ToughCarrier™ TCH06
Ultra High Load Capacity Single Axis Actuator

Product Features and Benefits

› An industry first: single axis actuator that uses rollers instead of balls for the linear guide rolling element.
› Load ratings increased more than 2x compared to standard (ball type) Monocarrier™.
› Rigidity increased more than 1.5x compared to standard (ball type) Monocarrier™.
› Compression rigidity increased more than 3x compared to standard (ball type) Monocarrier™.
› Monocarrier™, MCH series interchange is possible.
› Self-lubricating NSK K1™ units (installed as standard).

SPECIFICATIONS

Standard Slider Specifications

<table>
<thead>
<tr>
<th>Reference Model</th>
<th>Ball Screw Lead (mm)</th>
<th>Shaft Dia. (mm)</th>
<th>Basic Dynamic Load Rating (N)</th>
<th>Basic Static Load Rating (N)</th>
<th>Supporting Unit Limiting Load (N)</th>
<th>Basic Static Moment Load (N)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>Ball Screw Ca</td>
<td>Linear Guide C</td>
<td>Support Unit Ca</td>
<td>Ball Screw Coa</td>
</tr>
<tr>
<td>TCH06-K</td>
<td>5</td>
<td>Ø 12</td>
<td>3 760</td>
<td>20 900</td>
<td>6 600</td>
<td>6 310</td>
</tr>
<tr>
<td></td>
<td>10</td>
<td></td>
<td>2 260</td>
<td>35 700</td>
<td>3 780</td>
<td>3 780</td>
</tr>
<tr>
<td></td>
<td>20</td>
<td></td>
<td>2 260</td>
<td>28 300</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Short Slider Specifications

<table>
<thead>
<tr>
<th>Reference Model</th>
<th>Ball Screw Lead (mm)</th>
<th>Shaft Dia. (mm)</th>
<th>Basic Dynamic Load Rating (N)</th>
<th>Basic Static Load Rating (N)</th>
<th>Supporting Unit Limiting Load (N)</th>
<th>Basic Static Moment Load (N)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>Ball Screw Ca</td>
<td>Linear Guide C</td>
<td>Support Unit Ca</td>
<td>Ball Screw Coa</td>
</tr>
<tr>
<td>TCH06-A</td>
<td>5</td>
<td>Ø 12</td>
<td>3 760</td>
<td>12 200</td>
<td>6 600</td>
<td>6 310</td>
</tr>
<tr>
<td></td>
<td>10</td>
<td></td>
<td>2 260</td>
<td>26 200</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

› Basic dynamic and static load ratings indicate the values for one slider.
› Basic dynamic load ratings of the linear guide is based on 50 km fatigue life with unchanging load acting perpendicular to the axis of motion on top of the slider.
› Basic dynamic load rating of the linear guide is the load in perpendicular direction to the axis of motion that allows 90% of a group of the same ToughCarriers™ to operate equivalent to 1 million revolutions of the ball screw and support unit under the same condition without causing flaking by rolling contact.

› Basic dynamic load rating of the ball screw is a load to axial direction that allows 90% of ball screws of a group of the same ToughCarriers™ to rotate 1 million revolutions under the same condition without causing flaking by rolling contact.
› Basic static load rating is a load that results when combined permanent deformations at the contact points of balls and ball grooves is 0.01% of the diameter.
› In case of moment loading when using short slider, use of 2 sliders (double short slider specification) is recommended.
**Reference Number Coding**

- ToughCarrier™
- H: Standard
- S: Optional Parts
- Size: Rail Width (10 mm units)
- Stroke: 10 mm units
- Accuracy Standard: H: High, P: Precision

**ToughCarrier™ TCH06**

- Optional Parts: Cover units, sensor units, and motor brackets are available as standard parts. For special requests, contact NSK.

- For strokes not listed, contact NSK.
- Dimensions above show optional pin holes.
- Specification for short slider with 20 mm lead is not established.

**Reference Number Coding**

- TCH06005(H20K00)
- TCH06020(H20K00)
- TCH06030(H20K00)
- TCH06050(H20K00)
- TCH06010(H20K00)

**Accuracy Grades**

- **Units: µm**
- **Grade**
- **Stroke (mm)**
- **Repeatability**
- **Running Parallelism**
- **Backlash**

<table>
<thead>
<tr>
<th>Grade</th>
<th>Stroke (mm)</th>
<th>Repeatability</th>
<th>Running Parallelism</th>
<th>Backlash</th>
</tr>
</thead>
<tbody>
<tr>
<td>~200</td>
<td>±10</td>
<td>14</td>
<td>20 or less</td>
<td></td>
</tr>
<tr>
<td>~400</td>
<td>±3</td>
<td>16</td>
<td></td>
<td></td>
</tr>
<tr>
<td>~600</td>
<td>±20</td>
<td>20</td>
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</tbody>
</table>

**Accuracy Grades**

- **Units: mm**
- **Grade**
- **Stroke (mm)**
- **Repeatability**
- **Running Parallelism**
- **Positioning Accuracy**
- **Backlash**

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</tr>
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<tbody>
<tr>
<td>~200</td>
<td>±8</td>
<td>8</td>
<td>20</td>
<td></td>
<td></td>
</tr>
<tr>
<td>~400</td>
<td>±3</td>
<td>10</td>
<td>25</td>
<td>3 or less</td>
<td></td>
</tr>
<tr>
<td>~600</td>
<td>±12</td>
<td>12</td>
<td>30</td>
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