

## X-LRM150B-DE51 Datasheet



- 100, 150, 200 mm travel
- 15  $\mu\text{m}$  accuracy over 200 mm
- 50 kg load capacity
- Hardened steel construction and recirculating ball bearing guide provide exceptional stiffness and thermal stability
- Integrated linear encoders with 50 nm resolution provide slip/stall detection and position correction
- Built-in controller, daisy chains with other Zaber products

## X-LRM-DE Series Overview

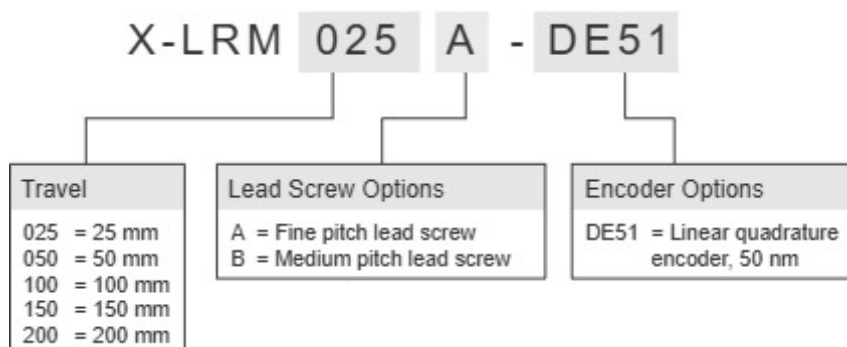
Zaber's X-LRM-DE series products are motorized linear stages with integrated controllers. An integrated linear encoder combined with stage calibration provides high accuracy positioning over the full travel of the device. The X-LRM-DE's hardened steel construction and recirculating ball bearing guide provide exceptional rigidity and thermal stability. High stiffness makes this stage ideal for multi-axis configurations or applications where excellent stability under moment loads is required.

They are stand-alone units requiring only a standard 24-48 V power supply. A knob at the end of the unit permits manual control - press and hold to switch between velocity mode and position mode, turn to move the stage, and press to stop.

The stages connect to the USB 2.0 or RS-232 port of any computer and can be chained with several units per chain. They can be chained with any other Zaber products. Convenient locking, 4-pin, M8 connectors on the unit allow for easy and secure connection between products. The chain also shares power, so multiple X-Series products can use a single power supply.

For more information visit: <https://www.zaber.com/products/linear-stages/X-LRM-DE>

## X-LRM-DE Series Part Numbering & Options



## X-LRM150B-DE51 Drawings

- [X-LRM-DE.png \(Drawing for the X-LRM-DE\)](#)

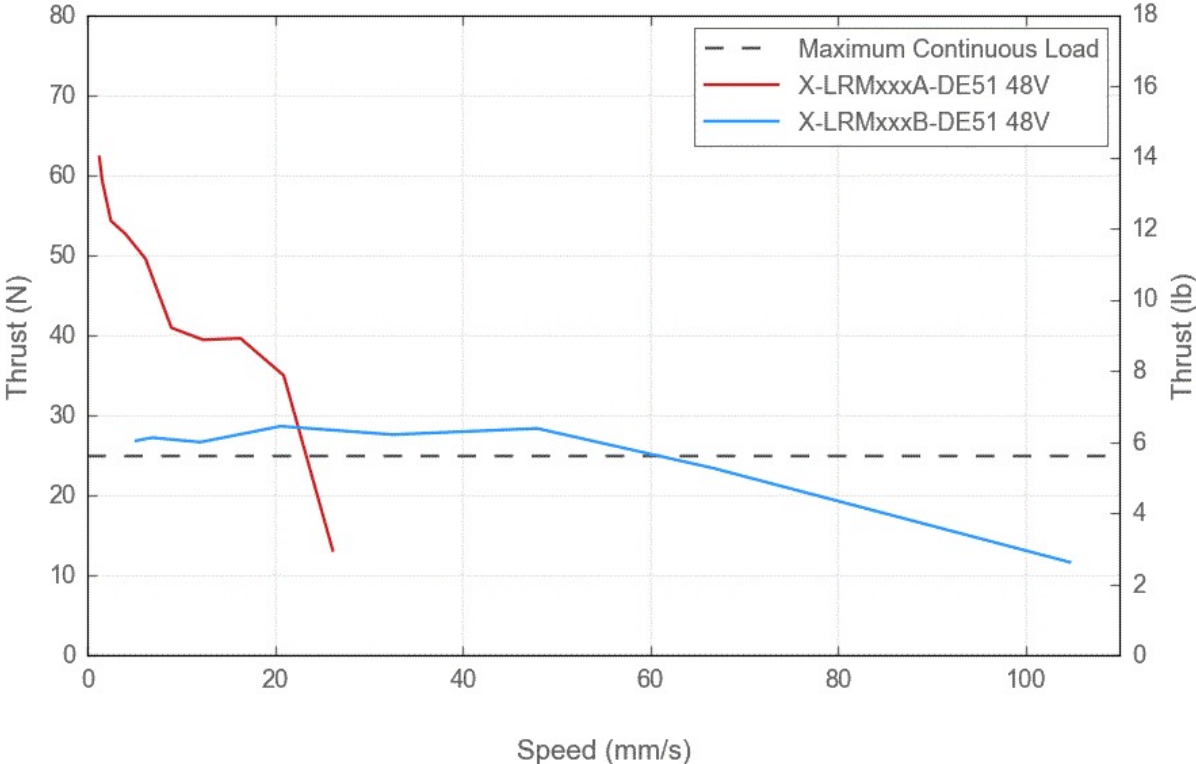
## X-LRM150B-DE51 Specifications

<b>Microstep Size (Default Resolution)</b>	<b>0.1905 <math>\mu\text{m}</math></b>
Built-in Controller	Yes
Travel Range	150 mm (5.905")
Accuracy (unidirectional)	15 $\mu\text{m}$ (0.000591")
Repeatability	< 2.5 $\mu\text{m}$ (< 0.000098")
Backlash	< 5 $\mu\text{m}$ (< 0.000197")
Maximum Speed	100 mm/s (3.937"/s)
Minimum Speed	0.000116 mm/s (0.000005"/s)
Speed Resolution	0.000116 mm/s (0.000005"/s)
Encoder Type	Linear quadrature encoder
Encoder Resolution	50 nm
Peak Thrust	50 N (11.2 lb)
Maximum Continuous Thrust	25 N (5.6 lb)
Communication Interface	RS-232, USB 2.0
Communication Protocol	Zaber ASCII (Default), Zaber Binary
Data Cable Connection	Locking 4-pin M8
Maximum Centered Load	500 N (112.1 lb)
Maximum Moment (Pitch)	6 N-m (4.4 ft-lb)
Maximum Moment (Roll)	15 N-m (11.1 ft-lb)
Maximum Moment (Yaw)	6 N-m (4.4 ft-lb)
Vertical Runout	< 8 $\mu\text{m}$ (< 0.000315")
Horizontal Runout	< 12 $\mu\text{m}$ (< 0.000472")
Pitch	0.02° (0.349 mrad)
Roll	0.02° (0.349 mrad)
Yaw	0.02° (0.349 mrad)
Stiffness in Pitch	550 N-m/° (32 $\mu\text{rad/N-m}$ )
Stiffness in Roll	550 N-m/° (32 $\mu\text{rad/N-m}$ )
Stiffness in Yaw	550 N-m/° (32 $\mu\text{rad/N-m}$ )

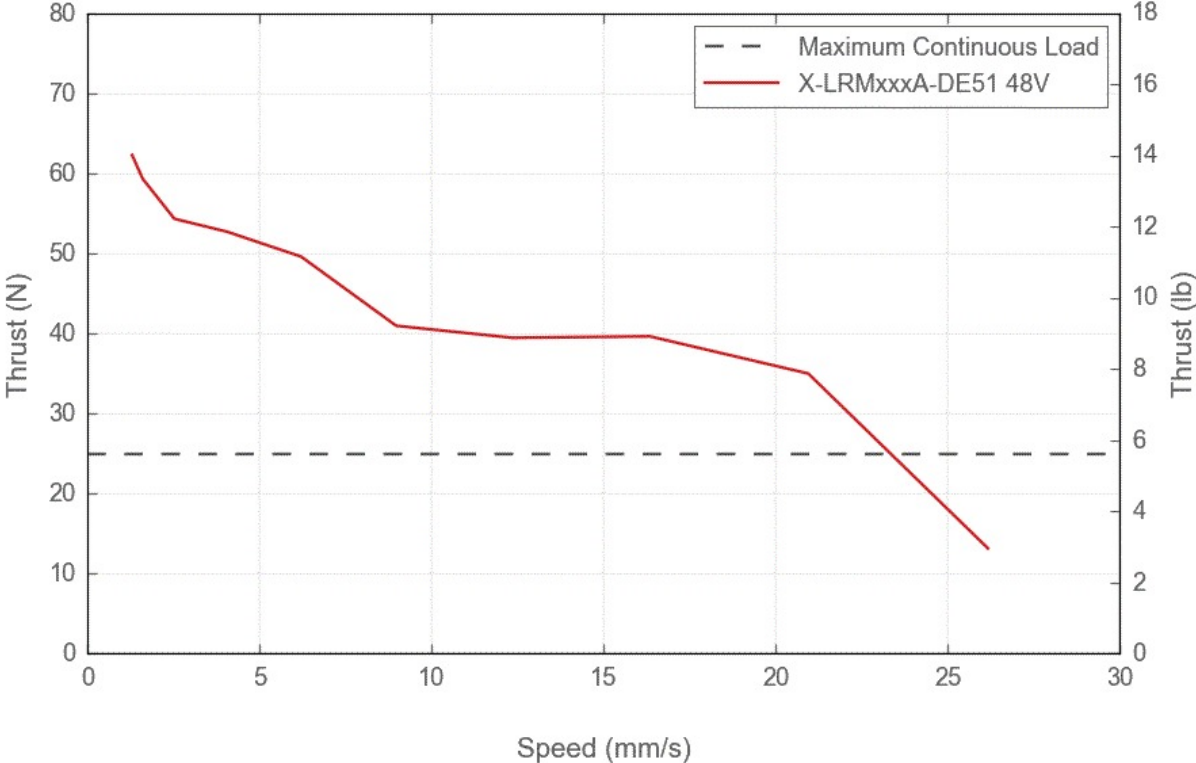
<b>Microstep Size (Default Resolution)</b>	<b>0.1905 <math>\mu\text{m}</math></b>
Power Supply	24-48 VDC
Power Plug	2-pin Screw Terminal
Maximum Current Draw	350 mA
Linear Motion Per Motor Rev	2.4384 mm (0.096")
Motor Steps Per Rev	200
Motor Type	Stepper (2 phase)
Motor Rated Current	600 mA/phase
Inductance	3.5 mH/phase
Default Resolution	1/64 of a step
Guide Type	Recirculating ball bearing
Mechanical Drive System	Precision lead screw
Limit or Home Sensing	Magnetic hall sensor
Manual Control	Yes
Axes of Motion	1
Mounting Interface	M3 and M6 threaded holes
Stage Parallelism	< 10 $\mu\text{m}$ (< 0.000394")
Operating Temperature Range	0 to 50 °C
CE Compliant	Yes
Vacuum Compatible	No
Weight	1.32 kg (2.910 lb)

X-LRM-DE Series Charts

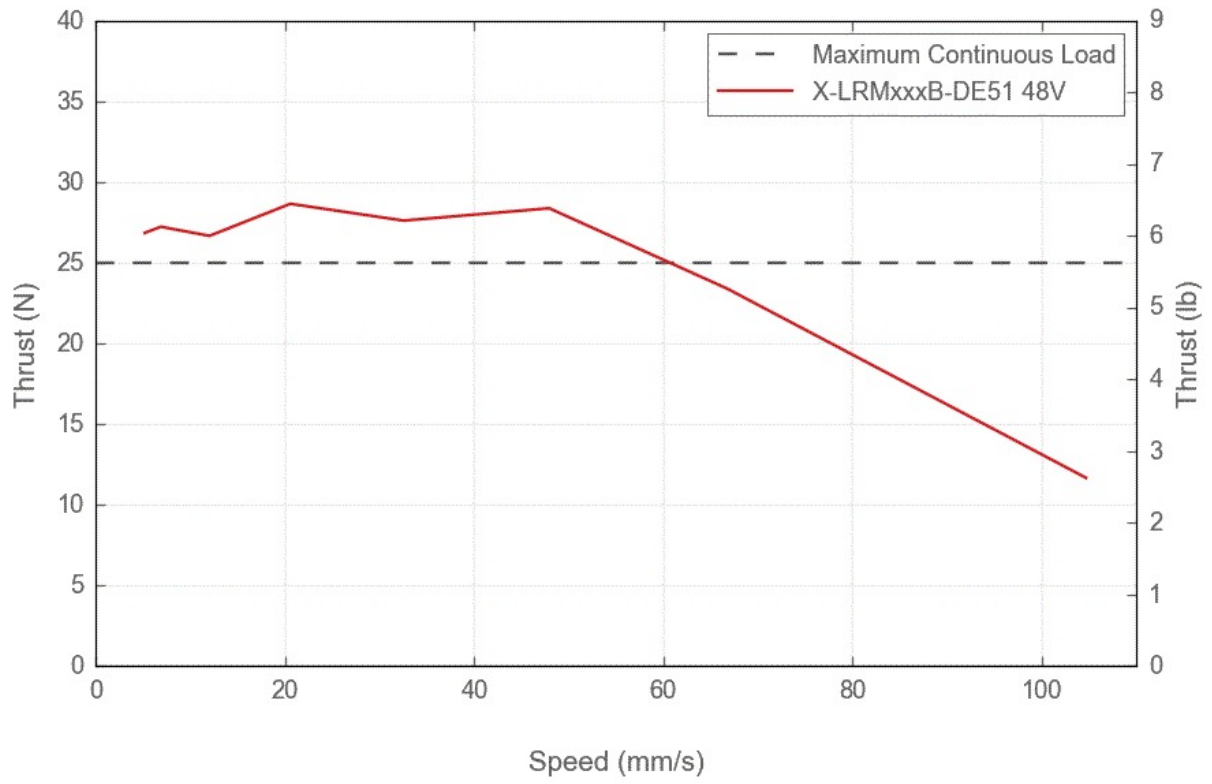
Thrust Speed Performance



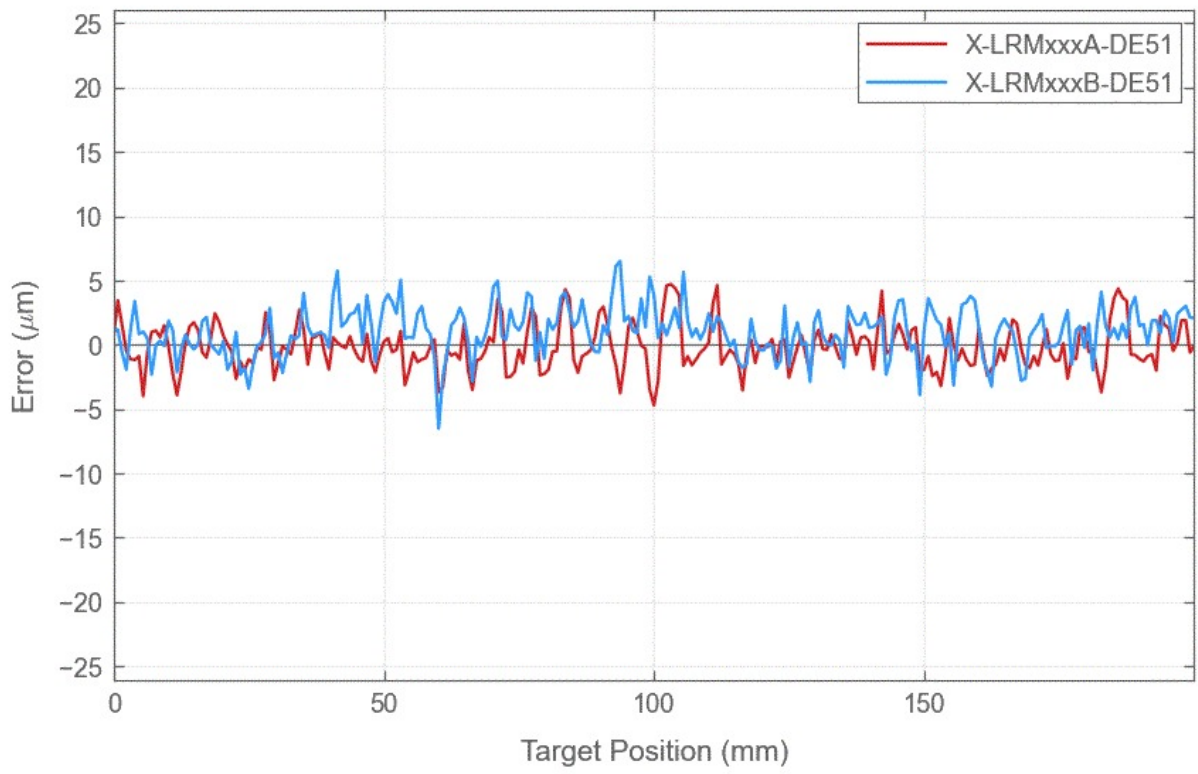
# Thrust Speed Performance



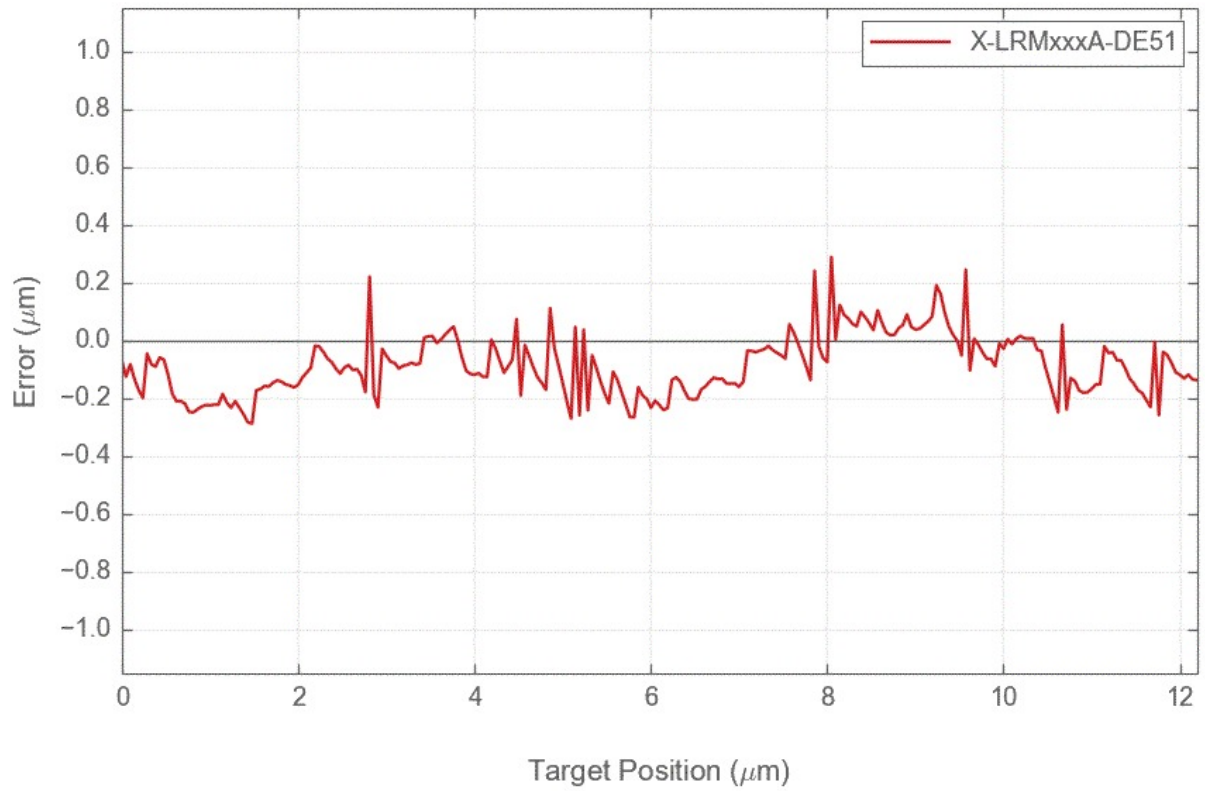
## Thrust Speed Performance



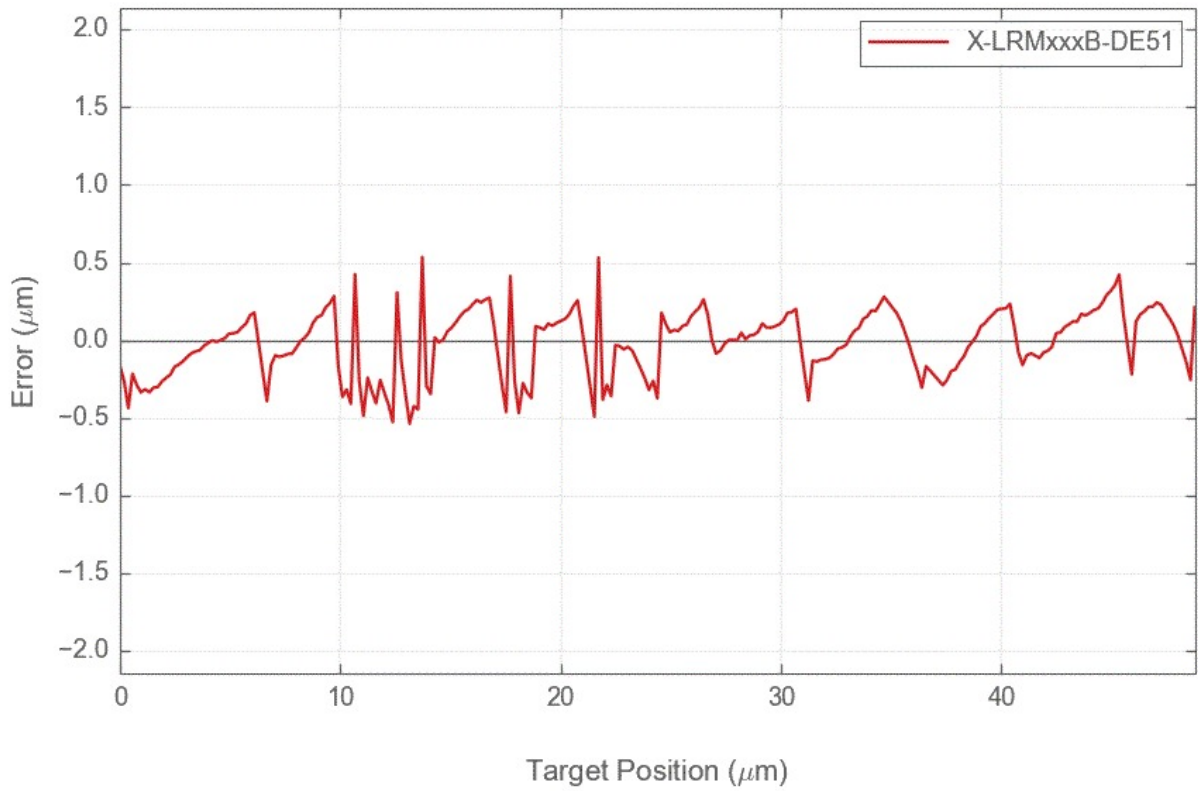
## Typical Accuracy



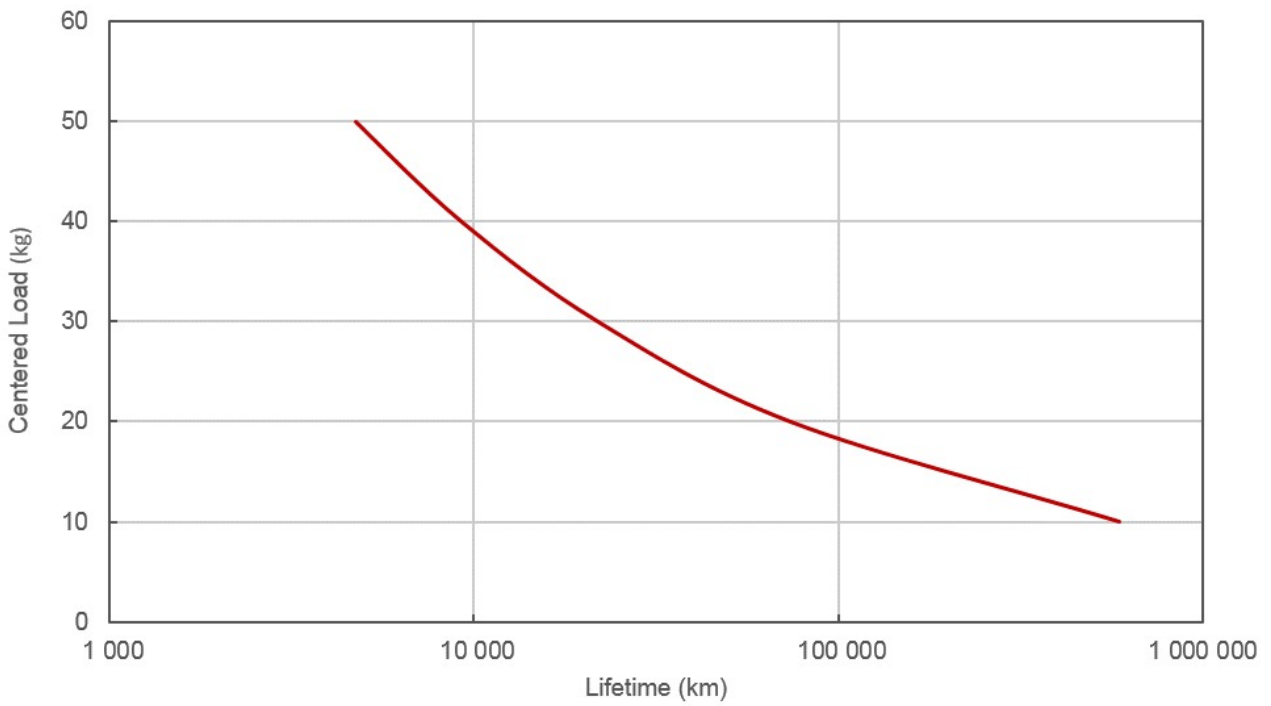
## Typical Microstepping Accuracy



### Typical Microstepping Accuracy



### LRM Linear Bearing Lifetime



## Contact

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