Zaber Technologies Inc.
#2 - 605 West Kent Ave.
Vancouver, BC

1-604-569-3780 *Direct*
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# X-LRQ150AL-E01 Datasheet



- 75, 150, 300, 450, 600 mm travel
- Up to 840 mm/s speed and up to 300 N thrust
- 100 kg load capacity
- Ball screw and lead screw configurations
- Inline and parallel drive configurations
- Integrated, 500 CPR, motor mounted encoder provides slip/stall detection and recovery
- Built-in controller; daisy-chains with other Zaber products
- Custom versions available

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## X-LRQ150AL-E01 Overview

Zaber's X-LRQ-E Series devices are computer-controlled, motorized linear stages with high stiffness, load, and lifetime capabilities in a compact size. Each device is available in either an inline or parallel drive configuration. They are stand-alone units requiring only a standard 24 V or 48 V power supply. The built-in motor encoder allows closed-loop operation and slip/stall recovery features. An optional indexed knob provides convenient manual control for versatile operation even without a computer.

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 units.

At only 36 mm high, these stages are excellent for applications where a low profile is required. The X-LRQ-E's innovative design allows speeds up to 840 mm/s and loads up to 100 kg. Like all of Zaber's products, the X-LRQ-E Series is designed to be 'plug and play' and very easy to set up and operate. These stages can bolt together into XY and XYZ systems. Some multi axis configurations may require additional accessories, please contact Zaber Technical Support to ensure the correct ones are selected.

For more information visit: https://www.zaber.com/products/linear-stages/X-LRQ-E?part=X-LRQ150AL-E01

## X-LRQ150AL-E01 Part Numbering & Options

Part number: X-LRQ150AL-E01

**X-LRQ 150 A L - E01**

**Travel**
- **075** — 75 mm
- **150** — **150 mm (this part)**
- **300** — 300 mm
- **450** — 450 mm
- **600** — 600 mm

**Drive Screw Options**
- **A** — **Fine pitch lead screw (this part)**
- **B** — Medium pitch lead screw
- **D** — Coarse pitch lead screw
- **H** — Fine pitch ball screw

**Drive Configuration**
- **L** — **Inline (this part)**
- **P** — Parallel

**Encoder Options**
- **E01** — **Motor Encoder, 500 CPR (this part)**

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## X-LRQ150AL-E01 Drawings

- X-LRQxL-E (Drawing for the X-LRQxL-E)
- X-LRQxP-E (Drawing for the X-LRQxP-E)
- View all drawings and documents at zaber.com

## X-LRQ150AL-E01 Specifications

### Overview

| Specification | Value |
|---|---|
| Built-in Controller | Yes |
| Travel Range | 150 mm<br>(5.905 ") |
| Manual Control | Indexed knob with push switch |
| Axes of Motion | 1 |
| LED Indicators | Yes |
| Weight | 2.56 kg<br>(5.644 lb) |

### Positioning Performance

| Specification | Value |
|---|---|
| Accuracy (unidirectional) | 45 µm<br>(0.001772 ") |
| Repeatability | <2.5 µm<br>(<0.000098 ") |
| Backlash | <8 µm<br>(<0.000315 ") |
| Flatness of Travel | <25 µm<br>(<0.000984 ") |
| Straightness of Travel | <20 µm<br>(<0.000787 ") |
| Pitch Error | 0.03 °<br>(0.523 mrad) |
| Roll Error | 0.015 °<br>(0.262 mrad) |

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| | |
|---|---|
| Yaw Error | 0.02 °<br>(0.349 mrad) |
| Microstep Size (Default Resolution) | 0.09921875 µm |
| Default Resolution | 1/64 of a step |

## Load Performance

| Specification | Value |
|---|---|
| Peak Thrust | 110 N<br>(24.7 lb) |
| Maximum Continuous Thrust | 100 N<br>(22.4 lb) |
| Back-driving Force* | Non-back-driving |
| Maximum Centred Load | 1000 N<br>(224.3 lb) |
| Maximum Moment (Pitch) | 30 N·m<br>(22.1 lb·ft) |
| Maximum Moment (Roll) | 30 N·m<br>(22.14 lb·ft) |
| Maximum Moment (Yaw) | 30 N·m<br>(22.14 lb·ft) |
| Stiffness (Pitch) | 640 N·m/° |
| Stiffness (Roll) | 1850 N·m/° |
| Stiffness (Yaw) | 665 N·m/° |

## Speed

| Specification | Value |
|---|---|
| Maximum Speed | 40 mm/s<br>(1.575 "/s) |
| Minimum Speed | 0.000061 mm/s<br>(0.000002 "/s) |
| Speed Resolution | 0.000061 mm/s<br>(0.000002 "/s) |

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## Encoder & Sensing

| Specification | Value |
|---|---|
| Encoder Type | Rotary quadrature encoder (incremental) |
| Encoder Resolution | 500 CPR (2 states/rev) |
| Limit or Home Sensing | Magnetic home sensor |

## Motor

| Specification | Value |
|---|---|
| Linear Motion Per Motor Rev | 1.27 mm (0.05 ") |
| Motor Steps Per Rev | 200 |
| Motor Type | Stepper (2 phase) |
| Motor Rated Current | 2300 mA/phase |
| Motor Winding Inductance | 2.8 mH/phase |

## Power and Communication

| Specification | Value |
|---|---|
| Communication Interface | RS-232 |
| Communication Protocol | Zaber ASCII (default), Zaber Binary |
| Data Cable Connection | Locking 4-pin M8 |
| Power Supply | 24-48 VDC |
| Power Plug | 2-pin screw terminal |
| Maximum Current Draw | 1200 mA |

## Mechanical

| Specification | Value |
|---|---|
| Guide Type | Recirculating ball linear guide |
| Mechanical Drive System | Precision lead screw |
| Mounting Interface | M6 and M3 threaded holes |

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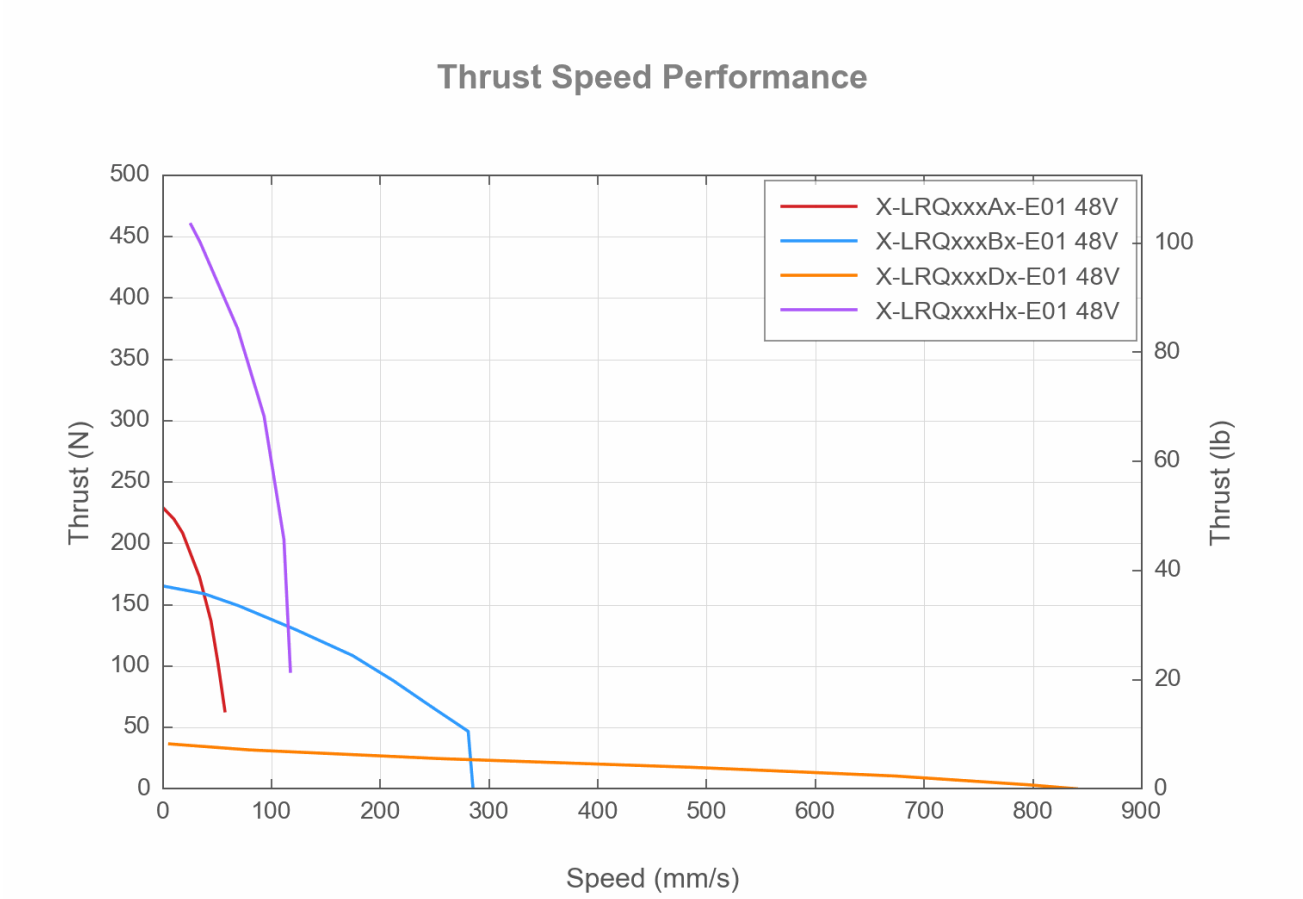
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## Environmental & Compliance

| Specification | Value |
|---|---|
| Operating Temperature Range | 0 to 50 °C |
| CE Compliant | Yes |
| Vacuum Compatible | No |

## X-LRQ150AL-E01 Charts

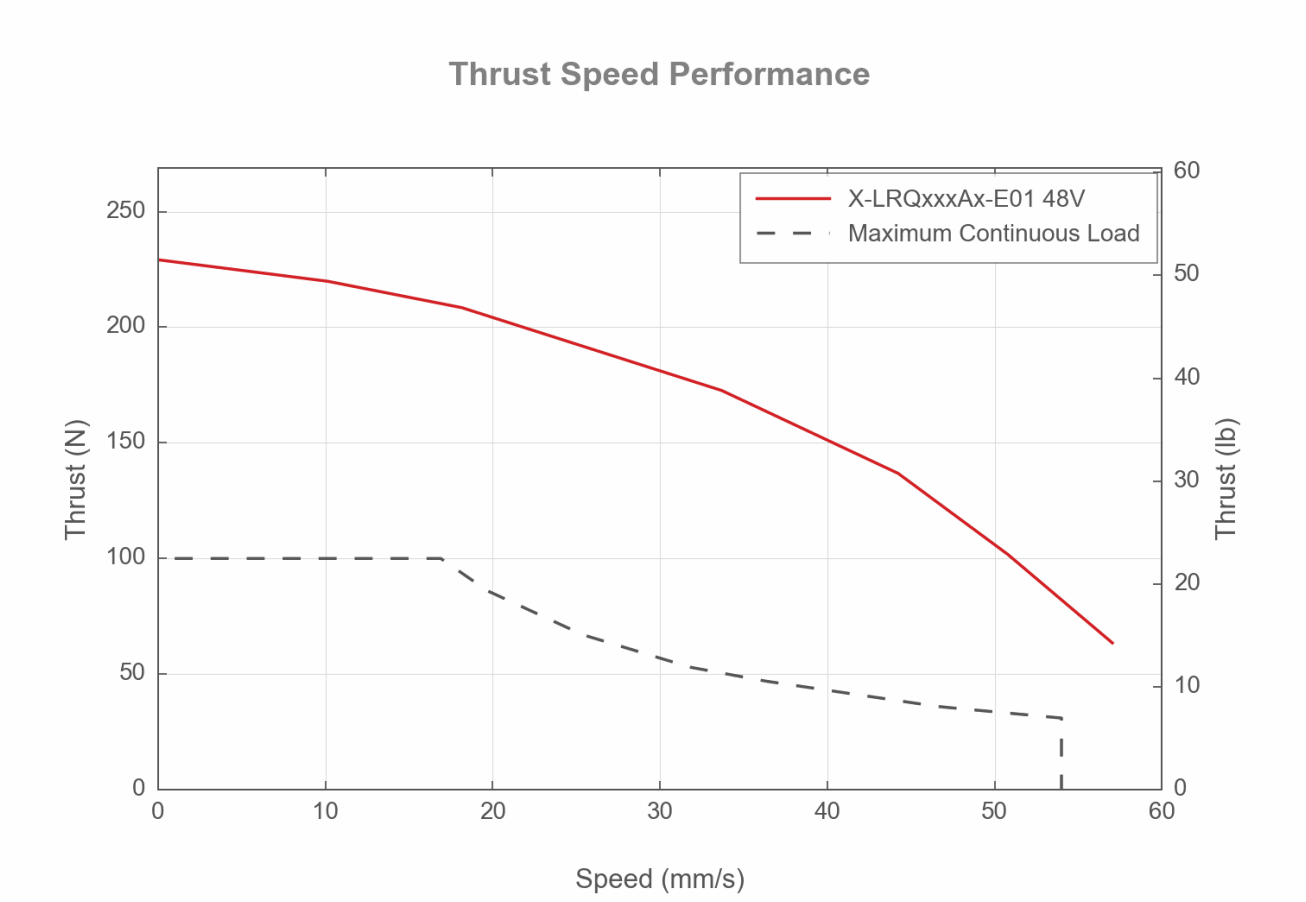
Thrust Speed



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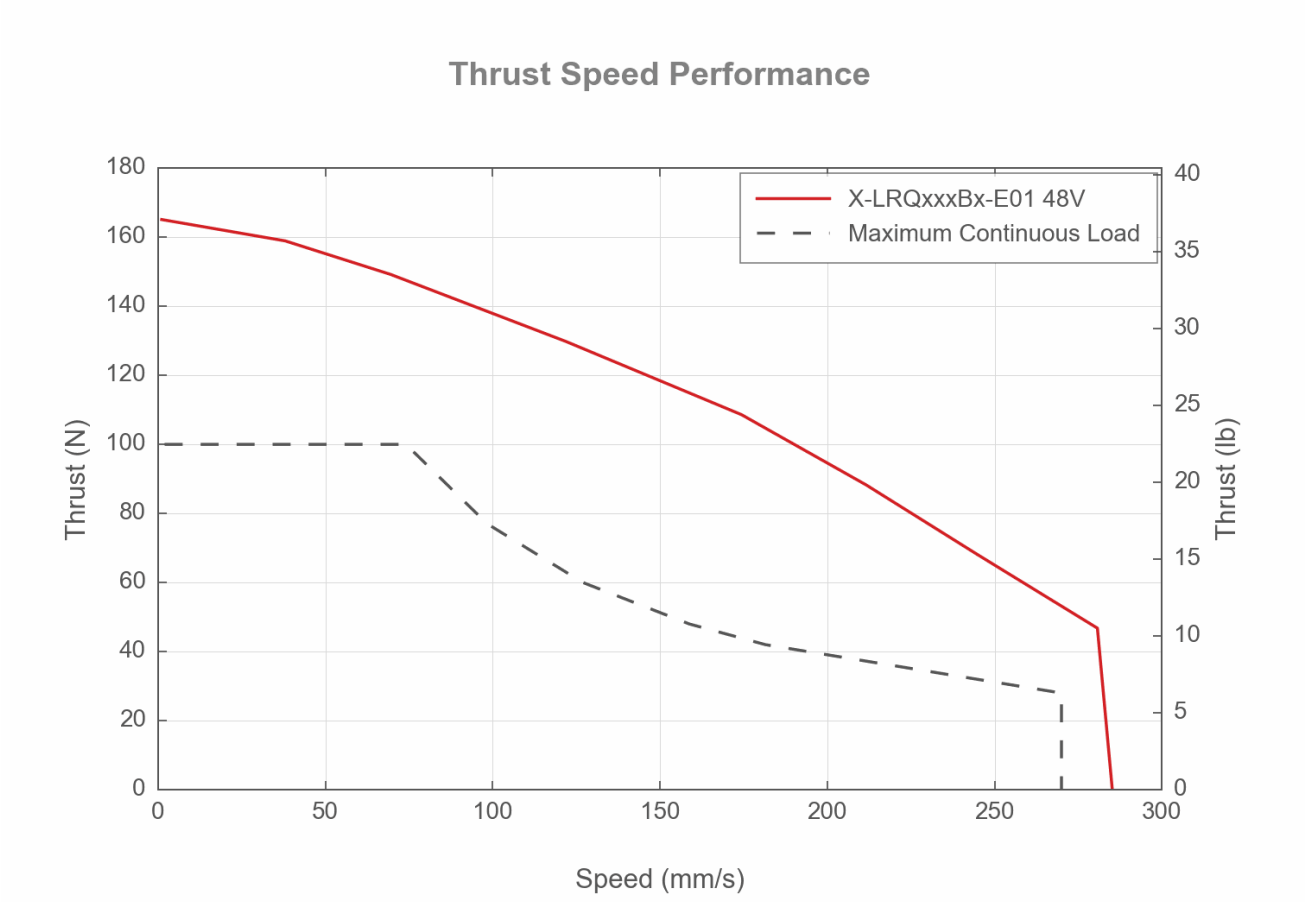
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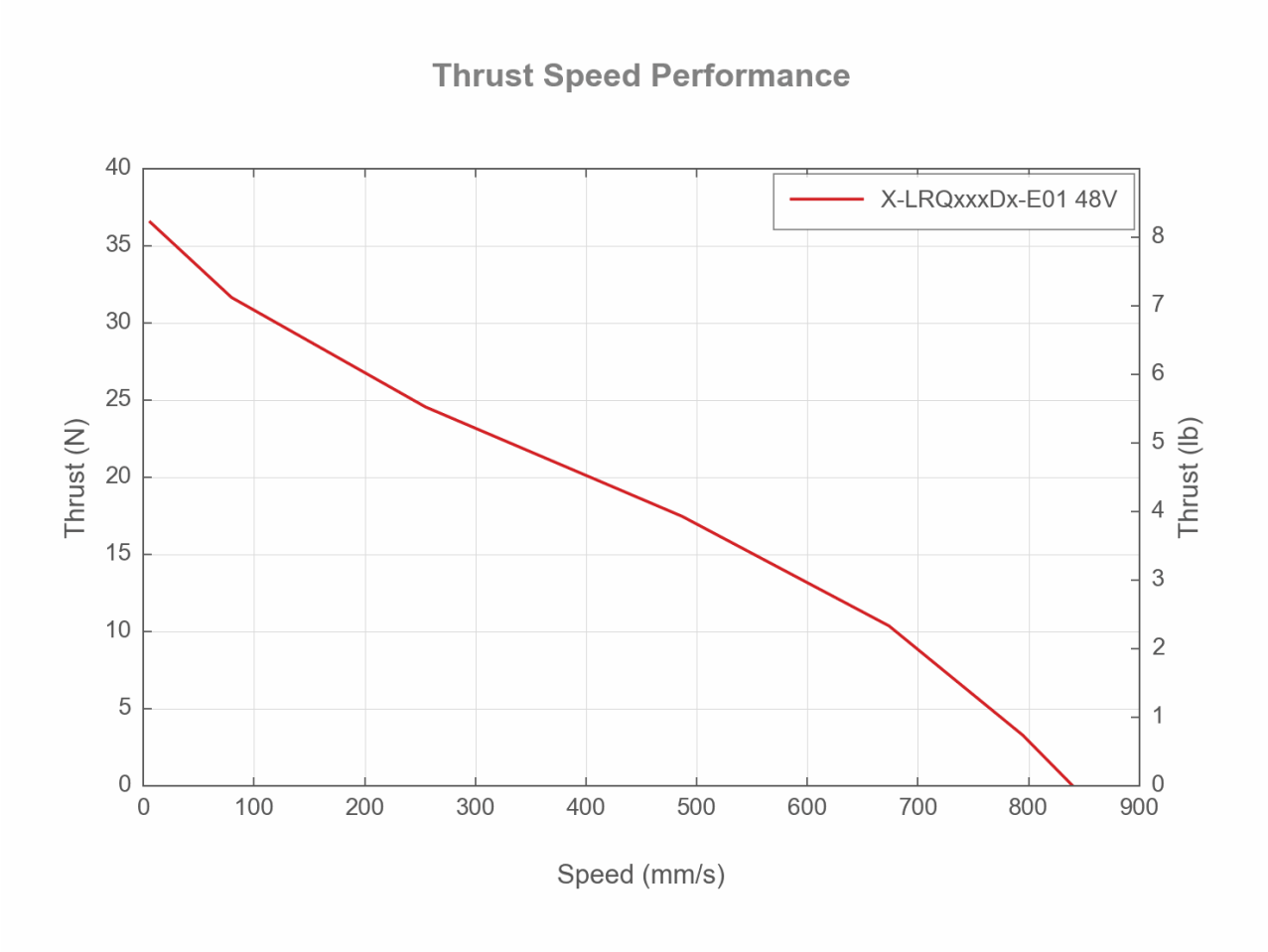
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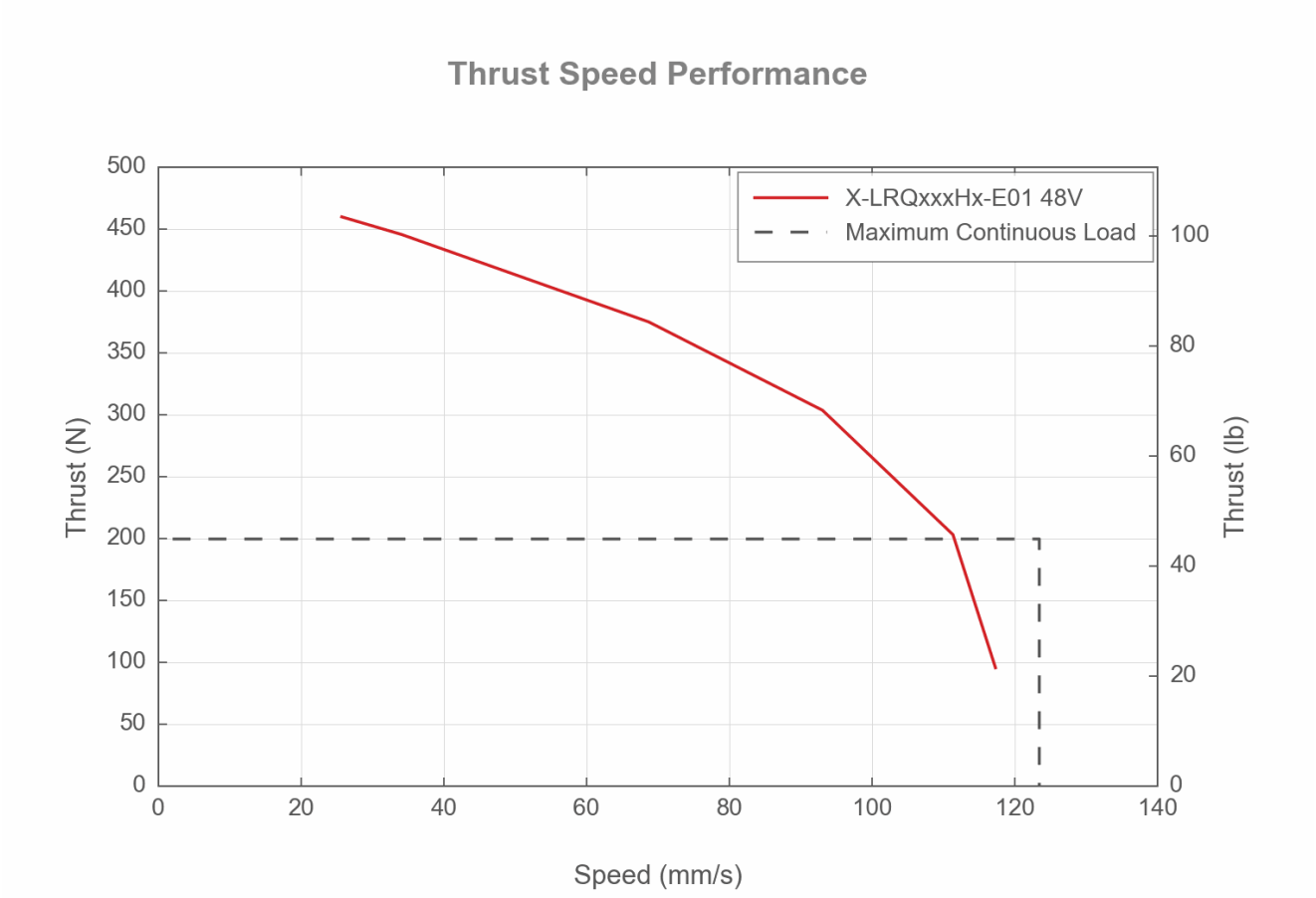
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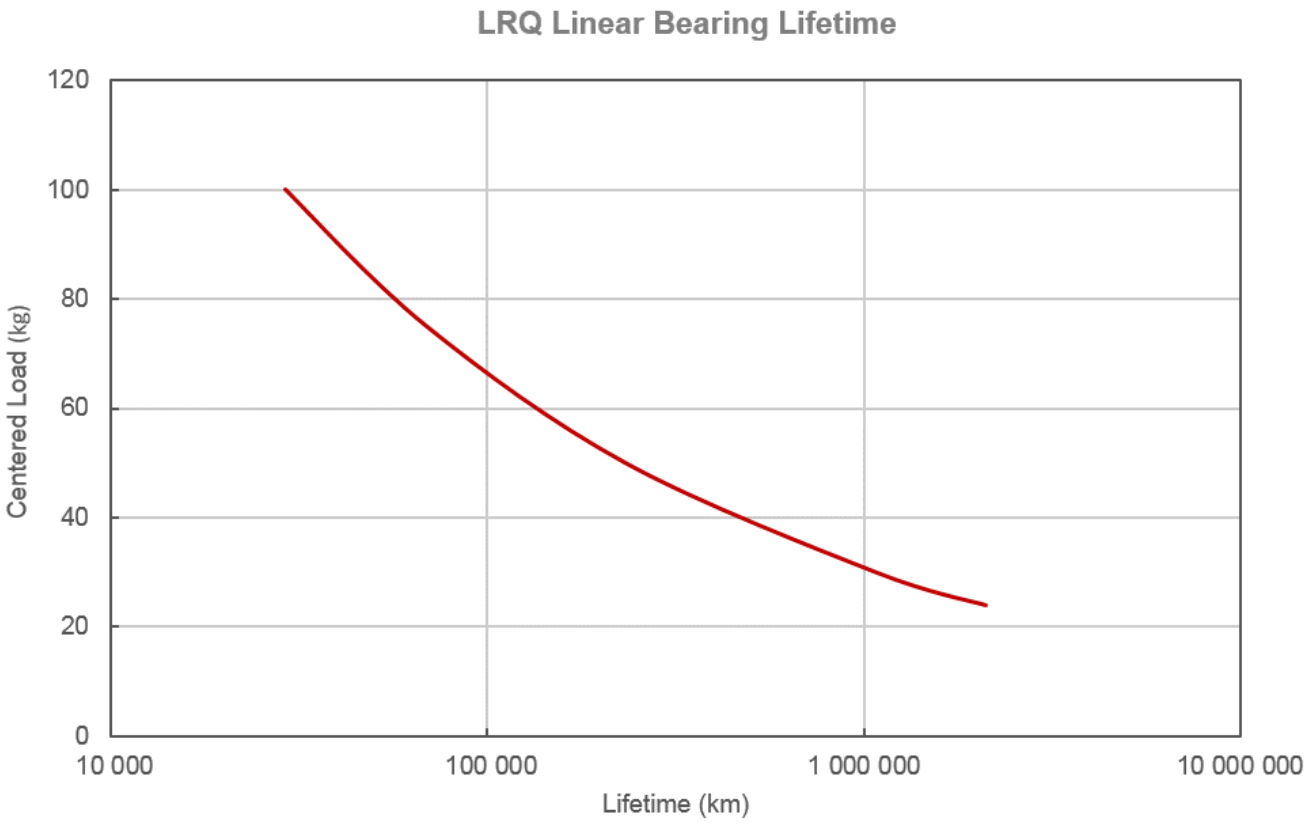
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## Thrust Speed



LRQ Lifetime




## Contact

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