AUSTRALIAN COLONIAL SERIES WOODEN MODEL KIT

HM CUTTER MERMAID 1817

SCALE 1:48







Modellers Shipyard

www.modellersshipyard.com

LENGTH: 590mm HEIGHT: 450mm

ITEM CODE: KTMS1001



BUILDING INSTRUCTIONS

Version 6.0

1.0 Introduction

Modeller's Shipyard is proud to present another wooden model ship in our Australian colonial vessel series. We are the only manufacturer of wooden model ships in Australia.

Our model of the HM Cutter *Mermaid* is based on a typical English cutter of the late eighteenth, early nineteenth century. Additional information was gathered from *"King of the Australian Coast: The Voyages of Phillip Parker King in the Mermaid and Bathurst"* by Marsden Hordern, *"The Mermaid Tree"* by Robert Tiley, "*Rigging Period Fore–and-Aft Craft"* by Lennarth Petersson and Anatomy of the Ship "*Naval Cutter Alert 1777*" by Peter Goodwin.

Our kit of the HM Cutter *Mermaid* is double planked on bulkhead construction with laser cut plywood. The kit comes complete with all timber, rigging cord and fittings. All parts and fittings are of the highest quality.

2.0 Historical Notes

The HM Cutter *Mermaid* was very small, being only 56ft (17m) from stem to stern, with a beam of 18ft 6inches (5.6m) and a draft of 9ft (2.7m). Weighing 84 tons and having been built of teak in Calcutta, she was less than a year old when commissioned on 16 October 1817. For the next 3 years Lieutenant Phillip Parker King, RN, used her for her designated task of "Exploring and Surveying the Coast of Australia". *Mermaid* survived three voyages of discovery under King's command but it was the third voyage involving a complete circumnavigation of the Australian mainland which draws closest scrutiny.

On 8 May 1819 *Mermaid* sailed north, for the Torres Strait, conducting the first reliable survey of the Great Barrier Reef Inner Route, opening it to commercial traffic, then due west for Arnhem Land, sighting the Wessel Islands in July 1819. From then onwards King ran running surveys along the entire coastline until, on reaching Prince Frederic's Harbour with *Mermaid* leaking badly, he knew this survey was over. Inspection required her to be inspected beneath her copper plating clear of the water, or careened. Therefore it was a gently shelving beach, at the location King named Careening Bay, the hull was patched up for 3 weeks until 9 October. During this time King carved *"HMC Mermaid 1820"* on the single Boab tree at the rear of the bay. This example of historic graffiti remains to this day. *Mermaid* sailed and entered the calm waters of Sydney Cove on 9 December 1820, some 25 weeks and 3 days since sailing, having circumnavigated the continent. Unfortunately, after hard years in Government service *Mermaid's* fate was sealed when, ironically, she ran aground in the very route she had opened to shipping off the present site of Cairns, in 1829, and was lost. In January 2009 the wreck of the *Mermaid* was found by a team of marine archaeologists from the Australian National Maritime Museum. The site of the wreck has now been declared a maritime heritage site.

Lieutenant Phillip Parker King, RN, one of Australia's foremost hydrographers commanded the *Mermaid* from 1817 to 1820. He was born on Norfolk Island 13 December 1791, his father being Phillip Gidley King a future governor of New South Wales. King entered the Royal Navy at age 15 and served continuously at sea for eight years, including operational service in the Napoleonic War. He served under officers with notable survey credentials such as Admirals Otway and Pellew, and was acquainted with Matthew Flinders who encouraged him in his career choice.

Phillip Parker King is perhaps one of Australia's greatest yet largely unsung early maritime surveyors. He charted most of the north-west coast of Australia from the eastern tip of Arnhem Land all the way to Cape Leeuwin and King George Sound on the southern shore of West Australia. He surveyed Macquarie Harbour in Van Diemen's Land and the treacherous waters inside the Great Barrier Reef, filling in the work of his famous predecessors. King may have been overshadowed by Cook and Flinders but his legacy has been enduring—more than a century later his charts, still in use, have guided countless ships through dangerous waters to safety. In 1855 he was promoted to the rank of Rear Admiral of the Blue, the first Australian born officer to achieve Flag rank. King died 25 February 1856 and is buried in the grounds of the Anglican Church at St Marys, western Sydney, NSW, Australia.

Sources: 1. Article by LCDR Mike Pounder for Navy Annual 2006
2. "King of the Australian Coast" by Marsden Hordern

3.0 General Instructions

These instructions and kit are designed to make the construction of the model as trouble free as possible. Everyone who completes their model in accordance with these instructions and using the materials supplied will have good cause for pride and satisfaction in their achievement.

1. It is **essential** the modeller study these instructions and associated photos and drawings thoroughly before commencing construction. While reading these instructions, familiarise yourself with the contents of the kit.

2. Parts are numbered in the approximate order of assembly—note there are some minor variations in this numerical order. Parts are identified as, for example P25 - means Part No 25.

3. Few, if any, parts can be simply glued in place without some preparation. Always dry fit parts and if necessary reshape the parts before final gluing.

4. Don't hurry. Take your time. If you are uncertain of anything take the time to study the instructions, the diagrams and photos and your kit parts. Most problems will be overcome with a little time spent pondering the issue at hand.

5. Check the contents of the kit against the Parts List. Note that some parts need to be made by the modeller from the stock of timber supplied in the kit.

6. The construction of a wooden model ship can be divided into the following steps.
   - Hull Construction
   - Deck Furniture
   - Masts & Yards
   - Rigging

These written building instructions are to be followed to build your model.

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4.0 **Parts List** (Modeller's Shipyard reserves the right to make changes to the instructions, components &/or kit contents at any time without notice)

Part No	Description	Quantity	Material
1-9	Bulkheads	9	Board 1
10	Transom	1	Board 1
11	False Keel	1	Board 1
12	Bow Filler Blocks	2	Board 1
13	Transom Filler Blocks	2	Board 1
14	Deck	1	Board 2
15	Basswood 2x5x400mm	44	Timber Stock
16	Bulwarks	2	Board 2
17	Teak 0.6x5x400mm	60	Timber Stock
18	Deck trim	4	Board 6
19	False frames	12	Board 6
20	Stem Post	1	Board 1
21	Stern Post	1	Board 1
22	Keel	1	Board 1
23	Rudder	1	Board 1
24	Rudder tiler	1	Board 1
25	Rudder Hinges	3	Parts Card 2
26	Nails - brass	Pkt	Parts Card 2
27	Birch 1x4x400mm	4	Timber Stock
28	Wale battens	4	Board 2
29	Cap rails	2	Board 2
30	Channels	2	Board 2
31	Eye pins 3x10mm	Pkt	Parts Card 2
32	Gunport lids	4	Board 2
33	Gunport frames	4	Board 6
34	Gunport hinges	8	Board 6
35	Cargo Hatch	1	Board 2
36	Rings - brass - 3mm	Pkt	Parts Card 2
37A-C	Forward companionway	3	Board 2 & Board 6
38A-E	Main gangway	6	Board 2
39	Coaming, trim & capping	5	Board 6
40A-E	Skylight	15	Board 2 & Board 6
41	Pump	1	Parts Card 2
42	Davits	2	Board 1
43	Culverins	2	Parts Card 2
44A-J	Windlass	17	Board 1 & Board 2
45A-D	Cannon carriage	16	Board 2
46	Cannon barrels	2	Parts Card 2
47	Rod - brass 1mm x 50mm	1	Parts Card 2
48	Knightheads	4	Board 1
49	Mast pin rail	1	Board 2

Part No	Description	Quantity	Material
50	Bowsprit pin rail	1	Board 2
51	Bitt heads	6	Board 1
52	Pin rails	2	Board 2
53A-B	Catheads	4	Board 1
54A-B	Ladders	10	Board 2
55	Hull Steps	12	Board 2
56	Anchors	2	Parts Card 2
57	Hawse Pipes	2	Parts Card 2
58	Anchor rope 2mm fawn	1	Parts Card 1
59	Rigging Cord - 0.25mm fawn	1	Parts Card 1
60	Rigging Cord - 0.5mm fawn	1	Parts Card 1
61	Rigging Cord - 1mm black	1	Parts Card 1
62	Block A - 1 hole 3mm	19	Parts Card 2
63	Block B - 2 hole 5mm	10	Parts Card 2
64	Block C - 1hole 5mm	23	Parts Card 2
65	Block D - 2 hole 7mm	2	Parts Card 2
66	Block E - 2 hole 4mm	2	Parts Card 2
67	Violin Block F - 8mm	2	Parts Card 2
68A-G	Boat 1 - 100mm	7	Board 4 & Board 5
69A-G	Boat 2 - 70mm	7	Board 4 & Board 5
70	Cleats	11	Board 1
71	Dowel - 6mm x 250mm	1	Timber Stock
72	Dowel - 6mm x 330mm	1	Timber Stock
73	Dowel - 3mm x 250mm	1	Timber Stock
74	Dowel - 10mm x 330mm	1	Timber Stock
75	Dowel - 5mm x 250mm	3	Timber Stock
76	Mast Cap - Lower	1	Board 1
77	Mast Cap - Upper	1	Board 1
78	Boom Rest	1	Board 2
79	Boom rest supports	3	Board 2
80	Mast Strap - 3x100mm copper	1	Parts Card 2
81	Boom Yoke	1	Board 2
82	Gaff Yoke	1	Board 2
83	Parrels	Pkt	Parts Card 2
84	Eye pins 3.5x20mm	10	Parts Card 2
85	Yard cleat	2	Board 2
86	Mast Heel	1	Board 1
87	Deadeye Straps	8	Parts Card 2
88	Deadeyes - 5mm	17	Parts Card 2
89	Straps	4	Parts Card 2
90	Bowsprit Ring - 12mm	1	Parts Card 2

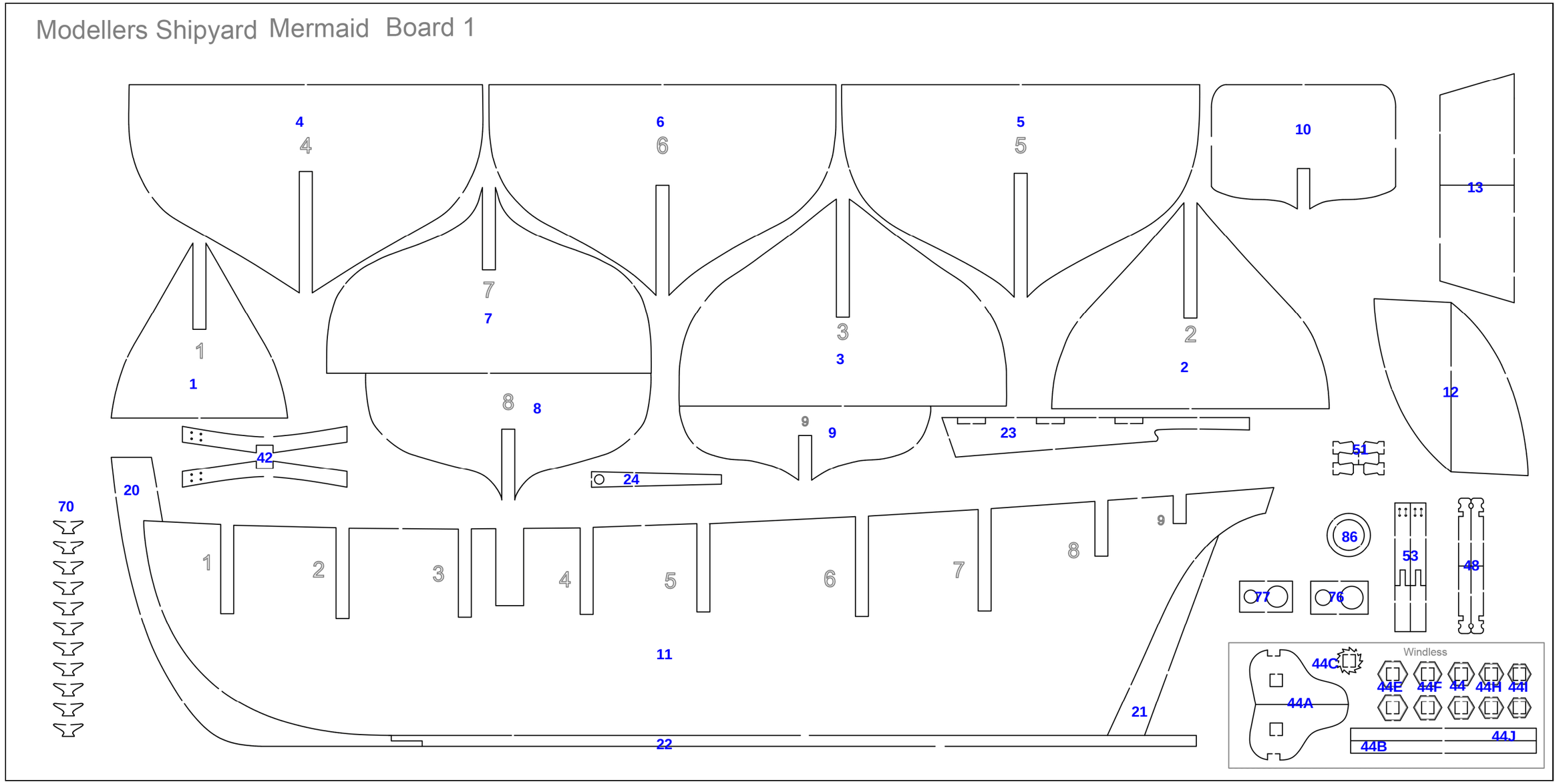
Part No	Description	Quantity	Material
91	Belaying Pins	28	Parts Card 2
92	Cradle Ends	2	Board 3
93	Cradle Supports	2	Board 3
94	Flag - White Ensign	1	Sheet 56

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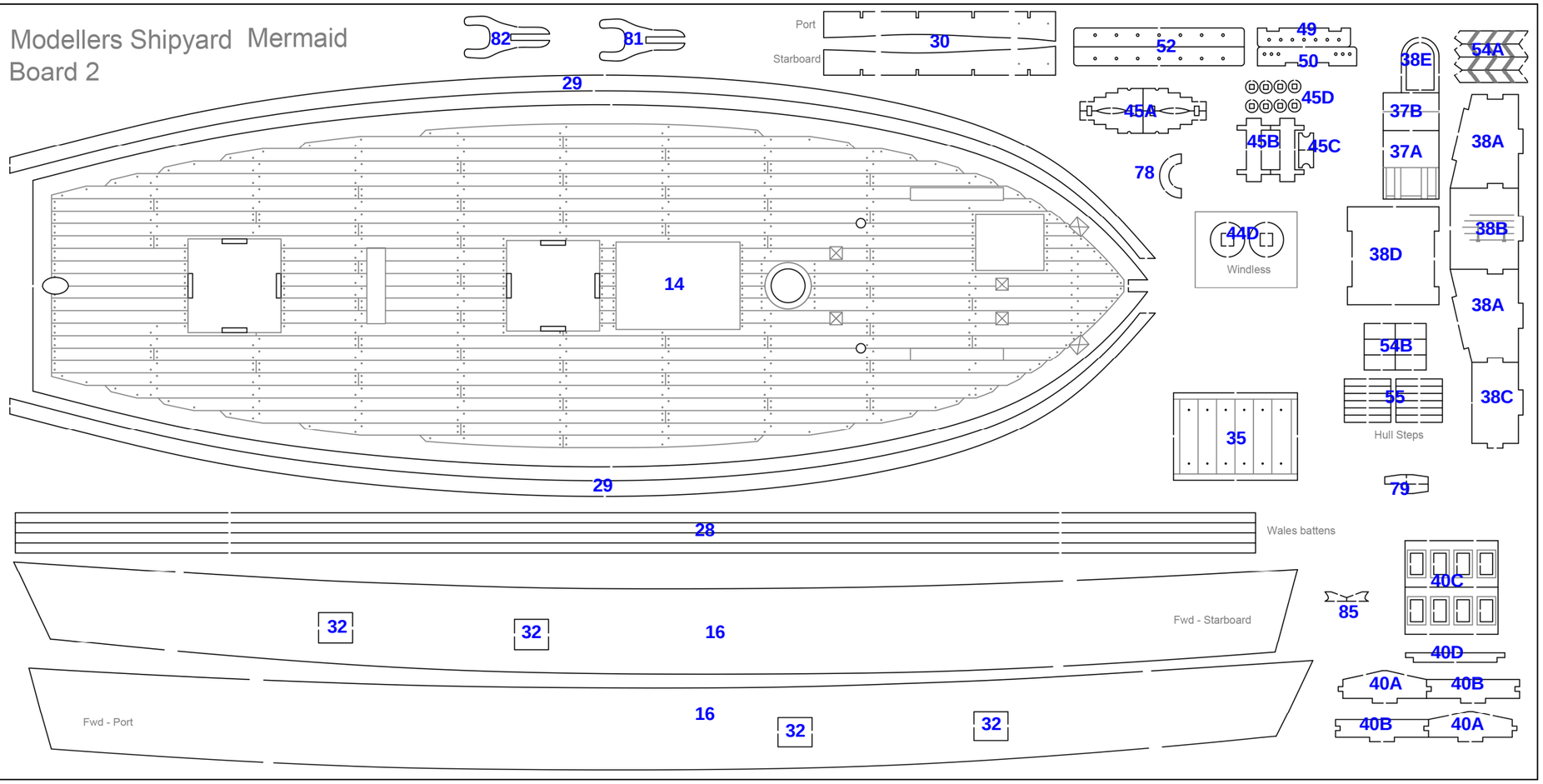
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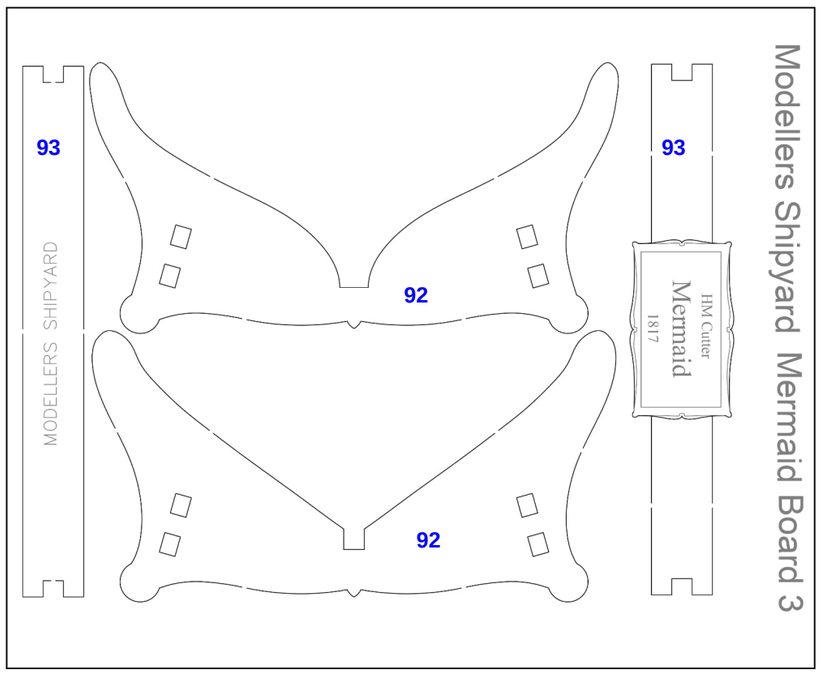
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Modellers Shipyard Mermaid
Board 2





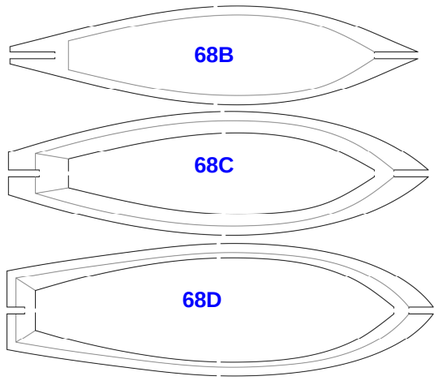
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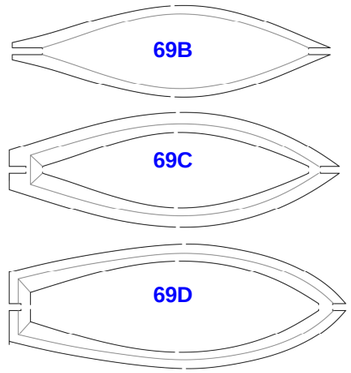
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Modellers Shipyard Mermaid Board 4

Boat 1

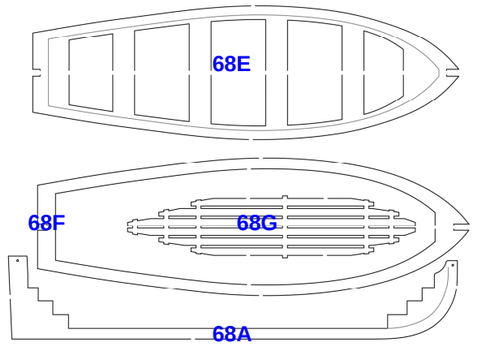


Boat 2

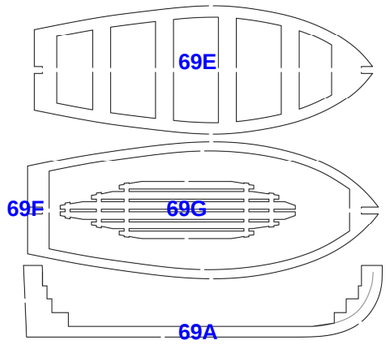


Modellers Shipyard Mermaid Board 5

Boat 1

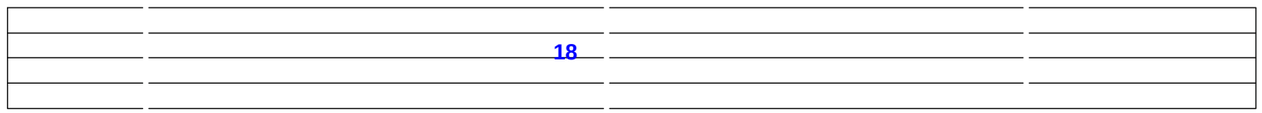


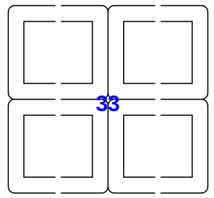
Boat 2



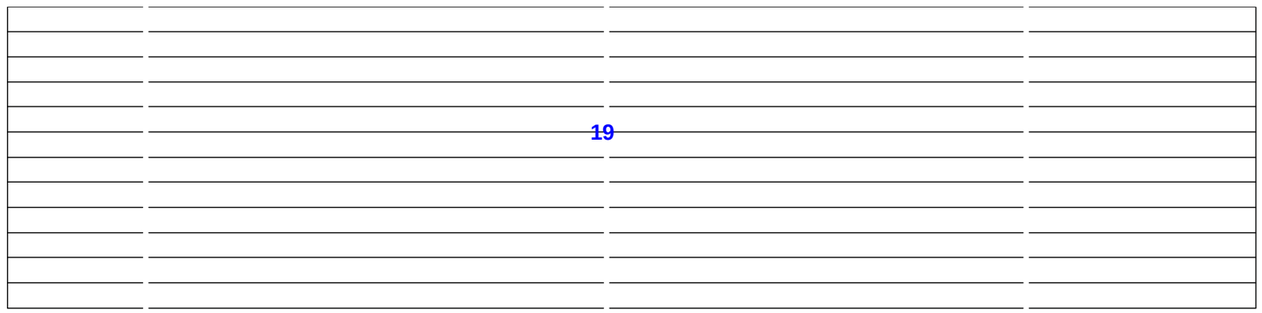
Modellers Shipyard Mermaid Board 6

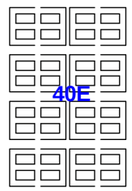
Deck Trim

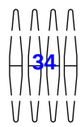




False Frames



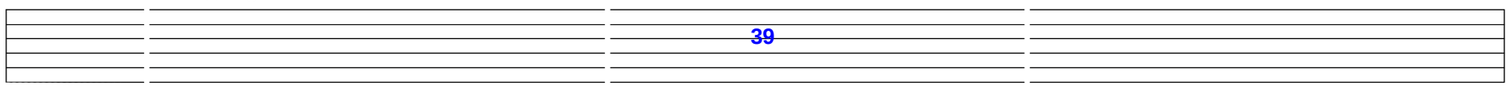






Comp Runners

Coaming, Trim & Capping

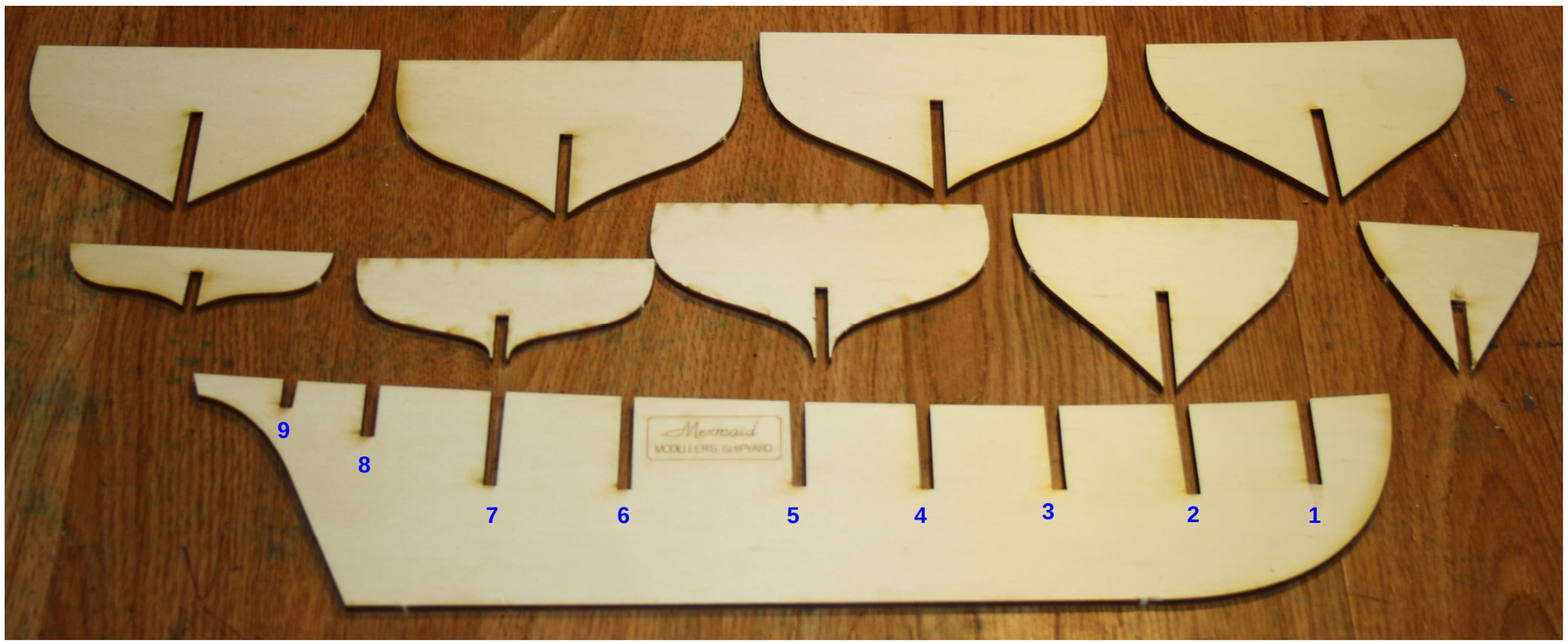


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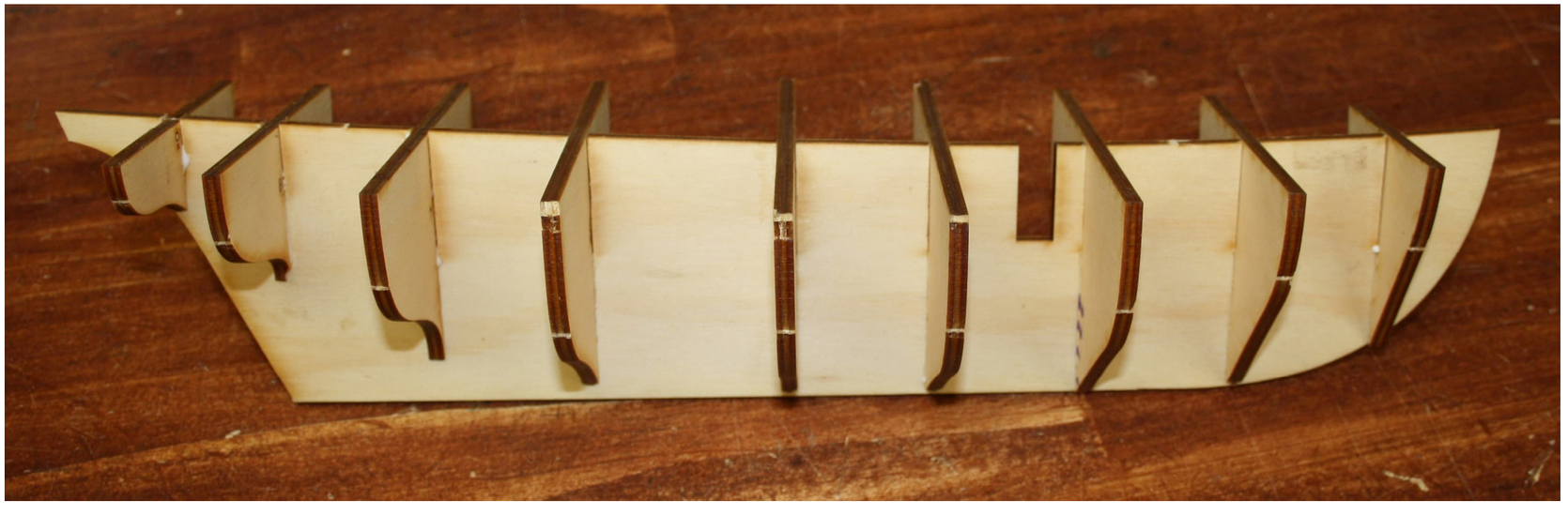
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6.0 Hull Construction

Step 1 Identify the bulkheads P1 - P9 and the false keel P10.Remove the bulkheads and false keel from the plywood sheet. Use a snap blade knife to carefully cut through both sides of the tabs holding the parts in place.



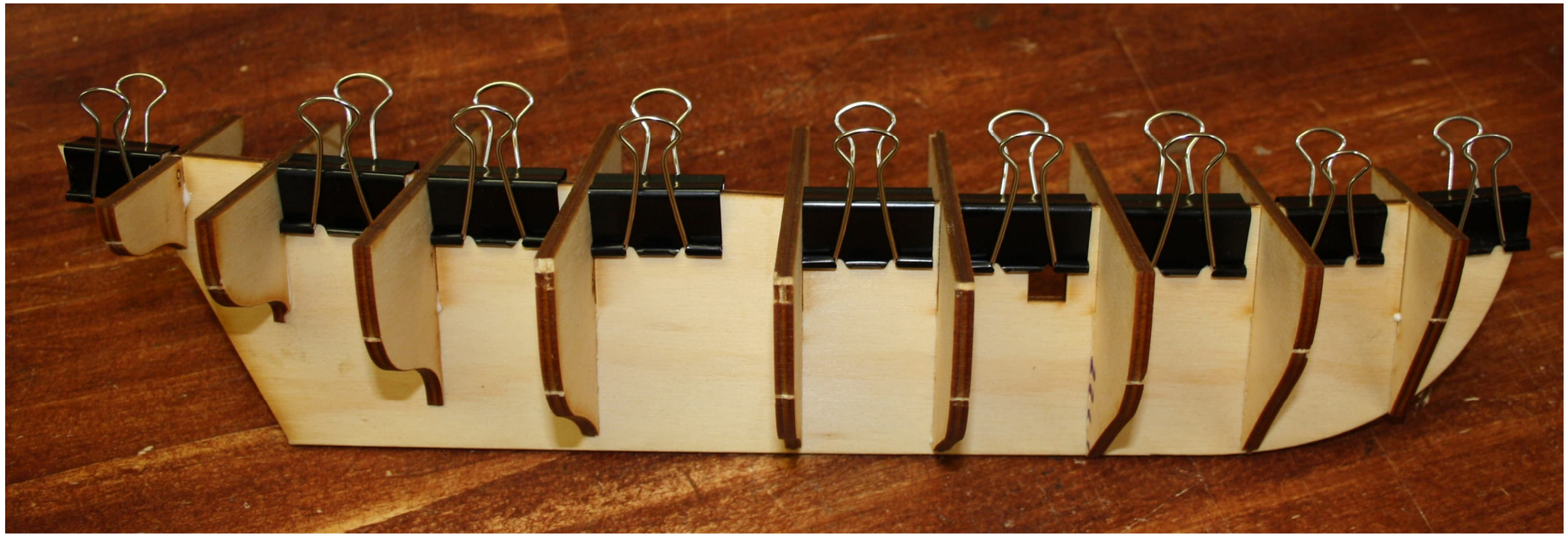
Step 2 Dry fit the bulkheads into the relevant keel slots. Do not glue anything at this stage. Do not force the bulkhead frame into the keel slot. You will need to use a flat needle file to fractionally open the slot in both the keel and bulkhead. The fit should be firm but no loose. There may be a need to adjust the slot depth in the keel and/or bulkhead to ensure the top edge of each bulkhead is flush with the top edge of the false keel. Do not glue anything at this stage. Also ensure frames 1 to 5 are level with the bottom of the keel.



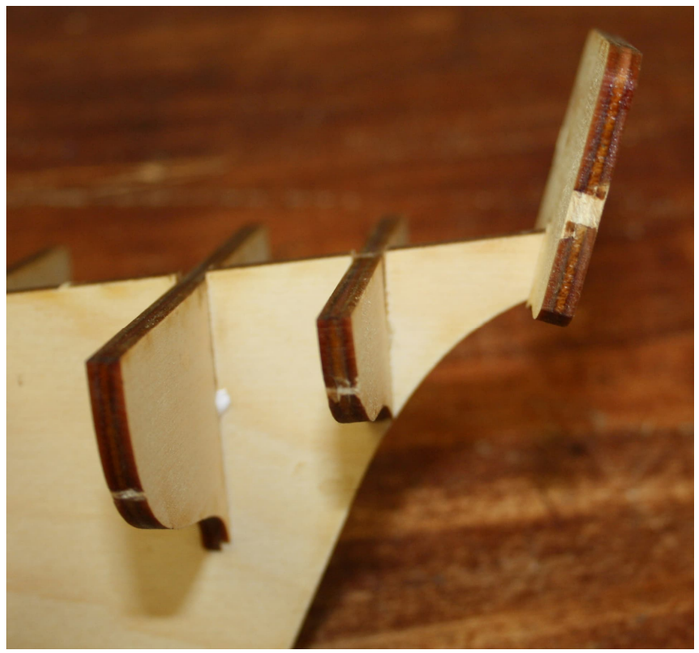
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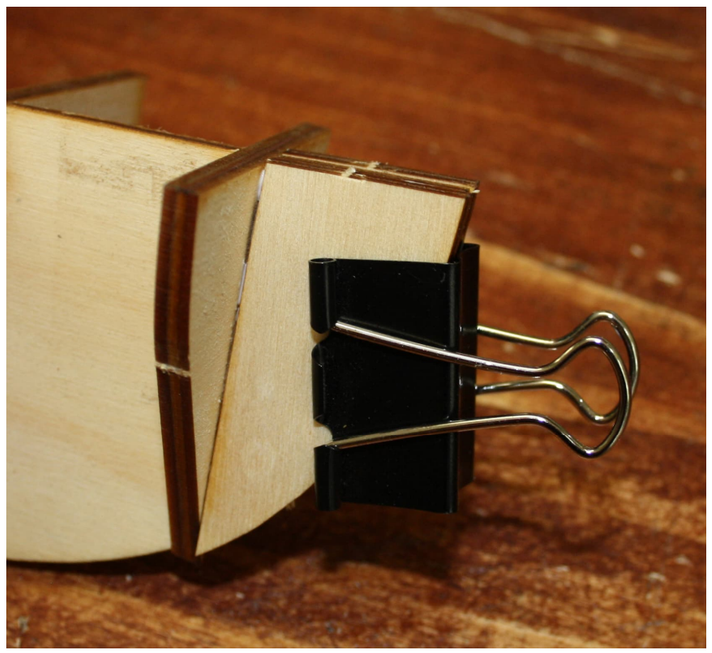
Step 3 Once satisfied with the dry fit of the bulkheads and keel, glue each bulkhead in place with white wood glue. It is important to make sure the frames are square to the keel. Place a “bull dog” clip against each bulkhead as shown to ensure the bulkheads are square to the false keel while the glue sets. Place the assembled keel and bulkheads frame construction aside and allow 24 hours for the glue to set.



Step 4 Identify the transom P10.The transom sits proud of the keel as shown. Trial fit the transom in place - align the transom with the angle of the end of the false keel - fractionally adjust as required, Once satisfied use a two part epoxy resin to glue the transom in place. Set aside for the glue to dry.



Step 5 Identify the bow filler blocks are P12. Glue a bow block to each side of the keel. Clamp in place as shown. Allow 24 hours for the glue to set.

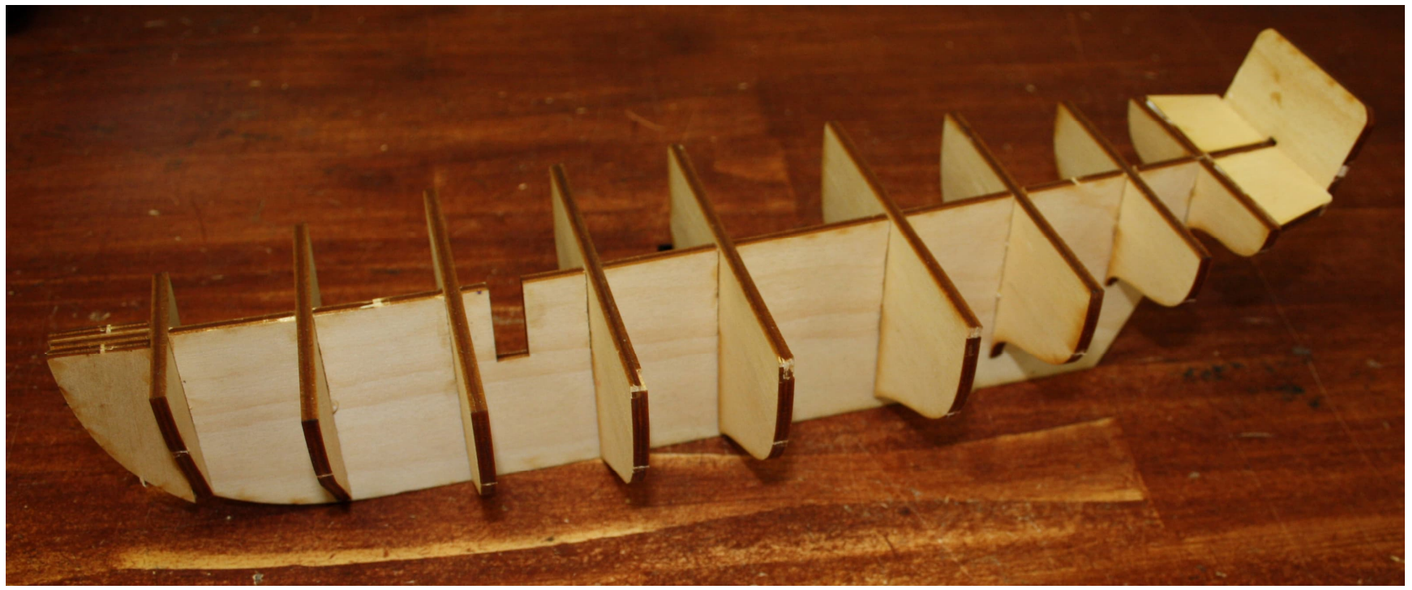


Step 6 The transom filler blocks are Parts 13. Trial fit the blocks in place - adjust the angle of the face butting up to the transom. Once satisfied glue the blocks in place as shown. Any over hang of the blocks beyond the transom sides. This will be removed later.



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Step 7 Assembled keel, bulkheads transom, bow blocks & filler Blocks
The keel, bulkheads, transom, bow blocks & filler blocks are now fully assembled.



Step 8 Deck
Identify the deck P14 - trial fit in place - align the mast hole, rudder hole and the bow tip of the deck with the centre of the keel. Once satisfied remove the deck and apply wood glue across the top of the bulkheads, keel and transom blocks. To hold the deck in place while the glue sets hammer map pins through the deck into the false keel at the locations of the main gangway, skylight and cargo hatch - also place large elastic bands over the deck and hull to hold the deck edges in place while the glues sets. Allow 24 hours to dry completely. Once dry remove all map pins.





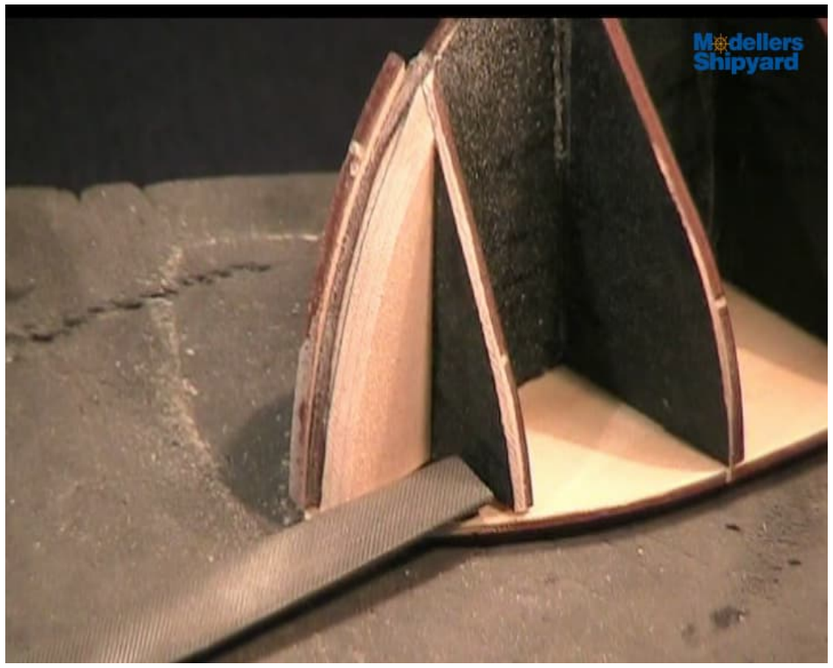
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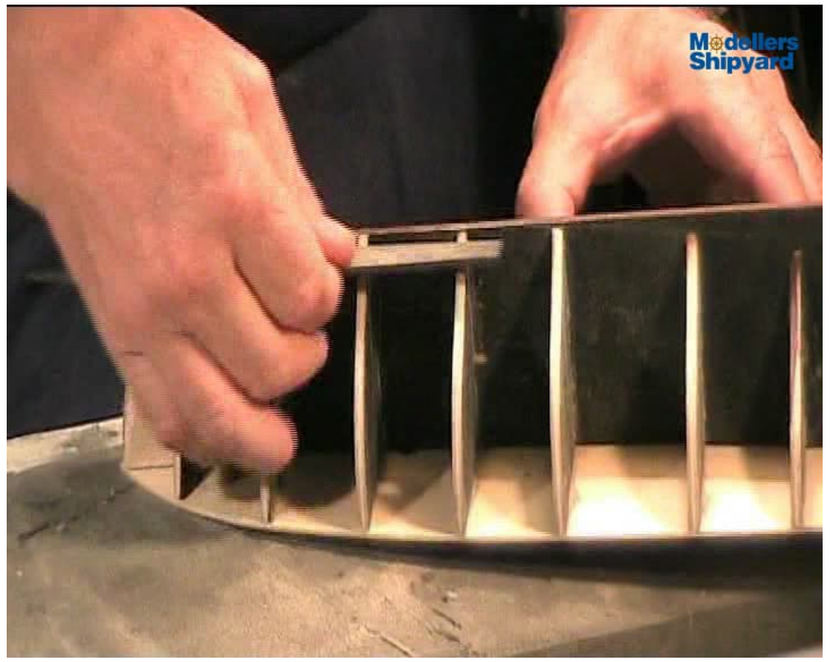
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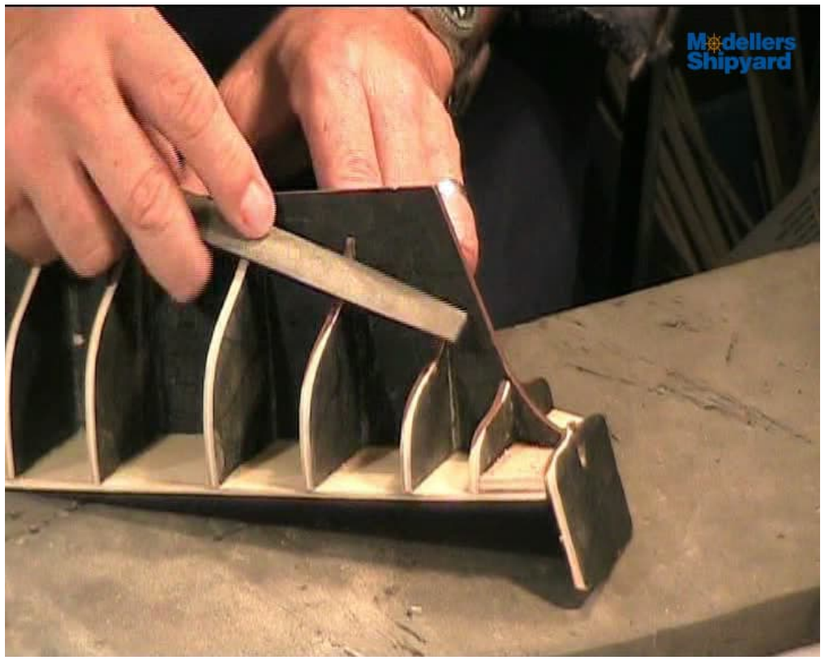
6.1 Fairing the Bulkheads

“Fairing” the bulkheads is a very important part of the preparation for planking the hull. The principle of “fairing” is to ensure the planks lay flat on the edge of each frame - this ensures a good glue bond is established between each plank and the bulkhead and, in turn ensures that when fully planked the hull is smooth and free of bumps or hollows. Take your time. Completing this process properly will ensure a good finish to the hull.

To start, lay a plank over a few bulkheads. You will see that the plank does not sit flat across the edge of all the bulkheads - especially at the bow and stern areas. To fair the bulkheads use a flat file to move across the edges of two bulkheads at a time starting at the deck level and moving towards the toe of the keel. Once two bulkheads are complete move to the next one. Always make sure you are filing across two bulkheads. Regularly check by laying a plank/batten across the bulkheads. Move to the bow applying the same approach as above - at the bow fair only the bow blocks - leave the keel untouched. Move to the stern and transom applying the same approach as above. Check across all frames along the complete length of each. Move the plank across all frames to ensure a good fit. Continue the fairing process until you can see the plank/batten will sit flat across each bulkhead.







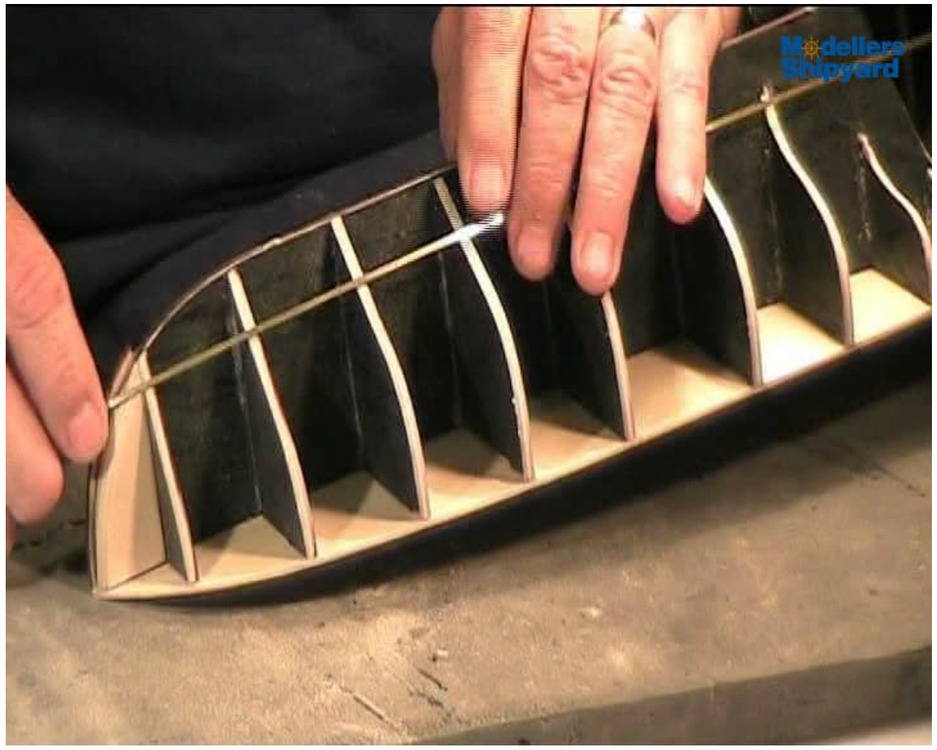


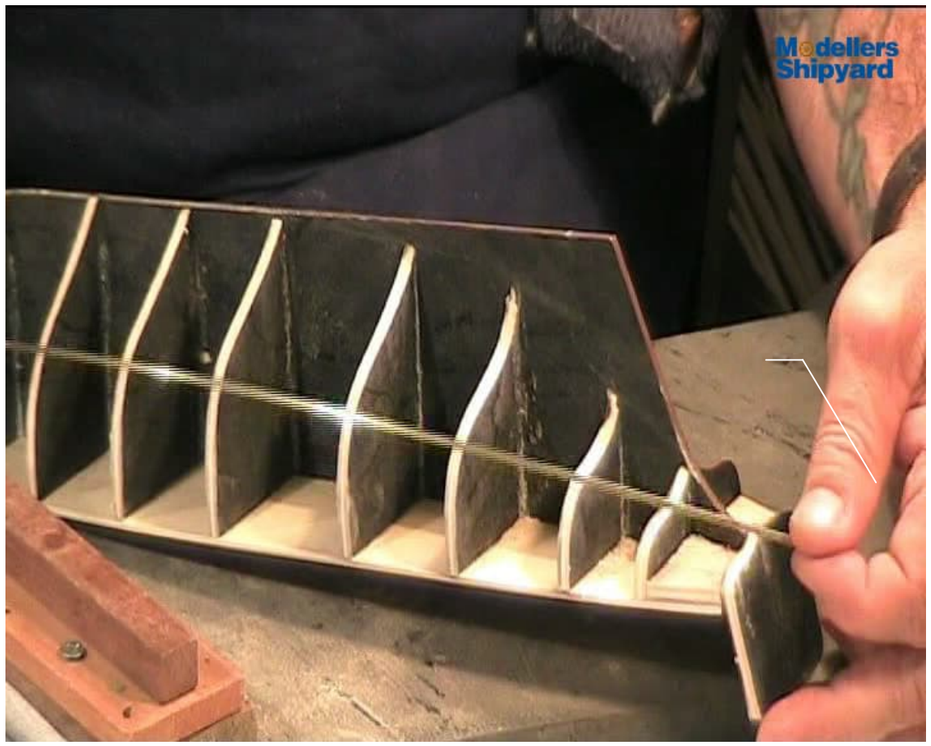
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6.1 Fairing the Bulkheads continued

Check across all frames along the complete length of each. Move the plank across all frames to ensure a good fit. Continue the fairing process until you can see the plank/batten will sit flat across each bulkhead.





6.2 Deadwood Area

The area between the bottom edge of the keel and the bottom of the bulkheads at the stern is known as the **deadwood area**. The deadwood area will be planked with two layers of planking consistent with the rest of the hull.

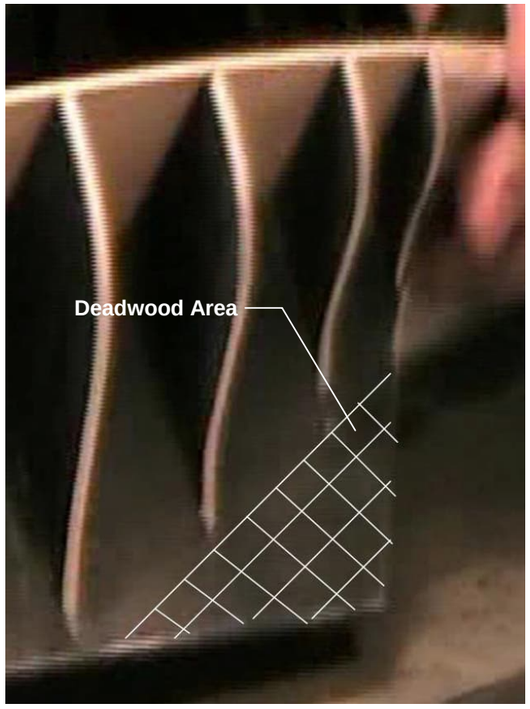
The stern post and rudder however will only be planked with the second layer of planking. So when the stern post and rudder are eventually fitted you need to ensure there is a consistent thickness between stern post, rudder and the stern area of the keel.

The keel, stern post & rudder are all 4mm plywood. The keel in the deadwood area will be planked with the first layer of planking - 2mm thick (on each side). Clearly, if no adjustment is made when the stern post and rudder are fitted there will be a significant discrepancy between the thickness of the stern area of the keel and the stern post and rudder.

To ensure there is consistency of thickness between the stern post, rudder and the hull in the deadwood area there is the need to ensure that when the first layer of planking is fixed in place the total thickness does not exceed the thickness of the stern post/rudder post.

To achieve this you will need to take two steps.
Step 1. Before fitting the first layer of planking reduce the thickness of the keel in the deadwood area by approximately 1mm on each side— i.e. reduce the keel thickness by about half in the deadwood area.
Step 2. Once the **first layer of planking** has been fitted then reduce the thickness of this planking by approximately 1mm on each side as well - fractionally adjusting to meet required thickness.

This will then reduce the total thickness of the keel and first layer of planking in the area to be 4mm thick thus meeting the requirement for consistency of thickness. This will ensure the same thickness between the keel, stern post and rudder.





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6.3 Planking the Hull

Planking the hull is not technically difficult but it does require some thought and study so that the principles are understood. It also requires some patience. Once mastered the process is straight forward.

There are a few points to remember:

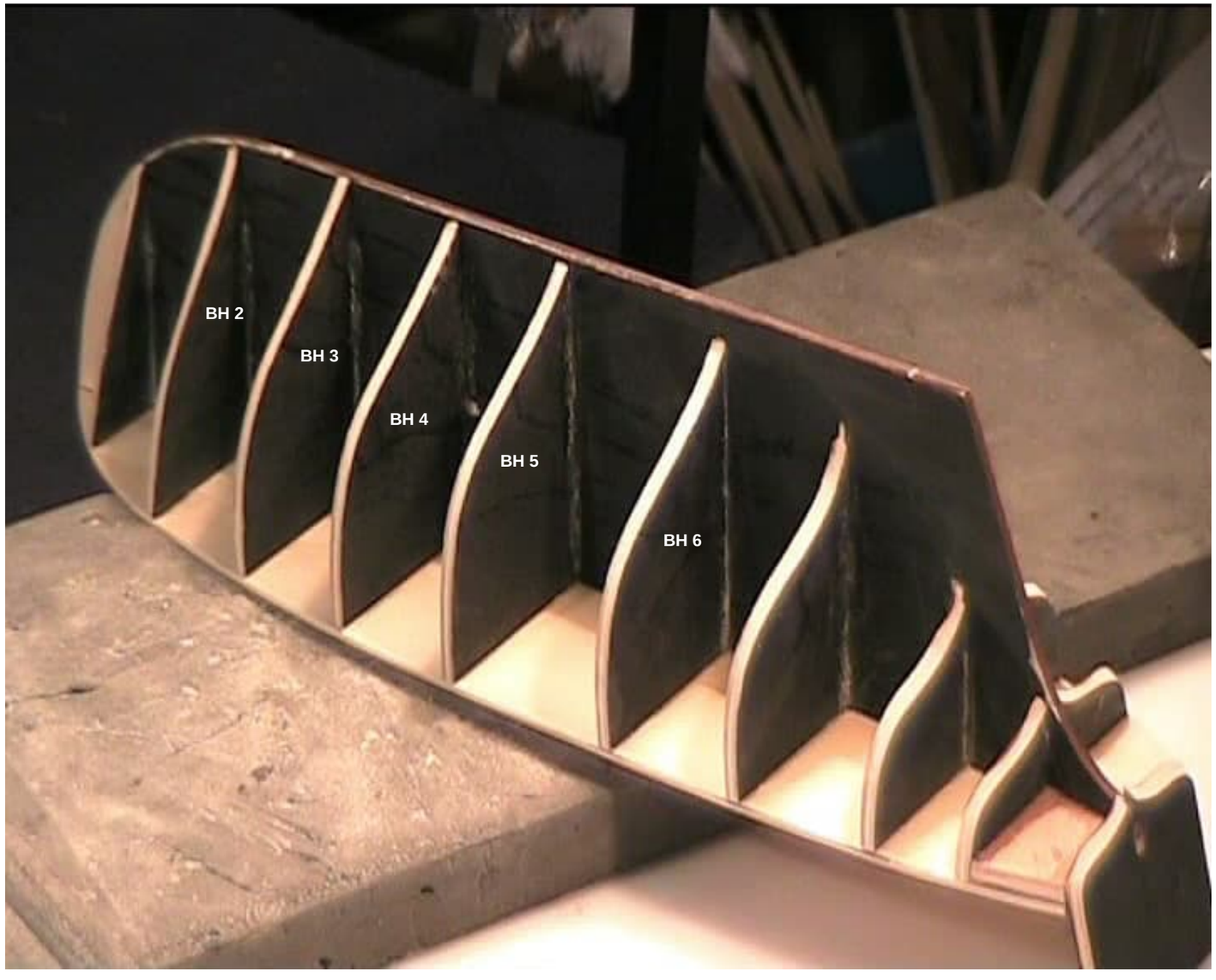
- Use a mini plane to taper the planks.
- Always taper the **lower** edge of the plank—ie the edge that will be closer to the keel.
- Prepare two planks together - one for each side of the hull. It is most important to fit and glue the planks in pairs - one on each side of the hull as this will minimise the chance of the keel being distorted or bent once the glue has set.

6.3.1 Hull Planking - First Principles

Spend a few moments with a dressmakers tape measure and measure from the top of the each bulkhead frame around the outside of the bulkhead to the toe of the bulkhead where it meets the keel. You will notice that the measurements around the bulkheads in the middle or “mid-ship” of the model are greater than the measurement around the bulkheads at the bow (front) of the hull.

We always assume that the “mid-ship” bulkheads are the largest distance and it is at this part of the hull the planks will be at their full width. For the Mermaid the mid-ship frames are 4 & 5.

From your measurements it will be clear that if you are to fit one plank along the full length of the hull you will need to taper the planks that fit across the bulkheads at the bow of the hull.

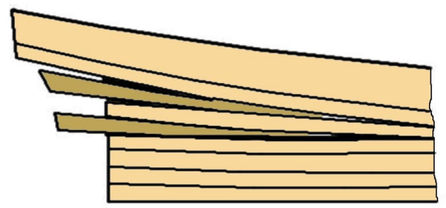


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Mid-Ship Bulkheads
It is assumed that the planks laid across the mid-ship bulkhead frames are at their maximum width. We need to determine how many planks will fit into the area between the top of these bulkheads and the keel. As an example say the measurement from the top of the mid-ship bulkheads 4 & 5 to the keel is 120mm.To determine how many plank will fit into this area across the mid-ship Bulkheads divide 120mm by 5mm that is 120/5 = 24. This means that 24 planks will be needed to fit into the area. These planks laid across the mid-ship frames will **not** be tapered or reduced in width across these bulkheads

Fore Bulkheads
Taking the example further, say the measurement from the top of bulkhead 2 to the keel is 80mm. As 24 planks will have to fit into this area also then the plank width at bulkhead 2 will need to be reduced. To determine the width of the plank at bulkhead 2 you divide 80mm by 24 planks that is 80/24 = 3.33mm. So the plank wide at bulkhead 2 needs to be 3.33mm to ensure that 24 planks will fit into this area. The same approach can be applied to determine the plank width at bulkhead 3.

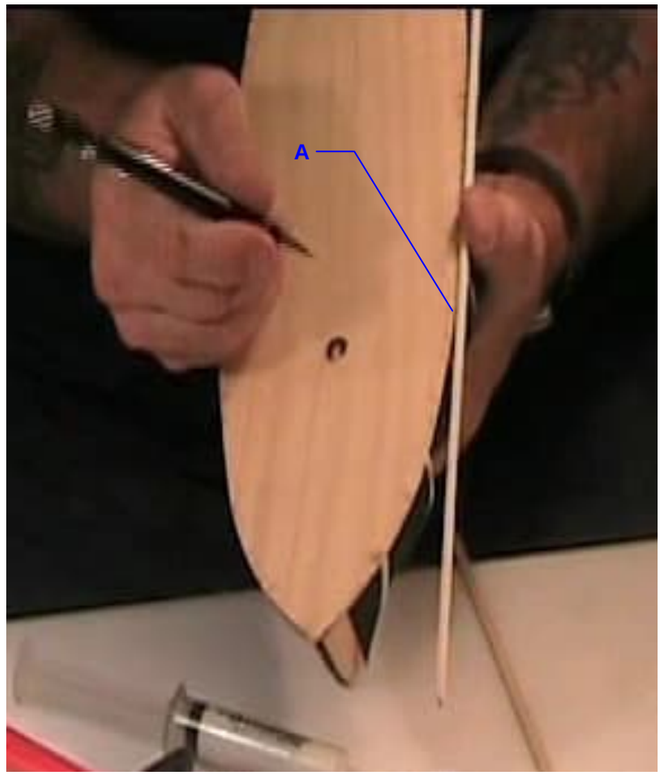
Stern Bulkheads
You will recall that the area between the bottom edge of the keel and the bottom of the bulkheads at the stern is known as the **deadwood area.** When making your measurements of these stern bulkhead frames include the “deadwood” in your measurement.

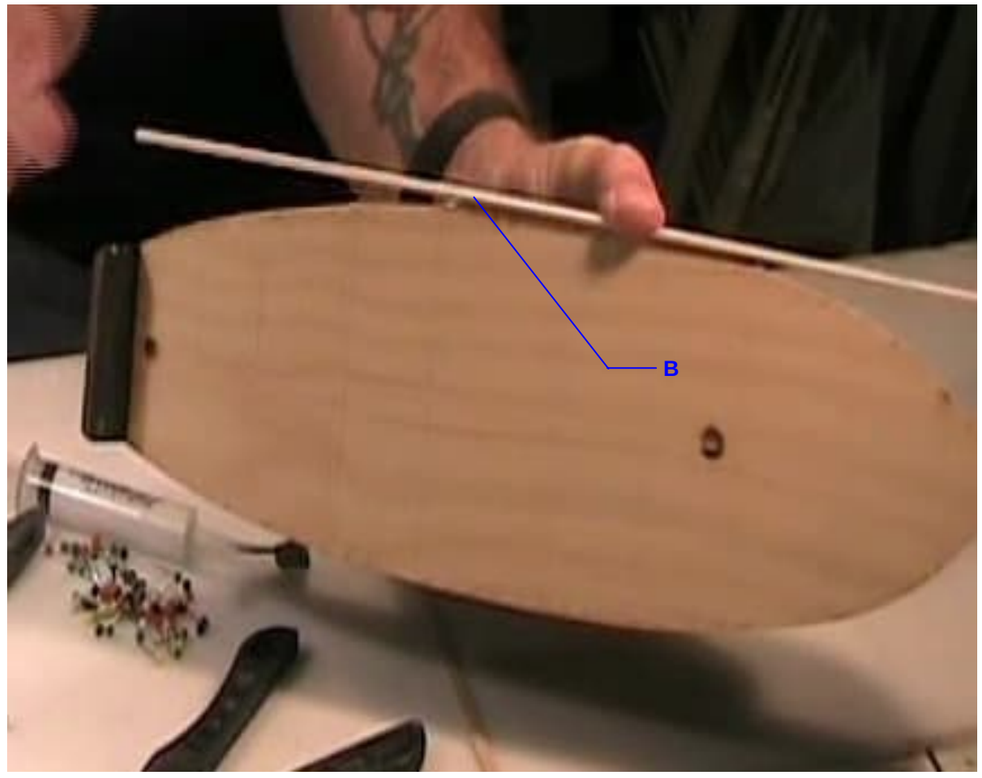


Across these bulkheads you will find the measurement from the top of the bulkhead frame to the bottom of the keel will be **greater** than it is at the “mid-ships” bulkhead frames. Where this occurs you will be inserting short triangular planks known as “stealers” or “wedges” to cover the extra distance. The use of stealers or wedges will be dealt with later.

6.3.2 First Layer of Planking
This model is “double planked”. This means there are two layers of planking. The first layer of planking provides strength to the whole hull and a solid base for the second layer of planking which is a more decorative timber. For the first layer of planking use the 2x5x400mm basswood P15. Clearly identify these planks before proceeding further.

Fitting the First Plank
The placement of the first plank needs to be 4mm down from the top of the bulkheads. This space will allow for the bulwark to be fitted later. Using one of the basswood planks spring it gently around the curve of the bow. Note where it starts to bend - with a pencil mark this as Point A on the plank. Using this same plank spring it gently around the curve of the stern. Note where it starts to bend - with a pencil mark this as Point B on the plank. Using a hand held plank bender gently crimp the plank from Point A towards the front of the plank and from Point B towards the rear. Do not taper this plank. From the top of each frame mark a line 4mm on the frame. Fit this first plank along this line starting at the bow and work towards the stern. Apply wood glue to this plank and use map pins to hold the plank in place while the glue sets. Repeat this process for the other side of the hull.





Take another plank and transfer these two points on to it. On each plank mark an arrow pointing towards the bow. Also mark each plank “P” for port (left) and “S” for starboard (right). We will do this for all the planks we prepare. We will also make all planks in pairs.

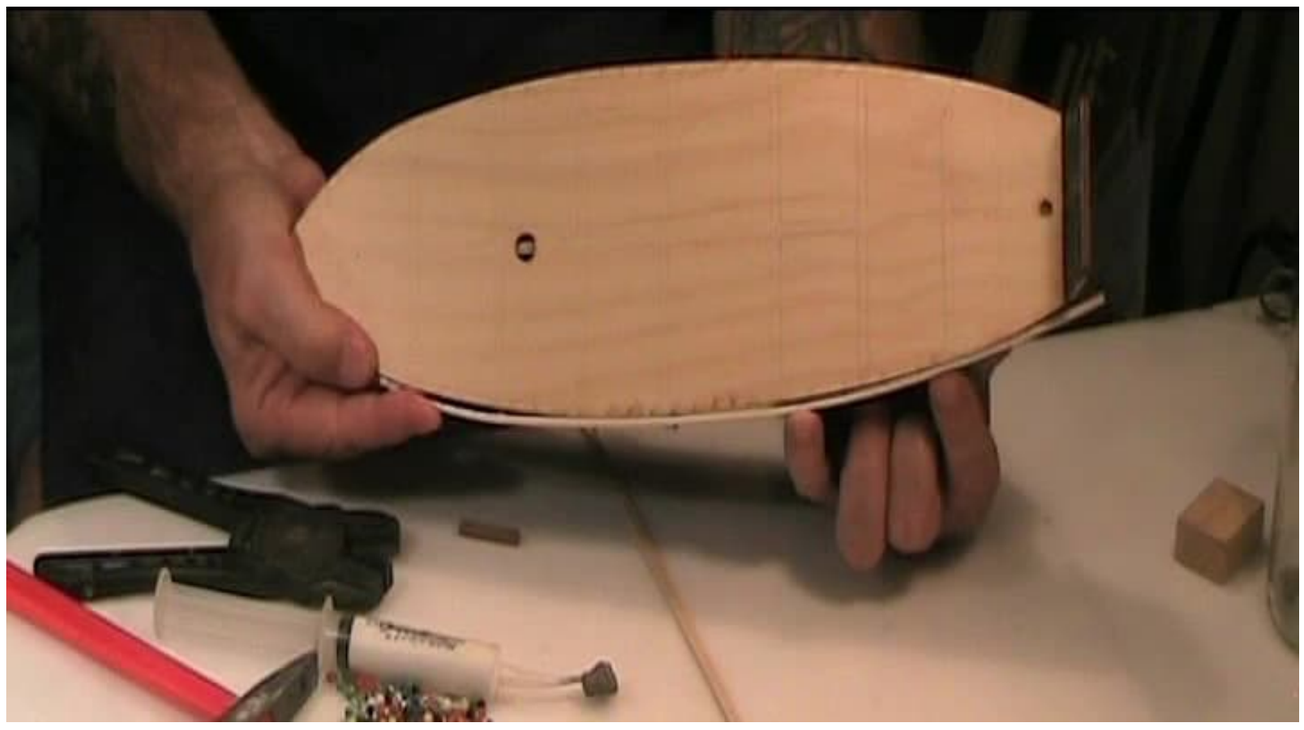
The first plank will not be tapered.

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From Point A use a plank bender to gently crimp the plank toward the bow. Trial fit the plank. If needed use the plank bender again by gently crimping between the previous crimps. This will increase the curvature of the plank. Repeat this process until you are satisfied with the plank curvature.



From Point B use a plank bender to gently crimp the plank toward the stern. Trial fit the plank. If needed use the plank bender again but gently crimp between the previous crimps. Repeat this process until you are satisfied with the plank curvature.

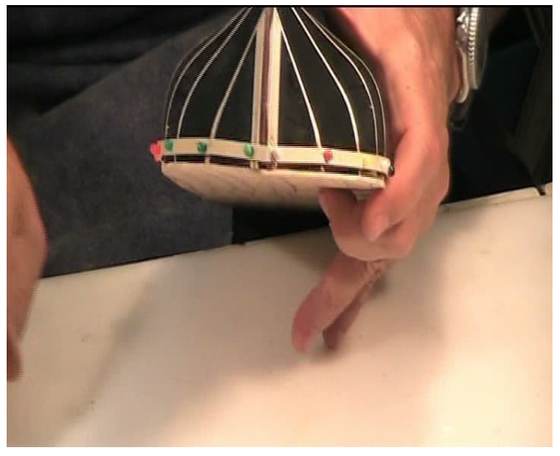


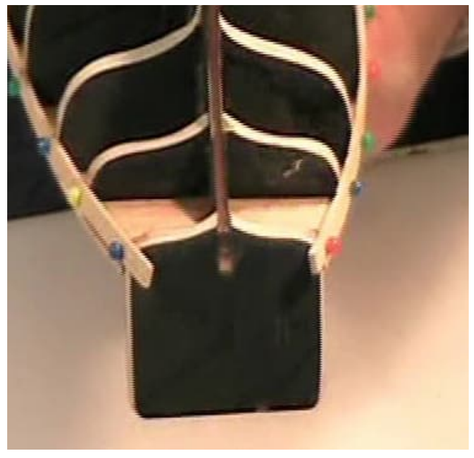
Note this first plank will **not be tapered**. Use wood glue to the plank in place and use map pins to hold the plank in place while the glue sets. Make sure that both planks (left and right or “port” and “starboard”) follow the same line and are a mirror image of each other.

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It is important to check that the first planks are symmetrical - check that they are a mirror image of each other at the bow and the stern.







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6.3.3 Fitting the Second Plank

The hull planking approach presented below divides the hull into two bands. Each band is planked separately. Follow the steps below to create the two planking bands.

Step 1: On the **mid-ship bulkheads** mark a position **approximately** halfway to the keel from the bottom edge of the **first plank** - the same distance down on each **mid-ship bulkheads** and a distance which is a multiple of a plank width. For example - as the planks are 5mm wide then the distance down the edge of each mid-ship frame to your pencil mark should be 45mm or 50mm, **but the same distance on each mid-ship bulkheads.** We will use 45mm - however you may choose 50mm.

Step 2: Take a second plank and **temporarily** pin in place at the positions you just have marked on the mid-ship bulkheads - do not glue this plank in position. Repeat for the other side of the hull.

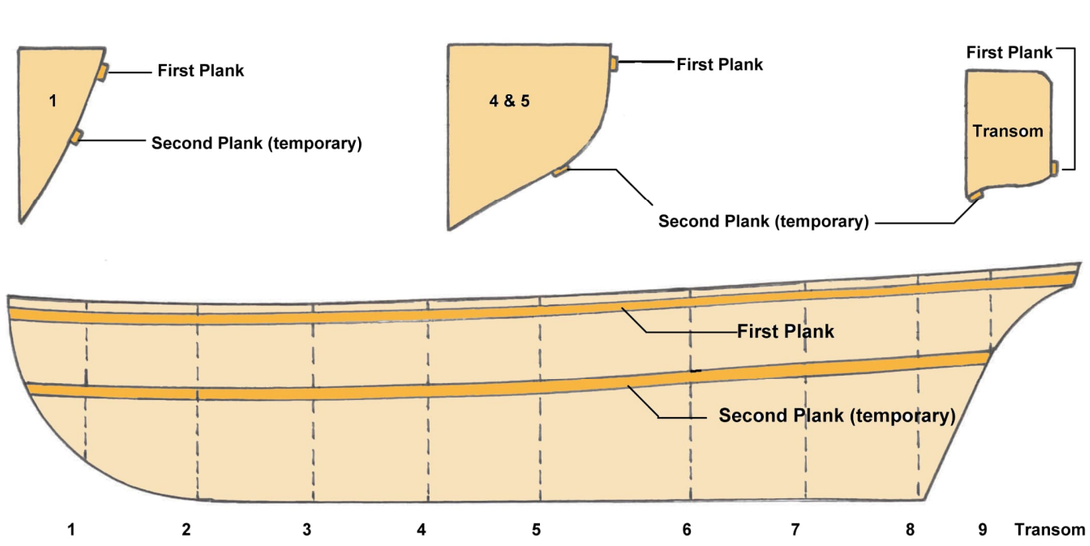
Step 3: Let this plank follow its natural course over the bulkheads to the bow and stern of the mid-ship bulkheads. At the stern the plank will be terminated at the junction between the keel and transom. At the bow let the plank follow its natural course.

Step 4: Temporarily attach these planks to the rest of the bulkheads making fine adjustments if necessary to ensure that each plank is a mirror image of the other.

Checking the corresponding measurements (port and starboard) on the first and last frames should show up any errors.

There are now four planks in place, two on each side of the hull - see figure below.

The hull has now been divided into two bands— an upper band and a lower band. We will carry-out the calculations to determine the plank width at each bulkhead frame in each band.



5.3.4 First Layer of Planking

We will focus on applying the planking principles to complete the first layer of planking within the two bands created.

Band A

Establish a table as shown below representing the number of bulkheads. You may also need to include the transom as well. To determine the plank width at each bulkhead use a dressmakers tape measure to measure the distance between the bottom of Plank 1 & top of Plank 2 at each bulkhead frame. Record these distances in the table below.

As the measurement at the mid-ship frames is 45mm then 45/5 = 9 planks. So 9 planks will be fitted into this band at the mid-ships area. The same number of planks need to be fitted into area at the bow and at the stern.

Using the measurements made above divide each by 9 (number of planks) to determine the plank width at each bulkhead. Record in a table as below.

Bulkhead	1	2	3	4	5	6	7	8	9	Transom
Measurement mm				45	45					
Plank Width mm				5	5					

Taking a pair of planks taper them to the required width at each bulkhead using a mini plane. Use a plank bender to bend the bow and stern end of each plank. Note Points A & B are where bending is to start. Fit and glue in place these planks starting from the underside of the first plank.

A rule of thumb is that planks should not be tapered to more than half their width. However there may be times when this rule can be extended to two thirds of the plank width.

After fitting each pair of planks recheck the measurements to ensure the correct plank width. Adjust as necessary. Repeat this process until Band A is closed on both sides of the hull. Once Band A is closed remove the temporary planks.



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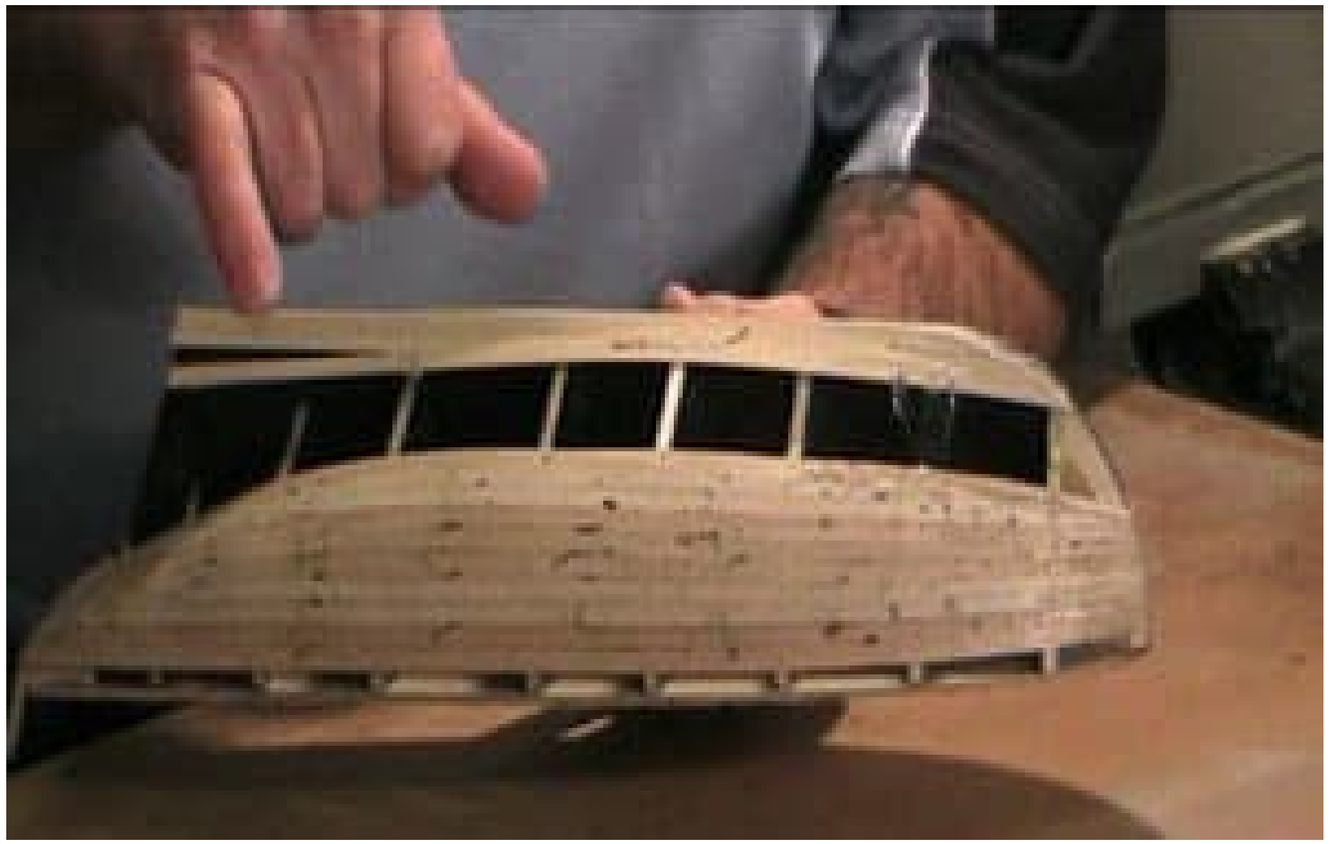
Lower Band Planking

Fit two planks along the edge of the keel on both the port & starboard sides - these are know as garboard planks. Do not taper these planks. Shape the bow ends of these two planks to follow the bow curve. Fix and glue them in place. Measure and record the distance at each frame between the second plank and the last plank on the upper band.

At the mid-ship bulkheads divide the distance by 5 (width of plank) to determine the number of planks (N) to fit into this area. The distance at each bulkhead divided by the number of planks (N) will give the width of each plank at the respective bulkhead. Mark these widths on to the plank at each bulkhead position. Taper a pair of plank to the required width. Tapering will be required at the bow only.

Allow these planks to follow their natural course. Do not force them. A gap will be formed in the “deadwood” area at the stern. This is where a “stealer” or “wedge” will be fitted later to fill the gap. Fix and glue each plank in place. Follow this process until the gap between the upper and lower bands is closed. Shape and fit the “stealers” into the remaining gaps at the stern.

Trim-off any excess overhang of planking. Sand the finished hull using a medium and fine grade sandpaper. Apply wood filler if needed to fill any gaps or hollows.





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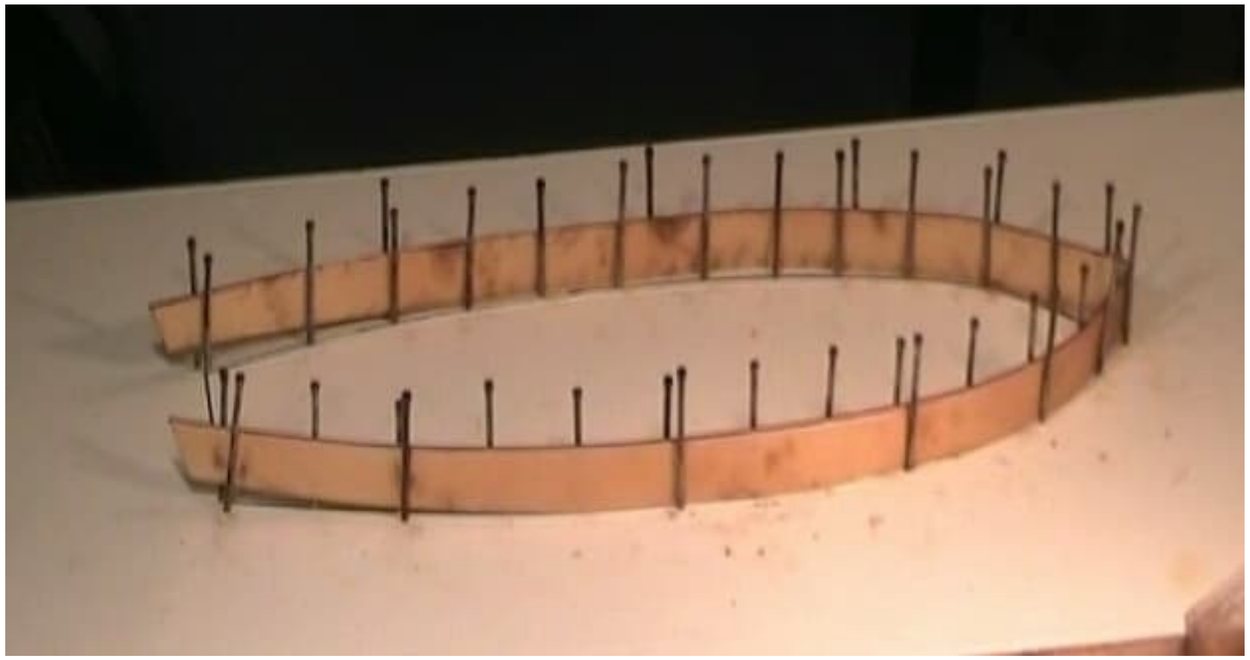
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6.3.5 Bulwarks

Identify the bulwarks P16 - the are marked port and starboard. Trial fit the bulwarks to cover the 4mm gap at the top of the planking. To achieve the required bend in the bulwarks use a wet molding process. Use the deck shape from the 2mm plywood sheet and draw its outline of a board. Fix several nails along the outline of this shape. Fully immerse the bulwarks in hot water for about 30 minutes. Then place each bulwark against the nails. Use outer nails to hold the bulwarks in place. Allow 24 hours to completely dry.

Once dry use a two part epoxy resin to glue the bulwarks in place. Pin in place while glue sets. Some trimming of any overlap may be required at the bow. Use a fine grade sandpaper to finish the first layer of hull planking.









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6.3.6 Inner Bulwark & Transom

Plank the inside of the bulwark and transom using 0.6x5mm teak strip P17. Fit and glue in place a length of the deck trim P18 on the inside of the bulwark and across the base of the transom. Using the false frames P19 **-** cut approximately 60 pieces 13mm long. These pieces simulate the frames of the cutter. Fit and glue these pieces in place approximately 10mm apart along the inside of the bulwark on the port and starboard sides making sure they are square to the deck.



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6.3.7 Second Layer of Hull Planking

Completing the second layer of hull planking is largely a repetition of the process for completing the first layer but with the added advantage of having a more solid foundation on which to work.

Use 0.6x5mm teak strips P17 as the second layer of planking. Identify these planks before proceeding. To glue the planks in place use a non-drip contact gel type adhesive. This type of glue will help stop any tendency for the edges of the thin second layer of planking to buckle and at the same time generally speeds up the planking process.

Start the second layer of hull planking at the top of the bulwark. Fit 5 planks in place. These planks will not be tapered.





Next place a plank along the line of the keel - this is the garboard plank - do not taper this plank. Place a second plank adjacent to the garboard plank - do not taper this plank.
Now place a third plank against this second plank— at the stern area allow this plank to follow its natural course over the hull in the deadwood area - a gap will be formed which will be filled by a stealer later.





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6.3.8 Finishing the Hull

Once you have closed the second layer of planking fit any stealers or wedges in the deadwood area. Sand the hull smooth and finish with a clear matt or satin varnish.



6.3.9 Stem Post, Stern Post and Keel

Identify the stem post P20, stern post P21 and keel P22. Apply a diluted teak stain to these parts. Use a razor saw to cut a slot into the bulwark at the bow as shown. Fractionally fit the stem post in place. Once satisfied glue in place. Trim off the extra length of the keel to be flush with the stern post.





6.3.10 Completed Hull

Once you have closed the second layer of planking fit any stealers or wedges in the deadwood area. Sand the hull smooth and finish with a few coats of clear matt or satin varnish.



6.3.11 Rudder & Tiller

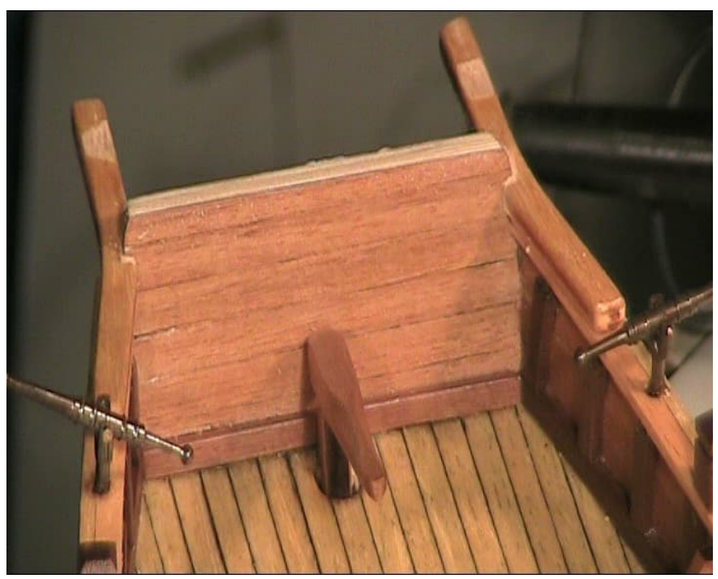
Identify the rudder P23 and the rudder tiller P24 - apply a diluted teak stain to the rudder and tiller. At the rudder hole in the deck drill a 5mm hole through the hull. Shape the top area of the rudder to fit through this hole. Shape the top of rudder to accept the tiller - fractionally adjust as required - once satisfied remove the tiller.

Identify the rudder hinges P25. Fit the two parts together - the gudgeon with pintal fits on top of the single gudgeon. Use super glue to fix gudgeon with pintal into the recesses in the rudder - cut the heads off 4 nails P26 - drill holes into the rudder to fit the nail head so as to cosmetically attach rudder hinge arms - shape and trim hinge arms as shown.

Clamp the rudder post in place to locate placement of the rudder gudgeons to the stern post/ hull - use super glue fix these gudgeons in place - use nails P26 to cosmetically attach rudder arms as previously stated - shape and trim arms as shown.



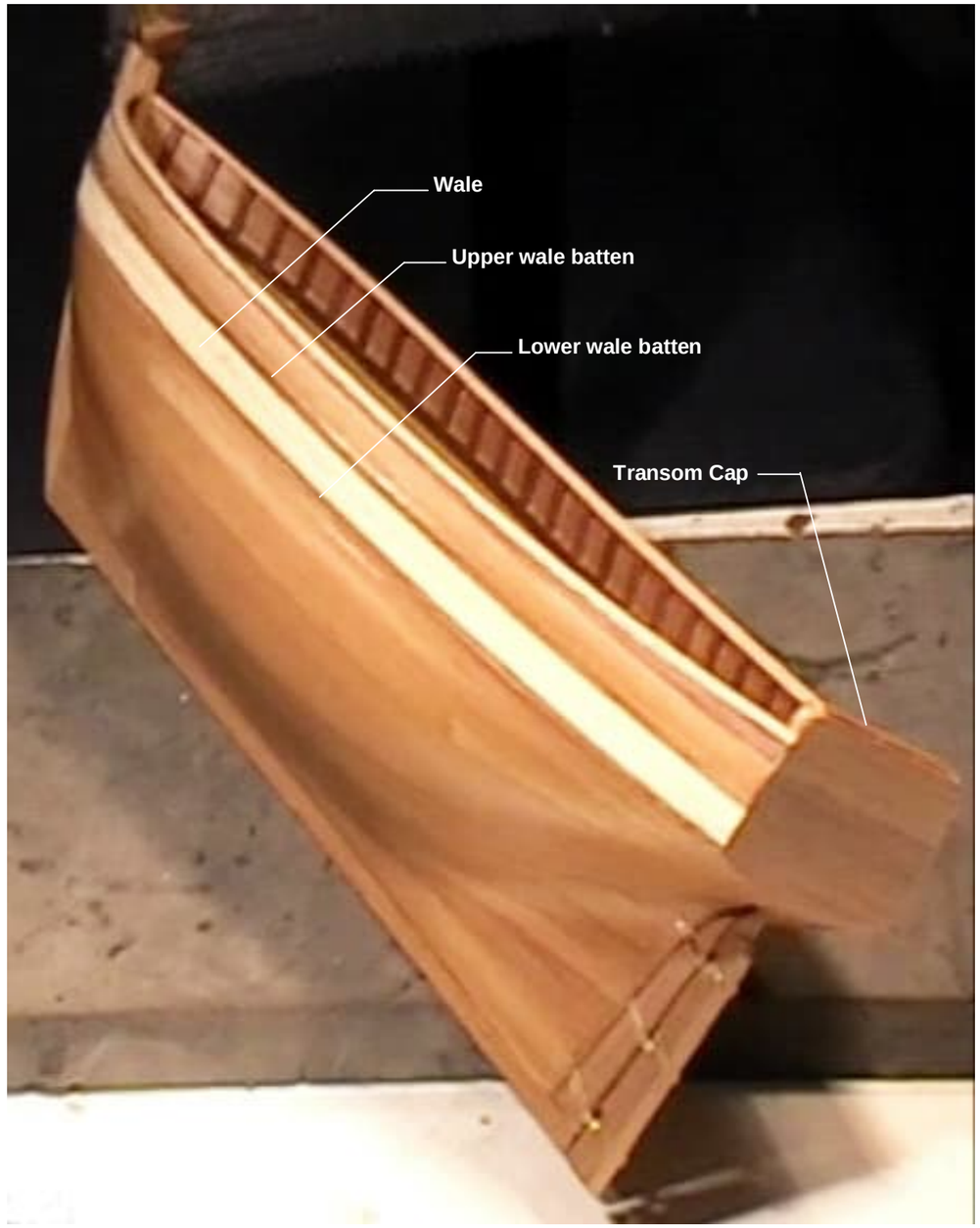




6.3.12 Wales & Transom Cap

Identify the 1x4x400mm birch P27. At mid-ship measure 13mm down from the top of the bulwark - mark with a pencil. For the wales, fit and glue in place a length of birch - allow the strip to follow its natural bend around the hull fore and aft. Fit and glue in place another length of birch immediately below the first strip.

Identify the wale battens P28 - trial fit in place along the upper and lower edge of the wale - use a plank bender to shape as required - once satisfied glue each length in place. Repeat for the other side of the hull. For the transom cap use the teak strip P17 - fit and glue in place a length across the top of the transom.



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6.3.13 Cap Rail

Identify the cap rails P29. Trial fit each along the top of the bulwark - fractionally shape as required. At the transom shape to fit neatly with the transom. Once satisfied glue in place and trim off any excess.

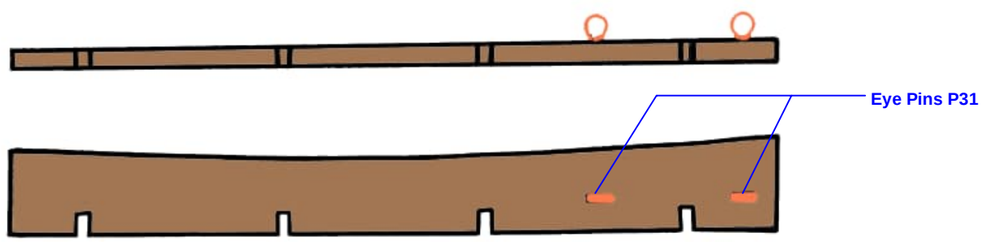






6.3.14 Channels

Identify the channels P30. For each channel drill two 0.6mm holes into the edge about 15mm from each end that fits against the hull side. Super glue map pins in place - snip off the map pin heads. Each channel is fixed to the upper wale batten. Align the front slot of each channel with the front of the mast hole - lay a rule square across the deck at the front of mast hole - use a pencil to transfer this point onto the wale. Repeat for the other side of the hull. Locate each channel marking on the hull the position of the map pin ends - drill 0.6mm holes at these points. Paint the channels matt black - once paint is dry apply glue to fix each channel in position as shown Sheet 19. Drill 0.7mm holes at the score marks on each channel and fix eye pins P31 in place.



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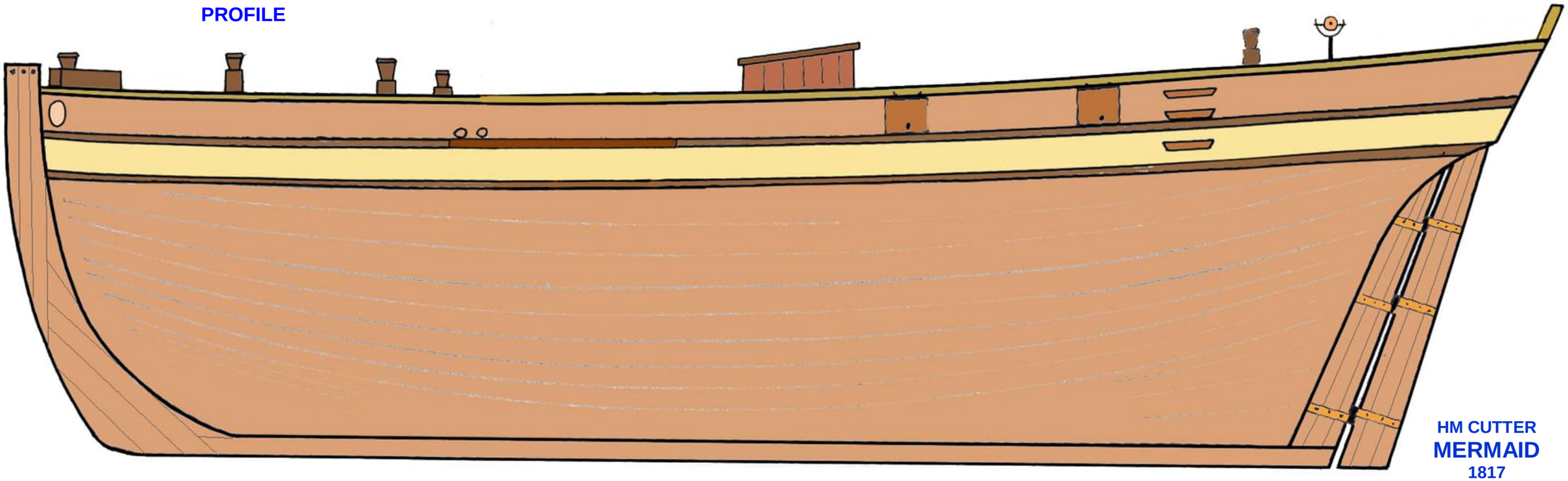
DECK PLAN

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Channel
Bowsprit Pin Rail
Knight Head
Bitt Head
Starboard Pin Rail
Bitt Head
Steps
Culverin
Cannon
Cat Head
Windlass
Knight Head
Cargo Hatch
Main Gangway
Skylight
Bitt Head
Mast Pin Rail
Pump
Tiller
Bitt Head
Cannon
Culverin
Steps
Cat Head
Bitt Head
Port Pin Rail
Bitt Head
Forward Companionway
Channel

SCALE 1:1

PROFILE

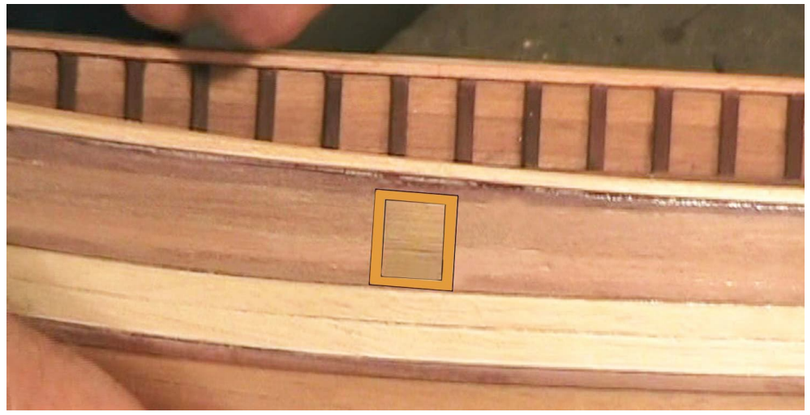


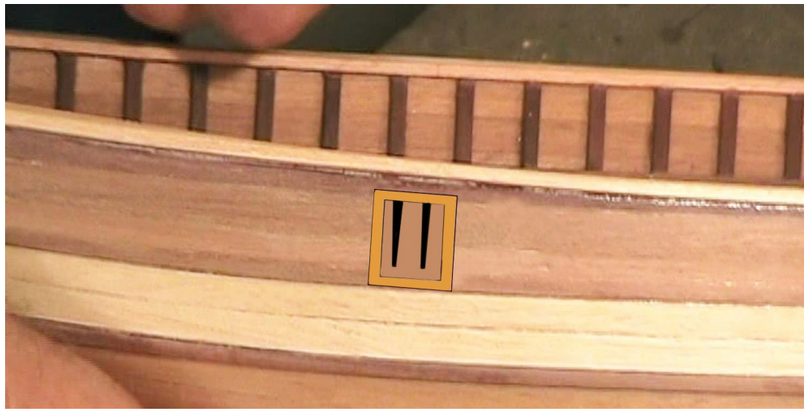
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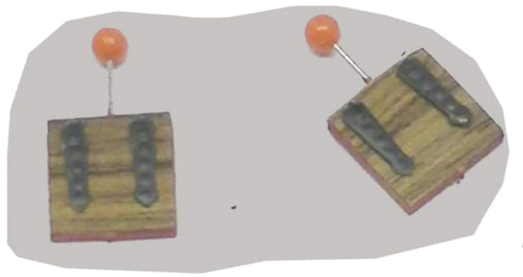
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6.3.15 Gun port lids, frames and hinges

Identify the gun port lids P32 - remove each lid and plank with teak strips P17. Identify the gun port frames P33 - stain with diluted teak and glue in place around gun ports. Identify the gun port hinges P34 - paint matt black and glue two to the outer face of each lid as shown. Reinsert the two fore gun port lids and glue in place. For the two mid-ship gun ports insert a map pin into the top edge of the gun port lid. Cut off the head of the pin leaving approximately 5mm of the pin remaining. Temporarily fit the gun port lid in place and mark where the pin will fit at the top edge of the gun port to hold the lid open. Drill a 0.6mm hole to take the pin. Fix the gun port lid in place.





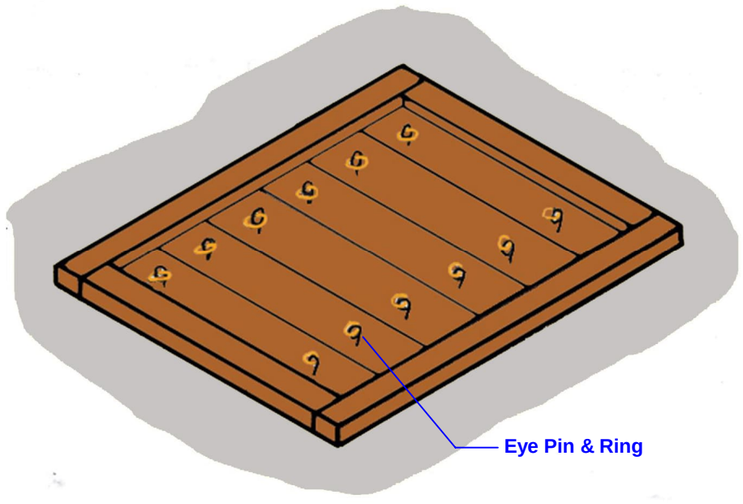


7.0 Deck Furniture

The next step is to assemble and fit in position the deck furniture. The deck furniture includes the gangway, cargo hatch, pump, skylight, winch, forward hatch, cannons, culverins, pin rails, davits and anchors. The following describes the assembly and placement of each of these items. The placement of these items is as shown on Sheet 19.

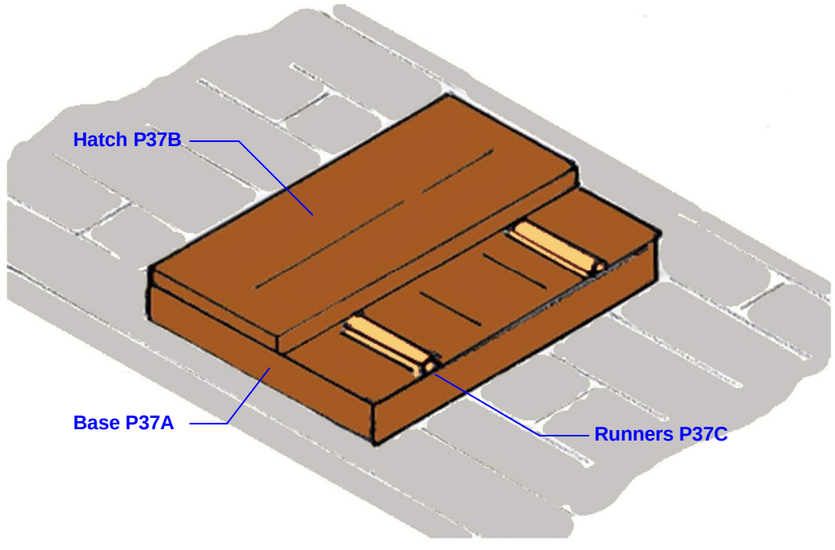
7.1 Cargo Hatch

Identify the cargo hatch P33. Stain the hatch with a diluted teak. Attach 3mm brass rings P36 to eye pins P31 and fix n place as shown. Glue cargo hatch in place on deck as shown Sheet 19.



7.2 Forward Companionway

Identify the companionway base P37A, hatch P37B and hatch runners P37C. Glue the hatch to the base as shown. Glue the runners in place as shown. Stain the assembled companionway with a diluted teak. Glue companionway in place on deck as shown Sheet 19.

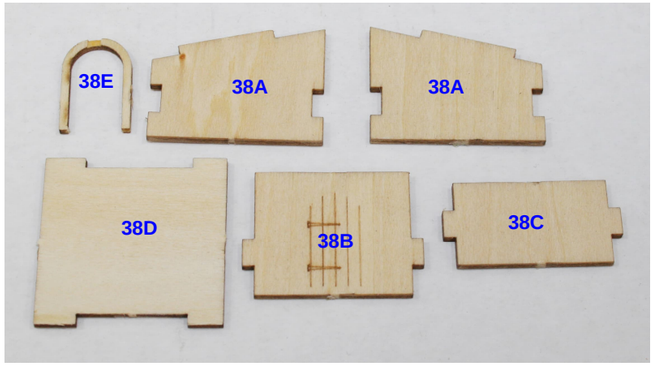


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7.3 Main Gangway

Identify the main gangway parts P38A-E Assemble as shown. Apply diluted teak stain. Paint door frame 37E-matt black. Glue door frame in place. Identify trim P39 - cut and glue lengths to cover the exposed joints and around base as shown. Glue gangway in place on deck as shown Sheet 19.



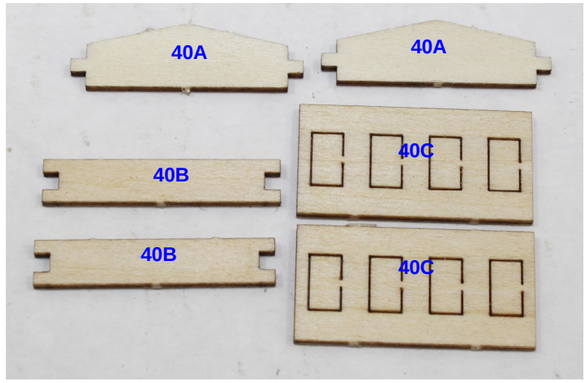


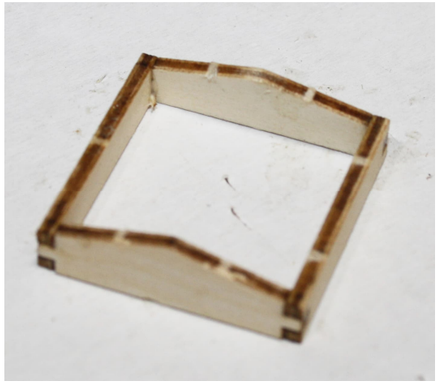


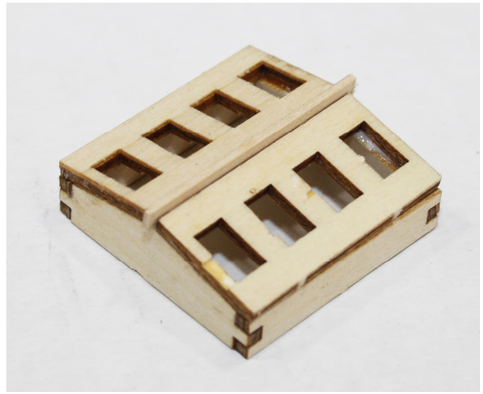


7.4 Skylight

Identify skylight parts are P40A - P40E. Assemble as shown. Fit the roof peak P40D. Apply diluted teak stain. Fit the skylight windows P40E in place. Glue in place on deck as shown Sheet 19.









7.5 Pump

Identify the pump P41. Glue pump in place on deck as shown Sheet 19.



7.6 Davits & Culverins

Identify the davits P42. Shape each davit to fit in place as shown. Apply a teak stain to each davit. Glue in place as shown..

Identify the culverins P43. Fit and glue in place 5mm along the cap rail from the end of each davit.

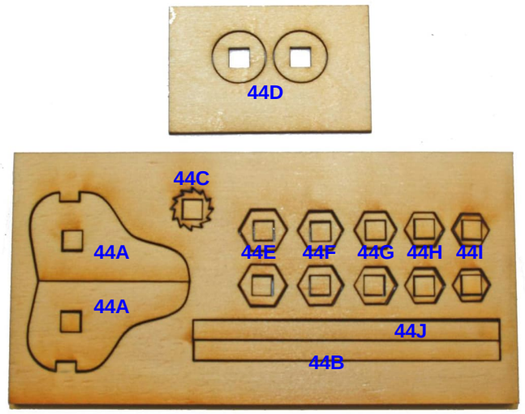


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7.7 Windlass

Identify the windlass P44A-J Follow the steps to assemble as shown.
Glue in place on deck as shown Sheet 19.

Step 1 Identify all the parts



Step 2 Identify P44B and P44C - fit and glue in place centrally along P44B as shown.



Step 3 Identify P44D and glue in place.



Step 4 Identify P44E - fit and glue in place against P44D.



Step 5 Identify P44F - fit and glue in place against P44E.



Step 6 Identify P44G - fit and glue in place against P44F. Follow same sequence for Ps 4 & 5 as shown



Step 7 Use a sanding block or flat file to shape the barrel.



Step 8 Glue P44A and glue in place. Glue P44J in place. Stain finished winch with teak wood stain.

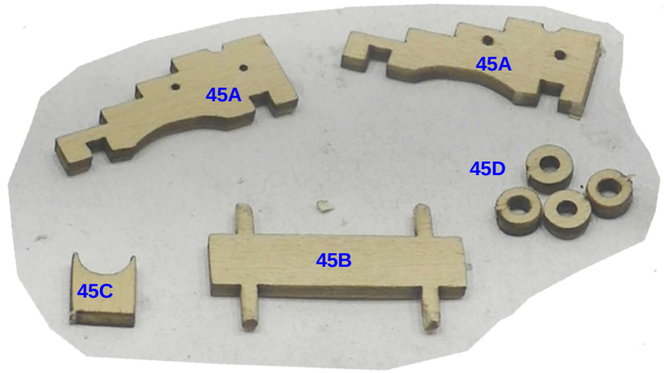


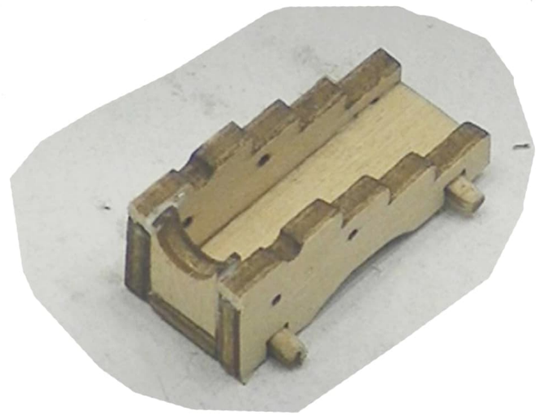




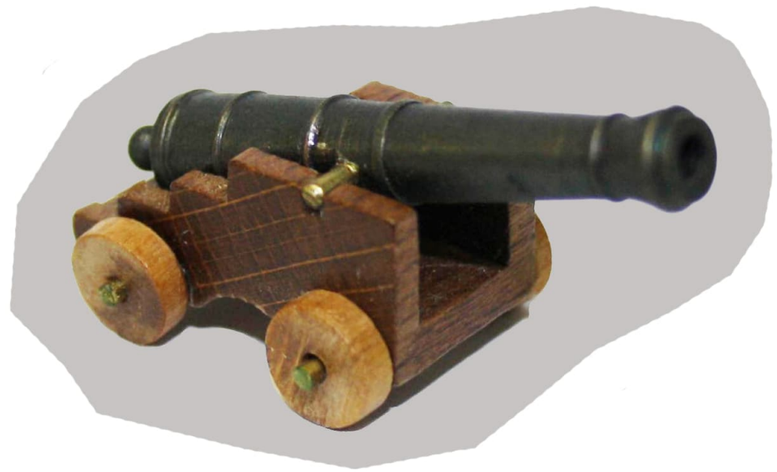
7.8 Cannons

Identify the cannons P45A-45D. Assemble the two cannons as shown. Apply diluted teak stain. Identify the cannon barrel P46 - paint matt black. Identify the 1mm brass rod P47 – cut lengths to mount the barrel as shown. Glue in place on deck as shown Sheet 19.





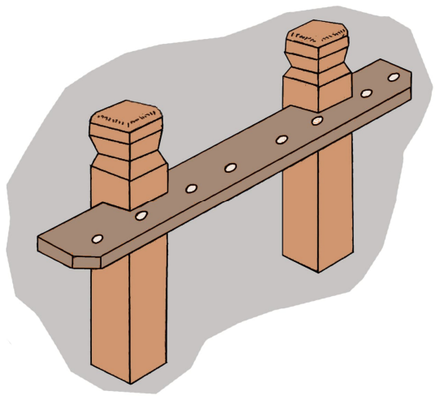




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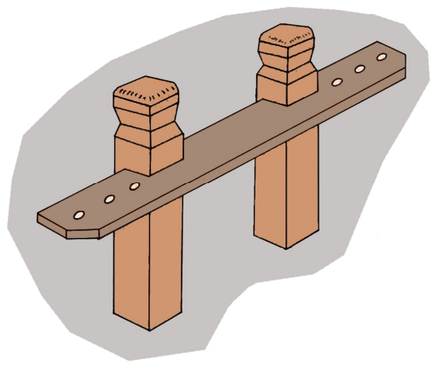
7.9 Mast Pin Rail

Identify the knightheads P48 and the mast pin rail P49. Assemble as shown. Apply diluted teak stain. Fix map pins to the centre of the knighthead base - snip off pin head. Drill 0.6mm holes at the score marks on the deck
Glue in place on deck as shown Sheet 19. Identify the belaying pin P91 - fit into holes.



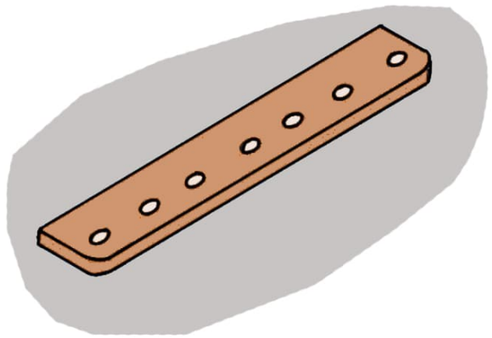
7.10 Bowsprit Pin Rail

Identify the knightheads P48 and the mast pin rail P50. Assemble as shown. Apply diluted teak stain. Fix map pins to the centre of the knighthead base - snip off pin head. Drill 0.6mm holes at the score marks on the deck
Glue in place on deck as shown Sheet 19. Identify the belaying pin P91 - fit into holes.



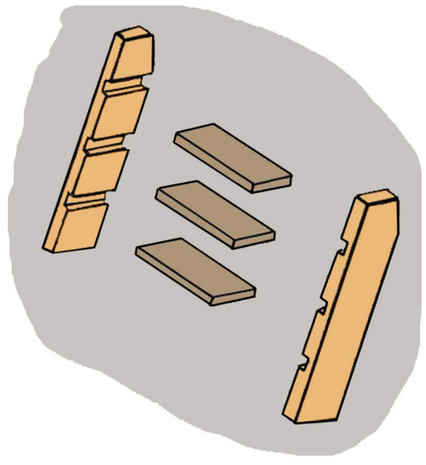
7.11 Port & Starboard Pin Rails

Identify the pin rails - apply diluted teak stain. Insert a map pins into the hull edge 5mm in from the end of each rail. Cut off the head of the pin leaving approximately 3mm of the pin remaining. Refer to Sheet 19 for the location of the pin rails - the rails are located immediately below the cap rail - mark the location of the pins, drill 0.6mm holes and glue the rails in place. Identify the belaying pin P91 - fit into holes.



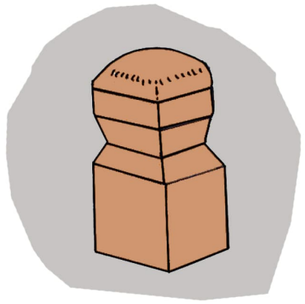
7.12 Ladders

Identify the ladder parts P54A-B. Assemble as shown Glue the ladders in place as shown Sheet 19.



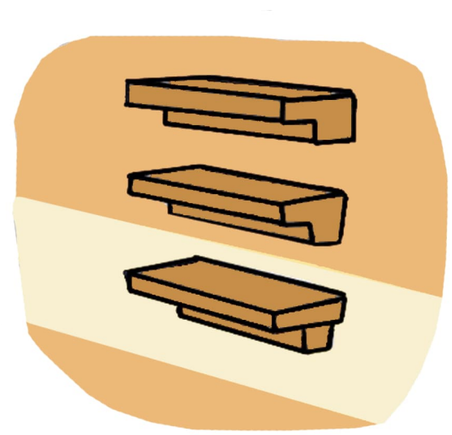
7.13 Bitt Heads

Identify the Bitt heads P51. Apply diluted teak stain. Glue in place as shown Sheet 19.



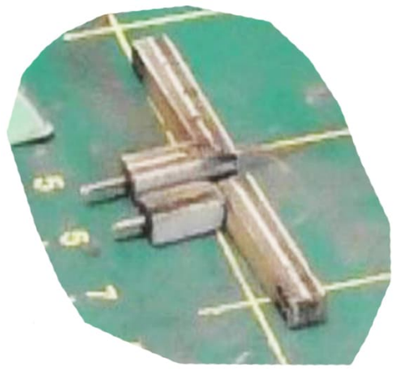
7.14 Bulwark Steps

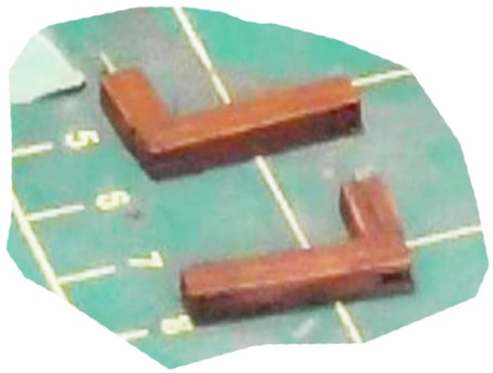
Identify the steps P55 - apply diluted teak stain. Glue two parts together to make an L shape. Fit to the bulwark as shown Sheet 19.



7.15 Cat Heads

Identify the catheads P53A-B. Assemble as shown - apply diluted teak stain. Fix map pins to the centre of the cat head base - snip off pin head. Drill 0.6mm holes at the score marks on the deck. Glue in place on deck as shown Sheet 19.





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7.16 Anchors

Identify the anchors P56 - assemble as shown. Identify the hawse piper P57 - fix hawse pipes into the pre-cut holes in the deck. Drill two 3mm holes through the bulwark on the port and starboard sides as shown. Identify the anchor rope P58 - cut two lengths 250mm long. Taking one end of this cord, pass it through the large brass ring on the end of the anchor shaft, wrap approximately 15mm back on itself and secure with 0.25mm fawn cord G P59. Feed the other end of the 2mm cord through the hole in the bulwark and wrap around the windlass - note the direction shown. Thread the remaining 2mm cord into the hawse pipe.



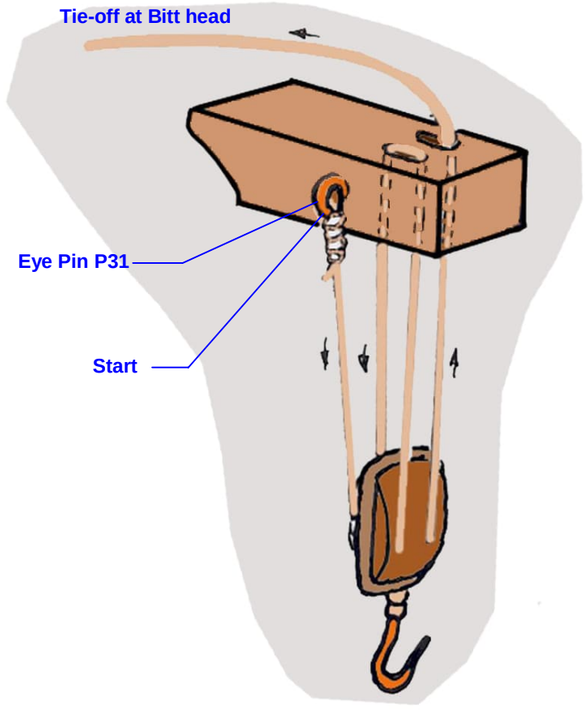




7.17 Anchor Crane

Shape and fit an eye pin P31 into one end of block D. Fit an eye pin P31 to the side of each cat head as shown. Using block D and cord H assemble the anchor crane as shown. Start at the eye pin, rig as shown and tie-off at the bow bitt head. Repeat the process for the second anchor crane.







BLOCK KEY		
Size	1 Hole	2 Hole
3mm	A	—
4mm	—	E
5mm	C	B
7mm	—	D
Violin	—	F

CORD KEY		
Size	Fawn	Black
0.25mm	G	—
0.5mm	H	—
2.0mm	J	—
1.0mm	—	K

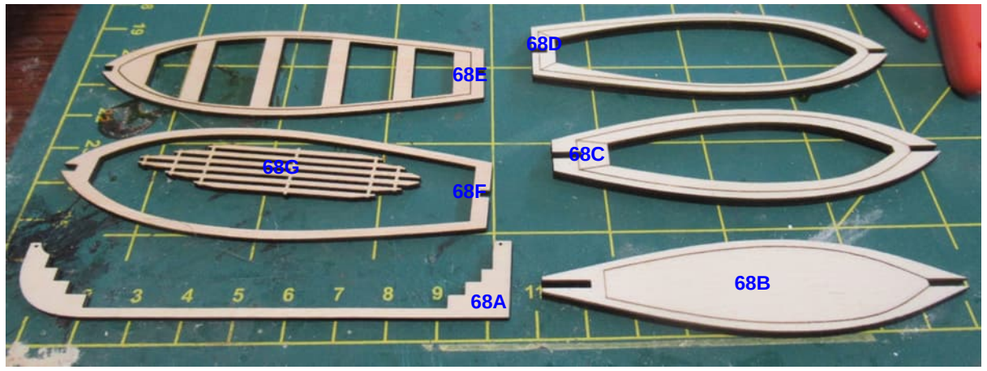
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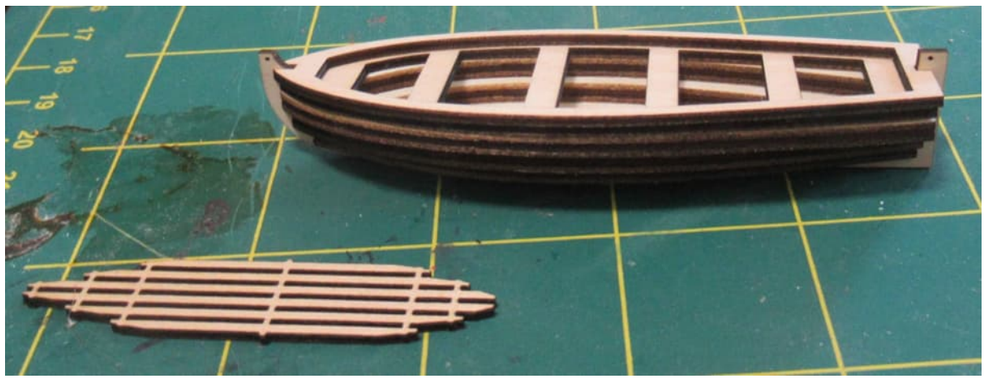
7.18 Boats

There are two boats. Boat 1 assembly is shown below - repeat process for Boat 2.
Shape and assemble the parts as presented below.

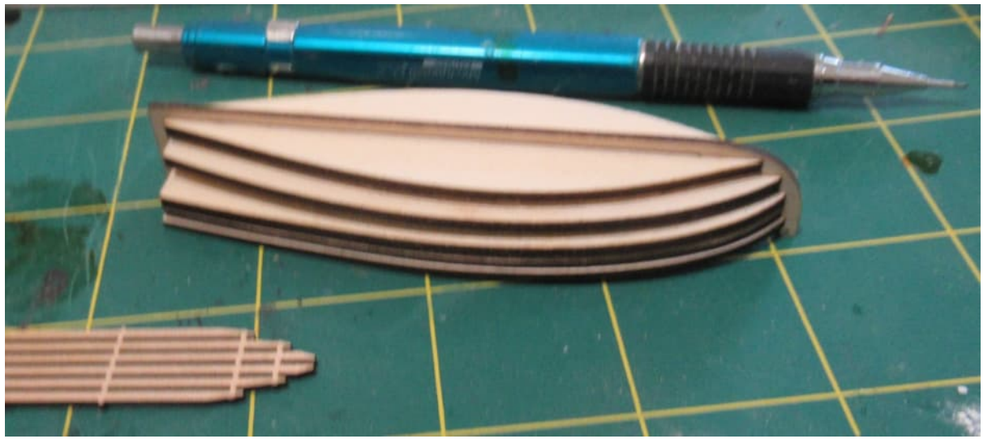
1. Identify the parts for Boat 1 P68A-G. Note the outer score lines on the top side of parts B,C & D.



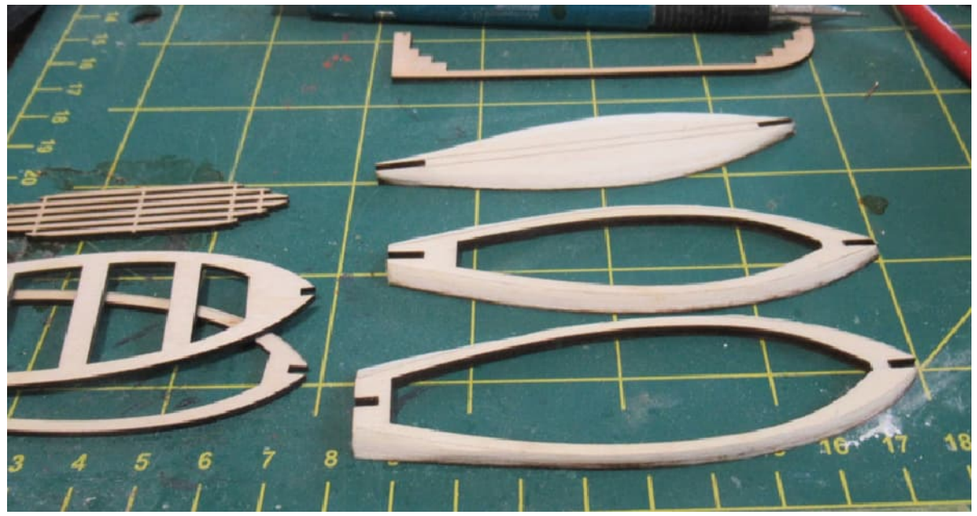
2. Stack the layers as shown: B-C-D-E as a dry fit to the keel.



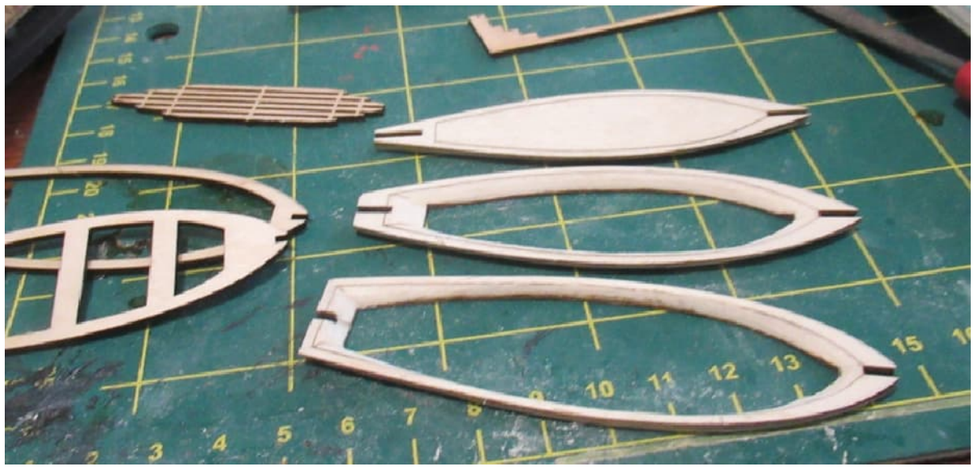
3. Turn the assembled hull over - trace the keel outline onto layer B.
Then trace layer B outline onto layer C and trace layer C onto layer D.
There are now score lines on both sides of parts B, C & D
Then disassemble the parts.



4. Shape the layers B,C & D from the outer pencil score line to the outer edge of each layer as shown.



5. Shape the layers C & D from the inner score lines of each layer as shown.

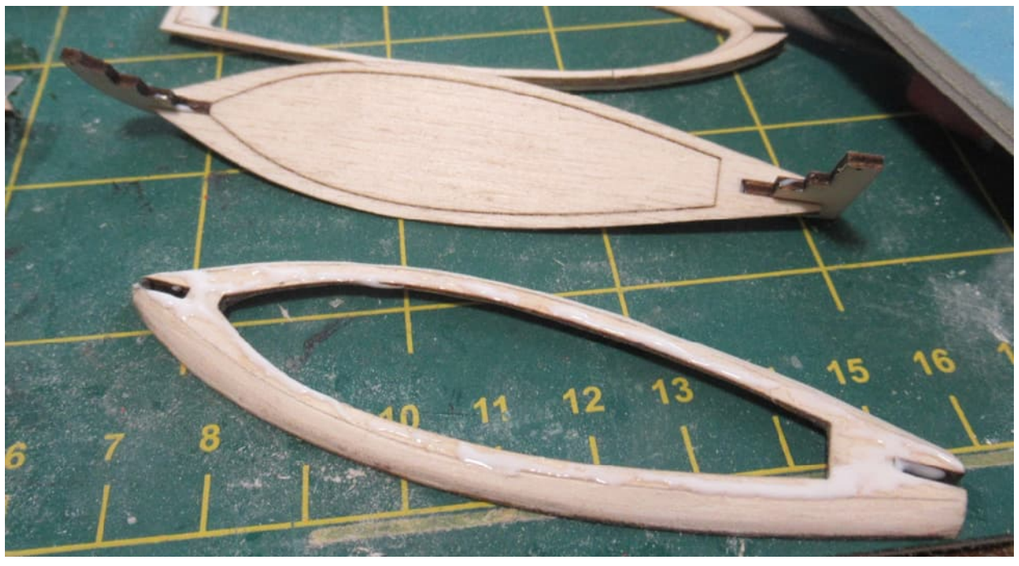


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6. Glue the keel to layer B as shown - apply glue to contact areas.

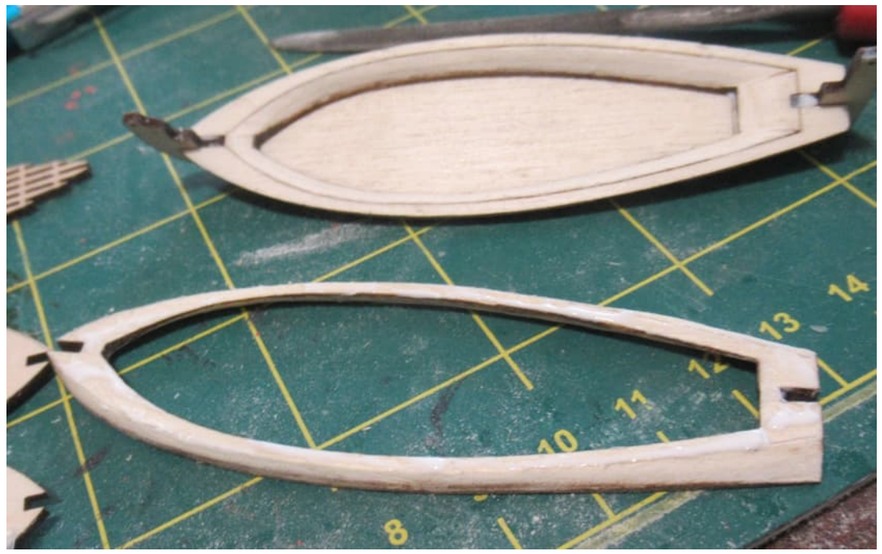


7. Glue the layer C onto layer B as shown.





8. Glue the layer D onto layer C as shown. Set aside for glue to fully set.







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9. File and sand smooth the internal hull. Apply wood filler and allow to set. Sand and smooth again - repeat until satisfied.

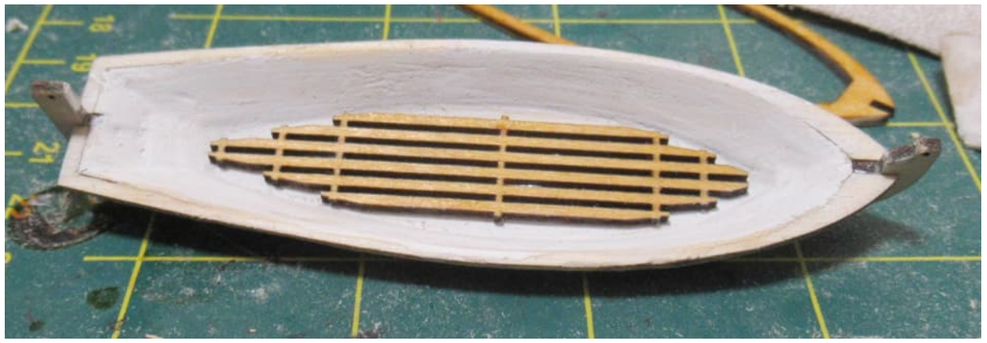


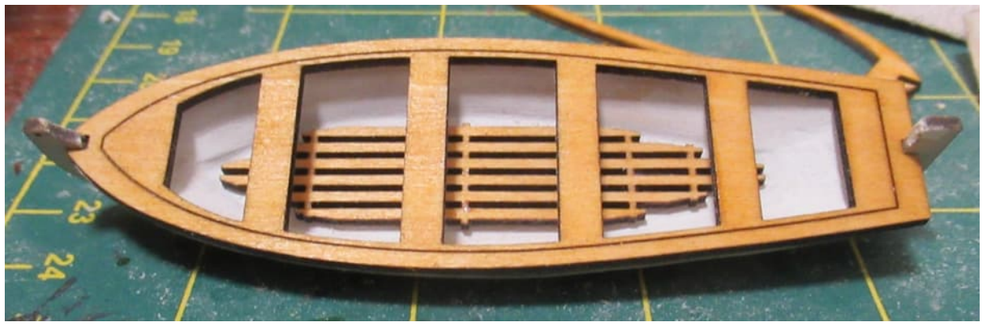




10. Paint the inner hull matt white and apply shellac to parts E, F & G as shown. Glue the floor grate G in place and then the seat layer E as shown



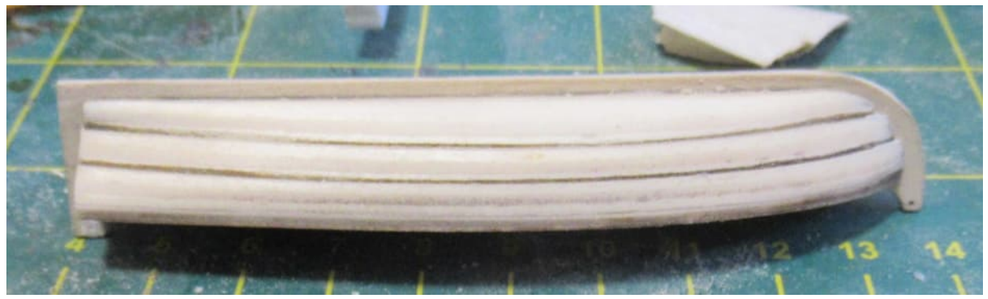




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11. Turn the hull over and san and smooth the outer hull. Apply wood filler as required and allow to set.



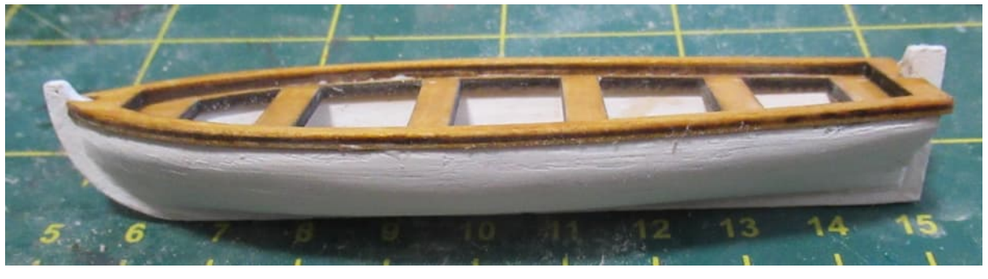




12. Sand and smooth the outer hull and paint matt white. Glue the capping F in place as shown.







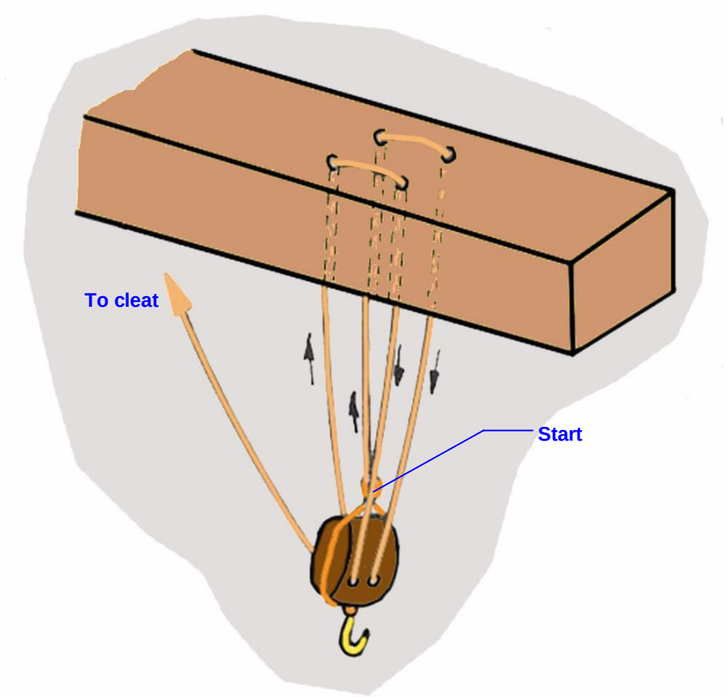
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7.19 Boat Crane

Fit 4 eye pins P31 to the fore and aft port and starboard side of boat 1. Nest boat 2 boat on to boat 1 as shown. If desired make oars from scrap dowel. Cut enough lengths of cord H to cross from one eye pin to the other to tie boat 2 in place. Tie a ring P36 In the middle of the cord as shown.

Fix a cleat P70 to the top of each davit as shown. Identify 2 x 4mm 2 hole blocks P66. Shape and fit an eye pin P31 into the end of each block as shown. Use cord H to reeve the blocks to the davit - hook the block eye pins to the rings as shown. Terminate the rigging at the cleat on each davit.







BLOCK KEY		
Size	1 Hole	2 Hole
3mm	A	—
4mm	—	E
5mm	C	B
7mm	—	D
Violin	—	F

CORD KEY		
Size	Fawn	Black
0.25mm	G	—
0.5mm	H	—
2.0mm	J	—
1.0mm	—	K

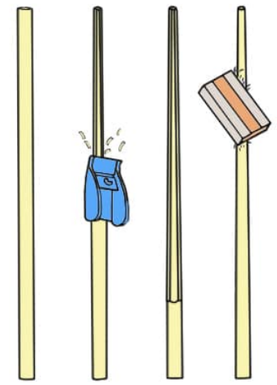
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8.0 Mast, Bowsprit, Gaff, Boom & Yards

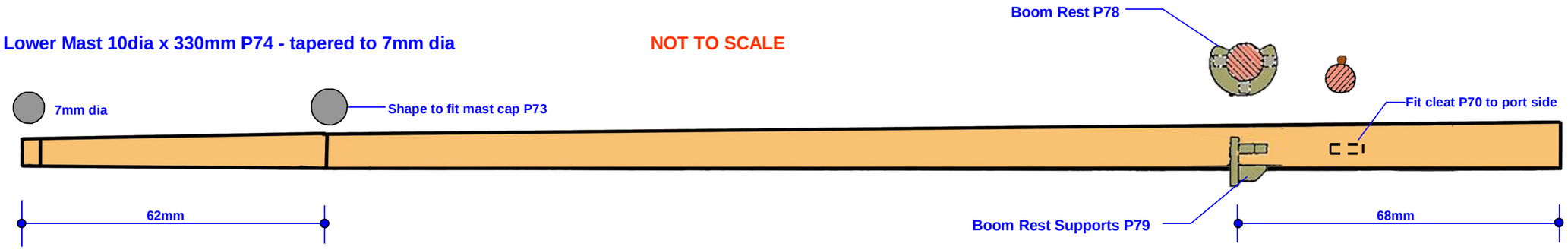
The next step is to shape and assemble the mast, bowsprit, gaff, boom & yards. Identify the various size dowels and cut, shape and taper these parts to the profiles shown in the drawings below. Tapering the dowels can be achieved using a mini plane, a file and sandpaper. Once they have all been shaped and tapered apply shellac finish to each if desired. Locate and identify the various mast caps, blocks and fittings to be used for this stage of building the model. Fit any eye pins, blocks and footrope stirrups as shown below.
Do not fit the mast, bowsprit, gaff, boom or yards to the model yet.

8.1 Mast

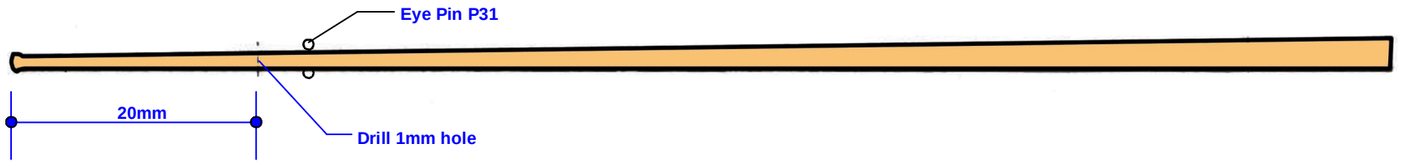
The mast is made in two parts—the lower mast and the upper mast. The two parts are jointed by two mast caps P73 & P74. Identify the relevant dowels and cut and shape the lower and upper mast pieces as shown. Fit and fix the supports and the boom rest P72 as shown. Assemble the lower and upper masts as shown. At the masthead cut 4 lengths of copper strap P77 to fit around the upper mast as shown. Fit an eye pin P31 into the upper mast cap and through the top three copper straps. Attach blocks to these eye pins as shown.

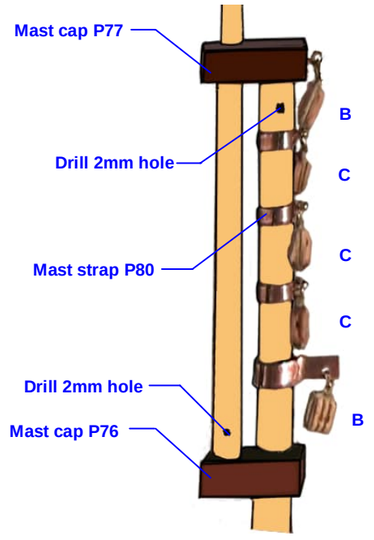


Lower Mast 10dia x 330mm P74 - tapered to 7mm dia NOT TO SCALE



Upper Mast 5dia x 225mm P75 - tapered to 2.5mm dia



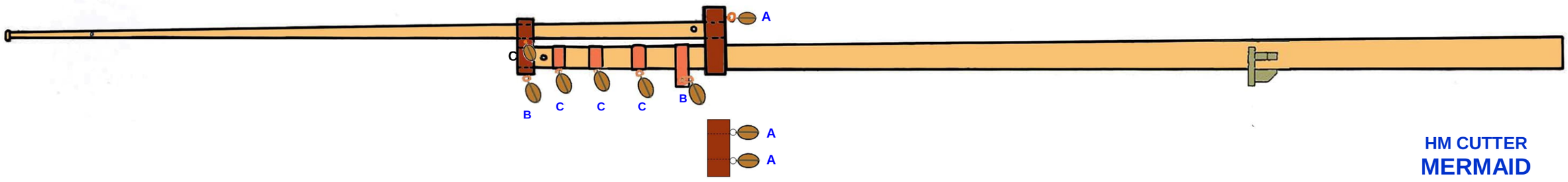


Masthead

CORD KEY		
Size	Fawn	Black
0.25mm	G	—
0.5mm	H	—
2.0mm	J	—
1.0mm	—	K

BLOCK KEY		
Size	1 Hole	2 Hole
3mm	A	—
4mm	—	E
5mm	C	B
7mm	—	D
Violin	—	F

Assembled Mast



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8.2 Bowsprit, Gaff, Boom & Yards

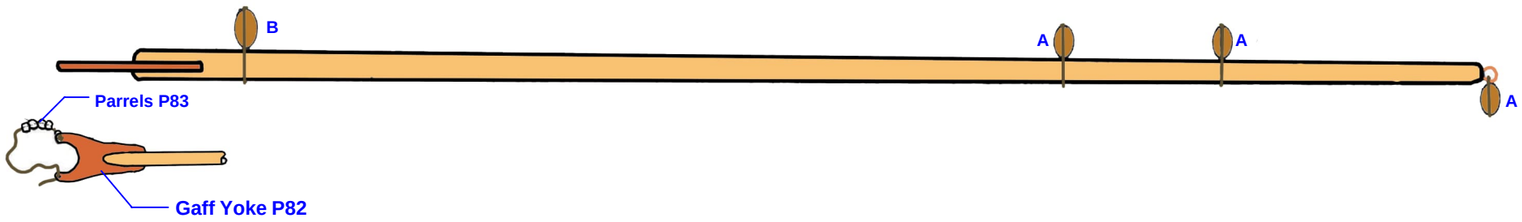
Shape each part following the dimensions below. Fit all fittings as shown.

NOT TO SCALE

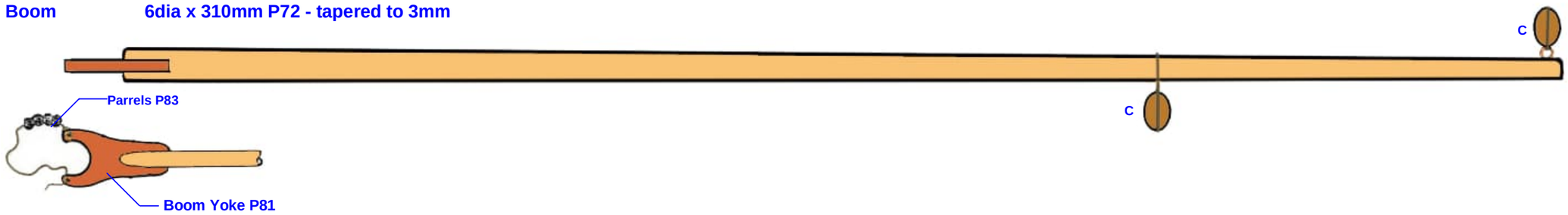
Bowsprit 6dia x 250mm P71 - tapered to 4mm



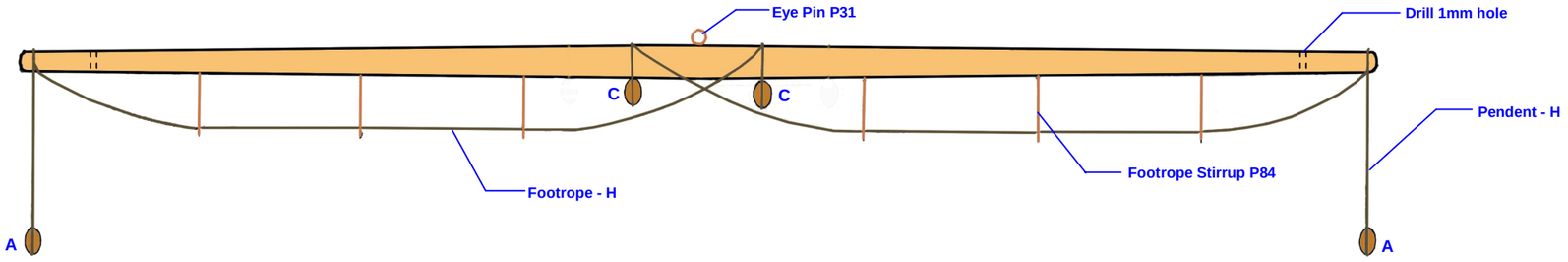
Gaff 5dia x 220mm P75 - tapered to



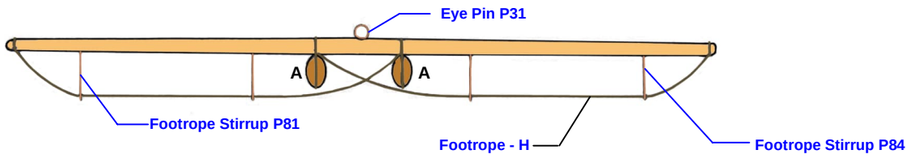
Boom 6dia x 310mm P72 - tapered to 3mm



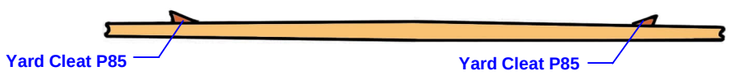
Lower Yard 5dia x 210mm P76 - tapered to 3mm at each end



Topsail Yard 3dia x 115mm P73 - tapered to



Topmast spreader 3dia x 100mm P73 - tapered to



CORD KEY		
Size	Fawn	Black
0.25mm	G	—
0.5mm	H	—
2.0mm	J	—
1.0mm	—	K

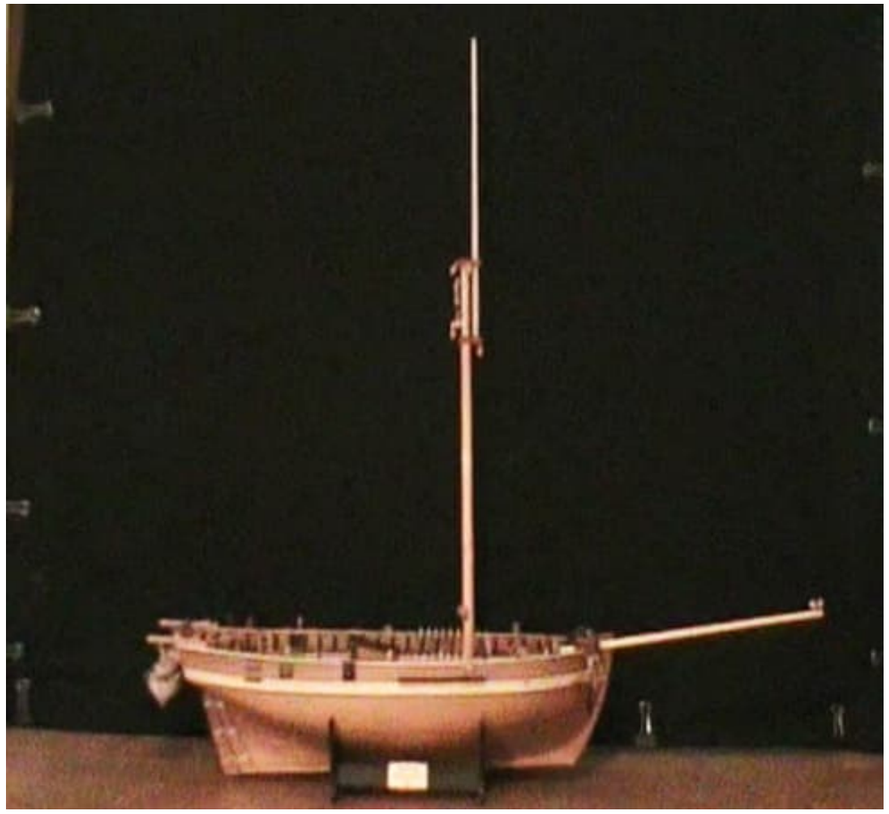
BLOCK KEY		
Size	1 Hole	2 Hole
3mm	A	—
4mm	—	E
5mm	C	B
7mm	—	D
Violin	—	F

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8.3 Mast Heel & Mast

Fit the mast heel P86 in place over the mast hole. Fit and glue the assembled mast in place vertical to the deck. There is **no** aft rack on the mast.



8.4 Bowsprit

Shape a slot in the bulwark on the starboard side of the stem post to take the bowsprit - fractionally adjust as required. Fit and glue the bowsprit in place between the knightheads and below the bowsprit pin rail.



8.5 Deadeyes (Lower) and Deadeye Straps

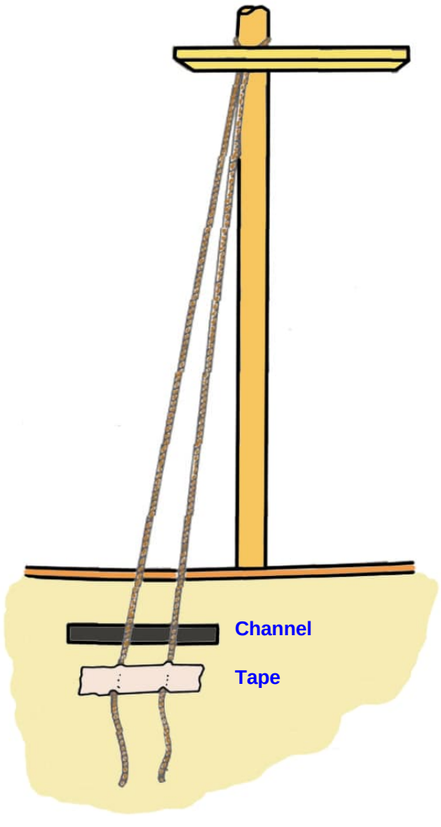
Identify the deadeye straps P87 and the deadeyes P88 - fit the deadeyes into the strap loop. Rotate the deadeye so the three holes of the deadeye are positioned with the lowest one being the centre of the three. Apply a small amount to glue to hold each deadeye in position. Fit the assembled deadeyes straps into the slots in the channel as shown - apply a dab of glue in the slot to hold the straps in place. Attach blocks C to the eye pins on the channel as shown.



BLOCK KEY		
Size	1 Hole	2 Hole
3mm	A	—
4mm	—	E
5mm	C	B
7mm	—	D
Violin	—	F

8.6 Shroud Extension Angle

The tail of each deadeye strap is fixed to the hull below the channel and must be in a straight line with its respective shroud - this is achieved by extending a shroud down below the channel and locating the deadeye strap fixing holes to ensure the deadeye strap is an extension of the shroud. Once located drill holes into the hull and fix the deadeye strap in place. To determine this extension angle run a length of rigging cord around the mast head and down over the channel slot - align the strap tail with the cord and mark the location of the strap fixing holes - move the cord to the next channel slot - repeat process for each slot on moth sides of the hull. Fix the tail of each strap in place using nails P26. Lastly, cut a length of P39 as capping to fit across channel as shown above.





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9.0 Rigging

9.1 Types of Rigging

The rigging of a ship can be divided into two main parts:
1. “Standing” rigging, which is used to support the Masts and Bowsprit.
2. “Running” rigging, which is used to manipulate yards and sails through pulley blocks.

On an “actual” ship any rigging that did not pass through a pulley block was coated with tar to help prevent it rotting. To simulate this the cord supplied in the kit for the standing rigging is black 1mm cord. The running rigging is fawn and of two sizes, 0.25mm and 0.5mm.

9.2 Preparation for Rigging

If needed drill out the holes in the blocks and deadeyes to facilitate the threading of the rigging cord when the time comes. For the most inaccessible blocks, insert a short piece of thin rigging cord through the hole and glue it to itself forming a loop. Later, when you wish to insert the permanent running rigging you cut the loop, glue the new cord to one end and pull it through the hole using the other end of the pilot cord.

There are a few points to remember when rigging.
- Never cross rigging lines with each other.
- Never run rigging lines on the forward side of the yards.
- Never bend rigging lines around obstacles.
- Never run rigging lines through ratlines.
- Never make knots in rigging lines.

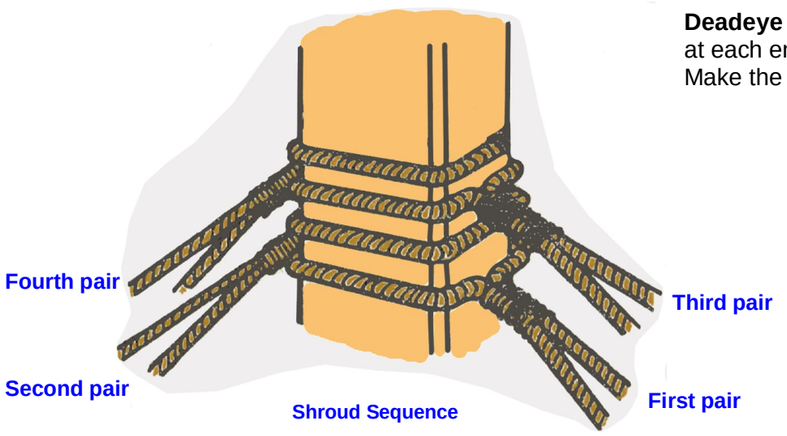
9.3 Standing Rigging

The standing rigging includes the rigging of the shrouds, backstays & forestays and is completed before the running rigging. The standing rigging should be taut but not over tensioned so as to cause bending of any mast.

9.4 Shrouds

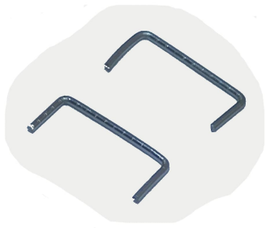
The shrouds are made up in pairs with a deadeye attached to the end of a single cord. On the port side fit the first pair of shrouds by cutting a length of K cord long enough to go from the channel to the mast cap twice with approximately 30mm overhang. Using an alligator clip glue one end of the rigging cord around a deadeye. Make sure the centre hole of the upper deadeye is the highest of the three. This deadeye should then be temporarily connected to the front portside lower deadeye using the deadeye spacer jig. This wire jig will provide the correct spacing between the upper and the lower deadeye and ensure the deadeyes are in straight rows parallel with the channels and with each other.

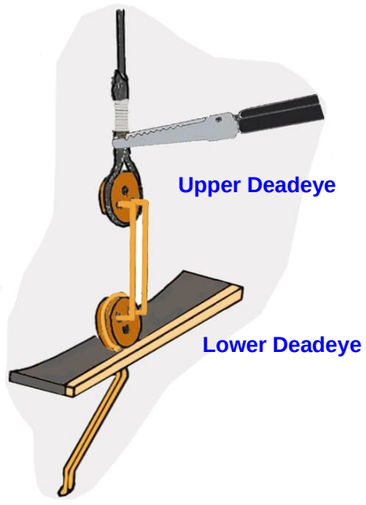
The loose end of the rope then goes up and around the mast and down to the position of the lower deadeye immediately behind the first. Using super glue, alligator clip and another wire jig - attach the upper deadeye to the shroud. Using a short length of cord G seize the two shrouds together around the mast at the mast cap. Once the first pair of shrouds has been completed, the exercise is repeated on the starboard side, then back to the port-side and so on. At the upper deadeye bind the double thickness of cord immediately above the upper deadeye with G cord. Seize the end of this cord with a dab of super glue.



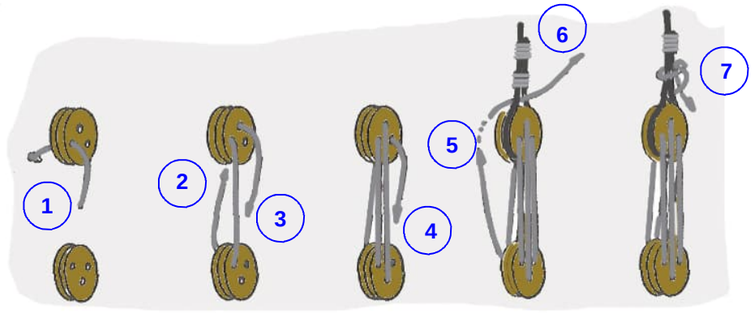
Shroud Sequence

Deadeye Spacer Jig is a piece of pliable steel wire (paper clip) bent at right angles at each end - long enough to fit into and hold the upper and lower deadeyes. Make the distance between the two bends 20mm.


Deadeye Spacer Jig



Lanyards
The lanyards are the cords that tie (reeve) the upper and lower deadeyes together and are used to tension the shrouds. For the lanyards use cord G and reeve as shown.



Reeving Deadeyes

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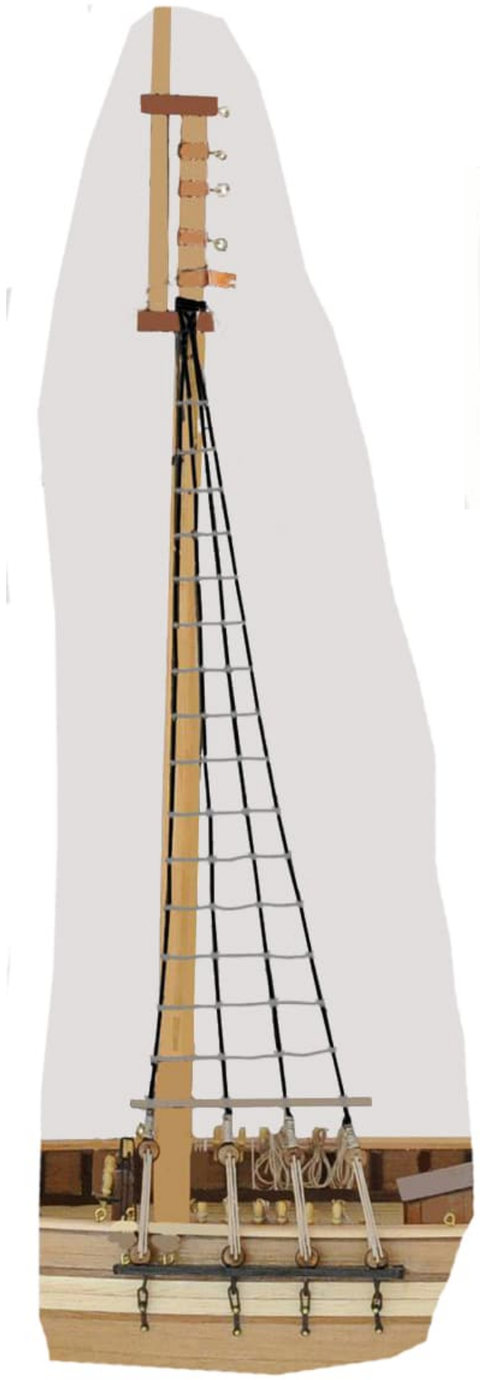
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9.4 Shrouds continued

Fit the shrouds following the sequence previously presented and using the deadeye spacer jig to maintain a consistent distance between the upper and lower deadeyes. Follow the sequence to reeve the deadeyes as previously presented. Lash a lanyard strip using P39 to the shrouds as shown.

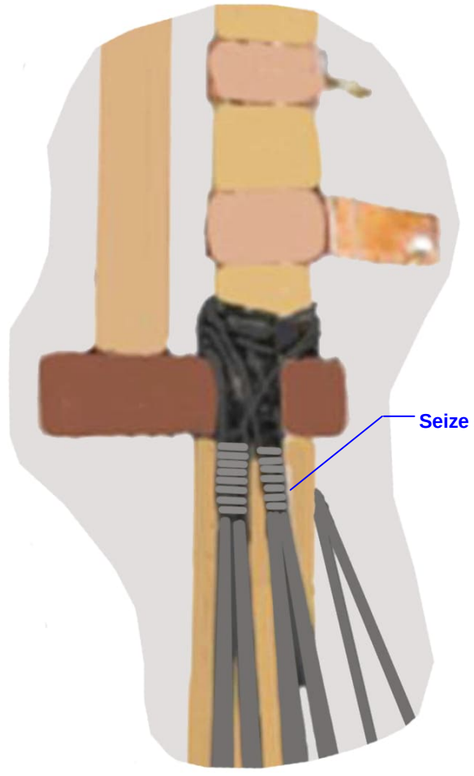
9.5 Ratlines

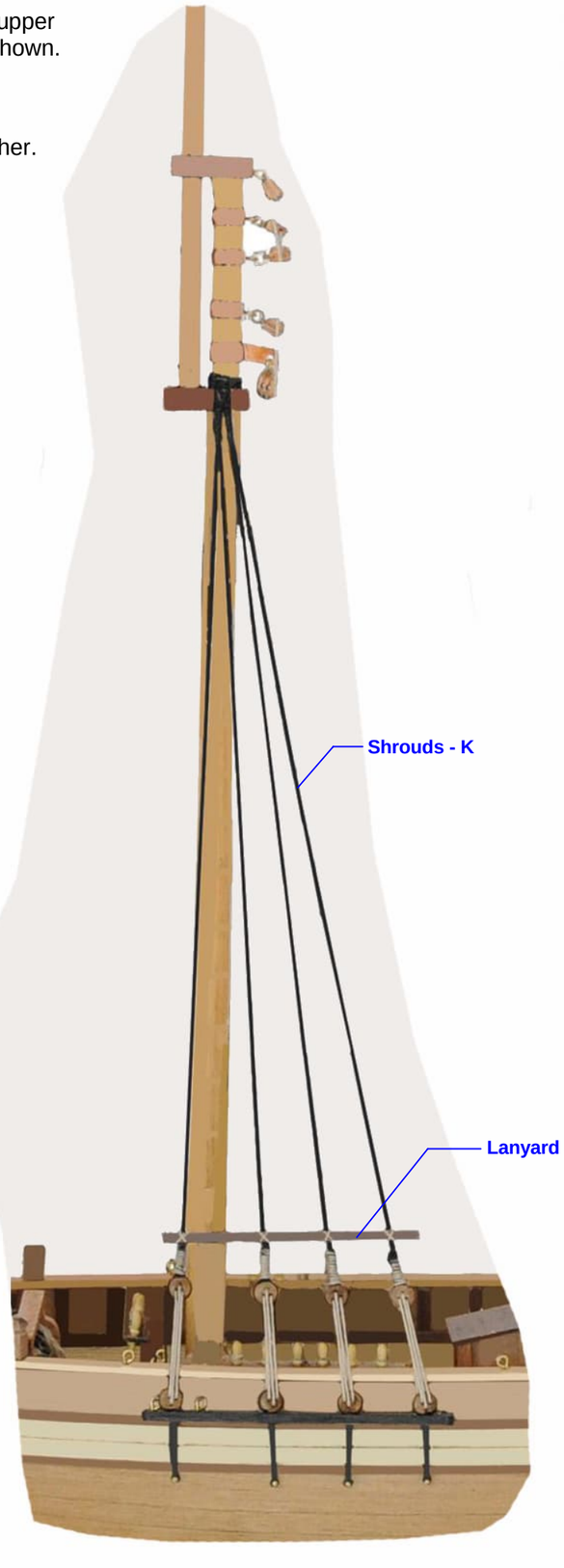
Using cord G tie off the ratlines to the shrouds as shown.. Equally space the ratlines making sure they are horizontal and parallel with each other. Seize each knot with a dab of glue and trim excess cord.





Ratlines





CORD KEY		
Size	Fawn	Black
0.25mm	G	—
0.5mm	H	—
2.0mm	J	—
1.0mm	—	K

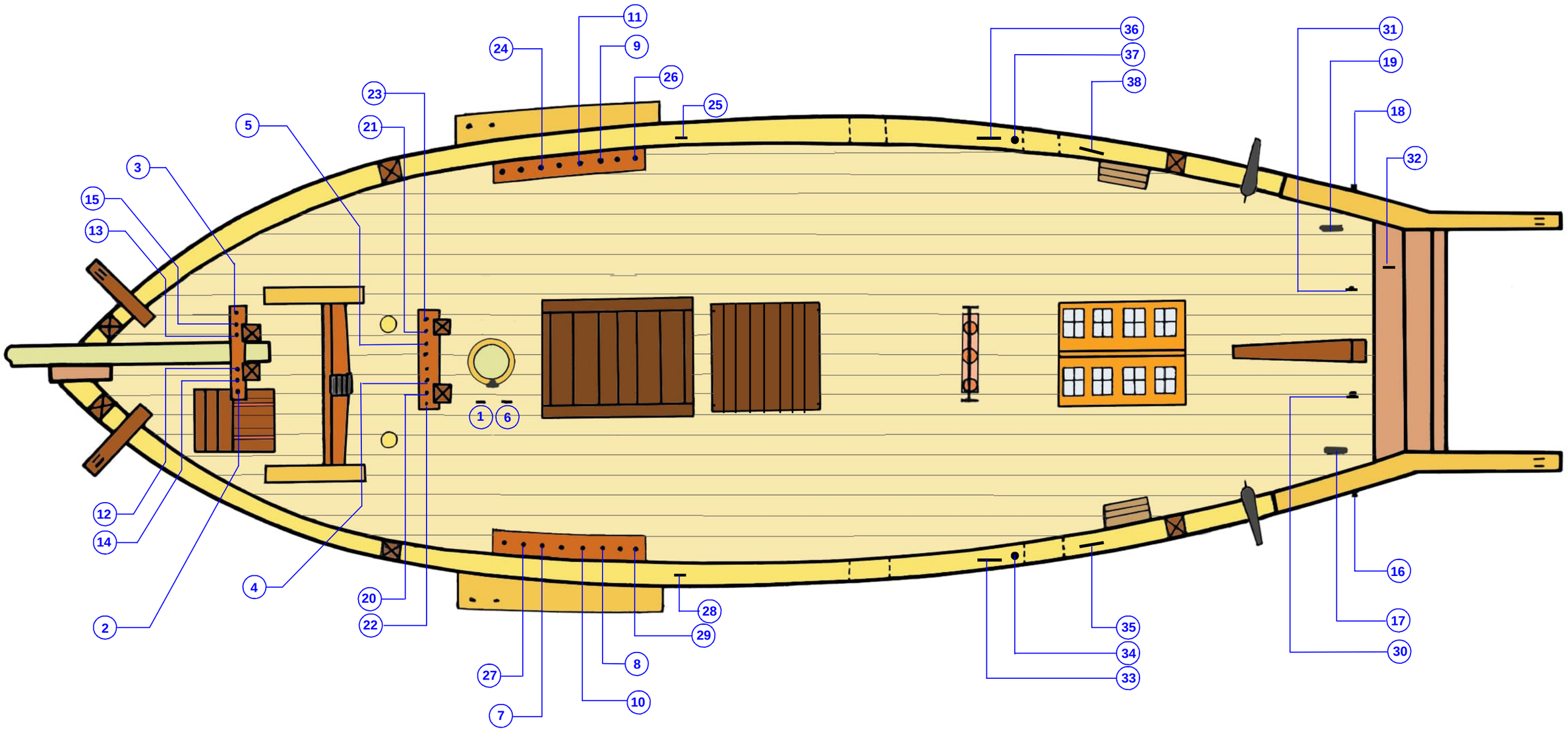
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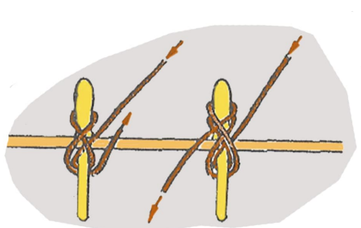
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9.6 Belaying Plan

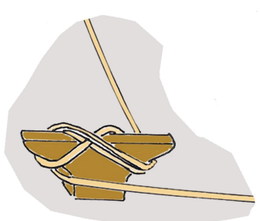
The belaying plan shows where the rigging starts and finishes. This plan will be used in each of the following sheets. Fit an eye pin P31 and a ring P36 to the belaying points on the deck, cap rail, channels and inner and outer bulwark The numbers presented on the following drawings & photos correspond to the belaying points indicated below.

BELAYING PLAN

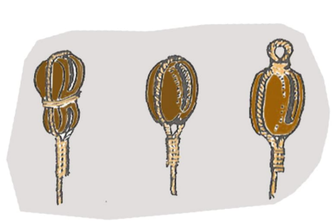




Belaying pin tie-off



Cleat tie-off



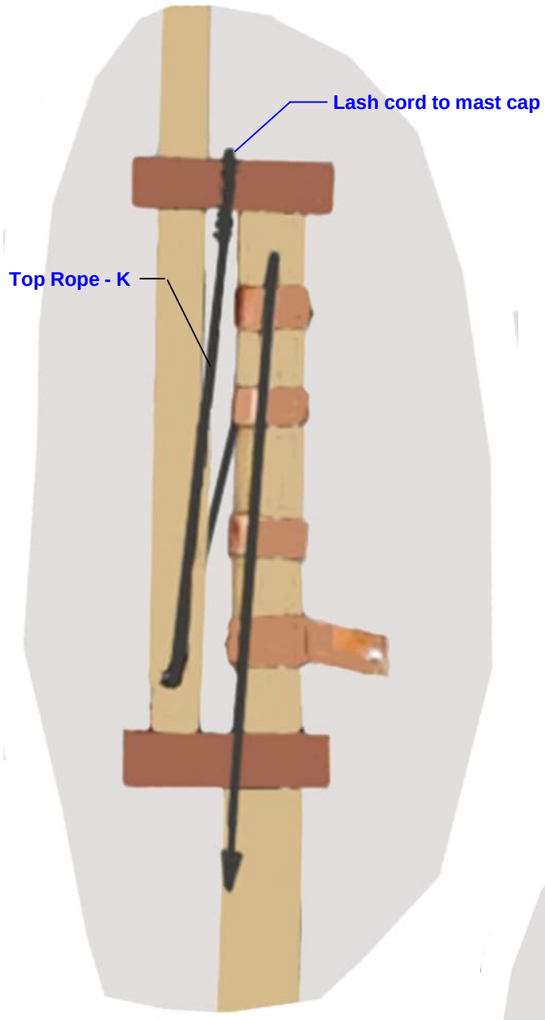
Block Tie-offs

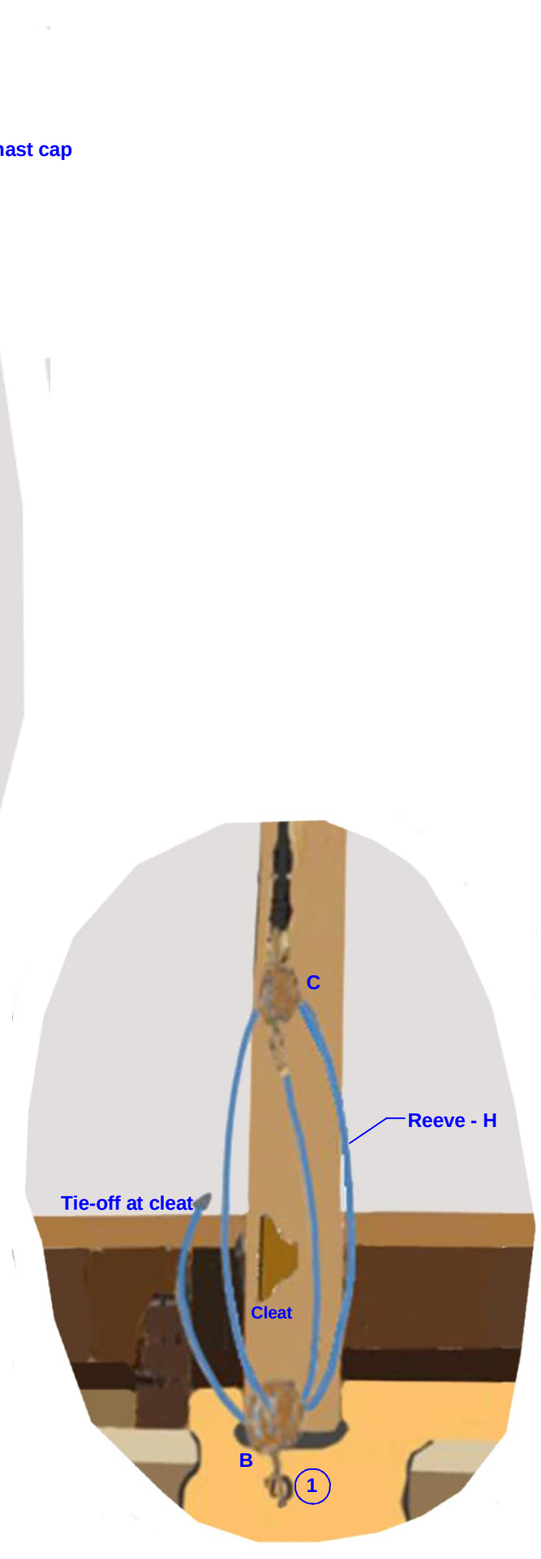
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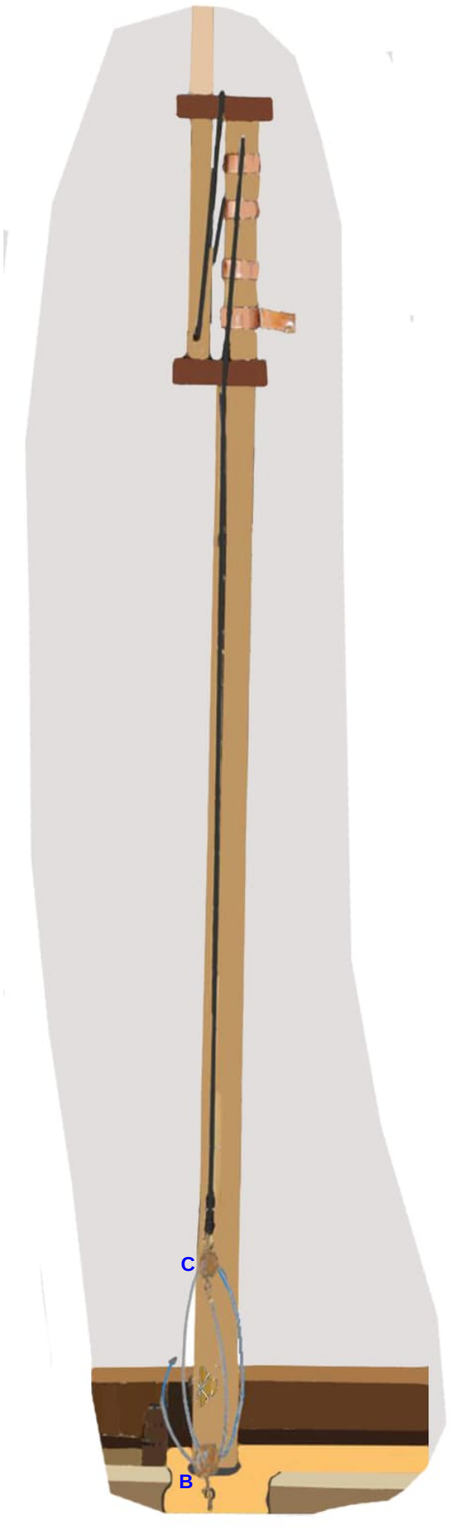
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9.7 Top Rope

Using a length of cord K, lash one end to the top mast cap. Feed the end down and through the hole in the top mast heel, then up through the hole in mast head and down to terminate at block C. Fit a block B to Point 1. Reeve these two blocks with together with cord H. Tie-off at the cleat fitted to the mast.

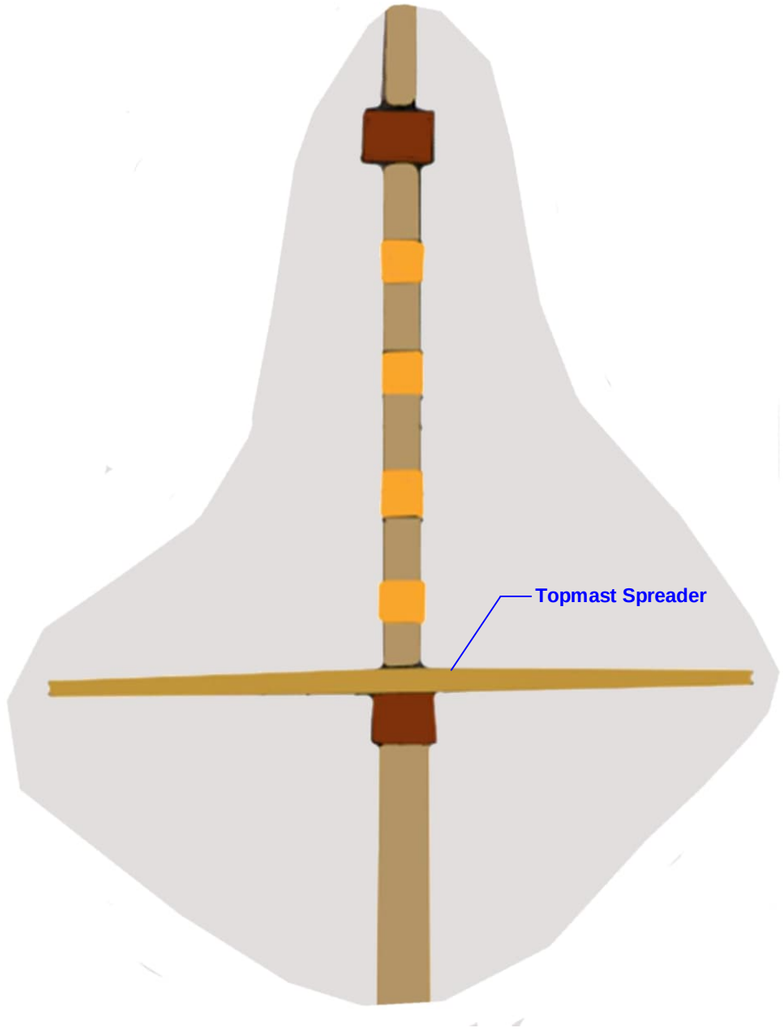






9.8 Topmast Spreader

Identify the topmast spreader. Fix centrally across the top of the lower mast cap. Align so that the yard cleats are facing the stern of the model.



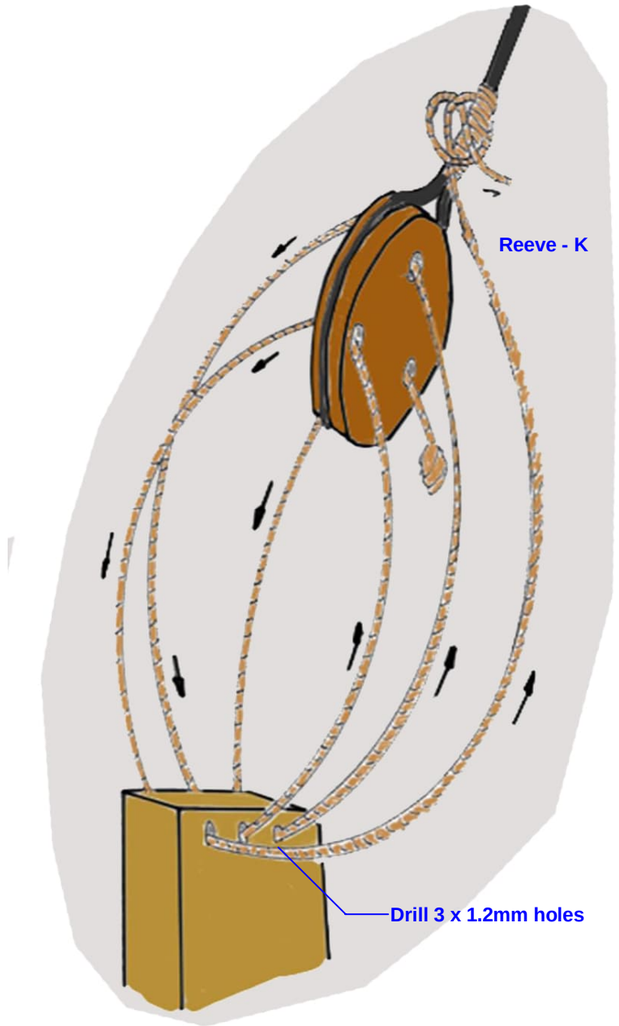
CORD KEY		
Size	Fawn	Black
0.25mm	G	—
0.5mm	H	—
2.0mm	J	—
1.0mm	—	K

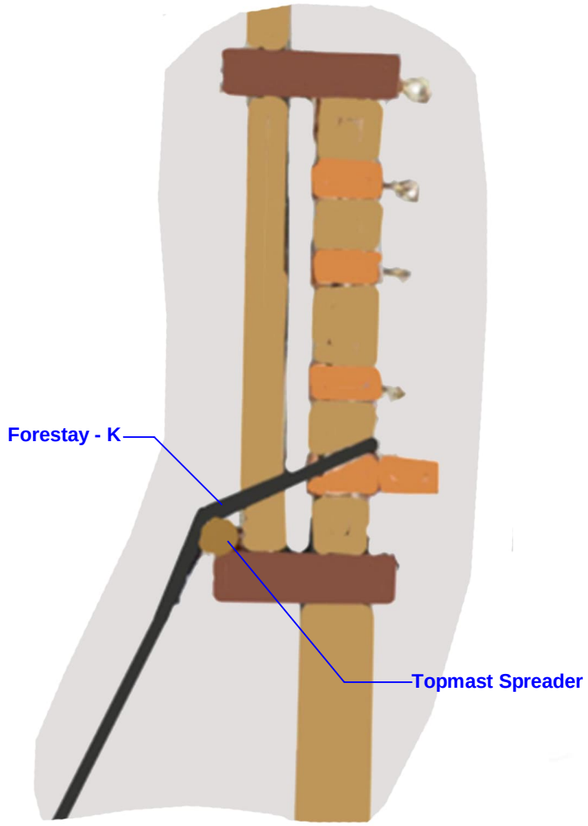
BLOCK KEY		
Size	1 Hole	2 Hole
3mm	A	—
4mm	—	E
5mm	C	B
7mm	—	D
Violin	—	F

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9.9 Forestay

Drill three 1.2mm holes in the top of the stem post as shown. Using a length of cord K fit, seize and glue one end at the top mast heel as shown. Fit a 5mm deadeye P85 to the other end of this cord. Use cord K to reeve between the deadeye and the stem post as shown.





BLOCK KEY		
Size	1 Hole	2 Hole
3mm	A	—
4mm	—	E
5mm	C	B
7mm	—	D
Violin	—	F

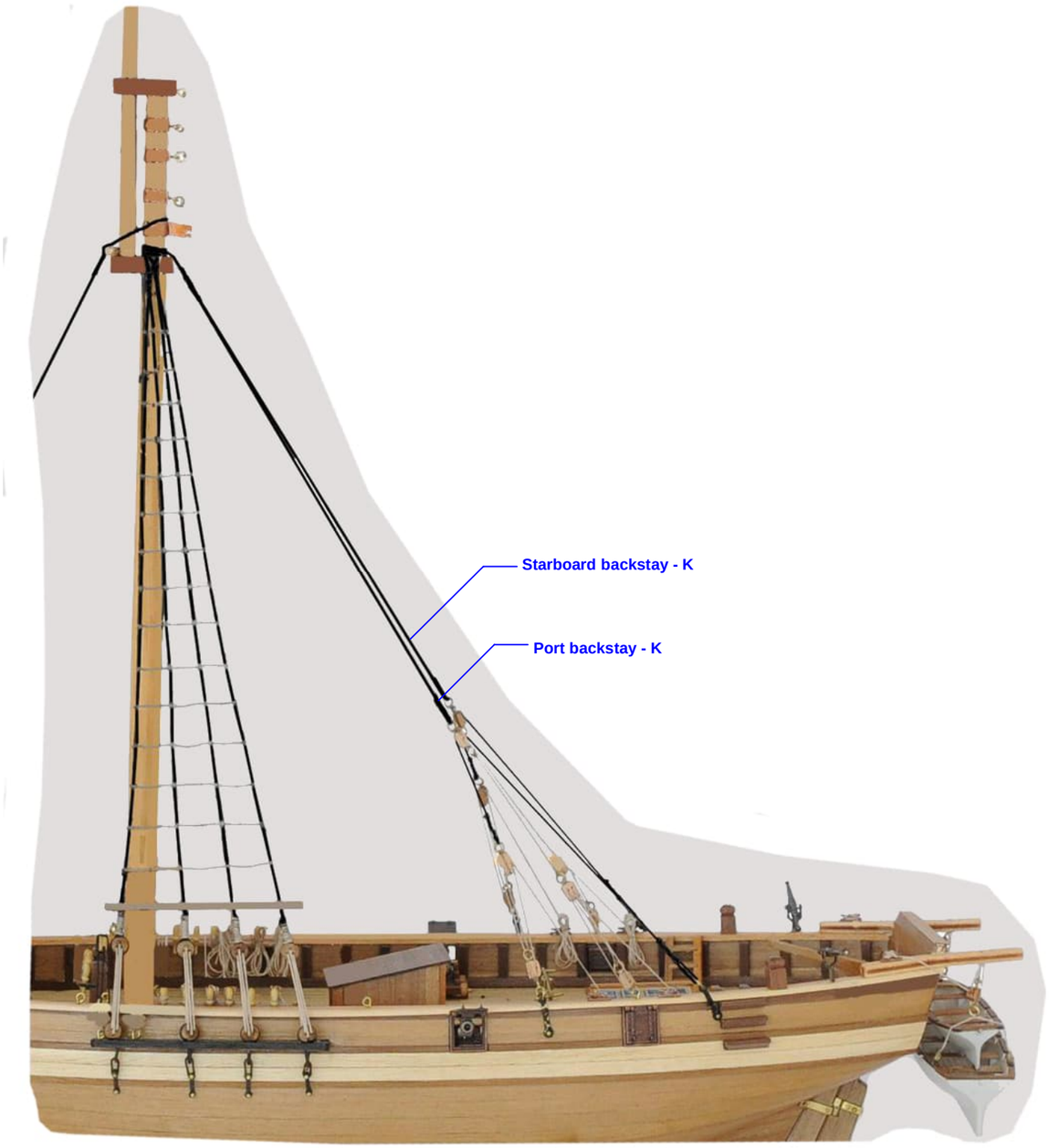
CORD KEY		
Size	Fawn	Black
0.25mm	G	—
0.5mm	H	—
2.0mm	J	—
1.0mm	—	K

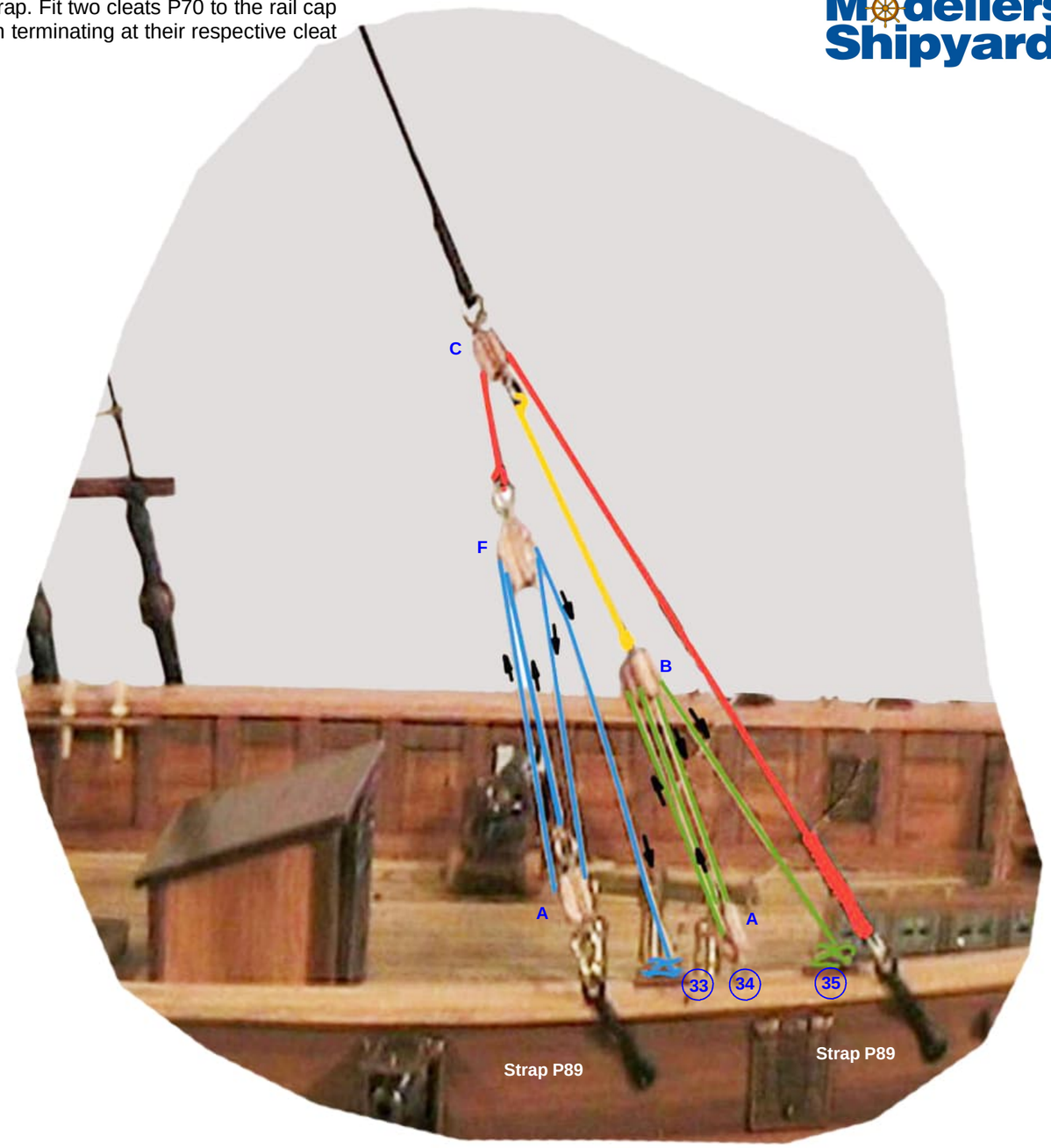
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9.10 Backstays

For the port side backstay use a nail to fix two straps P89 to the bulwark as shown. Fit a block A to the fore strap. Fit two cleats P70 to the rail cap at Points 33 & 35. Fit an eye pin P31 at Point 34 and attach a block A. Reeve the two sets of blocks as shown terminating at their respective cleat Points 33 & 35. Use cord H for the reeving. Repeat for the starboard side.





BLOCK KEY		
Size	1 Hole	2 Hole
3mm	A	—
4mm	—	E
5mm	C	B
7mm	—	D
Violin	—	F

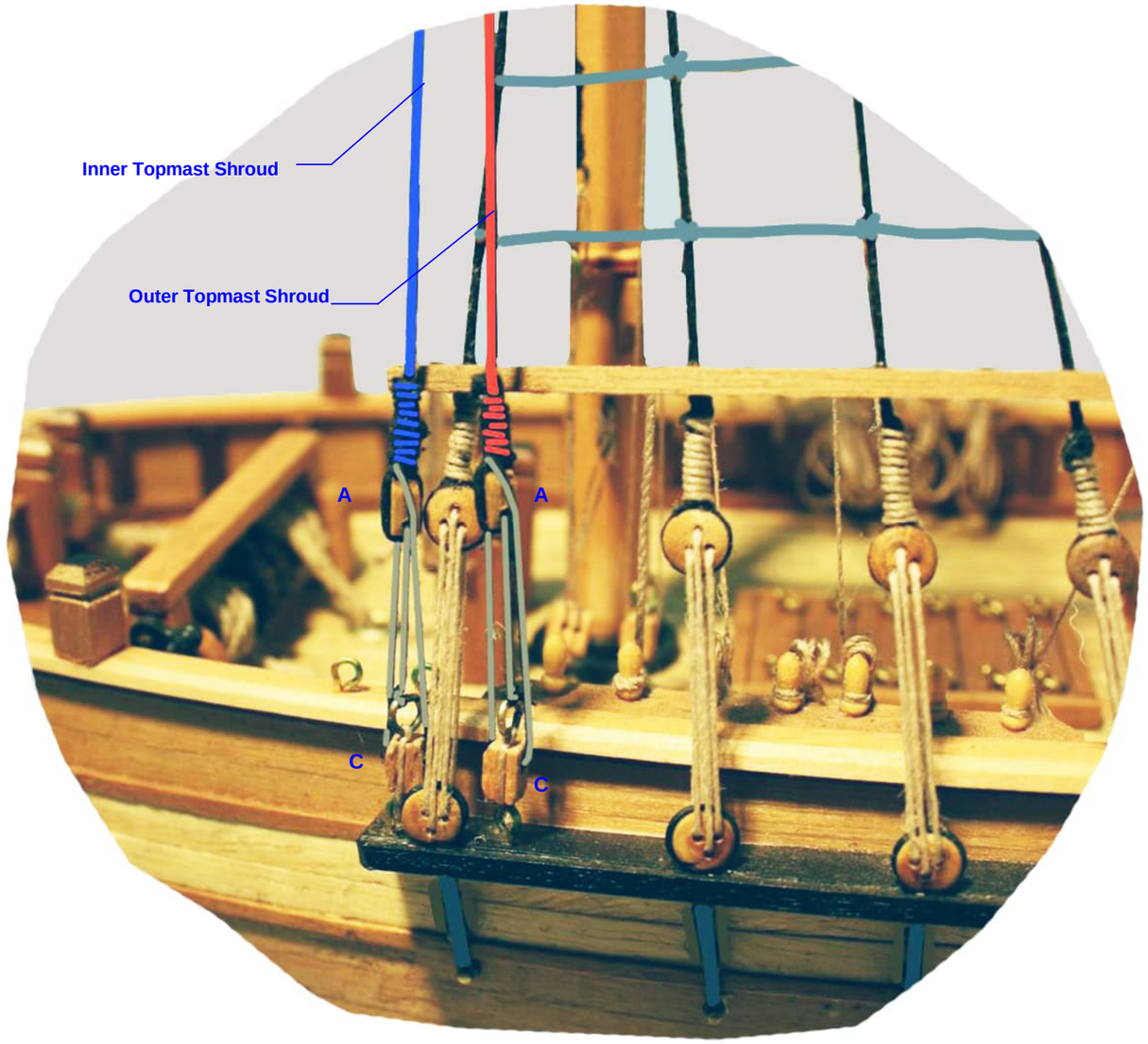
CORD KEY		
Size	Fawn	Black
0.25mm	G	—
0.5mm	H	—
2.0mm	J	—
1.0mm	—	K

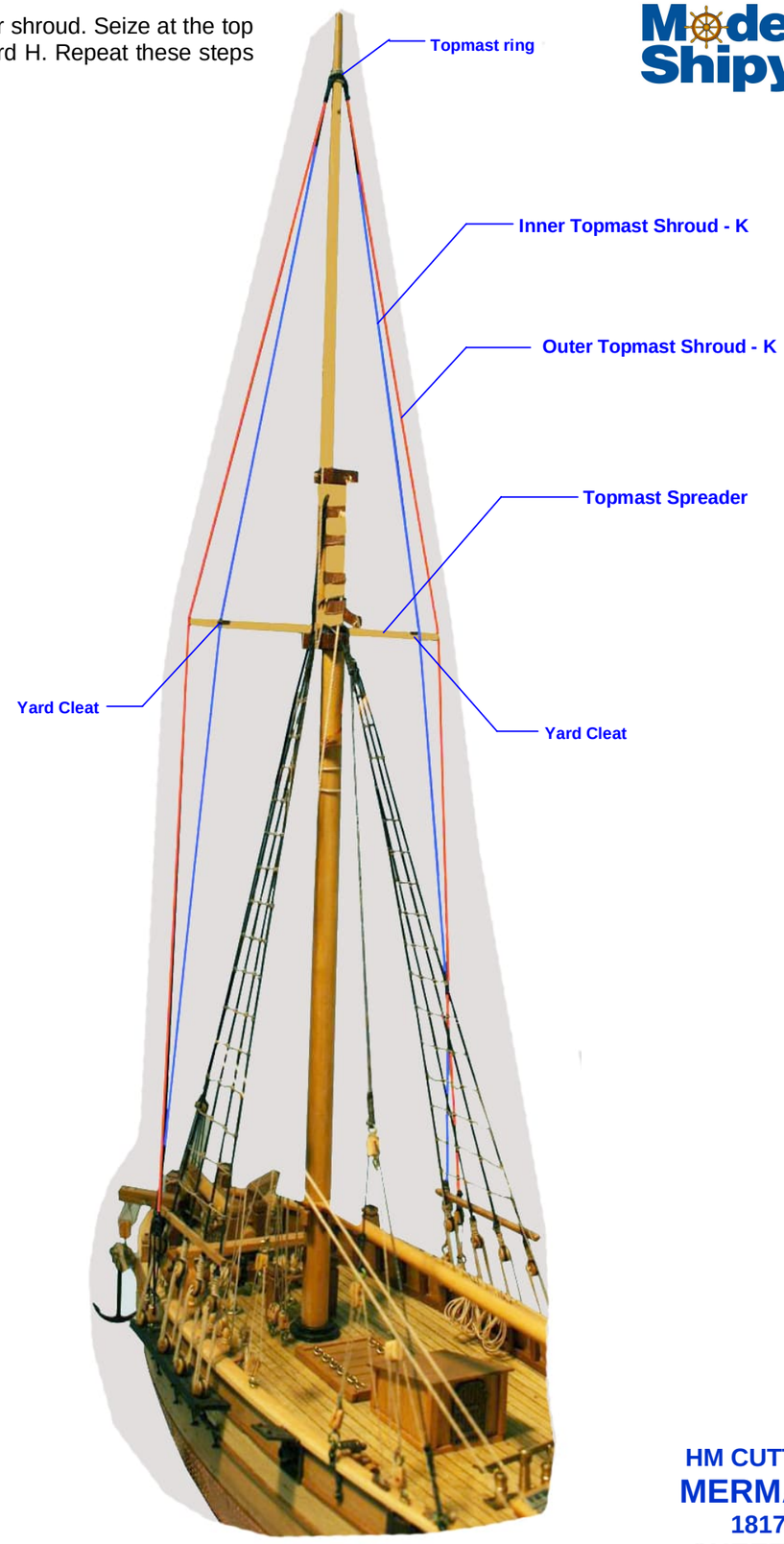
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9.11 Topmast Shrouds

Fit and glue in place a brass ring P36 25mm from the top of the mast. Use lengths of cord K long enough to make an inner and an outer shroud. Seize at the top mast ring. Run the shrouds via the top mast spreader down to the channel and tie-off to blocks A. Reeve the blocks together using cord H. Repeat these steps for the starboard side.





BLOCK KEY		
Size	1 Hole	2 Hole
3mm	A	—
4mm	—	E
5mm	C	B
7mm	—	D
Violin	—	F

CORD KEY		
Size	Fawn	Black
0.25mm	G	—
0.5mm	H	—
2.0mm	J	—
1.0mm	—	K

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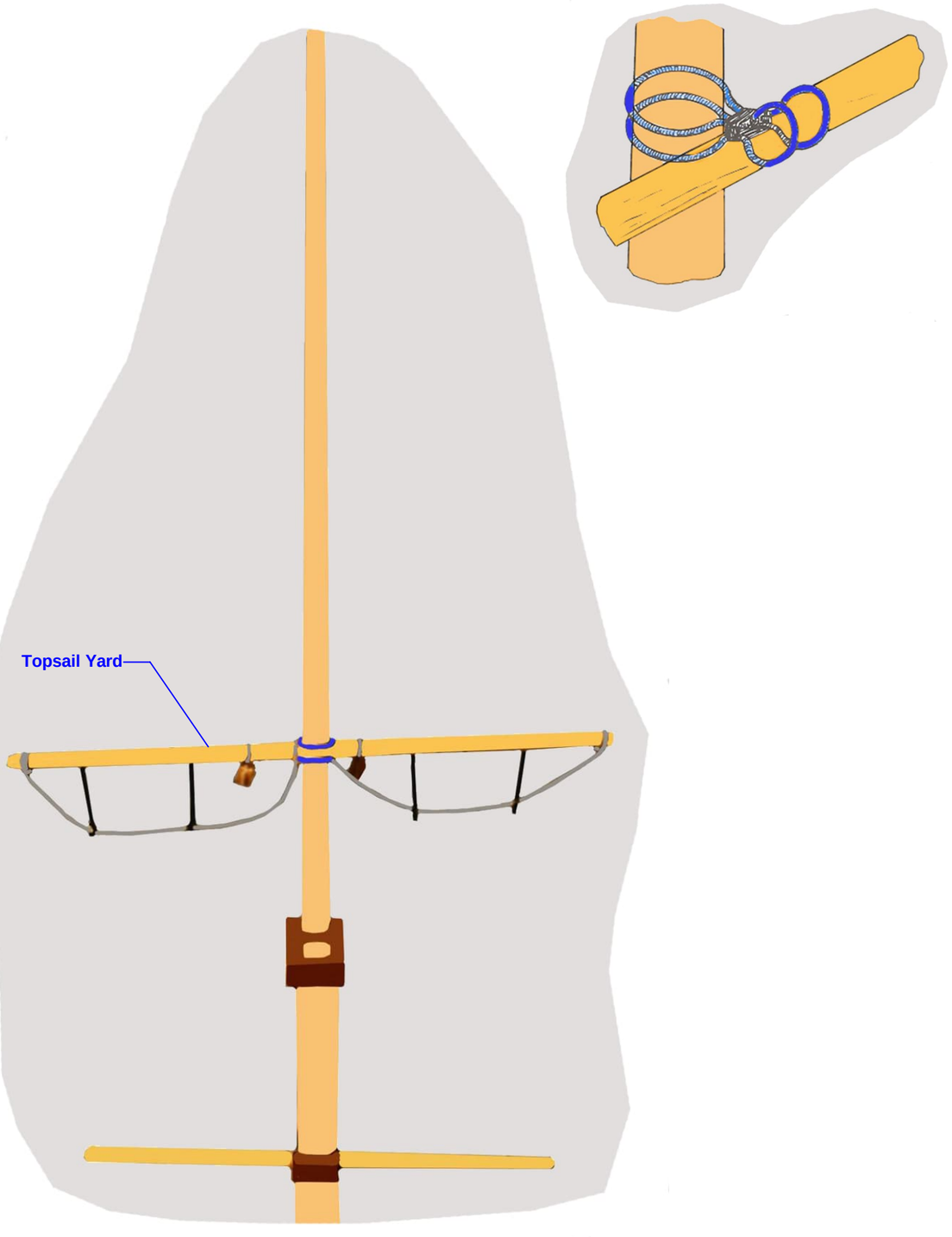
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10.0 Fitting the Yards

Fit the topsail yard and the lower yard to the model.

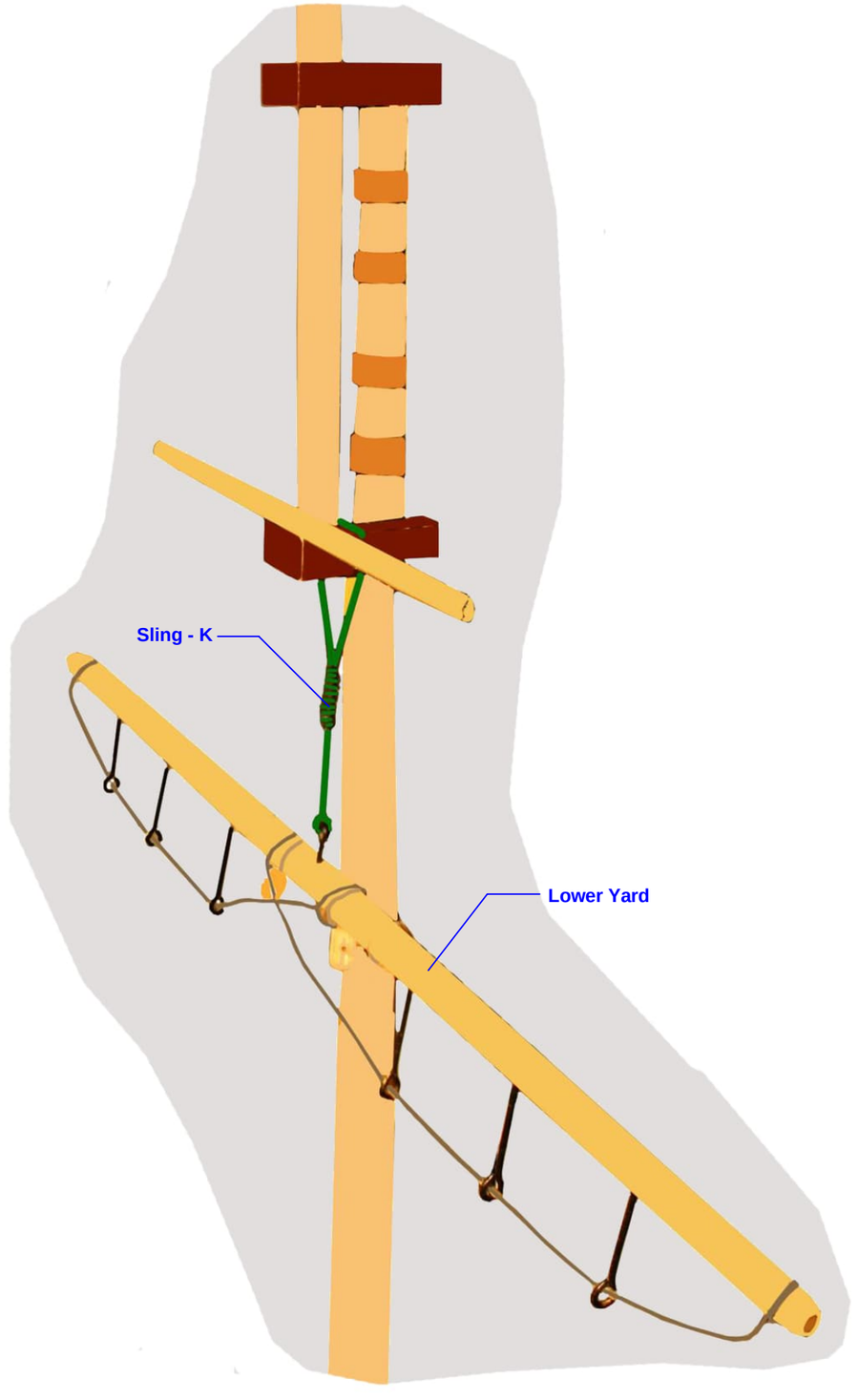
10.1 Topsail Yard

Retrieve the topsail yard. Using cord K lash the topsail yard to the mast above the top mast cap as shown.



10.2 Lower Yard Sling

The lower yard is attached to the mast by a sling. Using cord K fit a sling around the lower mast cap and tie-off the sling to the eye pin in the centre of the yard.



CORD KEY		
Size	Fawn	Black
0.25mm	G	—
0.5mm	H	—
2.0mm	J	—
1.0mm	—	K

BLOCK KEY		
Size	1 Hole	2 Hole
3mm	A	—
4mm	—	E
5mm	C	B
7mm	—	D
Violin	—	F

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11.0 Running Rigging

The Running Rigging includes the jib hauls, bowsprit guys, halliards, lifts, cluelines & sheets, yard braces, topping lift, topsail yard halliard, mainsheet and flag hoist. Use cord H. While completing the running rigging make sure to follow the rigging points presented.

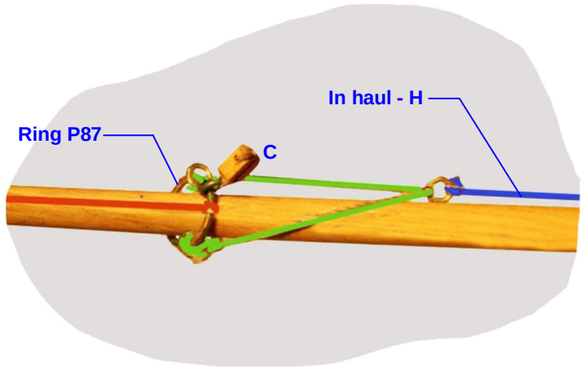
11.1 Jib Outhaul & Inhaul

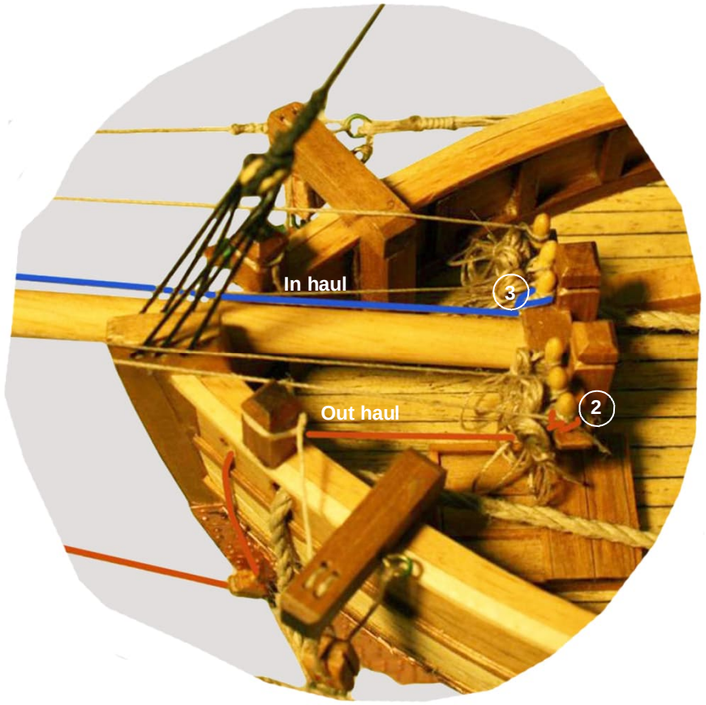
Outhaul

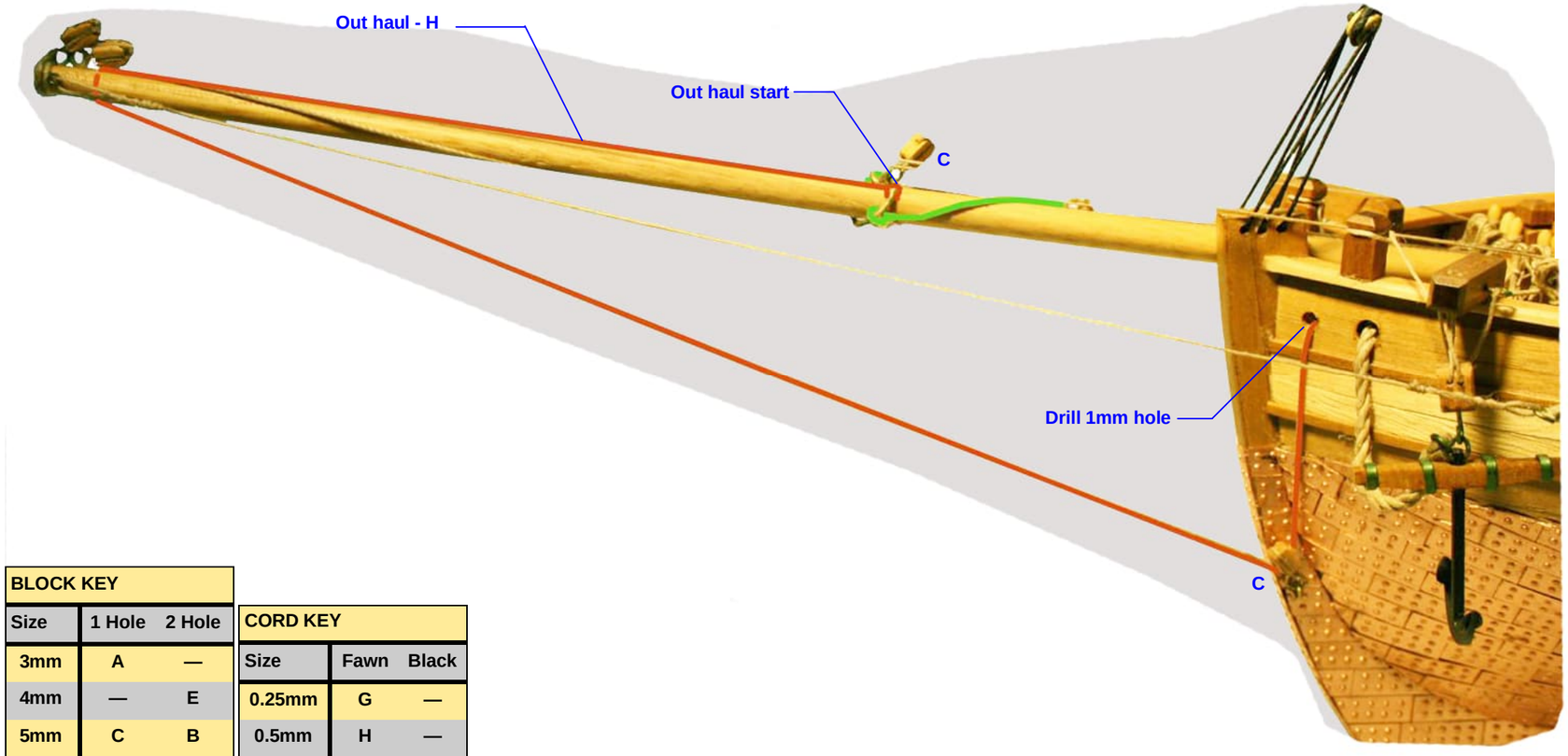
Fit the bowsprit ring P90 to bowsprit approximately 55mm from stem post. Fit three brass rings P36 to the bowsprit ring. Fit block C as shown. Drill hole in bulwark as shown. Rig using cord H as shown. Terminate at Point 2

Inhaul

Tie a loop of cord H to the two outer rings P36 attached to the bowsprit ring as shown. Attach a length of cord H to this loop and take back and terminate at the **port side knight head**. Terminate at Point 3.







BLOCK KEY		
Size	1 Hole	2 Hole
3mm	A	—
4mm	—	E
5mm	C	B
7mm	—	D
Violin	—	F

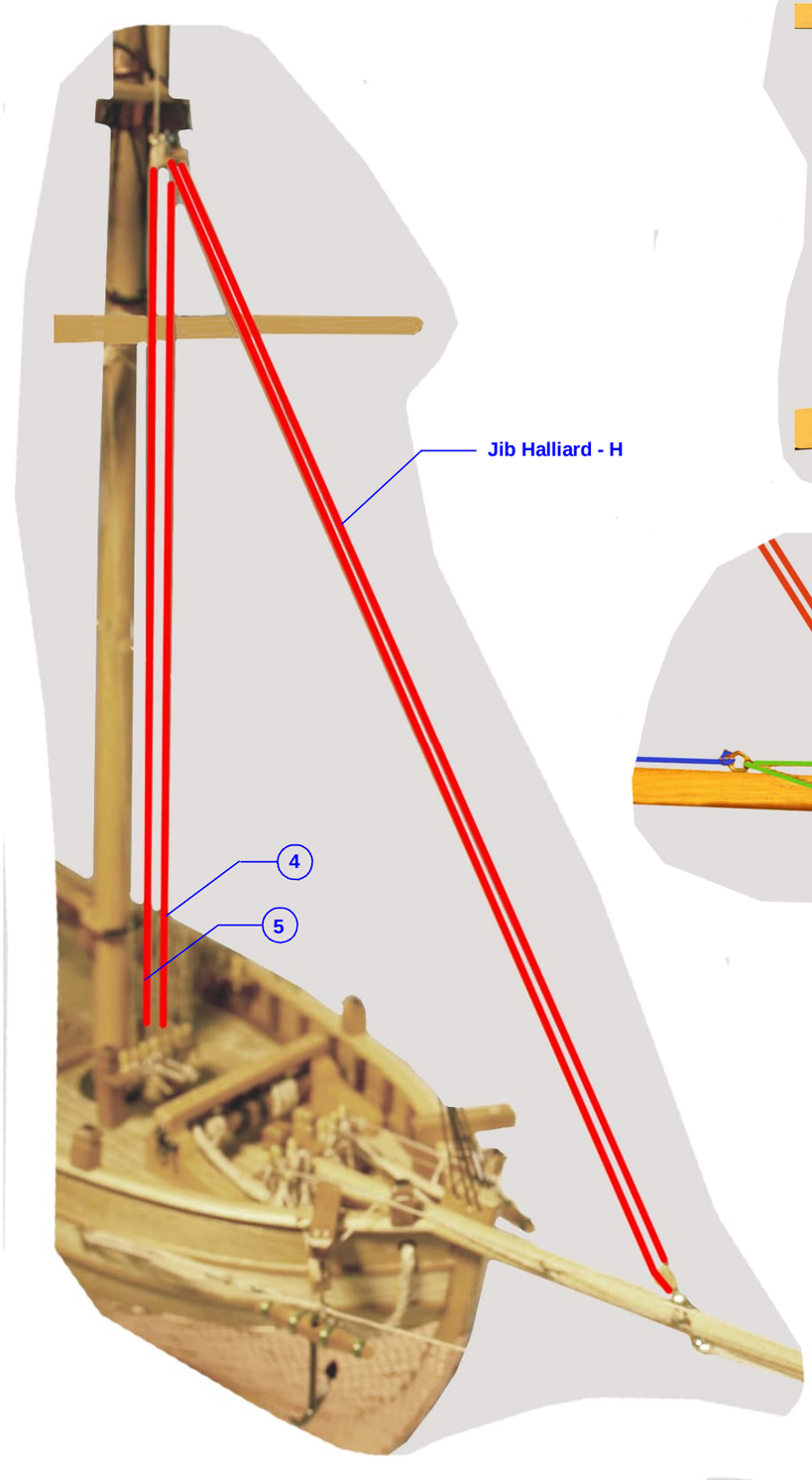
CORD KEY		
Size	Fawn	Black
0.25mm	G	—
0.5mm	H	—
2.0mm	J	—
1.0mm	—	K

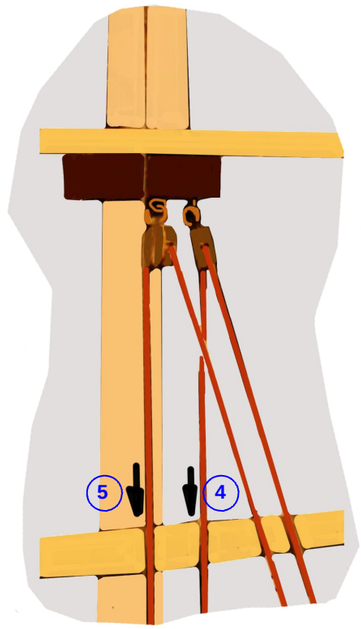
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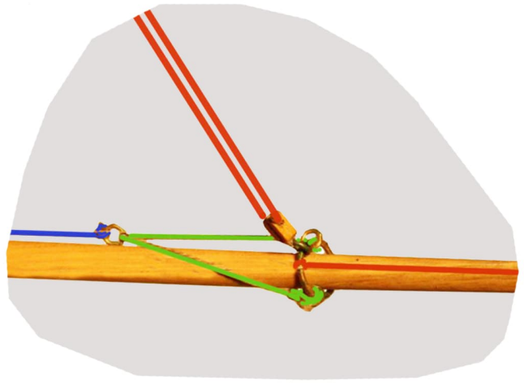
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11.2 Jib Halliard

Rig the jib halliard with cord H as shown. Terminate at Points 4 & 5





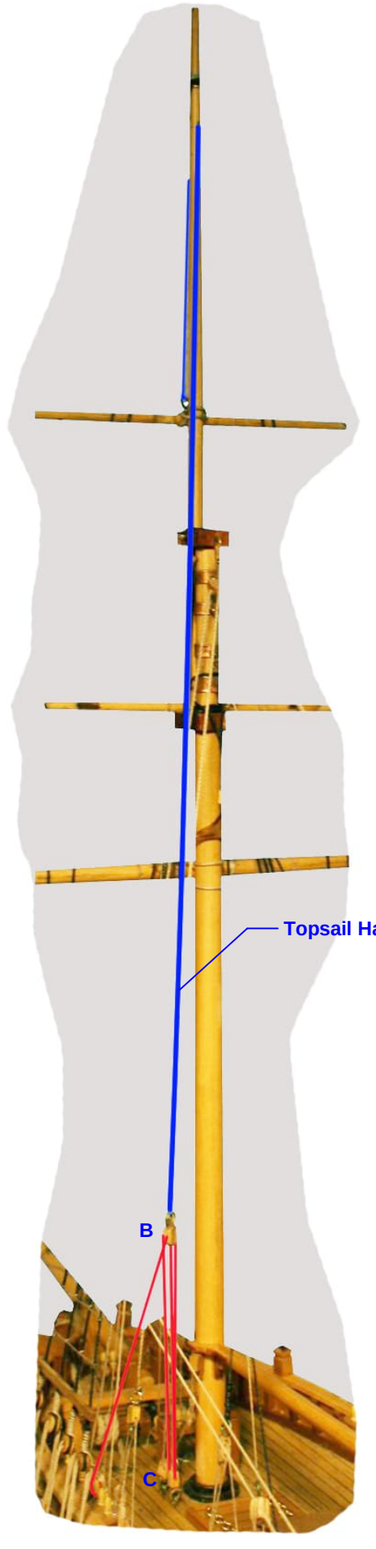


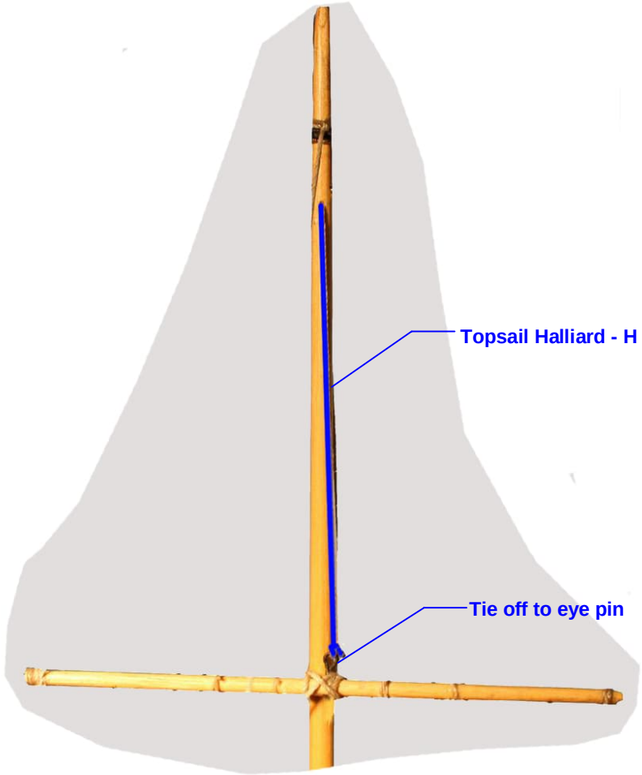
CORD KEY		
Size	Fawn	Black
0.25mm	G	—
0.5mm	H	—
2.0mm	J	—
1.0mm	—	K

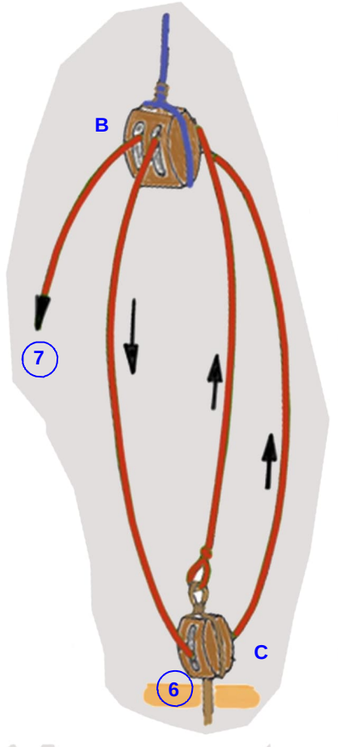
BLOCK KEY		
Size	1 Hole	2 Hole
3mm	A	—
4mm	—	E
5mm	C	B
7mm	—	D
Violin	—	F

11.3 Topsail Yard Halliard

Rig the topsail halliard with cord H as shown. Fit the block C at deck level at Point 6. Fit block B to end of halliard and reeve the blocks as shown. Terminate at Point 7.





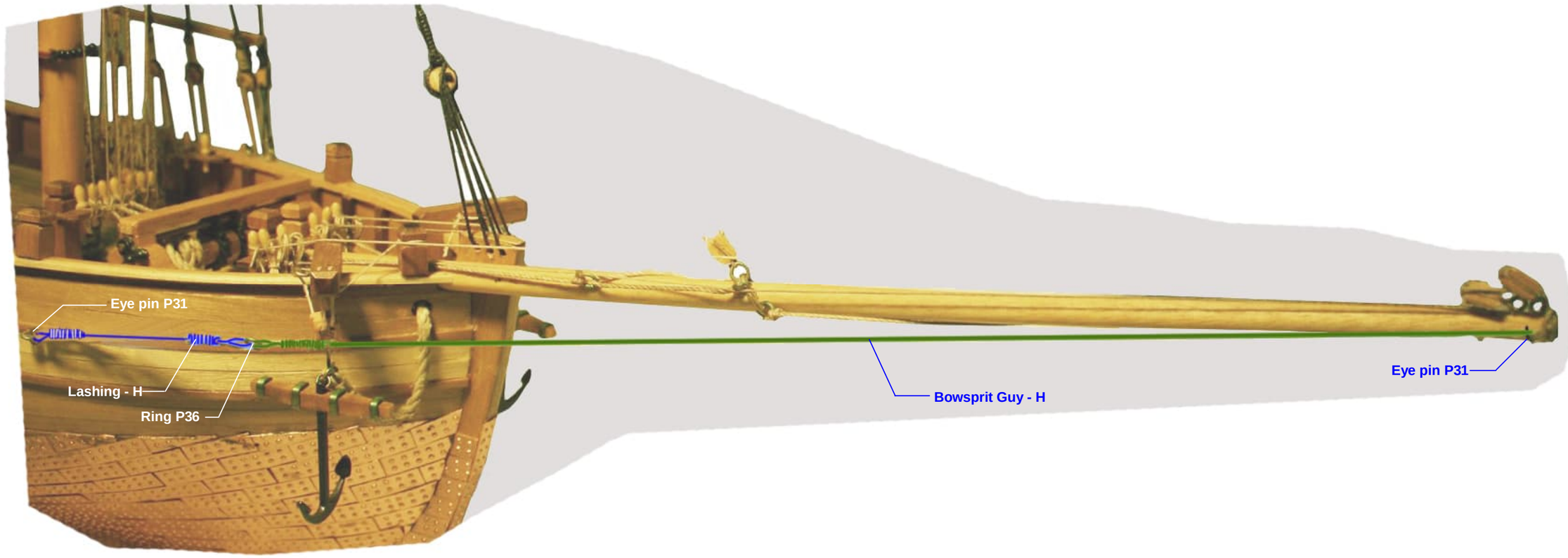


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11.4 Bowsprit Guys

Fit eye pins P31 & ring P36 as shown. Use cord H to rig the guy and complete the lashing on the port and starboard sides.



BLOCK KEY		
Size	1 Hole	2 Hole
3mm	A	—
4mm	—	E
5mm	C	B
7mm	—	D
Violin	—	F

CORD KEY		
Size	Fawn	Black
0.25mm	G	—
0.5mm	H	—
2.0mm	J	—
1.0mm	—	K

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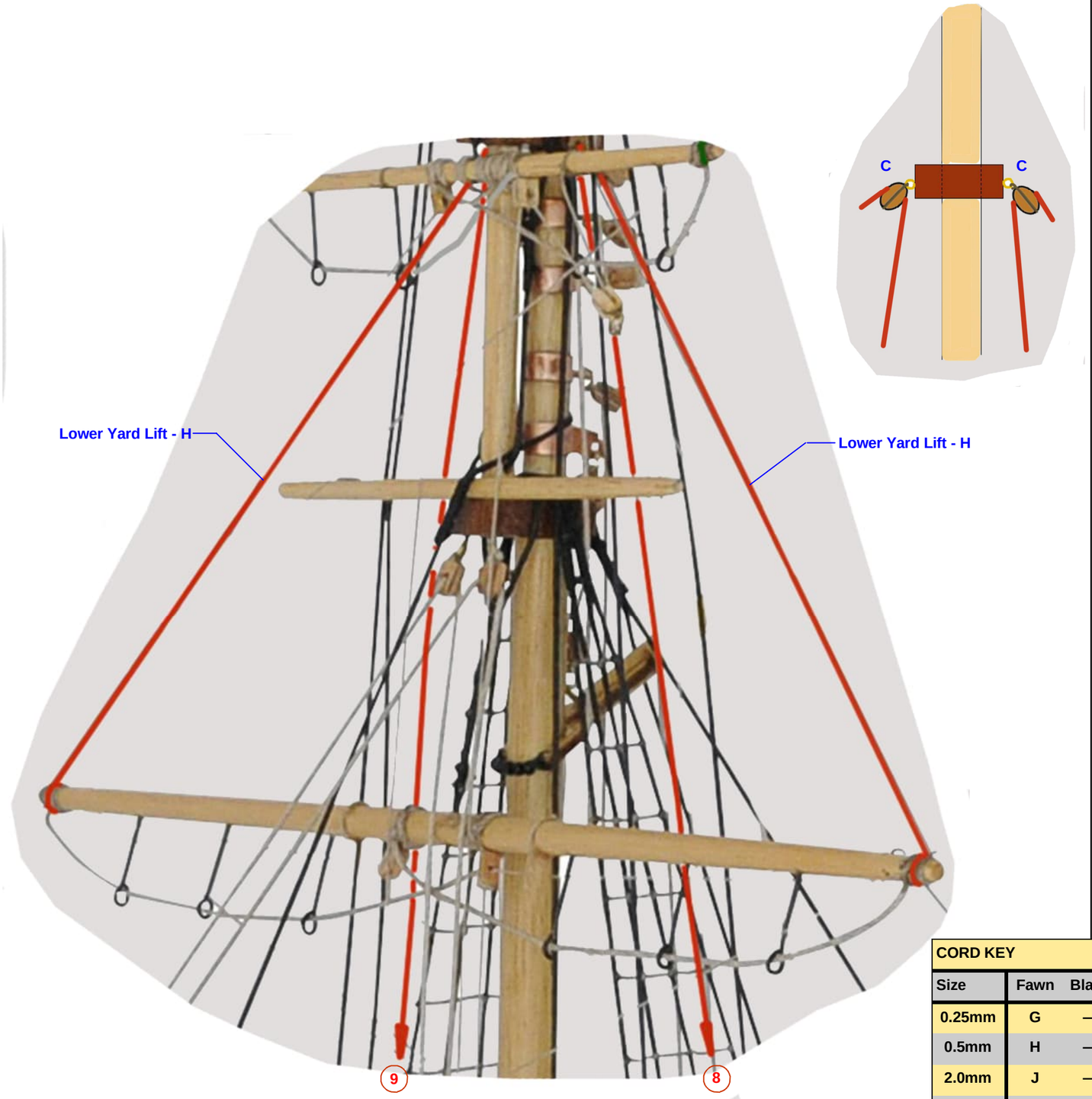
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11.5 Lifts

Lifts are ropes which reach from each mast-head to their respective yard to steady and suspend the ends.

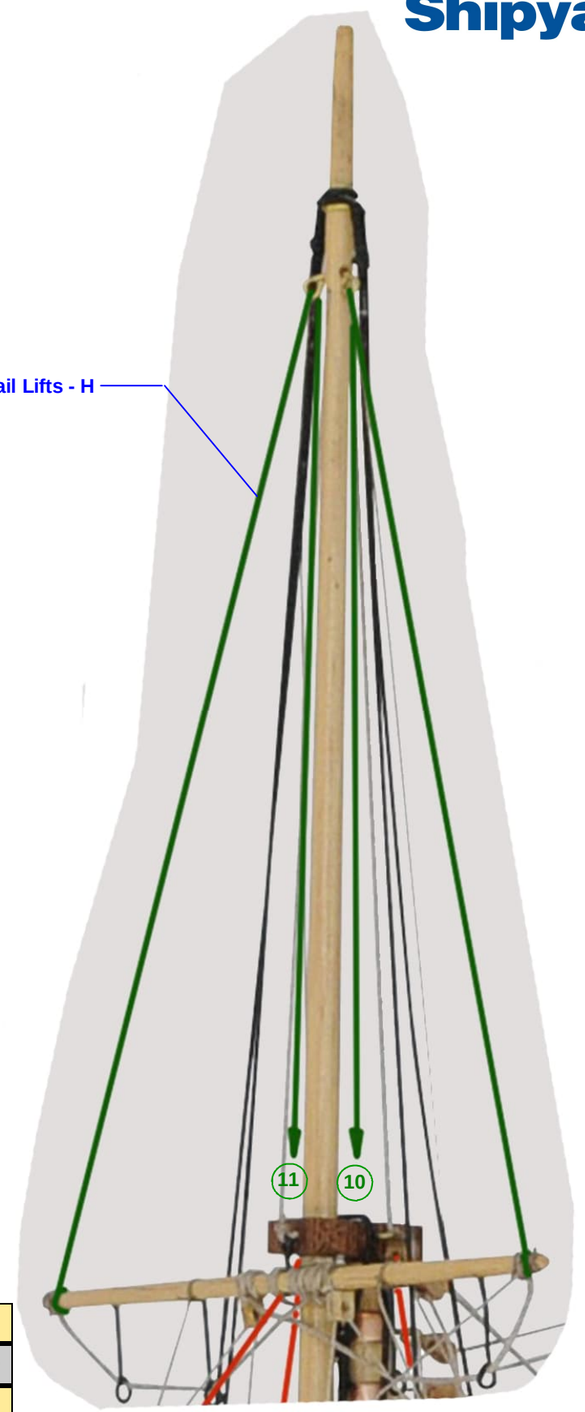
11.5.1 Lower Yard Lifts

Rig the lower yard lifts as shown with cord H. Terminate at Points 8 & 9.



11.5.2 Topsail Lifts

Rig the topsail yard lifts as shown. Terminate at Points 10 & 11.



CORD KEY		
Size	Fawn	Black
0.25mm	G	—
0.5mm	H	—
2.0mm	J	—
1.0mm	—	K

BLOCK KEY		
Size	1 Hole	2 Hole
3mm	A	—
4mm	—	E
5mm	C	B
7mm	—	D
Violin	—	F

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11.6 Yard Braces

Braces are ropes that trim the yards into or off the wind.

11.6.1 Lower Yard Braces — Fore

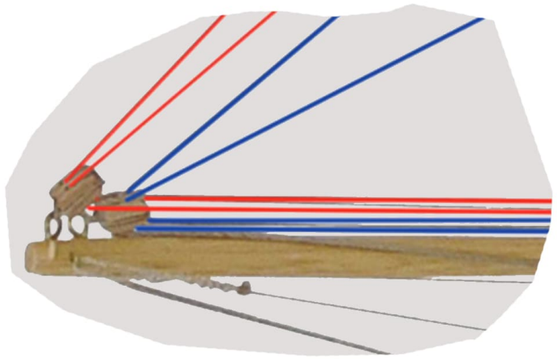
Rig the lower yard braces as shown. Terminate at Points 12 & 13.

11.6.2 Topsail Yard Braces

Rig the topsail yard braces as shown. Terminate at Points 14 & 15.

11.6.3 Jib Stay

Rig the jib stay as shown.

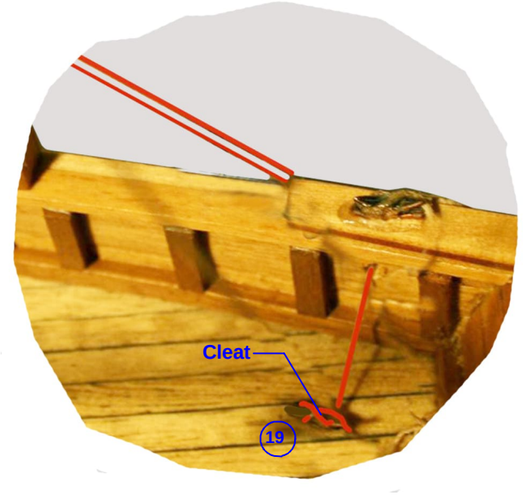


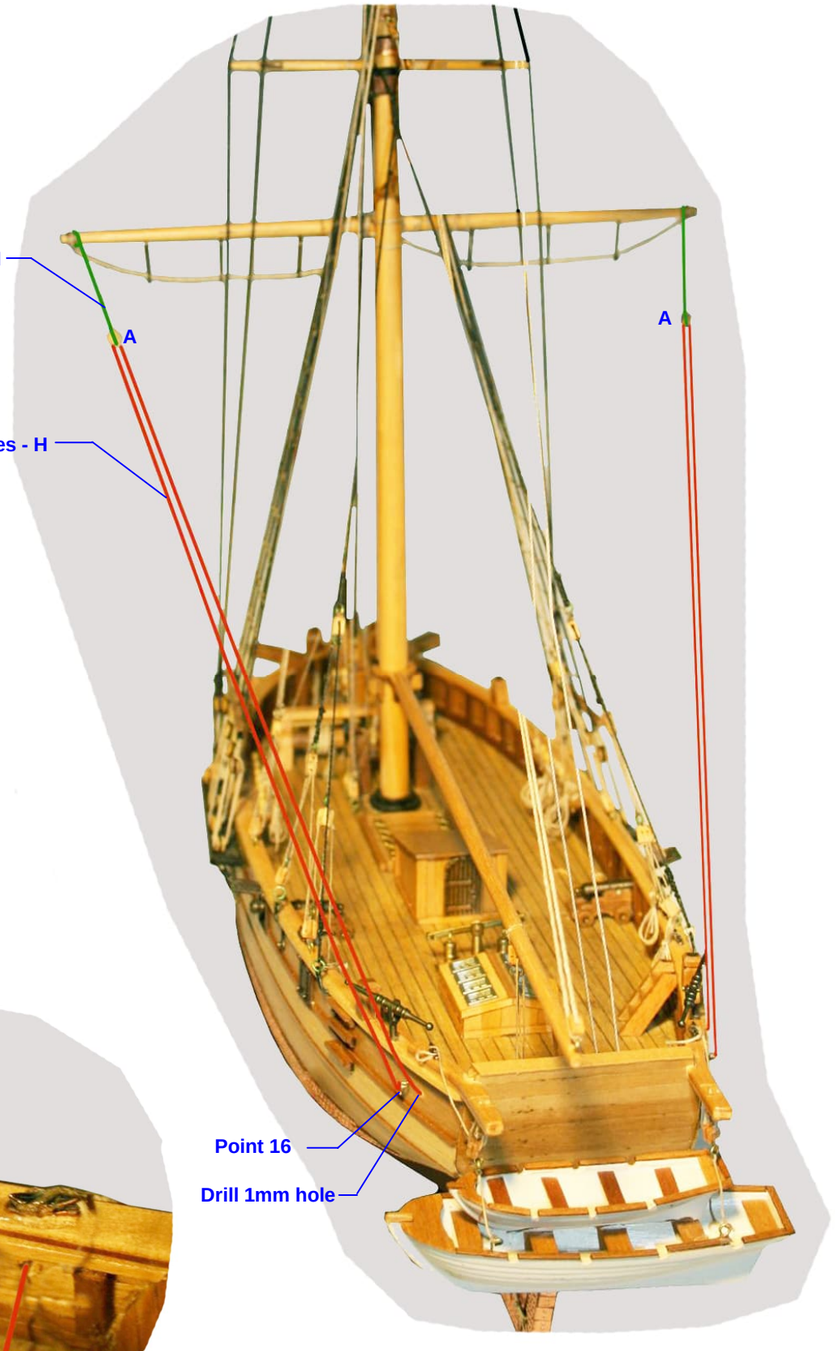
11.6.4 Lower Yard Braces - Aft

Attach pendants. Rig braces to lower yard as shown. Start at Points 16 & 18 and terminate at Points 17 & 19.

CORD KEY		
Size	Fawn	Black
0.25mm	G	—
0.5mm	H	—
2.0mm	J	—
1.0mm	—	K

BLOCK KEY		
Size	1 Hole	2 Hole
3mm	A	—
4mm	—	E
5mm	C	B
7mm	—	D
Violin	—	F



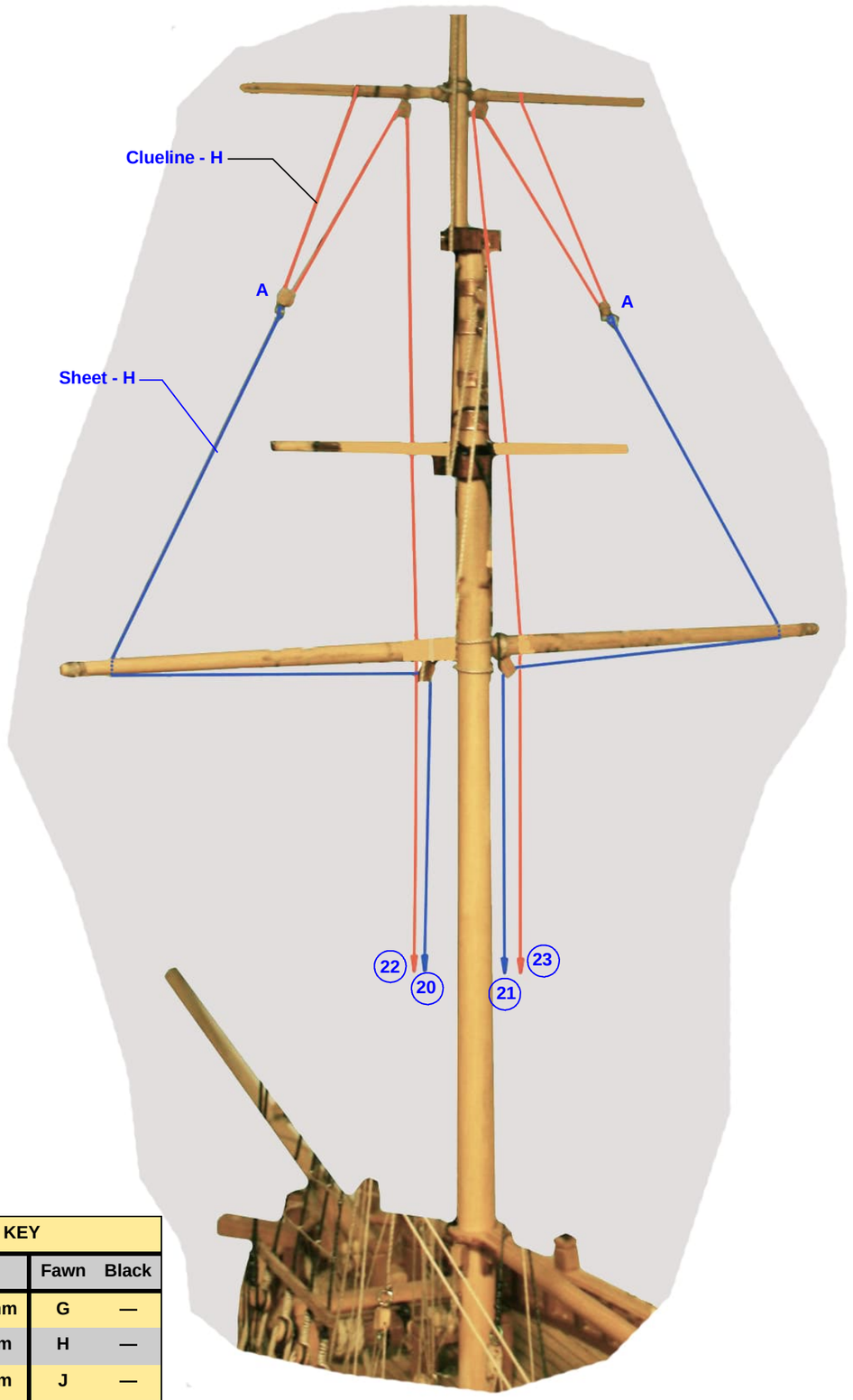


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11.7 Cluelines & Sheets

Rig as shown. Terminate sheets at Points 20 & 21. Terminate cluelines at Points 22 & 23

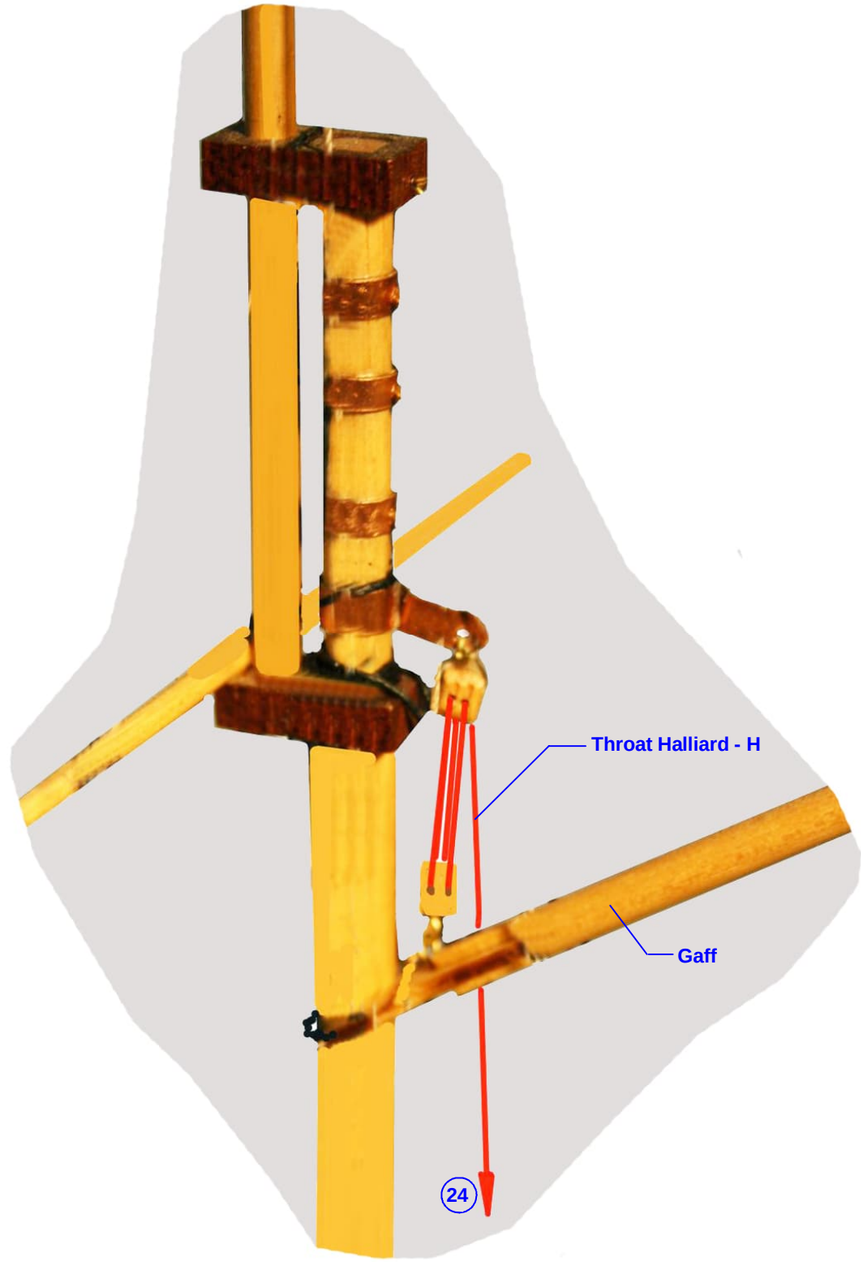


BLOCK KEY		
Size	1 Hole	2 Hole
3mm	A	—
4mm	—	E
5mm	C	B
7mm	—	D
Violin	—	F

CORD KEY		
Size	Fawn	Black
0.25mm	G	—
0.5mm	H	—
2.0mm	J	—
1.0mm	—	K

11.8 Throat Halliard

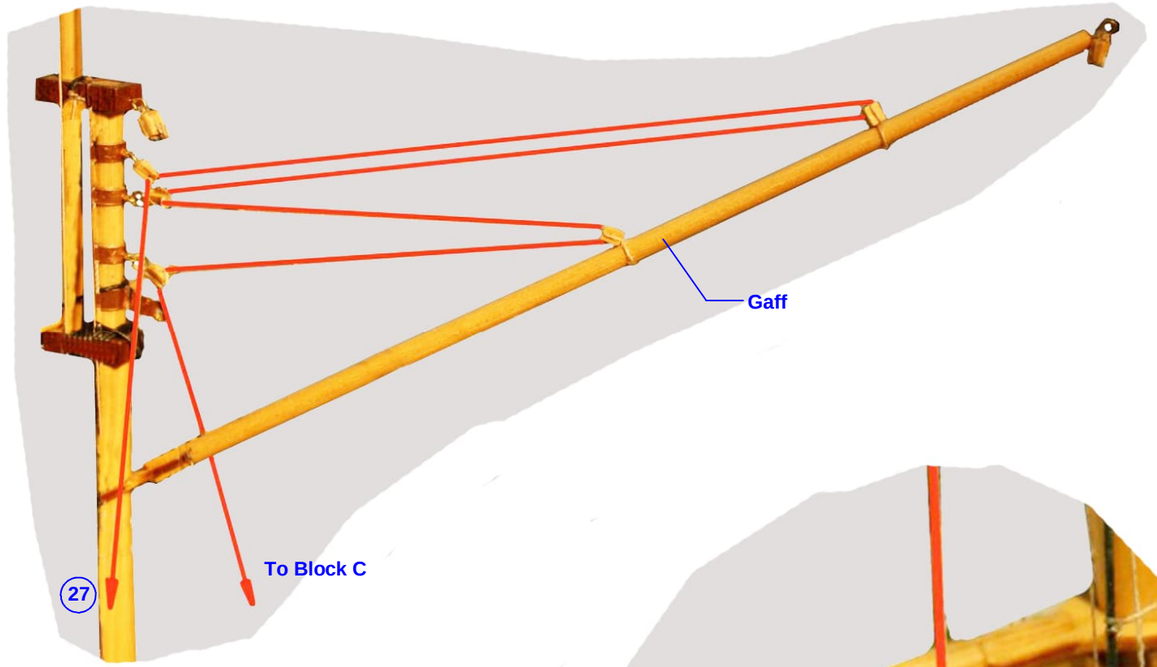
The throat halliard is used to lift the gaff. Fit the gaff to the mast. Use parrel P80 to tie the yoke to the mast. Reeve the blocks as shown. Terminate at Point 24.

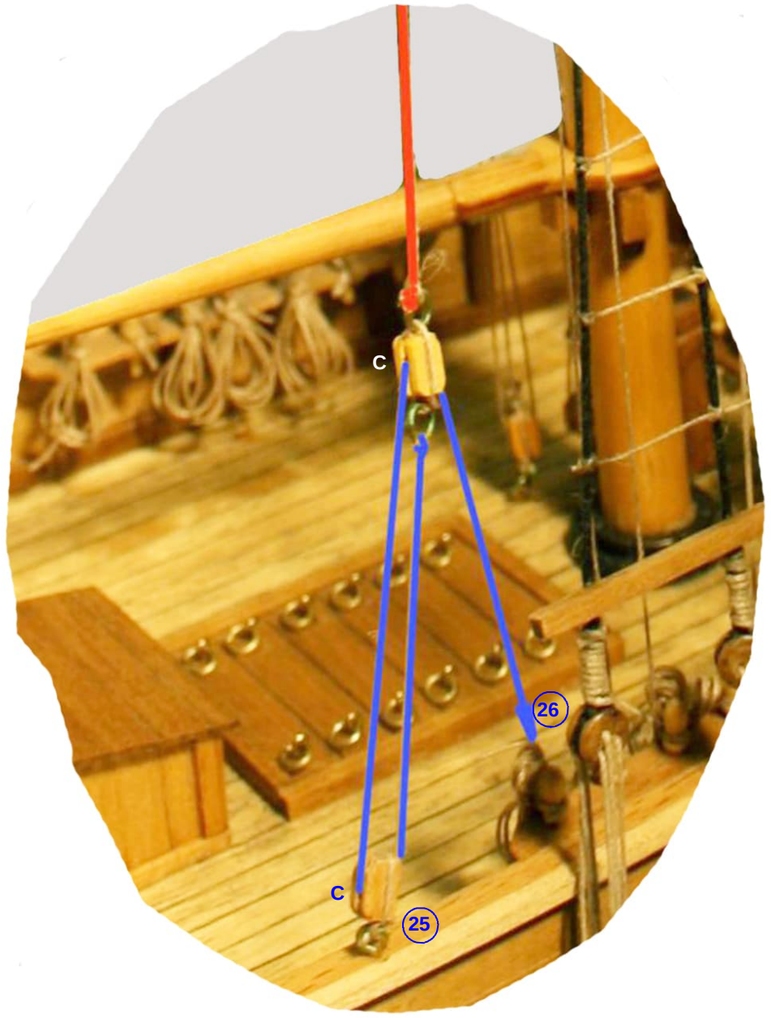


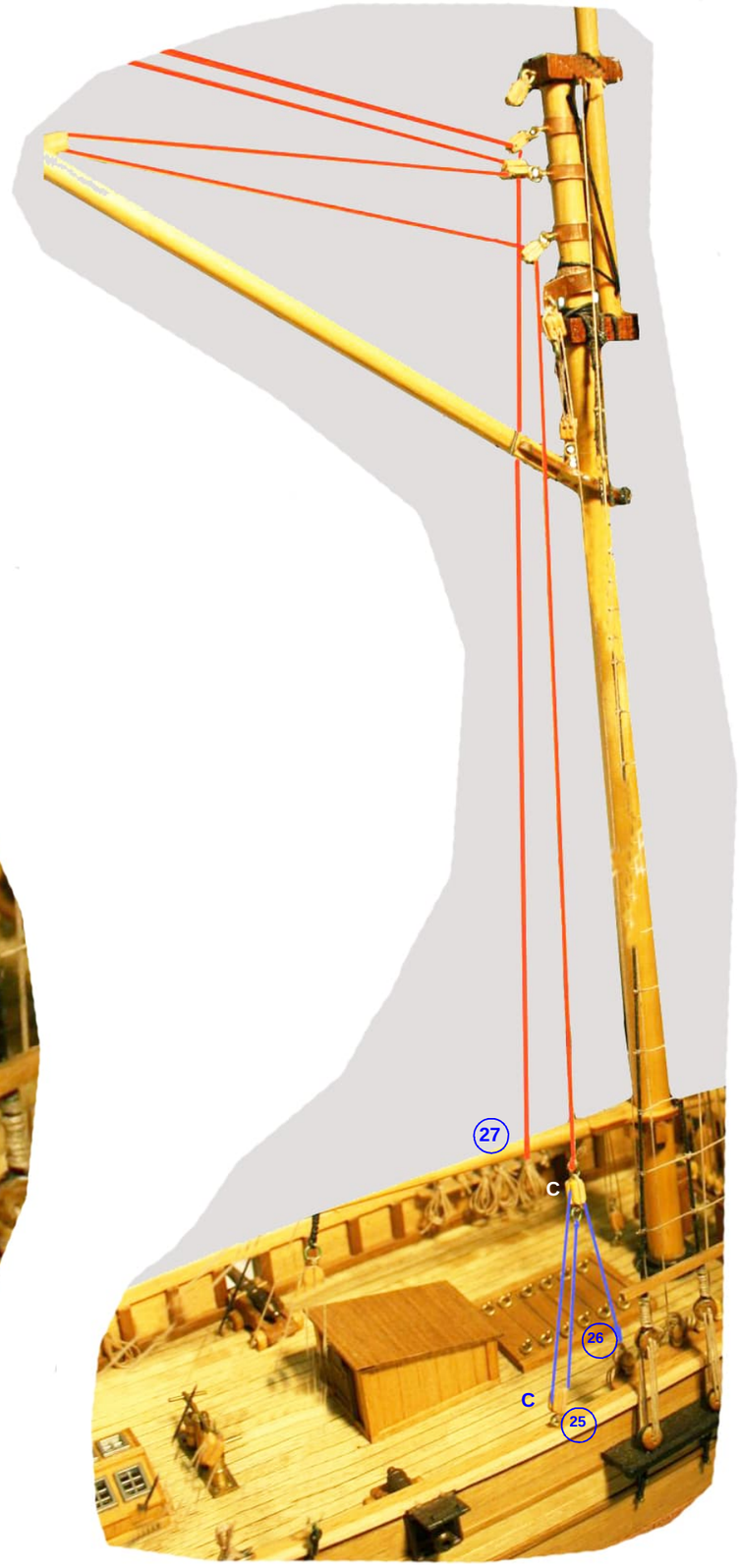
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11.9 Peak Halliard

The peak halliard controls the gaff. Rig as shown. Terminate at Points 26 and 27.







BLOCK KEY		
Size	1 Hole	2 Hole
3mm	A	—
4mm	—	E
5mm	C	B
7mm	—	D
Violin	—	F

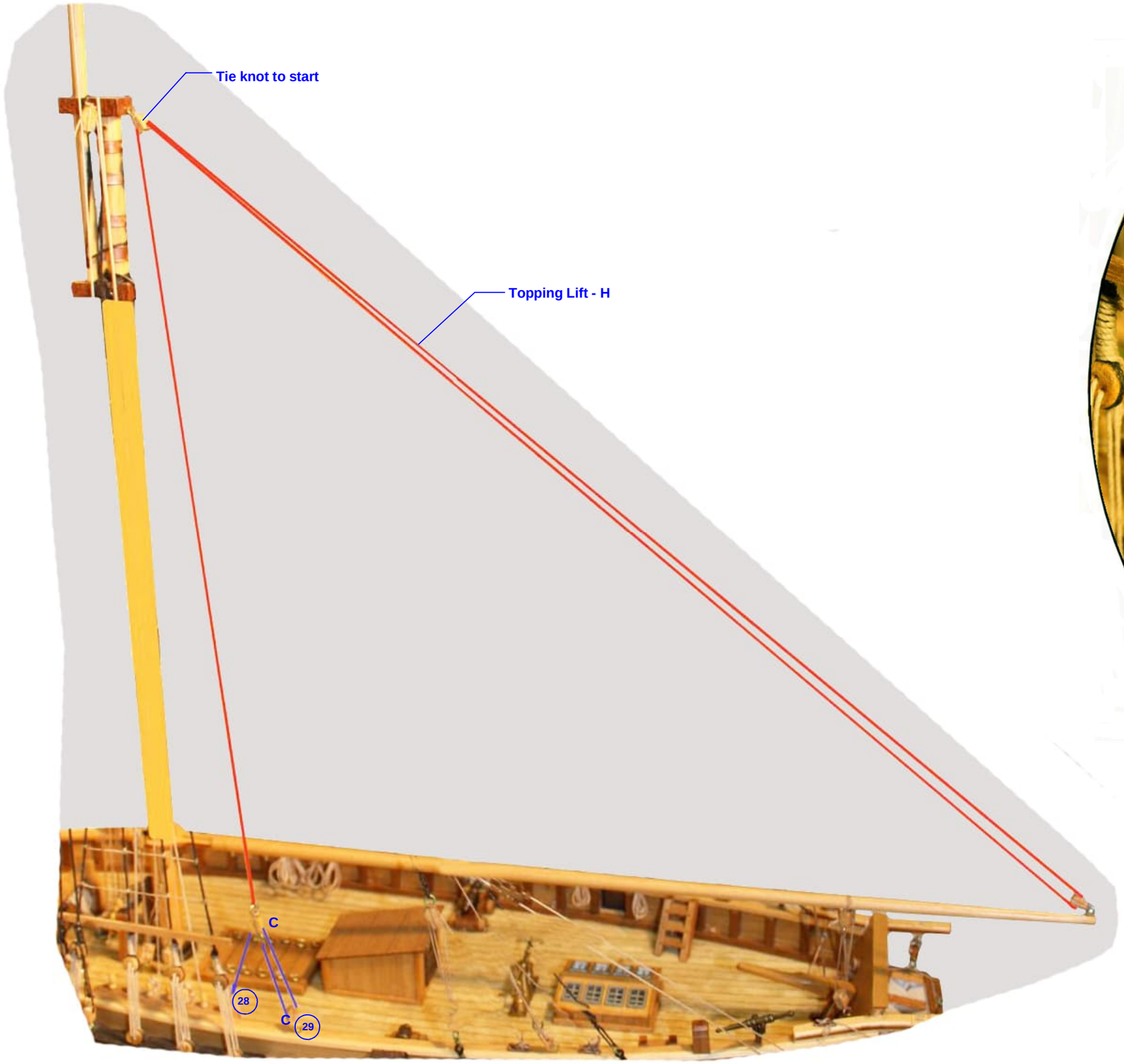
CORD KEY		
Size	Fawn	Black
0.25mm	G	—
0.5mm	H	—
2.0mm	J	—
1.0mm	—	K

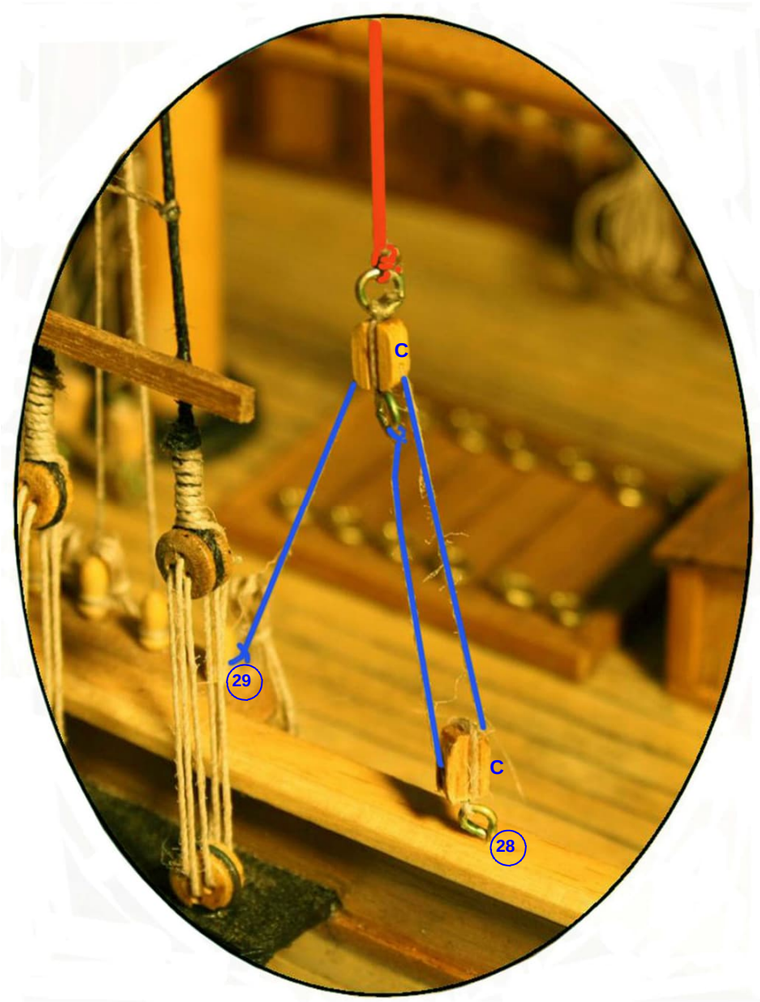
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11.10 Topping Lift

The Topping Lift controls the boom. Fit the boom to the mast. Use parrels P80 to tie the yoke to the mast. Fit blocks and rig as shown. Terminate at Point 29.





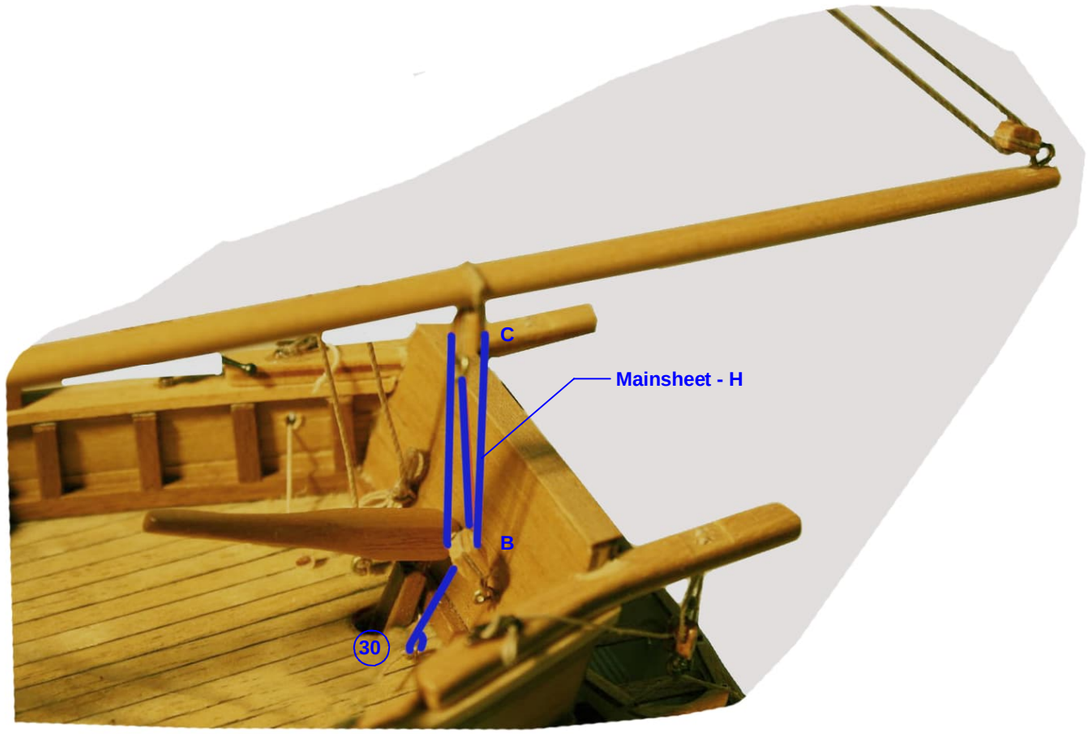
CORD KEY		
Size	Fawn	Black
0.25mm	G	—
0.5mm	H	—
2.0mm	J	—
1.0mm	—	K

BLOCK KEY		
Size	1 Hole	2 Hole
3mm	A	—
4mm	—	E
5mm	C	B
7mm	—	D
Violin	—	F

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11.11 Mainsheet

Rig the mainsheet as shown. Terminate at Point 30



BLOCK KEY		
Size	1 Hole	2 Hole
3mm	A	—
4mm	—	E
5mm	C	B
7mm	—	D
Violin	—	F

CORD KEY		
Size	Fawn	Black
0.25mm	G	—
0.5mm	H	—
2.0mm	J	—
1.0mm	—	K

11.12 Flag

Identify the White Ensign Flag P94.To create the appearance of the flag being wind affected follow the steps below:

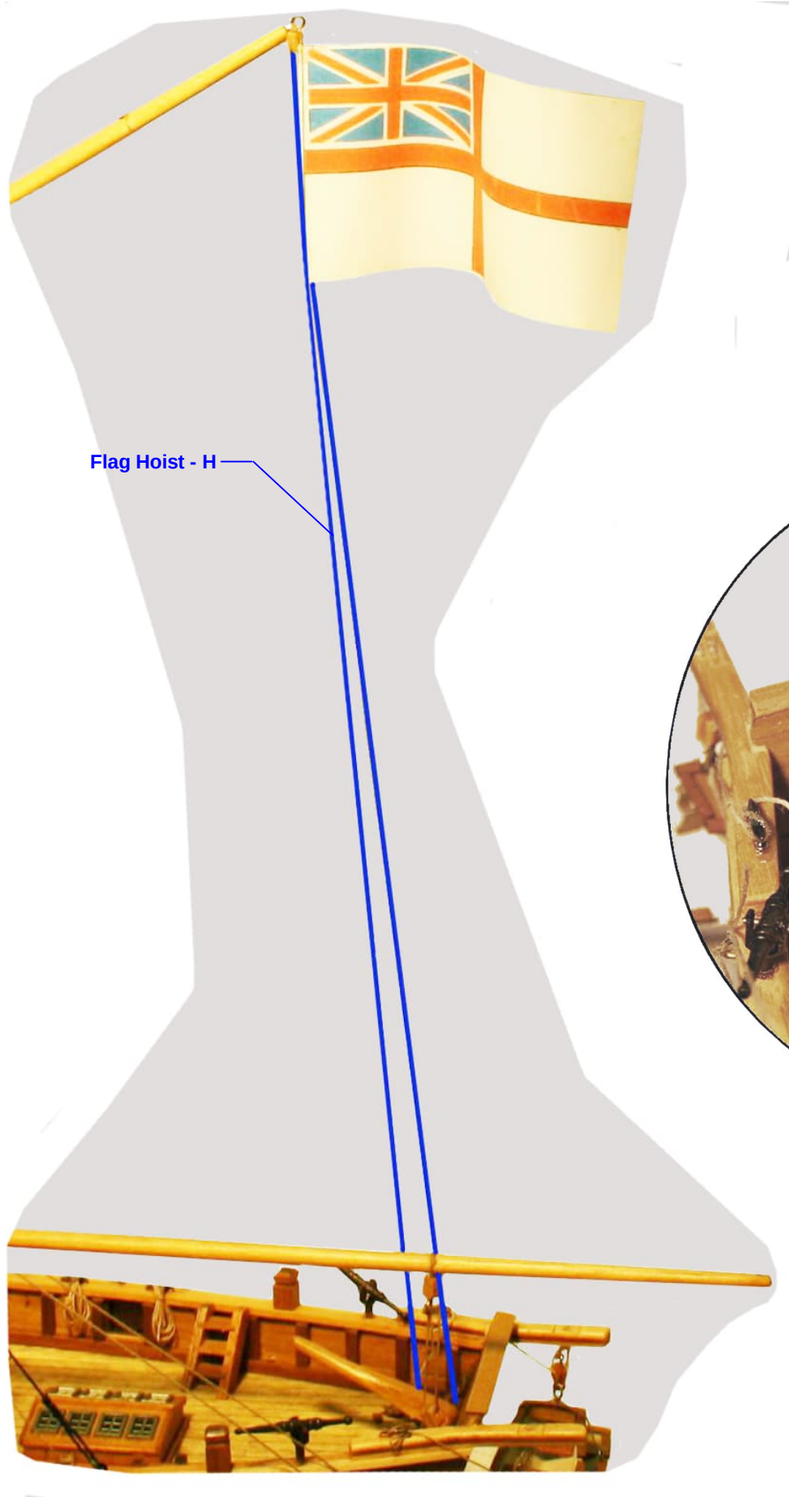
1. **Select a paper based glue and aluminium foil**
2. **Cut-out the flag and a piece of foil slightly larger than the flag.**
3. **Apply glue to the reverse side of the flag and place a length of cord H along the flag centre as shown - cut enough cord to go from the gaff end to the deck twice.**
4. **Lay the foil onto the reverse side of the flag as shown. Press firmly down on the foil to remove any air bubbles.**
5. **Apply glue to this foil surface and then fold the flag over upon its self along the centre line. Trim off excess foil.**
6. **Once glue has dried tie the flag hoist as shown 10.13 - shape the flag to give the appearance of being wind affected.**

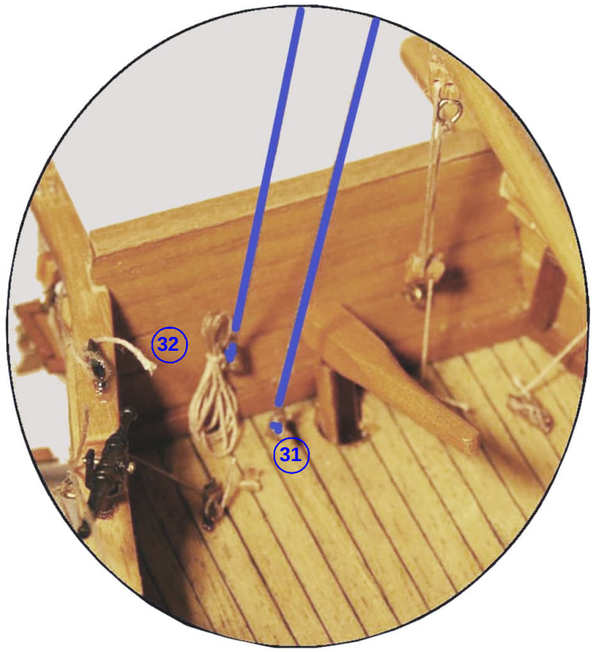


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11.13 Flag Hoist

Rig the flag hoist as shown. Start at Point 31 and terminate at Point 32





11.14 Cradle

Identify the cradle parts P89 and P90. Assemble as shown. Finish with shellac or paint as desired.



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12.0 Finishing Touches

Make rope coils to be placed at the various belaying points on the deck.

Look carefully over the instructions, photos & drawings and check to ensure that you have not forgotten anything.

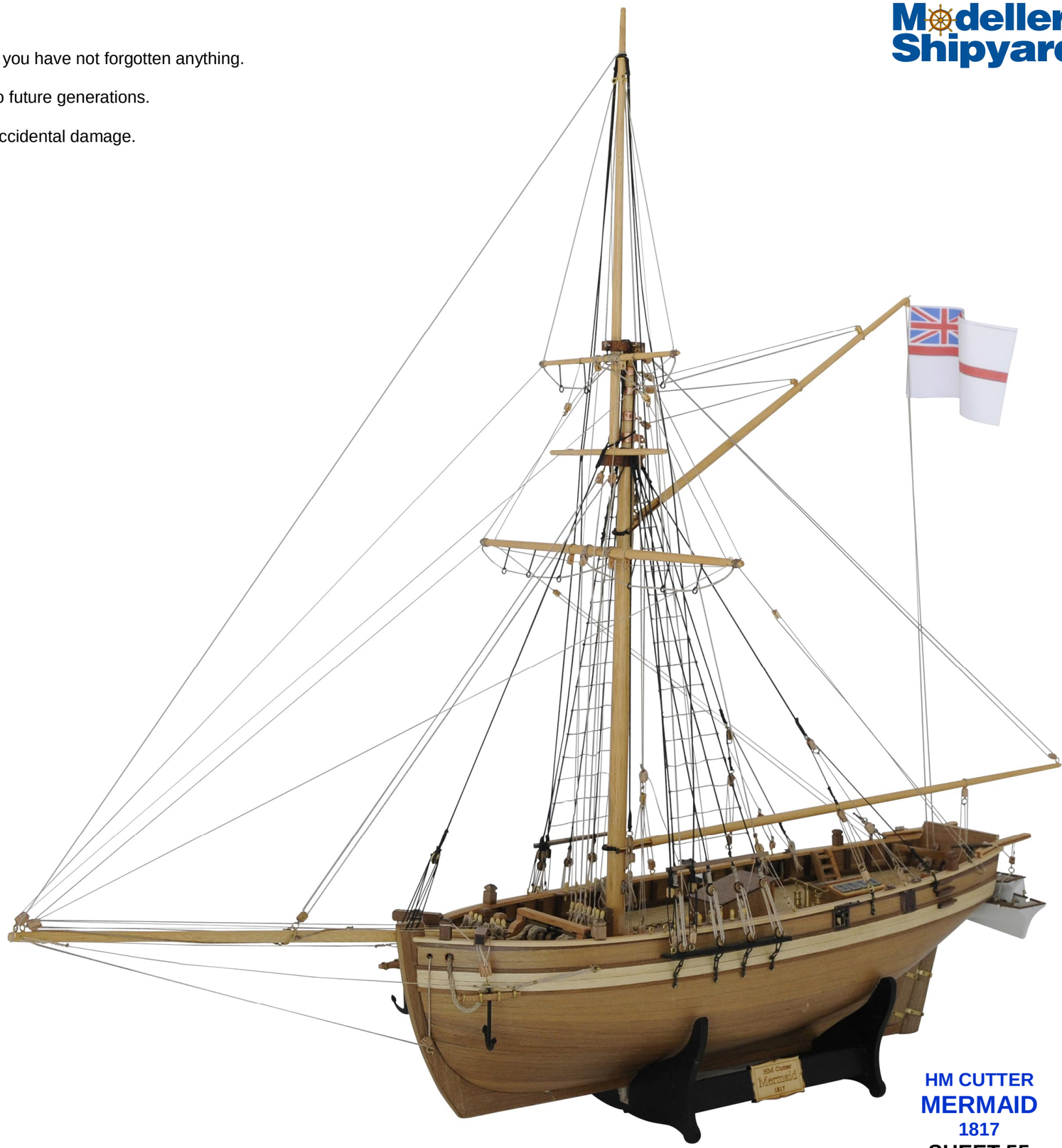
Take great pride in your achievement of building a work of art to be handed-on to future generations.

You might consider a display case which will protect your model from dust and accidental damage.



Rope Coils

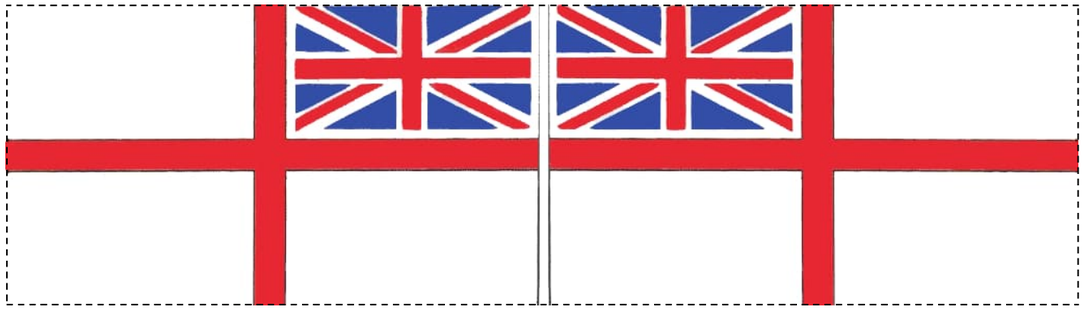
CORD KEY		
Size	Fawn	Black
0.25mm	G	—
0.5mm	H	—
2.0mm	J	—
1.0mm	—	K



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BLANK



P94 White Ensign Flag

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BLANK