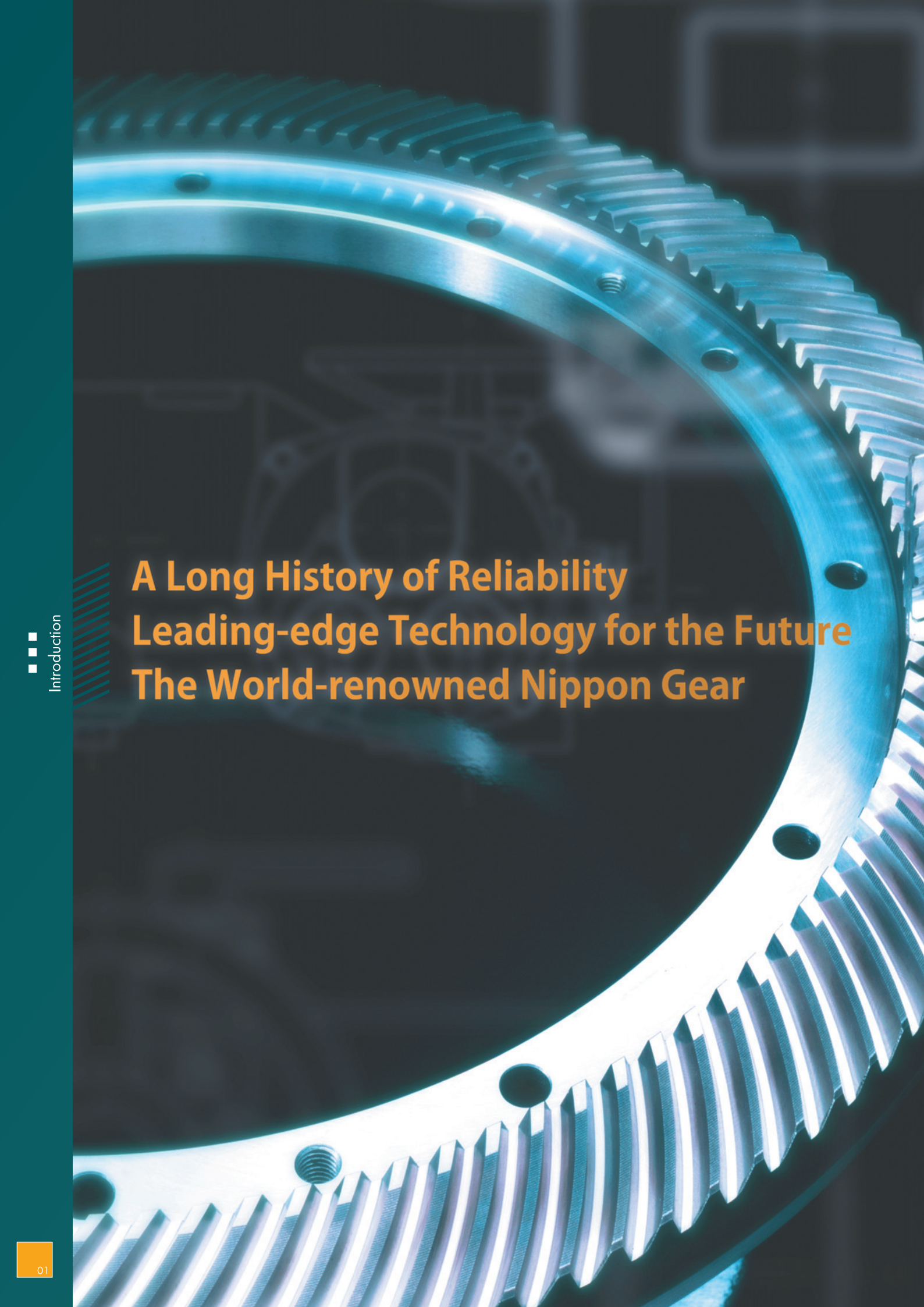


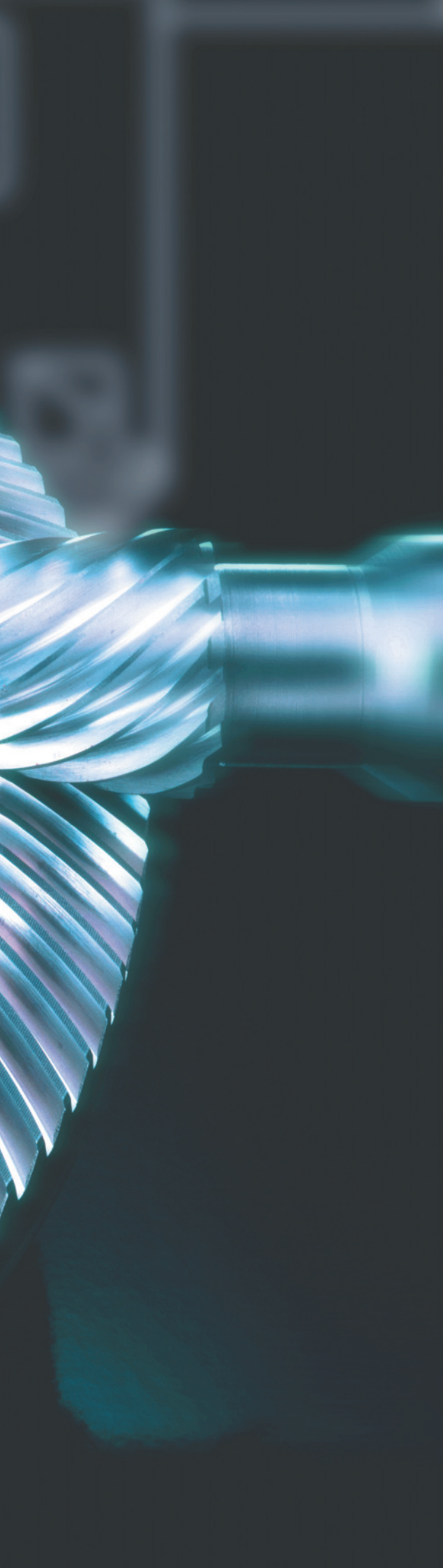
**NIPPON GEAR CO.,LTD.**  
Corporate Profile



***NIPPON GEAR CO., LTD.***



**A Long History of Reliability**  
**Leading-edge Technology for the Future**  
**The World-renowned Nippon Gear**



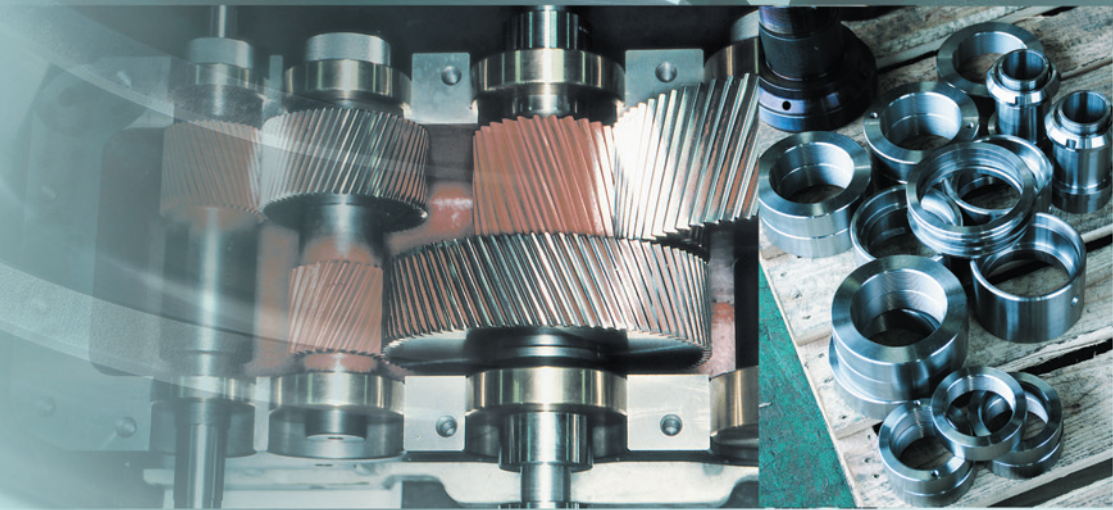
Nippon Gear Co., Ltd. was established in 1938 as an automobile gear manufacturer. Since our founding, we have applied leading-edge technology to the design of gears for a wide variety of applications and worked continuously to advance the level of that technology. As a result of those efforts, we first developed high-precision gears for incorporation into industrial equipment, and then lifting-jack mechanisms for use in steel industries and manufacturing plant for information technology (IT) services. In addition, valve actuators which are used in power generating plant, water/sewer services and petroleum plants, have been recognized around the world for their superb quality. Virtually synonymous with the word "gear," Nippon Gear today is a mechatronics enterprise that serves the broad-ranging needs of industry and society.



# Product Line

## From Single Gears to Advanced Mechatronics

Advanced mechatronics products produced by Nippon Gear are widely used in society today, and the performance and quality of these products are highly evaluated worldwide. We also put our experience in gear products and technologies to work in providing associated services for gear-related equipment manufacturing and maintenance.



Gears

Valve Actuators

Jacks

Mixer Drives & Gear Drives

Maintenance

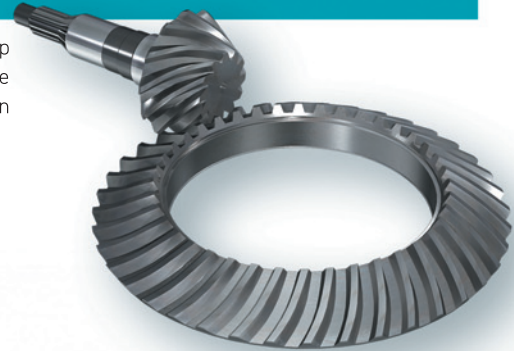
# GEARS

## Key Parts Forming the Backbone of Industry

Nippon Gear's line of gears, which are manufactured with traditional techniques and state-of-the-art facilities, contribute significantly to automotive, railroad, industrial machine, and other industries both in Japan and around the world. The achievement of these high-quality products extends beyond the design of the gears themselves; the overall mechanical system is first analyzed and examined, and the gears are engineered by ultra-precise, high-speed computers. The possibilities for these gears are limitless in the machinery industry, where engineers are continually striving to improve performance.

### -Hypoid Gears

The hypoid gear enables proper gear meshing even if the pinion shaft center moves up or down (become offset) with respect to the gear's center point. This feature of the hypoid gear increases the pinion's spiral angle, so the driveshaft's center of gravity can be lower. Also, the large meshing ratio provides quieter meshing.



### -Spiral Bevel Gears

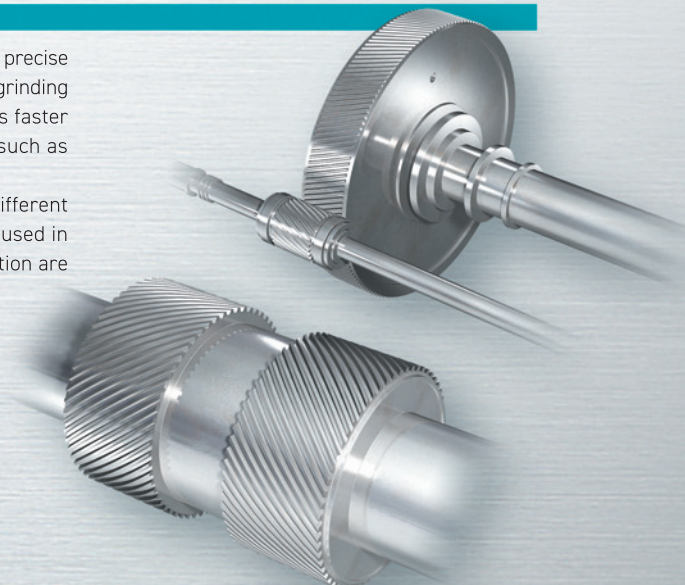
Spiral bevel gears are normally used with an orthogonal (90° shaft angle) configuration, but the gear design can be modified to manufacture gears with higher or lower shaft angles for drive systems in equipment such as precision machine tools and ships.



### -Cylindrical Gears

The numerous gear teeth on compact, high-speed cylindrical gears are ground to precise tolerances higher than JIS 0 standards using a gear grinder. This high-precision grinding allows cylindrical gears to mesh quietly and smoothly at circumference speeds faster than 100 m/s. for use in a variety of systems requiring high-speed rotation, such as compressors and generators.

A double helical gear is made with two helical gears on one shaft that have different orientations. The gear teeth are ground with a gear grinder, the gears can be used in equipment that requires high rotational speeds, and both left and right orientation are possible on a single shaft.



# VALVE ACTUATORS

## World-class, High-performance Valve Operating Systems

Nippon Gear's valve actuators are used with valves that control fluid volume, Manufactured in Japan under license from Flowserve USA, these high-precision, high-reliability valve actuators find applications in a wide range of industrial environments, from petroleum, nuclear, and generating plants to water/sewer pipelines advanced. Optical and two wire cables communications can be added for remote/automatic operation of most valve actuators. With their exceptional performance and durability, these valve operating systems are also used frequently in severe natural environments.

### -Multi-turn Type

Multi-turn actuators use linear motion to operate valves such as gate valves, globe valves, and sluice gates.

#### SMB

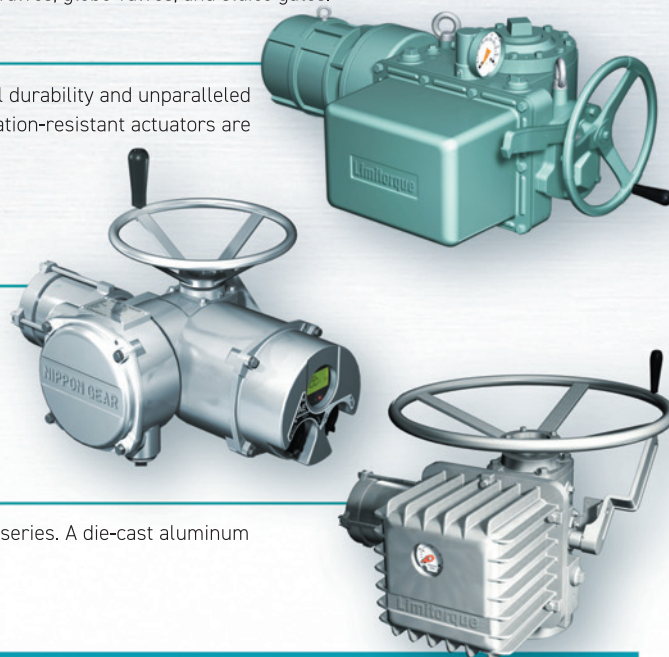
SMB valve actuators have earned a reputation for exceptional durability and unparalleled practicality. Explosion-proof, fireproof, submersible, and radiation-resistant actuators are available for use in the most severe environments.

#### AE (Smart type)

AE valve actuators are smart type electronics valve actuator that have enabled the creation of a variety of controls by digitalizing torque detection and position detection.

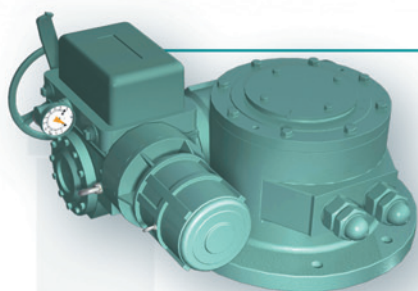
#### L120 (Compact, Lightweight Type)

L120 valve actuators are compact models based on the SMB series. A die-cast aluminum housing is used to reduce weight.



### -Quarter-turn Type

Quarter-turn actuators use rotational motion to operate valves such as butterfly valves, ball valves, plug valves, and dampers.



#### SMB Series and HB Series

Electrically powered SMB actuators are equipped with a double-reduction gear set (helical-gear and worm-gear reducers) designed for quarter-turn operation of large-scale butterfly valves.

### -Remote Control Systems

Our remote control systems can monitor and operate actuators in the field from the master control station.

#### G-Link (Digital Communication System)

G-Link is a highly reliable digital communication system for the centralized control of valve actuators. Cable type is available from either a optical fiber or a metal wire.

#### TWC (Two-wire Remote Control Devices)

The TWC system provides remote operation with a small number of control wires (the number of devices + one wire). Onsite wiring is simple and the system incorporates excellent safety features, such as overvoltage protection and false signal detection circuits.

# JACKS

## Ultimate Jacks Incorporating Fine Gears

Nippon Gear's jacks, the culmination of over 60 years of tradition and experience, are the ultimate jacks. They convert rotational motion to linear motion through gears, so they eliminate the need for hydraulic pumps or compressors; in addition, they are compact, produce little noise, and are easy to maintain. They can be computer-controlled to provide automatic steady-state motion or accurate cyclic operation. Also, they are not limited to lifting/lowering operations; they can be used for inclines, pulling, opening/closing, adjustment, holding, and almost every conceivable application.

### -Screw Jack

Models R-G and J-A

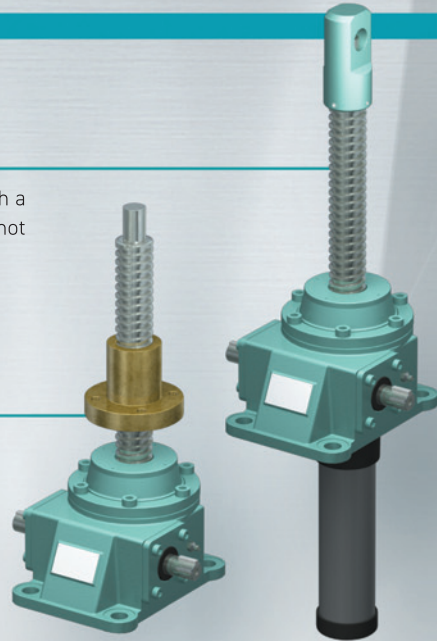
Basic capacity: 2 to 1,000 kN

#### Axial Lifting/Lowering Type

These are standard screw jacks with a wide variety of uses. They are equipped with a self-locking mechanism that can operate at any point in the stroke, so a brake is not needed for normal use.

#### Traveling-nut Type

An ordinary screw jack requires a space more than double its stroke, as its lifting screw move up and down. If the space is limited and if the full stroke is required, we recommend this traveling nut type screw jack.



### -Ball Screw Jack

Model J-B

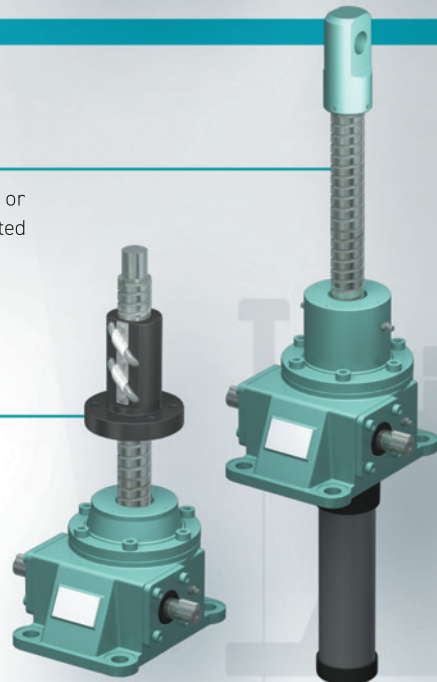
Basic capacity: 10 to 1,000 kN

#### Axial Lifting/Lowering Type

These standard screw jacks use a ball screw shaft and are ideal for high-speed or high-frequency operations. They are also environmentally-friendly, even when operated at high speeds, and generate little heat and little noise.

#### Traveling-nut Type

An ordinary screw jack requires a space more than double its stroke, as its lifting screw move up and down. If the space is limited and if the full stroke is required, we recommend this traveling nut type ball screw jack.



# MIXER DRIVES & GEAR DRIVES

## Employing the Most Advanced, High-precision Manufacturing Technology in the Industry

With over 70 years of accumulated experience in the design, manufacture, and practical use of gears, Nippon Gear is uniquely qualified in the design and manufacture of high-performance gear drives. We apply our high-precision manufacturing technology to produce gear drives for applications as diverse as power plant, chemical plant, waste water treatment plant, and others.

### -Mixer Drives

Nippon Gear combines the newest technology with its vast experience in reduction gears to manufacture mixing systems for wide variety of plants. Our integrated manufacturing and development organization optimizes mixing performance by selecting the best hardware (impeller type, motor capacity, etc.) and software for each application, thus earning our mixers a reputation for high performance and durability in demanding environments, such as chemical plants and water/sewage processing plants.

#### GSE

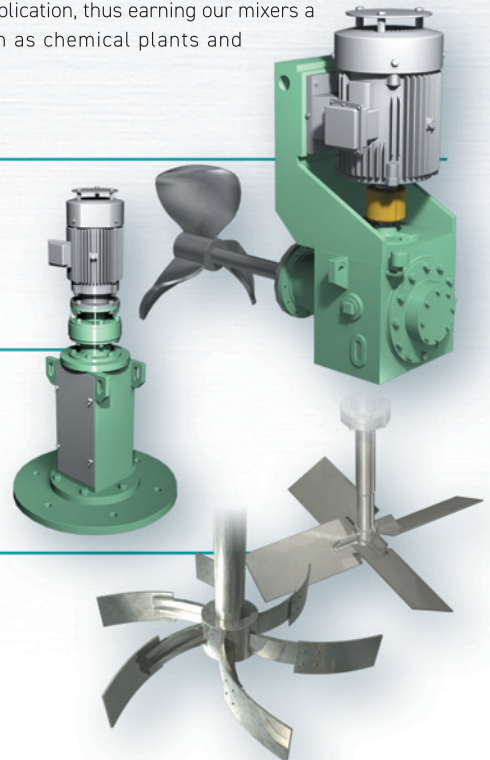
The GSE is a sideways mixer for attachment to the side of tanks. It is able to mix a large volume of fluid using a small amount of power.

#### NSR

The NSR is a compact, lightweight mixer employing highly reliable geared motor with low noise and long-life.

#### Impellers

Nippon Gear provides various impellers for achieving the desired mixing efficiency, matched to the scale of production, speed of operation, product consistency, product quantity, and motor capacity.



### -Gear Drives

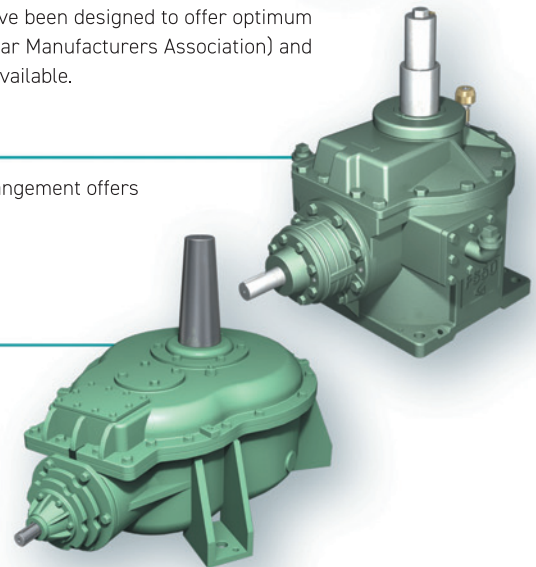
Spiral bevel gear drives for cooling tower and air-cooled heat exchanger service have been designed to offer optimum performance. All design features and ratings meet standards of AGMA(American Gear Manufacturers Association) and CTI(Cooling Tower Institute). Single-stage Gear Unit and Double-stage Gear Unit are available.

#### Single-stage Gear Unit

Gear type is single reduction of precision spiral bevel gear. Simple gear arrangement offers high reliability, high efficiency and minimum maintenance in the field.

#### Double-stage Gear Unit

Gear type is double reduction consisting of precision spiral bevel gear and helical gear. This gear combination covers wide range of gear ratio. Gear rating of Double-stage Gear Unit is larger than Single-stage Gear Unit.





# MAINTENANCE

## Advance Functional Support for All Products

Nippon Gear equipment is often used in severe operating environments. In order for plants to operate as safely as possible, it is necessary to prevent equipment problems while maintaining the high quality, precision, and functionality of all products. We have developed a worldwide maintenance/support network to maintain the operating efficiency, extend the lifetime, and preserve the high safety levels of Nippon Gear equipment.

### -Maintenance and Inspection

When valve actuators are subjected to typical operating and environmental conditions, their electrical components, bearings, oil, and seal materials gradually wear and deteriorate. Periodic maintenance and inspection are required in order to maintain normal and consistent operation.

#### Class A Inspection

This onsite inspection is performed once a year with the valve actuator installed on the valve body. The inspection involves an inspection/cleaning of the wiring and electrical components, inspection of each component for loose, scratched, or damaged parts, and an operational check of electrical components.

#### Class B Inspection

This onsite inspection is performed once every 3 to 5 years with the valve actuator installed on the valve body. The inspection involves a partial disassembly of the actuator to allow inspection by hand, removal of the motor to inspect the surfaces of the gear teeth, and an operational check of electrical components such as gear limit switches and torque switches.

#### Class C Inspection

This inspection is performed once every 7 to 10 years and the valve actuator is removed from the valve body and transported to the factory. The inspection involves a complete disassembly of the actuator to allow an operational check of the gears, cleaning and replacement of parts and grease, etc. After being reconditioned, the actuator is thoroughly tested, repainted, and reinstalled at the site.



### -Inspection of Gear Drives

A special feature of Nippon Gear's gear equipment is the availability of high-value-added options such as automated control and optical communication systems. As a specialized manufacturer producing equipment that incorporates leading-edge technology, Nippon Gear provides a complete service network for its products.



# PRODUCTION, RESEARCH & DEVELOPMENT

The Gears of Tomorrow: Built on High-efficiency, Advanced Production Lines and Backed by Tireless R&D

## -Production Lines that Combine Experience, Leading-edge Technology, and Strict Quality Control

Nippon Gear utilizes state-of-the-art machinery, including 3 high-precision gear grinders, 18 Gleason tooth cutting machines, heat-treating equipment, and inspection/testing equipment. We consistently produce the highest quality products by using a production system that combines the latest equipment with manufacturing skills accumulated over time, an integrated quality control system, and thorough system of management to ensure the accuracy of our measurement equipment, jigs, and machining centers.



## -High-precision Gear Manufacturing Requires Leading-edge Equipment

### Rapid 2000XL Gear Grinder

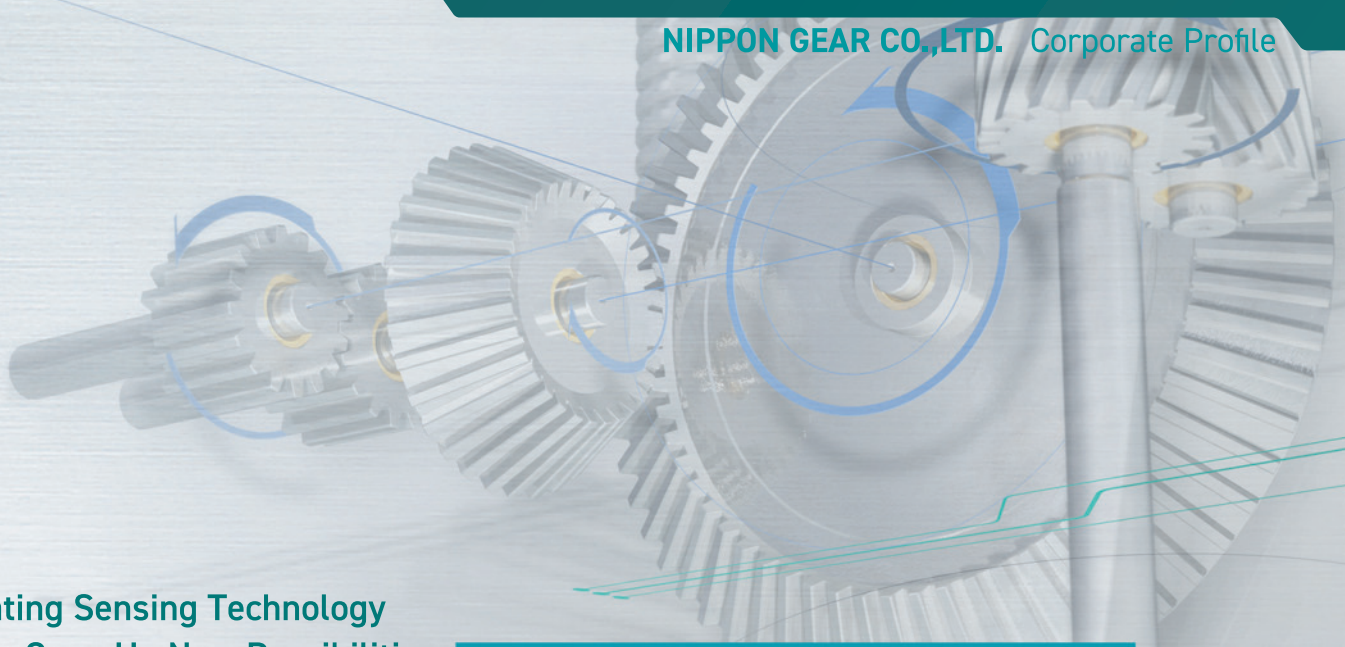
Our KLINGELNBERG Rapid 2000XL is an extremely advanced high-speed CNC gear hobbing machine that can grind gears with a maximum outside diameter of 2,000 mm and a maximum module of 50. This machine's manufacturing accuracy easily passes the former JIS 0 standards as well as the new JIS 3 and AGMA 13 standards. Additionally, CNC machining allows the tooth shape and pitch to be adjusted. The machine is also equipped with a precise built-in measurement function.



### Klingelberg Measuring Machine

In order to supply better precise products, we pursue the best precision also in the measuring and inspection processes. Especially, Klingelberg P150 Precision Measuring Center can measure up to  $\Phi 1800$  and module 1~32.





## -Integrating Sensing Technology and IT to Open Up New Possibilities

There are two intriguing possibilities for all of our gears. One is the inherent potential of the gear itself, and the other is the comprehensive potential of gear systems. To optimize both of these, we apply system control technology with minute sensors and super-precise gear manufacturing technologies. The focus for industry in the coming years will be energy efficiency and environmental countermeasures. By combining Nippon Gear's sensing technologies with IT, we are opening up a new market for minute sensors that help to improve the environment. Additionally, we are pursuing research and development into more efficient and compact reducers that will further improve energy efficiency and lower operating costs.



## -Fully Compliant with ISO9001 Standards

Nippon Gear received ISO9001 certification in 1994, by meeting all of the conditions of these international quality assurance standards. In the same spirit, we remain committed to serving industry, society, and the environment by offering products of the highest quality long into the future.





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Corporate Profile

[www.nippon-gear.jp](http://www.nippon-gear.jp)

**Head Office and Factory:**

2F, Keihanshin Toranomom building,  
1-7-14, Nishi-Shinbashi,  
Minato-ku, Tokyo, 105-0003, Japan  
TEL : +81-3-6363-3165 FAX : +81-3-6363-3168

**Factory:**

7 Kirihara-cho, Fujisawa-shi, Kanagawa-ken  
252-0811 Japan  
Tel: +81-466-45-2111 Fax: +81-466-45-3370