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

1-604-569-3780 *Direct*
1-888-276-8033 *Toll Free*
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ASR Series Datasheet



- 50 mm to 305 mm travel per axis
- Up to 2 µm repeatability; 85 mm/s speed
- Easily adjustable non-contact hall sensor limit switches
- Designed for use with MCC Family controllers or any 2-phase stepper motor controller
- With AutoDetect, Zaber controllers automatically configure settings for the connected peripheral
- Custom versions available

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ASR Series Overview

Zaber's ASR series microscope stages combined with our MCC family multi-axis controllers are designed as replacements for manual stages on upright and inverted microscopes or for stand-alone operation as scanning stages. Set up is easy with AutoDetect. Once connected, the controller will automatically detect and configure the ASR.
Mounting adaptors are available for breadboards and most common microscopes. Custom adaptors and plates are available upon request.

For more information visit: https://www.zaber.com/products/scanning-microscope-stages/ASR

ASR Series Part Numbering & Options

ASR 050 B 050 B - T3A

Lower Axis Travel
- **050** — 50 mm
- **100** — 100 mm
- **205** — 205 mm
- **305** — 305 mm

Lead Screw Options
- **B** — 2 mm/rev

Upper Axis Travel
- **050** — 50 mm
- **120** — 120 mm
- **205** — 205 mm
- **305** — 305 mm

Lead Screw Options
- **B** — 2 mm/rev

Connector
- **T3A** — D-sub 15 panel mount connector with Auto Detect

ASR Series Drawings

• View all drawings and documents at zaber.com

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ASR Series Specifications

Overview

Specification	Value
Built-in Controller	No
Recommended Controller	MCC (48 V) Recommended
AutoDetect	Yes
Axes of Motion	2

Positioning Performance

Specification	Value
Repeatability	<2 µm (<0.000079 ")
Pitch Error	0.05 ° (0.873 mrad)
Microstep Size (Default Resolution)	0.15625 µm
Default Resolution	1/64 of a step

Load Performance

Specification	Value
Peak Thrust	95 N (21.3 lb)
Maximum Continuous Thrust	95 N (21.3 lb)

Speed

Specification	Value
Minimum Speed	0.000095 mm/s (0.000004 "/s)
Speed Resolution	0.000095 mm/s (0.000004 "/s)

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Encoder & Sensing

Specification	Value
Limit or Home Sensing	Magnetic, adjustable home and away sensors

Motor

Specification	Value
Linear Motion Per Motor Rev	2.00 mm (0.079 ")
Motor Steps Per Rev	200
Motor Type	Stepper (2 phase)
Motor Rated Current	1500 mA/phase
Motor Winding Resistance	2.05 ohms/phase
Motor Winding Inductance	1 mH/phase
Motor Connection	D-sub 15

Mechanical

Specification	Value
Guide Type	Crossed roller bearing
Mechanical Drive System	Precision lead screw
Mounting Interface	Separate mounting adaptors available

Environmental & Compliance

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

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Part Number	Lower Travel Range	Upper Travel Range	Weight	Accuracy (unidirectional)
ASR050B050B-T3A	50 mm (1.969 ")	50 mm (1.969 ")	1.78 kg (3.924 lb)	60 µm (0.002362 ")
ASR100B120B-T3A	100 mm (3.937 ")	120 mm (4.724 ")	3 kg (6.614 lb)	60 µm (0.002362 ")
ASR205B205B-T3A	205 mm (8.071 ")	205 mm (8.071 ")	6.6 kg (14.55 lb)	60 µm (0.002362 ")
ASR305B305B-T3A	305 mm (12.008 ")	305 mm (12.008 ")	10.3 kg (22.708 lb)	80 µm (0.00315 ")

Part Number	Flatness of Travel	Backlash	Straightness of Travel	Roll Error
ASR050B050B-T3A	<8 µm (<0.0003 ")	<8 µm (<0.000315 ")	<5 µm (<0.000197 ")	0.01 ° (0.174 mrad)
ASR100B120B-T3A	<20 µm (<0.0008 ")	<8 µm (<0.000315 ")	<16 µm (<0.00063 ")	0.02 ° (0.349 mrad)
ASR205B205B-T3A	<25 µm (<0.001 ")	<10 µm (<0.000394 ")	<16 µm (<0.00063 ")	0.02 ° (0.349 mrad)
ASR305B305B-T3A	<50 µm (<0.002 ")	<10 µm (<0.000394 ")	<20 µm (<0.000787 ")	0.02 ° (0.349 mrad)

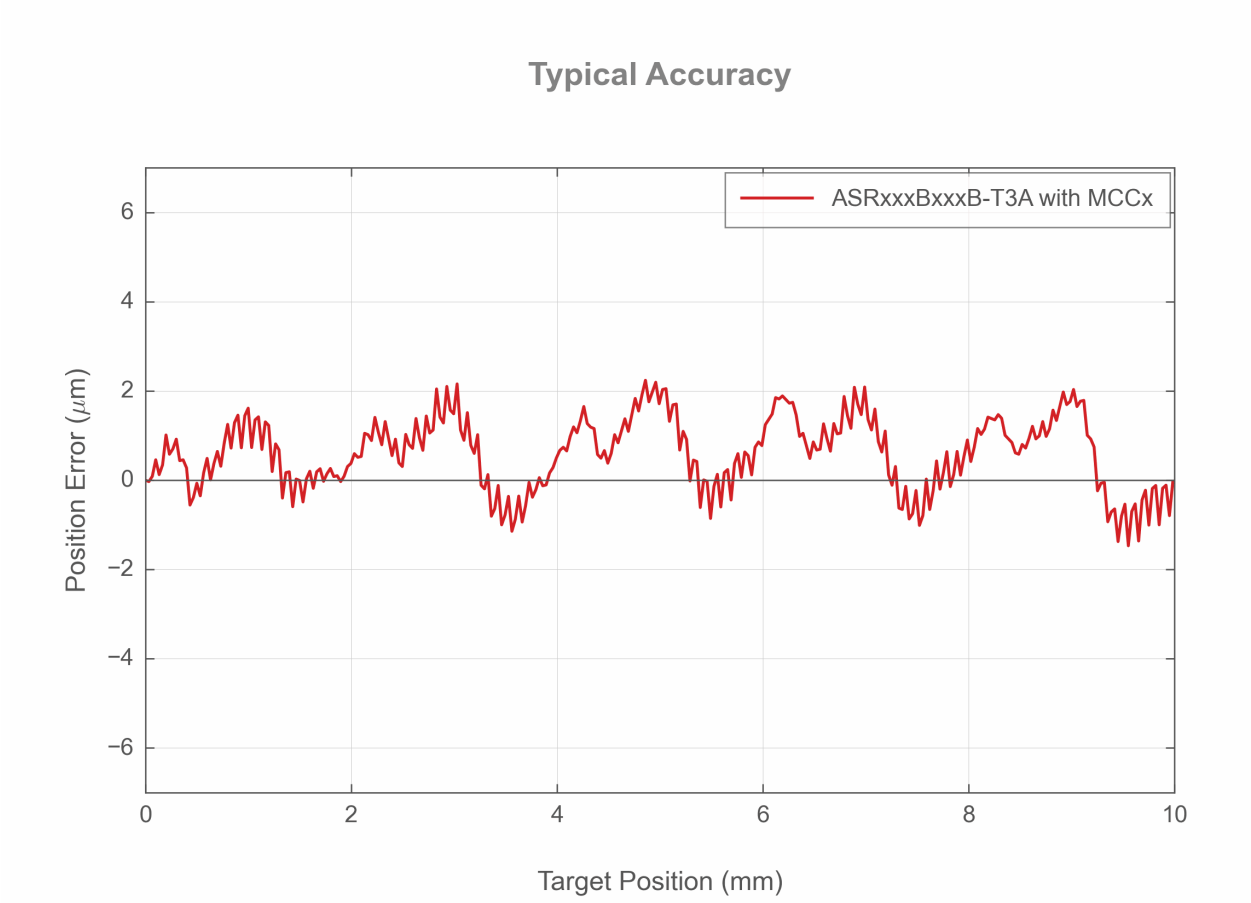
Part Number	Yaw Error	Maximum Centered Load	Maximum Speed
ASR050B050B-T3A	0.01 ° (0.174 mrad)	200 N (44.9 lb)	85 mm/s (3.346 "/s)
ASR100B120B-T3A	0.03 ° (0.523 mrad)	100 N (22.4 lb)	85 mm/s (3.346 "/s)
ASR205B205B-T3A	0.03 ° (0.523 mrad)	100 N (22.4 lb)	85 mm/s (3.346 "/s)
ASR305B305B-T3A	0.03 ° (0.523 mrad)	100 N (22.4 lb)	65 mm/s (2.559 "/s)

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ASR Series Charts

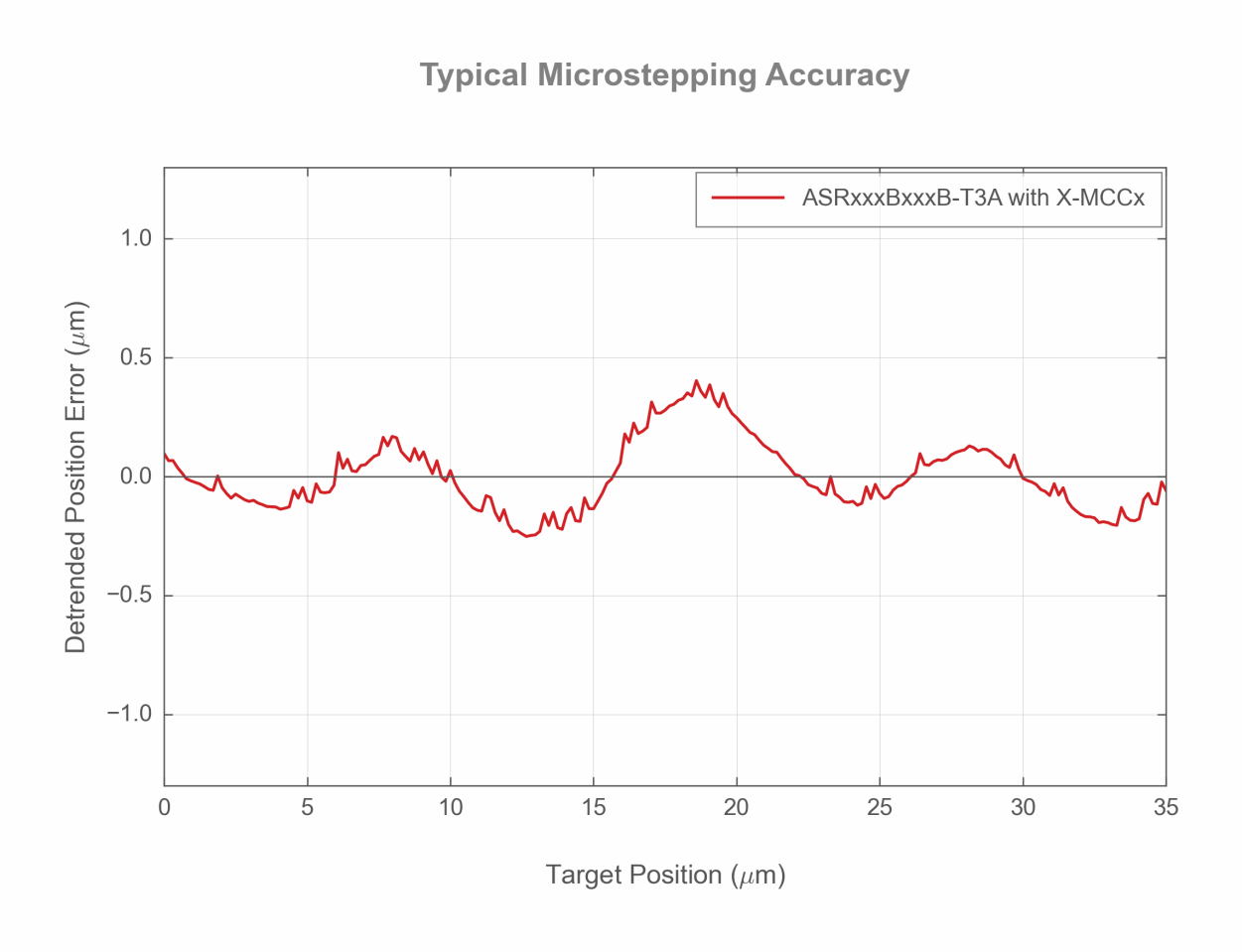
ASRxxxBxxxB T3A Typical Accuracy



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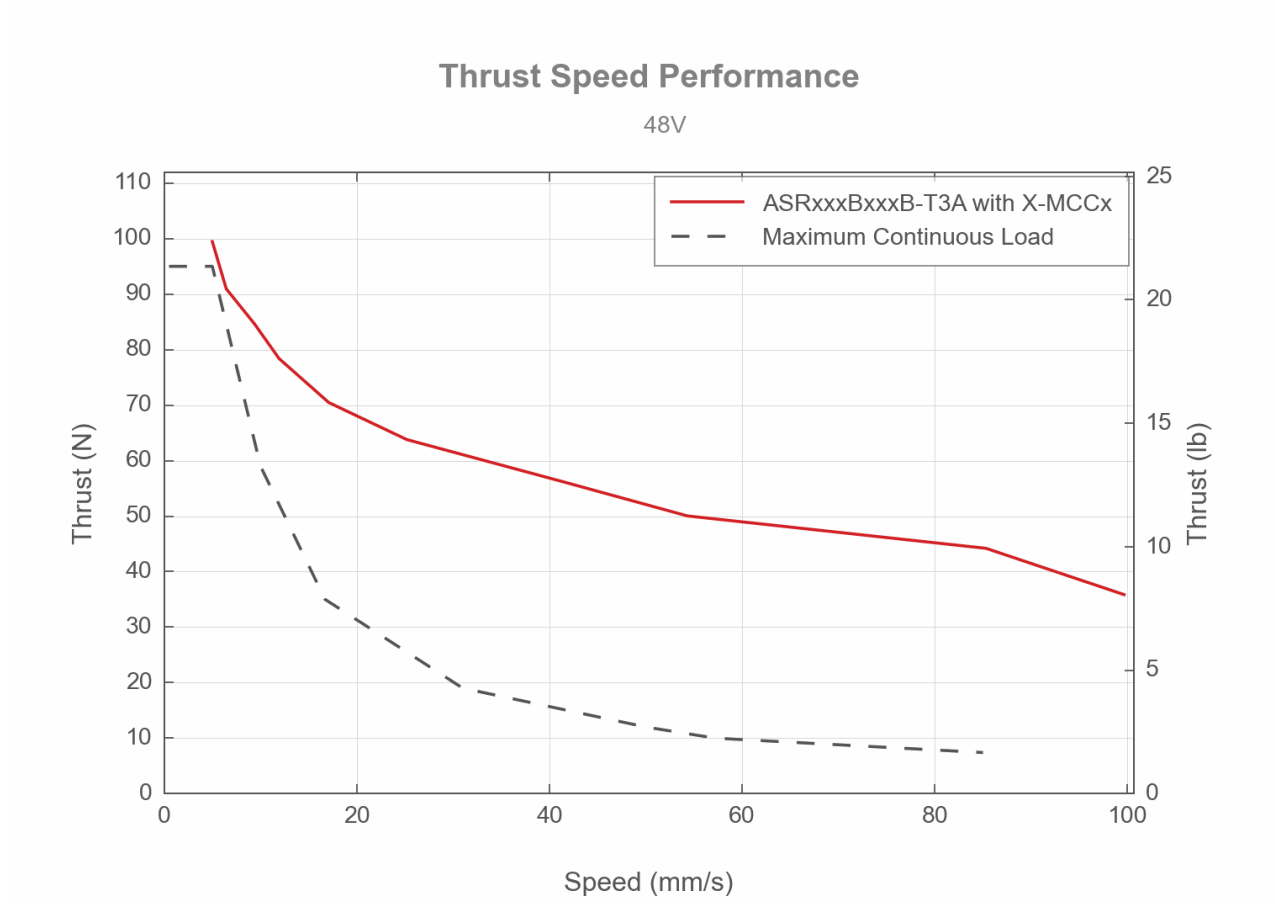
ASRxxxBxxxB T3A Typical Microstepping Accuracy



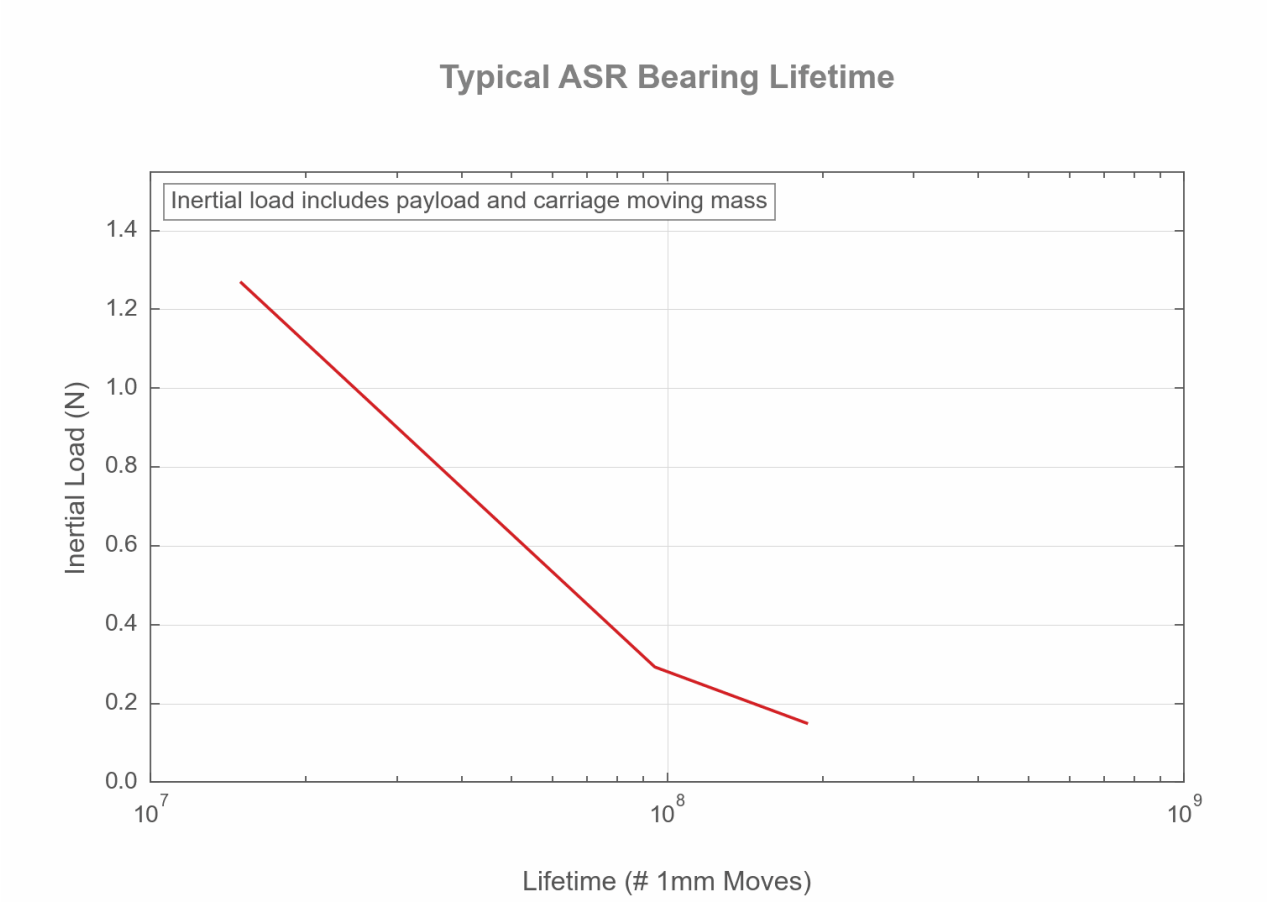
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ASRxxxBxxxB T3A Thrust Speed Performance



Typical ASR Bearing Lifetime



Contact

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ASR-E Series Datasheet



- 50 mm to 305 mm travel per axis
- Up to 2 µm repeatability; 85 mm/s speed
- Easily adjustable non-contact hall sensor limit switches
- Designed for use with MCC Family controllers or any 2-phase stepper motor controller
- With AutoDetect, Zaber controllers automatically configure settings for the connected peripheral
- Custom versions available

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ASR-E Series Overview

Zaber's ASR-E series microscope stages combined with our MCC family multi-axis controllers are designed as replacements for manual stages on upright and inverted microscopes or for stand-alone operation as scanning stages. Set up is easy with AutoDetect. Once connected, the controller will automatically detect and configure the ASR-E.
Mounting adaptors are available for breadboards and most common microscopes. Custom adaptors and plates are available upon request.

For more information visit: https://www.zaber.com/products/scanning-microscope-stages/ASR-E

ASR-E Series Part Numbering & Options

ASR 050 B 050 B - E03 T3A

Lower Axis Travel
- **050** — 50 mm
- **100** — 100 mm
- **205** — 205 mm
- **305** — 305 mm

Lead Screw Options
- **B** — 2 mm/rev

Upper Axis Travel
- **050** — 50 mm
- **120** — 120 mm
- **205** — 205 mm
- **305** — 305 mm

Lead Screw Options
- **B** — 2 mm/rev

Encoder Options
- **E03** — Motor Encoder, 200 CPR

Connector
- **T3A** — D-sub 15 panel mount connector with Auto Detect

ASR-E Series Drawings

• View all drawings and documents at zaber.com

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ASR-E Series Specifications

Overview

Specification	Value
Built-in Controller	No
Recommended Controller	MCC (48 V) Recommended
AutoDetect	Yes
Axes of Motion	2

Positioning Performance

Specification	Value
Repeatability	<2 µm (<0.000079 ")
Pitch Error	0.05 ° (0.873 mrad)
Microstep Size (Default Resolution)	0.15625 µm
Default Resolution	1/64 of a step

Load Performance

Specification	Value
Peak Thrust	95 N (21.3 lb)
Maximum Continuous Thrust	95 N (21.3 lb)

Speed

Specification	Value
Minimum Speed	0.000095 mm/s (0.000004 "/s)
Speed Resolution	0.000095 mm/s (0.000004 "/s)

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Encoder & Sensing

Specification	Value
Encoder Type	Rotary quadrature encoder (incremental)
Encoder Resolution	200 CPR (8 states/rev)
Limit or Home Sensing	Magnetic, adjustable home and away sensors

Motor

Specification	Value
Linear Motion Per Motor Rev	2.00 mm (0.079 ")
Motor Steps Per Rev	200
Motor Type	Stepper (2 phase)
Motor Rated Current	1500 mA/phase
Motor Winding Resistance	2.05 ohms/phase
Motor Winding Inductance	1 mH/phase
Motor Connection	D-sub 15

Mechanical

Specification	Value
Guide Type	Crossed roller bearing
Mechanical Drive System	Precision lead screw
Mounting Interface	Separate mounting adaptors available

Environmental & Compliance

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

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Part Number	Lower Travel Range	Upper Travel Range	Weight	Accuracy (unidirectional)
ASR050B050B-E03T3A	50 mm (1.969 ")	50 mm (1.969 ")	1.82 kg (4.012 lb)	60 µm (0.002362 ")
ASR100B120B-E03T3A	100 mm (3.937 ")	120 mm (4.724 ")	3 kg (6.614 lb)	60 µm (0.002362 ")
ASR205B205B-E03T3A	205 mm (8.071 ")	205 mm (8.071 ")	6.65 kg (14.661 lb)	60 µm (0.002362 ")
ASR305B305B-E03T3A	305 mm (12.008 ")	305 mm (12.008 ")	10.35 kg (22.818 lb)	80 µm (0.00315 ")

Part Number	Flatness of Travel	Backlash	Straightness of Travel	Roll Error
ASR050B050B-E03T3A	<8 µm (<0.0003 ")	<8 µm (<0.000315 ")	<5 µm (<0.000197 ")	0.01 ° (0.174 mrad)
ASR100B120B-E03T3A	<20 µm (<0.0008 ")	<8 µm (<0.000315 ")	<16 µm (<0.00063 ")	0.02 ° (0.349 mrad)
ASR205B205B-E03T3A	<25 µm (<0.001 ")	<10 µm (<0.000394 ")	<16 µm (<0.00063 ")	0.02 ° (0.349 mrad)
ASR305B305B-E03T3A	<50 µm (<0.002 ")	<10 µm (<0.000394 ")	<20 µm (<0.000787 ")	0.02 ° (0.349 mrad)

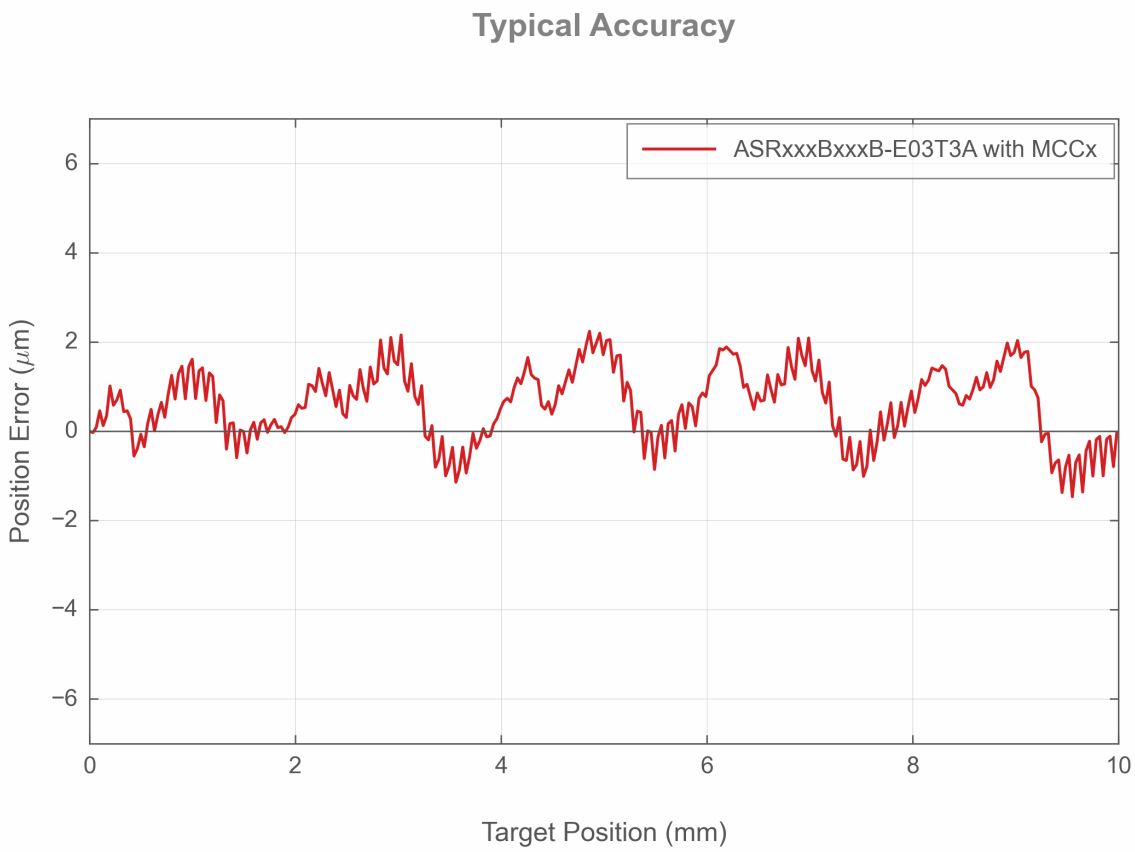
Part Number	Yaw Error	Maximum Centered Load	Maximum Speed
ASR050B050B-E03T3A	0.01 ° (0.174 mrad)	200 N (44.9 lb)	85 mm/s (3.346 "/s)
ASR100B120B-E03T3A	0.03 ° (0.523 mrad)	100 N (22.4 lb)	85 mm/s (3.346 "/s)
ASR205B205B-E03T3A	0.03 ° (0.523 mrad)	100 N (22.4 lb)	85 mm/s (3.346 "/s)
ASR305B305B-E03T3A	0.03 ° (0.523 mrad)	100 N (22.4 lb)	65 mm/s (2.559 "/s)

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ASR-E Series Charts

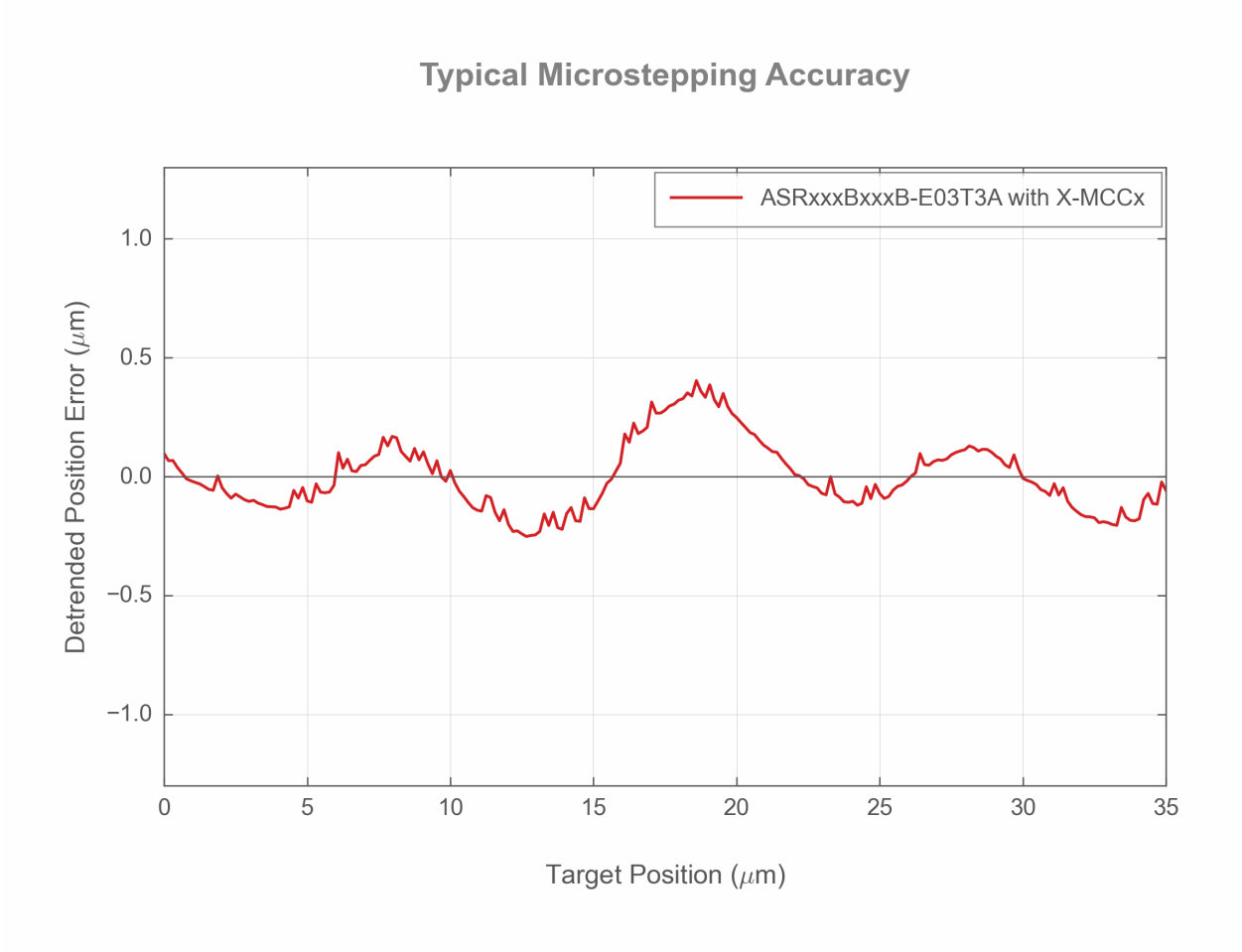
ASRxxxBxxxB E03T3A Typical Accuracy



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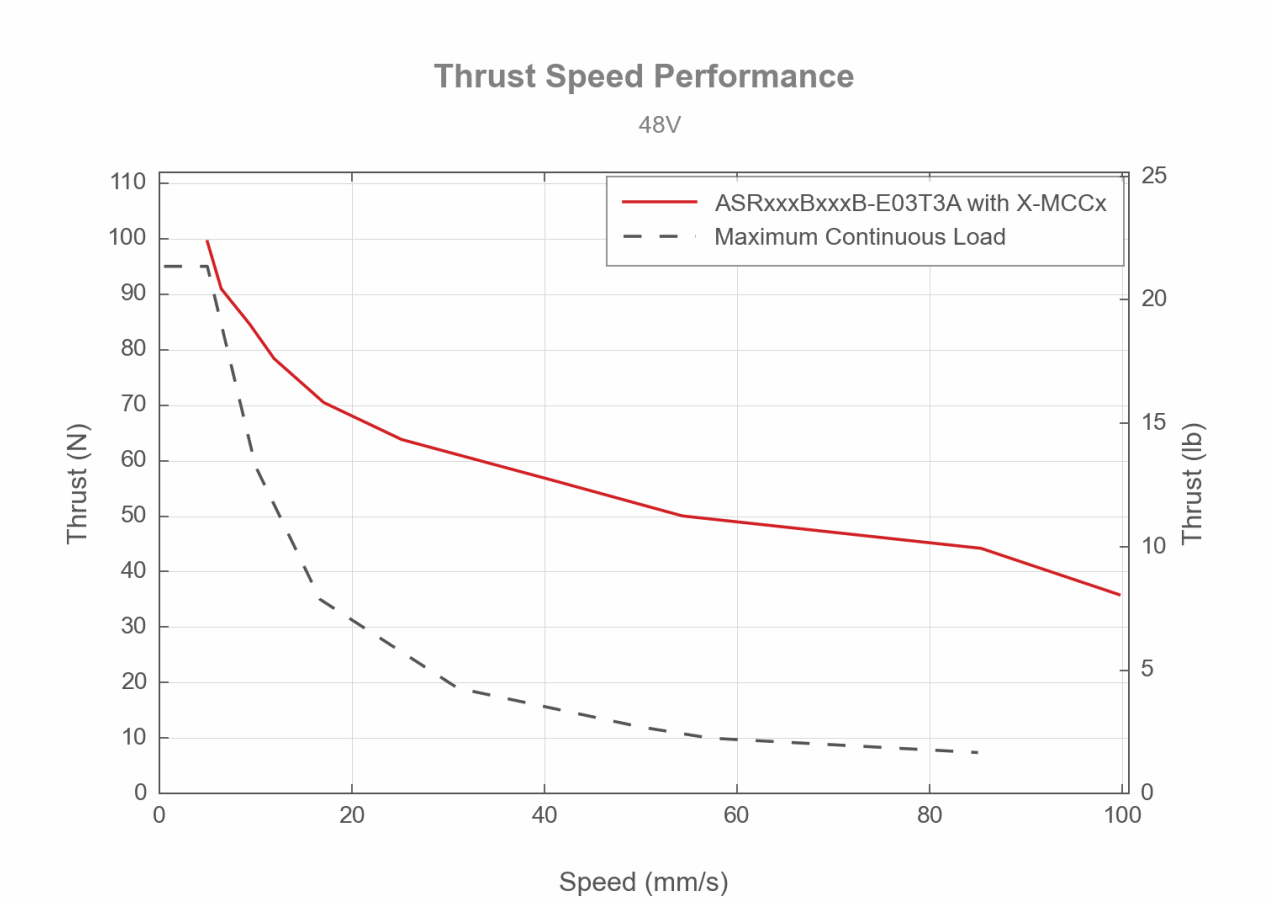
ASRxxxBxxxB E03T3A Typical Microstepping Accuracy



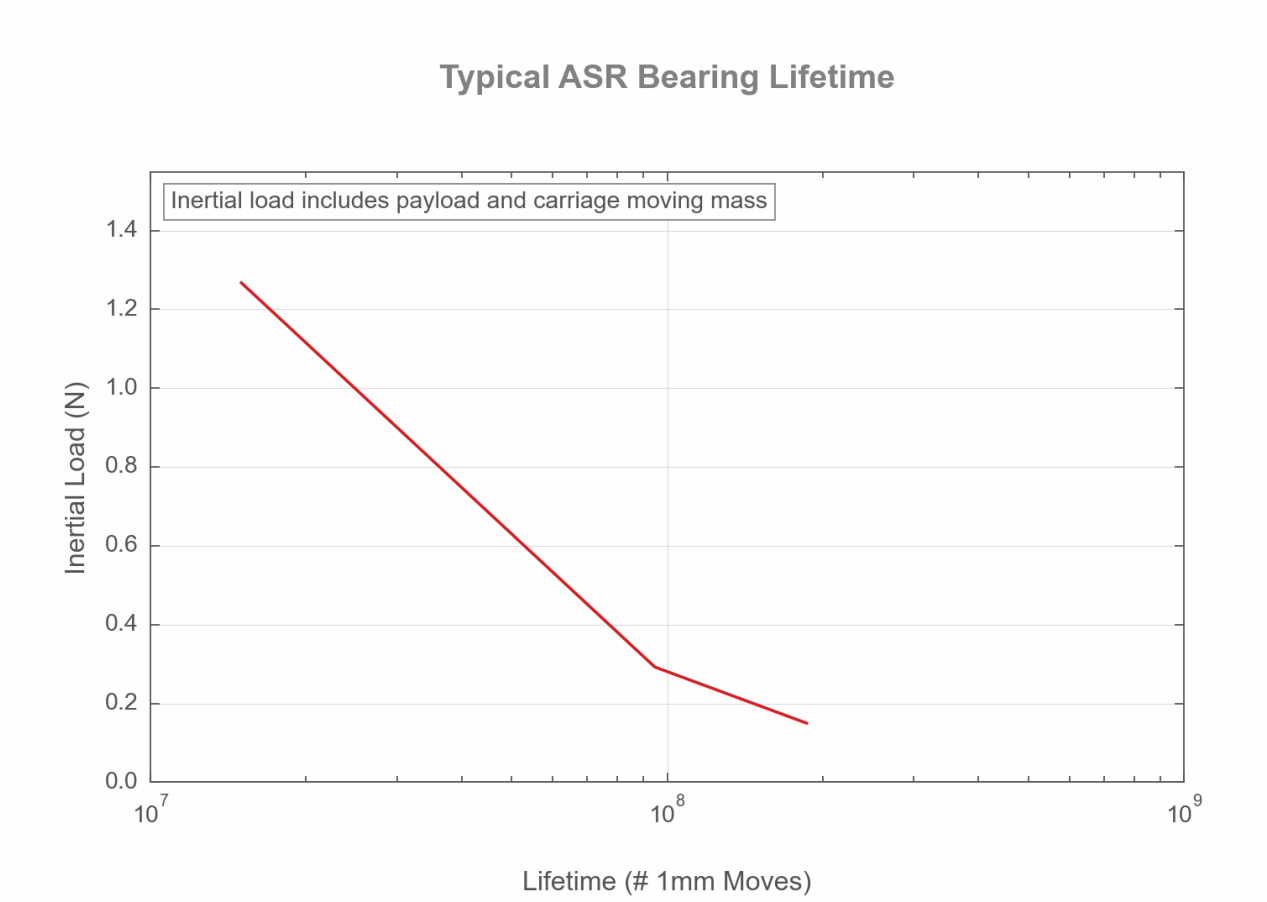
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ASRxxxBxxxB E03T3A Thrust Speed Performance



Typical ASR Bearing Lifetime



Contact

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X-ASR Series Datasheet



- 50 mm to 305 mm travel per axis
- Up to 2 µm repeatability; 85 mm/s speed
- Easily adjustable non-contact hall sensor limit switches
- Built-in controller saves space and simplifies cable management. Easily connect via USB and daisy chain to other Zaber products
- Simple standalone control with X-JOY joysticks
- Digital IO for triggering external systems
- Custom versions available

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X-ASR Series Overview

Zaber's X-ASR Series microscope stages are designed as replacements for manual stages on upright and inverted microscopes or for stand-alone operation as scanning stages. Compact, built-in controllers save bench space and allow the stages to be powered and controlled through a single, flex rated cable. X-ASR devices also include a digital input and two digital outputs for interfacing with external systems. An event-driven trigger system allows devices to be programmed for stand-alone operation based on I/O, time, or movement stimuli.
Mounting adaptors are available for breadboards and most common microscopes. Custom adaptors and plates are available upon request.

For more information visit: https://www.zaber.com/products/scanning-microscope-stages/X-ASR

X-ASR Series Part Numbering & Options

X-ASR 050 B 050 B -S D12

Lower Axis Travel
- **050** — 50 mm
- **100** — 100 mm
- **205** — 205 mm
- **305** — 305 mm

Lead Screw Options
- **B** — 2 mm/rev

Upper Axis Travel
- **050** — 50 mm
- **120** — 120 mm
- **205** — 205 mm
- **305** — 305 mm

Lead Screw Options
- **B** — 2 mm/rev

Options
- **-S** — No manual knob

I/O Options
- **D12** — One digital input, two digital outputs

X-ASR Series Drawings

• View all drawings and documents at zaber.com

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X-ASR Series Specifications

Overview

Specification	Value
Built-in Controller	Yes
Manual Control	No
Axes of Motion	2
LED Indicators	Yes

Positioning Performance

Specification	Value
Repeatability	<2 µm (<0.000079 ")
Pitch Error	0.05 ° (0.873 mrad)
Microstep Size (Default Resolution)	0.15625 µm
Default Resolution	1/64 of a step

Load Performance

Specification	Value
Peak Thrust	95 N (21.3 lb)
Maximum Continuous Thrust	95 N (21.3 lb)

Speed

Specification	Value
Minimum Speed	0.000095 mm/s (0.000004 "/s)
Speed Resolution	0.000095 mm/s (0.000004 "/s)

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Encoder & Sensing

Specification	Value
Limit or Home Sensing	Magnetic, adjustable home and away sensors

Motor

Specification	Value
Linear Motion Per Motor Rev	2.00 mm (0.079 ")
Motor Steps Per Rev	200
Motor Type	Stepper (2 phase)
Motor Rated Current	1500 mA/phase
Motor Winding Resistance	2.05 ohms/phase
Motor Winding Inductance	1 mH/phase

Power and Communication

Specification	Value
Communication Interface	RS-232, USB 2.0
Communication Protocol	Zaber ASCII (Default), RS-232
Data Cable Connection	Locking 4-pin M8
Power Supply	24-48 VDC
Maximum Current Draw	2600 mA

Analog & Digital I/O

Specification	Value
Digital Input	1
Digital Output	2

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Mechanical

Specification	Value
Guide Type	Crossed roller bearing
Mechanical Drive System	Precision lead screw
Mounting Interface	Separate mounting adaptors available

Environmental & Compliance

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

Part Number	Lower Travel Range	Upper Travel Range	Weight	Accuracy (unidirectional)
X-ASR050B050B-SD12	50 mm (1.969 ")	50 mm (1.969 ")	2.1 kg (4.63 lb)	60 µm (0.002362 ")
X-ASR100B120B-SD12	100 mm (3.937 ")	120 mm (4.724 ")	3.3 kg (7.275 lb)	60 µm (0.002362 ")
X-ASR205B205B-SD12	205 mm (8.071 ")	205 mm (8.071 ")	6.9 kg (15.212 lb)	60 µm (0.002362 ")
X-ASR305B305B-SD12	305 mm (12.008 ")	305 mm (12.008 ")	10.6 kg (23.369 lb)	80 µm (0.00315 ")

Part Number	Flatness of Travel	Backlash	Straightness of Travel	Roll Error
X-ASR050B050B-SD12	<8 µm (<0.0003 ")	<8 µm (<0.000315 ")	<5 µm (<0.000197 ")	0.01 ° (0.174 mrad)
X-ASR100B120B-SD12	<20 µm (<0.0008 ")	<8 µm (<0.000315 ")	<16 µm (<0.00063 ")	0.02 ° (0.349 mrad)
X-ASR205B205B-SD12	<25 µm (<0.001 ")	<10 µm (<0.000394 ")	<16 µm (<0.00063 ")	0.02 ° (0.349 mrad)

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X-ASR305B305B-SD12	<50 µm (<0.002 ")	<10 µm (<0.000394 ")	<20 µm (<0.000787 ")	0.02 ° (0.349 mrad)

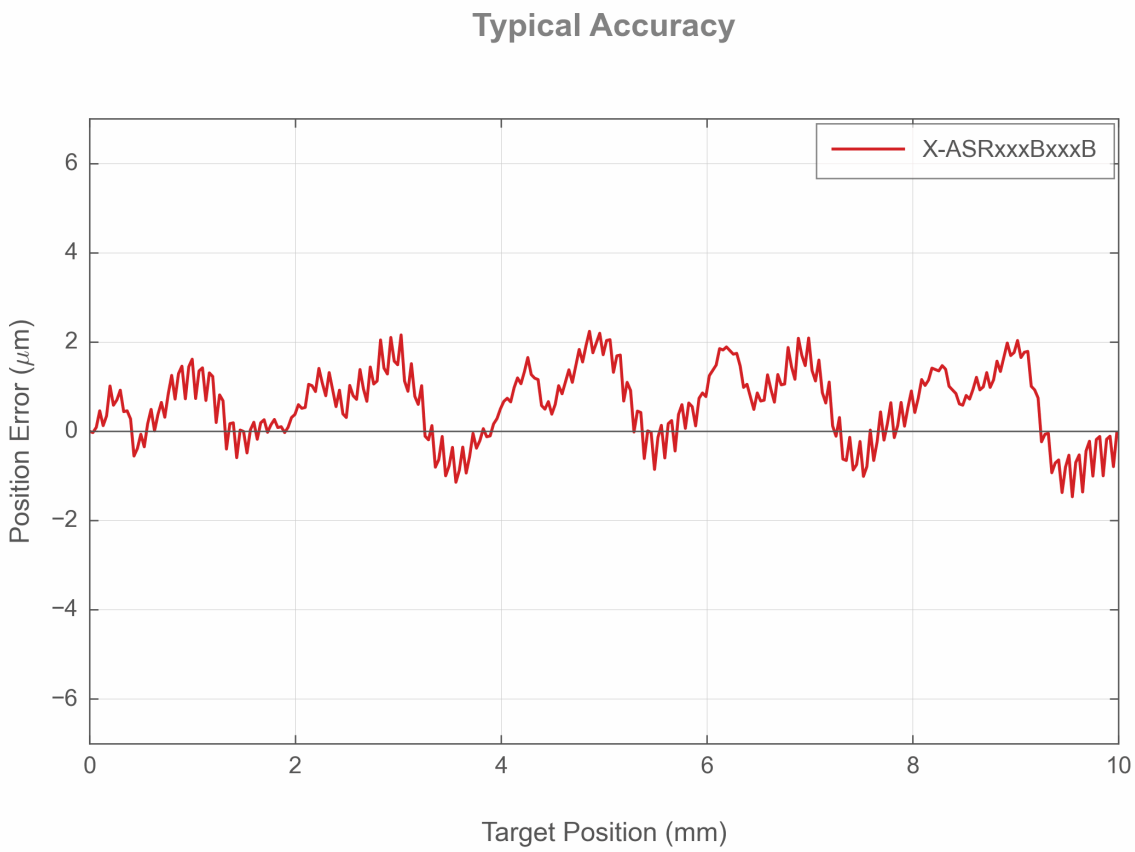
Part Number	Yaw Error	Maximum Centered Load	Maximum Speed
X-ASR050B050B-SD12	0.01 ° (0.174 mrad)	200 N (44.9 lb)	85 mm/s (3.346 "/s)
X-ASR100B120B-SD12	0.03 ° (0.523 mrad)	100 N (22.4 lb)	85 mm/s (3.346 "/s)
X-ASR205B205B-SD12	0.03 ° (0.523 mrad)	100 N (22.4 lb)	85 mm/s (3.346 "/s)
X-ASR305B305B-SD12	0.03 ° (0.523 mrad)	100 N (22.4 lb)	65 mm/s (2.559 "/s)

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X-ASR Series Charts

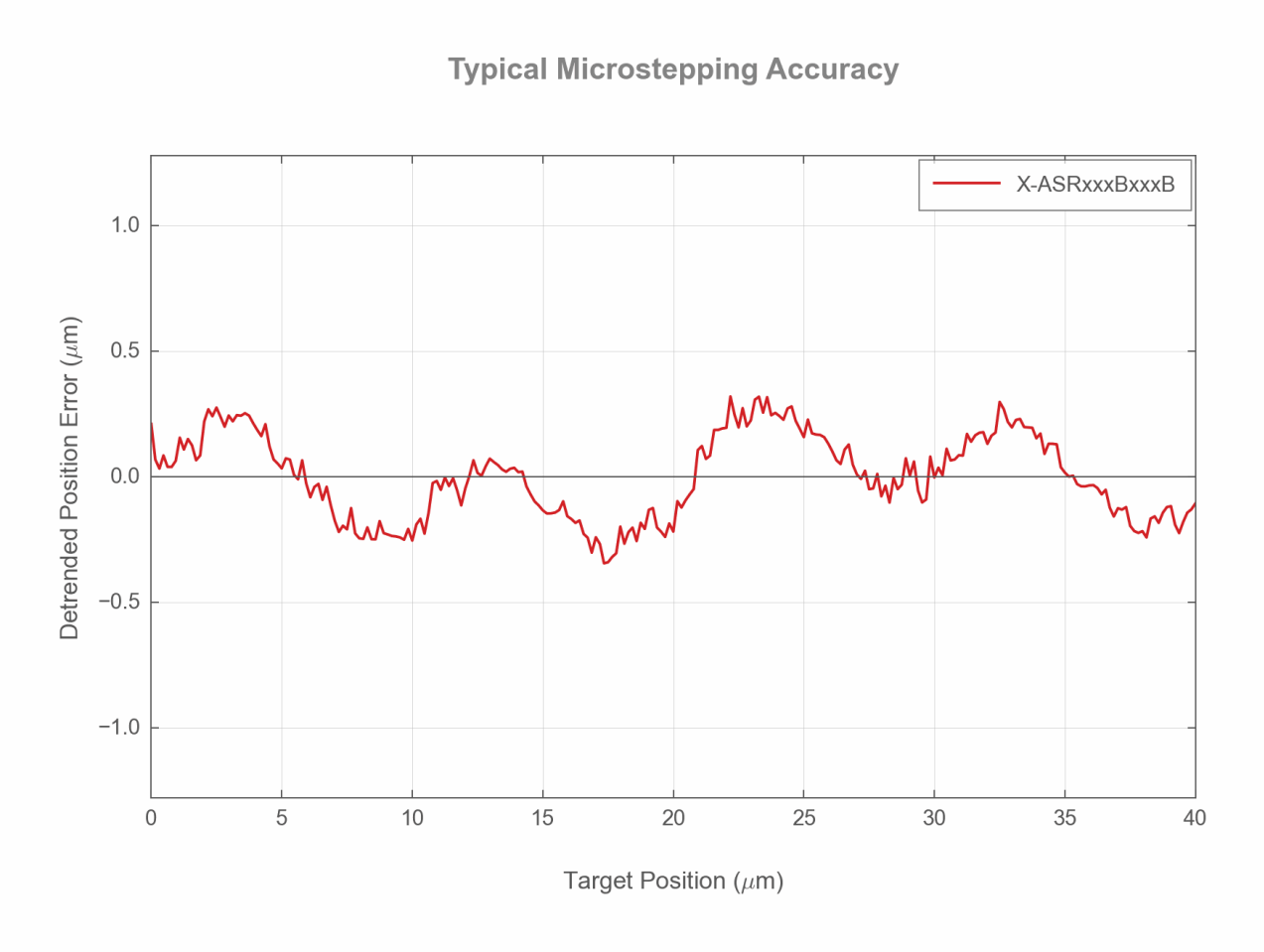
Accuracy



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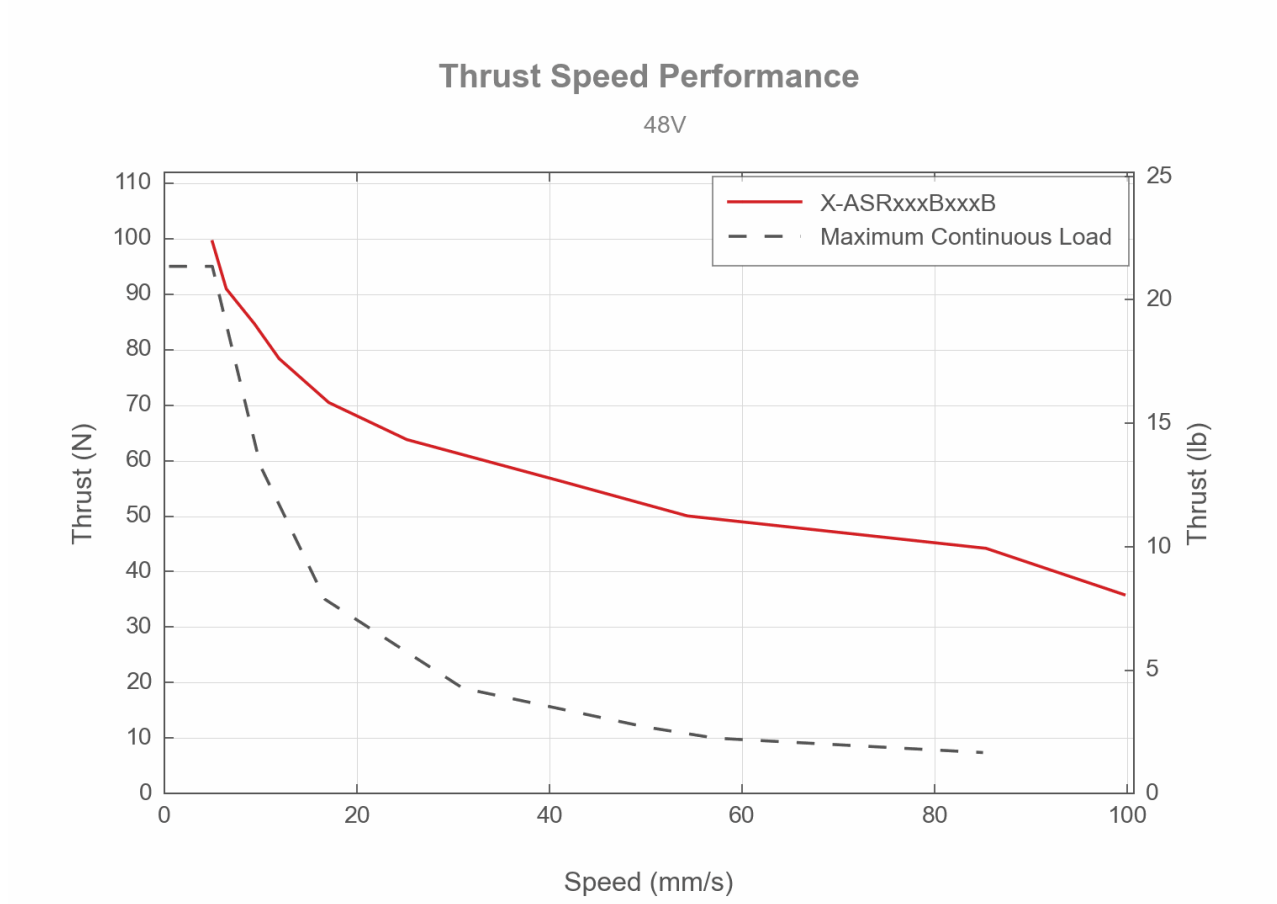
Microstepping Accuracy



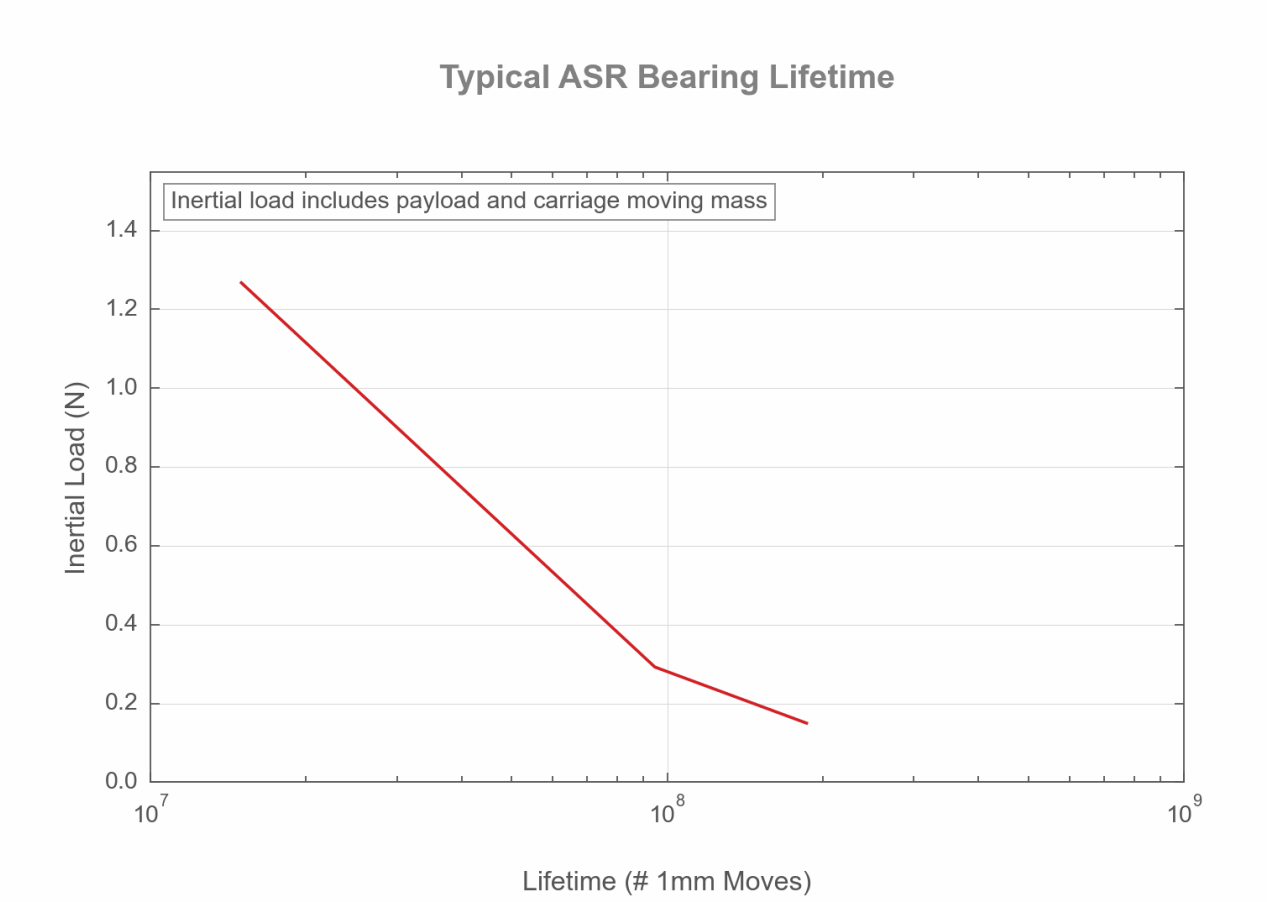
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Speed Performance



Typical ASR Bearing Lifetime



Contact

Email: contact@zaber.com

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X-ASR-E Series Datasheet



- 50 mm to 305 mm travel per axis
- Up to 2 µm repeatability; 85 mm/s speed
- Includes Nucleus microscopy platform modules
- Easily adjustable non-contact hall sensor limit switches
- Built-in controller saves space and simplifies cable management. Easily connect via USB and daisy chain to other Zaber products
- Simple standalone control with X-JOY joysticks
- Digital IO for triggering external systems
- Custom versions available

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X-ASR-E Series Overview

Zaber's X-ASR-E Series microscope stages are designed as replacements for manual stages on upright and inverted microscopes or for stand-alone operation as scanning stages. Compact, built-in controllers save bench space and allow the stages to be powered and controlled through a single, flex rated cable. X-ASR-E devices also include a digital input and two digital outputs for interfacing with external systems. An event-driven trigger system allows devices to be programmed for stand-alone operation based on I/O, time, or movement stimuli.
Mounting adaptors are available for breadboards and most common microscopes. Custom adaptors and plates are available upon request.

For more information visit: https://www.zaber.com/products/scanning-microscope-stages/X-ASR-E

X-ASR-E Series Part Numbering & Options

X-ASR 050 B 050 B -S E03 D12

Lower Axis Travel
- **050** — 50 mm
- **100** — 100 mm
- **205** — 205 mm
- **305** — 305 mm

Lead Screw Options
- **B** — 2 mm/rev

Upper Axis Travel
- **050** — 50 mm
- **120** — 120 mm
- **205** — 205 mm
- **305** — 305 mm

Lead Screw Options
- **B** — 2 mm/rev

Options
- **-S** — No manual knob

Encoder Options
- **E03** — Motor Encoder, 200 CPR

I/O Options
- **D12** — One digital input, two digital outputs

X-ASR-E Series Drawings

• View all drawings and documents at zaber.com

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X-ASR-E Series Specifications

Overview

Specification	Value
Built-in Controller	Yes
Manual Control	No
Axes of Motion	2
LED Indicators	Yes

Positioning Performance

Specification	Value
Repeatability	<2 µm (<0.000079 ")
Pitch Error	0.05 ° (0.873 mrad)
Microstep Size (Default Resolution)	0.15625 µm
Default Resolution	1/64 of a step

Load Performance

Specification	Value
Peak Thrust	95 N (21.3 lb)
Maximum Continuous Thrust	95 N (21.3 lb)

Speed

Specification	Value
Minimum Speed	0.000095 mm/s (0.000004 "/s)
Speed Resolution	0.000095 mm/s (0.000004 "/s)

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Encoder & Sensing

Specification	Value
Encoder Type	Rotary quadrature encoder (incremental)
Encoder Resolution	200 CPR (8 states/rev)
Limit or Home Sensing	Magnetic, adjustable home and away sensors

Motor

Specification	Value
Linear Motion Per Motor Rev	2.00 mm (0.079 ")
Motor Steps Per Rev	200
Motor Type	Stepper (2 phase)
Motor Rated Current	1500 mA/phase
Motor Winding Resistance	2.05 ohms/phase
Motor Winding Inductance	1 mH/phase

Power and Communication

Specification	Value
Communication Interface	RS-232, USB 2.0
Communication Protocol	Zaber ASCII (Default), RS-232
Data Cable Connection	Locking 4-pin M8
Power Supply	24-48 VDC
Maximum Current Draw	2600 mA

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Analog & Digital I/O

Specification	Value
Digital Input	1
Digital Output	2

Mechanical

Specification	Value
Guide Type	Crossed roller bearing
Mechanical Drive System	Precision lead screw
Mounting Interface	Separate mounting adaptors available

Environmental & Compliance

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

Part Number	Lower Travel Range	Upper Travel Range	Weight	Accuracy (unidirectional)
X-ASR050B050B-SE03D12	50 mm (1.969 ")	50 mm (1.969 ")	2.1 kg (4.63 lb)	60 µm (0.002362 ")
X-ASR100B120B-SE03D12	100 mm (3.937 ")	120 mm (4.724 ")	3.3 kg (7.275 lb)	60 µm (0.002362 ")
X-ASR205B205B-SE03D12	205 mm (8.071 ")	205 mm (8.071 ")	6.9 kg (15.212 lb)	60 µm (0.002362 ")
X-ASR305B305B-SE03D12	305 mm (12.008 ")	305 mm (12.008 ")	10.6 kg (23.369 lb)	80 µm (0.00315 ")

Part Number	Flatness of Travel	Backlash	Straightness of Travel	Roll Error

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X-ASR050B050B-SE03D12	<8 µm (<0.0003 ")	<8 µm (<0.000315 ")	<5 µm (<0.000197 ")	0.01 ° (0.174 mrad)
X-ASR100B120B-SE03D12	<20 µm (<0.0008 ")	<8 µm (<0.000315 ")	<16 µm (<0.00063 ")	0.02 ° (0.349 mrad)
X-ASR205B205B-SE03D12	<25 µm (<0.001 ")	<10 µm (<0.000394 ")	<16 µm (<0.00063 ")	0.02 ° (0.349 mrad)
X-ASR305B305B-SE03D12	<50 µm (<0.002 ")	<10 µm (<0.000394 ")	<20 µm (<0.000787 ")	0.02 ° (0.349 mrad)

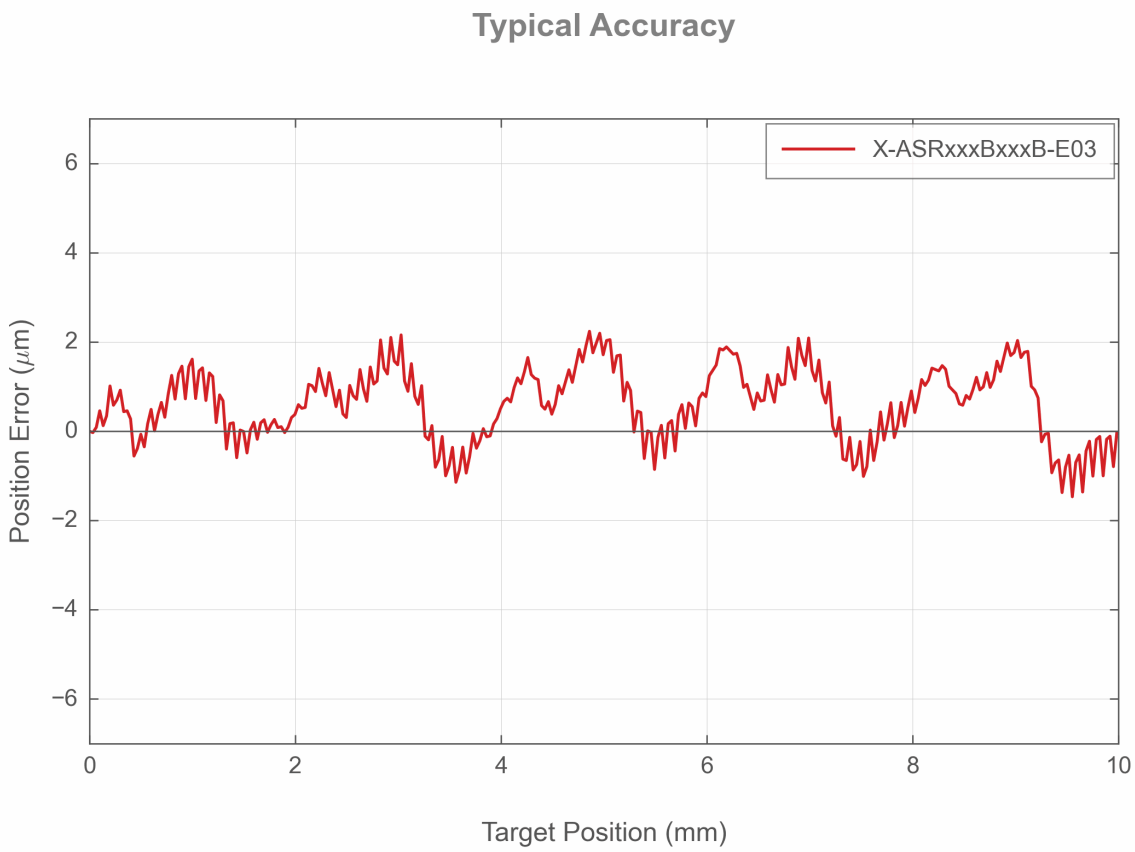
Part Number	Yaw Error	Maximum Centered Load	Maximum Speed
X-ASR050B050B-SE03D12	0.01 ° (0.174 mrad)	200 N (44.9 lb)	85 mm/s (3.346 "/s)
X-ASR100B120B-SE03D12	0.03 ° (0.523 mrad)	100 N (22.4 lb)	85 mm/s (3.346 "/s)
X-ASR205B205B-SE03D12	0.03 ° (0.523 mrad)	100 N (22.4 lb)	85 mm/s (3.346 "/s)
X-ASR305B305B-SE03D12	0.03 ° (0.523 mrad)	100 N (22.4 lb)	65 mm/s (2.559 "/s)

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X-ASR-E Series Charts

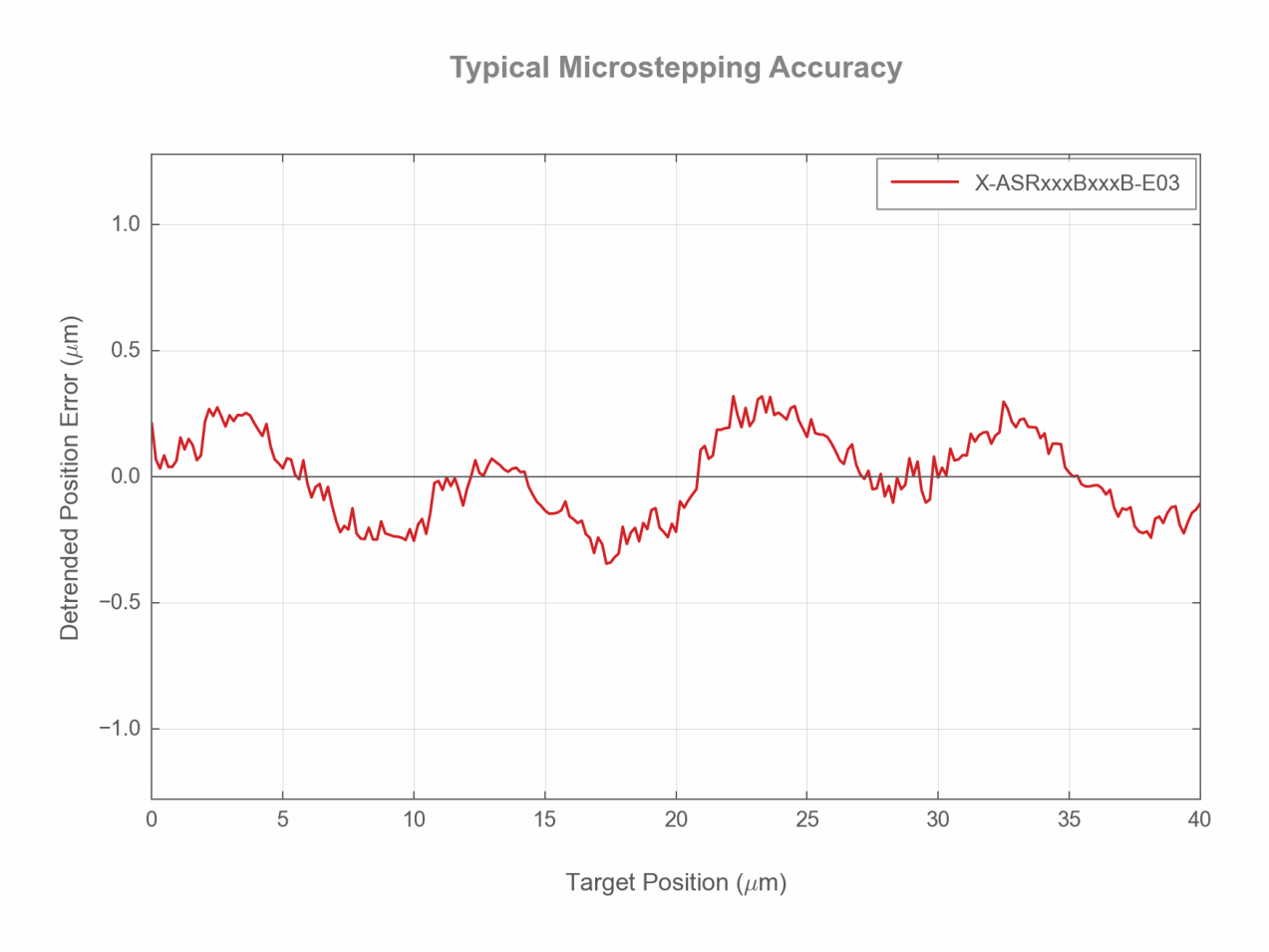
Typical Accuracy



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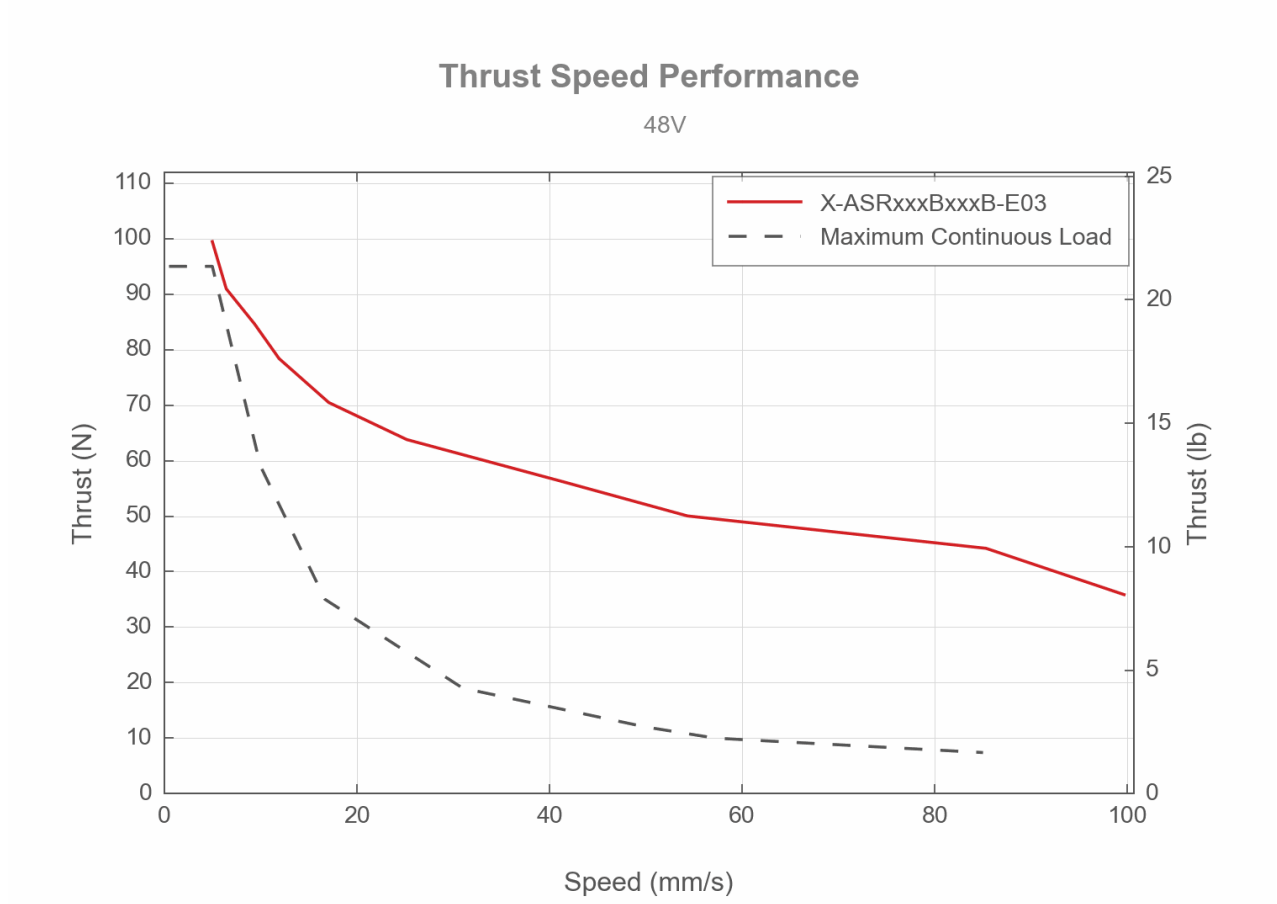
Typical Microstepping Accuracy



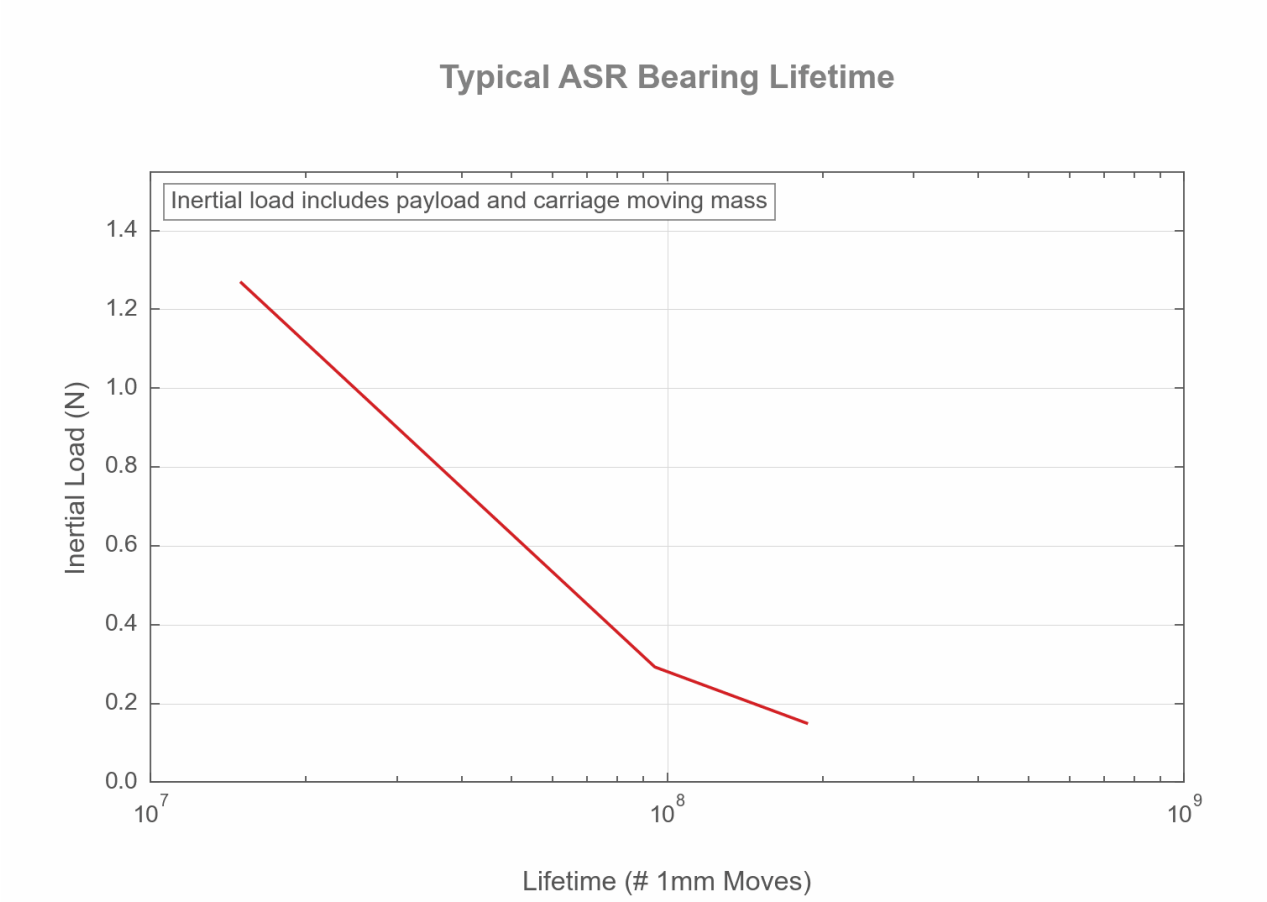
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Thrust Speed Performance



Typical ASR Bearing Lifetime



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