

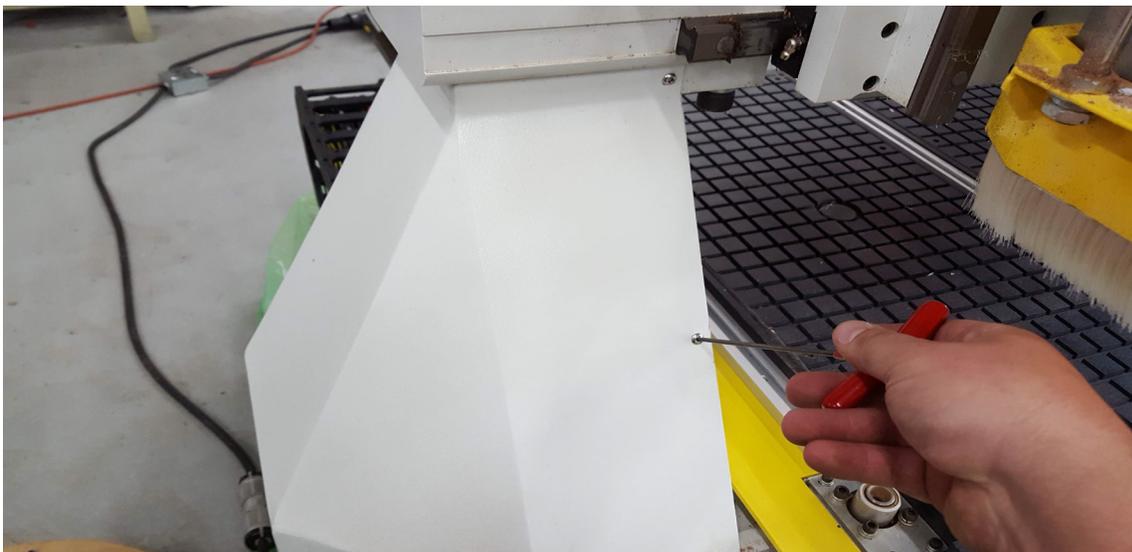
Techno **CNC** Systems Squaring Guide for HD and HDS CNC Routers



Tools needed to properly square the machine:

1. 14mm (for models purchased during or after 2015)
12mm (for models purchased before 2015)
10 mm, 6mm, and 3mm Allen wrenches
2. M6x40mm Allen screw
3. Dial Indicator with a corresponding collet.
4. 2 large c-clamps with an open grip of 9"
5. Square

Step 1: Using the 3mm Allen wrench, remove the 2 y-axis motor housings.

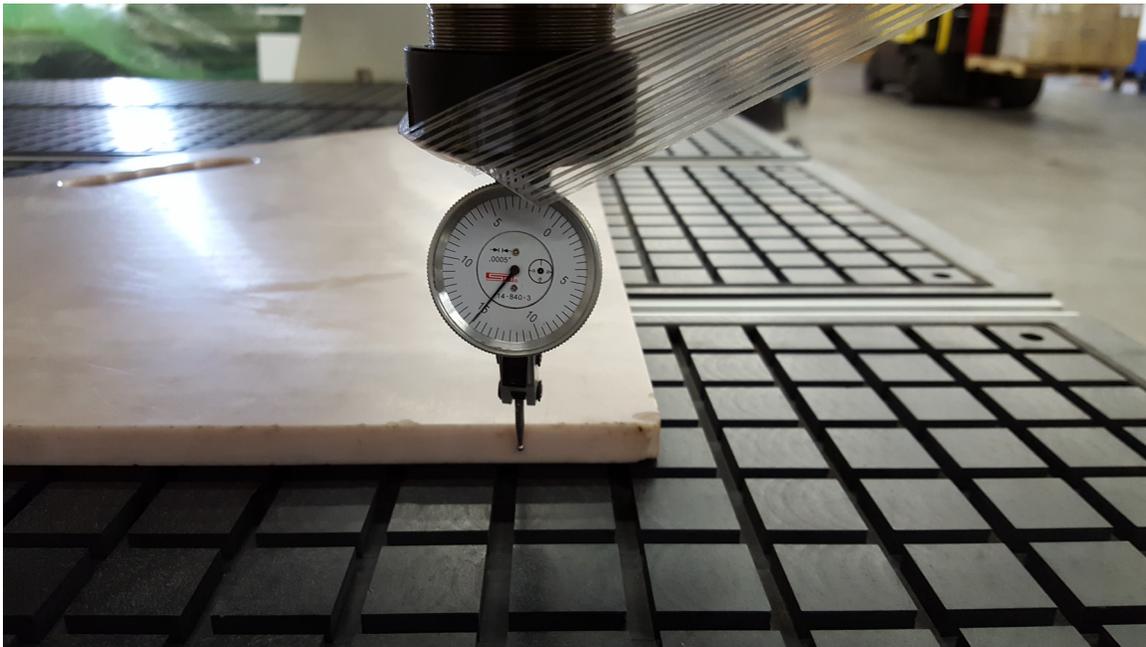


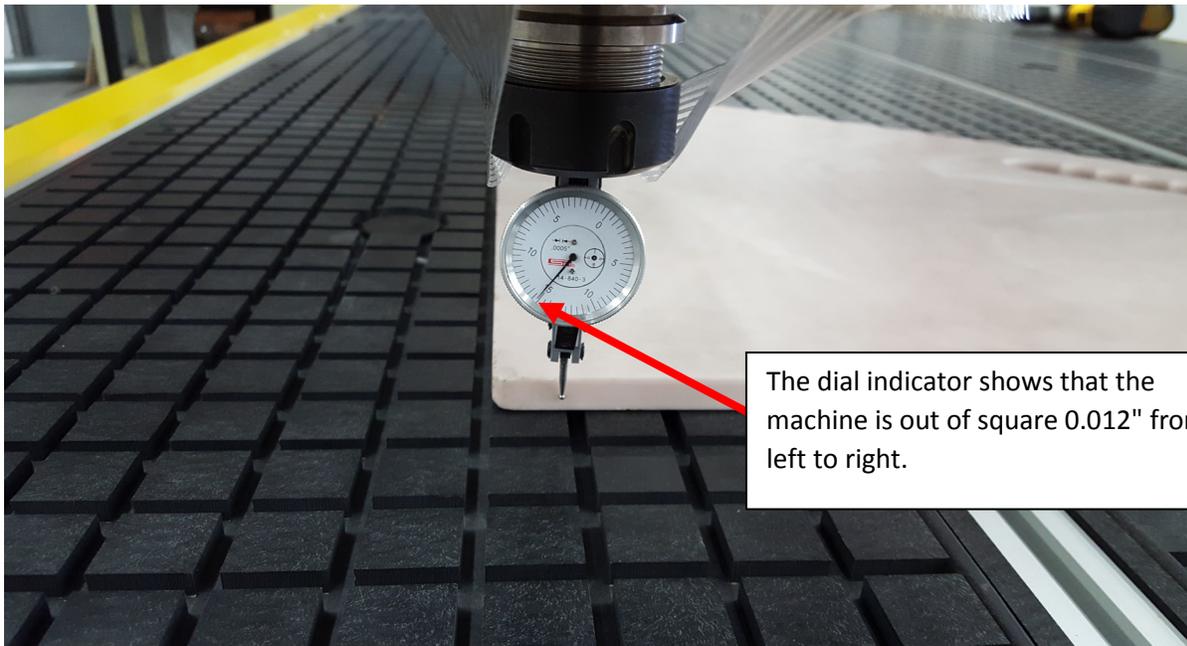
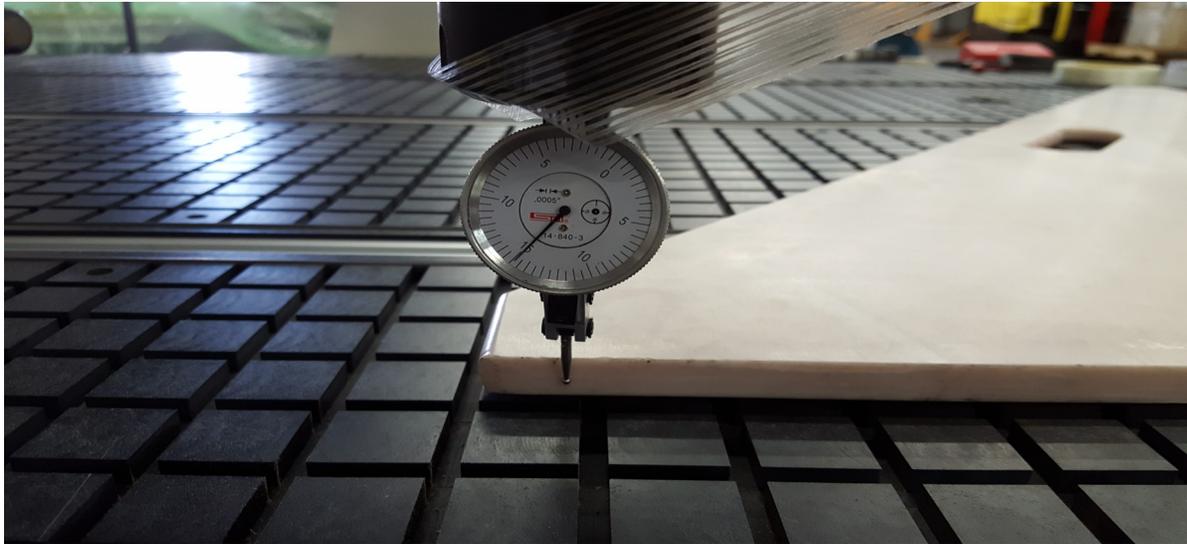
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Step 2: Insert the dial indicator into a tool holder, then, insert the tool into the spindle. When the tool is in the spindle you may want to tape the tool to the dust shroud. This will prevent the tool from rotation during the squaring process.

Step 3: Place the square down on the work process area and touch the dial indicator off of the square in the y direction.

Step 4: Using the hand wheel run the machine up and down the square in the y direction. If the dial indicator shows a change in its measurement as the machine moves along its y-axis, the square needs to be rotated accordingly so that the dial indicator displays the same value up and down the y-axis. This will ensure that the square being used is orientated exactly 90 degrees to the machine. Once the square's orientation has been adjusted, you can back the dial indicator off the square, rotate it 90 degrees and then touch off of the square in the x direction.





Step 5: Using the hand wheel, run the dial indicator up and down the square in the x direction. Any change in the value on the dial indicator when running along the x-axis will indicate how far out of square your machine is.

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Step 6: Since the machine is out of square 0.012" we have to use our c-clamps to move the right side of the machine away from the square 0.012" so that the dial indicator displays the same value as it did on the left side of the machine.

Step 7: Using your 10mm and 14mm Allen wrenches, loosen the 6 Allen bolts on both sides of the gantry. You will want to have at least one out of the six tightened on the side that you are not adjusting. This will allow the gantry to rotate.

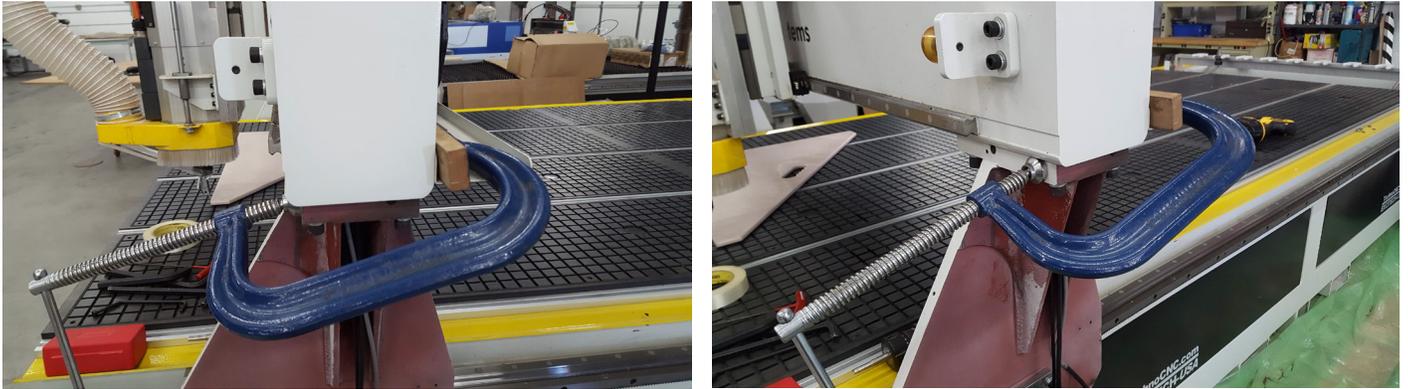




Step 8: There are 3 hole slots for pins on each gantry upright. If there are pins in these slots, remove them by threading the 6mm Allen bolt into the pins. They will eventually rotate with the bolt and you will be able to pull them out. If there are no pins in these slots, you can skip this step.



Step 9: Once the pins are removed and the bolts are loosened, you can attach the c-clamp to the gantry and the gantry upright. In this example, we want to force the right side of the gantry away from the square; so we want the clamp to make contact with the back side of the gantry and correspondingly, the front side of the gantry upright. This is displayed below.



Step 10: Depending on how far out of square the machine is, you may have to use the c-clamps to make adjustments to both sides.

Step 11: Once you have the machine within 0.005" square you want to tighten all the Allen bolts one at a time, making sure that the dial indicator is maintaining the same value. If the gantry is moving and therefore changing the value of the dial indicator during the tightening process, try tightening some of the Allen bolts on the opposite side. This will help stabilize the gantry.

Step 12: Once everything is tight, before removing the c-clamps, home the machine and check for squareness again. This will guarantee that the machine is square and did not move during the homing process. You may then remove the clamps and re-install the motor housings.

Techno CNC Systems recommends that the squaring of the machine should be a part of an annual maintenance schedule for any router. This will ensure that the machine is performing as efficiently and accurately as possible, yielding precision machined parts.