



# GOULDS PUMPS

October 2003

## Goulds LP3400 Series Low Pulse Fan Pumps



Goulds Pumps

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**ITT Industries**  
*Engineered for life*

# Standard Design Features for Reliable Low Pulse Headbox Fan

# Goulds Fan

## RENEWABLE CASING WEAR RINGS

Eliminate casing wear and permit easy maintenance of proper running clearances for maximum efficiency operation. Positively locked in place in the lower casing half to prevent rotation during pump operation.

## HEAVY DUTY SHAFTS

Designed for minimum deflection in the toughest services means extended shaft seal and bearing life. Available as double ended shaft design as required, in either left-hand or right-hand rotation.

## DOUBLE SUCTION IMPELLER

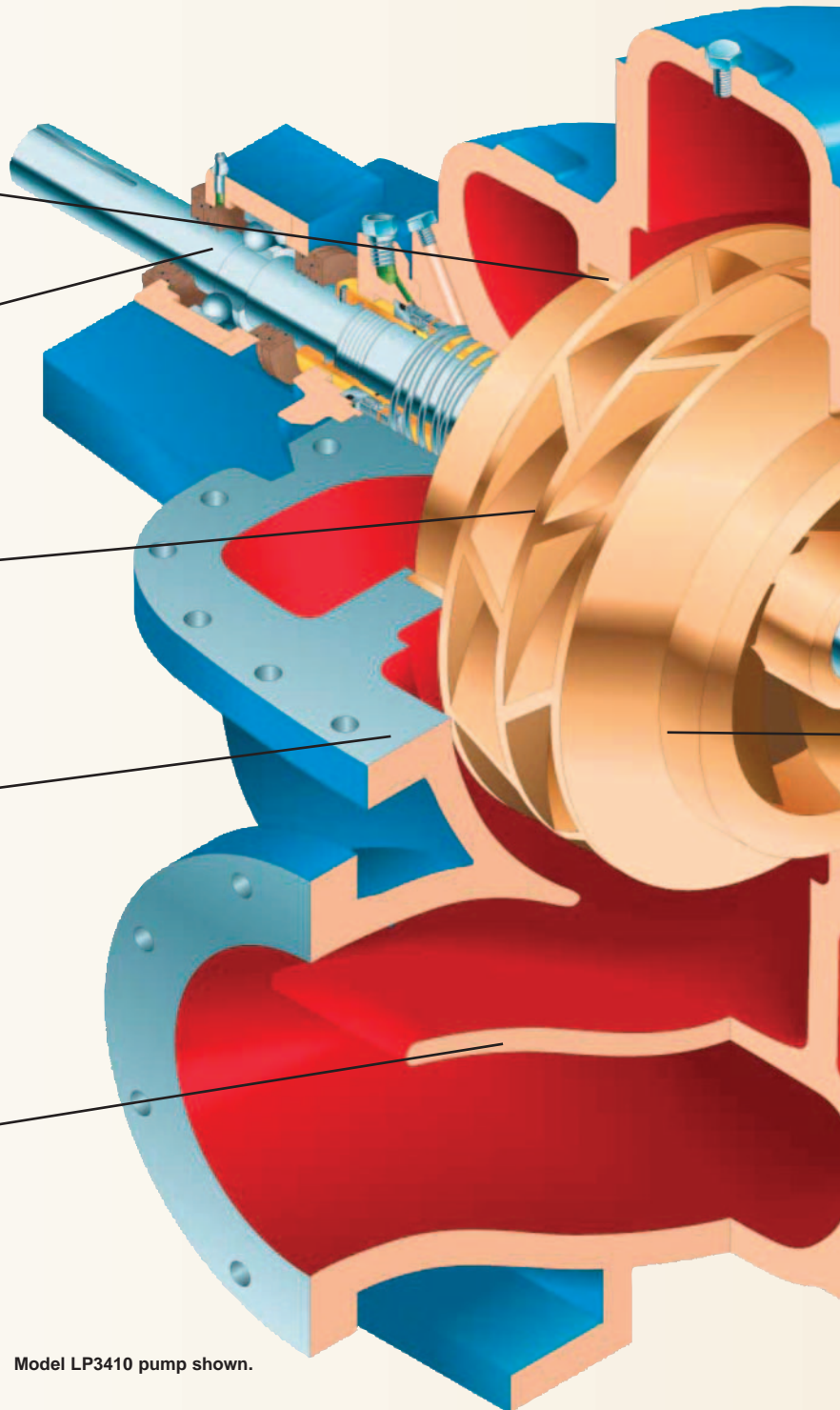
Minimizes axial thrust for longer bearing life. Dynamically balanced as standard to ISO 1940, G2.5 tolerances for smooth operation. Split and staggered design for low pulsation pumping. "Cotton Ball" finish to Ra 2.5 available for fine paper applications.

## HEAVY DUTY CASINGS

Rugged foot-mounted design to resist external forces and vibration. Casings designed to withstand high working pressures with minimum distortion and are 100% hydrostatically tested. Suction and discharge connections are in the lower half casing, allowing removal of upper half casing for inspection or removal of complete rotating element without disturbing piping or driver. "Cotton Ball" finish to Ra 2.5 available for fine paper applications.

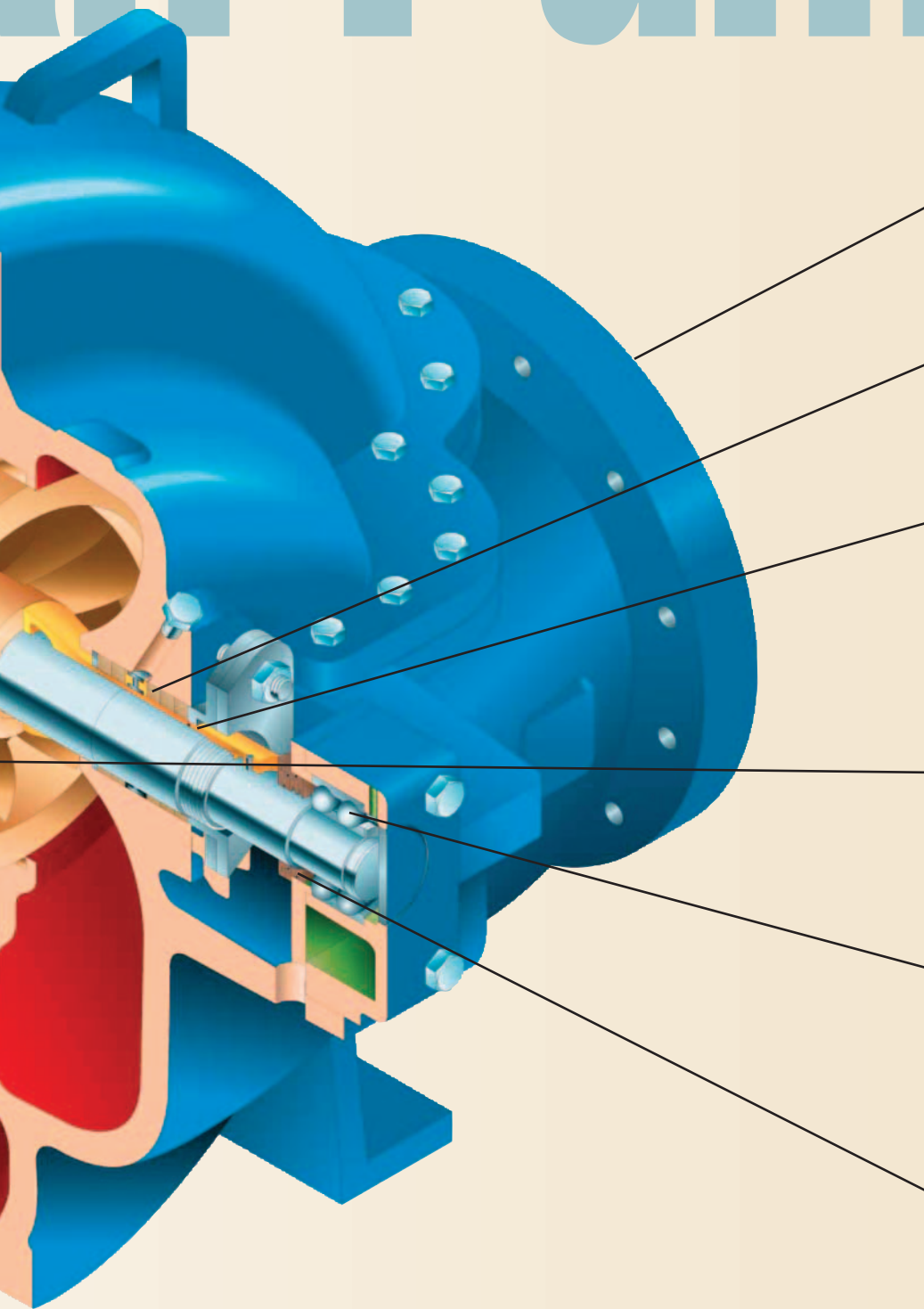
## BALANCED DESIGN

Dual volute casing design (not used on all sizes). Ideal when pumps must periodically operate at capacities above or below design capacity or at interrupted high head. LP3400 Fan Pumps are designed for high reliability and low maintenance.



Model LP3410 pump shown.

# Fan Pumps



## LARGE INLET AREAS

Reduce NPSH requirements and assure smooth, quiet flow to the impeller. Matched inlet and outlet connectors available as required.

## STUFFING BOX

Packing is *standard* on LP3400 Fan Pumps. A wide variety of mechanical seals, including cartridge and split type, are also available to suit the application.

## RENEWABLE SHAFT SLEEVES

Sleeves are sealed at the impeller and sleeve nuts to prevent liquid contact with the shaft extending life and reliability. Renewable shaft sleeves are available in a variety of materials (including hardened metals and hard metal coated) to protect shaft from liquid.

## RENEWABLE IMPELLER WEAR RINGS

Positively locked on impeller hubs permit easy renewal of running clearances and protect impeller hubs from wear. *Standard* on large and extra large capacity pump sizes. Optional on all others. "Flashed" as standard to prevent paper stock build-up.

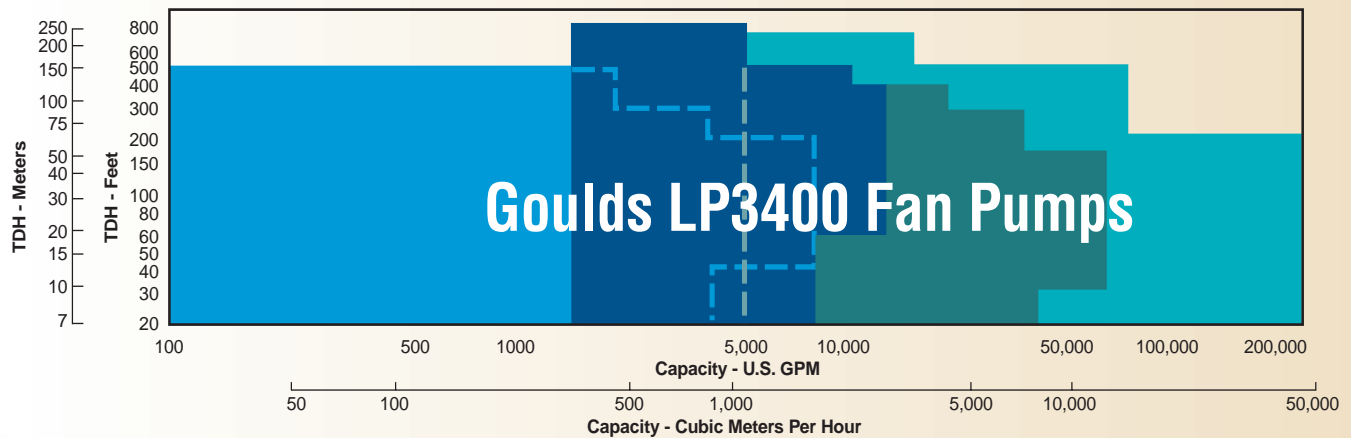
## DOUBLE ROW THRUST BEARING

Double row thrust bearing for high axial thrust capability is *standard* on all Goulds Fan Pumps. Locked on shaft in bearing housing positively positions rotating element and easily carries any residual axial thrust.

## LABYRINTH BEARING PROTECTION

*Standard* on all Goulds Fan Pumps. Significantly reduces the risk for bearing contamination in harsh mill environments, and greatly improves mean time between failure.

# The Most Complete Line of Fan Pumps In The Industry



## A Fan Pump for Every Service...



### Small Capacity



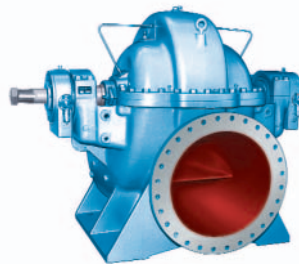
Flow to 1817 m<sup>3</sup>/hr.  
Ideal for dilution headbox  
and smaller paper  
machines.

### High Heads



Heads to 259 m.  
Ideal for modern high  
speed tissue machines.

### Large Capacity



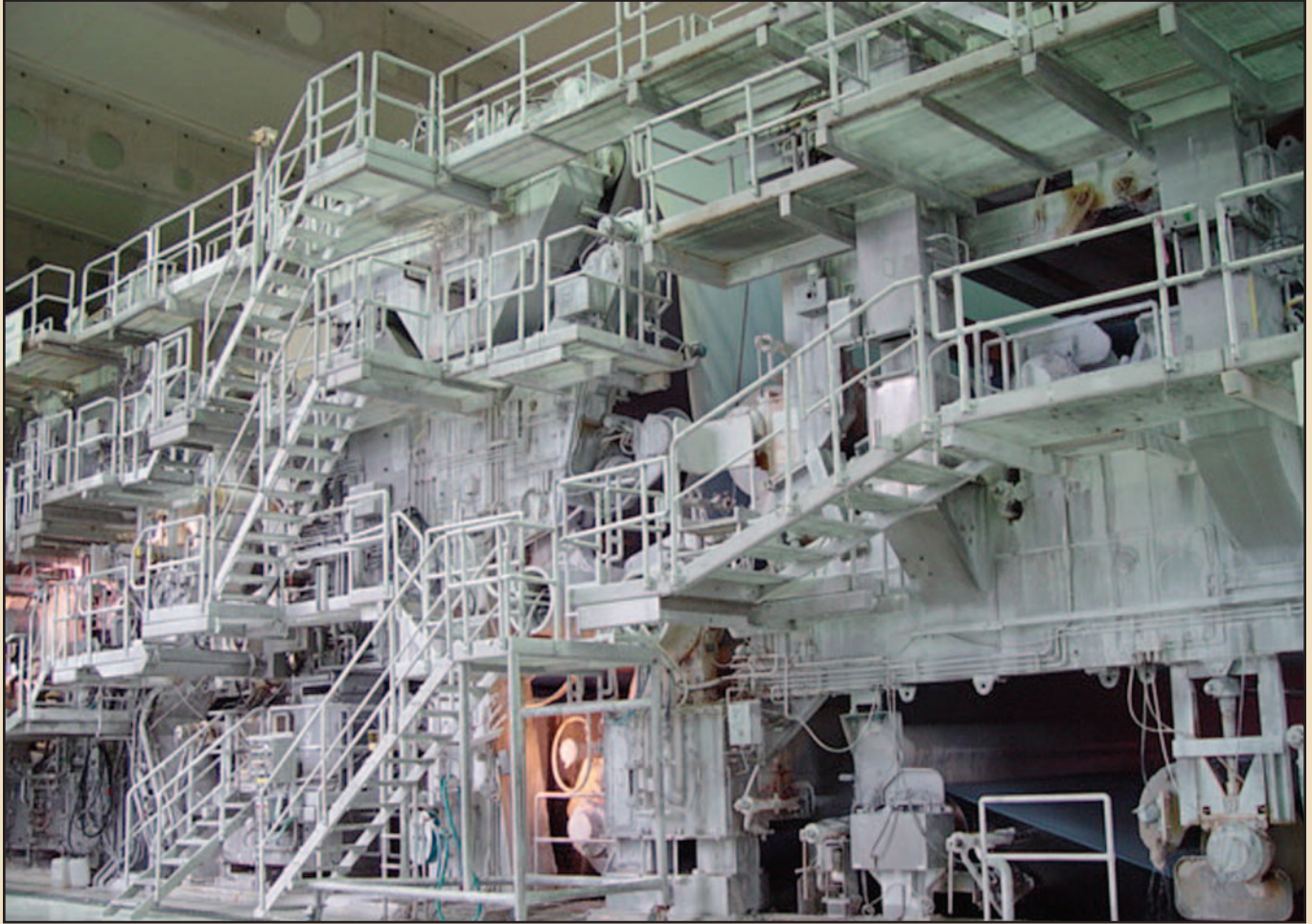
Flows to 14,800 m<sup>3</sup>/hr.  
Heavy duty long life  
service for board and  
large paper machines.

### Extra Large Capacity



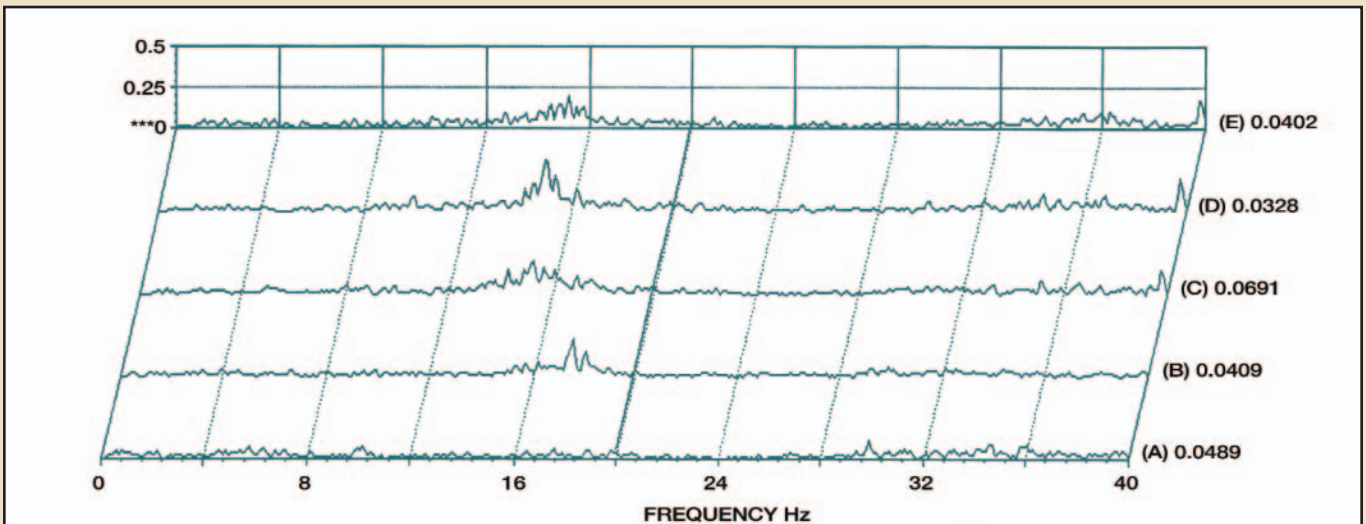
Inlet size to 2000 mm.  
Flow to 51,000 m<sup>3</sup>/hr.  
Fan Pump design for the  
largest machines of  
tomorrow.

# Goulds Fan Pumps in Modern Approach Systems

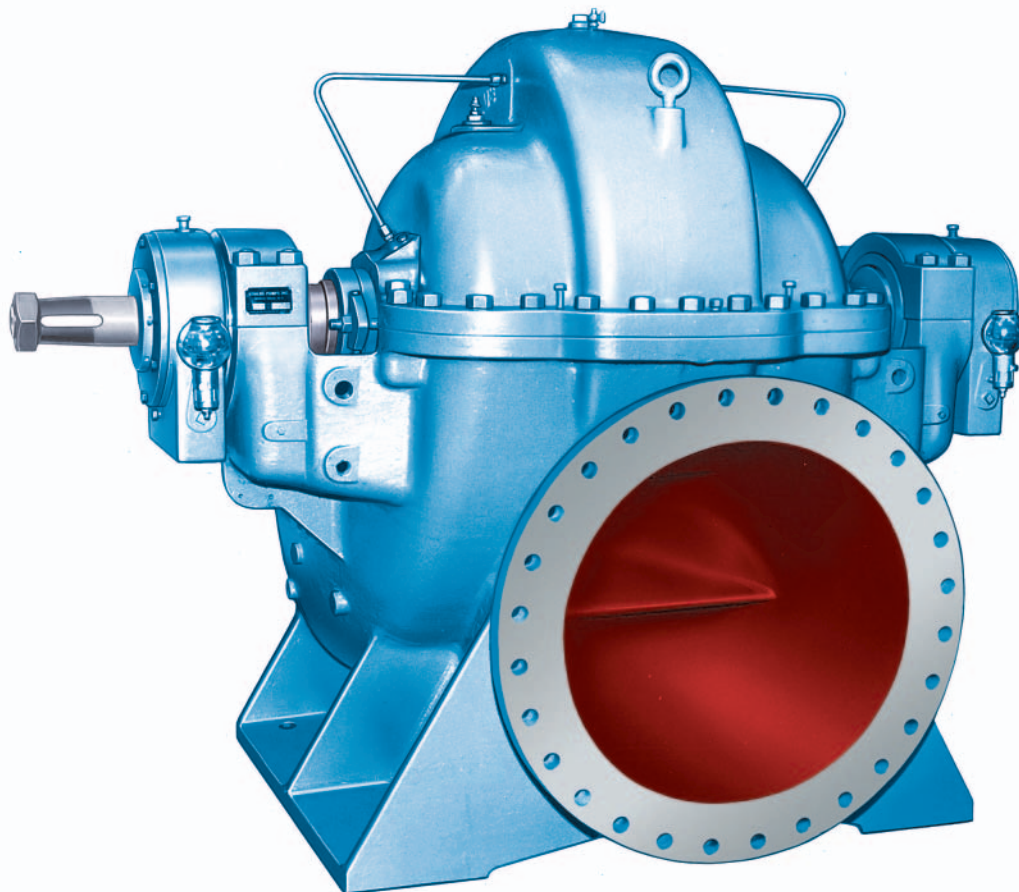


## Low Pressure Pulsations by Design

Pressure pulsations are harmful to machine direction basis weight quality. Goulds fan pumps are designed for the rigorous tolerances of modern paper machine headboxes with tested pulsations measuring less than 1000 Pascals (0.0102 kilograms/cm<sup>2</sup>).



# Goolds Low Pulse Pump Designs



Low pulse pump operation is obtained through the exceptional design characteristics present in every fan pump manufactured by Goolds. Over the past 25 years we have perfected fan pump manufacturing using the following criteria for impeller manufacturing:

- Impeller casting are formed to a specific quality standard
  - equal vane passage volume
  - maintaining of vane angles, concentricity of inlet / outlet angles
  - maintaining of vane thickness
- Impeller machining has a strict tolerance quality
  - Surface symmetry and run-out is optimized
  - Balancing is dynamically performed to ISO 1940 class 2.5 tolerances
  - Surface finish is machined without blemish

LOWPULSE IMPELLER																																									
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In addition, our trained applications personnel select pumps with impellers trimmed to less than maximum diameter, and within a range of 75% to 105% of the pump's best efficiency point. They also ensure suction conditions provide adequate NPSHA for the system. Why? To ensure your headbox receives the lowest possible pressure pulsations. This is the hallmark of a Goolds Fan Pump installation. Operation trouble free for a lifetime.

# Materials of Construction

Goulds uses the latest foundry methods to produce fan pumps with robust materials to meet demanding services in modern paper machines.



Part Description	Iron Pump	Acid Proof Stainless Steel	
		Austenitic	Duplex
Pump Housing Impeller Shaft	Cast Iron 316 Steel	316 316 Steel	2205 2205 Steel
Shaft Sleeve Packing Casing Wear Ring	316 Graphite 316	316 Graphite 316	316 Graphite 316
Impeller Wear Ring Bearing Housing Shaft Sleeve Nut	316 Cast Iron 316	316 Cast Iron 316	316 Cast Iron 316

## Material Equivalents

Description	ASTM	ISO	DIN
Cast Iron	A48 30B	185/Gr. 300	GG-30
Steel	A216 Gr. WCB		GS-C25
316	A743 Gr. CF-8M	683-13-10	G-X 2Cr Ni N 189
2205	A890 Gr. 3A		G-X 3Cr Ni Mo N 26 63



# PRO Services™ Your Business Solution For...

Routine Maintenance ✳ Plant Shutdown ✳ Field Repair  
Contract Services ✳ Turnkey Service



## In The Shop...Or On The Road.

PRO Services engineers and technicians are experienced with servicing all types of pumps and rotating equipment. Customers utilize PRO Services for commissioning, troubleshooting, and field repairs of pumps, pumping systems and other pieces of rotating equipment.

PRO Services engineers and technicians utilize state-of-the-art techniques and equipment to provide the highest level of service in the industry.

- Technical Expertise
- Factory Trained Service Personnel
- Fast Turnaround
- Emergency Service – 24 hours/day, 7 days/week, 365 days/year
- Quality
- ISO and Safety Certified

PRO Service Centers:  
Worldwide...Wherever  
You Need Us.



# PUMPSMART®

## CONTROL SOLUTIONS

**Simplicity**  
Dedicated pump control and protection logic in an easy to use package

**Reliability & Safety**  
Longer Pump and Seal life means reduced maintenance and down time

**Control**  
Improved pumping accuracy and repeatability means better process control

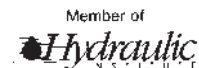
**Operating Cost**  
Variable speed cuts Energy Cost up to 70%  
Reduced maintenance & downtime cuts cost

**Flexibility**  
Multi-pump control & sizes up to 700 hp

**PUMPSMART**  
CONTROL SOLUTIONS

For more information, contact your nearest Goulds representative or visit our website at [www.gouldspumps.com](http://www.gouldspumps.com)

Goulds Pumps



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