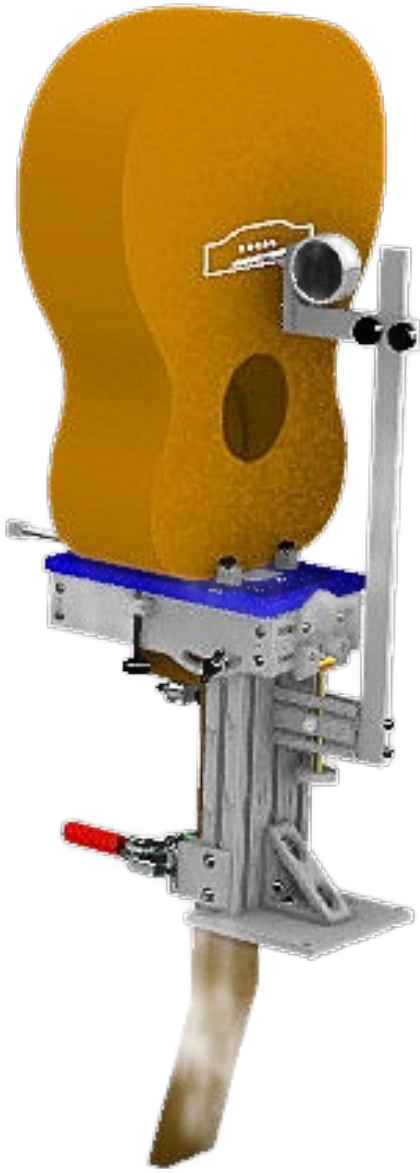
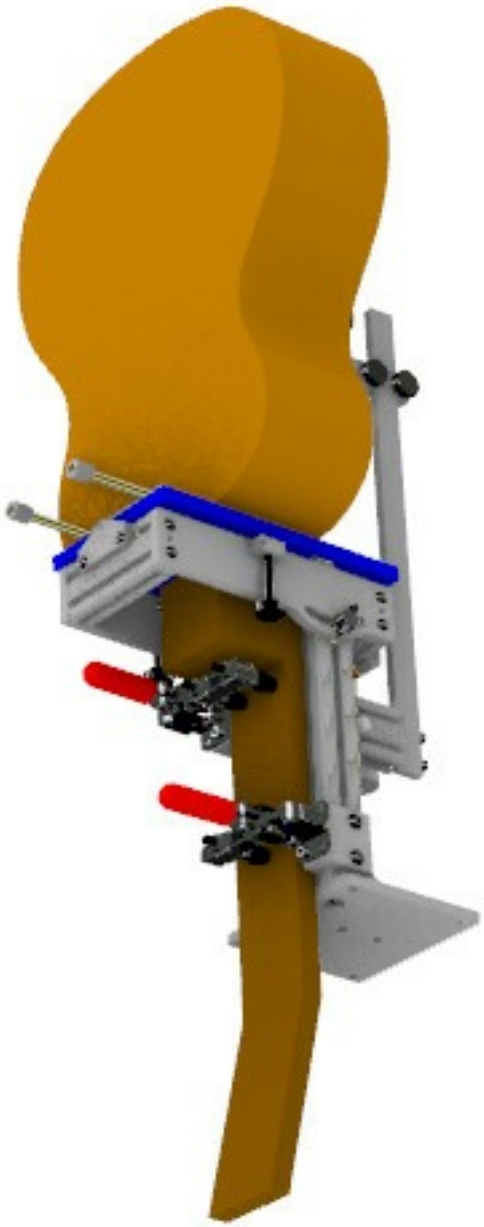
# Instructions Neck Angle Jig





# Instructions Neck Angle Jig

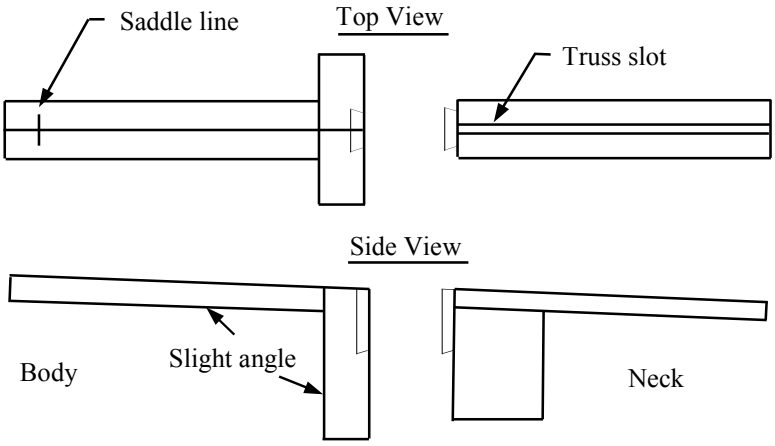
This Neck Angle Jig like the previous jig has the same features. Precisely aligning the neck angle in respect to the body and then routing out the appropriate joints is the what this jig is designed for. The tool comes with a Edge vise that is specifically designed to work with the jig and also can be used for the end graph, the templates and accessories are sold separately

## S A F T E Y

1. ALWAYS wear safety glasses or a face shield.
2. DO NOT wear loose clothing, gloves, neckties, or jewelry. Wear protective cover on hair and prevent contact with moving tool. These items can get caught in tool during operation and pull operator into moving part.
3. KEEP children away.
4. KEEP visitors at a safe distance.
5. WEAR a dust mask all times.
6. ALWAYS turn off motor before making any adjustments.
7. NEVER leave running tool unattended.
8. ALWAYS make sure all screws are tight and any hardware is removed from or near tool before starting.
9. SECURE all work pieces before starting.
10. ALWAYS keep knife edges sharp.
11. ALWAYS keep work area clean.
12. DO NOT operate tool if under the influence of drugs or alcohol.

## R E C O M E N D A T I O N

We highly recommend to put a few practice necks and bodies together out of scrap wood. This is very beneficial in getting used to the tool. The practice Pieces does not have to be the actual body or neck they just need to be a representation.



# R E F E R E N C E  P O I N T S

There are a few reference points that are important to the jig. The first point is the hinge area this will determine how flat and well the finger board will fit. It is also important to complete all the necessary steps to insure a level area for the finger board on the body, such as proper bracing and leveling the dome (figure 1).

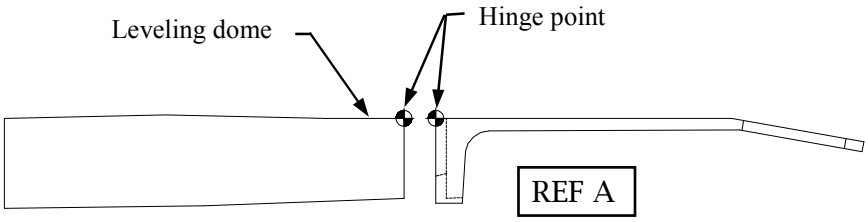



Figure 1

The other reference point or surface is where the neck will be attached to the body (figure 2). This is the area where the edge vise will be clamped.

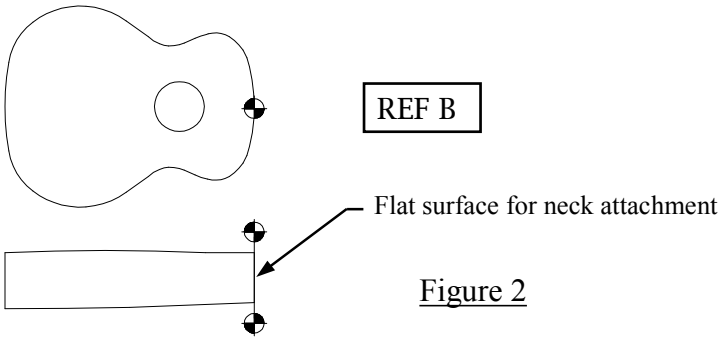



Figure 2

The next reference points or marks are the center line of the saddle and where the neck will be attached (figure 3). It is important to align the edge vise and the jig in respect to the center line/saddle location.

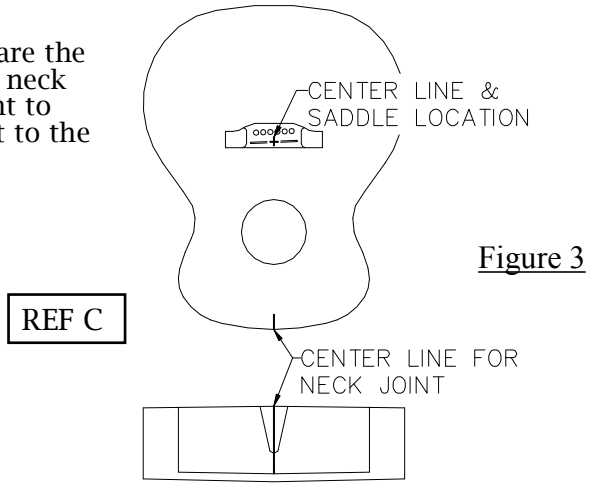
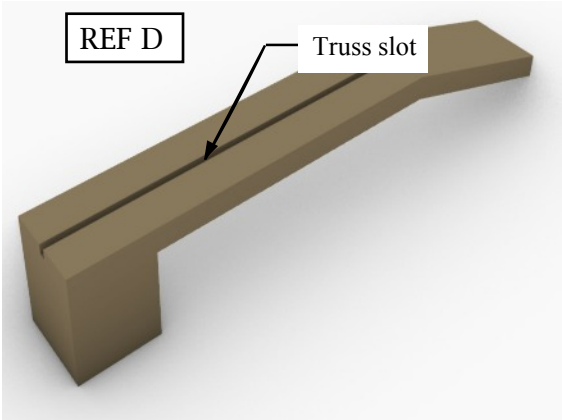



Figure 3

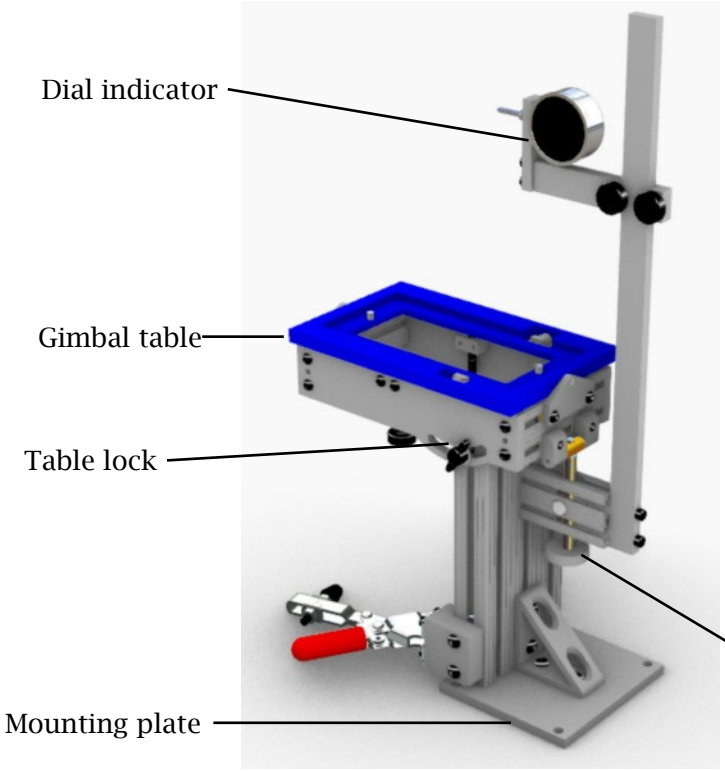
## REFERENCE POINTS (CONTINUED)

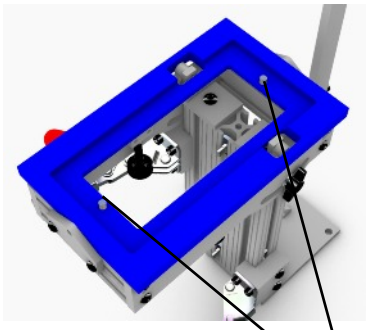
The last reference is the Truss slot on the neck.

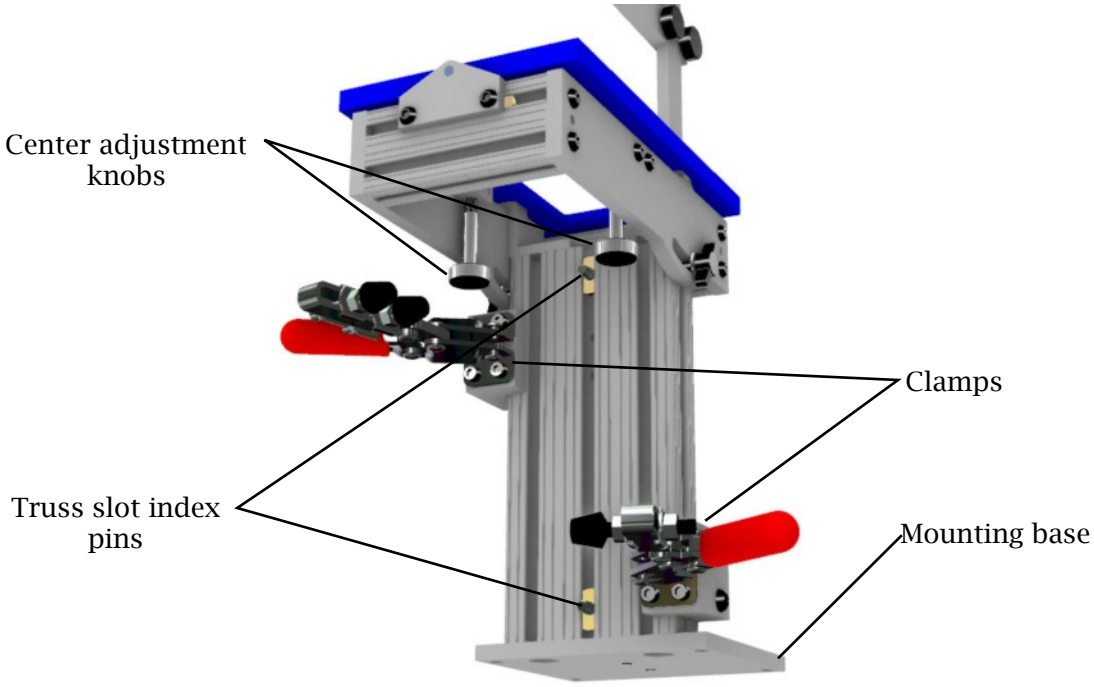



## DESCRIPTION

This Jig has many features designed to give you an accurate and quick way to set up and rout out the proper neck joint. It is important that you have a good understanding of the neck joint and also how the neck angle is achieved. Like Saddle height, neck relief, string height, etc. All these have an impact on how the angle has to be set.






The Neck Angle Jig consists of two axis gimbal table, one for side to side adjustment B+, B- (figure 4) and the other for actual neck angle adjustment A+, A.
With the adjustment knob associated with REF A, the neck angle can be adjusted accordingly with dial indicator. Where as the adjustment knobs associated with REF B, the side to side adjustment can be set also using the same dial indicator.

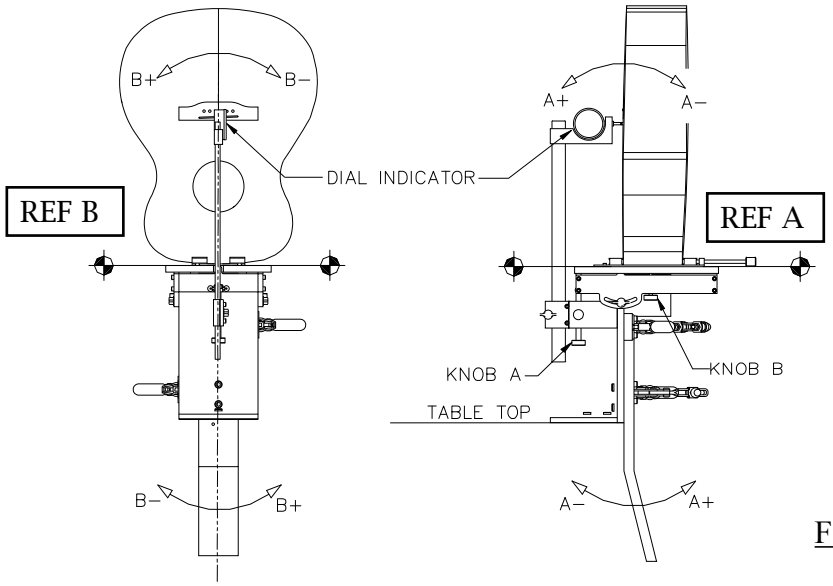
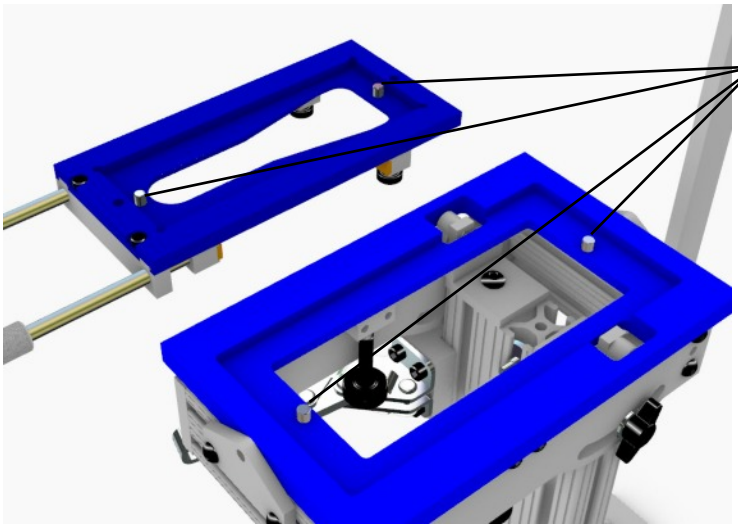
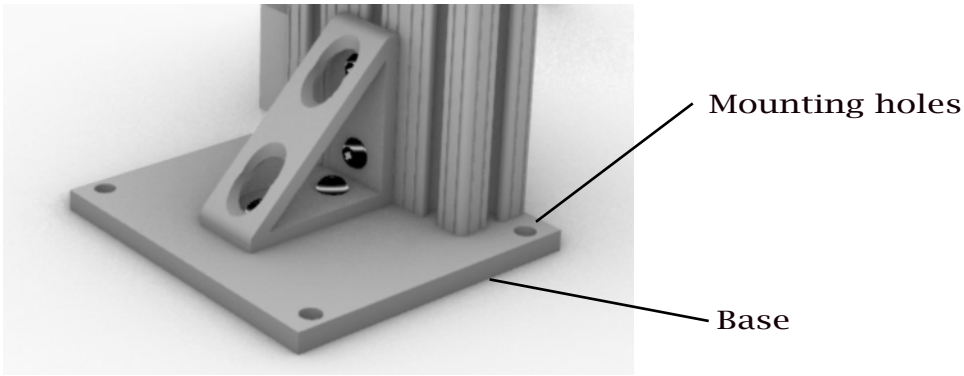



Figure 4

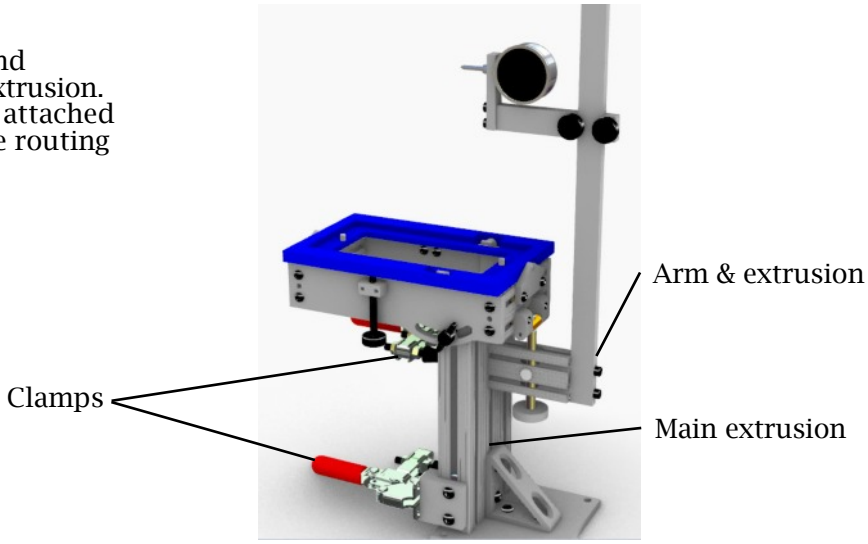
All the templates are indexed to the center of the Jig with pins even the edge vise template. This way we can place the body  in the Jig for proper neck angle setting.




There are four 3/8” mounting holes on the base to properly attach the Jig to a solid surface. If you do not want to use bolts two heavy duty  C clamps will do.

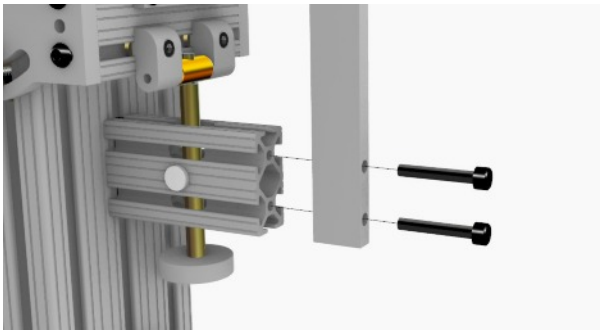


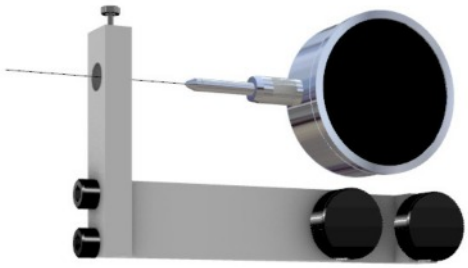

The Dial Indicator mounting arm and extrusion is attached to the main extrusion. This extrusion also has the clamps attached to keep the neck secured during the routing process.



# S E T  U P

The first step is to assemble the Dial indicator arm to the arm extrusion with two screws. Next insert dial indicator into the mounting plate on the indicator assembly and slide the whole assembly onto the vertical bar



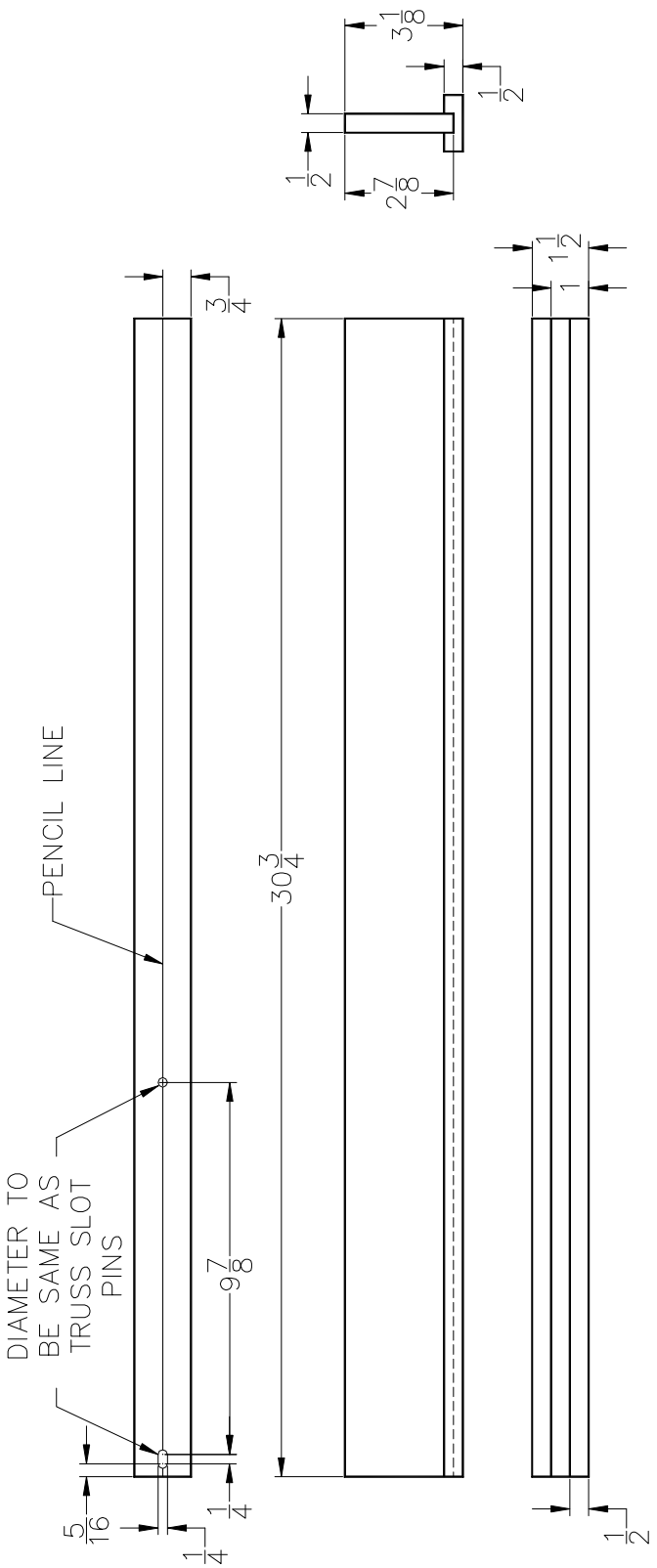


# C A L I B R A T I O N  B O A R D

We have to make sure that the main extrusion is calibrated with the Dial Indicator so that the appropriate neck angle and saddle
center can be measured. We recommend making a straight edge
board using good birch 1/2 inch plywood, making sure that it is absolutely straight.

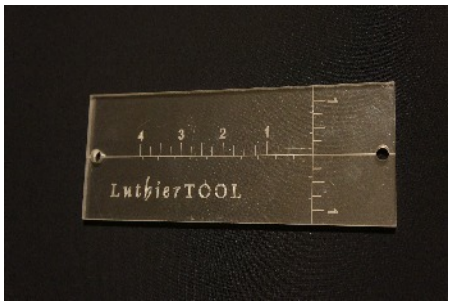
This board will need to have
a straight pencil line down the middle of one surface with two holes,
the same diameter as the truss slot
guide pins. See next page for dimensional drawing.

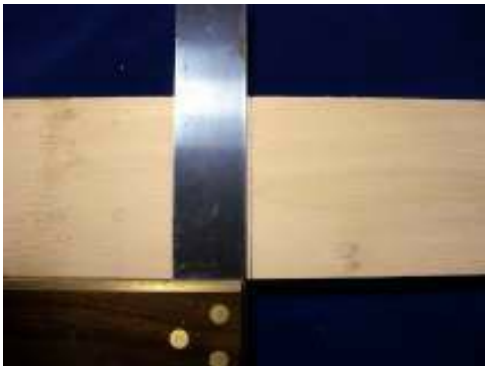
# S E T  U P  ( C O N T I N U E D )



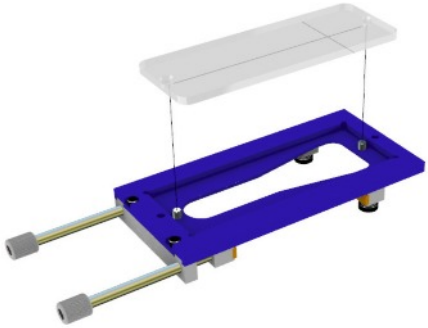
# S E T  U P  ( C O N T I N U E D )

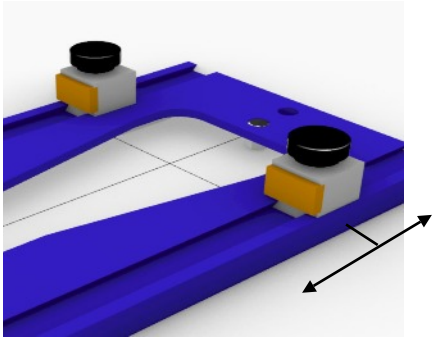
The alignment template is designed for ease in lining up the Edge vise on to the guitar body center line where the neck will be placed. This is the only template needed because everything else is indexed even the neck itself.



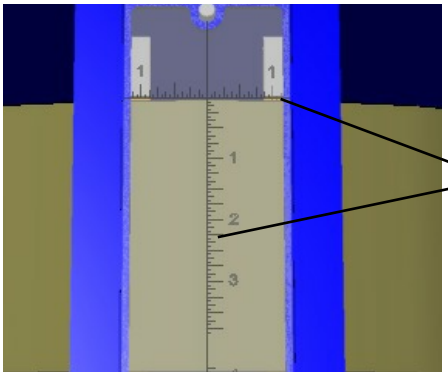



Using a square, draw a pencil line on a scrap piece of wood about 4 inches wide





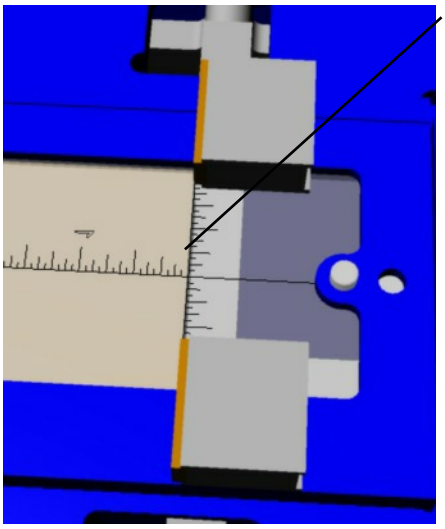
Place the Edge vice on the  piece of wood and align the template line with the pencil line. If not the same loosen the thumb screws on the fixed dog and move so that the template lines line up with the pencil line.

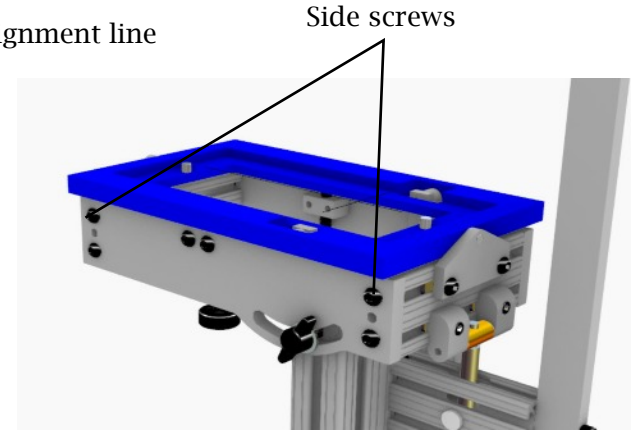



Line up with both the edge and the line Drawn. If the line on the template is not Lined up with the edge it may cause neck Angle deviation.

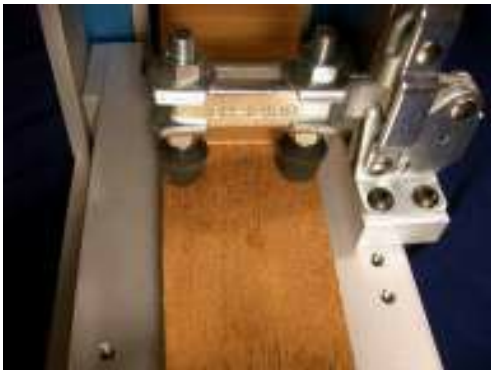
# S E T  U P  ( C O N T I N U E D )

On occasion the gimbal table may be out of alignment, this may happen during shipment. We can check for this by placing the alignment template in the Edge Vise and placing it in the Neck Jig. You can use a straight edge or a dummy neck blank with a truss rod slot and move it all the way to the bottom of the template. We want to make sure that the edge lines up precisely with the line on the template. If it's a bit off, you can loosen the side screws on the table frame and adjust accordingly. Please make sure that the template is always perpendicular to the neck plate.



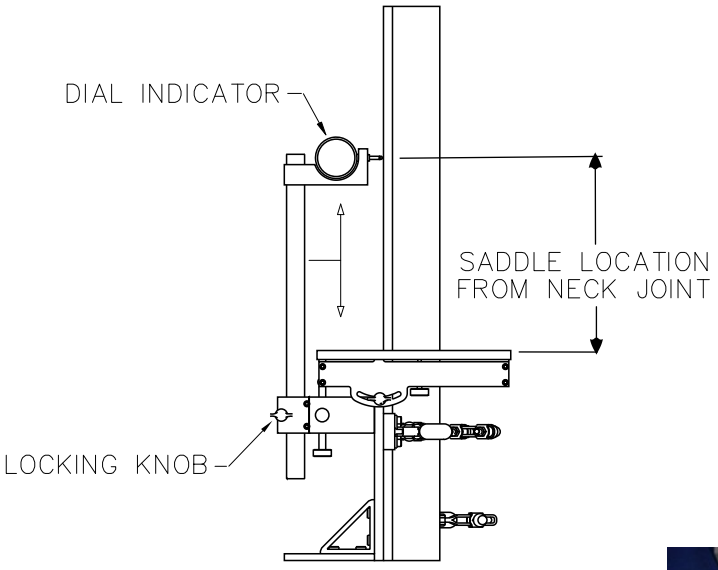




The last step is to make sure that the clamping spindles are set up. The lower clamp has one spindle where the top has two. The two top spindles are to insure that the top part of the neck is absolutely tight against the neck plate to prevent any chattering during the routing process. Be sure to keep the top spindles as far apart as practical.

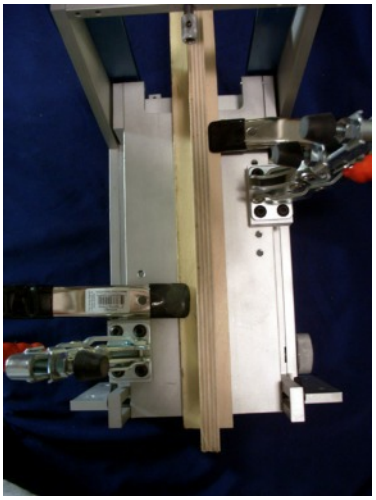


# O P E R A T I O N

You can move the height bar up or down to the appropriate saddle location. This location can also be transferred to the straight edge board with a pencil mark for future application.

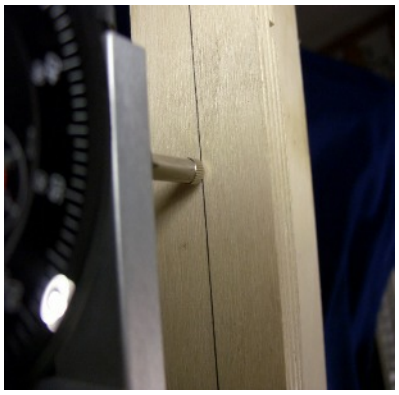


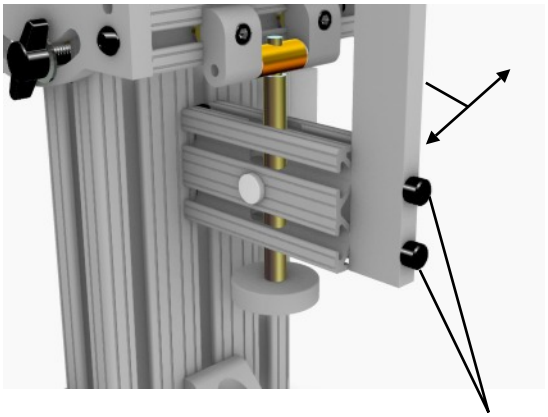

Place the straight edge board on the neck plate and truss rod pins of the jig and clamp with two large spring clamps.



Be careful to pull back the dial indicator plunger before mounting the edge board. At this point we want to align the neck plate center line and angle with the dial indicator.

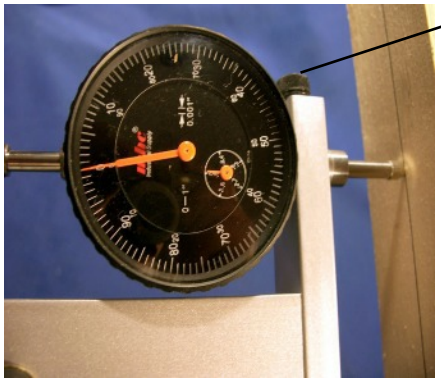
Loosen the two screws and move the adjustable arm from side to side so that the dial indicator plunger center is precisely centered on the pencil line of the straight edge board.





screw

The Dial indicator has two pointers. The small pointer will move in 0.100 of an inch and the larger pointer will move in 0.001 of an inch. The goal is to have large pointers point to zero and the small pointer fairly close to a major mark.



Thumb screw

Loosen the thumb screw near the Dial Indicator and move it so that the small pointer is on or near a numbered mark, then tighten the thumb screw.

Small pointer

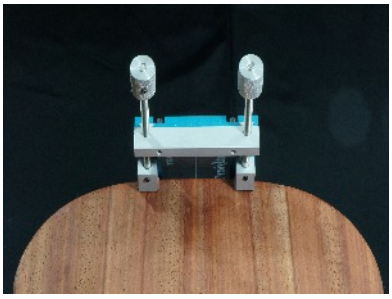
Outside ring

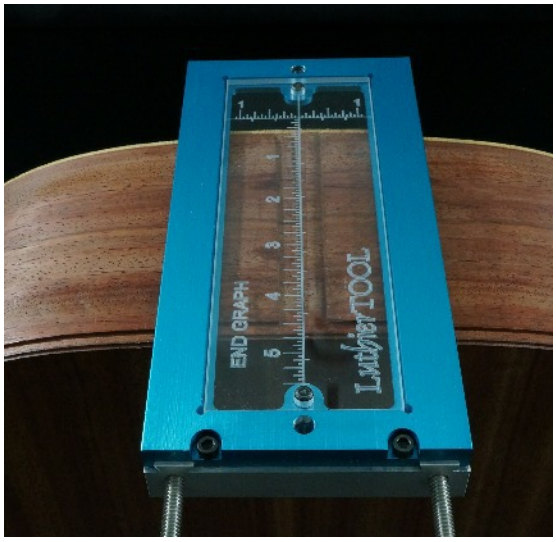
Then with the outside ring rotate the dial until the large pointer is on the zero mark.

At this point the dial indicator is calibrated to the neck plate. It may be necessary to re-zero the outer ring when you re-position the adjustment bar.

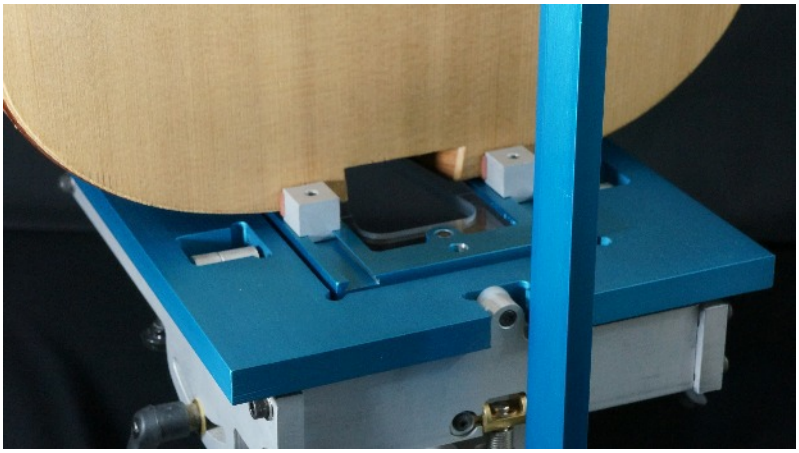
# O P E R A T I O N  ( C O N T I N U E D )

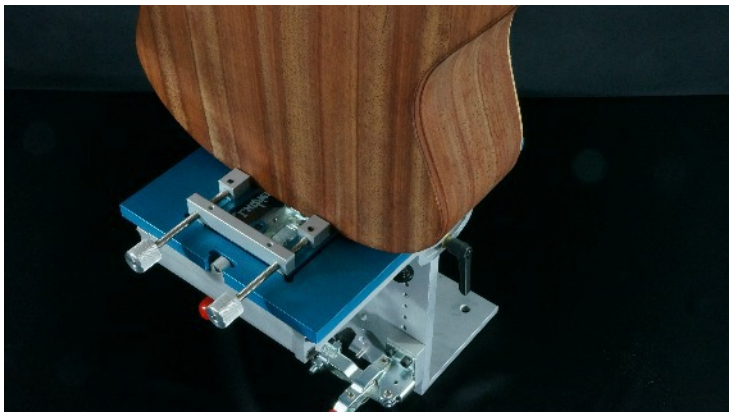
Place the Edge Vise on the guitar body and align the body pencil mark with the line on the template and firmly tighten the Vise. Make sure that the vise is seated flat on the body .



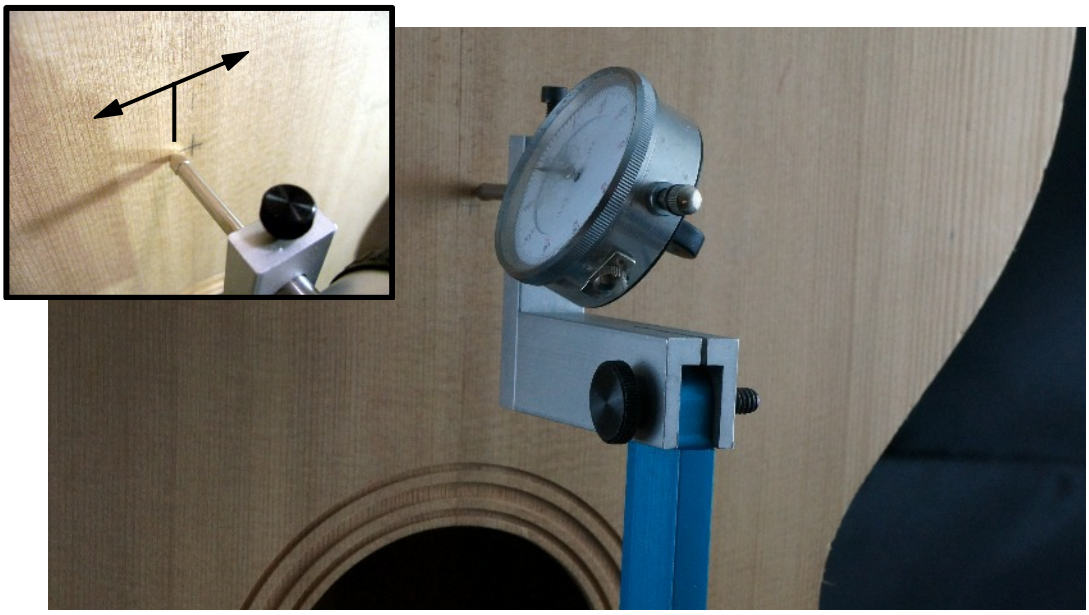



Now place the guitar body and edge vise into the Jig using the index pins . Make sure that the edge vise is seated all the way on the pins (the fit is a bit tight for a good pin accuracy).

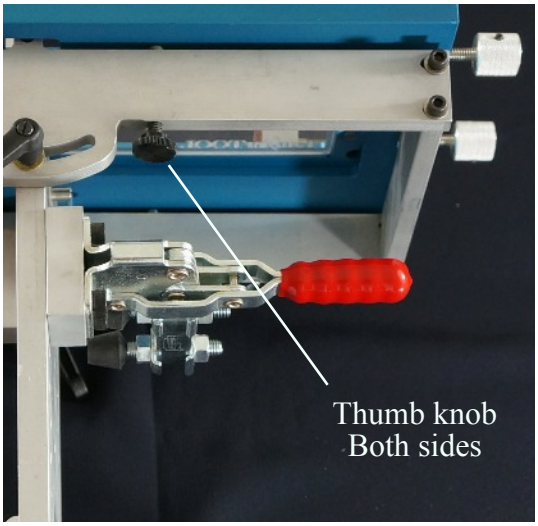


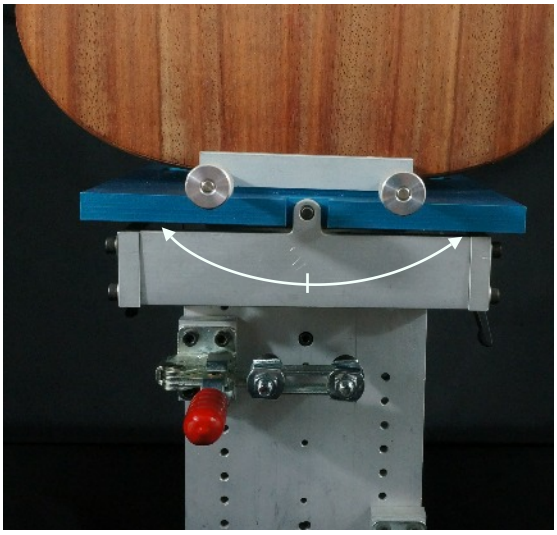


## Side to Side Adjustment



With the two thumb knobs at both sides loosen one side and tighten other or vice versa and adjust so that the tip of the Dial Indicator is precisely over the saddle center pencil line. Very lightly tighten the thumb screw (DO NOT OVER TIGHTEN)

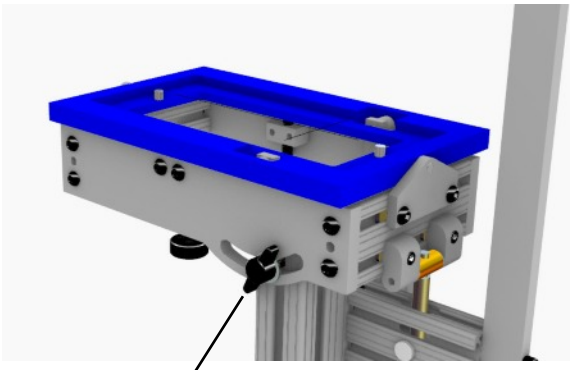


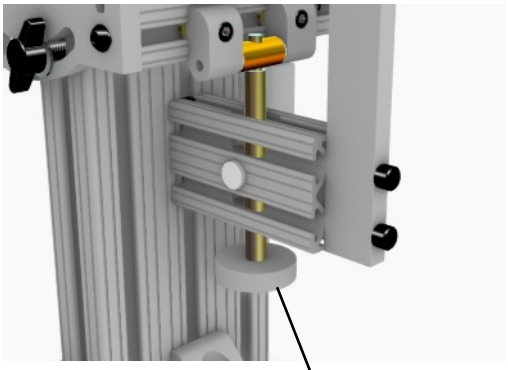
The two thumb knobs control the tilt of the main plate so that the whole body moves from side to side in order to line up the center of where the saddle will be placed.

# Neck Angle Adjustment

Loosen the wing nuts on both sides of the Jig and with the knurled knob adjust the neck angle until the small pointer of the dial indicator is close to the set mark and the large pointer is on zero. Now you can add height compensation. Then tighten the two wing nuts.



Wing nut



Knurled knob

At this point the Jig has been set up for the neck angle. All we have to do now is route out the appropriate neck joints. Remove the guitar body from the jig and insert the appropriate template. Make sure to screw in the indexing pin and tighten the thumb screw plate.

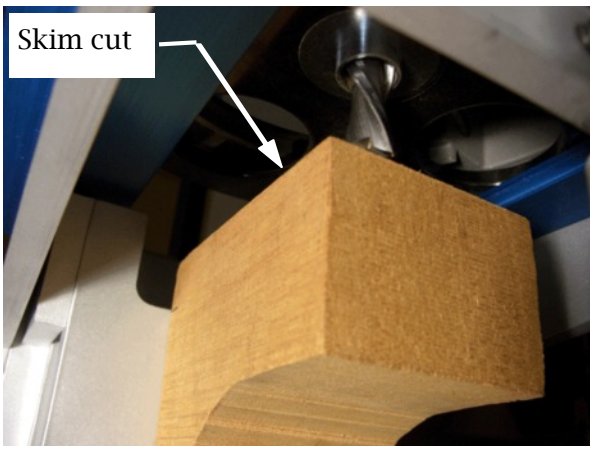
NOTE;

Remember with the dial indicator at zero, it represents the same projected plane for the top of the neck to the point where the saddle will be placed. With this setting you now have a surface that you can calculate the difference between the bridge, saddle height, finger board, string height, fret height, etc. This number will become your height compensation. This distance may be different for the type of guitar you are building.

## CAUTION

It is very important to secure the body properly before routing out the neck tenon, any large vibration can cause the router bit to take out a large chuck of the wood. Always remove the majority of wood before making the final cut, but DO NOT be in a hurry and remove too much wood at one time especially with a 1/2" bit. It is best to apply a slow feed rate. Practice on a scrap piece of wood to find the correct cutting speed. Also make sure that the Edge vise is secure to the


Before routing the tenon you can check the angle by simply making a skim cut on the top of the neck tenon area. Place the neck on the guitar and using a straight edge to check the neck angle and side to side angle. Slight adjustments can be made before the tenon is cut.

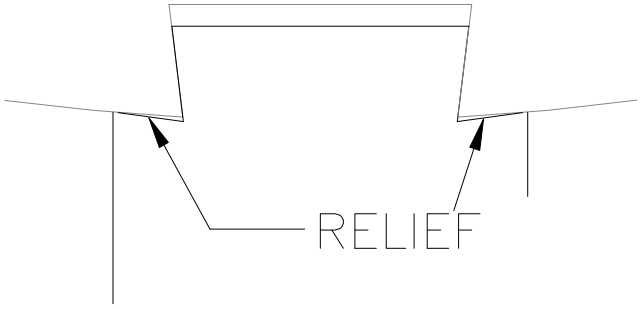



# O P E R A T I O N  ( C O N T I N U E D )

The Dove tail and Arch top templates are designed for 1” router bit extension. The router bit can be set to any desired extension for the Mortise/tenon templates.



Now that Jig is set up you can set the tenon depth. The drawing below shows the typical neck joint for the Neck Angle Jig.

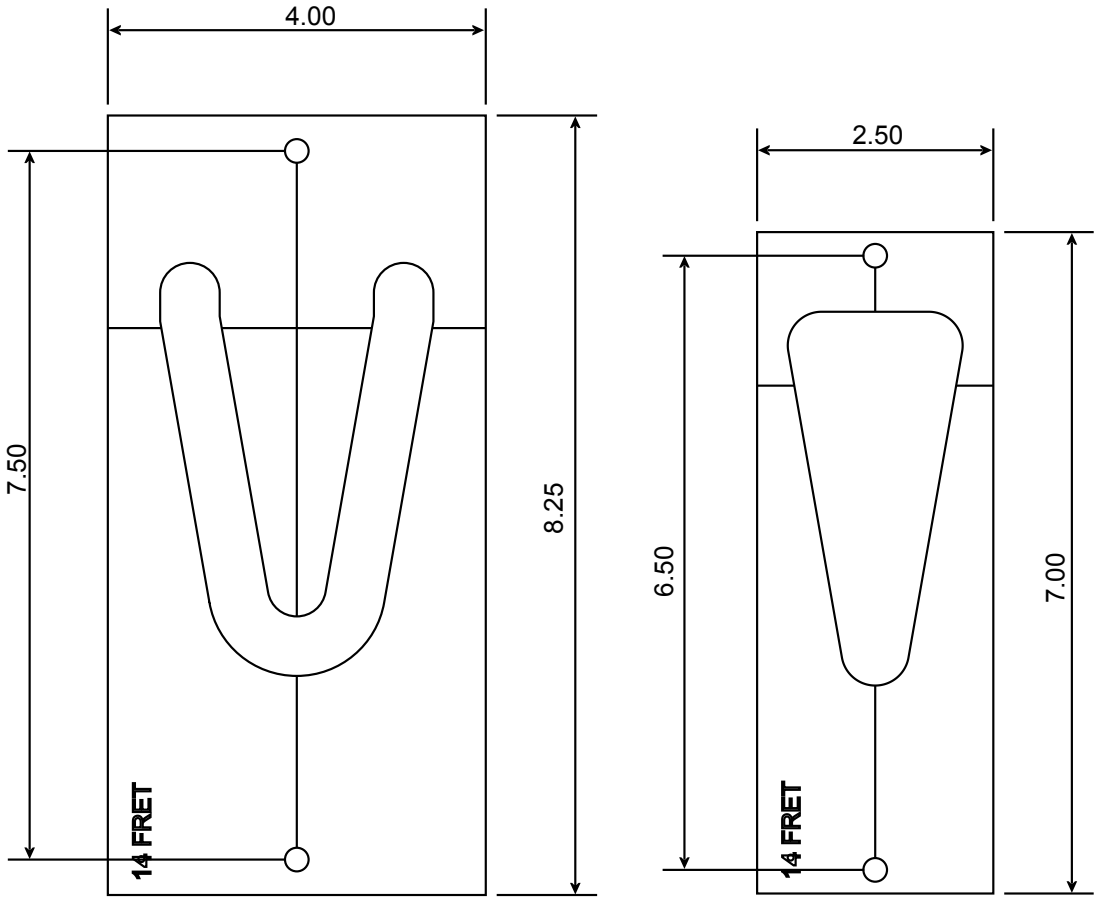

Use the top surface of the Jig to measure the depth of the neck tenon, this is the same surface that the router base rests on. Keep in mind that the top Jig surface thickness is 1/2”. Also keep in mind to account for the curvature of the upper bout so that the appropriate relief can be carved later without jeopardizing the tenon depth.

# T E M P L A T E S

There are three types of neck templates available.

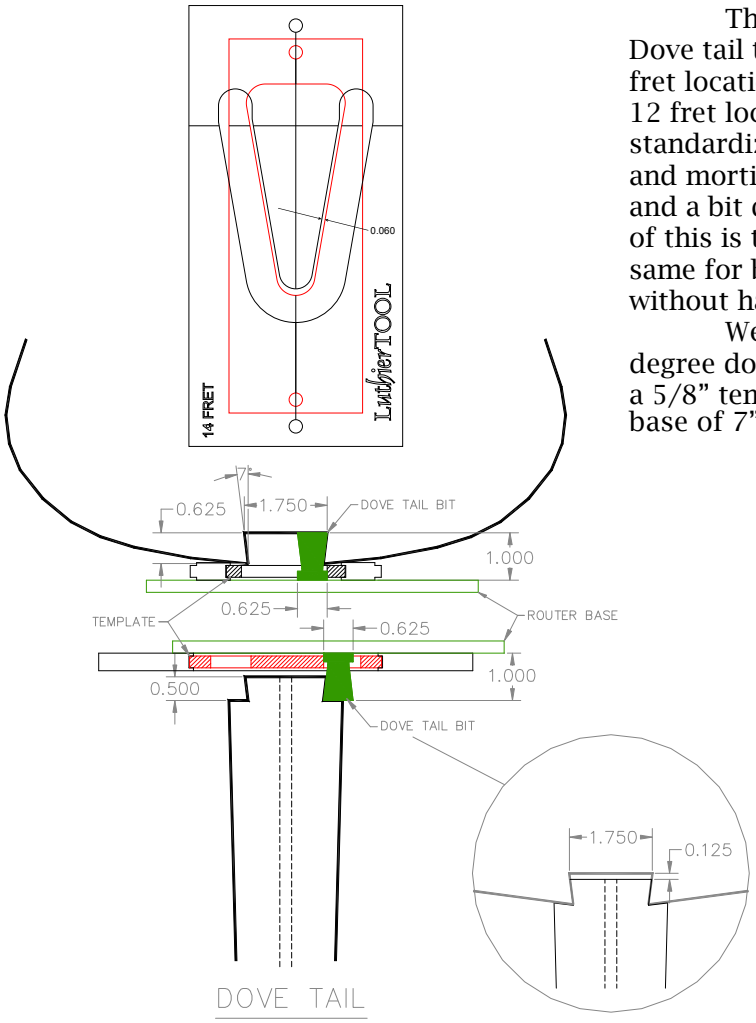
A. Dove tail
B. Mortis/tenon
C. Arch top

The templates are made of 1/4” acrylic.




The above drawing shows the dimensions for both the neck and body templates.

# D O V E  T A I L

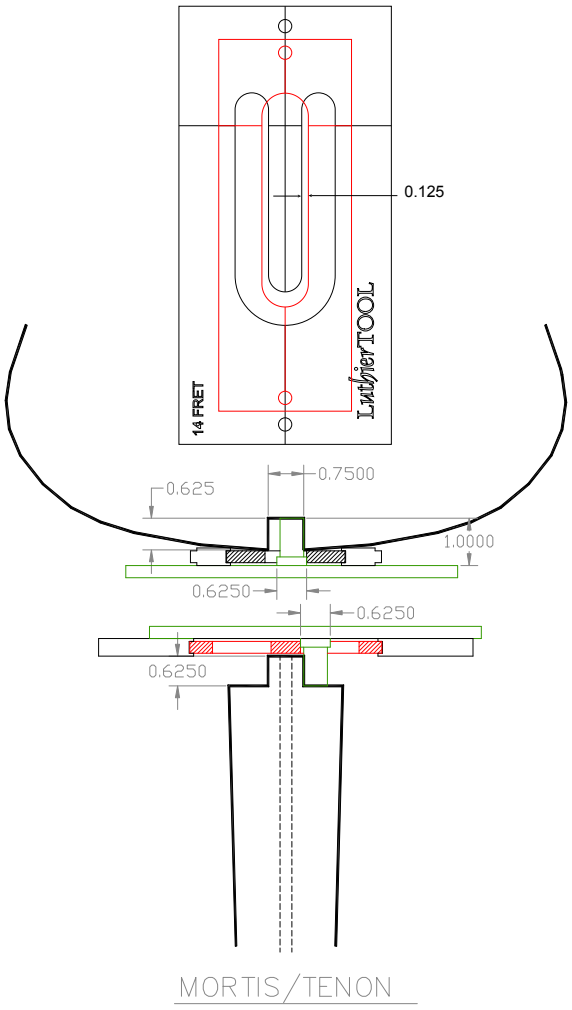



There are two styles of Dove tail templates, one for the 14 fret location and the other for the 12 fret location. We have elected to standardize the depth of the tenon and mortis. 5/8" for ,1/2" for tenon and a bit depth of 1". The purpose of this is to leave the bit depth the same for both the body and neck without having to adjust it.

We recommend using a 7 degree dove tail bit 1/2" shank and a 5/8" template guide. Also a router base of 7".

You may prefer to adjust for neck joint fit. This can be done by adding paper tape to the template edge that requires adjustment.

# S T R A I G H T  M O R T I S  a n d  T E N O N




There are two styles of Mortis/tenon templates, one for the 14 fret location and the other for the 12 fret location. The depth of the bit can be adjusted accordingly.

We recommend using a 1/2" diameter bit with 1/2" shank and a 5/8" template guide.

You may want to add some paper tape to the tenon template edge to adjust for fit.