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Development of Interchangeable “Hydrodynamic Bearing Unit” with Rolling Bearing

Interchangeable “Hydrodynamic bearing unit” with rolling bearing has been developed for applications such as small ventilators and electric motors mounted on cars.

Conventional hydrodynamic BEARPHITE (Sintered metal hydrodynamic bearing with which hydrodynamic grooves are formed on the bore surface) provides excellent quietness and durability, and is widely used for HDD spindle motors and fan motors etc. However, its dimensions and using conditions are different from those of rolling bearings.

This time, interchangeability of the new product with rolling bearing was ensured by reviewing the internal structure design of hydrodynamic BEARPHITE. Since the rotational body rotates in the condition of non-contact with the housing separated by oil film, the noise level of the new product can be improved to be approx. 1/5 of rolling bearing.

We will strive to propose replacement of rolling bearings for applications with relatively small load and less load fluctuation, aiming to market during the FY 2011.



Rolling bearing
(Bearing No.: 695)

New product
(Hydrodynamic
bearing unit)

For further information on this new product, access the following URL:

http://www.ntn.co.jp/english/news/news_files/new_products/news201000051.html

◆ We heard from Supervisor Masaharu Hori of Engineering Department, Fluid Dynamic Bearing Unit Division in charge of the development.

In Fluid Dynamic Bearing Unit Division, we are developing new products other than hydrodynamic bearings for HDD spindle motors as well and this new product is one of them.



Supervisor Hori conducting experiment

Under the restricted issue of “Design to be directly replaceable from rolling bearing”, the basic design for the new product was ensured by the optimized internal design and the development of high precision roll forming technology to provide hydrodynamic grooves on outer surface of sintered bearing. In addition, this product uses own core technologies on processing method of hydrodynamic grooves and assembly method. Therefore, this is a product that was developed by blending new and conventional technologies.

Presently only one size of 695 ($\phi 5 \times \phi 13 \times 4$) is available. We will strive to make it available in series as well as to expand the application.