Section 4: Y Motor Mount, Y Bar Clamp and Z Rod Clamp

The following is the assembly instructions for the Y motor mount assembly (1 required for this Mendel), Y bar clamp assembly (4 required) and z rod clamp (2 required). These are grouped here since all are necessary for the frame assembly, which is the next section. They are best categorized as ‘small fiddly bits’ and thus reside together. The bill of materials for all these assemblies together is:

<table>
<thead>
<tr>
<th>Description</th>
<th>Printed/Purchased</th>
<th>Quantity</th>
</tr>
</thead>
<tbody>
<tr>
<td>ja_y_motor_mount</td>
<td>Printed</td>
<td>1</td>
</tr>
<tr>
<td>ja_y_rod_clamp</td>
<td>Printed</td>
<td>4</td>
</tr>
<tr>
<td>5/16 or M8 threaded rod</td>
<td>Purchased</td>
<td>1, cut to 35mm long</td>
</tr>
<tr>
<td>5/16 or M8 Nut to fit rod</td>
<td>Purchased</td>
<td>1</td>
</tr>
<tr>
<td>M3 X 12 SHCS</td>
<td>Purchased</td>
<td>4</td>
</tr>
<tr>
<td>M3 Nut</td>
<td>Purchased</td>
<td>4</td>
</tr>
<tr>
<td>Fender Washer</td>
<td>Purchased</td>
<td>2</td>
</tr>
<tr>
<td>608 bearing</td>
<td>Purchased</td>
<td>1</td>
</tr>
</tbody>
</table>

The Y motor mount is first.

The completed assembly is shown above.
The printed part in the build orientation.

Take an “O” or 8mm drill and carefully ream the holes. Carefully clean out the closed bottom hole as best you can.
Drill out the 3mm holes, and trimout the 3mm slots for an easy fit to the screws.

Mix up a liberal amount of 5 minute epoxy and smear on the end threads of the 35mm cut threaded rod. Also put some into the flat bottomed hole. Screw the threaded rod in and carefully wipe off excess.
Check perpendicularity in both directions with a square. Let cure fully.
Insert nuts into the hexagonal holes for the opto mount screws (2X). Push in partially. You may have to trim the edges with an Exacto knife to get them in. See comments on this at the end of this section for other ways to do this.

Pull the nuts to the bottom of the recess with an M3 screw, then remove the screws.
Now put on the threaded rod in order: fender washer, M8 washer, 608 bearing, M8 washer, fender washer and nut. Snug nut.

The Y bar clamp assembly.
The printed part in the build orientation.

A cross section view of the assembly. Note that there is a captive nut buried inside to allow the standard M3 X 12 screw to clamp the y axis rods. Also, there is an undercut on the top surface of that through hole to insure only the outer portions make contact with the rod to insure reliable clamping.
Drill out the M3 hole.

Drill out the M8 hole that is tear drop shape. Now put the “O” or M8 drill through the hole that has the undercut. Move it and out to smooth the walls, but do not rotate. We want a good fit, but not too big.
Put an M3 screw through the hole.

Grab an M3 nut in needle nose pliers and insert into hole.
Line everything up and engage screw into nut.

Pull nut into recess. Tighten to bottom nut then loosen to allow rod to fit in.

The Z rod clamp.
The finished assembly and the part in the build orientation.

Drill out M3 holes.
Drill out M8 holes

Carefully ream out the rod clamp with a drill to not make it oversize. Try on rod to insure snug sliding fit.
Put nut on end of screw.

Start in hexagonal hole.
Push to bottom.

Remove screw, engage from other side and leave loose.

NEWS FLASH……

As in many assemblies, we need to push an M3 nut to the bottom of the hexagonal recess. I continually experimented with the easiest way to do this. In the Y motor mount I just pushed it
by hand and pulled it to the bottom with a screw. It was very hard to get it started. Here I put the nut on the end of a screw and pressed it in to bottom the nut in the recess. I then removed the screw and put it in from the other side. It was still hard to get everything lined up. Then I had a brilliant idea. It is illustrated here. Note it is shown on a part not mentioned in these instructions (thousand apologies…).

Run an M3 nut all the way on the screw.
Put screw and nut into the hex side hole. The screw extends far enough to engage the 3mm hole at the bottom of the hex recess. Squeeze with pliers, and note everything stays nicely aligned. When the screw is flush or slightly below the surface, take it out.

Wow, that was much easier…