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** Vaqtec 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.