



Hermetic Regenerative Turbine Pumps for Freon, CO₂, & other Liquid Refrigerants

HP Series



Designed for:

- Liquid Pressure Amplification
- Economization
- 2-Phase Cooling
- Capacities to 45 GPM
- Heads to 450 Feet
- Temperatures to 150°F (66°C)*
- Hermetically Sealed
- Inverter Duty Motor
- For Non-conductive, Non-corrosive Fluids
- Low NPSH Fluid Handling

* Consult factory for higher temperatures.



*Manufacturing MTH Pumps
in the USA since 1965*



MTH PUMPS
www.MTHPumps.com

HP Series

Hermetic Regenerative Turbine Pumps



MTH HP Series

The HP31, HP41, and HP412 Series line of hermetically sealed regenerative turbine pumps (also known as hermetic or zero emission pumps) is designed to handle applications with difficult to seal, non-conductive, non-corrosive fluids such as freons, CO₂'s, and others, where absolutely leak free performance is required and mechanical seals simply cannot provide the needed reliability, protection, and performance. All of this is accomplished at a price point previously unseen in the industry and is often comparable with other mechanically sealed solutions, but without the leaks and inevitable seal maintenance. Exotic non-conductive fluids present no difficulty for these units at fluid temperatures from -58°F (-50°C) up to 150°F (66°C). The hermetic design is far preferable to magnetic drive couplings as it does not add excessive length to the unit in tight OEM enclosures or suffer from the magnetic de-coupling problems often associated with mag-drive solutions. Two bearings, high strength cast steel components, and CNC welded sealless design assure extended maintenance free life.

Steep Operating Characteristics

Near-constant fluid delivery is maintained over wide variations

in discharge pressure. High shut-off pressures can often overcome temporary line resistances to maintain flow. Superior to Centrifugal pumps when dual speed 50-60 Hertz operation is desired.

Several Sizes Currently Available

Our current models include the HP31F, HP41E, HP41J, HP41P, and HP412P. Horsepowers range from 1 1/2 up to 7 1/2. Contact factory if greater pressures and flows are needed.

Self-Adjusting Impeller

A hydrodynamic film on each side of the impeller centers it in the casing and minimizes friction, which lengthens

pump life. The impeller also exerts no axial thrust load on the bearings.

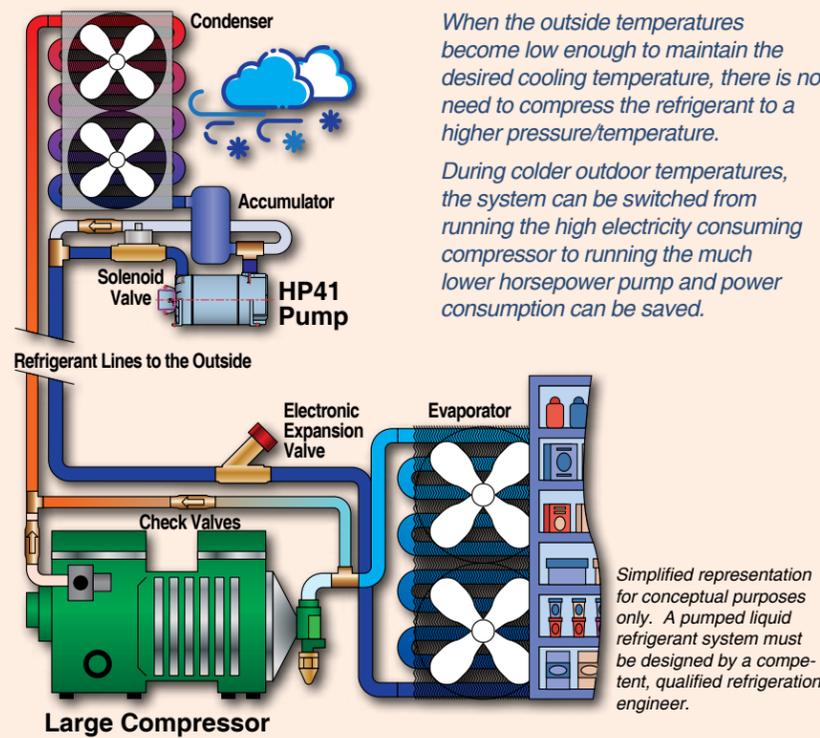
Leak Free Sealless Design

The hermetically sealed pump/motor combination uses the process fluid itself for cooling. Ends down time and maintenance problems associated with mechanical seals. Environmentally safe leak-free design. Each and every pump is tested for barrier and containment integrity before shipment.

Non-Cavitating

Sealless Turbine pumps may be operated under adverse inlet conditions without audible or measurable cavitation if fluid begins to vaporize.

HP Series in Practice



STANDARD MATERIALS

PART	STANDARD MATERIALS OF CONSTRUCTION*
Inlet	Steel
Discharge	Steel
Impeller	Bismuth Brass (C89836)
Drive Key	316 Stainless Steel
Channel Rings	Ductile Iron
Motor	Steel, Copper, & Aluminum
Thrust Bearings	304 Stainless Steel
Bearings	Carbon

* Other materials may be available for custom OEM consideration. Contact factory for more information

LIMITATIONS

Case Working Pressure	870 PSI
Differential Pressure (Min.)	5 PSI
Speed (Max.)	3450 RPM
Temperature	
Max Ambient	104°F (40°C)
Max Fluid Temperature	-58°F (-50°C)* to 150°F (66°C)
Horsepower	
HP31	3/4
HP41	1 1/2, 3
HP412	5, 7 1/2

*Contact Factory for operation below -58°F (-50°C)

Best Efficiency

Designs optimize best efficiency for each size.

Low NPSH Requirements

Like its T31 and T41 Series mechanically sealed counterparts, the HP Series hydraulic passageways are designed to minimize thrust on the self-adjusting impeller to avoid upsetting its hydraulic balance, and to handle low NPSH conditions which can occur in some applications. New to the HP Series is the location of the inlet on the centerline of the impeller

to further eliminate the potential of axial imbalance that sometimes occurs during periods of marginal NPSH availability. With these design features, MTH has eliminated almost all of the bearing thrust loads in these units, and the motor thrust bearings exist only to provide axial rotor positioning. Proper vapor or air purging at startup will help assure that the bearings are properly lubricated and minimize startup wear and priming problems. Rotolock fittings are used for both of these openings to assure a reliable leak-free fit, and to minimize the potential of galling that

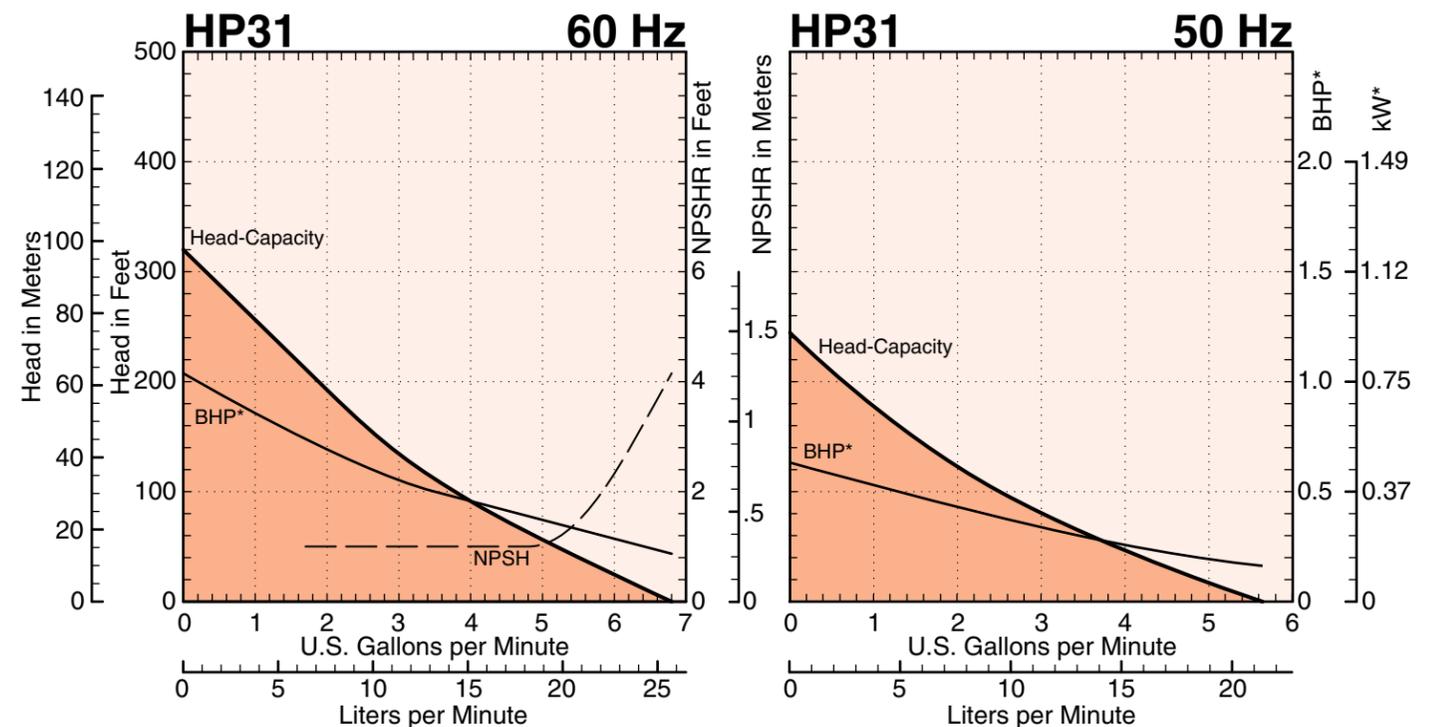
can be troublesome if over-tightening should occur.

Compact Integrated design

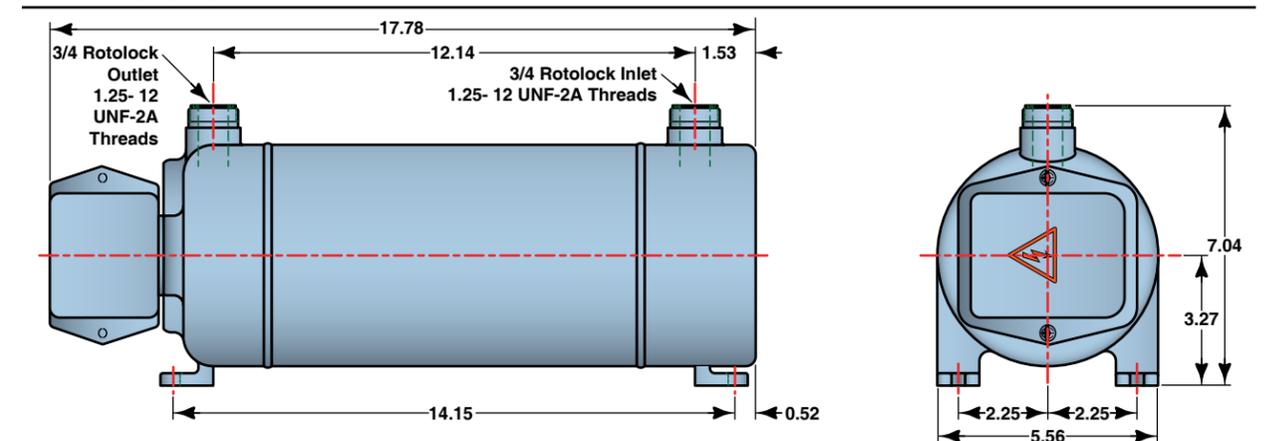
The pump/motor units use two carbon bearings, with the motor rotor positioned between two thrust bearings and the impeller overhung to provide long running life. As with all plain bearing pumps, keeping pumping systems free of solids to prevent bearing failure is important.

HP31 SERIES

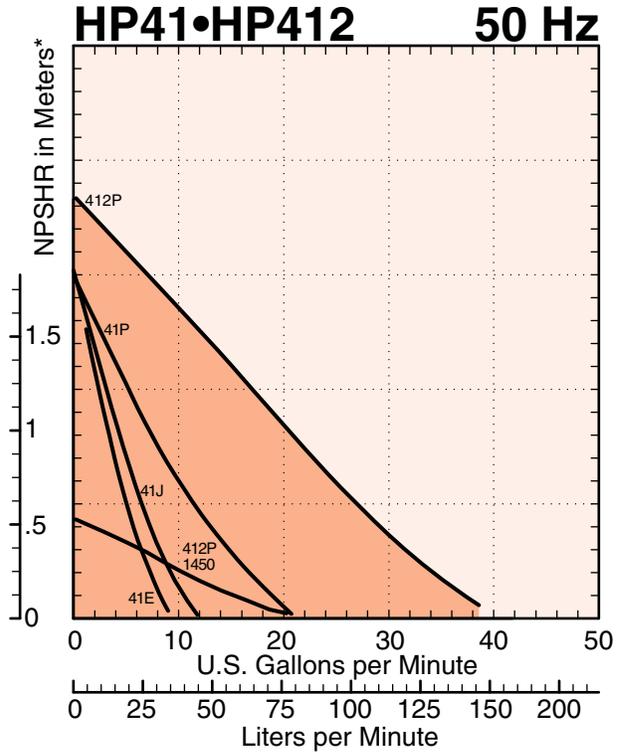
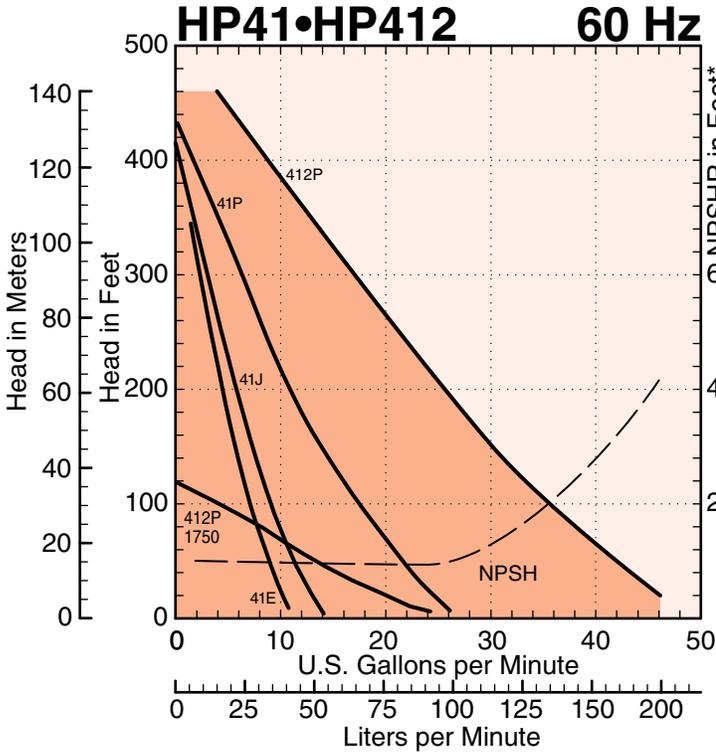
Performance Curves



Dimensions

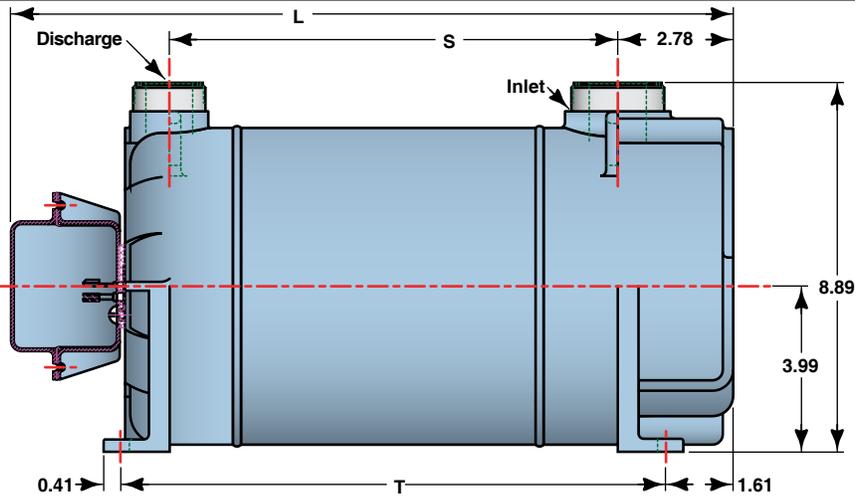
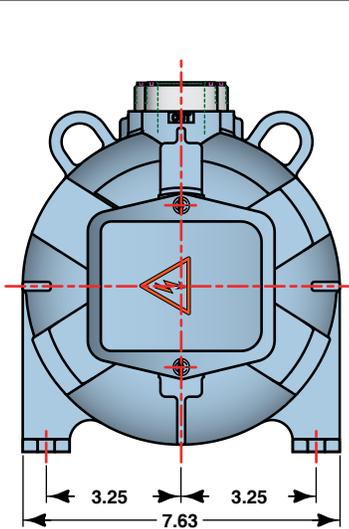


Performance Curves



*NPSH is estimated for for HP412. See individual curves for other NPSH curves.

Dimensions



PUMP MODEL	INLET	DISCHARGE	HP	L	S	T
HP41E	1.75-12 Rotalock	1.25-12 Rotalock	1 1/2	16.38	9.79	12.13
HP41J	1.75-12 Rotalock	1.25-12 Rotalock	1 1/2	16.38	9.79	12.13
HP41J	1.75-12 Rotalock	1.25-12 Rotalock	3	17.38	10.79	13.13
HP41P	2.25-12 Rotalock	1.75-12 Rotalock	3	17.38	10.79	13.13
HP412P	2.875-12 Rotalock	1.75-12 Rotalock	5	18.63	12.05	14.38
HP412P	2.875-12 Rotalock	1.75-12 Rotalock	7 1/2	19.63	13.05	15.38



See more HP Series Information



WARNING:
 CANCER AND REPRODUCTIVE HARM
 WWW.P65WARNINGS.CA.GOV



Manufacturing MTH Pumps
 in the USA since 1965
ISO Registered Company



MTH PUMPS

401 West Main Street • Plano, IL 60545-1436
 Phone: 630-552-4115 • Fax: 630-552-3688
 Email: REFRIGERATION@MTHPUMPS.COM
 http://WWW.MTHPUMPS.COM