

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

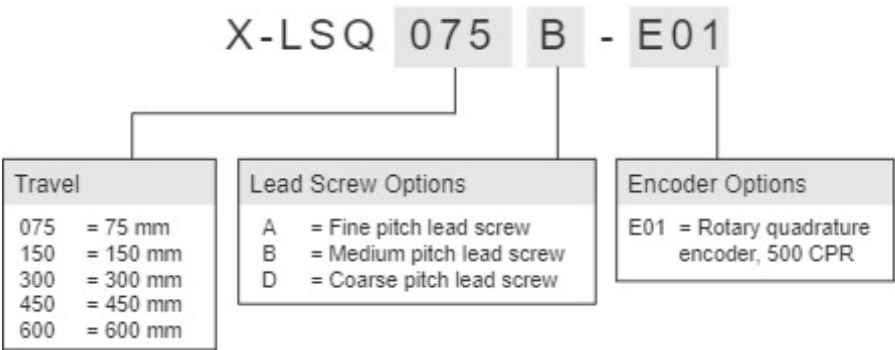
X-LSQ-E Series Overview

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.

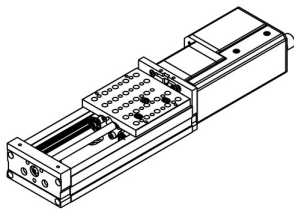
For more information visit: <https://www.zaber.com/products/linear-stages/X-LSQ-E>

X-LSQ-E Series Part Numbering



X-LSQ450D-E01 Drawings

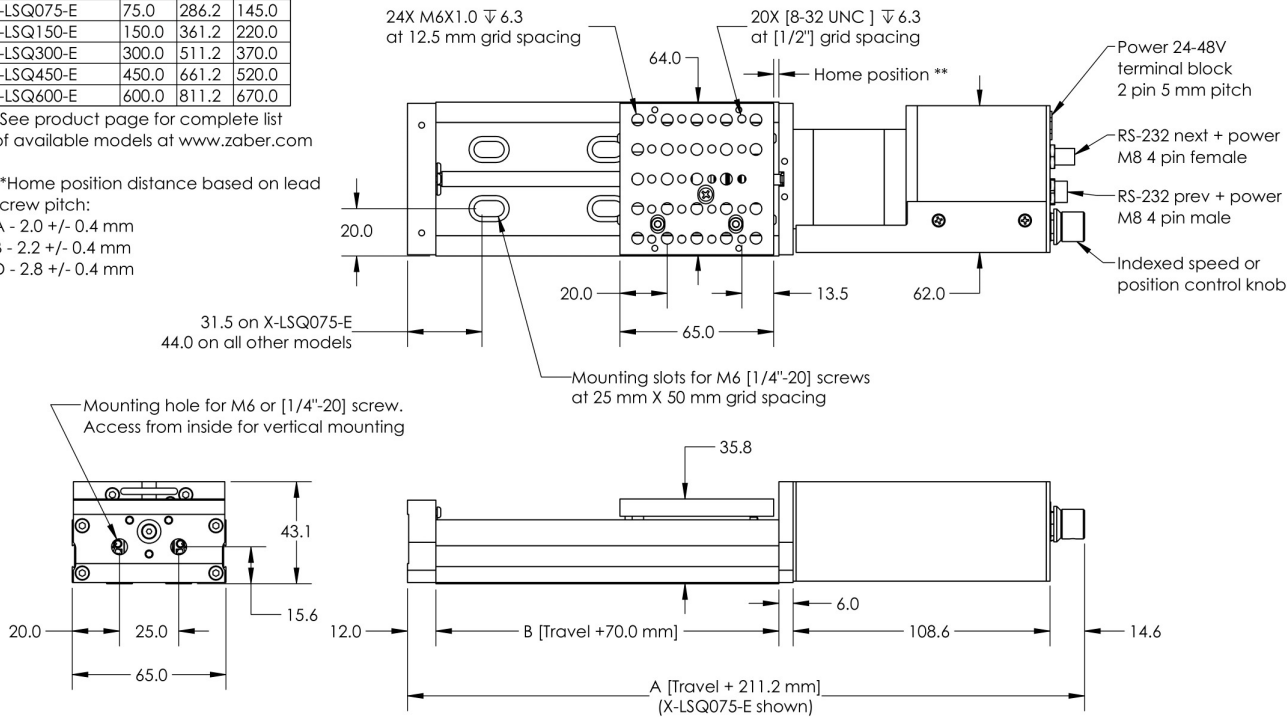
ZABER
X-LSQ-E Motorized Linear Stage
dimensions in mm



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

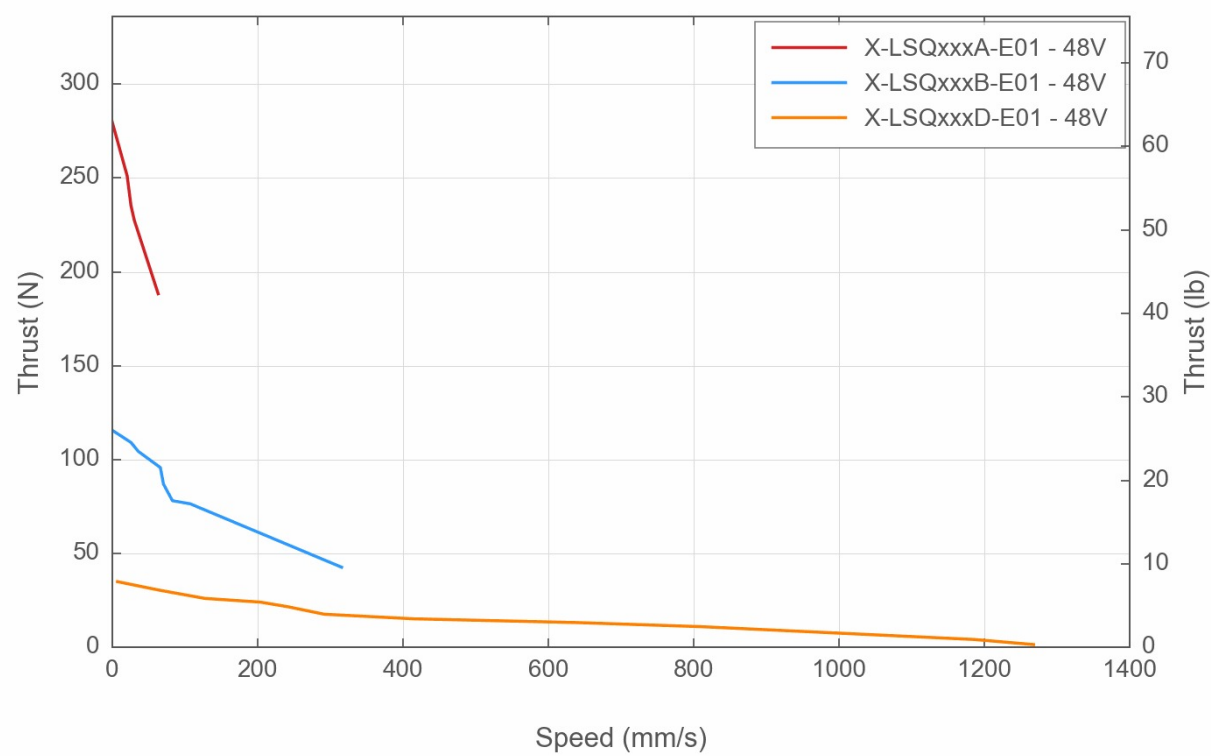
X-LSQ450D-E01 Specifications

Specification	Value	Alternate Unit
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	12 N ($\pm 30\%$)	2.7 lb ($\pm 30\%$)
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 Cantilever Load	2000 N-cm	2832.2 oz-in
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	
Power Plug	2-pin Screw Terminal	

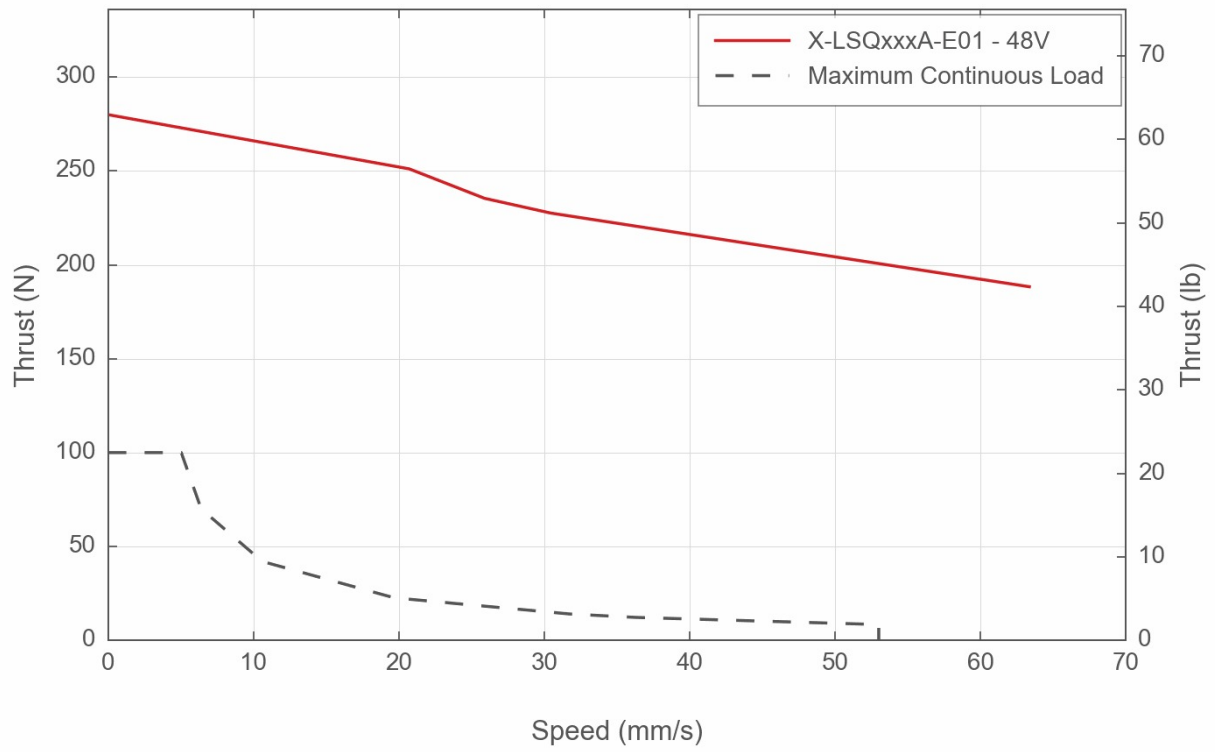
Specification	Value	Alternate Unit
Maximum Current Draw	1450 mA	
Linear Motion Per Motor Rev	25.4 mm	1.000"
Motor Steps Per Rev	200	
Motor Type	Stepper (2 phase)	
Motor Rated Current	2300 mA/phase	
Inductance	2.2 mH/phase	
Default Resolution	1/64 of a step	
Mechanical Drive System	Precision lead screw	
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 μ m	< 0.003937"
Operating Temperature Range	0 to 50 °C	
RoHS Compliant	Yes	
CE Compliant	Yes	
Vacuum Compatible	No	
Weight	2.30 kg	5.071 lb

X-LSQ-E Series Charts

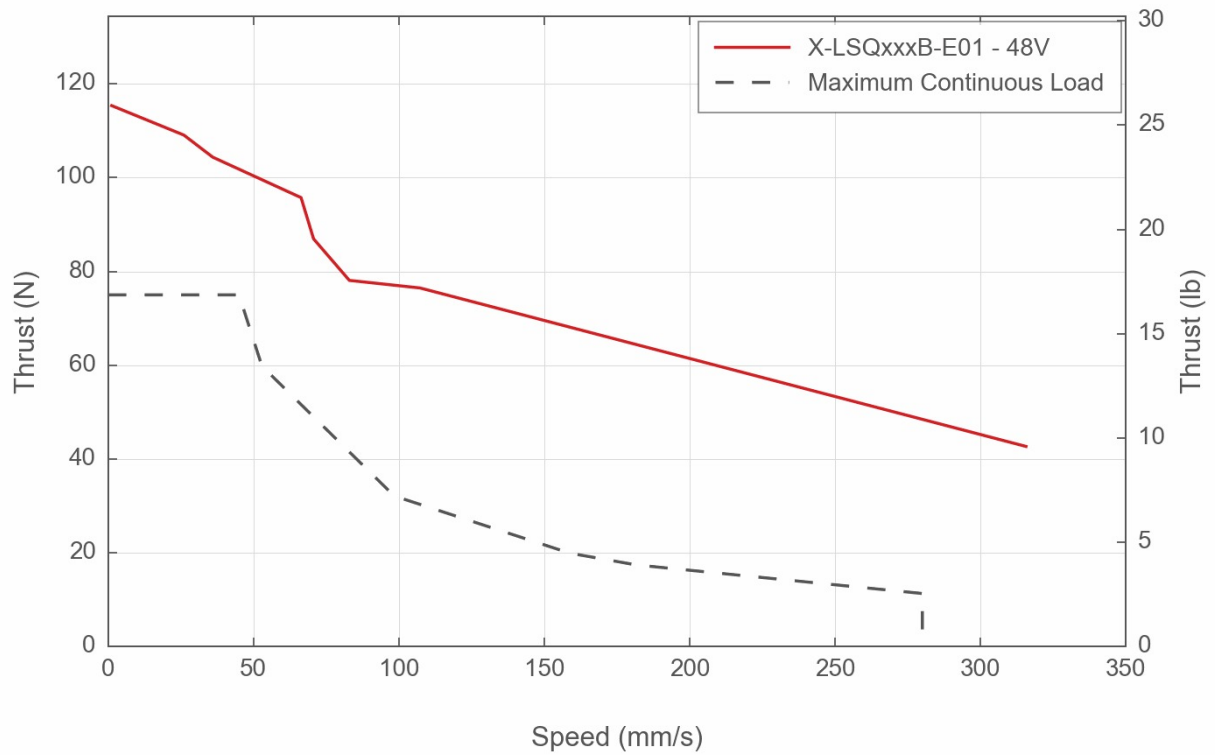
Thrust Speed Performance



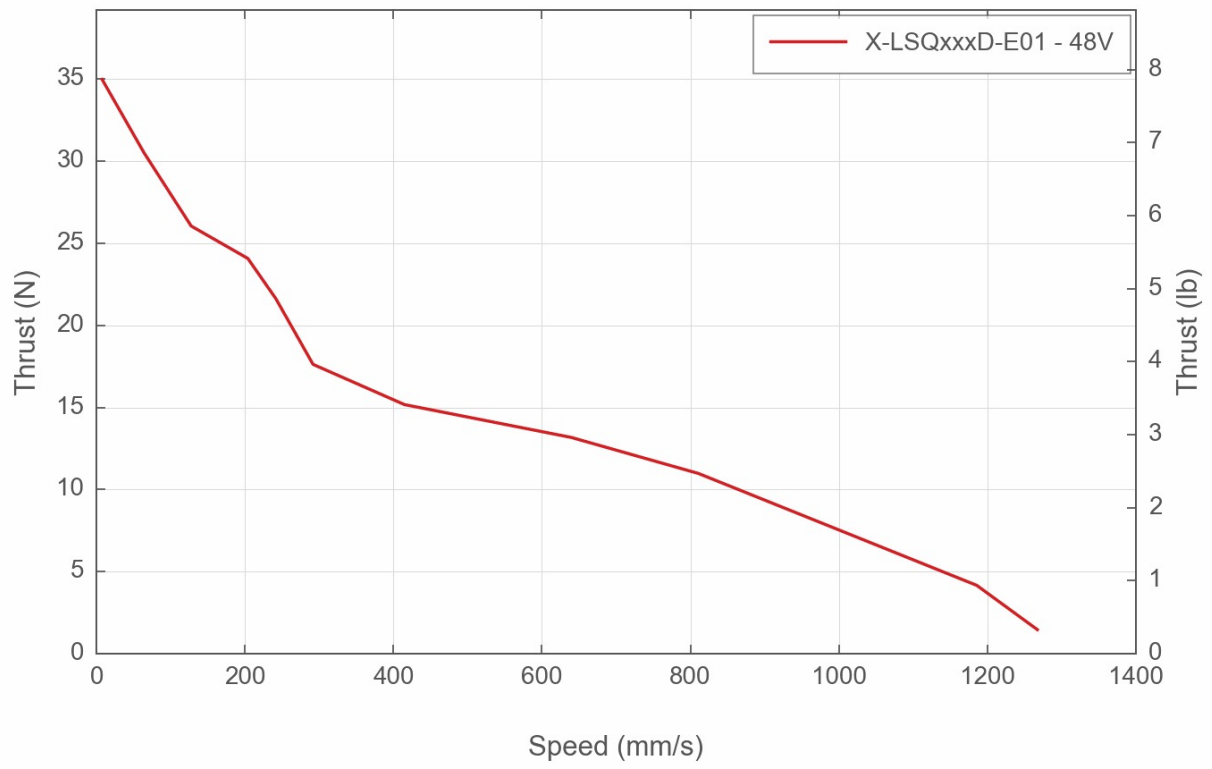
Thrust Speed Performance



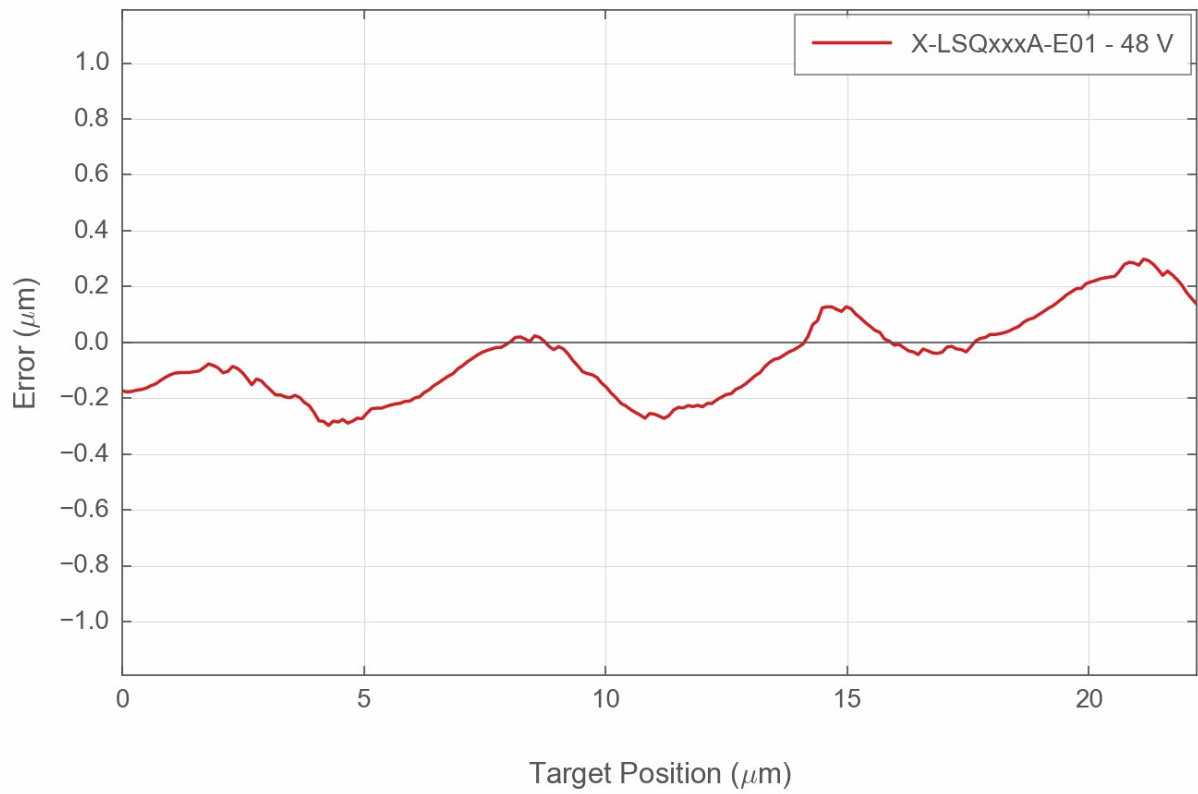
Thrust Speed Performance



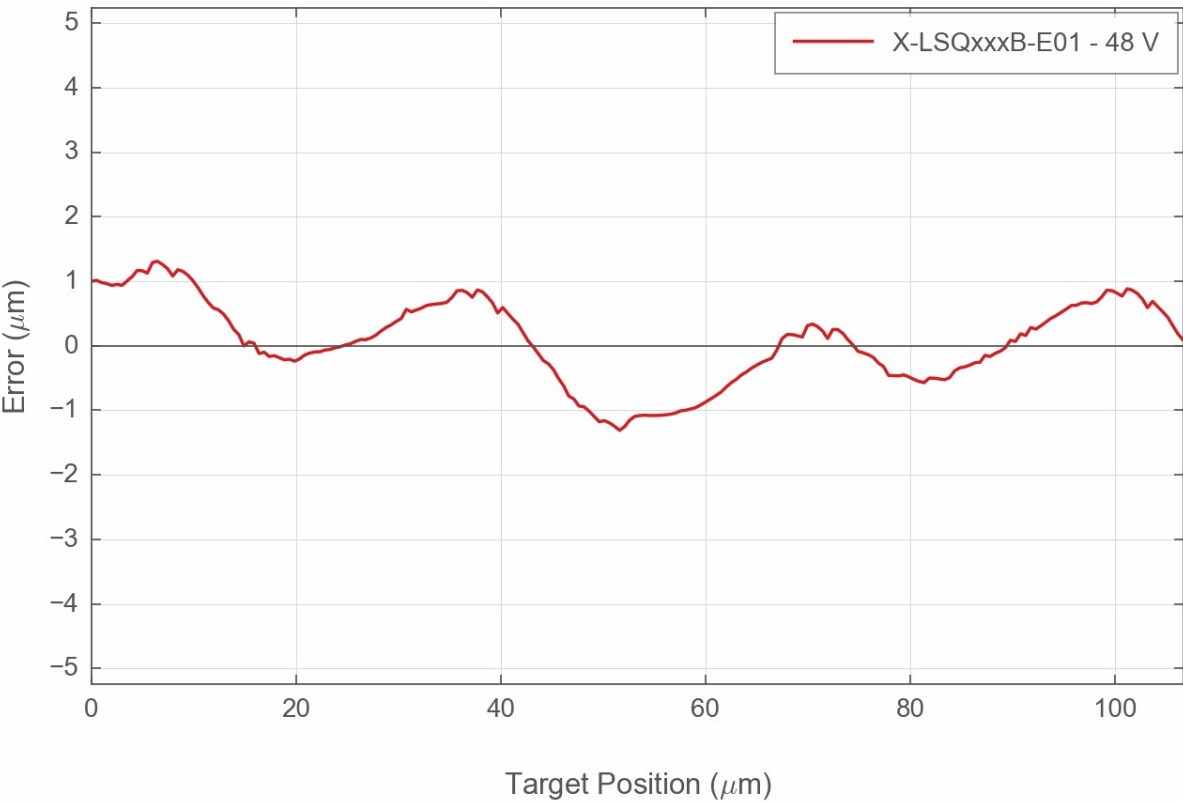
Thrust Speed Performance



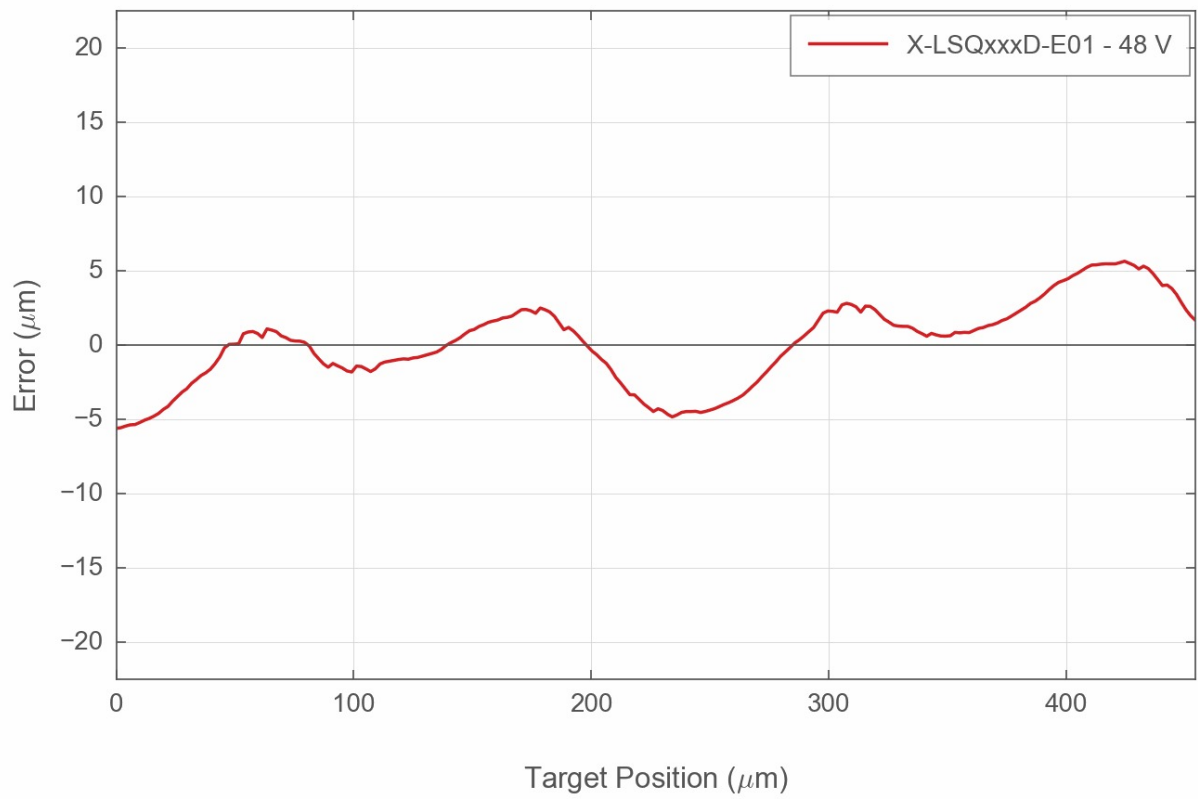
Typical Microstepping Accuracy



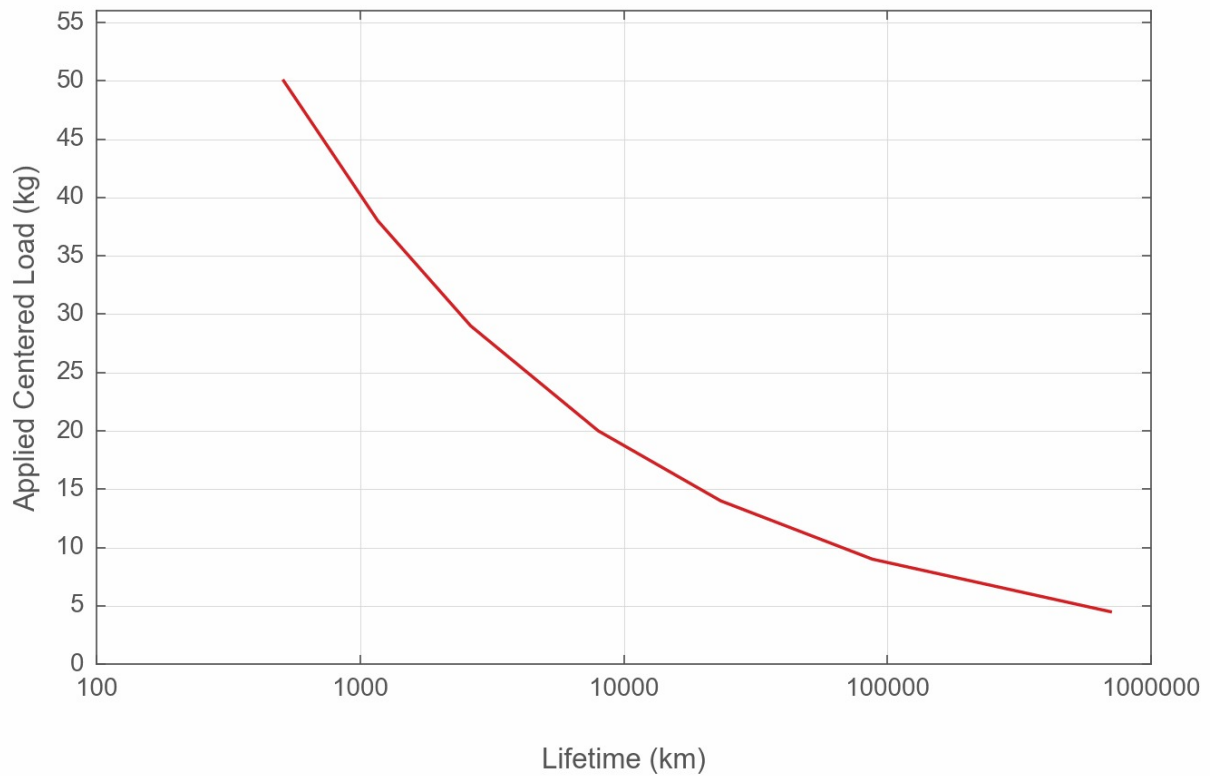
Typical Microstepping Accuracy



Typical Microstepping Accuracy



LSQ Linear Bearing Lifetime



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