

PRO115 Series

Mechanical Bearing, Ball-Screw Stage

Nine models with travels from 50 mm to 600 mm

Speeds up to 300 mm/s

Side seal design with hard-cover

Low-cost; high performance

Long-life linear motion guide bearing system



The PRO115-300 is one of nine models in the PRO115 series.

The PRO115 is Aerotech's smallest hard cover, side-sealed stage design. Competitive pricing coupled with Aerotech's reputation for producing high-quality linear motion devices make the PRO115 an attractive stage for medium-performance applications.

Rugged Construction

The hard-cover design provides protection from debris. The robust aluminum cover is hard-coated to provide a scratch-resistant surface.

The side seals keep dirt and particulates out of the stage and protect the bearing surfaces from contamination. The vertical orientation of the seals easily deflects debris away from the stage. Competitive top-seal designs can collect debris, resulting in the eventual failure and replacement of the sealing mechanism.

NEMA 23 Flange-Mount

The PRO115 has a NEMA 23 flange-mounting interface for attachment of a wide variety of Aerotech and third-party motors. Aerotech can provide brush, brushless, and stepper motors preconfigured and mounted directly to the stage for integration with Aerotech controls. Or the stage can be purchased without the motor for the attachment of third-party motors.

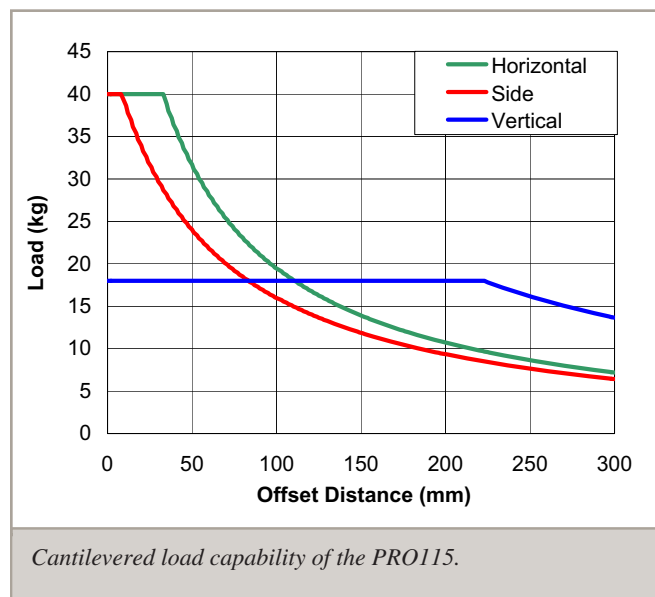
Easily Accessible Mounting

The mounting holes in the PRO115 base are accessible from the outside of the stage for ease of integration. The cover does not have to be removed when mounting the stage to a bread-board or when attaching multiple stages together in an X/Y/Z system. The tabletop is available with both metric and English hole patterns and can be ordered with brush attachments to clear debris that may collect on the hard cover. Tabletops with hole patterns that allow the

direct attachment of Aerotech's ADRS, ACS-LP, and AGR series rotary stages are available.

Configuration Options

Aerotech's BM or BMS series brushless servomotors with square-wave encoder output provide a net resolution of 0.5 micron. An optional analog output encoder can be coupled with external interpolation electronics to provide higher resolution. A holding brake can be added to the motor for vertical applications. A motor fold-back kit is available for space-constrained applications to reduce the overall stage length.



Cantilevered load capability of the PRO115.

PRO115 Series SPECIFICATIONS

| Basic Model | | PRO115-50 | PRO115-100 | PRO115-150 | PRO115-200 | PRO115-250 |
|-------------------------------------|------------------|---|------------------|------------------|------------------|------------------|
| Total Travel | | 50 mm | 100 mm | 150 mm | 200 mm | 250 mm |
| Drive System | | Ball Screw/Brushless Servomotor | | | | |
| Bus Voltage | | Up to 320 VDC | | | | |
| Continuous Current | A _{pk} | Up to 2.3 A | | | | |
| | A _{rms} | Up to 1.6 A | | | | |
| Feedback | | Noncontact Rotary Encoder | | | | |
| Resolution | 5 mm/rev lead | 0.5 μm with 2500-line Quadrature Encoder/0.1 μm with 1000-line AS Encoder | | | | |
| Maximum Travel Speed ⁽¹⁾ | 5 mm/rev lead | 300 mm/s (12 in/s) | | | | |
| Maximum Acceleration | | 0.5 g | | | | |
| Maximum Load ⁽²⁾ | Horizontal | 40.0 kg (88 lb) | | | | |
| | Vertical | 18.2 kg (40 lb) | | | | |
| | Side | 40 kg (88 lb) | | | | |
| Accuracy | 5 mm/rev lead | ±6 μm | ±6 μm | ±8 μm | ±8 μm | ±10 μm |
| Bidirectional Repeatability | 5 mm/rev lead | ±1 μm | | | | |
| Straightness and Flatness | | 3 μm | 5 μm | 6 μm | 10 μm | 10 μm |
| Nominal Stage Weight | Less Motor | 4.0 kg (8.8 lb) | 4.4 kg (9.7 lb) | 4.8 kg (10.6 lb) | 5.3 kg (11.7 lb) | 5.8 kg (12.8 lb) |
| | With Motor | 5.1 kg (11.2 lb) | 5.5 kg (12.1 lb) | 5.9 kg (13.0 lb) | 6.4 kg (14.1 lb) | 6.9 kg (15.2 lb) |
| Construction | | Black Anodized Aluminum Body with Hardcoated Tabletop | | | | |

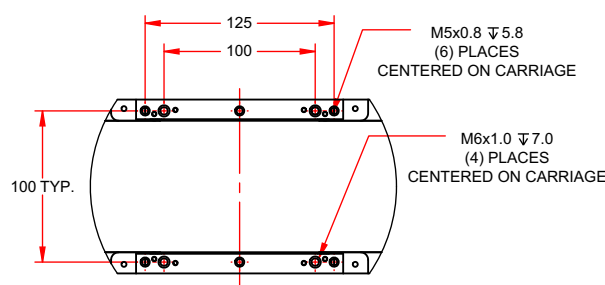
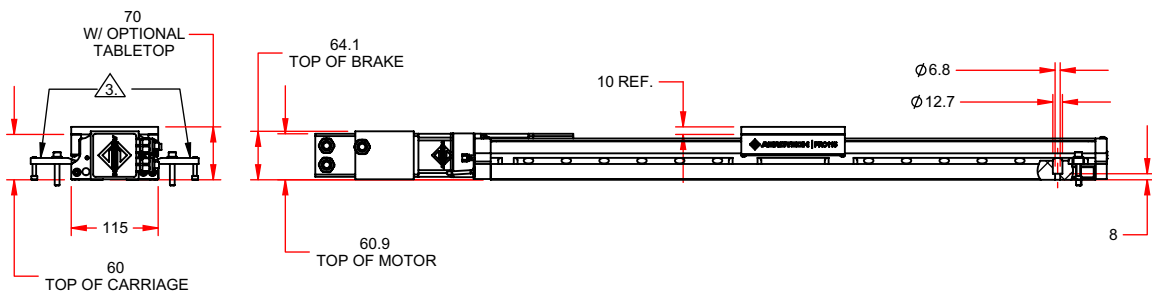
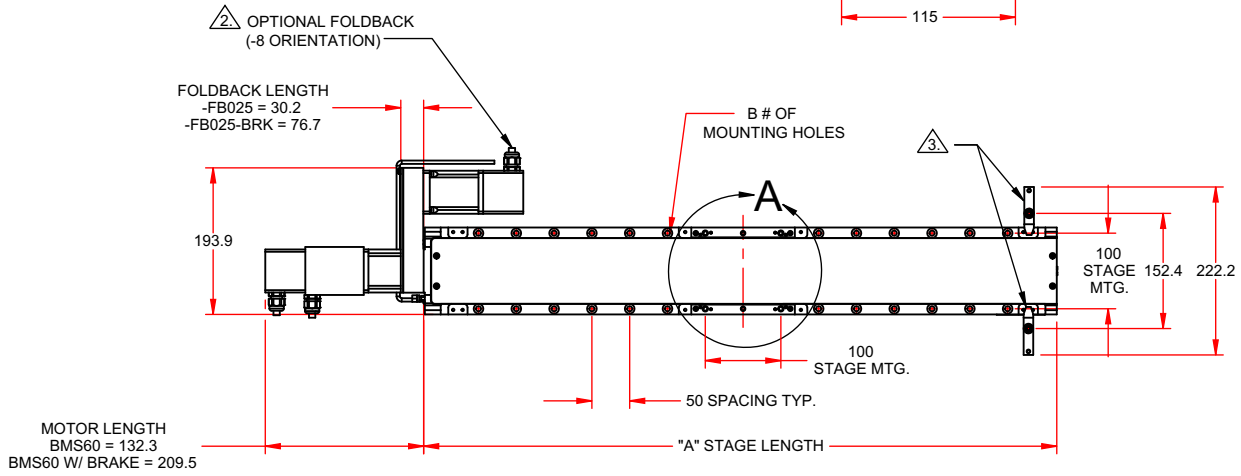
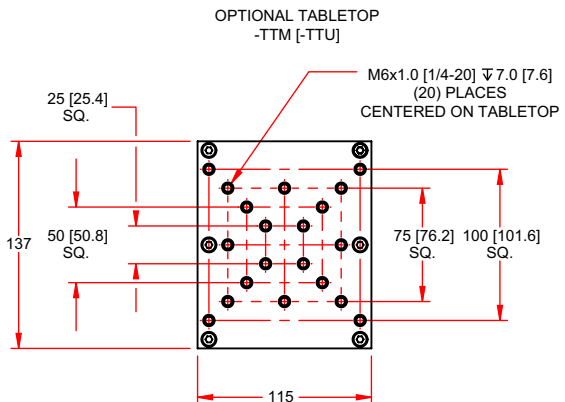
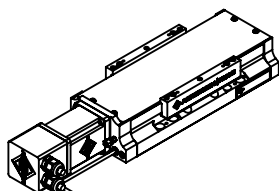
Notes:

- Excessive duty cycle may impact stage accuracy.
- Payload specifications are for single-axis system and based on ball screw and bearing life of 2500 km (100 million inches) of travel.
- Specifications are for single-axis systems, measured 50 mm above the tabletop. Performance of multi-axis systems is payload and workpoint dependent. Consult factory for multi-axis or non-standard applications.

| Basic Model | | PRO115-300 | PRO115-400 | PRO115-500 | PRO115-600 |
|-------------------------------------|------------------|---|------------------|--------------------|------------------|
| Total Travel | | 300 mm | 400 mm | 500 mm | 600 mm |
| Drive System | | Ball Screw/Brushless Servomotor | | | |
| Bus Voltage | | Up to 320 VDC | | | |
| Continuous Current | A _{pk} | Up to 2.3 A | | | |
| | A _{rms} | Up to 1.6 A | | | |
| Feedback | | Noncontact Rotary Encoder | | | |
| Resolution | 5 mm/rev lead | 0.5 μm with 2500-line Quadrature Encoder/0.1 μm with 1000-line AS Encoder | | | |
| Maximum Travel Speed ⁽¹⁾ | 5 mm/rev lead | 300 mm/s (12 in/s) | | 250 mm/s (10 in/s) | |
| Maximum Acceleration | | 0.5 g | | | |
| Maximum Load ⁽²⁾ | Horizontal | 40.0 kg (88 lb) | | | |
| | Vertical | 18.2 kg (40 lb) | | | |
| | Side | 40 kg (88 lb) | | | |
| Accuracy | 5 mm/rev lead | ±10 μm | ±12 μm | ±14 μm | ±16 μm |
| Bidirectional Repeatability | 5 mm/rev lead | ±1 μm | | | |
| Straightness and Flatness | | 12 μm | 16 μm | 18 μm | 20 μm |
| Nominal Stage Weight | Less Motor | 6.2 kg (13.6 lb) | 7.1 kg (15.6 lb) | 7.9 kg (17.4 lb) | 8.8 kg (19.4 lb) |
| | With Motor | 7.3 kg (16.1 lb) | 8.2 kg (18.0 lb) | 9.0 kg (19.8 lb) | 9.9 kg (21.8 lb) |
| Construction | | Black Anodized Aluminum Body with Hardcoated Tabletop | | | |

Notes:

- Excessive duty cycle may impact stage accuracy.
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DETAIL A
CARRIAGE MOUNTING HOLES

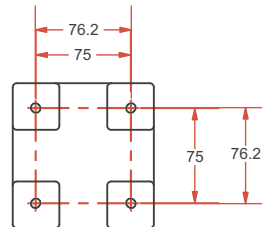
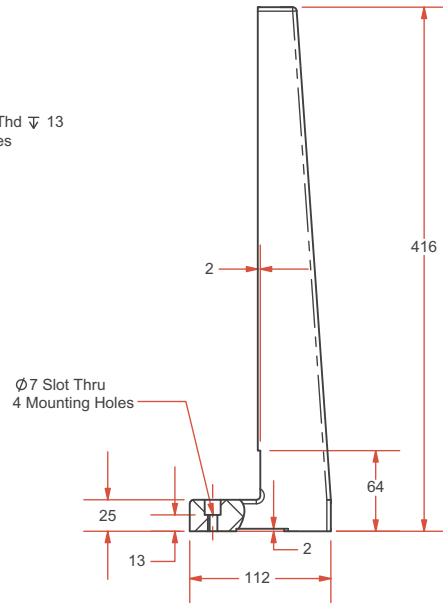
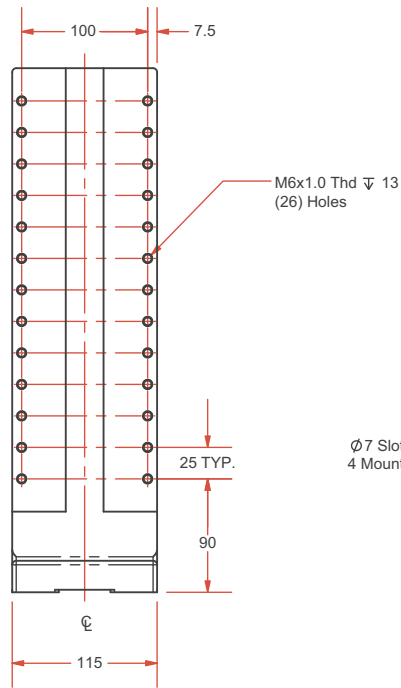
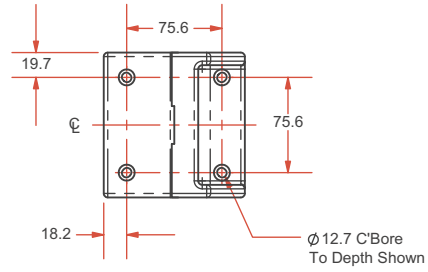
| BASIC MODEL | A (MM) | B |
|-------------------------------|--------|----|
| $\triangle 1$ PRO115-05MM-050 | 287.6 | 4 |
| $\triangle 1$ PRO115-05MM-100 | 337.6 | 8 |
| $\triangle 1$ PRO115-05MM-150 | 387.6 | 8 |
| PRO115-05MM-200 | 437.6 | 12 |
| PRO115-05MM-250 | 487.6 | 12 |
| PRO115-05MM-300 | 537.6 | 16 |
| PRO115-05MM-400 | 637.6 | 20 |
| PRO115-05MM-500 | 737.6 | 24 |
| PRO115-05MM-600 | 837.6 | 28 |

NOTES:

- $\triangle 1$ THESE TRAVEL LENGTHS MAY HAVE ADDITIONAL MOUNTING HOLES NOT SPECIFICALLY SHOWN.
- $\triangle 2$ -TTM TABLETOP OPTION REQUIRED FOR LOWER AXIS OF XY ASSEMBLIES WHEN FOLDBACK OPTION IS CHOSEN.
- $\triangle 3$ TOE CLAMPS TO BE USED FOR ENGLISH STAGE MOUNTING ONLY.

PRO115 Series – HDZ115 Bracket DIMENSIONS

HDZ115 Bracket

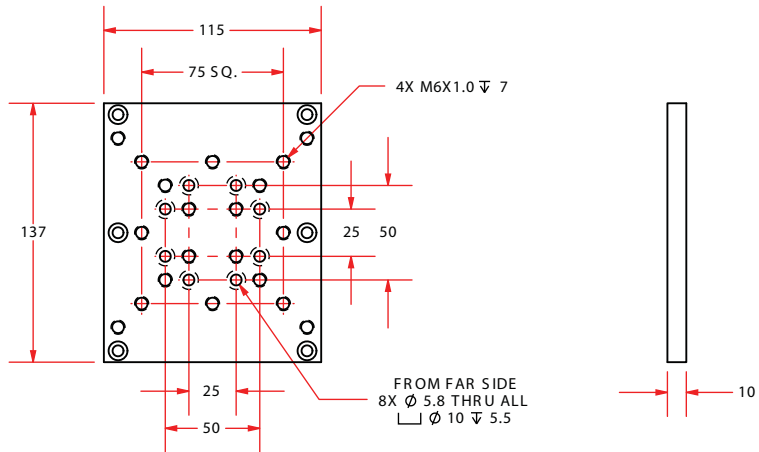


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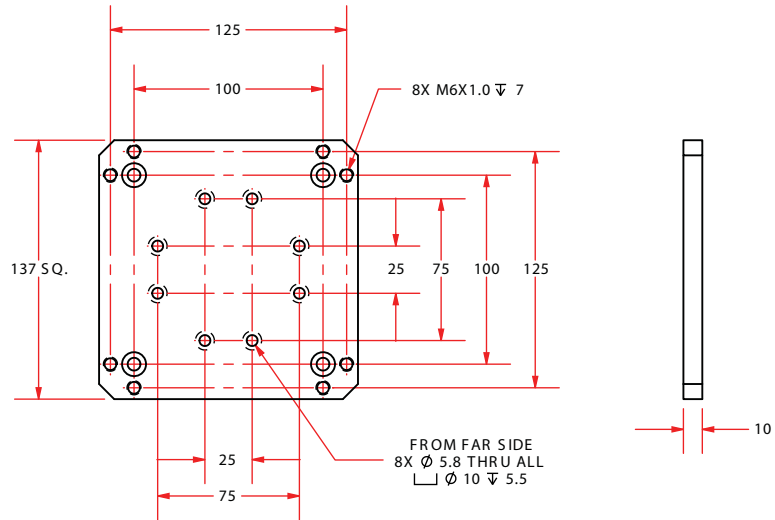
1. DIMENSIONS: MILLIMETERS
2. RECOMMENDED FOR PRO115-050 THRU PRO115-150

PRO115 Series – Tabletop DIMENSIONS

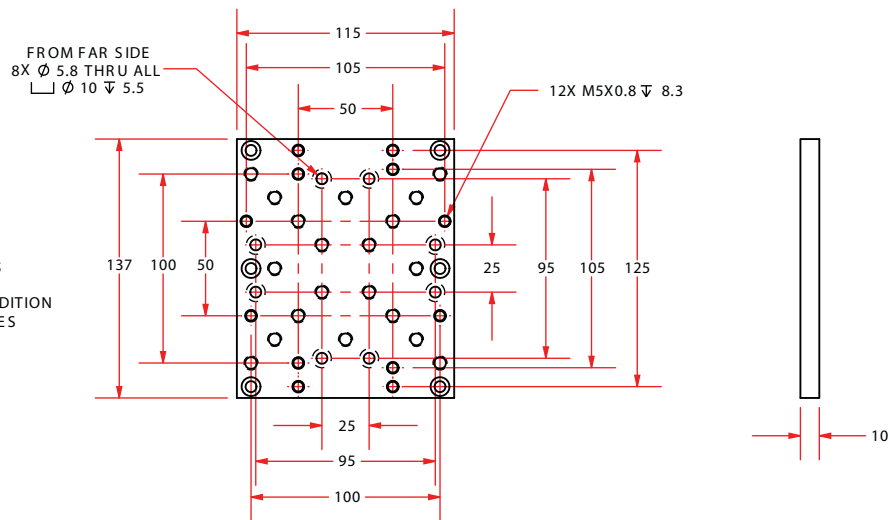
-TT100
MOUNTS ADRS-100
NOTE: ALL FEATURES ARE IN ADDITION
TO -TTM TABLETOP FEATURES



-TT150
MOUNTS ADRS-150



-TTAGR
MOUNTS AGR-50 & AGR-75
NOTE: ALL FEATURES ARE IN ADDITION
TO -TTM TABLETOP FEATURES



DIMENSIONS: MILLIMETERS

PRO115 Series ORDERING INFORMATION

Ordering Information

| PRO115 | -05MM | -050 | -TTM | -5V-NC | -BMS | -0 | -FB025 | -NONE | -PLOTS |
|--------|------------|-------------|----------|---------|-------------|------------|-------------|----------|-----------|
| Series | Ball Screw | Travel (mm) | Tabletop | Limits | Motor | Cable Exit | Options | Coupling | Testing |
| PRO115 | -05MM | -050 | -TTM | -5V-NC | -BMS | -0 | -FB025 | -NONE | -PLOTS |
| | | -100 | -TTU | -5V-NO | -BMS-BRK | -2 | -FB0375 | -C025 | -NO PLOTS |
| | | -150 | -NO TT | -24V-NC | -BMS-AS | -3 | -BASE WIPER | -C0375 | |
| | | -200 | -TT100 | | -BMS-AS-BRK | -4 | -FB025-BRK | | |
| | | -250 | -TT150 | | -BM | -5 | -FB0375-BRK | | |
| | | -300 | -TTAGR | | -BM-BRK | -8 | | | |
| | | -400 | /WIPER | | -BM-AS | -12 | | | |
| | | -500 | | | -BM-AS-BRK | | | | |
| | | -600 | | | -NM | | | | |

Ball Screw

-05MM 5 mm per revolution ball screw

PRO115 Series Linear Ball-Screw Stage

-050 50 mm travel stage with ball screw and limits
 -100 100 mm travel stage with ball screw and limits
 -150 150 mm travel stage with ball screw and limits
 -200 200 mm travel stage with ball screw and limits
 -250 250 mm travel stage with ball screw and limits
 -300 300 mm travel stage with ball screw and limits
 -400 400 mm travel stage with ball screw and limits
 -500 500 mm travel stage with ball screw and limits
 -600 600 mm travel stage with ball screw and limits

Tabletop

-TTM Metric pattern tabletop
 -TTU English pattern tabletop
 -NO TT No tabletop
 -TT100 Bolt-hole pattern to attach ADRS100 or ACS-100LP rotary stage with vertical or horizontal axis of rotation
 -TT150 Bolt-hole pattern to attach ADRS150 or ACS-150LP rotary stage with vertical or horizontal axis of rotation
 -TTAGR Bolt-hole pattern to attach AGR-50 or AGR-75 rotary stages
 /WIPER Wiper option for English and metric tabletops

Limits

-5V-NC 5 V normally-closed limits
 -5V-NO 5 V normally-open limits
 -24V-NC 24 V normally-closed limits

Motor

-BMS Brushless slotless servomotor with 2500-line feedback encoder (BMS60-A-D25-E2500H)
 -BMS-BRK Brushless slotless servomotor with 2500-line feedback encoder and motor-mounted brake (BMS60-A-D25-E2500H-BK1)
 -BMS-AS Brushless slotless servomotor with 1000-line amplified sine encoder (BMS60-A-D25-E1000ASH)
 -BMS-AS-BRK Brushless slotless servomotor with 1000-line amplified sine encoder and brake (BMS60-A-D25-E1000ASH-BK1)
 -BM Brushless servomotor with 2500-line feedback encoder (BM75-D25-E2500H)
 -BM-BRK Brushless servomotor with 2500-line feedback encoder and motor-mounted brake (BM75-D25-E2500H-BK1)
 -BM-AS Brushless servomotor with 1000-line amplified sine encoder (BM75-D25-E1000ASH)
 -BM-AS-BRK Brushless servomotor with 1000-line amplified sine encoder and brake (BM75-D25-E1000ASH-BK1)
 -NM No motor

Motor Orientation

-0 No motor
 -2 Bottom cable exit
 -3 Left side cable exit

PRO115 Series ORDERING INFORMATION

| | |
|-----|-----------------------|
| -4 | Top cable exit |
| -5 | Right side cable exit |
| -8 | Right side fold-back |
| -12 | Left side fold-back |

Options

| | |
|-------------|---|
| -FB025 | Motor fold-back kit for NEMA 23 motor with 0.25-inch diameter motor shaft |
| -FB0375 | Motor fold-back kit for NEMA 23 motor with 0.375-inch diameter motor shaft |
| -BASE WIPER | Wiper on base of top axis of X/Y pair to clear hardcover of the bottom axis |
| -FB025-BRK | Motor fold-back kit for 0.25-inch diameter motor shaft; NEMA 23 motor with brake |
| -FB0375-BRK | Motor fold-back kit for 0.375-inch diameter motor shaft; NEMA 23 motor with brake |

Coupling Option

| | |
|--------|--|
| -NONE | No motor coupling supplied |
| -C025 | 0.25-inch diameter motor shaft coupling |
| -C0375 | 0.375-inch diameter motor shaft coupling |

Testing

| | |
|-----------|--|
| -PLOTS | Accuracy, repeatability, straightness and flatness plots |
| -NO PLOTS | No performance plots |

Accessories (to be ordered as separate line item)

| | |
|-----------------|--|
| ALIGNMENT-NPA | Non-precision XY assembly |
| ALIGNMENT-NPAZ | Non-precision XZ or YZ assembly |
| ALIGNMENT-PA10 | XY assembly; 10 arc sec orthogonal |
| ALIGNMENT-PA10Z | XZ or YZ assembly with L-bracket; 10 arc second orthogonal |
| ALIGNMENT-PA5 | XY assembly; 5 arc sec orthogonal |
| ALIGNMENT-PA5Z | XZ or YZ assembly with L-bracket; 5 arc second orthogonal |
| HDZ115 | Right angle L-bracket for PRO115-050, PRO115-100, and PRO115-150 only |
| TC-PRO115 | Toe clamps for mounting PRO stage to an English dimension breadboard or hole pattern; recommended number of toe clamps for each travel length: 50-250 mm travel = 4 clamps; 300-600 mm travel = 8 clamps |