



NSK STANDARD BALL SCREWS COMPACT FA SERIES

Quiet, high-speed operating performance.



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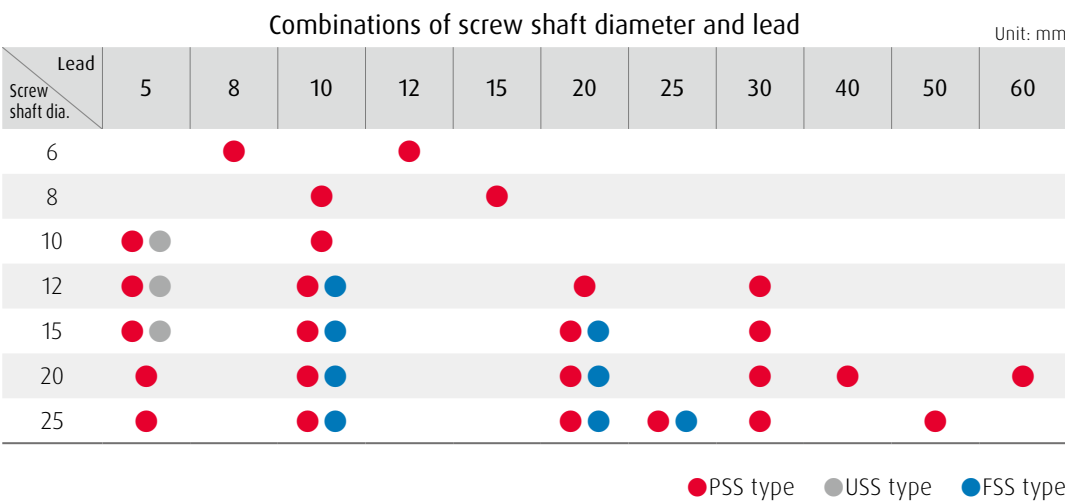
Selection of ball screws

Three types of compact FA Series are available. Choose optimal types for your application.

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Support Unit

Square Type	46-47
For general use, for clean use, space saving (low-profile type)	
Round Type	48-49
For general use, for clean use	
Square Type	50-51
For simple support side	



NSK Standard Ball Screws: Compact FA Series

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

The Compact FA Series includes the following types to meet your application requirements:

- PSS Type which offers various sizes for general use.
- USS Type for high accuracy and clean environment use.
- FSS Type for transfer equipment.

Features

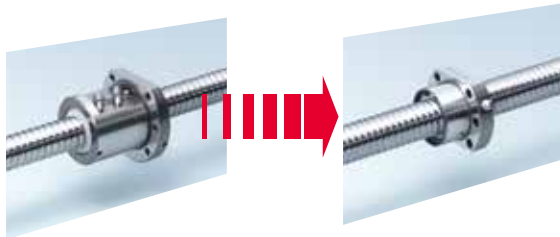
Quick delivery

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

Compact ball screw

The outside diameter of the ball nut is as much as 30% smaller than those of existing NSK products. Compact size enables all sorts of equipment and devices, such as linear stages, to be smaller. NSK has also designed low profile support units, specific for the Compact FA series, enabling a unique space-saving design.

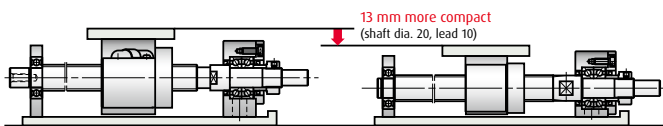
Shaft dia. 25 mm, lead 5 mm



Existing FA Series

Compact FA Series

Comparison of existing FA Series and Compact FA Series

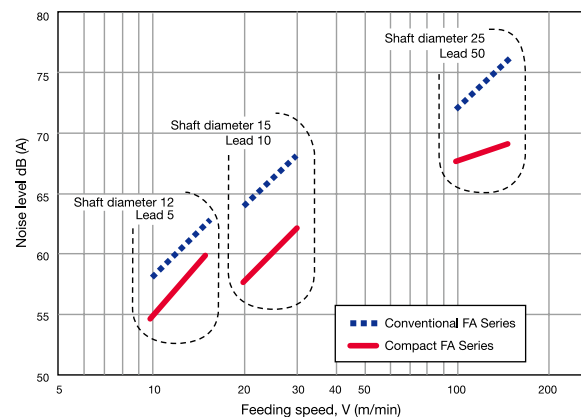


Existing support unit > New low-profile support unit

Quiet operation

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.

Noise data



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

High-speed operation

They handle speeds up to 5000 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 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.

Contact seal

Compact, thin plastic seal is available and helps to minimize grease dispersion and maintain a clean work environment.

Compact FA Series: PSS Type for General Use

Applications

Semiconductor manufacturing equipment, LCD manufacturing equipment, material handling equipment, measuring equipment, medical equipment, etc.

Accuracy grade and axial play

Accuracy grade: C5 grade of JIS

Axial play 1) Shaft dia. 6 and 8 mm: 0.005 mm or less
2) Shaft dia. 10 mm or over: 0 (Oversize ball preload)

Wide variation

Various combinations of shaft diameter, lead and stroke are available to meet a wide range of customer needs.

Shaft end support

The low-profile support units are compatible for the Compact FA Series. Each end of the ball screw shaft is designed to fit support unit, no detailed design after purchase is necessary.



Combinations of shaft diameter, lead and stroke

Shaft dia.	Lead	50	100	150	200	300	400	500	600	700	800	1000	1200	1600	2000	Page	Recommended support unit	
																	Fixed	Simple
6	8			▲*												8-9	WBK04-01M (square) WBK04-11M (round)	-
	12			▲*														
8	10			▲*												10-11	WBK06-01M (square) WBK06-11M (round)	-
	15			▲*														
10	5	●	●		●	●	●									12-13	WBK08-01B	WBK08S-01B
	10		●		●	●	●	●										
12	5	●			●	●	●	●								14-15	WBK08-01B	WBK08S-01B
	10		●		●	●	●	●	●									
	20		▲		▲	▲	▲	▲										
15	30		▲		▲	▲	▲	▲										
	5	●	●		●	●	●	●	●	●	●	●				16-19	WBK12-01B WBK10-01B	WBK12S-01B
	10		●		●	●	●	●	●	●	●	●						
20	20				●	●	●	●	●	●	●	●	●			20-25	WBK15-01B	WBK15S-01B
	30				▲	▲	▲	▲	▲	▲	▲	▲	▲	▲				
	40																	
	60																	
	5			●	●	●	●	●	●	●	●	●	●	●				
25	10				●	●	●	●	●	●	●	●	●	●		26-31	WBK20-01	WBK20S-01
	20					●	●	●	●	●	●	●	●	●	●			
	25						●	●	●	●	●	●	●	●	●			
	30							▲	▲	▲	▲	▲	▲	▲	▲			
	50								▲	▲	▲	▲	▲	▲	▲			

*For shaft diameter 6 and 8, length shown is overall length.

● Stocked: 4-week delivery. ▲ Contact NSK for availability.

Reference number

PSS	15	05	N1D	0361
COMPACT FA PSS TYPE	SCREW SHAFT DIAMETER (MM)	LEAD (MM)	NSK CONTROL NUMBER	SCREW SHAFT LENGTH (MM)

Compact FA Series: USS Type for High-Accuracy and Clean Room Use

Applications

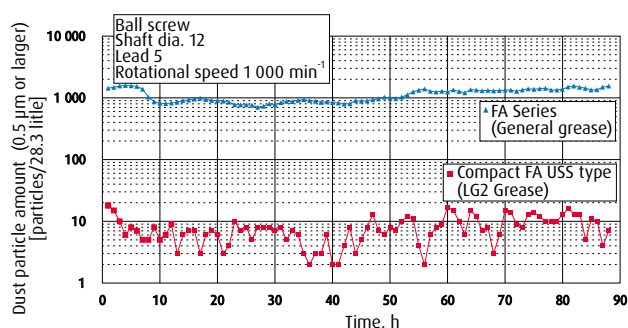
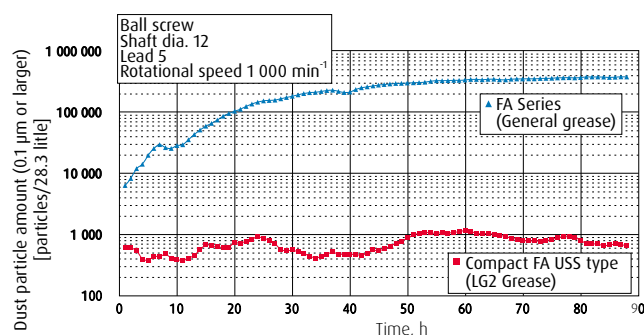
Semiconductor manufacturing equipment, LCD manufacturing equipment, and inspection equipment for clean room environments.

Accuracy grade and axial play

Accuracy grade: C3 grade of JIS Axial play: 0 (Oversize ball preload)

Low-dust emission

- LG2 clean grease is used as standard and reduces dust particle generation 90% compared to lithium grease
- 1/100 of dust particles generated with LG2 grease
- Ideal for clean room environmental use



Shaft end support

Low-profile support units for clean environments are available.

Combinations of screw shaft diameter, lead and stroke

Shaft dia.	Lead	Stroke					Page	Recommended support unit		
		100	200	400	500	600		Fixed	Simple	Application
10	5	●	●	●			32-33	WBK08-01B	WBK08S-01B	Low
								WBK08-01C	WBK08S-01C	Clean
12		●	●		●		34-35	WBK08-01B	WBK08S-01B	Low
								WBK08-01C	WBK08S-01C	Clean
15		●	●	●		●	36-37	WBK12-01B	WBK12S-01B	Low
								WBK12-01C	WBK12S-01C	Clean

Reference number

USS COMPACT FA USS TYPE	15 SCREW SHAFT DIAMETER (MM)	05 LEAD (MM)	N1D NSK CONTROL NUMBER	0361 SCREW SHAFT LENGTH (MM)
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Compact FA Series: FSS Type for Transfer Equipment

Applications

Transfer equipment used in industrial fields such as automotive, semiconductor, and medical equipment.

Accuracy grade and axial play

Accuracy grade: Ct7 grade of JIS Axial play: 0.010 mm or less

Easy stroke setting

- Flexible stroke setting with fixed-simple support by means of mounting support unit (simple support side) directly to ball screw thread outside diameter.
- Since corner cutting is not necessary, customers can cut ball screws, which results in reduced cost and lead time.
- If necessary, NSK can cut shaft if requested. Contact NSK for more information.

Precautions

- During the cutting process, be careful not to let metal particles or burrs fall inside the ball nut.
- Customers are also advised to treat the cut surface.
- When inserting the support unit (simple support side), apply oil or grease on the outside of the shaft and inside the bearing.

Shaft end support

Fixed side: The low-profile support units compatible for compact FA PSS type are available.
Simple side: Proprietary support units are available.



Design precautions

Permissible rotational speed varies when using cut screw shaft. To determine permissible rotational speed, calculate two items below. Use smaller number to determine permissible rotational speed.

- Critical speed which is the resonance vibration of the shaft. (Refer to the technical description of the catalog "Precision Machine Components".)
- Maximum rotational speed 5 000 min⁻¹

Combinations of shaft diameter, lead and shaft length

Shaft dia.	Lead	Overall shaft length						Page	Recommended support unit	
		400	500	600	900	1 000	1 450		Fixed	Simple
12	10	•		•	•			38-39	WBK08-01B	WBK12SF-01B
15	10		•			•	•	40-41	WBK12-01B	WBK15SF-01B
	20		•			•	•			
20	10			•		•	•	42-43	WBK15-01B	WBK20SF-01B
	20			•		•	•			
25	10			•		•	•	44-45	WBK20-01	WBK25SF-01
	20			•		•	•			
	25			•		•	•			

Reference number

FSS	15	10	N1D	1000
COMPACT FA FSS TYPE	SCREW SHAFT DIAMETER (MM)	LEAD (MM)	NSK CONTROL NUMBER	SCREW SHAFT LENGTH (MM)

Precautions

Design

- (1) If the left shaft end of a ball screw (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 NSK for detailed examination.
- (2) For general precautions concerning ball screws, please see NSK Catalog No. E3162 "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 or metal powder under operation, clean it with white kerosene and replenish with new grease of the same kind through the oil hole (grease fitting) 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.



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 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, contact NSK. We can perform inspection and repair if needed.
- (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.



Do not disassemble



Beware of dropping

Usage

- (1) Ball screws should be used in a clean environment. The ball screws should be installed 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.



Dust control

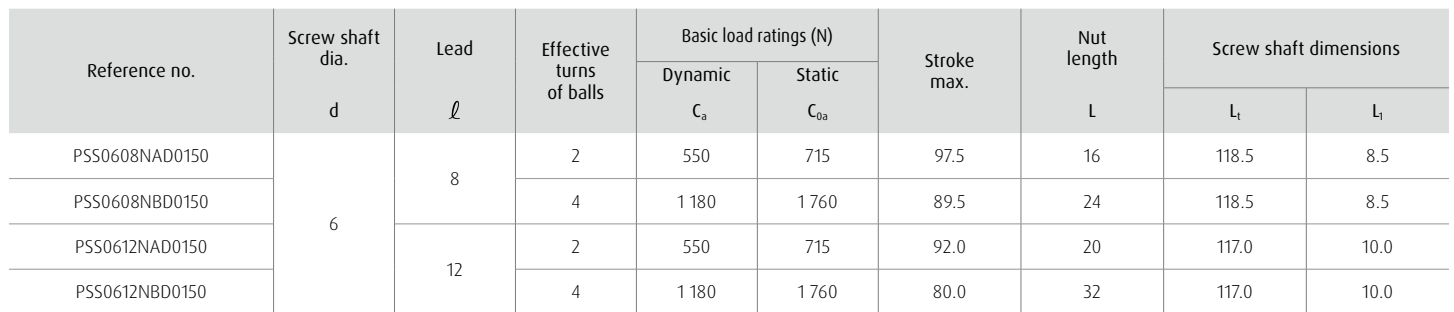


Caution max. temperature

Compact FA Series options

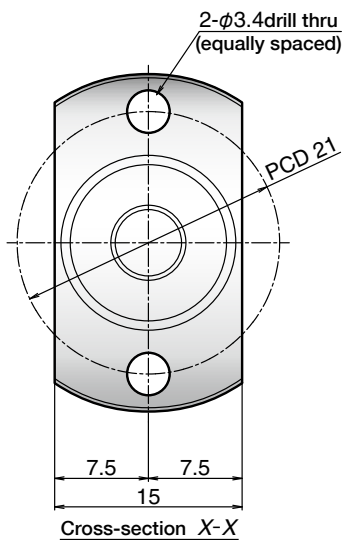
Consult with NSK for information regarding shaft end machining, reversing ball nut direction and other options.

Screw shaft diameter 6 mm, Lead 8 and 12 mm



8 Courtesy of Steven Engineering, Inc. - (800) 258-9200 - sales@steveneng.com - www.stevenengineering.com

PSS Type for General Use



Unit : mm

Ball screw specification	
Ball dia./screw shaft root dia.	1.2 / 4.9
Ball circle dia.	6.2
Accuracy grade/axial play	C5 / 0.005 mm or less
Factory-packed grease	NSK grease PS2

Recommended support unit

For drive side (Fixed)	
WBK04-01M (square)	P 46-47
WBK04-11M (round)	P 48-49

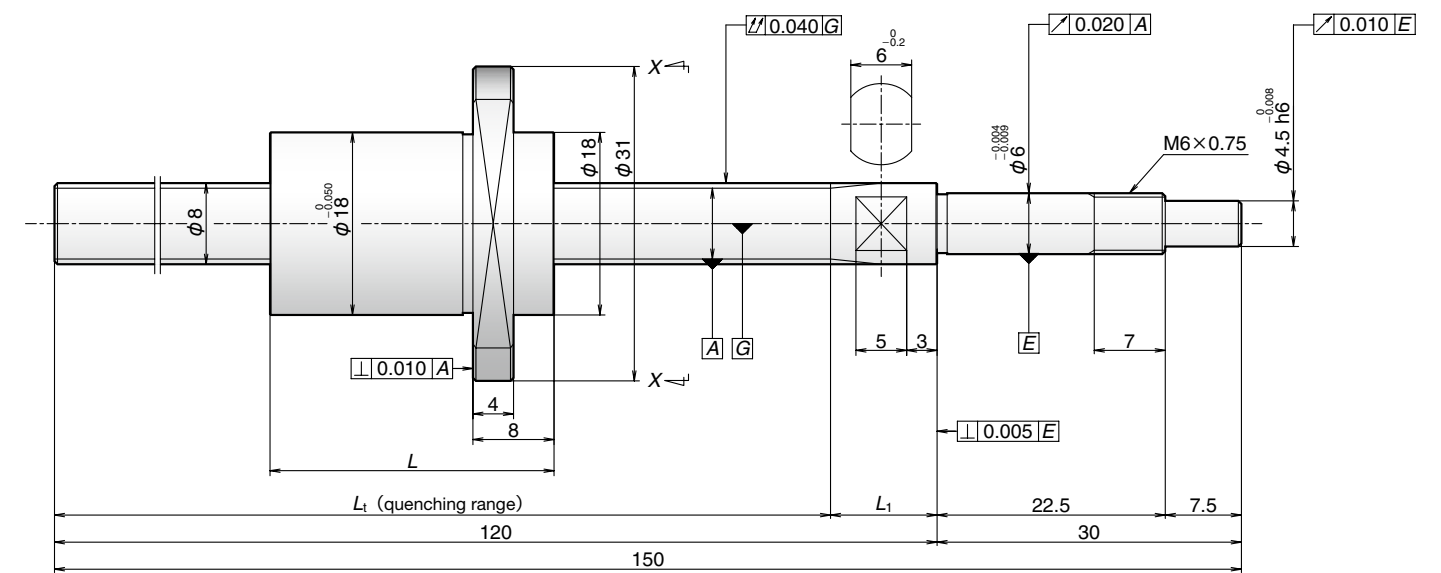
Unit : mm

Lead accuracy			Dynamic preload torque (N·cm)	Mass (kg)	Permissible rotational speed (min ⁻¹) ¹	Internal spatial volume of nut (cm ³)	Standard volume of grease replenishing (cm ³)
Target value T	Error e _p	Variation V _u					
0	20	18	0.5 or less	0.06	5 000	0.2	0.1
				0.06		0.3	0.2
				0.06		0.2	0.1
				0.07		0.3	0.2

- 2. Service temperature range is 0 to 80°C.
- 3. Use of NSK support unit is recommended. Refer to pages 46 to 49 for details.

Compact FA Series

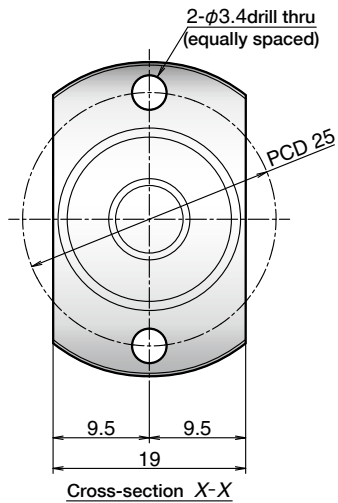
Screw shaft diameter 8 mm, Lead 10 and 15 mm



Reference no.	Screw shaft dia. d	Lead ℓ	Effective turns of balls	Basic load ratings (N)		Stroke max.	Nut length L	Screw shaft dimensions	
				Dynamic C _a	Static C _{0a}			L _t	L _i
PSS0810NAD0150	8	10	2	910	1 260	86.5	18	109.5	10.5
PSS0810NBD0150			4	1 950	3 080	76.5	28	109.5	10.5
PSS0815NAD0150		15	2	910	1 260	80.0	22	107.0	13.0
PSS0815NBD0150			4	1 950	3 080	65.0	37	107.0	13.0

Notes 1. Contact NSK if permissible rotational speed is to be exceeded.

PSS Type for General Use



Unit : mm

Ball screw specification	
Ball dia./screw shaft root dia.	1.588 / 6.6
Ball circle dia.	8.3
Accuracy grade/axial play	C5 / 0.005 mm or less
Factory-packed grease	NSK grease PS2

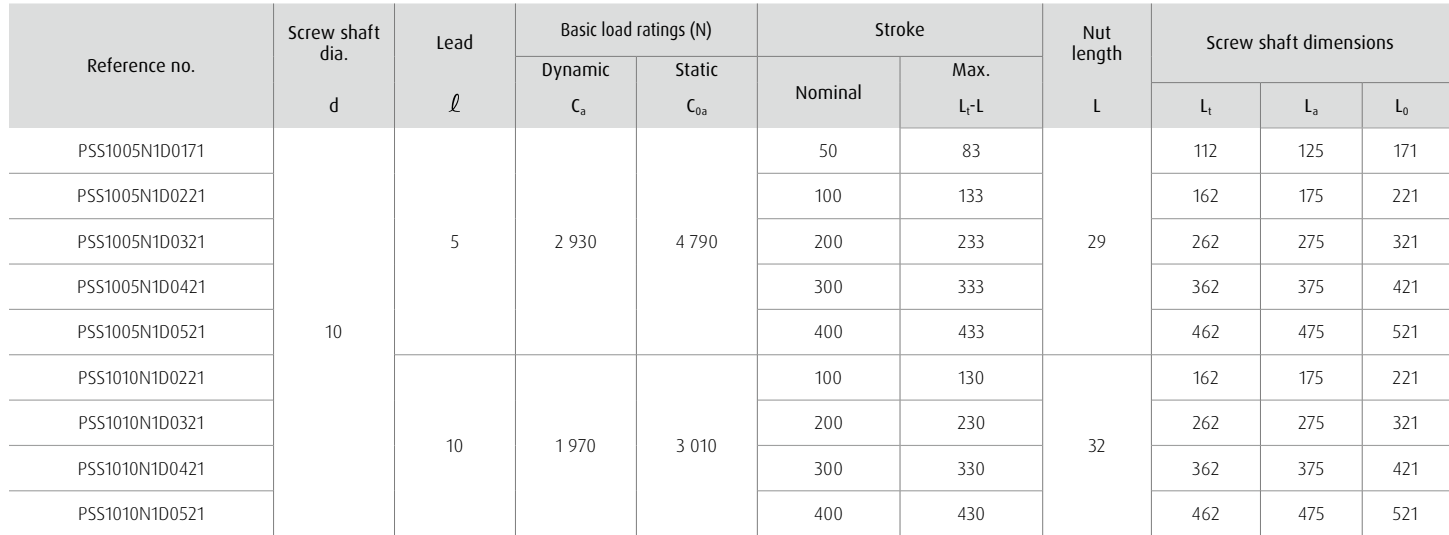
Recommended support unit

For drive side (Fixed)	
WBK06-01M (square)	P 46-47
WBK06-11M (round)	P 48-49

Unit : mm

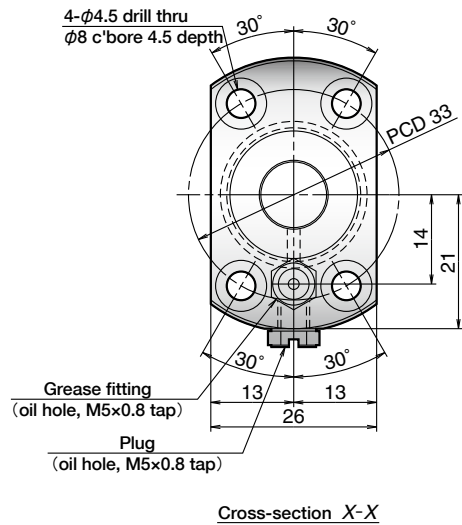
Lead accuracy			Dynamic preload torque (N·cm)	Mass (kg)	Permissible rotational speed (min ⁻¹) ¹	Internal spatial volume of nut (cm ³)	Standard volume of grease replenishing (cm ³)
Target value T	Error e _p	Variation V _u					
0	20	18	0.5 or less	0.09	5 000	0.4	0.2
				0.11		0.5	0.3
				0.10		0.4	0.2
				0.12		0.6	0.3

2. Service temperature range is 0 to 80°C.
3. Use of NSK support unit is recommended. Refer to pages 46 to 49 for details.



PSS Type for General Use

Unit : mm



Ball screw specification	
Preload type	Oversize ball (P-preload)
Ball dia./screw shaft root dia.	2.000 / 8.2
Ball circle dia.	10.3
Accuracy grade/axial play	C5 / 0
Factory-packed grease	NSK grease PS2

Recommended support unit

For drive side (Fixed)		For opposite to drive side (Simple)	
WBK08-01B (square, low)	P 46-47	WBK08S-01B (square, low)	P 50-51
WBK08-11 (round)	P 48-49	-	
WBK08-11B (round, high-load)	P 48-49	-	

Unit : mm

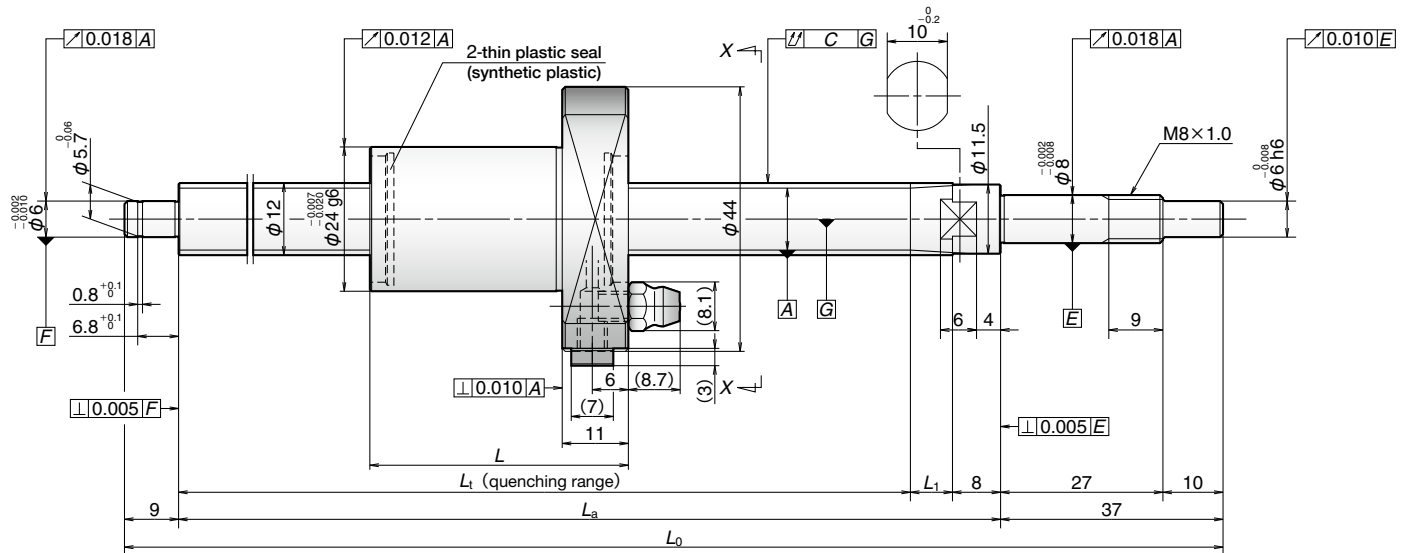
Lead accuracy			Shaft run-out	Dynamic preload torque	Mass	Permissible rotational speed (min ⁻¹) ^{1,2}	Internal spatial volume of nut	Standard volume of grease replenishing
Target value	Error	Variation				Fixed-simple		
T	e _p	V _u	C	(N·cm) ⁻¹	(kg)		(cm ³)	(cm ³)
0	0.020	0.018	0.030	0.7 to 3.3	0.3	5 000	0.8	0.4
	0.020	0.018	0.045	0.7 to 3.3	0.3			
	0.023	0.018	0.060	0.6 to 4.3	0.3			
	0.025	0.020	0.070	0.6 to 4.3	0.4			
	0.027	0.020	0.085	0.4 to 4.9	0.5			
	0.020	0.018	0.045	0.7 to 3.3	0.3		0.7	
	0.023	0.018	0.060	0.6 to 4.3	0.4			
	0.025	0.020	0.070	0.6 to 4.3	0.4			
	0.027	0.020	0.0850	0.4 to 4.9	0.5			

3. Service temperature range is 0 to 80°C.

4. Use of NSK support unit is recommended. Refer to pages 46 to 51 for details.

Compact FA Series

Screw shaft diameter 12 mm, Lead 5, 10, 20 and 30 mm

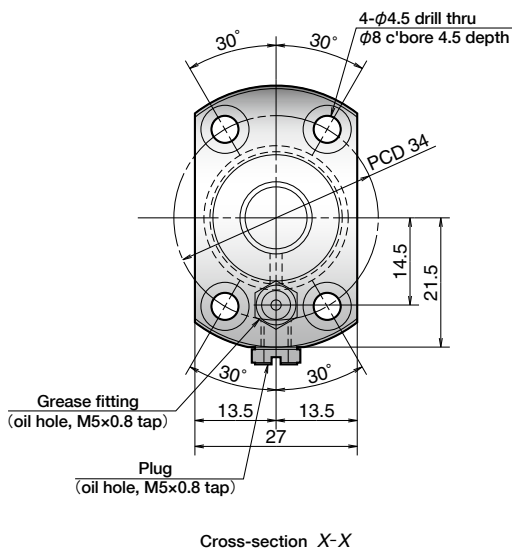


Reference no.	Screw shaft dia. d	Lead ℓ	Basic load ratings (N)		Stroke		Nut length L	Screw shaft dimensions			
			Dynamic C _a	Static C _{0a}	Nominal	Max. L ₁ -L		L ₁	L _a	L ₀	L ₁
PSS1205N1D0171	12	5	3 200	5 860	50	80	30	110	125	171	7
PSS1205N1D0221					100	130		160	175	221	
PSS1205N1D0321					200	230		260	275	321	
PSS1205N1D0421					300	330		360	375	421	
PSS1205N1D0521					400	430		460	475	521	
PSS1205N1D0621					500	530		560	575	621	
PSS1210N1D0221		10	3 200	5 860	100	117	43	160	175	221	7
PSS1210N1D0321					200	217		260	275	321	
PSS1210N1D0421					300	317		360	375	421	
PSS1210N1D0521					400	417		460	475	521	
PSS1210N1D0621					500	517		560	575	621	
PSS1220N1D0271		20	2 150	3 610	100	158	50	208	225	271	9
PSS1220N1D0371					200	258		308	325	371	
PSS1220N1D0471					300	358		408	425	471	
PSS1220N1D0571					400	458		508	525	571	
PSS1220N1D0671					500	558		608	625	671	
PSS1230N1D0271		30	2 150	3 610	100	133	70	203	225	271	14
PSS1230N1D0371					200	233		303	325	371	
PSS1230N1D0471					300	333		403	425	471	
PSS1230N1D0571					400	433		503	525	571	
PSS1230N1D0671					500	533		603	625	671	

- Notes 1. Indicates ball screw preload control value. Approximately 2.0 N•cm of torque is added due to thin plastic seals.
2. Contact NSK if permissible rotational speed is to be exceeded.

PSS Type for General Use

Unit : mm



Ball screw specification	
Preload type	Oversize ball (P-preload)
Ball dia./screw shaft root dia.	2.000 / 10.2
Ball circle dia.	12.3
Accuracy grade/axial play	C5 / 0
Factory-packed grease	NSK grease PS2

Recommended support unit

For drive side (Fixed)	For opposite to drive side (Simple)
WBK08-01B (square, low) P 46-47	WBK08S-01B (square, low) P 50-51
WBK08-11 (round) P 48-49	-
WBK08-11B (round, high-load) P 48-49	-

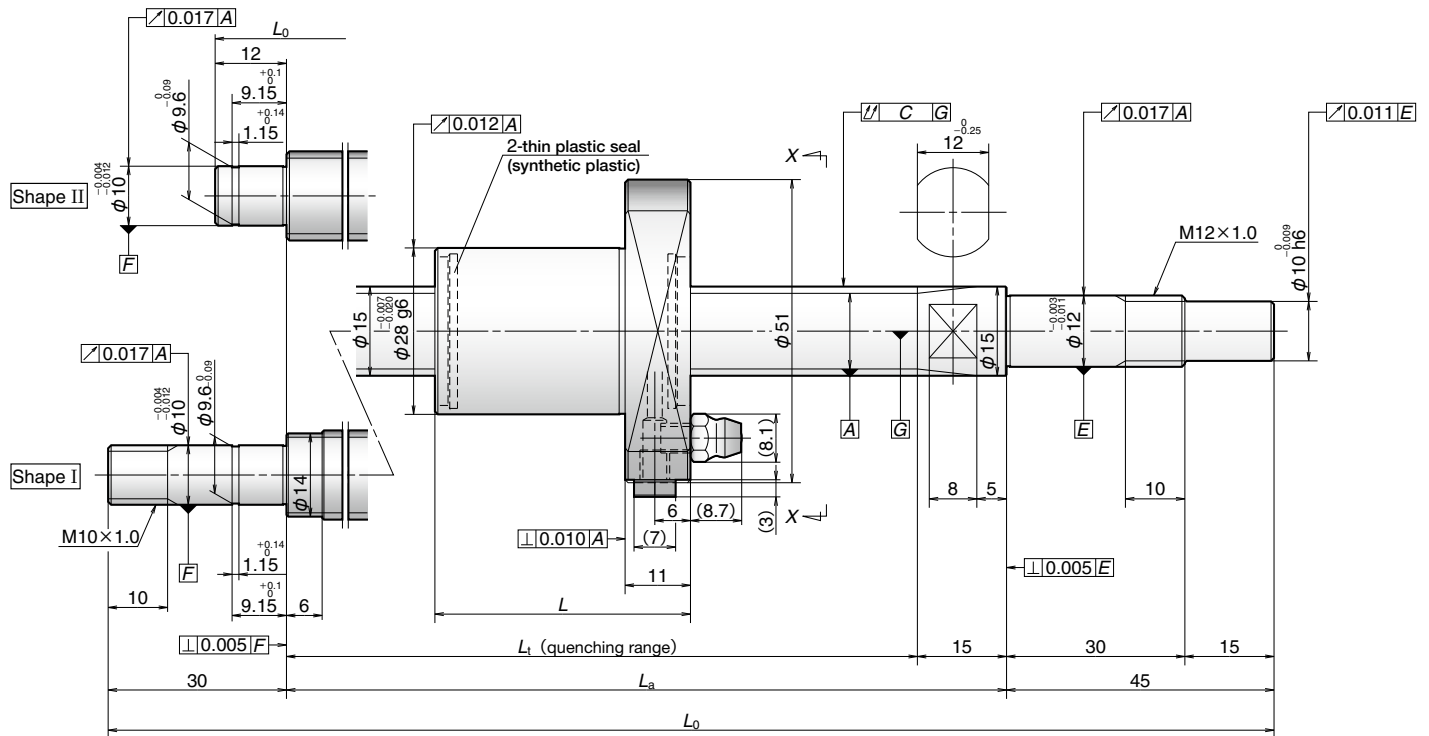
Unit : mm

Lead accuracy			Shaft run-out	Dynamic preload torque	Mass	Permissible rotational speed (min ⁻¹) ²	Internal spatial volume of nut	Standard volume of grease replenishing
Target value	Error	Variation				Fixed-simple		
T	e _p	V _u	C	(N·cm) ¹	(kg)		(cm ³)	(cm ³)
0	0.020	0.018	0.030	0.7 to 3.3	0.3	5 000	1.0	0.5
	0.020	0.018	0.045	0.7 to 3.3	0.3			
	0.023	0.018	0.060	0.6 to 4.3	0.4			
	0.025	0.020	0.070	0.6 to 4.3	0.5			
	0.027	0.020	0.085	0.6 to 4.3	0.6			
	0.030	0.023	0.085	0.4 to 4.9	0.7			
	0.020	0.018	0.045	0.7 to 3.3	0.4	5 000	1.0	0.5
	0.023	0.018	0.060	0.6 to 4.3	0.5			
	0.025	0.020	0.070	0.6 to 4.3	0.5			
	0.027	0.020	0.085	0.6 to 4.3	0.6			
	0.030	0.023	0.085	0.4 to 4.9	0.7			
	0.023	0.018	0.045	1.4 to 4.5	0.4	5 000	1.2	0.6
	0.023	0.018	0.060	0.9 to 4.9	0.5			
	0.027	0.020	0.070	0.9 to 4.9	0.6			
	0.030	0.023	0.085	0.6 to 5.9	0.7			
	0.030	0.023	0.110	0.6 to 5.9	0.8	4 200	1.5	0.8
	0.023	0.018	0.045	1.4 to 4.5	0.5	5 000		
	0.023	0.018	0.060	0.9 to 4.9	0.6			
	0.027	0.020	0.070	0.9 to 4.9	0.7			
	0.030	0.023	0.085	0.6 to 5.9	0.7			
0.030	0.023	0.110	0.6 to 5.9	0.8	4 300			

3. Service temperature range is 0 to 80°C.
4. Use of NSK support unit is recommended. Refer to pages 46 to 51 for details.

Compact FA Series

Screw shaft diameter 15 mm, Lead 5 and 10 mm

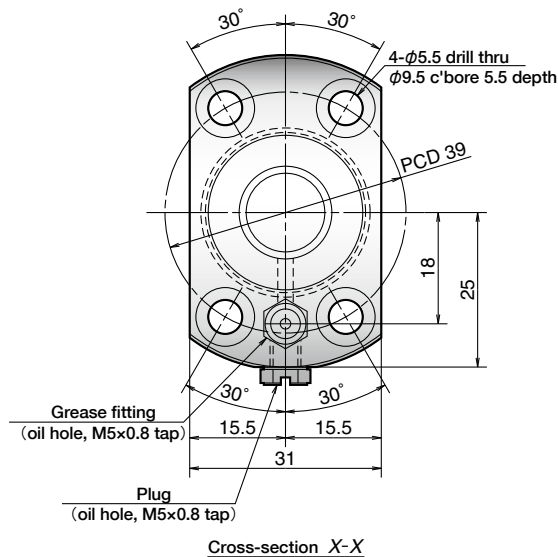


Reference no.	Screw shaft dia.	Lead	Basic load ratings (N)		Stroke		Nut length	Screw shaft dimensions					
			Dynamic	Static	Nominal	Max. L _t -L		L	L _t	L _a	L ₀		
	d	ℓ	C _a	C _{0a}									
PSS1505N1D0211	15	5	5 460	10 200	50	109	30	139	154	211			
PSS1505N1D0261					100	159		189	204	261			
PSS1505N1D0361					200	259		289	304	361			
PSS1505N1D0461					300	359		389	404	461			
PSS1505N1D0561					400	459		489	504	561			
PSS1505N1D0661					500	559		589	604	661			
PSS1505N1D0761					600	659		689	704	761			
PSS1510N1D0261		10						100	146	43	189	204	261
PSS1510N1D0361								200	246		289	304	361
PSS1510N1D0461								300	346		389	404	461
PSS1510N1D0561								400	446		489	504	561
PSS1510N1D0661								500	546		589	604	661
PSS1510N1D0761								600	646		689	704	761
PSS1510N1D0879								700	746		789	804	879
PSS1510N1D0979								800	846		889	904	979
PSS1510N1D1179								1 000	1 046		1 089	1 104	1 179

- Notes
1. Indicates ball screw preload control value. Approximately 2.0 N•cm of torque is added due to thin plastic seals.
 2. Contact NSK if permissible rotational speed is to be exceeded.

PSS Type for General Use

Unit : mm



Ball screw specification

Preload type	Oversize ball (P-preload)
Ball dia./screw shaft root dia.	2.778 / 12.6
Ball circle dia.	15.5
Accuracy grade/axial play	C5 / 0
Factory-packed grease	NSK grease LR3

Recommended support unit

For drive side (Fixed)	For opposite to drive side	
	(Fixed)	(Simple)
WBK12-01B (square, low) P 46-47	WBK10-01B (square, low) P 46-47	WBK12S-01B (square, low) P 50-51
WBK12-11 (round) P 48-49	WBK10-11 (round) P 48-49	-

Unit : mm

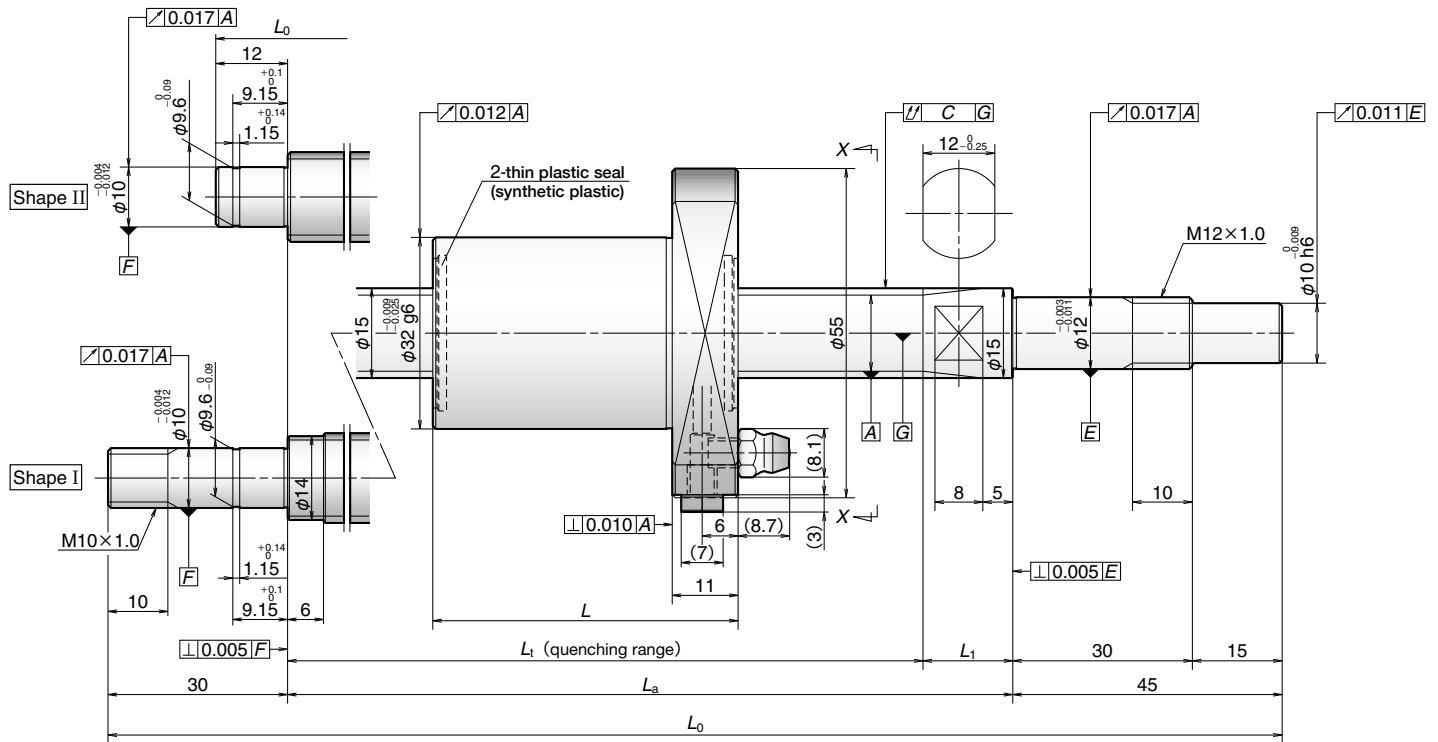
Left shaft end (opposite driven side)	Lead accuracy			Shaft run-out C	Dynamic preload torque (N·cm) ^{*1}	Mass (kg)	Permissible rotational speed (min ⁻¹) ^{*2}		Internal spatial volume of nut (cm ³)	Standard volume of grease replenishing (cm ³)
	Target value T	Error e _p	Variation V _a				Fixed-simple	Fixed-Fixed		
II	0	0.020	0.018	0.035	0.2 to 6.9	0.5	5 000	—	2.0	1.0
		0.020	0.018	0.035	0.2 to 6.9	0.5				
		0.023	0.018	0.045	0.2 to 6.9	0.6				
		0.025	0.020	0.050	0.4 to 9.8	0.8				
		0.027	0.020	0.060	0.4 to 9.8	0.9				
		0.030	0.023	0.075	0.4 to 9.8	1.0				
0.035		0.025	0.075	0.4 to 11.8	1.1	3 600				
II		0.020	0.018	0.035	0.6 to 7.4	0.6	5 000	—		
		0.023	0.018	0.045	0.6 to 7.4	0.7				
		0.025	0.020	0.050	0.4 to 9.8	0.8				
		0.027	0.020	0.060	0.4 to 9.8	1.0				
		0.030	0.023	0.075	0.4 to 9.8	1.1				
	0.035	0.025	0.075	0.4 to 11.8	1.2	3 600				
I	0.035	0.025	0.095	0.4 to 11.8	1.4	2 700	3 400			
	0.040	0.027	0.095	0.4 to 11.8	1.5	2 200	3 400			
	0.046	0.03	0.120	0.4 to 11.8	1.7	1 400	2 300			

3. Service temperature range is 0 to 80°C.

4. Use of NSK support unit is recommended. Refer to pages 46 to 51 for details.

Compact FA Series

Screw shaft diameter 15 mm, Lead 20 and 30 mm

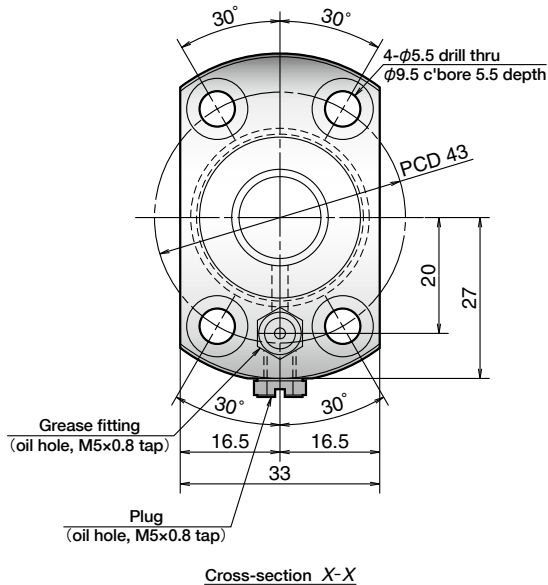


Reference no.	Screw shaft dia. d	Lead ℓ	Basic load ratings (N)		Stroke		Nut length L	Screw shaft dimensions			
			Dynamic C _a	Static C _{0a}	Nominal	Max. L _t -L		L _t	L _a	L ₀	L ₁
PSS1520N1D0261	15	20	5 070	8 730	100	135	51	186	204	261	18
PSS1520N1D0361					200	235		286	304	361	
PSS1520N1D0461					300	335		386	404	461	
PSS1520N1D0561					400	435		486	504	561	
PSS1520N1D0661					500	535		586	604	661	
PSS1520N1D0761					600	635		686	704	761	
PSS1520N1D0879					700	735		786	804	879	
PSS1520N1D0979					800	835		886	904	979	
PSS1520N1D1179					1 000	1 035		1 086	1 104	1 179	
PSS1530N1D0311	15	30	5 070	8 730	100	159	71	230	254	311	24
PSS1530N1D0411					200	259		330	354	411	
PSS1530N1D0511					300	359		430	454	511	
PSS1530N1D0611					400	459		530	554	611	
PSS1530N1D0711					500	559		630	654	711	
PSS1530N1D0811					600	659		730	754	811	
PSS1530N1D0929					700	759		830	854	929	
PSS1530N1D1029					800	859		930	954	1 029	
PSS1530N1D1229					1 000	1 059		1 130	1 154	1 229	

- Notes 1. Indicates ball screw preload control value. Approximately 2.0 N•cm of torque is added due to thin plastic seals.
2. Contact NSK if permissible rotational speed is to be exceeded.

PSS Type for General Use

Unit : mm



Ball screw specification	
Preload type	Oversize ball (P-preload)
Ball dia./screw shaft root dia.	3.175 / 12.2
Ball circle dia.	15.5
Accuracy grade/axial play	C5 / 0
Factory-packed grease	NSK grease LR3

Recommended support unit

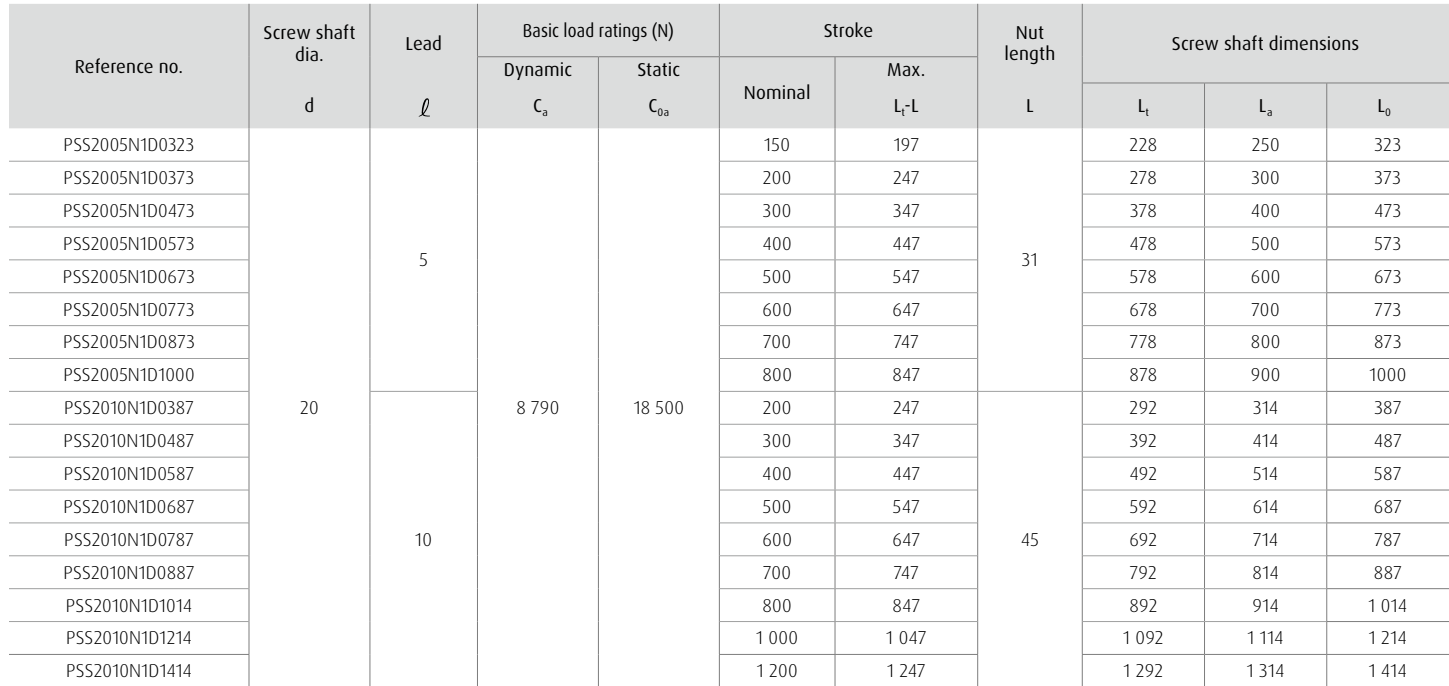
For drive side (Fixed)		For opposite to drive side	
		(Fixed)	(Simple)
WBK12-01B (square, low) P 46-47		WBK10-01B (square, low) P 46-47	WBK12S-01B (square, low) P 50-51
WBK12-11 (round) P 48-49		WBK10-11 (round) P 48-49	-

Unit : mm

Left shaft end (opposite driven side)	Lead accuracy			Shaft run-out	Dynamic preload torque	Mass	Permissible rotational speed (min ⁻¹) ²		Internal spatial volume of nut	Standard volume of grease replenishing	
	Target value T	Error e _p	Variation V _u				C	(N·cm) ⁻¹			(kg)
II	0	0.020	0.018	0.035	0.8 to 8.8	0.7	5 000	—	2.8	1.4	
		0.023	0.018	0.045	0.8 to 8.8	0.8					
		0.025	0.020	0.050	0.8 to 10.8	0.9					
		0.027	0.020	0.060	0.8 to 10.8	1.1					
		0.030	0.023	0.075	0.8 to 10.8	1.2					
		0.035	0.025	0.075	0.8 to 13.8	1.3					
I		0.035	0.025	0.095	0.8 to 13.8	1.5	2 900	4 200	3.4	1.7	
		0.040	0.027	0.095	0.8 to 13.8	1.6	2 200	3 300			
		0.046	0.030	0.120	0.8 to 13.8	1.9	1 500	2 200			
II		0.023	0.018	0.035	1.2 to 9.3	0.8	5 000	—	3.4	1.7	
		0.025	0.020	0.050	0.8 to 10.8	1.0					
		0.027	0.020	0.060	0.8 to 10.8	1.1					
		0.030	0.023	0.060	0.8 to 10.8	1.2					
		0.030	0.023	0.075	0.8 to 13.8	1.4					4 500
		0.035	0.025	0.095	0.8 to 13.8	1.5					3 300
I		0.040	0.027	0.095	0.8 to 13.8	1.6	2 600	3 800	3.4	1.7	
		0.040	0.027	0.120	0.8 to 13.8	1.8	2 000	3 000			
		0.046	0.030	0.120	0.8 to 13.8	2.0	1 400	2 000			

3. Service temperature range is 0 to 80°C.

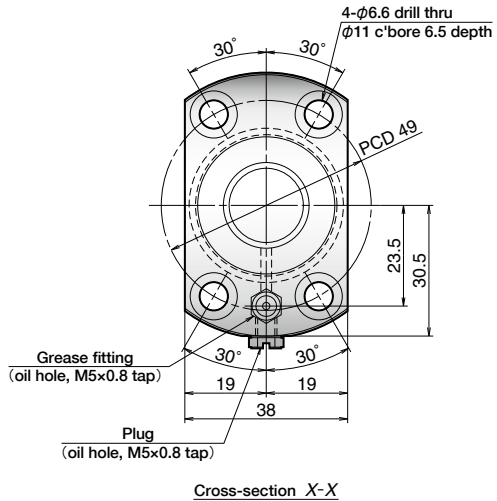
4. Use of NSK support unit is recommended. Refer to pages 46 to 51 for details.



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PSS Type for General Use

Unit : mm



Ball screw specification

Preload type	Oversize ball (P-preload)
Ball dia./screw shaft root dia.	3.175 / 17.2
Ball circle dia.	20.5
Accuracy grade/axial play	C5 / 0
Factory-packed grease	NSK grease LR3

Recommended support unit

For drive side (Fixed)	For opposite to drive side	
	(Fixed)	(Simple)
WBK15-01B (square, low) P 46-47	WBK15-01B (square, low) P 46-47	WBK15S-01B (square, low) P 50
WBK15-11 (round) P 48-49	WBK15-11 (round) P 48-49	-

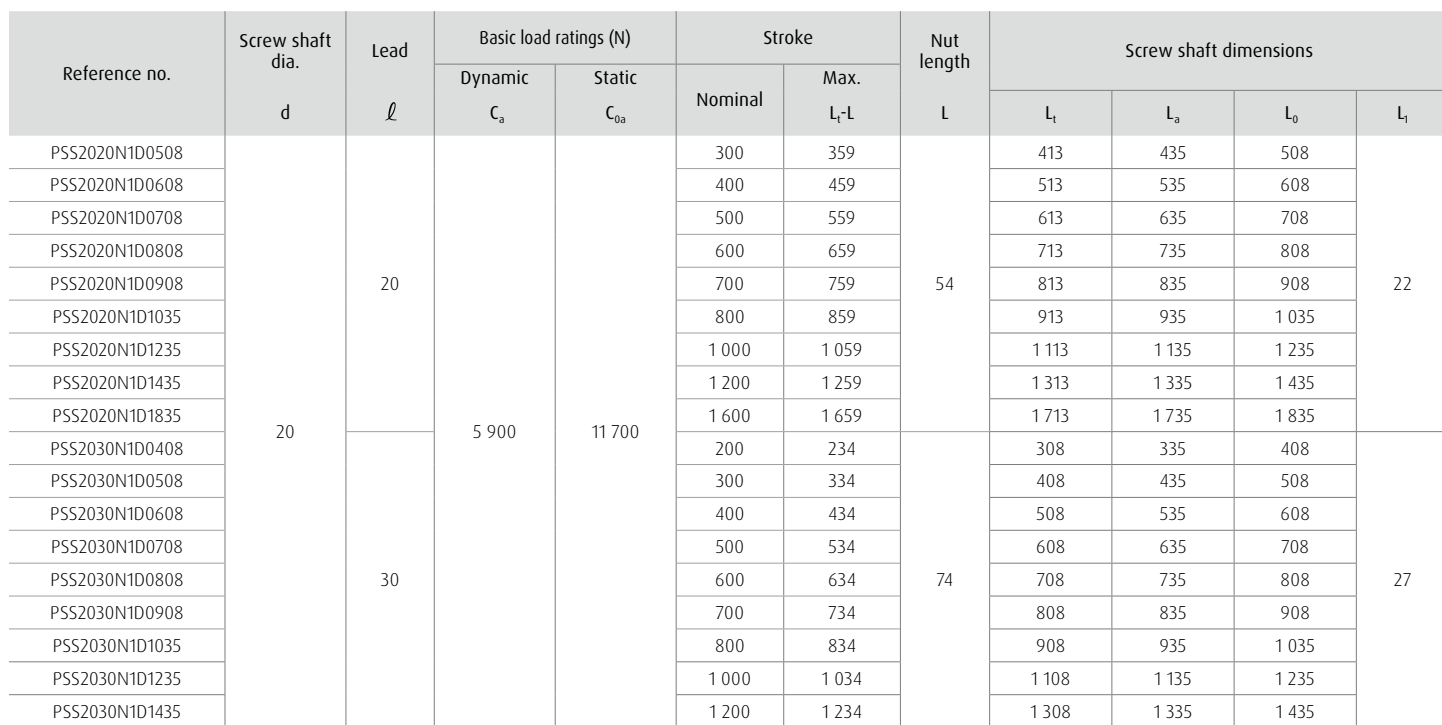
Unit : mm

Left shaft end (opposite driven side)	Lead accuracy			Shaft run-out	Dynamic preload torque	Mass	Permissible rotational speed (min ⁻¹) ²		Internal spatial volume of nut	Standard volume of grease replenishing
	Target value	Error	Variation				Fixed-simple	Fixed-Fixed		
	T	e _p	V _a	C	(N·cm) ⁻¹	(kg)			(cm ³)	(cm ³)
II	0	0.023	0.018	0.045	0.6 to 7.4	1.0	5 000	—	3.4	1.7
		0.023	0.018	0.045	0.6 to 7.4	1.1				
		0.025	0.020	0.050	0.6 to 7.4	1.3				
		0.027	0.020	0.060	0.4 to 9.8	1.5				
		0.030	0.023	0.075	0.4 to 9.8	1.7				
		0.035	0.025	0.075	0.4 to 9.8	1.9				
I		0.035	0.025	0.095	0.4 to 9.8	2.2	4 000	4 700		
		0.040	0.027	0.095	0.4 to 11.8	2.4	3 200			
II		0.023	0.018	0.045	1.2 to 9.3	1.2	5 000	—	3.2	1.6
		0.025	0.020	0.050	1.2 to 9.3	1.4				
		0.027	0.020	0.060	0.8 to 10.8	1.7				
		0.030	0.023	0.075	0.8 to 10.8	1.9				
	0.035	0.025	0.075	0.8 to 10.8	2.1					
	0.035	0.025	0.095	0.8 to 10.8	2.4	4 000				
I	0.040	0.027	0.120	0.8 to 13.8	2.6	3 100	4 600			
	0.046	0.030	0.120	0.8 to 13.8	3.1	2 100	3 100			
	0.054	0.035	0.160	0.8 to 13.8	3.6	1 500	2 200			

3. Service temperature range is 0 to 80°C.

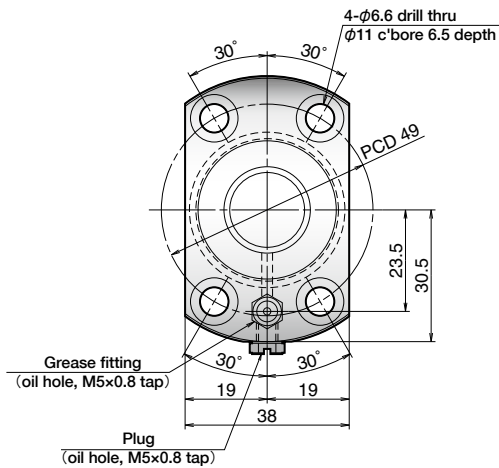
4. Use of NSK support unit is recommended. Refer to pages 46 to 51 for details.

Screw shaft diameter 20 mm, Lead 20 and 30 mm



Notes 1. Indicates ball screw preload control value. Approximately 2.0 N•cm of torque is added due to thin plastic seals.
2. Contact NSK if permissible rotational speed is to be exceeded.

PSS Type for General Use



Cross-section X-X

Unit : mm

Ball screw specification	
Preload type	Over-size ball (P-preload)
Ball dia./screw shaft root dia.	3.175 / 17.2
Ball circle dia.	20.5
Accuracy grade/axial play	C5 / 0
Factory-packed grease	NSK grease LR3

Recommended support unit

For drive side (Fixed)	For opposite to drive side	
	(Fixed)	(Simple)
WBK15-01B (square, low) P 46-47	WBK15-01B (square, low) P 46-47	WBK15S-01B (square, low) P 50-51
WBK15-11 (round) P 48-49	WBK15-11 (round) P 48-49	-

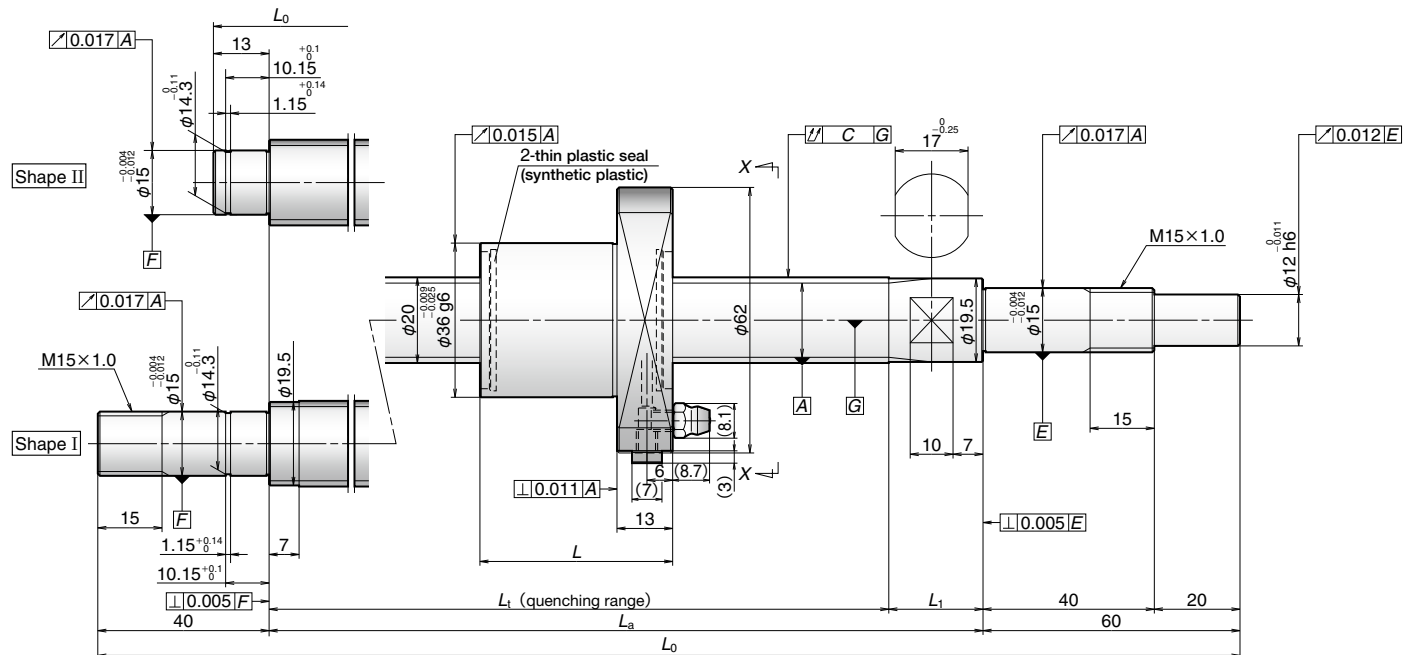
Unit : mm

Left shaft end (opposite driven side)	Lead accuracy			Shaft run-out	Dynamic preload torque	Mass	Permissible rotational speed (min ⁻¹) ²		Internal spatial volume of nut	Standard volume of grease replenishing
	Target value	Error	Variation				Fixed-simple	Fixed-Fixed		
	T	e _p	V _u	C	(N·cm) ¹	(kg)			(cm ³)	(cm ³)
II	0	0.027	0.020	0.060	1.4 to 11.8	1.6	5 000	—	3.2	1.6
		0.030	0.023	0.060	1.4 to 11.8	1.8				
		0.030	0.023	0.075	1.4 to 11.8	2.0				
		0.035	0.025	0.095	1.4 to 11.8	2.3				
		0.040	0.027	0.095	0.8 to 13.8	2.5	3 700	4 500		
0.040		0.027	0.120	0.8 to 13.8	2.8	3 000				
0.046		0.030	0.120	0.8 to 13.8	3.3	2 000	3 000			
0.054		0.035	0.160	0.8 to 13.8	3.8	1 400	2 100			
0.065		0.040	0.200	0.8 to 13.8	4.7	800	1 200	4.6	2.3	
II		0.023	0.018	0.050	1.6 to 9.8	1.4	5 000			—
		0.027	0.020	0.060	1.4 to 11.8	1.7				
		0.030	0.023	0.060	1.4 to 11.8	1.9				
		0.030	0.023	0.075	1.4 to 11.8	2.1				
		0.035	0.025	0.095	1.4 to 11.8	2.4				
0.040		0.027	0.095	0.8 to 13.8	2.6	3 900	4 600			
I	0.040	0.027	0.120	0.8 to 13.8	2.9	3 100				
	0.046	0.030	0.120	0.8 to 13.8	3.4	2 100		3 000		
	0.054	0.035	0.160	0.8 to 13.8	3.9	1 500		2 200		

3. Service temperature range is 0 to 80°C.
4. Use of NSK support unit is recommended. Refer to pages 46 to 51 for details.

Compact FA Series

Screw shaft diameter 20 mm, Lead 40 and 60 mm

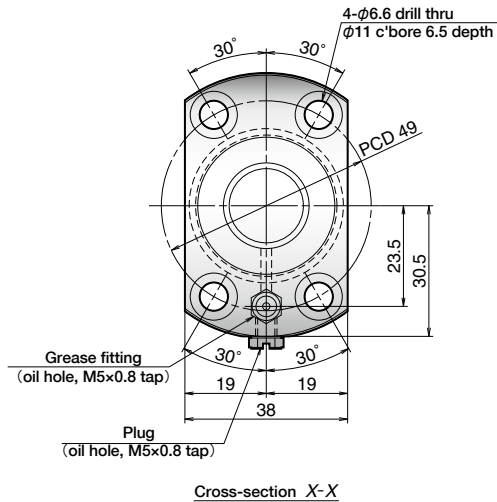


Reference no.	Screw shaft dia.	Lead	Basic load ratings (N)		Stroke		Nut length	Screw shaft dimensions					
			Dynamic	Static	Nominal	Max. L _t -L		L _t	L _a	L ₀	L ₁		
	d	ℓ	C _a	C _{0a}			L						
PSS2040N1D0658	20	40	5 900	11 700	400	461	92	553	585	658	32		
PSS2040N1D0758					500	561		653	685	758			
PSS2040N1D0858					600	661		753	785	858			
PSS2040N1D0958					700	761		853	885	958			
PSS2040N1D1085					800	861		953	985	1 085			
PSS2040N1D1285					1 000	1 061		1 153	1 185	1 285			
PSS2040N1D1485					1 200	1 261		1 353	1 385	1 485			
PSS2040N1D1885					1 600	1 661		1 753	1 785	1 885			
PSS2040N1D2285					2 000	2 061		2 153	2 185	2 285			
PSS2060N1D0708		60					400	464	129	593	635	708	42
PSS2060N1D0808							500	564		693	735	808	
PSS2060N1D0908							600	664		793	835	908	
PSS2060N1D1008							700	764		893	935	1 008	
PSS2060N1D1135							800	864		993	1 035	1 135	
PSS2060N1D1335							1 000	1 064		1 193	1 235	1 335	
PSS2060N1D1535							1 200	1 264		1 393	1 435	1 535	
PSS2060N1D1935							1 600	1 664		1 793	1 835	1 935	
PSS2060N1D2335							2 000	2 064		2 193	2 235	2 335	

- Notes 1. Indicates ball screw preload control value. Approximately 2.0 N•cm of torque is added due to thin plastic seals.
2. Contact NSK if permissible rotational speed is to be exceeded.

PSS Type for General Use

Unit : mm



Ball screw specification

Preload type	Oversize ball (P-preload)
Ball dia./screw shaft root dia.	3.175 / 17.2
Ball circle dia.	20.5
Accuracy grade/axial play	C5 / 0
Factory-packed grease	NSK grease LR3

Recommended support unit

For drive side (Fixed)	For opposite to drive side	
	(Fixed)	(Simple)
WBK15-01B (square, low) P 46-47	WBK15-01B (square, low) P 46-47	WBK15S-01B (square, low) P 50
WBK15-11 (round) P 48-49	WBK15-11 (round) P 48-49	-

Unit : mm

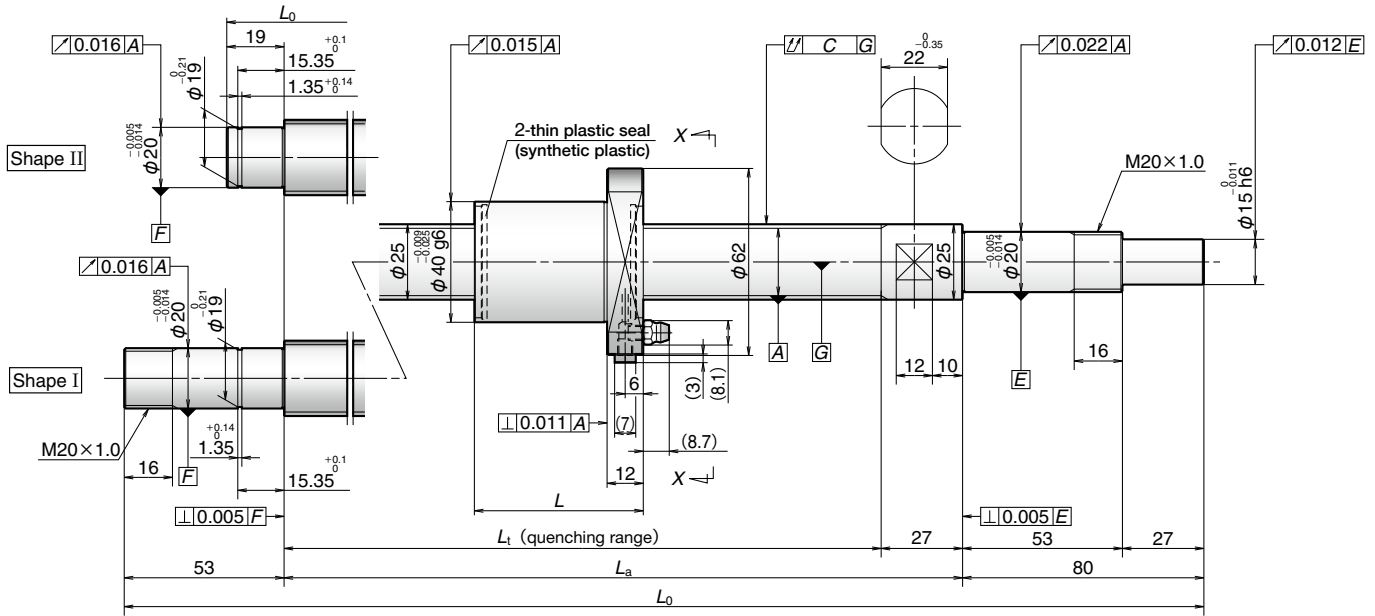
Left shaft end (opposite driven side)	Lead accuracy			Shaft run-out	Dynamic preload torque	Mass	Permissible rotational speed (min ⁻¹) ²		Internal spatial volume of nut	Standard volume of grease replenishing
	Target value T	Error e _p	Variation V _u				Fixed-simple	Fixed-Fixed		
				C	(N·cm) ¹	(kg)			(cm ³)	(cm ³)
II	0	0.030	0.023	0.075	2.2 to 12.8	2.1	5 000	—	5.3	2.7
		0.035	0.025	0.075	2.2 to 12.8	2.4				
		0.035	0.025	0.095	2.2 to 12.8	2.6				
		0.040	0.027	0.095	1.8 to 14.8	2.8				
I		0.040	0.027	0.120	1.8 to 14.8	3.1	2 800	4 200		
		0.046	0.030	0.160	1.8 to 14.8	3.6	1 900	2 800		
		0.054	0.035	0.160	1.8 to 14.8	4.1	1 400	2 000		
		0.065	0.040	0.200	1.8 to 14.8	5.1	800	1 200		
II		0.077	0.046	0.240	1.8 to 14.8	6.0	500	800		
		0.030	0.023	0.075	2.7 to 13.8	2.4	5 000	—	7.0	3.5
		0.035	0.025	0.095	2.7 to 13.8	2.6				
		0.035	0.025	0.095	2.7 to 13.8	2.9				
0.040		0.027	0.120	1.8 to 14.8	3.1	3 300				
I		0.040	0.027	0.120	1.8 to 14.8	3.4	2 600	3 900		
		0.046	0.030	0.160	1.8 to 14.8	3.9	1 800	2 700		
		0.054	0.035	0.160	1.8 to 14.8	4.4	1 300	1 900		
		0.065	0.040	0.200	1.8 to 14.8	5.4	800	1 100		
		0.077	0.046	0.240	1.8 to 14.8	6.3	500	700		

3. Service temperature range is 0 to 80°C.

4. Use of NSK support unit is recommended. Refer to pages 46 to 51 for details.

Compact FA Series

Screw shaft diameter 25 mm, Lead 5 and 10 mm

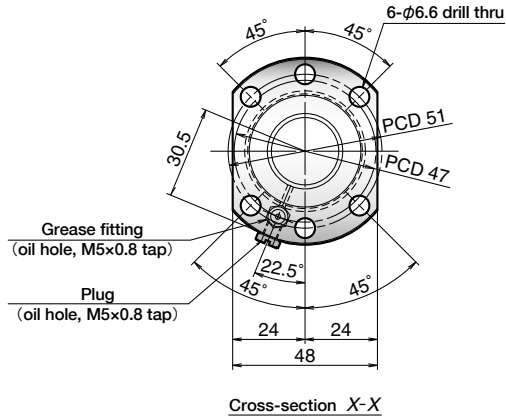


Reference no.	Screw shaft dia.	Lead	Basic load ratings (N)		Stroke		Nut length	Screw shaft dimensions		
			Dynamic	Static	Nominal	Max. L _t -L		L _t	L _a	L ₀
	d	ℓ	C _a	C _{0a}			L			
PSS2505N1D0349	25	5	9 760	23 600	150	191	32	223	250	349
PSS2505N1D0399					200	241		273	300	399
PSS2505N1D0499					300	341		373	400	499
PSS2505N1D0599					400	441		473	500	599
PSS2505N1D0699					500	541		573	600	699
PSS2505N1D0899					700	741		773	800	899
PSS2505N1D0999					800	841		873	900	999
PSS2505N1D1233					1 000	1 041		1 073	1 100	1 233
PSS2510N1D0549		10	12 800	32 300	300	367	56	423	450	549
PSS2510N1D0649					400	467		523	550	649
PSS2510N1D0749					500	567		623	650	749
PSS2510N1D0849					600	667		723	750	849
PSS2510N1D0949					700	767		823	850	949
PSS2510N1D1049					800	867		923	950	1 049
PSS2510N1D1283					1 000	1 067		1 123	1 150	1 283
PSS2510N1D1883					1 600	1 667		1 723	1 750	1 883

- Notes
1. Indicates ball screw preload control value. Approximately 2.0 N•cm of torque is added due to thin plastic seals.
 2. Contact NSK if permissible rotational speed is to be exceeded.

PSS Type for General Use

Unit : mm



Ball screw specification

Preload type	Oversize ball (P-preload)
Ball dia./screw shaft root dia.	3.175 / 22.2
Ball circle dia.	25.5
Accuracy grade/axial play	C5 / 0
Factory-packed grease	NSK grease LR3

Recommended support unit

For drive side (Fixed)	For opposite to drive side	
	(Fixed)	(Simple)
WBK20-01 (square) P 46-47	WBK20-01 (square) P 46-47	WBK20S-01 (square) P 50
WBK20-11 (round) P 48-49	WBK20-11 (round) P 48-49	-

Unit : mm

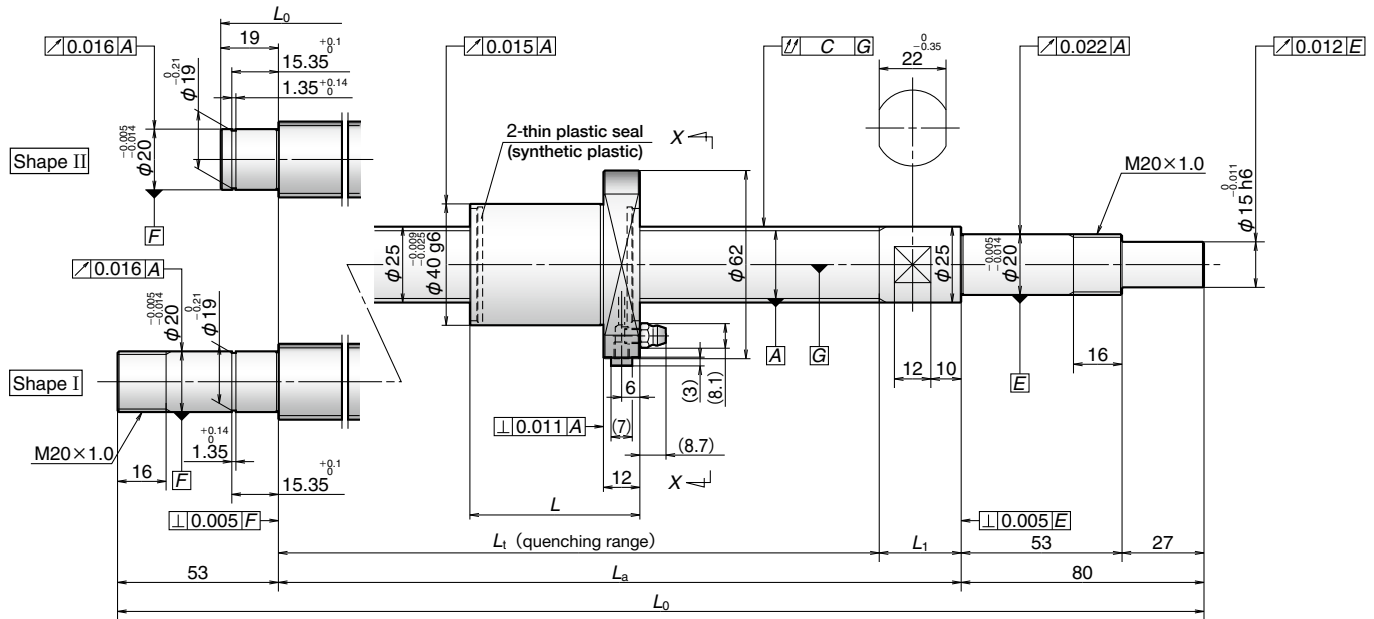
Left shaft end (opposite driven side)	Lead accuracy			Shaft run-out	Dynamic preload torque	Mass	Permissible rotational speed (min ⁻¹) ²		Internal spatial volume of nut	Standard volume of grease replenishing		
	Target value	Error	Variation				Fixed-simple	Fixed-Fixed				
	T	e _p	V _u								C	(N·cm) ⁻¹
II	0	0.023	0.018	0.035	1.2 to 9.3	1.5	5 000	—	4.4	2.2		
		0.023	0.018	0.035	1.2 to 9.3	1.6						
		0.025	0.020	0.040	1.2 to 9.3	2.0						
		0.027	0.020	0.045	1.2 to 9.3	2.3						
		0.030	0.023	0.055	0.8 to 10.8	2.7						
		0.035	0.025	0.065	0.8 to 10.8	3.4						
I		0.040	0.027	0.065	0.8 to 10.8	3.7	4 100	4 000	4.7	2.4		
		0.046	0.030	0.080	0.8 to 13.8	4.5	2 700					
II		0.027	0.020	0.045	3.1 to 11.8	2.4	5000	-			4.7	2.4
		0.030	0.023	0.055	2.2 to 12.8	2.7						
		0.030	0.023	0.055	2.2 to 12.8	3.1						
		0.035	0.025	0.065	2.2 to 12.8	3.5						
		0.040	0.027	0.065	2.2 to 12.8	3.8						
		0.040	0.027	0.080	2.2 to 12.8	4.2						
I	0.046	0.030	0.100	1.8 to 14.8	5.0	2 500	3 700	1 600				
	0.065	0.040	0.130	1.8 to 14.8	7.2	1 000						

3. Service temperature range is 0 to 80°C.

4. Use of NSK support unit is recommended. Refer to pages 46 to 51 for details.

Compact FA Series

Screw shaft diameter 25 mm, Lead 20 and 25 mm

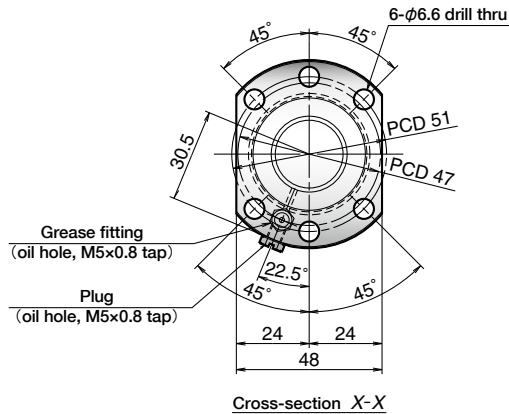


Reference no.	Screw shaft dia.	Lead	Basic load ratings (N)		Stroke		Nut length	Screw shaft dimensions					
			Dynamic	Static	Nominal	Max. L _t -L		L	L _t	L _a	L ₀	L ₁	
	C _a	C _{0a}											
PSS2520N1D0729	25	20	6 560	14 600	500	550	54	604	630	729	26		
PSS2520N1D0829					600	650		704	730	829			
PSS2520N1D0929					700	750		804	830	929			
PSS2520N1D1029					800	850		904	930	1 029			
PSS2520N1D1263					1 000	1 050		1 104	1 130	1 263			
PSS2520N1D1463					1 200	1 250		1 304	1 330	1 463			
PSS2520N1D1863					1 600	1 650		1 704	1 730	1 863			
PSS2520N1D2263					2 000	2 050		2 104	2 130	2 263			
PSS2525N1D0779		25			6 560	14 600	500	587	63	650	680	779	30
PSS2525N1D0879							600	687		750	780	879	
PSS2525N1D0979							700	787		850	880	979	
PSS2525N1D1079							800	887		950	980	1 079	
PSS2525N1D1313							1 000	1 087		1 150	1 180	1 313	
PSS2525N1D1513							1 200	1 287		1 350	1 380	1 513	
PSS2525N1D1913							1 600	1 687		1 750	1 780	1 913	
PSS2525N1D2313							2 000	2 087		2 150	2 180	2 313	

- Notes
1. Indicates ball screw preload control value. Approximately 2.0 N•cm of torque is added due to thin plastic seals.
 2. Contact NSK if permissible rotational speed is to be exceeded.

PSS Type for General Use

Unit : mm



Ball screw specification

Preload type	Oversize ball (P-preload)
Ball dia./screw shaft root dia.	3.175 / 22.2
Ball circle dia.	25.5
Accuracy grade/axial play	C5 / 0
Factory-packed grease	NSK grease LR3

Recommended support unit

For drive side (Fixed)		For opposite to drive side	
		(Fixed)	(Simple)
WBK20-01 (square)	P 46-47	WBK20-01 (square)	P 46-47
WBK20-11 (round)	P 48-49	WBK20-11 (round)	P 48-49

Unit : mm

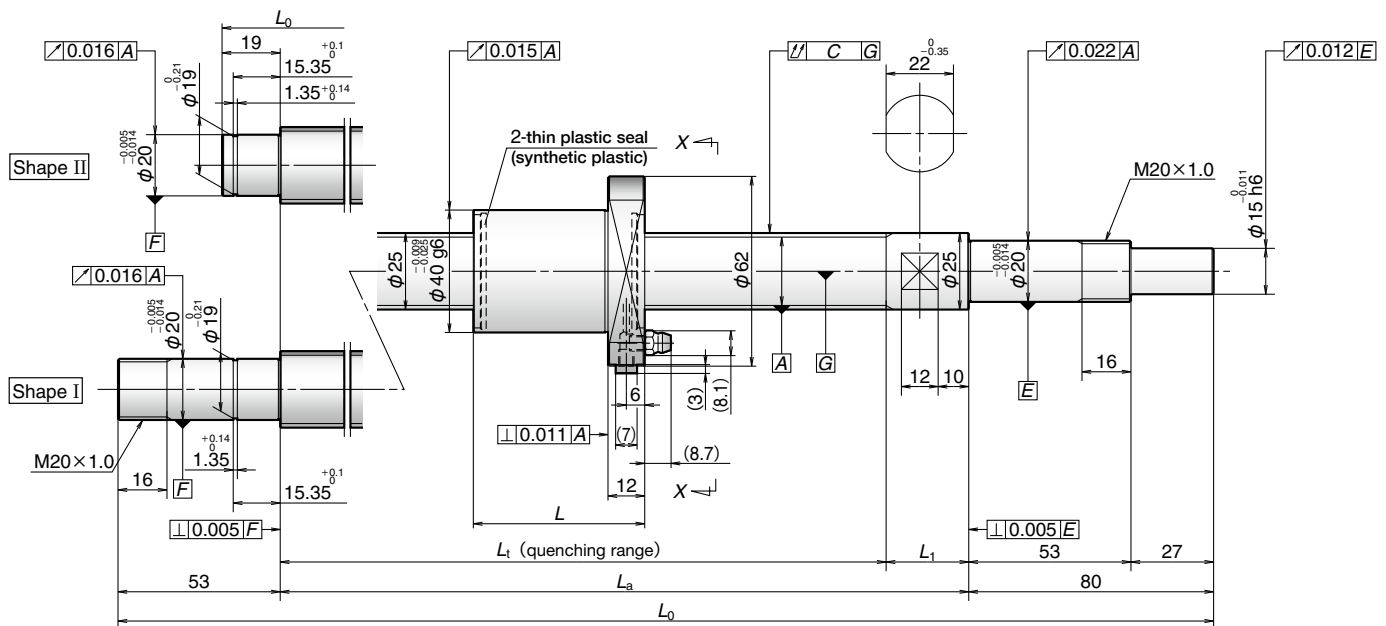
Left shaft end (opposite driven side)	Lead accuracy			Shaft run-out	Dynamic preload torque	Mass	Permissible rotational speed (min ⁻¹) ²		Internal spatial volume of nut	Standard volume of grease replenishing
	Target value T	Error e _p	Variation V _u				C	(N·cm) ⁻¹		
II	0	0.030	0.023	0.055	2.2 to 12.8	3.1	5 000	—	3.9	2.0
		0.035	0.025	0.065	2.2 to 12.8	3.4				
		0.040	0.027	0.065	2.2 to 12.8	3.8				
		0.040	0.027	0.080	2.2 to 12.8	4.2				
I		0.046	0.030	0.100	1.8 to 14.8	5.0	2 600	3 800		
		0.054	0.035	0.100	1.8 to 14.8	5.8	1 800	2 700		
		0.065	0.040	0.130	1.8 to 14.8	7.3	1 100	1 600		
		0.077	0.046	0.170	1.8 to 14.8	8.8	700	1 000		
II		0.035	0.025	0.055	2.7 to 13.8	3.3	5 000	—	4.3	2.2
		0.035	0.025	0.065	2.7 to 13.8	3.7				
		0.040	0.027	0.065	2.7 to 13.8	4.1				
		0.040	0.027	0.080	2.7 to 13.8	4.4				
I		0.046	0.030	0.100	1.8 to 14.8	5.3	2 300	3 500		
		0.054	0.035	0.100	1.8 to 14.8	6.0	1 700	2 600		
		0.065	0.040	0.130	1.8 to 14.8	7.5	1 000	1 500		
		0.077	0.046	0.170	1.8 to 14.8	9.1	700	1 000		

3. Service temperature range is 0 to 80°C.

4. Use of NSK support unit is recommended. Refer to pages 46 to 51 for details.

Compact FA Series

Screw shaft diameter 25 mm, Lead 30 and 50 mm

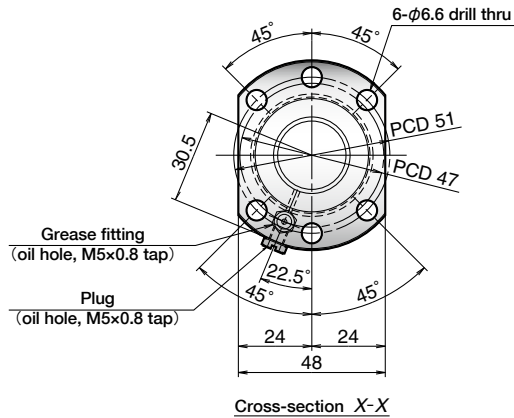


Reference no.	Screw shaft dia.	Lead	Basic load ratings (N)		Stroke		Nut length	Screw shaft dimensions					
			Dynamic	Static	Nominal	Max. L _t -L		L	L _t	L _a	L ₀	L ₁	
	d	ℓ	C _a	C _{0a}									
PSS2530N1D0779	25	30	6 560	14 600	500	576	74	650	680	779	30		
PSS2530N1D0879					600	676		750	780	879			
PSS2530N1D0979					700	776		850	880	979			
PSS2530N1D1079					800	876		950	980	1 079			
PSS2530N1D1313					1 000	1 076		1 150	1 180	1 313			
PSS2530N1D1513					1 200	1 276		1 350	1 380	1 513			
PSS2530N1D1913					1 600	1 676		1 750	1 780	1 913			
PSS2530N1D2313					2 000	2 076		2 150	2 180	2 313			
PSS2550N1D0829		50			6 560	14 600	500	576	114	690	730	829	40
PSS2550N1D0929							600	676		790	830	929	
PSS2550N1D1029							700	776		890	930	1 029	
PSS2550N1D1129							800	876		990	1 030	1 129	
PSS2550N1D1363							1 000	1 076		1 190	1 230	1 363	
PSS2550N1D1563							1 200	1 276		1 390	1 430	1 563	
PSS2550N1D1963							1 600	1 676		1 790	1 830	1 963	
PSS2550N1D2363							2 000	2 076		2 190	2 230	2 363	

- Notes 1. Indicates ball screw preload control value. Approximately 2.0 N•cm of torque is added due to thin plastic seals.
2. Contact NSK if permissible rotational speed is to be exceeded.

PSS Type for General Use

Unit : mm



Ball screw specification

Preload type	Oversize ball (P-preload)
Ball dia./screw shaft root dia.	3.175 / 22.2
Ball circle dia.	25.5
Accuracy grade/axial play	C5 / 0
Factory-packed grease	NSK grease LR3

Recommended support unit

For drive side (Fixed)		For opposite to drive side	
		(Fixed)	(Simple)
WBK20-01 (square)	P 46-47	WBK20-01 (square) P 46-47	WBK20S-01 (square) P 50
WBK20-11 (round)	P 48-49	WBK20-11 (round) P 48-49	-

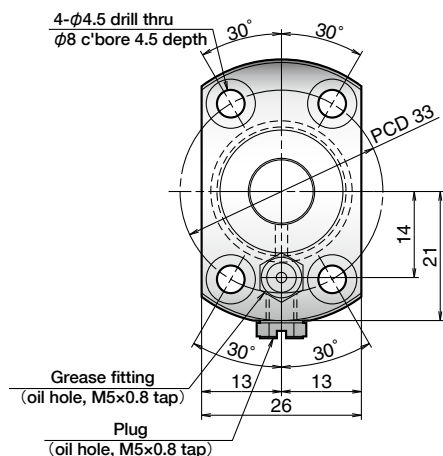
Unit : mm

Left shaft end (opposite driven side)	Lead accuracy			Shaft run-out	Dynamic preload torque	Mass	Permissible rotational speed (min ⁻¹) ²		Internal spatial volume of nut	Standard volume of grease replenishing	
	Target value	Error	Variation				Fixed-simple	Fixed-Fixed			
	T	e _p	V _u	C	(N·cm) ⁻¹	(kg)			(cm ³)	(cm ³)	
II	0	0.035	0.025	0.055	2.7 to 13.8	3.4	5 000	—	5.5	2.8	
		0.035	0.025	0.065	2.7 to 13.8	3.7					
		0.040	0.027	0.065	2.7 to 13.8	4.1					4 300
		0.040	0.027	0.080	2.7 to 13.8	4.5					3 400
I		0.046	0.030	0.100	1.8 to 14.8	5.3	2 300	3 600			
		0.054	0.035	0.100	1.8 to 14.8	6.1	1 700	2 600			
		0.065	0.040	0.130	1.8 to 14.8	7.6	1 000	1 500			
		0.077	0.046	0.170	1.8 to 14.8	9.1	700	1 000			
II		0.035	0.025	0.065	5.4 to 17.6	3.8	5 000	—	7.7	3.9	
		0.035	0.025	0.065	5.4 to 17.6	4.1	4 800				
		0.040	0.027	0.080	5.4 to 17.6	4.5	3 800				
		0.040	0.027	0.080	5.4 to 17.6	4.9	3 100				
I		0.046	0.030	0.100	4.1 to 19.6	5.8	2 200	3 400			
		0.054	0.035	0.100	4.1 to 19.6	6.5	1 600	2 500			
		0.065	0.040	0.130	4.1 to 19.6	8.0	900	1 500			
		0.077	0.046	0.170	4.1 to 19.6	9.6	600	1 000			

3. Service temperature range is 0 to 80°C.

4. Use of NSK support unit is recommended. Refer to pages 46 to 51 for details.

USS Type for High-Accuracy and Clean Room Use



Cross-section *X-X*

Unit : mm

Ball screw specification	
Shaft dia.	Ø10
Preload type	Overize ball (P-preload)
Ball dia./screw shaft root dia.	2.000 / 8.2
Ball circle dia.	10.3
Accuracy grade/axial play	C3 / 0
Factory-packed grease	NSK clean grease LG2

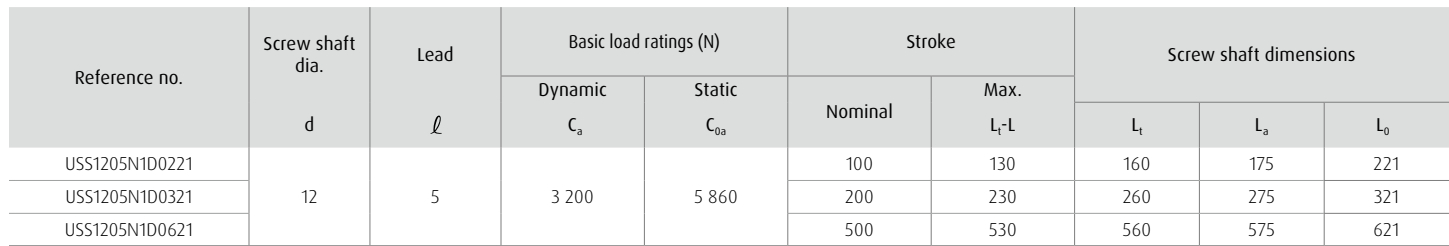
Recommended support unit

For drive side (Fixed)		For opposite to drive side (Simple)	
WBK08-01B (square, low)	P 46-47	WBK08S-01B (square, low)	P 50
WBK08-11 (round)	P 48-49	WBK08S-01C (square, clean)	P 50
WBK08-01C (square, clean)	P 46-47	-	
WBK08-11C (round, clean)	P 48-49	-	

Unit : mm

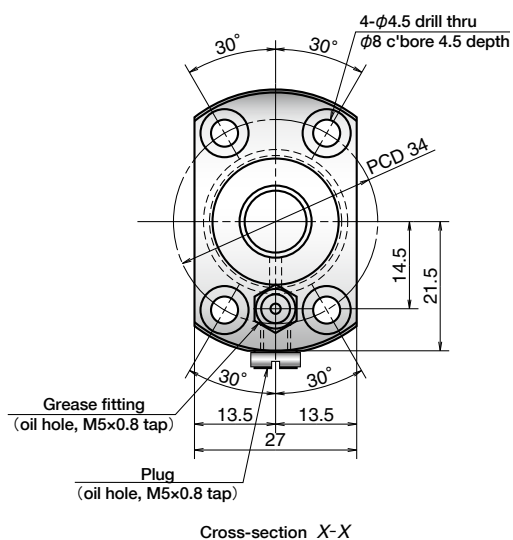
Lead accuracy			Shaft run-out	Dynamic preload torque	Mass	Permissible rotational speed (min ⁻¹) ²	Internal spatial volume of nut	Standard volume of grease replenishing
Target value	Error	Variation				Fixed-simple		
T	e _p	V _u	C	(N·cm) ⁻¹	(kg)		(cm ³)	(cm ³)
0	0.010	0.008	0.035	0.2 to 1.8	0.3	5 000	0.8	0.4
	0.012	0.008	0.045	0.2 to 2.0	0.3			
	0.015	0.010	0.070	0.2 to 3.0	0.5			

4. Use of NSK support unit is recommended. Refer to pages 46 to 50 for details.



USS Type for High-Accuracy and Clean Room Use

Unit : mm



Ball screw specification	
Shaft dia.	ϕ 12
Preload type	Oversize ball (P-preload)
Ball dia./screw shaft root dia.	2.000 / 10.2
Ball circle dia.	12.3
Accuracy grade/axial play	C3 / 0
Factory-packed grease	NSK clean grease LG2

Recommended support unit

For drive side (Fixed)		For opposite to drive side (Simple)	
WBK08-01B (square, low)	P 46-47	WBK08S-01B (square, low)	P 50
WBK08-11 (round)	P 48-49	WBK08S-01C (square, clean)	P 50
WBK08-01C (square, clean)	P 46-47	-	-
WBK08-11C (round, clean)	P 48-49	-	-

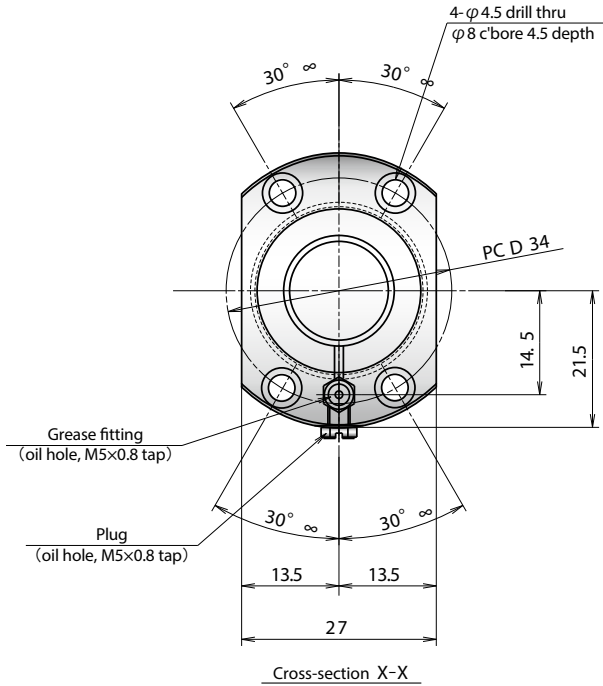
Unit : mm

Lead accuracy			Shaft run-out	Dynamic preload torque	Mass	Permissible rotational speed (min ⁻¹) ^{1,2}	Internal spatial volume of nut (cm ³)	Standard volume of grease replenishing (cm ³)
Target value	Error	Variation				Fixed-simple		
T	e _p	V _u	C	(N·cm) ⁻¹	(kg)			
0	0.010	0.008	0.035	0.2 to 1.8	0.3	5 000	1	0.5
	0.012	0.008	0.045	0.2 to 2.0	0.3			
	0.016	0.012	0.070	0.2 to 3.0	0.7			

- Service temperature range is 0 to 80°C.
- Use of NSK support unit is recommended. Refer to pages 46 to 50 for details.



FSS Type for Transfer Equipment



Unit : mm

Ball screw specification	
Ball dia./screw shaft root dia.	2.000 / 10.2
Ball circle dia.	12.3
Accuracy grade/axial play	Ct7 / 0.010 or less
Factory-packed grease	NSK grease LR3

Recommended support unit

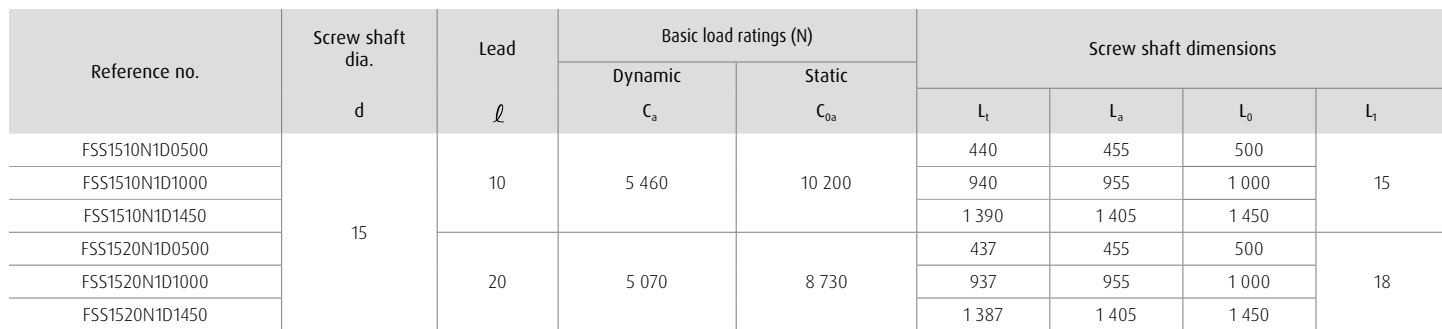
For drive side (Fixed)	For opposite to drive side (Simple)
WBK08-01B (square, low) P 46-47	WBK12SF-01B (square, low) P 51

Unit : mm

Lead accuracy			Shaft run-out	Mass	Internal spatial volume of nut	Standard volume of grease replenishing
Target value	Error	Variation				
T	e _p	V _u	C	(kg)	(cm ³)	(cm ³)
0	0.120	0.052	0.08	0.5	1.0	0.5
	0.195		0.12	0.7		
	0.310		0.18	1.0		

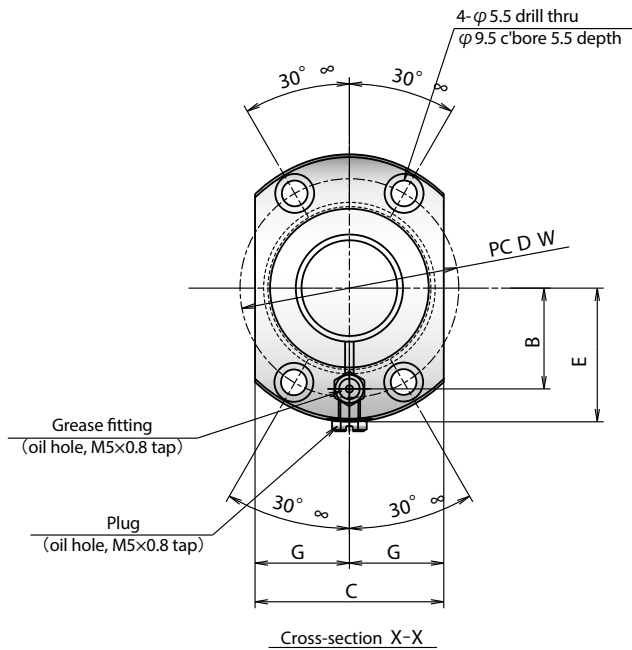
- Service temperature range is 0 to 80°C.
- Use of NSK support unit is recommended. Refer to pages 46 to 51 for details.

Screw shaft diameter 15 mm, Lead 10 and 20 mm



40 Courtesy of Steven Engineering, Inc. - (800) 258-9200 - sales@steveneng.com - www.stevenengineering.com

FSS Type for Transfer Equipment



Unit : mm

Ball screw specification		
Lead	10	20
Ball dia./screw shaft root dia.	2.778 / 12.6	3.175 / 12.2
Ball circle dia.	15.5	
Accuracy grade/axial play	Ct7 / 0.010 or less	
Factory-packed grease	NSK grease LR3	

Recommended support unit

For drive side (Fixed)		For opposite to drive side (Simple)	
WBK12-01B (square, low)	P 46-47	WBK15SF-01B (square, low)	P 51

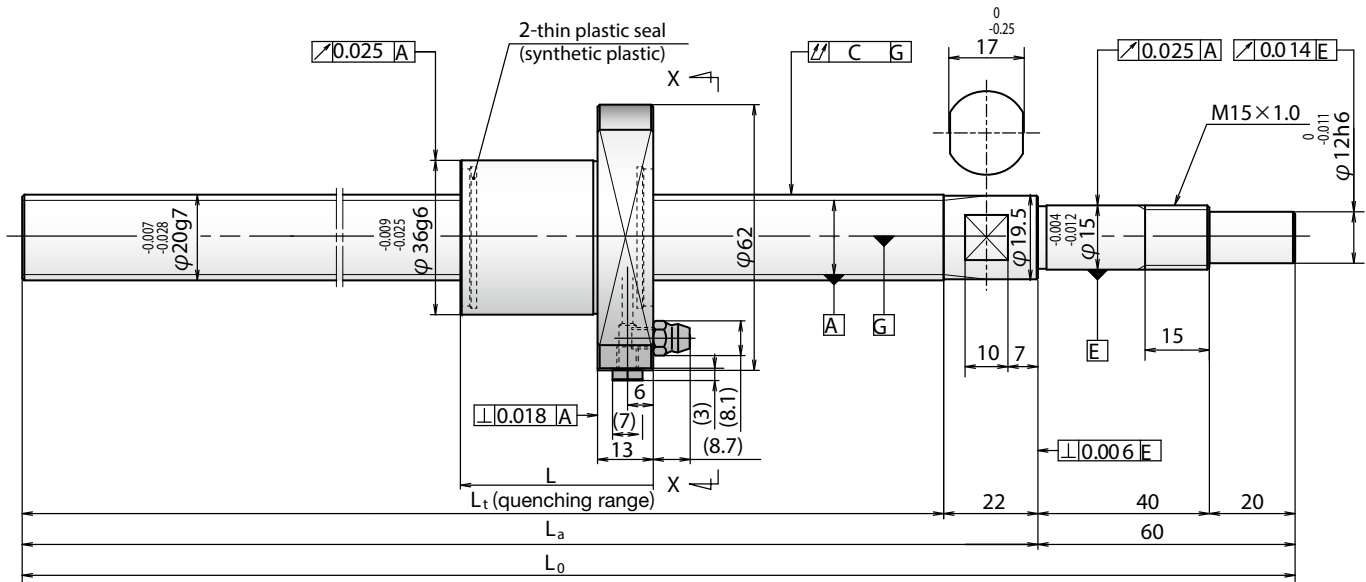
Unit : mm

Nut dimensions								Lead accuracy			Shaft run-out	Mass	Internal spatial volume of nut	Standard volume of grease replenishing
L	D ₁	D ₂	W	B	C	E	G	Target value	Error	Variation				
								T	e _p	V _u	C	(kg)	(cm ³)	(cm ³)
43	28	51	39	18	31	25	15.5	0	0.155	0.052	0.070	0.9	2.0	1.0
									0.310		0.125	1.7		
									0.490		0.200	2.3		
51	32	55	43	20	33	27	16.5		0.155		0.070	1.0	2.8	1.4
									0.310		0.125	1.7		
									0.490		0.200	2.3		

- Service temperature range is 0 to 80°C.
- Use of NSK support unit is recommended. Refer to pages 46 to 51 for details.

Compact FA Series

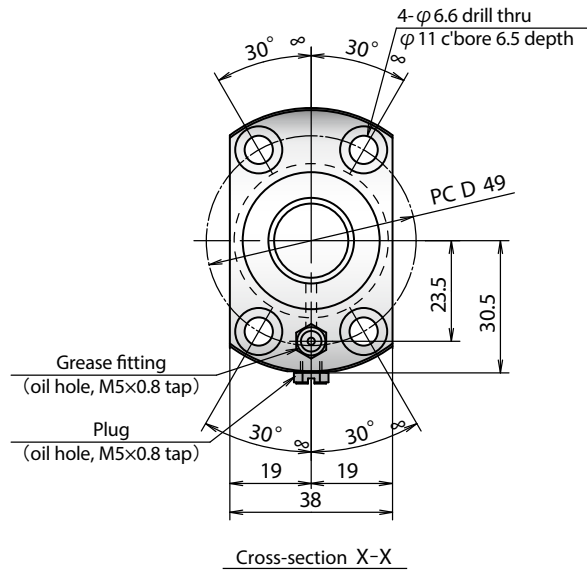
Screw shaft diameter 20 mm, Lead 10 and 20 mm



Reference no.	Screw shaft dia. d	Lead ℓ	Basic load ratings (N)		Screw shaft dimensions		
			Dynamic C _a	Static C _{0a}	L _t	L _a	L _o
FSS2010N1D0600	20	10	8 790	18 500	518	540	600
FSS2010N1D1000					918	940	1 000
FSS2010N1D1450					1 368	1 390	1 450
FSS2020N1D0600		20	5 900	11 700	518	540	600
FSS2020N1D1000					918	940	1 000
FSS2020N1D1450					1 368	1 390	1 450

- Notes
1. Approximately 2.0 N•cm of torque is added due to thin plastic seals.
 2. Permissible rotational speed varies when using cut screws shaft. It is necessary to calculate two items below, and whichever is smaller is the permissible rotational speed.
 - * Critical speed which is the resonance vibration of the shaft.
 - * Maximum rotational speed 5000 min⁻¹.

FSS Type for Transfer Equipment



Unit : mm

Ball screw specification	
Ball dia./screw shaft root dia.	3.175 / 17.2
Ball circle dia.	20.5
Accuracy grade/axial play	Ct7 / 0.010 or less
Factory-packed grease	NSK grease LR3

Recommended support unit

For drive side (Fixed)		For opposite to drive side (Simple)	
WBK15-01B (square, low)	P 46-47	WBK20SF-01B (square, low)	P 51

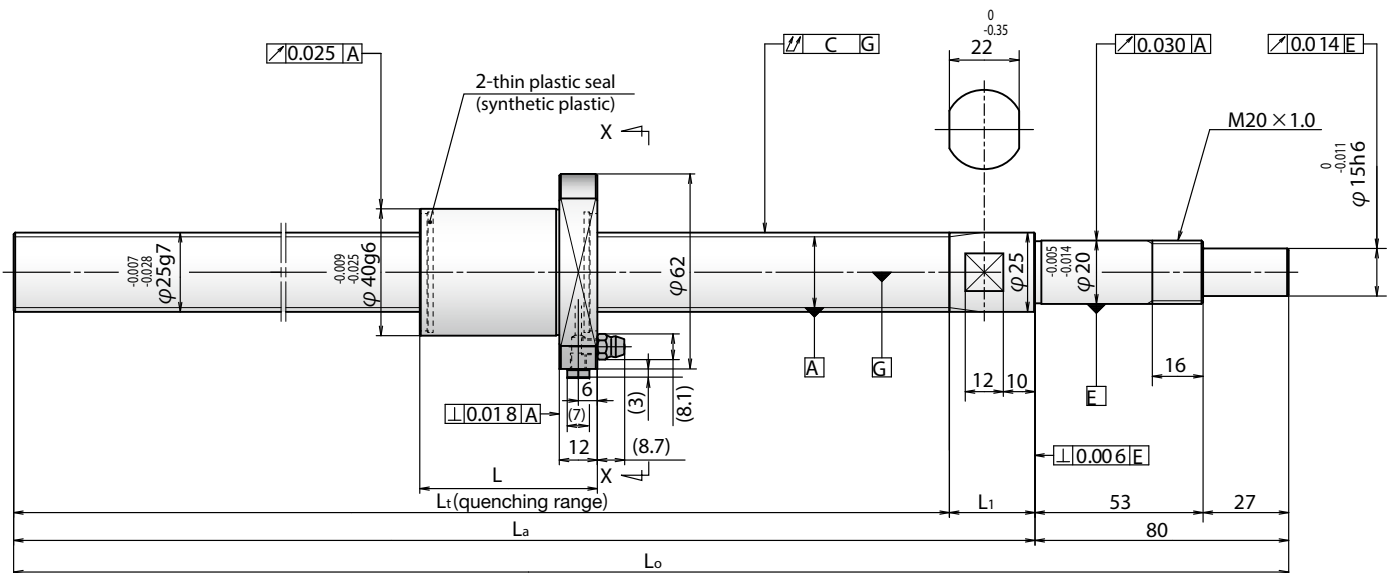
Unit : mm

Nut length	Lead accuracy			Shaft run-out	Mass	Internal spatial volume of nut	Standard volume of grease replenishing
L	Target value T	Error e _p	Variation V _u				
45	0	0.195	0.052	0.085	1.7	3.2	1.6
		0.310		0.125	2.6		
		0.490		0.200	3.6		
54		0.195		0.085	1.8		
		0.310		0.125	2.7		
		0.490		0.200	3.8		

- Service temperature range is 0 to 80°C.
- Use of NSK support unit is recommended. Refer to pages 46 to 51 for details.

Compact FA Series

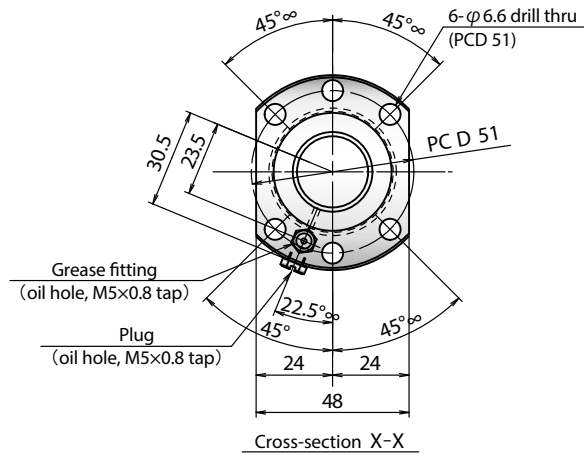
Screw shaft diameter 25 mm, Lead 10, 20 and 25 mm



Reference no.	Screw shaft dia.	Lead	Basic load ratings (N)		Screw shaft dimensions			
			Dynamic	Static	L _t	L _a	L ₀	L ₁
	C _a	C _{0a}						
FSS2510N1D0600	25	10	12 800	32 300	493	520	600	27
FSS2510N1D1000					893	920	1 000	
FSS2510N1D1450					1 343	1 370	1 450	
FSS2520N1D0600		20	6 560	14 600	494	520	600	26
FSS2520N1D1000					894	920	1 000	
FSS2520N1D1450					1 344	1 370	1 450	
FSS2525N1D0600		25			490	520	600	30
FSS2525N1D1000					890	920	1 000	
FSS2525N1D1450					1 340	1 370	1 450	

- Notes
1. Approximately 2.0 N•cm of torque is added due to thin plastic seals.
 2. Permissible rotational speed varies when using cut screws shaft. It is necessary to calculate two items below, and whichever is smaller is the permissible rotational speed.
 - * Critical speed which is the resonance vibration of the shaft.
 - * Maximum rotational speed 5000 min⁻¹.

FSS Type for Transfer Equipment



Unit : mm

Ball screw specification	
Ball dia./screw shaft root dia.	3.175 / 22.2
Ball circle dia.	25.5
Accuracy grade/axial play	Ct7 / 0.010 or less
Factory-packed grease	NSK grease LR3

Recommended support unit

For drive side (Fixed)		For opposite to drive side (Simple)	
WBK20-01 (square)	P 46-47	WBK25SF-01 (square)	P 51

Unit : mm

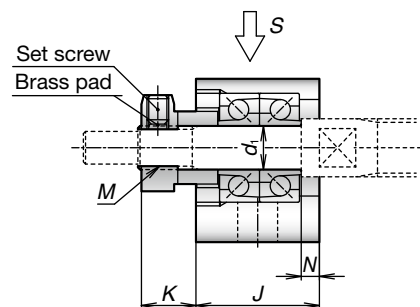
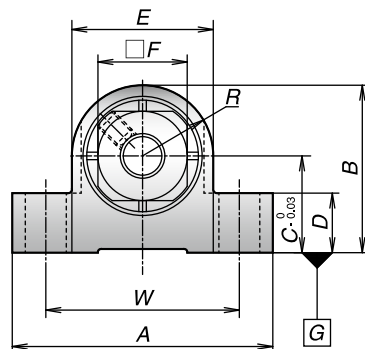
Nut length	Lead accuracy			Shaft run-out	Mass	Internal spatial volume of nut	Standard volume of grease replenishing
L	Target value T	Error e _p	Variation V _u				
56	0	0.155	0.052	0.065	2.6	4.7	2.4
		0.310		0.090	4.0		
		0.490		0.130	5.8		
54		0.155		0.065	2.6	3.9	2.0
		0.310		0.090	4.0		
		0.490		0.130	5.8		
63		0.155		0.065	2.6	4.3	2.2
		0.310		0.090	4.1		
		0.490		0.130	5.8		

- Service temperature range is 0 to 80°C.
- Use of NSK support unit is recommended. Refer to pages 46 to 51 for details.

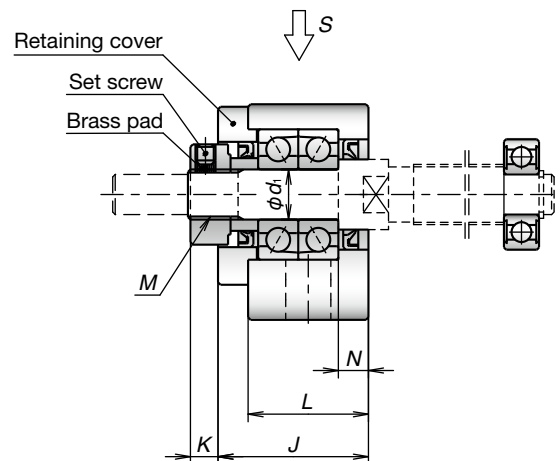
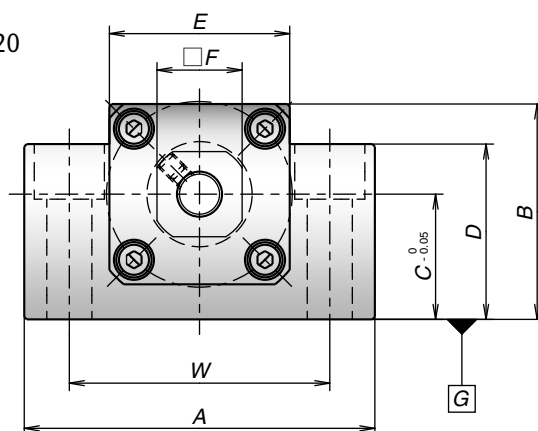
Support Units

Fixed support side support unit (square type)

WBK04 and 06



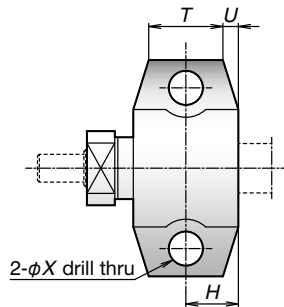
WBK08 to 20



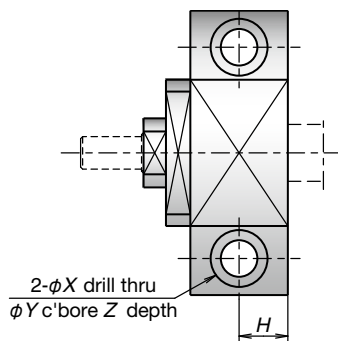
Reference no.	Use	d ₁	A	B	C	D	E	F	L	J	K	R	T	U	N
WBK04-01M	General	4	27	17.0	10.0	6	14	10	-	14.0	5.5	7.0	9	1.5	2.0
WBK06-01M	General	6	35	22.5	13.0	8	19	12	-	17.0	7.5	9.5	12	2.5	2.5
WBK08-01A	General	8	52	32.0	17.0	26	25	14	23.0	23.0	7.0	-	-	-	4.0
WBK08-01B	Low type		62	31.0	15.5	31	-		21.5	25.5	4.5				3.5
WBK08-01C	Clean		52	32.0	17.0	26	25		23.0	23.0	7.0				4.0
WBK10-01A	General	10	70	43.0	25.0	35	36	17	24.0	30.0	5.5	-	-	-	6.0
WBK10-01B	Low type			38.0	20.0	38	-								
WBK10-01C	Clean			43.0	25.0	35	36								
WBK12-01A	General	12	70	43.0	25.0	35	36	19	24.0	30.0	5.5	-	-	-	6.0
WBK12-01B	Low type			38.0	20.0	38	-								
WBK12-01C	Clean			43.0	25.0	35	36								
WBK15-01A	General	15	80	50.0	30.0	40	41	22	25.0	31.0	12.0	-	-	-	5.0
WBK15-01B	Low type			42.0	22.0	42	-								
WBK15-01C	Clean			50.0	30.0	40	41								
WBK20-01	General	20	95	58.0	30.0	45	56	30	42.0	52.0	10.0	-	-	-	10.0

- Notes
1. Use datum surface G for mounting to machine base.
 2. Tighten set screw after locknut has been adjusted and tightened.
 3. Insert brass pad provided with unit into locknut set screw hole, then insert and tighten the set screw.

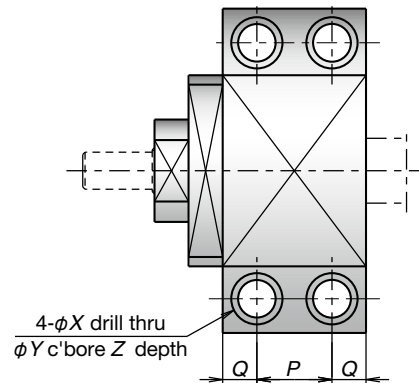
Square Type



View S (WBK04 and 06)



View S (WBK08 to 15)



View S (WBK20)

Reference no.	Tightening torque (reference) [N•cm]	
	Locknut	Set screw
WBK04-**-	100	69 (M3)
WBK06-**-	190	69 (M3)
WBK08-**-	230	69 (M3)
WBK10-**-	280	147 (M4)
WBK12-**-	630	147 (M4)
WBK15-**-	790	147 (M4)
WBK20-**-	1 670	147 (M4)

Counterbore dimensions							Mass (kg)	Specification				Locknut screw	Attached bearing for support side
H	P	Q	W	X	Y	Z		Axial Direction			Maximum starting torque		
								Basic dynamic load rating	Load limit	Rigidity			
								C ₀ (N)	N	(N/μm)	(N·cm)		
7.0	-	-	21	3.5	-	-	0.03	1 470	464	39	0.20	M4×0.50	-
8.5	-	-	26	5.5	-	-	0.05	2 760	854	60	0.35	M6×0.75	-
11.5	-	-	38	6.6	11	12	0.25	4 400	1 450	49	0.88	M8×1.0	606ZZ
11.0			46	9.0	14	18	0.30	6 600	2 730	94	1.90		606VV
11.5			38	6.6	11	12	0.25	3 100	1 100	36	0.52		
12.0	-	-	52	9.0	14	11	0.50	6 600	2 730	94	1.90	M10×1.0	608ZZ
						19	0.45	6 600	2 730	94	1.90		608VV
						11	0.50	4 250	1 364	50	1.10		
12.0	-	-	52	9.0	14	11	0.50	7 100	3 040	104	2.10	M12×1.0	6000ZZ
						19	0.40	7 100	3 040	104	2.10		6000VV
						11	0.50	4 700	2 443	57	1.20		
12.5	-	-	60	11.0	17	15	0.70	7 600	3 380	113	2.40	M15×1.0	6002ZZ
						23	0.60	7 600	3 380	113	2.40		6002VV
						15	0.70	5 100	2 757	63	1.30		
-	22	10	75	11.0	17	15	1.40	17 900	8 240	155	6.20	M20×1.0	6204ZZ

Unit : mm

4. Deep groove ball bearing and snap ring are also provided for simple support side. (except WBK04-01M, WBK06-01M).

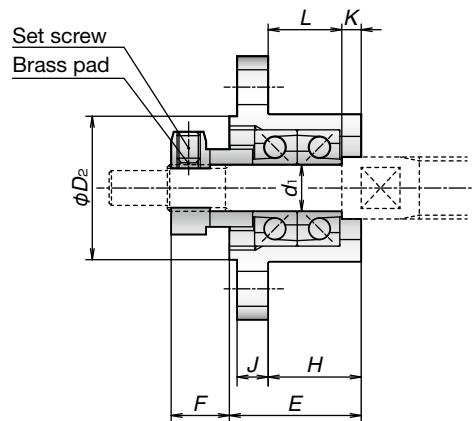
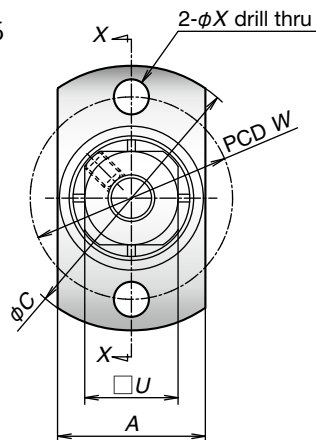
5. For retaining cover side of WBK08-01A and WBK08-01C, there are no seals.

6. For WBK04-01M and WBK06-01M, non-contact metal seals are installed in both sides of bearings.

Support Units

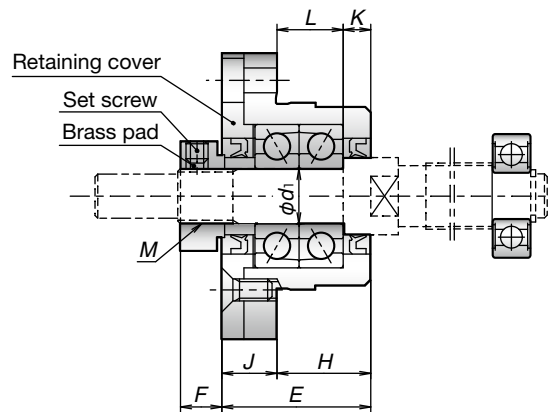
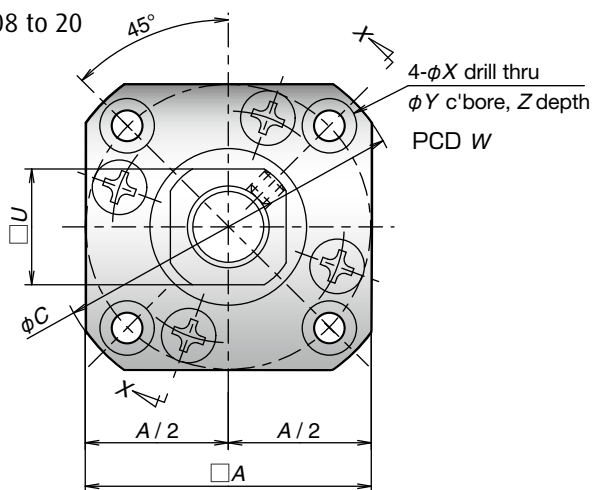
Fixed support side support unit (round type)

WBK04 and 06



Cross section X-X (Example 1)

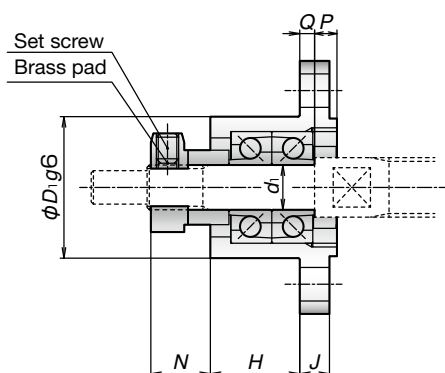
WBK08 to 20



View X-X (Example 1)

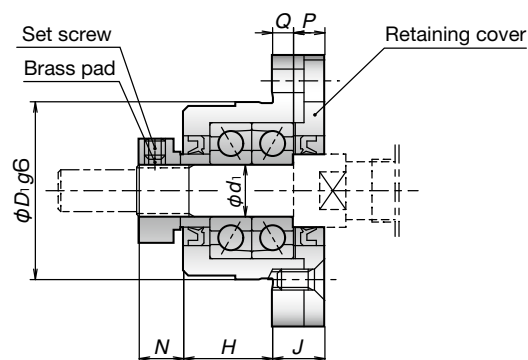
Reference no.	Use	d ₁	A	C	D ₁	D ₂	E	H	L	K	F	N	U	P	Q
WBK04-11M	General	4	14	26	14	14.0	13.5	8.5	7.0	1.5	5.5	6.6	10	2.6	2.4
WBK06-11M	General	6	19	34	19	18.5	17.0	12.0	9.5	2.5	7.5	8.0	12	3.0	2.0
WBK08-11B	High-load	8	42	52	34	-	25.5	15.5	12.0	3.5	4.5	7.0	14	6.0	4.0
WBK08-11	General		35	43	28		23.0	14.0	10.0	4.0	7.0	8.0		5.0	
WBK08-11C	Clean														
WBK10-11	General	10	42	52	34	-	27.0	17.0	12.0	5.0	7.5	8.5	17	6.0	4.0
WBK10-11C	Clean	12	44	54	36	-	27.0	17.0	12.0	5.0	7.5	8.5	19	6.0	4.0
WBK12-11	General														
WBK12-11C	Clean														
WBK15-11	General	15	52	63	40	-	32.0	17.0	11.0	6.0	12.0	14.0	22	8.0	7.0
WBK15-11C	Clean	20	68	85	57		52.0	30.0	20.0	10.0	10.0	14.0	30	14.0	8.0
WBK20-11	General														

- Notes
1. Tighten set screw after locknut has been adjusted and tightened.
 2. Insert brass pad provided with unit into locknut set screw hole, then insert and tighten the set screw.



Cross section X-X (Example 2)

Reference no.	Tightening torque (reference) [N•cm]	
	Locknut	Set screw
WBK04-**	100	69 (M3)
WBK06-**	190	69 (M3)
WBK08-**	230	69 (M3)
WBK10-**	280	147 (M4)
WBK12-**	630	147 (M4)
WBK15-**	790	147 (M4)
WBK20-**	1 670	147 (M4)



View X-X (Example 2)

Unit : mm

Counterbore dimensions					Mass (kg)	Specification				Locknut screw	Attached bearing for support side
J	W	X	Y	Z		Axial Direction			Maximum starting torque		
						Basic dynamic load rating	Load limit	Rigidity			
						C _a (N)	N	(N/μm)	(N·cm)	M	
3	20	3.5	-	-	0.02	1 470	464	39	0.20	M4 × 0.50	-
4	26	4.5	-	-	0.04	2 760	854	60	0.35	M6 × 0.75	-
10	42	4.5	8.0	4	0.20	6 600	2 730	94	1.90	M8 × 1.0	606ZZ
9	35	3.4	6.5		0.15	4 400	1 450	49	0.88		606ZZ
						3 100	1 100	36	0.52		606VV
10	42	4.5	8.0	4	0.20	6 600	2 730	94	1.90	M10 × 1.0	608ZZ
						4 250	1 364	50	1.10		608VV
10	44	4.5	8.0	4	0.25	7 100	3 040	104	2.10	M12 × 1.0	6000ZZ
						4 700	2 443	57	1.20		6000VV
15	50	5.5	9.5	6	0.40	7 600	3 380	113	2.40	M15 × 1.0	6002ZZ
						5 100	2 757	63	1.30		6002VV
22	70	6.6	11.0	10	1.10	17 900	8 240	155	6.20	M20 × 1.0	6204ZZ

3. Deep groove ball bearing and snap ring are also provided for simple support side. (except WBK04-11M and WBK06-11M)

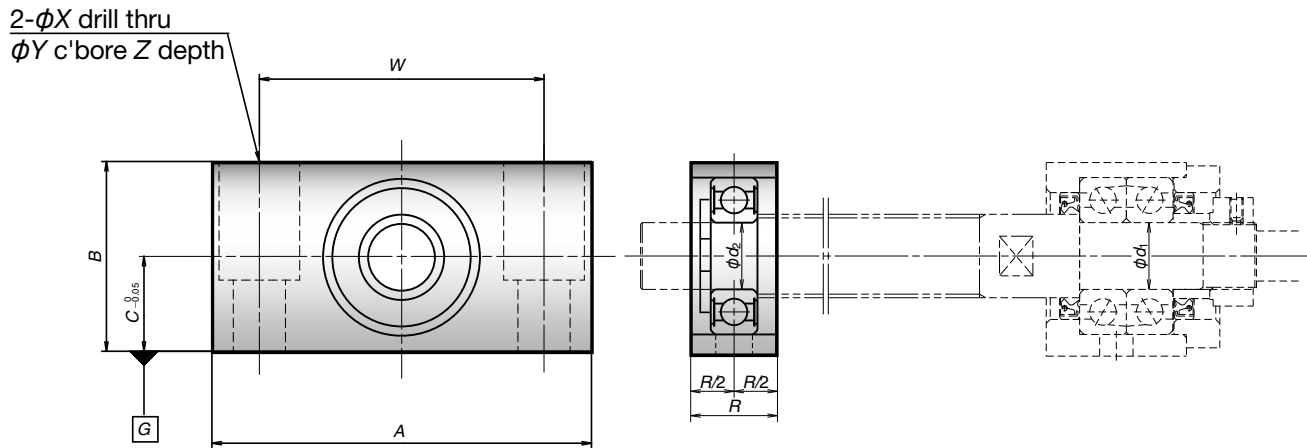
4. For retaining cover side of WBK08-11 and WBK08-11C, there are no seals.

5. For WBK04-11M and WBK06-11M, non-contact metal seals are installed in both sides of bearings.

Courtesy of Steven Engineering, Inc. - (800) 258-9200 - sales@steveneng.com - www.stevenengineering.com

Support Units for Simple Support Side

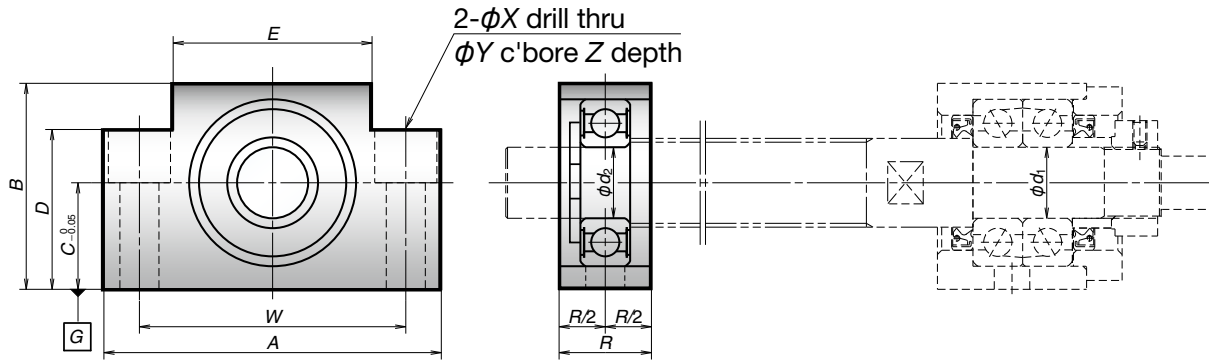
Simple support side support unit for PSS and USS types



Unit : mm

Reference no.	Use	d ₂	A	B	C	R	Counterbore dimensions				Mass (kg)	Bearing reference no.	Radial direction basic dynamic load rating (N)
							W	X	Y	Z			
WBK08S-01B	Low	6	62	31	15.5	16	46	9	14	18	0.2	606ZZ	2 260
WBK12S-01B	Low	10	70	38	20.0	20	52	9	14	19	0.4	6000ZZ	4 550
WBK15S-01B	Low	15	80	42	22.0	20	60	9	14	23	0.4	6002ZZ	5 600

Note 1. Use datum surface G for mounting to machine base.



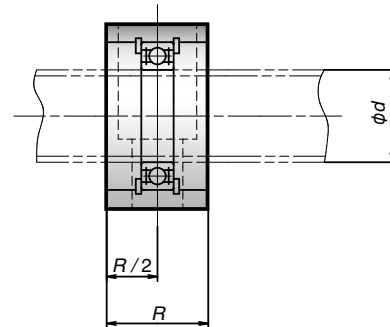
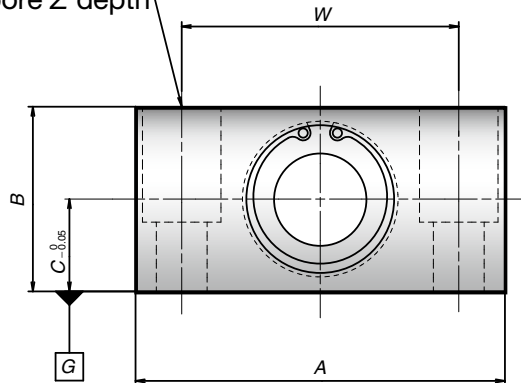
Unit : mm

Reference no.	Use	d ₂	A	B	C	D	E	R	Counterbore dimensions				Mass (kg)	Bearing reference no.	Radial direction basic dynamic load rating (N)
									W	X	Y	Z			
WBK08S-01	General	6	52	32	17	26	25	15	38	6.6	11	12	0.15	606ZZ	2 260
WBK08S-01C	Clean													606VV	2 260
WBK10S-01	General	8	70	43	25	35	36	20	52	9.0	14	11	0.40	608ZZ	3 300
WBK10S-01C	Clean													608VV	3 300
WBK12S-01	General	10	70	43	25	35	36	20	52	9.0	14	11	0.35	6000ZZ	4 550
WBK12S-01C	Clean													6000VV	4 550
WBK15S-01	General	15	80	50	30	40	41	20	60	9.0	14	11	0.45	6002ZZ	5 600
WBK15S-01C	Clean													6002VV	5 600
WBK20S-01	General	20	95	58	30	45	56	26	75	11.0	17	15	0.80	6204ZZ	12 800

Note 1. Use datum surface G for mounting to machine base.

Simple support side support unit for FSS types

2- ϕX drill thru
 ϕY c'bore Z depth

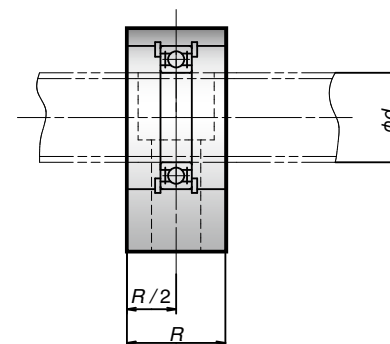
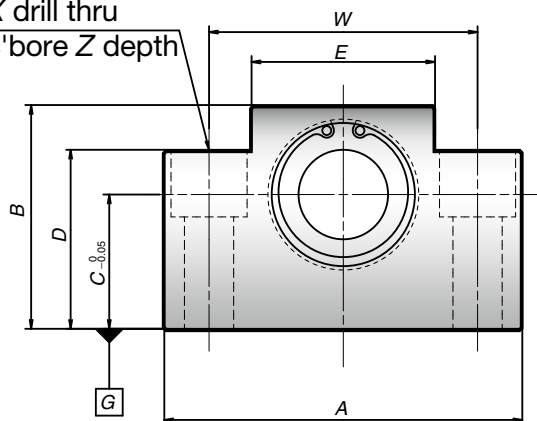


Unit : mm

Reference no.	d	A	B	C	R	Counterbore dimensions				Mass (kg)	Bearing reference no.	Radial direction basic dynamic load rating (N)
						W	X	Y	Z			
WBK12SF-01B	12	62	31	15.5	18	46	9	14	18	0.2	6801ZZ	1 920
WBK15SF-01B	15	70	38	20.0	18	52	9	14	19	0.3	6902ZZ	4 350
WBK20SF-01B	20	80	42	22.0	22	60	11	17	23	0.4	6804ZZ	4 000

Note 1. Use datum surface G for mounting to machine base.

2- ϕX drill thru
 ϕY c'bore Z depth



Unit : mm

Reference no.	d	A	B	C	D	E	R	Counterbore dimensions				Mass (kg)	Bearing reference no.	Radial direction basic dynamic load rating (N)
								W	X	Y	Z			
WBK25SF-01	25	95	58	30	45	56	22	75	11	17	15	0.55	6005ZZ	10 100

Note 1. Use datum surface G for mounting to machine base.

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