THK Linear Motor Actuators
-Challenging the Boundaries of Higher Agility and Accuracy-
THK Linear Motor Actuators
-Flexible Solutions for
All Your Linear Motion Needs-

THK offers one of the world’s most extensive line-ups of linear motor actuators, and we have products with features that satisfy a wide range of applications. THK’s actuators, optimised for LM Guide ratings and motor heat dissipation, enable the creation of high-quality linear motion systems. Our actuators can be customized in various ways to conform to LM Guides with different surface treatments or greasing requirements. Special-purpose units can be created by combining a discrete linear motor with specially designed mechanisms. THK’s actuators offer flexible solutions for diverse customer needs.
High-speed Transfer Models

**GLM10**  
Flat Model with Core  
- Low-cost extruded aluminium parts  
- Thin low-profile design  
- Easy installation of linear motors in tight spaces.  
- For compact transfer systems (50N and higher)  
- Minimum resolution: 0.1µm to 5.0µm

**GLM15**  
Flat Model with Core  
- Low-cost extruded aluminium parts + Caged Ball LM Guide features  
- Compact and clean design. Ideal for wafer conveyors.  
- For compact transfer systems (150N and higher)  
- Minimum resolution: 0.1µm to 10.0µm

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High-rigidity Model

**KLM46**  
Flat Model with Core  
- Smaller footprint  
- Ideal for second axis arm and other arms  
- Even with its core, this model provides stable speed required for inspection equipment.  
- Minimum resolution: 0.1µm to 1.0µm

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High-accuracy Model

**CLM**  
Coreless Flat Model  
- Standard iron base and table increase accuracy.  
- Coreless linear motor without cogs and attractive force improve speed stability.  
- Flat model linear motor allows for long strokes.  
- THK’s thermal design prevents motor heat from dissipating to transfer objects.  
- Minimum resolution: 0.078µm
GLM20
Flat Model with Core
- Low-cost extruded aluminium parts + Caged Ball LM Guide features
- High-performance, clean design for diverse applications
- For medium to large transfer systems (550N to 1000N)
- Minimum resolution: 0.1μm to 10.0μm

GLM25
Flat Model with Core
- Low-cost extruded aluminium parts + Caged Ball LM Guide features
- Clean, high-thrust actuator capable of conveying large glass substrates
- For ultra-large transfer systems (up to 3000N)
- Minimum resolution: 0.1μm to 1.0μm

Low-speed Ripple Model
RDM
Coreless Rod Model
- Three models available to match application requirements
- Coreless structure enables lighter moving components and less speed ripple.
- Coreless linear motor eliminates need for cogging and attractive force.
- Minimum resolution: 0.078μm

Compact Model
RDM-mini
Coreless Rod Model
- Lightweight, compact design
- Maximum speed: 5m/s; maximum acceleration: 0.0G
- Compact design uses shielded flat cable
- Coreless linear motor eliminates need for cogging and attractive force
- Minimum resolution 0.078μm
Performance Comparison

Positioning repeatability (μm)

<table>
<thead>
<tr>
<th>Speed (mm/s)</th>
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<tbody>
<tr>
<td>GLM10</td>
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<tr>
<td>GLM15</td>
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<td>GLM20</td>
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<tr>
<td>GLM25</td>
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<tr>
<td>KLM46</td>
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<tr>
<td>CLM60</td>
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<tr>
<td>RDM</td>
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<tr>
<td>RDM-mini</td>
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</table>

Maximum thrust (N)

<table>
<thead>
<tr>
<th>Standard stroke (mm)</th>
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</thead>
<tbody>
<tr>
<td>GLM10</td>
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<td>GLM15</td>
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<tr>
<td>CLM60</td>
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<tr>
<td>RDM</td>
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<tr>
<td>RDM-mini</td>
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</tbody>
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TD Driver

The TD driver is specially designed to get the most out of linear motors that feature high speed, quick acceleration and deceleration, as well as excellent uniform linear motion. The original control algorithm produces outstanding servo performance. The driver complies with the requirements of the RoHS Directive and CE Marking.
Linear Motor Actuator Features

High Speed
THK's RDM-mini, our fastest model in the series, attains a maximum speed of 5m/s. Most other models are capable of 4m/s.

Long Stroke
Base lengths of up to 4400mm are available, and joint specifications enable even longer strokes.

Sharp Acceleration and Deceleration
Lightweight sliders enable quick acceleration and deceleration at 2G to 10G.

Multi-sliders
Multiple sliders can be mounted on a 1-axis base and controlled independently.

Fast Response and Conformability
Quick response achieved by high gain and lightweight moving components.

Clean, Quiet Operation
The combination of the linear motor and the Caged Ball LM Guide achieves low noise and reduced dust operations.

High Precision
Fully closed control by the optical linear encoder ensures high positioning accuracy.

Comparison of Linear Motor and Ball Screw Actuators

<table>
<thead>
<tr>
<th>Mechanism</th>
<th>Ball screw drive</th>
<th>Linear motor</th>
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<tbody>
<tr>
<td></td>
<td>Stator</td>
<td>Moving side</td>
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<tr>
<td></td>
<td>Motor electro-magnetic force</td>
<td>electromagnetic force</td>
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<tr>
<td></td>
<td>Rotor</td>
<td>Fixed side</td>
</tr>
<tr>
<td></td>
<td>Motor electro-magnetic force</td>
<td>electromagnetic force</td>
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<tr>
<td></td>
<td>Motor electro-magnetic force</td>
<td>Motor electro-magnetic force</td>
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<tr>
<td></td>
<td>Transfer object</td>
<td>Transfer object</td>
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<tr>
<td>Long stroke</td>
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<td>△</td>
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<tr>
<td>High speed</td>
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<tr>
<td>High precision and conformity</td>
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<tr>
<td>Multi-slider</td>
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<tr>
<td>High accuracy</td>
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<td>Number of parts</td>
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<tr>
<td>Thrust</td>
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<tr>
<td>Cost</td>
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○ Excellent  ○ Usable  △ Poor