

# Goulds Patented *i-FRAME*™ Power Ends

## Extended Pump Life Through Intelligent Design

Goulds *i-FRAME* Power Ends are the result of 160 years of design experience, customer interaction, and continuous improvement. Customers get extended Mean Time Between Failure (MTBF) and lower life cycle costs (LCC)... guaranteed!

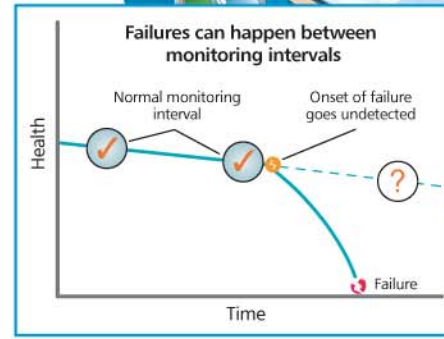
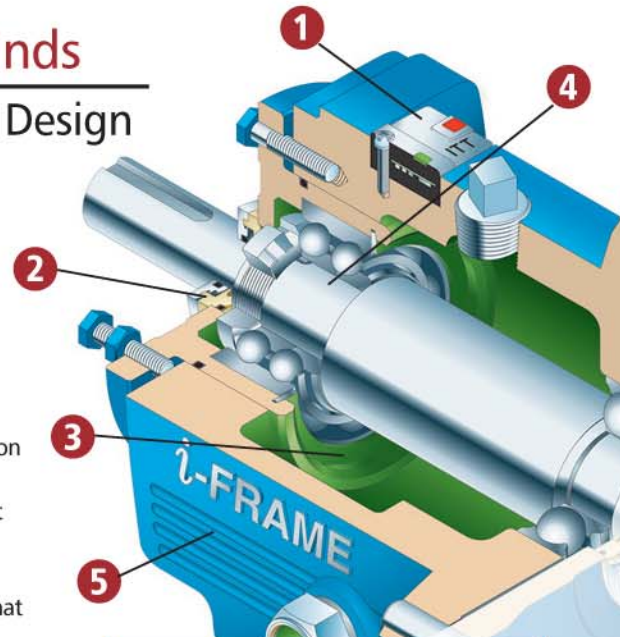
### 1 Condition Monitor



The heart of the *i-FRAME*, the condition monitor unit continuously measures vibration and temperature at the thrust bearing and automatically indicates when pre-set levels of vibration and temperature have been exceeded, so that changes to the process or machine can be made before failure occurs.

A visual indication of pump health makes walk-around inspections more efficient and accurate. The result is a more robust process to monitor and maintain all your ANSI pumps so that your plant profitability is maximized.

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

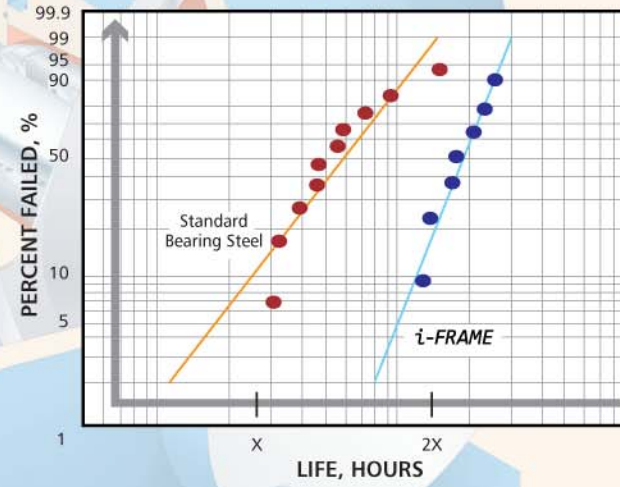


### 4 Shaft and Bearings Engineered for Maximum Reliability

Every model 3196 Power End is engineered and manufactured for optimal pump performance and increased MTBF.

ANSI B73.1 Shaft Specification	Meets	Exceeds
Diameter Tolerance		✓
Surface Finish		✓
Runout	✓	
Deflection		✓

Fatigue life more than double that of conventional bearing steels.



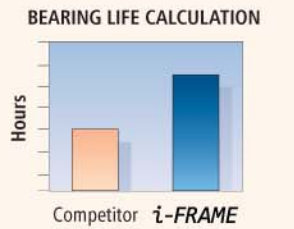
The rugged shaft and bearing combination maintains shaft deflection of less than 0.002 inches at all operating points. The result is longer seal and bearing life.

Premium severe-duty thrust bearings increase bearing fatigue life by 2-5X.

- High purity steels have fewer inclusions than standard steel — better grain structure and wear resistance.
- Heat treatment of bearing elements increases hardness for increased fatigue life.

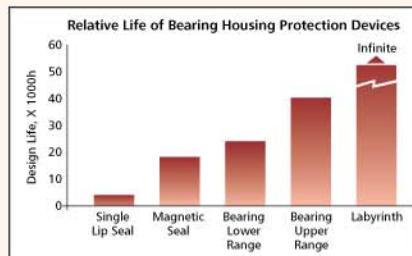
Forty-degree contact angle on the *MTi* thrust bearing for higher thrust load capability.

- 35% higher dynamic load rating vs. major competitor.
- Increases L'10 bearing life 2X.



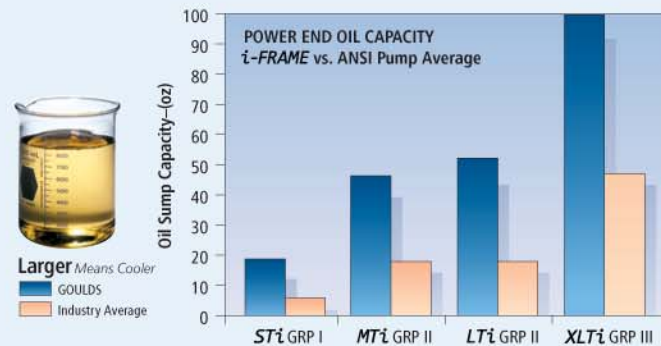
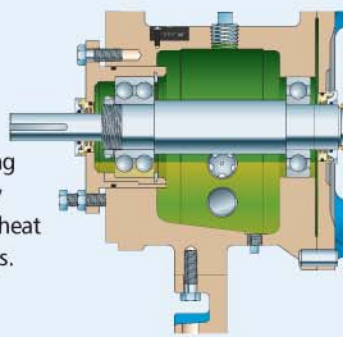
### 2 Inpro VBXX-D Hybrid Bearing Isolators

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.



### 3 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.



### 5 *LTi* Power End for High Load Applications

#### Increased L'10 Bearing Life 150% to 200% on the Toughest Applications

Ideal for tough conditions when a power end is pushed beyond ANSI limits: operating at low flows and higher heads, pumping high specific gravity liquids, fluctuating process conditions, overhung belt drive.

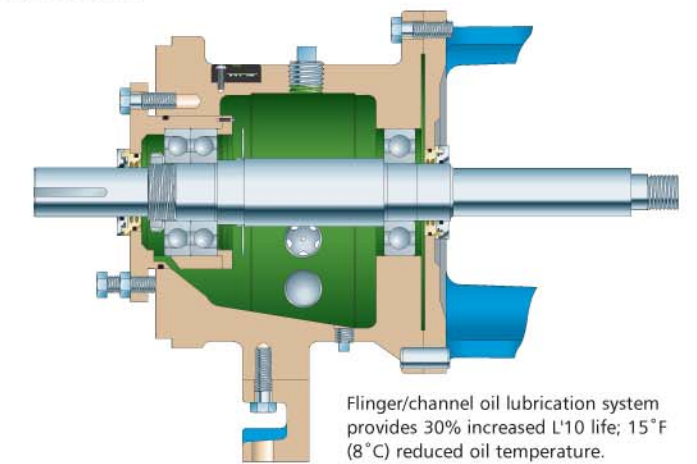
Oversized shaft and bearing assembly significantly expands the limits for long, trouble-free bearing and seal life. On high load applications, the *LTi* power end improves bearing life 150%–200%; oil operating temperature reduced by 45°F (25°C).



Duplex thrust bearings (40°/40° angular contact) with machined brass cages, are ideally sized for high load applications.



Oversized shaft with duplex thrust bearings provide increased L'10 by 40%.



Flinger/channel oil lubrication system provides 30% increased L'10 life; 15°F (8°C) reduced oil temperature.

### 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 *i-FRAME* ANSI Process Pump.

