

# BitZero V2 for Nomad 3

## Setup and User Guide



The BitZero V2 is a low-profile variant of the Carbide 3D touch probe for setting zero location on your stock material. It is tailored for the Nomad 3's unique constraints: reduced Z-clearance compared to the Shapeoko and an electrically-grounded table. The BitZero V2:

- Uses a magnetic ground connection.
- Uses a circular bore to probe in the X/Y direction so tool diameter doesn't matter.
- Is designed to be used on any material—wood, plastic, metal, synthetics.
- Features a non-conductive plastic base to insulate it from the workpiece so you can probe conductive materials. The machined plastic bottom will keep the BitZero V2 electrically isolated even if it's placed directly on the metal table. It will only trigger on contact with a tool in the spindle.
- Uses our active probing design which makes it easy to confirm everything is working properly.
- Includes  $\frac{1}{4}$ " and  $\frac{1}{8}$ " probing pins to eliminate accuracy problems caused by tool flutes.

Watch the [Nomad 3 BitZero V2 video](#).

If you run into any issues setting up or using your BitZero V2, please contact us at: [support@carbide3d.com](mailto:support@carbide3d.com).

**NOTE:** Carbide Motion 5.14 or higher is required for the BitZero V2.

## BitZero V2 Kit Contents

The BitZero V2 kit contains all of the components shown in **Fig. 1** and listed in the table below.

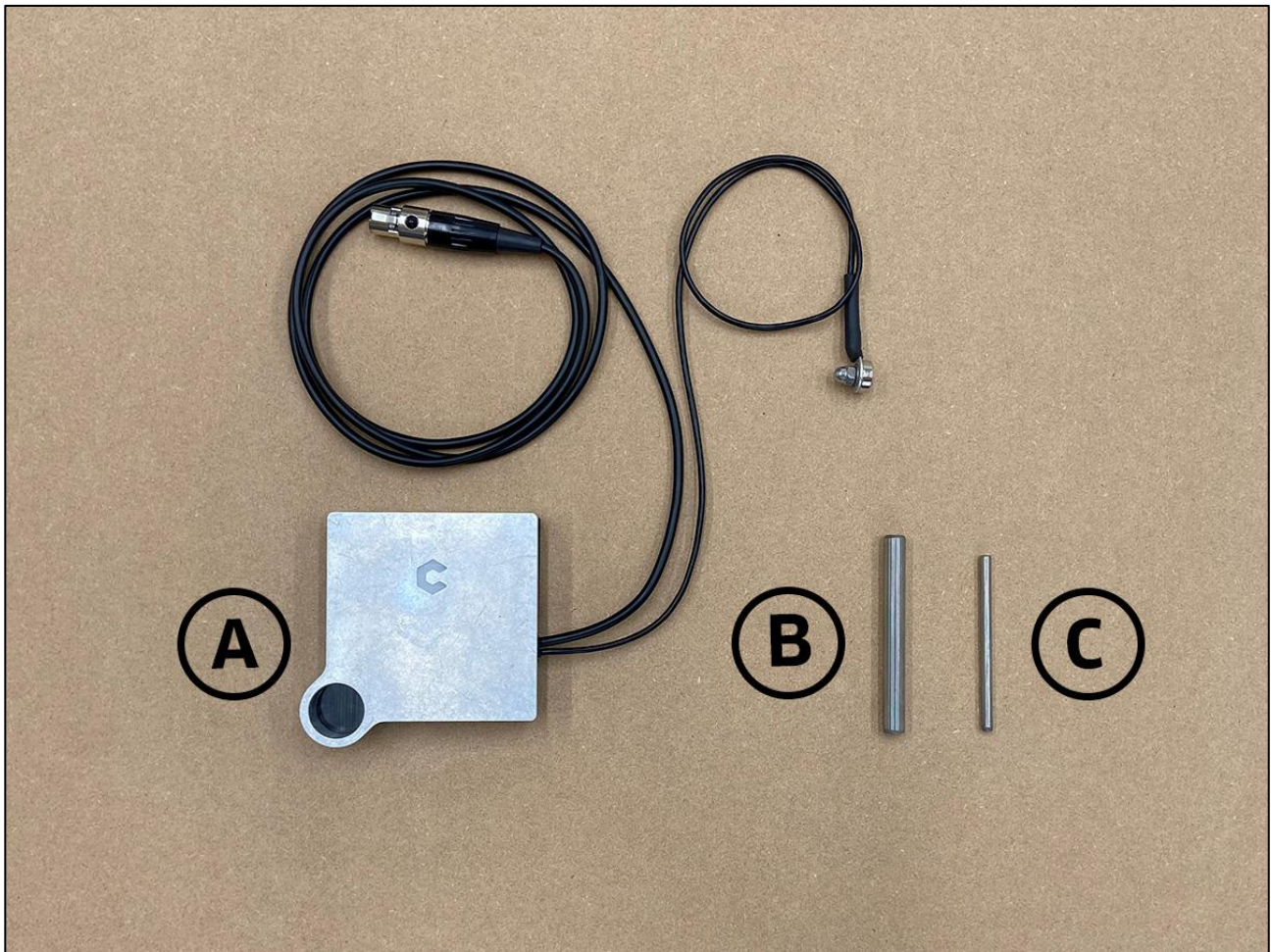


Figure 1

Item	Description	Qty	Note
A	BitZero V2	1	Touch Probe with Magnetic Grounding Clip
B	¼" Probing Pin	1	Probing Tool, Installs in the Spindle
C	⅛" Probing Pin	1	Probing Tool, Installs in the Spindle

## Connecting the BitZero V2

Plug in your BitZero V2:

1. Plug in the BitZero V2 into the top connector on the outside of the Nomad 3 enclosure. The small black release button on the connector faces up. See *Fig. 2*.



Figure 2

## Using BitZero V2 with a Probing Tool Vs. an End Mill

While you can use an end mill while work probing with the BitZero V2, it is better to use one of the included probing pins. The flutes of an end mill do not always register against a touch probe at the full radius of the tool. A probing pin is consistent all the way around, so no matter how it's rotated in the router/spindle, it will provide the most accurate results possible.

## Using the Interlock Key

The interlock key is specifically provided in the Nomad 3 kit to allow you to set job zero with the Nomad's protective door open. To use, simply place the interlock key on the face of the interlock.

**WARNING:** Do **NOT** use the interlock key to override the safety interlock while machining. Always close the machine door while the spindle is on.

## Routing the BitZero V2 Cable

As you use the BitZero V2 make sure the cable hugs the outside of the enclosure, so there is plenty of slack cable inside the enclosure. This will help prevent the BitZero V2 from shifting as the table and spindle move into position.

If you do notice that your BitZero V2 moves slightly during jogging or during the probing sequence, you can:

- Remove the tension in the cable by repositioning it (e.g., try draping the cable up and over the side of the enclosure).
- Secure the BitZero V2 to the stock with a piece of double-sided tape.

## Grounding the BitZero V2

The BitZero V2 must be properly grounded in order to activate. To ground the probe, place the magnetic grounding clip on the collet nut or installed probing pin. If using the probing pin for grounding, make sure at least  $\frac{1}{2}$ " of the tool remains unobstructed. See *Fig. 3*.



Figure 3

## Testing the BitZero V2

You can verify the probe is active and that everything is working properly by tapping the BitZero V2 body against the probing pin and checking for the status light LED on the top to turn red. Ensure the probe is properly grounded. See *Fig. 4*.

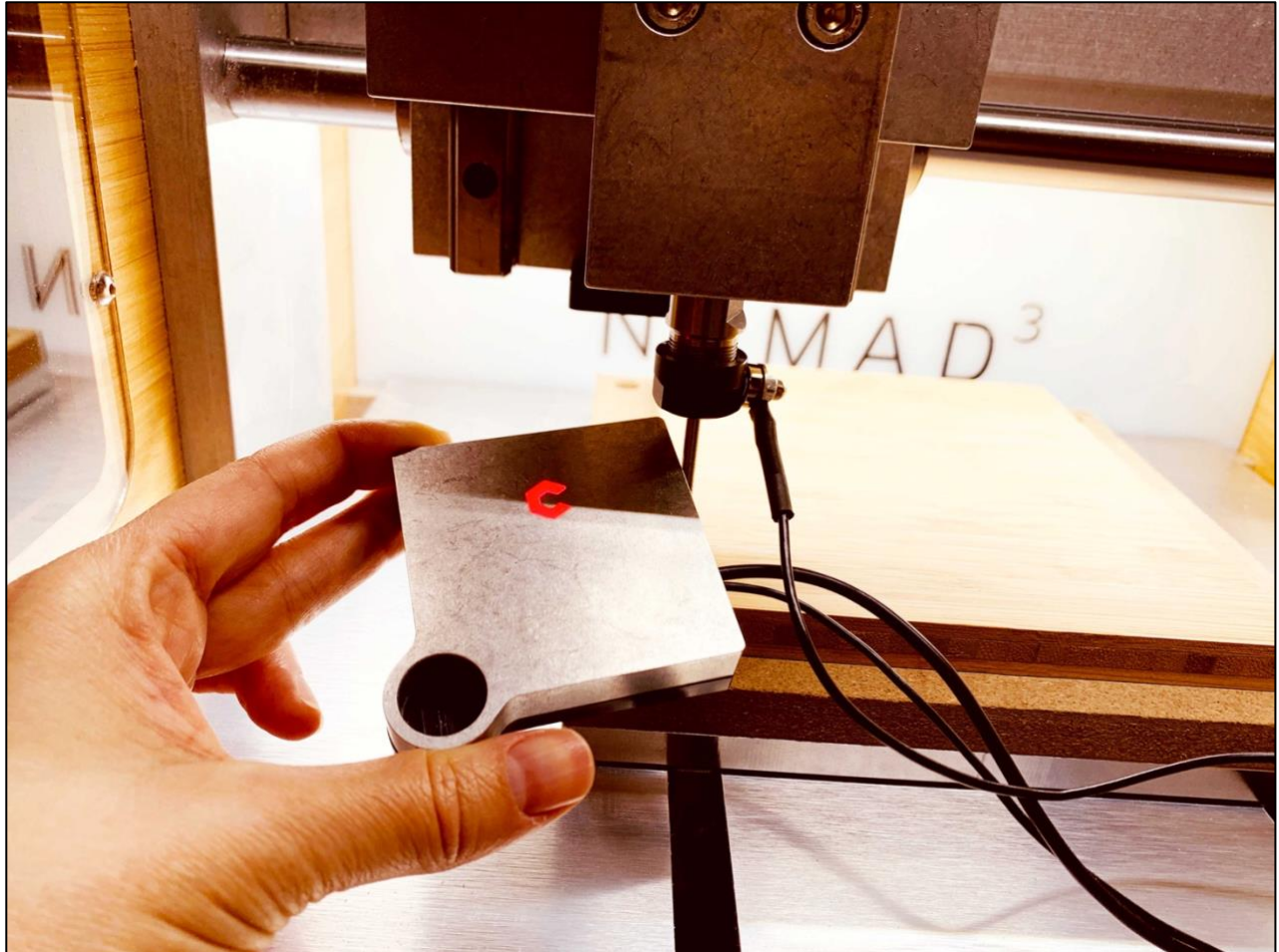


Figure 4

## Using the BitZero V2 to Set Job Zero

You can use the BitZero V2 to set the following zero locations:

- The lower-left corner of your stock (X, Y, and Z)
- The surface of your wasteboard/stock (Z only)
- One side of your stock (X or Y only)

Click one of the zero location options to go to the specific instructions on the next pages.

## Set Job Zero on the Lower-Left Corner

You can use BitZero V2 to find job zero on the lower-left corner of your stock. To find and set zero for X, Y, and Z:

1. Connect to and home the machine.
2. When prompted to load a tool, install a probing pin in the collet.
3. Place the interlock key on the face of the Nomad 3's safety interlock.
4. Set the BitZero V2 on the lower-left corner of your stock with the locating edges overhanging, but pressed up against the sides of your stock. See **Fig. 5**.
5. In Carbide Motion, click **Jog** in the top menu bar to open the *Jog screen*.
6. Jog the machine until the tip of the probing pin is just inside the circular bore on the corner of the BitZero V2. See **Fig. 5**.
7. Attach the magnetic grounding clip to either the collet nut or the probing pin in the spindle. See **Fig. 5**.
8. Tap the probe against the probing pin to ensure everything is working. Return the probe to its position flush against the corner.



Figure 5

9. Click the **Probe** button to open the *Probe Workpiece* window. See **Fig. 6**.

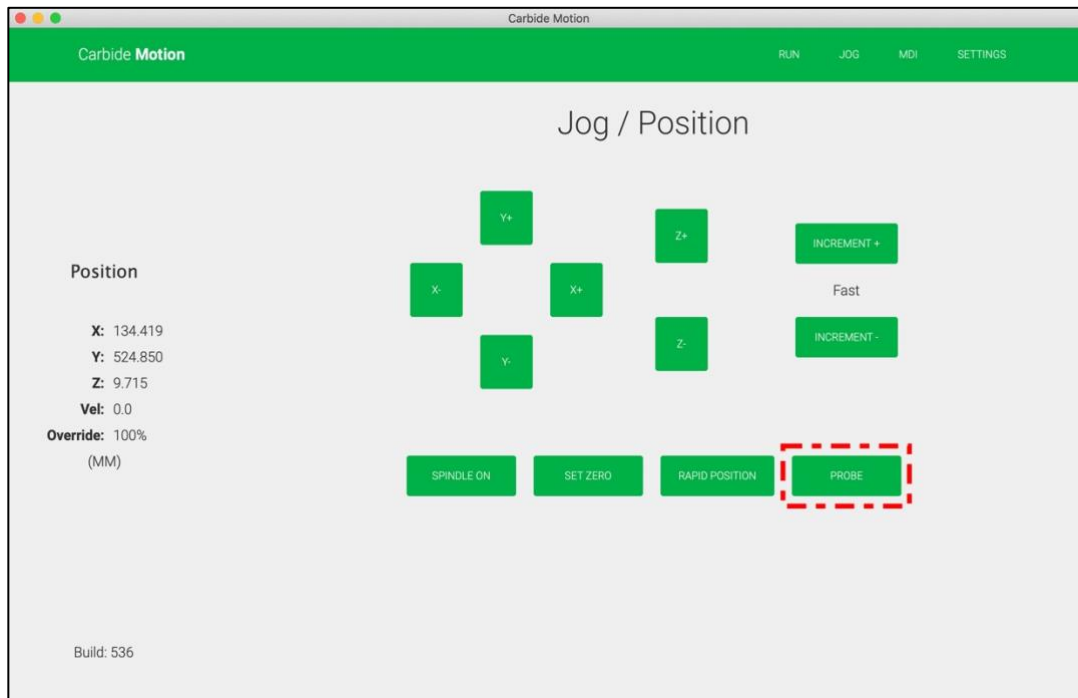


Figure 6

10. Select **BitZero V2** for the probe type. See **Fig. 7**.

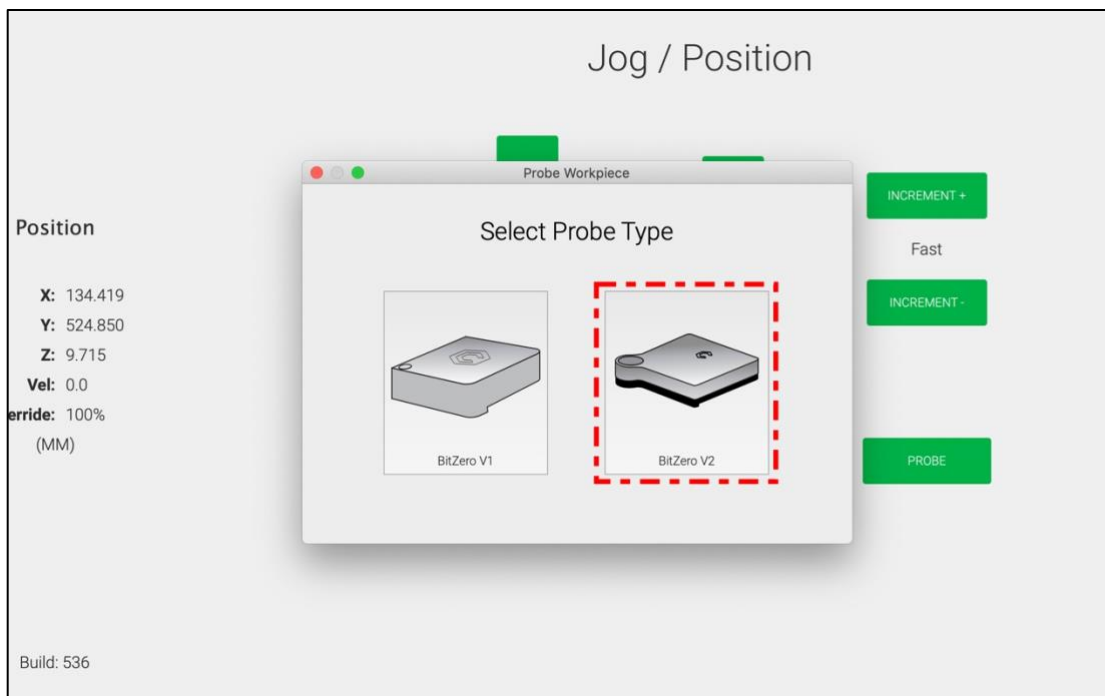


Figure 7

11. Select the **Corner** probe cycle. See *Fig. 8*.

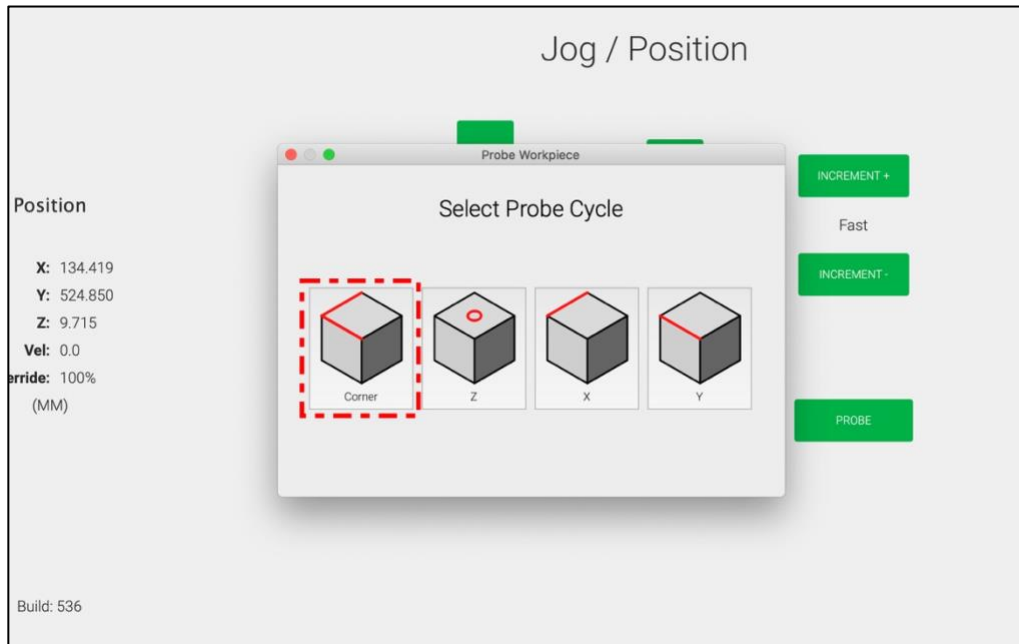


Figure 8

**NOTE:** Make sure your setup matches the graphic shown onscreen for the probe cycle you have selected. See *Fig. 9*. If your setup does not match, the calculated zero location will be incorrect.

12. Click the **Begin Probe** button to run the probing sequence and set zero for X, Y, and Z. See *Fig. 9*.

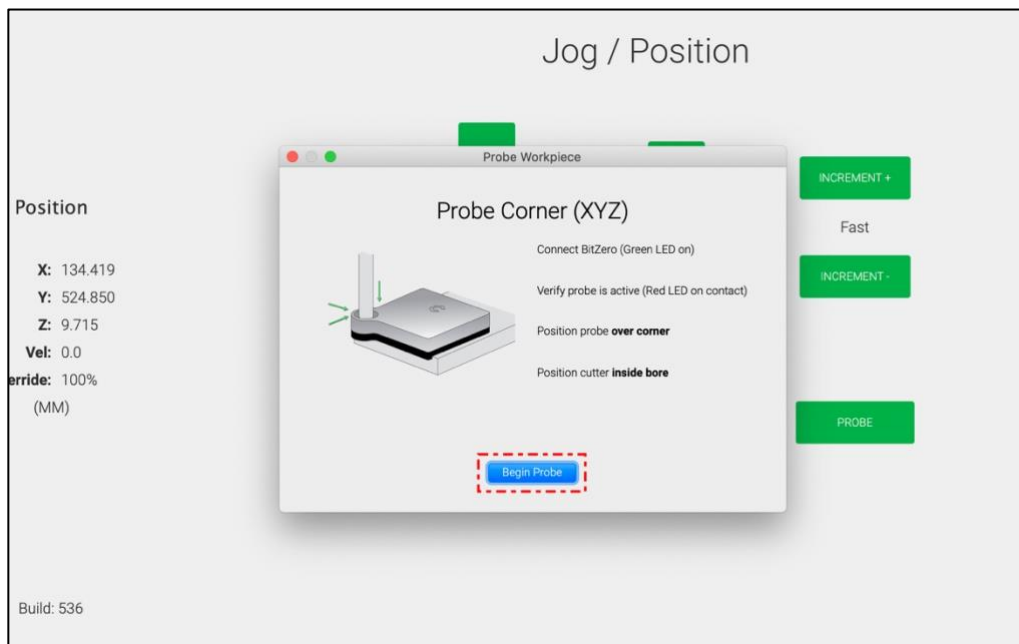


Figure 9



13. If you receive an error message, see **Fig. 10**, repeat steps 1–12 to run a new probing sequence.

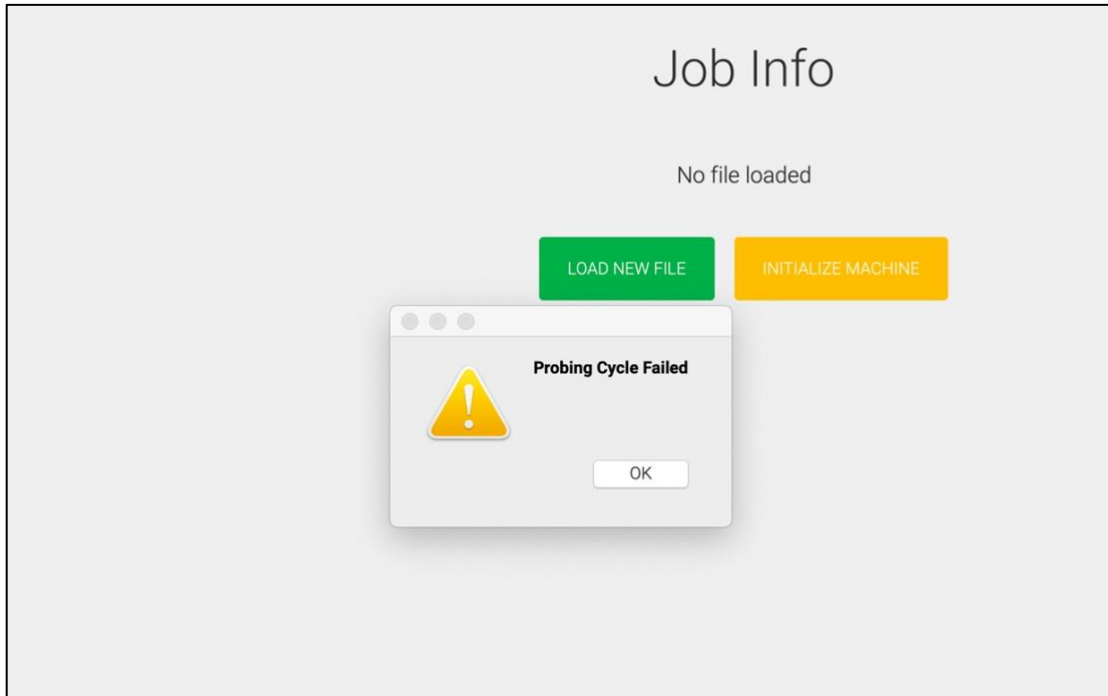


Figure 10

14. If you do not receive an error message, you're ready to begin machining. Remove the BitZero V2 and grounding clip from the machine enclosure.
15. Remove the interlock key and set it outside of the machine enclosure.

## Set Job Zero for Z-Zero Only

If you only want to find the zero location for the top of your material or wasteboard, you can find and set Z-zero only:

1. Connect to and home the machine.
2. When prompted to load a tool, install a probing pin in the collet.
3. Place the interlock key on the face of the Nomad 3's safety interlock.
4. Set the entire BitZero V2 on top of the surface to be measured (i.e. your stock). See **Fig. 11**.
5. In Carbide Motion, click **Jog** in the top menu bar to open the *Jog screen*.
6. Jog the machine until the tip of the probing pin is a few millimeters above the surface of the BitZero V2.
7. Attach the magnetic grounding clip to either the collet nut or the probing pin in the spindle. See **Fig. 11**.
8. Tap the probe against the probing pin to ensure everything is working. Return the probe to its position on top of your stock.



Figure 11

9. Click the **Probe** button to open the *Probe Workpiece* window. See **Fig. 12**.

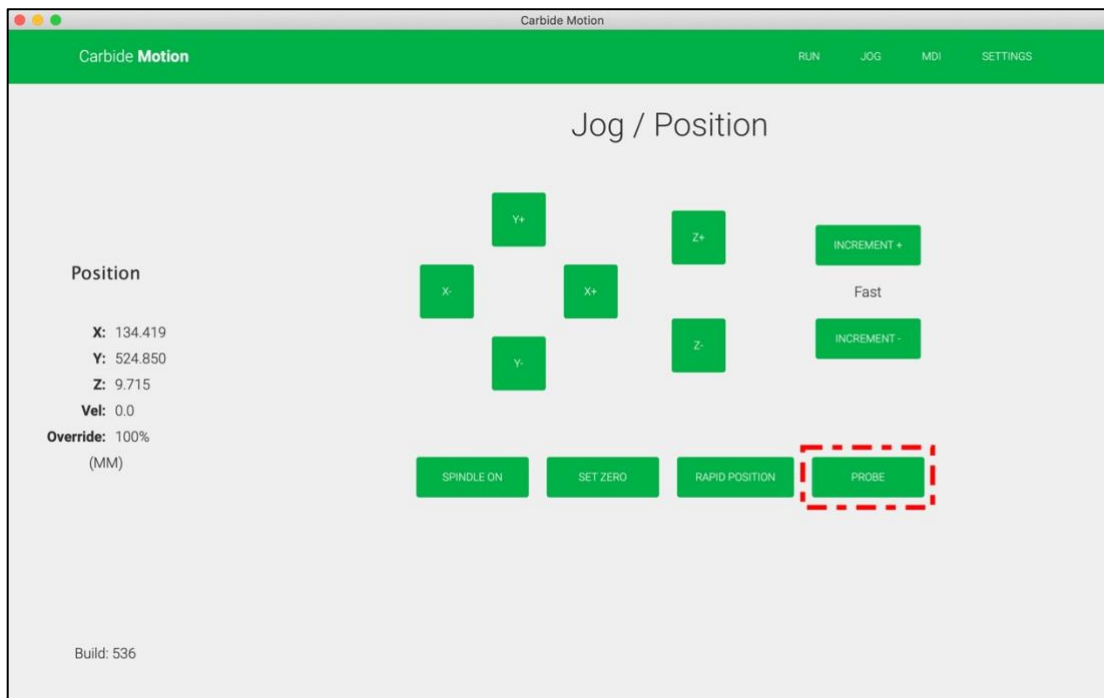


Figure 12

10. Select **BitZero V2** for the probe type. See **Fig. 13**.

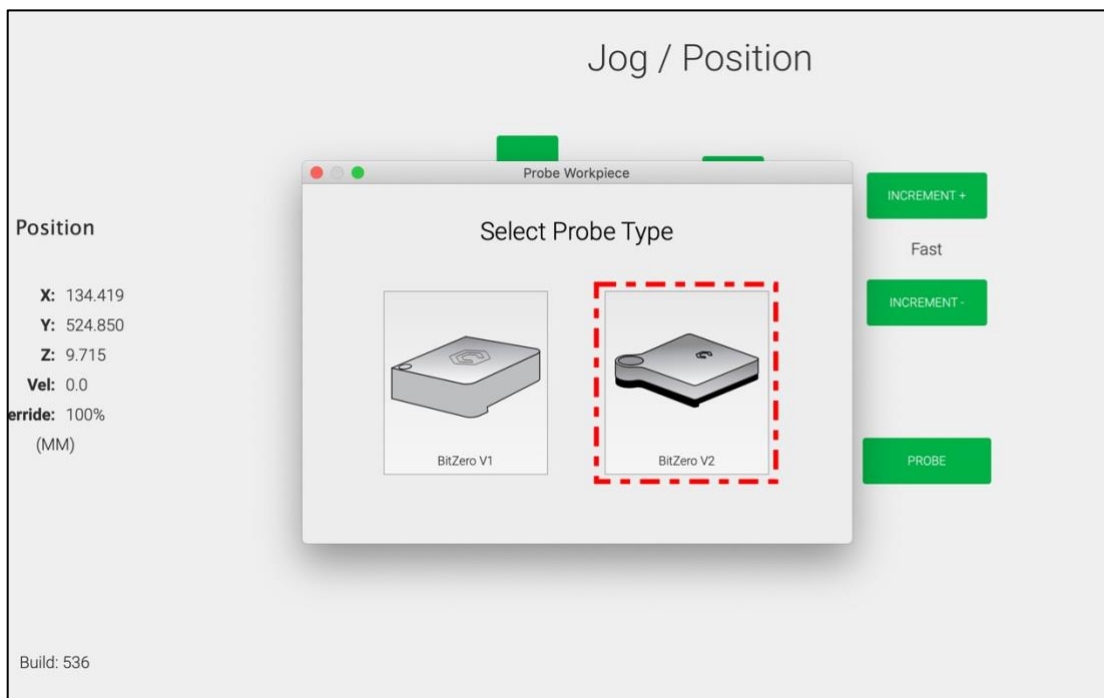


Figure 13

11. Select the Z probe cycle. See *Fig. 14*.

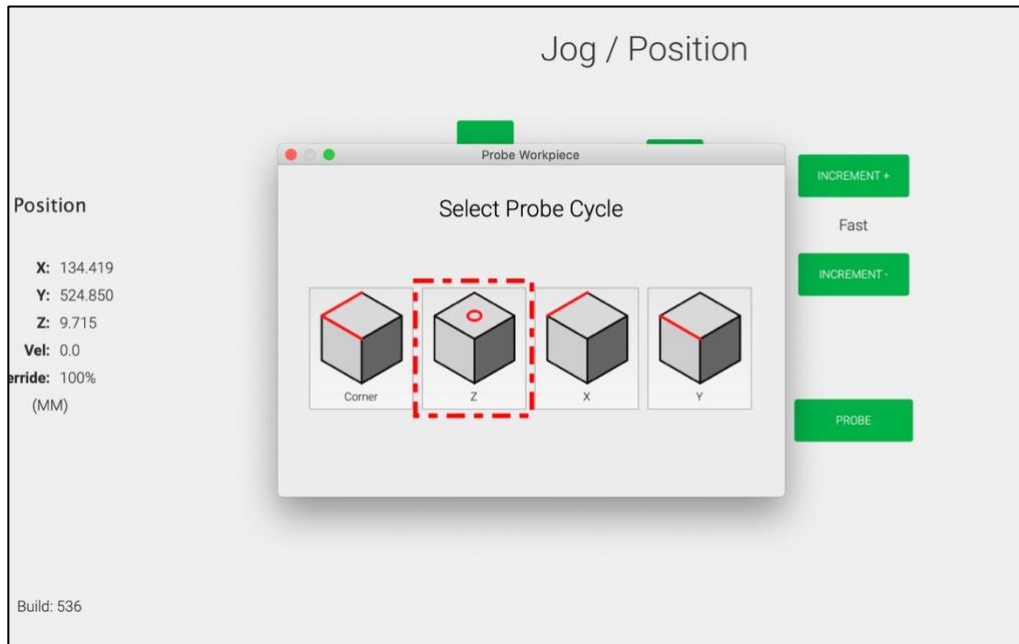
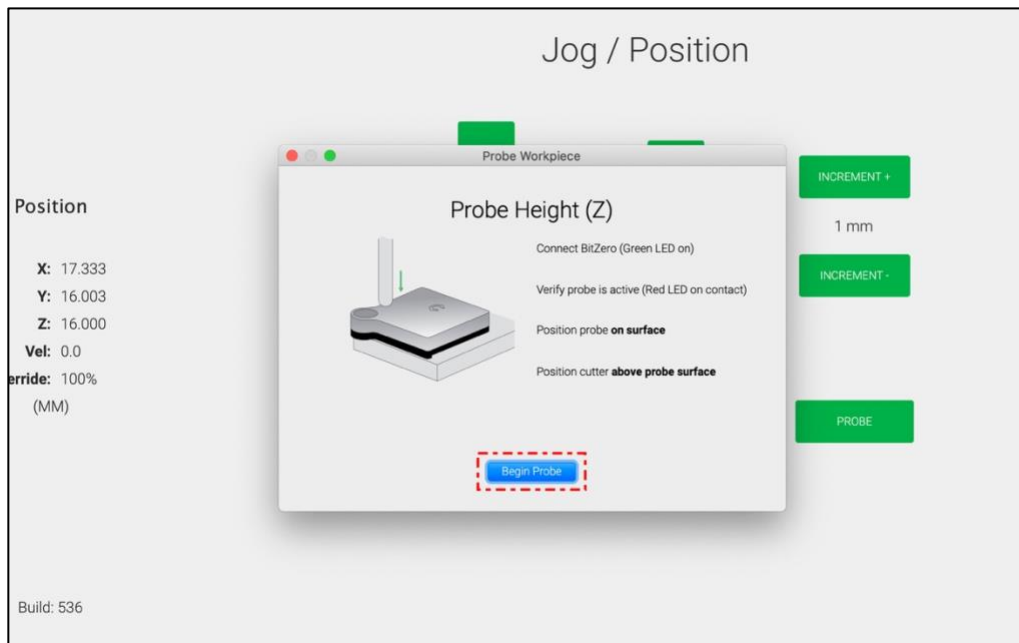


Figure 14

**NOTE:** Make sure your setup matches the graphic shown onscreen for the probe cycle you have selected. See *Fig. 15*. If your setup does not match, the calculated zero location will be incorrect.

12. Click the **Begin Probe** button to run the probing sequence and set zero for Z. See *Fig. 15*.



13. If you receive an error message, see **Fig. 16**, repeat steps 1–12 to run a new probing sequence.

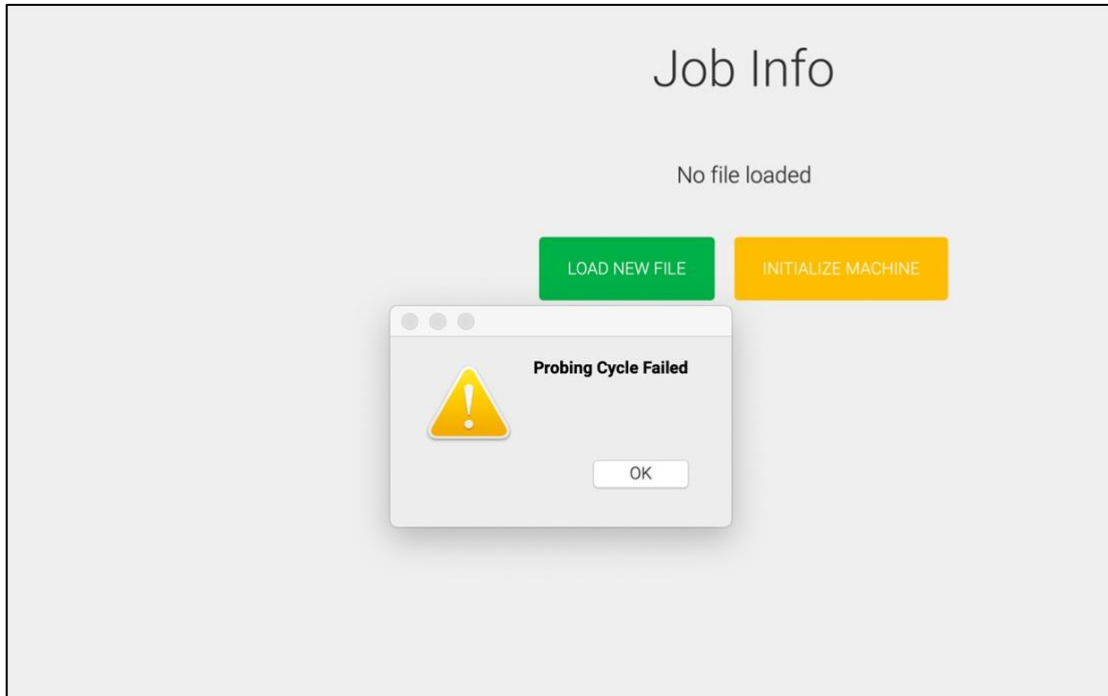


Figure 16

14. If you do not receive an error message, you're ready to begin machining. Remove the BitZero V2 and grounding clip from the machine enclosure.
15. Remove the interlock key and set it outside of the machine enclosure.

## Set Job Zero for X- or Y-Zero Only

You can also use BitZero V2 to find and set X- or Y-zero only:

1. Connect to and home the machine.
2. When prompted to load a tool, install a probing pin in the collet.
3. Place the interlock key on the face of the Nomad 3's safety interlock.
4. Set the BitZero V2 on a corner of your stock. See **Fig. 17**.
5. In Carbide Motion, click **Jog** in the top menu bar to open the *Jog screen*.
6. Jog the machine until the tip of the probing pin is just inside the circular bore on the corner of the BitZero V2.
7. Attach the magnetic grounding clip to either the collet nut or the probing pin in the spindle. See **Fig. 17**.
8. Tap the probe against the probing pin to ensure everything is working. Return the probe to its position on the corner of your stock.



Figure 17

9. Click the **Probe** button to open the *Probe Workpiece* window. See **Fig. 18**.

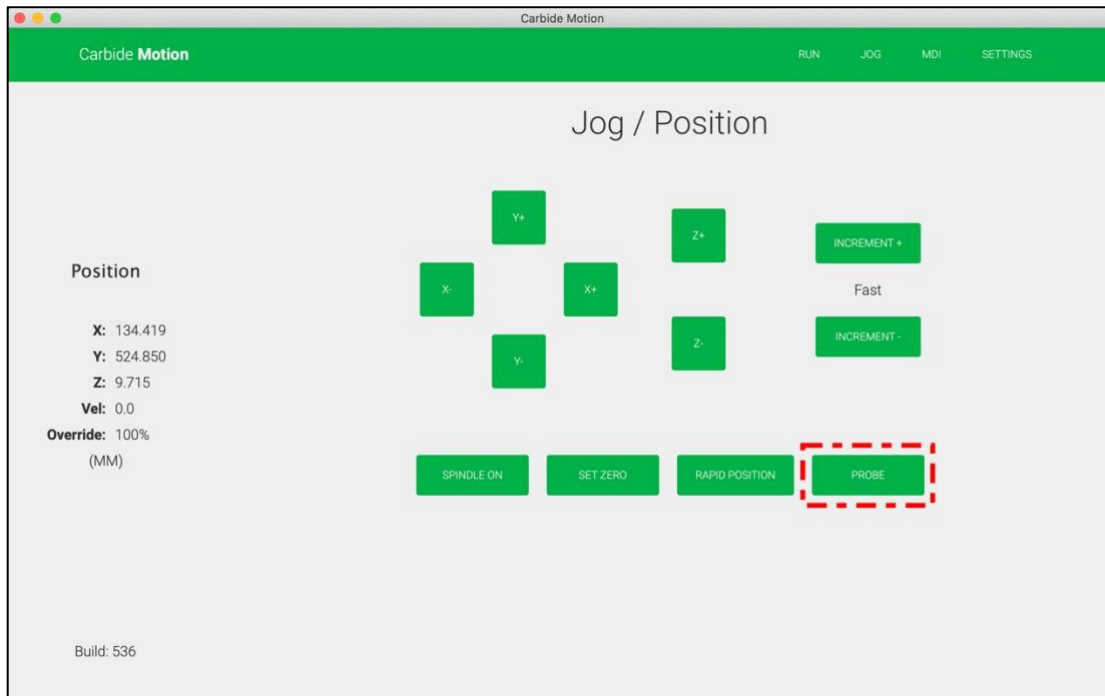


Figure 18

10. Select **BitZero V2** for the probe type. See **Fig. 19**.

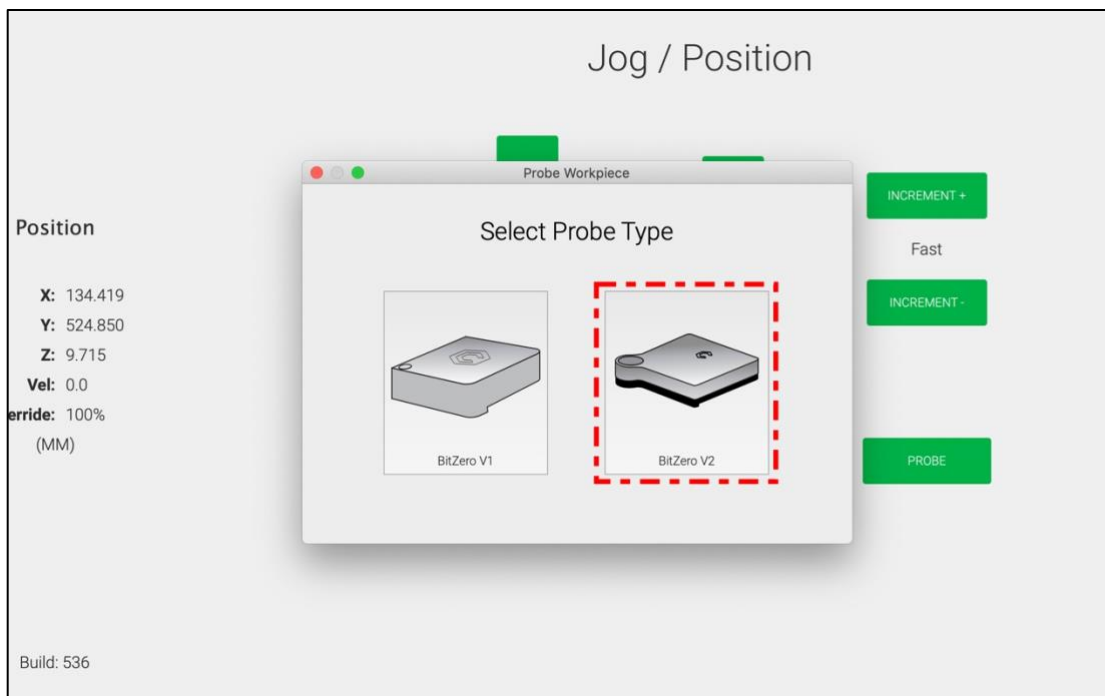


Figure 19

11. Select the **X** probe cycle if you want to set X-zero only (see **Fig. 20**). If you'd like to set Y-zero only, select the **Y** probe cycle (see **Fig. 21**).

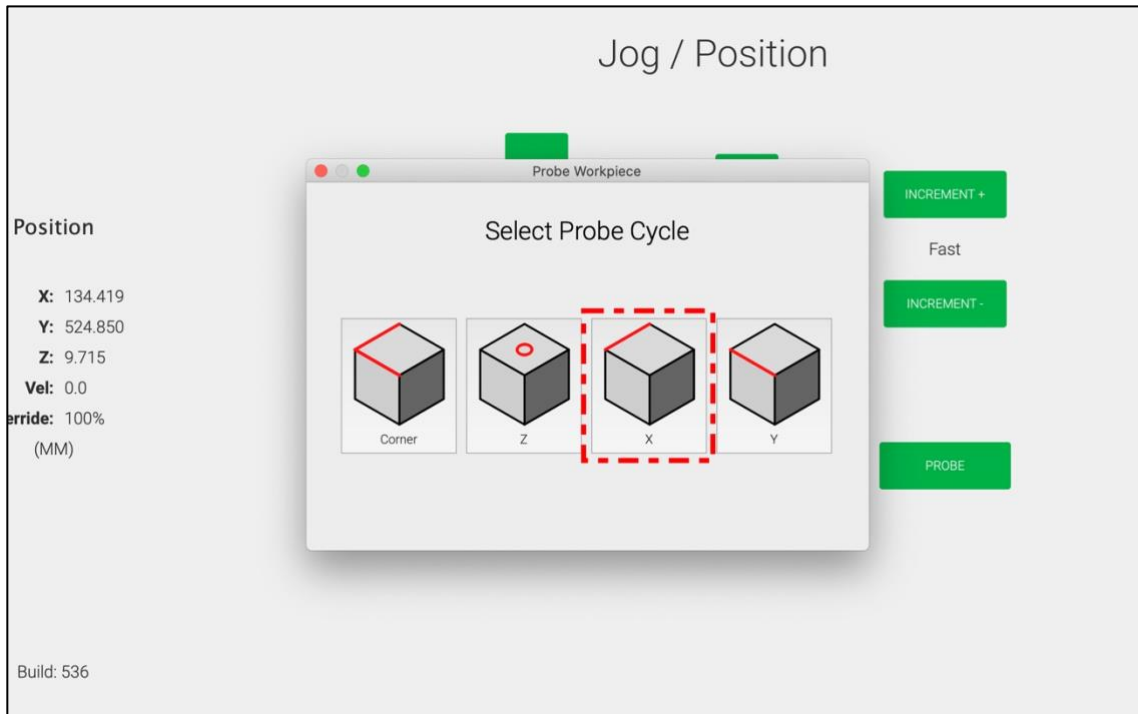


Figure 20

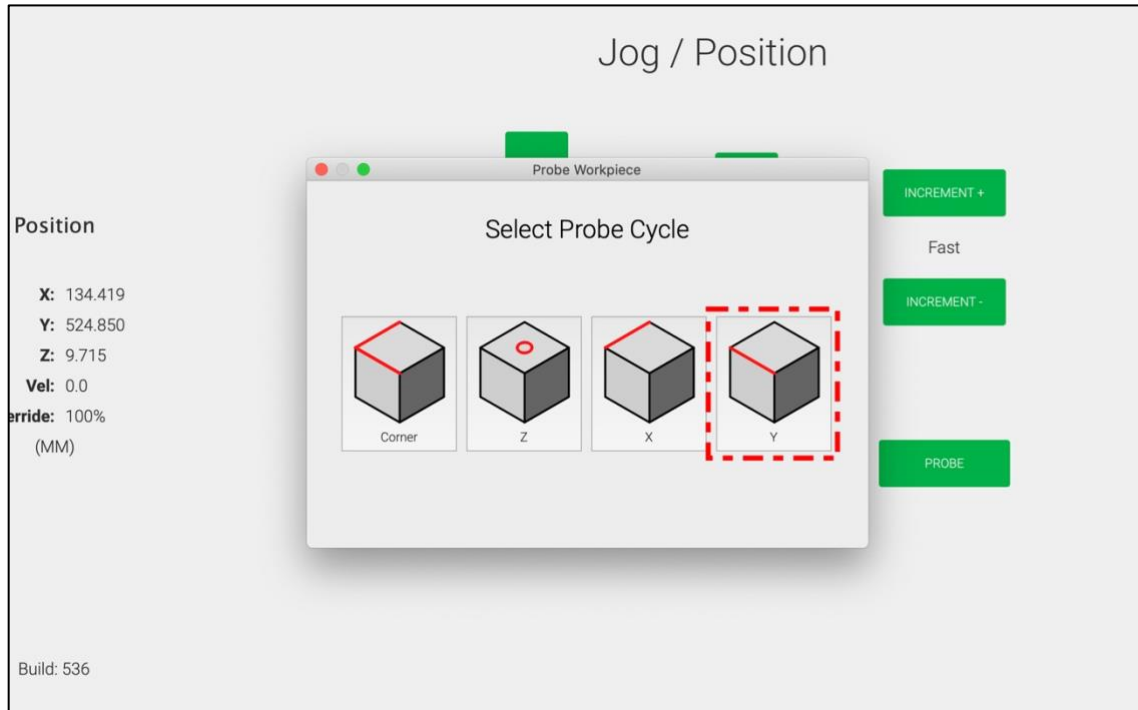


Figure 21



**NOTE:** Make sure your setup matches the graphic shown onscreen for the probe cycle you have selected. See **Figs. 22** and **23**. If your setup does not match, the calculated zero location will be incorrect.

12. Click the **Begin Probe** button to start the probing sequence. See **Figs. 22** (X-only) and **23** (Y-only).

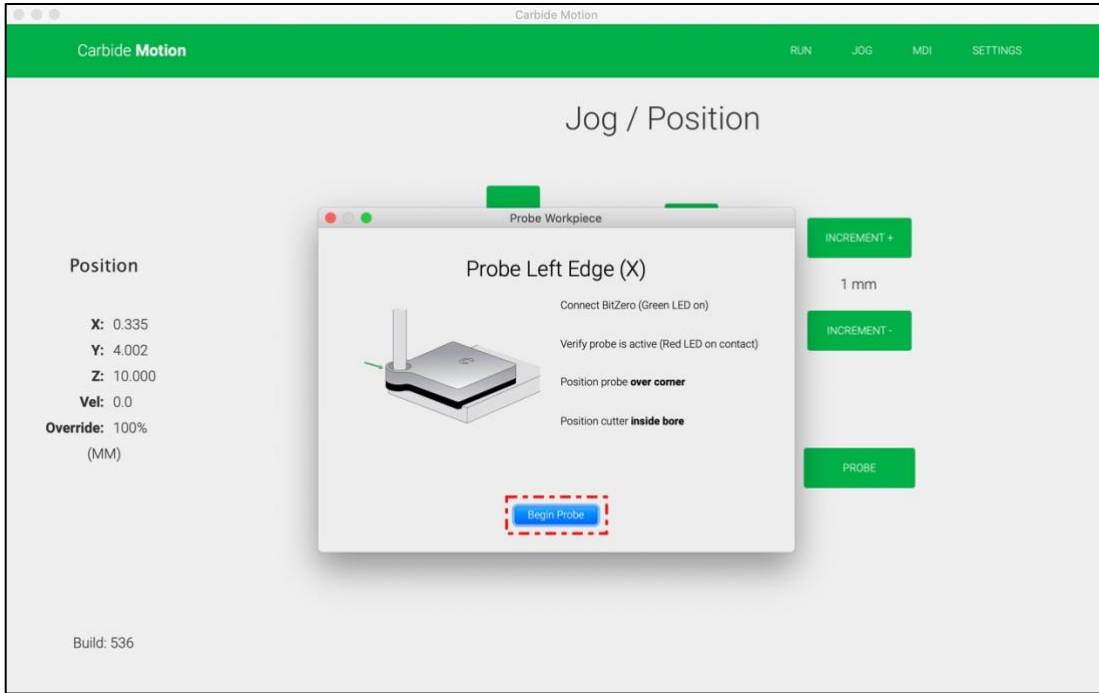


Figure 22

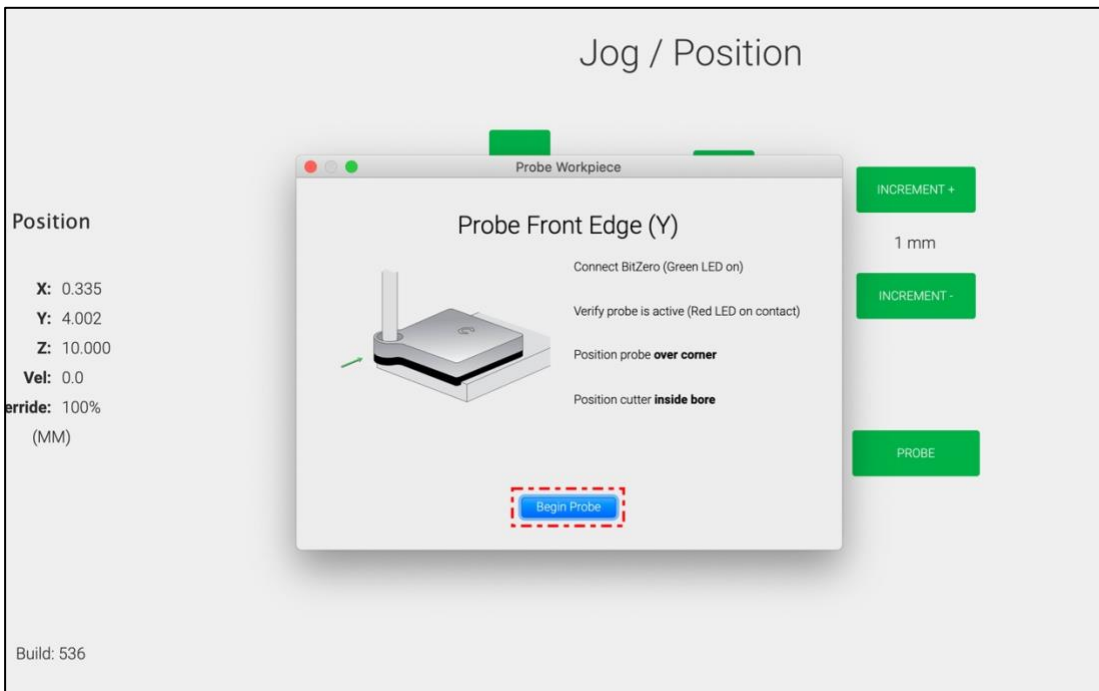


Figure 23

13. If you receive an error message, see **Fig. 24**, repeat steps 1–12 to run a new probing sequence.

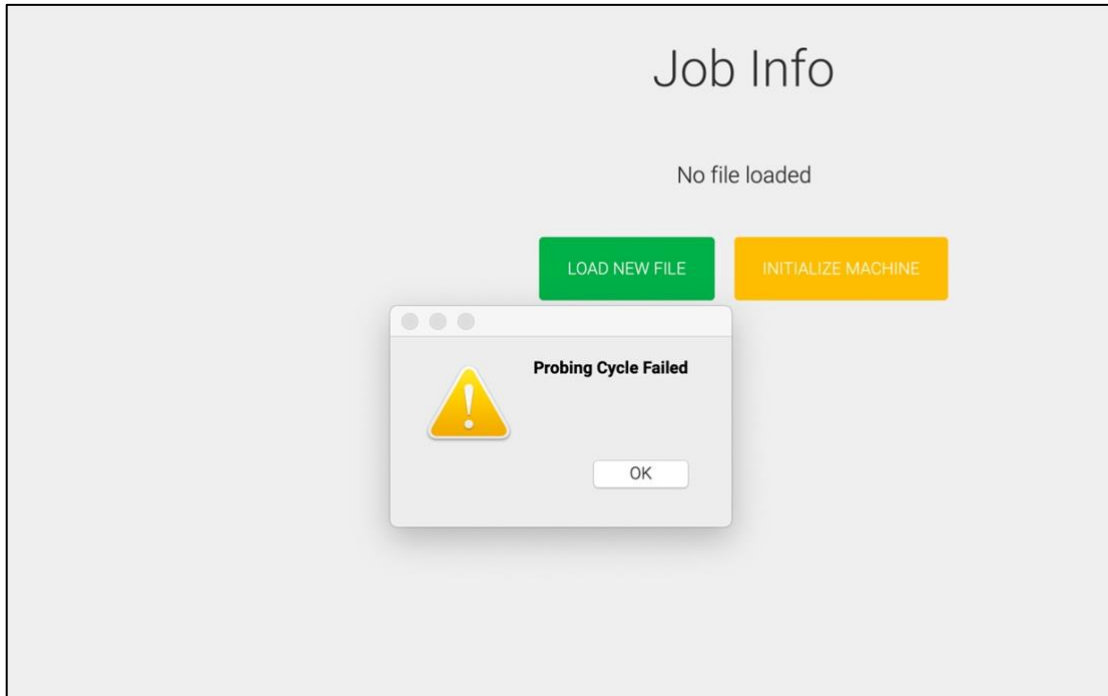


Figure 24

14. If you do not receive an error message, you're ready to begin machining. Remove the BitZero V2 and grounding clip from the machine enclosure.
15. Remove the interlock key and set it outside of the machine enclosure.