

Ultra High Vacuum Manipulators MULTIAxis

In the space, travels are shown in the three directions of the Cartesian axis generally named X, Y, Z. If we add three rotations, called Rx, Ry, Rz, around these three axes, we have a six degrees of freedom system.

A manipulator is the combination of several movements, which allow to position a sample in a defined space point.

A manipulator can be realized with one or more degrees of freedom.

Usually, in UHV chambers, manipulators up to six degrees of freedom are mounted. They are called: "X, Y, Z Manipulators" and the additional rotations are specified aside with different denominations (polar, azimuthal, tilt, flip, axial, tangential, etc.). Later, the sample centre will get as the co-ordinates origin as shown in fig.1 and the rotations will be considered positive in clockwise.

To make more flexible the manipulator's use, they are designed in modular shapes with only some degrees of freedom. It is possible to realize a multitude of manipulators, with different aptitudes, connecting together several modules, that, according to needs, can be adapted. The VACUO modules are designed to fit the widest number of applications in UHV and cryogenics fields (fig.2).

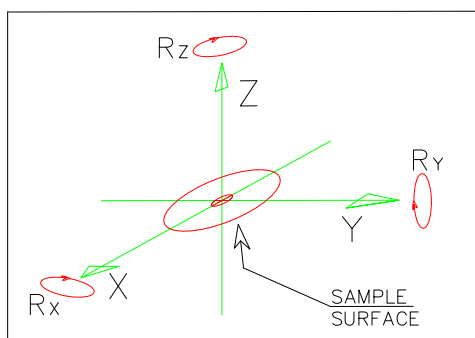


fig. 1



fig. 2 Liquid sample RF Magnetron

Mod XY15Z150 MULTIAxis MANIPULATOR

- * FULLY BAKEABLE TO 300°C
- * STANDARD X, Y TRAVEL ± 15 mm (vectorial)
- * ROTATION 360° CONTINUOUS
- * STANDARD Z TRAVEL 150mm
- * LONG LIFE CYCLES (NO BELLOWS)
- * MOUNTING IN ANY ATTITUDE
- * WIDE CHOICE OF TRASFERABLE SAMPLE HOLDERS

XY15Z150 MULTIAxis manipulator has four degrees of freedom.

They are realized by the combination of several modules:

X, Y axis have a vectorial stroke ± 15 mm; Z axis has 150mm stroke and rotates 360° continuously.

Membrane bellows (see fig 2) have been eliminated and substituted by magnetic rotator (see fig 3) and homokinetic cardan joints allowing to extend the life time and reduce the price.

New materials allow to bake out till 300°C improving the ultimate vacuum in the field of 10^{-11} mbar.

In fig.4 a standard module is shown:

- X, Y strokes ± 15 mm
- Z stroke 150 mm
- Z rotation 360°
- IR furnace $< 900^\circ\text{C}$
- polarization 1 KV

2" Sample transfer can be chosen between sliding shape or bayonet.

Infrared furnace with quartz lamp can be mounted to reach 900°C.

Sample holder can be insulated to 1KV.



fig 3 CF40 Magnetic Rotator