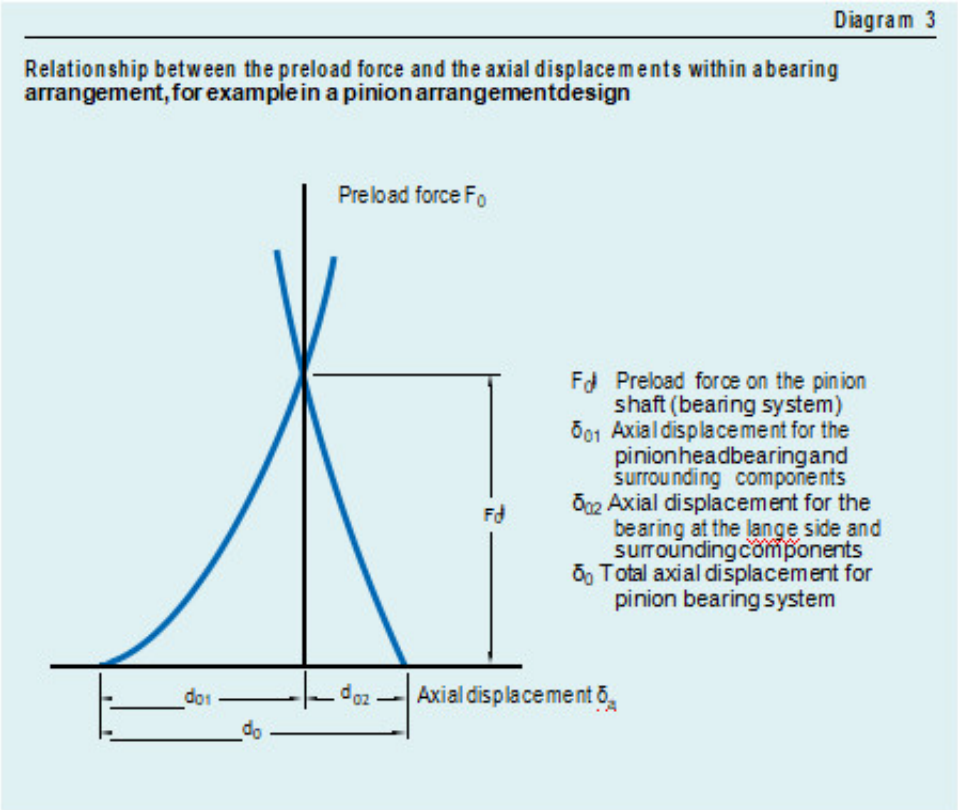
What is the method of SKF's bearing adjustment program?



Adjustment means setting the internal clearance or preload in an adjusted bearing arrangement during assembly. Operative a certain clearance/preload, or preload, range then arises.
Axial preload in an adjusted bearing arrangement with single row angular con- tact ball bearings, tapered roller bearings and deep groove ball bearings, is produced by displacing one bearing ring axially, rela- tive to the other, by an amount correspond- ing to the desired preload force.
There are basically two principal methods to adjust preload: individual adjustment and collective adjustment

Individual adjustment.
With individual adjustment, each bearing arrangement is adjusted separately using nuts, shims, spacer sleeves, crush sleeves, etc. Measuring and inspection procedures are used to ensure that the established nominal preload is obtained with the least possible deviation. There are various meth- ods to obtain the required preload:

- axial displacement method
- frictional moment method
- direct force method

The method used depends on, among other things, the application design and the number of bearings for being mounted. Individ- ual adjust0ment can accommodate enough tolerance stackup that if individual com- ponents are produced to Normal tolerances, the desired preload may possibly be achieved with a relatively high degree of accuracy.

Axial displacement method

The axial displacement method is based on the relationship between the preload force and the elastic deformations within the bearing arrangement. The requisite preload maybe determined from a preload force/ axial displacement diagram (diagram 3).

This method of adjustment is frequently used when the components of a bearing arrangement are preassembled. The required preload, which is expressed as a negative distance, requires measuring total axial positive displacement (end play) of bum rap about a ixed surface. This is typi- cally throw over a dial indicator.

Shims, intermediate rings or spacers can then be used to adjust axial displacement to the correct negative distance. The preload is achieved, such , for pinion arrange- ment designs by: