### Technical Features

- Proportional valve with integrated hydraulic lock control function
- Hardened and precision working parts
- 12 and 24 VDC standard supply voltage of coils
- Optional type of electrical terminal EN175301-803-A, AMP Junior Timer or Deutsch DT04-2P
- Optional Built-in quenching diode for protection of electronic control unit
- Economical design
- Connector positioning thanks to coil rotation around its axes 360°
- In the standard configuration steel parts are zinc coated for 240 h protection in NSS acc. to ISO 9227

### Functional Description

The SD2P-B4 valve can be used in any application when it comes to routing hydraulic fluid to and from the consumer. Typically, these are applications that require lifting or lowering of a load. Thanks to the proportional adjustability of the valve, the motion speed can be adjusted to the given demands.

Compared to other available proportional 4/3 directional valves, the SD2P-B4 valve is equipped with only one solenoid for both actuation directions (usually two solenoids are needed). This design provides several benefits (e.g. more compact design, fewer electric connectors);

The SD2P-B4 is typically used in combination with a pilot-to-open check valve. The corresponding schematic is shown in Fig A, B and C. In such circuits, the check valve serves to decouple the consumer from the rest of the hydraulic system with zero leakage. The check valve is closed as long as the proportional valve is in center position / de-energized (Fig. A). Fig. B and C show how the energized switching positions facilitate „lowering“ and „lifting“ functions.

### Technical Data

<table>
<thead>
<tr>
<th>Symbol</th>
<th>Valve size / Cartridge cavity</th>
<th>7/8-14 UNF-2A / B4</th>
</tr>
</thead>
<tbody>
<tr>
<td>A B</td>
<td>Flow stages [Δp = 10 bar (145 PSI)] l/min (GPM)</td>
<td>4 (1.1)</td>
</tr>
<tr>
<td></td>
<td>Max. flow l/min (GPM)</td>
<td>9 (2.4)</td>
</tr>
<tr>
<td></td>
<td>Max. operating pressure bar (PSI)</td>
<td>250 (3630)</td>
</tr>
<tr>
<td></td>
<td>Max. proof pressure in T channel bar (PSI)</td>
<td>100 (1450) T channel should stay without pressure for the correct function</td>
</tr>
<tr>
<td></td>
<td>Fluid temperature range °C (°F)</td>
<td>-30 ...90 (-22 ...194), +100 (212) short time</td>
</tr>
<tr>
<td></td>
<td>Ambient temperature range °C (°F)</td>
<td>-30 ...90 (-22 ...194), +100 (212) short time</td>
</tr>
<tr>
<td></td>
<td>Response time at 100 % signal ms</td>
<td>&lt; 50</td>
</tr>
</tbody>
</table>

| Solenoid data | Nominal supply voltage V | 12 DC | 24 DC |
|               | Max. current A | 1.5 | 1 |
|               | Rated resistance at 20 °C (68 °F) Ω | 5 | 13.4 |
|               | Duty cycle % | 100 |
|               | Optimal PWM frequency Hz | 200 |
|               | Enclosure type acc.to EN 60529** | (acc.to terminal type) IP67 / IP69K |
|               | Weight with solenoid kg (lbs) | 0.67 (1.48) |
|               | **Data Sheet | Type |
|               | General information | GI_0060 | Products and operating conditions |
|               | Coil types | C_8007 | C228* |
|               | Valve bodies | SB_0018 | SB-B4* |
|               | Sandwich mounted | SB-04(06)_0028 | SB-B4* |
|               | Cavity details / Form tools | SMT_0019 | SMT-B4* |
|               | Spare parts | SP_8010 |

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

SD2P-B4 / H

4/3 proportional directional control valve with connecting thread 7/8-14 UNF

Valve cavity
7/8-14 UNF-2A

Model
High performance

Functional symbol

Characteristics measured at \( \nu = 32 \text{ mm/s} \) (156 SUS)

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

Seals
V  NBR
V  FPM (Viton)

Manual override
No designation

Connector

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

Nominal supply voltage / max. current

12 V DC / 1.5 A
24 V DC / 1.0 A

Seals
No designation

Nominal flow rate \( P \to A \) at \( \Delta p = 10 \text{ bar} \) (1450 PSI)

4 l/min (1.1 GPM)
20 l/min (5.3 GPM)

Timing control limit SD2P-B4/H3Y13-5

Operating limits SD2P-B4/H3Y13-5

Pressure \( p \) [bar (PSI)]

4 l/min (1.1 GPM)
20 l/min (5.3 GPM)

Flow Q [l/min (GPM)]

Manual override
standard
Characteristics measured at $\nu = 32 \text{ mm/s (156 SUS)}$

**Pressure drop SD2P-B4/H3Y13-5**

![Graph showing pressure drop SD2P-B4/H3Y13-5](image)

1. $p_1 = 10$ bar (145 PSI)
2. $p_2 = 20$ bar (290 PSI)
3. $p_3 = 50$ bar (725 PSI)
4. $p_4 = 100$ bar (1450 PSI)
5. $p_5 = 200$ bar (2900 PSI)
6. $p_6 = 250$ bar (3630 PSI)

**Pressure drop SD2P-B4/H3Y13-25**

![Graph showing pressure drop SD2P-B4/H3Y13-25](image)

1. $p_1 = 250$ bar (3630 PSI)
2. $p_2 = 200$ bar (2900 PSI)
3. $p_3 = 150$ bar (2180 PSI)
4. $p_4 = 100$ bar (1450 PSI)
5. $p_5 = 10$ bar (145 PSI)
6. $p_6 = 20$ bar (290 PSI)
7. $p_7 = 50$ bar (725 PSI)

**Flow characteristic SD2P-B4/H3Y13-5**

Flow rate $A - T$

![Graph showing flow characteristic SD2P-B4/H3Y13-5](image)

Flow rate $P - A$

![Graph showing flow characteristic SD2P-B4/H3Y13-5](image)

Flow characteristic $A - T$

![Graph showing flow characteristic SD2P-B4/H3Y13-5](image)

Flow rate $A - T$

![Graph showing flow characteristic SD2P-B4/H3Y13-5](image)
Dimensions in millimeters (inches)

Connector type
E3A, E4A - IP67 (AMP Junior Timer - axial direction)

Manual Override in millimeters (inches)

No Designation - Standard

In case of solenoid malfunction or power failure, the spool of the valve can be shifted by manual override as long as the pressure in port T does not exceed 25 bar (363 PSI).
For alternative manual overrides contact our technical support.