Vertical Multi-stage (Barrel) Pump

Model VW
Superior Quality, High Performance
Advantages of HYUNDAI Vertical Multi-stage Pump

- Stability in capacity and shaft power enables continuous operation without overload or vibration in a wide operation ranges
- Double suction with reduced shaft dia., low peripheral speed at first stage impeller insures stable operation in limited suction conditions
- Superior quality and high performance
- No fear for surging and overload
- A variety of options to meet all customers’ requirements in material and construction
- In-line suction and discharge nozzles simplify installation
- Optional suction nozzle position for flexibility
- High efficiency with minimum power consumption
- Corrosion resistance material and ensuring long term stable operation
- Low operating noise and vibration levels
- Compact sizes and requiring small installation spaces

Applications

- Thermal or Nuclear power plant
  * Condensate extraction pump
  * Hot water pump
- Desalination plant
  * Brine recirculation pump
  * Brine blow down pump
  * Distillate pump
- Oil, refinery and petrochemical plant
  * Crude oil booster pump
  * Crude transfer pump
- Pipe line booster
- Production unloading
  * Injection secondary recovery
  * Especially in low temperature range and installation with low NPSH
Construction

**Coupling**
- Easy maintenance of packing or mechanical seal without disturbing driver
- Control of impeller location by adopting adjustable plate

**Stuffing box**
- Designed to install either packing or mechanical seal
- An advanced combination of bearing, serrated sleeve and throttle bushing, and vents to suction which increase packing or mechanical seal and bearing life

**Shaft**
- High stiffness and precision machining to ensure stable operation
- Renewable shaft sleeve or hardening the surface under the bearings to ensure long life

**Flanged column**
- Rabbeted fits machined with flange ensure easy alignment
- Bearing retainer welded to the column simplify the construction

**Wearing ring**
- Restrict leakage due to pressure to suction side of each impeller
- Hard facing of wear surface

**First stage casing**
- Adoption of double suction impeller developed NSPH requirements, thus increase safety factor under limited suction conditions
- Single suction impeller also available

**Suction bell**
- Incorporate the housing for a bearing
- Four split vanes minimize vortex formation and allow smooth approach of liquid into impeller eye

**Double suction(VWDXXX)**

- Coupling
- Stuffing box
- Shaft
- Flanged column
- Wearing ring
- First stage casing
- Suction bell
Welded construction having sufficient rigidity and durability against heavy driver
- Casted construction also available
- In case of pump thrust force shall be shared by pump, thrust bearing housing will be provided on discharge head.

**Discharge head**

- Minimize axial thrust
- Consist of cylindrical drum, pressure control valve and piping to suction side of pump

**Balancing drum(Option) at stuffing box**

- Casing flanges rabbeted fit assure positive alignment and easy maintenance
- Each casing incorporates a housing to suit a bearing or throttle bushing

**Casing**

- Bearings have inherent self lubricating properties, last longer and more durable even in two phase liquid
- Various kinds of material (Carbon, Rubber, Bronze, etc.) available according to service conditions

**Line shaft bearing**

- Made by carbon steel and qualified welding process
- Option: Epoxy lining or FRP materials

**Barrel(Suction can)**

- All water passages are finished smoothly to achieve maximum hydraulic efficiency
- Dynamic balance for free vibration operations
- Positive lock on the shaft by key and collar
- Balance hole at last or inter-stage impeller to minimize axial thrust

**Impeller**
Selection Chart

60Hz

VW (Single suction)

Symbol

4     : POLES OF ELECTRIC MOTOR
054 : BOWL SIZE
VII : STAGES OF PUMP

50Hz

VW (Single suction)

Symbol

4     : POLES OF ELECTRIC MOTOR
054 : BOWL SIZE
VII : STAGES OF PUMP
60Hz

VWD (Double suction)

Symbol

4 : POLES OF ELECTRIC MOTOR
054 : BOWL SIZE
VII : STAGES OF PUMP

50Hz

VWD (Double suction)

Symbol

4 : POLES OF ELECTRIC MOTOR
054 : BOWL SIZE
VII : STAGES OF PUMP
Outline Dimension

Outline Dimension of Pump

Outline Dimension of Bowl

Outline Dimension of Pump

Outline Dimension of Bowl

<table>
<thead>
<tr>
<th>Bowl Size</th>
<th>Suction X Discharge</th>
<th>Can Sizes</th>
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Outline Dimension of Bowl

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Outline Dimension of Bowl
# Type VW

## Material of Construction

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<th>Applications</th>
<th>Power Plant</th>
<th>Desalination Plant</th>
<th>Fresh Water Pump</th>
<th>Liquefied Gas</th>
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## Material Specification

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General Information

1. Liquids
Liquids which can be pumped by VW pump shall be Water, Sea water, Crude Oil Petroleum products, Chemical and others. This pump is not normally used for slurries, liquids containing stringy materials (Reeds, Fiber, etc.).

2. Capacity and pressure
The capacity range extends up to 6,000 m³/hour size up to 650 mm (26") and maximum discharge head is 600 m of water column. Also, according to the purchaser's (or owner's) specification (or request), the larger capacity & head may be applied to.

3. Pump speed limitations
Pump speed beyond our selection chart is also possible based on engineering.

4. Pump configurations
These types of pumps are available to two different basic constructions with or without suction can based on the conditions of available NPSH and system condition.

When Making Inquiries

We need the following information when making inquiries:
- Capacity, total head, NPSHav. based on floor level, and liquid property
- Position of suction flange (Above floor or bellow floor)
- Shaft sealing methods (Gland packing or mechanical seal)
- Standards of Suction and Discharge flanges (JIS, ANSI, MSS, ...)
- Materials of liquid contacting section, etc.
- Driver requirements;
  Power source (Cycle, Phase & Voltage, etc) for Electric motor, Engine, Fluid coupling, etc.

Condensate Pump for Yonggwang Nuclear Power Plant, Unit 5 & 6 (1,000 MW x 2), Korea