Proportional directional valve
• not pressure compensated
• \( Q_{\text{max}} = 20 \text{ l/min} \)
• \( Q_{\text{N max}} = 8 \text{ l/min} \)
• \( p_{\text{max}} = 315 \text{ bar} \)

**DESCRIPTION**
Direct operated proportional spool valve in flange design NG4-Mini according to Wandfluh standard with 4 ports. The spool valve is designed to the 5 chamber principle. The volume flow is adjusted by a Wandfluh proportional solenoid (VDE standard 0580). Low pressure drop due to the body design and spool profiling. The spool is made of hardened steel. The body made of high grade hydraulic casting for long service life is painted. The cover and the solenoid are zinc coated.

**FUNCTION**
Proportionally to the solenoid current spool stroke, spool opening and valve volume flow will increase. Proportional directional valves NG4-Mini are not load-compensated. The optimum spool shape and progressive characteristics curve allow fine motion control. To control the valve Wandfluh proportional amplifiers are available (see register 1.13).

**APPLICATION**
Proportional directional spool valves are well suited for demanding applications where high resolution, high volume flow and low hysteresis are requested. They are implemented in industrial hydraulics as well as in mobile hydraulics for the smooth control of hydraulic actuators. Application examples: pitch control of wind generators, forest and earth moving machines, machine tools and paper production machines with simple position controls, robotics and fan control.

**ELECTRICAL SPECIFICATIONS**
- Construction: Proportional solenoid, wet pin push type, pressure tight
- Standard-Nominal voltage: \( U = 12 \text{ VDC} \), \( U = 24 \text{ VDC} \)
- Limiting current: \( I_{\text{L}} = 1250 \text{ mA} \), \( I_{\text{G}} = 680 \text{ mA} \)
- Relative duty factor: 100% DF (see data sheet 1.1-430)
- Protection class: IP 65 acc. to EN 60 529
- Connection/Power supply: Over device plug connection acc. to ISO 4400/DIN 43650 (2P+E)
- Other electrical specifications see data sheet 1.1-115 (PI35V)

**HYDRAULIC SPECIFICATIONS**
- Fluid: Mineral oil, other fluid on request
- Contamination efficiency: ISO 4406:1999, class 18/16/13
- Viscosity range: \( 12 \text{ mm}^2/\text{s} \ldots 320 \text{ mm}^2/\text{s} \)
- Fluid temperature: \(-20 \ldots +70^\circ\text{C} \)
- Working pressure: \( p_{\text{max}} = 315 \text{ bar (connections P, A, B)} \)
- Tank pressure: \( p_{\text{max}} = 160 \text{ bar (connection T)} \)
- Nominal volume flow: \( Q_{\text{N}} = 4 \text{ l/min, 8 l/min} \)
- Max. volume flow see characteristic
- Leakage volume flow on request
- Hysteresis: \( \leq 5 \% \ast \)
- \( \ast \) at optimal dither signal

**GENERAL SPECIFICATIONS**
- Nominal size: NG4-Mini acc. to Wandfluh standard
- Designation: 4/2-, 4/3-way proportional directional valve
- Construction: Direct operated spool valve
- Mounting: Flange, 3 fixing holes for socket head cap screws M5x40
- Fastening Torque: \( M = 5,5 \text{ Nm (screw qual. 8.8)} \)
- Pipe connection: Connection plates, Multi-station flange subplate, Longitudinal stacking system
- Mounting position: any, preferably horizontal
- Ambient temperature: \(-20 \ldots +50^\circ\text{C} \)
- Weight: 4/2-way \( m = 1,15 \text{ kg} \), 4/3-way \( m = 1,55 \text{ kg} \)

**TYPE CODE**

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<th>Interface acc. to Wandfluh standard</th>
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<th>PW</th>
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<tr>
<td>Description of symbols acc. to table</td>
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<tr>
<td>Nominal volume flow ( Q )</td>
<td>4 l/min</td>
<td>8 l/min</td>
</tr>
<tr>
<td>Nominal voltage ( U )</td>
<td>12 VDC</td>
<td>24 VDC</td>
</tr>
</tbody>
</table>

Design-Index (Subject to change)
**CHARACTERISTICS**

**oil viscosity** $\eta = 30$ $\text{mm}^2/\text{s}$

$Q = f(p)$ Volume flow pressure characteristics $(i = i_p)$

- Types: S4D41, S4Z41a, S4Z41b

$\Delta p = f(Q)$ Pressure loss/flow characteristics $(i = i_p)$

- Types: S4D41, S4Z41a, S4Z41b

$Q = f(I)$ Volume flow adjustment characteristics $(\Delta p = 10 \text{ bar})$

- Types: S4D41, S4Z41a, S4Z41b

$Q = f(p)$ Volume flow pressure characteristics $(i = i_G)$

- Type: V4D42

$\Delta p = f(Q)$ Pressure loss/flow characteristics $(i = i_G)$

- Type: V4D42

$Q = f(I)$ Volume flow adjustment characteristics $(\Delta p = 10 \text{ bar})$

- Type: V4D42

**NOTE!**

All values measured over 2 metering edges, A and B ports linked.
Do not use anymore for new applications!
«Replacement by 1.10-73»

**DIMENSIONS**

4/3-way valve

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4/2-way valve

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**PARTS LIST**

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<tr>
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<td>Proportional solenoid PI35V-G24</td>
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<td>10</td>
<td>256.3426</td>
<td>Proportional solenoid PI35V-G12</td>
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<td>Plug with integrated manual override HB4,5</td>
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<td>219.2002</td>
<td>Plug B (black)</td>
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**ACCESSORIES**

- **Sub-plates**
  - Register 2.9

- **Proportional-amplifier**
  - Register 1.13

Technical explanation see data sheet 1.0-100E