MOTION & CONTROL
NSK

NSK Ball Screws for Standard Stock

Compact FA Series

New!

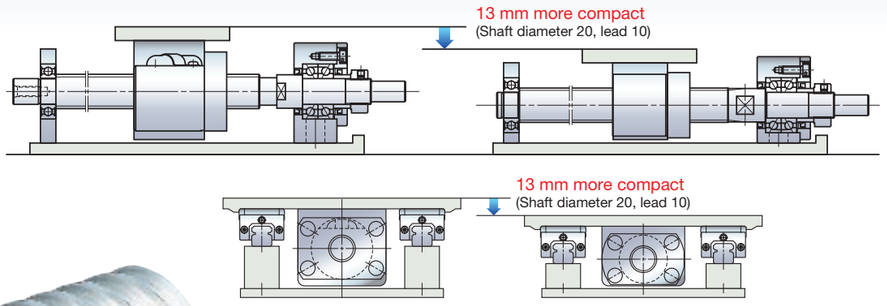
Patent Pending

Next-generation compact ball screws offer quiet, high speed operating performance.
A standard stock series assures immediate delivery.

BSS Series next-generation compact ball screws offer quiet, high-speed performance, now available in standard stock.

BSS Series next-generation compact ball screws incorporate the new ball recirculation system and offer quiet, high-speed performance. In order to respond quickly to a wide range of needs, NSK keeps these ball screws in standard stock as the Compact FA Series. The exceptionally high performance ball screws are ready for use in a variety of fields such as semiconductor manufacturing equipment, LCD manufacturing equipment, chip mounting equipment, measuring apparatus, and medical equipment.

Comparison of conventional FA Series and Compact FA Series



Features

6 dB less noise

The noise level of ball screws has been reduced by 6 dB, about half of what is sensed by the ear. Ball screws subsequently produce a quieter and gentler sound.

10%–30% more compact ball nut

The outside diameter of the ball nut is as much as 30% smaller than those of NSK conventional products. This contributes to more compact design of all sorts of equipment and devices such as thinner XY tables.

High-speed operation of up to 5 000 min^{-1}

The new ball screws offer 1.6 times faster rotational speed than conventional ball screws. They handle speeds up to 5 000 min^{-1}. This capability dramatically expands the range of service conditions.
Note: Please refer to the dimension table for details of permissible rotational speed.

Grease fitting provided as standard equipment

The new ball screws 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.

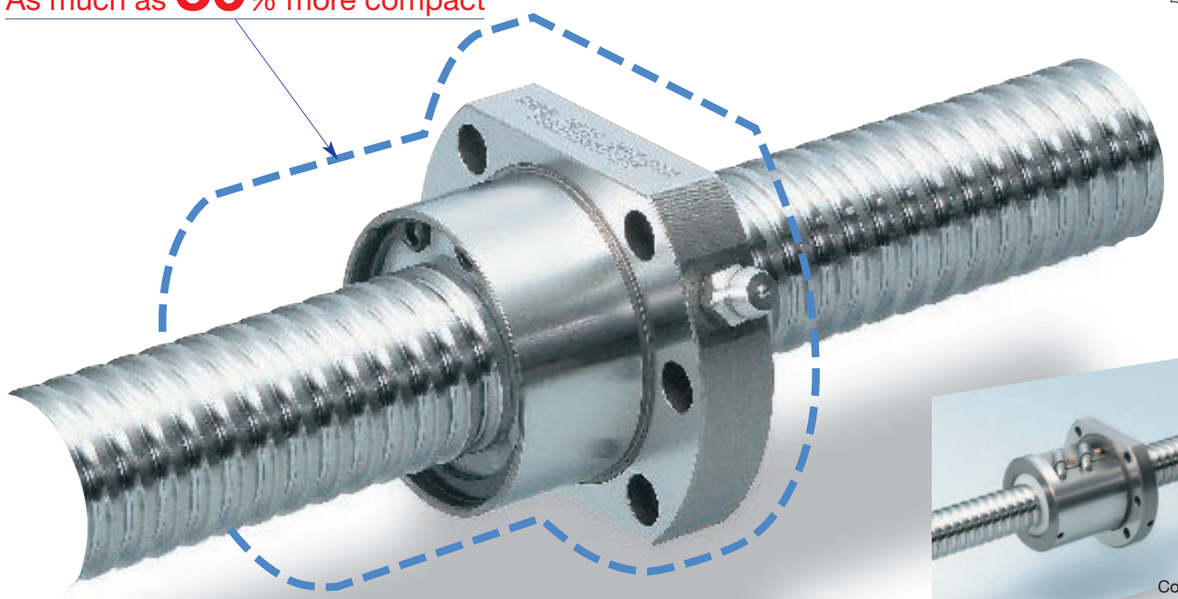
New type of contact seal

A new model high-performance contact seal minimizes grease dispersion and helps to maintain a clean work environment.

Low-profile design

The low-profile support units especially compatible with the compact FA series are available for uniquely space-saving design.

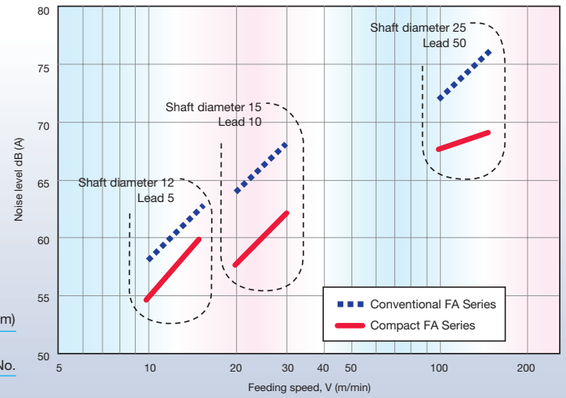
Existing support unit ⇒ New low-profile support unit



Example of reference number: **PSS 15 20 N1D 0561**

- PSS: Compact FA Series, Accuracy grade: C5
- 15: Screw shaft diameter (mm)
- 20: Lead (mm)
- N1D: NSK control No.
- 0561: Ball screw shaft length L_3 (mm)

Noise data



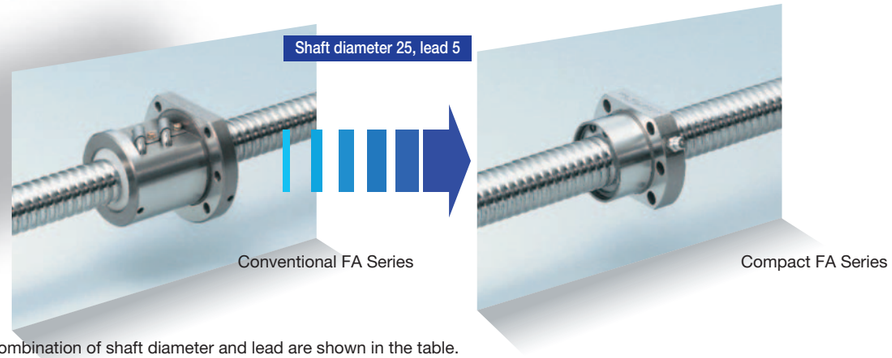
(Microphone was positioned at a distance of 400 mm for all noise measurements.)

Compact & Silent

Specifications

- Accuracy grade: C5 class is available.
- Axial play: 0 (oversize ball preload)

Consult with NSK for information on surface treatment.

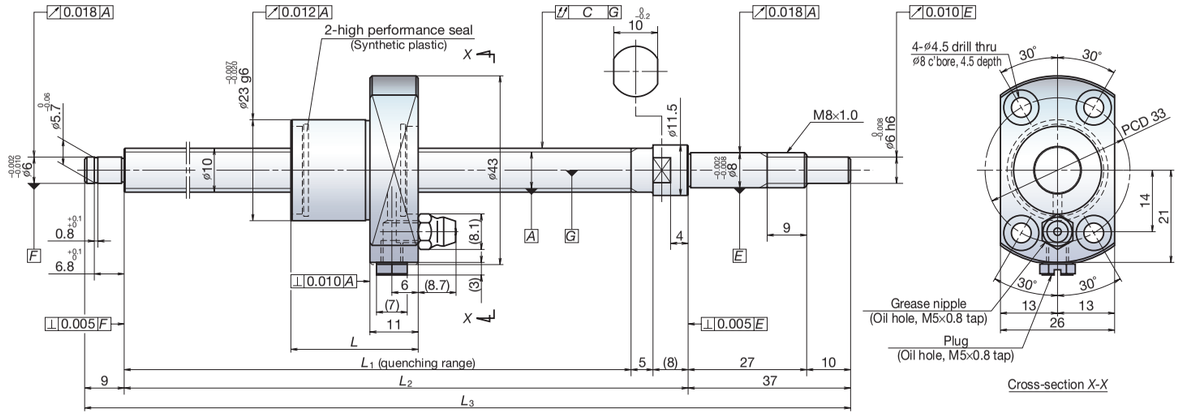


Application: Combination of shaft diameter and lead are shown in the table.

Shaft diameter	Lead	Stroke													Recommended support unit	
		50	100	150	200	300	400	500	600	700	800	1 000	1 200	1 600	2 000	Fixed side support unit	Simple side support unit
10	5	●	●		●	●	●									WBK08-01B	WBK08S-01B
	10		●		●	●	●										
12	5	●	●		●	●	●	●								WBK08-01B	WBK08S-01B
	10		●		●	●	●	●									
	20		●		●	●	●	●									
	30		●		●	●	●	●									
15	5	●	●		●	●	●	●	●							WBK12-01B WBK10-01B	WBK12S-01B
	10		●		●	●	●	●	●	●	●	●					
	20		●		●	●	●	●	●	●	●	●					
	30		●		●	●	●	●	●	●	●	●					
20	5			●	●	●	●	●	●	●	●					WBK15-01B	WBK15S-01B
	10				●	●	●	●	●	●	●	●	●				
	20					●	●	●	●	●	●	●	●	●			
	30				●	●	●	●	●	●	●	●	●				
	40						●	●	●	●	●	●	●	●	●		
	60						●	●	●	●	●	●	●	●	●		
25	5			●	●	●	●	●		●	●	●				WBK20-01	WBK20S-01
	10					●	●	●	●	●	●	●		●			
	20							●	●	●	●	●	●	●	●		
	25							●	●	●	●	●	●	●	●		
	30							●	●	●	●	●	●	●	●		
	50							●	●	●	●	●	●	●	●		

Other support units are also available. See last page of catalog for details.

Screw shaft ϕ10
Lead 5, 10



Ball screw specification

Preload type	Oversize ball preload (P-preload)
Ball diameter/screw shaft root diameter	2.000/8.2
Accuracy grade/axial play	C5/0
Factory pre-packed grease	NSK grease PS2

Recommended support unit

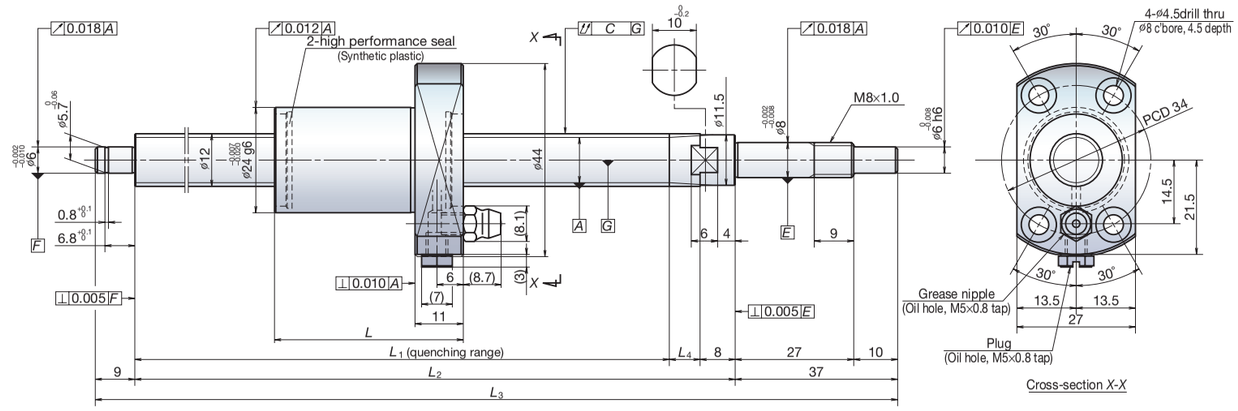
WBK08-01B	(square, fixed side)
WBK08S-01B	(square, simple side)
WBK08-11B	(round, fixed side)

Unit: mm

Reference number	Screw shaft diameter d	Lead ℓ	Basic load ratings (N) Dynamic C_a	Basic load ratings (N) Static C_{0a}	Stroke Nominal	Stroke Max. L_1-L	Nut length L	Screw shaft dimensions L_1	L_2	L_3	Lead accuracy Target value T	Lead accuracy Error e_p	Lead accuracy Variation υ_u	Shaft runout, C	Dynamic preload torque (N·cm) *1	Permissible rotational speed (min^{-1}) *2 Fixed-Simple
PSS1005N1D0171	10	5	2 930	4 790	50	83	29	112	125	171	0	0.020	0.018	0.030	0.7 – 3.3	5 000
PSS1005N1D0221					100	133		162	175	221		0.020	0.018	0.045	0.7 – 3.3	
PSS1005N1D0321					200	233		262	275	321		0.023	0.018	0.060	0.6 – 4.3	
PSS1005N1D0421					300	333		362	375	421		0.025	0.020	0.070	0.6 – 4.3	
PSS1005N1D0521					400	433		462	475	521		0.027	0.020	0.085	0.4 – 4.9	
PSS1010N1D0221		10	1 970	3 010	100	130	32	162	175	221		0.020	0.018	0.045	0.7 – 3.3	5 000
PSS1010N1D0321					200	230		262	275	321		0.023	0.018	0.060	0.6 – 4.3	
PSS1010N1D0421					300	330		362	375	421		0.025	0.020	0.070	0.6 – 4.3	
PSS1010N1D0521					400	430		462	475	521		0.027	0.020	0.085	0.4 – 4.9	

*1. Indicates ball screw preload control value. About 2.0 N·cm of torque is added due to high performance seal. *2. Contact NSK if permissible rotational speed is to be exceeded. *3. Service temperature range is -20°C to 80°C.

Screw shaft ϕ12
Lead 5, 10, 20, 30



Ball screw specification

Preload type	Oversize ball preload (P-preload)
Ball diameter/screw shaft root diameter	2.000/10.2
Accuracy grade/axial play	C5/0
Factory pre-packed grease	NSK grease PS2

Recommended support unit

WBK08-01B	(square, fixed side)
WBK08S-01B	(square, simple side)
WBK08-11B	(round, fixed side)

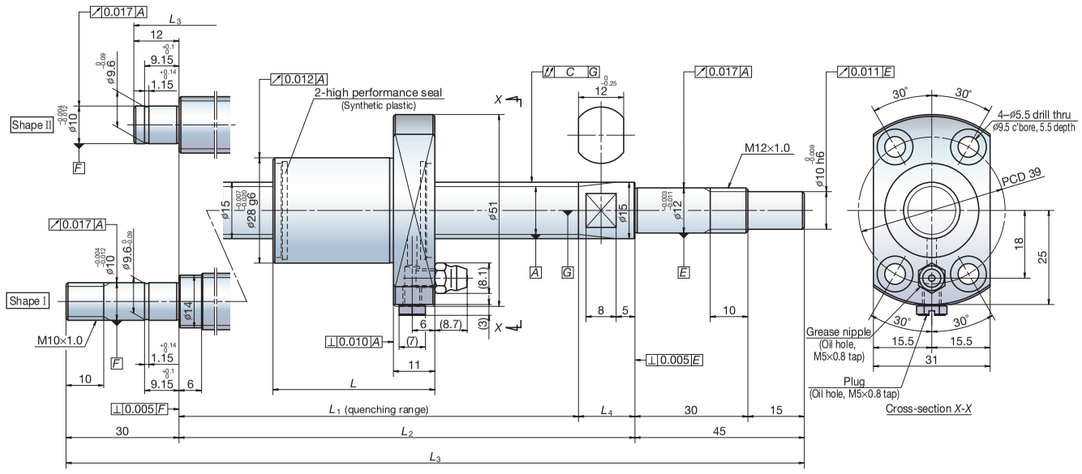
Unit: mm

Reference number	Screw shaft diameter d	Lead ℓ	Basic load ratings (N) Dynamic C_a	Basic load ratings (N) Static C_{0a}	Stroke Nominal	Stroke Max. L_1-L	Nut length L	Screw shaft dimensions L_1	L_2	L_3	L_4	Lead accuracy Target value T	Lead accuracy Error e_p	Lead accuracy Variation υ_u	Shaft runout, C	Dynamic preload torque (N·cm) *1	Permissible rotational speed (min^{-1}) *2 Fixed-Simple
PSS1205N1D0171	12	5	3 200	5 860	50	80	30	110	125	171	7	0	0.020	0.018	0.030	0.7 – 3.3	5 000
PSS1205N1D0221					100	130		160	175	221			0.020	0.018	0.045	0.7 – 3.3	
PSS1205N1D0321					200	230		260	275	321			0.023	0.018	0.060	0.6 – 4.3	
PSS1205N1D0421					300	330		360	375	421			0.025	0.020	0.070	0.6 – 4.3	
PSS1205N1D0521					400	430		460	475	521			0.027	0.020	0.085	0.6 – 4.3	
PSS1205N1D0621					500	530		560	575	621			0.030	0.023	0.085	0.4 – 4.9	
PSS1210N1D0221		10	3 200	5 860	100	117	43	160	175	221	7		0.020	0.018	0.045	0.7 – 3.3	5 000
PSS1210N1D0321					200	217		260	275	321			0.023	0.018	0.060	0.6 – 4.3	
PSS1210N1D0421					300	317		360	375	421			0.025	0.020	0.070	0.6 – 4.3	
PSS1210N1D0521					400	417		460	475	521			0.027	0.020	0.085	0.6 – 4.3	
PSS1210N1D0621					500	517		560	575	621			0.030	0.023	0.085	0.4 – 4.9	
PSS1220N1D0271		20	2 150	3 610	100	158	50	208	225	271	9		0.023	0.018	0.045	1.4 – 4.5	5 000
PSS1220N1D0371					200	258		308	325	371			0.023	0.018	0.060	0.9 – 4.9	
PSS1220N1D0471					300	358		408	425	471			0.027	0.020	0.070	0.9 – 4.9	
PSS1220N1D0571					400	458		508	525	571			0.030	0.023	0.085	0.6 – 5.9	
PSS1220N1D0671					500	558		608	625	671			0.030	0.023	0.110	0.6 – 5.9	4 200
PSS1230N1D0271		30	2 150	3 610	100	133	70	203	225	271	14		0.023	0.018	0.045	1.4 – 4.5	5 000
PSS1230N1D0371					200	233		303	325	371			0.023	0.018	0.060	0.9 – 4.9	
PSS1230N1D0471					300	333		403	425	471			0.027	0.020	0.070	0.9 – 4.9	
PSS1230N1D0571					400	433		503	525	571			0.030	0.023	0.085	0.6 – 5.9	
PSS1230N1D0671					500	533		603	625	671			0.030	0.023	0.110	0.6 – 5.9	4 300

*1. Indicates ball screw preload control value. About 2.0 N·cm of torque is added due to high performance seal. *2. Contact NSK if permissible rotational speed is to be exceeded. *3. Service temperature range is -20°C to 80°C.

NSK Ball Screws for standard stock

Screw shaft ϕ15
Lead 5, 10



Ball screw specification

Preload type	Oversize ball preload (P-preload)
Ball diameter/screw shaft root diameter	2.7781/12.6
Accuracy grade/axial play	C5/0
Factory pre-packed grease	NSK grease LR3

Recommended support unit

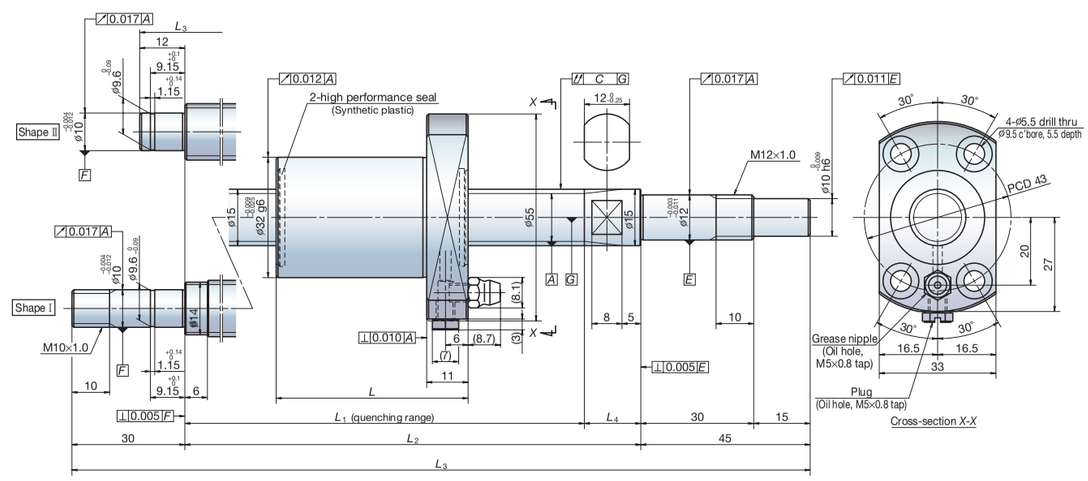
WBK12-01B	(square, fixed side)
WBK12S-01B	(square, simple side)
WBK12-11	(round, fixed side)
*4 WBK10-01B	(square, fixed side)
WBK10-11	(round, fixed side)

Unit: mm

Reference number	Screw shaft diameter d	Lead ℓ	Basic load ratings (N) Dynamic C_a	Basic load ratings (N) Static C_{0a}	Stroke Nominal	Stroke Max. L_1-L	Nut length L	Screw shaft dimensions L_1	L_2	L_3	L_4	Lead accuracy Target value T	Lead accuracy Error e_p	Lead accuracy Variation v_u	Shaft runout C	Dynamic preload torque (N·cm) *1	Permissible rotational speed (min^{-1}) *2 Fixed-Simple	Permissible rotational speed (min^{-1}) *2 Fixed-Fixed	Left shaft end (opposite driven side)
PSS1505N1D0211	15	5	5 460	10 200	50	109	30	139	154	211	15	0	0.020	0.018	0.035	0.2 – 6.9	5 000	–	Shape II
PSS1505N1D0261					100	159		189	204	261			0.020	0.018	0.035	0.2 – 6.9			
PSS1505N1D0361					200	259		289	304	361			0.023	0.018	0.045	0.2 – 6.9			
PSS1505N1D0461					300	359		389	404	461			0.025	0.020	0.050	0.4 – 9.8			
PSS1505N1D0561					400	459		489	504	561			0.027	0.020	0.060	0.4 – 9.8			
PSS1505N1D0661					500	559		589	604	661			0.030	0.023	0.075	0.4 – 9.8			
PSS1505N1D0761					600	659		689	704	761			0.035	0.025	0.075	0.4 – 11.8	3 600		
PSS1510N1D0261		10	5 460	10 200	100	146	43	189	204	261	15		0.020	0.018	0.035	0.6 – 7.4	5 000	–	Shape II
PSS1510N1D0361					200	246		289	304	361			0.023	0.018	0.045	0.6 – 7.4			
PSS1510N1D0461					300	346		389	404	461			0.025	0.020	0.050	0.4 – 9.8			
PSS1510N1D0561					400	446		489	504	561			0.027	0.020	0.060	0.4 – 9.8			
PSS1510N1D0661					500	546		589	604	661			0.030	0.023	0.075	0.4 – 9.8			
PSS1510N1D0761					600	646		689	704	761			0.035	0.025	0.075	0.4 – 11.8	3 600		
PSS1510N1D0879					700	746		789	804	879			0.035	0.025	0.095	0.4 – 11.8	2 700	3 400	Shape I
PSS1510N1D0979					800	846		889	904	979			0.040	0.027	0.095	0.4 – 11.8	2 200	3 400	
PSS1510N1D1179					1 000	1 046		1 089	1 104	1 179			0.046	0.030	0.120	0.4 – 11.8	1 400	2 300	

*1. Indicates ball screw preload control value. About 2.0 N·cm of torque is added due to high performance seal. *2. Contact NSK if permissible rotational speed is to be exceeded. *3. Service temperature range is -20°C to 80°C. *4. WBK 10-01B and WBK 10-11 are for shape I.

Screw shaft ϕ15
Lead 20, 30



Ball screw specification

Preload type	Oversize ball preload (P-preload)
Ball diameter/screw shaft root diameter	3.175/12.2
Accuracy grade/axial play	C5/0
Factory pre-packed grease	NSK grease LR3

Recommended support unit

WBK12-01B	(square, fixed side)
WBK12S-01B	(square, simple side)
WBK12-11	(round, fixed side)
*4 WBK10-01B	(square, fixed side)
WBK10-11	(round, fixed side)

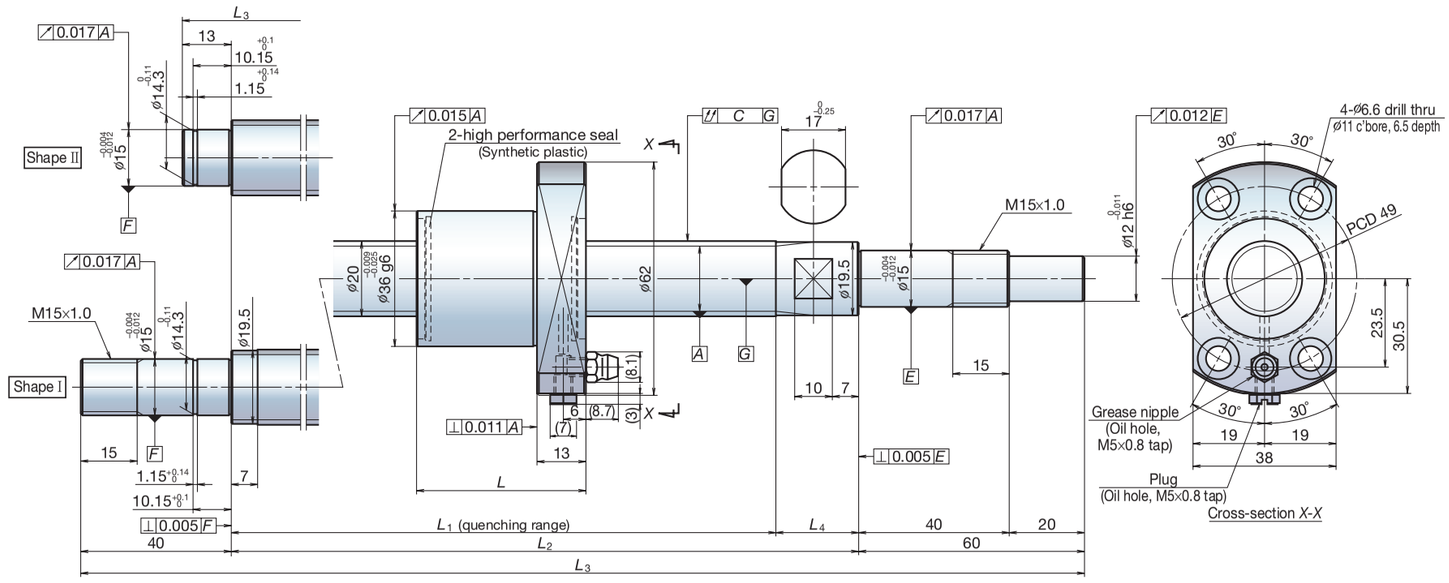
Unit: mm

Reference number	Screw shaft diameter d	Lead ℓ	Basic load ratings (N) Dynamic C_a	Basic load ratings (N) Static C_{0a}	Stroke Nominal	Stroke Max. L_1-L	Nut length L	Screw shaft dimensions L_1	L_2	L_3	L_4	Lead accuracy Target value T	Lead accuracy Error e_p	Lead accuracy Variation v_u	Shaft runout C	Dynamic preload torque (N·cm) *1	Permissible rotational speed (min^{-1}) *2 Fixed-Simple	Permissible rotational speed (min^{-1}) *2 Fixed-Fixed	Left shaft end (opposite driven side)
PSS1520N1D0261	15	20	5 070	8 730	100	135	51	186	204	261	18	0	0.020	0.018	0.035	0.8 – 8.8	5 000	–	Shape II
PSS1520N1D0361					200	235		286	304	361			0.023	0.018	0.045	0.8 – 8.8			
PSS1520N1D0461					300	335		386	404	461			0.025	0.020	0.050	0.8 – 10.8			
PSS1520N1D0561					400	435		486	504	561			0.027	0.020	0.060	0.8 – 10.8			
PSS1520N1D0661					500	535		586	604	661			0.030	0.023	0.075	0.8 – 10.8			
PSS1520N1D0761					600	635		686	704	761			0.035	0.025	0.075	0.8 – 13.8	3 700		
PSS1520N1D0879					700	735		786	804	879			0.035	0.025	0.095	0.8 – 13.8	2 900	4 200	Shape I
PSS1520N1D0979					800	835		886	904	979			0.040	0.027	0.095	0.8 – 13.8	2 200	3 300	
PSS1520N1D1179					1 000	1 035		1 086	1 104	1 179			0.046	0.030	0.120	0.8 – 13.8	1 500	2 200	
PSS1530N1D0311		30	5 070	8 730	100	159	71	230	254	311	24		0.023	0.018	0.035	1.2 – 9.3	5 000	–	Shape II
PSS1530N1D0411					200	259		330	354	411			0.025	0.020	0.050	0.8 – 10.8			
PSS1530N1D0511					300	359		430	454	511			0.027	0.020	0.060	0.8 – 10.8			
PSS1530N1D0611					400	459		530	554	611			0.030	0.023	0.060	0.8 – 10.8			
PSS1530N1D0711					500	559		630	654	711			0.030	0.023	0.075	0.8 – 13.8	4 500		
PSS1530N1D0811					600	659		730	754	811			0.035	0.025	0.095	0.8 – 13.8	3 300		
PSS1530N1D0929					700	759		830	854	929			0.040	0.027	0.095	0.8 – 13.8	2 600	3 800	Shape I
PSS1530N1D1029					800	859		930	954	1 029			0.040	0.027	0.120	0.8 – 13.8	2 000	3 000	
PSS1530N1D1229					1 000	1 059		1 130	1 154	1 229			0.046	0.030	0.120	0.8 – 13.8	1 400	2 000	

*1. Indicates ball screw preload control value. About 2.0 N·cm of torque is added due to high performance seal. *2. Contact NSK if permissible rotational speed is to be exceeded. *3. Service temperature range is -20°C to 80°C. *4. WBK 10-01B and WBK 10-11 are for shape I.

Screw shaft ϕ20

Lead 5, 10, 20, 30, 40, 60



Ball screw specification

Preload type	Oversize ball preload (P-preload)
Ball diameter/screw shaft root diameter	3.175/17.2
Accuracy grade/axial play	C5/0
Factory pre-packed grease	NSK grease LR3

Recommended support unit

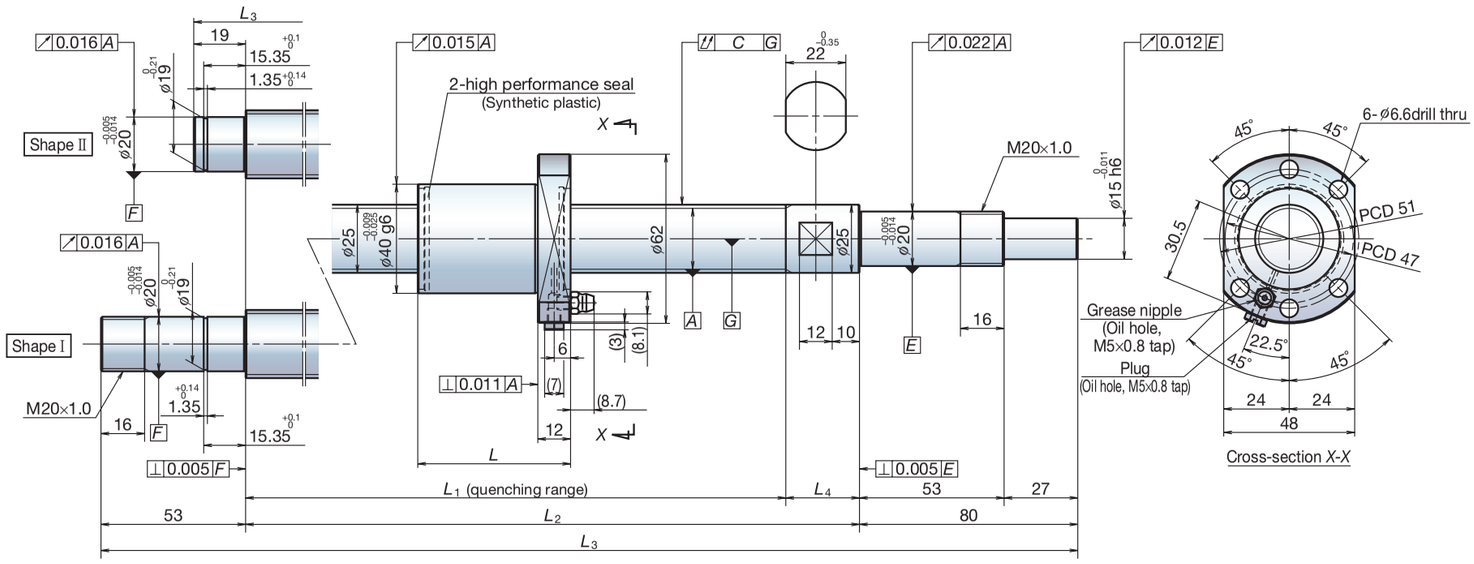
WBK15-01B	(square, fixed side)
WBK15S-01B	(square, simple side)
WBK15-11	(round, fixed side)

Unit: mm

Reference number	Screw shaft diameter d	Lead ℓ	Basic load ratings (N) Dynamic C_a	Basic load ratings (N) Static C_{0a}	Stroke Nominal	Stroke Max. L_1-L	Nut length L	Screw shaft dimensions L_1	L_2	L_3	L_4	Lead accuracy Target value T	Error e_p	Variation v_u	Shaft runout C	Dynamic preload torque (N·cm) *1	Permissible rotational speed (min^{-1}) *2 Fixed-Simple	Permissible rotational speed (min^{-1}) *2 Fixed-Fixed	Left shaft end (opposite driven side)
PSS2005N1D0323	20	5	8 790	18 500	150	197	31	228	250	323	22	0	0.023	0.018	0.045	0.6 – 7.4	5 000	–	Shape II
PSS2005N1D0373					200	247		278	300	373			0.023	0.018	0.045	0.6 – 7.4			
PSS2005N1D0473					300	347		378	400	473			0.025	0.020	0.050	0.6 – 7.4			
PSS2005N1D0573					400	447		478	500	573			0.027	0.020	0.060	0.4 – 9.8			
PSS2005N1D0673					500	547		578	600	673			0.030	0.023	0.075	0.4 – 9.8			
PSS2005N1D0773					600	647		678	700	773			0.035	0.025	0.075	0.4 – 9.8			
PSS2005N1D0873					700	747		778	800	873			0.035	0.025	0.095	0.4 – 9.8	4 000		
PSS2005N1D1000					800	847		878	900	1000			0.040	0.027	0.095	0.4 – 11.8	3 200	4 700	Shape I
PSS2010N1D0387		10	8 790	18 500	200	247	45	292	314	387	22		0.023	0.018	0.045	1.2 – 9.3	5 000	–	Shape II
PSS2010N1D0487					300	347		392	414	487			0.025	0.020	0.050	1.2 – 9.3			
PSS2010N1D0587					400	447		492	514	587			0.027	0.020	0.060	0.8 – 10.8			
PSS2010N1D0687					500	547		592	614	687			0.030	0.023	0.075	0.8 – 10.8			
PSS2010N1D0787					600	647		692	714	787			0.035	0.025	0.075	0.8 – 10.8			
PSS2010N1D0887					700	747		792	814	887			0.035	0.025	0.095	0.8 – 10.8	4 000		
PSS2010N1D1014					800	847		892	914	1 014			0.040	0.027	0.120	0.8 – 13.8	3 100	4 600	Shape I
PSS2010N1D1214					1 000	1047		1 092	1 114	1 214			0.046	0.030	0.120	0.8 – 13.8	2 100	3 100	
PSS2010N1D1414					1 200	1247		1 292	1 314	1 414			0.054	0.035	0.160	0.8 – 13.8	1 500	2 200	
PSS2020N1D0508		20	5 900	11 700	300	359	54	413	435	508	22		0.027	0.020	0.060	1.4 – 11.8	5 000	–	Shape II
PSS2020N1D0608					400	459		513	535	608			0.030	0.023	0.060	1.4 – 11.8			
PSS2020N1D0708					500	559		613	635	708			0.030	0.023	0.075	1.4 – 11.8			
PSS2020N1D0808					600	659		713	735	808			0.035	0.025	0.095	1.4 – 11.8			
PSS2020N1D0908					700	759		813	835	908			0.040	0.027	0.095	0.8 – 13.8	3 700		
PSS2020N1D1035					800	859		913	935	1 035			0.040	0.027	0.120	0.8 – 13.8	3 000	4 500	Shape I
PSS2020N1D1235					1 000	1 059		1 113	1 135	1 235			0.046	0.030	0.120	0.8 – 13.8	2 000	3 000	
PSS2020N1D1435					1 200	1 259		1 313	1 335	1 435			0.054	0.035	0.160	0.8 – 13.8	1 400	2 100	
PSS2020N1D1835					1 600	1 659		1 713	1 735	1 835			0.065	0.040	0.200	0.8 – 13.8	800	1 200	
PSS2030N1D0408		30	5 900	11 700	200	234	74	308	335	408	27		0.023	0.018	0.050	1.6 – 9.8	5 000	–	Shape II
PSS2030N1D0508					300	334		408	435	508			0.027	0.020	0.060	1.4 – 11.8			
PSS2030N1D0608					400	434		508	535	608			0.030	0.023	0.060	1.4 – 11.8			
PSS2030N1D0708					500	534		608	635	708			0.030	0.023	0.075	1.4 – 11.8			
PSS2030N1D0808					600	634		708	735	808			0.035	0.025	0.095	1.4 – 11.8			
PSS2030N1D0908					700	734		808	835	908			0.040	0.027	0.095	0.8 – 13.8	3 900		
PSS2030N1D1035					800	834		908	935	1 035			0.040	0.027	0.120	0.8 – 13.8	3 100	4 600	Shape I
PSS2030N1D1235					1 000	1 034		1 108	1 135	1 235			0.046	0.030	0.120	0.8 – 13.8	2 100	3 000	
PSS2030N1D1435					1 200	1 234		1 308	1 335	1 435			0.054	0.035	0.160	0.8 – 13.8	1 500	2 200	
PSS2040N1D0658		40	5 900	11 700	400	461	92	553	585	658	32		0.030	0.023	0.075	2.2 – 12.8	5 000	–	Shape II
PSS2040N1D0758					500	561		653	685	758			0.035	0.025	0.075	2.2 – 12.8			
PSS2040N1D0858					600	661		753	785	858			0.035	0.025	0.095	2.2 – 12.8			
PSS2040N1D0958					700	761		853	885	958			0.040	0.027	0.095	1.8 – 14.8	3 500		
PSS2040N1D1085					800	861		953	985	1 085			0.040	0.027	0.120	1.8 – 14.8	2 800	4 200	Shape I
PSS2040N1D1285					1 000	1 061		1 153	1 185	1 285			0.046	0.030	0.160	1.8 – 14.8	1 900	2 800	
PSS2040N1D1485					1 200	1 261		1 353	1 385	1 485			0.054	0.035	0.160	1.8 – 14.8	1 400	2 000	
PSS2040N1D1885					1 600	1 661		1 753	1 785	1 885			0.065	0.040	0.200	1.8 – 14.8	800	1 200	
PSS2040N1D2285					2 000	2 061		2 153	2 185	2 285			0.077	0.046	0.240	1.8 – 14.8	500	800	
PSS2060N1D0708		60	5 900	11 700	400	464	129	593	635	708	42		0.030	0.023	0.075	2.7 – 13.8	5 000	–	Shape II
PSS2060N1D0808					500	564		693	735	808			0.035	0.025	0.095	2.7 – 13.8			
PSS2060N1D0908					600	664		793	835	908			0.035	0.025	0.095	2.7 – 13.8	4 200		
PSS2060N1D1008					700	764		893	935	1 008			0.040	0.027	0.120	1.8 – 14.8	3 300		
PSS2060N1D1135					800	864		993	1 035	1 135			0.040	0.027	0.120	1.8 – 14.8	2 600	3 900	Shape I
PSS2060N1D1335					1 000	1 064		1 193	1 235	1 335			0.046	0.030	0.160	1.8 – 14.8	1 800	2 700	
PSS2060N1D1535					1 200	1 264		1 393	1 435	1 535			0.054	0.035	0.160	1.8 – 14.8	1 300	1 900	
PSS2060N1D1935					1 600	1 664		1 793	1 835	1 935			0.065	0.040	0.200	1.8 – 14.8	800	1 100	
PSS2060N1D2335					2 000	2 064		2 193	2 235	2 335			0.077	0.046	0.240	1.8 – 14.8	500	700	

*1. Indicates ball screw preload control value. About 3.0 N·cm of torque is added due to high performance seal. *2. Contact NSK if permissible rotational speed is to be exceeded. *3. Service temperature range is -20°C to 80°C.

Screw shaft ϕ25
Lead 5, 10, 20, 25, 30, 50



Ball screw specification

Preload type	Oversize ball preload (P-preload)
Ball diameter/screw shaft root diameter	3.175/22.2
Accuracy grade/axial play	C5/0
Factory pre-packed grease	NSK grease LR3

Recommended support unit

WBK20-01	(square, fixed side)
WBK20S-01	(square, simple side)
WBK20-11	(round, fixed side)

Unit: mm

Reference number	Screw shaft diameter d	Lead ℓ	Basic load ratings (N) Dynamic C_a	Basic load ratings (N) Static C_{0a}	Stroke Nominal	Stroke Max. L_1-L	Nut length L	Screw shaft dimensions L_1	L_2	L_3	L_4	Lead accuracy Target value T	Lead accuracy Error e_p	Lead accuracy Variation v_u	Shaft runout C	Dynamic preload torque (N·cm) *1	Permissible rotational speed (min^{-1}) *2 Fixed-Simple	Permissible rotational speed (min^{-1}) *2 Fixed-Fixed	Left shaft end (opposite driven side)
PSS2505N1D0349	25	5	9 760	23 600	150	191	32	223	250	349	27	0	0.023	0.018	0.035	1.2 – 9.3	5 000	–	Shape II
PSS2505N1D0399					200	241		273	300	399			0.023	0.018	0.035	1.2 – 9.3			
PSS2505N1D0499					300	341		373	400	499			0.025	0.020	0.040	1.2 – 9.3			
PSS2505N1D0599					400	441		473	500	599			0.027	0.020	0.045	1.2 – 9.3			
PSS2505N1D0699					500	541		573	600	699			0.030	0.023	0.055	0.8 – 10.8			
PSS2505N1D0899					700	741		773	800	899			0.035	0.025	0.065	0.8 – 10.8			
PSS2505N1D0999					800	841		873	900	999			0.040	0.027	0.065	0.8 – 10.8	4 100		
PSS2505N1D1233					1 000	1 041		1 073	1 100	1 233			0.046	0.030	0.080	0.8 – 13.8	2 700	4 000	Shape I
PSS2510N1D0549		10	12 800	32 300	300	367	56	423	450	549	27		0.027	0.020	0.045	3.1 – 11.8	5 000	–	Shape II
PSS2510N1D0649					400	467		523	550	649			0.030	0.023	0.055	2.2 – 12.8			
PSS2510N1D0749					500	567		623	650	749			0.030	0.023	0.055	2.2 – 12.8			
PSS2510N1D0849					600	667		723	750	849			0.035	0.025	0.065	2.2 – 12.8			
PSS2510N1D0949					700	767		823	850	949			0.040	0.027	0.065	2.2 – 12.8			
PSS2510N1D1049					800	867		923	950	1 049			0.040	0.027	0.080	2.2 – 12.8	3 600		
PSS2510N1D1283					1 000	1 067		1 123	1 150	1 283			0.046	0.030	0.100	1.8 – 14.8	2 500	3 700	Shape I
PSS2510N1D1883					1 600	1 667		1 723	1 750	1 883			0.065	0.040	0.130	1.8 – 14.8	1 000	1 600	
PSS2520N1D0729		20	6 560	14 600	500	550	54	604	630	729	26		0.030	0.023	0.055	2.2 – 12.8	5 000	–	Shape II
PSS2520N1D0829					600	650		704	730	829			0.035	0.025	0.065	2.2 – 12.8			
PSS2520N1D0929					700	750		804	830	929			0.040	0.027	0.065	2.2 – 12.8	4 800		
PSS2520N1D1029					800	850		904	930	1 029			0.040	0.027	0.080	2.2 – 12.8	3 800		
PSS2520N1D1263					1 000	1 050		1 104	1 130	1 263			0.046	0.030	0.100	1.8 – 14.8	2 600	3 800	Shape I
PSS2520N1D1463					1 200	1 250		1 304	1 330	1 463			0.054	0.035	0.100	1.8 – 14.8	1 800	2 700	
PSS2520N1D1863					1 600	1 650		1 704	1 730	1 863			0.065	0.040	0.130	1.8 – 14.8	1 100	1 600	
PSS2520N1D2263					2 000	2 050		2 104	2 130	2 263			0.077	0.046	0.170	1.8 – 14.8	700	1 000	
PSS2525N1D0779		25	6 560	14 600	500	587	63	650	680	779	30		0.035	0.025	0.055	2.7 – 13.8	5 000	–	Shape II
PSS2525N1D0879					600	687		750	780	879			0.035	0.025	0.065	2.7 – 13.8			
PSS2525N1D0979					700	787		850	880	979			0.040	0.027	0.065	2.7 – 13.8	4 300		
PSS2525N1D1079					800	887		950	980	1 079			0.040	0.027	0.080	2.7 – 13.8	3 400		
PSS2525N1D1313					1 000	1 087		1 150	1 180	1 313			0.046	0.030	0.100	1.8 – 14.8	2 300	3 500	Shape I
PSS2525N1D1513					1 200	1 287		1 350	1 380	1 513			0.054	0.035	0.100	1.8 – 14.8	1 700	2 600	
PSS2525N1D1913					1 600	1 687		1 750	1 780	1 913			0.065	0.040	0.130	1.8 – 14.8	1 000	1 500	
PSS2525N1D2313					2 000	2 087		2 150	2 180	2 313			0.077	0.046	0.170	1.8 – 14.8	700	1 000	
PSS2530N1D0779		30	6 560	14 600	500	576	74	650	680	779	30		0.035	0.025	0.055	2.7 – 13.8	5 000	–	Shape II
PSS2530N1D0879					600	676		750	780	879			0.035	0.025	0.065	2.7 – 13.8			
PSS2530N1D0979					700	776		850	880	979			0.040	0.027	0.065	2.7 – 13.8	4 300		
PSS2530N1D1079					800	876		950	980	1 079			0.040	0.027	0.080	2.7 – 13.8	3 400		
PSS2530N1D1313					1 000	1 076		1 150	1 180	1 313			0.046	0.030	0.100	1.8 – 14.8	2 300	3 600	Shape I
PSS2530N1D1513					1 200	1 276		1 350	1 380	1 513			0.054	0.035	0.100	1.8 – 14.8	1 700	2 600	
PSS2530N1D1913					1 600	1 676		1 750	1 780	1 913			0.065	0.040	0.130	1.8 – 14.8	1 000	1 500	
PSS2530N1D2313					2 000	2 076		2 150	2 180	2 313			0.077	0.046	0.170	1.8 – 14.8	700	1 000	
PSS2550N1D0829		50	6 560	14 600	500	576	114	690	730	829	40		0.035	0.025	0.065	5.4 – 17.6	5 000	–	Shape II
PSS2550N1D0929					600	676		790	830	929			0.035	0.025	0.065	5.4 – 17.6	4 800		
PSS2550N1D1029					700	776		890	930	1 029			0.040	0.027	0.080	5.4 – 17.6	3 800		
PSS2550N1D1129					800	876		990	1 030	1 129			0.040	0.027	0.080	5.4 – 17.6	3 100		
PSS2550N1D1363					1 000	1 076		1 190	1 230	1 363			0.046	0.030	0.100	4.1 – 19.6	2 200	3 400	Shape I
PSS2550N1D1563					1 200	1 276		1 390	1 430	1 563			0.054	0.035	0.100	4.1 – 19.6	1 600	2 500	
PSS2550N1D1963					1 600	1 676		1 790	1 830	1 963			0.065	0.040	0.130	4.1 – 19.6	900	1 500	
PSS2550N1D2363					2 000	2 076		2 190	2 230	2 363			0.077	0.046	0.170	4.1 – 19.6	600	1 000	

*1. Indicates ball screw preload control value. About 3.0 N·cm of torque is added due to high performance seal. *2. Contact NSK if permissible rotational speed is to be exceeded. *3. Service temperature range is -20°C to 80°C.

Precautions

◇ Design

(1) If a ball screw of which left shaft end (opposite driven side) is the shape I, and is supported with the “fixed-fixed” supporting method, you should be aware that the operating life of support bearings may drop due to thermal expansion of the screw shaft, depending on usage conditions. In this case, you should consider a structure that can absorb thermal expansion of the screw shaft if necessary. Please consult with NSK for a detailed examination.

(2) If using an NSK linear guide, the maximum speed of a linear guide of standard specifications under ordinary conditions is limited to 100 m/min. A linear guide with high-speed specifications is available if higher operating speed is required. Contact NSK for further information.

(3) For general precautions concerning ball screws, please see NSK Catalog No. E3161 “Precision Machine Components.”

◇ Usage and handling

Ball screws are precision products and should be treated as follows:

[Lubrication]

(1) Compact FA Series ball screws are packed and coated with lubrication grease at the factory, and require no further lubrication under ordinary circumstances. If the surface of the grease becomes contaminated with dirt and metal powder under operation, clean it with white kerosene and replenish with new grease of the same kind through the oil hole (grease nipple) on the ball nut. Avoid mixing different types of grease.

(2) Lubricant should be checked after the first 2 to 3 months of operation. If excessively dirty, we recommend you wipe away the old grease and replenish with a generous quantity of grease. After that, grease should be checked and replenished once a year under ordinary circumstances, but the period may vary depending upon the service environment.

[Handling]

(1) Never disassemble the ball screw, otherwise dirt may contaminate the inside of the unit and affect precision or result in equipment failure.

(2) Compact FA Series ball screws incorporate a new ball re-circulation system. Consequently, only NSK authorized plants should conduct disassembly and reassembly. If the nut accidentally comes off the screw shaft or is dropped, NSK will check precision, problems or perform repairs at your expense.

(3) When the ball screw is erected upright, the screw shaft or nut could fall by force of its own weight and result in injury. If dropped, the ball grooves could be dented or re-circulation parts damaged, resulting in loss of function. This would require the ball screw to be inspected by NSK. If so, be sure to send the ball screw to NSK and we will check it for a fee.

[Usage]

(1) Ball screws should be used in a clean environment. The ball screws should be provided with a dust cover to prevent the entry of debris such as dust and metal powder. If foreign matter is allowed to contaminate the ball screw, this could not only cause the ball screw to lose some of its function, but also result in clogging and damaging the re-circulation system parts, or cause the table to fall or a similar serious accident.

(2) Compact FA Series ball screws are designed to be used in a service temperature environment of 80˚C or lower. Do not allow the service temperature limit to be exceeded. In some cases, using ball screws in temperatures above 80˚C might lead to damage of re-circulation system parts or seal parts. Contact NSK if 80˚C must be exceeded.

◇ Compact FA Series options

Consult with NSK for information about optional specification not given in the catalog such as shaft end machining, reverse direction ball nut, alternative grease, surface treatment, and alternative preload.

Low-profile Support Units for Compact FA Series

NSK has developed a series of low-profile support unit to be used with the ball screws of compact FA series. A combination of the ball screw and the support unit offers a compact design for downsizing of many kinds of machinery.

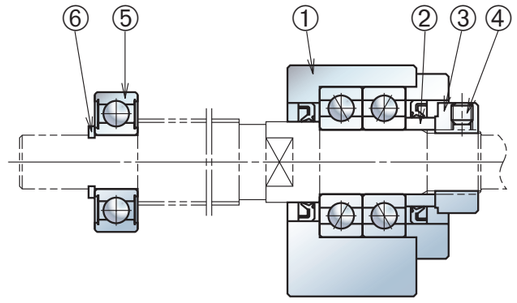
Features

The low-profile support units offer the low center height construction suited for the compact FA series ball screws.

Product configuration

All parts required for ball screw mounting are provided as a set (see the table below). The bearing housing of support unit for fixed side contains a built-in angular contact ball bearings and oil seal and should not be disassembled.

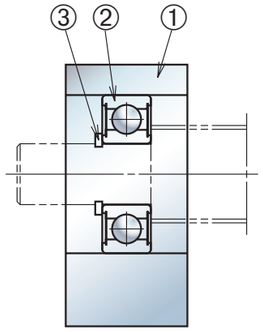
Fixed side support unit



Part No.	Part	Remarks (surface treatment, grease)
①	Bearing housing	Triiron tetroxide film
	Angular contact ball bearing,	PS2
	Oil seal	
	Cover	Triiron tetroxide film
②	Spacer	
③	Lock nut	Triiron tetroxide film
④	Setscrew	Triiron tetroxide film
	Set piece (pad)	
⑤	Deep groove ball bearing	Comes with support side, PS2
⑥	Snap ring	Triiron tetroxide film

Other machine screws are either made of stainless steel or coated with triiron tetroxide film.

Simple side support unit



Part No.	Part	Remarks (surface treatment, grease)
①	Bearing housing	Triiron tetroxide film
②	Deep groove ball bearing	PS2
③	Snap ring	Triiron tetroxide film

Reference number

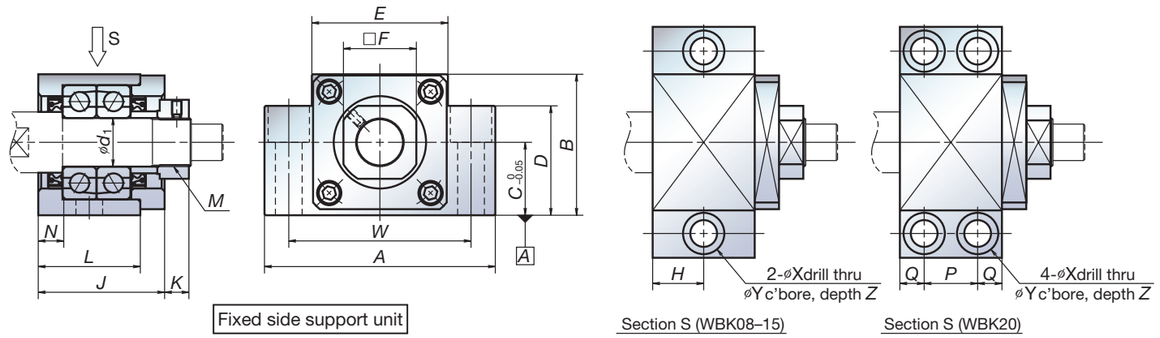
Example: **WBK 08 S - 01 B**

- WBK: Support unit product code
- 08: Nominal size code (internal bore of bearing)*
- S: Simple side support unit / No code: Fixed side support unit
- 01: Square type, 11: Round type — Mounting code
- B: Low-profile support unit / No code or A: conventional standard support unit

*For simple side support units, please note that size codes of 12 or less do not represent internal bores of bearing.

Square type and Round type

Fixed side support unit (square type)



Fixed side support unit

Section S (WBK08–15)

Section S (WBK20)

Unit: mm

Screw shaft diameter	Fixed side support unit (square type)																			
	Reference number	d_1	A	B	C	D	E	F	H	J	K	L	N	P	Q	W	X	Y	Z	M
ø10	WBK08-01A	8	52	32	17	26	25	14	11.5	23	7	—	4	—	—	38	6.6	11	12	M8×1
ø12	WBK08-01B	8	62	31	15.5	—	—	14	11	25.5	4.5	21.5	3.5	—	—	46	9	14	18	M8×1
ø15	WBK10-01B*	10	70	38	20	—	—	17	12	30	5.5	24	6	—	—	52	9	14	19	M10×1
	WBK12-01A	12	70	43	25	35	36	19	12	30	5.5	24	6	—	—	52	9	14	11	M12×1
	WBK12-01B	12	70	38	20	—	—	19	12	30	5.5	24	6	—	—	52	9	14	19	M12×1
ø20	WBK15-01A	15	80	50	30	40	41	22	12.5	31	12	25	5	—	—	60	11	17	15	M15×1
	WBK15-01B	15	80	42	22	—	—	22	12.5	31	12	25	5	—	—	60	11	17	23	M15×1
ø25	WBK20-01	20	95	58	30	45	56	30	—	52	10	42	10	22	10	75	11	17	15	M20×1

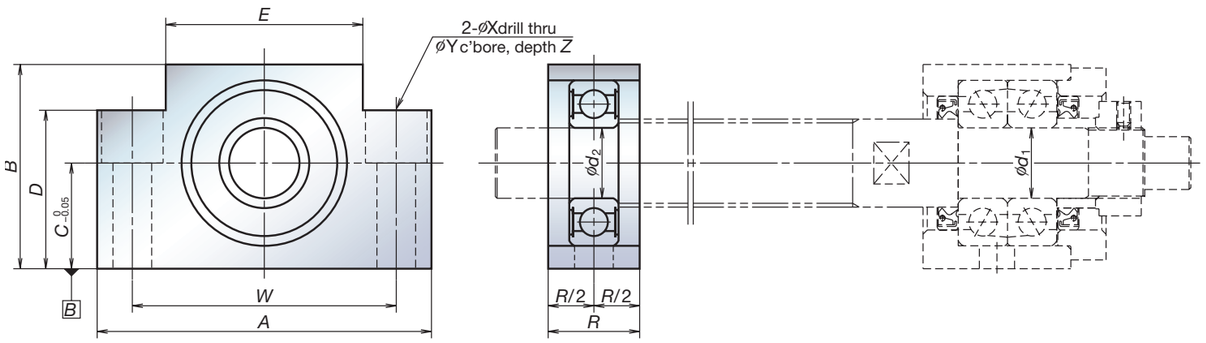
*Use support unit for fixing side for opposite drive side of shaft diameter ϕ15.

Remarks 1. Mount to the base using side A as the reference.

2. Tighten the setscrew after tightening the lock nut and adjusting.

3. Insert the set piece and then tighten the setscrew.

Simple side support unit



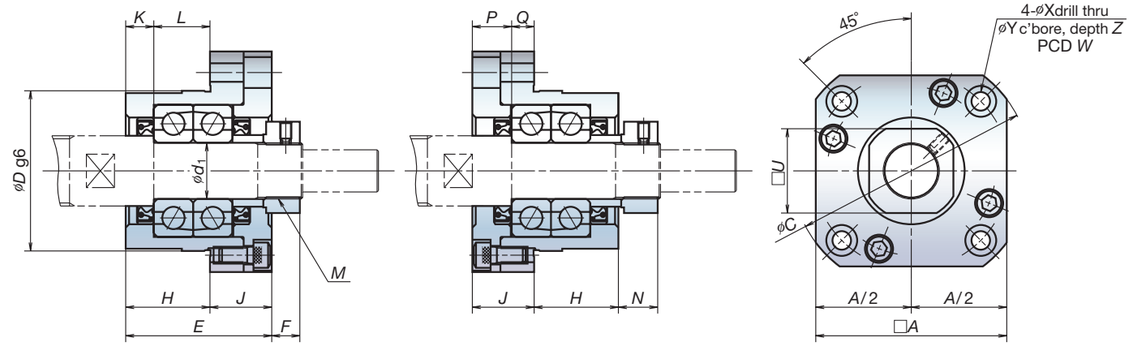
Simple side support unit

Unit: mm

Screw shaft diameter	Simple side support unit											
	Reference number	d_2	A	B	C	D	E	R	W	X	Y	Z
ø10	WBK08S-01	6	52	32	17	26	25	15	38	6.6	11	12
ø12	WBK08S-01B	6	62	31	15.5	—	—	16	46	9	14	18
ø15	WBK12S-01	10	70	43	25	35	36	20	52	9	14	11
	WBK12S-01B	10	70	38	20	—	—	20	52	9	14	19
ø20	WBK15S-01	15	80	50	30	40	41	20	60	9	14	11
	WBK15S-01B	15	80	42	22	—	—	20	60	9	14	23
ø25	WBK20S-01	20	95	58	30	45	56	26	75	11	17	15

Remarks 1. Mount to the base using side B as the reference.

Fixed side support unit (round type)



Mounting example 1

Mounting example 2

Unit: mm

Screw shaft diameter	Fixed side support unit (round type)																			
	Reference number	d_1	A	C	D	E	F	H	J	K	L	N	P	Q	U	W	X	Y	Z	M
ø10	WBK08-11	8	35	43	28	23	7	14	9	4	10	8	5	4	14	35	3.4	6.5	4	M8×1
ø12	WBK08-11B	8	42	52	34	25.5	4.5	15.5	10	3.5	12	7	6	4	14	42	4.5	8	4	M8×1
ø15	WBK10-11*	10	42	52	34	27	7.5	17	10	5	12	8.5	6	4	17	42	4.5	8	4	M10×1
	WBK12-11	12	44	54	36	27	7.5	17	10	5	12	8.5	6	4	19	44	4.5	8	4	M12×1
ø20	WBK15-11	15	52	63	40	32	12	17	15	6	11	14	8	7	22	50	5.5	9.5	6	M15×1
ø25	WBK20-11	20	68	85	57	52	10	30	22	10	20	14	14	8	30	70	6.6	11	10	M15×1

*Use support unit for fixing side for opposite drive side of shaft diameter ϕ15.

Remarks 1. Tighten the setscrew after tightening the lock nut and adjusting.

2. Insert the set piece and then tighten the setscrew.

Specifications of support unit

Screw shaft diameter	Fixed side support unit					Simple side support unit		
	Support unit reference number	Axial load: Basic load ratings C_a [N]	Axial load: Load limit [N]	Maximum starting torque [N·cm]	Tightening torque [N·cm]: Lock nut / Setscrew	Support unit reference number	Bearing number	Radial load: Basic load ratings C [N]
ø10	WBK08-01A (square type)	4 400	1 450	0.88	490 / 69 (M3)	WBK08S-01	606ZZ	2 260
	WBK08-11 (round type)					—		
ø12	WBK08-01B (square low-profile type)	6 600	2 730	1.9		WBK08S-01B		
	WBK08-11B (round type)					—		
ø15	WBK10-01B (square low-profile type)*	6 600	2 730	1.9	930 / 147 (M4)	—	6000ZZ	4 550
	WBK10-11 (round type)					—		
	WBK12-01A (square type)	7 100	3 040	2.1	1 370 / 147 (M4)	WBK12S-01		
	WBK12-01B (square low-profile type)					WBK12S-01B		
	WBK12-11 (round type)					—		
ø20	WBK15-01A (square type)	7 600	3 380	2.3	2 350 / 147 (M4)	WBK15S-01	6002ZZ	5 600
	WBK15-01B (square low-profile type)					WBK15S-01B		
	WBK15-11 (round type)					—		
ø25	WBK20-01 (square type)	17 900	8 240	5.4	4 700 / 147 (M4)	WBK20S-01	6204ZZ	12 800
	WBK20-11 (round type)					—		

*Use support unit for fixing side for opposite drive side of shaft diameter ϕ15.