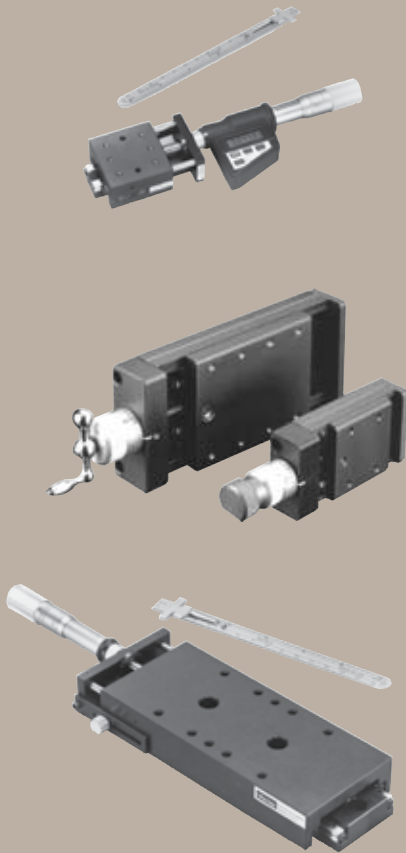


Crossed Roller Bearing Positioners

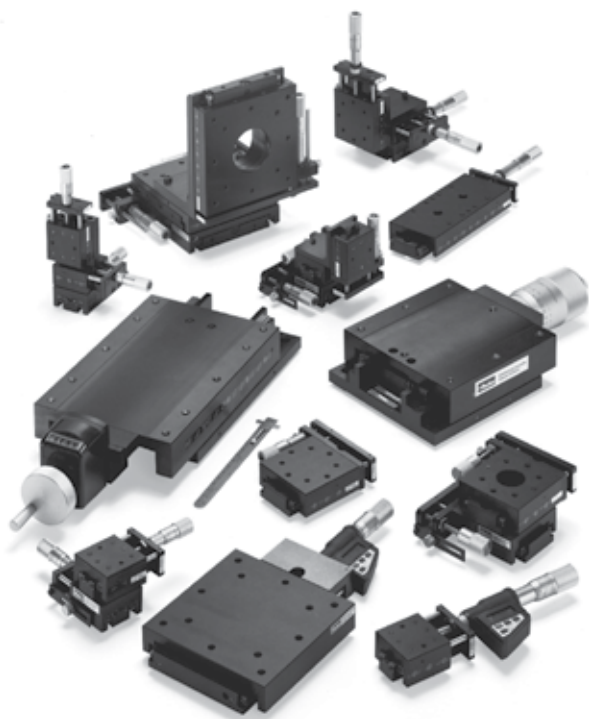
Parker Daedal precision crossed roller stages provide controlled, precise point-to-point positioning along a linear axis. Stages are comprised of two basic components: a precision linear crossed roller slide which serves as a linear bearing and guide, and a drive mechanism which accurately moves and positions the slide top along the linear axis. Crossed roller positioning stages offer exceptional load carrying capability, approximately 2 to 2 1/2 times that of comparably sized ball bearing stages. Additionally, crossed roller stages provide up to five times the life expectancy of the ball bearing stages without degradation of performance. Parker Daedal crossed roller stages are rated for over 100 million inches of travel at specified load.



Contents

| | |
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| 90-91 | Overview |
| 92-96 | 1.75" (44,5 mm) Wide |
| 97 | 1.97" (50,0 mm) Wide |
| 98-101 | 2.62" (66,5 mm) Wide |
| 102 | 2.95" (75,0 mm) Wide |
| 103 | 3.94" (100,0 mm) Wide |
| 104-107 | 5.00" (127,0 mm) Wide |
| 108-110 | 6.00" (152,4 mm) Wide |
| 111-114 | Performance Curves |

Crossed Roller Bearing Positioners



- Precision Quality
- Budget Friendly
- Largest Selection
- Easy multi-axis configuration
- No maintenance
- Vacuum preparation and custom options

Crossed Roller Positioner Design Principles

Crossed roller positioning stages offer exceptional load carrying capability, approximately 2 to 2 1/2 times that of comparably sized ball bearing stages. Additionally, crossed roller stages provide up to five times the life expectancy of the ball bearing stages without degradation of performance. Parker Daedal crossed roller stages are rated for over 100 million inches of travel at specified load. Three types of drive mechanisms are available: a fine screw, a micrometer, and a differential screw. The fine screw is used for fine resolution positioning. The micrometer is used whenever a position readout is required. The differential screw is used for applications requiring extremely fine resolution positioning. Crossed roller positioning stages are available in a straight stage/drive configuration as well as a side-drive configuration.

The linear positioner operates in a simple manner: a bracket which supports the drive screw is attached to the slide base. The end of the drive screw rests against the end of the moveable top. There are two extended springs “pulling” the slide top toward the screw so that the top will always be held firmly against the screw end. When the screw is turned clockwise, it advances and pushes the slide top along the linear axis. When turned counter clockwise, the screw retracts and the slide top follows because of the spring pressure holding the top against the screw end. The result is a very smooth linear motion, accurately controlled by rotation of the drive mechanism.

Standard Features

Exact manufacturing techniques, combined with demanding quality control standards, permit Parker Daedal to offer precision stages of unsurpassed quality. Selection can be made easily, based on required travel, load, and mounting surface requirements. Stages are available in single or multi-axis configurations (XY, XZ, and XYZ), and all have built-in quality features including:

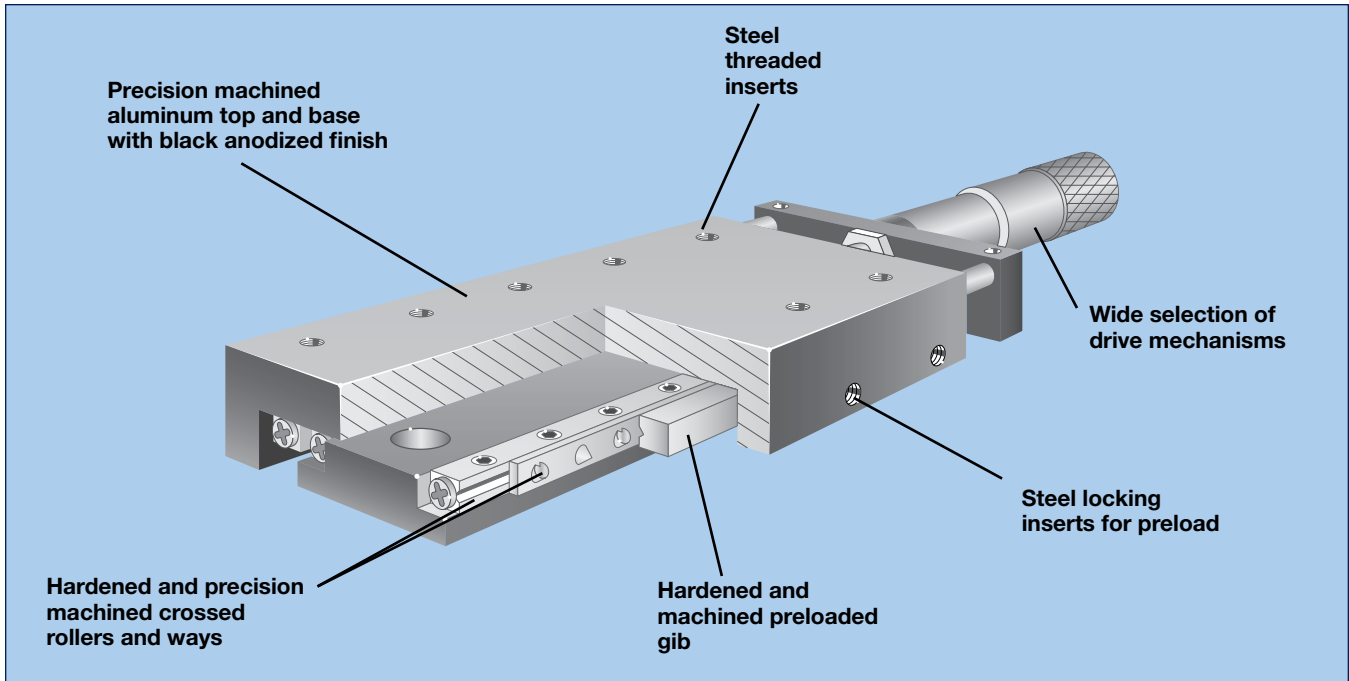
- Aluminum/steel construction
- Low friction linear adjustment with no backlash or side play
- Factory preloaded to provide dynamic stability and minimum runout
- Both top and bottom mounting surfaces are precision machined to provide micro-flat mounting surfaces
- Locking screw to positively lock stage without affecting position
- Straight line accuracy of 0.00008 in/in of travel
- Selectable drive mechanisms: Micrometer (Imperial or metric), Fine screw (64 pitch), Differential screw, Digital micrometers (Imperial and Metric)

Digital Micrometers

The 1.0” (25 mm) travel micrometer provides an LCD readout to 0.00005 in (0,001 mm) resolution and features incremental and/or absolute positioning modes and automatic shutdown to conserve the integral battery. The battery will power the unit for 500 hours of use. The 2.0” (51 mm) micrometer is accurate to ± 0.0001 in (± 2 microns) with a resolution and LCD reading to 0.00005 in (1 micron). The batteries will power the unit up to 5,000 hours.

How to Order

Use the overview chart on the following page to select the appropriate crossed roller positioner. Refer to the individual specifications page for complete performance and mechanical specifications. To order crossed roller bearing positioners, use the model number corresponding to the specific size and travel length selected. A variety of modifications to standard models are available to meet custom requirements. Contact our application engineering department with your design specifications.



Crossed Roller Positioners

| Series | Width in (mm) | Travel | | Normal Load | | Drive Orientation | | Mounting | | Page |
|--------|-----------------|---------|---------|-------------|-------|-------------------|------|----------|--------|------------|
| | | in | (mm) | lbs | (kg) | Center | Side | Imperial | Metric | |
| CR4000 | 1.75 (44,5) | 1.00 | (25,4) | 81 | (37) | • | • | • | | 92-94 |
| CR4100 | | | | 81 | (37) | • | | • | | 95-96 |
| CR4200 | | | | 121 | (55) | • | | • | | 95-96 |
| CR4300 | | | | 131 | (59) | • | | • | | 95-96 |
| SC050 | 1.97 (50,0) | 0.98 | (25) | 175 | (80) | • | | | • | 97 |
| SK050 | | 1.97 | (50) | 263 | (119) | • | | | • | |
| | | 2.95 | (75) | 351 | (159) | • | | | • | |
| CR4500 | 2.62 (66,5) | 1.00 | (25,4) | 111 | (50) | • | • | • | | 98-99, 101 |
| CR4600 | | | | 151 | (69) | • | | • | | 100-101 |
| CR4700 | | | | 201 | (91) | • | | • | | 100-101 |
| CR4800 | | | | 251 | (114) | • | | • | | 100-101 |
| SC075 | 2.95 (75,0) | 0.98 | (25) | 351 | (159) | • | | | • | 102 |
| SK075 | | 1.97 | (50) | 439 | (199) | • | | | • | |
| | | 2.95 | (75) | 527 | (239) | • | | | • | |
| SC100 | 3.94 (100,0) | 0.98 | (25) | 439 | (199) | • | | | • | 103 |
| SK100 | | 1.97 | (50) | 527 | (239) | • | | | • | |
| | | 2.95 | (75) | 614 | (278) | • | | | • | |
| | | 3.94 | (100) | 702 | (318) | • | | | • | |
| CR4400 | 5.0 (127,0) | 1.00 | (25,4) | 201 | (91) | • | • | • | | 104-107 |
| | | 2.00 | (50,8) | 201 | (91) | • | • | • | | 104-107 |
| CR4900 | 6.0 (152,4) | 1.00 | (50,8) | 423 | (192) | • | | • | | 108-109 |
| | | 2.00 | (50,8) | 423 | (192) | • | | • | | 108-109 |
| | | 4.00 | (100,0) | 423 | (192) | • | | • | | 110 |
| | | 6.00 | (150,0) | 719 | (326) | • | | • | | 110 |
| | | 8.00 | (200,0) | 1052 | (477) | • | | • | | 110 |
| | | 10.00 | (250,0) | 1395 | (633) | • | | • | | 110 |
| | 12.00 | (300,0) | 1735 | (786) | • | | • | | 110 | |

CR4000 Series

| Specifications | |
|--|---|
| Travel: | 0.5 in |
| Size: | |
| Width | 1.75 in |
| Length (mid-travel) | 2.95 – 4.47 in |
| Height | 1.00 in |
| Load: | |
| Normal | 81 lbs |
| Thrust – T _a | 10 lbs |
| Thrust – T _b | 5 lbs |
| Moment – Yaw, Pitch, Roll | See page 111 |
| Straight line accuracy: | 0.00008 in/in of travel |
| Micrometer graduations: | 0.001 in or 0,01 mm |
| Differential screw: | |
| Coarse Adjustment | 48 pitch |
| Fine Adjustment | 336 pitch |
| Weight: | 0.5 lbs/axis |
| Z-Axis bracket options: (See page 124-127) | |
| Center drive low profile | 4009 |
| Center drive standard | 4010 |
| Side drive low profile | 4059 |
| Side drive standard | 4060 |
| Construction: | Aluminum top and base/ steel crossed roller bearings |
| Mounting surface: | Precision machined |
| Finish: | Black anodize |



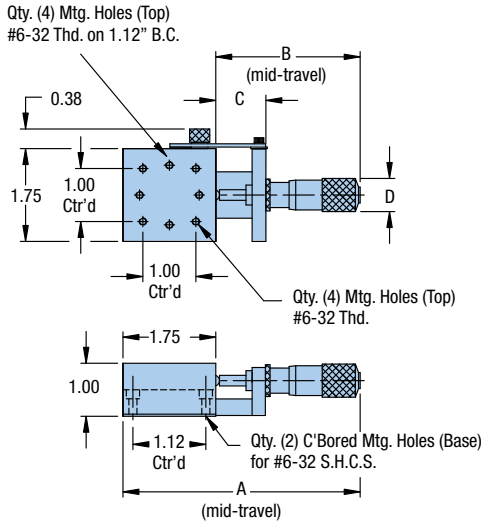
| Drive Mechanism | Travel | Center Drive Models | | | | Side Drive Models | | | |
|---------------------|---------|---------------------|----------|-------------------|----------------|-------------------|----------|-------------------|----------------|
| | | Single Axis | Two Axis | Y-Y-Z Low Profile | Y-Y-Z Standard | Single Axis | Two Axis | Y-Y-Z Low Profile | Y-Y-Z Standard |
| Imperial Micrometer | 0.50 in | CR4002 | CR4022 | CR4032 | CR4042 | CR4052 | CR4072 | CR4082 | CR4092 |
| Metric Micrometer | 13 mm | CR4002M | CR4022M | CR4032M | CR4042M | CR4052M | CR4072M | CR4082M | CR4092M |
| Differential Screw | 2/8 mm | CR4002D | CR4022D | CR4032D | CR4042D | CR4052D | CR4072D | CR4082D | CR4092D |



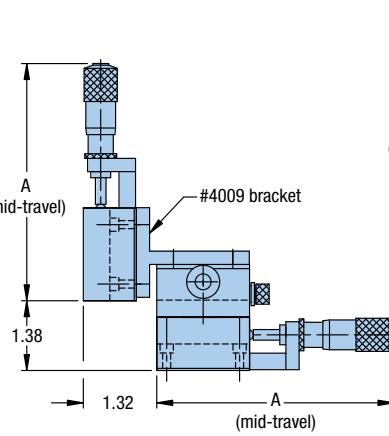
Dimensions Inches

For additional end view dimensions, refer to the CR4000 crossed roller slide drawing, page 40. Consult factory for critical dimension concerns.

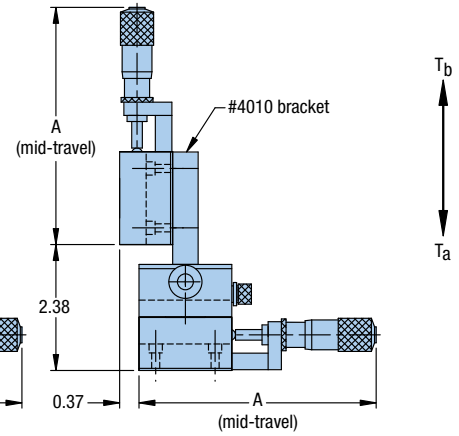
Center Drive



Single-Axis

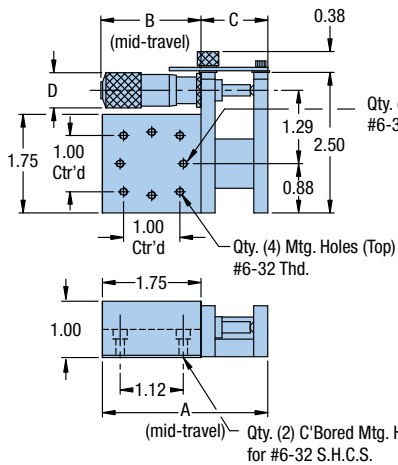


X-Y-Z Low-Profile

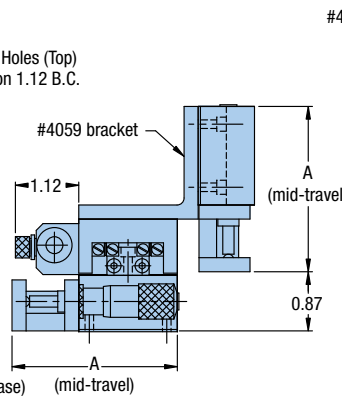


X-Y-Z Standard

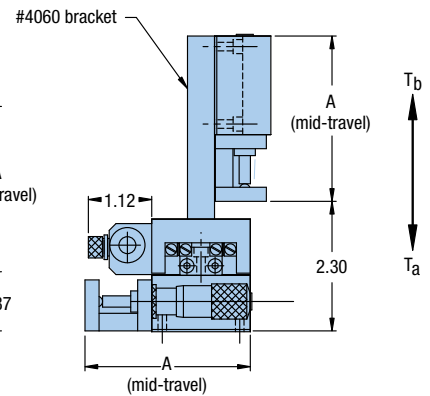
Side Drive



Single-Axis



X-Y-Z Low-Profile



X-Y-Z Standard

| Drive Mechanism | Travel | Center Drive Dimensions – in | | | | Side Drive Dimensions – in | | | |
|---------------------|---------|------------------------------|------|------|------|----------------------------|------|------|------|
| | | A | B | C | D | A | B | C | D |
| Imperial Micrometer | 0.50 in | 4.47 | 2.72 | 0.95 | 0.54 | 2.95 | 1.77 | 1.20 | 0.54 |
| Metric Micrometer | 13 mm | 4.37 | 2.68 | 0.95 | 0.54 | 2.95 | 1.78 | 1.19 | 0.54 |
| Differential Screw | 2/8 mm | 4.13 | 2.38 | 0.95 | 0.62 | 2.95 | 1.44 | 1.20 | 0.62 |

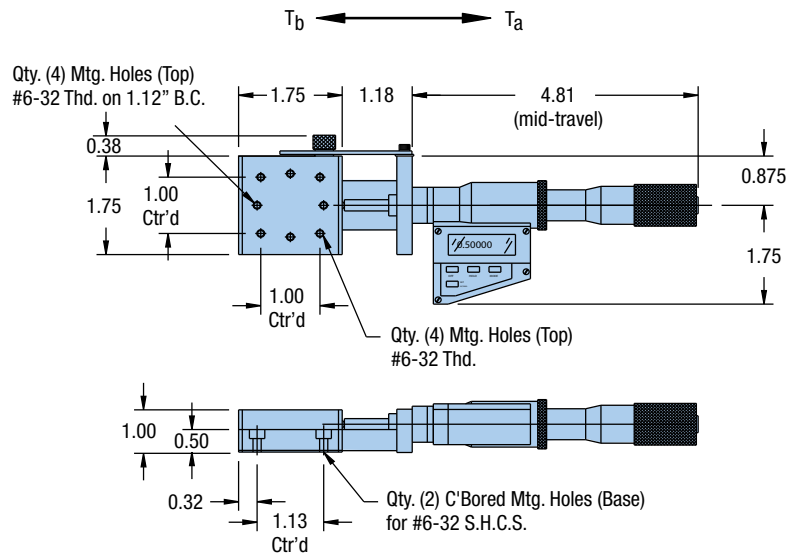
CR4000-DM Series

| Specifications | |
|---------------------------|---|
| Travel: | 1.0 in |
| Size: | |
| Width | 1.75 in |
| Length (mid-travel) | 7.75 in |
| Height | 1.00 in |
| Load: | |
| Normal | 81 lbs |
| Thrust – T_a | 10 lbs |
| Thrust – T_b | 3 lbs |
| Moment – Yaw, Pitch, Roll | See page 111 |
| Straight line accuracy: | 0.00008 in/in of travel |
| Micrometer graduations: | 0.00005 in |
| Weight: | 0.8 lbs |
| Construction: | Aluminum top and base/ 440C stainless steel bearings |
| Mounting surface: | Precision machined |
| Finish: | Black anodize |

For additional end view dimensions, refer to the CR4000 crossed roller slide drawing, page 40. Consult factory for critical dimension concerns.



Dimensions Inches



| Model | |
|-------------------|-----------|
| Imperial Mounting | CR4002-DM |



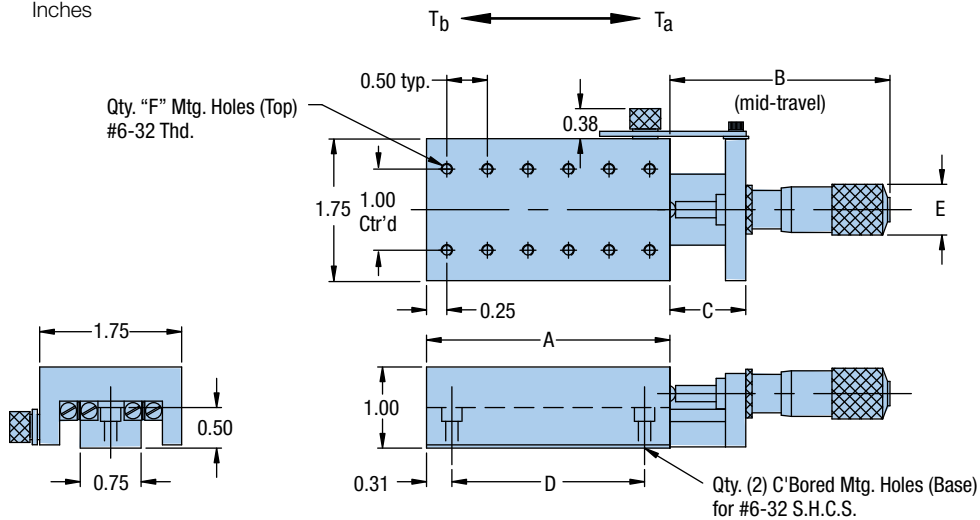
CR4100, CR4200, CR4300 Series

| Specifications | |
|---------------------------|---|
| Travel: | 0.5 – 1.0 in |
| Size: | |
| Width | 1.75 in |
| Length (mid-travel) | 4.6 – 8.28 in |
| Height | 0.75 in |
| Load: | |
| Normal | 81 - 131 lbs |
| Thrust – T_a | 10 lbs |
| Thrust – T_b | 3 lbs |
| Moment – Yaw, Pitch, Roll | See page 111 |
| Straight line accuracy: | 0.00008 in/in of travel |
| Micrometer graduations: | 0.001 in or 0,01 mm |
| Fine screw: | 64 pitch |
| Weight: | 0.8 – 1.3 lbs/axis |
| Construction: | Aluminum top and base/ steel crossed roller bearings |
| Mounting surface: | Precision machined |
| Finish: | Black anodize |



Consult factory for critical dimension concerns.

Dimensions Inches



| Drive Mechanism | Travel | Model | Load | Weight | Dimensions - in | | | | | Qty F |
|---------------------|---------|---------|---------|---------|-----------------|------|------|------|------|-------|
| | | | | | A | B | C | D | E | |
| Imperial Micrometer | 0.50 in | CR4102 | 81 lbs | 0.5 lbs | 2.00 | 2.72 | 0.94 | 1.38 | 0.55 | 8 |
| | 1.0 in | CR4104 | | | | 4.28 | 1.18 | | 0.71 | |
| Metric Micrometer | 13 mm | CR4102M | 81 lbs | 0.5 lbs | 2.00 | 2.72 | 0.94 | 1.38 | 0.55 | 8 |
| | 25 mm | CR4104M | | | | 4.28 | 1.18 | | 0.71 | |
| Fine Screw | 0.75 in | CR4103 | | | | 2.50 | 0.94 | | 0.58 | |
| Imperial Micrometer | 0.50 in | CR4202 | 121 lbs | 0.8 lbs | 3.00 | 2.72 | 0.94 | 2.38 | 0.55 | 12 |
| | 1.0 in | CR4204 | | | | 4.28 | 1.18 | | 0.71 | |
| Metric Micrometer | 13 mm | CR4202M | 121 lbs | 0.8 lbs | 3.00 | 2.72 | 0.94 | 2.38 | 0.55 | 12 |
| | 25 mm | CR4204M | | | | 4.28 | 1.18 | | 0.71 | |
| Fine Screw | 0.75 in | CR4203 | | | | 2.50 | 0.94 | | 0.58 | |
| Imperial Micrometer | 0.50 in | CR4302 | 131 lbs | 1.0 lbs | 4.00 | 2.72 | 0.94 | 3.38 | 0.55 | 16 |
| | 1.0 in | CR4304 | | | | 4.28 | 1.18 | | 0.71 | |
| Metric Micrometer | 13 mm | CR4302M | 131 lbs | 1.0 lbs | 4.00 | 2.72 | 0.94 | 3.38 | 0.55 | 16 |
| | 25 mm | CR4304M | | | | 4.28 | 1.18 | | 0.71 | |
| Fine Screw | 0.75 in | CR4303 | | | | 2.50 | 0.94 | | 0.58 | |

Crossed Roller Positioners

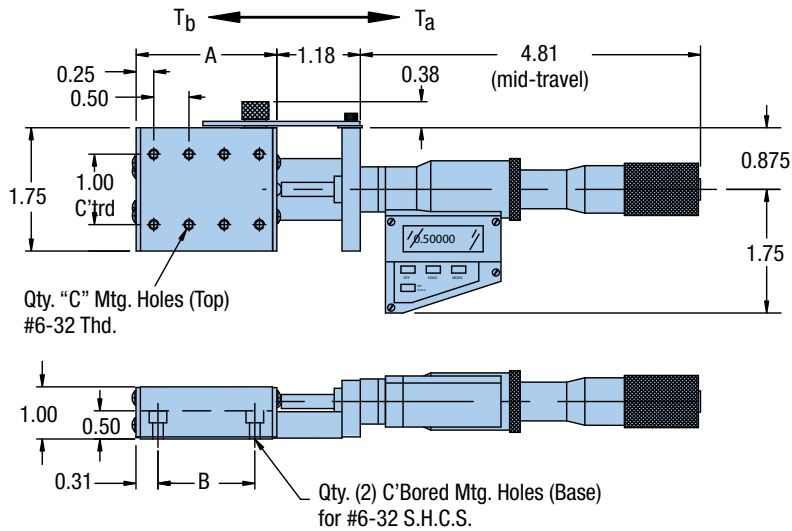
CR4100-DM, CR4200-DM, CR4300-DM Series

| Specifications | |
|---------------------------|---|
| Travel: | 1.0 in |
| Size: | |
| Width | 1.75 in |
| Length (mid-travel) | 7.99 – 9.99 in |
| Height | 1.00 in |
| Load: | |
| Normal | 81 – 131 lbs |
| Thrust – T_a | 10 lbs |
| Thrust – T_b | 3 lbs |
| Moment – Yaw, Pitch, Roll | See page 111 |
| Straight line accuracy: | 0.00008 in/in of travel |
| Micrometer graduations: | 0.00005 in |
| Weight: | 0.9 – 1.3 lbs/axis |
| Construction: | Aluminum top and base/ 440C stainless steel bearings |
| Mounting surface: | Precision machined |
| Finish: | Black anodize |



Consult factory for critical dimension concerns.

Dimensions Inches



| Model | Normal Load | Weight | Dimensions – in | | |
|-----------|-------------|---------|-----------------|------|----|
| | | | A | B | C |
| CR4104-DM | 81 lbs | 1.0 lbs | 2.00 | 1.38 | 8 |
| CR4204-DM | 121 lbs | 1.1 lbs | 3.00 | 2.38 | 12 |
| CR4304-DM | 131 lbs | 1.3 lbs | 4.00 | 3.38 | 16 |

CR4500 Series

| Specifications | |
|--|---|
| Travel: | 0.5 – 1.0 in |
| Size: | |
| Width | 2.62 in |
| Length (mid-travel) | 5.01 – 6.93 in |
| Height | 1.00 in |
| Load: | |
| Normal | 111 lbs |
| Thrust – T _a | 10 lbs |
| Thrust – T _b | 2 lbs |
| Moment – Yaw, Pitch, Roll | See page 111 |
| Straight line accuracy: | 0.00008 in/in of travel |
| Micrometer graduations: | 0.001 in or 0,01 mm |
| Differential screw: | |
| Coarse Adjustment | 48 pitch |
| Fine Adjustment | 336 pitch |
| Fine screw: | 64 pitch |
| Weight: | |
| Center drive | 0.9 lbs/axis |
| Side drive | 1.0 lbs/axis |
| Z-Axis bracket options: (See page 124-127) | |
| Center drive low profile | 4509 |
| Center drive standard | 4510 |
| Side drive low profile | 4559 |
| Side drive standard | 4560 |
| Construction: | Aluminum top and base/ steel crossed roller bearings |
| Mounting surface: | Precision machined |
| Finish: | Black anodize |

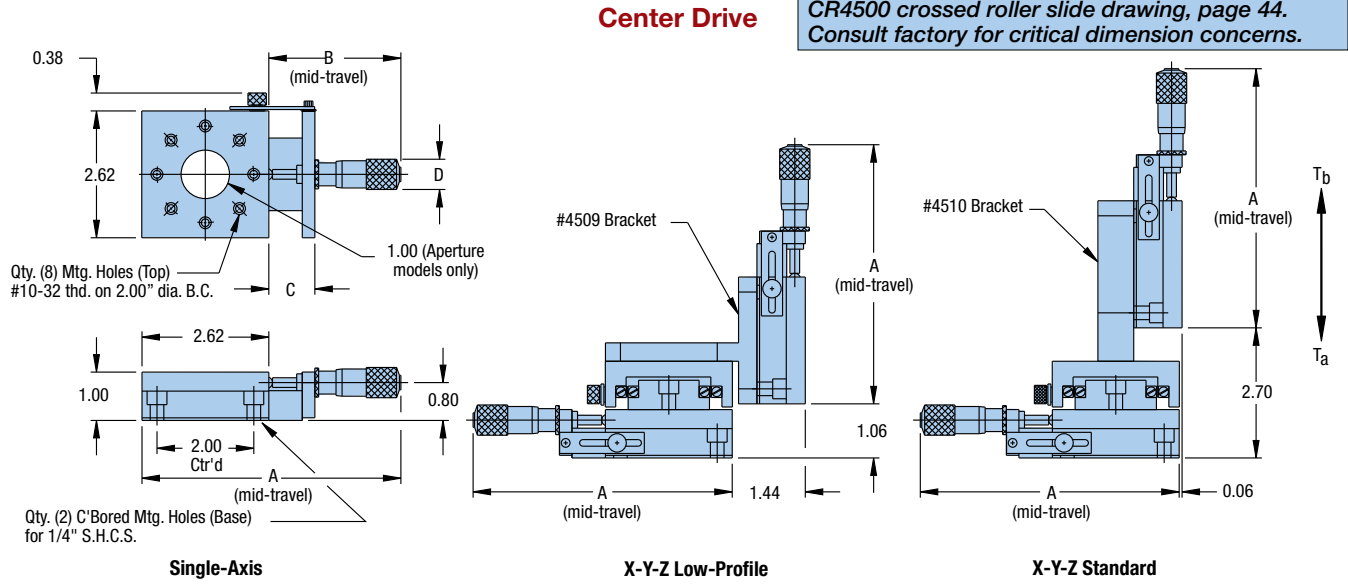


| Style | Drive Mechanism | Travel | Center Drive Models | | | | Side Drive Models | | | |
|-------------------|--------------------|-------------|---------------------|----------|-------------------|----------------|-------------------|----------|-------------------|----------------|
| | | | Single Axis | Two Axis | Y-Y-Z Low Profile | Y-Y-Z Standard | Single Axis | Two Axis | Y-Y-Z Low Profile | Y-Y-Z Standard |
| Solid Top | Imperial | 0.50 in | CR4502 | CR4522 | CR4532 | CR4542 | CR4552 | CR4572 | CR4582 | CR4592 |
| | Micrometer | 1.0 in | CR4504 | CR4524 | CR4534 | CR4544 | CR4554 | CR4574 | CR4584 | CR4594 |
| | Metric Micrometer | 13 mm | CR4502M | CR4522M | CR4532M | CR4542M | CR4552M | CR4572M | CR4582M | CR4592M |
| | Differential Screw | 25 mm | CR4504M | CR4524M | CR4534M | CR4544M | CR4554M | CR4574M | CR4584M | CR4594M |
| | Fine Screw | 0.08/0.3 in | CR4502D | CR4522D | CR4532D | CR4542D | CR4552D | CR4572D | CR4582D | CR4592D |
| | | | 0.75 in | CR4503 | CR4523 | CR4533 | CR4543 | CR4553 | CR4573 | CR4583 |
| Aperture (1.0 in) | Imperial | 0.50 in | CR4506 | CR4526 | CR4536 | CR4546 | CR4556 | CR4576 | CR4586 | CR4596 |
| | Micrometer | 13 mm | CR4506M | CR4526M | CR4536M | CR4546M | CR4556M | CR4576M | CR4586M | CR4596M |
| | Metric Micrometer | 0.08/0.3 in | CR4506D | CR4526D | CR4536D | CR4546D | CR4556D | CR4576D | CR4586D | CR4596D |
| | Differential Screw | | | | | | | | | |
| | Fine Screw | 0.75 in | CR4507 | CR4527 | CR4537 | CR4547 | CR4557 | CR4577 | CR4587 | CR4597 |

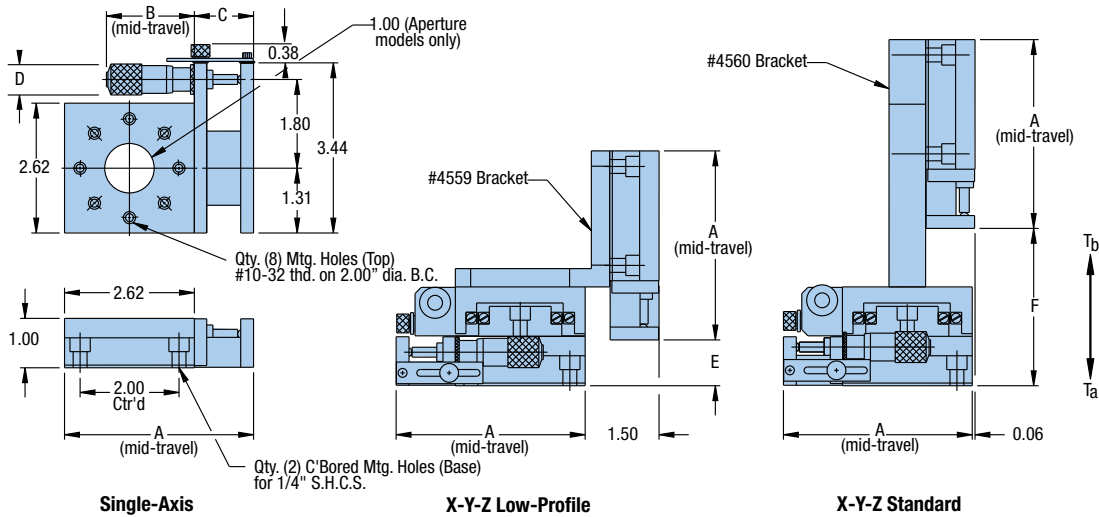


Dimensions Inches

For additional end view dimensions, refer to the CR4500 crossed roller slide drawing, page 44. Consult factory for critical dimension concerns.



Side Drive

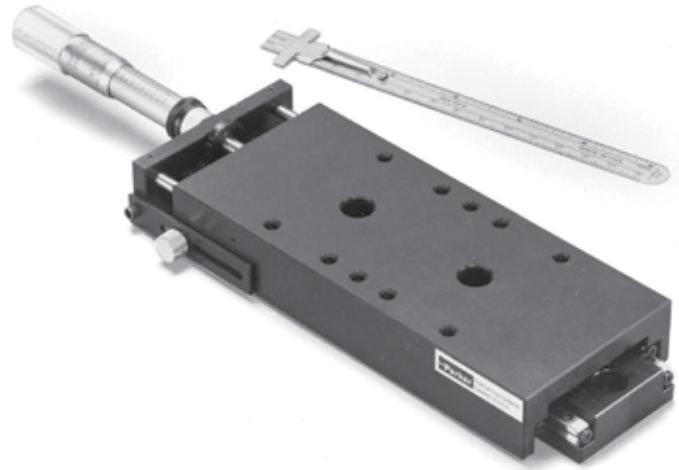


| Style | Drive Mechanism | | Center Drive Dimensions – in | | | | Side Drive Dimensions – in | | | | | |
|-------------------|---------------------|-------------|------------------------------|------|------|------|----------------------------|------|------|------|------|------|
| | | | A | B | C | D | A | B | C | D | E | F |
| Solid Top | Imperial Micrometer | 0.50 in | 5.35 | 2.73 | 0.95 | 0.54 | 3.82 | 1.78 | 1.20 | 0.54 | 0.93 | 3.18 |
| | | 1.0 in | 6.93 | 4.31 | 1.22 | 0.71 | 4.07 | 3.10 | 1.45 | 0.71 | 0.68 | 2.93 |
| | Metric Micrometer | 13 mm | 5.35 | 2.73 | 0.95 | 0.54 | 3.82 | 1.78 | 1.20 | 0.54 | 0.93 | 3.18 |
| | | 25 mm | 6.93 | 4.31 | 1.22 | 0.71 | 4.07 | 3.10 | 1.45 | 0.71 | 0.68 | 2.93 |
| Aperture (1.0 in) | Differential Screw | 0.08/0.3 in | 5.01 | 2.39 | 0.95 | 0.62 | 3.82 | 1.44 | 1.20 | 0.62 | 0.93 | 3.18 |
| | | Fine Screw | 0.75 in | 5.24 | 2.62 | 0.95 | 0.58 | 3.82 | 1.72 | 1.20 | 0.58 | 0.93 |
| Aperture (1.0 in) | Imperial Micrometer | 0.50 in | 5.35 | 2.73 | 0.95 | 0.54 | 3.82 | 1.78 | 1.20 | 0.54 | 0.93 | 3.18 |
| | | 13 mm | 5.35 | 2.73 | 0.95 | 0.54 | 3.82 | 1.78 | 1.20 | 0.54 | 0.93 | 3.18 |
| | Metric Micrometer | 13 mm | 5.35 | 2.73 | 0.95 | 0.54 | 3.82 | 1.78 | 1.20 | 0.54 | 0.93 | 3.18 |
| | | 25 mm | 6.93 | 4.31 | 1.22 | 0.71 | 4.07 | 3.10 | 1.45 | 0.71 | 0.68 | 2.93 |
| Aperture (1.0 in) | Differential Screw | 0.08/0.3 in | 5.01 | 2.39 | 0.95 | 0.62 | 3.82 | 1.44 | 1.20 | 0.62 | 0.93 | 3.18 |
| | | Fine Screw | 0.75 in | 5.24 | 2.62 | 0.95 | 0.58 | 3.82 | 1.72 | 1.20 | 0.58 | 0.93 |

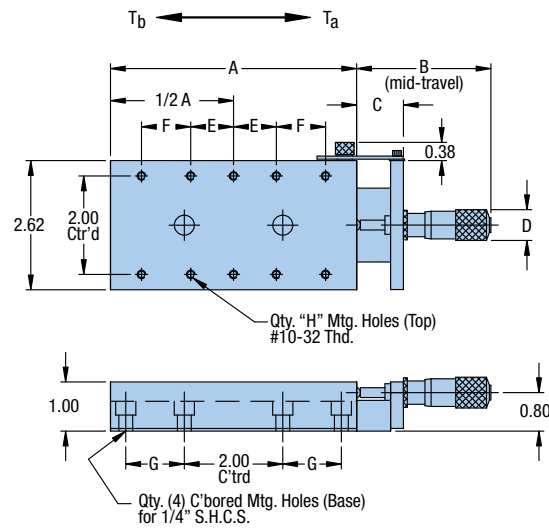
CR4600, CR4700, CR4800 Series

For additional end view dimensions, refer to the CR4600-4800 crossed roller slide drawing, page 45. Consult factory for critical dimension concerns.

| Specifications | |
|---------------------------|---|
| Travel: | 0.5 – 1.0 in |
| Size: | |
| Width | 2.62 in |
| Length (mid-travel) | 6.62 – 10.31 in |
| Height | 1.00 in |
| Load: | |
| Normal | 151 – 252 lbs |
| Thrust – T_a | 30 lbs |
| Thrust – T_b | 2 lbs |
| Moment – Yaw, Pitch, Roll | See page 111 |
| Straight line accuracy: | 0.00008 in/in of travel |
| Micrometer graduations: | 0.001 in or 0,01 mm |
| Fine screw: | 64 pitch |
| Weight: | 1.1 – 1.5 lbs/axis |
| Construction: | Aluminum top and base/ steel crossed roller bearings |
| Mounting surface: | Precision machined |
| Finish: | Black anodize |



Dimensions Inches



| Drive Mechanism | Travel | Model | Load | Weight | Dimensions - in | | | | | | | | |
|---------------------|---------|---------|---------|---------|-----------------|------|------|------|------|------|------|------|----|
| | | | | | A | B | C | D | E | F | G | H | |
| Imperial Micrometer | 0.50 in | CR4602 | 151 lbs | 1.1 lbs | 4.00 | 2.73 | 2.73 | 0.95 | 0.54 | 0.50 | — | 0.69 | 6 |
| | 1.0 in | CR4604 | | | | 4.31 | 4.31 | 1.22 | 0.71 | | | | |
| Metric Micrometer | 13 mm | CR4602M | 151 lbs | 1.1 lbs | 4.00 | 2.73 | 2.73 | 0.95 | 0.54 | 0.50 | — | 0.69 | 6 |
| | 25 mm | CR4604M | | | | 4.31 | 4.31 | 1.22 | 0.71 | | | | |
| Fine Screw | 0.75 in | CR4603 | | | | 2.62 | 2.62 | 0.95 | 0.58 | | | | |
| Imperial Micrometer | 0.50 in | CR4702 | 201 lbs | 1.3 lbs | 5.00 | 2.73 | 2.73 | 0.95 | 0.54 | 1.00 | — | 1.19 | 6 |
| | 1.0 in | CR4704 | | | | 4.31 | 4.31 | 1.22 | 0.71 | | | | |
| Metric Micrometer | 13 mm | CR4702M | 201 lbs | 1.3 lbs | 5.00 | 2.73 | 2.73 | 0.95 | 0.54 | 1.00 | — | 1.19 | 6 |
| | 25 mm | CR4704M | | | | 4.31 | 4.31 | 1.22 | 0.71 | | | | |
| Fine Screw | 0.75 in | CR4703 | | | | 2.62 | 2.62 | 0.95 | 0.58 | | | | |
| Imperial Micrometer | 0.50 in | CR4802 | 252 lbs | 1.5 lbs | 6.00 | 2.73 | 2.73 | 0.95 | 0.54 | 0.50 | 1.00 | 1.69 | 10 |
| | 1.0 in | CR4804 | | | | 4.31 | 4.31 | 1.22 | 0.71 | | | | |
| Metric Micrometer | 13 mm | CR4802M | 252 lbs | 1.5 lbs | 6.00 | 2.73 | 2.73 | 0.95 | 0.54 | 0.50 | 1.00 | 1.69 | 10 |
| | 25 mm | CR4804M | | | | 4.31 | 4.31 | 1.22 | 0.71 | | | | |
| Fine Screw | 0.75 in | CR4803 | | | | 2.62 | 2.62 | 0.95 | 0.58 | | | | |



CR4500-DM Series
CR4600-DM, CR4700-DM, CR4800-DM Series

For additional end view dimensions, refer to the CR4500 and CR4600-4800 crossed roller slide drawing, page 44-45. Consult factory for critical dimension concerns.

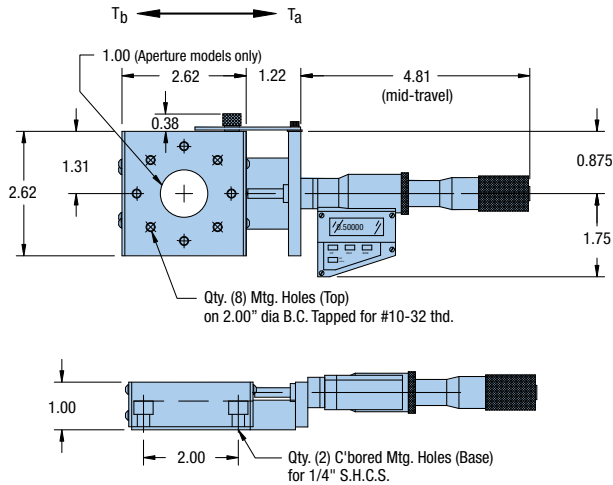
| Specifications | |
|---------------------------|---|
| Travel: | 1.0 in |
| Size: | |
| Width | 2.62 in |
| Length (mid-travel) | 8.65 – 12.03 in |
| Height | 1.00 in |
| Load: | |
| Normal Thrust – T_a | 111 – 252 lbs |
| Thrust – T_b | 10 lbs |
| Moment – Yaw, Pitch, Roll | 2 lbs |
| | See page 111 |
| Straight line accuracy: | 0.00008 in/in of travel |
| Micrometer graduations: | 0.00005 in or 0,001 mm |
| Weight: | 1.5 – 2.1 lbs/axis |
| Construction: | Aluminum top and base/ steel crossed roller bearings |
| Mounting surface: | Precision machined |
| Finish: | Black anodize |



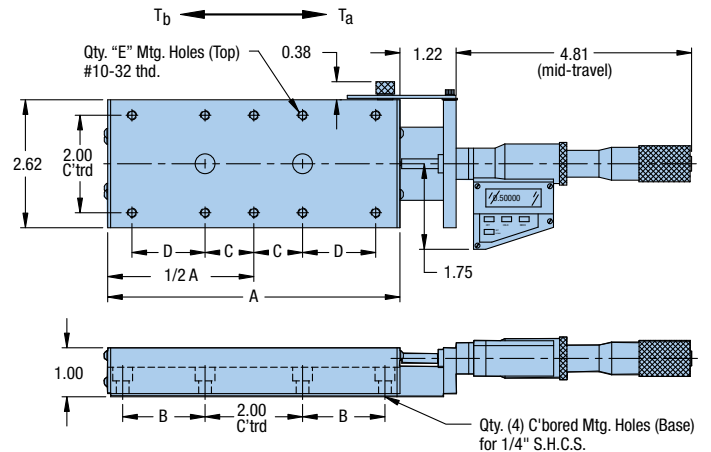
Crossed Roller Positioners

Dimensions Inches

CR4500-DM



CR4600-DM – CR4800-DM

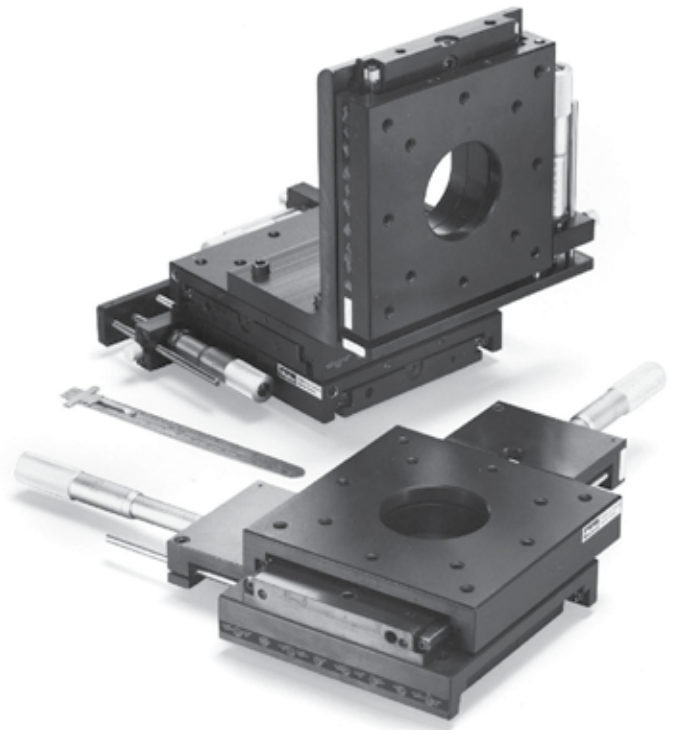


| Model | Load | Weight | Dimensions - in | | | | Qty E |
|-----------|---------|---------|-----------------|------|------|------|-------|
| | | | A | B | C | D | |
| CR4504-DM | 111 lbs | 1.5 lbs | — | — | — | — | — |
| CR4604-DM | 151 lbs | 1.7 lbs | 4.00 | 0.69 | 0.50 | — | 6 |
| CR4704-DM | 201 lbs | 1.9 lbs | 5.00 | 1.19 | 1.00 | — | 6 |
| CR4804-DM | 252 lbs | 2.1 lbs | 6.00 | 1.69 | 0.50 | 1.00 | 10 |



CR4400 Series

| Specifications | |
|---|---|
| Travel: | 1.0 – 2.0 in |
| Size: | |
| Width | 5.00 in |
| Length (mid-travel) | 6.0 – 11.34 in |
| Height | 1.00 in |
| Load: | |
| Normal | 201 lbs |
| Thrust – T _a | 30 lbs |
| Thrust – T _b | 3 lbs |
| Moment – Yaw, Pitch, Roll | See page 114 |
| Straight line accuracy: | 0.00008 in/in of travel |
| Micrometer graduations: | 0.001 in or 0,01 mm |
| Weight: | 2.6 lbs/axis |
| Z-Axis bracket options: (See page 124-127) | 4499 |
| Construction: | Aluminum top and base/ steel crossed roller bearings |
| Mounting surface: | Precision machined |
| Finish: | Black anodize |



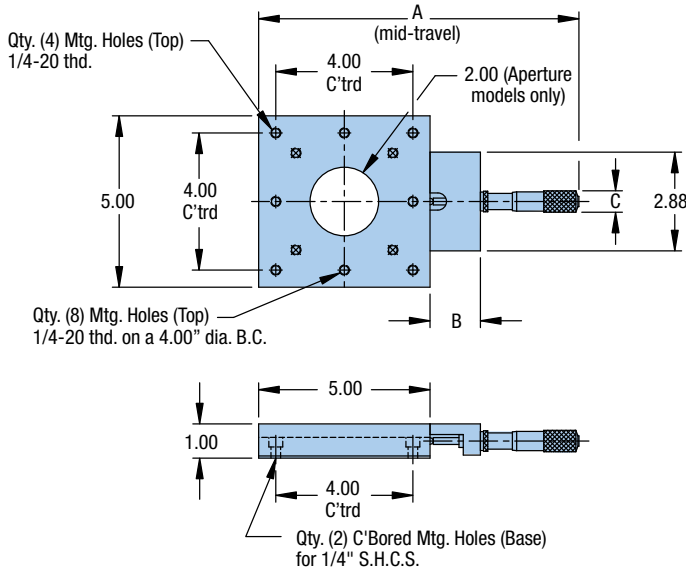
| Style | Drive Mechanism | Travel | Center Drive Models | | | Side Drive Models | | |
|----------------------|---------------------|--------|---------------------|----------|------------|-------------------|----------|------------|
| | | | Single Axis | Two Axis | Three Axis | Single Axis | Two Axis | Three Axis |
| Solid Top | Imperial Micrometer | 1.0 in | CR4411 | CR4421 | CR4431 | CR4416 | CR4426 | CR4436 |
| | | 2.0 in | CR4412 | CR4422 | CR4432 | CR4417 | CR4427 | CR4437 |
| | Metric Micrometer | 25 mm | CR4413 | CR4423 | CR4433 | CR4418 | CR4428 | CR4438 |
| | | 50 mm | CR4414 | CR4424 | CR4434 | CR4419 | CR4429 | CR4439 |
| Aperture (2.0 in) | Imperial Micrometer | 1.0 in | CR4451 | CR4461 | CR4471 | CR4456 | CR4466 | CR4476 |
| | | 2.0 in | CR4452 | CR4462 | CR4472 | CR4457 | CR4467 | CR4477 |
| | Metric Micrometer | 25 mm | CR4453 | CR4463 | CR4473 | CR4458 | CR4468 | CR4478 |
| | | 50 mm | CR4454 | CR4464 | CR4474 | CR4459 | CR4469 | CR4479 |



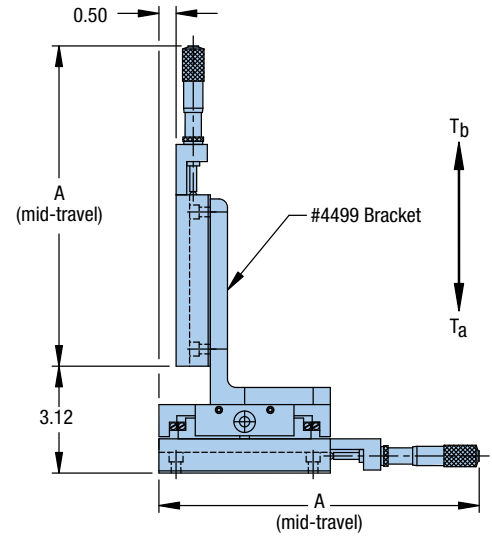
Dimensions Inches

For additional end view dimensions, refer to the CR4400 crossed roller slide drawing, page 50. Consult factory for critical dimension concerns.

Center Drive



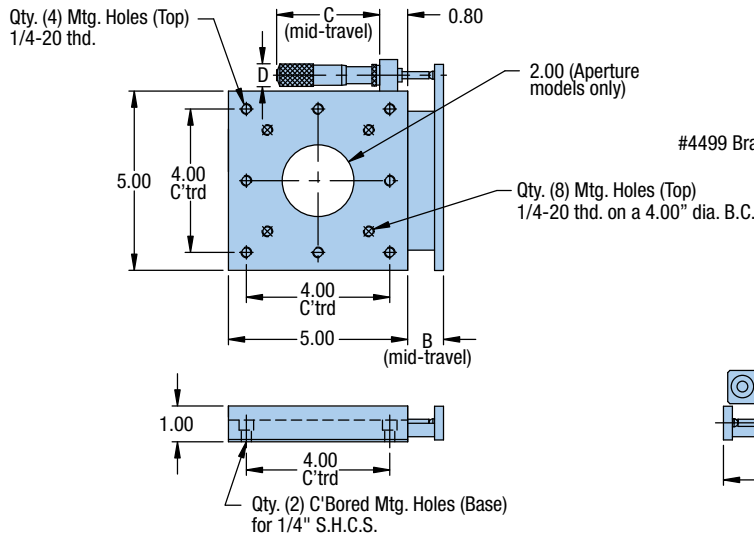
Single-Axis



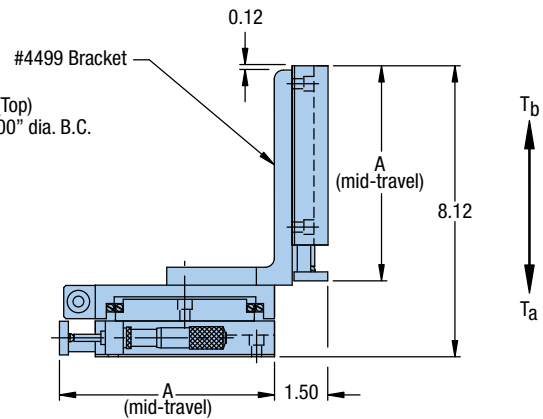
X-Y-Z Standard

Crossed Roller Positioners

Side Drive



Single-Axis



X-Y-Z Standard

| Style | Drive Mechanism | Travel | Center Drive Dimensions – in | | | Side Drive Dimensions – in | | | |
|-----------|---------------------|--------|------------------------------|------|------|----------------------------|------|------|------|
| | | | A | B | C | A | B | C | D |
| Solid Top | Imperial Micrometer | 1.0 in | 9.31 | 1.47 | 0.71 | 6.0 | 1.00 | 2.84 | 0.71 |
| | | 2.0 in | 11.34 | 1.98 | 0.73 | 6.5 | 1.50 | 4.36 | 0.73 |
| | Metric Micrometer | 25 mm | 9.31 | 1.47 | 0.71 | 6.0 | 1.00 | 2.84 | 0.71 |
| | | 50 mm | 11.34 | 1.98 | 0.73 | 6.5 | 1.50 | 4.36 | 0.73 |
| Aperture | Imperial Micrometer | 1.0 in | 9.31 | 1.47 | 0.71 | 6.0 | 1.00 | 2.84 | 0.71 |
| | | 2.0 in | 11.34 | 1.98 | 0.73 | 6.5 | 1.50 | 4.36 | 0.73 |
| | Metric Micrometer | 25 mm | 9.31 | 1.47 | 0.71 | 6.0 | 1.00 | 2.84 | 0.71 |
| | | 50 mm | 11.34 | 1.98 | 0.73 | 6.5 | 1.50 | 4.36 | 0.73 |

CR4400-DM Series

| Specifications | |
|--------------------------------|---|
| Travel: | 1.0 – 2.0 in |
| Size: | |
| Width | 5.00 in |
| Length (mid-travel) | 11.28 – 14.16 in |
| Height | 1.00 in |
| Load: | |
| Normal | 201 lbs |
| Thrust – T _a | 30 lbs |
| Thrust – T _b | 2.0 lbs |
| Moment – Yaw, Pitch, Roll | See page 114 |
| Straight line accuracy: | 0.00008 in/in of travel |
| Micrometer graduations: | 0.00005 in or 0,001 mm |
| Weight: | 3.1 lbs/axis |
| Construction: | Aluminum top and base/ steel crossed roller bearings |
| Mounting surface: | Precision machined |
| Finish: | Black anodize |



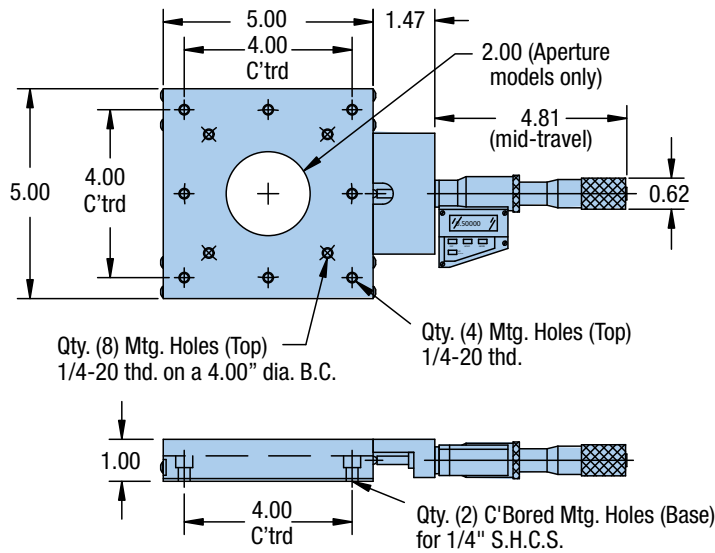
| Series | Model | Travel |
|-------------------|-----------|--------|
| Solid Top | CR4411-DM | 1.0 in |
| | CR4412-DM | 2.0 in |
| Aperture (2.0 in) | CR4451-DM | 1.0 in |
| | CR4452-DM | 2.0 in |



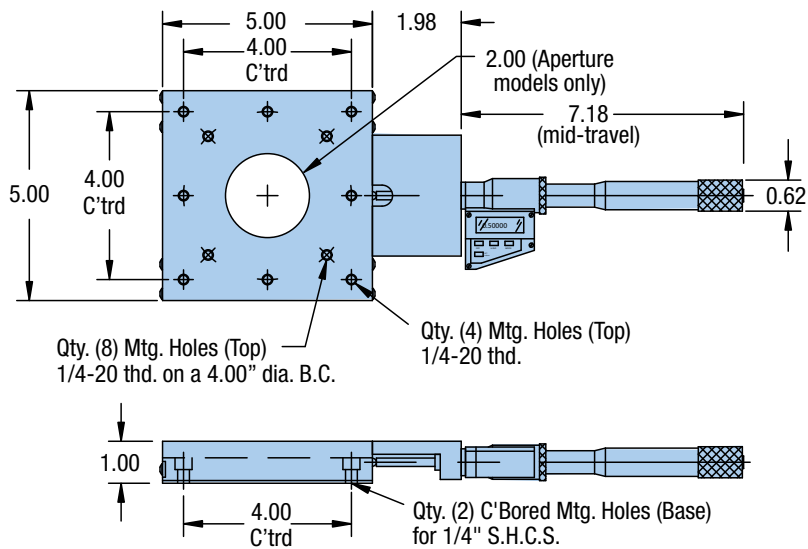
Dimensions Inches

For additional end view dimensions, refer to the CR4400 crossed roller slide drawing, page 50. Consult factory for critical dimension concerns.

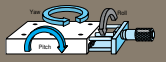
1.0 in (25 mm) Travel Models



2.0 in (50 mm) Travel Models

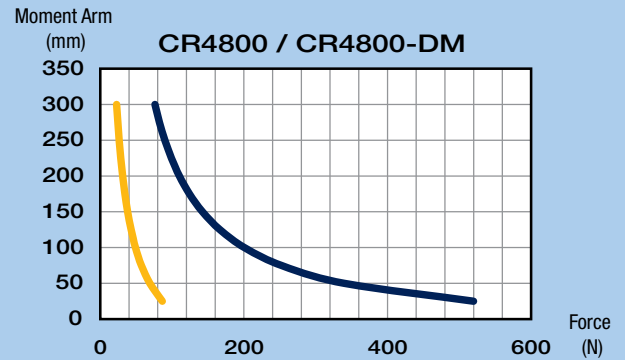
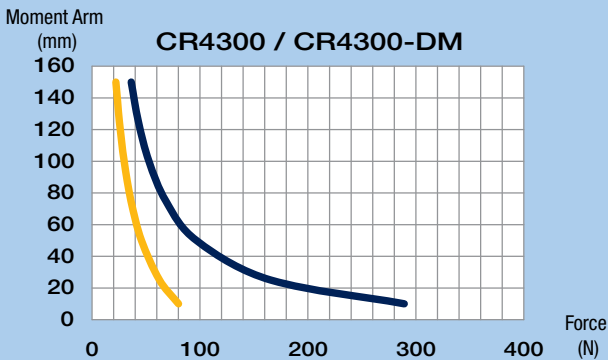
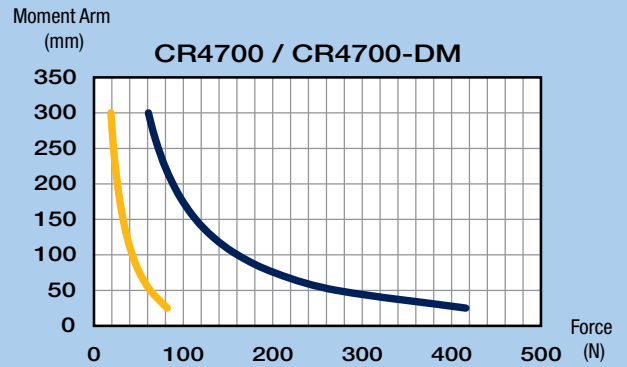
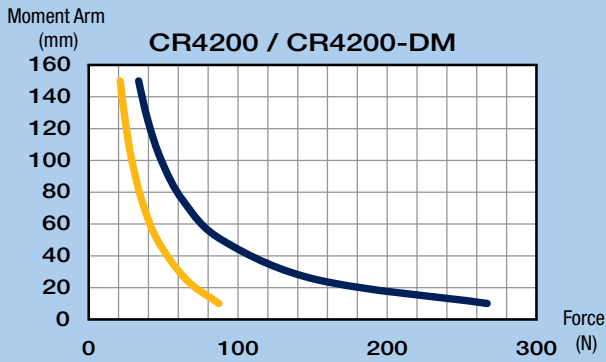
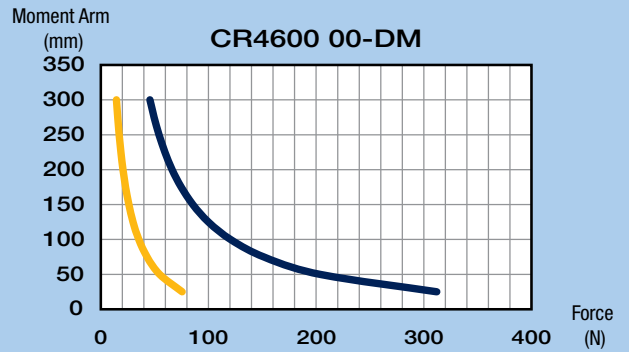
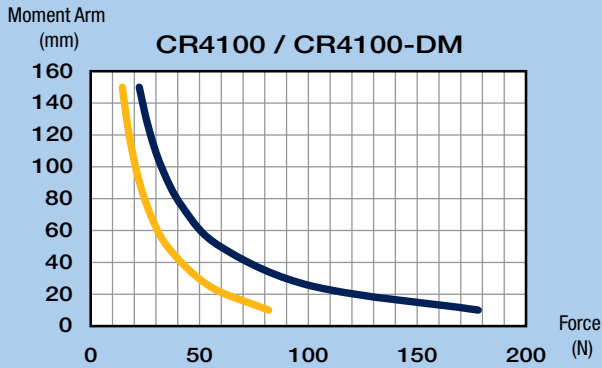
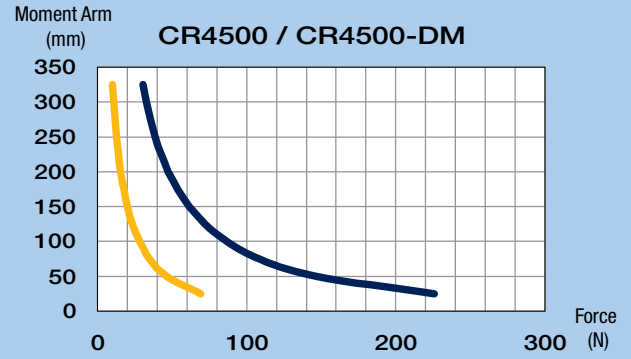
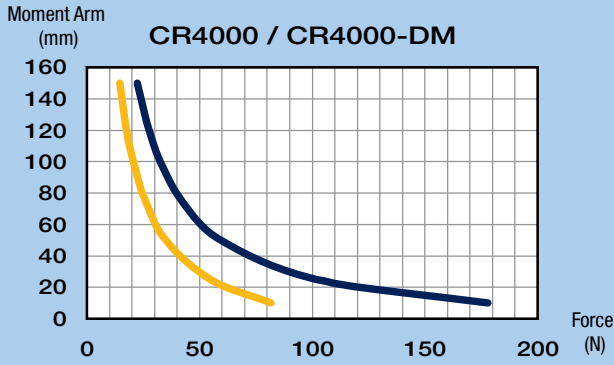


Crossed Roller Positioners



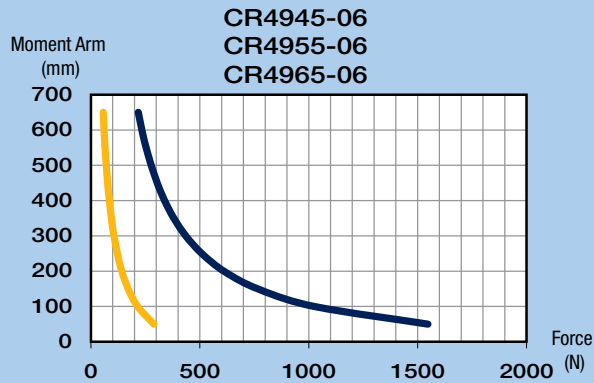
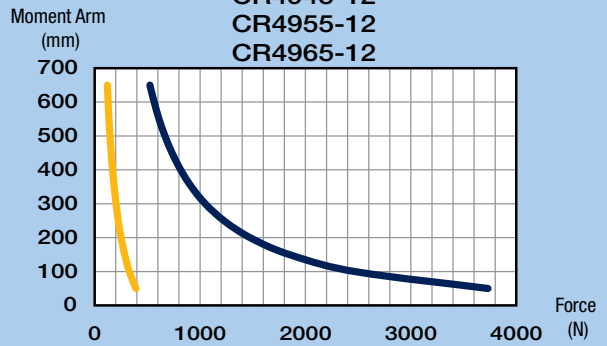
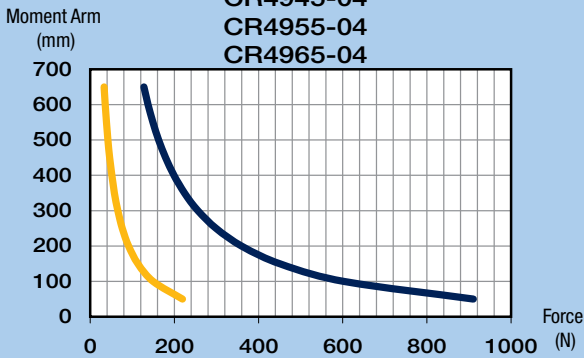
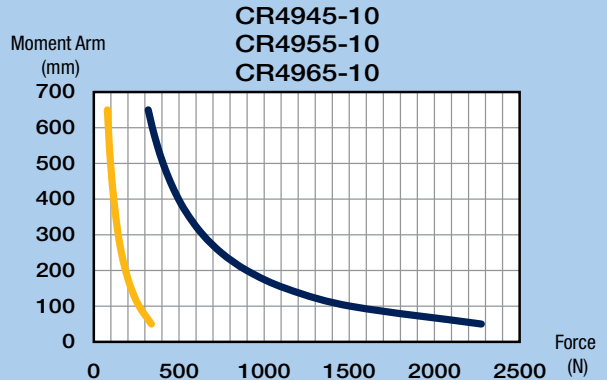
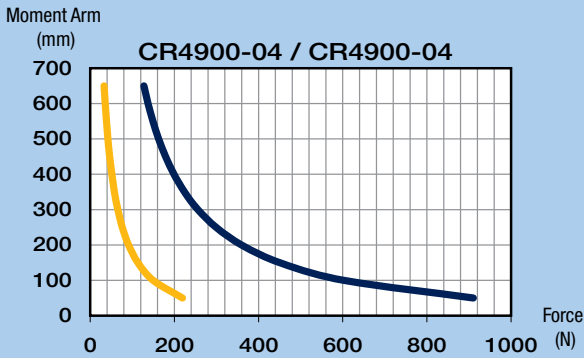
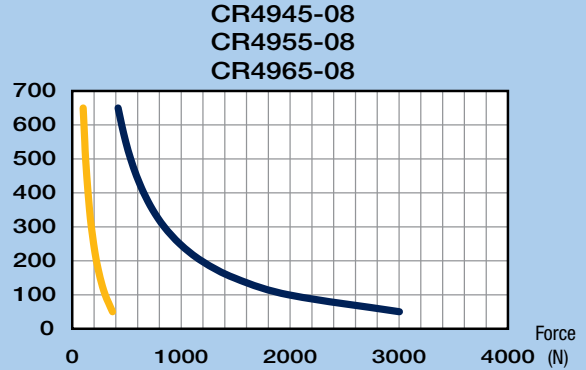
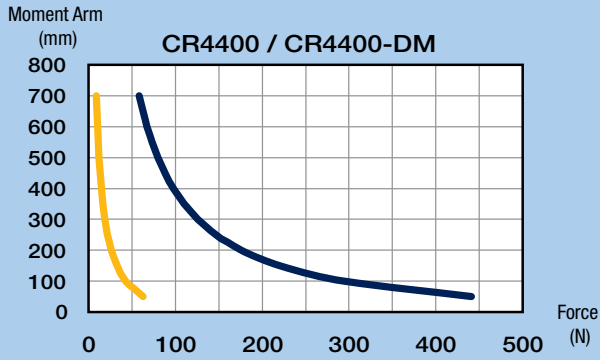
Yaw, Pitch, Roll

Yaw & Pitch Roll



Yaw, Pitch, Roll

Yaw & Pitch Roll



Accessories for linear and rotary positioners

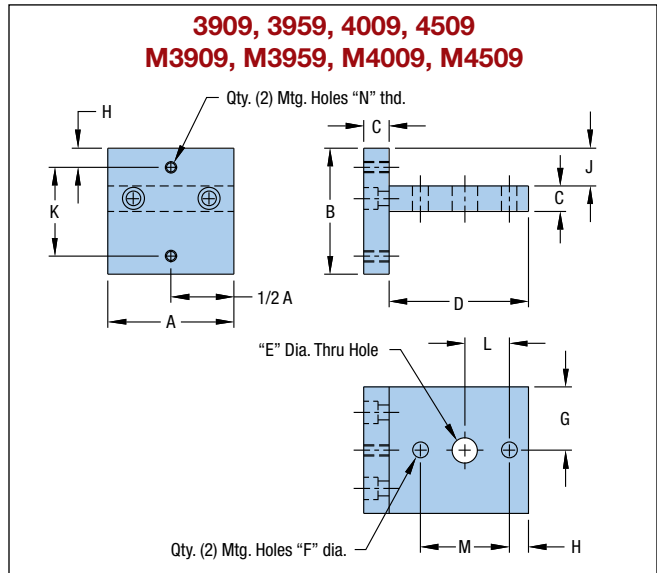


Parker Daedal offers a complete line of Z-axis brackets to combine ball bearing and cross roller stages into three axis positioning systems. We also offer drive mechanisms in an assortment of standard and digital micrometer heads, fine adjustment screws, and differential screws. Optical components including beam directors, optical mounts, mirror mounts and optical cells are also available.

Contents

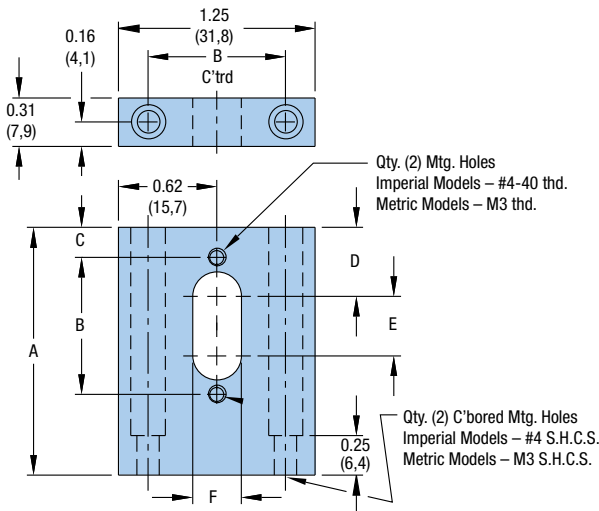
| | |
|----------------|------------------|
| 124-127 | Z-Axis Brackets |
| 128-129 | Micrometer Heads |
| 130-132 | Optical Mounts |

Z-Axis Brackets



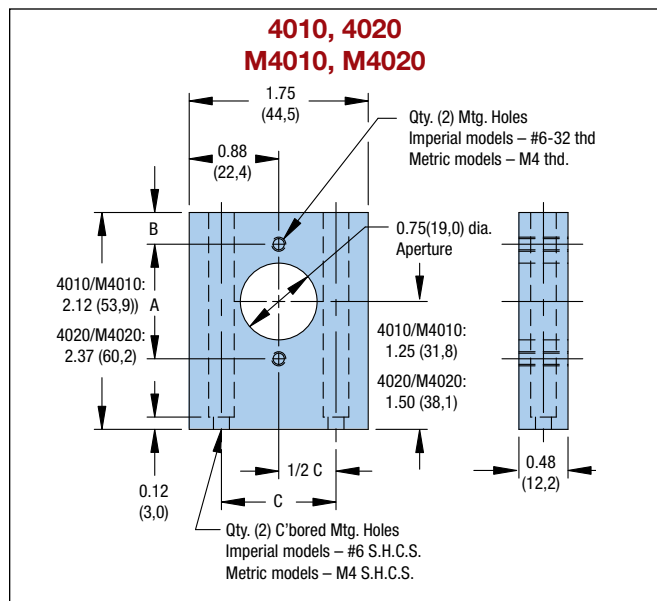
| | | Dimensions – in (mm) | | | | | | | | | | | Thd. N | |
|----------|-------|----------------------|--------|-------|--------|-------|-------|--------|-------|--------|--------|--------|--------|--------|
| | Model | A | B | C | D | E | F | G | H | J | K | L | M | |
| Imperial | 3909 | 1.25 | 1.25 | 0.25 | 1.38 | 0.25 | 0.156 | 0.62 | 0.19 | 0.38 | 0.88 | 0.44 | 0.88 | #4-40 |
| | 3959 | 1.25 | 1.25 | 0.25 | 1.38 | 0.25 | 0.156 | 0.62 | 0.19 | 0.04 | 0.88 | 0.44 | 0.88 | #4-40 |
| | 4009 | 1.75 | 1.69 | 0.25 | 1.88 | — | 0.156 | 0.88 | 0.31 | 0.63 | 1.12 | — | 1.12 | #6-32 |
| | 4509 | 2.44 | 2.62 | 0.38 | 2.75 | — | 0.218 | 1.22 | 0.31 | 0.93 | 2.00 | — | 2.00 | #10-32 |
| Metric | M3909 | (31,8) | (31,8) | (6,4) | (35,1) | (6,4) | (4,0) | (15,7) | (5,9) | (9,7) | (20,0) | (10,0) | (20,0) | M3 |
| | M3959 | (31,8) | (31,8) | (6,4) | (35,1) | (6,4) | (4,0) | (15,7) | (5,9) | (1,0) | (20,0) | (10,0) | (20,0) | M3 |
| | M4009 | (44,5) | (42,9) | (6,4) | (47,8) | — | (4,8) | (22,4) | (7,3) | (16,0) | (30,0) | — | (30,0) | M4 |
| | M4509 | (62,0) | (66,5) | (9,7) | (69,9) | — | (7,3) | (31,0) | (8,4) | (23,6) | (50,0) | — | (50,0) | M6 |

**3910, 3960
M3910, M3960**



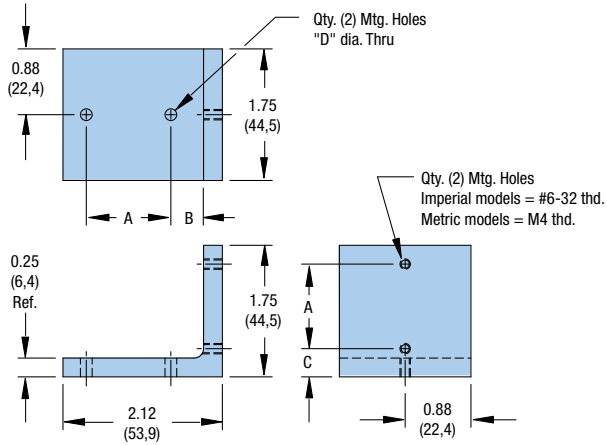
| | | Dimensions – in (mm) | | | | | |
|----------|-------|----------------------|--------|-------|--------|-------|-------|
| | Model | A | B | C | D | E | F |
| Imperial | 3910 | 1.58 | 0.88 | 0.19 | 0.44 | 0.38 | 0.31 |
| | 3960 | 2.33 | 0.88 | 0.19 | 0.44 | 0.38 | 0.31 |
| Metric | M3910 | (40,1) | (20,0) | (5,9) | (12,3) | (7,1) | (6,4) |
| | M3960 | (59,2) | (20,0) | (5,9) | (12,3) | (7,1) | (6,4) |

**4010, 4020
M4010, M4020**



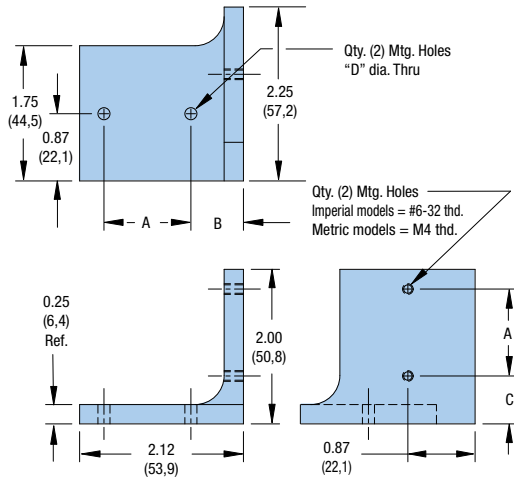
| | | Dimensions – in (mm) | | |
|----------|-------|----------------------|-------|--------|
| | Model | A | B | C |
| Imperial | 4010 | 1.12 | 0.31 | 1.12 |
| Metric | M4010 | (30,0) | (7,1) | (30,0) |

4059 M4059



4059A M4059A

For 1.00 inch (25,0 mm) Travel Micrometer Option



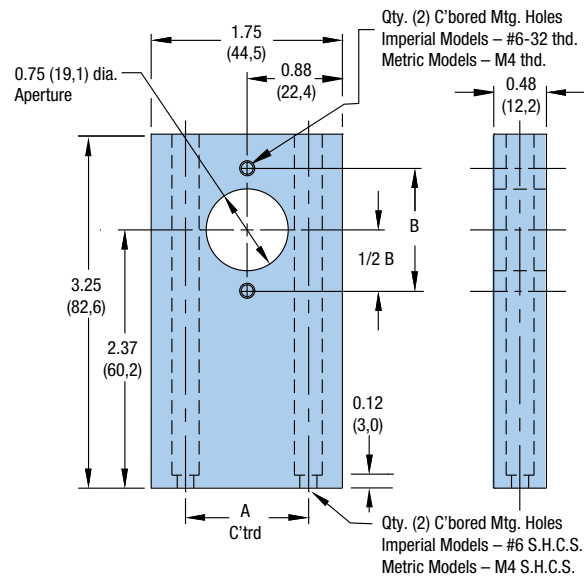
Dimensions – in (mm)

| | Model | A | B | C | D |
|----------|-------|--------|--------|-------|-------|
| Imperial | 4059 | 1.12 | 0.68 | 0.38 | 0.16 |
| Metric | M4059 | (30,0) | (16,8) | (8,8) | (4,8) |

Dimensions – in (mm)

| | Model | A | B | C | D |
|----------|--------|--------|--------|--------|-------|
| Imperial | 4059A | 1.12 | 0.68 | 0.62 | 0.16 |
| Metric | M4059A | (30,0) | (16,8) | (15,2) | (4,8) |

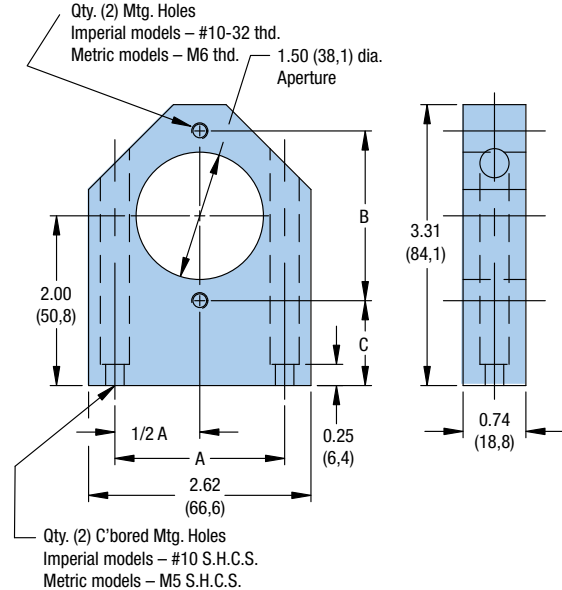
4060 M4060



Dimensions – in (mm)

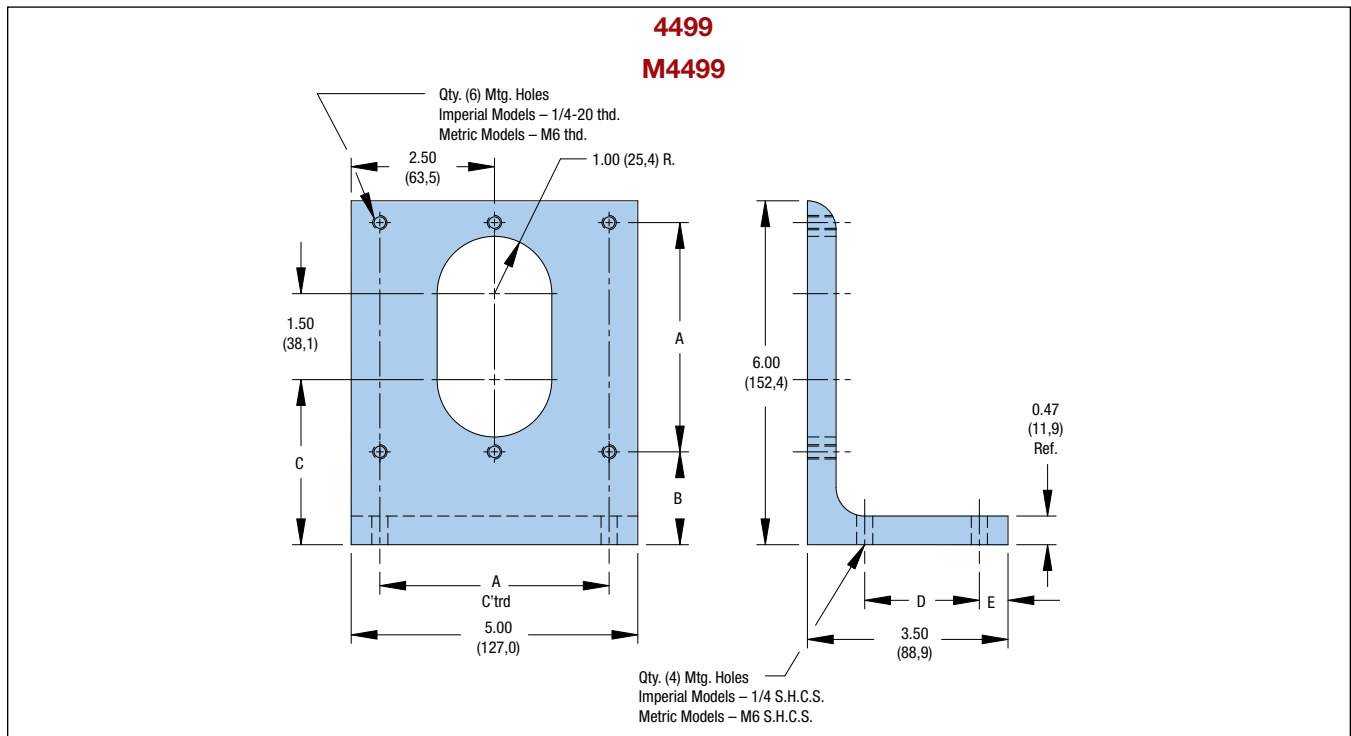
| | Model | A | B |
|----------|-------|--------|--------|
| Imperial | 4060 | 1.13 | 1.13 |
| Metric | M4060 | (30,0) | (30,0) |

4510 M4510

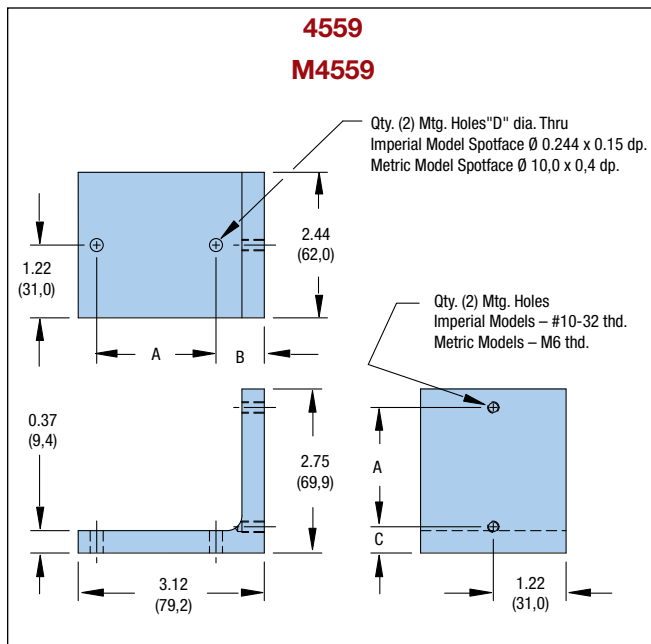


Dimensions – in (mm)

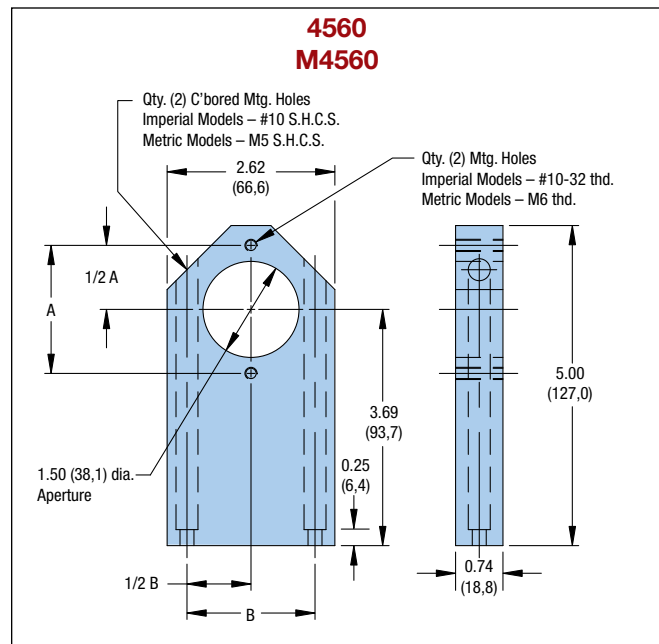
| | Model | A | B | C |
|----------|-------|--------|--------|--------|
| Imperial | 4510 | 2.00 | 2.00 | 1.00 |
| Metric | M4510 | (50,0) | (50,0) | (25,8) |



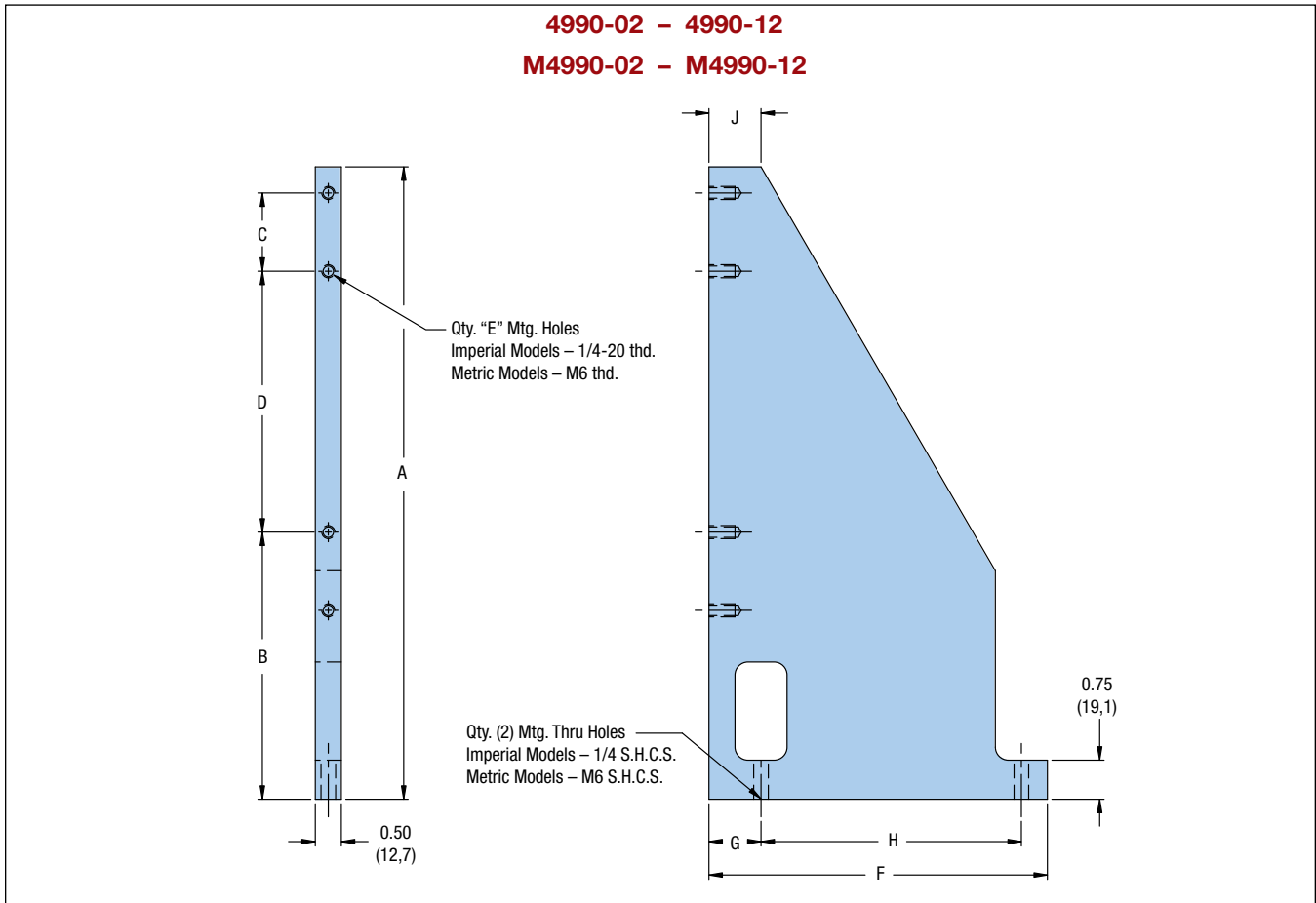
| | | Dimensions – in (mm) | | | | |
|----------|-------|----------------------|--------|--------|--------|--------|
| | Model | A | B | C | D | E |
| Imperial | 4499 | 4.00 | 1.62 | 2.88 | 2.00 | 0.50 |
| Metric | M4499 | (100,0) | (40,5) | (71,4) | (50,0) | (13,1) |



| | | Dimensions – in (mm) | | | |
|----------|-------|----------------------|--------|--------|-------|
| | Model | A | B | C | D |
| Imperial | 4559 | 2.00 | 0.81 | 0.44 | 0.22 |
| Metric | M4559 | (50,0) | (20,9) | (11,5) | (5,5) |



| | | Dimensions – in (mm) | |
|----------|-------|----------------------|--------|
| | Model | A | B |
| Imperial | 4560 | 2.00 | 2.00 |
| Metric | M4560 | (50,0) | (50,0) |



| | | Dimensions - in (mm) | | | | | | | | | |
|----------|-----------------|----------------------|---------|---------|---------|---|---------|--------|---------|--------|--|
| | Model | A | B | C | D | E | F | G | H | J | |
| Imperial | 4990-02 | 6.00 | 1.50 | - | 4.00 | 2 | 5.50 | 1.00 | 4.00 | 1.00 | |
| | 4990-04 | 8.12 | 2.62 | - | 5.00 | 2 | 6.50 | 1.00 | 5.00 | 1.00 | |
| | 4990-06 | 12.12 | 5.12 | 1.5 | 5.00 | 4 | 6.50 | 1.00 | 5.00 | 1.00 | |
| | 4990-08 | 17.12 | 8.62 | 3.0 | 5.00 | 4 | 6.75 | 1.25 | 5.00 | 1.50 | |
| | 4990-10 | 20.50 | 10.00 | 4.0 | 6.00 | 4 | 6.75 | 1.25 | 5.00 | 1.50 | |
| | 4990-12 | 24.12 | 11.62 | 5.0 | 7.00 | 4 | 6.50 | 1.00 | 5.00 | 1.00 | |
| Metric | M4990-02 | (152,4) | (38,9) | - | (100,0) | 2 | (139,7) | (26,2) | (100,0) | (25,4) | |
| | M4990-04 | (206,2) | (67,6) | - | (125,0) | 2 | (165,1) | (26,4) | (125,0) | (25,4) | |
| | M4990-06 | (307,8) | (131,2) | (37,5) | (125,0) | 4 | (165,1) | (26,4) | (125,0) | (25,4) | |
| | M4990-08 | (434,8) | (220,0) | (75,0) | (125,0) | 4 | (171,5) | (32,8) | (125,0) | (38,1) | |
| | M4990-10 | (520,7) | (255,2) | (100,0) | (150,0) | 4 | (171,5) | (32,8) | (125,0) | (38,1) | |
| | M4990-12 | (612,6) | (296,6) | (125,0) | (175,0) | 4 | (171,5) | (32,8) | (125,0) | (38,1) | |

Accessories

9510-9530 Series Micrometer Heads

Parker Daedal micrometer heads are recommended for any application requiring micrometer accuracy in settings and adjustment. These units feature a hardened and ground spindle, easy-to-read graduations, and an attractive non-glare satin chrome finish.

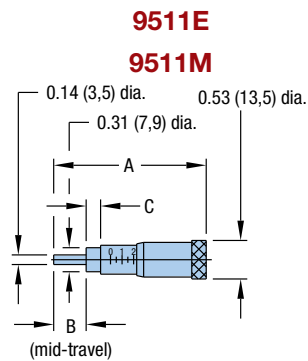


Figure A
Mini Thimble Micrometer Head

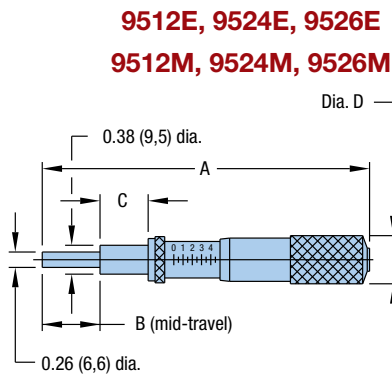


Figure B
Standard Thimble Micrometer Head

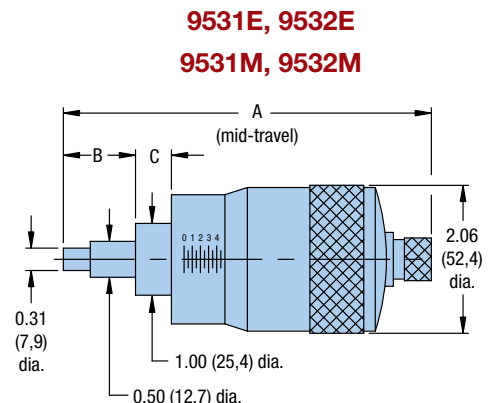


Figure C
Large Thimble Micrometer Head

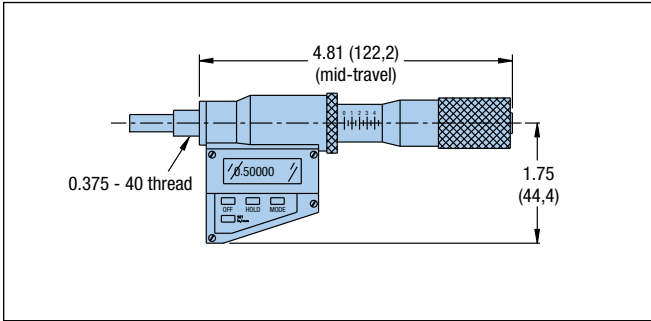
| | | Travel | Graduations | Dimensions – in (mm) | | | | |
|-----------------|--------------|---------|-------------|----------------------|---------|--------|--------|--------|
| | | in (mm) | in (mm) | A | B | C | D | |
| Imperial | 9511E | A | 0.50 | 0.001 | 2.03 | 0.50 | 0.187 | — |
| | 9512E | B | 0.50 | 0.001 | 2.63 | 0.50 | 0.375 | 0.54 |
| | 9524E | B | 1.00 | 0.001 | 4,23 | 0.75 | 0.625 | 0.73 |
| | 9526E | B | 2.00 | 0.001 | 6.16 | 1.25 | 0.625 | 0.73 |
| | 9531E | C | 1.00 | 0.0001 | 5.18 | 0.94 | 0.56 | — |
| | 9532E | C | 2.00 | 0.0001 | 7.18 | 1.44 | 0.56 | — |
| Metric | 9511M | A | (13) | (0,01) | (51,6) | (13,0) | (4,7) | — |
| | 9512M | B | (13) | (0,01) | (66,8) | (13,0) | (9,5) | (13,7) |
| | 9524M | B | (25) | (0,01) | (107,4) | (19,0) | (15,9) | (18,5) |
| | 9526M | B | (50) | (0,01) | (156,5) | (32,0) | (15,9) | (18,5) |
| | 9531M | C | (25) | (0,002) | (131,6) | (23,9) | (14,2) | — |
| | 9532M | C | (50) | (0,002) | (182,4) | (36,6) | (14,2) | — |

9550 Series Digital Micrometer Heads

Model 9551

The 9551 precision electronic digital micrometer head provides an LCD readout to 0.00005 inch resolution. The micrometer features:

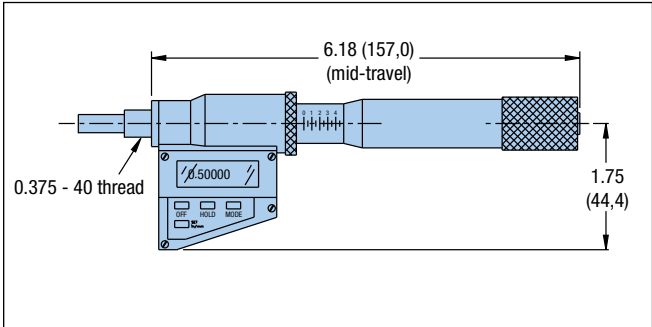
- Incremental and/or absolute positioning modes
- Zero set at any position, inch and millimeter readout (0.001 mm resolution), display hold, and automatic shutdown after two hours to conserve the integral battery
- 1.00 inch micrometer travel
- Battery powered for 500 hours of use



Model 9552

The 9552 precision electronic digital micrometer offers a 0 – 2 inch travel range with a 0.00005 inch resolution. Features include:

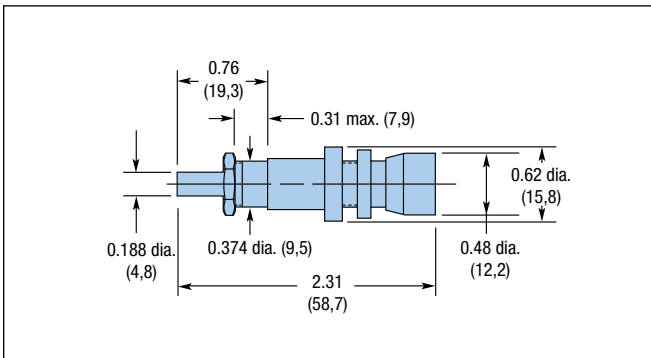
- 2 inch spindle
- Display face swivels for easy reading at various angles
- Non-rotating spindle
- Pre-set, zero, and inch/mm
- Carbide tipped measuring face
- Battery powered for 5,000 hours of use



9560 Series Differential Screws

Model 9560: 0.75 in Range

The 9560 differential screw offers two linear adjustment ranges in one unit: a coarse adjustment range of 0.31 in (8 mm) with a 48-pitch thread and a fine adjustment range of 0.078 in (2 mm) with a pitch equal to 336 threads per inch. The 9560 is interchangeable with 9511 – 9532 series micrometer heads.

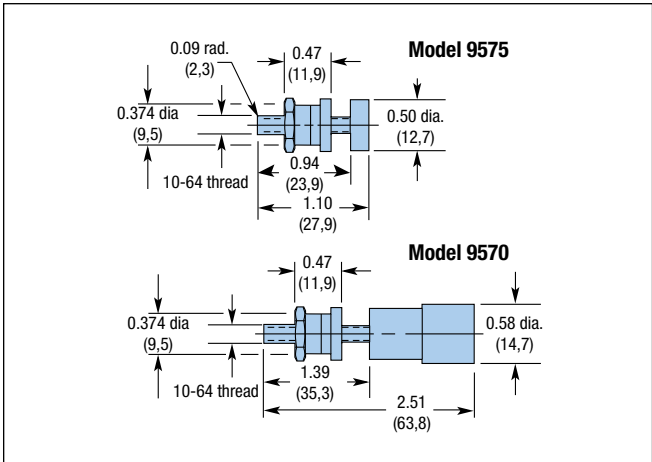


9570 Series Fine Adjustment Screws

Model 9570: 0.75 in Range

Model 9575: 0.50 in Range

These steel adjustment screws feature a 64-pitch thread, making them ideal for applications where finer resolution is required, but positional readout is not. These screws are easily interchanged with the 9511 – 9532 series micrometer heads.



Accessories

Optical Cell Mounts

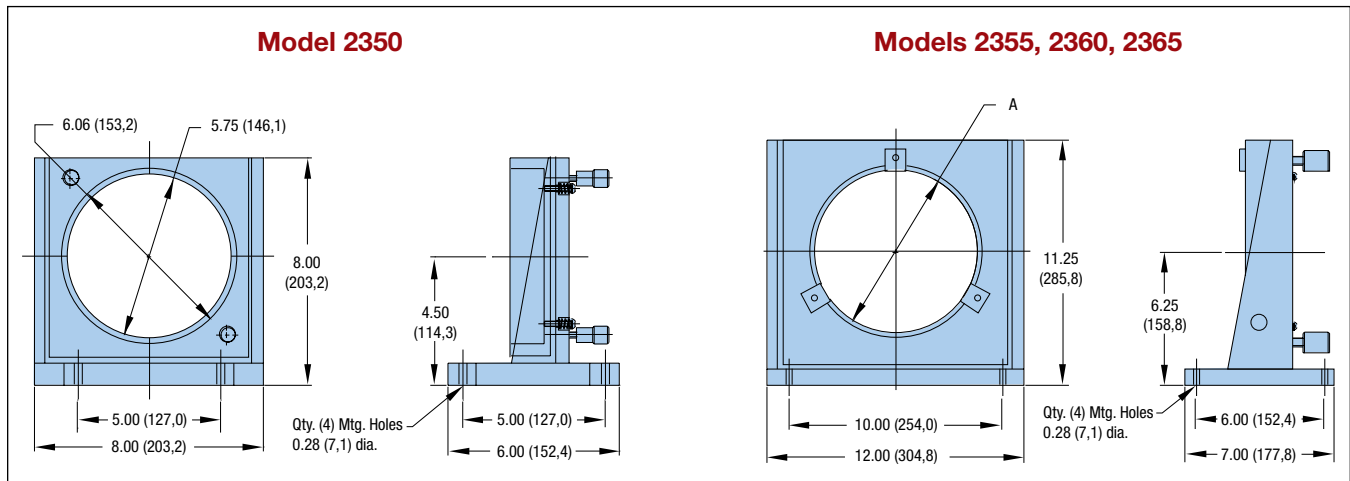
Model 2350: 6.0” Diameter

Model 2355: 7.0” Diameter

Model 2360: 8.0” Diameter

Model 2365: 9.0” Diameter

Parker Daedal optical mounts are highly stable, adjustable mounts for optics up to 9” in diameter and 1.25” thick. These mounts feature precise kinematic ball pivot adjustment on two axes, with orthogonal three-point suspension.



| Specifications | 2350 | 2355 | 2360 | 2365 |
|-------------------------------------|--------------------------|---------------------|---------------------|---------------------|
| Optic Size Opening – in (mm) | | | | |
| Dimension “A” Dia. max.: | 6.03 (153,1) | 7.06 (179,3) | 8.06 (204,7) | 9.06 (230,1) |
| Thickness: | 1.00 (25,4) | 1.25 (31,75) | 1.25 (31,7) | 1.25 (31,7) |
| Optic Retention: | Threaded retainer | 3 mounting clips | 3 mounting clips | 3 mounting clips |
| Range: | 5° | 5° | 5° | 5° |
| Resolution: | 0.5 arc-sec | 0.5 arc-sec | 0.5 arc-sec | 0.5 arc-sec |
| Adjustment: | 2 – 64-pitch screws | 3 – 32-pitch screws | 3 – 32-pitch screws | 3 – 32-pitch screws |
| Weight: | 7.5 lb (16,5 kg) | 20 lb (44 kg) | 20 lb (44 kg) | 20 lb (44 kg) |
| Construction: | Aluminum/stainless steel | | | |
| Finish: | Black anodize | | | |

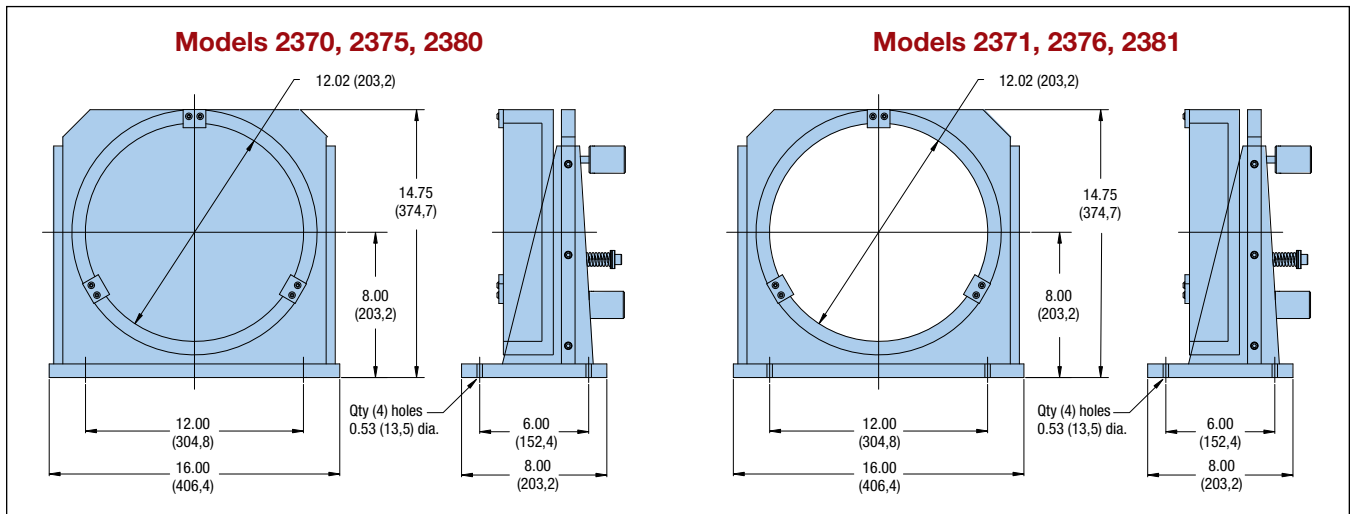
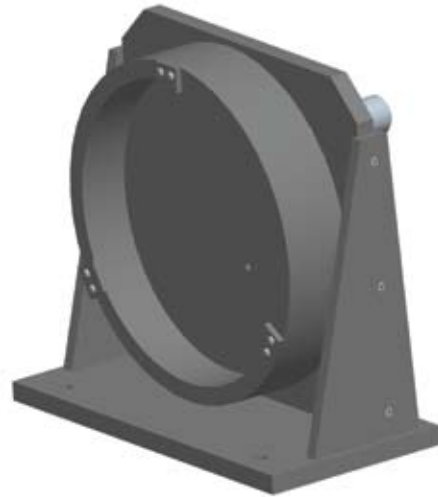
Optical Cell Mounts

Model 2370/2371: 10.0” Diameter

Model 2375/2376: 11.0” Diameter

Model 2380/2381: 12.0” Diameter

Parker Daedal optical mounts are highly stable, adjustable mounts for optics up to 12” in diameter and 2.0” thick. These mounts feature precise kinematic ball pivot adjustment on two axes, with orthogonal three-point suspension. Solid back models are designed to support reflective optics.



| Specifications | Solid Back Models | | | Aperture Models | | |
|-------------------------------------|--------------------------|---------------|---------------|--------------------------|---------------|---------------|
| | 2370 | 2375 | 2380 | 2371 | 2376 | 2381 |
| Optic Size Opening – in (mm) | | | | | | |
| Dimension “A” Dia. max.: | 10.02 (254,5) | 11.02 (379,9) | 12.02 (305,3) | 10.06 (255,5) | 11.06 (280,9) | 12.06 (306,3) |
| Thickness: | 2.00 (50,8) | 2.00 (50,8) | 2.00 (50,8) | 2.00 (50,8) | 2.00 (50,8) | 2.00 (50,8) |
| Optic Retention: | 3 mounting clips | | | 3 mounting clips | | |
| Range: | 7° | | | 7° | | |
| Resolution: | 0.5 arc-sec | | | 0.5 arc-sec | | |
| Adjustment: | 3 – 32-pitch screws | | | 3 – 32-pitch screws | | |
| Weight: | 45 lb (99 kg) | | | 41 lb (90 kg) | | |
| Construction: | Aluminum/stainless steel | | | Aluminum/stainless steel | | |
| Finish: | Black anodize | | | Black anodize | | |

Accessories

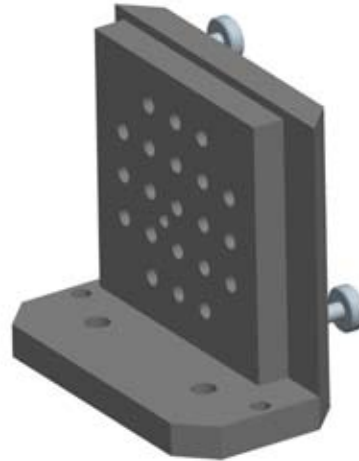
Mirror Mounts

Model 5000/5100: 3.0" Square Mounting Surface

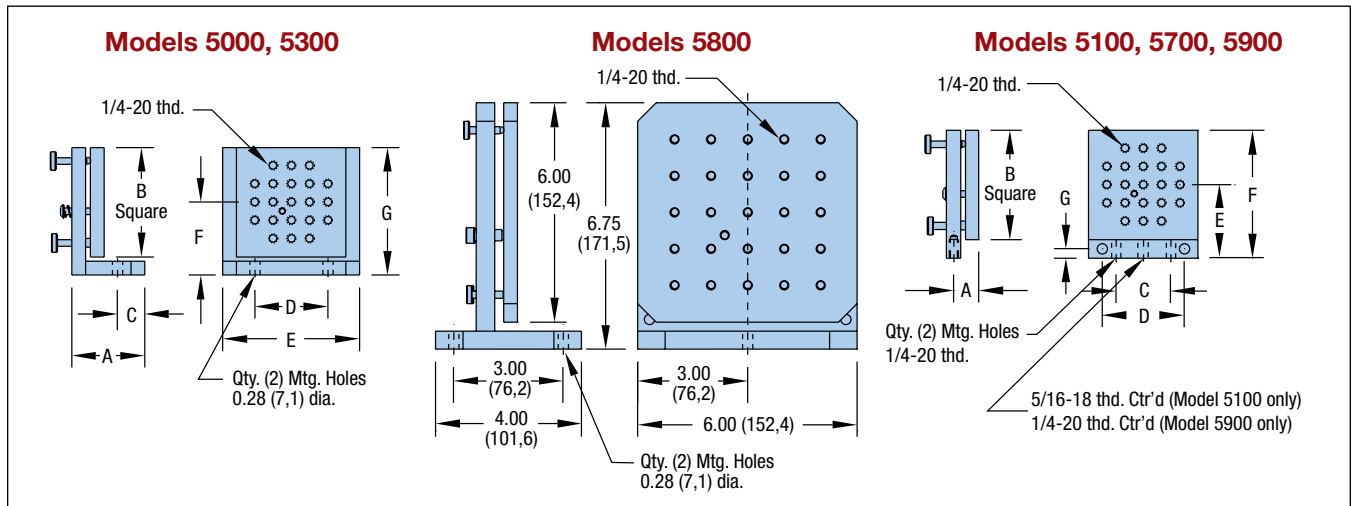
Model 5300/5700: 4.5" Square Mounting Surface

Model 5800/5900: 6.0" Square Mounting Surface

Parker Daedal mirror mounts are patterned with 1/4-20 holes on 0.5" or 1.0" centers to mount mirrors and other hardware. All models except the 5800 have two fine resolution 64-pitch adjustment screws to provide precise tilting of the mounting surface in two axes. The 5800 is equipped with three adjustment screws to provide precise tilting in two axes.



| Specifications | Angled Base Models | | | Flat Base Models | | |
|-------------------------|--|--------------|-------------|--------------------------|--------------|-------------|
| | 5000 | 5300 | 5800 | 5100 | 5700 | 5900 |
| Mounting Surface | | | | | | |
| Size (Square) – in (mm) | 3.0 (76,2) | 4.5 (114,3) | 6.0 (152,4) | 3.0 (76,2) | 4.5 (114,3) | 6.0 (152,4) |
| Holes – (Qty. x Center) | 21 x 0.50" | 49 x 0.50" | 25 x 1.0" | 21 x 0.50" | 49 x 0.50" | 25 x 1.0" |
| Range: | 12° | 8° | 4° | 12° | 8° | 4° |
| Resolution: | 1.0 arc-sec | 0.75 arc-sec | 0.5 arc-sec | 1.0 arc-sec | 0.75 arc-sec | 0.5 arc-sec |
| Weight – lb (kg) | 1 (2,2) | 2 (4,4) | 4.1 (9) | 0.7 (1,5) | 1.6 (3,5) | 3 (6,6) |
| Adjustment: | 2 – 64-pitch screws (3 screws on 5800) | | | 2 – 64-pitch screws | | |
| Construction: | Aluminum/stainless steel | | | Aluminum/stainless steel | | |
| Finish: | Black anodize | | | Black anodize | | |



| Model | Dimensions – in (mm) | | | | | | |
|-------|----------------------|--------------|--------------|--------------|--------------|--------------|--------------|
| | A | B | D | D | E | F | G |
| 5000 | 2.00 (50,8) | 3.00 (76,2) | 0.75 (19,1) | 2.00 (50,8) | 3.75 (95,3) | 2.00 (50,8) | 3.50 (88,9) |
| 5300 | 3.00 (76,2) | 4.50 (114,3) | 1.25 (31,8) | 4.00 (101,6) | 4.50 (114,3) | 2.88 (73,2) | 5.12 (130,1) |
| 5100 | 0.69 (17,5) | 3.00 (76,2) | 1.50 (38,1) | 2.25 (57,2) | 2.00 (50,8) | 3.50 (88,9) | 0.25 (6,4) |
| 5700 | 0.69 (17,5) | 4.50 (114,3) | 3.00 (76,2) | 3.75 (95,3) | 2.88 (73,2) | 5.12 (130,1) | 0.25 (6,4) |
| 5900 | 0.88 (2,4) | 6.00 (152,4) | 4.00 (101,6) | 5.38 (136,7) | 3.25 (82,6) | 6.25 (158,8) | 0.31 (7,9) |

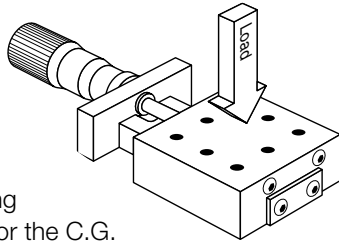
Travel

The travel listed is the total travel of the positioner from hard stop to hard stop.

Bearing Load Capacity

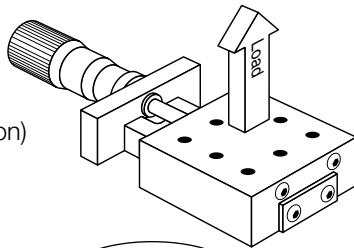
Normal Load

This is the maximum downward (compression) load or force which can be applied to the positioner perpendicular to the mounting surface. The center of force or the C.G. of the load must be located in the center of the mounting surface. For loads which are offset from this position, refer to moment loads.



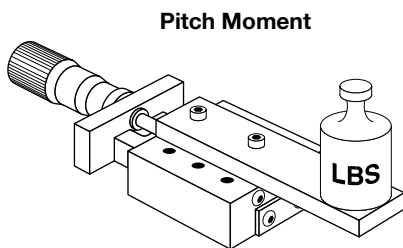
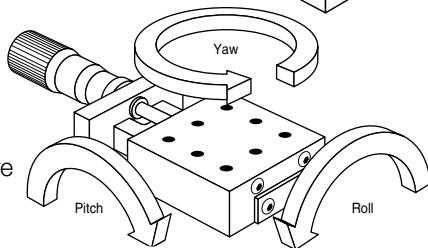
Inverted Load

Same as a normal load except in an upward (tension) direction.

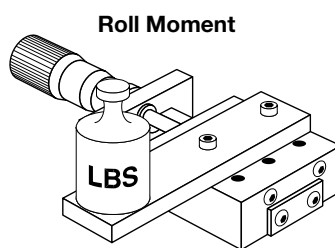


Moment Load

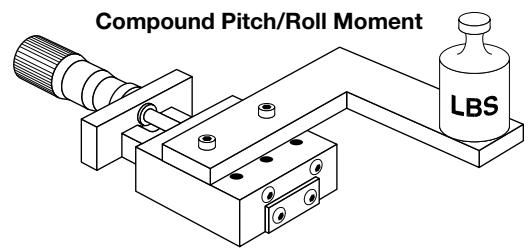
This refers to forces which are offset (cantilevered) from the bearing centers and therefore producing uneven loading on the bearings. This uneven loading means that some bearings are supporting more of the load than others. For this reason it is very important to determine if the moment loading for a given positioner is within acceptable limits. These moment forces are categorized by the direction they act in Pitch, Roll or Yaw; see diagram at left. When loading results in moments acting in only one of the moment directions (pitch, roll or yaw) it is called a single direction moment. Examples of this type of loading are shown below. How to calculate the maximum allowable moment load is discussed on the following page.



Pitch Moment



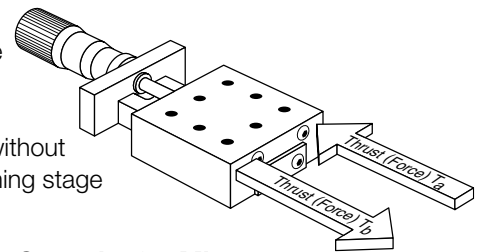
Roll Moment



Compound Pitch/Roll Moment

Thrust Capacity

Thrust capacity is the maximum force or load which can be applied in the direction of travel without damage to positioning stage components.



T_a and T_b Thrust Capacity for Micrometer, Fine Screw and Differential Screw Drives

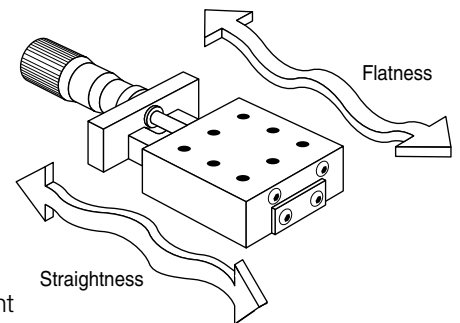
With these types of drives the mounting surface or stage carriage is pressed against the drive mechanism by means of a spring. Because of this the maximum thrust which the stage assembly can maintain is different when pressing toward the spring or away from it. When pressing toward the spring, the force is taken up by the drive mechanism (i.e. micrometer). While pulling away, the force is being held in place by the spring. Stages with this type of mechanism have two thrust capacity specifications (T_a and T_b). T_a refers to the load capacity against the micrometer and T_b is the spring load capacity. Refer to specific product drawings for load direction.

Screw Drive Thrust Capacity

Stages which use screw drive assemblies will only have one thrust capacity rating. This rating is for either direction of travel.

Straight Line and Flatness Accuracy

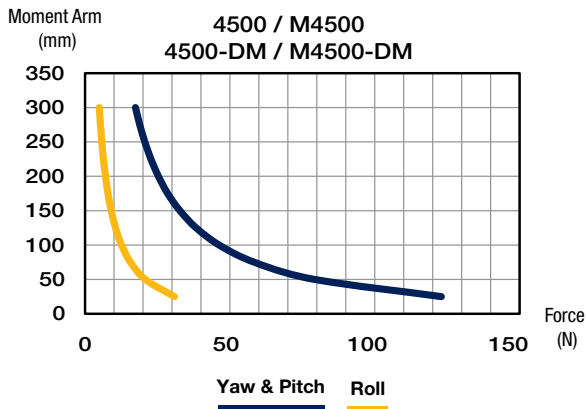
This is the amount of error a linear positioner deviates from an ideal straight line. The straight line accuracy is the error in the horizontal plane while flatness is the error in the vertical plane. Both the straight line and the flatness accuracy are measured at the moving carriage surface center.



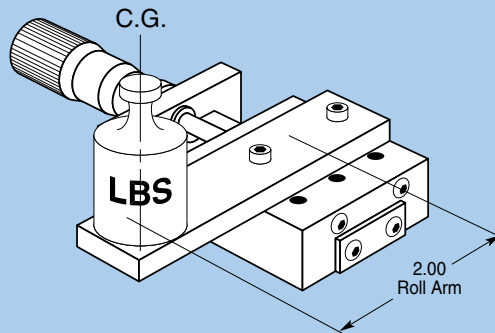
Calculating Maximum Allowable Moment Loads on Linear Slides and Stages

To determine if a load or force is within acceptable moment load ranges follow the steps below:

1. Calculate maximum load and or force which will be applied to the positioner. Include brackets and other axes which are mounted to the positioner.
2. Locate the center of gravity of the load.
3. Determine if there is a single or compound moment.
4. Measure the distance from the center of force or C.G. to the center of the linear stage carriage. This is the moment arm length and is designated A_S for single direction moments and A_C for compound moments.
5. Locate the moment load graph for the positioner you are interested in (located in back of individual product section, see example below). The X axis of the graph is the Force, the Y axis is the allowable moment arm A_S for single direction moments.
6. Locate the moment curve(s) which your load is acting in (pitch, roll or yaw).
7. Locate your load force on the X axis of the graph.
8. Draw a vertical line from the Force location on the X axis parallel with the Y axis.
9. Find the moment arm distance on the Y axis. Draw a horizontal line from this point parallel with the X axis until the vertical and horizontal lines intersect.
10. If the intersection point is below the moment curve in question then the stage is within acceptable limits. If the intersection point is above the moment curve, a positioner with a larger normal load capacity should be selected and the above steps repeated.



Example #1: Single Direction Moment Load



A 2 pound load is mounted to a single axis linear stage. The diagram shows the load's position in reference to the positioner carriage center. This shows that the load is offset 2 inches from the carriage center creating a roll moment.

The selected positioner is a 4502 ball stage. (The moment load curve for the 4502 is shown below.) First, find 2 pounds on the X axis and draw a vertical line. Next, draw a horizontal line starting at the 2 inches position on the A_S axis (single direction moment). Mark the intersection point.

In this example the intersection point is below the roll moment curve, indicating that the stage is acceptable for this application.

