HNS SERIES
The most advanced modular submersible pump system
HEVYY PUMPS:
The evolution of Toyo Pumps and a place where heritage meets imagination for the best of both worlds.

In Hevvy Pumps, we have created a product line that embodies the values of imagination and continuous improvement.

Over the course of our 35 year history as Toyo Pumps, the company has evolved. It is the customers who have helped shape us and Hevvy Pumps is the product line we have built for our customers out of years of listening to their needs, dreams and continually excellent feedback. We listened and then answered by creating a line of pumps that is not satisfied relying on past merits alone.

Hevvy pushes the limits of design to propel the future and challenge the industry to be more reliable, efficient and accountable to its customers and the environment. It is an exciting new future when “heritage” and “imagination” meet for the best of both worlds. With Hevvy and its new product lines, we are ready to make a real impact globally.

Make no mistake, the Toyo name has served us well. Toyo is older, proven technology, developed years ago. Hevvy is about embracing our proven technology and incorporating it into our new designs to both improve and create better products.
HEVYY ADVANTAGE

Hevvy is a niche player in the solids handling market and knows the applications better than anyone else.

This knowledge brings with it the following advantages:

- We can truly partner with our customers and consider ourselves an extension of our customer’s operation.
- We are not trying to be everything to everybody and therefore do not have the unfocused range of product lines that most of our conglomerate competitors have. As a result we are able to move faster and adapt with technology.
- We realize that by gaining just five efficiency points, we can effectively save our customers thousands of dollars a year in electricity costs.
- We also realize that by not basing our business model on surviving off spare parts revenues that we can invest in designing pumps that actually last the test of time thereby offering our customers a lower total cost of ownership.

We have named ourselves Hevvy because that one word sums up who we are and the industries we serve.

Hevvy Pumps are designed in house by our engineers and crafted in North America using our own local workforce and know-how.

Hevvy is our name, it signifies we are no lightweight.
Intro to the HNS Pumps

Hevvy Pumps, the global evolution of Toyo Pumps, introduces the HNS heavy-duty modular submersible pump series, available in 10HP-800HP. The HNS range is redefining the submersible pump market by answering one of the most frequent causes of failure in the submersible pump world: mechanical seal failure.

Hevvy offers the only fully integrated pressurized sealing solution on the market. Thanks to the combination of its patented positive pressure technology and tailored Hevvy Slurry Seals, the HNS submersible pumps lasts longer and can pump more aggressive slurries than any other submersible pump. The HNS offers unparalleled flexibility with modular selection of the pump wet-end, seal, motor, and accessories to best fit the application.

Plenum54™ Positive Pressure System

Welcome the revolutionary Plenum54™ to the submersible world. The patented Hevvy Pressurized Slurry Sealing system combines an internal self-generating pressurization system with Hevvy’s Slurry seal range. Together, this creates an internal oil back pressure on the sealing area which at typical submergence depths will yield a greater internal pressure in the sealing chamber than the incoming slurry pressure, ensuring the ultimate seal life.

“Plenum noun pləˈnɛm, ˈplɛnəm\ An enclosed volume of air, gas, or liquid under greater pressure than that surrounding the container.

“It’s like an internal API Plan 54 Shaft Sealing System for a submersible pump”
E Wet End

The HNS-E Wet End has a fully recessed vortex impeller that permits an unobstructed passage. This design allows solids with the same diameter of the discharge to pass through without the danger of clogging. The HNS-E Wet End has some of the highest efficiencies available for recessed impeller due to the unique axial spiral casing. Up to 40% solid fibrous material can also be handled without difficulty due to the natural flow of the fluid through the pump casing and the fact that the flow is virtually isolated from the impeller (only 15% of pumped liquid is in contact with the impeller). This pump is ideally suited for low shear applications.

S Wet End

The new HNS-S Wet End is a fantastic medium duty, high efficiency, solids handling pump for up to 60% solids by weight. The wet end boasts special elliptical cutwater design, high efficiency curved back vanes and an adjustable front wear plate.

D Wet End

The HNS-D Wet End is designed specifically to pick up and transport abrasive solids with the least amount of water. This wet end boasts a robust closed impeller with large internal clearances for superior solids handling capability of up to 70% by weight.

B Wet End

The HNS-B Wet End is hard wearing, heavy duty, and comes standard in high chrome and CD4MCu – although many other metallurgies are available. This wet end features a high efficiency impeller and flow stabilizing vanes on the suction side to increase efficiency and reduce turbulence and resulting impeller wear. This wet end can reach heads up to 500 ft (150 m) and transport heavy slurries with up to 70% solids.
Which mechanical seal is best for your application?

**SD – Severe Duty Mechanical Seal**

Hevvy introduces the SD Double Acting Back-to-Back standard seal, ideal for industries’ tough sealing needs. This is the toughest ‘standard’ sealing solution available on the market.

- Double Acting, Back-to-Back Arrangement.
- Sintered Silicon Carbide Seal Faces impregnated with graphite.
- Shrink fitted Seal Faces – seals are less prone to cracking.
- Anti-rotational pins to prevent seal seats from rotating.
- Widened outboard gap under stationary seal seat – seal less inclined to hang-up.
- Double balanced at seal faces. Increased submergence pressure will not open up the seal faces.

**XD – eXtreme Duty Mechanical Seal**

Hevvy introduces the XD Double Acting Tandem Arrangement seal, ideal for industries’ heavy duty and extra heavy-duty applications. This is the sturdiest mechanical seal ever designed for a submersible pump.

- Double Acting, Tandem Arrangement.
- Tungsten Carbide Seal Faces. Less prone to cracking, improved impact resistance.
- No Shaft Sleeve – impeller clamps seal directly onto shaft. No measuring required.
- Anti-rotational pins to prevent seal seats from rotating.
- Double balanced at seal faces. Increased submergence pressure will not open up the seal faces.
- Smooth-open geometry at lower seal face. Solids will not bind-up the seal.

The XD seal is the sturdiest mechanical seal ever designed for a submersible pump!
New HNS Motor Design

Not only have we designed the new internal pressurization system and the new slurry mechanical seals, we have also designed a new motor that is built for the most difficult slurry applications. With hundreds of motors in stock, we can assist in your efforts to choose the right motor for your application.

- Service Factor: 1.15 or 1.35
- 10 hp – 800 hp
- 4, 6 or 8 pole motors
- Class H insulation
- Available with Extended dry-run (2-8 hours under full load before tripping temperature sensor)
- L10 Bearing Life in excess of 100,000 hours
- Shaft stiffness ratio <1

Dry Run Closed Loop Cooling

The *PlenumS4™* internal pressurization system is also at the center of Hevvy’s optional Continuous Run Dry design. The pressurization system moves oils through a specially integrated heat exchanger to ensure continuous run dry operation of 60-120°C (140-248°F) at full load.

Optional Shroud available for added protection to the motor cooling system

Aerospace grade Aluminum heat exchanger for its superior heat transfer properties. Alternative materials can be used when chemical attack is an issue
Available Pump Add-Ons

**Agitator**
The Toyo patented agitator eliminates solids accumulating on the sump floor. It can significantly reduce maintenance costs from digging out sumps and downtime from solids building up and choking off the suction. The Toyo Agitator’s patented blade achieves the highest efficiency in material mixing.

**Chopper**
Heavy duty blades, located in front of the pump’s suction, agitates, chops, cuts and shreds incoming solids such as metal banding, plastic, wood, rags and bags, prior to them entering the impeller. The ‘chopper’ eliminates pump and system downtime by preventing the plugging of pump suctions and pipelines.

**Jet Ring**
When the material being pumped is not free-flowing and the agitator cannot put the solids back into suspension, look at adding a jet ring. The jet ring delivers high pressure water through nozzles to loosen up compacted and heavy solids and thus fluidizing dense solids mixtures into the intake of the pump.

In the field:

**New Hevvy Technology is Putting Pressure on the Competition...**

“This is one of the most abrasive applications I have ever seen in a process application (pumping 65% solids). The pump ran completely dry under load at various times during the test.”

— Mine Site Reliability Engineering

The competitor’s pump was lasting 3 weeks and the new HNS pump lasted 26 weeks. The HNS motor & seal were not damaged at all after 26 weeks – only the impeller needed to be replaced.

Modularity Interchangeability / Upgradability

Has your application changed? Are you re-purposing the pump? Not a problem for the HNS Pump. With its modular design, Hevvy can retrofit your existing pump to add on an option that you originally did not have, or change out the motor, seal or wet-end to meet the new conditions of your pump.
**Performance Curves**

**E** Vortex Impeller

- Vortex impeller, fully recessed
- Patented axial spiral casing
- No front wear plate needed
- Available in Ductile Iron, High Chrome, CD4, Alloy 20, & more
- Up to 40% solids by weight
- Low sheer

**S** Semi-Open Impeller

- Special elliptical cut water design
- High efficiency curved back vanes
- Up to 60% solids by weight
- High Chrome or CD4
**D** Closed Impeller

- Large solids handling
- Up to 70% solids by weight
- Standard High Chrome impeller and agitator
- Optional High Chrome casing and elbow

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**B** Closed Impeller

- High head
- Up to 70% solids by weight
- High Chrome or CD4
Modular design and unsurpassed flexibility.

Mining
Power
Steel
Pulp and paper
Petrochemical
Agriculture
Food and beverage

Coal
Industry
General sumps
Conveyor sumps
Ports
Paper recycling
Ball mill sumps