**FUNCTION**
Spool stroke, aperture and volume flow increase proportionally to the increase in the electric current at the proportional solenoid. This special design senses and compensates load induced flow changes. Flow remains constant with varying pressure. The optimised shape of the spool results in a good resolution of flow important for sensitive motion control. To control the valve Wandfluh proportional amplifiers are available (see register 1.13).

**APPLICATION**
Because of the high resolution and low hysteresis, these valves are particularly suitable for demanding tasks. Applications: handling operations, robots, actuators, radar controlled vehicles, tool making and paper production machines, in other words anywhere where precise control systems are needed.

**DISCRIPTION**
Directly controlled spool valve, actuated by a Wandfluh proportional solenoid (VDE standard 0580), in five chamber design. Wet solenoid in oil. Spools with precision machined oil passages control the oil volume which is proportional to the solenoid current. Reduced pressure drop achieved by optimised flow channels. Precise spool fit, long life. Spool made of hardened steel, valve body made of high quality cast iron suitable for hydraulic valves. Flange type, threaded connection by means of a connecting plate.

**ELECTRICAL SPECIFICATIONS**
- Standard-Nominal voltage: $U_{N}$ = 12 VDC, $U_{N}$ = 24 VDC
- Limiting current: $I_{C1}$ = 1250 mA, $I_{C2}$ = 680 mA
- Relative duty factor: 100% DF (see data sheet 1.1-430)
- Protection class: IP 65 to EN 60 529
- Connection/Power supply: Over device plug connection, 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 mm²/s…320 mm²/s
- Fluid temperature: -20…+70 °C
- Working pressure: $p_{max}$ = 250 bar (ports P, A, B)
- Tank pressure: $p_{max}$ = 160 bar
- Nominal volume flows: $Q_0 = 2$ l/min, $Q_4 = 6$ l/min
- Min. volume flow: $Q_{min} = 4$ l/min, $Q_{min} = 8$ l/min
- Leakage volume flow: $Q_{leak} = 0,020$ l/min
- Resolution: 1 mA *
- Repeatability: $\leq 1 \%$
- Hysteresis: $\leq 2 \%$
- Other by optimal dithersignal

**TYPE CODE**
- Control valve, proportional
- Number of control ports
- Description of symbols acc. to table
- Nominal volume flow
  - 2 l/min $02$
  - 4 l/min $04$
  - 6 l/min $06$
  - 8 l/min $08$
- Normally closed
- Nominal voltage $U_{N}$: 12 VDC $G_{12}$, 24 VDC $G_{24}$
- Design-Index (Subject to change)

**GENERAL SPECIFICATIONS**
- Nominal size: NG4-Mini acc. to Wandfluh-standard
- Designation: 4/2-, 4/3- Proportional control valve
- Construction: Direct operated spool valve
- Mounting: Flange, 4 holes for socket cap
- Fastening torque: $M_o = 5,5$ Nm (screw quality 8.8)
- Pipe connection: Connection plates, Multi-station flange
- Mounting position: any
- Ambient temperature: -20…+50 °C
- Weight: 4/2-way $m = 1,1$ kg, 4/3-way $m = 1,4$ kg

**PROPORTIONAL DIRECTIONAL VALVE**
- Pressure compensated
- $Q_{max} = 8$ l/min
- $p_{max} = 250$ bar
TYPE CHARTS/DESIGNATIONS OF SYMBOLS

<table>
<thead>
<tr>
<th>Symbol</th>
<th>Description</th>
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</thead>
<tbody>
<tr>
<td>D41</td>
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<tr>
<td>Z41a</td>
<td></td>
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<tr>
<td>Z41b</td>
<td></td>
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<tr>
<td>D42</td>
<td></td>
</tr>
<tr>
<td>Z42a</td>
<td></td>
</tr>
<tr>
<td>Z42b</td>
<td></td>
</tr>
</tbody>
</table>

CHARACTERISTICS

Oil viscosity \( \nu = 30 \text{ mm}^2/\text{s} \)

- **Volume flow-pressure-characteristics**
  - \( Q = f(p) \)
  - \( Q_N = 2 \text{ l/min} \)
  - \( Q_N = 4 \text{ l/min} \)
  - \( Q_N = 6 \text{ l/min} \)
  - \( Q_N = 8 \text{ l/min} \)

- **Volume flow-signal-characteristics**
  - \( Q = f(I) \)
**DIMENSIONS**

4/3-way valve

4/2-way valve

**PARTS LIST**

<table>
<thead>
<tr>
<th>Position</th>
<th>Article</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>10</td>
<td>256.3454</td>
<td>Proportional solenoid PI35V-G24</td>
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<tr>
<td>256.3426</td>
<td></td>
<td>Proportional solenoid PI35V-G12</td>
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<tr>
<td>20</td>
<td>253.8000</td>
<td>Plug with integrated manual override HB4,5</td>
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<tr>
<td>30</td>
<td>219.2001</td>
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<tr>
<td>35</td>
<td>219.2002</td>
<td>Plug B (black)</td>
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<td>40</td>
<td>057.4208</td>
<td>Cover</td>
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<td>50</td>
<td>246.1161</td>
<td>Socket head cap screw M4 x 60 DIN 912</td>
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<tr>
<td>60</td>
<td>246.1111</td>
<td>Socket head cap screw M4 x 10 DIN 912</td>
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<td>70</td>
<td>160.2052</td>
<td>O-ring ID 5.28 x 1.78</td>
</tr>
</tbody>
</table>

**ACCESSORIES**

Sub-plates register 2.9
Proportional-amplifier register 1.13

Technical explanation see data sheet 1.0-100