

# Tim's Taper Tool

## For Barrel Tapers

Installation and Operating Instructions  
for use with table saws and large disk sanders



Your taper tool is capable of making “barrel” tapered shafts. The term barrel is in quote marks because the term barrel needs to be defined as it relates to your taper tool. The original definition of “barrel” described an arrow shaft that was shaped like a barrel stave. It gently curved from a small diameter at one end to the largest diameter in the center and back to a small diameter at the other end. In contemporary times a “barrel” tapered shaft has both ends tapered, but the tapers are straight. Your taper tool does make a small curve or parabolic shape on the arrow shaft, but it does not make a barrel stave shaped shaft. You can taper one end only (single taper), or both ends of your arrow shafts, thus making “barrel” tapered shafts in the contemporary sense. A shaft when tapered at both ends is also called a double tapered shaft.

Because the taper tool is adjustable at both ends, you can taper shafts to different diameters and lengths at each end. One common “barrel” taper is  $11/32$ " at the tip end and  $5/16$ " at the nock end. Taper length can vary from 4" to 10" in length.

The sequence you use to taper your shafts is very important. If you do not have Tim's Taper Tool for nocks and tips you must taper the nock and tip before you barrel taper. If you do not, the nock and tip tapers will be misaligned. If you have a Tim's Taper Tool for nocks and tips it is best to taper the nock and tip after you barrel taper. Tim's Taper Tool for nocks and tips will accurately taper the nock and tip end before or after a shaft has been barrel tapered.

If you choose to double taper your shafts, taper the  $11/32$ " end first, then the smaller end. If you taper the smaller end first the rubber hose will not securely hold and rotate the shaft.

Your new taper tool is designed so it can be used on most table saws and large disk sanders. The installation and adjustment process on table saws or large disk sanders will take approximately 1 hour. Read all directions before you start and do not hurry through the process.

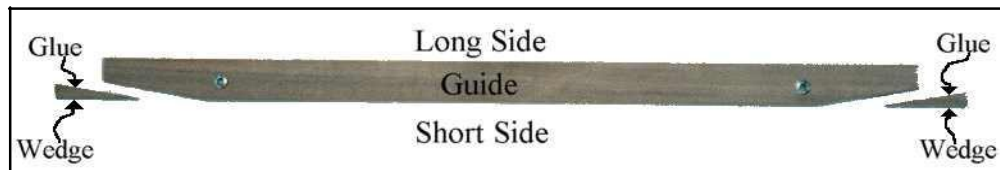
## CAUTION!

DO NOT USE YOUR TAPER TOOL WITH A SAW BLADE. USE ONLY WITH A SANDING WHEEL!!

BE FAMILIAR WITH YOUR TABLE SAW OPERATIONS AND FOLLOW ALL SAFETY PRECAUTIONS.

### TABLE SAW SLOT GUIDE INSTALLATION

1. Place the guide inside the slot on your table saw. If the guide is too wide, carefully sand or trim the short side of the guide until it fits snugly into the slot.
2. Once the guide fits in the slot, push it to the bottom of the slot. Place a good grade of wood glue on one side of a wedge and push into place between guide and side of slot. Glue and place the second wedge. Now apply firm pressure to the ends of both wedges to force them against the guide. Allow to dry.



3. After the glue has dried, sand and/or trim each end flush.
4. Return the guide to the table saw slot. You should be able to slide the guide in the slot with finger pressure, but it must not be loose in the slot.
5. Attach the taper tool to the guide with the brass thumb screws and washers. Place the washer under the thumb screw and not between the guide and taper tool.
6. Remove the assembled tool from the slot and set aside.

### ADJUSTING THE BARREL TAPER TOOL

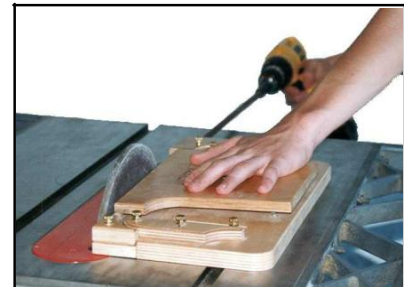
1. Inspect your sanding wheel carefully! If the sandpaper is loose or damaged REPLACE it! The taper tool fits closely to the wheel and loose sandpaper will damage the tool and ruin your arrow shafts. Use 80 - 120 grit sandpaper to taper your arrow shafts.
2. Adjust the sanding wheel so it is square to the table.
3. Raise the sanding disk to full height, and place your assembled taper tool back in the guide slot.

4. Place an 11/32" blunt or field tip in the arrow groove and under the hold down at the stop end of the taper tool. Place a 23/64" blunt or field tip in the arrow groove and under the hold down at the guide end of the taper tool. Move the taper tool into place next to the sanding disk and push the tool snug to the disk touching the field tip at the stop end to the sanding disk. Snug up the thumb screw at the stop end of the taper tool. Slide the taper tool forward in the slot so the other tip is now touching the disk. Snug up the second thumb screw. Spin the disk by hand. When the taper tool is the correct distance from the disk, you will hear the sandpaper just touch the field tips as the disk is rotated. Alternately adjust the tool at each end until the sanding disk just touches each field tip as the disk is rotated by hand. Tighten the thumb screws and remove the field tips from the tool.
5. Reinspect the wheel to make sure the sandpaper is not loose or damaged.  
**(The sandpaper must be clean and sharp.)**

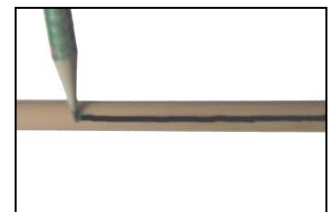


### TAPERING YOUR ARROW SHAFTS - PRACTICE

Now that you have made the necessary preliminary adjustments to your taper tool you are ready to taper some practice shafts. The adjustments you have made will taper a 23/64" shaft to approximately 11/32" and 6" to 8" long. You will want to make a few practice shafts before tapering good shafts to get a feel for the process. You will likely ruin a shaft or two while learning and making final adjustments, but then the tapering process becomes very simple. Do not use good shafts initially. Do not use shafts that have had paint or finish applied. If you do not have "junker" shafts, purchase a few 3/8" dowels at your local building supply or hardware store. The test shafts do not need to be straight for this process, but cannot be overly crooked. If you use 3/8" dowels you will need to remove the arrow guide temporarily. You will need a 3/8" variable speed electric or cordless drill. If you use 3/8" dowels you may place them directly in the drill chuck. If you use arrow shafts, use the aluminum and rubber arrow holder.



It is difficult to see how much wood is being removed from a bare shaft. It is very helpful if your test shafts have been stained a dark color, as it is very easy to see how much wood is being removed during the tapering process. You can also mark the shafts with a pencil from about 12" to 4" from the end as seen in photo at right.



Carefully follow the remaining directions and you will be tapering arrow shafts in no time.

1. Place your hand on top of the hold down plate, and slide the taper tool back and forth in the slot. The tool should move easily, must not be loose in the slot, and should not touch the sanding disk. If necessary, make adjustments at this time.
2. Slide the taper tool toward the back of the table until the stop is aligned with the rear of the sanding disk.

3. Place the rubber and aluminum arrow holder into the drill chuck and tighten. Slip an arrow shaft into the rubber tubing.



4. Start your table saw.

5. Start the shaft through the arrow guide. As soon as the shaft has entered the guide start the drill and rotate the shaft. Do not push the shaft past the guide without spinning it. The rotation speed should be about 400 - 600 RPM. Do not spin the shaft at full speed on an electric drill as that will cause heat buildup and excessive wear to the taper tool. As the shaft continues to rotate, push the shaft until it contacts the stop. Continue to rotate the shaft and slowly push with your hand on the hold down plate, towards the rear of the table until the guide is near the sanding disk. While the shaft continues to rotate, return the taper tool to the front edge of the table saw. Pull the arrow shaft out of the taper tool while the shaft continues to rotate. Turn off your table saw and examine the taper on your arrow shaft. CAUTION! If you do not keep the arrow shaft spinning during the entire process, you will flat spot the shafts, and they will stay flat spotted. No further sanding will take out the flat spots. Not to worry. This is just practice. If the shaft has become flat spotted, cut off that portion and taper it again.



6. If the arrow shaft is tapered to  $11/32$ ", your adjustment is complete. If not, move the taper tool closer to or farther from the sanding disk by loosening the thumb screw that holds the tool to the guide, and gently tap sideways on the taper tool. Move the taper tool in very small increments, and taper again following the above instructions. Continue this process until you are satisfied that the end diameter of the shaft is  $11/32$ ". Practice tapering several shafts or dowels. For practice, taper both ends of your shafts. If necessary, cut an inch off the shaft and taper again. Practice until you feel comfortable with the process.

### TAPERING TO $5/16$ "

1. With your table saw turned off, move your taper tool to the front edge of the table. Loosen the thumb screw above the slot on the adjustment cam at the stop end of the taper tool. Move the cam about half way on the slot. Tighten the thumb screw and start your table saw. Move the taper tool past the sanding disk until you have almost reached the shaft guide at the other end. Return the taper tool to the front edge of the table saw. You will be removing material from the STOP END of the tapertool. This process is necessary to enable you to taper shafts down to  $5/16$ ".



2. Insert an arrow shaft in the arrow holder tubing and taper the shaft as above. Examine the shaft as above. Examine the shaft for diameter. If all previous adjustments were made correctly, the shaft will not be tapered to 5/16". It will still be oversized. Repeat the process in step 2, moving the cam to about the 3/4 position. Turn on the table saw and sand material off of the taper tool. Taper your arrow shaft again and examine the diameter. Your shaft should still be oversized.
3. Repeat the process of moving the cam, sanding material off of the taper tool, tapering your arrow shaft, examining for diameter, until you have the proper adjustment. Do not hurry through this process as you may remove too much material from the taper tool, rendering it unusable.
4. On completion of this process, you will be able to set the cam to "square" and taper your shafts to 11/32" and by moving the cam to the farthest angle, taper shafts to 5/16".

### TAPER LENGTH ADJUSTMENT

1. To lengthen the taper adjust the cam at the shaft guide end as needed. If your taper is not as long as desired, return the adjusting cam to the square position. Loosen the thumb screw that holds the taper tool to the table saw slot guide at the shaft guide end. Carefully move the taper tool closer to the sanding disk, tighten the thumb screw, and taper some test shafts until the length of the taper is the SHORTEST that you will want to taper. By moving the cam at the guide end of the taper tool, you can precisely control the taper length. This final step will allow you to taper your arrow shafts to any desired length up to 10".
2. Continue to practice tapering with test shafts until you are comfortable with the tapering process.
3. The tool will taper shafts that are not straight, but will not give you a good result. **(Take the time to straighten your shafts before tapering.)** You may want to leave your good shafts full length, barrel taper them, then cut to length and retaper the tip end.

Congratulations! You are now ready to taper your arrow shafts! Enjoy your tool, and always adhere to the following:

USE ONLY SANDPAPER THAT IS TIGHTLY ADHERED TO THE SANDING DISK

USE CLEAN AND SHARP SANDPAPER

ROTATE THE ARROW SHAFT AT A MODERATE RATE THROUGH THE ENTIRE PROCESS, BEGINNING BEFORE THE ARROW SHAFT CONTACTS THE SANDING WHEEL AND CONTINUING UNTIL THE ARROW SHAFT HAS CLEARED THE SANDING DISK. FAILURE TO DO SO WILL FLAT SPOT YOUR SHAFTS

DO NOT TAPER SHAFTS THAT HAVE PAINT OR FINISH APPLIED. PAINT OR CLEAR FINISH WILL FILL SANDPAPER AND RENDER IT USELESS VERY QUICKLY

STRAIGHTEN SHAFTS BEFORE TAPERING

USE ONLY GOOD QUALITY SHAFTS. IF YOU USE OUT OF ROUND SHAFTS, THE TAPER WILL ALSO BE OUT OF ROUND