

**DEMING**<sup>®</sup>  
VERTICAL TURBINE PUMPS

Manufactured by PSI  
A RUTHMAN COMPANY

## Custom Manufactured to Meet Your Needs

Suitable for everything from clear water to hazardous, abrasive, and viscous fluids, Deming Vertical Turbine Pump can be custom designed in a wide range of capacities and pressures to match your requirements. By selecting from a large number of design options, our experienced engineers can tailor a pump to best fit your applications. As an NSF-certified manufacturer, Process Systems offers approved construction at your request.

These pumps have solved fluid transfer challenges in a broad range of industries, including steel, metal finishing, chemical, paper, municipal, 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

- Municipal Water & Wastewater
- Cooling Towers
- Injection Mold Cooling
- Loading/Unloading Barges And Ships
- Large Pools & Water Parks
- Mine De-watering
- Solar Energy
- Weld Water Cooling/Distribution
- Industrial Processes
- Agricultural Irrigation
- Desalination Facilities
- Stormwater & Flood Control

## Design Option: Hi-Thrust Base

### Advantages

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

### How it Works

The Deming Hi-Thrust Base motor assembly is designed to carry all thrust loads created during pump operation. The integrated single thrust bearing is capable of handling these loads, eliminating the need for a special high thrust or hollow shaft motor.

The motor and Hi-Thrust Base are precisely aligned during assembly to assure concentricity of all pump parts, including the shaft and thrust bearing. This eliminates any possible misalignment. The thrust bearing 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 Hi-Thrust Base 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.

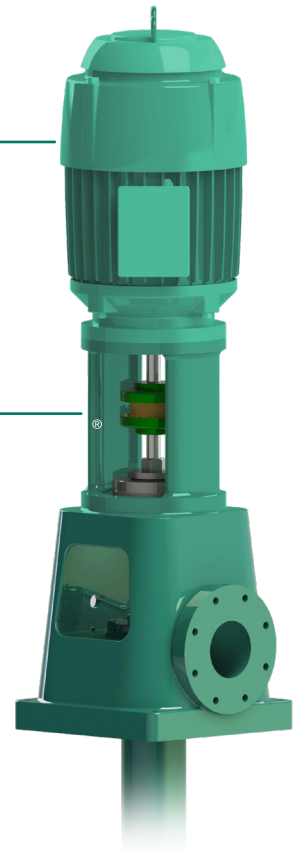
This combined design speeds delivery, assures proper motor to pump shaft alignment and concentricity, simplifies installation, and extends overall pump life.

### Standard Motor

The Hi-Thrust Base accepts standard C-Face motors. Off-the-shelf availability from a number of manufacturers minimizes down time in the event of motor failure.

### Guaranteed Alignment

The Hi-Thrust Base assembly incorporates a thrust bearing to carry all of the pump thrust loads. Factory alignment ensures concentricity and allows the impeller clearances to be factory-set.





## Design Option: Self-Seal

### Advantages

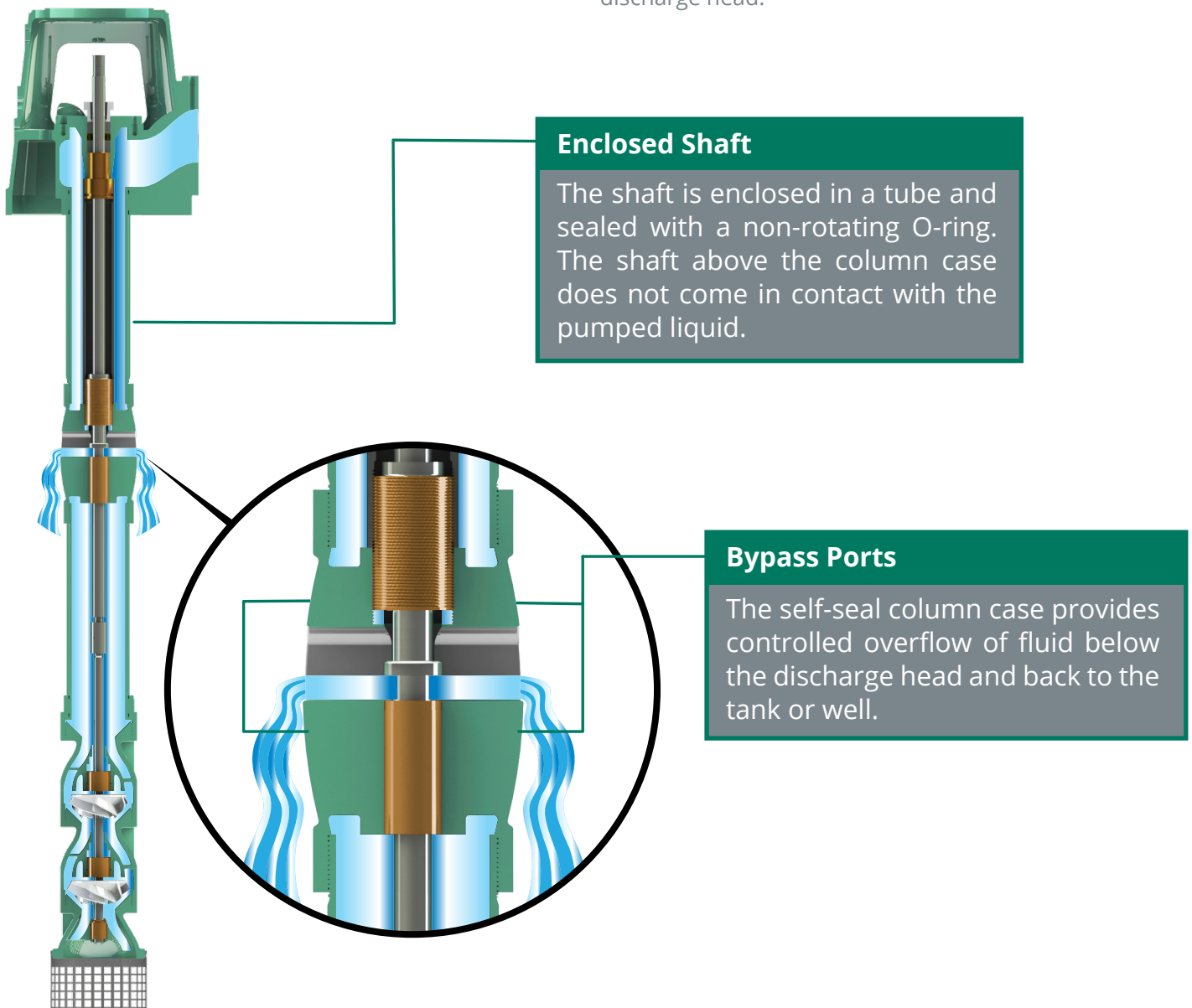
The unique self-seal design option eliminates the most common points of failure: the packing or a mechanical seal. This problem-solving sealing method reduces maintenance downtime and eliminates the potential for hazardous leakage and dangerous operating conditions.

### How it Works

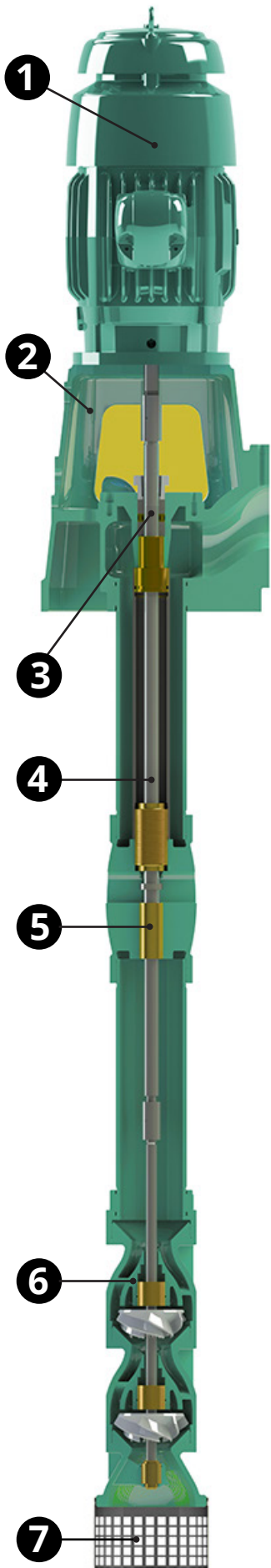
The shaft above the self-seal case is enclosed in a tube isolated from the fluid. A non-rotating O-ring seals this shaft-enclosing tube. As the pumped solution passes up through the lower column assembly, it enters the self-seal column case, located below the discharge head. The self-seal column case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

A minimal amount of fluid flows past the lower bushing into the self-seal case. A stainless steel slinger in the self-seal column case directs this fluid to the pump's bypass ports. Any fluid that flows past the lower bushing in the self-seal case is vented back to the tank or well.

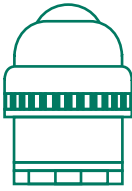
From the self-seal case upward, the shaft is enclosed in a dry tube away from the fluid, making it impossible for leaks to occur at the point the shaft passes out of the discharge head.



# Modular Pump Construction Options for Your Specific Application



## 1. DRIVERS

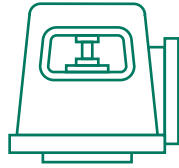


Hollow shaft motor

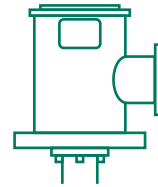


Solid shaft motor with stand

## 2. DISCHARGE HEADS

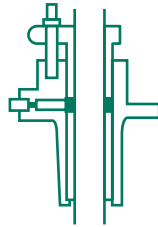


Standard cast iron surface discharge

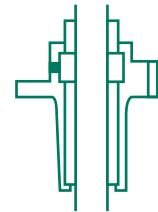


Fabricated steel surface discharge

## 3. SEALING METHODS



Standard pressure packing box



Mechanical seal

## 4. COLUMNS & SHAFTS

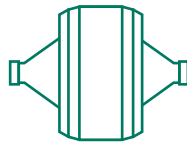


Open line shaft product lubricated

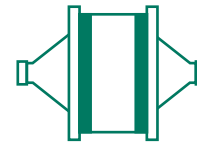


Enclosed line shaft oil lubricated

## 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)



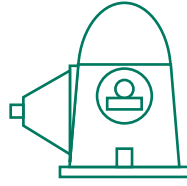
Standard cone



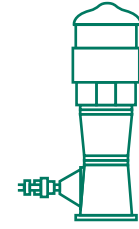
## 1. DRIVERS



C-face motor with Hi-Thrust Base

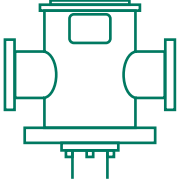


Right angle gear drive

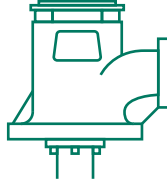


Combination right angle gear drive

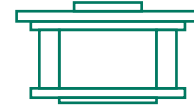
## 2. DISCHARGE HEADS



Fabricated T-head discharge



G-head ANSI flange base discharge

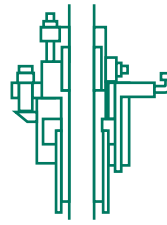


Motor stand-underground discharge

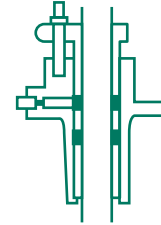
## 3. SEALING METHODS



Self-Seal design



Oil/grease lubricated construction



High-pressure packing box

## 4. COLUMNS & SHAFTS



Flanged column

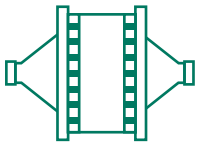


Oil/grease lubricated construction

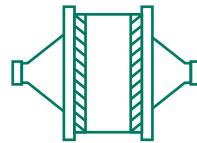


Underground discharge

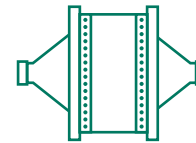
## 5. LINE SHAFT/BOWL BEARINGS



Vesconite product lubricated



Teflon product lubricated

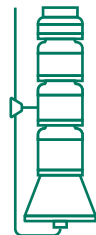


Greene Tweed product lubricated

## 6. BOWL ASSEMBLIES



Flanged bowls bell mouth suction

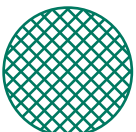


Grease, oil or water lubricated



High-pressure cased assembly

## 7. STRAINERS



Flat mesh for bell



Bolt-on basket for bell

Open construction (no strainer)

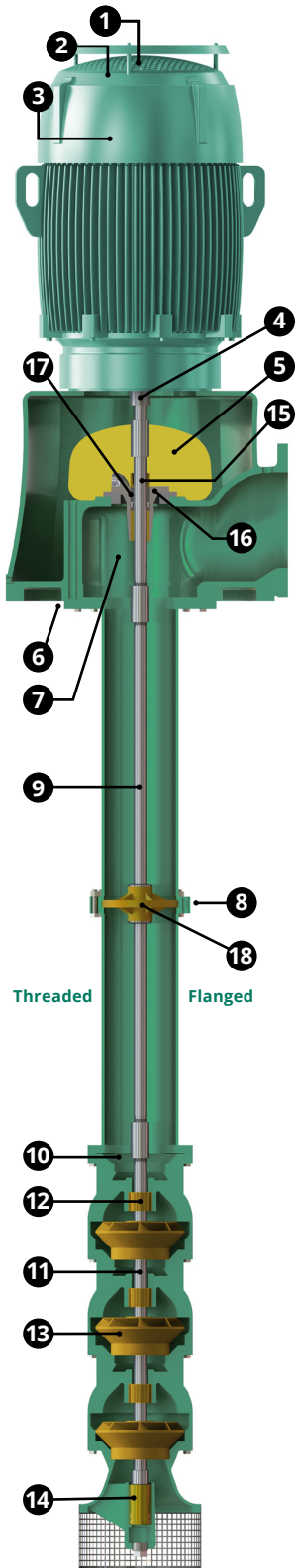


# The Universal Vertical Turbine Pump: Example Configurations

See following pages for all modular construction options.

## Common Construction

1. Adjusting nut located at top of motor—makes impeller adjustment easy
2. Ratchet prevents backspin—and avoids damage to pump in case of phase reversal (optional)
3. Heavy duty thrust bearing—cooled by air entering motor
4. Separate motor shaft with coupling in head shaft—facilitates installation; permits changing drives without raising pump
5. Coupling guard—supplied as standard feature
6. Recessed base plate—permits casing or sleeve to extend above foundation as required by many health departments (optional) \*not shown
7. Discharge head—maintains accurate alignment between motor and column shaft assembly (some discharge heads feature threaded column connections; refer to factory)
8. Column couplings—machined for tight-fitting butt joints (flanged column available) \*not shown
9. High strength line shaft—heat treated, ground and polished stainless steel; one-third stronger than ordinary shaft
10. Streamlined bowl passageways—reduce friction and increase pump efficiency
11. Stainless steel impeller shaft—heat treated, ground, and polished for longer life
12. Bowl bearings—bronze on all enclosed impeller pumps; rubber on all semi-enclosed impeller pumps (other materials optional)
13. Enclosed or semi-open impellers—choice of bronze, cast iron or stainless steel (optional materials available)
14. Bronze bearings—in suction bowl, protected with sand cap and packed with non-soluble grease (optional materials available)
15. Stainless steel top shaft—may be inverted to renew wearing surface
16. Pre-lubrication connection—through stuffing box distributes water around shaft for proper lubrication before start up (optional)
17. Stuffing box—with controlled lubrication for extended packing life



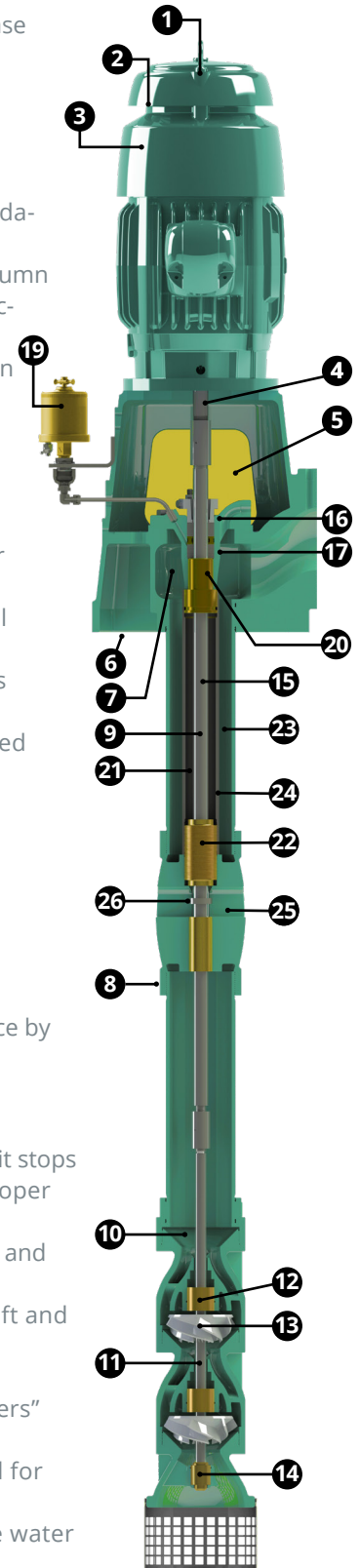
**Product Lubricated**

## Product Lubricated Only

18. Water lubricated shaft bearings—fluted, resilient rubber bearings lubricated by water flowing through the pump (bearings are held in place by a machined bronze bearing retainer secured between two pipe ends)

## Oil Lubricated Only

19. Automatic line shaft lubricator—opens when pump starts, closes when it stops
20. Bronze tube tension nut—easily accessible for placing tube under proper tension; also provides close-fitting bearing in pump head
21. Tubing head adapter with O-ring—assures watertight seal around shaft and enclosing tube
22. Bronze line shaft bearings—maintain accurate alignment for line shaft and a coupling for enclosure tube (spiraling internal oil groove lubricates uniformly and passes oil to bearings below)
23. Enclosure tube stabilizers—regularly spaced reinforced rubber “spiders” maintain enclosure tube alignment \*not shown
24. Heavy duty steel shaft enclosure tube—protects line shaft; machined for accurate bearing alignment
25. Relief ports in column case—prevent water from rising in tube above water level in well \*not shown
26. Water diverting slinger—redirects water as it works its way up the shaft out of the discharge case or column case ports, back to the tank or well.



**Oil Lubricated**

## 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.



**PROCESS**  
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Manufacturer of Deming® VTP

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Dry Ridge, Kentucky

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