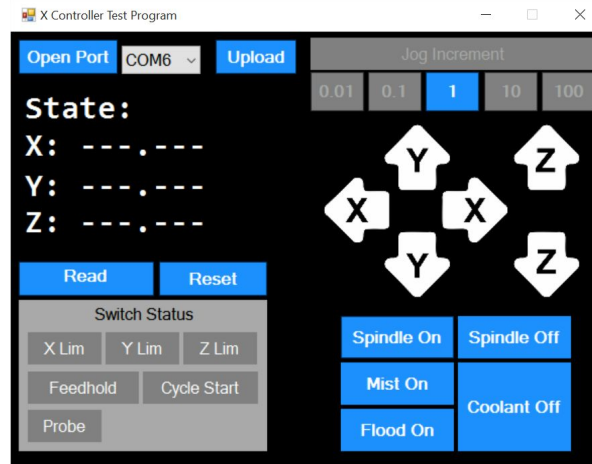


## Firmware upload and test.

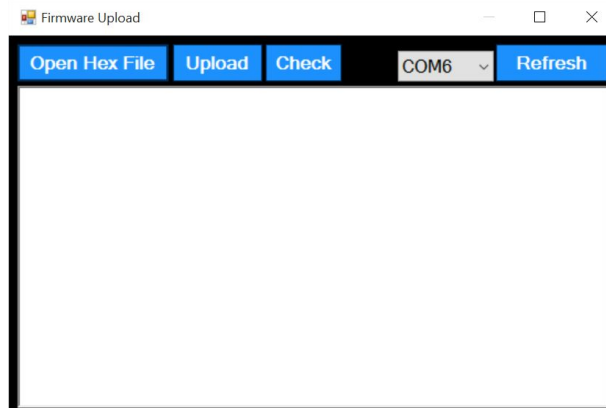
Use the X-Controller Test Program. You can get it here.

<http://www.eng-serve.com/inv/XctrlTest/>

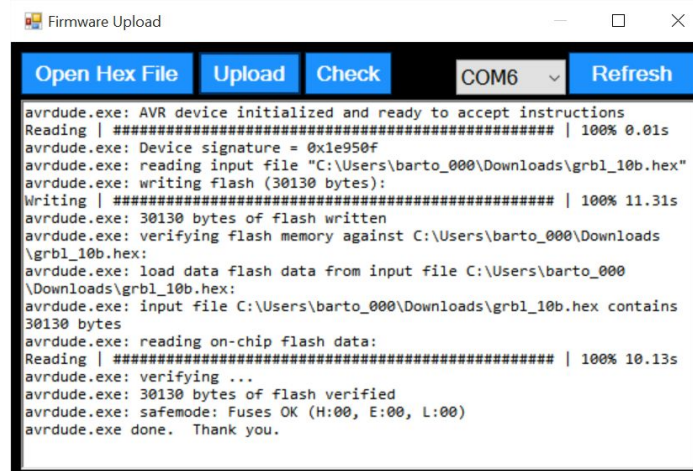


### Firmware uploading.

- Plug in the X-Controller to AC Power (Be sure 120/240 switch inside is correct).
- Connect it to the test fixture.
- Connect to a Windows PC via USB.
- Turn on X-controller power switch
- Click on the **Upload** button to get to the upload screen.



- Select the correct com port from the list. **Refresh** the list if required.
- Click on the **Open Hex File** button. Browse to **grbl\_1p0c.hex**
- Click the upload button. You should see text from the result in the text box. It takes about 30 seconds with a read, write and read phase.



The screenshot shows the 'Firmware Upload' window with a black header bar containing four buttons: 'Open Hex File', 'Upload', 'Check', and 'Refresh'. A dropdown menu shows 'COM6'. The main text area displays the following log output:

```
avrdude.exe: AVR device initialized and ready to accept instructions
Reading | ##### | 100% 0.01s
avrdude.exe: Device signature = 0x1e950f
avrdude.exe: reading input file "C:\Users\barto_000\Downloads\grbl_10b.hex"
avrdude.exe: writing flash (30130 bytes):
Writing | ##### | 100% 11.31s
avrdude.exe: 30130 bytes of flash written
avrdude.exe: verifying flash memory against C:\Users\barto_000\Downloads\grbl_10b.hex:
avrdude.exe: load data flash data from input file C:\Users\barto_000\Downloads\grbl_10b.hex:
avrdude.exe: input file C:\Users\barto_000\Downloads\grbl_10b.hex contains 30130 bytes
avrdude.exe: reading on-chip flash data:
Reading | ##### | 100% 10.13s
avrdude.exe: verifying ...
avrdude.exe: 30130 bytes of flash verified
avrdude.exe: safemode: Fuses OK (H:00, E:00, L:00)
avrdude.exe done. Thank you.
```

- After upload, click the **Check** button. It should verify the software and show a screen similar to this.



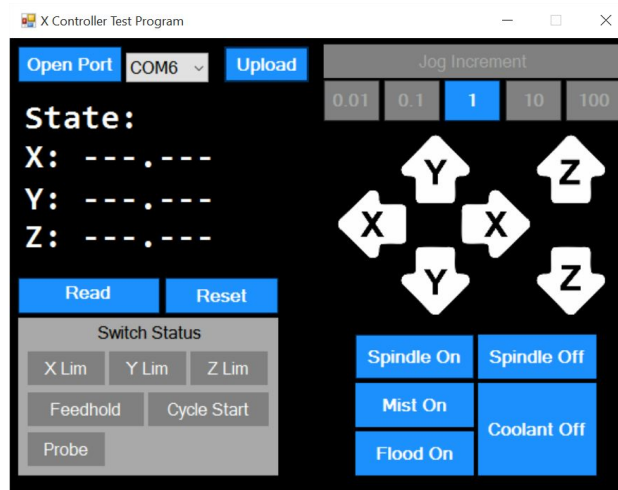
The screenshot shows the 'Firmware Upload' window with the same header bar. The main text area now displays:

```
Grbl 1.0b ['$' for help]
```

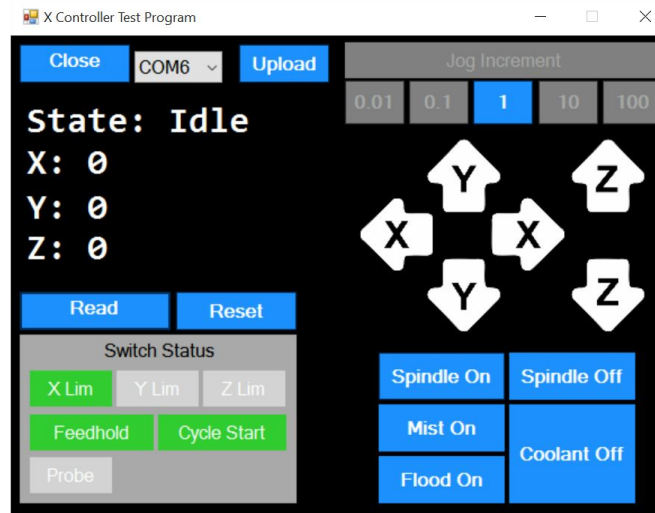
- Close this window using the “X” in the title bar.

## Hardware Testing

- Click the Open Port button with the correct port selected.



- Click the **Read** button. This allows the program to check the status of the switches
- Click the limits switches and probe button on the test fixture. Click the First two buttons on the X-controller (Hold & Start). **Do not click** the third button (reset). You should see the status indicators to change from gray to green. The refresh rate is a slow, so you need the hold the button for at least ½ second.



- Use the arrow buttons to test all motors.
- Use the **Spindle On** and **Spindle Off** buttons. You should see LEDS on the test fixture turn on and off.
- Do the same for **Mist On** and **Flood On**. **Coolant Off** will turn both of those LEDS off.