Blackmer
A DOVER COMPANY

**SPEC SHEET 111-002**

Section: **111**
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# ProVane®
MOTOR SPEED VANE PUMP

## Optimum Pump Performance for Process Applications

- Designed specifically for reliable continuous duty operation
- Sets the industry standard in positive displacement pumps for low and medium viscosity process applications

## Engineered for Long-Life Durability, Reliability and Performance

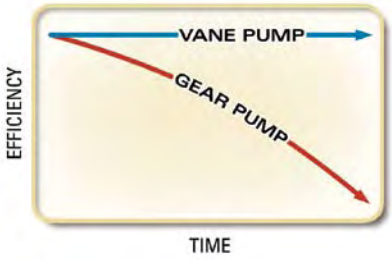
- **Patented rotor and shaft design** – heavy duty, low shaft stiffness ratio combined with superior hydrodynamic bearing – design delivers the best PV ratios of any pump in its class. The result:
  - Extended bearing life
  - Improved efficiency and energy consumption
  - Better volumetric performance
  - Enhanced service life
- **Self-adjusting vane technology** – ensures the pump maintains the highest level of performance and efficiency over time, better than any other pump technology.
- **Superior self priming, low shear fluid transfer at standard motor operating speeds:**
  - Operating Speeds: 1200, 1800, 3600 rpm
  - Ten (10) Flow Rates: Capacities 1 to 100 gpm
  - Five (5) Sizes: ranging from 3/4" to 2"
  - Low net positive suction head required (NPSHr) – exceptional suction/lift capability makes pump ideal for top-of-tank applications
- **Patented Cavitation/Noise Suppression technology**
  - Quiet operation
  - Controls cavitation to reduce wear effects
  - Longer service life
- **Motor Speed Design** – offers compact profile and upfront equipment, installation and energy costs savings:
  - No gear reducer
  - Smaller footprint of the complete pumping unit
  - Offers easy mounting in virtually any configuration
- **Available in Ductile Iron and Stainless Steel**

# Construction

**ProVane® pumps are specifically engineered for low and medium viscosity process applications where reliable, continuous duty operation with no preventative maintenance is desired. ProVane® pumps are ideal for handling shear-sensitive liquids at high speeds with no product degradation.**

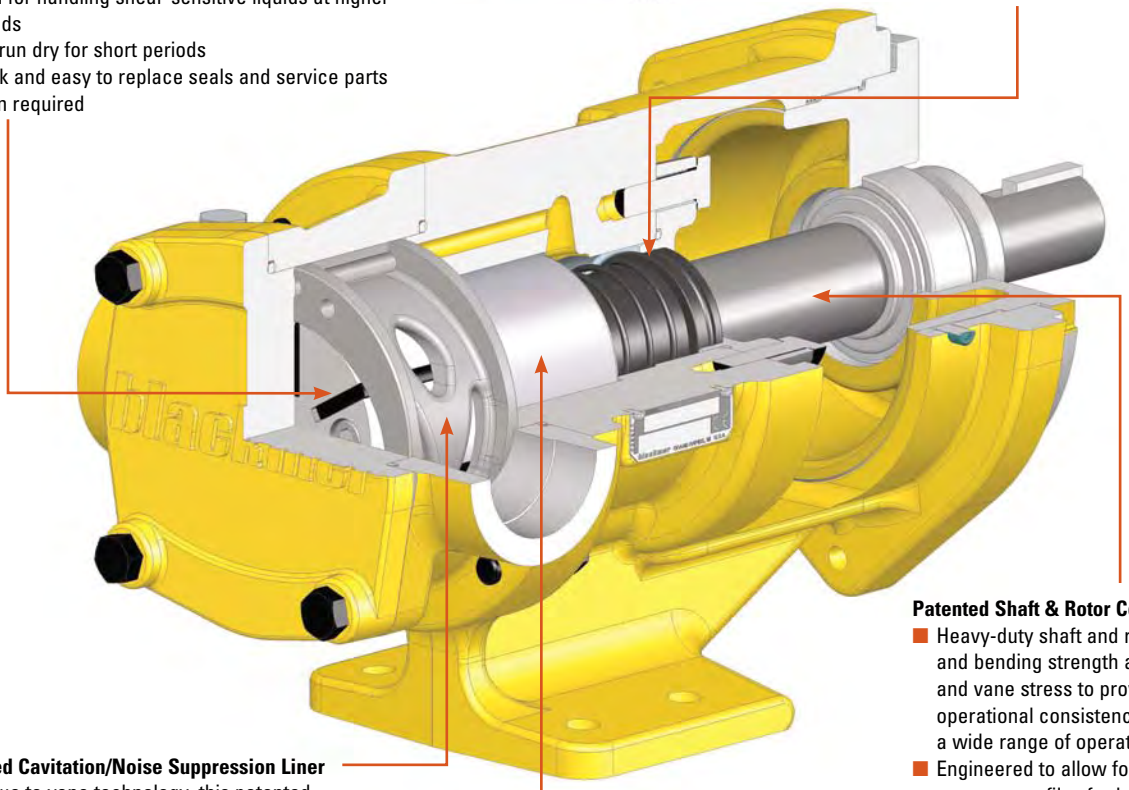
### Self-Adjusting Composite Vanes

- Long-lasting, nonmetallic composite vanes automatically adjust clearances and sustain the highest levels of flow performance, efficiency and reliability over other PD pump technologies
- Eliminate slip, capacity loss, and downtime for clearance adjustments due to worn metal parts common with other pump types
- Offer exceptional suction and dry priming capability
- Ideal for handling shear-sensitive liquids at higher speeds
- Can run dry for short periods
- Quick and easy to replace seals and service parts when required




### Seal Flexibility

- Commercially available sealing options to meet specific application requirements:
  - Double Lip Seal
  - Mechanical Seals
    - Cartridge
    - Elastomeric Bellows
    - Component
- One mechanical seal improves uptime reliability

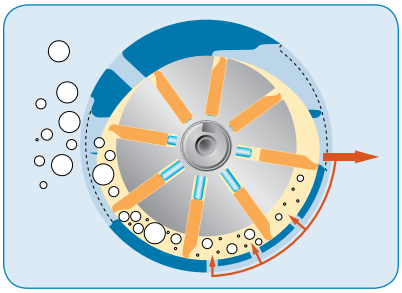


### Patented Shaft & Rotor Configuration

- Heavy-duty shaft and rotor offers high fatigue and bending strength and minimizes shaft and vane stress to provide unparalleled operational consistency and reliability under a wide range of operating conditions
- Engineered to allow for specific velocity and pressure profiles for best in class reliability, performance and efficiency

### Patented Cavitation/Noise Suppression Liner

- Unique to vane technology, this patented innovation offers multiple benefits:
  - Controls cavitation to minimize the wear effects, maintenance and costs associated with challenging installations
  - Reduces noise levels up to 15 dbA
  - Replaceable liner - protects the pump casing and extends service life



### Hydrodynamic Journal Bearing

- Allows for higher operating speeds and pressures on low viscosity fluids than are possible with other PD pumps
- Capable of low flow, high head application on low viscosity where centrifugal pumps can't run.
- Provides for superior bearing life – the pump shaft rides on a fluid boundary during load conditions to eliminate shaft-to-bearing contact. Since there is no metal-to-metal contact, there is no bearing wear during this hydrodynamic condition
- Exceptional efficiency at low flow rate applications
- Significantly reduces friction, excessive heat build-up and energy loss
- Results in higher mechanical efficiency and energy savings
- No degradation of performance over time

### Compact Profile

- Smaller footprint of a complete pump unit
- Mounting Flexibility
  - Vertical
  - Horizontal
  - Top if tank where suction lift is required
  - Virtually any direction
  - Simple and easy installation with only four (4) bolts required

### Motor Speed - No Gear Reducer

- Eliminates additional equipment cost
- Improves uptime reliability
- Eliminates installation costs and maintenance issues
- Results in additional energy savings
- Requires less space

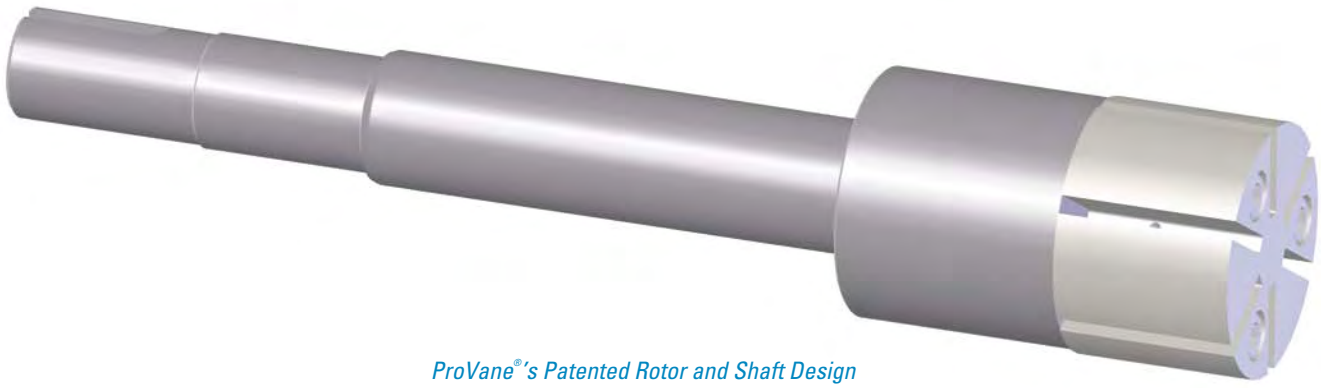
**blackOPS®: Blackmer Optimum Pump Solutions –** blackOPS® is a selection software program created specifically for Blackmer's positive displacement pumps and System One® centrifugal pumps. The program allows you to print (or save) your pump selection data and pump curves in a PDF format. For additional information on blackOPS®, log onto www.blackmer.com.

# ProVane® Motor Speed Vane Pumps

Exceptionally Engineered Process Pump Innovation That Delivers Superior Performance & Value

## Superior Bearing Life, Mechanical Efficiency and Energy Savings

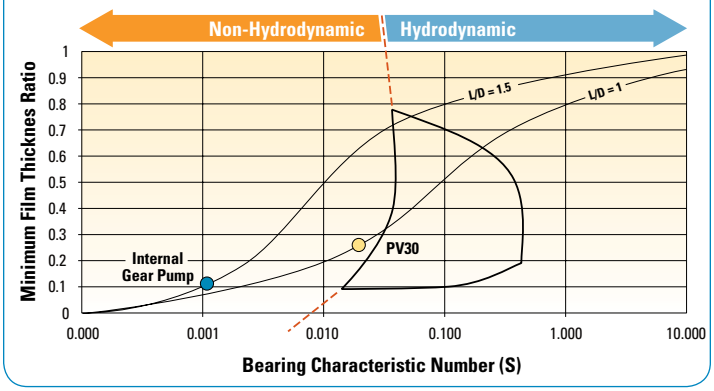
ProVane®'s patented rotor and shaft design delivers an efficient pressure/velocity profile on bearings and vanes resulting in superior bearing life, flow performance and smart energy efficiency over competing gear pumps.



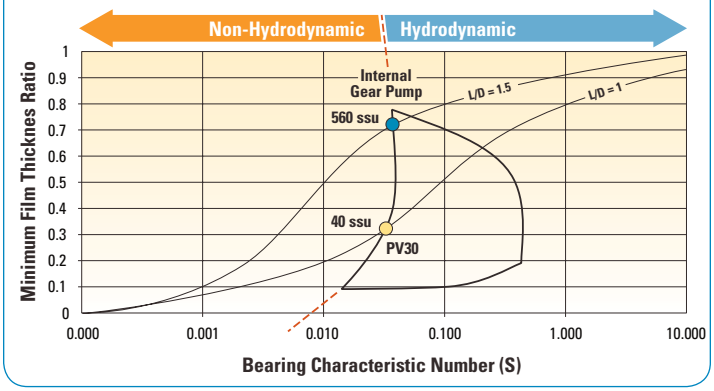
*ProVane®'s Patented Rotor and Shaft Design*

## The Hydrodynamic Journal Bearing Advantages of ProVane®

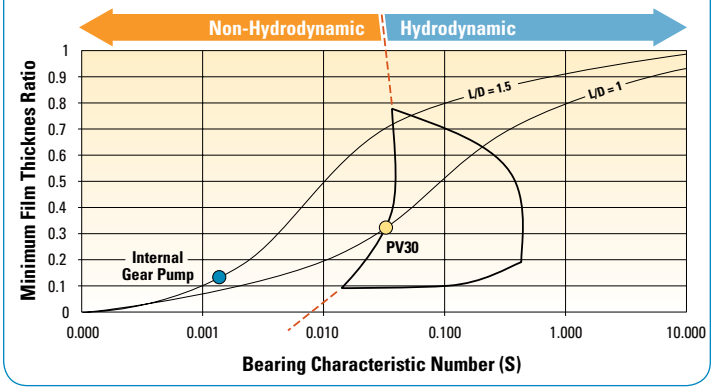
### 32 ssu @ 125 psi




### 125 psi




### 32 ssu @ 60 psi




- Fluid boundary forming principle eliminates shaft to bearing contact. The shaft hydroplanes above the bearing surface on a cushion of liquid. In this hydrodynamic condition there is no metal-to-metal contact or wear and bearing life can be indefinite.
- Engineered to achieve hydrodynamic mode (full film operation – the point offering the lowest bearing friction and least wear) faster than any other pump in its class – particularly with low viscosity liquids – to preserve bearing life.
- Maintains optimum bearing characteristics even under a wide range of operating conditions.
- Reduced shaft/bearing contact minimizes friction and results in higher mechanical efficiency and smart energy cost savings.

# ProVane® Motor Speed Vane Pumps

## Options to Optimize Your Pump Performance

## Flexibility of Application –

**There's a ProVane® Model for Every Application**

**Three Models:**

- **Ductile Iron** for general chemical, petroleum and additive blending, coatings and colorant applications
- **Stainless Steel** for high purity chemicals, acids, and caustics

**Maximum Operating Speeds:**

- **1,800 rpm** – PV(S) 10, 15, 20, 30, 40, 50, 80, 100
- **3,600 rpm** – PV(S) 6, 8

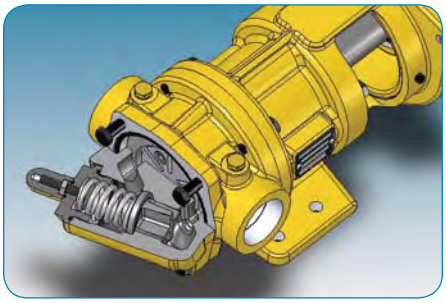
**Four (4) Port Sizes:** 3/4" to 2"

**Ten (10) Flow Rates:** 1 to 100 gpm

## C-Face Adaptor

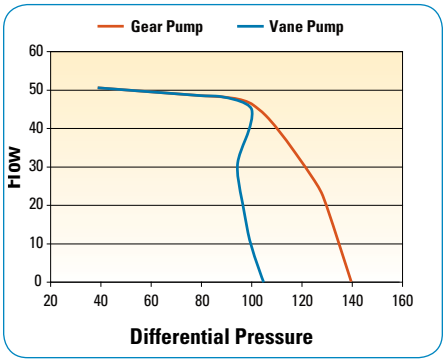
- Provides for mounting flexibility
- Eases mounting and unit assembly efforts
- Simplifies integration into system or equipment
- Provides for automatic mechanical motor alignment without special tools or excessive labor

## Relief Valve Peace-of-Mind Protection

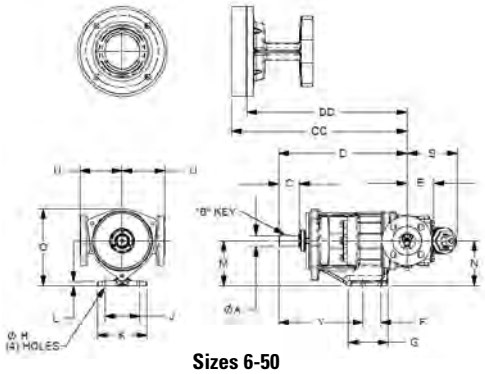


The ProVane® relief valve is designed to protect your pump in a high pressure build-up situation. Ideal for variable flow and pressure conditions, the optional relief valve offers:

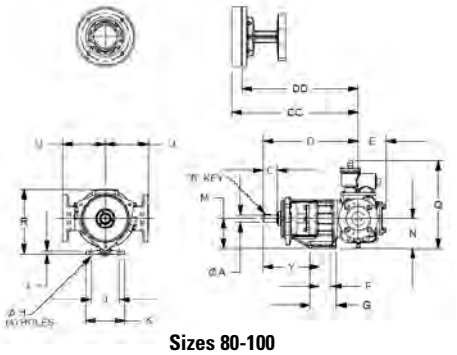
- Superior ability over other PD pumps to hold pressure under variable flow/pressure conditions
- Maintains motor horsepower requirement to help control energy consumption
- Highly engineered to provide better control over set points and operating conditions
- Lowers heat generation




## Dimensions




Sizes 6-50




Sizes 80-100

| Pump Model | | A | B | C | D | E | F | G | H | J | K | L | M | N | Q | R | S | U | Y | CC | DD | Port | Weight |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| PV6B, PV8B | in. | 3/8 | – | 13/16 | 5-1/2 | 1-1/4 | – | 2-1/8 | 1/4 | 2 | 3 | 3/8 | 3 | 3 | 4-13/16 | – | 3-1/8 | 1-3/4 | 3-1/2 | – | 8-1/8 | 3/4" NPT | 8 lbs |
| | mm | – | – | 20.6 | 139.7 | 31.8 | – | 54.0 | 6.4 | 50.8 | 76.2 | 9.5 | 76.2 | 76.2 | 122.2 | – | 79.4 | 44.5 | 88.9 | – | 206.4 | | 3.6 kg |
| PVS6A, PVS8A | in. | 3/8 | – | 13/16 | 5-1/2 | 1-1/4 | – | 2-1/8 | 1/4 | 2 | 3 | 3/8 | 3 | 3 | 4-13/16 | – | 3-1/8 | 1-3/4 | 3-1/2 | – | 8-1/8 | 3/4" NPT | 10 lbs |
| | mm | – | – | 20.6 | 139.7 | 31.8 | – | 54.0 | 6.4 | 50.8 | 76.2 | 9.5 | 76.2 | 76.2 | 122.2 | – | 79.4 | 44.5 | 88.9 | – | 206.4 | | 4.5 kg |
| PV10B, PV15B | in. | 7/8 | 3/16 | 2 | 10-1/4 | 2-1/16 | – | 3-13/16 | 7/16 | 3 | 4 | 7/16 | 4 | 4 | 6-1/2 | – | 4.1875 | 2-1/2 | 7-5/8 | 13-13/16 | 12-13/16 | 1" NPT | 29 lbs |
| | mm | – | – | 50.8 | 260.4 | 52.4 | – | 96.8 | 11.1 | 76.2 | 101.6 | 11.1 | 88.9 | 88.9 | 165.1 | – | 106.4 | 63.5 | 193.7 | 350.8 | 325.4 | | 13.2 kg |
| PVS10A, PVS15A | in. | 7/8 | 3/16 | 2 | 10-1/4 | 2-1/16 | – | 3-13/16 | 7/16 | 3 | 4 | 7/16 | 4 | 4 | 6-1/2 | – | 4.1875 | 2-1/2 | 7-5/8 | 13-13/16 | 12-13/16 | 1" NPT | 33 lbs |
| | mm | – | – | 50.8 | 260.4 | 52.4 | – | 96.8 | 11.1 | 76.2 | 101.6 | 11.1 | 88.9 | 88.9 | 165.1 | – | 106.4 | 63.5 | 193.7 | 350.8 | 325.4 | | 15.0 kg |
| PV20B, PV30B | in. | 1-1/8 | 1/4 | 2-1/16 | 12-1/2 | 2-5/16 | 1-3/4 | 3-15/16 | 7/16 | 4 | 5 | 7/16 | 5 | 5 | 7-3/4 | – | 4-5/8 | 3-3/8 | 8-7/16 | 17-1/4 | 15-3/4 | 1-1/2" | 60 lbs |
| | mm | – | – | 52.4 | 317.5 | 58.7 | 44.5 | 100.0 | 11.1 | 88.9 | 127.0 | 11.1 | 114.3 | 114.3 | 196.9 | – | 117.5 | 85.7 | 214.3 | 438.2 | 400.1 | NPT | 27.3 kg |
| PVS20A, PVS30A | in. | 1-1/8 | 1/4 | 2-1/16 | 12-1/2 | 2-5/16 | 1-3/4 | 3-15/16 | 7/16 | 4 | 5 | 7/16 | 5 | 5 | 7-3/4 | – | 4-5/8 | 3-3/8 | 8-7/16 | 17-1/4 | 15-3/4 | 1-1/2" | 65 lbs |
| | mm | – | – | 52.4 | 317.5 | 58.7 | 44.5 | 100.0 | 11.1 | 88.9 | 127.0 | 11.1 | 114.3 | 114.3 | 196.9 | – | 117.5 | 85.7 | 214.3 | 438.2 | 400.1 | NPT | 29.5 kg |
| PV40B, PV50B | in. | 1-1/8 | 1/4 | 2-1/16 | 12-7/8 | 2-11/16 | 1-3/4 | 3-15/16 | 7/16 | 4 | 5 | 7/16 | 5 | 5 | 7-3/4 | – | 5-1/16 | 3-3/8 | 8-7/16 | 17-5/8 | 16-1/8 | 1-1/2" | 62 lbs |
| | mm | – | – | 52.4 | 327.0 | 68.3 | 44.5 | 100.0 | 11.1 | 88.9 | 127.0 | 11.1 | 114.3 | 114.3 | 196.9 | – | 128.6 | 85.7 | 214.3 | 447.7 | 409.6 | NPT | 28.2 kg |
| PVS40A, PVS50A | in. | 1-1/8 | 1/4 | 2-1/16 | 12-7/8 | 2-11/16 | 1-3/4 | 3-15/16 | 7/16 | 4 | 5 | 7/16 | 5 | 5 | 7-3/4 | – | 5-1/16 | 4-1/4 | 8-7/16 | 17-5/8 | 16-1/8 | 1-1/2" | 68 lbs |
| | mm | – | – | 52.4 | 327.0 | 68.3 | 44.5 | 100.0 | 11.1 | 88.9 | 127.0 | 11.1 | 114.3 | 114.3 | 196.9 | – | 128.6 | 108.0 | 214.3 | 447.7 | 409.6 | ANSI | 30.9 kg |
| PV80B, PV100B | in. | 1-1/8 | 1/4 | 2-1/16 | 14-5/16 | 4-3/16 | 1-3/4 | 3-15/16 | 7/16 | 4 | 5 | 7/16 | 5 | 5 | 13-1/4 | 8-3/16 | – | 3-7/8 | 8-7/16 | 19-1/16 | 17-9/16 | 2" NPT | 76 lbs |
| | mm | – | – | 52.4 | 363.5 | 106.4 | 44.5 | 100.0 | 11.1 | 88.9 | 127.0 | 11.1 | 114.3 | 114.3 | 336.6 | 208.0 | – | 98.4 | 214.3 | 484.2 | 446.1 | | 34.5 kg |
| PVS80A, PVS100A | in. | 1-1/8 | 1/4 | 2-1/16 | 14-5/16 | 4-3/16 | 1-3/4 | 3-15/16 | 7/16 | 4 | 5 | 7/16 | 5 | 5 | 13-1/4 | 8-3/16 | – | 5-7/16 | 8-7/16 | 19-1/16 | 17-9/16 | 2" ANSI | 89 lbs |
| | mm | – | – | 52.4 | 363.5 | 106.4 | 44.5 | 100.0 | 11.1 | 88.9 | 127.0 | 11.1 | 114.3 | 114.3 | 336.6 | 208.0 | – | 138.1 | 214.3 | 484.2 | 446.1 | | 40.5 kg |

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