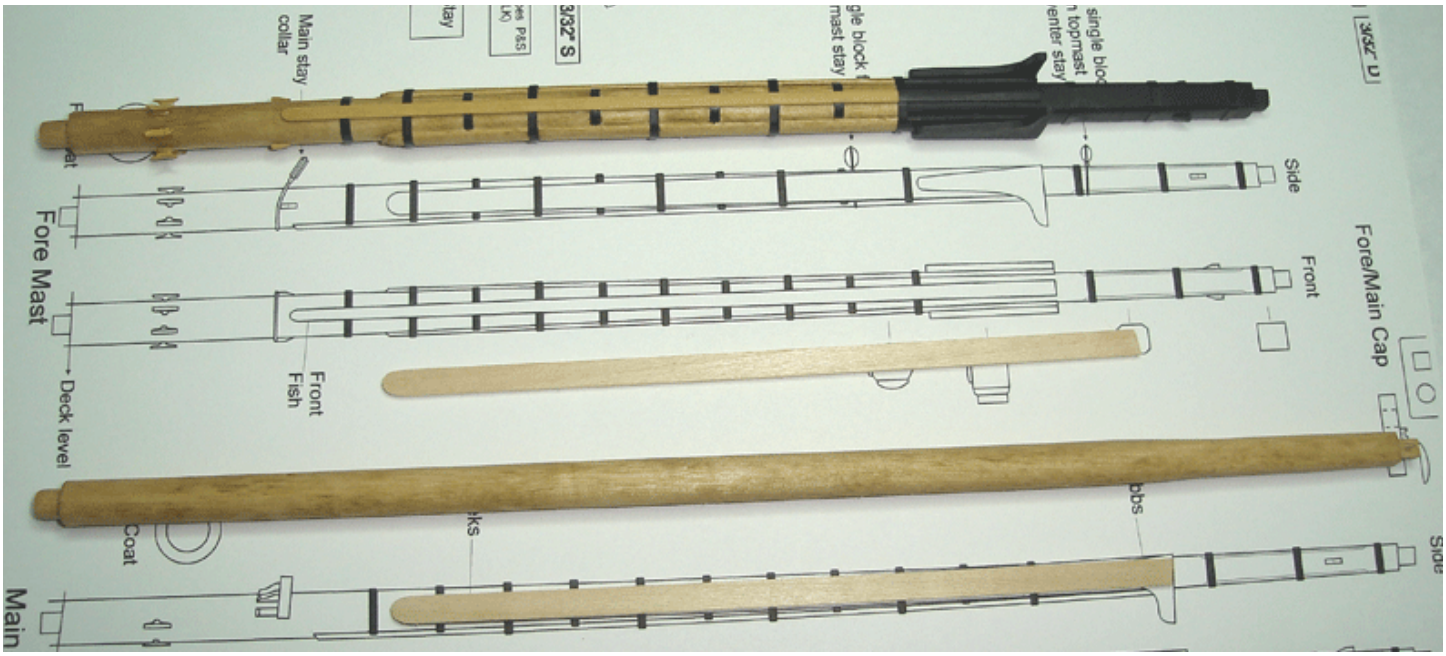


Chapter Seventeen Main and Fore Mast Construction

We will now begin construction of the fore and main lower masts. Examine the drawing above. Both lower masts will use the same initial construction principle. Other than their length and some other small details they are built the same way. Both lower masts are shaped using a 5/16" wood dowel. The initial construction is broken down into 8 steps as shown in that drawing. A detailed discussion for each step is presented below.

Step 1 — Cut each mast to length using a 5/16" dowel. Taper them towards the masthead. Don't taper them too severely. In fact, you should leave a little extra meat on the top of the mast where you will be shaping it to a square profile in step 2. With a sharp blade you can carve a small round tenon on the heel of each mast. This tenon should fit snug into the holes you drilled for them on deck.

Step 2 — Using the plans as a guide, carve or sand the top of the mast to a square profile. You can use a sharp blade to quickly remove most of the material. Then use a sanding block to clean it up and establish a nice sharp edge. To help keep the four sides from twisting at an angle you can draw some pencil lines to indicate each corner first. If you do this before starting to remove any material it will help keep the squared portions from looking like they are twisting. These four sides should remain straight and maintain the taper you achieved in step one. When finished, create a square tenon on the top of the mast which will be inserted into the cap. Leave the tenon a little oversized at this point so you can come back later and tweak it when your ready to fit the cap.

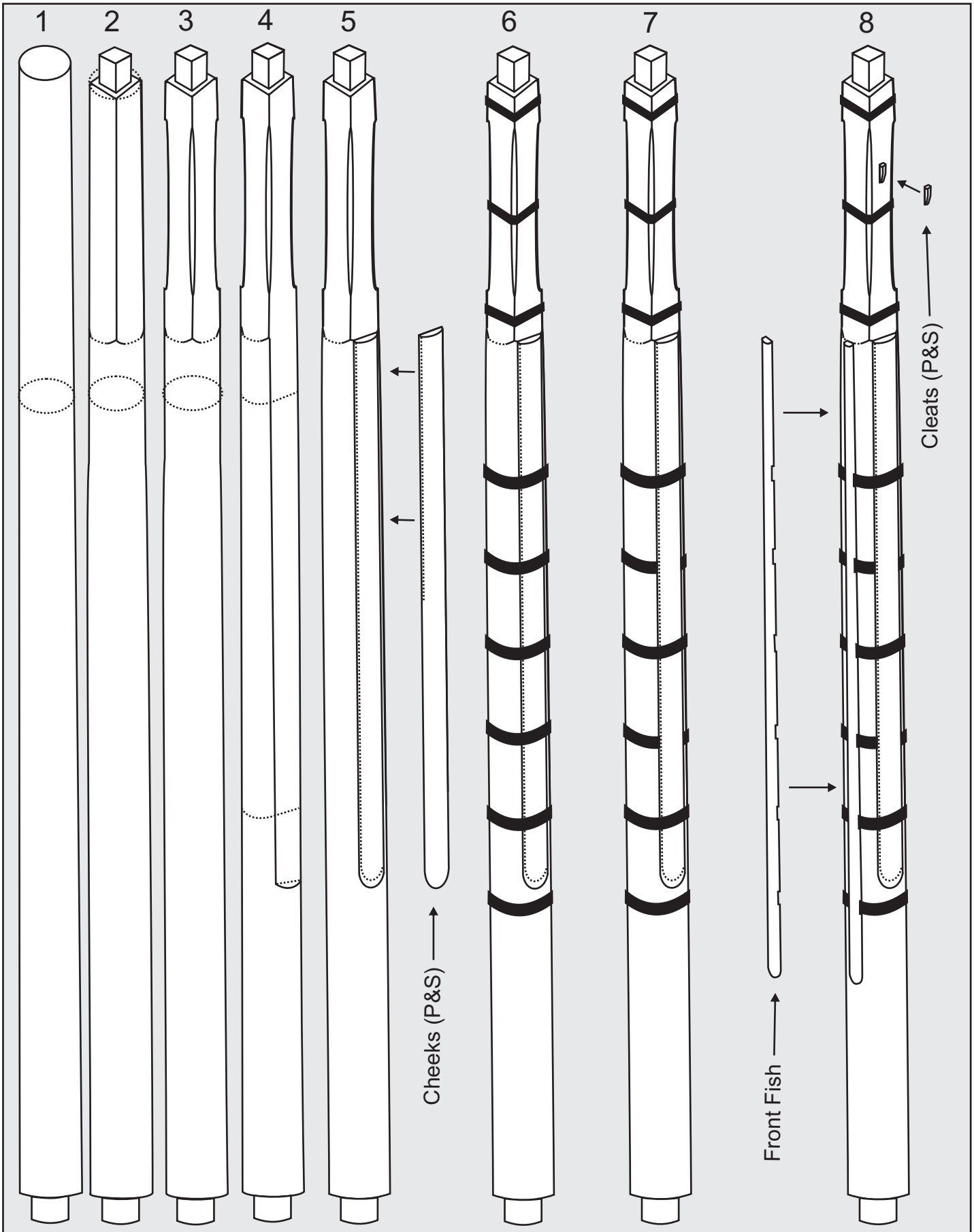
Step 3 — Chamfer the four corner edges of the squared portion of the masts. Reference the lengths and positions for the chamfered edge on the mast by first holding each mast against the plan sheet and marking them with a pencil.

Step 4 — In preparation for positioning the cheeks onto the sides of the mast we must flatten them first. The cheeks will be made from a 3/16" x 1/16" strip. Cut the cheeks to length using the plans as guide. Round off the bottom of each cheek. You only want to flatten "just-enough" of the mast on both sides so the cheeks will lay flat against them. To give you the correct area to be flattened it is recommended that you actually tape the two cheeks to the mast. This will give you the opportunity to trace their shapes onto each side of the masts. It will also give you the opportunity to make sure they are consistently positioned correctly across from one another as they run down the sides of each mast.

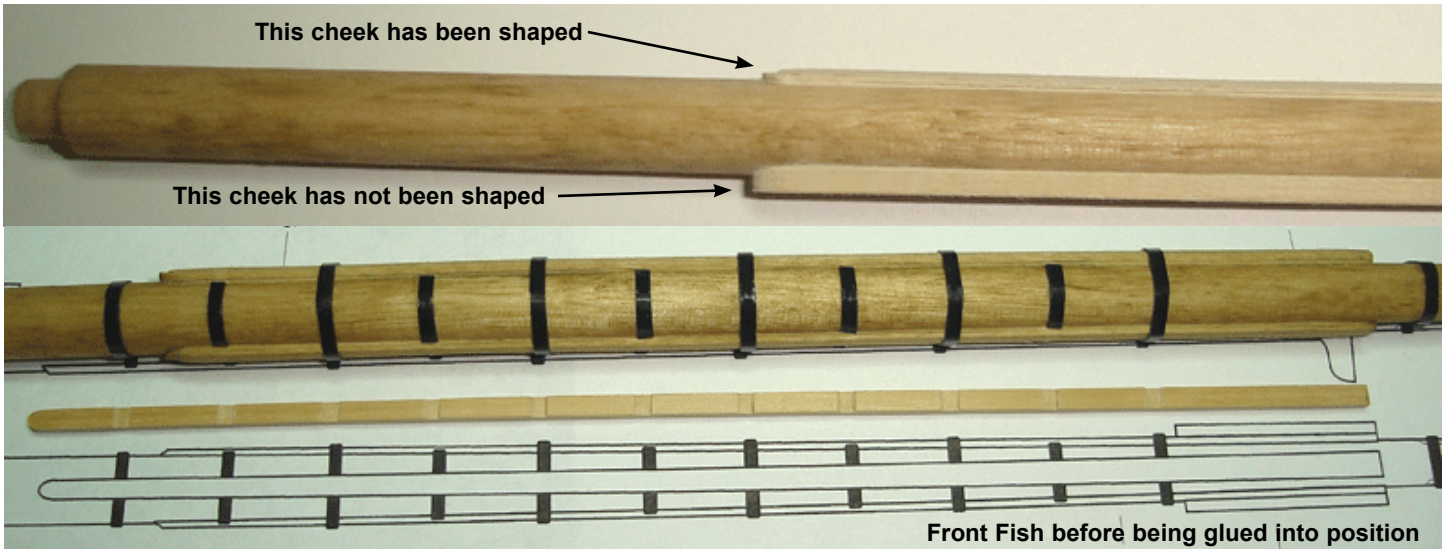
After tracing the shape of the cheeks you can flatten those areas of the mast. They can be carved or sanded flat. Use whatever method you feel most comfortable with.

Step 5 — Glue both cheeks onto the flattened areas of the lower masts. Once dry the cheeks can be sanded to their finished shape and thickness. At 1/16" they are too thick and too flat for our model. The cheeks need to be rounded to match the contour of the mast. Check the plans for details. The finished thickness on each edge of the cheeks should be closer to 1/32" than it is to 1/16". You might want to go even thinner than that along the extreme edge of each cheek but not by much. See the photo provided showing only one of the cheeks after it was shaped on the mast. You can see how the other one is too thick and still requires some shaping. The lower end of the cheeks has a carved "fingernail"-like detail. This is detail can be created using a sharp blade or by carefully filing the cheek to the proper profile. See the plans for details.

Step 6 and 7 — Use the 1/16" wide black pinstripe tape to simulate the iron bands around the mast. You can wrap



Initial Lower Mast construction- Fore and Main masts are the same except for their length and number of iron bands. Once completed the remaining details can be added that are unique to each. (cleats, hearts, boom rest, etc)



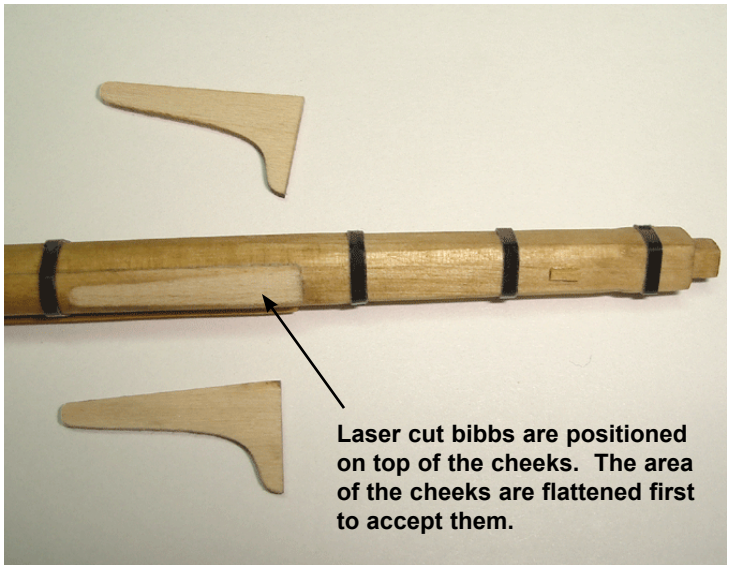
Front Fish before being glued into position

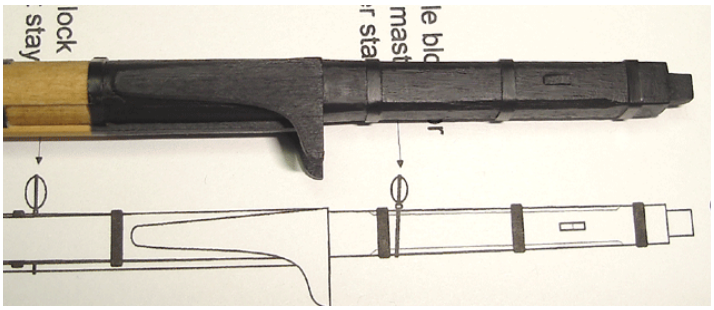
the tape around the mast two or three times which will be more than sufficient. You will notice on the plans that some of the bands are actually shown running under the cheeks. Even though this is the case, you should still initially wrap all of the bands around the entire mast. When you are finished, just use a sharp blade to cut those bands (those that appear to travel under the cheeks) close to the edge of the cheeks. Then remove the portion of the bands that sit on top of the cheeks. This will leave a nice clean cut along each cheek and do a good job of simulating them actually running underneath them. This may cause some of these cut hoops to lift up from the mast. The adhesive on the tape is not very strong. If this happens you can just use a little glue under the ends of the tape to secure them. It's better to be 100% sure that they will not start to lift away from the masts after you have a maze of rigging completed. That would make it tricky to navigate through with your tools to fix it later.

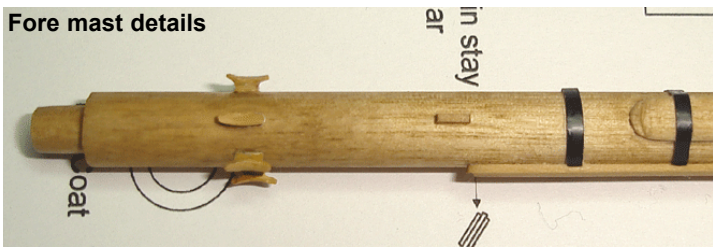
Step 8 — The front fish will be made using a 1/16" x 3/32" strip. Cut it to length and round off the bottom as shown on the plans. The front fish is not so wide that the mast would need to be flattened as was done for the cheeks. It will sit nicely on top of the mast bands. But first you will have to make notches along the front fish so it sits properly. Tape it to the mast temporarily and mark the locations for the notches on both edges of the front fish. Then file or carve the notches as shown in the photo provided. Once complete you can glue it onto the mast permanently.

Both masts also have two chocks/cleats located at the top of the mast head. These were made using 1/32" x 1/32" strips. They were glued to the masts prior to shaping. Just glue the "as cut" length of wood to each side of the mast. They are so tiny it is actually easier to shape them after they are glued in position.

You now have a fairly complete foundation built for both the fore and main masts. At this point it would be a great time to add those other small details that are unique to each lower mast. The bibbs for each mast have been laser cut for you (1/32" thick). Even though both masts will have a set of bibbs you should take care to position them properly. The tops will sit on top of the bibbs. If you examine the plans you will notice how both tops are parallel to the waterline. The main mast has a significant rake aft and therefore the top edge of the bibs is angled to accommodate the top as it will be situated. Use the plans as a


Laser cut bibbs are positioned on top of the cheeks. The area of the cheeks are flattened first to accept them.




Fore mast details

guide while gluing the bibbs into position. Remember to be conscious of the angles needed to properly position the tops in the next section of this chapter.

The cheeks will have to be flattened out before you glue the bibs into place. So you might want to temporarily tape them into position and trace their outline onto the cheeks. Than flatten only that area so the bibbs will sit properly. See the photo provided on the previous page. To finish off both lower masts you can now add the 5mm metal cleats to the bottom of each of them. Examine the belaying plan so you can see where they are positioned. There are six on the fore mast and four on the main mast.

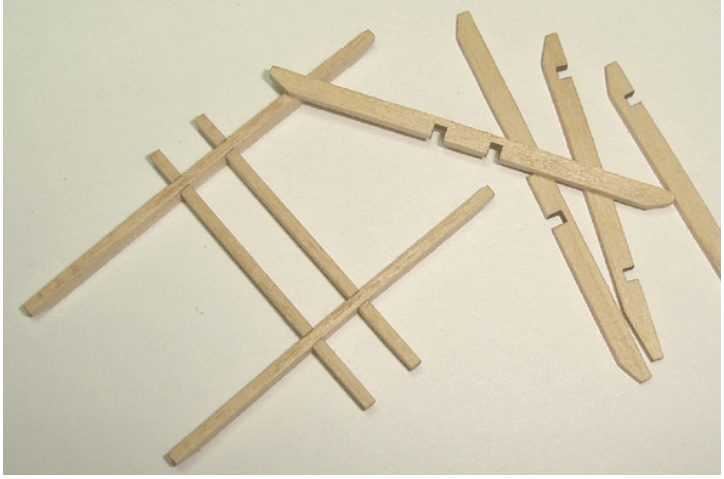
The fore mast also has an additional set of wooden chocks just below the front fish to help secure the heart collar for the main stay. The main mast also has a boom rest which should be constructed as shown on the plans. Use some scrap wood that is 1/16" thick to shape the top of the boom rest so it fits around half the diameter of the mast. Then create the support knees shown under the boom rest using 1/32" x 1/16" strips. Once again it might be easier to shape these knees after gluing them onto the mast. They are tiny. Note the angle shown on the plans for the boom rest.

Paint both mast assemblies black down to the first iron band as shown in the photos provided. You can also paint the iron bands with black acrylic paint to reduce the glossy finish. These bands would not have been shiny. Finally, the 5mm cleats around the base of the masts can be painted to look like wood. (Or, depending on your preferences they can also be painted black)

Main and Fore Top Construction

Like the lower masts, the fore and main tops are nearly identical as far as construction is concerned. There are some slight differences in size, block types, and other

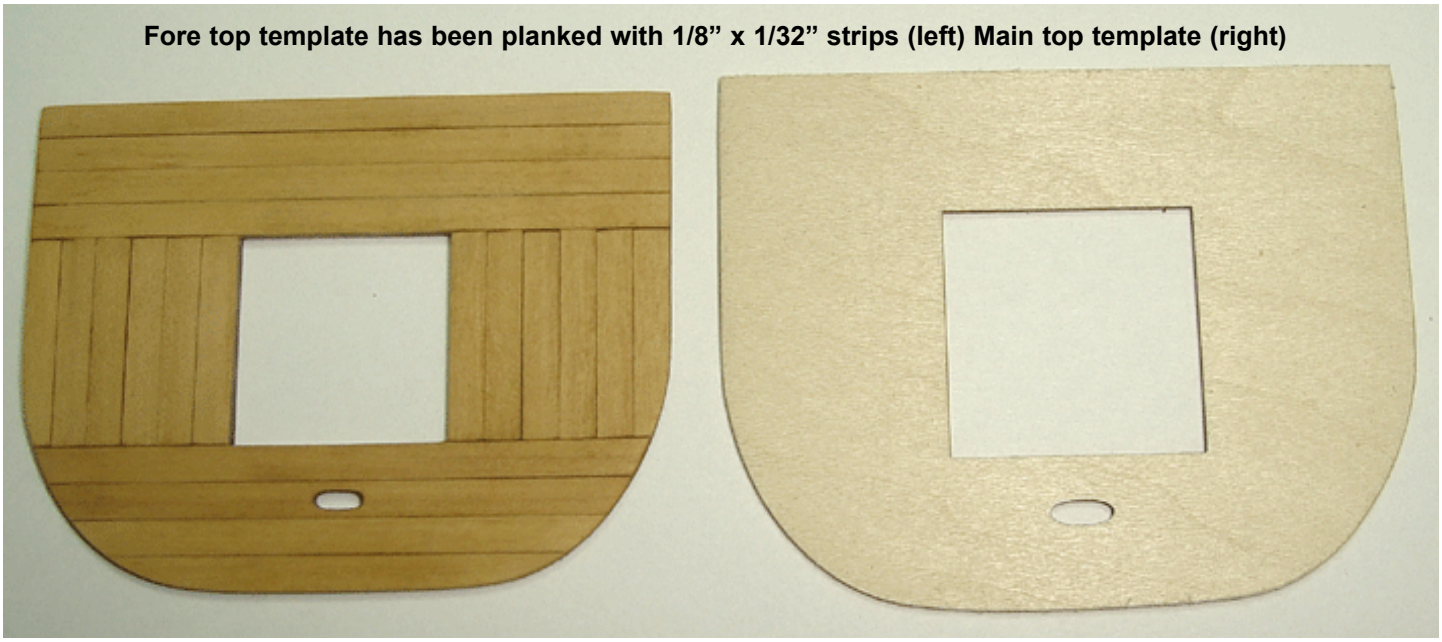
Trestle trees and cross trees dry fit together. Test fit on the lower mast first before gluing.



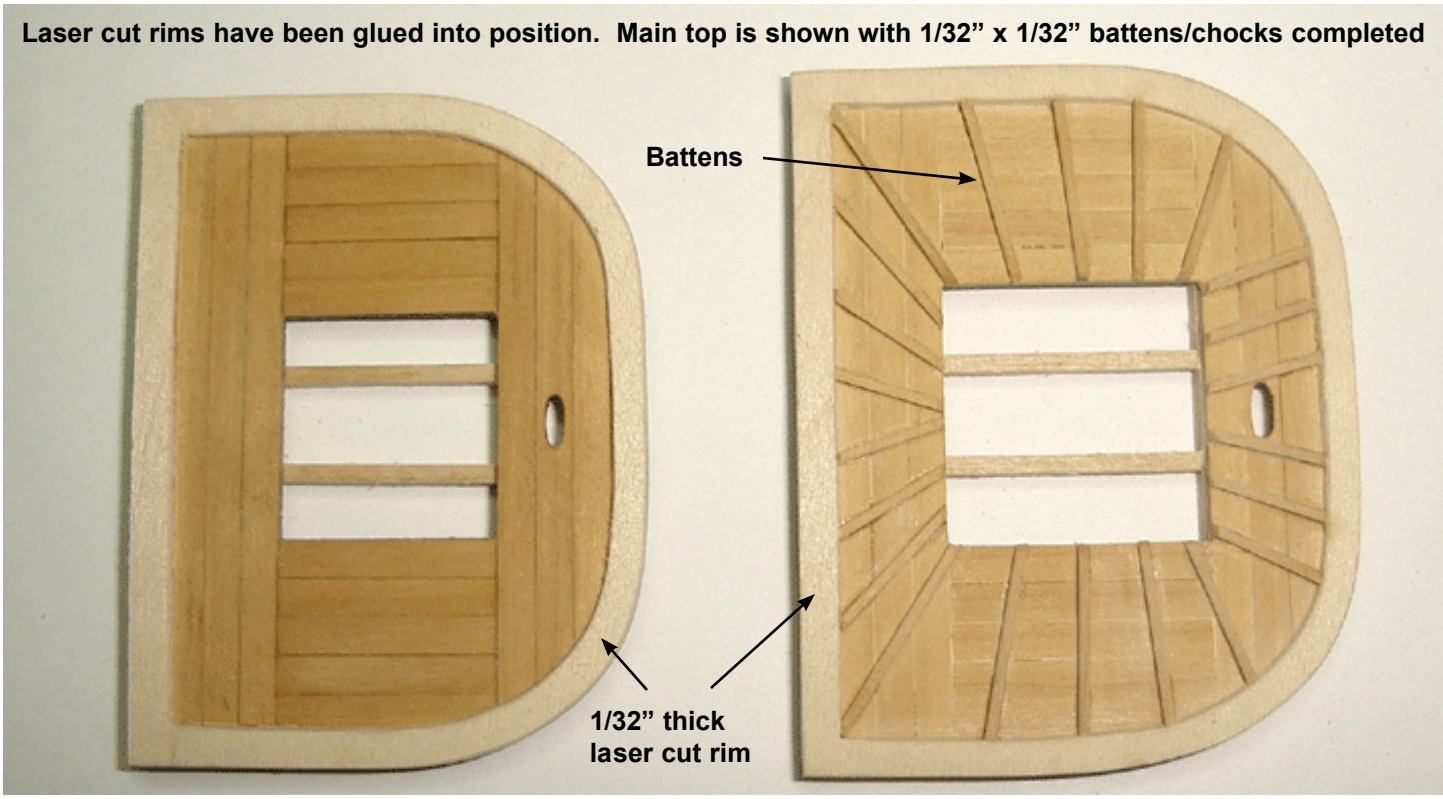
small details but essentially they can be built the same way. Begin by assembling the cross trees and trestle trees. These are laser cut for you and are 1/16" thick. Please note that an extra laser cut part for each is provided in case one breaks during construction. The aft-most cross tree is slightly longer than its forward counterpart for each top. Please examine the plans carefully for these details.

You should "dry fit" the cross trees and trestle trees together. Do not glue them together permanently yet. Before doing so it is recommended that you test their fit in position on the lower masts. There may be slight differences in the diameter of your masts in comparison to the plans. It is better to make sure that you can effectively slide the trestle trees onto the masts so they sit properly on top of the bibs. The cleats on each mast will prevent you from sliding them into position while facing in the right direction. Turn the trestle trees at a right angle to the cleats in order to bypass them. Once the cross trees are slid past the cleats you can turn them so they are facing in the proper direction.

Fore top template has been planked with 1/8" x 1/32" strips (left) Main top template (right)



Laser cut rims have been glued into position. Main top is shown with 1/32" x 1/32" battens/chocks completed



The trestle trees are flexible enough to "flex" while turning them to face forward. This isn't such a big issue while they aren't glued together permanently but once the tops are completed it will be the only way they can be slid into position. If the trestle trees are too close together to slide into position, simply adjust the notches in the cross trees to make them further apart.

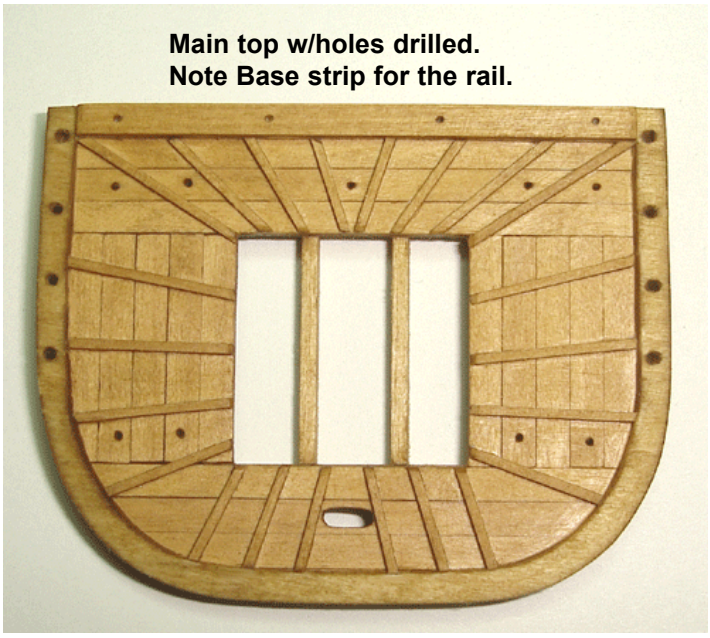
Once you are satisfied they can be glued together permanently. Be careful while doing so to ensure the assemblies are squared up properly. See the photo provided.

Laser cut templates are provided for both tops. They are 1/32" thick. These two templates need to be planked as shown on the plans. Only the top side of each template is planked. Plank them with 1/8" x 1/32" strips. Plank the fore and aft sides of each template first. Then plank the remaining space left between those areas. See the photo provided that shows the fore top template planked and the main top template before planking. Glue the planked tops onto the crosstrees when you are finished.

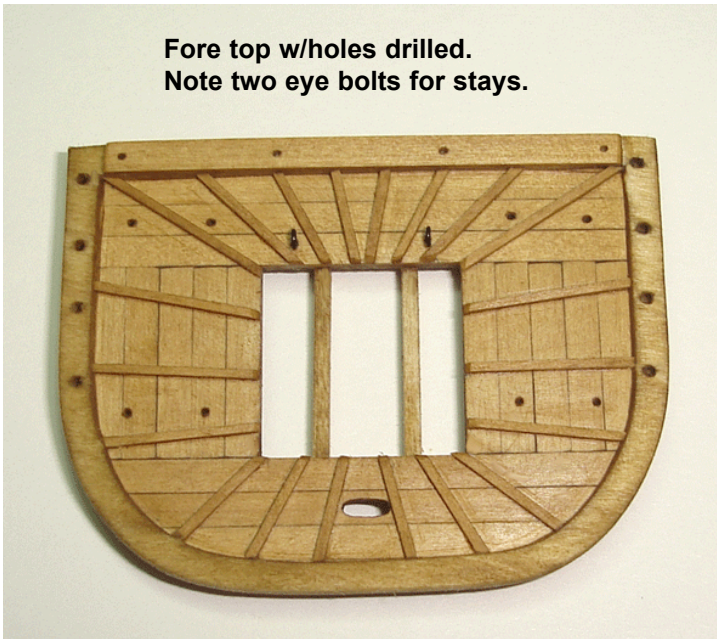
After you finish planking both tops glue the rim for each into position. The rims have also been laser cut and they are 1/32" thick. They are cut slightly oversized so you can sand the outside edges of each rim flush with outside edges of the tops. There are several battens that must be glued on top of the assembly afterwards. Use the plans to determine the positions for these battens. They are cut from 1/32" x 1/32" strips. See the photo provided that shows the rim in position and the battens completed for the main top. At this point, you can glue the base strip into position for the rail. It is located on the aft edge of the tops. It does not extend across the entire width of the top. The stanchions for the rail will be pinned into holes drilled into this base strip. A 1/32" x 1/18" strip is used for this base strip. See the photos provided. You will also notice that all of the holes for the deadeyes, blocks and stanchion pins are shown pre-drilled in those photos. This would be an excellent time to drill them. Two eye bolts are also shown in position on the fore top.

Please note that there are two methods that can be used to hang the blocks under each top. The more traditional "kit" method would be to drill some eyebolts into the cross trees and then seize the blocks to them. The positions for the blocks using this method are shown on the plans. However another more accurate method can be used instead. Depending on your experience level you can use either method. Read through the directions provided below for the alternative method and then decide which one you would be more comfortable using.

The more accurate way to hang these blocks is shown in the diagram provided below. The locations for the bocks using this method are also shown on the plans. It will require that you drill eight holes entirely through the top. This can be seen in the many photos that are provided illustrating this alternative process. The blocks are actually hung from the top and held in position with the use of a pin. In our case the pin is cut from 28 gauge black wire. Cut a length of .012 black rigging line and fold it in half. This will create a loop on one end which is pushed through the hole you drilled through the top. Push it through from the underside of the top. Examine photo A. You will see the loop protruding through the top. Simply insert a tiny length of 28 gauge wire into the loop and pull it tightly down onto it. The pin prevents the block from falling through the top. Secure the pin and loop with a small drop of glue afterwards.



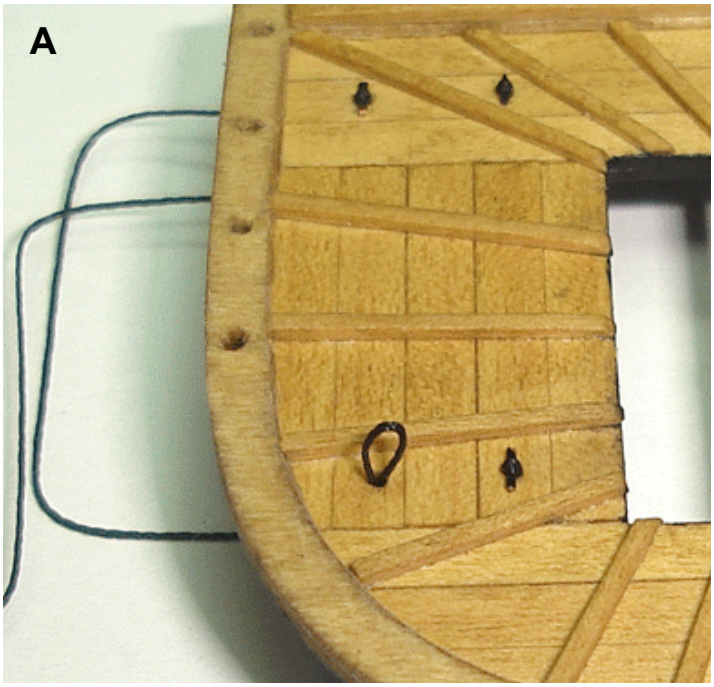
Main top w/holes drilled.
Note Base strip for the rail.

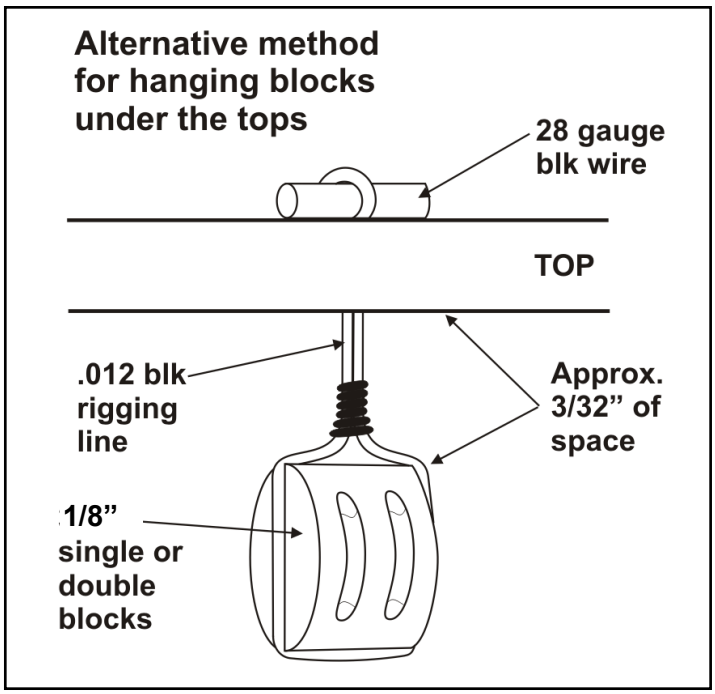


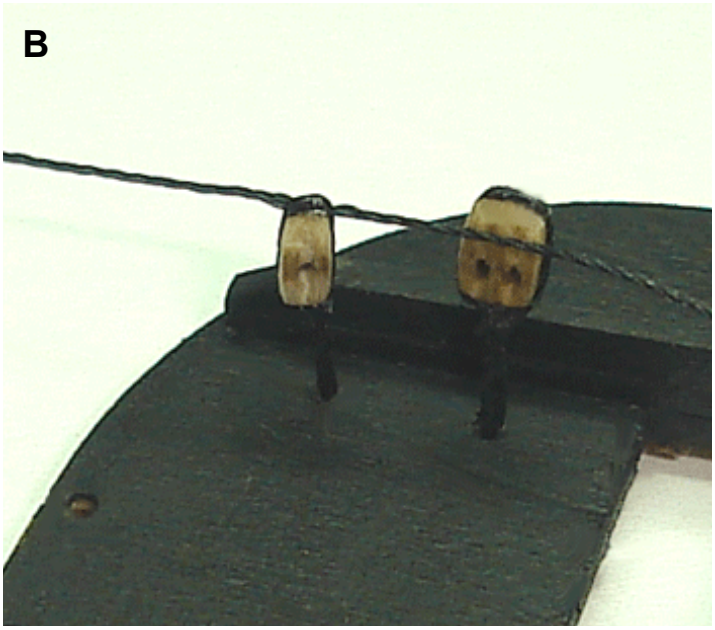
Fore top w/holes drilled.
Note two eye bolts for stays.

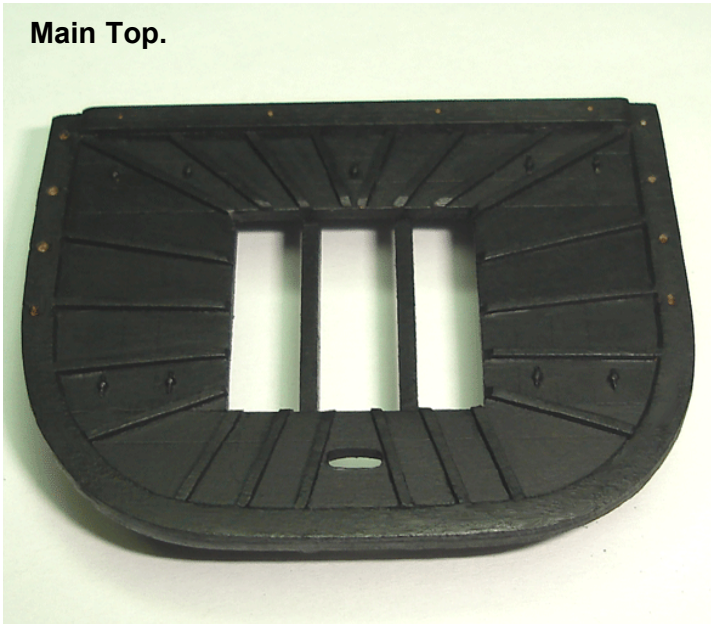
Then flip the top over (photo B) and seize the two loose ends of the rigging line together. The seizing should be positioned about 3/32" below the top. This detail is shown in the diagram provided earlier. Then "tie" the blocks in position with the excess of the two loose ends. A simple overhand knot will do. This can be seen clearly in photo B. Secure the knot and rigging line around the blocks with some glue. Then snip off the excess rigging line with a nail clipper. You will note that the top was NOT painted in these photos so the details can be seen better. You should however, paint the top black on both sides before securing the blocks as shown. It will be much easier to paint the tops without having the blocks dangling in your way.

A similar method is used to secure the deadeyes along the side of each top. Seize an eye on the looped end of some (.012) black rigging line. (See Photo C) The eyes are stiffened with some super glue. Twist an awl back and forth in the eye while the glue sets. This will help form a very round eye. You can add another drop of glue afterwards for good measure. This technique is a good way to simulate the deadeye plate. Normally these were made of metal but if you create them carefully no one will know they're not. Try and keep all of the eyes a similar size and paint them black afterwards so they aren't shiny from the glue. Then pull the loose ends up through the bottom of the holes for each deadeye. Position a 2.5 mm deadeye on top of the rigging line so it has two holes across the top. Use a drop of glue to help keep it in position. Don't use too much glue as you only want to hold it steady so you have enough time to make an overhand knot around the deadeye with the two lose ends of line. Add another drop of glue to the knot and snip off the excess with your nail clipper.







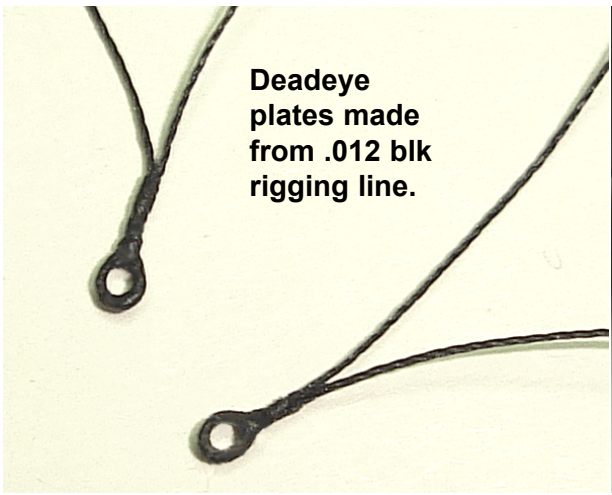


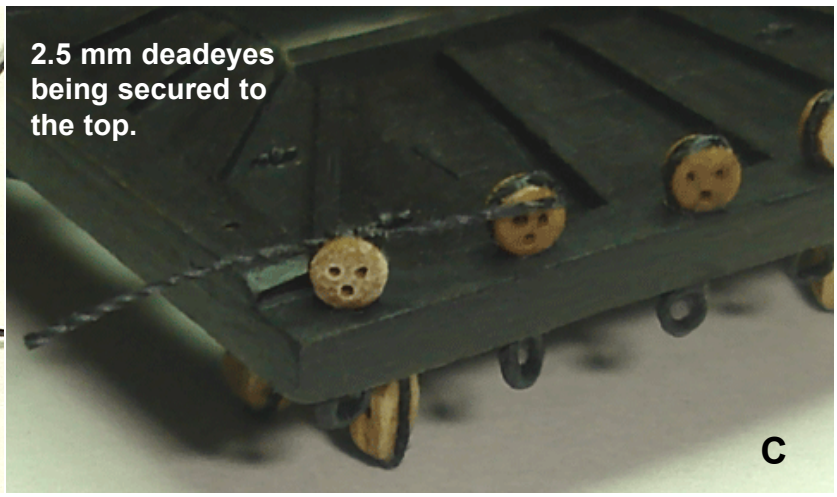
The rail positioned on each top is made using 1/16" x 1/16" strips. Use the plans to cut each piece (top rail and stanchions) to length. Glue a tiny length of 28 gauge wire into the bottom of each stanchion. The wire should protrude about 1/16" from the pre-drilled hole afterwards to form a pin. These pins will be glued into the holes you drilled for them in the base strip along the top. It will help give the railing some extra strength. If it is going to break free from the top it will most likely be along the bottom of these stanchions.

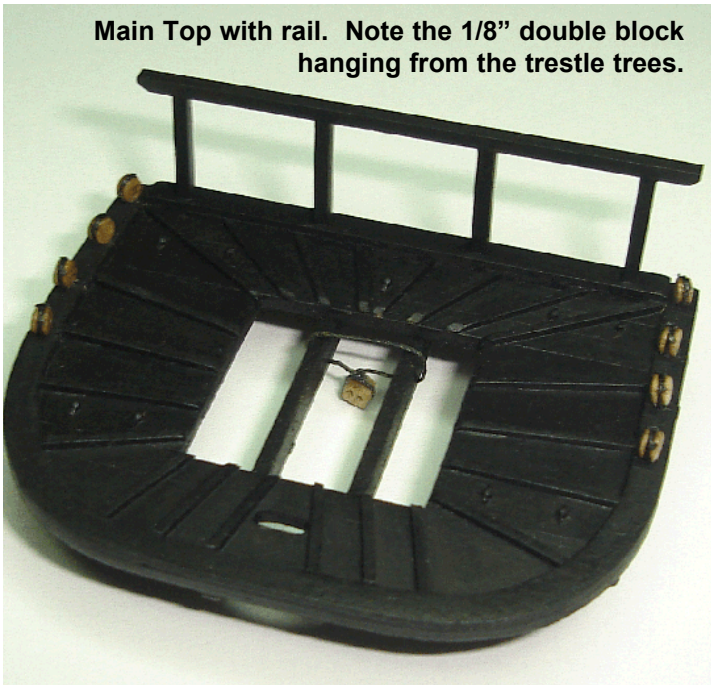
Glue the four stanchions to the top rail. But before you do so, mark the positions for each stanchion along the top rail so they line up with the holes you drilled in the base strip for pins. Otherwise they will not be aligned correctly after you glue the rail into position on the top. You can see a photo of the main and fore tops showing the rail for each. Note how the main top has a 1/8" double block hanging from its trestle trees. See the plans for details. You can add that block at this time. The rail on the main top is glued into position and painted black. The rail on the fore top will NOT be glued into place at this time. You can still paint it. You can still position it on the top. Just DON'T PERMANENTLY GLUE it into position yet. The main royal and main topgallant stays are belayed to the eyebolts you placed on the fore top. It will be much easier to set these up properly if the rail doesn't get in the way while doing so. You will be able to remove the rail to set up these two stays later in the project. After you complete that step the rail can be glued into place permanently. Note: In the photo of the fore top the rail is separated from the top in order to show the pins on the bottom of each stanchion. It has not been painted and no blocks or deadeyes have been added to it yet.

You can now position the top on the lower mast assemblies. You can mark the location of the mast onto the trestle trees first. The position of the lower mast is shown on the plans. This will help ensure that the tops are not sitting too far forward or aft once you glue them in place on top of the bibbs.

With the tops positioned, two cross beams for support can be add between the trestle trees. One is placed in front and in back of the lower masts. See the plans which show this detail on the overhead view of the trestle trees. The cross beams are made from 1/16" x 1/16" strips. Once that is completed the bolsters can be added as well. The



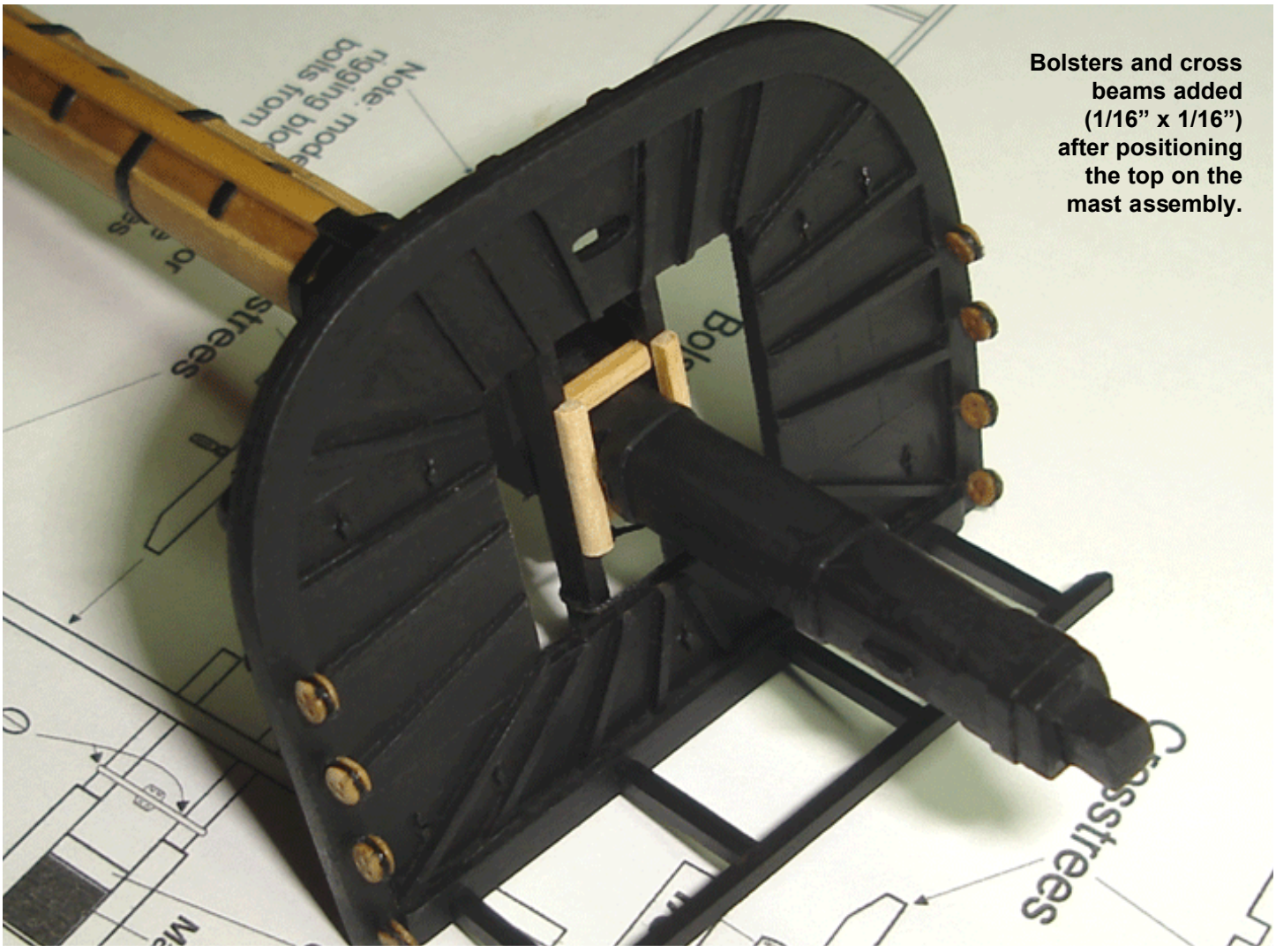




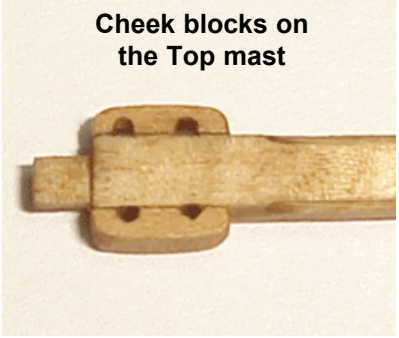
Main Top with rail. Note the 1/8" double block hanging from the trestle trees.

Fore top unpainted with rail showing pins in the base of each stanchion

bolsters are made from 1/16" x 1/16" strips and the top-outside edge is rounded off. Glue the bolsters on top of the trestle tress and paint them black along with the cross beams. You could also rig the 5/32" single block, the 1/8" single block and main stay collar to the fore mast at this time. It will be much easier to do this now rather than wait until the masts are glued into place on the model later.



Bolsters and cross beams added (1/16" x 1/16") after positioning the top on the mast assembly.



Top Mast Construction

Both top masts are identical in construction and size for the fore and main masts. The only difference between the two is the number and types of blocks that are rigged to them. The top masts are shaped using a 3/16" dia. dowel. They are shaped just like the many other masts and spar pieces you have already made up to this point. There are segments of the top mast that are square or eight-sided. Start shaping the heel of the mast so it is square. Then further shape those portions of the heel that are eight-sided to complete it. The balance of the top mast can then be tapered as shown on the plans. But don't taper it fully. Leave it a little thicker so you can shape (squared, eight-sided, and chamfered) the other areas of the mast.

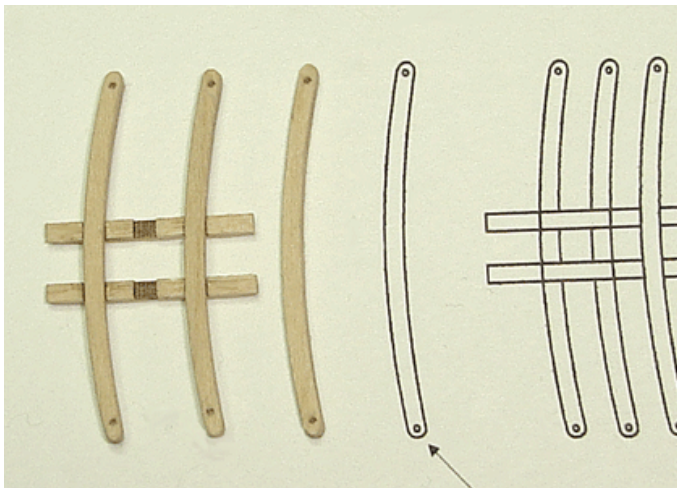
When you are satisfied that the mast is shaped properly you can drill the hole for fid. It doesn't need to be square. Simply make the hole large enough that you can slide the fid through it. The fid is shaped from a 1/16" x 1/16" strip. The fid prevents the top mast from sliding through the top.

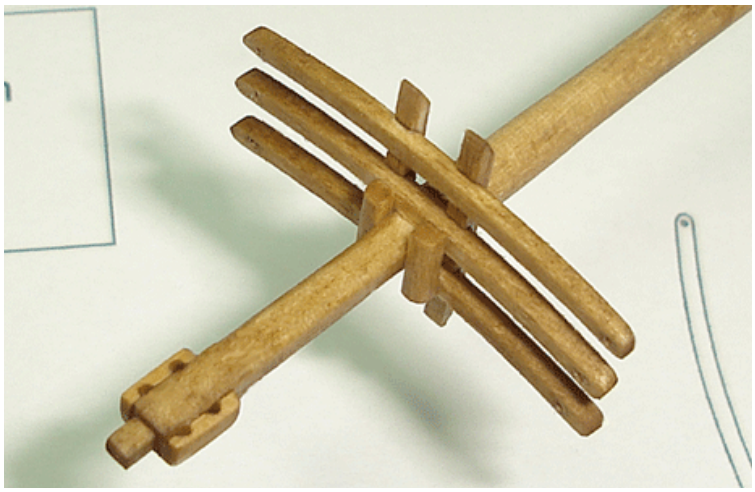
Next you should take the laser cut cap for the lower mast and test its fit. Test that the square tenon on the top of the lower mast fits snug. Then remove the cap and make sure you can slide it onto the top mast. You will probably have to enlarge the round hole in the cap in order to slide it far enough down towards the heel of the top mast. Once the cap can slide into position on the top mast properly you should test fit the top mast in position. See the photo provided that shows the fore top mast seated properly before painting. You will also notice the saddle for the lower yard sling glued to the top of the cap in that photo. This shouldn't be added until after the top mast is completed and glued into position permanently. There are still a few additional steps to complete first.

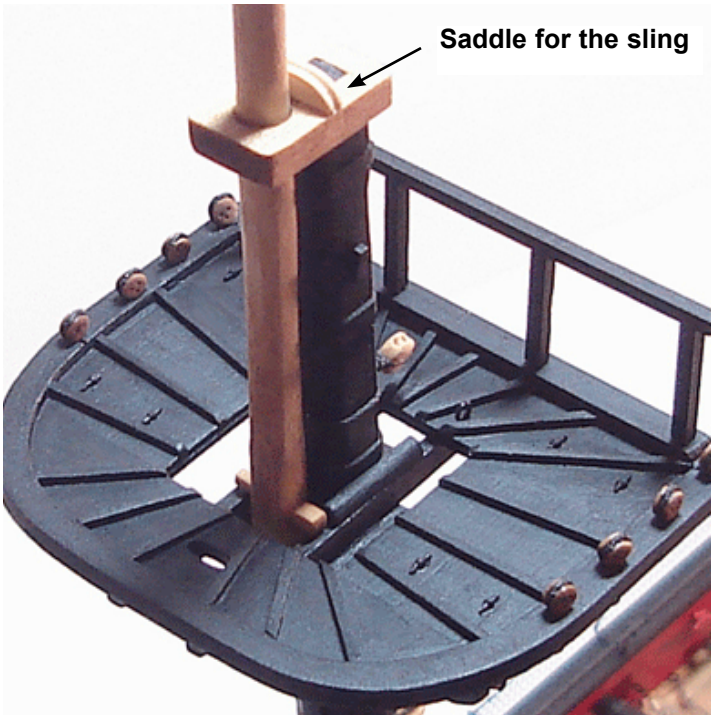
When you are satisfied that the top mast fits in position, you should remove it so the cheek blocks can be shaped and attached. Do not remove the cap from the top mast. You must keep the cap on the top mast because once the cheek blocks are added it would be impossible to slide the cap onto the top mast. The cheek blocks would never fit through the round hole of the cap. The cheek blocks are made from a 3/32" x 1/16" strip. Cut a small piece to length and file two small grooves on one side which will simulate the sheave holes. See the photo provided that shows the cheek blocks in position. It is probably easier to shape the cheek blocks after you glue them into position. Thin them down and re-drill the sheave holes using the grooves you made as a guide. The grooves you pre-established will help prevent the small pieces from splitting. You can now glue the top mast into position and add the saddle for the sling on the lower cap. Be sure to leave a little room between the saddle and the topmast. This is where you will secure the lift blocks for the lower yards. The saddle was shaped from a piece of 3/32" x 1/16" strip. It was rounded off as shown and a groove was filed down the center. Paint the balance of the mast doubling black afterwards.

Top Mast Cross Trees

The cross trees and trestle trees for the top mast have been laser cut for you. They are 1/16" thick. It is recom-







mended that you drill the small holes on the ends of the cross tress before you remove them from the laser cut sheet. This will help prevent the fragile pieces from splitting. Assemble them directly on top of the plan sheet to insure they are squared up properly. IMPORTANT: Do not glue the center cross tree into position yet. Only secure the two outside trees. You will not be able to slide the assembly past the cheek blocks with the center cross tree in position. As you did with the lower top, slide the trestle trees into position on the top mast. Once they are past the cheek blocks you can twist the trestle trees so they are facing forward. See the photo provided. Once glued into place you can add the center cross tree. To finish them off shape the bolsters using a 1/16" x 1/16" strip and glue them into position as shown.

Topgallant Mast/Pole

The topgallant masts are also the same for both the main and fore mast assemblies. They should be shaped/tapered as shown on the plans like the others. Use a 1/8" dia. dowel. This mast when tapered will get somewhat fragile. Be careful while shaping it so the mast doesn't snap in two.

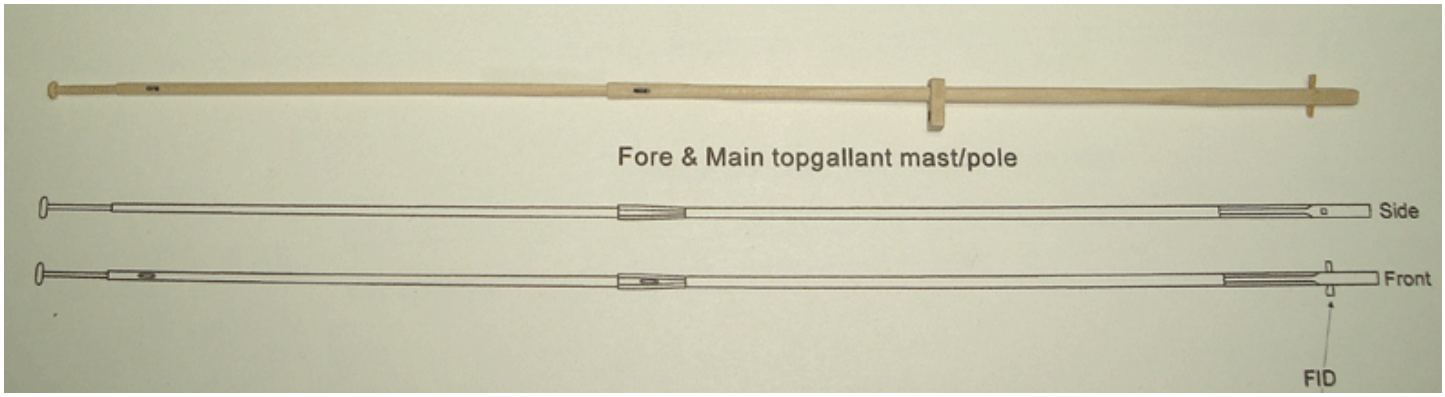
Drill the hole for the fid when you are finished. This time the fid will be shaped using 1/32" x 1/32" strip. There are also two simulated sheaves which you can create/drill through the masts. Make sure you choose a very small drill bit to avoid splitting the wood. Mark the locations for your holes on both sides of the mast first. Then drill only part way through one side of the mast. Don't apply too much pressure with the drill and allow the bit to do all of the work. Then flip the mast over and complete the hole from the other side. This will help prevent splitting and assure that the holes are made straight through the mast rather than at an angle. The bit should align itself with the hole you started on the other side if you properly marked them level with each other. Finally, you can add the ball truck on the tip of the pole. This was simply shaped from some scrap stock. But as shown in the photo provided, please remember to slide the laser cut cap onto the mast first. Once again it will be difficult to do so after the ball truck is glued into position. Test the caps fit and enlarge the holes if needed. The heel of the mast should slide snugly between the top mast crosstrees. Test the mast in position with the cap before gluing the ball truck into position.

Rigging your blocks

It would be best to rig any blocks to the finished mast assemblies prior to "stepping" them permanently on the model. Many of them, especially those on the fighting tops, would be difficult to add once the shrouds and standing rigging are completed. Examine the plans carefully which show all of the lift blocks, jeer blocks and slings. See the illustration provided. There should be four blocks that hang from the top mast crosstrees as well, and a few others for the main stays. Although only a few of these blocks are mentioned here, all of them are shown on the plans along with their sizes. You will be so happy that you secured them in advance of starting the rigging. Also see some of the photos provided.

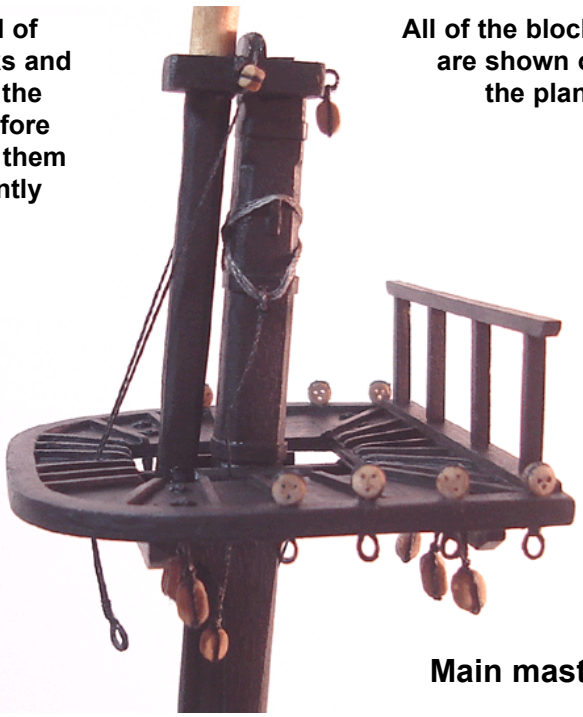
Stepping the masts

With the mast assemblies completed, touch up any of the painted areas before moving forward. You will notice on the plans that the main mast has a noticeable rake aft while the fore mast is almost perfectly vertical. It will be important to establish these correct angles. So rather than

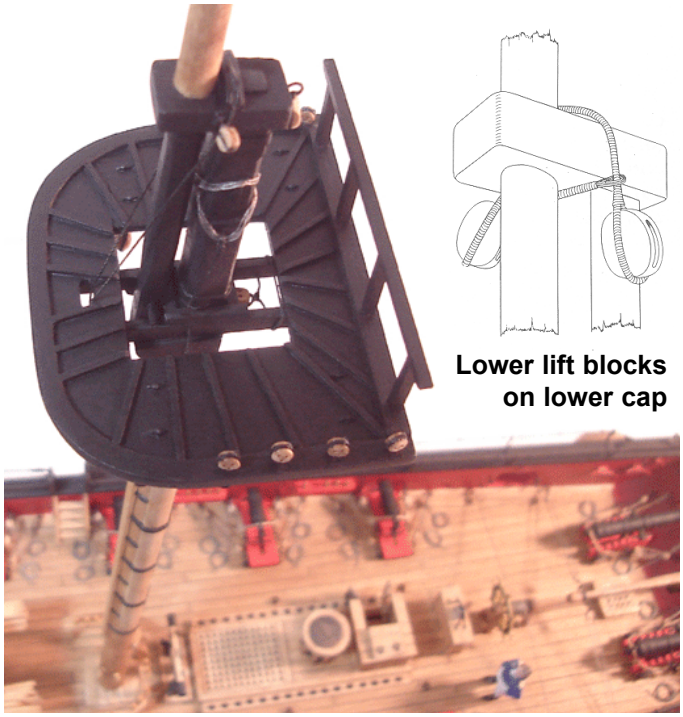


Attach all of the blocks and slings to the masts before stepping them permanently

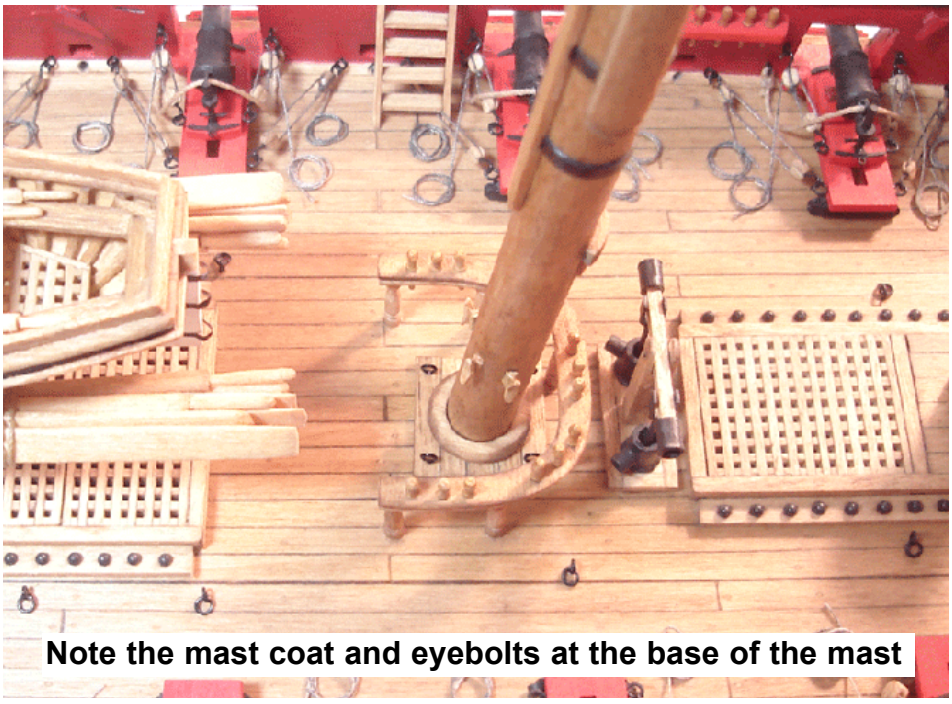
All of the blocks are shown on the plans.



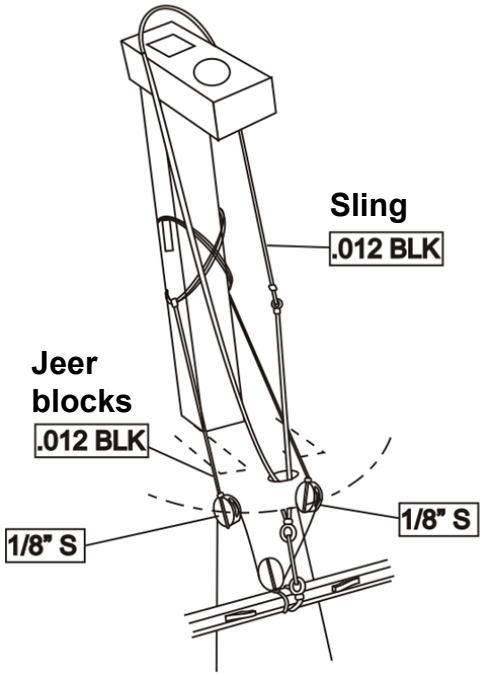
Main mast



Lower lift blocks on lower cap



Note the mast coat and eyebolts at the base of the mast



use super glue (CA) to secure them, it is recommended that yellow carpenters glue be used. This will give you adequate time to establish the correct angles before the glue dries. You will walk around the model to view it from various angles. Adjust the angles for both masts slightly until you are satisfied. The two masts should be lined up with one another when viewed from the bow and stern. But before you do so there are a few things that must be completed first.

At the base of each mast you will see the mast coat or wedges. These were often coated with canvas and tarred. Therefore you could paint them black although leaving them natural is perfectly acceptable. The mast coats have been laser cut for you. They are 1/16" thick. Round off the top outside edges of the mast coat and slip them onto the heel of each mast assembly. After the lower mast tenons have been glued into the deck, the mast coats can be slid down into position so they lay flat on deck. See the photo provided. As with everything else, test their fit prior to final gluing.

There is one remaining step to do BEFORE gluing the masts into position. You should add all of the eye bolts that surround the base of each mast on deck. There are four surrounding the main mast and six around the fore mast. Their locations are all clearly shown on the belaying plan. Once completed you can step the masts and slide the mast coats into place as was just described.