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<td>NSP</td>
<td>Compact Power Unit with Variable Volume Vane Uni-Pump</td>
<td>5.3gpm, 3hp</td>
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NSP Series
Compact Power Unit with
Variable Volume Vane Uni-Pump
NSP Series
Compact Power Unit with Variable Volume Vane Uni-Pump

Compact hydraulic units are widely used as a power source in such machine tool applications as NC lathe chuck opening and closing, tailstock, tool rotation, machining center spindle raise and lower operations, etc. During pressure holding, the new NSP power unit, consisting of our UVN variable volume vane uni-pump, enables machine efficiency that delivers energy savings of approximately 40% when compared with Nachi standard power units.

Features

**Space-saving, lightweight design**
A smaller tank capacity makes the power unit more compact, and greatly reduces space requirements.

**New structure increases efficiency**
Based on years of experience, the structure includes an improved pump joint that provides more efficient operation.

**Greatly improved cooling capacity**
A powerful, energy-efficient built-in cooling system eliminates the need for fan motor wiring and coolant pipes.

Specifications

<table>
<thead>
<tr>
<th>Item</th>
<th>NSP-**<em>V0A</em></th>
<th>NSP-**<em>V1A</em></th>
</tr>
</thead>
<tbody>
<tr>
<td>Pump capacity cm³/rev. [in³/rev]</td>
<td>8.0 (0.49)</td>
<td>16.0 (0.98)</td>
</tr>
<tr>
<td>Maximum pressure MPa [psi]</td>
<td></td>
<td>8.0 (1160) (Full cutoff pressure)</td>
</tr>
<tr>
<td>Motor output kW [HP]</td>
<td>0.75 (1), 1.5 (2)</td>
<td>1.5 (2), 2.2 (3)</td>
</tr>
<tr>
<td>Tank capacity l [gallon]</td>
<td>20 (5.28)</td>
<td></td>
</tr>
<tr>
<td>Installation space mm [inch]</td>
<td>300 X 400 (11.81 X 15.75)</td>
<td></td>
</tr>
<tr>
<td>Approximate weight kg [lbs]</td>
<td>39 (86) (20 l, 1.5kW)</td>
<td></td>
</tr>
</tbody>
</table>

Model Code

**NSP** – 20 – 15  V  1 A 3 – 12

- **Design number**
- Pressure adjustment range (A: Constant volume type)
  2: 218 to 580 psi (508 psi)
  3: 508 to 870 psi (725 psi)
  4: 798 to 1160 psi (1015 psi)
- Note: Figures in parentheses show factory default full cutoff pressure.

- Maximum pump capacity
  0: 0.49in³/rev
  1: 0.98in³/rev
- Note: Factory defaults are maximum values shown above.

- Pump type: Variable vane pump
- Motor capacity
  07: 0.75kW (1HP)
  15: 1.5kw (2HP)
  22: 2.2kW (3HP)
- Tank capacity: 20 liters (5.28 gallons)
- NSP series compact hydraulic power unit

**UVN** – 1 A 3 – 1 E 4 M – 1

- **Design number**
- Power supply M: AC230V-60 Hz
  G: AC460V-60 Hz
- Number of motor poles: 4P
- Motor capacity 0.7: 0.75kW, 1.5: 1.5kW, 2.2: 2.2kW
- Maximum pump capacity (See NSP)
- Pressure adjustment range (See NSP)
- Mounting method A: Foot mounting
- Pump size 1
- UVN series Uni-pump
**Dimensional Drawings**

**NSP Power Unit**

- **Details of flange mounting surface**
- **Details of uni-pump terminal block**

**Note:** The unit lifting lug (eye-bolt and eye-nut) also serves as a screw for assembling the tank. If it is removed, the tank upper plate will be removed.

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**Model Specifications**

<table>
<thead>
<tr>
<th>Model</th>
<th>Dimensions inch</th>
<th>Approximate weight lbs</th>
</tr>
</thead>
<tbody>
<tr>
<td>NSP-20-07V<em>A</em>-12</td>
<td></td>
<td>86.0</td>
</tr>
<tr>
<td>NSP-20-15V<em>A</em>-12</td>
<td></td>
<td>99.2</td>
</tr>
<tr>
<td>NSP-20-22V<em>A</em>-12</td>
<td></td>
<td>112.0</td>
</tr>
</tbody>
</table>

**UVN Uni-Pump**

<table>
<thead>
<tr>
<th>Model</th>
<th>Dimensions inch</th>
<th>Approx. weight lbs</th>
</tr>
</thead>
<tbody>
<tr>
<td>UVN-1A-<em>A</em>-0.7E-4M-11</td>
<td></td>
<td>37.5</td>
</tr>
<tr>
<td>UVN-1A-<em>A</em>-1.5E-4M-11</td>
<td></td>
<td>46.2</td>
</tr>
<tr>
<td>UVN-1A-<em>A</em>-2.2E-4M-11</td>
<td></td>
<td>57.3</td>
</tr>
</tbody>
</table>
Motor Selection Method
The area under a motor output curve in the graphs below is the operating range for the motor under the rated output for the motor.

Example
Find the motor to be used at a pressure of 3.5MPa (508psi) and discharge rate of 12ℓ/Min (3.2gpm).

Solution
Since the intersection of the two broken lines from a pressure of 3.5MPa (508psi) and discharge rate of 12ℓ/Min (3.2gpm) intersect in the area under the 1.5kW curve, it means that a 1.5kW motor should be used.

Performance Characteristics

Power Consumption

Noise Characteristics

Conditions
The value in the left-hand drawing represents typical characteristics under the following conditions:
- Oil used: ISO VG32 or its equivalent
- Oil temperature: 104 ± 4ºF
- Measuring distance: 3.3 feet around the unit

Note:
The noise characteristics depend on the installation floor base conditions and the presence of the surrounding substance reflecting the sound, and so may be different from the above description in some cases.

Oil Temperature Characteristics

Conditions
The value on the left-hand drawing represents typical characteristics under the following conditions:
- Oil used: ISO VG32 or its equivalent
- Speed: 1800 min⁻¹
- Room temperature: 84ºF
- Motor: 0.75~2.2kW

Notes:
1. For 5.0MPa (724psi) of a 2.6 gallon tank. It should be noted that there is a big rise in oil temperature under continuous operation. In this case, we recommend use of a 5.3 gallon tank.
2. Rise of oil temperature depends on the conditions of using an actual machine, and so may be different from the above description in some cases.