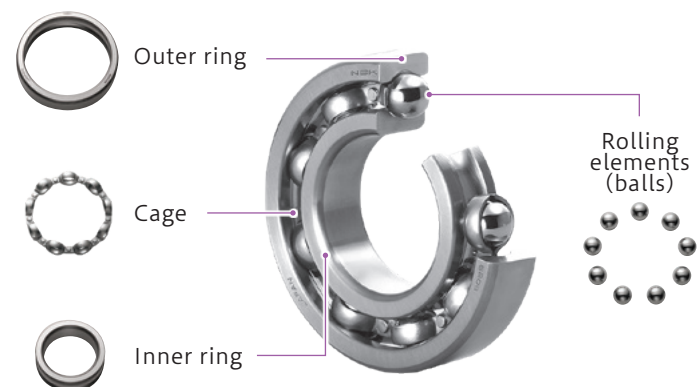


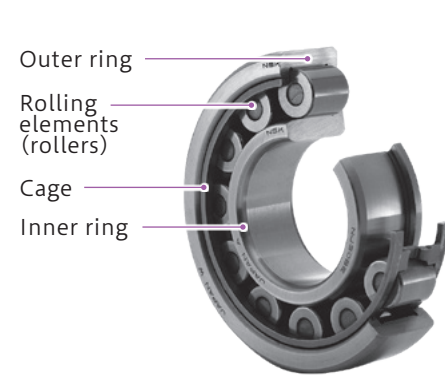
Basic Knowledge of NSK Products

1 Bearings

Ball Bearing



Roller Bearing



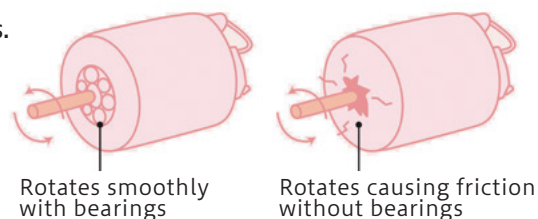
Bearings have a simple basic structure with four elements—an outer ring, an inner ring, rolling elements, and a cage.

Bearings are products that contribute to the environment

Bearings work to reduce friction in the rotational motion of machines. Smooth movement makes the following three contributions.

- 1 Reduces breakdowns
- 2 Extends operating life
- 3 Reduces power consumption

Some estimates indicate that if bearings were not used in automobiles, an extra 600,000 kl of gasoline would be needed annually in Japan. Bearings are indispensable for fuel-efficient performance that enables vehicles to operate using less fuel.

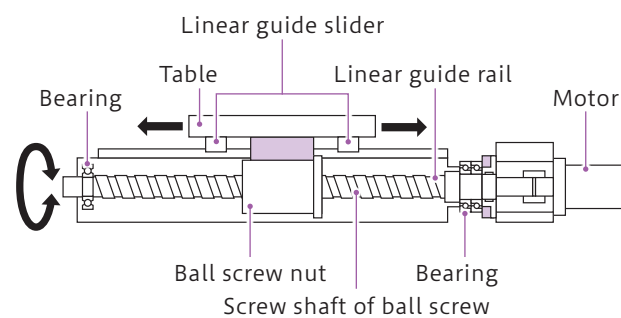
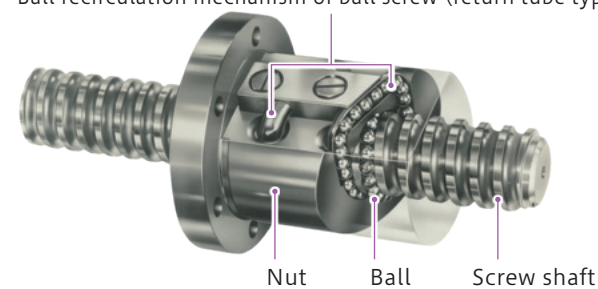


2 Ball Screws and Linear Guides

A ball screw is a component that converts rotational motion into linear motion or linear motion into rotational motion by applying the principles of bearings. Linear guides are products that guide linear motion by also applying the bearing principle. In ball screws, the nut advances axially as the screw shaft rotates. These items are widely used as components for precision positioning mechanisms mainly in machine tools, various types of robots, FA, OA equipment, semiconductor-related equipment, industrial machinery, and medical-related equipment.

Precision Positioning Mechanisms and Ball Screw Movements

Ball recirculation mechanism of ball screw (return tube type)



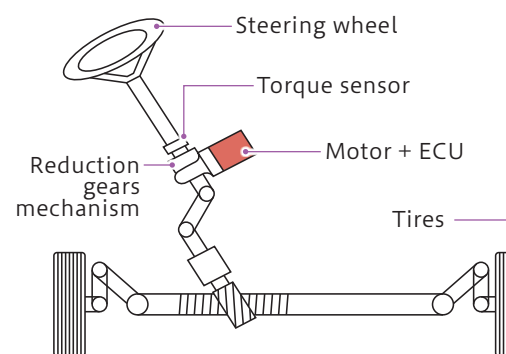
3 EPS (Electric Power Steering)

EPS is a product that assists driver steering wheel operation by using electric motors. NSK succeeded in mass-producing EPS for compact cars in 1988 and since then has been contributing to the production of fuel-efficient and environmentally friendly vehicles.

To accommodate differences in vehicle weight and structure, EPS is largely divided into four main types depending on the motor mounting position and reduction gears mechanism (Charts 1 to 4). Type 1 is most suitable for lightweight vehicles, while types closer to Type 4 are more suitable for heavier vehicles.

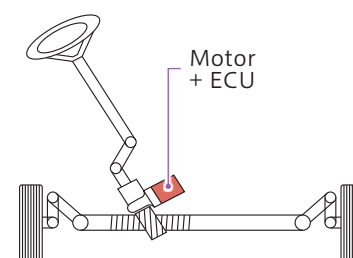
In recent years, electrification and improved automatic driving technology have enabled EPS not only to assist drivers in steering wheel operation but also help to create new value by enabling drivers to operate the steering wheel based on instructions from the vehicle.

1 Column-type

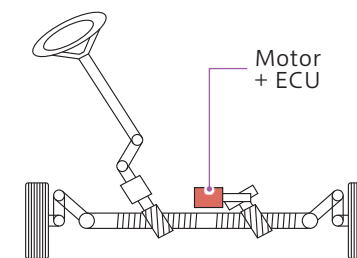


The motor-assisted type shown above is located closer to the steering wheel and is called **the upper assist type**, while the motor-assisted types shown below are located closer to the tires and are called **the lower assist type**.

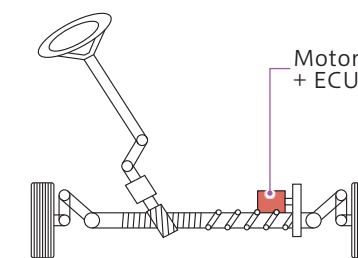
2 Single pinion type



3 Dual pinion type



4 Rack type



Light ← Vehicle weight → Heavy

COLUMN

NSK's vision is "setting the future in motion," and NSK is developing advertisements that express this vision. Members of technological divisions participate in the creation of the advertisements, taking on the challenge of creating new movements while leveraging the strengths of the Company's products and technologies. The "_ with Motion & Control Running" advertisement released in 2020 won the Transportation Advertising Grand Prix 2021 in the Vehicle Digital Media Category. In the "_ with Motion & Control Connecting" advertisement released in 2021, we used Monocarrier™ and Megatorque Motor™ to create movements that connect the world toward the future.

▶ Please click here to view the advertisement videos. <https://www.nsk.com/special/>

