Building of the Native American Flute

By Woodwindflutes.com
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WoodWindFlutes is proud to provide you with our detail flute building diagrams and design documents. These documents contain all the information you will need to build a quality Native American Style Flute.

For more information please see us at www.woodwindflutes.com Or contact us at: scottj@woodwindflutes.com
Building of the Native American Style Flute can be a complicated process, that seems to test the patience of many of the best craftsmen. However, over the years of building and sacrificing my flutes to the burn pile, I have come up with a few tips that I think will make flute building a very enjoyable task.

First off I must say the instruction, diagrams and outlines in this document is strictly in reference to using our CNC cut flute blanks from www.woodwindflutes.com. That’s not to say you can’t create your own flutes from our dimensions and diagrams, however results may vary to a great degree as we have crafted our blanks to reduce the complexity of flute building getting you faster to finishing and playing your flute.

*Where do I Start?*

You should have received your flute blanks from us in either a 30” x 1” bore, 24” x 7/8” Bore, or some other special cut length and bore diameter that you requested.

~ *So, the good news is much of the hard work is done.*

Here we go:

**Step 1:** You’ll want to establish the **Cutting Edge**. What is that?? It’s probably one of the most important pieces to the overall sound of your flute. The cutting edge is where the air coming through the flute is **CUT or SPLIT** by a cutting edge in the middle of the flutes body (much like a knife cuts). If the Air is not cut with half going UP and half going down, you won’t produce a good sound...if any sound at all.
The best way to illustrate this process is for you to watch our video on YouTube about establishing the cutting edge.

Step 2: **Glue UP** - Before you start gluing your blanks together you may want to prepare the two halves for gluing. I start by lightly sanding any saw, or tool marks out of the internal chambers. We do use a CNC machine BUT it is cutting WOOD so no matter how accurate it is, the wood will ultimately win and move, crack, have defects etc. So PLEASE make sure the chambers are smooth, fill any cracks, or blemishes and sand down to around 300 grit level.

Next I like to coat my chambers (NOT the glue surfaces, cover glue surfaces with blue painter tape) with Clear Deft lacquer (Satin). No I don’t get a kick back from Deft, and I’m certain there are other products that could work just as well, but I’ve found Deft to give me very good results in the past. 3 - 4 Coats of Deft and let dry will do a fine job of sealing the chambers and making for an air tight fit.

Glue the two halves together using strong wood glue - I use TiteBond III because it’s water proof, and seems to be very strong. Use several strong clamps, maybe as many as 4 - 6 down the length of the flute. Be CAREFUL Not to clamp so hard you crack the
flute. Place scrap wood blocks under the clamps that are larger than the flute blank to protect it.

You will experience squeeze out on the inside of the bore and internal chambers.

~ How the heck do you get that out?

Well getting glue squeeze out of the main chamber is not that difficult as it’s big enough to send a swab or rag down. However, the blow hole, and Slow Air Chamber is a different situation. I use a Rifle Cleaning Rod, or a wooden dowel rod, and place strips of old T-Shirt around the rod like a Big Cotton Swab. Make sure you WET down the T-Shirt strips with water, water will dissolve the TiteBond III and clean out the squeeze out. But don’t totally soak the inside of your blank as that could wash out some of the glue. Just dampen the strips so it will clean out the glue on the internal surfaces.

Step 3: Shaping - shaping your blank is where your personal touch really comes into play. How you shape it, and what it looks like is totally up to you. However, I would recommend a few things that have been beneficial for me.

1) I rough turn my flutes on a wood lathe. Certainly, you don’t need to go out and by a lathe if you don’t have one. But it sure takes off allot of rough material in short order. Some builds will simply sand with a belt sander, or electric sander until they get it looking like they want.

2) Once I’ve rough turned it to mostly round, I start shaping with a spoke shaver. A WHAT?? I haven’t seen one of those since I was a kid. Yes, a cheap (but sharp) Spoke Shaver Hand Plan will render beautiful results, and is quite pleasing to use if it’s sharp.

3) Try NOT to get your bore wall thickness less than 3/16” of an inch thick. You can leave it a little thicker, but it just adds to the weight, and thinner will make your flute prone to cracking. Also, sometimes the sound can be affected by the wall thickness, so try to stay around 3/16”.

Step 4: Fundamental Note - Well here is where the “rubber meets the road”. Time to blow through it and see what voice it has. Get yourself a good Guitar Tuner, or you know there is an “App for that”. I use an IPhone App Called TE Tuner, but there are many out there that work just fine for both IPhone and Android, just pick one.

Now you’ll need to blow thru the flute and see what Fundamental Note is coming up on the tuner. Most likely it will NOT be dead on and you’ll need to tune it to achieve the Note you WANT. So, let’s say it’s blowing a F# and you want it to be a G, then we need to bring UP or raise the pitch higher to get to a G. Rule of thumb: Removing Wood will SHARPEN a note, adding wood (which is not easy) will FLATEN a note. So, we need to sharpen it to get to a G. Go over to the band saw, or get out a hand saw
and cut off ONLY about 1/8” of wood off the FOOT END of the flute (so the end furthest from your mouth). Blow through it again and see what the tuner says....it should be slightly higher, or sharper. It won’t be a lot, but keep cutting small amounts off the end of the flute until it tunes to the note you want. This is now your FUNDAMENTAL NOTE.... it’s tuned to a G, or F, or whatever you think you need it at. Remember that note, as this step will be important when you go to tuning the playing Holes later.

Step 5: It’s Time for Playing Holes - your almost there! This is another area where I’ve created a video to best illustrate how to do this process. I would recommend you watch the video a few times, and get it all laid out before you start.

Step 6: Make yourself a Totem or Fetish Block

A Totem is the nice little block that’s placed on top of the focus channel to force air toward the cutting edge. It’s very important to have, as the flute won’t play anything without it. However, as long as it’s FLAT on the bottom and cover the entire focus channel (not over the True Sound hole) it will work just fine. You can make it look however you like, from hand carved characters to a simple block of finished wood. Doesn’t really matter to anyone but you and how you want your flute to look. If you
really just don’t want to worry about making one or you want your friends to think you hand carved a totem, then take a look at our Pre-made Totems on our website.

YOUR READY TO FINISH IT

Well you've made it to here, congratulations!

Finishing a flute comes with as many preferences as it does with the people building them. I’ve been asked what’s the best finish to put on? Well that depends on what you like visually and what is going to best protect the wood. First and foremost, the wood needs to be protected from moisture. Both externally and internally your flute will absorb moisture from saliva and humidity from the environment. Here is what I use, and why.

I like coating my flutes in Tung Oil, either by immersing them in a container of Tung Oil or using a paint brush. I have taken a 3” piece of PVC pipe and capped both ends, fill the pipe about ½ to ¾ of the way full of Tung Oil and immerse the flute into the container. Leave it in the Tung Oil for about 15 - 20 Minutes and pull it out and hang it on a hook in the shop. Let it dry for the recommended time from the instructions on the can. Then you may want to do several coats just like the last, maybe 2-3 or more coats. WHY do I do it like that. 1) Tung Oil especially Tung Oil that’s used for cutting boards is usually Food Safe, do you really want your mouth on Polyurethane??? 2) Submerging your flute in Tung Oil will help to coat, and seal the inside and outside. Remember your working with wood, it always moves, expanding and contracting with moisture at least UNTIL you seal it. Once you finish it with a strong coat of oil, it will help to reduce the movement and prolong the life of the flute dramatically.

I’m not sure there is a wrong way to finish your flute. I’ve heard of people painting, spraying with Acrylic, waxing, and covering them with furniture polish. Really, it’s what works for you and what you’re comfortable with using.
As always, we at WoodWindFlutes.com are committed to providing you with the resources, supplies, and education to building the finest flute you can craft. If you have any questions, please reach out to me Scott Jones personally and I’ll do my best to help you thru any issues that may arise.

HAPPY BUILDING!!

Scott A. Jones
scottj@woodwindflutes.com
www.woodwindflutes.com

See Additional Diagram Below:
Placement of the playing Hole # 3 is very important, follow these steps:

1) Measure from the CUTTING EDGE to the Foot End of the flute and write that number down.
2) Divide your measure length in HALF and place a mark with a pencil on the top of your flute (This will be your CENTER MARK).
3) Now move down toward the foot of the flute ¼” FROM YOUR CENTER MARK → (See center mark below) and make a MARK, this will now be your #3 HOLE.
4) ALL Holes are now measured from the #3 HOLE from here on out.
5) Measure down toward foot of flute from #3 HOLE → 1 1/8” and place a MARK this will be your #2 HOLE.
6) Measure down toward foot of flute from #2 HOLE → 1 1/8” and place a MARK this will be your #1 HOLE.
7) Measure UP from #3 HOLE ← 1 ¼” and make a mark, this will be your #4 HOLE.
8) Measure UP from #4 HOLE ← 1 1/16” and make a mark, this will be your #5 HOLE.
9) Measure UP from #5 HOLE ← 1 1/16” and make a mark, this will be your #6 HOLE.
10) You now have all Six Holes marked out. If you want a 5 HOLE flute then just don’t drill out HOLE # 4.

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![Finger Hole Placement Diagram](image-url)
# 6 Hole Flute Tuning Diagram

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