

Comprehensive Aftermarket Services

For Babbitted Fluid Film Bearings



Kingsbury Aftermarket Services

Expert Care For Fluid Film Bearings



Finish-machining 43" base ring assembly



Hand-scraping a vertical hydro thrust shoe with high pressure lift



Preparing a 74" runner forging for drilling



Kingsbury operates an independent aftermarket services organization supported by our corporate design and engineering departments.

Kingsbury's Repair & Service operations are dedicated to the special needs of maintenance engineers and plant managers, who have the critical task of keeping their equipment

running reliably and at maximum efficiency.

Let us help you to forget about bearing problems, enabling you to spend more time on your process and your plant throughput! In addition to expert repairs for all makes and models of fluid film thrust and journal bearings, we offer bearing upgrades and retrofits which maximize performance and reliability. We also offer diagnostic support and predictive capabilities for bearing parameters such as pad temperature, bearing loading, and heat load (power loss). With multiple aftermarket repair facilities and a staff of Field Service Engineers, we can help you with your bearings in our nearest plant or at your own facility.

Kingsbury's aftermarket support is focused on our customers' critical needs:

- 24/7/365 technical support for fluid film bearings
- Fast-turnaround for emergency bearing repairs and replacements
- Complete inspection, evaluation, design, and manufacturing capabilities for Kingsbury and other fluid-film makes
- Bearing upgrades and retrofits
- Field service support
- Auxiliary systems, condition monitoring, and training

The Kingsbury Promise

- Expert Solutions
- Reliable Support
- Uncompromised Performance

Facilities And Field Support

When And Where You Need It



Kingsbury's aftermarket support is headquartered at our Repair & Service Division in Philadelphia, PA and is dedicated to keeping your bearings running smoothly around the clock. We offer 24/7 access to our emergency support services. You can reach us via telephone, email, or through our web site where we also maintain a library of technical

publications and other useful support information. Feel free to contact us whenever you need us:

Phone: 215-956-0565

Email: Repair@Kingsbury.com

Email: Expert@Kingsbury.com

Web: www.kingsbury.com

Outside of North America, contact our International Sales Department by dialing our corporate office at: **1-215-824-4000**

Whether you have an emergency that requires round-the-clock attention, you need to send your bearings to us to be repaired, or you are interested in having your current bearings evaluated for design and performance upgrades, we're here for you, wherever you are, whatever your machinery and bearing needs may be.

Hatboro, PA Repair & Service

- 33,000 sq. ft.
- Turning and machining to 144"

Yuba City, CA Repair & Service

- 24,000 sq. ft.
- Turning and machining to 75"

Philadelphia, PA Fluid-Film & Rolling Element Bearings

- 140,000 sq. ft.
- Corporate headquarters and large bearing manufacturing

Oshkosh, WI Fluid-Film

- 90,000 sq. ft.
- Production facility



Repair & Service, Hatboro, PA



Repair & Service, Yuba City, CA

Hydroelectric Applications

Extend The Life Of Your Bearings



From Holtwood, PA in 1912 to today's modern automated plant, Kingsbury has been the first choice to provide bearings for the largest and heaviest vertical turbine-generator and pumped-storage hydroelectric plants in the world.

Kingsbury Expert Services For Hydro

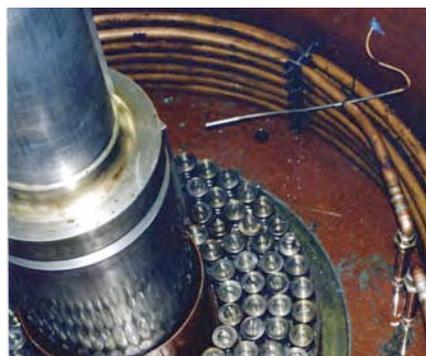
- Evaluation, repair, and rebabbiting of thrust and guide bearings for vertical and horizontal hydroelectric bearing applications
- Field service support including load alignment and re-scraping shoes
- Training for maintenance staff at your facility or at Kingsbury

Performance Upgrades & Retrofits

- High pressure lift systems and bearing modifications for improved maintenance, extended bearing life, and increased load-carrying capacity
- Load cell installation upgrades for improved performance monitoring, load-equalization, and extended life
- Retrofits of jack-screw and other non-equalizing thrust bearings with Kingsbury mechanical leveling-plate or hydraulic equalizing bearings
- Retrofits of spring-plate and other vertical bearing designs with Kingsbury standard VK or KBV designs



Jack-screw bearing upgraded with high-pressure lift modification



Before: OEM spring plate bearing being disassembled



After: Kingsbury standard VK bearing upgrade

Power Generation Applications

Upgrade To Better Performance

Kingsbury has provided bearings for all of the major manufacturers of heavy-duty power generation equipment including large steam turbines, gas turbines and generators, and nuclear reactant coolant pumps.

Kingsbury Expert Services For Power

- Evaluation, repair, and rebabbiting of tilt-pad thrust bearings, horizontal tilt-pad journals, and cylindrical journal sleeve bearings
- Send us the bearings from your entire power train for fast, efficient, and expert repair of your bearing set
- Installation services & training at your facility or at Kingsbury.

Performance Upgrades & Retrofits

- Offset-pivot pads to increase load-carrying capacity
- Chrome-copper thrust and journal shoe retrofits to reduce operating temperature and increase load carrying capacity
- Leading Edge Groove (LEG™) directed-lube retrofits of your flooded bearing designs to reduce oil-flow and power loss due to shearing and turbulence in a flooded cavity; increase load carrying capacity
- Consider a Kingsbury upgrade to your existing OEM-supplied bearing for improved performance



Plain and tilt-pad journal bearings



17" diameter journal for large gas turbine



Fitting a large spherically-seated turbine bearing



Steam turbine thrust bearing

Oil & Gas Industry Applications

Breaking The Speed Limit



High-Speed Compressors, Turbines, And Gearbox Bearings

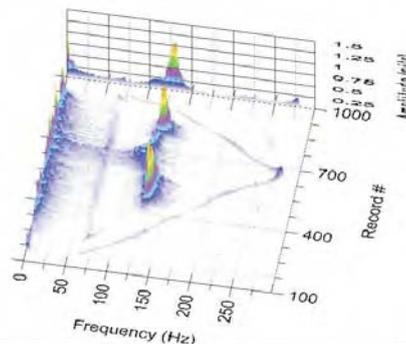
Machinery designers of high-speed equipment for the Oil & Gas Industry have been continually pushed towards higher speeds and increased reduced power loss in order to maximize process throughput and efficiency. The bearing design limits the operating limits of the machine, which results in a constant pressure to expand the operating range of our bearings. Kingsbury has dedicated a major portion of its Research & Development budget and Testing Programs in an effort to accurately model bearing behavior and provide new and modified designs to maximize high-speed bearing operating range and performance.

Kingsbury Expert Services For Oil & Gas

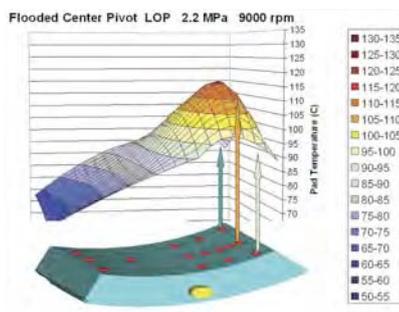
- Evaluation, repair, and reballing of thrust and journal bearings for standard and special applications
- Analysis of existing bearing performance and predictions of bearing performance under additional operating parameters
- Design enhancements or replacements using pre-engineered Kingsbury standard and custom-designed bearing systems

Performance Upgrades & Retrofits

- Leading Edge Groove (LEG™) bearings for reduced oil flow and power loss and increased load capacity at high speeds
- Chrome-copper thrust and journal bearing pad-material retrofits for reducing maximum pad temperatures
- Offset-pivot and other geometries for thrust and journal pads to increase load capacity and reduce operating temperatures
- Bearing designs to improve rotordynamic stability and to predict and resolve vibration issues in thrust and journal bearings



Eliminating axial vibration



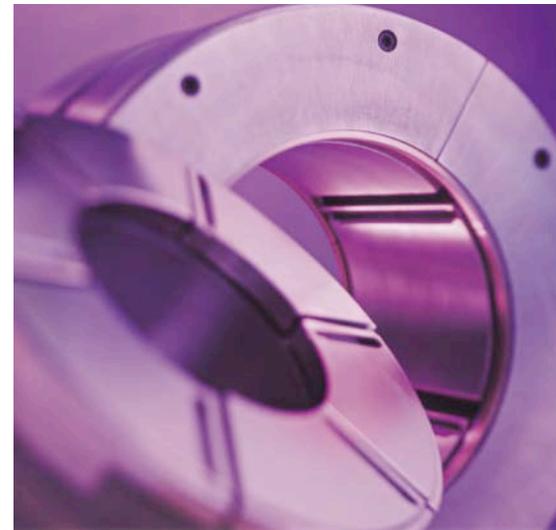
Predicting journal pad temperatures

Expert Solutions For Demanding Applications

At Kingsbury, simply conquering tough bearing challenges isn't enough

In the early 1990s, shaft speeds of compressors and related drive and transmission equipment had increased to the point that bearing performance (temperatures and power loss) were limiting the design of larger, faster, more efficient machinery and machine trains. Kingsbury developed and tested its Leading Edge Groove (LEG™) directed-lube bearing for both thrust and journal bearings. This design provided superior bearing performance at reduced oil flows, which translates into higher machine efficiency.

Today, the LEG™ is a standard Kingsbury design that has been proven in thousands of compressors, turbines, and other applications in a variety of applications and markets. Ask us to evaluate your application to see if we can offer you better results with an LEG retrofit.



The Advantages Of LEG Technology

- Reduces operating temperatures by 10° F to 45° F depending on shaft speed
- Increases load capacity by 15% – 20%, reducing required bearing size
- Lowers oil flow by 50%, allowing for reduced lube system demand
- Improves efficiency – up to a 45% reduction in friction losses

Kingsbury Has Solutions For High Speed Problems

- Subsynchronous noise
- Upper journal pad flutter
- High bearing temperatures
- Axial vibration
- Pivot & leveling plate wear
- High-speed, light-load issues



LEG thrust bearing with chrome-copper shoes



LEG journal bearing



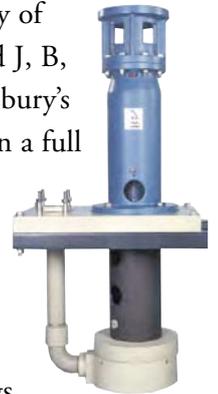
LEG lubrication path

Motor & Pump Applications

Expert Repairs, Advanced Upgrades



Kingsbury has supplied tens of thousands of bearings for a large variety of pump applications and for vertical electric motors. Kingsbury standard J, B, KV, and KVB designs are stocked for shaft sizes from 2” to 10”. Kingsbury’s self-contained, self-lubricating CH and C style bearings are provided in a full package, complete with a housing and all necessary seals, circulators, and a heat exchanger. The bearings are fully assembled and do not require an external lube system.

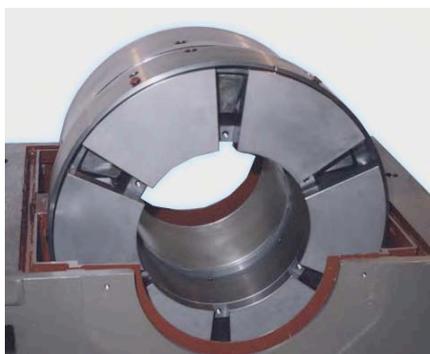


Kingsbury Expert Services For Motors & Pumps

- Evaluation, repair, and reballing of thrust and journal bearings, seals, guide bearings, and thrust blocks for motor and pump applications
- Most standard parts are in stock including shoes, leveling plates and thrust disks for pump and motor bearings up to shaft sizes of about 10” in diameter

Performance Upgrades & Retrofits

- Kingsbury equalizing (KBV) and non-equalizing (VK) retrofits for spring-plate and other OEM-supplied bearings
- High-pressure lift for vertical motor and large pump applications to increase load capacity and simplify maintenance and start-up
- Alternate pad geometries for increased performance
- Self-contained CH bearings for centrifugal pumps and other applications



Retrofit of pump bearing for water storage facility



PEEK and other alternate material for special pump processes



Standard equalizing "J-type" Kingsbury thrust bearing

Ship-Board & Auxiliary Bearings

For Reliability When It Counts Most

Kingsbury is proud to have supplied bearings to every major battleship, frigate, cruiser, destroyer, carrier, and submarine class that has been built by the United States Navy since World War I.

In addition, Kingsbury provides new and repaired bearings, design support, and field service expertise for commercial and industrial marine applications including freighters, tugs, cruise liners, and dredge pump vessels.

Kingsbury Expert Services For Marine Applications

- Evaluation, Repairs, and Retrofits for:
 - ▶ Main Propulsion Thrust Bearings
 - ▶ Line Shaft Bearings
 - ▶ Main Bull Gear Thrust Bearings
 - ▶ Positioning Gearing Thrust & Journal Bearings
 - ▶ Auxiliary ship-board pump, turbine, compressor and gearbox bearings
 - ▶ Dredge-Pump high-impact loading bearings
 - ▶ Vibration-Reducer Submarine Designs
- Kingsbury is certified to various MIL-Spec and ABS Specifications
- Fast-turnaround service on both coasts – East (Hatboro, PA) and West (Yuba City, CA)
- Field Service available shipboard and dry-dock locations



23" line shaft bearings and housings



21" dredge-pump bearing retrofit



Large double-acting thrust and plain journal with housing for U.S. Navy

Process Machinery & Special Applications

Expert Support For Harsh Conditions



Kingsbury Expert Services For Process Equipment

Kingsbury's engineered products are capable of handling the most extreme machinery requirements: heavy loads, impact-loading, wide fluctuations in rotational shaft speeds, and a variety of environmental and spatial constraints. Kingsbury supports these products in the aftermarket with a fully trained Field Service staff, replacement components, and design upgrades and retrofits.

A few of these special applications include:

- Air Preheaters – heavy loads extremely low speeds
- Paper & Pulp Refiners – heavy, impact loads; hydraulic piston designs for automated clearance adjustment
- Rock Crushers & Pulverizers – heavy, impact loading, low shaft speeds
- Large Industrial Fans & Blowers – critical air-handling machinery
- Deep Well Pumps – process-lube, high bath temperature
- Industrial Clutch Applications – unique geometries
- Cement and Steel Mill Machinery - large journal bearings
- Test Stand Equipment – heavily instrumented bearings

Kingsbury has the expertise to evaluate, repair, and offer upgrades to keep your operation running as smoothly as possible.



Journal shoes before repair



Journal shoes after repair



Machining a spindle bearing



Evaluating bearing performance in a pulp refiner

Kingsbury Aftermarket Services Guarantees Uncompromised Performance!

We are proud of the long list of users and original equipment manufacturers who have selected Kingsbury for all of their fluid-film bearing new and aftermarket needs. If you are looking for support or advice on the bearings in your machine, or have questions about fluid-film bearings, please give us the opportunity to help.

ABB ALSTOM POWER / A-C COMPRESSOR CORP / AIR PREHEATER COMPANY / AIR PRODUCTS & CHEMICALS / ALABAMA POWER / ALCOA / ALFRED CONHAGEN / ALLEGHENY ENERGY / ALLEGHENY POWER / ALLIANT ENERGY / ALSTOM POWER / AMEREN / AMERICAN ELECTRIC POWER / AMERICAN HYDRO / ANDRITZ / ANDRITZ VA TECH HYDRO / ANSALDO ENERGIA / APPALACHIAN POWER APPLIED DYNAMICS / APPLIED INDUSTRIAL / AQUILA INC / AREVA NP / ARIZONA PUBLIC SERVICE / ARKANSAS POWER & LIGHT / ASSOCIATED ELECTRIC / ATLAS COPCO COMPRESSORS / AVISTA UTILITIES / BALTIMORE GAS & ELECTRIC / BATH IRON WORKS / BDI CANADA / BOISE CASCADE / BP EXPLORATION / BP-AMOCO PETROLEUM / BROOKFIELD POWER / CABRILLO POWER / CAROLINA POWER & LIGHT / CENTRAL ARIZONA PROJECT / CENTRAL HUDSON GAS & ELECTRIC / CENTRAL POWER & LIGHT / CENTRAL VERMONT PUBLIC SERVICE / CHALMERS & KUBECK / CHEVRON U.S.A. / CLECO POWER / COMMONWEALTH EDISON / CONSOLIDATED EDISON / CONSTELLATION ENERGY / CONSUMERS ENERGY / COVANTA ENERGY / CURTISS-WRIGHT / DAVID BROWN UNION PUMPS / DEVINE TARBELL / DOMINION NUCLEAR / DOW CHEMICAL / DOW CORNING / DRESSER RAND / DRESSER ROOTS / DRS POWER TECHNOLOGY / DUKE ENERGY / EASTMAN CHEMICAL COMPANY / ELECTRIC BOAT / ELECTRIC MACHINERY / ELLIOTT / ENERGIE BROOKFIELD / ENTERGY / EPCOR GENERATION / EXELON / EXXON/MOBIL OIL / FAIRBANKS MORSE / FINCANTIERI MARINE SYSTEM / FIRST ENERGY / FLENDER-GRAFFENSTADEN / FLORIDA POWER & LIGHT / FLOWSERVE / FORMSPRAG CLUTCH LLC / FORTISBC / GE AIRCRAFT ENGINES / MTC / GE OIL & GAS CONMEC / GE OIL & GAS OPERATIONS / GEORGIA POWER COMPANY / GEVISA / GOULDS PUMPS / GPU GENERATION / GREAT LAKES DREDGE & DOCK / HARBIN TURBINE / HAYWARD TYLER / HOLLAND BOARD OF PUBLIC WORKS / HORSBURGH & SCOTT / HOVENS A / HOWDEN BUFFALO / HUPP ELECTRIC MOTORS / HYDRO DEVELOPMENT GROUP / HYDRO SOUTH / HYDROAIRE / HYUNDAI HEAVY INDUSTRIES / IDEAL ELECTRIC / INTEGRATED POWER SERVICE / JOHNSTON PUMP / KANSAS CITY POWER & LIGHT / KEYSpan POWER STATION / KRUGER, INC / LAWRENCE PUMPS / LEPPERT-NUTMEG / LOUIS ALLIS LMC / LOUISVILLE GAS & ELECTRIC / LUFKIN INDUSTRIES / MAFI-TRENCH COMPANY / MAN TURBO AG / METROPOLITAN WATER DISTRICT / MICHIGAN LIMESTONE / MIDAMERICAN ENERGY / MILLENNIUM POWER PARTNERS / MINNESOTA METHANE / MIRANT / MISSISSIPPI POWER / MOHLER TECHNOLOGY / MONARCH ELECTRIC SERVICE / MOTIVA ENTERPRISES / NAVAL INVENTORY CONTROL / NAVAL SHIP SYSTEMS ENGINE / NAVAL SUBMARINE BASE, GROTON / NAVAL SURFACE WARFARE CENTER / NEBRASKA PUBLIC / NEVADA IRRIGATION DIST / NEVADA POWER / NEW BRUNSWICK / NEW YORK POWER AUTHORITY / NORCAN HYDRAULIC / NORTHROP GRUMMAN / NRG / NUOVO PIGNONE / PACIFIC GAS & ELECTRIC / PACIFICORP / PARSONS / PEARL HARBOR NAVAL SHIPYARD / PENNSYLVANIA POWER & LIGHT / PHILADELPHIA GEAR CORP / PLACER COUNTY WATER / POTOMAC ELECTRIC POWER / PPL MONTANA / PREMCOR REFINING GROUP / PROENERGY SERVICES / PROGRESS ENERGY / PUBLIC SERVICE COMPANY OF NEW HAMPSHIRE / PUGET SOUND NAVAL STATION / QATAR PETROCHEMICAL / RAM MOTORS & CONTROLS / RCS COMPRESSORS, INC. / REGENCO LLC / RELIANT ENERGY / RENEWAL PARTS



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