



## JTEKT INSIDE - Jan 2023

### Contribution to further downsizing of EV e-axes

#### Introduction

JTEKT Bearings (formerly Koyo Bearings) continues its relentless efforts to optimize its products for a multitude of applications inside demanding industries, including the design and manufacturing of drive trains for Electric Vehicles (EVs). Recently a new ultra compact bearing was developed for application in Automotive e-axes, contributing to improved power density of the e-drive system.



#### JTEKT Ultra Compact Bearings (JUCB's) for e-axis application

E-axes (that integrate the electric motor, inverter, reducer and differential in one unit) used for EV's must be as compact and light weighted as possible, to contribute to energy efficiency and increased driving range. Additionally this creates more space in the front of the car which can be used for other purposes (better car streamlining or increasing luggage space). To meet such targets JTEKT developed a ball bearing with reduced width (-30%) and weight (-26%) compared to conventional types (Fig. 1).

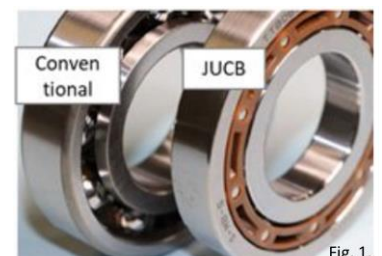


Fig. 1.

#### How did JTEKT realize such compactness

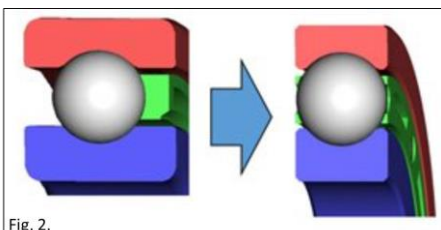


Fig. 2.

The main challenge was to redesign the resin cage in such a way that the critical properties (high speed resistance, high rigidity) would not be lost. In addition, the strength of the cage was ensured by establishing a unique mold design and molding method. The bearing performance such as strength and durability (load ratings) are the same as that of conventional products and the bearing width has been narrowed to the limit (Fig 2).

#### The effect on e-axes

In combination with other new JTEKT technologies, including an ultra-compact differential (JUCD) and a special seal, the weight of a so called coaxial type 150 KW e-axis, could be reduced by 5 kg, with a total unit length reduction of 50 mm. (Fig. 3).

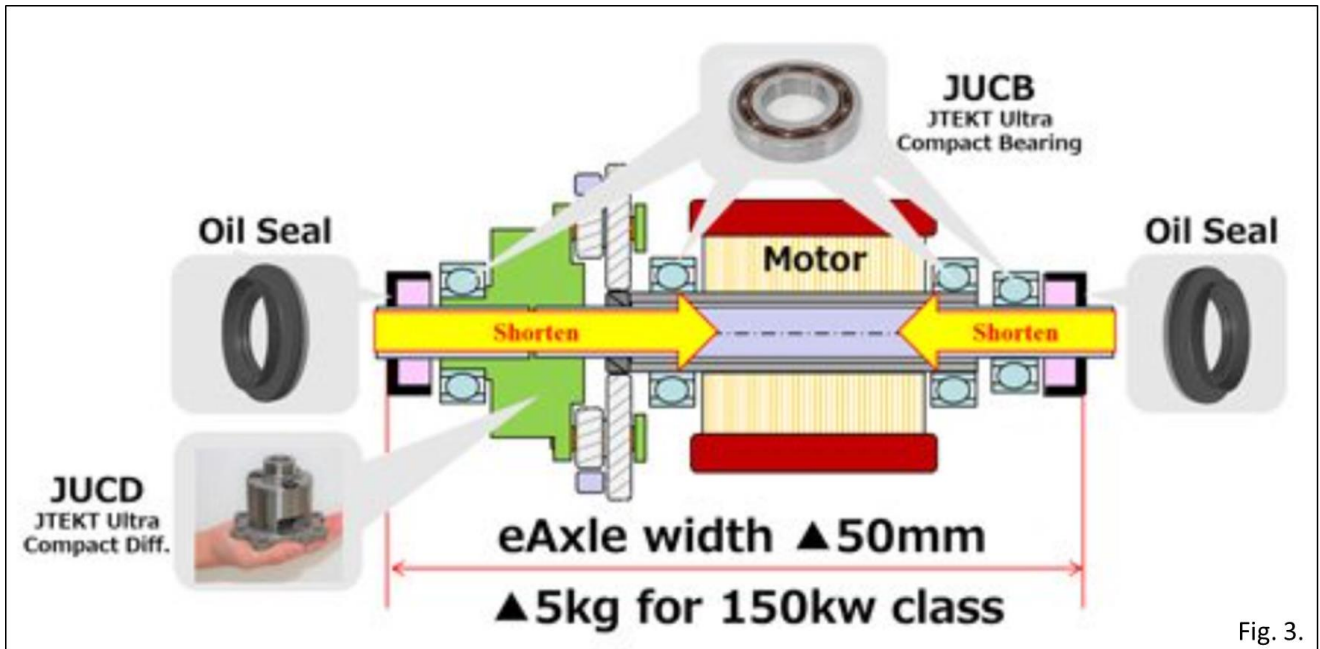


Fig. 3.

### Additional prospects

The JUCB is expected to be beneficial in other applications outside the Automotive industries as well, including construction & agricultural machines, robots and drones. Where required, we will meet the needs for miniaturization of all types of drive systems.

### Global sustainability

JTEKT will continue to overcome business barriers and work together as a group to further strengthen technologies that contribute to electrification. We will contribute to the realization of a low-carbon society through activities that are "for the earth, for society, and for customers"

SUSTAINABLE DEVELOPMENT GOALS



### General notification



**Koyo Bearings** has been officially rebranded to **JTEKT Bearings** as of April 1, 2022. Please appreciate that this is only a change of brand. The company, its general structure, the products and services will remain the same. Our customers can rely on the continued good service and quality of our products in the future and our commitment to keep the same excellent business relationship with our valued partners, as in the past.

*Please do not hesitate to contact us or your distributor in case you would like to have more information about our company, products and services.*

Get to know our bearings at: [www.koyo.eu](http://www.koyo.eu)

