



**PUMPS THAT EXPERTS SELECT.**

# Hydrochloric Acid Pumps



Hydrochloric Acid, a strong reducing acid with pungent odor, is an aqueous solution of hydrogen chloride. It is commonly used in acid pickling or acid treatment, chemical cleaning, and chemical processing (e.g. hydrochlorination, chlorination of unsaturated organic compounds).

Chemically pure acid is nominally 35.5% strength with S.G. of 1.179. 27.92% has S.G. of 1.142, and 31.45% is 1.16.

The most common pitfall in handling hydrochloric acid is the unrecognized presence of oxidizing contaminants (Fe<sup>+++</sup>), which adversely affect corrosion resistance of both nickel-molybdenum alloys and zirconium.

Modern synthesis processes burn hydrogen in chlorine, yielding a high-purity hydrogen chloride for water absorption.

More than 90% of hydrochloric acid is currently manufactured is recovered from organic syntheses, and may be contaminated with chlorine, organics, chloroorganics, and catalyst particles unless specifically purified. Chlorine contamination may be removed by passage over activated carbon in the presence of olefins or by reaction with high-boiling paraffin hydrocarbons, while hydrogen fluoride can be removed by reaction with calcium chloride, alumina, or silica. The hydrogen chloride may be dried by passage through concentrated sulfuric acid. Chlorosulfuric acid will reduce the water content to less than 10 ppm.

### 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 B. Special two-piece shafts might be required for longer settings, above 12 feet. The support plate can be 20SS clad for extra protection. All hardware below the support plate should be Hastelloy B. Most pumps are Vapor Proof Construction. Contact the factory for specific material selection.
- **Bearing Materials:** Bearing materials made of Glass-Filled Teflon (GFT) or Rulon should be used. There are other sleeve bearing materials and bearing retainer materials available. 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. 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 1.8 for horsepower calculations. Also we recommend that a motor service factor of 1.15 be used.

### Application Considerations

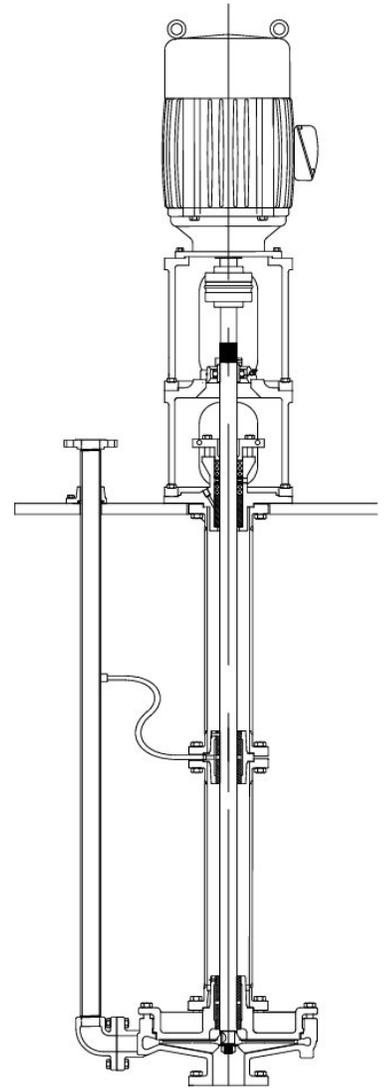
- ✓ Most Hydrochloric Acid applications are between 50-280 degF.
- ✓ The S.G. can range from 1.1 to 1.9. You should have the customer confirm the S.G. so that we can correctly size the motor.

- ✓ Hydrochloric 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

Akzo Chemicals



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

**Ph: (317) 924-7384 - Fax: (317) 920-6605 - [www.labourtaber.com](http://www.labourtaber.com)**

A Product of Peerless Pump Company Copyright © 2005 Peerless Pump Company



