TSK Linear Bearings

Features of TSK Linear Bearings

Compact Design
As four to six lines of balls smoothly circulate the narrow circuit to receive the load, the compact design is possible in line with the compact power supply and drive mechanism designs.

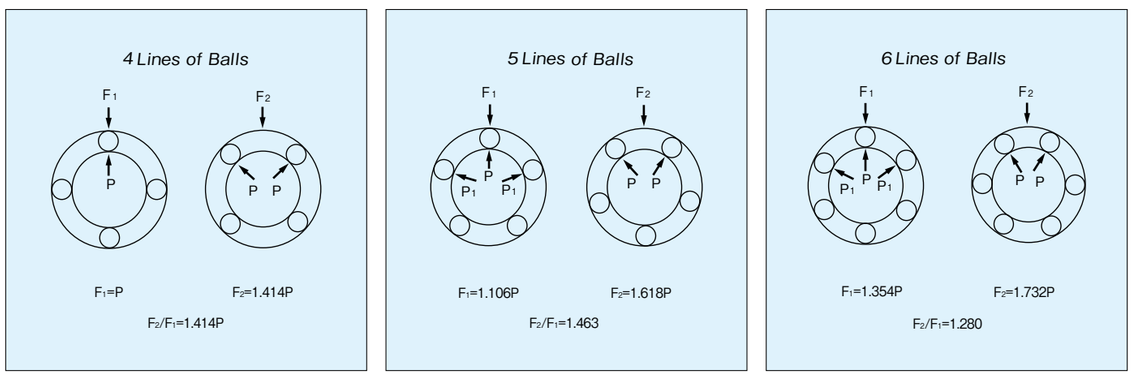
Compatibillity
As the dimension tolerances of bearing parts are fully standardized, the full compatibility is retained and the fitting clearances are unchanged.

Low Noise
As the retainer is made of resin material, it generates a minimum of noise during drive and gives the smoothest circulation of balls.

High Precision and Compactness
Using the TSK linear motion bearing with the high-precision TSK linear shafts gives a precise and smooth linear motion to make the whole machine smaller and lighter in weight.

Long Life
Since each portion of the bearing is made of choice materials and then being hardened and precision-machined according to strict quality control stardards, long-term operational life is guaranteed. See the chart below for details.

The figure of relationship between Rated load and Ball Line Disposition



Friction Factors of Linear Motion Bearings
One big feature of linear motion bearings is, from its structure, a minimal friction resistance and the starting friction is far lesser than that of plain bearings to give a least energy consumption optimal for a labor-saving machine.
Factors vital for determining the friction resistance of linear bearings are as follows and are represented by their sum.

1. Rolling friction between ball and shaft, ball and casing
2. Sliding friction between balls due to ball rolling
3. Sliding friction between ball and retainer
4. Sliding friction of seals
5. Viscosity resistance of lubricant

Types and amount of lubricant may especially be unexpectedly decisive factors in friction. Be careful of supplying adequate type and amount of lubricant according to use conditions.

$$F = F_0 + \mu W$$

F =Frictional resistance force
F_0=Seal resistance force
μ=Coefficient of friction
W=Load

The factor F_0 is a friction peculiar to each bearing and may be rendered unchanged in regular use conditions though it changes, if strictly speaking, with stroke speeds.
The factor μW usually increases in proportion to the load W but the μ tends to increase due to the sliding friction inside the bearing at the load below 20kgf.
Normally, the friction factor is 0.001 to 0.003 and is as small as one several tenths when compared with plain bearings.