

# An Angle Grinder Table Saw, version 1.2

**By R. G. Sparber**

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One of the best products sold by Harbor Freight<sup>®</sup> is their 4" angle grinder. I own two of them. They are amazingly rugged and versatile while also low cost. They are also potentially dangerous to operate. If that spinning wheel contacts your body, it does not end well.

Rather than limiting my use of this tool, I set out to make it safer. By adding a table, I now have a small abrasive wheel table saw. It is great for cutting small pieces of heavy gage sheet metal.

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<sup>1</sup> You are free to copy and distribute this document but not change it.

Rather than supply plans, I will walk you through the steps of making this attachment. As much as possible, I have avoided measurements.



The first step is to buy one of these angle grinders. On sale, they go for around \$16 plus tax. Then buy a box of the thin abrasive wheels.

Next, you will need a piece of steel plate 1/8" thick by 4" wide by about 6" longer than the grinder.



Clamp the plate into a large vise or over the edge of your work bench. Draw a line with a marker about  $\frac{1}{2}$ " from the side edge and about 1" from the end. Then, holding the abrasive wheel as close to parallel to the edge as possible, carefully plunge cut through the plate.





We must next locate the hole for mounting the plate to the grinder. On my grinder, the handle hole was threaded 3/8-16. I took a piece of threaded rod and turned a point on it with my lathe. If you don't have a lathe, just skip the point. File the end of the rod flat. Then roughly locate where the hole will go on the plate and blue the surface. Don't have any bluing? Use marker.

With the grind unplugged, the abrasive wheel is lowered into the slot and by pressing down on the plate with the grinder, you can mark the location of the threaded hole. Lift off the grinder, check for marks that indicate the hole location. When you are convinced you have the right mark, scribe an X on the location and dimple the center.

Drill the hole using a 3/8" bit.

With the abrasive wheel back in its slot, loosely fit a 3/8-16 bolt through the plate and into the handle hole on the grinder.



Use a pencil to roughly mark the location of the motor brush boss. Then use bluing or marker to paint the area. Finger snug down the grinder to the plate and scribe around the boss.

This is a rather large hole so I first chain drilled inside the final diameter using a 1/4" bit. Then I used a Harbor Freight step drill<sup>2</sup> to open it out so the boss was a loose fit. Alternately, you can file the hole round.

When the boss is in the hole, the grinder cannot pivot on the one clamping bolt.

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<sup>2</sup> Titanium Nitride Coated High Speed Steel Step Drill Bits - item#69088 as of 4/26/14.





I then raided my scrap pile for a piece of steel bar  $\frac{1}{4}$ " thick, 1" wide, and about 7" long. It happened to have a hole in one end so all I needed to do was use it. I also found a  $\frac{1}{4}$ " thick homemade aluminum washer to raise the bar so it was roughly even with the top of the lower motor brush boss.



With the bar bolted to the lower handle hole, I have a solid place to clamp the assembly with my vise.



Here is a side view showing how the washer offsets the bar so it is even with the lower boss. With the bolt tight, the assemble is solid.



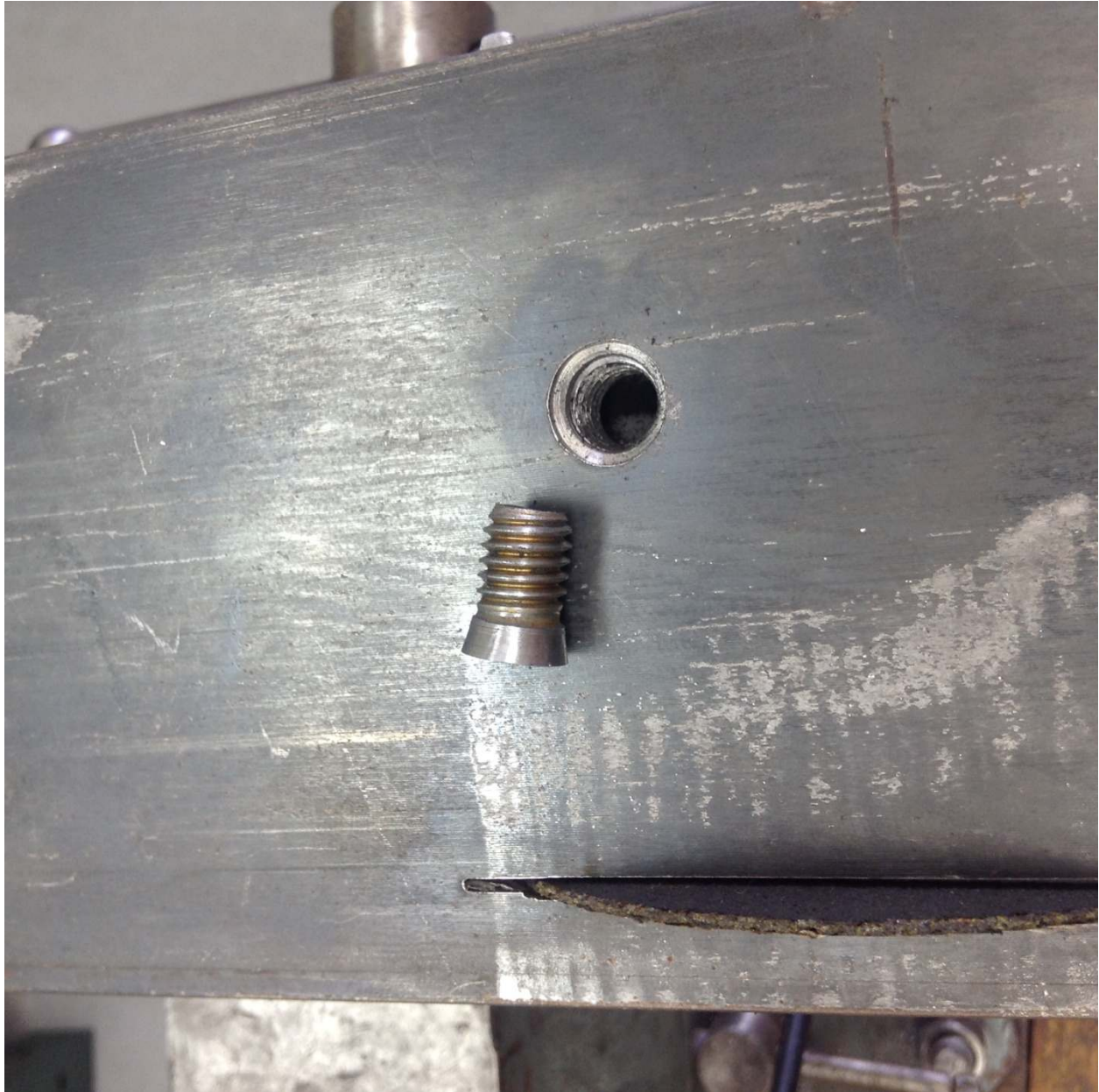


After the article was published, John Herrmann suggested that I capture the lower boss in the support bar to prevent the grinder from pivoting. The bar is too narrow but Brian Lamb suggested using a piece of channel. Worked great!



I through drilled the bar and drilled and tapped 10-24 into the channel.





The only tricky part of the project is finding a 3/8-16 screw to hold the table top to the top handle threaded hole. Since I have a lathe, I took a button head screw and reshaped the head. If I happened to have a flat head screw in my junk drawer, I would have used that instead. The goal is to get the top of the screw flush with the top of the table. If necessary, you can counter sink through the plate and also into the aluminum head of the angle grinder.



With the lower bar clamped into my vise, I have a solid work table for abrasively grinding heavy gage sheet metal into small pieces.



I needed to cut 10 gage steel into a strip 2.5" wide. With the help of a piece of angle stock and two small C clamps, I built a fence. Then the stock was fed into the abrasive wheel just like on my table saw.

The grinding is noisy and a bit dirty. But it is far safer and more accurate than hand holding the grinder. It should go without saying that you must wear at least safety glasses when using this tool. Also, do not tamper with the wheel guard on the grinder.



## Acknowledgements

Thanks to John Herrmann for suggesting that I capture the lower boss in the support bar and to Brian Lamb for suggesting the use of a piece of channel.

I welcome your comments and questions.

If you wish to be contacted each time I publish an article, email me with just "Article Alias" in the subject line.

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