

Q&A

Question: There is a terminology called "Preload Dynamic Drag Torque".
Is it any different from "Torque", which is generally used?

When you use Ball Screws, some type of Torque will be generated. Preload Torque in KSS drawing is not the same as actual Torque.

Preload Torque is generated by only Preload, when Ball Screws are applied Preload in order to eliminate Axial play. It is officially called "Preload Dynamic Drag Torque".

Preload Dynamic Drag Torque is calculated by following formula.

$$T = 0.05 \times (\tan \beta)^{-0.5} \times \frac{F_a \cdot \ell}{2\pi} \times 10^{-3} \quad \text{N} \cdot \text{m}$$

$$T = 0.05 \times (\tan \beta)^{-0.5} \times \frac{F_a \cdot \ell}{2\pi} \times 10^{-1} \quad \text{kgf} \cdot \text{cm}$$

T : Preload Dynamic Drag Torque N·m {kgf·cm}

β : Lead angle deg

F_a: Preload N {kgf}

ℓ : Lead mm

Some other Torque other than Preload Dynamic Drag Torque will occur, when using Ball Screws.

- 1) Load Torque ; This is generated by Axial Load.
- 2) Acceleration Torque ; This is generated by acceleration or deceleration when starting or stopping.
- 3) Additional Torque ; Torque from the friction of Bearing or oil-seal etc.

Total of the above should be actual Torque. Please do not confuse Preload Dynamic Drag Torque with actual Torque.

There are several kinds of Torque for Ball Screws!!!