

B-3-3.4 BSL™ Type for Miniature Lathes

1. Features

- Prompt delivery
Screw shaft configuration and ball nut shape are standardized for prompt delivery.
- High speed and low noise
Adoption of end-deflector recirculation system realized high-speed operation with low noise.
- Excellent dust resistance
Thin plastic seal and specially designed ball grooves prevent the entry of foreign matters.

2. Specifications

(1) Ball recirculation system

End-deflector recirculation system has features of high-speed, low-noise operation and compact ball nut. The structure of recirculation system is shown in Fig.1.

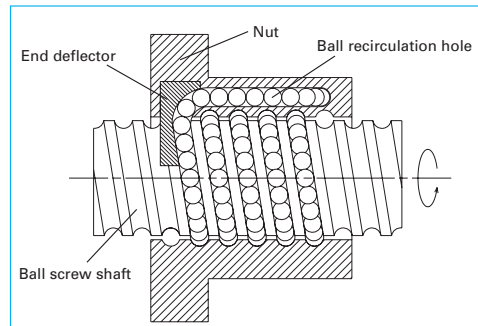


Fig. 1 Structure of end-deflector recirculation system

(2) Accuracy grade and axial play

The available standard accuracy grade and axial play are as follows. Please consult NSK for other grades.

Table 1 Accuracy grade and axial play

Accuracy grade	C5
Axial play	0 mm (preloaded)

(3) Allowable d·n value and the criterion of maximum rotational speed

Allowable d·n value and the criterion of maximum rotational speed are shown below. Please consult NSK if the rotational speed exceeds the permissible range below.

Allowable d·n value: 180 000 or less
 Criterion of maximum rotational speed : 4 000 min⁻¹

Note: Please also review the critical speed. See "Technical Description: Permissible Rotational Speed" (page B47) for details.

(4) Options

Optional NSK K1 lubrication unit, molded from resin and impregnated with lubrication oil, supplies fresh oil onto ball rolling surface, ensuring long-term, maintenance-free operation. Please consult NSK when using NSK K1.

3. Design Precautions

When designing the screw shaft end, one end of the shaft must meet either one of the following conditions. If not, we cannot install the ball nut on the screw shaft.

- Cut the ball groove through to the shaft end.
- The diameters of bearing journals and the gear or pulley seat must be less than the root diameter of ball groove "dr" specified on the dimension table.

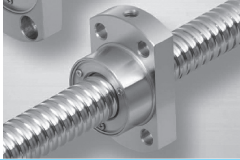
Special bearings which have higher-load carrying capacity are available.

For general precautions regarding ball screws, refer to "Design Precautions" (page B83) and "Handling Precautions" (page B103).

4. Product categories

The BSL type has a model as follows.

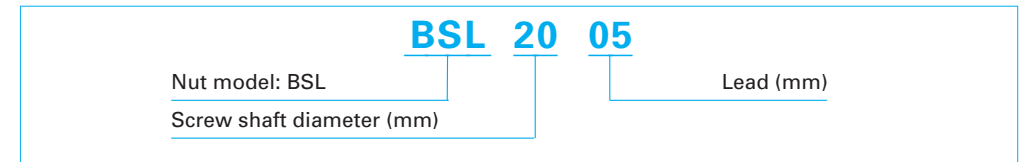
Table 2 BSL type product categories

Nut model	Shape	Flange shape	Preload system
BSL		Circular III	P-Preload (Slight preload)

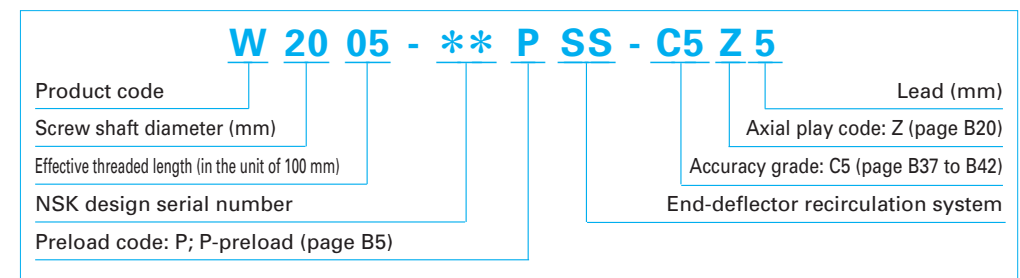
5. Structure of model number and reference number

The followings describe the structure of "Model number" and "Reference number for ball screw".

◇Model number



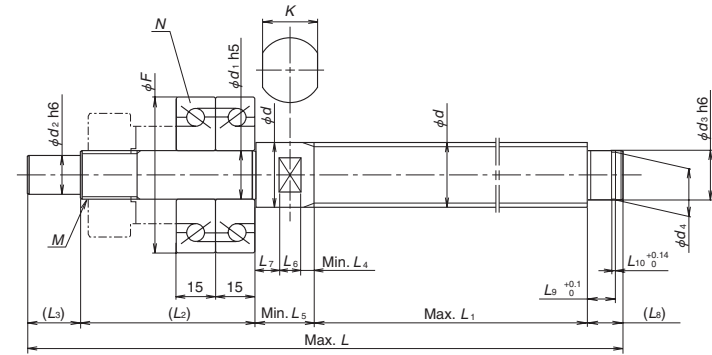
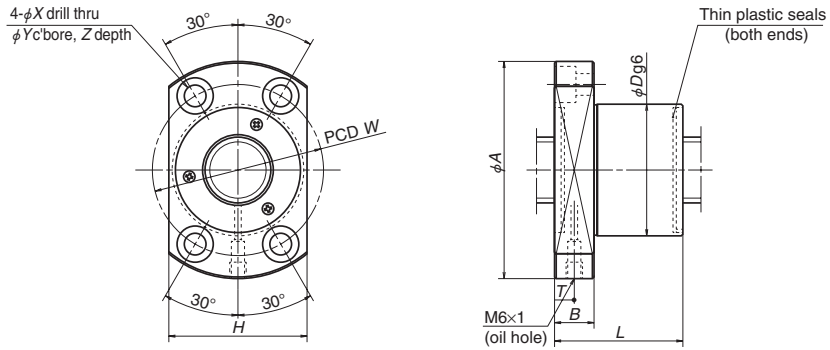
◇Reference number for ball screw



6. Handling Precautions

Maximum operating temperature: 80°C

If using NSK K1, operating temperature should not exceed 50°C. Refer to "Designing Precautions" (page B83).



Model No.	Shaft dia. <i>d</i>	Lead <i>l</i>	Root dia. <i>d_r</i>	Basic load rating (N)		Ball nut dimensions										Oil hole <i>d_i</i>
				Dynamic <i>C_d</i>	Static <i>C_{0s}</i>	External dimensions					Bolt hole dimensions					
						<i>D</i>	<i>A</i>	<i>H</i>	<i>B</i>	<i>L</i>	<i>W</i>	<i>X</i>	<i>Y</i>	<i>Z</i>	<i>T</i>	
BSL2005	20	5	17.2	8 920	16 300	36	63	38	12	37	49	6.6	11	6.5	6.5	15
BSL2006		6	16.4	11 900	20 000	40	65	42	12	45	51	6.6	11	6.5	6.7	
BSL2505	25	5	22.2	9 900	20 500	40	65	42	12	38	51	6.6	11	6.5	7.1	20
BSL2506		6	21.4	13 300	25 200	43	69	45	12	44	55	6.6	11	6.5	6.3	
BSL2508		8	20.5	17 100	30 100	46	72	48	12	55	58	6.6	11	6.5	6.5	
BSL2510	10	20.5	17 100	30 100	46	72	48	12	65	58	6.6	11	6.5	6		
BSL3210	32	10	26.4	27 700	51 300	61	93	63	18	68	76	9	14	8.5	10	25
BSL3212		77														

Notes: 1. The right turn screw is the standard. Please consult NSK for left turn screw.
2. Shaft dimensions are for reference.

Unit: mm

Shaft configuration and dimensions (reference)																				Exclusive bearing N Bearing reference number	Basic dynamic load rating <i>C_d</i>	Permissible axial load (N)
Shaft dimension															<i>F</i>							
<i>d₂</i>	<i>d₃</i>	<i>d₄</i>	<i>L</i> (max.)	<i>L₁</i> (max.)	<i>L₂</i>	<i>L₃</i>	<i>L₄</i> (min.)	<i>L₅</i> (min.)	<i>L₆</i>	<i>L₇</i>	<i>L₈</i>	<i>L₉</i>	<i>L₁₀</i>	<i>K</i>		<i>M</i>	<i>F</i>	<i>C_d</i>	(N)			
12	15	14.3 ⁰ _{-0.11}	500	500	66	20	3	20	4	21	8	9	14	10.15	1.15	17				M15×1.0	15TAC47C	47
15	20	19 ⁰ _{-0.21}	700	700	71	27	3	27	4	28	10	14	19	15.35	1.35	22	M20×1.0	20TAC62C	62	28 500	40 500	
							4	28	5	29												
							5	29	5	29												
20	25	23.9 ⁰ _{-0.21}	1 000	800	71	33	6	33	7	34	12	15	20	16.35	1.35	27	M25×1.5	25TAC62C	62	28 500	40 500	
							7	34														

3. Shaft length *L₁* and shaft entire length *L* are the maximum length.
When *L* becomes the same length as the *L₁*, the thread is all screw specification.