

Axial Flow Pump Up-grades

**Mechanical & Hydraulic
Pump Up-Grades**

For Your

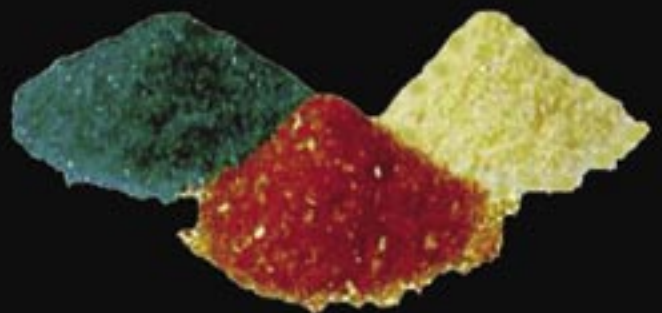
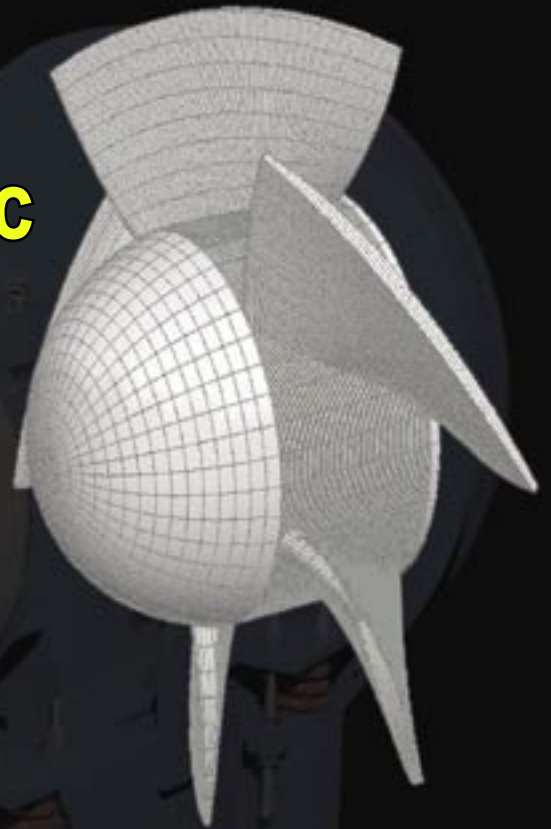
Evaporator

Crystallizer

Aeration

& Waste Water

Circulation Systems



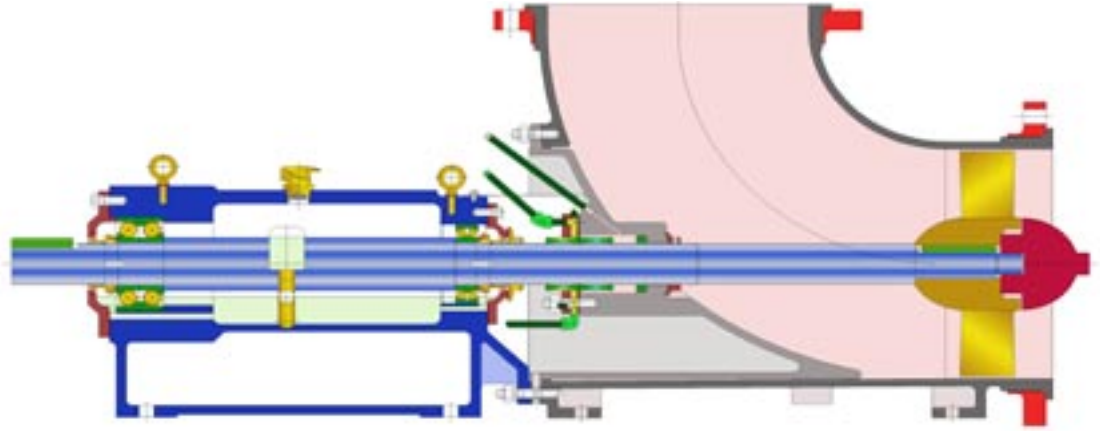
 **LAWRENCE
PUMPS INC.**



Axial Flow Pump Upgrades

Pre-E-9000 Axial Flow Pump Design

Original axial flow pump cross section showing components that may now be upgraded for optimizing pump efficiency and reliability



Select Your Upgrade Options

1. **Hydraulics** - Upgraded Hydraulics available by using different propellers. (Increase flow, Lower NPSHR, Eliminate Cavitation)
2. **Throat Bushing** - Capscrews for mechanical fastening of Teflon bushing instead of O-ring.
3. **Sealing Options** - Include: Packing, Single Seal, Double Seal, Split Seal or Gas Seal.
4. **Fully Confined Casing Gasket** - Alignment and sealing of casing is improved by changing Teflon Gasket to a confined casing O-Ring. (This requires machining of the elbow)



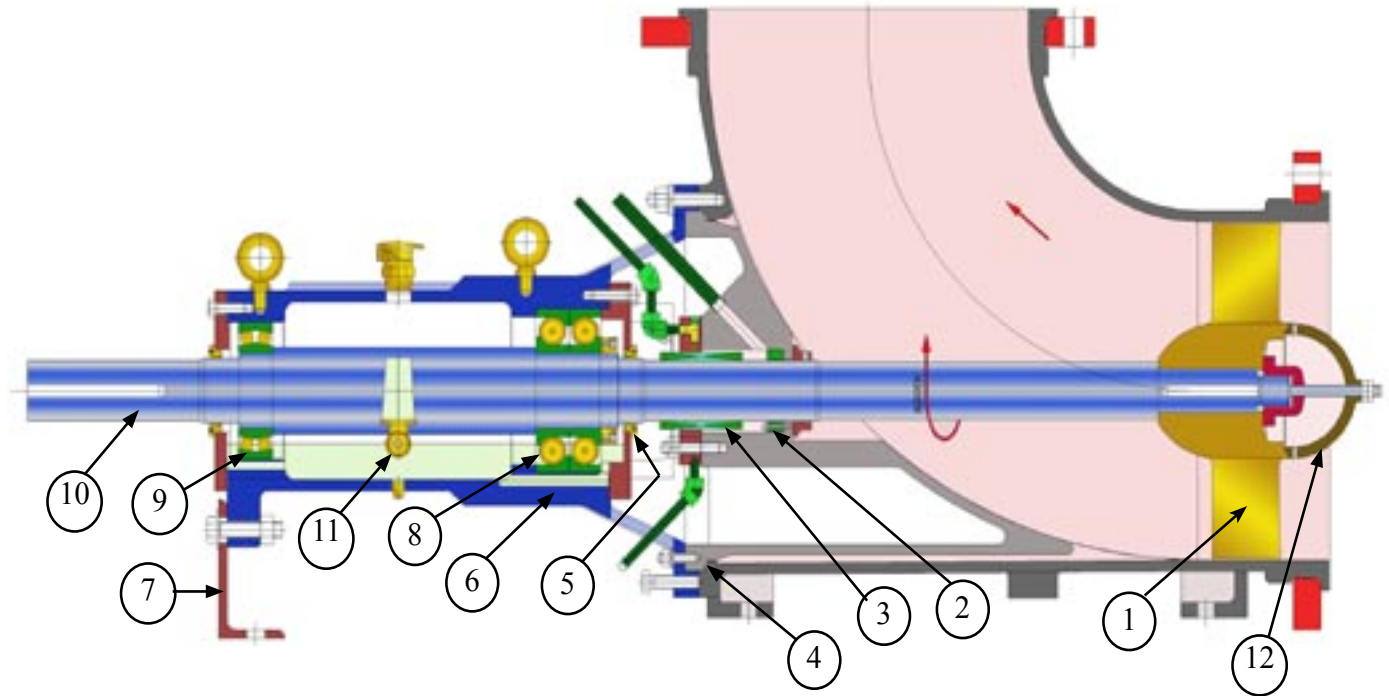
Back Pull-Out Assembly



V-Belt Driven Unit with Titanium Casing



E-9000 Axial Flow Pump Design



5. **Labyrinth Oil Seals** - Non-contacting extended life oil seals protect shaft from excessive wear associated with contacting seals. Elimination of costly sleeved locknuts.
6. **Single Piece Bearing Frame** - Provides accurate bearing frame to elbow alignment using a full 360 degree flange with deep rabbit fit.
7. **Bearing Frame Foot** - Adjustable bearing frame bracket eliminates the need for "Soft Foot" check.
8. **Radial Bearing** - Located at the sheave end of bearing frame for V-belt loading.
9. **Thrust Bearing** - Located at inboard end of bearing frame for extended life.
10. **Shaft Material Up-grades** - Additional grades of titanium provide higher elastic modulus reducing shaft deflection and extending mechanical seal life.
11. **Constant level oiler** - upgraded to Watchdog type oiler for easy viewing of bearing frame oil level.
12. **Propeller Cap** - Hollow design to reduce overhung weight.

Upgrades available for any manufacturer's Axial Flow Pump design.



Why use Lawrence Pumps for Parts, Repairs and Field Service?

Outsourcing to Lawrence Pumps, Inc. is a cost-effective solution for pump service and maintenance issues.

- > Materials and workmanship warranty
- > Parts and repairs to original equipment manufacturer specifications (including tolerances, manufacturing processes and materials)
- > Root cause analysis
- > Hydraulic performance modifications
- > On-time delivery
- > Fully qualified personnel for welding and NDT
- > Access to a global installation base with experience and feedback on similar pumping applications, resulting in proposals with the latest upgrades.

Parts

- > All parts are manufactured to OEM specifications.
- > Complete rotating assemblies can be provided to minimize downtime.
- > LPI will stock parts as needed to satisfy customer requirements.

Repairs

- > Pump rebuilds (overhauls)
- > Part repairs
- > Upgrades to design or materials
- > All repairs can be performed at LPI or any authorized Service Center.

Field Service

- | | |
|-------------------------|--------------------------|
| > Installation | > Contract maintenance |
| > Start-up / Operation | > Preventive maintenance |
| > Troubleshooting | > Corrective maintenance |
| > Pump overhaul support | > Condition monitoring |
| > Training | |

Technical Service and Support

LPI provides technical assistance and responds to technical inquiries regarding pump installation, start-up, operation, troubleshooting, spare parts, rebuilds, upgrades. The goal at Lawrence Pumps, Inc. is to enhance the reliability of pump operation, reduce MTBR and MTBF, and minimize the total life-cycle cost of ownership. LPI provides a package of services to meet these goals and maximize running time. Installation, operation, and maintenance manuals are supplied with every pump shipment.

Web Site: www.lawrencepumps.com



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