

How To Build A Neck Jig

(by Matt Vinson)

Originally taken from www.guitarfrenzy.com

The neck jig is a very important tool to have. It can be the difference between having a good playing guitar or having one that plays great. I will explain in another article on why and how to use the neck jig. For now, we are concentrating on how to construct yourself one. Here is a list of things you need to build one:

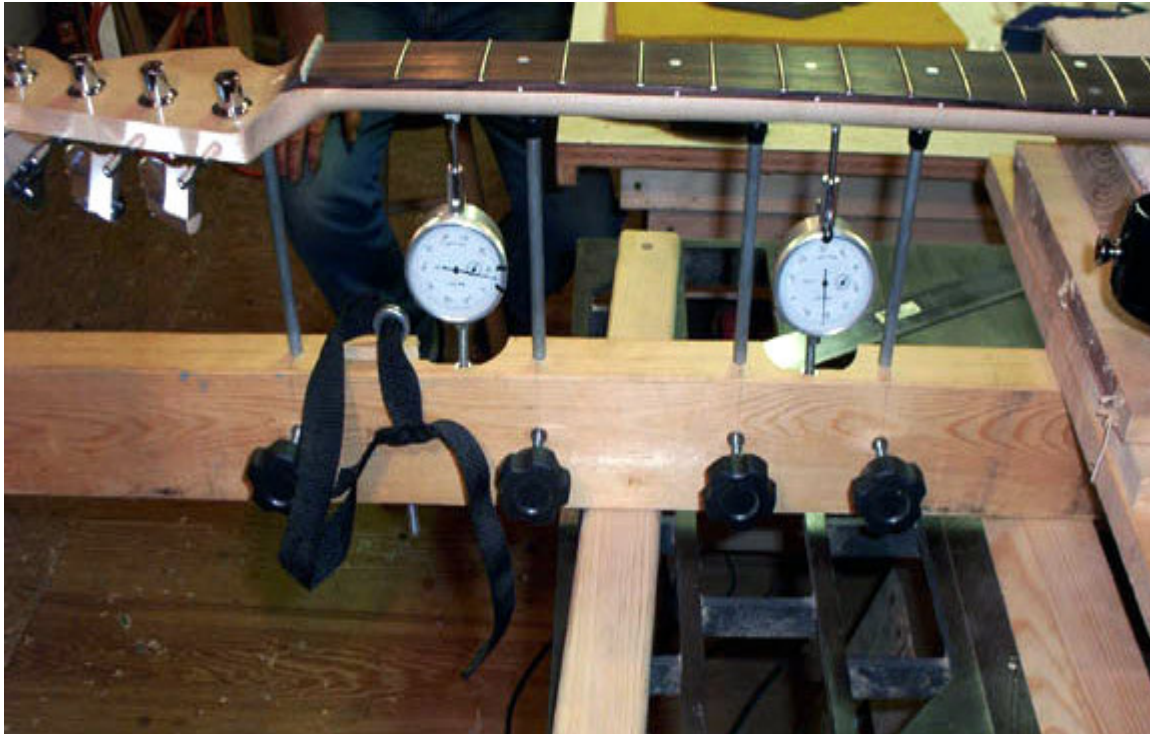
| Neck Jig Parts List | | | | |
|-------------------------------|--|-------------------|----------|----------------|
| Description | Where I Purchased | Quantity | Part # | Price per unit |
| 2x4 (8ft) | local hardwood store | 1 | none | - |
| 16"x24"x1" flat board | local hardwood store | 1 | none | - |
| 1/4-20 threaded inserts | www.mcfeelys.com | 1 package (10) | 3606-STS | 4.02 |
| Knobs (1/4-20) 1" stud | www.mcfeelys.com | 4 | JKA-2510 | .77 |
| 6mm driver for inserts | www.mcfeelys.com | 1 | 3606-STD | 9.95 |
| Dial Indicators | www.harborfreight.com | 2 | 623-0VGA | 13.99 |
| Ratchet Strap Tie Downs | local hardware store | 2 | none | - |
| Plastic Caps | local hardware store | 4 | none | - |
| Mini Jack | www.stewmac.com | 1 | 3592 | 3.82 |
| 8" long eyebolt 1/4-20 | local hardware store | 1 | none | - |
| 1/4-20 pan head machine screw | local hardware store | 2 | none | - |
| small strap (lash strap) | local hardware store | 1 | none | - |
| 1/4-20 nuts | local hardware store | 6 | none | - |
| 1/4-20 washers | local hardware store | 6 | none | - |
| drywall screws | local hardware store | 1 box | none | - |
| 3/8" steel rod (3 ft piece) | local hardware store | 1 | none | - |

The first thing you'll want to do is cut the main board to 16"x24" or whatever size you want the neck jig body to be. I find that to be big enough to jig acoustics, bass, or whatever guitar you want to jig. So after it's cut out you will draw a centerline down the middle of the board which is 8" from the side in this case. Next, cut the 2x4 to around 51" long and draw a centerline all the way down the top of it. Also on this neck jig, I cut another 16" piece of 2x4 to go across the back of the neck jig to make it stable instead of using levelers. The 16" 2x4 was marked in the center and the 51" piece was marked at one end in the center of the board. You can attach these two boards with some drywall screws, making a T shape out of the boards. Now you can align the top board and screw it down to the 2x4's, using your centerline as a guideline. The 16" 2x4 board should align flush at the end with the board. See the picture below. You can't see the back board but you can see where it was screwed down by looking at the top board.





As you can see in this picture that the board was attached on top of the 2x4, which is different than the ones Stew Mac sells, but since I wasn't going to use the 4" swivel levelers I needed all the height I could get. In the photo above you can also see that the centerline on the 2x4 was drawn and had been drilled after the board was attached with a 3/8" drill bit at 4 different key locations. You will make 4 marks on the 2x4 at the center mark, measuring from where the board is attached at the top. The measurements I used measuring from the board is: 1st mark (4"), 2nd mark (8"), 3rd mark (12.5"), 4th mark (18.5"). The reason I used these are because I took measurements from Stew Mac's Jig, by watching video's and looking at pictures using guitars necks as a reference. In all actuality though you could have used more rods if you wanted to. After they have been marked you can use the 3/8" drill bit and drill all the way through the board at those locations. These are for the steel rods to go through. Now you can cut your steel rods into four 9" pieces and place the plastic cap on the ends. Next, take speed square and using the top marks as your guide draw 4 lines down the side of the 2x4 so you can drill out a hole for the threaded inserts. The lines should be on the right side of the 2x4 looking at it from the 2x4 end. These inserts will let the knob stud contact the rod to keep it in place when tightened. After the line is drawn you will mark down 1-1/2" and will make the center line for drilling the 3/8" hole needed for the threaded inserts. Look at the picture below to get an idea of what I'm talking about.

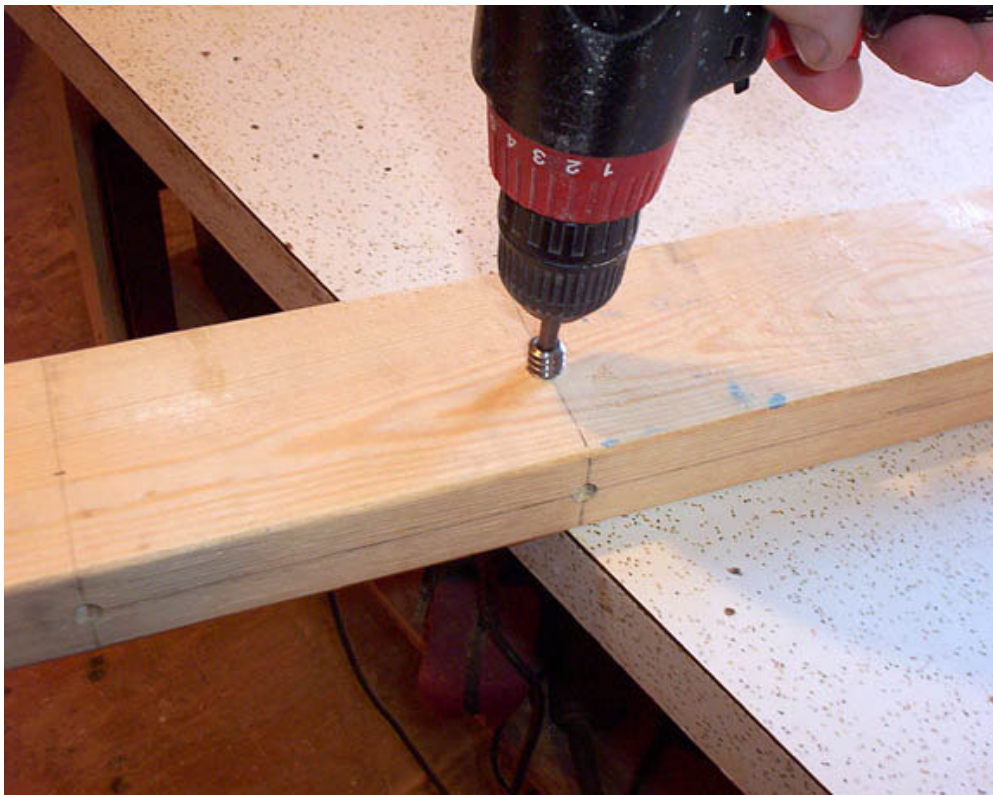


Now that you have your mark you can go ahead and drill the 4 holes out with the 3/8" bit, but only till you reach the other hole you had drilled from the top for the rods. You don't want to drill them all the way through.





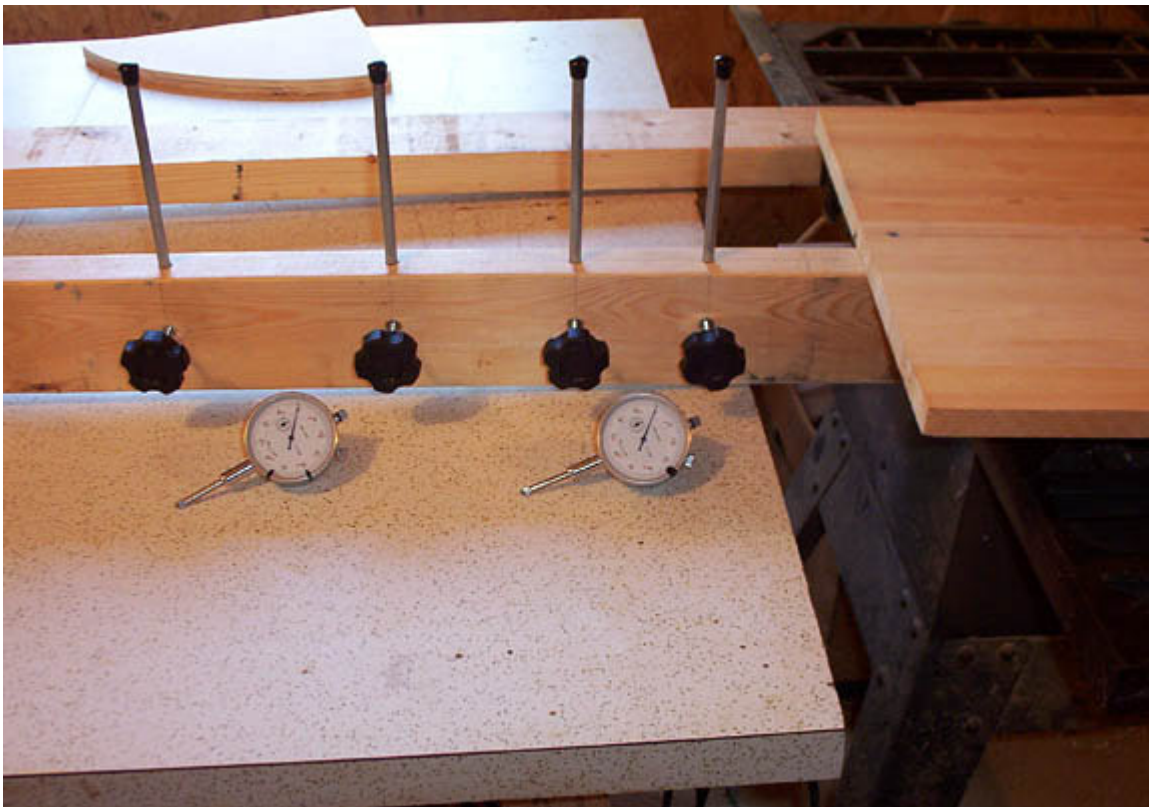
Be careful when driving the threaded insert in with the 6mm driver, or you might split the wood badly.

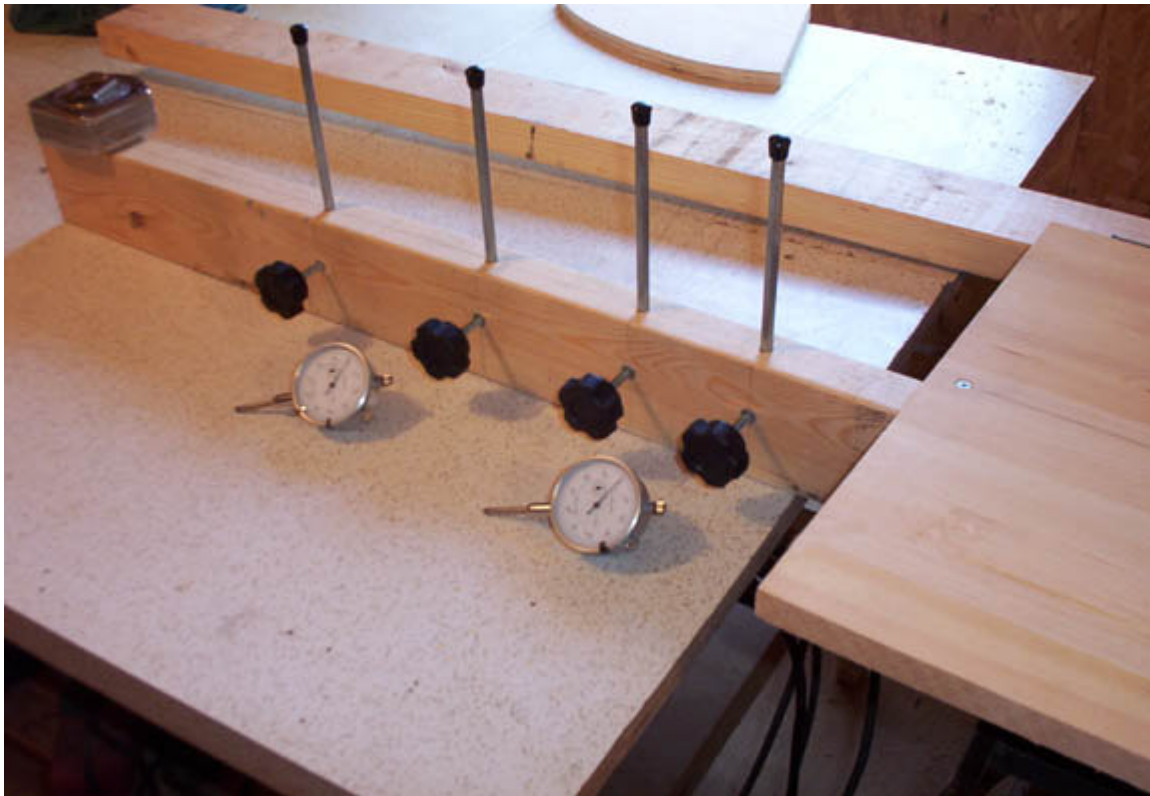


You should have something that resembles this when your finished.

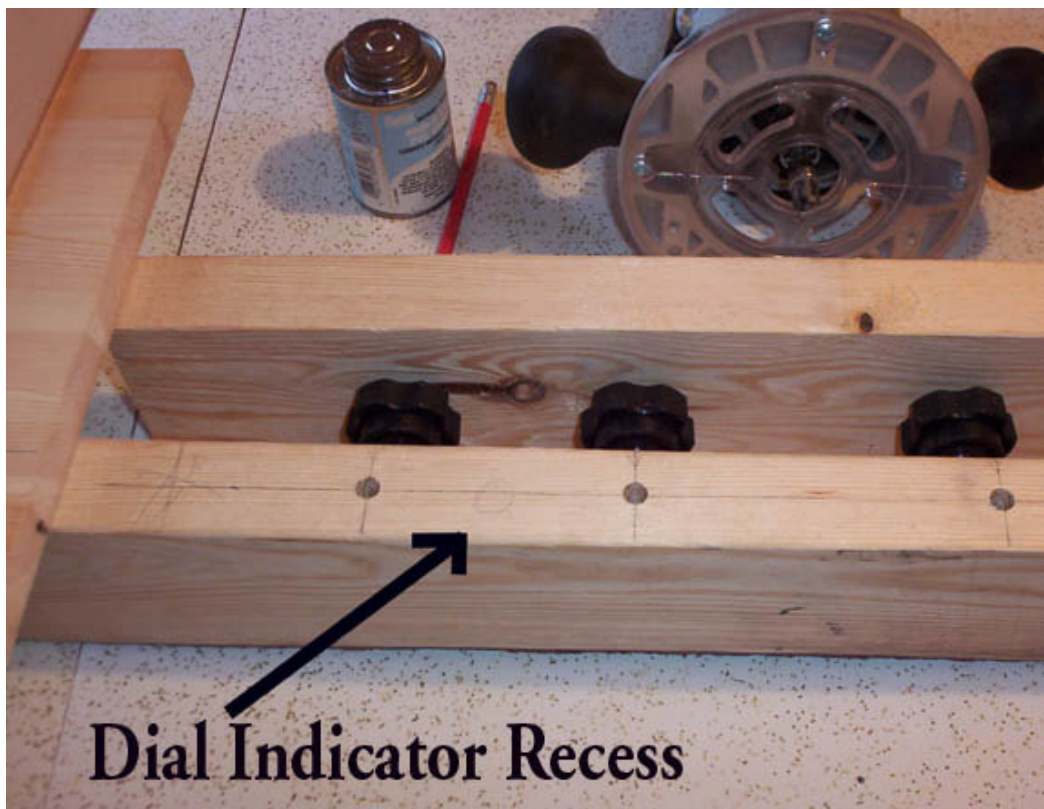


Now we can test to see if the steel rods and knobs will fit and work good. In this next picture, you can see I have gotten it all together and have even placed the dial indicators in front of where they will be mounted later, so you can get a better idea of what's going on.





Now I need to route out a round slot so that the dial indicator has room for back part of the plunge to go into if needed. I have marked off the center between the 1st hole and 2nd hole and will use a round cement (2" round) can and a pencil to draw a template so that my router pattern bit will follow it and make a nice clean cut for the access.



Dial Indicator Recess

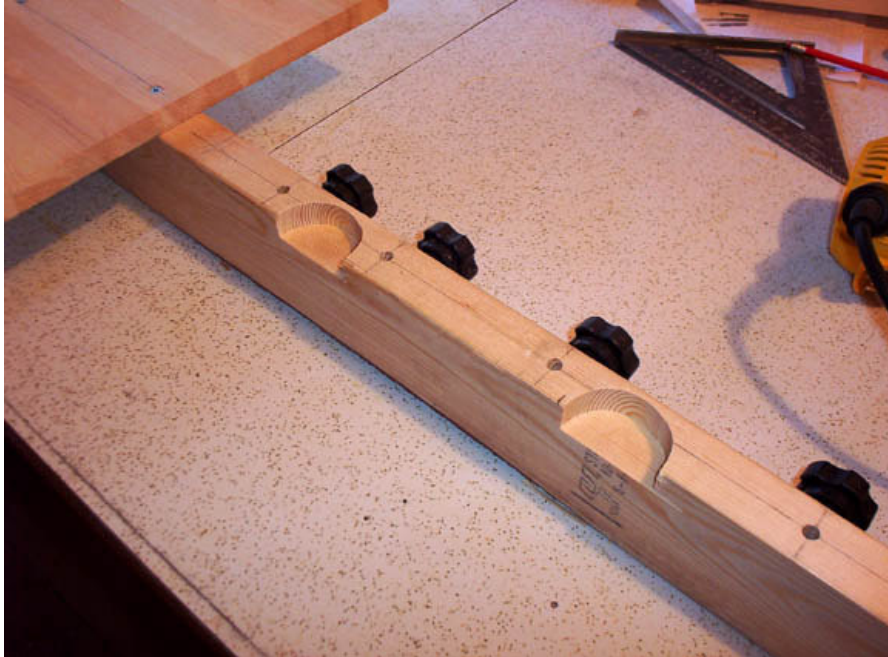
You can make a template by drawing a little over half the circle to the edge of a 1/4" piece of ply and cut it out with a scroll saw or band saw. Clean up the mistakes with a 2" drum sander if needed. Now you can align it and route it out a little over 1" deep.



After the first dial indicator recess was routed out, I made a mark 3/4" away from the 3rd hole from the board and placed the dial indicator recess jig so that the left edge of the circle touched it. Double stick taped it down again with another 2x4 past it to hold the template flat and routed out the second recess.



Now you should have something similar to this when your done.



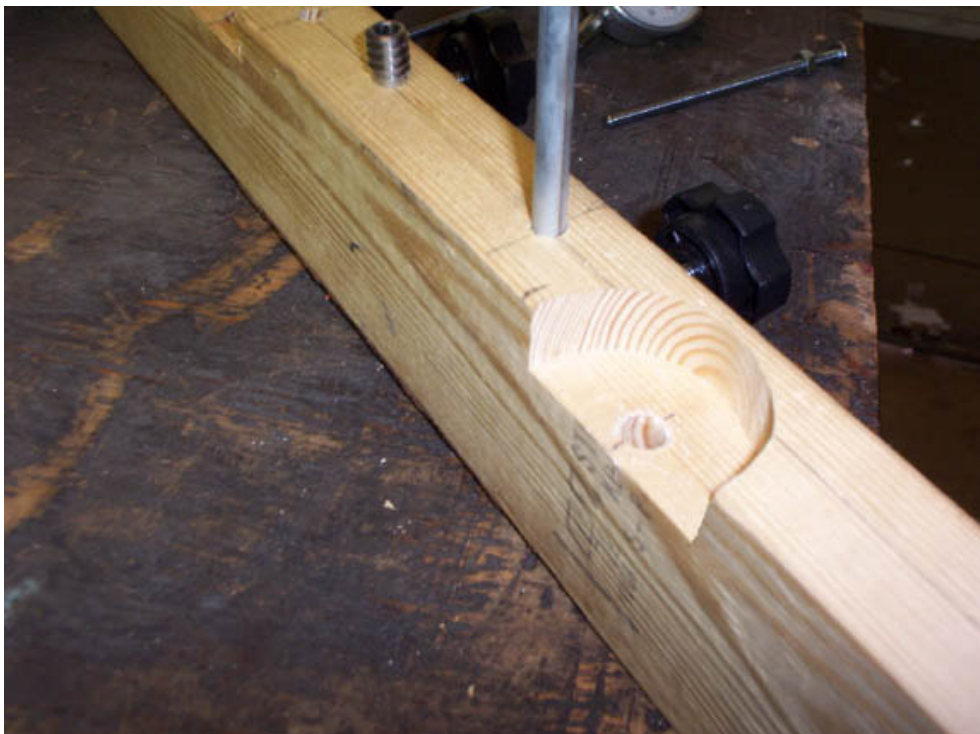
Now that both dial indicator recess are cut out it's time to get ready to install two threaded inserts. I have chosen threaded inserts simply because I can turn the 1/4-20 screws to move the dial indicators up and down depending on how I need them positioned. I used two common 5" pan head screw (1/4-20) to hold the dial indicators in proper place, but first we need to drill out the 3/8" holes for them. You will have to use your own judgement on where you want to place them. I drew a centerline in the middle of the circle and then used a nail to make a starter hole 3/4" away from the edge in both recesses. In the picture below you can see where I made the starter hole, threaded insert, and the 5" pan head screw I will use to hold the dial indicators in place. You could have just used 1/4-20 piece of all thread, since I later decided I'd have to hacksaw the head of the screw off. If you just buy a regular screw like I did in this one, run a nut all the way up around 1" away from the screw head. Cut the head of the screw off with a hacksaw and twist the nut off the same end that was cut. It will in a sense rethread the bolt after it was cut.



Here's a close up so you can see how it was marked better.



Now for the threaded inserts that I'm using it takes a 3/8" hole, so using the drill press again, I drilled a hole at least 2" deep just in case I later decide to use longer threaded rods. You'll probably have to move the support rods in order to use the drill press.



Now being very careful, drill the threaded inserts straight down into place.



You should end up with something like this when your finished.



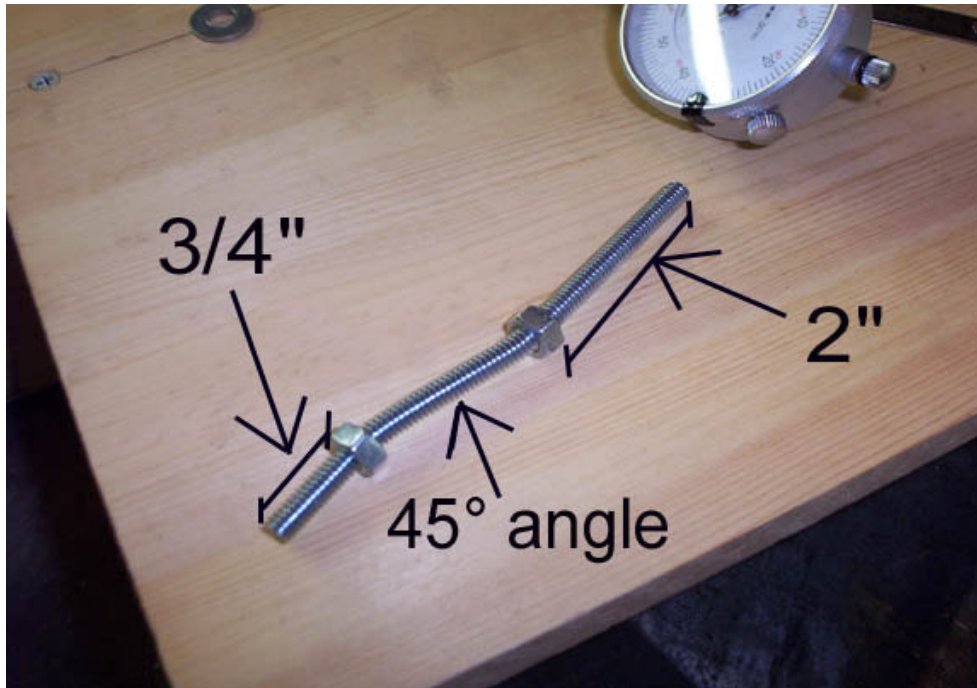
Now you can see that if we just mount the dial indicators on like this. The plunge bar won't be directly under the neck your jigging, so it will have to be bent just right so that everything aligns correctly.



This picture will give you a better idea of how the dial indicator will be held in place with two 1/4" screws.



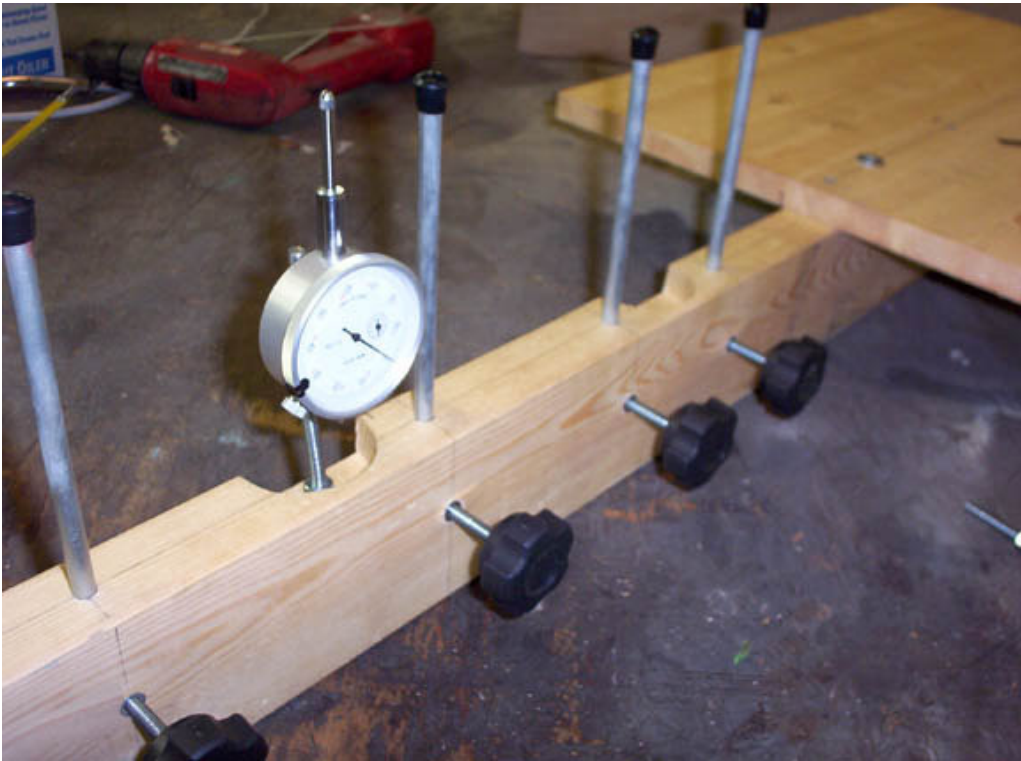
I went ahead and cut both the bolts heads off and went to bending the bolt the way I needed it. I took a 6" steel ruler and ran one nut up to until it measured 3/4" away from the end. I put the nut part in a vise and with my hands bent it over until it was 45° angled. Then turn it around and measure 2" from the end and bend it until it's parallel with the other end. Just make sure when your bending it, that you do so with the end in the vise or you'll end up having the nut where it won't unscrew.. lol



Now you can turn the bolt with the 3/4" end down until it holds and run the nut down and tighten it until it holds it in proper place.



Next you can install the dial indicator as was shown in another picture using two nuts, one that above and one below the back bracket.



Here's another angle of the dial indicator. It looks tilted to the left, but that's because of the way the picture was taken. The main object is to make sure that the dial indicators are in line with the support rods.



Now that we have the dial indicators ready to mount later we can move on to taking the final steps in making the neck jig.

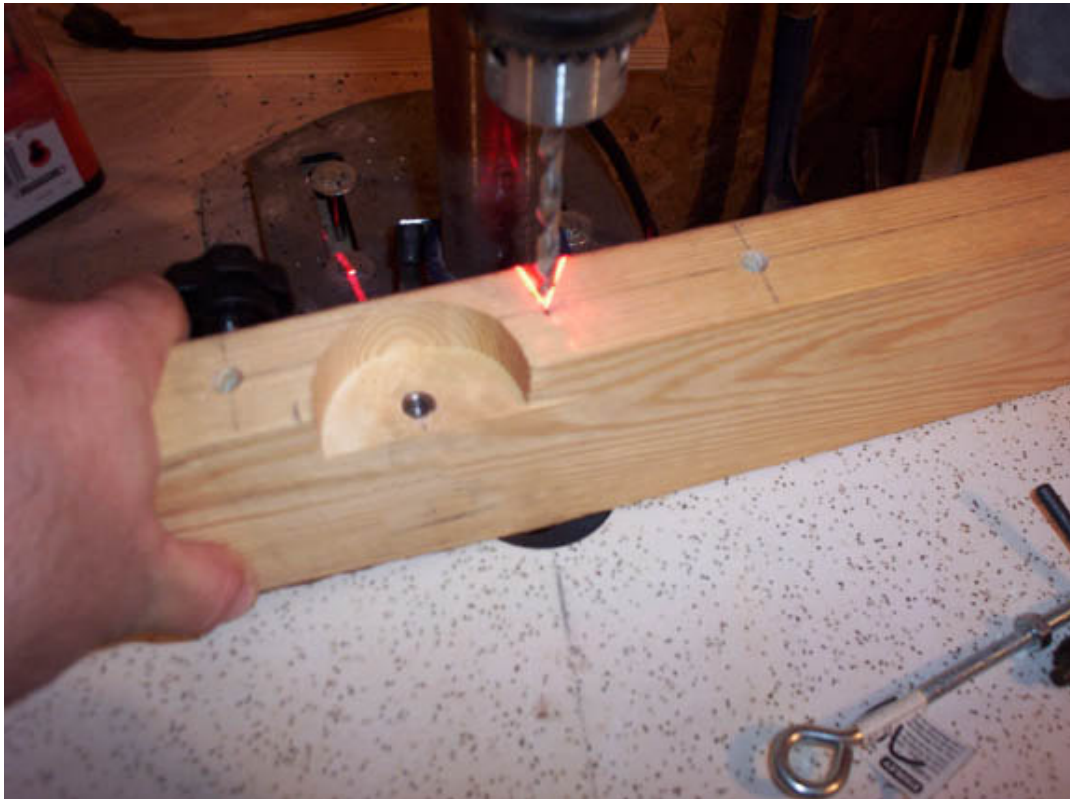
Here is a picture of the lash strap I bought for the headstock pull down. They come two a package, but was the best I could find like that.



From the last dial indicator recess toward the last neck support slot, away from the neck jig body board. Measuring from the middle of the insert I marked off 1 1/2" away from it with a 6" steel ruler.



The eyebolt I'll be using is around 8" long and there will need to be a 1/4" hole drilled all the way through the 2x4.



Next, I took a 1/2" round straight bit and used a small laminate trim router with guide to route out a straight slot so that the eyebolt will have room to recess if needed. I routed until I was around 1" or so away from the last support rod hole.



You can cut the lash strap so that it isn't as long. You don't need 8 foot of strap.. lol Just give yourself enough so that you can go from the eyebolt all the way up to where the neck will be and leave enough extra just in case.



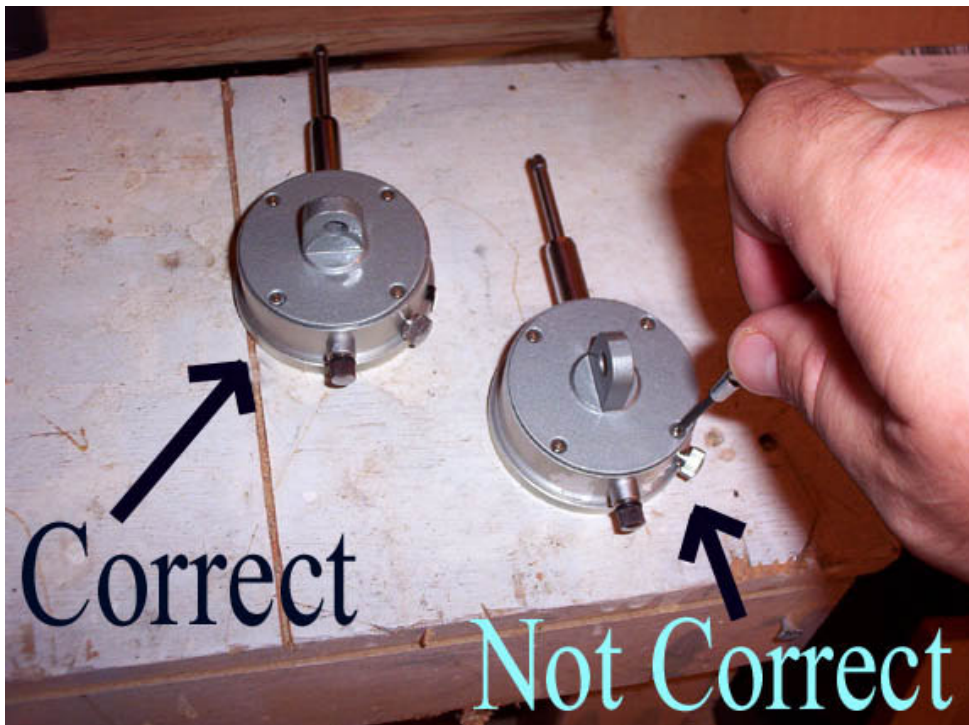
Now you can push the strap through the eyebolt and thread it through the lash strap to make sure everything fits good.



Now you can push it through the slot for now. Later on you will use a female knob to pull it down when the Neck Jig is ready to finish.



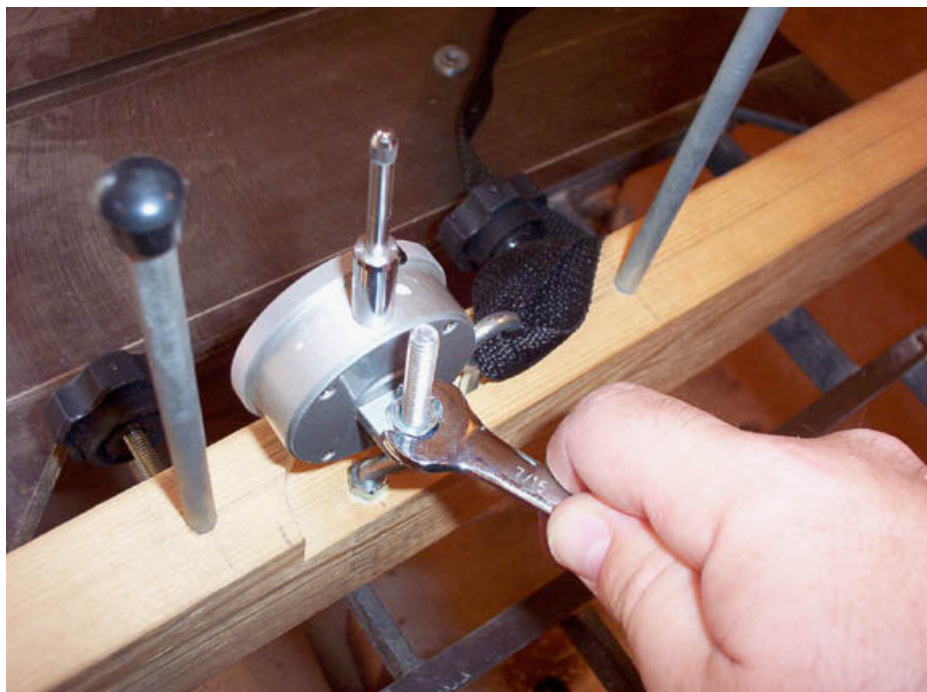
Now we can finally mount the dial indicators, but first if you get some like mine, you'll have to remove the back cover and turn it so that the bolt will hold the dial indicators straight up and down. Below is a picture of one that's already been turned the correct way, and the other is in the process of being done the same way.



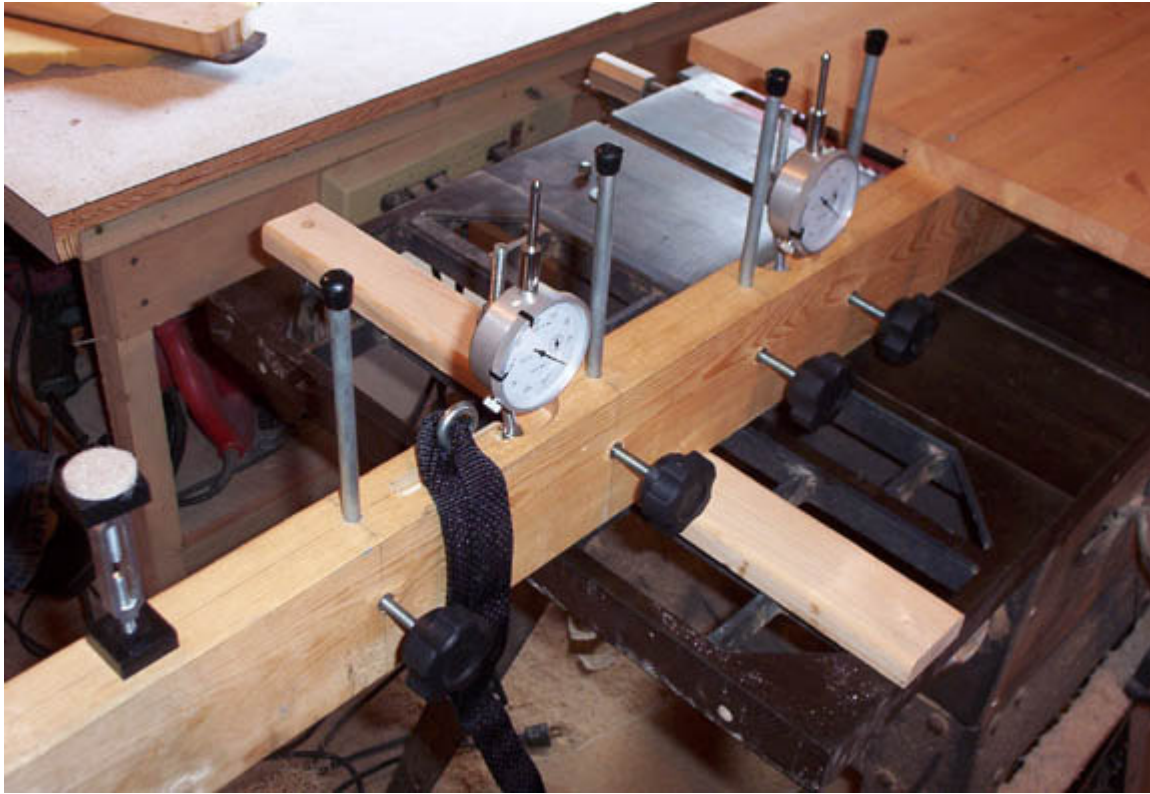
Now to mount the 1/4" thread you made earlier on. You'll want to get it so that you can tighten down the 1/4" nut with a open end wrench. It will hold it in place wherever you want it.



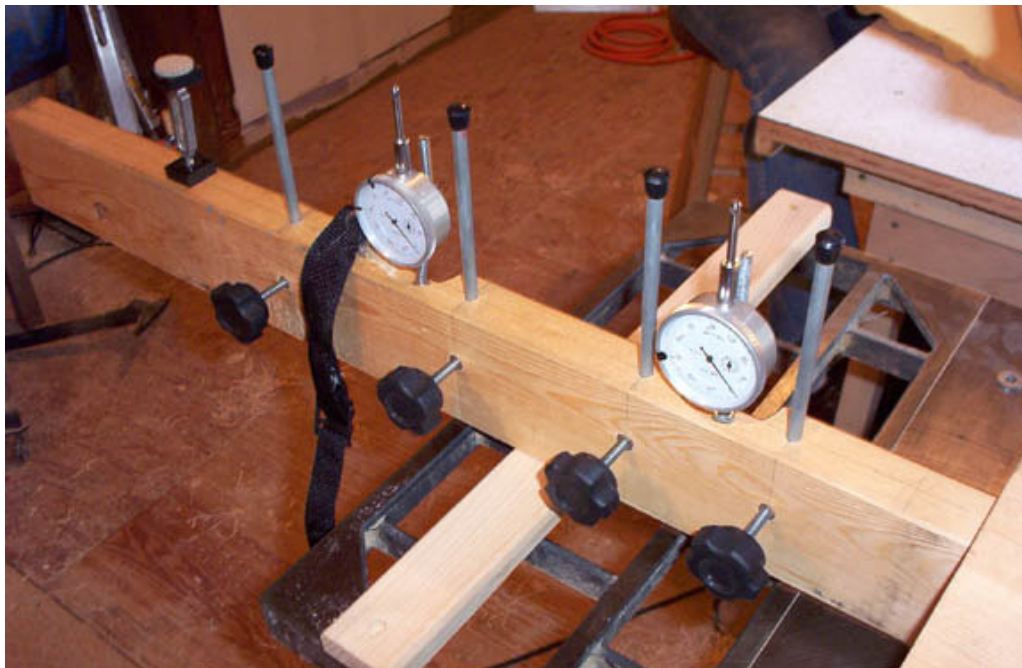
Now to hold the dial indicators in place all I did was use two 1/4" nuts on both sides of the mounting bracket to hold it wherever it needs to be. It's easy to move it up and down now by moving the nuts up or down. You'll have to experiment to get the proper placement depending on which guitar your jigging. It doesn't take long to figure out though, and making mental notes of where it was, for a particular style guitar, helps also.



After both the dial indicators have been tightened into place it was time to move on to the mini jack. For right now I just used a cork circle and glued it to the top to protect the headstock. You can use whatever you feel is safe though.



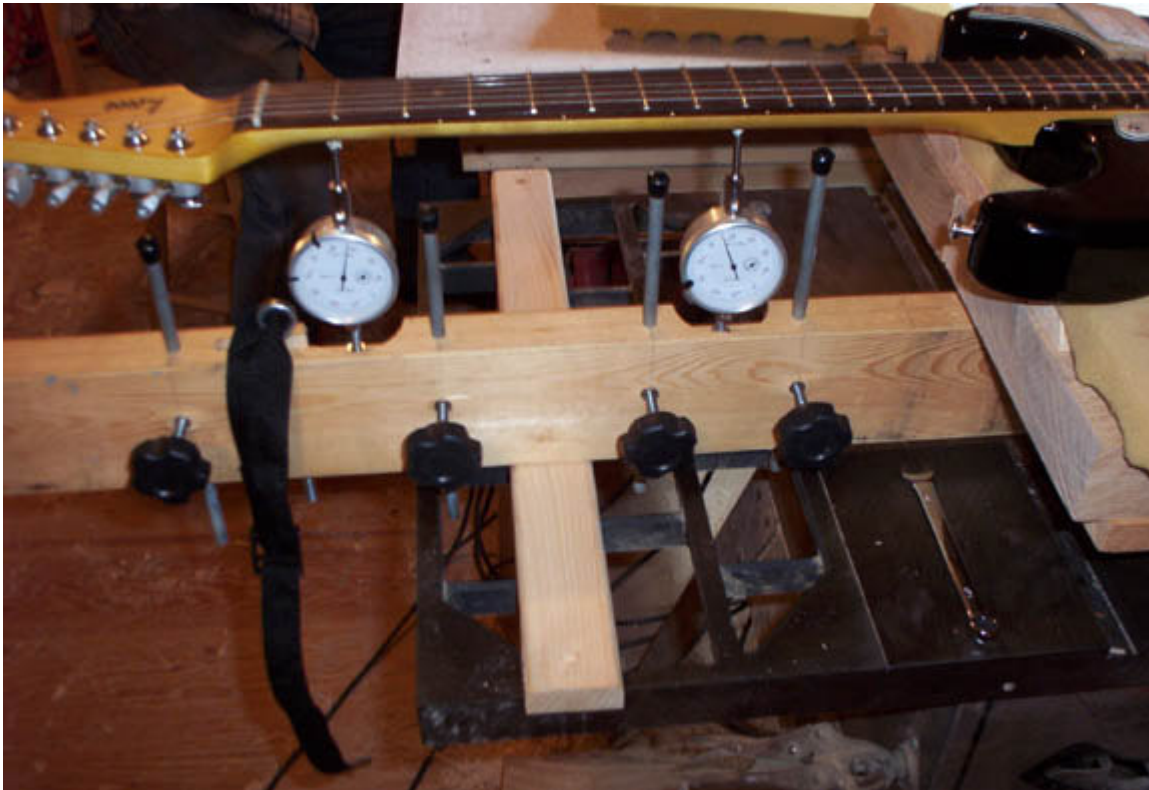
Here is another good look of the neck jig board with everything attached properly. The mini jack isn't mounted, it's simply setup here so you can get a good idea of how the neck jig should look when done.



I used some thin piece of masking tape to put on top of each dial indicators to keep the back of the neck from any harm (look at the picture below). You can use whatever you want though, cork, etc. You'll notice that I didn't use the swivel head levelers on this jig, simply because I can just stack up boards and use a mat to put on top of it, to hold the guitar in place. In this picture, I used a thin piece of foam, but I would have been better off using something less giving as I would learn later. So basically, now I use a mat to go over the boards to protect the guitars finish. You have to use the ratchet pull downs to hold the guitar in place and maybe I'll have time to do another tutorial on how to use one properly. You can find a lot of information about using a neck jig on the web though.

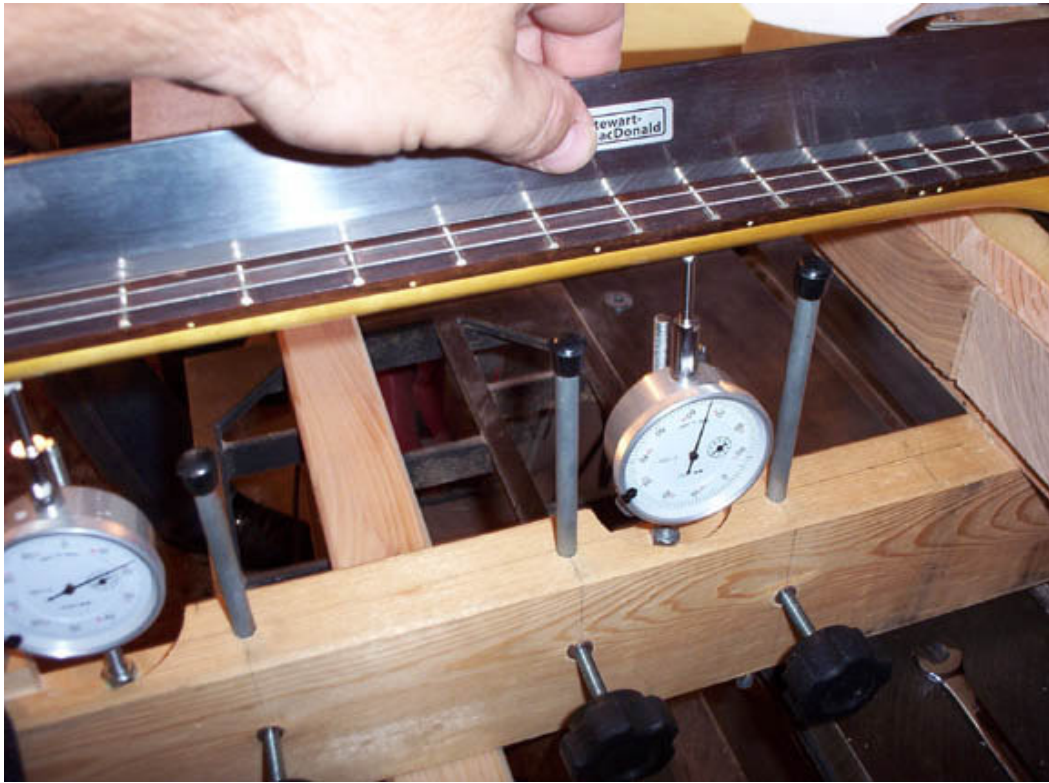
Here's a basic description of how to use one, just to get you started properly.

You'll align the guitar so that the neck is centered with the support rods and dial indicators. Also, so that the dial indicator is around the 1st fret area. You don't need the support rods just yet, so bring them down. After the body has been fastened down real good, being sure to use something to protect the sides, top of the guitar where the straps come over, you'll be ready to jig.



Don't worry about what the dial indicators read at this point; just make sure they are contacting the back of the neck though.

Now with the strings attached, tuned up to pitch, use a leveler to check for straightness. The main object is to get the neck as straight as possible using the truss rod adjustment. The reason for this is two-fold. One, you'll have less fret material to remove in order to get them level. Two, the fret heights will be more consistent.



Once you've felt like the fretboard is as level as it can be. You zero your dial indicators as a reference point. Here is a good close up of turning the outside ring so that the dial aligns with the 0.



Next, you can remove the strings from the guitar. And you use the pull down strap and mini jack to push and pull the neck until the dial indicators get as close to zero again as possible. What it's doing is getting the neck back into the position it was in when you had it straight, with string tension. Bring your support rods up, being extra careful to not move the dial indicators away from zero too much in the process. When all the support rods are in place, you can do your normal fret job while in the jig.

We'll that about all I have to write at this time. I hope you got a lot out of this tutorial and I'm looking forward to seeing how yours turns out. Maybe I'll do a whole separate tutorial on how to use the neck jig if anyone is interested. I also want to thank Robert May for all his input into this tutorial. Thanks..

This Tutorial Was Written by Matt Vinson

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