

## X-LSQ600D-E01C 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
- Includes rigid cover
- 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

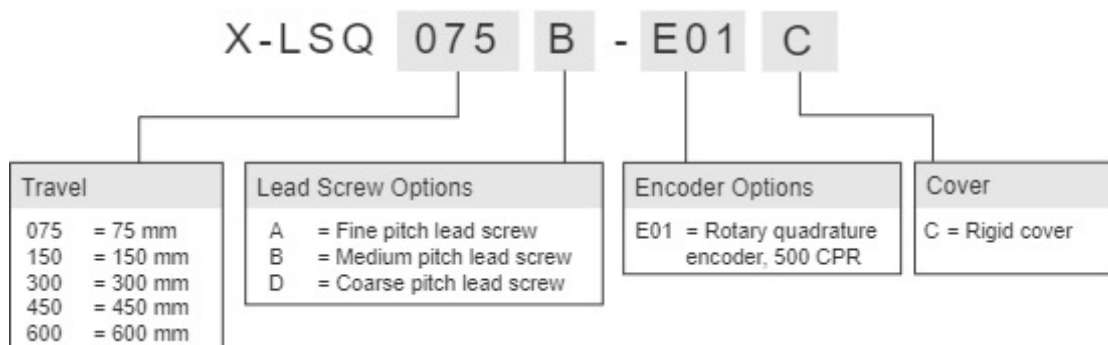
## X-LSQ-EC Series Overview

Zaber's X-LSQ-EC 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. A rigid non-contact cover prevents the ingress of small objects. 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-EC>

## X-LSQ-EC Series Part Numbering

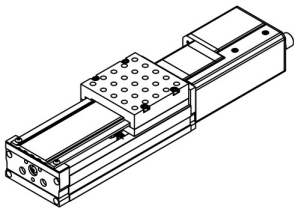


X-LSQ600D-E01C Drawings

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X-LSQ-EC Motorized Linear Stage

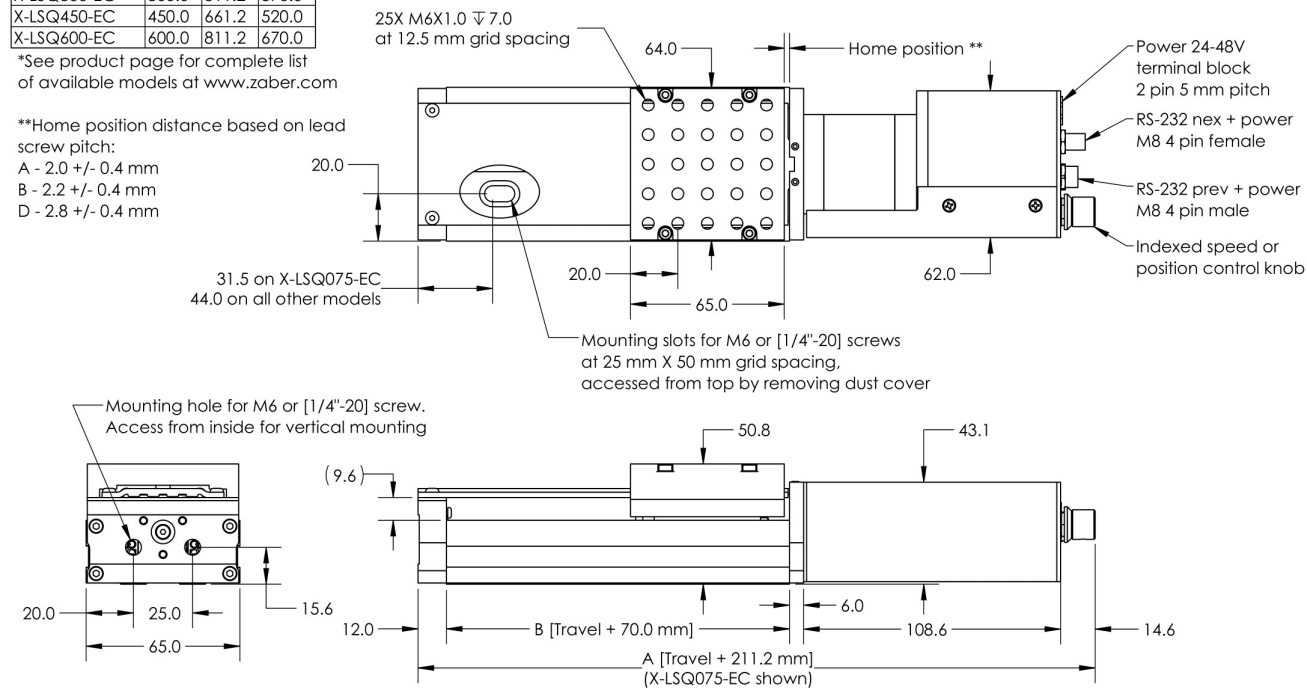
dimensions in mm



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

\*See product page for complete list of available models at [www.zaber.com](http://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



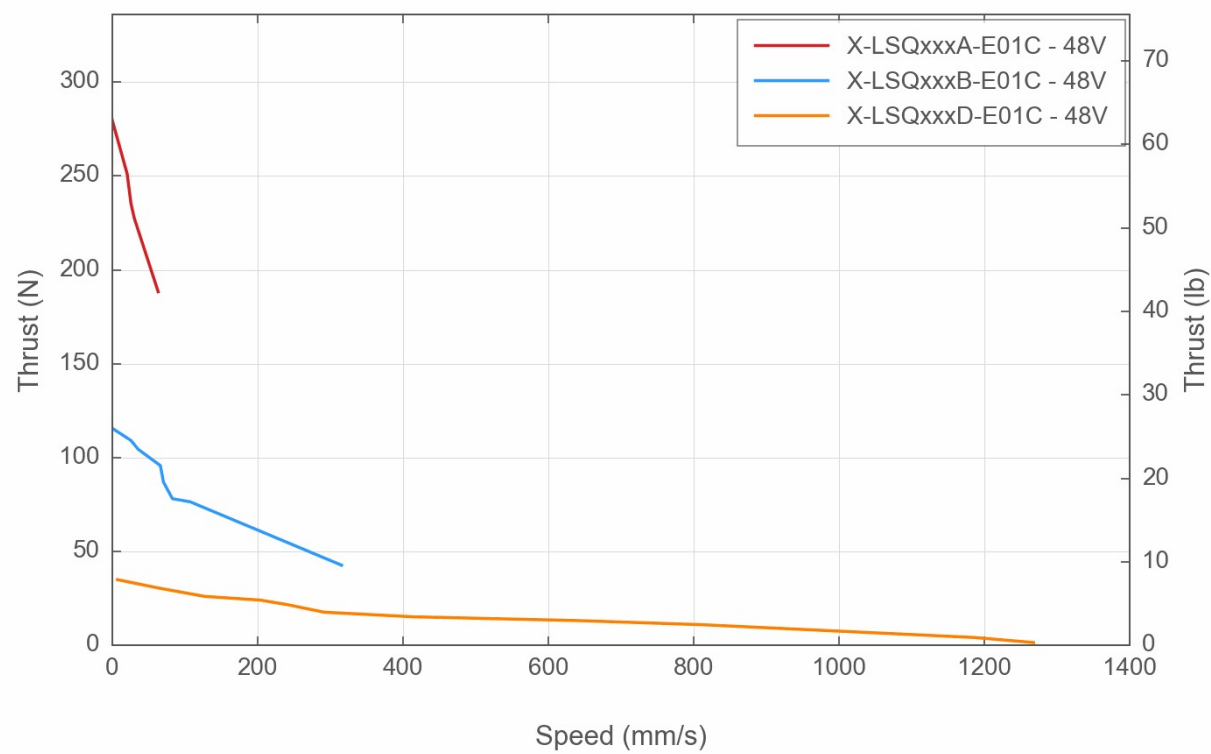
## X-LSQ600D-E01C Specifications

| Specification                       | Value                               | Alternate Unit           |
|-------------------------------------|-------------------------------------|--------------------------|
| Microstep Size (Default Resolution) | 1.984375 $\mu\text{m}$              |                          |
| Built-in Controller                 | Yes                                 |                          |
| Travel Range                        | 600 mm                              | 23.622"                  |
| Accuracy (unidirectional)           | 230 $\mu\text{m}$                   | 0.009055"                |
| Repeatability                       | < 10 $\mu\text{m}$                  | < 0.000394"              |
| Backlash                            | < 75 $\mu\text{m}$                  | < 0.002953"              |
| Maximum Speed                       | 700 mm/s                            | 27.559"/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<br>( $\pm 30\%$ )              | 2.7 lb<br>( $\pm 30\%$ ) |
| 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 $\mu\text{m}$                  | < 0.001181"              |
| Horizontal Runout                   | < 60 $\mu\text{m}$                  | < 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                |                          |

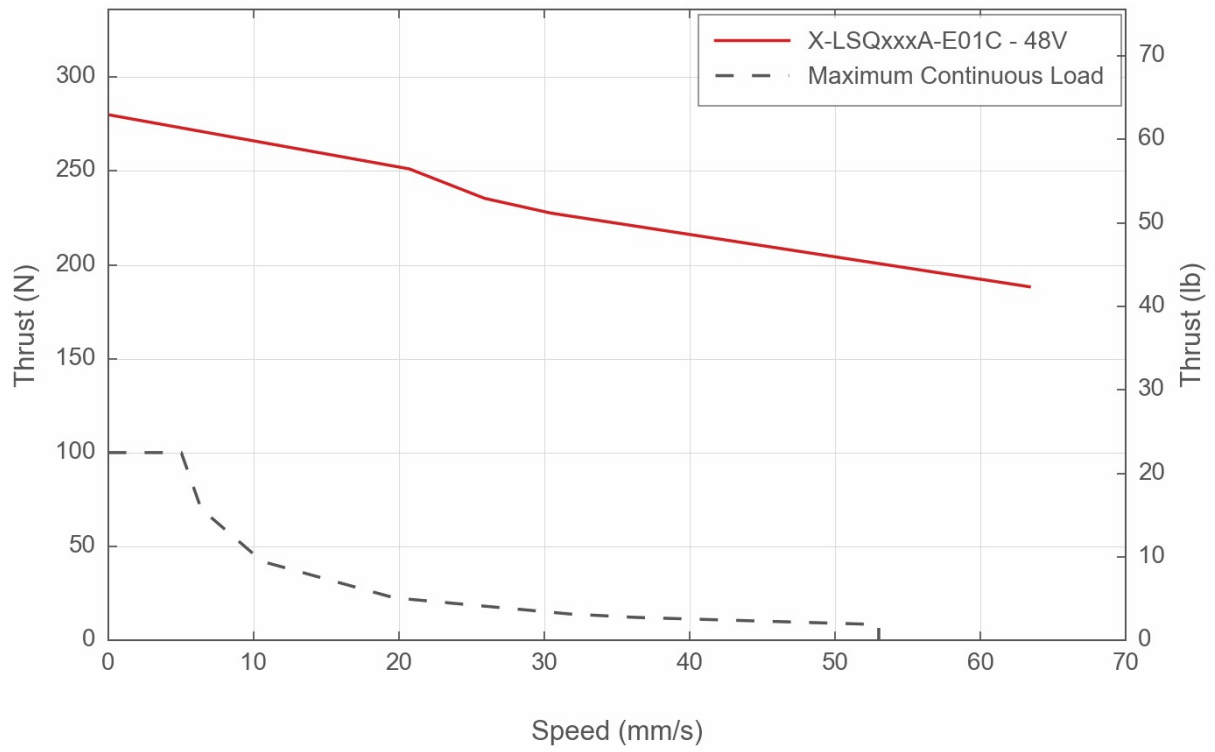
| Specification               | Value                         | Alternate Unit |
|-----------------------------|-------------------------------|----------------|
| Maximum Current Draw        | 1450 mA                       |                |
| Linear Motion Per Motor Rev | 25.4 mm                       | 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             |                |
| Stage Parallelism           | < 100 $\mu$ m                 | < 0.003937"    |
| Operating Temperature Range | 0 to 50 °C                    |                |
| RoHS Compliant              | Yes                           |                |
| CE Compliant                | Yes                           |                |
| Vacuum Compatible           | No                            |                |
| Weight                      | 3.25 kg                       | 7.165 lb       |

X-LSQ-EC Series Charts

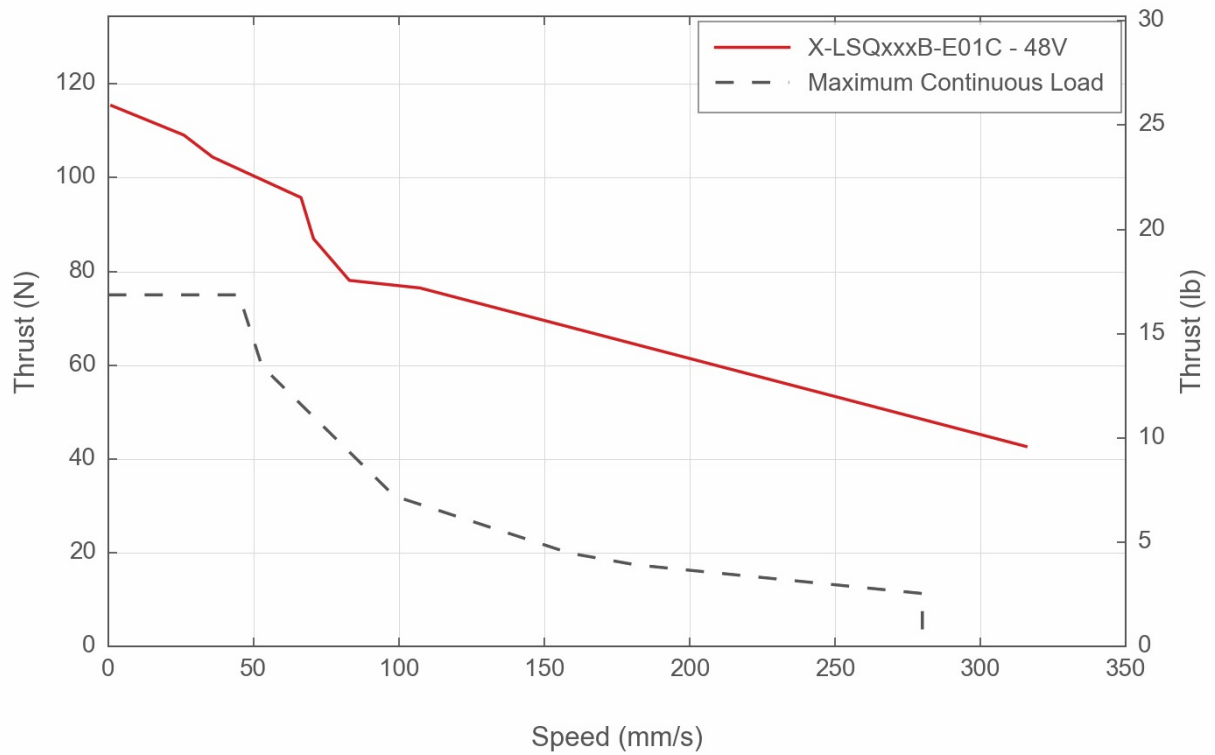
Thrust Speed Performance



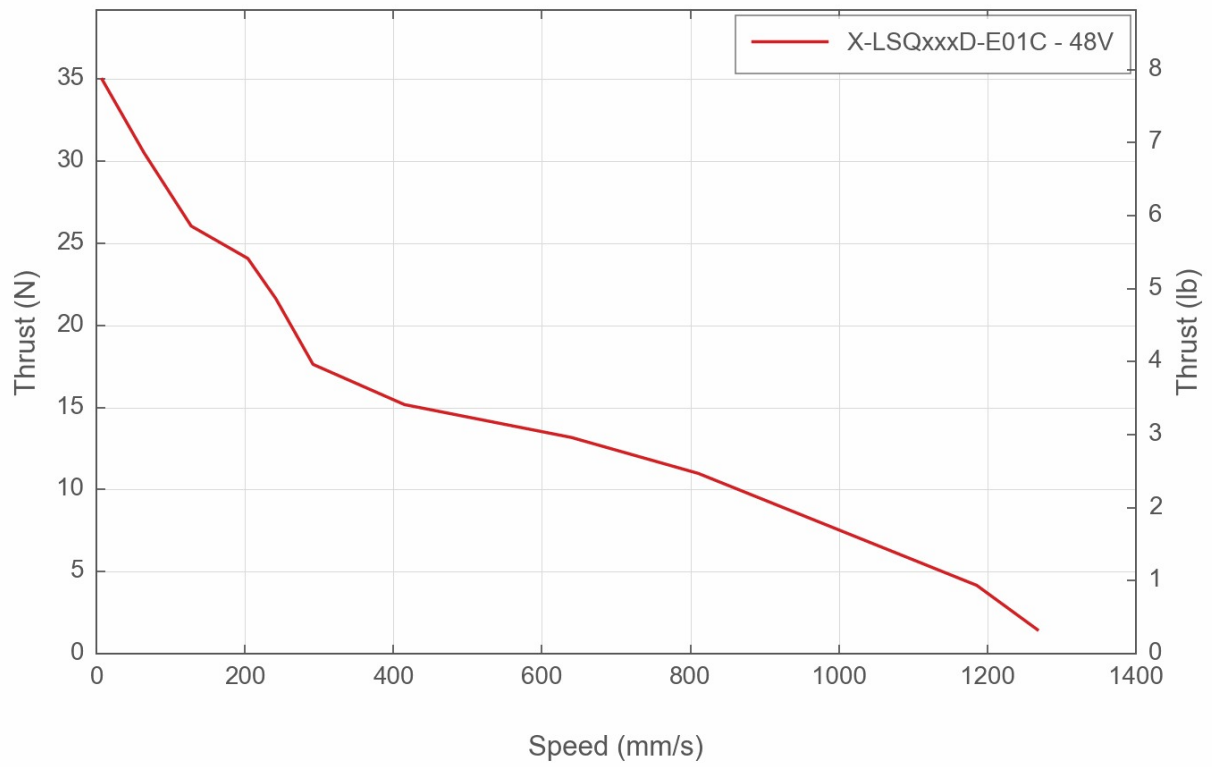
### Thrust Speed Performance



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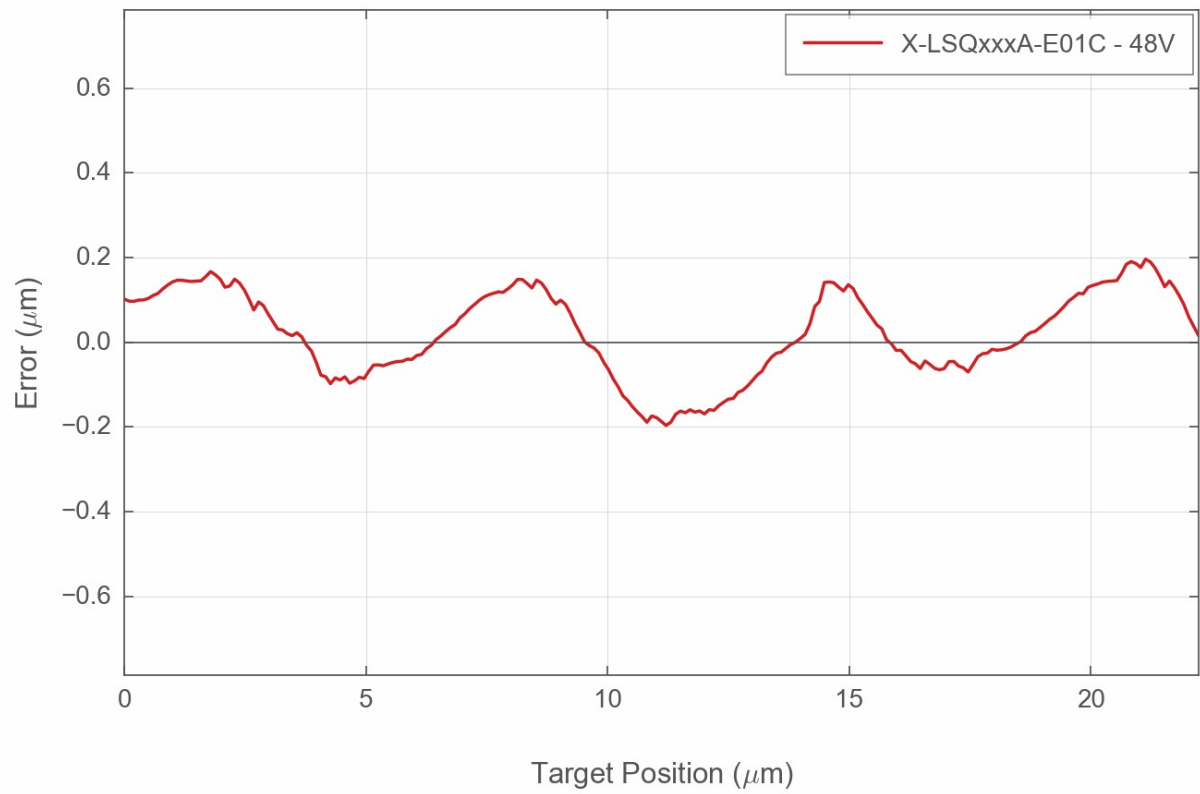


## Thrust Speed Performance

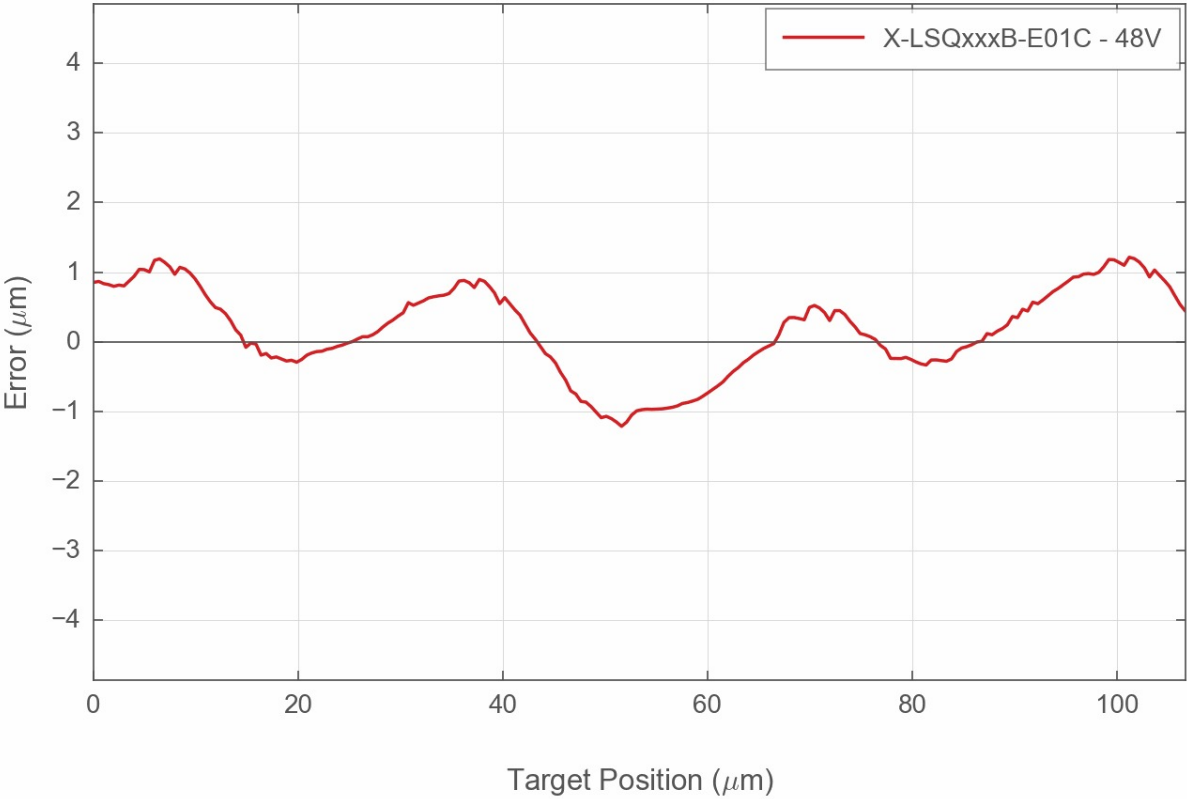




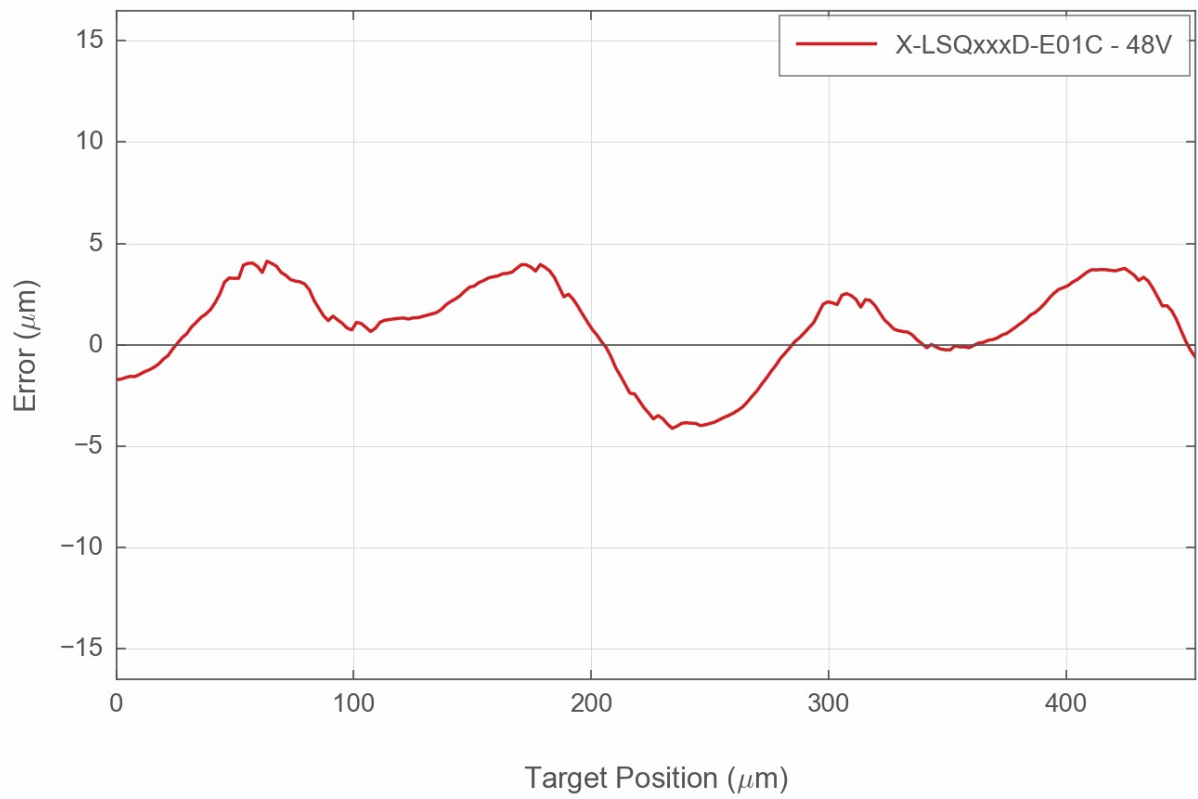
## Typical Microstepping Accuracy



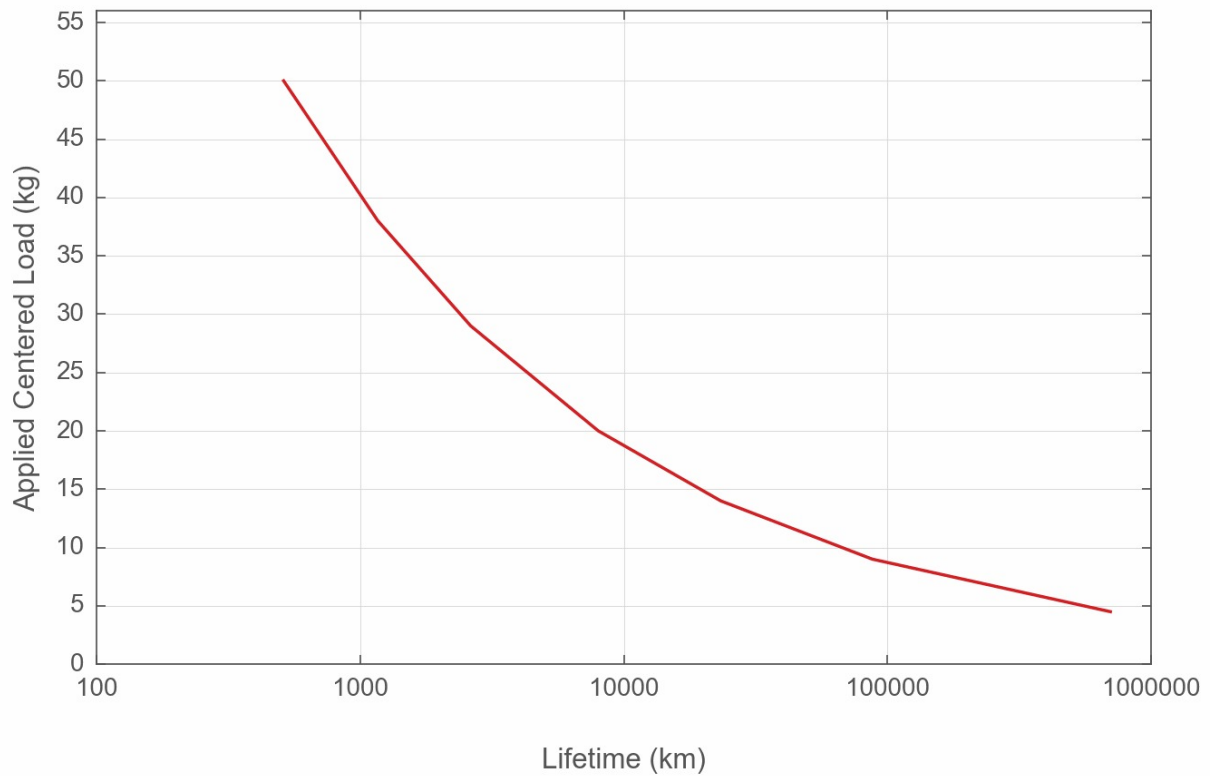
# Typical Microstepping Accuracy



## Typical Microstepping Accuracy



## LSQ Linear Bearing Lifetime



### Contact

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