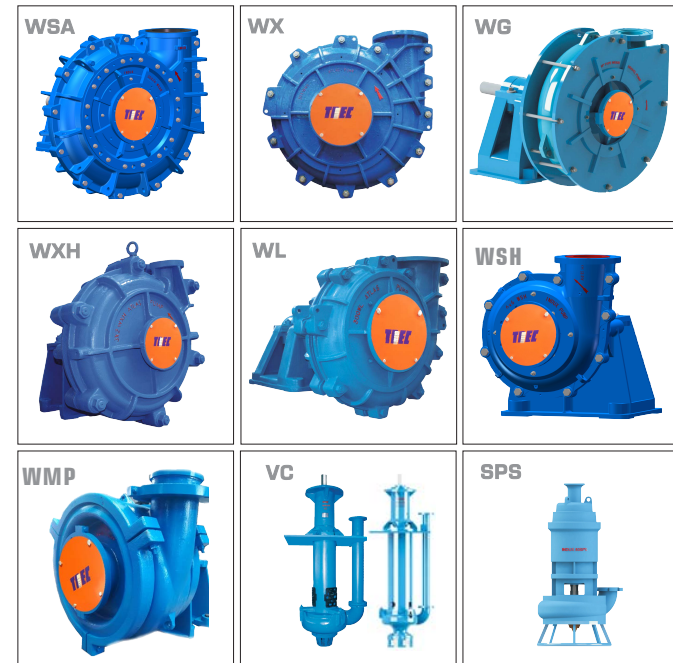


## Global Footprint



## **TEEC** INDUX<sup>®</sup> PUMP Slurry Pumping Solution



Mining & Mineral Processin | Power Plant | Coal Washing | Metallurgy | Aggregate | Dredging | Kaolin

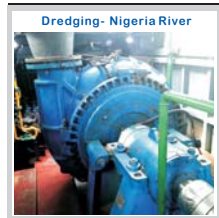
## TIIEC PUMPS ON SITE



Copper Mine, Chile



Iron Ore, Australia



Dredging- Nigeria River



Coal Washing, Australia



Bauxite & Alumina, Australia



Steel Plant, Brazil

## TYPICAL APPLICATIONS

PUMP APPLICATIONS	PUMP										
	WSA	WX	WXH	WL	WG	VC	SPH	SPL	SPS	WXF	WDL
Mill discharge	■	■						■			
Coarse Sand	■	■	■			■	■	■			
Coarse tailings	■	■	■			■	■	■			
Phosphate matrix		■	■	■	■	■	■	■			
Fine tailings		■		■		■	■	■			
Heavy media	■	■	■	■		■	■	■			
Dredging					■				■		
Gypsum		■	■	■		■	■	■	■		
Coal washing		■	■	■	■	■	■	■	■		
FGD		■	■	■		■	■	■	■		■
Flotation										■	

## ABOUT US

Hebei TIIEC Machinery Co.,Ltd.(hereafter called "TIIEC") was founded in 1998, it is a mining equipment manufacturing and service group which possesses a complete R&D team, intellectual property rights for all its designs and products branded as TIIEC® and INDUX®.

Serving a global market with worldwide distribution and overseas branches in South Africa, Peru and Australia, TIIEC specializes in handling the toughest and most abrasive applications. It is striving for the best in product reliability, availability, and value as well as customer satisfaction.

Through years of research and product development, we have developed a comprehensive range of 13 pump series covering over 154 models that make up our slurry pump range. With a capacity of over 3500t pump sets per annum. Currently the largest pump we manufacture is 760mm mill circuit slurry pump with 760mm (discharge ID).

Up to today TIIEC® and INDUX® pump has been installed in many of the world's top mining houses and has gained a well-deserved reputation for quality, reliability and cost saving among our customers worldwide.

### Our pumps are featured with:

- Multiple series, full sizes slurry pumps to meet the demands of a massive range of applications
- Diverse wear and corrosion resistant hard metal and elastomer material to handle various mediums.
- Quality guaranteed using State-of-the-art foundry, heat treatment, machining processes and well-equipped testing equipment with a very strict QC standard.
- Performance guaranteed with advanced pump testing facility
- Superior delivery is assured with stable and effective production system



## SERVICE PACKAGE

### As a slurry pump manufacturer, we also provide:

- Pumping system design and upgrading services, to achieve optimum efficient operation.
- Complete solutions for slurry delivery system (EPC design)
- On-site technical support and stocking service.
- Slurry pump contracting and service exchange programs
- On-site and in-house training.



## WSA(R) - Mill Circuit Sever Duty Slurry pump

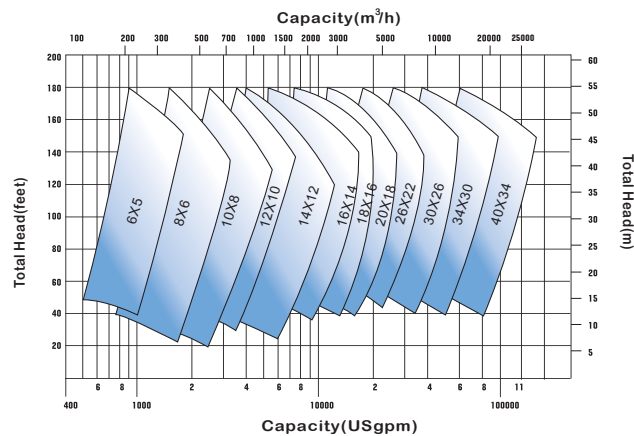
The WSA(R) pump is particularly designed to operate in more aggressive wear applications, easily handle large particles in dense abrasive pulps, and perfectly combine strength, durability, hydraulics, and construction materials.

THIEC WSA(R) pump is the best choice for applications ranging from the most abrasive grinding discharge to crushed ore pumping. Furthermore, all grinding processes can be covered, when operated in conjunction with the WX pump.



Discharge size: 5"~34" / Capacities to:22000m<sup>3</sup>/hr / Heads to:55m

### WSA(R) Pump Quick Selection Chart



#### Pump Features

Single stage, single suction, overhang shaft, centrifugal, double casing horizontal pump

**Material** -Elastomeric linings with alloy impellers provide longer life, particularly in cyclone feed circuits and more complex screen unloading services

**Passage** - Large diameter impellers with a wide passage design assures lower running speeds which achieve longer wear life and reduces maintenance.

**Bearings** - A short and large diameter shaft together with quality heavy duty roller bearings reduce shaft bending, pump vibration and overheating whilst pump is in operation.

**Adjustable impeller clearance** - The clearance between the impeller and the throat bush can be adjusted to assure the pumps run at their best efficiencies.

**Flanges** - Flange sizes are in accord with standard ASME/ANSI B16.5 and 16.47 or be customized regarding specific requirement.

## WX(R) / WXA(R) - Heavy Duty Slurry Pump

WX(R) & WXA(R) hard metal/rubber heavy duty slurry pumps are designed for the most difficult pumping applications for highly abrasive, high density or corrosive slurries. Extra thick sections at the critical wear points and superior Impeller structure ensures improved performance with extended wear and minimised maintenance, thus improving cost of ownership.



Rubber lined pumps expand applications to chemical products handling, several different rubber options are available to meet different application requirements. Best fitted in aggressive applications, like mill discharge and tailing transfer

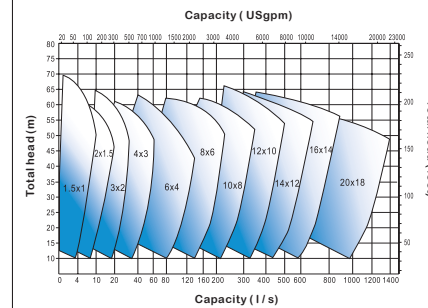


WXA(R) pumps are improved version of WX(R) pumps, in that it has an adjustable wear plate seated in at the Throatbush. This can be adjusted while the pump is running.

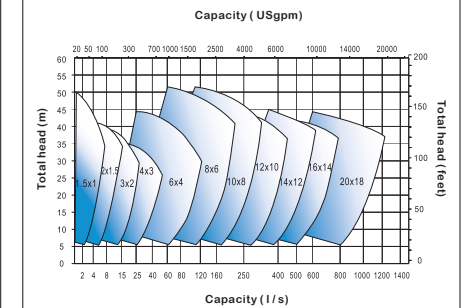
#### WXA- Adjustable Impeller Clearance

Discharge size: 1"~18" / Capacities to:5400m<sup>3</sup>/hr/Heads to: 68m<sup>3</sup>

### WX (A) Pump Quick Selection Chart



### WX(A)R Pump Quick Selection Chart



#### Pump Features

Single stage, single suction, overhang shaft, centrifugal, double casing horizontal pump

#### Material:

Casing are made of ductile Iron, ribs help casing to withstand higher pressures.

Wet Ends - Impellers, liners, volutes are made of high-chrome alloy or rubber or polyurethane, to resist wear, corrosion or impact, parts made of metal or rubber are interchangeable.

Shaft sleeve: Ceramic, tungsten carbide or other hard material are optional for coating, to increase wear resistance.

**Bearing Assembly-** Grease Lubrication and oil lubrication are optional depend on the usage.

**Seal options-** Gland Seal, expeller( centrifugal or dynamic) seal and mechanical seal are optional to fit different application **Parts design:**

Impeller-Multiple impeller types for diverse applications to get best performance: High efficiency, High efficiency with lower NPSHr, large particle, enhanced performance, flow reducer, Recessed eyes are available.

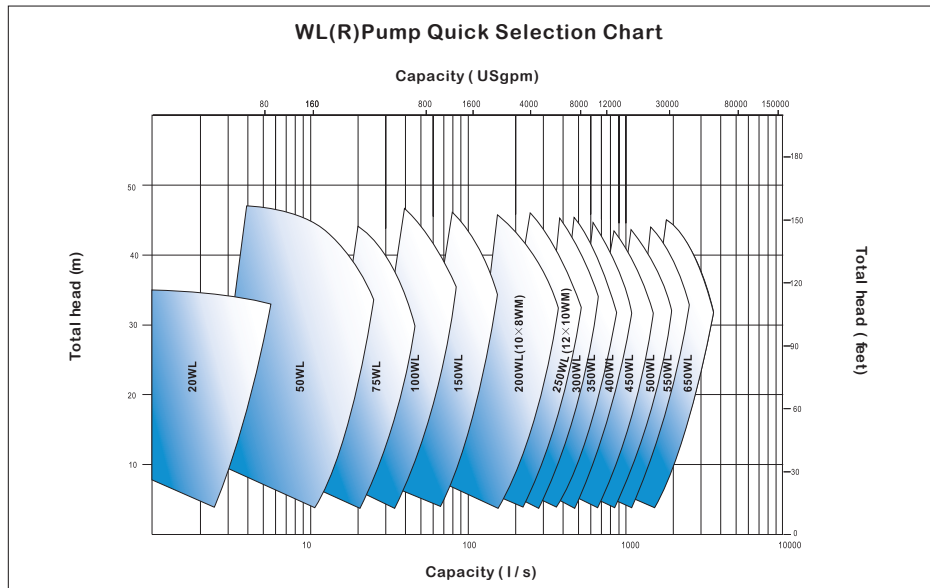
Liners- different types to match different impellers.

## WL(R) - Low to Medium Head Heavy duty Slurry Pump

WL(R) light to medium duty slurry pumps are designed for continuous slurry handling applications where a large flow at a low to medium head is required. Especially for medium abrasive and lower solids concentrations applications. Similar in structure to WX pump, WL(R) pumps are smaller sized and relatively economical to handle mild slurries.



Discharge size: 20–650mm / Capacities to: 10260m<sup>3</sup>/hr / Heads to: 63m



### Pump Features

Single stage, single suction, overhang shaft, centrifugal, double casing horizontal pump

#### Material:

Casing- Made of ductile Iron, ribs help casing to stand high pressure.

Wet Ends- Impellers, liners, volutes are made of high-chrome alloy or rubber, to resist wear, corrosion, impact or erosion, parts made of metal or rubber are interchangeable.

Bearing Assembly- Grease Lubrication and oil lubrication are optional depending on the usage.

Seal options- Gland Seal, expeller (centrifugal or dynamic) seal and mechanical seal are optional to fit different application.

#### Parts design:

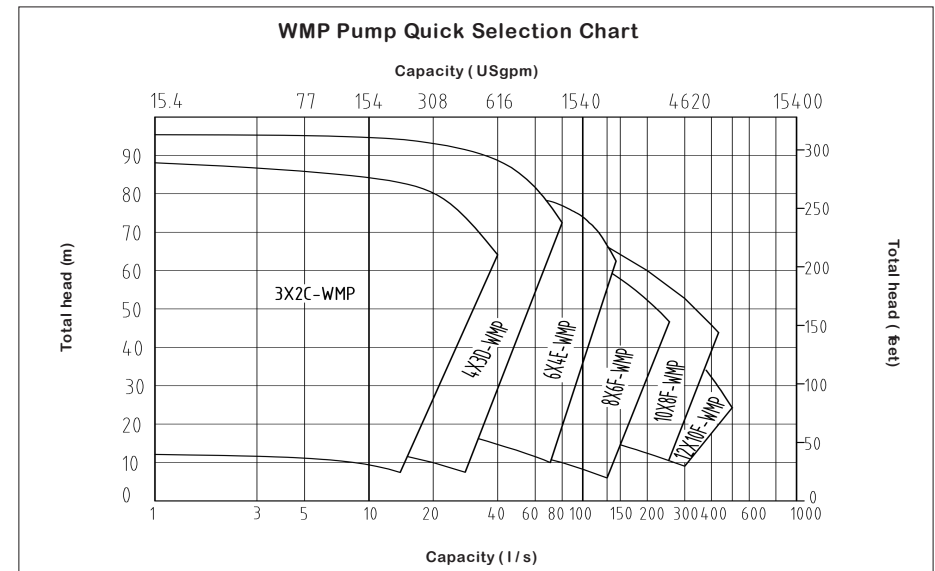
Compare with WX(R), WL(R) pumps are smaller sized, more economical when dealing with mild media.

## WMP HEAVY DUTY SLURRY PUMPS

WMP medium abrasion slurry pumps are designed for the most difficult pumping applications for highly abrasive, high density or erosive slurries. Extra thick sections at wear point and perfect impeller structure ensures satisfactory performance with long life and needs minimum maintenance requirements.



Discharge size: 2"-10" / Capacities to: 1800m<sup>3</sup>/hr / Heads to: 66m



### Pump Features

Single stage, single suction, overhang shaft, centrifugal, single casing horizontal pump

Material: Shaft sleeve: Ceramic, tungsten carbide or other hard material are optional for coating, to increase wear resistance.

Bearing Assembly- Grease Lubrication are optional depend on the usage.

Seals options- Packing Seal, expeller (centrifugal or dynamic) seal and mechanical seal are optional to fit different application

#### Part design:

Impeller – with multiple impeller types, for diverse applications to get best performance.

High efficiency with lower NPSHR, large particle handling, enhanced performance, increased durability.

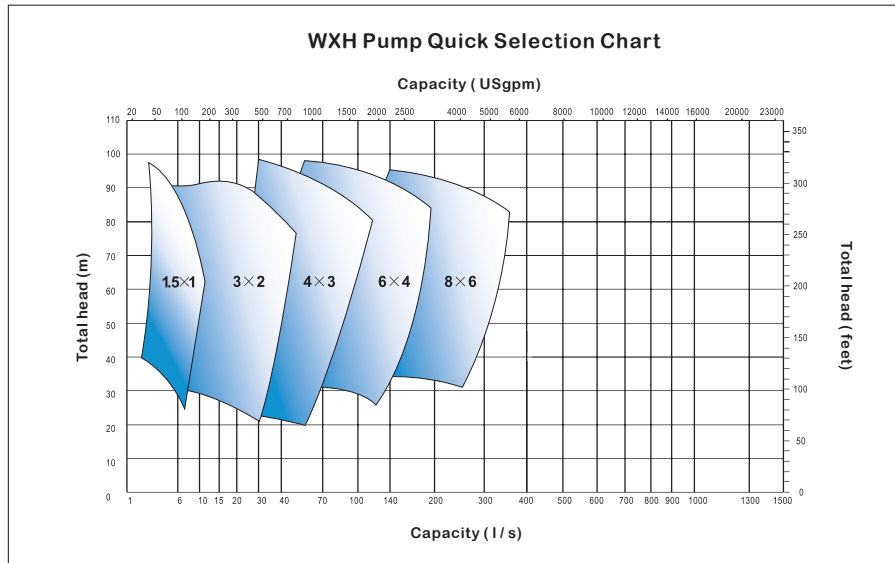
Recessed eyes are available.

## WXH - High Head Heavy Duty Slurry Pump

The WXH pumps is designed to produce high staged discharge head at high pressure and has been commonly used for long distance transport lines. It is frequently used on lines where multiple pumps could operate in series, thus reducing the number of bombs.



Discharge size: 1"~6" / Capacities to: 1152m<sup>3</sup>/hr / Heads to: 98m



### Pump Features

Single stage, single suction, overhang shaft, centrifugal, double casing horizontal pump

#### Material:

Casing are made of ductile iron; bolstered ribs help casing withstand high pressures  
Wet Ends- Impellers, liners, volutes are made of high-chrome alloy to resist wear, corrosion, and Impact.

**Bearing Assembly-** Grease Lubrication and oil lubrication are optional depending on the usage.

**Seal options-**Gland Seal, expeller(centrifugal or dynamic) seal, mechanical seal is optional to accommodate different application.

#### Parts design:

Impeller has a Large diameter, low turning speed, with wide veins and recessed vanes help lower internal velocity and extend wear life.

## VC(R)/VCS - Heavy Duty Sump Pump

VC(R) /VCS slurry pumps are designed for handling abrasive and corrosive slurries ,whilst submerged in sumps or pit.

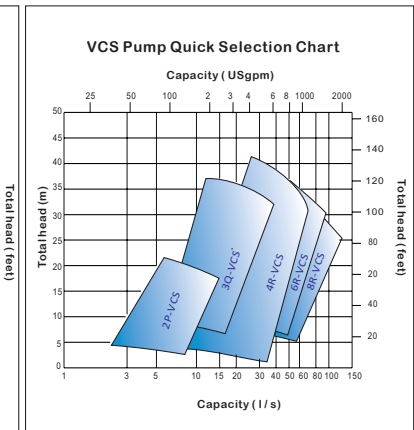
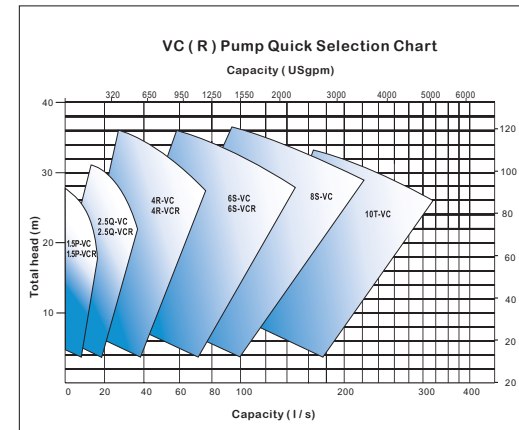
The pump has no shaft seal, easy to maintenance and cost of ownership is reduced.

Hard metal and rubber parts are optional for different applications and are interchangeable. Suitable for most applications where sump slurry pumps are needed.

VC(R) pumps are equipped with standard impellers while VCS pumps are equipped with recessed impellers.



Discharge size: 40~250mm / Capacities to: 1090m<sup>3</sup>/hr / Heads to: 41m



### Pump Features

VC(R) & VCS pumps are single stage, single suction, overhang shaft, centrifugal, single casing structure

#### Material:

Casings, Impellers, liners are made of high-chrome alloy or rubber, to resist wear, corrosion or impact , parts made of metal or rubber are interchangeable.

\* For VCS, only metal material is optional

**Seal options-**No shaft seal, free of shaft sealing problems.

**Structure-**No Impeller clearance adjustment is needed, easy to maintain and operate.

**Bearing Assembly-** Grease Lubricated, easy to maintenance. With a heavy-duty bearing assembly, ensures the stability and smooth running of the pump. With large particle handling capabilities. Has "Dry Run" capability.

#### VC(R) - Standard impellers

**Inlet -** The bottom and top inlet design allows for no priming

**Strainer -** Reduce blockage rate.

**Impeller -** Double suction vanes reduce the axial load.

**Suction pipe -** could be fixed to draw away the high concentrated slurry deposited on the bottom of pit.

There is also an agitator option in hi-chrome only

#### VCS- Non-clogging Sump Pumps with recessed impellers

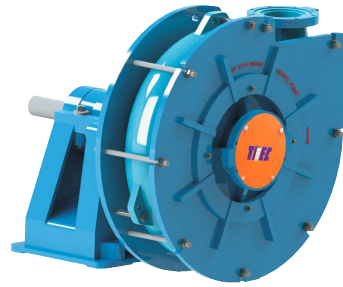
The recessed impeller and the casing with specially designed, flow allows for big particles through unbroken.

This series is specially designed for the applications where heavy abrasive slurries exist and the particles are required to keep unbroken during pumping, e.g. transportation of pellets in mineral processing.

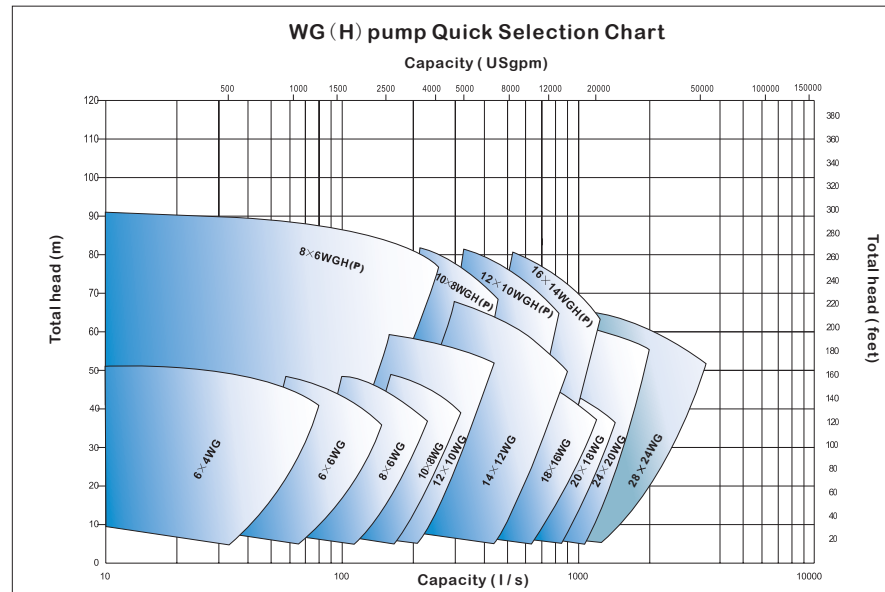
## WG(H) - Gravel & Dredge Pump

WG(H) pump are designed for continuous pumping of highly abrasive slurries, that containing large particles which other Atlas pumps cannot handle, Large veins inside the casing, make it the best choice for gravel, dredging and other applications where large particles needed to be handled, especially with high flow, high concentration, high head medium.

Low NPSH requirement and robust design, ensures long life under severe duties.



Discharge size: 4"~20" / Capacities to: 5600m<sup>3</sup>/hr / Heads to: 78m



### Pump Features

Single stage, single suction, overhang shaft, centrifugal, single casing horizontal pump

#### Material:

Casing, Impeller, Plates are made of high-chrome alloy ,to resist wear, corrosion, impact.

**Bearing Assembly**- Grease Lubrication and oil lubrication are optional depending on the usage.

**Seal options**-Gland Seal, expeller( centrifugal or dynamic) seal and mechanical seal are optional to fit different application.

#### Parts design:

Wet parts- wide internal passage allow large particle to pass un-obstructed, through and reduces wear.

Impeller -wide passage and recessed vanes, help to lower internal velocity to extend wear life.

Belt joint-Discharge could be any angle.Excellent NPSH performance.

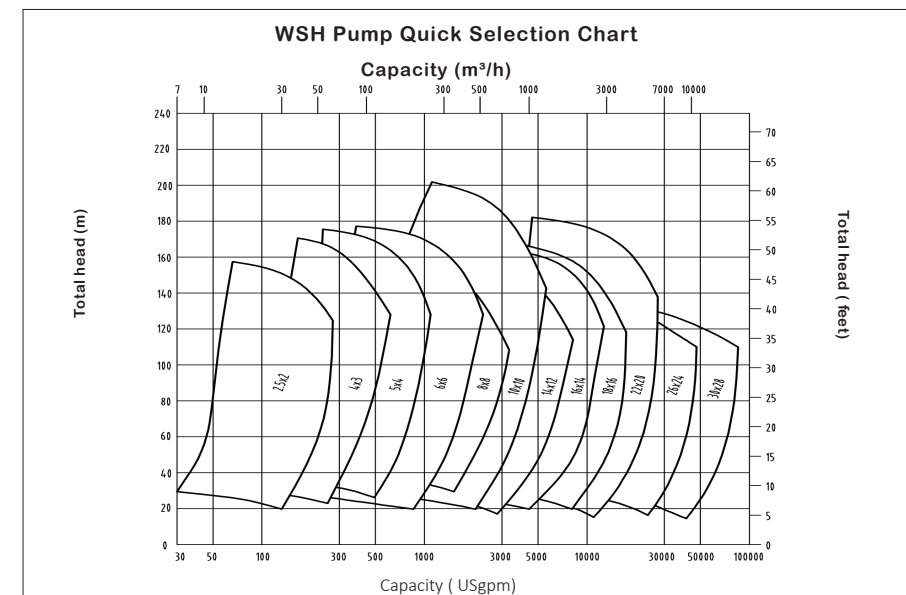
## WSH - Heavy Duty Slurry Pump

WSH series pump is designed for the most difficult pumping applications like highly abrasive, high density pumping requirements. It can handle slurries containing in excess of 70% by weight.

Combined with advanced hydraulic design, it provides higher efficiency, superior wear-resistant volute, and impeller, and will require less maintenance and thus a cost saving and improved cost of ownership .



Discharge size: 2"X1.5"~30"X28" / Capacities to: 10000m<sup>3</sup>/hr / Heads to: 60m



### Pump Features

#### Material

Casing-Made of ductile Iron, with ribs that help casing withstand higher operating pressures.

Wet Ends-Impellers, liners, volutes are made of high-chrome alloy to resist wear, corrosion or impact.

#### Structure

-Special structure design to fit in high head applications, where more than one pump in series is needed.

High efficiency, lower power draw.

-Oil lubrication to lower bearing temperature, reduced time.

--Impellers are designed to be trimmed multiple times to fit motor speed, when required.

**Seal:** Expeller + packing seal or mechanical seal are optional and suited to the application.

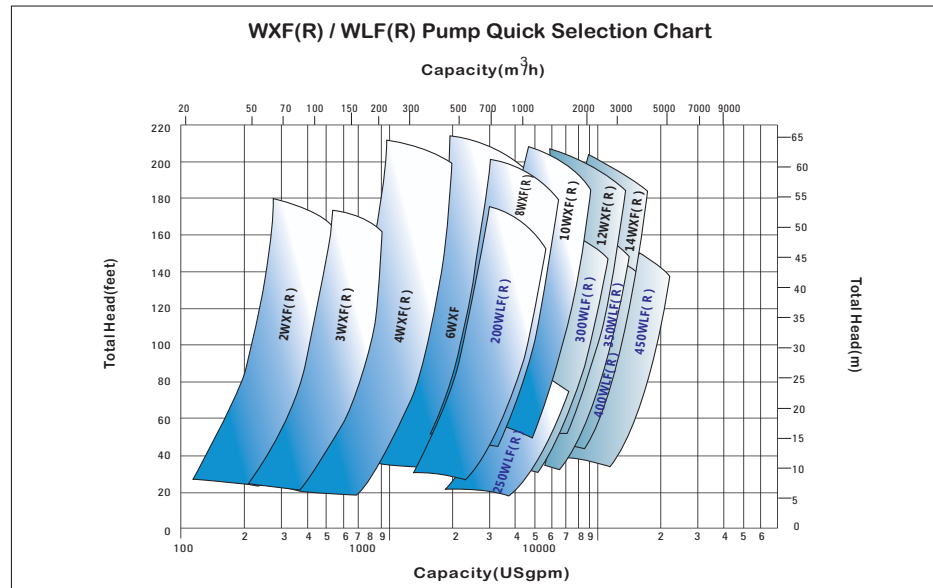
## WXF(R)/WLF(R) - Froth Pump

Heavy Duty Metal and Rubber Lined Foam Pumps. The WXF(R)/WLF(R) Foam Pump is designed to economically handle heavy air loaded pulp mixes.

This unique foam pumping design includes an enlarged suction diameter and a unique semi-open impeller to facilitate the flow of foam into the pump.



Discharge size: 2"(50mm)~450mm / Capacities to:5000m<sup>3</sup>/hr / Heads to: 65m



### Pump Features

Single stage, single suction, overhang shaft, centrifugal, double casing horizontal pump

**Material:** Ceramics; Hard metal Impellers and Elastomer molded/ hard metal Liners are used to handle corrosive/abrasive froth slurries.

#### Structure:

- The enlarged inlet of throat bush reduces NPSHr.
- The blade shape of open impeller and venting pipe in suction pipe help to get as more as froth or viscous slurries into the pump, minimize the pump size and increase efficiency.
- Venting pipe helps to relief air from system, promotes the movement of the froth slurry into the impeller eye.

**Seals-**When froth factor is over 1.8, we adopt Gland seal with venting system to help release air from the pump.

so 3 seal methods are optional:

Gland seal, Gland seal with venting system, and Mechanical seal.

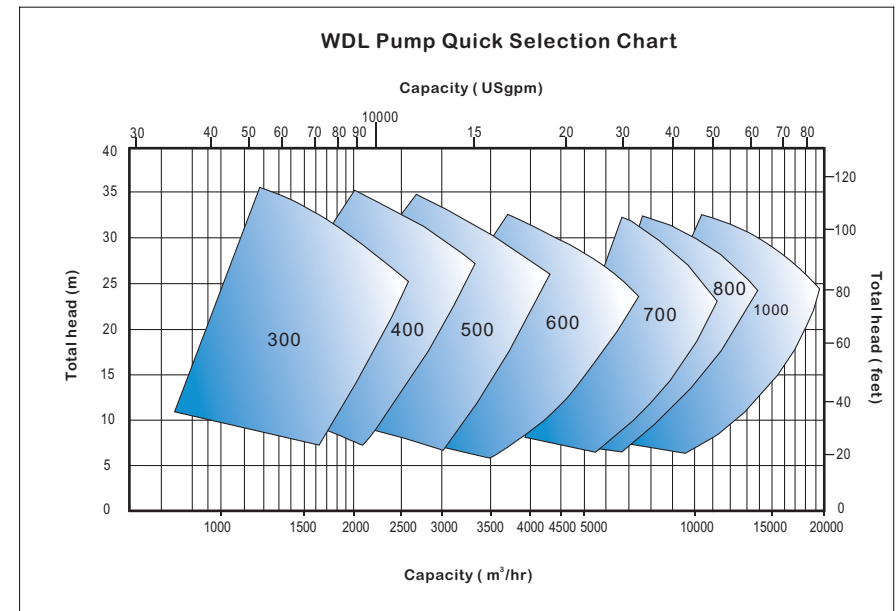
## WDL(R) - Fuel & Gas Desulfurization Slurry Pump

WDL(R) series is especially designed for fuel and gas desulfurization application for power plants. Mainly applied in absorbing tower circling pump for spray FGD device. Specially designed compact frame can save space for pump installation.

TIEC developed multiple options of materials suitable for desulfurization application.



Discharge size: 300~1000mm / Capacities to:15000m<sup>3</sup>/hr / Heads to:35m



### Pump Features

Single stage, single suction, overhang, double casing, centrifugal pump

**Smaller size**(discharge outlet diameter up to 500mm)

**Material:** Ceramic; wet-parts--high abrasion and corrosion resistant metal material  
Lower frame design ensure pump running in a more secure condition.  
Bearing Assembly- cylindrical bearing assembly with grease lubrication

**Larger size**(discharge outlet diameter 600mm and above)

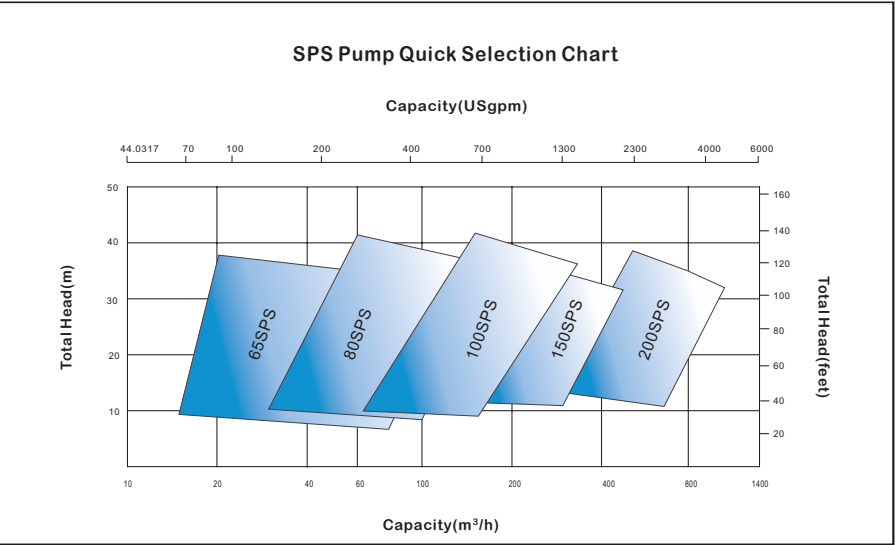
**Material:** Metal impeller with rubber liner with high abrasion, corrosion resistant.  
Rear demounted structure—convenient for inspection or change of impeller and mechanical seal without demount inlet-outlet pipeline.  
Bearing assembly-Oil lubrication improves bearing life time.

## SPS - Submerged Slurry Pump

Single stage, single suction, single casing, submerged over-hanging shaft centrifugal submersible slurry pump. suitable for corrosive applications, with solid particles, like mining, power plant, coal, especially handle corrosive slurry with crystals and de-watering.



Discharge size: 65~200mm / Capacities to:700m<sup>3</sup>/hr / Heads to:45m



### Pump Features

- Structure:**
- Pump and motor are a one-piece unit. Impeller and motor share the same shaft, to ensure stable and smooth operation.
  - No shaft seal needed, reduces downtime.
  - The unit works submersed; no priming needed.
  - No need for external protection (self-guarded) and is loose fitted and could be moved to the required place, conveniently. Less noise and vibration.

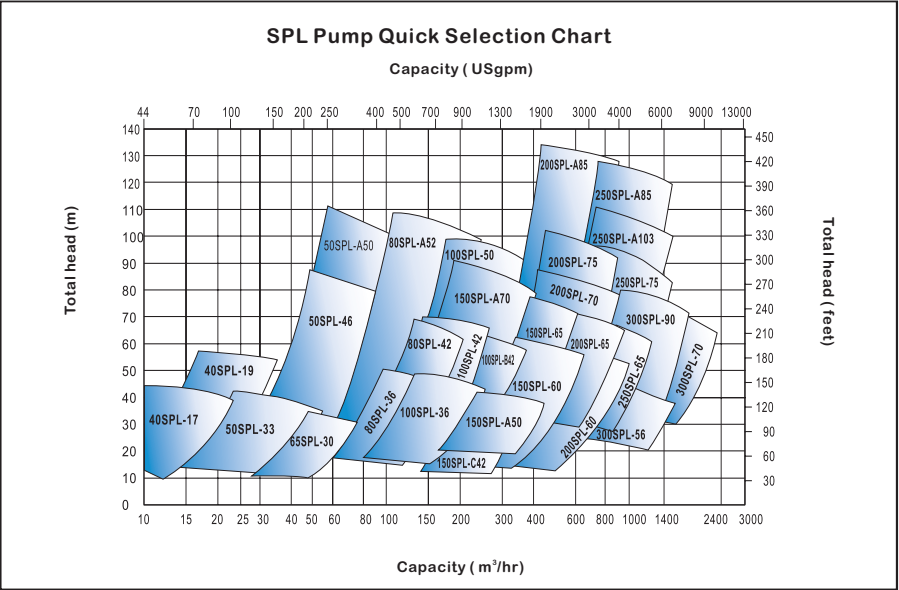
- Material:**
- Wet parts are made of high-chrome alloy to resist wear, corrosion or impact and reduces cost of ownership
  - Ceramics

## SPL - Heavy Duty High Head Slurry Pump

SPL hard metal slurry pump are designed for high head applications Widely used in Coal preparation applications. Oil lubrication with water-cooling design makes the bearings always working at lower temperature thus shaft could rotate more rapidly to get high head, direct connected drive are always optional by trimming impeller to appropriate diameter and to get performance just in need, save the cost for variable-frequency motor. Specially designed liners and impellers structure help pump get higher efficiency and high head. Could be used in sea water handling applications after special improvement. Could be used in series under 3.6MPa.



Discharge size: 40~300mm / Capacities to:2333m<sup>3</sup>/hr / Heads to: 128m



### Pump Features

- Material**
- Ceramics ; Casing-Made of ductile Iron, ribs help casing to stand high pressure.
  - Wet Ends-Impellers, liners, volutes are made of high-chrome alloy to resist wear, corrosion, shock or brush

- Structure**
- Special structure design to fit in high head applications where more than one pump in series are needed. High efficiency, lower power cost.
  - Oil lubrication to lower bearing temperature, reduce down time.
  - Impellers are designed to be trimmed multiple times to fit motor speed, coupling connection between pump and motor help pump running more stable and reliable.

**Seal:**Expieler+packing seal and mechanical seal are optional, to reduce leakage risk.

## SPH - Medium Duty High Head Slurry Pump

SPH hard metal slurry pumps are designed for high head applications, widely used in mining tailing transportation applications.

Oil lubrication with water-cooling design makes the bearings always working at lower temperature thus shaft could rotate more rapidly to get high head, direct connected drive are always optional by trimming impeller to appropriate diameter and to get performance just in need, save the cost for variable-frequency motor. Specially designed liners and impellers structure help pump get higher efficiency and high head.

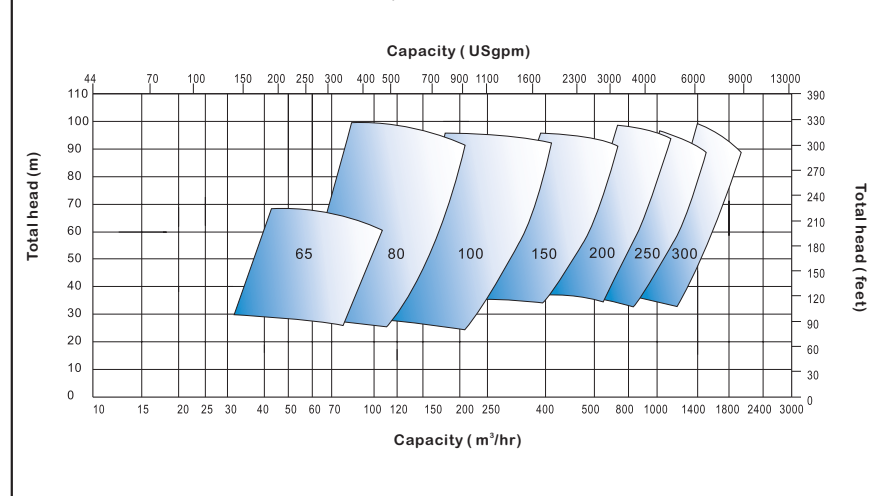
Could be used in sea water handling applications after special improvement.

Could be used in series under 3.6MPa.



Discharge size: 65~300mm / Capacities to:1920m<sup>3</sup>/hr / Heads to: 94m

SPH Pump Quick Selection Chart



### Pump Features

#### Material

**Ceramics** ; Casing-Made of ductile Iron, ribs help casing to stand high pressure.

Wet Ends-Impellers, liners, volutes are made of high-chrome alloy to resist wear, corrosion, shock or brush **Structure**

-Special structure design to fit in high head applications where more than one pump in series are needed.

High efficiency, lower power cost.

-Oil lubrication to lower bearing temperature, reduce down time.

-Impellers are designed to be trimmed multiple times to fit motor speed, coupling connection between pump and motor help pump running more stable and reliable.

**Seal:**Expeller+packing seal and mechanical seal are optional, to reduce leakage risk.

Depending on our capability, we will also provide customization and service of different materials in mining, industrial and steel fields

### Ceramics Sintered Casting

**Materials:** silicon carbide, silicon nitride, composite materials

**Products:** pump parts, pipes, linings



### Rubber Moulding

**Rubber Materials:** Nature rubber, Synthetic rubber; **Composite material:** Metal and rubber, Ceramic and rubber.

**Products:** Liners for ball mill, Hydrocyclone, Pump parts, Valve, Screen media, other irregular parts.



### PU Casting

**PU Materials:** 2 components system and 3 components system.

**Products:** Pump parts, Screen media, Liners for ball mill, Floatation equipment parts, Pipelining, and Pipe Fittings.



### Metal Casting

**Materials:** high chromium wear - resistant cast iron, titanium alloy, wear - resistant high manganese steel, ductile iron, stainless steel

**Products:** pump parts, mill lining board, crusher parts

