TMB Series
Rolled Ball Screw + 5 Phase Stepping Motor

Features
- A 5-phase Stepping Motor is mounted directly onto the shaft end of a Ct7 grade Rolled Ball Screw, which is all-round performance drive unit.
- Ball Screw Shaft is ideally constructed to form the Motor Rotor Shaft.
- Since combining the Motor Shaft and Ball Screw Shaft, Coupling-less, saving total length, and reducing labor cost can be achieved.
- Recommended Driver for 5-phase Stepping Motor is available.

Specifications

<table>
<thead>
<tr>
<th>Model</th>
<th>Shaft Nominal Dia.</th>
<th>Load</th>
<th>Travel</th>
<th>Travel per pulses</th>
<th>Reference Thrust</th>
<th>Mass</th>
</tr>
</thead>
<tbody>
<tr>
<td>TMB0401</td>
<td>ø 4</td>
<td>1</td>
<td>30</td>
<td>2</td>
<td>50</td>
<td>100</td>
</tr>
<tr>
<td>TMB0504</td>
<td>ø 5</td>
<td>4</td>
<td>75</td>
<td>8</td>
<td>25</td>
<td>180</td>
</tr>
<tr>
<td>TMB0601</td>
<td>ø 6</td>
<td>1</td>
<td>75</td>
<td>2</td>
<td>100</td>
<td>180</td>
</tr>
<tr>
<td>TMB0602</td>
<td>ø 6</td>
<td>2</td>
<td>75</td>
<td>4</td>
<td>50</td>
<td>180</td>
</tr>
<tr>
<td>TMB0606</td>
<td>ø 6</td>
<td>6</td>
<td>75</td>
<td>12</td>
<td>15</td>
<td>180</td>
</tr>
<tr>
<td>TMB0801</td>
<td>ø 8</td>
<td>1</td>
<td>150</td>
<td>2</td>
<td>300</td>
<td>320</td>
</tr>
<tr>
<td>TMB0802</td>
<td>ø 8</td>
<td>2</td>
<td>150</td>
<td>4</td>
<td>150</td>
<td>320</td>
</tr>
<tr>
<td>TMB0805</td>
<td>ø 8</td>
<td>5</td>
<td>150</td>
<td>10</td>
<td>120</td>
<td>450</td>
</tr>
<tr>
<td>TMB0812</td>
<td>ø 8</td>
<td>12</td>
<td>150</td>
<td>24</td>
<td>50</td>
<td>450</td>
</tr>
</tbody>
</table>

Note 1: Detail specifications & dimensions are shown in drawings from page P124.
Note 2: Travel per pulse represents the value for full step.
Note 3: Acceleration & Deceleration Rate should be 20ms/kHz or more.
Note 4: Reference Thrust may vary depending on the operating condition, please ask KSS for more detail.

Motor Specifications

<table>
<thead>
<tr>
<th>Model</th>
<th>Motor size</th>
<th>Rated voltage</th>
<th>Rated current (Alphase)</th>
<th>Winding resistance</th>
<th>Holding torque</th>
<th>Rotor Inertia</th>
<th>Load limit in Vertical Position</th>
</tr>
</thead>
<tbody>
<tr>
<td>TMB0401</td>
<td>NEMA 10</td>
<td>DC 0.83</td>
<td>0.75</td>
<td>1.1</td>
<td>0.018</td>
<td>4.2</td>
<td>230</td>
</tr>
<tr>
<td>TMB0504</td>
<td>NEMA 10</td>
<td>DC 1.28</td>
<td>0.75</td>
<td>1.7</td>
<td>0.028</td>
<td>8.3</td>
<td>230</td>
</tr>
<tr>
<td>TMB0601</td>
<td>NEMA 10</td>
<td>DC 1.28</td>
<td>0.75</td>
<td>1.7</td>
<td>0.028</td>
<td>8.8</td>
<td>230</td>
</tr>
<tr>
<td>TMB0602</td>
<td>NEMA 10</td>
<td>DC 1.28</td>
<td>0.75</td>
<td>1.7</td>
<td>0.028</td>
<td>8.7</td>
<td>230</td>
</tr>
<tr>
<td>TMB0606</td>
<td>NEMA 10</td>
<td>DC 1.28</td>
<td>0.75</td>
<td>1.7</td>
<td>0.028</td>
<td>8.8</td>
<td>230</td>
</tr>
<tr>
<td>TMB0801</td>
<td>NEMA 17</td>
<td>DC 1.28</td>
<td>0.75</td>
<td>1.7</td>
<td>0.128</td>
<td>40</td>
<td>300</td>
</tr>
<tr>
<td>TMB0802</td>
<td>NEMA 17</td>
<td>DC 1.28</td>
<td>0.75</td>
<td>1.7</td>
<td>0.128</td>
<td>40</td>
<td>300</td>
</tr>
<tr>
<td>TMB0805</td>
<td>NEMA 17</td>
<td>DC 1.65</td>
<td>0.75</td>
<td>2.2</td>
<td>0.236</td>
<td>74</td>
<td>300</td>
</tr>
<tr>
<td>TMB0812</td>
<td>NEMA 17</td>
<td>DC 1.65</td>
<td>0.75</td>
<td>2.2</td>
<td>0.236</td>
<td>74</td>
<td>300</td>
</tr>
</tbody>
</table>

Note 1: Basic step angle is 0.72.
Note 2: Rotor Inertia includes Ball Screw Shaft.

Motor Characteristic

Test condition
Driver: Maker Standard
Input Voltage: DC24V
Phase Current: 0.75A

Note: Motor characteristic will vary depending on Driver type, operating conditions.
Model number notation for customized TMB series is as follows:
In case of standard style, model number is described in catalogue from page P124 to page P128.

- **Series No.**
  - TMB: Rolled Ball Screw + 5-phase Stepping Motor
- **Screw Shaft nominal diameter (mm)**
- **Lead (mm)**
  - 01 means 1mm
- **Screw thread length (mm)**
  - \( \text{L1} \) : See below
- **Thread direction (R=Right-hand)**
- **Screw Shaft total length (mm)**
  - \( \text{L2} \) : See below
- **Accuracy grade**
- **Axial play (\( \mu \text{m} \))**

---

### Model number notation

```
TMB  04  01  -  30  R  80  C7 -  20
```

- **01** Series No.
- **TMB** : Rolled Ball Screw + 5-phase Stepping Motor
- **04** Screw Shaft nominal diameter (mm)
- **30** Lead (mm)
- **R** 01 means 1mm
- **C7** Screw thread length (mm)
  - \( \text{L1} \) : See below
- **20** Thread direction (R=Right-hand)
- **20** Screw Shaft total length (mm)
  - \( \text{L2} \) : See below
- **0.05** Accuracy grade
- **0.025** Axial play (\( \mu \text{m} \))

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### Definition of Screw length

![Diagram of Screw length](image)

### Model Specifications

<table>
<thead>
<tr>
<th>Model.</th>
<th>Lead</th>
<th>Travel</th>
<th>Reference Thrust (N)</th>
<th>Mass (g)</th>
</tr>
</thead>
<tbody>
<tr>
<td>TMB0401</td>
<td>1</td>
<td>30</td>
<td>50</td>
<td>100</td>
</tr>
</tbody>
</table>

**Recommended Drivers**

- KR-A5CC
- KR-ASSE (Micro step)
- KR-ASSM (Micro step / AC: 100～220V)

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### Ball Screw Specifications

- **Accuracy grade**: JIS CI7
- **Thread direction**: Right
- **Axial play**: 0.020mm or less
- **Shaft & Nut material**: Chrome-molybdenum steel
- **Surface Coating**: Black Chrome coating on Shaft
- **Surface hardness**: HRC58～62 (Thread area)
- **Lubricant**: KSS original grease M50 No.1

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### Motor Specifications

- **Basic step angle**: 0.72°
- **Rated Voltage**: DC 0.83 V
- **Rated current**: DC 0.75 A/phase
- **Winding resistance**: 1.1Ω
- **Holding Torque**: 0.018Nm
- **Rotor inertia**: 4.2g·cm²
- **Operating temperature**: -20°C～50°C

**Note**: Only shaft end cutting is available. Other than that, it would be customized order.

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**Dimensions & Specifications**

Rolled Ball Screw + 5-Phase Stepping Motor

**Shaft dia. φ4**
### Standard products in stock TMB series

**Rolled Ball Screw + 5-Phase Stepping Motor**

**TMB 24 / NEMA 10**

**Shaft dia. φ5**

#### Ball Screw Specifications

<table>
<thead>
<tr>
<th>Model</th>
<th>Lead</th>
<th>Travel</th>
<th>Reference Thrust (N)</th>
<th>Mass (g)</th>
</tr>
</thead>
<tbody>
<tr>
<td>TMB0504</td>
<td>4</td>
<td>75</td>
<td>25</td>
<td>180</td>
</tr>
</tbody>
</table>

**Recommended Drivers**

- KR-ASLCC
- KR-ASLMC (Micro step)
- KR-ASLMR/MM (Micro step / AC-100-220V)

#### Motor Specifications

<table>
<thead>
<tr>
<th>Accuracy grade</th>
<th>JIS C17</th>
</tr>
</thead>
<tbody>
<tr>
<td>Thread direction</td>
<td>Right</td>
</tr>
<tr>
<td>Axial play</td>
<td>0.020mm or less</td>
</tr>
<tr>
<td>Shaft &amp; Nut material</td>
<td>Chrome-molybdenum steel</td>
</tr>
<tr>
<td>Surface Coating</td>
<td>Black Chrome coating on Shaft</td>
</tr>
<tr>
<td>Surface hardness</td>
<td>HRC38～42 (Thread area)</td>
</tr>
<tr>
<td>Lubricant</td>
<td>KSS original grease MSG No.1</td>
</tr>
</tbody>
</table>

- Basic step angle: 0.72°
- Rated Voltage: DC 1.28 V
- Rated current: DC 0.75 A/phase
- Winding resistance: 1.7Ω
- Holding Torque: 0.02N·m
- Rotor inertia: 8.3g·cm²
- Operating temperature: ～20°C～50°C

**Note**

- Only shaft end cutting is available. Other than that, it would be customized order.

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### Standard products in stock TMB series

**Rolled Ball Screw + 5-Phase Stepping Motor**

**TMB 24 / NEMA 10**

**Shaft dia. φ6**

#### Ball Screw Specifications

<table>
<thead>
<tr>
<th>Model</th>
<th>Lead</th>
<th>Travel</th>
<th>Reference Thrust (N)</th>
<th>D</th>
<th>Dt</th>
<th>V</th>
<th>Dp</th>
<th>Mass (g)</th>
</tr>
</thead>
<tbody>
<tr>
<td>TMB0601</td>
<td>1</td>
<td>75</td>
<td>100</td>
<td>13</td>
<td>24</td>
<td>16</td>
<td>20</td>
<td>180</td>
</tr>
<tr>
<td>TMB0602</td>
<td>2</td>
<td>75</td>
<td>50</td>
<td>15</td>
<td>28</td>
<td>19</td>
<td>22</td>
<td>180</td>
</tr>
<tr>
<td>TMB0606</td>
<td>4</td>
<td>75</td>
<td>15</td>
<td>14</td>
<td>27</td>
<td>16</td>
<td>21</td>
<td>180</td>
</tr>
</tbody>
</table>

**Recommended Drivers**

- KR-ASLCC
- KR-ASLMC (Micro step)
- KR-ASLMR/MM (Micro step / AC-100-220V)

#### Motor Specifications

<table>
<thead>
<tr>
<th>Accuracy grade</th>
<th>JIS C17</th>
</tr>
</thead>
<tbody>
<tr>
<td>Thread direction</td>
<td>Right</td>
</tr>
<tr>
<td>Axial play</td>
<td>0.020mm or less</td>
</tr>
<tr>
<td>Shaft &amp; Nut material</td>
<td>Chrome-molybdenum steel</td>
</tr>
<tr>
<td>Surface Coating</td>
<td>Black Chrome coating on Shaft</td>
</tr>
<tr>
<td>Surface hardness</td>
<td>HRC38～42 (Thread area)</td>
</tr>
<tr>
<td>Lubricant</td>
<td>KSS original grease MSG No.1</td>
</tr>
</tbody>
</table>

- Basic step angle: 0.72°
- Rated Voltage: DC 1.28 V
- Rated current: DC 0.75 A/phase
- Winding resistance: 1.7Ω
- Holding Torque: 0.02N·m
- Rotor inertia: TMB0601: 8.8g·cm² TMB0602: 8.1g·cm²
- Operating temperature: ～20°C～50°C

**Note**

- Only shaft end cutting is available. Other than that, it would be customized order.
Rolled Ball Screw + 5-Phase Stepping Motor

**TMB □42 / NEMA 17**

**Shaft dia. Ø 8**

**Model** | **Lead** | **Travel** | **Reference Thrust (N)** | **D** | **DF** | **F** | **Li** | **Li** | **V** | **Dp** | **X** | **Mass (g)**
---|---|---|---|---|---|---|---|---|---|---|---|
TMB0801 | 1 | 150 | 300 | 14 | 29 | 4 | 17 | 13 | 18 | 23 | 3.4 | 320
TMB0802 | 2 | 150 | 150 | 20 | 37 | 5 | 24 | 19 | 22 | 29 | 4.5 | 320

**Recommended Drivers**
- KR-ASCC
- KR-AS5MC (Micro step)
- KR-AS5MM (Micro step / AC-100~220V)

**Note** Refer to page P162 or P163 for connection diagram of recommended Drivers.

**Ball Screw Specifications**
- Accuracy grade: JIS Cl7
- Thread direction: Right
- Axial play: 0.020mm or less
- Shaft & Nut material: Chrome-molybdenum steel
- Surface Coating: Black Chrome coating on Shaft
- Surface hardness: HRC58~62 (Thread area)
- Lubricant: KSS original grease M5G No.1

**Motor Specifications**
- Basic step angle: 0.72°
- Rated Voltage: DC 1.28 V
- Rated current: DC 0.75 A/phase
- Winding resistance: 1.7Ω
- Holding Torque: 0.128Nm
- Rotor inertia: 60g·cm²
- Operating temperature: −20°C～50°C

**Note** Only shaft end cutting is available. Other than that, it would be customized order.

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**TMB □42 / NEMA 17**

**Shaft dia. Ø 8**

**Model** | **Lead** | **Travel** | **Reference Thrust (N)** | **Li** | **Li** | **Mass (g)**
---|---|---|---|---|---|
TMB080S | 5 | 150 | 120 | 28 | 24 | 450
TMB0812 | 12 | 150 | 50 | 27 | 17 | 450

**Recommended Drivers**
- KR-ASCC
- KR-AS5MC (Micro step)
- KR-AS5MM (Micro step / AC-100~220V)

**Note** Refer to page P162 or P163 for connection diagram of recommended Drivers.

**Ball Screw Specifications**
- Accuracy grade: JIS Cl7
- Thread direction: Right
- Axial play: 0.020mm or less
- Shaft & Nut material: Chrome-molybdenum steel
- Surface Coating: Black Chrome coating on Shaft
- Surface hardness: HRC58~62 (Thread area)
- Lubricant: KSS original grease M5G No.1

**Motor Specifications**
- Basic step angle: 0.72°
- Rated Voltage: DC 1.65 V
- Rated current: DC 0.75 A/phase
- Winding resistance: 2.0Ω
- Holding Torque: 0.236Nm
- Rotor inertia: 76g·cm²
- Operating temperature: −20°C～50°C

**Note** Only shaft end cutting is available. Other than that, it would be customized order.