POWERING DESIGNS

ONE BEARING AT A TIME

PUSHING THE STANDARD FORWARD

Our Goal is to Build on Our Reputation as Japan's Leader in Tribology to Become the World Leader in the Craft

With 6,900 employees worldwide, Daido Metal is the global market leader in plain bearings. We supply bearing products globally to a diverse customer base across many sectors. Daido manufactures and sells a wide variety of bearings for automobiles, marine applications, construction machinery, and general industrial use. A well-established global production and sales network extends through Japan, North America, Europe, Asia, and China.

Daido Metal is the world's largest manufacturer of several types of bearings, producing nearly a third of all automobile engine bearings and half of all large ship engine bearings. Daido has also earned an overwhelming domestic market share of bearings used in trucks, construction machinery, agricultural machinery, motorcycles, and automobile parts, such as turbochargers and shock absorbers.

Daido bearings used in turbines for electric power generation have earned a reputation for superior durability. With its lead-free bearing products receiving high praise from the market, Daido products are increasingly being specified by European automobile manufacturers.

WHAT WE BELIEVE

Leadership Sets the Standard

OUR DUTY

We hold ourselves responsible for the happiness of everyone in our organization and the contributions we make to global society.

OUR RESOLVE

We will create a vigorous and open-minded corporate culture through diligent self-discipline and ethical behavior.

OUR FOUNDATION

We will learn from our markets, respond to our customers' requirements, and exceed our customers' expectations.

OUR APPROACH

We will devote ourselves to creation, innovation and the realization of dreams.

OUR OBJECTIVE

We will strive to be the world leader in tribology through constant technical improvement, development, and innovation.

QUALITY IS OUR LIFE

The Belief That Guides Everything We Do

Starting with our in-house design and manufacture of tools, fixtures, molds, production equipment, and our introduction of the latest mechatronics, Daido Metal implements thorough in-line assurance with all production staff embracing responsibility for quality control. We also promote environmental management, including energy savings, recycling, and the reduction of waste from our production methods. In all production processes, we are continually striving to make innovations in production technology to meet and anticipate market needs.

Protection of the Environment

Protecting the environment, humankind's shared asset, is one of our most important priorities. We recognize its importance and promote environmental conservation and protection with our practices and technology.

Quality Control and Quality Assurance Recognized Worldwide

In addition to holding various patents, our plants in Japan and across the globe are certified under the international ISO9000 series, U.S. QS9000 standard, and German VDA6 standard, acknowledged as the world's strictest quality management system. With a strong foundation in quality control and quality assurance, we continuously earn customers' trust and affirm our reputation as a leading global manufacturer of bearings.

CERTIFICATIONS

ISO 9001
JQA-QMA11193

IATF 16949
JQA-AU0023-1

ISO 14001
JQA-EM1402

OHSAS
JQA-OH0045

JIS Q9100
(Expected May 2019)

TRIBOLOGY

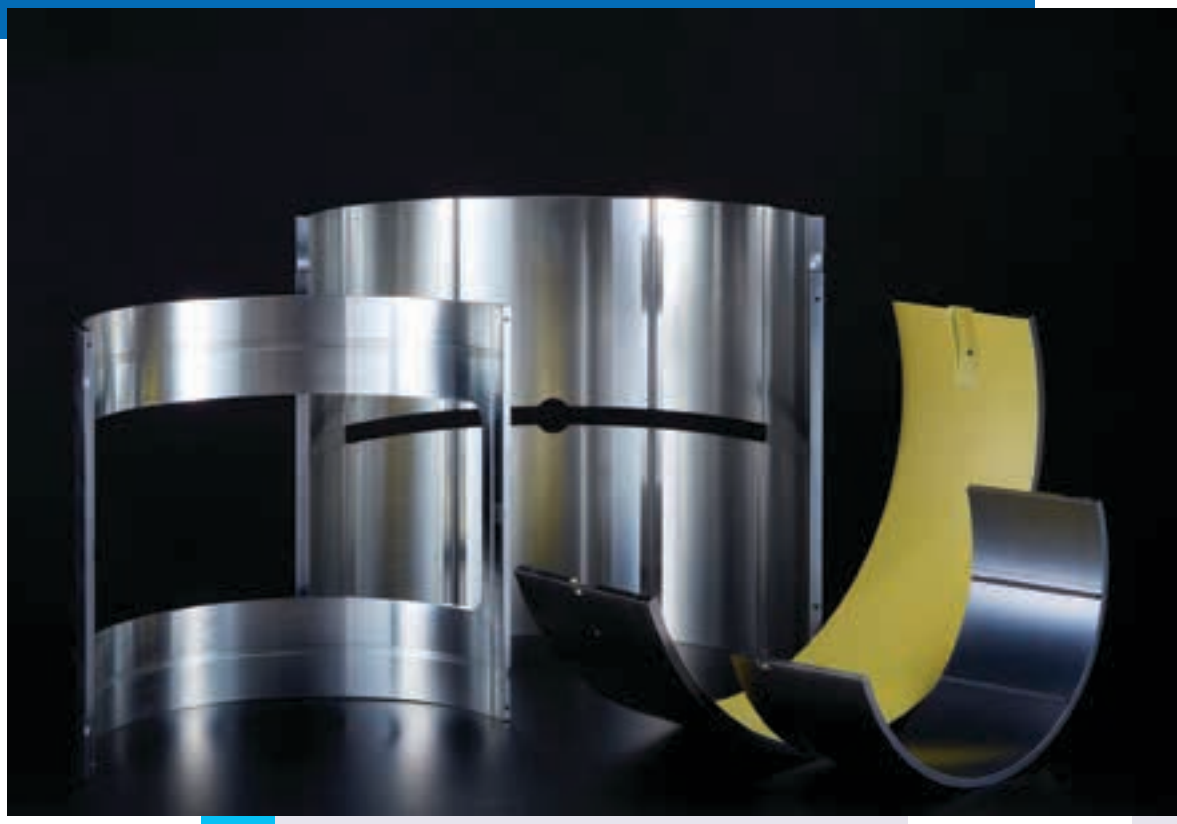
The Art and Science of Controlling Friction

Tribology is derived from the Greek word “tribos” and it refers to the physical and scientific analysis of friction, wear, and lubrication when physical objects move. Machines always have parts that are subject to friction, making them susceptible to wear and other problems. To provide solutions for these challenges, Daido Metal was quick to establish its tribological approach with a combination of bimetal technology, precision processing technology, and surface treatment technology.

Daido Metal is a Lead-Free Leader

Daido Metal is actively engaged in developing products that are friendly to people and the environment. We have been a leader in developing lead-free products with equivalent characteristics as traditional lead-based products. We are concerned about the impact of lead on the environment. This awareness is exemplified across our product line, including our bearings for automotives and dam gates, just two of the many applications where ecological performance is a global concern.

DAIDO CORE TECHNOLOGIES



Bimetal Technology

Bimetal refers to a composite material made by bonding one of a variety of special bearing layers onto a plate steel base. Daido Metal's atomic-level bonding technology includes sintering, pressure welding, casting, and impregnation. We manufacture bimetals of all characteristics, using copper alloys, aluminum alloys, polymers, and other materials.
The development of these bimetal materials is the foundation of our high-quality bearings and the main reason the Daido Metal brand is so well respected around the world.

Precision Processing Technology

Bimetal materials must undergo forming technology to produce high-performance bearing products. Extremely precise machining is required at this stage, whether it's press cutting, press working to form parts into half-bearings or cylindrical shapes, or finishing to optimal thickness. We design and manufacture our own press molds and dedicated machinery in-house. We employ technology accurate to the micron level, allowing us to produce high-quality bearings with consistent reliability.

Surface Treatment Technology

Smooth motion depends on the condition of the surfaces where friction occurs. With the overlay covering, the bearing layer plays a crucial role. Daido Metal continues to develop new overlays and improve production methods, and established a surface treatment technology that creates uniform and highly precise films. We continue to engage ourselves actively in developing new surface treatment technologies.

GLOBAL FOOTPRINT

Influence Around the World

Daido Metal has a production and sales network that operates in the major global markets of Japan, North America, Europe, Asia, and China.

North America

USA

- Daido Metal U.S.A. Inc.
  - Detroit Main Office
  - Bellefontaine Office
  - Indiana Sales and Engineering Office
  - North American Technical Center
- ISS America, Inc.

Mexico

- Daido Metal Mexico, S.A. de C.V.
- Daido Metal Mexico Sales, S.A. de C.V.
- ISS Mexico Manufacturing, S.A. de C.V.

Europe

UK

- Daido Metal Europe Limited
- Daido Industrial Bearings Europe Limited
- The European Technical Centre (UK)

Germany

- Daido Metal Europe GmbH
- The European Technical Center (Germany)

Czech Republic

- Daido Metal Czech s.r.o.
- The European Technical Center

Montenegro

- Daido Metal Kotor AD

Russia

- Daido Metal Russia LLC

Asia

Korea

- Dong Sung Metal Co., Ltd.
- Korea Dry Bearing Co., Ltd.
- DMS Korea Co., Ltd.

Philippines

- Philippine Iino Corporation

India

- BBL Daido Private Limited

Thailand

- Dyna Metal Co., Ltd.
- ATA Casting Technology Co., Ltd.
- DM Casting Technology (Thailand) Co., Ltd.

Indonesia

- PT. Daido Metal Indonesia
- PT. Iino Indonesia

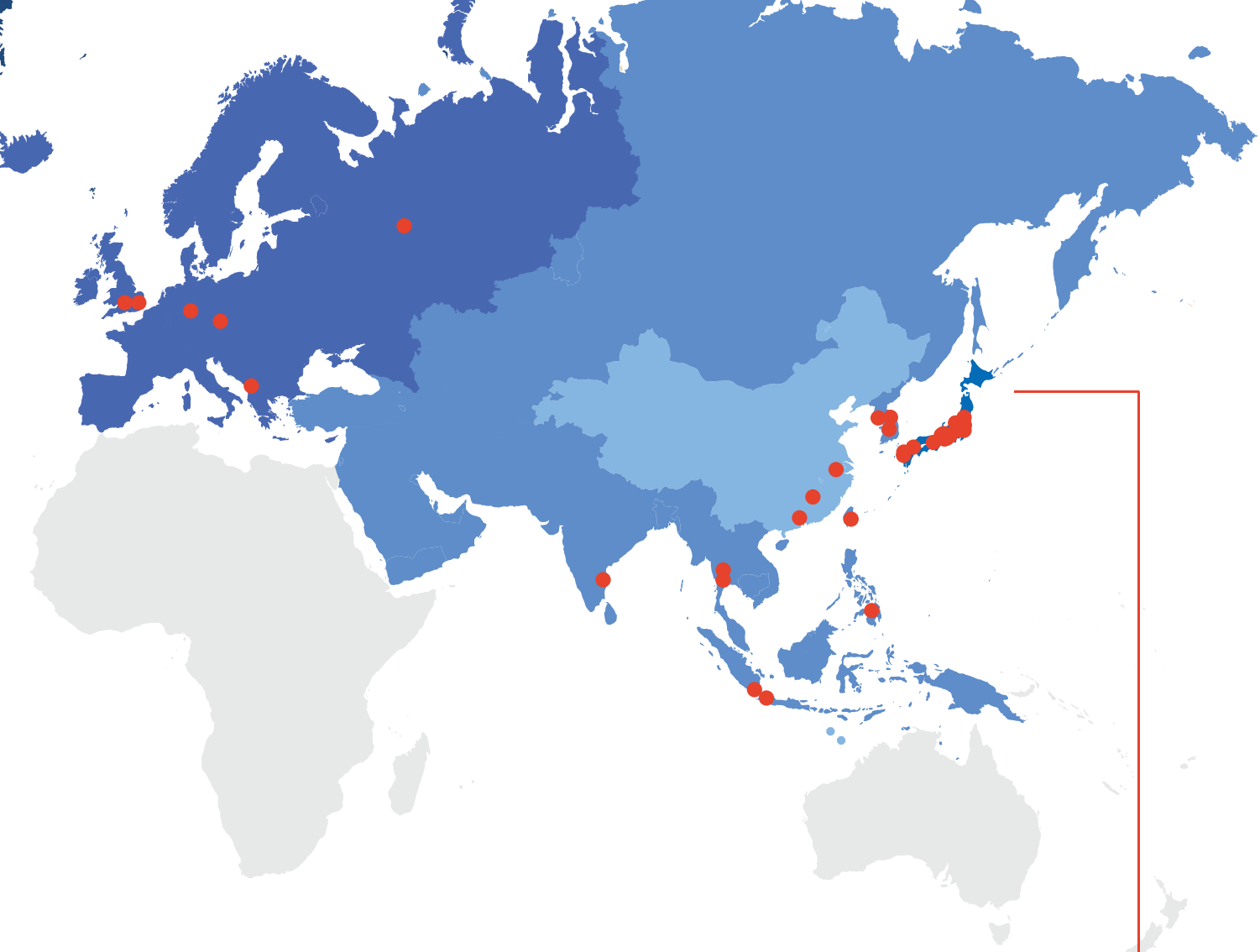
China

China

- Daido Precision Metal (Suzhou) Co., Ltd.
  - Guangzhou Branch
  - Chongqing Branch
- Iino (Foshan) Technology Co., Ltd.
- Chung Yuan Daido (Guangzhou) Co., Ltd.

Taiwan

- Chung Yuan Daido Co., Ltd.



For more information on our locations, refer to our website at www.daidometal.com.

Japan

Daido Metal Co., Ltd.
- Nagoya Headquarters
- Tokyo Headquarters and Branch Office
- Inuyama Site
- Gifu Plant
- Hiroshima Sales Office
- Kyushu Sales Office
- Osaka Branch Office
- Hamamatsu Sales Office
- Kita-Kanto Sales Office

Daido Plain Bearings Co., Ltd.

Daido Industrial Bearings Japan Co., Ltd.

Daido Metal Saga, Co., Ltd.

Daido Metal Sales, Co., Ltd.

Asia Kelmet Co., Ltd.

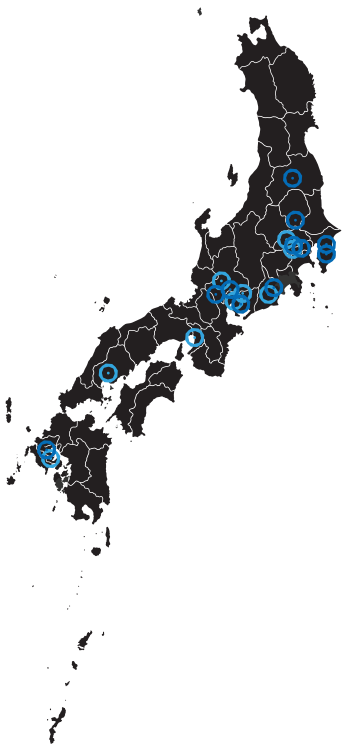
NDC Co., Ltd.
- Headquarters and Narashino Plant
- Kouzaki Plant

NDC Sales Co., Ltd.

Iino Manufacturing Co., Ltd.
- Headquarters and Omiya Plant
- Tajima Plant
- Yaita Plant

ATA Casting Technology Japan Co., Ltd.

Daido Logitech Co., Ltd.



WHAT WE DELIVER

We Build Products to Enhance the Way We Live

Our Global Products Are Engineered to Exacting Standards. Daido Metal offers a versatile product lineup with bearings made from many types of materials for improved performance in each unique application. Whether you need polymer, metallic, or engine bearings, we have the expertise you need to provide the right product for superior results.

METAL-POLYMER BEARINGS

Because of their strength and wear-resistance, Daido Metal self-lubricating, metal-polymer plain bearings are used in a wide variety of applications, including office equipment, construction equipment, hydro, thermal and nuclear power plants, high-speed vehicles, trains, domed stadiums, and more.

METALLIC BEARINGS

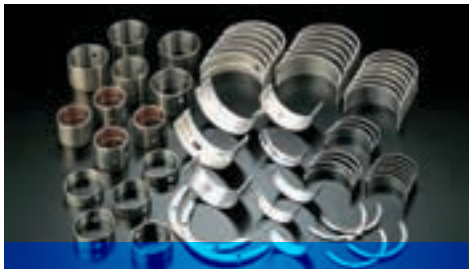
Daido Metal high-performance metallic bearing materials solve a host of problems that plague sliding parts.

MODULAR PRODUCTS

These modular Daido Metal products are assembled in-house, utilizing the capabilities of our self-lubricating plain bearings and structural materials used for the housings.

TURBOMACHINERY BEARING SYSTEMS

Daido Metal plain bearings support the spindles of a variety of rotary equipment, notably the turbines, generators, and compressors used in power plants.



ENGINE BEARINGS

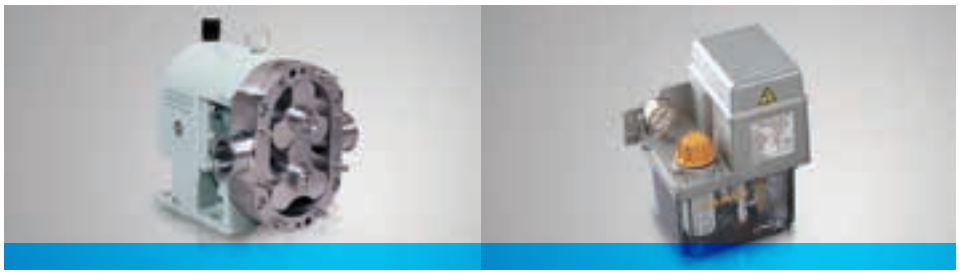
In addition to passenger cars, buses, and construction machinery, these exceptional, Daido Metal world market leader products are also used for the high-speed engine bearings of race cars, providing an ultra-high-tech edge in motor sports applications.

MARINE ENGINE BEARINGS

We are one of the few manufacturers of marine bearings capable of turnkey production from raw materials to finished products. We have the leading share of the global market for large-class marine engine bearings.

CAPACITOR

Daido Metal high density, high accuracy, high endurance electrode sheets use a polytetrafluoroethylene (PTFE) binder. The molding, rolling, and bonding process benefits from our processing technology for mass production of bearings for the automotive, marine, and general industrial equipment markets.



PUMP | CENTRALIZED LUBRICATION

Daido Metal also develops products other than bearings, applying the same high levels of research and technology that we have fostered in our pursuit of optimized tribology.

TAKING YOUR DESIGN TO A HIGHER LEVEL

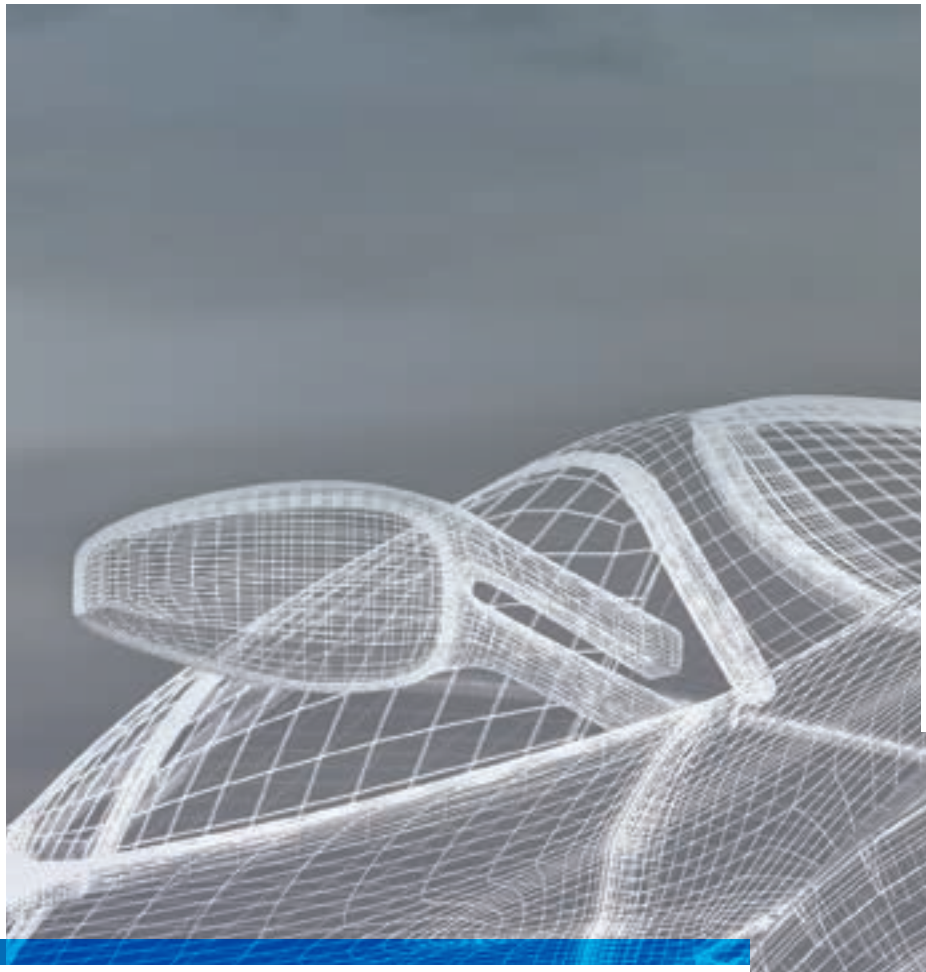
Manufactured to precise standards for long-term usage and high output, and made from aluminum alloy, bronze alloy, copper alloy, or other properties, we can custom manufacture a bearing for your specific need.

AUTOMOTIVE

Driving the World Standard

Automobile bearings are the cornerstone of Daido Metal's operations. Our products are proven performers in the high-technology engines of today. Used in passenger cars, buses, and race cars, Daido bearings provide an ultra-high-tech edge in motor sports applications. We have the largest market share in Japan for plain bearings in engines and most global automobile manufacturers have adopted our bearings as well.

DAIDO ENGINE BEARINGS support TOYOTA GAZOO Racing Teams in their effort to win the World Endurance Championship (WEC).



AUTOMOTIVE APPLICATIONS

// ENGINE
// TRANSMISSION
// STEERING
// FUEL SYSTEMS
// ENGINE ACCESSORIES
// TURBOCHARGER
// DOOR SYSTEMS
// AUTOMOTIVE AIR CONDITIONERS
// INTERIOR SYSTEMS
// SUSPENSION SYSTEMS
// BRAKES
// WIPERS
// SOLENOID

DAIDYNE DDK05

An environmentally friendly, **lead-free**, self-lubricating metal-polymer bearing that does not require additional lubricant. This product combines low-friction PTFE bearing surface with the strength and dimensional stability of a metal backing.

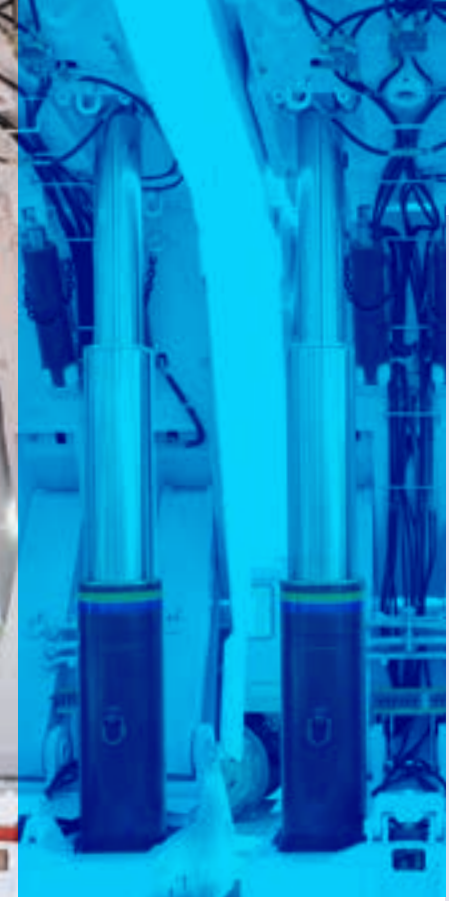
DDR11

Also an environmentally friendly, **lead-free** bearing with a copper-tin alloy sintered onto a steel backing. The bearing surface is a mixture of PTFE and a special filler. This creates low friction, excellent durability and sliding characteristics via PTFE, to strengthen the metal material and dimensional stability.

DAITHERMO DTK57

Another environmentally friendly, **lead-free** bearing solution with copper-tin alloy sintered onto a steel backing. The bearing surface is a mixture of polyetheretherketone resin (PEEK) and a special filler, resulting in excellent wear resistance, durability, and sliding characteristics. Along with this special filler, the metal material is strengthened, as well as its dimensional stability.

Visit **www.daidometal.com** for Comprehensive Details on all Daido Products.



ENERGY

Powering Renewable Sources to Empower Options

Daido Metal supplies bearings that help improve performance for lower energy consumption and cleaner emissions. We provide a wide range of bearings to renewable energy and fossil fuel applications that contribute to the environment. With our expertise in tribology, we craft the most technically engineered products for the energy market as well. Be it in new construction or retrofitting older projects, our products are energy saving, labor saving, and non-polluting. They contribute to the lower usage of resources and hence to environmental conservation, via minimal friction, heat resistance, lower wear, and longer life.

ENERGY APPLICATIONS

// TURBINES
// GATES
// ANCILLARY GEAR
// VALVES
// HYDRAULIC PUMPS/MOTORS
// FLUID POWER APPLICATIONS

Proven Product Performance

DAIBEST DBB01

Oil-infused bearings of our own proprietary lubrication characteristics, in which lipophilic fibers and special filler material are uniformly dispersed within polyacetal plastic resin, a plastic bearing material offering excellent bearing characteristics.

THERMALLOY TYPE T

Metallic self-lubricating bearing material in which a solid lubricant, mainly graphite, is evenly dispersed throughout various base metals. Type T is a special Thermalloy grade that can be used under wider conditions. The base metals are composed of different types of materials such as bronze, iron and nickel, and a solid lubricant can be selected.

DDR17X

With a copper-tin alloy sintered onto steel backing, the DDR17X is made of an environmentally friendly, lead-free bearing material. Through a surface that is a mixture of PTFE and a special filler, this bearing exhibits excellent durability under boundary and fluid lubrication conditions. It also has excellent load-carrying capacity due to the strength of the metal material and dimensional stability.

AEROSPACE

Take Flight with Daido Quality

Daido Metal bearings are used across the spectrum of aerospace applications. From landing gears to passenger seating, self-lubricating Daido Metal bearings meet the aerospace industry's requirements for light weight, high-load capacity, thin cross section, and wide temperature range. With certification to the **JIS Q9100** quality standard expected in May 2019, Daido meets the industry's quality management system requirements for the manufacture of metal-backed bearings, washers, and solid polymer bearings.

AEROSPACE APPLICATIONS

// LANDING GEAR STRUTS

// WING FLAP ACTUATORS

// SEATS & COMPARTMENTS

DAIDYNE DDK05

Environmentally friendly, **lead-free**, self-lubricating metal-polymer bearing requires no additional lubricant. Combines low-friction PTFE bearing surface with the strength and dimensional stability of a metal backing.

DAIDYNE DDK35

Moisture resistant, usable in water. Self-lubricating metal-polymer bearing requires no additional lubricant. Combines low-friction PTFE bearing surface with the strength and dimensional stability of a metal backing.

DAIBEST DBB01

Infused with proprietary lubricant and composed of lipophilic fibers and special filler material uniformly dispersed within polyacetal resin, a plastic material offering excellent bearing characteristics.

AGRICULTURE & CONSTRUCTION

Growing Our Reputation Through Building Your Trust

Daido meets the demand for higher output, smaller sizes, less pollution, better fuel economy, and longer maintenance intervals.

We supply bearings for engines and hydraulic systems of excavators and numerous other agricultural and construction equipment, including cranes, bulldozers, tractors, backhoes, and more. Daido Metal bearings are designed to withstand the harsh environmental challenges of farmlands and construction sites.

Our expertise in tribology makes Daido materials among the most technical engineered products in the hydraulics market.

Proven Products for the Market

DAIDYNE DDK02

Environmentally friendly, **lead-free** bearing, material consists of multiple layers of PTFE, porous intermediate layer and steel backing (similar to DDK05 dry bearings). Via improved sliding and porous layers, boundary surface performance and fluid lubrication are improved.

DDR15X

Copper-tin-lead alloy sintered onto steel backing. Bearing surface is mixture of PTFE resin, lead/tin, and special filler. Excellent durability under boundary and fluid lubrication conditions and good sliding characteristics due to PTFE/lead/tin mixture, special filler, strength of the metal material, and dimensional stability.

DAIDYNE DDK05

Environmentally friendly, **lead-free**, self-lubricating metal-polymer bearing requires no additional lubricant. Combines low-friction PTFE bearing surface with the strength and dimensional stability of a metal backing.

AGRICULTURE & CONSTRUCTION APPLICATIONS

// STEERING CYLINDERS
// HYDRAULIC CYLINDERS
// KING PIN & LINKAGE PIN
// HINGES & PEDALS
// CONVEYORS
// ROCK SHAFTS
// AXLE, TRACK & SUSPENSION TRUNNIONS
// FRAME & WALKING BEAM TRUNNIONS
// DUMP BODY PIVOT
// ARTICULATING & CRITICAL CLEARANCE JOINTS
// LINKAGE & PIVOT POINTS

INDUSTRIAL

From Heavy Duty to Home Applications

Daido Metal supplies highly reliable, self-lubricating bearings that do not require additional lubricants and can operate for extended periods without maintenance.

Our maintenance-free bearings exhibit wear- and seizure-resistance in continuous operation of high precision industrial equipment such as machine tools, injection molding machines, robotics, and today's infrastructure and transportation modes, which must be fast, comfortable, and safe. Daido Metal also supplies environmentally safe bearing products for home appliances and interior fixtures that help make living spaces more comfortable and cozy.

INDUSTRIAL APPLICATIONS

// INJECTION MOLDING
// FURNACE CHARGING CARS
// SHEARS
// CONVEYOR ROLLERS
// MULTI-RAM PRESS GUIDES
// HEAT TREATING UNITS
// FURNITURE

DAIDYNE DDK05

Environmentally friendly, **lead-free**, self-lubricating metal-polymer bearing requires no additional lubricant. Combines low-friction PTFE bearing surface with the strength and dimensional stability of a metal backing.

DAIDYNE DDK35

Moisture resistant, usable in water. Self-lubricating metal-polymer bearing requires no additional lubricant. Combines low-friction PTFE bearing surface with the strength and dimensional stability of a metal backing.

MARINE

Oceans of Innovation

As the world leader in automotive bearing technology, Daido excels equally in the marine engine market. We are one of the world's few manufacturers of marine engine bearings capable of turnkey production from raw materials to finished products and can make super large bearings with diameters in the 1200 mm range. The Result: Daido has the leading share of the global market for large-class marine engine bearings.

MARINE APPLICATIONS

// MAIN BEARINGS
// CRANKSHAFT HALF BEARINGS
// CONNECTING ROD BEARINGS
// BUSHES FOR CONNECTING ROD SMALL ENDS
// THRUST BEARINGS
// FRACK PUMP CRANKSHAFT BEARINGS

Proven Product Performance

METAL BUSHING (LUBRICATED METAL)

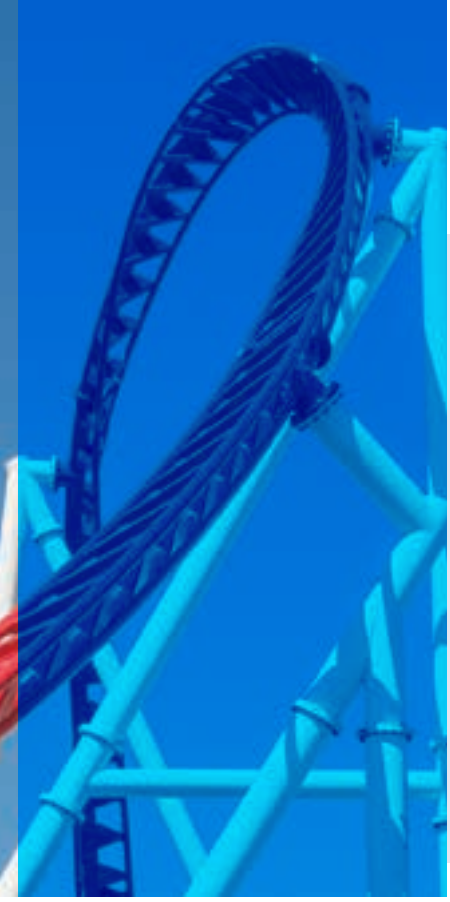
Aluminum alloy and copper alloy comprise a two- or three-layer structure with steel backing. Its high mechanical strength allows it to be used under lubricated conditions and high-speed/high-load operation.

TURBINE AND SUPERCHARGER BEARINGS FOR MARINE

Turbine and marine supercharger bearings for supporting rotating shafts of propulsion steam turbines and large marine engines.

ENGINE BEARINGS – HALF SHELL BEARINGS 4-STROKE DIESEL MARINE

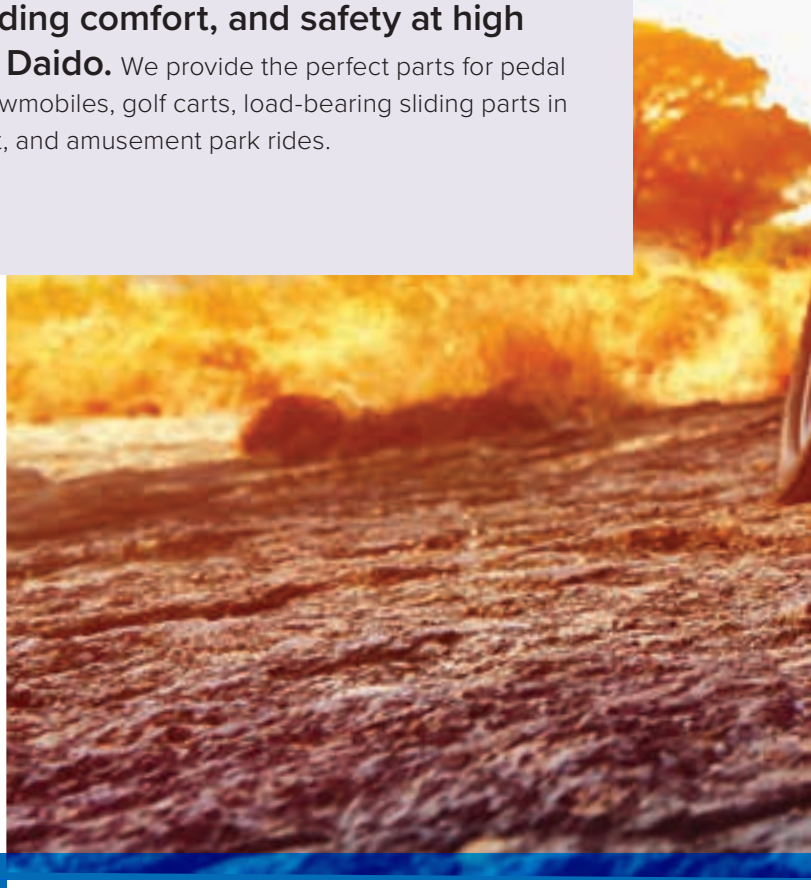
Medium- and high-speed, 4-stroke diesel engines are used as the primary engines for construction machinery, ferries, and fishing boats, and as auxiliary engines for larger vessels and power plants. Our copper and aluminum alloy bearings, some of which are plated, are widely used in these engines.



LEISURE

Serious Leisure Activities Call for Daido Bearing Solutions

For durability, riding comfort, and safety at high speeds, specify Daido. We provide the perfect parts for pedal bikes, motorbikes, snowmobiles, golf carts, load-bearing sliding parts in playground equipment, and amusement park rides.



Proven Products for the Market

DAIBEST DBX01

Bearing is filled with lubricant before installation, to which a small amount of lubricant is added at predetermined intervals to allow it to withstand long-term operation. The structure of this pre-lubricated bearing consists of spherical powdered bronze sintered onto a steel backing and polyacetal resin impregnated into the surface.

DAIDYNE DDK05

Environmentally friendly, **lead-free**, self-lubricating metal-polymer bearing requires no additional lubricant. Combines low-friction PTFE bearing surface with the strength and dimensional stability of a metal backing.

LEISURE APPLICATIONS

// ALL-TERRAIN VEHICLES
// PLEASURE CRAFTS
// CYCLING GEAR
// SNOWMOBILE SHOCK ABSORBERS
// DRIVE WHEELS
// SUSPENSIONS
// WEIGHT LIFTING STATIONS

DDR11

An environmentally friendly, **lead-free** bearing with a copper-tin alloy sintered onto a steel backing. The bearing surface is a mixture of PTFE and a special filler. This creates low friction, excellent durability, and sliding characteristics via PTFE to strengthen the metal material and dimensional stability.

PRODUCT DIVERSITY

Growing Our Skillset

Daido Metal collaboratively works with subsidiaries all over the world to expand our range of product offerings for our clients.

MANUFACTURING CO., LTD.

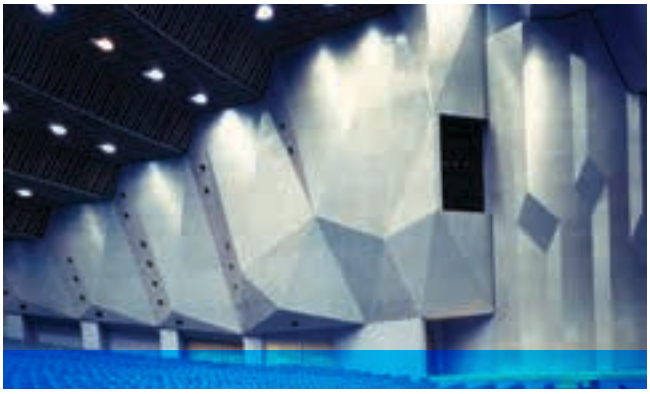
Throughout the history of parts production, lino has accumulated various technology and experience in processing precision metal parts especially required for engines and transmissions in the automotive field. lino also has engineering capabilities for development and prototyping, which eventually leads to production.

DM CASTING TECHNOLOGY (THAILAND) CO., LTD.

A newly formed subsidiary of Daido Metal, DM Casting Technology is expected to begin production in 2020. DM Casting Technology will specialize in the production of 800 ton and 1250 ton aluminum die cast parts primarily for the automotive industry. DM Casting Technology will meet the growing demand for aluminum die cast parts for electric vehicles and establish itself as a leader in the industry.

ATA CASTING TECHNOLOGIES CO., LTD.

Specializing in products of aluminum die-casting such as steering parts, engine, power-train parts, and inverter parts, ATA handles the entire process of manufacturing from design, engineering and metal melting to final inspection for quality assurance and sales. ATA specifically serves the car and automobile assembler markets. Through this deep expertise we also create cylinder block, cylinder head, and inverter cases for clients around the world.



CO., LTD.

CALME technology is a key product for NDC. Made of sintered aluminum powder and created with our high-sintering technology, these sound absorption plates are porous in texture. It can control which frequencies to absorb and be painted or curved without compromising the performance. The texture of CALME suits natural materials such as exposed concrete or stone, as well as modern architecture, offering excellent sound absorption performance with a luxurious appearance at the same time.

PARTNERING WITH DAIDO

A CULTURE OF COLLABORATIVE EXCELLENCE

Daido Metal has Tribology in its genes. Accordingly, we've established a Technology Division Research & Development Department that is one of the few truly comprehensive Tribology R&D centers in the world. We deal with theoretical research, making new and composite materials, design of innovative bearing products, and development of new production technologies.

Standardization to the Industry Worldwide

Through our participation in the **ISO/TC123** Japan Plain Bearing Committee of the Japan Society of Mechanical Engineers, Daido Metal furthers the cause of international standardization.

Technology Collaboration

Through technology exchange and collaborative development with our partnering clients, we contribute to improving technology standards worldwide together.

Learn more about our collaborative process and how we can partner together on your next project at:

www.daidometal.com

www.daidometal.com

PDU001A-01 2018.11