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# VERTICAL TURBINE PUMPS

## TES VTP SERIES

Engineered for the U.S. Market

**Manufactured in Saudi Arabia**

**TECHNICAL CATALOG - U.S. 60 Hz**

**TOTAL ENGINEERING SOLUTIONS LLC | TEXAS, USA**

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# U.S. CUSTOMER ACCESS.
# SAUDI MANUFACTURING.

Total Engineering Solutions LLC provides the U.S. commercial and technical interface for TES vertical turbine pumps manufactured in Saudi Arabia under the TES white-label program.

### U.S. MARKET SUPPORT

- Application review and pump selection
- Technical and commercial coordination
- Documentation and project support
- Direct contact through TES in Texas

### PRODUCT PLATFORM

- Vertical lineshaft turbine pumps
- Water- and oil-lubricated configurations
- Cast or fabricated discharge heads
- Multiple materials and hydraulic selections

## OPERATING ENVELOPE

**FLOW**
**Up to 20,000 GPM**
4,500 m³/h

**HEAD**
**Up to 2,000 ft**
630 m

**PRESSURE**
**Up to 1,500 psi**
10,340 kPa

**BOWL SIZE**
**6 to 28 in**
152 to 700 mm

**POWER**
**Up to 2,600 HP**
2,000 kW

**TEMPERATURE**
**Up to 500°F**
260°C

Performance limits shown are the catalog envelope; final duty selection is subject to engineering review.




## Operating Parameters

- Flows to 20,000 GPM (4,500 m³/Hr)
- Heads to 2,000 feet (630 m)
- Pressures to 1,500 psi (10,340 kPa)
- Bowl sizes from 6" to 28"(152 mm to 700 mm)
- Temperatures to 500°F (260°C)
- Horsepower to 2,600 HP (2,000 KW)

## Design Advantages

◆ Advanced hydraulic model and structure design, Ashland process for core, epoxy coated in blade passage of impeller, reasonable material selection, excellent product performance, long service life

◆ High efficiency, higher 2~8%, than Local J、JD、JC Pump, with flat efficiency curve wide area for high efficiency add 10~20% separation range, significant energy saving effort

◆ Cast or Fabricated discharge head and flanged column

◆ Flanged bowl construction

◆ Stainless steel shafting

◆ Alloy construction with external flush of critical wear areas available for corrosive/abrasive services

◆ Built-in alignment and simple piping for less costly installation and ease of maintenance / reduced downtime

◆ The sand throwing apparatus, a labyrinth structure make the sand cannot enter the bearing

◆ Impeller and motor shafts are supported by copper bearing, shaft runout control within American standard 0.13mm, smooth running, low noise.

## Applications

★ Raw water intake: from rivers, lakes, reservoirs, and deep wells for water treatment plants

★ Booster water supply: urban water supply networks (secondary booster for high buildings, regional water pressure compensation)

★ Emergency water supply: municipal pipe network maintenance or water shortage

★ Large-scale farmland irrigation (grain fields, cash crops, greenhouse planting) in plain and hilly areas

★ Central water supply for rural communities, well water extraction and booster for villages and towns

★ Irrigation and drainage for aquaculture ponds (water exchange, oxygenation auxiliary)

★ Process water supply for manufacturing industries (petrochemical, power, metallurgy, food and beverage)

★ Circulating cooling water for industrial equipment (power plant condenser cooling, steel mill smelting cooling, chemical reactor cooling)

★ Raw water extraction and wastewater reuse for industrial parks

★ Rainwater and sewage drainage for urban low-lying areas, underground garages, and municipal pipe networks

★ Process wastewater drainage for industrial plants (light industrial wastewater, non-corrosive industrial sewage)

★ Sump drainage for construction sites (foundation dewatering, tunnel engineering water discharge)

★ Fire water supply: as a fire water pump for high-rise buildings, industrial parks, and large commercial complexes

★ Seawater intake/discharge: for coastal industries (desalination plants, port terminals, coastal power plants)

★ Mine dewatering: shallow mine underground water dewatering, surface water drainage for mine goaf

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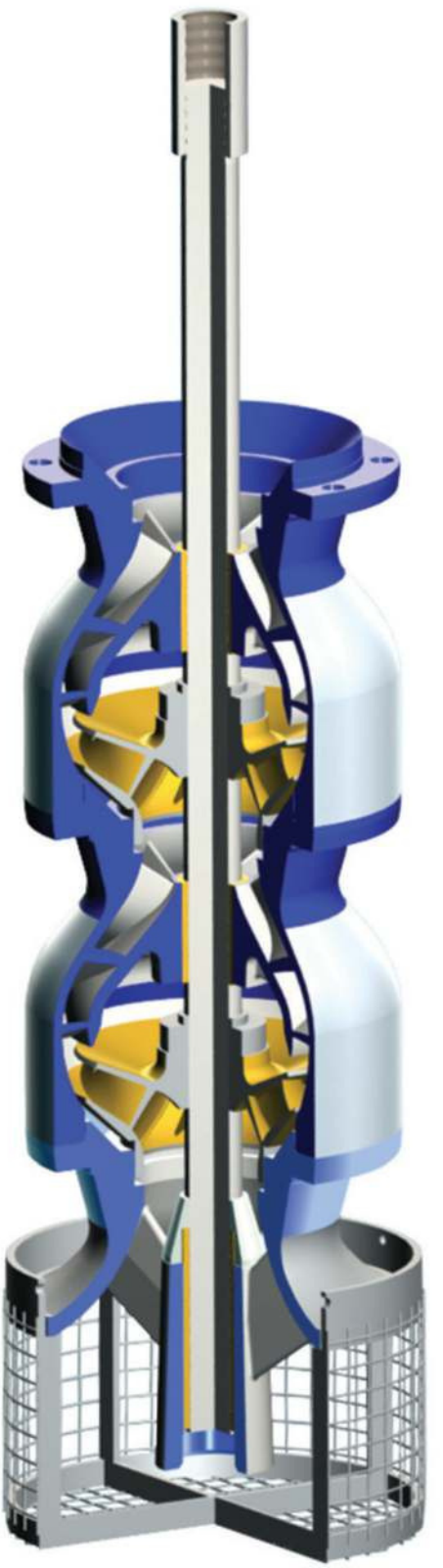
# CONFIGURATION FLEXIBILITY

TES vertical turbine pumps combine flexible hydraulic selection with robust mechanical design. We configure the bowl assembly, column, discharge head, shafting and materials for each duty.

## Pump bowl assembly

*The bowl assembly is the heart of the vertical turbine pump. The impeller and diffuser type casing are designed to deliver the head and capacity that your system requires in the most efficient way possible. The fact that the vertical turbine pump can be multi-staged allows maximum flexibility both in the initial pump selection and in the event that future system modifications require a change in the pump rating.*

*A variety of material options allows the selection of a pump best suited for even the most severe services. The many bowl assembly options available ensure that the vertical turbine pump satisfies the users' needs for safe, efficient, reliable and maintenance-free operation.*



## Bowl Assembly Features And Options

***Including but not limited to:***

- *Semi-open or enclosed impellers.*
- *Dynamically balanced impellers.*
- *Low NPSH first stage construction available.*
- *Bowl and/or impeller wear rings.*
- *Colleted or keyed construction.*
- *Sleeve-type bearings of carbon, bronze, rubber, Vesconite, steel-backed rubber or phenolic-backed rubber at each stage assure stable operation.*
- *Hard facing of shaft journals and bearings protects against abrasion and increases interval between maintenance periods.*
- *Pump shaft made from heavy duty 416SS standard; available in 316SS, 17-4 PH, Monel and other alloys for high strength and corrosion resistance.*
- *Rifle drilling of bowl shafts available to protect bearing in abrasive services.*
- *Interior coating on bowls improves efficiency.*
- *Stages are flanged and bolted together for ease of maintenance. Registered fit assures positive alignment.*
- *Double bolting available for high pressure applications.*
- *Sand collar prevents solids from entering the suction bearing.*
- *Suction bell lets liquid enter impeller eye smoothly and minimizes vortex formation.*
- *Vortex suppressors for challenging water levels.*
- *Basket or cone strainer prevents foreign objects from entering the pump.*
- *Impeller and bowl materials in a variety of cast materials provide reliable service in the most severe applications.*

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# LINESHAFT *Water Lubrication*

### 1 - Adjusting Nut

*Permits exact impeller adjustment for maximum performance.*

### 2 - Discharge Head

*Heavy-duty head provides maximum accessibility to service packing box assembly.*

### 3 - Prelube Connection

### 4 - Column Adapter - Optional

*Accepts threaded or flanged column.*

### 5 - Adjusting Nipple - Optional

*Threads directly into column adapter. Headshaft stickup set exactly by threading head on column as required.*

### 6 - Discharge Bowl Bearing

*NBR, Teflon, Bronze or Thordon.*

### 7 - Discharge Bowl

*Close-grained casting.*

### 8 - Pump Shaft

*Oversized high strength polished stainless steel.*

### 9 - Intermediate Bowls

*Close-grained casting. Waterways glass lined for maximum efficiency (optional).*

### 10 - Impellers

*Designed for maximum efficiency. Precision balanced for smooth operation.*

### 11 - Intermediate Bowl Bearings

*NBR, Teflon, Bronze or Thordon for long pump life under any well conditions.*

### 12 - Lock Collets

*Steel construction secures impeller to pump shaft.*

### 13 - Sand Collar - Optional

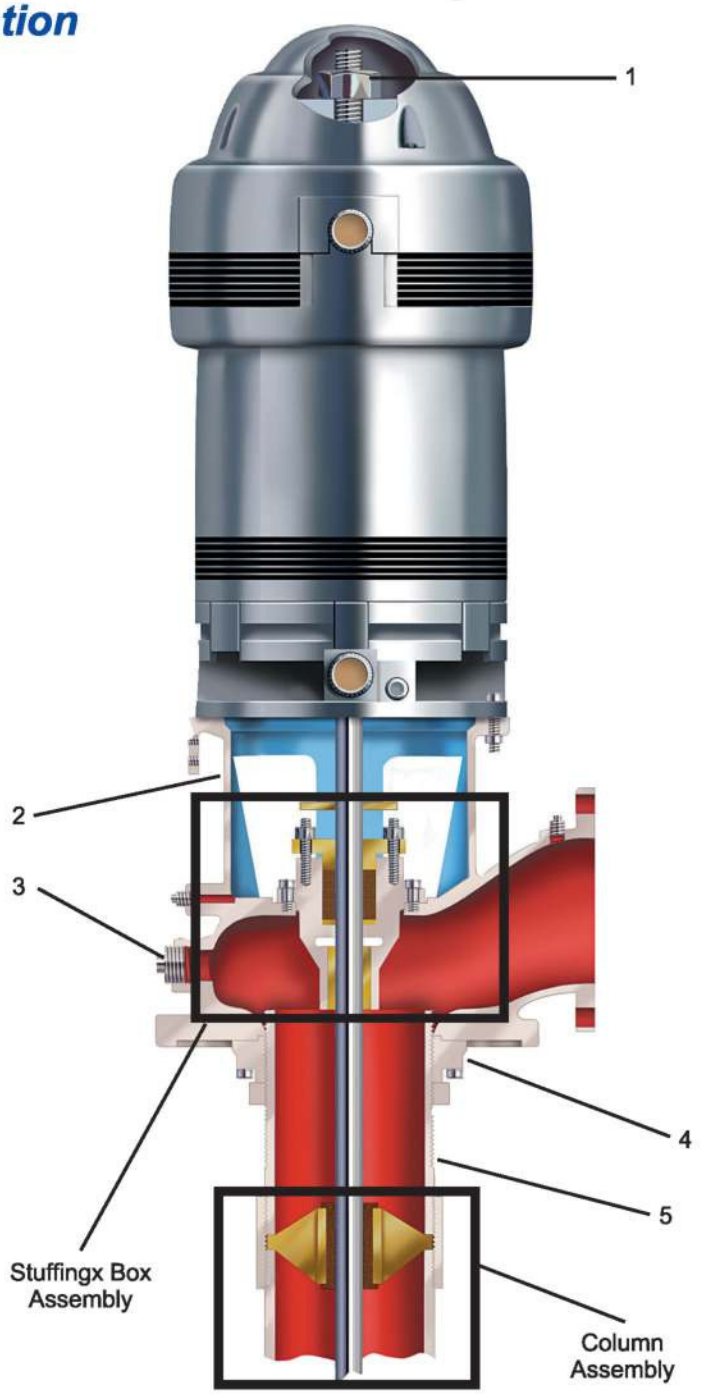
*Accurately located at suction bowl bearing to eliminate possible sand buildup.*

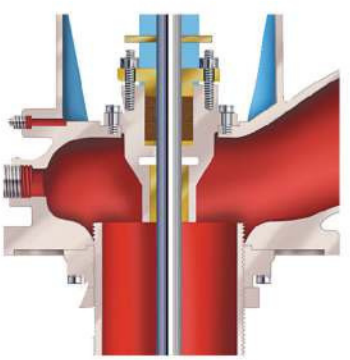
### 14 - Suction Bowl (or Bell) Bearing

*Bronze. Grease packed for long trouble-free life.*

### 15 - Suction Strainer

*Provides protection from large solids.*



### Headshaft

*Stainless Steel*

### Cast Stuffing Box Throttle Bushing

*Extra length bronze for better shaft support, longer packing life.*

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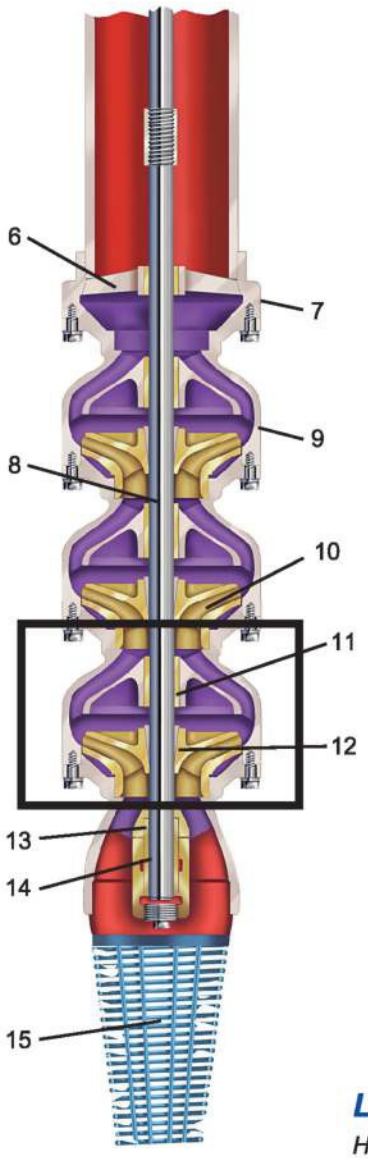



## Impellers



Closed Impeller



Semi-Open Impeller

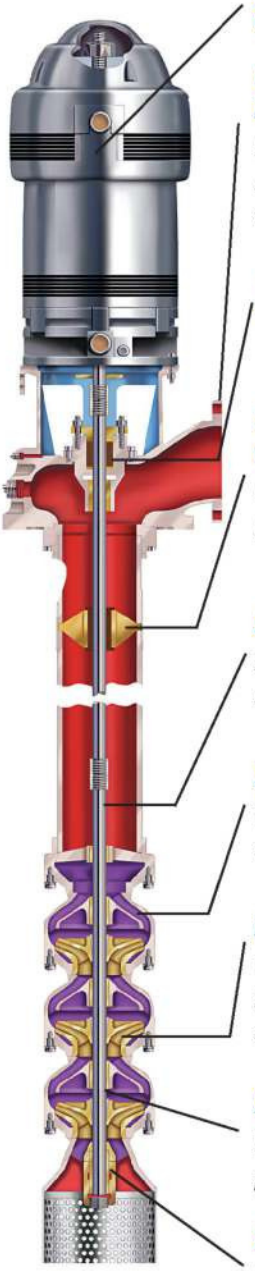


### Glass Lined Bowls

*Heavy-duty cast intermediate bowls with optional feature of vitra-glass lined waterways for maximum efficiency and wear protection.*

## Design Flexibility

**TES offers a wide variety of design** options for vertical turbine applications.



### Vertical Hollow Shaft or Solid Shaft Motors

### Cast Iron or Fabricated Discharge Head

*Designed for mounting electric motor, right angle or combination gear.*

### Packed Stuffing Box or Mechanical Seal

### Threaded or Flanged Column Assemblies

*With bronze or cast iron bearing retainers.*

### Lineshaft

*Polished high strength stainless steel. Other alloys available.*

### Intermediate Bowls

*Waterways glass lined for maximum efficiency.*

### Impellers

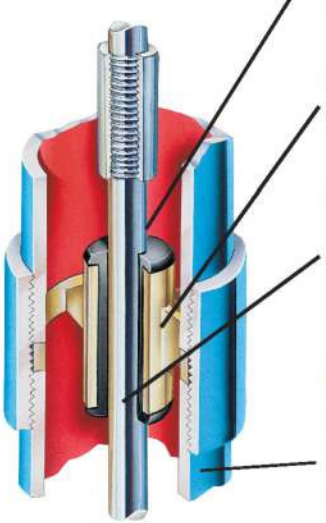
*Taperlocked or keyed construction. Precision balanced for smooth operation.*

### Intermediate Bowl Bearings

*Bronze, rubber or carbon for long pump life under any conditions.*

### Suction Bell Bearing

*Grease-packed for long trouble-free life.*



### Lineshaft

*High strength stainless steel. Ground and polished for exact bearing fit. Available in carbon steel.*

### Bearing Retainer (Spider)

*Cast Iron, stainless steel, or Bronze.*

### Lineshaft Bearings

*Fluted rubber, designed to flush sand and grit rapidly. Available in Teflon, Bronze, or Thordon.*

### Column Pipe

*-Parallel thread, accurately machined for easy installation, accurate alignment.*
*-Flanged connection, easy for assembly and maintenance*

## Column Assembly

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# LINESHAFT *Oil Lubrication*

### 1 - Adjusting Nut
*Permits exact impeller adjustment for maximum performance.*

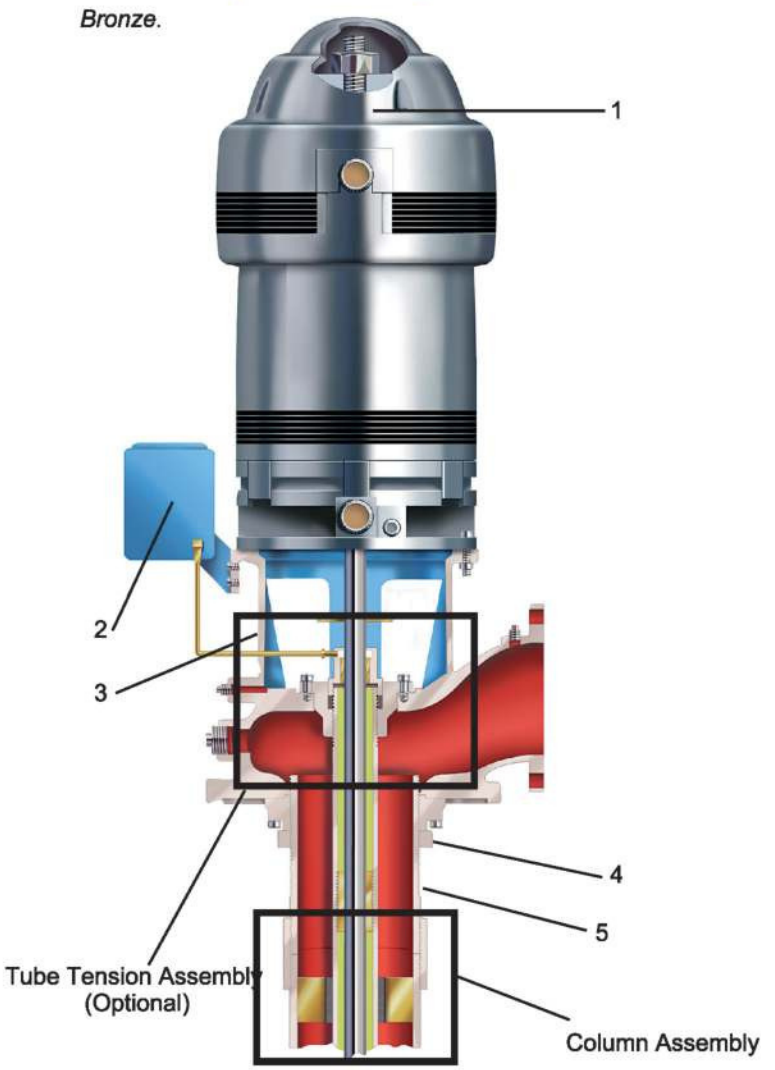
### 2 - Manual or Solenoid Oiler - Optional
*Assures constant oil supply.*

### 3 - Discharge Head
*Heavy-duty head provides maximum accessibility to service tube tension assembly.*

### 4 - Lock Ring
*Positively locks adjusting nipple to discharge head.*

### 5 - Adjusting Nipple - Optional
*Threads directly into column adapter. Headshaft stickup set exactly by threading head on column as required.*

### 6 - Tube Adapter Bushing
*Bronze.*




### 7 - Double Bowl Seal
*Provides positive sealing of developed head.*

### 8 - Pump Shaft
*Oversized high strength polished stainless steel.*

### 9 - Discharge Bowl
*Close-grained casting. Relief ports insure positive bearing lubrication.*

### 10 - Discharge Bowl Bearing
*Bronze. Close tolerance fit for minimum leakage.*

### 11 - Impellers
*Designed for maximum efficiency. Precision balanced for smooth operation.*

### 12 - Intermediate Bowls
*Close grained casted. Waterways glass lined for maximum efficiency (optional).*

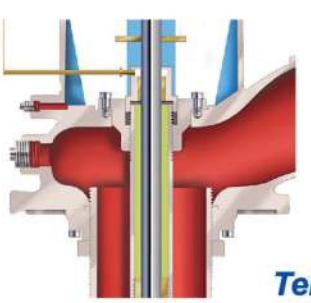
### 13 - Intermediate Bowl Bearings
*NBR, Teflon, Bronze or Thordon for long pump life under any well conditions.*

### 14 - Lock Collets
*Steel construction secures impeller to pump shaft.*

### 15 - Sand Collar
*Accurately located at suction bowl bearing to eliminate possible sand buildup.*

### 16 - Suction Bowl (or Bell) Bearing
*Bronze. Grease packed for long trouble-free life.*

### 17 - Suction Strainer
*Provides protection from large solids.*



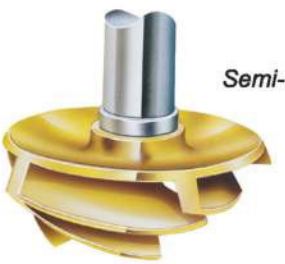
### Headshaft
*Stainless Steel*

### Tube Tension Nut
*Heavy-duty cast*

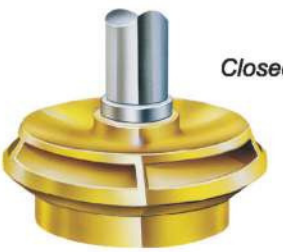
### Tension Nut Bushing
*Bronze construction. Spiral groove insures positive lubrication to lineshaft bearings.*

### Heavy-Duty Tension Plate
*For positive alignment of lineshaft bearings.*

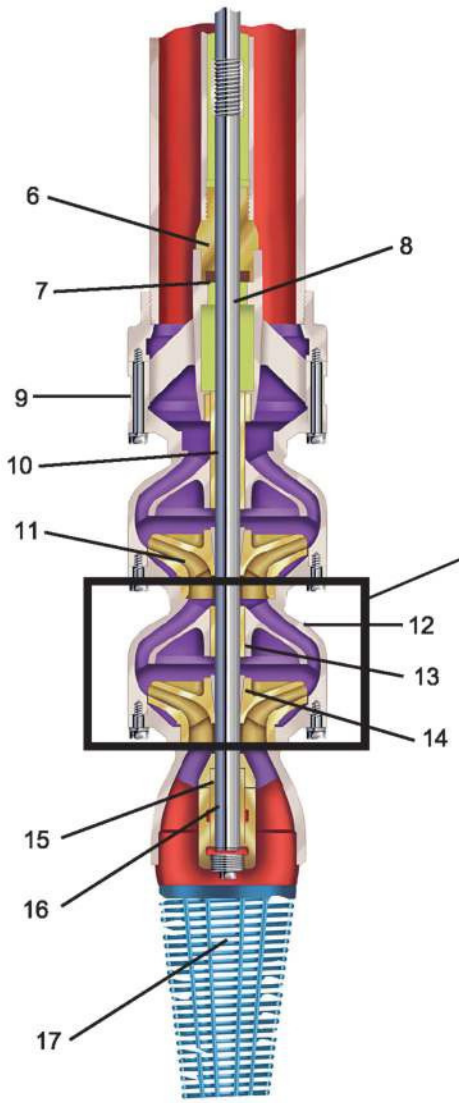
## Impellers



Semi-Open Impeller



Closed Impeller




### Glass Lined Bowls

*Heavy-duty cast intermediate bowls with optional feature of vitra-glass lined waterways for maximum efficiency and wear protection.*



### Optional Long Lateral

*Long lateral adjustment for maximum setting capabilities. Available in some sizes.*



### Lineshaft

*High strength Stainless steel. Ground and polished for exact bearing fit.*

### Enclosing Tube

*Extra heavy steel tubing for positive bearing alignment.*

### Enclosed Lineshaft Bearings

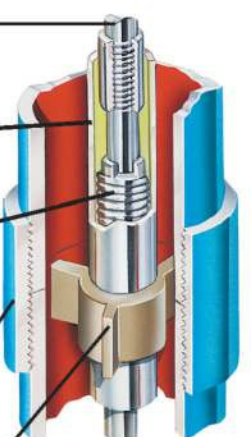
*Bronze Construction — High strength bearing bronze, spiral grooved for positive lubrication.*

### Column Pipe

*Accurately machined for easy installation, accurate alignment.*

### Tube Centering Spider

*Stabilizes enclosing tube for smoother operation.*



**Column Assembly**

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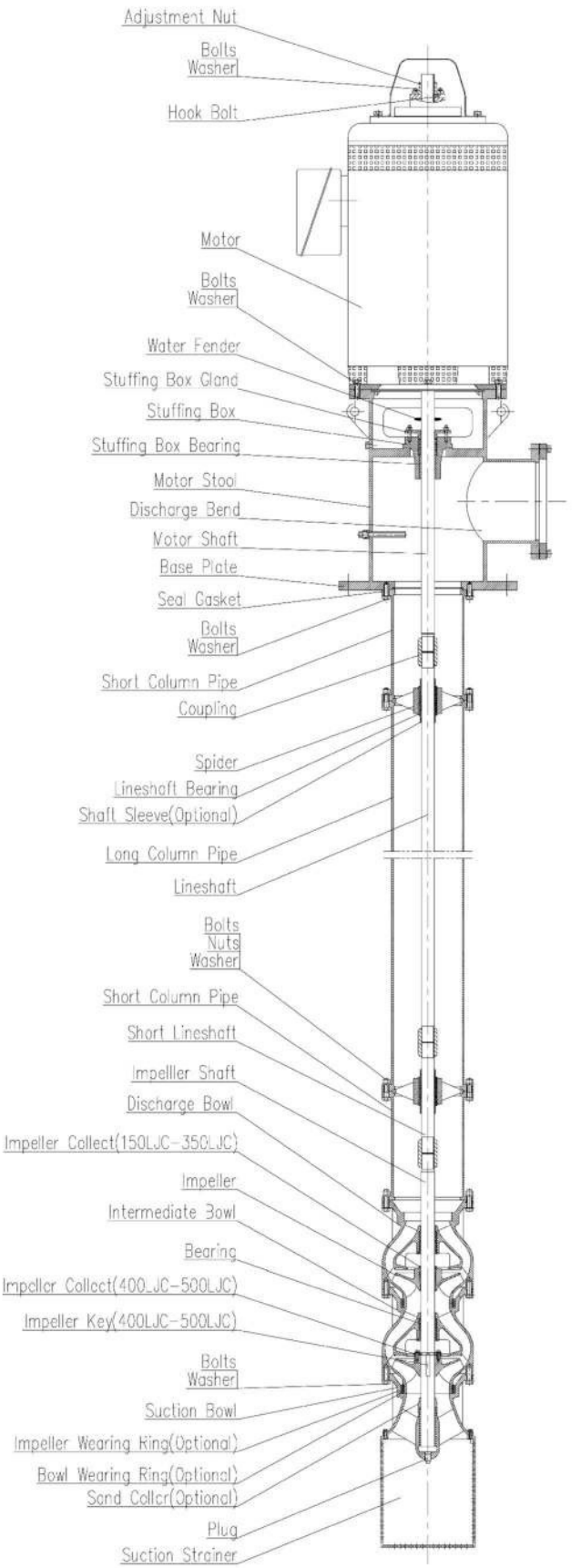
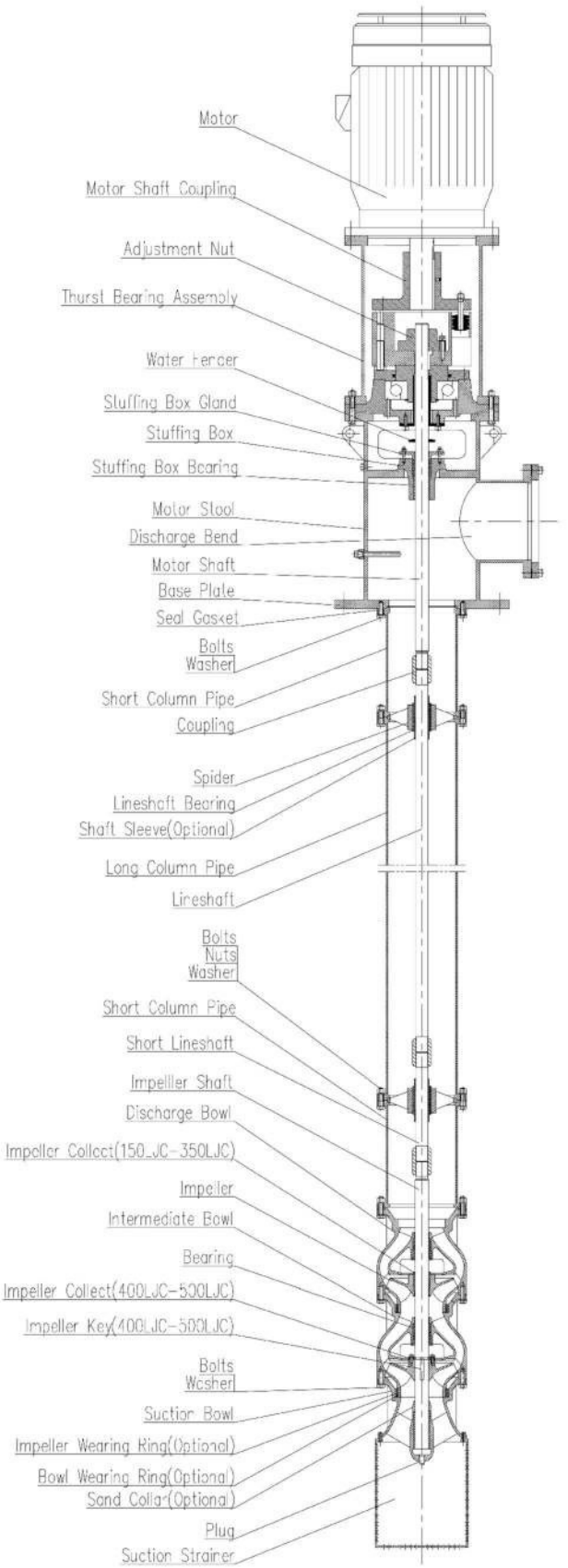
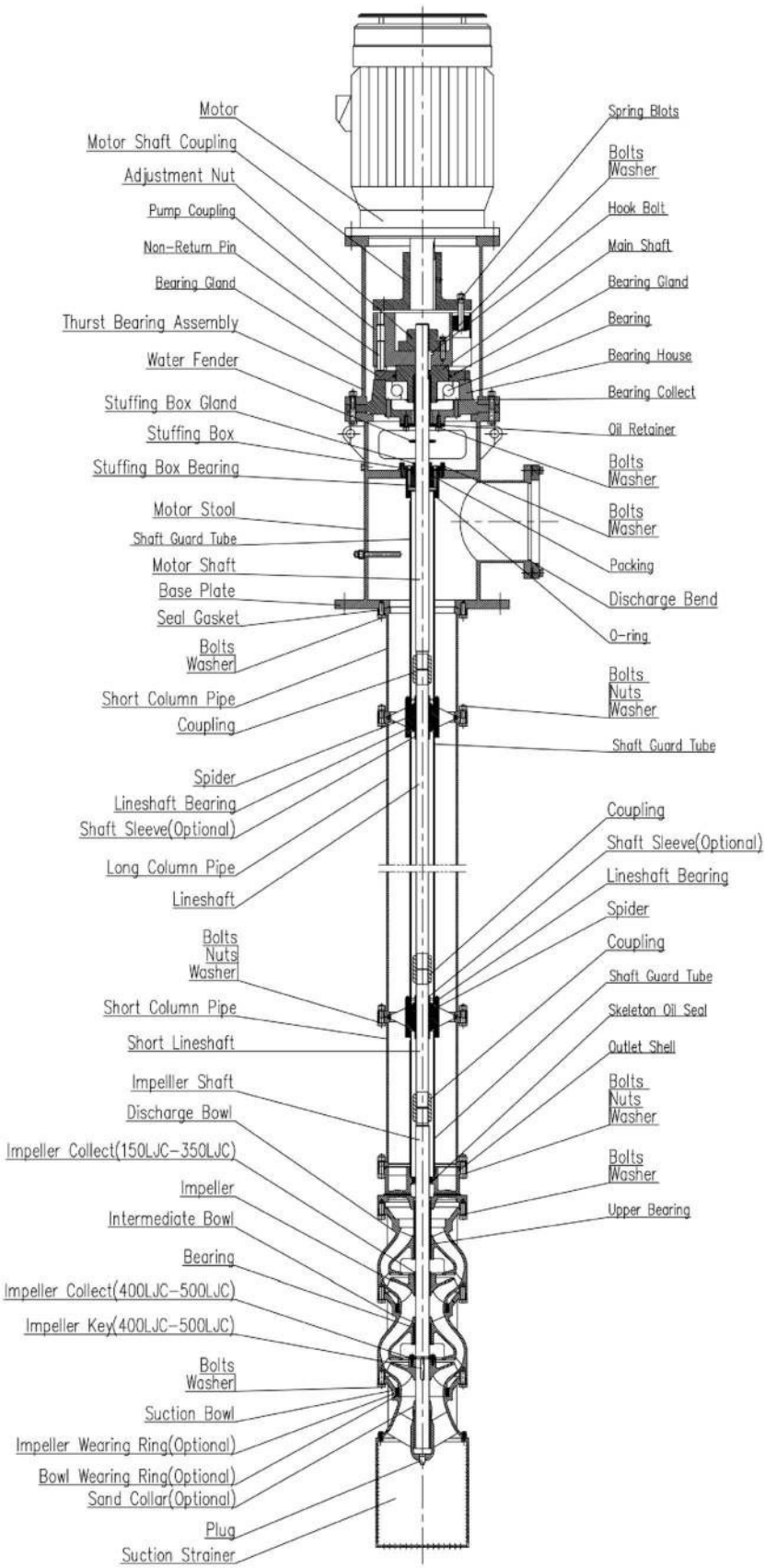
## Structure Drawing



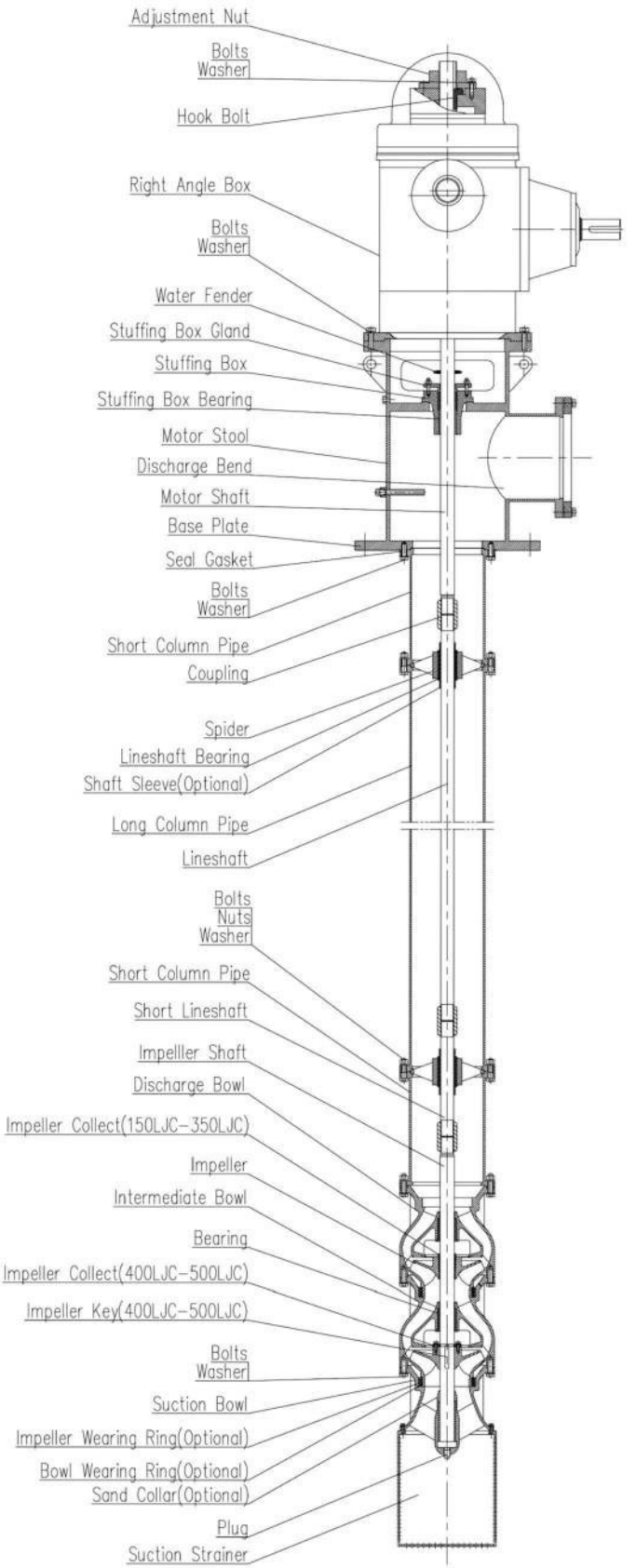

**Cross Sectional Drawing**
**(Vertical Turbine Pump Driven by VHS Motor)**




**Cross Sectional Drawing**
**(Vertical Turbine Pump Driven by VSS Motor)**




**Cross Sectional Drawing**
**(Vertical Turbine Pump with Oil Lubrication)**




**Cross Sectional Drawing**
**(Vertical Turbine Pump Driven by Right Angle Gear Drive)**

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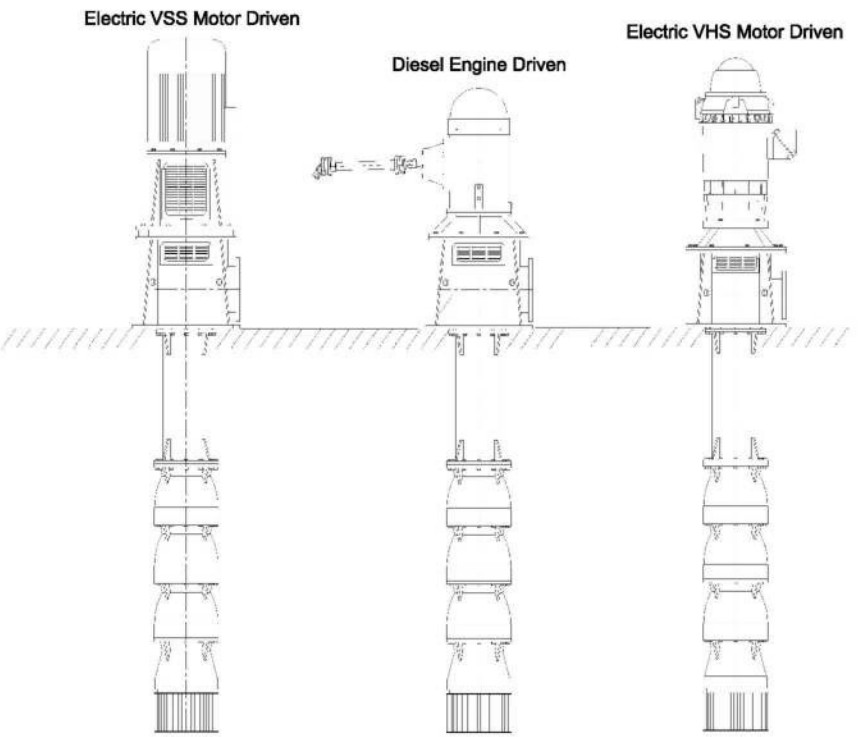
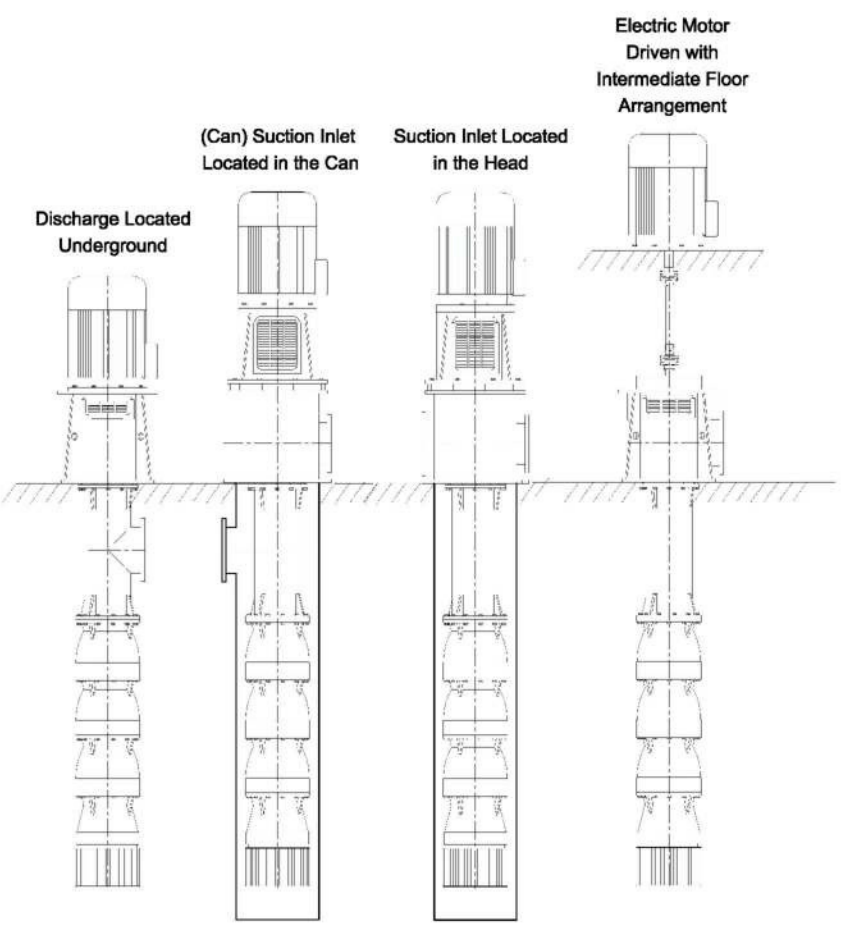
## Installation Options



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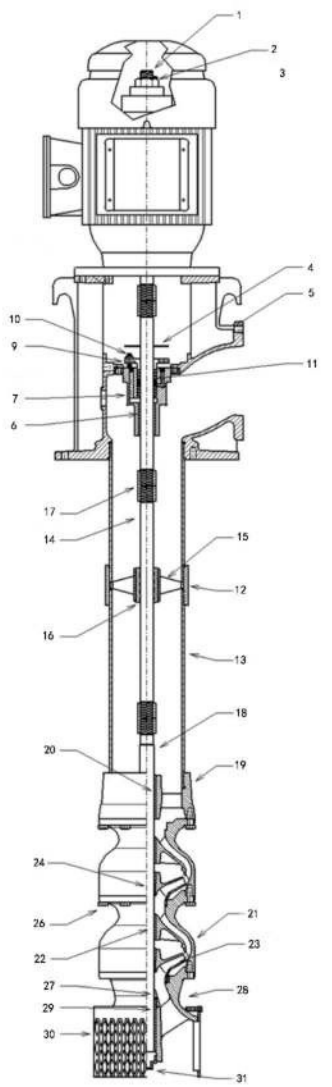
## Main Components & Materials




| DISCHARGE HEAD ASSEMBLY | | |
|---|---|---|
| **Item** | **Description** | **Material** |
| 1 | Head Shaft | Carbon Steel, 420SS, 416SS, 316SS, Duplex SS, Super Duplex SS, 17-4PH SS, Monel K500 |
| 2 | Adjusting Nut | Cast Iron, Ductile Iron, Carbon Steel, Bronze |
| 3 | Gib Key | Carbon Steel |
| 4 | Slinger | Rubber |
| 5 | Discharge Head | Cast Iron, Ductile Iron, Fabricated Steel, Fabricated Stainless Steel |
| 6 | Stuffing Box Bearing | Bronze, Teflon, Thordon |
| 7 | Stuffing Box | Cast Iron, Ductile Iron, Stainless Steel |
| 8 | Stuffing Box Gasket | Paper, Rubber |
| 9 | Stuffing Box Gland | Cast Iron, Ductile Iron, Stainless Steel |
| 10 | Gland Adjusting Screw | Galvanized Steel, 304SS, 316SS, Duplex SS, Super Duplex SS, 17-4PH SS |
| 11 | Packing | Oil Asbestos, Graphite, GFO Fiber |
| **COLUMN PIPE ASSEMBLY** | | |
| 12 | Column Pipe Coupling/Flange | Cast Iron, Ductile Iron, Bronze/Carbon Steel, Stainless Steel, Duplex SS |
| 13 | Column Pipe | Carbon Steel, 304SS, 316SS, Duplex SS, Super Duplex SS |
| 14 | Lineshaft | Carbon Steel, 420SS, 416SS, 316SS, Duplex SS, Super Duplex SS, 17-4PH SS, Monel K500 |
| 15 | Bearing Retainer (Spider) | Cast Iron, Ductile Iron, Bronze, 304SS, 316SS, Duplex SS, Super Duplex SS |
| 16 | Lineshaft Bearing | Rubber, Teflon, Bronze, Thordan |
| 17 | Lineshaft Coupling | Carbon Steel, 420SS, 416SS, 304SS, 316SS, Duplex SS, Super Duplex SS |
| **BOWL ASSEMBLY** | | |
| 18 | Bowl Shaft | Carbon Steel, 420SS, 416SS, 316SS, Duplex SS, Super Duplex SS, 17-4PH SS, Monel K500 |
| 19 | Discharge Bowl | Cast Iron, Ductile Iron, 420SS, 304SS, 316SS, Duplex SS, Super Duplex SS, Bronze |
| 20 | Discharge Bowl Bearing | Rubber, Teflon, Bronze, Thordan |
| 21 | Intermediate Bowl | Cast Iron, Ductile Iron, 420SS, 304SS, 316SS, Duplex SS, Super Duplex SS, Bronze |
| 22 | Intermediate Bowl Bearing | Rubber, Teflon, Bronze, Thordan |
| 23 | Impeller | Cast Iron, Ductile Iron, 420SS, 304SS, 316SS, Duplex SS, Super Duplex SS, Bronze |
| 24 | Impeller Collet | Carbon Steel, 304SS, 316SS, Duplex SS, Super Duplex SS |
| 25 | Wear Ring (Optional) | Cast Iron, Ductile Iron, 304SS, 316SS, Duplex SS, Super Duplex SS, Bronze |
| 26 | Bowl Bolting | Galvanized Steel, 304SS, 316SS, Duplex SS, Super Duplex SS, 17-4PH SS |
| 27 | Sand Collar (Optional) | 304SS, 316SS, Duplex SS, Super Duplex SS, Bronze |
| 28 | Suction Bowl/Bell | Cast Iron, Ductile Iron, 420SS, 304SS, 316SS, Duplex SS, Super Duplex SS, Bronze |
| 29 | Suction Bowl/Bell Bearing | Bronze, Teflon, Thordon |
| 30 | Suction Strainer | Galvanized Steel, 304SS, 316SS, Duplex SS, Super Duplex SS, Bronze |
| 31 | Plug | Galvanized Steel, 304SS, 316SS, Duplex SS, Super Duplex SS |

*Note: Materials can also be customized as per standard from the end user

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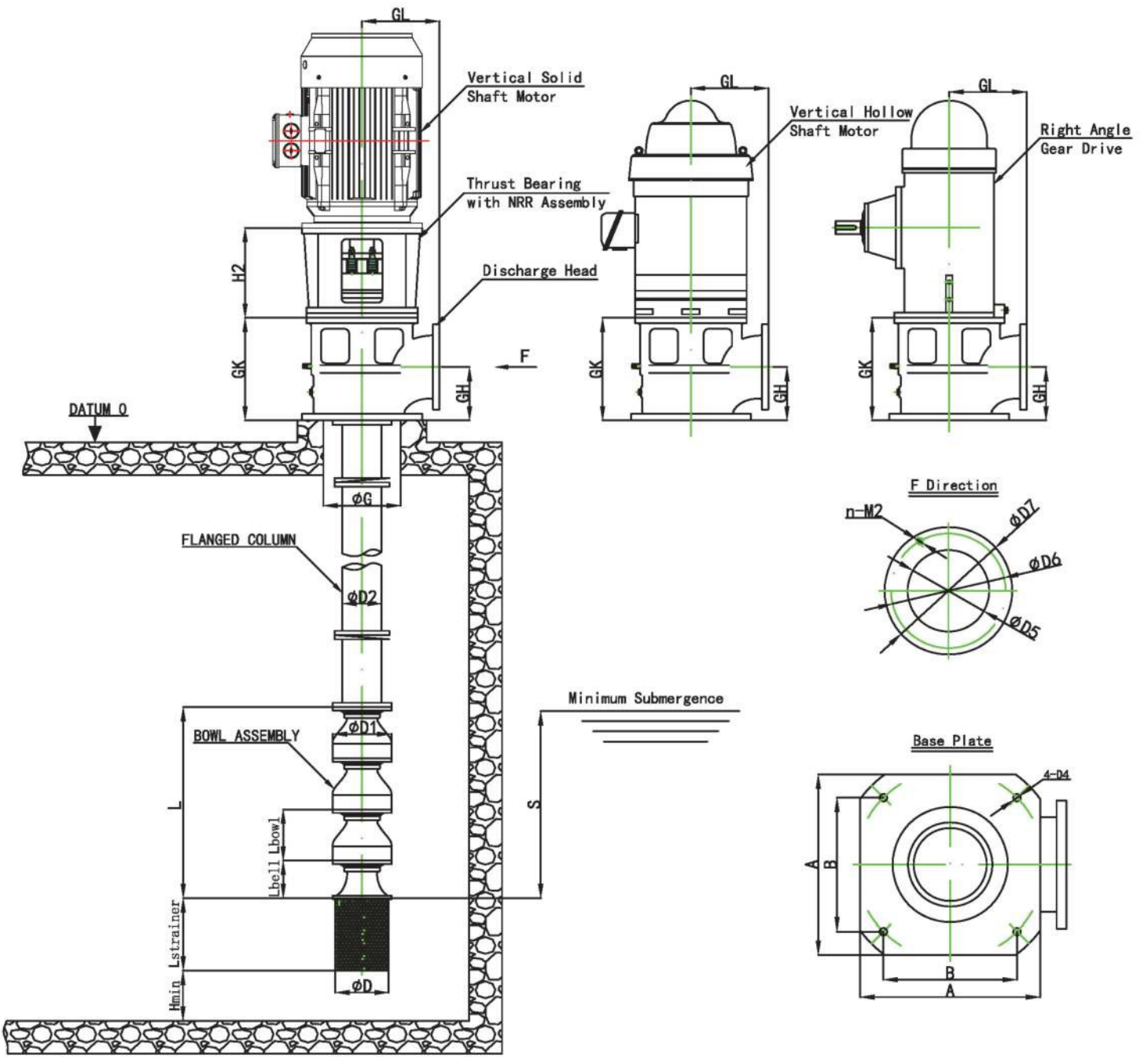
## Main Dimensions



| Pump Model | Column Dia (In) | φD (mm) | φD1 (mm) | φD2 (mm) | φG (mm) | S (mm) | Hmin (mm) | L（mm) (1st Stage) | Lbowl (mm) Each add Stage | Lbell (mm) | Lstrainer (mm) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 6WYD | 4 | 114 | 152 | 114 | 300 | 250 | 200 | 257 | 127 | 130 | 300 |
| 6WYG | 4 | 114 | 152 | 114 | 300 | 250 | 200 | 257 | 127 | 130 | 300 |
| 7WYD | 4 | 159 | 190 | 114 | 300 | 325 | 200 | 329 | 164 | 165 | 350 |
| 7WYG | 6 | 159 | 190 | 159 | 300 | 325 | 200 | 329 | 164 | 165 | 350 |
| 8WYD | 6 | 159 | 190 | 159 | 300 | 325 | 200 | 329 | 164 | 165 | 350 |
| 8WYG | 6 | 159 | 190 | 159 | 300 | 325 | 200 | 329 | 164 | 165 | 350 |
| 10WYG | 6 | 159 | 242 | 159 | 330 | 450 | 200 | 460.5 | 247 | 213.5 | 350 |
| 11WYD | 7 | 219 | 280 | 194 | 330 | 500 | 200 | 507 | 257 | 250 | 400 |
| 11WYZ | 7 | 219 | 280 | 194 | 330 | 500 | 200 | 507 | 257 | 250 | 400 |
| 11WYG | 7 | 219 | 280 | 194 | 330 | 500 | 200 | 507 | 257 | 250 | 400 |
| 12WYD | 7 | 194 | 295 | 194 | 330 | 500 | 200 | 508 | 264 | 244 | 400 |
| 12WYZ | 7 | 194 | 295 | 194 | 330 | 500 | 200 | 508 | 264 | 244 | 400 |
| 12WYG | 7 | 194 | 295 | 194 | 330 | 500 | 200 | 508 | 264 | 244 | 400 |
| 14WYD | 8 | 219 | 340 | 219 | 430 | 550 | 200 | 559 | 267 | 292 | 500 |
| 14WYZ | 8 | 219 | 340 | 219 | 430 | 550 | 200 | 559 | 267 | 292 | 500 |
| 14WYG | 8 | 219 | 340 | 219 | 430 | 550 | 200 | 559 | 267 | 292 | 500 |
| 16WYD | 10 | 370 | 410 | 273 | 430 | 610 | 200 | 616 | 260 | 355 | 500 |
| 16WYG | 10 | 370 | 410 | 273 | 480 | 650 | 200 | 660 | 273 | 387 | 500 |
| 18WYD | 12 | 370 | 445 | 325 | 480 | 540 | 200 | 546 | 216 | 330 | 500 |
| 18WYG | 16 | 480 | 451 | 402 | 580 | 720 | 200 | 731 | 306 | 425 | 500 |
| 20WYDD | 16 | 480 | 481 | 402 | 580 | 750 | 200 | 763 | 306 | 457 | 500 |
| 20WYDG | 17 | 480 | 481 | 426 | 580 | 750 | 200 | 763 | 306 | 457 | 500 |
| 20WYGG | 19 | 480 | 532 | 480 | 580 | 850 | 200 | 858 | 312 | 546 | 500 |
| 20WYXGG | 19 | 480 | 532 | 480 | 580 | 850 | 200 | 858 | 312 | 546 | 500 |
| 20WYGD | 19 | 480 | 532 | 480 | 580 | 850 | 200 | 858 | 312 | 546 | 500 |
| 20WYXGD | 19 | 480 | 532 | 480 | 580 | 850 | 200 | 858 | 312 | 546 | 500 |

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| Pump Model | Motor | GH (mm) | GL (mm) | GK (mm) | A (mm) | B (mm) | D4 (mm) | D5 (mm) | D6 (mm) | D7 (mm) | n-M2 | H2 (mm) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 6WYD | 11kw-15kw | 172 | 305 | 395 | 500 | 382 | 20 | 150 | 240 | 280 | 8-M20 | 337 |
| | 18.5kw-22kw | | | | | | | | | | | 349 |
| 6WYG | 11kw-15kw | 172 | 305 | 395 | 500 | 382 | 20 | 150 | 240 | 280 | 8-M20 | 337 |
| | 18.5kw-37kw | | | | | | | | | | | 349 |
| 7WYD | 11kw-15kw | 172 | 305 | 395 | 500 | 382 | 20 | 150 | 240 | 280 | 8-M20 | 337 |
| | 18.5kw-37kw | | | | | | | | | | | 349 |
| 7WYG | 15kw | 172 | 305 | 395 | 500 | 382 | 20 | 150 | 240 | 280 | 8-M20 | 337 |
| | 18.5kw-37kw | | | | | | | | | | | 349 |
| 8WYD | 11kw-15kw | 172 | 305 | 395 | 500 | 382 | 20 | 150 | 240 | 280 | 8-M20 | 337 |
| | 18.5kw-45kw | | | | | | | | | | | 349 |
| 8WYG | 11kw-15kw | 172 | 305 | 395 | 500 | 382 | 20 | 150 | 240 | 280 | 8-M20 | 337 |
| | 18.5kw-45kw | | | | | | | | | | | 349 |
| 10WYG | 18.5kw-30kw | 172 | 305 | 455 | 500 | 382 | 20 | 150 | 240 | 280 | 8-M20 | 349 |
| | 37kw-45kw | | | | | | | | | | | 377 |
| | 55kw-90kw | 190 | 330 | 580 | | | | 200 | 295 | 340 | | 412 |
| | 110kw-185kw | | | | | | | | | | | 442 |
| 11WYD/Z/G | 18.5kw-30kw | 172 | 305 | 455 | 500 | 382 | 20 | 150 | 240 | 280 | 8-M20 | 349 |
| | 37kw-45kw | | | | | | | | | | | 377 |
| | 55kw-90kw | 190 | 330 | 580 | | | | 200 | 295 | 340 | | 412 |
| | 110kw-185kw | | | | | | | | | | | 442 |
| 12WYD | 18.5kw-30kw | 172 | 305 | 455 | 500 | 382 | 20 | 150 | 240 | 280 | 8-M20 | 349 |
| | 37kw-45kw | | | | | | | | | | | 377 |
| | 55kw-90kw | 190 | 330 | 580 | | | | 200 | 295 | 340 | | 412 |
| | 110kw-185kw | | | | | | | | | | | 442 |
| 12WYZ | 18.5kw-30kw | 172 | 305 | 455 | 500 | 382 | 20 | 150 | 240 | 280 | 8-M20 | 349 |
| | 37kw-45kw | | | | | | | | | | | 377 |

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| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 55kw-90kw | 190 | 330 | 580 | | | | 200 | 295 | 340 | | 412 |
| | 110kw-185kw | | | | | | | | | | | 442 |
| 12WYG | 18.5kw-30kw | 172 | 305 | 455 | 500 | 382 | 20 | 150 | 240 | 280 | 8-M20 | 349 |
| | 37kw-45kw | | | | | | | | | | | 377 |
| | 55kw-90kw | 190 | 330 | 580 | | | | 200 | 295 | 340 | | 412 |
| | 110kw-185kw | | | | | | | | | | | 442 |
| 14WYD | 37kw-45kw | 245 | 355 | 470 | 550 | 408 | 23 | 250 | 350 | 390 | 12-M20 | 377 |
| | 55kw-90kw | | | | | | | | | | | 412 |
| | 110kw-185kw | | | | | | | | | | | 442 |
| | 200kw | | | | | | | | | | | 485 |
| | 220kw-280kw | | | | | | | | | | | / |
| 14WYZ | 37kw-45kw | 245 | 355 | 470 | 550 | 408 | 23 | 250 | 350 | 390 | 12-M20 | 377 |
| | 55kw-90kw | | | | | | | | | | | 412 |
| | 110kw-185kw | | | | | | | | | | | 442 |
| | 200kw | | | | | | | | | | | 485 |
| | 220kw-280kw | | | | | | | | | | | / |
| 14WYG | 37kw-45kw | 245 | 355 | 470 | 550 | 408 | 23 | 250 | 350 | 390 | 12-M20 | 377 |
| | 55kw-90kw | | | | | | | | | | | 412 |
| | 110kw-185kw | | | | | | | | | | | 442 |
| | 200kw | | | | | | | | | | | 485 |
| | 220kw-280kw | | | | | | | | | | | / |
| 16WYD | 55kw-90kw | 245 | 355 | 470 | 550 | 408 | 23 | 250 | 350 | 390 | 12-M20 | 412 |
| | 110kw-185kw | | | | | | | | | | | 442 |
| | 200kw | | | | | | | | | | | 485 |
| | 220kw-280kw | | | | | | | | | | | / |
| 16WYG | 55kw-90kw | 245 | 355 | 470 | 550 | 408 | 23 | 250 | 350 | 390 | 12-M20 | 412 |
| | 110kw-185kw | | | | | | | | | | | 442 |
| | 200kw | | | | | | | | | | | 485 |
| | 220kw-280kw | | | | | | | | | | | / |



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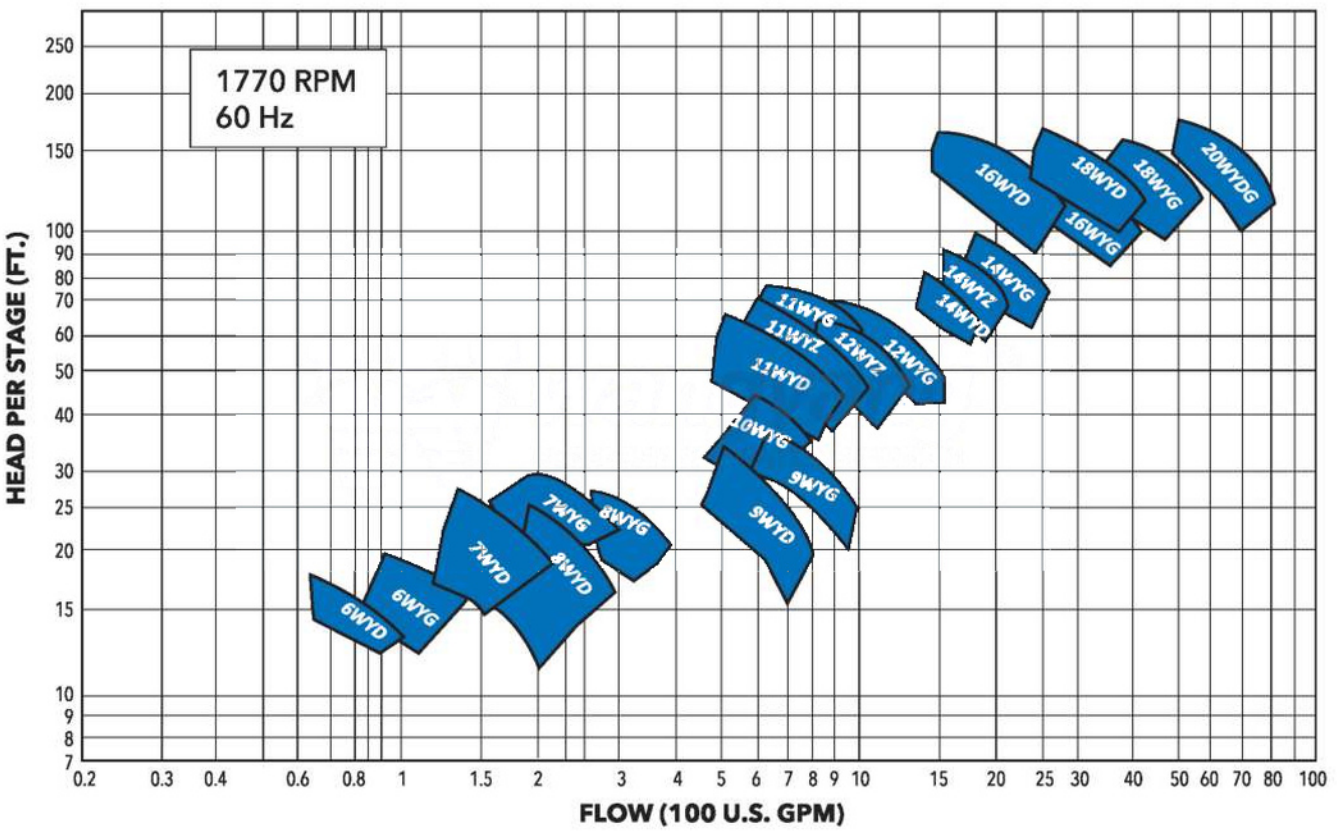
# 60 Hz PERFORMANCE RANGE - 4 POLE

1770 RPM nominal motor speed | Flow in U.S. GPM | Head per stage in feet




## PRELIMINARY SELECTION GUIDE

Operating envelopes indicate the available 60 Hz model families by flow and head per stage.

Final pump selection, number of stages, efficiency, power and NPSH are confirmed for the project duty point and issued in the TES project-specific technical submittal.

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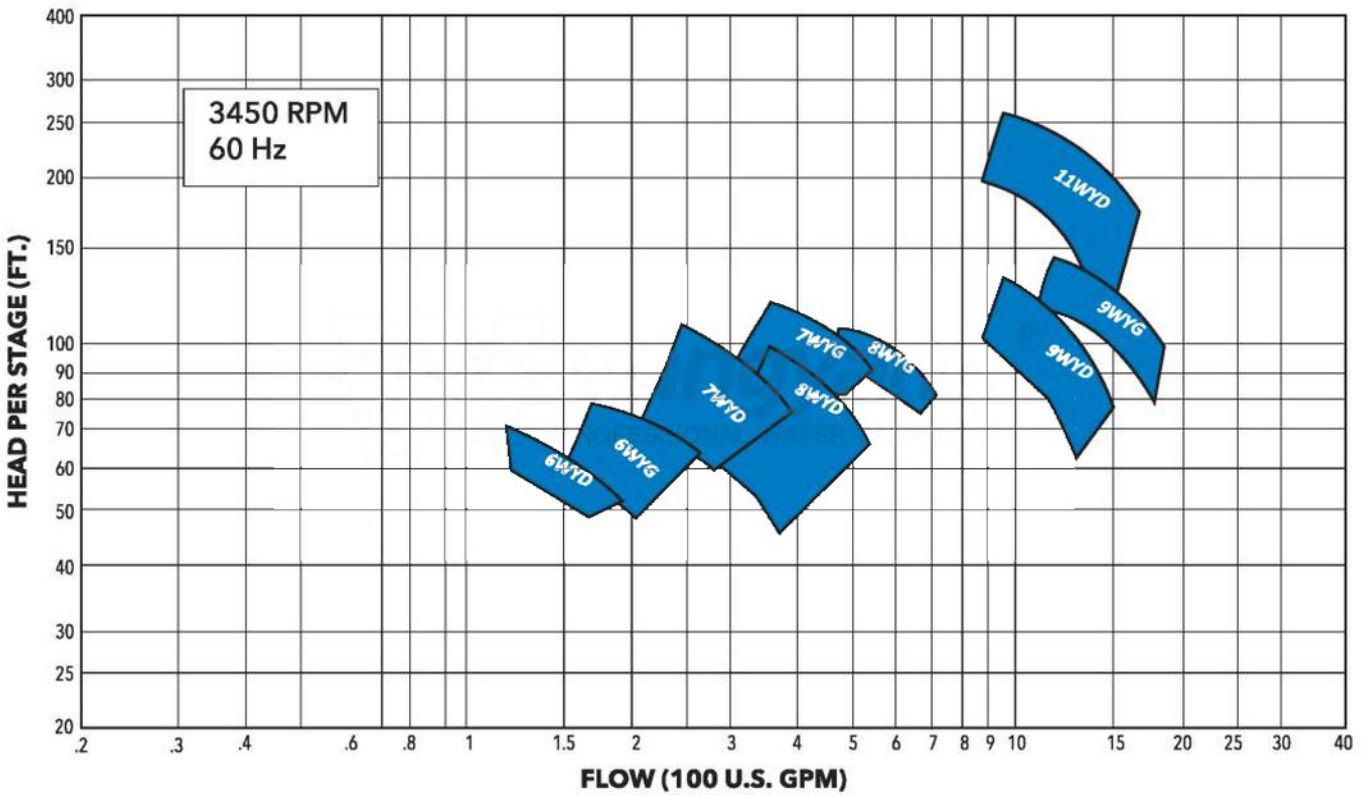
# 60 Hz PERFORMANCE RANGE - 2 POLE

3450 RPM nominal motor speed | Flow in U.S. GPM | Head per stage in feet




## PRELIMINARY SELECTION GUIDE

Operating envelopes indicate the available 60 Hz model families by flow and head per stage.

Final pump selection, number of stages, efficiency, power and NPSH are confirmed for the project duty point and issued in the TES project-specific technical submittal.

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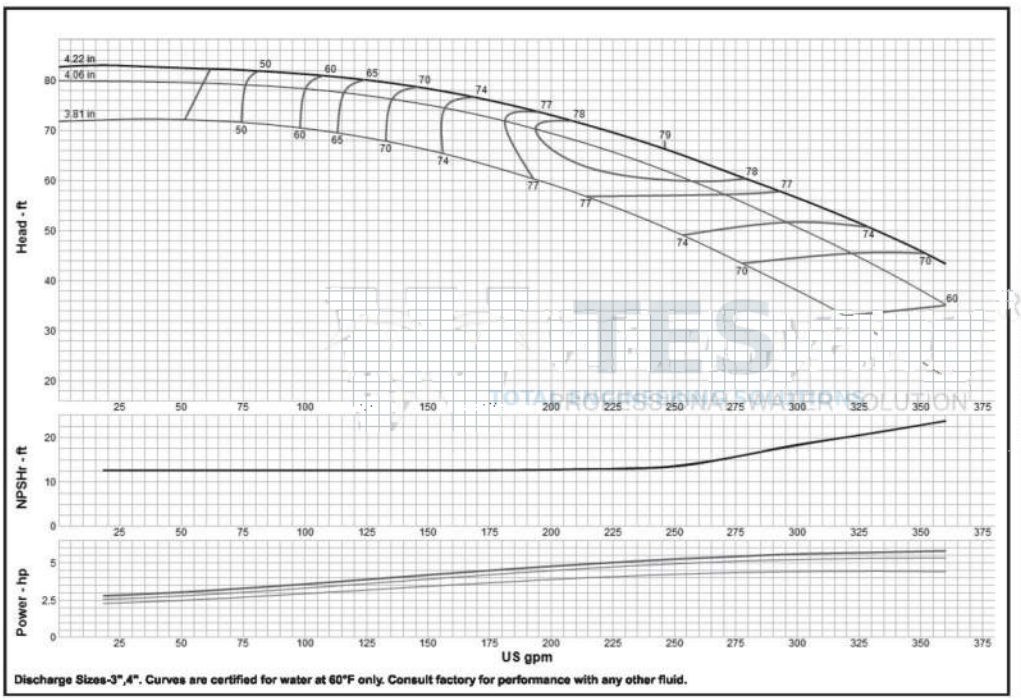
# Performance Curve - 60 Hz - 2 Poles - 1 Stage



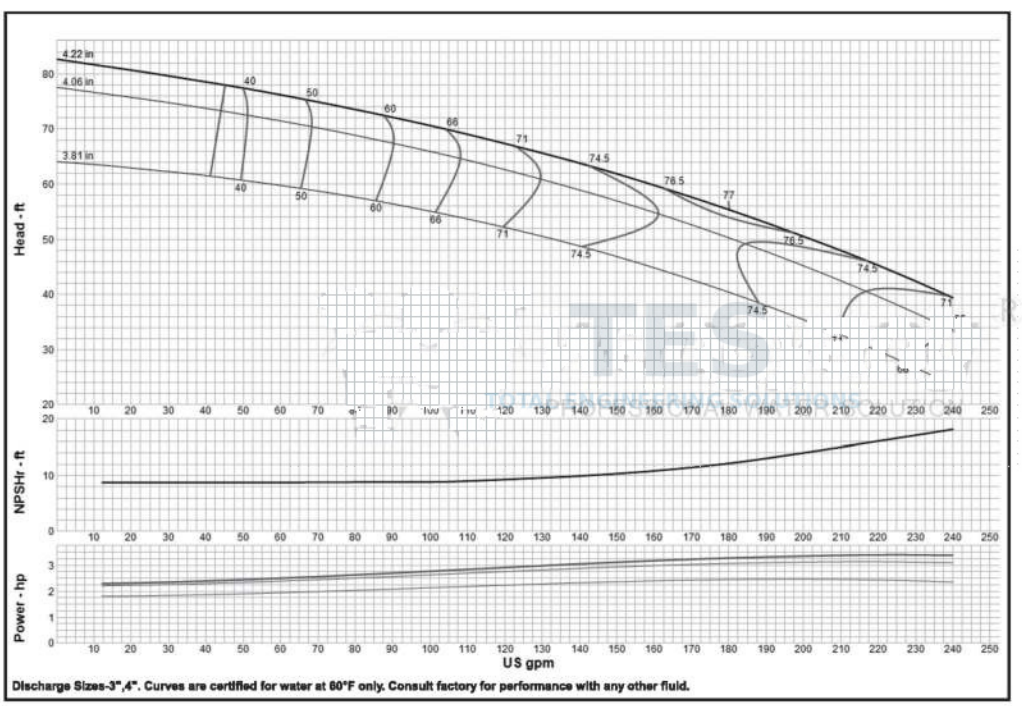

Discharge Sizes-3",4". Curves are certified for water at 60°F only. Consult factory for performance with any other fluid.

## MODEL: 6WYG

| RPM | 3550 |
|---|---|
| EFFICIENCY CORRECTION | |
| 1-STAGE | -3 |
| 2-STAGE | -2 |
| 3-STAGE | -0.5 |
| 4-STAGE | 0 |
| Impeller | ENCLOSED |
| Ns = | 2340 |
| K = | 2.1 |
| Bowl O. D. | 5.88 in |
| Bowl Lateral | 0.25 |
| Max. PSI | 420 |
| Disch size | 3", 4" |

TOTAL ENGINEERING SOLUTIONS

BOWL PERFORMANCE CURVE BASED ON PUMPING CLEAR, NON-AERATED WATER. RATED POINT ONLY IS GUARANTEED. CURVES REPRESENT SINGLE STAGE PERFORMANCE BASED ON TEST OF MULTI-STAGE BOWL ASSEMBLY. EFFICIENCY CORRECTION APPLIES TO HEAD, FLOW AND HORSEPOWER FOR LESSER STAGES.




Discharge Sizes-3",4". Curves are certified for water at 60°F only. Consult factory for performance with any other fluid.

## MODEL: 6WYD

| RPM | 3550 |
|---|---|
| EFFICIENCY CORRECTION | |
| 1-STAGE | -3 |
| 2-STAGE | -2 |
| 3-STAGE | -0.5 |
| 4-STAGE | 0 |
| Impeller | ENCLOSED |
| Ns = | 2292 |
| K = | 2.1 |
| Bowl O. D. | 5.88 in |
| Bowl Lateral | 0.25 |
| Max. PSI | 420 |
| Disch size | 3", 4" |

TOTAL ENGINEERING SOLUTIONS

BOWL PERFORMANCE CURVE BASED ON PUMPING CLEAR, NON-AERATED WATER. RATED POINT ONLY IS GUARANTEED. CURVES REPRESENT SINGLE STAGE PERFORMANCE BASED ON TEST OF MULTI-STAGE BOWL ASSEMBLY. EFFICIENCY CORRECTION APPLIES TO HEAD, FLOW AND HORSEPOWER FOR LESSER STAGES.

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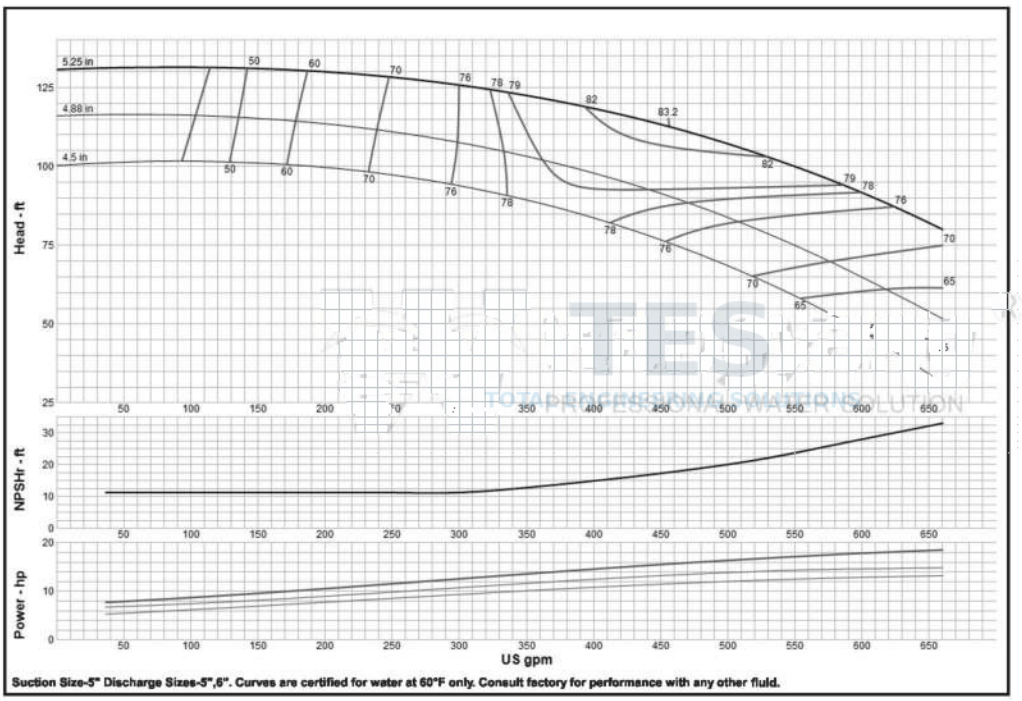


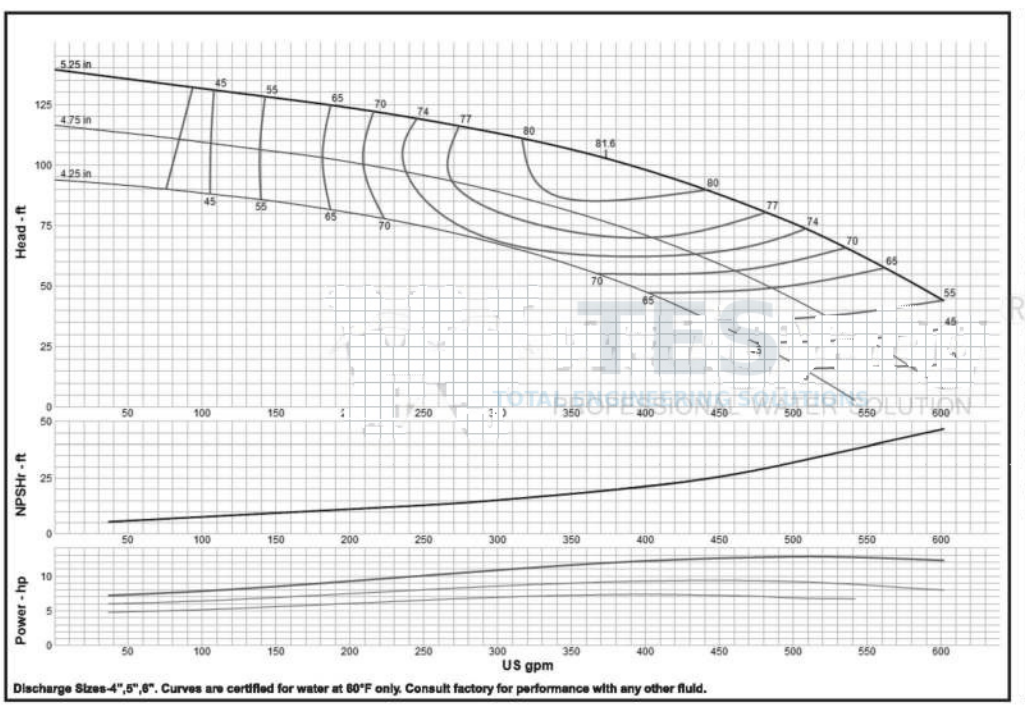

Suction Size-5" Discharge Sizes-5",6". Curves are certified for water at 60°F only. Consult factory for performance with any other fluid.

## MODEL: 7WYG

| RPM | 3550 |
|---|---|
| EFFICIENCY CORRECTION | |
| 1-STAGE | -3 |
| 2-STAGE | -1 |
| 3-STAGE | 0 |
| 4-STAGE | 0 |
| Impeller | ENCLOSED |
| Ns = | 2210 |
| K = | 3.5 |
| Bowl O. D. | 7.13 in |
| Bowl Lateral | 0.5 |
| Max. PSI | 415 |
| Disch size | 4", 5", 6" |

TOTAL ENGINEERING SOLUTIONS

BOWL PERFORMANCE CURVE BASED ON PUMPING CLEAR, NON-AERATED WATER. RATED POINT ONLY IS GUARANTEED. CURVES REPRESENT SINGLE STAGE PERFORMANCE BASED ON TEST OF MULTI-STAGE BOWL ASSEMBLY. EFFICIENCY CORRECTION APPLIES TO HEAD, FLOW AND HORSEPOWER FOR LESSER STAGES.




Discharge Sizes-4",5",6". Curves are certified for water at 60°F only. Consult factory for performance with any other fluid.

## MODEL: 7WYD

| RPM | 3550 |
|---|---|
| EFFICIENCY CORRECTION | |
| 1-STAGE | -3 |
| 2-STAGE | -1 |
| 3-STAGE | 0 |
| 4-STAGE | 0 |
| Impeller | ENCLOSED |
| Ns = | 2422 |
| K = | 3.5 |
| Bowl O. D. | 7.13 in |
| Bowl Lateral | 0.5 |
| Max. PSI | 415 |
| Disch size | 4", 5", 6" |

TOTAL ENGINEERING SOLUTIONS

BOWL PERFORMANCE CURVE BASED ON PUMPING CLEAR, NON-AERATED WATER. RATED POINT ONLY IS GUARANTEED. CURVES REPRESENT SINGLE STAGE PERFORMANCE BASED ON TEST OF MULTI-STAGE BOWL ASSEMBLY. EFFICIENCY CORRECTION APPLIES TO HEAD, FLOW AND HORSEPOWER FOR LESSER STAGES.

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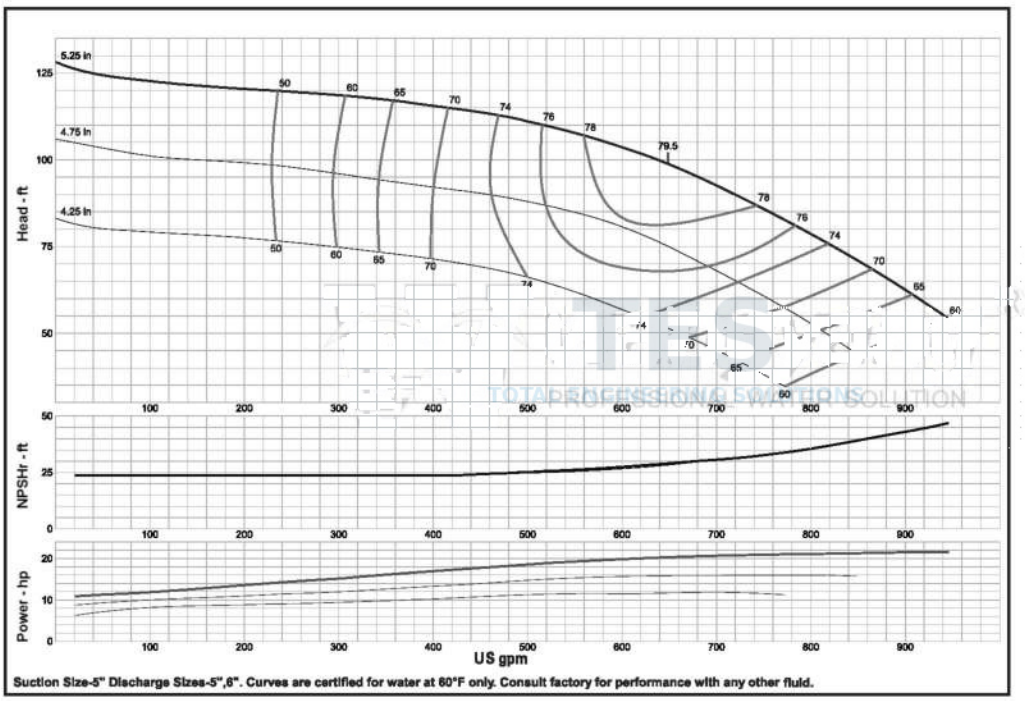


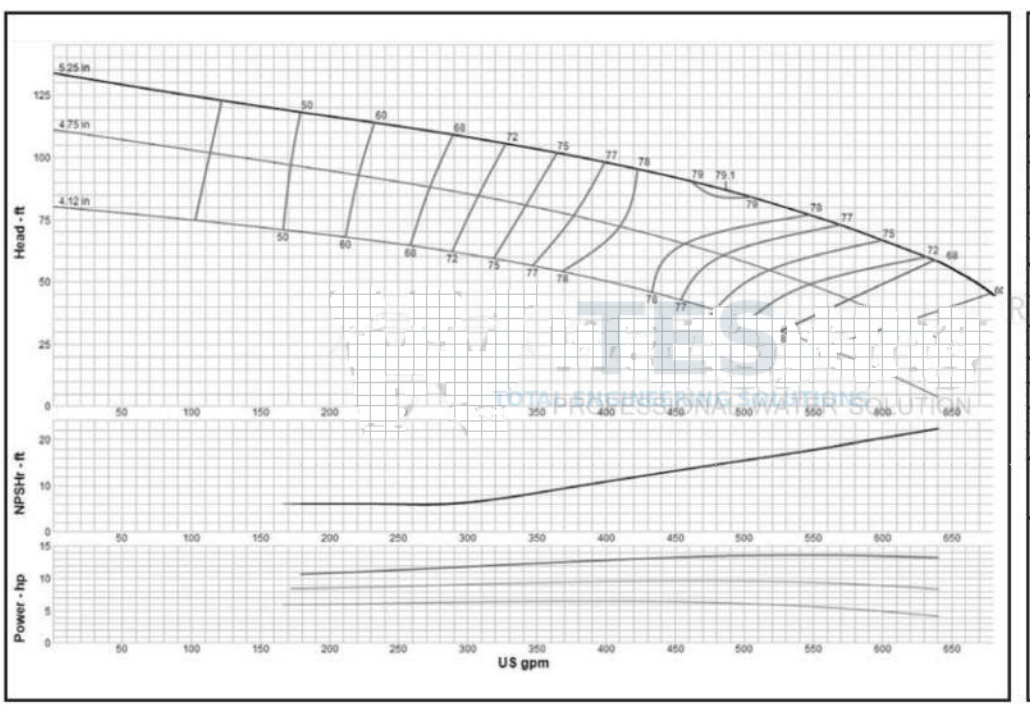

Suction Size-5" Discharge Sizes-5",6". Curves are certified for water at 60°F only. Consult factory for performance with any other fluid.

## MODEL: 8WYG

| RPM | 3550 |
|---|---|
| EFFICIENCY CORRECTION | |
| 1-STAGE | 0 |
| 2-STAGE | 0 |
| 3-STAGE | 0 |
| 4-STAGE | 0 |
| Impeller | ENCLOSED |
| Ns = | 2849 |
| K = | 4 |
| Bowl O. D. | 7.50 in |
| Bowl Lateral | 0.63 |
| Max. PSI | 425 |
| Disch size | 4", 5", 6" |

TOTAL ENGINEERING SOLUTIONS

BOWL PERFORMANCE CURVE BASED ON PUMPING CLEAR, NON-AERATED WATER. RATED POINT ONLY IS GUARANTEED. CURVES REPRESENT SINGLE STAGE PERFORMANCE BASED ON TEST OF MULTI-STAGE BOWL ASSEMBLY. EFFICIENCY CORRECTION APPLIES TO HEAD, FLOW AND HORSEPOWER FOR LESSER STAGES.



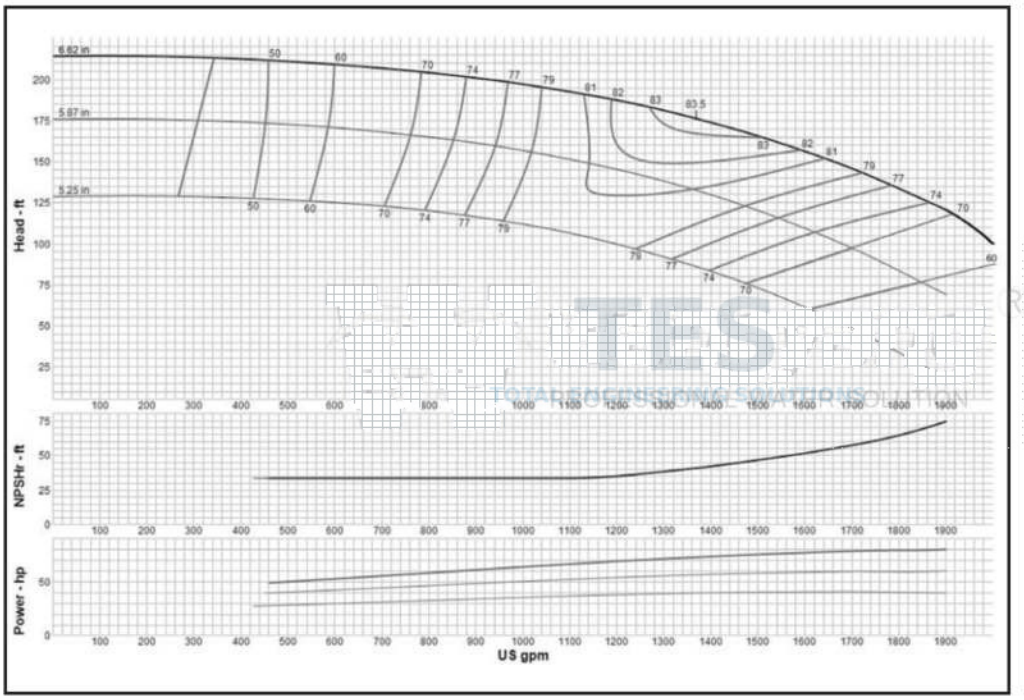

## MODEL:8WYD

| RPM | 3550 |
|---|---|
| EFFICIENCY CORRECTION | |
| 1-STAGE | 0 |
| 2-STAGE | 0 |
| 3-STAGE | 0 |
| 4-STAGE | 0 |
| Impeller | ENCLOSED |
| Ns = | 2815 |
| K = | 4 |
| Bowl O. D. | 7.50 in |
| Bowl Lateral | 0.62 |
| Max. PSI | 425 |
| Disch size | 4", 5", 6" |

TOTAL ENGINEERING SOLUTIONS

BOWL PERFORMANCE CURVE BASED ON PUMPING CLEAR, NON-AERATED WATER. RATED POINT ONLY IS GUARANTEED. CURVES REPRESENT SINGLE STAGE PERFORMANCE BASED ON TEST OF MULTI-STAGE BOWL ASSEMBLY. EFFICIENCY CORRECTION APPLIES TO HEAD, FLOW AND HORSEPOWER FOR LESSER STAGES.

Total Engineering Solutions

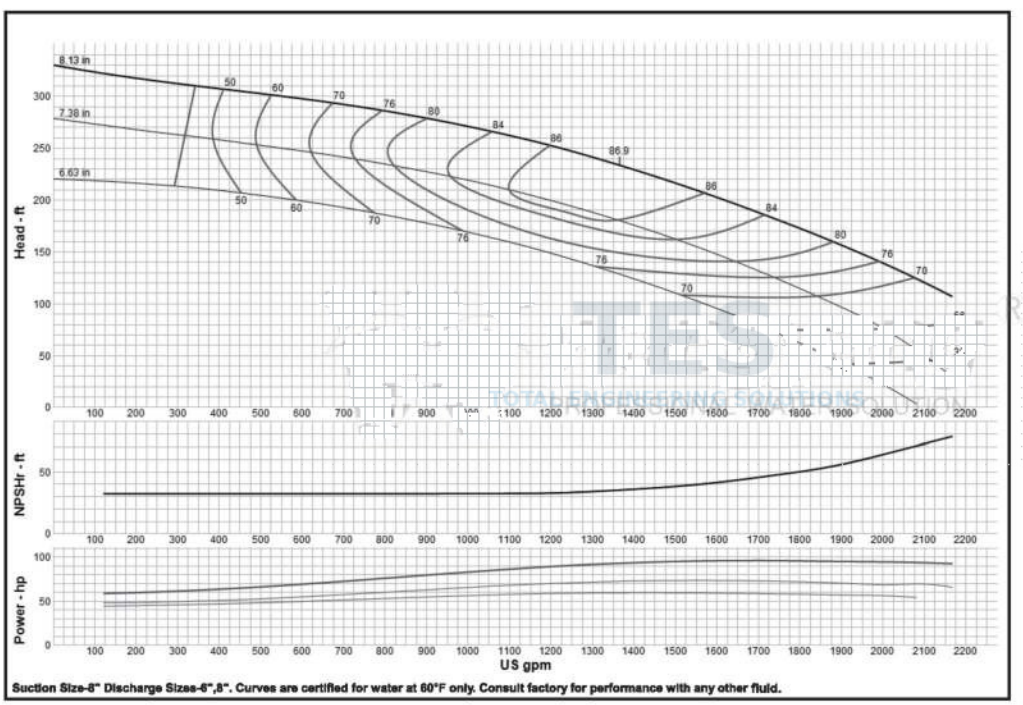



## MODEL:10WYG

| | |
|---|---|
| **RPM** | **3550** |
| EFFICIENCY CORRECTION | |
| 1-STAGE | 0 |
| 2-STAGE | 0 |
| 3-STAGE | 0 |
| 4-STAGE | 0 |
| Impeller | **ENCLOSED** |
| Ns = | **2760** |
| K = | **7** |
| Bowl O. D. | 9.50 in |
| Bowl Lateral | 0.75 |
| Max. PSI | 430 |
| Disch size | 6", 8" |

TOTAL ENGINEERING SOLUTIONS

BOWL PERFORMANCE CURVE BASED ON PUMPING CLEAR, NON-AERATED WATER. RATED POINT ONLY IS GUARANTEED. CURVES REPRESENT SINGLE STAGE PERFORMANCE BASED ON TEST OF MULTI-STAGE BOWL ASSEMBLY. EFFICIENCY CORRECTION APPLIES TO HEAD, FLOW AND HORSEPOWER FOR LESSER STAGES.




Suction Size-8" Discharge Sizes-6",8". Curves are certified for water at 60°F only. Consult factory for performance with any other fluid.

## MODEL: 11WYD

| | |
|---|---|
| **RPM** | **3550** |
| EFFICIENCY CORRECTION | |
| 1-STAGE | -1.5 |
| 2-STAGE | -1 |
| 3-STAGE | -0.5 |
| 4-STAGE | 0 |
| Impeller | **ENCLOSED** |
| Ns = | **2230** |
| K = | **7** |
| Bowl O. D. | 11.00 in |
| Bowl Lateral | 0.75 |
| Max. PSI | 380 |
| Disch size | 6", 8", 10" |

TOTAL ENGINEERING SOLUTIONS

BOWL PERFORMANCE CURVE BASED ON PUMPING CLEAR, NON-AERATED WATER. RATED POINT ONLY IS GUARANTEED. CURVES REPRESENT SINGLE STAGE PERFORMANCE BASED ON TEST OF MULTI-STAGE BOWL ASSEMBLY. EFFICIENCY CORRECTION APPLIES TO HEAD, FLOW AND HORSEPOWER FOR LESSER STAGES.

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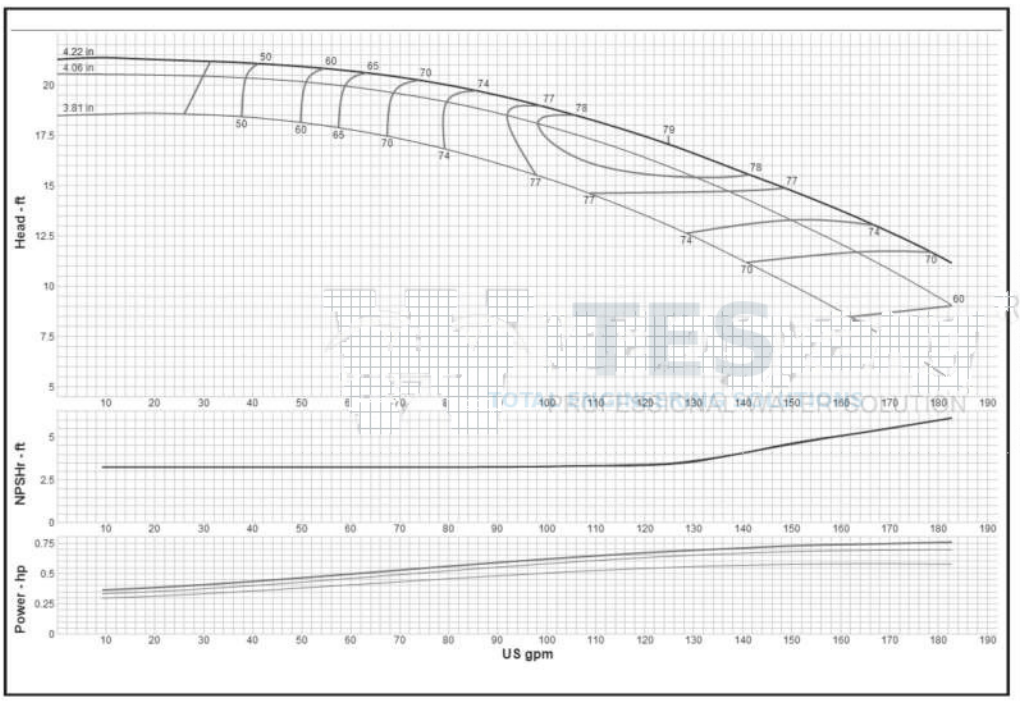
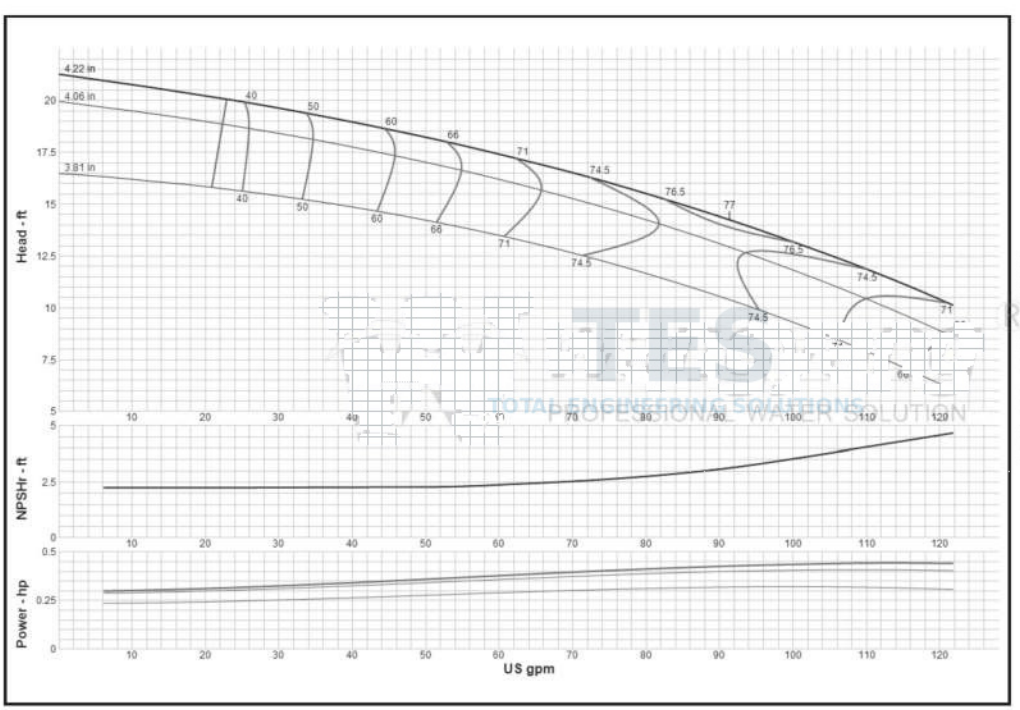
## Performance Curve - 60 Hz - 4 Poles - 1 Stage




| MODEL: 6WYG | |
|---|---|
| **RPM** | **1750** |
| EFFICIENCY CORRECTION | |
| 1-STAGE | -3 |
| 2-STAGE | -2 |
| 3-STAGE | -0.5 |
| 4-STAGE | 0 |
| Impeller | **ENCLOSED** |
| Ns = | **2340** |
| K = | **2.1** |
| Bowl O. D. | 5.88 in |
| Bowl Lateral | 0.25 |
| Max. PSI | 420 |
| Disch size | 3", 4" |

TOTAL ENGINEERING SOLUTIONS

BOWL PERFORMANCE CURVE BASED ON PUMPING CLEAR, NON-AERATED WATER. RATED POINT ONLY IS GUARANTEED. CURVES REPRESENT SINGLE STAGE PERFORMANCE BASED ON TEST OF MULTI-STAGE BOWL ASSEMBLY. EFFICIENCY CORRECTION APPLIES TO HEAD, FLOW AND HORSEPOWER FOR LESSER STAGES.

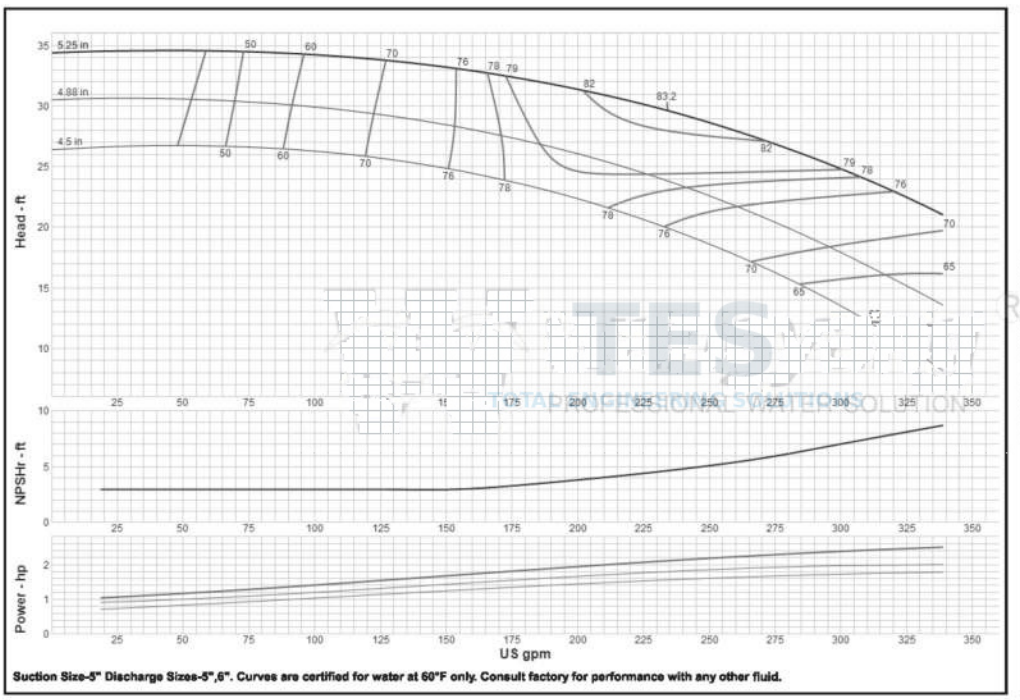



| MODEL: 6WYD | |
|---|---|
| **RPM** | **1750** |
| EFFICIENCY CORRECTION | |
| 1-STAGE | -3 |
| 2-STAGE | -2 |
| 3-STAGE | -0.5 |
| 4-STAGE | 0 |
| Impeller | **ENCLOSED** |
| Ns = | **2292** |
| K = | **2.1** |
| Bowl O. D. | 5.88 in |
| Bowl Lateral | 0.25 |
| Max. PSI | 420 |
| Disch size | 3", 4" |

TOTAL ENGINEERING SOLUTIONS

BOWL PERFORMANCE CURVE BASED ON PUMPING CLEAR, NON-AERATED WATER. RATED POINT ONLY IS GUARANTEED. CURVES REPRESENT SINGLE STAGE PERFORMANCE BASED ON TEST OF MULTI-STAGE BOWL ASSEMBLY. EFFICIENCY CORRECTION APPLIES TO HEAD, FLOW AND HORSEPOWER FOR LESSER STAGES.

Total Engineering Solutions



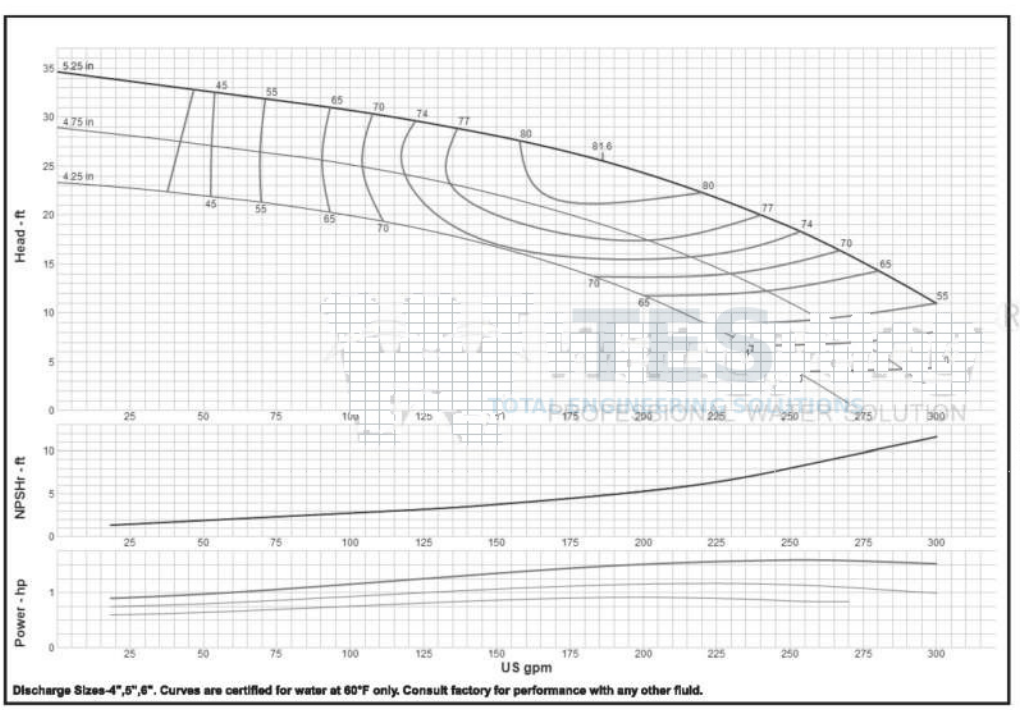

Suction Size-5" Discharge Sizes-5",6". Curves are certified for water at 60°F only. Consult factory for performance with any other fluid.

## MODEL:7WYG

| | |
|---|---|
| **RPM** | **1770** |
| EFFICIENCY CORRECTION | |
| 1-STAGE | -3 |
| 2-STAGE | -1 |
| 3-STAGE | 0 |
| 4-STAGE | 0 |
| Impeller | **ENCLOSED** |
| Ns = | **2210** |
| K = | **3.5** |
| Bowl O. D. | 7.13 in |
| Bowl Lateral | 0.5 |
| Max. PSI | 415 |
| Disch size | 4", 5", 6" |

TOTAL ENGINEERING SOLUTIONS

BOWL PERFORMANCE CURVE BASED ON PUMPING CLEAR, NON-AERATED WATER. RATED POINT ONLY IS GUARANTEED. CURVES REPRESENT SINGLE STAGE PERFORMANCE BASED ON TEST OF MULTI-STAGE BOWL ASSEMBLY. EFFICIENCY CORRECTION APPLIES TO HEAD, FLOW AND HORSEPOWER FOR LESSER STAGES.




Discharge Sizes-4",5",6". Curves are certified for water at 60°F only. Consult factory for performance with any other fluid.

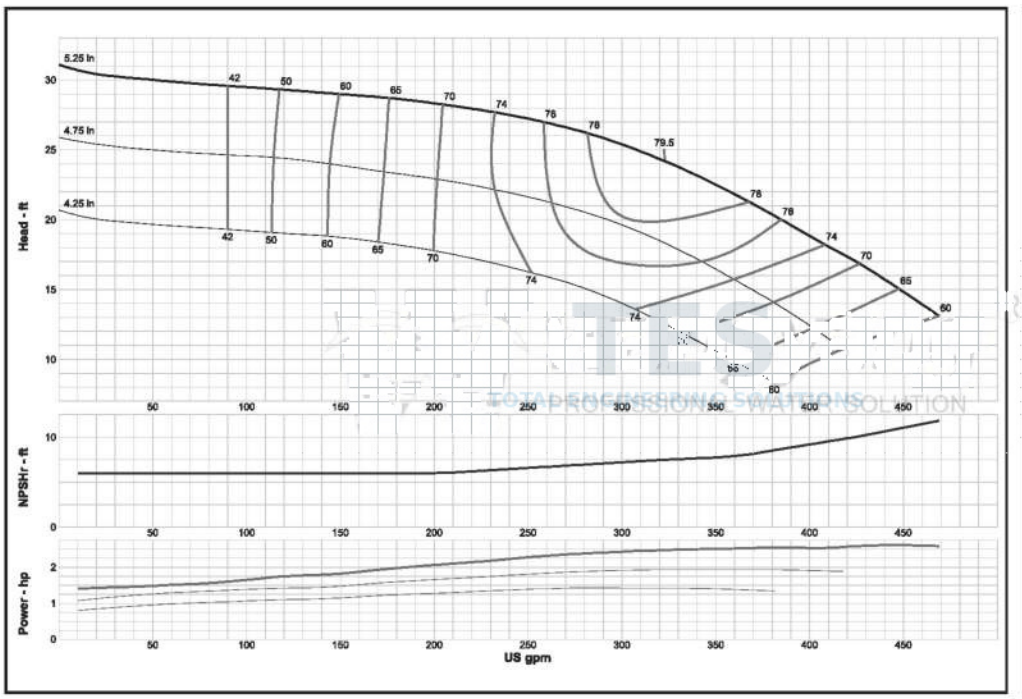
## MODEL:7WYD

| | |
|---|---|
| **RPM** | **1750** |
| EFFICIENCY CORRECTION | |
| 1-STAGE | -3 |
| 2-STAGE | -1 |
| 3-STAGE | 0 |
| 4-STAGE | 0 |
| Impeller | **ENCLOSED** |
| Ns = | **2422** |
| K = | **3.5** |
| Bowl O. D. | 7.13 in |
| Bowl Lateral | 0.5 |
| Max. PSI | 415 |
| Disch size | 4", 5", 6" |

TOTAL ENGINEERING SOLUTIONS

BOWL PERFORMANCE CURVE BASED ON PUMPING CLEAR, NON-AERATED WATER. RATED POINT ONLY IS GUARANTEED. CURVES REPRESENT SINGLE STAGE PERFORMANCE BASED ON TEST OF MULTI-STAGE BOWL ASSEMBLY. EFFICIENCY CORRECTION APPLIES TO HEAD, FLOW AND HORSEPOWER FOR LESSER STAGES.

Total Engineering Solutions

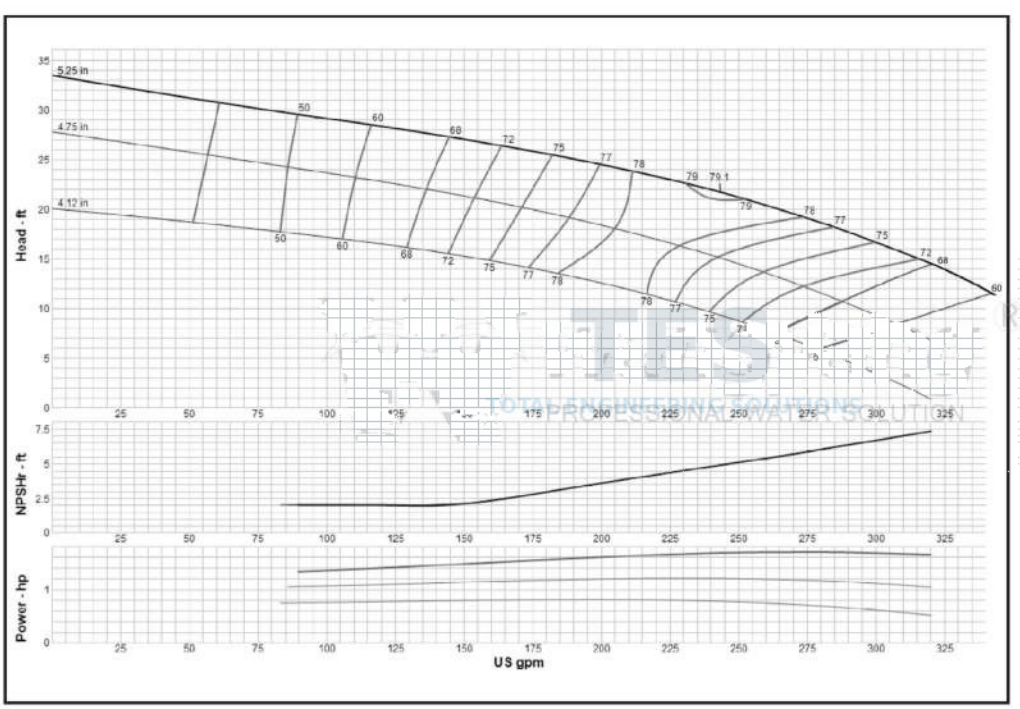



## MODEL:8WYG

| RPM | 1760 |
|---|---|
| EFFICIENCY CORRECTION | |
| 1-STAGE | 0 |
| 2-STAGE | 0 |
| 3-STAGE | 0 |
| 4-STAGE | 0 |
| Impeller | ENCLOSED |
| Ns = | 2765 |
| K = | 4 |
| Bowl O. D. | 7.50 in |
| Bowl Lateral | 0.63 |
| Max. PSI | 425 |
| Disch size | 4", 5", 6" |

TOTAL ENGINEERING SOLUTIONS

BOWL PERFORMANCE CURVE BASED ON PUMPING CLEAR, NON-AERATED WATER. RATED POINT ONLY IS GUARANTEED. CURVES REPRESENT SINGLE STAGE PERFORMANCE BASED ON TEST OF MULTI-STAGE BOWL ASSEMBLY. EFFICIENCY CORRECTION APPLIES TO HEAD, FLOW AND HORSEPOWER FOR LESSER STAGES.



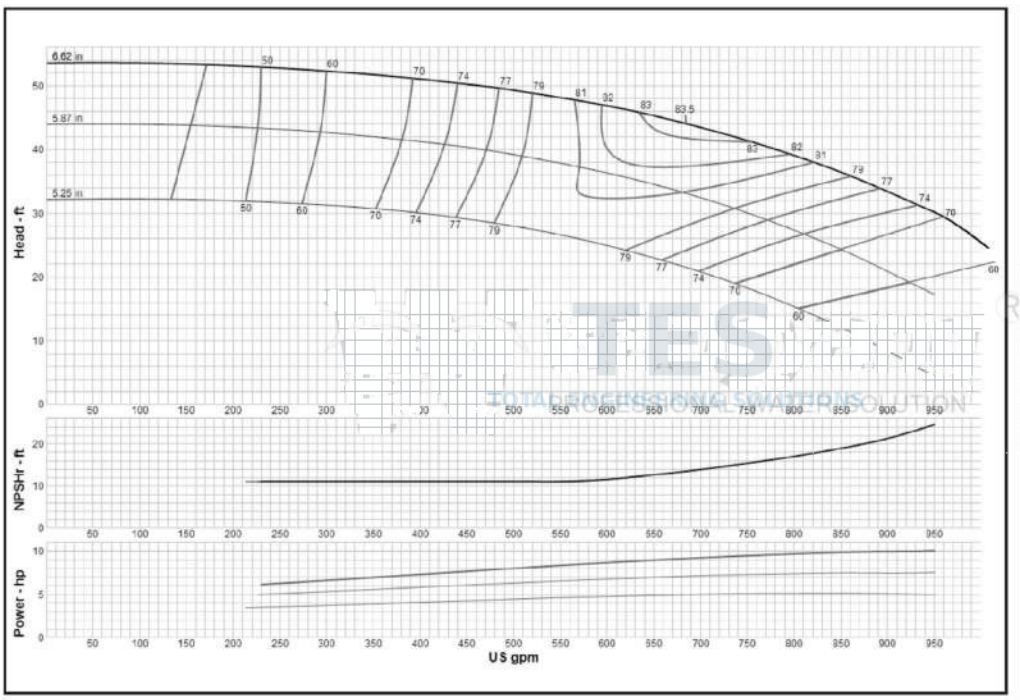

## MODEL:8WYD

| RPM | 1760 |
|---|---|
| EFFICIENCY CORRECTION | |
| 1-STAGE | 0 |
| 2-STAGE | 0 |
| 3-STAGE | 0 |
| 4-STAGE | 0 |
| Impeller | ENCLOSED |
| Ns = | 2815 |
| K = | 4 |
| Bowl O. D. | 7.50 in |
| Bowl Lateral | 0.62 |
| Max. PSI | 425 |
| Disch size | 4", 5", 6" |

TOTAL ENGINEERING SOLUTIONS

BOWL PERFORMANCE CURVE BASED ON PUMPING CLEAR, NON-AERATED WATER. RATED POINT ONLY IS GUARANTEED. CURVES REPRESENT SINGLE STAGE PERFORMANCE BASED ON TEST OF MULTI-STAGE BOWL ASSEMBLY. EFFICIENCY CORRECTION APPLIES TO HEAD, FLOW AND HORSEPOWER FOR LESSER STAGES.

Total Engineering Solutions

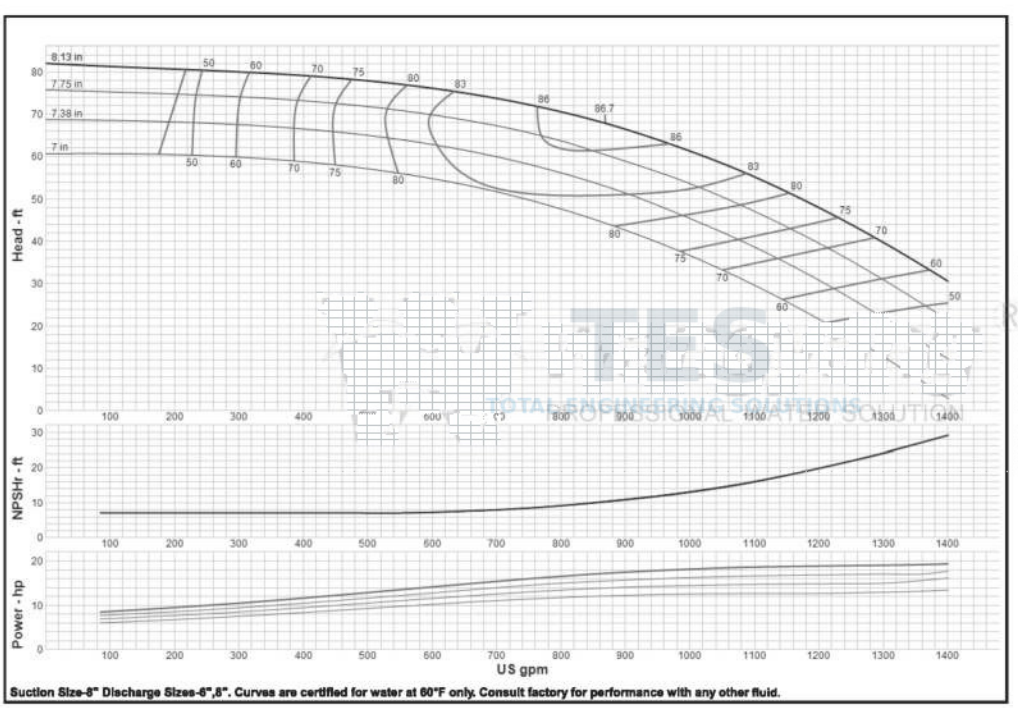



## MODEL:10WYG

| RPM | 1760 |
|---|---|
| EFFICIENCY CORRECTION | |
| 1-STAGE | 0 |
| 2-STAGE | 0 |
| 3-STAGE | 0 |
| 4-STAGE | 0 |
| Impeller | ENCLOSED |
| Ns = | 2880 |
| K = | 7 |
| Bowl O. D. | 9.50 in |
| Bowl Lateral | 0.75 |
| Max. PSI | 430 |
| Disch size | 6", 8" |

TOTAL ENGINEERING SOLUTIONS

BOWL PERFORMANCE CURVE BASED ON PUMPING CLEAR, NON-AERATED WATER. RATED POINT ONLY IS GUARANTEED. CURVES REPRESENT SINGLE STAGE PERFORMANCE BASED ON TEST OF MULTI-STAGE BOWL ASSEMBLY. EFFICIENCY CORRECTION APPLIES TO HEAD, FLOW AND HORSEPOWER FOR LESSER STAGES.




Suction Size-8" Discharge Sizes-6",8". Curves are certified for water at 60°F only. Consult factory for performance with any other fluid.

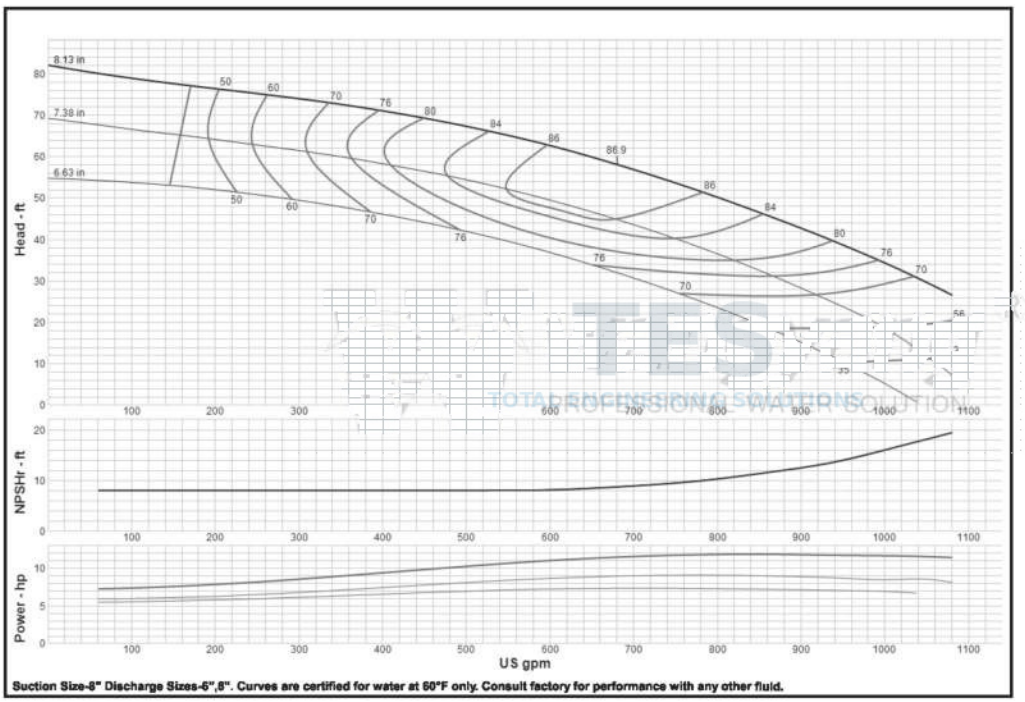
## MODEL:11WYG

| RPM | 1770 |
|---|---|
| EFFICIENCY CORRECTION | |
| 1-STAGE | -1.5 |
| 2-STAGE | -1 |
| 3-STAGE | -0.5 |
| 4-STAGE | 0 |
| Impeller | ENCLOSED |
| Ns = | 2130 |
| K = | 7 |
| Bowl O. D. | 11.00 in |
| Bowl Lateral | 0.88 |
| Max. PSI | 380 |
| Disch size | 6", 8", 10" |

TOTAL ENGINEERING SOLUTIONS

BOWL PERFORMANCE CURVE BASED ON PUMPING CLEAR, NON-AERATED WATER. RATED POINT ONLY IS GUARANTEED. CURVES REPRESENT SINGLE STAGE PERFORMANCE BASED ON TEST OF MULTI-STAGE BOWL ASSEMBLY. EFFICIENCY CORRECTION APPLIES TO HEAD, FLOW AND HORSEPOWER FOR LESSER STAGES.

Total Engineering Solutions



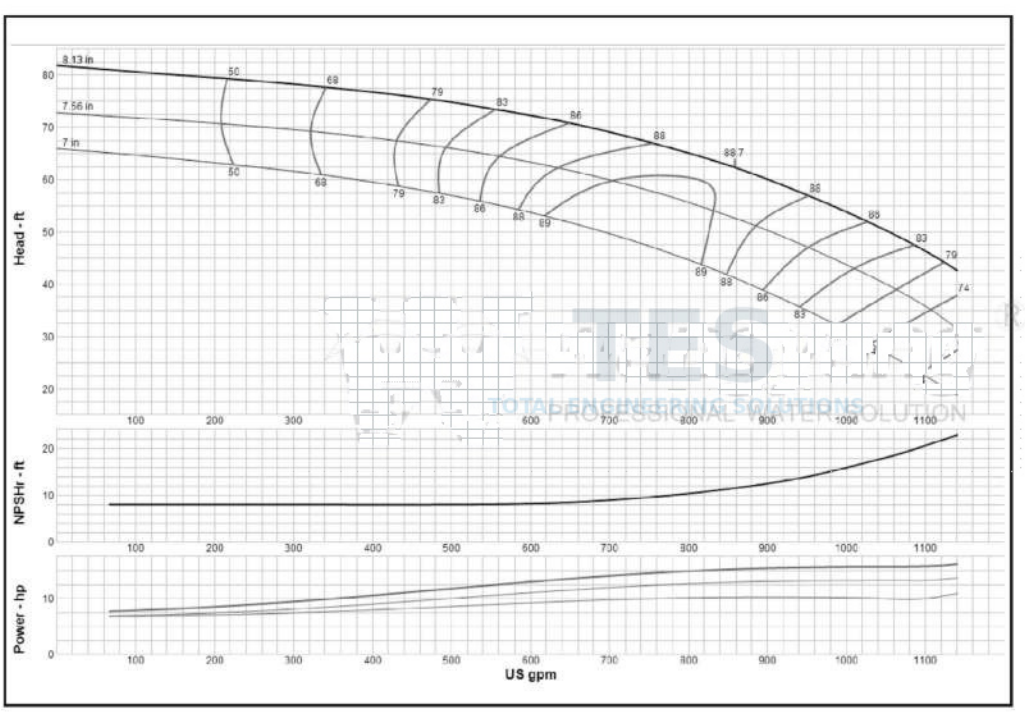

Suction Size-8" Discharge Sizes-6",8". Curves are certified for water at 60°F only. Consult factory for performance with any other fluid.

## MODEL:11WYD

| RPM | 1770 |
|---|---|
| EFFICIENCY CORRECTION | |
| 1-STAGE | -1.5 |
| 2-STAGE | -1 |
| 3-STAGE | -0.5 |
| 4-STAGE | 0 |
| Impeller | ENCLOSED |
| Ns = | 2230 |
| K = | 7 |
| Bowl O. D. | 11.00 in |
| Bowl Lateral | 0.88 |
| Max. PSI | 380 |
| Disch size | 6", 8", 10" |

TOTAL ENGINEERING SOLUTIONS

BOWL PERFORMANCE CURVE BASED ON PUMPING CLEAR, NON-AERATED WATER. RATED POINT ONLY IS GUARANTEED. CURVES REPRESENT SINGLE STAGE PERFORMANCE BASED ON TEST OF MULTI-STAGE BOWL ASSEMBLY. EFFICIENCY CORRECTION APPLIES TO HEAD, FLOW AND HORSEPOWER FOR LESSER STAGES.



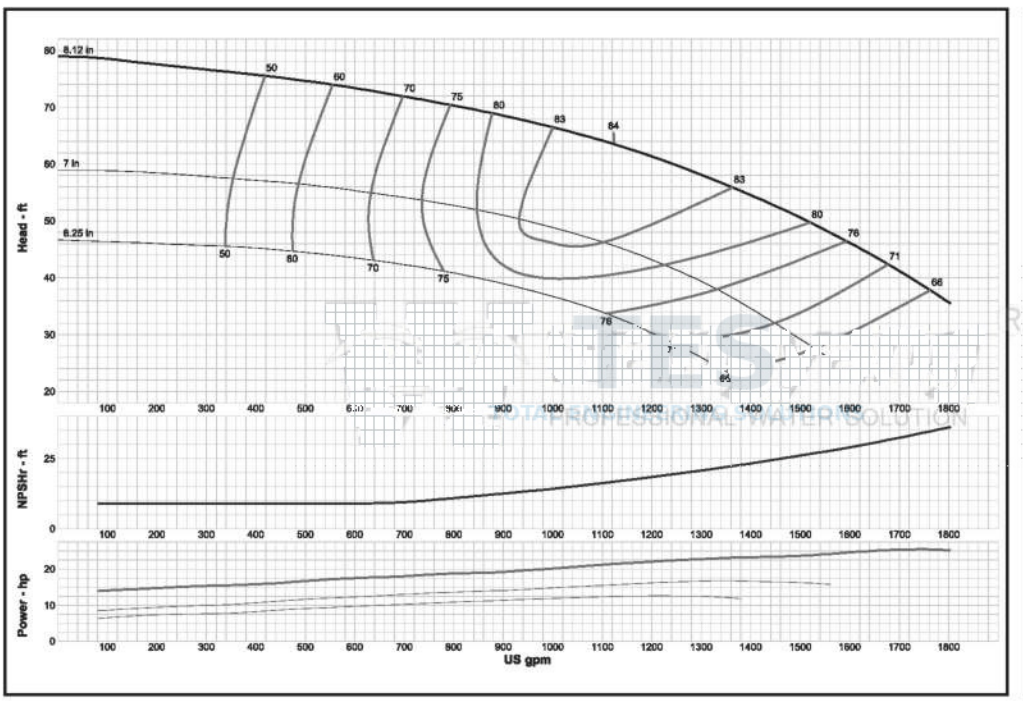

## MODEL:11WYZ

| RPM | 1770 |
|---|---|
| EFFICIENCY CORRECTION | |
| 1-STAGE | -1.5 |
| 2-STAGE | -1 |
| 3-STAGE | -0.5 |
| 4-STAGE | 0 |
| Impeller | ENCLOSED |
| Ns = | 2195 |
| K = | 7 |
| Bowl O. D. | 11.00 in |
| Bowl Lateral | 0.88 |
| Max. PSI | 380 |
| Disch size | 6", 8", 10" |

TOTAL ENGINEERING SOLUTIONS

BOWL PERFORMANCE CURVE BASED ON PUMPING CLEAR, NON-AERATED WATER. RATED POINT ONLY IS GUARANTEED. CURVES REPRESENT SINGLE STAGE PERFORMANCE BASED ON TEST OF MULTI-STAGE BOWL ASSEMBLY. EFFICIENCY CORRECTION APPLIES TO HEAD, FLOW AND HORSEPOWER FOR LESSER STAGES.

Total Engineering Solutions

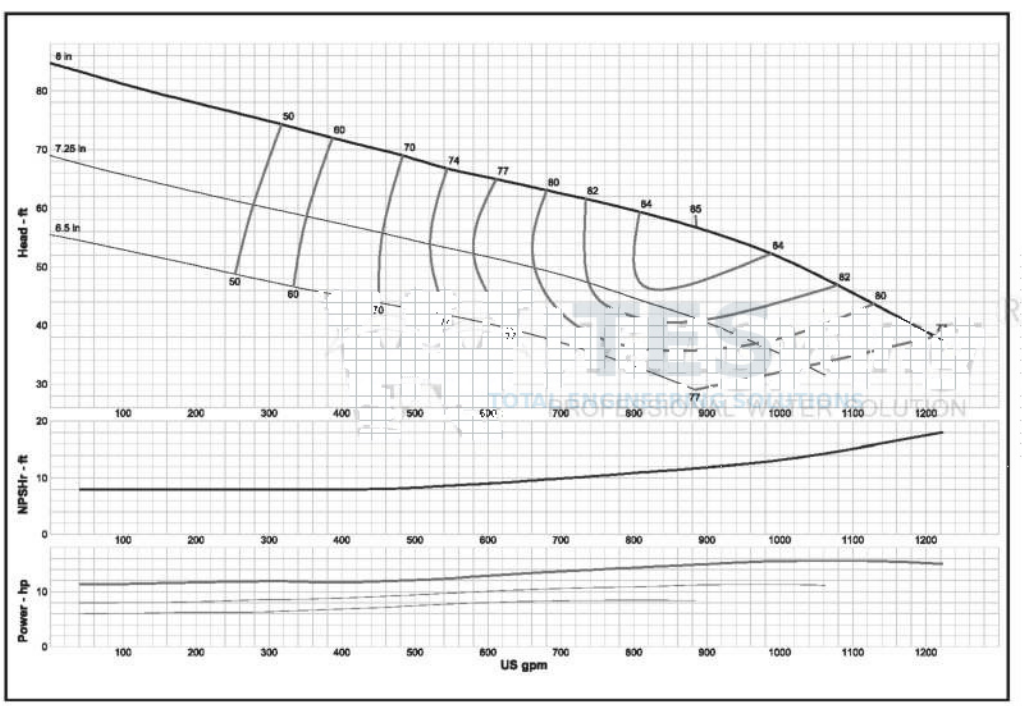



## MODEL:12WYG

| RPM | 1760 |
|---|---|
| EFFICIENCY CORRECTION | |
| 1-STAGE | 0 |
| 2-STAGE | 0 |
| 3-STAGE | 0 |
| 4-STAGE | 0 |
| Impeller | ENCLOSED |
| Ns = | 0 |
| K = | 9.5 |
| Bowl O. D. | 11.60 in |
| Bowl Lateral | 1 |
| Max. PSI | 340 |
| Disch size | 6", 8", 10" |

TOTAL ENGINEERING SOLUTIONS

BOWL PERFORMANCE CURVE BASED ON PUMPING CLEAR, NON-AERATED WATER. RATED POINT ONLY IS GUARANTEED. CURVES REPRESENT SINGLE STAGE PERFORMANCE BASED ON TEST OF MULTI-STAGE BOWL ASSEMBLY. EFFICIENCY CORRECTION APPLIES TO HEAD, FLOW AND HORSEPOWER FOR LESSER STAGES.



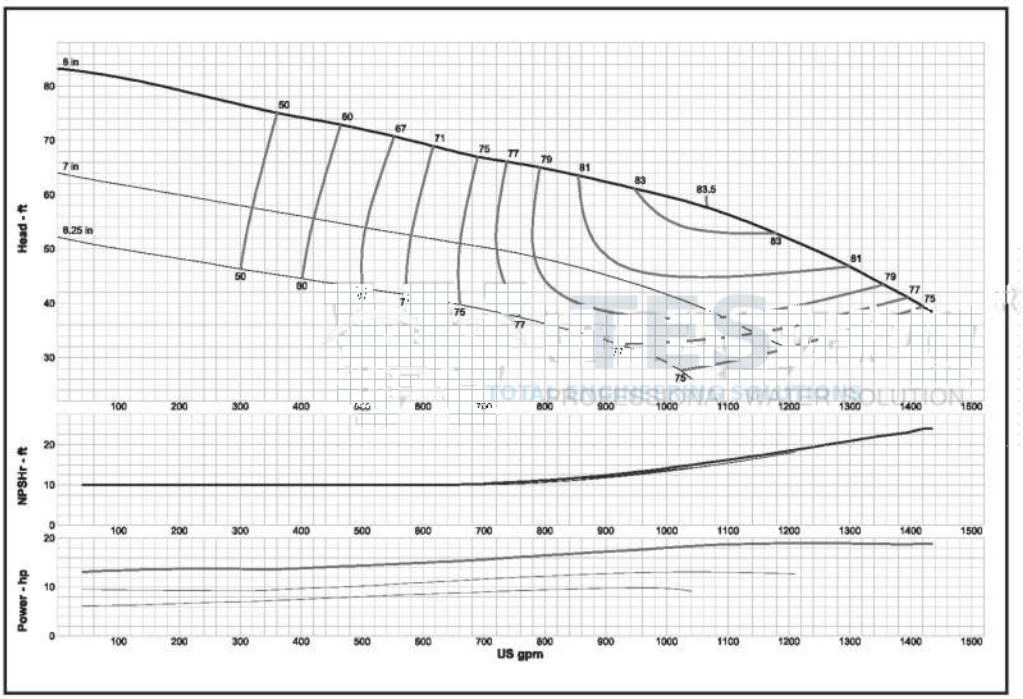

## MODEL:12WYD

| RPM | 1760 |
|---|---|
| EFFICIENCY CORRECTION | |
| 1-STAGE | 0 |
| 2-STAGE | 0 |
| 3-STAGE | 0 |
| 4-STAGE | 0 |
| Impeller | ENCLOSED |
| Ns = | 2580 |
| K = | 9.5 |
| Bowl O. D. | 11.60 in |
| Bowl Lateral | 1 |
| Max. PSI | 340 |
| Disch size | 6", 8", 10" |

TOTAL ENGINEERING SOLUTIONS

BOWL PERFORMANCE CURVE BASED ON PUMPING CLEAR, NON-AERATED WATER. RATED POINT ONLY IS GUARANTEED. CURVES REPRESENT SINGLE STAGE PERFORMANCE BASED ON TEST OF MULTI-STAGE BOWL ASSEMBLY. EFFICIENCY CORRECTION APPLIES TO HEAD, FLOW AND HORSEPOWER FOR LESSER STAGES.

Total Engineering Solutions

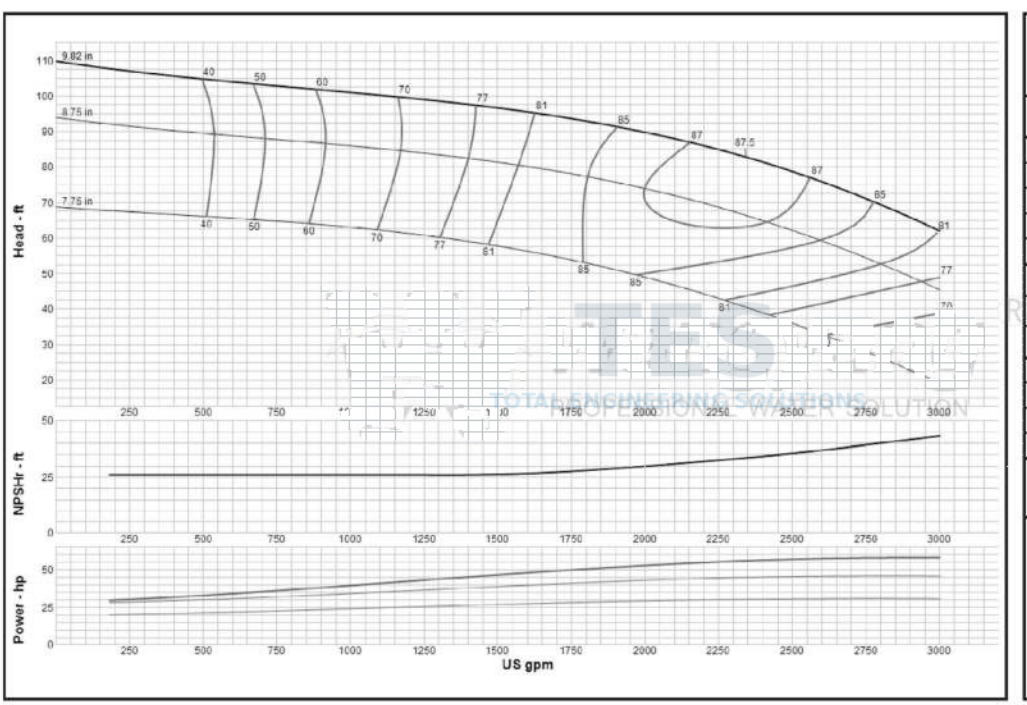



## MODEL:12WYZ

| RPM | 1760 |
|---|---|
| EFFICIENCY CORRECTION | |
| 1-STAGE | 0 |
| 2-STAGE | 0 |
| 3-STAGE | 0 |
| 4-STAGE | 0 |
| Impeller | ENCLOSED |
| Ns = | 2760 |
| K = | 9.5 |
| Bowl O. D. | 11.60 in |
| Bowl Lateral | 1 |
| Max. PSI | 340 |
| Disch size | 6", 8", 10" |

TOTAL ENGINEERING SOLUTIONS

BOWL PERFORMANCE CURVE BASED ON PUMPING CLEAR, NON-AERATED WATER. RATED POINT ONLY IS GUARANTEED. CURVES REPRESENT SINGLE STAGE PERFORMANCE BASED ON TEST OF MULTI-STAGE BOWL ASSEMBLY. EFFICIENCY CORRECTION APPLIES TO HEAD, FLOW AND HORSEPOWER FOR LESSER STAGES.



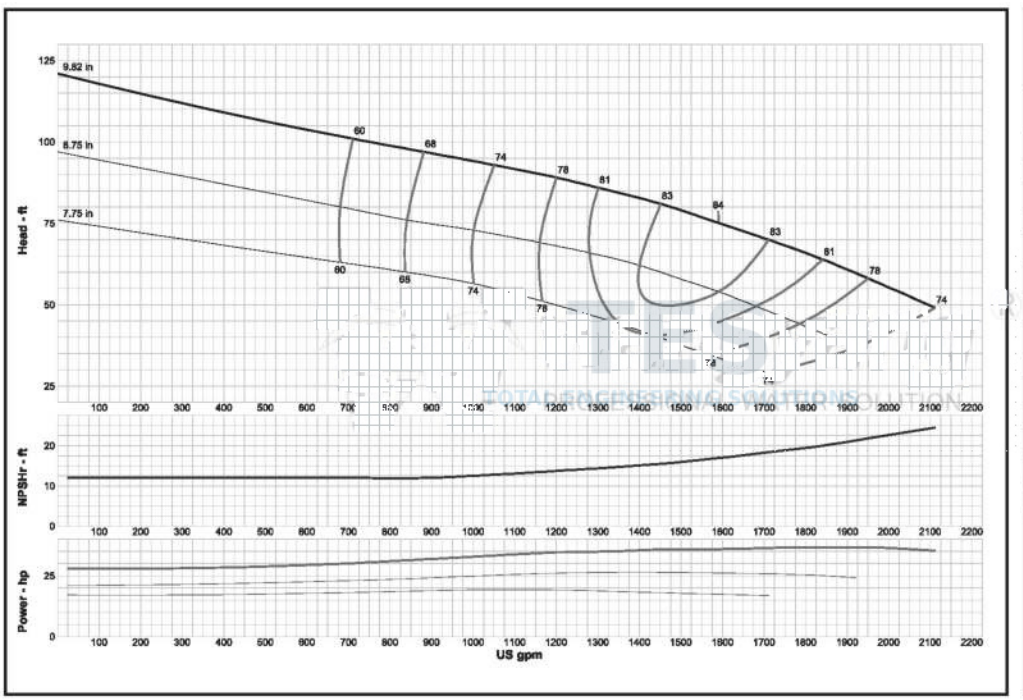

## MODEL:14WYG

| RPM | 1770 |
|---|---|
| EFFICIENCY CORRECTION | |
| 1-STAGE | -1 |
| 2-STAGE | -0.5 |
| 3-STAGE | 0 |
| 4-STAGE | 0 |
| Impeller | ENCLOSED |
| Ns = | 3032 |
| K = | 13 |
| Bowl O. D. | 13.63 in |
| Bowl Lateral | 1 |
| Max. PSI | 340 |
| Disch size | 8", 10", 12" |

TOTAL ENGINEERING SOLUTIONS

BOWL PERFORMANCE CURVE BASED ON PUMPING CLEAR, NON-AERATED WATER. RATED POINT ONLY IS GUARANTEED. CURVES REPRESENT SINGLE STAGE PERFORMANCE BASED ON TEST OF MULTI-STAGE BOWL ASSEMBLY. EFFICIENCY CORRECTION APPLIES TO HEAD, FLOW AND HORSEPOWER FOR LESSER STAGES.

Total Engineering Solutions

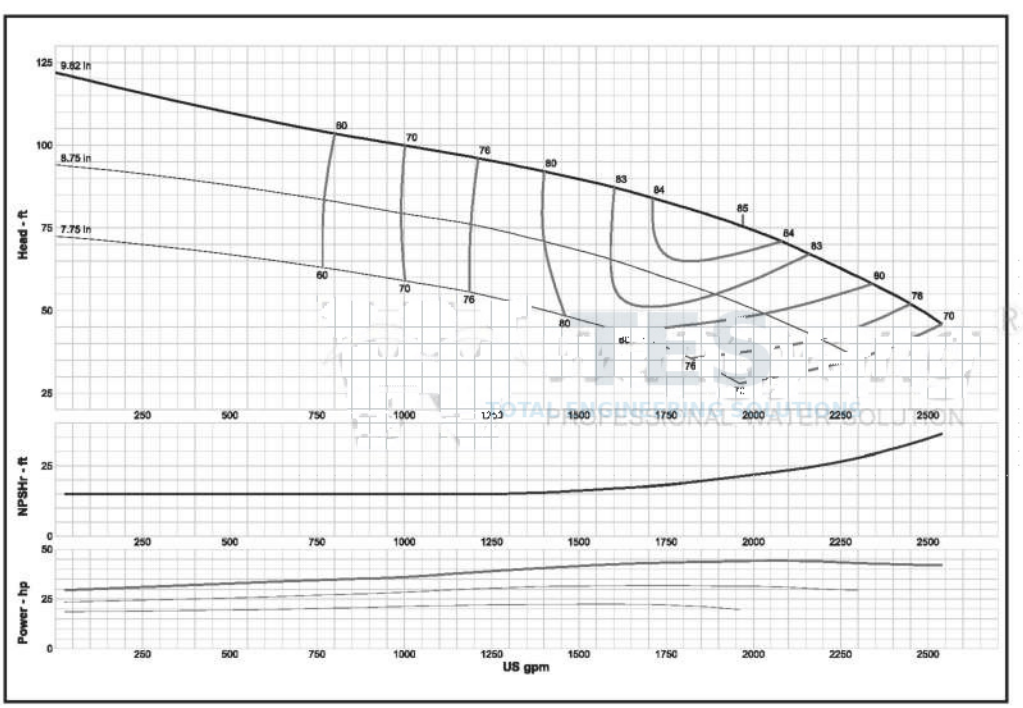



## MODEL:14WYD

| | |
|---|---|
| **RPM** | **1770** |
| EFFICIENCY CORRECTION | |
| 1-STAGE | -3 |
| 2-STAGE | -1 |
| 3-STAGE | 0 |
| 4-STAGE | 0 |
| Impeller | **ENCLOSED** |
| Ns = | **2750** |
| K = | **13** |
| Bowl O. D. | 13.63 in |
| Bowl Lateral | 1 |
| Max. PSI | 340 |
| Disch size | 8", 10", 12" |

**TOTAL ENGINEERING SOLUTIONS**

BOWL PERFORMANCE CURVE BASED ON PUMPING CLEAR, NON-AERATED WATER. RATED POINT ONLY IS GUARANTEED. CURVES REPRESENT SINGLE STAGE PERFORMANCE BASED ON TEST OF MULTI-STAGE BOWL ASSEMBLY. EFFICIENCY CORRECTION APPLIES TO HEAD, FLOW AND HORSEPOWER FOR LESSER STAGES.



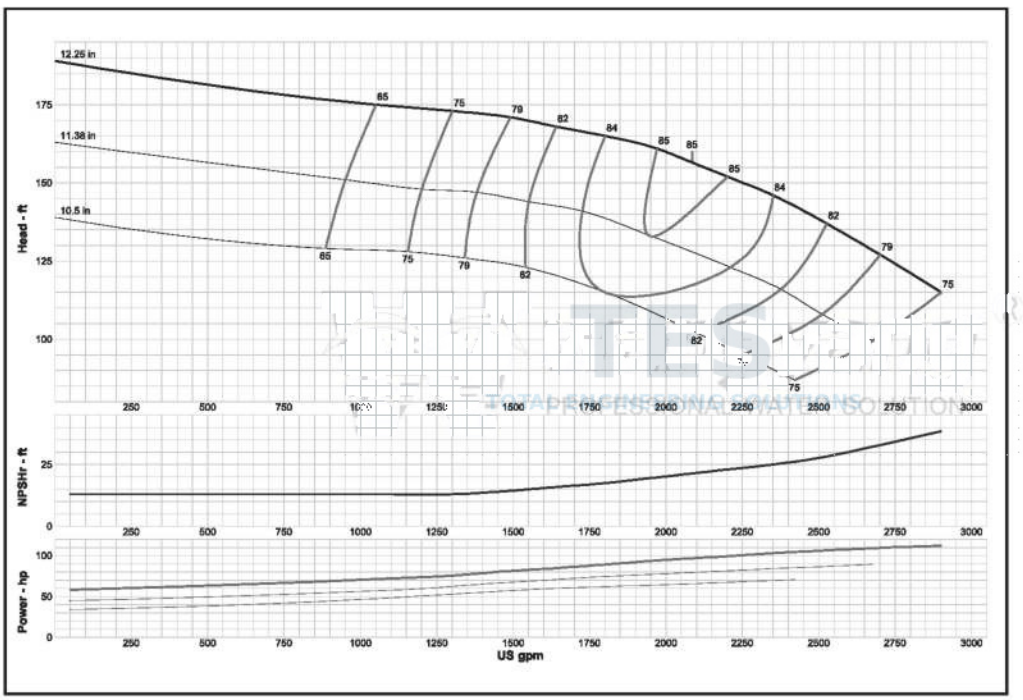

## MODEL:14WYZ

| | |
|---|---|
| **RPM** | **1770** |
| EFFICIENCY CORRECTION | |
| 1-STAGE | -2 |
| 2-STAGE | -1 |
| 3-STAGE | 0 |
| 4-STAGE | 0 |
| Impeller | **ENCLOSED** |
| Ns = | **2990** |
| K = | **13** |
| Bowl O. D. | 13.63 in |
| Bowl Lateral | 1 |
| Max. PSI | 340 |
| Disch size | 8", 10", 12" |

**TOTAL ENGINEERING SOLUTIONS**

BOWL PERFORMANCE CURVE BASED ON PUMPING CLEAR, NON-AERATED WATER. RATED POINT ONLY IS GUARANTEED. CURVES REPRESENT SINGLE STAGE PERFORMANCE BASED ON TEST OF MULTI-STAGE BOWL ASSEMBLY. EFFICIENCY CORRECTION APPLIES TO HEAD, FLOW AND HORSEPOWER FOR LESSER STAGES.

Total Engineering Solutions

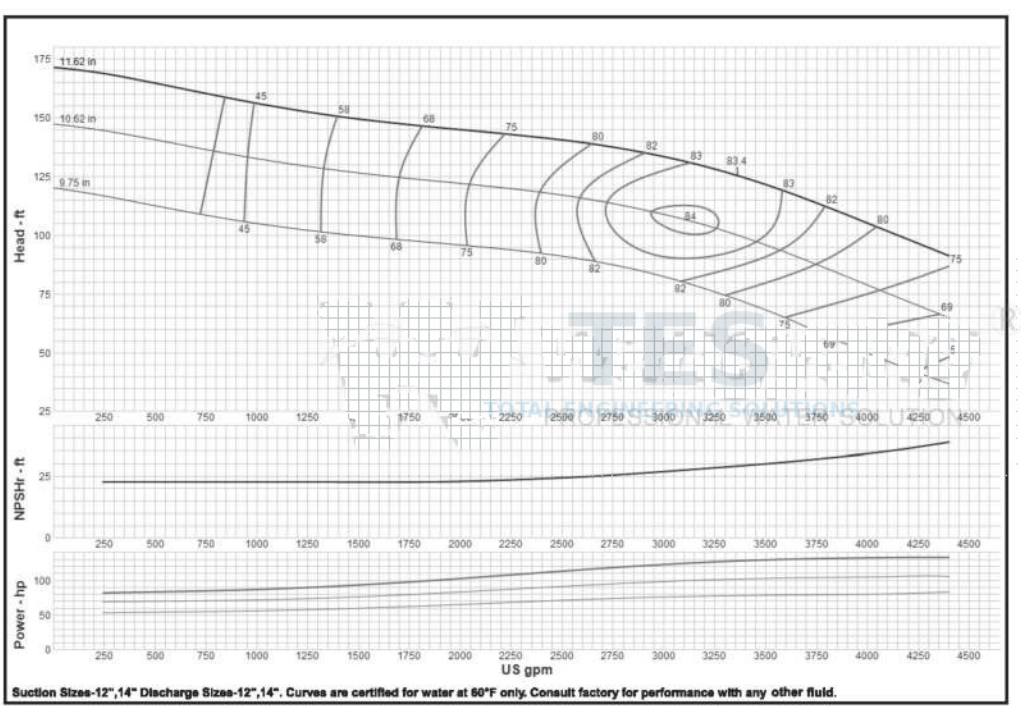



## MODEL:16WYD

| RPM | 1770 |
|---|---|
| EFFICIENCY CORRECTION | |
| 1-STAGE | -2 |
| 2-STAGE | -1 |
| 3-STAGE | 0 |
| 4-STAGE | 0 |
| Impeller | ENCLOSED |
| Ns = | 1825 |
| K = | 14.1 |
| Bowl O. D. | 16.13 in |
| Bowl Lateral | 0.88 |
| Max. PSI | 322 |
| Disch size | 8", 10", 12" |

TOTAL ENGINEERING SOLUTIONS

BOWL PERFORMANCE CURVE BASED ON PUMPING CLEAR, NON-AERATED WATER. RATED POINT ONLY IS GUARANTEED. CURVES REPRESENT SINGLE STAGE PERFORMANCE BASED ON TEST OF MULTI-STAGE BOWL ASSEMBLY. EFFICIENCY CORRECTION APPLIES TO HEAD, FLOW AND HORSEPOWER FOR LESSER STAGES.




Suction Sizes-12",14" Discharge Sizes-12",14". Curves are certified for water at 60°F only. Consult factory for performance with any other fluid.

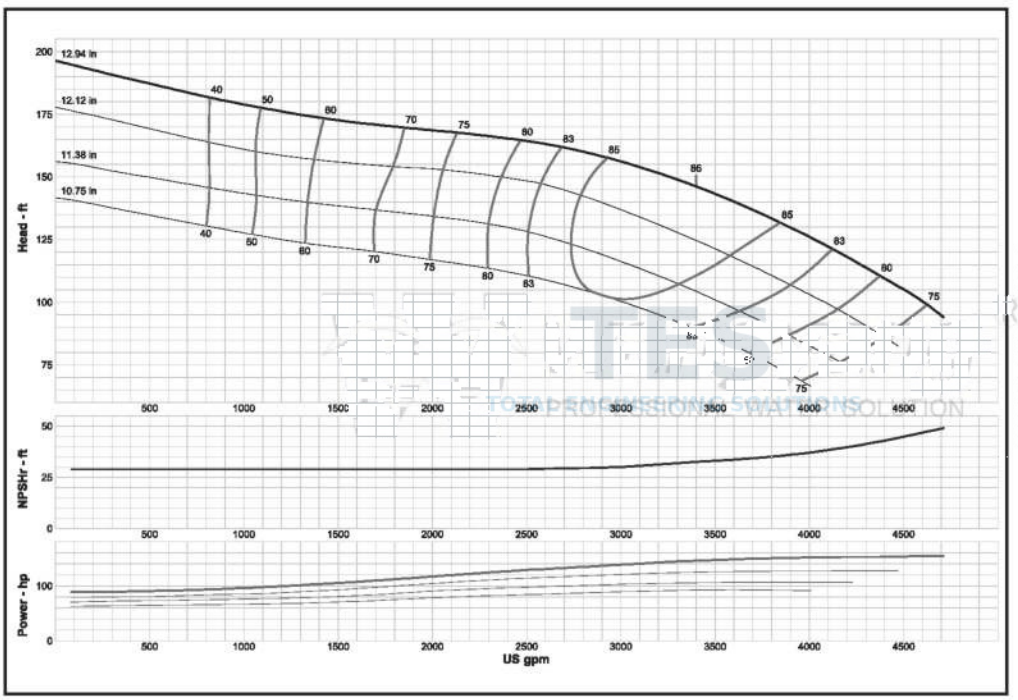
## MODEL:16WYG

| RPM | 1770 |
|---|---|
| EFFICIENCY CORRECTION | |
| 1-STAGE | -1 |
| 2-STAGE | 0 |
| 3-STAGE | 0 |
| 4-STAGE | 0 |
| Impeller | ENCLOSED |
| Ns = | 2859 |
| K = | 18 |
| Bowl O. D. | 15.25 in |
| Bowl Lateral | 0.75 |
| Max. PSI | 335 |
| Disch size | -- |

TOTAL ENGINEERING SOLUTIONS

BOWL PERFORMANCE CURVE BASED ON PUMPING CLEAR, NON-AERATED WATER. RATED POINT ONLY IS GUARANTEED. CURVES REPRESENT SINGLE STAGE PERFORMANCE BASED ON TEST OF MULTI-STAGE BOWL ASSEMBLY. EFFICIENCY CORRECTION APPLIES TO HEAD, FLOW AND HORSEPOWER FOR LESSER STAGES.

Total Engineering Solutions

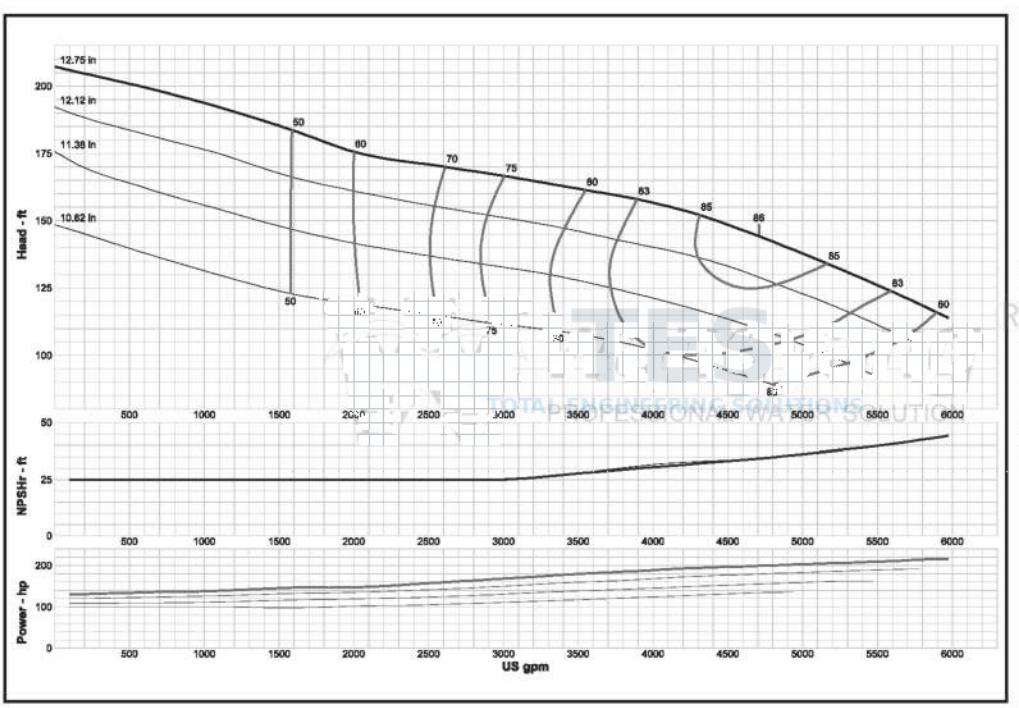



## MODEL:18WYD

| | |
|---|---|
| **RPM** | **1770** |
| EFFICIENCY CORRECTION | |
| 1-STAGE | -3 |
| 2-STAGE | -1 |
| 3-STAGE | 0 |
| 4-STAGE | 0 |
| Impeller | **ENCLOSED** |
| Ns = | **2418** |
| K = | **27.5** |
| Bowl O. D. | 17.50 in |
| Bowl Lateral | 0.75 |
| Max. PSI | 348 |
| Disch size | -- |

**TOTAL ENGINEERING SOLUTIONS**

BOWL PERFORMANCE CURVE BASED ON PUMPING CLEAR, NON-AERATED WATER. RATED POINT ONLY IS GUARANTEED. CURVES REPRESENT SINGLE STAGE PERFORMANCE BASED ON TEST OF MULTI-STAGE BOWL ASSEMBLY. EFFICIENCY CORRECTION APPLIES TO HEAD, FLOW AND HORSEPOWER FOR LESSER STAGES.



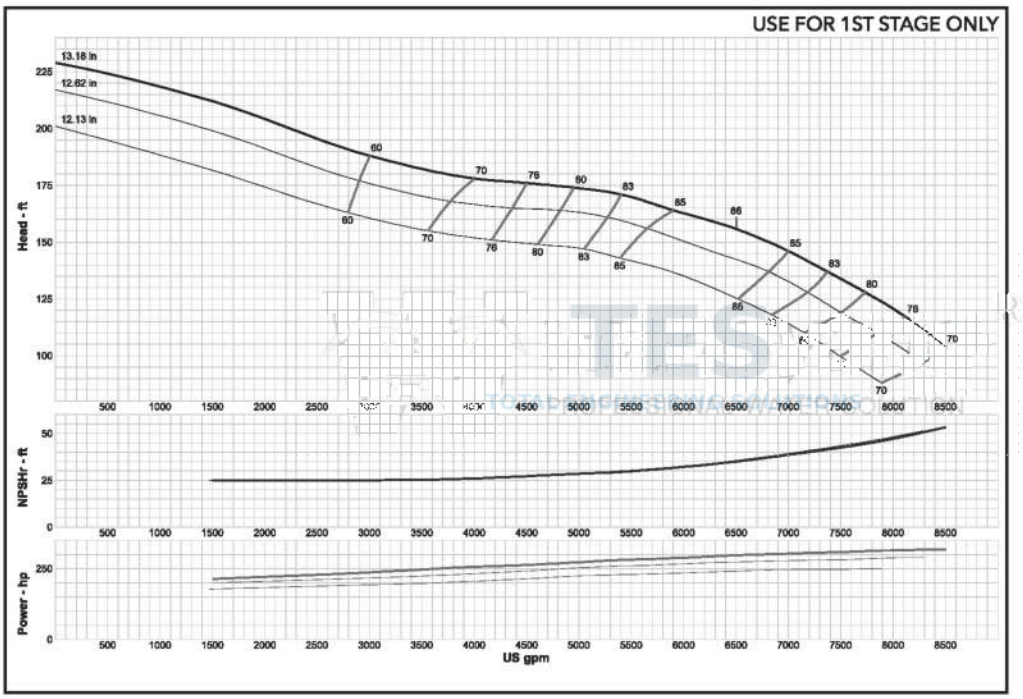

## MODEL:18WYG

| | |
|---|---|
| **RPM** | **1770** |
| EFFICIENCY CORRECTION | |
| 1-STAGE | -1.5 |
| 2-STAGE | -1 |
| 3-STAGE | 0 |
| 4-STAGE | 0 |
| Impeller | **ENCLOSED** |
| Ns = | **2868** |
| K = | **27.5** |
| Bowl O. D. | 17.75 in |
| Bowl Lateral | 0.75 |
| Max. PSI | 310 |
| Disch size | -- |

**TOTAL ENGINEERING SOLUTIONS**

BOWL PERFORMANCE CURVE BASED ON PUMPING CLEAR, NON-AERATED WATER. RATED POINT ONLY IS GUARANTEED. CURVES REPRESENT SINGLE STAGE PERFORMANCE BASED ON TEST OF MULTI-STAGE BOWL ASSEMBLY. EFFICIENCY CORRECTION APPLIES TO HEAD, FLOW AND HORSEPOWER FOR LESSER STAGES.

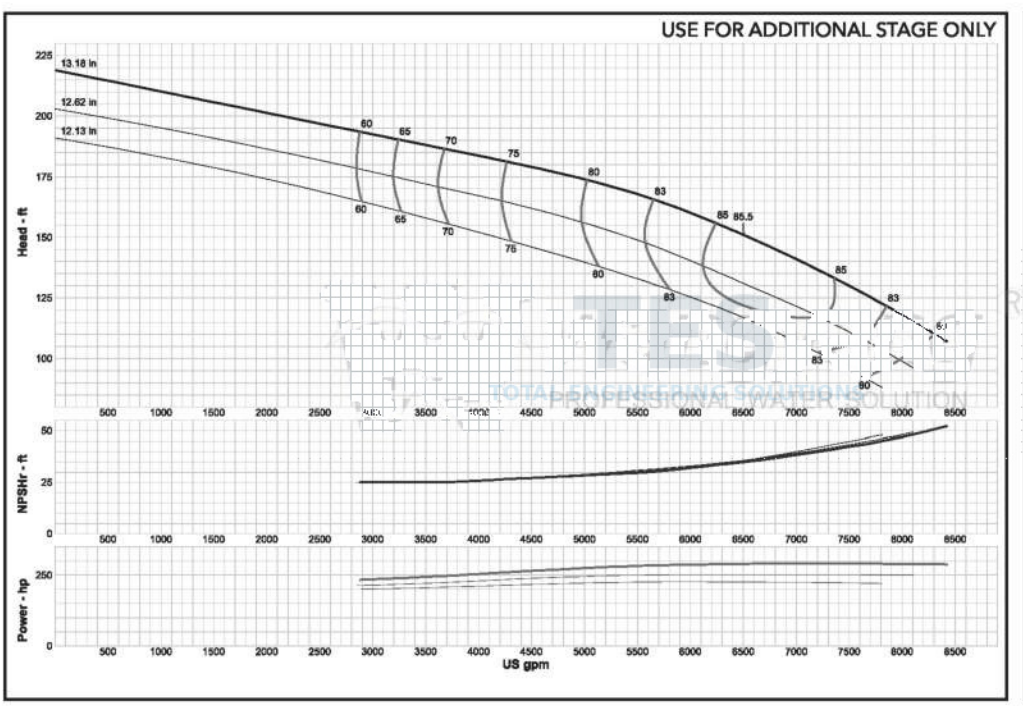
Total Engineering Solutions




| MODEL:20WYDG | |
|---|---|
| **RPM** | **1770** |
| EFFICIENCY CORRECTION | |
| 1-STAGE | 0 |
| 2-STAGE | 0 |
| 3-STAGE | 0 |
| 4-STAGE | 0 |
| Impeller | **ENCLOSED** |
| Ns = | **3233** |
| K = | **36** |
| Bowl O. D. | 18.94 in |
| Bowl Lateral | 0.88 |
| Max. PSI | 310 |
| Disch size | -- |

**TOTAL ENGINEERING SOLUTIONS**

BOWL PERFORMANCE CURVE BASED ON PUMPING CLEAR, NON-AERATED WATER. RATED POINT ONLY IS GUARANTEED. CURVES REPRESENT SINGLE STAGE PERFORMANCE BASED ON TEST OF MULTI-STAGE BOWL ASSEMBLY. EFFICIENCY CORRECTION APPLIES TO HEAD, FLOW AND HORSEPOWER FOR LESSER STAGES.

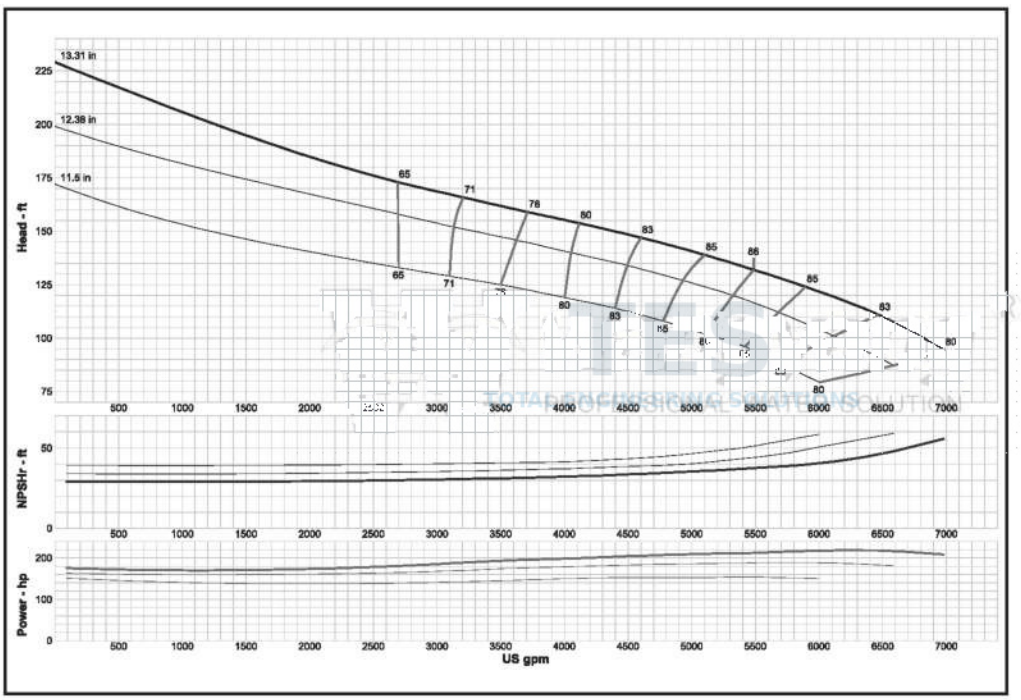



| MODEL:20WYDG | |
|---|---|
| **RPM** | **1770** |
| EFFICIENCY CORRECTION | |
| 1-STAGE | 0 |
| 2-STAGE | 0 |
| 3-STAGE | 0 |
| 4-STAGE | 0 |
| Impeller | **ENCLOSED** |
| Ns = | **3233** |
| K = | **36** |
| Bowl O. D. | 18.94 in |
| Bowl Lateral | 0.88 |
| Max. PSI | 310 |
| Disch size | -- |

**TOTAL ENGINEERING SOLUTIONS**

BOWL PERFORMANCE CURVE BASED ON PUMPING CLEAR, NON-AERATED WATER. RATED POINT ONLY IS GUARANTEED. CURVES REPRESENT SINGLE STAGE PERFORMANCE BASED ON TEST OF MULTI-STAGE BOWL ASSEMBLY. EFFICIENCY CORRECTION APPLIES TO HEAD, FLOW AND HORSEPOWER FOR LESSER STAGES.

Total Engineering Solutions

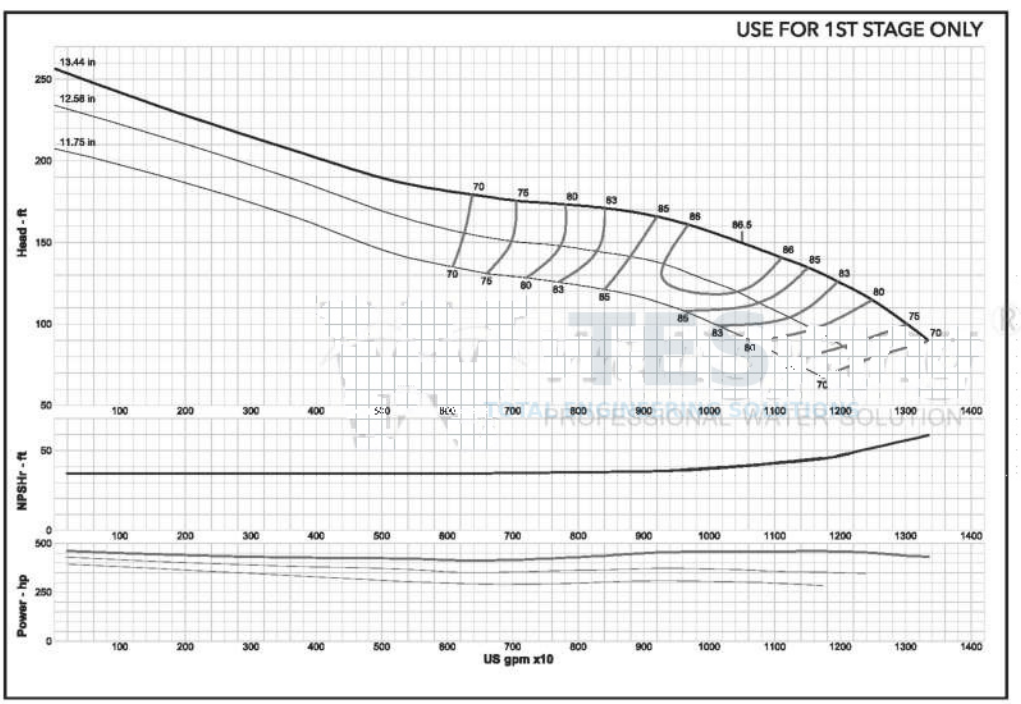



## MODEL:20WYDD

| RPM | 1770 |
|---|---|
| EFFICIENCY CORRECTION | |
| 1-STAGE | -3 |
| 2-STAGE | -1 |
| 3-STAGE | 0 |
| 4-STAGE | 0 |
| Impeller | ENCLOSED |
| Ns = | 3371 |
| K = | 31 |
| Bowl O. D. | 18.94 in |
| Bowl Lateral | 0.88 |
| Max. PSI | 310 |
| Disch size | -- |

TOTAL ENGINEERING SOLUTIONS

BOWL PERFORMANCE CURVE BASED ON PUMPING CLEAR, NON-AERATED WATER. RATED POINT ONLY IS GUARANTEED. CURVES REPRESENT SINGLE STAGE PERFORMANCE BASED ON TEST OF MULTI-STAGE BOWL ASSEMBLY. EFFICIENCY CORRECTION APPLIES TO HEAD, FLOW AND HORSEPOWER FOR LESSER STAGES.

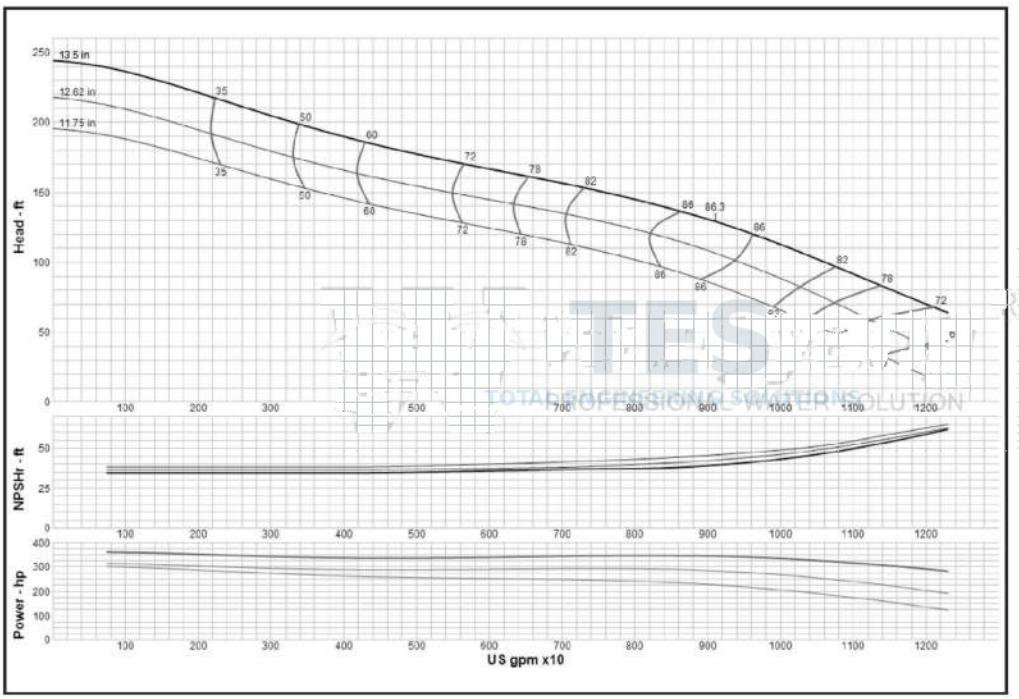



## MODEL:20WYXGG

| RPM | 1770 |
|---|---|
| EFFICIENCY CORRECTION | |
| 1-STAGE | 0 |
| 2-STAGE | 0 |
| 3-STAGE | 0 |
| 4-STAGE | 0 |
| Impeller | ENCLOSED |
| Ns = | 4255 |
| K = | 52 |
| Bowl O. D. | 20.75 in |
| Bowl Lateral | 1.41 |
| Max. PSI | 300 |
| Disch size | -- |

TOTAL ENGINEERING SOLUTIONS

BOWL PERFORMANCE CURVE BASED ON PUMPING CLEAR, NON-AERATED WATER. RATED POINT ONLY IS GUARANTEED. CURVES REPRESENT SINGLE STAGE PERFORMANCE BASED ON TEST OF MULTI-STAGE BOWL ASSEMBLY. EFFICIENCY CORRECTION APPLIES TO HEAD, FLOW AND HORSEPOWER FOR LESSER STAGES.

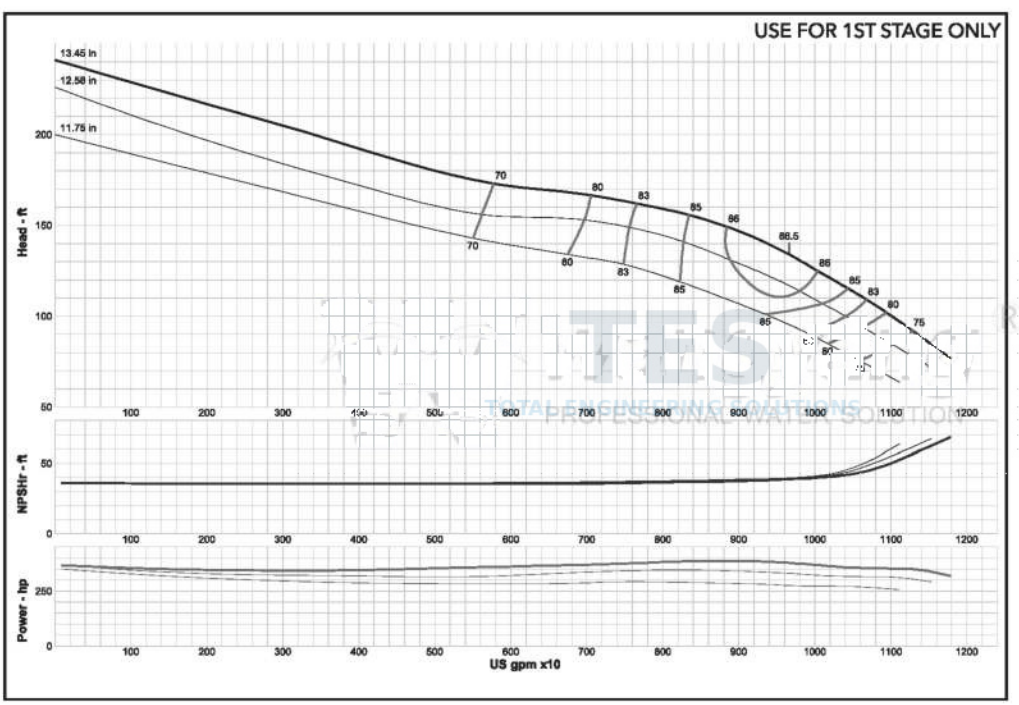



## MODEL:20WYGD

| RPM | 1770 |
|---|---|
| EFFICIENCY CORRECTION | |
| 1-STAGE | -1 |
| 2-STAGE | 0 |
| 3-STAGE | 0 |
| 4-STAGE | 0 |
| Impeller | ENCLOSED |
| Ns = | 4807 |
| K = | 45 |
| Bowl O. D. | 20.75 in |
| Bowl Lateral | 1.41 |
| Max. PSI | 270 |
| Disch size | -- |

TOTAL ENGINEERING SOLUTIONS

BOWL PERFORMANCE CURVE BASED ON PUMPING CLEAR, NON-AERATED WATER. RATED POINT ONLY IS GUARANTEED. CURVES REPRESENT SINGLE STAGE PERFORMANCE BASED ON TEST OF MULTI-STAGE BOWL ASSEMBLY. EFFICIENCY CORRECTION APPLIES TO HEAD, FLOW AND HORSEPOWER FOR LESSER STAGES.




## MODEL:20WYXGD

| RPM | 1775 |
|---|---|
| EFFICIENCY CORRECTION | |
| 1-STAGE | 0 |
| 2-STAGE | 0 |
| 3-STAGE | 0 |
| 4-STAGE | 0 |
| Impeller | ENCLOSED |
| Ns = | 4345 |
| K = | 55.4 |
| Bowl O. D. | 20.75 in |
| Bowl Lateral | 1.41 |
| Max. PSI | 300 |
| Disch size | -- |

TOTAL ENGINEERING SOLUTIONS

BOWL PERFORMANCE CURVE BASED ON PUMPING CLEAR, NON-AERATED WATER. RATED POINT ONLY IS GUARANTEED. CURVES REPRESENT SINGLE STAGE PERFORMANCE BASED ON TEST OF MULTI-STAGE BOWL ASSEMBLY. EFFICIENCY CORRECTION APPLIES TO HEAD, FLOW AND HORSEPOWER FOR LESSER STAGES.

Total Engineering Solutions

# FROM DUTY POINT TO CERTIFIED CURVE

TES prepares the final 60 Hz pump selection and project-specific performance submittal after confirming the required operating conditions with the customer.

**FLOW**
**Up to 20,000 GPM**

**HEAD**
**Up to 2,000 ft**

**POWER**
**Up to 2,600 HP**

**BOWL SIZE**
**6 to 28 in**

**PRESSURE**
**Up to 1,500 psi**

**FREQUENCY**
**60 Hz U.S. selection**

## INFORMATION REQUIRED FOR SELECTION

- Design flow and total dynamic head
- Liquid, temperature and water analysis
- Sump or well geometry and minimum water level
- Driver preference, voltage and speed
- Materials, coating and applicable project standards

### PROJECT-SPECIFIC TECHNICAL SUBMITTAL

Detailed certified 60 Hz performance curves will be submitted after confirmation of the required duty point and final pump configuration.

Total Engineering Solutions

# ENGINEERED ACCESS TO VERTICAL TURBINE PUMP SOLUTIONS

U.S. market coordination through TES.

**Manufactured in Saudi Arabia.**


## TOTAL ENGINEERING SOLUTIONS LLC

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Technical selections, materials and performance are subject to final quotation and approved submittals.

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