# Choosing between 3 Z modes



**Very important: before switching Z-modes, the spring locking ring must be unscrewed.**

## Switching between Z modes

1. Plate surface : Set : Screw the spring locking ring all the way up and surface the tool on the material. If the nosecone is on the spindle, floating engraving can be performed. If the nosecone was removed before you started the surfacing procedure, you can re-lock the spring pressure ring and engrave absolute depths after having surfaced the tool. The depths then have to be entered.
2. Plate surface: Auto : In this mode the spindle always has to be in the floating mode. In this mode never lock the spring pressure ring, as this may damage the machine.
3. Plate surface : Map : Screw the spring locking ring all the way up. Remove the nosecone retaining ring from the spindle. Place the optional spherical rod in the spindle. Position the spindle in the upper left corner of an imaginary rectangle of which you want to digitize the surface, specify the width and height of that field, the measuring distances, etc. Once the surface is digitized, you can replace the spherical rod with a cutter, surface anywhere on the material , lock the spring pressure ring, and engrave your job. You can switch between 3 options by clicking on the relevant button in the “Plate Surface” field in the Cyborg virtual pendent. The options are: - Plate surface : set - Plate surface : auto - Plate surface : map

## The 3 options

### 1. Plate surface : set

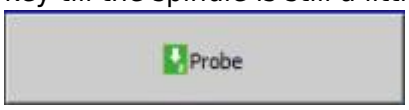






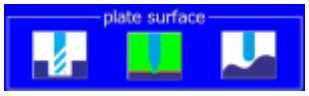
In this mode the system can use the “surface” proximity switch to determine the plate surface, both for working with or without nosecone. (See page….) How to use the “set” option: When using the “set” option, make sure the black knurled spring pressure ring is screwed all the way up. Make sure you position the spindle above the area of your workpiece where you want to set surface. Do this before pushing the “set surface” key. Press the “set surface” key on the virtual pendent. You can now either push the Z down and the Z up keys to position the spindle to the level where you want Z to be 0, then press the Enter  key in the set surface window, or You can push the Z down 

key till the spindle is still a little above the plate surface, then push the “Probe”




key in the “set surface” window. As long as you push the “probe” key the spindle will slowly move down and the Z=0 level will be set automatically.

### 2. Plate surface : auto




In this mode the system can only be used with nose cone, hence in the floating mode. With the first Z down move the spindle will travel down and reach the material. The nosecone will stop the spindle movement, whilst the Z-motor still continues to move the inner spring loaded Z-assembly down. Shortly after the nosecone reaches the material surface, an electronic proximity switch will be activated. That signal indicates to the machine that the Z-down movement has to stop, and the XY movements, in other words the engraving of the character, can start. After having engraved the first character (or vector) the cnc controller knows exactly where the plate surface is and will use this level for all remaining characters (or vectors). Note: When using the “Auto Z” option, make sure the black knurled spring pressure ring is screwed all the way up.

### 3. Plate surface : map




In this mode the system will digitize the surface of a non flat object. This scanning cycle results into a rectangular cloud of points, each with a particular X, Y, and Z coordinate. This cloud of points is automatically saved into the controller’s memory. The job(s) which is (are) engraved afterwards, are automatically projected onto this 3d relief. This makes it possible to engrave on uneven surfaces without the help of a nosecone.

**Notes:**

1. This system works for limited height differences and not for steep slopes. In any case, for safety reasons the Z safe lift has to be set higher than the height of the relief of the object to be mapped.
2. When using the “Map” option, make sure the black knurled spring pressure ring is screwed all the way up.
3. The images on the left show the default map window when the surface button is hit with the “map” option active. The second image shows a typical set of data to perform a surface scan. In this case a surface of 150mm x 150mm will be scanned with one scan point every 10 mm. the Z-down move speed to find the surface in this case is 15 mm/sec and after having found the surface at each scan point the spindle in this case moves up 10 mm before moving to the following scan point.

**Continue to the table of contents.**

From:
https://manuals.cyborg-engravers.com/ - **cyborg-engravers**

Permanent link:
**https://manuals.cyborg-engravers.com/doku.php?id=en:x300:choosing_z_modes&rev=1663845515**

Last update: **2022/09/22 13:18**