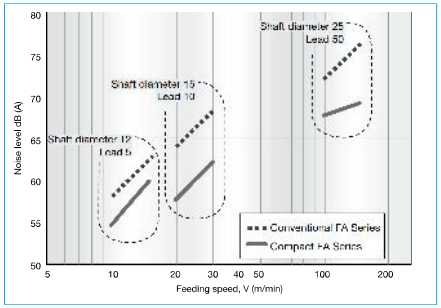
B-3-1.1 Compact FA Series PSS Type, USS Type, and FSS Type

1. Features

In order to respond quickly to a wide range of needs, NSK keeps end-deflector recirculation system ball screws, which offer high-speed and low-noise operation and compact design, in standard inventories as the Compact FA Series. The exceptionally high performance ball screws are ready for use in a variety of fields such as semiconductor manufacturing equipment, LCD manufacturing equipment, chip mounting equipment, measuring apparatus, food and medical equipment, and automotive manufacturing equipment.

●Quieter sound

The operating noise level of ball screws has been reduced by 6 dB, about half of what is sensed by the ear.



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

Fig. 1 Comparison of noise level

●Compact

The outside diameter of the ball nut is as much as 30% smaller than those of existing NSK products. This contributes to more compact design of all sorts of equipment and devices such as low-profile positioning stages.

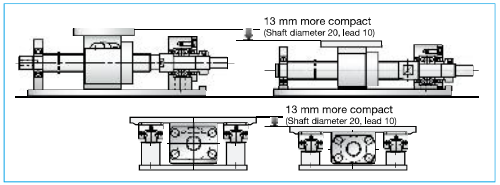


Fig. 2 Comparison of FA Type and Compact FA Series PSS Type

●High speed

The permissible rotational speed up to 5 000 min^{-1}. This capability dramatically expands the range of service conditions.

Please refer to the dimension tables for details of the permissible rotational speed.

●A grease fitting is provided as a standard equipment

The new ball screw type is equipped with a grease fitting (M5 × 0.8) as a standard equipment. Two lubrication ports are provided to facilitate easy maintenance.

●Storage seal

Compact, thin plastic seal is available. Nut outside diameter is compact compare with the return tube recirculation system.

●Low-profile design

The low-profile support units especially compatible with the compact FA Series are available for a superb space-saving design.

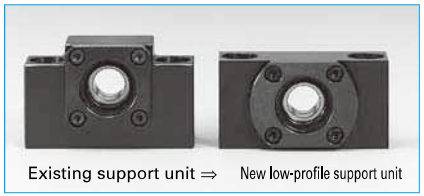


Fig. 3 Comparison of support units

●Low dust generation LG2 grease (USS Type)

The dust count is approximately 1/100 that of the existing FA series. It is suitable for applications in clean environments.

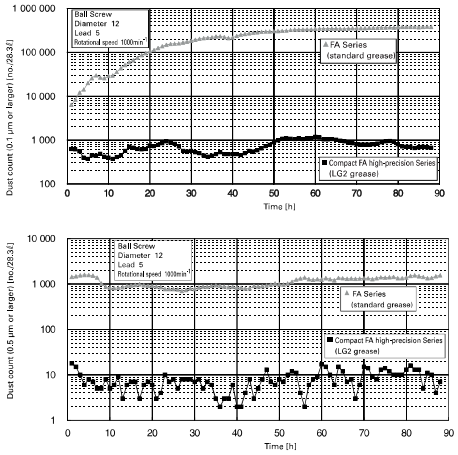


Fig.4 Comparison of dust count

●Easy stroke setting (FSS Type)

Flexible stroke setting with fixed-simple support by means of mounting support unit (simple support side) directly onto ball screw thread outside diameter. Proprietary support unit (simple support side) is available from NSK.

Fig.5 Flexible stroke setting

2. Order of the dimension table

For each type, it is arranged in order from small diameter to large.

3. Dimension tables

Dimension tables show shapes/sizes as well as specification factors of each shaft diameter/lead combination. Tables also contain data as follows:

●Stroke

Nominal stroke: A reference for your use.

Maximum stroke: The limit stroke that the nut can move. The figure is obtained by subtracting the nut length from the effective threaded length (L_1).

●Lead accuracy

PSS Type, C5 grade; USS Type, C3 grade; FSS Type, Ct7 grade

T: Travel compensation

e_p: Tolerance on specified travel

v_u: Travel variation

See "Technical Description: Lead Accuracy" (page B37) for the details of the codes.

●Permissible rotational speed

d • n: Limited by the relative peripheral speed between the screw shaft and the nut.

Critical speed: Limited by the natural frequency of a ball screw shaft. Critical speed depends on the supporting condition of screw shaft.

The lower of the two criteria, the d·n and critical speed, will determine the overall permissible rotational speed of the ball screw. For details, see "Technical Description: Permissible Rotational Speed" (page B47).

4. Other

The seal of the ball screw and end deflector are made of synthetic resin. Consult NSK when using our ball screws under extreme environments or in special environments, or if using special lubricant or oil.

The NSK K1 cannot be mounted to the compact FA Series.

For special environments, see pages B70 and D2. For lubrications, see pages B67 and D13.

Note: For details of standard stock products, contact NSK.

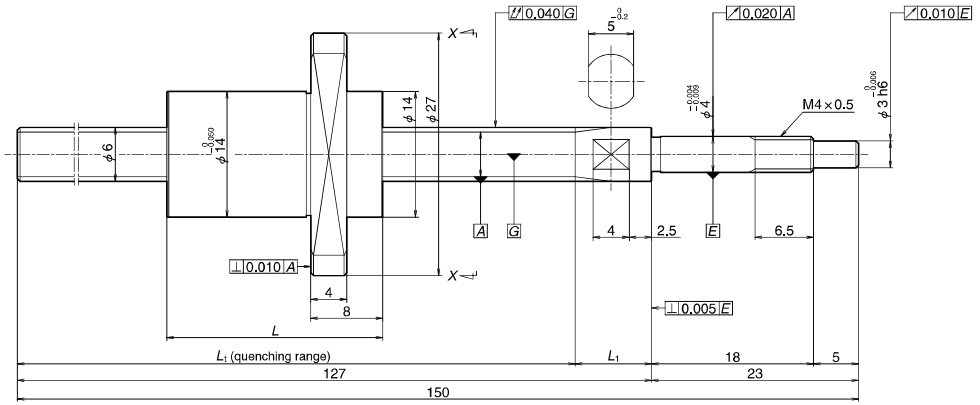
Table 1 Combinations of screw shaft diameter and lead

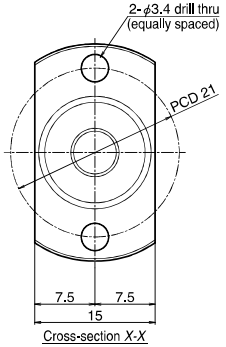
Screw shaft diameter \ Lead	5	8	10	12	15	20	25	30	40	50	60
6		B109		B109							
8			B111		B111						
10	B113 B133		B113								
12	B115 B135		B115 B139			B115		B115			
15	B117 B137		B117 B141			B119 B141		B119			
20	B121		B121 B143			B123 B143		B123	B125		B125
25	B127		B127 B145			B129 B145	B129 B145	B131		B131	

Screw shaft ø6

Lead 8, 12

Unit: mm





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

Recommended

For drive side (Fixed)
WBK04-01M (square)
WBK04-11M (round)

Unit: mm

Ball screw No.	Screw shaft diameter d	Lead l	Effective turns of balls	Basic load ratings (N) Dynamic C_a	Basic load ratings (N) Static C_{0a}	Maximum stroke	Nut length L	Screw shaft dimensions L_t	Screw shaft dimensions L_1
PSS0608NAD0150	6	8	2	550	715	97.5	16	118.5	8.5
PSS0608NBD0150			4	1 180	1 760	89.5	24	118.5	8.5
PSS0612NAD0150		12	2	550	715	92	20	117	10
PSS0612NBD0150			4	1 180	1 760	80	32	117	10

Lead accuracy Target value T	Lead accuracy Error e_p	Lead accuracy Variation v_u	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)
0	0.020	0.018	~0.5	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

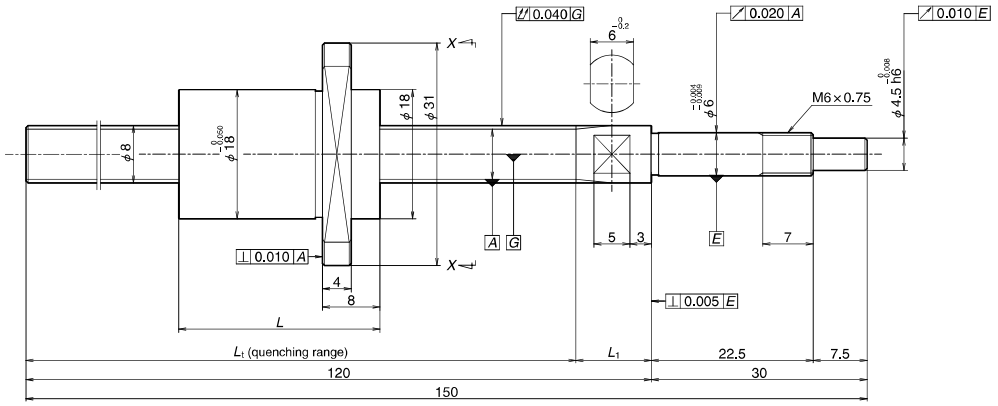
Notes: 1. Contact NSK if permissible rotational speed is to be exceeded.

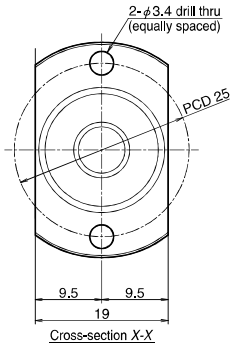
2. Service temperature range is 0 to 80˚C.
3. Use of NSK support unit is recommended. Refer to page B389 for details.

Screw shaft ø8

Lead 10, 15

Unit: mm





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

Recommended

For drive side (Fixed)
WBK06-01M (square)
WBK06-11M (round)

Unit: mm

Ball screw No.	Screw shaft diameter d	Lead l	Effective turns of balls	Basic load ratings (N) Dynamic C_a	Basic load ratings (N) Static C_{0a}	Maximum stroke	Nut length L	Screw shaft dimensions L_t	Screw shaft dimensions L_1
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	22	107	13
PSS0815NBD0150			4	1 950	3 080	65	37	107	13

Lead accuracy Target value T	Lead accuracy Error e_p	Lead accuracy Variation v_u	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)
0	0.020	0.018	~0.5	0.09	5 000	0.4	0.2
				0.11		0.5	0.3
				0.1		0.4	0.2
				0.12		0.6	0.3

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

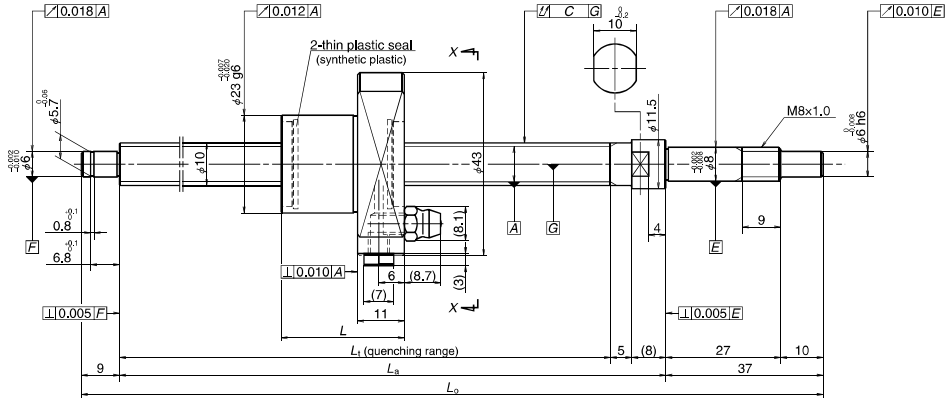
2. Service temperature range is 0 to 80˚C.
3. Use of NSK support unit is recommended. Refer to page B389 for details.

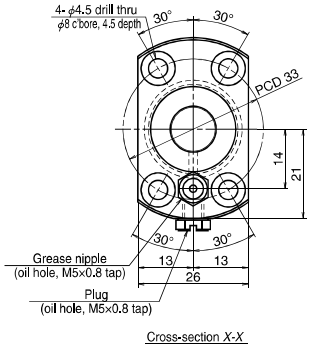
NSK

Screw shaft ø10

Lead 5, 10

Unit: mm





Cross-section X-X

Ball screw specification	
Preload type	Oversize ball preload (P-preload)
Ball diameter/screw shaft root diameter	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 (low-profile, square)	WBK08S-01B (low-profile, square)
WBK08-11B (round, high load)	

Unit: mm

Ball screw No.	Screw shaft diameter d	Lead l	Basic load ratings (N) Dynamic C_a	Basic load ratings (N) Static C_{0a}	Stroke Nominal	Stroke Max.	Nut length L	Screw shaft dimensions L_t	L_a	L_o
PSS1005N1D0171	10	5	2 930	4 790	50	78	29	112	125	171
PSS1005N1D0221					100	128		162	175	221
PSS1005N1D0321					200	228		262	275	321
PSS1005N1D0421					300	328		362	375	421
PSS1005N1D0521					400	428		462	475	521
PSS1010N1D0221		10	1 970	3 010	100	125	32	162	175	221
PSS1010N1D0321					200	225		262	275	321
PSS1010N1D0421					300	325		362	375	421
PSS1010N1D0521					400	425		462	475	521

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

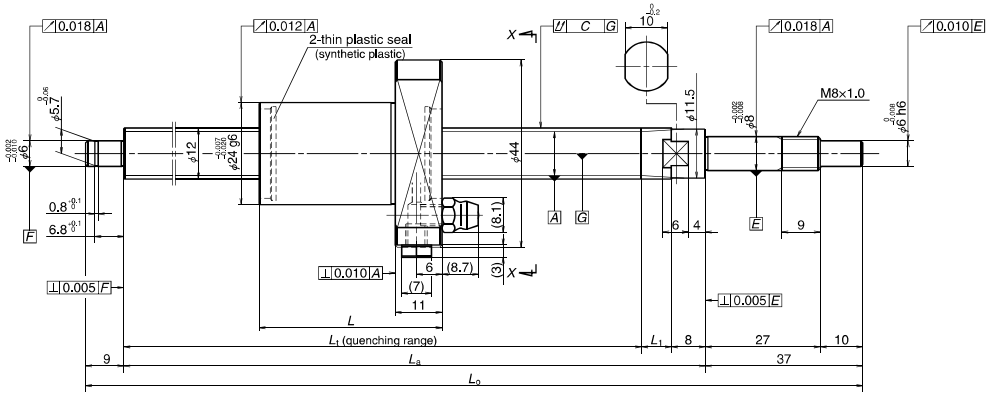
Notes: 1. Indicates ball screw preload control value. Approximately 2.0 N·cm of torque is added due to thin plastic seals.
2. Contact NSK if permissible rotational speed is to be exceeded.
3. Service temperature range is 0 to 80°C.
4. Use of NSK support unit is recommended. Refer to page B389 for details.
5. Recommended quantity of grease is about 50% of ball nut's internal space. See page D16 for details.

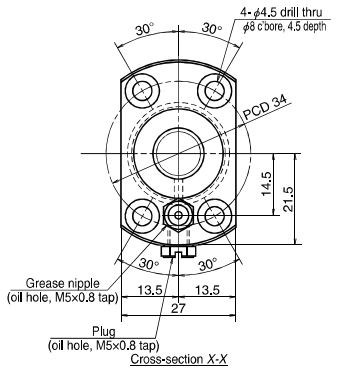
PSS

NSK

Screw shaft ø12

Lead 5, 10, 20, 30





Unit: mm

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

Recommended support unit

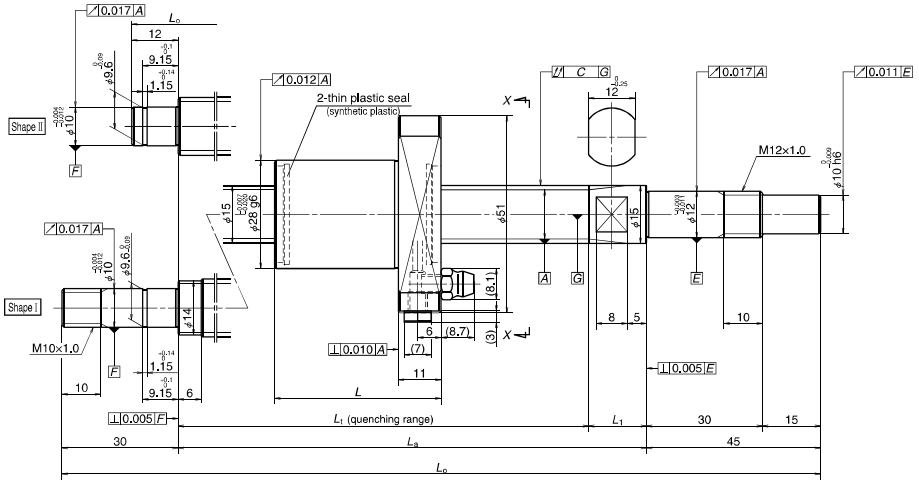
For drive side (Fixed)	For opposite to drive side (Simple)
WBK08-01B (low-profile, square)	WBK08S-01B (low-profile, square)
WBK08-11B (round, high load)	

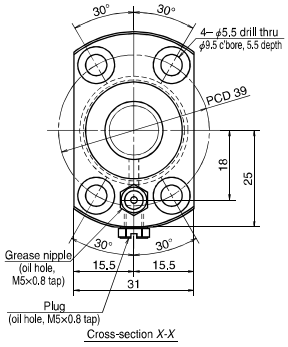
Unit: mm

Ball screw No.	Screw shaft diameter	Lead	Basic load ratings (N)		Stroke		Nut length	Screw shaft dimensions				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
			Dynamic	Static								Target value	Error	Variation				Fixed-Simple		
	d	l	C_a	C_{0a}	Nominal	Max.	L	L_t	L_a	L_o	L_1	T	e_p	v_u	C	(N·cm) *1	(kg)		(cm³)	(cm³)
PSS1205N1D0171	12	5	3 200	5 860	50	75	30	110	125	171	7	0	0.020	0.018	0.030	0.7 – 3.3	0.3	5 000	1.0	0.5
PSS1205N1D0221					100	125		160	175	221			0.020	0.018	0.045	0.7 – 3.3	0.3			
PSS1205N1D0321					200	225		260	275	321			0.023	0.018	0.060	0.6 – 4.3	0.4			
PSS1205N1D0421					300	325		360	375	421			0.025	0.020	0.070	0.6 – 4.3	0.5			
PSS1205N1D0521					400	425		460	475	521			0.027	0.020	0.085	0.6 – 4.3	0.6			
PSS1205N1D0621					500	525		560	575	621			0.030	0.023	0.085	0.4 – 4.9	0.7			
PSS1210N1D0221		10	3 200	5 860	100	112	43	160	175	221	7		0.020	0.018	0.045	0.7 – 3.3	0.4	5 000	1.0	0.5
PSS1210N1D0321					200	212		260	275	321			0.023	0.018	0.060	0.6 – 4.3	0.5			
PSS1210N1D0421					300	312		360	375	421			0.025	0.020	0.070	0.6 – 4.3	0.5			
PSS1210N1D0521					400	412		460	475	521			0.027	0.020	0.085	0.6 – 4.3	0.6			
PSS1210N1D0621					500	512		560	575	621			0.030	0.023	0.085	0.4 – 4.9	0.7			
PSS1220N1D0271		20	2 150	3 610	100	153	50	208	225	271	9		0.023	0.018	0.045	1.4 – 4.5	0.4	5 000	1.2	0.6
PSS1220N1D0371					200	253		308	325	371			0.023	0.018	0.060	0.9 – 4.9	0.5	5 000		
PSS1220N1D0471					300	353		408	425	471			0.027	0.020	0.070	0.9 – 4.9	0.6	5 000		
PSS1220N1D0571					400	453		508	525	571			0.030	0.023	0.085	0.6 – 5.9	0.7	5 000		
PSS1220N1D0671					500	553		608	625	671			0.030	0.023	0.110	0.6 – 5.9	0.8	4 480		
PSS1230N1D0271		30	2 150	3 610	100	128	70	203	225	271	14		0.023	0.018	0.045	1.4 – 4.5	0.5	5 000	1.5	0.8
PSS1230N1D0371					200	228		303	325	371			0.023	0.018	0.060	0.9 – 4.9	0.6	5 000		
PSS1230N1D0471					300	328		403	425	471			0.027	0.020	0.070	0.9 – 4.9	0.7	5 000		
PSS1230N1D0571					400	428		503	525	571			0.030	0.023	0.085	0.6 – 5.9	0.7	5 000		
PSS1230N1D0671					500	528		603	625	671			0.030	0.023	0.110	0.6 – 5.9	0.8	4 720		

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.
3. Service temperature range is 0 to 80°C.
4. Use of NSK support unit is recommended. Refer to page B389 for details.
5. Recommended quantity of grease is about 50% of ball nut's internal space. See page D16 for details.

PSS





NSK

Screw shaft ø15

Lead 5, 10

Unit: mm

Ball screw specification	
Preload type	Oversize ball preload (P-preload)
Ball diameter/screw shaft root diameter	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)	For opposite to drive side (Simple)
WBK12-01B (low-profile, square)	WBK10-01B (low-profile, square)	WBK12S-01B (low-profile, square)
WBK12-11 (round)	WBK10-11 (round)	

Unit: mm

Ball screw No.	Screw shaft diameter d	Lead l	Basic load ratings (N) Dynamic C_a	Basic load ratings (N) Static C_{0a}	Stroke Nominal	Stroke Max.	Nut length L	Screw shaft dimensions L_t	L_a	L_o	L_1
PSS1505N1D0211	15	5	5 460	10 200	50	103	30	139	154	211	15
PSS1505N1D0261					100	153		189	204	261	
PSS1505N1D0361					200	253		289	304	361	
PSS1505N1D0461					300	353		389	404	461	
PSS1505N1D0561					400	453		489	504	561	
PSS1505N1D0661					500	553		589	604	661	
PSS1505N1D0761					600	653		689	704	761	
PSS1510N1D0261		10	5 460	10 200	100	140	43	189	204	261	15
PSS1510N1D0361					200	240		289	304	361	
PSS1510N1D0461					300	340		389	404	461	
PSS1510N1D0561					400	440		489	504	561	
PSS1510N1D0661					500	540		589	604	661	
PSS1510N1D0761					600	640		689	704	761	
PSS1510N1D0879					700	740		789	804	879	
PSS1510N1D0979					800	840		889	904	979	
PSS1510N1D1179					1 000	1 040		1 089	1 104	1 179	

Left shaft end (opposite driven side)	Lead accuracy Target value T	Lead accuracy Error e_p	Lead accuracy Variation v_u	Shaft run-out C	Dynamic preload torque (N·cm) *1	Mass (kg)	Permissible rotational speed (min⁻¹) *2 Fixed-Simple	Permissible rotational speed (min⁻¹) *2 Fixed-Fixed	Internal spatial volume of nut (cm^3)	Standard volume of grease replenishing (cm^3)
II	0	0.020	0.018	0.035	0.2 – 6.9	0.5	5 000			
II		0.020	0.018	0.035	0.2 – 6.9	0.5	5 000			
II		0.023	0.018	0.045	0.2 – 6.9	0.6	5 000			
II		0.025	0.020	0.050	0.4 – 9.8	0.8	5 000	—	2.0	1.0
II		0.027	0.020	0.060	0.4 – 9.8	0.9	5 000			
II		0.030	0.023	0.075	0.4 – 9.8	1.0	5 000			
II		0.035	0.025	0.075	0.4 – 11.8	1.1	4 130			
II		0.020	0.018	0.035	0.6 – 7.4	0.6	5 000	—		
II		0.023	0.018	0.045	0.6 – 7.4	0.7	5 000	—		
II		0.025	0.020	0.050	0.4 – 9.8	0.8	5 000	—		
II		0.027	0.020	0.060	0.4 – 9.8	1.0	5 000	—		
II		0.030	0.023	0.075	0.4 – 9.8	1.1	5 000	—	2.0	1.0
II		0.035	0.025	0.075	0.4 – 11.8	1.2	4 210	—		
I		0.035	0.025	0.095	0.4 – 11.8	1.4	3 190	4 410		
I		0.040	0.027	0.095	0.4 – 11.8	1.5	2 500	3 470		
I		0.046	0.030	0.120	0.4 – 11.8	1.7	1 650	2 320		

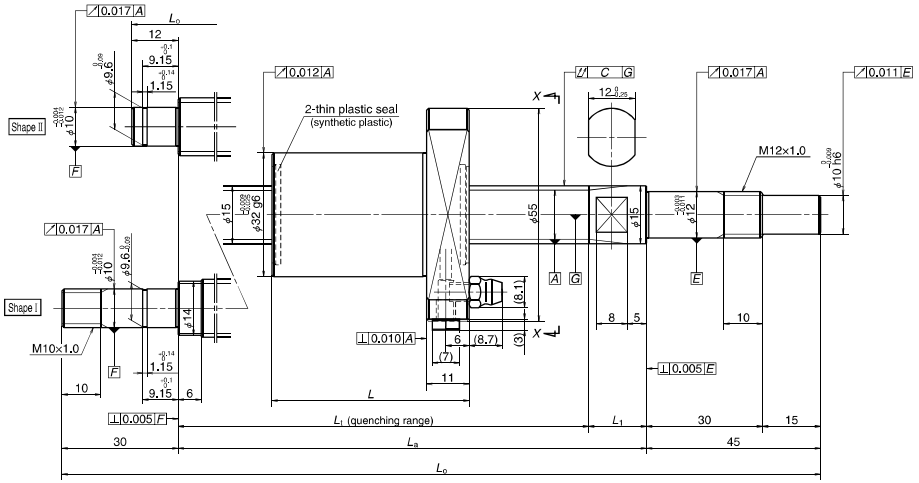
Notes: 1. Indicates ball screw preload control value. Approximately 2.0 N·cm of torque is added due to thin plastic seals.
2. Contact NSK if permissible rotational speed is to be exceeded.
3. Service temperature range is 0 to 80°C.
4. Use of NSK support unit is recommended. Refer to page B389 for details.
5. Recommended quantity of grease is about 50% of ball nut's internal space. See page D16 for details.

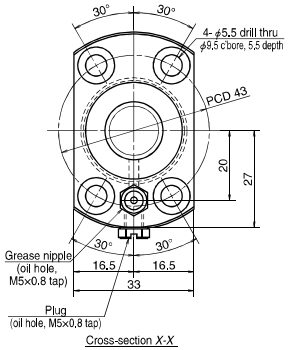
NSK

Screw shaft ø15

Lead 20, 30

Unit: mm





Ball screw specification	
Preload type	Oversize ball preload (P-preload)
Ball diameter/screw shaft root diameter	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)	For opposite to drive side (Simple)
WBK12-01B (low-profile, square)	WBK10-01B (low-profile, square)	WBK12S-01B (low-profile, square)
WBK12-11 (round)	WBK10-11 (round)	

Unit: mm

Ball screw No.	Screw shaft diameter d	Lead l	Basic load ratings (N) Dynamic C_a	Basic load ratings (N) Static C_{0a}	Stroke Nominal	Stroke Max.	Nut length L	Screw shaft dimensions L_t	L_a	L_o	L_1
PSS1520N1D0261	15	20	5 070	8 730	100	129	51	186	204	261	18
PSS1520N1D0361					200	229		286	304	361	
PSS1520N1D0461					300	329		386	404	461	
PSS1520N1D0561					400	429		486	504	561	
PSS1520N1D0661					500	529		586	604	661	
PSS1520N1D0761					600	629		686	704	761	
PSS1520N1D0879					700	729		786	804	879	
PSS1520N1D0979					800	829		886	904	979	
PSS1520N1D1179					1 000	1 029		1 086	1 104	1 179	
PSS1530N1D0311		30	5 070	8 730	100	153	71	230	254	311	24
PSS1530N1D0411					200	253		330	354	411	
PSS1530N1D0511					300	353		430	454	511	
PSS1530N1D0611					400	453		530	554	611	
PSS1530N1D0711					500	553		630	654	711	
PSS1530N1D0811					600	653		730	754	811	
PSS1530N1D0929					700	753		830	854	929	
PSS1530N1D1029					800	853		930	954	1 029	
PSS1530N1D1229					1 000	1 053		1 130	1 154	1 229	

Left shaft end (opposite driven side)	Lead accuracy Target value T	Lead accuracy Error e_p	Lead accuracy Variation v_u	Shaft run-out C	Dynamic preload torque (N·cm) *1	Mass (kg)	Permissible rotational speed (min⁻¹) *2 Fixed-Simple	Permissible rotational speed (min⁻¹) *2 Fixed-Fixed	Internal spatial volume of nut (cm³)	Standard volume of grease replenishing (cm³)
II	0	0.020	0.018	0.035	0.8 – 8.8	0.7	5 000	—	2.8	1.4
II		0.023	0.018	0.045	0.8 – 8.8	0.8	5 000	—		
II		0.025	0.020	0.050	0.8 – 10.8	0.9	5 000	—		
II		0.027	0.020	0.060	0.8 – 10.8	1.1	5 000	—		
II		0.030	0.023	0.075	0.8 – 10.8	1.2	5 000	—		
II		0.035	0.025	0.075	0.8 – 13.8	1.3	4 170	—		
I		0.035	0.025	0.095	0.8 – 13.8	1.5	3 150	4 310		
I		0.040	0.027	0.095	0.8 – 13.8	1.6	2 460	3 390		
I		0.046	0.030	0.120	0.8 – 13.8	1.9	1 620	2 260		
II		0.023	0.018	0.035	1.2 – 9.3	0.8	5 000	—	3.4	1.7
II		0.025	0.020	0.050	0.8 – 10.8	1.0	5 000	—		
II		0.027	0.020	0.060	0.8 – 10.8	1.1	5 000	—		
II		0.030	0.023	0.060	0.8 – 10.8	1.2	5 000	—		
II		0.030	0.023	0.075	0.8 – 13.8	1.4	5 000	—		
II		0.035	0.025	0.095	0.8 – 13.8	1.5	3 770	—		
I		0.040	0.027	0.095	0.8 – 13.8	1.6	2 880	3 910		
I		0.040	0.027	0.120	0.8 – 13.8	1.8	2 310	3 110		
I		0.046	0.030	0.120	0.8 – 13.8	2.0	1 540	2 100		

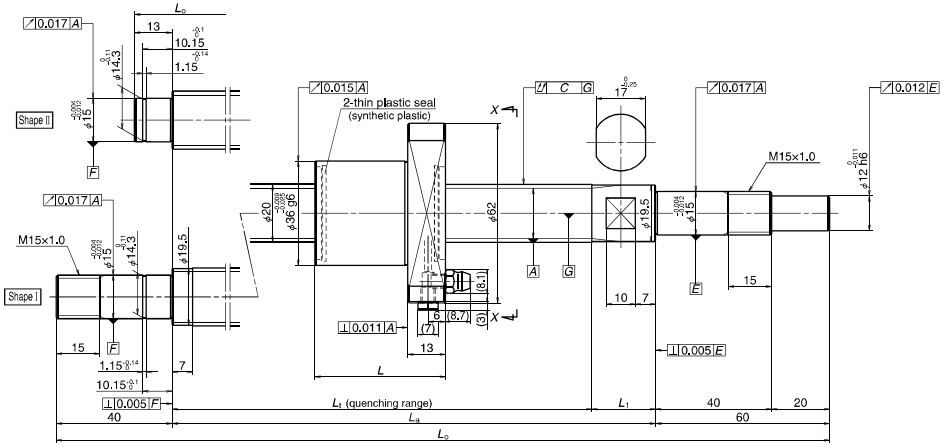
Notes: 1. Indicates ball screw preload control value. Approximately 2.0 N·cm of torque is added due to thin plastic seals.
2. Contact NSK if permissible rotational speed is to be exceeded.
3. Service temperature range is 0 to 80°C.
4. Use of NSK support unit is recommended. Refer to page B389 for details.
5. Recommended quantity of grease is about 50% of ball nut's internal space. See page D16 for details.

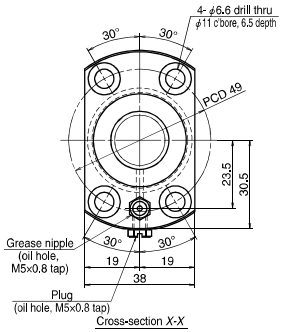
NSK

Screw shaft ø20

Lead 5, 10

Unit: mm





Ball screw specification	
Preload type	Oversize ball preload (P-preload)
Ball diameter/screw shaft root diameter	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)	For opposite to drive side (Simple)
WBK15-01B (low-profile, square)	WBK15-01B (low-profile, square)	WBK15S-01B (low-profile, square)
WBK15-11 (round)	WBK15-11 (round)	

Unit: mm

Ball screw No.	Screw shaft diameter d	Lead l	Basic load ratings (N) Dynamic C_a	Basic load ratings (N) Static C_{0a}	Stroke Nominal	Stroke Max.	Nut length L	Screw shaft dimensions L_t	L_a	L_o	L_1
PSS2005N1D0323	20	5	8 790	18 500	150	191	31	228	250	323	22
PSS2005N1D0373					200	241		278	300	373	
PSS2005N1D0473					300	341		378	400	473	
PSS2005N1D0573					400	441		478	500	573	
PSS2005N1D0673					500	541		578	600	673	
PSS2005N1D0773					600	641		678	700	773	
PSS2005N1D0873					700	741		778	800	873	
PSS2005N1D1000					800	839		878	900	1 000	
PSS2010N1D0387		10	8 790	18 500	200	241	45	292	314	387	22
PSS2010N1D0487					300	341		392	414	487	
PSS2010N1D0587					400	441		492	514	587	
PSS2010N1D0687					500	541		592	614	687	
PSS2010N1D0787					600	641		692	714	787	
PSS2010N1D0887					700	741		792	814	887	
PSS2010N1D1014					800	839		892	914	1 014	
PSS2010N1D1214					1 000	1 039		1 092	1 114	1 214	
PSS2010N1D1414					1 200	1 239		1 292	1 314	1 414	

Left shaft end (opposite driven side)	Lead accuracy Target value T	Lead accuracy Error e_p	Lead accuracy Variation v_u	Shaft run-out C	Dynamic preload torque (N·cm) *1	Mass (kg)	Permissible rotational speed (min⁻¹) *2 Fixed-Simple	Permissible rotational speed (min⁻¹) *2 Fixed-Fixed	Internal spatial volume of nut (cm^3)	Standard volume of grease replenishing (cm^3)
Ⅱ	0	0.023	0.018	0.045	0.6 – 7.4	1.0	5 000	—	3.4	1.7
Ⅱ		0.023	0.018	0.045	0.6 – 7.4	1.1	5 000	—		
Ⅱ		0.025	0.020	0.050	0.6 – 7.4	1.3	5 000	—		
Ⅱ		0.027	0.020	0.060	0.4 – 9.8	1.5	5 000	—		
Ⅱ		0.030	0.023	0.075	0.4 – 9.8	1.7	5 000	—		
Ⅱ		0.035	0.025	0.075	0.4 – 9.8	1.9	5 000	—		
Ⅱ		0.035	0.025	0.095	0.4 – 9.8	2.2	4 410	—		
Ⅰ		0.040	0.027	0.095	0.4 – 11.8	2.4	3 450	4 710		
Ⅱ		0.023	0.018	0.045	1.2 – 9.3	1.2	5 000	—	3.2	1.6
Ⅱ		0.025	0.020	0.050	1.2 – 9.3	1.4	5 000	—		
Ⅱ		0.027	0.020	0.060	0.8 – 10.8	1.7	5 000	—		
Ⅱ		0.030	0.023	0.075	0.8 – 10.8	1.9	5 000	—		
Ⅱ		0.035	0.025	0.075	0.8 – 10.8	2.1	5 000	—		
Ⅱ		0.035	0.025	0.095	0.8 – 10.8	2.4	4 330	—		
Ⅰ		0.040	0.027	0.120	0.8 – 13.8	2.6	3 400	4 640		
Ⅰ		0.046	0.030	0.120	0.8 – 13.8	3.1	2 250	3 110		
Ⅰ		0.054	0.035	0.160	0.8 – 13.8	3.6	1 600	2 220		

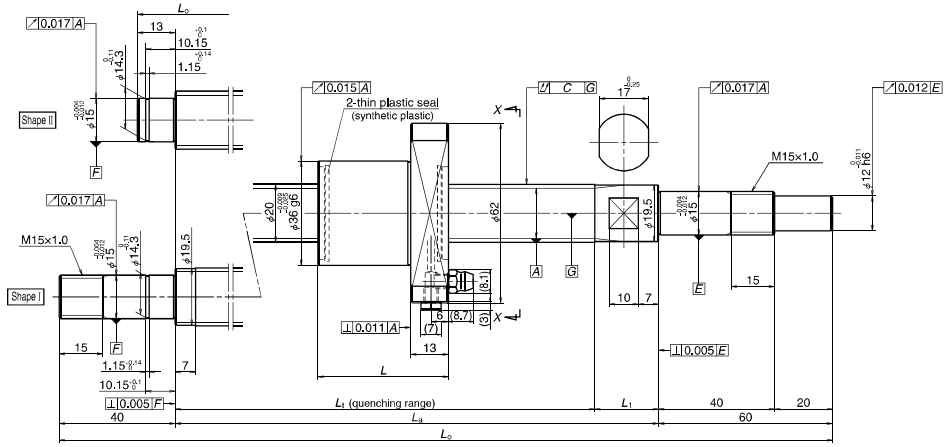
Notes: 1. Indicates ball screw preload control value. Approximately 2.0 N·cm of torque is added due to thin plastic seals.
2. Contact NSK if permissible rotational speed is to be exceeded.
3. Service temperature range is 0 to 80°C.
4. Use of NSK support unit is recommended. Refer to page B389 for details.
5. Recommended quantity of grease is about 50% of ball nut's internal space. See page D16 for details.

NSK

Screw shaft ø20

Lead 20, 30

Unit: mm



Ball screw specification	
Preload type	Oversize ball preload (P-preload)
Ball diameter/screw shaft root diameter	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)	For opposite to drive side (Simple)
WBK15-01B (low-profile, square)	WBK15-01B (low-profile, square)	WBK15S-01B (low-profile, square)
WBK15-11 (round)	WBK15-11 (round)	

Unit: mm

Ball screw No.	Screw shaft diameter d	Lead l	Basic load ratings (N) Dynamic C_a	Basic load ratings (N) Static C_{0a}	Stroke Nominal	Stroke Max.	Nut length L	Screw shaft dimensions L_t	L_a	L_o	L_1
PSS2020N1D0508	20	20	5 900	11 700	300	353	54	413	435	508	22
PSS2020N1D0608					400	453		513	535	608	
PSS2020N1D0708					500	553		613	635	708	
PSS2020N1D0808					600	653		713	735	808	
PSS2020N1D0908					700	753		813	835	908	
PSS2020N1D1035					800	851		913	935	1 035	
PSS2020N1D1235					1 000	1 051		1 113	1 135	1 235	
PSS2020N1D1435					1 200	1 251		1 313	1 335	1 435	
PSS2020N1D1835					1 600	1 651		1 713	1 735	1 835	
PSS2030N1D0408		30	5 900	11 700	200	228	74	308	335	408	27
PSS2030N1D0508					300	328		408	435	508	
PSS2030N1D0608					400	428		508	535	608	
PSS2030N1D0708					500	528		608	635	708	
PSS2030N1D0808					600	628		708	735	808	
PSS2030N1D0908					700	728		808	835	908	
PSS2030N1D1035					800	826		908	935	1 035	
PSS2030N1D1235					1 000	1 026		1 108	1 135	1 235	
PSS2030N1D1435					1 200	1 226		1 308	1 335	1 435	

Left shaft end (opposite driven side)	Lead accuracy Target value T	Lead accuracy Error e_p	Lead accuracy Variation v_u	Shaft run-out C	Dynamic preload torque (N·cm) *1	Mass (kg)	Permissible rotational speed (min⁻¹) *2 Fixed-Simple	Permissible rotational speed (min⁻¹) *2 Fixed-Fixed	Internal spatial volume of nut (cm³)	Standard volume of grease replenishing (cm³)
II	0	0.027	0.020	0.060	1.4 – 11.8	1.6	5 000	—	3.2	1.6
II		0.030	0.023	0.060	1.4 – 11.8	1.8	5 000	—		
II		0.030	0.023	0.075	1.4 – 11.8	2.0	5 000	—		
II		0.035	0.025	0.095	1.4 – 11.8	2.3	5 000	—		
II		0.040	0.027	0.095	0.8 – 13.8	2.5	4 150	—		
I		0.040	0.027	0.120	0.8 – 13.8	2.8	3 270	4 470		
I		0.046	0.030	0.120	0.8 – 13.8	3.3	2 180	3 010		
I		0.054	0.035	0.160	0.8 – 13.8	3.8	1 550	2 170		
I		0.065	0.040	0.200	0.8 – 13.8	4.7	900	1 270		
II		0.023	0.018	0.050	1.6 – 9.8	1.4	5 000	—	4.6	2.3
II		0.027	0.020	0.060	1.4 – 11.8	1.7	5 000	—		
II		0.030	0.023	0.060	1.4 – 11.8	1.9	5 000	—		
II		0.030	0.023	0.075	1.4 – 11.8	2.1	5 000	—		
II		0.035	0.025	0.095	1.4 – 11.8	2.4	5 000	—		
II		0.040	0.027	0.095	0.8 – 13.8	2.6	4 310	—		
I		0.040	0.027	0.120	0.8 – 13.8	2.9	3 380	4 570		
I		0.046	0.030	0.120	0.8 – 13.8	3.4	2 240	3 070		
I		0.054	0.035	0.160	0.8 – 13.8	3.9	1 590	2 200		

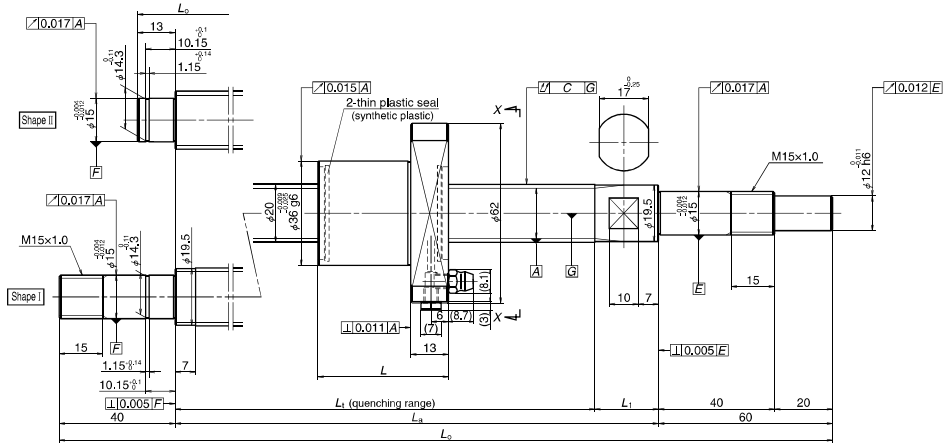
Notes: 1. Indicates ball screw preload control value. Approximately 2.0 N·cm of torque is added due to thin plastic seals.
2. Contact NSK if permissible rotational speed is to be exceeded.
3. Service temperature range is 0 to 80°C.
4. Use of NSK support unit is recommended. Refer to page B389 for details.
5. Recommended quantity of grease is about 50% of ball nut's internal space. See page D16 for details.

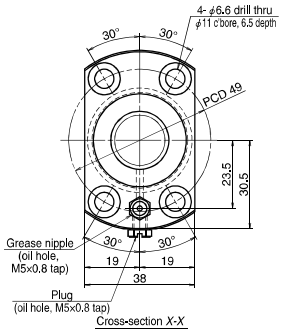
NSK

Screw shaft ø20

Lead 40, 60

Unit: mm





Ball screw specification	
Preload type	Oversize ball preload (P-preload)
Ball diameter/screw shaft root diameter	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)	For opposite to drive side (Simple)
WBK15-01B (low-profile, square)	WBK15-01B (low-profile, square)	WBK15S-01B (low-profile, square)
WBK15-11 (round)	WBK15-11 (round)	

Unit: mm

Ball screw No.	Screw shaft diameter d	Lead l	Basic load ratings (N) Dynamic C_a	Basic load ratings (N) Static C_{0a}	Stroke Nominal	Stroke Max.	Nut length L	Screw shaft dimensions L_t	L_a	L_o	L_1
PSS2040N1D0658	20	40	5 900	11 700	400	455	92	553	585	658	32
PSS2040N1D0758					500	555		653	685	758	
PSS2040N1D0858					600	655		753	785	858	
PSS2040N1D0958					700	755		853	885	958	
PSS2040N1D1085					800	853		953	985	1 085	
PSS2040N1D1285					1 000	1 053		1 153	1 185	1 285	
PSS2040N1D1485					1 200	1 253		1 353	1 385	1 485	
PSS2040N1D1885					1 600	1 653		1 753	1 785	1 885	
PSS2040N1D2285					2 000	2 053		2 153	2 185	2 285	
PSS2060N1D0708		60	5 900	11 700	400	458	129	593	635	708	42
PSS2060N1D0808					500	558		693	735	808	
PSS2060N1D0908					600	658		793	835	908	
PSS2060N1D1008					700	758		893	935	1 008	
PSS2060N1D1135					800	856		993	1 035	1 135	
PSS2060N1D1335					1 000	1 056		1 193	1 235	1 335	
PSS2060N1D1535					1 200	1 256		1 393	1 435	1 535	
PSS2060N1D1935					1 600	1 656		1 793	1 835	1 935	
PSS2060N1D2335					2 000	2 056		2 193	2 235	2 335	

Left shaft end (opposite driven side)	Lead accuracy Target value T	Lead accuracy Error e_p	Lead accuracy Variation v_u	Shaft run-out C	Dynamic preload torque (N·cm) *1	Mass (kg)	Permissible rotational speed (min⁻¹) *2 Fixed-Simple	Permissible rotational speed (min⁻¹) *2 Fixed-Fixed	Internal spatial volume of nut (cm³)	Standard volume of grease replenishing (cm³)
II	0	0.030	0.023	0.075	2.2 – 12.8	2.1	5 000	—	5.3	2.7
II		0.035	0.025	0.075	2.2 – 12.8	2.4	5 000	—		
II		0.035	0.025	0.095	2.2 – 12.8	2.6	5 000	—		
II		0.040	0.027	0.095	1.8 – 14.8	2.8	3 940	—		
I		0.040	0.027	0.120	1.8 – 14.8	3.1	3 120	4 190		
I		0.046	0.030	0.160	1.8 – 14.8	3.6	2 100	2 850		
I		0.054	0.035	0.160	1.8 – 14.8	4.1	1 500	2 070		
I		0.065	0.040	0.200	1.8 – 14.8	5.1	880	1 230		
I		0.077	0.046	0.240	1.8 – 14.8	6.0	580	810		
II		0.030	0.023	0.075	2.7 – 13.8	2.4	5 000	—	7.0	3.5
II		0.035	0.025	0.095	2.7 – 13.8	2.6	5 000	—		
II		0.035	0.025	0.095	2.7 – 13.8	2.9	4 830	—		
II		0.040	0.027	0.120	1.8 – 14.8	3.1	3 740	—		
I		0.040	0.027	0.120	1.8 – 14.8	3.4	2 980	3 920		
I		0.046	0.030	0.160	1.8 – 14.8	3.9	2 020	2 700		
I		0.054	0.035	0.160	1.8 – 14.8	4.4	1 460	1 970		
I		0.065	0.040	0.200	1.8 – 14.8	5.4	860	1 180		
I		0.077	0.046	0.240	1.8 – 14.8	6.3	570	790		

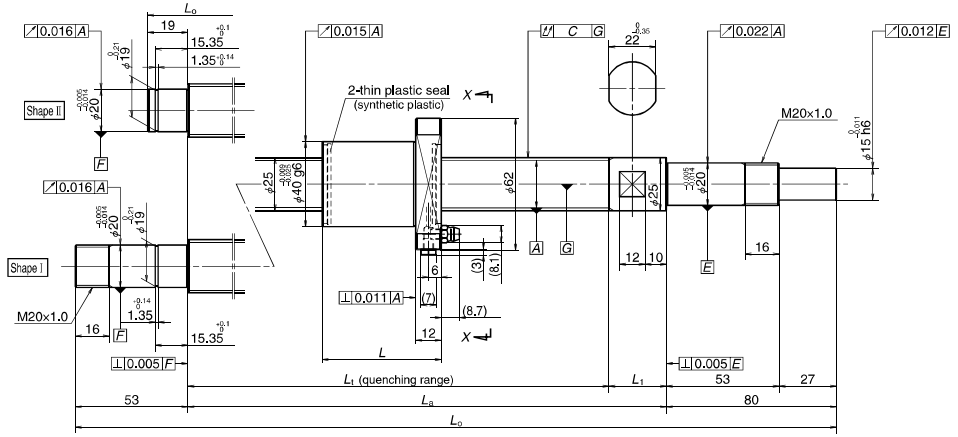
Notes: 1. Indicates ball screw preload control value. Approximately 2.0 N·cm of torque is added due to thin plastic seals.
2. Contact NSK if permissible rotational speed is to be exceeded.
3. Service temperature range is 0 to 80°C.
4. Use of NSK support unit is recommended. Refer to page B389 for details.
5. Recommended quantity of grease is about 50% of ball nut's internal space. See page D16 for details.

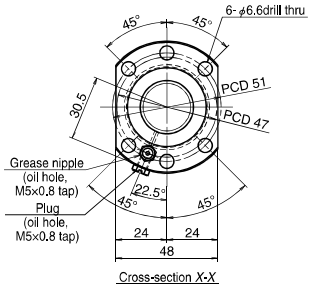
NSK

Screw shaft ø25

Lead 5, 10

Unit: mm





Ball screw specification	
Preload type	Oversize ball preload (P-preload)
Ball diameter/screw shaft root diameter	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)	For opposite to drive side (Simple)
WBK20-01 (square)	WBK20-01 (square)	WBK20S-01 (square)
WBK20-11 (round)	WBK20-11 (round)	

Unit: mm

Ball screw No.	Screw shaft diameter d	Lead l	Basic load ratings (N) Dynamic C_a	Basic load ratings (N) Static C_{0a}	Stroke Nominal	Stroke Max.	Nut length L	Screw shaft dimensions L_t	L_a	L_o	L_1
PSS2505N1D0349	25	5	9 760	23 600	150	185	32	223	250	349	27
PSS2505N1D0399					200	235		273	300	399	
PSS2505N1D0499					300	335		373	400	499	
PSS2505N1D0599					400	435		473	500	599	
PSS2505N1D0699					500	535		573	600	699	
PSS2505N1D0899					700	735		773	800	899	
PSS2505N1D0999					800	835		873	900	999	
PSS2505N1D1233					1 000	1 027		1 073	1 100	1 233	
PSS2510N1D0549		10	12 800	32 300	300	361	56	423	450	549	27
PSS2510N1D0649					400	461		523	550	649	
PSS2510N1D0749					500	561		623	650	749	
PSS2510N1D0849					600	661		723	750	849	
PSS2510N1D0949					700	761		823	850	949	
PSS2510N1D1049					800	861		923	950	1 049	
PSS2510N1D1283					1 000	1 053		1 123	1 150	1 283	
PSS2510N1D1883					1 600	1 653		1 723	1 750	1 883	

Left shaft end (opposite driven side)	Lead accuracy Target value T	Error e_p	Variation v_u	Shaft run-out C	Dynamic preload torque (N·cm) *1	Mass (kg)	Permissible rotational speed (min⁻¹) *2 Fixed-Simple	Fixed-Fixed	Internal spatial volume of nut (cm^3)	Standard volume of grease replenishing (cm^3)
Ⅱ	0	0.023	0.018	0.035	1.2 – 9.3	1.5	5 000	—	4.4	2.2
Ⅱ		0.023	0.018	0.035	1.2 – 9.3	1.6	5 000	—		
Ⅱ		0.025	0.020	0.040	1.2 – 9.3	2.0	5 000	—		
Ⅱ		0.027	0.020	0.045	1.2 – 9.3	2.3	5 000	—		
Ⅱ		0.030	0.023	0.055	0.8 – 10.8	2.7	5 000	—		
Ⅱ		0.035	0.025	0.065	0.8 – 10.8	3.4	5 000	—		
Ⅱ		0.040	0.027	0.065	0.8 – 10.8	3.7	4 490	—		
Ⅰ		0.046	0.030	0.080	0.8 – 13.8	4.5	2 960	4 060		
Ⅱ		0.027	0.020	0.045	3.1 – 11.8	2.4	5 000	—	4.7	2.4
Ⅱ		0.030	0.023	0.055	2.2 – 12.8	2.7	5 000	—		
Ⅱ		0.030	0.023	0.055	2.2 – 12.8	3.1	5 000	—		
Ⅱ		0.035	0.025	0.065	2.2 – 12.8	3.5	5 000	—		
Ⅱ		0.040	0.027	0.065	2.2 – 12.8	3.8	5 000	—		
Ⅱ		0.040	0.027	0.080	2.2 – 12.8	4.2	4 120	—		
Ⅰ		0.046	0.030	0.100	1.8 – 14.8	5.0	2 760	3 790		
Ⅰ		0.065	0.040	0.130	1.8 – 14.8	7.2	1 150	1 620		

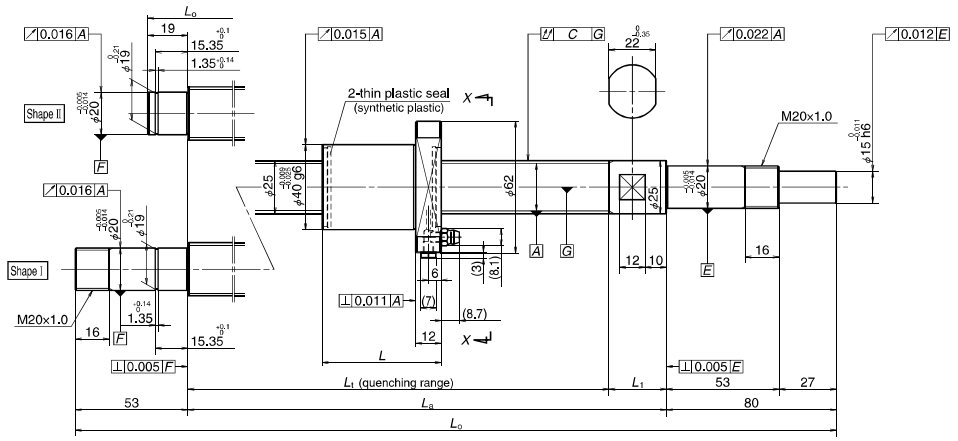
Notes: 1. Indicates ball screw preload control value. Approximately 2.0 N·cm of torque is added due to thin plastic seals.
2. Contact NSK if permissible rotational speed is to be exceeded.
3. Service temperature range is 0 to 80°C.
4. Use of NSK support unit is recommended. Refer to page B389 for details.
5. Recommended quantity of grease is about 50% of ball nut's internal space. See page D16 for details.

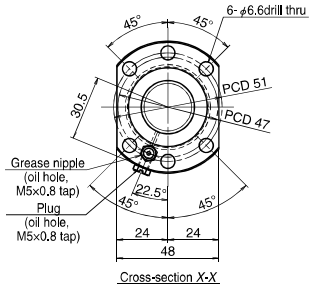
NSK

Screw shaft ø25

Lead 20, 25

Unit: mm





Ball screw specification	
Preload type	Oversize ball preload (P-preload)
Ball diameter/screw shaft root diameter	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)	For opposite to drive side (Simple)
WBK20-01 (square)	WBK20-01 (square)	WBK20S-01 (square)
WBK20-11 (round)	WBK20-11 (round)	

Unit: mm

Ball screw No.	Screw shaft diameter d	Lead l	Basic load ratings (N) Dynamic Ca	Basic load ratings (N) Static C0a	Stroke Nominal	Stroke Max.	Nut length L	Screw shaft dimensions Lt	La	Lo	L1
PSS2520N1D0729	25	20	6 560	14 600	500	544	54	604	630	729	26
PSS2520N1D0829					600	644		704	730	829	
PSS2520N1D0929					700	744		804	830	929	
PSS2520N1D1029					800	844		904	930	1 029	
PSS2520N1D1263					1 000	1 036		1 104	1 130	1 263	
PSS2520N1D1463					1 200	1 236		1 304	1 330	1 463	
PSS2520N1D1863					1 600	1 636		1 704	1 730	1 863	
PSS2520N1D2263					2 000	2 036		2 104	2 130	2 263	
PSS2525N1D0779		25	6 560	14 600	500	581	63	650	680	779	30
PSS2525N1D0879					600	681		750	780	879	
PSS2525N1D0979					700	781		850	880	979	
PSS2525N1D1079					800	881		950	980	1 079	
PSS2525N1D1313					1 000	1 073		1 150	1 180	1 313	
PSS2525N1D1513					1 200	1 273		1 350	1 380	1 513	
PSS2525N1D1913					1 600	1 673		1 750	1 780	1 913	
PSS2525N1D2313					2 000	2 073		2 150	2 180	2 313	

Left shaft end (opposite driven side)	Lead accuracy Target value T	Lead accuracy Error ep	Lead accuracy Variation vu	Shaft run-out C	Dynamic preload torque (N·cm) *1	Mass (kg)	Permissible rotational speed (min⁻¹) *2 Fixed-Simple	Permissible rotational speed (min⁻¹) *2 Fixed-Fixed	Internal spatial volume of nut (cm³)	Standard volume of grease replenishing (cm³)
Ⅱ	0	0.030	0.023	0.055	2.2 – 12.8	3.1	5 000	—	3.9	2.0
Ⅱ		0.035	0.025	0.065	2.2 – 12.8	3.4	5 000	—		
Ⅱ		0.040	0.027	0.065	2.2 – 12.8	3.8	5 000	—		
Ⅱ		0.040	0.027	0.080	2.2 – 12.8	4.2	4 280	—		
Ⅰ		0.046	0.030	0.100	1.8 – 14.8	5.0	2 850	3 920		
Ⅰ		0.054	0.035	0.100	1.8 – 14.8	5.8	2 030	2 820		
Ⅰ		0.065	0.040	0.130	1.8 – 14.8	7.3	1 180	1 650		
Ⅰ		0.077	0.046	0.170	1.8 – 14.8	8.8	770	1 080		
Ⅱ		0.035	0.025	0.055	2.7 – 13.8	3.3	5 000	—	4.3	2.2
Ⅱ		0.035	0.025	0.065	2.7 – 13.8	3.7	5 000	—		
Ⅱ		0.040	0.027	0.065	2.7 – 13.8	4.1	4 910	—		
Ⅱ		0.040	0.027	0.080	2.7 – 13.8	4.4	3 910	—		
Ⅰ		0.046	0.030	0.100	1.8 – 14.8	5.3	2 640	3 620		
Ⅰ		0.054	0.035	0.100	1.8 – 14.8	6.0	1 900	2 630		
Ⅰ		0.065	0.040	0.130	1.8 – 14.8	7.5	1 120	1 570		
Ⅰ		0.077	0.046	0.170	1.8 – 14.8	9.1	740	1 040		

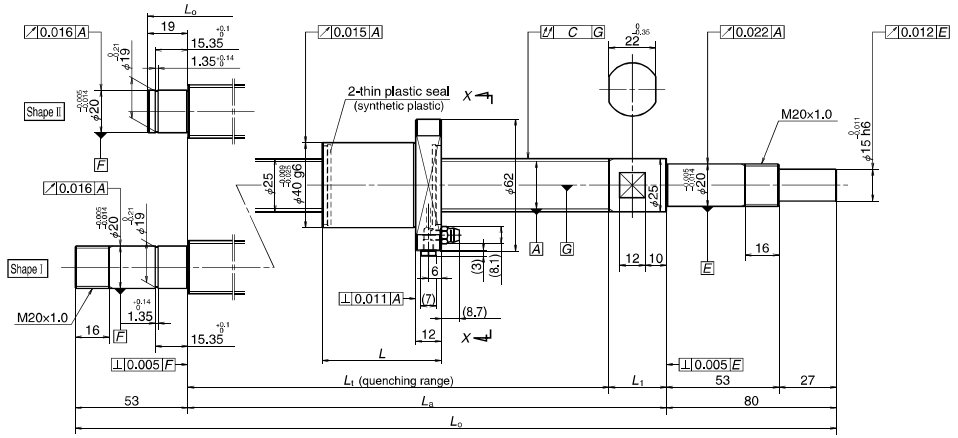
Notes: 1. Indicates ball screw preload control value. Approximately 2.0 N·cm of torque is added due to thin plastic seals.
2. Contact NSK if permissible rotational speed is to be exceeded.
3. Service temperature range is 0 to 80°C.
4. Use of NSK support unit is recommended. Refer to page B389 for details.
5. Recommended quantity of grease is about 50% of ball nut's internal space. See page D16 for details.

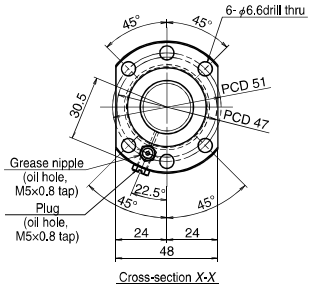
NSK

Screw shaft ø25

Lead 30, 50

Unit: mm





Ball screw specification	
Preload type	Oversize ball preload (P-preload)
Ball diameter/screw shaft root diameter	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)	For opposite to drive side (Simple)
WBK20-01 (square)	WBK20-01 (square)	WBK20S-01 (square)
WBK20-11 (round)	WBK20-11 (round)	

Unit: mm

Ball screw No.	Screw shaft diameter *d*	Lead *l*	Basic load ratings (N) Dynamic C_a	Basic load ratings (N) Static C_{0a}	Stroke Nominal	Stroke Max.	Nut length *L*	Screw shaft dimensions L_t	L_a	L_o	L_1
PSS2530N1D0779	25	30	6 560	14 600	500	570	74	650	680	779	30
PSS2530N1D0879					600	670		750	780	879	
PSS2530N1D0979					700	770		850	880	979	
PSS2530N1D1079					800	870		950	980	1 079	
PSS2530N1D1313					1 000	1 062		1 150	1 180	1 313	
PSS2530N1D1513					1 200	1 262		1 350	1 380	1 513	
PSS2530N1D1913					1 600	1 662		1 750	1 780	1 913	
PSS2530N1D2313					2 000	2 062		2 150	2 180	2 313	
PSS2550N1D0829		50	6 560	14 600	500	570	114	690	730	829	40
PSS2550N1D0929					600	670		790	830	929	
PSS2550N1D1029					700	770		890	930	1 029	
PSS2550N1D1129					800	870		990	1 030	1 129	
PSS2550N1D1363					1 000	1 062		1 190	1 230	1 363	
PSS2550N1D1563					1 200	1 262		1 390	1 430	1 563	
PSS2550N1D1963					1 600	1 662		1 790	1 830	1 963	
PSS2550N1D2363					2 000	2 062		2 190	2 230	2 363	

Left shaft end (opposite driven side)	Lead accuracy Target value *T*	Lead accuracy Error e_p	Lead accuracy Variation v_u	Shaft run-out *C*	Dynamic preload torque (N·cm) *1	Mass (kg)	Permissible rotational speed (min⁻¹) *2 Fixed-Simple	Permissible rotational speed (min⁻¹) *2 Fixed-Fixed	Internal spatial volume of nut (cm^3)	Standard volume of grease replenishing (cm^3)
Ⅱ	0	0.035	0.025	0.055	2.7 – 13.8	3.4	5 000	—	5.5	2.8
Ⅱ		0.035	0.025	0.065	2.7 – 13.8	3.7	5 000	—		
Ⅱ		0.040	0.027	0.065	2.7 – 13.8	4.1	4 980	—		
Ⅱ		0.040	0.027	0.080	2.7 – 13.8	4.5	3 960	—		
Ⅰ		0.046	0.030	0.100	1.8 – 14.8	5.3	2 670	3 650		
Ⅰ		0.054	0.035	0.100	1.8 – 14.8	6.1	1 920	2 650		
Ⅰ		0.065	0.040	0.130	1.8 – 14.8	7.6	1 130	1 580		
Ⅰ		0.077	0.046	0.170	1.8 – 14.8	9.1	740	1 040		
Ⅱ		0.035	0.025	0.065	5.4 – 17.6	3.8	5 000	—	7.7	3.9
Ⅱ		0.035	0.025	0.065	5.4 – 17.6	4.1	5 000	—		
Ⅱ		0.040	0.027	0.080	5.4 – 17.6	4.5	4 750	—		
Ⅱ		0.040	0.027	0.080	5.4 – 17.6	4.9	3 790	—		
Ⅰ		0.046	0.030	0.100	4.1 – 19.6	5.8	2 570	3 470		
Ⅰ		0.054	0.035	0.100	4.1 – 19.6	6.5	1 860	2 540		
Ⅰ		0.065	0.040	0.130	4.1 – 19.6	8.0	1 100	1 520		
Ⅰ		0.077	0.046	0.170	4.1 – 19.6	9.6	730	1 020		

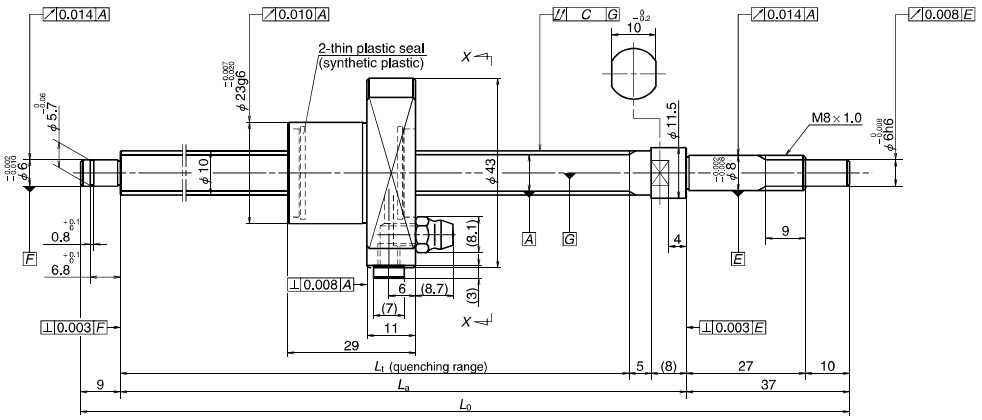
Notes: 1. Indicates ball screw preload control value. Approximately 2.0 N·cm of torque is added due to thin plastic seals.
2. Contact NSK if permissible rotational speed is to be exceeded.
3. Service temperature range is 0 to 80°C.
4. Use of NSK support unit is recommended. Refer to page B389 for details.
5. Recommended quantity of grease is about 50% of ball nut's internal space. See page D16 for details.

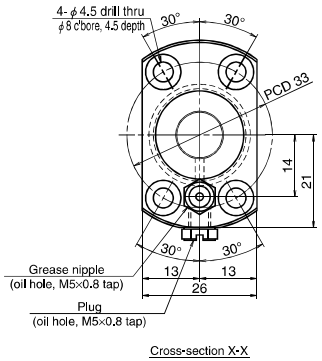
NSK

Screw shaft ø10

Lead 5

Unit: mm





Ball screw specification	
Preload type	Oversize ball preload (P-preload)
Ball diameter/screw shaft root diameter	2.000 / 8.2
Ball circle dia.	10.3
Accuracy grade/axial play	C3 / 0
Factory-packed grease	NSK grease LR2

Recommended support unit

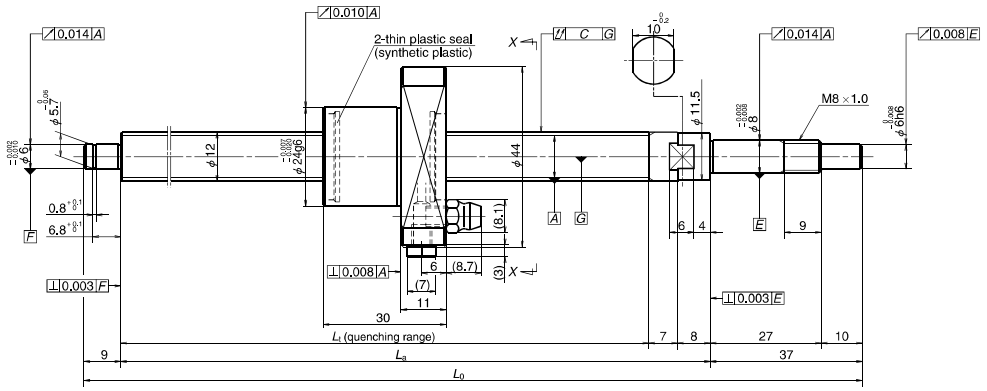
For drive side (Fixed)	For opposite to drive side (Simple)
WBK08-01C (square, clean)	WBK08S-01C (square, clean)
WBK08-11C (round, clean)	WBK08S-01B (low-profile, square)
WBK08-01B (low-profile, square)	
WBK08-11 (round)	

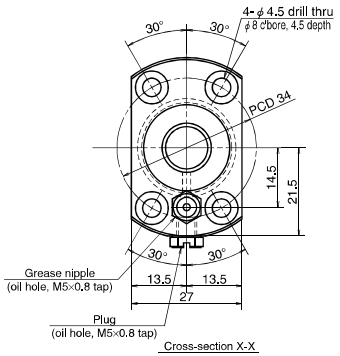
Unit: mm

Ball screw No.	Screw shaft diameter d	Lead l	Basic load ratings (N) Dynamic C_a	Basic load ratings (N) Static C_{0a}	Stroke Nominal	Stroke Max.	Screw shaft dimensions L_t	Screw shaft dimensions L_a	Screw shaft dimensions L_0
USS1005N1D0221	10	5	2 930	4 790	100	133	162	175	221
USS1005N1D0321					200	233	262	275	321
USS1005N1D0521					400	433	462	475	521

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

Notes: 1. Indicates ball screw preload control value. Approximately 0.5 N·cm of torque is added due to thin plastic seals.
2. Contact NSK if permissible rotational speed is to be exceeded.
3. Service temperature range is 0 to 80°C.
4. Use of NSK support unit is recommended. See page B389 for details.





NSK

Screw shaft ø12

Lead 5

Unit: mm

Ball screw specification	
Preload type	Oversize ball preload (P-preload)
Ball diameter/screw shaft root diameter	2.000 / 10.2
Ball circle dia.	12.3
Accuracy grade/axial play	C3 / 0
Factory-packed grease	NSK grease LR2

Recommended support unit

For drive side (Fixed)	For opposite to drive side (Simple)
WBK08-01C (square, clean)	WBK08S-01C (square, clean)
WBK08-11C (round, clean)	WBK08S-01B (low-profile, square)
WBK08-01B (low-profile, square)	
WBK08-11 (round)	

Unit: mm

Ball screw No.	Screw shaft diameter d	Lead l	Basic load ratings (N) Dynamic C_a	Basic load ratings (N) Static C_{0a}	Stroke Nominal	Stroke Max.	Screw shaft dimensions L_t	L_a	L_o
USS1205N1D0221	12	5	3 200	5 860	100	130	160	175	221
USS1205N1D0321					200	230	260	275	321
USS1205N1D0621					500	530	560	575	621

Lead accuracy Target value T	Error e_p	Variation V_u	Shaft run-out C	Dynamic preload torque (N·cm) *1	Mass (kg)	Permissible rotational speed (min⁻¹) *2 Fixed-Simple	Internal spatial volume of nut (cm^3)	Standard volume of grease replenishing (cm^3)
0	0.010	0.008	0.035	0.2–1.8	0.3	5 000	1.0	0.5
	0.012	0.008	0.045	0.2–2.0	0.3			
	0.016	0.012	0.070	0.2–3.0	0.7			

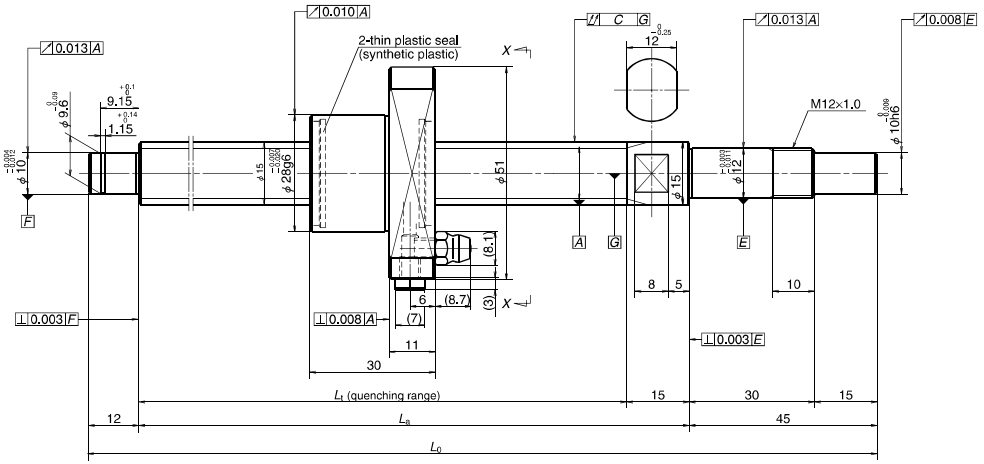
Notes: 1. Indicates ball screw preload control value. Approximately 0.5 N·cm of torque is added due to thin plastic seals.
2. Contact NSK if permissible rotational speed is to be exceeded.
3. Service temperature range is 0 to 80°C.
4. Use of NSK support unit is recommended. See page B389 for details.

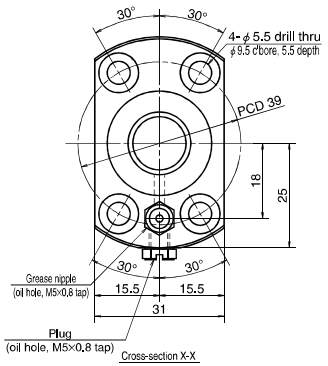
NSK

Screw shaft ø15

Lead 5

Unit: mm





Ball screw specification	
Preload type	Oversize ball preload (P-preload)
Ball diameter/screw shaft root diameter	2.778 / 12.6
Ball circle dia.	15.5
Accuracy grade/axial play	C3 / 0
Factory-packed grease	NSK grease LR2

Recommended support unit

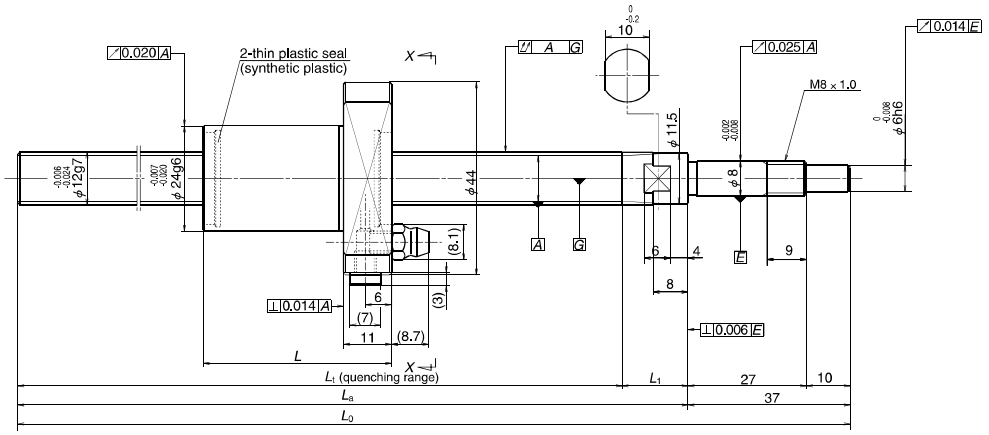
For drive side (Fixed)	For opposite to drive side (Simple)
WBK12-01C (square, clean)	WBK12S-01C (square, clean)
WBK12-11C (round, clean)	WBK12-01B (low-profile, square)
WBK12S-01B (low-profile, square)	
WBK12-11 (round)	

Unit: mm

Ball screw No.	Screw shaft diameter d	Lead l	Basic load ratings (N) Dynamic C_a	Basic load ratings (N) Static C_{0a}	Stroke Nominal	Stroke Max.	Screw shaft dimensions L_t	L_a	L_o
USS1505N1D0261	15	5	5 460	10 200	100	159	189	204	261
USS1505N1D0361					200	259	289	304	361
USS1505N1D0561					400	459	489	504	561
USS1505N1D0761					600	653	689	704	761

Lead accuracy Target value T	Error e_p	Variation V_u	Shaft run-out C	Dynamic preload torque (N·cm) *1	Mass (kg)	Permissible rotational speed (min⁻¹) *2 Fixed-Simple	Internal spatial volume of nut (cm^3)	Standard volume of grease replenishing (cm^3)
0	0.010	0.008	0.025	0.2–5.0	0.5	5 000	2.0	1.0
	0.012	0.008	0.035	0.2–5.0	0.6	5 000		
	0.015	0.010	0.045	0.2–6.0	0.9	5 000		
	0.018	0.013	0.060	0.2–8.0	1.1	4 130		

Notes: 1. Indicates ball screw preload control value. Approximately 0.5 N·cm of torque is added due to thin plastic seals.
2. Contact NSK if permissible rotational speed is to be exceeded.
3. Service temperature range is 0 to 80°C.
4. Use of NSK support unit is recommended. See page B389 for details.



Ball screw No.	Screw shaft diameter	Lead	Basic load ratings (N)		Stroke		Nut length	Screw shaft dimensions			
			Dynamic	Static	Nominal	Max.					
	d	l	C_a	C_{0a}			L	L_t	L_a	L_o	L_1
FSS1210N1D0400	12	10	3 200	5 860	250	287	43	348	363	400	15
FSS1210N1D0600					450	487		548	563	600	
FSS1210N1D0900					750	787		848	863	900	

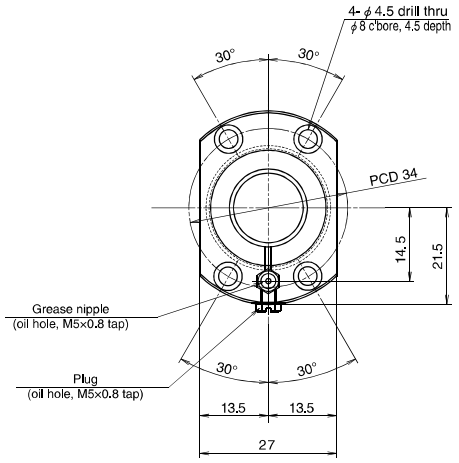
Notes: 1. Indicates ball screw preload control value. Approximately 2.0 N·cm of torque is added due to thin plastic seals.
2. Service temperature range is 0 to 80°C.
3. Use of NSK support unit is recommended. See page B389 for details.

NSK

Screw shaft ø12

Lead 10

Unit: mm



Ball screw specification	
Ball diameter/screw shaft root diameter	2.000 / 10.2
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 (low-profile, square)	WBK12SF-01B (low-profile, square)

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_{300}	C	(N·cm)	(kg)		(cm³)	(cm³)
0	0.120	0.052	0.080	–	0.5	5 000	1.0	0.5
	0.195		0.120		0.7	5 000		
	0.310		0.180		1.0	2 300		

4. The stroke and permissible rotational speed shown in the table are the values when the support unit recommended by NSK is used and Fixed-Supported (ball screw mounting method) is selected.
5. Permissible rotational speed varies when using cut screw shaft. It is necessary to calculate two items below, and whichever smaller is the permissible rotational speed.
*Critical speed which is the resonance vibration of the shaft (page B47).
*Maximum rotational speed 5 000 min⁻¹

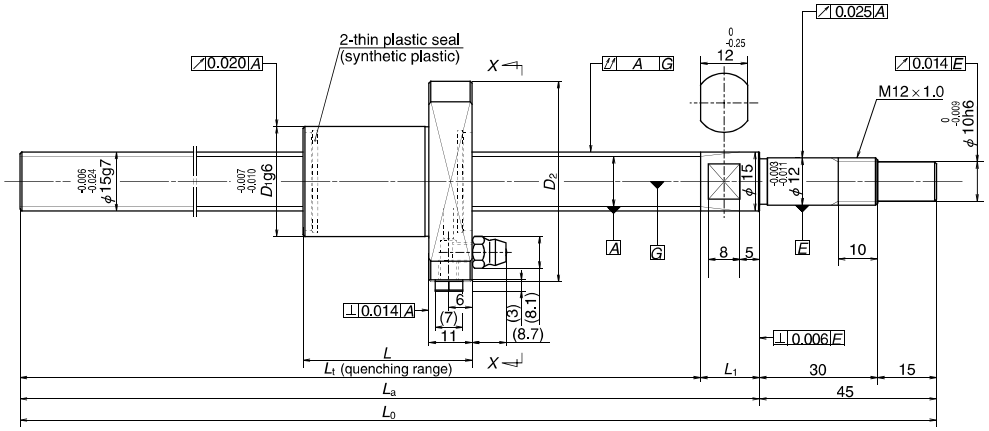
FSS

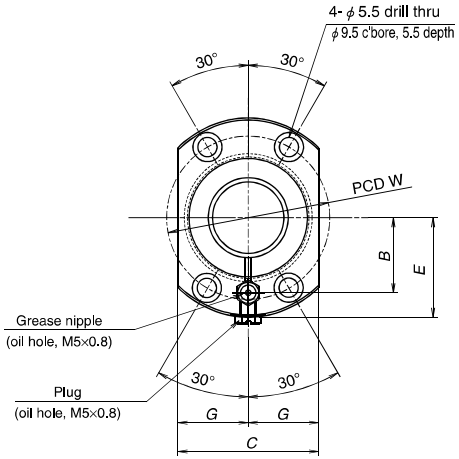
NSK

Screw shaft ø15

Lead 10, 20

Unit: mm





Ball screw specification		
Lead	10	20
Ball diameter/screw shaft root diameter	2.778 / 12.6	3.175 / 12.2
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 (low-profile, square)	WBK15SF-01B (low-profile, square)

Unit: mm

Ball screw No.	Screw shaft diameter d	Lead l	Basic load ratings (N) Dynamic C_a	Basic load ratings (N) Static C_{0a}	Stroke Nominal	Stroke Max.	Screw shaft dimensions L_1	L_a	L_0	L_1	Lead accuracy Target value T	Error e_p	Variation V_{300}
FSS1510N1D0500	15	10	5 460	10 200	350	379	440	455	500	15	0	0.155	0.052
FSS1510N1D1000					850	879	940	955	1 000			0.310	
FSS1510N1D1450					1 300	1 329	1 390	1 405	1 450			0.490	
FSS1520N1D0500		20	5 070	8 730	350	368	437	455	500	18		0.155	
FSS1520N1D1000					850	868	937	955	1 000			0.310	
FSS1520N1D1450					1 300	1 318	1 387	1 405	1 450			0.490	

Nut dimensions L	D_1	D_2	W	B	C	E	G	Shaft run-out C	Dynamic preload torque (N·cm)	Mass (kg)	Permissible rotational speed (min⁻¹) *2 Fixed-Simple	Internal spatial volume of nut (cm^3)	Standard volume of grease replenishing (cm^3)
43	28	51	39	18	31	25	15.5	0.070	–	0.9	5 000	2.0	1.0
								0.125		1.7	2 300		
								0.200		2.3	1 020		
51	32	55	43	20	33	27	16.5	0.070		1.0	5 000	2.8	1.4
								0.125		1.7	2 260		
								0.200		2.3	1 000		

Notes: 1. Indicates ball screw preload control value. Approximately 2.0 N·cm of torque is added due to thin plastic seals.
2. Service temperature range is 0 to 80°C.
3. Use of NSK support unit is recommended. See page B389 for details.
4. The stroke and permissible rotational speed shown in the table are the values when the support unit recommended by NSK is used and Fixed-Supported (ball screw mounting method) is selected.
5. Permissible rotational speed varies when using cut screw shaft. It is necessary to calculate two items below, and whichever smaller is the permissible rotational speed.
*Critical speed which is the resonance vibration of the shaft (page B47).
*Maximum rotational speed 5 000 min^{-1}

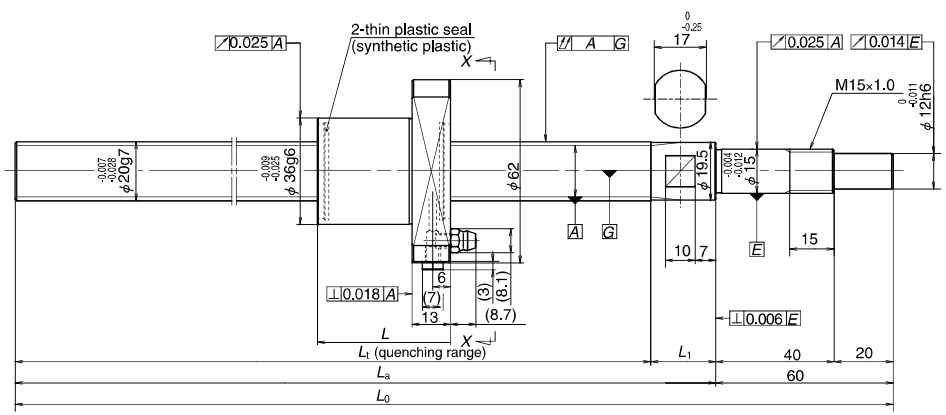
FSS

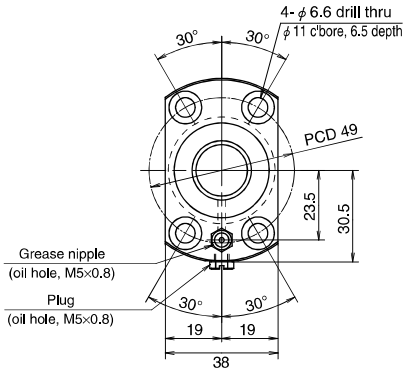
NSK

Screw shaft ø20

Lead 10, 20

Unit: mm





Ball screw specification	
Ball diameter/screw shaft root diameter	3.175 / 17.2
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 (low-profile, square)	WBK20SF-01B (low-profile, square)

Unit: mm

Ball screw No.	Screw shaft diameter d	Lead l	Basic load ratings (N) Dynamic C_a	Basic load ratings (N) Static C_{0a}	Stroke Nominal	Stroke Max.	Nut length L	Screw shaft dimensions L_t	L_a	L_0	L_1
FSS2010N1D0600	20	10	8 790	18 500	400	451	45	518	540	600	22
FSS2010N1D1000					800	851		918	940	1 000	
FSS2010N1D1450					1 250	1 301		1 368	1 390	1 450	
FSS2020N1D0600		20	5 900	11 700	400	442	54	518	540	600	
FSS2020N1D1000					800	842		918	940	1 000	
FSS2020N1D1450					1 250	1 292		1 368	1 390	1 450	

Lead accuracy Target value T	Error e_p	Variation V_{300}	Shaft run-out C	Dynamic preload torque (N·cm)	Mass (kg)	Permissible rotational speed (min^{-1}) *2 Fixed-Simple	Internal spatial volume of nut (cm^3)	Standard volume of grease replenishing (cm^3)
0	0.195	0.052	0.085	–	1.7	5 000	3.2	1.6
	0.310		0.125		2.6	3 310		
	0.490		0.200		3.6	1 450		
	0.195		0.085		1.8	5 000		
	0.310		0.125		2.7	3 350		
	0.490		0.200		3.8	1 460		

Notes: 1. Indicates ball screw preload control value. Approximately 2.0 N·cm of torque is added due to thin plastic seals.
2. Service temperature range is 0 to 80°C.
3. Use of NSK support unit is recommended. See page B389 for details.
4. The stroke and permissible rotational speed shown in the table are the values when the support unit recommended by NSK is used and Fixed-Supported (ball screw mounting method) is selected.
5. Permissible rotational speed varies when using cut screw shaft. It is necessary to calculate two items below, and whichever smaller is the permissible rotational speed.
*Critical speed which is the resonance vibration of the shaft (page B47).
*Maximum rotational speed 5 000 min^{-1}

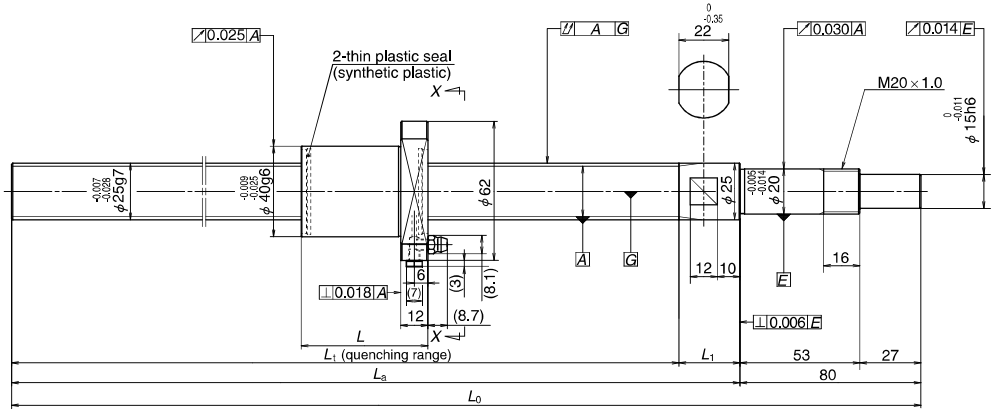
FSS

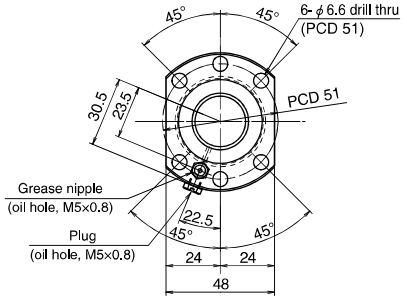
NSK

Screw shaft ø25

Lead 10, 20, 25

Unit: mm





Ball screw specification	
Ball diameter/screw shaft root diameter	3.175 / 22.2
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)	WBK25SF-01 (square)

Unit: mm

Ball screw No.	Screw shaft diameter d	Lead l	Basic load ratings (N) Dynamic C_a	Basic load ratings (N) Static C_{0a}	Stroke Nominal	Stroke Max.	Nut length L	Screw shaft dimensions L_t	L_a	L_o	L_1
FSS2510N1D0600	25	10	12 800	32 300	400	415	56	493	520	600	27
FSS2510N1D1000					800	815		893	920	1 000	
FSS2510N1D1450					1 250	1 265		1 343	1 370	1 450	
FSS2520N1D0600		20	6 560	14 600	400	418	54	494	520	600	26
FSS2520N1D1000					800	818		894	920	1 000	
FSS2520N1D1450					1 250	1 268		1 344	1 370	1 450	
FSS2525N1D0600		25			400	405	63	490	520	600	30
FSS2525N1D1000					800	805		890	920	1 000	
FSS2525N1D1450					1 250	1 255		1 340	1 370	1 450	

Lead accuracy Target value T	Error e_p	Variation V_{300}	Shaft run-out C	Dynamic preload torque (N·cm)	Mass (kg)	Permissible rotational speed (min⁻¹) *2 Fixed-Simple	Internal spatial volume of nut (cm³)	Standard volume of grease replenishing (cm³)
0	0.155	0.052	0.065	–	2.6	5 000	4.7	2.4
	0.310		0.090		4.0	4 590		
	0.490		0.130		5.8	1 970		
	0.155		0.065		2.6	5 000	3.9	2.0
	0.310		0.090		4.0	4 570		
	0.490		0.130		5.8	1 960		
	0.155		0.065		2.6	5 000	4.3	2.2
	0.310		0.090		4.1	4 660		
	0.490		0.130		5.8	1 990		

Notes: 1. Indicates ball screw preload control value. Approximately 2.0 N·cm of torque is added due to thin plastic seals.
2. Service temperature range is 0 to 80°C.
3. Use of NSK support unit is recommended. See page B389 for details.
4. The stroke and permissible rotational speed shown in the table are the values when the support unit recommended by NSK is used and Fixed-Supported (ball screw mounting method) is selected.
5. Permissible rotational speed varies when using cut screw shaft. It is necessary to calculate two items below, and whichever smaller is the permissible rotational speed.
*Critical speed which is the resonance vibration of the shaft (page B47).
*Maximum rotational speed 5 000 min⁻¹