

Mogul documentation First draft 11/27/2016

Procedure Overview

Setup of the Mogul CNC router involves two separate processes. They are 1) installing the router bit and securing the work piece, and 2) establishing the “Home Position” for the Mogul and “Zero Point” for the project.

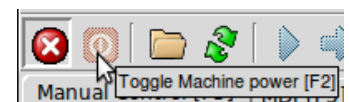
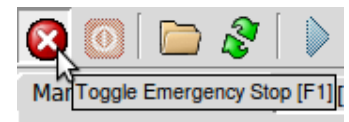
Following these procedures and underlying steps in order promotes safe operation of the equipment and minimizes errors.

Installing Router Bit

1. Ensure all power switches are Off.
 - a. Mogul Power is a toggle switch on right side of table.
 - b. Router Power switch is a red slide tab on the top of the router.
2. Manually move the spindle to the Left Stop and below the black reference line on the spoil board. Additionally, move the spindle to the top of the CNC bracket.
3. Install the desired bit into the router.
4. Secure the work piece on to the spoil board using metal T-clamps or a jig that will securely hold the work piece. It is essential the T-clamps or jig placement will not inhibit free movement of the Mogul or interfere with the router bit. T-clamps are located in a desk drawer opposite the Mogul. Examples of proper clamping techniques are displayed on the wall behind the Mogul.

Establishing the Mogul Home Position and Project Zero Point

1. Turn on the Mogul Power switch (toggle switch on right side of Mogul brace).
2. Turn on the computer and sign in (password: mms).
3. Open the 3 X 3 CNC Mogul application (penguin icon).
 - a. If the project file is on a thumb drive, insert the thumb drive into the USB and transfer the appropriate file to the desktop. This will simplify locating the work file later (NOTE: the work file must be in a .ngc format).
4. Select the red button (white X) in the upper left corner of the CNC application on the menu line.
5. Select the orange button located to the red button previously selected.
 - a. This step activated the options in the window below (options turn from gray to black).



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6. In the open window, select each axis and click on the “Home Button” to establish the Mogul Home position.
 - a. Select X, then click the “Home Axis”.
 - b. Select Y, then click the “Home Axis”.
 - c. Select Z, then click the “Home Axis”.
7. Using the “-“ and “+” buttons in the open window, move the spindle over the Zero Point of the project. It may be necessary to use .05 or .01 options rather than Continuous to precisely set the center of the router over the Zero Point.
 - a. Select “X” then “+” until the spindle aligns with the Zero Point. Then select “Touch Off”.
 - i. Select “OK” on the Touch Off pop up message.
 - b. Select “Y” then “+” until the spindle aligns with the Zero Point. Then select “Touch Off”.
 - i. Select “OK” on the Touch Off pop up message.
 - c. Select “Z” then “-” until the router bit touches the Zero Point. Then select “Touch Off”.
 - i. Select “OK” on the Touch Off pop up message.

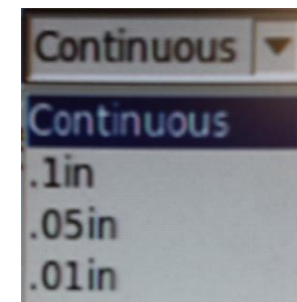
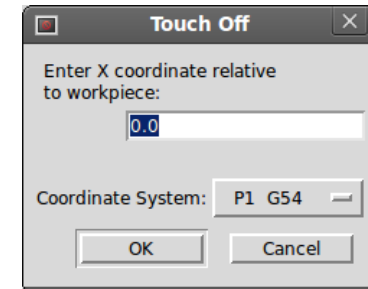
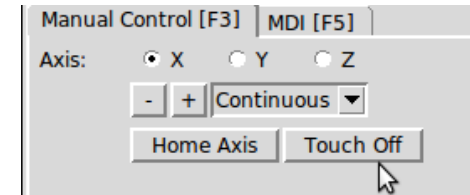
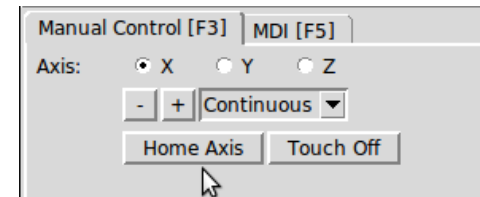
A technique to achieve the proper Z axis height is to place a piece of paper on top of the project piece and under the router bit. While slowly lowering the spindle, move the paper back and forth. Continue to move the spindle lower (.01 increment recommended) until the paper can no longer be moved.

Notes

It is permissible to move the spindle in all 3 axis until it is over the Zero Point and then select Touch Off for each axis.

The project Zero Point corresponds to the origin of the design within the project file. Select a Zero Point that will keep the router bit on the project piece at all times and will not come into contact with a clamp while the Mogul follows the cutting instructions.

8. After all 3 axis are aligned and Touch Off selected, use the “+” buttons in the Z axis to move the spindle to position above (no longer touching) the work piece.



Running the Project File

1. Select “File” in the menu line.
2. Select “Open” from the dropdown menu.
3. Navigate to the desired file and select. If not previously copied to the desktop, it may be necessary to move up or down the directory to find the thumb drive. Once the file is open, the project drawing will be displayed.
4. Turn on the router (red slide tab).
5. Select the blue Forward button to start the cutting process.
 - a. The process can be stopped and restarted at any time using the pause button. The process can be aborted (no restart) by selecting the red button to the left of the blue Forward button.
 - b. The cutting instructions can be executed individually by selecting the blue arrow to the right of the Forward button. This button must be selected to execute each subsequent instruction.
6. Monitor the cutting process. Pause or abort if needed.
 - a. If a change in router bits is necessary:
 - i. pause the cutting process
 - ii. turn off the router
 - iii. change the bit
 - iv. reestablish the Z axis Zero Point (see step 7, .c above).
 - v. turn the router on
 - vi. select the blue start arrow
7. Once the cut is complete:
 - a. Turn off the router
 - b. Turn off the Mogul power
 - c. Move the spindle to a safe position
 - d. Remove the router bit
 - e. Remove the work piece and clamps
 - f. Close the 3X3 CNC Mogul application
 - g. Delete any files copied to the desktop
 - h. Thoroughly clean the work area**

