

So you want to use the Roland MDX-540 router?

Please follow each of these operating steps carefully:

STEP 0 Familiarize Yourself with the Router

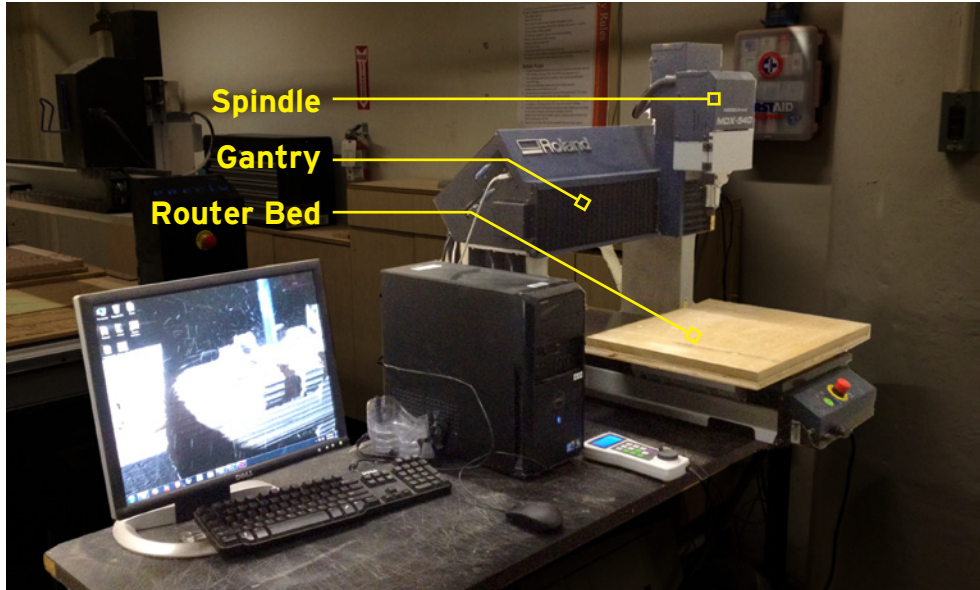


Fig.0A | This is the Roland router - It's composed of the "Router Bed", "Gantry", and "Spindle".



Fig.0B | This is the computer which controls the movement of the router.

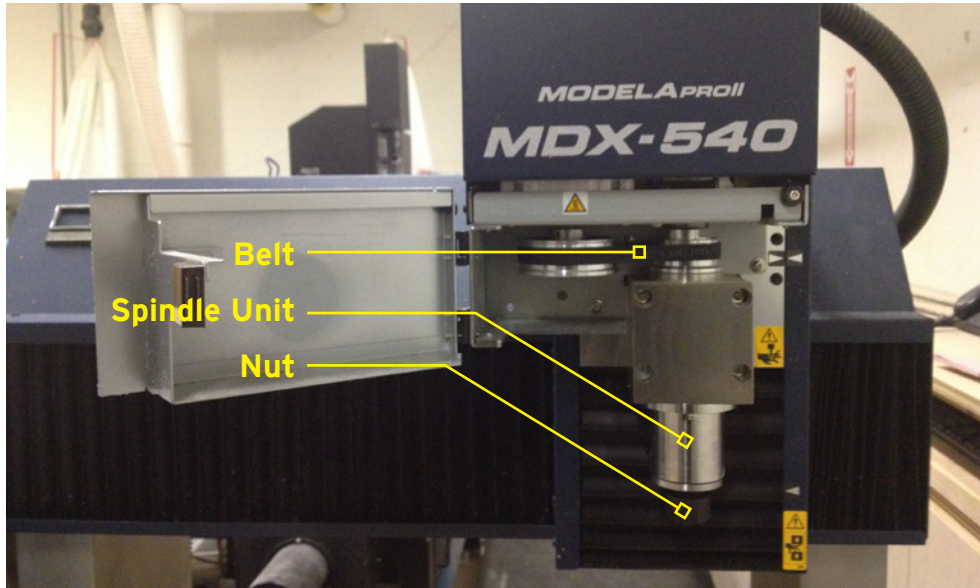


Fig.0C | This is the spindle - it spins the end mill for cutting.

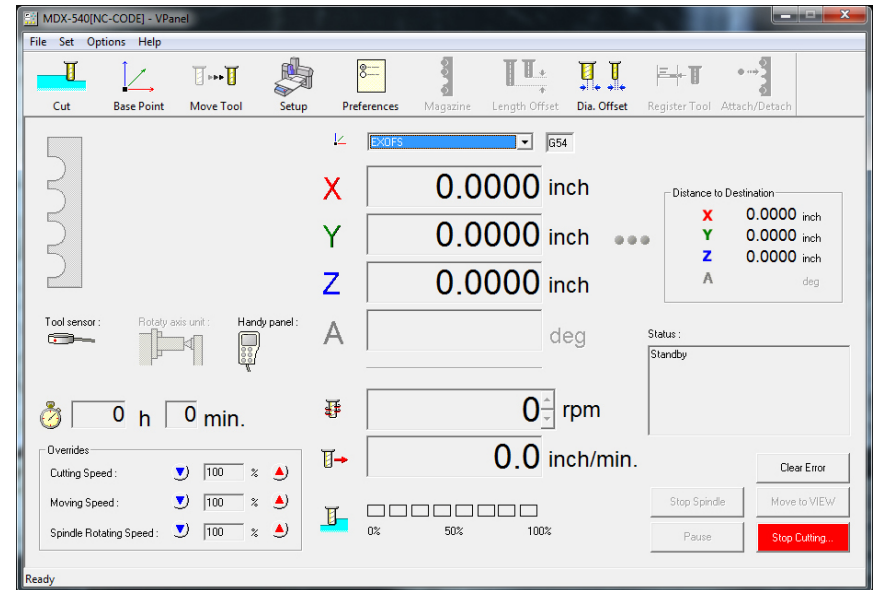


Fig.0D | This is the software interface - this is where you will load your files, and move the gantry.

STEP 1 Power-Up the System

Step 1A : Computer

Turn on the computer and log-in.

Step 1B : Connect Tool Sensor

Be sure the "Tool Sensor" is already connected to the router.

Step 1C : Precix Controller

On the router, press the "Power" button to turn on the machine (Fig.1A).

Step 1D : Home the Machine

On the router's front panel, press the "Enter" button (Fig.1B). This will send the machine to its default origin.

NOTE:

THIS WILL CAUSE THE MILL TO MOVE!!!
MAKE SURE THE BED IS CLEAR OF ALL
OBJECTS AND PEOPLE!

Step 1E : Machine Mode

Once the router has stopped moving, check that the "NC" light is on (Fig.1B).

NOTE:

IF THE LIGHT IS NOT ON, TURN OFF
THE ROUTER. LAUNCH THE ROUTER
INTERFACE (STEP 02) AND SELECT
"NC-CODE" FROM THE "COMMAND SET
SELECTION" POP-UP.

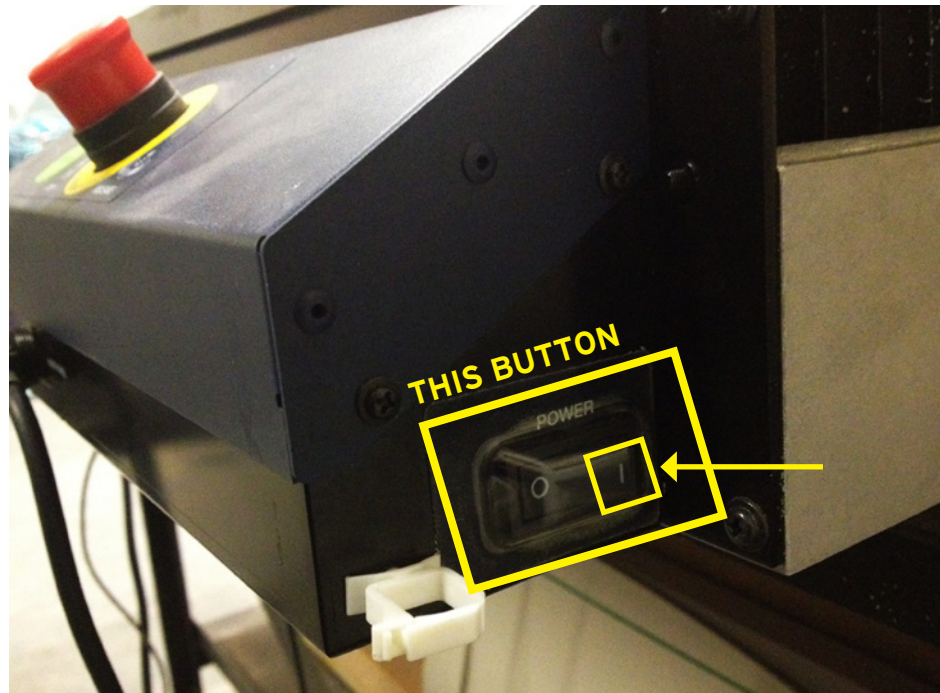


Fig.1A | Turn Power On at the Roland

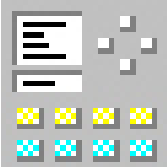


Fig.1B | Enter button at router panel

STEP 2 Launch the Router Interface

Step 2A : Start Software

On the computer, launch the router interface with this icon:



Step 2A : Start Software

Verify the machine name by pressing "OK" on the first Pop-Up.

Step 2A : Interface

You will now be at the VPanel interface.

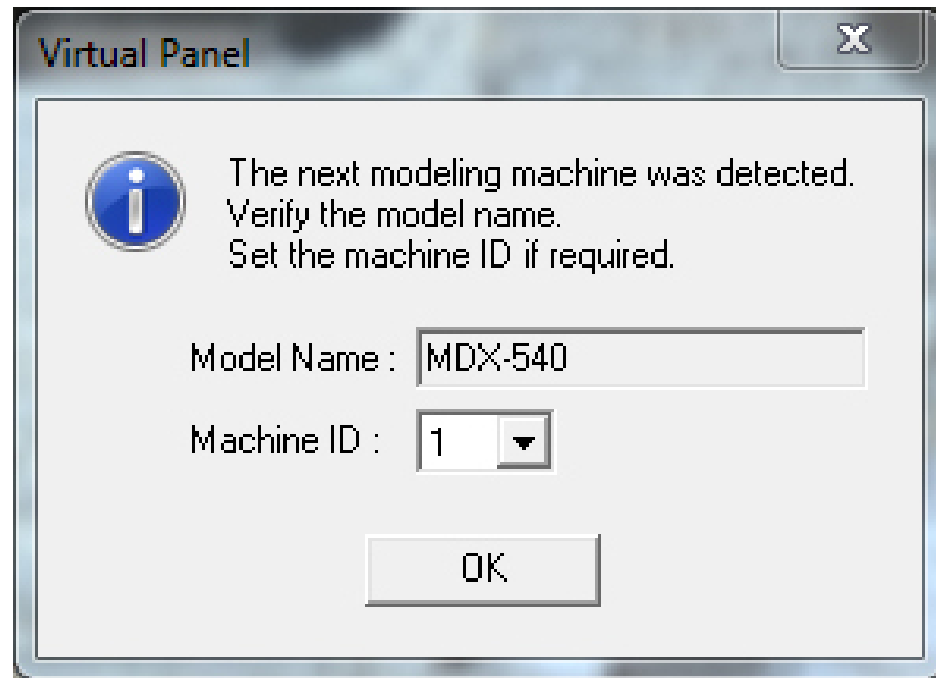


Fig.2A | Model Name

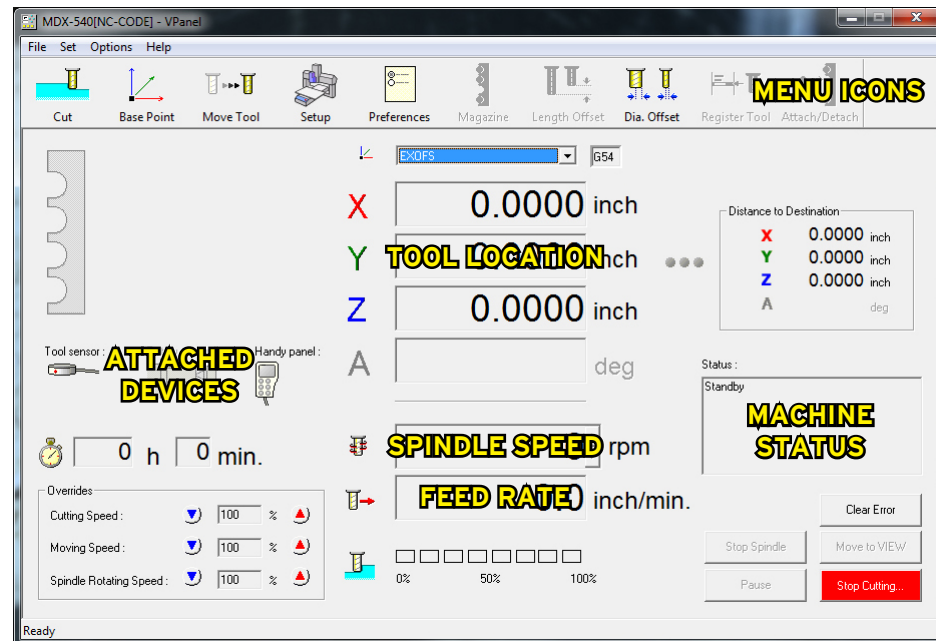


Fig.2B | VPanel Interface

STEP 3

Setup your material

Step 3A : Align Material

Align your material to the X and Y axis of the bed (Fig.3A) referencing either old cut marks or an existing jig.

Step 1B : Secure Material to Spoil Board

Use screws to fasten your material to the table (Fig.3B).

NOTE:
CHOOSE SCREWS OF THE PROPER LENGTH. SCREWS THAT ARE TOO SHORT WILL BE EASILY RIPPED OUT DURING MILLING. SCREWS THAT ARE TOO LONG WILL DAMAGE THE MILL. MEASURE THE SCREWS AND MATERIAL FIRST!!!

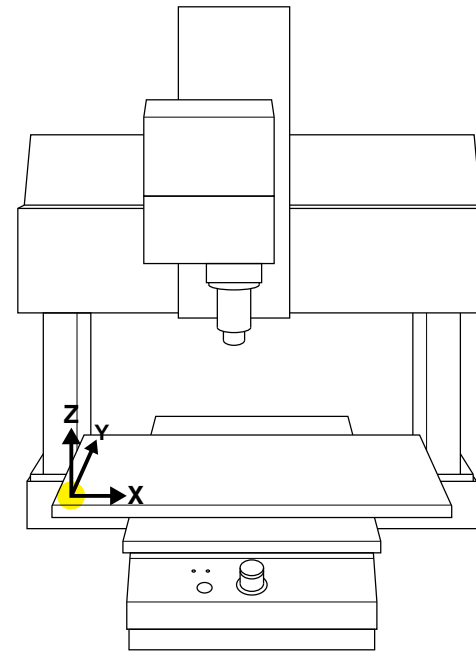


Fig.3A | Align Material



Fig.3B | Secure Material

STEP 4

Load an End Mill

Step 4A : Choose your end mill

Based on the settings for your file, select the appropriate end mill. Select the matching collet for this tool (Fig.4A-1).

NOTE:
IF YOU NEED TO USE MULTIPLE END MILLS TO COMPLETE A JOB, BE SURE YOU ARE SELECTING THE CORRECT TOOL FOR THE CORRECT FILE.

Step 4B : Attach Collet and Nut

Insert the collet into the nut until it clicks into position (Fig.4A-2).

Step 4C : Attach Nut to Spindle

Screw the nut loosely onto the spindle by hand (Fig.4A-3).

Step 4D : Insert the End Mill

Slide the end mill into the collet (Fig 4B -4). The tool should fill at least 80% of the collet, but do NOT allow any of the tool flutes to enter the collet (Fig.4B-5).

Step 4E : Insert the End Mill

Hand tighten the nut to stop the end mill from slipping out of the collet.

NOTE:
IF YOU DO NOT TIGHTEN THE NUT, YOU COULD DAMAGE THE TOOL WHEN IT DROPS.

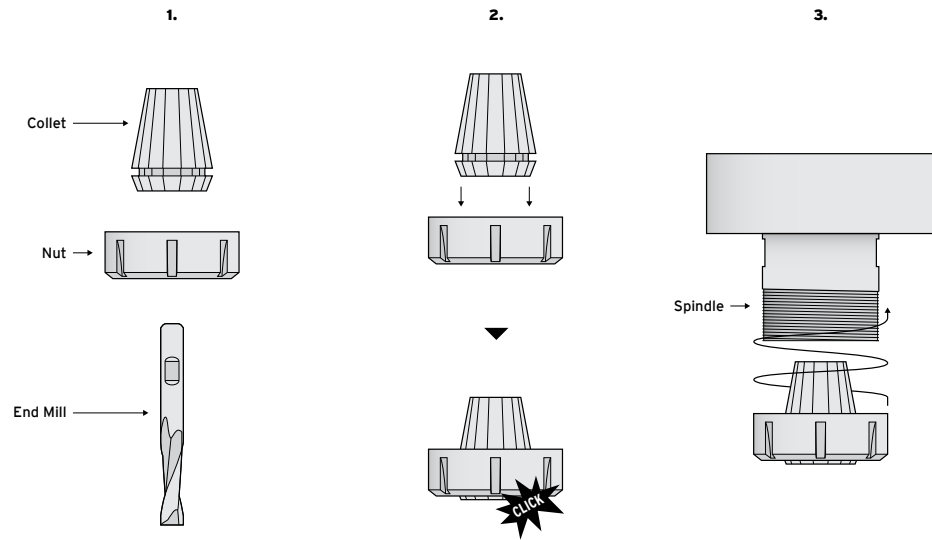


Fig.2A | Turn Power On at Computer Interface

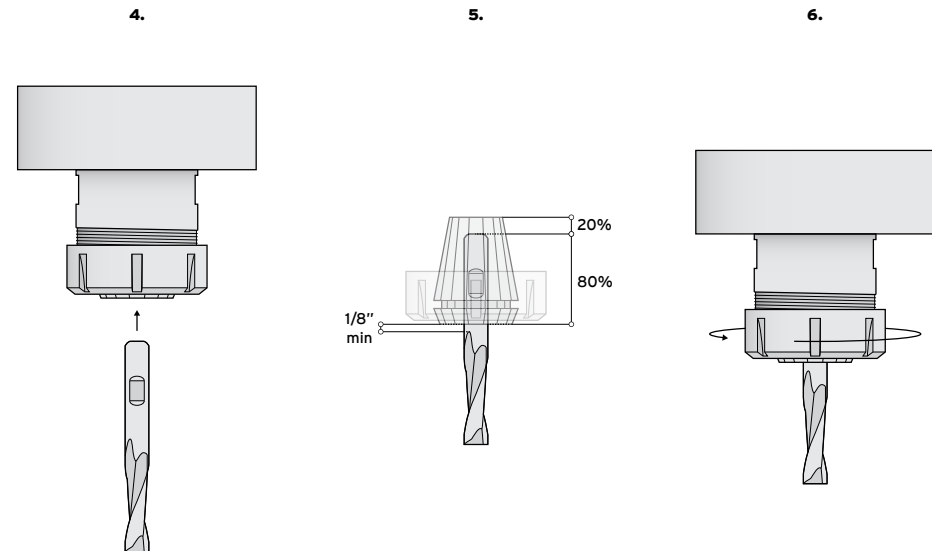


Fig.2B | Home the Machine

STEP 5

Tighten the Collet Nut

Step 5A : Tighten the Nut

Slip the “Top Wrench” around the spindle.
Slide the “Bottom Wrench” up into the slots on the nut (Fig.5B).

If the “Bottom Wrench” is on the left, squeeze the two wrenches together to tighten (Fig.5B).

If the “Bottom Wrench” is on the right, pull the wrenches apart to tighten.

NOTE:

LEARN THE CORRECT AMOUNT OF FORCE FOR TIGHTENING:

- OVER TIGHTENING WILL MEAN DIFFICULTY REMOVING YOUR TOOL LATER

- UNDER TIGHTENING WILL MEAN YOUR TOOL COULD SLIP OUT DURING THE JOB.

NOTE:

TO LOOSEN, FOLLOW THESE SAME STEPS, BUT MOVE THE WRENCHES IN THE OPPOSITE DIRECTION.

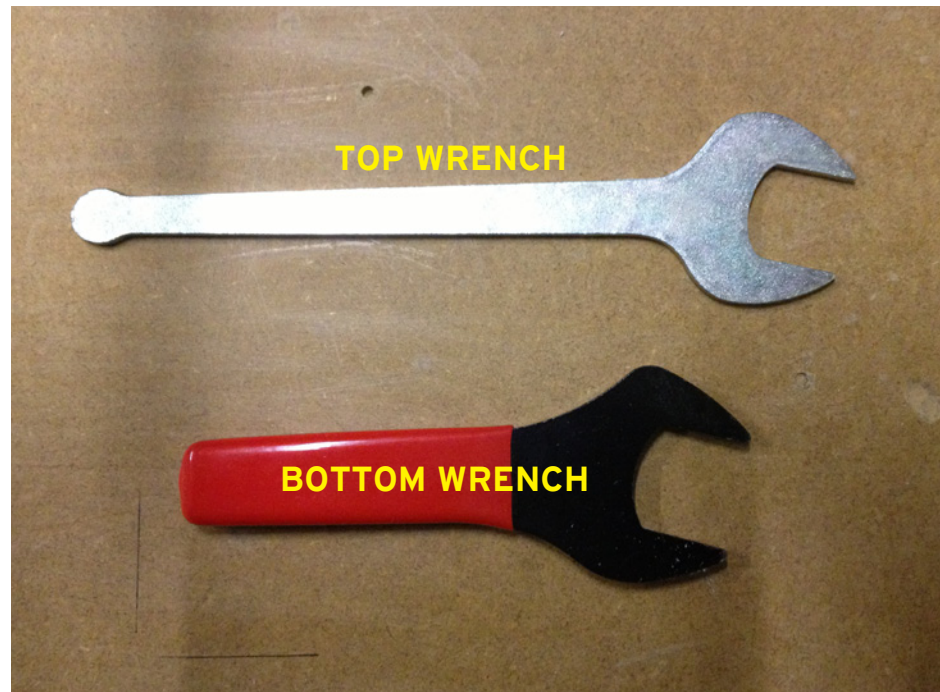


Fig.5A | Collet Wrenches

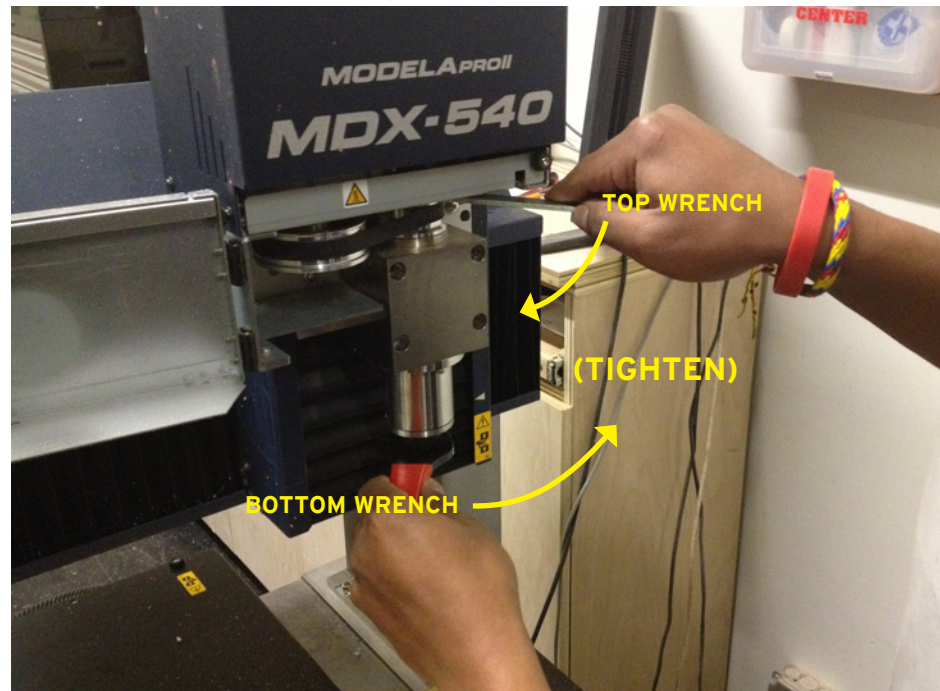


Fig.5B | Tightening Procedure

STEP 6

Set the Router X and Y Origin

NOTE:

THIS IS THE MOST IMPORTANT STEP, THUSFAR. IF DONE INCORRECTLY, YOU COULD DO SEVERE DAMAGE TO THE MILL, OR INFLICT INJURY ON THE OPERATOR! BEFORE MILLING, DOUBLE-CHECK THAT THESE SETTINGS ARE CORRECT.

Step 6A : Move the Mill into Position

Press the “Base Point” icon on the VPanel interface (Fig.6A).

Step 6B : Move the Mill into Position

Using the “X-Y Arrows” on the Roland interface (Fig.6B), move the machine until it aligns with the corner of your material (remember, this corner should correspond exactly with the origin of your digital model).

Step 6C : Coordinate Space

Select “G54” from the pull-down.

Step 6B : Set X-Y Values

Select “XY Origin (Home)” from the pull-down (Fig.6B).

Press the “Apply” button to set the X and Y values (Fig.6C).

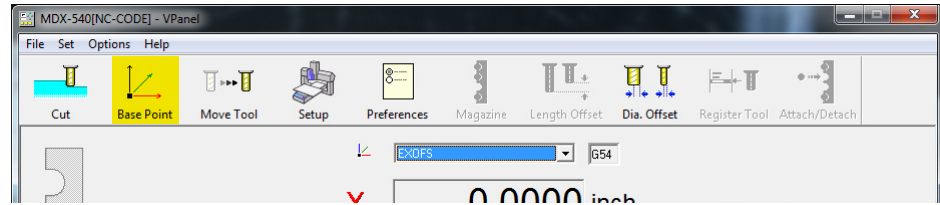


Fig.6A | Switch to Base Point Interface

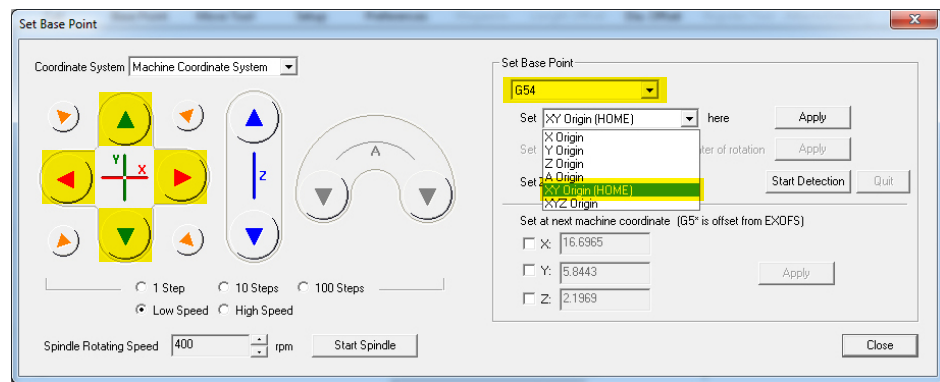


Fig.6B | Move router to X-Y position

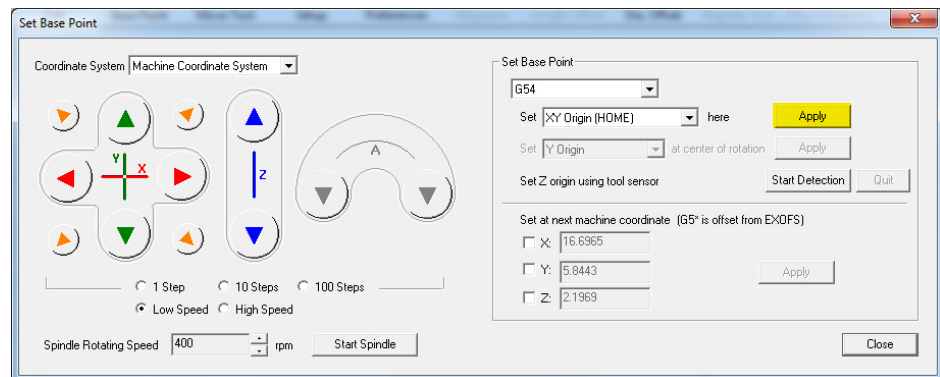


Fig.6C | Set the X - Y Origin

STEP 7

Set the Router Z Origin

Step 7A : Locate the Tool Sensor

Place the "Tool Sensor" on to a clean part of your material (Fig.7A), corresponding to your digital origin.

NOTE:
FOR THIS TO WORK, THE ORIGIN OF YOUR DIGITAL MODEL MUST CORRESPOND TO THE TOP OF YOUR MATERIAL. IF NOT, YOU WILL HAVE TO SET THE Z MANUALLY (JUST LIKE THE X-Y ORIGIN).



Fig.7A | Place Tool Sensor on your material

Step 7B : Move the Mill into Position

Using the "X-Y Arrows" on the Roland interface, move the machine until it is directly over the sensor. Use the "Z-Arrows" to move the tool down until it is 1/2" above the sensor.

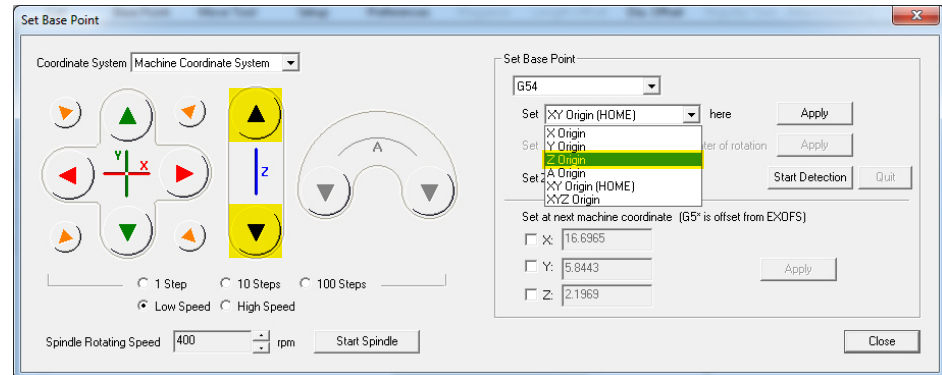


Fig.7B | Move router to X-Y position

Step 7C : Set Z Values

Select "Z Origin" from the pull-down (Fig.7B).

Press the "Start Detection" button to set the Z origin (Fig.7C).

NOTE:
THIS WILL CAUSE THE MACHINE TO MOVE DOWN!

Once the end mill makes contact with the sensor, the Z origin will be set. Press "Close" (Fig.7C).

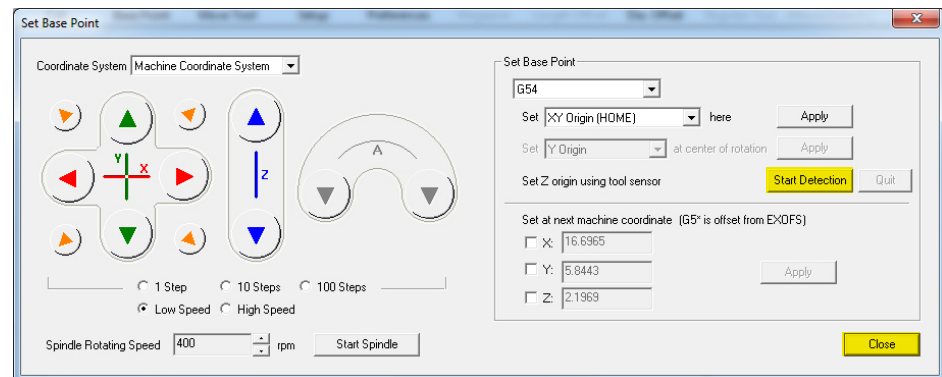


Fig.7C | Star the Detection Sequence

STEP 7 (Continued) Set the Router Z Origin

Step 7D : Start Software

On the main VPanel interface, select “Machine Coordinate System” (Fig.7D) from the pull-down.

This is your origin in machine space. Write these values down. If you need to turn off the machine or restart, you can use these numbers to reset your origin.

In the pull-down, reselect G54.

NOTE:
IF DONE CORRECTLY, THESE SETTINGS
WILL KEEP THE MACHINE FROM
CRASHING INTO THE TABLE. TAKE
YOUR TIME AND DOUBLE-CHECK YOUR
WORK.

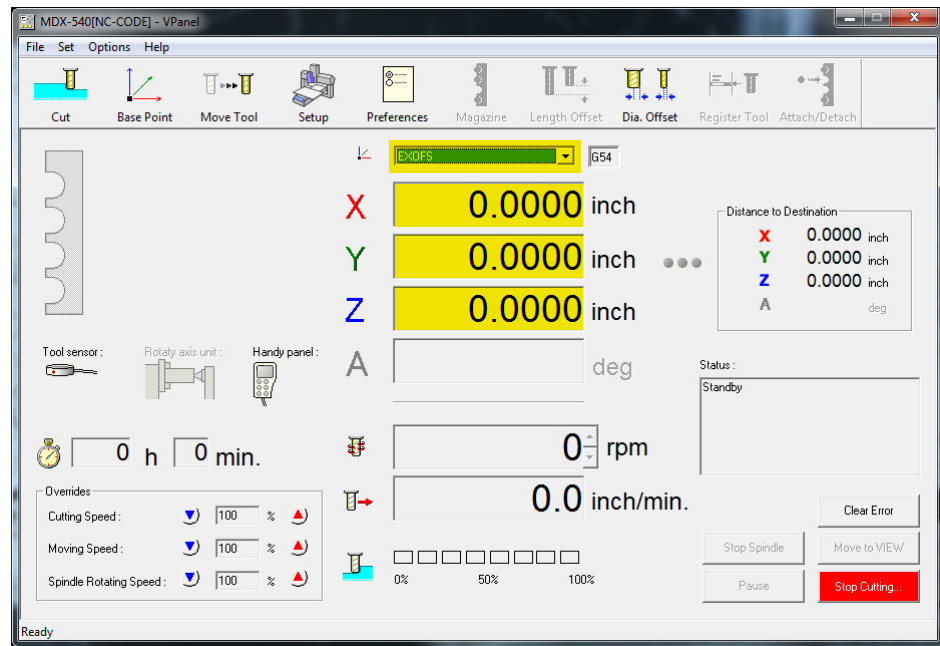


Fig.2A | Model Name

STEP 8 Load Your File

Step 8A : Switch to Cut Interface

Press the "Cut" icon on the VPanel interface (Fig.8A).

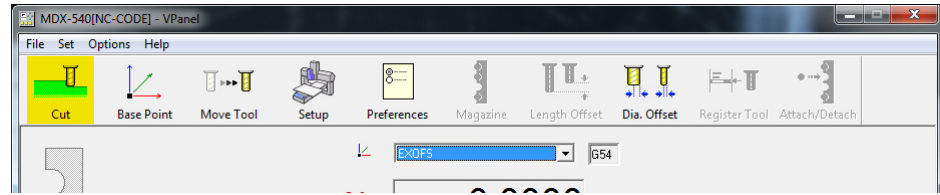


Fig.8A | Switch to Cut Interface

Step 8B : Clear Old Jobs

Press the "Remove All" Button (Fig.8B) to clear the "Output File List" of all old jobs.

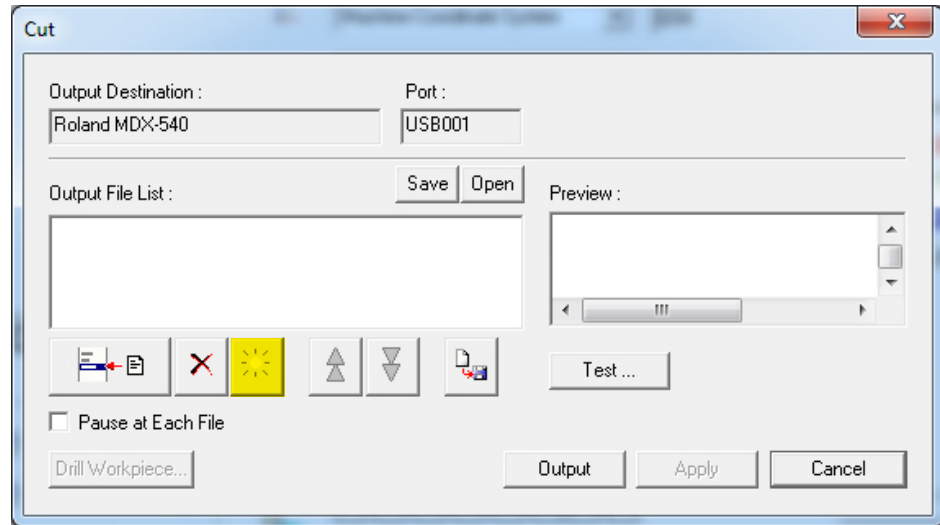


Fig.8B | Clear Old Files

Step 8C : Load New File

Press the "New File" button (Fig.8C) and select your .NC file.

Step 8C : Start Your Job

Press the "Output" button (Fig.8C) to begin milling your file.

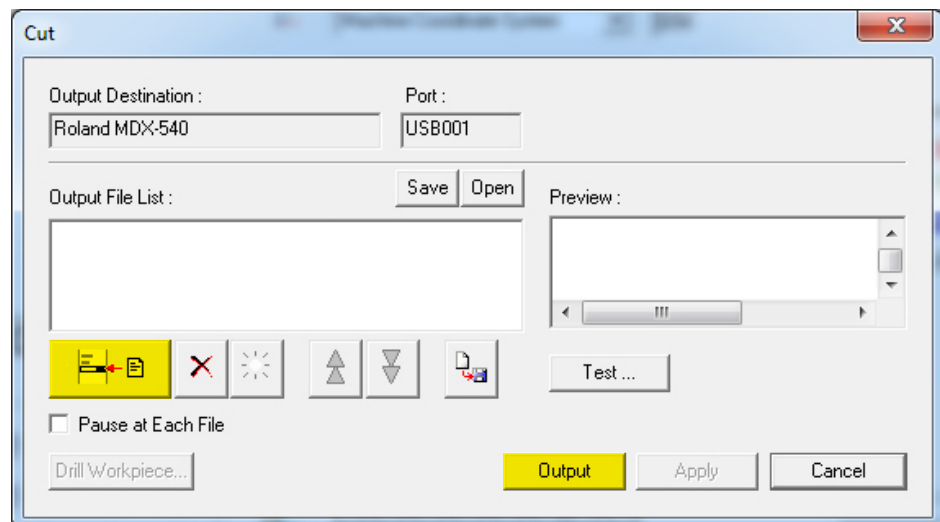


Fig.8C | Load New File

NOTE:
THIS WILL CAUSE THE SPINDLE TO TURN ON AND THE ROUTER TO START MOVING.

ALWAYS BE READY TO PRESS THE EMERGENCY STOP BUTTON IF ANYTHING GOES WRONG.

IF YOU NEED TO ADJUST ANY OF THE MILL SETTINGS, CONTINUE TO STEP 9.

IF NOT, AND YOUR JOB FINISHES, GO TO STEP 10.

STEP 9 Override Router Settings

Step 9A : Override the Feed Rate

If you need to adjust the machine feed rate, press the “Pause” button to stop the machine’s movement. Use the arrows next to correct “Overrides” input to change the movement speed. Press the “Resume” button when finished to continue your job.

Step 9B : Override the Spindle Speed

If you need to adjust the machine spindle speed, press the “Pause” button to stop the machine’s movement. Use the arrows next to the “RPM” field to change the spindle speed. Press the “Resume” button when finished to continue your job.

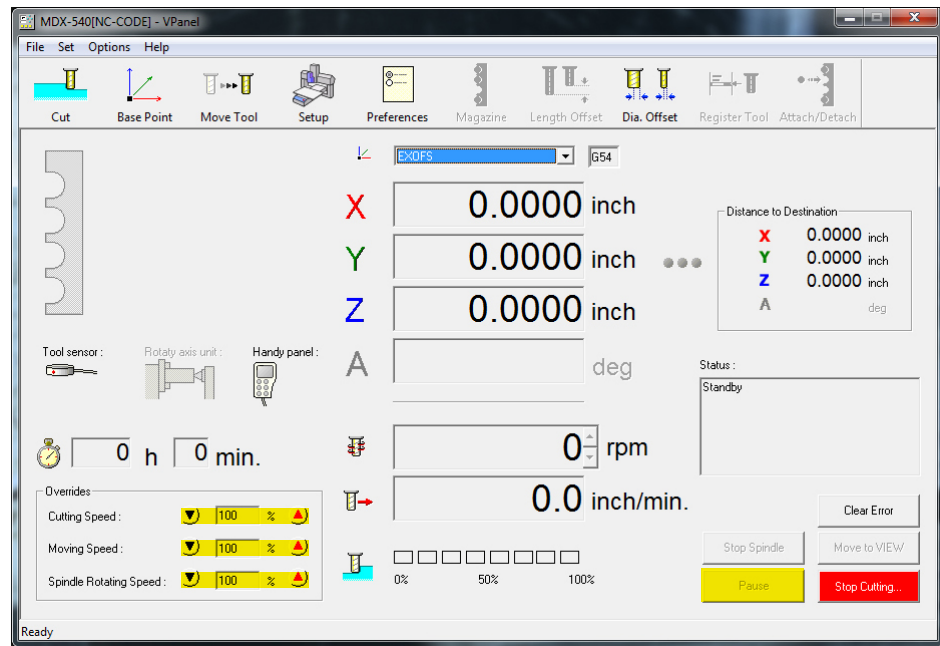


Fig.9A | Override the Feed Rate

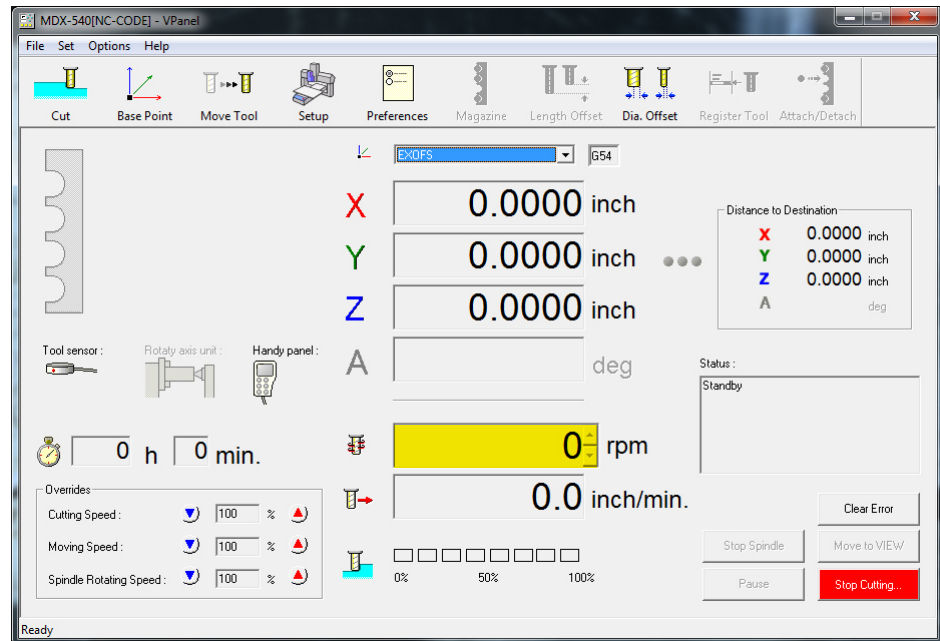


Fig.9B | Override the Spindle Speed

STEP 10

End Your Job

Step 10A : End Your File

When your file has finished milling, the spindle will turn off and the mill will return to the job "Home".

NOTE:

IF YOU HAVE ANOTHER FILE TO MILL,
RETURN TO STEP 4 TO SWITCH END
MILLS.

AFTER REPLACING YOUR END MILL, YOU
CAN USE THE SAME X AND Y ORIGIN
(SKIP STEP 6), BUT YOU WILL HAVE TO
ENTER A NEW Z ORIGIN.

Step 11B : Remove Your Material

Once you have finished all your milling, move the router out of the way and remove your material from the mill bed.

Be sure to remove and clean the end mill when finished. Put it back in its appropriate drawer.

IF YOU ARE GOING TO BE THE LAST
PERSON TO USE THE MILL, PROCEED TO
THE NEXT STEP. IF NOT:

CONGRATULATIONS, YOU ARE DONE!!

STEP 11 (CONTINUED)

End Your Job

Step 11C : Shutdown the Mill

Close the Roland Interface (Fig.11A).

Power down the machine by pushing the power button on the Roland router (Fig.1A).

Cleanup dust and chips from the machine and floor. Use the shop-vac and air compressor if needed.

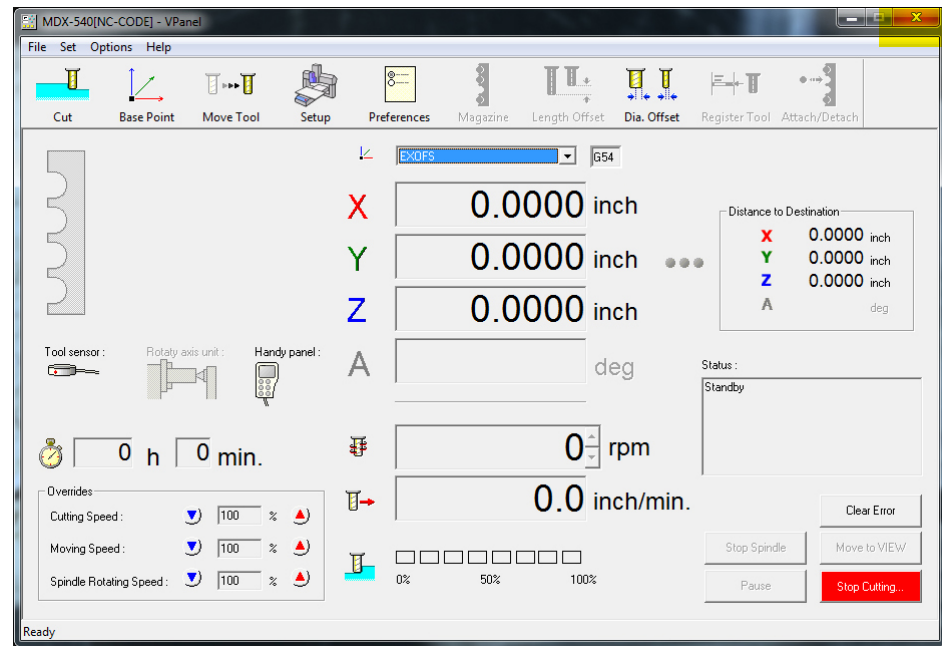


Fig.11A | Close the Roland Interface

PLEASE KEEP THE MILL EQUIPMENT CLEAN!

THIS IS A SHARED FACILITY..BE RESPECTFUL
TO YOUR FELLOW CLASSMATES.

CONGRATULATIONS, YOU FINISHED MILLING!
I HOPE YOU ARE HAPPY WITH THE RESULTS OF ALL YOUR HARD WORK.