

## TOOLS REQUIRED:

EYE PROTECTION should be worn at all times. All safety precautions should be used during assembly and operation of this machine.

3/8" DRILL MOTOR 5/16" DRILL BIT

PENCIL MEASURING RULE

2 C-CLAMPS

1/4", 3/16", 5/32", 1/8", 3/32" HEX WRENCHES

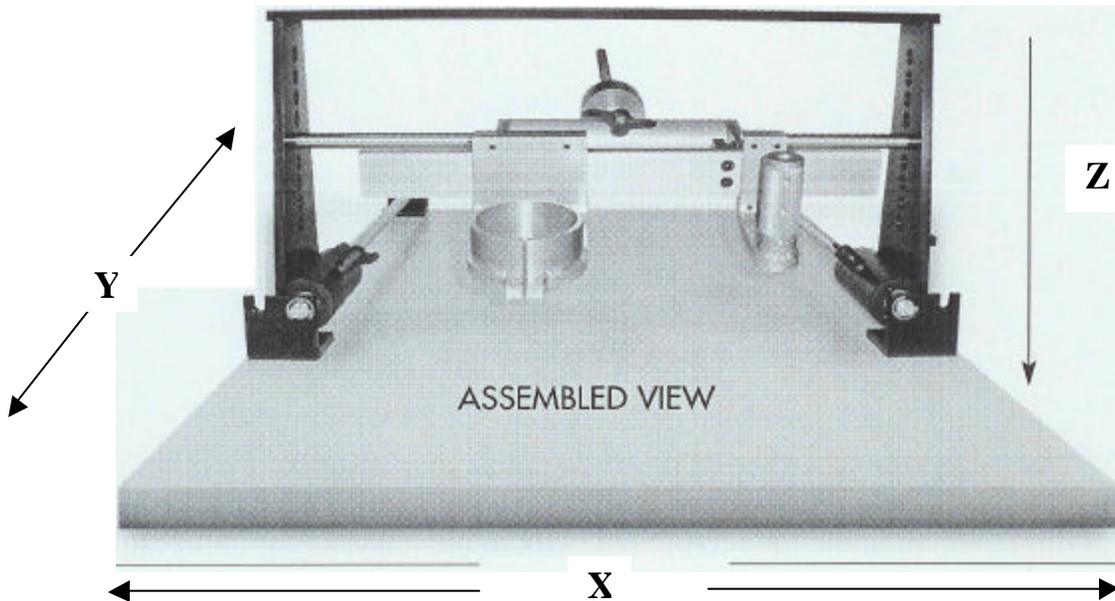
## MATERIAL REQUIRED:

MEDIUM DENSITY FIBERBOARD (MDF) OR PLYWOOD FOR BASE

3/4" x 48" x 48" FOR MODELS 520, 1020, 2020

3/4" x 30" x 48" FOR MODELS 510, 1010, 2010

IT IS RECOMMENDED TO USE DOUBLE THICKNESS OF 3/4 PLYWOOD OR MDF



### • NOTES:

All directions are based on operator's perspective from front of the machine. The "X" Axis runs side-to-side; the "Y" Axis runs front-to-back. Assemble the machine on its intended baseboard.

## ASSEMBLY OF BRIDGE

1. Construct the Bridge Assembly by attaching the Bridge Cross Beam to the two Bridge Uprights using four 1/4 - 20 x 1" Flat Head Socket Cap Screws (FHSCS).



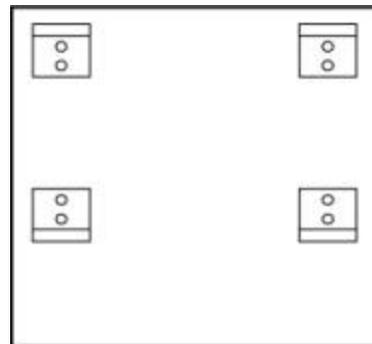
2. Insert the "X" Axis Rod between the bottom holes of the Bridge Uprights. Install a 1" shoulder screw at each end of this rod. (**Model 520,1020, & 1520**) For Model 510,1010, & 1510 slide the "X" Axis rod through the holes and use 3/8-16 button head screws at each end.



## ASSEMBLY OF BASE

3. Position the Multi-Carver so the Support Angles are near the back of the base, and so the angles are the same distance from the edge of base on the left and right sides. Orienting the Support Angles as shown. The slots for the lead screw are positioned towards the outside of the machine.

Back of Base



Outside of Machine  
→

## ASSEMBLY OF "Y" AXIS

4. Slide a "Y" Axis Rod through the Linear Bearing in each Bridge Upright. Slide the rods so that a roughly equal length protrudes from both sides of the bearings.

The locking screws can be used to keep the rods from moving during installation.



5. With both "Y" axis rods in position on the support angles, slide the Bridge Assembly forward and back several times through its full range of travel. This will help the support angles find their natural position on the base.



## ASSEMBLY OF LEAD SCREW



6. The lead screw can be installed on either the left or right or both sides of the Y-axis.

Make sure the lead screw will fit between the two angle supports and turn easily before installing the split nut to the upright.

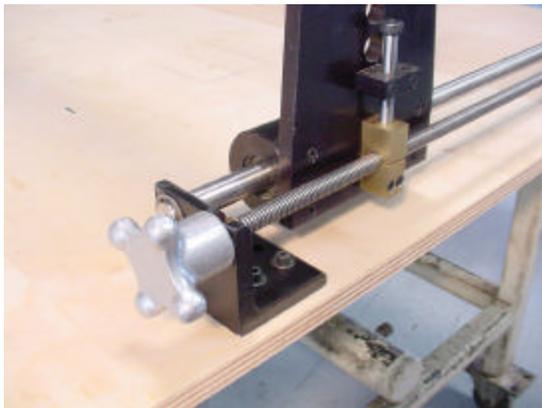
### IMPORTANT NOTE:

The 3/8-16 button head screws at the end of the "Y" Axis rods should be loosened to allow the bronze bushings to rest freely in the slots of the angles.

7. Using two 8-32 x 1-1/4 FHSCS secure the lower brass split nut to the upright. Then using two 8-32 x 1 1/2 FHSCS secure the shoulder screw support to the upright. Then insert the 3/8-shoulder screw through the hole in the shoulder screw support and thread it into the upper brass split nut.

**NOTE:** The brass-split halves are stamped with a numerical or alpha character. Both halves should match and be facing outward. The shoulder screw can be raised and the lead screw easily removed from engaging the lower brass split nut to allow free movement of the Y-axis.

8. On the back side, the “Y” Axis rod will need to be removed from the Support Angle on each side of the machine to position the Drive Chain around the sprockets. Once this is done, and everything is moving freely, firmly hold or clamp the Angle Supports and drill two 5/16" holes at each Support Angle.



**Front view**



**Back view**

9. Working from the bottom of your base, press the 1/4 - 20 x 7/16 “T” nuts up into the 5/16 holes you have just drilled. Use the proper 1/4 - 20 SHCS with 1/4” flat washers and tighten the Angles as you go. Check often to make sure everything is still free and the lead screws do not bind in the slots.

**NOTE:** If a single piece of MDF or plywood is used, then use the 1/4-20 x 1 1/4” SHCS. If using double thickness of MDF or plywood, use the 1/4-20 x 2” SHCS. Both size screws are provided.

## **TOOL CARRIAGE**

10. The Tool Carriage arrives partially assembled. You will complete its assembly by removing the “X” Axis rod and sliding the rod through the bearings. Then use four 1/4 - 20 x 1” Flat Head Socket Cap Screws (FHSCS) to install the Front Rail.



11. Select the hole on the riser that best fits your project. The second hole from the bottom will put your cutter about 3 inches from the base. Each hole is 1 inch apart. Now reinstall the “X” Axis rod.



12. Finish the Tool Carriage assembly by installing the Router and Stylus Support. After the Counter Balance Screw, Weight and Router are added you will need to adjust the Weight for your preference. I normally set the back a little heavy.

## Helpful Hints, Tips, and Ideas

In shipping the Lead Screws can get bent. Be careful not to put a sharp bend in them if you try to straighten.

Support the power cord by tying it to the bridge with wire ties.

DO NOT oil the bearings or Axis Rods.

If wood dust accumulates in the bearings the movement of the Axis will become a little resistant. When this happens, remove the Locking Screw for that Axis and blow compressed air in the hole.

Right-handers prefer to mount the Stylus on the right side and left-handers on the left.

Get in the habit of thinking about reaching for the Stylus and NEVER reach for the cutter.

It is comfortable to operate the machine from the side where the Stylus is rather than from the front.

On the Front Rail there are ¼ inch holes drilled to match holes drilled in the Router and Stylus holder. One hole is in the center, and the others are spread at a distance of 14.600 and 19.600 inches apart. For repeatability, consider these dimensions when building jigs and fixtures.

Behind the Front Rail there are pivots that can be used to tilt the router. This could be useful when you want to cut a flat bottom surface or just to keep the cutter perpendicular to you work.

Use the “X” Axis Locking Screw to align your work from front to back, and use the “Y” Axis Locking Screws to align your work from left to right.

You can lift the split brass nut to move the “Y” Axis or to remove the Lead Screw.

Make sure before you begin any project, you have checked all screws and the nuts on the Stylus and Counter Balance for tightness.

Hold the Stylus close to your pattern with two fingers like you would hold a pencil and DO NOT push down on the Router.

Try to never climb cut. This is when the cutter wants to pull into the wood. Conventional cutting is preferred, and is when the wood is on the left side of the cutter as you move forward.

Mounting your work on a sub board allows you to fasten objects from the bottom. When you do this it is most important to make sure the screws will not be in the path of your cut.

More than one router can be used to increase productivity.

Be creative in building jigs and fixtures, but also try them out on some otherwise useless piece of wood until you know they will work.