

# FLOWAY<sup>®</sup>

## POWER AND GENERAL INDUSTRY

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## VERTICAL TURBINE PUMPS FOR INDUSTRIAL AND POWER

### FLOWAY® RENOWNED FOR OFFERING WORLD LEADING WEAR AND CORROSION RESISTANT PRODUCTS FOR MANY POWER AND GENERAL INDUSTRIAL PROCESSES.

Whatever the manufacturing process, there is always an application that requires better equipment to ensure critical process reliability. This is where Floway comes into their own.

Floway is renowned for offering world leading wear and corrosion resistant products for many power and general industrial processes. Our pumps are generally hidden away in some corner quietly performing some arduous and critical application without fuss. Reliability, long wear life, high efficiency and ease of maintenance are all hallmarks of our world famous pumps.

Our customers demand top efficiencies, low vibration performance and high quality appearance. To ensure adherence to performance specifications, we offer full hydraulic testing and analysis under a variety of operational conditions.



#### Customer Focused Product Development

As a service to our customers, Floway Pumps has developed two specification selection programs to allow customers to specify projects and product details.

The SCORE selector program is a web based program which allows customers to search pump selection by flow and head specifics.

Build A Spec™ is a specification assistance program that builds a word based specification from user selected construction options.

#### Typical Markets

- Snow Making
- Condensate
- Cooling Tower
- Geothermal
- Power
- HVAC
- Automotive
- Nuclear Power (non-safety related)
- Amusement Park / Aquarium

## Excellent Engineering Solutions

Floway Pumps utilizes an in-house staff of licensed professional engineers to ensure maximum control over design specifications. Engineering capabilities include:

- 3D solid modeling
- In-house hydraulic design
- Products engineered to customer specifications
- Special material selection
- Computational Fluid Dynamics (CFD) analysis
- Stress and deflection analysis using Finite Element Analysis (FEA)
- Lateral and torsional rotordynamic analysis
- Structural natural frequency analysis (using FEA) and design for VFD operation
- Design for low vibration
- Industry leading low vibration

Floway Pumps is dedicated to manufacturing pumps with industry-leading low vibration levels.

## Optional Features:

- Premium machined and balanced motor
- Specially toleranced motor coupling machined by Floway Pumps
- Jacking posts for precise motor/pump shaft alignment
- Impellers balanced per API 610
- Reduced run-out on motor base



## Performance Testing

A major engineering function of any pump manufacturer is hydraulic performance testing under a variety of operational conditions. Testing ensures that pump performance matches specifications and that all components are operating properly.

Testing and analysis capabilities include:

- Three testing pits for flows to 45,000 GPM (10,220 m<sup>3</sup>/hr)
- Hydrostatic testing equipment for pressures to 5,000 PSI (345 Bars)
- NPSH testing equipment available for flows to 30,000 GPM (6,814 m<sup>3</sup>/hr)
- Pressures to 2,500 PSI (172 Bars)
- Electrical power through 3,000 HP (2,235 KW)
- All measuring equipment calibrated on a scheduled basis with traceability to National Institute of Standards and Technology (NIST)
- Vibration testing available including spectrum analysis(FFT) with multiple simultaneous channels. Proximity probes available for measuring dynamic shaft vibration
- Impact testing available to determine the structural natural frequencies (Reed Critical Frequency) of the pump/motor structure
- Capable of testing a complete engine driven pump
- Both 50 Hz and 60 Hz power available
- Pump testing using a Variable Frequency Drive (VFD) available upon request
- Coating spark test (low voltage/high voltage)
- Pump thrust testing
- Noise testing

## Non-Destructive Testing (NDT)

- Dye Penetrant (LP)
- Magnetic Partical Inspection (MP)
- Radiography Exam (RT)
- Ultrasonic Testing (UT)
- Positive Material Identification (PMI)
- Hardness Testing (Rockwell and Brinell)
- CMTR upon request
- AWS Certified Welding Inspection (CWI)

## Coatings

- NSF certified coating available when requested
- Two part epoxy
- Fusion bonded epoxy
- Most coatings available for potable or non-potable service

## FLOWAY® VERTICAL TURBINE PUMPS

### VF and VFR Head Design

Vertical close coupled, single or multi-stage turbine with fabricated head discharging above ground, with a below ground suction mounted in a fabricated barrel or can.

Typical service: booster applications for various water process services

Capacity to 35,000 gpm (7,950 m<sup>3</sup>/hr)

Pressure to 1,500 psi (103 bars)

### VC Head Design

Vertical close coupled, single or multistage turbine, with fabricated head configured for an above ground suction and discharge mounted in a fabricated barrel or can

Typical service: in-line, above ground, closed suction booster applications for various water process services

Capacity to 35,000 gpm (7,950 m<sup>3</sup>/hr)

Pressure to 3,000 psi (207 bars)

### A and AF Head Design

Vertical close coupled, single or multistage turbine with cast iron head discharging above ground, with below ground suction in a fabricated barrel or can

Typical services: booster applications for various water process services

Capacity to 5,000 gpm (1,140 m<sup>3</sup>/hr)

Pressure to 300 psi (20.7 bars)



VFR Head

VC Head

A and AF Head

# FLOWAY® VERTICAL TURBINE PUMPS

## FLOWAY® VTP VERTICAL TURBINE PUMPS



Submersible

VU Head

F Head

Lowlift

### Low-lift

Vertical mixed flow single or multistage with fabricated discharge head.

These pumps can be mounted at 45 degrees or 90 degrees with above or below ground discharge.

Typical service: large wet pit for flood control and other low-lift applications

Capacity to 35,000 GPM (7,950 m<sup>3</sup>/hr)

Setting to 50 ft (15 m)

Pressure to 35 PSI (2.41 Bars)

### Submersible

The submersible pump utilizes a submersible motor coupled directly to the bowl assembly and is designed to operate completely submerged in the fluid being pumped.

Capacity to

7,000 GPM (1,590 m<sup>3</sup>/hr)

Setting to 1,500 ft (457 m)

Pressure to 750 psi (52 Bars)

### VU Head Design

Vertical close coupled, single or multistage turbine with a fabricated head discharging below ground with below ground suction

Typical service: large wet pit for flood control, water treatment plants and any surface water source

Capacity to

35,000 gpm (7,950 m<sup>3</sup>/hr)

Pressure to 1500 psi (103 bars)

### F and FR Head Design

Vertical close coupled, single or multistage turbine with fabricated head discharging above ground with radius elbow, with below ground suction

Typical service: large wet pits, water treatment plants, lake and river intake, and various water process applications

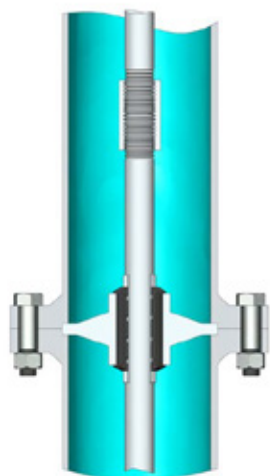
Capacity to

35,000 gpm (7,950 m<sup>3</sup>/hr)

Pressure to 1,500 psi (103 bars)

# COLUMN ASSEMBLIES AND IMPELLERS CONFIGURATION

## Column Assemblies



### Flanged column pipe (open lineshaft for product shown)

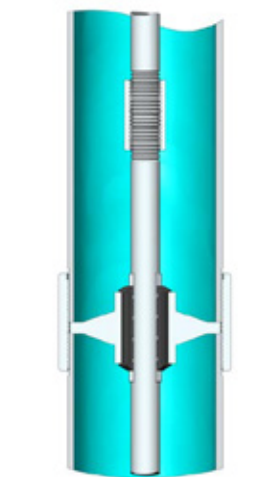
Standard construction 16-inch (41cm) diameter and larger column pipe recommended when ease of assembly is required. Flanged column pipe can be furnished in either oil, water flush or product lubricated construction.



### Flanged column pipe (enclosed lineshaft for oil lubrication or fresh water flush shown)

Applications include pumpages with suspended particles which require bearing protection and deep well pumps.

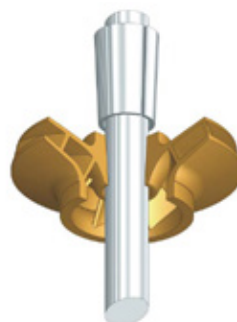
**Note:** Not recommended for use on high-pressure, short-setting pumps.



### Threaded Column Pipe (open lineshaft for product lubrication shown)

Pump setting with water levels over 30 ft. (9m) require driver non-reverse ratchet and lineshaft pre-lubrication. Available for 3-inch (8cm) through 14-inch (34cm) threaded pipe size. Threaded column generally preferred for well pumps where clearance is minimal.

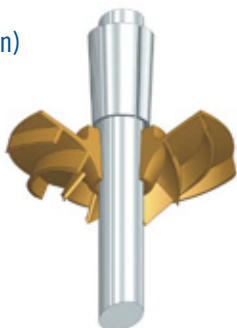
## Impellers



### Enclosed Type Impeller with Tapered Collet-Shaft Mounting

Standard construction features tapered friction drive collet furnished on pump bowls through size 22-inch (56cm).

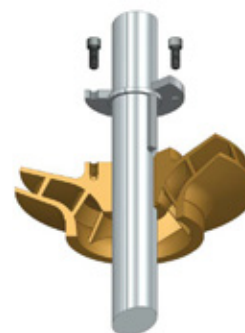
**Features** — Easy installation, lateral adjustment and low hydraulic thrust



### Semi-open Type Impeller with Tapered Collet-Shaft Mounting

Standard construction features tapered friction drive collet. Semi-open impeller construction is available on pump bowls through size 27-inch (69cm) and on larger sizes when required.

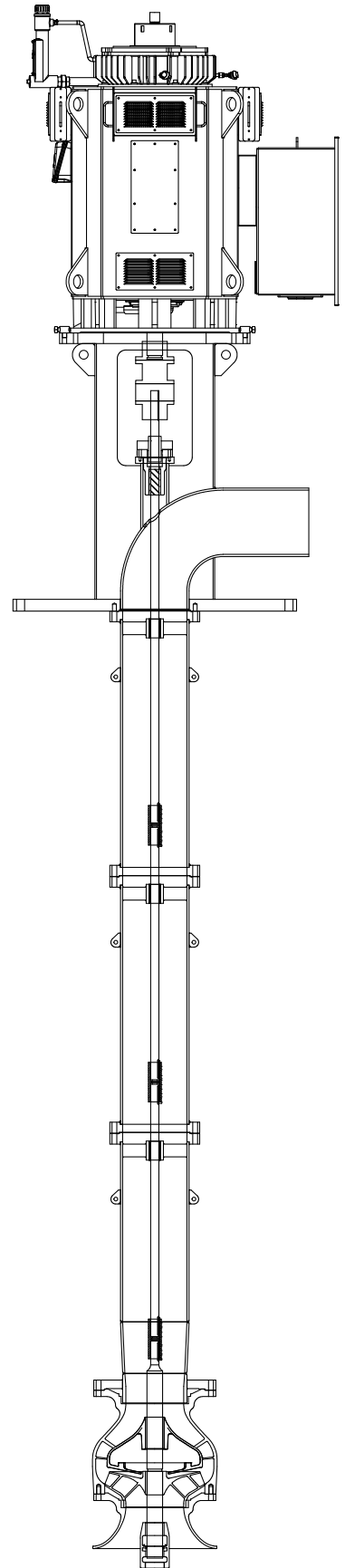
**Features** — Reduced chances of plugging impellers when handling solids.



### Enclosed Type Impeller with Double-Keyed Shaft Mounting

The double-keyed impeller shaft mounting features both axial and radial keys. This construction is standard on bowl sizes 23-inches (58cm) and larger. Smaller enclosed and semi-open type impellers are also available.

**Features** — Allows for ease of removal and replacement of impeller wear parts





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