

# TECHNICAL DATA OF BALL SCREWS

## PRELOAD TORQUE

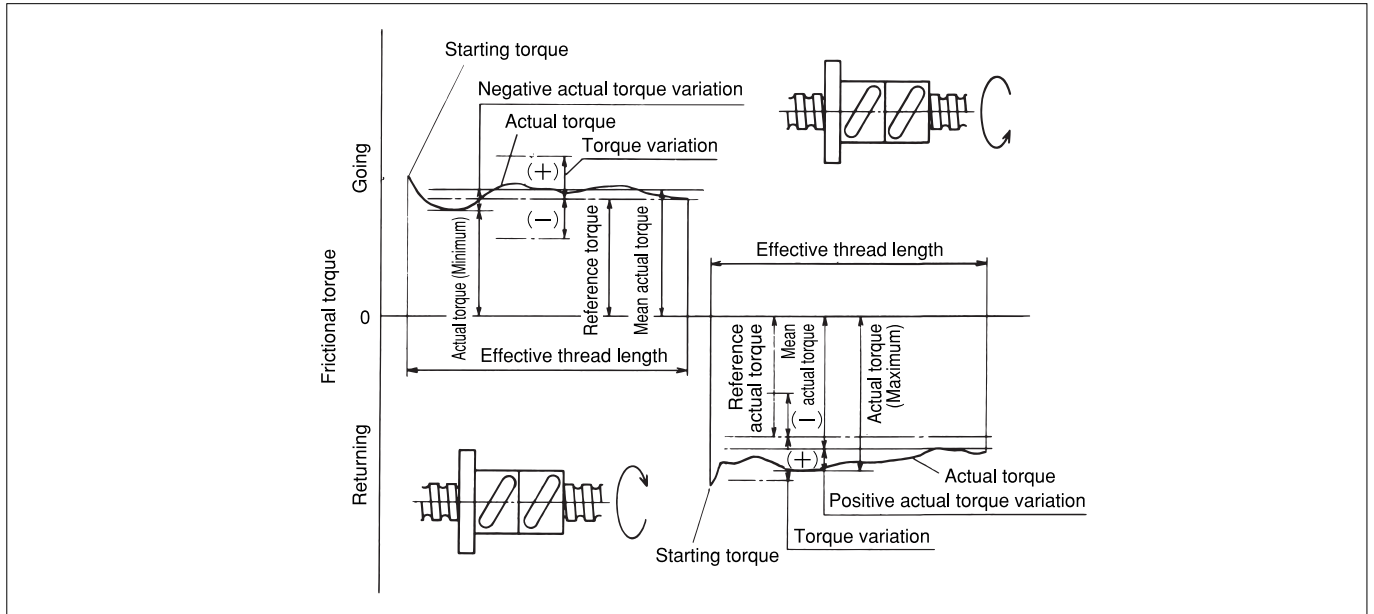


Fig. 6 Characteristics of preload torque

### •TERMS AND DEFINITIONS

#### Preload

A way to reduce the backlash of ball screws or to increase the rigidity of ball screws by incorporating a series of steel balls or by using a pair of nuts which are displaced in the axial direction respectively.

#### Dynamic preload drag torque

A dynamic torque required to successively rotate the screw shaft or nut of ball screw to which the prescribed preload is applied without applying load from the outside.

#### Reference torque

A dynamic preload drag torque preset as a target.

#### Torque variation value

A value of variation in dynamic preload drag torque preset as a target.

#### Torque variation ratio

A ratio of torque variation to reference torque.

#### Actual torque

A dynamic preload drag torque obtained by measurement on an actual ball screw.

#### Mean actual torque

An arithmetic mean of the maximum and minimum values of the actual torque measured by moving the nut forward and backward over the effective thread length.

#### Actual torque variation

A maximum variation of actual torque measured by moving the nut forward and backward over the effective thread length. The value is described as a plus (+) and minus (-) value to the mean actual torque.

#### Actual torque variation ratio

A ratio of actual torque variation to mean actual torque.

### •MEASURING CONDITIONS

Measuring number of revolutions:100min<sup>-1</sup>

Viscosity of lubricant:ISO VG100

### •PERMISSIBLE RATIO OF TORQUE VARIATION

Table 18 Permissible ratio of torque variation

Reference torque (N•cm)		Effective thread length (mm)											
		4000 or less											
		Slenderness ratio:40 or less						Slenderness ratio:60 or less					
		Accuracy grade						Accuracy grade					
Over	Or less	C0	C1	C2	C3	C4	C5	C0	C1	C2	C3	C4	C5
20	40	±35%	±40%	±45%	±45%	±50%	±55%	±40%	±45%	±50%	±55%	±60%	±65%
40	60	±25	±30	±35	±35	±40	±45	±33	±38	±45	±45	±50	±50
60	100	±20	±25	±30	±30	±35	±35	±25	±30	±35	±35	±40	±40
100	250	±15	±20	±25	±25	±30	±30	±20	±25	±30	±30	±35	±35
250	630	±10	±15	±20	±20	±25	±25	±15	±20	±25	±25	±30	±30
630	1000	-	-	±15	±15	±20	±20	-	-	±20	±20	±25	±25

(Note)•Slenderness ratio is the value obtained by dividing thread length (mm) of screw shaft by nominal diameter (mm) of screw shaft.

•Under 20 N•cm, KURODA sets torque standards independently.