Machine Operation Basics & Trouble Shooting Guide

Version 1.00

Connecting to Universal G Code Sender

UGS can be downloaded from the Resources page of our website for free.

https://millrightcnc.com/resources/

UGS - 4 Axis
Compatible
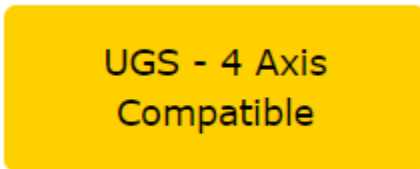
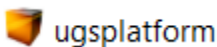UGS will be downloaded as a zip file and will need to Extracted. Right click on the file and select Extract All. If you try to open UGS before Extracting the file you will see this error.

Compressed (zipped) Folders   ✕

⚠ This application may depend on other compressed files
   in this folder.

   For the application to run properly, it is recommended that
   you first extract all files.

   Extract all   Run   Cancel
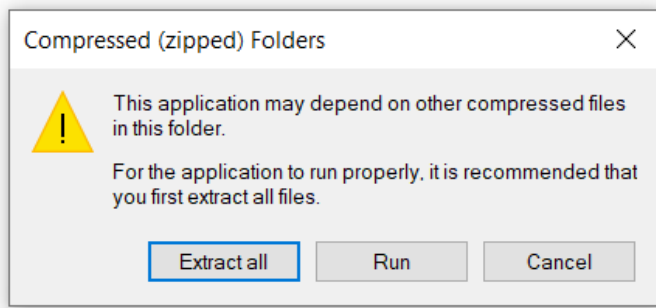
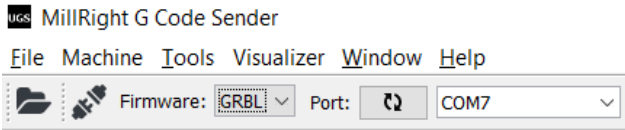After UGS is Extracted, open UGS by clicking the file ugsplatform>bin>ugsplatform

ugsplatform

MAC users will have to select ugsplatform without the yellow square icon.

ugsplatform
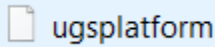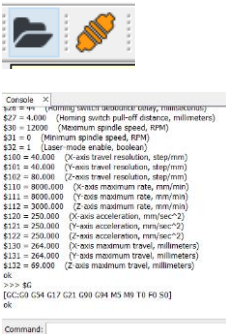
You may need to download java. Go to java.com and hit download at the top.

Once UGS is open, plug the USB cord into the electronics box and into your computer.

After starting UGS, you will see this at the top left of your screen.

UGS MillRight G Code Sender

File   Machine   Tools   Visualizer   Window   Help

Firmware: GRBL ∨   Port: ↻   COM7   ∨

To select the correct port click the two arrows in a circle. It will usually pull up the correct port. Click the plug icon to connect to the machine. The plug should turn orange and the setting should scroll across the console screen.

Console X
$26 = 41   (Homing switch debounce delay, milliseconds)
$27 = 4.000   (Homing switch pull-off distance, millimeters)
$30 = 12000   (Maximum spindle speed, RPM)
$31 = 0   (Minimum spindle speed, RPM)
$32 = 1   (Laser-mode enable, boolean)
$100 = 40.000   (X-axis travel resolution, step/mm)
$101 = 40.000   (Y-axis travel resolution, step/mm)
$102 = 80.000   (Z-axis travel resolution, step/mm)
$110 = 8000.000   (X-axis maximum rate, mm/min)
$111 = 8000.000   (Y-axis maximum rate, mm/min)
$112 = 3000.000   (Z-axis maximum rate, mm/min)
$120 = 250.000   (X-axis acceleration, mm/sec^2)
$121 = 250.000   (Y-axis acceleration, mm/sec^2)
$122 = 250.000   (Z-axis acceleration, mm/sec^2)
$130 = 264.000   (X-axis maximum travel, millimeters)
$131 = 264.000   (Y-axis maximum travel, millimeters)
$132 = 69.000   (Z-axis maximum travel, millimeters)
ok
>>> $G
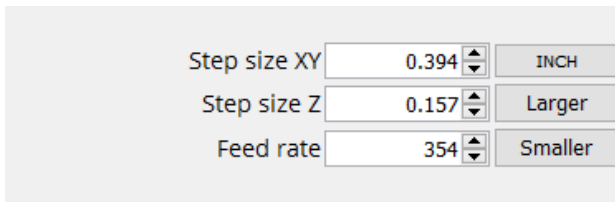[GC:G0 G54 G17 G21 G90 G94 M5 M9 T0 F0 S0]
ok

Command:

If you do not see the setting, disconnect and try another COM port.

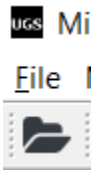You can now use the Jog Controls to move the machine around.
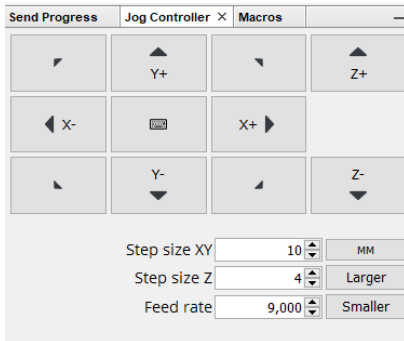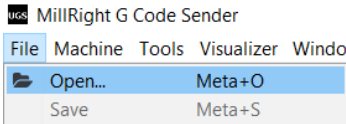

Make sure your step sizes and feed rate are set large enough to allow you to see movement, such as the ones shown here; mm above, inches below.
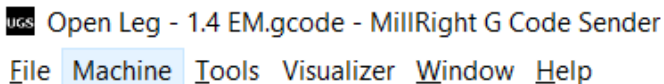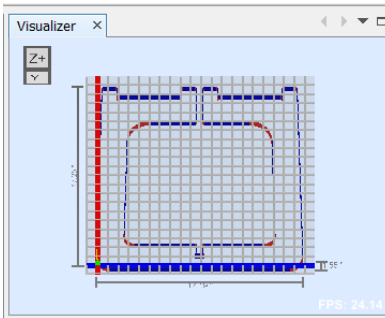
Opening a program in UGS

At the top left of UGS click File – Open or click the folder icon .

Navigate to where your file is saved. Select your file and click open.

Your visualizer should show your project and the name of the file should show at the top left of UGS.
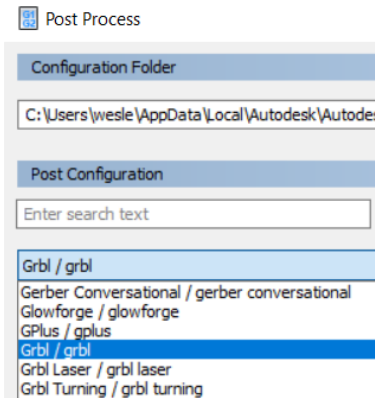
Post Processor

When saving your project to generate a G code program you will need to make sure to use the correct post processor for our machines.
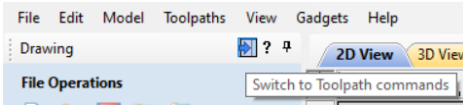
Fusion 360 – To save your program you must go to the Actions dropdown and click Post Process.
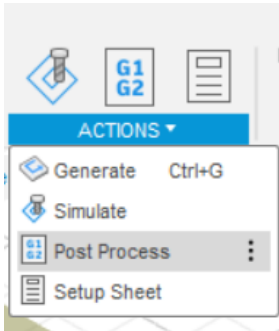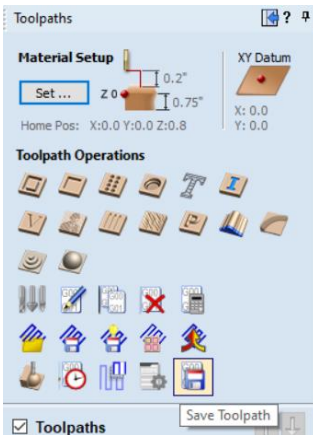

You will then need to select the grbl post processor. Then Click Post at the bottom.
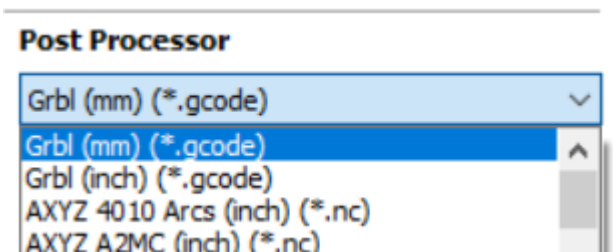
Vectric Software - You will need to be in the Toolpath commands to save your file. Click the arrow in the top left.

Once your tool paths are programed you will click Save toolpath.
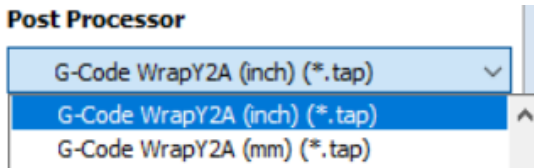

Select grbl (mm) or grbl (inches) to save your g code file.

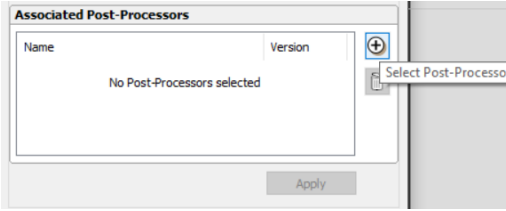The post-processor for the 4th axis will be:

G-Code Wrap Y2A (mm), G-Code Wrap Y2A (inch)

Post Processor

G-Code WrapY2A (inch) (*.tap)	∨
G-Code WrapY2A (inch) (*.tap)	∧
G-Code WrapY2A (mm) (*.tap)	

Vectric software v11.

Version 11 Vectric software will ask you to save your machine settings. You do not need to fill out any information except the post-processor section.

You can select Multiple post-processors. The ones you will need for our machines are: grbl (mm), grbl (inch). For the 4th axis you will need G-Code Wrap Y2A (mm), G-code Wrap Y2A (inch).
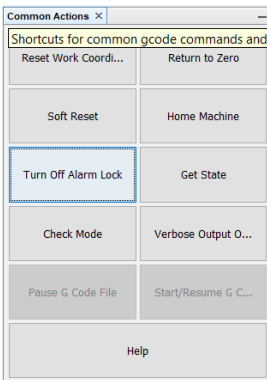
Clearing an Alarm

When your controller state is showing an alarm, you can clear the alarm by pressing "Turn off Alarm Lock" in the Common actions window.

It the alarm comes from hitting a Homing switch, you will have to turn off the alarm lock and jog off the switch. May need to be done twice depending on your step size.
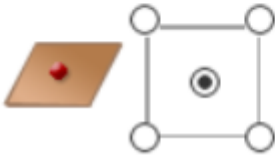
Zeroing the Machine

You CAD/CAM software will have you choose the starting point on your project.

Z Zero Position
- ● Material Surface
- ○ Machine Bed

XY Datum Position
Use Offset
X: 0.0
Y: 0.0

Here the project zero point is the surface of the stock and the middle of the bed.

You will jog the machine to the middle of your stock and slowly bring your z down to your stock top. Bring the z down until your bit pinches a piece of paper between the bit and stock surface. Lower your step size so you do not crash into your stock.

In the command console type "g92 x0 y0 z0.004" in inches mode or "g94 x0 y0 z0.01" fo mm mode, hit enter. This will set your XY to zero and your z to the thickness of the paper. Move the machine to a

safe height and you are ready to start your program.

You can tell where you need to set zero on your stock by looking at your visualizer.
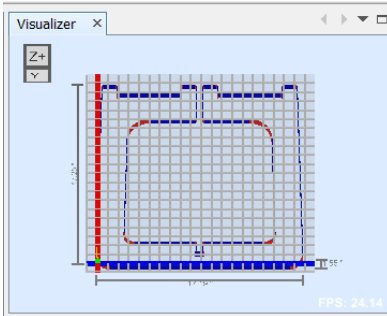
This shows the starting point is at the lower left (left, front of the stock).
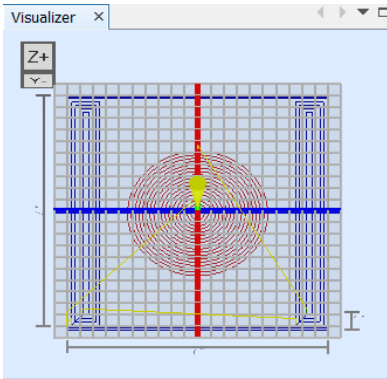
This shows the starting point is at the center of your stock.

Trouble with Binding

Always check that your couplers are tight on your motors and your lead/ball screws.

Carve King 2, Power Route, and Z Axis only on the Mega V - If binding continues loosen the screws on the motors and any bearings on the axis that is binding. Move to the front of the machine for Y, left for X, and up for Z. Tighten any screws that were loosened. Move the machine to the opposite side and tighten any screws that are loose. This should align the lead screws with the machine and fix any binding.

Mega V XY Axis– Loosen the rack. Move the Gantry to the front/right of the machine. Make sure you have good engagement with the pinion gear and the rack. Tighten the front screw. Move gantry back/left to next screw on the rack. Check engagement of pinion gears and rack, making adjustments. Tighten Second screw. Continue until you reach the back/left of the machine.

If binding continues email support@millrightcnc.com for additional help.

Additional Resources

A video tutorial list can be found on the resources page of our website.
https://millrightcnc.com/resources/

It will have videos covering:

Homing switches and Coordinate systems

https://www.youtube.com/watch?v=61FNml8M3i0

Basic Fusion CAD/CAM

https://www.youtube.com/watch?v=oSYyz21TcJU&t=57s

Lightburn for Laser

https://www.youtube.com/watch?v=PIDfe2tVWI0

And others.

Vectric has good tutorial videos on their website.

https://www.vectric.com/support/tutorials/vcarve-desktop?

And their YouTube page

https://www.youtube.com/channel/UCqkhkxqPPLdtYy8ybykTlzQ

Fusion 360 Product documentation can be found here.

https://help.autodesk.com/view/fusion360/ENU/?guid=GUID-1C665B4D-7BF7-4FDF-98B0-AA7EE12B5AC2

Fusion 360 YouTube Page

https://www.youtube.com/c/AutodeskFusion360/featured

Many other tutorial videos can be found by third parties.

You can ask questions on our forum found on the resources drop down on our website.

https://millrightcnc.proboards.com/

You can also find help from customers on Facebook by joining groups dedicated to our machines.

MillRight CNC User Group

MillRight CNC Mega V Group

You can also reach MillRight support by email at support@millrightcnc.com.