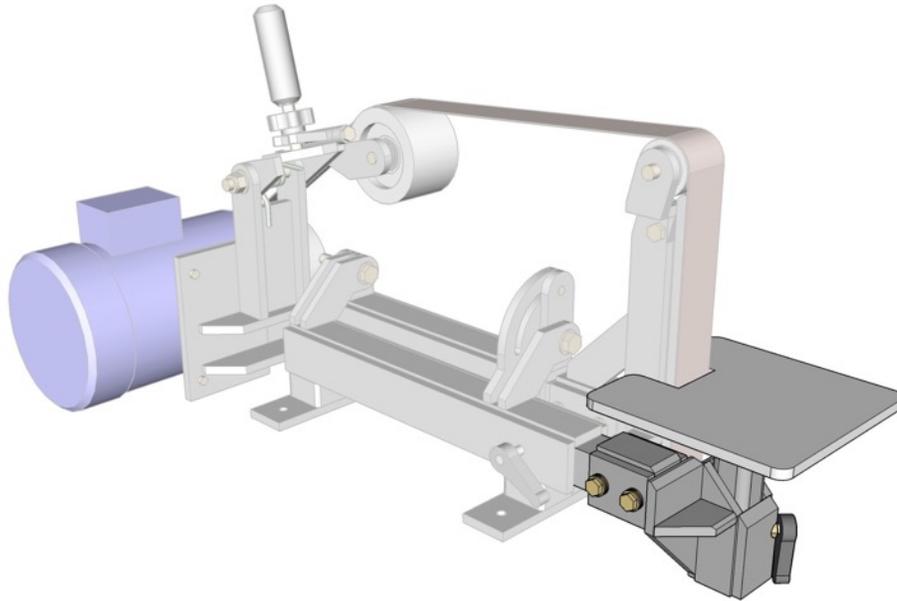


Universal table holder plans

An attachment for the 2x72" tilting belt grinder



Some important notes:

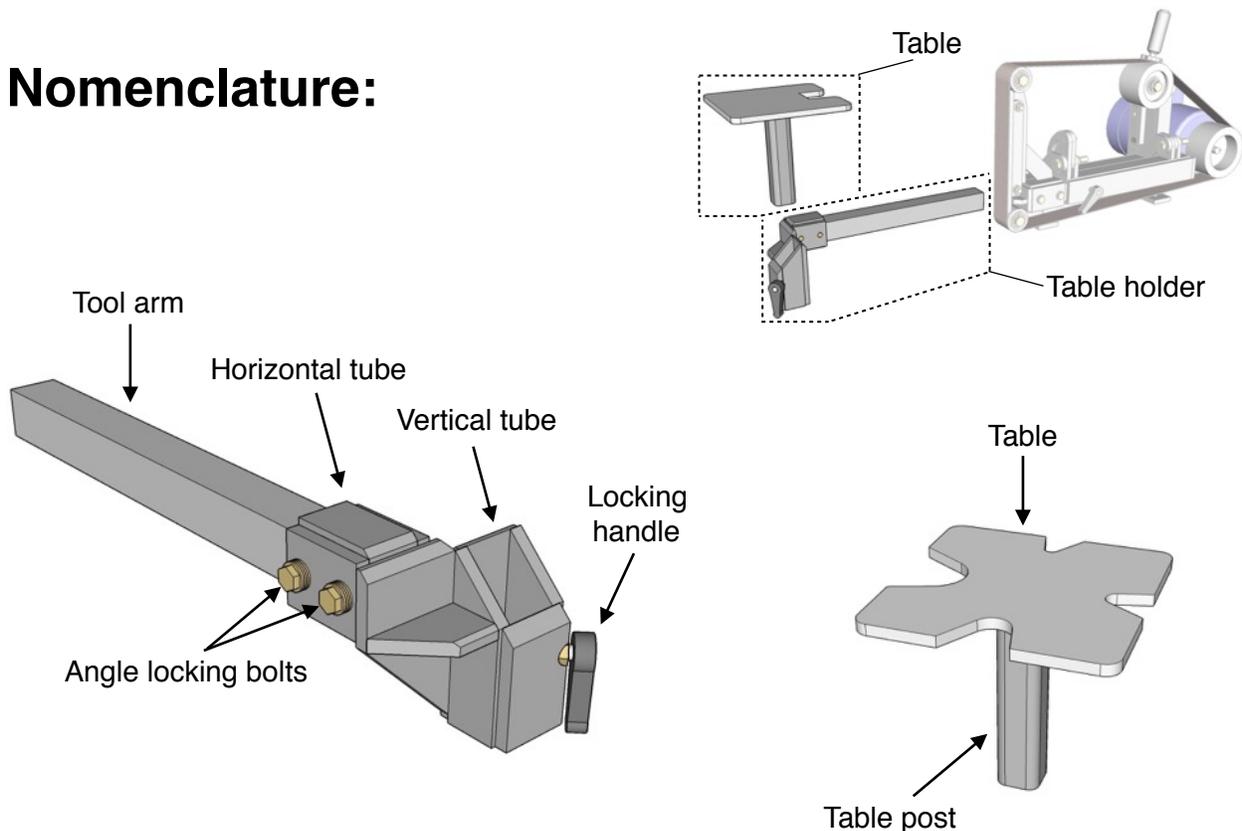
1. To use this attachment, you will first have to build my 2x72" tilting belt grinder. Plans for it and the platen attachment (the grayed out parts shown above) are available here: <http://etsy.me/2sm5uvvg> Plans & Sketchup models for other attachments and jigs will be available on my website, here: <http://jerswoodshop.com/2x72-tilting-belt-grinder/>
2. It is assumed that you will build and use this attachment in a safe manner, therefore, few safety precautions are set forth in these plans. Build and use at your own risk. I am not responsible for any injuries caused by the manufacture and use of the belt grinder or this attachment.
3. Building assumptions: It is assumed that you have a basic knowledge of fabricating and metalworking. These plans will give you a few pointers and what techniques worked best for me, but they will not tell you how to set your welder, etc., since I assume you already know how to do that. All welds on the build may be ground & touched up for looks, so long as you don't grind away the structure of the weld. Everything should be checked with a square prior to welding, and all parts should be built with good precision, for best results.
4. Painting should be left to the end of the build, after testing is complete. Some parts may need to be modified slightly, so it's best to leave painting for after that's done.
5. If you haven't seen the YouTube build video for this attachment, please watch it: <https://youtu.be/MmY2AY1ATKU>
6. If you have any questions, or if you find any errors in these plans, you can contact me at jerswoodshop@gmail.com.

Parts list:

“Used in...” indicates which step(s) in the plans use this part. Refer to that step or steps for more information about that part.

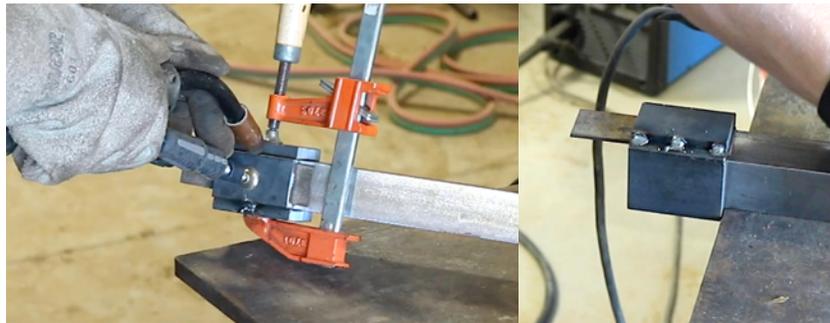
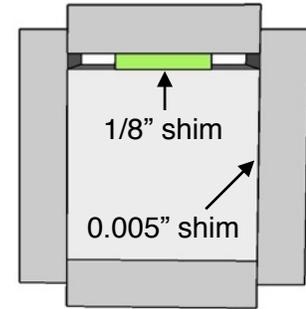
Part/material name	Size	Quantity	Used in...
Steel flatbar	3/8" x 1-1/2"	19"	Steps 1 & 2
Steel flatbar	3/8" x 2"	14"	Steps 1 & 2
Steel plate	3/8" thick	4-3/4" x 2-3/4"	Step 4
Steel bar stock	1-1/2" x 1-1/2"	16-1/2"	Step 1 & 6
Steel plate for tables	3/8" thick recommended	Approx. 8" x 8" for each	<i>Making tables</i> , page 6
Steel tube for tables	1-1/2" square, 1/4" wall	Approx. 7" for each	<i>Making tables</i> , page 6
Grade 8 nut	3/8"-16	1	Step 7
Grade 8 bolts	3/8"-16 x 2-1/2"	2	Step 8
Flat washers	3/8"	8	Step 8
Bolt or handle	3/8"-16 x 1"	1	Step 8

Nomenclature:



Step 1

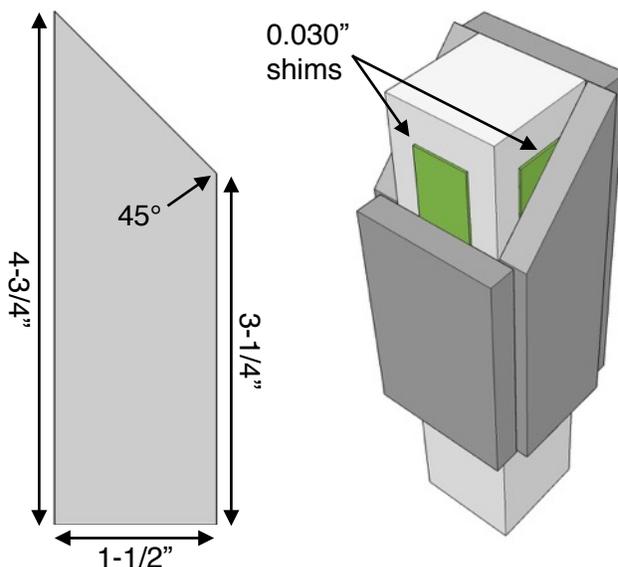
Cut the four 2-1/2" long parts to make the horizontal tube. The top & bottom of the tube are made from 3/8" x 1-1/2" flatbar, and the sides are made from 3/8" x 2" flatbar. Clamp these four parts to the 1-1/2" solid bar with a 1/8" shim to give it a little clearance as shown. On the side, a shim of up to 0.005" *maximum* thickness may be used, as it should make the tube slightly easier to remove. Once clamped, tack weld the tube together in 3 places along each edge (but don't weld it solid yet), then remove the tube from the bar (this will require significant force). *Note: it is critical that the 1-1/2" bar fits snugly in this tube when the shim is removed. If it fits too tightly, you may carefully grind it down until it fits, but don't make it loose!*



Step 2

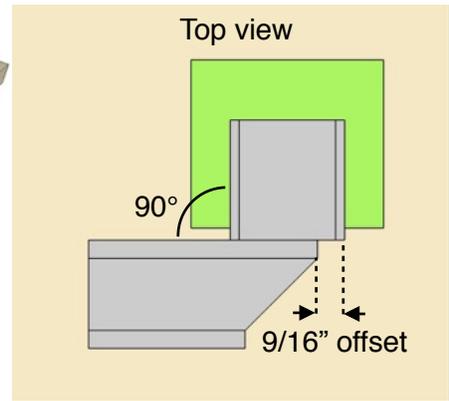
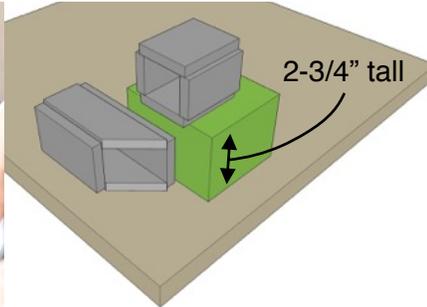
Make the vertical tube. The front of the tube is a 3-1/4" long 3/8" x 2" flatbar, and the back is a 4-3/4" long 3/8" x 2" flatbar. The two side pieces are made from 3/8" x 1-1/2" flatbar, cut at 45° on one end (see dimensioned drawing below). The vertical tube is made by the same method as the horizontal tube, but this time the tube doesn't need to fit tightly, so you can use approximately 0.030" shims in both directions (shown below in green). *Note: check the dimensions of the square tube that you plan to use for the table post; sometimes square tube can be a little oversized, so you'll want to make sure it will fit.* Once again, tack weld the tube

together every 1-2 inches, then remove it from the bar. We'll weld both tubes solid in a later step.



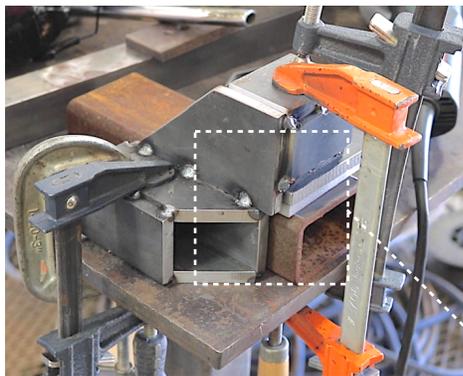
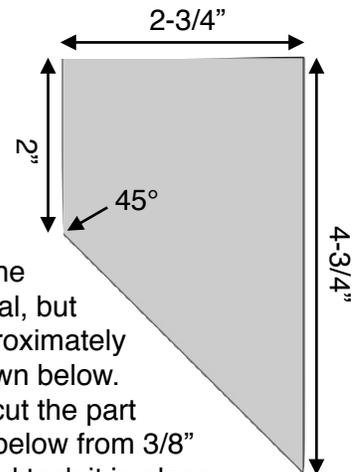
Step 3

Set up the two tubes on a table so they are in the correct positions relative to one another. Be sure the surfaces of the table and the parts are clean so they sit flat, then clamp them down in the position shown below. The short tube should be clamped down on top of a block to hold it in the correct position.

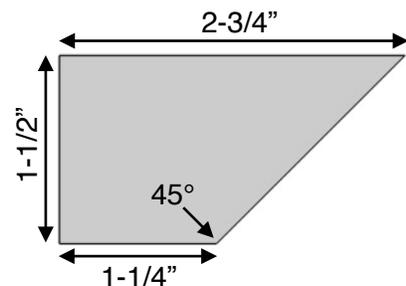


Step 4

Cut out the trapezoid shape shown on the right from 3/8" plate. This will be used to connect the two tubes together. Place the part as shown in the photo below, and tack weld it in place. It should be resting directly on the "vertical tube", and pressed tight against the end of the "horizontal tube".

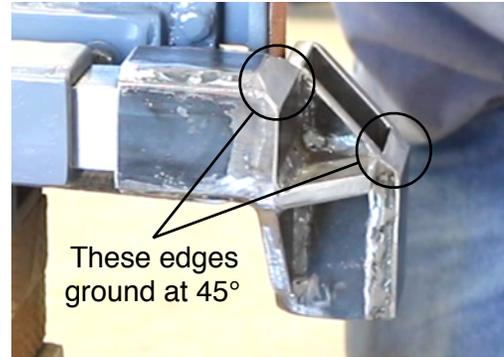


The side-to-side position isn't critical, but the plate should be offset approximately 1/4" from the tube end as shown below. Before removing the clamps, cut the part shown below from 3/8" steel and tack it in place. This piece is only structural, and its position is not critical. I tried to align it to the edge of the "horizontal tube" just to make it look nice, but as long as it is close to the position shown in the photos, it will serve its purpose just fine. You can now weld all the parts solid, being careful to avoid warping the parts.



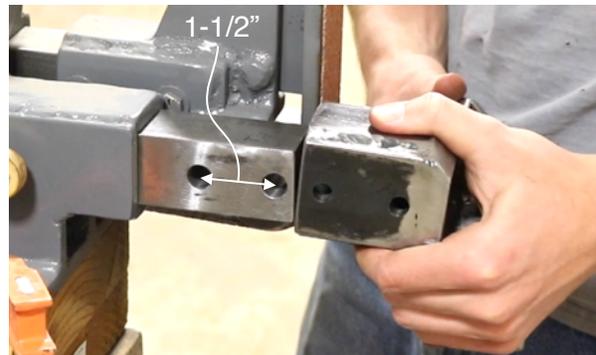
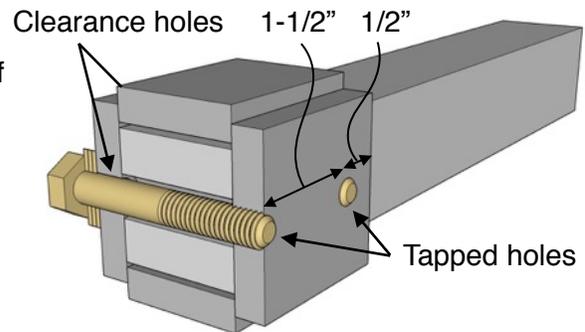
Step 5

To allow a 45° table to drop down as low as possible, the front plate of the vertical tube needs to be ground off at 45°, even with the end of the tube. You can also grind the top corner of the horizontal tube to a 45° angle, since it could also interfere with an angled table.



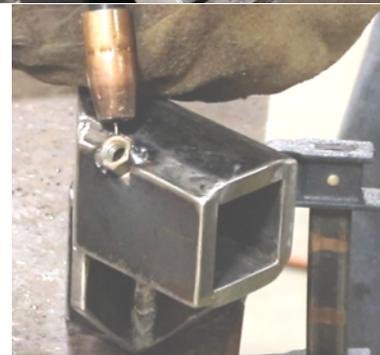
Step 6

The horizontal tube needs two holes through its sides to bolt the assembly to the 1-1/2" square tool arm. The holes in the right side of the tube are tapped 3/8"-16, and the holes in the left side of the tube are 3/8" through holes (they may be oversized slightly if you want). All holes should be centered vertically on the tube. After tapping the holes, you'll want to be sure to remove any burrs or raised material from the inside of the tube that may prevent the tool arm from fitting in the tube. You also need to drill a matching set of holes in the 16-1/2" long tool arm, and these should be oversized to give the bolts plenty of wiggle room. I drilled them 1/2", but even larger would be fine. These holes need to be 1-1/2" apart on centers, and they should be very close to the end of the bar to prevent the bar from bottoming out in the tube. If you find that it does bottom out before you're able to put the bolts through, just grind some length off the bar to make it work.



Step 7

It should now be possible to bolt the tube assembly to the tool arm, but before proceeding, the nut for the locking handle needs to be welded to the vertical tube. Start by grinding or filing a flat spot on a 45° angle on the right front corner of the vertical tube. The center of the flat spot should be 2" from the bottom of the tube. This will give you a starting spot to drill a hole through the corner. *Note: the angled weld on the tube can make your flat spot appear off center even if it isn't, so be careful to make sure the hole is in the correct position to end up centered on the inside corner in the tube.* The hole should be oversized; about 7/16" diameter. After drilling, position a 3/8"-16 nut on the center of the hole, and weld it in place. It might be a good idea to thread a bolt in to keep weld spatter out of the threads. Once the nut is welded on, the welding is all done on this part, so you can clean up any sharp edges and paint it (don't paint the inside of the tubes).



Step 8

Slip the tool arm into the frame tube on the grinder, and slide the table adapter onto it. Thread a 3/8-16 x 2-1/2" bolt into each of the holes, using a few washers to prevent the end of the bolts from protruding out the right side of the horizontal tube (if the bolts protrude more than about 1/16", they may hit the platen attachment). Leave them loose for now. To lock the table adapter in place parallel to the platen attachment, place a length of square tube or square bar in the vertical tube and lock it in place with a bolt or locking handle. Place a spacer (any flat piece of scrap material at least 1/2" thick) against the front of the platen attachment, and clamp the tube to the platen with the spacer between (loosen the locking handle on the grinder's base frame tube so the tool arm can slide, if it needs to, when you tighten the clamp). *Note: the photo on the right shows me doing this without the belt in place, but I recommend you leave a belt on the grinder to keep the platen attachment "preloaded" during this operation.* Your table holder's vertical tube should be parallel to the platen now. Tighten the bolts holding the adapter to the tool arm, as tight as possible without stripping the threads. Your table holder is now complete and you can move on to making tables.



Making tables

The purpose of the table holder is to allow you to cheaply and easily make whatever sort of tables you want, therefore this section is only a few guidelines & pointers to help you make your tables. The table post is made from 1-1/2" thick-walled square tubing, and in most cases 7" length seems to work about right. I made my primary table from 3/8" steel plate, 8" square. Ideally, the table post should be close to the belt. If the post is too far from the belt, the thin table that spans that distance will flex minutely and cause chatter. You can make tables at any angle, and since the table holder's vertical tube is parallel to the belt, the angle just needs to be correct relative to the table post. Be careful when welding the table to the post to prevent excessively warping the table. Of course, there is really no limit to what can be mounted in the table holder; it is not restricted to just tables. I'll be interested to see what kind of jigs you can come up with!

