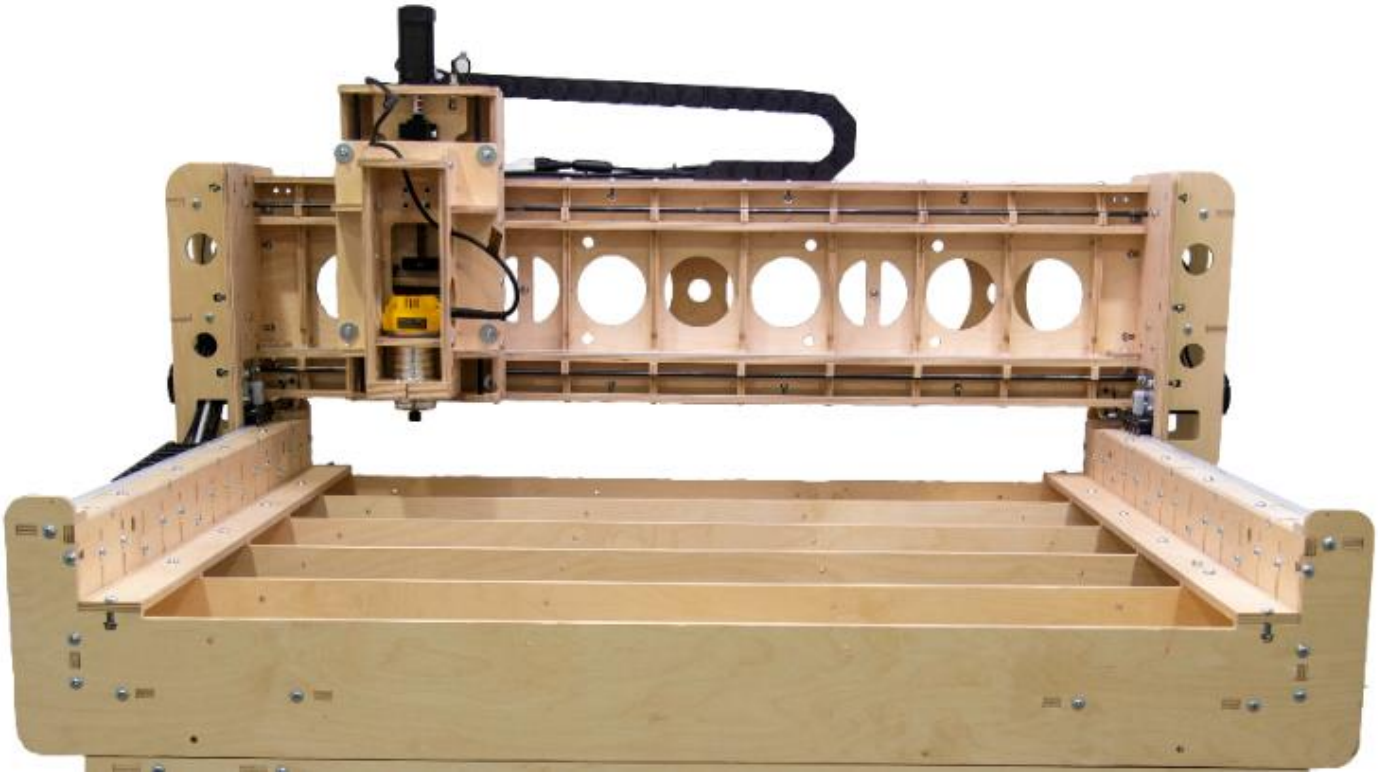
BobsCNC
Unleash Your Creativity

# KL744

# Spoilboard Construction and Tram Manual

## MANUAL 7 of 8



Version 1.9

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# Look Safety Information and Hints.

**DANGER** Indicates a serious risk of bodily harm, possible injury and death. This warning box is to be taken seriously. Any work must be carried out with extreme caution.

**CAUTION** Indicates a possible risk of injury that can result from failure to follow this warning.

**WARNING** Indicates the possible damage to the machine, it's components, or the work piece that can result from the failure to follow this warning.


Hints will provide needed information, shortcuts, and insights that will make assembly and machine operation easier and safer.

**Please review each assembly manual before beginning to assemble the KL7 SERIES CNC Router.**

The KL7 Series does not include a Spoilboard. You will need to build one.

We recommend you consider the following questions to help determine the best Spoilboard configuration for your needs. We also have included some ideas that may be helpful.

## How large is my work?

- With large projects, you may want to only have clamping at the edges.
- With small projects, you may need flexibility with clamping.

## How tall is my project?

- With tall projects, you may want a thinner Spoilboard
- A thinner Spoilboard will have more flex
- We would recommend a 0.5” to 1.0” thick baseboard and Spoilboard.

## What clamping system do I plan on using?

- Double sided tape
- Threaded inserts
- T-slots
- Vacuum table

Recommended Spoilboard installation will require:

1. 24 5/16-18 x 1.5” screws and nuts
2. 4 Runner boards 3/4 x 1 x 3 pine boards 49” long
3. 1 Baseboard 1/2 to 1” plywood (48” x 60.5”)
4. 1 Spoilboard material finish size (48” x 60.5”)

Other needed material may include: Inserts, T-track, or glue depending on your requirements for material clamping.

# Installing the Runner Boards

| | |
|---|---|
| HINT | **The Baseboard on which the Spoilboard is mounted will be screwed into the Runner Board. We recommend using a straight piece of 1 x 3 pine 49” long to construct the Runner Boards.** |

## Step 1

**Clamp the Runner Boards to the X frame as shown.**

**NOTE: that the top edge should be 1/16” below the KL44 frame members.**

## Step 2

**Drill a 5/16” diameter hole into the Runner Board using the holes on the KL744 X frame holes as pilot holes as shown.**

## Step 3

**Fasten the 1 x 3 Runner Boards with four 5/16”-18 x 1 3/4” Machine Screws and Nuts as shown.**

## Step 4

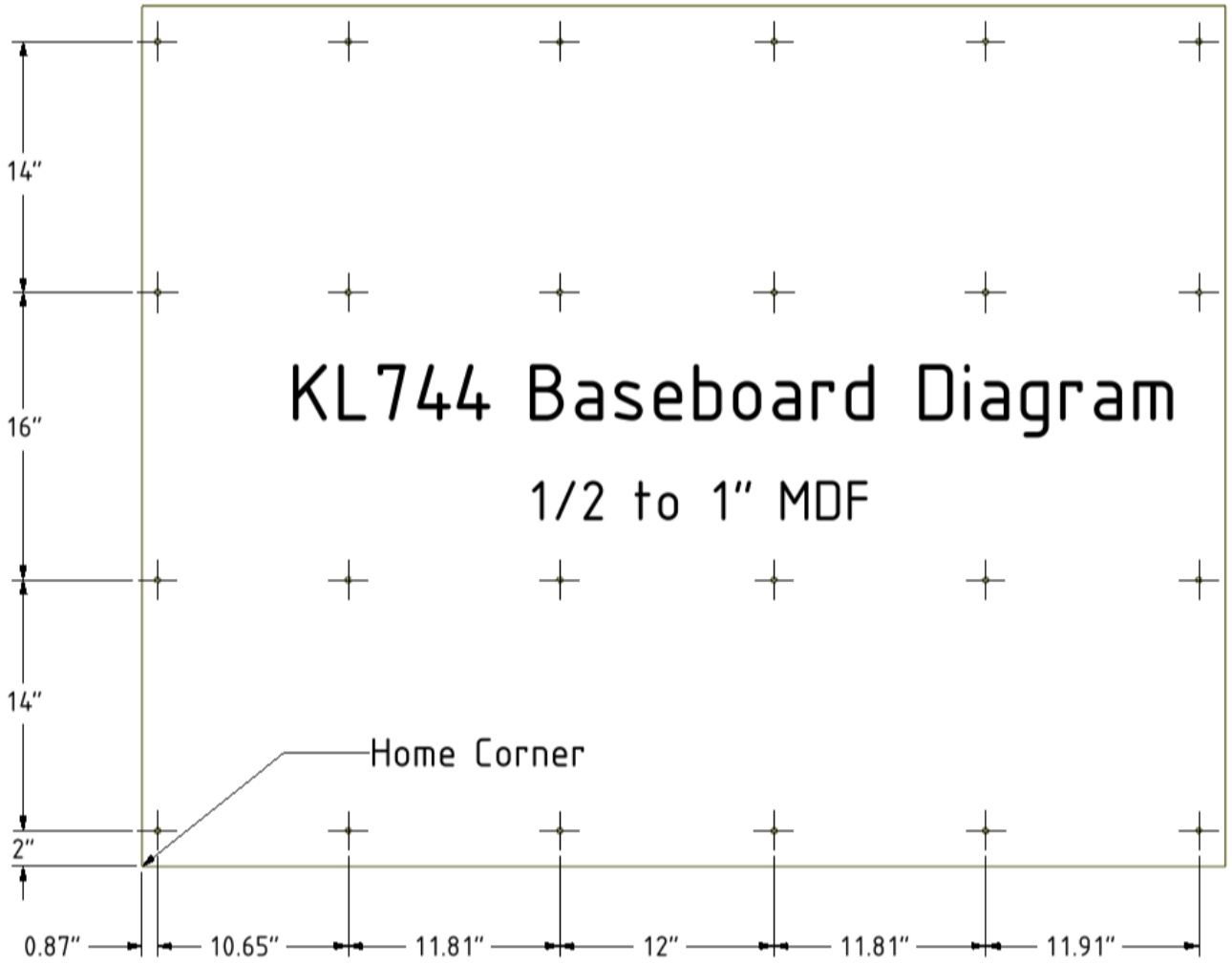
**Repeat Step 3 for the remaining four Runner Boards as shown.**

**The back Runner Board should be mounted with the machine screw heads on the outside.**

# Installing the Baseboard

## Step 1

**Cut the Baseboard Plywood to size, then measure, mark, and drill the attachment points for the baseboard as shown.**




## Step 2

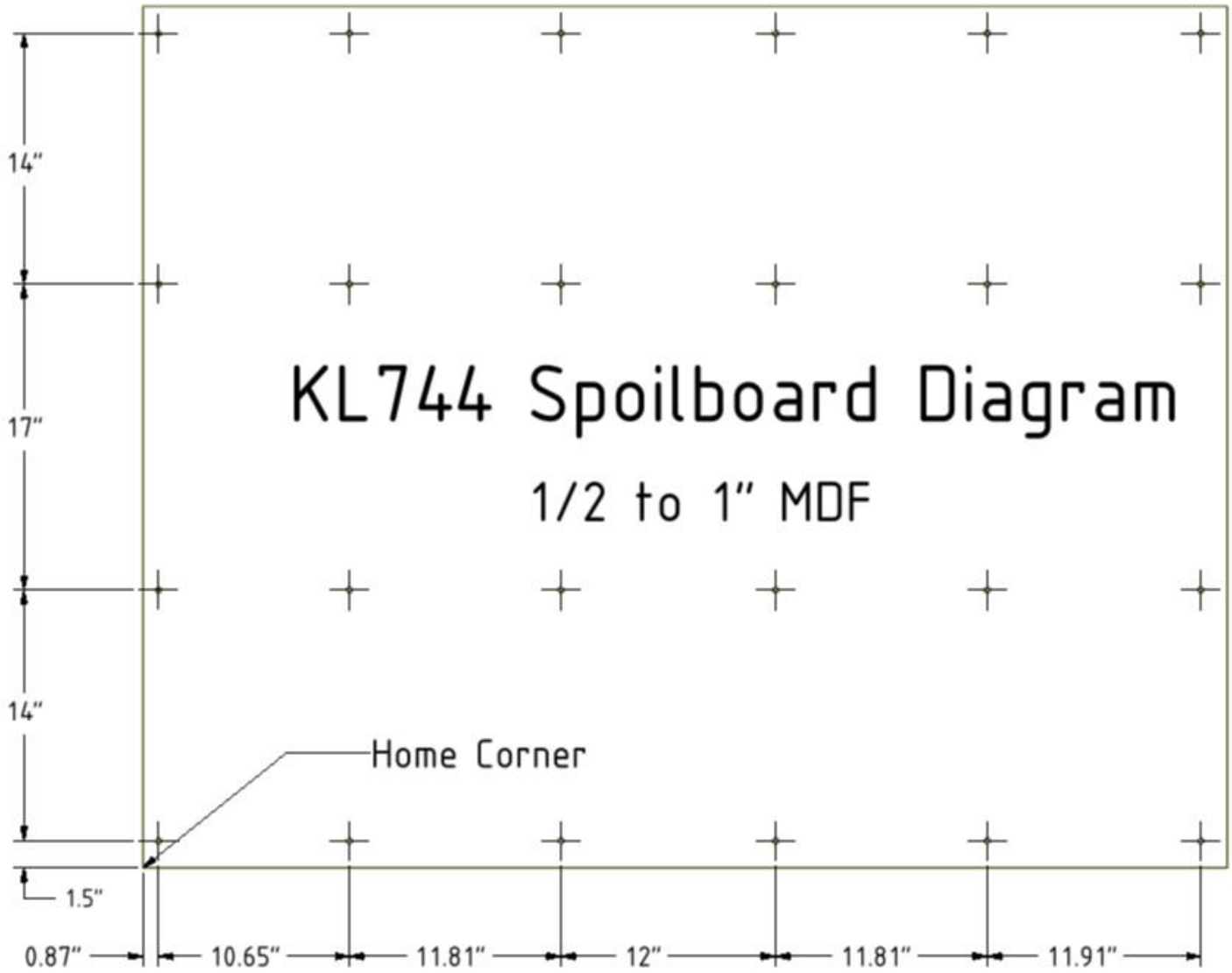
**Place the Baseboard into position so that the back side is flush with the X Frame Support.**

**NOTE: The front edge will hang over the front X Frame Support.**

# Spoilboard (Option 1) - No Clamp

## Step 1

**Cut the Baseboard Plywood to size, then measure, mark, and drill the attachment points for the baseboard as shown.**

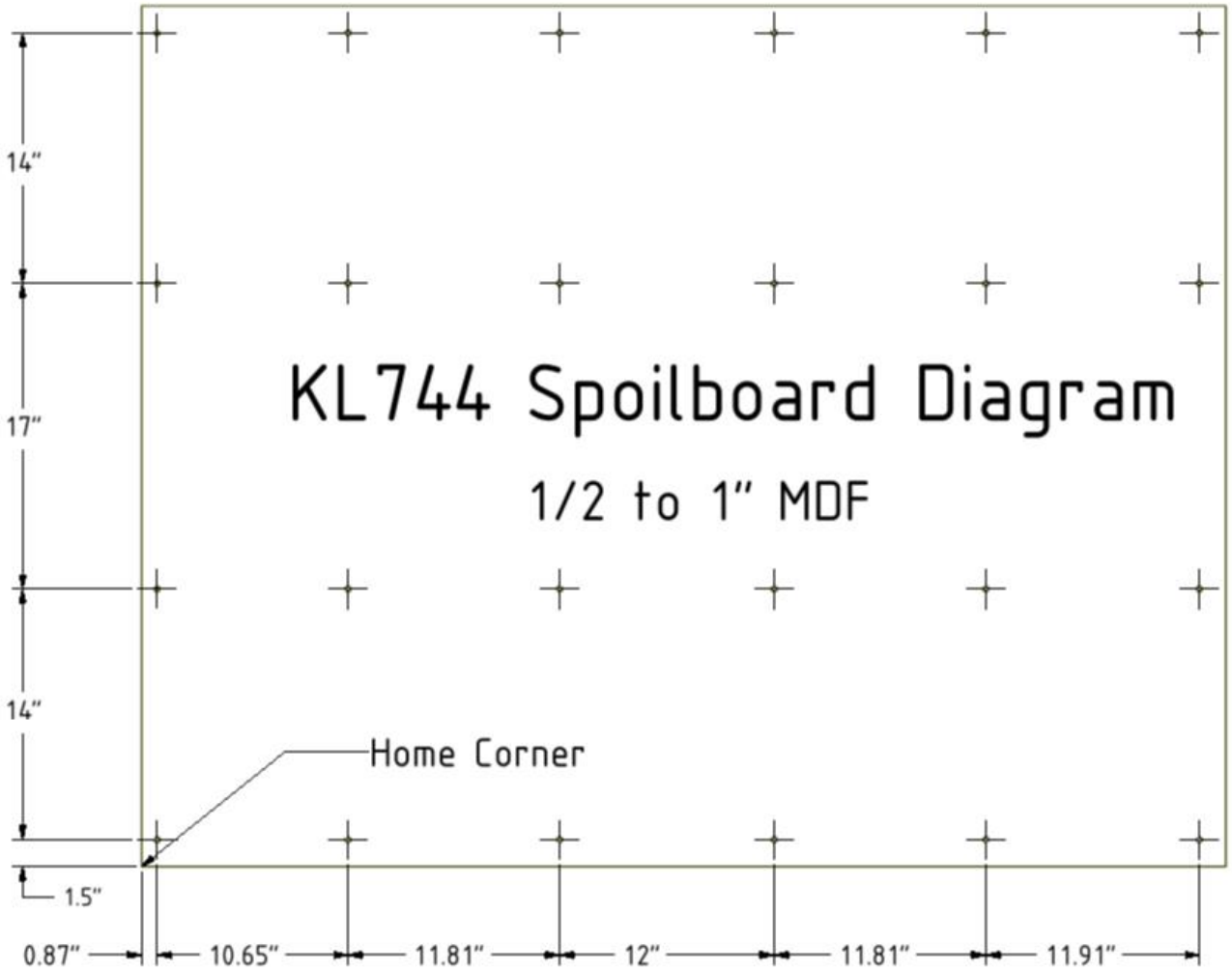



## Step 2

**The Spoilboard should be placed directly over the Baseboard.**

# Spoilboard (Option 2) - Using Inserts

**Step 1** **Cut the to size, then measure, mark, and drill the attachment points for the baseboard as shown.**




**Step 2** **Determine the desired insert pattern, then mark, drill and install the Threaded Inserts.**

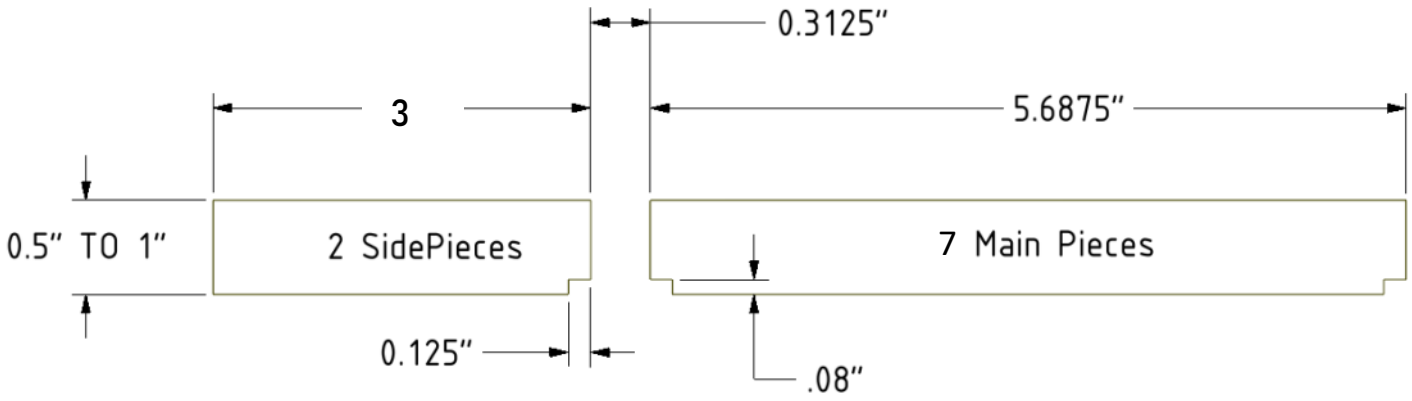
**Step 3** **Align the Spoilboard with Inserts directly over the Baseboard.**

**Screw the Spoilboard into the Runner boards using the predrilled holes. We recommend that the heads of the screws are countersunk into the Spoilboard.**

# Spoilboard (Option 3) - T-slots (A)

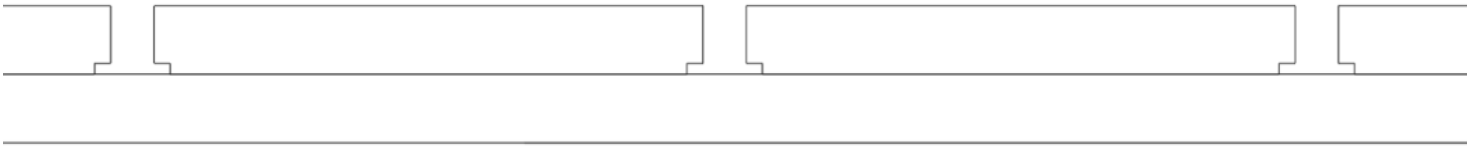
## Step 1

**Create a six inch on center sized T-slots from MDF as shown. Note the width of the slots or the board can be modified to fit your needs.**




## Step 2

**Lay out the MDF T-slots as shown and check ensure T-nuts freely slide and the end pieces align with the baseboard. NOTE: The two boards on the outside can be trimmed if needed to create the desired fit.**

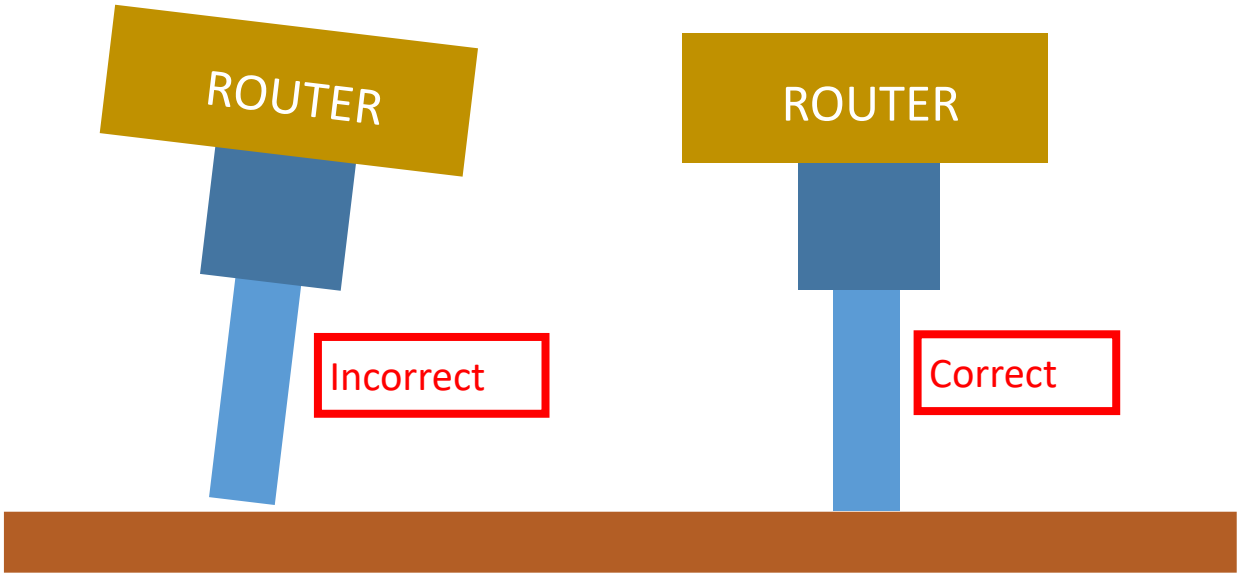


## Step 3

**Glue or screw Spoilboard pieces into place.**

# Two Ways to Tram the Spindle

**The purpose of tramming the spindle is to rotate the spindle so that the router bit is perpendicular to the Spoilboard surface as shown below.**

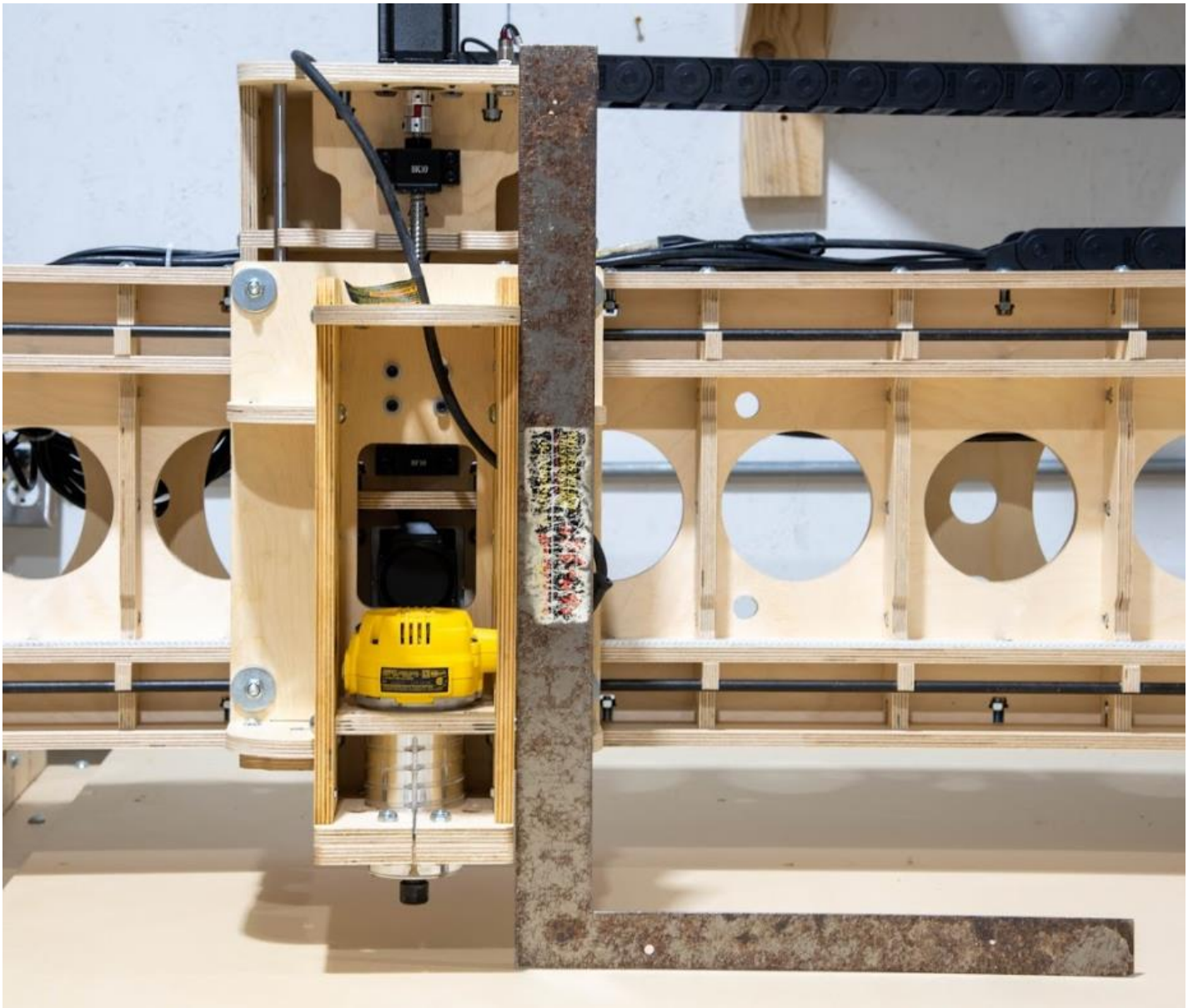



**The KL7 Series routers have 4 SG25U bearings in slotted holes. There are 8-32 Set Screws that can be used to precisely move any of the 4 SG25U bearings to rotate the Z Assembly around the X axis so that it is perpendicular to the Spoilboard surface.**

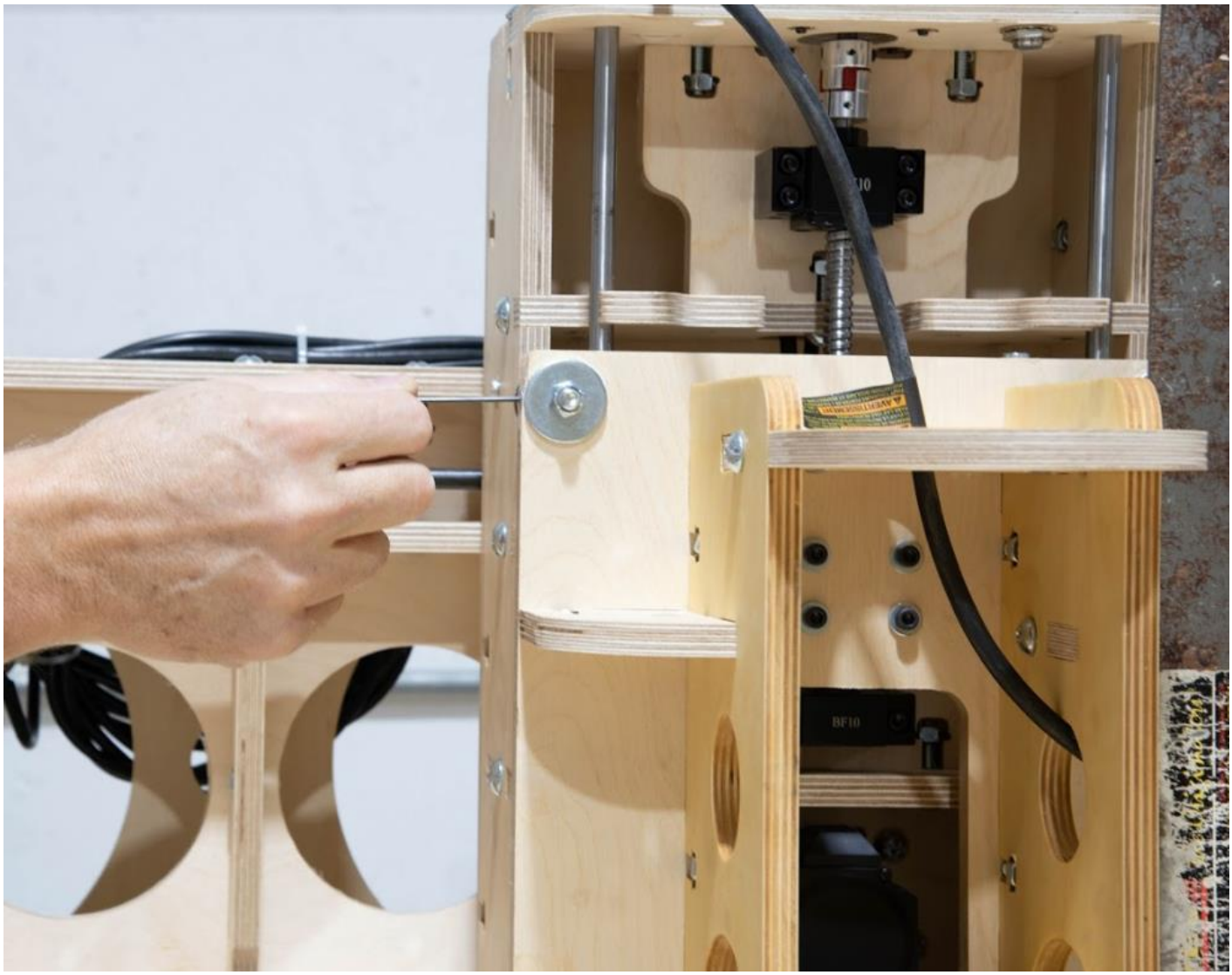
**The KL7 Series include shims (if needed) to place between the hub of the SG25U bearing on the Y axis and the wood frame to rotate the YZ Assembly around the Y axis.**

# Method 1 –Using a Square

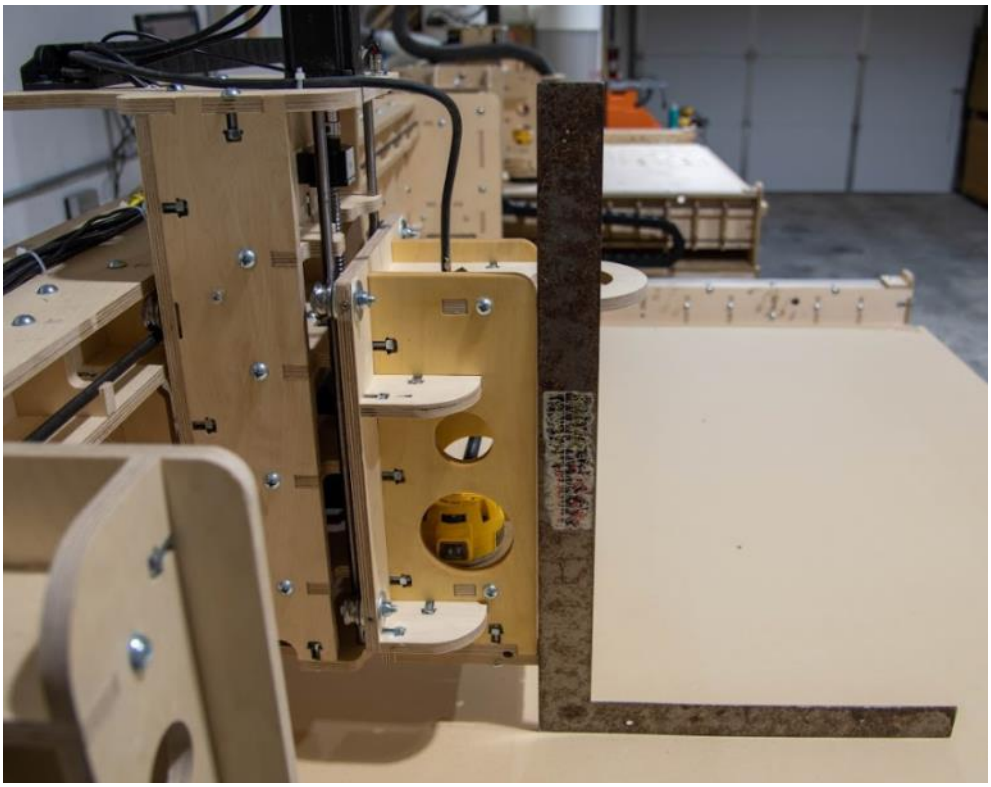
**Step 1** **Move the Z axis down and place the square as shown and look for a gap along the side of the Z Assembly .**



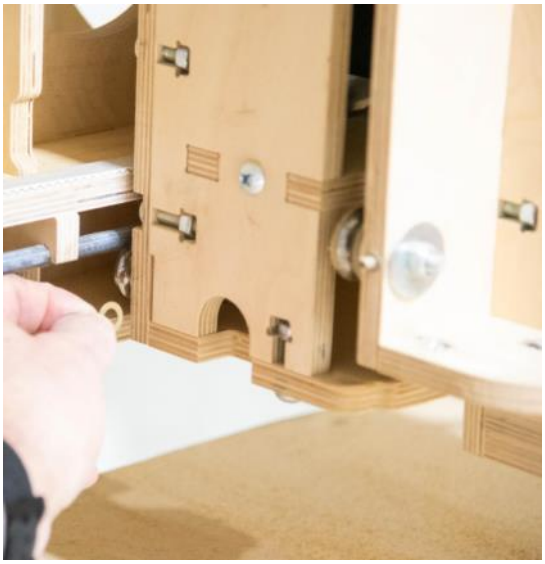
## Step 2 Adjust the 4 SG25U bearings so that the gap closes and the side of the Z Assembly is parallel with the edge of the square.



## Step 3 Place the square as shown and look for a gap along the front of the Z Assembly .



## Step 4 If needed, place the included Shim(s) in between the hub of the SG25U bearings and the fender washer on the Y carriage. Place matching shims on both of the top or the bottom bearings to rotate the YZ assembly clockwise or counter clock-wise respectively.

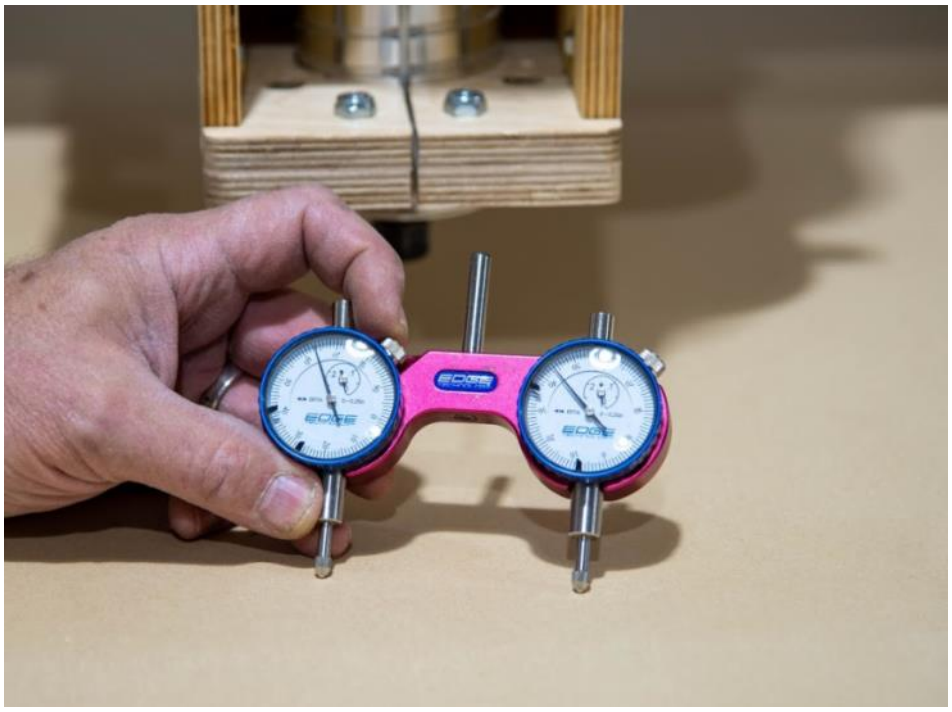


## Step 5 Tighten the Hex Bolts to set the SG25U bearing in place.

**NOTE: If you plan to use a Tram tool then do not tighten the Bolts in this step.**

# Method 2 –Using a Tram Tool

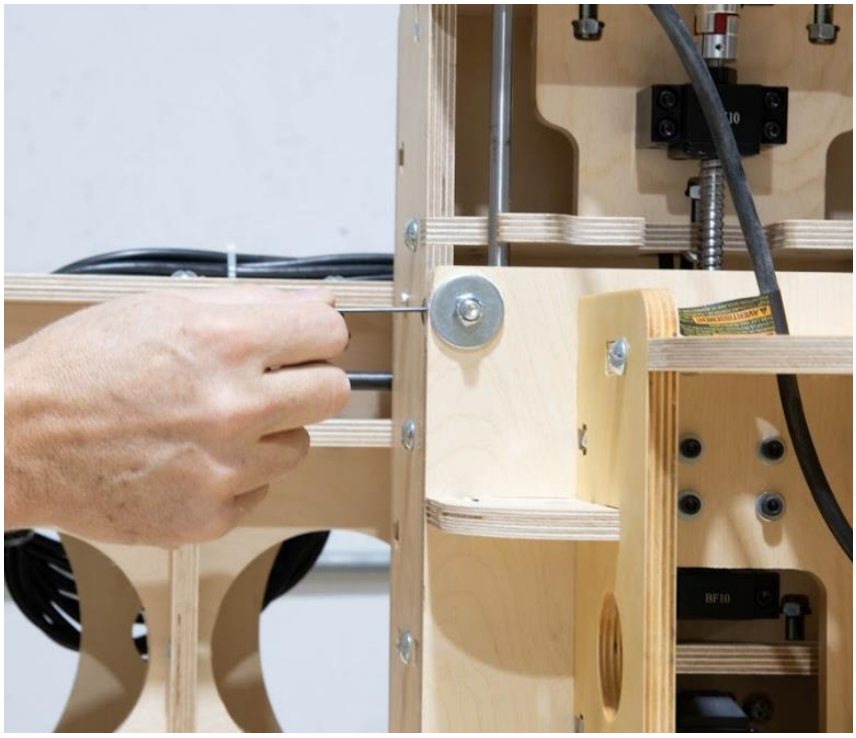
**A Tram tool uses dial indicators that precisely indicate the perpendicularity of the router bit and the Spoilboard surface.**



## Step 1 Insert the Tram Tool into the collet and snug the collet.

## Step 2 Rotate the Tram Tool and note the distance and direction that the gauge moves.

## Step 3 Adjust the 4 SG25U bearings to rotate around the X axis or install Shims to rotate around the Y axis until the dial indicator only moves a small amount. We recommend a total range of 0.002”.



## Step 4 Tighten the Hex Bolts to set the SG25U bearing in place.