PBX Miniature Bevel Gearboxes

Features

1. **Light weight and compact**
   Simple construction with plastic housing. Uses a plastic resin which has superior chemical and thermal resistance.

2. **Freedom of installing orientation**
   Unit has through holes and counter-bores allowing mounting on any orientation.

3. **Maintenance free**
   Grease is applied to gears before shipping.

4. **Speed ratio**
   1:1

Points to observe during use

1. Environmental conditions
   - Ambient temperature: -10°C to 40°C
   - Ambient humidity: 80% or less
   - Atmosphere: Well-ventilated, dust-free air not including corrosive gas and steam.
   - Location: Indoor

2. Mounting Methods
   - Bolt or screw the unit firmly on a flat surface free from variations.
   - For screws, recommend JIS Type 2 grooved screws.
   - The dimensions of the mounting screws and the recommended tightening torques are given in the table below.
   - No secondary operations such as adding bolt holes can be performed on the casing. There is a danger that the gearbox will break.

3. Connection with mating machinery
   - Before connecting to the mating machinery, please verify the directions of the shaft rotation to avoid breakage of the equipment.
   - Please use a flexible coupling to connect the gearbox shaft to a mating shaft.
   - Make sure that the shafts of the gearbox and the mating machinery are lined up center to center.
   - If the gearbox shaft does not have a step, care should be exercised when attaching a coupling so that it does not interfere with the housing.
   - There is no keyway on the gearbox shaft. Use clamping type couplings to avoid slippage.

4. Operating precautions
   - Do not go near or touch rotating portions of the machine such as the shafts during operation. You may get caught and injure yourself.
   - Stop the operation immediately when the noise level or the temperature rises abnormally. Do not restart until all of the causes are analyzed and proper repairs are made.
   - Do not disassemble or modify these productions. You may destroy the unit.

Recommended tightening torques

<table>
<thead>
<tr>
<th>Mode</th>
<th>Through hole</th>
<th>Tapped screw hole</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Size</td>
<td>Lightening torque (N·m)</td>
</tr>
<tr>
<td>PBX-04 Type</td>
<td>M3</td>
<td>0.3 ~ 0.6</td>
</tr>
<tr>
<td>PBX-06 Type</td>
<td>M3</td>
<td>0.4 ~ 0.8</td>
</tr>
<tr>
<td>PBX-08 Type</td>
<td>M4</td>
<td>0.5 ~ 1.0</td>
</tr>
</tbody>
</table>

Selection Hints

1. PBX series are economical bevel gearboxes. For applications requiring high precision, strength and/or speed, we recommend the use of KBX type bevel gearboxes.
2. Please avoid overhang and thrust loads on the shafts. By supporting both ends of the shaft on which a gear or sprocket is mounted by means of pillow blocks or bearings as shown below, you can eliminate overhang loads.
3. These units are not suitable when you have sudden reversals of rotation or impact loads. Please consider KBX type bevel gearboxes in such applications.

PBX Specification Chart

<table>
<thead>
<tr>
<th>Type</th>
<th>Specifications</th>
<th>X-axis revolutions per minute (rpm)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>50</td>
</tr>
<tr>
<td>PBX-041</td>
<td>X/°-axis torque (N·cm) (lbf·ft·cm)</td>
<td>9.8</td>
</tr>
<tr>
<td></td>
<td>Efficiency (reference value)</td>
<td>70%</td>
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<tr>
<td>PBX-061</td>
<td>X/°-axis torque (N·cm) (lbf·ft·cm)</td>
<td>39.2</td>
</tr>
<tr>
<td></td>
<td>Efficiency (reference value)</td>
<td>80%</td>
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<tr>
<td>PBX-081</td>
<td>X/°-axis torque (N·cm) (lbf·ft·cm)</td>
<td>78.4</td>
</tr>
<tr>
<td></td>
<td>Efficiency (reference value)</td>
<td>75%</td>
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</tbody>
</table>

CAUTION: 1. Be sure not to exceed the allowable values.
2. The values in the table are effective when the service factor is 1. When the units are used under other conditions, refer to the Selection Guide.

Please see our web site for corrections on KHK Catalogs.
### PBX Miniature Bevel Gearboxes

#### L Type

<table>
<thead>
<tr>
<th>Catalog No.</th>
<th>Speed Ratio</th>
<th>A</th>
<th>B</th>
<th>C</th>
<th>D</th>
<th>E</th>
<th>F</th>
<th>G</th>
<th>H</th>
<th>J</th>
<th>K</th>
<th>L</th>
<th>M</th>
<th>O</th>
<th>P</th>
<th>Q</th>
<th>S</th>
<th>T</th>
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<tr>
<td>PBX-041L</td>
<td>1:1</td>
<td>61</td>
<td>20.5</td>
<td>55</td>
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<td>10</td>
<td>26</td>
<td>9.5</td>
<td>16</td>
<td>15</td>
<td>18</td>
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<td>4.5</td>
<td>3</td>
<td>10</td>
<td>.04</td>
<td>.35</td>
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<td>27.5</td>
<td>73</td>
<td>61</td>
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<td>15</td>
<td>34</td>
<td>13.5</td>
<td>20</td>
<td>19</td>
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<td>4.5</td>
<td>4.5</td>
<td>14</td>
<td>.06</td>
<td>.35</td>
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<tr>
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<td>81</td>
<td>30.5</td>
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<td>78.5</td>
<td>20</td>
<td>41</td>
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<td>24.5</td>
<td>22.5</td>
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<td>15</td>
<td>9.</td>
<td>5.5</td>
<td>16.5</td>
<td>.08</td>
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#### T Type

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<th>D</th>
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<th>G</th>
<th>H</th>
<th>J</th>
<th>K</th>
<th>L</th>
<th>M</th>
<th>O</th>
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<th>Q</th>
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<tr>
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</tr>
</tbody>
</table>

**[Caution]**
1. The arrow marks on the shafts are intended to show the relative direction of rotation. The units can be driven in the opposite direction as well.
2. In the standard unit, the X-axis rotates clockwise, and the Y-axis counterclockwise.
3. The tolerance of shaft diameter is JS8.
4. The shafts do not have keyways. Please use clamping type couplings to avoid slippage.
5. The backlash at the X-axis (input shaft) is about 3 degrees.

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### PBX Bevel Gearboxes

#### Catalog No. Diameter Depth Weight (g) Catalog No.
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2.5 11 45 PBX-041L
2.5 13 120 PBX-061L
3.3 14 200 PBX-081L

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### Other Products

Please see our web site for corrections on KHK Catalogs.