

Assembling the KRMx01 Y-Carriages



Step 1:

Gather together all the parts needed to make a single carriage. Pictured to the left are all the pieces of metal angle that will be required to build one of the Y-Axis Carriages. From top to bottom are two carriage supports, two spacers, carriage bottom piece and a carriage top piece.



Step 2:

Start by adding a 1/4" washer to two 1/4"-20 x 1" long bolts. Take one of the 1" angle support pieces and slide these bolts into the end pair of holes. See the image to the left.



Step 3:

Next add one of the 1/8" x 1" x 2" spacers to the bolts placed on the support. Keep in mind that the holes on the spacer are offset like they are on the support. See the picture to the left.



Step 4:

Next add the top carriage angle to the assembly. Remember that the flat undrilled side of the support angle will be on your left and the bearing slot on the bottom carriage angle will be on your left. Add a 1/4" washer, 1/4" lock washer and a 1/4" nut and finger tighten. See the picture to the left. Attach the other support in the same manner. Remember that the outside of the support angle will face to the right on the other side.



Step 5:

Next place the carriage top on a hard flat surface and make sure the support angles are pushed all the way down. The idea here is to make sure they will be flush with the top carriage angle. If it extends past the top, it could interfere with the X-Beam. Next place a square along the carriage top and support and square the assembly up. Tighten the bolts. An assistant to help here is a bonus. See the image to the left. Do the same routine to the support angle on the other side.



Step 6:

Turn the assembly around so that the flat side of the carriage supports are facing you. Add a 1/4" washer to 4, 1/4"-20 x 1" bolts and insert them into the two top holes of both carriage support pieces. Next, add a spacer to each support piece. See the picture to the left.



Step 7:

Next add the carriage bottom to the supports, letting the part rest on the bolts protruding from the support pieces. Add a 1/4" washer, 1/4" lock washer and a 1/4" nut to each of the 4 bolts. Finger tighten. See the picture to the left.



Step 8:

Lay the assembly so that the supports are facing up. Next you want to make sure the top and bottom carriage angles are 6-7/8" apart, measuring from the outside edges of the top and bottom carriage angles. Check at both ends and when you are sure of the measurement, tighten the 4 bolts holding the supports to the bottom carriage angle.



Step 9:

Next gather together all the parts you need to install the anti-backlash nuts. The new nuts from CNC Router Parts comes in a nice aluminum housing and with a pair of 5/16"-18 socket head bolts. You will need in addition to these, (4) 1/4" flat washers, (4) 5/16" split lock washers and (4) 5/16" nuts.

the KRMx01 Guide to Building a High Precision CNC Router



Step 10:

Attach the anti-backlash nuts to the carriage supports making sure that the elongated plastic part of the nut faces the inside of the carriage. See the picture to the left. Add a 1/4" flat washer, a 5/16" split lock washer and a 5/16" nut to each bolt protruding through the support. Finger tighten the hardware.



Step 11:

Gather the hardware you need for the bearing assemblies. Keep in mind you need to be picky about the selection of the inside nuts and washers for these. Take the time to measure the thickness of the nuts and washers finding 4 nuts and 8 washers that measure the same thickness. This is important to make sure that each bearing is the same distance from the rail that it will ride on. Assemble these by the instructions given on page 71 of the book.



Step 12:

Slide the bearing assemblies into the slots of the top and bottom carriage angles. See image to the left. Remember that your matches washers will be on the inside of the angle. Add a 3/8" washer and nut to the bolt and finger tighten them. You may want to tighten them closer to the edge of the angle to leave room for the adjustment bolt. I assembled the thing out of order. :-)



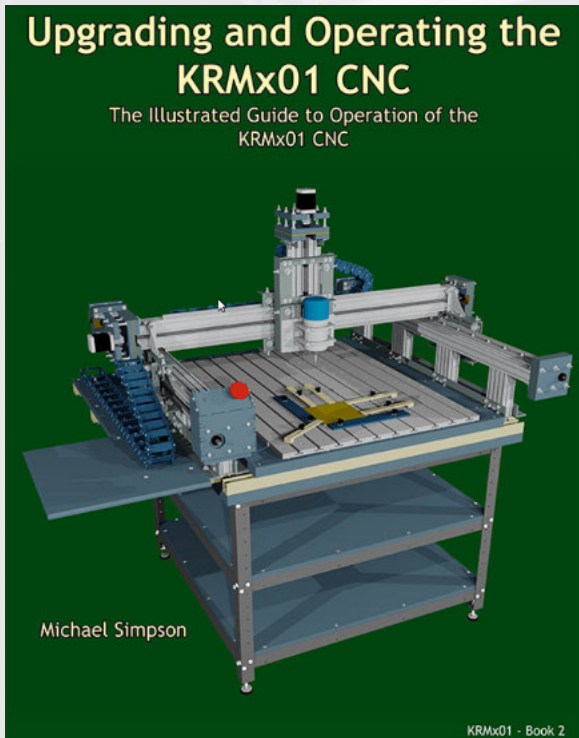
Step 13:

Add a 1/4" nut, 1/4" split lock washer and a 1/4" flat washer to a 1/4"-20 x 1-1/2" all thread bolt. Screw the bolt into the bearing adjuster hole on the carriage. Using a dial caliper or a pair of vernier calipers, adjust the bolt so that when the nut is tightened against the lock washer that you have .020" of clearance between the nut and the bolt head. Do this for all four adjusting bolts. When completed loosen and slide the bearing so that the flat of the nut is against the adjusting bolt and re-tighten.



The completed KRMx01 Y-Carriage

The carriage is ready to be added to your machines Y-Beam. Follow the same steps to assemble the other carriage.



For Great Upgrades and Operating Instructions

Check out the KRMx01 Book 2 - Upgrading and Operating the KRMx01 CNC by Michael Simpson. This book is available on Amazon and kronosrobotics.com.

Michael Simpson

KRMx01 - Book 1