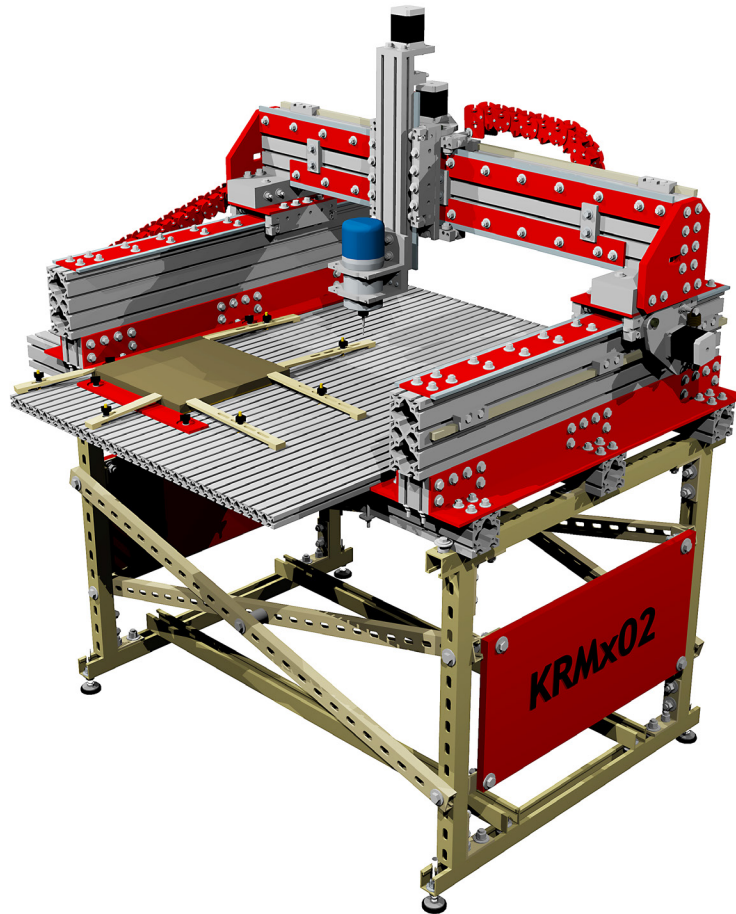


KRMx02 Steel Stand

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By Michael Simpson



A sturdy stand is an absolute necessity for a precise CNC. If the stand is not sturdy it will vibrate, shake and shimmy as your X and Y axes move. This unwanted movement will manifest in decreased precision and quality.

Whether you build a stand from scratch, or purchase a kit, it will need to be 48 x 36" in order to support the [KRMx02](#).

Tools Needed For This Project

- Reciprocating saw with metal cutting blade
- 2, 3/4" Wrenches or sockets
- 2, 9/16" Wrenches or sockets
- Power drill
- 5/8" Drill bit
- 4' Level
- Large flat blade screwdriver
- Rotary grinder (used to clean burrs from cuts)

Components Needed For This Project

- 4, 1-5/8" x 1-5/8" Metal framing channels (Home Depot # ZA1200HS) \$78.92
- 2, 1-5/8 x 13/16 x 10' Metal framing channels (Home Depot # ZB1400HS) \$32.18
- 8, 4-Hole 90-degree brackets (Home Depot # ZAB205EG) \$17.12
- 10, 2-Hole 90-degree brackets (Home Depot # ZAB201) \$16.50
- 4, Adjustable feet
- 2, 24" x 48" x 3/4" handy panels (see text)
- 36, 1/2-13 x 1-1/2" Hex bolts
- 8, 1/2-13 x 2" Hex bolts
- 8, 1/2-13 x 3-1/2" Hex bolts
- 2, 1/2-13 x 4" Hex bolts
- 170, 1/2" Washers
- 54, 1/2" Lock washers
- 46, 1/2-13 Hex nuts
- 6, 3/8-16 x 1-1/2" Hex bolts
- 6, 3/8" Lock washers
- 10, 3/8-16 Hex nuts
- 10, 3/8-16 Washers
- 12, 5/16" Washers

Purchasing large quantities of hardware like carriage bolts, washers and hex nuts can result in huge savings if purchased by weight. Check your local "Tractor Supply Company". They offer most common hardware sizes to be purchased by weight.

Chapter Estimate

Cost: \$198

Time: Weekend

Prerequisites

You will need two pieces of 3/4" stock cut to 27" x 13-5/8" (Figure 1.1). These pieces form the sides to the stand.

The folks at most home centers will cut them down from larger stock if you ask them.

These can be made from plywood, MDF or particle board. Baltic birch will yield the best side panel.



Figure 1.1

Tip

Paint the sides to match the color of your CNC. Sand between coats for a smooth finish.

You will need four adjustable feet. They can be as simple as a 1/2" bolt with nuts or a heavy duty foot designed specifically for this purpose. Just make sure they have 1/2" posts.

Stand Sizes

The stand described in this project is 36" x 48". It is sized to work with the 27" x 30" KRMx02 CNC. If you are building the stand for a different sized CNC you will need to adjust the cuts on some of the framing channels. The two bottom braces dictate the width of the stand. The four support beams determine the depth of the stand. The four posts help determine the height.

If you decide to change the depth of the stand to anything greater than five feet, you should add an additional set of posts and leveling feet. Also changing the width or height will affect the length of the cross braces. If you do change the width or height, don't cut them until the stand is complete, then measure the distance between the two cross brace support brackets.

Step 1

You will need to cut the four 1-5/8 x 1-5/8" framing channels into the sizes shown in Figure 1.2.

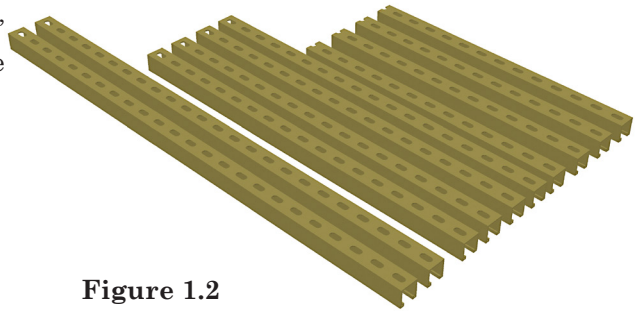


Figure 1.2

Cut them into the following sizes:

- 4, 1-5/8" x 1-5/8" x 26-3/4" (posts)
- 4, 1-5/8" x 1-5/8" x 36" (support beams)
- 2, 1-5/8" x 1-5/8" x 48" (bottom braces)

Tip

The best way to cut the struts is with a reciprocating saw with a metal cutting blade. Clamp the struts to a table along with a scrap piece of MDF as a guide, as shown in Figure 1.3.

Be sure to clean up the cut edges of the strut with a file or rotary tool.



Figure 1.3

Tip

When cutting the framing channel, make all your cuts from keeping the factory edge intact. This is not possible for for all the pieces. On the smaller pieces you need to make an extra cut in between two holes to create a 1/2" gap between the edge and the hole.

Be sure to clean all cut edges with a rotary grinder or file.

Step 2

You will need to cut the two 1-5/8 x 13/16" framing channels into the sizes shown in Figure 1.4.

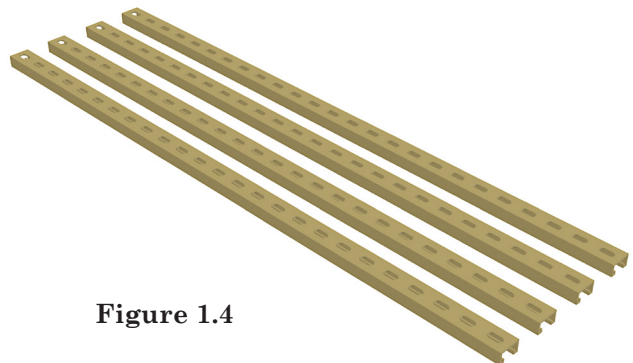


Figure 1.4

Cut them into the following sizes:

- 4, 1-5/8" x 13/16" x 50" (cross braces)

Step 3

Take a 1/2-13 x 1-1/2" hex bolt and insert four 1/2" washers onto the bolt. Slip the bolt through the inside hole on the short end of one of the 4 hole angles, as shown in Figure 1.5. Add a 1/2" lock washer and 1/2-13 hex nut.

Take a 1/2-13 x 1-1/2" hex bolt and insert one 1/2" washer onto the bolt. Slip the bolt through the outside hole on the short end of one of the 4 hole angles, as shown in Figure 1.5. Add a 1/2" washer, 1/2" lock washer and 1/2-13 hex nut.

Note the long side of the angle is up.

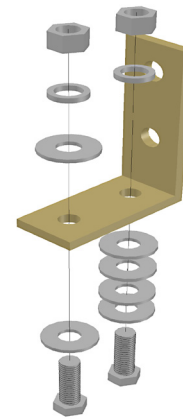


Figure 1.5

Step 4

Let the bolts dangle as shown in Figure 1.6. Slide them into the end of the one of the support beams (1-5/8" x 1-5/8" x 36")

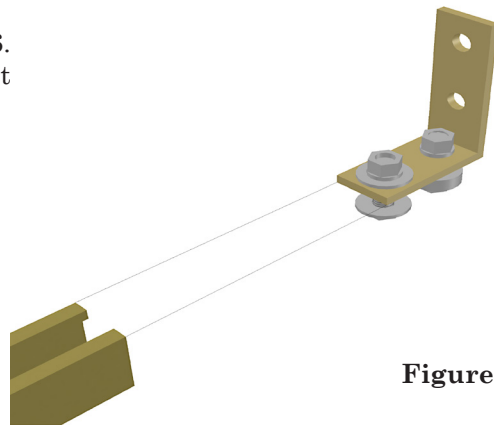


Figure 1.6

Step 5

Slide the assembly until the back side of the angle is 3-17/32" from the edge of the support beam, as shown in Figure 1.7.

Tighten the bolts.

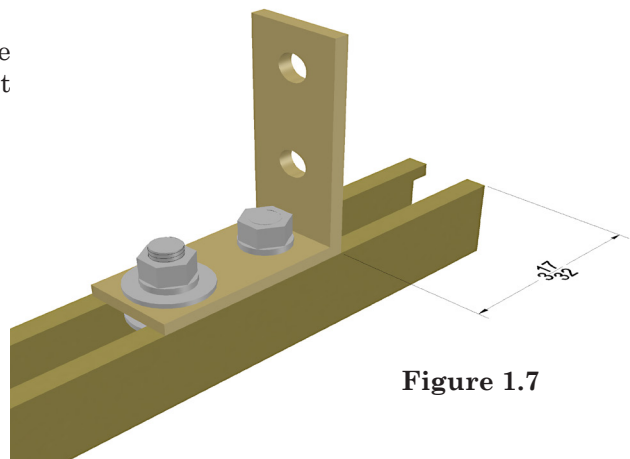


Figure 1.7

Step 6

Repeat on both sides of each of the support beams. The finished support beams should look like those shown in Figure 1.8.

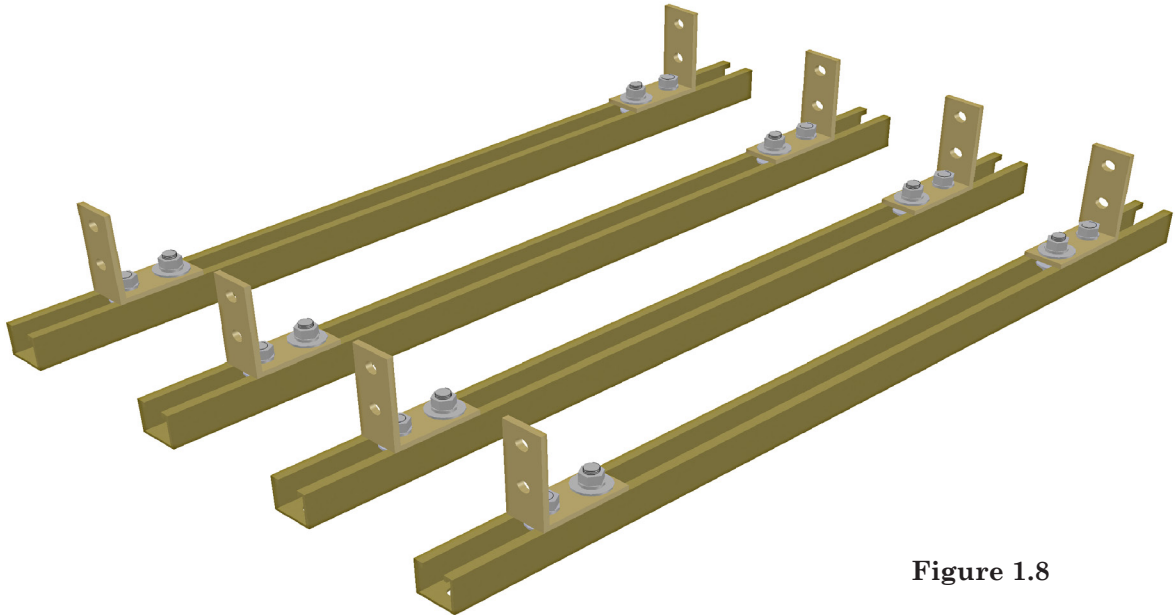


Figure 1.8

Step 7

Using two 1/2-13 x 1-1/2" hex bolts, four 1/2" washers, two 1/2" lock washers, and two 1/2-13 hex nuts add a post (1-5/8" x 1-5/8" x 26-3/4") to the beam assembly as shown in Figure 1.9.

The best way to do this is to install the bolts to the angle, then slip the post over the ends of the bolt and washer.

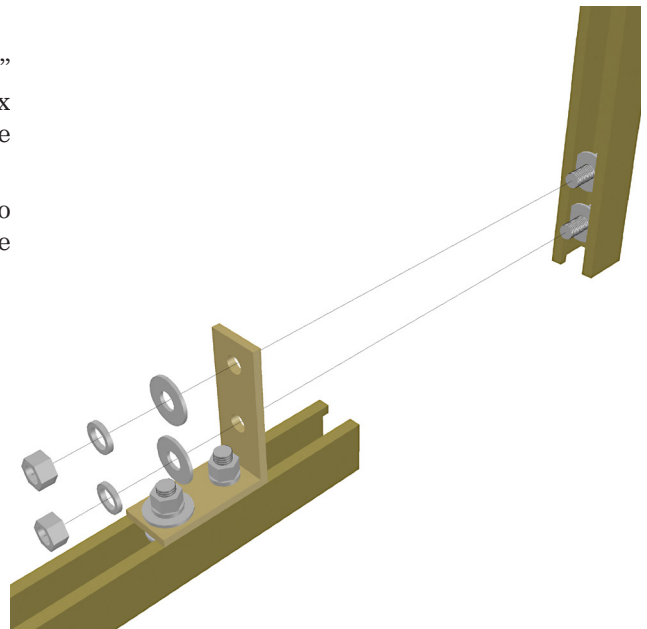


Figure 1.9

Step 8

Tighten the top bolt indicated by the arrow in Figure 1.10. Leave the bottom bolt loose. You will tighten it later.

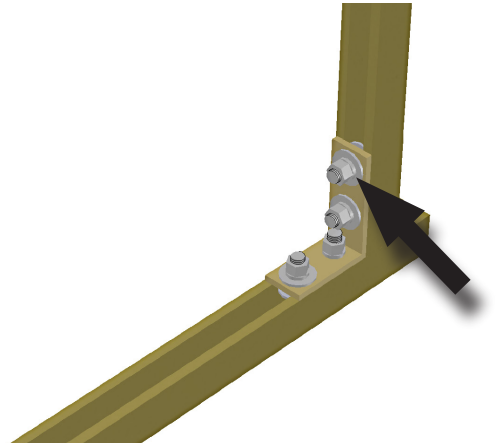


Figure 1.10

Step 9

Repeat the process on the opposite end of the beam assembly, as shown in Figure 1.11.

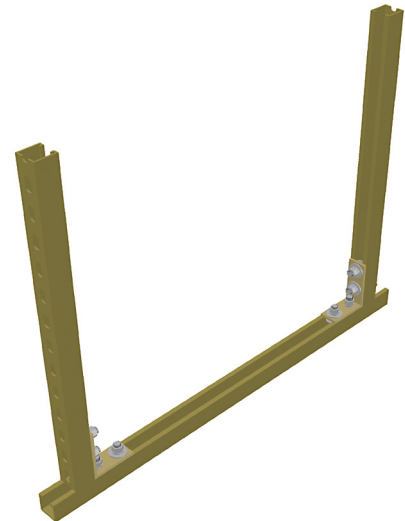


Figure 1.11

Step 10

Using one of the support assemblies, repeat Step 7 on to both of the angles, as shown in Figure 1.12.

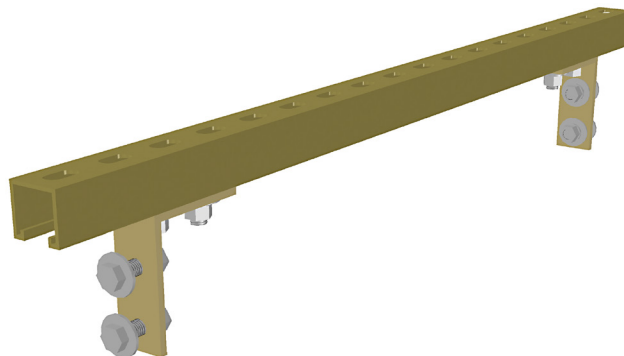


Figure 1.12

Step 11

Attach the top beam support assembly into the two posts. Be sure the bolt head and washer are properly seated against the inside ribs, as shown in Figure 1.13.

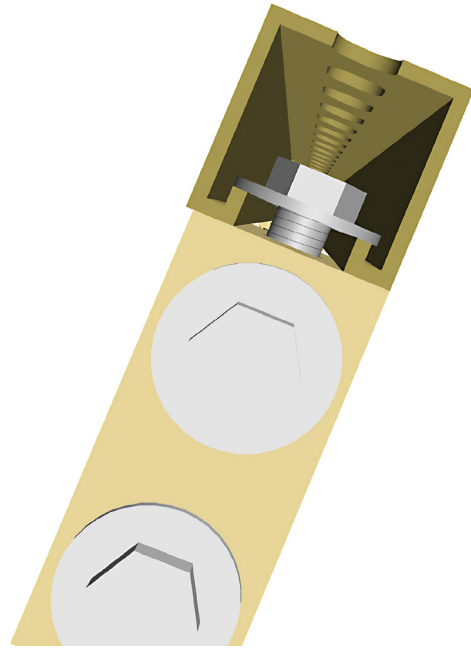


Figure 1.13

Once in place, tighten the two bolts indicated by the arrows Figure 1.14.



Figure 1.14

Step 12

Repeat the process on the second beam and post assembly. The completed assemblies should look like those shown in Figure 1.15.

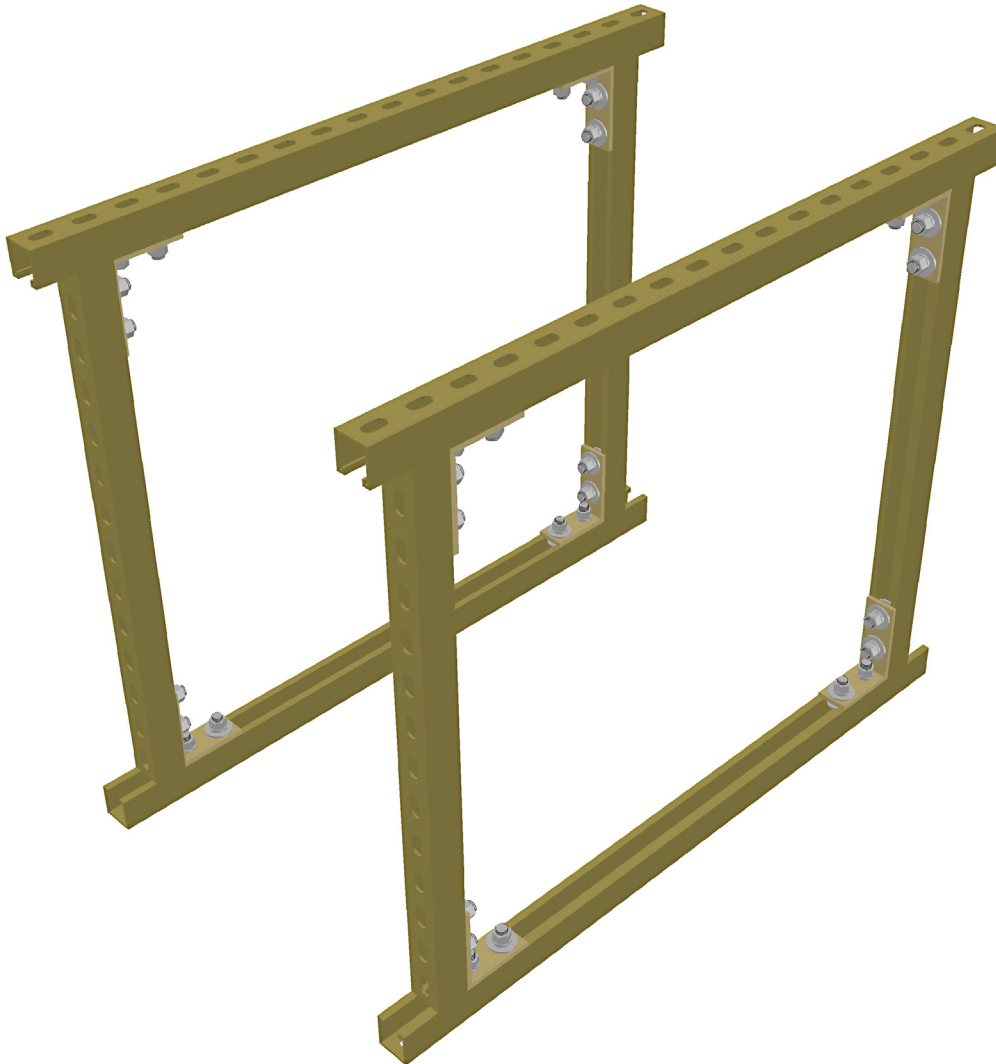


Figure 1.15

Step 13

Lay the two 1-5/8" x 1-5/8" x 48" bottom braces across the two completed assemblies, as shown in Figure 1.16.

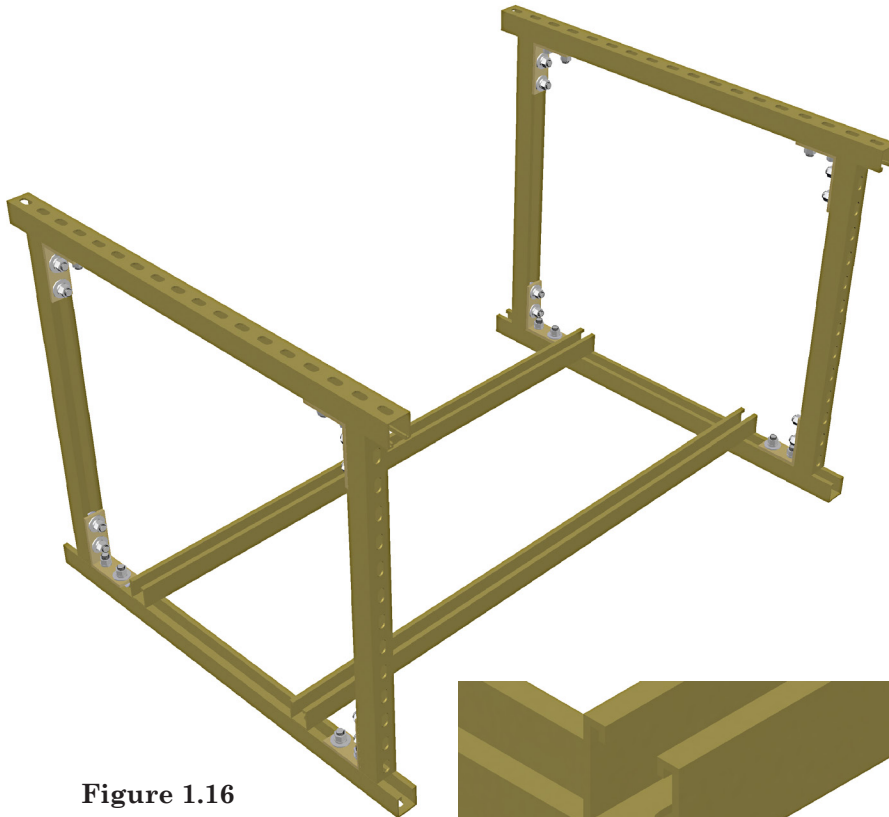


Figure 1.16

The braces should be placed 8-1/2" from the edges of the support beam, as shown in Figure 1.17

The actual placement is not that critical, as long as you can place all the cross beams the same distance from the edge. This will make squaring the final assembly much easier.

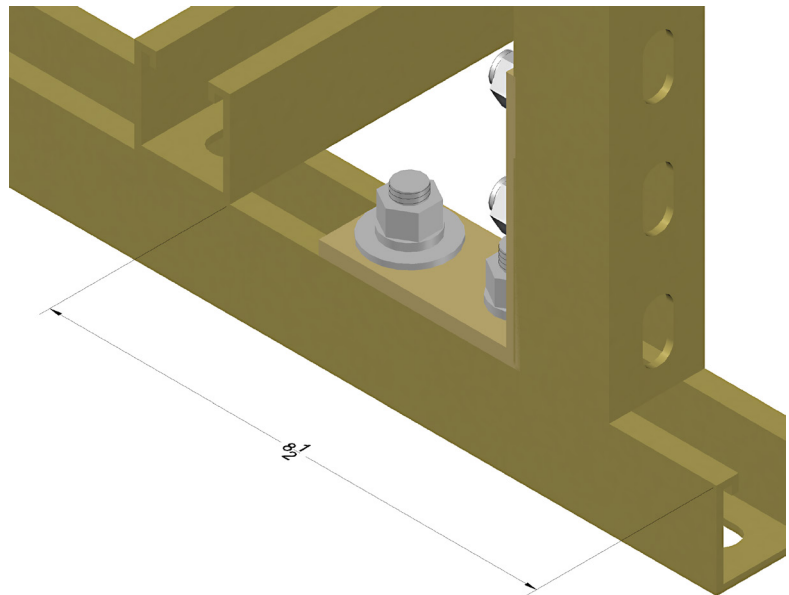


Figure 1.17

Step 14

Place a 1/2" washer on a 1/2-13 x 3-1/2" hex bolt and insert it through one a hole in the bottom of the support beam, then up through the support brace, as shown in Figure 1.18. Add a 1/2" washer, lock washer and hex nut.

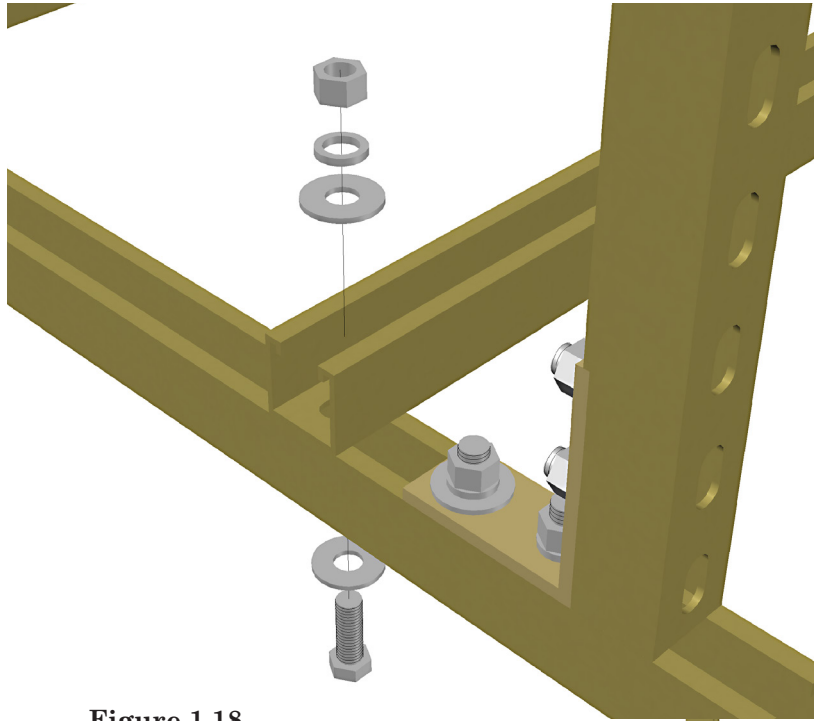


Figure 1.18

Square the assembly and tighten the nuts, as shown in Figure 1.19.

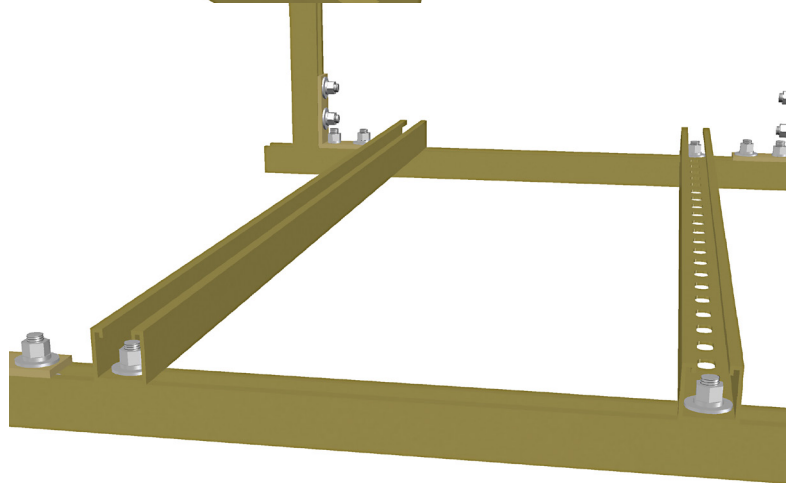


Figure 1.19

Step 15

Take two 1/2"-13 x 3-1/2" hex bolts and add a 1/2" washer. Slip the bolts through the holes in the end of one of the cross braces. Next, slip each bolt into holes on the posts as shown in Figure 1.20. Slip them through the fourth hole from the top and the fourth from the bottom of each post.

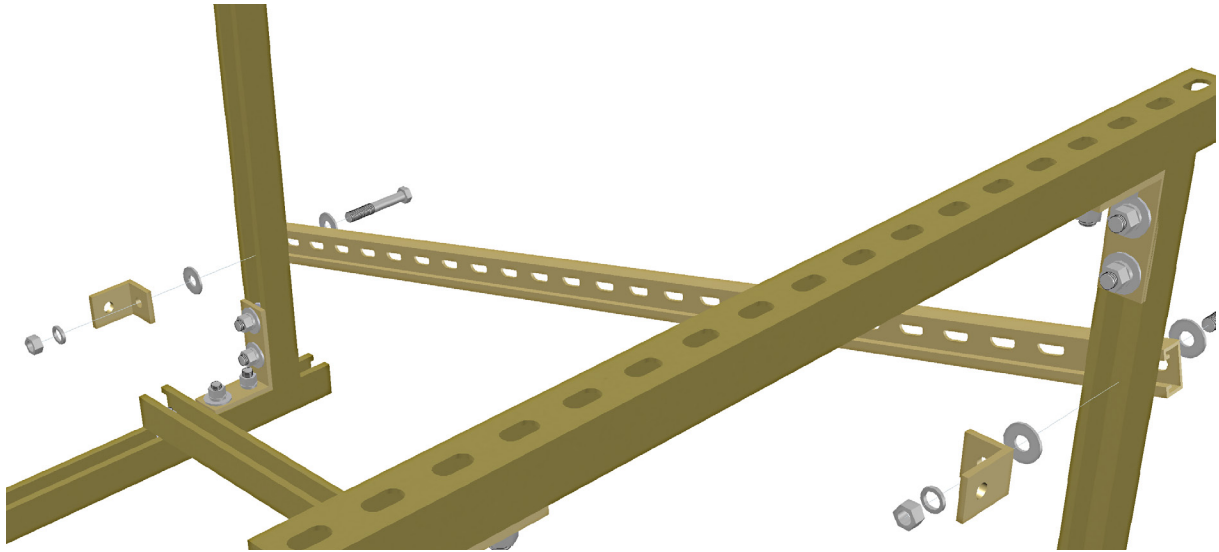


Figure 1.20

Step 16

Add a 1/2" washer to the bolts. Place the short end of the 2-hole bracket on the bolt, then add a 1/2" lock washer and hex nut. Tighten the nut holding the long end of the bracket so that it faces each side of the stand.

Step 17

Take two 1/2"-13 x 3-1/2" hex bolts and add a 1/2" washer. Slip them through the fourth hole from the top and the fourth from the bottom of each post, as shown in Figure 1.21.

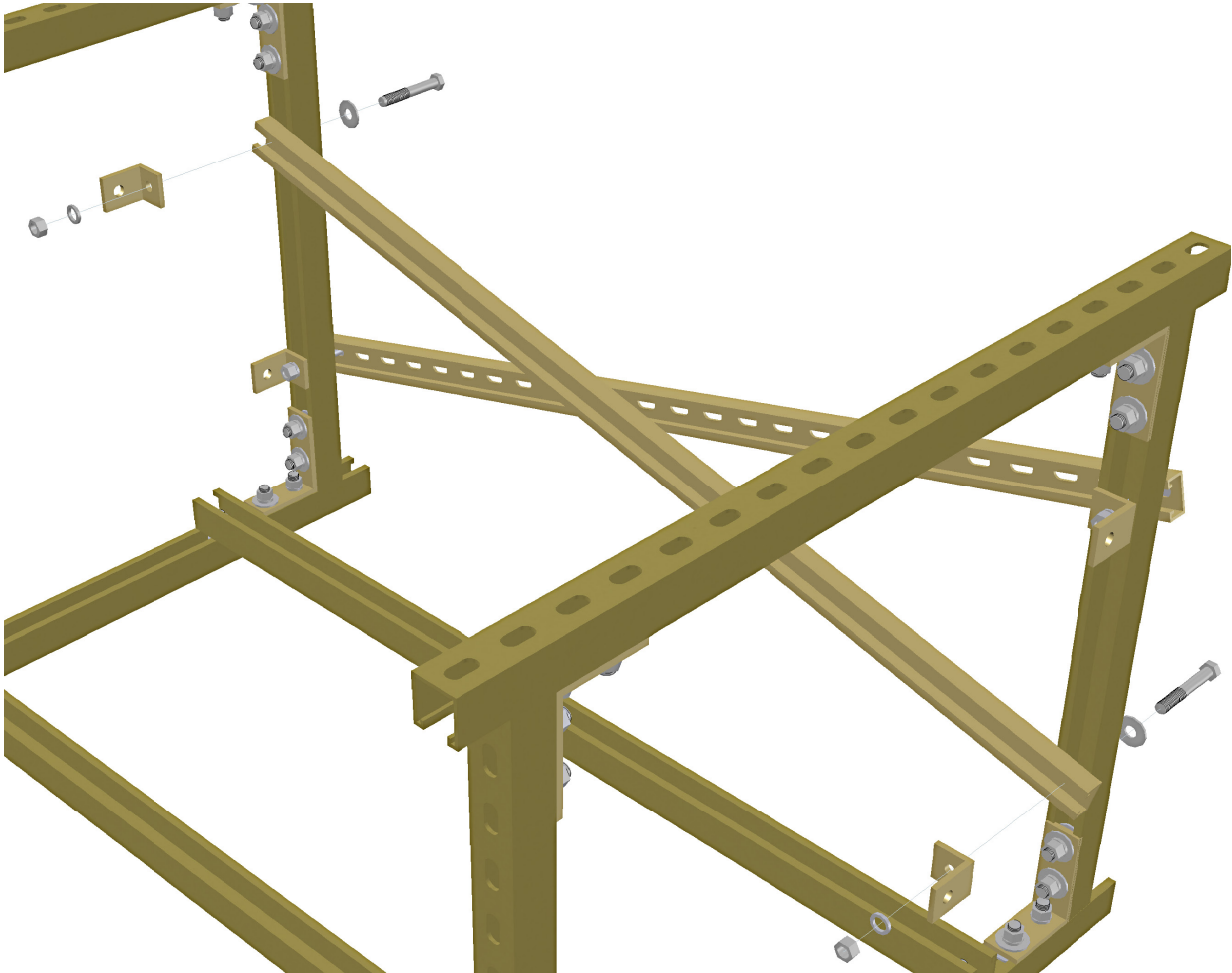


Figure 1.21

Step 18

On the opposite side of the post, add one of the cross braces as shown. Place the short end of the 2-hole bracket on the protruding bolt, then add a 1/2" lock washer and hex nut. Tighten the nut holding the long end of the bracket so that it faces each side of the stand.

Step 19

Place a 1/2" washer on a 1/2-13 x 4" hex bolt. Holding 15, 1/2" washers in between the two braces, slip the bolt/washer assembly through the two braces and washers, as shown in Figure 1.22. Add a 1/2" washer, lock washer and hex nut and tighten.

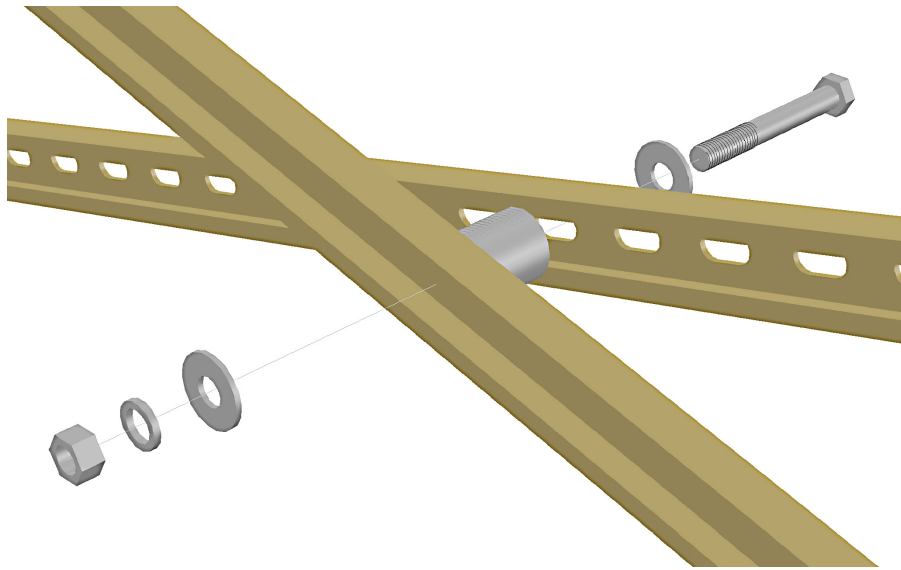


Figure 1.22

Step 20

You need to drill four holes into each of the side panels as shown in Figure 1.23. On one panel the two top holes are 5/8" from the edge, and 13/16" from the top. The two bottom holes are 1-1/2" from the edge and 13/16" from the bottom. The second panel is drill the same, but you will flip the panel when installing it.



Figure 1.23

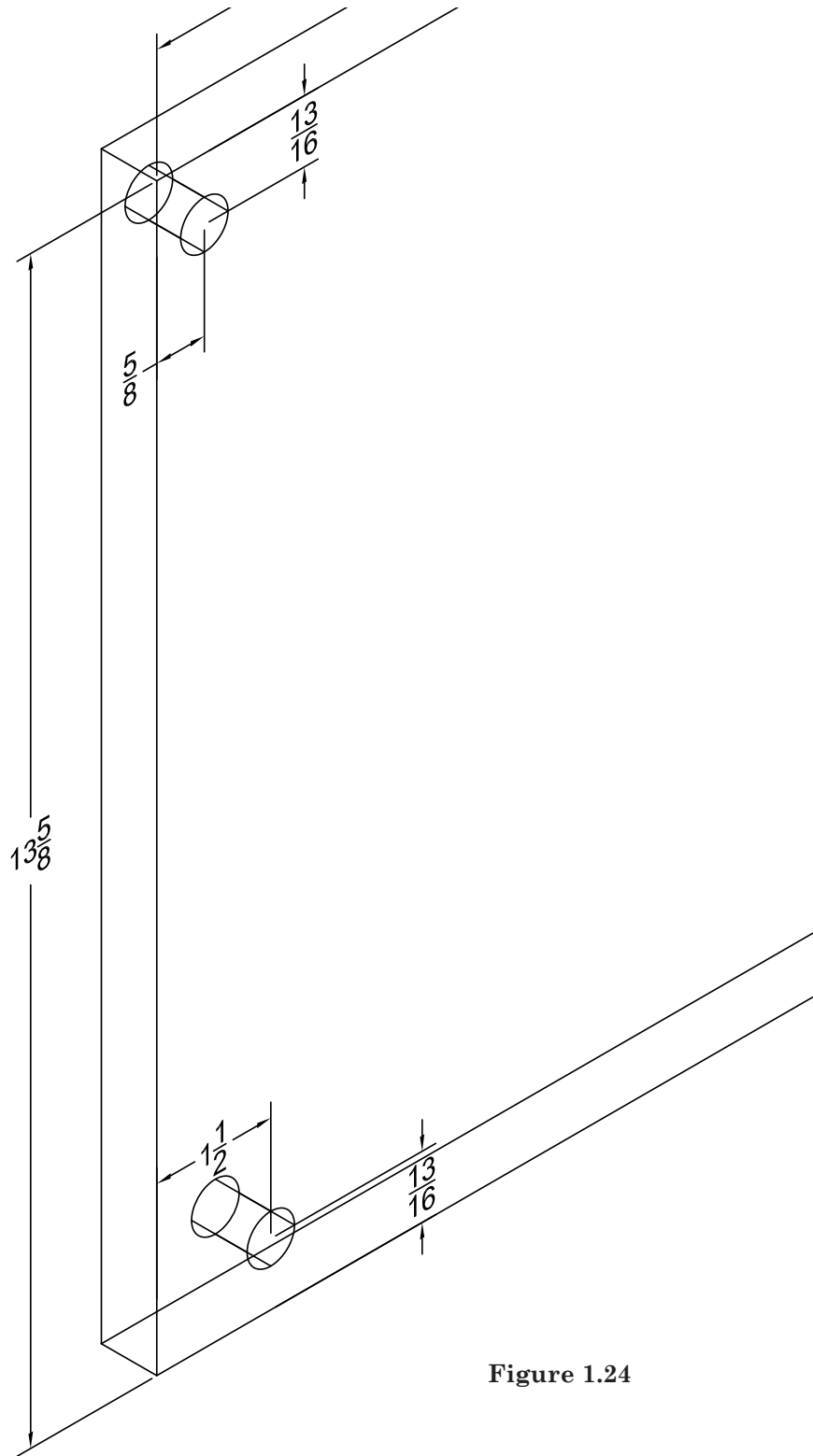


Figure 1.24

Step 21

Place a 1/2" washer on a 1/2-13 x 2" hex bolt. Holding the panel in place insert the bolt/washer assembly into the holes as shown in Figure 1.25. Add a 1/2" washer, lock washer and hex nut. Tighten all the bolts.

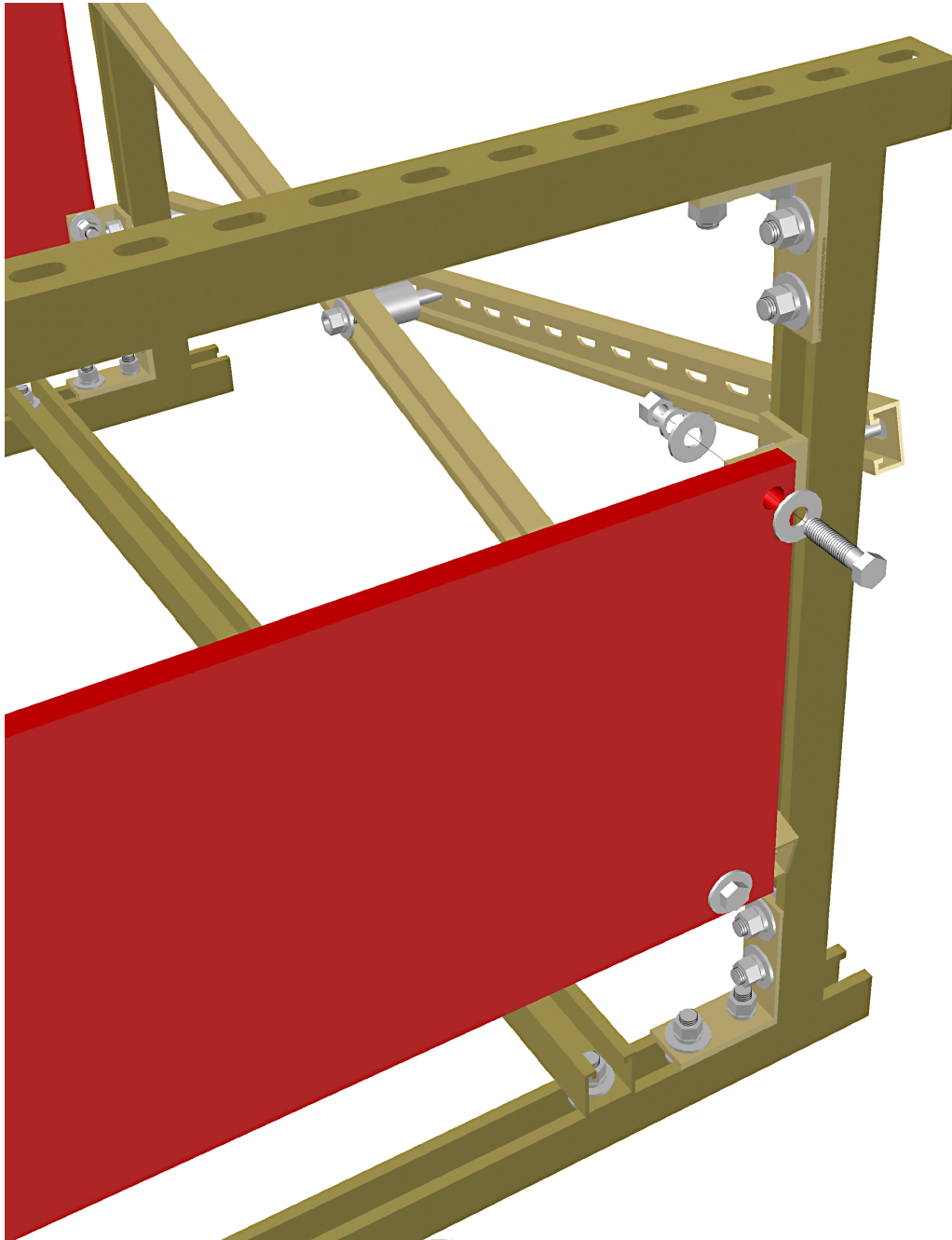


Figure 1.25

Step 22

Install a 1/2" nut and washer on the adjustable foot so that about 1/2" of the threaded rod is exposed at the bottom near the foot. Slip it into the hole at the end of each of the beam supports, as shown in Figure 1.26. Add a washer, lock washer and hex nut as shown.

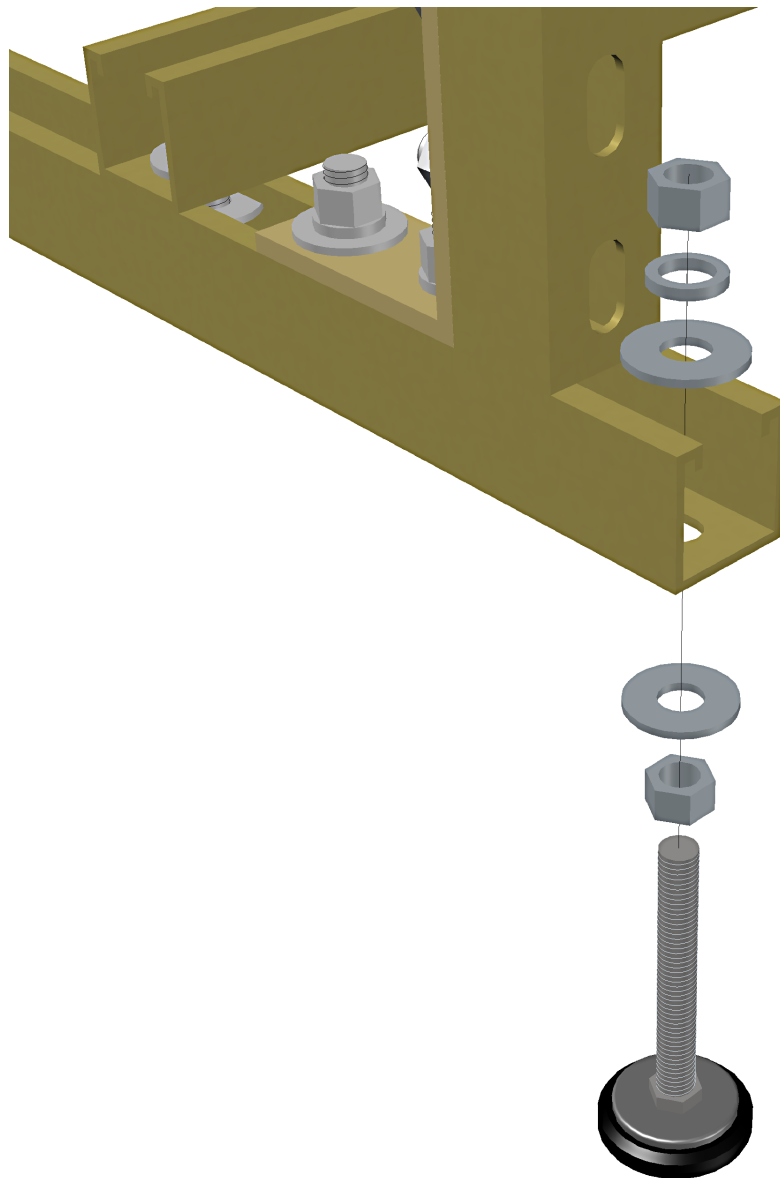


Figure 1.26

Conclusion

Your CNC stand is now complete. Use 2-hole angle brackets and a combination of bolts and washers to lock your CNC in place. Figure 1.28 shows just one way to lock the KRMx02 in place.

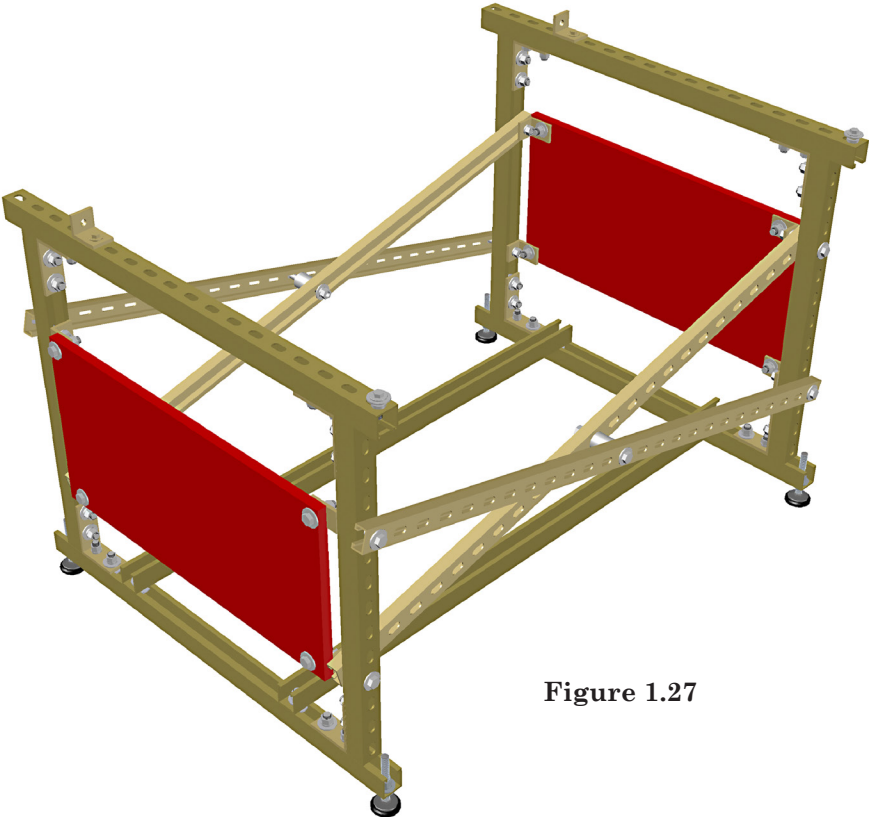


Figure 1.27

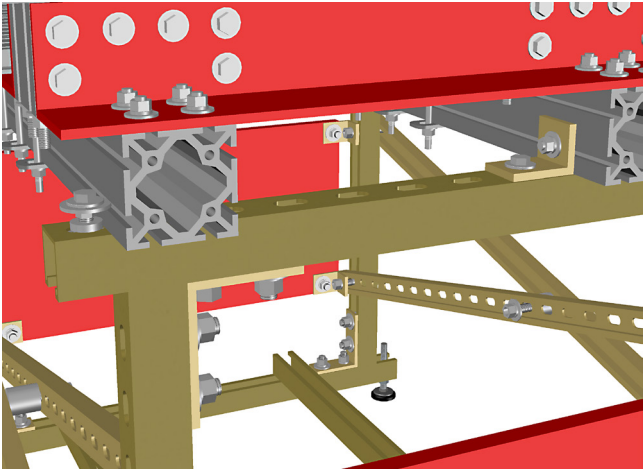


Figure 1.28