HM Cutter Trial 1790

Building Manual

PART NUMBER - VM-14

VANGUARD MODELS

BY CHRIS WATTON

HM CUTTER TRIAL

HISTORY

The 'Trial' was built by Thomas Dusterville of Plymouth to the designs of Captain John Schank (Ordered on 1st December 1788). It measured 65 feet in length by 21 feet in the beam and had a tonnage of 123 burden. She had a complement of 45.

The hull was fitted with three of Captain Schank's sliding keels, which give the shallow hull directional stability when under sail.

On 28 June 1793, Trial took a privateer from St Marlo, the 14-gun 'Le Feret'. In 1797 Trial captured the privateer brig 'Le Courier de la Mer'. In 1798 whilst keeping watch on the invasion flotilla at Le Havre, in company with a frigate and a bomb vessel, her ability to sail close inshore was useful in a brief action with the 36-gun frigate 'La Confiance' and the 20-gun corvette 'La Vesuve'. The former was beached, deserted and later burnt by a boat action; the corvette was driven ashore but refloated and escaped when superior forces drove off the British squadron.

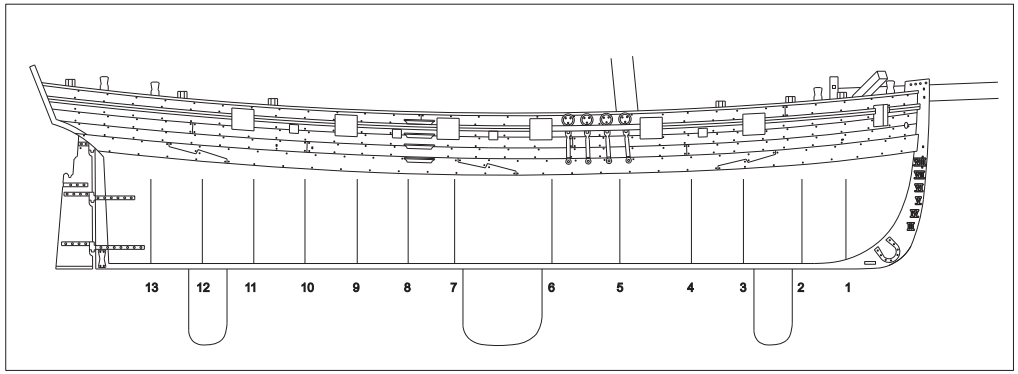
The Trial was hulked in 1810 and became a depot ship at Waterford. She was still in service in the 1840's, at Callao in Peru as a coal depot, and sold in 1848 - a very long service career for such a vessel.

When first commissioned in 1790, Trial's main armament was 8 x 3 Pounder carriage guns. In 1793, 4 x 12 Pounder carronades were added. It is with these extra guns that the kit is modelled on, giving her 12 guns in total.

Trial was fitted with stocks for swivel guns on the gunwale, but research suggests that these were never once used during her long career, so no swivel guns have been included. It is important to note that once carronades were added to a ship's armament, the need for swivel guns was completely negated, as carronades did the same job, but much more effectively.

Reference:

Winfield, Rif (2008). British Warships in the Age of Sail 1793–1817: Design, Construction, Careers and Fates. Seaforth. ISBN 978-1861762467.



THE KIT

Although the kit has many parts, this does not mean it is more complicated than standard kits you may be used to. It simply means that more parts are pre-made/cut than most other kits of this class, meaning you do not have to manufacture the parts yourself from wood stock supplied in the kit.

This model kit is designed to be as accurate as possible for a commercial kit in both scale and detail. Although Trial is as easy to build as we can make it, very basic woodworking skills (and patience) are still required. Estimated build time is between 30 to 50 hours, so a work space will have to be put aside for the job. Do not remove parts from the laser cut sheets until actually required for fitting, as they can be easily damaged or lost. We recommend all planks and laser cut parts that require bending, are 'pre-bent' before gluing.

PLEASE NOTE - This is very important.
Take plenty of time to study this manual until you are confident enough to tackle each stage of construction. Patience is the key word when building any scale model. Treat each stage as a separate project and the overall effect of the completed subject will be much enhanced.

Care should be taken when cutting parts from the laser and brass etched sheets. The sheet from which you are going to cut the parts should be laid on a hard, flat surface. Use a heavy-duty craft knife (a Stanley Knife is perfect and is and always has been my staple for all manner of cutting) with a good strong blade to cut through the tabs holding the parts in place.
It is easier to paint most of the photo-etched parts before removing them from their sheets. They can be touched up again once in place on the model. When painting parts in wood, use multiple coats with fine sanding in-between each coat to help minimise the grain visibility. Never settle on just a single coat, but instead take your time with every single sub assembly. Consider using a coat of flat varnish under your paint too.

We have included a building cradle on the 2mm MDF laser sheet that is for use when building the model, marking the waterline etc. Do not make up the Mirror and clear acetate cradle until the model is complete.

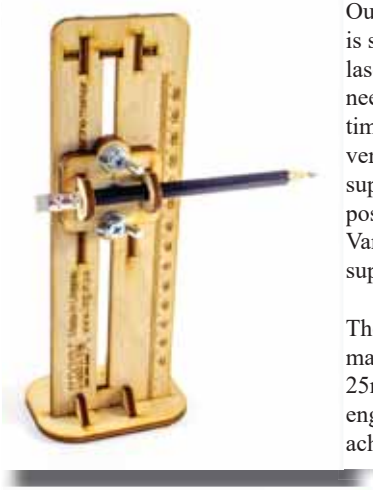
Any heat discolouration due to laser cutting/engraving can usually be removed with a very light surface sanding with 320/400 grit, being careful not to damage engraved detail. Then to use a stiff brush to remove any dust from engraved details afterwards.

Finally, Trial's skill level is 'Amateur'. This means that it should be well within the grasp of a modeller who has built a slightly simpler kit, such as a number of our fishing boats. However, the more advanced and seasoned modeller will still benefit from an intuitive build with the same levels of detail you would normally find in a more advanced kit.

Recommended tool list

(All items listed were used by the modeller to build the Trial prototype model)
1: Craft knife (or standard Stanley Knife, which is robust enough for most jobs)
2: A selection of needle files
3: Razor saw
4: Pin vice or small electric drill.
5: Selection of drill bits from 0.5mm to 1mm
6: Selection of abrasive paper and sanding block (110, 180, 240, 320, 400)
7: Selection of good quality paint brushes
8: Pliers/wire cutters (Good quality side-cutters are excellent for trimming rigging ends)
9: Good quality set of tweezers (For small parts and rigging)
10: Steel ruler (300mm - for providing a straight edge for tapering the planking)
11: Small clamps (2 inch clamps with rubber tips, are very useful for projects like this)
12: Good quality pencil or drawing pen
13: Masking tape (Tamiya masking tape is perfect for masking areas around the main wale)
14: A Pin Pusher (Or you can just use a pair of pliers to push pins into the planking and bulkhead edges)
15: Cutting mat

Recommended tools from Vanguard Models



Our waterline marking tool is supplied in a sheet of laser-cut, 4mm plywood that needs assembly. Assembly time is around 15 minutes and very easy. Metal fittings are supplied to aid the change in position of the pencil carriage. Vanguard Models pencil is supplied with each tool.

The Waterline Marker will mark a level from between 25mm to 150mm, and an engraved gauge will help you achieve the correct level.

Pocket sized Pin Pusher
Can push pins in to 9 mm of plywood or MDF
Ideal for pushing brass pins

Pin Pusher With Adjustable Depth Stop

This is a slightly larger version of our other pin pusher, and has the added advantage of an adjustable depth stop to ensure that all pins are pushed 'home' to the same depth. It is ideal for model boat/ ship hull planking, and setting miniature n-gauge rail track on to board, or for nailing tasks on wooden boat models, dolls houses and picture frames.

This plank bending tool is the ideal boat modeller's tool for the bending strips to the desired curvature. Used for perfect and precise bending of all wooden strips, such as planking on model boats up to 2mm thickness. For bending at an angle, change the cutting angle and the plank will 'spiral'. The more cuts produced the tighter the bend. Includes a plastic blade stopper.

Spring-Loaded Finger Sanders available in 4 sizes, 10mm, 20mm, 25mm, 40mm (Medium Grade)
Unique shape for flat and curved surfaces
Easy to fit band with spring mechanism

These sanders have a unique shape for working on both flat and curved surfaces and come with pre-fitted medium sander band. The sanders also have an ergonomic shape meaning that they're comfortable when in use.

Flexible Masking Tape x2

This is available in TWO sizes, and there are two rolls in each packet.

3mm wide x 18m long
6mm wide x 18m long
Absolutely ideal for masking hull waterlines! These masking tapes are also ideal for general modelling, airbrushing, arts, crafts, and even those smaller DIY tasks. The tape sticks, stays and removes cleanly. This flexible acid-free tape is designed to follow curved lines and contoured surfaces without creasing, tearing or paint bleed.

Pin Vice and Drill set

Pin Vice – Double Ended (0 – 2.9mm)
Handy holder for drills, taps, pins etc. Including: 2 reversible collets, with capacities 0-1.2mm, & 1.3-2.4mm and 0.8-2.0mm, & 1.8-2.9mm. Incorporating an Anti-roll 6-sided body.

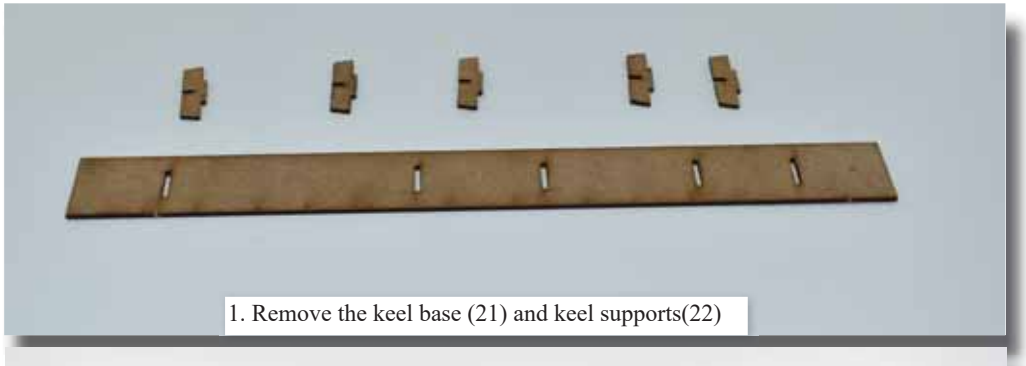
Drill bits
Our Drill Bits are made of high quality tungsten steel, have high wear resistance, precision, and are beautifully sharp. This Set contains 10 different size drill bit diameters: 0.3mm, 0.4mm, 0.5mm, 0.6 mm, 0.7 mm, 0.8 mm, 0.9 mm, 1 mm, 1.1mm, 1.2mm.

Recommended Paints, stains and adhesives

1: White PVA wood glue or suitable Titebond adhesive.
2: Cyanoacrylate (superglue) thick and medium viscosity
3: Natural colour wood filler (Water based wood filler is recommended as this can be diluted and made thinner)
4: Matt polyurethane varnish (Not satin or gloss)

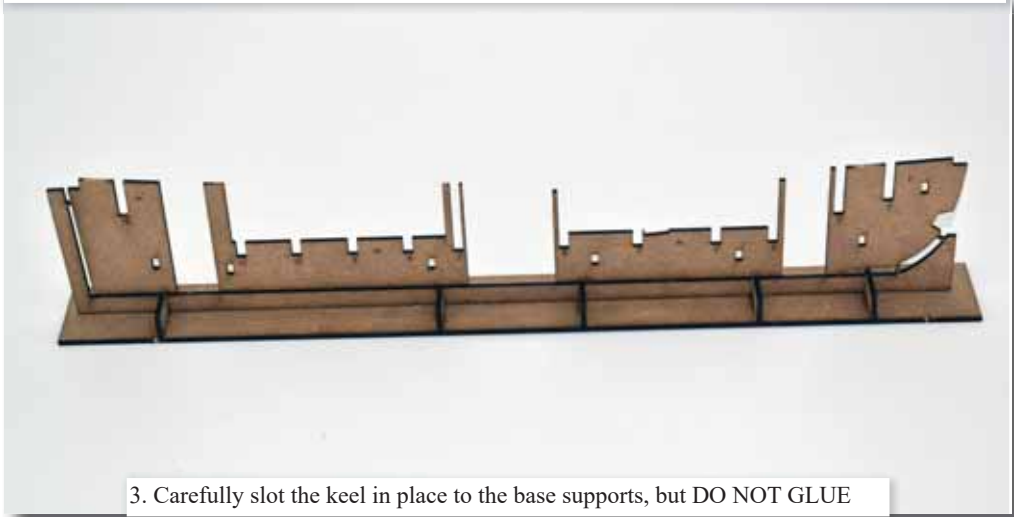
BLACK
OFF-WHITE
MATT RED
VARNISH MATT

HULL CONSTRUCTION



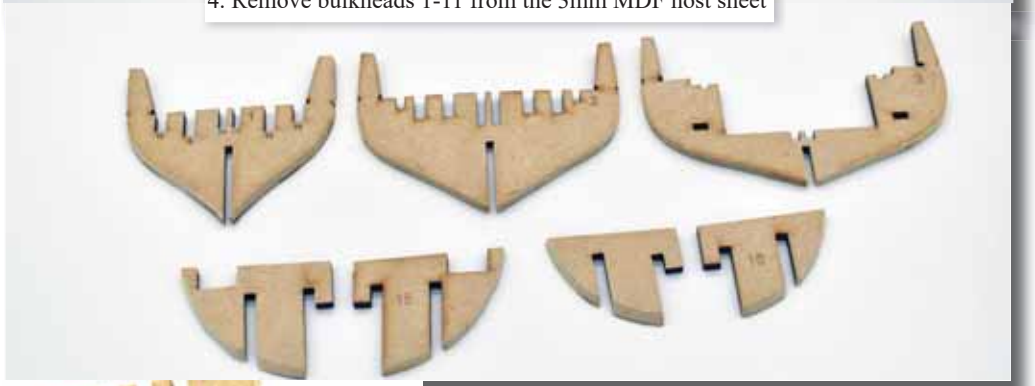
1. Remove the keel base (21) and keel supports(22)

2. Glue the keel supports into the slots in the base. Remove the main keel (20) from the 2mm MDF sheet. Be careful when handling this, as it is in 4 sections, and held together on its jig to keep the sections spaced correctly until built up



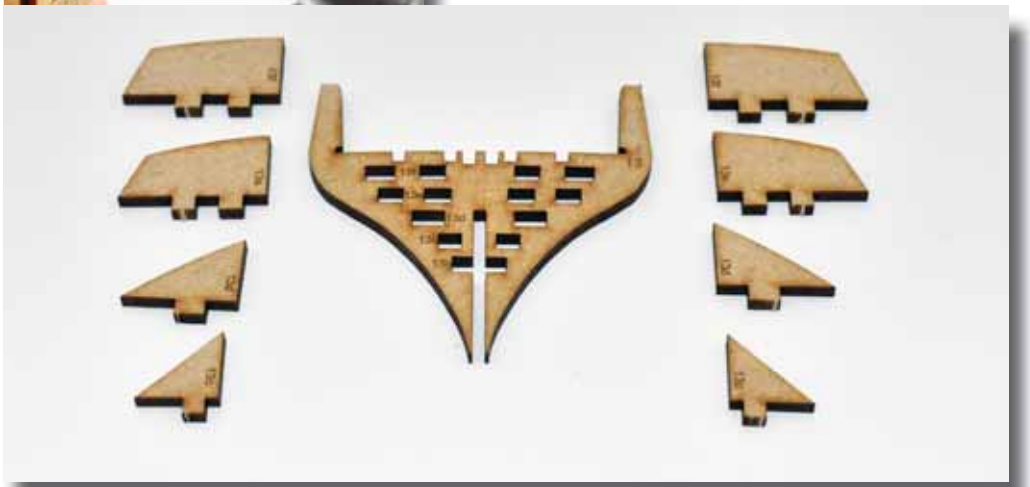
3. Carefully slot the keel in place to the base supports, but DO NOT GLUE

4. Remove bulkheads 1-11 from the 3mm MDF host sheet



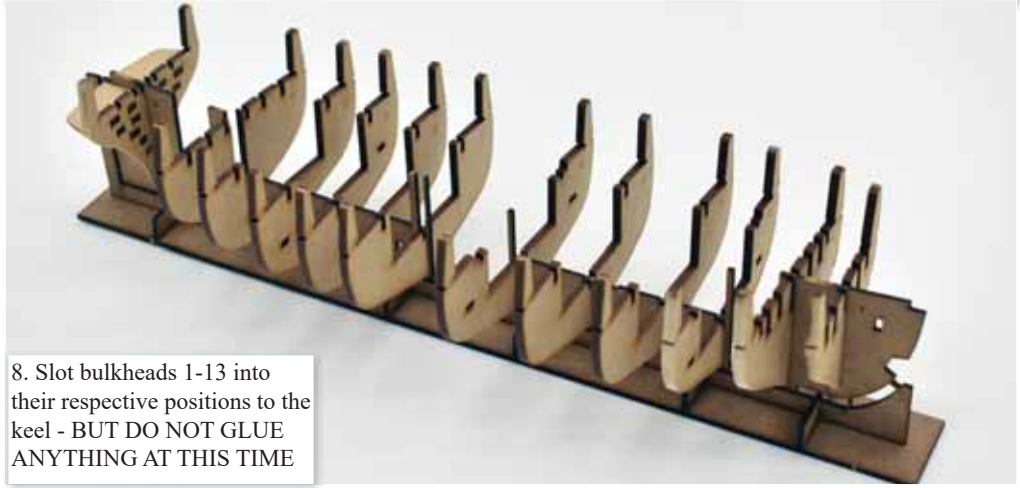
5. Bulkheads 1-3 can be pre-bevelled at this stage. Also remove parts 15 and 16 and bevel the edges. These can be sanded by had or using a Dremel type tool as shown.

Remove the rear most bulkhead (13) and stern patterns (13b-13f)



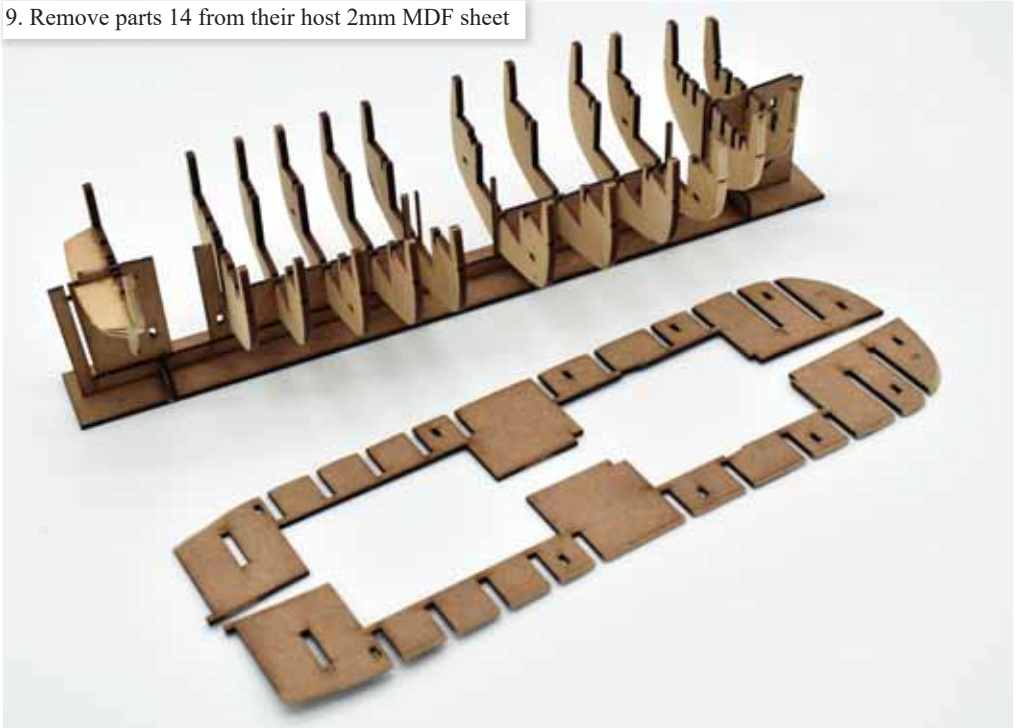
6. Glue each of the stern patterns into their respective slots in bulkhead 13, being careful not to allow the glue to cover the keel slot on the bulkhead.

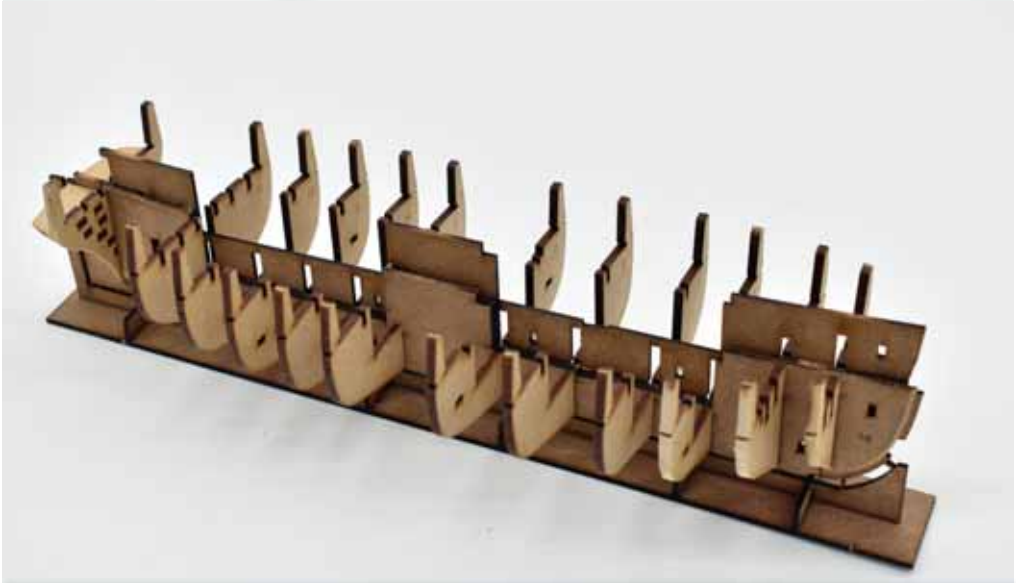
7. You now need to sand the assembly as shown here. This will make final sanding of the hull a little easier. This assembly can be finally sanded when installed to the hull.



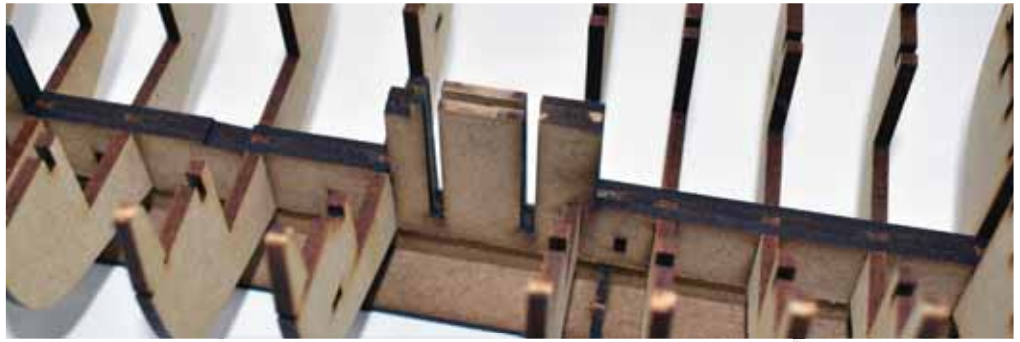
8. Slot bulkheads 1-13 into their respective positions to the keel - BUT DO NOT GLUE ANYTHING AT THIS TIME

9. Remove parts 14 from their host 2mm MDF sheet

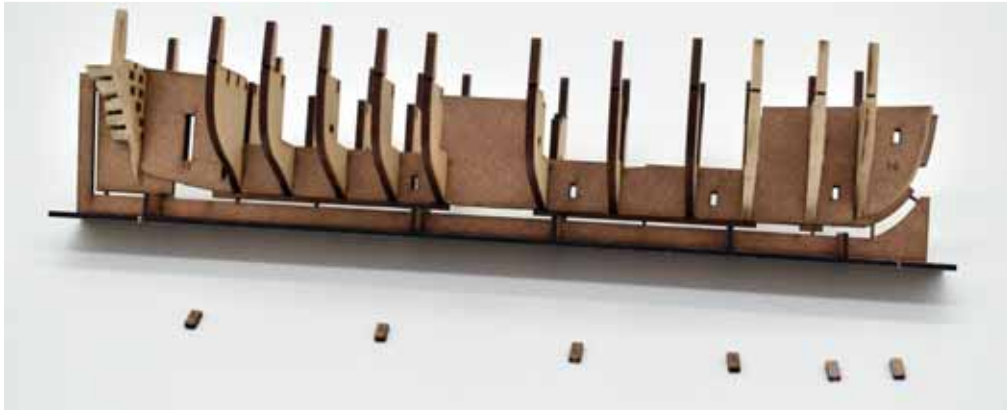




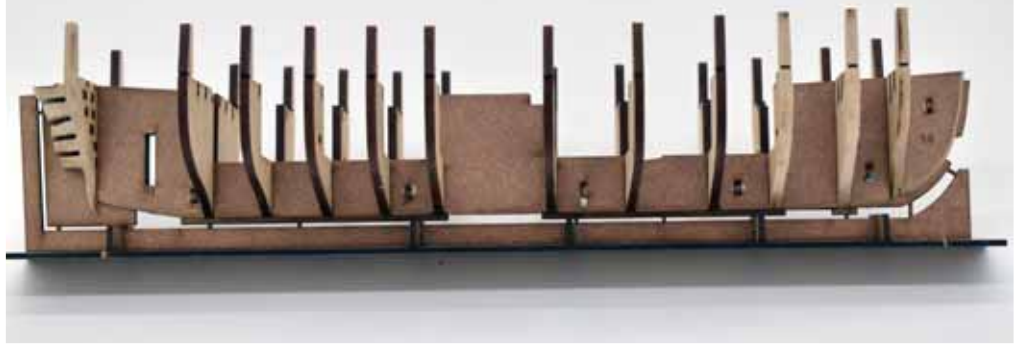
10. Carefully drop and slot parts 14 into place. These secure all bulkheads in place. DO NOT USE GLUE



Make sure both sides are pushed fully home into position

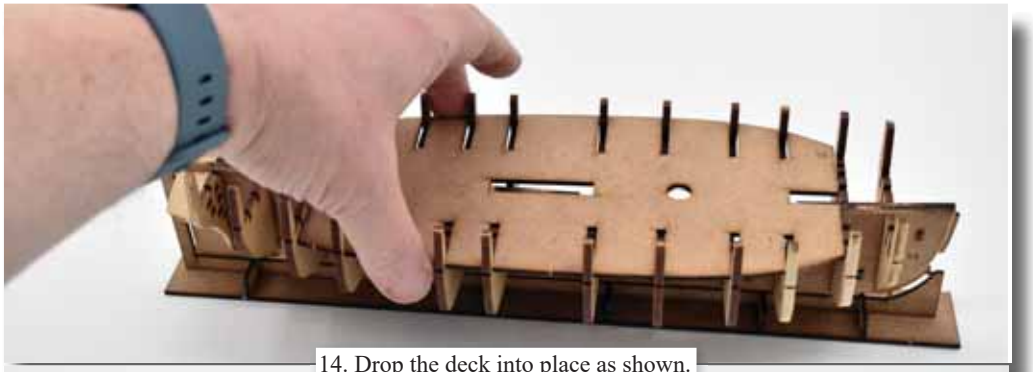


11. Remove the keel keys (K-1) from the 2mm MDF sheet. Slot and glue into each slot along the keel to secure the assembly and ensure all parts are aligned perfectly



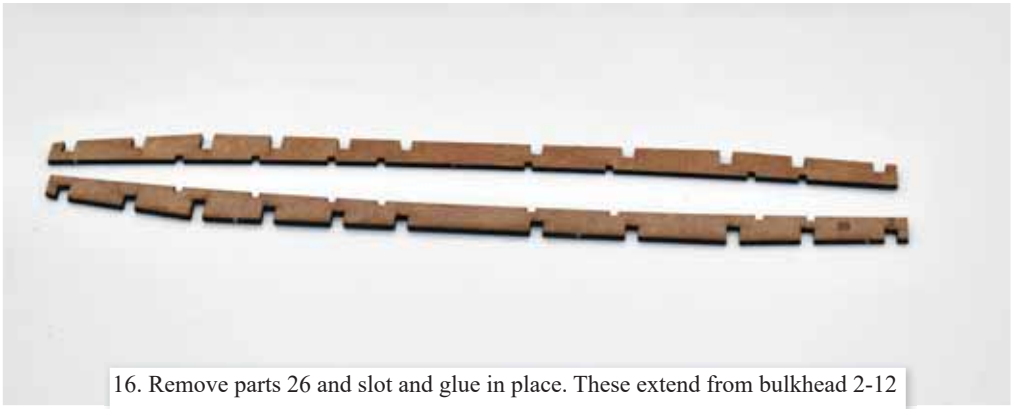
12. The final bulkheads can now be fitted. Remove both halves of bulkhead 12 and add glue as shown. Do not add glue to the slot, as there is a chance some glue will entre the slot for the drop keel.

13. Remove the lower deck (25) from the 2mm MDF sheet, ready for slotting into place

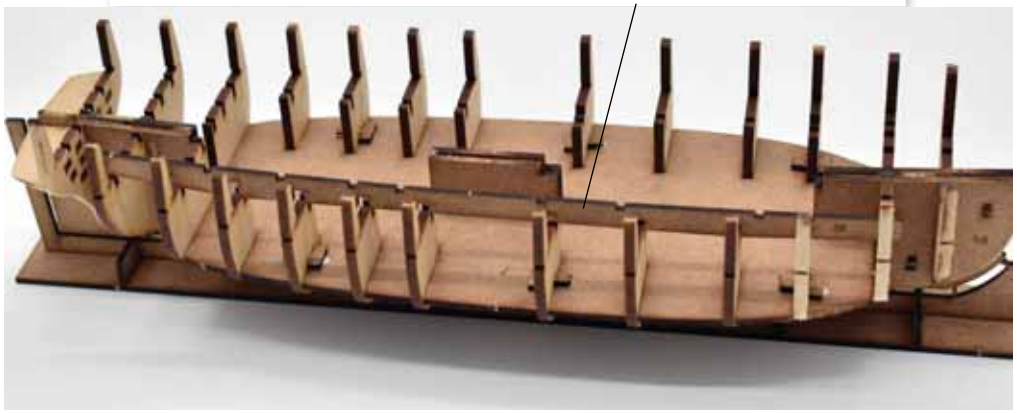


14. Drop the deck into place as shown.

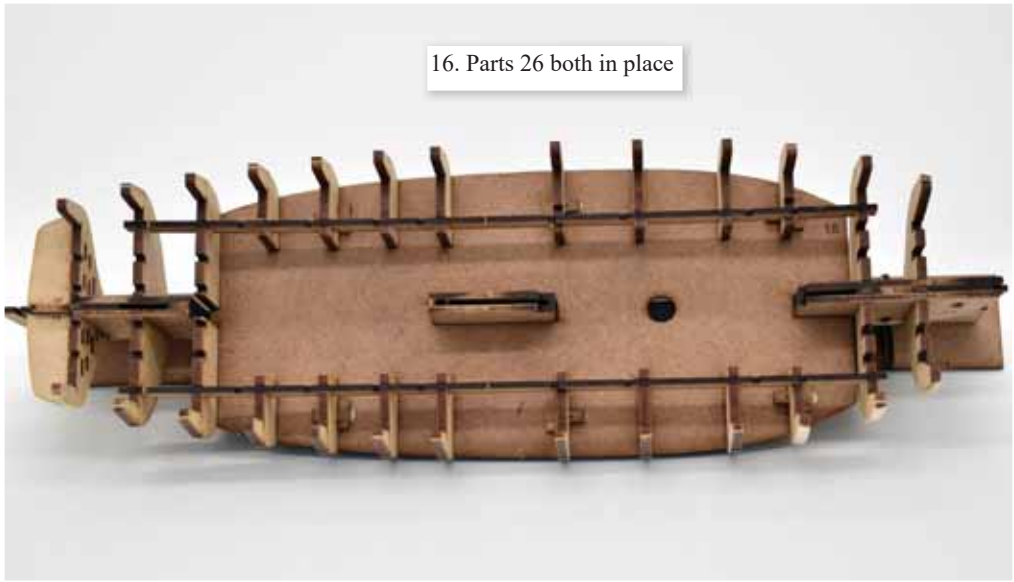
15. Remove the lower deck securing keys (K-2) and slot and glue into place on bulkheads 3, 6 and 9. These will ensure the lower deck is locked into place.



16. Remove parts 26 and slot and glue in place. These extend from bulkhead 2-12

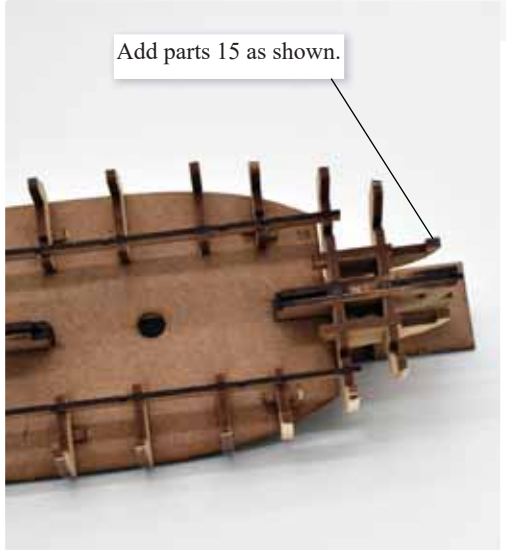


16. Parts 26 both in place

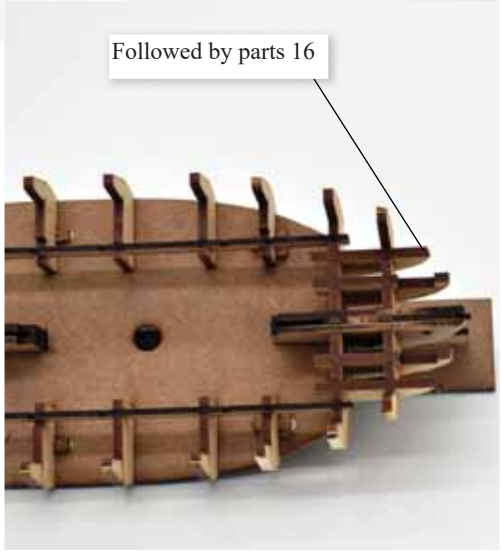


17. Parts 15 and 6 can now be fitted in place.

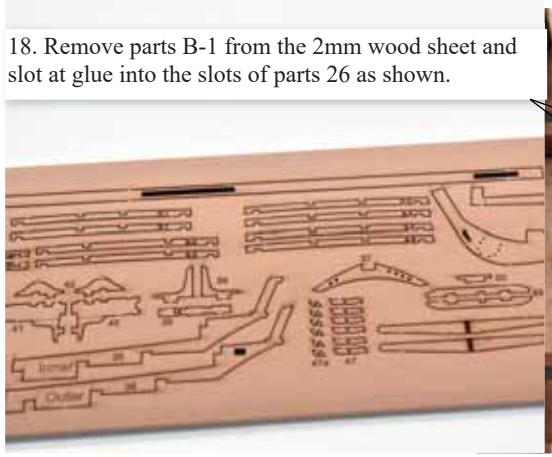
Add parts 15 as shown.

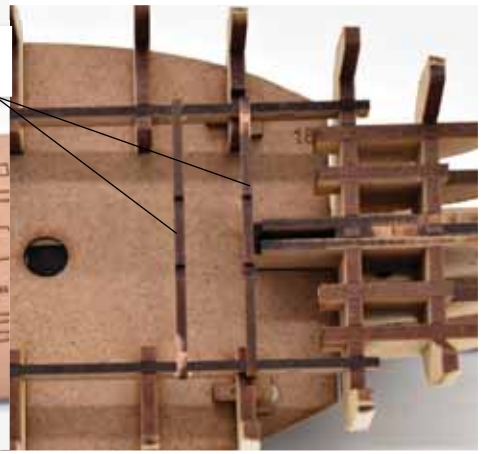


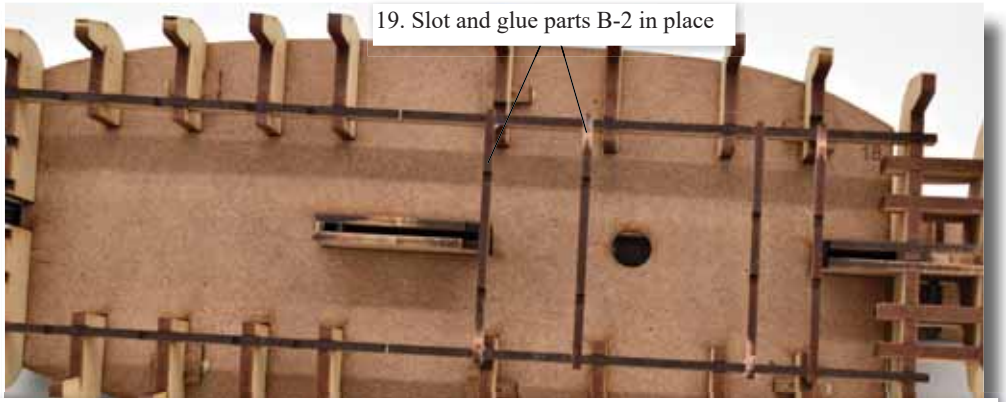
Followed by parts 16



18. Remove parts B-1 from the 2mm wood sheet and slot at glue into the slots of parts 26 as shown.

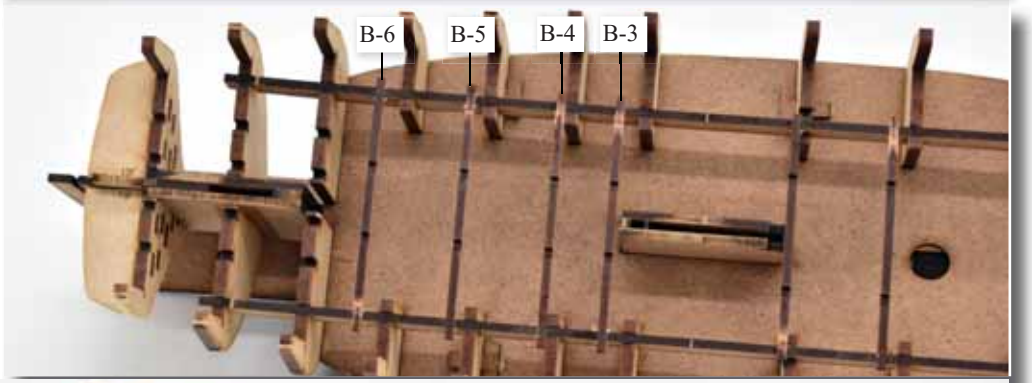






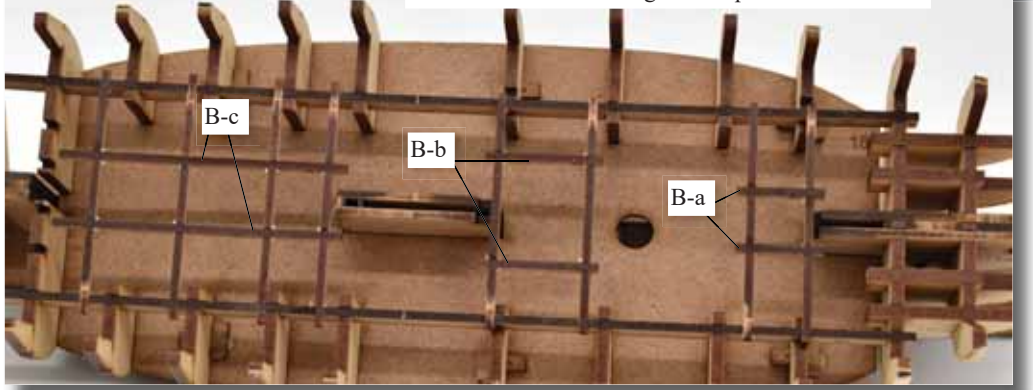
19. Slot and glue parts B-2 in place

20. Slot and glue B-3, B-4, B-5 and B-6 into position. The positions of each part can also be found on Plan Sheet 3



22. Remove the stern frames, parts 35 and 36 from the 2mm wood sheet.

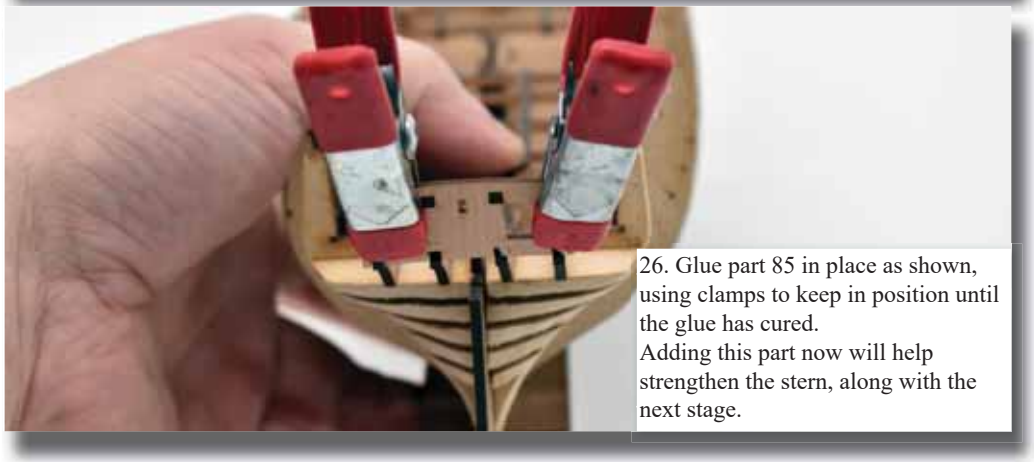
21. Remove parts B-a, B-b and B-c from the 2mm wood sheet and slot and glue into place as shown



23. Slot and glue parts 35 in place

24. Slot and glue parts 36 in place

25. Remove part 85 from the 1mm wood sheet. The upper slots will be slightly different in your kit, as these were changed during development, in order to make the part less fragile.

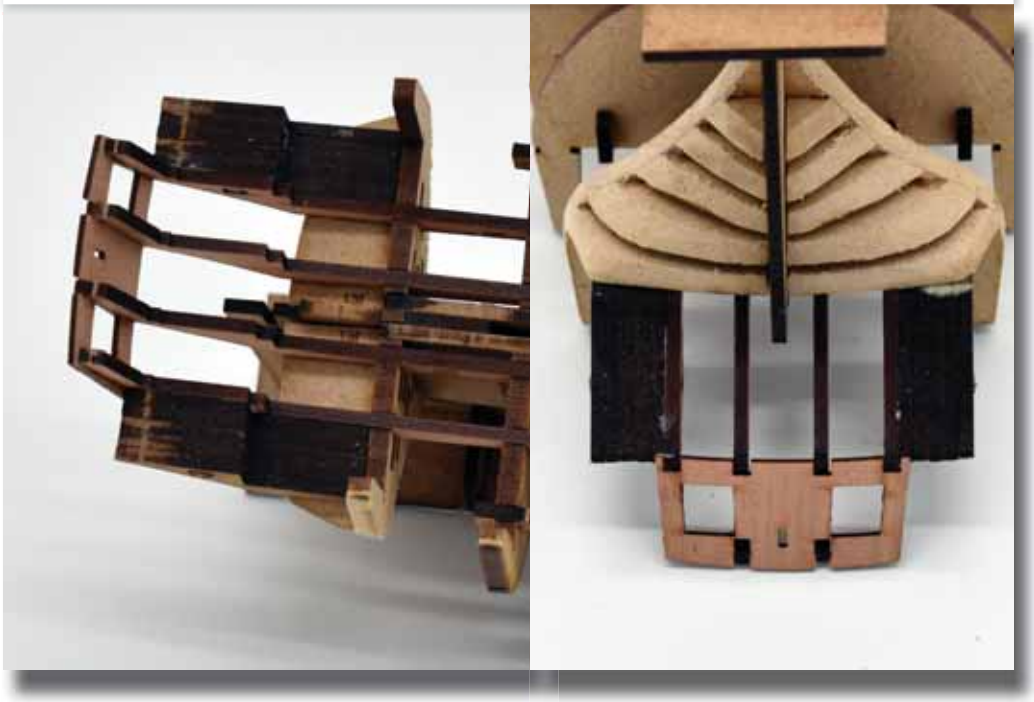


26. Glue part 85 in place as shown, using clamps to keep in position until the glue has cured.
Adding this part now will help strengthen the stern, along with the next stage.

Although not shown here, part 13a should be added each side at this stage. This is shown on Plan Sheet 4

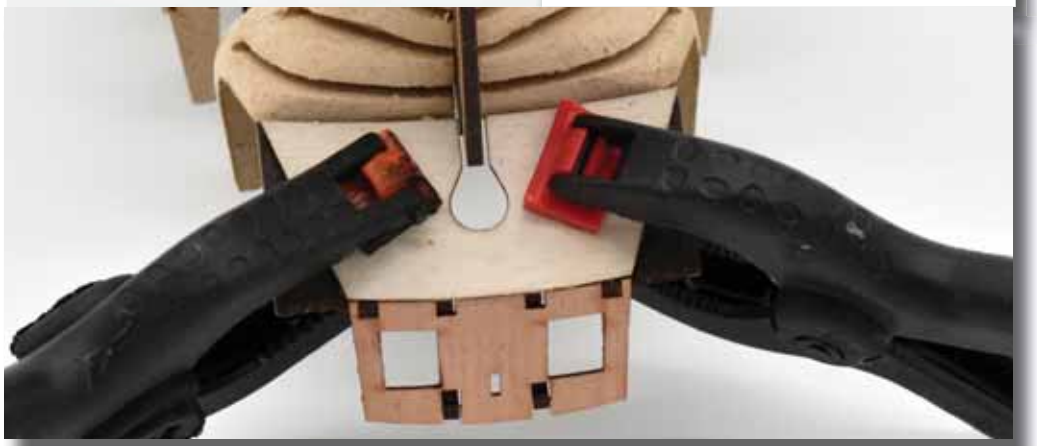
28. Glue parts 24 and 24a to the outer stern frame (36), using 24a to lock the parts and align correctly

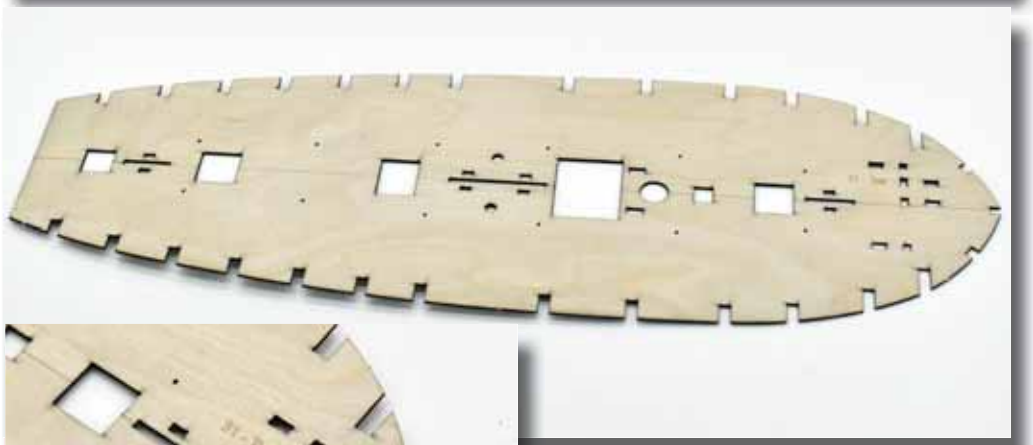
27. Remove parts 24 and 24a from the 2mm MDF host sheet.
These are filler pieces for the stern that will require a lot of sanding to follow the shape of the stern.

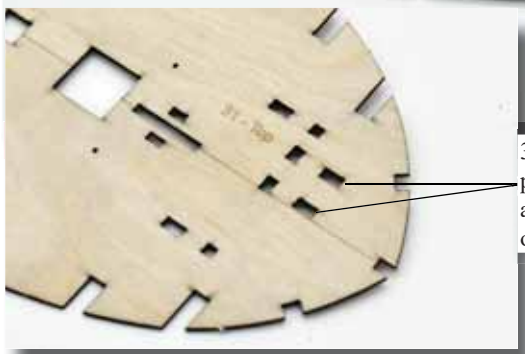


29. Remove part 51 from the 0.8mm ply sheet. This is the inner stern counter pattern. When you glue in place, make sure the hole is on the right (starboard) side.

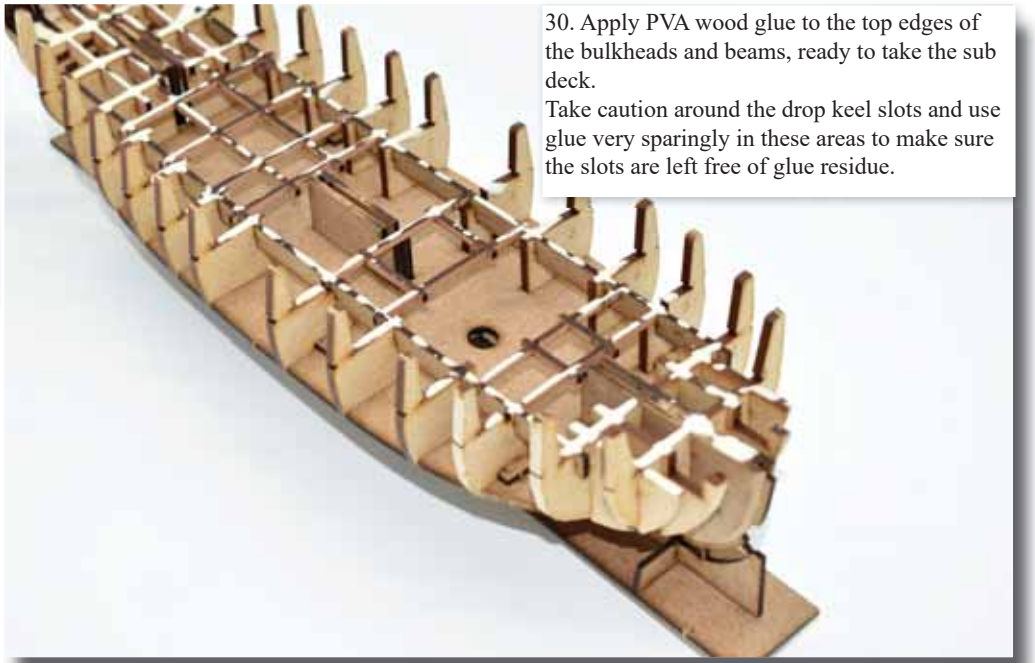
Clamp as well as glue into place. Once set, remove the clamps. The stern should now be very strong.





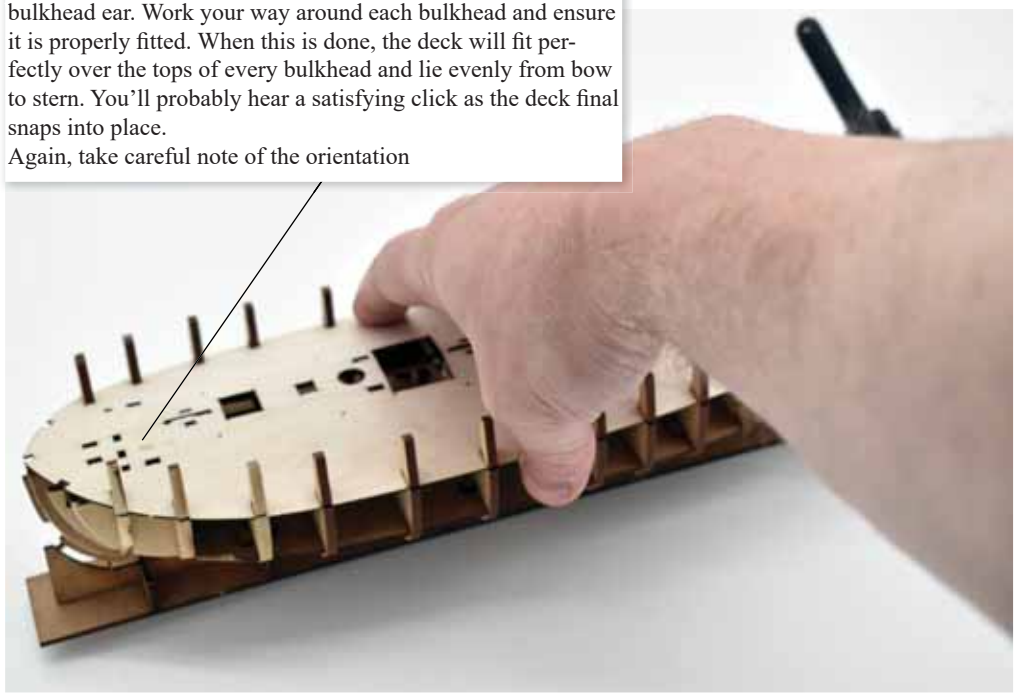


30. Remove the false deck (31) from the 0.8mm ply sheet. Please note the correct orientation, as the bowsprit bitts that slot into the deck are offset



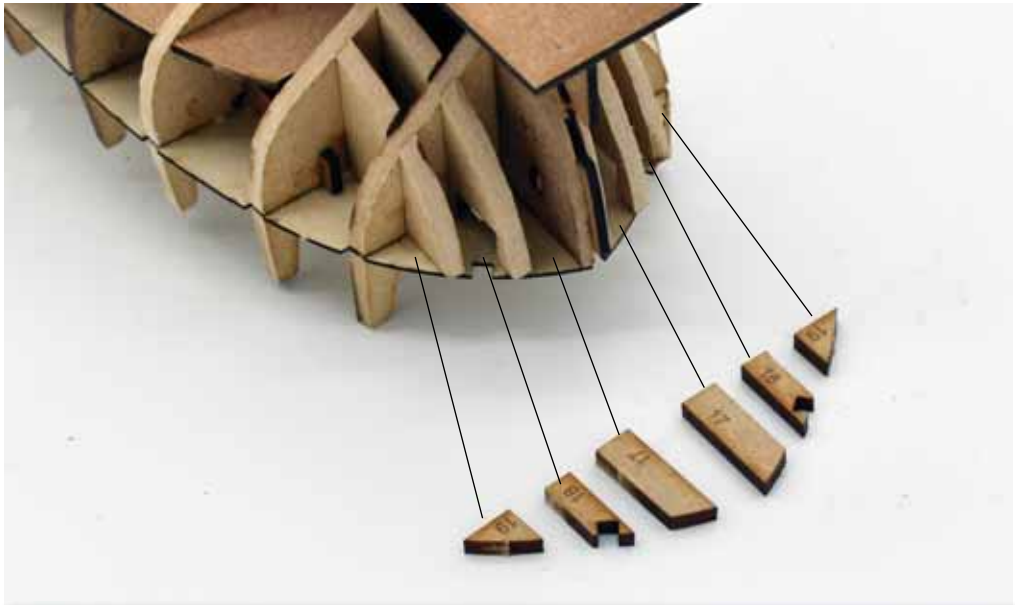
30. Apply PVA wood glue to the top edges of the bulkheads and beams, ready to take the sub deck.
Take caution around the drop keel slots and use glue very sparingly in these areas to make sure the slots are left free of glue residue.

31. Flex the deck and slot it into notches in the bases of each bulkhead ear. Work your way around each bulkhead and ensure it is properly fitted. When this is done, the deck will fit perfectly over the tops of every bulkhead and lie evenly from bow to stern. You'll probably hear a satisfying click as the deck final snaps into place.
Again, take careful note of the orientation



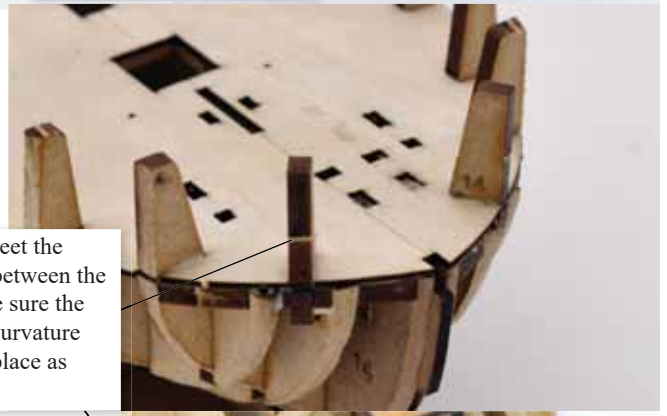
32. Once the deck is correctly in place along the edges, all it needs until the glue cures is a couple of clamps at the mid hatches area to help keep the centre flush with the top edges of the beams.

(The black clamps at the rear are just there to clamp the stern counter, which was still drying at the time)

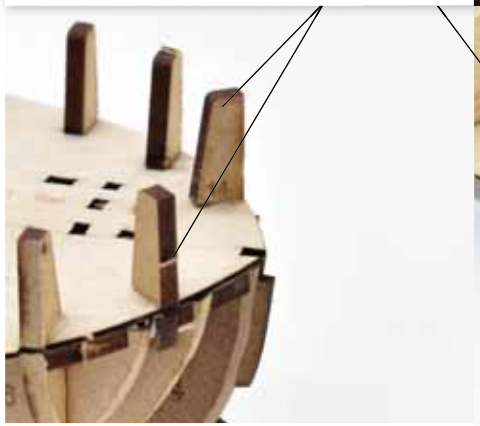


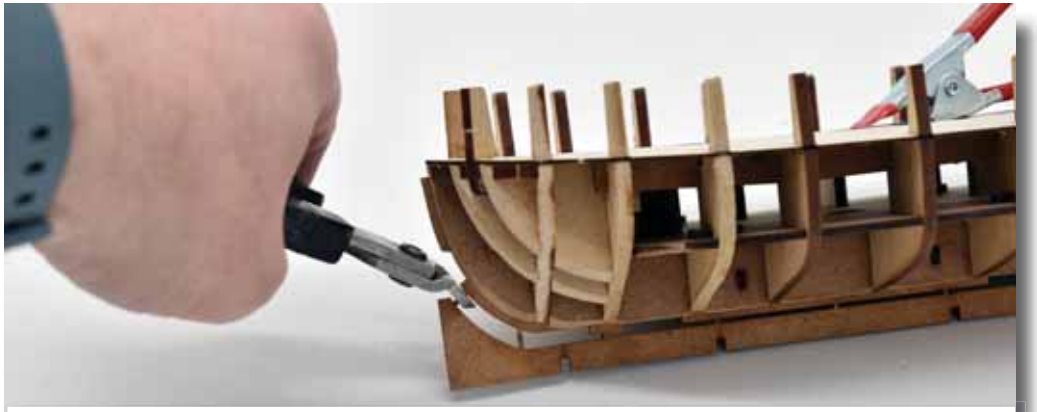
33. Remove from the 3mm MDF sheet the bow blocks, 17, 18 and 19. These fit in between the bow frames, under the deck to give the bulwark pattern a greater area for glue.

17, 18 and 19 glued in place

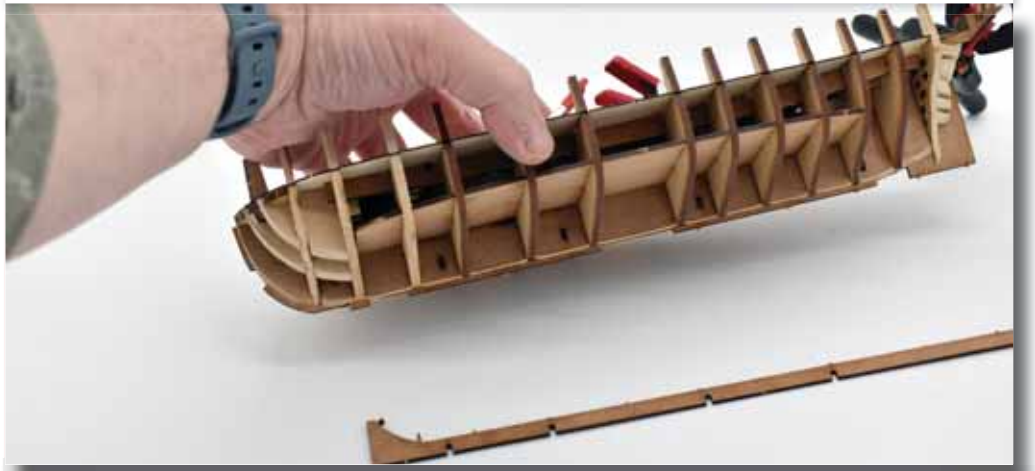


34. Remove from the 3mm MDF sheet the bow bulwark tabs (14) These fit in between the bow frames, under the deck to make sure the bulwark pattern retains the correct curvature around the bow. Slot and glue into place as shown in the three pictures.

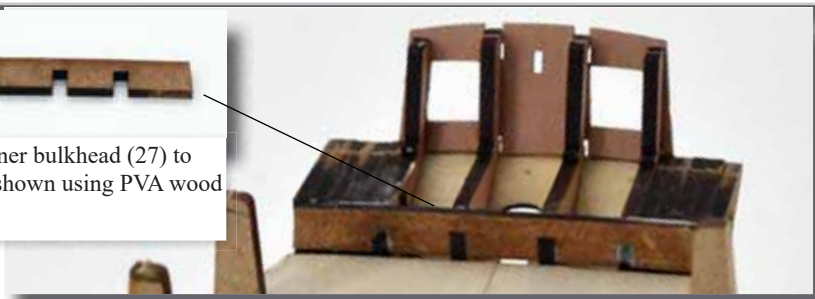




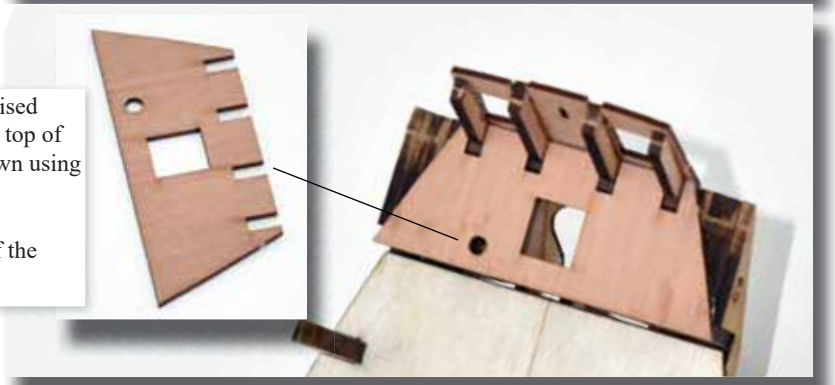
35. Now that the hull structure is strong and rigid, the spacer jig can be removed. Cut the tabs close to the keel using side cutters, followed by filing the remaining stubs flush with the edge of the keel.



36. To further strengthen the hull assembly, you can brush on watered down PVA wood glue under the lower and upper decks.

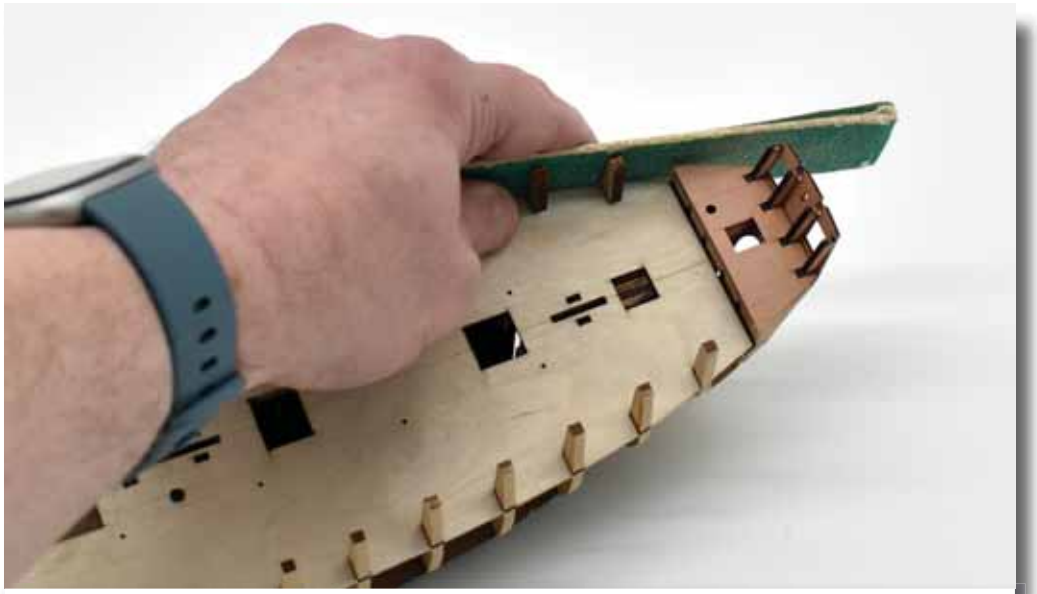


37. Add the stern inner bulkhead (27) to the stern frames as shown using PVA wood glue.

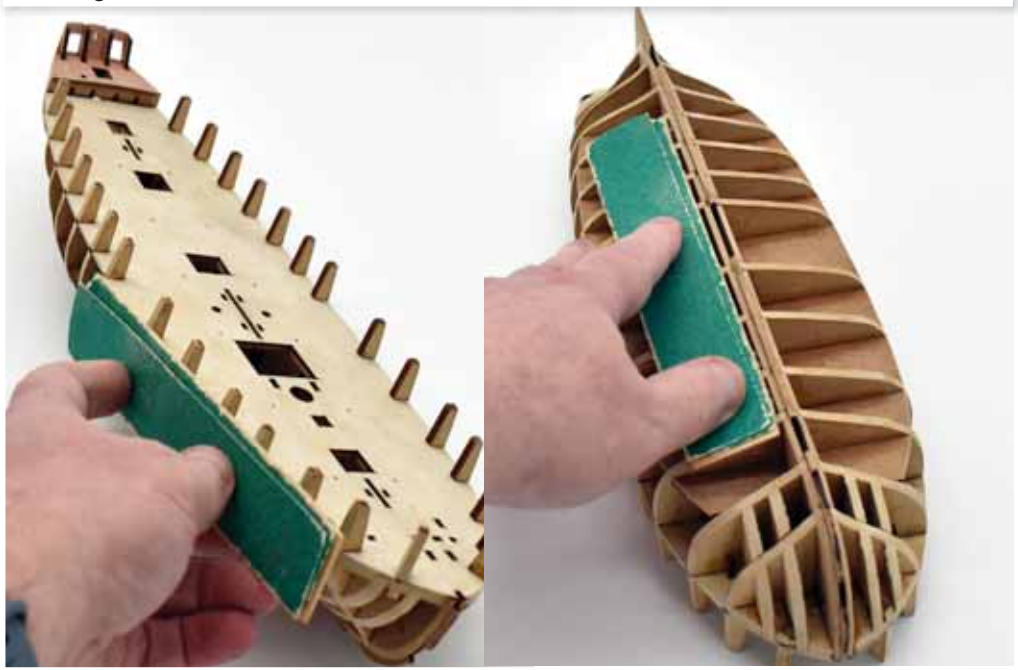


38. Add the stern raised platform (84) to the top of stern frames as shown using PVA wood glue.

Note the position of the hole for the toilet.



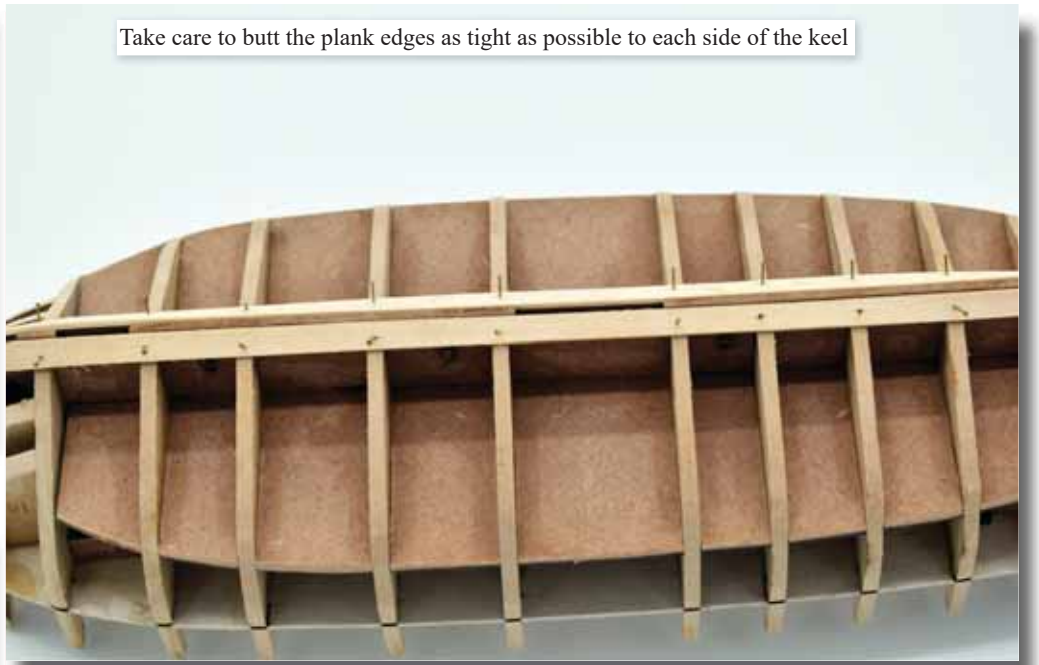
39. The hull can now be sanded to follow the smooth run of the planking and laser cut bulwark patterns. Sand the stern filler pieces right down so they follow the same curves and angle as the stern platform and bulkheads, and then sand the rest of the hull as shown. In the pictures, a length of 0.8mm ply was used, which has medium grit abrasive paper wrapped around it. This process takes arounf half an hour of sanding.

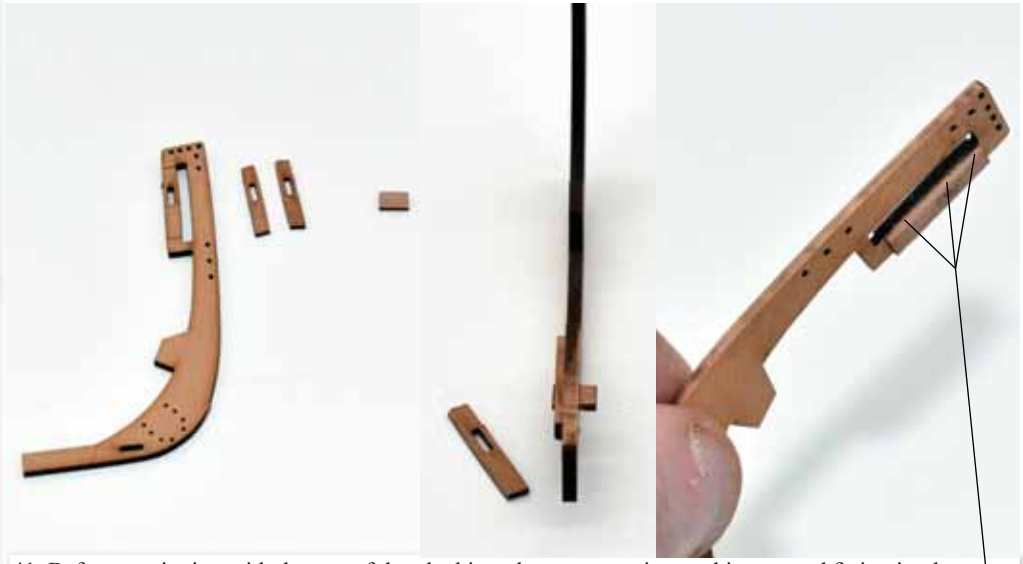


69. From the 1mm wood sheet, remove parts #57 and #58.

40. For the start of the first planking (1x5mm lime strip), we recommend starting by adding the lowest plan first. Shape the front of each plank to match the curve of the bow. When gluing into place, use the glue very sparingly near the drop keel slots, just apply a drop of glue to each of their adjacent bulkhead edges. As with all planks for the first planking, pin as well as glue into place. Do not push the pins all the way in, but just about half way. Once the plank is set, the pins can be removed and re used (if not bent..)

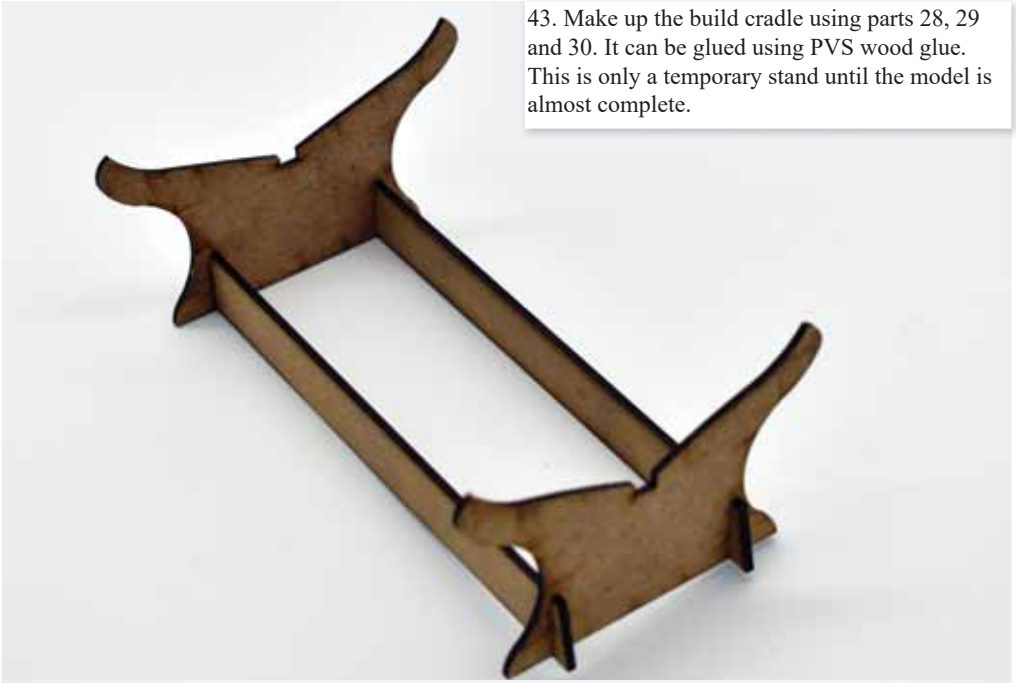
Take care to butt the plank edges as tight as possible to each side of the keel



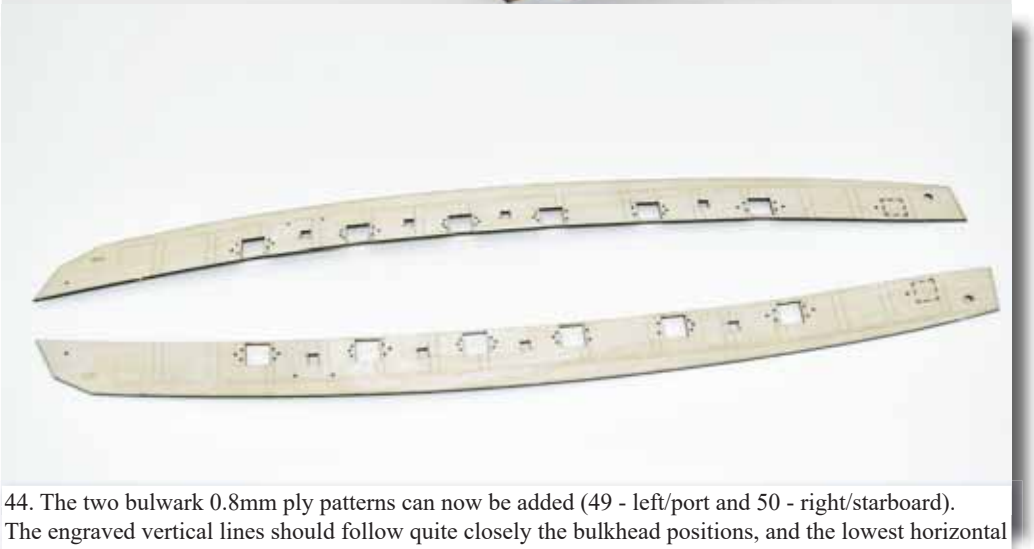


41. Before continuing with the rest of the planking, the prow requires making up and fitting in place. The prow (31) is to be fitted with a 'bolster' either side (96). Add these as shown and secure with a locating peg (K-3). These will give the bulwark pattern more of a surface to fix to.
The forward edge of 96 can be bevelled to match the curve of the bulwark pattern.

42. Glue the prow in place using PVA wood glue



43. Make up the build cradle using parts 28, 29 and 30. It can be glued using PVS wood glue. This is only a temporary stand until the model is almost complete.



44. The two bulwark 0.8mm ply patterns can now be added (49 - left/port and 50 - right/starboard). The engraved vertical lines should follow quite closely the bulkhead positions, and the lowest horizontal line should be placed at the top edge of the false deck position.
We recommend that these parts are dry fitted several times to ensure correct positioning. Each engraved line may not be a perfect match to each bulkhead tab due to slight variations in the sanding of the bulkheads process. However, if they more or less match from front to back, this will be fine. Always watch for the lower deck line along the deck edges.

You may have a little excess to remove at the front when checking for fit. The bulwarks were clamped as every bulkhead station for the prototype, with no need for pre-soaking of the ply patterns.
Add a few drops of glue to each bulkhead tab, and down to where the bulwark pattern finishes, and then carefully add each pattern using a clamp. As the wood glue takes time to cure, there is plenty of time for adjustments if needed.
A couple of pins may be required right at the lower bow area and stern.
Once in place, leave to thoroughly cure for 24 hours.

45 - First Planking

The first planking should now be ready to be laid using 1x5mm lime wood strip. The first or 'master plank' is to be laid at the bottom edge of the gun port/bulwark pattern.

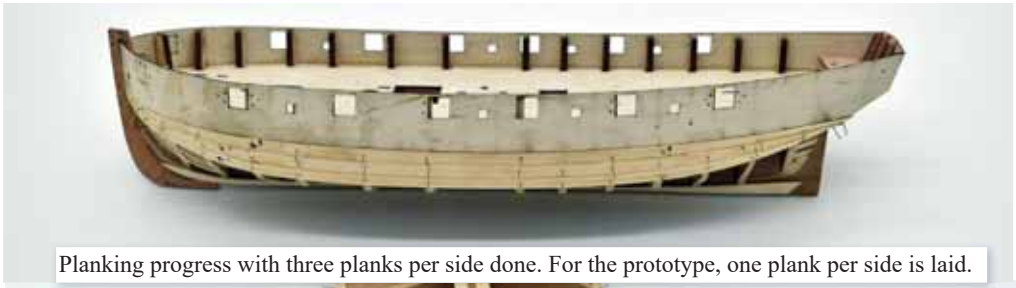
When pushing the brass pins into the planks and bulkheads, leave at least half of the pin length protruding so they can be easily removed with the use of a pair of flat nose pliers once the planks are secure. Use PVA wood glue to fix the planks to the edges of each bulkhead.

Mild tapering is required for all planks, but there are only 12 per side for this model.
To determine the amount of taper needed for each plank to lie naturally, lay a plank at the forth or fifth bulkhead and then lay it around the bow. Mark the excess area of plank that overlaps the one directly above it. Repeat this technique for the stern also.

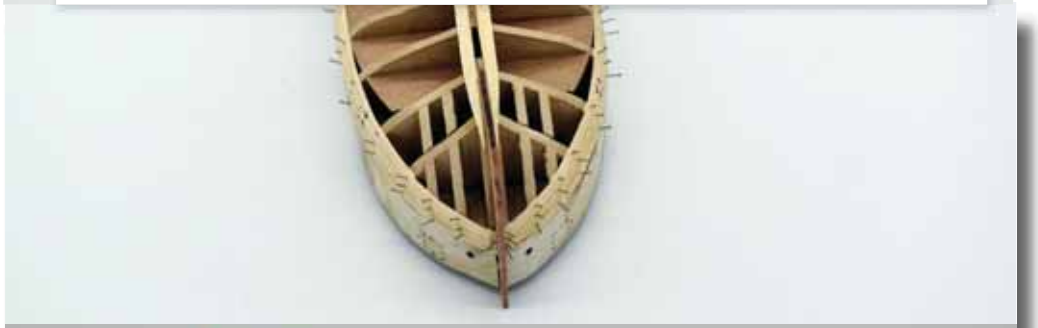
Although the planks may not require tapering at the stern, it is advisable to let the planks run as natural as possible which helps avoid any possible 'springing' of the planks when sanding. Before cutting the taper into the planks, soak them in warm water for a few minute only, as this minimises the chance of the blade of the knife following the grain of the wood rather than the edge of the steel rule.

Lay the first damp plank to be tapered on a clean, flat surface; (a cutting mat is well suited for this and is highly recommended.) Press firmly with a steel rule onto the marked taper line on the plank and score down the line with a heavy-duty craft knife several times until the excess is cut off. Pin and glue the tapered planks into position on the hull, leaving a little excess at the stern which can be trimmed to shape once the planking is complete. Glue two or three strips each side alternately. This method should prevent any possible twisting/warping of the frames and keel as the glue cures.

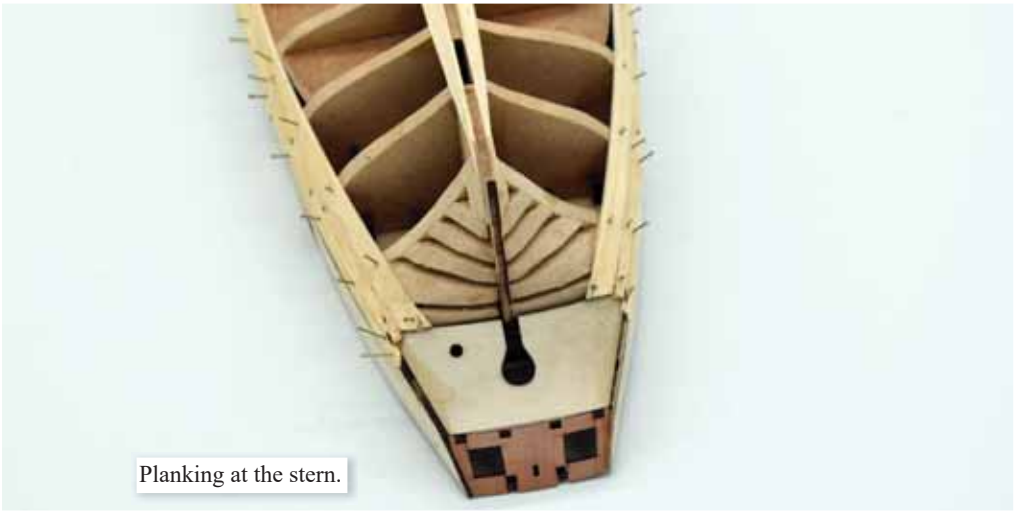
Sand the whole hull that has been planked with a coarse grade abrasive paper, followed by medium grade. This will entail about an hour's work. If possible, sand the hull in a well-ventilated area, ideally in an open space as the dust particles could present both a fire and health hazard. The use of light duty gloves is also recommended to reduce any risk of blisters from sanding. Alternatively, you could use a small electric sander, like a sanding mouse, which will be much quicker.



Planking progress with three planks per side done. For the prototype, one plank per side is laid.



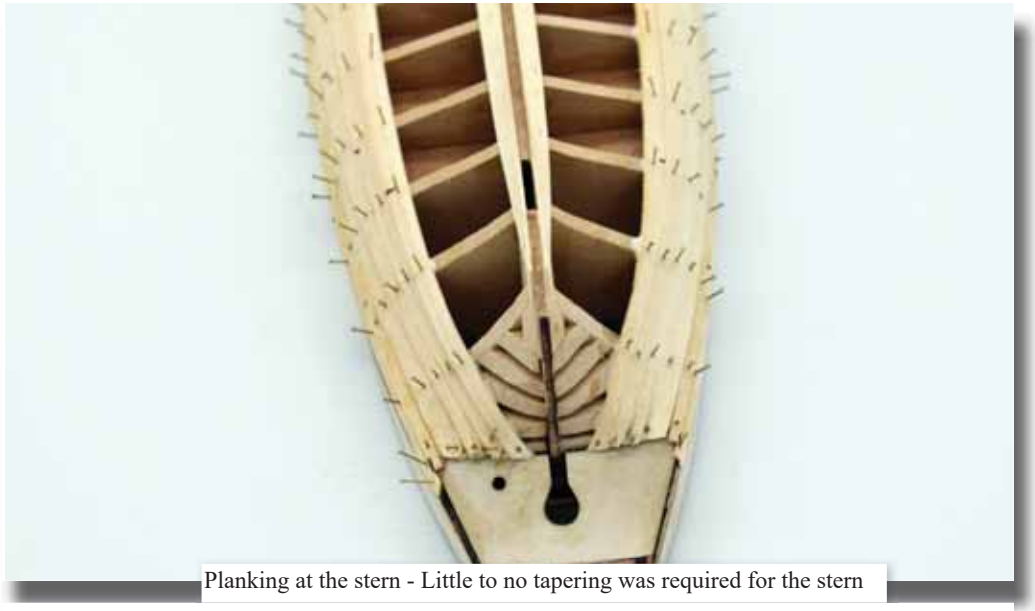
The forward part of a bevelled and edge bent plank, ready to be glued and pinned into position. The slight edge bend was simply done when the plank was damp, and bent using fingers and thumb.



Planking at the stern.

The taper position marks can be clearly seen in this picture.

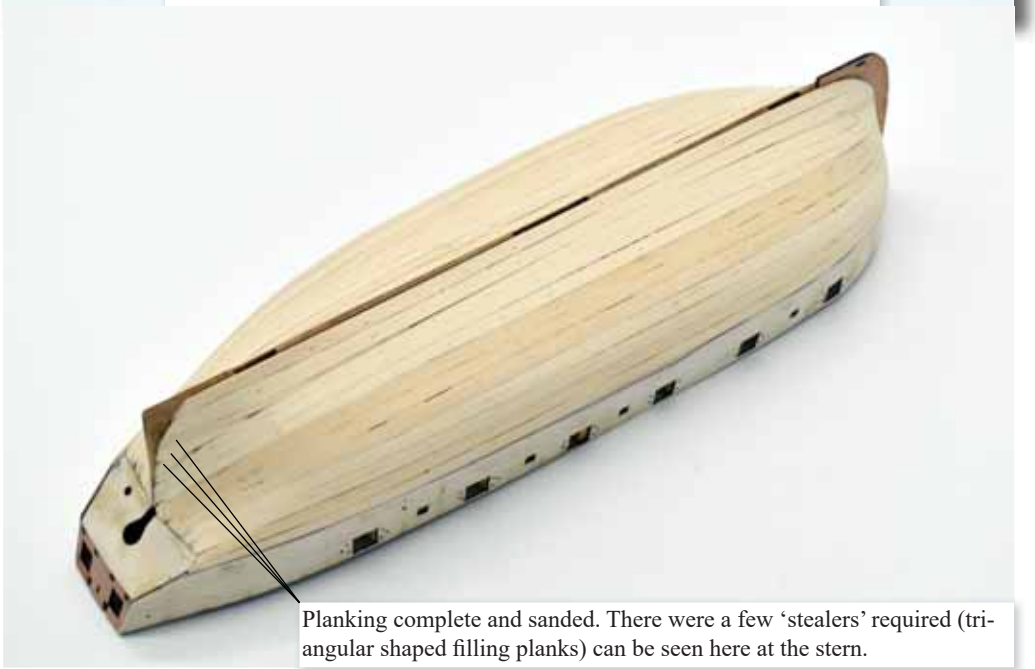
Planking progress with 6 planks per side done



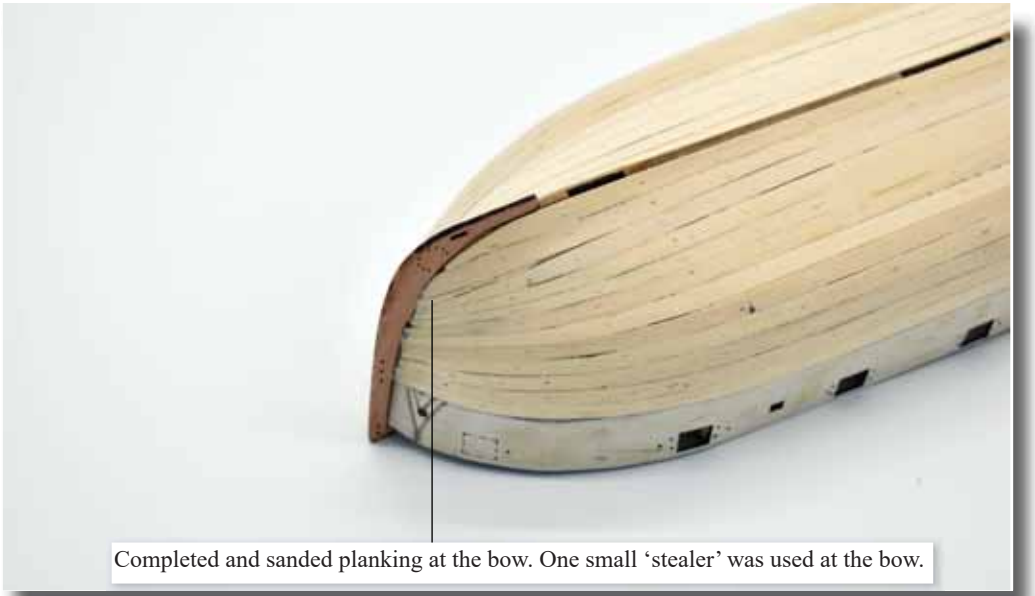
Planking at the stern - Little to no tapering was required for the stern

Planking progress with 9 planks per side done (10 including the plank at the keel)

Planking at the stern - Still very little tapering was required for the stern

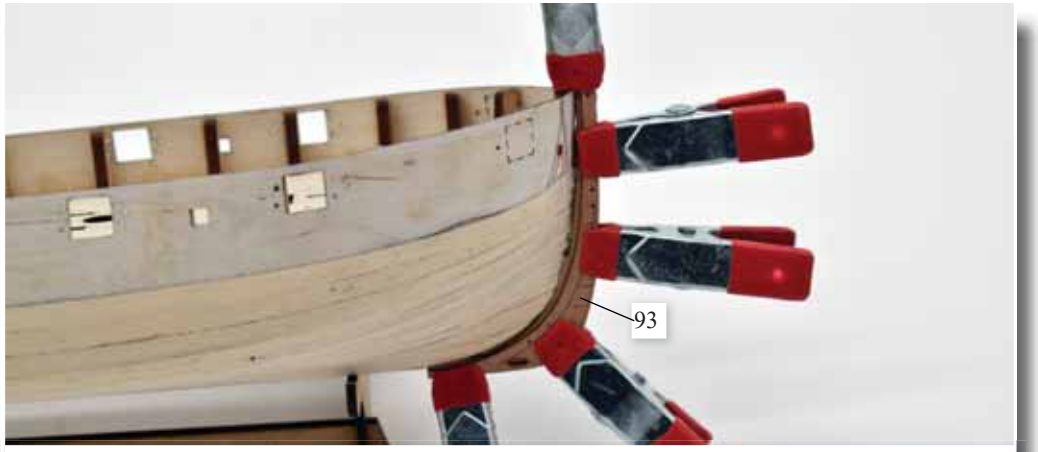


Planking complete and sanded. There were a few ‘stealers’ required (triangular shaped filling planks) can be seen here at the stern.

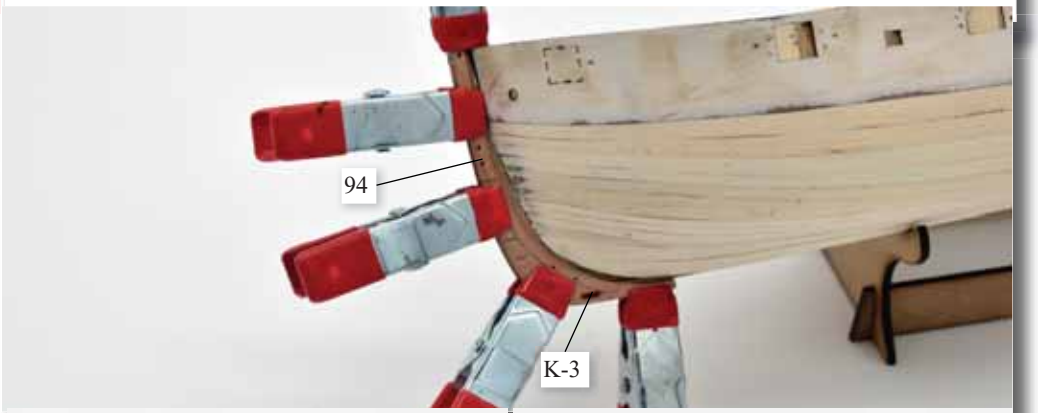


Completed and sanded planking at the bow. One small ‘stealer’ was used at the bow.

Another view of the completed planking at the stern.



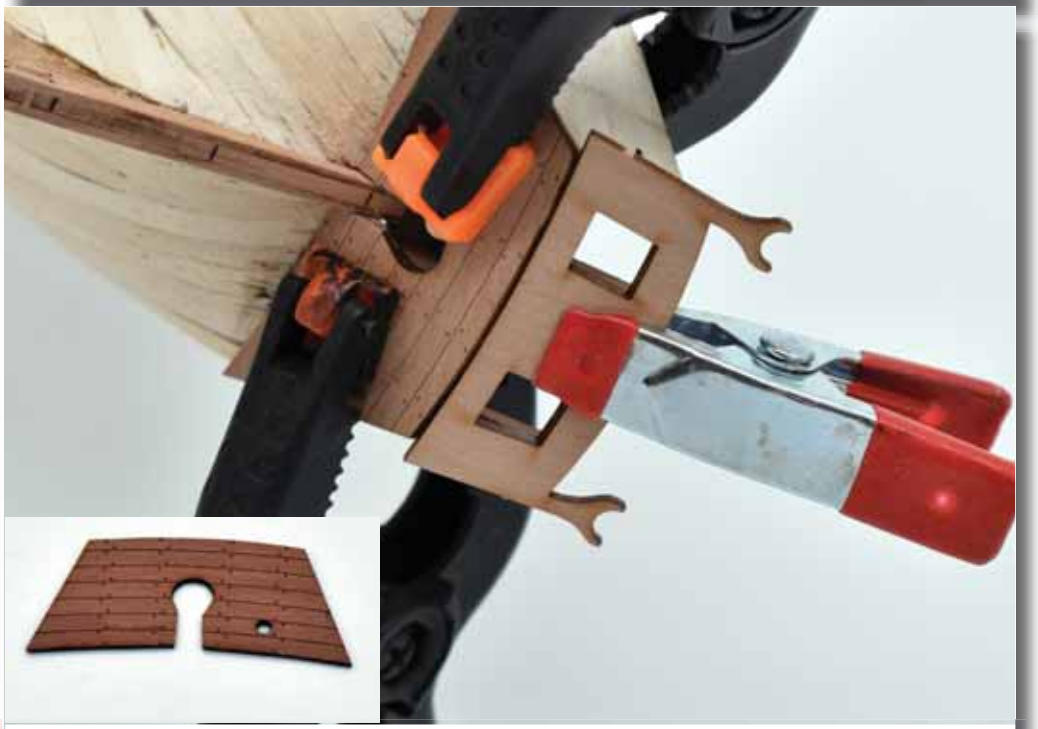
46. Add the outer facings to the prow, 93 right and 94 left. Use K-3 to lock the parts in place and PVA wood glue to fix. Clamps are shown, securing the assembly until the glue has cured.



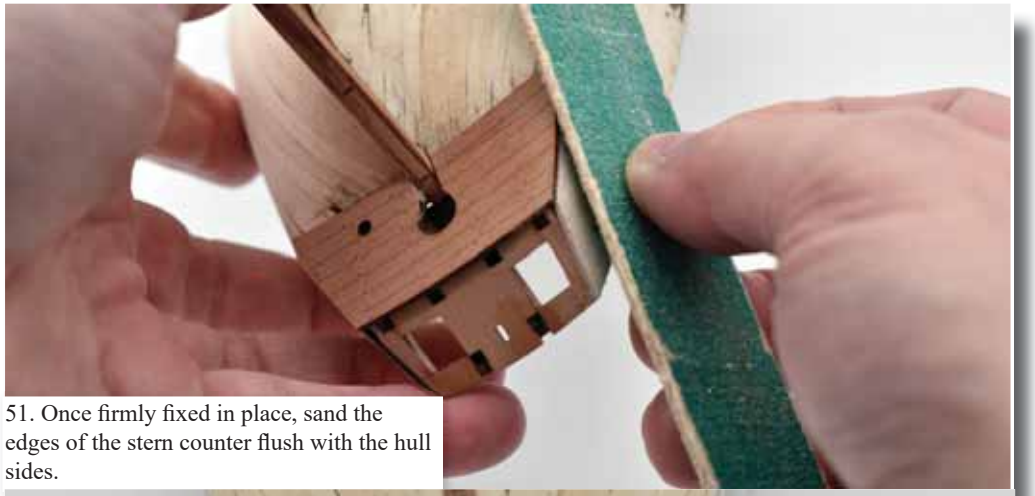
47. Make up the stern/rudder post assembly using part 32 at the core, and parts 95 for the outer rabbet parts. Glue and peg using K-3 the parts together and clamp until set, as shown.

48. The main keel (33) can now be added. Pin as well as glue into position, making sure the slots for the drop keels line up with the slots in the hull

49. Glue the stern/rudder post assembly in place as shown



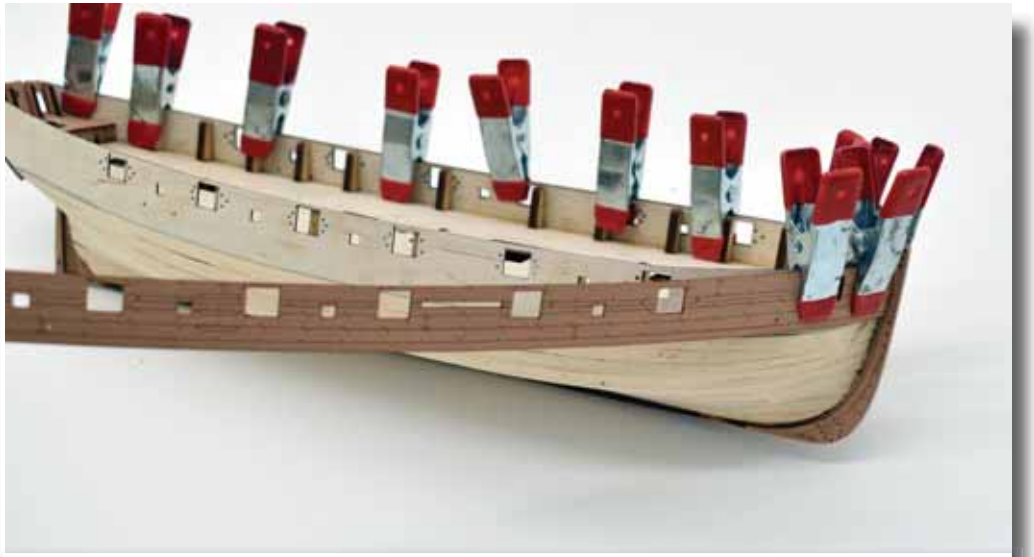
50. Add the outer stern counter pattern (122) using PVA wood glue and clamps to keep firmly in place until set. The picture above shows part 83 temporarily clamped into position, to help gauge the correct positioning of 122.



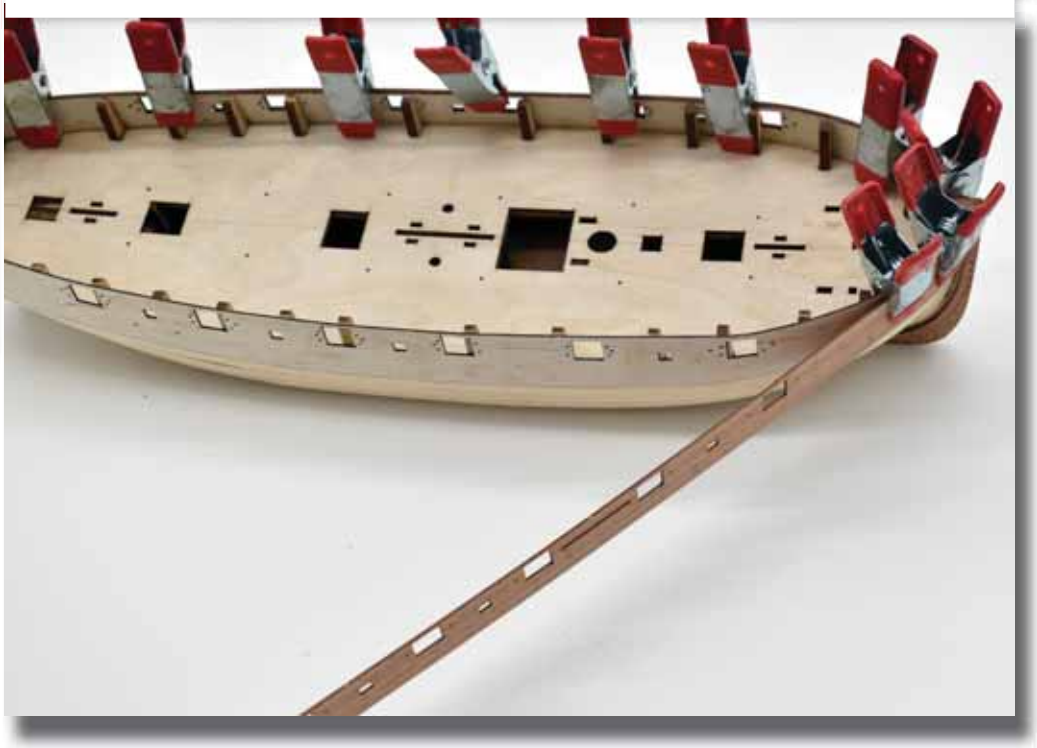
51. Once firmly fixed in place, sand the edges of the stern counter flush with the hull sides.

The hull is now ready for the second and final layer of planking

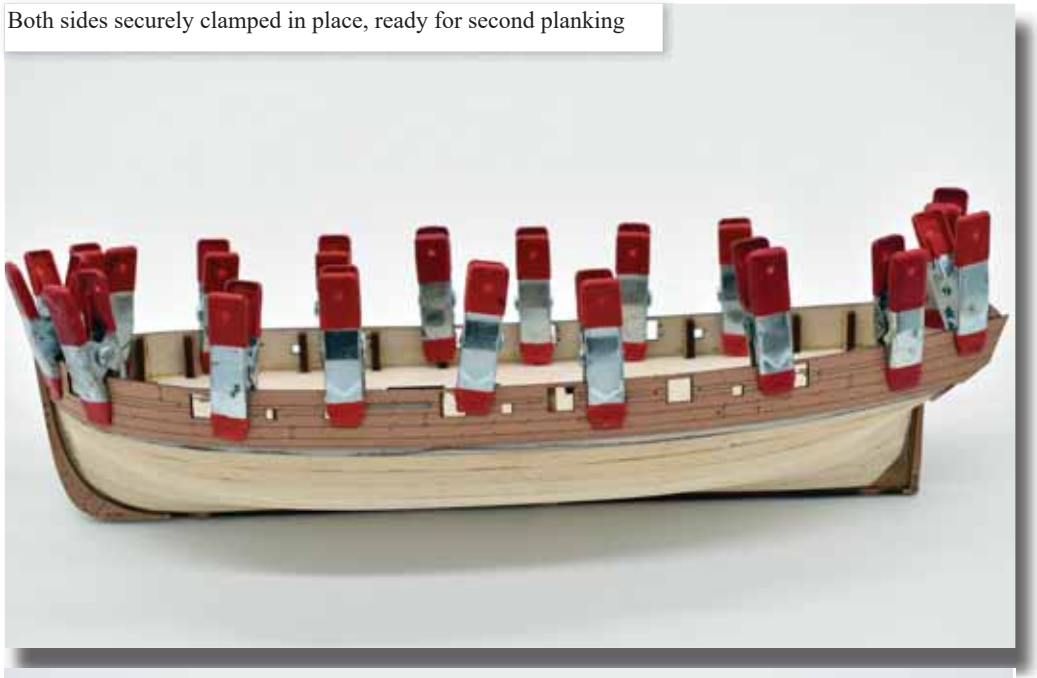
52. Remove parts 113 and 114 from their 0.8mm wood sheet. Treat these with care, as these are the outer layer of the hull and requite only paint and varnish to finish them.



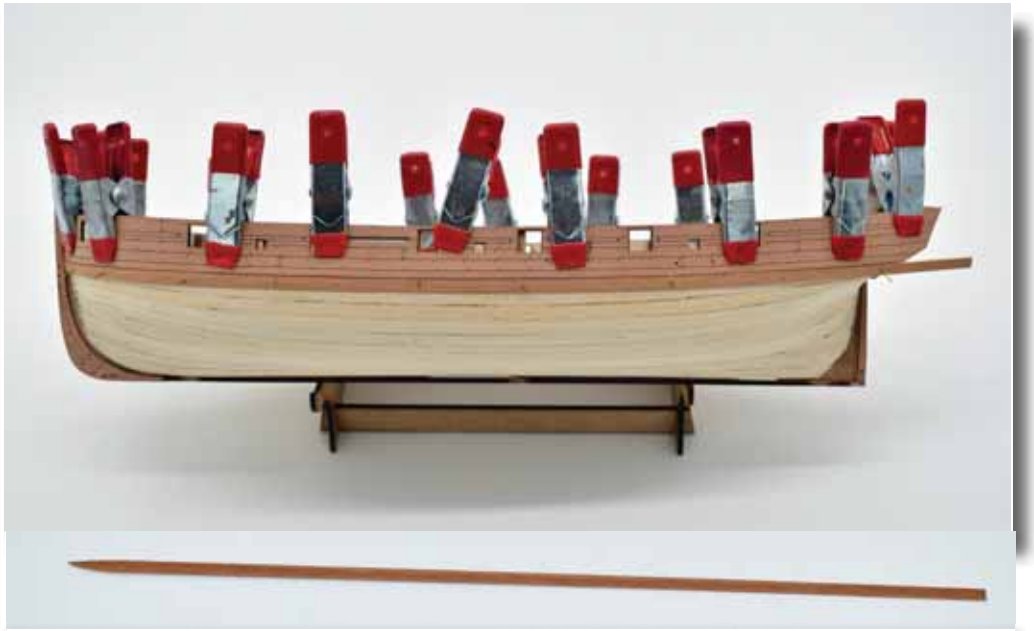
53. Parts 113 and 114 can be either glued into position at this time, or, as we have done here, just clamped into position. I decided to just clamp and not glue these so that I could just get the correct planking line for the 0.8x4mm planking strips, and then remove the engraved outer bulwark before painting the lower hull white, making sure no paint touches the engraved patterns.



Both sides securely clamped in place, ready for second planking

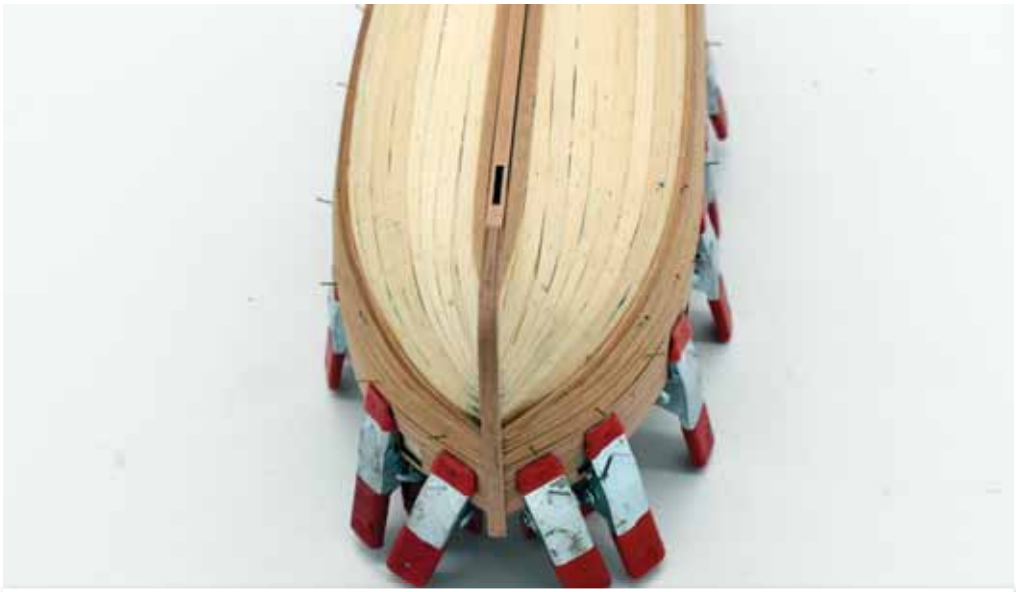


54. The second planking is applied using 0.8mm x 4mm wood strip. Start planking directly below the clamped engraved bulwark patterns (It is better to just pin the first plank in place with no glue, in case glue inadvertently reaches the clamped bulwark patterns) and work down towards and up to the keel. Use the same planking techniques as the first planking, with the exception that the whole under surface of the plank is to be glued to the first planking, as well as edge to edge.
The best glue to use for the second planking is medium to thick cyano gel. This is to avoid any pin holes showing in the planks.

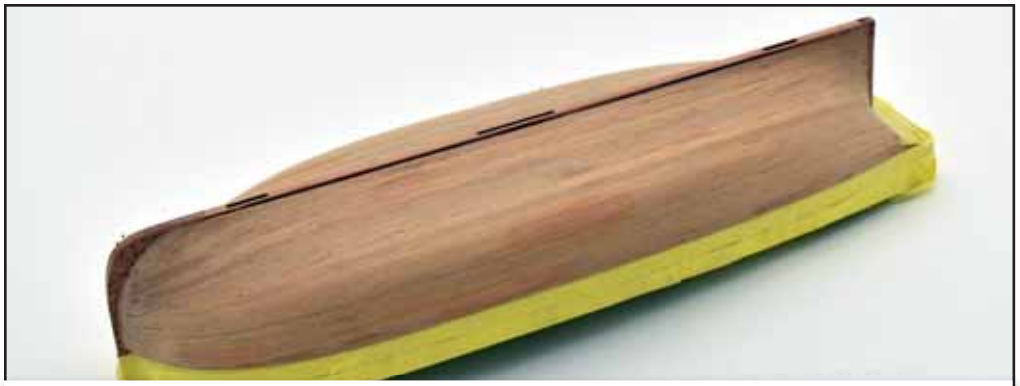


55. As with the first planking, shape and add the lowest plank to the bottom of the keel as shown.

As with the fist planking, the planks require tapering at the front (as shown above)
Below - The first 4 planks laid.

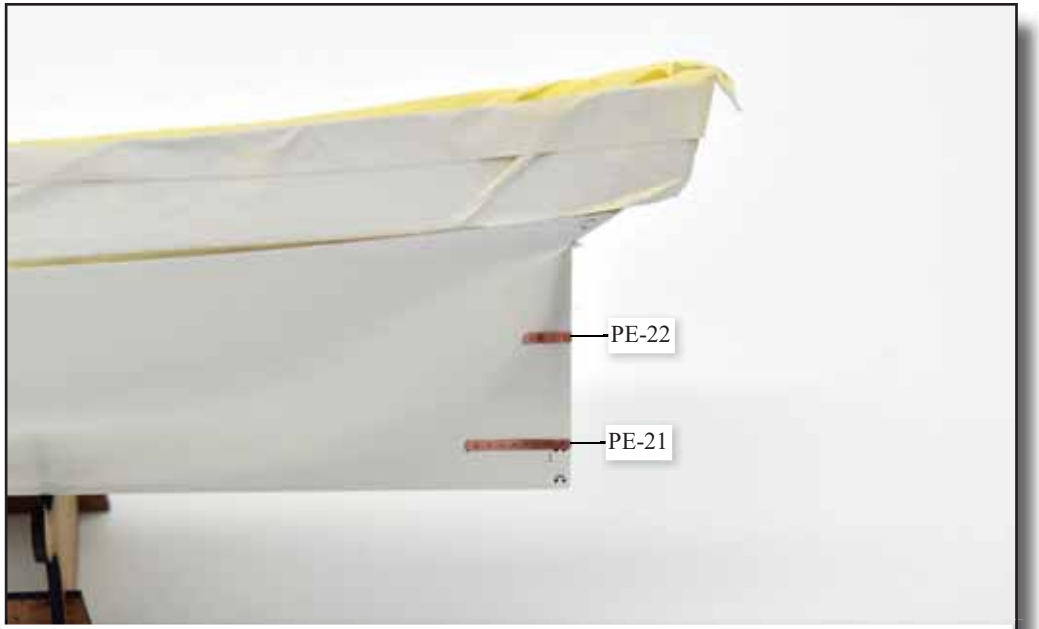


Planking progress at bow (above) and stern (below). If you do not get the end planks at the stern perfectly butted up against the stern counter, do not worry too much, as this line is covered by stern counter rails (124 and 125)

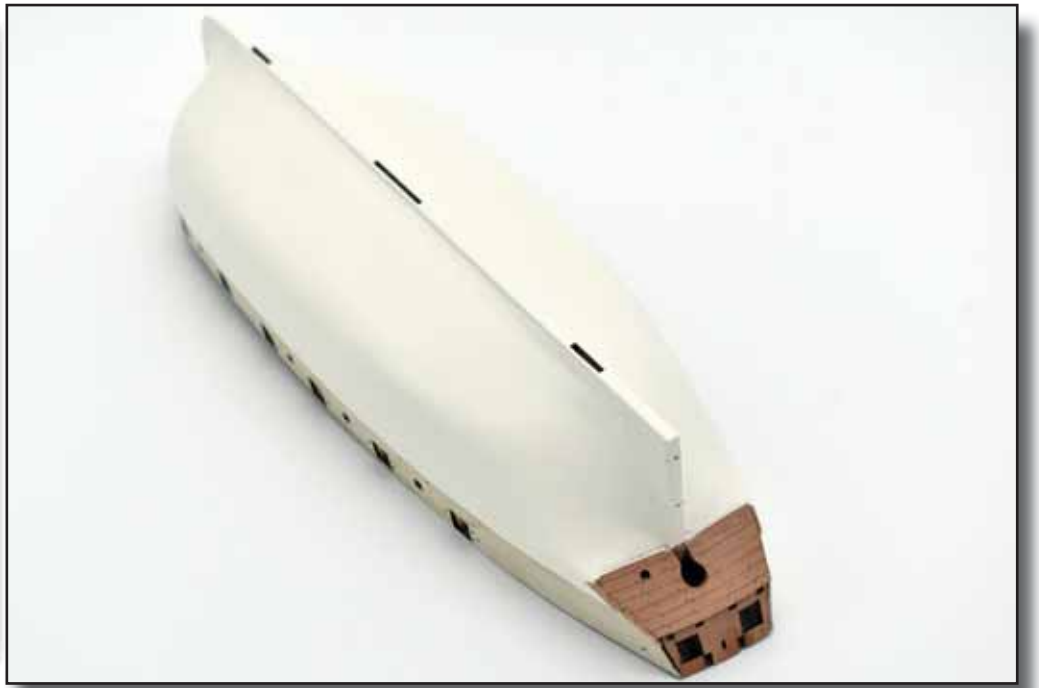


56. Second planking complete, sanded and filled. To get to this stage, several filling and sanding sessions were required. The filler used is a water based type, so it can be diluted and thinned, so it is able to flow into every gap.
Before the sanding and filling process started, the engraved upper bulwark patterns were removed and the areas not to be painted white masked off, as can be seen.

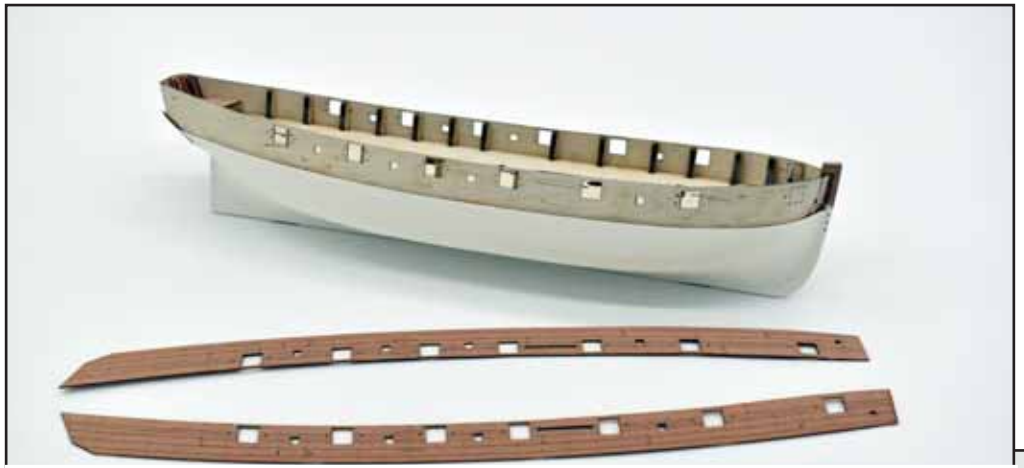
57. The hull is sprayed white using a standard spray can from any DIY outlet. Above shows the first three light coats. You will notice gaps in between the planks, despite sanding and filling previously. This is normal.
Below shows another covering of filler, before sanding smooth. This process will need repeating several times until all gaps are eliminated. (Pre-cut holes in keel were blocked off using brass pins during this process)

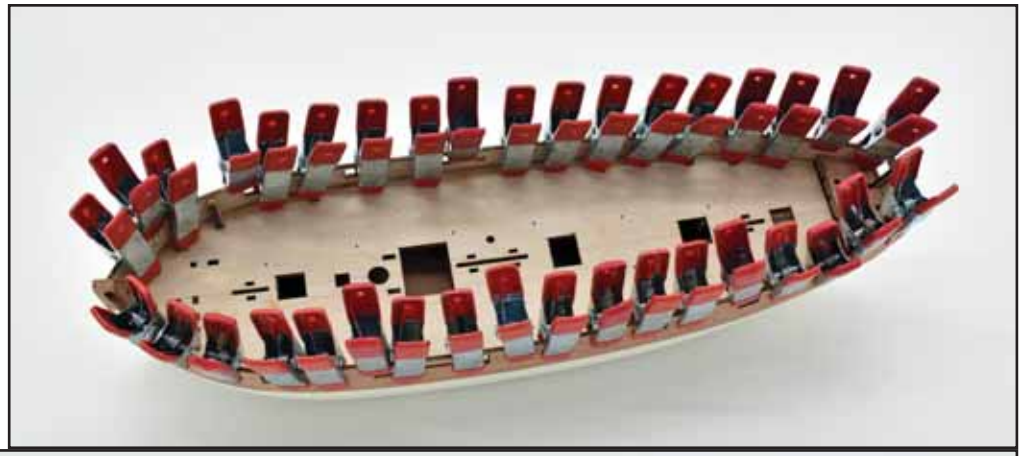


58. Hull painting almost finished. Before adding the last two or three coats, glue the rudder hinges (PE-21 and PE-22) in place as shown

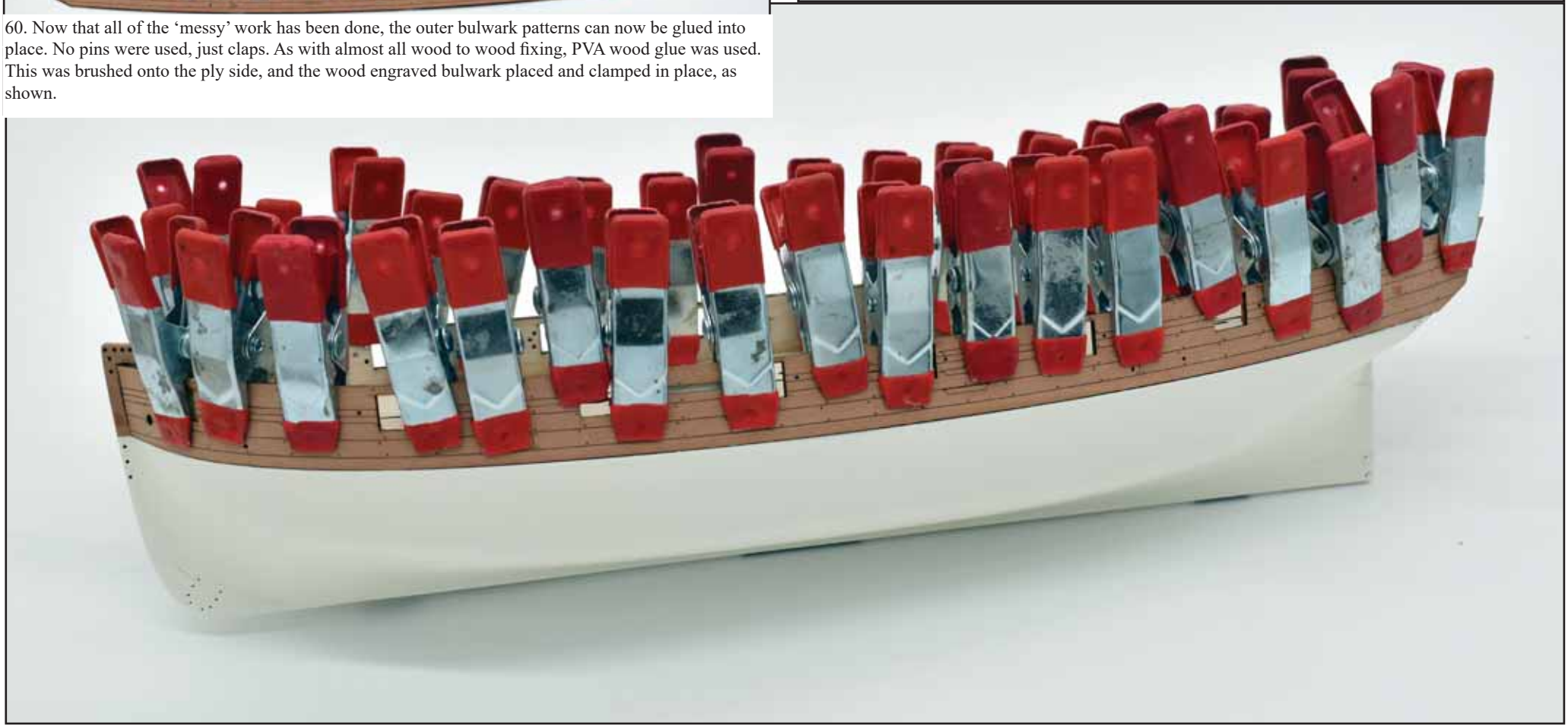


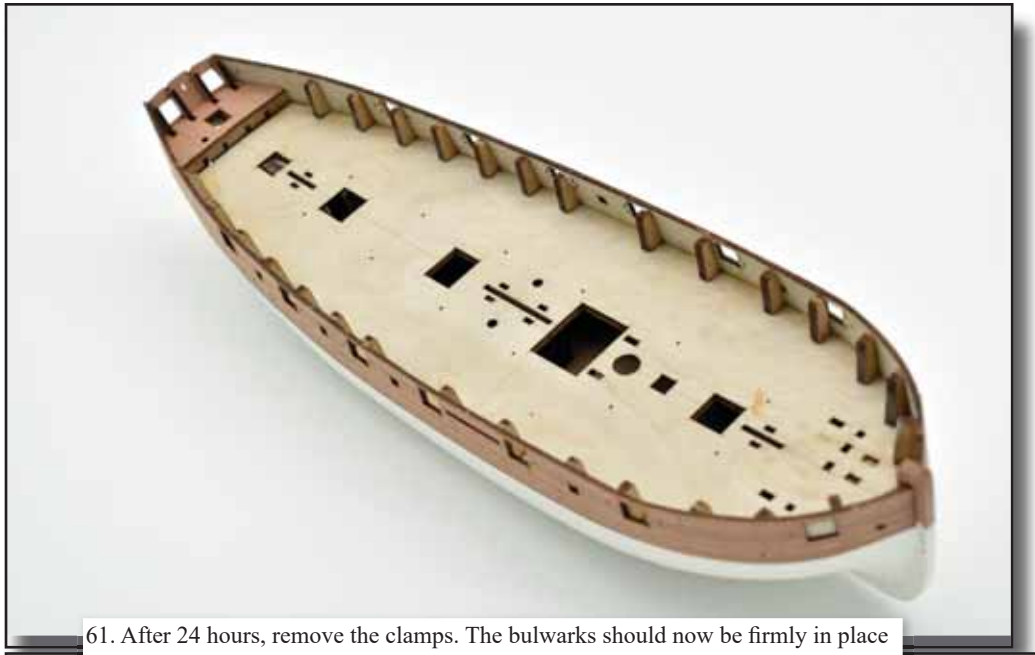
59. Hull painting fully complete and all masking removed. Touch up any areas that require attention



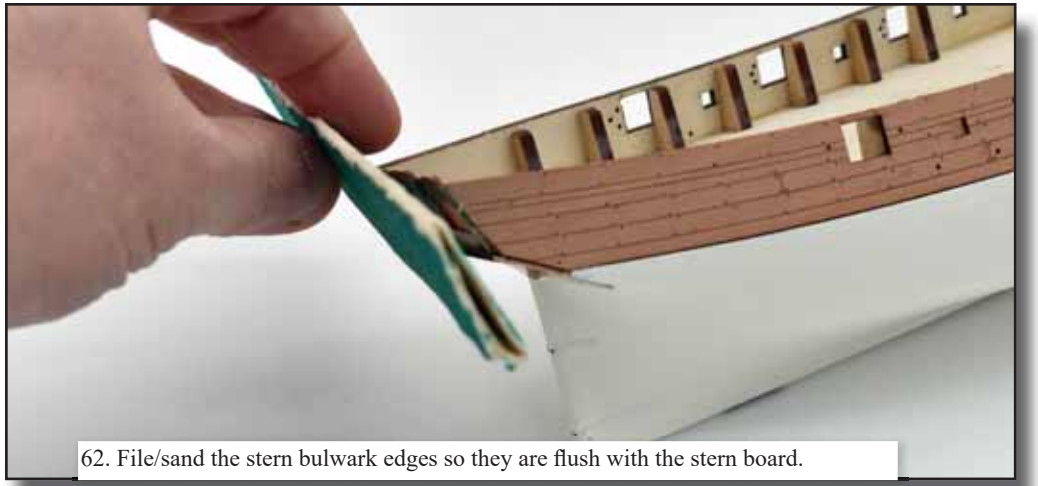


60. Now that all of the ‘messy’ work has been done, the outer bulwark patterns can now be glued into place. No pins were used, just claps. As with almost all wood to wood fixing, PVA wood glue was used. This was brushed onto the ply side, and the wood engraved bulwark placed and clamped in place, as shown.



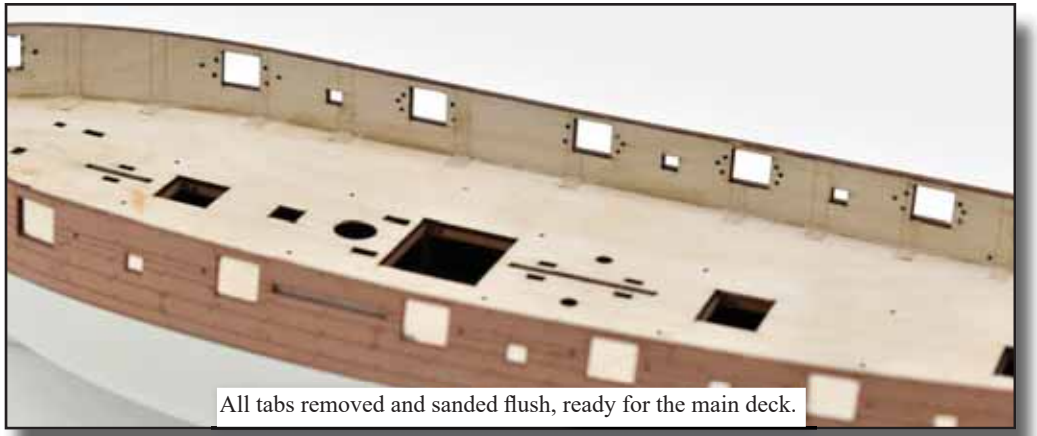


61. After 24 hours, remove the clamps. The bulwarks should now be firmly in place

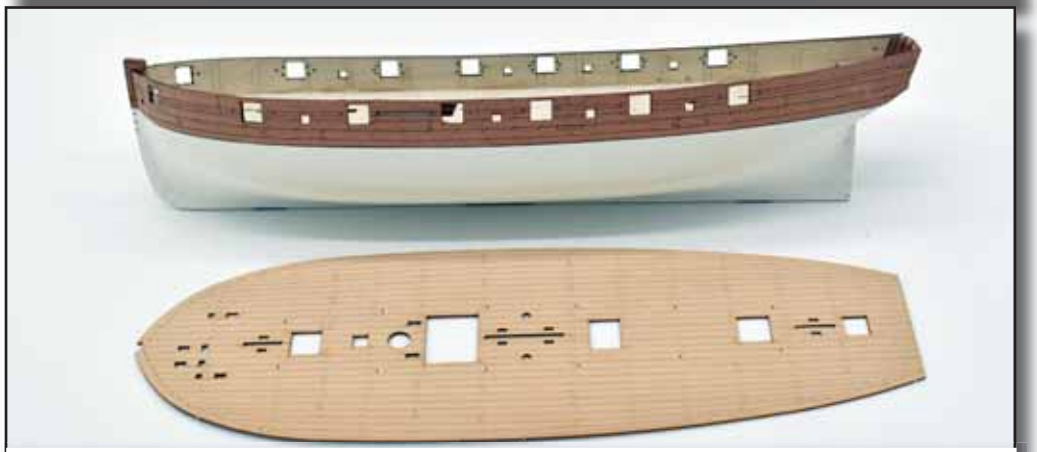


62. File/sand the stern bulwark edges so they are flush with the stern board.

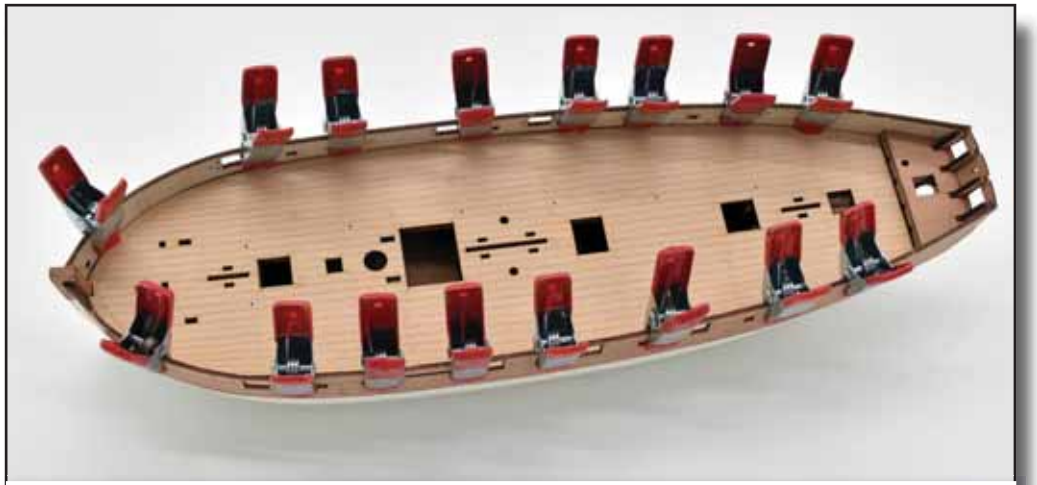
63. Remove all bulkhead tabs above deck level by carefully bending and twisting with a pair of pliers or similar. Once removed, sand any remaining stubs flush with the deck.



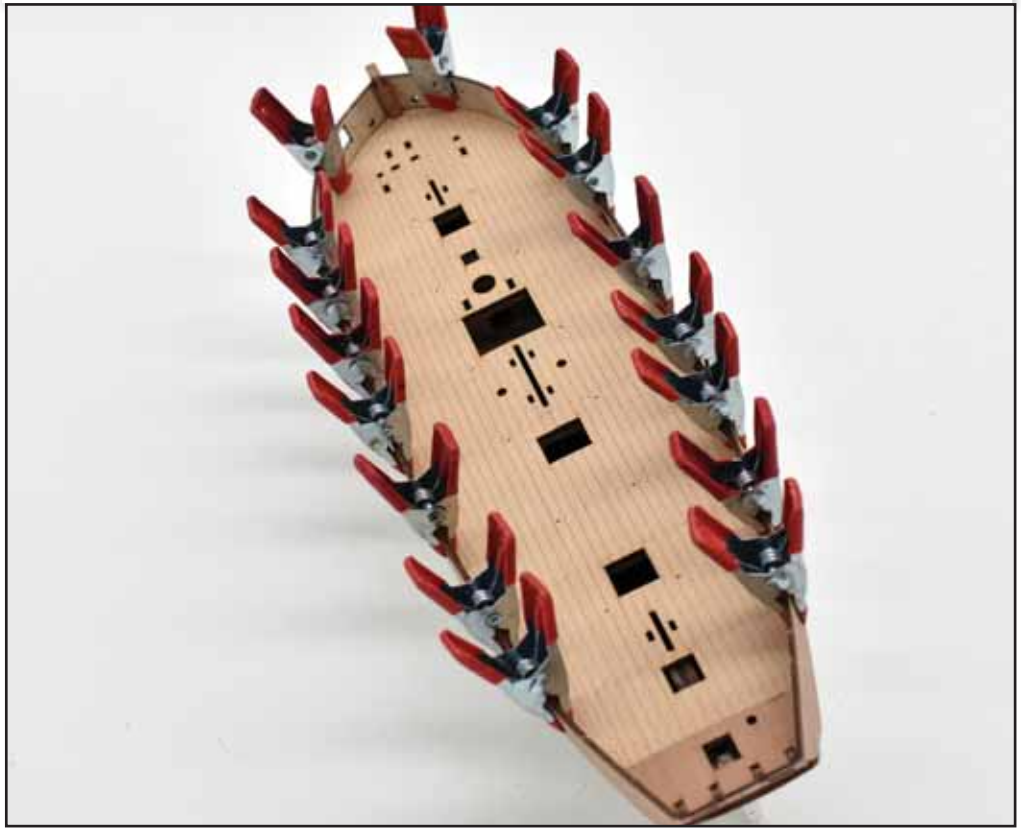
All tabs removed and sanded flush, ready for the main deck.



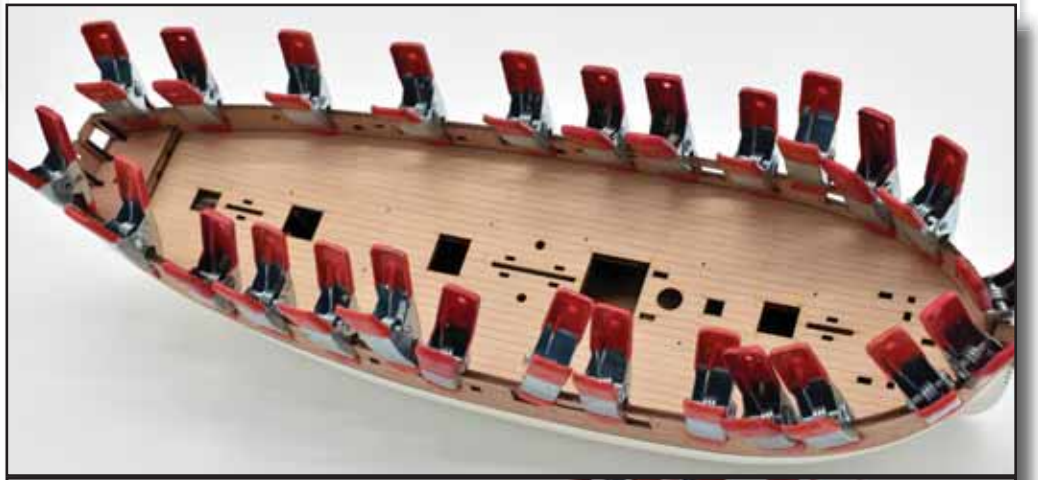
64. The laser engraved 1mm lime wood deck is now ready to be glued in place. Trial fit the deck and sand/file (below) any tight spots around the edges. Because there is another 'spirketting' plank that covers the inner bulwark, it does not matter if there is a slight gap between the deck edge and the bulwark sides.

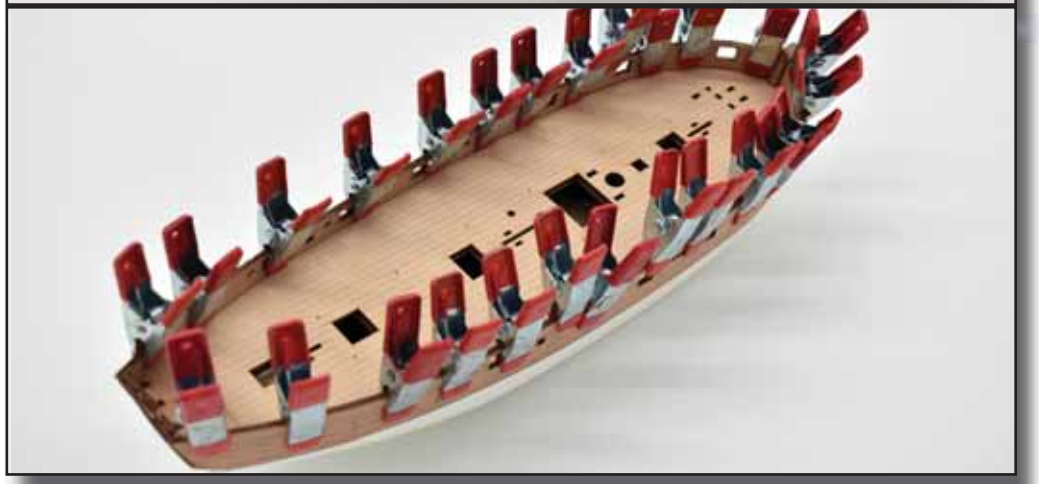


65. Add drops of glue around the near edges of the ply sub deck and around all hatch openings. Carefully place the engraved deck on top of the ply sub deck and then clamp the edges of the engrave deck in place using clamps as shown.



66. The inner bulwarks (117-Right and 118-Left) can now be added. Trial fit the parts before gluing anything. Like the outer patterns, there may be a little trimming required at the front and rear.
The patterns are designed to sit just above the engraved deck, so if you find that there is a gap, do not worry, this is intentional; The spirketting patterns cover any gaps.
Glue and clamp the inner bulwarks into position as shown below.

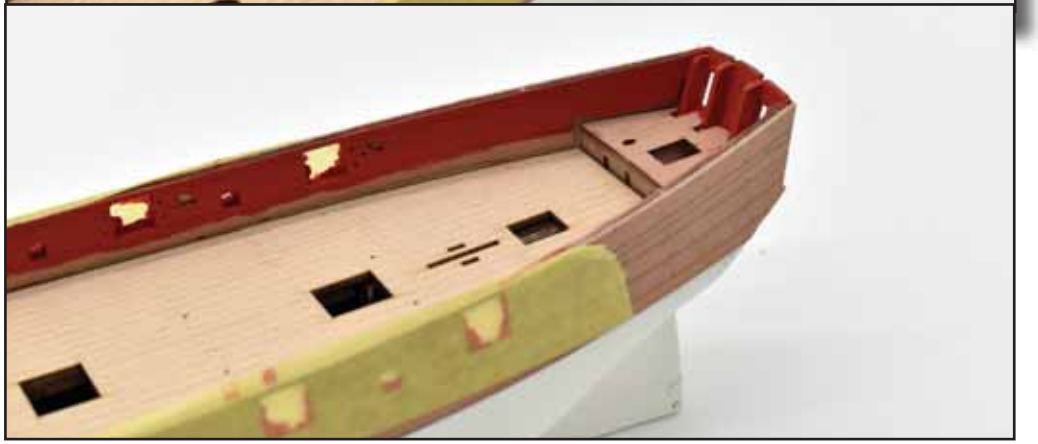




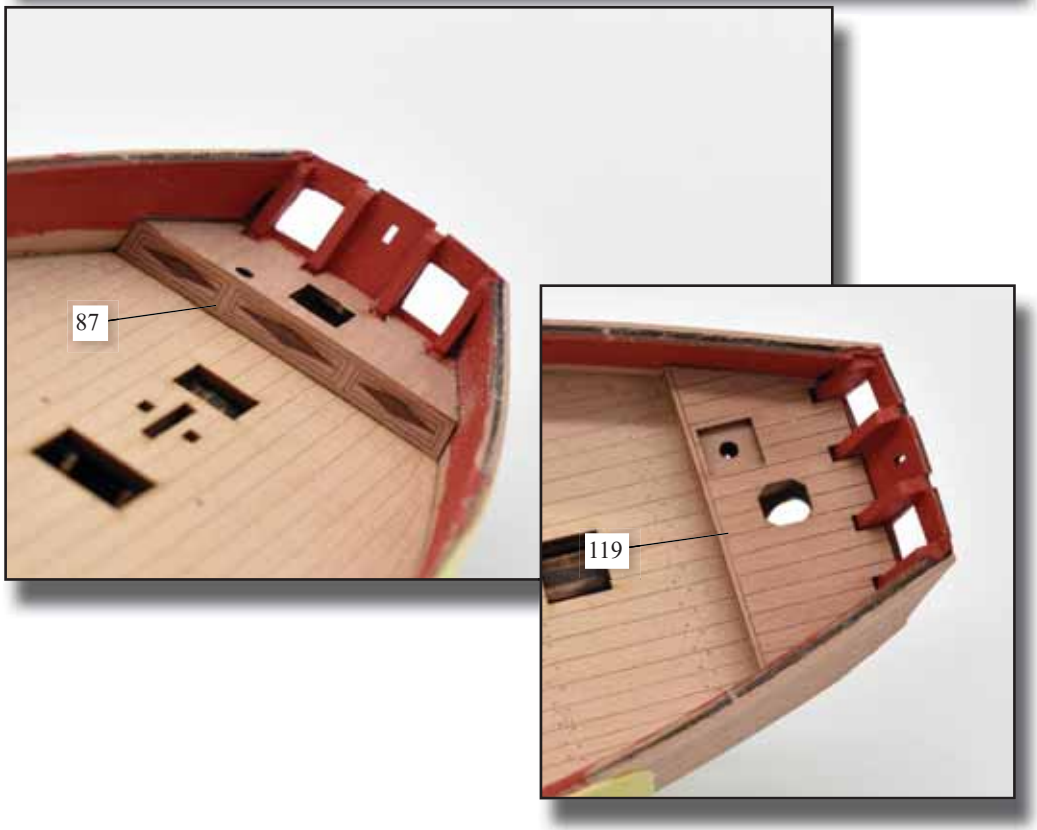
Inner bulwarks in place. Note the slight gap between the bottom edge of the bulwarks and deck.

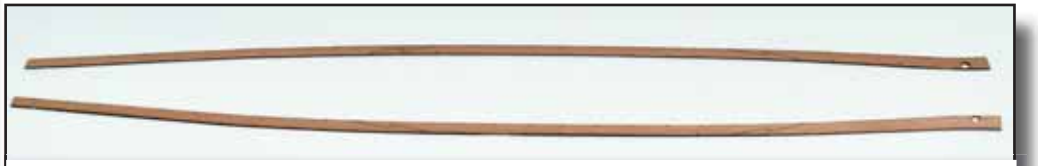
67. Above - File the gun port openings so that all three layers are completely flush in the four inner edges, using a flat needle file. Take care not to damage the deck, perhaps add masking tape to the deck for protection in case you slip with the tool.
Below - Do the same for the smaller oar ports, but use a square needle file instead.
Bottom - Finally, sand all three layers flush at the top edges of the bulwarks. This is important because the gunwale will need to sit perfectly flush along the whole top edge of the bulwarks.

68. The inner bulwarks can be painted red at this point. Cover the outer bulwarks with masking tape, to help stop paint seepage to the outer face. If you are unsure of painting neat, also mask the deck edges. The prototype was brush painted. The paint doesn't need to go all the way to the bottom, as the spirketting will cover this. Make sure all of the inner edges of the oar and gun ports are covered in red. Two to three coats should suffice.

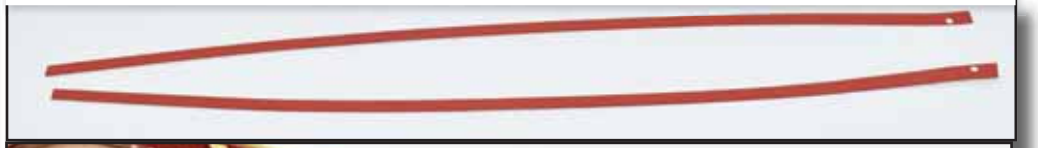


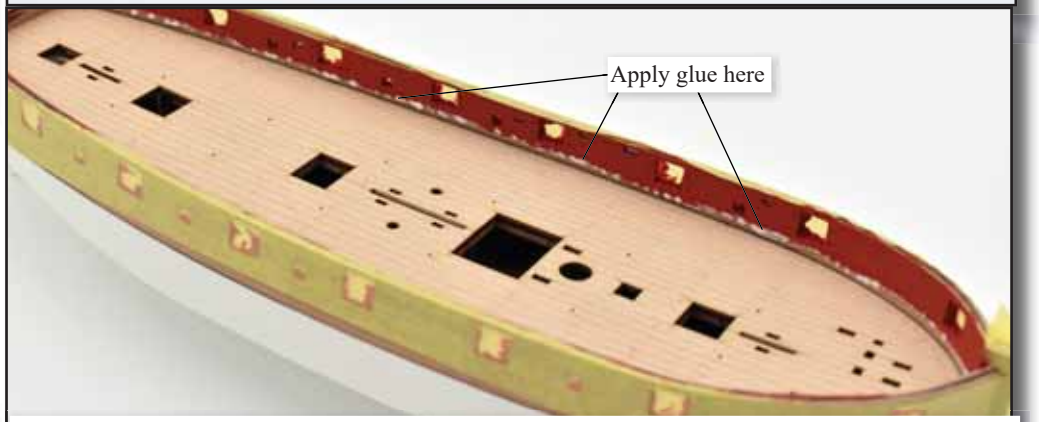
69. Add the stern engraved panel (87) to the front step as shown, followed by the stern raised platform panel (119), which should cover the top edge of 87. A little sanding of the sides may be required to get them to sit correctly.



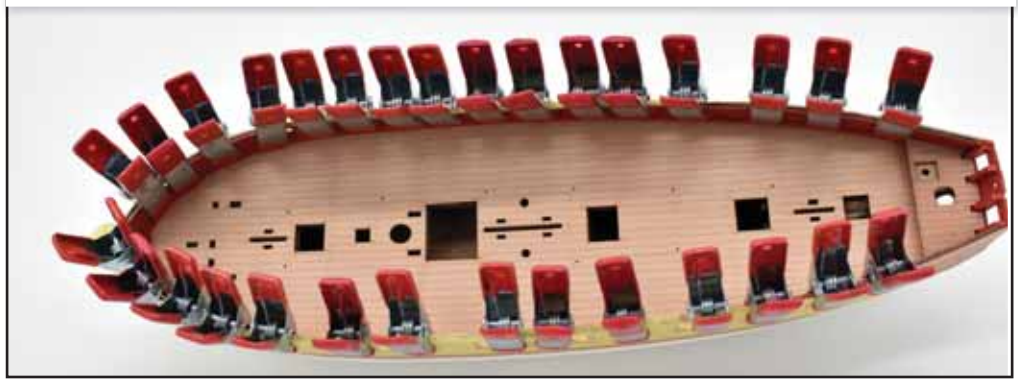


70. Remove the two spirketting patterns (133 - right and 134 - left) from the 0.6mm wood sheet (Above) Double check the fit, the top edges should be just below or on the lower edges of the gun ports, and the lower edge of the spirketting should touch the deck.
Paint the parts red before fixing in place, this avoids the need to mask off the deck edges and ensures a nice clean line.

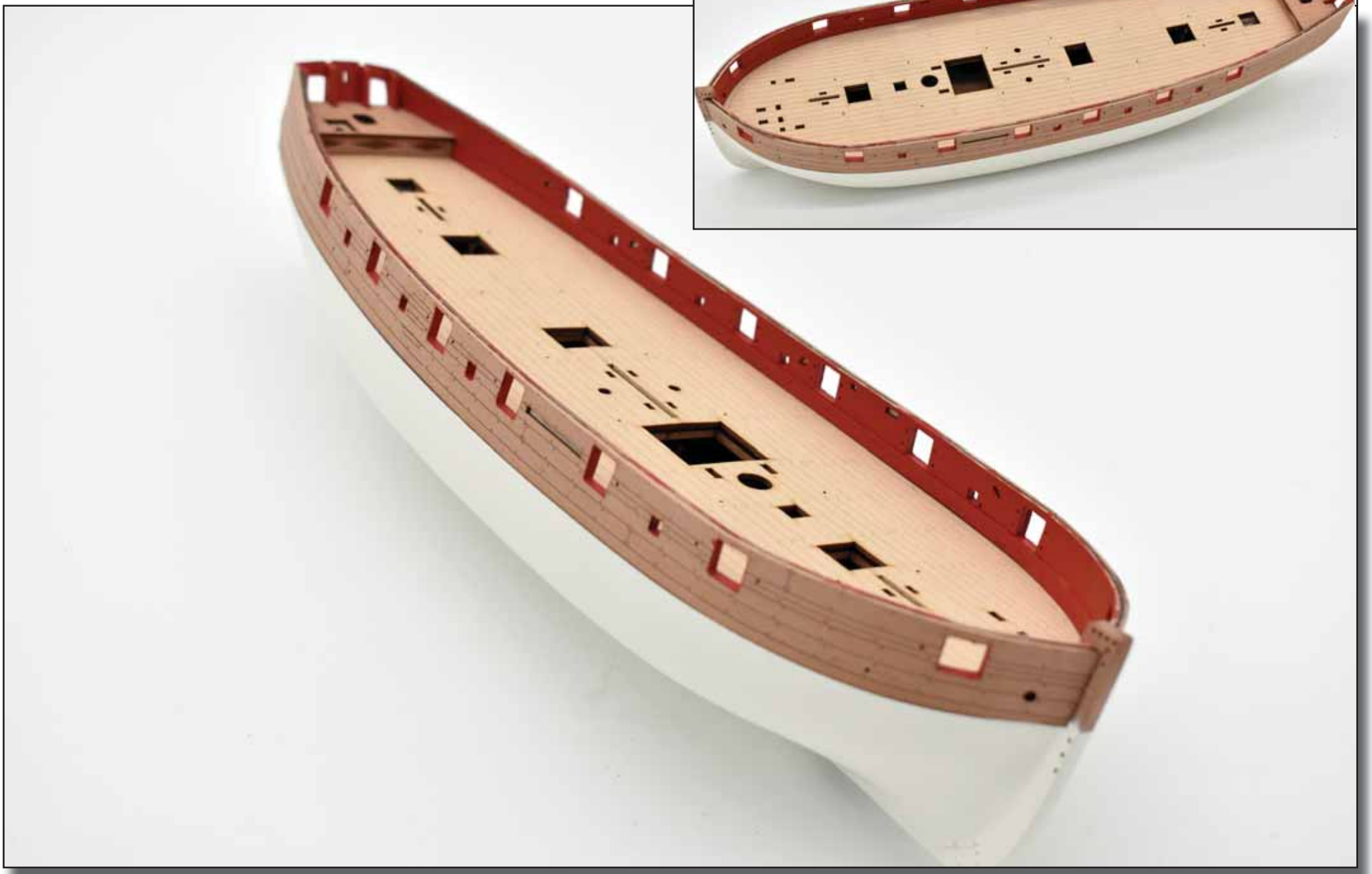


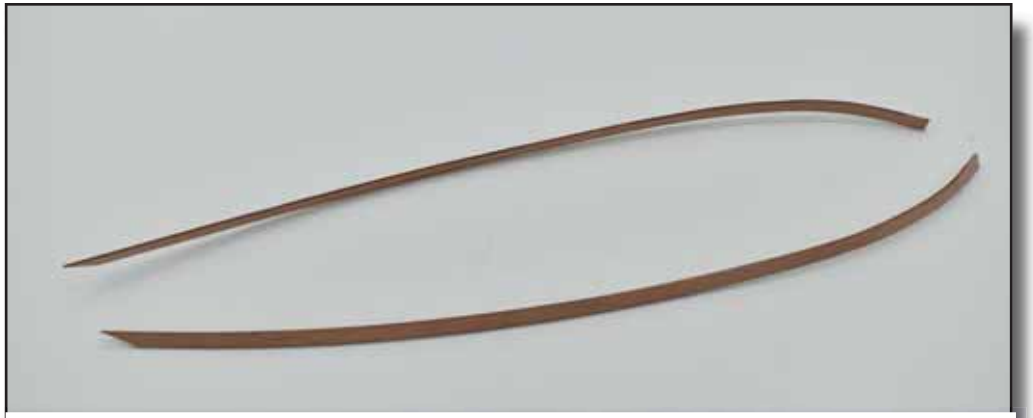


71. Apply wood glue (sparingly) to a position that will be central to the spirketting width. If you apply too much, there is a chance the glue will seep beyond the spirketting.
Below - Carefully apply the spirketting using clamps to keep them in place until the glue sets. This should be quite easy as the 0.6mm wood is very pliable.

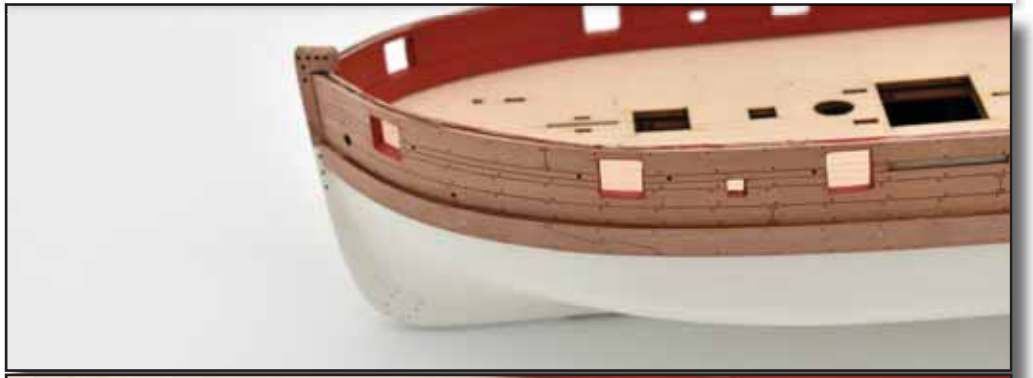


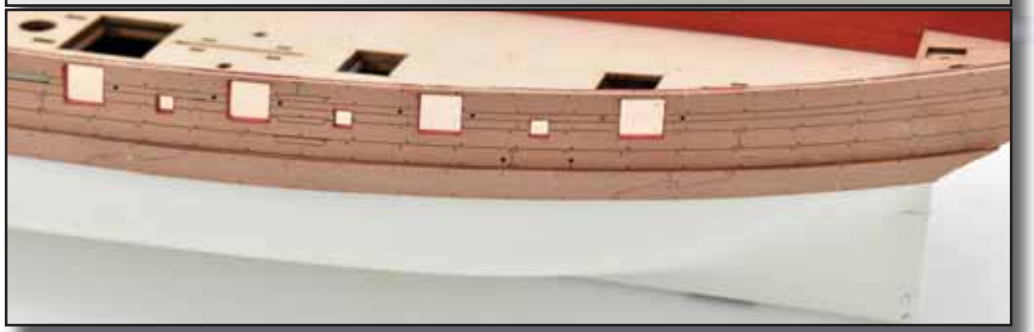
Spirketting now in place

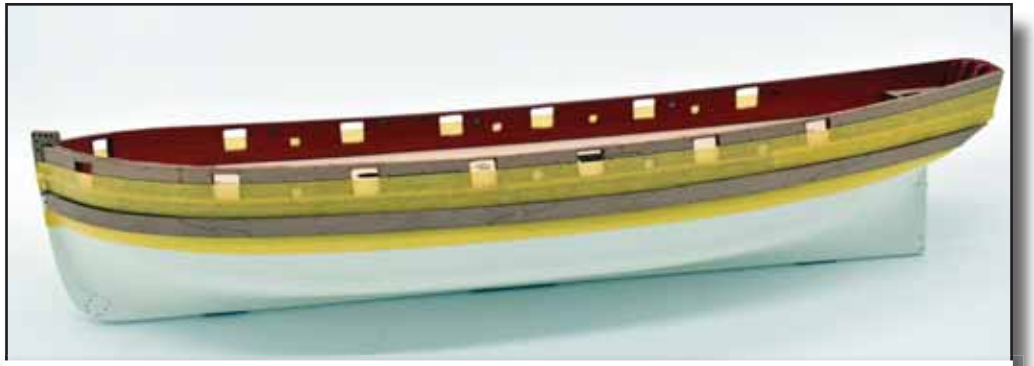




72. The main wales can now be added (115 - Right and 115 - Left). The prototype model used 1mm wood, but this seemed a little too thick, so your model has 0.8mm wales, which will be easier to manipulate.
It is more advisable to pre-shape the wales and then paint black before gluing in place, rather than gluing in place and then painting like on the prototype model. However, if you want to follow what is shown, this is fine.
Below - The top edge of the main wale follows the lowest engraved line on the outer engraved bulwark patterns - so all you need to do is to keep to this line for the correct placement of the wales.
It is better to pin as well as glue in place. As the wales are painted black, once the glue has set, you can simply remove the exposed parts of the pins so they are flush with the wale surface, and paint over them



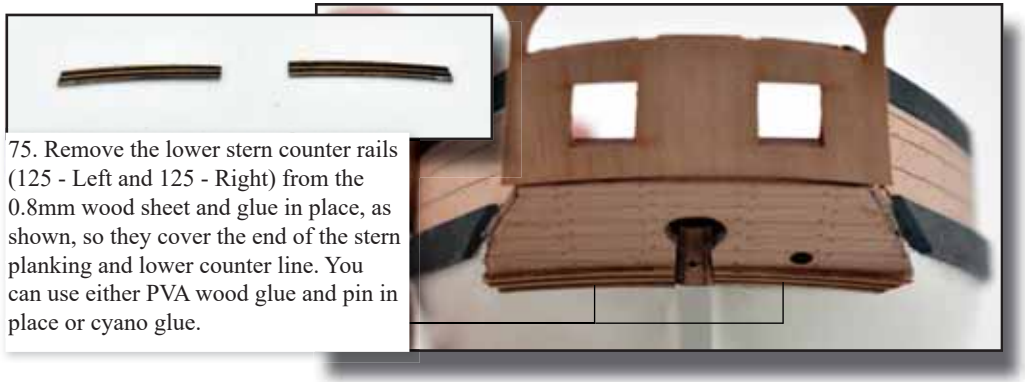




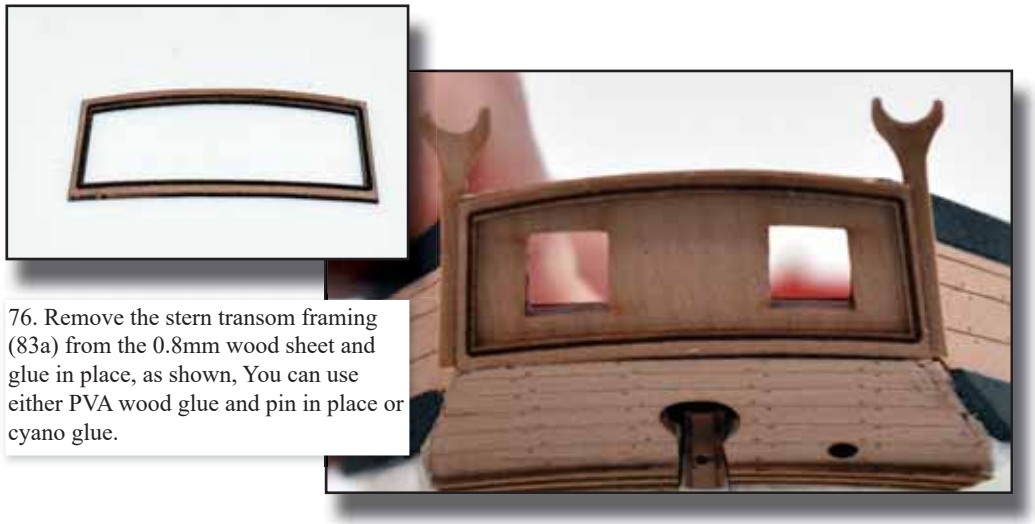
73. This stage regarding the main wales only applies of you opted to add the wales before painting them. Mask off the upper and lower parts of the hull to the wale edges and brush paint them black.

Mask off the area just below the upper rail engraved line and brush paint the upper area black, as shown.

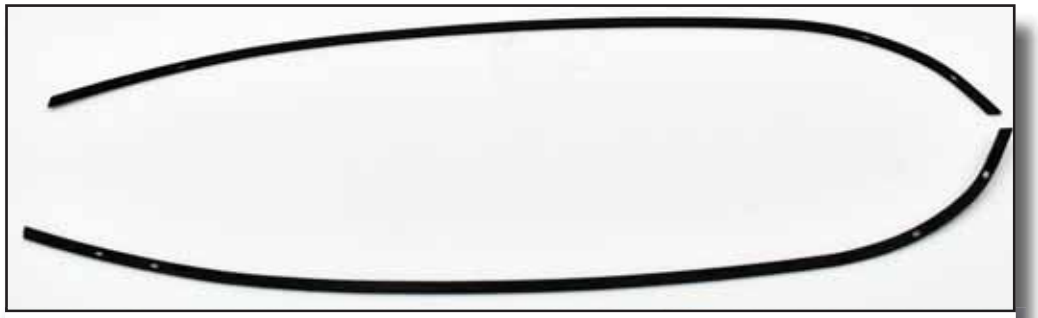
74. Remove the stern transom (83) from the 1.5mm wood sheet and glue in place, as shown. Again, this can be clamped until the glue has cured. Once cured, file the openings so both layers are completely flush with one another.



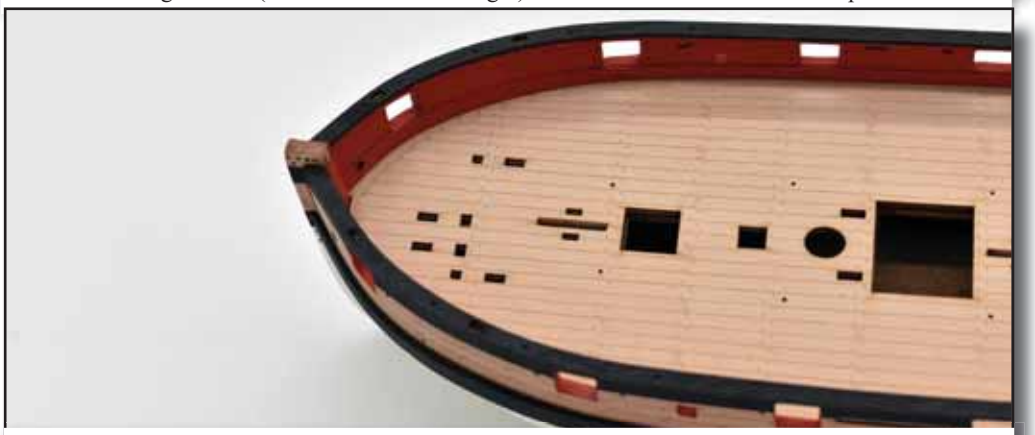
75. Remove the lower stern counter rails (125 - Left and 125 - Right) from the 0.8mm wood sheet and glue in place, as shown, so they cover the end of the stern planking and lower counter line. You can use either PVA wood glue and pin in place or cyano glue.



76. Remove the stern transom framing (83a) from the 0.8mm wood sheet and glue in place, as shown, You can use either PVA wood glue and pin in place or cyano glue.

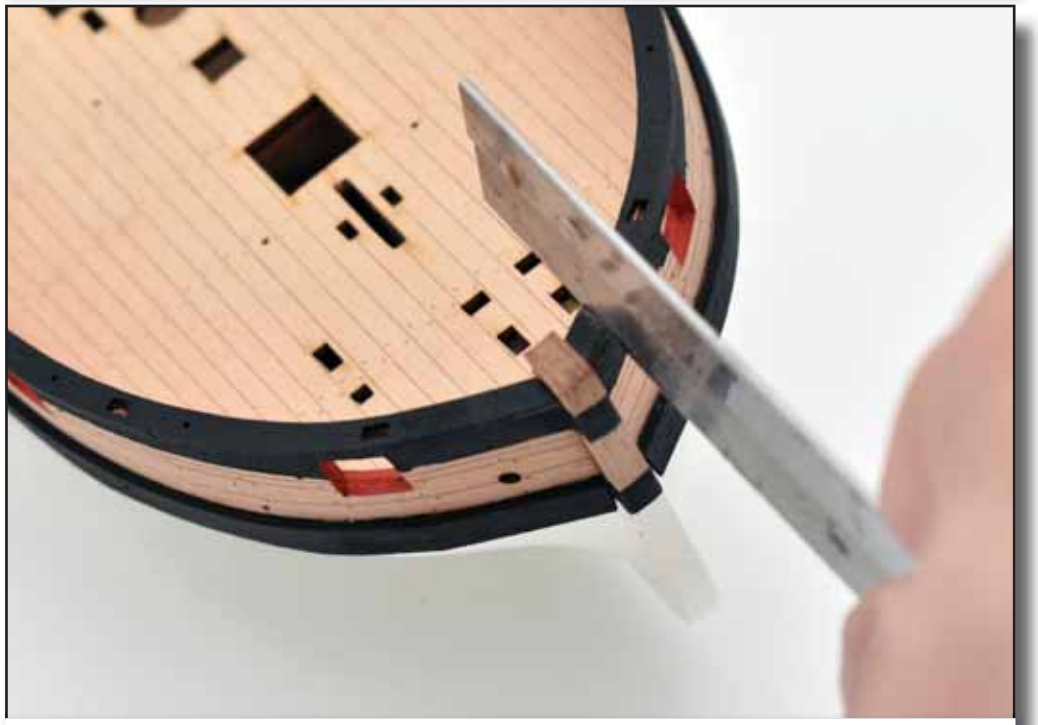


77. Remove the gunwales (120 - Left and 121 - Right) from the 0.8mm wood sheet and paint black

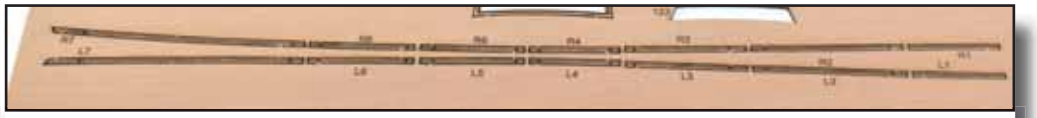


78. Carefully glue the gunwales in place so there is more or less an equal overhang on the outer and inner bulwark sides. You can use cyano glue or PVA and pins. If the latter, you can do the same as the main wales, and pin in place, and then cut off the tops of the pins flush with the top surface of the gunwales, and then re paint black.

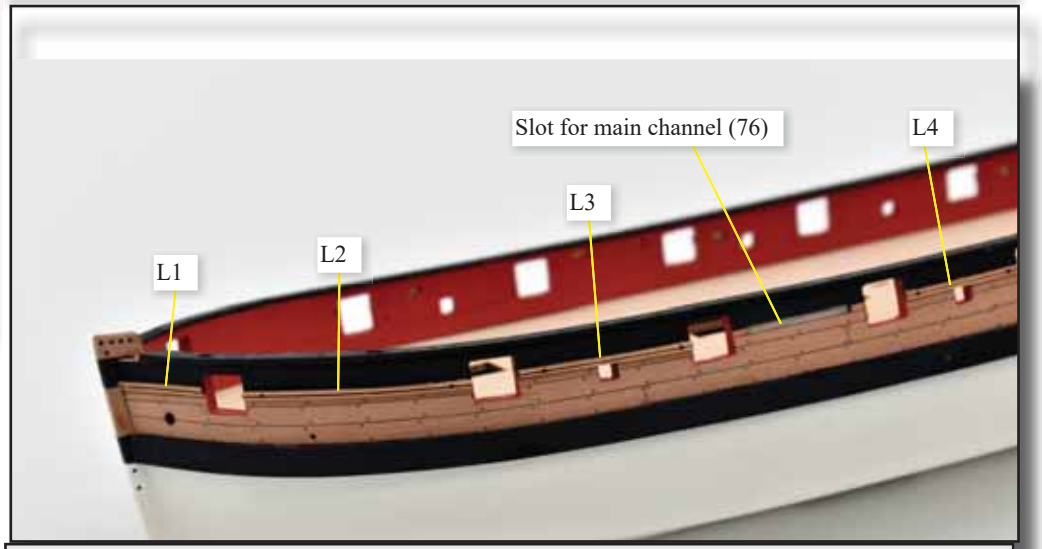
79. Add the stern transom gunwale (123). This will need a little filing in order to get it to fit in between the aft parts of the side gunwales. Once in place, paint black.

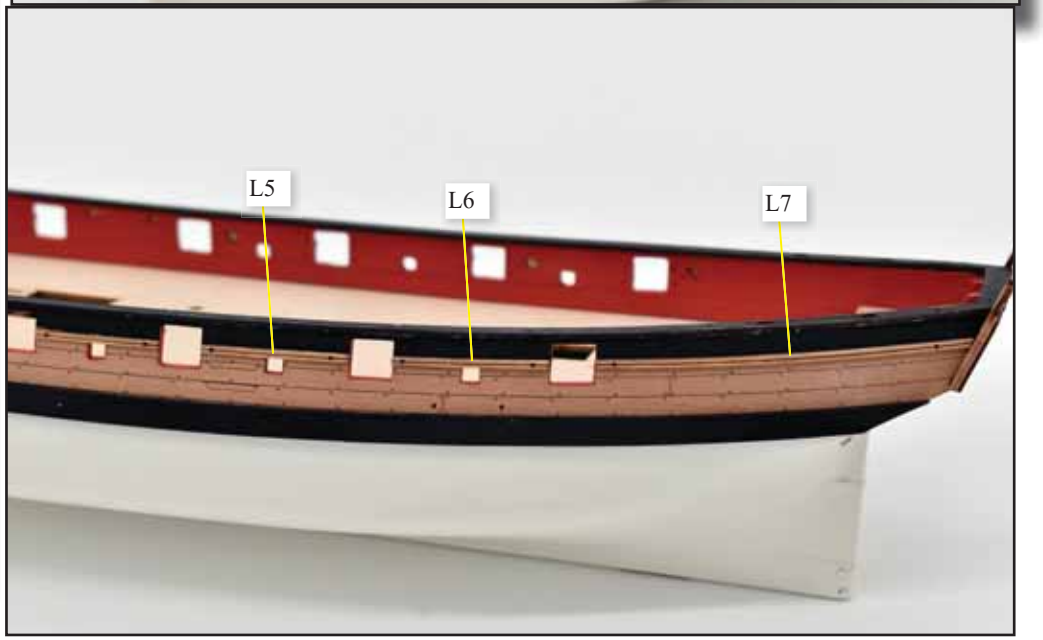


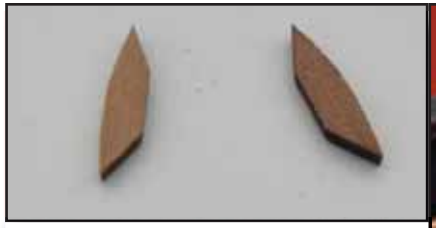
80. Remove 6mm from the main wale on the left hand side using a razor saw. This area will be for the bowsprit to sit, and more will need to be filed later.



81. The upper rails can now be fitted in place L1-L7 fit on the left side, and R1 to R7 fit on the right side, in between the gun ports. Glue into place along the engraved rail lines using either cynao or PVA wood glue. There is a small hole at the end of each rail, so you can pin into place if you wish.

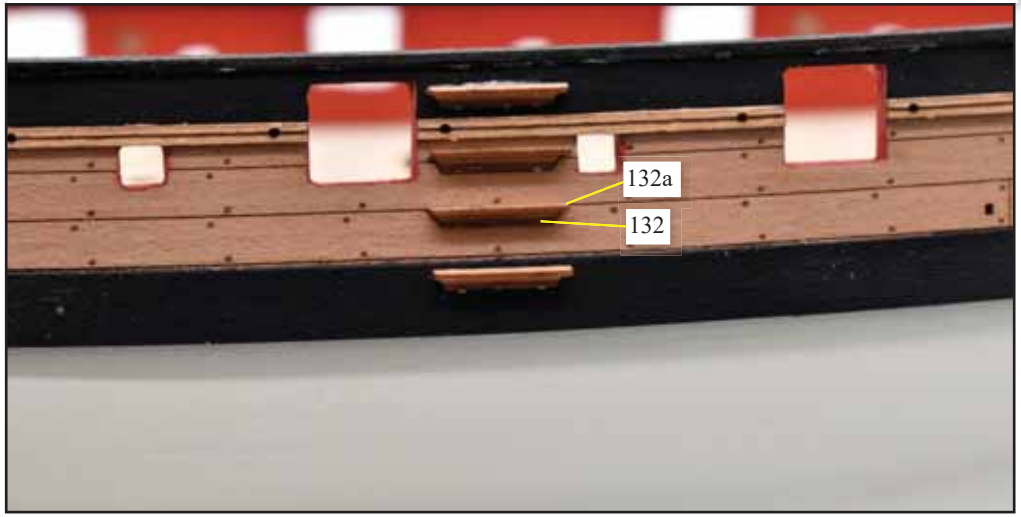


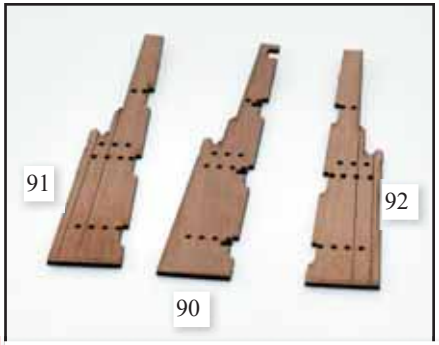


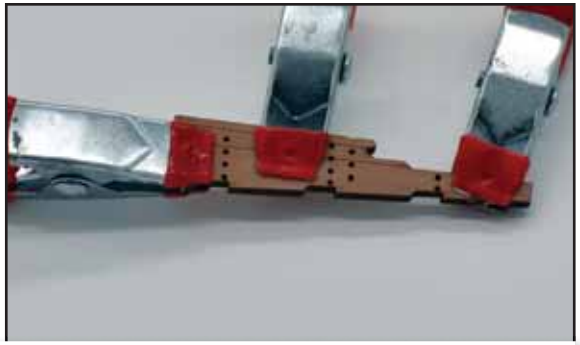


82. Remove the stern side counter timbers (74) and glue in place to the position shown

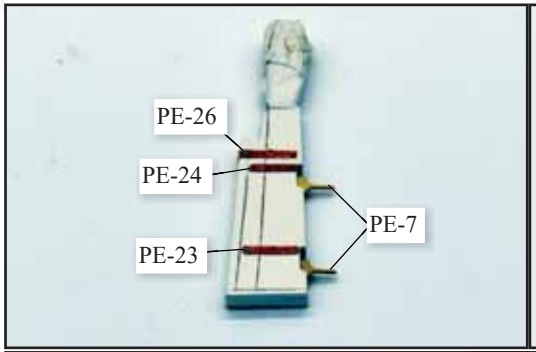
83. The outer hull side steps can now be fitted, These are on the 0.6mm wood sheet, 132 are the lower parts and 132a are the upper parts. The step positions are engraved on the hull sides, so glue in place to these positions using a small amount of PVA wood glue, and tweezers for positioning.

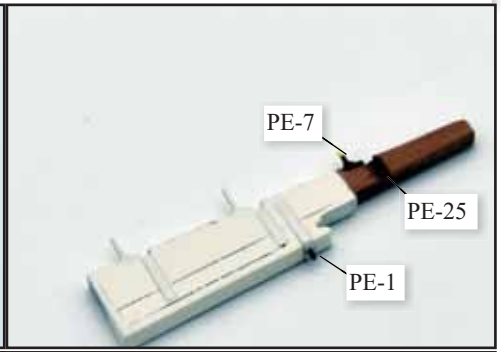






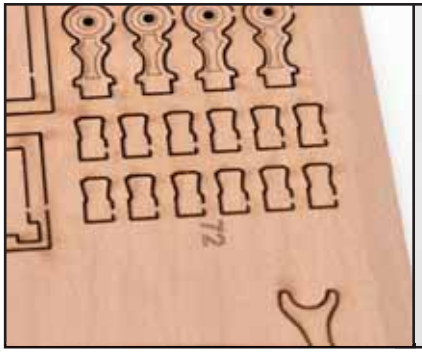
84. The main rudder assembly consists of three parts, the core (90), the right side (91) and left (92). 91 and 92 are glued to 90.
Below - Paint the area below the waterline of the rudder white. As with the hull painting, before the last couple of coats are added, add the rudder photo etched parts (PE-7, PE-23, 24 and 26), and then apply the last coats of white paint.
Once painted, paint black and add parts PE-7, PE25 and PE-1
Drill three holes into the rudder post positions and insert the rudder hinge stems into the holes.





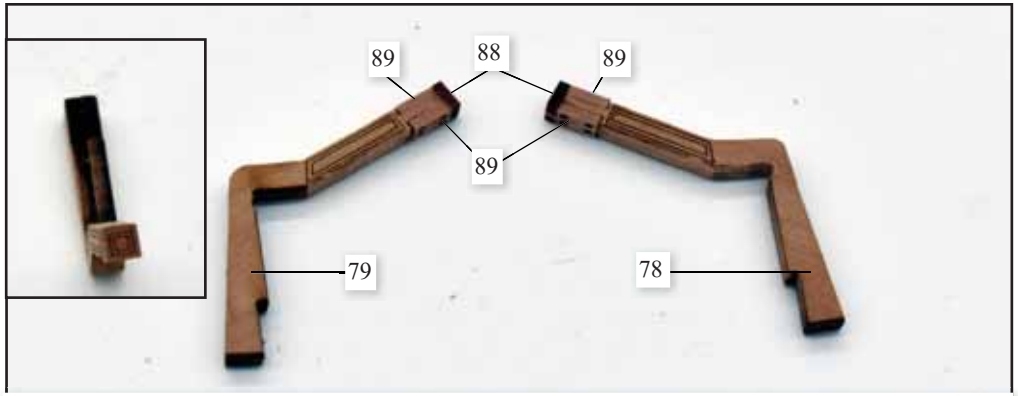
85. Make up the tiller arm with the core (98) the left outer (128) and right outer (129). You can use brass pins to help with alignment, and the edges of the tiller arm can be rounded off slightly. Put the assembly to one side, to be added later in the build.

86. Remove the 12 swivel gun posts (136) from the 3mm wood sheet and carefully glue into position over the holes in the gunwales. The best way to align these is to use a brass pin or a short length of brass wire to go through the post, and then align to the hole in the gunwale.

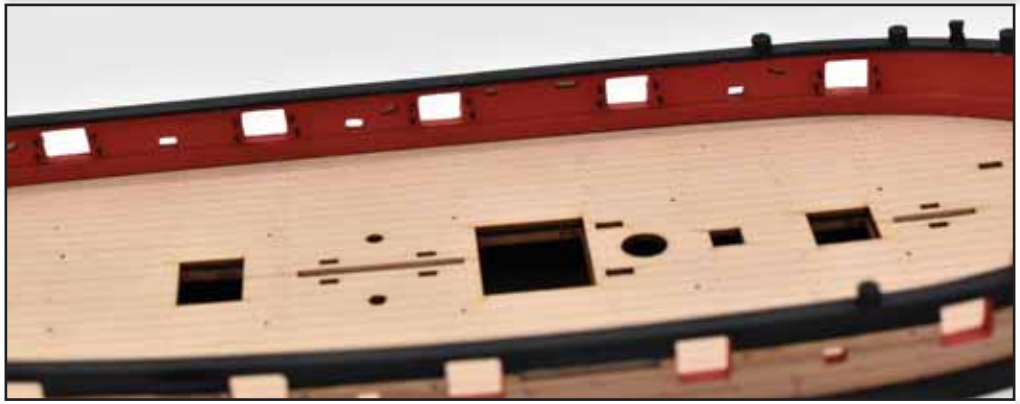


87. Remove the 8 timber head posts (72) from the 1.5mm wood sheet and carefully glue into position into the slots in the gunwales. Once added, the swivel gun posts and timber heads can be painted black.

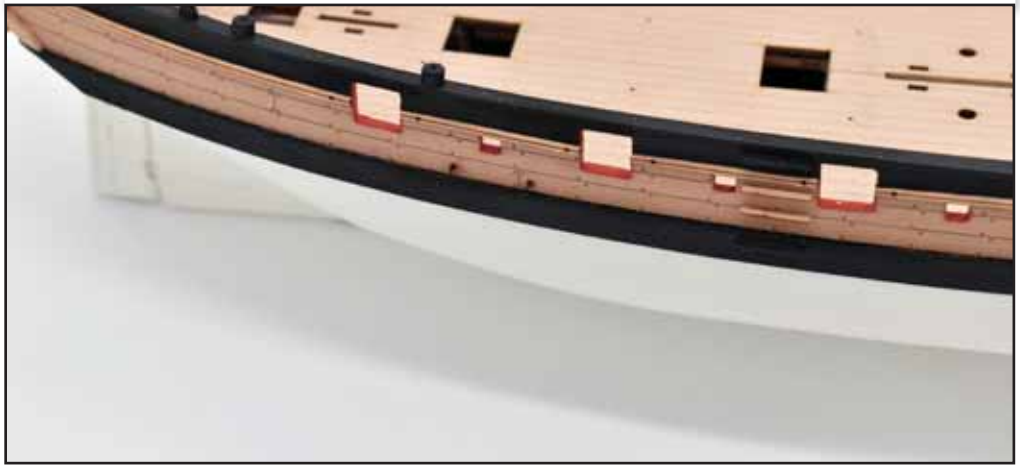
88. Remove the main cathead left and right patterns (78 and 79) from the 1.5mm wood sheet, the sheave patterns from the 1mm wood sheet (89) and the end caps (88)



89. Assemble the cathead parts as shown. Once glued, carefully file/sand the laser char from the edges of the assemblies and put safely to one side.

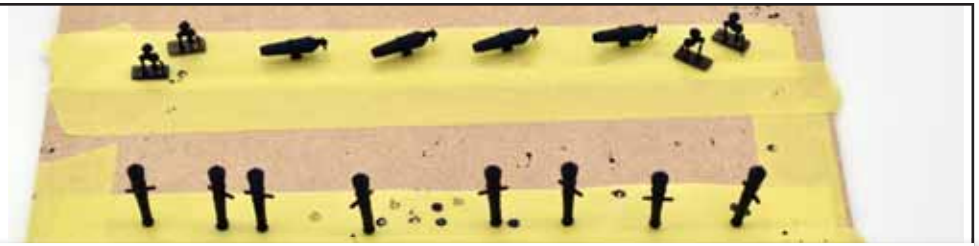


90. Using the plan sheets for reference, paint black and add all of the eyelets (PE-1) into their positions around the gun ports, outer hull and deck.

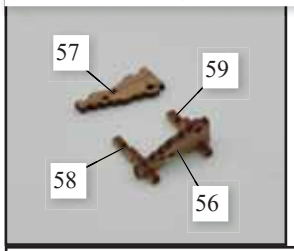


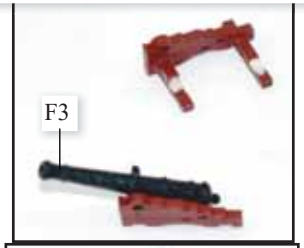
91. Remove part 37, the bow knee, from the 2mm wood sheet. Trial fit and file/sand as necessary so the contact edge sits as flush as possible to the inner bow. Note the orientation of the belaying pin holes, there are 2 on the left side, as the bowsprit covers the rest of the area, and 4 on the right side.

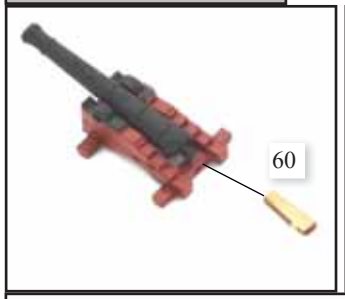
92. Remove part 80, the stern knees, from the 1.5mm wood sheet. Trial fit and file/sand as necessary so the contact edge sits as flush as possible to the inner stern and side gunwales.

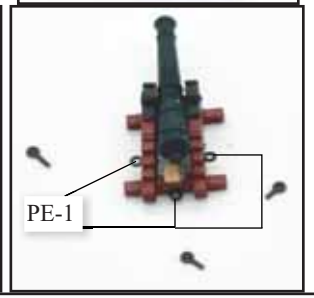


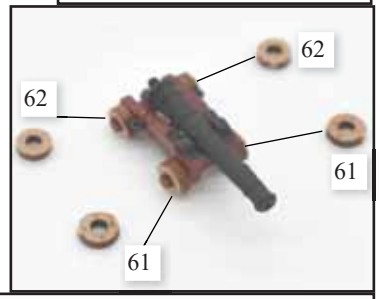
93. Cannons. Paint the cannon, carronade barrels and carronade wheels black. Although they are produced in black resin, they still require painting.
Make up the 3 pounder cannon assemblies as shown below. Paint the sides and axles red (56-59), Glue one side to the axles, and then add the barrel to the other side. Add glue to the axles assemble the carriage side with the barrel to the other carriage side. Insert the PE cross bolt (PE-17), and then glue the quoin (60) to the rear axle and cross bolt, followed by the three eyelets (PE-1) and finally the wheels (61 front and 62 - rear). 8 cannon assemblies are required.



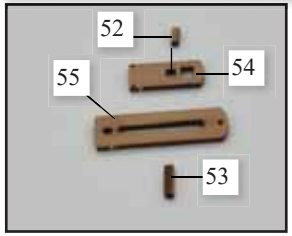


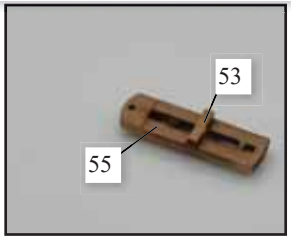


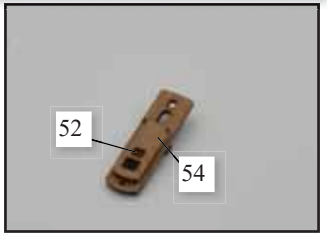


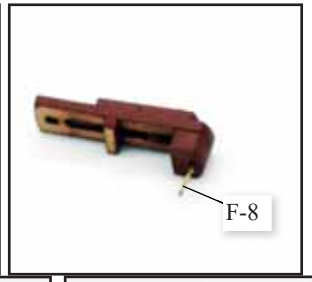


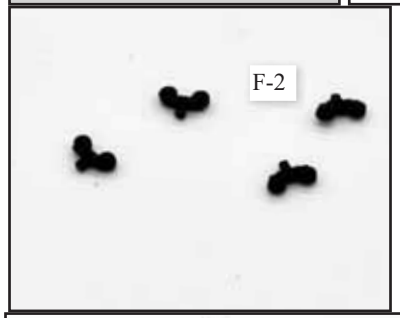
94. Carronades. Make up the 12 pounder carronade assemblies as shown below. Paint the upper and lower bed red (54 and 55), Glue part 53 to the underside of 55 using the engraved line a placement. Glue the slide pin (52) so it is flush with the top of part 54 and then glue part 55 to 55. Paint the assembly red. Add part 139 (also painted red) to the front underside of part 55. Use a pin to connect and align and glue in place. Once dry, remove the exposed length of the pin as shown. Add the wheels (F-2), followed by eyelets (PE-1) and finally the barrel (F-1). There is a 'gate' or support on the barrel, that links the lower elevating screw to the barrel. Carefully snip this off, as it is there only to make sure the fragile lower elevating thread does not break. 4 carronade assemblies are required.

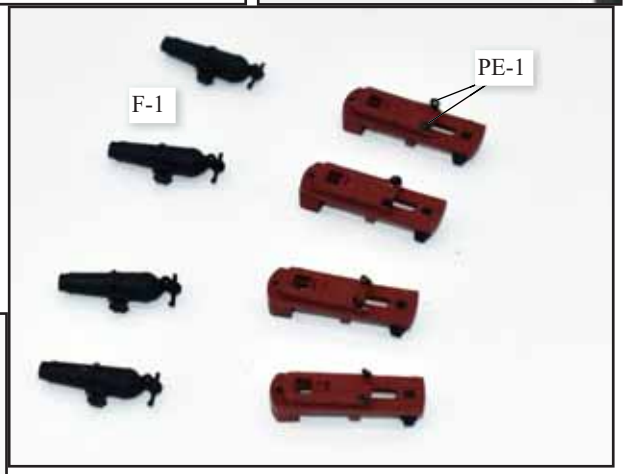


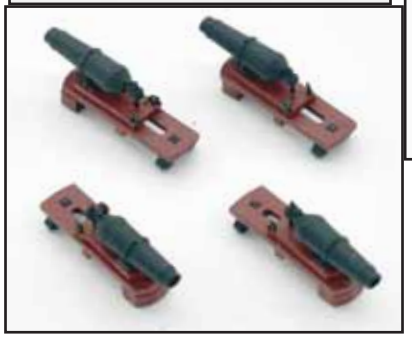


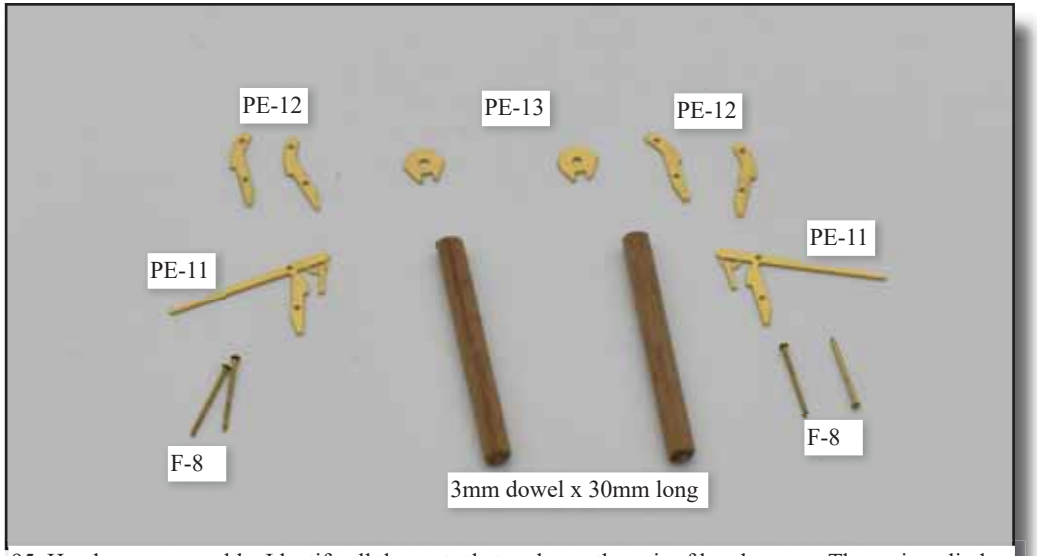




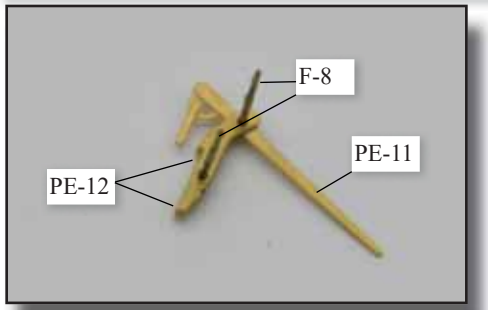


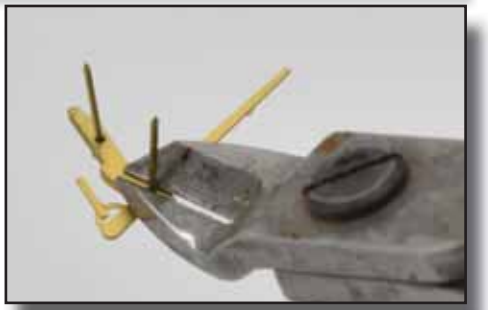




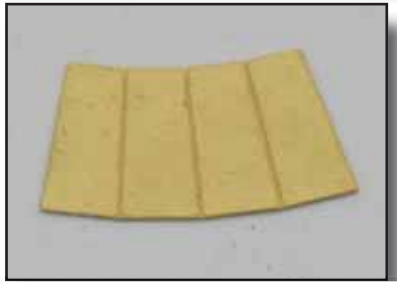


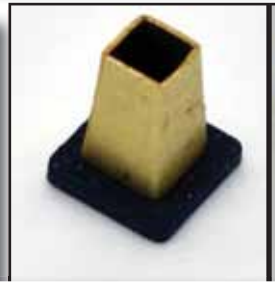
95. Hand pump assembly. Identify all the parts that make up the pair of hand pumps. The main cylinder is made up from 3mm dowel, cut to a length of 30mm each.
Add PE-12 to both sides os of PE-11, using 2 pins to align the assembly. Add a drop of thin cyano to the edges to secure the three parts, and then snip off the excess pins.
Glue the cap (PE-13) to the top of each dowel and then glue the pump handle assembly to the dowel as shown. Paint the handle a wood colour, and the rest of brass parts black to complete the assemblies.

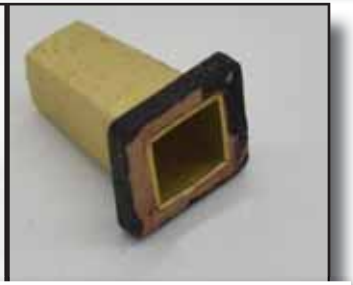




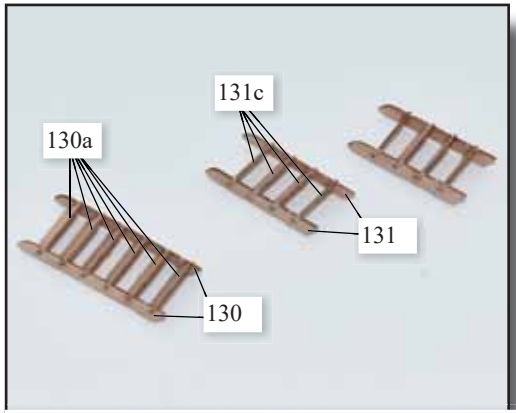
96. Main winch assembly. Paint the main winch drum (F-5) a wood colour, and the central gear ring black. Remove the main windlass standards (40 and 41) and the end cheeks (42) from the 2mm wood sheet.Insert the winch drum into the square notch in each standard, and then glue and add the end cheeks, to lock the windlass into position to complete the assembly.

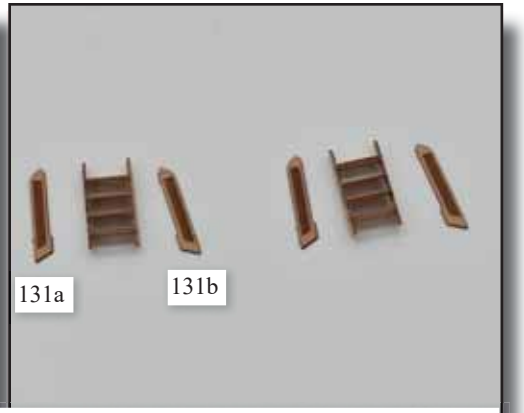






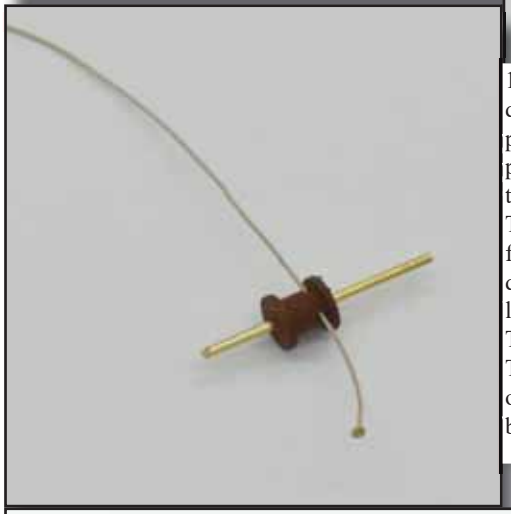
97. Chimney and coaming assembly. Bend the photo etched chimney pattern (PE-6) to crate the tapered chimney and apply a little thin cyano to the edges. Insert the bottom of the chimney into the coaming (71) and paint the 2 parts black.



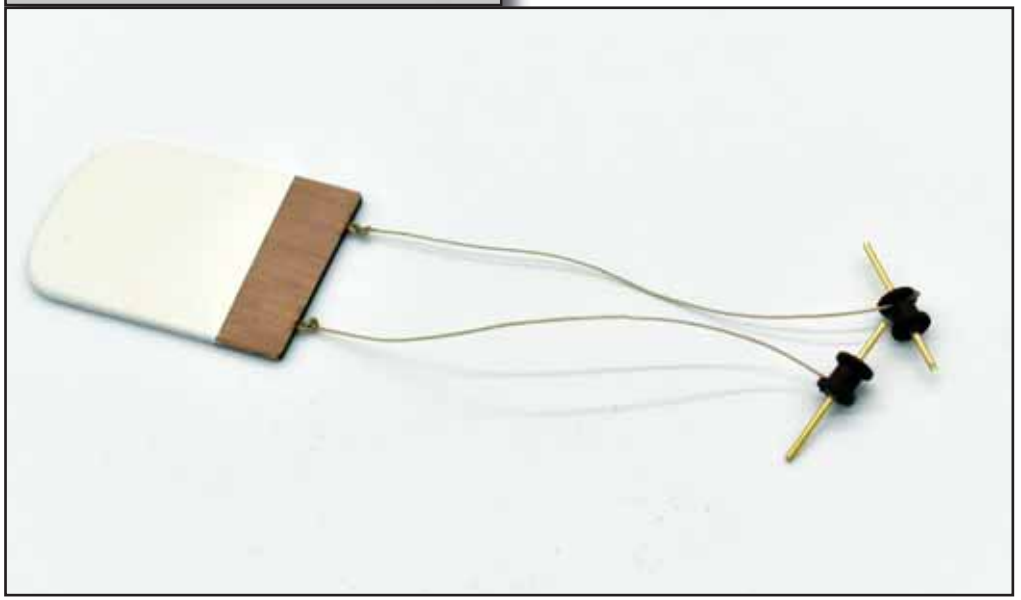


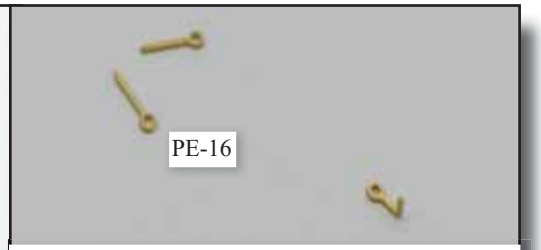
98. Ladders. Make up the main companionway ladder using the sides, 130 and steps, 130a. Use PVA wood glue to glue the steps to the sides.
The inner bulwark ladders are optional. Make the same as the companionway ladder, but ass parts 131a and 131b to each side.

99. Drop Keels. Remove the three drop keels from the 1.5mm wood sheet. The edges can be sanded slightly to more of a curve, Drill one 0.7mm hole in the upper edge of 64 and 66, using the laser cut mark as a positioning guide, and drill two holes in part 65. Insert and glue an eyelet (PE-1) into each hole. Paint the lower part of the keels white to about 2mm above the engraved line. This line marks the position the drop keels should be in relation to the hull keel.

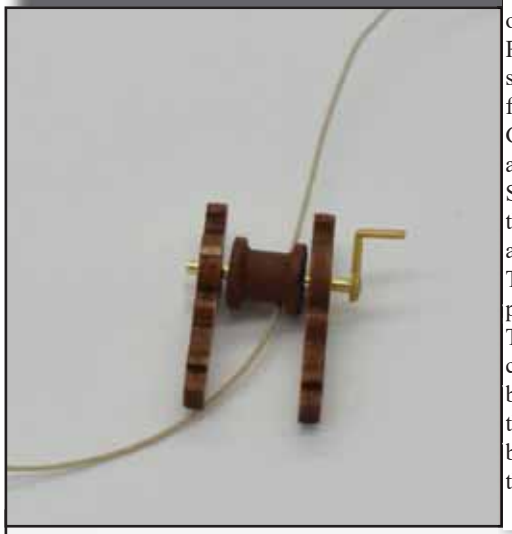


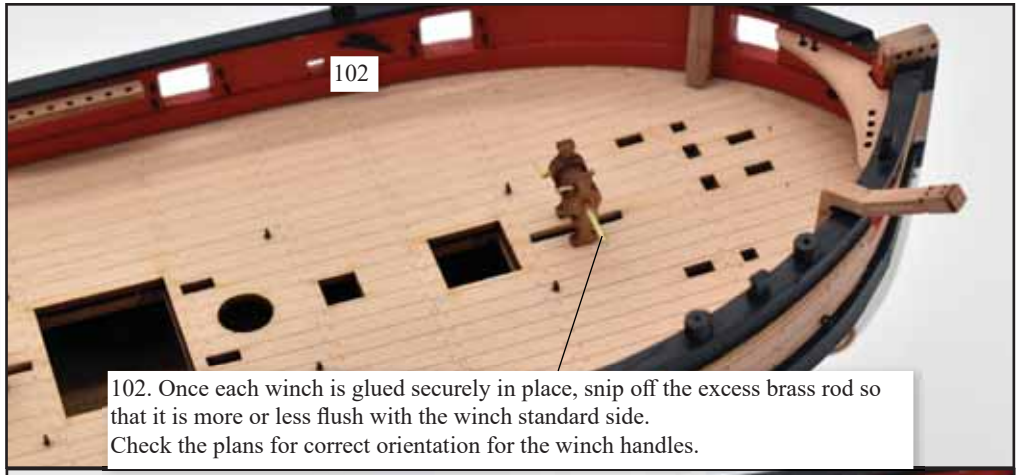
100. Drop Keel winch. Paint the drop keel winch drums (F-6) a wood colour while still on their supports. Once painted, remove them from their supports and insert a 15mm length of 0.8mm brass rod through the centre of each (4 required in total)
There is an offset hole in each of the drums, this to for the 0.5mm thread that connects the drum to the drop keel. Tie a knot and secure with cyano, followed by snipping off the excess as shown left.
The 0.5mm thread should be about 80mm in length. Tie the other end of the thread to each eyelet located on the top edges of each of the drop keels, as shown below.



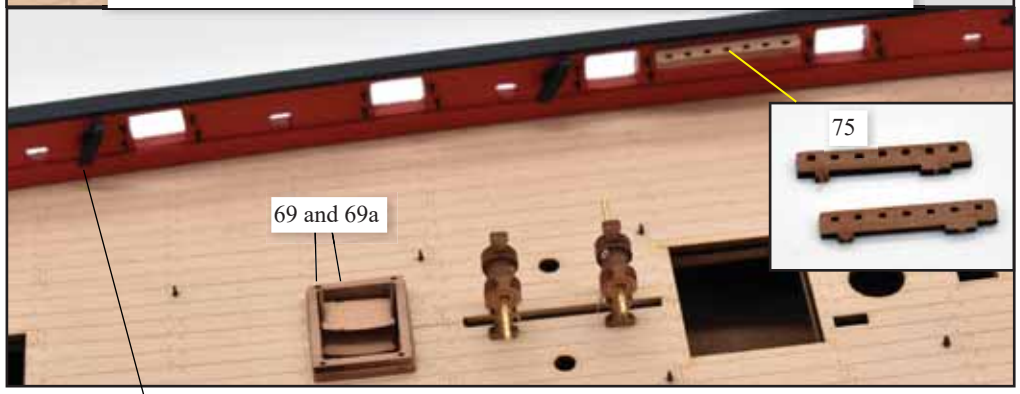


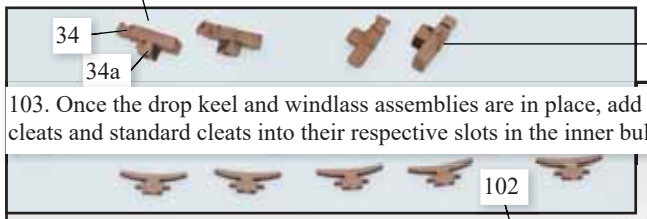
101. Remove 8 of part 73 from the 1.5mm wood sheet and slot the winch drum axles through the hole of parts 73, but do not glue.
Remove 4 of PE-16 from the 0.4mm photo etched sheet, and bend as the bend line to make the handle for the winch.
Glue the handle to one side of each winch drum axle.
Slot each drop keel through their respective slots through the deck until they come out the other side, as shown below.
The winch standards can now be glued into their positions over the keel slots in the deck.
The drop keels can then be 'wound up' to their correct positions. Alternatively, the drop keels can be glued in place to the engraved line, and then the thread would up to take the tension, followed by brushing on watered down PVA to help secure the thread into position.



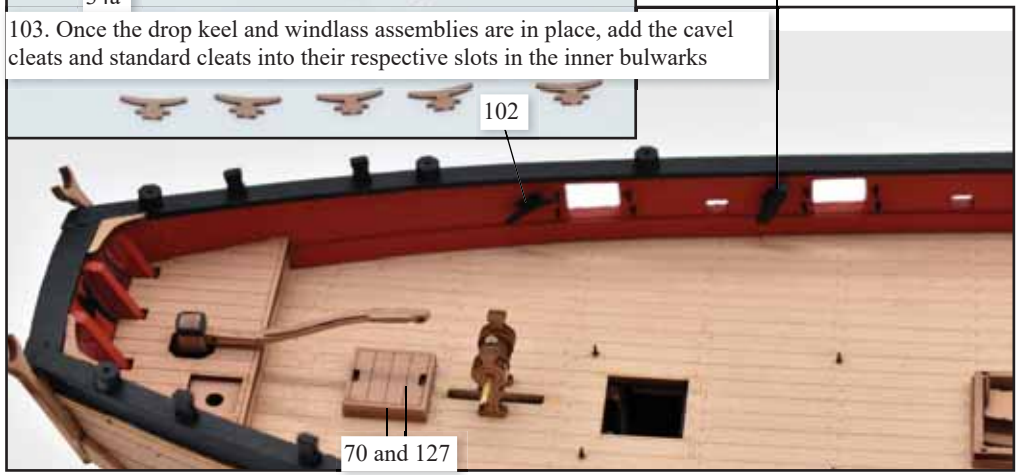


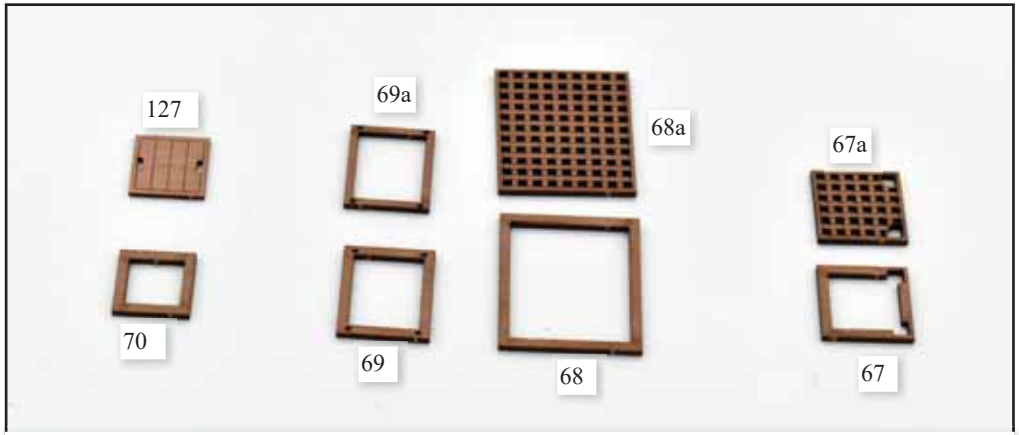
102. Once each winch is glued securely in place, snip off the excess brass rod so that it is more or less flush with the winch standard side.
Check the plans for correct orientation for the winch handles.



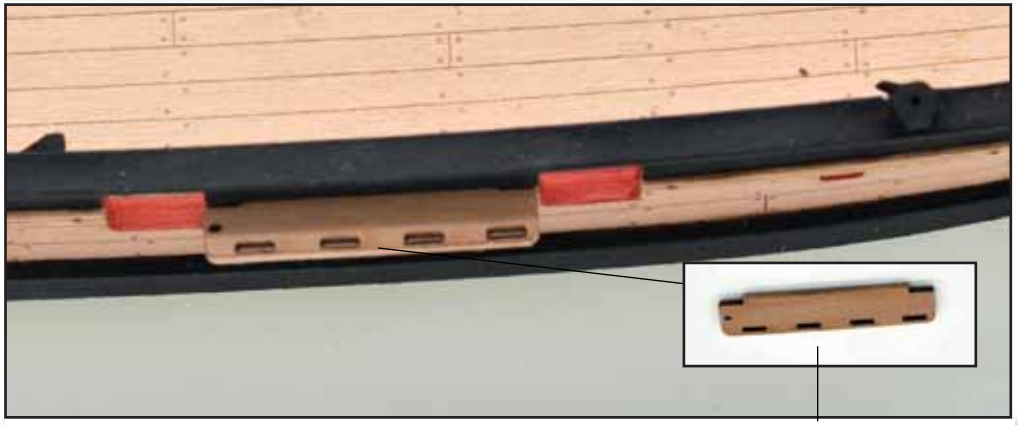


103. Once the drop keel and windlass assemblies are in place, add the cavel cleats and standard cleats into their respective slots in the inner bulwarks

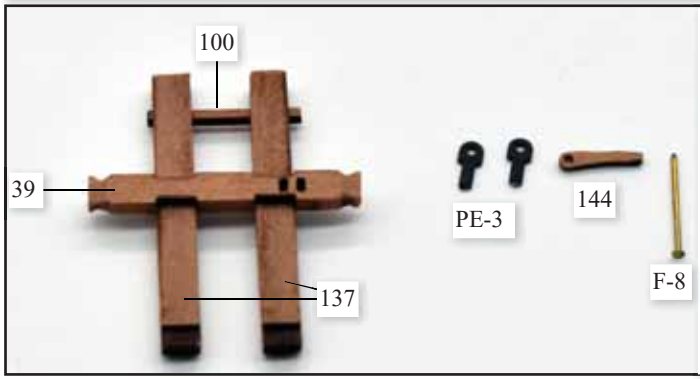




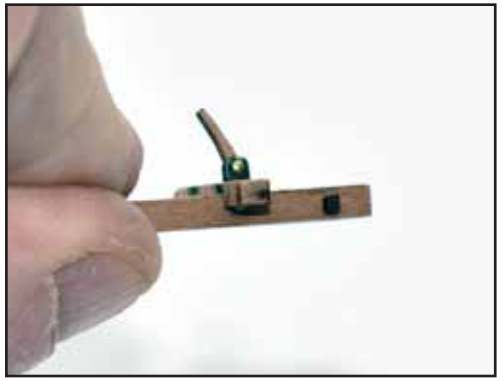
104. Make up the deck hatches and gratings by simply gluing one to the other. Once glued, carefully file or sand the edges to remove the laser char.
All can be fitted at this time except for 67/67a, which will require the anchor hawse rope to be fitted



105. Add the channels (76) to position. Glue into the slot located on the outer bulwarks, in between the third and forth gun port. Make sure the small slot for the eyelet is at the rear.

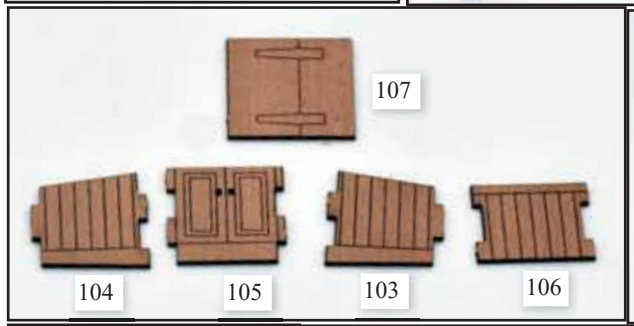


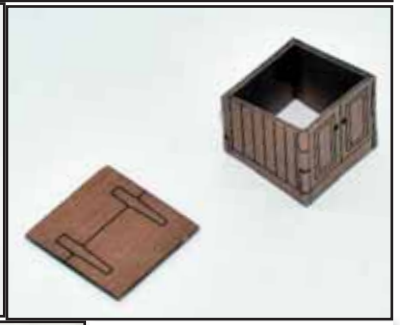
106. Make up the bowsprit bitts as shown,
The pawl for the windlass is fixed to the crossbeam (39) Insert and glue the pawl brackets (PE-3) into the slots on part 39, insert the pawl (144) and secure with a brass pin. Once in place, snip off the end of the brass pin and apply a tiny drop of glue to secire it.

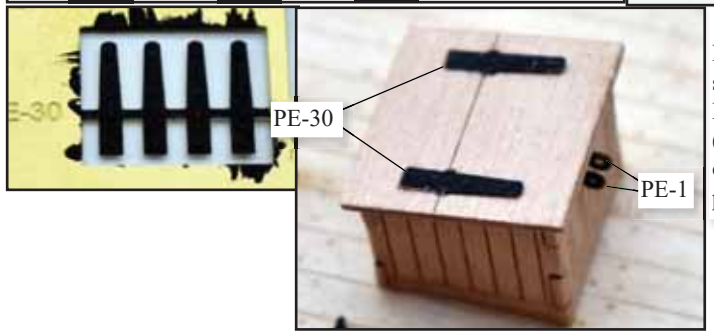


The completed bowsprit bitt and pawl assembly

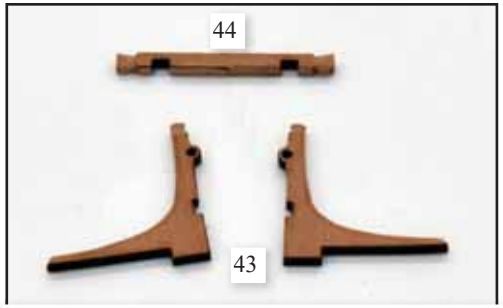
Foredeck assemblies complete, ready for fitting into place

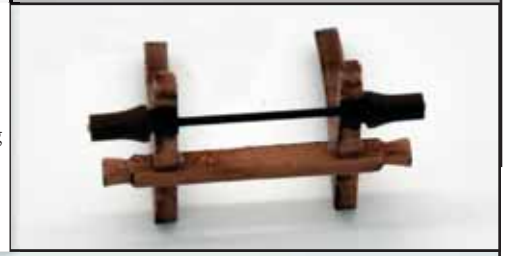






107. Companion assembly. Make up the assembly as shown using PVA wood glue. Paint the photo etched hinges (PE-30) black, as well as the eyelets (PE-1) and glue into place as shown

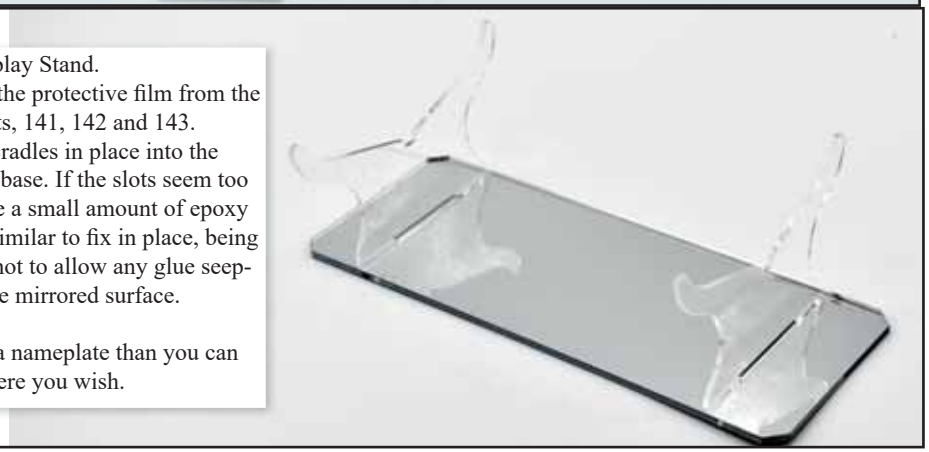




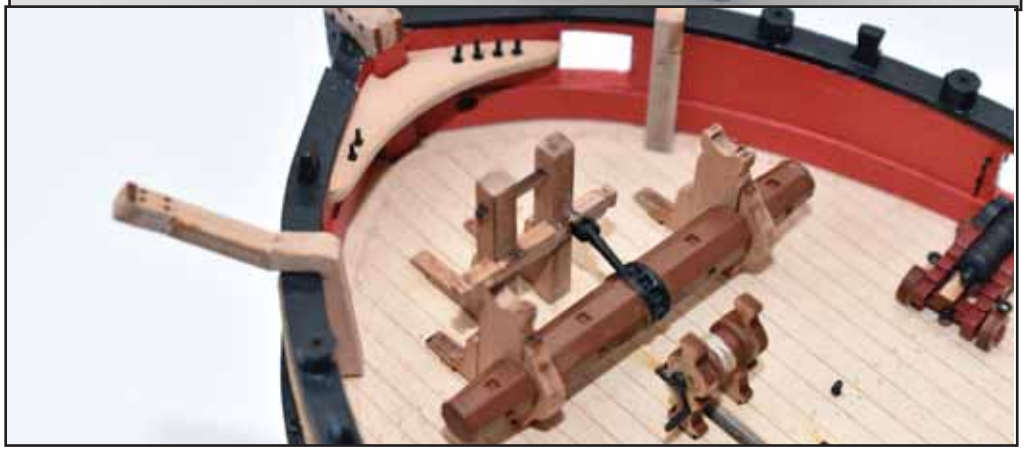
108. Main Mast bitts. Make up the main mast bitts as shown. Paint the drums (F-7) a wood colour and remove from their supports.
Cut to a length of 0.8mm brass rod to 30mm and insert through the holes in parts 43, followed by gluing the winch drums to both ends. Trim any excess brass rod from the ends of the drums, and paint the brass rod black to complete the assembly.

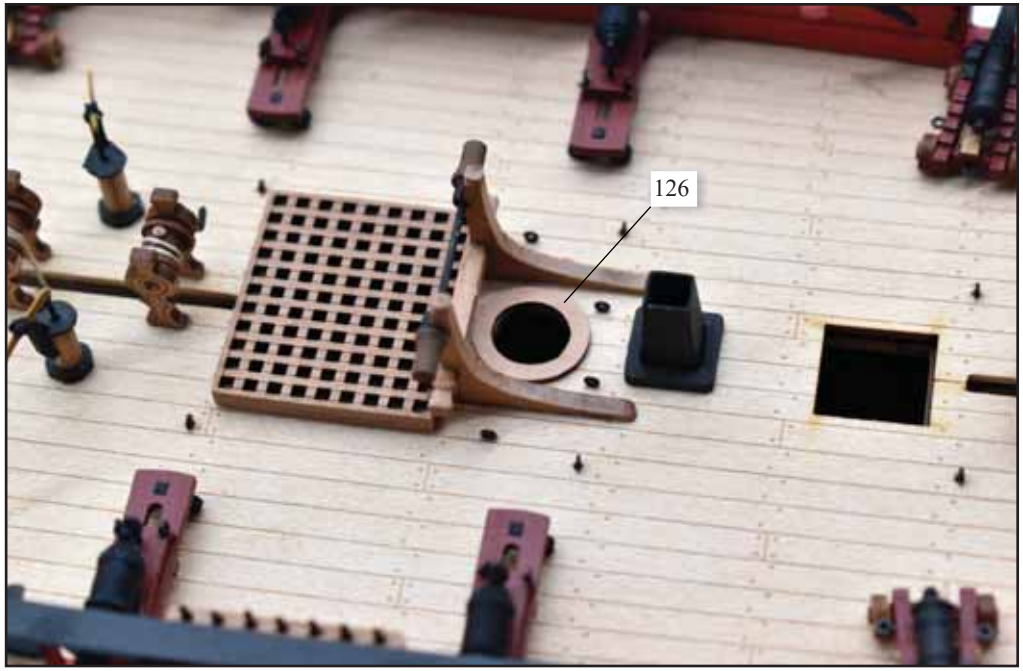
109. Display Stand.
Remove the protective film from the three parts, 141, 142 and 143.
Slot the cradles in place into the mirrored base. If the slots seem too loose, use a small amount of epoxy resin or similar to fix in place, being mindful not to allow any glue seepage on the mirrored surface.

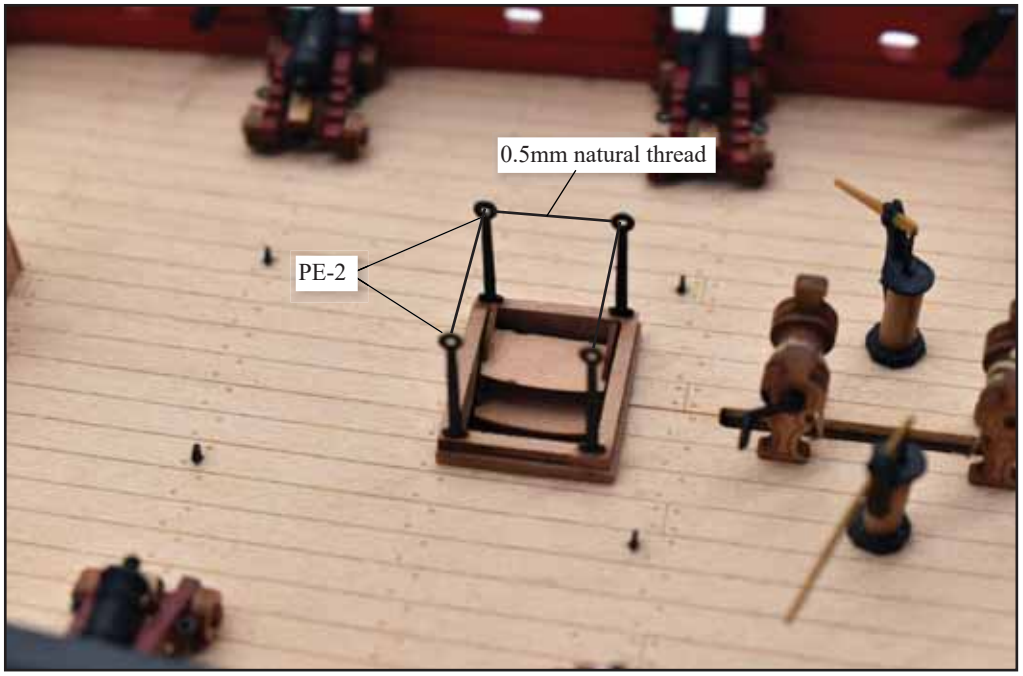
There is a nameplate than you can place where you wish.



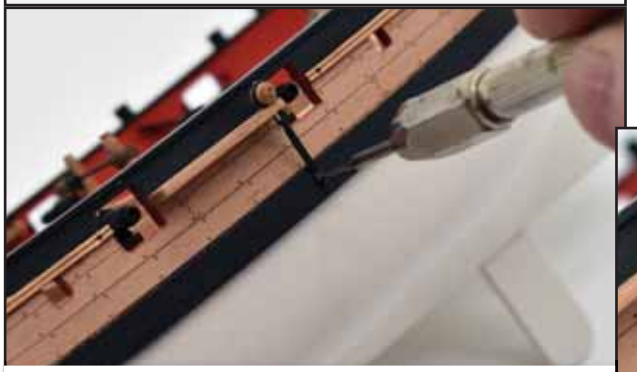
110. Add all of the deck fittings you have previously made to the model. Use the plans for all correct positioning.



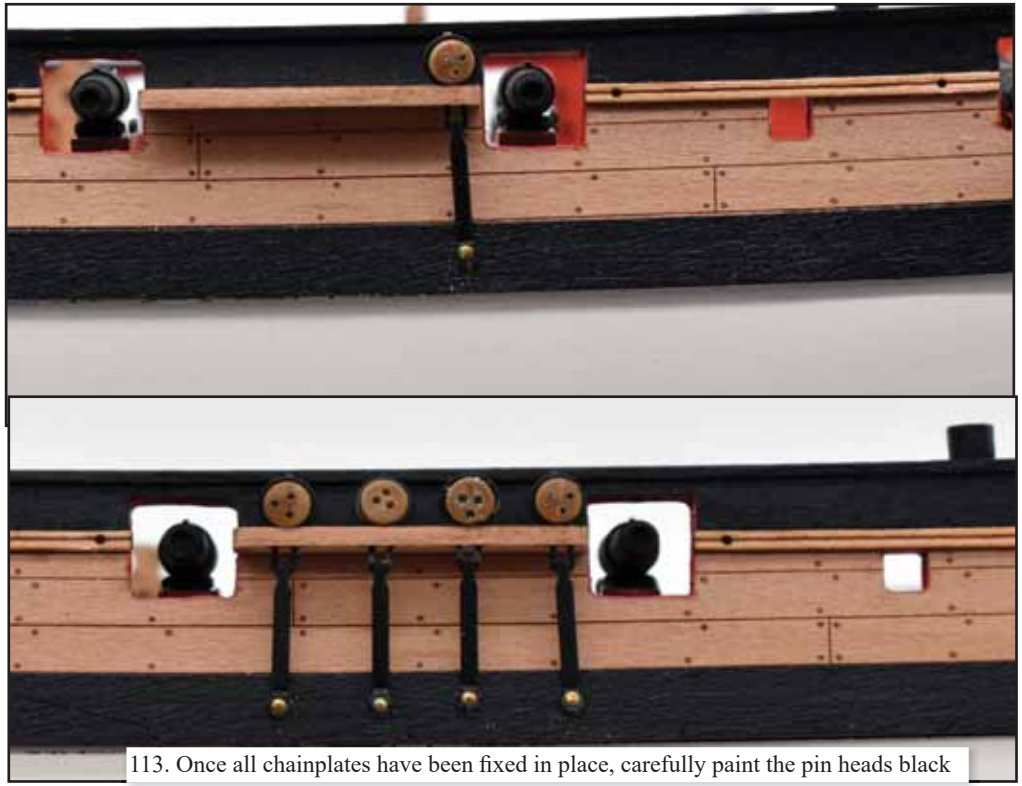




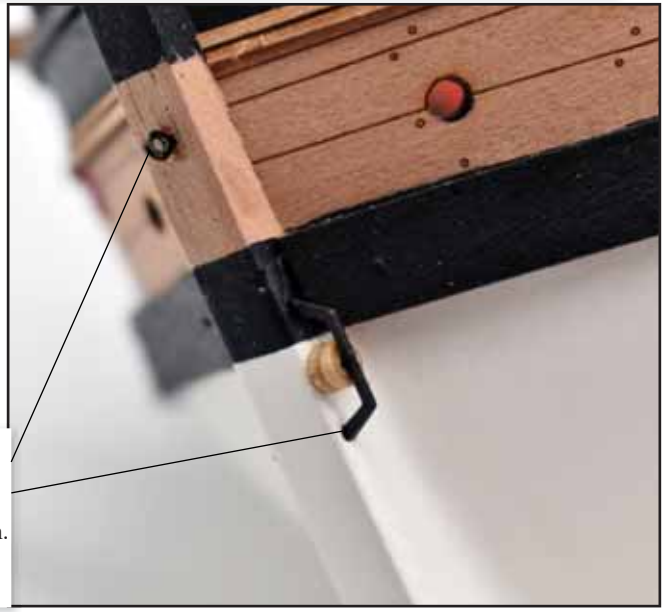
111. From the 0.4mm PE sheet, remove parts PE-20. Slightly prise open the loop, sit a 3.5mm deadeye within the loop, and then close the loop again. 8 are required.



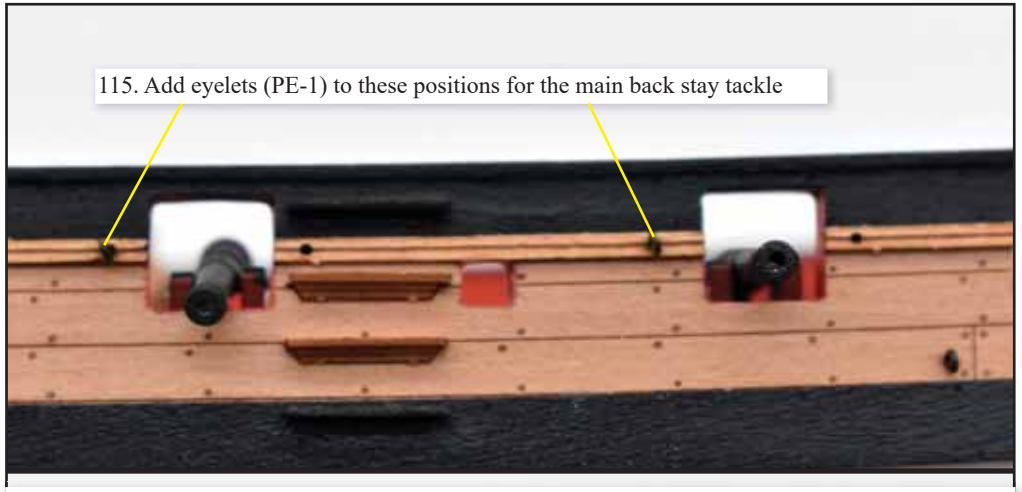
112. Push/drop the cha inplate through the slot in the channel and drill a 0.6mm hole to secure the lower chainplate with a brass pin. The pin can then be pushed all the way in to secure the chainplate.



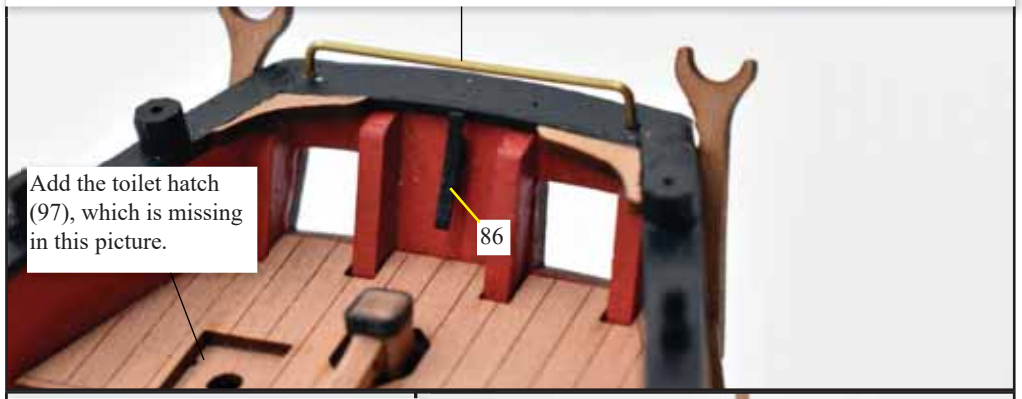
113. Once all chainplates have been fixed in place, carefully paint the pin heads black



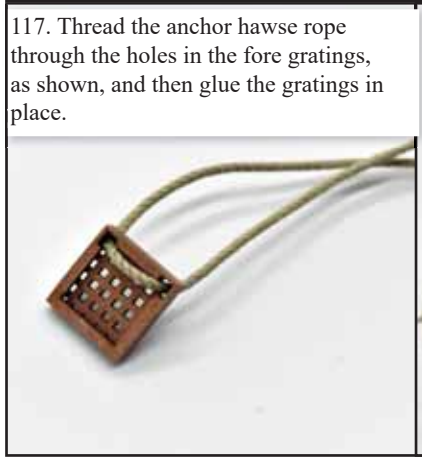
114. Make up the sheave assembly that is fixed to the left hand side of the prow, using PE-4 and a 2.5mm sheave. Slot into the position shown. Also drill and insert an eyelet to the end of the prow as shown.

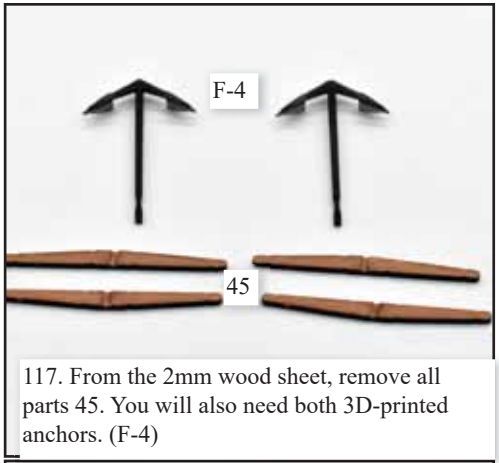


116. Using the plans for size reference, make up the main sheet bar from 0.8mm brass rod. Bend the ends so they coincide with the holes located in the stern gunwale and glue in place.



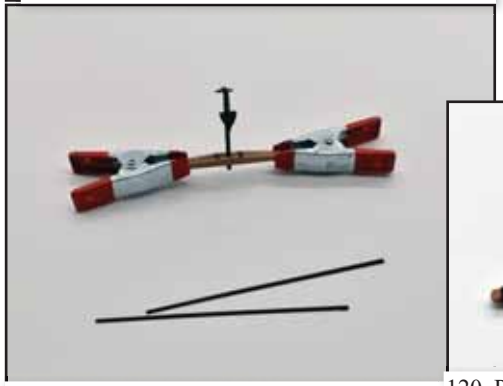
117. Thread the anchor hawse rope through the holes in the fore gratings, as shown, and then glue the gratings in place.



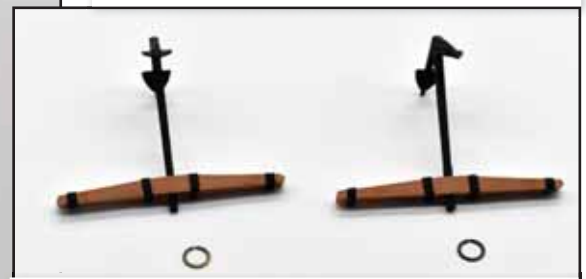


117. From the 2mm wood sheet, remove all parts 45. You will also need both 3D-printed anchors. (F-4)

118. Before gluing the halves of the anchor stocks together, test fit the anchor shaft between them and if necessary, deepen the engraved area a little when the anchor sits comfortably within, remove the anchor and glue the stock halves together.

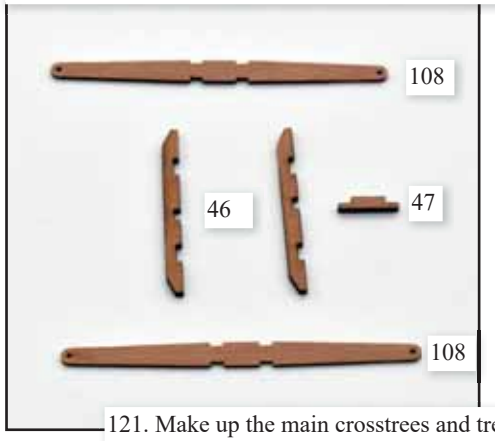


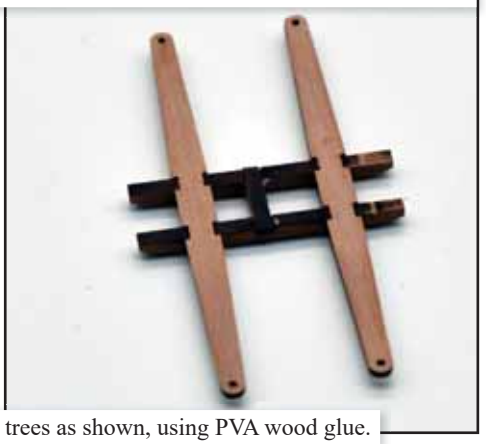
119. Cut thin strips of black cartridge paper and glue into place as shown.



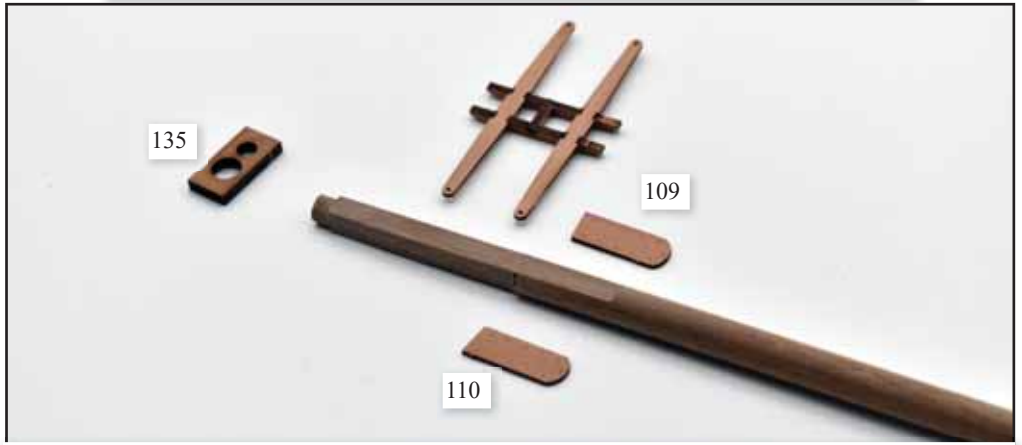
120. Paint the anchor black and then glue it into the stock. Finally, remove the anchor rings PE-14 from the 0.4mm PE sheet. Twist these slightly to open them, then slide into the hole in the anchor before twisting the part closed again.

Masting and Rigging - Please note the following stages are supplementary to the plan sets, and it is the plan sets that you should follow for all placements and dimensions.

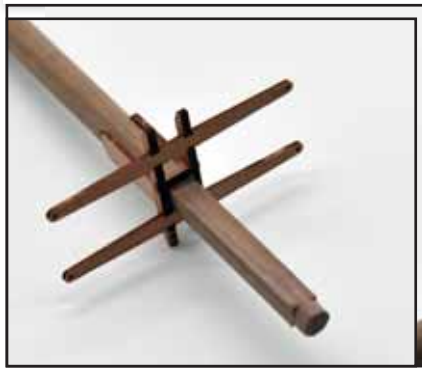


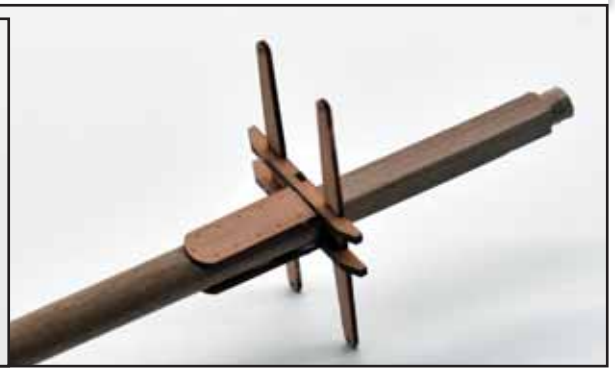


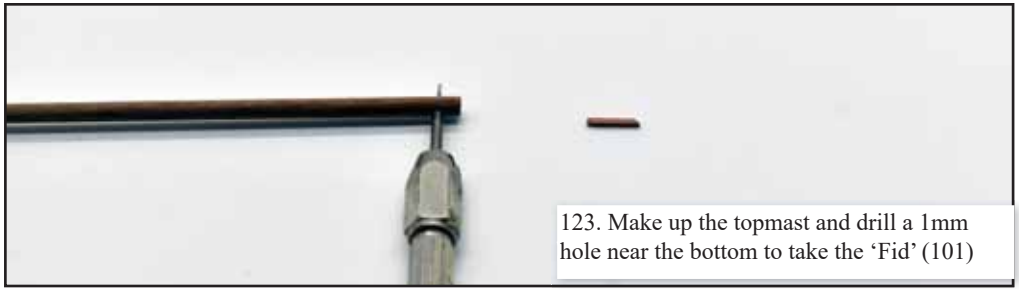
121. Make up the main crosstrees and trestle trees as shown, using PVA wood glue.



122. Using the plans for dimensions, make up the main mast. The upper part is to be square, and the very top round, to fit the mast cap.







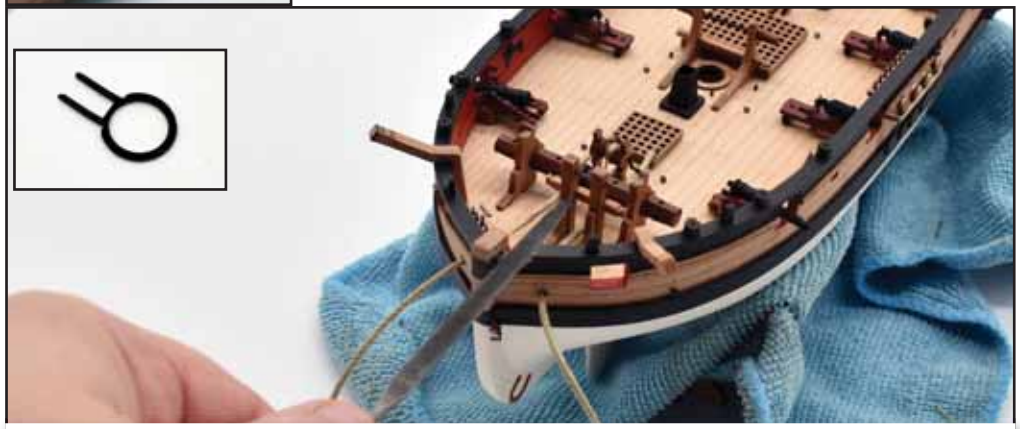
123. Make up the topmast and drill a 1mm hole near the bottom to take the ‘Fid’ (101)

124. Slot the mast cap over the topmat, ready for fixing to the main mast.

125. Mast sections in place. You can use a few dabs of PVA wood glue around the mast caps and fid area to secure the parts, as this area is to be painted black anyway. Note the angle of the cap and trestle trees

126. Using the plans, mark out, drill and insert the eyelets to the positions shown.

127.. Add the stool for the main boom (77) using PVA wood glue to the position indicated on the mast plan.
Add the cleats (112) and topmast cap (126a) to the topmast and paint the masthead section black, and clear varnish for the rest.



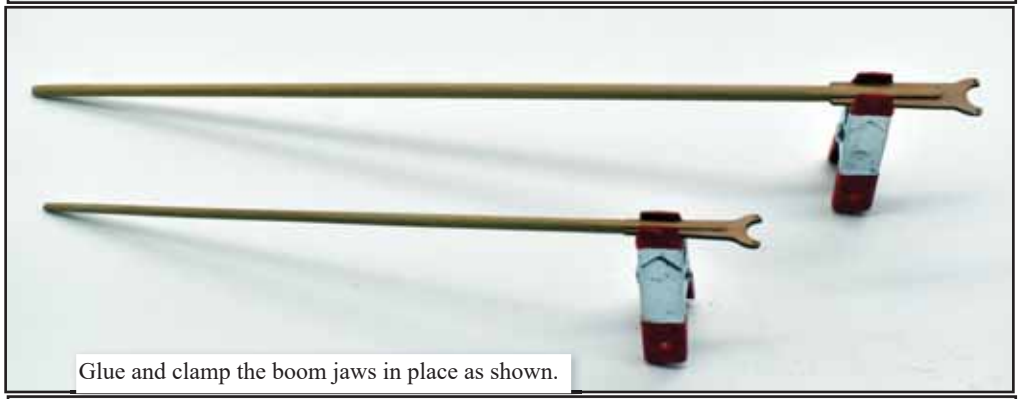
128. Using a half round needle file, shape the semi circular hole for the bowsprit seating. The bowsprit ring (PE-5, shown inset) will help determine the amount of material at the bow bulwarks will need removing.

129. Once the area has been rounded enough for the bowsprit to fit through, PE-5 can be slotted in place as shown

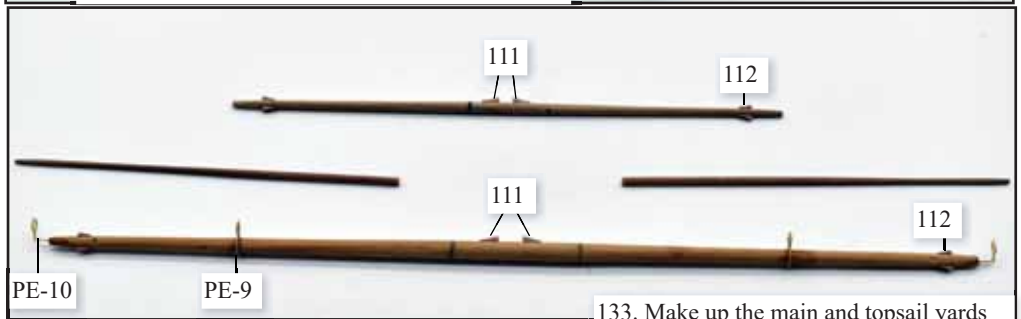
130. Once the bowsprit has been shaped as per the plan, you can now slot and insert into place. the very end fits in between the bowsprit bitts.

131. Remove the bowsprit chock (138) from the 3mm wood sheet and shape the end to the same angle as the run of the bowsprit. Glue in place as shown above and paint black when set.

132. Shape the driver boom and gaff yards as per the plans, and add the jaws to the ends



Glue and clamp the boom jaws in place as shown.

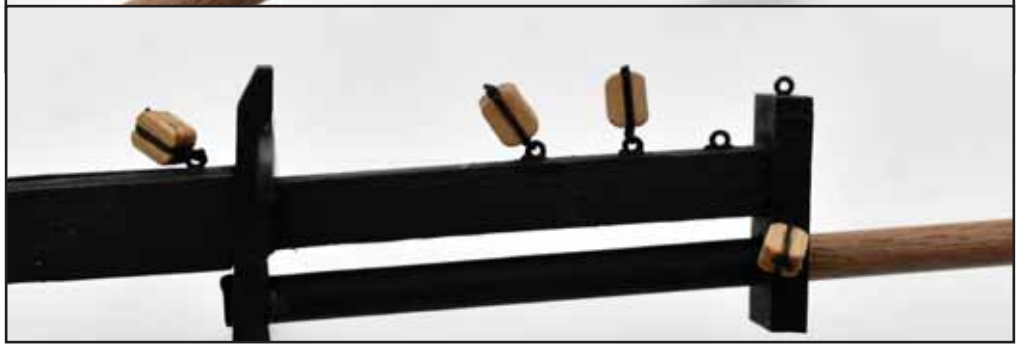


133. Make up the main and topsail yards as shown on the plans.
A hole needs to be drilled into the ends of the main yard for the topsail sheet rigging to pass through

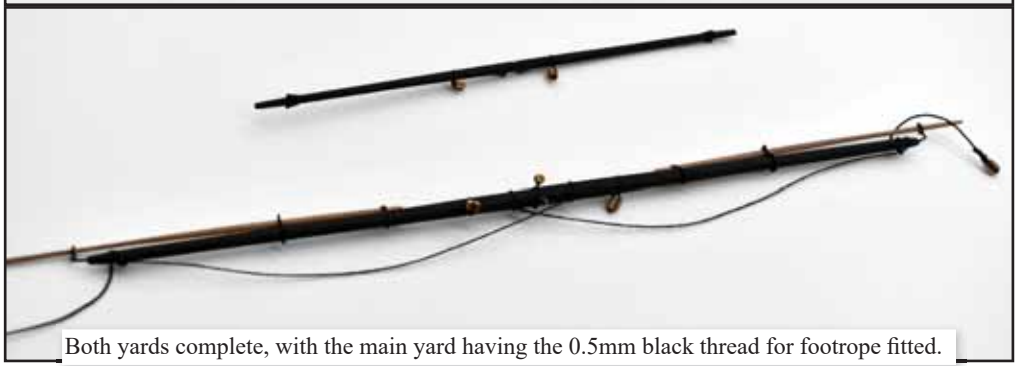
134. Once all spars have been made, paint them black.

135. Once all spars have been painted black, the process of adding the various blocks can begin. The pictures above show a method of tying a block to an eyelet. First tie a 0.25mm length of black thread to the eyelet and then make another knot, but do not close it until you have added the block. Once the block is securely in place, you can add a very small drop of cyano to the knot and then trim off the excess thread.

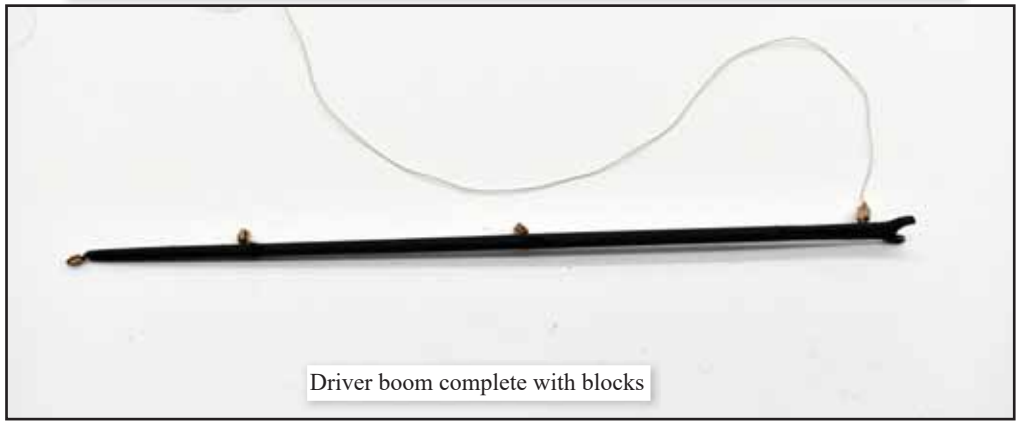
Thimble blocks are used for the topsail yard lifts



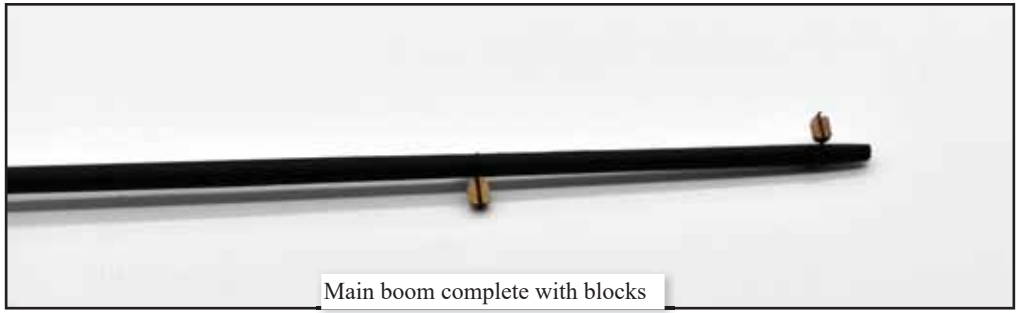
The main yard now with all its various blocks attached. Once the blocks have been fitted, add the stun-sail booms (below). The inner ends can be secured by simply adding 0.25mm black thread, tied around the yards two or three times.



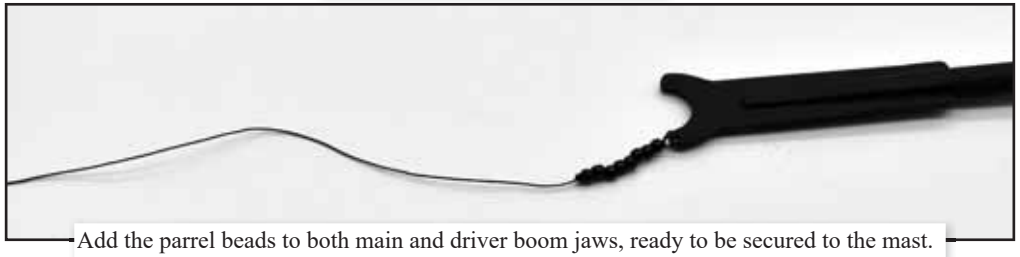
Both yards complete, with the main yard having the 0.5mm black thread for footrope fitted.



Driver boom complete with blocks

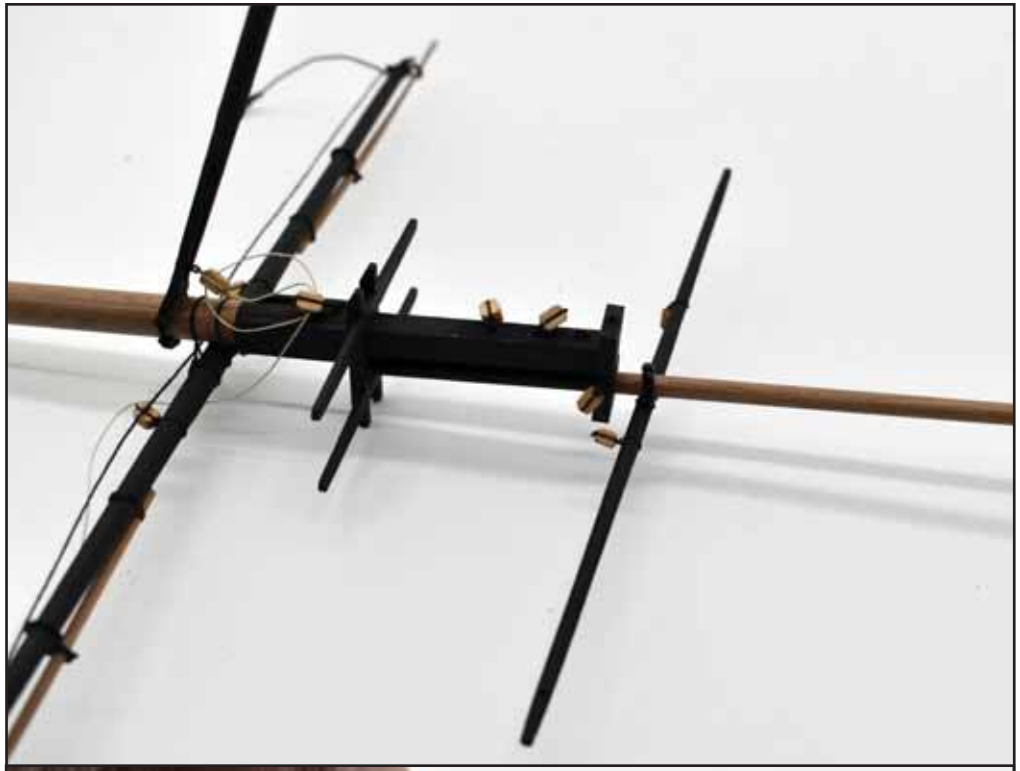


Main boom complete with blocks

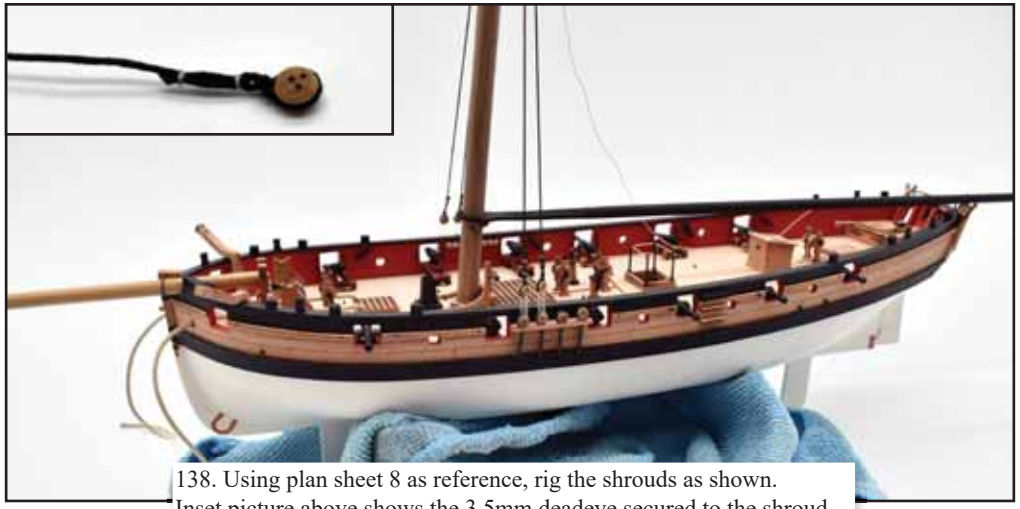


Add the parrel beads to both main and driver boom jaws, ready to be secured to the mast.

136. Using the plans as reference, secure the spars to the mast assembly. This can be done after the mast has been fitted to the hull if desired.

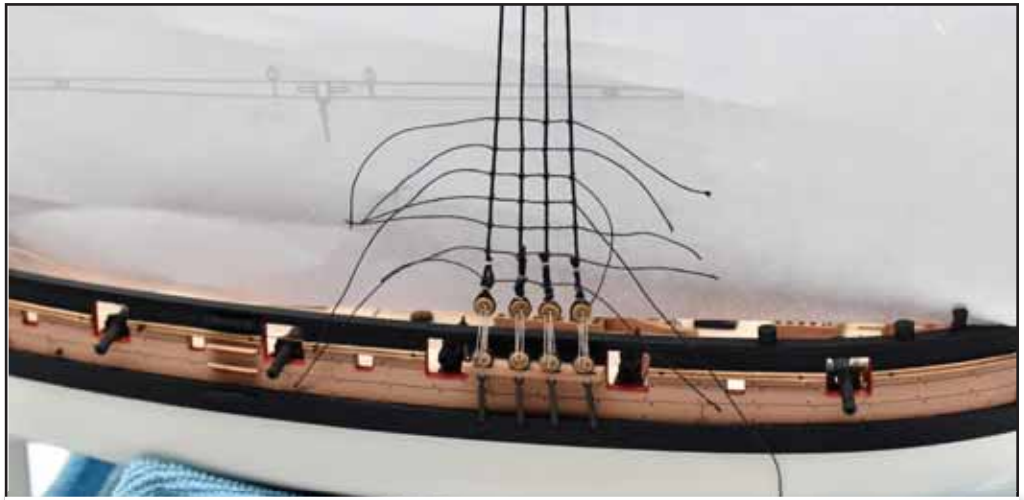


137. Installing the mast. Add a drop of PVA wood glue to the end of the main mast, and insert the mast in place, making sure the cross trees are properly aligned.

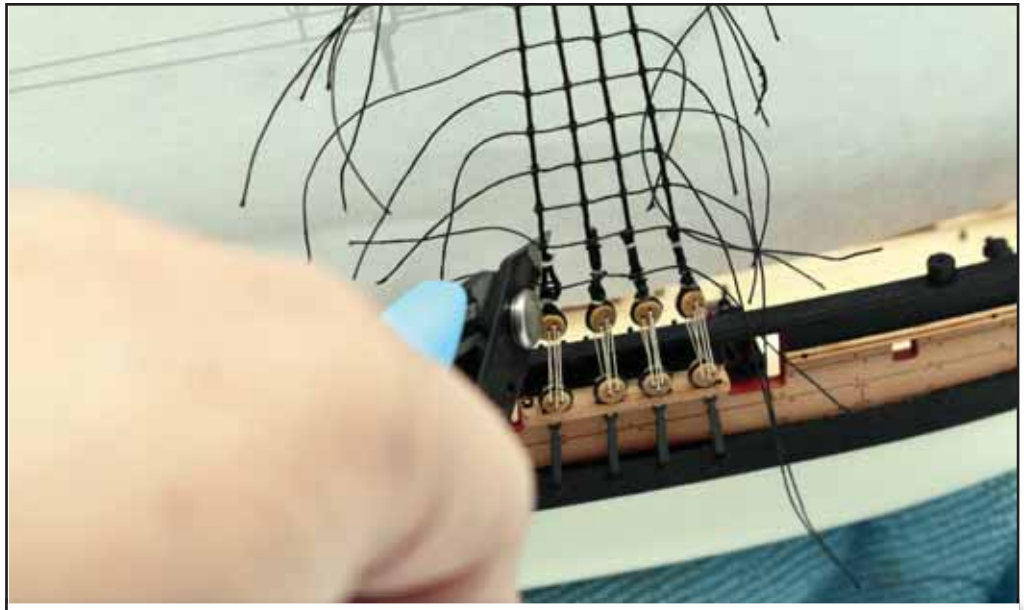


138. Using plan sheet 8 as reference, rig the shrouds as shown.
Inset picture above shows the 3.5mm deadeye secured to the shroud

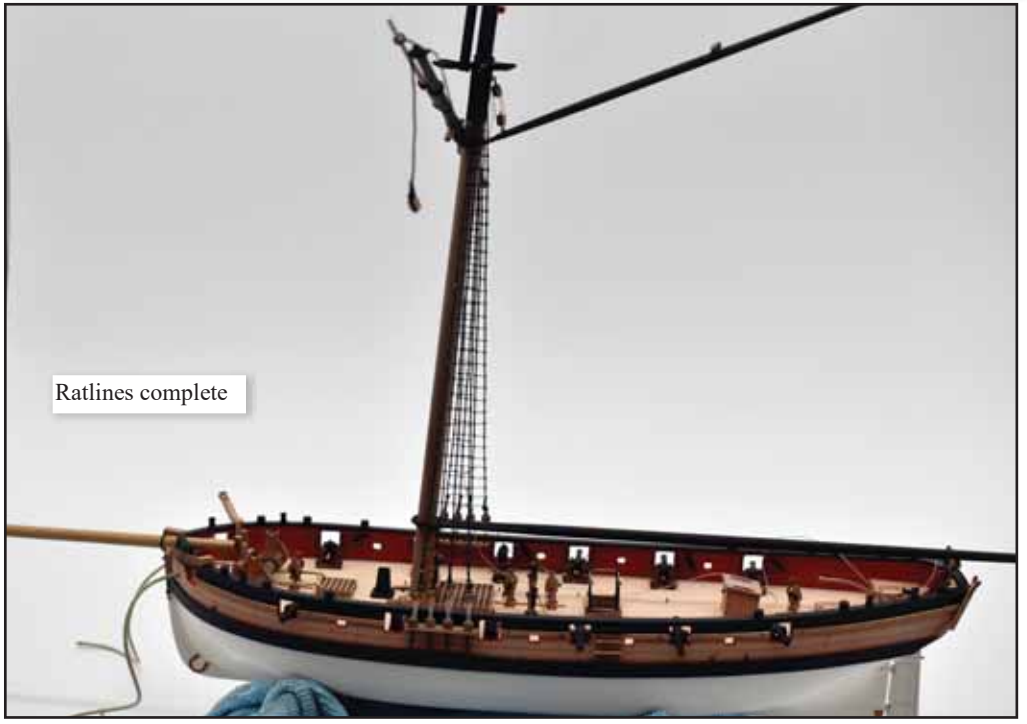
This picture shown how the shrouds are tied in pairs. There will be 2 pairs each side, making 4 shrouds per side.



139. It is now time to add ratlines. These ratlines will run parallel to the waterline. As a guide, the lines are approximately 6mm apart. When the lines are installed, brush some dilute PVA over the knot and allow to dry properly. NOTE: Please try NOT to add any tension to the vertical lines as that will pull them out of shape and distort them.



140. Once the ratline are complete, use some good quality cutters to snip the extra cord from each ratline.



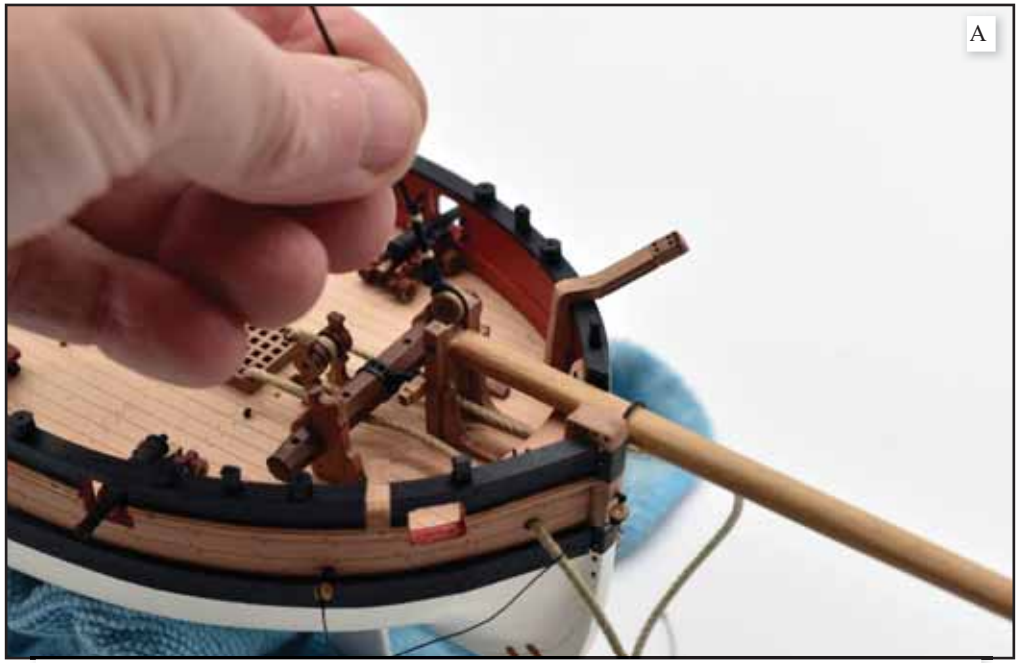
Ratlines complete

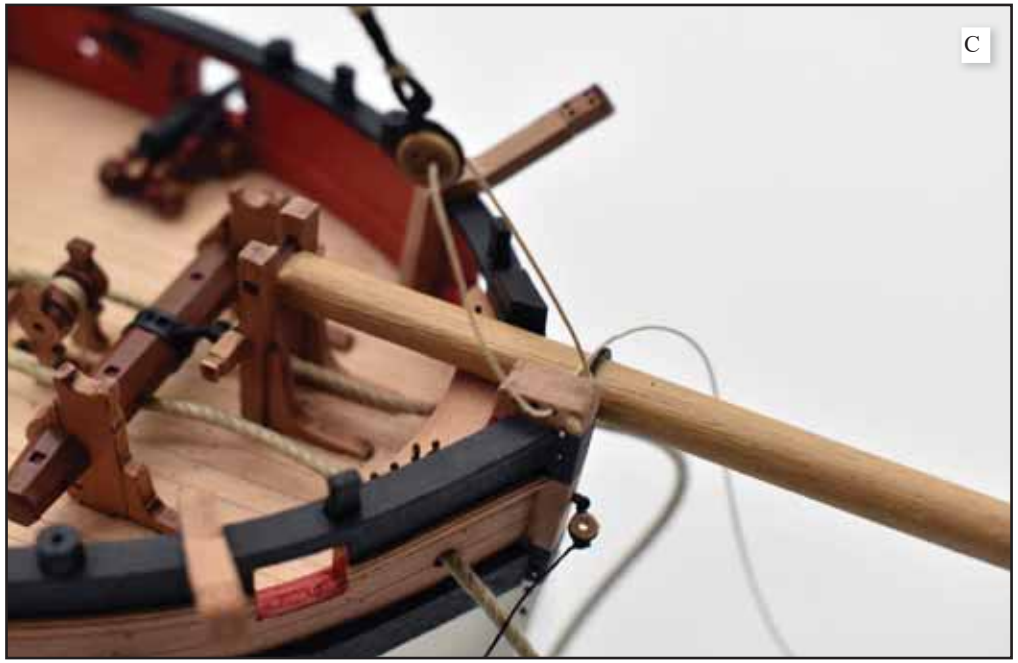
141. Left - This picture shows the method of making the lower yard sling. The longer end loops around the mast head and then is tied to the other looped end to secure in place. It is then connected to the thimble in the centre of the main yard by lashing 0.25mm black thread around both thimbles, as seen in the bottom photo.

Below - Method of securing the mast stays. Tie a loop into one end, and the other end reeves through it to secure the upper stays to the mast head.

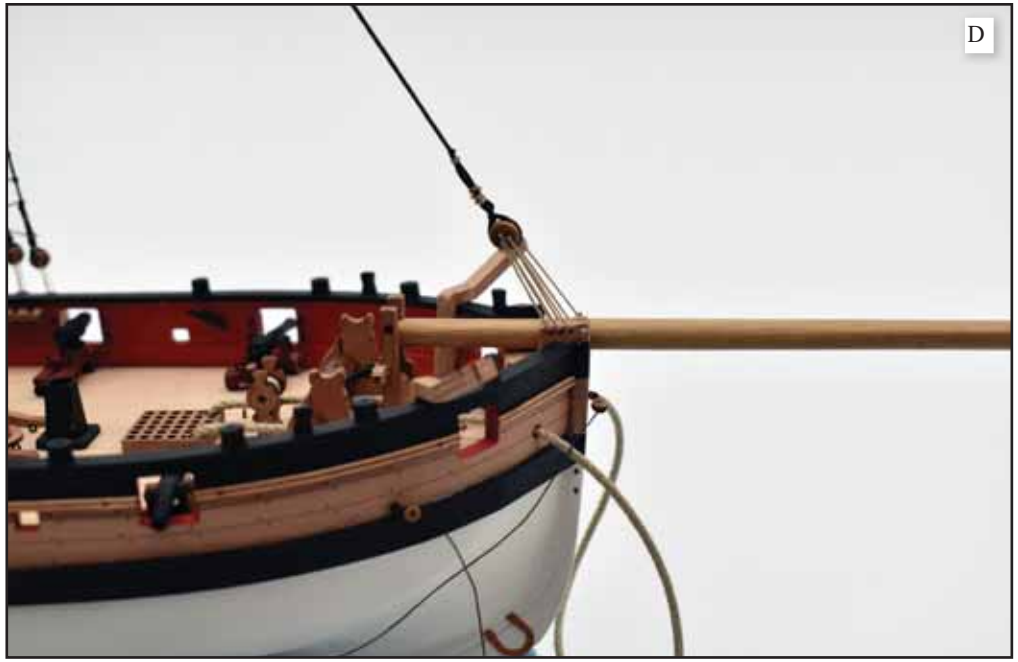
142 - These 2 pictures show the back stay rigging detail

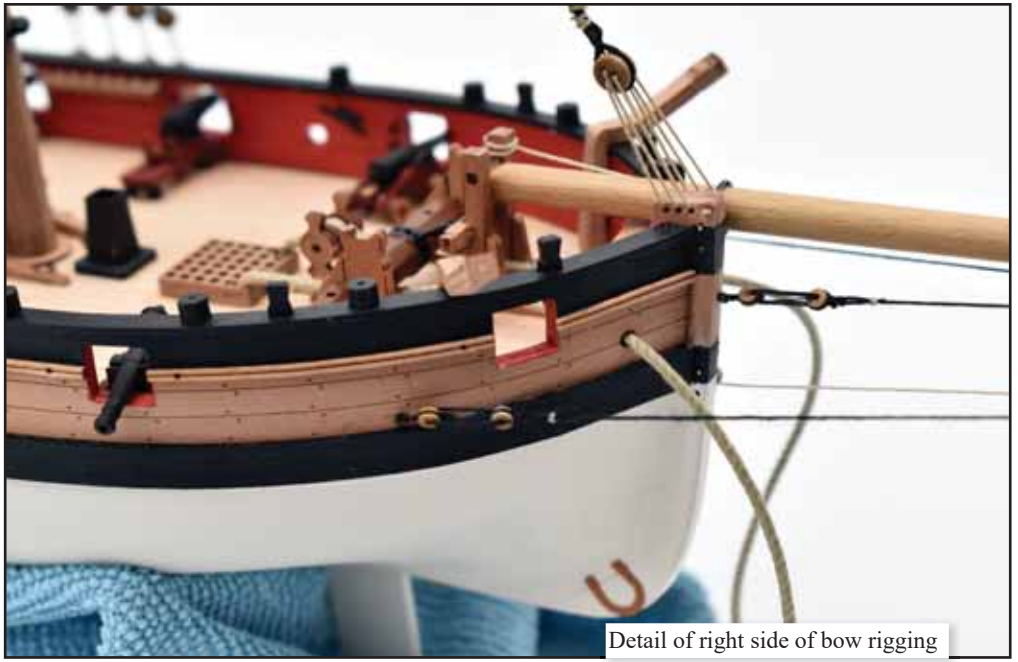
143. Mast head detail showing main stay





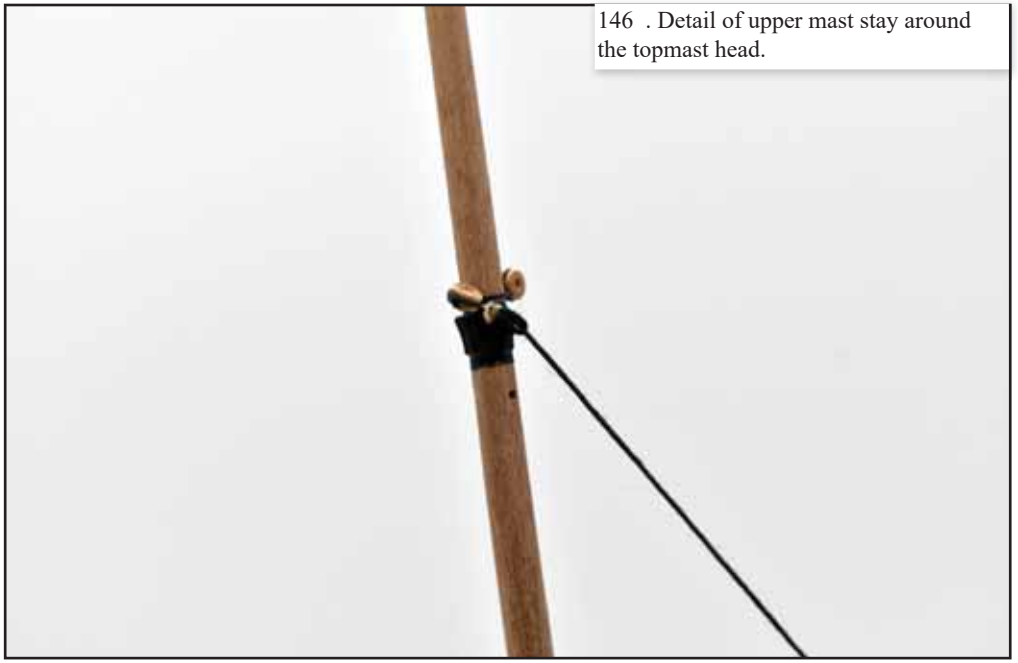
144. Photos A-D show the method of tying the main stay to the prow, using 0.5mm natural thread





Detail of right side of bow rigging

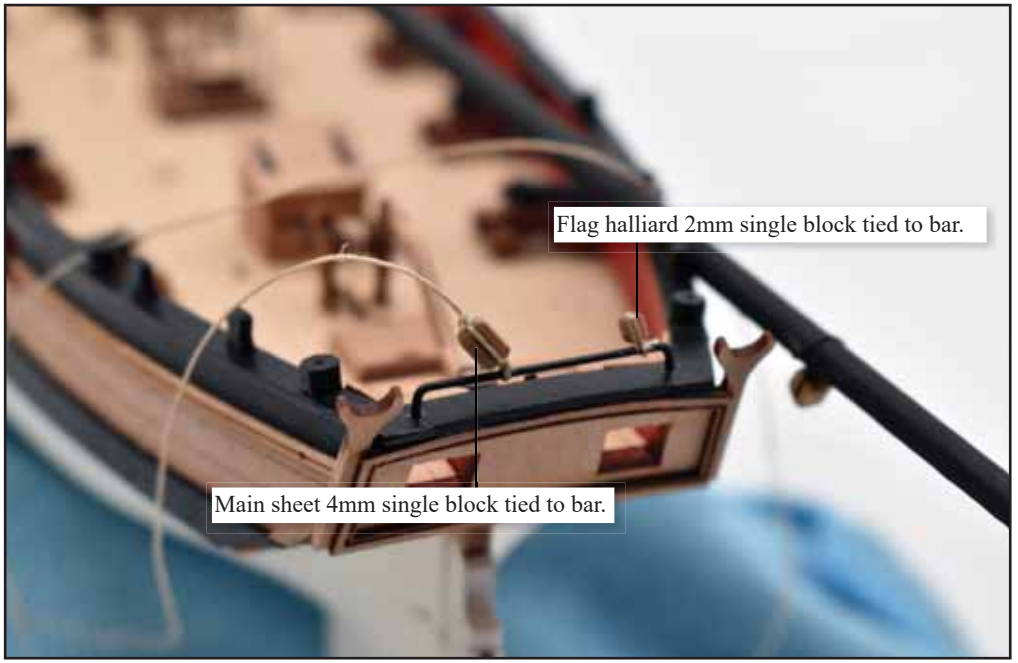
145. Detail of left side of bow rigging



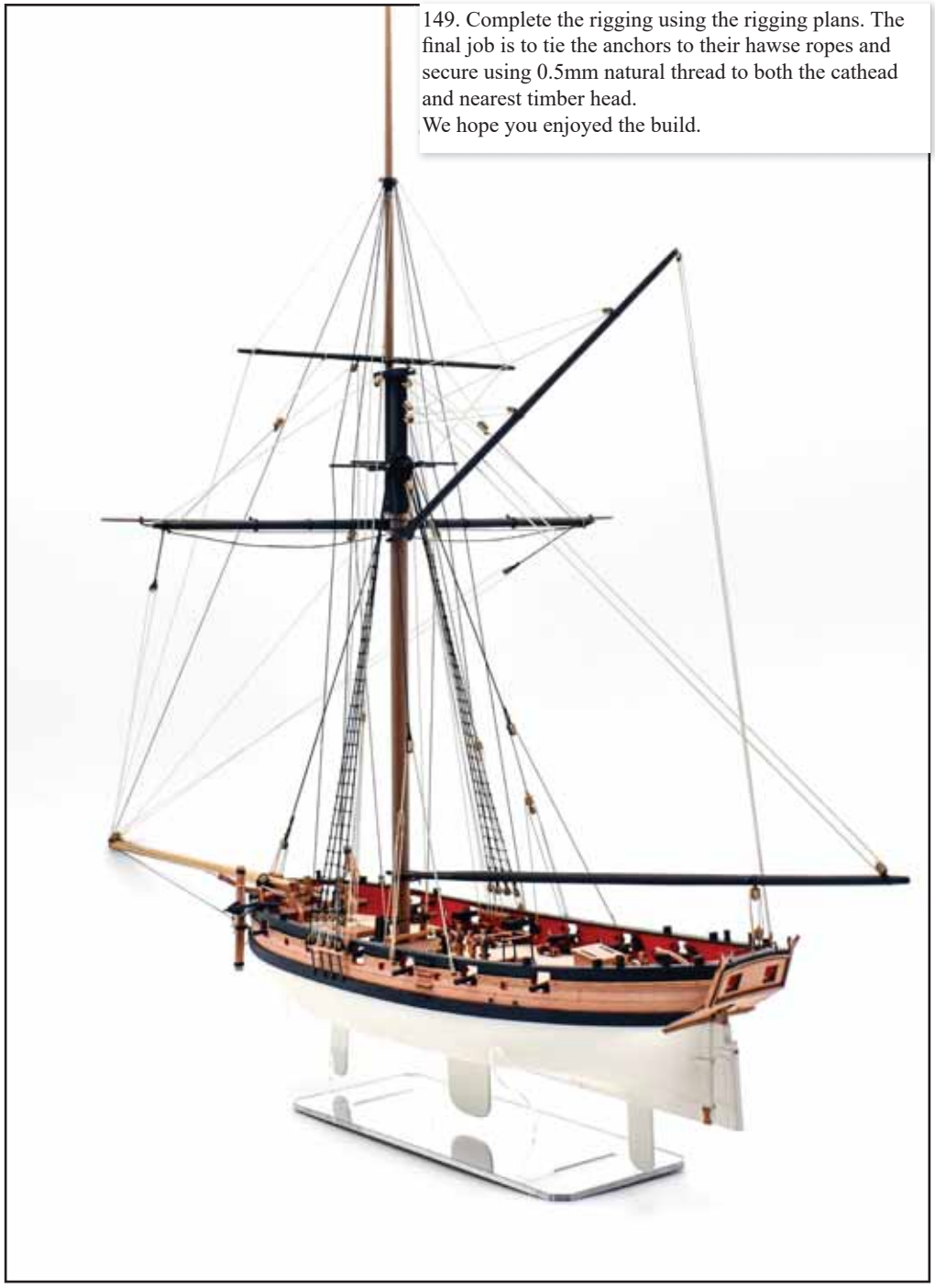
146 . Detail of upper mast stay around the topmast head.

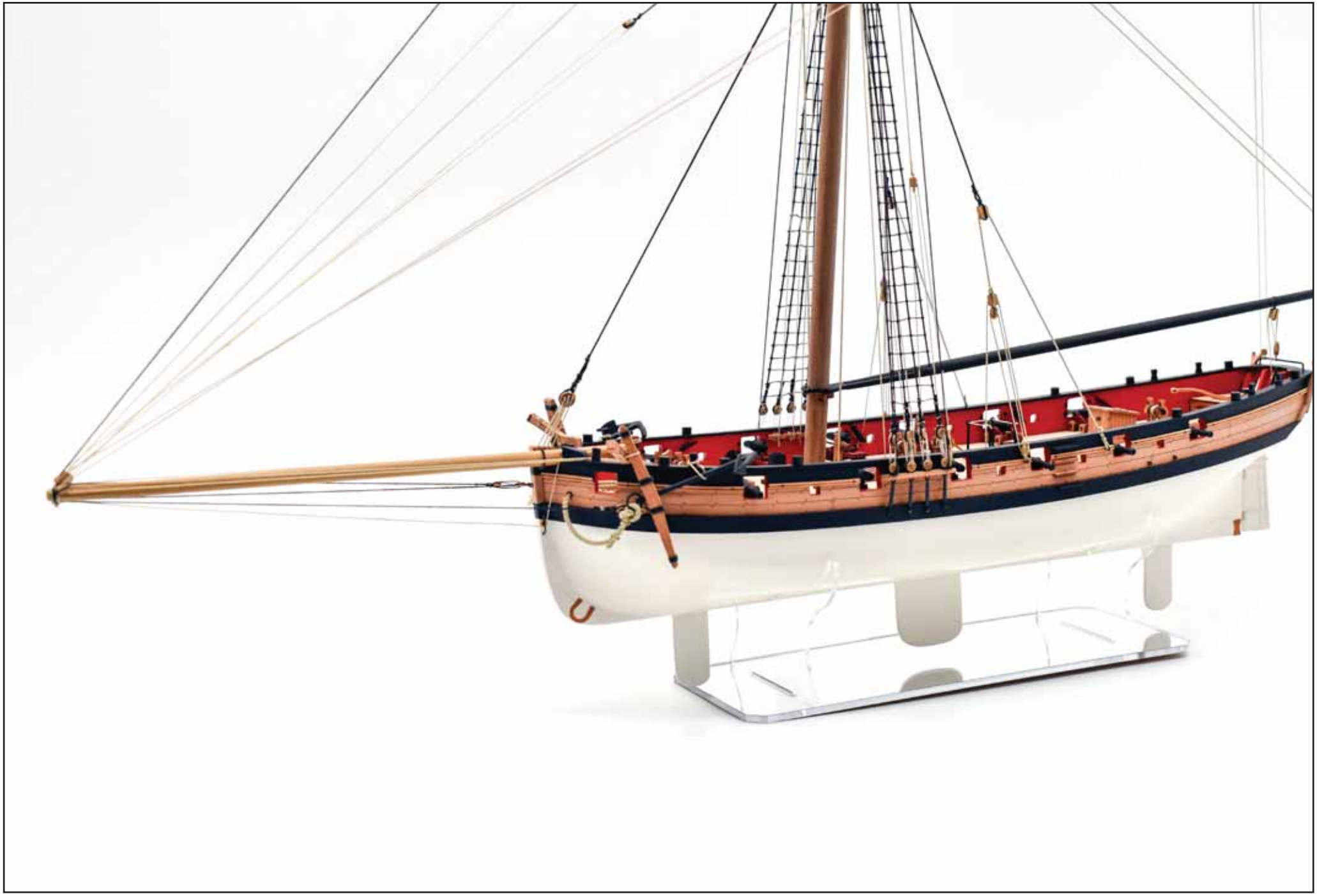
147. Two pictures showing the 2 breast backstays per side. The lower ends are secured around the first and last lower deadeye for the shrouds, and then taken up through the hole located near the end cross-trees and then tied to the topmast head, at the cleat positions.

148. Driver boom peak halliard rigging.
The flag halliard will introduce tension to this rigging.



149. Complete the rigging using the rigging plans. The final job is to tie the anchors to their hawse ropes and secure using 0.5mm natural thread to both the cathead and nearest timber head.
We hope you enjoyed the build.





PARTS LIST

3mm MDF

1	Bulkhead	3mm MDF	1
2	Bulkhead	3mm MDF	1
3	Bulkhead	3mm MDF	1
4	Bulkhead	3mm MDF	1
5	Bulkhead	3mm MDF	1
6	Bulkhead	3mm MDF	1
7	Bulkhead	3mm MDF	1
8	Bulkhead	3mm MDF	1
9	Bulkhead	3mm MDF	2
10	Bulkhead	3mm MDF	1
11	Bulkhead	3mm MDF	1
12	Bulkhead	3mm MDF	2
13	Bulkhead	3mm MDF	1
13a	Stern Finishing Pattern	3mm MDF	2
13b	Stern Filling Transom Pattern	3mm MDF	2
13c	Stern Filling Transom Pattern	3mm MDF	2
13d	Stern Filling Transom Pattern	3mm MDF	2
13e	Stern Filling Transom Pattern	3mm MDF	2
13f	Stern Filling Transom Pattern	3mm MDF	2
14	Bow bulwark Support	3mm MDF	2
15	Bow frame (Inner)	3mm MDF	2
16	Bow frame (Outer)	3mm MDF	2
17	Bow Filling Pattern	3mm MDF	2
18	Bow Filling Pattern	3mm MDF	2
19	Bow Filling Pattern	3mm MDF	2

2mm MDF

20	Inner Keel and Jig	2mm MDF	1
21	Inner Keel Jig Base	2mm MDF	1
22	Inner Keel Jig Support	2mm MDF	5
23	Keel Doubler Pattern	2mm MDF	2
24	Stern Filling Pattern	2mm MDF	12
24a	Stern Filling Pattern Key	2mm MDF	4
25	Lower Deck	2mm MDF	1
26	Longitudinal Support Pattern	2mm MDF	2
27	Tiller Housing Inner Bulkhead	2mm MDF	1
28	Build Cradle (Fore)	2mm MDF	1
29	Build Cradle (Aft)	2mm MDF	1
30	Build Cradle Beam	2mm MDF	2
K-1	Locking Peg for Keel Parts	2mm MDF	12
K-2	Locking Peg for Lower Deck	2mm MDF	8

2mmWood

31	Prow	2mm Wood	1
32	Stern/Rudder Post	2mm Wood	1
33	Keel	2mm Wood	1
34	Cavel Cleat	2mm Wood	6
34a	Cavel Cleat Chock	2mm Wood	6
35	Inner Stern Frame	2mm Wood	2
36	Outer Stern Frame	2mm Wood	2
37	Bow Knee	2mm Wood	1
38	Bowsprit Bitt Knee	2mm Wood	2
39	Bowsprit Bitt Cross Beam	2mm Wood	1
40	Main Windlass Standard (Starboard)	2mm Wood	1
41	Main Windlass Standard (Port)	2mm Wood	1
42	Main Windlass Standard End Cheek	2mm Wood	2
43	Main Mast Bitts	2mm Wood	2
44	Main Mast Bitts Cross Beam	2mm Wood	1
45	Anchor Stock	2mm Wood	2
46	Main Trestle Tree	2mm Wood	2
47	Main Trestle Cross Beam	2mm Wood	1
B-1	Deck Beam (Fore)	2mm Wood	2
B-2	Deck Beam (Middle)	2mm Wood	2
B-3	Deck Beam (Aft)	2mm Wood	2
B-4	Deck Beam (Aft)	2mm Wood	2
B-5	Deck Beam (Aft)	2mm Wood	2
B-6	Deck Beam (Aft)	2mm Wood	2
B-a	Deck Longitudinal Beam (Fore)	2mm Wood	2
B-b	Deck Longitudinal Beam (Middle)	2mm Wood	2
B-c	Deck Longitudinal Beam (Aft)	2mm Wood	2

0.8mm Plywood

48	Sub Deck	0.8mm Ply	1
49	Port Side Bulwark	0.8mm Ply	1
50	Starboard Side Bulwark	0.8mm Ply	1
51	Stern Counter (Inner)	0.8mm Ply	1

1.5mm Wood

52	12-Pounder Carronade Slide Pin	1.5mm Wood	5
53	12-Pounder Carronade Slide Bed Cross Beam	1.5mm Wood	5
54	12-Pounder Carronade Slide Bed	1.5mm Wood	5
55	12-Pounder Carronade Slide Bed	1.5mm Wood	5
56	3-Pounder Cannon Carriage Side (Right)	1.5mm Wood	9
57	3-Pounder Cannon Carriage Side (Left)	1.5mm Wood	9
58	3-Pounder Cannon Carriage Rear Axle	1.5mm Wood	9
59	3-Pounder Cannon Carriage Front Axle	1.5mm Wood	9
60	3-Pounder Cannon Carriage Quoin	1.5mm Wood	9
61	3-Pounder Cannon Carriage Front Wheel	1.5mm Wood	22
62	3-Pounder Cannon Carriage Rear Wheel	1.5mm Wood	22
63			
64	Drop Keel (Fore)	1.5mm Wood	1
65	Drop Keel (Middle)	1.5mm Wood	1
66	Drop Keel (Aft)	1.5mm Wood	1
67	Fore Hatch Combing	1.5mm Wood	1
67a	Fore Hatch Grating	1.5mm Wood	1
68	Main Hatch Combing	1.5mm Wood	1
68a	Main Hatch Grating	1.5mm Wood	1
69	Ladderway Combing (Lower)	1.5mm Wood	1
69a	Ladderway Combing (Upper)	1.5mm Wood	1
70	Brad Hatch Combing	1.5mm Wood	1
71	Stove Chimney Combing	1.5mm Wood	1
72	Gunwale Timberhead	1.5mm Wood	12
73	Drop Keel Winch Drum Support	1.5mm Wood	10
74	Stern Side Counter Timber	1.5mm Wood	2
75	Belaying Pin Rail	1.5mm Wood	2
76	Main Channel	1.5mm Wood	2
77	Stool for Main Boom	1.5mm Wood	1
78	Cathead Side	1.5mm Wood	2
79	Cathead Side	1.5mm Wood	2
80	Stern Knee	1.5mm Wood	2
81	Main Boom Jaws	1.5mm Wood	1
82	Main Gaff Jaws	1.5mm Wood	1
83	Stern Transom	1.5mm Wood	1

1mm Wood

84	Stern Raised Platform (Lower)	1mm Wood	1
85	Stern Transom (Inner)	1mm Wood	1
86	Stern Transom Cleat	1mm Wood	2
87	Stern Raised Platform Outer Panel	1mm Wood	1
88	Cathead End Cap	1mm Wood	4
89	Cathead Sheaves	1mm Wood	6
90	Rudder (Middle)	1mm Wood	1
91	Rudder Side (Right)	1mm Wood	1
92	Rudder Side (Left)	1mm Wood	1
93	Prow Outer Pattern (Right)	1mm Wood	1
94	Prow Outer Pattern (Left)	1mm Wood	1
95	Rudder Post Outer Pattern	1mm Wood	2
96	Prow Support for Bulwark Front	1mm Wood	2
97	Toilet Hatch/Lid	1mm Wood	1
98	Tiller Arm	1mm Wood	1
99	Hand Pump Base	1mm Wood	2
100	Bowsprit Securing Bar	1mm Wood	2
101	Main Topmast Fid	1mm Wood	1
102	Inner Bulwark Cleat	1mm Wood	8
103	Companion Side (Left)	1mm Wood	1
104	Companion Side (Right)	1mm Wood	1
105	Companion Front	1mm Wood	1
106	Companion Rear	1mm Wood	1
107	Companion Canopy	1mm Wood	1
108	Main Cross Tree	1mm Wood	2
109	Main Mast Cheek (Left)	1mm Wood	1
110	Main Mast Cheek (Right)	1mm Wood	1
111	Large Cleat (Inner Yard)	1mm Wood	8
112	Small Cleat (Outer Yard)	1mm Wood	36

0.8mm Wood

83a	Stern Transom Framing	0.8mm Wood	1
113	Outer Bulwark Side Pattern (Left)	0.8mm Wood	1
114	Outer Bulwark Side Pattern (Right)	0.8mm Wood	1
115	Main Wale (Right)	0.8mm Wood	1
116	Main Wale (Left)	0.8mm Wood	1
117	Outer Bulwark Side Pattern (Left)	0.8mm Wood	1
118	Outer Bulwark Side Pattern (Right)	0.8mm Wood	1
119	Stern Raised Platform (Outer)	0.8mm Wood	1
120	Gunwale (Left)	0.8mm Wood	1
121	Gunwale (Right)	0.8mm Wood	1
122	Stern Counter (Outer Facing)	0.8mm Wood	1
123	Stern Gunwale	0.8mm Wood	1
124	Lower Stern Counter Rail (Left)	0.8mm Wood	1
125	Lower Stern Counter Rail (Right)	0.8mm Wood	1
126	Main Mast Base	0.8mm Wood	1
126a	Main Top Mast Cap	0.8mm Wood	1
127	Bread Hatch	0.8mm Wood	1
144	Main Winch Pawl	0.8mm Wood	2
L1	Upper Rail	0.8mm Wood	1
R1	Upper Rail	0.8mm Wood	1
L2	Upper Rail	0.8mm Wood	1
R2	Upper Rail	0.8mm Wood	1
L3	Upper Rail	0.8mm Wood	1
R3	Upper Rail	0.8mm Wood	1
L4	Upper Rail	0.8mm Wood	1
R4	Upper Rail	0.8mm Wood	1
L5	Upper Rail	0.8mm Wood	1
R5	Upper Rail	0.8mm Wood	1
L6	Upper Rail	0.8mm Wood	1
R6	Upper Rail	0.8mm Wood	1
L7	Upper Rail	0.8mm Wood	1
R7	Upper Rail	0.8mm Wood	1

0.6mm Wood

128	Rudder Tiller Arm Outer facing (Right)	0.6mm Wood	1
129	Rudder Tiller Arm Outer facing (Left)	0.6mm Wood	1
130	Companion Ladder Side	0.6mm Wood	2
130a	Companion Ladder Step	0.6mm Wood	8
131	Inner Bulwark Ladder Side (Inner)	0.6mm Wood	4
131a	Inner Bulwark Ladder Side (Outer)	0.6mm Wood	2
131b	Inner Bulwark Ladder Side (Outer)	0.6mm Wood	2
131c	Inner Bulwark Ladder Step	0.6mm Wood	8
132	Outer Hull Side Step (Lower)	0.6mm Wood	10
132a	Outer Hull Side Step (Upper)	0.6mm Wood	10
133	Inner Bulwark Spirketting (Right)	0.6mm Wood	1
134	Inner Bulwark Spirketting (Left)	0.6mm Wood	1

3mm Wood

135	Main Mast Cap	3mm Wood	1
136	Swivel Gun Post (Swivel Guns Never Fitted)	3mm Wood	16
137	Bowsprit Bitt/Post	3mm Wood	2
138	Bowsprit Chock	3mm Wood	1
139	12 Pounder Carronade Front Support	3mm Wood	6

1mm Laser Engraved Limewood

140	Laser Engraved Main Deck	1mm Wood	1

3mm Mirrored Base

141	Display Base	3mm Acetate	1

2mm Clear Acetate

142	Display Stand Fore Cradle (Bulkhead 4)	2mm Acetate	1
143	Display Stand Rear Cradle	2mm Acetate	1

0.4mm Photo-Etched Brass

PE-1	Eyebolt	0.4mm PE	100
PE-2	Stanchion	0.4mm PE	7
PE-3	Windlass Pawl Bracket	0.4mm PE	4
PE-4	Prow Sheave Bracket	0.4mm PE	1
PE-5	Bowsprit Securing Iron	0.4mm PE	1
PE-6	Stove Chimney	0.4mm PE	1
PE-7	Rudder Pintle and Gudgeon	0.4mm PE	4
PE-8	Swivel Gun Handle (Not Used)	0.4mm PE	16
PE-9	Stunsail Boom Inner Iron	0.4mm PE	3
PE-10	Stunsail Boom Iron	0.4mm PE	3
PE-11	Deck Pump Main Body	0.4mm PE	2
PE-12	Deck Pump Outer Pattern	0.4mm PE	6
PE-13	Deck Pump Top Cap	0.4mm PE	2
PE-14	Anchor Ring	0.4mm PE	2
PE-15	Belaying Pin	0.4mm PE	40
PE-16	Drop Keel Winch Handle	0.4mm PE	8
PE-17	3-Pounder Carriage Cross Iron	0.4mm PE	12
PE-18	Rigging Hook	0.4mm PE	24
PE-19	Swivel Gun Bracket (Not used)	0.4mm PE	16
PE-20	Chainplate	0.4mm PE	10
PE-31	Bowsprit 6 Ring Spider Band	0.4mm PE	1
PE-32	Bowsprit 2 Ring Spider Band	0.4mm PE	1

0.2mm Photo-Etched Brass

PE-21	Rudder Strap (Rudder Post)	0.2mm PE	2
PE-22	Rudder Strap (Rudder Post)	0.2mm PE	2
PE-23	Rudder Strap (Rudder)	0.2mm PE	2
PE-24	Rudder Strap (Rudder)	0.2mm PE	2
PE-25	Rudder Strap (Rudder)	0.2mm PE	2
PE-26	Rudder Pintle Brace	0.2mm PE	1
PE-27	Bow Depth Markings	0.2mm PE	2
PE-28	Bow Horse Shoe Plate	0.2mm PE	2
PE-29	Stern Fish Plate	0.2mm PE	2
PE-30	Companion Hatch Hinges	0.2mm PE	2

Fittings and Materials

F-1	12 Pounder Carronade Barrel	3-D Print	4
F-2	12 Pounder Carronade Wheels	3-D Print	4
F-3	3-Pounder Cannon Barrel	3-D Print	8
F-4	Anchor	3-D Print	2
F-5	Main Winch Drum	3-D Print	1
F-6	Drop Keel Winch Drum	3-D Print	5
F-7	Main Bitts Winch Drum	3-D Print	2
F-8	Small pin	Brass	200
F-9	2.5mm Thimble Block	Wood	30
F-10	3.5mm Deadeye	Wood	20
F-11	6mm Deadeye	Wood	2
F-12	2mm Single block	Wood	20
F-13	3mm Single block	Wood	50
F-14	4mm Single Block	Wood	20
F-38	5mm Single Block	Wood	12
F-15	4mm Double block	Wood	20
F-15T	5mm Triple block	Wood	2
F-16	Parrel bead	Plastic	30
F-17	0.1mm Diameter natural thread		50m
F-18	0.25mm Diameter natural thread		20m
F-19	0.5mm Diameter natural thread		20m
F-20	0.75mm Diameter natural thread		10m
F-21	0.25mm Diameter black thread		20m
F-22	0.5mm Diameter black thread		20m
F-23	0.75mm Diameter black thread		20m
F-24	1mm Diameter black thread		20m
F-25	2mm Diameter natural thread (Anchor hawse)		0.5m
F-26	8mm Dowel x 330mm long	Wood	1
F-27	6mm Dowel x 250mm long	Wood	1
F-28	5mm Dowel x 330mm long	Wood	3
F-29	4mm Dowel x 330mm long	Wood	2
F-30	3mm Dowel x 200mm long	Wood	1
F-31	2mm Dowel x 250mm Long	Wood	1
F-32	1mm x 5mm x 340mm strip - Limewood	Wood	26
F-33	0.8mm x 4mm x 340mm strip - Second planking	Wood	34
F-34	1mm Diameter brass rod x160mm long	Metal	1
F-35	0.8mm Diameter brass rod x 160mm long	Metal	1

F-36	Black Card for Anchor Stock	Card	1
F-37	Nameplate	Acetate	1

Trial Cutter Laser and PE Sheet Quantities

3mm MDF Laser Cut	1
2mm MDF Laser cut	2
2mm Clear Acetate	1
1.5mm Special Acetate Nameplate	1
3mm Mirrored Base	1
0.6mm Pear Wood	1
0.8mm Pear Wood	2
1mm Pear Wood x 250mm long	1
1.5mm Pear Wood	1
2mm Pear Wood	1
3mm Pear Wood (Small)	1
0.8mm Plywood	1
1mm Wood laser etched deck	1
0.2mm Photo Etched Brass Sheet	1
0.4mm Photo Etched Brass Sheet	1

VANGUARD MODELS

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HM Trial Cutterwas designed and developed in the UK by Chris Watton
Finished prototype model made and photographed (including construction manual text) by Chris Watton

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