

# FLOWAY® PUMPS

Vertical Turbine Pumps

Oil & Gas Industry

Excellent  
Minerals  
Solutions

**WEIR**  
MINERALS



# Meeting the needs of the oil & gas industry worldwide

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

Unlike our competitors, 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

By concentrating solely on the vertical pump product line, 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, on site wherever our customers require us to be, we help release the synergy benefits of standardised 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.

Floway Pumps 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



*Floway pumps are used in a variety of oil and gas applications both upstream and downstream including pipeline, offshore platforms and refinery*

*Typical vertical turbine pump applications for the oil and gas industry*

Excellence through innovative design and precision manufacturing is why Floway Pumps are used extensively in the oil and gas industry.

- Shell Oil
- BP Arco
- Amoco Oil Co.
- Fina Oil
- Pemex
- Andarko
- Chevron/Texaco
- All-American Pipeline
- Koch Oil
- Occidental Petroleum
- Kinder Morgan Energy Partners
- Petro-Canada Refinery, Edmonton
- Enbridge Pipelines
- CNRL Horizon Oil Sands
- Suncor
- Syncrude
- Vertical process

- Light hydrocarbon, high vapor pressure (low NPSHA)
- Pipeline, pipeline booster
- Offshore platform/sea water lift (crude oil transfer)
- Refinery service
- LPG transfer
- Secondary recovery
- Cryogenic liquid
- Cooling water
- Aircraft fueling
- Terminal/Transfer

**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 oil and gas 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**

Floway Pumps 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 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%

From left to right:  
Typical API discharge head  
Floway Pumps are manufactured to the highest quality to ensure long service life



**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 up to 400 HP with VFD. Higher HP testing available upon request
- Coating spark test (low voltage high voltage)
- Non-Destructive testing, NDT includes dye penetrant, magnetic particle, radiography, ultrasonic and noise level

**In house manufacturing capabilities**

Fabrication - The Floway Pumps 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.

**Customer focused product development**

As a service to our customers, Floway Pumps has developed 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.

The Floway Pumps specification tools can be accessed through [www.weirminerals.com](http://www.weirminerals.com).

**Quality assurance**

Quality control never ends at 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.

Floway is certified to ISO 9001 and 14001, and OHSAS 18001 management systems.

From below left to right:  
Stainless steel impellers  
Bowl assemblies  
Floway pumps state of the art testing facility



# Floway® Pumps VHP Series

Our VHP Series is compliant with the current API 610 standards.

- Compliant with API 610 current edition.
- Multi-staging in the medium specific speed range from 1,300 Ns through 5,000 Ns.
- High pressures with premium efficiencies and low operating costs.
- Low NPSH first stage construction with Nss below 11,000 is available which allows for a reduction in can length for double casing pumps (VS6) and minimum submergence for wet pit single casing pumps (VS1).
- Pressure and flow variations are achieved by changing number of stages or impeller type.
- Pump bowl assembly is characterized as low energy per stage resulting in a broad flow range with excellent hydraulic stability.
- Thrust balanced impellers are available for pump axial thrust reduction and assist in obtaining the desired thrust bearing rating/life.
- Thrust pot assembly is available in applications where non-thrust carrying motors are required.

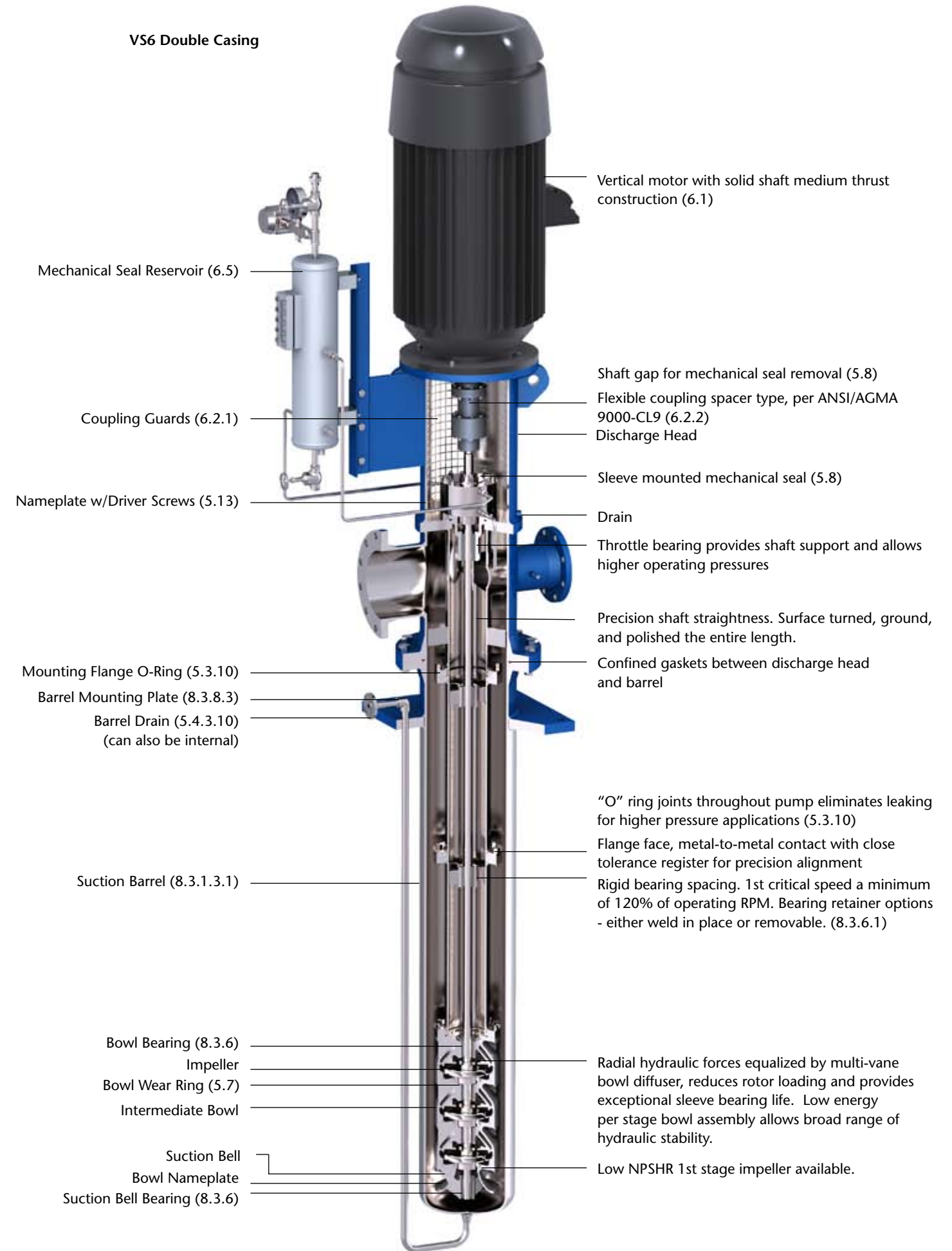
	VHP VS6 Double Casing	VHP VS1 Single Casing
Pump Configuration	Vertical close coupled single or multistage turbine with closed suction	Vertical close coupled single or multistage turbine. Wet pit
API-610 Class Type	Vertical suspended, double casing can type.	Vertical suspended, single casing wet pit type.
Capacity	To 35,000 USGPM (8,000 M3/HR)	To 35,000 USGPM (8,000 M3/HR)
Pressure	To 3,000 PSI (200 Bars)	To 1,500 PSI (100 Bars)
Liquid Handled	Water, chemical solutions, petroleum, condensates, L.P.G., and hydrocarbons.	Water, chemical solutions, (acidic or alkaline), and hydrocarbons.
Temp. Range	-130°F (-90°C) To +450°F (+220°C)	+450°F (+220°C)
HP Range	To 3,000 HP (2,250 KW)	To 3,000 HP (2,250 KW)
Drivers	Electric motors, steam turbines, engine/gear drives, and variable speed drives.	Electric motors, steam turbines, engine/gear drives, and variable speed drives.
Materials of Construction	Any machinable and weldable alloys or combinations available.	Any machinable and weldable alloys or combinations available.



VHP VS1 Single Casing



VS6 Double Casing



## Geographical footprint

Weir Minerals has the geographical presence to service all the major minerals markets around the world. This global supply capability provides a competitive advantage in this relatively fragmented market.

Weir Minerals has operations across:

- North America
- Europe
- Latin America
- Australia
- Africa
- Asia
- Russia

## Customer profile

Our customers range from the world's largest minerals and mining multinationals to single pumpset operators.

We support customer operations worldwide with consistent products and local engineering expertise. As part of the Weir Group, we have the reach and resource to build close, long term relationships with all our customers, helping them to achieve ...

### The Lowest Cost of Ownership

## Service and support

This global capability with our own dedicated service teams combined with the service centres of our sister companies within the Weir Group and those of our strategic partners provide support in virtually every developed market.

**WARMAN®** Centrifugal Slurry Pumps  
**GEHO®** PD Slurry Pumps  
**VULCO®** Wear Resistant Linings  
**CAVEX®** Hydrocyclones  
**FLOWAY® PUMPS** Vertical Turbine Pumps  
**ISOGATE®** Slurry Valves  
**MULTIFLO®** Mine Dewatering Pumps  
**HAZLETON®** Specialty Slurry Pumps  
**LEWIS PUMPS™** Vertical Chemical Pumps  
**BEGEMANN PUMPS™** Centrifugal Process Pumps



For further information on any of these products, service or support services contact your nearest sales office or visit:

[www.weirminerals.com](http://www.weirminerals.com)

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Excellent  
Minerals  
Solutions



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