Q-BS-14

Q&A

Question: Can we use Ball Screws under the Axial loadequal to Basic Dynamic Load Rating Ca?

Basic Dynamic Load Rating Ca shows dynamic capacity of Ball Screws. Its definition is the Axial load for which the Basic Rating Life is 1,000,000 revolutions. This means that if you apply the Axial load equal to Ca on Ball Screw, it will reach the Life after 1,000,000 revolutions.

To be accurate, the definition of Basic Rating Life is that "total number of revolutions which90% of Ball Screws can endure without flaking by rolling fatigue on grooves of Shaft or Nut or Balls under the same condition".

So, if you apply the Axial load equal to Ca on Ball Screw, you will find the flaking on it with 10% probability after 1,000,000 revolutions. KSS cannot say anything it is OK or not, it is up to customer. But 1,000,000 revolutions are considered too short.
Generally, KSS would recommend that the Axial load should be less than 30% of Ca.

In addition, the ability for load of Ball Screws is restricted from not only Basic Dynamic Load Rating Ca, but also other factors.
For example, other factors are as follows.

1) Strength of Shaft ⇒ Restriction by buckling load and permissible tension load.
   ** Shaft length gets longer, strength for buckling decreases.
2) Thrust from the Motor specifications.
   ** If you use Ball Screws under the Axial load over the thrust calculated by Rated Torque of Stepping Motor, it will step out, and Ball Screws will not be operated.

Therefore, please consider all of factors to operate Ball Screws,
not only Basic Dynamic Load Rating Ca, but other factors.

There is a close relationship between Dynamic Capacity and Life!!!