AQUA®©

MAKE IN INDIA

Ultra Compact, Pit Installed; Flood Proof *(Fully Immersible)* InLine Booster Pumpsets...

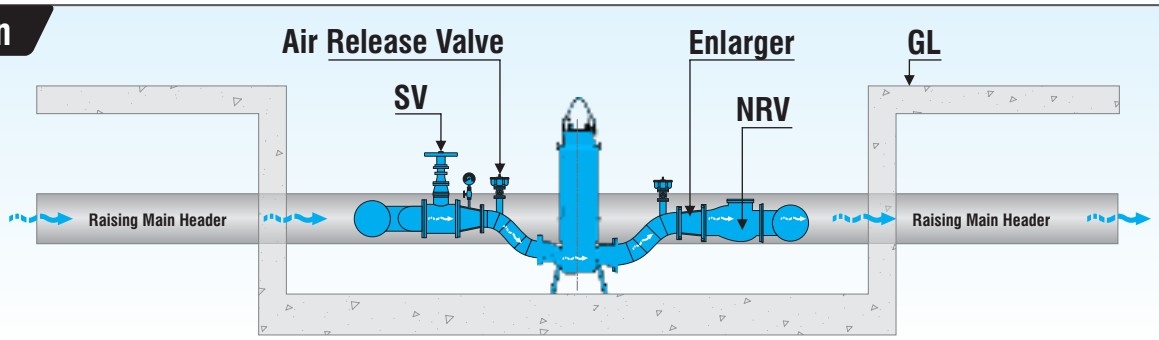
AILFP

Fully Immersible pumpsets for OnLine Boosting of Water Pressure with Minimal FootPrint

Flood Proof Insurance *for Inline Booster Pumping*

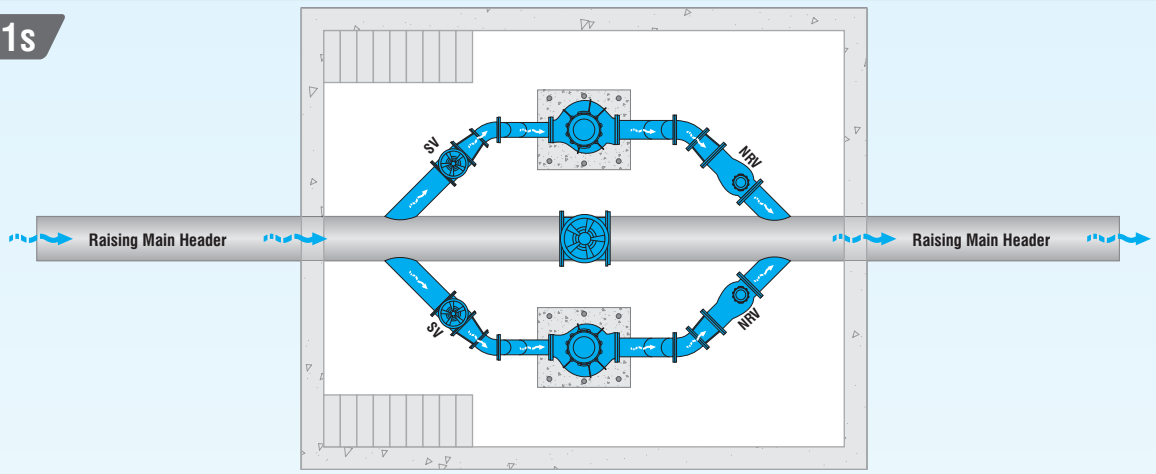
www.aquapumps.com

Elevation

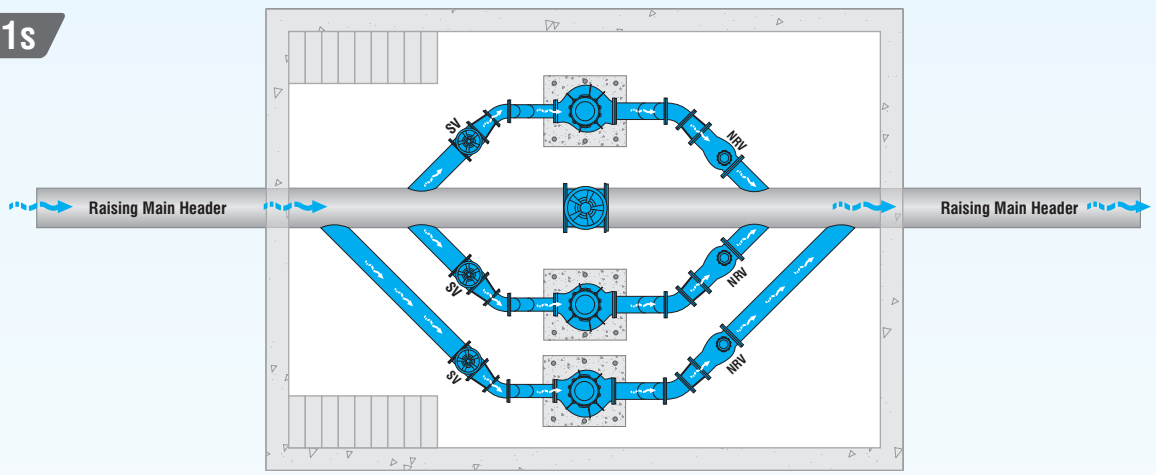


Plan

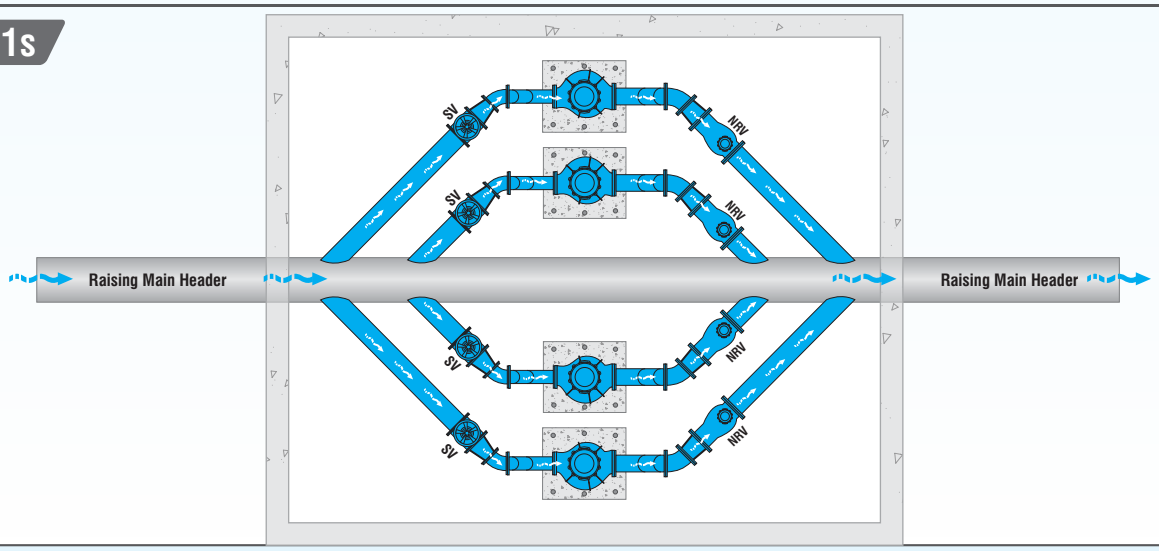
1w+1s



2w+1s



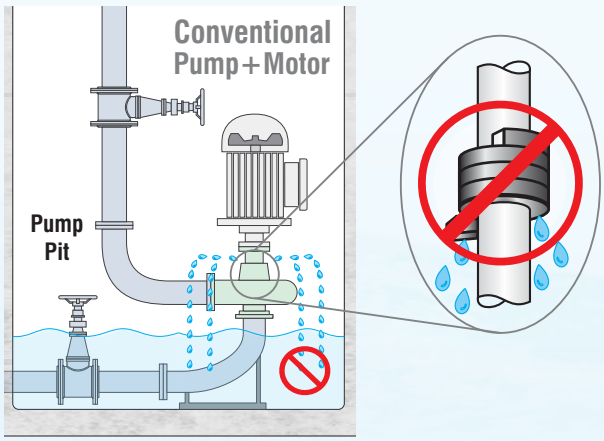
3w+1s



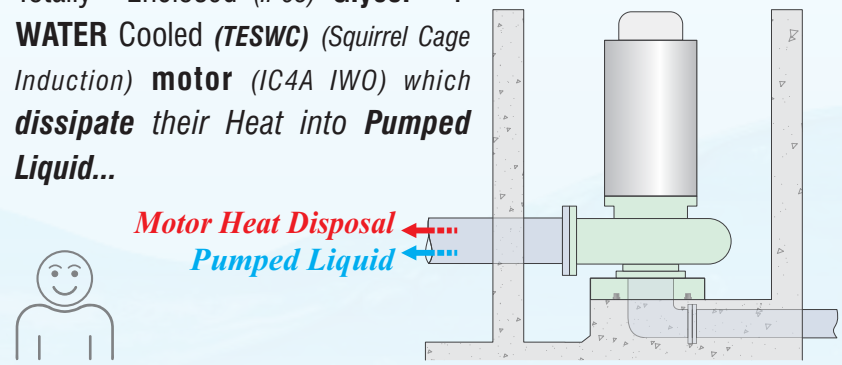
Thanks to the **Back Pull Out design**; the Entire Motor+Shaft+Impeller can be pulled out as a **Single unit** *(without disturbing the pipeline)*; Maintained in hygienic condition at Ground Level & Refitted within minutes *(without the risk of misalignment).*

Benefits of Ultra Compact, Pit Installed;Flood Proof *(Fully Immersible)* InLine Booster Pumpsets

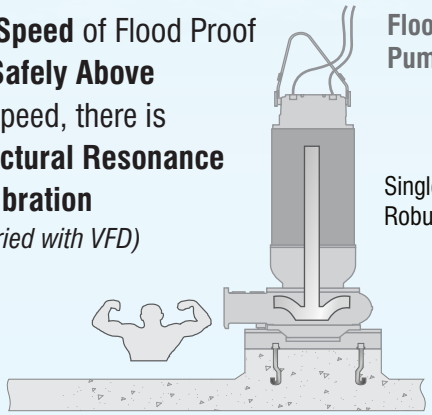
Thanks to the use of Two Ultra High Quality **Mechanical Shaft Seals,** there is **no Nuisance Leakage** *(from Pump Gland Rope)* into the Pump Pit.



Aqua's Flood Proof Pumpsets use Totally Enclosed *(IP68)* **Glycol + WATER** Cooled ***(TESWC)*** *(Squirrel Cage Induction)* **motor** *(IC4A IWO) which* ***dissipate*** *their Heat into* ***Pumped Liquid...***



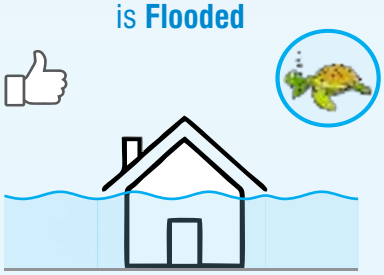
As the **Critical Speed** of Flood Proof pumpsets lies **Safely Above** it's Maximum Speed, there is **No Risk of Structural Resonance** or **Excessive Vibration** *(when speed is varied with VFD)*



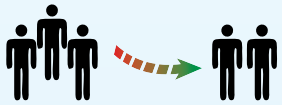
Flood Proof Pumpsets

Single, Rigid; Robust Shaft

Weather Proof
...works even if the entire Pump Pit is **Flooded**



VFD Compatible 100%



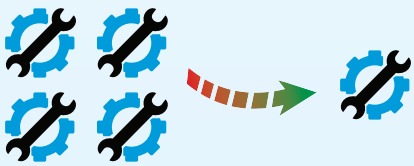
Saves *(upto 33%)* **O&M Staff***

No need for Frequent Periodic....

Shafts/Sleeves &/or **Coupling**

Gland Packing

Oil &/or **Grease**



Saves *(upto 75%)* **Spare Parts & Consumables***

Design: **Pumpset**

Flood Proof Motor Pumpsets are the latest technological development - their Pump-end is similar to **Conventional** *(End Suction)* **Volute pumps** while their Motor-end is much more superior then Conventional Air / Water Cooled Bare Shaft Induction motors - these motors *(already popular in Submersible pumpsets)* are **Fully Immersible** thanks to their **IP68** enclosure.

Coolant Pump

The **Inbuilt** Water + Glycol Circulating Impeller is key driven by the pumpset's shaft itself *(& hence it doesn't require any additional motor or maintenance)*

Heat Exchanger

The maintenance free, Inbuilt **Water** *(Glycol)* **to Water** *(Waste Water)* Heat Exchanger is built of sturdy **Cast Iron**.

The Heat Exchanger & Coolant Pump effectively transfer motor's heat to pumped liquid enabling **S1** operation even with the motor in Air.

The motor is **Amphibious** & hence can safely operate either in totally Dry or Submerged *(Flooded)* conditions.

A built in Jacket Cooling system ensures that the motor is efficiently cooled irrespective of whether or not it is submerged; while the **IP68 Enclosure** ensures that even if the surroundings are flooded, the motor is safe to run.

Design : **Motor Cooling**

Aqua's **Closed Loop Glycol** system uses a mixture of **Potable Water** & any commercially available Polypropylene Glycol formulations.

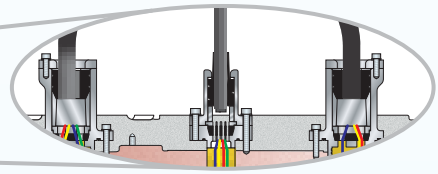
It has excellent heat transfer, corrosion resistance properties & is suitable for temperatures between -45°C to **+55°C**.

The coolant is circulated by an Inbuilt circulating Impeller through the space between the Motor Casing, Jacket Shell thereby extracting motor heat & dissipating it to pumped liquid *(via an inbuilt Heat Exchanger)* away from the Dry Well.

Design: **Motor**

The motor is **Amphibious** & hence can safely operate either in totally Dry or Submerged Flooded conditions.

Water Proof Cable Glands are specially designed as per **IP68** to prevent water ingress *(into the motor windings)* even in case of water flooding the dry well

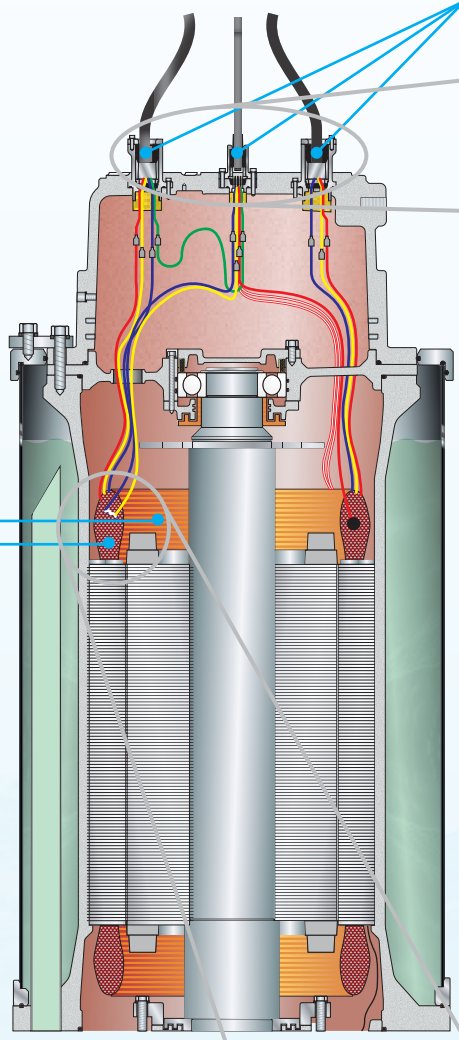


LT Motor

The Totally Enclosed, Self Circulation Water Cooled *[**TESWC IC-4A1W1** to **IEC/IS-60034_6**]* motor is similar to Dry Type Induction Motor, the major difference being the Degree of Protection - it is of **IP-68** Enclosure to ensure **Hermetic Sealing** *(even if an accidental water flooding the dry-well).*

It is cooled by an inbuilt cooling mechanism which uses Potable Water + Commercially available Glycol Mixture as a Coolant.

Option of IEC **IE2 Equivalent** Motor Efficiencies are available *(at a price premium)*

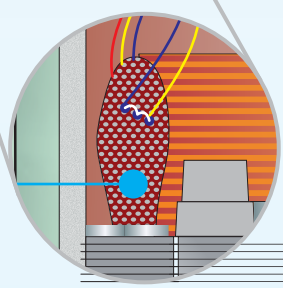


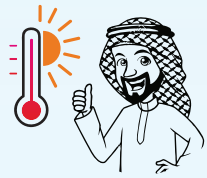
VFD Compatible

Thanks to the very high Thermal Conductivity of Water + Glycol *(as compared to Air)*, Aqua's Flood Proof pumpsets can be safely run staying cool even at reduced frequency despite harmonics from VFD

World's Best, Premium **Motor Insulation**

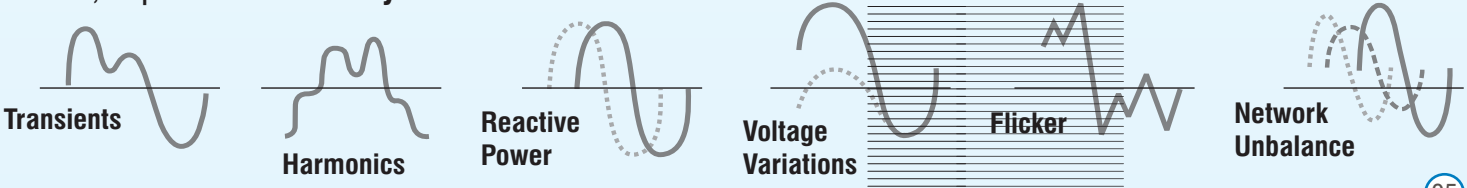
Insulation is based on **"Power House"** type treatment *(**Mica based; Dual Vaccum Pressure Resin Impregnation (VPI)**)* technology for Superb **Di-Electric Strength** due to use of costlier **Resin** *(v/s cheaper **Varnish** used by most Competitors)*.





Thanks to **generous Reserve Margins** & Optimized Design; Aqua's Motors keep coolly working even upto **+55 °C.**

Hence, Aqua's **Motor easily tolerates :**



Design: **Pump End**

End Suction Impeller

CADesigned, CFD optimized; **Multi bladed Water Impellers** ensure **Superb Efficiency.**

Pump Casing is of End Suction **Volute** type & Impeller is mounted **directly** on to the Extended Shaft of the motor hence **eliminating alignment** & **vibration problems.**

Design : **Shaft**

OverSized Mono Shaft for Fail Safe Operation

Pump Clogging though un-desirable, is often unavoidable, It causes severe Stress on Shaft. To tackle this problem, Aqua's Pumpsets are built with an **Oversized** Stainless Steel **Shaft** & designed **without** Any Couplings or **Sleeves** *(below the Mechanical Seals)* thereby **Eliminating shaft failures, Reducing Maintenance** & the eliminating **need** of **Spare Parts** for **15years.**

Design : **Seals**

Seals have L_{10H} life in excess of **50,000** hours &/or **5** years.

Shaft Sealing is by means of **Two**, Independent, high quality Bi-Directional; **Mechanical Seals** *(& the Primary seal is always of **Silicon Carbide** faces to withstand Erosion incase of increased silt & grit content in sewage/ water)* hence there is Zero Leakage of water/ septic sewage into the Dry Well from the Shaft Gland.

Design : **Shaft**

All **Thrusts** are absorbed by **Grease Lubricated Anti Friction Bearings** located deep inside the motor.

Superb Bearing Life

A Typical Bearing of L_{10H} life of 1,00,000 hours &/or 10 years.

Premium, **Ultra Long Life; Synthetic Grease**

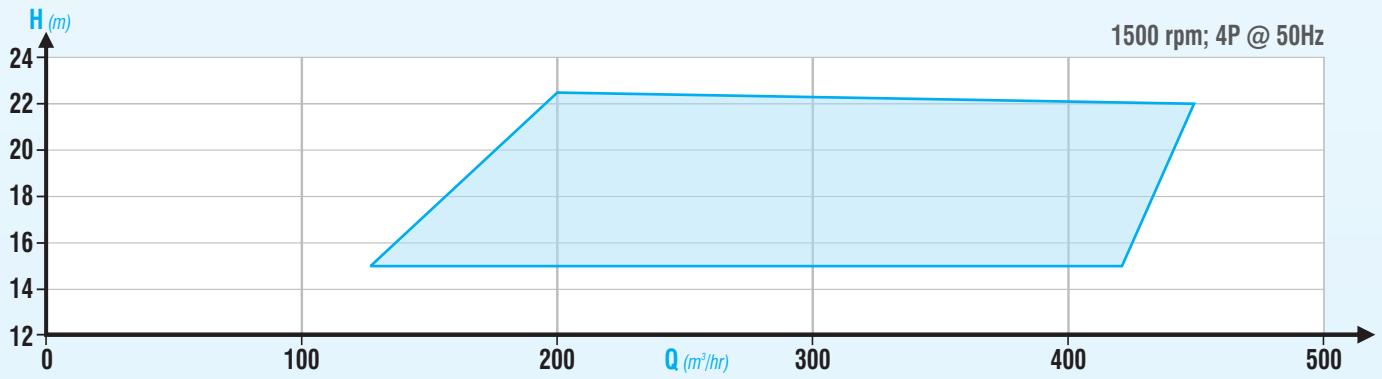
Ensures a Typical Re-Greasing Interval of 50,000 hours &/or 5 year

Design : **InBuilt Monitoring Systems**

Simple, Uncomplicated yet Effective ...proven in Indian Conditions

- **CCWLD** detects Accidental Water Leakage from Cable Sheath's Cuts &/or Nicks into the Motor *(≥22.5kW)*.
- **SBWLD** detects Accidental Water Leakage in to Motor's Stator Chamber *(≥22.5kW)*.
- **BTDs** in the form of Bi-metallic Switches *(for All Pumpsets)*.
- **WTDs** in the form of Bi-metallic Switches *(for All Pumpsets)*.

Typical **Performance Range**



Standard **Technical Specifications**		
Pump	**Discharge Sizes**	DN 100 to 200mm
	Flow Rate	Upto 462 m3/hr
	Head	Up to 22m
Motor	**Ratings**	12kW to 37kW
	Speeds	1500 rpm *(synchronous)*
	Duty & Enclosure	S1 & Exceeding IP 68
	Supply Options	3Ø; 415V, 550V
Intelligent InBuilt Monitoring	**Cable Connection Chamber Water Leakage Detector** *(CCWLD)*	Typically Available from size 22.5kW* & above
	Winding Temp Detector *(WTD)*	Available by default by Bimetallic Switches in each phase
	Drive End Bearing Temperature Detector *(BTD) (DE)*	Available by default by Bimetallic Switches from size 22.5 kW & above
	Non Drive End Bearing Temperature Detector *(BTD) (NDE)*	Available by default by Bimetallic Switches from size 22.5 kW & above
	Stator Chamber Water Leakage Detector *(SBWLD)*	Available from size 22.5 kW & above

Material of **Construction** *(MoC)*			
		Option 1	**Option 2**
Pump Volute Casing		Ductile CI	NiResist
Impeller / Propeller		CF8	CF8M
Motor Casing, Cable, Terminal Chamber		Grey Cast Iron	
Oil Chamber		Grey Cast Iron	
Shaft		Stainless Steel *(SS410 / SS431)*	
Fasteners		Stainless Steel *(A2 - SS304)*	
Jacket Shell		Stainless Steel *(SS304)*	
Elastomers		Nitrile	
Mechanical Shaft Seals	**Primary** *(Pump side)*	Silicon Carbide v/s Silicon Carbide	
	Secondary *(Motor side)*	Cast Chrome Moly Steel v/s Resin Impregnated Carbon	
Wearing Ring / Plate *(Casing)*		Stainless Steel	
Motor Squirrel Cage Rotor Bars		Aluminum bar	Copper bar
Cables		PVC insulated, Copper Cored	ERPS insulated, Copper Cored
Oil		Eco friendly Paraffin White Oil ISO VG 20 or 30	
Sole Plate		MS Fabricated	

Site **Installation** of **Flood Proof** Pumpsets

Some of Our **Other Products**

Submerged Turbine Pumpsets *(AVT)*

Submerged Centrifugal Pumpsets *(SCF)*

Submerged Tubular Column Pumpsets *(ATBP, ATBN & ATBM)*

Aqua Gate Pump *(AGP)*

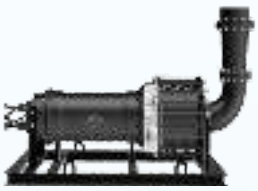
Submersible Dredging / Slurry Pumpset *(ADSJ)*

Submersible Dewatering Pumpset *(ASSJ)*

Non Clog Submersible Sewage Pumpsets *(ANS)*

Submerged Elbow Pumpsets *(AES)*

Non Clog Flood Proof Submersible Pumpset *(ANFP)*



Submerged Mine Dewatering Pumpsets *(AMS)*

Submersible Slurry Hydro Electric Pumpsets *(ASSHE)*

Submersible Slurry Pumpsets *(ASS)*

Submersible Dredging Pumpsets *(ADS)*

Ultra Compact Submersible Sewage Pumpsets *(Scavenger)*

Submersible Sewer Manhole Pumpsets *(AM)*

World's 2nd Largest Plant ***(for submersibles)***

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