Progressive distributor VPA-B

Use:
In progressive mode based central lubrication systems.

The main features of **WOERNER**-progressive distributors are as follows:
- Accurate proportioning volumes.
- Clear and precise arrangement of control channels in spite of small-size construction.
- Modular system construction. Quick fault remedy possible without having to loosen the pipeline.
- 3 different proportioning volumes selectable in accordance with the lubricant required.
- Extremely long service life due to refined sliding surfaces.
- Pluggable monitoring elements can be replaced during operation.
- No proportioning decrease at the piston monitored.

Technical data:
Proportioning volume per cycle: 0,09 ... 0,2 cm³
Lubrication point connections at max.: 20
Operating pressure at max.: 150 bar
Throughput volume in case of:
- Oil at max.: 700 cm³/min
- Grease at max.: 70 cm³/min
Delivery medium:
- Oil-viscosity: >6 cP
- Grease up to: NLGI-category 2
Material:
- Proportioning block: Aluminium
- Internal parts: Steel
- Connecting plate: Aluminium
- Grease at max.: 70 cm³/min
- Oil at max.: 700 cm³/min
- Connections at max.: 20
- Oil-viscosity: >6 cP
- Delivery medium:
- Lubrication point connections at max.: 20
- Operating pressure at max.: 150 bar

Temperature range: -20 ... +80 °C

Mounting position: usually as needed
Note: In case of heavy vibration or shock load, install the distributor such that piston axes are situated vertically to the main direction of shock impact.
An optimum ventilation of the whole lubrication system is the precondition for its functionally safe operation. For quicker ventilation, the flow direction from bottom to top in the distributor is of advantage (inlet on bottom side).
The distributor must not be "distorted". Therefore when mounting it, always be careful that the supporting surface is level.

**Number of outlets**

<table>
<thead>
<tr>
<th>Number of outlets</th>
<th>Length &quot;s&quot;</th>
<th>Length &quot;s&quot;</th>
<th>Weight [kg]</th>
</tr>
</thead>
<tbody>
<tr>
<td>6</td>
<td>97</td>
<td>-</td>
<td>0.50</td>
</tr>
<tr>
<td>8</td>
<td>114</td>
<td>-</td>
<td>0.65</td>
</tr>
<tr>
<td>10</td>
<td>131</td>
<td>-</td>
<td>0.80</td>
</tr>
<tr>
<td>12</td>
<td>153</td>
<td>68</td>
<td>0.95</td>
</tr>
<tr>
<td>14</td>
<td>170</td>
<td>85</td>
<td>1.10</td>
</tr>
<tr>
<td>16</td>
<td>187</td>
<td>85</td>
<td>1.25</td>
</tr>
<tr>
<td>18</td>
<td>204</td>
<td>102</td>
<td>1.40</td>
</tr>
<tr>
<td>20</td>
<td>221</td>
<td>102</td>
<td>1.55</td>
</tr>
</tbody>
</table>
Visual check:

In a translucent polyamide casing, a red pin being connected with the piston shows the piston's movement.

Casing material: Polyamide, translucent
Ambient temperature: -10...+80 °C
Weight: 0.35 kg
Mounting point at distributor: A or B

Choice of initiators:

<table>
<thead>
<tr>
<th>Designation / Purchase-no.</th>
<th>Initiator &quot;C&quot; 913.900-03</th>
<th>Initiator &quot;F&quot; 913.900-11</th>
<th>Initiator &quot;N&quot; 913.900-21</th>
<th>Initiator &quot;I&quot; 913.900-14</th>
<th>Initiator &quot;Z&quot; 979.044-88</th>
</tr>
</thead>
<tbody>
<tr>
<td>Suits for</td>
<td>Casing &quot;W&quot; Switching dis.≥5mm</td>
<td>Casing &quot;D&quot; and &quot;W&quot; Switching dis.≥8mm</td>
<td>Casing &quot;D&quot; and &quot;W&quot; Switching dis.≥8mm</td>
<td>Casing &quot;W&quot; Switching dis.≥5mm</td>
<td>Casing &quot;W&quot; Switching dis.≥5mm</td>
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<tr>
<td>Dimension drawing:</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Connection diagram:

Operating voltage: 10...30 VDC 20...250 VUC 10...30 VDC 10...30 VDC 10...30 VDC
Residual ripple: ≤10% ≤15% ≤15% ≤15% ≤15%
Load current at max.: 250 mA 500 mA 200 mA 150 mA 130 mA
Protection system: IP67 IP67 IP67 IP67 IP67
Power connection: Cable 3 m Cable 3 m Unit plug (see accessoires page 3)
Length "A": 60 mm 62 mm 45 mm 83 mm 65 mm

Electrical check with initiator:

Casing for initiator:

A pin being connected with the piston attenuates an initiator once per cycle.

Version "D":
Casing material: Polyamide, translucent
(Piston movement is visible) for initiators with a switching distance of: ≥8 mm

Version "W":
Casing material: Polyamide, black for initiators with a switching distance of: ≥5 mm

Use initiator with M18x1 thread!
(When using other initiators than those depicted below, such initiators must be checked for suitability.)
**Electrical check with reed contact:**

A magnet connected with the piston switches the reed contact once per cycle.

- Switching voltage: 10 ... 36 VUC
- Switching current at max.: 25 mA
- Switching power at max.: 0,9 VA
- Ambient temperature: -5 ... +80 °C
- Mounting point at distributor: A

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**Version "R" with plug-in connection DIN 43650A:**

- Material (casing): Al or 1.4305
- System of protection: IP65
- Connection diagram:

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**Version "RK" with cable:**

- Material (casing): PA or 1.4305
- System of protection: IP65
- Cable:
  - Length: 10 m
  - Cross section: 2x0,75 mm²
  - Material: Oilflex
- Connection diagram:

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**Version "RS" with unit plug 4 pin (M12):**

(for matching cable jack see accessories)

- Material (casing): PA or 1.4305
- Connection diagram:

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**Cable jack with LED and cable:**

- Purchase-no.: 913.404-19
- Operating voltage: 10 ... 30 VDC
- Cross section: 3x0,34 mm²
- Length: 5 m
- System of protection: IP68

**Cable jack with terminal clamps:**

- Purchase-no.: 913.404-24
- Connection type: Screws
- Connection cross section: at max. 0,75 mm²
- Cable diameter: 4 ... 6 mm
- System of protection: IP67
Cable jack with LED and cable:
913.404-19

Cable jack with terminal clamps:
(without LED)
913.404-24

Purchase-no.:

Operating voltage: 10 ... 30 VDC

Cross section: 3x0,34 mm²
Length: 5 m
System of protection: IP68

Connection type: Screws

Cable diameter: 4 ... 6 mm
System of protection: IP67
Connection cross section: at max. 0,75 mm²

Electrical check with reed contact:

Version "R"
with plug-in connection DIN 43650A:

Version "RK"
with cable:

Version "RS"
with unit plug 4 pin (M12):

A magnet connected with the piston switches the reed contact once per cycle.

Switching voltage: 10 ... 36 VUC
Switching current at max.: 25 mA
Switching power at max.: 0,9 VA
Ambient temperature: -5 ... +80 °C
Mounting point at distributor: A

Material (casing):
Al or 1.4305
System of protection: IP65
Connection diagram:

Material (casing): PA or 1.4305
System of protection: IP65
Cable Length: 10 m
Cross section: 2x0,75 mm²
Material: Oilflex
Connection diagram:

Accessories:
(state purchase-no., please)
Cable jack for functionality check "RS" and initiator
LED yellow = function display
green = operating voltage

Version "R"
Version "RK"
Version "RS"

Note:
When a functionality checking device is to be added on, the proportioning volume must be 0,20 cm³ at least at the last point!

Purchase-designation: Progressive distributor
VPA-B

Distributor view

Purchase-designation: Proportioning block
DPA-B

Purchase-designation: Connecting plate
APA-B

Note:
When a functionality checking device is to be added on, the proportioning volume must be 0,20 cm³ at least at the last point!

Purchase-example:
(for the distributor as depicted here)
Progressive distributor with 12 outlets, without visual check "0", with receptacle for initiator "W" and initiator "C", proportioning distinctive numbers "20", "20", "09", "14", "14", "20", gasket material "P".

Purchase-designation:
VPA-B / 12 / 0 / W / C / 20 / 20 / 09 / 14 / 14 / 20 / P
R : P P A V 0 0
M : K K Z K Z Z
L : B B 0 0 B A

Leaflet-No. 0687 EN
Page 4 of 6
Combination of outlets, doubling the proportioning volume at an outlet:

Connect opposing outlets by removing the “Z” screw. Close the not needed outlet with the lock screw. Without removal of the “Z” screw, no outlet must be locked.

Add-on elements and combination of outlets:

Distinctive letters:
- B = double bridge
- P = triple bridge
- A = Outlet at the bridge
- Z = opposing outlets separated
- K = opposing outlets connected
- O = open outlet
- V = Lock screw

Pipe screw fittings DIN 2353:

Add-on elements and combination of outlets:

<table>
<thead>
<tr>
<th>Connection thread</th>
<th>4</th>
<th>6</th>
<th>8</th>
<th>10</th>
<th>12</th>
<th>Check valve with pipe-outer connector</th>
</tr>
</thead>
<tbody>
<tr>
<td>G1/8</td>
<td>951.100-04</td>
<td>951.100-05</td>
<td>951.100-06</td>
<td>-</td>
<td>-</td>
<td>501.060-65</td>
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Accessories:

Bridges and lock screw:

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<tr>
<th>Bridges (location of the mid fastening screw “S”)</th>
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Function process figures 1 ... 4:

The lubricant flows from the main line through the right-side ring groove of piston III as well as the bypass line (right) and to the left side of piston I and moves it into its home position. The lubricant displaced by piston I is ejected via the left bypass line through outlet no. 6.

After shifting of piston I, lubricant flows to the left side of piston II and pushes it into its right-side home position. The displaced lubricant is ejected via outlet no. 1.

After shifting of piston II, lubricant flows to the left side of piston III and pushes it into its right-side home position. The displaced lubricant is ejected via outlet no. 2.

After shifting of piston III, lubricant flows to the right side of piston I and pushes it into its left-side home position. The displaced lubricant is ejected via outlet no. 3. The continuation of that process is evidenced in the scheme depicted.

Monitoring of progressive distributors:

As for instance due to soiling, the flow through a lubricant point line may be prevented. This will cause a piston to get blocked. By virtue of the forced control as depicted in figures 1 up to 4, the other pistons will be stopped as well. Due to this configuration, the proportioning at all outlets of the distributor can be monitored by means of a sensor at one piston only.

Mounting note:

The pistons are provided with an extremely small fitting clearance. Therefore, the pistons, after the dismantling of a distributor, must never be interchanged.

Formula for calculating the lubricant available per lubrication point:

A progressive distributor allocates the delivered lubricant to the individual lubrication points in forced order. Due to the functional process as described herein, a safe proportioning is ensured.

The lubricant $q_i$ delivered to a lubrication point $i$ can be calculated as follows

$$q_i = \frac{K_i}{2*(K_1+K_2+K_3...)} * Q$$

$Q$ = lubricant delivered to the distributor,

$K_i$ = distinctive number of the outlet $i$