

LRQ450BL-V1T4 Datasheet



- Vacuum compatible to 10⁻³ Torr
- 75, 150, 300, 450, 600 mm travel
- Up to 205 mm/s speed and up to 100 N thrust
- 100 kg load capacity
- Designed for use with an X-MCC Series stepper motor controller or any 2-phase stepper motor controller
- Only 7 feedthrough wires required to control these units

LRQ-V1 Series Overview

For more information about the basics of a vacuum system and considerations to keep in mind when gathering requirements for your application, read our technical article, "Motion Device Design Considerations for Vacuum Applications".

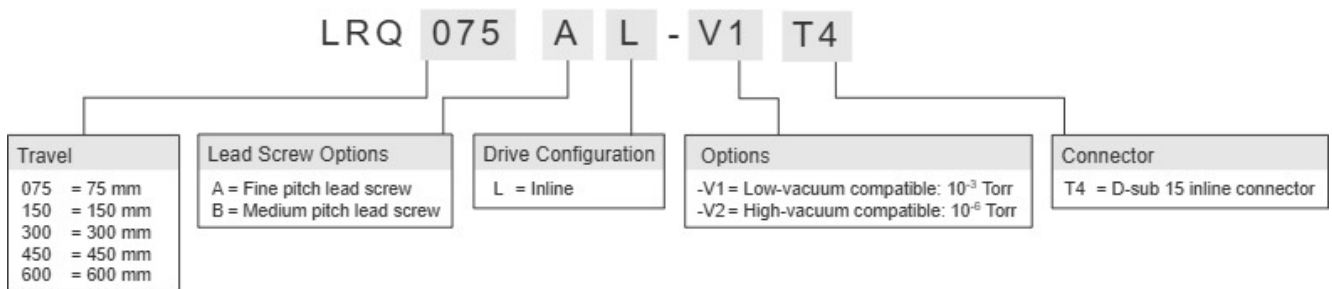
Zaber's LRQ-V1 Series devices are low-vacuum, computer-controlled, motorized linear stages with high stiffness, load, and lifetime capabilities in a compact size.

At only 36 mm high, these vacuum stages are excellent for applications where a low profile is required. The LRQ-V1's innovative design allows speeds up to 205 mm/s and loads up to 100 kg. Like all of Zaber's products, the LRQ-V1 Series is designed to be very easy to set up and operate. These stages can bolt together into an XY system.

These stages are wired with a male D-sub 15 connector for plug-and-play use with our X-MCC Series stepper motor controllers. Simply cut the connector off for flying leads in vacuum and match the wire connections outside of the vacuum for an easy connection. Our handy kits include free software, and all of the accessories that you will need to get the stage running right out of the box.

For more information visit: <https://www.zaber.com/products/vacuum-compatible-stages/LRQ-V1>

LRQ-V1 Series Part Numbering & Options



LRQ450BL-V1T4 Drawings

- [LRQxL-V.png \(Drawing for the LRQxL-V\)](#)

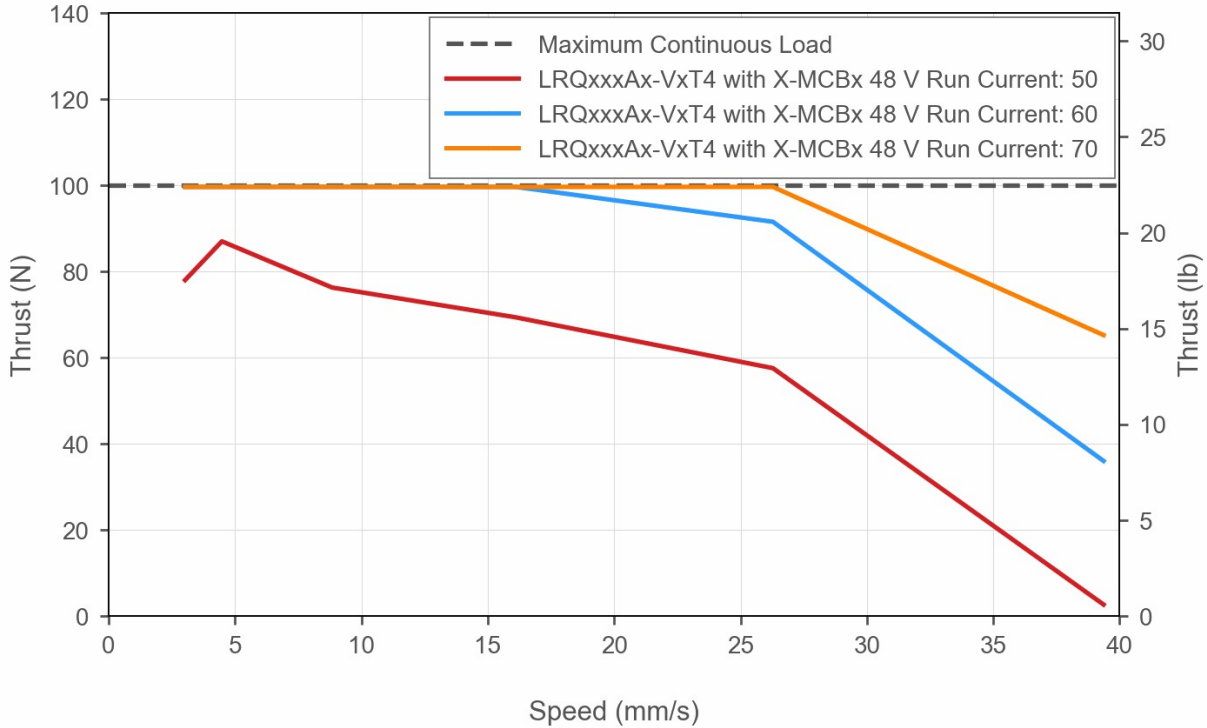
LRQ450BL-V1T4 Specifications

Microstep Size (Default Resolution)	0.49609375 μm
Built-in Controller	No
Recommended Controller	X-MCC (48 V) Recommended
AutoDetect	No
Travel Range	450 mm (17.716")
Accuracy (unidirectional)	60 μm (0.002362")
Repeatability	< 2.5 μm (< 0.000098")
Backlash	< 21 μm (< 0.000827")
Maximum Speed	205 mm/s (8.071"/s)
Minimum Speed	0.000303 mm/s (0.000012"/s)
Speed Resolution	0.000303 mm/s (0.000012"/s)
Peak Thrust	60 N (13.5 lb)
Maximum Continuous Thrust	60 N (13.5 lb)
Maximum Centered Load	1000 N (224.3 lb)
Maximum Moment (Pitch)	30 N-m (22.1 ft-lb)
Maximum Moment (Roll)	30 N-m (22.1 ft-lb)
Maximum Moment (Yaw)	30 N-m (22.1 ft-lb)
Vertical Runout	< 45 μm (< 0.001772")
Horizontal Runout	< 40 μm (< 0.001575")
Pitch	0.04° (0.698 mrad)
Roll	0.025° (0.436 mrad)
Yaw	0.04° (0.698 mrad)
Stiffness in Pitch	500 N-m/° (35 $\mu\text{rad/N-m}$)
Stiffness in Roll	1180 N-m/° (15 $\mu\text{rad/N-m}$)
Stiffness in Yaw	450 N-m/° (39 $\mu\text{rad/N-m}$)
Linear Motion Per Motor Rev	6.35 mm (0.250")
Motor Steps Per Rev	200
Motor Type	Stepper (2 phase)
Motor Rated Current	2100 mA/phase
Inductance	2.8 mH/phase
Motor Connection	Teflon flying leads with D-sub15 connector

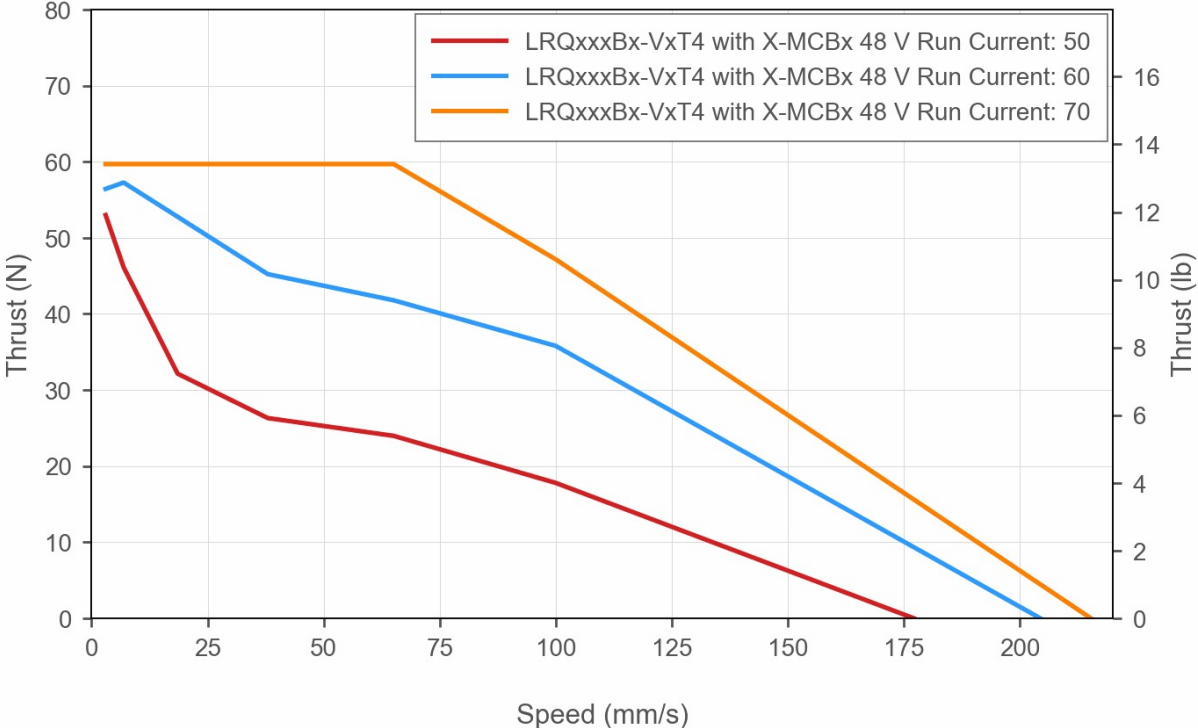
Microstep Size (Default Resolution)	0.49609375 μm
Default Resolution	1/64 of a step
Guide Type	Recirculating Ball Linear Guide
Mechanical Drive System	Precision lead screw
Limit or Home Sensing	Magnetic home sensor
Manual Control	No
Axes of Motion	1
Mounting Interface	M6 and M3 threaded holes
Operating Temperature Range	0 to 50 °C
CE Compliant	Yes
Vacuum Compatible	Low vacuum (10 ⁻³ Torr)
Weight	4.15 kg (9.149 lb)

LRQ-V1 Series Charts

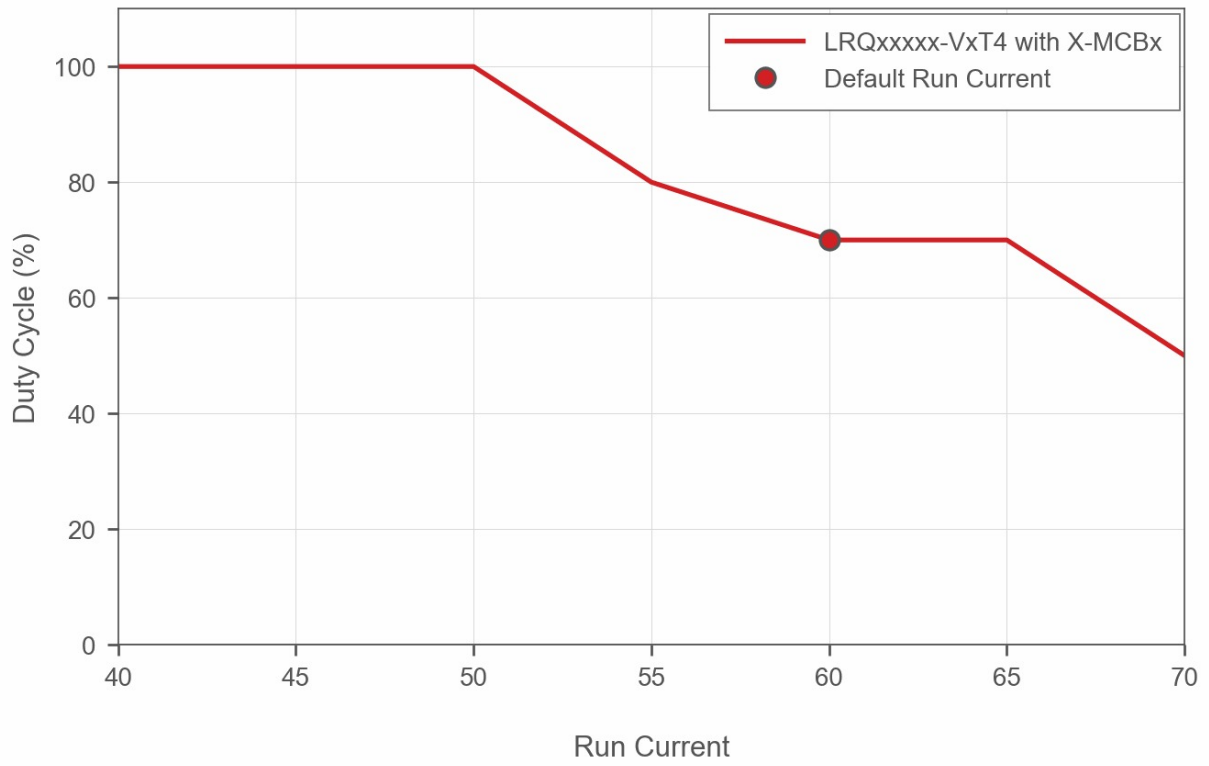
Thrust Speed Performance



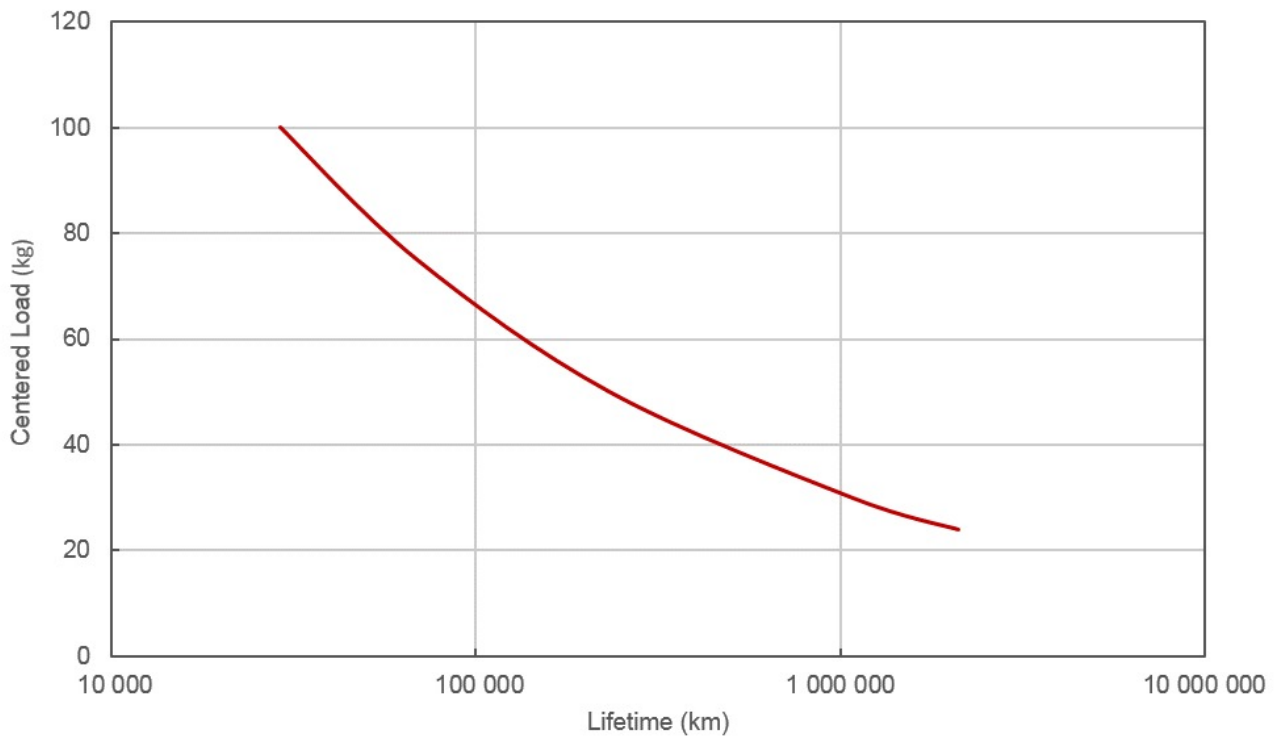
Thrust Speed Performance



Recommended Duty Cycle



LRQ Linear Bearing Lifetime



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