

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 $\pm 2^\circ$ 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 $\pm 0.5"$ (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 2¾" (CF38), 4½" (CF63), and 8" (CF150) conflat.
- See the User's manual for more information.

Square Pattern

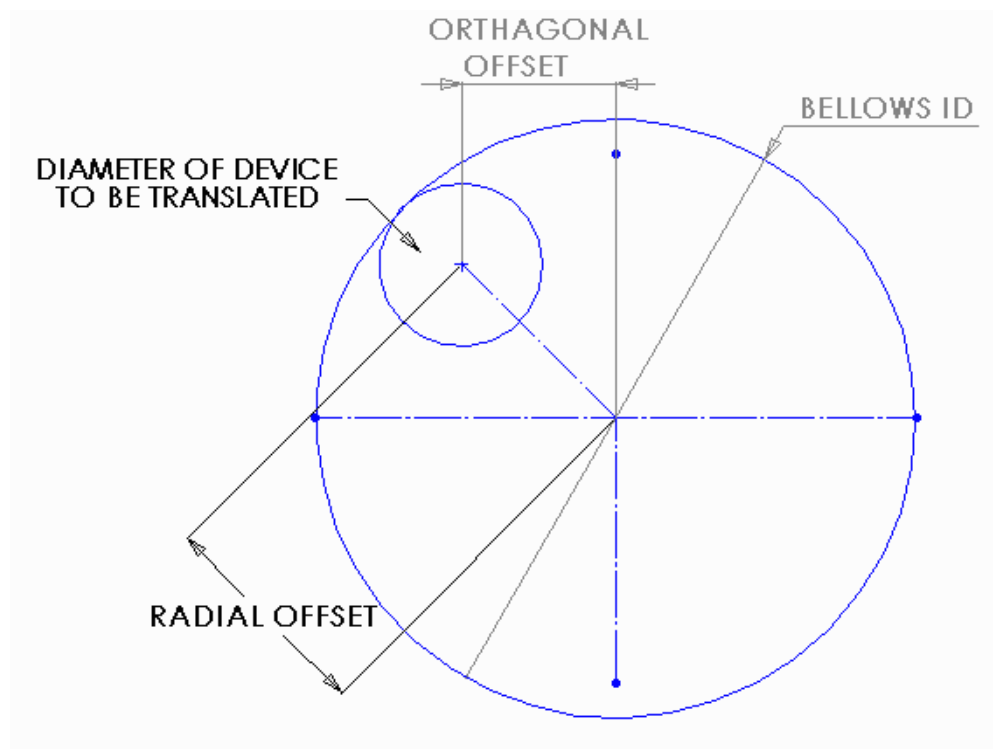
Circular Pattern vs. Square Pattern

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

For example, a manipulator with a $\pm 0.5"$ (± 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 $\pm 1.0"$ (± 25 mm) of XY travel, **Circular Pattern**, the values will be twice that of the $\pm 0.5"$ (± 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.

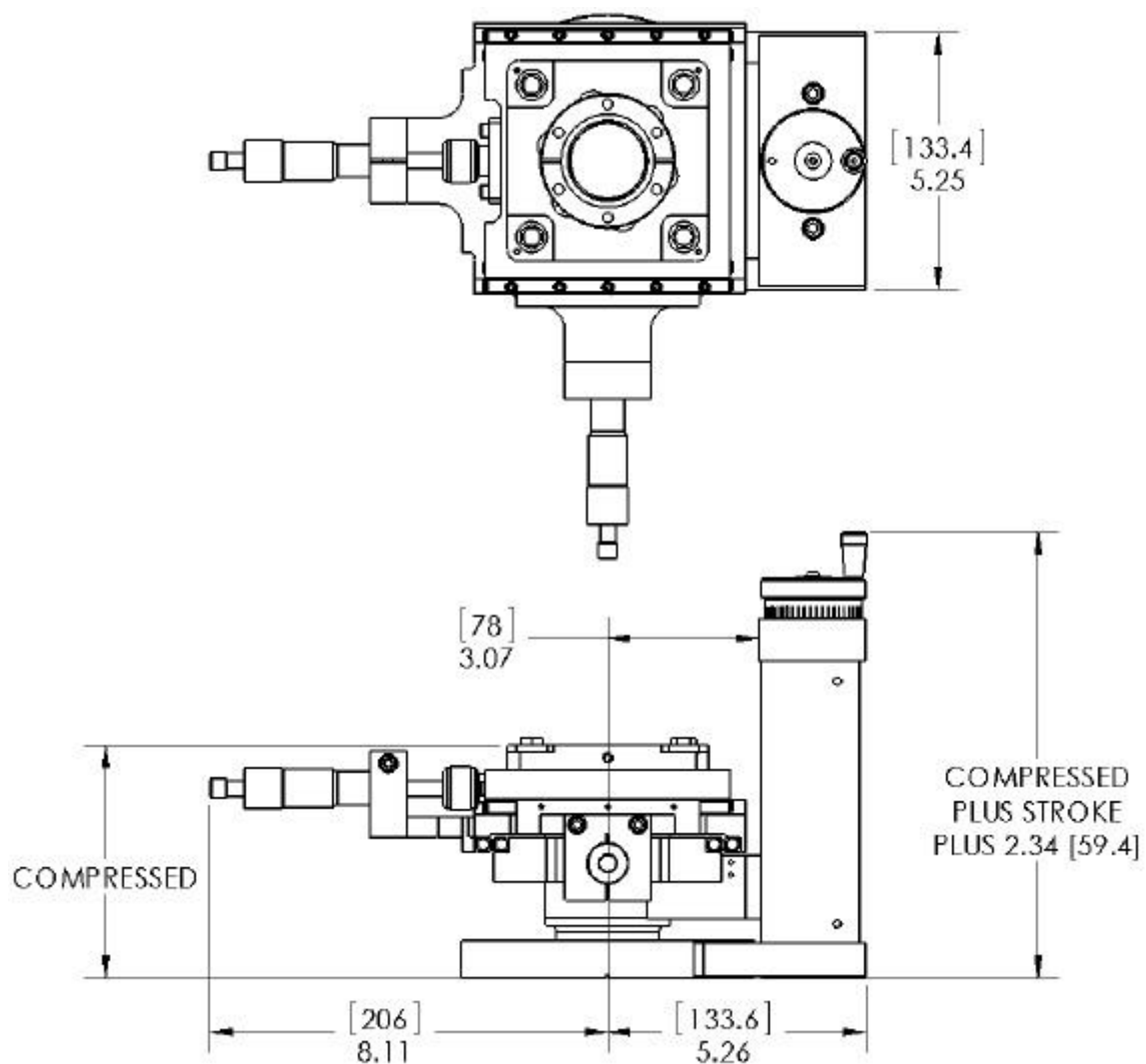
A manipulator with $\pm 0.5"$ (± 12.5 mm) of XY travel, **Square Pattern**, will move the center of the translated device anywhere within a 1" **square** so that when both the X and Y orthogonal offsets are at 0.5" (12.5 mm), the bellows is **actually** offset 0.707" (18 mm). As above, for a manipulator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



Large Micrometers



Drawing



MA2000 series Part No List

XY travel $\pm 0.5"$ (12.5 mm)

2" I.D. bellows

Model	Compressed Height	Z Stroke
MA2002	4.75" (120)	2" (50)
MA2004	5.05" (128)	4" (100)
MA2006	5.35" (135)	6" (150)
MA2008	5.65" (143)	8" (200)
MA2010	5.95" (150)	10" (250)
MA2012	6.25" (159)	12" (300)

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

Options

Base flange 8" (CF150) with 5 minis (CF16), <u>Stepper motors</u> and limit switches, per axis, Stepper motor controller and power supply, first axis, add:	Base flange 6" (CF100) with 5 minis (CF16), Base flange 2.75" (CF40) Z-Axis DC Motor with limit switches DC controller and pendant
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Stepper motor
controller for
each additional axis,

switch

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



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