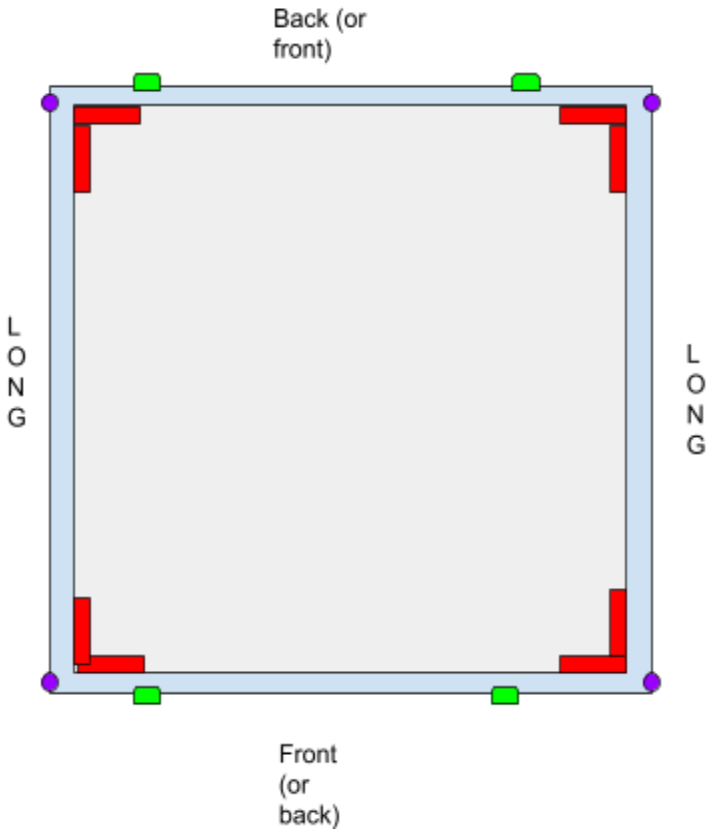
Notes on Ortur Laser Master 2 Build
By Al Williams

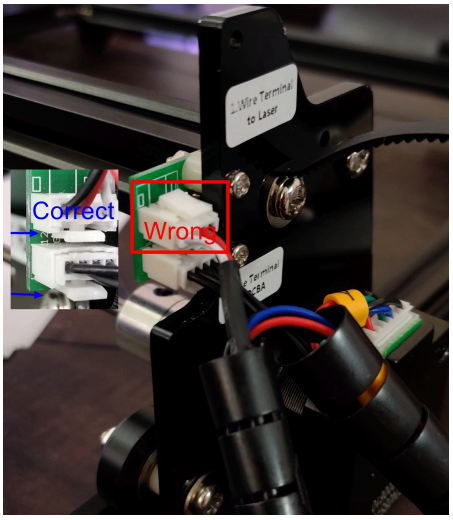
A few notes that supplement the official instructions.

1. The corner braces each have two grub screws in them. A grub screw might fall out in shipping. If so, put it back in first.
2. The braces fit inside the square. The holes in the braces are for the grub screws, not to line up with the bolt holes in the extrusion.
3. Slide a brace into the top slot of a long extrusion and push it past the drill hole. Then line the drill hole up with the hole in the end of the short extrusion and slot it into the vertical part of the brace. Tighten with M5x25 bolt through the hole in the long extrusion threaded into the short extrusion's end hole. When all 4 corners are done, tighten the grub screws to hold the braces down. Be sure to put in the two T nuts on the front and back pieces. These will face the front and the back when completed.
4. At the end, the braces will "rest" on the inside tracks of the extrusions. See the picture below. The red are the braces, the green are the T nuts and the purple are the bolts holding the frame together. Note, the T nuts will slide so their position isn't important yet.

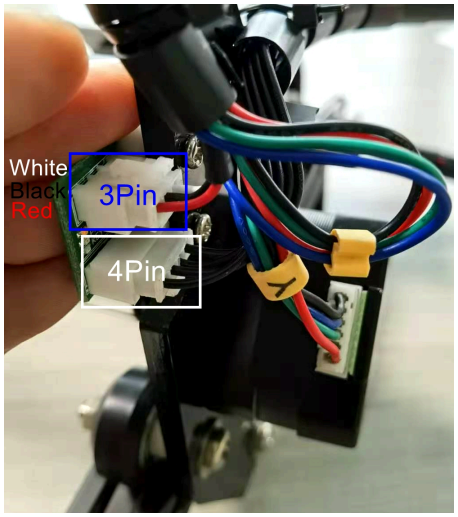


5. Slide the X carriage onto the frame. You will wind up with two wheels on the top of the long extrusion and one wheel underneath. Just put the frame in the right position and push/wiggle the carriage until it slides freely. Right now, either short end can be the front or the back, but the side of the carriage that has the four threaded bolts sticking out for the laser will be the front. The stepper motor mount will be to the rear.
6. To simplify the feet, put the bolt without the washer into the T nut first, but don't tighten fully so the foot can slide. Then put the belt through the slot and with a bolt and washer, tighten into the end hole of the long extrusions. Then tighten the first bolt into the T nut. You want to do both sides of the back (the side nearest the X stepper motor mount on the carriage). Don't worry about the belts when doing the back feet, other than the teeth on the belt go down.
7. Slide the belt into the top grove of the long extrusion. Go under the rear wheel on the X carriage. Now you need to get it to go up over the drive gear. The easiest way I've found to do that is to push it straight through and block the path on the far side of the carriage with your finger or a screwdriver. The belt will buckle, making a loop that you can position between the rear wheel and the drive gear. Snag the loop with your finger and pull the belt back out. Thread the gear and then the belt will naturally feed around the forward wheel.
8. Turn the frame and do front right foot only. You'll want to put tension on the belt as you tighten. The manual shows using pliers, but your fingers will probably do.
9. The end stop mounts using a T nut on the top left long extrusion. The microswitch goes to the top and faces the rear of the unit. The end stop also grabs the left belt. Get the bolt started and pull the stop back to tighten the belt as you tighten the bolt into the T nut.
10. The control until serves as the front left leg. You don't need any washers.
11. The X stepper mounts next. Make sure the power connector faces up and the belt goes taunt over the drive gear.
12. The laser mounts to the acrylic plate. It appears that you want to place it as high as it will go. The narrow part of the plate goes up and should be about as high as the laser's cooling fan. Apparently, the 20W laser has a slightly different mount.
13.

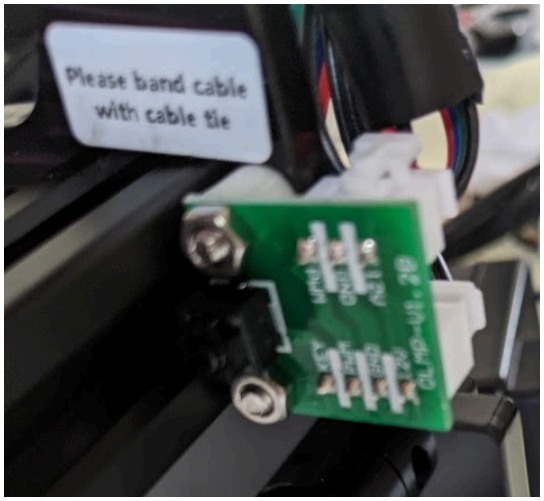
14. The cables are pretty easy. The X and Y steppers are marked and the 3rd end is the controller. The end stop connects to the controller in the middle connector. The only tricky one is the small connector on the Y stepper assembly (not the stepper connector). There is a picture in the official ZIP file that shows it is easy to put the connector on backward. It really looks like the lock should go up, but it really should go down, at least on the v2 board. It appears that the best way to tell is that, the white wire goes to the right. If you have a v1 board, there is a picture of that in the official ZIP file that has instructions. If you look on the back of the board, it is marked PWM, GND, and 12V. The PWM is the white wire.



Version 2



Version 3



There is also a version 1 board that does not have the RJ connector for the handheld control box.

15. There are small holes on the controller and near the two steppers for using zip ties to hold the wires down.

Obligatory action video:
https://www.youtube.com/watch?v=KFGPXsOP40M