

Phosphoric Acid Pumps

Phosphoric acid is a moderately strong inorganic acid of a reducing nature, a syrupy liquid. It may be produced directly by absorption of phosphorous pent-oxide in water (in which case there are few contaminants) or as crude, contaminated product, from the digestion of phosphate rock with sulfuric acid. In the later case, oxidizing and reducing contaminants profoundly affect the corrosion characteristics.

Pump Model

The Taber Series 1000 is the pump of choice. The preferred speed is 1800 rpm. We can supply a Series 8000, which has the added feature of a triple throat casing for reduced radial loads. The pump can also be operated at 1200 and 3600 RPM, consult factory for support.

Pump Selection and Application

- **Materials of Construction:** All wetted parts should be Hastelloy C, 316L can be used as a lower cost material, but the life of the pump will probably be 1-2 years. Special two-piece shafts might be required for longer settings, above 12 feet. The support plate should be 316LSS clad. All hardware below the support plate should be 316SS and tack welded, with longer fasteners. Contact the factory for specific material selections.
- **Bearing Materials:** Bearing materials made of Graphitar 84 should be used but there are other sleeve bearing materials. Contact factory for support.
- **Support Column and Discharge Pipe:** Standard support column and discharge pipe can be used. No jacketing is required.
- **Stuffing Box and Sealing:** We require using a single stuffing box as a minimum to contain the fumes and vapors. High temperature packing should be considered at the higher temperatures of 280 deg F. We recommend a Graphitar 84 stuffing box sleeve. Optional double stuffing boxes or Gas Barrier Mechanical Seals are available, as the E.P.A has labeled this a hazardous substance.
- **Couplings:** Standard couplings can be used. Typically Woods Sure-Flex type 'S'.
- **Motors:** Standard TEFC or TEFC Chem Duty motors are generally used. Any enclosure can be considered. We recommend a class "F" insulation. Make sure that you account for the high specific gravity in the horsepower calculations. The S.G. used is 1.5 for concentrations of 30-50% phosphoric acid, and 1.93 for 115% phosphoric acid.

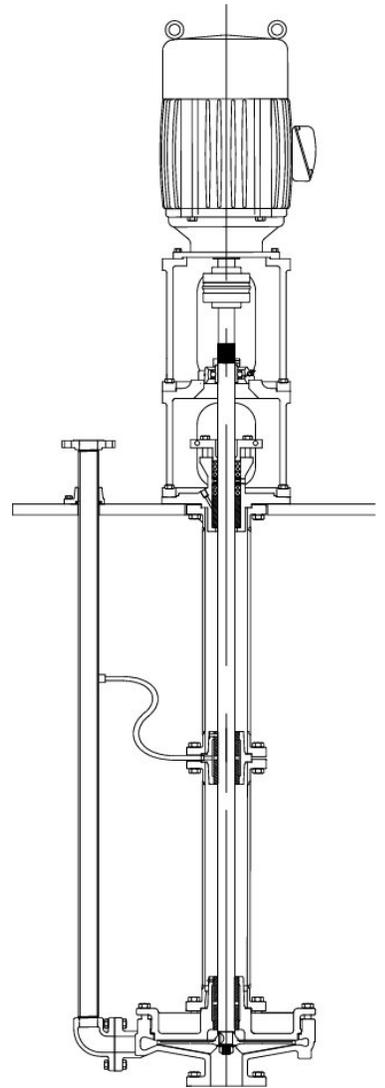
Application Considerations

- ✓ Most Phosphoric Acid applications are between 70-280 degF.
- ✓ The S.G. can range from 1.3 to 1.95. You should have the customer confirm the S.G. so that we can correctly size the motor.
- ✓ Phosphoric Acid is a strong irritant to the eyes, skin, etc. It is highly toxic by ingestion.
- ✓ The coupling should be a Woods type S or equivalent.
- ✓ Due to the potential high temperature, special impeller settings may be made to allow for the "growth" of the shaft/impeller assembly. As standard procedure, the pump is placed in the pit and allowed to reach the application temperature, before setting the impeller clearance. Contact the factory for your specific pump application.

Reference List and Installation List

The following are the companies that have successfully applied these pumps

N.I. Industries
Stauffer Chemical
Rhone Poulenc



LaBour Pump Company – 901 Ravenwood Drive, Selma, Alabama 36701

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