

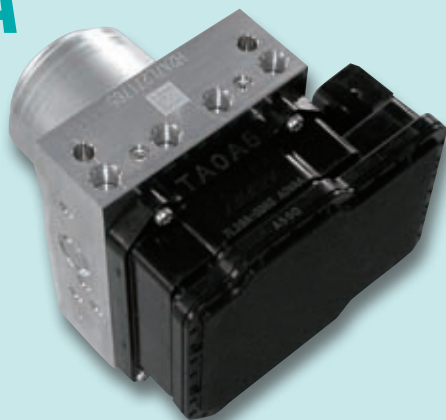
## INTRODUCING CORE PRODUCTS

Reducing environmental impact and enhancing safety are two universal requirements of the automotive industry. Since its founding as a company manufacturing automotive brake components, Nissin Kogyo has been engaged in research and development activities to satisfy these requirements by leveraging the advanced technologies it has amassed, including aluminum casting and processing technologies, and braking system control technologies.

By making use of its strengths in aluminum casting and processing technologies to deliver lightweight and compact products, Nissin Kogyo has been improving automotive fuel efficiency and contributing to reducing the environmental impact of automobiles by reducing CO<sub>2</sub> emissions. The Company is also making use of another strength, its braking system control technologies, to contribute to the ongoing development of highly intelligent braking systems, and thereby to driving safety and comfort.

Matched precisely to the needs of the current era, Nissin Kogyo's products are finding favor with the Company's customers, automobile manufacturers.

### VSA



The Company's VSA (vehicle stability assist) system helps maintain the stability of a vehicle by preventing skidding. The system applies the brakes automatically when the vehicle is cornering if a sensor detects the vehicle is losing stability.

### STRENGTHS AND FEATURES OF THE NEW VSA

When the VSA system is installed in a vehicle, it provides three functions. The anti-lock brake system (ABS) prevents the wheels from locking up when braking, the traction control system (TCS) prevents the wheels from losing their grip on the road when accelerating, and the VSA system itself prevents skidding when the vehicle is cornering. Because these three functions provide comprehensive control of the vehicle, they help enable the direction of travel to be maintained automatically.

The newly developed VSA system offers the driver a more responsive operation than hitherto, and is more compact and lightweight because the specifications of all components, including motors and pressure sensors, were reviewed and consolidated. Weighing 2.0 kg, the new VSA system is 20% lighter than the conventional product. A decade ago the product weighed 4.6 kg, and Nissin Kogyo's success in reducing the weight by more than half is reflected in the continually increasing unit production of this product.



### NK15 Series

Nissin Kogyo developed the NK15 series brake system specifically for hybrid vehicles. This system adjusts the hydraulic brake volume according to the change in the regenerative brake volume when the brake is operated. The NK15 series has been adopted for use in Honda Motor's Civic Hybrid vehicle.

➡ Produced in: Japan



### ABS

Anti-lock brake systems (ABS) enable the vehicle to be steered without the tires locking, even if the brakes are applied under slippery road conditions.

➡ Produced in: Japan, the U.S., China and other parts of Asia

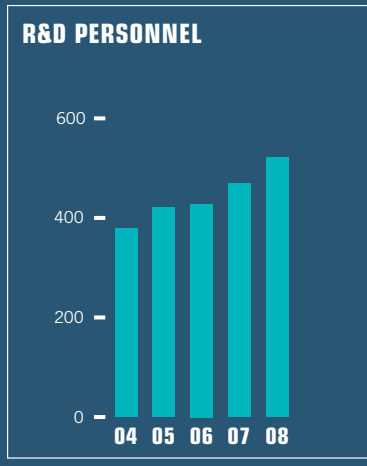
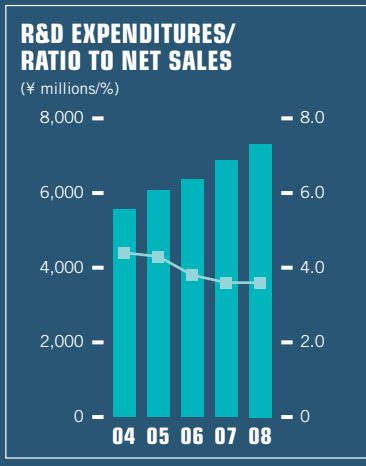


### Aluminum Rear Disc Brakes

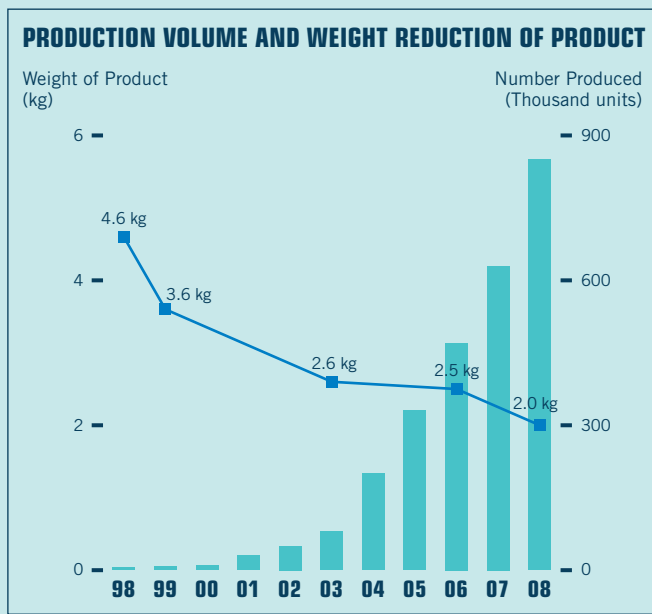
The rear disc brake operates by pinching a rotating disc together with the rear wheel between friction pads.

In recent years, the discs have increasingly been made of aluminum instead of steel to reduce weight and enable easier recycling.

➡ Produced in: Japan, the U.S., China and other parts of Asia

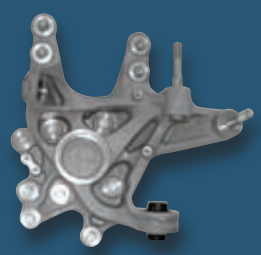


■ R&D Expenditures (left scale)  
■ Ratio to Net Sales (right scale)



### ADOPTION OF THE NEW VSA

The new VSA system has been installed in the latest Honda Accord model marketed in the U.S. From September 2011, it will become obligatory for all vehicles sold in the U.S. to be fitted with an anti-skid device in order to reduce the number of single-vehicle accidents. In anticipation of this change, Honda has made the VSA system a standard feature in the new Accord.



### Aluminum Knuckles

Knuckles are platform parts connected to each suspension arm that are used to bind tires, discs and other components to the vehicle chassis. In recent years, knuckles are increasingly being made of aluminum instead of steel to reduce weight and enable easier recycling.

► Produced in: Japan, the U.S., China and other parts of Asia



### Motorcycle Disc Brakes

The motorcycle disc brake operates by pinching a rotating disc together with the front wheel between friction pads.

The Nissin Kogyo Group holds the world's top share in master cylinders used with these brakes.

► Produced in: Japan, the U.S., China and other parts of Asia, South America



### Motorcycle Master Cylinders

This component generates hydraulic pressure when a lever is physically operated. The pressure is then conveyed to the disc brake.

The Nissin Kogyo Group holds the world's top share in master cylinders for motorcycle disc brake systems.

► Produced in: Japan, the U.S., China and other parts of Asia, South America