Proportional spool valve
Screw-in cartridge type
◆ pilot operated
◆ \( Q_{\text{max}} = 250 \, \text{l/min} \)
◆ 1 volume flow level
◆ \( Q_{\text{N max}} = 150 \, \text{l/min} \)
◆ \( p_{\text{max}} = 315 \, \text{bar} \)

DESCRIPTION
Pilot operated proportional spool valve in screw-in cartridge construction. Precise spool fit, low leakage, long service life time. Spool made of hardened steel. The valve is controlled externally through a pilot pressure via the \( x \) and \( y \) connections. Without control, the piston is held in the central position by a spring. Proportional to the pilot pressure, the spool opening and the valve volume flow increase. Thanks to the optimum spool form, sensitive movement processes are possible. For the control, Wandfluh proportional pressure valves (see register 2.3) and Wandfluh proportional amplifiers (see register 1.13) are available.

APPLICATION
Proportional spool valves are perfectly suitable for demanding tasks due to the high resolution, large volume flow and low hysteresis. The applications are in the industry as well as in the mobile hydraulics for the smooth control of hydraulic actuators. Some examples: rotor blades control of wind generators, forestry and earth moving machines, machine tools and paper production machines with simple position control, robotics and fan control.

TYPE CODE

<table>
<thead>
<tr>
<th>Spool valve</th>
<th>Pilot operated</th>
<th>Proportional</th>
</tr>
</thead>
<tbody>
<tr>
<td>Screw-in cartridge M42 x 2</td>
<td>Nominal volume flow rate ( Q_{\text{N}} )</td>
<td>150 l/min</td>
</tr>
<tr>
<td>Design index (subject to change)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

SYMBOL
Symmetrical control

\[
\text{ACB-S} \quad \text{CB2-S}
\]

x

\[
\begin{array}{ccc}
A & B & \uparrow \downarrow \\
\downarrow & T & T \\
P & T & y
\end{array}
\]

x

\[
\begin{array}{ccc}
A & B & \uparrow \downarrow \\
\downarrow & T & T \\
P & T & y
\end{array}
\]

Meter-in control

\[
\text{ADB-V} \quad \text{DB2-V}
\]

x

\[
\begin{array}{ccc}
A & B & \uparrow \downarrow \\
\downarrow & T & T \\
P & T & y
\end{array}
\]

x

\[
\begin{array}{ccc}
A & B & \uparrow \downarrow \\
\downarrow & T & T \\
P & T & y
\end{array}
\]

WVPPM42
**GENERAL SPECIFICATIONS**

<table>
<thead>
<tr>
<th>Specification</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Designation</td>
<td>Proportional spool valve</td>
</tr>
<tr>
<td>Construction</td>
<td>Pilot operated</td>
</tr>
<tr>
<td>Mounting</td>
<td>Screw-in cartridge type</td>
</tr>
<tr>
<td>Nominal size</td>
<td>M42 x 2 according to Wandfluh standard</td>
</tr>
<tr>
<td>Actuation</td>
<td>Pilot valve</td>
</tr>
<tr>
<td>Ambient temperature</td>
<td>-30…+90 °C</td>
</tr>
<tr>
<td>Weight</td>
<td>1,4 kg</td>
</tr>
<tr>
<td>MTTFd</td>
<td>150 years</td>
</tr>
</tbody>
</table>

**HYDRAULIC SPECIFICATIONS**

<table>
<thead>
<tr>
<th>Specification</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Working pressure</td>
<td>$p_{\text{max}} = 315$ bar</td>
</tr>
<tr>
<td>Maximum volume flow</td>
<td>$Q_{\text{max}} = 250$ l/min, see characteristics</td>
</tr>
<tr>
<td>Nominal volume flow</td>
<td>$Q_{\text{N}} = 150$ l/min</td>
</tr>
<tr>
<td>Leakage volume flow</td>
<td>$P \rightarrow T$ (at 200 bar): &lt; 0,5 l/min</td>
</tr>
<tr>
<td>Fluid</td>
<td>Mineral oil, other fluid on request</td>
</tr>
<tr>
<td>Viscosity range</td>
<td>12 mm$^2$/s…320 mm$^2$/s</td>
</tr>
<tr>
<td>Temperature range fluid</td>
<td>-20…+70 °C</td>
</tr>
<tr>
<td>Contamination efficiency</td>
<td>Class 18 / 16 / 13</td>
</tr>
<tr>
<td>Filtration</td>
<td>Required filtration grade $\beta$ 6…10 ≥ 75, see data sheet 1.0-50</td>
</tr>
</tbody>
</table>

**PERFORMANCE SPECIFICATIONS**

Oil viscosity $\nu = 30$ mm$^2$/s

**Volume flow pressure characteristics**

\[
Q = f(\Delta p)
\]

\[
\begin{align*}
Q \ [\text{l/min}] & \quad \begin{array}{c}
0 & 50 & 100 & 150 & 200 & 250 & 300 & 350 \\
0 & 4 & 8 & 12 & 16 & 20 & 24 & 26 \\
0 & 2 & 4 & 6 & 8 & 10 & 12 & 14 & 16 & 18 & 20 & 22 & 24 & 26 & 28 & 30 & 32 & 34 & 36 \\
\end{array}
\end{align*}
\]

\[
Q = f(pv)
\]

\[
\begin{align*}
Q \ [\text{l/min}] & \quad \begin{array}{c}
0 & 50 & 100 & 150 & 200 & 250 & 300 & 350 \\
0 & 12 & 24 & 36 & 48 & 60 & 72 & 84 & 96 & 108 & 120 & 132 & 144 & 156 & 168 \\
0 & 2 & 4 & 6 & 8 & 10 & 12 & 14 & 16 & 18 & 20 & 22 & 24 & 26 & 28 & 30 \\
\end{array}
\end{align*}
\]

Connection example
## DIMENSIONS

<table>
<thead>
<tr>
<th>Dimensions</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Ø 48</td>
<td></td>
</tr>
<tr>
<td>Mₜ = 80...100 Nm</td>
<td></td>
</tr>
</tbody>
</table>

## HYDRAULIC CONNECTION

- **Cavity drawing according to Wandfluh standard**

### ACTUATION

- **Actuation**: Pilot control
- **Minimum pilot pressure**: 4,5 bar
- **Maximum pilot pressure**: 30 bar

### INSTALLATION NOTES

- **Mounting type**: Screw-in cartridge M42 x 2
- **Mounting position**: Any, preferably horizontal
- **Tightening torque**: Mₜ = 80...100 Nm Screw-in cartridge

### ACCESSORIES

<table>
<thead>
<tr>
<th>Accessory</th>
<th>Register/Data sheet</th>
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<tbody>
<tr>
<td>Proportional pressure valves</td>
<td>2.3</td>
</tr>
<tr>
<td>Proportional amplifier</td>
<td>1.13</td>
</tr>
<tr>
<td>Technical explanations</td>
<td>1.0-100</td>
</tr>
<tr>
<td>Hydraulic fluids</td>
<td>1.0-50</td>
</tr>
<tr>
<td>Filtration</td>
<td>1.0-50</td>
</tr>
</tbody>
</table>

### SURFACE TREATMENT

- The external parts of the cartridge body are zink / nickel coated

### SEALING MATERIAL

- NBR as standard

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**Note!** For detailed cavity drawing and cavity tools see data sheet 2.13-1052