

X-LSQ450D-E01 Datasheet



- 75, 150, 300, 450 and 600 mm travel
- 50 kg load capacity
- Up to 1 m/s speed and up to 100 N thrust
- Integrated recirculating ball bearing guide provides exceptional lifetime
- Encoder position feedback with slip/stall detection and automatic recovery
- Built-in controller; daisy-chains with any other Zaber products
- Custom versions available

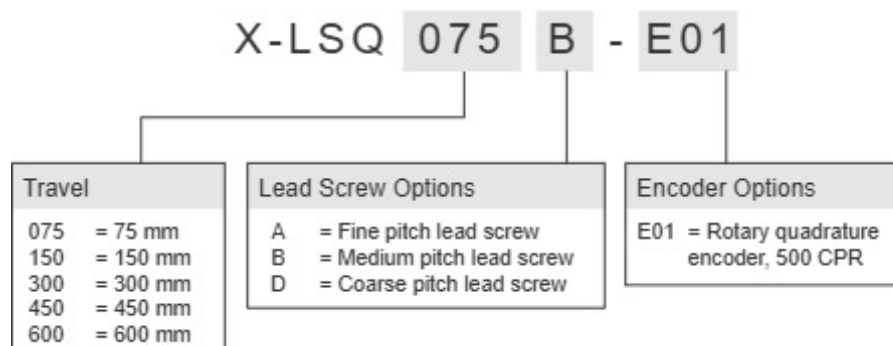
X-LSQ-E Series Overview

Zaber's X-LSQ-E Series products are computer controlled, motorized linear stages with a variety of lead screw pitches and travels. The built-in motor encoder allows closed-loop operation and slip/stall recovery features. They are stand-alone units requiring only a 48 V power supply, included with the kit version. An indexed knob provides convenient manual control for versatile operation even without a computer - press and hold to switch between velocity mode and position mode and push to stop.

These stages connect to the RS-232 port or USB port of any computer, and they can be daisy-chained with any other Zaber products. The daisy-chain also shares power, making it possible for multiple X-Series products to share a single power supply. Convenient locking, 4-pin, M8 connectors on the unit allow for secure connection between devices.

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

X-LSQ-E Series Part Numbering & Options



X-LSQ450D-E01 Drawings

- [X-LSQ-E.png \(Drawing for the X-LSQ-E\)](#)

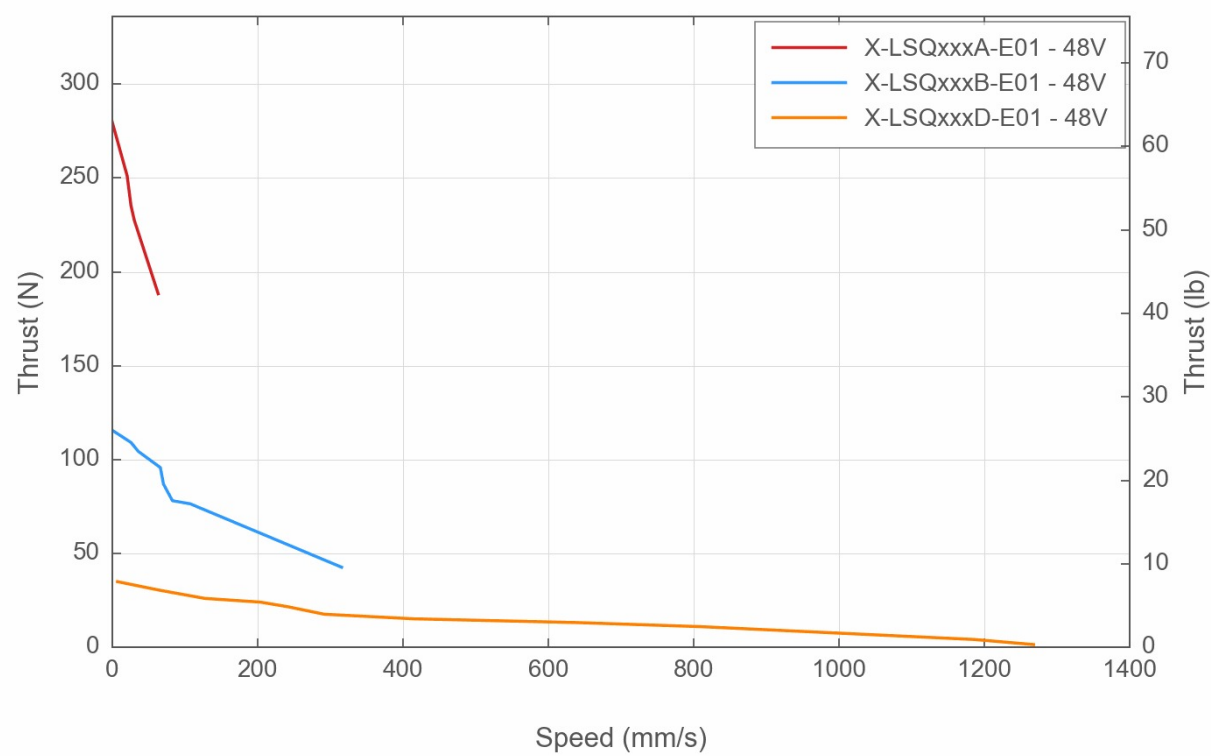
X-LSQ450D-E01 Specifications

Microstep Size (Default Resolution)	1.984375 μm
Built-in Controller	Yes
Travel Range	450 mm (17.716")
Accuracy (unidirectional)	185 μm (0.007283")
Repeatability	< 10 μm (< 0.000394")
Backlash	< 75 μm (< 0.002953")
Maximum Speed	1000 mm/s (39.370"/s)
Minimum Speed	0.001212 mm/s (0.000048"/s)
Speed Resolution	0.001212 mm/s (0.000048"/s)
Encoder Resolution	500 CPR (2000 states/rev)
Encoder Type	Rotary quadrature encoder
Peak Thrust	35 N (7.8 lb)
Back-driving Force*	($\pm$ 30%) 12 N (2.7 lb)
Maximum Continuous Thrust	18 N (4.0 lb)
Communication Interface	RS-232
Communication Protocol	Zaber ASCII (Default), Zaber Binary
Data Cable Connection	Locking 4-pin M8
Maximum Centered Load	500 N (112.1 lb)
Maximum Moment (Roll)	20 N-m (14.8 ft-lb)
Maximum Moment (Pitch)	6 N-m (4.4 ft-lb)
Maximum Moment (Yaw)	6 N-m (4.4 ft-lb)
Guide Type	Recirculating Ball Linear Guide
Vertical Runout	< 30 μm (< 0.001181")
Horizontal Runout	< 40 μm (< 0.001575")
Pitch	0.06° (1.047 mrad)
Roll	0.03° (0.523 mrad)
Yaw	0.03° (0.523 mrad)
Stiffness in Pitch	150 N-m/° (116 $\mu\text{rad/N-m}$)
Stiffness in Roll	225 N-m/° (78 $\mu\text{rad/N-m}$)
Stiffness in Yaw	150 N-m/° (116 $\mu\text{rad/N-m}$)
Power Supply	24-48 VDC

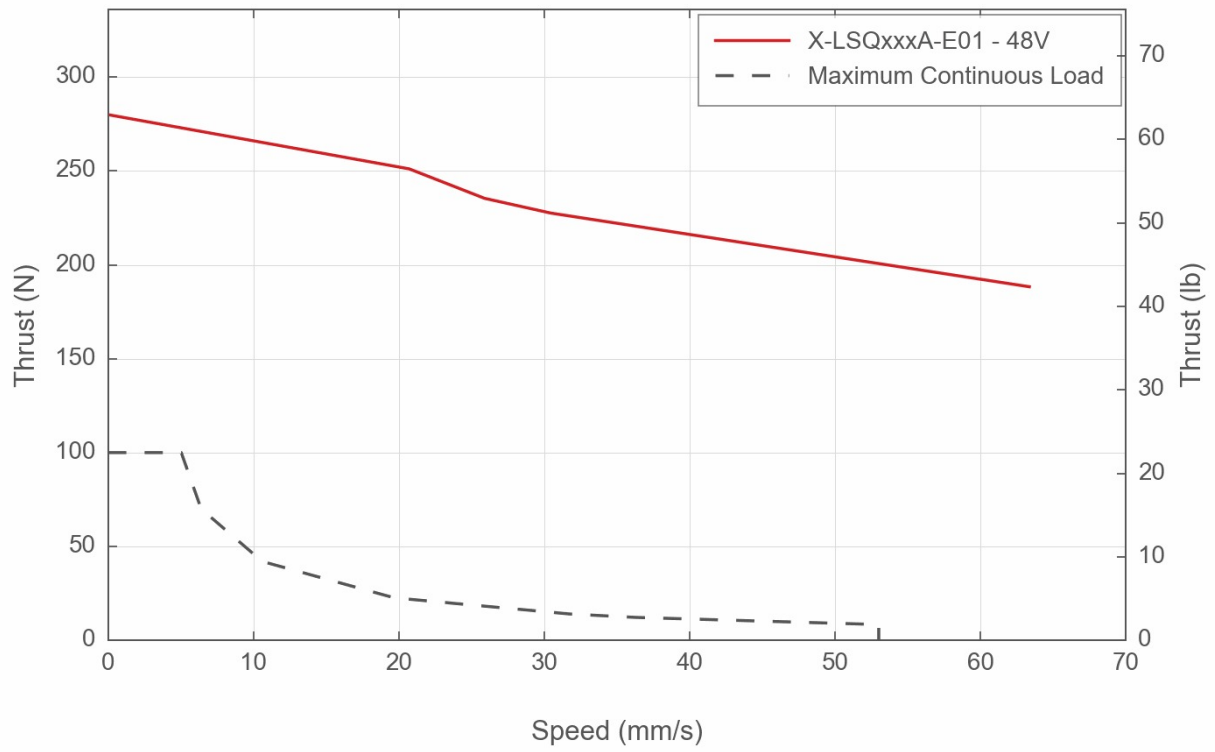
Microstep Size (Default Resolution)	1.984375 μm
Power Plug	2-pin Screw Terminal
Maximum Current Draw	1450 mA
Linear Motion Per Motor Rev	25.4 mm (1.000")
Motor Steps Per Rev	200
Motor Type	Stepper (2 phase)
Motor Rated Current	2300 mA/phase
Inductance	2.2 mH/phase
Default Resolution	1/64 of a step
Mechanical Drive System	Precision lead screw
Limit or Home Sensing	Magnetic home sensor
Manual Control	Indexed knob with push switch
Axes of Motion	1
LED Indicators	Yes
Mounting Interface	M6 threaded holes and 8-32 threaded holes
Stage Parallelism	< 100 μm (< 0.003937")
Operating Temperature Range	0 to 50 °C
CE Compliant	Yes
Vacuum Compatible	No
Weight	2.30 kg (5.071 lb)

X-LSQ-E Series Charts

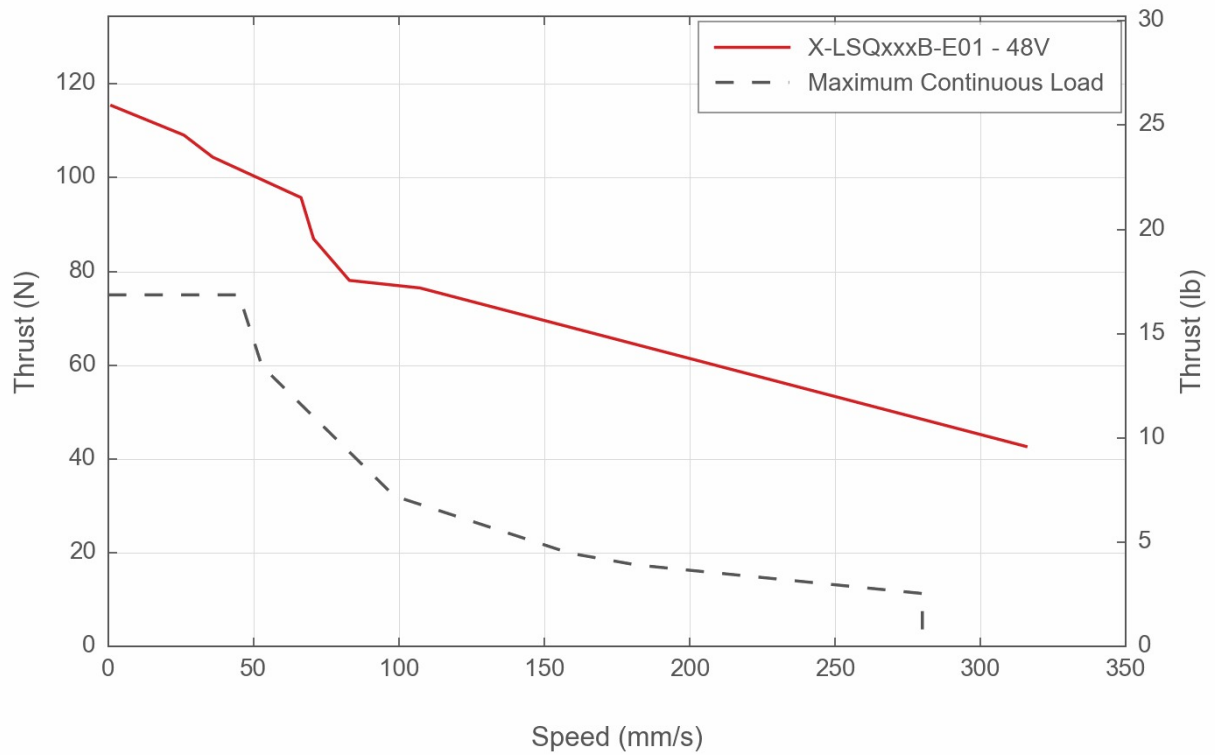
Thrust Speed Performance



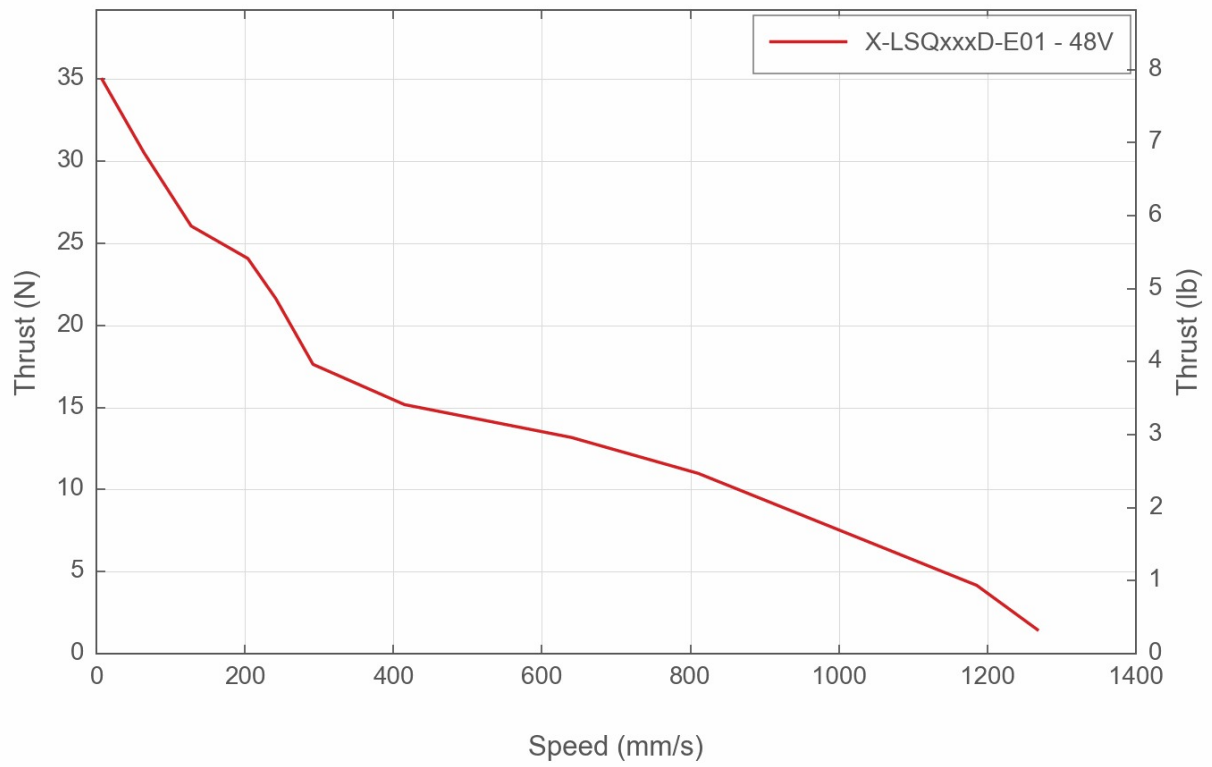
Thrust Speed Performance



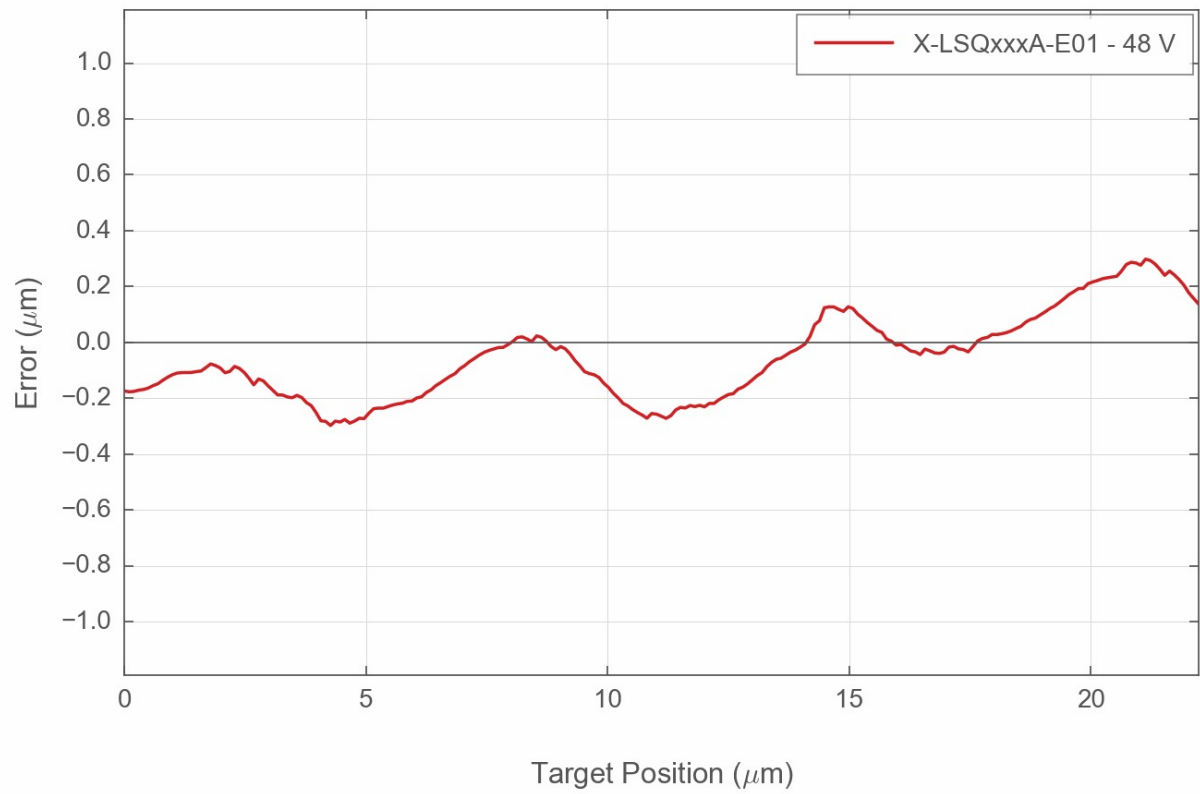
Thrust Speed Performance



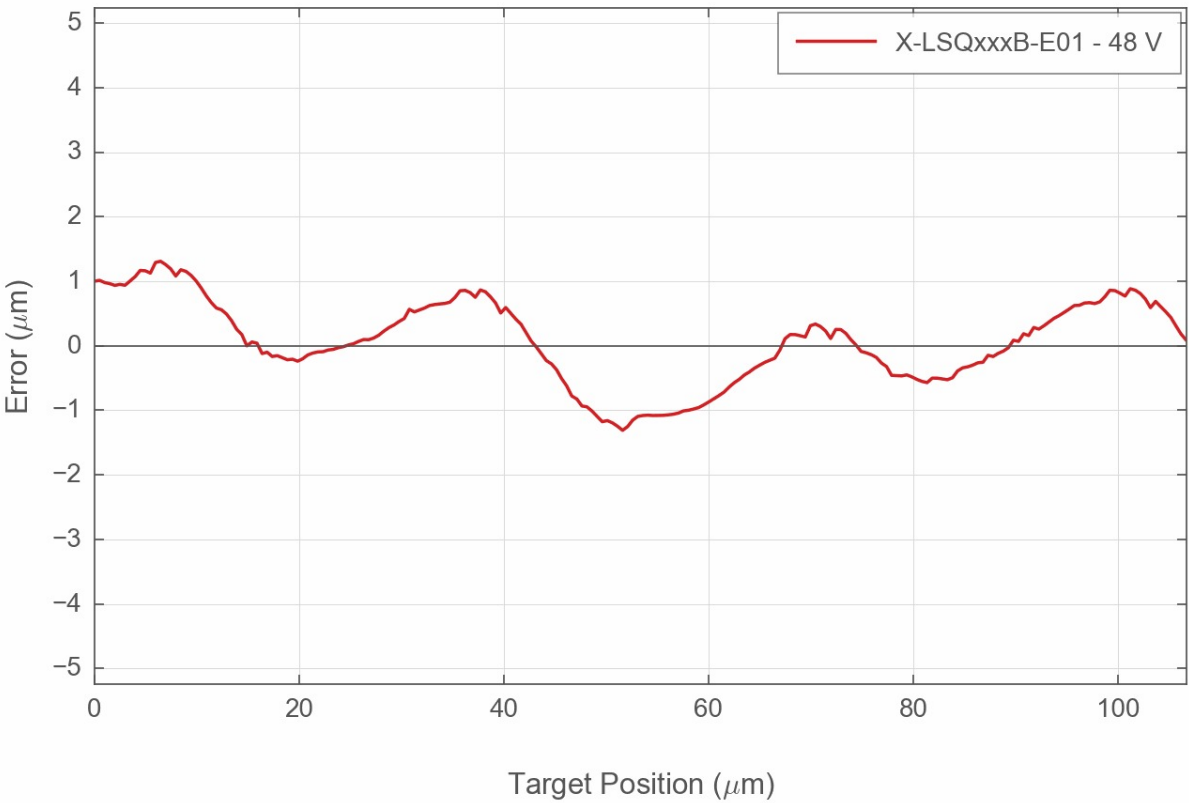
Thrust Speed Performance



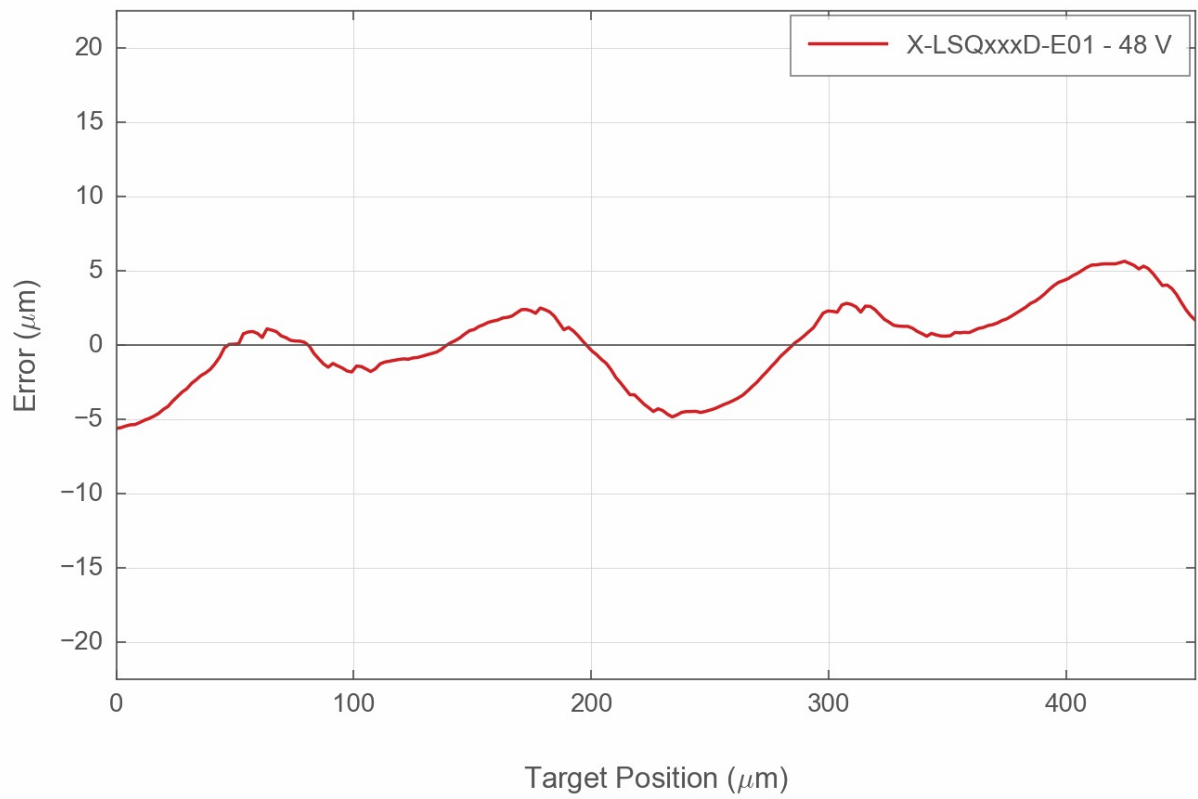
Typical Microstepping Accuracy



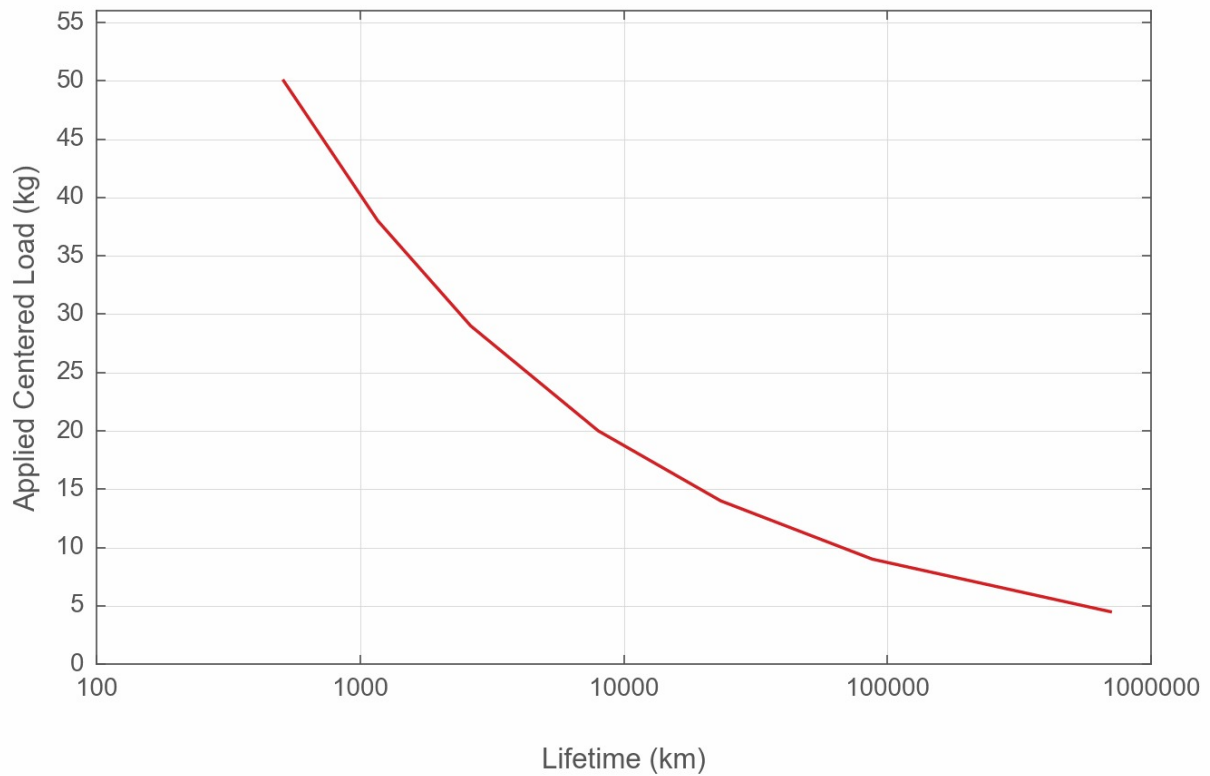
Typical Microstepping Accuracy



Typical Microstepping Accuracy



LSQ Linear Bearing Lifetime



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