PVS PISTON PUMP THRU SHAFT SERIES
KEY & SPLINE SHAFT OPTIONS

NACHI AMERICA INC.
PVS PISTON PUMP THRU SHAFT SERIES

PVS PUMP

- Multiple pressure compensation options
- Multiple spline and key shaft options
- Low friction Nachi bearings guarantee pump viability

Nachi Design

- High operating efficiency for lower power consumption and reduced heat generation
- Semi-circular swash plate reduces power loss by ensuring a stable discharge volume
- 11 piston design minimizes flow ripple, further reducing noise

APPLICATIONS

- CNC Machine
- Injection Molding Machine
- Mill
- Hydraulic Press
- Lathe

K: Keyed shaft (see table)
S: Spline shaft (see table)
Pressure adjustment range (see table)

Model Code

How to Order

PVS - 1 B - 16 - N - 2 - (*) - E5737A

Design number for thru-shaft

K: Keyed shaft (see table)
S: Spline shaft (see table)
Pressure adjustment range (see table)

Variable control mechanisms
N: Pressure compensation type (standard)
R: Load sensing type
P: Remote control type
RS: Solenoid cut off control type
WS: 2 Pressure control Type

Max pump capacity (cc/rev) (see table)
Nominal 8, 16, 22, 35, 45

Pump size: 0, 1, 2

B: Flange type mounting

PVS series variable volume piston pump

General Performance

Discharge pressure P psi
Discharge volume Q gpm
Input Lin hp
Overall efficiency η
Volume efficiency \( \eta_v \)

Noise Characteristics

Measurement position: 1m rear of pump

*All tests performed on PVS-0B-8N3-E30
# PVS Piston Pump Thru Shaft Series

<table>
<thead>
<tr>
<th>Model No.</th>
<th>Volume in³/rev</th>
<th>Discharge volume at no-load (gpm)</th>
<th>Pressure range (psi)</th>
<th>Permitted peak pressure (psi)</th>
<th>Front shaft</th>
<th>Rear shaft</th>
<th>Port size</th>
<th>Rotating speed (min⁻¹)</th>
<th>Mass lbs</th>
</tr>
</thead>
<tbody>
<tr>
<td>PVS-0B-8N*-E5737A</td>
<td>0.18 - 0.48 (3.0 - 8.0)</td>
<td>3.8</td>
<td>290 to 507</td>
<td>3625</td>
<td>K: SAE (AH) 19-1 (3/4)</td>
<td>S: SAE (A) 16-4 (9T)</td>
<td>Inlet: SAE-12</td>
<td>Outlet: SAE-08</td>
<td>500 - 2000</td>
</tr>
<tr>
<td>PVS-1B-16N*-E5737A</td>
<td>0.31 - 1.0 (5.0 - 16.5)</td>
<td>7.8</td>
<td>290 to 507</td>
<td>3625</td>
<td>K: SAE (AH) 19-1 (3/4)</td>
<td>S: SAE (AH) 19-4 (11T)</td>
<td>S3: SAE (B) 22-4 (13T)</td>
<td>Inlet: SAE-16</td>
<td>Outlet: SAE-12</td>
</tr>
</tbody>
</table>

Note: Direction of rotation is clockwise when viewed from the shaft end.

### Rear Pump

<table>
<thead>
<tr>
<th>Rear Pump</th>
<th>Double Pump PN</th>
<th>Kit Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>PVS-0B-8N*-E30</td>
<td>PVS-0B-8N*-E5737A</td>
<td>PVMK-1-SAE-A-3/4”</td>
</tr>
<tr>
<td>PVS-1B-16N*-E13</td>
<td>PVS-1B-16N*-E5737A</td>
<td>PVMK-1-SAE-A-3/4”</td>
</tr>
<tr>
<td>PVS-2B-35N*-E13</td>
<td>PVS-2B-35N*-E5737A</td>
<td>PVMK-2-SAE-B-7/8”</td>
</tr>
<tr>
<td>PVS-2B-45N*-E20</td>
<td>PVS-2B-45N*-E5737A</td>
<td>PVMK-2-SAE-B-1”</td>
</tr>
</tbody>
</table>

### NASGP 1 Series

<table>
<thead>
<tr>
<th>NASGP 1 Series</th>
<th>Double Pump PN</th>
</tr>
</thead>
<tbody>
<tr>
<td>PVS-0B-8N*-E5737A</td>
<td>PVMK-1-SAE-A-3/4”</td>
</tr>
<tr>
<td>PVS-1B-22N*-E5737A</td>
<td>PVMK-2-SAE-A-3/4”</td>
</tr>
</tbody>
</table>

### NASGP 300 Series

<table>
<thead>
<tr>
<th>NASGP 300 Series</th>
<th>Double Pump PN</th>
</tr>
</thead>
<tbody>
<tr>
<td>PVS-0B-8N*-E5737A</td>
<td>PVMK-1-SAE-A-3/4”</td>
</tr>
<tr>
<td>PVS-1B-16N*-E5737A</td>
<td>PVMK-1-SAE-A-5/8”</td>
</tr>
</tbody>
</table>

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Model No.: PVS-0B-8N*-E5737A
Front Pump: 1 2 3
Discharge volume at no-load (gpm): 0.18 - 0.48 (3.0 - 8.0)
Pressure range (psi): 290 to 507
Permitted peak pressure (psi): 3625
Front shaft: K: SAE (AH) 19-1 (3/4)
Rear shaft: S: SAE (A) 16-4 (9T)
Volume in³/rev: 3.8
Discharge volume at no-load (gpm): 3.8
Pressure range (psi): 290 to 507
Permitted peak pressure (psi): 3625
Front shaft: K: SAE (AH) 19-1 (3/4)
Rear shaft: S: SAE (A) 16-4 (9T)
Volume in³/rev: 7.8
Discharge volume at no-load (gpm): 7.8
Pressure range (psi): 290 to 507
Permitted peak pressure (psi): 3625
Front shaft: K: SAE (AH) 19-1 (3/4)
Rear shaft: S: SAE (AH) 19-4 (11T)
Volume in³/rev: 10.5
Discharge volume at no-load (gpm): 10.5
Pressure range (psi): 290 to 507
Permitted peak pressure (psi): 3625
Front shaft: K: SAE (AH) 19-1 (3/4)
Rear shaft: S: SAE (AH) 19-4 (11T)
Volume in³/rev: 16.6
Discharge volume at no-load (gpm): 16.6
Pressure range (psi): 290 to 507
Permitted peak pressure (psi): 3625
Front shaft: K: SAE (AH) 19-1 (3/4)
Rear shaft: S: SAE (AH) 19-4 (11T)
Volume in³/rev: 21.5
Discharge volume at no-load (gpm): 21.5
Pressure range (psi): 290 to 507
Permitted peak pressure (psi): 3625
Front shaft: K: SAE (AH) 25-1 (1”)
**Calculation of Torque**

- **Equation**
  \[ T = \text{Pressure (psi)} \times \text{Displacement (cpr)} \times \frac{1}{2n} \]

- **Notes**
  Total torque is dependent on both the pump size and shaft style. All torque and shaft specification can be found in the PVS brochure.

- **Example:**
  Total allowable torque for this pump is 928.80 in-lbs.

  **PVS-1B-16/22N*-K-E5737A (Front Pump)**
  Pressure setting: 3000 psi, Displacement setting: .50 cpr
  Equation: \( 3000 \times .50 \times \frac{1}{2n} \)
  Result: \( T = 238.73 \text{ in-lbs} \)

  **PVS-1B-22N*-S3-E5737A (Rear Pump)**
  Pressure setting: 750 psi, Displacement setting: 1.00 cpr
  Equation: \( 750 \times 1.00 \times \frac{1}{2n} \)
  Result: \( T = 119.37 \text{ in-lbs} \)

**Total Torque**
\[ T = 238.73 \text{ in-lbs} + 119.37 \text{ in-lbs} = 358.1 \text{ in-lbs} \]

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**Allowable Torque**

<table>
<thead>
<tr>
<th>Pump</th>
<th>Max Allowable Torque (in-lbs)</th>
<th>Max Rear Pump Torque (in-lbs)</th>
</tr>
</thead>
<tbody>
<tr>
<td>PVS-0B-8N*-K-E5737A</td>
<td>844.80</td>
<td>530.00</td>
</tr>
<tr>
<td>PVS-0B-8N*-S-E5737A</td>
<td>375.60</td>
<td>256.00</td>
</tr>
<tr>
<td>PVS-1B-16/22N*-K-E5737A</td>
<td>928.80</td>
<td>530.00</td>
</tr>
<tr>
<td>PVS-1B-16/22N*-S1-E5737A</td>
<td>734.40</td>
<td>530.00</td>
</tr>
<tr>
<td>PVS-1B-16N*-S3-E5737A</td>
<td>1176.00</td>
<td>530.00</td>
</tr>
<tr>
<td>PVS-1B-22N*-S3-E5737A</td>
<td>1353.60</td>
<td>530.00</td>
</tr>
<tr>
<td>PVS-2B-35/45N*-K-E5737A</td>
<td>2194.80</td>
<td>796.00</td>
</tr>
<tr>
<td>PVS-2B-35/45N*-S3-E5737A</td>
<td>1353.60</td>
<td>796.00</td>
</tr>
<tr>
<td>PVS-2B-35/45N*-S5-E5737A</td>
<td>2124.00</td>
<td>796.00</td>
</tr>
</tbody>
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**Example:**

- **PVS-2B-45N3-45N3-E20**
- **Kit No:** PVMK-2-SAE-B-1
  *includes all parts to fully assemble*