

# Contents

# 01

Diesel Engines	02
Engine Diagnostics – “Diesel Doctor”	03
Reconditioning	04
Precision Machining	05
Rebabbitting	06
Fuel Equipment	07
Crankshaft Grinding	08
In-situ Crankshaft Machining	09
In-situ Machining	10
Line Boring	11
Laser Alignment	12
Chocking & Grouting	13
Metal Stitching	14
Automation & Electrical	15
Steel Work – Welding	16
Quality Control	17
Classification Approval & Authorisations	18

# 02

## Engines

24 hours a day, 7 days a week, backed by our worldwide network of service facilities and on-call emergency repair team, **Goltens has been helping thousands of vessels to reduce off-hire and spare part consumption and more accurately, predict operating cost over the past decades.**

Our team of specially trained technicians and engineers are capable of performing routine maintenance, troubleshooting and repair on all major makes of main and auxiliary diesel engines.

### Goltens offers:

- Expertise in repair, reconditioning and replacement of damaged/ worn out parts.
- Skilled personnel – engineers and mechanics with shipyard and seagoing experience; technicians trained at the manufacturer factories for quick troubleshooting and problem solving.
- Readily available spare parts.





Engine Trial in Power Plant

## Engine Diagnostics

Goltens has a team of specially trained Service Engineers to carry out engine performance analysis and troubleshooting with the assistance of portable "Diesel Doctor". We can provide Vibration and Noise Analysis, Engine Inspection Programs, troubleshooting and repair preparations to reduce maintenance and operation costs while increasing machinery performance, efficiency and reliability for customers involved in the Oil and Gas, Shipping and Marine, Manufacturing Industries, etc.

Diesel Doctor Working  
Onboard Vessel

# 03



# Reconditioning 04



Nimonic Valve Spindle Reconditioning

In an ever more competitive world, reconditioning is the best alternative to replacement with new parts. Goltens has well-equipped facilities with class approved procedure for parts and components to be reconditioned to original maker's specifications.

#### Typical Components for Reconditioning:

- Cylinder Covers / Heads
- Piston Crowns / Skirts
- Exhaust Valve Spindles & Seats (Stainless Steel or Nimonic)
- Exhaust Valve Cages / Housings
- Piston Rods / Connecting Rods
- Pump Housings



Reconditioned Piston Skirts



Reconditioned Cylinder Covers



Grinding of Piston Ring Grooves



Reconditioned Exhaust Valve Housings & Cages



05

# Precision Machining

Fully-equipped with computerised machines and automatic equipment, Goltens is well positioned to meet the high demands of today's Marine Shipping Environment. [Our continued investment in equipment and people makes us the "repair partner of choice" for many local and international customers.](#)

## Goltens workshop capacities include:

- Large high technology CNC Plano Milling Machine with maximum cutting length x width of 6000mm x 4000mm which can undertake machining jobs for work pieces of up to 10 tons.
- Full range of CNC, NC and machines for all boring, grinding, milling and machining requirement.
- Full range of PTA, SAW, MIG, TIG welding equipment, welding positioners and associated manipulators.
- State-of-the-art Chrome Plating plant.
- Stress relieving furnace.
- In-house grit blasting facility ensures no time lost before inspection can commence.



Milling of Engine Bedplate



# Rebabbitting 06

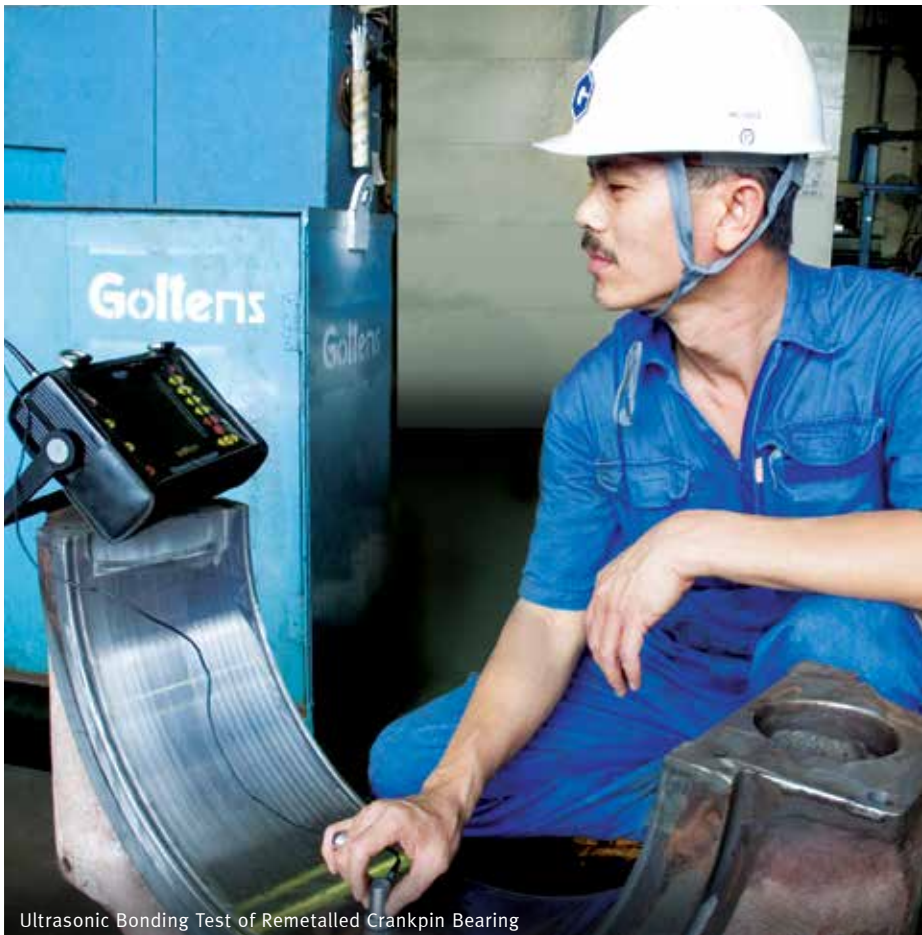
Since Goltens designed the hydraulic centrifugal rebabbitting machine 30 years ago, [we have rebabbitted over 100,000 bearings](#), making us the Industry's foremost expert.

## Typical Parts for Rebabbitting:

- Crankpin and Main Bearings
- Crosshead Bearings
- Intermediate Bearings
- Turbine Bearings
- Alternator Pedestal Bearings
- Pump Bearings
- Main Gear Bearings
- Thrust Pads and Thrust Collars
- Stern Tube Bearings

## Goltens offers:

- Specially designed tools and machines to suit different sizes and weights requirement of different types of bearings.
- Well-proven rebabbitting procedures widely recognised and accepted by all classification surveys.
- Experienced and well trained technicians.
- Round-the-clock workshop operations to meet vessel's urgent needs.



Ultrasonic Bonding Test of Remetalled Crankpin Bearing



Centrifugal Remetalling of Stern Tube Bearing



Machining of Stern Tube Bearing

# 07 Fuel Equipment

Goltens has over the years, built up a worldwide reputation for excellence in Fuel Equipment Reconditioning. Our capabilities within injection equipment require the finest tolerances has been documented through several decades.

Goltens has a fully-equipped workshop with special equipment for diagnosis, reconditioning and testing.

## Typical Components for Reconditioning:

- Fuel Injectors (Including latest Slide Valve type)
- Plunger and Barrels
- Fuel Nozzles
- Needle and Guides
- Fuel Valves
- Fuel Pumps
- HP Fuel Piping



Sulzer Pump Block Overhaul



Nozzle Lapping



Engine Manufacturer Authorised Fuel Equipment Testing Machine

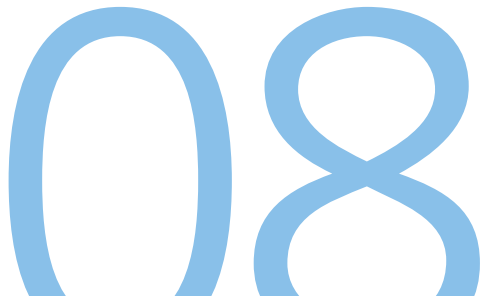


Contact Face Grinding



Reconditioning of Fuel Slide Valve





# Crankshaft Grinding



Boroscope of Oil Passage

Having reconditioned over 25,000 crankshafts since the start up in 1940, Goltens has both the experience and expertise to handle any kind of grinding problem.

**Goltens offers:**

- Specially designed tools for grinding of bearing surfaces without dismantling the shaft.
- Bench grinding in dedicated workshop.
- Trained engineers and mechanics who are skilled in the art of in-situ grinding and bench grinding.
- Readily available tools for almost any engine make and type.



Grinding of Crankshaft in Workshop





Multi Point Machining of Crankpin

09

## In-situ Crankshaft Machining

In the field of crankshaft machining, Goltens has long been the acknowledged leader. Goltens' first tool for in-situ machining was patented as far back as 1957. Since then, [we have machined more than 50,000 crankpins and main journals in-situ.](#)

We have also developed tools to machine thrust pad of crankshafts, heat treat of crankshafts and other tools customised as solutions to individual ship owners' challenges.



Grinding of B&amp;W Engine Thrust Pad



Annealing of Overheated Crankpin to Reduce Hardness

# In-situ Machining 10

With in-situ machining, Goltens can offer a quicker, more economical alternative to dismantling damaged components, transporting to workshop, repairing and re-transporting for assembly and re-alignment. We can mobilise a wide range of machines and equipment to your site, ensuring that your machinery is operational as soon as possible.

## Goltens offers:

- Portable Machines for resurfacing.
- Lightweight machines for vertical/horizontal position machining for separators.
- Portable machines to suit overhead/under surface machining for thrusters seating.
- Portable flat face milling machines (generator foundation in power station).
- Portable key-way machine (turbine shaft in power station).



Milling of Vertical Flange Surface



Milling of Thruster Seating



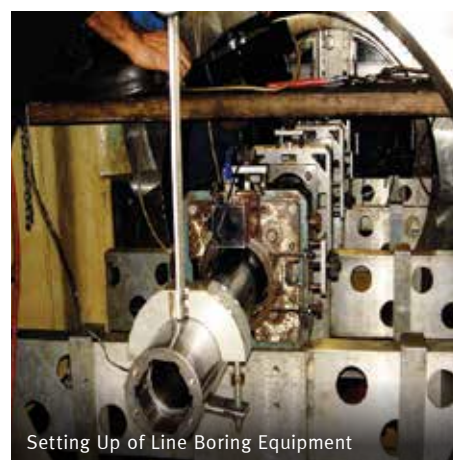
## 11



Machining of Liner Bore



Line Boring and Flange Facing



Setting Up of Line Boring Equipment

# Line Boring

Line boring in-situ or in workshop is a speciality of Goltens. With the use of skilled personnel, special designed tools and laser guided equipment, **Goltens executes work of exact precision.**



Line Boring of Main Bearing Pockets for 4-stroke Engine

# 12

## Laser Alignment

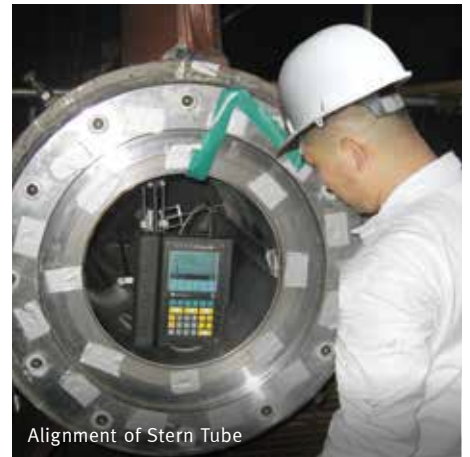
Goltens uses special laser equipment for re-alignment of machinery and checking of machinery after re-alignment.



Laser Alignment Check of Main Bearing Pockets



Laser Alignment Check of Propulsion Shaft Line

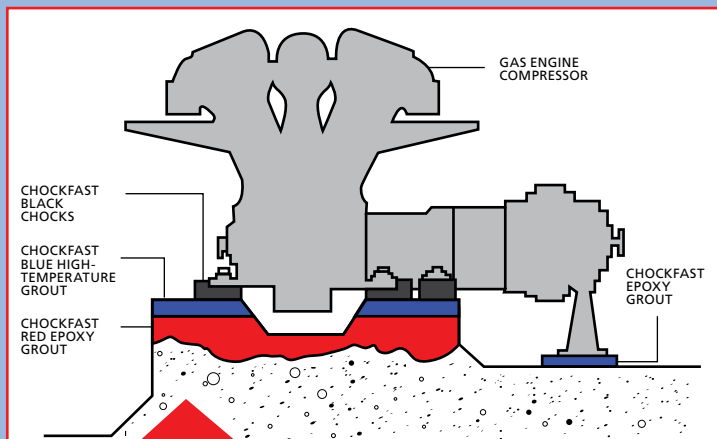


Alignment of Stern Tube



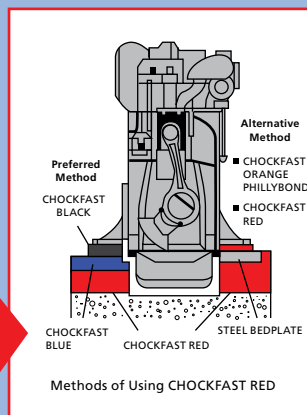
Flatness Check of Thruster Pedestal





The  
Chockfast System  
Assures Precise  
and Permanent  
Alignment of  
Gas-Engine  
Compressors

...and  
Diesel Engines



13

# Chocking & Grouting

**ITW Polymer Technologies**

## Marine and Offshore Sectors

Alignment and chocking are critical operations in new buildings and repairs. Being the authorised distributor for **ITW Polymer Technologies**, Goltens can provide a unique knowledge, which offers a quick, dependable and accurate system for alignment and chocking, and supply various types of epoxy grouting solutions to suit the needs of Marine, Offshore as well as Industrial installation.

### Advantages of Chockfast Chocks are:

- Minimise heat build-up on foundations.
- Assure precise and unsurpassed contact with bedplates.
- Provide a high coefficient of friction to help maintain engine alignment and reduce possible bearing or crankshaft damage.
- Resist abrasion, impact, cavitation, corrosion, erosion and chemical attack.

## Industrial Sectors

The Chockfast System for permanent alignment of gas engine compressors and diesel engines consist of pourable Chockfast epoxy resin chocks, **Chockfast Blue** high temperature grout, and **Chockfast Red** foundation-capping and strengthening compound.



# 14

## Metal Stitching

Metal stitching is a well-known method for repairs of all kinds of casted material. Goltens professionally trained teams are specialised in carrying out metal stitching both in-situ and in our workshop.

**Parts that generally need stitching are:**

- Engine blocks and bedplates
- Pump casings
- Turbine casings
- Gear and gear casing







Troubleshooting of Control Panel

# Automation & Electrical

The manoeuvring, control, alarm and safety systems are major contributors to many of the severe damages we entertain regularly. [Our concept, hence, is to overhaul the manoeuvring and safety systems as an integral part of a total overhaul to avoid interface problems.](#) It is well-known that no system is stronger than its weakest link.

## Priority Systems:

- Engine remote control
- Bridge control
- Alarm and monitoring systems
- Safety systems
- Rudder and propeller controls
- Cargo control systems
- Lift controls
- Fire alarm systems
- Switchboards
- Voltage regulators
- Starter panels
- Distribution network
- Electric Motors
- Generators/Alternators

## Goltens offers:

- Troubleshooting
- Repairs
- Fine tuning of exiting
- Installations
- Calibration of sensors

# Steel Work – Welding 16



Steel work such as welding of pipes, structure, as well as special welding of engine parts is part of Goltens Singapore's day-to-day services. We have long experienced and well-trained personnel for all kinds of welding requirements. These works can be done in Goltens workshop, at anchorage as well as on voyage. Our certified welders and professional staff will guarantee quality in our service to you.



# Quality Control 17



Determine Piston Ring Grooves Chrome Hardness

At Goltens, we pledge to comply with the requirements of the ISO 9001:2000 Quality Management Standard and other applicable statutory and regulatory requirements. All jobs are carried out according to the original maker's specifications with our class approved procedures.

We are ISO 9001:2000 certified.

**We carry out quality checks and inspections for various Engine Components:**

- Determine Piston Ring Grooves Chrome Thickness
- Determine Piston Ring Grooves Chrome Hardness
- Ultrasonic Gauging of Cylinder Cover
- Inspection of Cylinder Cover Cooling Bores using Boroscopes
- Ultrasonic Testing of Valve Spindle
- Ferrite Testing of Valve Spindle

**Some of our Inspection Instruments:**

- Ferrite Indicator
- Liquid Penetrant
- Magnetic Particle
- Chrome Thickness
- Hardness Tester
- UT Krautkramer



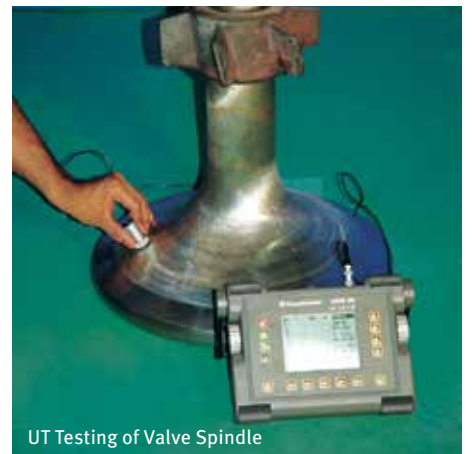
Determine Piston Ring Grooves Chrome Thickness



Ultrasonic Gauging of Cylinder Cover



Boroscope of Cylinder Cover



UT Testing of Valve Spindle

# Classification Approval & Authorisations

18

Our approved procedures are recognised by all major Classification Societies as follows:



American Bureau of Shipping (ABS)



Bureau Veritas (BV)



Det Norske Veritas (DNV)



Nippon Kaiji Kyokai (NKK)



Lloyd's Register (LR)

## Service Authorizations



Japan Engine Corporation



H.Cegielski Service

STX Heavy Industries Co., Ltd  
STX Engine Co., LtdHyundai Heavy Industries Co., Ltd  
EMD HIMSEN Engines  
(member of the Global Service Network)

CSSC Marine Power Co., Ltd

GE Transportation  
Systems Marine  
and Stationary PowerIOP Marine Products  
(Hydraulic Pumps,  
Fuel Valve Testing Equipment)

ITW Polymer Technologies



Anqing CSSC Diesel Engine Co., Ltd

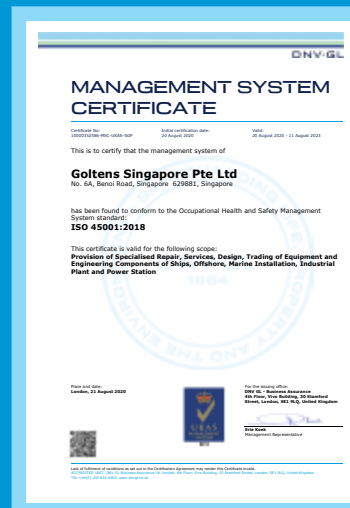
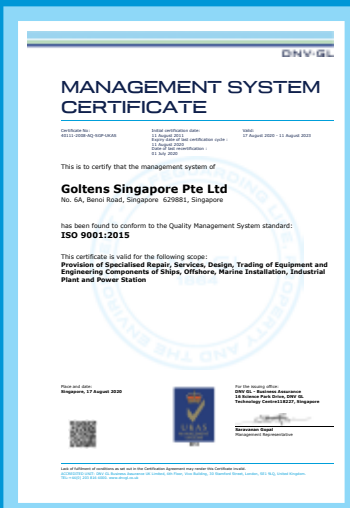




'Round the clock, around the world'

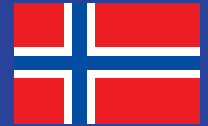
# TRUSTED GLOBALLY

**Goltens** is the Service Provider of Choice to an extensive number of major fleet, Power Plant & Industrial Customers worldwide. We are committed to maintaining our reputation for reliable quality services in the marketplace whether in Marine, Oil & Gas, Power Generation or Industry in general.





# 'Round the clock, around the world'



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