NP Series
Fluid Processing and Transfer Sliding Vane Pumps

Application
Versatility
The NP type positive displacement sliding vane pumps are specially designed to offer maximum versatility for handling a wide range of clean, non-corrosive fluids.

Efficiency Means Energy Savings
The high volumetric efficiency and symmetrical bearing support of the NP pumps means they require less horsepower than other PD pumps and up to 50% less power when handling viscous fluids. This means cost savings on both motors and electricity to operate the pumps.

Self-Priming and Dry Run Capability
The NP pumps are self-priming, and the self-adjusting vanes help maintain this capability. NP pumps can run dry for short periods of time for priming and line stripping.

High Viscosity
The NP pumps are ideal for handling viscous or shear sensitive fluids. The key to the NP series’ versatility is Blackmer’s unique sliding vane rotor design that provides sustained, high level performance over a wide viscosity range. Slow operating speeds and non-pulsating flow minimizes shear and agitation of the fluid. Optional Heating Jackets are available if required.

How Blackmer’s sliding vane action works
NP Series
Multipurpose Sliding Vane Pumps for a wide range of fluids and viscosities

Long Bearing Life
The unique head and bearing design allows a small quantity of fluid to flow from the discharge side of the pump to the bearings. The pumpage is then drawn to the suction side of the pump through passages in the heads. The small, continuous flow of fluid over the bearing surfaces provides a hydrodynamic film, which minimizes temperature rise for longer bearing life.

Applications
- Refined Fuels
- Wax
- Greases
- Glues
- Solvents (VOCs)
- Adhesives
- Chocolate
- Creosote
- Syrup
- Asphalt
- Molasses
- Aqueous Film Forming Foam (AFFF)
- Edible Oils
- Black Liquor
- Sodium Silicate
- Tallow
## Options and Specifications

**Casing:**
Cast iron construction

**Drain Plugs:**
Allow for easy draining, standard on ductile iron casing, optional on cast iron casing

**Rotor & Shaft:**
Ductile iron rotor with hardened steel shaft

**Jacket Options:**
Pumps available with optional Electric Heater ports or heating jackets for use with steam or hot oil. Both options heat the pump for highly viscous fluids and controlling bearing temperature. Electric heater ports are ready to accept standard heating elements. Steam and hot oil jackets use standard NPT connections.

**Relief Valve:**
Integral cast iron valve with steel spring (optional corrosion resistant relief valve with stainless steel spring)

**Flanges:**
- NP1.5” model: NPT tapped casing ports
- NP2, 2.5, 3 & 4” models: NPT tapped companion flanges standard–optional weld neck, ANSI 150 lb. available

**Elastomer:**
FKM is standard. PTFE is optional.

**Seals:**
PTFE impregnated shaft packing is standard. Carbon filled PTFE lip seals, Blackmer triple lip seals, single or multiple cartridge mechanical seal options available.

## Design Parameters

**Flow Rates:**
5 to 500 U.S. gpm (19 to 1,893 L/min)

**Operating Temperatures:**
to 500°F (260°C)

**Viscosity Range:**
30-100,000 ssu (1.0-22,000 cP)

**Maximum Differential Pressure:**
200 psi (13.8 bar) 300 psi (20.7 bar) hydrostatic pressure

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### Basic Design And Construction

![Diagram of pump components](image)

- **Cartridge Mechanical Seal (Option)**
- **Lip Seal (Option)**
- **Push Rod**
- **Pump Head**
- **Casing**
- **Rotor and Shaft**
- **Sleeve Bearing**
- **Relief Valve**
- **Jacketed Joints**
- **Companion Flanges**
- **Sliding Vanes**
- **Shaft Packing**
- **Elastomer**
### Pump Performance Data*

<table>
<thead>
<tr>
<th>Pump Model</th>
<th>NP1.5</th>
<th>NP2</th>
<th>NP2.5</th>
</tr>
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<tbody>
<tr>
<td>ssu</td>
<td>31</td>
<td>1,000</td>
<td>20,000</td>
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<tr>
<td>cP</td>
<td>1</td>
<td>210</td>
<td>4,200</td>
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<tr>
<td>gpm</td>
<td>38</td>
<td>45</td>
<td>24</td>
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<tr>
<td>L/min</td>
<td>144</td>
<td>170</td>
<td>91</td>
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<tr>
<td>Max rpm</td>
<td>640</td>
<td>640</td>
<td>350</td>
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<td>bhp</td>
<td>1.7</td>
<td>2.2</td>
<td>2.2</td>
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<tr>
<td>kW</td>
<td>1.3</td>
<td>1.6</td>
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</table>

*Approximate capacities and horsepower (bhp) are for the conditions specified at 50 psi (3.45 bar) differential pressure. Refer to Blackmer Characteristic Curves for capacities and horsepower at other operating conditions.

### Maximum Operating Limits

<table>
<thead>
<tr>
<th>Pump Model</th>
<th>Nominal Flow Rate</th>
<th>Pump Speed</th>
<th>Viscosity</th>
<th>Differential Pressure</th>
<th>Hydrostatic Pressure</th>
<th>Temperature</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>gpm</td>
<td>L/min</td>
<td>cP</td>
<td>psi</td>
<td>psi</td>
<td>°F</td>
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<tr>
<td>NP1.5</td>
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<td>178</td>
<td>640</td>
<td>22,000</td>
<td>200</td>
<td>13.39</td>
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<tr>
<td>NP2</td>
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<td>291</td>
<td>640</td>
<td>22,000</td>
<td>200</td>
<td>13.39</td>
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<tr>
<td>NP2.5</td>
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<td>515</td>
<td>640</td>
<td>22,000</td>
<td>200</td>
<td>13.39</td>
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<tr>
<td>NP3</td>
<td>276</td>
<td>1,045</td>
<td>640</td>
<td>22,000</td>
<td>200</td>
<td>13.39</td>
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<tr>
<td>NP4</td>
<td>525</td>
<td>1,985</td>
<td>500</td>
<td>22,000</td>
<td>200</td>
<td>13.39</td>
</tr>
</tbody>
</table>

Note: Optional materials of construction may be required to meet specific application requirements – refer to Blackmer Material of Construction Sheets. For operating limits that exceed those listed – consult factory.

### Pump Dimensions

| Pump Model | A | B | C | D | E | F | G | H | J | K | L | M | N | O | P | Q | R | S | T | V | Approx. Wt. with Std. Flanges |
| NP1.5      | in. | 1 | 1½ | 3½ | 3½ | 3½ | 6½ | 4 | 8½ | 7 | 3½ | 2⅔ | 7 | 3½ | 2½ | 47 lbs. |
|            | mm  | – | – | 95 | 95 | 79 | 165 | 102 | 216 | 178 | 90 | 57 | 89 | 38 | 30 kg  |
| NP2        | in. | 1 | ¾ | 11/4 | 4½ | 3½ | 6½ | ³/₈ | 7 | 3½ | 9½ | 6½ | 3½ | 1½ | 65 lbs. |
|            | mm  | – | – | 286 | 124 | 89 | 165 | 89 | 221 | 149 | 98 | 38 | 44 | 30 kg  |
| NP2.5      | in. | 1½ | ¾ | 1³/₄ | 5½ | 4½ | 7½ | ³/₈ | 7 | 3½ | 9½ | 6½ | 3½ | 1½ | 92 lbs. |
|            | mm  | – | – | 330 | 149 | 124 | 178 | 95 | 244 | 173 | 98 | 44 | 42 kg |
| NP3        | in. | 1½ | ¾ | 1³/₄ | 5½ | 4½ | 7½ | ³/₈ | 7 | ¾ | 9½ | 6½ | 3½ | 1½ | 134 lbs.|
|            | mm  | – | – | 330 | 149 | 111 | 184 | 117 | 311 | 217 | 124 | 64 | 61 kg |
| NP4        | in. | 2 | 1½ | ¾ | 18 | 8½ | 7 | 9½ | 5 | 15½ | 10½ | 6½ | 2½ | 314 lbs.|
|            | mm  | – | – | 457 | 206 | 178 | 241 | 127 | 394 | 268 | 162 | 64 | 142 kg|

Note: Please refer to Blackmer catalog Dimension Sheets for optional jacketed head dimensions and NPT, weld neck, ANSI or DIN compatible companion flange dimensions.