

**PROCESS**  
SYSTEMS, Inc.

Manufacturer of Deming® VTP

## Custom Manufactured to Meet Your Needs

Process Systems Inc's durable and reliable industrial pumps have evolved over a half century of solving real world pump challenges. Suitable for services ranging from coolant filtration to sludge pits, PSI custom-engineers its vertical turbine pumps to achieve a wide range of capacities and pressures.

By designing each pump from a large selection of modular pump components, PSI delivers the most efficient and reliable pump for a given application. This expert engineering is backed by precision manufacturing and first-in-class service.

These pumps have solved fluid transfer challenges in a broad range of industries, including automotive, steel, metal finishing, chemical, paper, petroleum and agriculture.



## Capabilities

- Modular design ensures each pump is completely suited to both required performance and installation parameters—whether a new install or retrofit
- Large inventory of pump bowls from leading manufacturers to meet exacting NPSH requirements
- Cast iron construction as standard, ductile iron and stainless steel available to withstand challenging environments
- Full assembly and machining in the US to shorten lead times on new pumps and repair parts
- Exclusive design features not available from other vertical turbine pump manufacturers

## Applications

- Central Coolant Filtration
- High-Pressure Coolant
- Spray Booth/Sludge
- Cooling Towers
- Welder Water
- E-Coat/ELPO Paint Systems
- Quench/Scale Pits
- Phosphate Systems
- Waste Treatment

## Design Option: Thrust Head® Discharge

### Advantages

- Greatly simplified installation
- Faster delivery
- Longer, more reliable pump life
- Economical, fast motor replacement with widely available C-Face Motors

### How it Works

The exclusive Process Systems one piece Thrust Head is designed to carry all thrust loads created during pump operation. The integrated thrust bearing cartridge is capable of handling these loads, eliminating the need for a special high thrust or hollow shaft motor.

The unique one-piece casting of the discharge head and thrust stand assures concentricity of the entire assembly, including the shaft and thrust bearing. This eliminates any possible misalignment. The thrust bearing cartridge is installed at the factory, allowing impeller clearances to be factory preset. This removes the risk of improper shaft adjustment in the field and the resulting damage during installation.

With the Thrust Head carrying the pump thrust load, rather than the motor, a standard C-Face motor can be used. This allows a much wider array of lower-cost motor choices that are available off the shelf.

This all-in-one design speeds delivery, assures proper motor to pump shaft alignment and concentricity, simplifies installation, and extends overall pump life.

### Standard Motor

The Thrust Head accepts standard C-Face motors. Off-the-shelf availability from a number of manufacturers minimizes downtime in the event of motor failure.

### Single Piece Construction

The discharge head incorporates a thrust bearing to carry all of the pump thrust loads. Its single cast construction ensures alignment and allows the impeller clearances to be factory-set.



## Design Option: Self-Seal Column

### Advantages

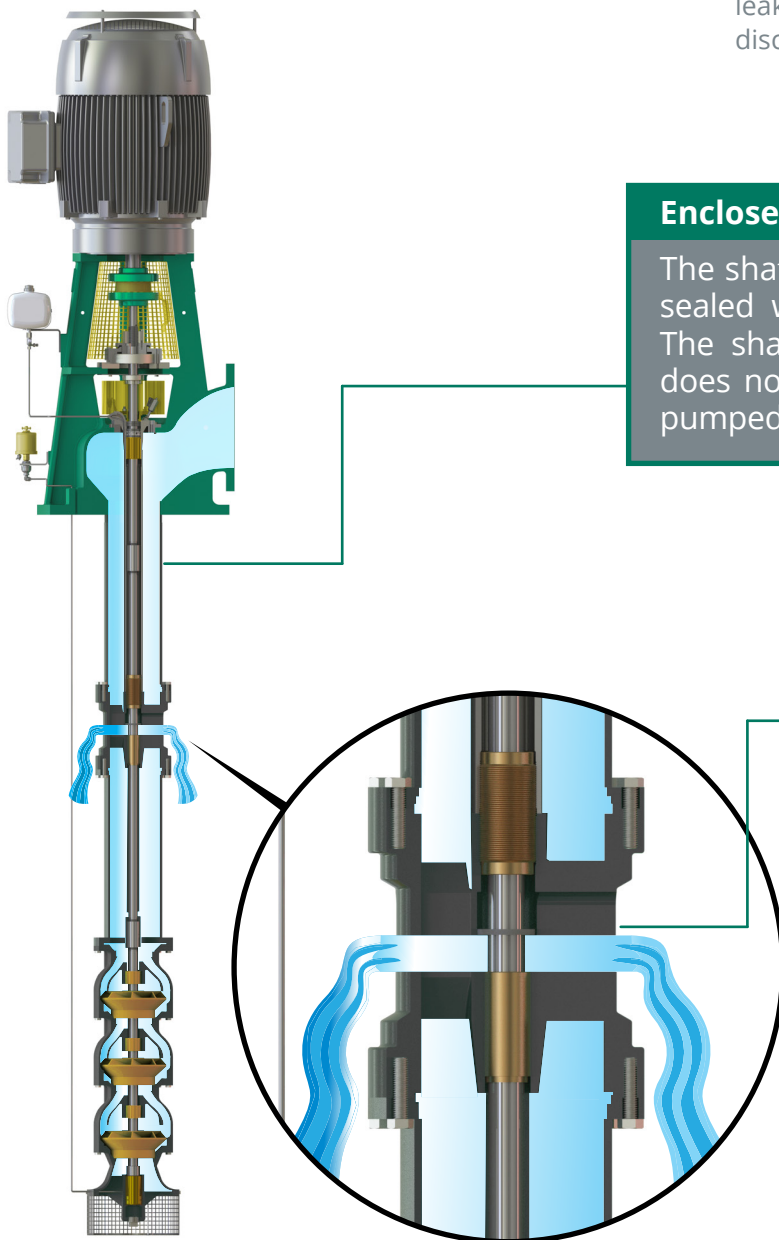
The unique self-seal column option eliminates the most common points of failure: the packing or a mechanical seal. This problem-solving sealing method reduces maintenance downtime and eliminates the potential for hazardous leakage and dangerous operating conditions.

### How it Works

The shaft above the self-seal case is enclosed in a tube isolated from the fluid. A non-rotating O-ring seals this shaft-enclosing tube. As the pumped solution passes up through the lower column assembly, it enters the self-seal column case, located below the discharge head. The self-seal column case throttles the fluid pressure, diverting liquid away from the shaft-enclosing tube.

If fluid flows past the lower bearing into the self-seal column case (typically a minimal amount, if any), a stainless steel slinger directs this fluid to the pump's bypass ports. The bypass ports vent this fluid back to the tank or well.

From the self-seal case upward, the shaft is enclosed in a dry tube away from the fluid, making it impossible for leaks to occur at the point the shaft passes out of the discharge head.



#### Enclosed Shaft

The shaft is enclosed in a tube and sealed with a non-rotating O-ring. The shaft above the column case does not come in contact with the pumped liquid.

#### Bypass Ports

The self-seal column case provides controlled overflow of fluid below the discharge head and diverts it back to the tank or well.



## Process Systems Vertical Turbine Enclosed Line Shaft Construction

Each pump is custom-engineered by combining the right driver, discharge, seal, column, shaft, bearings, bowls and strainer for a given application. Due to maximum parts standardization, PSI offers competitive pump pricing, lower cost on parts, and simplified repairs.

Regardless of the design, each pump is precision-manufactured with a number of common features that ensure pump efficiency, reliability and long service life. These key features are outlined here on one of our most commonly constructed pumps, the enclosed line shaft. For all modular construction options, see the following pages.

**Coupling Guards**  
OSHA approved

**Thrust Bearing Assembly**  
Time tested with 8,000+ pumps in operation

**Grease Distribution Block**  
Distributes grease to three main lubrication points of a grease lubricated pump

**Uphrust Bearing**  
Protects against momentary upthrust

**Column Pipe**  
Heavy wall with threaded or flanged connections

**Tube Stabilizer**  
Stabilizes enclosing tube and keeps it centered in the column

**Connector Bearing & Seal**  
Connects enclosing tube to discharge case, prevents pumped solution from entering the enclosing tube and bearings

**Grease Line**  
Securely attached with stainless steel banding; positioned on side of suction case to prevent damage

**Bowl Bearings**  
Extra long for greater support and longer wear; heavier wall thickness prevents shaft from wearing into bowl casting

**Bearing Treatment (Optional)**  
Exclusive space age fluoropolymer treatment available for extended life

**Factory Adjusted Impellers**  
Set prior to shipment to simplify installation; dynamically balanced, precision machined and hand finished

**Basket Strainer**  
Filters large debris to protect pump components

**Flexible Coupling**

TB Woods Sureflex coupling assembly, protects pump from damage and shearing

**Thrust Head® Discharge Head**

Thrust-absorbing discharge head, single piece

**Grease Seals**

Provided on grease lubricated pumps and/or vacuum service pumps

**Enclosing Tube**

Schedule 80 or mechanical tube, protects line shaft and bearings from pumped solution and assures bearing alignment

**Head Shaft**

Oversized for motor horse power; to reduce shaft and bearing wear

**Shaft Coupling**

Prevents uncoupling upon reverse rotation of motor

**Discharge Case**

Venturi-type provides smooth hydraulic flow for greater efficiency

**Lock Collet**

Precision taper-machined to positively lock impeller shaft

**Bowl Shaft**

Extra large diameter; chrome plated 700 BRN (standard) for extended life

**Sand Collar**

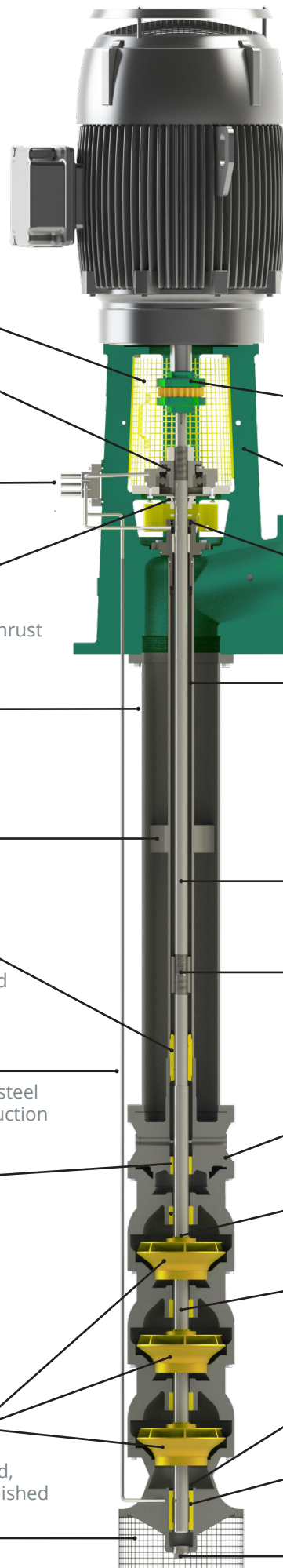
Set screw to shaft running over seal; prevents seal contamination

**Suction Case Bearing Seal**

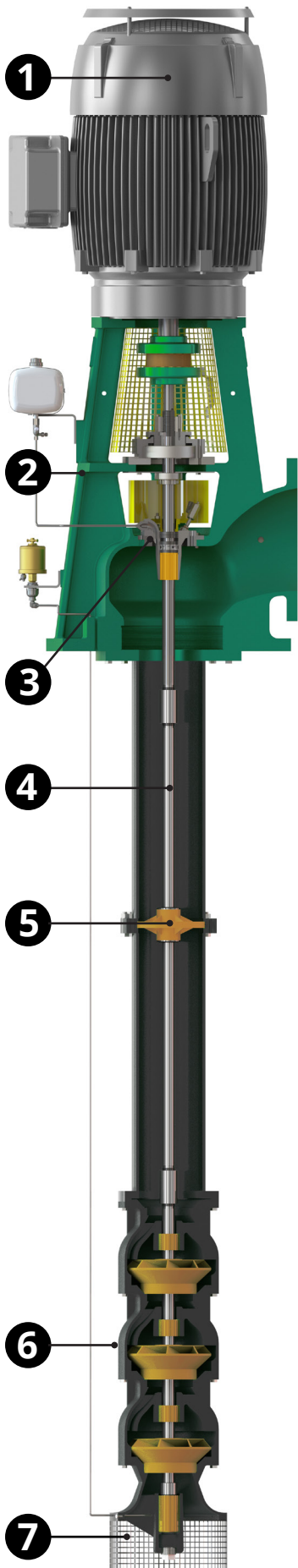
Separates bearing from the pumpage; automatic or manual grease lubrication

**Suction Case Plug**

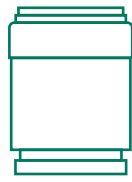
Large size makes bearing accessible for removal in an arbor press



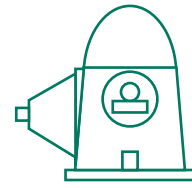
# Modular Pump Construction Options for Your Specific Application



## 1. DRIVERS

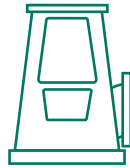


C-Face motor

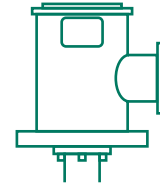


Right angle gear drive

## 2. DISCHARGE HEADS

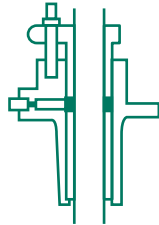


One-piece Thrust Head

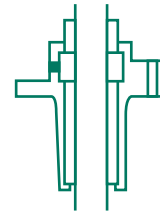


Fabricated steel discharge head

## 3. SEALING METHODS



Standard pressure packing box



Mechanical seal

## 4. COLUMNS & SHAFTS

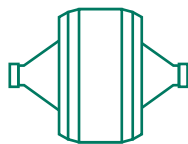


Open line shaft product lubricated

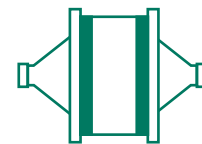


Enclosed line shaft oil/grease lubricated

## 5. LINE SHAFT/BOWL BEARINGS



Rubber bearing product lubricated



Metallic bearing product lubricated

## 6. BOWL ASSEMBLIES



Product lubricated



Flanged bowls tapered suction

## 7. STRAINERS

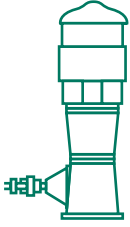


Standard basket (threaded)



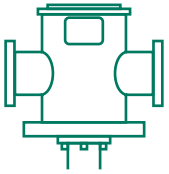
Standard cone

## 1. DRIVERS



Combination right angle gear drive

## 2. DISCHARGE HEADS



T-head discharge

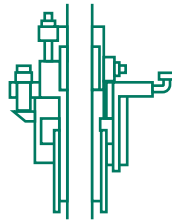


Motor stand

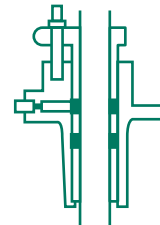
## 3. SEALING METHODS



Self-Seal Design



Oil/grease lubricated construction



High-pressure packing box

## 4. COLUMNS & SHAFTS



Flanged column

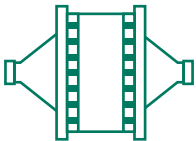


Oil/grease lubricated construction

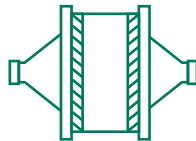


Below grade discharge

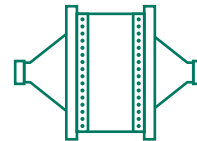
## 5. LINE SHAFT/BOWL BEARINGS



Vesconite product lubricated



Teflon product lubricated



Greene Tweed product lubricated

## 6. BOWL ASSEMBLIES

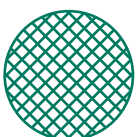


Flanged bowls bell mouth suction

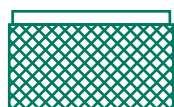


Grease, oil or water lubricated

## 7. STRAINERS



Flat mesh



Bolt-on basket for bell

Open construction (no strainer)

## Ruthman Companies: A family-owned business supplying pumps for over 100 years



Since the early 1900's, when its founder invented the first sealless centrifugal pump, the Ruthman Companies has been family owned and operated. Three generations of Ruthmans have expanded the company's product line from the original Gusher centrifugal coolant pumps to include vertical turbine, gear, and heavy duty slurry pumps, as well as relief valves.

Process Systems, Inc. joined the Ruthman Companies in 2007, with its range of PSI industrial process pumps and Deming® Vertical Turbine Pumps. Process Systems' durable and reliable industrial pump line has evolved over half a century of solving real customers' pump challenges, backing up expert engineering with first-in-class service. In 2004, Process Systems acquired manufacturing rights to the Deming Vertical Turbine Pump line. Deming's pump engineering history dates back 140 years; the name is known for its durability, efficiency, and low maintenance. The Deming Vertical Turbine Pump range now offered by Process Systems is one of the most diverse and complete in the world, time tested in the field for municipal, industrial and agricultural applications.



Manufacturer of Deming® VTP

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#### Gusher Pumps

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#### Gusher Pumps Headquarters

Williamstown, Kentucky

#### Gusher Pumps Manufacturing

Dry Ridge, Kentucky

#### Gusher Pumps Training Facility

Dry Ridge, Kentucky

#### Gusher Pumps Indiana

New Castle, Indiana

#### Nagle Pumps

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Dry Ridge, Kentucky

#### RAE Pumps

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