The Hositrad MA20-series
XYZ Manipulator

With 2.75" (CF38) Flanges

The new MA2000 series of precision XYZ manipulators is, quite simply, the best value on the market today.

The MTS MA(nipulator) sets the standard in terms of features, quality, possible configurations and cost.
Standard features:

- **Top Flange Tilt - with ±2° adjustment. A Hositrad Exclusive!**

- Compact design - see drawing
- Adjustable, crossed roller bearings for extra rigidity.
- Bellows I.D. 2.0" (50 mm) allows full (square pattern) translation.
- Compact, rugged design with full Z axis frame provides extra rigidity to allow strokes to 12" (300 mm). **No flimsy, unsupported guide rods!**
- Large micrometers are available.
- XY travel ± 0.5" (12.5 mm) square pattern).
- Resolution to > 0.0001" (2.5 μ) with large micrometers.
- Repeatability to >0.00005" (1.25 μ) with large micrometers.
- Resolution to >0.001" (10 μ) with small micrometers.
- Repeatability to >0.0005" (5 μ) with small micrometers.
- Z travel 2" -12" (50 - 300 mm).
- Standard Z resolution >0.001" (25 μ)
- Standard Z repeatability >0.0005" (12.5 μ)
- Optional resolution on 2" Z travel >0.0001" (2.5 μ)
- Repeatability >0.00005" (1.25 μ)
- Field conversion to stepper motors in 15 minutes. All models are pre-threaded for limit switches.
- Top flange may be either tapped or non-tapped to suit your equipment. **Another MTS exclusive!**
- Base flange 6" (100 mm) conflat is standard. Optionally available with 5 mini conflats.
- Optional base flange 2¼" (CF38), 4½" (CF63), and 8" (CF150) conflat.
- See the User's manual for more information.
Square Pattern

Circular Pattern vs. Square Pattern

XY Manipulator motions are defined as either Circular Pattern (sometimes called Vector Sum) or as Square Pattern.

For example, a manipulator with a ±0.5" (±12.5 mm) of XY travel, Circular Pattern, will move the center of the translated device anywhere within a 1" (25 mm) circle, as shown in the graphic, below. Note that the radial offset (the sum of the vectors) will remain constant while the individual X and Y offsets vary. For a manipulator with ±1.0" (±25 mm) of XY travel, Circular Pattern, the values will be twice that of the ±0.5" (±12.5 mm) values but the relationships will persist.

Unless specified otherwise, all MTS manipulators, as well as all other manufacturer's manipulators are circular pattern. Also, the minimum bellows ID must equal twice the radial offset plus the diameter of the device to be translated. Be sure to keep this in mind when specifying a manipulator.

A manipulator with ±0.5" (±12.5 mm) of XY travel, Square Pattern, will move the center of the translated device anywhere within a 1" square so that when both the X and Y orthogonal offsets are at 0.5" (12.5 mm), the bellows is actually offset 0.707" (18 mm). As above, for a manipulator with ±1.0" (±25 mm) of XY travel, the values will be twice that of the ±0.5" (±12.5 mm) values, but the relationships will persist.
Large Micrometers

Drawing

www.hositrad.com  
email: info@hositrad.com
MA2000 series Part No List

XY travel ± 0.5" (12.5 mm)

**SQUARE pattern**

2" I.D. bellows

<table>
<thead>
<tr>
<th>Model</th>
<th>Compressed Height</th>
<th>Z Stroke</th>
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<tbody>
<tr>
<td>MA2002</td>
<td>4.75&quot; (120)</td>
<td>2&quot; (50)</td>
</tr>
<tr>
<td>MA2004</td>
<td>5.05&quot; (128)</td>
<td>4&quot; (100)</td>
</tr>
<tr>
<td>MA2006</td>
<td>5.35&quot; (135)</td>
<td>6&quot; (150)</td>
</tr>
<tr>
<td>MA2008</td>
<td>5.65&quot; (143)</td>
<td>8&quot; (200)</td>
</tr>
<tr>
<td>MA2010</td>
<td>5.95&quot; (150)</td>
<td>10&quot; (250)</td>
</tr>
<tr>
<td>MA2012</td>
<td>6.25&quot; (159)</td>
<td>12&quot; (300)</td>
</tr>
</tbody>
</table>

Dimensions are in inches (mm) - and - Part No’s includes small micrometers and 6" (150 mm) base flange with no mini conflats

<table>
<thead>
<tr>
<th>Options</th>
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<tbody>
<tr>
<td>Base flange 8&quot; (CF150) with 5 minis (CF16), Stepper motors and limit switches, per axis, Stepper motor controller and power supply, first axis, add:</td>
</tr>
</tbody>
</table>
DC controller and pendant switch

Stepper motor controller for each additional axis,

Large micrometers, 0.0001" (.0025 mm) divisions,

Custom MA2002 with 4.5 CF Top Flange, large micrometers and 5 Mini CFs.