

# NSK Ball Screws

## Compact FA Series

Compact ball screws offer quiet, high-speed operating performance.

Two-week delivery is available on common sizes.



# Compact ball screws offer quiet, high-speed performance.

Compact FA Series ball screws incorporate NSK's new ball recirculation system and offer quiet, high-speed performance. In order to respond quickly to a wide range of needs, NSK offers two-week delivery on common sizes. These high-performing ball screws are ready for use in a variety of industries including: semiconductor manufacturing, medical equipment and devices, factory automation and general industrial use.

## Features

### Quick delivery on common sizes

Domestic manufacturing and comprehensive stocking program ensure two-week delivery and reduced shipping costs.

### 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 a more compact design of all sorts of equipment and devices such as thinner XY tables.

### High-speed operation of up to 5000 min<sup>-1</sup>

The new ball screws offer 1.6 times faster rotational speed than conventional ball screws. They handle speeds up to 5000 min<sup>-1</sup>. 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 equipped with a grease fitting (M5 × 0.8). Lubrication ports are provided in two locations to facilitate maintenance.

The ball screws can be easily connected to an integrated lubrication system.

\* Grease fitting provided on the flange OD when equipped with K1™.

### New type of contact seal

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

### Extended product life

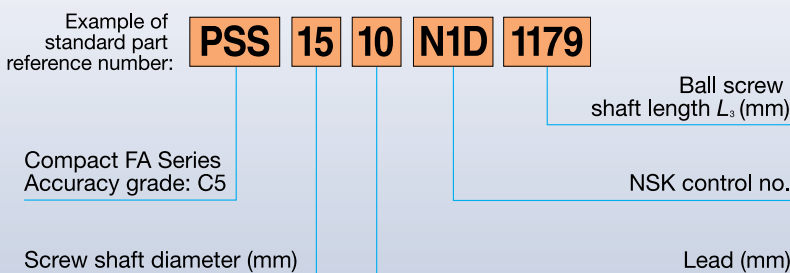
K1™ Lubrication Units, in combination with minimal grease, offer increased product life and maintenance-free operation. K1™ Lubrication Units are particularly useful in applications where lubrication is difficult to apply or is a source of contamination. The K1™ Lubrication Unit is optional on the Compact FA series and is not available in two-week lead time. Contact NSK for more information.

### Low-profile design

The low-profile support units specifically compatible with the Compact FA series are available for a uniquely space-saving design.



Existing support unit ⇒ New low-profile support unit

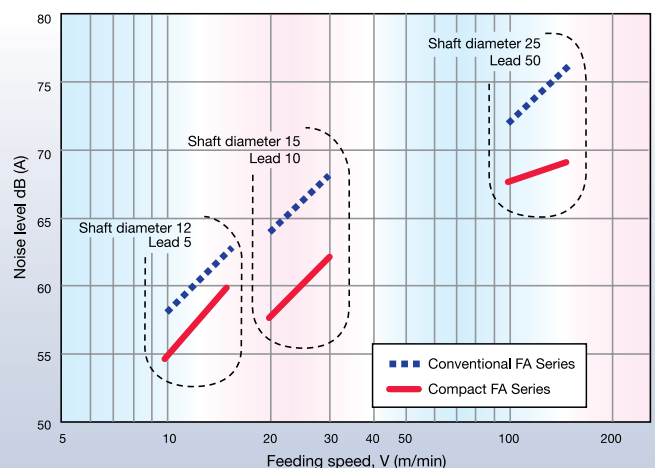


As much as **30%** more compact



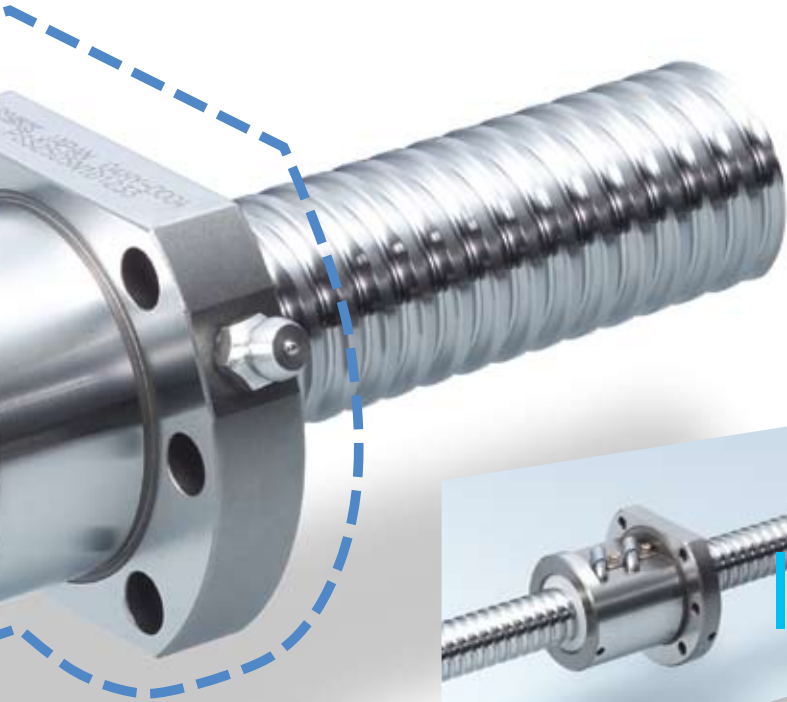
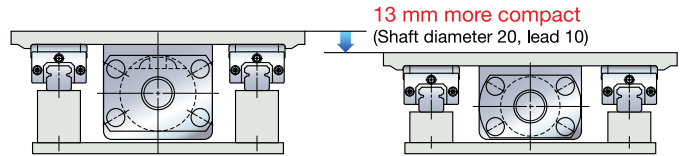
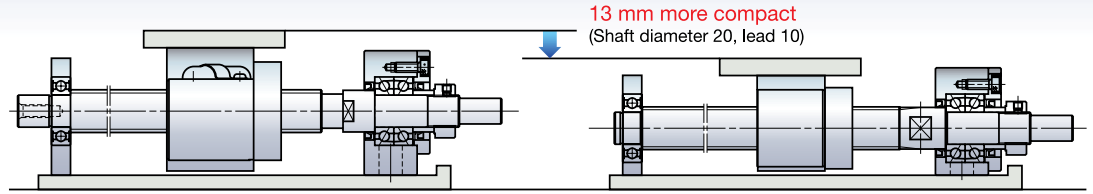
# Compact & Silent

Noise data



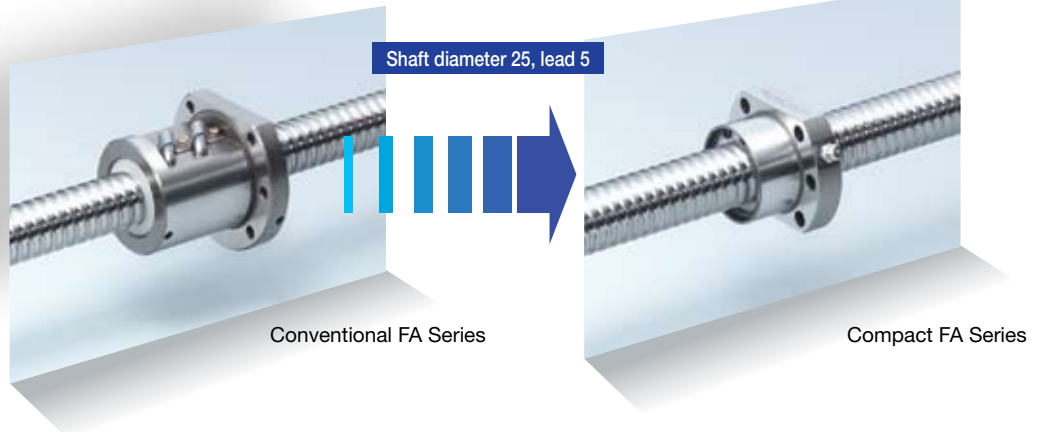
(Microphone was positioned at a distance of 400 mm for all noise measurements.)

Comparison of conventional FA Series and compact FA Series



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.

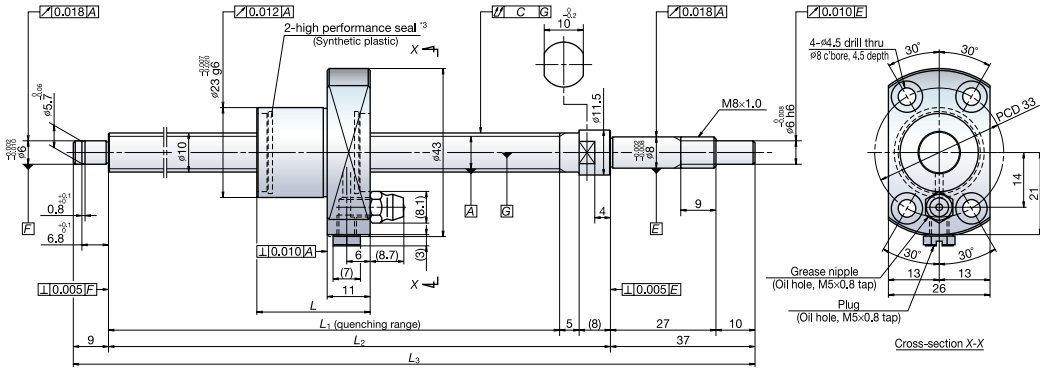
Shaft diameter	Lead	Stroke														Recommended support unit	
		50	100	150	200	300	400	500	600	700	800	1000	1200	1600	2000	Fixed side support unit	Simple side support unit
10	5	○	○		○	○	○									WBK08-01B	WBK08S-01B
	10		○		○	○	○										
12	5	○	○		○	○	○	○								WBK08-01B	WBK08S-01B
	10		○		○	○	○	○									
	20		▲		▲	▲	▲	▲									
	30		▲		▲	▲	▲	▲									
15	5	○	○		○	○	○	○	○							WBK12-01B	WBK12S-01B
	10		○		○	○	○	○	○	○					WBK10-01B		
	20		▲		▲	▲	▲	▲	▲	▲	▲						
	30		▲		▲	▲	▲	▲	▲	▲	▲						
20	5			○	○	○	○	○	○	○							
	10				○	○	○	○	○	○	○						
	20				▲	▲	▲	▲	▲	▲	▲	▲				WBK15-01B	WBK15S-01B
	30				▲	▲	▲	▲	▲	▲	▲	▲	▲				
	40					▲	▲	▲	▲	▲	▲	▲	▲	▲			
	60						▲	▲	▲	▲	▲	▲	▲	▲			
25	5			○	○	○	○	○	○	○							
	10				○	○	○	○	○	○							
	20					○	○	○	○	○	○					WBK20-01	WBK20S-01
	25						○	○	○	○	○	○					
	30						▲	▲	▲	▲	▲	▲	▲				
	50						▲	▲	▲	▲	▲	▲	▲	▲			

Other support units are also available. See page 10 for details. ○ Two-week delivery. ▲ Made to order.

Screw shaft:  $\phi 10$  and  $12$

Screw shaft  $\phi 10$

Lead 5 10



Ball screw specification

Preload type	Upsize 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)

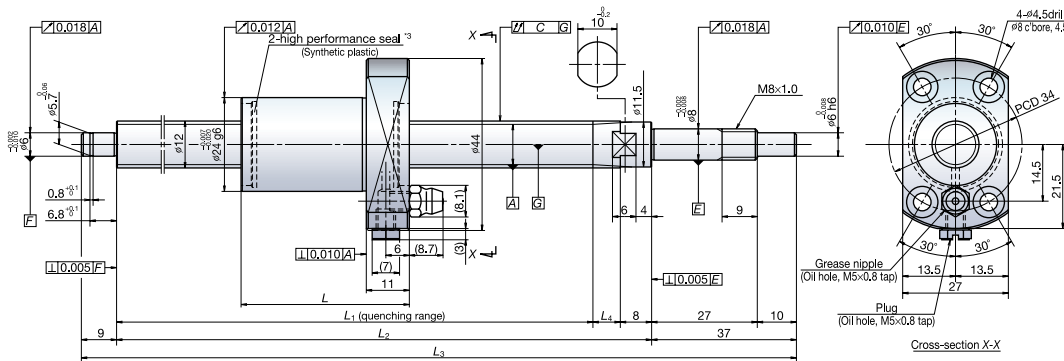
Reference number	Screw shaft diameter $d$	Lead $l$	Basic load ratings (N)		Stroke		Nut length $L$	Screw shaft dimensions				Lead accuracy			Shaft runout, C	Dynamic preload torque (N-cm) <sup>*1</sup>	Permissible rotational speed (min <sup>-1</sup> ) <sup>*2</sup>	
			Dynamic $C_a$	Static $C_{0a}$	Nominal	Max. $L_1$ - $L$		$L_1$	$L_2$	$L_3$	Target value $T$	Error $e_p$	Variation $v_u$	Fixed			Simple	
																		5000
PSS1005N1D0171	10	5	2930	4790	50	83	29	112	125	171	0	0.020	0.018	0.030	0.7 - 3.3	5000		
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	10	1970	3010	100	130	32	162	175	221	0	0.020	0.018	0.045	0.7 - 3.3	5000		
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. Approx. 2.0 N•m 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.

○ Two-week delivery.

Screw shaft  $\phi 12$

Lead 5 10 20 30



Ball screw specification

Preload type	Upsize 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)

Reference number	Screw shaft diameter $d$	Lead $l$	Basic load ratings (N)		Stroke		Nut length $L$	Screw shaft dimensions				Lead accuracy			Shaft runout, C	Dynamic preload torque (N-cm) <sup>*1</sup>	Permissible rotational speed (min <sup>-1</sup> ) <sup>*2</sup>	
			Dynamic $C_a$	Static $C_{0a}$	Nominal	Max. $L_1$ - $L$		$L_1$	$L_2$	$L_3$	$L_4$	Target value $T$	Error $e_p$	Variation $v_u$			Fixed	Simple
PSS1205N1D0171	12	5	3200	5860	50	80	30	110	125	171	7	0	0.020	0.018	0.030	0.7 - 3.3	5000	
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	12	10	3200	5860	500	530	43	560	575	621	0	0	0.030	0.023	0.085	0.4 - 4.9	5000	
PSS1210N1D0221					100	117		160	175	221			0.020	0.018	0.045	0.7 - 3.3		
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	12	20	2150	3610	500	517	50	560	575	621	0	0	0.030	0.023	0.085	0.4 - 4.9	5000	
PSS1220N1D0271					100	158		208	225	271			0.023	0.018	0.045	1.4 - 4.5		
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	12	30	2150	3610	500	558	70	608	625	671	0	0	0.030	0.023	0.110	0.6 - 5.9	4200	
PSS1230N1D0271					100	133		203	225	271			0.023	0.018	0.045	1.4 - 4.5		
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	12	30	2150	3610	500	533	70	603	625	671	0	0	0.030	0.023	0.110	0.6 - 5.9	4300	

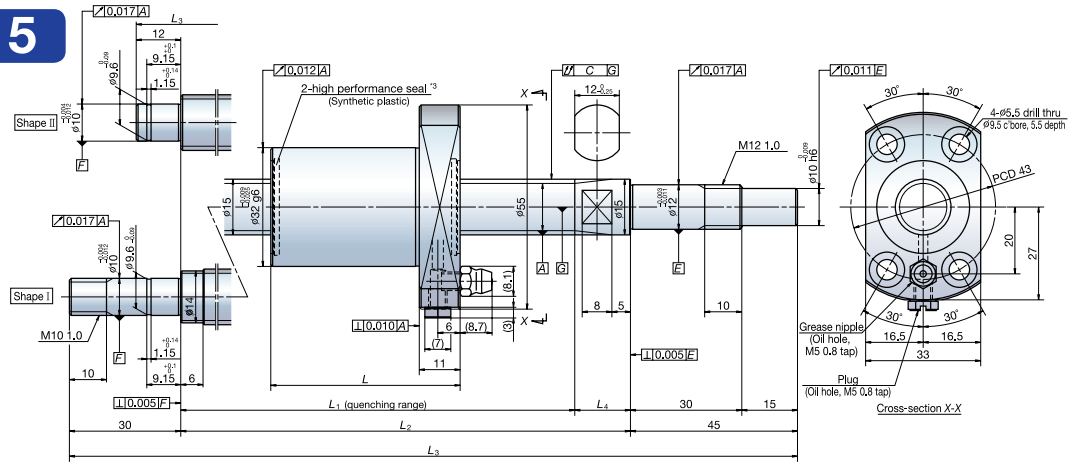
\*1. Indicates ball screw preload control value. Approx. 2.0 N•m of torque is added due to high performance seal. \*2. Contact NSK if permissible rotational speed is to be exceeded. \*3. Service temperature range is -20°C to 80°C.

○ Two-week delivery. ▲ Made to order.

Screw shaft:  $\phi 15$

Screw shaft  $\phi 15$

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)
<sup>2</sup> 4WBK10-01B	(square, fixed side)
WBK10-11	(round, fixed side)

Unit: mm

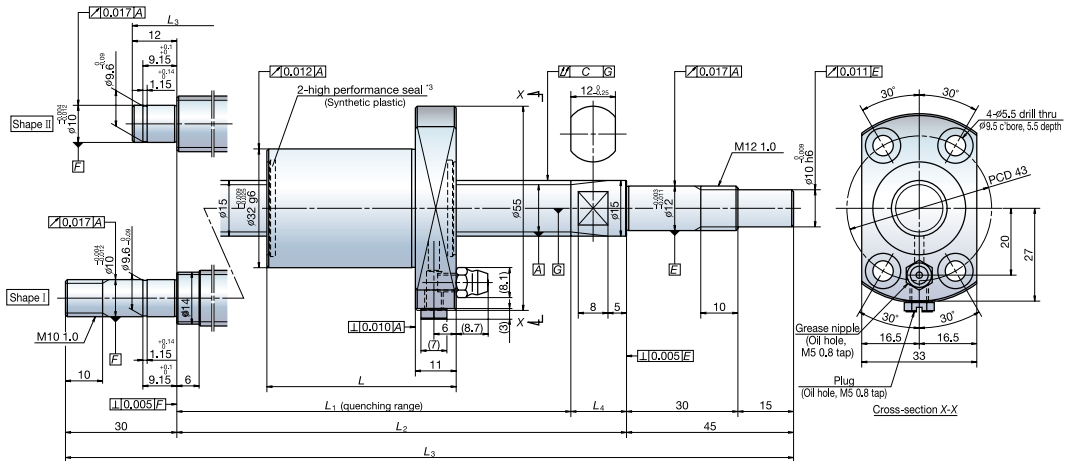
Reference number	Screw shaft diameter $d$	Lead $l$	Basic load ratings (N)		Stroke		Nut length $L$	Screw shaft dimensions				Lead accuracy			Shaft runout, C	Dynamic preload torque (N-cm) <sup>*1</sup>	Permissible rotational speed (min <sup>-1</sup> ) <sup>*2</sup>		Left shaft end (opposite driven side)			
			Dynamic $C_a$	Static $C_{0a}$	Nominal	Max. $L_1-L$		$L_1$	$L_2$	$L_3$	$L_4$	Target value $T$	Error $e_p$	Variation $v_u$			Fixed-Simple	Fixed-Fixed				
PSS1505N1D0211	15	5	5460	10200	50	109	30	139	154	211	15	0	0.020	0.018	0.035	0.2 - 6.9	5000	-	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
PSS1510N1D0261					100	146							189	204	261	0.020				0.018	0.035	0.6 - 7.4
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													
PSS1510N1D0879	700	746	789	804	879	0.035	0.025	0.095	0.4 - 11.8	2700	3400	Shape I										
PSS1510N1D0979	800	846	889	904	979	0.040	0.027	0.095	0.4 - 11.8	2200	3400											
PSS1510N1D1179	1000	1046	1089	1104	1179	0.046	0.030	0.120	0.4 - 11.8	1400	2300											

\*1. Indicates ball screw preload control value. Approx. 2.0 N•m 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. Two-week delivery.

Screw shaft  $\phi 15$

Lead 20 30



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)
<sup>2</sup> 4WBK10-01B	(square, fixed side)
WBK10-11	(round, fixed side)

Unit: mm

Reference number	Screw shaft diameter $d$	Lead $l$	Basic load ratings (N)		Stroke		Nut length $L$	Screw shaft dimensions				Lead accuracy			Shaft runout, C	Dynamic preload torque (N-cm) <sup>*1</sup>	Permissible rotational speed (min <sup>-1</sup> ) <sup>*2</sup>		Left shaft end (opposite driven side)					
			Dynamic $C_a$	Static $C_{0a}$	Nominal	Max. $L_1-L$		$L_1$	$L_2$	$L_3$	$L_4$	Target value $T$	Error $e_p$	Variation $v_u$			Fixed-Simple	Fixed-Fixed						
PSS1520N1D0261	15	20	5070	8730	100	135	51	186	204	261	18	0	0.020	0.018	0.035	0.8 - 8.8	5000	-	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	3700	Shape I
PSS1520N1D0879					700	735							786	804	879	0.035				0.025	0.095	0.8 - 13.8	2900	
PSS1520N1D0979					800	835							886	904	979	0.040				0.027	0.095	0.8 - 13.8	2200	3300
PSS1520N1D1179					1000	1035							1086	1104	1179	0.046				0.030	0.120	0.8 - 13.8	1500	2200
PSS1530N1D0311					15	30							5070	8730	100	159				71	230	254	311	24
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	4500			Shape I									
PSS1530N1D0811	600	659	730	754			811	0.035	0.025	0.095	0.8 - 13.8	3300												
PSS1530N1D0929	700	759	830	854			929	0.040	0.027	0.095	0.8 - 13.8	2600			3800									
PSS1530N1D1029	800	859	930	954			1029	0.040	0.027	0.120	0.8 - 13.8	2000			3000									
PSS1530N1D1229	1000	1059	1130	1154			1229	0.046	0.030	0.120	0.8 - 13.8	1400			2000									

\*1. Indicates ball screw preload control value. Approx. 2.0 N•m 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.

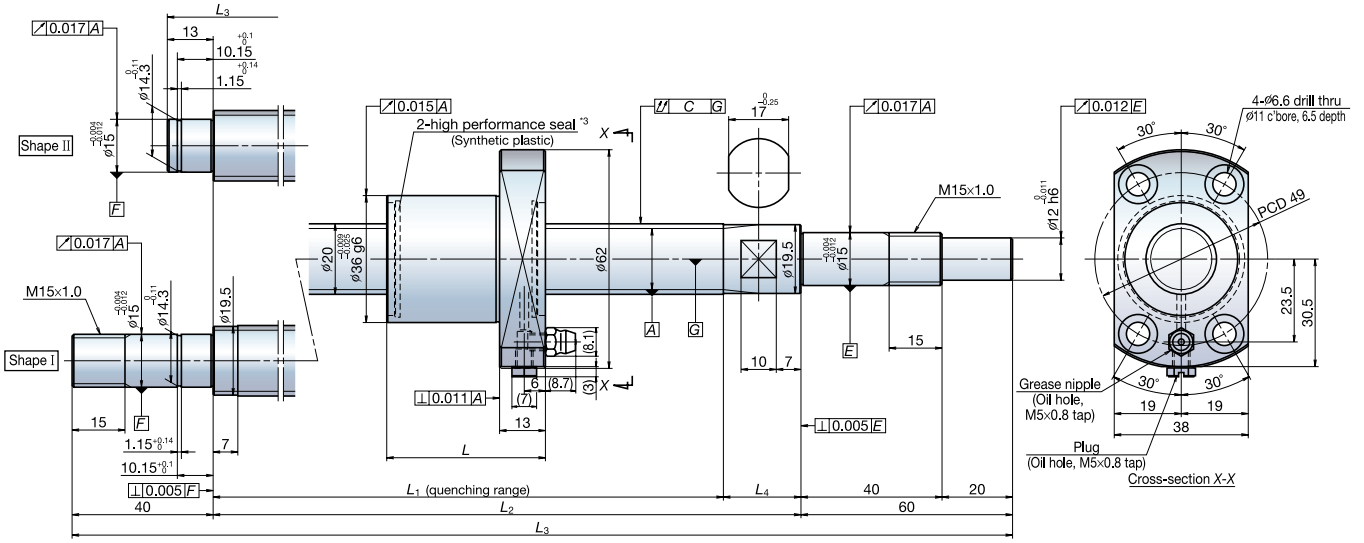
\*4. WBK 10-01B and WBK 10-11 are for shape I. Made to order.

Screw shaft:  $\phi 20$

Screw shaft  $\phi 20$

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 $\ell$	Basic load ratings (N)		Stroke		Nut length $L$	Screw shaft dimensions				Lead accuracy			Shaft runout, C	Dynamic preload torque (N-cm) <sup>*1</sup>	Permissible rotational speed (min <sup>-1</sup> ) <sup>*2</sup>		Left shaft end (opposite driven side)				
			Dynamic $C_a$	Static $C_{0a}$	Nominal	Max. $L_1-L$		$L_1$	$L_2$	$L_3$	$L_4$	Target value $T$	Error $E_p$	Variation $V_u$			Fixed-Simple	Fixed-Fixed					
																				Fixed-Simple	Fixed-Fixed		
PSS2005N1D0323	20	5	8790	18500	150	197	31	228	250	323	22	0	0.023	0.018	0.045	0.6 - 7.4	5000	-	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							
PSS2005N1D1000					800	847		878	900	1000			0.040	0.027	0.095	0.4 - 11.8				4000	3200	4700	Shape I
PSS2010N1D0387					200	247		292	314	387			0.023	0.018	0.045	1.2 - 9.3							
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	4000	3100	4600	Shape I										
PSS2010N1D1014	800	847	892	914	1014	0.040	0.027	0.120	0.8 - 13.8	2100				3100									
PSS2010N1D1214	1000	1047	1092	1114	1214	0.046	0.030	0.120	0.8 - 13.8	1500	2200												
PSS2010N1D1414	1200	1247	1292	1314	1414	0.054	0.035	0.160	0.8 - 13.8	1500	2200												
PSS2020N1D0508	20	5	5900	11700	300	359	54	413	435	508	22	0	0.027	0.020	0.060	1.4 - 11.8	5000	-	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				3700	3000	4500	Shape I
PSS2020N1D1035					800	859		913	935	1035			0.040	0.027	0.120	0.8 - 13.8				2000			
PSS2020N1D1235					1000	1059		1113	1135	1235			0.046	0.030	0.120	0.8 - 13.8				1400	2100		
PSS2020N1D1435					1200	1259		1313	1335	1435			0.054	0.035	0.160	0.8 - 13.8				1400	2100		
PSS2020N1D1835					1600	1659		1713	1735	1835			0.065	0.040	0.200	0.8 - 13.8				800	1200		
PSS2030N1D0408					200	234		308	335	408			0.023	0.018	0.050	1.6 - 9.8				5000	-	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	3900	3100	4600	Shape I										
PSS2030N1D1035	800	834	908	935	1035	0.040	0.027	0.120	0.8 - 13.8	2100				3000									
PSS2030N1D1235	1000	1034	1108	1135	1235	0.046	0.030	0.120	0.8 - 13.8	1500	2200												
PSS2030N1D1435	1200	1234	1308	1335	1435	0.054	0.035	0.160	0.8 - 13.8	1500	2200												
PSS2040N1D0658	400	461	553	585	658	0.030	0.023	0.075	2.2 - 12.8	5000	-	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				3500	2800	2800	Shape I							
PSS2040N1D1085	800	861	953	985	1085	0.040	0.027	0.120	1.8 - 14.8				1800				2700						
PSS2040N1D1285	1000	1061	1153	1185	1285	0.046	0.030	0.160	1.8 - 14.8				800	1200									
PSS2040N1D1485	1200	1261	1353	1385	1485	0.054	0.035	0.160	1.8 - 14.8				500	800									
PSS2040N1D1885	1600	1661	1753	1785	1885	0.065	0.040	0.200	1.8 - 14.8				500	800									
PSS2040N1D2285	2000	2061	2153	2185	2285	0.077	0.046	0.240	1.8 - 14.8				500	800									
PSS2060N1D0708	400	464	593	635	708	0.030	0.023	0.075	2.7 - 13.8				5000	-	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	4200	3300	3900				Shape I							
PSS2060N1D1008	700	764	893	935	1008	0.040	0.027	0.120	1.8 - 14.8	2600							3900						
PSS2060N1D1135	800	864	993	1035	1135	0.040	0.027	0.120	1.8 - 14.8	1800	2700												
PSS2060N1D1335	1000	1064	1193	1235	1335	0.046	0.030	0.160	1.8 - 14.8	1300	1900												
PSS2060N1D1535	1200	1264	1393	1435	1535	0.054	0.035	0.160	1.8 - 14.8	800	1100												
PSS2060N1D1935	1600	1664	1793	1835	1935	0.065	0.040	0.200	1.8 - 14.8	500	700												
PSS2060N1D2335	2000	2064	2193	2235	2335	0.077	0.046	0.240	1.8 - 14.8	500	700												

\*1. Indicates ball screw preload control value. Approx. 3.0 N•m 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.

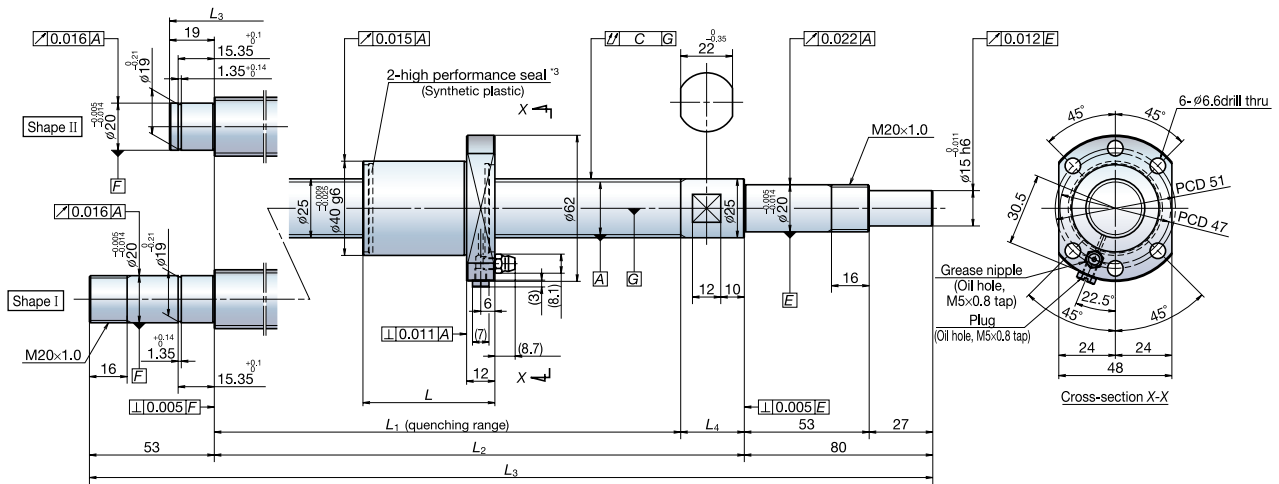
○ Two-week delivery. ▲ Made to order.

Screw shaft:  $\phi 25$

Screw shaft  $\phi 25$

Lead

- 5
- 10
- 20
- 25
- 30
- 50



Ball screw specification

Preload type	Enlarge 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 $\ell$	Basic load ratings (N)		Stroke		Nut length $L$	Screw shaft dimensions				Lead accuracy			Shaft runout, C	Dynamic preload torque (N·cm) <sup>*1</sup>	Permissible rotational speed (min <sup>-1</sup> ) <sup>*2</sup>		Left shaft end (opposite driven side)										
			Dynamic $C_a$	Static $C_{0a}$	Nominal	Max. $L_1-L$		$L_1$	$L_2$	$L_3$	$L_4$	Target value $T$	Error $e_p$	Variation $v_u$			Fixed-Simple	Fixed-Fixed											
PSS2505N1D0349	25	5	9760	23600	150	191	32	223	250	349	27	0	0.023	0.018	0.035	1.2 - 9.3	5000	-	Shape II										
PSS2505N1D0399					200	241		273	300	399			0.025	0.020	0.040	1.2 - 9.3													
PSS2505N1D0499					300	341		373	400	499			0.027	0.020	0.045	1.2 - 9.3													
PSS2505N1D0599					400	441		473	500	599			0.030	0.023	0.055	0.8 - 10.8													
PSS2505N1D0699					500	541		573	600	699			0.035	0.025	0.065	0.8 - 10.8													
PSS2505N1D0899					700	741		773	800	899			0.040	0.027	0.065	0.8 - 10.8													
PSS2505N1D0999					800	841		873	900	999			0.046	0.030	0.080	0.8 - 13.8													
PSS2505N1D1233					1000	1041		1073	1100	1233			0.027	0.020	0.045	3.1 - 11.8													
PSS2510N1D0549					25	10		12800	32300	300			367	56	423	450				549	27	0	0.030	0.023	0.055	2.2 - 12.8	5000	-	Shape II
PSS2510N1D0649										400			467		523	550				649			0.035	0.025	0.065	2.2 - 12.8			
PSS2510N1D0749	500	567	623	650			749			0.040	0.027	0.065	2.2 - 12.8																
PSS2510N1D0849	600	667	723	750			849			0.046	0.030	0.100	1.8 - 14.8																
PSS2510N1D0949	700	767	823	850			949			0.065	0.040	0.130	1.8 - 14.8																
PSS2510N1D1049	800	867	923	950			1049			0.030	0.023	0.055	2.2 - 12.8																
PSS2510N1D1283	1000	1067	1123	1150			1283			0.046	0.030	0.100	1.8 - 14.8																
PSS2510N1D1883	1600	1667	1723	1750			1883			0.054	0.035	0.100	1.8 - 14.8																
PSS2520N1D0729	25	20	6560	14600			500			550	54	604	630		729	26	0	0.035	0.025	0.065			2.2 - 12.8	5000	-	Shape II			
PSS2520N1D0829							600			650		704	730		829			0.040	0.027	0.065			2.2 - 12.8						
PSS2520N1D0929					700	750	804	830	929	0.046		0.030	0.100	1.8 - 14.8															
PSS2520N1D1029					800	850	904	930	1029	0.065		0.040	0.130	1.8 - 14.8															
PSS2520N1D1263					1000	1050	1104	1130	1263	0.035		0.025	0.055	2.7 - 13.8															
PSS2520N1D1463					1200	1250	1304	1330	1463	0.040		0.027	0.080	2.2 - 12.8															
PSS2520N1D1863					1600	1650	1704	1730	1863	0.046		0.030	0.100	1.8 - 14.8															
PSS2525N1D0779					25	25	6560	14600	500	587		63	650	680	779			30	0	0.054	0.035	0.100	1.8 - 14.8				1700	2600	Shape I
PSS2525N1D0879									600	687			750	780	879					0.065	0.040	0.130	1.8 - 14.8						
PSS2525N1D0979									700	787			850	880	979					0.077	0.046	0.170	1.8 - 14.8						
PSS2525N1D1079	800	887	950	980					1079	0.035	0.025		0.065	5.4 - 17.6															
PSS2525N1D1313	1000	1087	1150	1180					1313	0.035	0.025		0.065	5.4 - 17.6															
PSS2525N1D1513	1200	1287	1350	1380					1513	0.040	0.027		0.080	5.4 - 17.6															
PSS2525N1D1913	1600	1687	1750	1780					1913	0.040	0.027		0.080	5.4 - 17.6															
PSS2525N1D2313	2000	2087	2150	2180					2313	0.046	0.030		0.100	4.1 - 19.6															
PSS2530N1D0779	25	30	6560	14600					500	576	74		650	680	779	30	0			0.035	0.025	0.065	2.7 - 13.8	5000	-	Shape II			
PSS2530N1D0879									600	676			750	780	879					0.040	0.027	0.065	2.7 - 13.8						
PSS2530N1D0979					700	776	850	880	979	0.046		0.030	0.100	1.8 - 14.8															
PSS2530N1D1079					800	876	950	980	1079	0.054		0.035	0.100	1.8 - 14.8															
PSS2530N1D1313					1000	1076	1150	1180	1313	0.065		0.040	0.130	1.8 - 14.8															
PSS2530N1D1513					1200	1276	1350	1380	1513	0.077		0.046	0.170	1.8 - 14.8															
PSS2530N1D1913					1600	1676	1750	1780	1913	0.035		0.025	0.065	5.4 - 17.6															
PSS2530N1D2313					2000	2076	2150	2180	2313	0.040		0.027	0.080	5.4 - 17.6															
PSS2550N1D0829					25	50	6560	14600	500	576		114	690	730	829			40	0	0.046	0.030	0.100	4.1 - 19.6				2100	3400	Shape I
PSS2550N1D0929									600	676			790	830	929					0.054	0.035	0.100	4.1 - 19.6						
PSS2550N1D1029	700	776	890	930					1029	0.065	0.040		0.130	4.1 - 19.6															
PSS2550N1D1129	800	876	990	1030					1129	0.077	0.046		0.170	4.1 - 19.6															
PSS2550N1D1363	1000	1076	1190	1230					1363	0.046	0.030		0.100	4.1 - 19.6															
PSS2550N1D1563	1200	1276	1390	1430					1563	0.054	0.035		0.100	4.1 - 19.6															
PSS2550N1D1963	1600	1676	1790	1830					1963	0.065	0.040		0.130	4.1 - 19.6															
PSS2550N1D2363	2000	2076	2190	2230					2363	0.077	0.046		0.170	4.1 - 19.6															

\*1. Indicates ball screw preload control value. Approx. 3.0 N·m 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.

○ Two-week delivery. ▲ Made to order.

# Precautions

## ◇ Design

- (1) If a ball screw of which the left shaft end (opposite driven side) is Shape I and is supported by the “fixed-fixed” supporting method, you should be aware that the operating life of the support bearings may decrease 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 two to three 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.



Check lubrication

### [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 recirculation 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 the force of its own weight and result in injury. If dropped, the ball grooves could be dented or recirculation 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.



Do not disassemble



Beware of dropping

### [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 recirculation 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 recirculation system parts or seal parts. Contact NSK if 80°C must be exceeded.



Dust control



Caution max. temperature

## ◇ 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, alternative preload or alternative threaded lengths.

# Low-profile Support Units for Compact FA Series

NSK has developed a series of low-profile support units 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 the downsizing of many kinds of machinery.

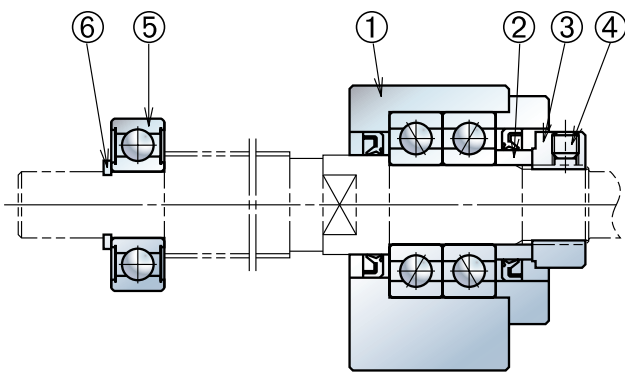
## Features

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 the fixed side support unit contains a built-in angular contact ball bearing and oil seal and should not be disassembled.

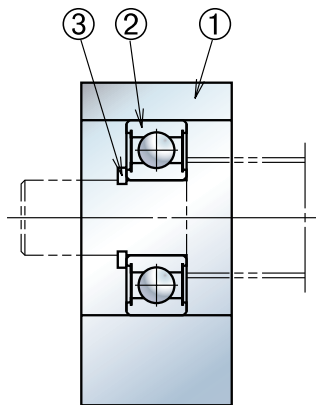
Fixed side support unit



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**

Support unit product code

Nominal size code (internal bore of bearing)\*

No code or A: conventional standard support unit  
B: Low-profile support unit

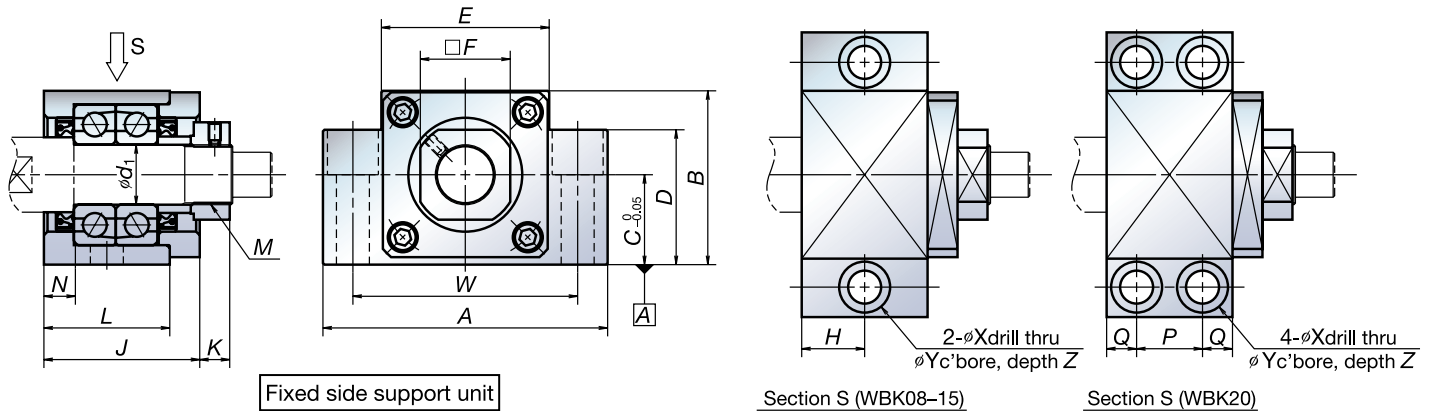
01: Square type, 11: Round type

Mounting code  
No code: Fixed side support unit  
S: Simple side support unit

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

# Low-profile Support Units for Compact FA Series

## Fixed side support unit (square type)



Fixed side support unit

Section S (WBK08-15)

Section S (WBK20)

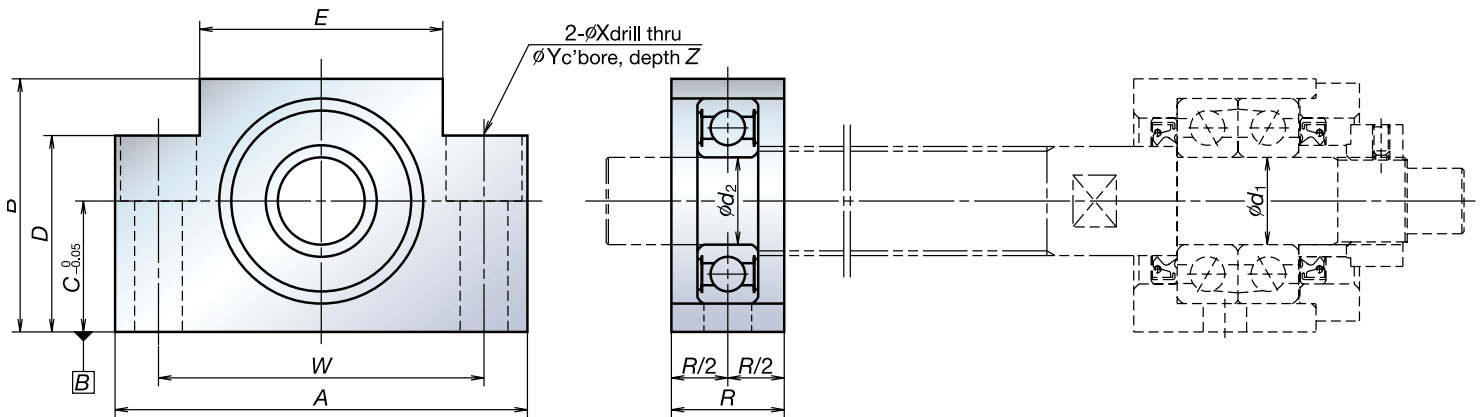
Unit: mm

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
$\phi 10$	WBK08-01A	8	52	32	17	26	25	14	11.5	23	7	—	4	—	—	38	6.6	11	12	M8X1
	WBK08-01B	8	62	31	15.5	—	—	14	11	25.5	4.5	21.5	3.5	—	—	46	9	14	18	M8X1
$\phi 15$	WBK10-01B*	10	70	38	20	—	—	17	12	30	5.5	24	6	—	—	52	9	14	19	M10X1
	WBK12-01A	12	70	43	25	35	36	19	12	30	5.5	24	6	—	—	52	9	14	11	M12X1
	WBK12-01B	12	70	38	20	—	—	19	12	30	5.5	24	6	—	—	52	9	14	19	M12X1
$\phi 20$	WBK15-01A	15	80	50	30	40	41	22	12.5	31	12	25	5	—	—	60	11	17	15	M15X1
	WBK15-01B	15	80	42	22	—	—	22	12.5	31	12	25	5	—	—	60	11	17	23	M15X1
$\phi 25$	WBK20-01	20	95	58	30	45	56	30	—	52	10	42	10	22	10	75	11	17	15	M20X1

\*Use support unit for fixing side for opposite drive side of shaft diameter  $\phi 15$ .

- 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



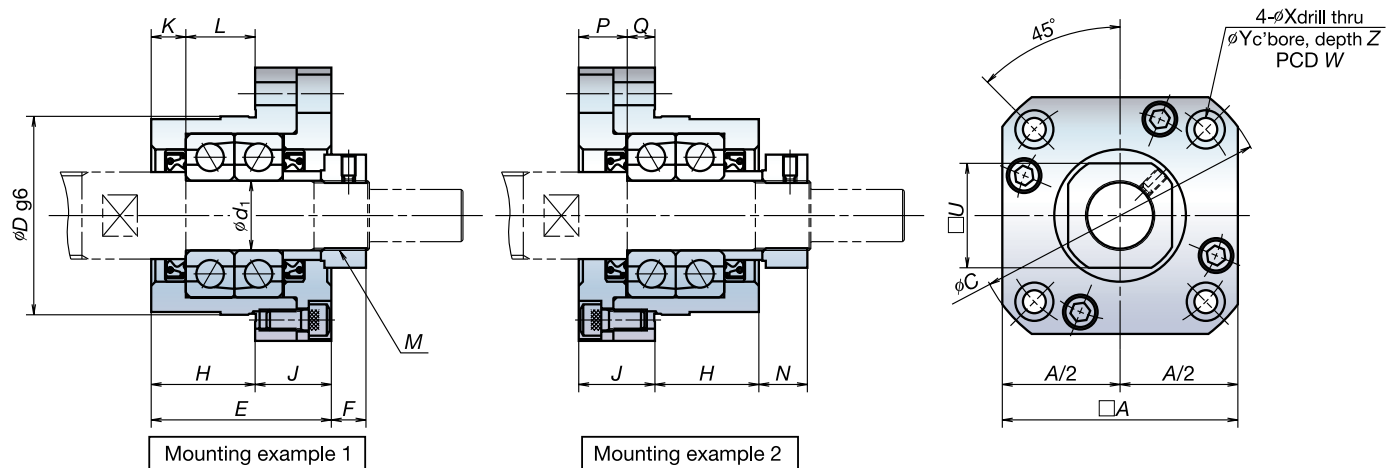
Simple side support unit

Unit: mm

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



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
$\phi 10$	WBK08-11	8	35	43	28	23	7	14	9	4	10	8	5	4	14	35	3.4	6.5	4	M8X1
$\phi 12$	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	M8X1
$\phi 15$	WBK10-11*	10	42	52	34	27	7.5	17	10	5	12	8.5	6	4	17	42	4.5	8	4	M10X1
	WBK12-11	12	44	54	36	27	7.5	17	10	5	12	8.5	6	4	19	44	4.5	8	4	M12X1
$\phi 20$	WBK15-11	15	52	63	40	32	12	17	15	6	11	14	8	7	22	50	5.5	9.5	6	M15X1
$\phi 25$	WBK20-11	20	68	85	57	52	10	30	22	10	20	14	14	8	30	70	6.6	11	10	M15X1

\*Use support unit for fixing side for opposite drive side of shaft diameter  $\phi 15$ .

- 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		Maximum starting torque [N-cm]	Tightening torque [N-cm]		Support unit reference number	Bearing number	Radial load Basic load ratings C [N]
		Basic load ratings $C_a$ [N]	Load limit [N]		Lock nut	Setscrew			
$\phi 10$	WBK08-01A (square type)	4400	1450	0.88	490	69 (M3)	WBK08S-01	606ZZ	2260
	WBK08-11 (round type)						—		
$\phi 12$	WBK08-01B (square low-profile type)	6600	2730	1.9	930	147 (M4)	WBK08S-01B	6000ZZ	4550
	WBK08-11B (round type)						—		
$\phi 15$	WBK10-01B (square low-profile type)*	6600	2730	1.9	2350	147 (M4)	WBK12S-01	6204ZZ	12800
	WBK10-11 (round type)						—		
	WBK12-01A (square type)	7100	3040	2.1	4700	147 (M4)	WBK12S-01B		
	WBK12-01B (square low-profile type)						—		
$\phi 20$	WBK12-11 (round type)	7600	3380	2.3	4700	147 (M4)	WBK15S-01	6002ZZ	5600
	WBK15-01A (square type)						WBK15S-01B		
	WBK15-01B (square low-profile type)								
$\phi 25$	WBK15-11 (round type)	17900	8240	5.4	4700	147 (M4)	WBK20S-01	6204ZZ	12800
	WBK20-01 (square type)						—		
	WBK20-11 (round type)								

\*Use support unit for fixing side for opposite drive side of shaft diameter  $\phi 15$ .



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