

LSQ Series Datasheet

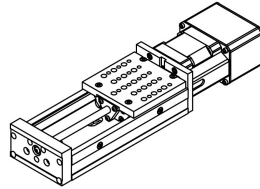


- 75, 150, 300, 450 and 600 mm travel
- 20 kg load capacity
- Up to 1 m/s speed and up to 100 N thrust
- Designed for use with a X-MCB1 Series stepper motor controller or any 2-phase stepper motor controller
- Custom versions available

Drawings

ZABER

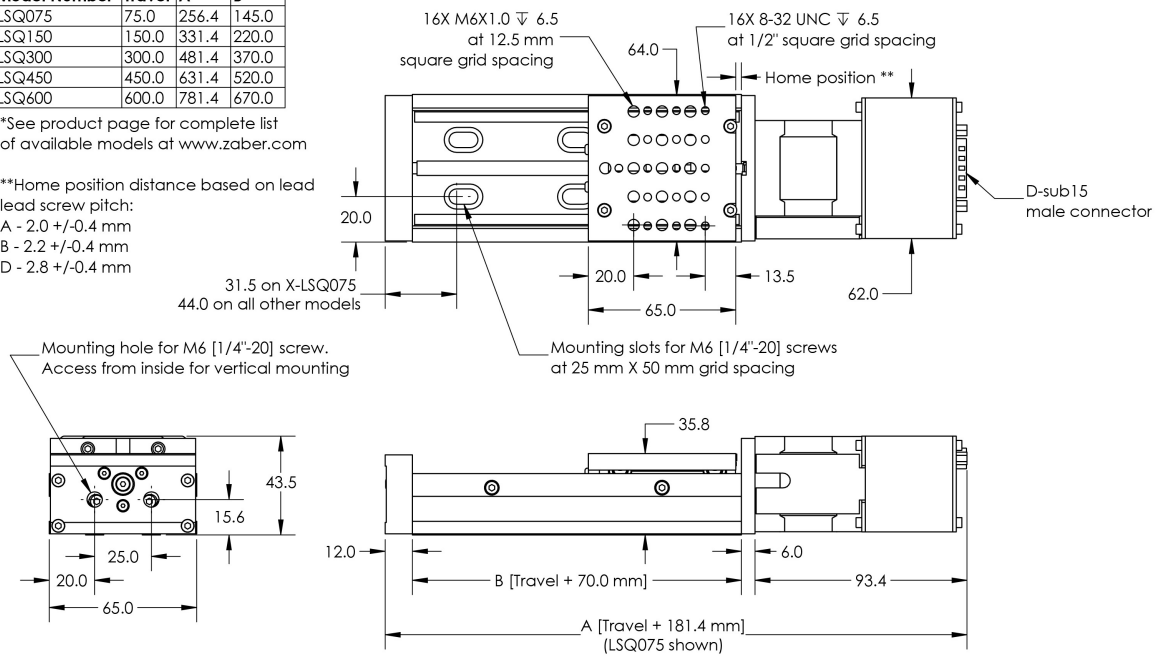
LSQ Motorized Linear Stage
dimensions in mm



Model Number*	Travel	A	B
LSQ075	75.0	256.4	145.0
LSQ150	150.0	331.4	220.0
LSQ300	300.0	481.4	370.0
LSQ450	450.0	631.4	520.0
LSQ600	600.0	781.4	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 1179 801A

Specifications

Specification	Value	Alternate Unit
Built-in Controller	No	
Recommended Controller	X-MCB1 (48 V) Recommended	
Encoder Type	None	
Maximum Centered Load	200 N	44.9 lb
Maximum Cantilever Load	800 N-cm	1132.9 oz-in
Guide Type	Roller bearing	
Vertical Runout	< 24 μm	< 0.000945 "
Horizontal Runout	< 26 μm	< 0.001024 "
Pitch	0.075 °	1.309 mrad
Stiffness in Pitch	150 N-m/°	116 $\mu\text{rad/N-m}$
Roll	0.04 °	0.698 mrad
Stiffness in Roll	150 N-m/°	116 $\mu\text{rad/N-m}$
Yaw	0.03 °	0.523 mrad
Stiffness in Yaw	150 N-m/°	116 $\mu\text{rad/N-m}$
Motor Steps Per Rev	200	
Motor Type	Stepper (2 phase)	
Motor Rated Current	1250 mA/phase	
Inductance	2.8 mH/phase	
Motor Connection	D-sub 15	
Mechanical Drive System	Precision lead screw	
Limit or Home Sensing	Magnetic home sensor	
Axes of Motion	1	
Mounting Interface	M6 threaded holes and 8-32 threaded holes	
Vacuum Compatible	No	
Operating Temperature Range	0 to 50 °C	
Stage Parallelism	< 100 μm	< 0.003937 "
RoHS Compliant	Yes	
CE Compliant	Yes	

Part Number	Microstep Size (Default Resolution)	Travel Range	Accuracy (unidirectional)	Repeatability
LSQ075A-T3	0.09921875 μm	75 mm (2.953 ")	35 μm (0.001378 ")	< 2 μm (< 0.000079 ")
LSQ075B-T3	0.49609375 μm	75 mm (2.953 ")	45 μm (0.001772 ")	< 2 μm (< 0.000079 ")
LSQ075D-T3	1.984375 μm	75 mm (2.953 ")	80 μm (0.003150 ")	< 4 μm (< 0.000157 ")
LSQ150A-T3	0.09921875 μm	150 mm (5.905 ")	45 μm (0.001772 ")	< 2 μm (< 0.000079 ")
LSQ150B-T3	0.49609375 μm	150 mm (5.905 ")	50 μm (0.001968 ")	< 2 μm (< 0.000079 ")
LSQ150D-T3	1.984375 μm	150 mm (5.905 ")	100 μm (0.003937 ")	< 4 μm (< 0.000157 ")
LSQ300A-T3	0.09921875 μm	300 mm (11.811 ")	90 μm (0.003543 ")	< 2 μm (< 0.000079 ")
LSQ300B-T3	0.49609375 μm	300 mm (11.811 ")	65 μm (0.002559 ")	< 2 μm (< 0.000079 ")
LSQ300D-T3	1.984375 μm	300 mm (11.811 ")	145 μm (0.005709 ")	< 4 μm (< 0.000157 ")
LSQ450A-T3	0.09921875 μm	450 mm (17.716 ")	135 μm (0.005315 ")	< 2 μm (< 0.000079 ")
LSQ450B-T3	0.49609375 μm	450 mm (17.716 ")	75 μm (0.002953 ")	< 2 μm (< 0.000079 ")
LSQ450D-T3	1.984375 μm	450 mm (17.716 ")	185 μm (0.007283 ")	< 4 μm (< 0.000157 ")
LSQ600A-T3	0.09921875 μm	600 mm (23.622 ")	150 μm (0.005905 ")	< 2 μm (< 0.000079 ")
LSQ600B-T3	0.49609375 μm	600 mm (23.622 ")	90 μm (0.003543 ")	< 2 μm (< 0.000079 ")
LSQ600D-T3	1.984375 μm	600 mm (23.622 ")	230 μm (0.009055 ")	< 4 μm (< 0.000157 ")

Part Number	Backlash	Maximum Speed	Minimum Speed	Speed Resolution
LSQ075A-T3	< 9 μm (< 0.000354 ")	53 mm/s (2.087 "/s)	0.000061 mm/s (0.000002 "/s)	0.000061 mm/s (0.000002 "/s)
LSQ075B-T3	< 13 μm (< 0.000512 ")	280 mm/s (11.024 "/s)	0.000303 mm/s (0.000012 "/s)	0.000303 mm/s (0.000012 "/s)
LSQ075D-T3	< 73 μm (< 0.002874 ")	1000 mm/s (39.370 "/s)	0.001211 mm/s (0.000048 "/s)	0.001211 mm/s (0.000048 "/s)

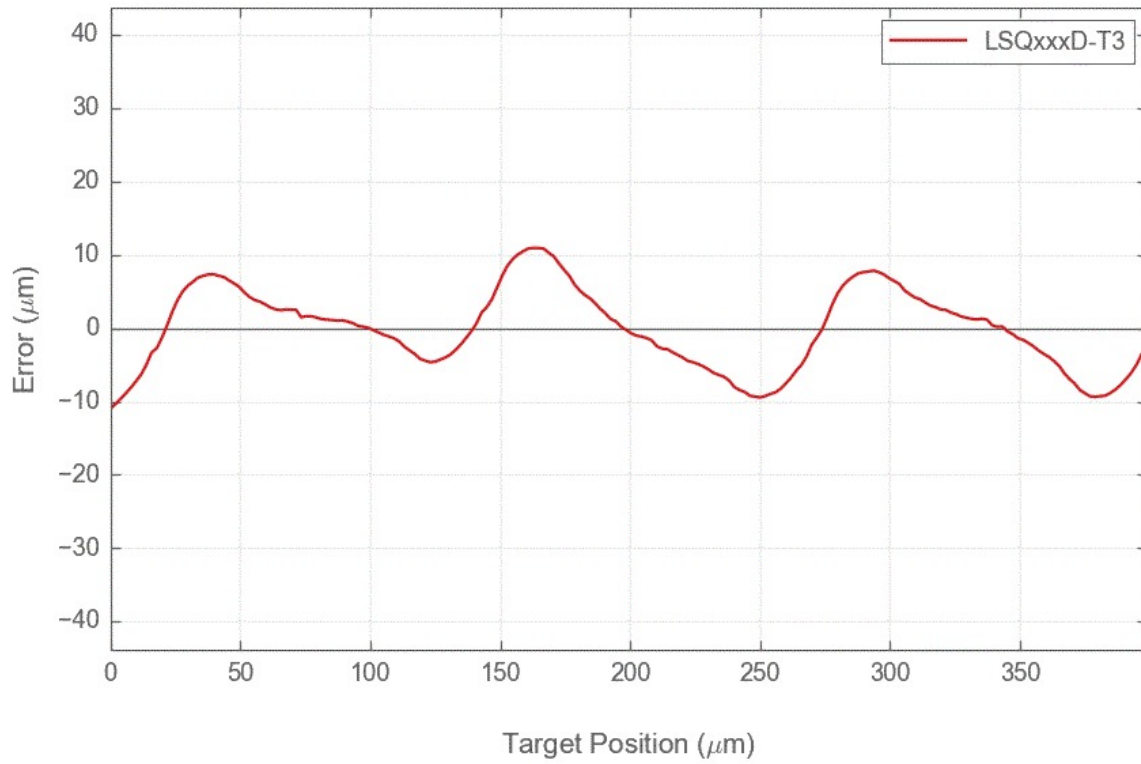
Part Number	Backlash	Maximum Speed	Minimum Speed	Speed Resolution
LSQ150A-T3	< 9 μm (< 0.000354 ")	53 mm/s (2.087 "/s)	0.000061 mm/s (0.000002 "/s)	0.000061 mm/s (0.000002 "/s)
LSQ150B-T3	< 13 μm (< 0.000512 ")	280 mm/s (11.024 "/s)	0.000303 mm/s (0.000012 "/s)	0.000303 mm/s (0.000012 "/s)
LSQ150D-T3	< 73 μm (< 0.002874 ")	1000 mm/s (39.370 "/s)	0.001211 mm/s (0.000048 "/s)	0.001211 mm/s (0.000048 "/s)
LSQ300A-T3	< 9 μm (< 0.000354 ")	53 mm/s (2.087 "/s)	0.000061 mm/s (0.000002 "/s)	0.000061 mm/s (0.000002 "/s)
LSQ300B-T3	< 13 μm (< 0.000512 ")	280 mm/s (11.024 "/s)	0.000303 mm/s (0.000012 "/s)	0.000303 mm/s (0.000012 "/s)
LSQ300D-T3	< 73 μm (< 0.002874 ")	1000 mm/s (39.370 "/s)	0.001211 mm/s (0.000048 "/s)	0.001211 mm/s (0.000048 "/s)
LSQ450A-T3	< 9 μm (< 0.000354 ")	53 mm/s (2.087 "/s)	0.000061 mm/s (0.000002 "/s)	0.000061 mm/s (0.000002 "/s)
LSQ450B-T3	< 13 μm (< 0.000512 ")	280 mm/s (11.024 "/s)	0.000303 mm/s (0.000012 "/s)	0.000303 mm/s (0.000012 "/s)
LSQ450D-T3	< 73 μm (< 0.002874 ")	1000 mm/s (39.370 "/s)	0.001211 mm/s (0.000048 "/s)	0.001211 mm/s (0.000048 "/s)
LSQ600A-T3	< 9 μm (< 0.000354 ")	42 mm/s (1.654 "/s)	0.000061 mm/s (0.000002 "/s)	0.000061 mm/s (0.000002 "/s)
LSQ600B-T3	< 13 μm (< 0.000512 ")	225 mm/s (8.858 "/s)	0.000303 mm/s (0.000012 "/s)	0.000303 mm/s (0.000012 "/s)
LSQ600D-T3	< 73 μm (< 0.002874 ")	800 mm/s (31.496 "/s)	0.001211 mm/s (0.000048 "/s)	0.001211 mm/s (0.000048 "/s)

Part Number	Peak Thrust	Maximum Continuous Thrust	Linear Motion Per Motor Rev	Weight
LSQ075A-T3	160 N (35.9 lb)	100 N (22.4 lb)	1.27 mm (0.050 ")	1.20 kg (2.646 lb)
LSQ075B-T3	80 N (17.9 lb)	80 N (17.9 lb)	6.35 mm (0.250 ")	1.20 kg (2.646 lb)
LSQ075D-T3	20 N (4.5 lb)	20 N (4.5 lb)	25.4 mm (1.000 ")	1.20 kg (2.646 lb)
LSQ150A-T3	160 N (35.9 lb)	100 N (22.4 lb)	1.27 mm (0.050 ")	1.40 kg (3.086 lb)
LSQ150B-T3	80 N (17.9 lb)	80 N (17.9 lb)	6.35 mm (0.250 ")	1.40 kg (3.086 lb)
LSQ150D-T3	20 N (4.5 lb)	20 N (4.5 lb)	25.4 mm (1.000 ")	1.40 kg (3.086 lb)

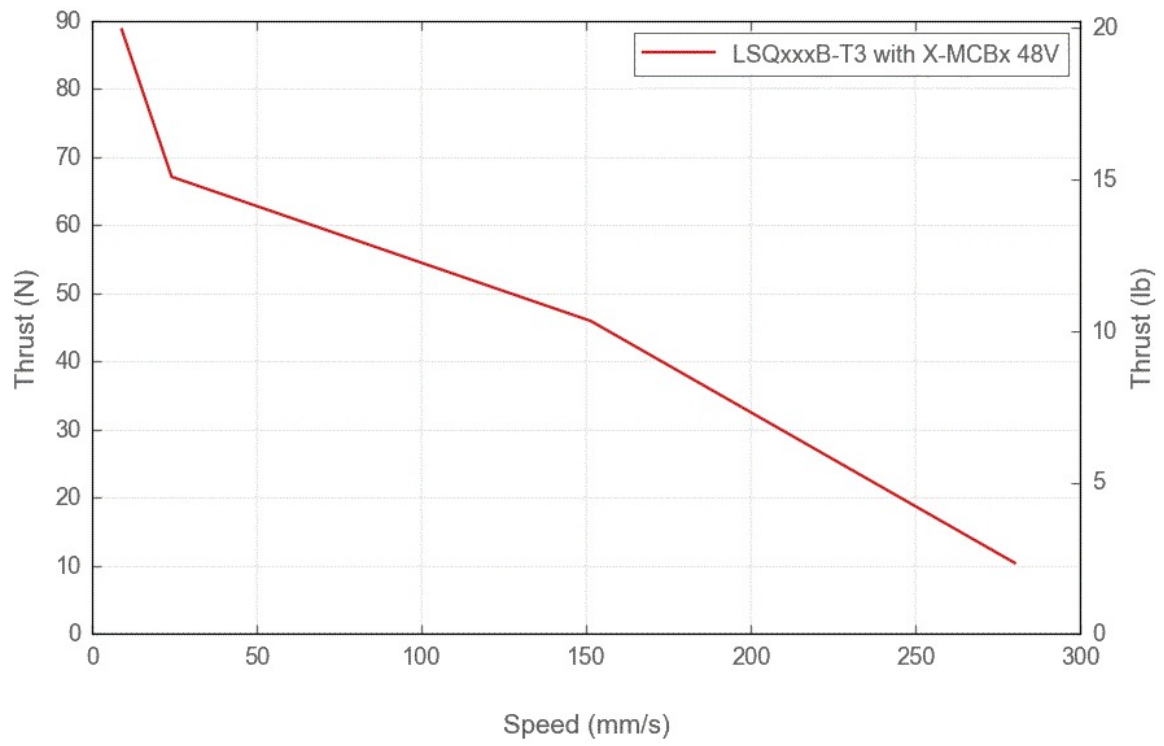
Part Number	Peak Thrust	Maximum Continuous Thrust	Linear Motion Per Motor Rev	Weight
LSQ300A-T3	160 N (35.9 lb)	100 N (22.4 lb)	1.27 mm (0.050 ")	1.80 kg (3.968 lb)
LSQ300B-T3	80 N (17.9 lb)	80 N (17.9 lb)	6.35 mm (0.250 ")	1.80 kg (3.968 lb)
LSQ300D-T3	20 N (4.5 lb)	20 N (4.5 lb)	25.4 mm (1.000 ")	1.80 kg (3.968 lb)
LSQ450A-T3	160 N (35.9 lb)	100 N (22.4 lb)	1.27 mm (0.050 ")	2.30 kg (5.071 lb)
LSQ450B-T3	80 N (17.9 lb)	80 N (17.9 lb)	6.35 mm (0.250 ")	2.30 kg (5.071 lb)
LSQ450D-T3	20 N (4.5 lb)	20 N (4.5 lb)	25.4 mm (1.000 ")	2.30 kg (5.071 lb)
LSQ600A-T3	147 N (33.0 lb)	100 N (22.4 lb)	1.27 mm (0.050 ")	2.9 kg (6.393 lb)
LSQ600B-T3	75 N (16.8 lb)	80 N (17.9 lb)	6.35 mm (0.250 ")	2.9 kg (6.393 lb)
LSQ600D-T3	18 N (4.0 lb)	20 N (4.5 lb)	25.4 mm (1.000 ")	2.9 kg (6.393 lb)

Charts

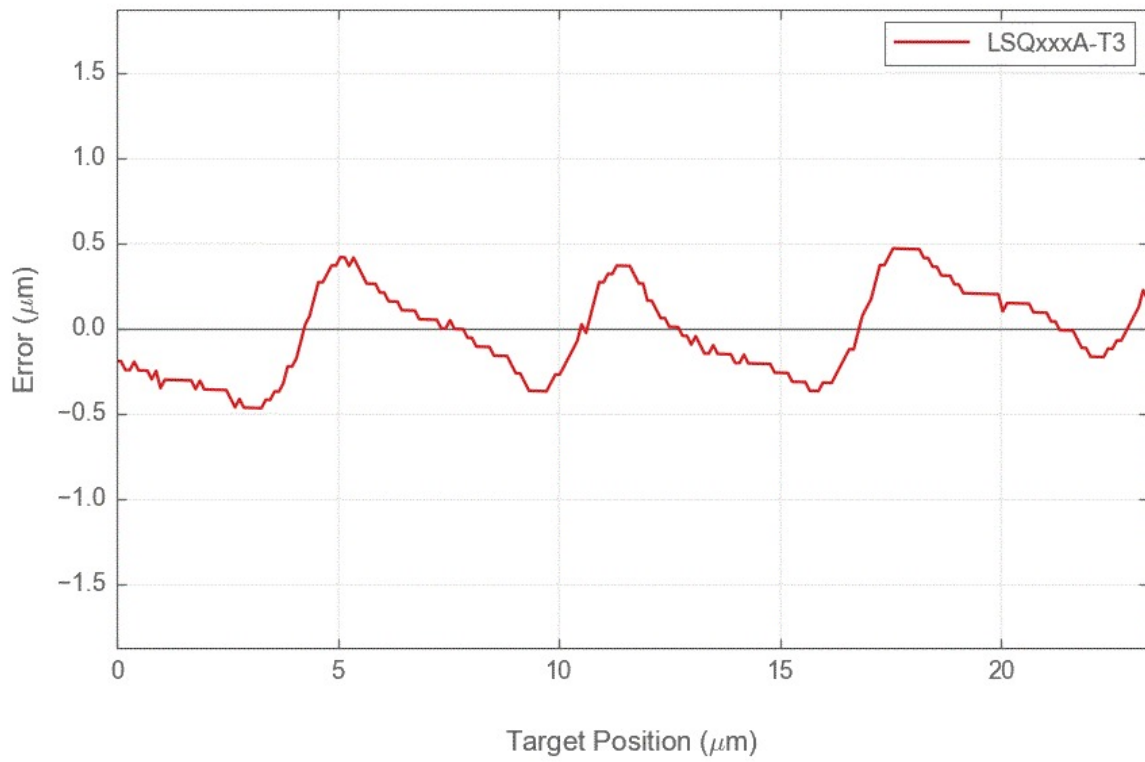
Typical Microstepping Accuracy



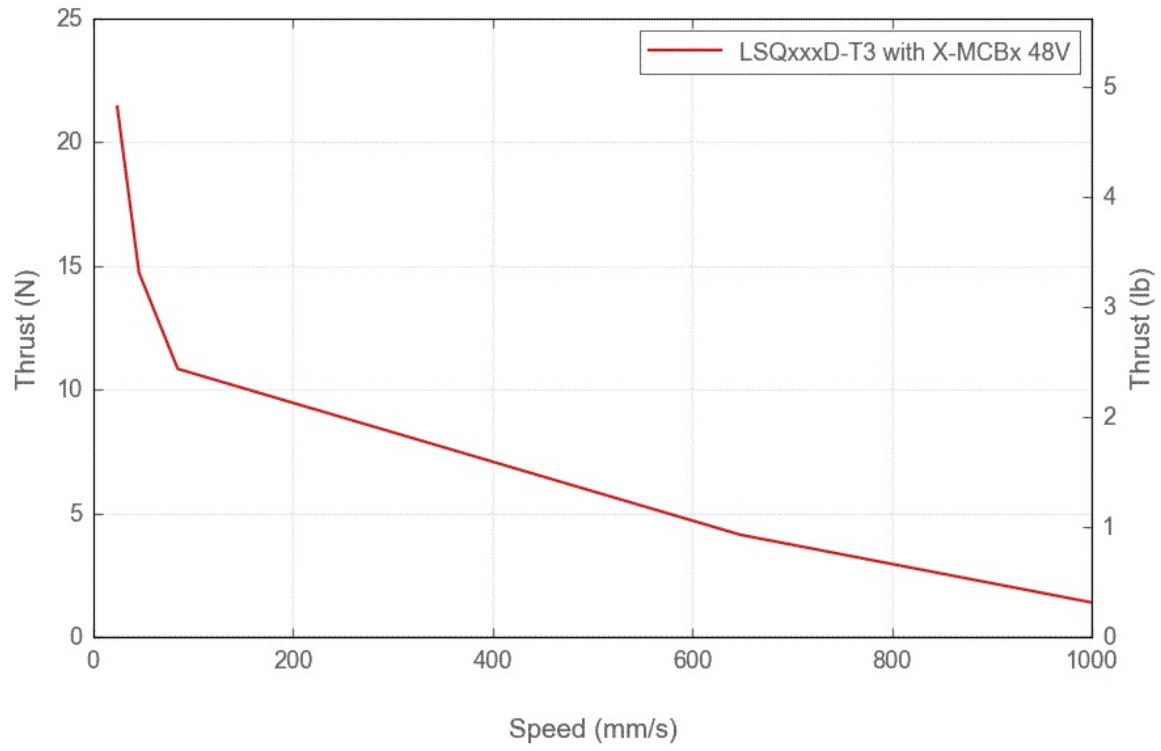
Thrust Speed Performance



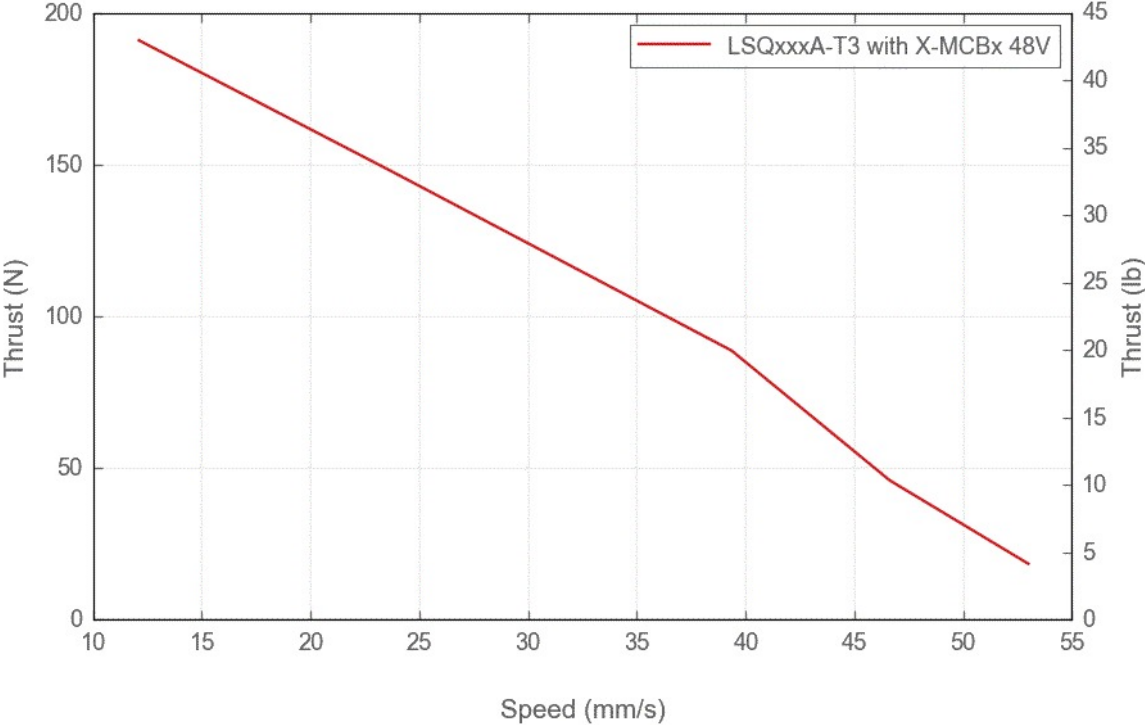
Typical Microstepping Accuracy



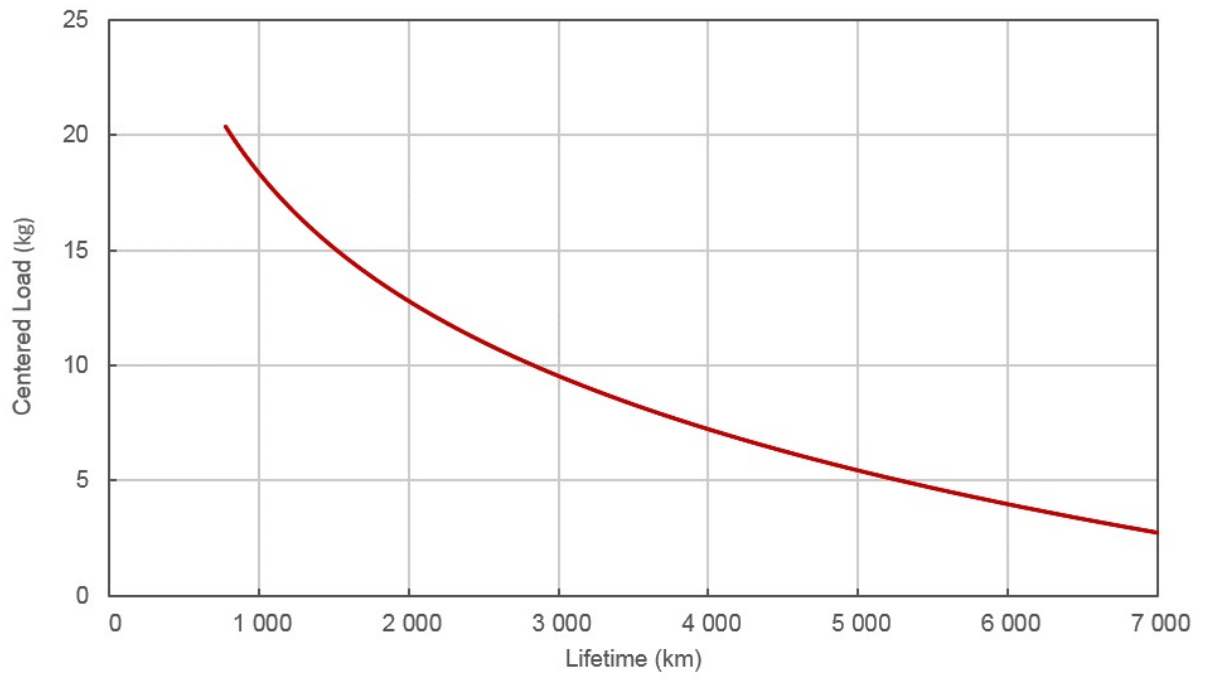
Thrust Speed Performance



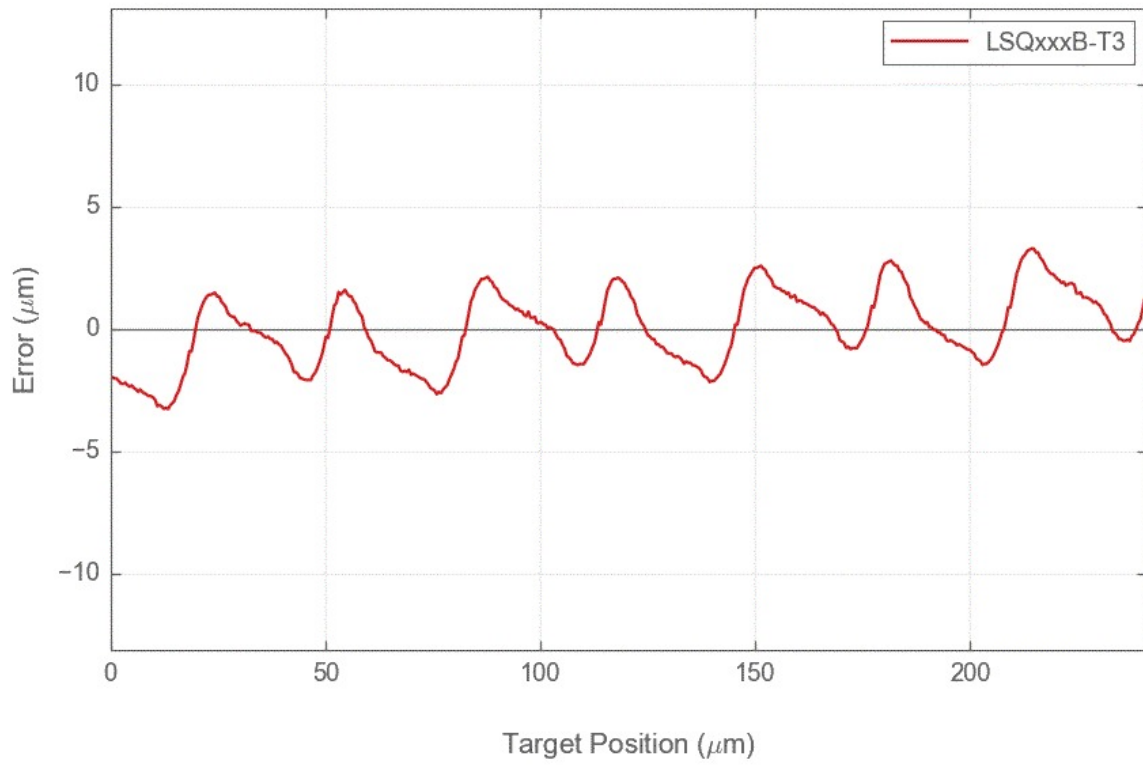
Thrust Speed Performance



LSQ Linear Bearing Lifetime



Typical Microstepping Accuracy



Thrust Speed Performance

