




Rolled Ball Screws / Precision Ball Screws



Type, Lead Accuracy and Available Grease

Ball Screw Lineup

Roller Ball Screws

Type	Compact Nut Type	Standard Nut Type	Block Nut Type
Screw Shaft O.D.	Ø8~25	Ø8~32	Ø15~25
	BSSC	BSSZ/BSSR/BSST	BSSB
Part Number			
Accuracy Grade	C10	C7/C10	C10
Features	• The Nut size is up to 40% smaller.	• Most common type	• Can be mounted to the table directly

Precision Ball Screws

Type	Compact Nut Type	Standard Nut Type
Screw Shaft O.D.	Ø6~8	Ø8~25
	BSX	BSX/BSS/BSSE
Part Number		
Accuracy Grade	C3	C3/C5/C7
Features	• Nut body diameter is smaller.	• Most common type

- Rolled Ball Screw Lineup -

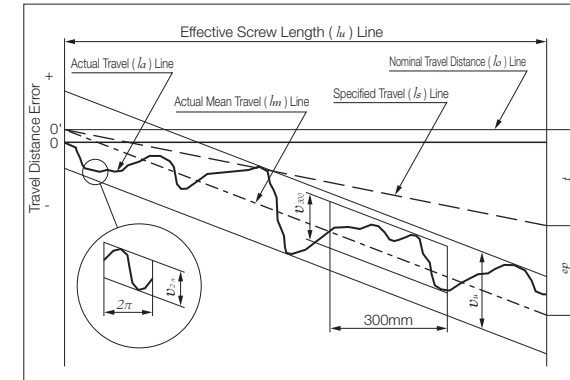
Type	Example	Shaft Dia.	Lead	Axial Play (mm)	Shaft Length (mm)			
					MIN	MAX		
Standard Nut Accuracy Grade C7	BSST	8	2	0.03 or Less	100	380		
			4		150	585		
			12		150	795		
		15	5		200	1200		
			10		200	1200		
			20		200	1200		
	20	5	200	1200				
		10	250	2000				
		20	250	2000				
		25	5	200	2000			
			10	300	2000			
			20	300	2000			
Standard Nut Accuracy Grade C10	BSSZ BSSR	8	2	0.05 or Less	100	400		
			4		150	585		
			10		150	600		
		10	4		150	585		
			10		150	800		
			15		150	800		
		15	5		200	1200		
			10		200	1200		
			20		200	1200		
	20		5	200	2000			
			10	250	2000			
			20	250	2000			
	25	10	300	2000				
		25	300	2000				
		28	6	250	2000			
			10	300	2000			
			32	300	2000			
		Compact Nut Accuracy Grade C10	BSSC	8	2	0.05 or Less	100	400
4	150				600			
12	150				800			
15	5			150	1200			
	10			200	1200			
	20			200	2000			
20	5		200	2000				
	10		250	2000				
	25		200	2000				
	Block Nut Accuracy Grade C10		BSBR	15	5	0.10 or Less	150	1200
					20		200	1200
					25		200	1500
20		15	150	1200				
		20	200	1200				
		25	200	1500				

- Precision Ball Screw Lineup -

Type	Example	Shaft Dia.	Lead	Axial Play (mm)	Shaft Length (mm)		
					MIN	MAX	
Standard Nut Accuracy Grade C3	BSX	6	1	0 (Preloaded)	80	205	
			1		80	255	
			2		100	240	
			2		100	310	
			5		150	390	
			5		150	440	
Standard Nut Accuracy Grade C5	BSS	8	2	0.005 or Less	100	210	
			2		100	315	
			4		150	380	
			10		150	450	
			2		150	445	
			4		150	400	
	15	5	200	1095			
		10	200	1095			
		20	230	1095			
		20	5	200	1000		
			10	250	1500		
			20	250	1500		
25	5	300	995				
	10	300	1500				
	20	300	1500				
	Standard Nut Accuracy Grade C7	BSSE	8	2	0.030 or Less	100	210
				2		100	315
				4		150	380
2				150		445	
5				150		450	
10				200		600	
15	5	150	1095				
	10	200	1095				
	20	230	1095				
	20	5	200	1000			
		10	250	1500			
		20	250	1500			
25	5	300	995				
	10	300	1500				
	20	300	1500				

Lead Accuracy of Ball Screws (For details, see P. 1937)

The lead accuracy of Ball Screws is defined by JIS Standard Characteristics ($\epsilon^P, U_{10}, U_{300}$ and $U_{2\pi}$). In general, confirm actual mean travel error for Ball Screws is within the range of necessary positioning precision. Then select the accuracy grade for Ball Screws to be used. Definitions and allowable values for each characteristic are as follows.



Term	Symbol	Meaning
Actual Mean Travel Error	ϵ^P	Difference between actual mean travel and specified travel
Variation	U_{10}	Maximum difference of the actual travel within two lines drawn parallel to the actual mean travel. Defined as following three parameters:
	U_{300}	U_{10} : Maximum value against an effective thread length.
	$U_{2\pi}$	U_{300} : Maximum value against 300mm span arbitrarily taken from the effective thread length
	$U_{2\pi}$	$U_{2\pi}$: Variation for an arbitrary 1 revolution (2πrad).
Specified Travel	l_s	While a nominal travel indicates a nominal travel distance, this is an amount of axial travel distance after compensating possible axis expansion and contraction caused by thermal rise and loads.
Target Value for Specified Travel	t	Difference between specified travel and nominal travel over the effective thread length. This value is predetermined by compensating possible expansion and contraction caused by external loads and a change in thermal conditions. It is predetermined from experimental data or past experiences.
Actual Travel	l_a	Actually measured travel distance.
Actual Mean Travel	l_m	Straight line representing the trend of actual travel. A straight line obtained by the least squares method or another simple and optimal approximation method from a curve that indicates an actual travel distance.

Available Grease

Grease type can be changed from the standard type to the following types.

Part Number	Product Name	Main Features
L Type	ET-100 (Made by Kyodo Yushi)	Excels in heat resistance, oxidation stability, adhesion and adhesive power. In addition, splash or leakage is little.
G Type	LG2 (Made by NSK Ltd.)	Special grease for linear guides, ball screws and etc. for clean-room use.

Item	Condition	Unit	Measurement Method	Main Features		
				L Type	G Type	
Grease Performance	Thickener	-	-	Aromatic Diurea	Lithium Type	
	Base Oil	-	-	Ether Synthetic Oil	Mineral Oil + Synthetic Hydrocarbon Oil	
	Base Oil Viscosity	40°C	mm ² /s	JIS K2220 5.19	103	30
		100°C			12.8	-
	Worked Penetration	-	-	JIS K2220 5.3	280	207
	Dropping Point	-	°C	JIS K2220 5.4	<260	200
	Evaporation Amount	99°Cx24h	wt%	-	0.15%	1.40%
	Oil Separation Rate	100°Cx24h	wt%	JIS K2220 5.14	1.2%	0.8%
	Operating Temp.	In Air	°C	-	-40~200	-10~80

Available Ball Screws and Grease Types

Type	Accuracy Grade	Type
Precision Ball Screws	C 5	BSS
	C 7	BSSE
	C 7	BSST
Rolled Ball Screw	C10	BSSR BSSZ
		BSSRK BSSZK

⊗ Not applicable to Precision Ball Screws Accuracy Grade C3 and Compact Nut Type Rolled Ball Screws

Price [Configure Online](#)

Ordering Example: Part Number - **L**
BSS2010L - 700 (L Type Greased)
BSS2010G - 700 (G Type Greased)
 ⊕ Please add L, G after the part number of standard type when placing an order.

Days to Ship [Configure Online](#)

Alterations [Part Number - L - \(FC, MC, etc.\)](#)
BSS2010L - 700 - RNC

⊕ Confirm the details of alterations from each page.