UVN SERIES
VARIABLE VOLUME VANE UNI-PUMP

UVN Series Variable Volume Vane Uni-pump
(NSP Uni-pump)

3 to 16cm³/rev
8MPa(81.6kgf/cm²)

Features

1. Energy efficient high performance

All the performance of a vane pump, right from the low pressure range, is enhanced even further by eliminating the external drain and optimizing the pressure balance, creating a design that generates little heat.

The result is a pump that contributes to the energy efficiency of the mother machine, as well as to process precision.

2. Lightweight, compact design

The pump and motor are designed for exclusive uni-pump use, making them lightweight, compact, easy to handle, and suitable for a wide range of applications.

3. Low noise, long life

The pump and motor shaft are linked by a joint, which minimizes noise by eliminating the effects of shaft vibration and an off-center shaft. The coupling is constructed to allow constant lubrication, for friction-free long life.

Specifications

<table>
<thead>
<tr>
<th>Model No.</th>
<th>Pump Capacity cm³/rev</th>
<th>Pressure Adjustment Range MPa(kgf/cm²)</th>
<th>No-load Discharge Rate l/min</th>
</tr>
</thead>
<tbody>
<tr>
<td>UVN-1A-0A2-5,7-4-11</td>
<td>8.1</td>
<td>1.5 to 4.0 (15.3 to 40.8)</td>
<td>50Hz 12</td>
</tr>
<tr>
<td>UVN-1A-0A3-5,7-4-11</td>
<td></td>
<td>3.5 to 6.0 (35.7 to 61.2)</td>
<td>60Hz 14.5</td>
</tr>
<tr>
<td>UVN-1A-0A4-5,7-4-11</td>
<td></td>
<td>5.5 to 8.0 (56.1 to 81.6)</td>
<td></td>
</tr>
<tr>
<td>UVN-1A-1A2-15,7-4-11</td>
<td>16.1</td>
<td>1.5 to 4.0 (15.3 to 40.8)</td>
<td>50Hz 24</td>
</tr>
<tr>
<td>UVN-1A-1A3-15,7-4-11</td>
<td></td>
<td>3.5 to 6.0 (35.7 to 61.2)</td>
<td>60Hz 29</td>
</tr>
<tr>
<td>UVN-1A-1A4-15,7-4-11</td>
<td></td>
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<td></td>
</tr>
</tbody>
</table>

Note)
Contact your agent for combinations other than those noted above.

Understanding Model Numbers

UVN - 1 A - 1 A 4 - 1.5 - 4 - 11

- Design number
- Number of motor poles: 4 (P)
- Motor output (kW) "Power supply AC200V-50/60Hz AC220V-60Hz
  0.7: 0.75kW 1.5: 1.5kW 2.2: 2.2kW
- Pressure adjustment range
  2: 1.5 to 4.0MPa (15.3 to 40.8kgf/cm²)
  4: 5.5 to 8.0MPa (56.1 to 81.6kgf/cm²)
- Flow characteristics: Constant discharge type
- Discharge rate (At N=1800min⁻¹)
  0: 14.5 l/min (max) 1: 29 l/min (max)
- A: Foot type mounting
- Pump size: VDN-1B
- UVN Series Uni-pump

• Handling
1. Installation and Piping Precautions
   1. Provide a mounting base of sufficient rigidity, and install so that the pump shaft is oriented horizontally.
   2. Make sure the flow rate of the suction piping is no more than 2m/s, and that the suction pressure at the pump suction port is in the range of -0.03 to -0.03MPa.
   3. Drain piping must be direct piping up to a point that is below the tank fluid level, and back pressure due to pipe resistance should not exceed 0.01MPa. Provide a suction strainer with a filtering grade of about 100 µm (150 mesh).

2. Running Precautions
   1. The direction of rotation is clockwise (rightward) when viewed from the motor fan side.
   2. At startup, repeat the inching operation (start-stop) with the pump discharge side at no-load to bleed air from the pump and suction piping.
   3. Equip an air bleed valve in circuits where it is difficult to bleed air before startup.
   4. Make sure the maximum peak pressure (setting pressure + surge pressure) during operation does not exceed 14MPa.
   5. Refer to the following piping conditions as a guideline to keep the maximum peak pressure below 14 MPa. 1/2” x 2 m rubber hose (for 14 MPa) (pipe volume: approximately 250 cm³)
   6. Install a relief valve to cut surges in the circuit if pressure exceeds 14 MPa.
Installation Dimensions

Installation method is the same as design number 10D (old design).

<table>
<thead>
<tr>
<th>Model No.</th>
<th>Output - Poles (kW - 4P)</th>
<th>Motor Dimensions mm (mm)</th>
<th>Weight kg</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>A</td>
<td>IL</td>
<td>C</td>
</tr>
<tr>
<td>U1VN-1A’-‘A’-0.7-‘4-11</td>
<td>20</td>
<td>90</td>
<td>80</td>
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<tr>
<td>U1VN-1A’-‘A’-1.5-‘4-11</td>
<td>20</td>
<td>100</td>
<td>90</td>
</tr>
<tr>
<td>U1VN-1A’-‘A’-2.2-‘4-11</td>
<td>20</td>
<td>110</td>
<td>100</td>
</tr>
</tbody>
</table>

No hanger.

1. Standard drive motor is the fully enclosed fan-cooled type.
2. Standard voltage for drive motor is 200 VAC, 50/60 Hz or 220 VAC, 60 Hz.
3. Standard terminal box is B terminal (right side viewed from pump).

Characteristics of drive motor for unipump (domestic standard 3 rating)

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</thead>
<tbody>
<tr>
<td>0.75</td>
<td>4</td>
<td>The drive motor is specialized for the unipump and is not a specific model.</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>1.5</td>
<td>4</td>
<td></td>
<td>200</td>
<td>50</td>
<td>3.9</td>
<td>1400</td>
<td>E</td>
</tr>
<tr>
<td>220</td>
<td>60</td>
<td></td>
<td>50</td>
<td>7.1</td>
<td>1390</td>
<td>E</td>
<td></td>
</tr>
<tr>
<td>220</td>
<td>60</td>
<td></td>
<td>6.3</td>
<td>1670</td>
<td>E</td>
<td></td>
<td></td>
</tr>
<tr>
<td>200</td>
<td>50</td>
<td></td>
<td>9.0</td>
<td>1410</td>
<td>E</td>
<td></td>
<td></td>
</tr>
<tr>
<td>200</td>
<td>60</td>
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<td>8.7</td>
<td>1700</td>
<td>E</td>
<td></td>
<td></td>
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<tr>
<td>220</td>
<td>60</td>
<td></td>
<td>8.2</td>
<td>1720</td>
<td>E</td>
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</tr>
</tbody>
</table>
**Performance Curves**

UVN-1A-*A*-*4-11
Operating Fluid: ISO VG 32
Oil temperature: 40°C

Motor selection curves

The area under a motor output curve in the graph below is the operating range for that motor under the rated output for that motor.

Example:
To find the motor that can produce pressure of 3.5MPa and a discharge rate of 12 ℓ/min.

* Select a uni-pump that has a pressure and flow rate that is within the range of the drive so that the drive will not overload.

**Selection Process**

Since the intersection of the two broken lines from a pressure of 3.5MPa and discharge rate of 12 ℓ/min intersect in the area under the 1.5kW curve, it means that a 1.5kW motor should be used.

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**UVN-1A-0A * (50Hz)**

- Discharge rate Q: 15 ℓ/min
- Discharge pressure P: 20.4 MPa
- Motor Power: 1.5kW

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**UVN-1A-1A * (50Hz)**

- Discharge rate Q: 35 ℓ/min
- Discharge pressure P: 20.4 MPa
- Motor Power: 2.2kW

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**UVN-1A-0A * (60Hz)**

- Discharge rate Q: 15 ℓ/min
- Discharge pressure P: 20.4 MPa
- Motor Power: 1.5kW

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**UVN-1A-1A * (60Hz)**

- Discharge rate Q: 35 ℓ/min
- Discharge pressure P: 20.4 MPa
- Motor Power: 2.2kW

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**Motor Power Loss at Full Cutoff**

**DR Volume a Full Cutoff**

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**UVN-1A-*A*-2.2-4-11**

- Motor axial input kW
- Discharge pressure P: 20.4 MPa
- Motor Power: 60Hz

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**UVN-1A-*A*-4-11(60Hz)**

- Drain rate DR: 1.2 ℓ/min
- FC setting pressure P: 20.4 MPa
- Motor Power: 60Hz