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.

(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>
<thead>
<tr>
<th>Table 2  BSL type product categories</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nut model</td>
</tr>
<tr>
<td>------------</td>
</tr>
<tr>
<td>BSL</td>
</tr>
</tbody>
</table>

5. Structure of model number and reference number

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

- **Model number**
  
  Nut model: BSL
  Screw shaft diameter (mm)

- **Reference number for ball screw**
  
  Product code
  Screw shaft diameter (mm)
  Effective threaded length (in the unit of 100 mm)
  NSK design serial number
  Preload code: P; P-preload (page B5)
  Axial play code: Z (page B20)
  Accuracy grade: C5 (page B37 to B42)

End-deflector recirculation system

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).
### Ball nut dimensions

<table>
<thead>
<tr>
<th>Model No.</th>
<th>Shaft dia.</th>
<th>Lead</th>
<th>Root dia.</th>
<th>Basic load rating/N</th>
<th>Ball nut dimensions</th>
<th>Oil hole</th>
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<tr>
<td></td>
<td>d</td>
<td>l</td>
<td>d2</td>
<td>d3</td>
<td>d4</td>
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<td>93</td>
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</tbody>
</table>

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