

SPINDLE MOTOR STRUCTURE USING CERAMIC

BALL BEARING FOR HARD DISK DRIVE

ABSTRACT

It is desirable in terms of durability, quake-resistance, or the like to use a ceramic ball as a rolling ball in a bearing mechanism. Nevertheless, a pre-loaded pressure may become excessively large depending on a working temperature, since a coefficient of linear expansion of ceramic is smaller than each coefficient of linear expansion of other members, and a working temperature condition should be limited thereby. A change rate to temperature of a distance X between outer races is made to be larger than one of a distance Y between inner races by forming a sleeve (40) (aluminum), holding the outer race (33b), with a member having a larger coefficient of linear expansion than that of a shaft (31) (stainless steel) holding the inner races (33a) and (34a) in a pair of bearings (33) and (34). Therefore, difference between size changes of the inner races, outer races, and rolling balls is compensated by difference between size changes of distances between bearings.

FIG 4