

X-LSQ600B-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

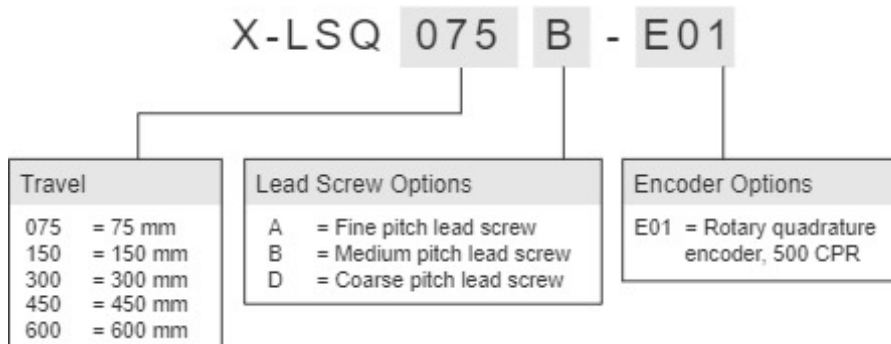
X-LSQ-E Series Overview

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>

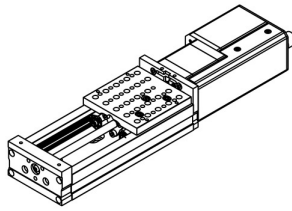
X-LSQ-E Series Part Numbering



X-LSQ600B-E01 Drawings

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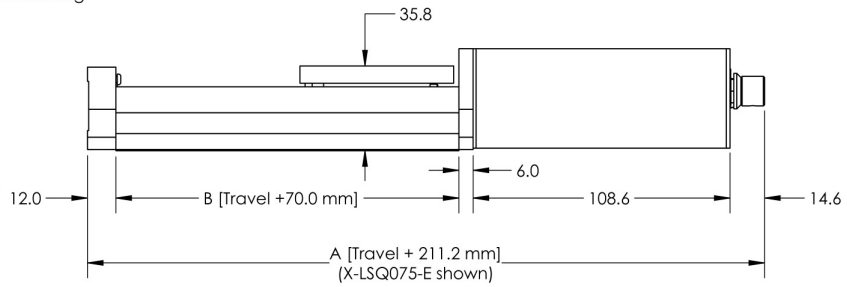
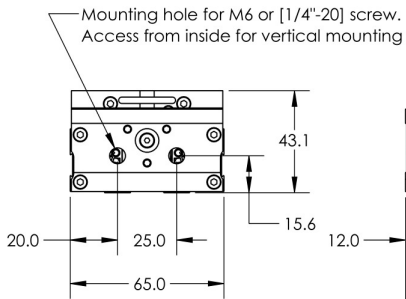
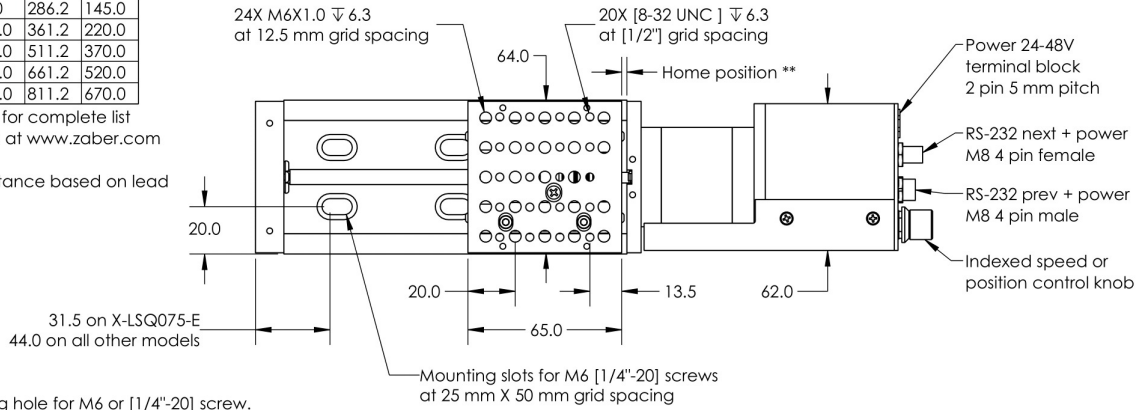
X-LSQ-E Motorized Linear Stage
 dimensions in mm



| Model Number* | Travel | A | B |
|---------------|--------|-------|-------|
| X-LSQ075-E | 75.0 | 286.2 | 145.0 |
| X-LSQ150-E | 150.0 | 361.2 | 220.0 |
| X-LSQ300-E | 300.0 | 511.2 | 370.0 |
| X-LSQ450-E | 450.0 | 661.2 | 520.0 |
| X-LSQ600-E | 600.0 | 811.2 | 670.0 |

*See product page for complete list of available models at www.zaber.com

**Home position distance based on lead screw pitch:
 A - 2.0 +/- 0.4 mm
 B - 2.2 +/- 0.4 mm
 D - 2.8 +/- 0.4 mm



DWG-3012 R01A

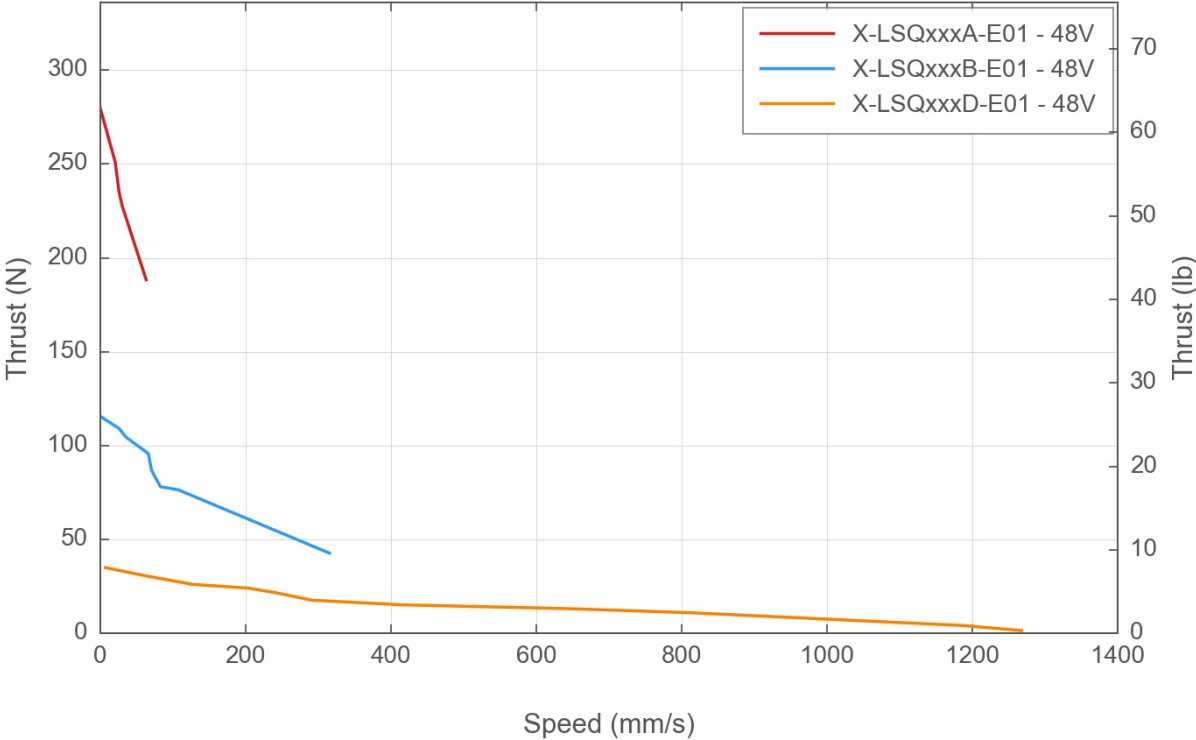
X-LSQ600B-E01 Specifications

| Specification | Value | Alternate Unit |
|-------------------------------------|-------------------------------------|--------------------------|
| Microstep Size (Default Resolution) | 0.49609375 μm | |
| Built-in Controller | Yes | |
| Travel Range | 600 mm | 23.622" |
| Accuracy (unidirectional) | 100 μm | 0.003937" |
| Repeatability | < 3 μm | < 0.000118" |
| Backlash | < 18 μm | < 0.000709" |
| Maximum Speed | 144 mm/s | 5.669"/s |
| Minimum Speed | 0.000303 mm/s | 0.000012"/s |
| Speed Resolution | 0.000303 mm/s | 0.000012"/s |
| Encoder Resolution | 500 CPR | 2000 states/rev |
| Encoder Type | Rotary quadrature encoder | |
| Peak Thrust | 120 N | 26.9 lb |
| Back-driving Force | 44 N ($\pm 30\%$) | 9.9 lb ($\pm 30\%$) |
| Maximum Continuous Thrust | 75 N | 16.8 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 Cantilever Load | 2000 N-cm | 2832.2 oz-in |
| Guide Type | Recirculating Ball Linear Guide | |
| Vertical Runout | < 30 μm | < 0.001181" |
| Horizontal Runout | < 60 μm | < 0.002362" |
| 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 | |
| Power Plug | 2-pin Screw Terminal | |

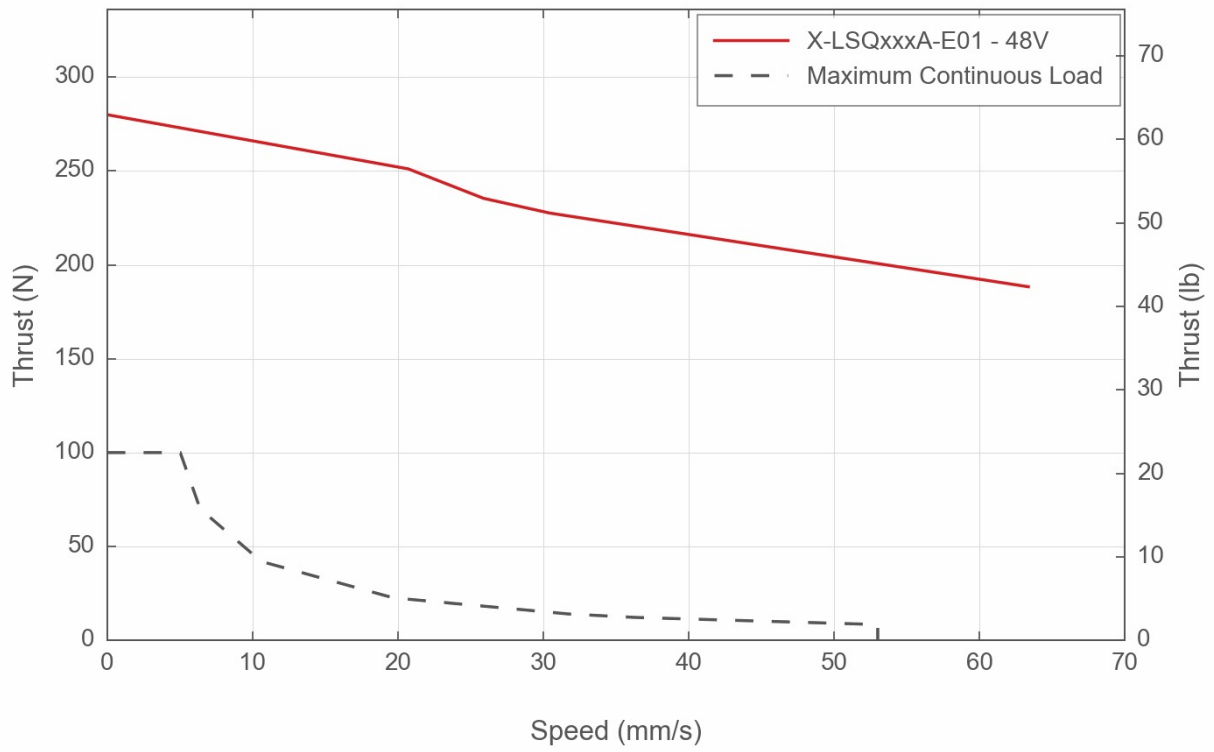
| Specification | Value | Alternate Unit |
|-----------------------------|---|----------------|
| Maximum Current Draw | 1450 mA | |
| Linear Motion Per Motor Rev | 6.35 mm | 0.250" |
| Motor Steps Per Rev | 200 | |
| Motor Type | Stepper (2 phase) | |
| Motor Rated Current | 2300 mA/phase | |
| Inductance | 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 μ m | < 0.003937" |
| Operating Temperature Range | 0 to 50 °C | |
| RoHS Compliant | Yes | |
| CE Compliant | Yes | |
| Vacuum Compatible | No | |
| Weight | 2.90 kg | 6.393 lb |

X-LSQ-E Series Charts

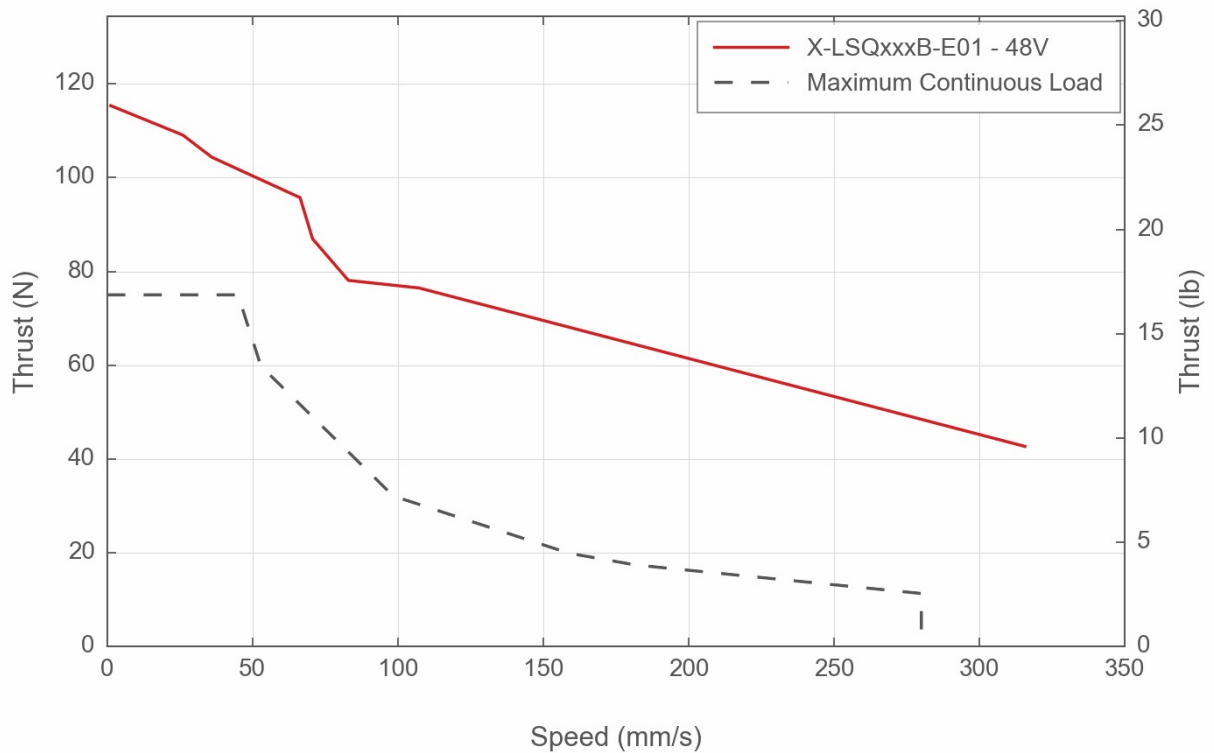
Thrust Speed Performance



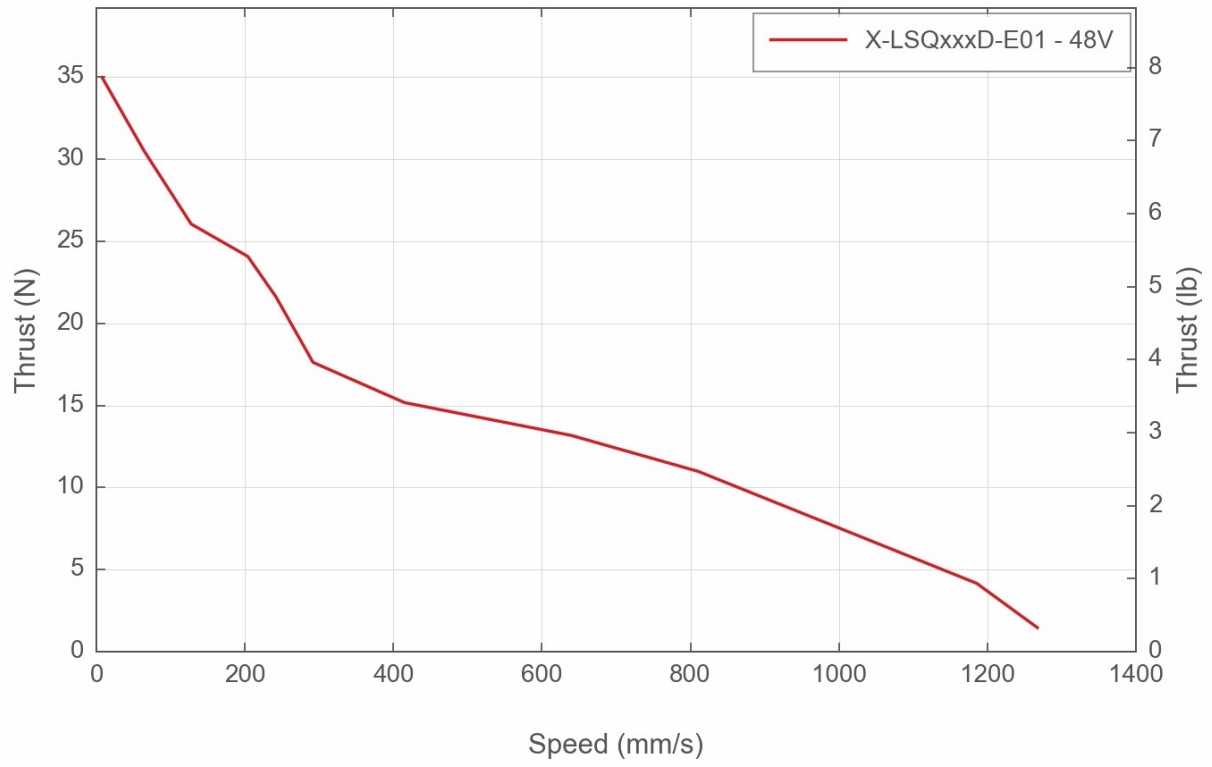
Thrust Speed Performance



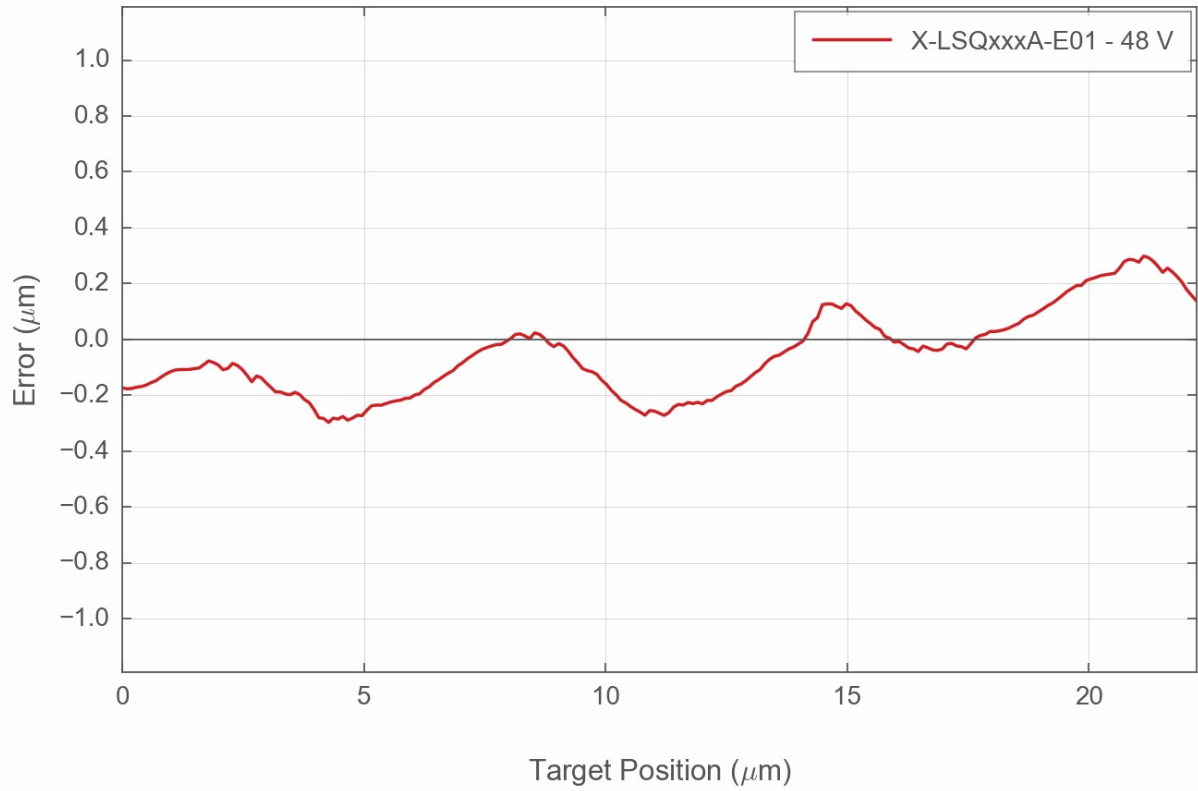
Thrust Speed Performance



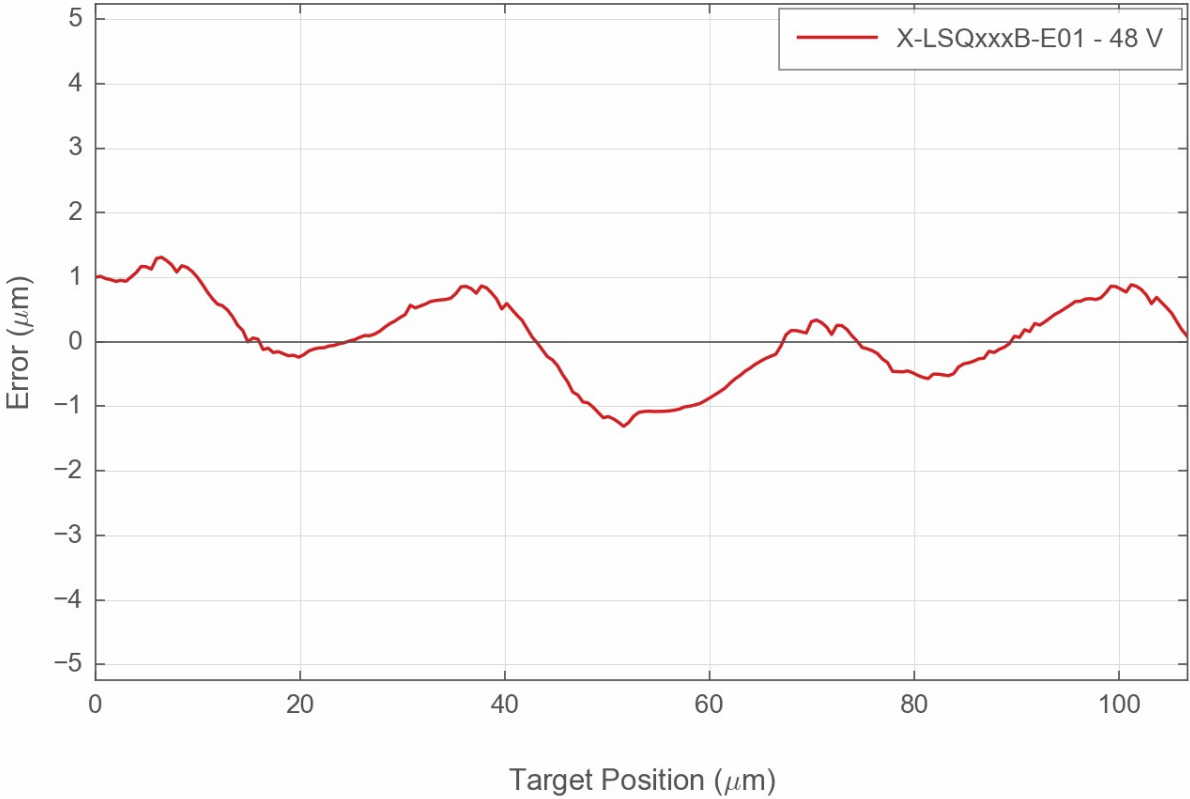
Thrust Speed Performance



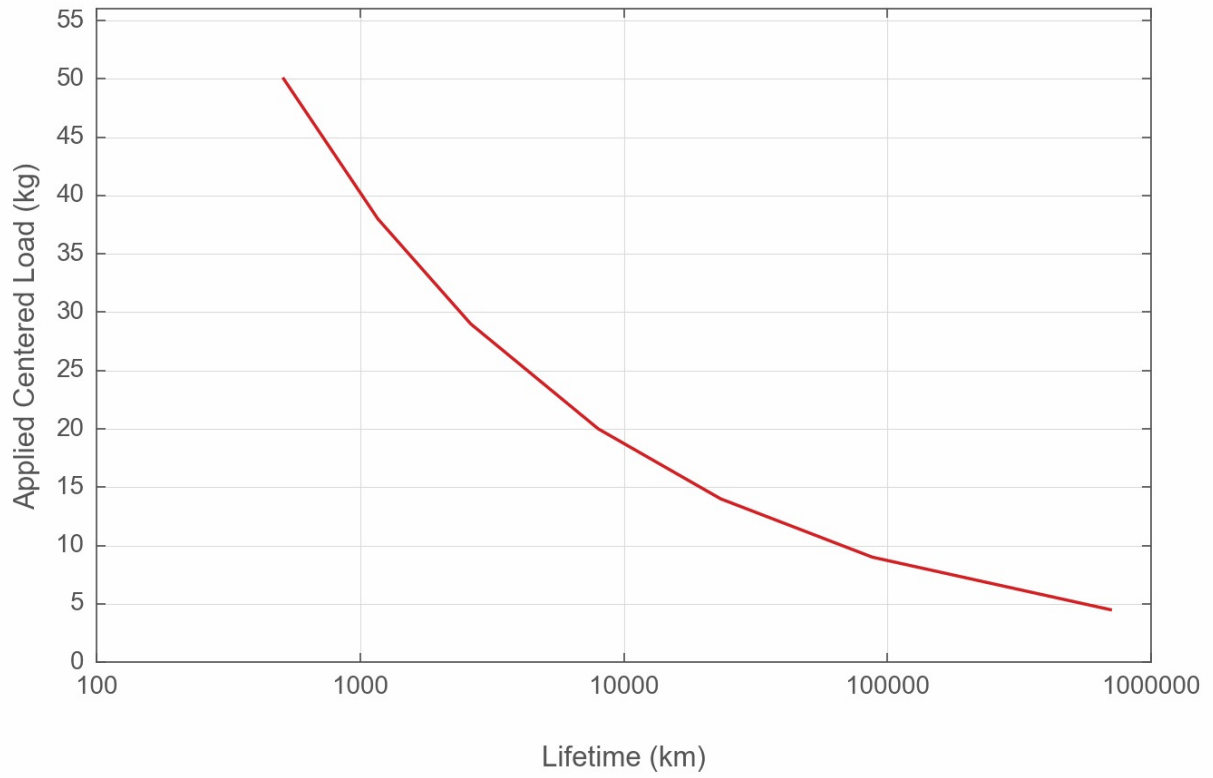
Typical Microstepping Accuracy



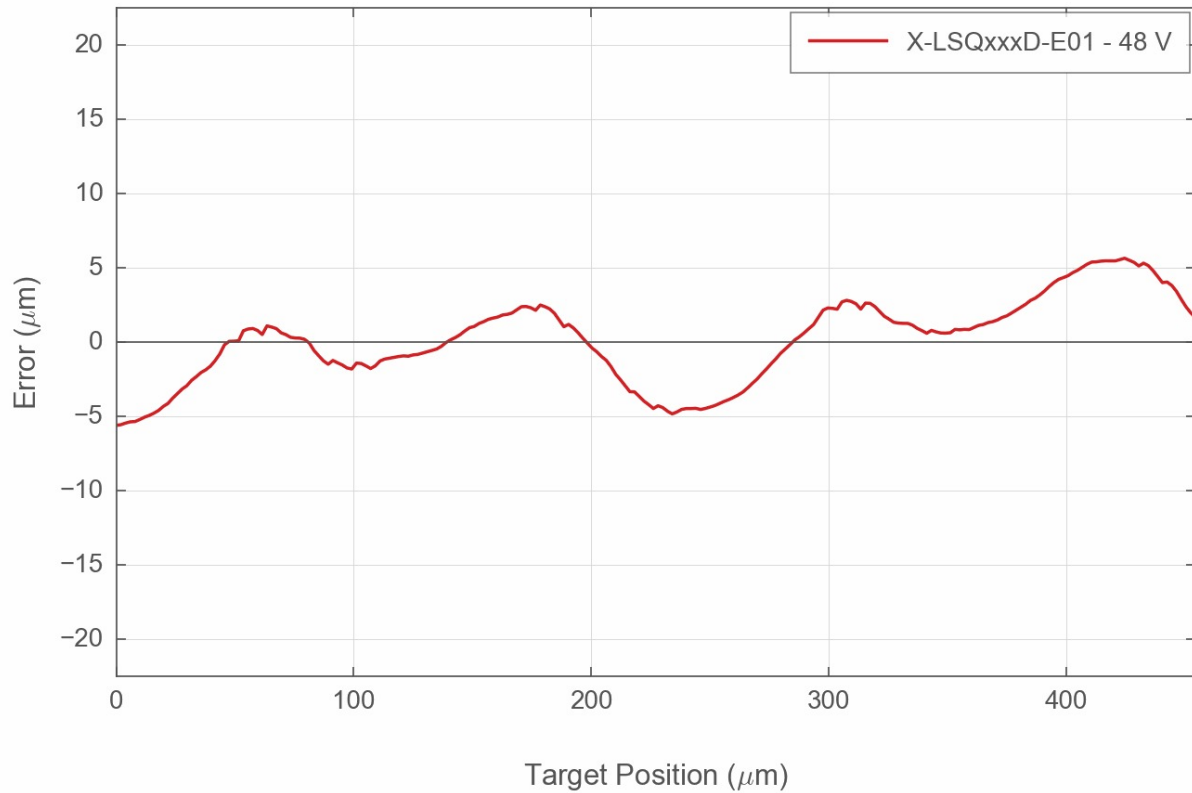
Typical Microstepping Accuracy



LSQ Linear Bearing Lifetime



Typical Microstepping Accuracy



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