



Vertical Turbine Pump Repair



Your local PRO Services™ Center offers high quality repair / reboiling capability for your vertical turbine pumps. They're experienced with pumps of all manufacturers including Aurora, Byron-Jackson, Floway, Goulds, A-C, Ingersoll-Rand, Johnston and Peerless among a range of others.

Experienced PRO technicians are equipped with the latest technology and training. They provide full factory engineering support for failure analysis, material upgrade and performance enhancements.

PRO Services™ Centers provide a thorough inspection and as found report. A complete workscope for all required repairs with a firm price is included. We're capable of handling all critical work such as non-destructive testing, welding and machining.

We welcome your inspection of our facility and processes.

PRO Services



ITT Industries
Engineered for life

Typical Vertical Turbine Pump Repair Procedure

- 1 The pump is completely disassembled and inspected. Particular attention is focused on unusual wear due to:
 - Improper clearances
 - Corrosion / erosion
 - Flow problems
 - Cavitation
 - Contaminants
- 2 Digital photography can be used to capture specific damage for customer inspection.
- 3 Component parts are thoroughly cleaned.
- 4 Precise measurements are taken on all wear components and noted on the inspection form. Non-destructive testing is performed on all parts.
- 5 Parts are replaced with same or upgraded materials per customer input.
- 6 Impellers are dynamically balanced to our customer's specification.
- 7 The pump is carefully reassembled.
- 8 Performance testing is available.
- 9 Check all runouts to insure unit meets all requirements.
- 10 Documentation is completed for disassembly, parts replacement, modifications, reassembly and compiled in a *REPAIR REPORT*.
- 11 Complete maintenance records are maintained in our totally integrated *PRO-APP* System for future reference and tracking of Mean Time Between Failure.



New discharge heads can be provided to address vibration problems. Complete head analysis can be accomplished if required and tested at our Los Angeles facility.



Disassembled pumps are inspected for unusual wear.



Final inspection of all components is performed to insure products meet all dimensional requirements.



All final checks are made prior to shipment to insure product meets customer requirements. Also, all units are tagged for tracking maintenance history and failure analysis.

Rebowling Service... New Life for Old Pumps



Special vertical applications welcomed. Above are some geothermal units that are being rebowled. ITT Industries can handle some of the toughest applications

PRO Services™ can easily restore your vertical turbine pump's original performance (and in many instances, improve it) by rebowling. Complete new liquid ends match all makes of vertical turbine pumps from 6" to 120" ... regardless of manufacture.

Once the mechanical and hydraulic requirements are determined, a complete replacement bowl assembly can be shipped for on-site adaptation and installation or, if preferred, easily accomplished at the nearest PRO Services™ Center.

Our PRO Services™ Centers are fully equipped to do whatever it takes to rebowl your pump in minimal time. They can also perform any work on the pump as required.

Let the PROs show you how easily and fast your old pump can enjoy new life.

Benefits of Rebowling

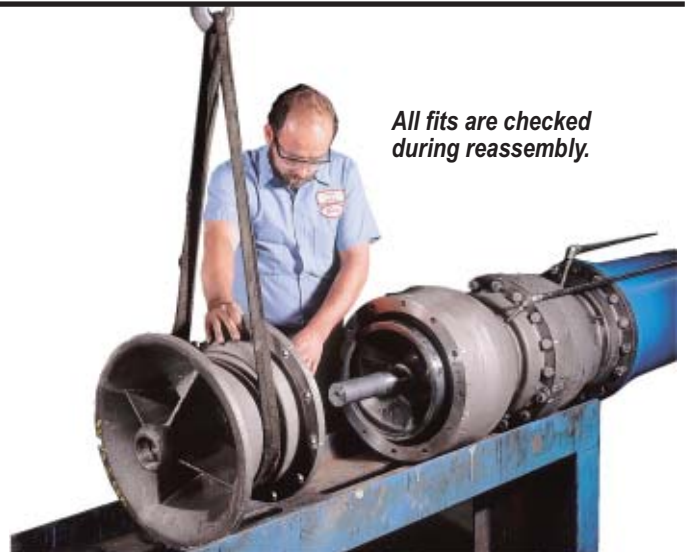
- Hydraulic Upgrading
- Increased Efficiency
- Material Upgrade
 - Corrosion, CD4 or 316SS
 - Abrasion, hard coatings
 - Cavitation, 316SS
- In Stock - Current Models
- New Pump Warranty
- Mechanical Revisions
 - Increased shaft size
 - Reduced bearing spans

When to Rebowl

- Bowls or impellers damaged beyond repair
- Pump cavitates and vibrates
- Casting corroded beyond repair
- Casting requires material upgrade
- Pump no longer meets hydraulic requirements as system has been changed
- Excessive maintenance



PRO Services™ Centers have full machine capability to address needed repairs.



All fits are checked during reassembly.

Testing



Vertical test facilities are in California and Pewaukee, WI. Testing capabilities cover flows up to 300,000 GPM, motors up to 3,500 HP, and voltage up to 4,160 Volts. Facilities are equipped with the latest in transducers and test equipment.

Customers are particularly impressed with our test systems which allow for quick setup of instrumentation and testing. A conference room for customer use with telephone, fax, and work area is available.

A complete vertical turbine is prepared for performance testing.



No vertical turbine pump is too big.

PRO Advantages

- One (1) year warranty.
- Full Factory engineering support.
- Field service available to assure proper installation and start-up.
- Experience with all manufacturers' equipment provides best available practices and designs in all repairs. We recognize problems and address *root causes* of failure... not just mechanical symptoms.
- Twenty-four hour, seven-days-a-week emergency service.



Our rotating equipment experience and engineering expertise allow us to improve equipment efficiency and/or improve MTBF. Some typical turbine pump upgrades include:

- Review bearing spacing to assure latest technology is utilized.
- Adapt latest bowl / impeller design to improve efficiency, flow and / or discharge pressure.
- Provide finite element analysis of complete unit to eliminate resonance problems.
- Review metallurgical properties of unit versus pumpage to insure maximum product life.
- Convert from packing to mechanical seal design.
- Incorporate various external bearing / wear ring flush arrangements to improve service life.

PRO Services

For more information, call your nearest PRO Services™ Center or visit our website at www.ittproservices.com

