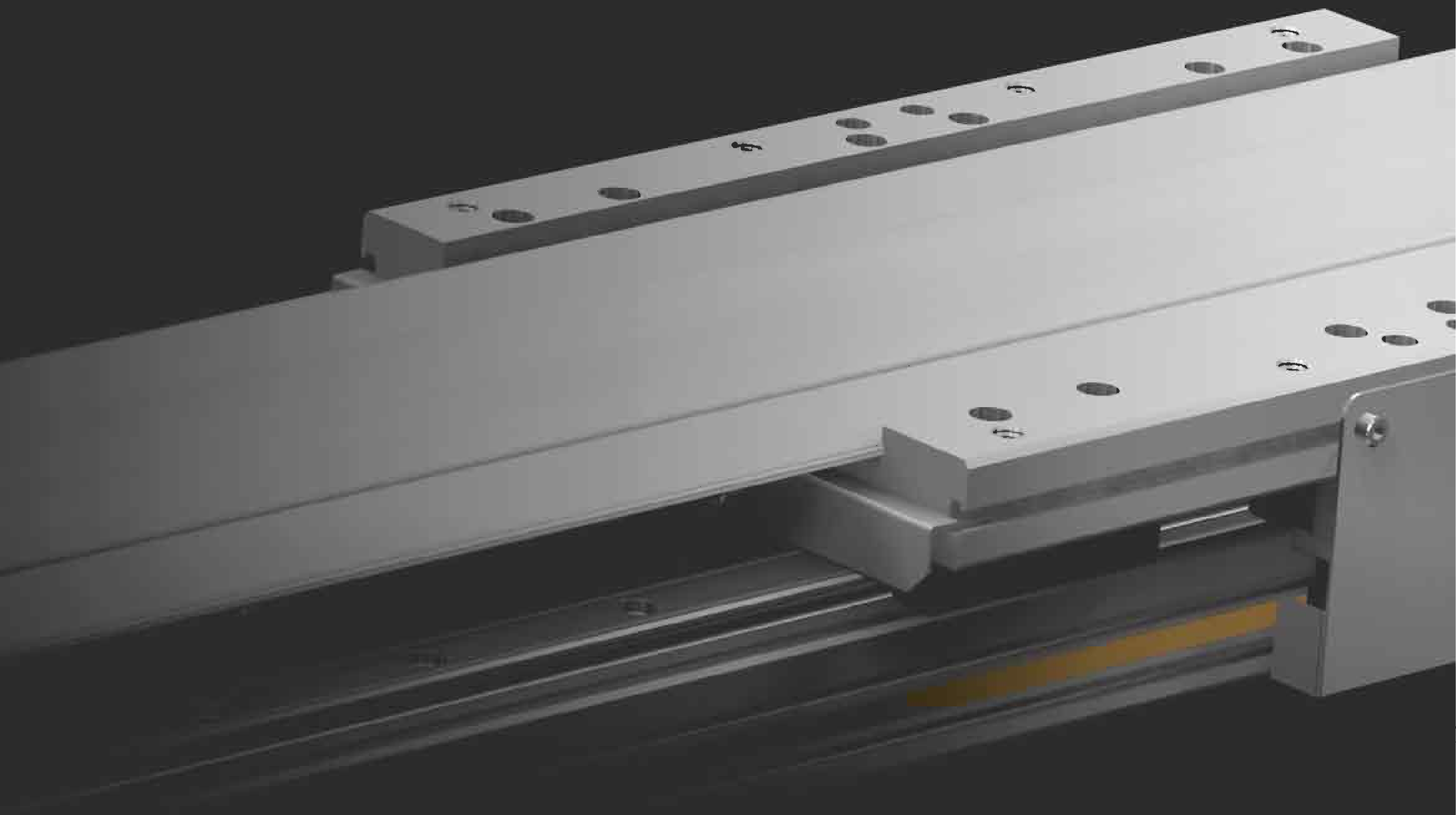


## **Linear Motor Actuators**



# **THK Linear Motor Actuators** **-Challenging the Boundaries of** **Higher Agility and Accuracy-**



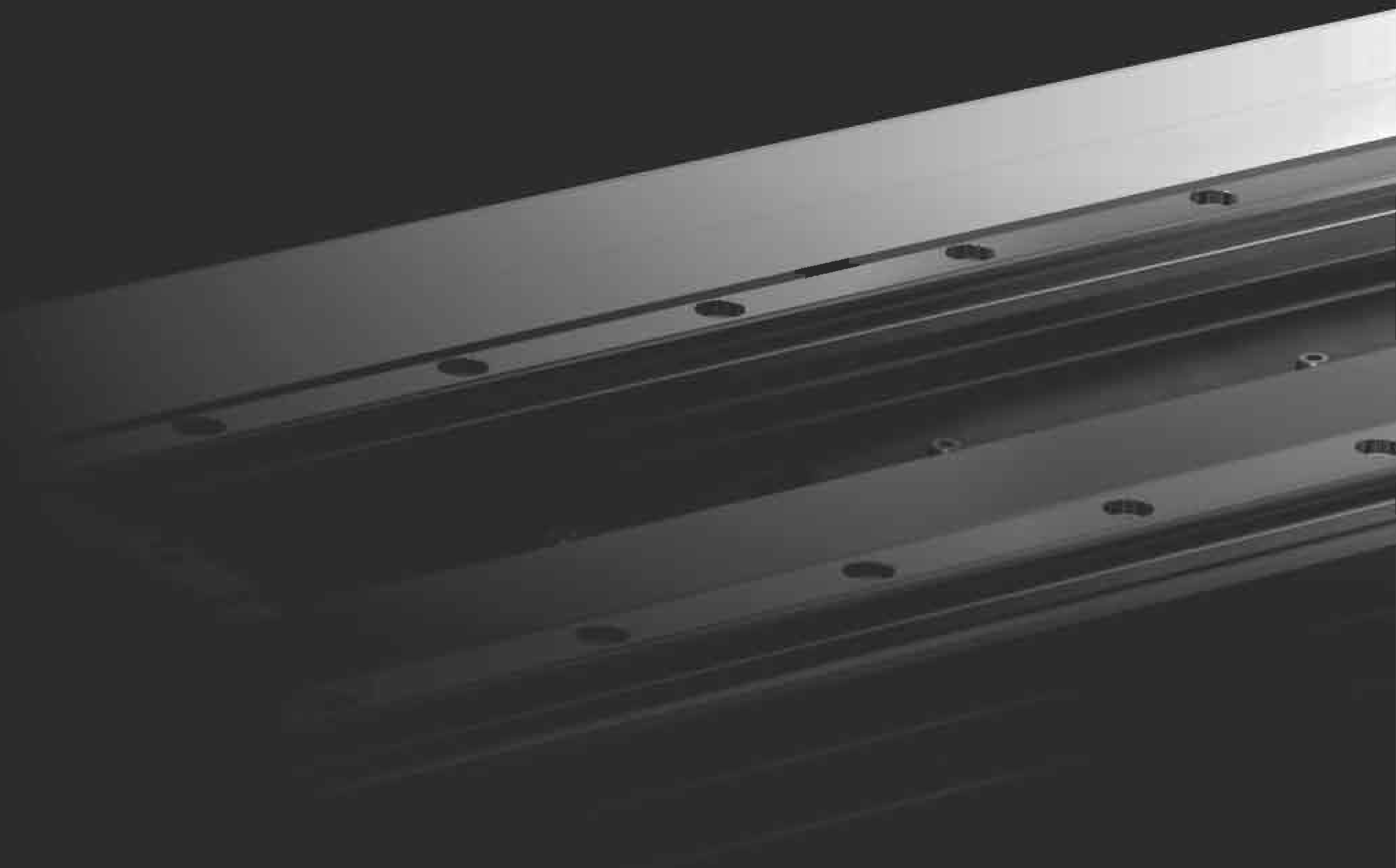
# THK Linear Motor Actuators -Flexible Solutions for All Your Linear Motion Needs-

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.

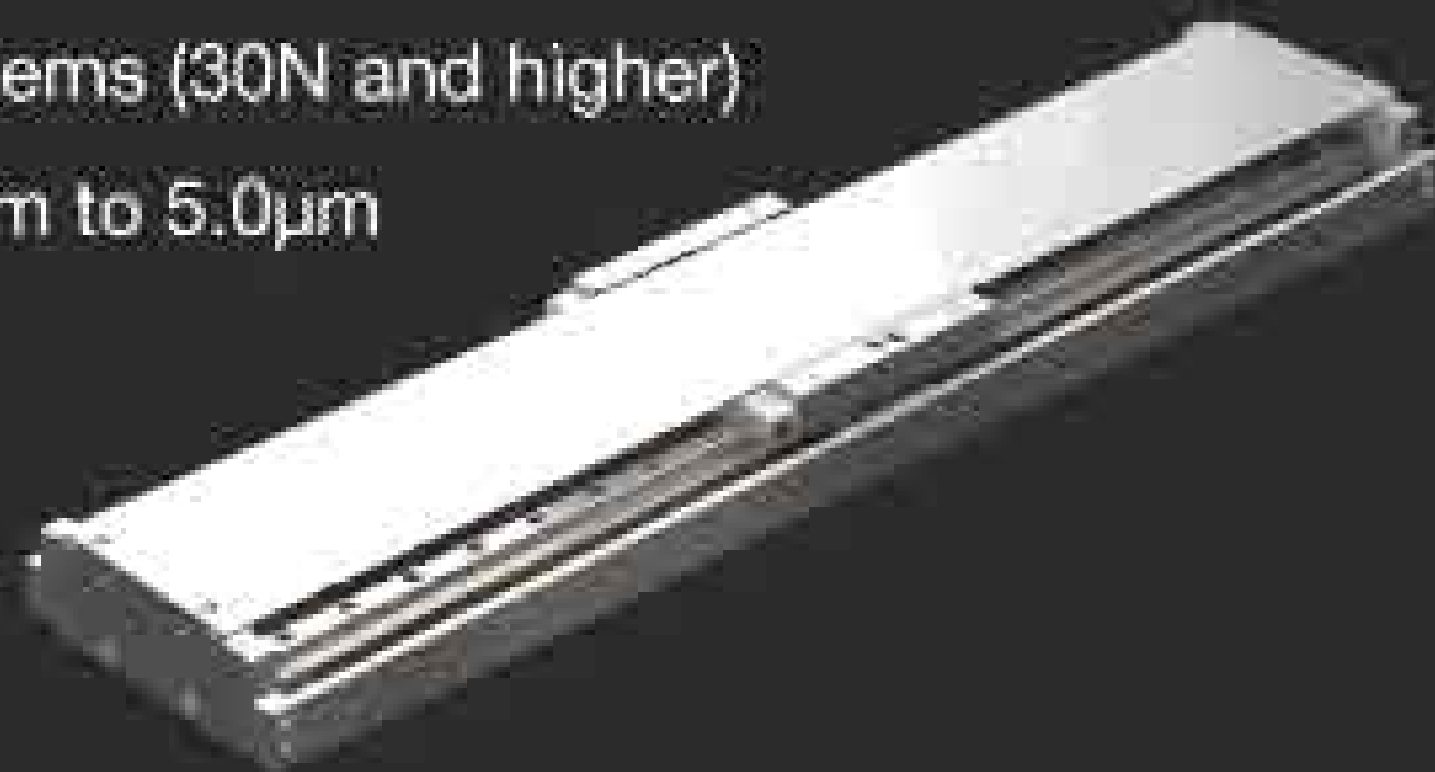


# High-speed Transfer Models

## GLM10

Flat Model with Core

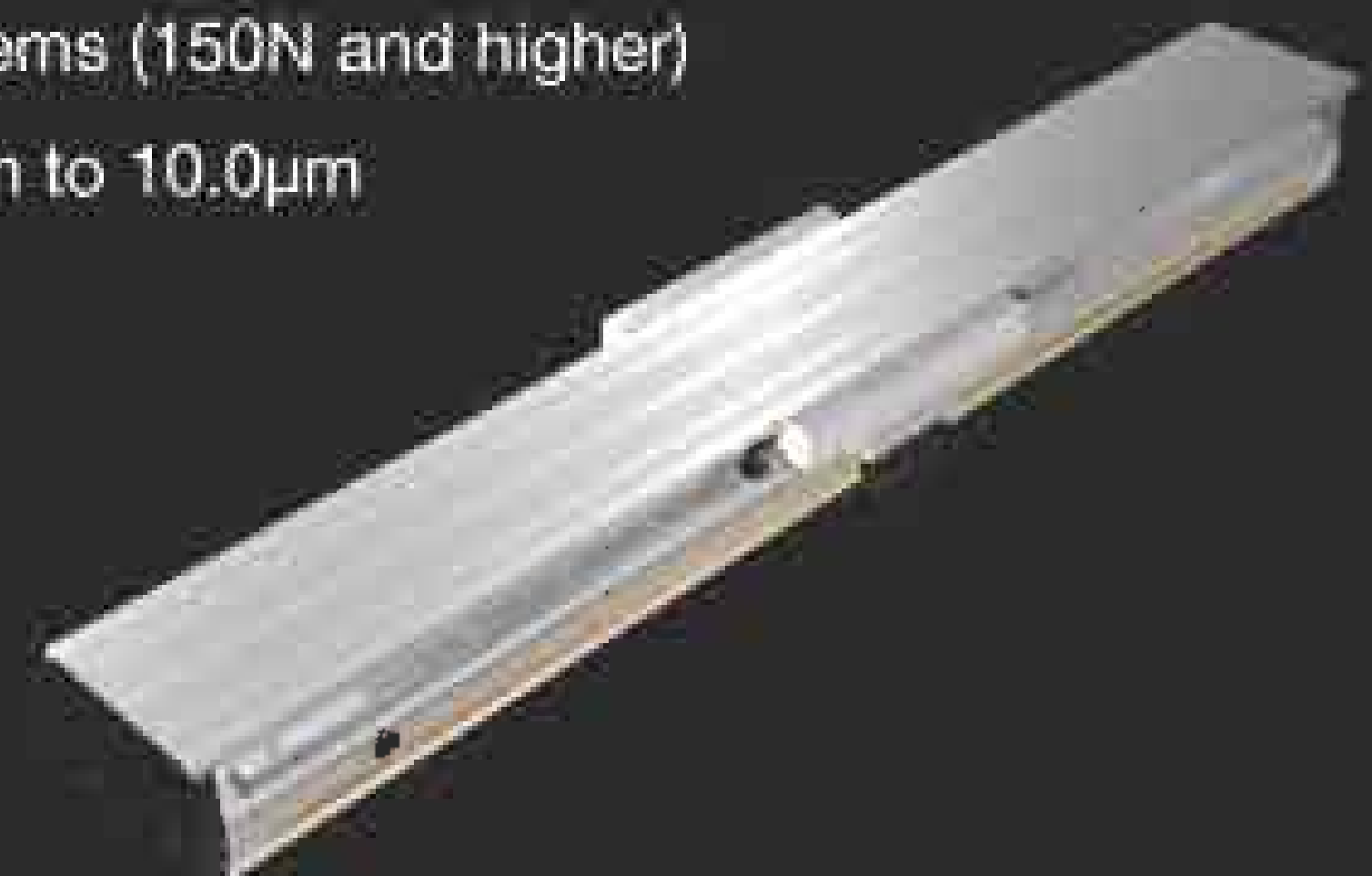
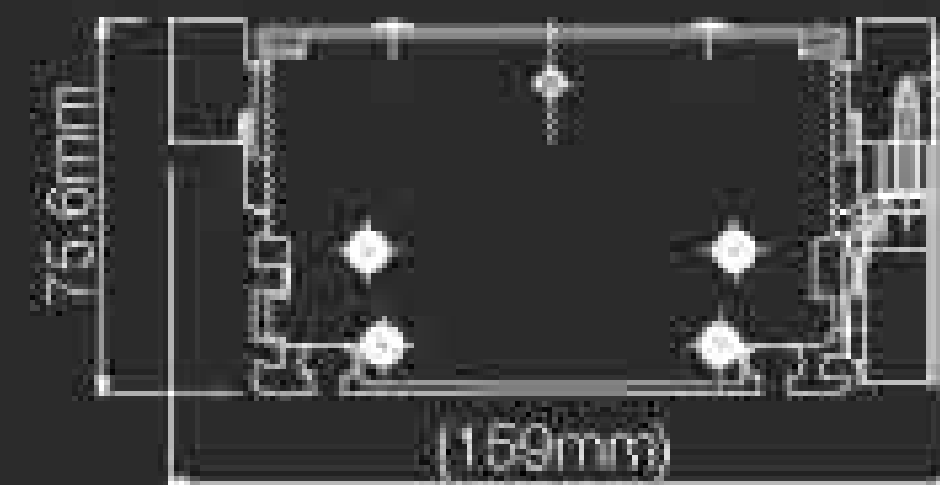
- Low-cost extruded aluminium parts
- Thin low-profile design  
Easy installation of linear motors in tight spaces.
- For compact transfer systems (30N and higher)
- Minimum resolution: 0.1 $\mu$ m to 5.0 $\mu$ m



## 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: 0.1 $\mu$ m to 10.0 $\mu$ m



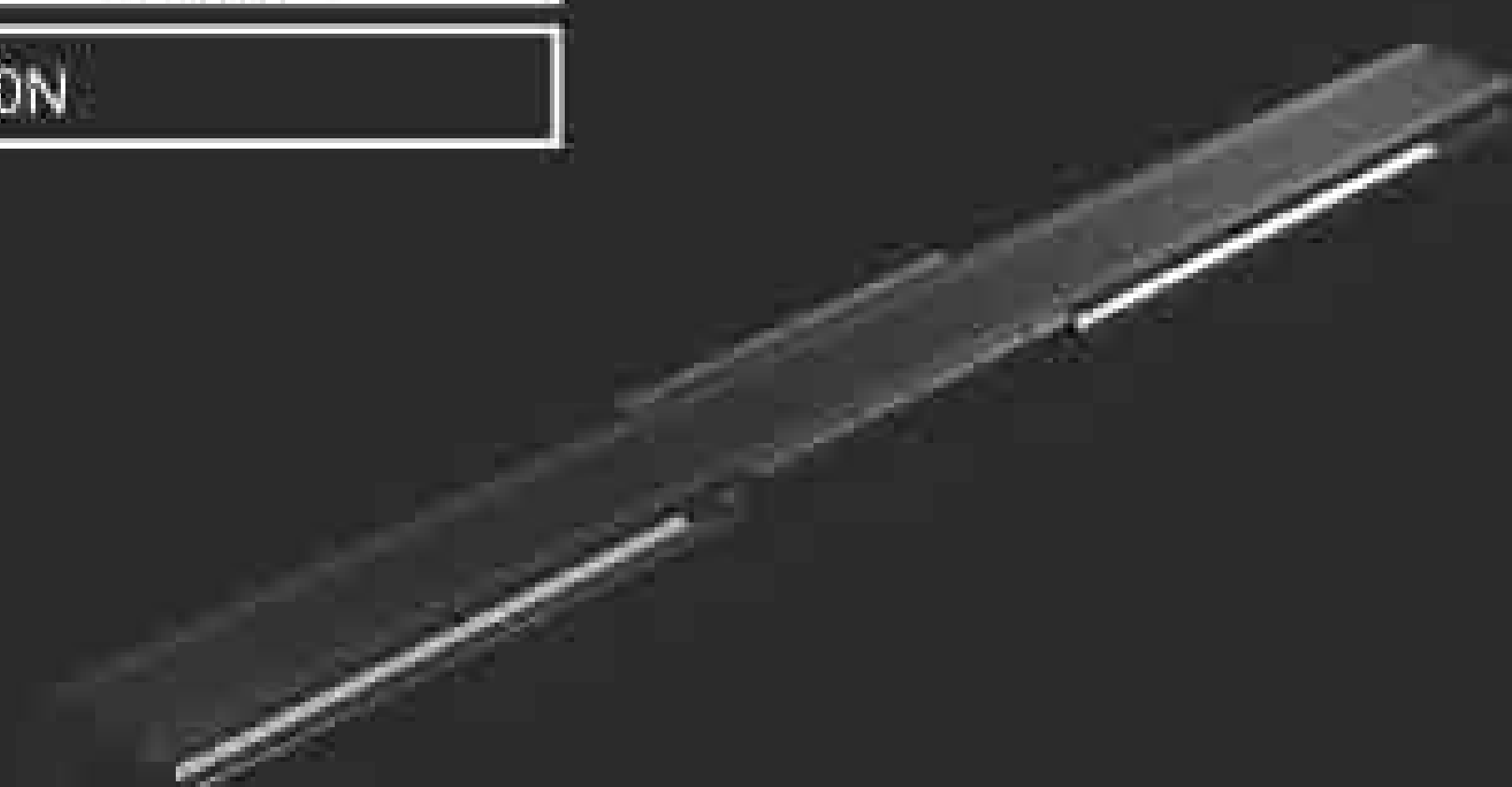
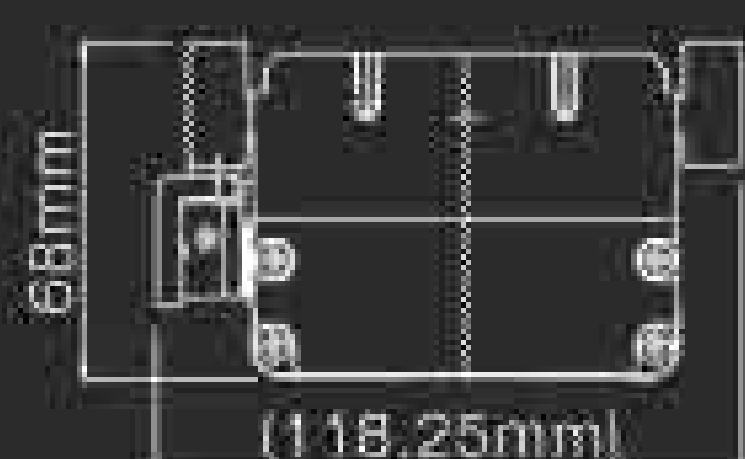
# High-rigidity Model

## 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: 0.1 $\mu$ m to 1.0 $\mu$ m

Small transfer systems KLM46S	Medium transfer systems KLM46M
150N-300N	

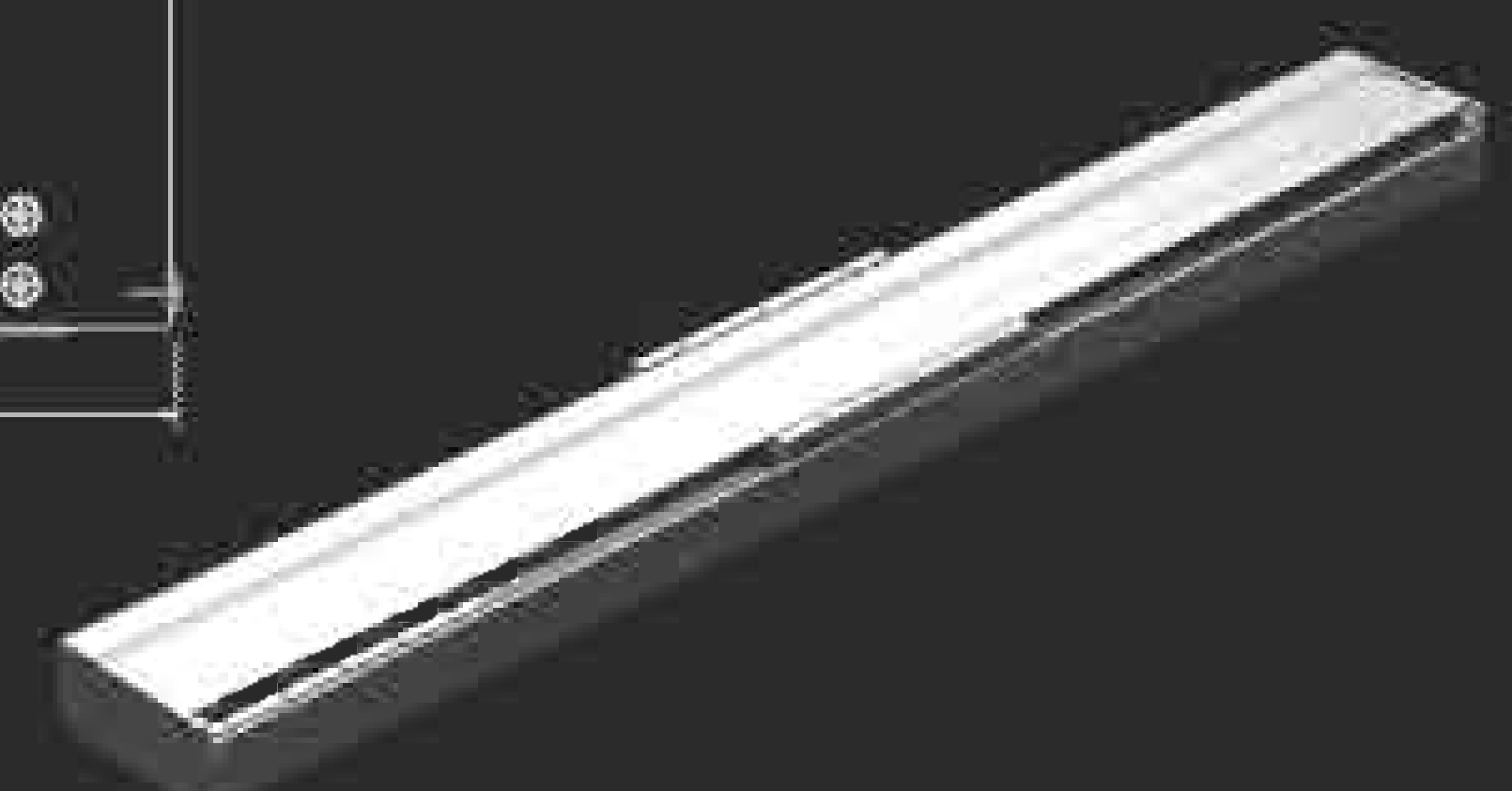


# High-accuracy Model

## CLM

Coreless Flat Model

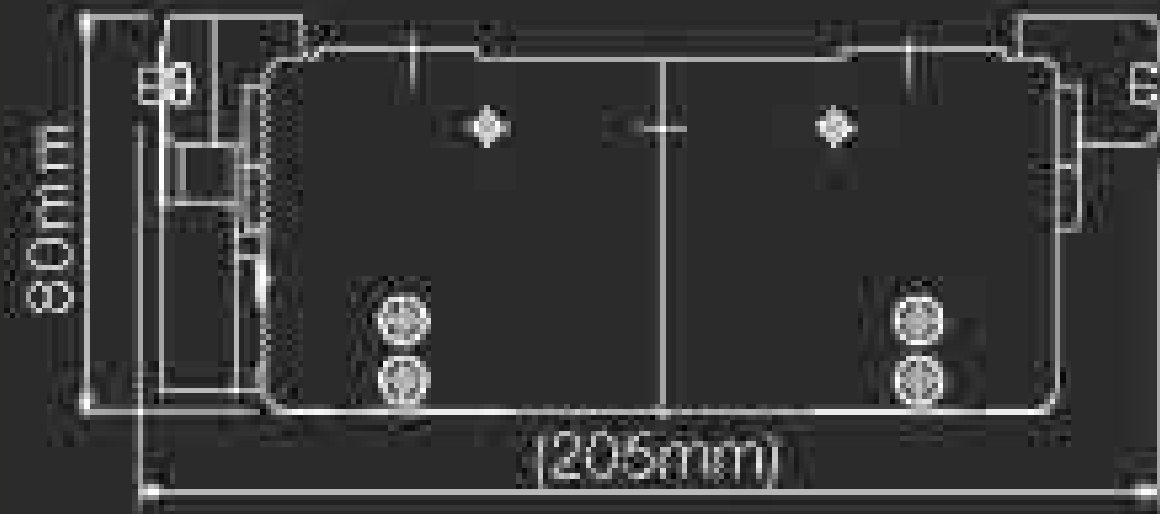
- Standard iron base and table increase accuracy.
- Coreless linear motor without cogs and attractive force improve speed stability.
- Flat model linear motor allows for long strokes.
- THK's thermal design prevents motor heat from dissipating to transfer objects.
- Minimum resolution: 0.078 $\mu$ m



# GLM20

Flat Model with Core

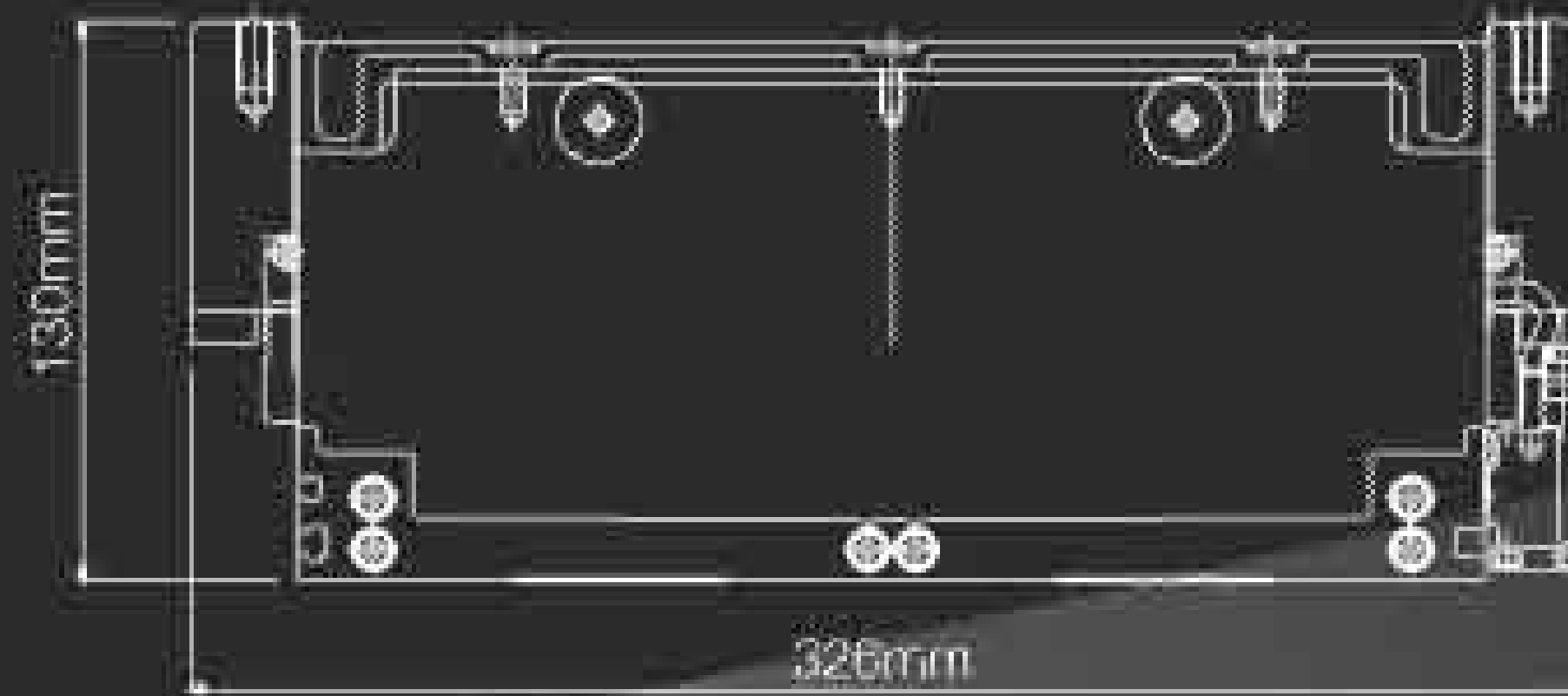
- Low-cost extruded aluminium parts + Caged Ball LM Guide features
- High-performance, clean design for diverse applications
- For medium to large transfer systems (350N to 1000N)
- Minimum resolution: 0.1µm to 10.0µm



# 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

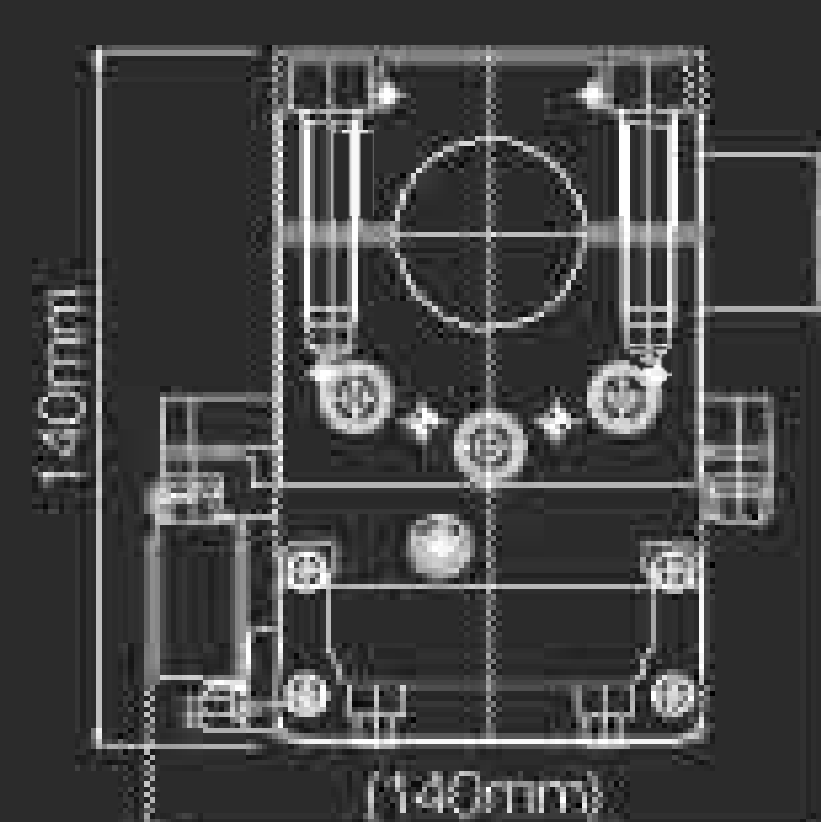
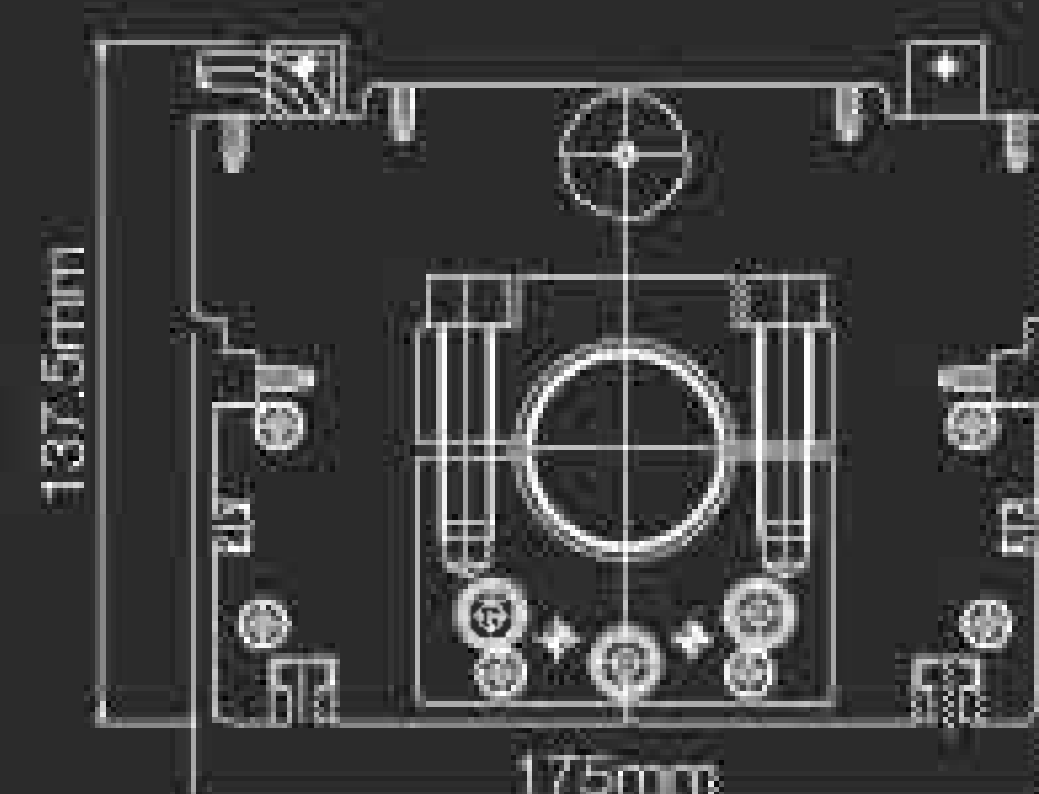
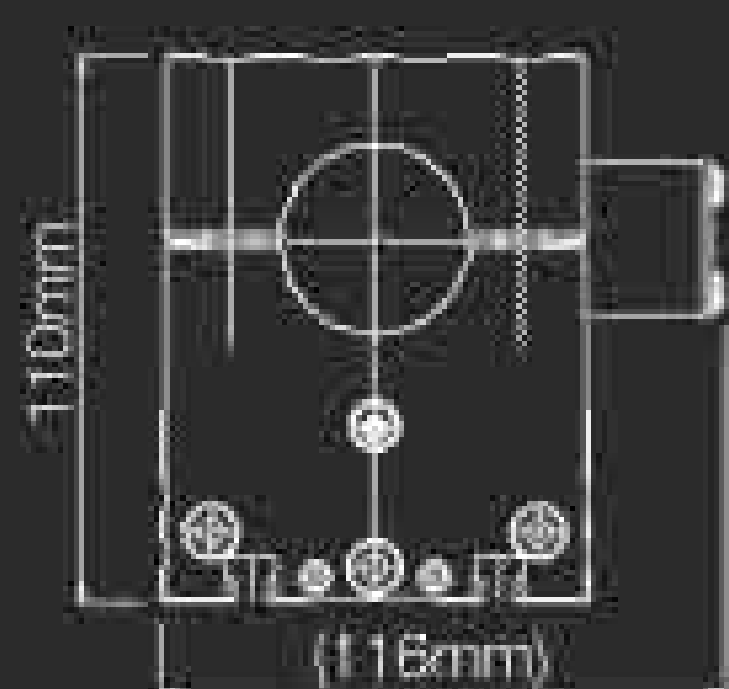


## Low-speed Ripple Model

### 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

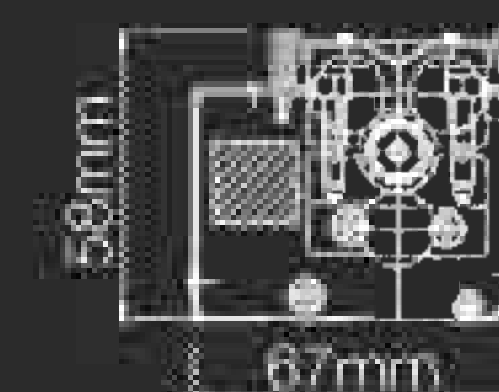


## Compact Model

### RDM-mini

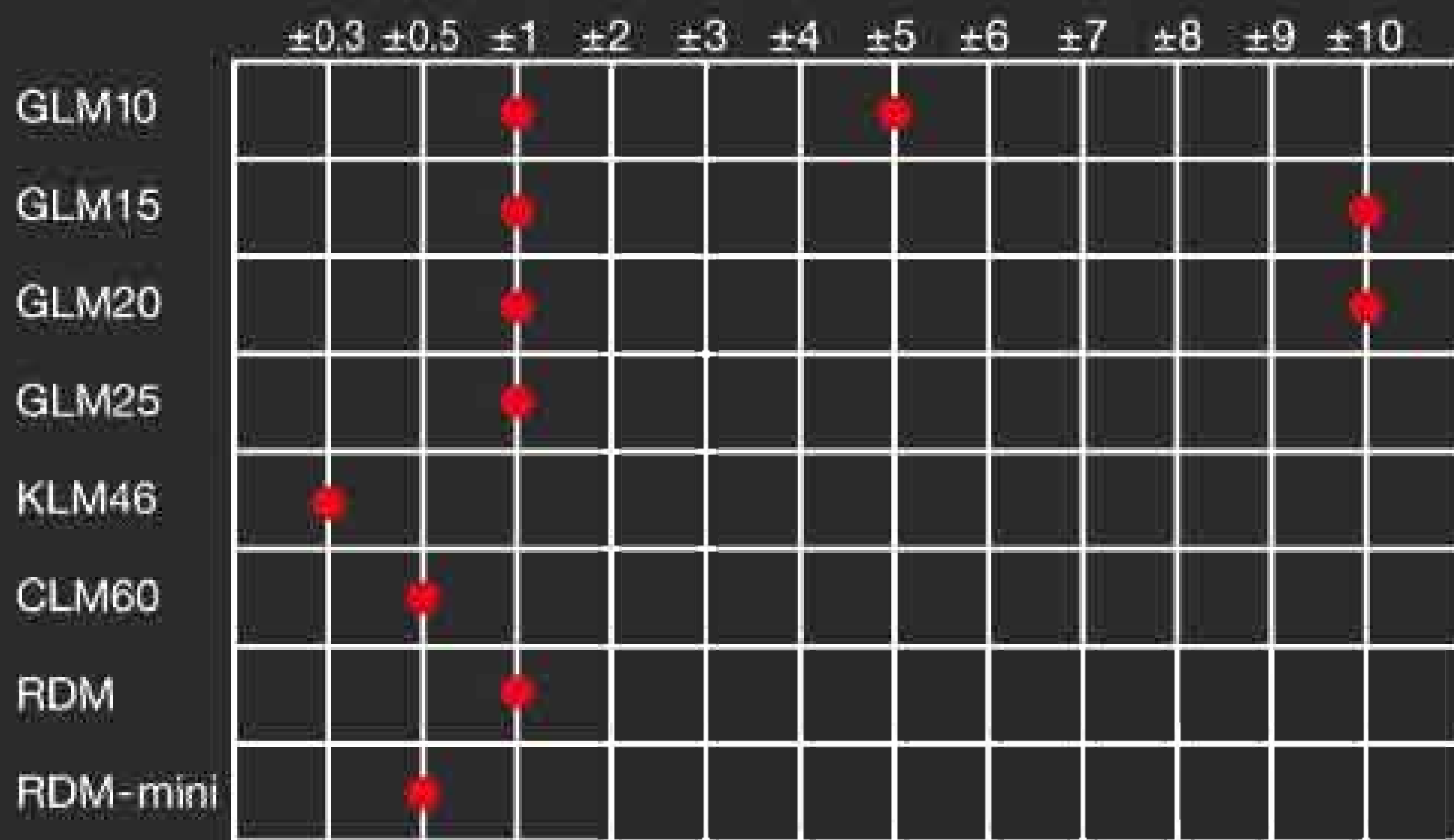
Coreless Rod Model

- Lightweight, compact design
- Maximum speed: 5m/s; maximum acceleration: 9.0G
- Compact design uses shielded flat cable
- Coreless linear motor eliminates need for cogging and attractive force
- Minimum resolution 0.078µm

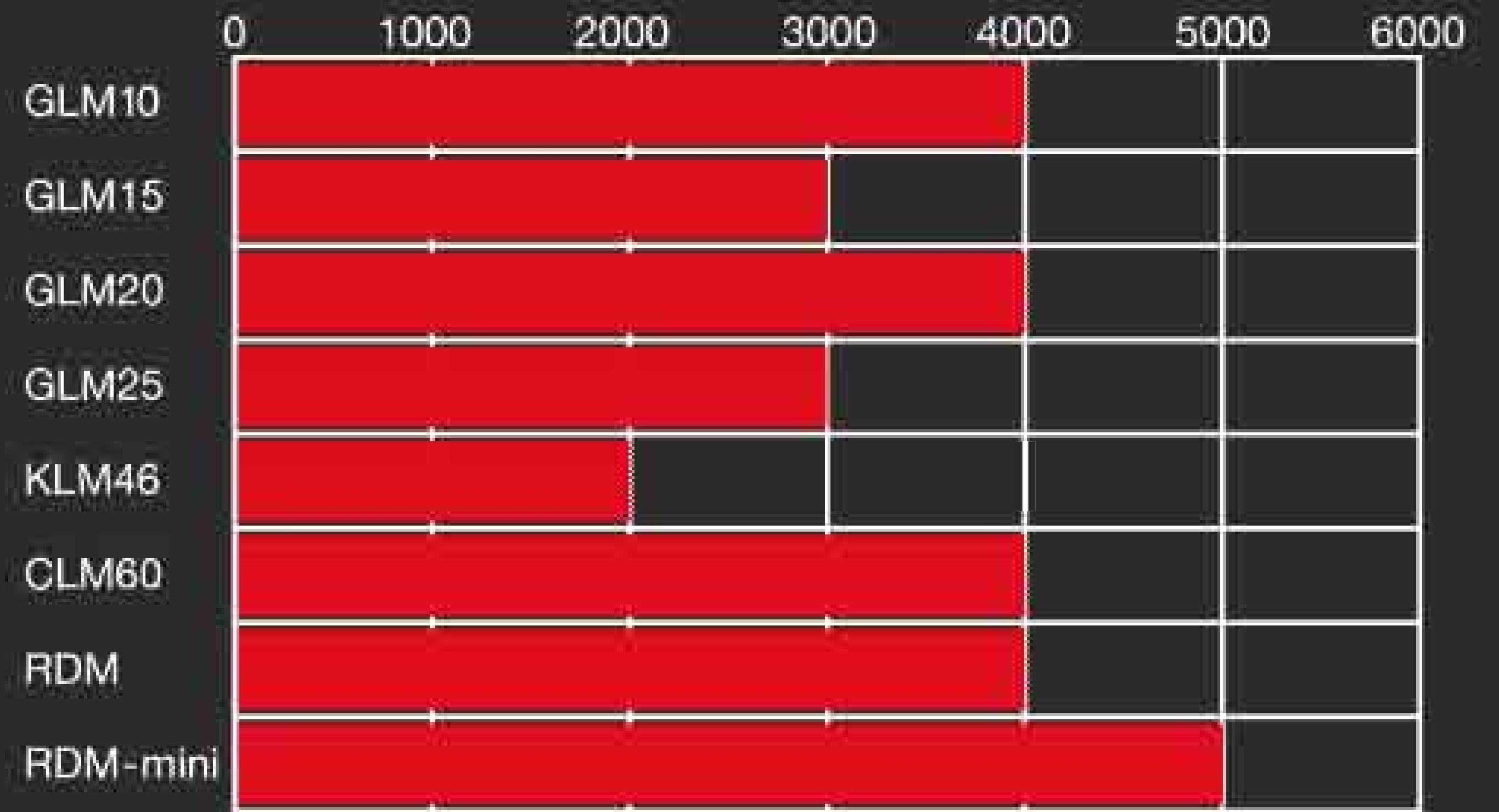


# Performance Comparison

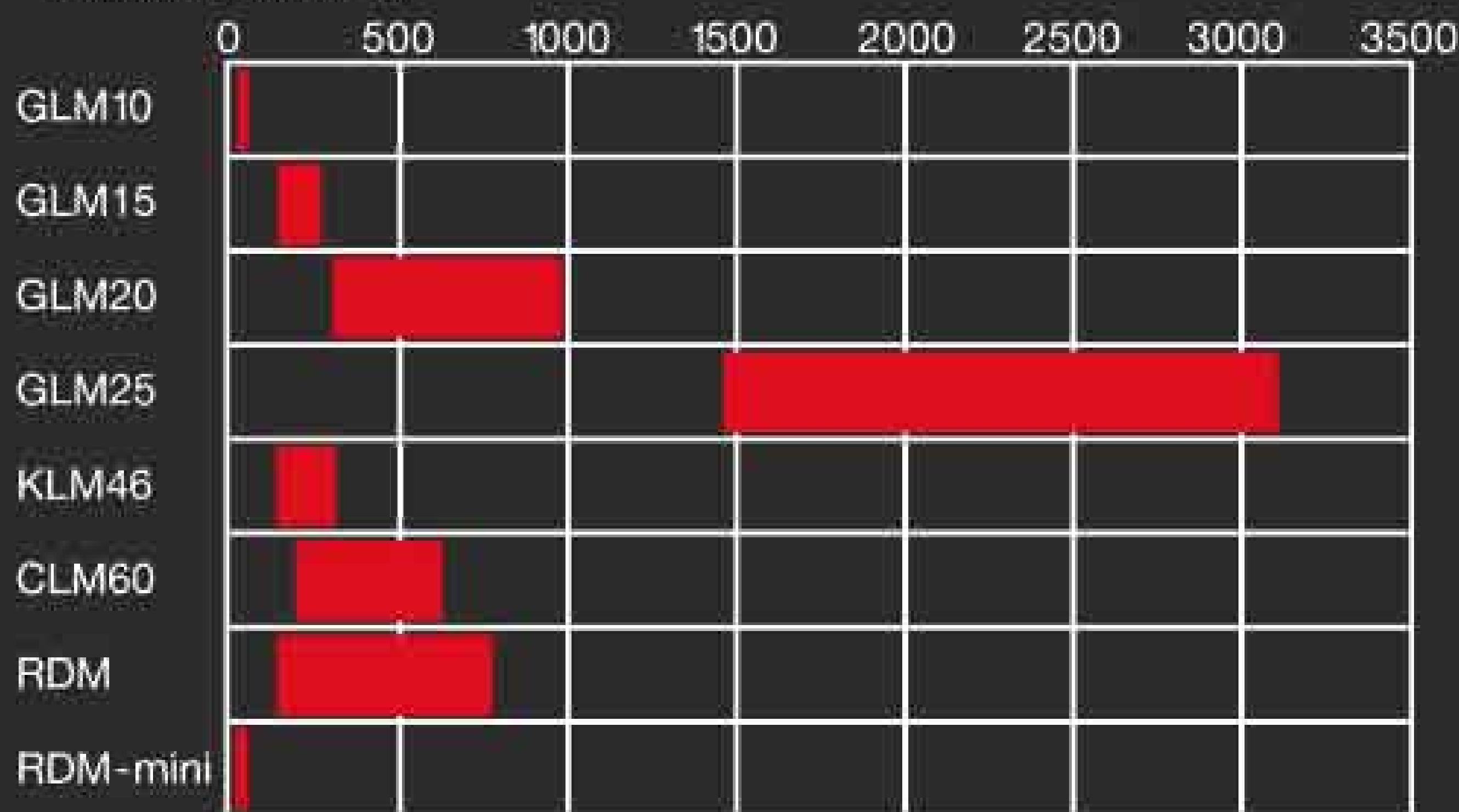
Positioning repeatability ( $\mu\text{m}$ )



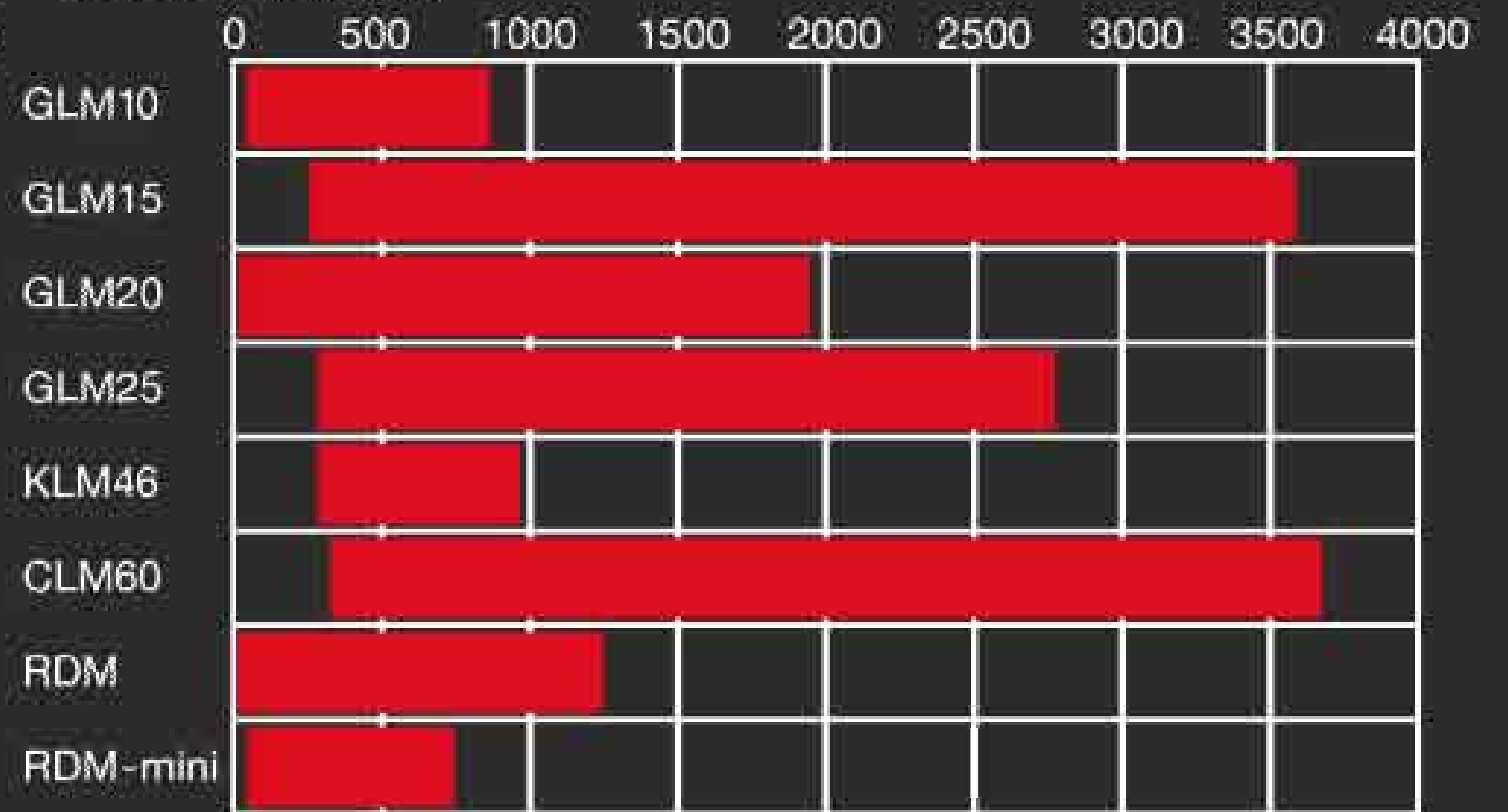
Speed (mm/s)



Maximum thrust (N)



Standard stroke (mm)



## 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

	Ball screw drive	Linear motor drive
Mechanism	<p>The diagram shows a cross-section of a ball screw drive. A stator is at the top, and a rotor is at the bottom. Motor electromagnetic force is applied to the stator, creating torque. This torque is transferred through a ball screw shaft and coupling to a transfer object.</p>	<p>The diagram shows a linear motor drive. It consists of a moving side and a fixed side. Electromagnetic force is applied to the moving side, which moves directly to a transfer object. The text notes 'Direct drive = no decelerating mechanism such as gears'.</p>
Long stroke	△	◎
High speed	○	◎
High response and conformability (acceleration performance)	○	◎
Multi-slider	△	◎
High accuracy	○	◎
Number of parts	○	◎
Thrust	◎	○
Cost	○	△

◎:Excellent ○:Usable △:Poor

THK

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