

# Environmental and Social Activity Report 2018



Our Precision, Your Advantage

[www.kyb.co.jp](http://www.kyb.co.jp)



Contact

## KYB Corporation

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Considerations made for paper use



**Forest Neighborhood Association**  
Paper used for this printing is useful for the effective use of thinning and timber from forest thinning that revive forests.



**Use of FSC certified paper**  
We used paper made of timber from adequately managed forests.

Considerations made for printing



**Green Printing**  
Environmentally friendly printing materials and printing methods were used to produce this report.



**Use of Non-VOC ink**  
We used environmentally friendly 100% vegetable oil ink free from VOC (volatile organic compound).



**Waterless printing**  
We adopted waterless printing with organic materials that generate less waste.

## Top Message

### Introduction

Since its establishment in 1935, KYB has provided a variety of products based on vibration and power control technologies, which has also propelled the company to grow on a global scale as a comprehensive hydraulic device manufacturer. This would not have been possible without the generous understanding and enormous cooperation of all stakeholders. We would like to express our deep gratitude to them.

This fiscal year is the second year of the 2017 midterm plan, and it is time for us to solve the unresolved issues from the previous year as we leap towards further growth. KYB plans to return to the basics of manufacturing and construct a solid foundation for a giant leap forward. We appreciate your ongoing support as we work toward this goal.

### Looking back at fiscal year 2017

Looking back at the KYB group in fiscal 2017, which is the first year of the 2017 midterm plan, we achieved consolidated net sales of 392.3 billion yen exceeding the initial goal of 356.9 billion yen, thanks to the recovery of the Chinese market and the robust growth in the economies of the United States and emerging countries. Ordinary profits are also expected to exceed the planned value. We also accelerated efforts towards future growth through proactive

order winning activities and the construction of innovative manufacturing lines. On the other hand, the many challenges of a tight production capacity and fixed costs remained at a high level and remain unresolved.

In fiscal 2018, while positively overcoming the challenges from the previous fiscal year, we will steadily construct a management system capable of flexibly responding to a drastically changing external environment. In addition, we will develop a revenue base and unite as one as we work toward the achievement of the goal of the midterm plan.

### KYB Group initiatives for society/environment

In fiscal 2017, the KYB group experienced labor accidents and quality issues. We sincerely apologize to our shareholders for any concerns and inconveniences that we may have caused. Following these considerations, we will further strengthen our efforts for safety and quality in order to regain the lost trust. In terms of safety, we reorganized the organization by reflecting the idea of safety comes first, and in terms of quality, we declared quality management based on the idea of quality is the foundation of management and started the process of bad news first efforts. Outside the company, a series of incidents disrupting safety and

quality, which are the core of the trust in Japan's manufacturing, occurred. The KYB group, having reconfirmed that the base of the company's survival lies in the trust of society through incidents inside and outside the company, will promote the building of a healthy and faithful company culture through changes in the attitude of each employee.

In terms of preservation of the natural environment and with the goal of constructing plants that minimize waste and conserve energy, the KYB group is involved in environment development and energy visualization for partial energy sharing and the promotion of waste reduction and recycling.

I will be very pleased if KYB Group initiatives for society and the environment become better understood through this report so that we can continue receiving support from increasing numbers of stakeholders. I also look forward to receiving your comments on this report, and hope that you will express your frank opinions regarding the KYB Group.

With the core of hydraulic integrate vibration technologies, and to contribute to creation of an

technologies, we will control, power control systemization technologies enriched society.



Yasusuke Nakajima  
Representative Director and President Executive Officer  
KYB Corporation

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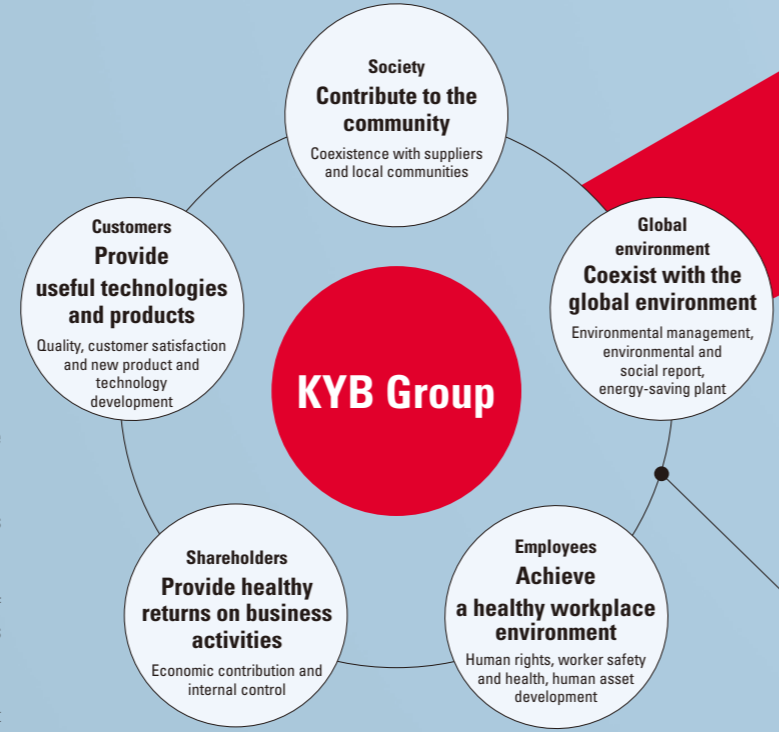
What KYB Aims to Be

# Our Precision, Your Advantage

The KYB Group aims to satisfy its stakeholders at a time of increasing focus on corporate social responsibility. Based on KYB's management philosophy, each employee will maintain an awareness of our responsibility as a business, and manifest that awareness through actions that will always comply with the law. We will moreover work to enhance our corporate value so that our company continues to be a trusted.



Relationship between the KYB Group and stakeholders



Management principles

The KYB Group contributes to society providing technologies and products make life safe and comfortable.

1. Challenge higher objectives and construct livelier corporate cultural climate.
2. Maintain grace and good faith, and pay attention to nature and the environment.
3. Always seek creative ideas and contribute to the progress of customers, shareholders, suppliers and society.

Management Vision

**Human Resources Development**  
To cultivate the talent to achieve the objectives with a thorough understanding of the principles and the strategy.

**Technology and Product Development**  
To provide products that are impressive, comfortable and reliable to customers throughout the world.

**Monozukuri (Japanese manufacturing expertise)**  
To make our plants enjoyable, dynamic places to work, and at the same time full of discipline based on the field priority doctrine, in order to produce products satisfactory to the customer.

**Management**  
Always keep social responsibilities of the corporation in mind and provide efficient group management.

行動指針

- |  |   |   |   |
|--|---|---|---|
| (1) Corporate ethics                     | (9) Relationship with stakeholders  | (17) Appropriate accounting and financial closing | (25) Creation of a worker-friendly work environment                             |
| (2) Compliance with laws and ordinances  | (10) Business with customers  | (18) Information disclosure                       | (26) Improvement of field capabilities through education and skills development |
| (3) Respect for human rights             | (11) Business with suppliers  | (19) Prohibition of insider trading               |   |
| (4) Respect for the rights of workers    | (12) Supply chain   | (20) Preservation of corporate secrets            |   |
| (5) Respect for corporate assets         | (13) Pursuit of new technology  | (21) Protection of personal information           |   |
| (6) Protection of intellectual property  | (14) Provision of safe products   | (22) Contribution to society                      |   |
| (7) Emphasis on benefits to the customer | (15) Participation in the activities of groups and industry organizations | (23) Preservation of the natural environment      |   |
| (8) Pursuit of optimum quality           | (16) Break from forces threatening society                                | (24) Safety and sanitationlabor                   |   |

Social Responsibility in the KYB Group

Through our business activities, the KYB Group aims to contribute to the development of our customers, shareholders, suppliers and society through the constant pursuit of creativity. Following our Corporate management philosophy and vision, units of the KYB Group incorporate CSR initiatives into their yearly action plans and put them into practice. They then follow up on these actions as part of an ongoing cycle of improvement and reform. Employees carry the KYB Group's Action Guidelines with them to deepen their awareness of the importance of CSR (Corporate social responsibilities).

**Vision** What the KYB brand can do for the world  
Monozukuri for human happiness

KYB's aim is to support the development of society through the joy of Monozukuri, and make people happier as a result.

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**Mission** The mission of KYB brand  
Monozukuri taken one step further

KYB will remain an enterprise able to bring value to our clients and markets thanks to the reliable technical expertise we have built up over the years. Through our own efforts, we take Monozukuri one step further to provide our clients with new value and greater satisfaction than they have ever known.

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**Value** Value made possible by the KYB brand  
Technology for comfortable living

Sensory value : comfortable living, the joy of Monozukuri  
Functional value : reliable quality

The value KYB promises its end users is a higher level of "comfortable living" that comes from creative technology and sincere product development.

The value KYB promises its clients is the "reliable quality" that comes from thinking of the end user as "our client".

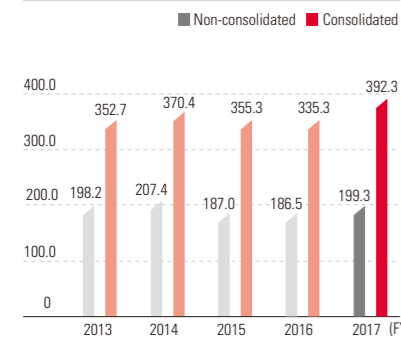
The value KYB promises each employee is "the joy of Monozukuri" that comes from knowing he or she is changing the world.

## Outline of KYB Group

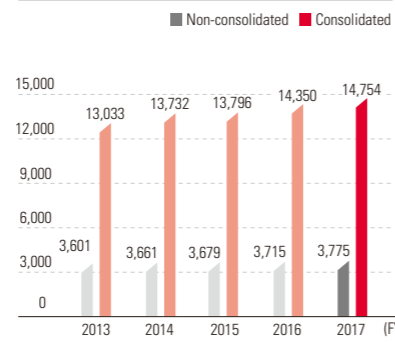
### Company overview

<b>Company Name</b>	KYB Corporation	<b>Plants</b>	Kumagaya, Sagami, Gifu North, Gifu South, Gifu East
<b>Founded</b>	Kayaba Research Center, November 19, 1919	<b>Laboratories</b>	Basic Technology R&D Center, Production Technology R&D Center Developmental Experiment Center Machine Tools Center Electronics Technology Center
<b>Established</b>	Kayaba Manufacturing Co., Ltd. March 10, 1935	<b>Number of Employees</b>	14,754 persons (As of the end of March 2018, consolidated) 3,775 persons (As of the end of March 2018, non-consolidated)
<b>Incorporated</b>	November 25, 1948 (KYB Corporation)		
<b>Head Office</b>	World Trade Center Bldg., 2-4-1, Hamamatsu-cho, Minato-ku, Tokyo 105-6111, Japan		
<b>Chief Representative</b>	Representative Director, President Yasusuke Nakajima		
<b>Capital</b>	27,647,600,000 yen (As of the end of March 2018)		

### Net sales (billion yen)



### Number of employees (persons)

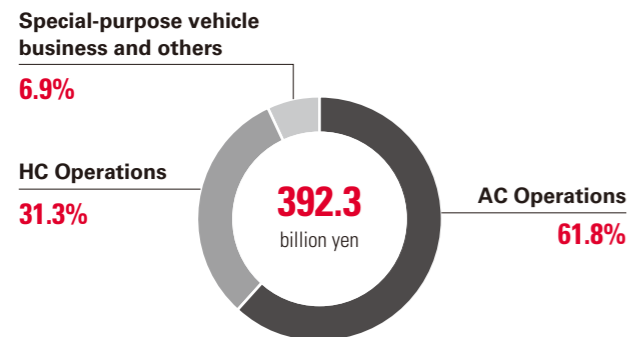


### Major Products

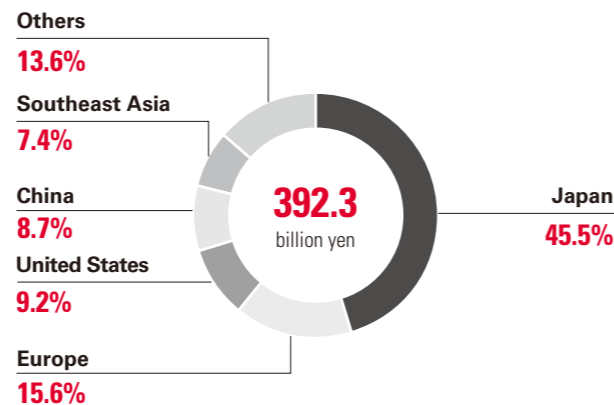
<b>AC (automotive components) operations</b>	Shock absorbers, suspension systems, power steering systems, vane pumps, front forks, oil-cushion units, stay dampers, free locks
<b>HC (hydraulic components) operations</b>	Cylinders, valves, oil dampers for railroad, collision bumpers, pumps, motors
<b>Special-purpose vehicles, Aircraft components, system products and electronic equipment</b>	Concrete mixer trucks, granule carriers, special-purpose vehicles, aircraft landing systems, aircraft pilot systems, aircraft control systems, aircraft emergency systems, simulators, hydraulic systems, auditorium and stage control systems, naval ship equipment, tunnel boring machines, environmental devices, earthquake-resistant and vibration insulation dampers, seismic isolation systems and vibration control dampers, electronic applications

\* AC business: abbreviation for Automotive Components Business, HC business: abbreviation for Hydraulic Components Business

### Net sales by business segment in fiscal 2017 (Consolidated)



### Net Sales by geographic region in fiscal 2017 (Consolidated)



\* For details on sales figures and applicable range, please refer to our financial reports. Major Products

### Affiliate companies in Japan

Kayaba System Machinery Co., Ltd.  
KYB Trondule Co., Ltd.  
KYB-YS Co., Ltd.  
KYB Kanayama Co., Ltd.  
KYB Motorcycle Suspension Co., Ltd.  
Towa Japan Corporation  
Takako Industries, Inc.



### KYB Group production bases



### Overseas affiliate companies

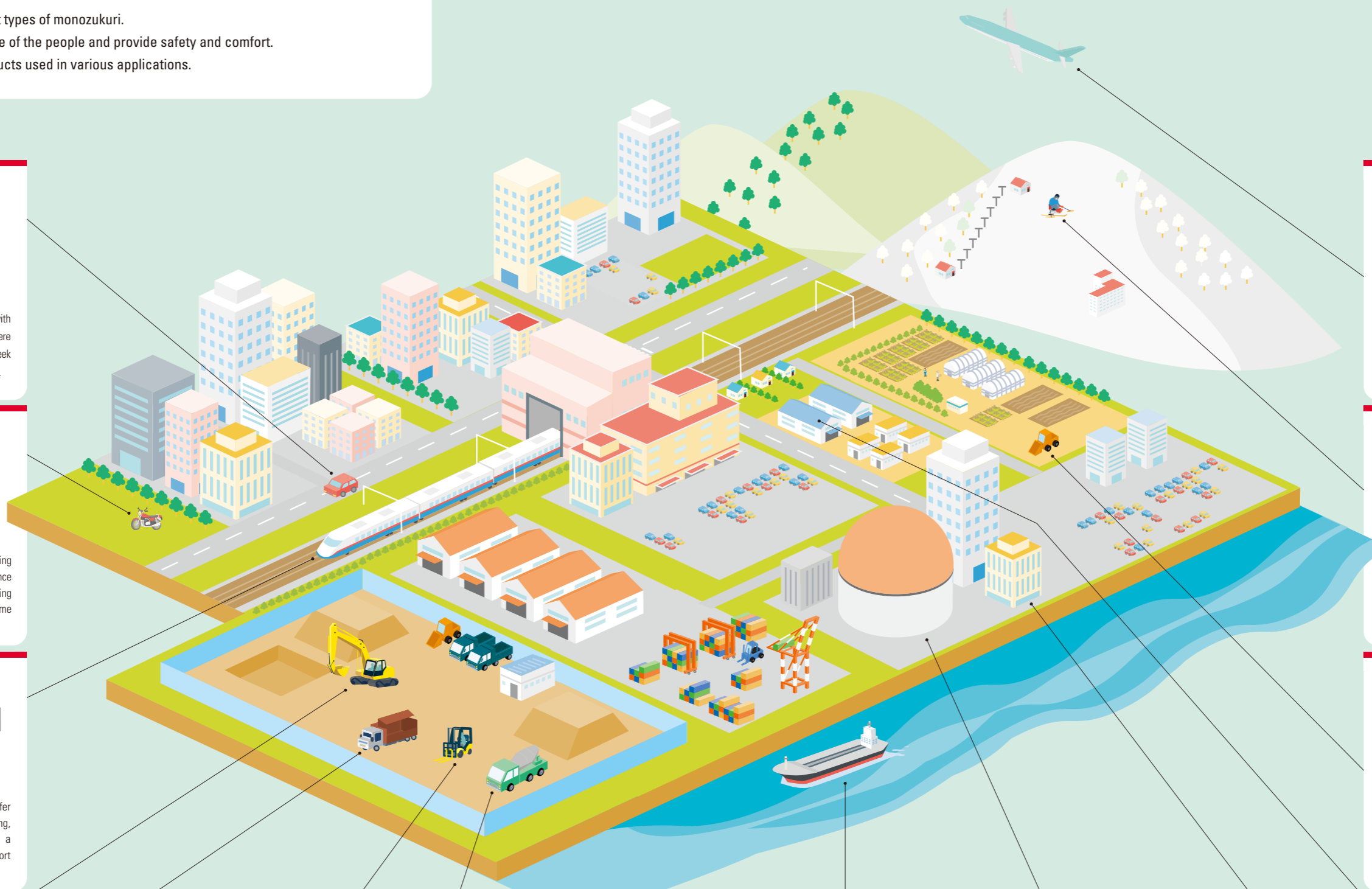
Americas	Asia	Europe
KAC: KYB Americas Corporation	KIMZ: KYB Industrial Machinery (Zhenjiang) Ltd.	KYBSE: KYB Suspensions Europe, S.A.U.
TAC: Takako America Co., Inc.	KWT: Wuxi KYB Top Absorber Co., Ltd.	KSS: KYB Steering Spain, S.A.
KMEX: KYB Mexico S.A. de C.V.	KLRC: Changzhou KYB Leadrun Vibration Reduction Technology Co., Ltd.	KAMS: KYB Advanced Manufacturing Spain, S.A.U.
KMB: KYB-Mando do Brasil Fabricante de Autopeças S.A.	CKMZ: CHITA KYB Manufacturing (Zhenjiang) co., Ltd.	KMCZ: KYB Manufacturing Czech s.r.o.
	HKE: 湖北恒凯德汽车电动转向系统有限公司	KCME: KYB CHITA Manufacturing Europe, s.r.o.
	KMT: KYB Manufacturing Taiwan Co., Ltd.	
	KST: KYB Steering (Thailand) Co., Ltd.	
	KYBT: KYB (Thailand) Co., Ltd.	
	KHMI: PT.KYB Hydraulics Manufacturing Indonesia	
		PT.KYBI: PT. Kayaba Indonesia
		PT. Chita: PT. Chita Indonesia
		KMV: KYB Manufacturing Vietnam Co., Ltd.
		TVC: Takako Vietnam Co., Ltd.
		KMSB: KYB-UMW Malaysia Sdn. Bhd.
		KSMZ: KYB-UMW Steering Malaysia Sdn. Bhd.
		KMSI: KYB Motorcyle Suspension India Pvt. Ltd.
		KCPL: KYB-Conmat Pvt. Ltd.

### History

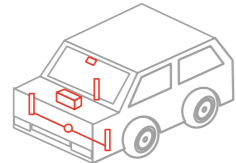
<b>1919</b>	Founded Kayaba Research Center	
<b>1927</b>	Established Kayaba Seisakusho	
<b>1935</b>	Established Kayaba Manufacturing Co., Ltd.	
<b>1948</b>	Incorporated Kayaba Industry Co., Ltd.	
<b>1959</b>	Company stock listed on the Tokyo Stock Exchange	
<b>1981</b>	Unified production system under KPS name	
<b>1985</b>	Changed trade name to Kayaba Industry Co., Ltd.	
<b>1992</b>	Set up the Environment and Safety Committee	
<b>1993</b>	Held first company-wide sports and culture interactive event	
<b>1998</b>	All KYB plants acquired ISO 9001 certification	
<b>1999</b>	Formulated the Corporate Guiding Principles	
<b>2001</b>	All KYB plants acquired ISO 14001 certification	
<b>2005</b>	Formulated new management principals and management vision Adopted "KYB" as a shared corporate name	
<b>2008</b>	Held company's first robot contest	
<b>2011</b>	Established Developmental Experiment Center, started operating test course	
<b>2015</b>	Changed trade name to KYB Corporation	

# KYB Here and There

KYB products support different types of monozukuri. They help with the everyday life of the people and provide safety and comfort. Listed below are the KYB products used in various applications.

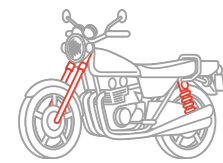


## 1 Automobiles



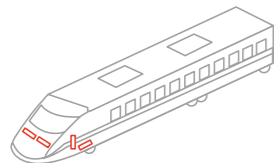
Whether it be for a comfortable drive with family or a motor sports scene with severe conditions, KYB automotive components seek a drivability level satisfactory for everyone.

## 2 Motorcycles



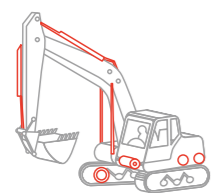
KYB strives for the highest level of driving stability and great driving performance with its motorcycle components by using race-proven technology built for extreme speed and stability.

## 3 Railroad Equipment



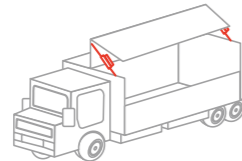
KYB railroad equipment works to buffer rolls from air pressure when cornering, passing oncoming trains, or entering a tunnel to achieve appropriate comfort levels at high speed travel.

## 4 Construction Machinery



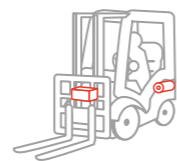
KYB components are widely used in construction machinery at the construction sites under severe conditions.

## 5 Industrial Machinery



KYB industrial machinery components, including opening/closing devices for trucks, are used to improve the environments of the plant, office, and home.

## 6 Industrial Vehicles



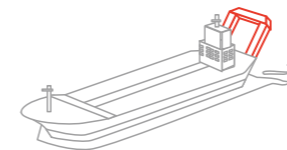
KYB demonstrates its hydraulic technology on forklifts and other industrial vehicles to provide the powerful support for improved operational efficiency.

## 7 Special-Purpose Vehicles



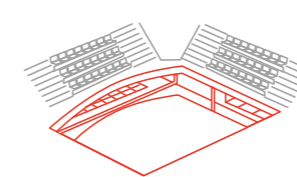
KYB special-purpose vehicles offer support for comfort in all living environments. KYB concrete mixer trucks hold the highest market share in Japan.

## 8 Marine Vessels



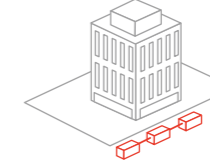
KYB hydraulic and tension control technologies add comfort to transport, supply, rescue and other work at sea for submarine explorers and mother ships.

## 9 Building and Stage Equipment



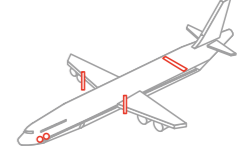
KYB technology provides stage performance spaces with rigging, acoustic reflectors, and other support equipment.

## 10 Seismic Isolation Dampers



Base isolation and seismic dampers utilizing KYB proprietary hydraulic technology hold the top share of the Japanese domestic market. In the spirit of extensive market-oriented production based on collaboration with our customers, KYB will protect safety.

## 14 Aircraft Components



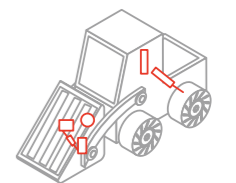
KYB provides a wide range of aircraft components meeting the high reliability standards demanded by the aerospace industry, including components for steering, landing, and hydraulic and pneumatic systems.

## 13 Sports, Environment, and Welfare



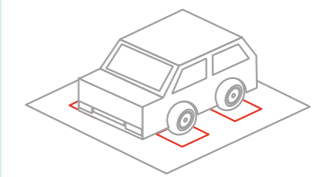
KYB core technologies are used to develop sports, environment, and welfare products.

## 12 Agricultural Machinery



KYB agricultural machinery components save space and energy for more efficient farming.

## 11 Testers



Our tester products are used in simulators to verify the durability and performance of parts and components.

# 2017 Action Highlights

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## New establishment of the Motor Sports Division



Race vehicle for WRX EKS

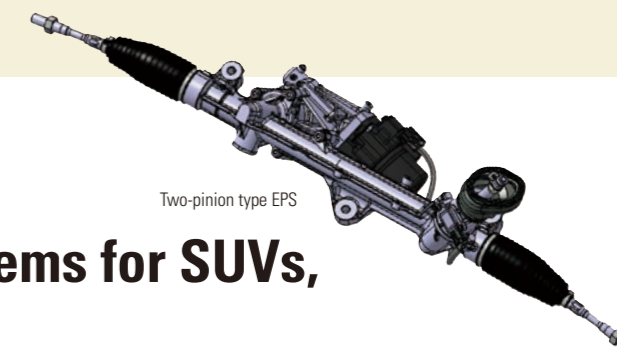


Race vehicle for Moto2 Class TECH3 Racing Team

To further enhance motor sports activities, we established the new Motor Sports Division on April 1, 2017. By integrating the activities for four-wheel shock absorbers, steering mechanisms, and two-wheel suspensions, we have provided products and technical support with the intention of taking part in the world's top categories in the World Rallycross Championship (WRX), World Endurance Championship (WEC), and MotoGP. In June 2017, we concluded a sponsorship support agreement with EKS, which has competed in the WRX. Through these activities, we promote weight reductions in conventional products and enhance product development capabilities and technical strengths in order to preserve the environment.



Signing ceremony at the conclusion of the sponsorship support agreement with EKS, which has competed in WRX



Two-pinion type EPS

## By mass-producing high-output steering systems for SUVs, we contribute to society.

SUVs are generally heavier than ordinary sedans; consequently, a high-output hydraulic power steering has been conventionally employed in SUVs. Thanks to the employment of the two-pinion method where the input shaft linked to the steering mechanism is separated from the shaft transmitting the electric motor output, our electric power steering (EPS) system realizes both high output and quick handling, which had been considered difficult to balance. Thus, we contribute to improvements in fuel consumption. In addition, the EPS's fine control capability provides tall vehicle types with steering

equivalent to that of a high-class sedan, allows mode selection suitable for the driver, and contributes to preventive safety with the aid of the lane departure prevention support system. Furthermore, the two-pinion type EPS is compliant with ISO 26262, which is the international safety standard, and achieves that safety standard at an extremely high level for the mounted electronic system. We will further develop new products that balance the pleasures of driving, comfort, and safety at a high level to create a better society.

## Lightweight strut type shock absorber

Against the backdrop of worsening environmental issues, further vehicle weight reduction is needed. In such circumstances, weight reduction of conventional parts through the employment of high tension steel plating and thinning is shifting to the employment of multiple materials in the process of using the right materials in the right location. In order for different materials to make up for deficiencies through the combination of materials while the advantages are fully utilized, it is important for weight reduction technology to enhance added value through the stable bonding of different materials.

We are now developing a damper for the strut structure where a hollow piston rod with a chrome-plated CFRP (carbon fiber reinforced thermosetting plastic) surface is combined with an injection-molded CFRTP (carbon fiber reinforced thermoplastic plastic) outer housing. By effectively using steel and resin materials, the product weight is expected to be reduced by approximately 40% compared to current mass-produced products. We will continue to promote damper weight reduction to improve fuel consumption and contribute to solving environmental issues by reducing CO2 emissions.



Lightweight strut type shock absorber

## Semi-active suspension system introduced for the DS7 Crossback

The DS7 Crossback, which is the premium segment of the PSA group's luxury brand DS Automobiles, adopted the semi-active suspension system. We started mass production of the system at KAMS (in Spain), which is one of our production bases in Europe. This semi-active suspension system consists of a sensor, ECU, and damping force adjustable shock absorber. Similar to the human body, the sensor is like a sensory organ, whereas the shock absorber is like a muscle. The ECU, as the brains of the system, automatically makes adjustments for optimum damping force to control the vibrations in



Electronically controlled semi-active suspension system equipment



System model (DS7 Crossback)

the vehicle body so that drivers can enjoy driving on rough roads while experiencing a sense of ease and comfort. With this product, we launched Japan-developed technology at our overseas bases. The quality of the entire system has been well-received, which gives us the opportunity to play a part in a user experience unique to the flagship model. We will continuously pursue technology that delivers comfort and driving pleasure and offer products that support the sense of ease, safety, and comfort.



Limited Express Romancecar GSE

## Fully active suspension for the Limited Express Romancecar GSE

Our fully active suspension system is adopted for the new Limited Express Romancecar GSE (Model 70000) of Odakyu Electric Railway Co., Ltd. The fully active suspension system consists of an acceleration sensor that converts the vibrations from a car into electrical signals, a control device that calculates forces to control lateral vibrations, and a motor-driven hydraulic actuator. This system actively controls vibrations by using the hydraulic energy converted from electricity to suppress vibrations and provide significantly improved ride comfort compared with conventional passive or semi-active suspensions. The actuator also functions as a passive damper

and a semi-active damper for appropriate switching with signals from the control device, which makes it possible to miniaturize the system for space-saving installation on the car. We will continue to manufacture products that provide safety and comfort to meet customer expectations.



Fully active suspension

## Variable damping oil damper

A base isolation structure is intended to separate building and ground movement by installing laminated rubber or dampers so that severe earthquake vibrations are not directly transmitted to the building. Dampers designed to suppress excessive building movement under the assumption of a major earthquake, such as the Nankai or Sagami Trough earthquake, which may occur in the near future, will obstruct building movement during the frequent small and medium earthquakes and direct transmit vibrations from the ground to the building. Accordingly, in cooperation with Shimizu Corporation, we developed an oil damper for base isolation that can

Variable damping oil damper



suppress vibrations not only from a major earthquake, but also small and medium earthquakes. The oil damper has a function to switch to damper performance more suitable for the degree of damper movement so that the building moves smoothly during small and medium earthquakes while it does not move excessively during a major earthquake. The damper, which is adopted for the MM21-54 Block Area Project (a temporary name) under construction in Nishi Ward, Yokohama City, has a simplified switching function in the main unit designed to reduce resources and control material increases caused by the addition of functions.

## Tsuppanda, an earthquake resistant damper unit to prevent office furniture from falling

Because of the high probability of a major earthquake, such as the Nankai Trough earthquake, occurring in the near future, devices to increase the earthquake resistance of buildings have been spreading rapidly. However, not many people are actually securing furniture because the furniture and walls may be scratched or there will be little effect. Therefore, we developed Tsuppanda, a fall-prevention device with a damper that can be installed without opening holes in the furniture, walls, and ceiling, to prevent the furniture from falling even in the event of an earthquake measuring 7 on the Japanese seismic intensity scale by using our core vibration control technology. Tsuppanda is usually pressed between the ceiling and the furniture

with the repulsive force (small force) of a spring. During an earthquake, Tsuppanda is continually pressed between the ceiling and furniture with the repulsive force to suppress the vibrations from the earthquake using the hydraulic damping force (large force) to prevent the furniture from falling. As a result of tests specified in the Performance Evaluation Criteria for Fall Prevention Instruments stipulated by the Japan Testing Center for Construction Materials,\* we obtained the highest rating of ☆☆☆ (three stars). We will continue to develop products that contribute to safety.



\*The Japan Testing Center for Construction Materials provides performance certification of fall-prevention instruments, such as for furniture, at the request of the Tokyo Fire Department.