Building Your Own T-Square Style Table-Saw Fence

By
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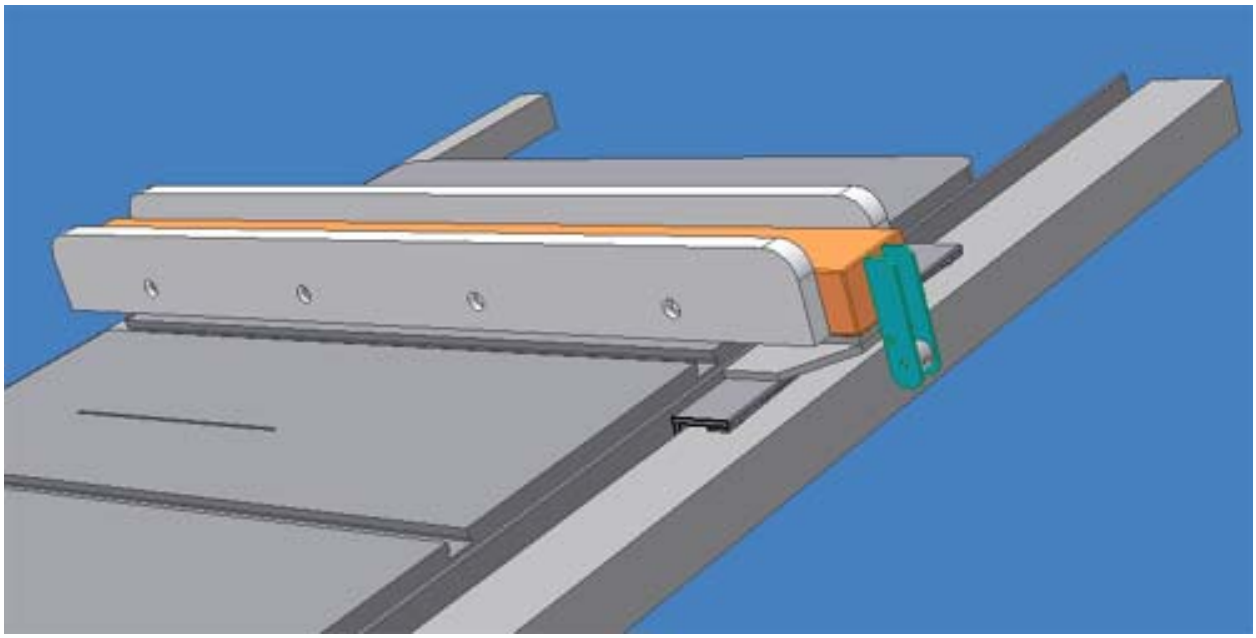

Contents

Before We Begin

Introduction

The two grim realities most table-saw owners are faced with are:

1. Unless you spent a *lot* of money on your table-saw, the fence that came with it isn't very good.
2. At around $300, the after-market fences are *way* more than most of us can bear to part with.

Although some of the after-market fences can be quite complicated, with pulleys and whatnot to keep them parallel, some others are quite simple in design. In fact, the simplest of them all is the "T-Square" style and, astoundingly enough, they are regarded by everyone I've asked as the best you can get.

The T-square style is so simple, in fact, that it requires no specially-cast parts and only about 2 moving parts. Just about everything you need to make one can be bought either from your local hardware store or from your local steel supplier. They can be built fairly quickly, too. I built mine in about 20-30 hours of shop time, but that's because I was tinkering with the design and spent a lot of time cutting pieces to length. If you knew the lengths of all of the pieces you needed (and I'll tell you what those lengths are), then you could probably throw one of these together in about 10 hours or so.

Now, although the design of the T-square fence is simple, keep in mind that it is very *specific*. Although you can buy all of the parts from a steel supplier, they have to be joined together such that everything lines up correctly. That's the purpose of this document.

Although you can find web pages of people showing off their home-made T-square fences, they always show you the finished product and they talk about how fun it was to build, etc… but they never tell you the dimensions of all of the pieces… and the dimensions *matter*… but now you'll have some that will work. Note that these aren't the only dimensions that will work. You can use smaller or bigger pieces as you care to, and I'll try to point out what other adjustments you need to make if you substitute thicker or thinner pieces somewhere.

All of the drafting drawings were done using AutoDesk Inventor. It's an incredible piece of software. I'm sure I'm not using 10% of its capability, but it has saved me tons of time and frustration by letting me see how the pieces all fit together (or don't fit together) without actually having to build a prototype.

As far as machinery goes, I used a drill-press and a belt-sander most of all. I used my radial-arm saw (fitted with a metal cutting blade) to cut many pieces to the proper length. If you have access to an equivalent metal-cutting capability (metal-cutting band saw, having it cut at your steel supplier, etc), that will do just as well.

Also keep in mind that this design is for a "cabinet"-style of saw… those big, enclosed 400-500 pound jobbies. I would hesitate to make this exact design for a contractor-style or bench-top saw for fear that this thing would tip it over or, at the least, be overkill. All in all, I think this fence weighs over 80 pounds or so. If you're making one for a smaller saw, then you can shrink some of the pieces as you see fit to make it a little more reasonable.

Contact Info

If you need to get in touch with me to discuss an error in the document, make a suggestion, or just say "thanks", you can reach me at:

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If you need the latest copy of this document, you should be able to get it from:

http://joe.emenaker.com/

Credits

Credit should be given to *John A. Swensen* for making the first webpage I ever saw describing how to make a T-square fence (http://www.tdl.com/~swensen/machines/fence/fence.html).

Special thanks to Keith Kidder for building one: (http://mywebpages.comcast.net/kidder/Audio/Tools/Table%20Saw/table_saw_mod.htm) and sending me lots of pictures of it.

Errata

The fence you see pictured in the photos ***does not match*** the one shown in the drafting drawings or the 3D renderings. The photos are of my first attempt at making the fence. It had a few glitches that, if I did it all over again, I'd want to fix. So, I fixed them in the drawings so that you'll have a better fence than I do.

If you find any other errors in this document (ie, wrong dimensions, something doesn't fit right) or if you have any clever suggestions on how to make the fence even better, please let me know.

Also, keep in mind that the colors used in the CAD drawings are for *contrast* purposes. The fence tube isn't really orange and the clamp mounts aren't really teal.

Copyright

Disclaimer

For fear that someone is going to hurt themselves while building this or while using the finished product and then sue me, I feel compelled to issue the following warning.

Don't build this.

You'll probably lose an eye. In fact, you'll be lucky if you lose just one. Furthermore, if you don't end up killing your spouse and children in the process of building/using it, then they'll certainly leave you *because* you build it. You will die alone and penniless in a dark foul-smelling alleyway.

So, if any of these things actually happen to you, you were warned.

On a More Serious Note

While I was in the home stretch of building this thing, I got pretty absorbed in getting it completed and I cut a few corners in the "better judgment" department. Specifically, I didn't bother with opening my garage door while brazing the pieces together, and I ended up doing a bit more brazing than I was planning on… and I did all of it in one session. So, I didn't really realize that the garage was filling up with all kinds of fumes from the melting brass and the flux and whatever funny chemicals were being formed when the flux de-oxidized the metal parts.

Later that evening, I felt like I had been in a smog alert in L.A., where it hurts to take a deep breath. I also had body aches and, overall, felt pretty lethargic. When my girlfriend heard what I had done (and how I was feeling) she jumped on the net to see if there was a name for what I had done to myself.

According to her, the common name for it is “Metal Fume Fever”. The milder symptoms are the ones I’ve described but, in more extreme cases and over prolonged exposure, it can cause renal distress, there’s supposedly been some correlation of it to Parkinson ’s disease, and I guess there have been fatalities reported from it as well.

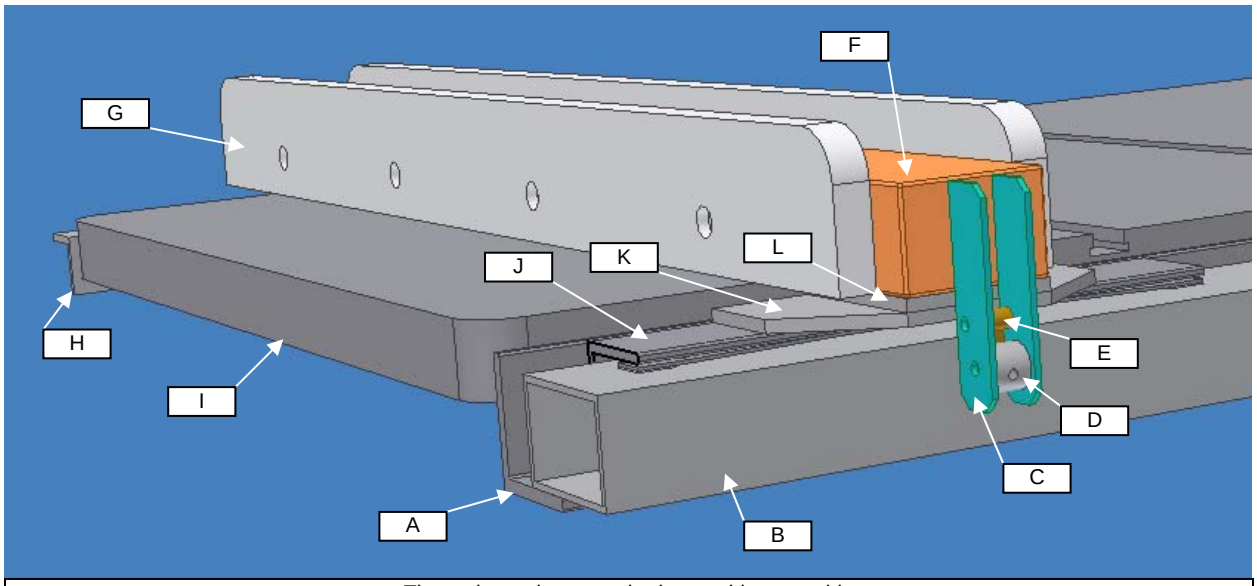
Now, I didn’t get a very heavy “dose” of it, and I was feeling myself again within about 12-18 hours. But it’s much better to be safe than lucky, and I’m planning on doing all of my future welding outdoors from now on. ***Please***, folks, read and follow the safety precautions on all of the welding/painting/stripping/etching materials you plan to use.

Now, on with the project….

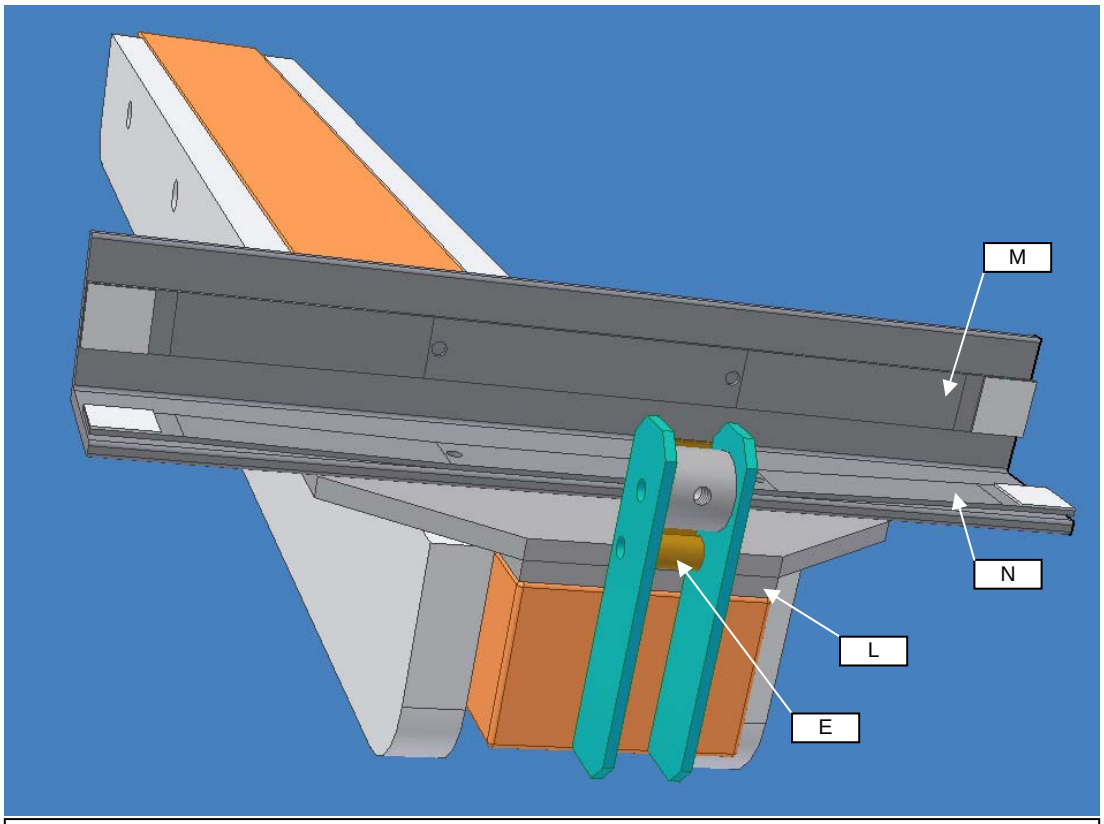
Construction

Anatomy of a T-Square Fence

Although these parts probably have different names in the mechanical engineering world, I'm going to tell you what *I* call these parts, so that you'll know what I'm talking about throughout the rest of the document.



The entire project, attached to a table-saw table



Underside of the fence assembly

The pieces are called as follows:

A. “Front Guide Rail” or “Front Rail”. Together with part B, the “Guide Tube”, they form the “Front Guide Assembly”.
B. “Guide Tube”. Together with part A, the “Front Guide Rail”, they form the “Front Guide Assembly”.
C. “Clamping Bracket” (Qty. 2). These attach to the back of the Fence Tube (F) and hold the Clamping Cam (D) and the Pressure Plate (E)
D. “Clamping Cam”. This is a cylinder with an off-center hole drilled through it to make it into a cam. When turned, it forces the Pressure Plate (E) to press against the Guide Tube (B)
E. “Pressure Plate”. This is a bent piece of sheet-metal used to prevent the Clamping Cam (D) from wearing directly against the Guide Tube (B)
F. “Fence Tube”. This is the “fence” itself. Aside from the Sacrificial Fences (G), it’s the only thing that rests on the Table (I).
G. “Sacrificial Fences”. These bolt onto the Fence Tube (F) and form expendable, replaceable surfaces for the fence.
H. “Rear Rail”. This provides support for the far end of the Fence Tube (F). Partly so that it can ride just off of the surface of the Table (I) and partly so that it doesn’t fall when you move your fence way off to the right.
I. “Table”. We won’t be building this. ☺
J. “Squaring Angle”. This is a piece of angle-iron welded to the Fence Tube (F) which keeps it square to the Guide Tube (B). The “squareness” is adjusted with the Horizontal Adjustment Plate (M)
K. “Tortion Plate”. This provides some separation between the Fence Tube (F) and the Guide Tube (B) and it also adds some strength against twisting at the interface between these two pieces.
L. “Spacer Plate”. This provides some separation as well. If this weren’t here, the top of the Tortion Plate (K) would be flush with the bottom of the Fence Tube (F), which is going to ride just above the surface of the table… which would mean that the top of the Tortion Plate will be just above

the table… which means that it would be in the way when you tried to rip something. So, to keep the Tortion Plate below the surface of the table, we add this spacer. (NOTE: The one that I built that is in the picture does NOT have a spacer plate in it! So, if you have trouble seeing it in the pictures, it's because it's not there).

M. "Horizontal Adjustment Bar". This is a piece of thick sheet metal with some UHMW slider feet on it. The feet slide against the Guide Tube (B). There is an adjustment screw in the Squaring Angle (J) behind each of the feet to adjust for squareness.

N. "Vertical Adjustment Bar". This is just like the horizontal one, except that this is to lift the fence *just* off of the surface of the table and also to make sure that the sides of the Fence Tube (F) are perpendicular to the surface of the Table (I)… which is important if you're going to make a panel-raising jig that slides along the fence.

Parts

Here's a look at the stuff you're going to need to buy:

Qty	Descr.	Purpose	Price
From steel supplier			
1	4-foot length of 1/4" thick 2.5"x2.5" steel angle-iron	Front rail	$7.00
1	4-foot length of 3/16" thick 1.5" x 1.5" steel angle-iron	Back rail	$4.00
1	4-foot length of 1/8" thick 2"x3" rectangular steel tubing	Guide tube	$15.00
1	3-foot length of 3/32" thick 2"x3" rectangular steel tubing	Fence body	$12.00
1	1-foot length of 3/16" thick 2"x2" steel angle-iron	Squaring angle	$2.00
1	1" diameter steel rod, 3/4" long (I cut up a 1" dia bolt for this)	Clamping cam	$2.00
2	12" x 3/4" x 1/32"-1/16" thick steel or brass strips	Adjustment plates	$4.00
1	4" x 3/4 x 1/32"-1/16" thich steel or brass strips	Pressure plate	$1.00
2	4" x 1" x 1/4" thick steel plates	Clamp mounts	$1.00
1	12" x 4" x 1/4" thick steel plate	Tortion plate	$3.00
1	2" x 3" x 1/4" steel plate	End cap for fence	$1.00
1	3" x 4" x 1/8" steel plate	Spacer	$1.00
From hardware Store			
6	1/4"-20, 1-inch Phillips or Flat-head bolts	Attach fence sides	$1.00
2	1/4"-20, 1-inch Hex-head or Allen-head bolts	Attach front rail & tube	$1.00
4	10-24, 3/8" long headless allen screws	Adjustment screws	$1.00
2	1/4"-20 1.5"-1.75" long bolts	Clamp assembly	$1.00
2	1/4"-20 vinyl stop nuts	Clamp assembly	$1.00
1	5/16"-18, 4-inch bolt	Clamp lever	$1.00
1	5/16"-18 nut	Jam nut for lever	$1.00
1	1/4"-20 1-inch bolt	Rear slider	$0.20
1	1/4"-20 nut	Rear slider jam nut	$0.20
1	Sheet of clear lexan/acrylic/plexiglass 2" x 2" x 1/4"	Measurement window	$2.00
2	10-24, 1/4"-long machine screws	Measurement window	$0.10
From Woodcraft or Lee Valley			
1	Self-adhesive measuring tape	Measurement tape	$6.00
1	Roll of 3/4" UHMW tape	Slider pads	$6.00
		Total	$74.50

The two top 4-foot lengths are for the guide rails that attach to the front and back of your saw. I chose 4 feet because that's what was on my saw to begin with. You can make them as long or short as you want. Keep in mind, however, that the fence needs 8.25 inches of rail beyond the blade-side of the fence to clamp onto. In other words, if your rail extends 36 inches to the right of your saw blade, the widest you can rip will be 36 *minus* 8.25 inches.

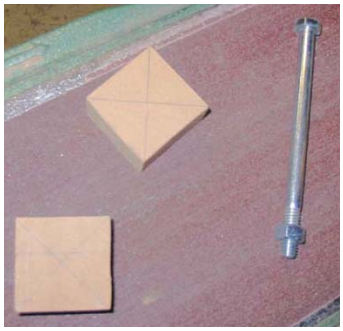
The 3-foot length is the length of the actual fence itself. My original fence was a little shorter than this, but I wanted it to hang a little over the end of the saw. Again, you can make this any length you want. As far as thickness goes, I wouldn't go any thinner than this, or you'll easily strip the theads you put in it.

In addition to the above items, there are a few other things that, if you don't own them, you should consider buying them (or borrow them). If you have to buy them, it will increase the cost of this project, but your shop will have them from now on:

- Set of English/Imperial (aka. Non-metric) taps and dies. Specifically, you need a tap for 10-24, ¼"-20, and 5/16"-18
- Forstner bit, approx ½" to 5/8" in dia for making the recesses for screw heads in the sacrificial fences.
- Pop-riveter (unless you have access to a spot-welder) for attaching the adjustment plates to the fence. Epoxy or small screws can do if you don't want to own a pop-riveter.

Construction

Let's make the knob first, because you have to let some epoxy cure for a while, so we might as well get that process going right off the bat.



Cut two 1.5"x1.5" pieces of ¾" MDF and draw lines between the opposing corners on them to find the centers of the pieces. In one piece, drill a 5/16" hole all the way through. In the other piece, use a ½" or 5/8" forstner bit (or whatever you've got) to drill a shallow cup a little deeper than you need to receive the hex head of the 5/16" bolt that we're going to use for the clamping lever.

Mix some JB-Weld, PC-7, or some other strong epoxy and goop some into the cup where the head of the bolt is going to go. Then, thread the bolt through the 5/16" hole on the other piece, slather a little epoxy on the faces, and clamp them together and let them sit for a day.

When the epoxy has cured (I'll remind you later to come back here for this part), remove the clamps and use a belt or power sander to get round off the corners and edges.

Then, chuck the bolt in your drill press and turn on your drill press

and use it like a lathe; using a rasp or sanding block to smooth the handle to a nice, round, ball.

Then, mask off the shaft of the bolt and paint the handle the color of your choice.

Next, we'll assemble the front guide assembly, which is merely two pieces bolted together.

Take the 2.5"x2.5"x1/8" 4-foot angle-iron and the 4-foot rectangular tubing and mate them together so that the inside of one leg of the angle-iron is touching one of the 3" faces of the 2" x 3" tubing. We need a little bit of space between the other leg of the angle-iron and the tubing, and we want that space to be pretty constant (or the tubing won't be parallel to the front of the saw). To do this, I ripped a piece of oak to the width I wanted and sandwiched it in there as a spacer (make sure that you keep the spacer away from the rounded inside corner of the angle iron). Clamp everything together securely.

Clamping the angle-iron and tubing together. (Note the wooden spacer)

Then, drill a pair of 3/16" holes through the angle-iron and the tubing where they overlap. Place them fairly near the ends (about 6" or so in from the ends is fine) to best resist any torque exerted by the fence upon the guide tube. Line the holes up with a line that runs down the middle of the area where the two pieces overlap each other (not too close to the edge of the angle-iron, nor the tubing).

Once you've drilled the holes, unclamp the pieces and re-drill the holes in the *angle-iron* to be ¼" at a *minimum* (to accommodate the ¼" bolts that we're going to use). If you need more room to adjust for parallel or whatnot, feel free to make these holes a little bigger… 5/16", I guess. Then, tap the holes in the *tubing* to ¼"-20.

Then, bolt the pieces together. Note that we're not completely done with this part, yet. We still have to drill the holes for mounting it to the front of your saw, but we'll save that until after our fence is built so that we can test-fit everything and make sure that we don't mount the rail too high or low.

Let's Get One Thing Straight (aka. Tapping Threads)

It seems that everybody's got some trick to tapping straight threads. I've got one, too, so I'll let you in on it. Most of the other systems I've seen involve chucking the tap in a lathe or drill press and then trying to hand-turn the chuck while trying to feed the tap into the hole at the proper rate. Or, another simple one is to just make a right-angle butt joint out of a couple of 1" strips of wood, to make a corner that will stand vertical for you to guide your tap with.

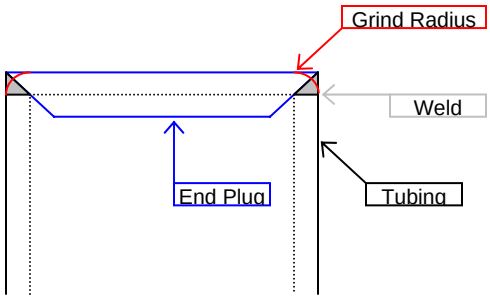
In the picture, you can see what I do. With a drill press (or something that can make holes perpendicular to a piece of wood), I make a hole that's either the tap-hole size or a little larger in a piece of scrap ¾" MDF. Then, I tap the hole and *leave* the tap in there. I leave the end of the tap just protruding out of the hole on the bottom.

Then, I use the protruding tap to properly center it on the hole in the metal that I want to tap and then I clamp the MDF to the workpiece and then start tapping. There are a few nice things about doing it this way. The *really* neat thing is that the threads in the MDF automatically feed the tap into the hole at the proper rate. I don't even have to press down on the tap, usually. Another nice thing is that, once the tap is centered and the MDF is clamped, you really can't mess it up too much. You just turn the tap without any regard to any undue side-to-side pressure you're putting on the tap. Lastly, it's *so* easy to set up. Any scrap piece of wood will do.

Now, we build the fence itself.

For starters, we have to plug one end of the 3-foot tubing. The challenge here is that this plug is going to be bearing most of the clamping stress, so the weld needs to be fairly sturdy, but we're also planning on rounding the corners off, and we don't want to accidentally grind all of the weld away.

What I ended up doing was beveling the edges of the 3"x2"x1/4" plate by about 5-10 degrees, to make fit the end of the tubing like a square cork, of sorts. I tapped it snug (don't tap it too hard or you'll deform the tubing) and then welded the two pieces, filling the little groove around the end with weld metal. I then rounded the corners off on the belt-sander. (Note, the little gap at the front of your belt-sander, between the roller and the table, is great for rounding things. Since the sanding belt has no backing there, you can place things there and the sanding belt will "give" a little, wrapping around the thing you're trying to round off).



End-cap illustration to show filling of the gap with weld metal. (Note: Bevel on plug is *greatly* exaggerated)

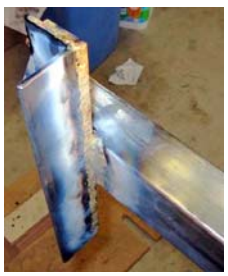
It's fairly important that this plugged end be square to the sides of the fence (or your whole clamping mechanism will be crooked). You can see the photo of how I squared mine on the disc sander. I squared the table to the disc, and then clamped a piece of 2x4 to the table that was also square to the disc. Then, I was able to use the table and the 2x4 as a guide while pressing the plugged end of the tube against the disc.

Before you start, use a sharpie or some other felt marker to scribble all over the end. This way, you'll know when all of the end plug has contacted the sanding disc.

Squaring the tortion plate to the tubing (Note that the prototype in the picture doesn't have a spacer plate)

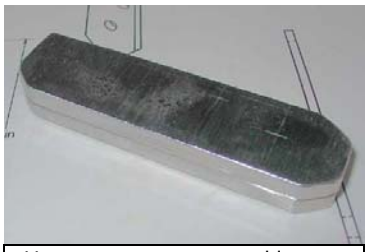
Next, weld or braze the spacer onto one of the 3-inch sides of the fence tube. *Remember that the spacer needs to be flush with the end plug in the tube (where the clamp mounts are going to go)*.

After that, weld or braze the tortion plate onto the spacer. Again, make the the narrow part of the tortion plate (the "top" of the trapezoid, if you will) flush with spacer and the end plug in the tube. Try to get the wide-end of the tortion plate perpendicular to the tubing.



Then, weld or braze the squaring angle iron to the tortion plate, lined up with the wide end of the plate. *Try to get this angle-iron to be square to the fence tube. If that means that it can't be perfectly flush with the wide end of the tortion plate, then that's okay*.

Now for the clamp mounts. Drill the holes in the clamp mounts. We want these holes to be lined up with one another, so I stuck mine together with carpet tape so that I could drill through them both at the same time. Also, the mounts are beveled for appearance and to have smooth corners. You don't have to make them 45-degrees. You can make them semi-circles, or you can just file the sharp edges down, whatever your preference.



Use carpet-tape or something to stick the two clamp mounts together when drilling.

Use a couple of long ¼" bolts and some nuts to keep the plates the right distance apart

Now, weld or braze the clamp mounts to the end-plug/spacer/tortion-plate stack. You want these to be ¾" apart and parallel. To keep them this way while I was brazing, I ran two bolts through the holes with three nuts on each bolt to hold them parallel. The outside of each mount should be 7/8" in from the side face of the fence tubing and the top of the mount should be flush with the top of the fence.

(While your welding/brazing stuff is cooling, this is a good time to go see if the epoxy on your knob-block has cured. If so, go toss it in the drill-press and sand it until you have a round knob. Then, paint it and let it dry.)

The clamp mounts, after they've been brazed on

Next, prepare your adjustment bars. You need to have some little UHMW pads on them for good sliding, so I used my band-saw to make some thin strips suitable for epoxying onto the ends of the bars. If I were to do everything over again, I'd just use the sticky-backed ¾" UHMW tape you can get from Woodcraft or Lee Valley.

Before we drill the holes for our pop rivets (or spot-weld them, if that's what you're going to do), you'll need to clamp the bars where you want them to go. Don't clamp them quite yet, I just want to discuss placement of them, first.

One bar goes on each "leg" of the squaring angle-iron. The one that goes underneath the top leg just levels the fence and makes it ride a little off of the saw table, and can be positioned anywhere, so I clamped it about ¼" in from the edge of the angle. The other bar is the one that you use to adjust for squareness and it bears a lot more force than the top one does, so I wanted mine to be as close to the corner of the guide tube as possible to minimize flexing and deformation of the tubing when I clamped. So, I placed that bar about ¼" down from the corner of the guide tube.

One adjustment plate riveted in place, one resting on the tubing, ready to be clamped and drilled.

But, in order to do that, we're going to need to know how the fence is going to ride on the tubing. To do this, I placed the fence on the saw table and then set up two outfeed rollers to hold my guide tube. Then, I could raise or lower the guide rail/tube to help visualize everything. Be sure to slip your top adjustment bar in between the guide-tube and the squaring angle. Once you do this, you'll have an idea of where on the angle-iron to place the second adjustment plate.

Once you've got the placement all figured out, go ahead and clamp them. Figure out where the center of the UHMW pads are and mark those four positions on the angle-iron. This is where our adjustment

screws are going to go. Now, if you're going to rivet the bars in place, go ahead and drill the holes. I used 3/16" rivets, but 1/8" would do fine, too… I just didn't have any 1/8" ones handy that were long enough. *Make sure to put the rivets within ¾" of the side of the fence tube. That way, they'll be obscured by the ¾" melamine sacrificial fences that we're going to attach. Otherwise, if they're further out than that, there's a chance that they'll stick up past the surface of the table, and they'll scratch or gouge your work when you use the saw. However, if they're hidden under the sacrificial fence, then you're safe. So, I'd put them about ½" out from the sides of the fence*.

Once you drill the rivet holes, don't put the rivets in quite yet… and, if you're spot-welding, don't weld quite yet, either. We want to drill and tap the holes for the adjustment screws and we want the adjustment bars out of the way for that. These holes should be in line with the centers of the UHMW pads on the adjustment bars (and you already marked those spots on the angle-iron, remember?).

For the adjustment holes, I used 10-24 sized headless allen screws. Once you drill and tap your adjustment screw holes, you can go ahead and weld, rivet, or epoxy your adjustment bars in place.

Next, we're going to make the clamping cam. Grab the ¾" long, 1" diameter rod cylinder thingie. Find the center of one of the circular faces by measuring ½" in from various places along the circumference. Once you've found the center, mark a spot about 1/16" out from the center (It doesn't matter which way you go… it's a circle). Drill a ¼" hole down through the cylinder at this off-center point.

You now have a cam. Now, we just need to know where to put the hole for the lever. Go ahead and place the cam between the clamp mounts and put one of the long ¼"-20 bolts through it to mount it in place. Now, you should be able to spin the cam around and around and see the cam action at work. Turn the cam until it gets closest to the opposing leg of the angle-iron (when there'd be the most clamping on the guide tube). At this point, we'd want the clamping lever to be all the way down, so make a little mark with a sharpie or something on the bottom of the cam. Now, turn the cam 180-degrees as though you were lifting the clamping lever. You should see that, with the lever vertical, the cam would be as "unclamped" as possible.

Once you're satisfied with the positioning of where your lever is going to go, go ahead and drill a hole where you placed your mark (for drilling into a curved surface, it helps to use a center-punch to make a little dent to help your drill not stray when you first start the hole). Then, tap the hole to 5/16"-18. Once you do that, if the paint on your clamping lever knob is dry, you can put a 5/16"-18 jam nut on the threads of the lever and put the lever on the cam. Screw the knob in until you hit the ¼" pivot bolt, then back out about one turn and use the jam nut to wedge the lever in place.

Next, fashion a little pressure plate out of the ¾" strip steel/brass. I was able to make mine with a vise, repeatedly squishing the end until I had a tight loop on one end. Drop that in place and put the other 1/4"-20 bolt through it.

Drill and tap the hole for the slider for the back rail.

At this point, the fence is done except for addition of sacrificial fences and adjustment. We can now drill the holes to place the front rail. Use the adjustment screws to push the adjustment bars out a bit (since we'll want some room to back them off if we need to). Now trial-fit the guide-rail. Raise the rail/tube until they *just* start to lift the fence off of the saw table. *Make sure that the rail does not get in the way of your miter slots!!* For me, the top of the rail was ½" below the top of the table, and the miter slots are about 7/16" deep, so I had about 1/16" of clearance.

In your case, if everything lines up fine, then figure out where you need to drill your holes and drill them. However, if your rail *does* get in the way of your miter slots, then you have a few options. If the rail is just barely in the way, you can mount the rail a little lower and just screw the adjustment screws further. Or, if the rail is *really* in the way (for example, more than about 1/16" of overlap, then you can either grind a groove in your angle-iron for your miter slots (some commercial T-square fences come like this) or you can go get an angle-iron with one leg a little shorter (like a 2"x2.5").

Once you drill your holes and mount your front rail, you should be able to place your fence on it and lock the fence to the guide tube. Go ahead and lock the fence and see how sturdy the other end is. It should feel pretty solid.

Now mount your rear rail the same way you mounted the front one. The only difference is that I mounted my rear rail "upside-down" in the sense that the horizontal leg (that the fence was going to ride on) was *over* the vertical leg (that bolts to my saw). I used 1.5"x1.5" 3/16"-thick angle-iron because a bigger piece would interfere with my blade-guard (or the mount where it clamped on when I used to use it, anyway).

Once this is in place, put the ¼"-20 nut on the ¼"-20 1-inch bolt and thread it into the hole at the far end of the fence. Cut a little piece of UHMW tape to fit the end and then adjust the bolt so that the end rides *just* off of the top of the table and then lock the bolt with the jam nut.

Do the same with the vertical adjustment screws… adjusting so that the fence rides just off of the top of the table. Slide the fence from side to side to be sure that it doesn't "bottom out" anywhere.

Lastly, we need to adjust for squareness and clamping snugness.

With your table-saw unplugged, raise the blade all the way and slide the fence up against the blade and lock the fence. (*Be careful because the fence is going to twist a little when you clamp it*). Unless you live a charmed life, the fence will be touching only one end of the blade, the front end or the back end. Measure the gap at the place were the blade is *not* touching with some feeler gauges or tiny drill bits or whatnot. Basically, every *quarter-turn* of one of the 10-24 adjustment screws will give you about a 1/100" correction in gap across the diameter of a 10" saw blade. So, adjust until you are satisfied with the degree of parallel.

To get the clamping snugness right, you need to turn both of the squareness adjustment screws the same amount. Adjust the screws so that the fence is pretty well clamped when the lever is about 45-degrees down from horizontal.

Finishing

All of the home-made fences I've seen had some kind of paint on them. Usually, it's grey. I opted for green Hammerite because it would match my Grizzly saw. If you've never seen it before, Hammerite is this paint that gives that orange-peel-like hammered finish. It comes in brush-on and spray. The spray doesn't give you as good of a hammered effect as the brush on, but it's a less muss and fuss, so I went with spray.

Be sure to mask off the parts where the paint would get boogered up. Specifically, these are:

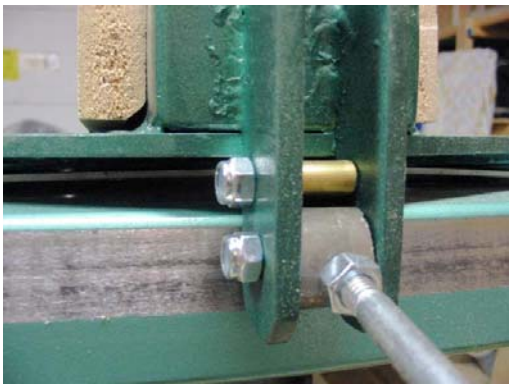
- The two strips where the two adjusting strips contact the guide tube
- The UHMW feet on the adjusting strips
- The pressure plate
- Probably the bottom and sides of the fence tube, too

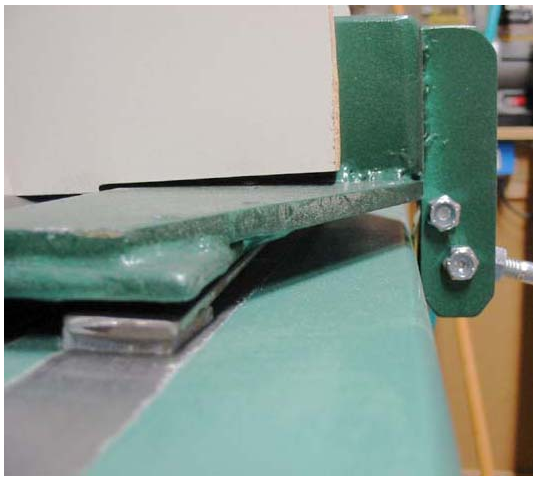
When you mask off the strips where the adjusting strips contact, use something like 1-inch masking tape, since the strips, themselves, are ¾". This will give you 1/8" on either side for slop.

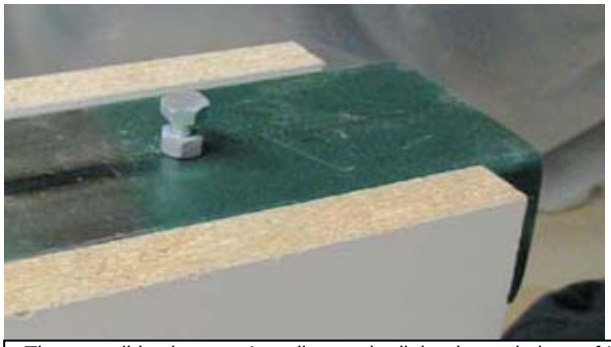
Lastly, you can make the little window for viewing the measuring tape. At my local Home Depot, about the thickest sheets of Lexan that they sell are 0.1" thick. Since it was closer to ¾" or more between the top of the tortion plate and the top of the guide tube, I decided to make a big "lexan sandwich" using clear silicone rubber adhesive (I tried about 5 different clear adhesives and that was the only one that didn't cloud the lexan). However, it occurred to me later that you could easily make a little wooden piece that mounts on the tortion plate and closes most of the gap and then you could glue a little piece of lexan on the bottom of the wood. Either way, don't forget to make it adjustable from side-to-side by about ¼".

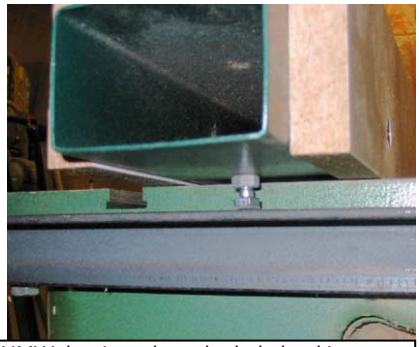
Victory Lap (the finished photos)

When you're all done with painting and you put it all back together, you should end up with something like so:





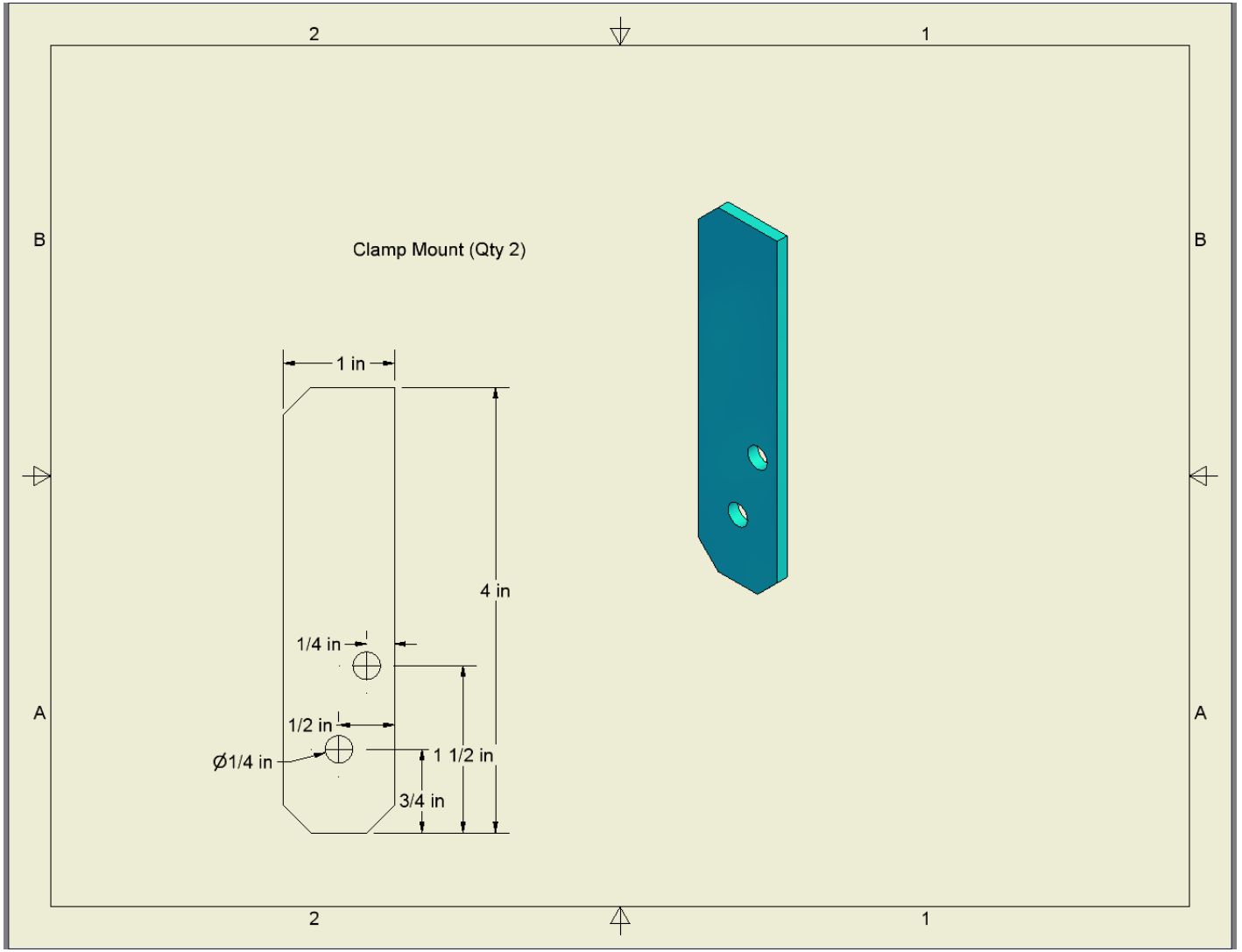




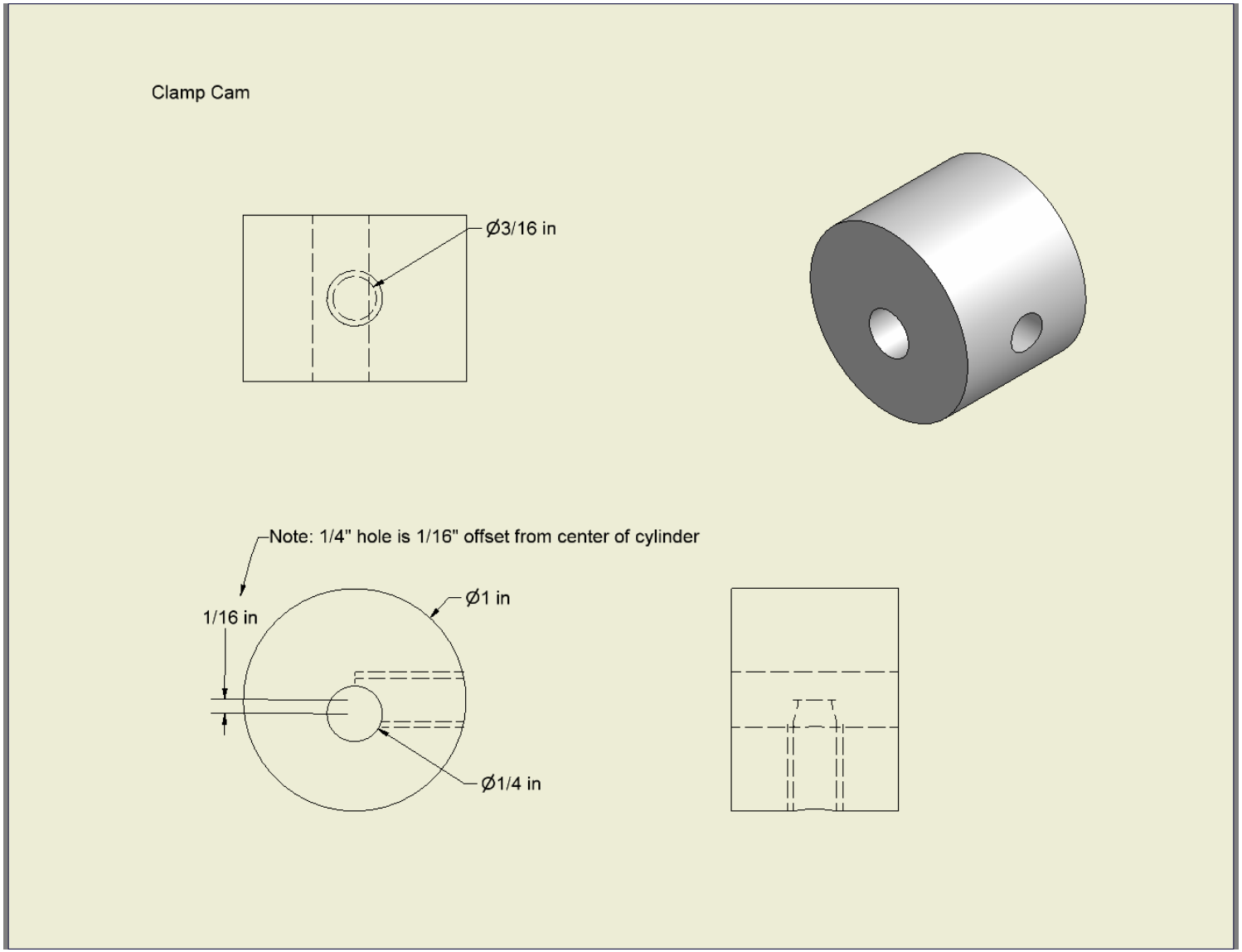
The rear slider (you can't really see the little trimmed piece of UHMW that I stuck on the bolt, but it's there. Also, note that the rear angle-iron is "upside-down" compared to the front one.

CAD Drawings

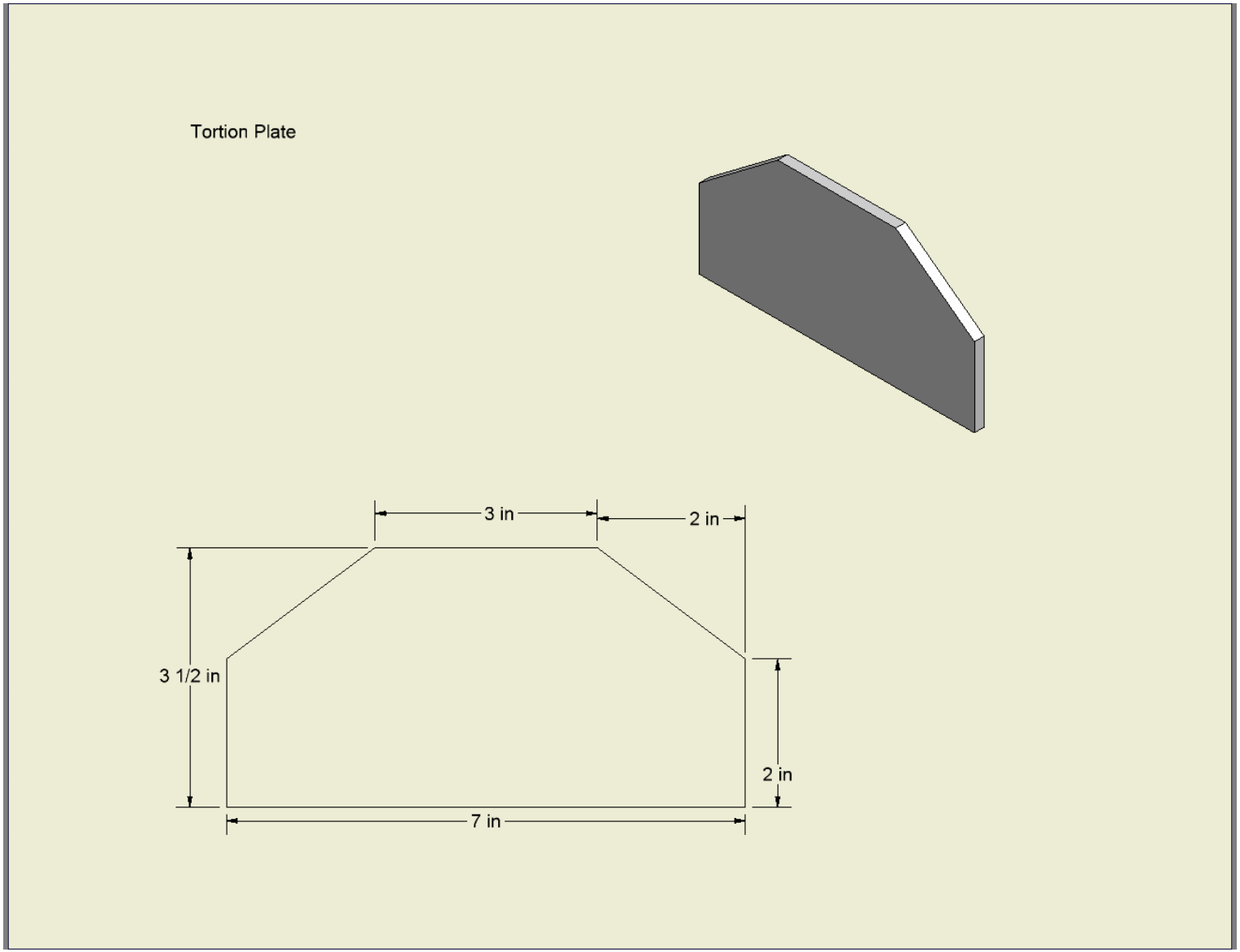
Clamp Mount



Clamp Cam


Clamp Cam
Ø3/16 in
Note: 1/4" hole is 1/16" offset from center of cylinder
1/16 in
Ø1 in
Ø1/4 in

Tortion Plate



3-D View of the Assembly