

# TIMKEN

Engineered Marine Solutions



## PRODUCTS AND SERVICES GUIDE FOR MARINE



## **TIMKEN ENGINEERED MARINE SOLUTIONS** **KEEP YOUR VESSELS MOVING**

From mandatory changes caused by environmental concerns, to gaps in operational efficiency, to supplier lead time and support, there are many challenges that come with staying on top in the workboat marine industry.

As a company whose products bring uptime and reliability to numerous mobile and industrial applications, Timken Engineered Marine Solutions can help solve the challenges you face. Our purpose-built portfolio consists of leading products, application knowledge, global service and a technical support network.

From new builds to existing fleets in either rivers or oceans, Timken Engineered Marine Solutions keep your vessels moving.

## **WHO WE ARE**

With more than a century of knowledge and innovation, Timken is a world-leader in designing and manufacturing high-quality and premium performance products including:

- Mounted Bearings
- Bearings
- Shaft Seals
  - Bulkhead Seals
  - Sterntube Seals
  - Thruster Seals
- Clutches
- Brakes
- Torque Limiters
- Couplings
- Gearbox Systems
- Lubrication Systems
- Belts
- Chain

At Timken, we've been helping our customers solve unique challenges for over 120 years to improve performance, reliability and efficiency.



## LOCALLY BASED, WORLD-CLASS SERVICE

We are a U.S. headquartered company that has a global manufacturing footprint. As a Timken customer, you have access to a global sales, service and application engineering team that provides local support around the globe.

## ENGINEERED FOR PREMIUM PERFORMANCE

Our products are engineered to perform in severe operating conditions and you gain a partner who understands the regulations and operational challenges you face.

## TIMKEN QUALITY MANAGEMENT SYSTEM

At Timken, we consistently produce and deliver what we promise. Quality is the cornerstone of our reputation and is central to achieve our mission. With Timken Engineered Marine Solutions, you can be confident in the components that go into running your vessel.

## MARINE AGENCY APPROVALS

The Timken Engineered Marine Solutions brand portfolio is proud to carry a number of Marine Agency approvals including, Product Design Reviews, Factory Manufacturing Assessments and Type Approvals. Where needed, additional approvals may be obtained. Simply discuss your approval requirements with your Timken Engineered Marine Solutions representative.



## DRIVE TRAIN TO DECK EQUIPMENT

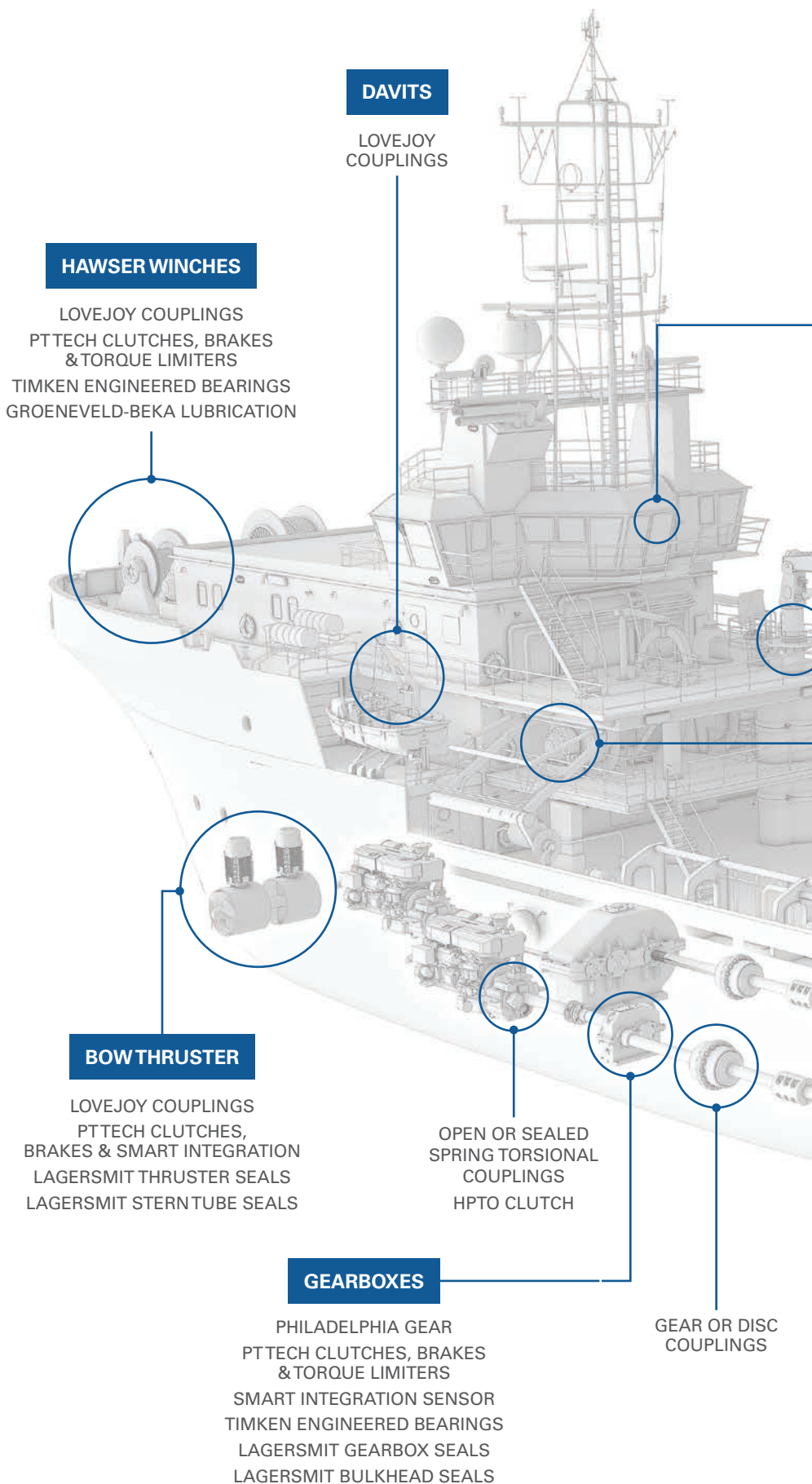
Our umbrella of brands provide uptime critical products and solutions from the main drivetrain to deck equipment.

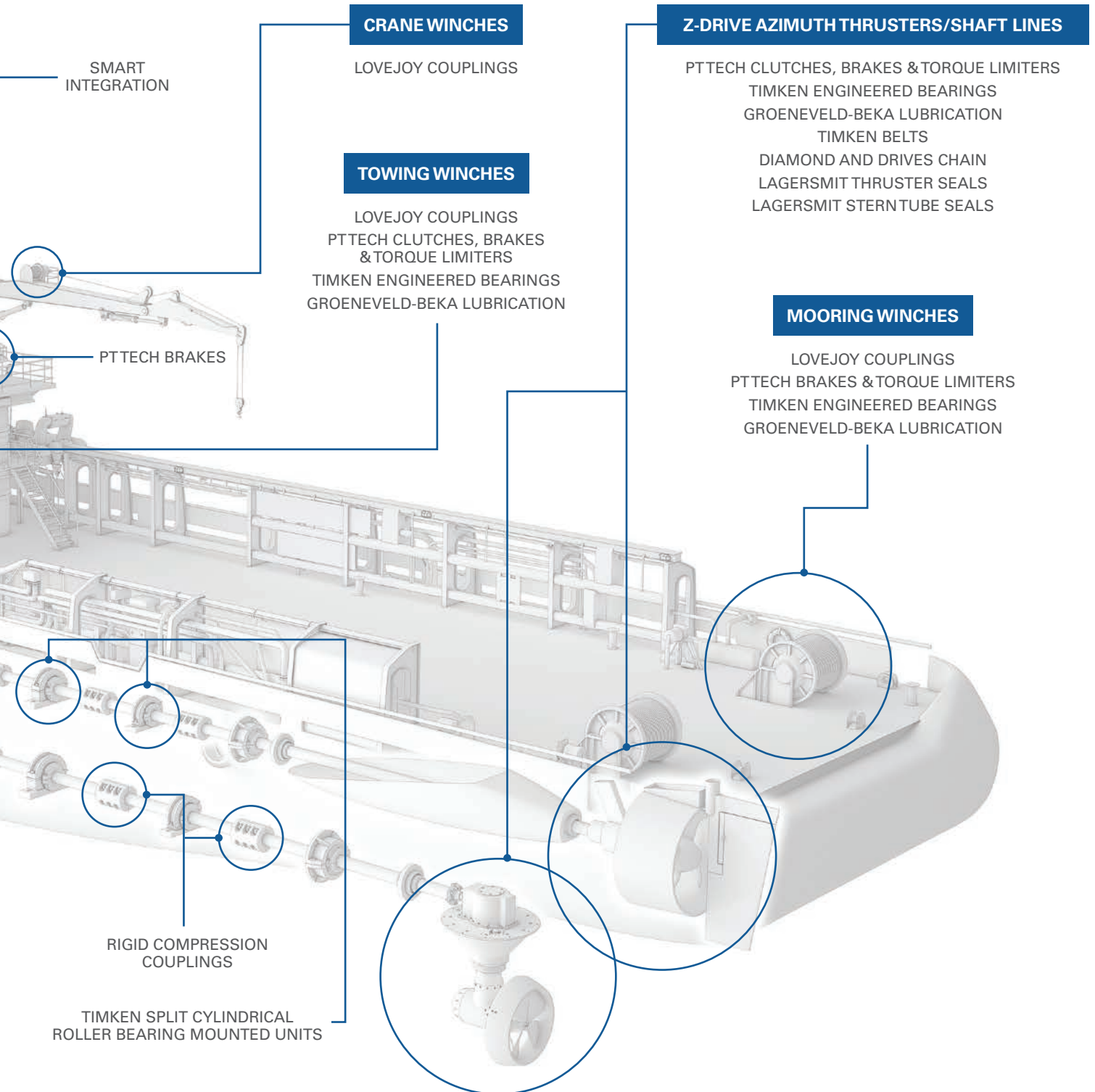
## SUPPORT WHEN YOU NEED IT

With access to Timken's dedicated sales and service engineers, you can be confident in vessel uptime. Our service engineers become an extension of your team and work with your installation technicians to ensure you are selecting and installing the right components.

## RELIABLE PRODUCT DELIVERY

An out-of-service vessel can cost tens of thousands of dollars per day. With thousands of local distribution partners, we strive to reliably deliver products so that you can experience more cost-effective uptime.





## ENGINEERED MOUNTED BEARINGS

Timken offers one of the broadest lines of mounted bearing solutions with various selections for bearing types including our Mounted Split Cylindrical Roller Bearing that eliminates the need to remove the propulsion shaft due to the split design, significantly reducing maintenance time. We also offer high-performance sealing solutions, locking options and housing styles designed to drive strong operational results and efficiency.

We have the capability to apply application specific coating and lubrication solutions to all of our mounted units.

**TIMKEN**



### MOUNTED SPLIT CYLINDRICAL ROLLER BEARINGS

Ideal for trapped applications in high-service cost locations with split-to-the-shaft design available in a variety of housing styles.

- Reduce inspection and replacement time dramatically
- Increase operational life and reduce maintenance expense



1

#### Integrated Cage Clips

- Simplifies assembly
- Eliminates lost cage clips



2

#### Jacking Screws

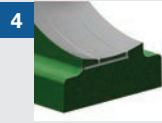
- Facilitates alignment during installation



3

#### Anti-Vibration Clamp Ring Bolts

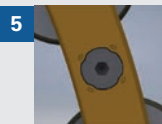
- Incorporates Nord-Lock® safety washers with wedge-locking technology
- Maintains clamping force, even in high-vibration applications



4

#### Spherical Lubrication Features (SLUB)\*

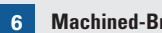
- Spherical relubrication feature can be specified to allow bearing housing to move freely within pedestal support



5

#### Anti-Vibration Cage Features

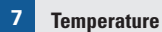
- Cage peening ensures long-term cage reliability on high-vibration applications



6

#### Machined-Brass Cage

- Accommodates higher speeds and temperatures
- Stands up to acceleration forces
- Reduces noise



7

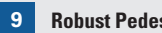
#### Temperature and Vibration Probe Features (TEVB)\*

- Allows for installation of monitoring equipment



8

#### Profiled Rolling Elements



9

#### Robust Pedestal Support Design

\*Non-standard features - available upon request.

Nord-Lock® is a registered trademark of Nord-Lock International AB.



### MOUNTED SNT/SAF PLUMMER (PILLOW) BLOCK

Customizable design, interchangeable components and high-performance spherical roller bearings provide heavy-duty performance.

- Easily convert from fixed to float configurations in the field
- Split housing allows for removal of cap for easy assembly and bearing inspection

## ENGINEERED BEARINGS

Timken® engineered bearings feature precision tolerances, proprietary internal geometries and quality materials. Our tapered, spherical, cylindrical, thrust, ball and plain bearings deliver a strong performance, consistently and reliably.

### TIMKEN



#### TAPERED ROLLER BEARINGS

Over 120 years ago, our first patent was on the tapered roller bearing, and today we offer the widest variety in inch and metric sizes. Our tapered roller bearings are specially designed to perform even in the most unforgiving conditions with the goal of minimizing equipment downtime.

- Enhancements available for high-corrosion, high-temperature and low-lubrication environments



#### CYLINDRICAL ROLLER BEARINGS

Comprehensive line of single-double- and multi-row versions helps extend equipment life and lower maintenance costs.

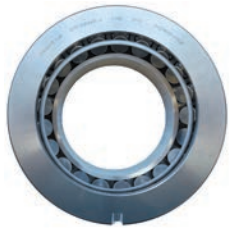
- EMA high-performance series offers premium brass land-riding cages that reduce operating temperatures



#### SPHERICAL ROLLER BEARINGS

The Timken® spherical roller bearing line is one of the broadest in the industry with a wide variety of sizes and configurations to meet the requirements of demanding applications.

- Optimized internal geometry provides longer bearing life and extended lubrication life leading to more productivity and uptime



#### THRUST BEARINGS

Timken® thrust bearings deliver premium-performance in challenging conditions.

- N1 notched thrust spherical roller bearings are designed to handle intense axial and radial loads and to compensate for tilting moments, ensuring high performance in critical marine applications



#### BALL BEARINGS

Timken ball bearings are engineered to perform in a wide range of applications and conditions.

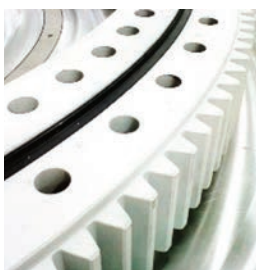
- Radial varieties tolerate relatively high-speed operation under various load conditions
- Angular contact designs can support both radial and axial loads
- Deep groove ball bearings' premium design helps ensure consistent quality



#### SPHERICAL PLAIN BEARINGS

Support high-capacity radial and axial loads, ideal for static oscillatory applications where moderate misalignment may occur.

- Hardened steel helps deliver consistent, reliable performance
- Reduce installation time with simplified housing shaft designs



#### SLEWING RING BEARINGS

Engineered to handle heavy loads and combined loads including axial and radial.

- Delivers custom designs to specification or to suit the requirements of a specific application



#### COATINGS AND ENGINEERED SURFACES

Hard coatings and topographical modifications help boost the performance of precision components in difficult applications.

- Enhance performance and reliability in equipment with marginal lubrication or in high-debris environments



# TIMKEN BEARING REMANUFACTURING

## WHY TIMKEN FOR BEARING REMANUFACTURING?

Timken has a dedicated team of bearing remanufacturing experts. This team employs strict Timken standards and quality control in the remanufacturing process. In addition, the remanufactured bearing is backed by an industry-leading warranty.

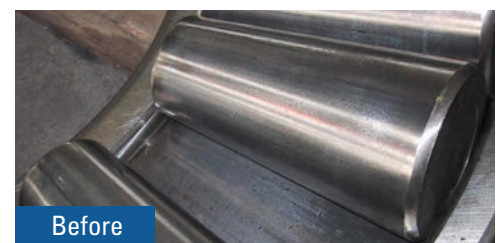
While some bearing remanufacturing methods consist of just a cosmetic honing, we take the extra steps to help extend the life of your bearing.

## HOW DO I KNOW WHEN A BEARING NEEDS REMANUFACTURED?

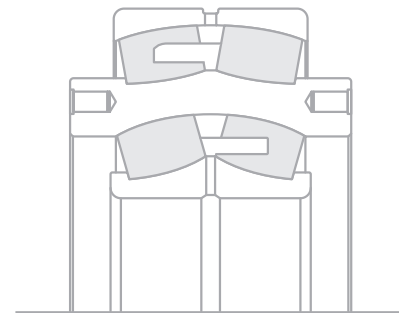
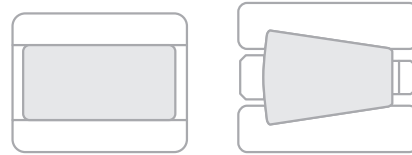
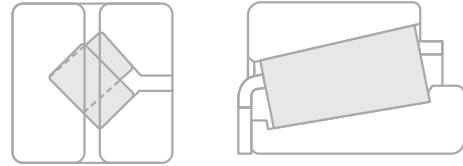
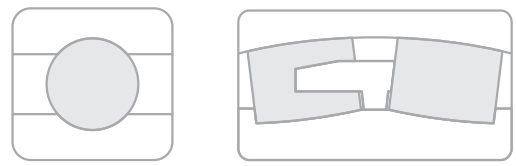
Timken remanufacturing experts can help you to identify the type of bearing damage, determine the root-cause and recommend the best remanufacturing method.

Signs or reasons that a bearing may need remanufactured:

- During routine maintenance the bearing is deemed “ready for replacement”
- Exceeds an operating temperature of 200°F (93°C)
- Exposure to excessive vibration
- Experiences a sudden drop or gain in lubrication
- Emits excessive noise
- Loses bearing seal integrity







## HOW CAN I MAXIMIZE THE VALUE OF BEARING REMANUFACTURE SERVICES?

You can significantly reduce your overall cost of operation by building a critical spares inventory. With new bearings in operation, send the out-of-service bearings to Timken for remanufacturing.

When it is time to replace bearings, you can install the remanufactured part from your inventory, avoiding stock-outs and costly downtime.

As this cycle repeats, you continue to lower your costs and reduce operational downtime.

## REMANUFACTURE, REPEAT, SAVE

With each remanufacturing cycle, you can save 20 to 60 percent of the cost of replacing the bearing. Remanufacture the same bearing twice, and you could cover the cost of a new bearing.

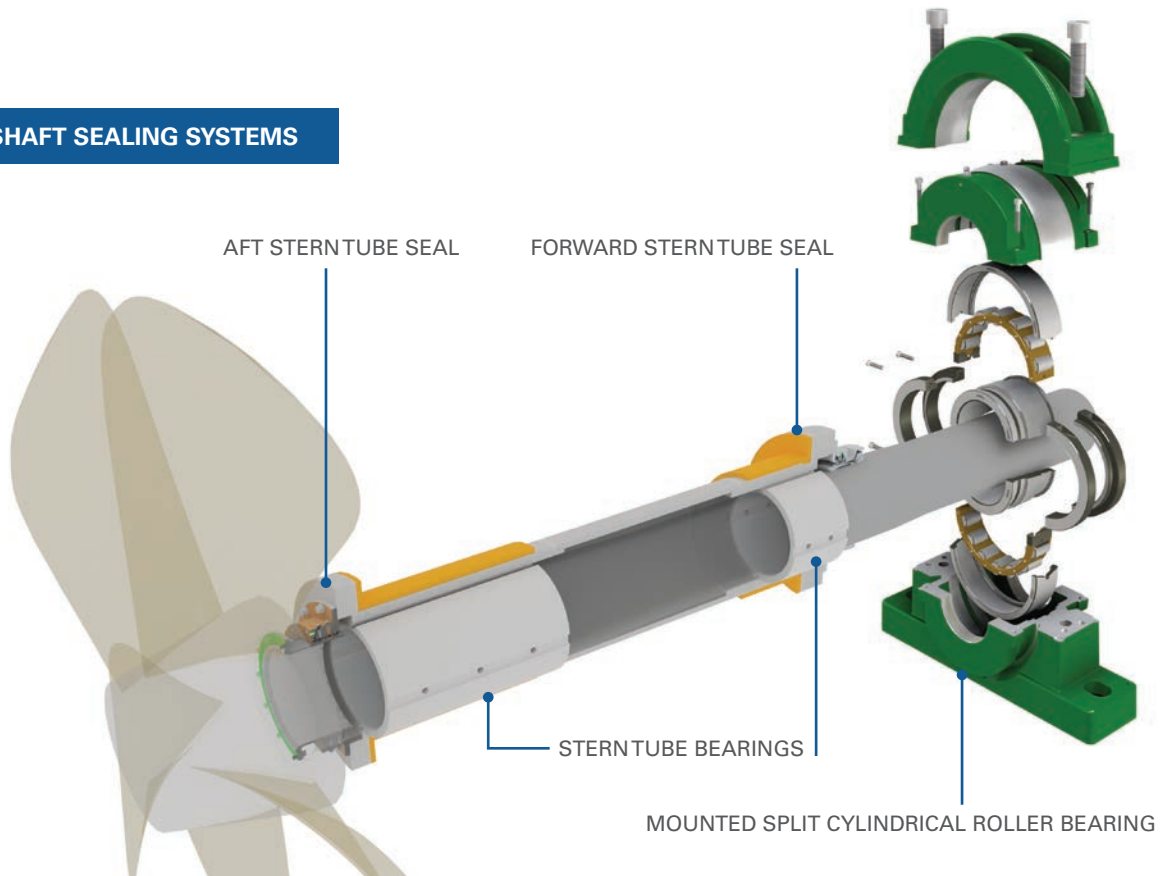
## WHAT TYPE OF BEARING CAN BE REMANUFACTURED?

### WHAT IF THE BEARING WAS MADE BY ANOTHER BRAND?

Regardless of the original manufacturer, we can remanufacture most types of bearings including:

- Ball bearings
- Class 3 precision bearings (all types)
- Cross roller bearings
- Cylindrical roller bearings
- Spherical roller bearings
- Tapered roller bearings
- Thrust bearings (all types)
- Triple ring bearings

## ROTATING SHAFT SEALING SYSTEMS



### **LAGERSMIT SEALS**

Lagersmit seals aim to deliver top performance and offer you peace of mind.

We offer a variety of sealing options including our Supreme® stern tube seals and Supreme® thruster seals. These seals are produced with high quality housing parts, lip seals and liners. They can be used for both new-build and retrofit applications.

Advanced options like an HML coating for extra durable liners, environmentally acceptable lubricant (EAL) compatible seals, and the Supreme Ventus Air Type Seal allow you to enhance your seal design.

Applications include:

- Stern tubes and bearings – FPP, CPP – water & oil lubricated
- Thrusters - azimuth, azipull, tunnel, pods
- Bulkheads
- Fin stabilisers
- Rudder stock
- Gearboxes
- Pumps

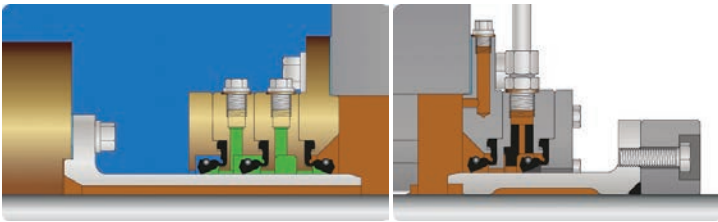
### **MANUFACTURING AND OPERATIONAL EXCELLENCE**

Our modular, made-to-measure philosophy enables us to deliver customer-specific designs combined with short quotation, lead and delivery times.

### **SERVICE**

Lagersmit service engineers are your seal experts and can be on location within 48 hours worldwide. Every engineer is specifically trained to ensure optimal quality. Their focus ranges from installation to supervision, and from troubleshooting to regular maintenance.

## SEALING SOLUTIONS FOR STERN TUBES AND THRUSTERS



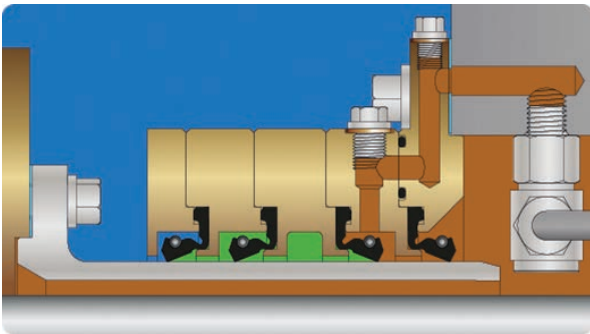
**SUPREME® STANDARD (AFT + FWD)**  
Highly corrosion-resistant and effective in separating water and lubricants, the Supreme seal is suitable for both new-build and retrofit applications. Can be fully customized to your sealing needs even for inland shipping.



MODULAR DESIGN



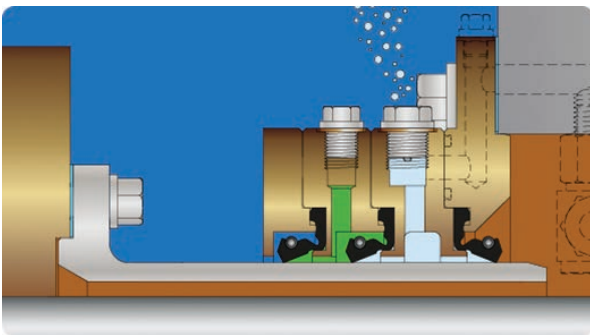
SPLIT TYPE OPTIONAL



**SUPREME SEAGUARD®**  
The Supreme SeaGuard gives you extra security against oil leakage into the marine environment through an additional redundant lip seal. The chamber between the two oil-repellent lip seals is pressurized by the stern tube header tank. This way the pressure on both sides of the fourth lip seal remains equal. By closing off the oil supply to this chamber, the fourth lip seal can be used as a new oil-repellent lip seal. In case of leakage, docking and maintenance can be postponed by putting this redundant (fourth) lip seal to work.



REDUNDANT LIP SEAL



**SUPREME VENTUS®**  
The Supreme Ventus has an advanced self-regulating air control unit that enhances the seal's lifetime by minimizing wear. It provides 24/7 (remote) condition monitoring and is approved by DNV GL, in compliance with VGP/VIDA, Green passport and more.



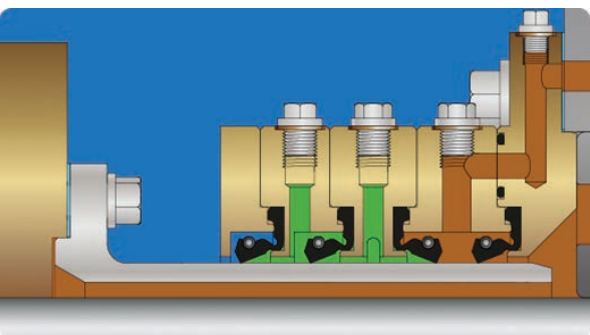
VGP COMPLIANT



LARGE VARYING DRAUGHTS



CONDITION MONITORING



**SUPREME® TS4**  
The Supreme TS4 seal is a targeted design for azimuth and azipull thrusters that deal with heavy-duty operations. It provides extra safety for the thruster against water ingress and oil leakage to the outside environment. Condition monitoring is provided.

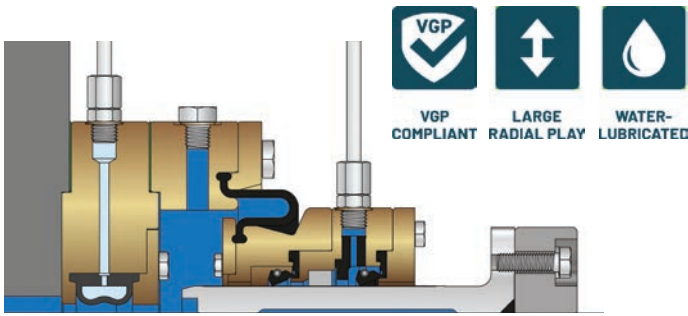


SPECIAL THRUSTER DESIGN



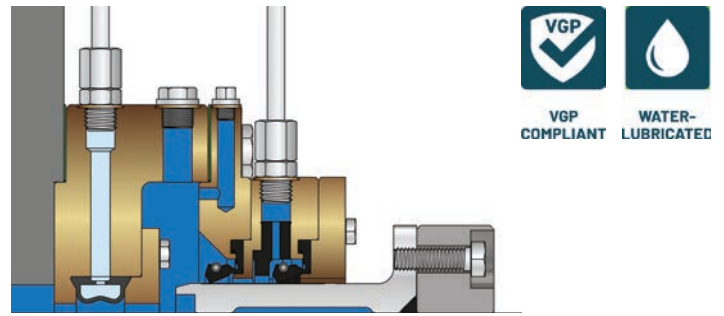
REDUNDANT LIP SEAL

## SEALING SOLUTIONS FOR WATER LUBRICATED PROPULSION SYSTEMS



### SUPREME® HYDROFUSE – STF WLC

Designed for open water-lubricated stern tube systems, the Supreme Hydrofuse system monitors and displays the status of your seals and lets you know when maintenance is due through condition monitoring. The seal accommodates large axial shaft displacement along with radial play up to 5mm without compromising functionality. Through the incorporated inflatable seal, additional safety is provided.



### SUPREME® STF WL

The Supreme STF WL is an environmentally friendly water-lubricated solution that is specially developed in accordance with the VGP/VIDA regulations and provides extended seal service life. Through the incorporated inflatable seal, additional safety is provided.

## OTHER SEALING SOLUTIONS



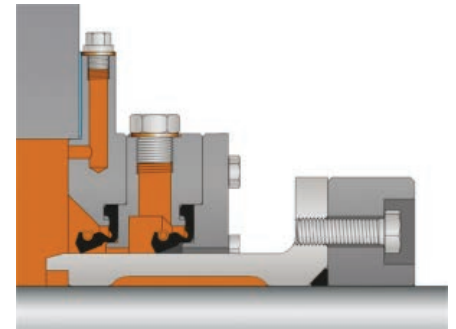
### SUPREME® BULKHEAD SEAL

The Supreme Bulkhead seal is used to prevent flooding of the bulkhead seal's adjacent compartments in the unlikely event of an accident. These seals allow large radial (5 mm) and axial (30 mm) play and can be used for low and high speed shafts. The lip seals can be bonded on site, making it easy to install and perform maintenance. Lagersmit also provides gas-tight bulkhead seals on request.



### SUPREME® RUDDER STOCK SEAL

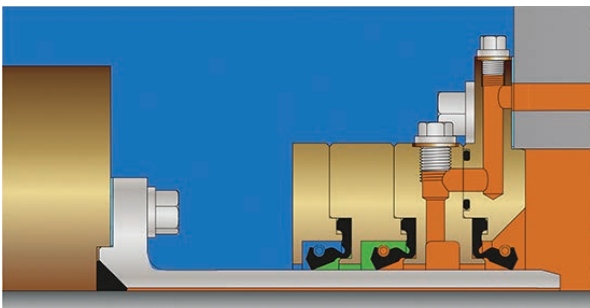
Our rudder stock seals are custom designed to seal the upper and lower rudder stock bearings. Lagersmit can offer various type of lip seal materials depending on the type of lubricant used.



### SUPREME® GEARBOX SEAL

Different custom seal designs are engineered for gearboxes and bearing blocks operating under varying conditions. Supreme seals can be applied to propulsion gearboxes as well as submerged cutter shaft gearboxes for cutter dredgers, operating under harsh conditions.

The gearbox seals are engineered as a fully split design and can have a floating set-up to ensure extreme shaft movements are followed smoothly.



### SUPREME® FIN

This seal prevents water ingress into the drive train of the fin stabilizer and can withstand the abrasive environments of coastal waters and harbors.

## CLUTCHES

We offer a variety of wet and dry clutch solutions including back of engine SAE flywheel mounted and internal high-power density designs. Our patented electronic controls monitor and adjust to real-time operating conditions, preventing machine damage while minimizing downtime. From integrated, smart remote controls, condition monitoring, power take offs and related components, our expert engineering team ensures you have the right clutch solution for your project.



### DRY CLUTCHES

Full range of SAE engine mounted hydraulically actuated multiple disc clutch systems.

- Reliable, simple, economical clutch solution
- Remote engage / disengage control and sensor packages
- Self adjusting for wear



### WET CLUTCHES

Full range of SAE engine mounted or freestanding multiple disc clutch systems available with integral torsional coupling.

- High inertia engagements, slipping style clutch
- Remote engage / disengage control and sensor packages
- Self adjusting for wear



### HPTO

Compact, single and multi tower PTO and clutch packages with pump drive pads and flexible mounting styles.

- Complete engineered package
- Multiple standard designs offer value and availability



### KDK AND SGK COUPLINGS

Conventional fluid couplings and oneway drive roll clutches.

- High starting torque
- Smooth running



### CONDITION MONITORING DEVICE

Over twenty years of development and control expertise in a flexible multirole solid state package.

- J1939 communication conforming device
- IoT for critical power transmission devices
- Helps prevent unscheduled breakdowns



### HPU

Custom hydraulic power units design and production for complete hydraulic clutch and brake system solutions.

- Compact designs
- Self-contained
- Optional cooling and sensor packages



## BRAKES

Designed and perfected over 30 years, our Wet and Motor Mounted Brakes offer spring or power applied brakes with hydraulic, pneumatic and electric release options based on your need. Additionally, our Caliper brakes have greater thermal capacity and discs are far more resistant to heat checking compared to drum brakes, resulting in better brake performance.



### NBE

Spring applied electric release, multi disc motor holding brake for moderate to extreme duty applications.

- Standard DIN 42948 flange mounting
- Smaller standard flange for more compact package
- Holding brake with e-stop characteristics



### VFD-B

Spring applied, electric release, multi disc motor holding brake designed for modern VFD's with dynamic braking performance.

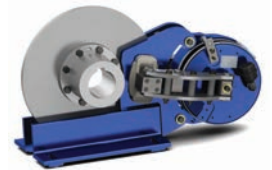
- Standard DIN 42948 flange mounting
- Maintains torque during high energy stops
- Encoder mount, heater and sensor options



### CALIPER DISC BRAKES

Complete range of failsafe spring-applied and hydraulic and pneumatic power-applied caliper brake systems.

- Custom engineered solutions
- Complete system package
- Braking, holding and e-stop configurations



### CUSTOM MECHANICAL POWER TRANSMISSION AND BRAKING SOLUTIONS

We are a global provider of turnkey solutions for difficult clutch and brake applications.

- Marine Agency standard compliance expertise
- Wide range of mechanical power transmission product expertise
- Industry leading Timken products

## TORQUE LIMITERS

Our heavy-duty torque limiters provide consistent torque levels to protect your drive line from damage or downtime. These reliable and accurate torque settings reduce fatigue and component breakage due to drive line shock loads. Our tamper-resistant torque setting is designed to be maintenance-free throughout the life of the torque limiter.



### PTO GEARBOXES

Custom design clutch able and speed reducing / increasing, power dividing and power take off gearboxes.

- Fully customizable, nonstandard
- Low quantity production
- Small package and multiple PTO options



### FRICTION TORQUE LIMITER

Large capacity, power dense package for long term, reliable overload protection of power transmissions and engines.

- Preset at factory
- Reliable overload setting
- No reset required after slip event



### SMART TORQUE LIMITER

Hydraulic or failsafe spring applied torque limiters with integrated slip and overload detection.

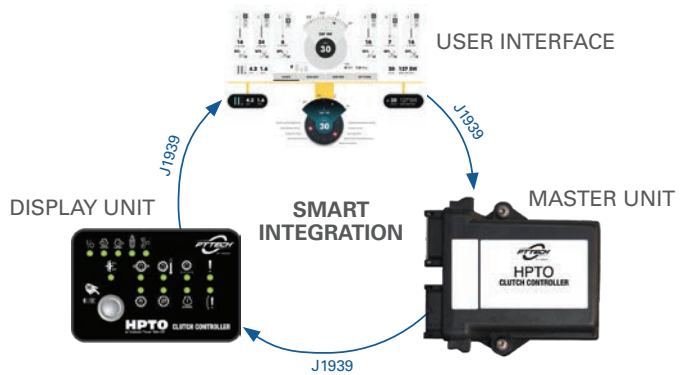
- Releasable at overload
- Variable overload setting, automatic reset
- Data collection for root cause analysis



## SMART INTEGRATION

For more than 20 years, we have been delivering condition monitoring and remote control electronic devices to major OEM's all over the world.

For the Marine industry we are delivering a reliable, embedded J1939 based communication solution. Our unique, patented remote control and monitoring solutions provide operators seamless information and troubleshooting that increases equipment uptime and extends service life.



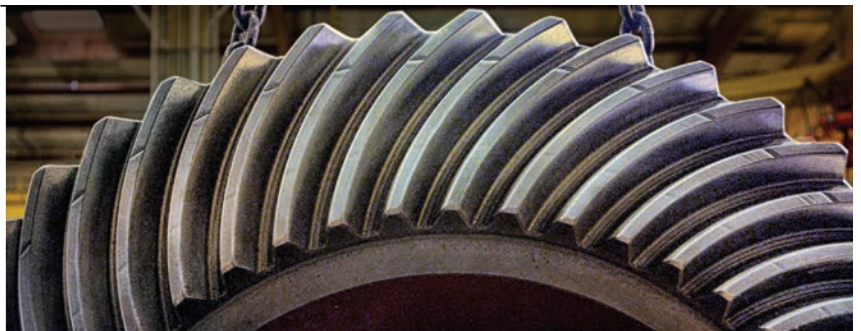
## GEARBOXES, ELECTRIC MOTORS, AND CONTROL SYSTEMS

Philadelphia Gear has custom-designed and manufactured marine gears ranging from 500 to 60,000 HP. With a legacy of developing solutions for U.S. Navy frontline combat vessels since World War I, we have expanded our capabilities by combining our main reduction gear expertise with a network of electric motor service facilities to offer comprehensive electromechanical support for the commercial marine industry.

As suppliers of equipment for a variety of main propulsion, power generation, thruster, and auxiliary applications—whether driven by diesel engines, gas turbines, steam turbines, or electric motors—we provide field service, parts, repair, and manufacturing expertise for gearboxes, electric motors, and control systems for all of the following vessel types and more:

- barges
- commercial fishing
- container ships
- dredges
- fast ferries
- fireboats
- LNG tankers
- tugboats

For more information about Philadelphia Gear's marine capabilities, visit [https://philgear.com/industries\\_marine.html](https://philgear.com/industries_marine.html) or email us at [info@philgear.com](mailto:info@philgear.com).



## COUPLINGS

Our robust couplings portfolio consists of elastomeric and spring couplings which are designed to address critical operational issues that may occur in workboats. We provide solutions that can lower maintenance and downtime costs, all with the expertise to engineer custom products to meet your unique needs.



### GEAR COUPLINGS

Offering standard and specialty designs in both the flanged and continuous sleeve styles plus HercuFlex® gear couplings which incorporate the latest advances in finite element analysis technology.



- High load capacity and compact size
- Interchangeable with industry standard
- Operate in wide temperature range and available in several materials to match the operating environment

### GRID COUPLINGS

Protect power transmission systems from vibration and shock with an all-metal, flexible grid coupling.



- Available in 25 sizes
- Interchangeable with industry standard
- Spacer style designs

### DISC COUPLINGS

Eliminate the need for lubrication and reduce maintenance. Inspect without disassembly to keep things running.



- No wearing parts
- Special styles available such as spacer, close coupled, and drop in
- Certain models meet API 610, 671 Standards

### QUICK FLEX® COUPLINGS AND JAW COUPLINGS

Lovejoy offers a wide range of low-maintenance, lubrication-free flexible coupling options such as the standard straight/curved jaw lines and the most versatile QUICK FLEX coupling.



- Hubs and inserts are available in many materials and configurations to accommodate harsh environments and wide temperature ranges
- QUICK FLEX and jaw in shear coupling inserts can be replaced without moving hubs or surrounding equipment
- Accommodate misalignment

### S-FLEX ENDURANCE® COUPLINGS

Absorb shock, dampen vibration and accommodate misalignment on pumps, fans, and uniform load applications.



- Best performing and longest lasting EPDM material in the marketplace
- Interchangeable with industry standard
- Various materials and configurations available

### UNIVERSAL JOINTS

Lovejoy® universal joints and Curtis® universal joints couple low to moderate speed and torque applications and accommodate severe misalignment



- Many materials available including naval brass
- Interchangeable with industry standards
- Single and double joint designs and many bore styles



### RUNRIGHT® MOTOR BASES AND BELT/CHAIN TENSIONERS

Provide a constant tension on the drive system and reduce energy consumption with self tensioning motor bases or belt/chain tensioners.

- Sixteen standard motor bases for NEMA frames 143T to 5810 and IEC frames 90S thru 315 M
- Tensioners fit all chain sizes up to 120 single chain and C size belts
- Dampening feature extends the life of surrounding equipment



### ELASTOMERIC TORSIONAL COUPLINGS

Simultaneously handle all forms of alignment, drive train geometry, weight transfers and other diesel related conditions.



- 15 families of products
- Mounting plates and housings available to fit various engines
- Simple designs for highly effective torsional dampening

### OPEN SPRING STEEL TORSIONAL COUPLINGS

Developed specifically for today's modern diesel engines.



- Tuned and optimized for each application
- Not sensitive to high or low temperature
- Can be used in oil bath

### SEALED SPRING STEEL TORSIONAL COUPLINGS

Replaces elastomeric coupling applications with long life steel and spring couplings.



- Not sensitive to high or low temperature
- Supports drive shaft applications
- Sealed and lubricated for life

### INTEGRATED TORQUE LIMITING STEEL SPRING COUPLINGS

An ideal combination of torsional performance, long life, small power dense packaging and overload protection.

- Reliable overload setting
- Single integral component
- Factory preset load



### TORSIONAL VIBRATION ANALYSIS

Since 1987, Torsion Control Products has been a leader in providing TVA's to industry for custom engineered torsional solutions.

- Complex multi branch system analysis available
- Marine Agency required TVA report
- Data collection assistance

## LUBRICATION SYSTEMS

Groeneveld-BEKA offers dedicated automatic lubrication systems designed to decrease wear and tear of critical components resulting in extended life, less downtime and reduced repair and maintenance costs. You achieve higher productivity and lower operational costs. As maintenance technicians no longer have to climb on or crawl under the equipment, Groeneveld-BEKA's automatic lubrication systems also contribute to safety.

Groeneveld-BEKA can provide services for different applications like cutter suction dredgers, bulk material loaders, offshore drilling rigs, off shore cranes, ship ramps and more.

For more information about Groeneveld-BEKA's product offerings, visit [www.groeneveld-beka.com](http://www.groeneveld-beka.com) or email us at [info@groeneveld-beka.com](mailto:info@groeneveld-beka.com).

### GROENEVELD-BEKA

#### GROENEVELD® TWIN AUTOMATIC LUBRICATION SYSTEM

Dual-line lubrication system for large application like bulk loaders, offshore drilling rigs or ship ramps.

- Not affected by ambient temperatures
- Reservoirs up to 20 liters
- Suitable for grease up to NLGI-2



#### BEKA® TDM-SERIES AUTOMATIC LUBRICATION SYSTEM

A complete range of multi-line systems for oil lubrication with up to 8 outlets, commonly used for diesel or combustion engines.

- Compact design
- Robust pump with long lifetime and low operating costs
- Suitable for oil



#### BEKA® A AND D-SERIES AUTOMATIC LUBRICATION SYSTEM

Multi-line lubrication system for oil lubrication of up to 12 lubrication points, commonly used for engines.

- Available with mechanical or electrical drive
- Suitable for oil



#### GROENEVELD-BEKA® GM AUTOMATIC LUBRICATION SYSTEM

Modular multi-line lubrication systems for oil or grease lubrication of applications with up to 72 lubrication points.

- Interchangeable components ensure ease of maintenance
- Reservoirs up to 5 liters
- Suitable for oil and grease up to NLGI-2



#### BEKA® OKG-OC SERIES AUTOMATIC LUBRICATION SYSTEM

Range of multi-line oil lubrication pumps with up to 21 lubrication outlets, suitable for the lubrication of engines.

- Versatile solution for a variety of applications
- Reservoir up to 8 liters
- Suitable for oil



#### BEKA® FKG-EP SERIES AUTOMATIC LUBRICATION SYSTEM

Powerful lubrication system with up to eight lubrication outlets, suitable for use in a single-line or progressive lubrication system.

- Versatile solution for a variety of applications
- Reservoirs up to 8 liters
- Suitable for all common lubricants (NLGI-000, 00, 0, 1, 2)



#### BEKA® F-SERIES AUTOMATIC LUBRICATION SYSTEM

The F-Series is the ultimate solution for applications requesting a larger amount of lubricant in a progressive, a dual-line or multi-line system.

- Reservoirs up to 200 kg
- Robust steel construction, suitable for outdoor applications
- Suitable for grease up to NLGI-2



#### BEKA® ZEPTO AUTOMATIC LUBRICATION SYSTEM

Compact electric cartridge pump for applications with up to 30 lubrication points like propeller shafts or stern tube sealings.

- Rugged and compact design
- Suitable for various screw-on cartridge types
- Suitable for all common lubricants (NLGI-000, 00, 0, 1, 2)



#### BEKA® PICO AUTOMATIC LUBRICATION SYSTEM

The combination of power and flexibility, combining multi-line and progressive lubrication technology in one system.

- Compact system for applications with little number of lubrication points
- Suitable for all common lubricants (NLGI-000, 00, 0, 1, 2)
- Flexible extension possibilities





## GROENEVELD-BEKA

### BEKA® GIGA AUTOMATIC LUBRICATION SYSTEM

The BEKA® GIGA range is like having four pumps in one. It serves the full range of automatic lubrication systems and can be used as a progressive as well as a single-line, dual-line or progressive sectional system.



- 3 lubrication circuits that can be operated independently
- Reservoirs up to 16 liters
- Suitable for grease up to NLGI-2

### BEKA® STREAM AUTOMATIC LUBRICATION SYSTEM

Powerful lubrication system for grease lubrication in a single-line, dual-line or progressive lubrication system.



- Available with electric or hydraulic drive
- High delivery capacity, perfectly suitable for larger applications
- Suitable for grease up to NLGI-2

### BEKA® OIL CIRCULATION UNIT

Gearboxes and highly stressed bearings require special attention and need to be effectively lubricated and stay as cool as possible. Especially for those kind of applications, Groeneveld-BEKA manufactures oil circulation systems according to customer specifications.



- Complete customized system



### GROENEVELD® GREENLUBE

A variety of greases designed to offer trouble-free operations and proper lubrication of equipment.

- Highly water-resistant
- Performs in severe conditions
- Does not contain heavy metals

## TIMKEN BELTS

Premium quality Timken® belts are manufactured in the USA for maximum performance and durability in sizes from 3 inches to 900 inches. Timken belts are purpose-built and designed for optimal performance on the most demanding applications including fans, mixers, pumps, conveyors, machine tools, centrifuges, robotics and all types of industrial machines. Timken's Gold-Ribbon® Cog-Belt® and Power-Wedge® Cog-Belt are well suited to small diameter pulleys that are used in marine applications.

### TIMKEN BELTS

#### HEAVY DUTY BELTS

Cog belts, V-Belts, Ribbed Belts, Double Angle V-Belts in a variety of configurations and materials.

- A wide range of belt configurations to suit the most demanding applications
- Resist stretch, heat, oil, chemicals, ozone, and are static dissipating



#### BANDED BELTS

Classical cross-sections (B, C, D) and narrow cross-sections (3V, 5V, 8V) in wrapped or cogged constructions.

- Maximum protection against belt whip and belt turnover



#### SYNCHRONOUS BELTS

Toothed belts in a variety of configurations and materials.

- Engineered for longer life and quieter operation; an alternative to chain



#### LIGHT DUTY V-BELTS

Fractional Horsepower (FHP) v-belts with raw edge, EPDM construction.

- Saves energy and improves efficiency, performance and overall belt life



#### SPECIALTY BELTS

Synchronous, ribbed, cogged, round and double angle v-belts.

- Belts engineered for optimum performance in specialty applications



## CHAIN

On a boat or at the port, marine applications require precision roller chain that is both strong and durable. Diamond and Drives have an impressive portfolio of chain to choose from, complete with anti-corrosion and heavy shock load capabilities. We aim to reduce maintenance costs and keep operations moving along successfully.

From concept to production and then throughout the life of the unit, our team works hard and smart to exceed your expectations.



### DRIVES SILVER SHIELD CR® CHAIN

Offers increased corrosion resistance when applications are subject to high-moisture, mildly caustic or acidic environments.



- Fully interchangeable with carbon-steel ANSI chains
- Fewer chain replacements result in lower cost of operations

### DIAMOND ACE® CHAIN

Electrically bonded, protective exterior plating is ideal for chain used in high moisture environments.



- Experiences superior protection over nickel plating – even if scratched or damaged
- Excellent defense against water, salt water and humidity

### DRIVES LEAF CHAIN

Often used on straddle carriers and forklift trucks, large pitch leaf chain is essential for container handling at sea ports.



- Press fit pin construction increases push-out force and minimizes risk of pin rotation
- Ballized pitch hole surface finish improves wear life, fatigue resistance and pin retention



## CALL ON TIMKEN ENGINEERED MARINE SOLUTIONS

We are here to partner with you and help solve your problems. For more information, visit us at [timkenmarine.com](http://timkenmarine.com).

---

# TIMKEN

## Engineered Marine Solutions



Over the past decade, The Timken Company has invested in strategic acquisitions to better serve our customers and position ourselves as a diversified industrial leader.

---

As a Timken customer, you are connected to a team of on-site service engineers who help solve unique equipment challenges resulting in extended uptime, productivity and efficiency.



# TIMKEN

The Timken team applies their know-how to improve the reliability and performance of machinery in diverse markets worldwide. The company designs, makes and markets bearings, gear drives, automated lubrication systems, belts, brakes, clutches, chain, couplings, linear motion products and related industrial motion rebuild and repair services.

**Stronger. By Design.**

[www.timkenmarine.com](http://www.timkenmarine.com)