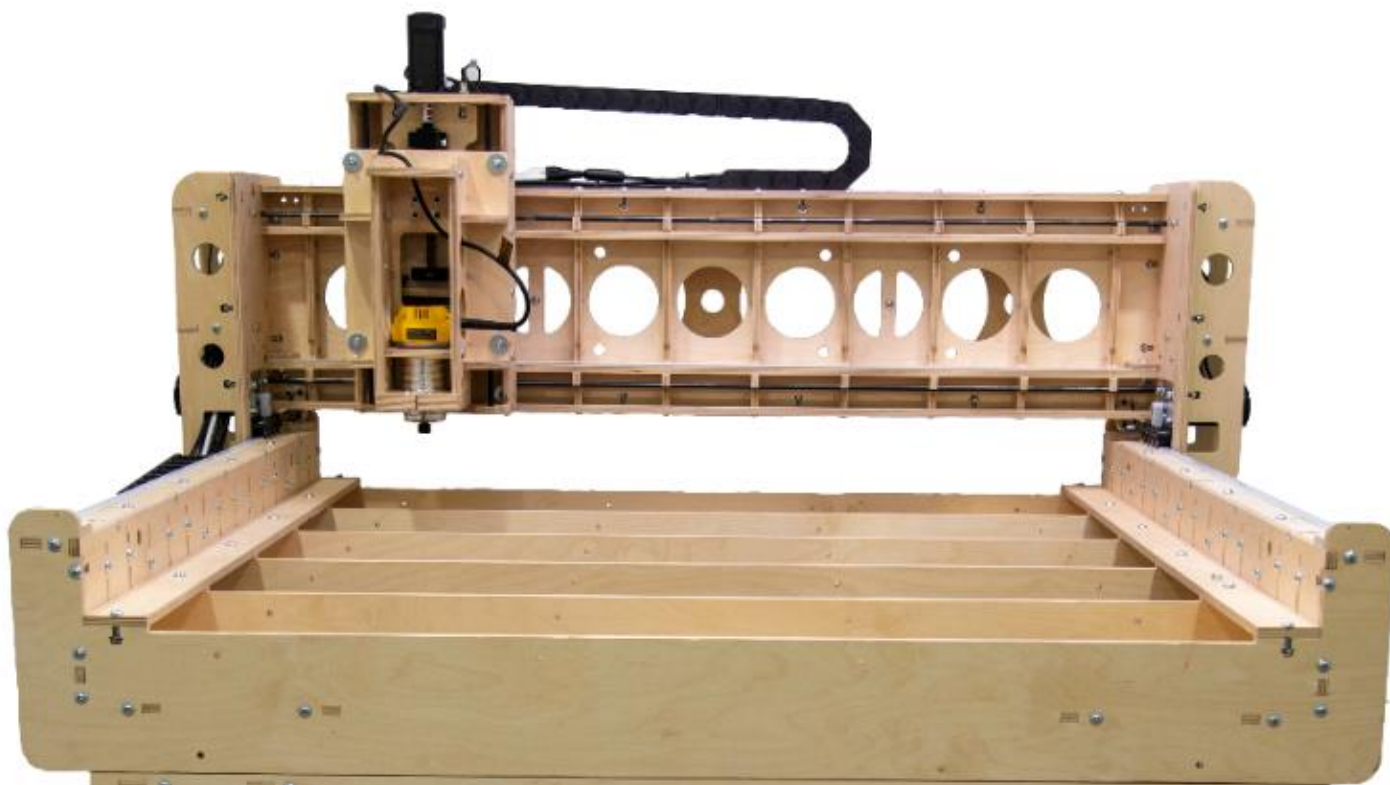




Gantry & Bell-Everman Drive Assembly Manual

MANUAL 3 of 8



Version 2.8

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Look Safety Information and Hints.

	<p>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.</p>
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	<p>CAUTION Indicates a possible risk of injury that can result from failure to follow this instruction.</p>
---	--

	<p>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.</p>
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 <p>HINT</p>	<p>Hints will provide needed information, shortcuts, and insights that will make assembly and machine operation easier and safer.</p>
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Please review each assembly manual before beginning to assemble the KL7 SERIES CNC Router.

Bell-Everman Drive Components

Part #	Description	Qty	Photo
BE 1	Bell-Everman Plate	3	
BE2	Idler Pulley	12	
BE3	Timing Pulley	3	
BE4	Servo Motor	3	
H10	10-24 Lock Nut	12	
H12	10-24 x 3/4 Socket Head Bolt	12	
H25	8 x 7 x 22 Bearing	24	
H17	Allen Head M6 x 30 Shoulder Bolt	12	
H7	Hardened Washers	60	
H18	M6 Lock Nuts	12	
	3 mm Pulley Gauge	1	

Bell-Everman Assembly Instructions



CAUTION: The Bell-Everman Plate has been designed so that Shoulder Bolts must be press fit or carefully tapped into place with a hammer.



HINT

Idler Pully sequence:

Allen Head Shoulder Bolt/ Bearing/ four Hardened Washers / Idler Pulley/Bearing/ one Hardened Washer / Bell-Everman Plate / Lock Nut.



Step 1

Gently slide M6 Shoulder Bolt through the Bearing and insert four Hardened Washers as shown.



Step 2

Slide the M6 Shoulder Bolt, Bearing, and Hardened Washers into the Idler Pulley as shown.



Step 3

Press the Assembled Components into the Idler Pulley so that the Bearing is fully seated as shown.



Step 4

Slide the second Bearing onto the M6 Shoulder Bolt and secure by pressing the Bearing into the Idler Pulley body as shown.



Step 5

Slide a Hardened Washer onto the M6 Shoulder Bolt. It will serve as a spacer allowing the Idler Assembly to turn freely against the Bell-Everman Plate.



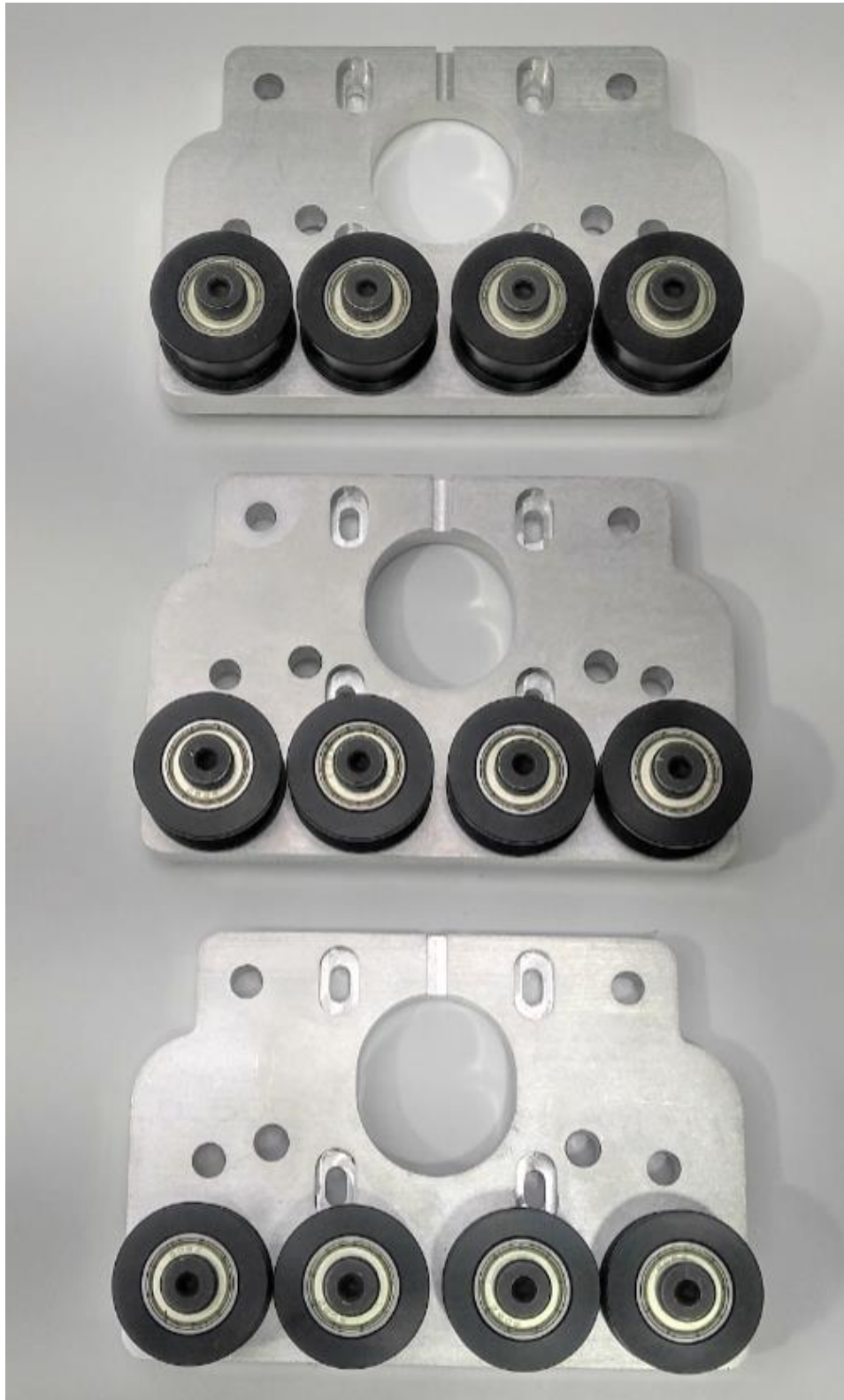
Step 6

Thread the M6 Shoulder Bolt through the mounting holes in the Bell-Everman Plate. Gently tap the head of the Bolt, if necessary, for fit. Make sure the Hardened Washer is in place before securing the M6 Lock Nut as shown. Tighten with Allen wrench and socket.



Step 7

Repeat Steps 1 thru 6 attaching the remaining 3 Idler Assemblies to the Bell-Everman Plates as shown.



Step 8

Attach the Timing Pulley to the X1, X2 and Y Servo Motor Shafts

Step 9

Remove the two set screws from the Timing Pulley. Apply Lock-Tite to the threads and reinstall.



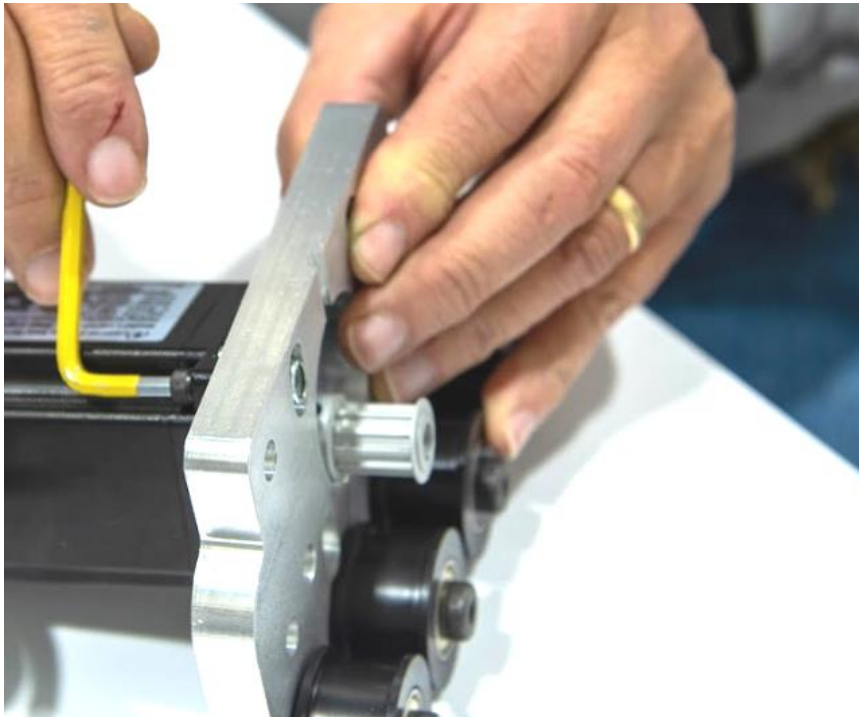
Step 10

Slide the pulley onto the Servo Motor Shaft. Using the enclosed 33 mm Belt Pulley Gauge, properly position the pulley. Make certain one Set Screw is positioned to engage the flat surface of the motor shaft and securely tighten the Set Screws as shown.

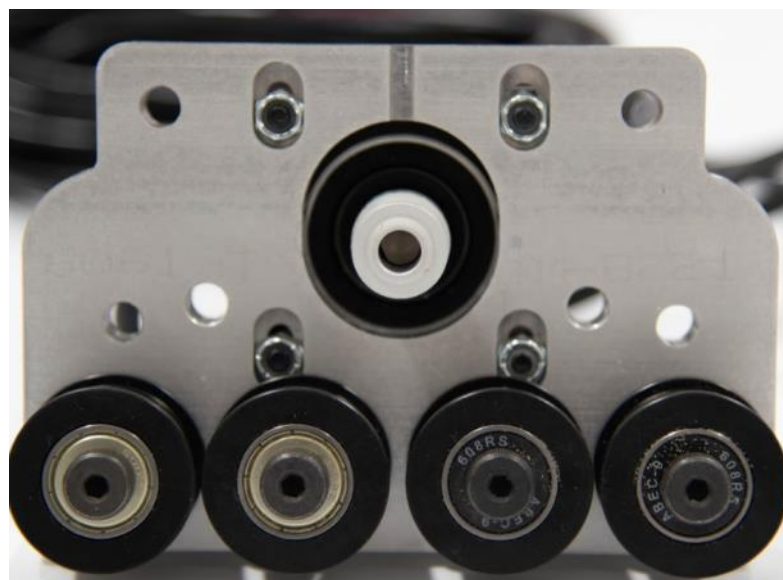


Step 11

Slide the Servo Motor shaft with attached Timing Pulley through the Bell Everman Plate and secure with four 10-24 x 3/4" Socket Head Bolts and four Lock Nuts as shown. These four bolts will be tightened in a later step.



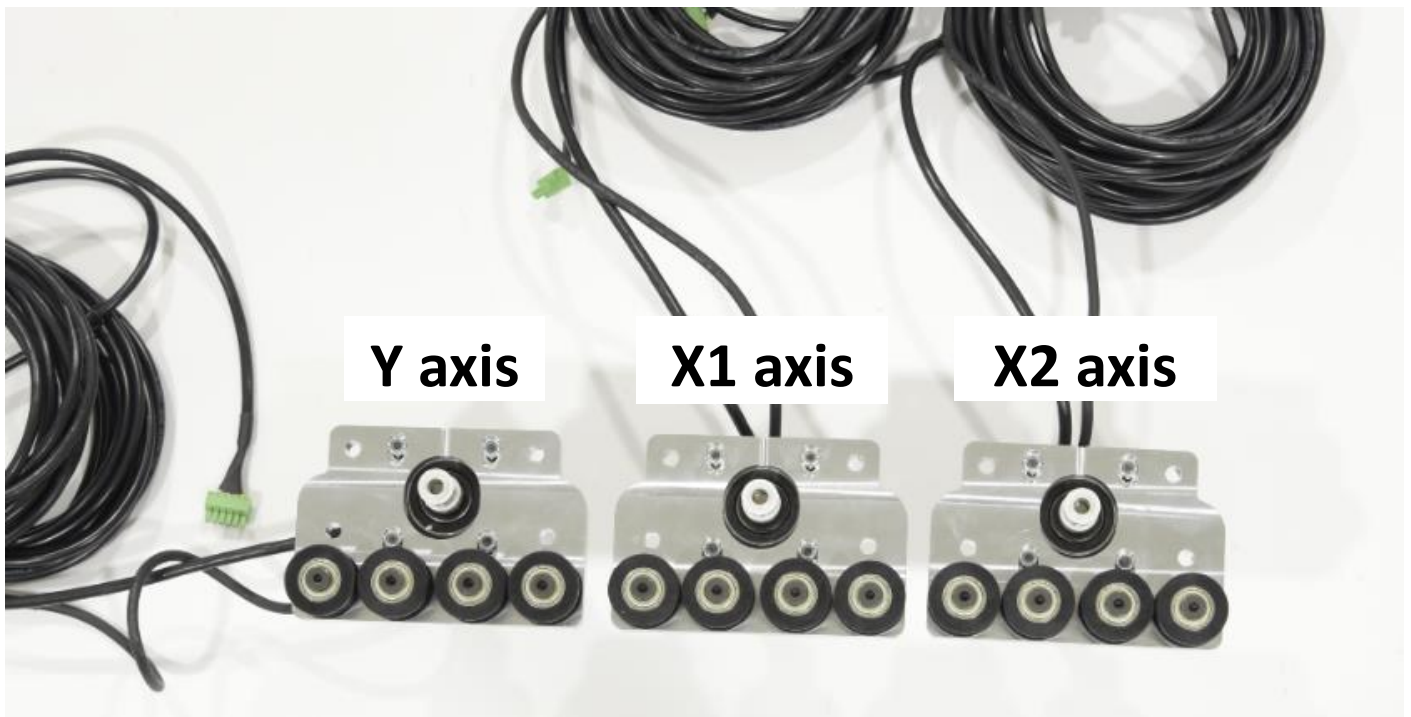
Finished plate from the front



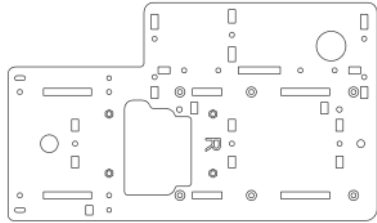
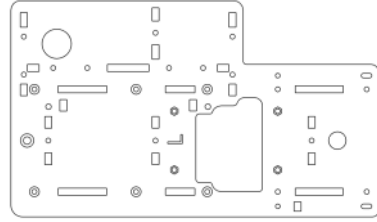


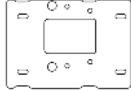



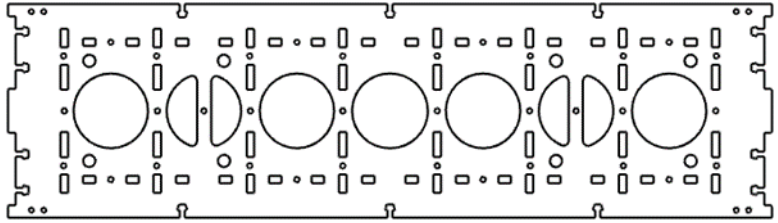


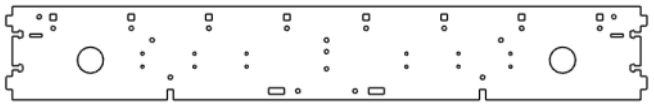
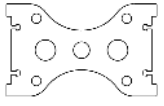
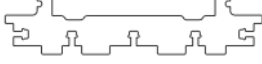
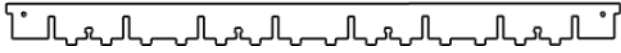
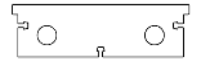

HINT

NOTE the orientation of the Servo and Controller Wires in relation to the front of the Bell Everman Plate assembly. The wires for the Servo Motor on the Y axis must be routed to the right side as shown. The X1 and X2 axes are routed toward the top.



Gantry Wood Components

Part #	Description	Qty	Photo
G1	Gantry Right Side	1	
G2	Gantry Left Side	1	
G3	Gantry Side Supports	3	
G4	Gantry Side Support w/ wire bracket mount [left side only].	1	
G5	Adjustment Plate	2	
G6	Cross Brace	2	
G7	Top & Bottom Brackets [two per side]	4	
G8	Drag Chain Mount	1	
G9	Gantry Frame	1	

Part #	Description	Qty	Photo
G10	Gantry Top and Bottom Support	2	
G11	Gantry Back Brace	3	
G12	Y Rail Support	10	
G13	Horizontal Brace	2	
G14	Box Brace	2	
G15	X Home Switch Mount (6mm)	2	

Gantry Hardware

Part #	Description	Qty	Photo
H24	SG25U bearings	8	
H8	5/16 Fender Washers	24	
H1	5/16 x 1 3/4 Hex Head Bolt	8	
H22	10-24 Insert	6	
H12	10-24 x 3/4 Socket Head Screw	2	
H5	5/16 Nut	119	
H6	5/16 Lock Nut	16	
H3	5/16x 1 1/4 Machine Screw	127	
H23	8-32 inserts	4	
RY	3/8" x 59 3/8" Y Rail	2	

Gantry Sides Assembly

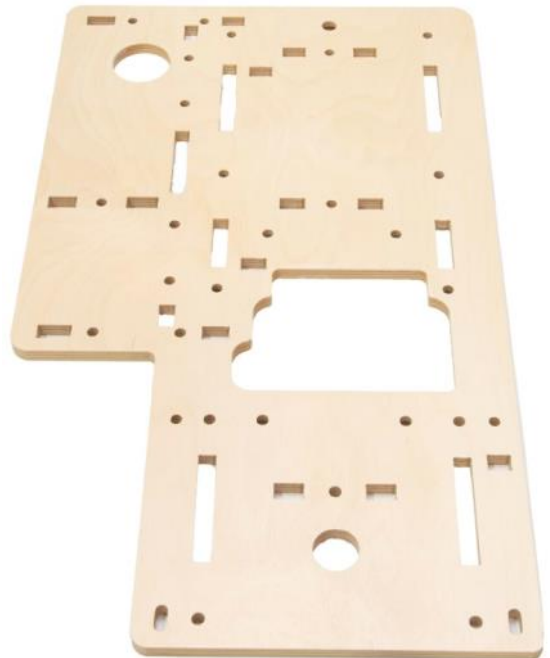
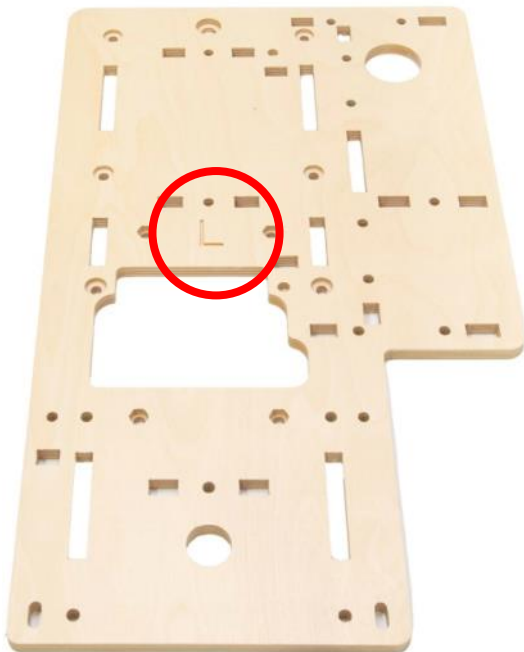


The tabs and slots have been engineered for a tight fit. Prior to assembly use a sanding block with 80 to 100 grit sandpaper to gently chamfer the edges of the tabs.

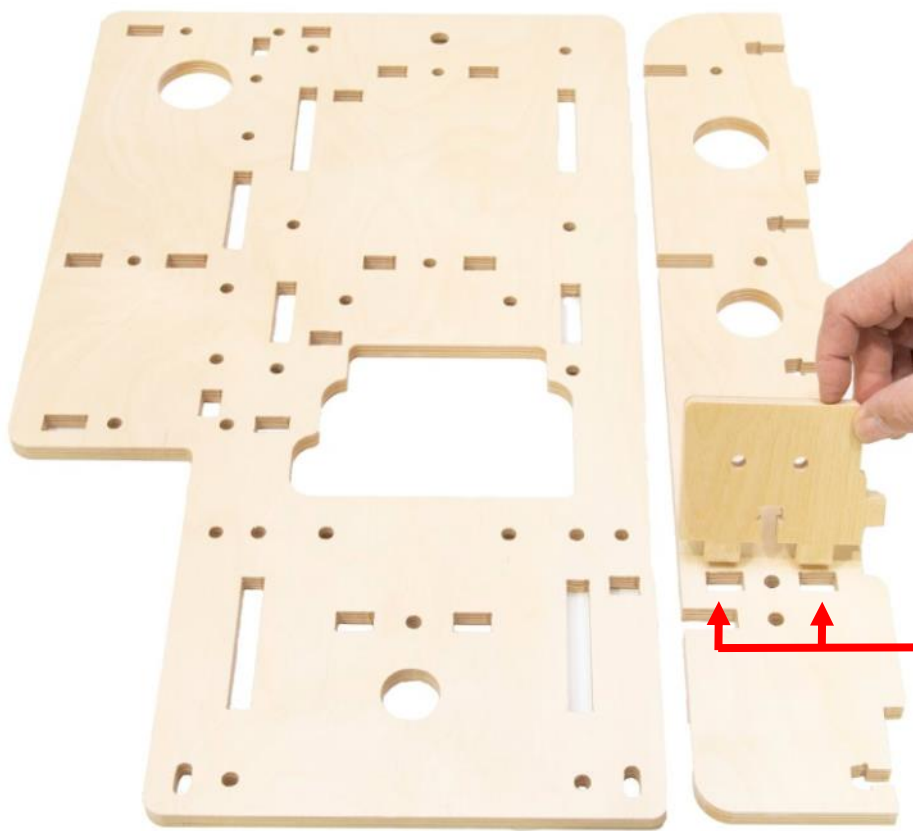
Step 1

Lay the G2 Gantry Left Side with the L designation facing down as shown.

Left Designation



Step 2 Place the G4 Gantry Side Support as shown. Insert the tabs of the G8 Drag Chain Mount into the slots of the Side Support as shown.



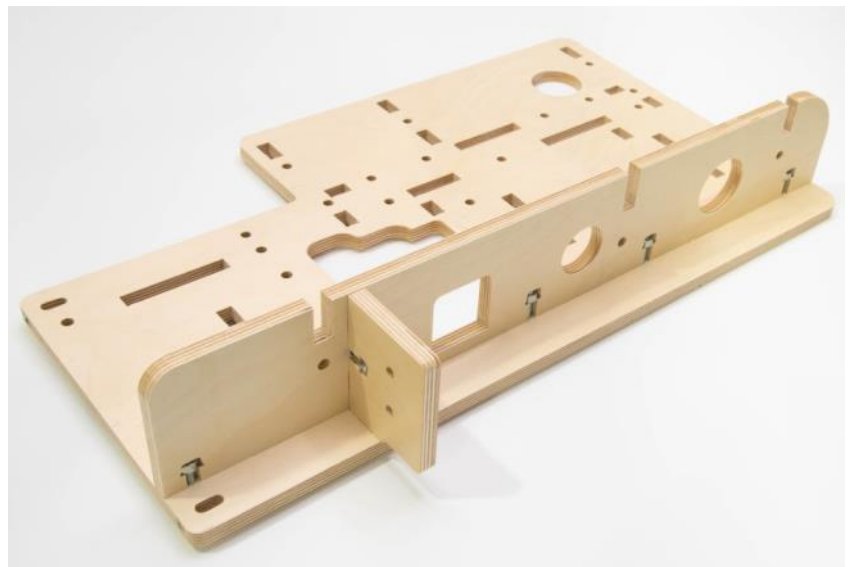
The G4 Side Support has two slots as shown.



Step 3 Insert the tabs of the Side Support Assembly into the slots of the Gantry Left Side.

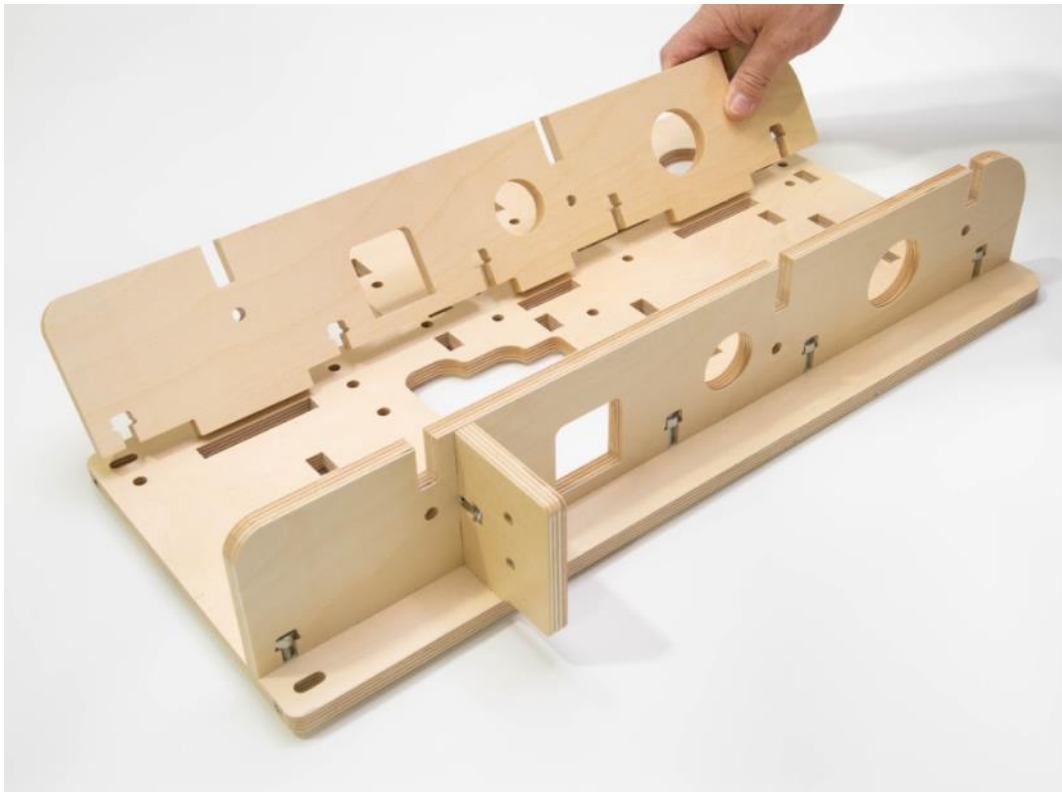


Secure with six 5/16 x 1 1/4 Machine Screws and Nuts as shown.



Step 4

Insert the tabs of the G3 Gantry Side Support into the slots of the Gantry Left Side as shown.

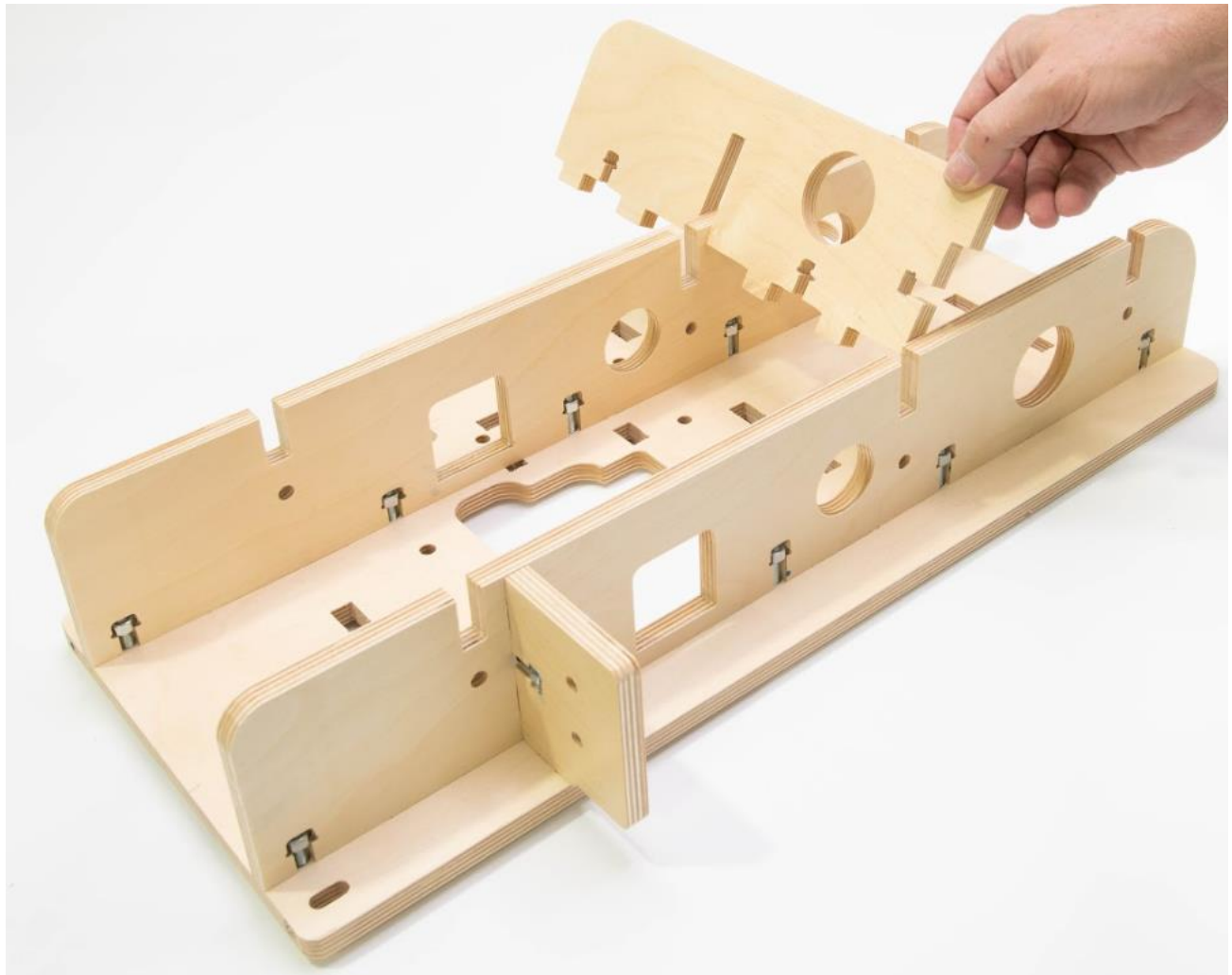


Secure with five 5/16 x 1 1/4 Machine Screws and Nuts.



Step 5

Attach the G6 Cross Brace. Align the long slot of the Cross Brace with the slots in the Side Supports and the Gantry Left Side as shown.

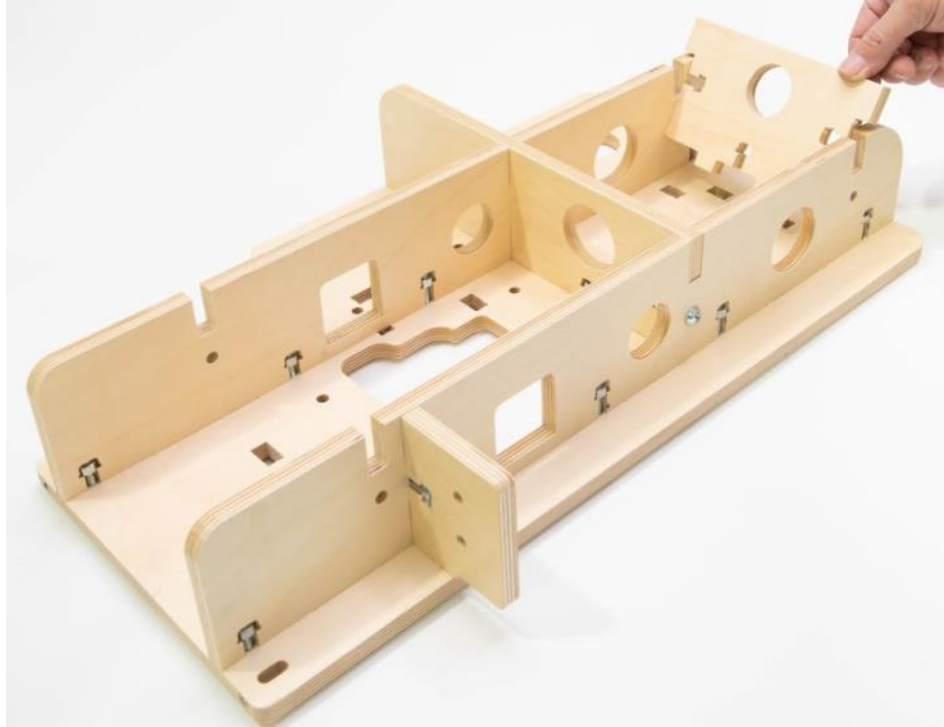


**Secure with three
5/16 x 1 1/4 Machine
Screws and Nuts.**



Step 6

Attach the G7 Top Bracket. Align the Top Bracket with the slots in the Side Supports and the Gantry Left Side and slide into place as shown.



Step 7

Repeat with the G7 Bottom Bracket. Align the Bottom Bracket with the slots in the Side Supports and the Gantry Left Side.



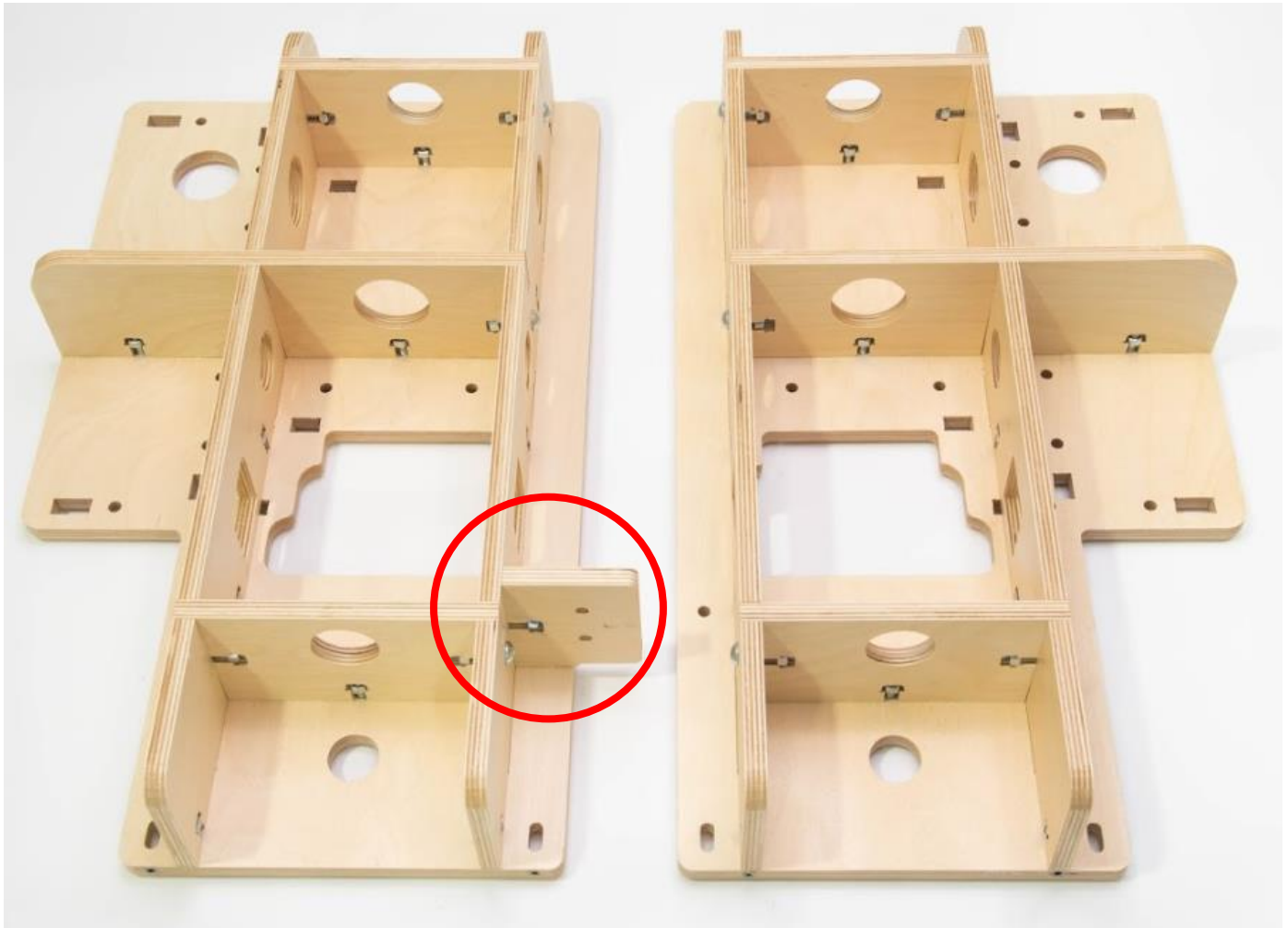
Step 8

Secure the Top and Bottom Brackets with six 5/16 x 1 1/4 Machine Screws and Nuts.



Step 9

Repeat the process to assemble the mirrored Gantry Right Side Assembly as shown. Since the Right Side Assembly does not include a Drag Chain Mount the total number of Machine Screws and Nuts will be reduced by one . The number required for the Right Side is nineteen of each.



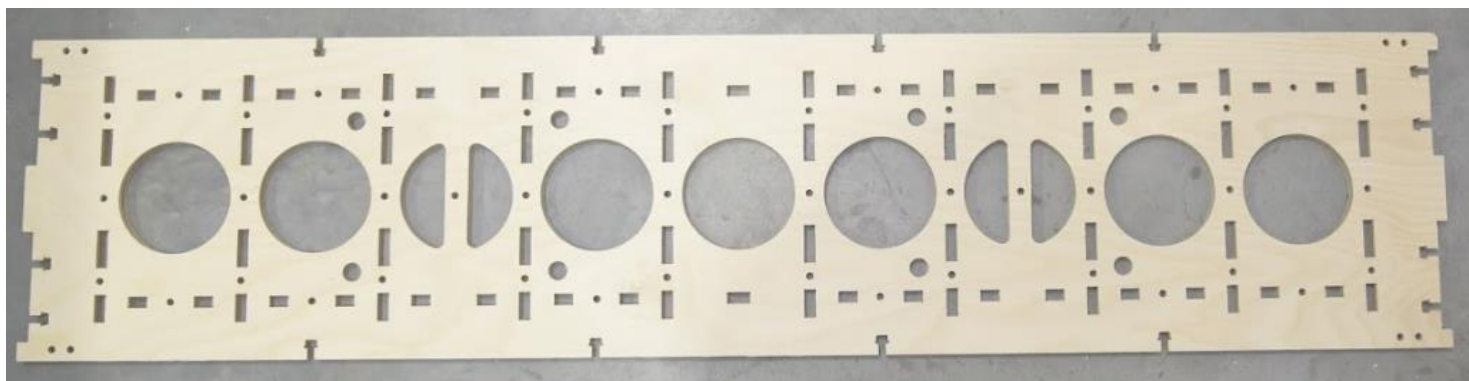
Left Side

Right Side

Gantry Frame Assembly

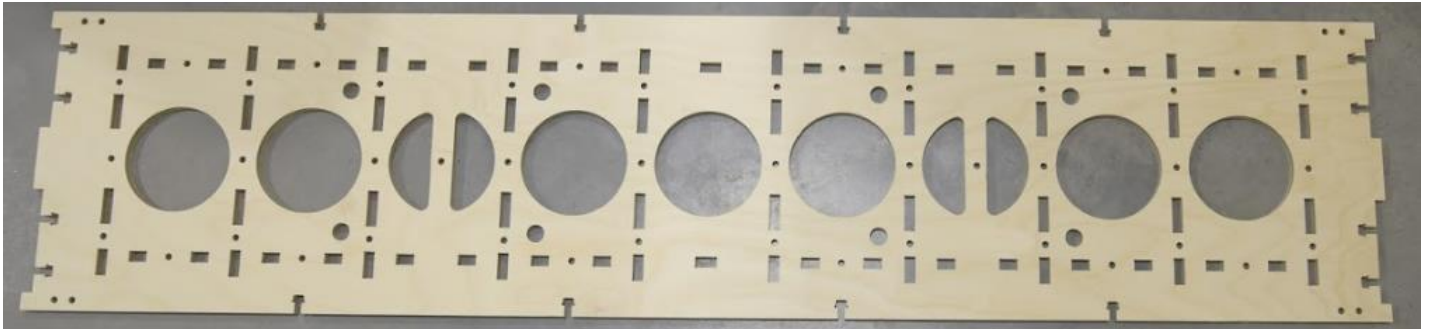
Step 1

Align the tabs of the G12 Y Rail Support with slots on the G9 Gantry Frame. Insert and secure with three 5/16 x 1 1/4 Machine Screws and Nuts as shown.



Step 2

Repeat the process to install all ten G12 Y Rail Supports as shown.



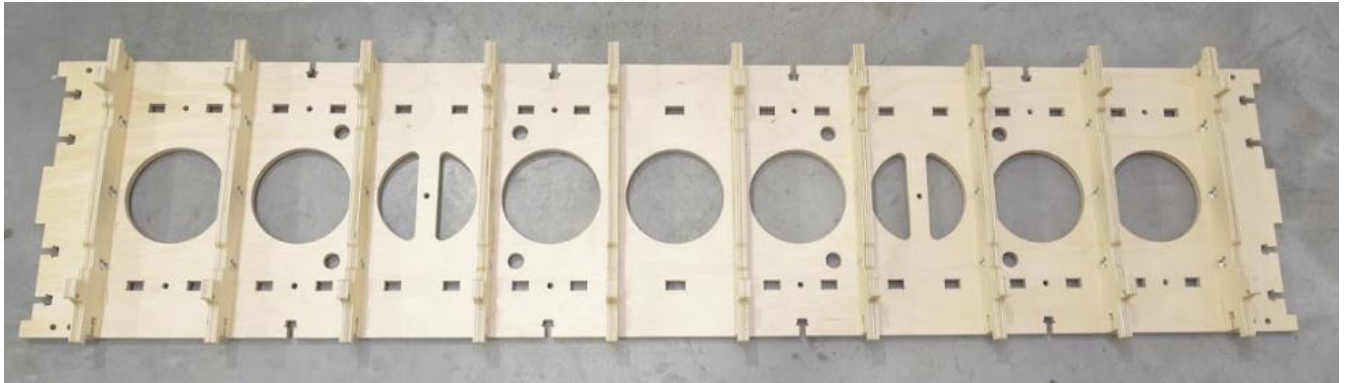
Assembled Top View



Assembled End View

Step 3

Align the tabs and slots of the G13 Horizontal Brace with the slots of the Gantry Frame Assembly and tap in place.



Secure with six 5/16 x 1 1/4 Machine Screws and Nuts as shown.

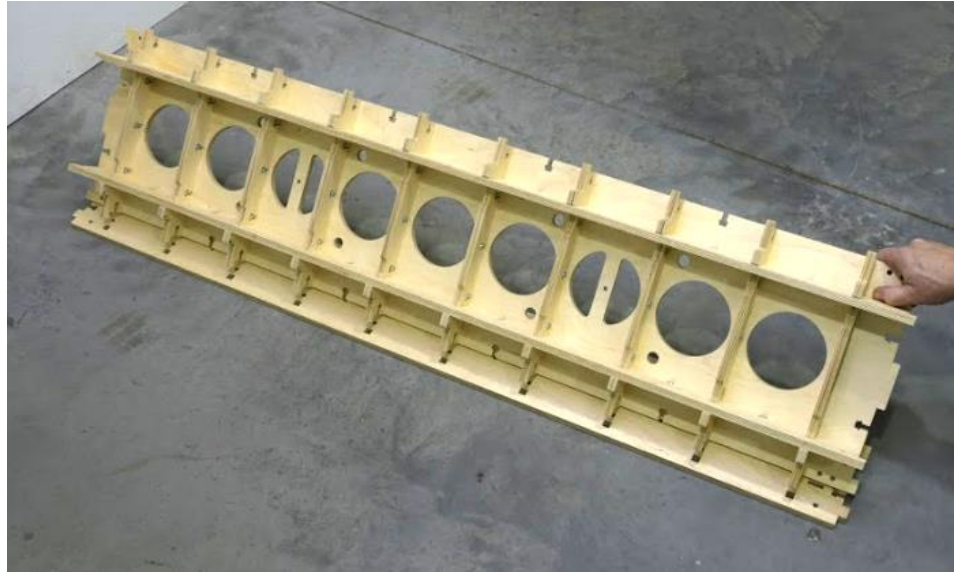


Repeat the process to attach the second G13 Horizontal Brace as shown.

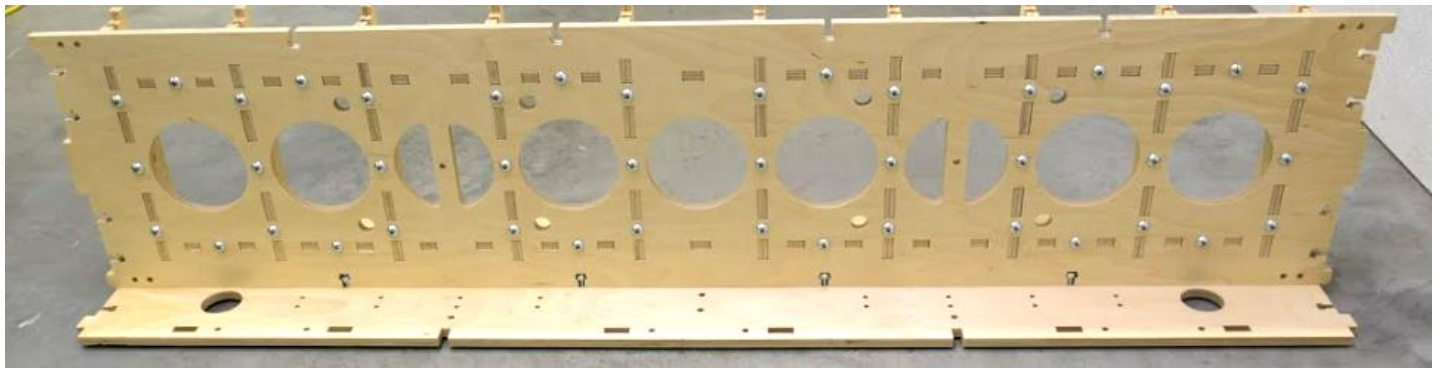


Step 4

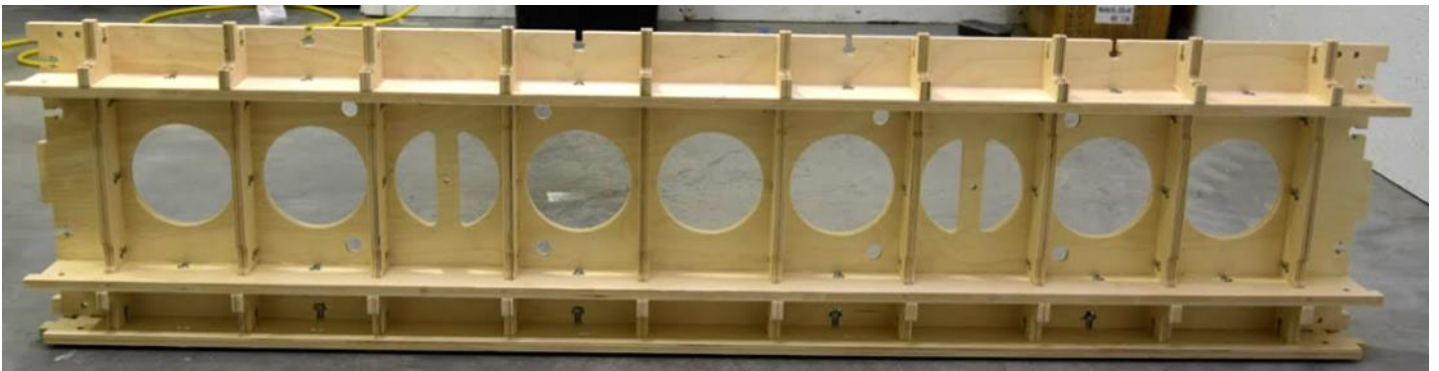
Lay the G10 Gantry Bottom Support on the work surface. Align the tabs and slots of the Frame Assembly with the slots of the G10 Gantry Bottom Support. Tap in place and secure with fourteen 5/16 x 1 1/4 Machine Screws and Nuts.



Front View

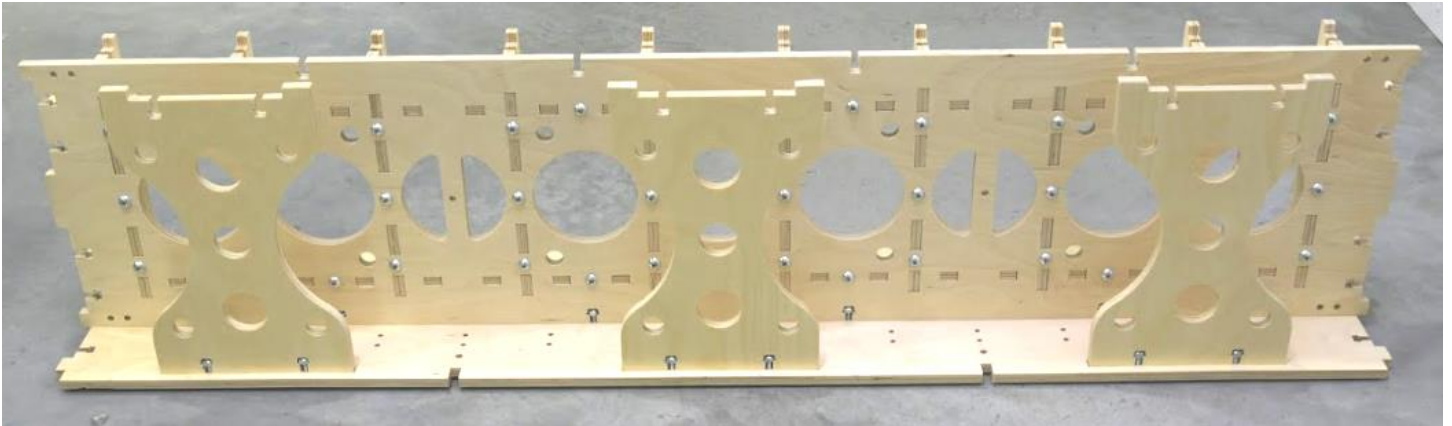


Back View



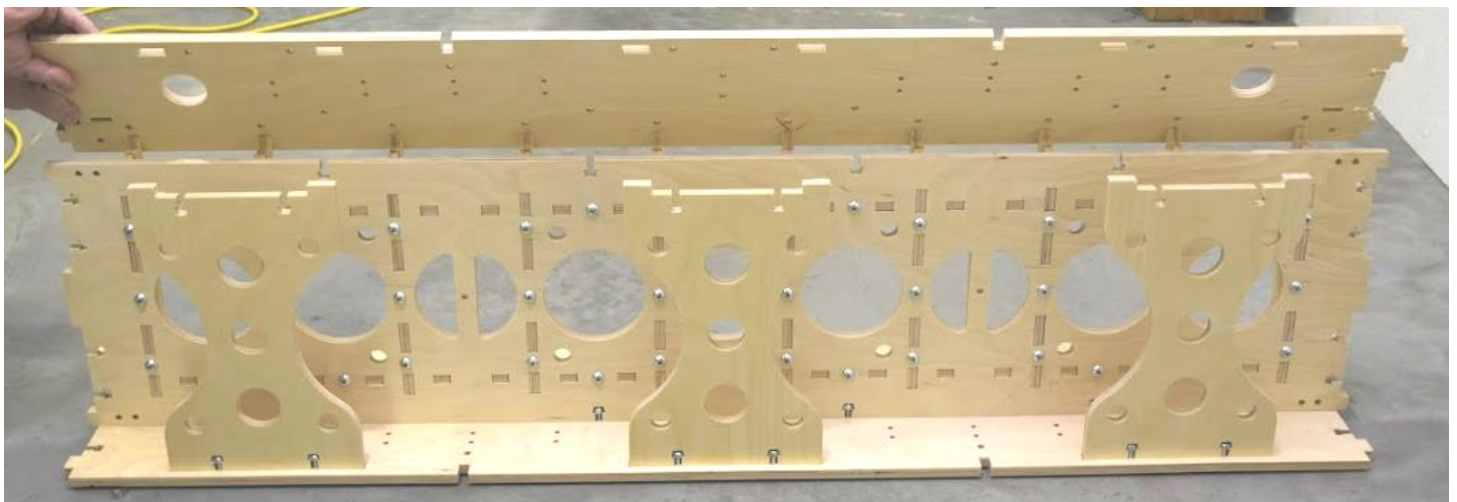
Step 5

Insert the G11 Gantry Back Braces and secure in place with six 5/16 x 1 1/4 Machine Screws and Nuts as shown.



Step 6

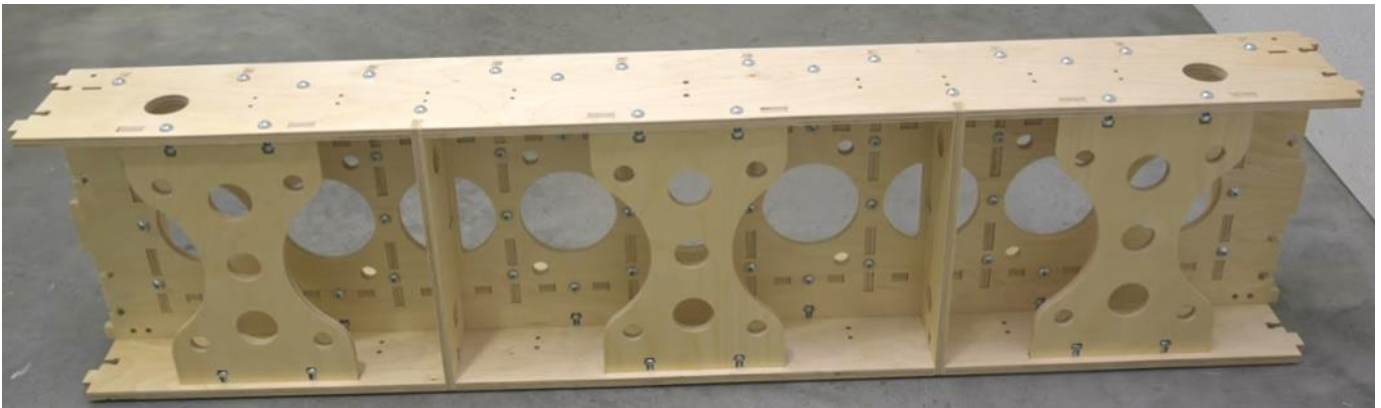
Attach the G10 Gantry Top Support and secure in place with twenty 5/16 x 1 1/4 Machine Screws and Nuts as shown.



Step 7

Slide the G14 Box Brace as shown and secure with three 5/16 x 1 1/4 Machine Screws and Nuts as shown.

Repeat for the second G14 Box Brace as shown.

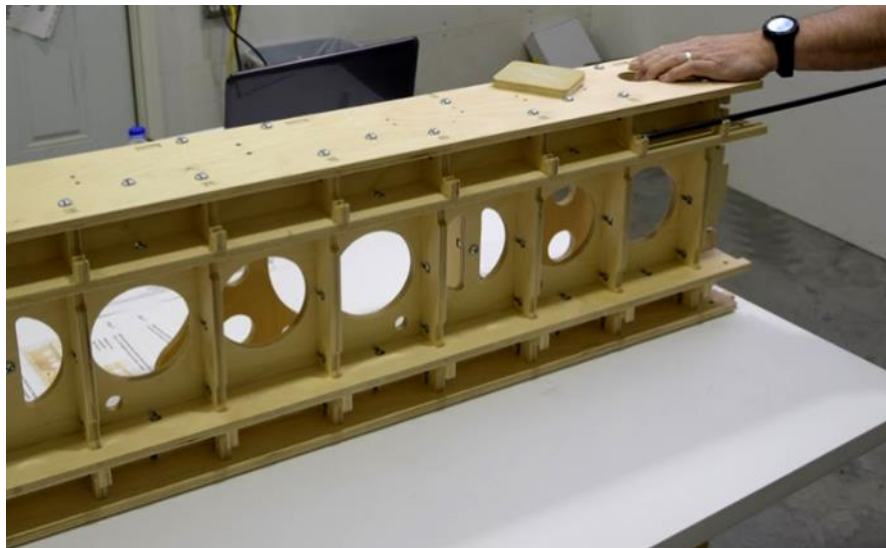


HINT

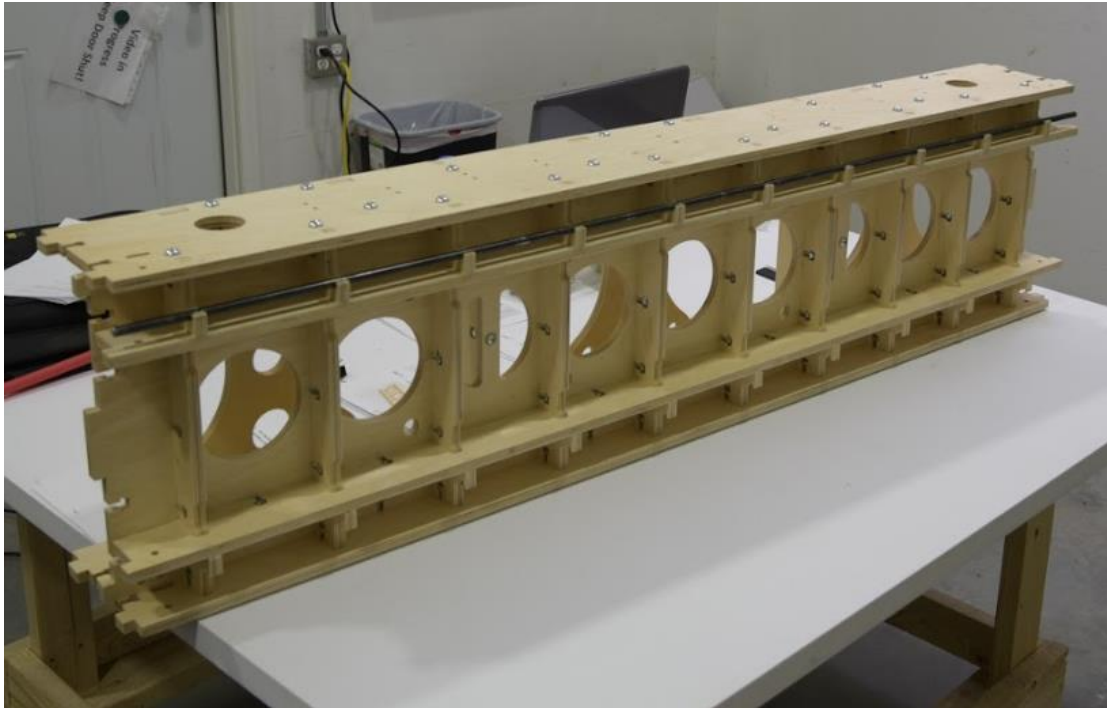
Apply Teflon dry lube to the rail prior to installation.

Step 8

Carefully insert the Y Rail into the Y Rail supports and gently feed the rail through each support.



Step 9 The Y Rail should be roughly centered on the Gantry Frame Assembly as shown.



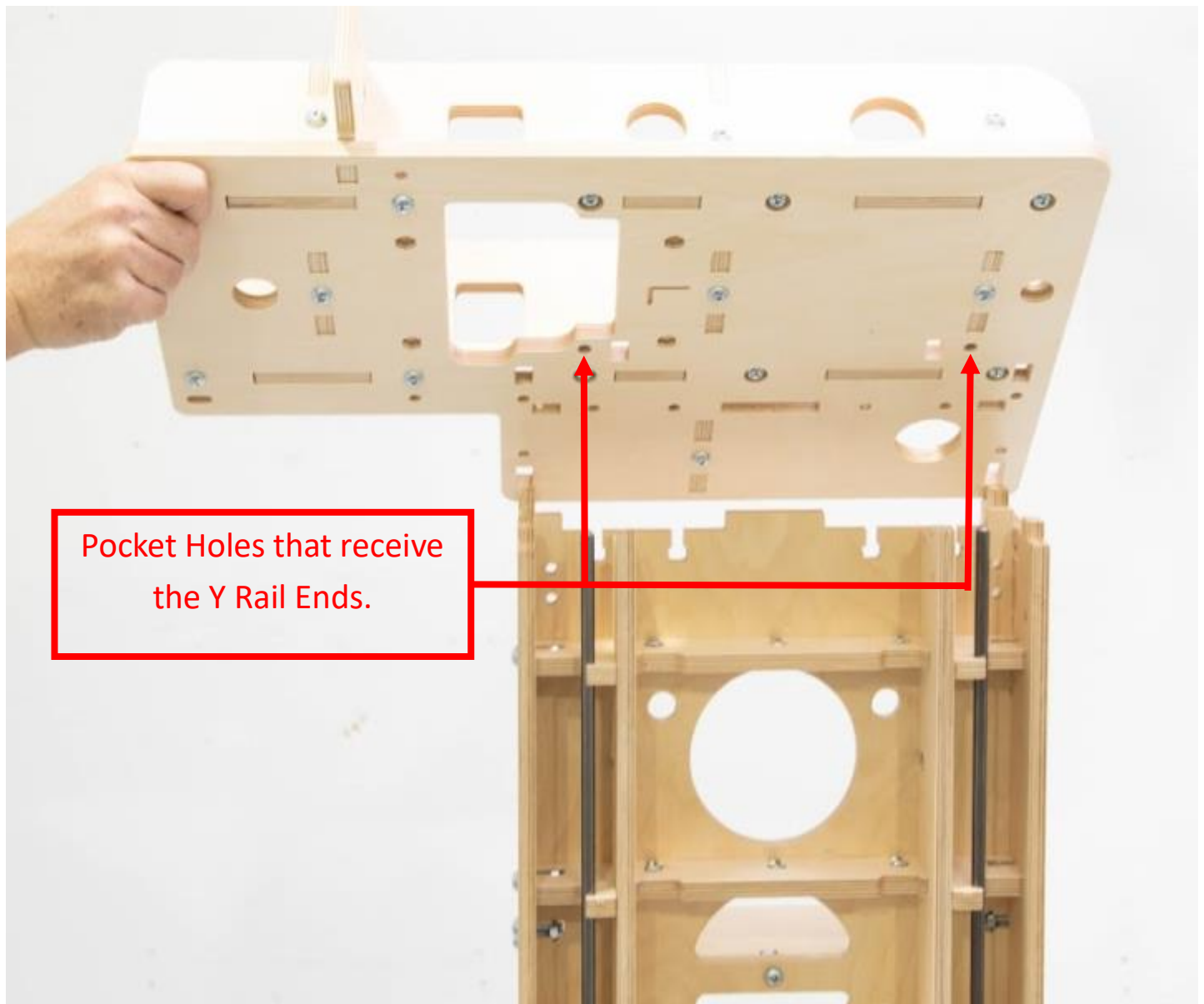
Repeat to install the bottom Y Rail as shown.



Final Gantry Assembly

Step 1

Align the tabs of the Left Gantry Side Assembly making sure the pocket holes are aligned to receive the Y Rail Ends as shown. Secure with eight 5/16 x 1 1/4 Machine Screws and Nuts.



Step 2

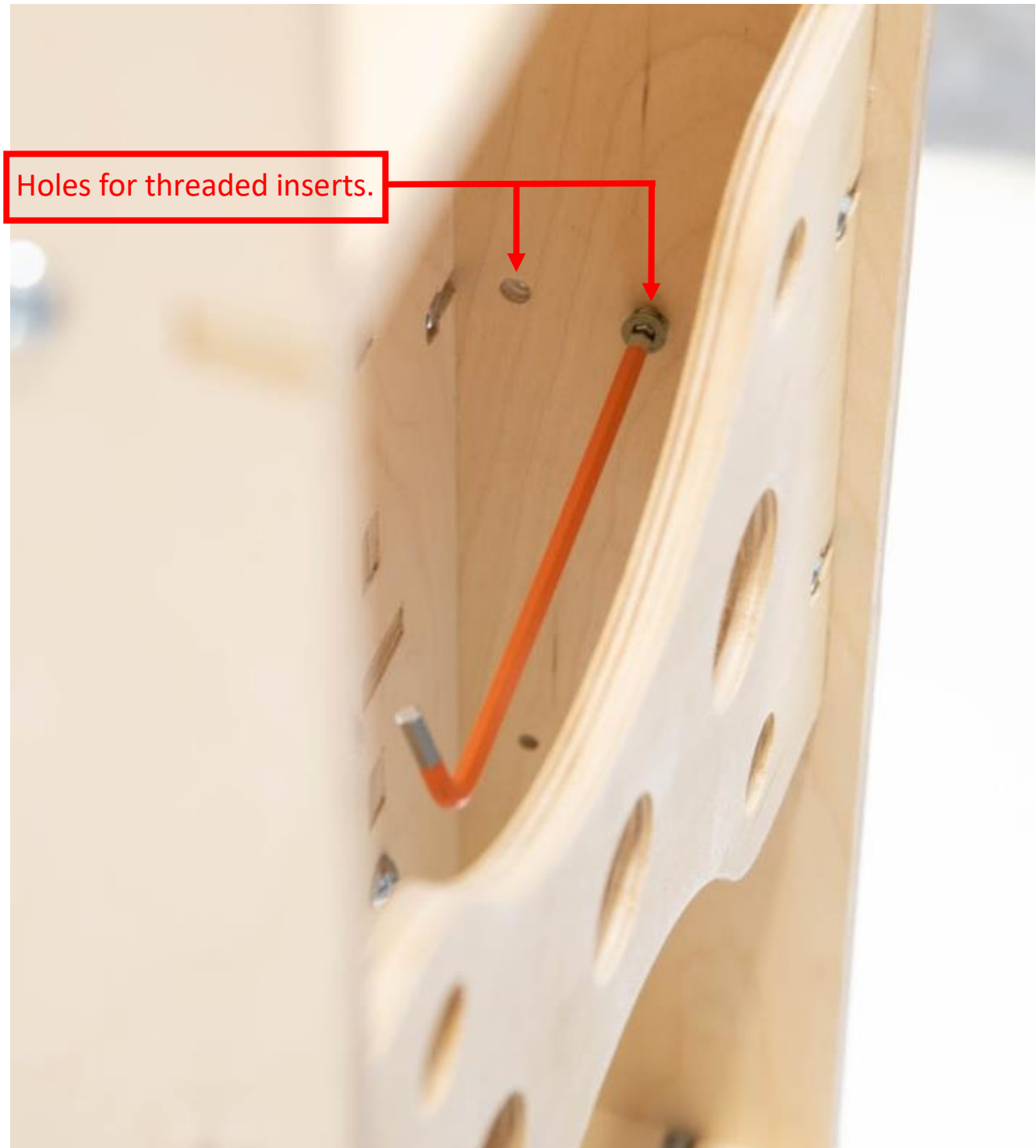
Repeat to attach the Right Gantry Side assembly.



Step 3

NOTE: Find the two holes in the underside of the G10 Gantry Top Support. They will be behind the center G11 Gantry Back Brace as shown.

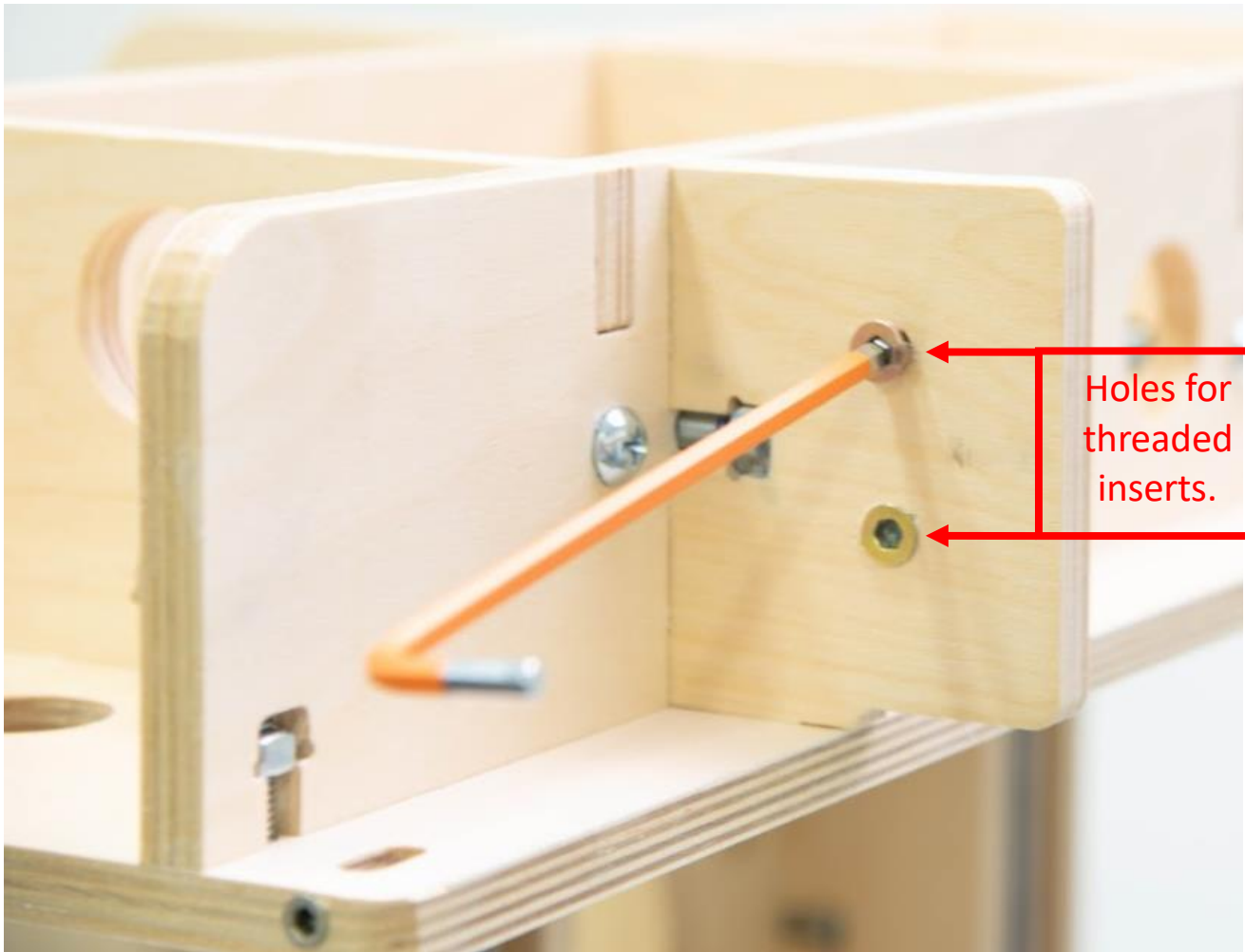
Insert the two 10-24 threaded inserts with an Allen wrench as shown. These inserts will help attach the Gantry Drag Chain in a later step.



Step 4

Insert the two 10-24 Threaded Inserts on the bottom side of the Drag Chain Mount and tighten in place with an Allen wrench as shown.

NOTE: The G8 Drag Chain Mount is located on the left side of the Gantry Side Assembly.



Step 5

Insert a 10-24 Threaded Insert in each corner. Screw the Insert in the hole furthest from the Gantry Side Assembly. Tighten in place with an Allen wrench as shown.



Step 6

Slide both G15 X Home Switch Mounts into the slot at each end on the underside of the Gantry Bottom Assembly. Secure each in place with one 10-24 x 3/4 Socket Head Bolt.



**X Home Switch
Mount Locations.**



NOTE: Set the Gantry on the work surface resting on the Top Plate with the bottom of the Gantry Side facing up.

Step 7 Insert the 8 x 32 Set Screw into each of the factory installed Threaded Inserts in the bottom of both sides of the Gantry Side Assemblies as shown.



Step 8

Install four SG25U Bearings on both Gantry Sides as shown. Tighten the Bearings in the round holes but only snug the Bearings mounted in the elongated holes. These will be fully tightened in a later step.



HINT

Bearing sequence:

Hex-head / Bearing/ Fender Washer / Plywood / Fender Washer / Locknut.



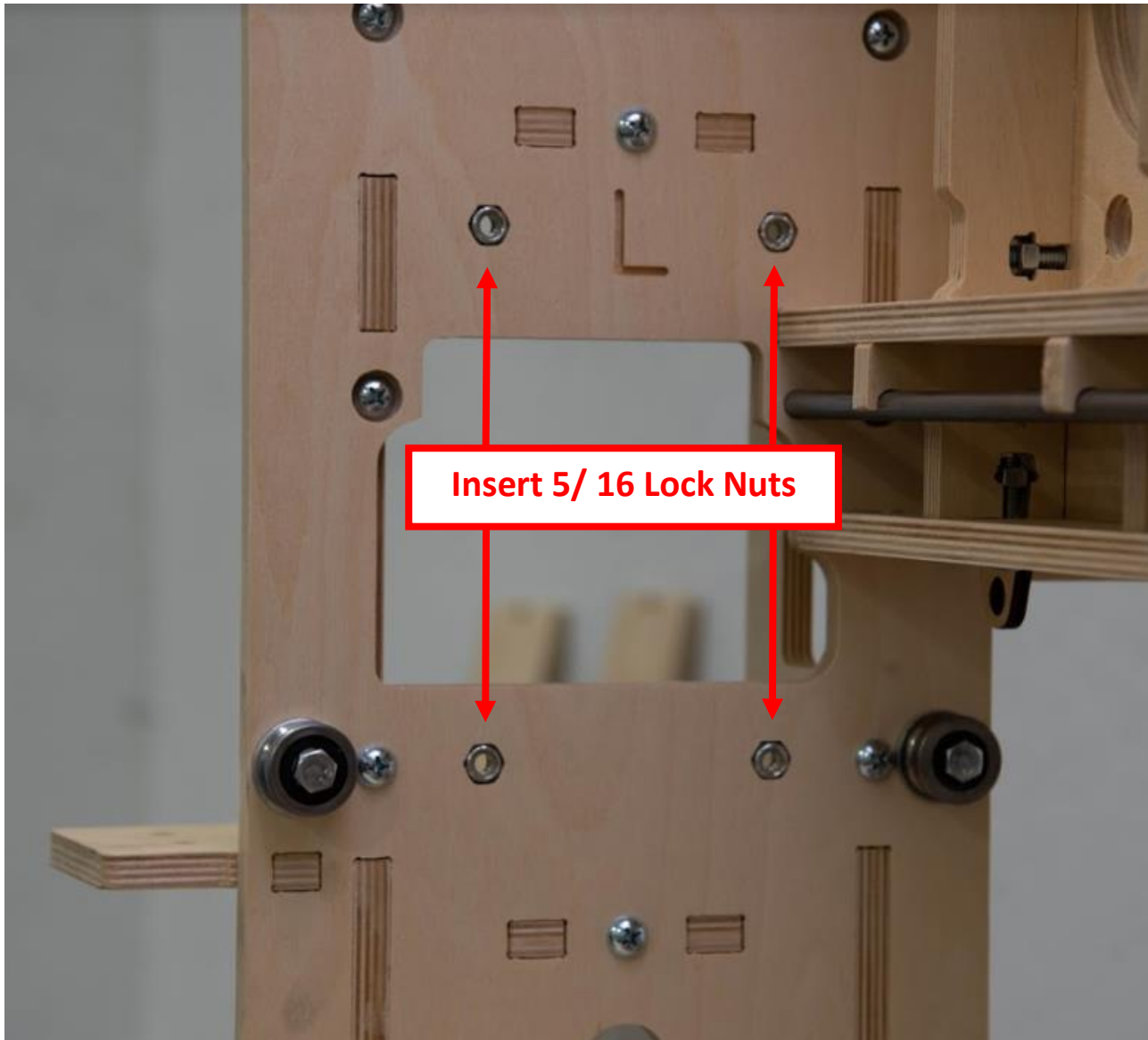
CAUTION:

Make sure the hub of the bearing faces the washer. **IMPORTANT:** the hex head must be oriented so that the nut is visible when looking at the inside of the Gantry (see photo below).



Step 9

Insert four 5/16 Lock Nuts into the Left Gantry Side Assembly as shown.

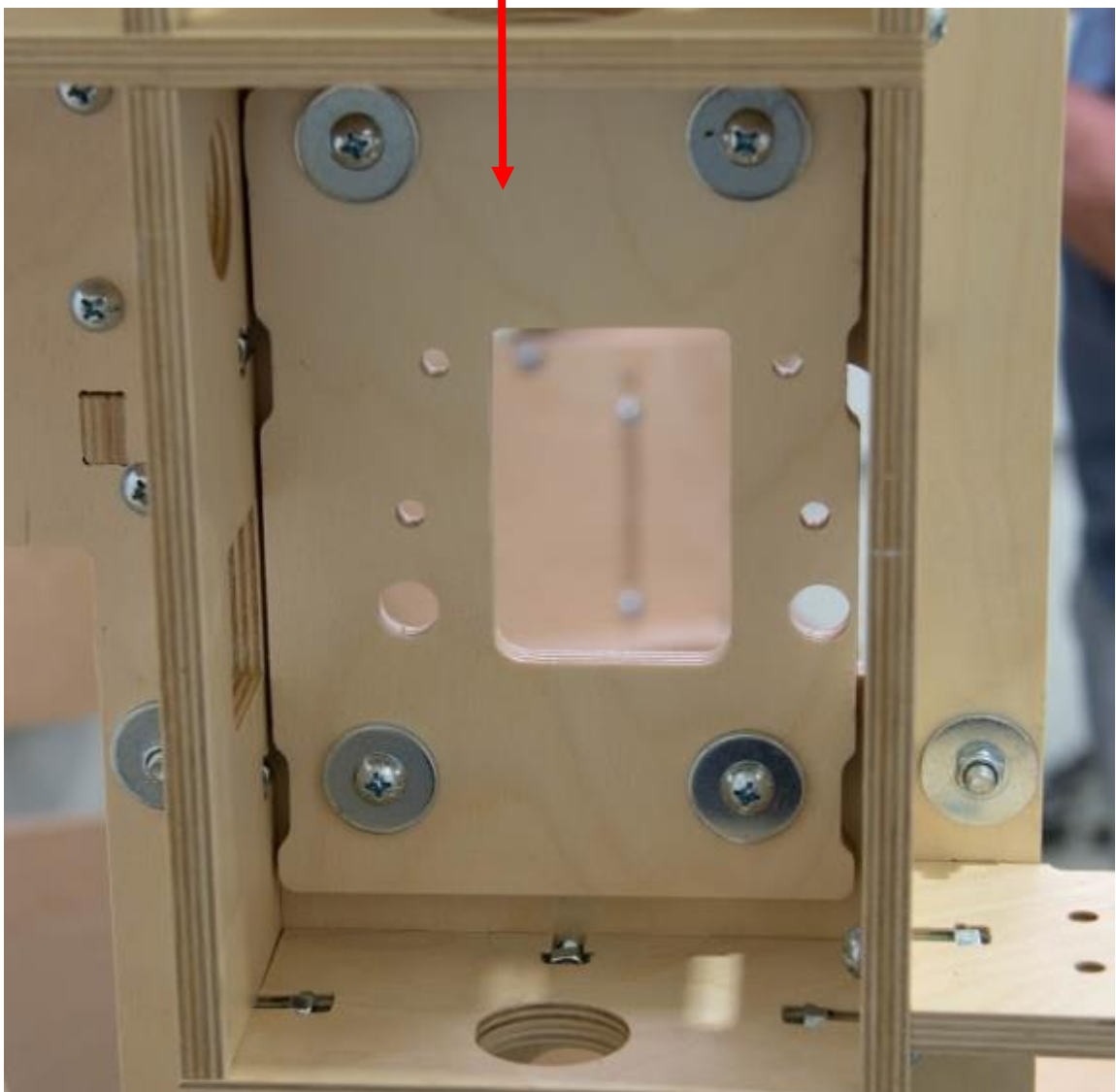


Step 10

Position the G5 adjustment plate as shown

Place four Fender Washers and insert four 5/16 x 1 1/4 Machine screws through the Lock Nuts and snug, allowing the G5 Adjustment Plate to slide freely.

Snug the Screws and washers so that the G5 Adjustment Plate slides freely.



Step 8

Repeat for the Right Side G5 Adjustment Plate installation.