BUILDING A NOESS KILLER MOOK JONG

A Construction Guide with Associated Miscellaneous Musings From

NOESS LLC

Revision A

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ONLY A FEW EXAMPLE PAGES ARE INCLUDED SO THE TABLE OF CONTENTS IS NOT SHOWN

INTRODUCTION

This package of information from NOESS LLC will show you how we build our model LN Mook Jong.

Caveat Emptor Caveat Emptor Caveat Emptor

There are a number of do-it-yourself books available that teach making a jong out of pipes and telephone poles. This is NOT one of those books. Building our jong is not a simple undertaking. It is a complicated woodworking project that requires a fair degree of technical skill. It also requires a lot of power tools in order to complete it in a timely manner. Even so, many of the processes can be done "by hand" even though it will take considerably more time than using the power tools, jigs and fixtures we show in this guide. Our construction time when building a single unit is upwards of 40 hours. If you are not prepared to put some real effort into the project, this instructional product may not be the right one for you.

BY THE RETENTION AND USE OF THIS GUIDE, YOU ACKNOWLEGE THAT NOESS LLC AND ITS MEMBERS ARE IN NO WAY RESPONSIBLE FOR YOUR ACTIONS, NOR ARE WE RESPONSIBLE IN ANY WAY WHATSOEVER FOR ANY INJURY OR LOSS SUSTAINED IN YOUR CORRECT OR INCORRECT EXECUTION OF THESE INSTRUCTIONS.

A personal note from the author, designer and builder, WE Wood Jr.: *I started doing woodworking projects in my grandfather's shop back in the 1950's. I've carried on as both an amateur and paid professional since then. Having built and sold a lot of "stuff" over the last 50 years, you can see one of my published works in the second Design Book from Fine WoodWorking (The Taunton Press ISBN 0-918804-07-8).*

Like many other woodworkers, I've always been interested in creating unique or at least, very limited productions. This desire presents a monumental challenge to full time professional woodworkers because there is normally a significant investment of time and money required to do the prototyping necessary to "tune" the product to its personally acceptable level of quality. Meanwhile the bills keep coming in. This construction guide represents a year of prototyping thru seven iterations. I've decided to publish it because: 1) I enjoy teaching (and have been a technician and technical training specialist in telecom/datacom for over 40 years); 2) This is a "way cool" product and I want to share it with other woodworking fans of martial arts; 3) It serves to show the degree of labor required to build one of these things and why we decline goofball requests to sell them for $250; 4) Sitting at a computer keyboard is a lot quieter (and safer) than shoving stock thru a planer and the electron dust of the former causes significantly less sneezing than the latter!

I've tried to write this guide to accommodate both those who want to "getter' done" directly and those who need significantly more instruction in the techniques I use to build the jong parts. I've also used a very "conversational" style because after so many years of classroom instruction, it's what works best for me.

Those of you who are experienced woodworkers and tactile learners may just look at the drawings and parts lists and go to it, while skipping my witty (some say only half that) asides and comments. Those of you who are less experienced, or process learners, can read the step-by-step text and my accompanying personal musings on techniques to build your mental map before proceeding.

But, I strongly suggest even to the getterdones, that they too read the whole document before starting. I write this because they may want to modify some of my steps to suit their own style and won't know what mine are until they are fully read.

No matter your learning style, YOUR WORK STYLE SHOULD BE SAFE. To paraphrase Norm (i.m.h.o., the best craftsman on TV), READ AND FOLLOW YOUR OWNERS MANUALS INSTRUCTIONS CAREFULLY.

You are responsible for your own actions. If what I write or show you in this manual looks unsafe for you to do….then don't do it! Figure out an alternate way that is safe for you to do, or get a professional shop to do it for you! In some of the steps I've suggested several ways that a process can be accomplished (based on my own iterative learning during successive prototyping models) but ultimately YOU ARE RESPONSIBLE FOR YOUR OWN ACTIONS. "No job is so important nor service so urgent that we cannot take the time to do our work safely" are the words on the plaque that was posted in every telephone company facility I worked in for over 20 years. I still follow that directive in my own shop today, and so should you.

LIST OF POWER TOOLS

Partial list of power tools we use: table saw, radial arm saw, miter saw, band saw, thickness planer, drill press, bradpoint bits, forstner bits, wood lath, jointer, stationary belt sander, stationary router, spindle sander, biscuit cutter, saber saw, hand-held router, variable speed drill motor, disc sander, orbital sander and angle grinder.

LIST OF HAND TOOLS

Partial list of hand tools we use: large rubber mallet *(the most important tool in my shop – used to beat the stuffings out of anything that goes wrong – and something will inevitably go wrong),* hand saw *(I prefer the Japanese style that cuts on the out stroke because it generally keeps me from getting too far in to my work),* various chisels, wood rasp, wood file, flat and Phillips screwdrivers, ½" wrenches and sockets, measuring tape and rulers, marking tool, square, an accurate angle gage, three or more band clamps that can form at least a 13" circle, a never ending supply of bar clamps and other stuff that I'll think of as I write the text for all the steps.

Question for WE. *Geese WE, must we have all these tools (especially the power ones) in order to build the jong?*

Answer from WE. *No, many of these tools just make the construction easier and faster than doing it by hand. You should note however that they do significantly contribute to the accuracy and final quality of the finished jong. As an example, depending on the type of bit being use, drilling consistently accurate holes in Douglas fir (especially endgrain) is close to impossible if you use the bit in a hand-held drill motor. Only a drill press or horizontal bore device will do it in a consistently accurate manner. In several operations you will have to intersect a vertical hole with a horizontal one and it's very, very difficult to do this by hand (personal experience speaking here folks). Of course, you may actually need fire wood and kindling where you live, in which case you should ignore the preceding info.*

Please also note that you may certainly use hardwood instead of fir for the body and frame, but unless you have a usable tree in your yard, the costs will be much higher. Especially after you've cut that high dollar hardwood board three times and it's still too short, the very difficult to locate Acme Board Stretcher Tool will add significantly to your construction cost.

MATERIALS LIST - Lumber

List of lumber for body:

10 ea 2x4x48" clear, dry FIR (Part H)
4 ea 2x6x12 and 2x4x12 clear, dry FIR (Part H Caps)
9 ea 1x3x26 clear, dry BIRCH (Part J)
2 ea. 1x6x18" clear, dry BIRCH (Part K)
2 ea 1x6x10" clear dry BIRCH (Part K)
2 ea 1x4x18 ½" clear dry BIRCH (Part K)
2 ea 1x4x11 ½" clear dry BIRCH (Part K)
2 ea. 1 ½ x 1 ¾ x 64" clear, dry OAK (Part L)
12 ea 1x2x2" clear, dry BIRCH (Part M)
12 ea 3/8 x 3" BIRCH dowel (Part M)

List of lumber for frame:

2 ea 2x6x65" clear, dry FIR (Part A)
6 ea 2x6x26 ½" clear, dry FIR (Part B)
2 ea 2x6x48" clear, dry FIR (Part C)
2 ea 2x6x60" clear, dry FIR (Part D)
1 ea 2x4x60" clear, dry FIR (Part E)
4 ea 2x4x4" clear, dry FIR (Part F)
4 ea 2x6x15" clear dry FIR (Part G)

MATERIALS LIST - Hardware

SCREWS:

20 ea 3” colored deck

BOLTS:

28 ea 5/16x6

18 ea 5/16x3

4 ea 5/16x3

NUTS & WASHERS:

4 ea 5/16” nuts & 50 ea ¼” washers

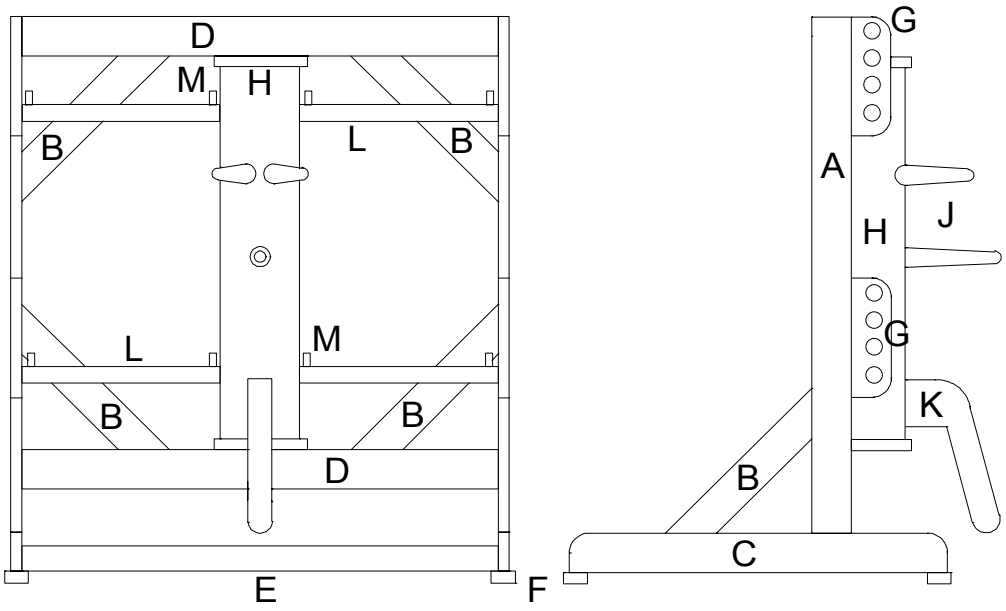
CROSS DOWELS:

46 ea 5/16-18x1-3/16 (13-CD040 from woodpeck.com)

THREADED INSERTS:

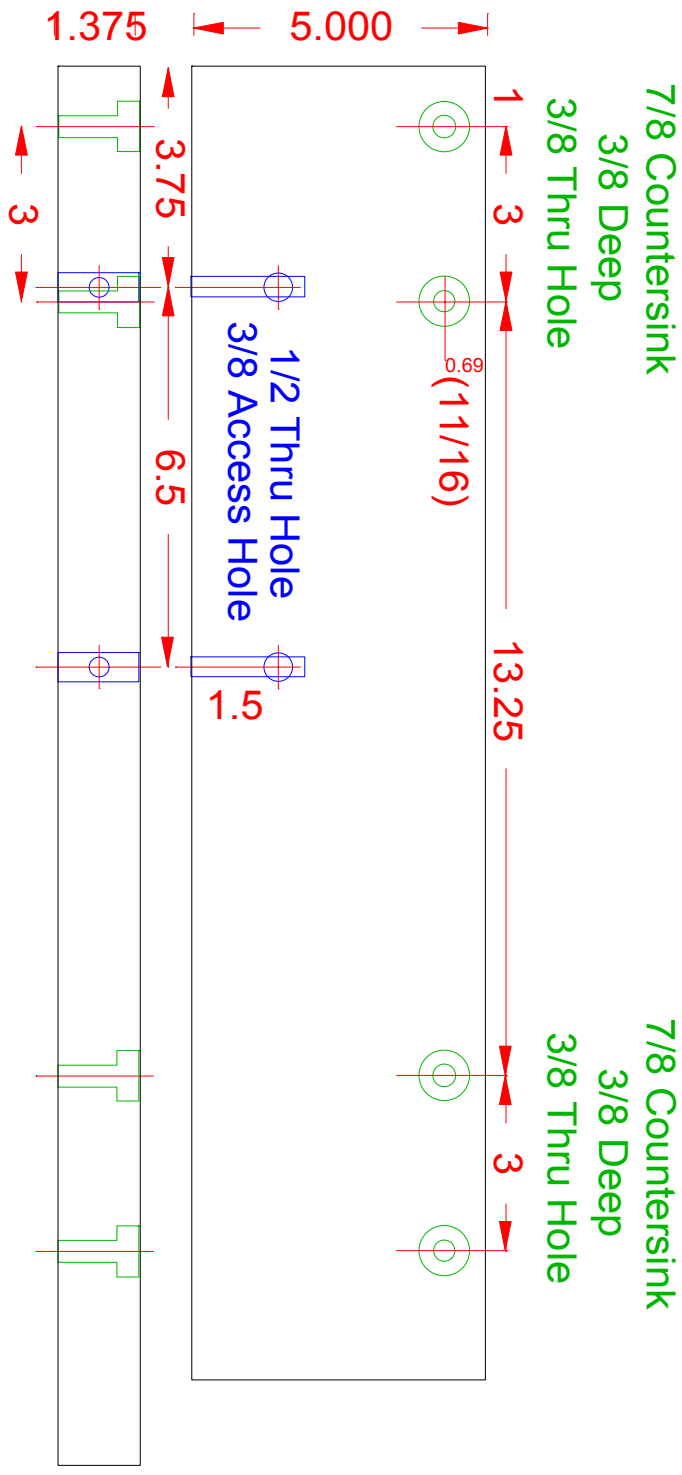
4 ea 5/16-18 (28811 from rockler)

Drawings – Complete Unit



Here are the front and side drawings with all the parts labeled so you can get a clear overall view of the complete unit. Also note that this drawing is just a little different than the Revision A picture on the cover. This guide and these drawings are for our improved Revision B unit. I shortened parts "A" just a little so the "G" units meet them flush and I added the "B" braces to the bottom cross-member "D" because it adds to the frame's strength and visual balance. These changes bring this LN model into congruence with our TQ unit so that we now only build one free-standing frame style instead of two.

On the following pages are the individual labeled parts. I've put just one part on each page in order to make their initial view and printing as large as possible. Even so, some of the dimension values and lines are still very small unless you view them at 200 or even 500%.



Close-up of top section of Part A

Initial Construction Steps

1. Mill all of the fir to the same 1 3/8" thickness. *This is especially important for the jong body staves. The angles to be cut and subsequently fitting of these parts in later steps require them to be very close in thickness.*

2. If necessary, mill the 4/4 hardwood stock to the same thickness. *(This is particularly important for the stock that will make up the leg. The two sub-sections must fit tightly together to make a completed leg and will not do so if the boards are each a little different thicknesses.)*

We use a two speed, three blade thickness planner with the final pass on slow feed to get an almost finished surface. This is perfect for the glue-up steps and produces a surface that needs only a little sanding to take a finish coat. If you don't have one of these machines, get the lumber yard to plane your boards.

Here's a close-up picture of the squared holes for the leg and arms in the jong body. The offset of the arm holes is what enables the arm tips to be parallel (or significantly not parallel if you insert them upside down).

Here's a close-up of the matching offset of the arms that allow (coupled with the body hole offsets) parallel arm mounting. You can also see the not-so-great-workmanship saw marks I left from cutting the square part from the arm's rough blank. The material in this picture is oak but I've found that I prefer birch for the arms and leg.(but of course, the customer gets what ever they want me to use). It turns on the lath like butter on a hot corncob, really yummy. Oak smells a bit like baby puke to me…if you don't mind that…oak will work just fine.

Cutting Stave Holes

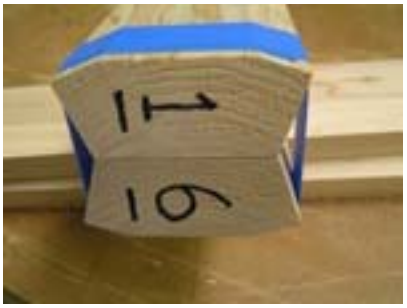
Step 1: Mark each specified stave for holes. *You have the specs back on drawing Part H, LN Body.*

Step 2: Cut holes.

Question for WE: *Those two instruction steps were even more than less than explanatory, so for us "process" folks, can we get a little more DETAILED INFO???*

Answer from WE: *Yes, dear (ooh, after 37 years that just rolls trippingly off the tongue).*

The center arm holes in staves 1&6 can be cut with a saber saw (or by hand with a coping saw) after first drilling pilot holes at each corner of the marked square holes. You can do these pilots separately but a better way to assure hole alignment from front to back of the body is to temporarily tape the two staves together (after making sure the ends are precisely even) and work them as one unit.



The leg pilot holes in staves 1&6 can be done the same way and at the same time, BUT BE SURE TO NOTE THAT THE LEG HOLE IS 4" LONG BY 1.5" WIDE.

These are close-ups of stave 1 on top of stave 6 showing marks for the lower (green - center) arm hole.

Step 3: Mark stave center. **4:** Mark to center of hole. **5:** Mark hole boundaries.↑

Step 12: Notch out the "half" hole to the line you marked for depth.↓


I found that using a radial arm saw works great for this. Much easier to see the lines than using the table saw. The main thing to be aware of here is that the side of the stave you're cutting must be horizontal to the travel of the saw blade. You can see in these pictures that I use one of the scraps with the 18° side as a "filler" fence behind the stave to make that so.

If you don't have a radial or table saw, you can do it manually with a handsaw and chisel. I don't recommend this method because it takes a lot more time and SKILL.

Using a biscuit cutter is the easiest way to get the cuts precisely 90° to the edgeface of each stave, which they must be.

Step 2: Set the biscuit cutter to 18°, align to the marked lines on each stave, an' gitterdone!

Step 4: Grind off the corners and flats of the icosagon to make it round.↓

You'll need to have the body rotating slowly to do this step. You can have a helper spin it by hand for you, or use a motor like I do, or let the tool pull it around. If you get the angle just right, any of these three tools will make the body rotate.

Start with a VERY rough grit and work up. This process will also make A LOT OF DUST. I do this step inside of a makeshift dust hood (clear plastic sheeting held up with plastic sprinkler pipe) that I hook my vacuum system to. I also strongly recommend a professional dust mask (but the high grade white surgical looking things are better than nothing)

The left picture is an angle grinder with a 6" disk (this tool works the best). The middle picture is a belt sander (tends to dig into the wood).The right one is a hand drill with a 6" disk (doesn't have the power of a grinder and is more difficult to hold at the correct angle).

If one had unlimited resources, a milling machine that rounds over the individual staves BEFORE glue-up would be a much better way to make a round body. Which reminds me, don't forget to send any of your surplus spondulics to yours truly.

Actually, you do have one other option if you don't want to do all this rounding over work .You could wrap the icosagon *with some type of gym mat or foam pad so you don't see the unfinished wood. We do this on our MinniMook model designed to be safe for small kids to use. We've never done this on our full size units because we see them as pieces of art that should be displayed, in addition to being used. But, aren't you glad you read all the way to this point before deciding to make pounds and pounds of sanding dust?*

Arm Construction

Here's a picture of the three arms you'll need to make. These are oak, but as I wrote earlier, I like using birch because it smells better and turns so well on the lath. You can see the offset of the square sections that allow parallel placement in the body.

Step 1: Glue up 3 arm blanks from 9 boards each 1(3/4)x2 ½" x 25".

Step 2: On each blank measure down 12" and mark it all the way around the blank's circumference. *The example pictures that follow are not full length because of my camera limitations. I have to make them shorter to get all the lines in a picture Be sure to measure carefully on your arm blanks.*

Step 3: Find and mark the center on each end of each blank.↓

This picture shows the blank's center and the cuts for the head of the lath to lock into.

Step 4: On the end of the 12" section on each blank mark out a 1 ½" square using the outer edge of the center board as one side of the square.↓

Here's some photos of an oak leg's knee joint.

Here's some photos of a birch leg's knee joint.

You probably noticed that I didn't have you drill the hole in the thru shaft for the stopper pin yet. We'll have to make the pins before we'll know exactly where to place that hole.

Frame Construction

The individual part drawings are detailed enough to mark and drill all the frame parts so this section will only outline some of the additional techniques and caveats you may need.

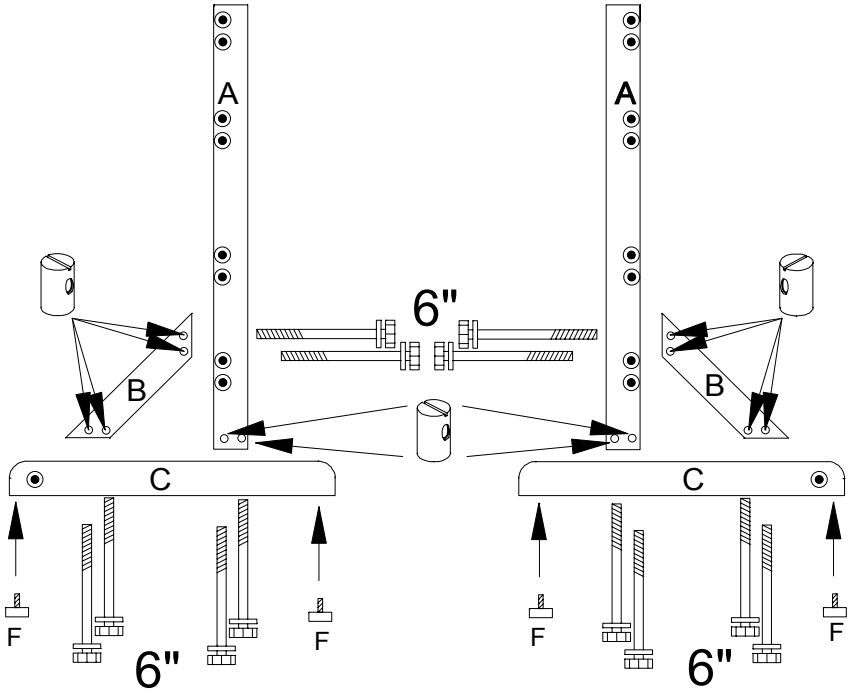
Step 1: Make sure all frame boards are dimensioned at 5” wide by 1 3/8” thick.

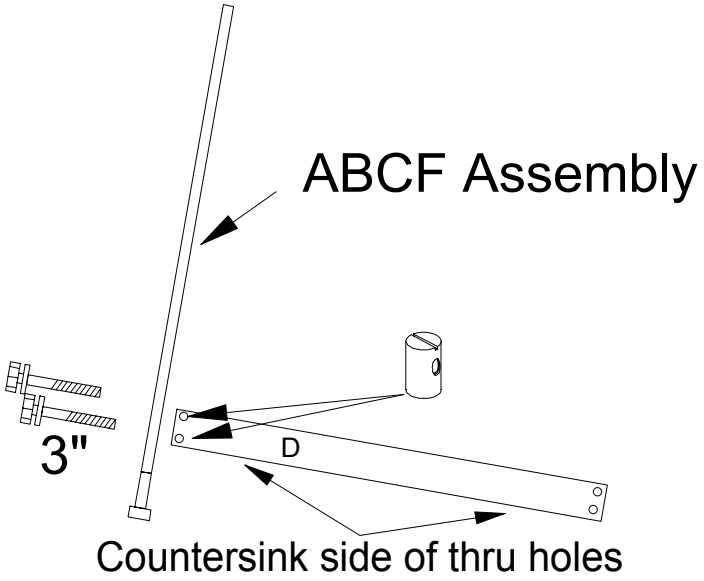
This is a picture of Part A with G’s attached and a close up of the holes to secure Parts D. Getting these holes accurately positioned is VERY important because the bolts must meet the steel cross dowels strait on or they won’t screw in as you can see in the picture below left.

These are the type of bits you should use. The brad points are very helpful in getting a precise hole location.

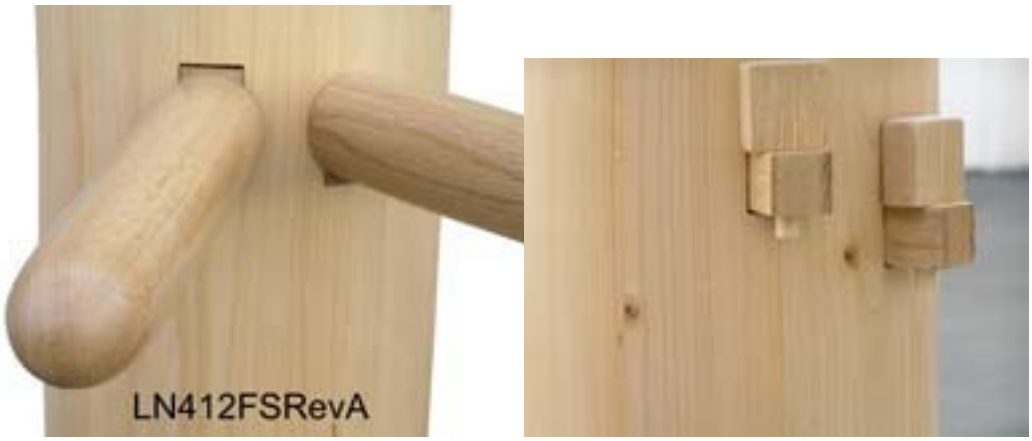
In a pinch you can get away with spade bits and standard point drills…if you must.

Final Assembly





Miscellaneous Photos



Here's a close up of the arms and their stopper pins on the back side.

Here's a picture of our RevA sitting in the driveway behind the shop.