

Modeling The Armed Virginia Sloop Chapter 1



A Practicum by Robert E. Hunt

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1. Assembling The Framework

Welcome to Chapter 1 of the Armed Virginia Sloop practicum. In this chapter we will build the basic framework of the model. The framework consists of a keel, a center keel, bulkheads and filler blocks. Each of these items will be covered in this chapter. So let's begin.

1.1 Introduction

First, let me say welcome to the Armed Virginia Sloop practicum. For many years now practicums have been written for scratch-built models. However, the majority of model shipbuilders do not build from scratch, nor do they wish to learn how. Scratch building is a complex, lengthy procedure requiring special tools, a commitment of thousands of hours of time, and skills in woodworking, carving, metalworking and even sculpting at times. To some modelers, these skills come natural. But to many it can take years to master them or even become good at them. But what most modelers don't realize is that even building a kit involves much scratch building. The major difference is that a kit provides pre-milled stock, cast fittings, and to some degree, a set of instructions.

I have built kits for many years and gained much experience in figuring out what the instructions left out. It was a long road and many models were less than I had envisioned. When I first started building model ships, I had never heard of the Internet and was pretty much on my own. Living in a small town, there were no other experienced modelers to mentor me. I basically had to teach myself. My method was to learn from my mistakes. And believe me, I have made them all. I've probably thrown away as many models as I have finished.

The kits are often times flawed with poor quality materials, inaccurate plans, and vague, if not difficult to understand, instructions. Today there exist numerous forums on the Internet and the majority of questions and problems come from modelers building kits and running into these same problems over and over again.

After completing two scratch-built models through practicums and participating in other scratch-built practicums, I came to the conclusion that I was no longer enjoying the lengthy process of building a model ship from scratch. So I ordered some new kits. And what I had found was that things had improved since I last built a kit. A new set of kits were being developed with laser cut parts, parts that actually fit together. Plans had greatly improved and instructions were better as well. But I still saw the same questions being asked by modelers on specific methods for things like planking, coppering, painting, and finishing. It was then that I decided that the time had come for me to take what I had learned over the years and put it to meaningful use.

This practicum is not the first such detailed writing on how to build a model ship based on a kit. An earlier writing by Gene McClure was written based on the Mantua kit of HMS Victory. However, that kit is no longer available and has been replaced by a newer, less detailed kit. The kit I have chosen is one developed by knowledgeable and experienced people in the industry of model ships, the Model Shipways kit of the Armed Virginia Sloop sold only by Model Expo Incorporated and its authorized retailers. The kit was inspired by Clayton Feldman, MD of Seaways' Ships in Scale magazine.

Now one thing I want to emphasize is that my methods work for me quite well. They are not gospel. If you know of an easier method that works for you to perform a certain part of the construction, then by all means, use what works for you. Share your methods with the group if you like.

A forum has been set up on my website (<http://www.lauckstreetshipyard.com>) for this practicum. This forum is for paid participants in the practicum only. It is an un-moderated forum in that you may post your questions, comments or methods, without censorship, to the forum, so that other participants may benefit from them as well. I am owner of the forum and I will attempt to answer any and all questions posted in the forum. **Should you conduct yourself in an unacceptable manner in the private or public forums that I provide, you will be banned from these forums and no refund will be available. However, I will continue to support your practicum related questions through private correspondence. But I will not tolerate poor conduct in my forums and have, in the past, banned practicum participants due to improper conduct. I think that the majority of you understand the disruption such conduct causes and can appreciate my policies on this matter.**

If you encounter problems or don't understand a particular part of the practicum, post a question in the forum so that it benefits others. I will do everything I can to assist you and help you in building this model.

We will be building the model as the kit provides. The purpose of this practicum is to help the modeler, especially new modelers, understand the sequence of building such a model and standard methods that can be used on other models. It is not meant to teach kit bashing or scratch building. Other practicums I have written will at some point cover such matters as the complexity of the kit dictates.

This practicum is the first in a series of such writings and is the *Freshman Course* in my **College of Model Shipbuilding** series. Each practicum in the series takes the modeler further into the art of model shipbuilding by teaching new techniques and enabling the modeler to hone his or her model shipbuilding skills. These courses are meant to be progressive in nature and often previously covered material is not repeated.

Most of the construction of this model will be done with basic hand tools. As most modelers do not possess some of the more expensive power tools, I will be teaching this course based on hand tools so that it may benefit everyone. That is not to say that you must use hand tools if you possess some of the more expensive power tools. However, in the first chapter there are large blocks of basswood that must be reduced to smaller dimensions in which I do use power tools to make the cutting easier.

When possible, I will also specify where you can purchase a particular tool that I might use if it is still available and I will give the vendor's stock number. I believe that most of the tools I use today are still available. There's much work ahead of us so let's get started.

1.1.1 The Chosen Kit

The subject chosen for this series of articles is Model Shipways' kit, American Privateer, Armed Virginia Sloop, 1768. This model was chosen for a number of reasons. First, it is a kit designed for the beginner. The kit is an accurate model of an eighteenth century Virginia Sloop of War with laser-cut parts, quality castings, wood and detailed instructions and plans. The kit is reasonably priced, another quality many beginners take note of. And the model does not require a large inventory of special tools to build.

The kit is built plank-on-bulkhead and uses two layers of planking. The first layer is of basswood and the finished layer is walnut. The model may be painted or finished in its natural wood. I will be constructing the model with the recommended paint scheme. The model also comes with an attractive launching ways in stained basswood instead of the standard mounting system of pedestals.

The model is designed in 1/4" scale; 1/4 of an inch is equal to one scale foot on the actual ship. The finished model will be 31" long from the tip of the bowsprit to the end of the boom and gaff. The model will stand 22" high from the bottom of the keel to the top of the mast. The width at the widest point, across the lower yard, is 8 1/4". Overall, these dimensions are reasonable for setting the model on a mantle or in a small case.

Photo P1.1.1-1 shows the kit. There is a bag of planking and other wood pieces for fitting out the model, a plastic case with fittings such as cannons, blocks and deadeyes, eyebolts, cleats, grating strips and such. Another small bag contains the nine spools of rigging line in various diameters, black and beige. And there are nine sheets of laser-cut parts. An inventory sheet is included so that the modeler can check his or her kit to see that all parts are included. There is a detailed instruction booklet written by Ben Lankford and seven sheets of detailed plans drawn in the scale of the model. The instruction booklet also has detailed drawings and photographs of the model.



P1.1.1-1

Having built many of the European kits over the years, I can honestly say that this is certainly one of the finest quality kits I've worked with. A skilled modeler would have no trouble whatsoever in building this kit - but, what about the beginning modeler?

I know that when I first began building model ships, I was somewhat overwhelmed with the detailed instructions and plans and so many drawings. I had built many plastic models; so modeling was not new to me.

But model shipbuilding, even from kits, requires some skills the average modeler may not have perfected. Even though a great amount of work has been done for the modeler before hand, wood is milled to precise thickness, parts are laser cut, many pre-manufactured parts are included, there's still a lot of construction that must be done. Many parts are made from strips of wood and have to be cut to length as taken from the plans. Planking a hull can be very challenging for a beginner.

With all of these challenges in mind, it is my intention to take the kit's plans and instructions and expand on them, step by step, and show techniques not covered by the instructions. The purpose of this practicum is to help teach a new modeler not just how to build this model, but how to use the skills and techniques learned so he can build other model ships as well.

1.2 Format of This Practicum

I will be using a special format throughout this practicum. First, each chapter will be broken down into sections and sections will be broken down into subsections. For example, Chapter 1 is on the Assembling The Framework. That chapter is broken down into several sections:

- 1.1 Introduction
- 1.2 Format of This Practicum
- 1.3A Word About Tools

Subsections will be numbered according to their section numbers. An example:

- 1.1.1 Cleaning the Laser Parts
- 1.1.2 Cutting the Rabbet
- 1.1.3 Attaching the Keel, Stem and Sternpost

At the end of each subsection, a summary will be provided with checkboxes that you can use to check off the construction as it is completed.

Summary

- Remove all laser parts that make up the keel, center keel and bulkheads from their billets, using a #11 X-acto blade in your knife.
- Using a sanding block, such as the True Sander or other hard block, clean up the edges of the laser cut parts, removing the angled cut caused by the laser.
- Trace the center keel from your plans and mark the bearding line. ...

This will enable you to first read the subsection to understand what you must do, and then keep track of your completion as you progress. It is hoped that this format will help you to simplify the complexity of building the model and to complete this practicum.

Should you encounter a problem or have a question you wish to post in the forum for the group's benefit, or to me directly, you can then reference the section or subsection by number making it easier to know exactly what area of the practicum you are having trouble with.

1.3 A Word About Tools

I guess I should say something about tools. Over the years I have accumulated a number of tools and have become accustomed to their use. That is not to say that the list I'm going to give you is gospel. And certainly, not all of these tools are required to build the Armed Virginia Sloop. These are tools I like to use and it took me years to acquire them.

I am not saying you need to rush out and buy all of these tools before starting this practicum. If you've been building model ships for a while, you probably have a lot of these tools or equivalents. Some of these tools are a must; some make the job go much easier. So I only list these because many modelers have asked me what tools I use to build my models. Where possible, I list the Micro Mark catalog numbers as I find that source to be invaluable to the modeler. You can reach Micro Mark at (800) 225-1066 or <http://www.micromark.com>. I am in no way affiliated with Micro Mark nor do I receive any benefits from them by mentioning them in this practicum.

Here are the tools that I've acquired over the years and use frequently:

1. No. 5 X-acto knife handle (Micro Mark #36117).
2. No. 2 or equivalent X-acto knife handle (Micro Mark #14351 or 70233).
3. #10, #11 and #22 X-acto blades (Micro Mark #14360, 36102 and 36113).
4. Micro Saw Blades (Micro Mark #14346)
5. Dremel Rotary Tool (Micro Mark #82592)
6. Helping Hands (Micro Mark #21120)
7. Weldbond white glue. (Home Depot or Lowe's)
8. Zap A Gap mid cure super glue (Micro Mark #80877 or 80878)
9. Z Ends for Zap A Gap (Micro Mark #80890)
10. Five minute epoxy (Home Depot or Lowe's)
11. Delta Scroll saw or Jewelers Saw (Micro Mark #22105)
12. Microlux Tilting Arbor Table saw (Micro Mark #80463)
13. Swiss style watchmakers tweezers (Micro Mark #19101)
14. Deluxe pin vise (Micro Mark #82110)
15. Dimensioned mini square (Micro Mark #82147)
16. Ponce wheel (Micro Mark #15200)
17. Steel machinist square (Micro Mark #10117)
18. Angled high precision micro shear (Micro Mark #80334)
19. Tweezers-nose pliers (Micro Mark #80338)
20. Mid size file set (Micro Mark #81063)
21. Stainless steel 6" ruler (Micro Mark #10114)
22. True Sander (Micro Mark #14475)
23. Micro drill bit set (Micro Mark #60362)
24. 3" Toolmakers angle plates (Micro Mark #60626)
25. Office clips, small and medium size
26. Pan vise (Micro Mark #21123)

27. Delta bench top mini disk/belt sander (Micro Mark #82218)
28. Preac table saw
29. 9" band saw
30. Mini wood lathe with duplicator
31. Optivisor
32. Proportional dividers
33. Cutting mat
34. Razor saw
35. Mini-MITE by Dremel
36. Ruler by Incra

There are probably other tools I use infrequently and did not mention. By the looks of this list, I should own stock in Micro Mark, perhaps we all should.

Now before you get excited, or maybe depressed over this lengthy list, let me say this one more time. You do not need to rush out and buy all of these tools. In writing this practicum, I have tried to mention the tools you'll need for a particular assembly as we go along and alternatives for those who may not possess some of the larger and more expensive power tools. Keep in mind, the Armed Virginia Sloop may be labeled a beginner's kit, but this is not a *simple* kit. It has many assemblies and will take time to construct. Use the tools you feel comfortable with and can afford to buy.

1.3.1 Some Supplies You Will Need

There are several items I use regularly in my modeling that do not come in your kit. So that you will be prepared when the time comes, here is a list of certain supplies you will find yourself using routinely:

- Weldbond White Glue
- Zap A Gap Super Glue
- Z Ends
- Five Minute Epoxy
- Tracing Paper
- Thick Card Stock
- #10, 11, 22 X-acto Blades and Knife
- 100, 150, 220, 330 and 400-Grit Sandpaper
- Polyurethane Satin, Wipe On Poly or Sanding Sealer
- Toothpicks
- Office Clips
- Rubbing Alcohol

Other items may be needed as we progress and I will try and give some advance notice of these items when they come up.

As to tools, once again let me say that you will be able to build the model with simple hand tools. However, there may be times when the job is much easier if some form of power tool is used. This kit is nearly 100% basswood. Basswood is a soft wood that can be cut fairly easily with a knife or razor saw. However, there will be times when I suggest substituting other materials to either make the job a bit easier or to improve the quality of the finished product. Whether you choose to follow my suggestions is entirely up to you. I will still follow the kit's supplied pieces and design as much as possible.

1.4 Copyright And Licensing Agreement

All writings, drawings, photographs or plans provided in this practicum are protected under Copyright laws and are owned by Lauck Street Shipyard, LLC. Reproduction of any part of this practicum, other than for personal use, is strictly prohibited. Distribution of this practicum to others without the author's permission is strictly prohibited and a violation of the author's copyright.

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Ok, that's the legal mumbo jumbo. It is hoped that you understand that to build a model and go into descriptive detail with photos to explain the entire process is difficult and challenging. The cost of this practicum is small and barely covers my costs considering the amount of time it takes to write the practicum, photograph construction, mail the CD's, and the costs of envelopes, postage, and so forth. I do hope that you will respect these copyrights and license agreement and you will abide by them. If you find it absolutely necessary not to adhere to them, please contact me first and explain your situation. I'm pretty darn easy to get along with if I understand the problem. Thank you.

1.5 Summary And Thank You

In summation, I hope that you will find this practicum useful and wish you success in completing the model. I will attempt to steer you clear of problem areas and keep the sequence of construction in a meaningful and useful fashion, so that we don't paint ourselves into a corner and accept mistakes that could have been avoided.

Upon completion of your model, if you will notify me by mail or email that you have successfully completed the model and the course, evidenced with a photo of the finished model, I will send you a Certificate of Completion for your perseverance and in appreciation of your efforts.

Please note that the photographs in this practicum have reference numbers on them that do not match the section numbers they belong to. This is the *enhanced* version of the practicum and the addition of drawings and practicum format has changed the section numbering. You may ignore the numbers on the photos, as the other practicums in the series no longer use them. The photos are numbered below each photograph according to the section and subsection they belong to and are referenced in this practicum accordingly.

Good luck and thank you for purchasing this practicum.

Bob Hunt
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Strasburg, VA 22657

1.6 Contributing Editor

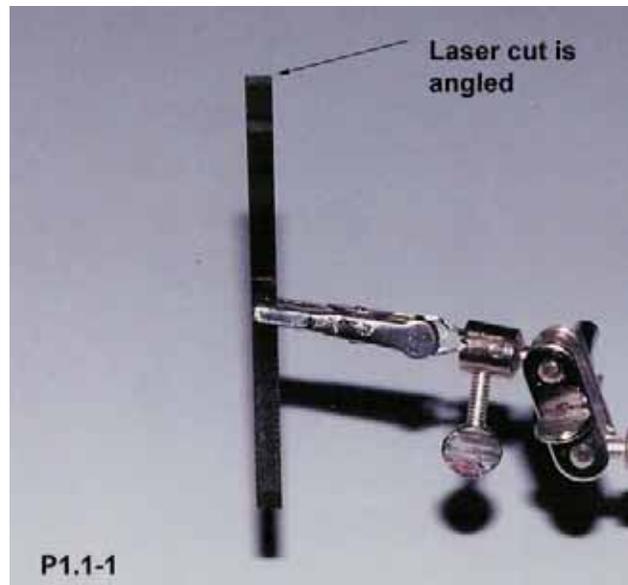
I would also like to thank my contributing editor, Gregory D. Meyer, for his outstanding contribution of drawings found throughout this practicum. This was Greg's first model ship and he was most generous in sharing his talents by creating excellent drawings to enhance this practicum and better explain the many steps in constructing the model. Thank you Greg, for making a good practicum even better. I'm sure those participating in the practicum will find your work to be a great aid in completing this course.

1.7 Assembling the Keel

We begin construction with the keel, as this is where most models begin. The keel is the lowest and principal timber of a wooden ship, which extends the whole length of the vessel and to which the stem, sternpost and frames of the vessel are attached. The keel is the backbone of the ship and is its strongest single member. In actuality, we will build a “keel assembly” – stem, keel and sternpost, which is attached to a center keel; this assembly will be used to form the hull. But before we start, let’s discuss laser cutting. There are some differences between a laser cut model and a non-laser cut model.

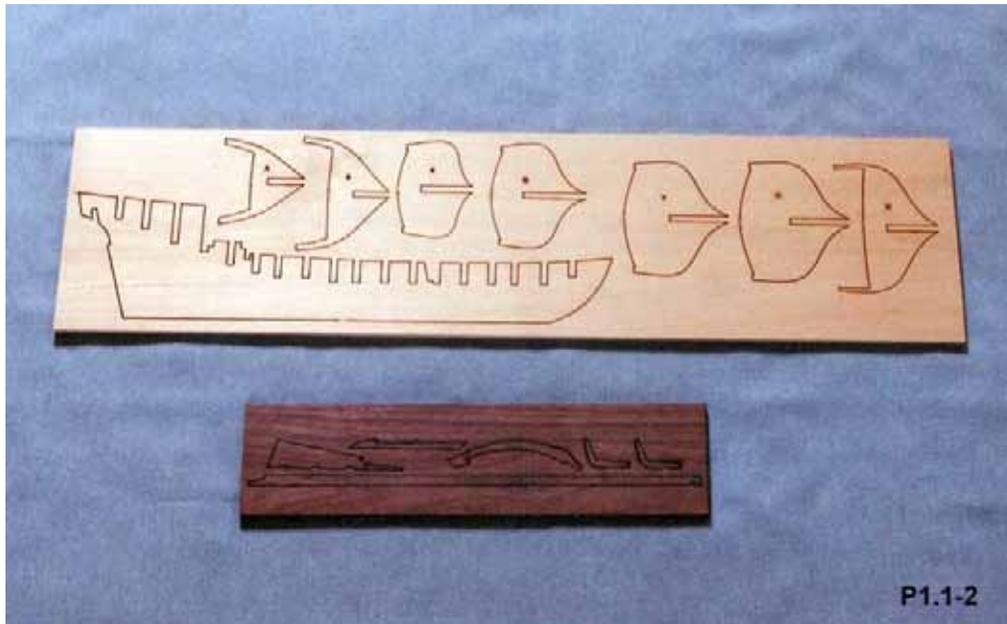
The laser cutting process produces two effects to the wood being cut. First, there is a burning of the oils in the wood. This produces a dark brown edge on all parts cut by the laser. This burned edge needs to be removed.

Second, the laser does not cut through the wood at a ninety-degree angle. As the laser beam passes through the wood, it begins to diminish in intensity. In doing so, the cut becomes slightly angled. This angled effect can be seen in photo P1.7-1 showing the stem of the model. This angled edge needs to be eliminated before parts can be glued together. If the angle were not corrected, before long the parts would be out of alignment and things would not fit properly in some areas.



P1.7-1

Photo P1.7-2 shows the billets of wood that contain parts to build the keel assembly. The main part of the keel assembly, the “center keel”, is a piece of basswood with slots in it to hold the bulkheads. Attached to the center keel are the sternpost, keel and stem, all these parts cut from walnut stock. In this photo you see some of the bulkheads with the center keel. There is another billet of basswood as shown in photo P1-1 with additional laser-cut bulkheads that you will need for this step as well.



P1.7-2

If you pick up the billet with the center keel, you'll notice that the part does not just drop out of the billet. Typically, very small tabs are left uncut by the laser. We will remove the center keel by cutting these tabs with a #11 X-acto blade in your knife. I first make a few cuts across the tab on one side of the wood, then turn the wood over and make cuts across the tab again until the knife has cut through the tab completely.

Take your time; be neat; be careful. If you try to force a laser-cut part from the billet, chances are you will break the part or cause it to splinter where the tabs still hold it in.

As an FYI, photo P1.7-3 shows some of the tools I use.



P1.7-3

Summary

- Remove all laser parts that make up the keel, center keel and bulkheads from their billets, using a #11 X-acto blade in your knife.

1.7.1 Cleaning the Laser Parts

Once the parts have been removed from the billets, each edge needs to be cleaned and squared. One tool I very much like for doing this is the metal sanding block that comes with the True Sander from Micro Mark (item #14475). The block provides a very hard, flat surface. It has four sides and you can attach the self-stick sandpaper that is used by many oscillating sanders. I purchased several grits, 100, 150 and 220 and cut strips to fit the 4 sides of the sanding block. I put one strip of 100-grit on one side, a strip of 150-grit on another side, and two strips of 220-grit on the two remaining sides.

By viewing down the edge of a laser part, you can see the side that has the angle in it. A small square can also be laid over the part's edge to reveal the "high" edge. Using your sanding block and 100-grit or 150-grit sandpaper, gently sand this high edge down. Take small swipes with the sanding block and check the part frequently. Basswood is soft and it is quite easy to sand too much off and end up in a quandary.

Sand all laser edges, truing them and removing burnt oils from the wood. Glue does not adhere well to a burned surface.

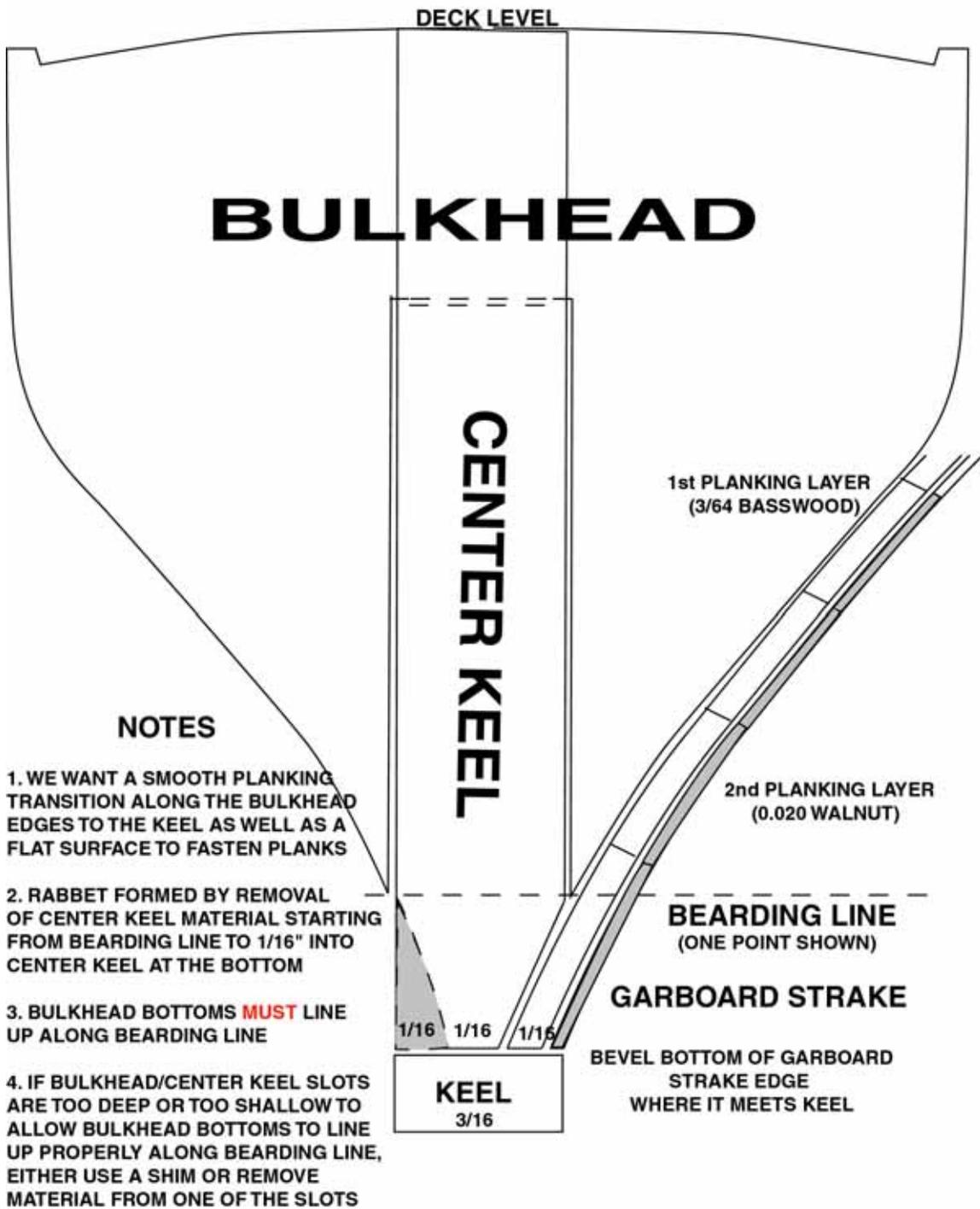
Once you are satisfied with your edges, test fit parts to the center keel. Make sure the fit is good.

Summary

- Using a sanding block, such as the True Sander or other hard block, clean edges of laser-cut parts, removing the angled cut caused by the laser.

1.7.2 Cutting the Rabbet

Next we draw the bearding line onto the center keel. The bearding line represents the transition line from bulkhead bottoms to the keel, stem and sternpost deadwood. This line also defines the start of the rabbet bevel. The purpose of the rabbet bevel is to make a smooth planking transition from the bulkheads down to the keel and to make a flat surface to fasten the bottom planks against. Figure F1.7.2-1 will help to show how the planking transitions into the keel at the bearding line.



F1.7.2-1

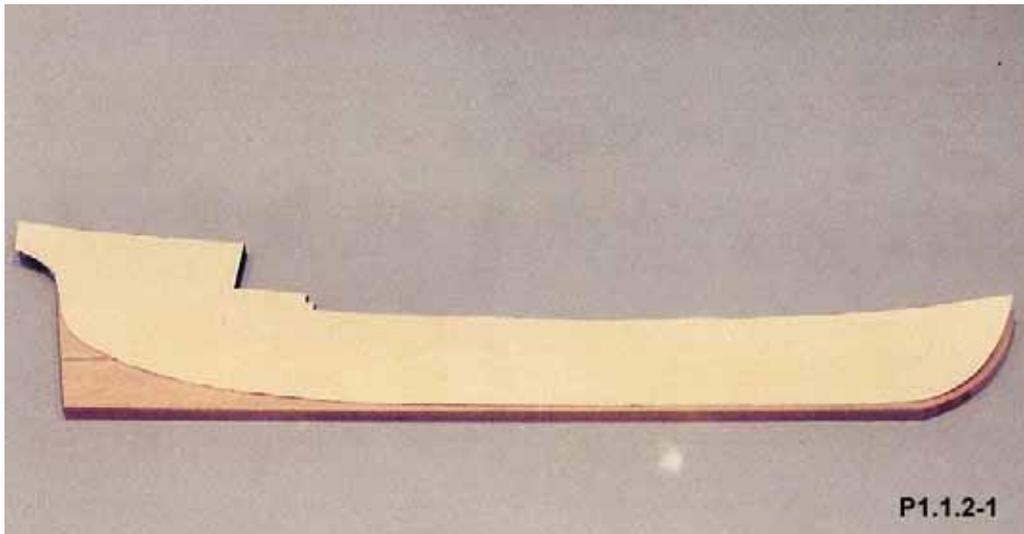
To make use of the bearding line, we cut a taper into the center keel, starting at the bearding line and extending to the outward edge of the center keel. Later, we will add the keel, stem and sternpost to the center keel and coupled with this taper will form a "V" or "L" trough for our bottom planks to tuck into. This trough

was called the **rabbet** joint. This is typical ship construction and I'm pleased to see that the kit elaborates some on this detail.

To mark the bearding line, I first make a tracing from the plans. Sheet 2 of your plans shows the center keel with the bearding line and rabbet line marked. Lay a piece of tracing paper or velum over the drawing and trace the bearding line. The bearding line runs from the top of the stem area, down, following the keel and then sweeps upward toward the sternpost. Once you have traced the line, also trace the general outline of the center keel along the top surfaces. It is not necessary to trace the notches where the bulkheads will go. We just need a general tracing of the shape so that we can later align the tracing with the actual center keel piece of wood.

Now cut out your tracing. Glue tracing using rubber cement to a thin piece of card stock; I use manila folders used in offices to store files in. Then cut out the tracing from the card stock.

You now have a fairly rigid drawing that should match your center keel at the top, revealing the bearding line at the bottom. See photo P1.7.2-1. Take a pencil and outline the bearding line on the center keel. Do this on both sides by flipping the pattern over and outlining again on the opposite side of the center keel.



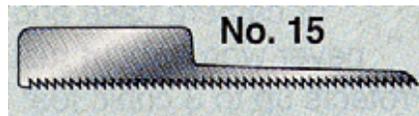
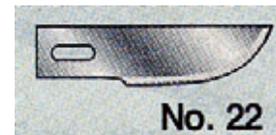
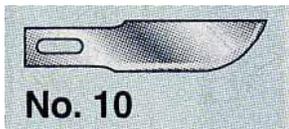
P1.7.2-1

Once the bearding line has been drawn, we need to establish a preliminary depth for our rabbet joint. To do this, I used a compass set to $1/32$ ". By running the compass along the outside edge of our center keel, **before** gluing the keel pieces on, we can do a preliminary cutting of the rabbet joint around the edges of the center keel. Photo P1.7.2-2 shows how I drew this line.



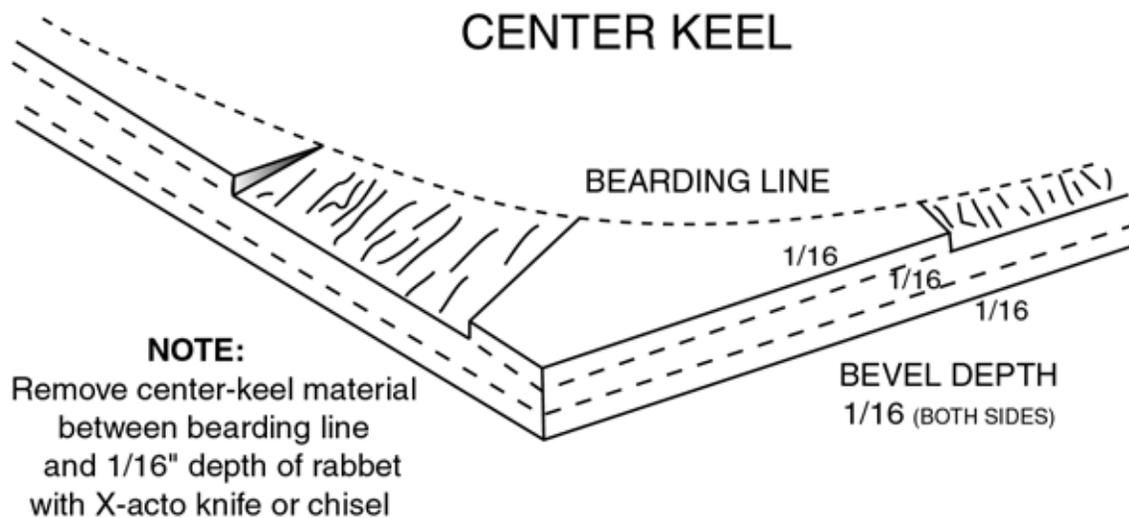
P1.7.2-2

I always find that a #10 or #22 blade works best for this type of cutting. See figure F1.7.2-2 below for some of the common X-acto blades used in this practicum. The curvature of the blade makes it easy to use as a chisel or gouge. You want to cut a beveled edge from the bearding line down to the outside edge of the center keel surface all the way around. The line you marked on the outside edge of the center keel defines the depth of this bevel. This rabbet will be refined after the walnut keel parts are attached. Its current purpose is to give some definition to the rabbet joint.



F1.7.2-2

The rabbet joint has a very odd and changing shape throughout. At some points the shape is that of the letter "V" but changes to the shape of the letter "L" at the sternpost and stern deadwood. However, for our purpose, we will make this rabbet more of a "U" shape for most of the joint. The reason for this is to better hold the planking once we apply it. Figure F1.7.2-3 shows how the rabbet joint is cut at the *stern deadwood* area; the area where the rabbet joint transitions from the keel to the sternpost.



F1.7.2-3

Make your bevel on both sides of the center keel. Be neat and do not extend inside the bearding line. At the stern area, commonly referred to as the stern deadwood, the shape becomes more like a long flattened out area where the ends that meet the keel is "L" shaped or at a ninety degree angle. F1.7.2-3 above and the instruction booklet show this very clearly.

The center keel is only 3/16" thick so we must be careful that we leave sufficient edge for the walnut keel pieces to be glued on. Once you have cut this preliminary rabbet joint around the outside edges of the center keel, it is time to glue the walnut keel pieces on, which is covered in the next section.

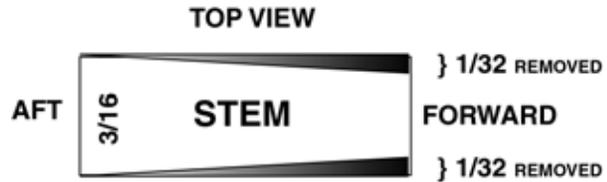
Summary

- Trace the center-keel bearding line from your plans.
- Cut tracing out and rubber cement to card stock.
- Place card stock on center keel, align top edge, and mark bearding line on the center keel
- Use a compass to mark a line 1/32" along outside edges of the center keel.

- Bevel from the bearding line on the face of the center keel to the line drawn along the outside edge.
- Repeat for the other side of the center keel.

1.7.3 Attaching the Keel, Stem and Sternpost

You will also need to taper the walnut stem piece. Again, using your compass set at 1/32" in width, trace around the outer edge and mark a line on each side. Then



bevel from the back edge (edge that butts against the center keel) of the stem to this line, using your knife with a #10 blade. You will be removing no wood at the back edge but 1/32" of wood at the forward edge of the stem, forming a taper when looking from the top of the stem. Sheet 2 of the plans shows this bevel. Taper all the way down the forward edge of the stem to the scarf joint that joins the keel. Once glued in place, the forward edge of the keel will also be beveled slightly to form a smooth transition.

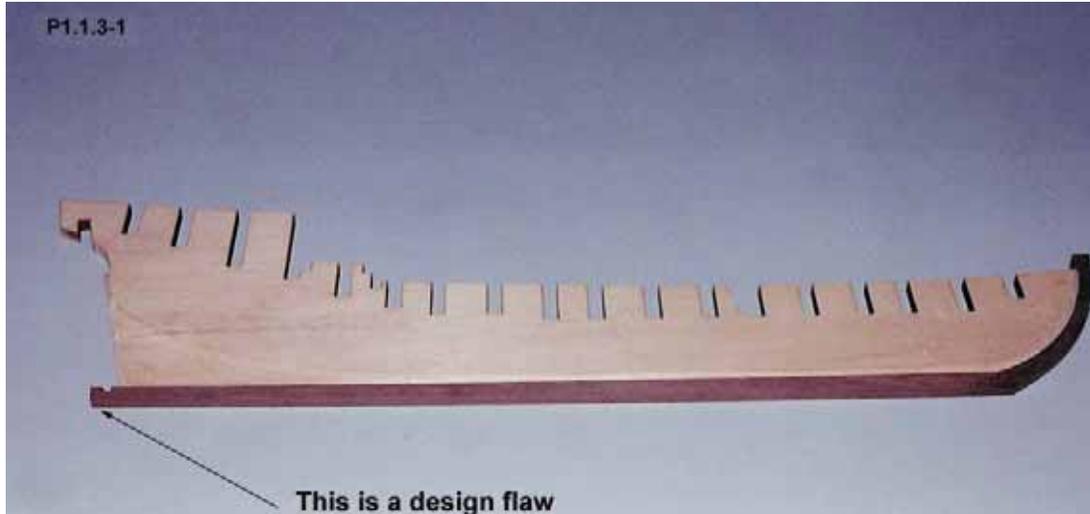
I've come to like a white-glue called Weldbond. I've found it at both Lowe's and Home Depot but any good hardware store would probably carry it. Yellow glues are okay, but when they dry, any overflow of glue is also yellow and very difficult, if not impossible, to remove. Weldbond dries clear and can be removed by scraping the excess glue off with an X-acto knife. Epoxy can also be used for this purpose.

The stem attaches to the keel with a scarf joint already cut for you. You should test fit the stem to the center keel and the keel's scarf joint before gluing the stem and keel in place. Once you are satisfied with the fit, glue your stem and then your keel in place. It is nearly impossible to clamp these pieces. I found that simply holding the pieces in place for a few minutes until the glue set up, was sufficient clamping.

Spread a small amount of glue around the outer edges of the center keel and glue the walnut keel pieces on. Be sure to keep the keel piece centered, side to side on the center keel so that the rabbet joint shows on both sides. You also want to make sure your center keel does not warp. Once the glue starts to set up, lay the center keel down on a flat surface and put something heavy on top of it to ensure that it stays flat. Don't worry too much about glue overflow right now. We will be cleaning the rabbet joint and cutting it deeper in the next step.

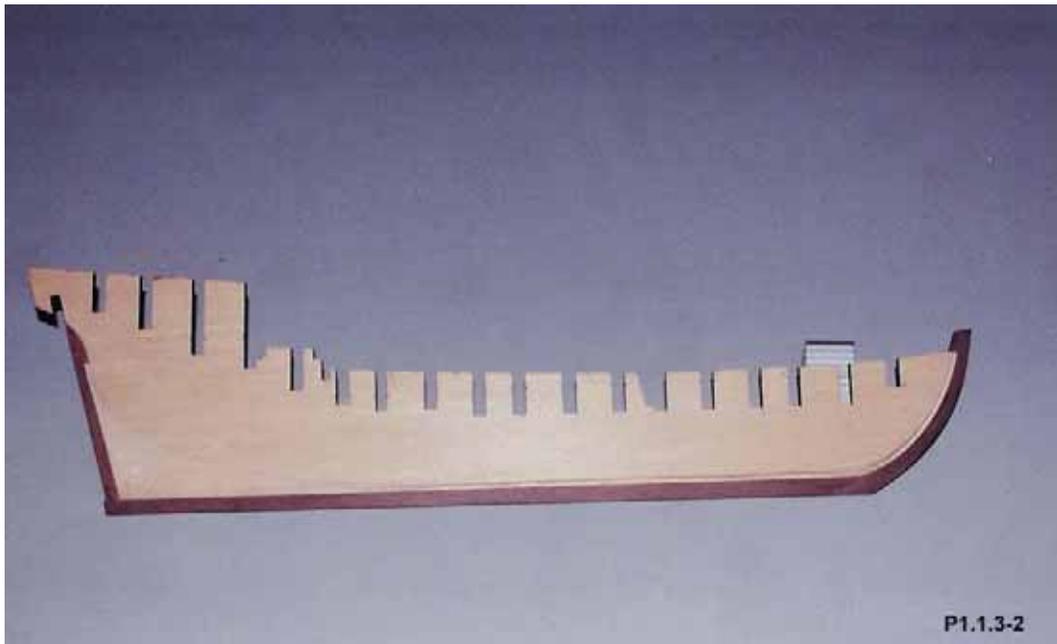
The final piece to attach is the sternpost. I found that in my kit, the notch in the keel piece that is made to accept the sternpost was not accurately positioned. Others have found just the opposite. Apparently, laser cutting the center keel on mine resulted in a smaller center keel than required; whereas on others, the laser

cut produced is larger than required center keel. Each production run produces parts with varying sizes – so check and take appropriate action for your situation. You can see in photo P1.7.3-1 how the notch extends beyond the center keel on my kit.



P1.7.3-1

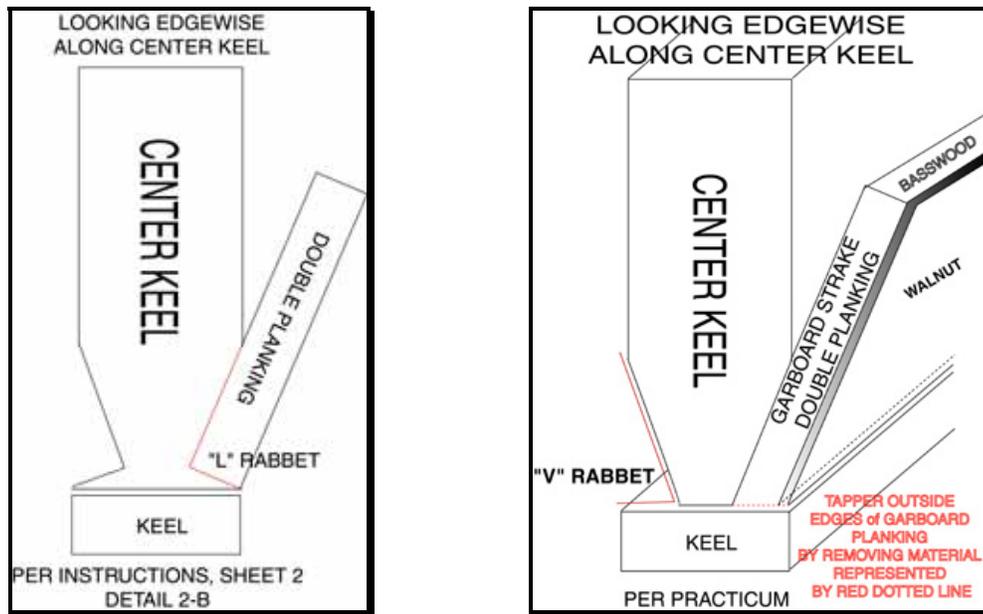
I had to adjust the notch's location slightly and then sand the excess wood off the end of the keel, even with the sternpost. Photo P1.7.3-2 shows the sternpost piece attached after the keel notch was adjusted. You can see how the keel is slightly longer than it should be at the stern.



P1.7.3-2

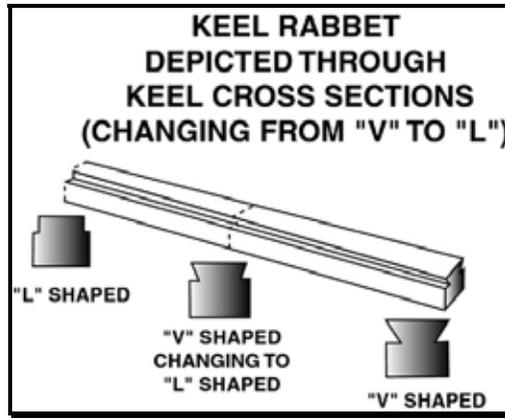
After the glue has dried, we want to clean up any overflow that oozed into our rabbet joint, using a #10 blade. We also want to deepen our rabbet joint to a depth of about 1/16". Remember, the center keel is only 3/16" thick; so if you take the rabbet joint to a depth of 1/16" on both sides, it will only leave you 1/16" of wood holding your walnut keel pieces on.

I used a small flat chisel to refine my rabbet joint but it can be done with a #10 blade as well. On the bottom edge, I made my rabbet less of a "V" shape and more of a square channel. The planking that tucks into this joint consists of two layers. The first layer of basswood is 3/64" thick. The second layer of walnut is .020" thick. You want to make your channel deep enough to allow these two layers of planking to fit snugly into. Use the actual planks to check your channel depth. Figures F1.7.3-1, F1.7.3-2 and F1.7.3-3 will help in explaining the rabbet joint.

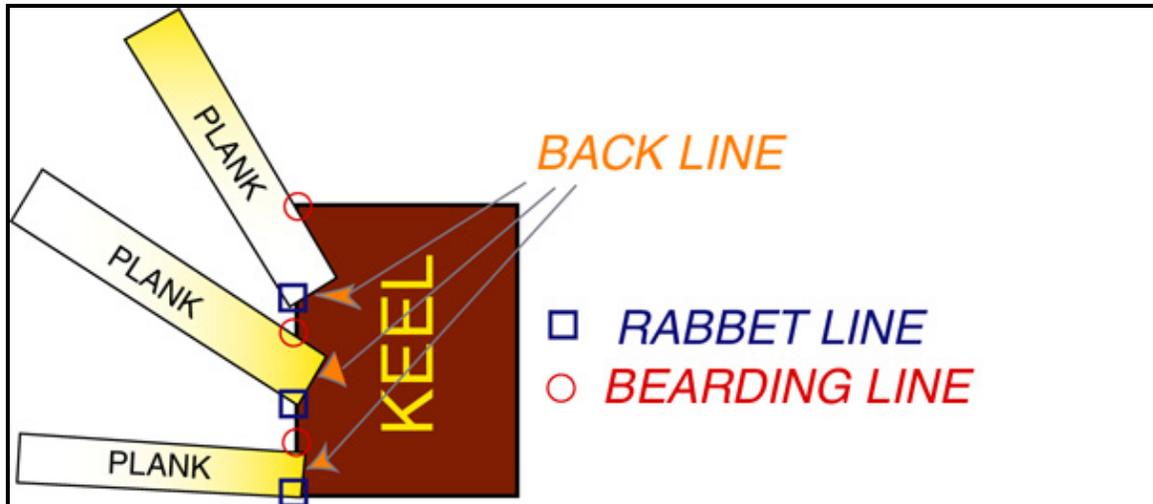


F1.7.3-1

Contributing Editor Comments: The plans show the rabbet as an "L" or "V" notch cut into the center keel – which isn't correct – in reality the rabbet is cut into the keel. Follow the practicum way of beveling the center keel from the bearding line to the outside edge of the center keel – it's easy and looks good. The correct way to cutting the rabbet will be addressed in an advanced practicum. The rabbet as cut into the keel assembly, is generally an "L" or 90 degree shaped and rotates to accommodate the hull shape as depicted in the two figures below:



F1.7.3-2



NOTE:

0. Figure above depicts the garboard plank in three different positions and for illustration purposes shows the plank at different levels in the keel; however the plank should always be as shown in the upper position.

1. Rabbet is a triangular notch in the keel/stem/sternpost to accept square edge of the garboard plank or hood end of a plank.



2. Notch rotates in keel to conform to hull shape and keep the plank square in the keel/stem/sternpost rabbet - "L" shape.



3. Back line dimension is the same as the plank thickness.

4. Rabbet is the generic term for keel notch formed between the bearding line, back line and rabbet line. The notch is almost always takes an "L" or 90 deg form such that the plank seldom needs to be tapered or beveled - which would weaken the plank at that point.

F1.7.3-3

Where the rabbet joint turns upward at the stem, the rabbet becomes more of a "V" shape; but it again turns into a channel that is "U" shaped, going up the stem.

At the stern, where the rabbet becomes wider and wider, becoming the deadwood, the entire area flattens out with an “L” shape at the aft most position. You should be able to lay the two layers of planking flat against this area such that the sternpost and planks become one even layer of wood. The planking is flush with the sternpost and keel at this point on the hull. Once bulkheads are added, the planking will meet the bulkheads at the bearding line and turn up the side of the ship’s hull.

The stern deadwood area can be daunting at first to understand. As the deadwood goes upward to the top of the sternpost, the rabbet joint turns into a channel once again shaped like a squared up letter “U”. In actual practice this was more of a “V” shape, but for modeling purposes, I made mine a squared “U” shape to better hold the planking in place.

Proceed slowly and carefully when cutting the rabbet and stern deadwood to a depth of 1/16” inch. Photo P1.8-1 below shows how the finished rabbet joint should look. It is very important that you make this cut now and be as neat as possible. It will be virtually impossible to work on it once the bulkheads are glued in place.

Summary

- Taper stem from its back edge to its front edge, reducing the thickness on each side by 1/32”.
- Glue walnut stem to center keel with Weldbond, centering it on the rabbet joints.
- Glue walnut keel to center keel, matching scarf joint to the stem and centering it on the rabbet joints. You may have to adjust the notch at the stern to attach the sternpost if your kit is flawed.
- Glue walnut sternpost to the back edge of the center keel, inserting tab into keel notch and centering it on the rabbet joint.
- Deepen rabbet to a depth of 1/16” on each side.

1.8 Attaching The Bulkheads

We are now ready to proceed with the bulkheads. The instructions will tell you to bevel the bulkheads where the hull turns towards the bow and stern. The plans also show this. In studying the plans, I feel that we can proceed without beveling the bulkheads first as this is a small model and the bevels can easily be beveled when we fair up all of the bulkheads for planking. On larger models, where the bevel is much more pronounced, it is easier to cut the bevel first. If you wish to cut your bevels before attaching your bulkheads, first trace the bevel on tracing paper, then rubber cement the tracing paper to some card stock. Use the notch in the bulkhead as your alignment point of reference. Then cut the card stock out and place it on the appropriate bulkhead and mark out the bevel. Trim the bevel with your X-acto knife.

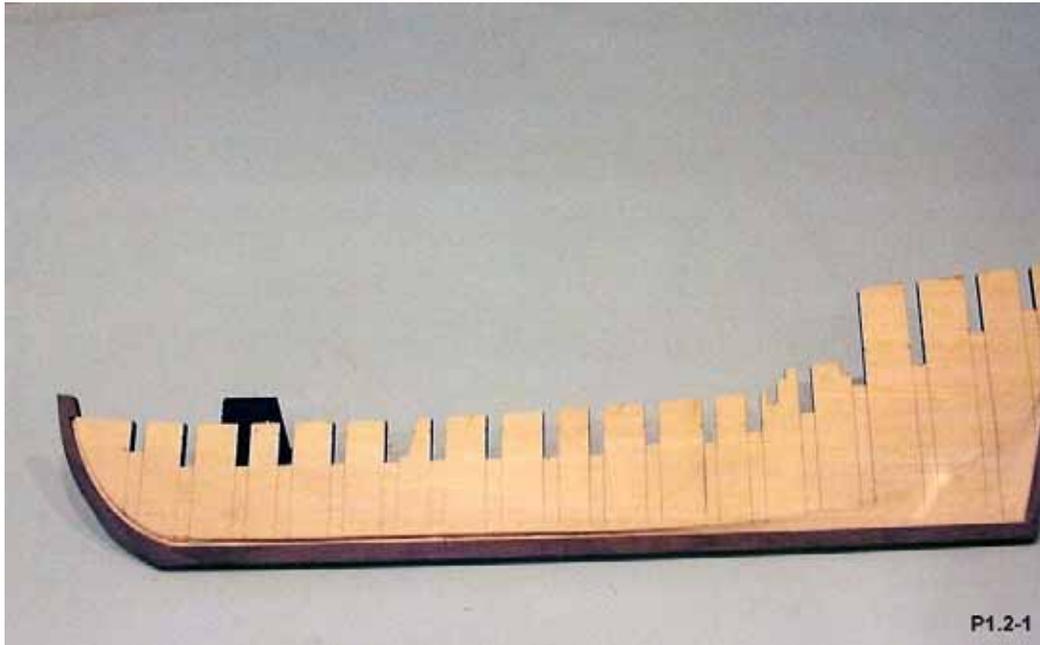
The slots in the bulkheads, for the most part, are undercut. Thus, we'll have to adjust the bulkhead slots to fit over the center keel by taking material off the slot sides – port, starboard or both if centered. What is important is to keep the bulkheads symmetrically centered on the center keel.

To do this, we can either measure and mark the center of the bulkhead and extend a perpendicular line down from this center point to the slot, using a small machinist square or triangle. The line we draw may show the slot to be slightly off center. If so, remove material from the appropriate side to make the bulkhead fit and be centered as closely as possible. Or, we can place the bulkhead over the plan template and note if the slot is centered; and if not centered, what side we need to remove material from. In either case, the fit should be tight, but not too tight that there is no room to align the bulkhead.

If the slot is way out of alignment, we may have to add shim material. I didn't find it necessary to have to add shim material. Also make sure the top of the bulkhead is even with the top of the center keel – this forms the base for the decks. If the kit parts were laser cut to design and the design is correct, the bottoms of the bulkheads should align along the bearding line and the bulkhead/center-keel tops should be even. And you guessed it, what if they aren't even? We will have to deepen or shim the center-keel/bulkheads slots for a correct fit.

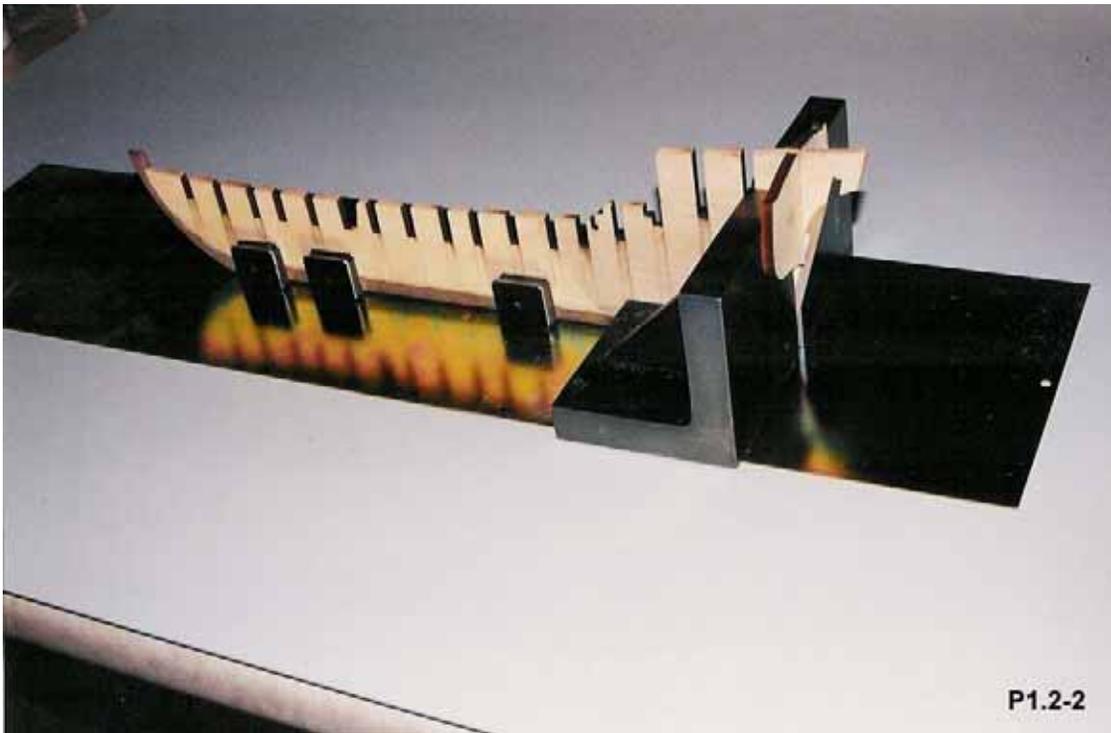
I started with bulkhead "R", the aft-most bulkhead. It is very important that your bulkheads be at a perfect ninety degree angle to the center keel and aligns along the bearding line. Again, we must deal with the angle produced by the laser cut. The bulkhead slots show this angle clearly and in most cases, when you slide the bulkhead down into the center-keel slot, the bulkhead will not sit at a ninety degree angle; it will twist to one side. This is not what we want. Therefore, you must first trim off this angle slightly on each side of the slots. Do so carefully as removing too much wood will make the bulkhead fit very loosely.

We must also be sure that the bulkhead is at a ninety-degree angle to the keel, that is, perpendicular to the keel. First take a small machinist square and extend the lines of the slots in the center keel down to the bearding line. I used one I bought from Micro Mark that has a 3" blade, item number 10117. Mark all of the slots on both sides of the center keel. You can see in photo P1.8-1 how these marks were added.



P1.8-1

To help keep things in alignment, I used two heavy steel blocks I purchased from Micro Mark. They're called Angle Plates, item number 60626, and they are 3" square. Very heavy, they hold the center keel tightly at a perfect ninety degree angle and keep the bulkheads properly oriented as well. Photo P1.8-2 shows the first bulkhead glued using these plates to hold the center keel aligned with the bulkhead. Also pay close attention to the extended lines drawn. Make sure that none of your bulkheads cant forward or backwards but remain perpendicular and along these lines. Use Weldbond or epoxy to glue the bulkheads to the center keel. Leave ample time for the glue to dry before proceeding to the next bulkhead. I also used a 6x24 Magnetic Gluing Jig, item number 70223, to hold the center keel in an upright position.



P1.8-2

Proceed gluing each of your bulkheads in place, trimming the slots and test fitting the bulkhead first. Move from stern to stem. Photo P1.8-3 shows over half of the bulkheads attached and photo 11 in the instruction booklet shows the completed framing with all bulkheads attached. Notice how nicely the bulkheads look, aligned with the keel at a ninety degree angle. All the bulkheads should extend to the bearding line.



P1.8-3

Once all of the bulkheads have been glued in place on the center keel, our hull is now formed. We will now proceed with the sub decks. Here we will deviate slightly from the instructions. I do this because I feel that we need to strengthen our structure before fairing the bulkheads and putting bevels on them with a sanding block. By gluing the sub decks on next, we can further strengthen the bulkhead positions and the entire structure.

Summary

- Draw lines on the side of the center keel, extending the bulkhead notches to the bearding line; keep the lines perpendicular to the keel.
- Brace the keel in a perpendicular manner to your table top and attach bulkhead "R", making sure it is perpendicular to the center keel, horizontally as well as vertically. Use Weldbond or Epoxy.
- Continue to glue bulkheads in from stern to stem, making sure they are held perpendicular and at a 90 degree angle to the center keel.

1.9 Sub Decks

Sub decks: covering placed over the bulkhead tops (kits only) to which deck planking will be applied. I found that the notches in the sub decks were slightly on the small side and had to be enlarged. I removed approximately 1/32" on the forward edge of each notch, again using a #10 X-acto blade. Be very careful with these decks; they are very fragile.

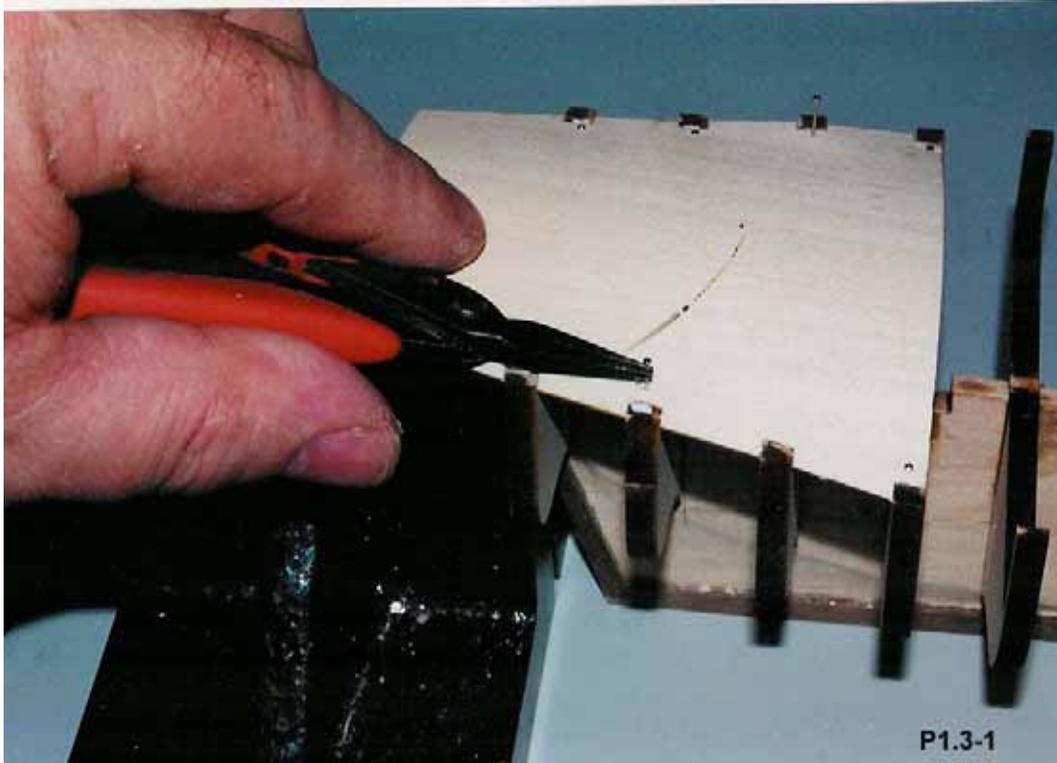
First we want to make sure our bulkhead tops are aligned and flush. Using a sanding block with 100-grit sandpaper, carefully sand the tops of the bulkheads (but not the extensions). Sanding should be from front to back. Do not use too much pressure and be very careful with the bulkhead extensions (stanchions) that will form the bulwarks.

Stanchions: upright supports set along the side of the upper deck of a ship which carries the guardrail.

Bulwark: planking along the sides of a ship above the upper deck to prevent seas from washing over the gunwales and also sailors from falling or being washed overboard. These are very thin and fragile and can be broken off easily. When the burn oils have been removed, the bulkheads should be in alignment.

Starting with the aft deck (cabin/poop), test fit the basswood deck after removing a small amount of wood from each notch. The fit should not be loose and the front edge should line up with the front edge of bulkhead "O". If you are satisfied with the fit, put a bead of glue along the top of each bulkhead and the center keel. Now press the sub deck down and ensure that it touches each bulkhead by looking from underneath. Use some of the small lil pins provided and press them down along the outer edges of the deck. Photo P1.9-1 shows how I used my needle nose pliers to grasp the lil pins or small nails and push them through the soft basswood sub deck, pressing down into the bulkheads. I purchased my pliers from Micro Mark, item number 80338. They also sell a high precision micro shear, item number 80333, which is used to get under the pin and lift it out once the glue has dried.

Contributing Editor Comments: My aft deck was a little short. Add wood either to the front (preferable) or the aft end. Also there is the alternative to leave this gap as is and use this gap as a rabbet for a piece of molding to be added there later. This is discussed later when we add the poop deck planking.



P1.9-1

The next deck is the quarterdeck. This is a very small deck and needs some additional support. There are three laser-cut basswood beams provided. Two of these beams support the quarterdeck at the front and back. The third beam supports the back of the main deck.

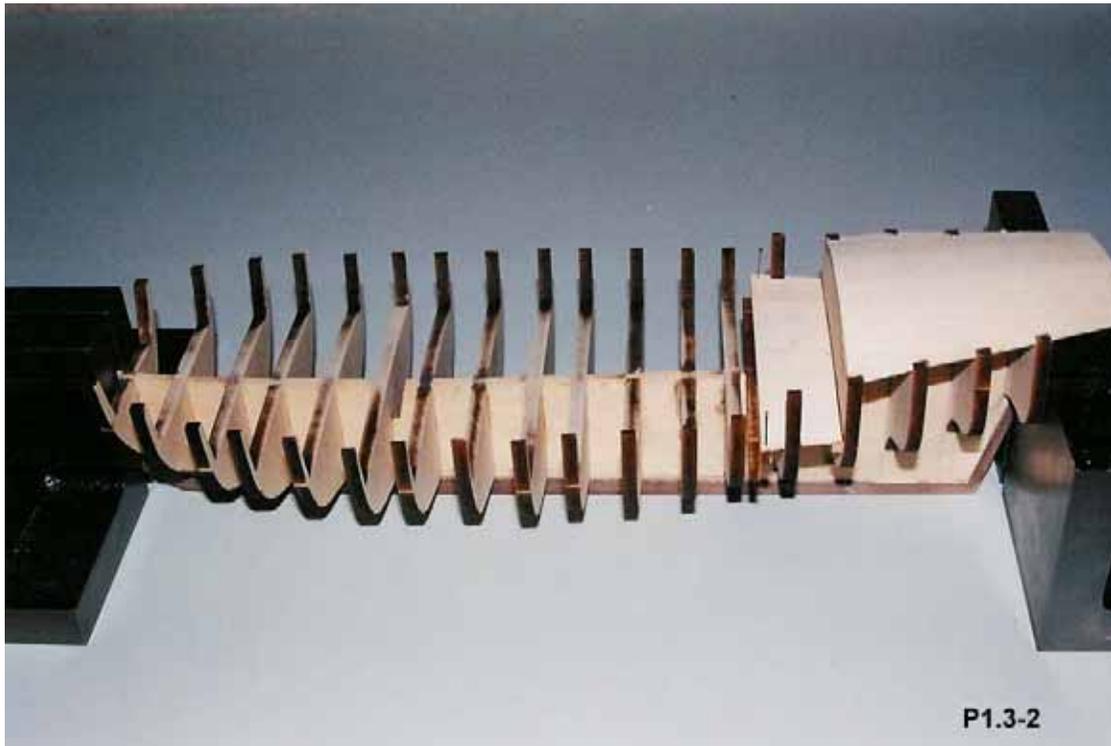
Start with the aft-most beam and lay it into the notch athwart ship in the center keel, centering it. Sight down the center keel from the bow and align the beam from side to side so that it is level with bulkhead "N" and make marks on bulkhead "O" on each side for reference. Don't worry about the beam extending beyond the bulkheads; we'll sand them flush later.

I found that my beam sat a bit high. To fix this problem, I marked where the beam intersected the center keel and cut a small notch into the bottom of the beam. This notch helped stabilize the beam and hold it in place better. Now apply a small bead of glue to the notch, in the center of your beam and the back edge and glue it into the notch in the center keel and against bulkhead "O".

Next test fit a beam in the forward slot for the quarterdeck. This slot is just in front of bulkhead "N". Again, you may have to cut a small notch into the center of the beam to get it to fit flush with bulkhead "N". Once you are satisfied with the fit and alignment, glue it in place and push a pin into it at the center keel to hold it in place and in alignment. Allow ample time for the glue to dry.

The last beam we need to attach supports the back of the main deck. Follow the same procedure as before, aligning it with bulkhead "M". Glue and pin it in place and allow glue to dry.

Now we can attach the small quarterdeck. It only has one notch on each side to be enlarged as before. The back edge of the deck should fit snugly against bulkhead "O" and the front edge should be flush with the beam we glued earlier. Put a bead of glue across the two beams and the center keel and push the deck down in place, ensuring that it lays flat against the beams. Use the lil pins provided to hold the sub deck down against the beams. Photo P1.9-2 shows the two decks installed.

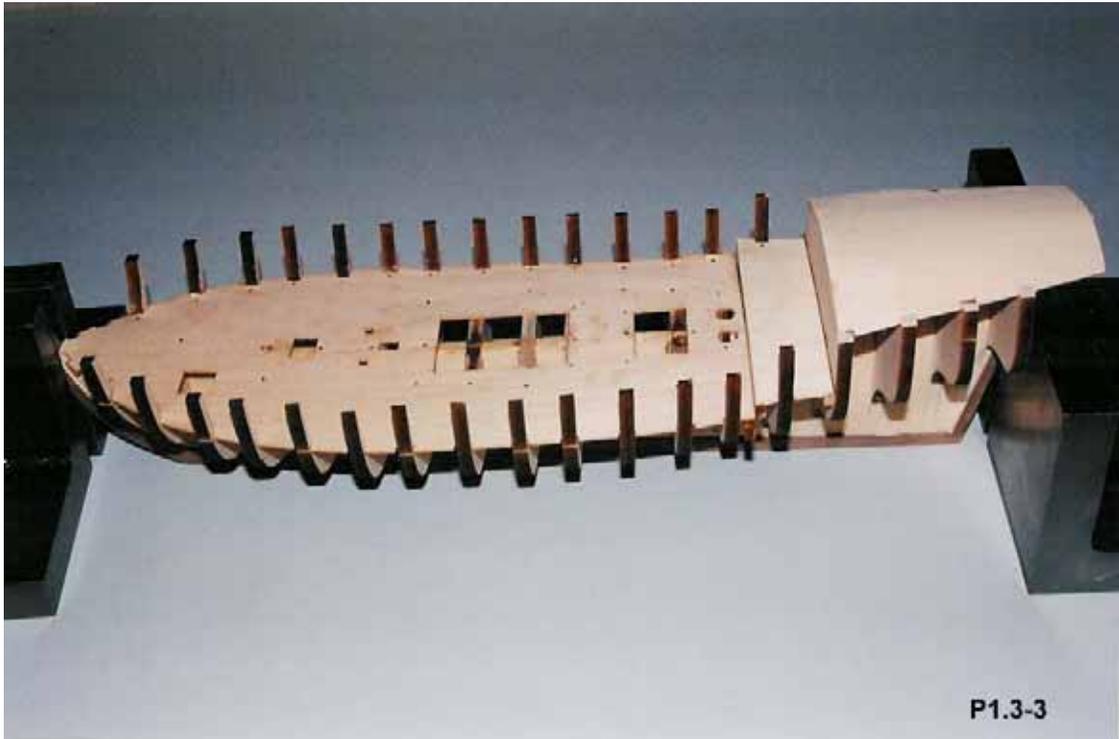


P1.9-2

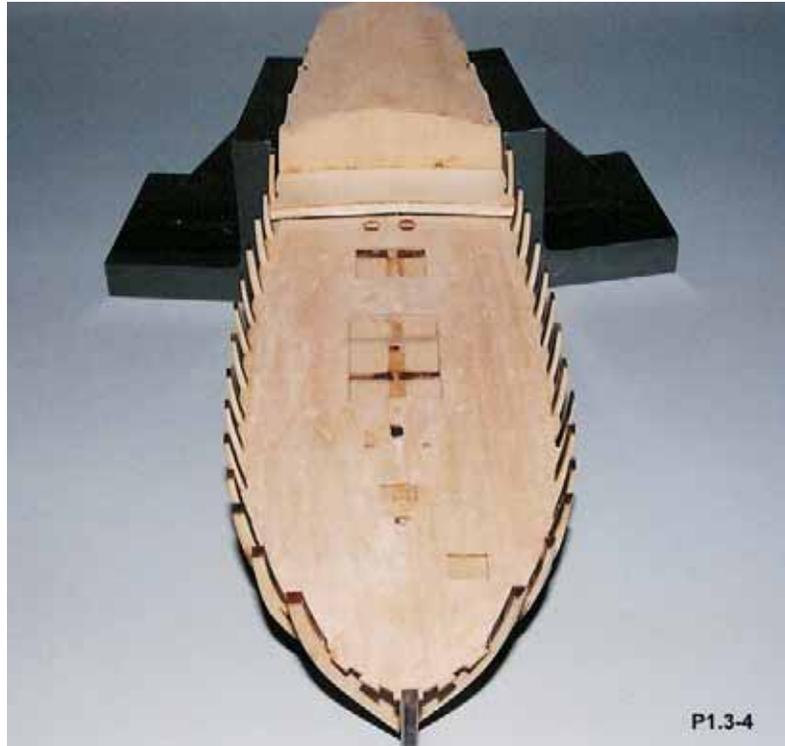
Our last sub deck to install is the main deck. This deck has 15 notches on each side. I removed 1/32" from the forward edge of each notch.

Thirty minute epoxy works best for this deck. Do not apply too much to the bulkheads as it will ooze out. You do not want to apply any glue to the tops of the bulkheads where the hatch openings are located. Be sure and punch these openings out when you remove the deck from the basswood billet. Make sure the scuttle opening is on the port side.

The deck must be bent slightly to fit it into place. I found that some of the notches also had to be deepened slightly. There is a camber to the deck from the center to the outer edges. The deck also bends slightly from front to back. Take your time and be very careful putting this deck in place. I used lil pins along each bulkhead to hold the deck flat against the bulkheads until the glue dried. Be sure that the back of the deck lays flat against the beam added earlier. Photos P1.9-3 and P1.9-4 shows my sub decks glued into place.



P1.9-3



P1.9-4

Summary

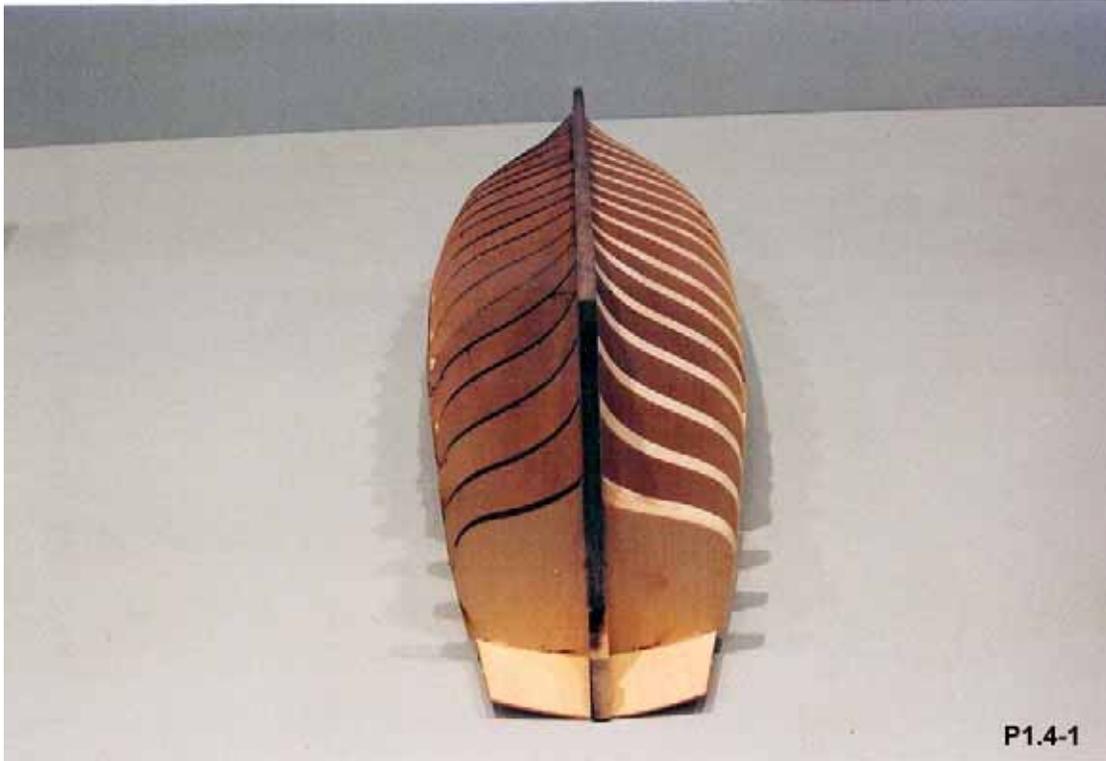
- Install the aft cabin sub deck, using epoxy and small pins provided.
- Remove pins once the glue has set up.
- Add beams to support the quarterdeck sub deck. You may need to notch the beams at the center keel to get them to seat properly.
- Glue the quarterdeck sub deck in place on the beams.
- Remove 1/32" from forward edge of each notch in the main deck, so that they fit the bulkheads without binding.
- Sand the tops of the bulkheads where the main deck goes to ensure they are fair and have no unwanted peaks or valleys. You may need to use thin basswood filler strips if you have a low area.
- Use epoxy on the bulkhead tops but do not get glue in the hatch openings. Secure with small pins provided until the glue has set.

1.10 Fairing The Hull

It is now time to turn our attention to fairing the hull. This is a fairly simple task and takes about 15 minutes to fair each side. I used a sanding block made of plastic with a small rubber pad between the block and the sandpaper (you can see this block in photo P1.7-3 above). I bought these blocks several years ago at my local hobby shop and I think they are still available, although I do not know the name of the manufacturer. Using 100-grit sandpaper, you want to begin sanding the side of the hull, removing all burned oils from the bulkheads. I began sanding at the stern of the model. Be very careful where the bulkheads extend above the main deck as they are very thin and will get even thinner as you sand them.

You will find that at the stern you will have to sand an angle in the bulkheads to fair them up. Remember, you are not just removing the burned part of the bulkhead. You are making the transition of bulkheads smooth from one to the next so that when you sight along the bottom of the hull it is one long continuous line.

At bulkheads "O", "P", "Q" and "R" the bevel in the bulkheads becomes even more pronounced. Be very careful where the bulkheads meet the center keel. You do not want to sand notches into the center keel. The bulkhead bottoms touch the bearding line and your sanding should produce a smooth transition. The last bulkhead, "R", may have to be trimmed slightly with an X-acto knife so that it is flush with the bearding line. The same holds true with bulkhead "A". Photo P1.10-1 shows how these bulkheads should look on one side after sanding.



P1.10-1

When you are satisfied with the first side, switch to 150-grit sandpaper and lightly sand again to ensure the hull form is smooth, and then begin sanding the other side with 100-grit sandpaper.

Photos P1.10-2 and P1.10-3 show the finished hull after it has been sanded and faired up. You can see the smooth transition from one bulkhead to the next. A smooth and fair sanding will produce a well-shaped hull when the planking is applied with little or no problems.



P1.10-2



P1.10-3

Summary

- Sand the bulkhead bottoms with 100-grit sandpaper using a sanding block until all burned residue has been removed.

1.11 Finishing the Framework

There are still a few details to do before our framework is complete. We must finish out the stern transom by adding stern frames, frame in the windows and add wing transom and filler pieces. At the bow we will add filler pieces as well. These filler pieces serve to strengthen the structure and give the planking something to attach to later on.

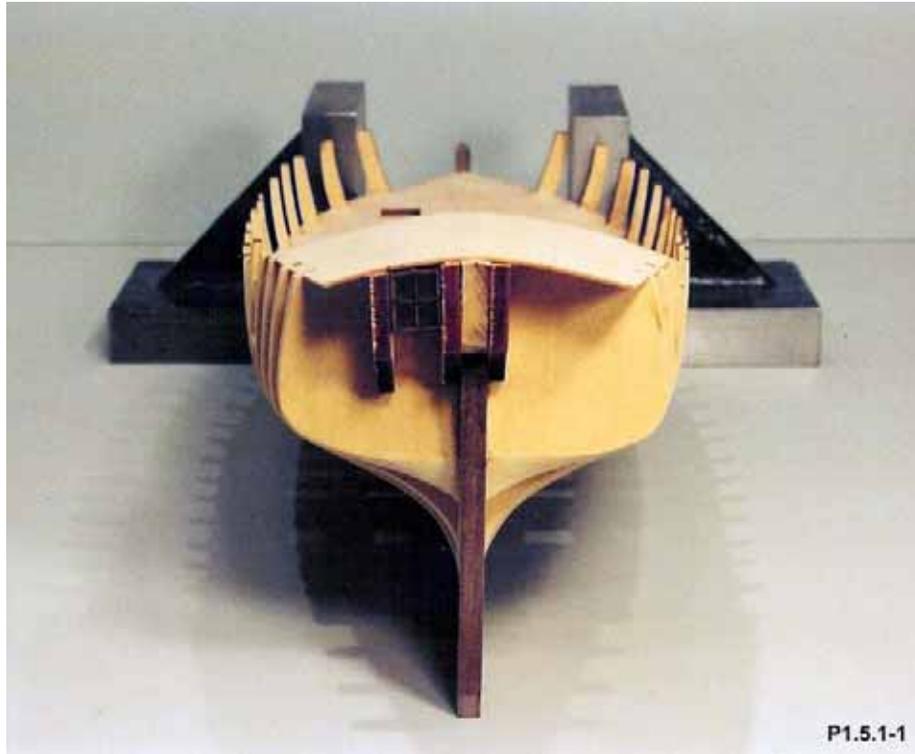
1.11.1 The Stern Transom

First we will frame out the stern transom. There are six laser-cut basswood parts that will form the framework of the transom and windows. These pieces are numbered 1, 2 and 3. Piece 1 goes against the center keel, then piece 2 and finally piece 3 on the outer edge.

To ensure that frames 2 and 3 are in their correct position, I used an actual window to set the space between these frames.

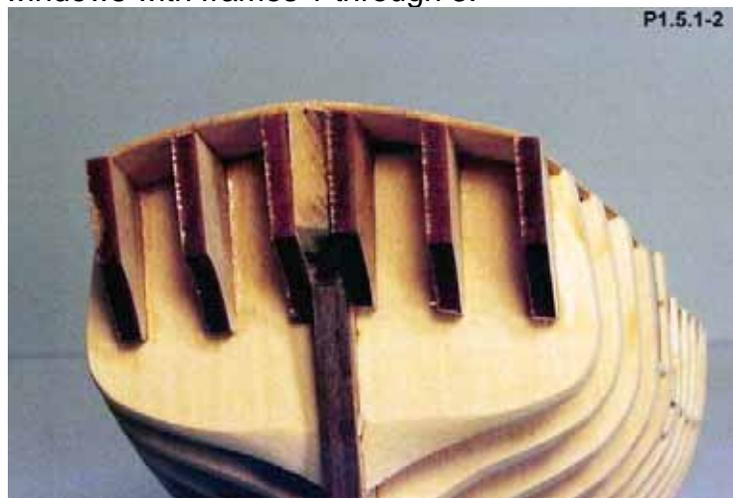
We will first glue frame 1 in place. You will notice that the deck has a camber in it and the frame does not fit flush against the bottom of the deck. You will need to sand the upper edge of the frame at an angle that matches the deck camber in relation to the center keel. Be sure to sand the correct edge. If you look closely at the frame, you will see that there is a long edge that runs with the grain of the wood. This is the top of the frame and the edge that will be glued to the bottom of the deck. Once you are satisfied with the fit, glue the first frame to the side of the center keel and the under surface of the deck. The back edge of the frame is glued to bulkhead "R". Glue one frame #1 on each side of the center keel.

Now, using a window for spacing, set frame #2 in place and mark its location. Trim the frame as before so that it lays flush against bulkhead "R" and the underside of the deck. Once you are satisfied with the fit, glue it in place, ensuring that the window fits snugly. Photo P1.11.1-1 shows a few of my frames in place with the window between them for spacing.



P1.11.1-1

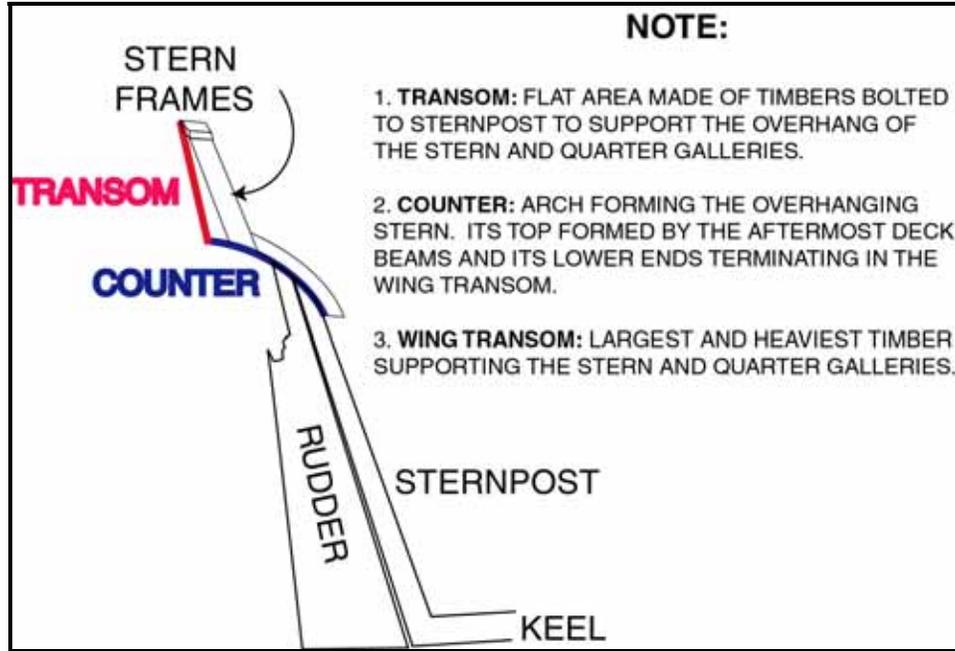
Repeat this process for the frame #3. Do not try to match the frame to the angle of the deck or the sides of the bulkheads. Additional basswood filler pieces will go on the outside to bring the entire structure flush and aligned with the bulkheads. Photo P1.11.1-2 shows what the stern transom should look like after framing in the windows with frames 1 through 3.



P1.11.1-2

Next we'll add the wing transom, just below the bottom edge of the stern frames. The wing transom is made from a small 1/4" square basswood stock provided in the kit. The wing transom has a slight downward angle from the center keel out to the outer edge of the hull. On my model, the bottom edges of frames 2 and 3 had to be trimmed some as the angle was too pronounced. I trimmed the bottom

of the frames with an X-acto knife and kept checking the fit of the wing transom. We'll be using two terms along the way, transom and counter. Figure F1.11.1-1 helps to explain some of these terms. The wing transom is not depicted in this drawing but is the timber at the bottom of the counter.

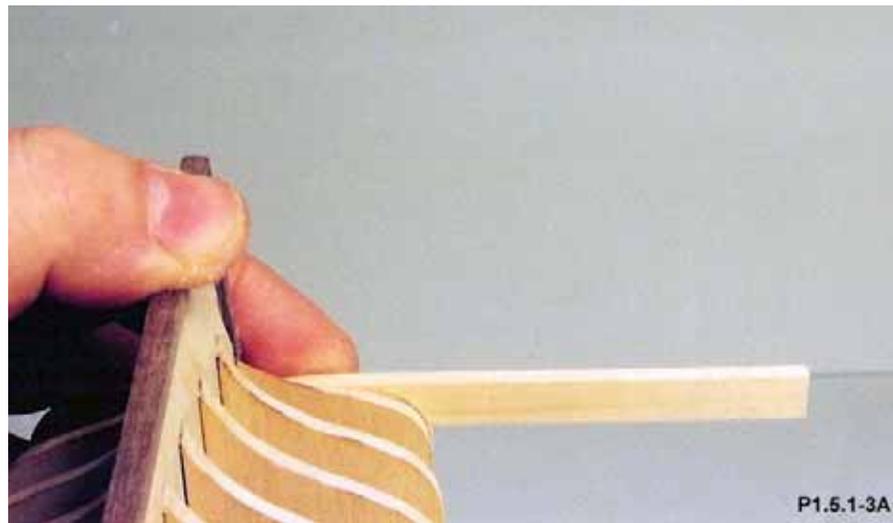


F1.11.1-1

Photo P1.11.1-3 shows the wing transom being held into place on the starboard or right side of the model. Notice the slight downward angle of the piece. Once fitted and cut to length, the transom is glued to bulkhead "R" and the underside of the three frames. Repeat this process for the port or left side of the stern. Photo P1.11.1-3A shows how the piece is marked on the outside edge of bulkhead R.



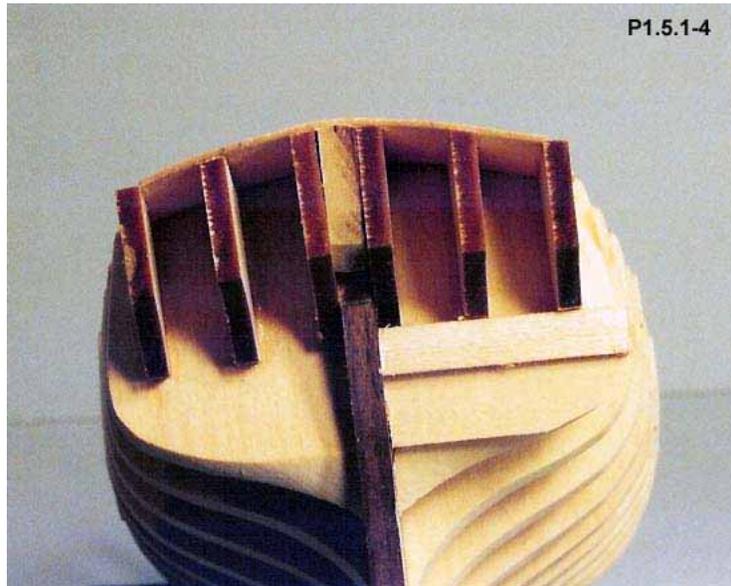
P1.11.1-3



P1.11.1-3A

Now we will add a filler piece beneath the wing transom. This comes from a piece of 3/8" x 1/8" basswood stock provided in the kit. The piece fits tight against the bottom of the wing transom and tight against the center keel. Cut it off at the side of the hull. We will fair it all up with our sanding block and 100-grit sandpaper.

Looking at sheet 2 of our plans, we see that the curved counter that frames 1 – 3 form, continue down the wing transom and feather to the bottom edge of the filler piece added beneath the wing transom. I rough shaped the wing transom and filler piece with my number 10 blade and then sanded with the sanding block and 100-grit sandpaper. Photos P1.11.1-4 shows the pieces before sanding.



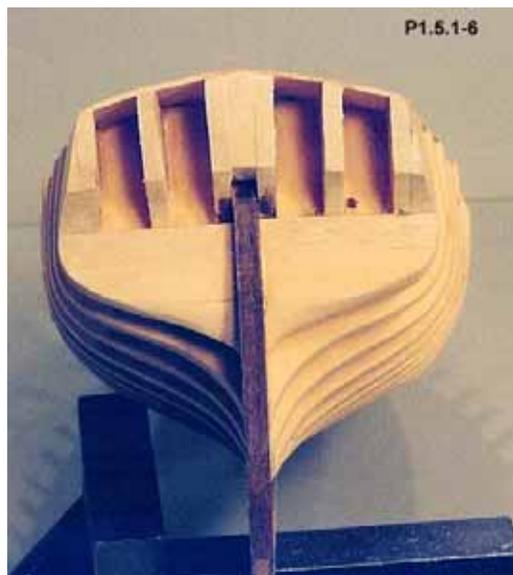
P1.11.1-4

The final piece to add is a filler piece that glues against the outside edge of frame 3 on each side of the stern. This piece is made from a piece of 1" x 1/4" basswood stock. Lay the piece against the outside of stern transom frame 3 and trace the transom shape onto the back side of the basswood piece. Be sure the piece is flat against bulkhead "R". Then rough cut the piece with your X-acto knife or jeweler's saw. Don't worry; it doesn't have to be perfect. You will sand it to match the rest of the transom once it is glued into place. Photo P1.11.1-5 shows the piece glued in place on the starboard side and the wing transom and filler blocks sanded.



P1.11.1-5

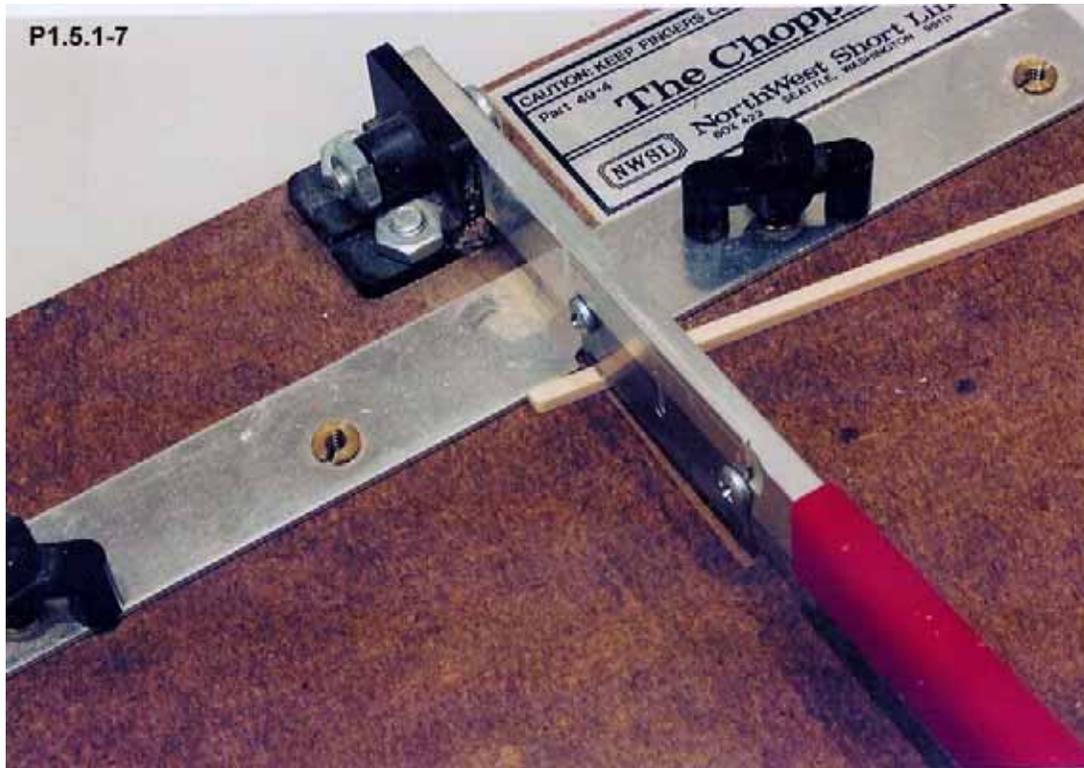
Glue the filler block to the side of frame 3 and the back of bulkhead "R". When the glue has dried, you must taper the piece so that it matches the flow of the bulkheads. Photo P1.11.1-6 shows this piece after tapering and how the piece is just a continuation of the bulkheads and rest of the hull.



P1.11.1-6

Repeat this process for the other side of the hull and sand.

The final pieces to be added to the stern transom are window frames made from 3/32" square basswood stock found in your kit's strip wood. I use a cutting block purchased from Micro Mark called the Chopper that comes with a replaceable single edge razor blade. I believe it has been replaced by the Chopper II, item number 82439. Photo P1.11.1-7 shows the use of this tool. A number-10 or number-11 blade could be used instead to cut these delicate pieces.



P1.11.1-7

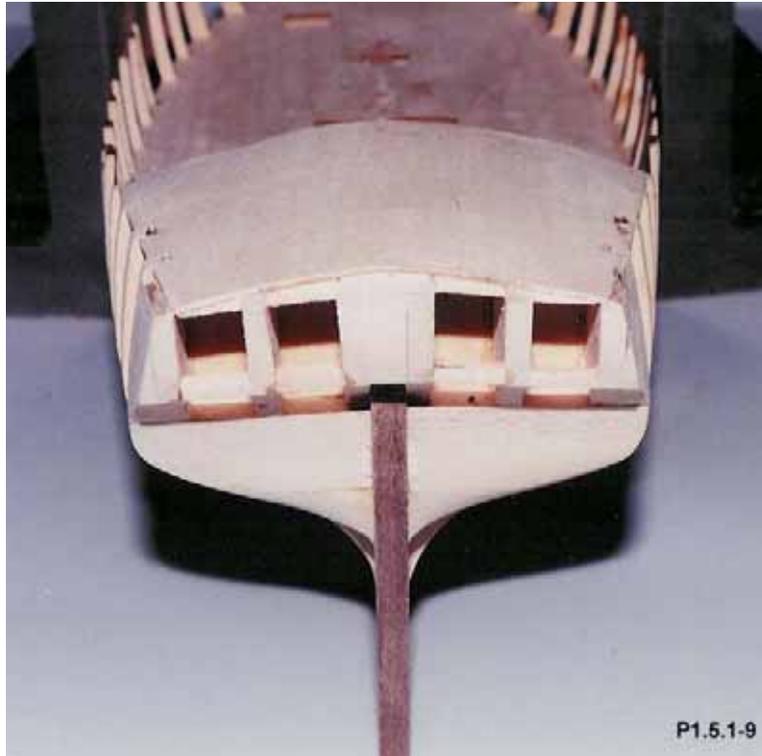
Each window is framed above and below with 3/32" square strips. I started with the bottom frames first and positioned a window between the transom frames as shown in photo P1.11.1-8. The bottom sill is even with the knuckle at the bottom of the transom frames, which forms the counter.



P1.11.1-8

After the bottom pieces are cut and glued in place, the top pieces are fitted. The top pieces must be cut on an angle or beveled from the edge closest to the center keel outward as shown in photo P1.11.1-8. You want a snug fit but not so tight that you cannot remove the window. Use a small pair of tweezers to insert and remove the window. **DO NOT** glue the window in place yet. This will be done much later in construction. You only want to use the window as a guide in locating the upper and lower frame sills. Later the transom will be planked and the windows added after planking.

When all window sills have been completed, sand the stern transom once again with your sanding block and 150-grit sandpaper to ensure that everything is flush. Sand the wing transom, ensuring that the bottom of the sills don't protrude any. Photo P1.11.1-9 shows the sills in place and the transom sanded.



P1.11.1-9

Summary

- Remove the 6 laser cut transom frames from their billets.
- Bevel the top edge of the frames to match the camber of the deck. You should have a left and a right handed set of frames.
- Glue frames 1 on each side of the center keel with Weldbond. Glue them to the center keel and bulkhead "R".
- Use a window to set the spacing for frames 2 and 3 and glue the frames in place.
- Using a piece of 1/4" square basswood stock, mark and cut the wing transom piece to fit under the transom frames and to the outside edge of bulkhead "R". You may need to trim the bottoms of the transom frames to get a good fit that does not have too much of a downward angle to it.
- Glue the wing transom in place on both sides of the center keel.
- Using 3/8" x 1/8" basswood stock, make and glue a filler piece directly under the wing transom.
- Sand the filler pieces, blending them into bulkhead "R" at the bottom and flush with the sides of bulkhead "R".
- Using a piece of 1" x 1/4" basswood stock, trace the outline of transom frame 3 on its side and cut out; glue in place to the outside of transom frame 3 and the back of bulkhead "R".
- Trim this filler block with your knife and sand flush with the side of the hull.

- Make window sills from 3/32" square stock, aligning the bottom with the knuckle on the transom frames. The top pieces must be beveled to fit between the window and the underside of the poop deck.
- Sand once again ensuring everything is flush and smooth. Do not glue the windows in at this time.

1.11.2 The Bow Filler

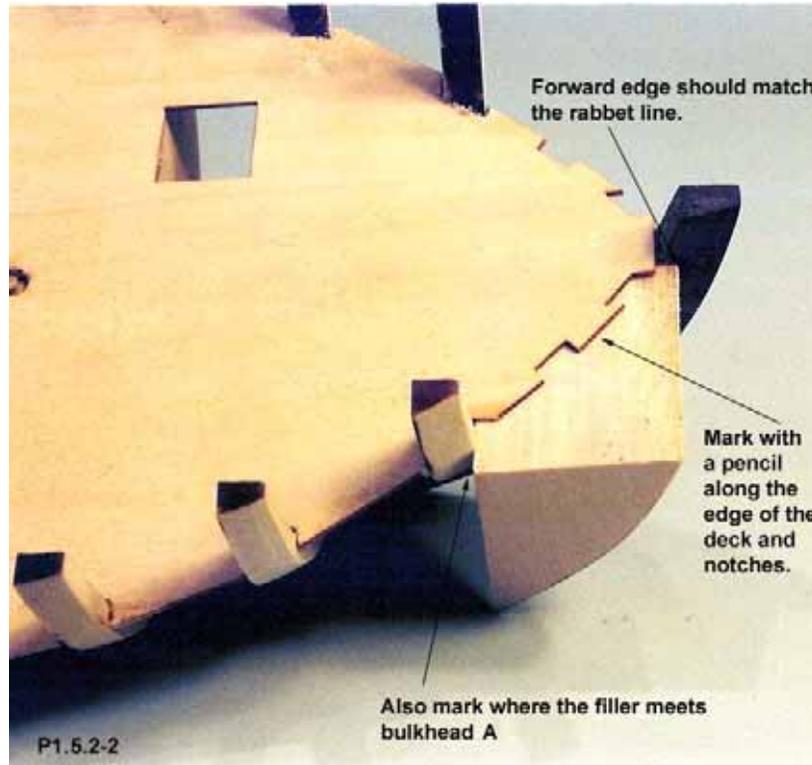
The final piece we want to make to complete our framework is a filler piece at the bow of the ship that attaches to the center keel and the front of bulkhead "A". A piece of 1" square basswood stock is provided in your kit for this filler piece. First, trace the bearding line, main deck line and front edge of bulkhead "A" on some tracing paper to establish the shape of the filler piece from front to back. Rubber cement tracing to a piece of card stock and cut it out. Now place this template onto the 1" square basswood stock and draw a line around the outside edge of the piece as shown in photo P1.11.2-1. Here is where a scroll saw comes in handy. But if you don't have a scroll saw, a small jeweler's saw will do. Be sure and clamp the piece into a vice to hold it steady while you cut. You could also use a Dremel tool with drum sander, but that's going to cause quite a mess with sawdust; so wear a respirator or face mask!



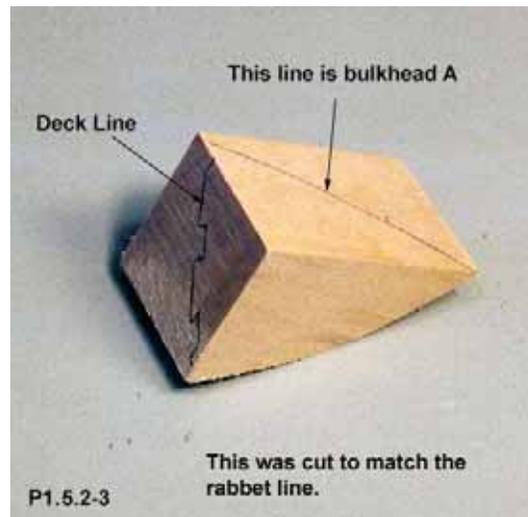
P1.11.2-1

Cut the piece out just along the lines drawn. Note that the deck slants upward from bulkhead "A" to the bow. After cutting the piece out, place it against bulkhead "A" and center keel and see how it fits. Don't worry if it's a little big, we will be trimming it down to form the forward contour of the model.

Once you are satisfied with the fit, take a pencil and draw a line around the top perimeter of the deck, including the notches and the side of bulkhead "A" so that you will know where you need to trim the wood block. Photo P1.11.2-2 shows my piece being fitted and photo P1.11.2-3 shows the piece marked.



P1.11.2-2



P1.11.2-3

Using a number 22 X-acto blade, start to carve away the excess wood, working from top to bottom. It may help to clamp the piece in a vice but don't crush the wood; it is soft. What you want to end up with is a rounded wedge shaped piece, sort of triangular with the outside of the triangle rounded. Remember, this is a continuation of the hull. Photo P1.11.2-4 shows the finished shape with the filler piece glued to the center keel and bulkhead "A". As you can see, the curve is smooth and continuous, ending along the stem rabbet joint we cut earlier. From the top of the center keel downward, it should follow the rabbet without any hills or valleys in it. It should match the profile of bulkhead "A" as well.



P1.11.2-4

Repeat this process for the other side of the hull. Give the structure another sanding with your sanding block and 100-grit sandpaper, making a smooth the transition from bulkhead to center keel as shown in photo P1.11.2-4.

Summary

- Make a template of the bow filler block from your plans, tracing the bearding line, deck line and front edge of bulkhead "A".
- Transfer the pattern to a 1" square block of basswood and cut out.
- Place against center keel and bulkhead "A" and mark across the top where the deck and notches meet the piece.
- Carve and sand the piece from the line showing bulkhead "A" to the bearding line and test fit to the hull again.
- When satisfied with the fit, glue to center keel and front side of bulkhead "A".
- Sand once more to blend in with the bulkheads.
- Repeat for the other side of the model.

1.12 Chapter Summary

This completes the basic framework of the model. We began by removing the laser cut pieces that make up the framework. We cleaned up the edges, removing the angle formed by the laser and burned area. We transferred our bearding line from the plans to the center keel, cut the rabbet joint, glued up the stem, keel and sternpost to the center keel and added the bulkheads. Sub decks were then added to strengthen the structure. We finished off our framework with stern transom and window frames, wing transom and filler blocks and bow filler blocks.

In our next chapter, we will frame out the gunports and sweep ports and begin planking the hull. Timberheads will be mounted at the bow, which will require some cutting of notches into our stem filler pieces.