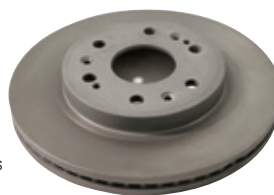


Akebono is working to improve brake performance and to develop the next generation technology. We are also focused on developing products and technologies that will reduce environmental burden.

FNC Finished Rotors

Akebono supplies rotors for trucks produced by U.S.-based General Motors Company. These rotors are finished using the ferritic nitrocarburizing (FNC) process and thus deliver superior braking performance as well as low noise and vibration while boasting an industry-leading product life, which, in turn, contributes to resource savings. Moreover, since FNC finishing provides greater abrasion resistance, it also reduces the generation of dust, which not only often mars the appearance of wheels, but poses an environmental burden.



FNC Finished Rotors

Satisfying U.S. Regulations on Chemicals Used in Brake Friction Materials

In 2014, new regulations were enforced in California and the state of Washington, the United States, setting limits on copper and other specified substance content in brake pads, linings and friction materials produced on and after January 1, 2014. The regulations are intended to prevent the impact of such substances on ecosystems in rivers and oceans. Moreover, the regulations oblige manufacturers to label their pads and linings using Friction Materials Edge Code Markings that indicate compliance.

In response, a number of Akebono's business units, including its U.S., Japanese and Asian production bases that manufacture friction materials destined for the American market, as well as development, quality assurance, sales and production engineering sections worldwide, have striven to ensure compliance with these requirements through across-the-board collaboration. Looking ahead, we will painstakingly continue to implement measures aimed at complying with state laws and other regulations, such as package labeling statutes.



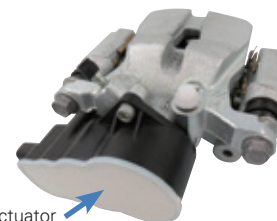
A copper-free brake pad (prototype pictured)

Development of New Brakes for Greater Fuel Efficiency

We are developing a new automobile braking system that improves fuel efficiency by weight savings. In addition, we aim to contribute to resource savings by reducing the number of parts.

■ Electro-Mechanical Brakes

This new brake system employs an electric operating mechanism to press down the disc brake pads. The system helps to improve fuel efficiency by saving weight. Moreover, this system can contribute to environmental preservation by eliminating use of hydraulic brake fluid, which must be properly disposed of whenever repairs are made.



Arrow indicates the electro-mechanical actuator

■ Low Drag Caliper

In a conventional disc brake there is always slight contact between the brake pads and the rotor, even when the brakes are released. This creates rotational resistance of the rotor and negatively affects fuel economy. Also, if the gap between the rotor and pad alters, however subtle the change, it affects how far the pedal must travel to initiate braking. This reduces driver confidence. The low drag caliper incorporates specially designed components to ensure that the pad to rotor gap is precisely maintained at the micron level. In this way, brake drag is reduced, contributing to improved fuel economy.



Low Drag Caliper

Upgrading Ai-Ring to Secure Competitiveness in the Global Market

Ai-Ring is one of the largest test courses to be operated by an automotive parts manufacturer in Japan. The facility enables various types of brake testing using actual vehicles, such as high-speed braking tests. A new Ai-Ring is scheduled for completion in October 2016. The plans for the facility include expanding various type of test course, such as a new winding road, rough roads, and slopes. We will use these courses to further enhance the performance and quality of our products for high-performance vehicles, and to bolster our development of electro-mechanical brakes. We also plan to increase our dyno testing facilities (brake testing machines) to help ensure safety as a top



Ai-Ring

priority from the design stage. This will enable us to conduct comprehensive brake testing from bench testing, through dyno testing, to vehicle testing in a single facility. Akebono will also shorten development lead times by improving its vehicle testing capabilities and enhancing its NVH* analysis and simulation technologies. With the new facility we aim to establish a global development structure that will enhance our R&D competitiveness. At the same time, Ai-Ring will help us to integrate testing techniques employed at R&D bases worldwide while providing a place for training designers and engineers who will be able to propose their own ideas as brake experts.

*NVH: Noise vibration harshness

Quality Management Systems (ISO/TS16949, ISO26262)

With the aim of promoting its corporate branding initiative, Akebono has acquired and maintains the ISO/TS16949 quality management system certification that has been widely introduced by automakers overseas, in addition to ISO9001.

Moreover, efforts are now underway to acquire ISO 26262 certification with regard to automotive electronic and electrical safety-related systems with help from external specialists.

TOPICS

Akebono Receives Award in the Japan Society of Mechanical Engineers Medal for New Technology

For achievement in the "development and mass production of high-performance brakes for road cars" Akebono was awarded the FY2015 Japan Society of Mechanical Engineers (JSME) Medal for New Technology. The brake systems are used in the ultra-high performance road car "P1™" made by the U.K. automaker McLaren.

Established in 1958 with the aims of encouraging research activities and development of mechanical engineering in Japan, the JSME Medal has been presented annually to outstanding papers, technologies and products. In awarding the medal, the judges recognized Akebono's high achievement in "stability when braking at ultra-high speed and high temperature levels," "significant weight reduction," and "comfortable braking in city driving."

This is the second time in 34 years that Akebono has received the award, the previous time being in 1982.



Brake system for McLaren P1™