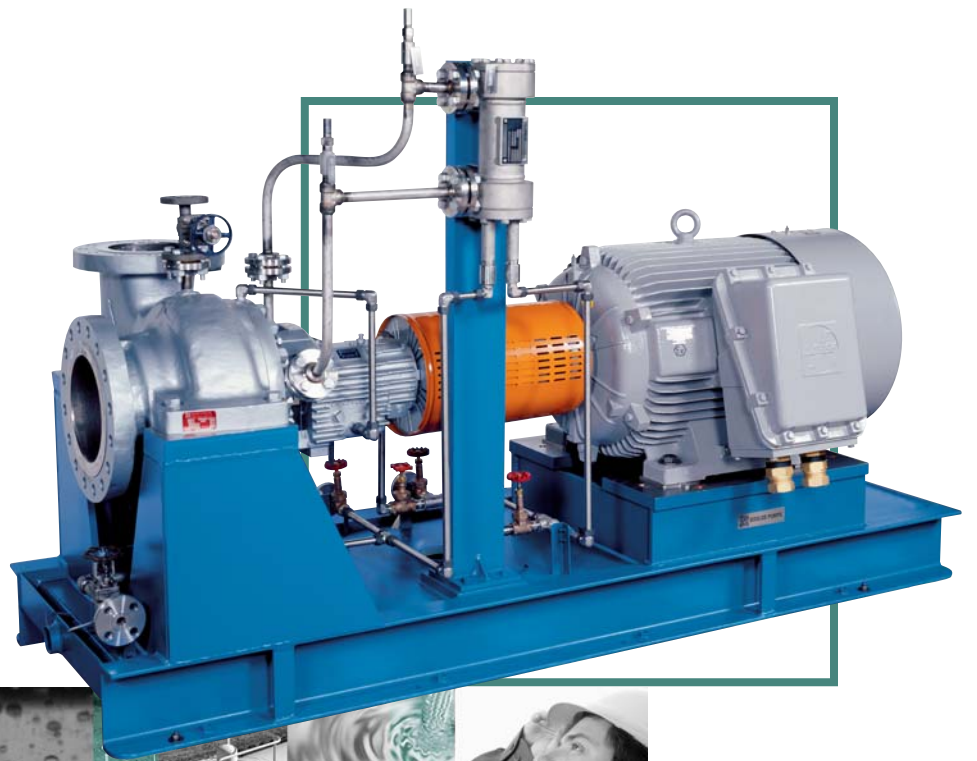


Goulds 3700

Single Stage, Overhung (API OH-2)
Process Pump



A Leader in API Engineered Pump Package Solutions...

Proven API Leadership

ITT Goulds Pumps is a proven leader in API Pumps

- ◆ Over 18,000 units installed
 - Over 15,500 OH2/OH3's
 - Over 2,500 BB2/BB3 pumps
- ◆ 50+ years of API expertise
- ◆ Participating member on API 610 and API 682 committees

Family of API Pumps

ITT Goulds Pumps has a family of proven API pumps

- ◆ Overhung pumps
- ◆ Single and two stage between bearing pumps
- ◆ Multi-stage between bearing pumps
- ◆ Vertical, double casing pumps
- ◆ Specialty pumps

Global Coverage

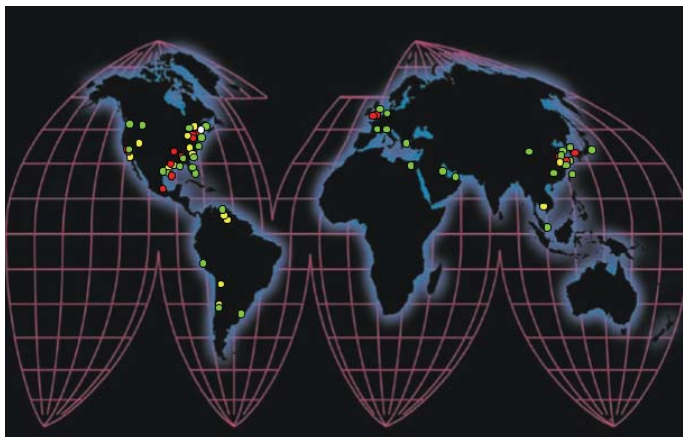
ITT Goulds Pumps has the global coverage needed to serve multi-national companies in any region.

Industry Leading Hydraulic Coverage

- ◆ With 48 pump sizes and 99 hydraulic combinations — we can offer more hydraulic fits to meet your process needs.
- ◆ Better hydraulic fits can mean improved efficiency and long-term reliability and parts life.



IP Global Presence



4000 Horsepower Testing Capability

- ◆ Our expanded test facility can test your pump in the most demanding of conditions.
- ◆ Testing at rated speeds is critical to assess the impact of dynamic conditions including vibration.

API Engineering Expertise

- ◆ We are experts in packaging engineered pumps that meet your demanding applications — with true conformance to the latest API specifications.
- ◆ Our extensive experience in nearly every type of driver, bearing, seal, piping configuration, nozzle configuration, flange and base plate designs to meet your application needs.
- ◆ ITT is a world leader in technology and engineering including hydraulics, materials science, mechanical design, and fluid dynamics.

Broad Applications

- ◆ Petroleum refining, production and distribution
- ◆ Petrochemical and demanding chemical processing
- ◆ Gas industry
- ◆ High temperature applications including boiler circulation
- ◆ General industrial requiring high temperature or high pressures

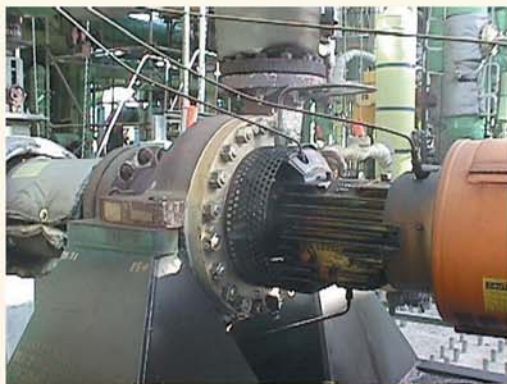
Goulds 3700



Model 3700

End Suction API-610/ISO 13709 Process Pump

- ◆ Designed for optimum reliability
- ◆ State-of-the-art mechanical design features
- ◆ 48 casing sizes—choice of impellers with most casings.



Model 3700 on high temperature service at a U.S. Gulf Coast refinery.



High-pressure (1100 psi) customized pump

High Temperature and Pressure Process Pumps that Meet or Exceed API-610 and ISO 13709 10th Edition

Safety, reliability and versatility are the key words for our end-suction, centerline mounted, overhung (OH-2) API 610 process pump.

Safety and Reliability

We provide engineered solutions with true conformance to the latest API specifications including the stringent emissions containment per API 682.

The result is a safe and rugged overhung API process pump designed for a 20-year life.

Versatility

- ◆ Capacity to 6500 GPM (1475 m³/h)
- ◆ Total Dynamic Head to 1200 feet (360 m)
- ◆ Temperature to 800°F (427°C)
- ◆ Pressure vacuum to 870 PSIG (60 kg/cm²)

Materials: Available in a wide range of materials including all API 610 constructions and custom application needs.

Engineered Hydraulics: An industry leading 99 hydraulic combinations to better match your process for efficiency and reliability. Custom hydraulics are available.

Engineered Packaging with a wide range of drivers, seals, piping, nozzle configurations, flanges, base plates, and QC testing.

Services

Column Reflux	Hot Oil	Stabilizer Overhead
Column Bottoms	Reboiler	Stripper Overhead
Column Charge	Reactor Feed	Heat Transfer
Injection	Tower Bottoms	Slop Gas Oil
Fuel Blending	Heavy Gas Oil	Scrubber Circulation
Offsite Hydrocarbon Transfer		

Standard Features for Optimum Reliability



Proven API-610/ISO 13709 Nozzle Load Design

Rugged casing and baseplate/pedestal support system provides flange loading capability exceeding API-610/ISO 13709 requirements without the use of a bearing frame support.

Full Flange Rating Pressure Capability

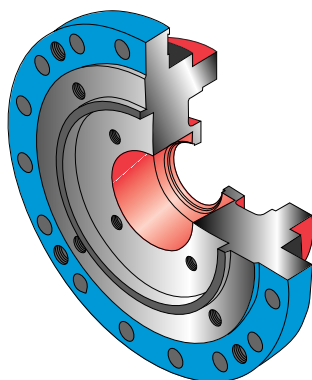
All pumps designed to operate at 2 pole running speeds have casings designed for the full pressure capability of a 300 RF flange.

Spiral Wound Casing Gasket

Casing to cover joint sealed with a spiral wound, controlled compression gasket required by API-610. Provides positive sealing up to the maximum design pressure and temperature.

API-610/ISO 13709 Seal Chamber

Designed to provide ideal seal environment for specified sealing arrangements. Full conformance with standardized dimensional requirements of API-610/ISO 13709. Accepts full range of API 682/ISO 21049 mechanical seals. Interchangeable with Model 3910.



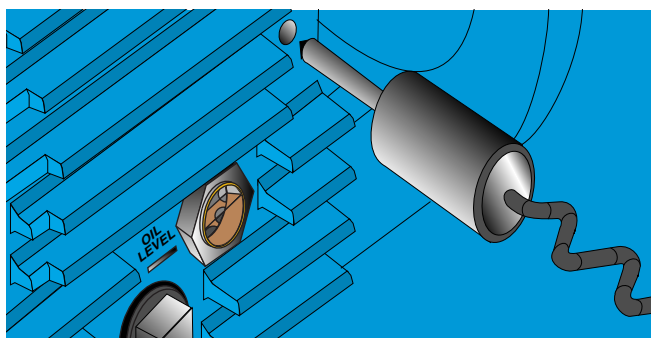
Performance Options

MULTIPLE IMPELLERS

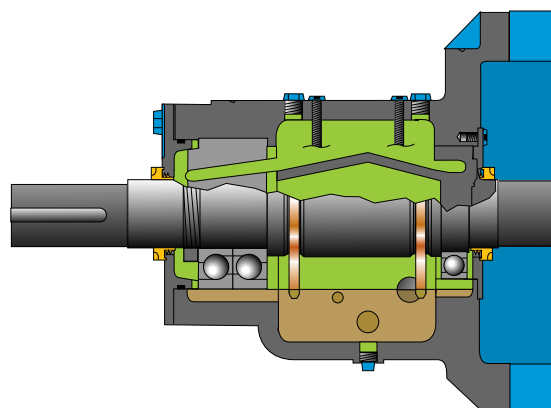
Meet specific user operating requirements. Available for most pump sizes.



Improved Bearing Environment



- Bearing frame fins provide optimum heat dissipation.
- Condition monitoring sites allow easy and consistent monitoring of temperature and vibration. Provision for instrumentation mounting per API-670 available.
- Large oil sight glass allows viewing condition and level of oil, critical for bearing life.

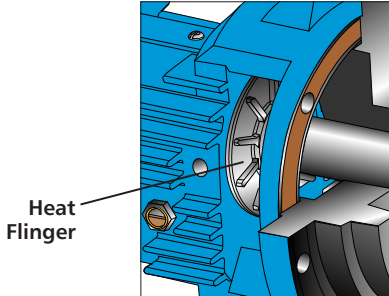


- Extra large oil sump provides cooler running bearings.
- Proven channeled oil lubrication system assures flow-thru of cooled oil to thrust and radial bearings.
- Standard dual oil rings, positively located, provide oil flow to channeled oil lubrication system and prevent oil foaming.

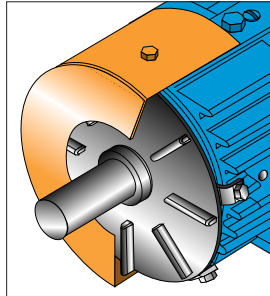
Optional Features for Application Flexibility

Goulds offers users a range of options to meet specific plant and process requirements.

High Temperature Capability *For high temperature applications, these options are available.*



HEAT FLINGER
Heat flinger dissipates shaft-conducted heat and circulates air to reduce heat build-up.



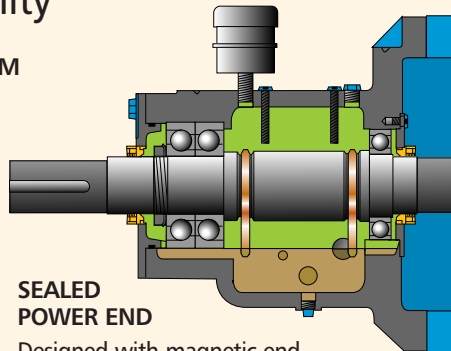
AIR COOLING
High capacity fan and shroud mounted on power end effectively reduce bearing frame temperature for cooler running bearings without using cooling water.



WATER COOLING
Finned cooler for maintaining oil/bearing temperature. Corrosion resistant material.

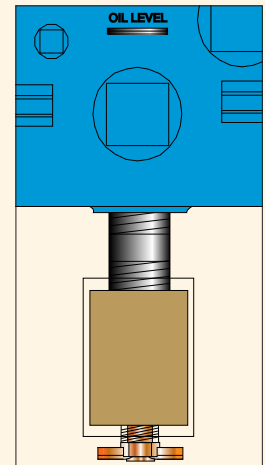
Lubrication Flexibility

OIL MIST LUBRICATION SYSTEM
Connections for pure or purge oil mist lubrication can be provided for immediate use or future requirements.



SEALED POWER END
Designed with magnetic end face seals and expansion chamber to prevent contaminants from entering the power end.

LUBRICANT SIGHT GLASS AND SAMPLING BOTTLE
For visual inspection and sampling of oil.



Baseplate Options

EXTRA WIDE BASEPLATE
Provided for seal systems with auxiliary components to improve maintenance access.

HEAVY DUTY PEDESTAL
Unique trapezoidal design provides superior resistance to deflections from flange loads.

TOP SUCTION NOZZLE
This option reduces space requirements and installation costs for unique applications.

INDUCER OPTION
Under certain conditions, reduction in NPHSR can be provided with an axial flow inducer.

COKE CRUSHER OPTION
Allows coke particles to be easily pumped by crushing coke with a cutter screw.

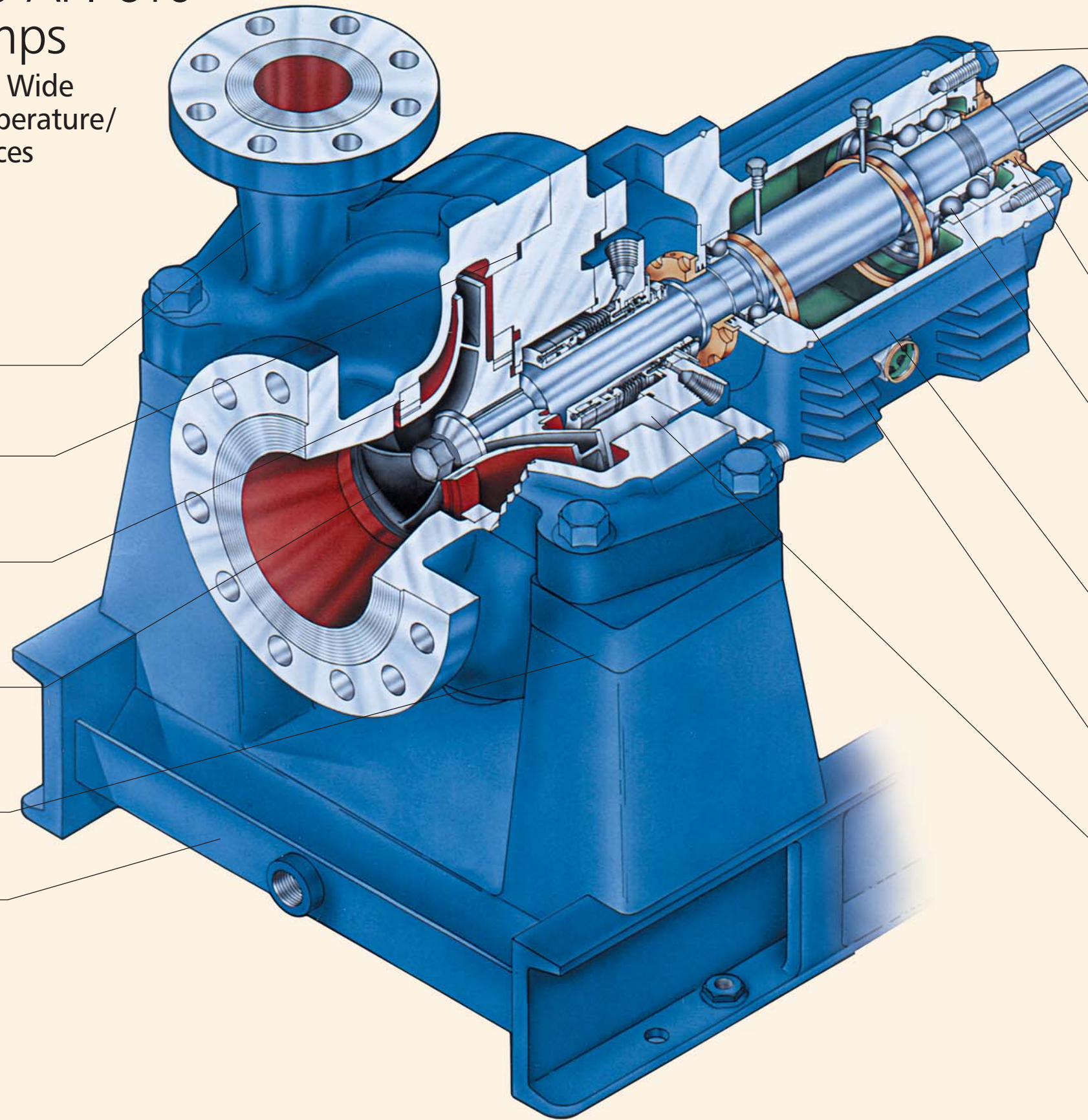


Inducer Option



Model 3700 API-610 Process Pumps

Design Features for Wide
Range of High Temperature/
High Pressure Services



TANGENTIAL DISCHARGE
Design maximizes hydraulic efficiency.

**CONFINED CONTROLLED
COMPRESSION GASKET**
Spiral wound gasket assures positive sealing
with no chance of misalignment.

**RENEWABLE WEAR RINGS
STANDARD ALL SIZES**
Positively locked and set screwed.
Front and rear rings control seal chamber
flows and pressures. Optional non-metallic
rings for improved efficiency.

IMPELLER
Multiple closed impellers for most casings
to meet specific hydraulic requirements.
Balanced to stringent requirements of
API-610/ISO 13709.

NOZZLE LOAD CAPABILITY
Casing/baseplate design optimized to exceed
toughest API/ISO nozzle load criteria.

FABRICATED BASEPLATE
Enlarged drain connection to prevent buildup
of debris. All joints are continuously welded.
Extra width sizes available to ease
maintenance of seal systems.

BONUS INTERCHANGEABILITY
Bearing frame, seal chamber, bearings,
shaft, mechanical seal, impeller and
wear rings completely interchangeable
with Goulds Model 3910 bearing frame
in-line process pumps. Entire back
pull-out assembly interchangeable
with Model 3710.

RIGID, HEAVY DUTY SHAFT
Minimizes shaft deflection, maximizes
bearing and mechanical seal life.

LABYRINTH OIL SEALS
Labyrinth seal design prevents oil
from leaking out and contaminants
from intruding. Made from non-
sparking metal.

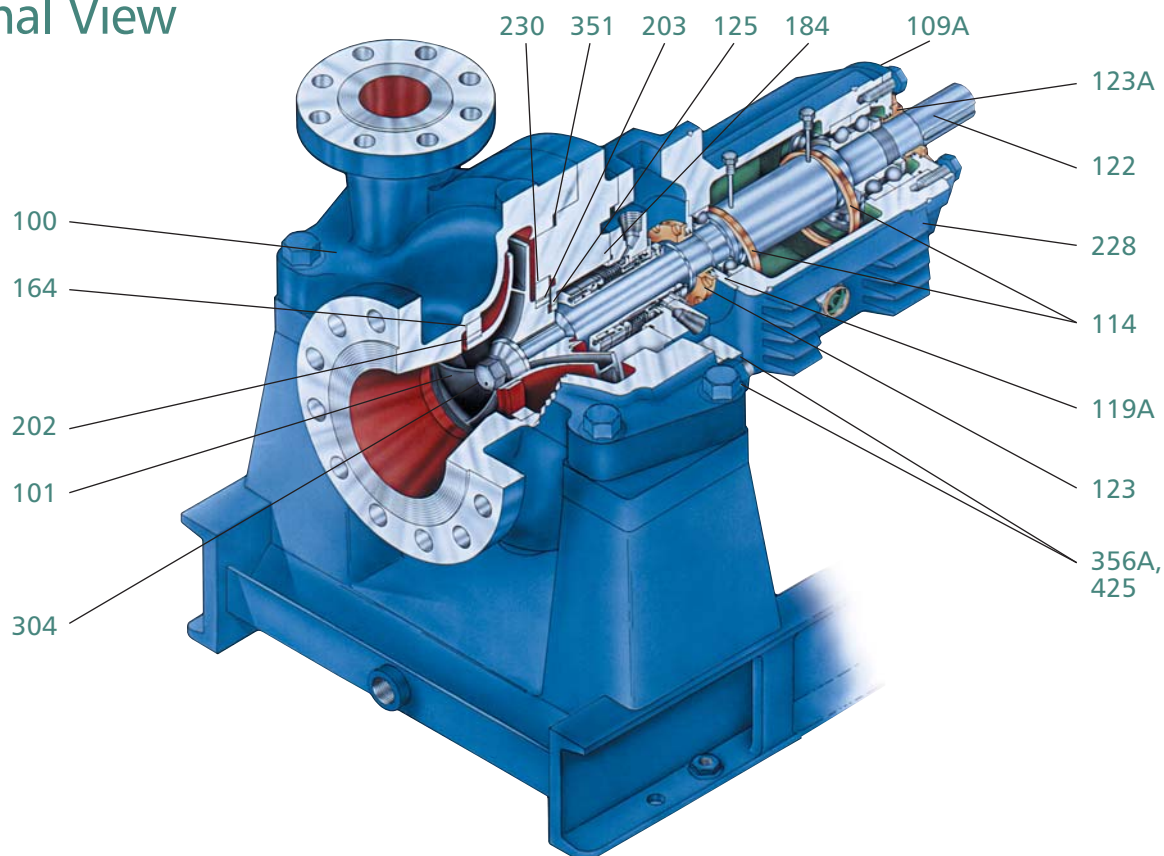
BEARINGS
Duplex 40° angular contact thrust
bearings and deep-groove (Conrad)
radial bearings sized for minimum three
(3) year bearing life under most severe
operating conditions. Exceeds API-610/
ISO 13709 requirements.

**HEAVY DUTY
BEARING FRAME**
Piloted and metal-to-metal fits
assure runouts and concentricities well
within limits specified in API-610/ISO
13709. Large oil sump capacity.
Cast fins enhance cooling.

LUBRICATION SYSTEM
Proven, engineered ring-oiled flow-thru
bearing lubrication optimizes MTBPM.

API 682 SEAL CHAMBER
Enlarged seal chamber fully conforms to
API-610/ISO 13709 standards.
Accepts wide range of API 682/ISO
21049 cartridge mechanical seals.
Renewable throat bushing standard for
controlled seal chamber environment.

Sectional View

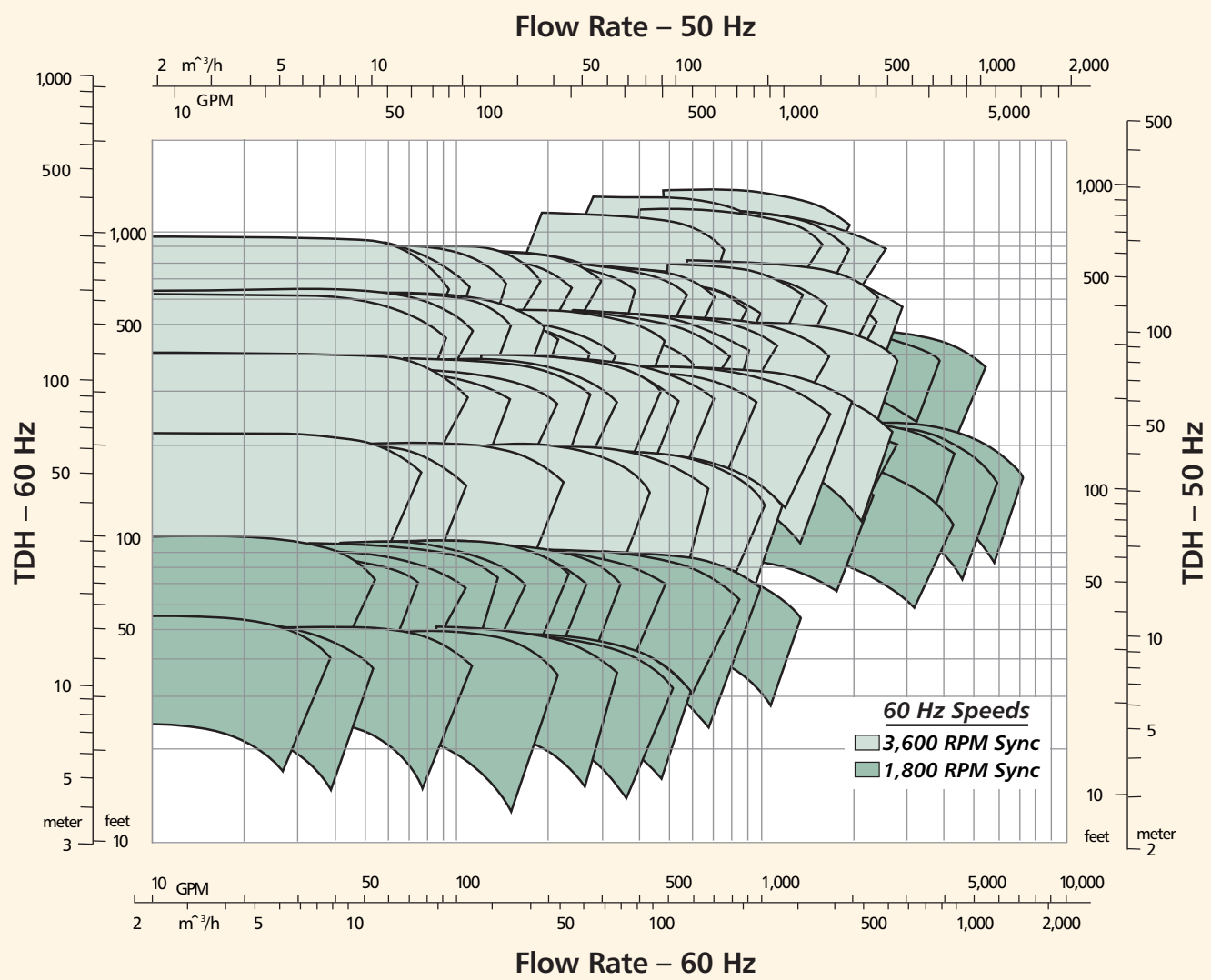


Parts List and Materials of Construction

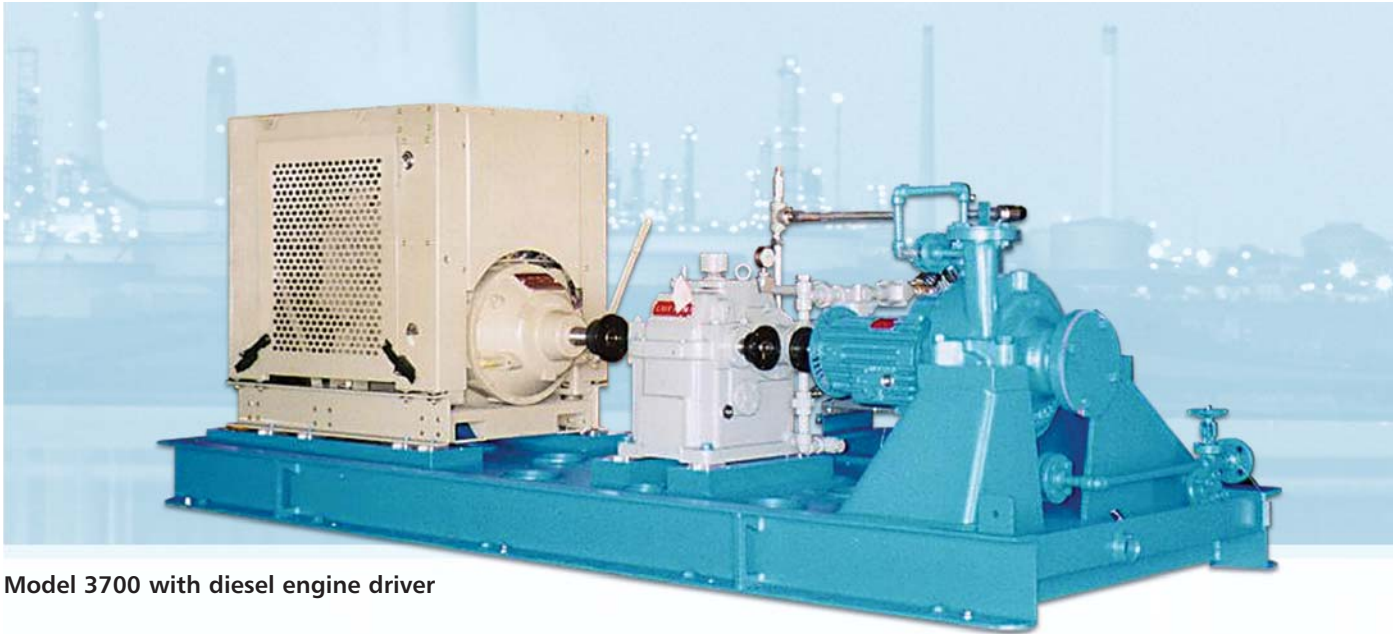
Item Number	Part Name	API-610 Material Classes				
		S-4	S-6	S-8	C-6	A-8
100	Casing	Carbon Steel			12% Chrome	316L SS
101	Impeller	Carbon Steel	12% Chrome	316L SS	12% Chrome	316L SS
109A	Bearing End Cover - Outboard	Carbon Steel				
114	Oil Ring	Bronze				
119A	Bearing End Cover - Inboard	Carbon Steel				
122	Shaft	AISI 4140 *		316L SS	410 SS	316L SS
123	Labyrinth Seal - Inboard	Bronze/Viton				
123A	Labyrinth Seal - Outboard	Bronze/Viton				
125	Throat Bushing	Cast Iron	410 SS	316L SS	410 SS	316L SS
164	Wear Ring - Casing	Cast Iron	12% Chrome	316L SS	12% Chrome	316L SS
184	Seal Chamber Cover	Carbon Steel			12% Chrome	316L SS
202, 203	Wear Rings - Impeller	Cast Iron	12% Chrome	Nitronic 60	12% Chrome	Nitronic 60
228	Bearing Frame	Carbon Steel				
230	Wear Ring - Seal Chamber Cover	Cast Iron	12% Chrome	316L SS	12% Chrome	316L SS
304	Impeller Nut	Steel	316 SS			
351	Casing Gasket	Spiral Wound 316 SS				
353, 355	Gland Studs and Nuts	AISI 4140				
356A, 425	Casing Studs and Nuts	AISI 4140				

* 410 SS on S-6 when temperature exceeds 350° F (175°C)
 All other API materials of construction are available.

Hydraulic Coverage

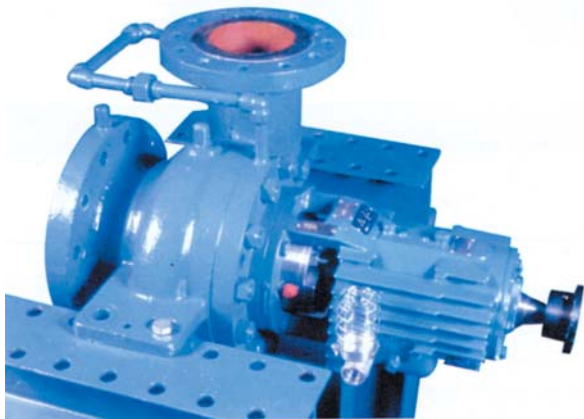


Typical 3700 Installation



Model 3700 with diesel engine driver

Upgrade Your Pre-10th Edition API Process Pump



Need an economical alternative to high maintenance costs? Goulds PRO Service Centers are experienced with reconditioning all types of pumps and rotating equipment, restoring equipment to original specification.

Users continually utilize PRO Service Centers for economical repair versus replacement, decreased downtime, reduced inventory of replacement parts and the advantage of updated engineering technology.

Benefits:

Years of experience allow PRO Service Centers to easily handle any rotating equipment including pumps, drivers, gear boxes, centrifuges, blowers, fans and compressors.

Profit from these exclusive quality services:

- Quality rebuilds/repairs ensure maximum reliability from your rotating equipment.
- One-year warranty on all rebuilds/repairs.
- Upgrade old designs to latest technology to maximize reliability.

Your local PRO Service Center offers solutions to lowering Total Cost of Ownership of your pumping systems. This can be achieved by upgrading your older style API process pumps to today's high performance standard of API 8th edition.

The question of whether to Replace or Upgrade your existing equipment is a challenge faced by most end users today. When casing, piping, and foundation are in good shape, upgrading your existing pump to comply with 8th edition performance usually is economically attractive compared to new pump installation. By exploring all options a better decision can be made.



Upgrades may involve hydraulic modifications and /or power end conversions. PRO Service Centers are experienced with all pump manufacturers.



PRO SERVICES® Extending Equipment Life...

Product Repair (all types and brands of rotating equipment)

- Service Center Repair
- Turnkey Repair/Installation
- Field Service
- Emergency Service

Reliability Improvement

- Predictive Condition Monitoring
- Root Cause Failure Analysis
- Machine & System Assessment
- Engineered Upgrades

Optimization of Assets

- Inventory Management
- Replacement/Exchange
- Training
- Maintenance Management

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

PROSMART

ProSmart™ encompasses the latest technology* in condition monitoring to transform your Predictive Maintenance program into a Plant Profitability program. It provides a cost-effective solution to maintaining uptime on all of your rotating equipment. ProSmart continuously monitors, analyzes and annunciates an alarm when critical criteria is not met. By identifying, diagnosing, and sounding an alert to potential equipment problems before they have a chance to manifest into unexpected downtime or catastrophic failure, ProSmart helps to assure plant profitability.



ProSmart delivers benefits that go right to the bottom line.

- Extends equipment life
- Optimizes costly “walk arounds” by skilled personnel
- Can help reduce overall equipment failures and the cost of downtime
- Sends alerts prior to potential catastrophic process failures
- Automatically alerts personnel to machine problems
- Consolidates data for equipment optimization (*Patent pending)

ProSmart is a wireless machinery monitoring system that collects and analyzes operating data automatically every 5 seconds. Integrated analysis capabilities provide enhanced data and reporting functions.

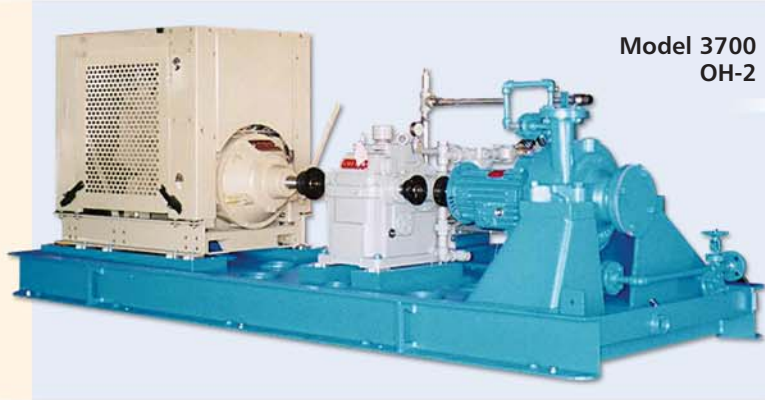
PUMPSMART System Options

- Energy savings
- Provides for pump protection
- Low flow protection (torque-based) when low levels are encountered in standpipe
- Provides upper speed limit to protect motor and drive from excessive load
- Provides lower speed limit to allow Model 3500XD air removal system to work satisfactorily
- Several proven control schemes allow for the maximum benefit of variable speed drive system
- Allows for future operating condition with same pump
- Allows for same pump size to be used when multiple pumps are involved with large TDH variations among them
- Allows for one impeller diameter (and Back Pullout) to be used for multiple pump installations — minimize inventory for critical services



A Leader in API Engineered Pump Package Solutions

API Family of Pumps



**Model 3700
OH-2**



**Model 3910
OH-3**



**Model 3620
3640
BB-2**



**Model
3400 API
BB-1**

Goulds Model	API Type	Capacity GPM (M ³ /Hour)	TDH Feet (Meters)	Temperature °F (°C)	Pressure PSIG (kg/cm ²)
3700	OH-2	6,500 (1,475)	1,200 (360)	800 (427)	870 (60)
3910	OH-3	7,500 (1,700)	750 (225)	650 (340)	595 (40)
3600	BB-3	4,500 (1,020)	6,000 (1,825)	400 (205)	2,500 (175)
3620	BB-2	20,000 (4,540)	1,500 (455)	850 (455)	1,000 (70)
3640	BB-2	2,500 (760)	1,400 (425)	850 (455)	750 (50)
3400	BB-1	50,000 (11,355)	700 (215)	400 (200)	300 (21)



**Model 3600
BB-3**