

FLOWAY® PUMPS

Vertical Turbine Pumps

Water Industry

Excellent
Minerals
Solutions

WEIR
MINERALS



The strength of Weir Floway products lies in the superiority of our engineering expertise, low vibration designs and highest quality materials.

Weir Floway has a 75 year history of providing customers around the world with the right product and the highest quality for their specific process.

Our products are recognized worldwide for superior quality, top hydraulic performance and long service life.

Sample of cities across the US relying on Floway pumping solutions:

- Las Vegas, NV
- Phoenix, AZ
- Los Angeles, CA
- Niagara Falls, NY
- Atlanta, GA
- Orlando, FL
- Seattle, WA

First choice for water industry pumping solutions

Below: Raw water service pumps



By concentrating solely on the vertical pump product line, Weir Floway has become a dominant force in today's highly diversified market. Floway pumps are recognized worldwide for superior quality, top hydraulic performance and long service life.

In applications where the cost of ownership often outweighs capital cost as a priority, we help our customers address such issues as longevity, efficiency of operation and ease of maintenance.

- Through continuous improvements to materials, product design, engineering and manufacturing, we minimise downtime and reduce the risk of disruption to our customers' operations.
- By ensuring that we have a global presence, our customers will experience the synergy benefits of standardized processes worldwide.
- Working in close partnership with our customers allows us to develop end-to-end engineering solutions to the technical challenges they face, delivering genuine competitive advantage.

- Market leading products
- Whole life cycle solutions for any application
- Industry leading low vibration
- Customer-focused product development
- Expert installation and engineering support
- Total care, from basic service support to aftermarket sales and service

Over 75 years experience has provided the expertise to manufacture a versatile line of vertical turbine pumps for a wide range of applications. .

Typical services

- High service
- Raw water (clear liquid)
- Finished water
- Booster
- Effluent disposal
- Lake or river water intake
- Makeup water
- Secondary recovery
- Service water
- Aquifer storage and recovery (ASR)
- Backwash
- Well water
- Screen wash
- Reverse osmosis
- Corrosive water services, sea water - brackish water



Top: Booster pumps

Middle left: High service pumps

Middle right: Sump pumps

Bottom: Booster pumps

Weir Minerals has the geographical presence to service all the major water and wastewater markets around the world.

Weir Floway combined with Weir Minerals has the capability to support customer operations worldwide with consistent products and local engineering expertise. As part of The Weir Group, we have the reach and resource to grow into emerging markets alongside our customers.

Weir Minerals has operations across:

- North America
- South America
- Africa
- Europe & UK
- Australasia
- Former Soviet Union

Weir Floway pumps are built around the versatility of the vertical pump design. Depending upon exact job specifications, our engineers select the best combination of pump components and materials of constructions to meet virtually any water application.

Engineering capabilities

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

- 3D CAD modeling
- In-house hydraulic design
- Products engineered to customer specifications
- Special material selection
- Flow analysis
- Intake design review
- Stress, torsional and seismic analysis
- Natural frequency analysis and construction for VFD operation
- Low vibration design (PMLV™)

Industry leading low vibration

Weir Floway is dedicated to manufacturing pumps with industry leading low vibration levels. We offer Precision Machined Low Vibration (PMLV™) pumps with vibration levels at one half of the standards set by the Hydraulic Institute.

PMLV features:

- Premium machined and balanced motor
- Specially toleranced motor coupling machined by Weir Floway
- Jacking posts for precise motor/pump shaft alignment
- Impellers balanced per API 610
- Reduced run-out on motor base
- Extends MTBF by more than 200%

Customer focused product development

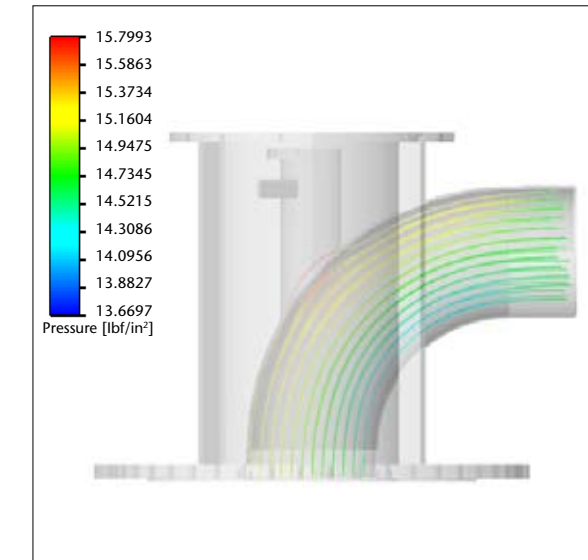
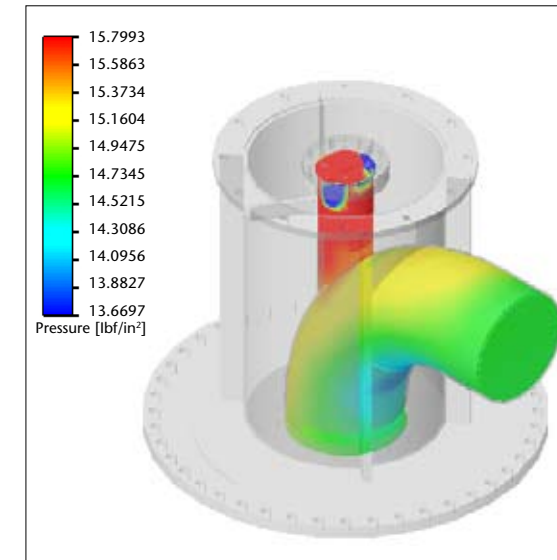
As a service to our customers, Weir Floway has developed two specification selection programs to allow customers to specify projects and product details.

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 breaks down the following components:

- Discharge head design
- Sealing arrangements
- Column construction
- Bowl construction

The Weir Floway specification tools can be accessed through www.weirminerals.com.



Above: Design flow analysis

Flow testing

A major engineering function of any pump manufacturer is hydraulic flow 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 40,000 GPM (9,085 m³/hr)
- Hydrostatic testing equipment for pressures to 5,000 PSI (345 Bars)
- NPSH testing equipment available for flows to 30,000 GPM (6,814 m³/hr)
- Pressures to 2,500 PSI (172 Bars)
- Electrical power through 2,500 HP (1864 KW)
- All pressure flow measuring equipment calibrated on a scheduled basis with traceability to National Bureau of Standards
- Four Vibration monitors available including full spectrum real time analysis. Proximity probes available for measuring dynamic shaft run-out.
- Critical "Reed" Frequency testing - three exciter sizes available for pump and motor structural testing
- Capable of testing a complete engine driven pump

- Both 50 Hz and 60 Hz power available
- Variable Frequency Driven pump testing with VFD available
- Coating spark test (low voltage/high voltage)
- Non-Destructive testing, NDT includes dye penetrant, magnetic particle, radiography, ultrasonic and noise level

Mechanical testing

- 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)

Coating

- NSF approved coating available when required.
- Two part epoxy
- Fusion bonded epoxy
- Most any coating available for potable or non-potable service.

Below: Engineering startup services



End to end
engineering solutions

Weir Floway takes pride in the fact that all of our products are manufactured in house giving total control and maximum capabilities.

Unlike our competitors, Weir Floway's unparalleled pump product is manufactured all under one roof. That means that every step from designing to manufacturing and the finished product is controlled in our state of the art facility in Fresno, California, USA



Left: Water re-use pumps
Below top: Field installation
Below bottom: Booster pumps



Manufactured to meet global certifications and standards:

Electrical standards

- NEMA
- IEE
- 50 Hz - 60 Hz
- IEC

Mechanical standards

- ANSI B165 class 150 through 1500 ratings
- Welding to ASME section IX on all listed materials
- ASTM standards met for all materials supplied - castings, forgings, and wrought materials
- Stress relief carbon steel to ASME Section VIII

International standards

- DIN
- BS
- Hydraulic Institute
- CE Marking

Quality assurance

Quality control never ends at Weir Floway. It begins with the quotation phase and continues throughout the order process, manufacturing phase, warranty period, customer follow-up and service. This dedication to quality has given us the reputation for having one of the finest products in the vertical turbine pump industry.

Certifications

- ISO 9001:2000
- ISO 14001

In house manufacturing capabilities

Fabrication - The Weir Floway fabrication facility is staffed by ASME Boiler Code Section IX certified welders.

Machining - Computer controlled lathes, large boring mills, and individual production equipment ensure an efficient and flexible manufacturing process.

Balancing - Dynamic and static balancing of rotating elements ensure low vibration performance

Final Assembly - All pump components are assembled to customer specifications for top efficiency, long service life, and high quality appearance.



Above: NSF approved epoxy coating being applied to pump
Far left: Machining of discharge head on large VTL
Center: Fabrication of custom discharge head
Left: Quality control inspection process



Meeting global standards through excellent manufacturing processes

Floway vertical pumps for the water industry

Typical options of construction

- Semi-open or enclosed impellers
- Bowl and impeller wear rings
- Thrust balanced impellers (Reduced downthrust on motor bearings)
- Flanged or threaded column pipe
- Product lubricated, water flush or oil lubricated shafting

- Hard chrome bearing journals
- Special materials of construction (stainless steel, bronze, duplex, super duplex)
- PMLV™ construction
- Electrical motors available in Vertical solid (VSS) or vertical hollow (VHS) shaft construction
- Abrasive service – Special materials and construction to increase pump life

- Shaft sealing elements available in mechanical seal, packed box, water flush, oil lubricated or grease packed configurations
- Hydro-Seal construction – eliminates above grade shaft sealing element

VF & VFR

F & FR

VU

Vertical pump features and services

VF & VFR

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

Capacity to 35,000 GPM (7,950 m³/hr)

Setting to 100 ft (15.2 m)

Pressure to 1,500 PSI (103 Bars)

Typical service - booster applications for various water process services

F & FR

Vertical close coupled single or multistage turbine with fabricated head discharging above ground

Capacity to 35,000 GPM (7,950 m³/hr)

Setting to 1,200 ft (365.8 m)

Pressure to 1,500 PSI (103 Bars)

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

VU

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

Capacity to 35,000 GPM (7,950 m³/hr)

Setting to 100 ft (30.5 m)

Pressure to 200 PSI (13.8 Bars)

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

VC

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

Capacity to 35,000 GPM (7,950 m³/hr)

Setting to 100 ft (15.2 m)

Pressure to 3,000 PSI (207 Bars)

Typical service - in-line, above ground, closed suction booster applications and water treatment plants

Low-lift

Vertical mixed flow single or multistage with fabricated discharge head. These pumps can be mounted at 45 degree or 90 degree with above or below ground discharge.

Capacity to 35,000 GPM (7,950 m³/hr)

Setting to 50 ft (15.2 m)

Pressure to 35 PSI (2.41 Bars)

Typical service - large wet pit for flood control, water treatment plants and other low-lift applications

A & AF

Vertical close coupled, single or multistage turbine with cast iron head with an above ground discharge.

Capacity to 5,000 GPM (1,140 m³/hr)

Setting to 600 Ft (182.9 m)

Pressure to 300 PSI (20.7 Bars)

Typical services - wet pit, well pumps, and booster applications for water treatment plants, various water process applications

VC

Lowlift

A & AF



Column assembly and impeller configurations

Column assemblies



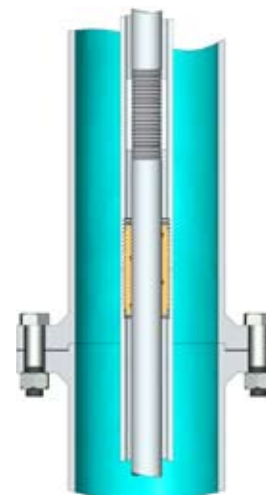
Product lubricated column and shaft assemblies

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



Enclosed lineshaft assembly with water flush or oil bearing lubrication

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

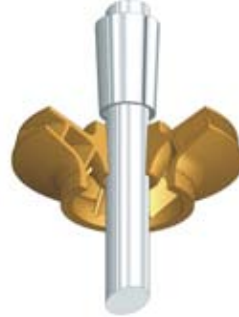


Flanged column assemblies

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

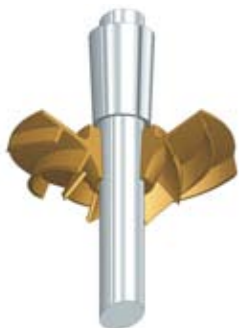
Impellers



Enclosed type impeller with tapered collet shaft mounting

Standard construction features tapered friction drive collet furnished on pump bowls through size 22" (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" (69cm) and on larger sizes when required.

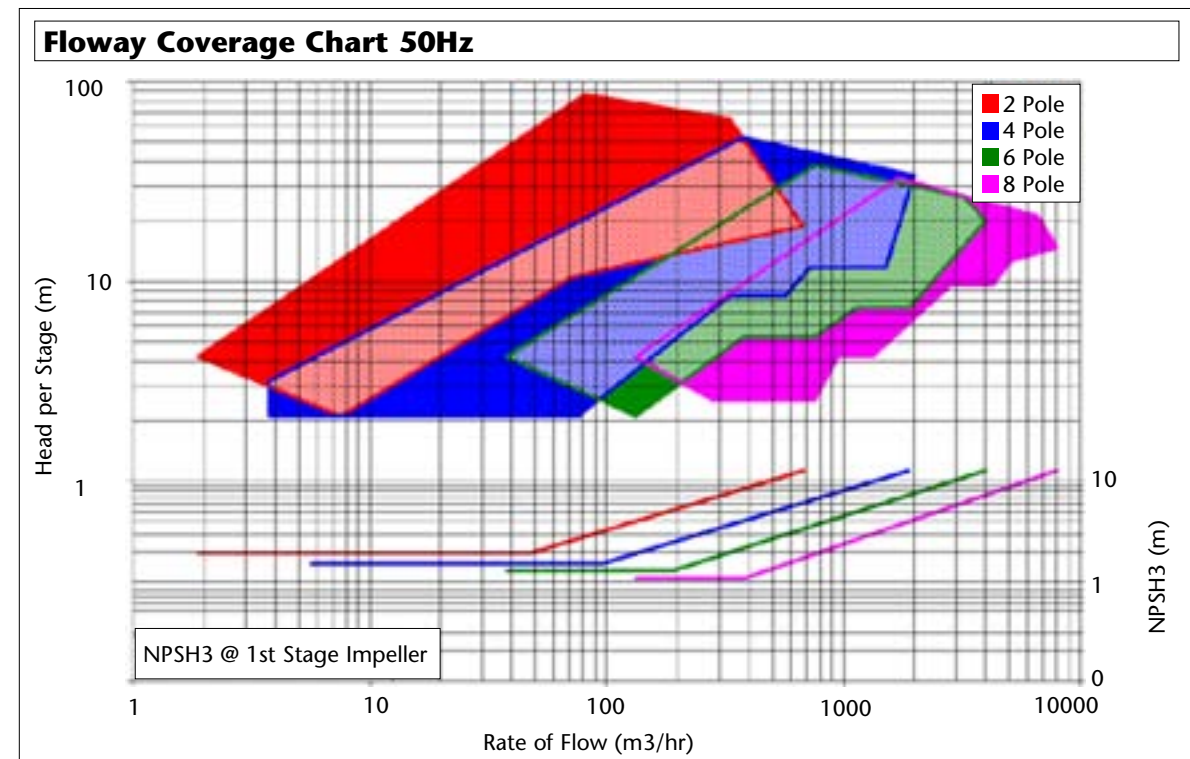
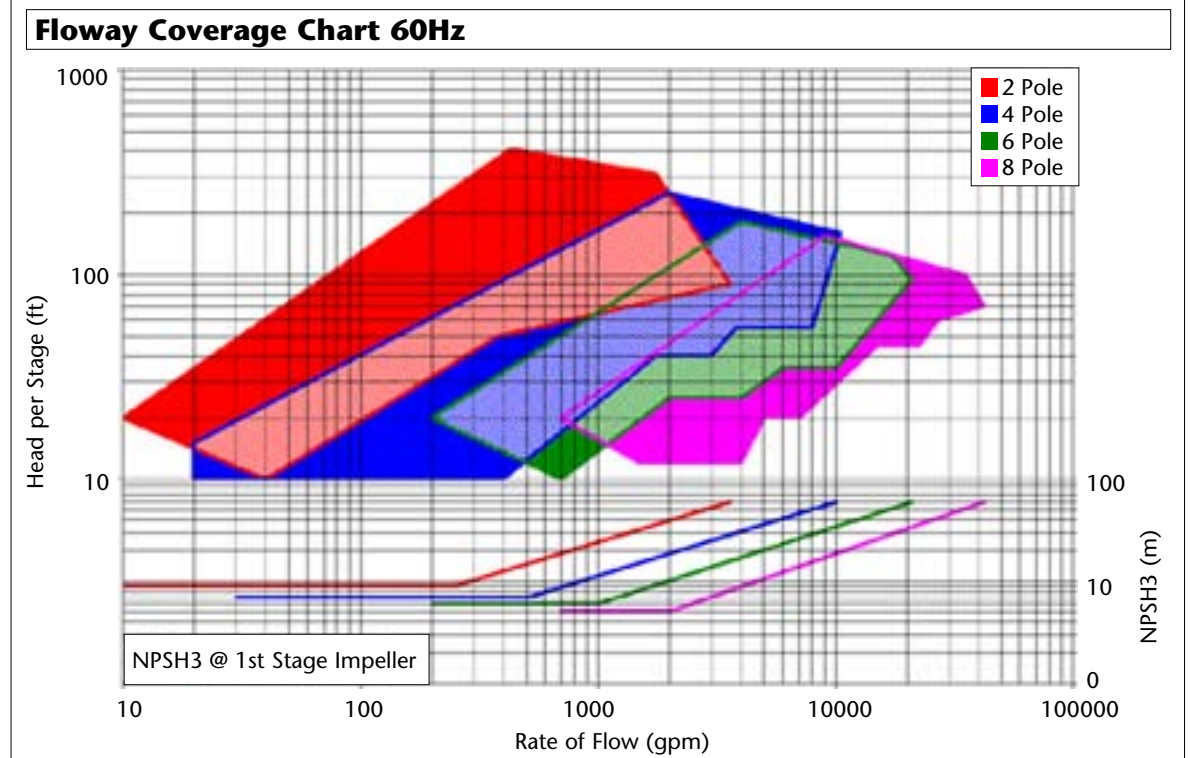
Features - Lateral adjustment for increasing or reducing flow rates. Reduced chances of plugging impellers when handling solids.



Enclosed type impeller with double keyed shaft mounting

The double keyed impeller shaft mounting features both axial and radial key. This construction is standard on bowl sizes 23" (58cm) and larger. It is also available as optional construction on bowl size 22" (56cm) and smaller enclosed and semi-open type impellers.

Features - Allows for ease of removal and replacement of impeller wear parts.



For more information on any of these products or support services please contact your nearest and most appropriate Weir Floway sales office or visit:

www.weirminerals.com

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