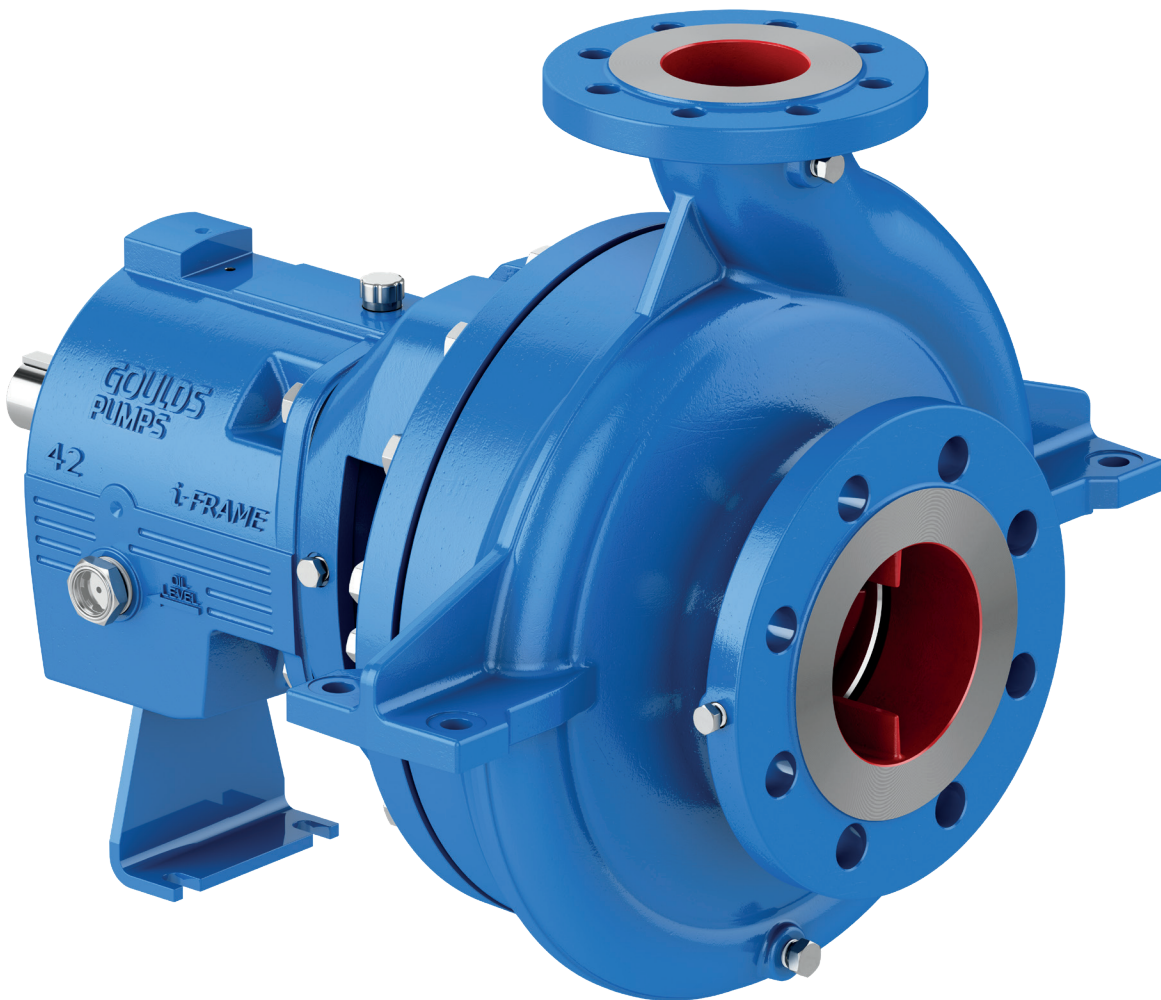


ICP

High Pressure / High Temperature Chemical Process Pump



ICP

High Pressure / High Temperature Chemical Process Pumps



The ICP is a Heavy Duty Chemical Process Pump Designed For Extreme Temperatures and Pressures and is Ideal for Chemical, Petrochemical, Hot Water or Heat Transfer Fluid Applications.

Hydraulic Components Comply with ISO 2858 for Easy Integration to Most Process Piping Systems. Mechanical Design In Accordance to ISO 5199 for Extended Reliability.



- Capacities to 450 m³/h (1980 USGPM)
- Heads to 150 m (492 Ft)
- Temperature Range -40°C to 280°C (-40°C F to 535°F)
- Pressures to 25 bar (363 Psig)

Material of Construction

- Carbon Steel (1.0619)
- Stainless Steel (1.4408)
- Duplex Stainless Steel (1.4517)
- Hastelloy C (2.4810)

Design Features

Extended Pump Reliability

- Patented "Cyclone" Seal Chamber Extends Seal Life
- Standard Center-Line Mounted Casing Controls Thermal Growth & Maintains Pump Alignment for Extended Bearing Life
- Large Capacity Oil Sump Improves Oil Cooling for Extended Bearing Life
- Optional Inducer Reduces NPSHr, Ideal for Marginal NPSH Applications

Reduces Maintenance Costs

- Back Pull Out Design Simplifies Maintenance Activities
- Modular Interchangeability with IC Pump Reduces Spare Parts Inventories
- Optional Wear Rings Renew Pump Performance and Extend Pump Life

Applications

- Chemical Process
- Petrochemical
- Pharmaceutical
- Condensate
- District Heating
- Heat Transfer Fluids
- Rubber & Plastic Manufacturing

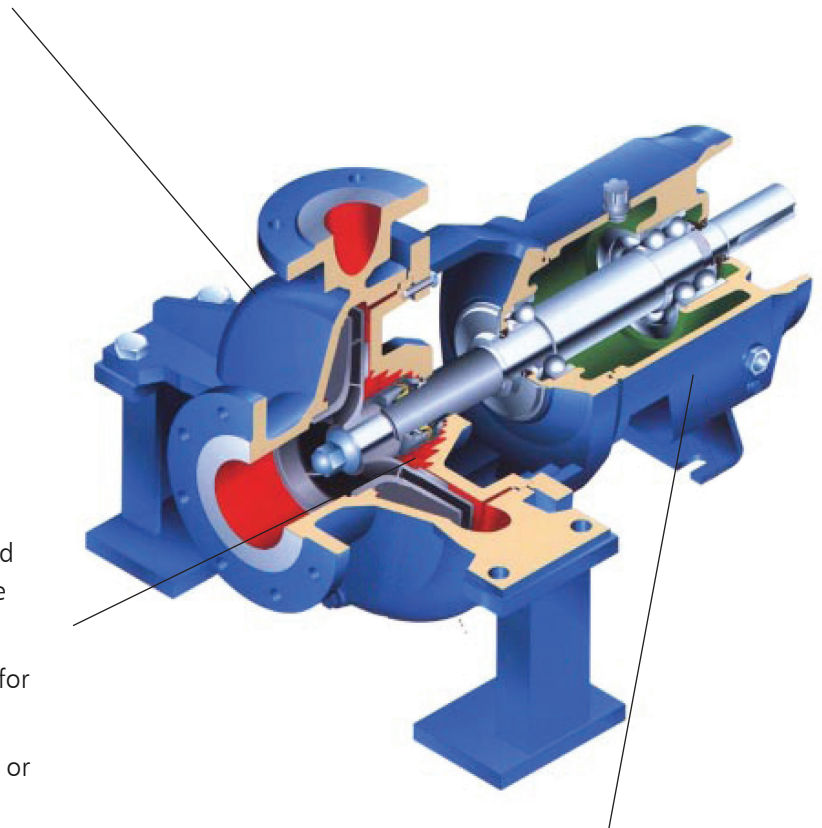
Value Packed Features Engineered For Reliability

Heavy Duty Casing

- Centerline Mounted Design Controls Thermal Growth and Maintains Pumps Alignment for Extended Bearing Life
- Heavy Duty Design Meets ISO 5199 Nozzle Loading Criterion
- Minimum 3 mm Corrosion Allowance Maximizes Pump Life
- Standard 3/8"-NPT Casing Drain For Safe and Simple Maintenance

Engineered Seal Chamber

- Patented "Cyclone" Seal Chamber Keeps Solids and Vapors Out Of the Seal Area for Extended Seal Life
- Tapered Bore Design Enhances Lubrication and Cooling of Seal Faces Often Eliminating the Need for External Flush Connections
- Can Be Fitted With Standard DIN 24960 L1k Seals or Cartridge Seals



Heavy Duty Bearing Bracket

- Large Capacity Oil Sump Increases Oil Cooling for Increased Bearing Life
- Rigid Shaft Designed to Limit Shaft Deflections to less than 0,05 mm for Reliable Shaft Sealing
- Heavy Duty, Double Angular Contact Bearings Designed for L 10 Bearing Lives in Excess of 17.500 hours
- Standard Stainless Steel Shaft (1.4021) for Reliable, Corrosion Resistant Power Transmission

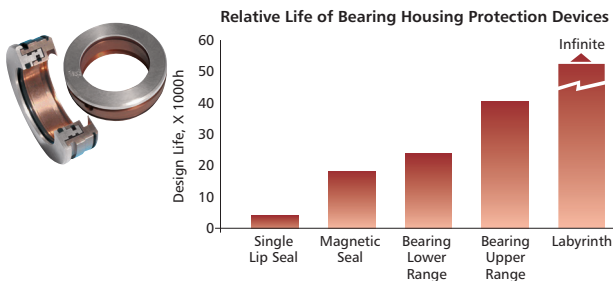
Goulds Patented i-FRAME® Power Ends

Extended Pump Life Through Intelligent Design

Goulds *i-FRAME* Power Ends are the result of close to 170 years of design experience, customer interaction, and continuous improvement. Customers get extended Mean Time Between Failure (MTBF) and lower life cycle costs (LCC) ... guaranteed!

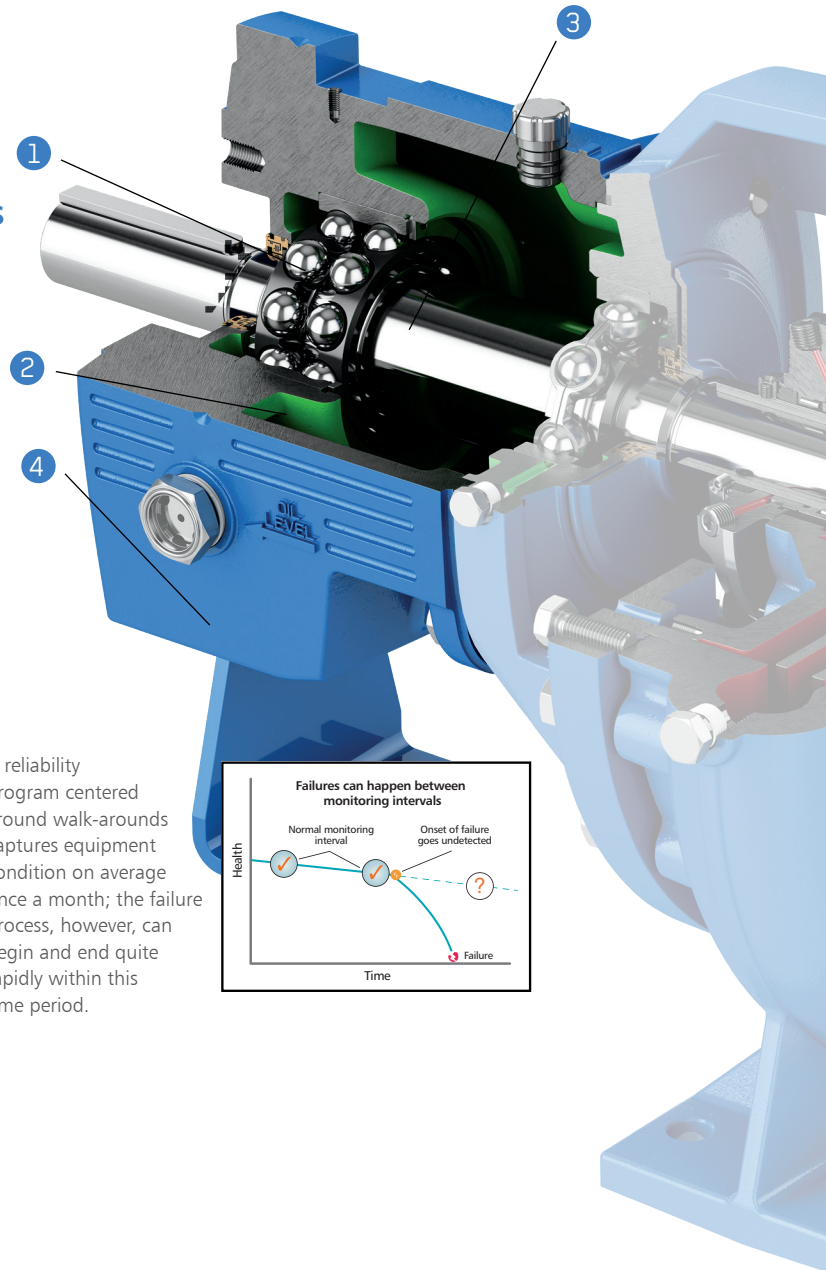
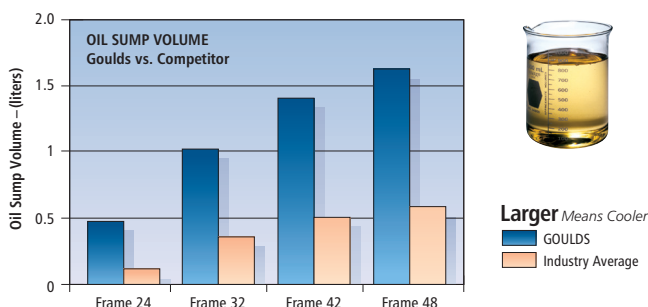
1 Inpro VBXX-D Hybrid Bearing Isolators

Most bearings fail before reaching their potential life. They fail for a variety of reasons, including contamination of the lubricant. INPRO VBXX-D has long been considered the industry standard in bearing lubricant protection. The *i-FRAME* now improves upon that design by offering stainless steel rotors, for maximum protection against contaminants and the corrosive effects of seal leakage or environmental conditions. These seals are non-contacting and do not wear.

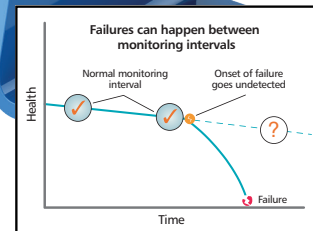


2 Optimized Oil Sump Design

Internal sump geometry is optimized for longer bearing life. Sump size increased by 10%-20% results in better heat transfer and cooler bearings. Contoured design directs contaminants away from bearings, to the magnetic drain plug for safe removal.

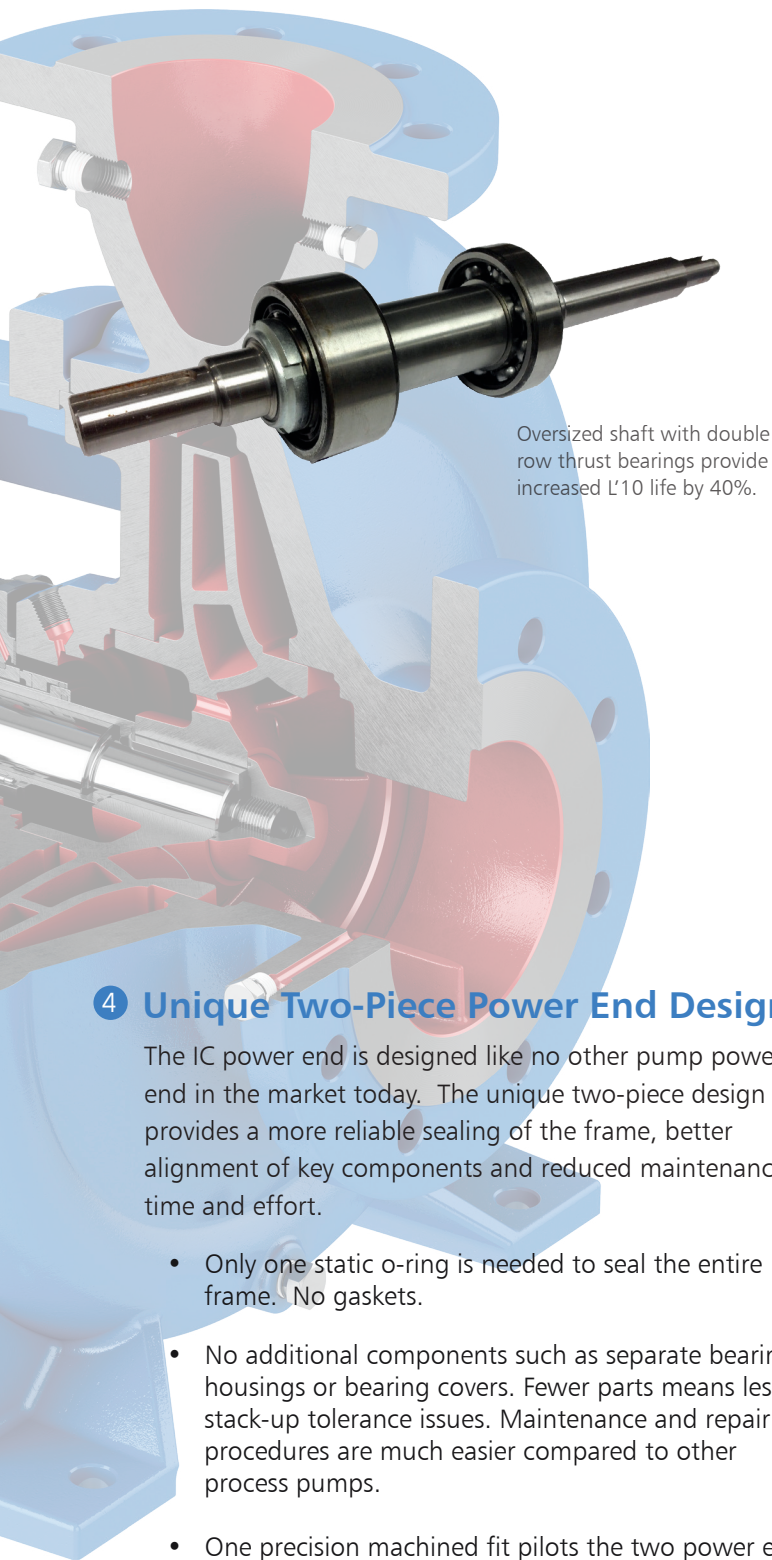


A reliability program centered around walk-arounds captures equipment condition on average once a month; the failure process, however, can begin and end quite rapidly within this time period.



3 Shaft and Bearings Engineered for Maximum Reliability

Every IC *i-FRAME* Power End is engineered and manufactured for optimal pump performance and increased MTBF.



Oversized shaft with double row thrust bearings provide increased L10 life by 40%.

4 Unique Two-Piece Power End Design

The IC power end is designed like no other pump power end in the market today. The unique two-piece design provides a more reliable sealing of the frame, better alignment of key components and reduced maintenance time and effort.

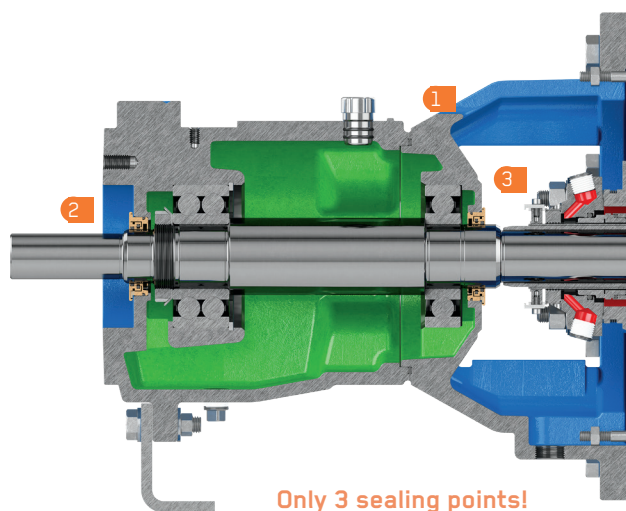
- Only one static o-ring is needed to seal the entire frame. No gaskets.
- No additional components such as separate bearing housings or bearing covers. Fewer parts means less stack-up tolerance issues. Maintenance and repair procedures are much easier compared to other process pumps.
- One precision machined fit pilots the two power end halves together. More reliable and repeatable alignment between the bearings, shaft, seal, impeller and casing.
- No dynamic elastomeric seals! Only non-contacting labyrinth oils seals with static o-rings. No dynamic seal components that could wear out and leak. Provides more reliable lubrication retention and a cleaner environment for the high performance bearings.

ISO 5199 Shaft Specification	Meets	Exceeds
Diameter Tolerance		✓
Surface Finish		✓
Runout	✓	
Deflection		✓

The rugged shaft and bearing combination maintains shaft deflection of less than 50 μm at all operating points. The result is longer seal and bearing life.

Premium severe-duty thrust bearings increase bearing life.

- High purity steels have fewer inclusions than standard steel – better grain structure and wear resistance.
- Heat treatment of bearing elements to 50 stabilization levels provides superior thermal stability for increased service life.
- Bearing Balls are manufactured to at least one ISO grade above standard (ISO P5 for ring running accuracy and ISO P6 for dimensions). The result is reduced vibration and noise for improved shaft guidance.



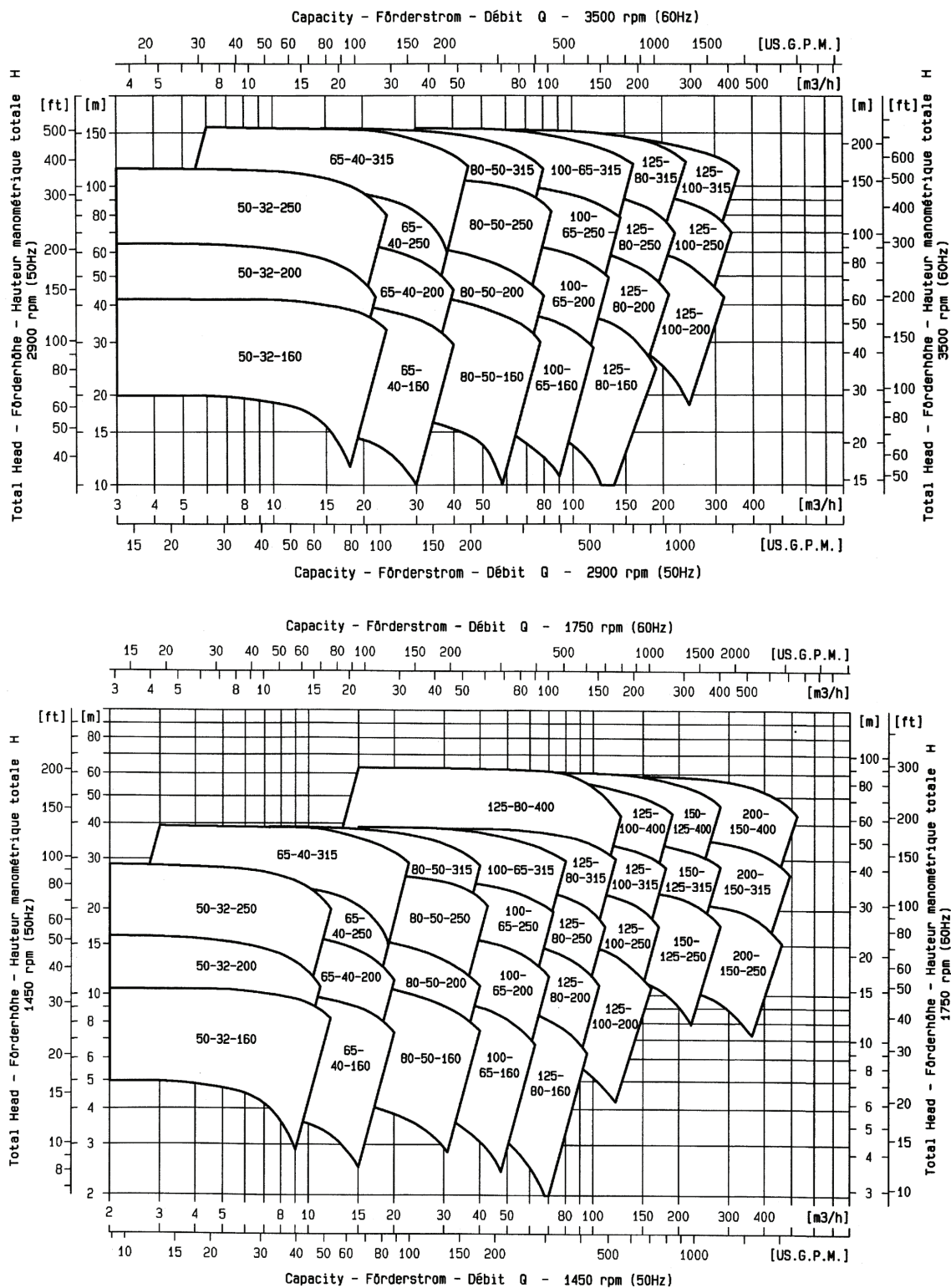
Only 3 sealing points!

Our Guarantee

We are so confident that the *i*-FRAME is the most reliable Power End in the industry, that we are proud to offer a standard 5-year warranty on every ISO and ANSI *i*-FRAME Process Pump.



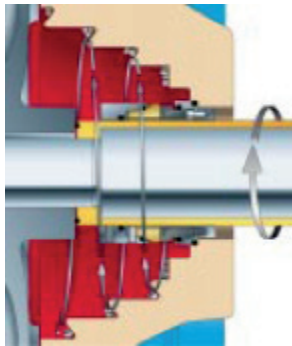
Performance



Engineered For Reliability for Severe Duty Chemical Process Applications

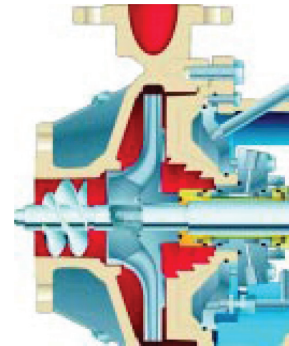
Patented "Cyclone" Seal Chamber Keeps Solids & Vapors Out of the Seal Environment for Extended Seal Life

- A Tapered Bore Design Enhanced with Cast Helical Grooves which Act to Keep Solids and Vapors Out of the Sealing Area
- Increased Radial Clearance and Volume for Improved Cooling of Seal Faces
- Self-Venting Design Eliminates the Build up of Vapors in the Seal Area while Simplifying Pump Start-ups
- Designed for Shaft Sealing With Any DIN 24960 L1k Mechanical Seal or Cartridge Seal



High Efficiency, Enclosed Impeller Design Engineered Performance with Low Hydraulic Loads

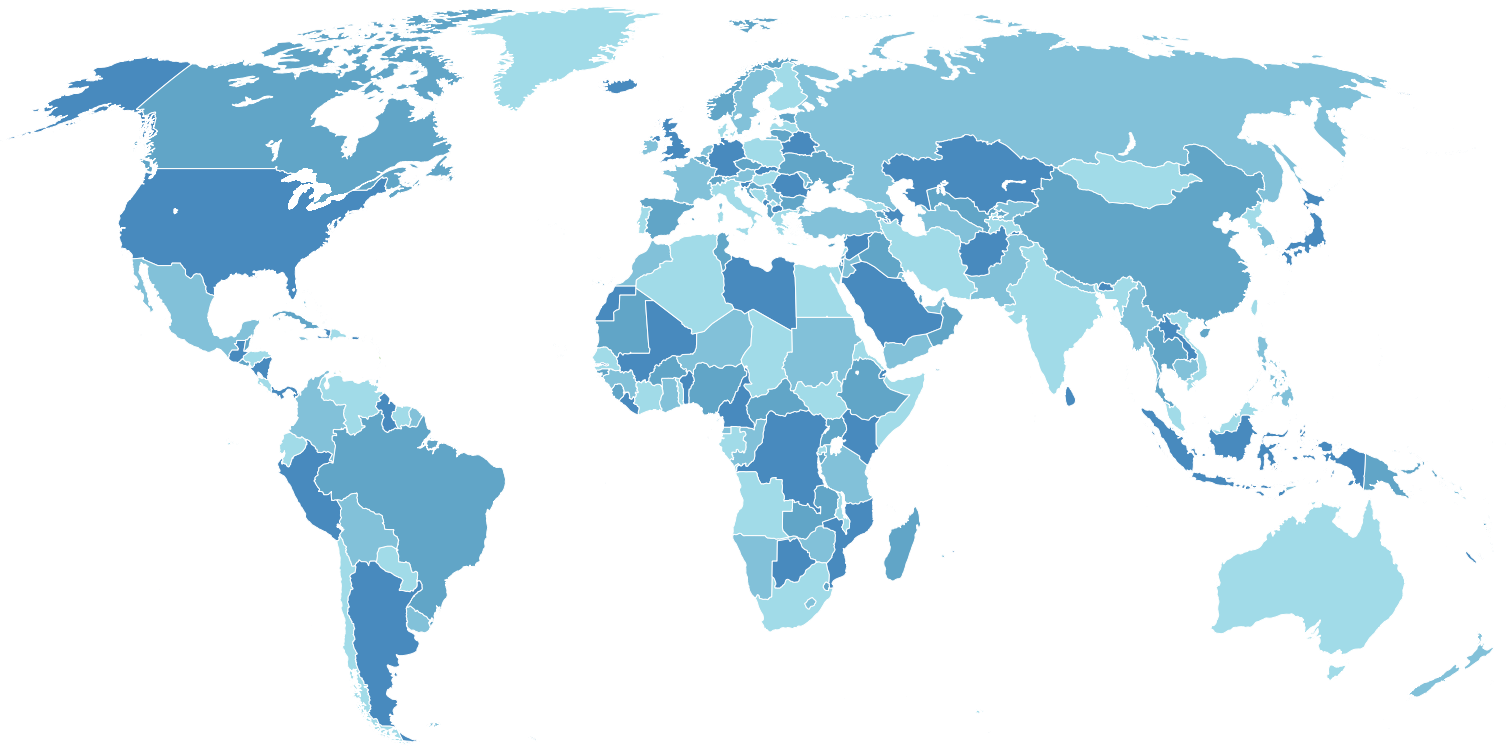
- Enclosed Impeller Design Featuring Back Vanes or Rear Ring Fits Act to Reduce Hydraulic Thrust Loads for Extended Seal and Bearing Life
- Precision Cast, Enclosed Impellers Provide High Efficiency and Low NPSHr For Reduced Operating Cost and Smooth Operation
- Key Driven To Pump Shaft To Prevent Start-up Failures Resulting from Mis-wiring
- Optional Wear Rings Re-new Pump Performance and Extend Service Life



Pumping Solutions for Extreme Services Proven Technology, Process "Know How"

- Optional Jacketed Casing and Seal Chamber Provide Direct Temperature Control for Critical Applications
- Finned Tube Oil Sump Cooler Maintain Oil Temperature for Extended Bearing Life
- Optional Suction Inducers Reduce NPSHr up to 50%, Ideal for Marginal NPSH Applications
- Broad Range Of Engineered Shaft Sealing Solution for "difficult to seal" Liquids





Visit www.ittproservices.com & www.gouldspumps.com to
find nearest service, sales, and manufacturing locations



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