Ranger

Barking Fish Carrier

1864

Building Manual

VANGUARD MODELS

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Designed, developed and produced in the UK

PART NUMBER – VM–11

The Barking Fish Carrier
Ranger
1864

Salt-water fishing from Barking was mentioned as early as 1320, when its fishermen were prosecuted for using nets with too small a mesh. The industry seems to have been at that time quite small-scale. A list of the 1660s shows Barking had 14 fishing smacks, crewed by 70 men and boys. By 1814 the number had grown to 70 smacks, by 1833 there were 120, by 1845 approximately 150 and by 1850 at least 220.

This phenomenal growth was due to one family, the Hewetts: Scrymgeour (1765–1850) and his son Samuel (1797-1871). In 1833 the Hewett fleet, called the Short Blue Fleet after its ensign, consisted of 10 vessels. The main type of fishing vessel used in Barking at that time was a well smack until the 1860's, when the costs of operating such vessels rising rapidly, coupled with the fact that the increasing pollution of the London river made it increasingly difficult to store live cod in chests in Gravesend. The custom of putting each day's catch on board one of the Well Smacks working with the fleet gave way to the use of fast cutters specially built for the purpouse

The fast Fish Carrier Ranger was a typical example of this type of vessel. She was built at Barking in 1864, was 74ft. 3 inches overall and 52 tons. These vessels could sail to wind'ard faster than any vessel then afloat. With such a perishable cargo as fish, minutes counted and the weather least desired was calm or light airs.

Those that survived into the steam age enjoyed new careers as fast yachts.

THE KIT

The model kit is designed to be as accurate as possible for a commercial kit in both scale and detail and has been developed with the beginner to intermediate modeller in mind, with some aspects simplified for ease of construction. More experienced modellers can modify the kit how they wish. This kit is an ideal introduction to the world of Plank on Bulkhead (POB) modelling, and the modeller will learn many valuable lessons through its construction.

Although the kit of Ranger is as easy to build as we can make it, very basic woodworking skills (and patience) are still required, or at least the ability to learn those skills as you proceed. A small workspace will have to be put aside for the assembly. Do not remove parts from the laser cut sheets until required for fitting, as they can be easily damaged or lost.

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 or Swann Morton scalpel are perfect) 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. For the Ranger prototype model, some of the photo-etched brass was left unpainted to highlight some aspects of the vessels detail.

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 take your time with every single sub assembly.

Recommended Paints, stains and adhesives

1: White PVA wood glue or Titebond.
2: Cyanoacrylate (superglue) gel.
3: Natural colour wood filler.
4: Matt polyurethane varnish (Not satin or gloss)
5: Black Red-Brown paints (recommend either Humbrol, Vallejo or Tamiya)
6: Red Oxide (Hull below waterline) (Recommend Plastikote Red Oxide Primer)
7: White Paint for area between waterline and main wale (Recommend Plastikote Super Matt Spray)

Recommended tool list

(All items listed were used by the prototype builder to build the Ranger prototype model)
11: Craft knife (or standard Stanley Knife, which is robust enough for most jobs)
2: A selection of needle files
3: Razor saw
4: Small wood plane (for rough tapering of masts and yards before sanding smooth)
5: Pin vice or small electric drill.
6: Selection of drill bits from 0.7mm to 1mm
7: Selection of abrasive paper and sanding block (typically 120 – 240 grade)
8: Selection of good quality paint brushes
9: Pliers/wire cutters (Good quality side cutters are excellent for trimming rigging ends)
10: Good quality set of fine tweezers (For small parts and rigging)
11: Steel ruler (300mm - for providing a straight edge for tapering the planking)
12: Clothes pegs or small clamps
13: Good quality pencil or drawing pen
14: Masking tape (Tamiya or Tesa masking tape are highly recommended)
15: Waterline marking out tool, such as the one from our web store.
16: A Pin Pusher (Or you can just use a pair of pliers to push pins into the planking and bulkhead edges)
17: 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.

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.

Pocket sized Pin Pusher
Can push pins in to 9 mm of plywood or MDF
Ideal for pushing brass pins
Nailing, pin pushing or riveting can be frustrating if the wrong type or an oversized hammer is used. Not to mention the dangers involved. Small pins and nails should be driven in using a precision tool rather than a regular DIY hammer. Pin pushers will make inserting small panel pins and nails a breeze and virtually eliminate sore thumbs!

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.

Ideal for bending planking strips to the desired curvature
Modelcraft Plank Bending Tool Kit 220-240v, 30w

•The Plank Bending tool is ideal for bending planking strips to the desired curvature
• The rounded head on the tool should be warmed up and the wooden strip should be placed on the wooden template form. The strip is then heated by running the tool head over it a few times until the required curve is achieved.
• It works on dry strips with a maximum thickness of 1mm
• For thickness over 1mm, the strip must be dampened
• Set includes: Tool with a rounded head, tool stand & wooden template form.
• Use with caution as parts will be hot

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.

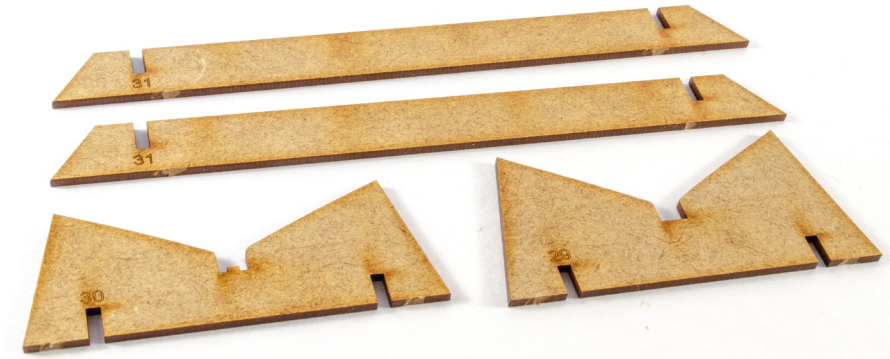

The Banking Fish Carrier
RANGER
Launched in 1864

HULL CONSTRUCTION

Warning!

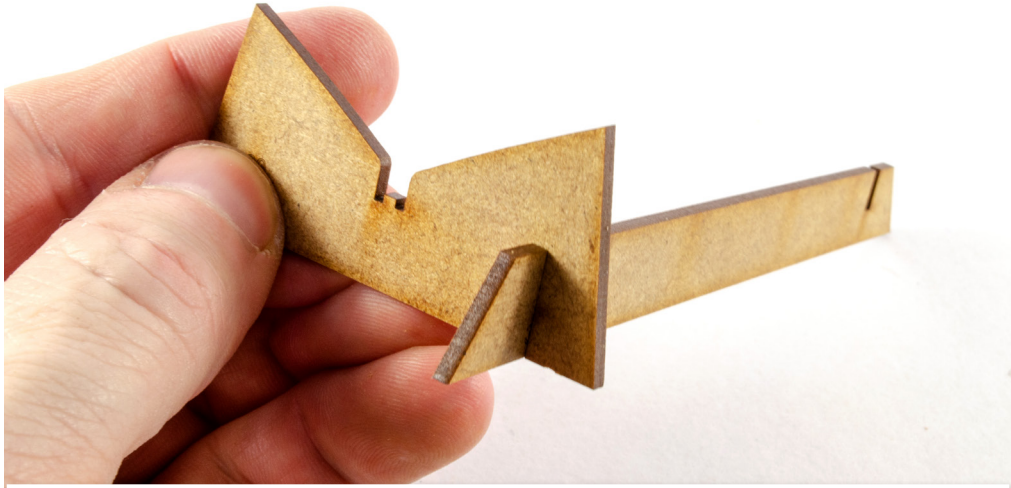
It is recommended that a facemask is used whilst sanding any timber and MDF, and also if spraying paint in a confined area. You get one set of lungs, so protect them! Safety glasses are also recommended when using any manual or power tools.

1. IMPORTANT: Use a sharp knife to remove parts from the sheets. In necessary, but the tabs from each side instead of forcing your knife all at once. When each part is removed, use sandpaper or a knife to remove the remains of the connecting tag.

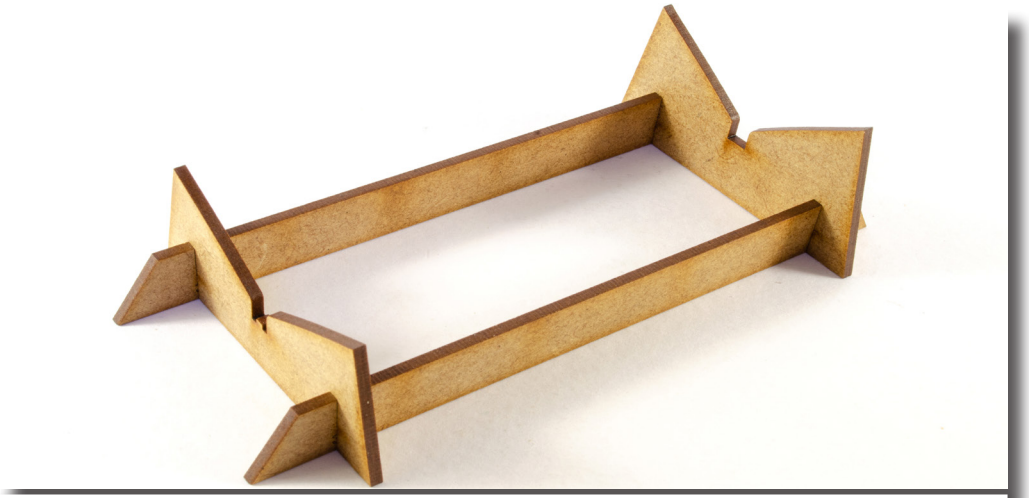


2. From the 2mm MDF sheet, remove parts #29, #30, and both parts #31. These will form the temporary cradle for your model and can be discarded when your model is built.

Remove the sheet attachment points using a sharp knife or a piece of sandpaper.



3. Slot one part #31 into part #29, as shown here. Then take the other part #31 and fit it into the other slot on the cradle end. Finally, take part #30 and fit it into the slots on both parts #31. Complicated? Nope! When completed, it should look…



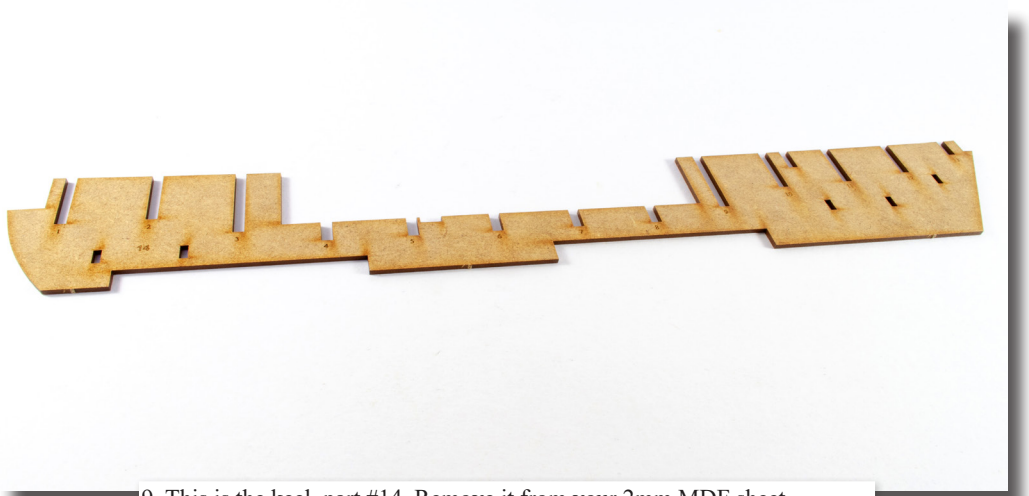
4. …just like this. You shouldn't need to use any glue for this as the parts hold together well enough without it.

6. Here are the remaining six bulkheads, #8 thru to #13. Again, note the engraved lines on some of these parts.

5. Your hull comprises of a series of numbered bulkheads. Here you see bulkheads #1 thru to #7. Note that some of these have lines engraved on them? We'll look at those very soon.

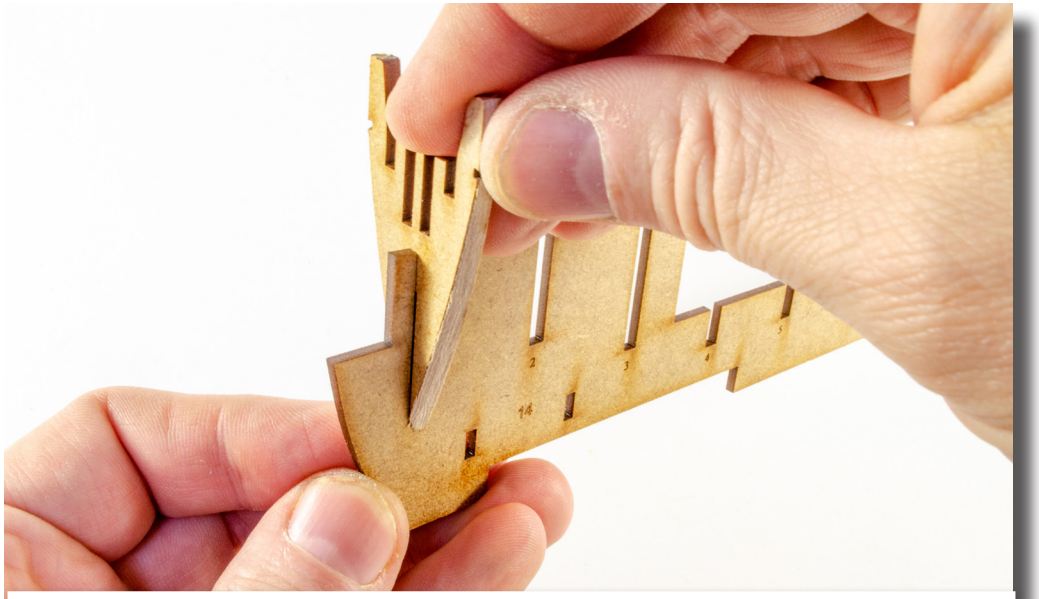
7. Take all bulkheads that have engraved lines and separate from the others. These are bulkheads #1, #2, #3, #11, #12, and #13. You now need to bevel these from the outside edge to the engraved lines on each part. You can do this with either sandpaper, sanding stick, or a rotary tool such as a Dremel.

8. This is what the seven bevelled bulkheads will look like. Don’t worry if you went a little too far as these will be further bevelled when the hull frame is sanded (faired).

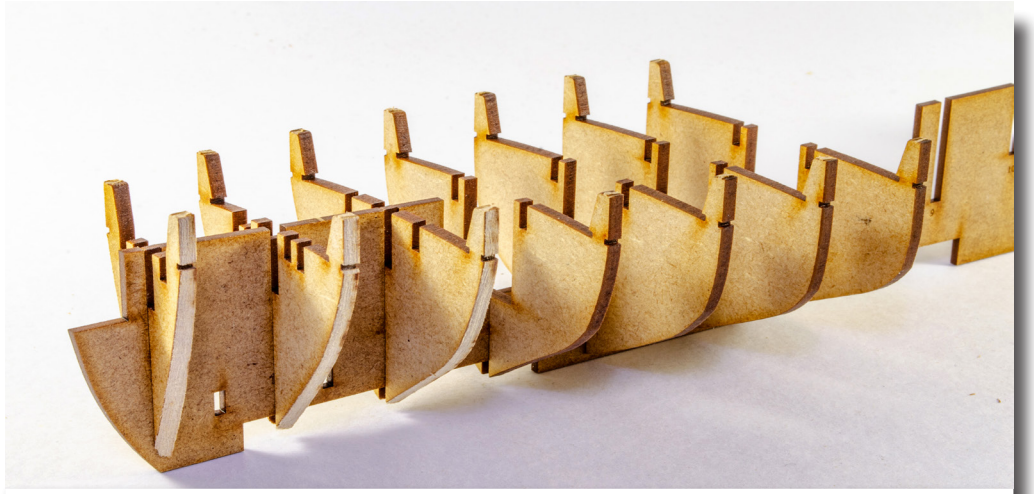


9. This is the keel, part #14. Remove it from your 2mm MDF sheet.

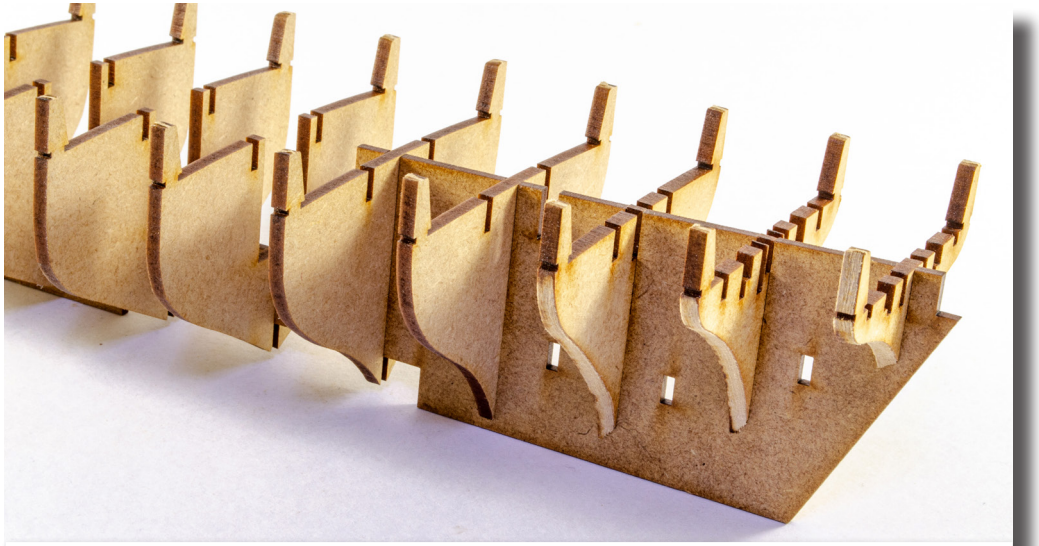
10. Notice how the slots on the keel are numbered? These correspond with the bulkhead # that will fit into each slot.



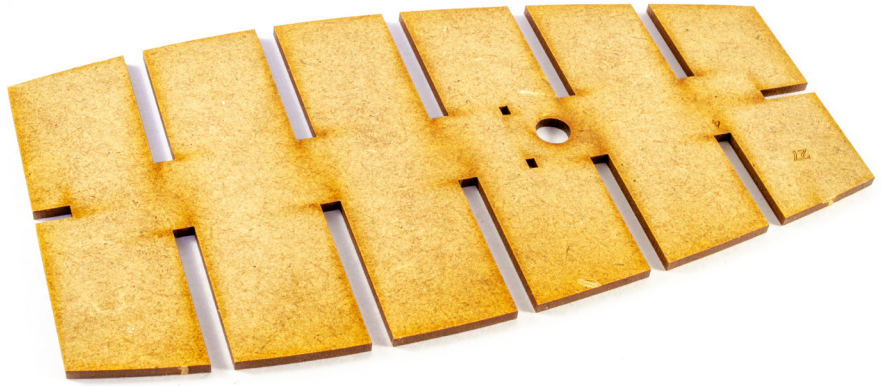
11. Take bulkhead #1 and slot into position as shown. Note that the bevelled side faces forward. Also, DO NOT glue any bulkheads at this time.



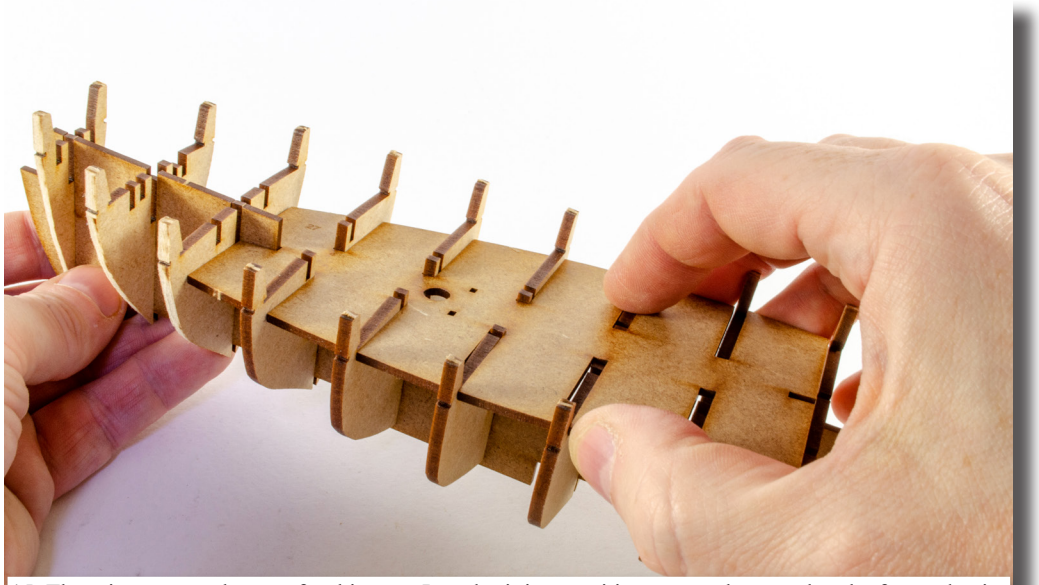
12. Now take bulkheads #2 thru to #7 and slot into position. Again, note that the bevelled bulkheads must face forward.



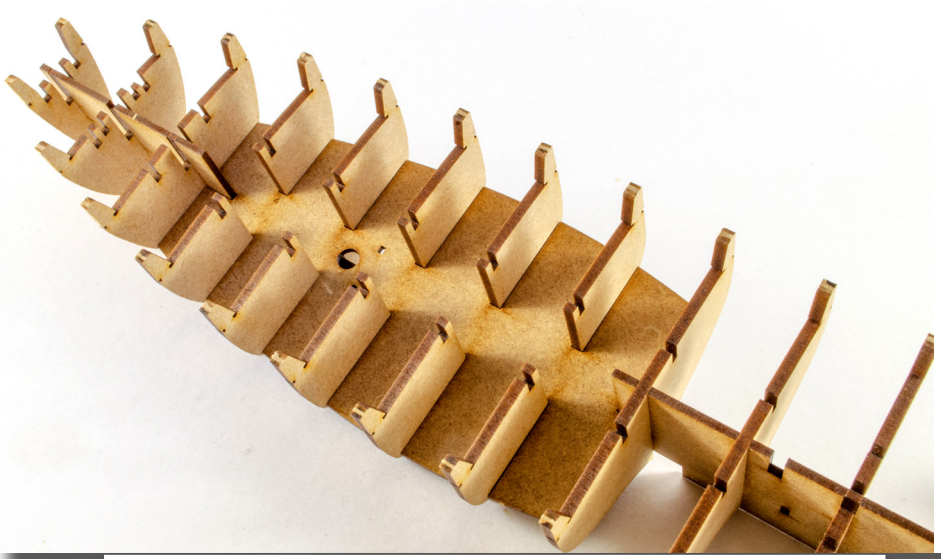
13. Now slot bulkheads #8 thru to #13 into place. NOTE: The bevelled bulkheads here must face backwards.



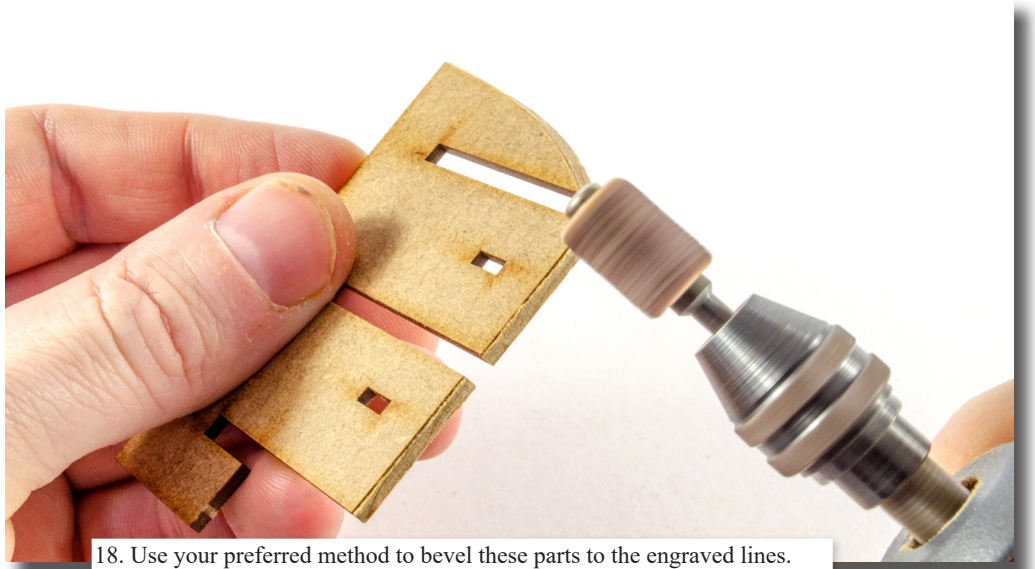
14. Remove part #27 from the 2mm MDF sheet.



15. There is no top or bottom for this part. Just slot it into position as seen here so that the front edge is against bulkhead #3 and the bulkheads engage with the slots in this part too.

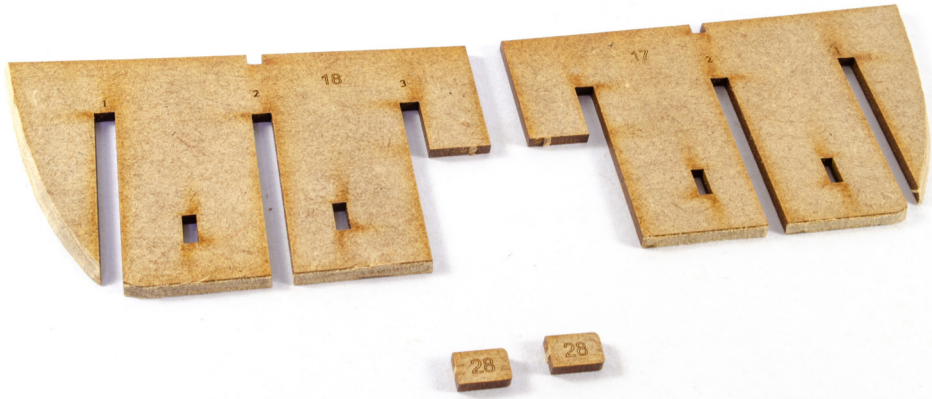


16. When fitted, this is how it will look. Again, DO NOT glue anything just yet.

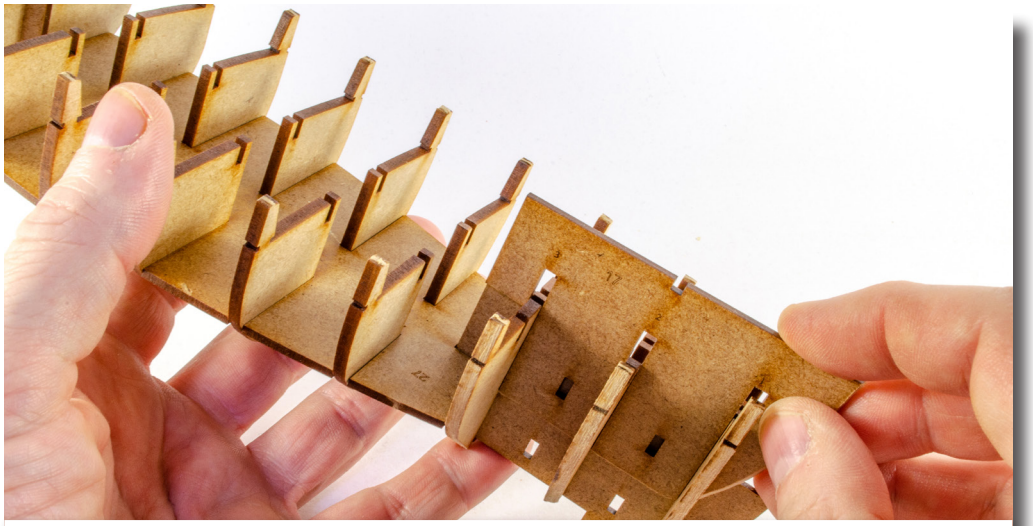


18. Use your preferred method to bevel these parts to the engraved lines.

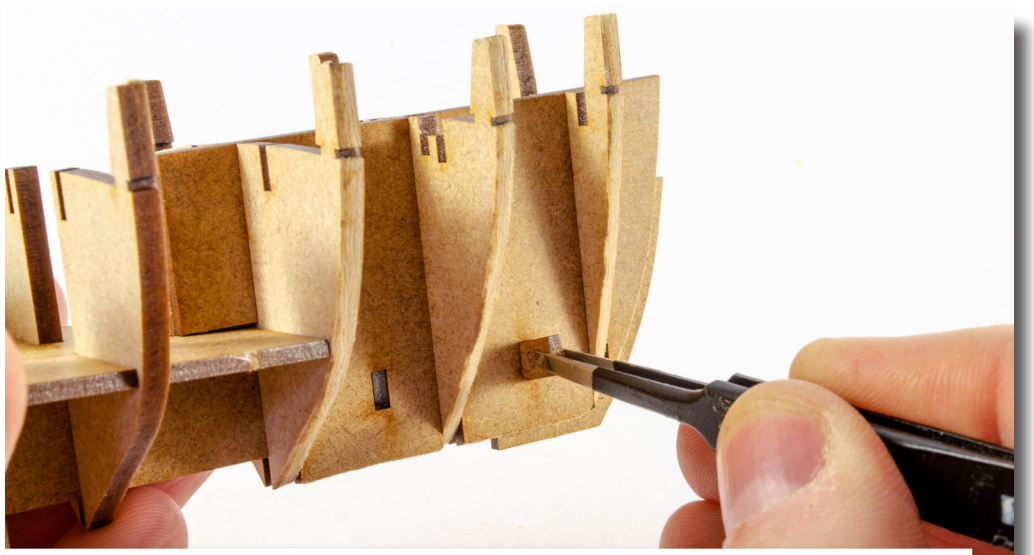
17. From the 2mm MDF sheet, remove parts #17 and #18.



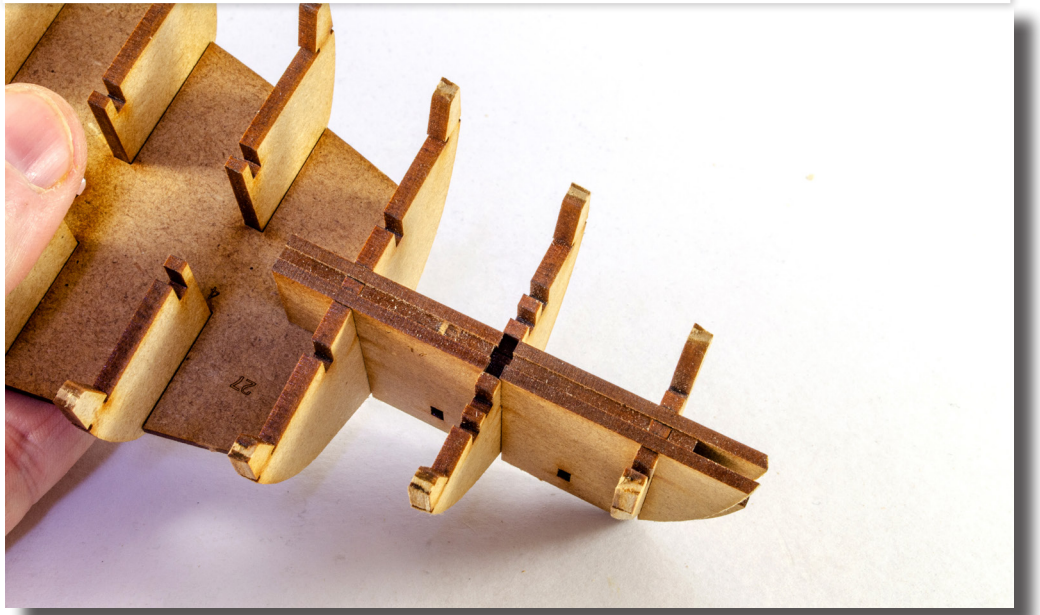
19. Along with your two engraved parts, also remove two parts #28 from the 2mm MDF sheet.



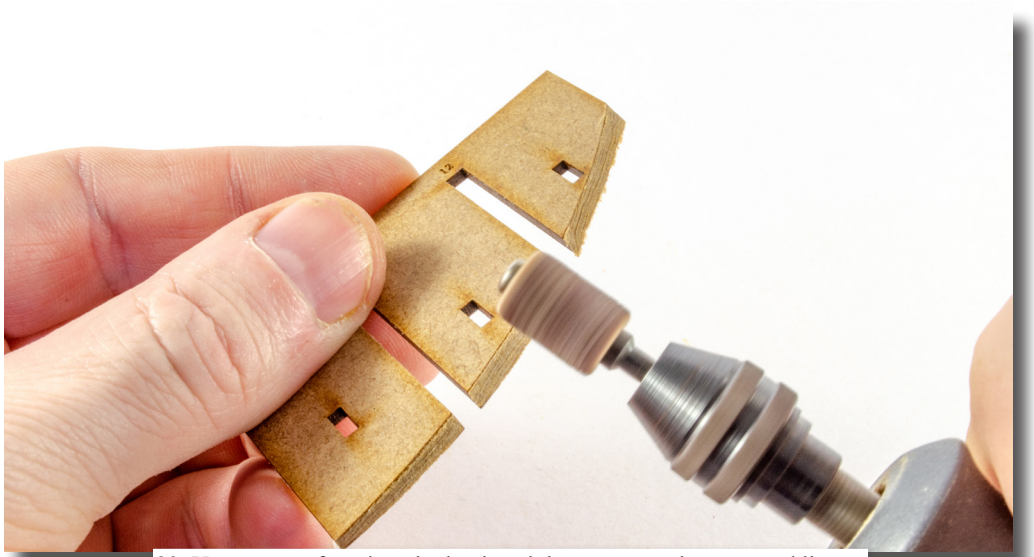
20. Slide part #17 into place as shown, gluing it only to the keel and not the bulkheads. You will see here that the part slots into the top of the first three bulkheads, and against the keel itself. Repeat with part #18.



21. Now take the locating pegs #28 and glue into place, though all the way through the parts you just added, and through the keel.

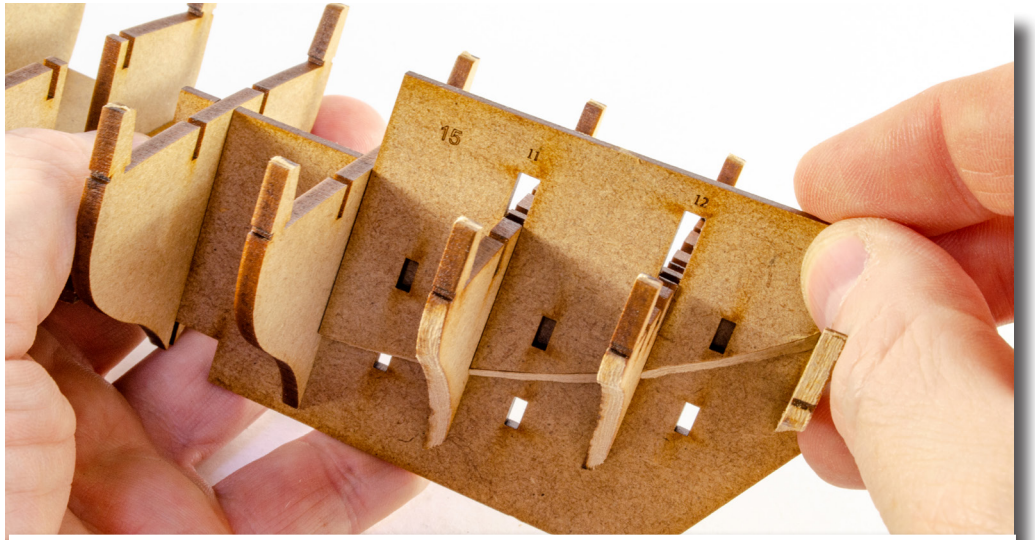


22. From the 2mm MDF sheet, remove parts #15 and #16.



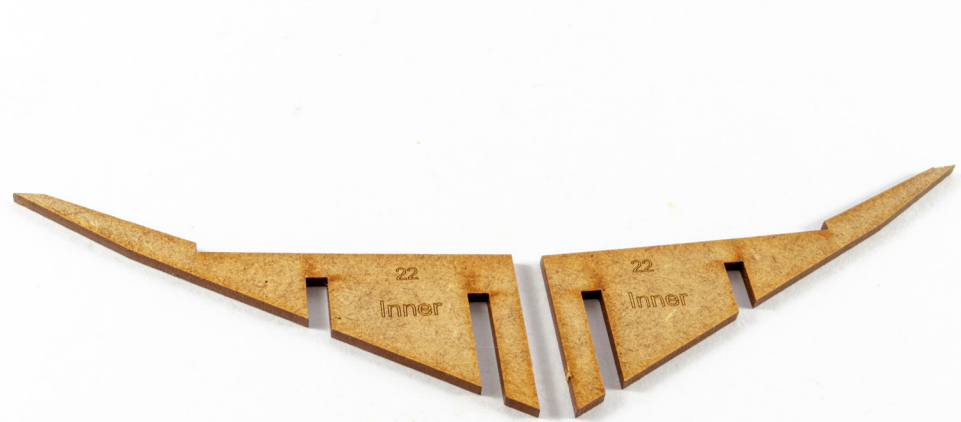
23. Use your preferred method to bevel these parts to the engraved lines.

24. Along with your two engraved parts, also remove three parts #28 from the 2mm MDF sheet.

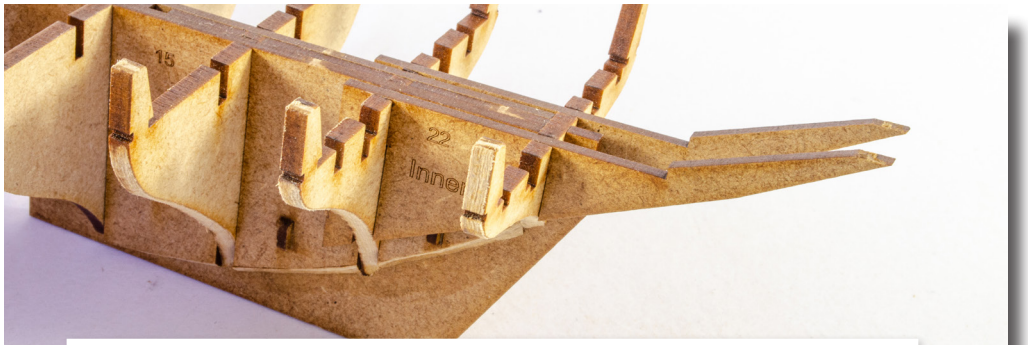


25. Slide part #15 into place as shown, gluing it only to the keel and not the bulkheads. You will see here that the part slots into the top of the bulkheads #11 and #12 and against the keel itself. Repeat with part #16.

26. Now take the locating pegs #28 and glue into place, though all the way through the parts you just added, and through the keel.

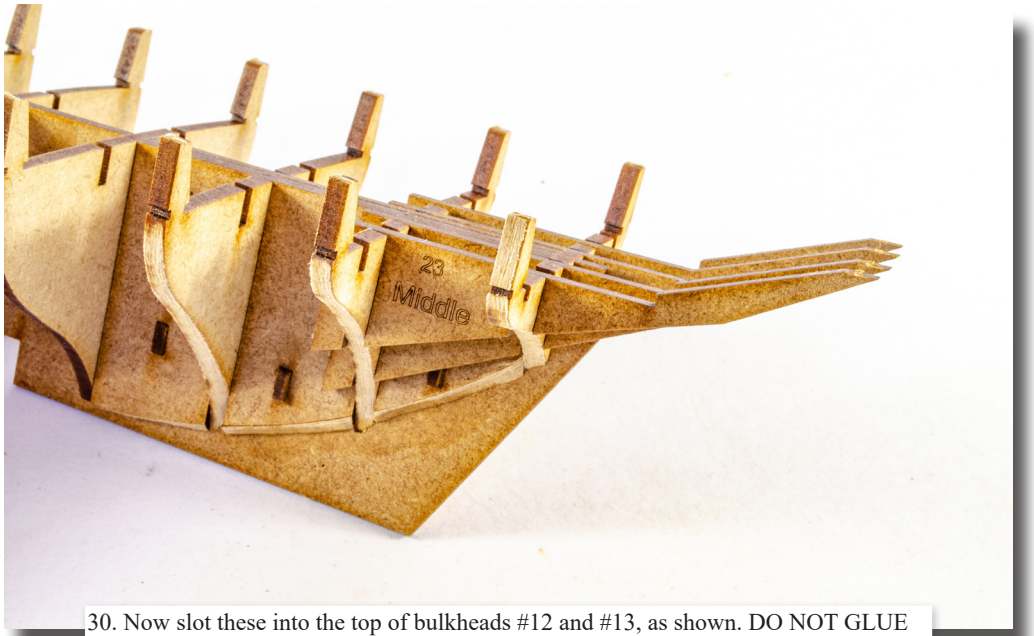


27. From the 2mm MDF sheet, remove both parts #22. Note they are engraved ‘Inner’.



28. Now slot these into the top of bulkheads #12 and #13, as shown. DO NOT GLUE

29. From the 2mm MDF sheet, remove both parts #23. Note they are engraved ‘Middle’.

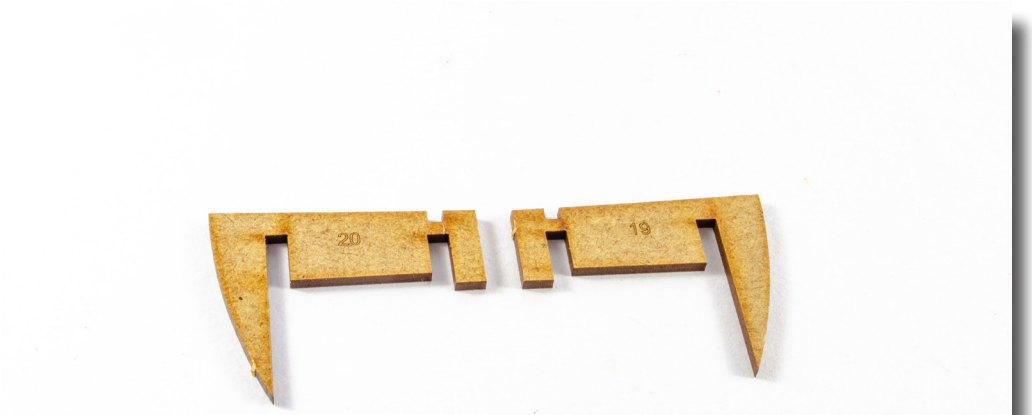


30. Now slot these into the top of bulkheads #12 and #13, as shown. DO NOT GLUE

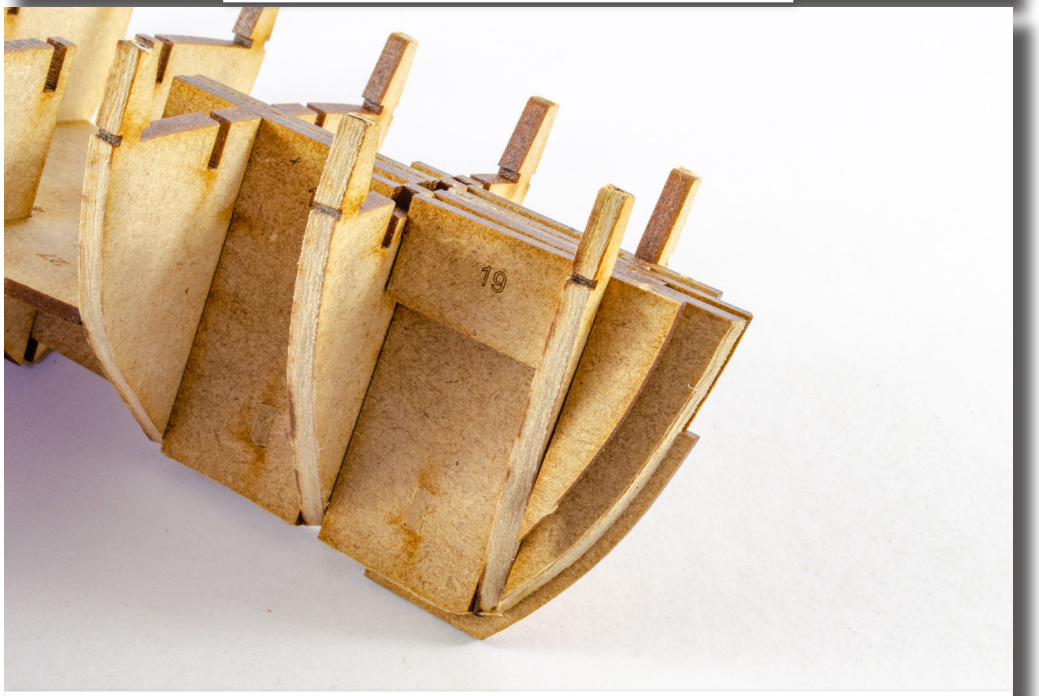
31. From the 2mm MDF sheet, remove both parts #24. Note they are engraved ‘Outer.

32. Now slot these into the top of bulkheads #12 and #13, as shown. DO NOT GLUE

35. Take part #27 (inner) and slot (NO NOT GLUE) into the innermost slots on the last two bulkheads. Add one at each side of the keel.

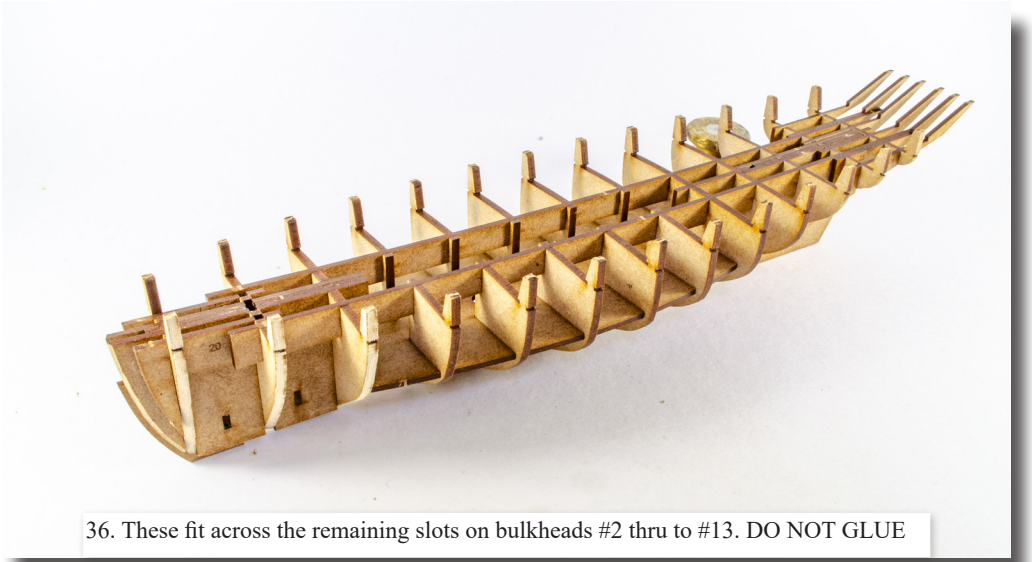


33. From the 2mm MDF sheet, remove parts #19 and #20.

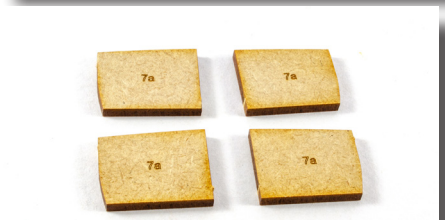


34. Glue part #19 in place as shown, across the slots in the top of bulkheads #1 and #2. Now take part #20 and fit on the opposite side. How they will look is clearly shown here.

35. From the 2mm MDF sheet, remove both parts #21.

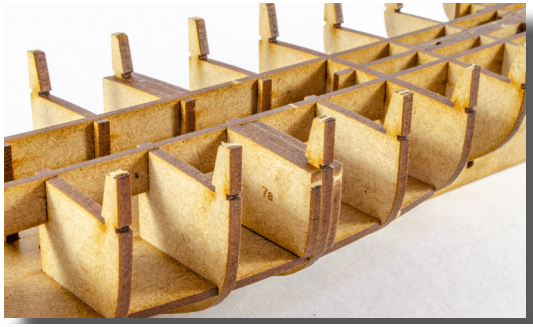


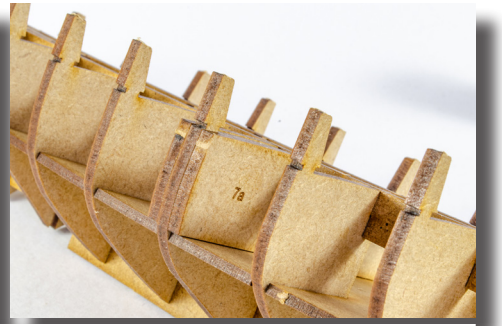
36. These fit across the remaining slots on bulkheads #2 thru to #13. DO NOT GLUE



37. From the 2mm MDF sheet, remove all parts #7a.

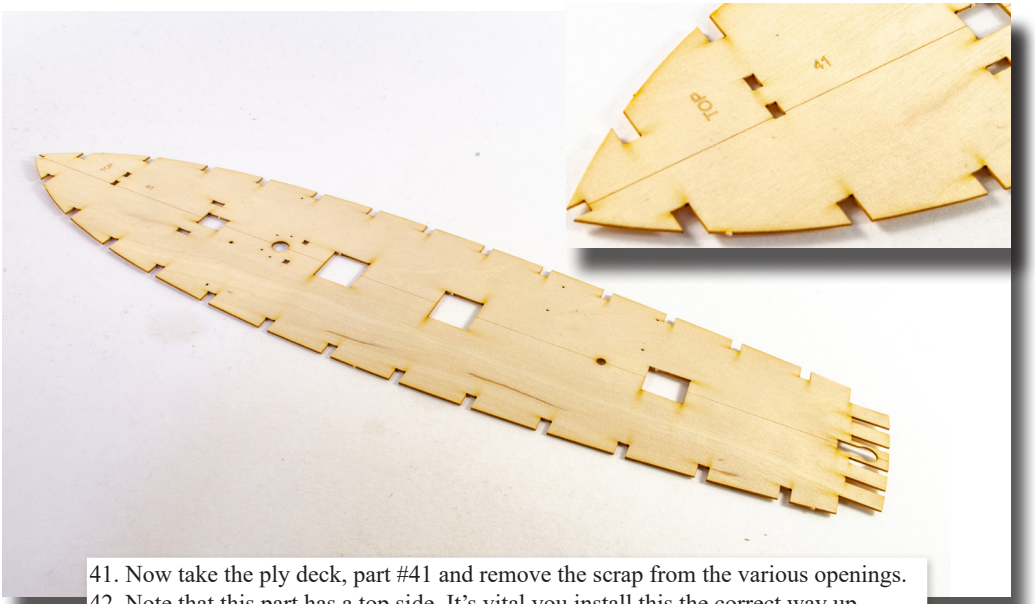
38. With the deck part properly pushed into place, parts #7a can be glued to either side of bulkhead #7, tripling the thickness in this area. Clamp until set.



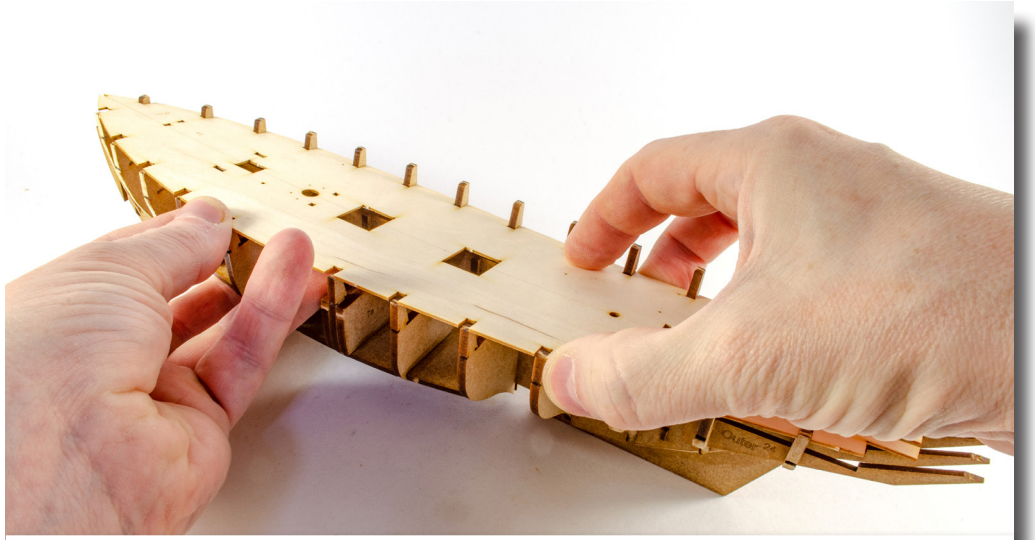


39. See how parts #7a sit on the deck and flush with the outside edge of bulkhead and level with the top edge.

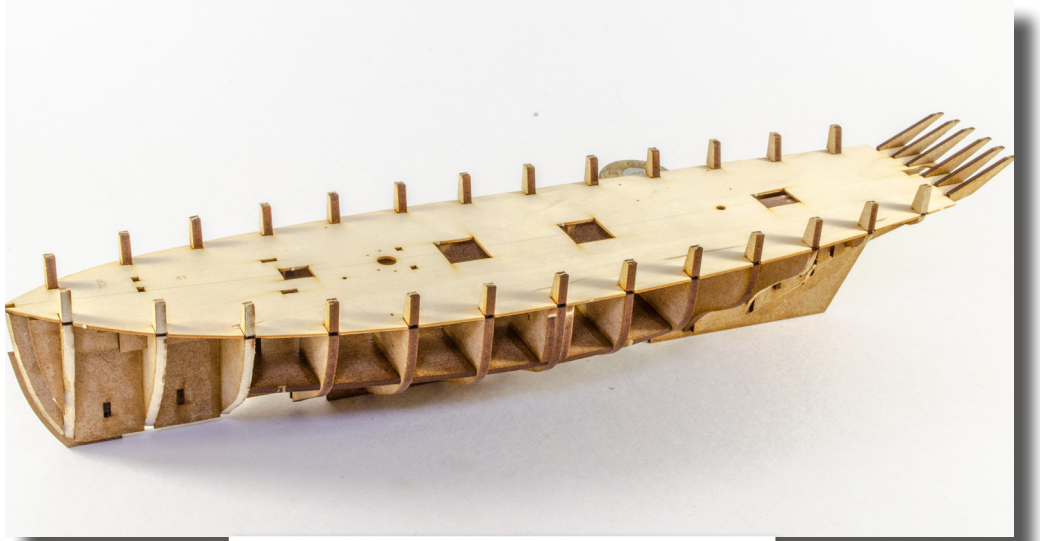
40. Make sure that everything is pushed firmly together, and nothing is misaligned. Now, brush slightly diluted wood glue into the various slots and joints around the hull. Once done, leave to dry for a few hours.



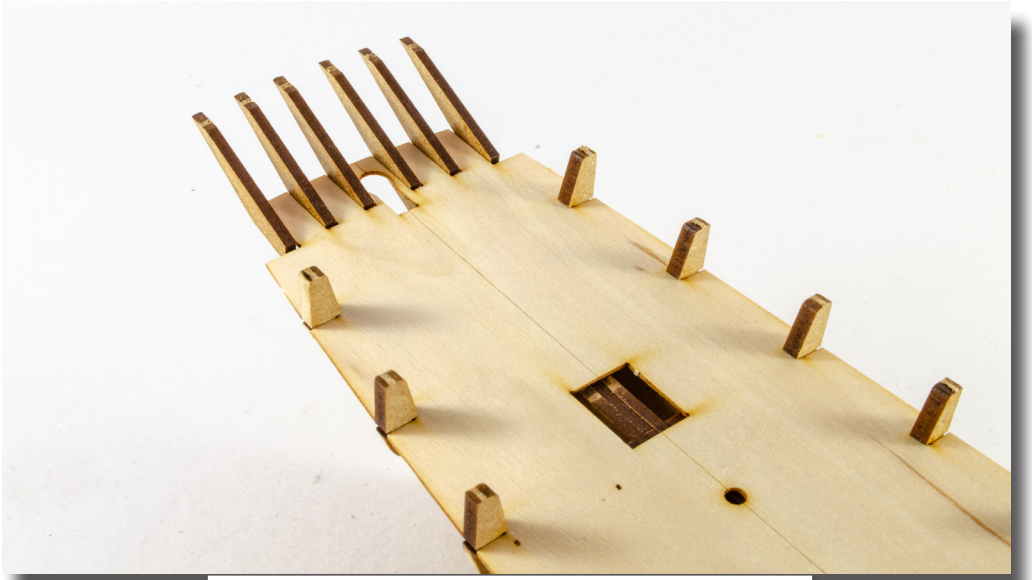
41. Now take the ply deck, part #41 and remove the scrap from the various openings.
42. Note that this part has a top side. It's vital you install this the correct way up.



43. Flex the ply deck along its length and slot it into the bulkhead ears. You will note that there is a notch at the inside bottom of each ear. This deck must fit into those notches. Work your way around each bulkhead ear and check the deck is fully engaged into the notches. When it is, it will lie perfectly flat against the construction below. Once in place, brush glue into the joints underneath the deck and leave to set.

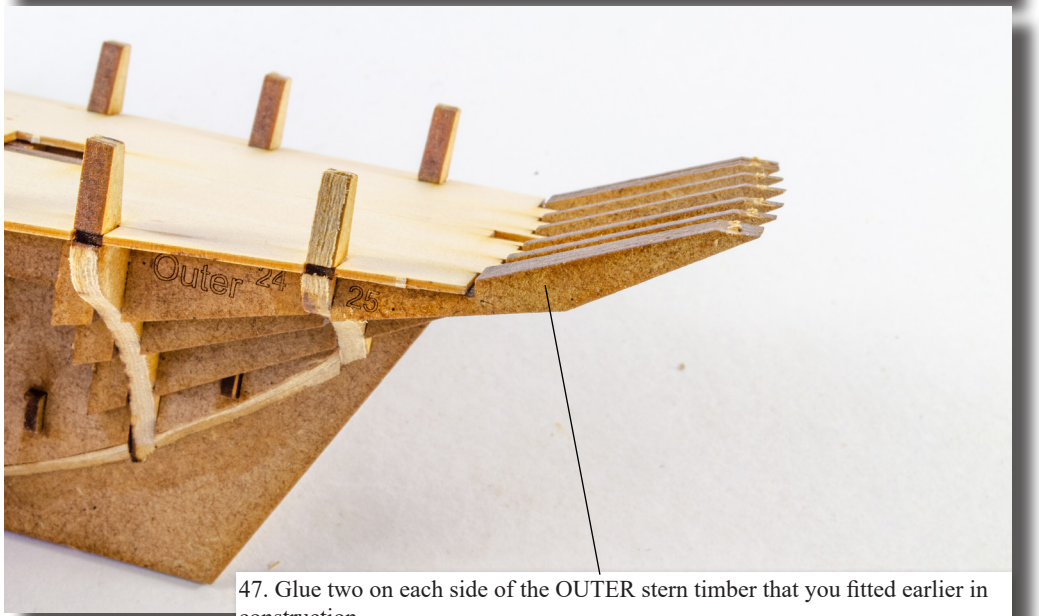


44. Once installed, your Ranger will look like this.



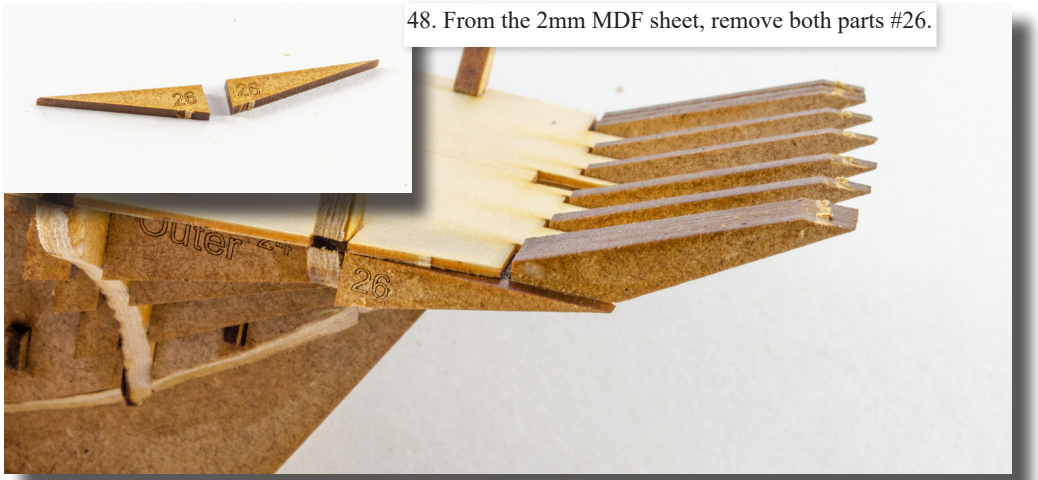
45. These photos show you in more detail the installed deck.

46. From the 2mm MDF sheet, remove all parts #25.

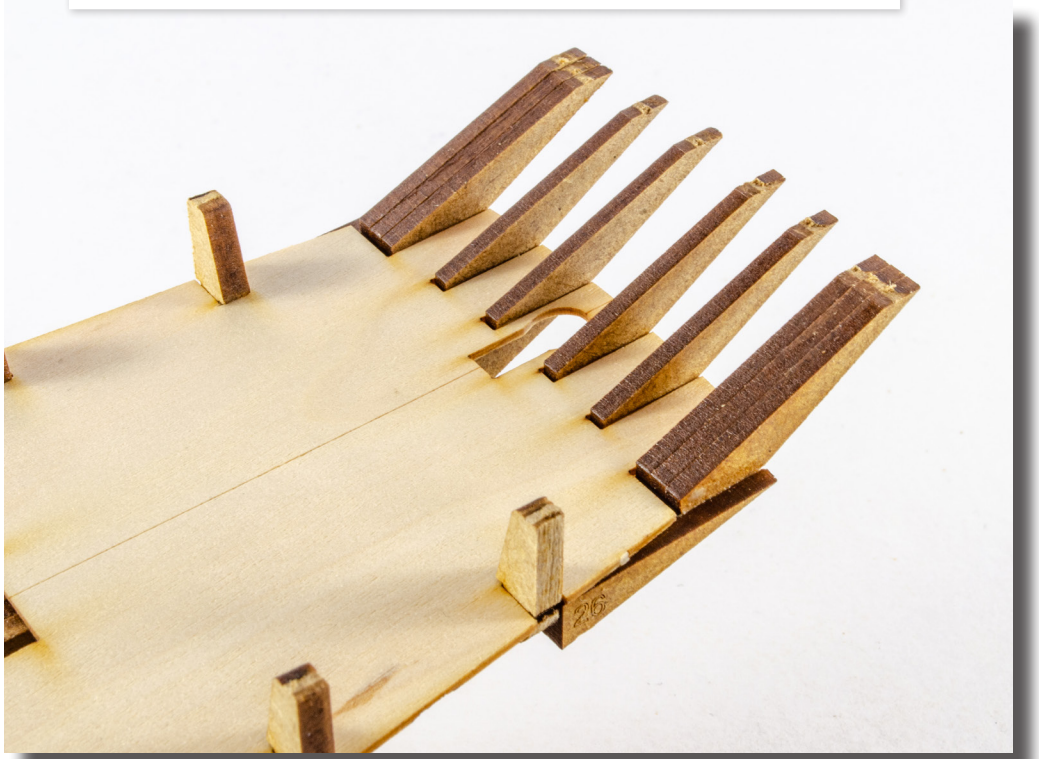


47. Glue two on each side of the OUTER stern timber that you fitted earlier in construction.

48. From the 2mm MDF sheet, remove both parts #26.



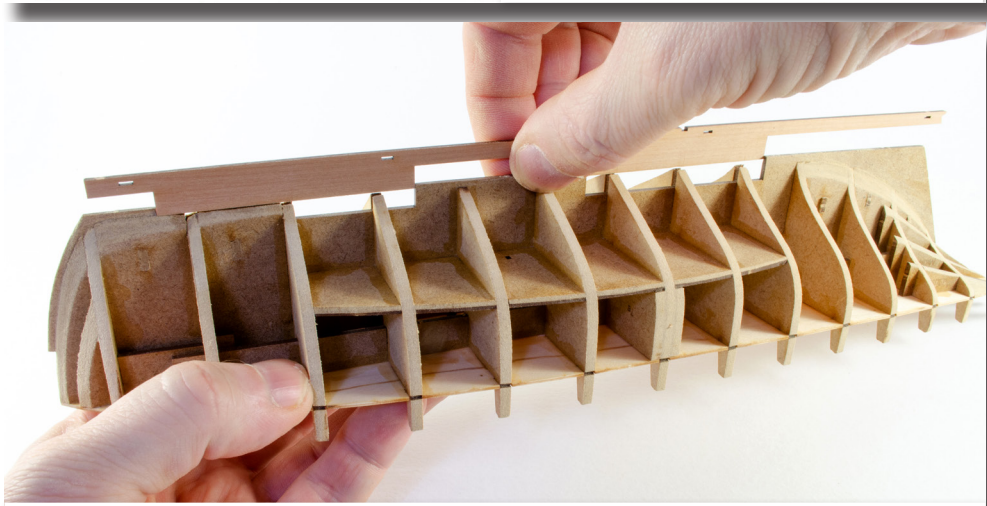
49. Now glue these into place as seen here, on the outside of the parts you just fitted.



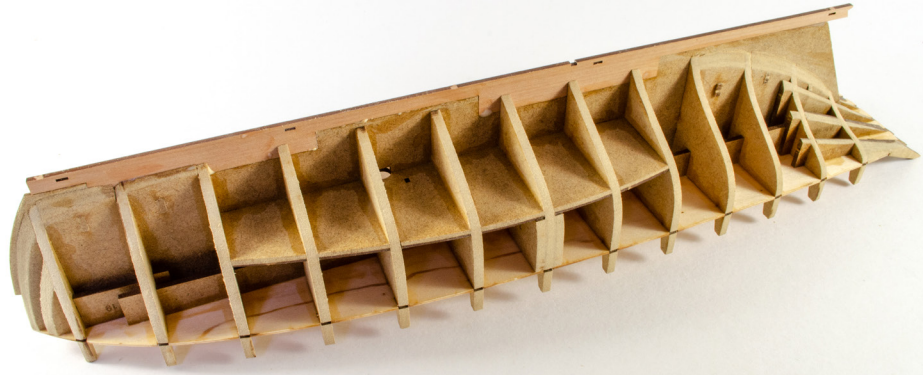
50. We now need to fair the hull. That means it needs to be sanded so the contours run smoothly, and a plank may lie against the bulkheads with maximum contact to the bulkheads. With Ranger, this is quite easy. Take your time, test your sanding by lying a plank along the hull. A good indicator, generally, is that you should have little to no char left on the bulkhead edges.

51. This should give you an idea about what the faired hull should look like.

52. From the 2mm wood sheet, remove part #33.

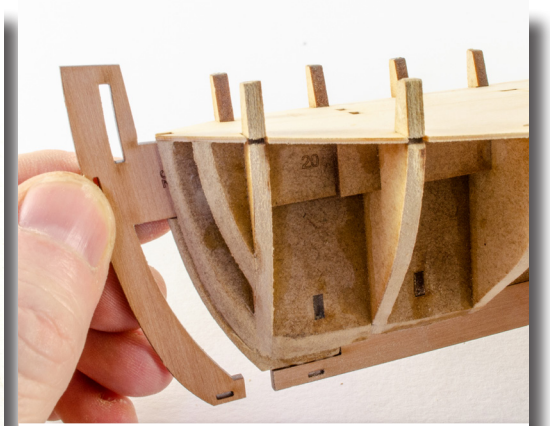


53. Glue this into position on the underside of your hull. It will only go one way around, and test fit before you do glue anything.



54. When fitted, it should look like this.

55. From the 2mm wood sheet, remove part #32.



56. Glue this to the hull as shown and make sure it's in alignment with the previous part on the underside.

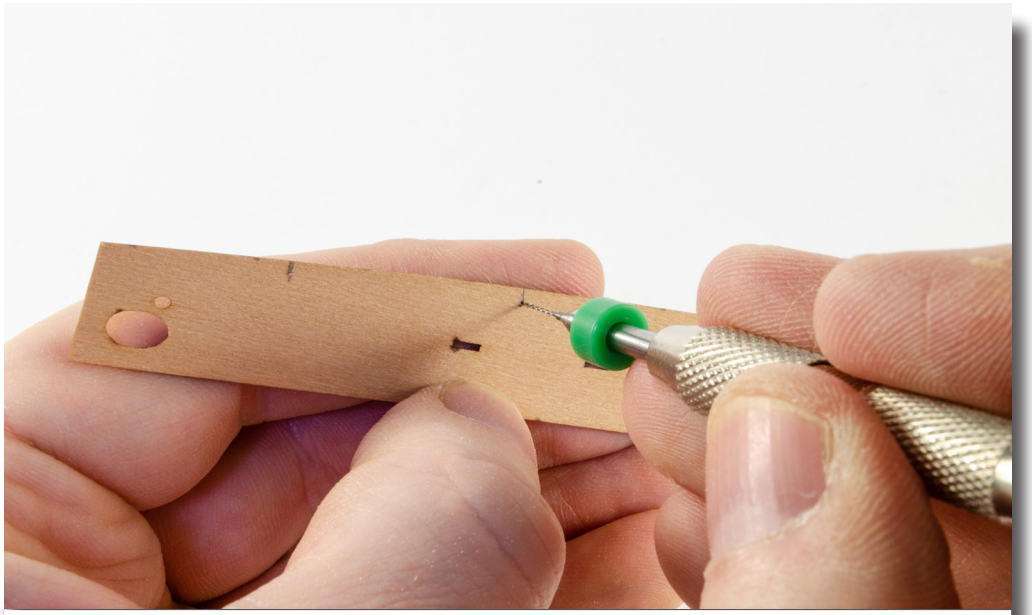
59. When dry, sand any overlap, flush with the side of the hull.

57. On your 0.8mm maple veneer sheet, remove part #43

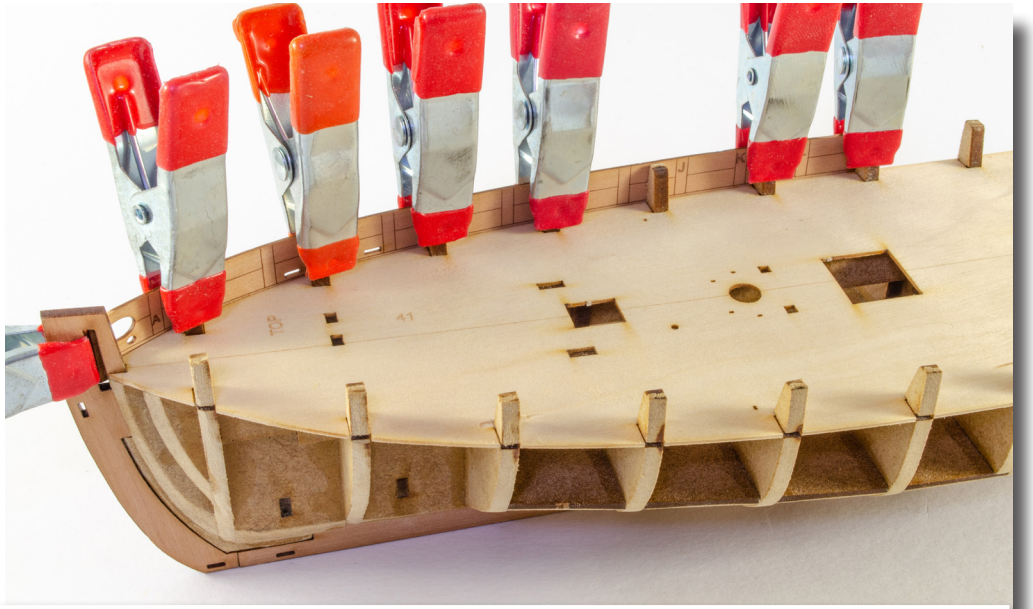
58. Glue this into position as shown here, with the narrow edge meeting the stern timbers at the point where they change angle. Maple veneer is very easy to bend. You may wish to glue the narrow edge first and then leave to dry before forming the wider edge against the underside/bulkhead #13.

60. From the 0.8mm wood sheet, remove part #44 (Front Right).

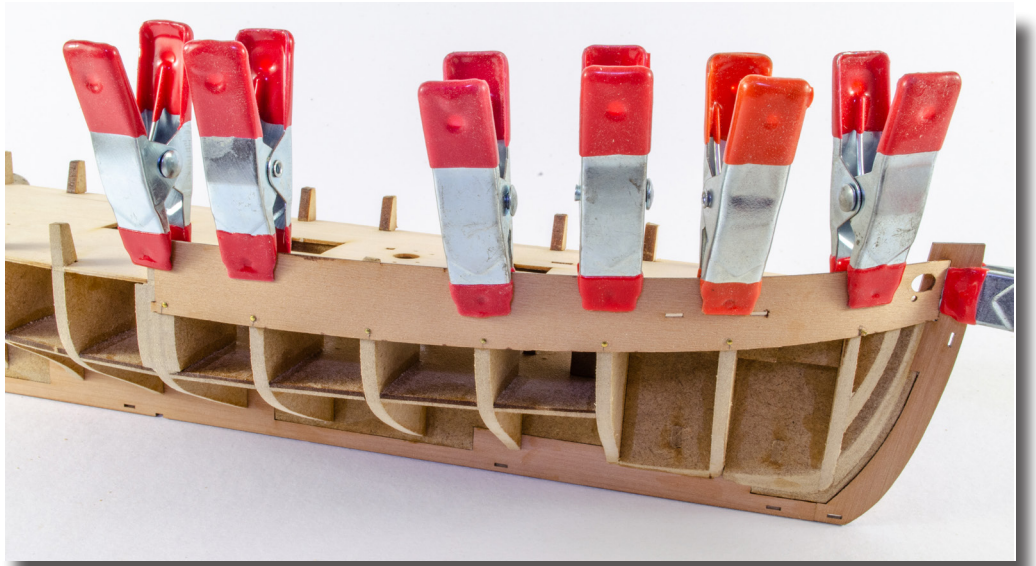
61. Insert the front edge of this part into the slot on the wooden prow, then clamp in place so the top edge of this is in line with top of bulkheads. Now use a pencil to mark the bulkhead positions.



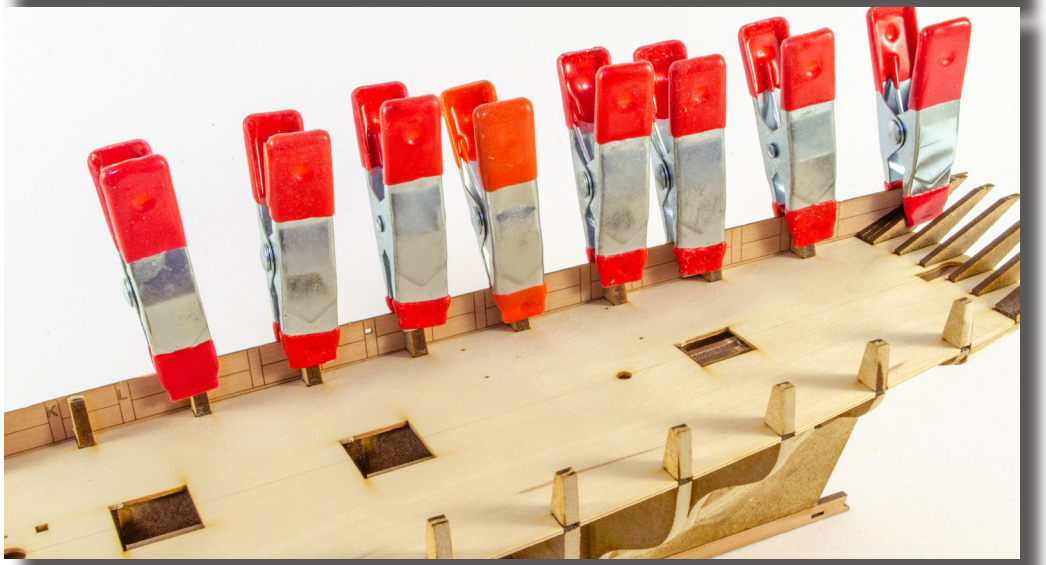
62. We chose to drill a 0.5mm hole at those marks, around 2mm up from the bottom. That will just make it easier to insert pins later.



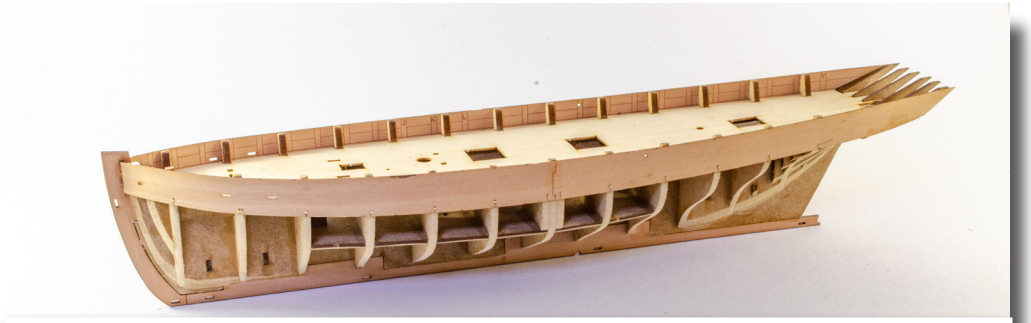
63. Glue the part into place, MAKING SURE that the lowest longitudinal engraved line is at deck height. NOTE: ONLY glue this in place at deck height and below. Do NOT glue to the bulkhead ears above deck! Use plenty of clamps to hold in place and also use brass nails to secure to bulkheads before deck level.



64. From the 0.8mm wood sheet, remove part #45.



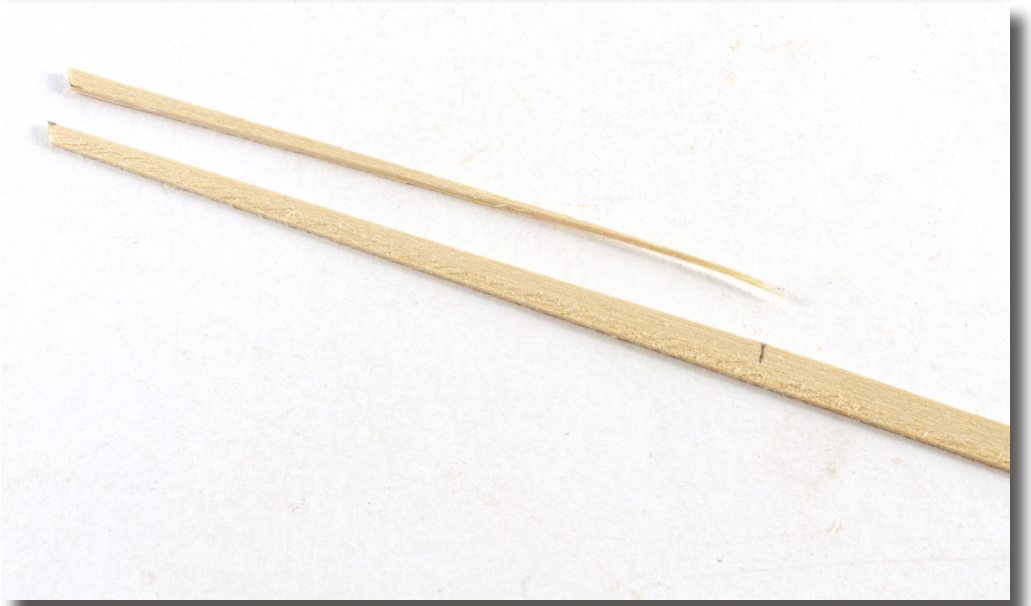
65. Fit this in the same way as the previous part. You will find there is no need to soak any of these parts prior to fitting.



66. Once dry, fit the bulwark parts #46 and #47 to the opposite side. Your hull will now look like this.

67. It's now time to start adding the first layer of lime planks. Take of the wider and thicker lime planks and glue it immediately underneath the bulwarks. This does not need to be tapered. You can also install the plank in halves if you wish, as we have done here for you. Remember to pin the planks and also glue them to each other along their length.

68. On the next plank, you will start to see the need to taper them. Run the plank underneath the first and make a mark where the new plank tries to cross over the previous. Now make a mark at the front of the plank, about 1/3 down from the top. Join the marks and then cut between them to taper.

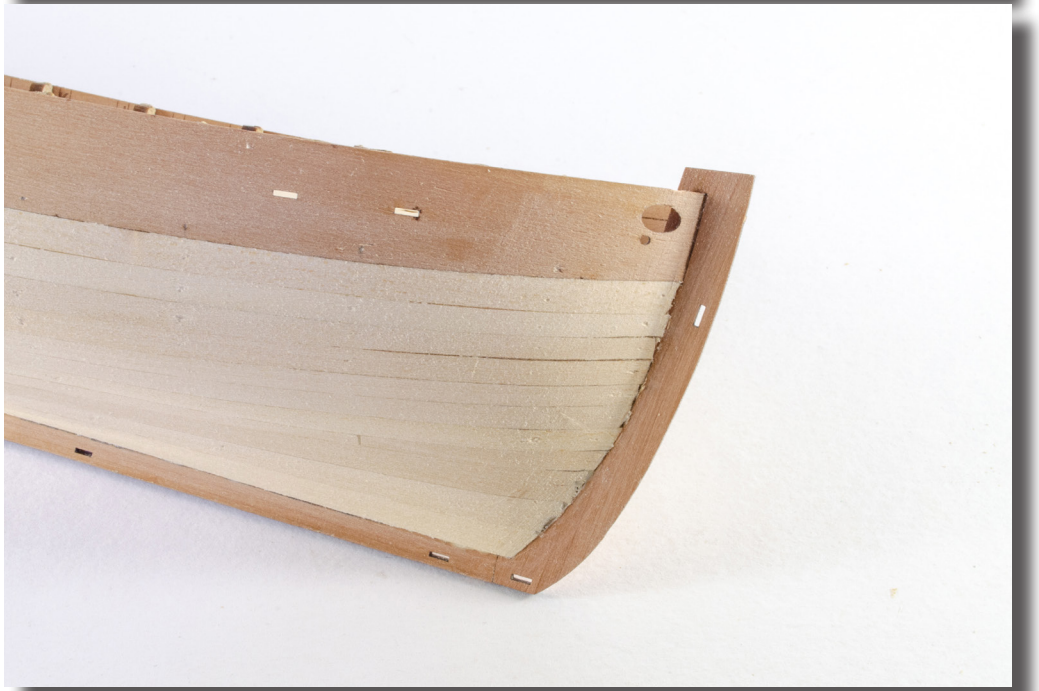


69. The plank can now be fitted to the hull. The reason we need to taper planks is because if we left them full width, they would stop lying flat on the bulkheads as we move towards the bow, creating a gap between plank and bulkhead.

70. When you plank so far down the hull, you might struggle to comfortably continue. Here is where you can fit the lowest plank against the keel. This is called the garboard plank. Glue, clamp and pin in position until dry, then work your way upwards towards the previous planks. If you have any gaps, just use scrap plank to fill them in. My methodology here is aimed at the beginner. Those with more experience will undoubtedly have their own methods.

71. Your planked hull will now look like this.

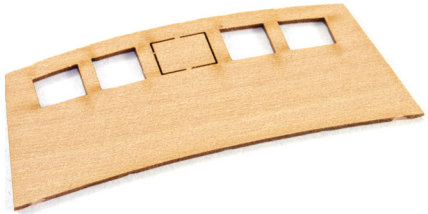
72. Once you've removed all your brass pins, you will now need to sand the hull smooth. Use a grade of paper around 110 grit, or similar. Finish the hull in something a little finer once you have about completed the sanding.



73. From the 2mm wood sheet, remove part #34.

74. This can now be glued into position at the stern, as shown here.

76. Now, finally sand that area to make sure everything is flush and level.



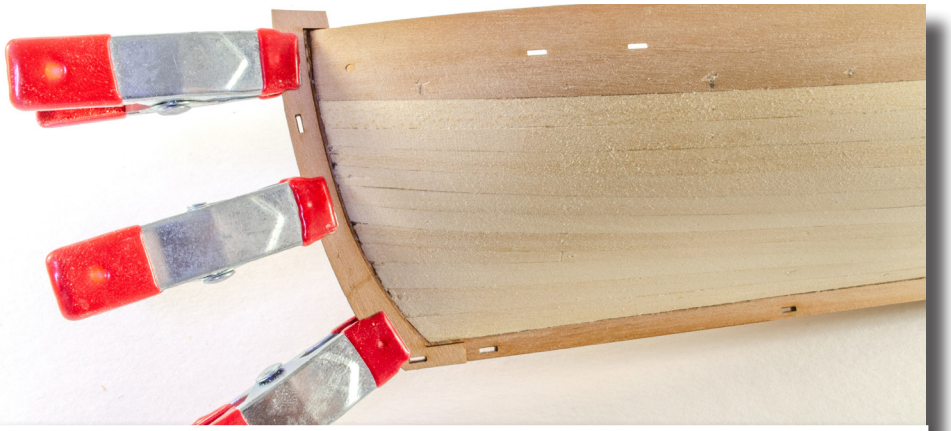
77. From the 0.8mm wood sheet, remove part #59.

78. Glue into place as shown here and clamp until set.

75. Use a knife to trim the excess length from the bulwarks, so they are about flush with the stern timbers.

79. Sand the edges of this part so they're flush with the bulwark sides.

80. From the 0.8mm wood sheet, remove both parts #49 and two parts #58



81. Glue both parts #49 to the prow, as shown, one on each side. Make sure the locating peg holes are aligned.

82. Now glue the pegs into position. We advise you clamp parts #49 until dry to make sure you get full contact.

83. From the 0.8mm wood sheet, remove both parts #48, and four parts of #58.

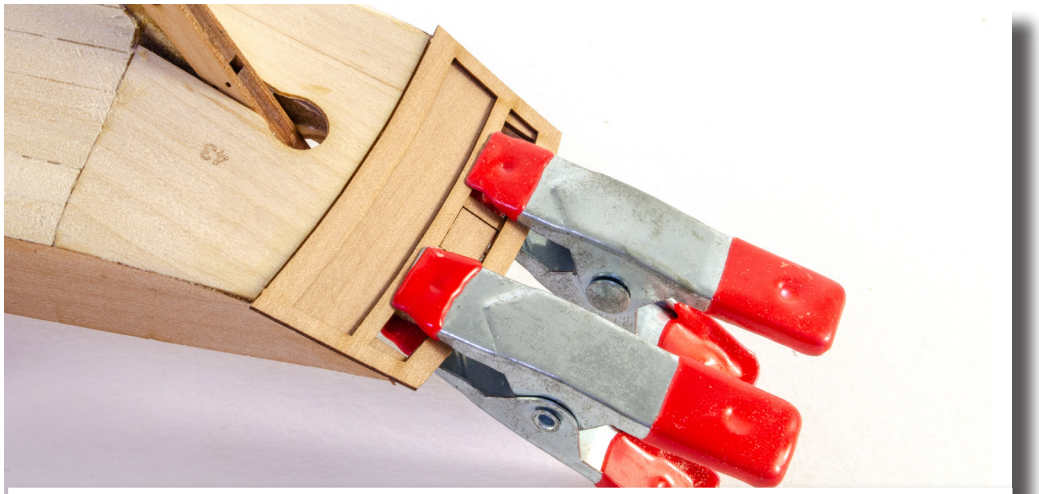
84. Glue and clamp parts #48 to either side of the keel, making sure the peg holes are aligned. Also glue the locating pegs #58 into the holes.

85. From the 0.8mm wood sheet, remove both parts #50 and two more locating/alignment pegs #58.

86. Glue and clamp parts #50 to either side of the rudder post, ensuring the peg holes are aligned. Now glue the pegs #58 into place. Once all keel parts are set you can trim all of them back, so they are flush with the outside of the keel.

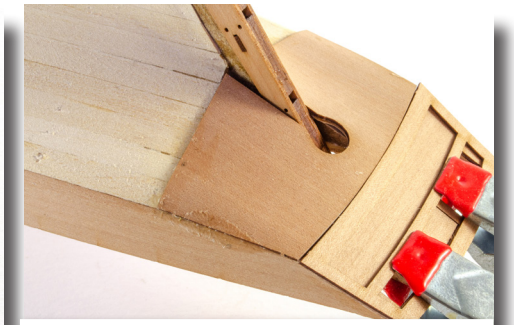
87. Your hull will now look like this.

88. From the 0.8mm wood sheet, remove part #60.

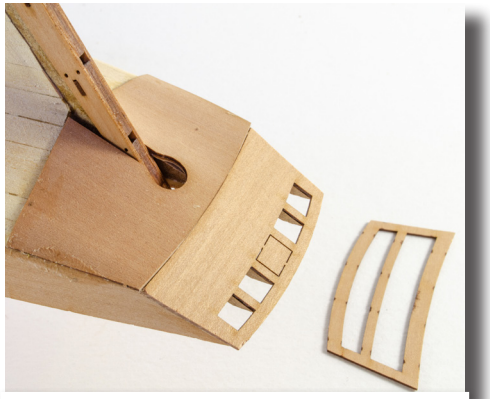


89. IMPORTANT!!! DO NOT GLUE this part into place. Instead, just align it with the stern and simply clamp it into place, temporarily. We are doing this so we can put the following part in its correct position.

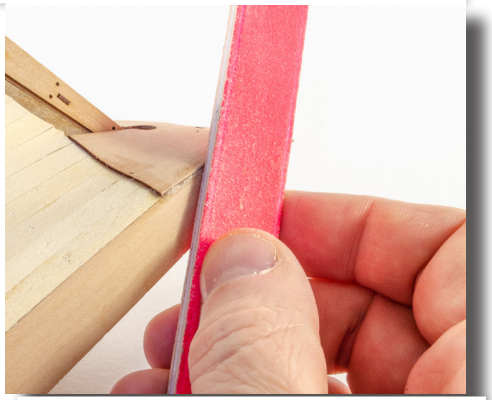
90. From the 0.8mm wood sheet, remove part #53.



91. Glue this part to your hull, up against the part you temporarily clamped to the model. You should do this along the narrow edge first and let that glue dry. You can then glue down either side in turn, holding it in place until the glue sets. Take your time. No soaking is required here as the part is pushed easily into place.



92. Now you can remove the part you temporarily clamped into position.



93. Sand the edges of part #53 flush with the sides of the hull.

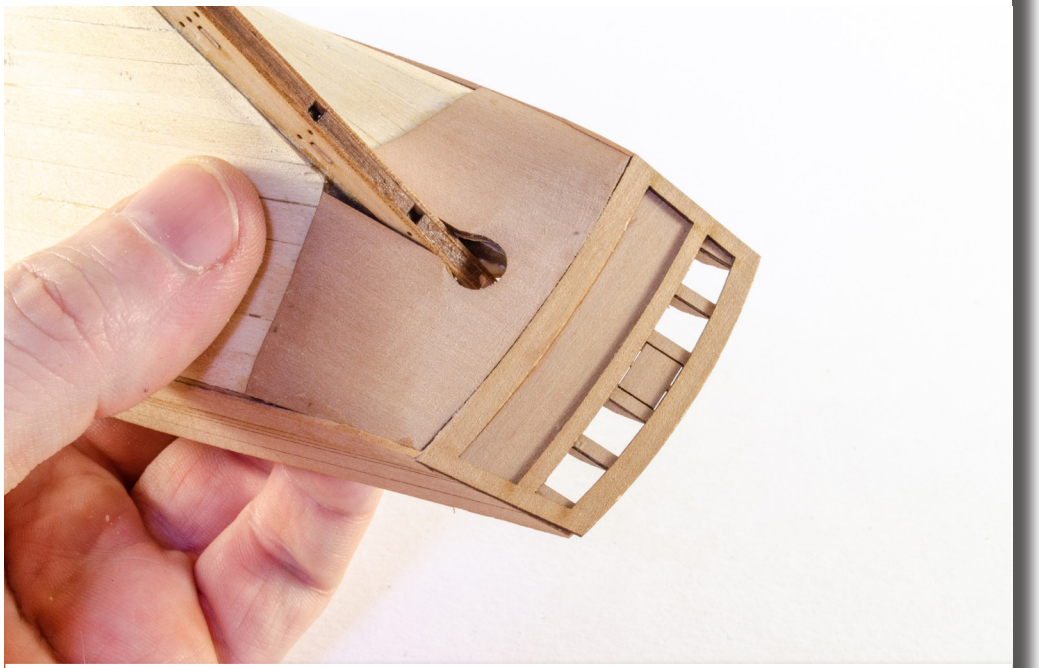
94. From the 0.8mm wood sheet, remove part #54.

95. This is now glued and clamped to the outside of the right-side bulwark. You may need to trim/angle the front edge where it fits into the rebate, and also made sure the scupper holes (the two narrow slots) are aligned with the inner bulwark. Again, there is flexibility to slightly trim length from the front of this part. The top of this part must be level with the top of the inner bulwarks.

96. From the 0.8mm wood sheet, remove part #55.

97. Glue and clamp this into position as shown here, with the top edge running along the top edge of the inner bulwark. Leave to dry.

98. Using parts #56 and #57, repeat this for the left-hand side of the hull.



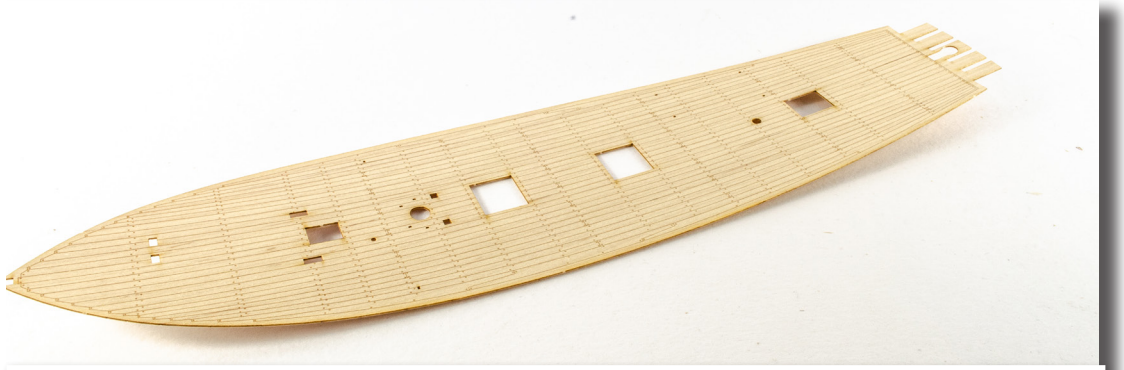
99. Sand the rear of these bulwarks so they are flush with the stern, and finally glue part #60 into place.

100. You must now use the strips of pear wood to plank the outside of the hull again, covering the initial layer. The first plank will sit directly under the bulwarks you just added. IMPORTANT: Try to add at least the first couple of planks as full length as some timber will be seen if using our paint scheme. Also note that it isn't appropriate to use brass pins for these planks as you could ruin the overall finish of the hull. Instead, we recommend using a good quality CA gel, such as that made by Gorilla. We apply this in small dots along the length of each plank before easing it into position. The glue grabs very quickly but allows you a second or so to reposition. It is also important that you taper your planks and edge-bevel them, so they sit snugly up against the previous plank.

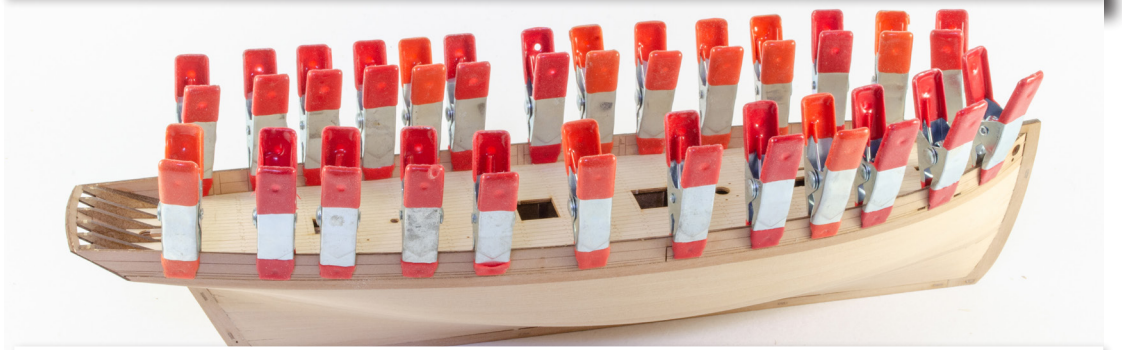
101. Mask off the engraved areas on the upper bulwarks and sand the hull so that it's smooth. If there are any areas that require filling, then we'll do that later.

102. Using pliers, twist and snap off the MDF bulkhead ears from your model. These are the ones running down each side and NOT the ones at the stern.

103. Use sandpaper to make sure the remnants are flush with the deck. When done, blow or brush the deck to make sure all debris is removed.

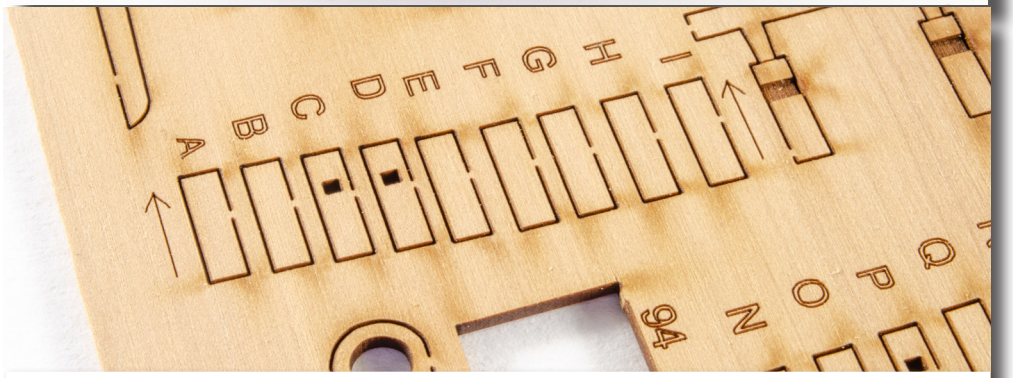


104. We will now fit your laser-engraved maple deck #42. Make sure the holes/openings have their centres removed.



105. IMPORTANT: This deck is very flexible, so please be careful with it. You must now test fit the deck to make sure it lies totally flat on the ply deck. That means that it sits flat across all of the camber and can be pushed right down around the edges while not bulging in the middle. If you need to, carefully sand the edges where you feel any material needs to be removed. Keep test fitting until this part lies flat everywhere. When you are satisfied with the fit, add glue to the ply deck and then fit the maple deck. Use clamps around the edges to make sure the maple deck doesn't lift along those edges. Leave until dry.

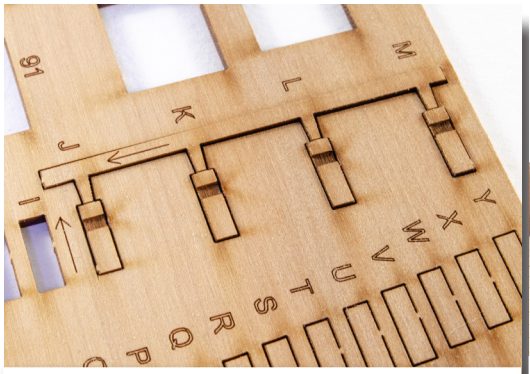
106. Your hull will now look like this.



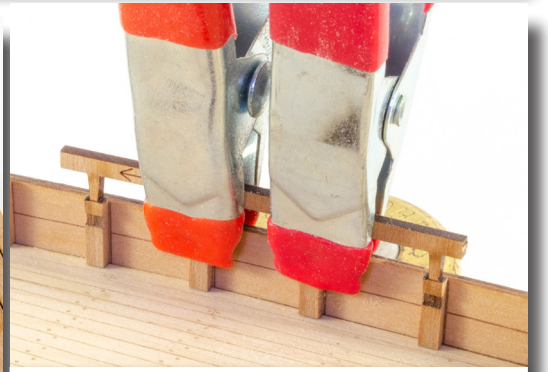
107. On the 1.5mm wood sheet, you will find a series of parts called 'timberheads'. These are labelled 'A' thru to 'Y', and there is a set per side. The ones we are looking at specifically are these, labelled 'A' thru to 'I'. Identify these on your parts sheet. Notice the arrows. Those indicate the top of these parts.

108. Now, if you look at your hull, you'll see the positions for these inside the bulwarks, with 'A' shown at the front.

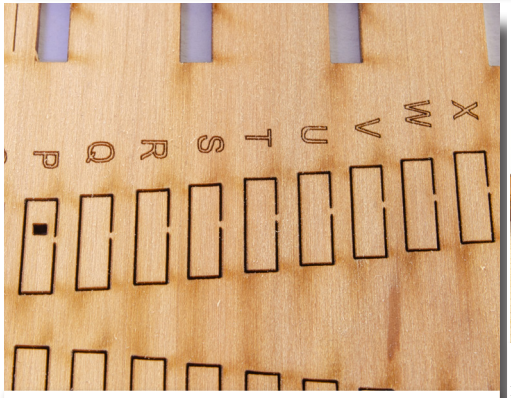
109. Remove one at a time from the parts sheet, and glue them inside the bulwarks, A, B, C, D, etc. This is how those initial ones will look.



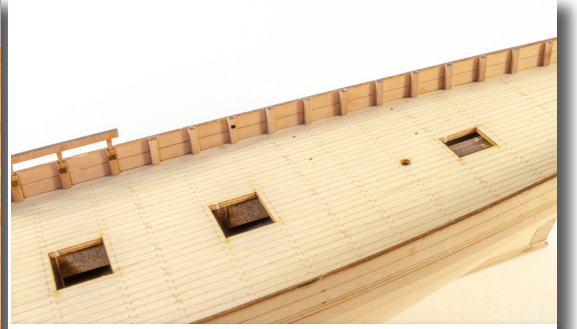
110. Identify this part on your parts sheet. See the arrow which points towards the bow of the boat, where you just installed the previous timberheads.



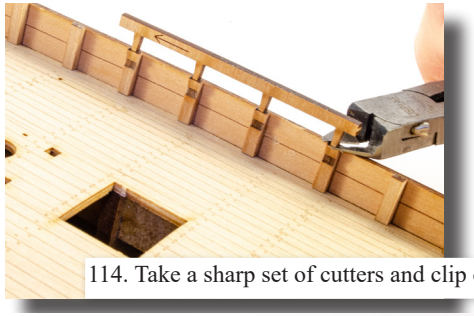
111. Now glue and clamp this part next to the other timberheads, as shown.



112. On the same 1.5mm parts sheet, identify this specific set of timberheads, labelled 'N' thru to 'Y'.

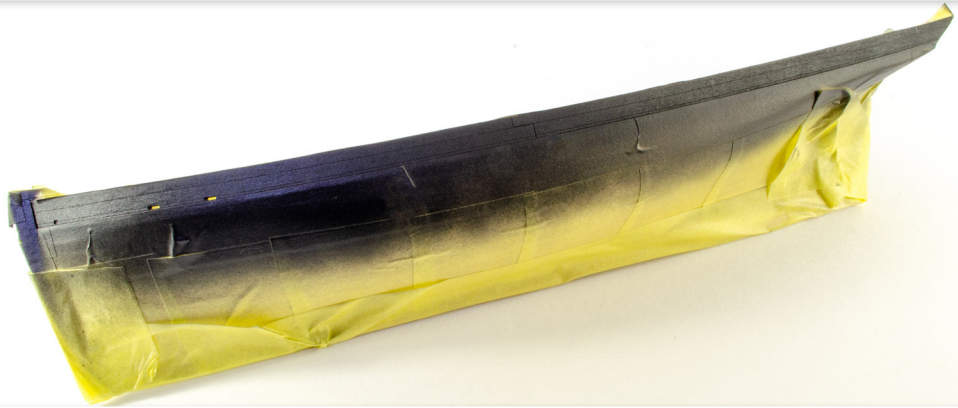


113. Now glue them un sequence after the part you just installed, with 'Y' being the very last one next to the stern.



114. Take a sharp set of cutters and clip off the temporary gate atop these timberheads.

115. Use a sanding stick or a ruler wrapped in sandpaper and draw this along the top of the bulwarks. This will sand the timberheads to the same height as the bulwark. A good indicator that you have sanded properly will be when the char is removed from the top of the bulwarks. Remember to sand the stern fascia top to the same height as the bulwarks.

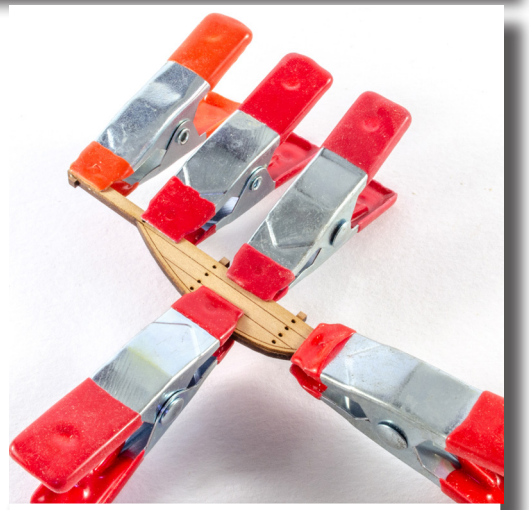


116. The hull is now masked off apart from the upper engraved bulwarks. This area is now sprayed in matt black paint. Remember to mask off the bulwark holes on the inside of the bulwark so that no paint can get into the deck area. When dry, remove your masking tape.

117. From the 0.8mm wood sheet, remove the wales, parts #65 and #66. The top edge of these will be approximately 14.6mm from the top of the bulwark. Draw a pencil mark along the bottom edges of these parts then put them safely away until later. Now mask the hull to just inside your pencil line and then proceed to use wood filler to fill any imperfections in your planking. Keep checking your work, refilling, and sanding until you are happy with it. We use acrylic wood filler, slightly diluted with water and applied with a brush.

118. From the 0.2mm PE sheet, glue parts #PE23, 24 and 25 (both sides) as seen here and on your plan sheet #4. Use brass pins as bolts and cut off the remainder at the opposite side.

119. From the 2mm wood sheet, remove part #35. From the 0.8mm wood sheet, remove parts #51 and #52.



120. Apply your wood glue to the 2mm part and glue the engraved parts to each side, with the engravings facing outwards. Clamp until fully dry.

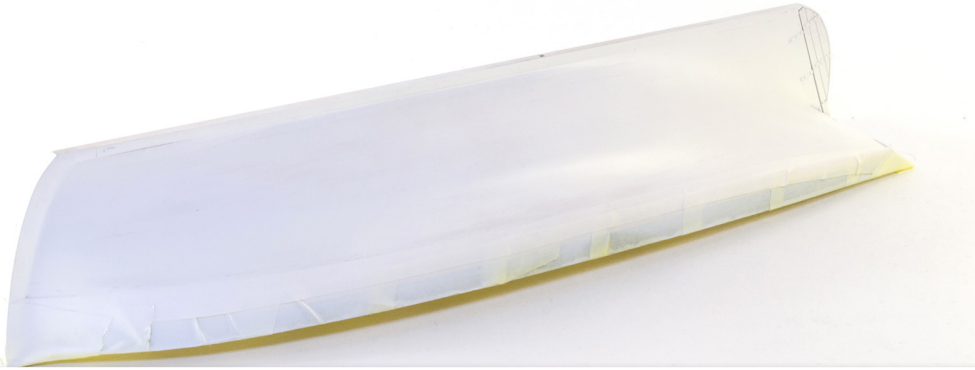
121. Your rudder should now look like this. You can now remove the char from the edges.

122. From the 0.2mm PE sheet, remove both sets of parts #PE-20, 21, and 22. Glue onto both sides of the rudder as shown on plan sheet #4. Use brass pins as bolt heads.

123. Snip off the remaining length of brass pins. You can, if you wish, use shortened pins, and have the domes heads on each side of the rudder.

124. The completed rudder can now be finally glued into position on the hull.

125. Unmask a little of the upper area and apply something like Blue-Tack around where the rudder protrudes above deck. This will stop any paint entering from the next steps.



126. We primed our hull in Tamiya Fine Surface Primer (white) and proceeded to fill and sand any further blemishes which showed up. Once happy with the finish, a final coat of Plastikote Matt White was applied to the hull.

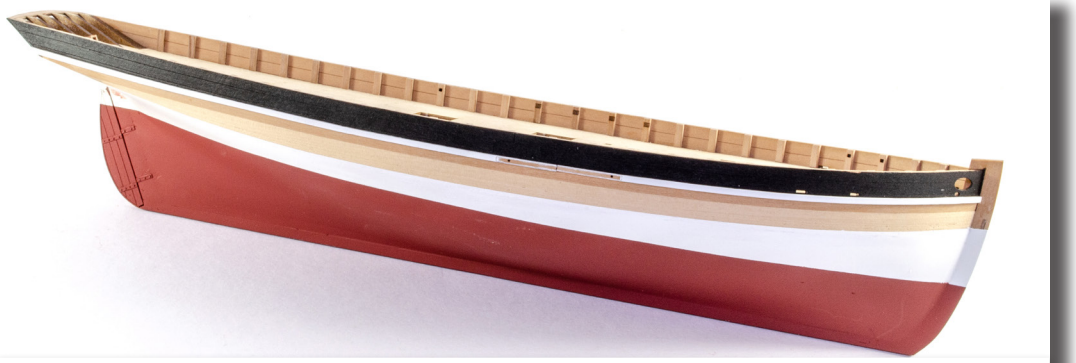
127. Using your plan sheet #4 for reference, add the waterline mark from bow to stern, both sides. If you don't have a waterline tool, we sell them in our online store, and they are inexpensive.

128. Mask the hull along the line you've just drawn. We have flexible tape in our online store, and this is great for running along that line. Make sure the rest of the hull above that line is also masked off. Now apply a red oxide-coloured paint. For this, we always opt to use Plastikote Red Primer as the colour match is perfect.

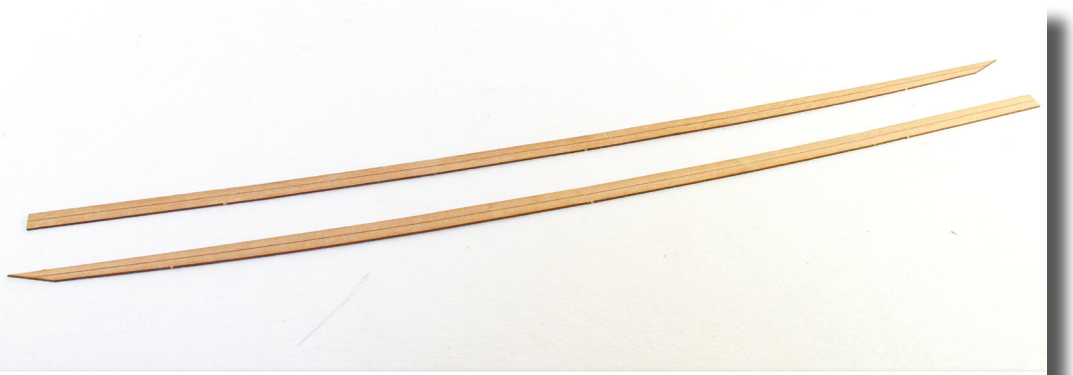
129. When your hull is dry, you can remove all masking tape.

130. From the 0.8mm wood sheet, remove parts #63 and #64. These form the upper rail for the right-hand side of the hull. You can also remove parts #61 and #62 for the left-hand side of the hull. Don't get them mixed up. Note than when you sit them together, there is an engraved area. This needs to be masked so no varnish or paint gets in that area. Varnish the parts and then paint white.

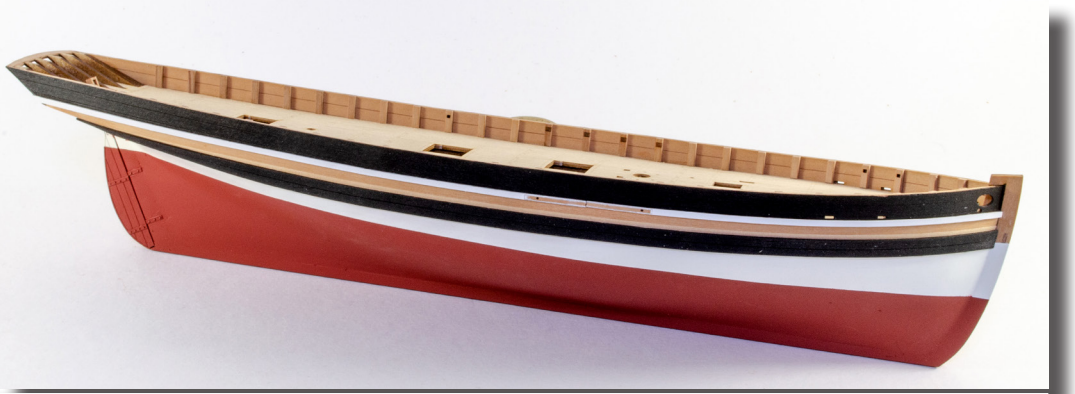
131. The forward section of each rail can now be applied to the null. This sits directly underneath the black bulwark area. (left-hand side shown).



132. The rear section of the rail can now be glued into place. For these rails, we use small spots of CA gel applied to the rails themselves.



133. Now take the wales you previously removed and varnish and sand them before painting black.



134. These can now be glued to the hull. Remember, the top edge of the wales is around 14.6mm down from the top edge of the bulwark. You could make some small pencil marks to help you locate the position of the wales.

135. From the 0.8mm wood sheet, remove parts #67 and #69. The engraved sides must face upwards.

136. Here you see the left-hand side part sat in place atop the bulwarks. The inner edge should be flush with the timberhead faces, creating an overhang on the exterior. Fit the part to both sides of the hull.

137. From the 0.8mm wood sheet, remove parts #68 and #70.

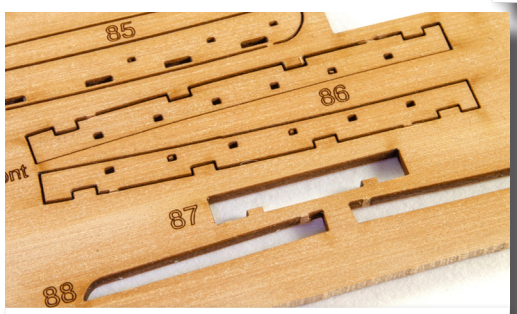
138. Here you see the left-hand side part #68, glued into place as a continuation of the previous section. Fit the part to both sides of the hull.

139. From the 0.8mm wood sheet, remove part #71.

140. Test fit the part so the overhand at the stern is the same as the side rails. You may need to cut back the end of the side rails to achieve this. Glue into place and sand the ends so they flow with the side rails (gunwales).

141. From the 1.5mm wood sheet, remove both parts #88.

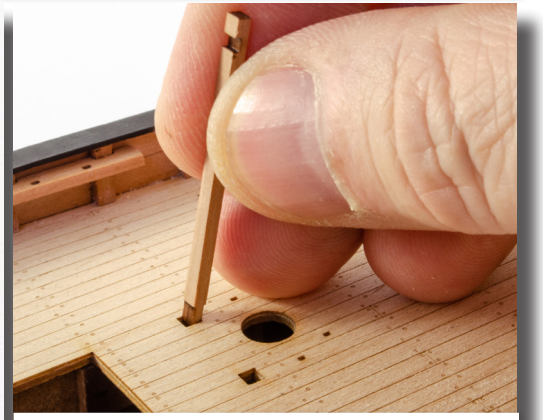
142. Glue into position on the engraved gunwale areas. You will need to bevel the forward edge, so they sit against the prow. You can now paint the gunwales in matt black paint.



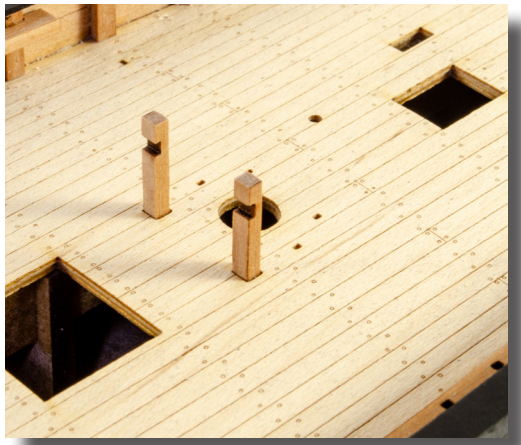
143. On the 1.5mm wood sheet, locate both parts #86. Note now the front end is labelled.

144. Remove one at a time and glue into the engraved recesses on the previously co-joined timberheads, making sure the front of the rail is facing the bow. Do this for both parts on opposite hull sides.

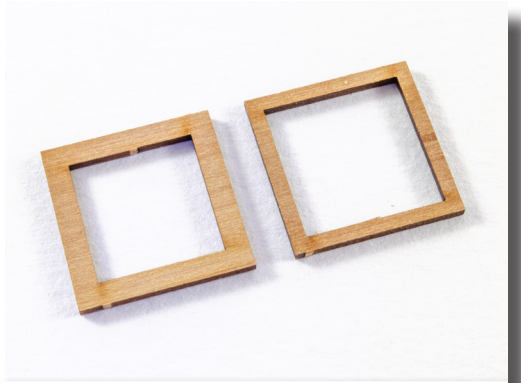
145. From the 1.5mm wood sheet, remove part #87. From the 2mm wood sheet, remove both parts #39.



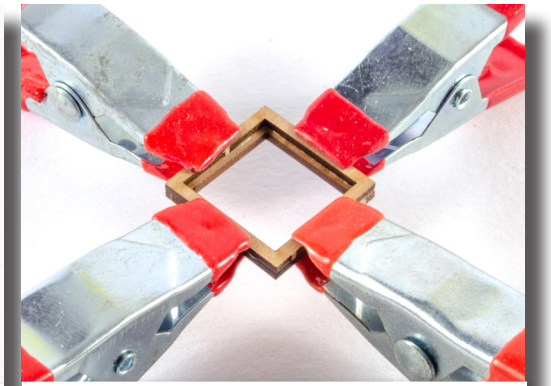
146. Locate and glue both parts #39 into position, with the slot in the upper area, facing aft. NOTE: The bottom of these parts MUST locate in the MDF sub deck. You can clearly see this by looking through the adjacent deck opening.



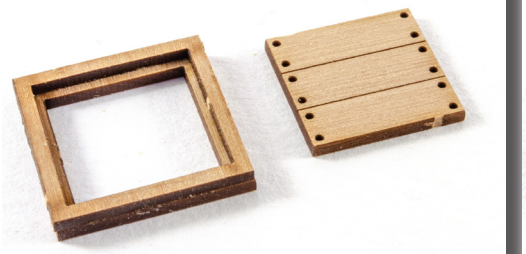
147. Now glue part #87 into the slots on the previous parts.



148. From the 1.5mm sheet, remove parts #89 and #90. There are two sets of these.



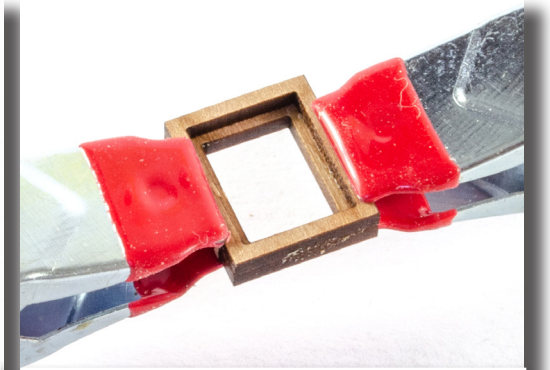
149. Glue part #90 to the top of part #89 and leave to set.



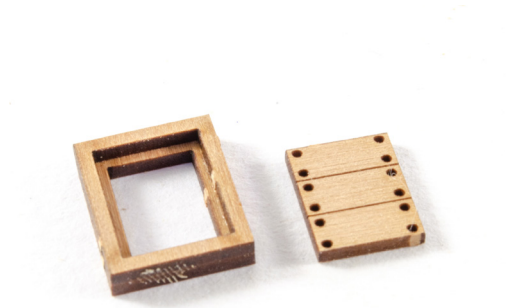
150. From the 1.5mm wood sheet, remove both parts #91.

151. Glue the parts inti position on both frames.

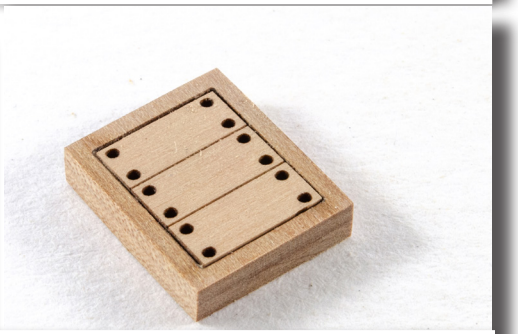
152. From the 1.5mm wood sheet, remove parts #92 and #93.



153. Glue part #93 to the top of part #92 and leave to dry.



154. From the 1.5mm wood sheet, remove part #94.

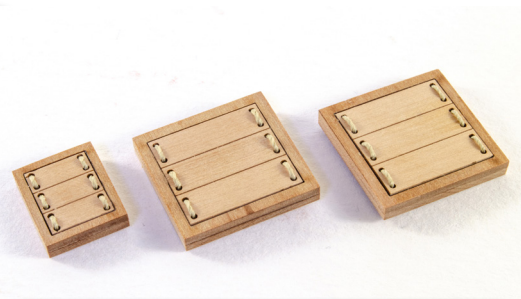


155. Glue into position as shown.

156. This applies to all assemblies you've just made. Use a length of 0.5mm natural thread and tie a knot in one end. Apply some CA to the opposite end and trim to a point. Thread the pointed end through the corner hole, from the underside.

157. Now pull the thread through to the outside and push the pointed end through the adjacent hole. Thread this in and out of all the holes until you reach the last hole where the thread will again be on the underside.

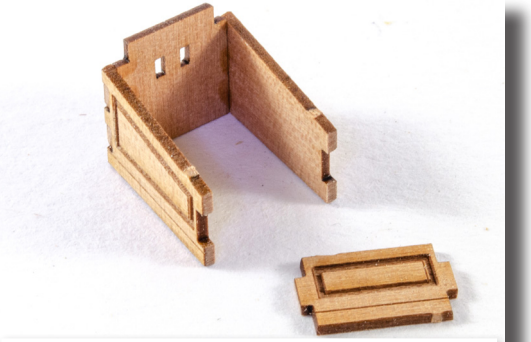
158. Cut short the thread here and use CA to glue it to the underside of the hatch.



159. The fish hatches will now look like this.

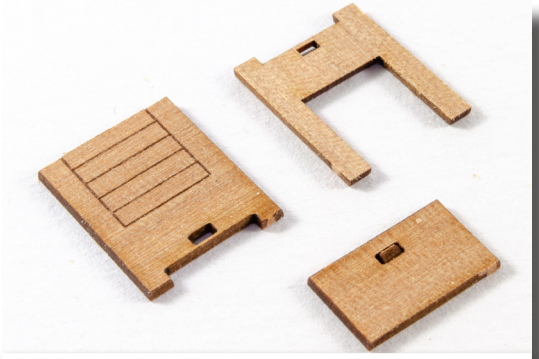
160. Glue the hatches into position as seen here and on your plan sheets.

161. From the 1mm wood sheet, remove parts #72 thru to #75.

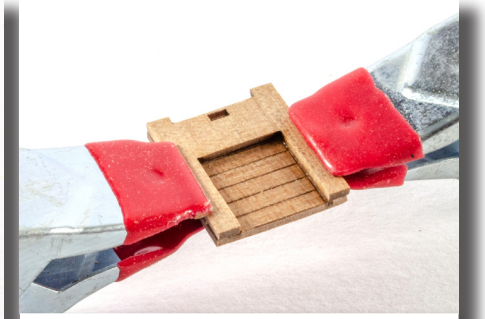


162. Glue the side panels to the forward doors panel, as shown. Leave to dry.

163. Now glue the rear panel into position to complete the housing.



164. From the same wood sheet, remove parts #76 thru to #78.



165. Glue #77 to the top of #76. Use the engravings on #76 to guide the position.

166. Your assembly should now look like this.

167. Glue #78 atop the previous assembly.

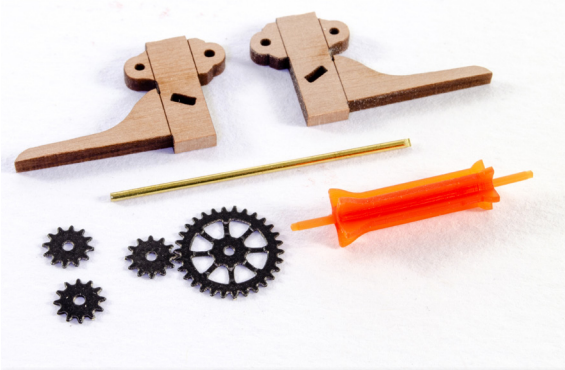
168. You now have two companionway assemblies.

169. Glue the assemblies together as shown. From the same wood sheet, remove three parts #79.

170. Glue into place as shown.

171. The completed companionway can now be glued to the deck, making sure the doors face aft.

172. From the 2mm wood sheet, remove part #38.

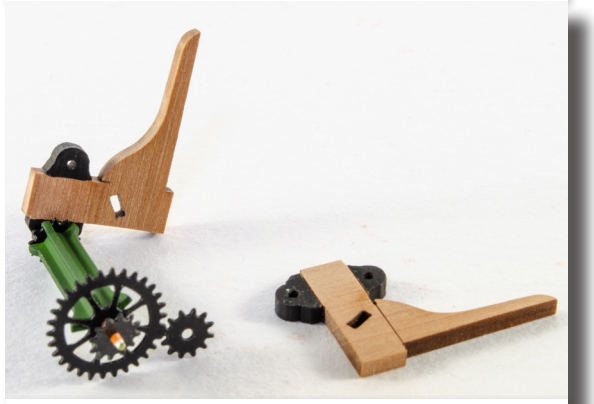


174. From the 2mm wood sheet, remove parts #36 and #37. From the 0.4mm PE sheet, remove both parts #PE-4 and part #PE-3 You will also need the short length of brass rod and the 3D-printed Windlass Drum #F-1.

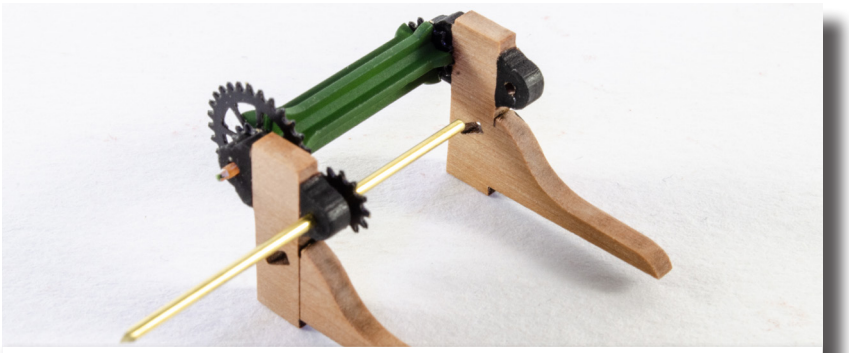
176. Here you can see the smaller PE-4 on the outside of PE-3.

173. Glue into place with the slightly shorter legs facing upwards so the bowsprit hole is nearer the top of the part.

175. Prime and paint the windlass drum. We chose a flat green colour. Paint the PE parts in black. Slide #PE-3 onto one side and then one #PE-4 onto each side too, in that order. Don't use any glue here.

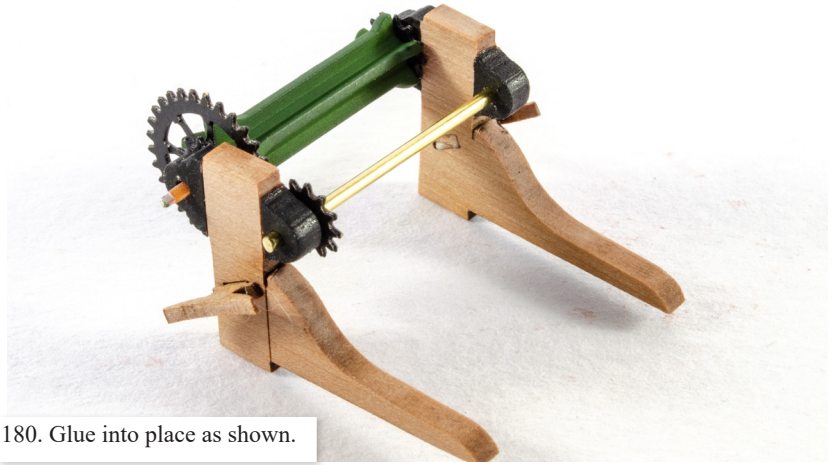


177. On the wooden parts, paint the brackets in black. Now take part #36 and fit (no glue) to the previous assembly.

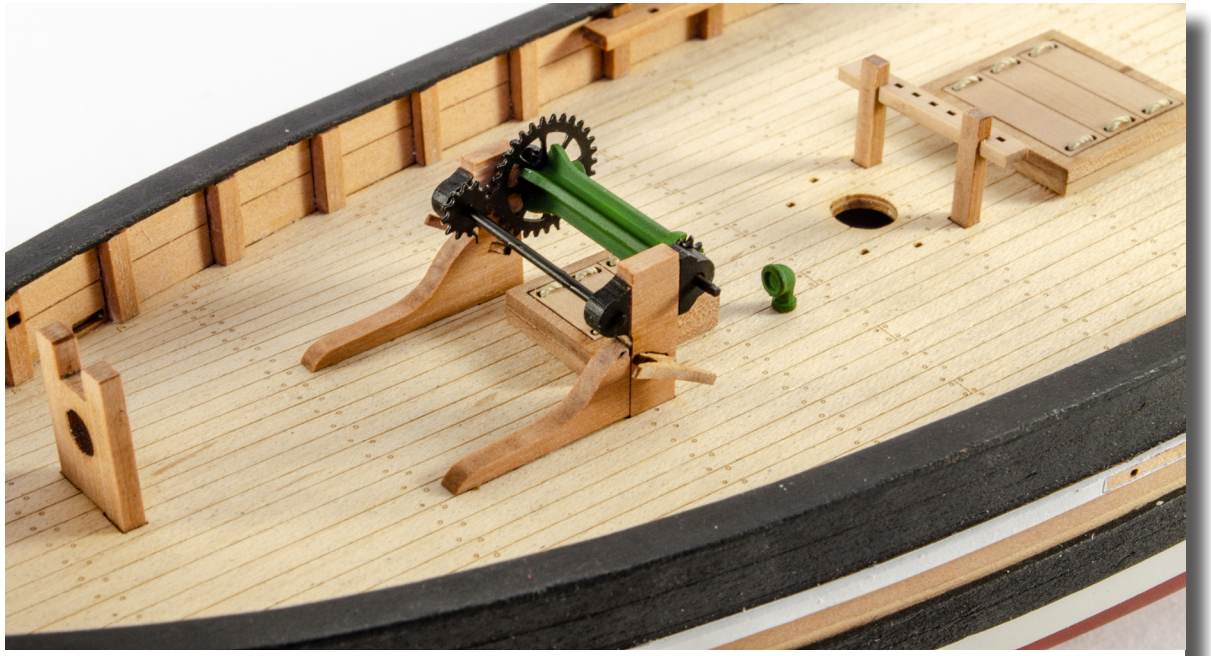


178. Now take wooden part #37 and fit as shown, no glue. Note the engraved sides of these wooden parts, face outwards. Take the brass rod and slide through the bracket as shown, and through #PE-3. Slide the rod all the way through to the bracket on the opposite wood part.

179. Make sure the brass rod protrudes at either side by around 0.5mm. Do NOT glue anything. From the 1mm wood sheet, remove both parts #82.



180. Glue into place as shown.



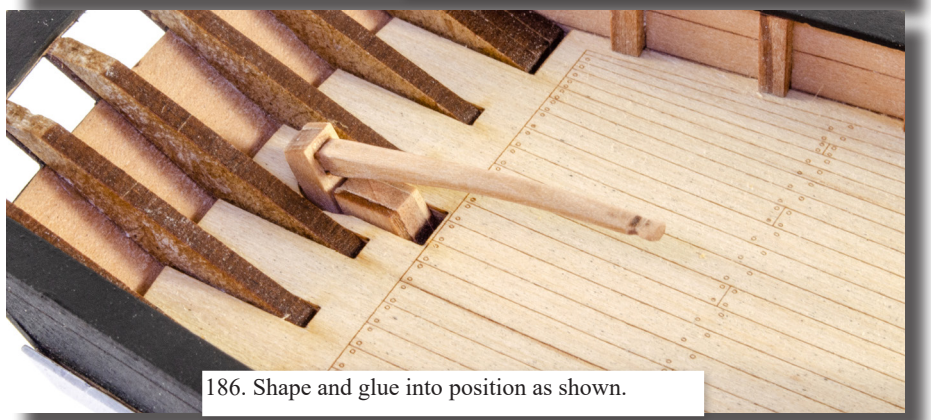
181. Now glue the winch assembly to the deck as shown, noting orientation. Also prime/paint the 3D-printed Chain Pipe #F-25 into place, just behind the winch assembly.

184. From the 1mm wood sheet, remove part #80. Glue into place as shown. You may use the thickest length of dowel to help you get this part central over the deck hole.

182. Take the 40mm length of aluminium tube and cut as shown on plan sheet #3. Glue together with CA gel.

183. From the 0.4mm PE sheet, remove part #5 and paint black. Slide this onto the bottom of the chimney you just made and fit the assembly to the deck. NOTE: You may need to run a 3mm drill through the hole to clear away any MDF protruding into the hole area.

185. From the 2mm wood sheet, remove part #40.

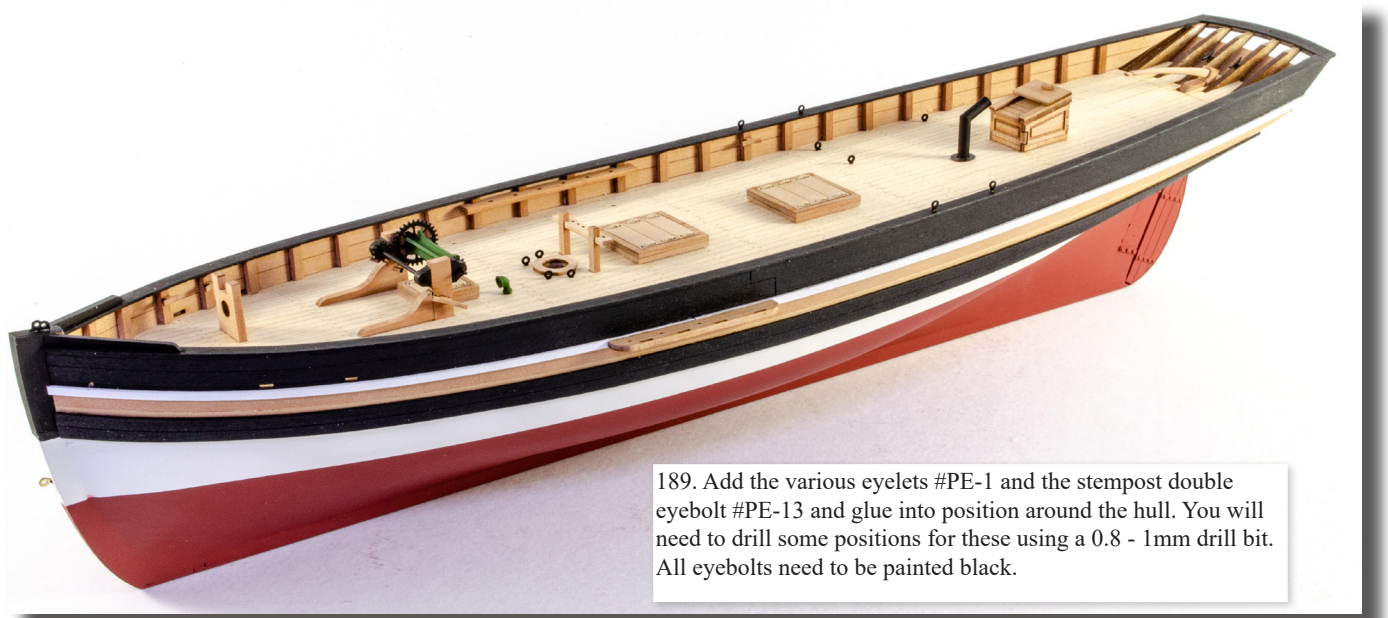


186. Shape and glue into position as shown.

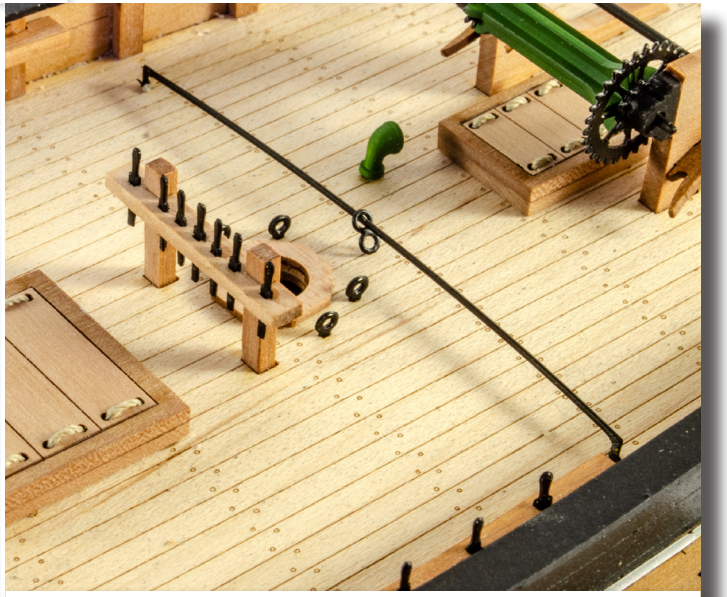
187. From the 1mm wood sheets, remove the cleats #83 and glue into the positions shown on both sides of the hull.

188. From the 0.4mm photo etched sheet, remove the cleats #PE-17 and glue into place on the two innermost stern timbers. Paint the parts black.

190. From the 0.4mm photo etched sheet, remove parts #PE-18 (only one) and #PE-19.



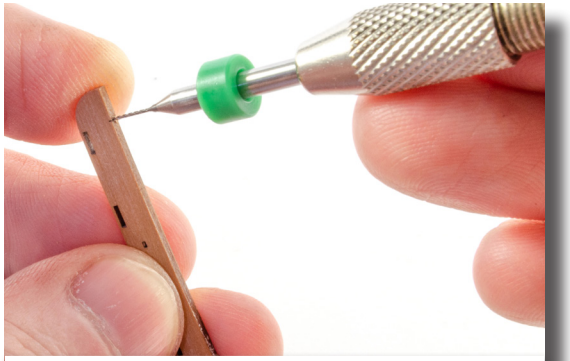
189. Add the various eyelets #PE-1 and the stempost double eyebolt #PE-13 and glue into position around the hull. You will need to drill some positions for these using a 0.8 - 1mm drill bit. All eyebolts need to be painted black.



191. Slide part PE-18 onto PE-19 and glue the assembly into place as shown. From the same PE sheet, remove the belaying pins #PE-7 and glue into place on the three racks.

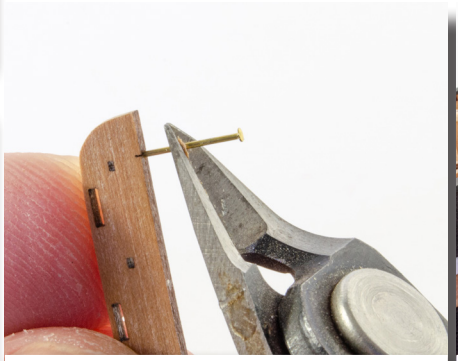
192. Use a small round/half-round file to elongate the bowsprit entry hole.

194. From the 1.5mm wood sheet, remove both parts #85.

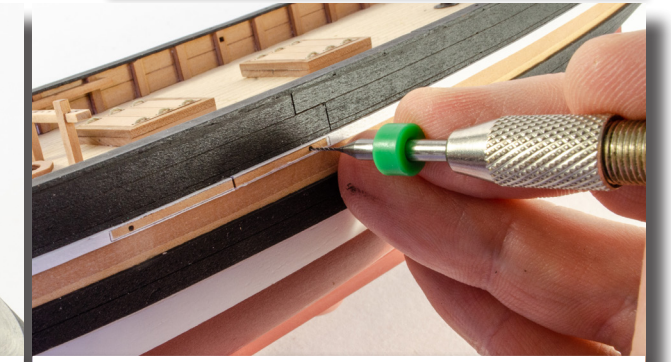


195. Note the tiny laser engraved mark. Use a 0.5mm drill to drill a hole at that point on the middle of the connecting face.

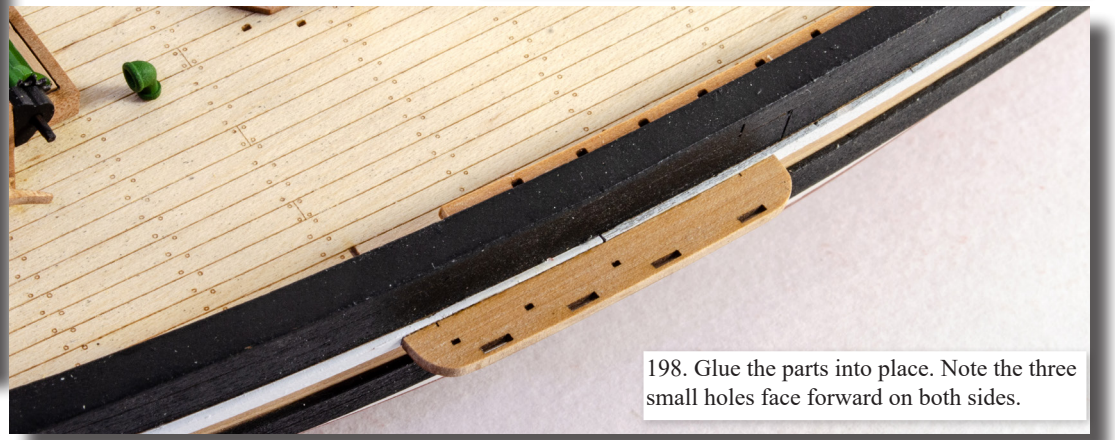
193. When complete, you should be able to insert a length of 4mm dowel through the hole and into the bowsprit support block, with no wobble at the bulwark.



196. Insert a brass pin and cut short so about 2mm are protruding.

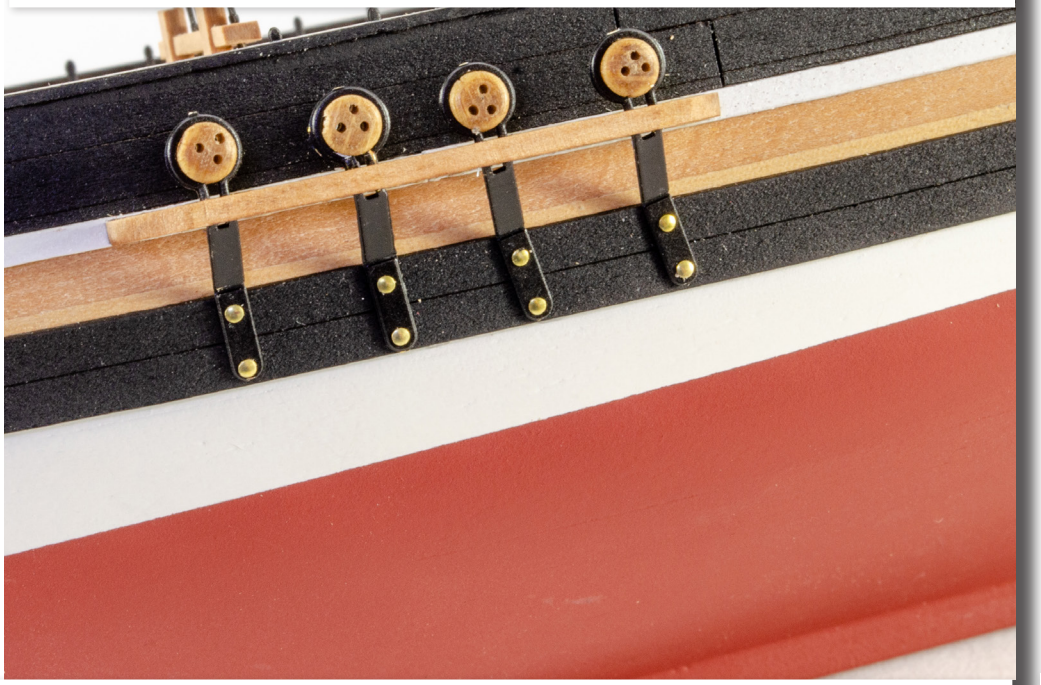


197. Drill the accompanying holes in the outer rails, about 2mm deep, taking into account the thickness of the rail into that calculation.



198. Glue the parts into place. Note the three small holes face forward on both sides.

199. From the 0.4mm PE sheet, remove eight parts of #PE-2. Here you see the sequence for inserting the 3mm deadeyes. Use a tool (tweezers, pliers etc.) to open up the loop a little. Insert the deadeye, and then close up the loop to how it previously looked.

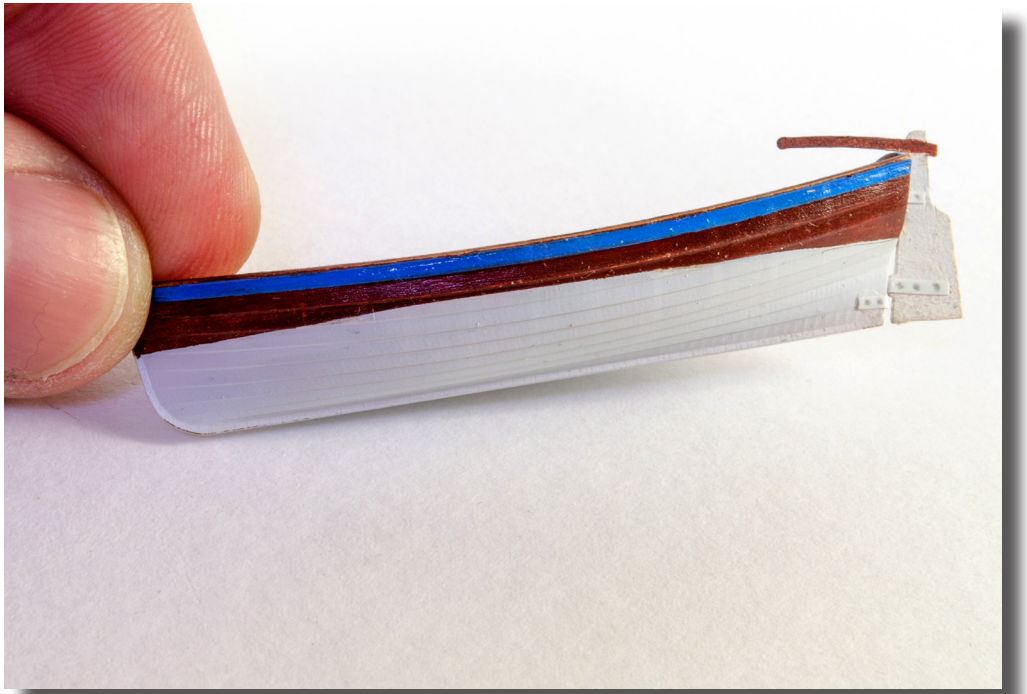


200. Fit the chainplate assemblies to the hull, noting their angles on the plan. These parts will bend slightly along engraved lines and they are then pinned/glued into position on the wales.

201. On the 0.2mm PE sheet, prime and paint all decorative parts in white. Here you see the parts in position.

202. Paint and assemble the small boat in any way you see fit. This was painted using oil paints. You have some wooden parts to accompany the boat. You'll find these grouped together on your wooden parts sheet.

203. The boat is now lashed to the deck via the four eyelets and some 0.25mm natural thread. In these photos you can see the completed deck works.



204. Your Ranger hull should now look like this.

205. Using your plans, build the bowsprit as shown. This is nice and easy as there's to taper on this part.

206. Slot the bowsprit into position so the inner end is only just though the support block. Note the correct orientation of PE and block at the outer end.

207. MAIN MAST: Using plan sheet 5 as your reference, cut the lower section of the main mast from 6mm dowel. This is 250mm long. You now need to evenly reduce one end of this to 4mm for a length of 39mm. Use a knife and sandpaper to achieve this.

208. From the 1.5mm wood sheet, remove one part #95 and glue into position as seen here so the part sits snug into the shoulder where you reduced the dowel diameter.

209. From the 0.4mm PE sheet, remove part #PE-15 and paint black. Glue into place as seen here. It's a good idea to use a length of 3mm dowel to make sure the opposite hole aligns with the one in the wooden block.

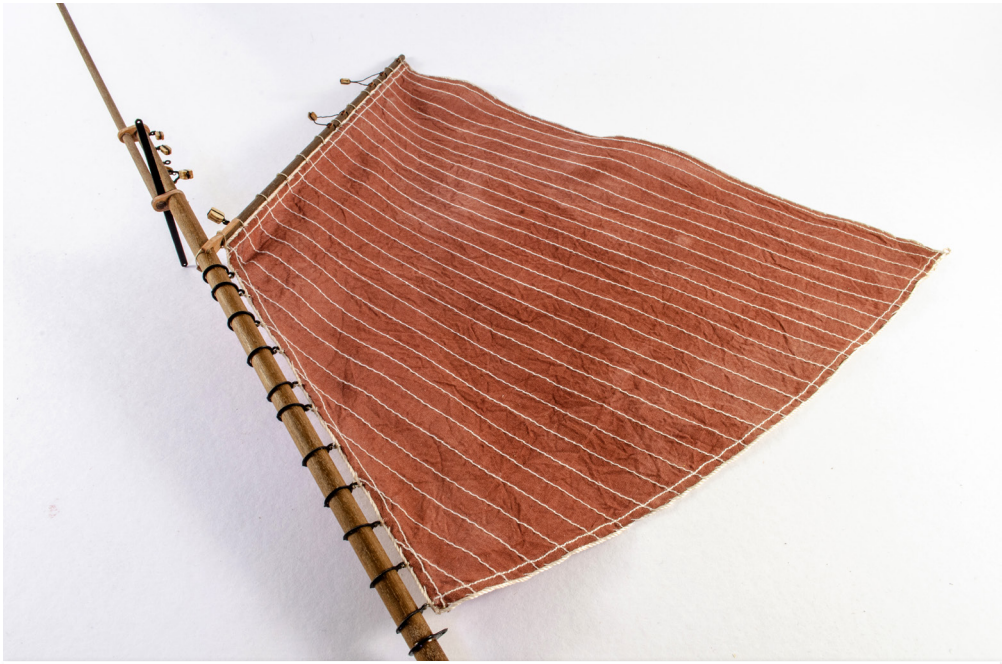
210. Make the upper section of the mast, complete with the taper towards the top, and then fit this to the assembly you've made, using the other part #95 at the very top of the lower mast section. Make sure everything is properly aligned. This is important.

211. Fit the PE and rigging blocks to the mast, as per your plan sheet.

212. At this stage, your mast will look like this. Don't add any further PE to it unless you aren't fitting the sails. If you aren't using sails, then you can slip the main sail rings #PE-16 into place (no glue) followed by #PE-9 which needs to be glued 52mm from base of mast.

213. Now make the remaining wooden assemblies as shown here. Refer to your plan sheets for these. They are very easy to make.

214. If you are using sails, then you need to stitch the main gaff to the largest sail, as shown and also stitch the main sail rings (PE-16) to the sail. Add the other rig lines



215. The sail can now be fitted to the mast and #PE-9 glued to the mast, 52mm from the bottom.

216. The main topsail yard can now be stitched to this sail, as shown.

217. The main topsail yard can now be lashed to the top of the mast as shown here and on plans.

218. Glue the mast to the hull, making sure all orientation is correct. Leave to dry.

219. We now need to add the shroud lines, as per plan. These are from 0.75mm black thread. These are added in pairs, on alternate sides, each time.

220. 3mm deadeyes are now added to the shroud lines and then 0.1mm natural thread is used to rig the lanyards.

221. This model is a good introduction to adding ratlines. These are the ropes that are used as steps for the crew to climb to the upper mast. These are from 0.1mm black line. To get them evenly spaced, a card template is added behind the shroud lines, with lines drawn across it which on our prototype were 7.5mm apart. Don't use any glue at this stage when adding these. Follow the plans with how these need to be tied. NOTE: It's very important that you don't create any tension on the shroud lines as this can lead to them being distorted and out of shape.

222. Once the ratlines have been added, brush some dilute PVA over the knots. Leave to dry and then use side cutters to remove the excess thread.

223. Your completed shrouds will look like this.

224. Now add the two foreword stays.

225. Look under the bowsprit and you'll see I've added the line from the prow, through the rigging tackle and through to the cleat inside the hull (right side only). Check your plan sheet #8 and add this. It's very easy. Also notice the two lines from the topmast, running down through the mast spreader bar and terminating on the channels via thimble blocks. Also, on plan sheet #8.

226. Now add and rig the back stays.

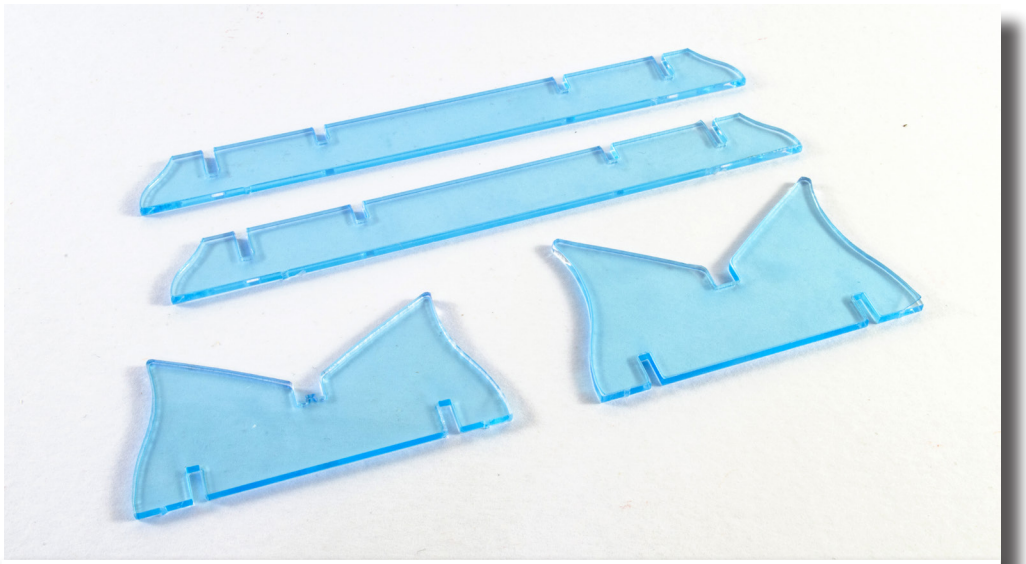
227. You can now rig the main and top sails using plan sheets #9 & #10. Rig the main sail first and then the top sail can be tweaked into position as shown in the photos.

228. This photo gives you a good idea about how the main sail is rigged, with position of the sail on the mast.

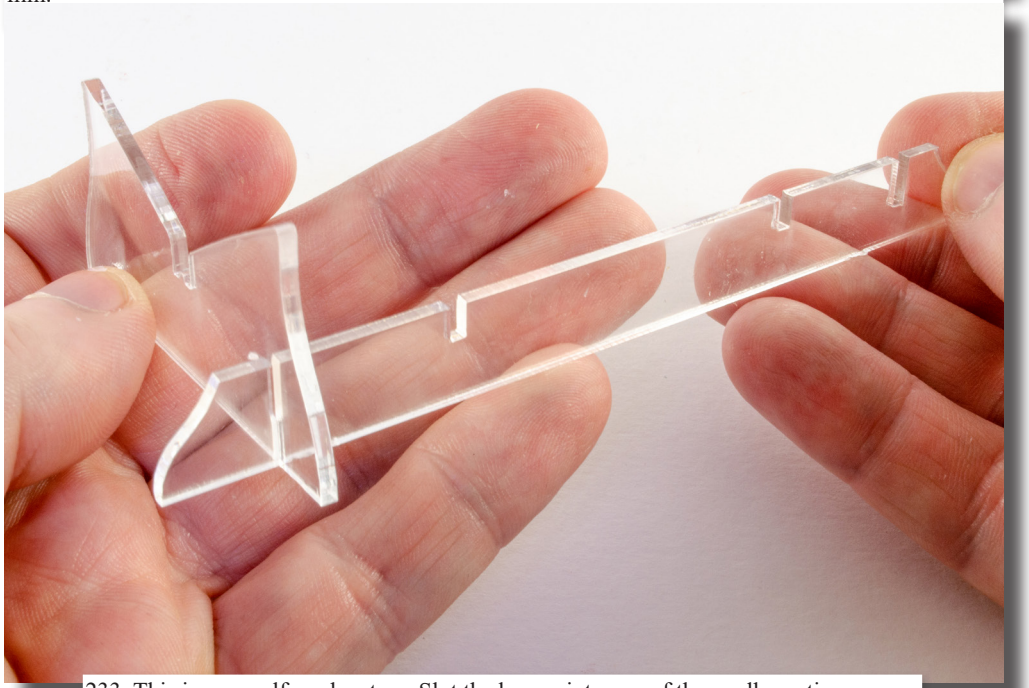
229. And here you see the position of the top sail in relation to the main sail.

230. Fit the lower jib sail as shown. Start by threading it to the fore stay and then rig the lines and blocks.

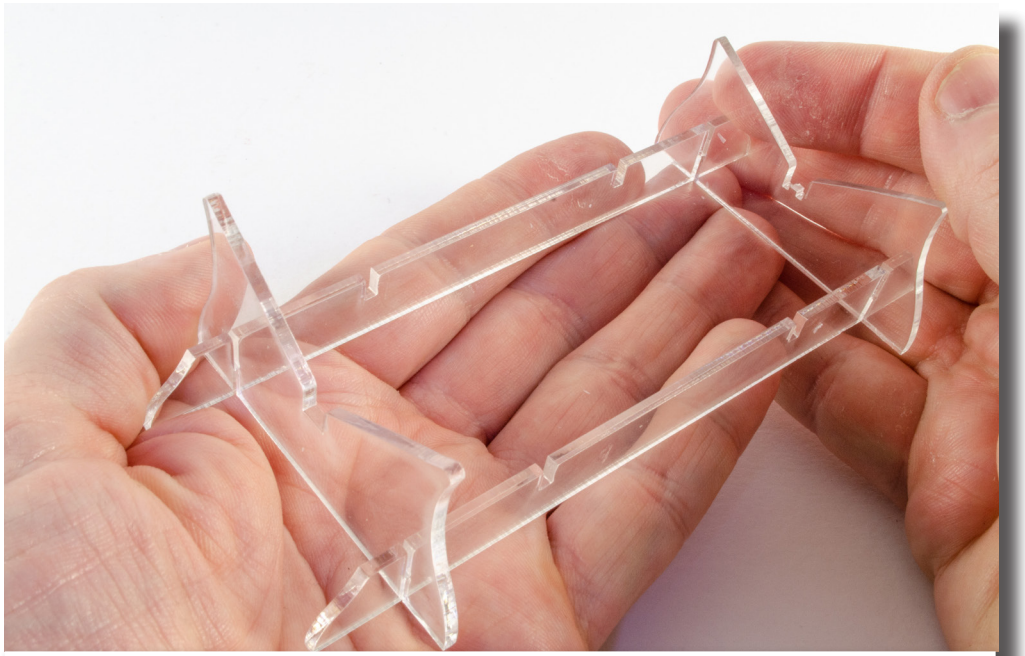
231. The upper jib can now be fitted. This is very easy. Use the plan and photo as an approximation of the sail position.



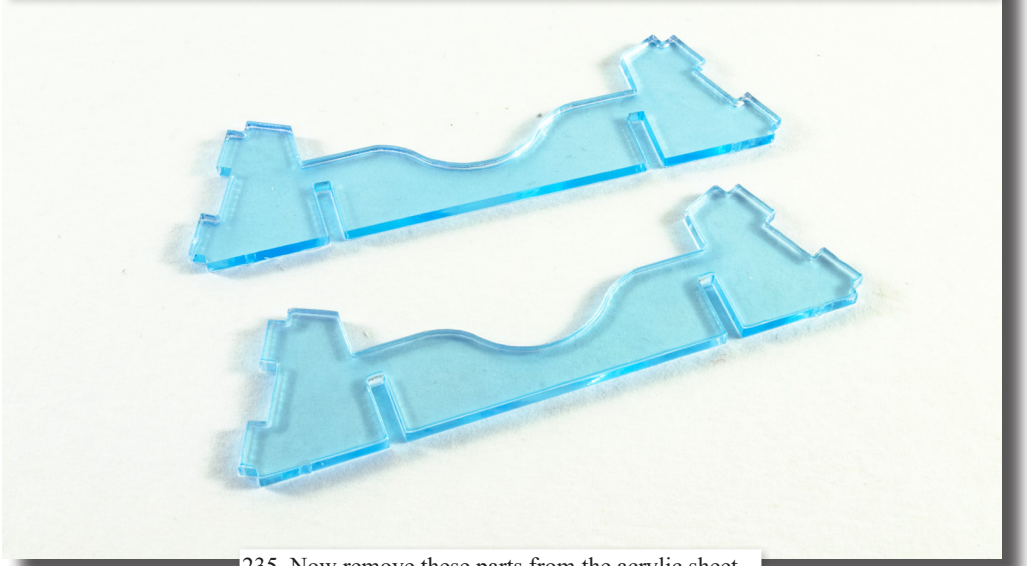
232. You'll now need the acrylic cradle sheet. These parts have a peelable blue film on one side. We've left it in position in some photos, for clarity. Cut these parts from the acrylic sheet, then peel off the film.



233. This is very self-explanatory. Slot the beams into one of the cradle sections…



234. …then slot the other cradle part across the slots at the other end of the beam. Remember that the rearmost cradle part has a tab in the keel slot. This helps you locate the model precisely into the cradle due to the hole in the keel underside.



235. Now remove these parts from the acrylic sheet.

236. Slot these across the beams, like this.

237. Remove the name pl
acrylic sheet.

238. These fit to the cradle like this.

239. Your Ranger is now complete! Congratulations on your journey and safely making it ashore. We look forward to another journey with you on your next Vanguard Models kit.

Ranger - Barking Fish Carrier – 1:64th scale

PARTS LIST

Pt. No	Description	Material	QTY
	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	1
10	Bulkhead	3mm MDF	1
11	Stern Counter Frame	3mm MDF	1
12	Stern Pattern (Upper)	3mm MDF	2
13	Stern Pattern (Middle)	3mm MDF	2
14	Stern Pattern (Lower)	3mm MDF	2
	2mm MDF		
15	Stern Planking Edge Pattern (Left)	2mm MDF	1
16	Stern Planking Edge Pattern (Right)	2mm MDF	1
17	Bow Planking Edge Pattern (Left)	2mm MDF	1
18	Bow Planking Edge Pattern (Right)	2mm MDF	1
19	Locating Pegs for Bow and Stern Patterns	2mm MDF	6
20	Bow Planking Pattern	2mm MDF	2
21	Lower Deck Pattern	2mm MDF	1
22	Fish Well Side	2mm MDF	2
23	Fish Well End (Rear)	2mm MDF	1
24	Fish Well End (Front)	2mm MDF	1
25	Keel	2mm MDF	1
26	Longitudinal Hull Brace Pattern	2mm MDF	2
27	Stern Frame (Inner)	2mm MDF	2
28	Stern Frame (Middle)	2mm MDF	2
29	Stern Frame (Outer)	2mm MDF	2
30	Stern Frame Outer Filling Pattern	2mm MDF	2
31	Stern Frame Outer-most Filling Pattern	2mm MDF	2
33	Building Cradle Cross Piece	2mm MDF	2
34	Building Cradle (Front)	2mm MDF	1
35	Building Cradle (Rear)	2mm MDF	1
	0.8mm Birch Plywood		
36	Sub Deck	0.8mm Birch Plywood	1
	0.8mm Maple Veneer		
MD-1	Deck Pattern	0.8mm Maple Veneer	1
MD-2	Stern Counter Inner Pattern	0.8mm Maple Veneer	1
	2mm Wood		
37	Stem Pattern	2mm Wood	1
38	Stern Post	2mm Wood	1
39	Keel Pattern	2mm Wood	1
40	Rudder	2mm Wood	1
41	Tiller Arm	2mm Wood	1
42	Belaying Bitt Post	2mm Wood	2
43	Fore Hatch Coaming (Lower)	2mm Wood	1
44	Bowsprit Post	2mm Wood	1
45	Bowsprit Post Knee	2mm Wood	1
58	Main Mast Cap	2mm Wood	2
	1.5mm Wood		
46	Windlass Side Post (Right)	1.5mm Wood	1
47	Windlass Side Post (Left)	1.5mm Wood	1
48	Windlass Front Pattern	1.5mm Wood	2
49	Belaying Rail	1.5mm Wood	1
50	Fish Hatch Coaming (Lower)	1.5mm Wood	1
51	Fish Hatch Coaming (Upper)	1.5mm Wood	1
52	Fish Hatch Gratings	1.5mm Wood	1
53	Main Sail Gaff (Upper) Jaws	1.5mm Wood	1
54	Main Sail Boom Jaws	1.5mm Wood	1
55	Main Channel	1.5mm Wood	2
56	Inner Bulwark Cavil/Belaying Rail	1.5mm Wood	2
57	Stern Cavil Rail	1.5mm Wood	1
	1mm Wood		
59	Mast and Boom Cleat	1mm Wood	40
60	Companionway Side (Right)	1mm Wood	1
61	Companionway Side (Left)	1mm Wood	1
62	Companionway Front	1mm Wood	1
63	Companionway Rear	1mm Wood	1
64	Companionway Roof (Lower)	1mm Wood	1
65	Companionway Roof (Upper)	1mm Wood	1
66	Companionway Sliding Top Hatch	1mm Wood	1
67	Companionway & Fore Hatch Handle	1mm Wood	3
68	Main Mast Base	1mm Wood	1
69	Main Boom Support	1mm Wood	1
70	Windlass Post Cleat	1mm Wood	3
71	Fore Hatch Top Coaming	1mm Wood	1
72	Fore Hatch	1mm Wood	1

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73	Fish/Well Hatch Coaming (Front)	1mm Wood	1
74	Fish/Well Hatch (Front)	1mm Wood	1
75	Fish/Well Hatch Coaming (Rear)	1mm Wood	1
76	Fish/Well Hatch (Rear)	1mm Wood	1
77	Capstan Lower Pattern	1mm Wood	1
78	Capstan Whelp	1mm Wood	8
79	Capstan Upper Pattern	1mm Wood	1
80	Capstan Top Pattern	1mm Wood	1
81	Capstan Uppermost Pattern	1mm Wood	1

0.8mm Wood

82	Stem outer Pattern	0.8mm Wood	2
83	Keel outer Pattern	0.8mm Wood	2
84	Rudder Post Outer Pattern (Right)	0.8mm Wood	1
85	Rudder Post Outer Pattern (Left)	0.8mm Wood	1
86	Rudder Outer Pattern (Right)	0.8mm Wood	1
87	Rudder Outer Pattern (Left)	0.8mm Wood	1
88	Keel Slot Location peg	0.8mm Wood	10
89	Stern Lower Counter	0.8mm Wood	1
90	Stern Board	0.8mm Wood	1
91	Stern Board Rails Pattern	0.8mm Wood	1
92	Inner Bulwark Pattern (Left)	0.8mm Wood	1
93	Inner Bulwark Pattern (Right)	0.8mm Wood	1
94	Inner Bulwark Support Post Pattern	0.8mm Wood	2
95	Bowsprit Post Knee Base	0.8mm Wood	1
96R	Main Gunwale (Right)	0.8mm Wood	1
96L	Main Gunwale (left)	0.8mm Wood	1
97	Stern Gunwale	0.8mm Wood	1
98	Upper Rail (Left)	0.8mm Wood	1
99	Upper Rail (Right)	0.8mm Wood	1
100	Main Wale	0.8mm Wood	2
101	Outer Bulwark Pattern (Left)	0.8mm Wood	1
102	Outer Bulwark Pattern (Right)	0.8mm Wood	1
C-A	14 Foot Cutter Floor	0.8mm Wood	1
C-B	14 Foot Cutter Bow Platform	0.8mm Wood	1
C-C	14 Foot Cutter Rear Seat/Stern Sheet	0.8mm Wood	1
C-D	14 Foot Cutter Middle Seat	0.8mm Wood	1
C-E	14 Foot Cutter Front Seat	0.8mm Wood	1
C-F	14 Foot Cutter Rudder	0.8mm Wood	1
C-G	14 Foot Cutter Middle & Front Seat Knee	0.8mm Wood	4
C-H	14 Foot Cutter Oar	0.8mm Wood	4

2mm Clear Acetate

AS1	Fore Cradle	2mm Clear Acetate	1
AS2	Aft Cradle	2mm Clear Acetate	1
AS3	Cradle Spacer	2mm Clear Acetate	2
AS4	Name Plate Cross Support	2mm Clear Acetate	2
AS5	Nameplate	2mm Clear Acetate	2

0.4mm Photo Etched Brass

PE-1	Eyebolt	0.4mm Photo Etch	25
PE-2	3mm Deadeye Strop & Chainplate	0.4mm Photo Etch	10
PE-3	Mast Stay Rigging Strap & Eyebolt	0.4mm Photo Etch	6
PE-4	Rigging Hook	0.4mm Photo Etch	15
PE-5	Main Sail Ring	0.4mm Photo Etch	10
PE-6	Iron Cleat	0.4mm Photo Etch	12
PE-7	Belaying Pin	0.4mm Photo Etch	27
PE-8	Iron Horse	0.4mm Photo Etch	1
PE-9	Iron Horse Double Ring	0.4mm Photo Etch	2
PE-10	Windlass Pawl	0.4mm Photo Etch	1
PE-11	Fore Hatch Hinge	0.4mm Photo Etch	4
PE-12	Rudder Strap (Rudder - Lower)	0.4mm Photo Etch	2
PE-13	Rudder Strap (Rudder - Middle)	0.4mm Photo Etch	2
PE-14	Rudder Strap (Rudder - Upper)	0.4mm Photo Etch	2
PE-15	Rudder Strap (Rudder Post – Right Lower)	0.4mm Photo Etch	1
PE-16	Rudder Strap (Rudder Post – Left Lower)	0.4mm Photo Etch	1
PE-17	Rudder Strap (Rudder Post – Right Middle)	0.4mm Photo Etch	1
PE-18	Rudder Strap (Rudder Post – Left Middle)	0.4mm Photo Etch	1
PE-19	Rudder Strap (Rudder Post – Right Upper)	0.4mm Photo Etch	1
PE-20	Rudder Strap (Rudder Post – Left Upper)	0.4mm Photo Etch	1
PE-21	Stern Scrollwork	0.4mm Photo Etch	1

Fittings & Materials

F-1	Windlass Drum	3-d Print	1
F-2	2.5mm Thimble/Sheave	Wood	8
F-3	3mm Deadeye	Wood	14
F-4	3mm Single Block	Wood	20
F-5	5mm Single block	Wood	4
F-6	4mm Double block	Wood	10
F-7	0.1mm Diameter natural thread		20m
F-8	0.25mm Diameter natural thread		20m
F-9	0.5mm Diameter natural thread		10m
F-10	0.1mm Diameter black thread		20m
F-11	0.25mm Diameter black thread		10m
F-12	0.5mm Diameter black thread		5m
F-13	0.7mm Diameter black thread		5m
F-14	5mm Dowel x 250mm long	Wood	1
F-15	4mm Dowel x 200mm Long	Wood	1
F-16	3mm Dowel x 300mm Long	Wood	2
F-17	2mm Dowel x 100mm Long	Wood	1
F-18	1 x 5 x 340mm Long Limewood	Wood	26
F-19	0.8 x 4 x 340 mm Long Second planking	Wood	34
F-20	Fine Brass Pins	Metal	200
F-21	Resin Barrel	3-d Print	2
F-22	Small Anchor	3-d Print	1
F-23	Sail Set (Optional)	Cloth	4

Laser Cut Sheet Quantities

3mm MDF Laser Cut Sheet	1
2mm MDF Laser Cut Sheet	2
2mm Wood Laser Cut Sheet	1
2mm Clear Acetate Laser Cut Sheet	1
1.5mm Wood Laser Cut Sheet	1
1mm Wood Laser Cut Sheet	1
0.8mm Wood Laser Cut Sheet	4
0.6mm Wood Laser Cut Sheet	1
0.8mm Maple Veneer Laser Etched Deck	1
0.8mm Maple Veneer Stern Inner Counter Pattern	1
0.8mm Birch Plywood Sub Deck	1
0.4mm Photo Etched Brass Sheet	1


RANGER

VANGUARD MODELS

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Ranger was designed and developed in the UK by Chris Watton
Finished prototype model with sails made and photographed (plus text) by James Hatch
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