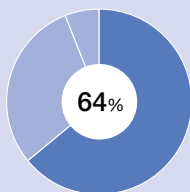


At a Glance

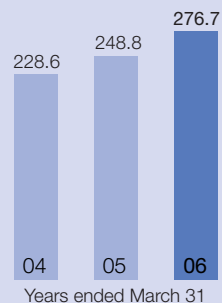
In April 2006, NTN launched a program to expand its divisional headquarters system to strengthen Group management. To control each division's operations on a global scale and improve production efficiency, we have widened the scope of application of the system to the constant-velocity joint business, the axle unit business, and the bearings business. These new units join the existing units devoted to precision equipment and fluid dynamic bearings. We aim to raise the reputation of the NTN brand still further by ensuring that our products and services are always of the very highest quality.

Bearings

Net sales share



Net sales (Billions of yen)

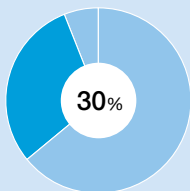


Bearings are NTN's principal business, accounting for 64% of consolidated sales. Currently, NTN bearings have a 27%* share of Japan's market and 8%* of the global market.

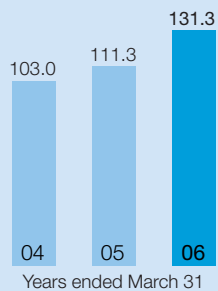
NTN began international expansion of its sales offices in the 1960s and followed with the development of a global manufacturing network a decade later. Today, NTN is using its expertise as a leading bearing manufacturer to create new value-added products and services to meet the needs of customers in a wide range of industries. NTN serves the core automotive industry as well as the machinery, semiconductor,

Constant-velocity Joints

Net sales share



Net sales (Billions of yen)

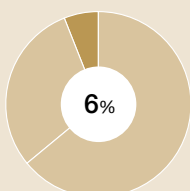


A strategic product with strong growth potential, constant-velocity joints (CVJs) currently generate 30% of consolidated sales. NTN currently holds 39%* of Japan's market and 21%* of the global market.

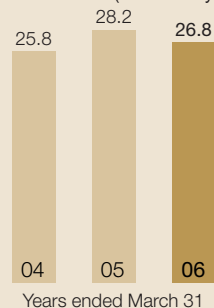
Starting CVJ production in Japan in 1963, the cumulative production of our CVJs surpassed 300 million units in 2003, NTN's 40th year. Aggressively expanding production worldwide in the 1990s, today NTN has a strong base of operations to respond to the global sourcing needs of the automotive industry, major customers for CVJs.

Precision Equipment and Other Products

Net sales share



Net sales (Billions of yen)



Accounting for 6% of consolidated net sales, the precision equipment business segment combines leading-edge technology products and products for special fields. Using highly sophisticated mechatronic technologies developed over the years, NTN supplies products with special features to this market.

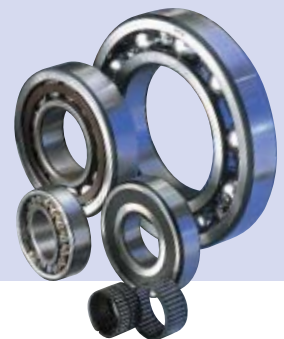
We provide the IT industry with a range of mechatronic products, including our liquid crystal display (LCD) repair devices, which efficiently repair defects in LCDs. Our parts feeders automatically align various parts and feed them into

medical, biotechnology and IT industries. In particular, demand is growing sharply for its fluid dynamic bearings, which are used in hard disk drives (HDDs). Manufactured from a sintered alloy developed by NTN using proprietary technology, these fluid dynamic bearings are regarded highly by the market. (see p. 21)
(*NTN Estimation)



Major products

- Ball bearings
- Roller bearings
- Axle bearings
- Bearing units
- Large bearings
- Precision bearings
- Fluid dynamic bearings
- Sliding bearings
- Other bearings



These operations are supported by a trilateral development system covering the three key regions of Japan, the Americas and Europe. A production and sales system encompassing these three regions as well as China and other parts of Asia has also been formed.

Based on technological expertise developed over the years, NTN has established a solid reputation as a leader in the CVJ sector.
(*NTN Estimation)



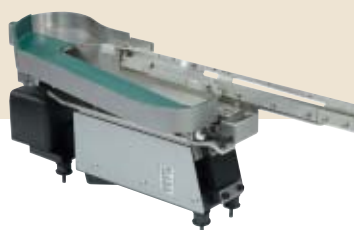
Major products

- Automotive CVJs
- (for halfshafts, propeller shafts and steering shafts)
- CVJs for industrial machinery



production machinery. Of particular note is our surface mounted device (SMD) feeder, which enables high-speed alignment and feeding during the production process for microchips in mobile phones and other devices.

We supply the automobile industry with a variety of products, such as auto-tensioners, which automatically adjust the tension of the timing belt for engines. In addition, we offer a diverse lineup of clutch units, including mechanical clutch units (MCUs), which enable vehicles to be shifted easily and quickly between different drive-train systems.



Major products

- LCD repair devices
- PDP rib barrier defect repair system
- Parts feeders
- XY tables
- Magnetic-bearing spindles

- Auto-tensioners
- Engineering plastics parts
- Machines, apparatus and other



Bearings

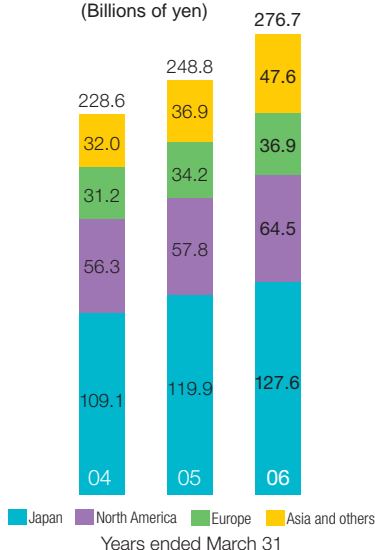
Further improvements in product quality and cost competitiveness



Review of Operations

During the fiscal year under review, bearing sales rose ¥27.9 billion, or 11.2%, to ¥276.7 billion (US\$2,355 million). Although the depreciation of the yen had a negative impact on yen-denominated sales, the contribution of new orders from the automobile industry and strong sales of axle bearings in Japan and North America and of needle bearings in North America, Asia and other regions supported overall high sales.

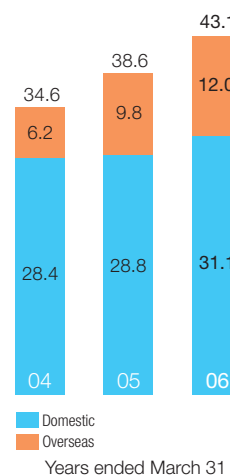
Total bearing sales
(Billions of yen)



Axle bearing sales
(Billions of yen)



Needle bearing sales
(Billions of yen)



We have assigned application managers who focus on individual industries, such as construction machinery, machine tools, or rolling stock. These industry-specific application managers are responsible for operations within their designated industries across the whole world, and enable us to develop our businesses on a global scale.

In Japan, sales of large bearings and precision bearings increased, thanks to the activities of application managers. Sales also increased for automobile-use bearings such as axle and needle bearings. As a result, domestic sales climbed ¥7.8 billion, or 6.5%, to ¥127.6 billion. From the current term, the Company will work to expand sales of large bearings, precision bearings

and tapered roller bearings—all products for which demand is expected to grow. Under its new “MONOZUKURI” approach, the Company will further improve product quality and strengthen its cost competitiveness.

In North America, in addition to favorable sales to the automotive industry, sales of bearings for general industrial machinery such as construction and agricultural machinery increased. Consequently, sales of bearings in North America rose ¥6.7 billion, or 11.6%, to ¥64.5 billion. Looking ahead, the Company will implement measures to expand sales of bearings for general industrial machinery, such as construction machinery, while keeping an eye on fluctuations in demand for tapered roller bearings and axle bearings for automobiles.

In Europe, sales growth was supported by strong sales of bearings to the automotive industry, and by growth in sales of large bearings to the wind power generation industry. Sales increased ¥2.6

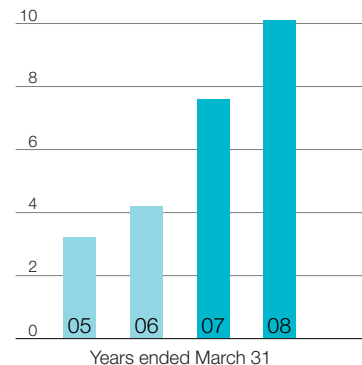
billion, or 7.7%, to ¥36.9 billion. In July of this year we concluded an agreement with French automobile manufacturer Renault, under which we will carry out a phased acquisition of SNR Roulements (a global bearing manufacturer and a wholly-owned subsidiary of Renault). From the current term onward, we will be further stepping up the pace of business development via strategic alliances.

In Asia and other areas, sales of fluid dynamic bearings for hard disk drive motors and bearings for office equipment in China were favorable. As a result, Asian regional sales grew ¥10.8 billion, or 29.2%, to ¥47.6 billion. In response to growing demand for fluid dynamic bearings, NTN-Nidec (Zhejiang) Corporation in China and the newly established NTN Nidec (Thailand) Co., Ltd. in Thailand will increase sales of fluid dynamic bearings.

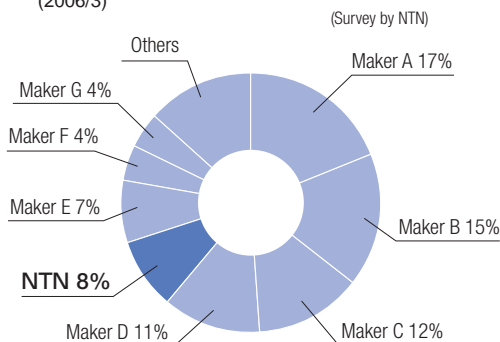


NTN-Nidec (Thailand) Co., Ltd.

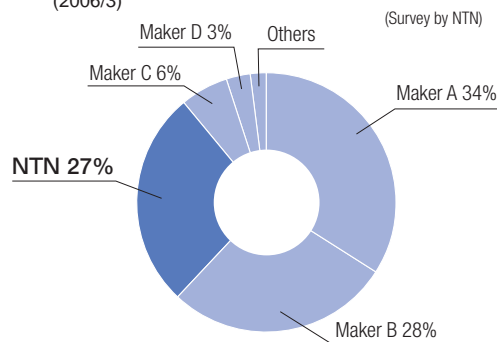
Fluid dynamic bearing sales
(Billions of yen)



Our share of the global bearing market
(2006/3)



Our share of the Japanese bearing market
(2006/3)



Business Description

What are bearings?

Precision components used in the rotating parts of various machines

Bearings are key components that enable rotating mechanical parts to rotate smoothly and efficiently. As most people rarely see bearings in action in their day-to-day lives, it is generally only machinery designers and engineers who consider their importance. Nevertheless, did you know that these inconspicuous parts are the product of extremely high-level technology and equipment, and that they are essential to support our modern day machine-based civilization? The roundness of bearings is now so precise that it has reached the nanometer level (one millionth of a millimeter or less). Whereas the steel balls used in ball bearings and pachinko (*) balls may look almost identical at a glance, they are actually very different. If you were to enlarge these two types of balls to the size of the earth, a pachinko ball would have lumps and bumps the size of Mount Fuji (3,776 m) on its surface.

The unevenness on the surface of a ball bearing on the other hand would be no higher than the 65-meter building for example.

* Japanese game loosely resembling pinball

Essential products for the entire world

Bearings are international products based on uniform standards set out by the International Standards Organization (ISO). Through exports and overseas production, bearings contribute to people's lives and industrial development the world over.

Environmentally friendly products

Bearings help conserve energy in a major way. Specifically, by substantially reducing friction on rotating parts, bearings make it possible to transmit power and energy without loss. Cars for instance use more than 100 bearings each. If they didn't use bearings, they would use up an additional 500,000 kiloliters (over two million gallons) of gasoline a year.

NTN's bearings business

NTN manufactures and sells a wide range of bearings, with axle bearings and needle roller bearings in particular positioned as core strategic products. We focus our business resources on products that use superior technology and offer high profit margins.



Axle Bearings

Key Data

Sales contribution	Consolidated sales: ¥38.5 billion (up 19.2% YoY) Consolidated net sales contribution: 8.9% Proportion of overseas sales: 60.5%
Users	Automotive industry
Production bases	Japan: NTN (Okayama Works) North America: American NTN Bearing Mfg. Corp. (Elgin Plant) NTK Precision Axle Corp. Asahi Forge of America Corp. Germany: NTN Kugellagerfabrik (Deutschland) G.m.b.H. France: SNR Roulements Thailand: NTN Manufacturing (Thailand) Co., Ltd. China: Shanghai NTN Corp. Changzhou NTN-Guangyang Corp.
Market shares	Japan: 26% Global: 12%
Strengths	NTN is a manufacturer of both axle bearings and CVJs. Leveraging this technological advantage, we have developed GEN4 hub joints and lead the industry in modularization.

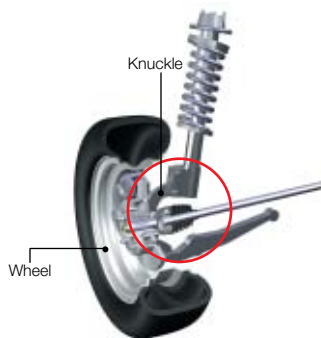
Hub Bearings and NTN

Attached to the wheels of automobiles, a hub bearing enables the wheels to turn while also bearing the weight of the vehicle body. Although extremely basic, the hub bearing plays an essential role in vehicle movement.

Modularization of hub bearings has progressed from the first to the third generation, achieving lighter and more compact products through reduction in the number of components. At the same time, modularization has also been introduced into the production process, allowing the same production line to be easily switched from one model to another.

In addition to having a complete lineup of all types of hub bearings, from first generation to third generation, the Company has set up a global supply network by establishing production bases in Japan, the United States, Europe and Asia, including China. Through this network, NTN supplies hub bearings to the world's major automotive companies. The Company has developed a

fourth-generation hubjoint by combining third-generation hub bearings with CVJs in one unit. This unique NTN product, which offers reduced weight and greater compactness than previous models, has been made possible by the Company's command over hub bearing and CVJ manufacturing technologies. It has already attracted the attention of vehicle manufacturers, and is expected to become the global standard for automotive drivetrains.



A hub bearing installed on a wheel



GEN 1 GEN 2 GEN 3



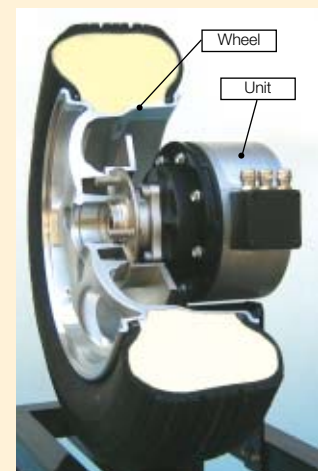
GEN 4
Unifying third generation hub bearings with CVJs to achieve a lightweight and compact product

New Product

In-Wheel Motor Axle Unit

In light of environmental issues, there has been accelerated development of technology such as fuel cells and electric vehicles in recent years. One of the drive systems used in electric vehicles, including fuel cell vehicles, is structured around in-wheel motors built into each individual wheel. Advantages of the in-wheel system over systems whereby a motor is fitted into the body of the vehicle include outstanding space utility (due to the fact that it is easy to secure space inside vehicles) and improved vehicle stability (due to the fact that it is possible to control drive power to each wheel individually). On the other hand, such systems still need to be made more lightweight to resolve outstanding issues such as reduced drivability and comfort resulting from increased unsprung (suspension) weight.

NTN has recently developed an in-wheel motor axle unit that provides a high reduction ratio with a single row of bearings. In addition to using a high-efficiency cycloid differential reduction mechanism to reduce the weight of speed reduction units, it also features a compact axial-gap type permanent magnetic synchronous motor. By incorporating such speed reduction units and motors into a single unit (alongside NTN's core hub bearing products) and employing optimum design, we have successfully developed an in-wheel motor axle unit that is compact, lightweight and highly efficient.



New Product

High-load-bearing tapered roller hub bearing units for SUVs

Conventional automobiles utilize hub bearings containing steel balls as the rolling element, but the heavier pickup trucks, SUVs and similar vehicles require the use of cone-shaped tapered roller hub bearings, which have greater stiffness and a higher load-bearing capacity. Compared with the hub bearings used in ordinary cars, the tapered roller hub bearings employed in pickups and SUVs must cope with heavier radial loads. Moreover, reduction in the amount of maintenance work required on the vehicles has recently become a focal issue. To meet the demand for longer working lives for tapered roller bearings these days, improvements in conventional materials and the upgrading of heat-processing methods are insufficient to meet the required specifications of the components.

At NTN, we have implemented radical changes to the design of internal bearing components to shrink the distance between the bearing retainer cage (in which the gap between each tapered roller is standardized as far as possible) to the absolute minimum, thereby minimizing the bearing clearance and allowing us to increase the number of roller bearings to the limit without any attendant falloff in the strength of the bearing retainer cage. These innovative specifications enable us to produce roller bearings with a 20% longer working life and 7% higher stiffness with no change in the size of the bearings.



Needle Roller Bearings



Needle Roller Bearings and NTN

Needle roller bearings have relatively small diameter cylindrical, needle-like rolling elements. The outstanding feature of needle roller bearings is their high load-bearing capacity and rigidity relative to size. Needle roller bearings enable compact and lightweight designs for customers. Because of these special features, needle roller bearings are used in many applications for

automobile transmissions and other parts where there are space conservation or high load-bearing capacity requirements.

NTN commenced production of needle roller bearings in 1962. Having operated as a compact unit encompassing production,

Key Data

Sales contribution	Consolidated sales: ¥43.1 billion (up 11.6% YoY) Consolidated net sales contribution: 9.9% Proportion of overseas sales: 27.9%
Users	70%: Automotive industry 30%: Industrial machinery
Production bases	Japan: NTN (Iwata Works) NTN Mikumo Company Ltd. NTN Kamiina Corp. NTN Omaezaki Corp. NTN Mie Corp. North America: NTN-BCA Corp. (Lititz Plant) Thailand: NTN Manufacturing (Thailand) Co., Ltd. China: Shanghai NTN Corp. Changzhou NTN-Guangyang Corp. Taiwan: Tung Pei Industrial Co., Ltd.
Market shares	Japan: 41% Global: 15%
Strengths	<ul style="list-style-type: none"> • In-house manufacture of needle bearings, a structural component, makes NTN highly cost competitive. • The Company's wide array of needle roller bearing products find application in a diverse range of products, from automobiles to industrial machinery.

sales and technology, these operations have the full trust of their customers. NTN manufactures its own needle rollers and specializes in press-processed cages. Against the backdrop of this cost competitiveness and its strong technology, NTN has actively been developing a network of overseas production bases: Thailand in 1999, the United States in 2000 and China in July 2003.

Establishment of a new Japanese roller production company (Nagano Prefecture)

With a view to increasing production of CVJs and various types of bearing rollers and cutting costs, in December 2005 we established a new company called NTN Kamiina Corporation on a site adjacent to our NTN Nagano Works. We commenced production in January 2006 and expect to reach sales of approximately ¥7 billion by fiscal 2008 using a new plant currently under construction. This will help expand

our sales thanks to world-leading quality and cost competitiveness.



NTN Kamiina Corporation

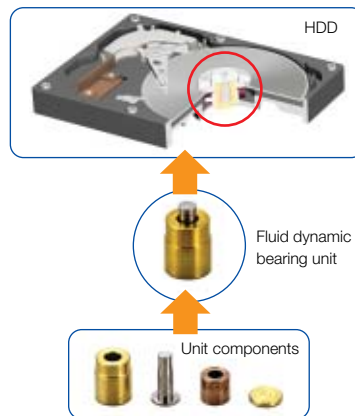
Fluid Dynamic Bearings

What Are Fluid Dynamic Bearings?

Personal computers, digital video cameras, mobile devices, car navigation systems and mobile phones are becoming convenient tools that we cannot do without in our lives. The hard disk drives (HDDs) in these devices require not only an increased memory capacity, but also extremely high-precision rotation in some parts of their motors. Fluid dynamic bearings have superior rotation precision and quietness compared with conventional ball bearings. Leveraging these advantages, they are expected to become the mainstream bearings used in hard disk drive motors.

Special Features of NTN Fluid Dynamic Bearings

The use of oil-impregnated sintered bearings (which contain lubricating oil within the actual bearing) in NTN fluid dynamic bearing units eliminates the occurrence of sudden failure in hard disk motors. Consequently, hard disk drive systems using these bearings do not exhibit any loss of data as do systems using the solid bearings of competitors. An additional advantage of NTN fluid dynamic bearing units is their cost competitiveness—the result of volume production made possible by a superior press manufacturing system.

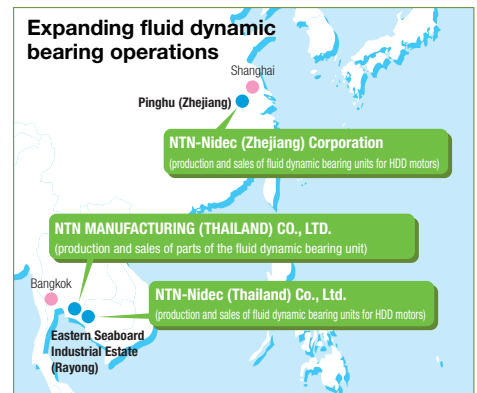


Expansion of Fluid Dynamic Bearing Business

NTN began producing these increasingly popular fluid dynamic bearing units for HDD motors in March 2003, and cumulative production has already exceeded 70 million units. NTN's production bases are NTN-Nidec (Zhejiang) Corporation, established in 2002, and owned 60% by NTN and 40% by Nidec Corporation, in China and NTN Manufacturing (Thailand) Co., Ltd. (NMT), a wholly-owned NTN subsidiary that makes sintered alloy hydrodynamic bearings, the core part of the fluid dynamic bearing unit. In 2004, NMT added a new plant, and has the capacity to produce a full-line of fluid dynamic bearing units, from standard

products for the 3.5-inch HDD to products for the 1-inch HDD, the production of which started recently. NTN is preparing for mass production of these parts, including parts for the 0.85-inch HDD, the world's smallest.

In November 2005, we also established a new company called NTN-Nidec (Thailand) Corporation (NNTC) owned 60% by NTN and 40% by Nidec. With HDDs becoming increasingly commonplace in Thailand and in markets throughout the ASEAN region, we are now able to fully assemble fluid dynamic bearing units in both China and Thailand using sintered alloy hydrodynamic bearings manufactured by NMT. We began operations in June 2006 and plan to increase production from 3 million units per month in 2006 to 6 million units per month by 2008.



Constant-velocity Joints

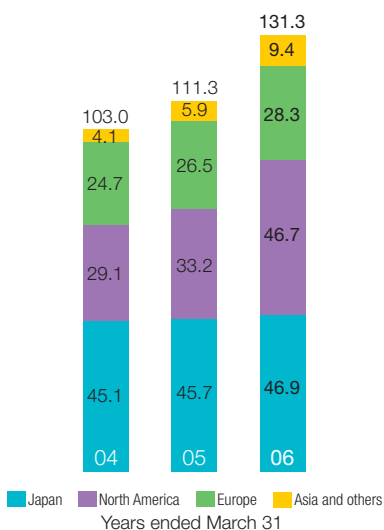
Expanding sales globally to achieve the world's top ranking



Review of Operations

Sales grew for constant-velocity joints (CVJs) for propeller shafts and other applications. Sales in North America were assisted by strong sales to Japanese automobile manufacturers there. Consequently, CVJ sales rose ¥131.3 billion (US\$1,118 million), up ¥20 billion or 18% from the previous term.

Constant-velocity Joints sales (Billions of yen)



In Japan, although competition intensified and sales prices declined, the launch of new car models contributed to a growth in sales. As a result, sales grew by ¥1.2 billion, or 2.7% from the previous term, to ¥46.9 billion yen. We are working to expand sales to meet the growing demand for the E series (lightweight and compact type) and other new products for use in CVJs for propeller shafts. In July of this year we established NTN Fukuroi Corporation, which is now our third manufacturing base in Japan. This development is certain to significantly raise NTN's competitiveness in the market for constant-velocity joints.



NTN Fukuroi Corporation (Japan) (Architectural drawing)

Sales in North America grew as a result of a surge in new orders from Japanese and

U.S. automobile manufacturers, climbing ¥13.5 billion, or 40.5%, to ¥46.7 billion. From the current term, we will focus on strengthening profitability and responding with flexibility to the rapidly growing demand.

European sales were given a boost by strong demand from Japanese automobile manufacturers, rising ¥1.7 billion, or 6.6%, to ¥28.3 billion. NTN continues to plan even more detailed sales activities in Europe based on its account manager system. In April 2006, the Company took an equity stake in the CVJ manufacturing company of the IFA group, which maintains a strong business relationship with the Volkswagen group. We will work to generate synergies with IFA and accelerate the expansion of our CVJ business activities in Europe.



IFA-AT (Germany)

Asian sales jumped ¥3.6 billion, or 61.1%, to ¥9.4 billion because of the start up of new production to fill orders from China, Malaysia and South Korea. In the current term, we are expanding production capacity at existing production bases, specifically NTN Manufacturing (Thailand) and Guangzhou NTN-Yulon Drivetrain Co., Ltd. We also will begin production at our

new subsidiary in India, NTN Manufacturing India Private Limited. In this way, we are working to provide a continuous response to the growing demand in Southeast Asia, China and South Korea.



NTN Manufacturing India Private Limited
(Architectural drawing)

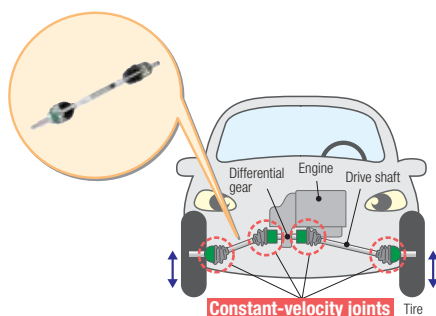
Business Description

What Are Constant-velocity Joints (CVJs)?

The function performed by CVJs inside vehicles

Although torque is transmitted from the engine to the tires via the drive shaft, it is difficult to ensure that it is transmitted smoothly due to differences in the elevation of the differential gears and the tires, the effects of steering on the tires and the fact that there is constant vertical movement from factors such as uneven road surfaces. CVJs however are designed to move in the same way as human joints, combining flexibility and smoothness, and therefore make it possible to transmit torque smoothly. CVJs are core components essential to industrial development, and are widely used in drive shafts for vehicles and a range of industrial machinery.

Constant-velocity joints in a vehicle



Key Data

Sales contribution	Consolidated sales: ¥131.3 billion (up 18.0% YoY) Consolidated net sales contribution: 30% Proportion of overseas sales: 64%
Users	Automotive industry (Industrial machinery: less than 1%)
Production bases	Japan: NTN (Iwata and Okayama works) NTN Fukuroi Corp. Hikari Seiki Industry Co., Ltd. North America: NTN Driveshaft, Inc. NTK Precision Axle Corp. France: NTN Transmissions Europe Germany: IFA-Antriebstechnik GmbH Thailand: NTN Manufacturing (Thailand) Co., Ltd. Taiwan: Taiway Ltd. Australia: Unidrive Pty. Ltd. China: Shanghai NTN Corp. Guangzhou NTN-Yulon Drivetrain Co., Ltd. Beijing NTN-Seohan Driveshaft Co., Ltd. India: NTN Manufacturing India Private Ltd.
Market shares	Japan: 41% Global: 22%
Strengths	Proprietary technology allows NTN to stay one step ahead of its competitors in offering a lineup of lightweight, compact and low-vibration products.

CVJs and NTN

NTN brought fixed CVJs to market in 1963, first in Japan, and followed up by adding the DOJ, TJ and other plunging CVJs to its lineup. Attaching fixed and plunging CVJs to a drive shaft, the Company started supplying these products to automotive manufacturers that were making front-wheel drive vehicles.

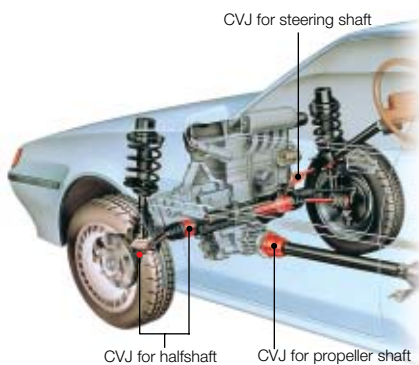
Taking advantage of the oil shock in 1973, sales of front-wheel drive vehicles

began to climb because of their fuel efficiency. Production of CVJs leaped. Furthermore, automotive manufacturers increased their use of CVJs in halfshafts for rear-wheel drive and in propeller shafts for 4WD vehicles to improve the ride. As CVJ demand expands, NTN is proceeding with global business development by setting up a network of production bases covering Japan, United States, Europe and Asia, including China.

In recent years, there has been strong demand for developments that will reduce environmental impact, lighten component weight (contributing to greater automobile design freedom), achieve greater compactness and improve noise, vibration

and harshness (NVH). Because the function and quality of CVJs directly and indirectly affect the functioning of automobiles, we have stayed at the forefront of trends in automobile technology and have carried out a variety of specific improvements. NTN's E

series or CSJ (lightweight and compact type) and PTJ or EPTJ (ultra-low vibration type) fully address these requirements. Their reputation for improved function is well-known among our customers.



1. CVJs for halfshaft

Lightweight and Compact E Series

The EBJ developed by NTN uses smaller balls, but has eight balls compared with the conventional six-ball BJ. This design enables the EBJ to maintain the same load-bearing capabilities as conventional products while being lighter and more compact. Compared with conventional BJs, it is 15% lighter, has a 7% smaller outer circumference, and a 30% higher torque transmission ratio.



EBJ

PTJ Offers Substantial Improvement in NVH (Noise, Vibration and Harshness)

Many NVH problems, such as automobile idling vibration and the horizontal vibration that occurs when the car first moves forward result from slide resistance and the induced thrust of the plunging CVJ on the gearbox side. The pillow journal tripod joint (PTJ) improves on the conventional induced-thrust-resistant product, the double roller

type SFJ, by improving the contact conditions of the inner parts and stabilizing the position of the roller cassette to achieve a significant reduction in friction. In addition, the PTJ is 15% to 20% lighter than the SFJ. Moreover, the high efficiency pillow journal tripod joint (EPTJ) further reduces the outer diameter of the outer race by about 4% and is approximately 8% lighter. These two new products have further expanded NTN's lightweight, compact, high-performance E series lineup.



EPTJ

2. CVJ for steering shaft

Meeting Diverse Automobile Needs with Compact, Large-Angle CVJs (CSJs) for Steering Systems

NTN has developed a new product in response to the special layout requirements for steering systems in sports utility vehicles (SUVs) and mini-vans that have limited space for steering systems due to their short noses. The Company has developed a large-angle, compact and lightweight ball-type CSJ for steering systems. Compared with a double cardan joint, the CSJ is 50% smaller and lighter. In addition, thanks to the optimal design of the ball rolling race, the CSJ can achieve a maximum operating angle of 48 degrees.



CSJ

3. CVJs for propeller shaft

CVJs for propeller shafts are components used in propeller shafts (front-to-rear axles, transmission, etc.) for the likes of four-wheel drive and IRS (independent rear suspension) vehicles. They are increasingly being used instead of conventional non-constant velocity cross joints (CJs) to make vehicles quieter and more comfortable.

We at NTN have developed and are now mass producing a high speed series of CVJs for propeller shafts (HEBJ/HLJ/HEDJ/HETJ) that are more efficient, lighter and more compact than conventional mass-produced CVJs and offer superior rotation performance at high speeds, whilst also maintaining the same load-bearing capabilities and durability.

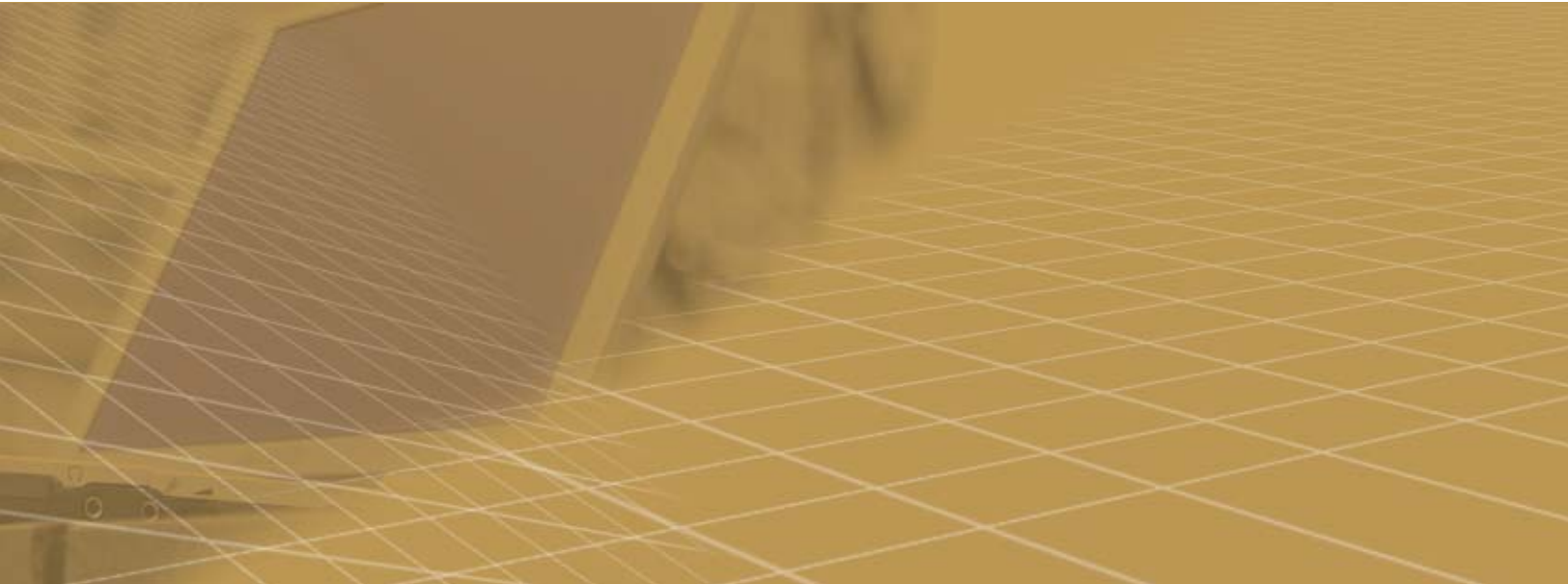
We also use lead-free grease (designed especially for propeller shafts) on our CVJs and use hexavalent chromium-free materials on parts that require surface treatment, to help protect the environment.



CVJs for propeller shafts

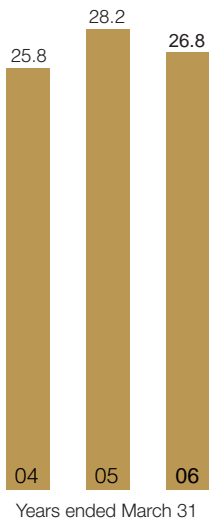
Precision Equipment and Other Products

Continuously developing products that meet user needs



Review of Operations

Precision equipment and other products sales
(Billions of yen)



Among precision equipment and other products, sales were strong for parts feeders and other equipment for the automobile manufacturing industry. In contrast, sales declined for liquid crystal display (LCD) repair and plasma display panel (PDP) rib barrier repair systems for mechatronic products in the digital electronics industry. Consequently, sales in the precision equipment business segment fell ¥1.4 billion, a 5.0% decline, to ¥26.8 billion (US\$228 million).



Mono-ring CVT

NTN has been expanding its product lineup, primarily targeting the repair field for flat panel displays. We have launched, in succession, a rib barrier defect repair system for plasma display panel (PDP) substrates, a multi-repair system for liquid crystal color filters and a color filter repair system that can conduct quick and high-grade repairs on the defective parts of liquid crystal color filters in response to the move toward large-size flat panel displays with higher levels of definition). We are working on new products that anticipate future trends, such as a mono-ring CVT (continuously variable transmission), featuring a simple structure and a high efficiency rate, for use as the CVT in automobiles. We are also developing a dual-directional parts supply (parts feeder) system, named, “the monodrive, two-way feeder.”

MONOZUKURI Manufacturing “Parts Prize”

In April 2006, our “monodrive, two-way feeder” was awarded the (Manufacturing) Parts Prize by the Nikkan Kogyo Shinbun, a publisher of a business newspaper in Japan. In the case of our monodrive, two-way feeder, a single linear feeder vibrates the transfer chute in two directions (the alignment/supply side and the return side). The use of a single driver does away with the need to use a feeder bowl. As a result, our model takes up considerably less space than conventional models. In this way, we have succeeded in creating a product that is more compact and more lightweight than conventional feeders. It is also energy-saving and allows for other cost-savings. This prize, which customarily is awarded to parts that play an important supporting role behind-the-scenes, focuses on products that are low-cost but also high-quality. Considering that the crafting of parts is the source our competitiveness, we feel that NTN, as a parts maker, fully deserved this prize.



Plaque of merit



Monodrive two-way feeder

Business Description

NTN's Precision Equipment

The Company continues to successfully introduce new products in a timely fashion to the expanding liquid crystal and plasma display markets. Recent examples include the world's first system for repairing rib barrier defects in plasma display panels and the world's first system that can repair three types of defects in color filters for LCDs with one piece of equipment. In the future, the Company will increase sales, especially to LCD manufacturers in Taiwan and Korea.

NTN also boasts a wide lineup of clutch products for everything from office equipment to automobiles. Because of the Company's recent focus on developing clutch systems for automobiles, sales of

clutches have steadily grown. For mechatronic products and other precision equipment supplied to the semiconductor, LCD, electronic devices and other industries, NTN set up a separate division in April 2002 to adapt flexibly to the rapid technological innovation and fluctuating production levels of these major customers.

In addition to all this, we have also introduced technology such as parts feeders to enable the transportation of different parts within the manufacturing process. We have created solidification systems to enable substances such as steel dust and grinding swarf to be recycled, thereby making products more environmentally friendly. We

intend to emphasize NTN's unrivalled and unique technology as we continue to accept orders in the future.



Rib barrier defect repair system



Multi-repair system

Key Data

Sales contribution	Consolidated sales: ¥26.8 billion (up 5.0% YoY) Consolidated net sales contribution: 6%
Strengths	<ul style="list-style-type: none"> • NTN is developing leading-edge technology businesses with its mechatronics products using proprietary technologies. • A diverse product lineup of clutches is available, ranging from office equipment to automobiles.

New Precision Products

Development of a high-speed, high-definition color filter repair system

As part of our efforts to develop products targeting the large-scale, high-definition flat panel display (FDP) repair market, we have developed a color filter repair system that is capable of repairing defective portions of liquid crystal color filters quickly and at high definition.

As conventional color filter repair systems that use repair coating are only equipped with one or two coating needles to carry out repairs, the needles need to be washed every time they are changed between the four colors (RGB and black), making the process extremely time consuming. Furthermore, due to the inability to fine-tune the volume of repair coating applied by the needles to ensure an even coating, the repaired portion can seep out into other portions in some cases when repairing a narrow area.

As the new system developed by NTN has dedicated needles and tanks for repair coating in each of the four colors, there is no need to wash the needles. The system is structured so that the needles are stored inside the coating tanks, meaning that it is also possible to reduce ink replenishment times thanks to the fact that the ends of the needles can be replenished merely by moving in and out of holes located at the base of the repair coating tanks. As a result, it is now possible to reduce repair time by 30% compared to conventional systems.

What is more, as it is possible to use specialized techniques to process the ends of the coating needles to control * the volume of coating based on the length of time the needles are in contact with color filter substrates, the system also eliminates seepage and improves the quality of the repairs.

* It is possible to control the volume of coating from a few picoliters (pl—one trillionth of a liter) to several dozen pl.

Development of a steel dust solidification system

Steel dust consists of fine particles produced by steel manufacturers as part of the manufacturing process. Up to now, the roughly 500,000 tons of steel dust generated by electric furnaces around the country every year have always been disposed of as industrial waste at landfill sites. However, bearing in mind the fact that steel dust is a raw material and issues relating to environmental impact and waste disposal costs, there has always been demand for an environmentally friendly yet inexpensive method of recycling.

In conjunction with Daiwa Steel Corporation, NTN has developed the world's first steel dust solidification system to turn steel dust into cylindrical briquettes using just carbon and water so that it can be reused in furnaces.

The introduction of this system will help eliminate emissions by reducing the volume of industrial steel dust waste generated by steel manufacturers to zero. It will also eliminate the need to add binder (hardening agents), which has always formed an essential part of recycling methods in the past. This will remove the costs previously required for the disposal of industrial waste.



High-speed, high-definition color filter repair system



Steel dust solidification system