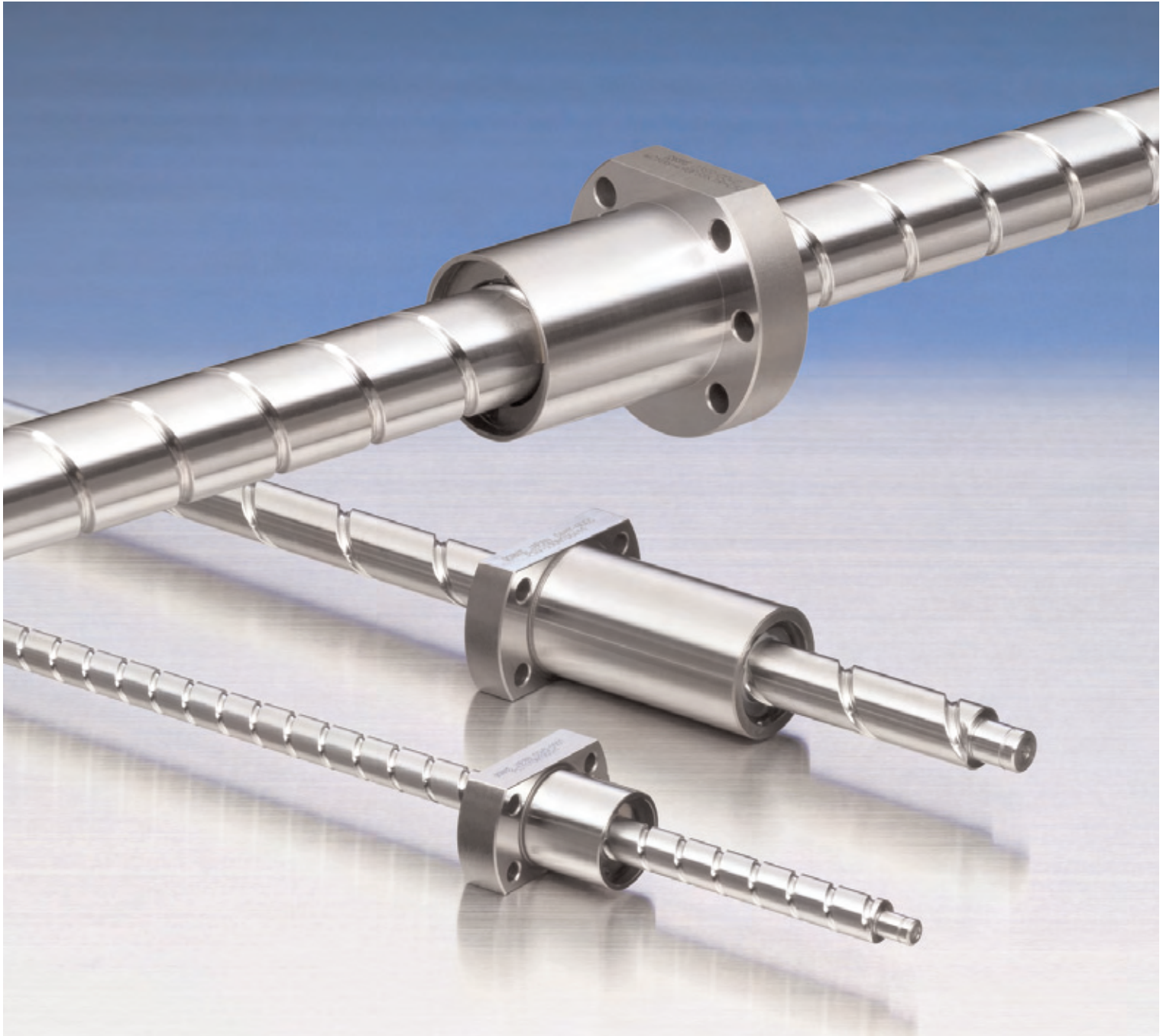
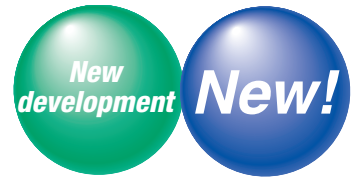


High-speed and Low-noise Ball Screws

BSS Series

Quiet and compact, with unparalleled high speed performance. Reduced-noise BSS Series ball screws for an extensive range of uses, from machine tools to transportation equipment.

Patent Pending



BSS Series—Next-generation ball screws with quiet, high-speed performance in a compact size, the result of joining NSK's advanced technology with an innovative recirculation method

A new series has joined the NSK ball screws lineup that delivers unrivaled precision. Developed with the advanced technology NSK has gained over years of earning customer trust with proven performance, this series represents a groundbreaking achievement in reduced noise and high-speed operation in an amazingly compact size. The quiet performance is especially appreciated in machine tools, medical equipment, semiconductor-manufacturing equipment, LCD manufacturing equipment, and chip mounting equipment.

Features

Quieter by 6 dB; nearly silent in typical applications

The average noise level is reduced by more than 6 dB compared with our conventional products. At low-speed rotation, the ball screws are nearly silent, while the lowest noise level is achieved at high-speed rotation*.

*Noise level measured with a microphone at a distance of 400 mm.

High-speed operation of up to 180 000 d·n

Realizes high-speed operation at a maximum of d·n 180 000—outstanding for ball screws and far surpassing the 100 000 d·n maximum performance of conventional return tube type products. For high lead ball screws, high-speed operation at over 200m/min is also possible.

Allowable maximum rotational speed is 5 000 min⁻¹.

Please consult NSK if maximum rotational speed exceed 5 000 min⁻¹ or d·n exceed 180 000.

30% smaller

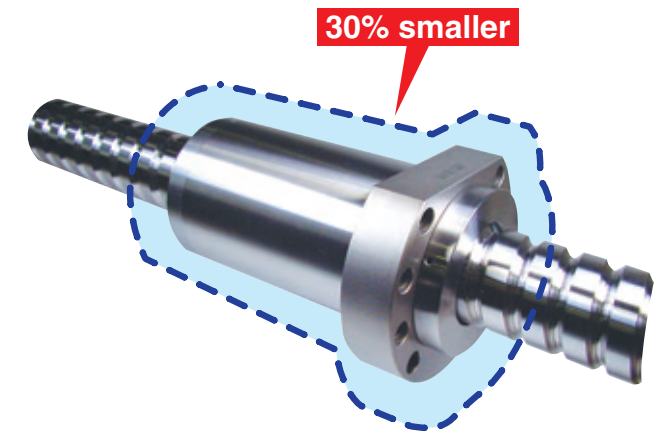
The external diameter of the ball nut is 30% smaller than our conventional models. Compact configurations are possible for low-profile XY tables as well as for other devices and equipment.

Grease fitting provided as standard equipment

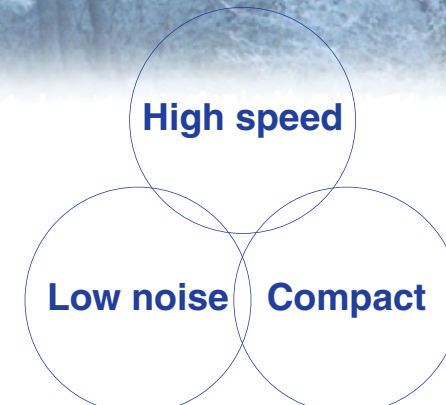
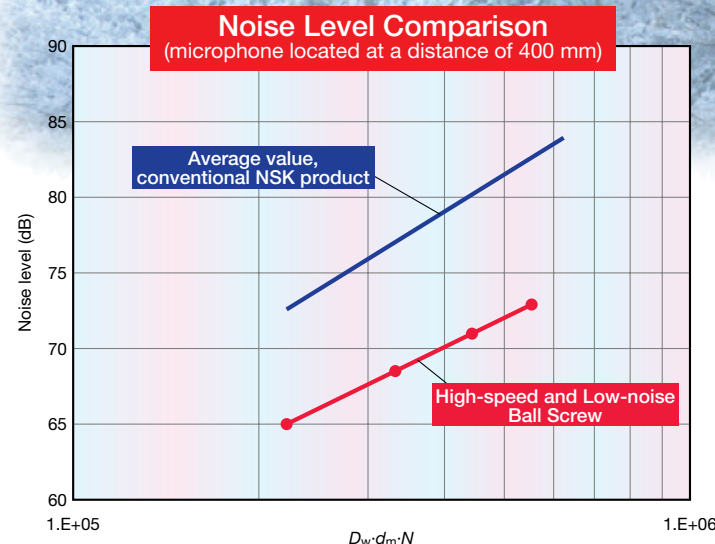
The ball screws with shaft diameters of less than φ25 are standardly equipped with a grease fitting (M5 × 0.8). Lubrication ports are provided in 2 places to facilitate maintenance. The ball screws can be easily connected to an integrated lubrication system.

High-speed and Low-noise Ball Screws BSS Series

*High speed,
extremely low noise*



Silent



Application

Combinations of shaft diameter and lead of the high-speed and low-noise ball screws are shown in the table.

Shaft diameter	Lead													
	5	10	12	16	20	25	30	32	40	50	60	64	80	100
10	●	●												
12	●	●			●		●							
15	●	●			●		●							
20	●	●			●		●		●		●			
25	●	●			●	●	●			●				
32	●	●	●	●	●			●				●		
36	●	●	●	●	●									
40	●	●	●	●	●	●	●		●				●	
45	●	●	●	●	●	●	●							
50	●	●	●	●	●	●	●			●				●

Specifications

Recirculation method

A new internal ball recirculation method is applied for simpler, more compact ball nuts.

Preload and axial play

Adopts oversized ball preload, suitable for compact devices. Axial play can be selected from less than or equal to 0.005 mm (code T), 0.020 mm (code S), or 0.050 mm (code N). For more information, please see the general catalog of precision machine components.

Sealing

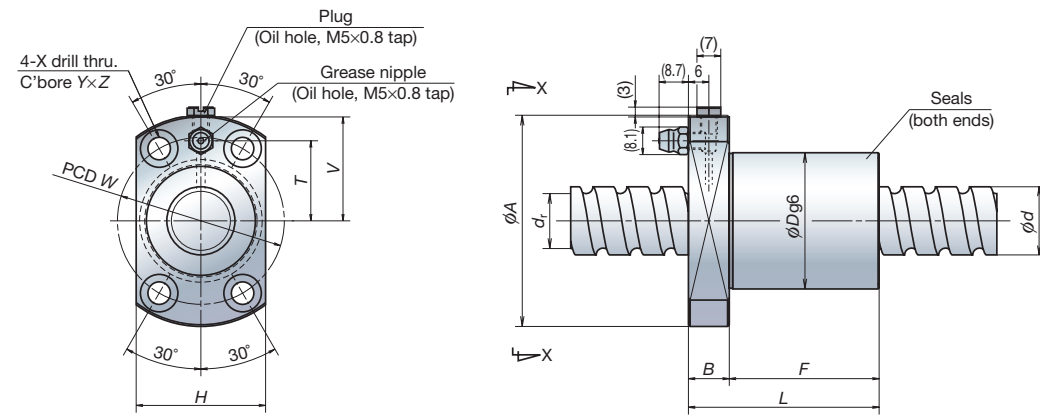
Adopts a new compact design high performance sealing. Minimal grease scattering contributes to maintenance of a clean environment.

Options

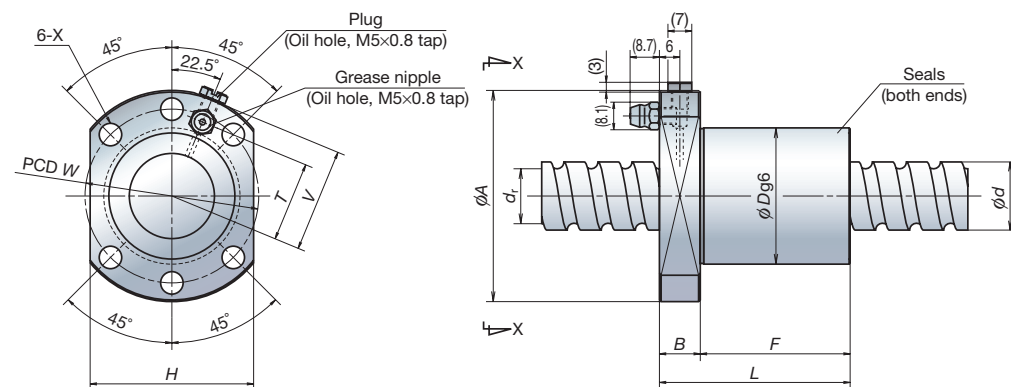
- Optional NSK K1™ lubrication unit, molded from resin and impregnated with lubrication oil, supplies fresh oil onto ball rolling surfaces, ensuring long-term, maintenance-free usage. Please contact NSK when using NSK K1.
- Please contact NSK about hollow shaft ball screws that are compatible with the forced cooling of the shaft center, which are effective for stabilizing positioning accuracy and shortening the warm-up period.

Dimensions of BSS Series

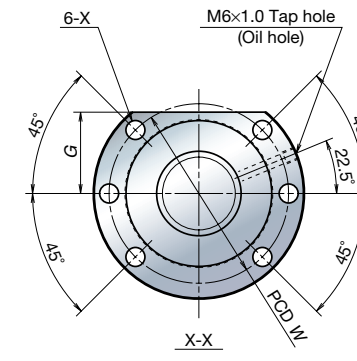
High-speed and Low-noise Ball Screws BSS Series



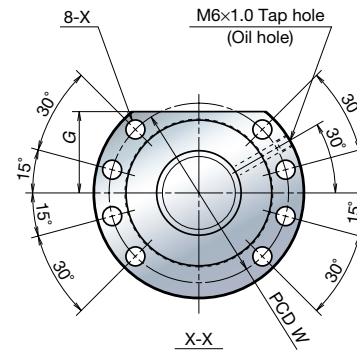
Type I Flange



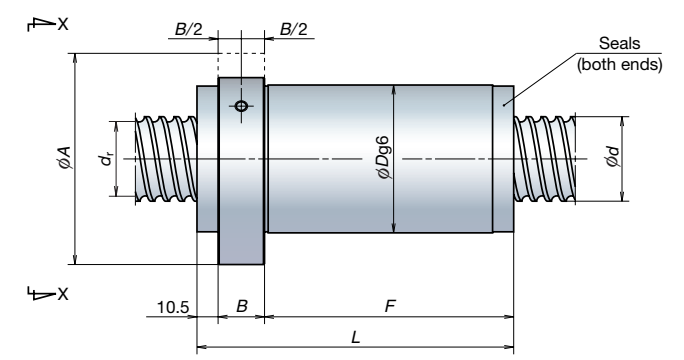
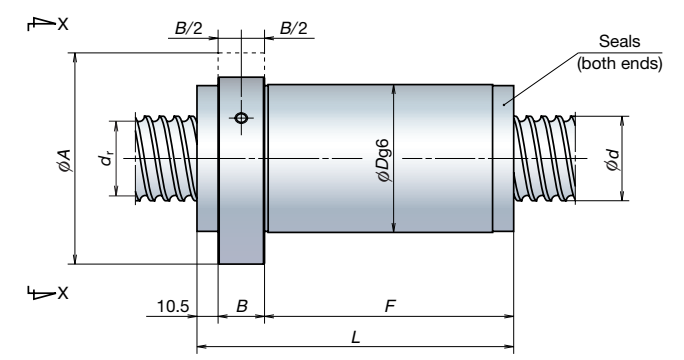
Type II Flange



Type III Flange



Type IV Flange



Unit: mm

Model No.	Screw shaft diameter d	Lead l	Ball dia. D_w	Ball circle dia. d_m	Root dia. d_r	Effective turns of balls	Basic load rating		Axial rigidity (N/ μ m)	Ball nut dimensions												
							Dynamic C_a (N)	Static C_{oa} (N)		D	A	L	B	F	HxV	TYPE	W	T	X	Y	Z	
BSS1005-3E	10	5	2.000	10.3	8.2	3	2 930	4 790	126	23	43	29	11	18	26x21	I	33	14	4.5	8	4.5	
BSS1010-2E		10				2	1 970	3 010	77													21
BSS1205-3E	12	5	2.000	12.3	10.2	3	3 200	5 860	146	24	44	30	11	19	27x21.5	I	34	14.5	4.5	8	4.5	
BSS1210-3E		10				3	3 200	5 860	142													32
BSS1220-2E		20				2	2 150	3 610	83													39
BSS1230-2E	30	2	2 150	3 610	75	59																
BSS1505-3E	15	5	2.778	15.5	12.6	3	5 460	10 200	183	28	51	30	11	19	31x25	I	39	18	5.5	9.5	5.5	
BSS1510-3E		10				3	5 460	10 200	181													32
BSS1520-2E		20				2	5 070	8 730	127													40
BSS1530-2E		30				2	5 070	8 730	116													60
BSS2005-3E	20	5	3.175	20.5	17.2	3	8 790	18 500	268	36	62	31	13	18	38x30.5	I	49	23.5	6.6	11	6.6	
BSS2010-3E		10				3	8 790	18 500	268													32
BSS2020-2E		20				2	5 900	11 700	167													41
BSS2030-2E		30				2	5 900	11 700	159													61
BSS2040-2E		40				2	5 900	11 700	147													79
BSS2060-2E		60				2	5 900	11 700	128													116
BSS2505-3E	25	5	3.175	25.5	22.2	3	9 760	23 600	325	40	62	32	12	20	48x30.5	II	51	23.5	6.6	-	-	
BSS2510-4E		10				4	12 800	32 300	437													44
BSS2520-2E		20				2	6 560	14 600	203													54
BSS2525-2E		25				2	6 560	14 600	197													63
BSS2530-2E		30				2	6 560	14 600	194													74
BSS2550-2E		50				2	6 560	14 600	177													114

Unit: mm

Note: Rigidity values in this table are theoretical values derived from elastic displacement between screw grooves and balls when axial load is applied to a ball nut for which preload is set at 3% of the basic dynamic load rating (C_a).
The shape and dimension of ball screws with shaft diameters less than $\phi 25$ are the same as NSK ball screws held in standard stock as the Compact FA Series.

Model No.	Screw shaft diameter d	Lead l	Ball dia. D_w	Ball circle dia. d_m	Root dia. d_r	Effective turns of balls	Basic load rating C_a (N)	Static C_{oa} (N)	Axial rigidity (N/ μ m)	Ball nut dimensions											
										D	A	L	B	F	G	TYPE	W	X			
BSS3205-5E	32	5	3.175	32.5	29.2	5	17 500	52 900	672	56	86	60	12	37.5	34	III	71	9	-	-	
BSS3210-6E		10				6	43 300	111 000	865												104
BSS3212-5E		12				5	36 700	90 800	716												103
BSS3216-5E		16				5	36 700	90 800	716												122
BSS3220-5E		20				5	36 700	90 800	708												141
BSS3232-2E		32				2	15 300	32 400	261												94
BSS3264-2E	64	2	15 300	32 400	232	153	124.5														
BSS3605-5E	36	5	6.35	37	30.4	5	18 400	59 500	740	65	95	60	12	37.5	36	IV	80	9	-	-	
BSS3610-6E		10				6	55 200	142 000	970												109
BSS3612-6E		12				6	55 200	142 000	967												120
BSS3616-6E		16				6	55 200	142 000	961												143
BSS3620-6E	20	6	55 200	142 000	959	166	133.5														
BSS4010-6E	40	10	6.35	41	34.4	6	58 200	158 000	1 060	70	100	109	22	76.5	38.5	IV	85	9	-	-	
BSS4012-6E		12				6	58 200	158 000	1 050												120
BSS4016-6E		16				6	58 200	158 000	1 050												143
BSS4020-6E		20				6	58 200	158 000	1 050												166
BSS4025-4E		25				4	40 100	103 000	686												145
BSS4030-3E		30				3	30 600	74 000	505												134
BSS4040-2E		40				2	20 600	46 600	319												110
BSS4080-2E		80				2	20 600	46 600	286												184
BSS4510-6E	45	10	6.35	46	39.4	6	60 700	178 000	1 160	75	110	109	22	76.5	43	IV	93	11	-	-	
BSS4512-6E		12				6	60 700	178 000	1 160												120
BSS4516-6E		16				6	60 700	178 000	1 160												143
BSS4520-6E		20				6	60 700	178 000	1 150												166
BSS4525-5E		25				5	51 400	146 000	954												170
BSS4530-4E		30				4	41 800	116 000	752												164
BSS5010-6E	50	10	6.35	51	44.4	6	64 600	198 000	1 270	82	118	109	22	76.5	46	IV	100	11	-	-	
BSS5012-6E		12				6	64 600	198 000	1 270												120
BSS5016-6E		16				6	64 600	198 000	1 270												143
BSS5020-6E		20				6	64 600	198 000	1 260												166
BSS5025-5E		25				5	54 700	164 000	1 040												170
BSS5030-5E		30				5	54 700	164 000	1 040												194
BSS5050-2E		50				2	22 800	58 300	383												130
BSS50100-2E		100				2	22 800	58 300	342												224

Note: Rigidity values in this table are theoretical values derived from elastic displacement between screw grooves and balls when axial load is applied to a ball nut for which preload is set at 3% of the basic dynamic load rating (C_a).

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