

# Thrust Needle Roller Bearings Used under Low Viscosity Lubrication Conditions



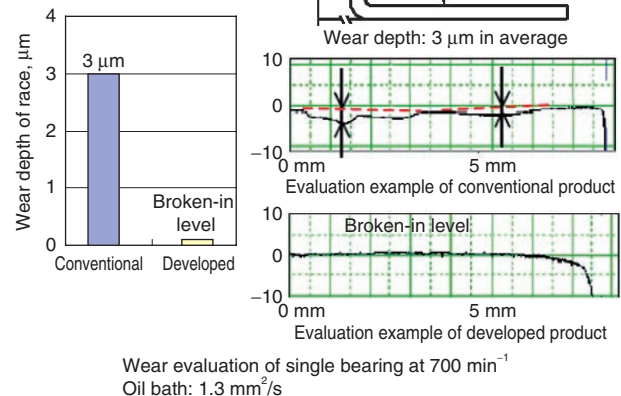
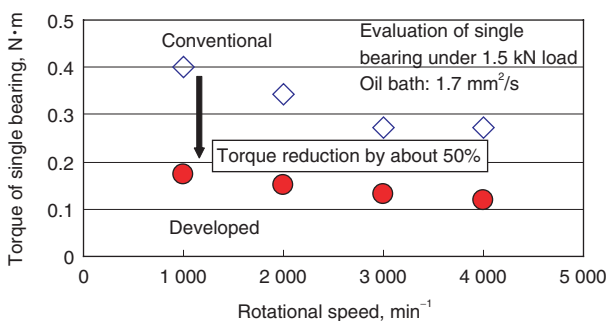
In recent years, the use of low viscosity lubrication has become widespread for improved fuel efficiency in automobiles. While thrust needle roller bearings are known for high load carrying capacity, their friction loss is large due to a structure with high sliding contact. Also, there have been issues with wear occurring easily on both sliding and rolling contact areas under low viscosity lubrication conditions.

Now for the first time in the world we have designed a low torque thrust needle roller bearing for mass production that is usable even in oil with a viscosity of 3 mm<sup>2</sup>/s or less. The features are as follows.

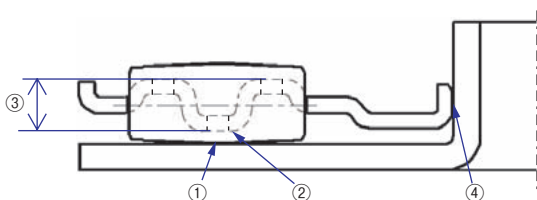
## Features

- ① Reduction in rolling friction loss by providing a special crowning profile for rollers
- ② A no-contact structure between the retainer and race ("A roller riding retainer") prevents wear from contact between the retainer and race under low viscosity lubrication conditions
- ③ Weight reduction (10%) and reduced retainer rotational resistance thanks to a smaller cross-section of the retainer
- ④ A special crowning profile for the retainer bore section in contact with the race

By changing all relative motion contact areas inside of the bearing to almost point contact conditions from conventional line contact, the bearing configurations in ① through ④ have been applied to realize a maximum of 50% rolling friction loss reduction and control of wear under low viscosity lubrication of 3 mm<sup>2</sup>/s or less.



## Structure



No.	Item	Applied measures for developed product
①	Contact of roller and race	Special crowning profile for roller
②	Contact between retainer and race	No-contact retainer for race
③	Rotational resistance reduction and weight reduction of retainer	Smaller cross-section of retainer
④	Contact of retainer bore and race	Crowning profile for retainer bore

## High Volume Production

High volume production began in domestic plants from May 2011.

Production expansion to global production sites is scheduled.

(Central JAPAN Technical Center, Bearing & Driveline Operations Headquarters)

**JTEKT CORPORATION**