COLUMN

Basic Principles of Brakes

Here we explain the structure and function of Akebono's core product—brakes.

What is a Brake?

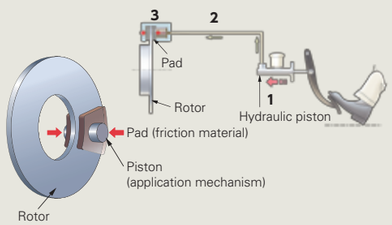
It is a device that utilizes friction to cause a vehicle to decelerate and/or stop by converting kinetic energy into heat energy. Sudden braking at 100 km/h generates enough heat to raise the temperature of two liters of water from 0°C to boiling (100°C). Brakes are relatively small compared with other major automobile components, and the space where they are mounted is restricted. Complex controls are required to absorb the output power of the engine and brake safely. Brakes are considered an important safety component in an automobile because of their key role in ensuring vehicle safety.

Types of Brakes

Each of the four wheels on an automobile is equipped with a brake. Depending on the usage and characteristics of the car, the wheels may have disc brakes or drum brakes. Disc brakes have the capability to stop a car in a stable manner even at a high speed, while drum brakes have the capability to stop heavier vehicles. A vehicle can be equipped with different combinations of disc and drum brakes. Some vehicles use disc brakes on the front and rear wheels, while others use disc brakes on the front and drum brakes on the rear.

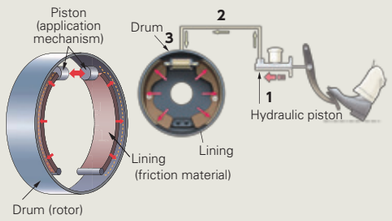
Disc Brakes

Brake pads clamp the rotor to stop its rotation

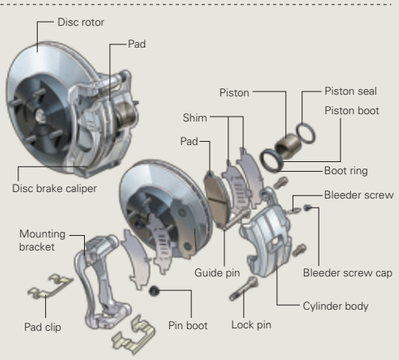


Drum Brakes

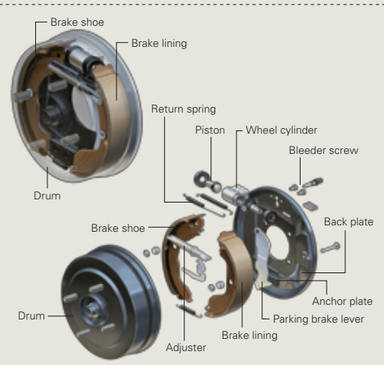
Lining is pushed out to drum from the inside to stop its rotation



Main Parts of Disc Brakes



Main Components of Drum Brakes



Providing Safety and Peace of Mind

Automotive brake-related products account for 90% of Akebono's net sales, and the Company also draws on its accumulated comprehensive brake technologies to develop and supply brakes for motorcycles, rolling stock and industrial machinery, as well as sensor products.

Products for Automobiles

- Disc brake calipers
- Disc brake pads
- Disc brake rotors
- Drum brakes
- Drum brake shoes
- Drum brake linings

Disc brake

Drum brake

Products for Motorcycles

- Disc brake calipers
- Disc brake pads
- Master cylinders

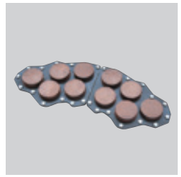

Master cylinder


Disc brake

Products for Rolling Stock

- Bullet train disc brakes
- Rolling stock brake linings
- Monorail disc brakes


Bullet train disc brake

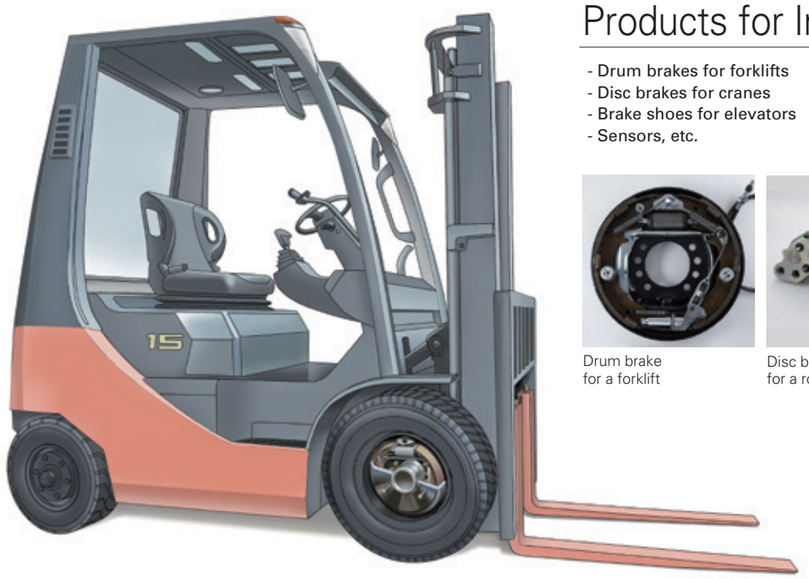

Bullet train
disc brake lining


Monorail disc brake

PICK UP

Contribution in Railway Field

Akebono has provided the brakes for many Japanese bullet trains, from the first generation Type 0 series to the latest N700A series, as well as conventional trains and monorails.



Products for Industrial Machinery

- Drum brakes for forklifts
- Disc brakes for cranes
- Brake shoes for elevators
- Sensors, etc.

Drum brake
for a forklift


Disc brake
for a rough-terrain crane


Concrete filling rate
detection system

COLUMN

Motorsports Challenge

Akebono is developing its technologies in the demanding field of motorsports.

Formula One (F1)

Akebono has been supplying brake systems to the McLaren team to support their participation in the world's most prestigious motorsport – Formula One racing since 2007. In this demanding environment where rotor temperatures can soar to 800°C when braking to enter a corner, we strive to create brakes that always deliver reliable and stable performance by applying exacting standards in all aspects of our products, including structure, materials, and surface processing.


Formula One (F1)

FIA World Endurance Championship (WEC)

Akebono provides brake calipers for the cars of the TOYOTA GAZOO Racing team, which is participating in the World Endurance Championship series, including the Le Mans 24-hour race. In 2016, our brake calipers were used on the new model TS050 HYBRID.


FIA World Endurance Championship (WEC)

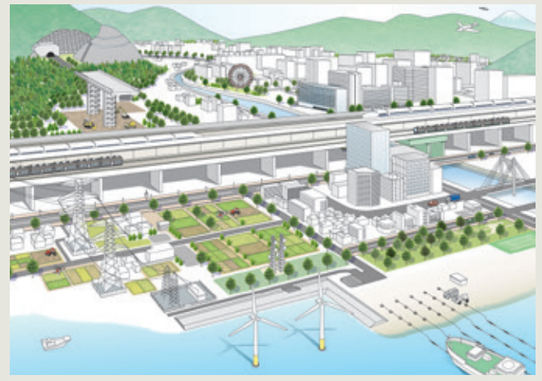
Nürburgring 24 Hour Endurance Race

The Nürburgring 24 Hour Endurance race is said to be the toughest production car race in the world. The race was held from May 28 to 29, 2016, and Akebono supplied brake calipers and brake pads for the class-champion LEXUS RC F of TOYOTA GAZOO Racing with TOM'S team.


Nürburgring 24 Hour Endurance Race

Developing the Infrastructure & Mobility Business

Using its expertise in products for rolling stock, products for industrial machinery, and sensor products, Akebono will open up new businesses in various fields such as civil engineering and construction, agriculture, shipping, energy, and urban development.

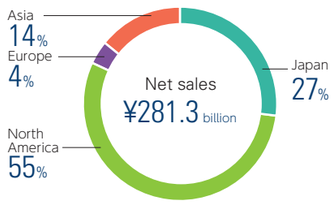


Global Business Expansion

Akebono operates its business in 13 countries around the world.

We are working to establish a global network built around the four focus regions of Japan, North America, Europe, and Asia.

Sales Ratio by Region
(Fiscal 2015)



Ratio of Associate Numbers by Region
(As of March 31, 2016)