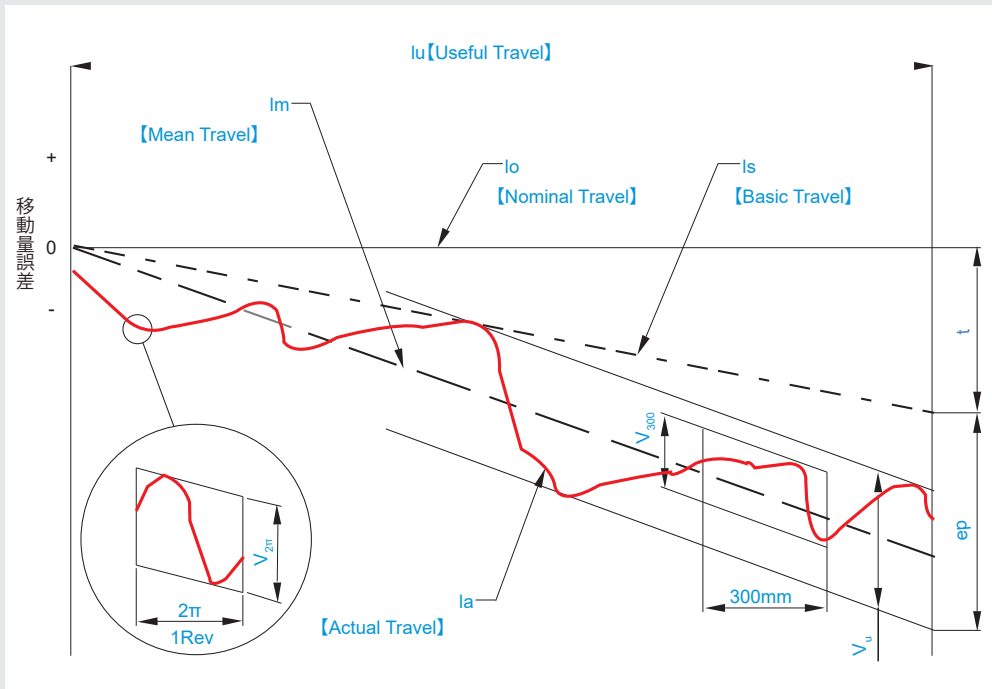


Ball Screws Introduction

Lead Accuracy of Ball Screw



Code	Designation of Code	Coding Explanation
t	Target Value of Basic Travel	The value obtained by deducting the nominal travel from basic travel within the useful travel length.
ep	Mean Travel Deviation	The value obtained by deducting the basic travel from mean travel.
ls	Basic Travel	Corrected axial travel displacement of the nominal travel, which is occurred due to thermal and loading. It leans to actual travel line.
Im	Mean Travel	Mean travel line. The straight line calculated by least square method or simple approximation method according to the curve indicated as actual travel.
la	Actual Travel	The actual travel measured. The maximum variations of the actual travel (range) between two straight lines parallel to mean travel will be determined according to the following 3 items.
Vu	Variations	Max. variation within useful length of the shaft section.
V300		Max. variation within 300mm randomly retrieved from useful length of the shaft section.
V2π		Max. variation of one-rotation (2π rad) randomly retrieved from useful length of the shaft section.

Introduction of International Standards

International Accuracy Standard of Ball Screw

Unit: μm

Grade Classification		Ground Grade					Rolled Grade	
		C0	C1	C3	C5	C7		
V ₃₀₀	ISO, DIN	※	6	12	23	52		
	JIS	3.5	5	8	18	50		
	GMT	3.5	5	8	18	50		

※ V₃₀₀: Max. variation within 300mm randomly retrieved from effective length of the shaft section.

Variation Range of Preloaded Torque (Source : JIS B1192)

Unit: $\pm\%$

Basic Torque (Kgf. cm)		Useful Stroke (mm)														
		< 4000mm										from 4000mm (incl.) up to 10000mm				
		Slenderness ≤ 40					40 < Slenderness < 60					-				
		Accuracy					Accuracy					Accuracy				
Above	To	C0	C1	C3	C5	C7	C0	C1	C3	C5	C7	C0	C1	C3	C5	C7
2	4	30	35	40	50	-	40	40	50	60	-	-	-	-	-	-
4	6	25	30	35	40	-	35	35	40	45	-	-	-	-	-	-
6	10	20	25	30	35	40	30	30	35	40	45	-	-	40	45	50
10	25	15	20	25	30	35	25	25	30	35	40	-	-	35	40	45
25	63	10	15	20	25	30	20	20	25	30	35	-	-	30	35	40
63	100	-	15	15	20	30	-	-	20	25	35	-	-	25	30	35

Note: 1. Slenderness Ratio = screw Tread length / Screw Nominal O.D.

2. Basic variation range of designed pre-load torque.

Variation of Mean Travel

Unit: μm

Accuracy		C0		C1		C3		C5	
Item		Mean Travel Deviation ($\pm\text{ep}$)	Variation (V_u)	Mean Travel Deviation ($\pm\text{ep}$)	Variation (V_u)	Mean Travel Deviation ($\pm\text{ep}$)	Variation (V_u)	Mean Travel Deviation ($\pm\text{ep}$)	Variation (V_u)
Above	Below								
-	100	3	3	3	5	8	8	18	18
100	200	3.5	3.5	3	5	10	8	20	18
200	300	4	4	3.5	5	12	8	23	18
300	400	5	5	3.5	5	13	10	25	20
400	500	6	6	4	5	15	10	27	20
630	800	6	6	4	6	16	12	30	23
500	630	7	7	5	7	18	13	35	25
800	1000	8	8	6	8	21	15	40	27
1000	1250	9	9	6	9	24	16	46	30

Variation

Accuracy	C0		C1		C3		C5	
Item	V ₃₀₀	V _{2π}	V ₃₀₀	V _{2π}	V ₃₀₀	V _{2π}	V ₃₀₀	V _{2π}
Allowable Value	3.5	3	5	4	8	6	18	8

GOOBS Series Introduction

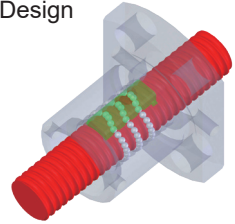
GOOBS Series Unique Features

◎Reflux Design

Internal Circulation Structure

- ☒ One circulation counts on crossing ball screw thread peak along internal return retainer.
- ☒ Fits to short lead thin shaft needs.
- ☒ Performed by high rigidity & secured by steel material been heat-treatment.

Reflux Design

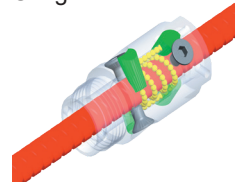


◎Extended Usage Life

Reliable Internal Circulation Structure

- ☒ Ball run endless inside along the internal circulation retainer.
- ☒ Fits to short lead thin shaft needs.
- ☒ Retainer in POM adapted to increase reliability & decrease noise.

Extended Usage Life



Low Temperature
Black & Chrome Plating



◎Surface Treatment-Low Temperature Black & Chrome Plating

Hardness	Color	Thickness of Layer	Material Applicability	Characteristics
800HV	Black Extinction	1~2μm	Steel Copper Stainless Steel	1. Good corrosion 2. Rust proof 3. Abrasion proof 4. Ultra thin layer

◎Salt Spray Test

	Thickness of Layer (μm)	Corrosion Proof (hr)
Brand A	2.5	48
Brand B	1.75	96
Brand C	2	96
GOOYII	2	120