

HP-PLUS

HORIZONTAL HIGH PRESSURE MULTI-STAGE PUMP



 Engineered, Assembled, & Tested in the USA



PUMPWORKS HP-PLUS

The PumpWorks HP-Plus pump was designed with reliability and cost reduction in mind. It is a multi-stage centrifugal pump capable of producing a full range of volumes and pressures. Each pump is individually assembled by trained PumpWorks personnel and fully tested to industry API 11S2 standards.

The PumpWorks HP-Plus skid design is the result of a century's worth of engineering, design and the technically advanced SOLIDWORKS Simulation design software. This combination of fabrication and engineering experience coupled with the modern finite element analysis that SOLIDWORKS Simulation brings has allowed PumpWorks to develop a skid design with superior strength, integrity and unsurpassed ease of installation.

As a standard, all PumpWorks HP-Plus pumps are built with hand finished Ni-Resist type 1 stages of a high nickel content steel which is excellent at withstanding hostile or aggressive fluids. The staging configuration is set so that all PumpWorks HP-Plus pumps are constructed in compression. PumpWorks HP-Plus also offers stage coating for those applications requiring additional protection.

Pump shafting options of Nitronics, K-500 Monel®, Stainless Steel, and Inconel® are available for each individual application.

PumpWorks HP-Plus offers abrasive resistant tungsten carbide (TC) bearings to add radial stability in aggressive fluid conditions. Our pumps can be assembled in a multitude of Ni-Resist/TC configurations including up to 1:1 TC to stage ratio.

All PumpWorks HP-Plus centrifugal pump heads and bases are of high quality stainless steel and each is assembled with either tungsten carbide or GRAPHALLOY® bushing and sleeve as a standard.

The PumpWorks HP-Plus components are installed in carbon steel housings but high strength and stainless steel housings are also available.



| Applications

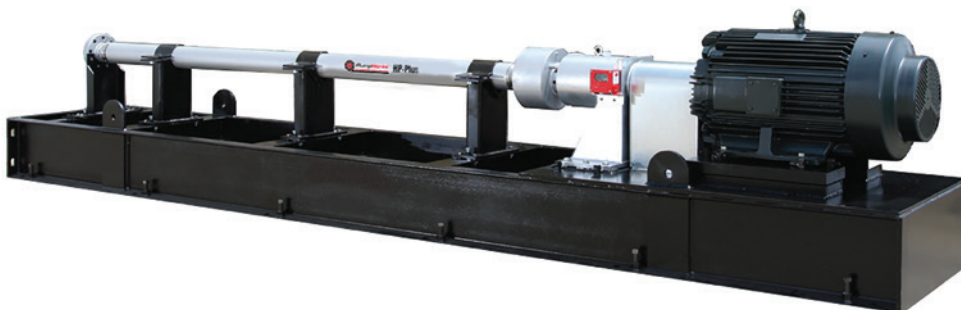
- Amine
- Fluid Transfer
- Gas Processing
- Mine Dewatering
- Pipeline Booster
- Saltwater Disposal
- Water Injection
- Water Flooding

| Fluids

- Amine
- Condensate
- Glycol
- Liquid Natural Gas
- Oil
- Water
- Saltwater

| Markets

- Chemical
- Industrial
- Oil & Gas
- Pipeline
- Refining

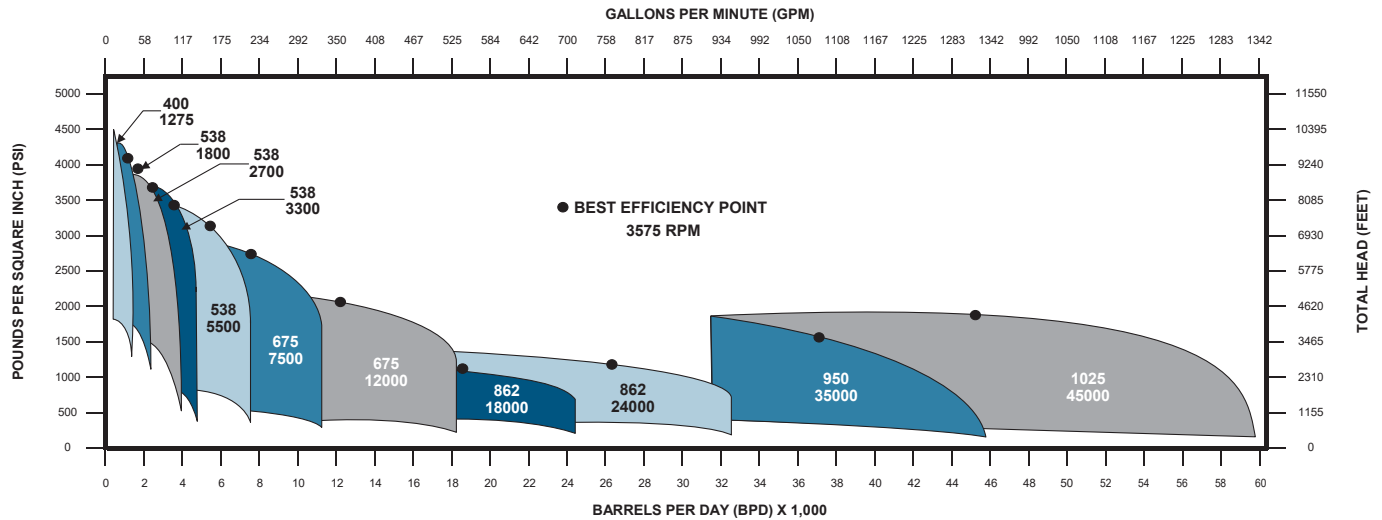


CAPABILITIES	
VOLUME	350 - 45,000 BPD / 10 - 1300 GPM
DEVELOPED PRESSURE	to 9,930 Feet / 4,300 PSI
HOUSING PRESSURE	to 6,000 PSI
HORSEPOWER	to 1,500 HP



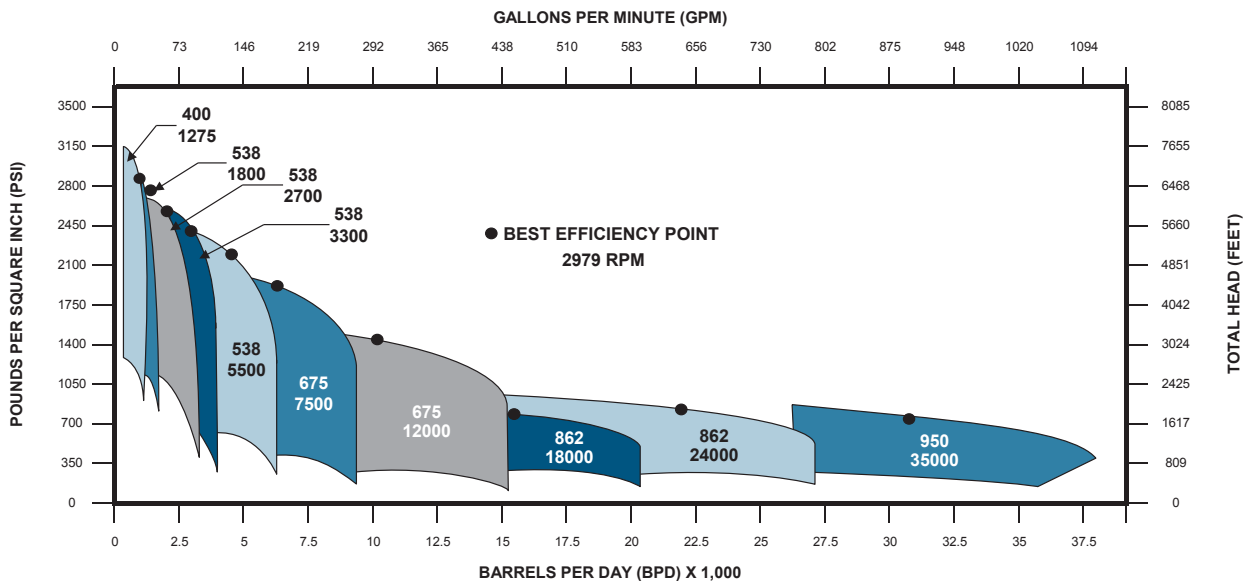
HYDRAULIC PERFORMANCE COVERAGE

| 60 Hz Performance Coverage



Performances shown are nominal and are to be used for preliminary selection only.

| 50 Hz Performance Coverage



Performances shown are nominal and are to be used for preliminary selection only.



DESIGN FEATURES AND BENEFITS

Adjustable V-shaped pump cradles provide for reliable centering while horizontal and vertical adjustments allows for easier alignment.

Adjustable discharge flange support helps protect the pump from static pipe loads and reduces piping fit problems during installation.

Bolt-on skid extension allows skids to easily be extended to accommodate longer pump lengths due to future operating conditions.

Optional API-610 seal flush systems as required.

Thrust Chamber is heavy duty, bi-rotational with standard API-682 seal chamber and rear pullout feature for easy maintenance. Alternate thrust chamber designs are also used including non-rear pullout, depending on the application and/or customer preference.

Removable motor pads allow the skid to accept the next larger motor frame without major skid modification.

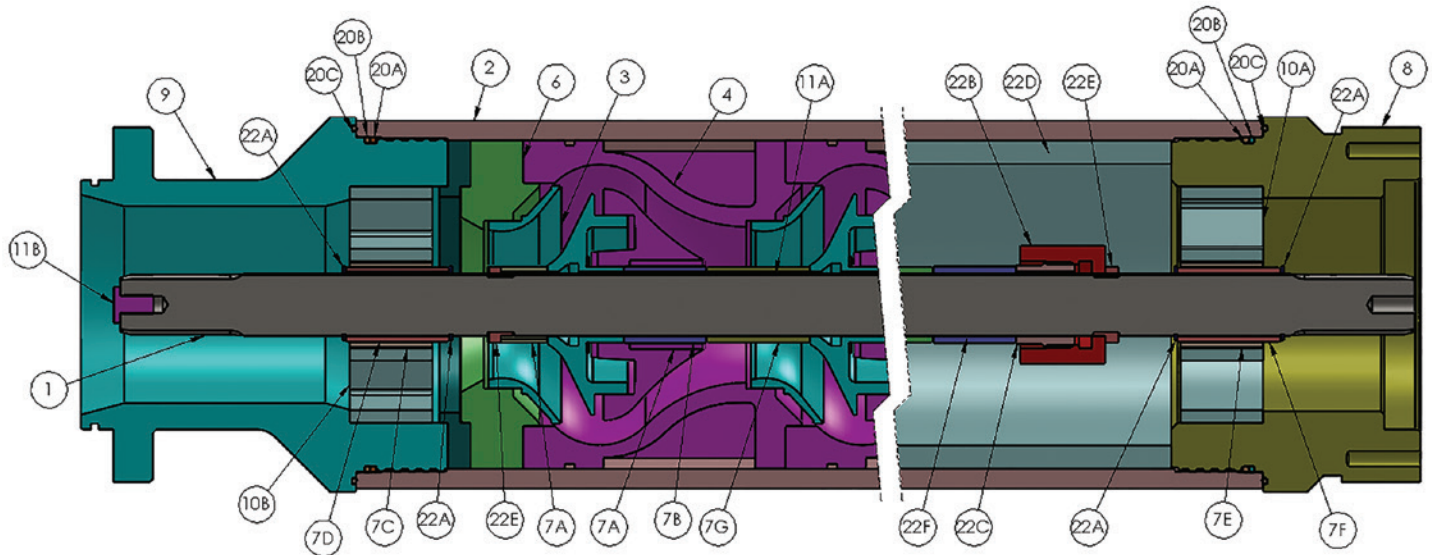
Motor mounting adjustment screws standard for ease of installation and alignment.

Intake and discharge drip pans with drain plugs for spill containment capture potential piping and mechanical seal leakage.





PARTS LIST AND MATERIALS OF CONSTRUCTION



ITEM REF NUMBER	PART NAME	COMPRESSION STANDARD	COMPRESSION ABRASION RESISTANT	COMPRESSION STAINLESS STEEL	COMPRESSION HIGH HP/ HIGH PRESSURE
02	Housing	Carbon Steel	Carbon Steel	Stainless Steel	High Strength
02	Impeller		Ni-Resist		
04	Diffuser		Ni-Resist		
06	Lower Diffuser		Ni-Resist		
08	Head		Stainless Steel		
10 A	Head Bearing Support	Ni-Resist	Ni-Resist	Stainless Steel	Ni-Resist
20 A	Head O-Rings		Viton		
20 B	Head Backing Rings		Peek		
20 C	Head Face O-Ring		Viton		
09	Base		Stainless Steel		
10 B	Base Bearing Support	Ni-Resist	Ni-Resist	Stainless Steel	Ni-Resist
20 A	Base O-Rings		Viton		
20 B	Base Backing Ring		Peek		
20 C	Base Face O-Ring		Viton		
07 A	Bushing, Stage	Ni-Resist	Carbide	Carbide	Carbide
07 B	Sleeve, Stage	Ni-Resist	Carbide	Carbide	Carbide
07 C	Bushing, Base		Carbide		
07 D	Sleeve, Base		Carbide		
07 E	Bushing, Head		Carbide		
07 F	Sleeve, Head		Carbide		
07 G	Spacer	Ni-Resist	Ni-Resist	Stainless Steel	Ni-Resist
22 A	Snap Ring		Stainless Steel		
01	Shaft	Monel	Monel	Monel	Inconel
11 A	Key Stock		Monel		
11 B	Shaft Plug		Monel		
22 E	Two Piece Ring	Monel	Monel	Stainless Steel	Monel
Monel	Compression Sleeve	Ni-Resist	Ni-Resist	Stainless Steel	Ni-Resist
22 B	Compression Nut	Stainless Steel or Monel	Stainless Steel or Monel	Stainless Steel	Stainless Steel or Monel
22 C	Compression Screw	Stainless Steel or Monel	Stainless Steel or Monel	Stainless Steel	Stainless Steel or Monel
22 D	Compression Tube	Stainless Steel or Ni-Resist	Stainless Steel or Ni-Resist	Stainless Steel	Stainless Steel or Ni-Resist



SMART RELIABILITY

Controlling Performance and Continuously Monitoring for Maximum Profitability

From constant speed to integrated pump control, PumpWorks offers multiple options for motor control solutions to meet our customers needs.



Constant Speed Operation

In those cases where constant speed operation is preferred, PumpWorks can provide high quality across the line starters in whatever NEMA enclosure specified. However we recommend the use of our soft starters with maximum pump protection to minimize energy costs, reduce maintenance and provide maximum reliability.

Variable Frequency Drives

PumpWorks offers the Toshiba Plus Pack with the ground breaking Virtual Linear Pump (VLP) technology to provide advanced pump control and protection. The Plus Pack is a solid-state AC drive that ranges from 66-1500 KVA and features true torque control enabling motors to develop high starting torque and compensating for motor slip. Available in NEMA 3R enclosures, ASD rated for 50 degrees C and 4500 fash with no derate of output current. The enclosure cooling technology requires no exchange of inside air to outside air with no filters that require maintenance and no unreliable air conditioners. A 3-year parts and labor warranty is offered when packaged with Toshiba's EQP series motor, even covering bearing fluting failures.

Predict-Plus®

A revolutionary and economical product to continuously monitor vibration in all three axis plus temperature providing the user early detection of anomalies. Predict-Plus® captures the power of the Industrial Internet of Things and transmits machine data to the cloud so that when alarmed, proactive measures can be taken by the user to protect the rotating equipment. Predict-Plus® is adaptive and flexible enough to continuously monitor most rotating equipment.

Predict-Cloud®

is the powerful user interface in which technical machine data can be viewed from anywhere in the world, trended and exported for reports. This tool allows the user to customize alarm/alert levels, text/email call out lists and, general registration information. Managing this data is a powerful component in attaining the goal of reducing maintenance spending and increasing Mean Time Between Repair (MTBR).

DXP Pump Controller

DXP offers a pump specific controller with quick and easy setups for submersible and centrifugal pumps. The pump controller is available in NEMA1, 3R or 4 enclosures up to 700 hp including explosion proof. Our controllers are rated 110 degrees F, standard and have advanced pump protection

features which protect the pump from common process upsets such as; dry run, no flow, broken pipe and run out control. These advanced features are designed to protect the asset and prevent catastrophic failure to the rotating equipment, improving pump reliability and maximizing uptime.





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