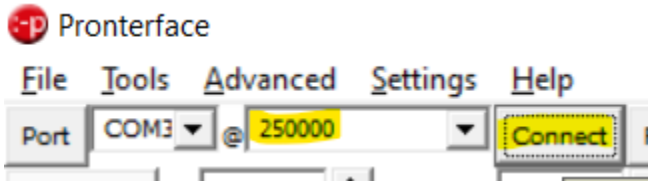
Creating a “Pro” Recreator 3D when the second extruder driver doesn’t work

In some XVico X3S machines, it seems the second extruder (E1) does not work with the Recreator 3D firmware. There is an alternative method: make use of one of the other axes! Just follow these steps carefully - don’t take shortcuts and you are likely to have success. Note that this is based on my experience and a sample of one machine; if at any point you notice odd behavior from your machine using this method, I would suggest *not* using this alternative method and build the single-motor version of the Recreator 3D instead.

These instructions assume you have fully completed the build instructions for the Pro (dual-motor) version of the Recreator 3D. If you have not completed those steps, some of what is mentioned below will not make sense.

1. Turn off your machine and unplug it from the wall
2. Turn your machine upside-down and remove the bottom cover by removing the four screws from the plate
3. Remove the stepper driver board from the E1 slot and place it in the X driver slot instead
4. Move the stepper motor plug from the E1 motor output to the X output on the board instead
5. Replace the cover and replace all four screws
6. Plug the machine back into the wall and turn it on
7. Connect your computer to the Recreator 3D with a USB cable
8. Start Pronterface
9. Assuming you have the drivers for the XVico board correctly installed on your machine, Pronterface should automatically fill in the port. Make sure the baud rate is set to 250000 and click “Connect”



10. In the lower-right hand corner of the interface, type “M92” in the command line and click “Send”

11. The console should show the current steps-per-unit for all axes. *Note that I have already set my steps for the X axis - you will likely see 80.0 for the X axis.*

```
Connecting...
Printer is now online.
Disconnected.
Connecting...
Printer is now online.
>>>M92
SENDING:M92
echo: M92 X110.00 Y80.00 Z400.00 E110.00
```

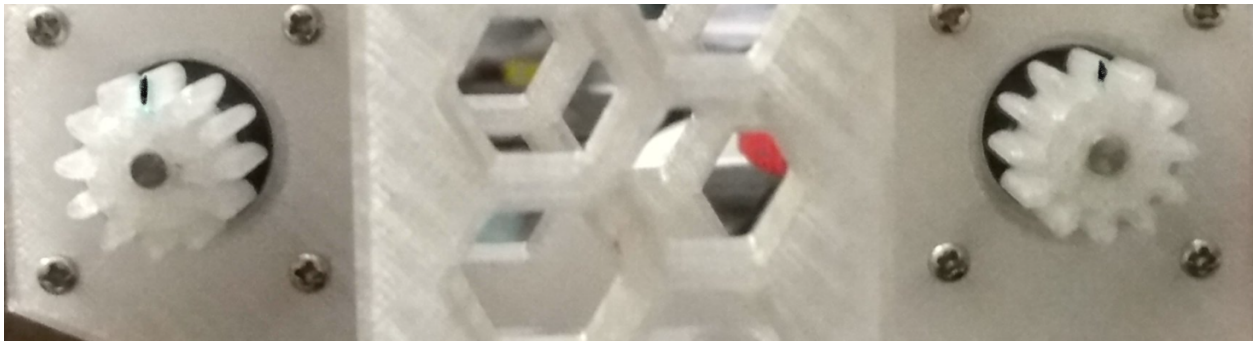
12. You should now set the X steps to match the E steps. In my case it is 110. You can do this with the command **M92 X110** (and click the “Send” button.) You should see something like this in the console:

```
echo: M92 X110.00 Y80.00 Z40(
>>>M92 X110
SENDING:M92 X110
```

13. Now you need to write these to the firmware. This can be done by typing in the command **M500** and clicking the “Send” button. You should seem something like this in the console:

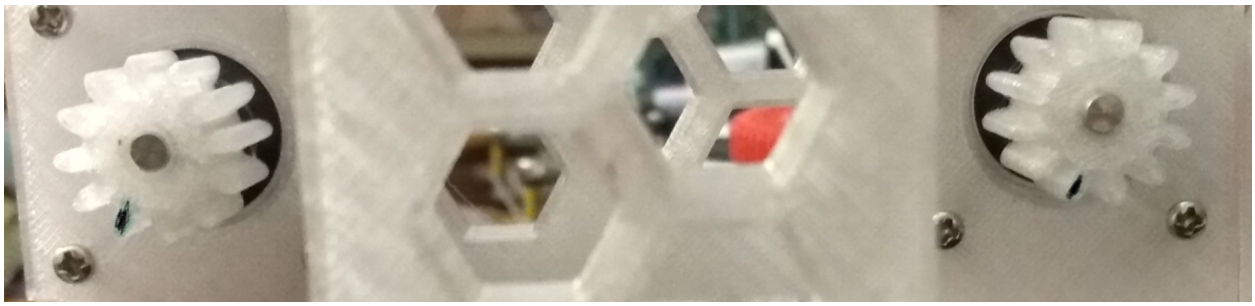
```
>>>M500
SENDING:M500
echo:Settings Stored (643 bytes; crc 44867)
```

14. Acceleration should normally be set to be the same in both the E and X axes - this is important to ensure the motors spin up to speed at the same rate. In the next steps be sure to note the behavior of your printers gears
15. In the next step, we want to make sure of two things: that the two motors are spinning in the same direction and that they spin at the same rate. Follow these steps carefully:
16. First, remove the spool gear if you have it installed
17. Next make sure the gears on both of the motors are in the same orientation. With a permanent marker, mark the top spur of both gears:



18. Now we will need to pre-heat the hot end so the extruder motor can run. In Pronterface, enter the command **M104 S200** to set the hotend temperature to 200C. Wait for the hotend to reach that temperature.
19. Once the hotend is at 200C, enter the command **G1 E100 X100 F400** in Pronterface.

20. Watch the gears to make sure both move in the same direction. Once the movement stops, verify that the marks you have made are in the **same position**.



21. If you see a similar result where both marks are in the same orientation, congratulations, you have a Pro model! Click “disconnect” in Pronterface, disconnect your computer from the Recreator 3D and re-attach the spool gear.
22. When making filament, you will need a modified version of the Pro gcode files. In these files the commands have been updated to run the E and X motors instead of the two E motors. Download these files and place them on your SD card for the Recreator 3D - you are now ready to MAKE SOME FILAMENT!