AUSTRALIAN COLONIAL SERIES WOODEN MODEL KIT

HM CUTTER MERMAID 1817

SCALE 1:48

LENGTH: 590mm HEIGHT: 450mm

ITEM CODE: KTMS1001

SEAL OF QUALITY
Modellers Shipyard

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www.modelshipyard.com.au

BUILDING INSTRUCTIONS

Version 5

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** that the modeller study these instructions and associated 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. Parts that need to be made by the modeller from timber supplied in the kit are noted in the Parts List.

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

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

For the modeller who would like additional detail on particular techniques on building this model, a DVD on *"How to Build the HM Cutter Mermaid"* is available from Modeller's Shipyard. In this DVD there is 4 hours of narration and demonstration by a master modeller as the model is built. There are many techniques and tips presented on every detail of building the *Mermaid* from opening the box to putting the finishing touches of the rigging. ***Note:*** **There are some features and fittings shown on the model being built in the DVD that may not be in the kit. Also the DVD may not necessarily follow the same building steps presented in the written instructions.**

For further details on this DVD see our website www.modelshipyard.com.au — see Training Materials on our home page or call our office.

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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	Bulkhead Frames	9	4mm plywood
10	Transom	1	4mm plywood
11	Keel	1	4mm plywood
12A/B	Bow Filler Blocks	2	4mm plywood
13A/B	Transom Filler Blocks	2	4mm plywood
14	Stem Post	1	4mm plywood
15	Stern Post	1	4mm ply wood
16	Rudder	1	4mm plywood
17A/B	Davits	2	4mm ply wood
18	False Deck	1	2mm plywood
19A/B	Bulwarks	2	2mm plywood
20	Forward Companionway Base	1	2mm plywood
21	Channel	1	2mm ply wood
22	Channel	1	2mm plywood
23	Boom Yoke	1	2mm ply wood
24	Gaff Yoke	1	2mm plywood
25	Main Gangway Rear	1	2mm plywood
26	Main Gangway Front	1	2mm plywood
27	Main Gangway Side	1	2mm plywood
28	Main Gangway Side	1	2mm plywood
29	Main Gangway Roof	1	2mm plywood
30A/B	Skylight Ends	2	2mm plywood
31A/B	Skylight Sides	2	2mm plywood
32A/B	Skylight Roof	2	2mm plywood
33	Main Cargo Hatch Base	1	2mm plywood
34A/B	Cradle Ends	2	4mm plywood
35A/B	Cradle Supports	2	4mm plywood
36	Limewood - 2x5x400mm	40	Timber Stock
37	Silver Ash - 0.6x4x400mm	30	Timber Stock
38	Mahogany - 0.6x5x400mm	60	Timber Stock
39	Keel	1	4mm plywood
40	Walnut - 2x4x500mm	2	Timber Stock
41	Walnut - 2x3x400mm	8	Timber Stock
42	Walnut - 2x3x100mm	1	Timber Stock
43	Rudder Tiller	1	4mm plywood
44	Beech - Flex 2x4x500mm	2	Timber Stock
45	Limewood - 2x2x500mm	2	Timber Stock
46	Walnut - 2x3x300mm	1	Timber Stock
47	Gun Ports with Lids	4	Parts Card 2
48	Walnut - 1x6x400mm	1	Timber Stock
49	Eye Pins—3mm	Pkt	Parts Card 2

Part No	Description	Quantity	Material
50	Rings—3mm	Pkt	Parts Card 2
51	Walnut - 1x3x250mm	1	Timber Stock
52	Walnut - 1x2x330mm	1	Timber Stock
53	Main Gangway Door	1	2mm plywood
54	Skylight Windows	8	Parts Card 2
55	Anchors	2	Parts Card 3
56	Cannons	2	Parts Card 2
57	Anchor Winch	1	Parts Card 2
58	Walnut - 5x5x250mm	1	Timber Stock
59	Belaying Pins	28	Parts Card 2
60	Steps—Runners	4	2mm plywood
61	Steps—Steps	6	2mm plywood
62	Culverins	2	Parts Card 2
63	Walnut - L Sect 3x3x100mm	1	Timber Stock
64	Pump	1	Parts Card 2
65	Hawse Pipes	2	Parts Card 3
66	Anchor Rope—2mm fawn	1	Parts Card 1
67	Rigging Cord—0.25mm fawn	1	Parts Card 1
68	Rigging Cord—0.5mm fawn	1	Parts Card 1
69	Rigging Cord—1mm black	1	Parts Card 1
70	Boat 1—100mm	1	Parts Card 3
71	Boat 2—70mm	1	Parts Card 3
72	Cleats	11	4mm plywood sheet
73	Mast Cap—Lower	1	Parts Card 3
74	Mast Cap—Upper	1	Parts Card 3
75	Dowel - 10mm x 330mm	1	Timber Stock
76	Dowel - 5mm x 250mm	3	Timber Stock
77	Mast Strap—3x80mm copper	1	Parts Card 1
78	Mast Heel	1	4mm plywood sheet
79	Bowsprit Ring—12mm	1	Parts Card 2
80	Dowel - 3mm x 250mm	1	Timber Stock
81	Footrope Stirrups	10	Parts Card 2
82	Blocks 2 hole 7mm—D	2	Parts Card 3
83	Blocks—1hole 5mm—C	23	Parts Card 3
84	Blocks—2 hole 5 mm—B	10	Parts Card 3
85	Blocks—2 hole 4mm—E	2	Parts Card 3
86	Blocks—1 hole 4mm—A	19	Parts Card 3
87	Violin Blocks—8mm - F	2	Parts Card 3
88	Dowel - 6mm x 250mm	1	Timber Stock
89	Dowel - 6mm x 330mm	1	Timber Stock
90	Deadeye Straps	8	Parts Card 3

Part No	Description	Quantity	Material
91	Deadeyes—5mm	17	Parts Card 3
92	Straps	4	Parts Card 2
93	Yoke Parrel Beads	Pkt	Parts Card 2
94	Flag—White Ensign	1	Parts Card 3
95	Rudder Hinges	3	Parts Card 2
96	Boom Rest	1	2mm plywood
97	Nails—Brass	Pkt	Parts Card 2
98	Name Plate—Mermaid	1	2mm plywood

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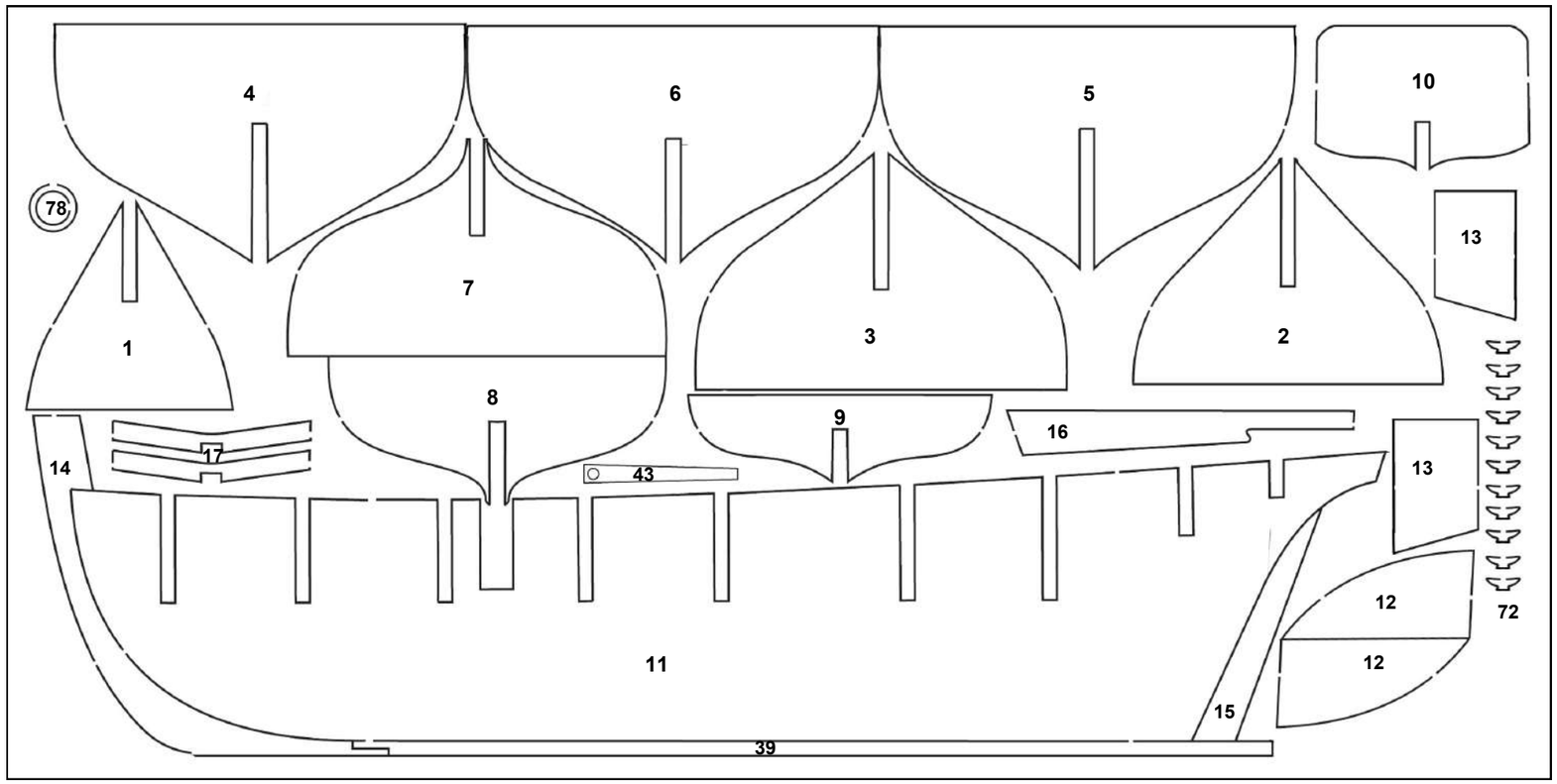
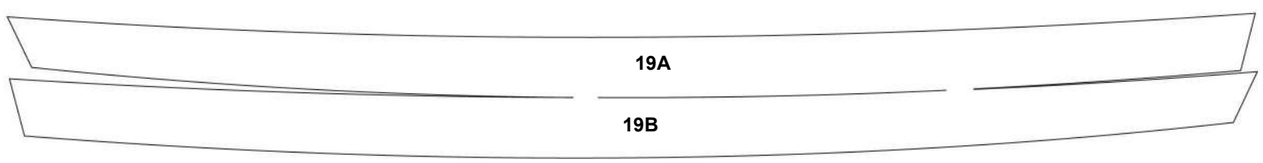
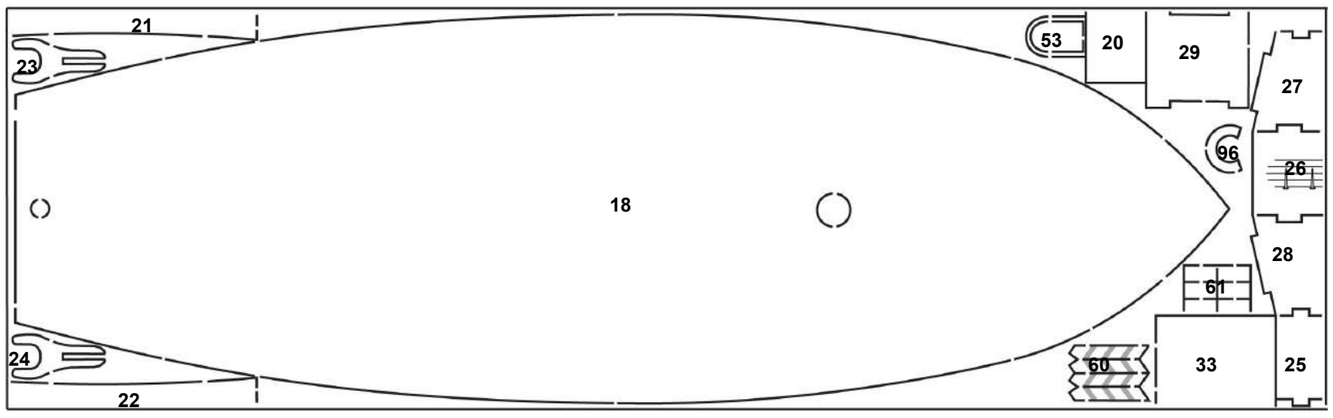
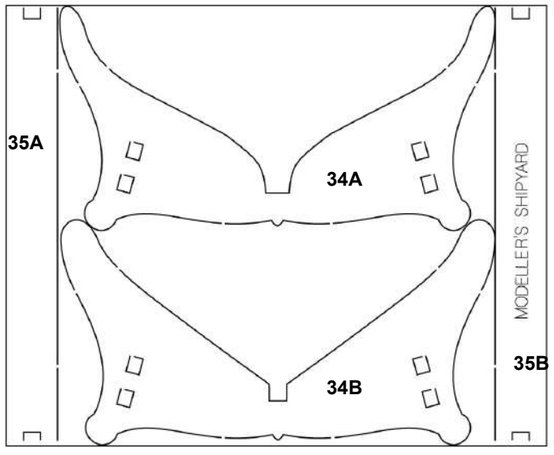
Plywood Boards









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5.0 Hull Construction
5.1 Assemble the Keel & Bulkhead Frames

Step 1 On the laser cut sheets in your kit use a pencil to mark the relevant numbers on each piece before removing them from the sheet. Remove the keel, bulkhead frames and transom from the 4mm plywood sheet. Use a snap blade knife to carefully cut through both sides of the tabs holding the parts to the main sheet.


Photo 1

Step 2 Dry fit the bulkhead frames into the 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 frame. The fit should be firm but no loose. There may be a need to adjust the slot depth in the keel and/or bulkhead frames to ensure the top edge of each bulkhead frame is flush with the top edge of the keel. Do not glue anything at this stage. Also ensure frames 1 to 5 are level with the bottom of the keel.

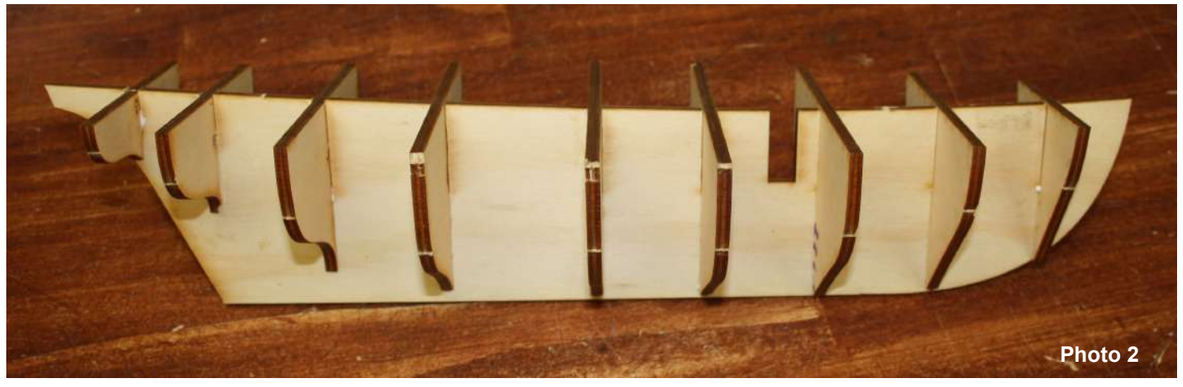
Photo 2

Step 3 You may wish to make a working base as shown Figure 1. This will help to ensure the keel does not become distorted. Cut the slots in the keel supports to correspond with the bulkhead frames.

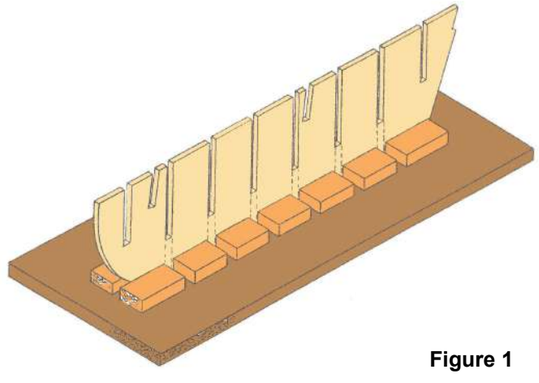
Figure 1

Step 4 Once you are satisfied with the dry fit of the frames and keel, glue each frame in place with PVA glue. It is important to make sure the frames are square to the keel. Place a “bull dog” clip against the frame to ensure it remains square while the glue sets. Place the keel and frame construction aside and allow 24 hours for the glue to set.

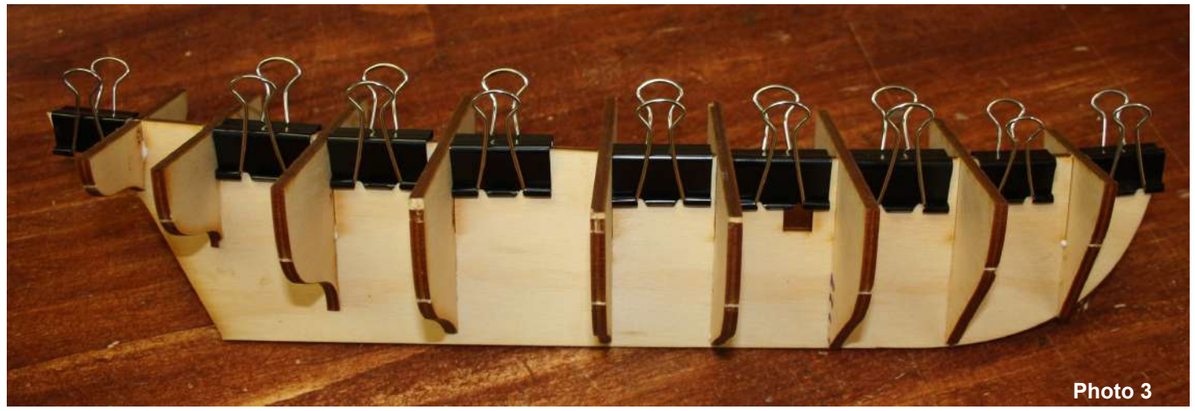
Photo 3

Step 5 The next step is to fit the transom P10. The transom sits proud of the keel as shown. Use a two part epoxy resin to fix the transom in place. Align the transom with the angle of the end of the keel. Set aside for the glue to dry.

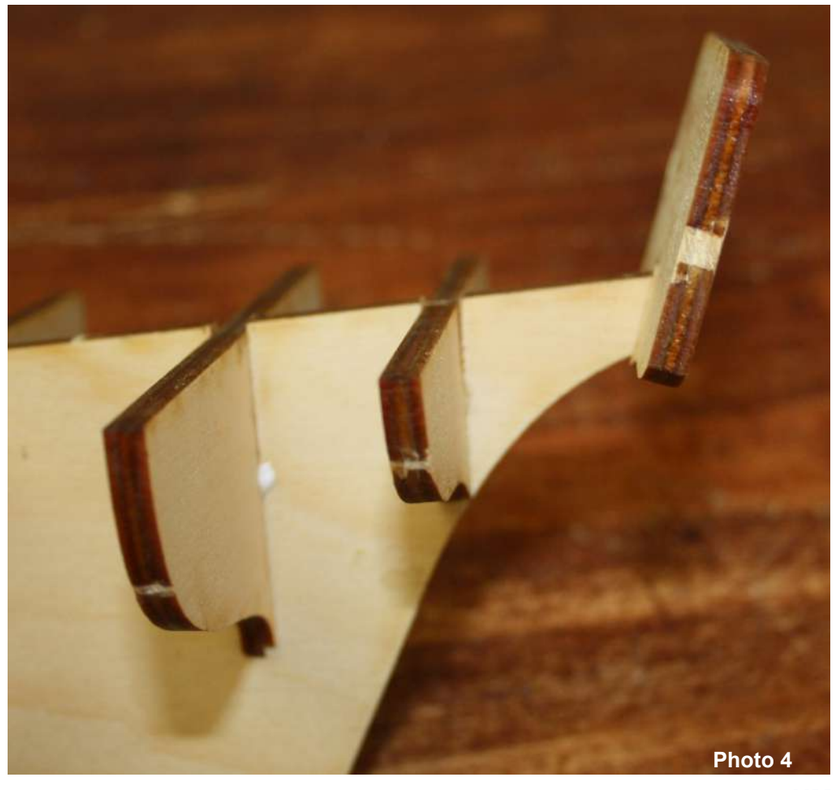
Photo 4

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5.2 Bow & Transom Filler Blocks

5.2.1 Fit the Bow Blocks

The bow filler blocks are P12A/B. They provide an area for gluing the planks at the bow. Glue a bow block to each side of the keel. Allow 24 hours for the glue to set.

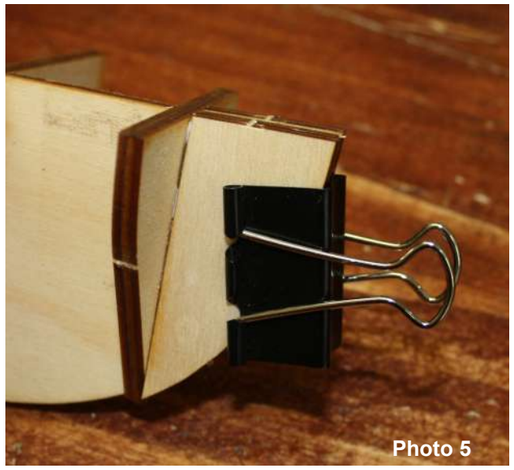

Photo 5

5.2.2 Fit the Transom Blocks

The transom filler blocks are Parts 13A/B. They provide strength to the transom and an edge for gluing the first plank. Trial fit the blocks—you will notice you will have to adjust the angle of the face butting up to the transom. Once satisfied glue the blocks in place as shown. Do not be concerned with the over hang of the blocks beyond the transom sides. This will be removed later.

Photo 6

5.3 Assembled Keel, Bulkhead Frames, transom & Filler Blocks

The keel, bulkhead frames, transom & filler blocks are now fully assembled.

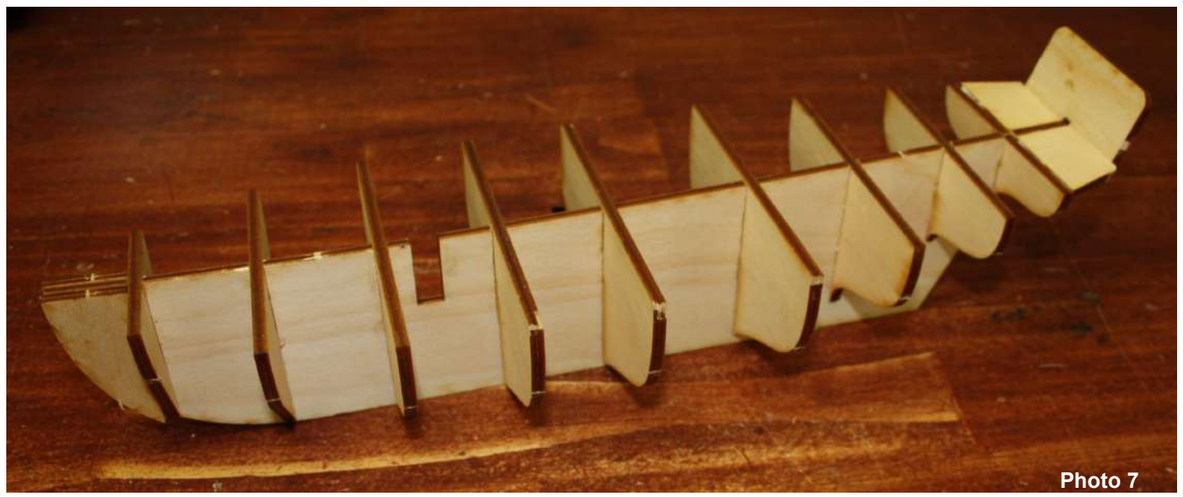

Photo 7

5.4 Fit False Deck

The next step is to fit and fix the false deck to the hull skeleton. The false deck P18 is on the 2mm plywood sheet. Fitting the false deck at this stage will provide added strength to the whole hull structure.

Apply wood glue across the top of the bulkhead frames, keel and transom blocks. Fit the deck in place and align the mast hole, rudder hole and the bow tip of the deck with the centre of the keel at the bow. Hammer pins through the deck into the bulkhead frames and keel to hold the deck in place while the glues sets. Allow 24 hours to dry completely. Once dry remove all pins.

Photo 8

5.5 Fairing the Frames

“Fairing” the frames is a very important part of the preparation for planking the hull. The principle of “fairing” the frames is to ensure the planks lay flat on the edge of each frame to ensure a good glue bond is established between each plank and the frame of the model and to ensure that when 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.

Using a pencil number the bulkhead frames starting at the bow—1, 2, 3 , through to 9 with 10 being the transom. Lay a plank over a few frames. You will see that the plank does not sit flat across the edge of all the frames—especially at the bow and stern areas. To fair the frames use a file to move across the edges of two frames at a time starting at the deck level and moving towards the toe of the keel.. Once two frames are complete move to the next one.

Always make sure you are filing across two frames. Regularly check by laying a plank/batten across the frames. 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 frame.

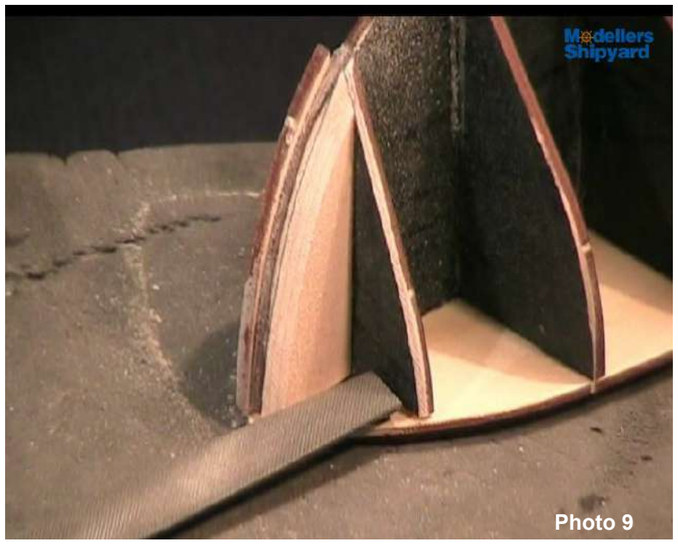
Photo 9

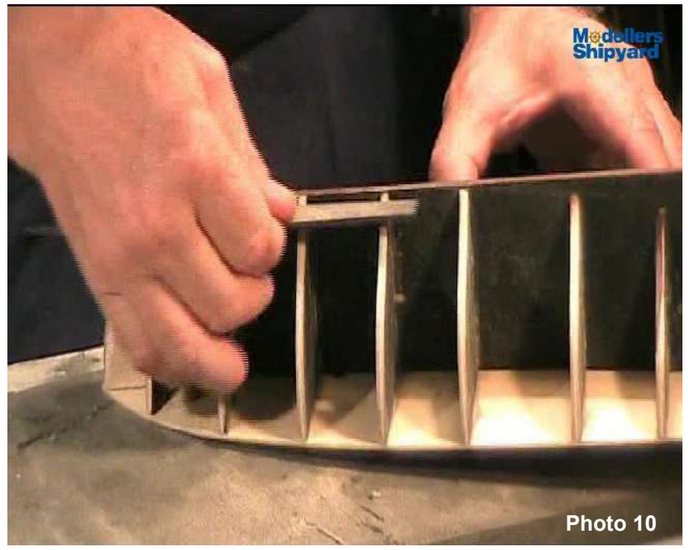
Photo 10


Photo 11


Photo 12

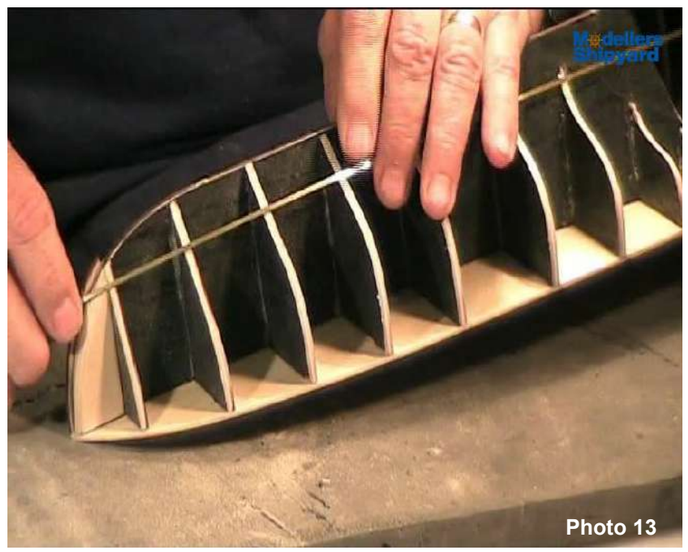
Photo 13


Photo 14

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5.6 Deadwood Area

The area between the bottom edge of the keel and the bottom of the bulkhead frames 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 stern post and rudder will be planked with 0.6x5mm mahogany P41. However the keel in the deadwood area will be planked with the first layer of planking—2mm thick (on each side) and then planked with the second layer of planking. 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 that when the second layer of planking is fitted there will be the same thickness between the keel, stern post and rudder.

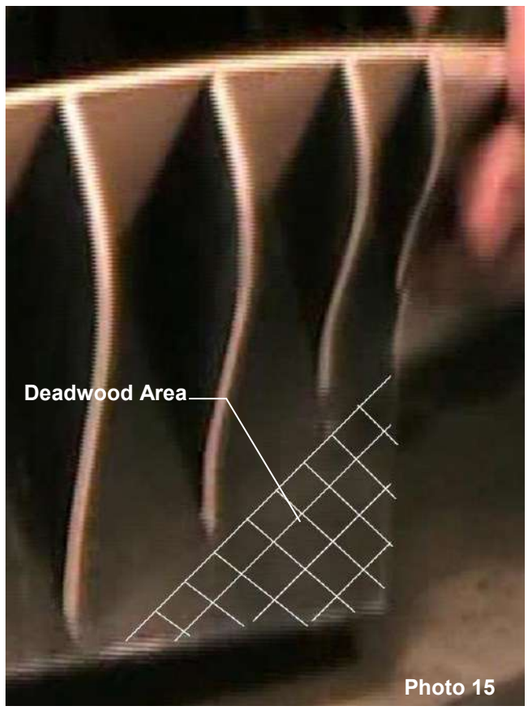

Photo 15

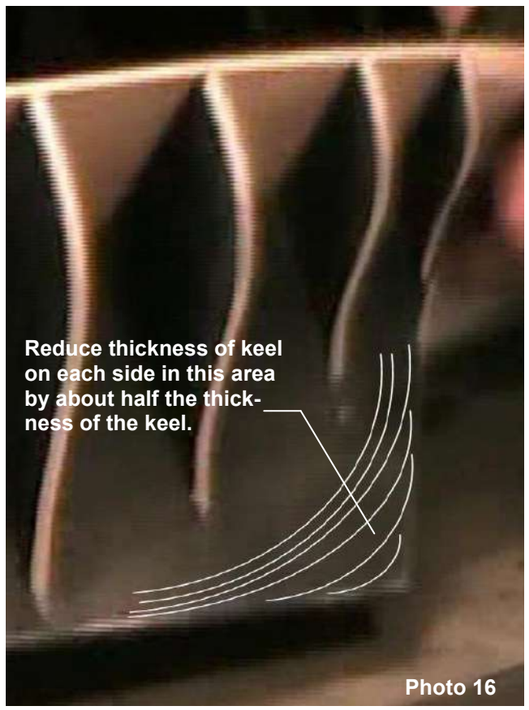

Photo 16

5.7 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.

5.7.1 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 frame to the toe of the bulkhead frame where it meets the keel. You will notice that the measurements around the bulkhead frames in the middle or “mid-ship” of the model are greater than the measurement around the bulkhead frames at the bow (front) of the hull.

We always assume that the “mid-ship” bulkhead frames 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 bulkhead frames at the bow of the hull.

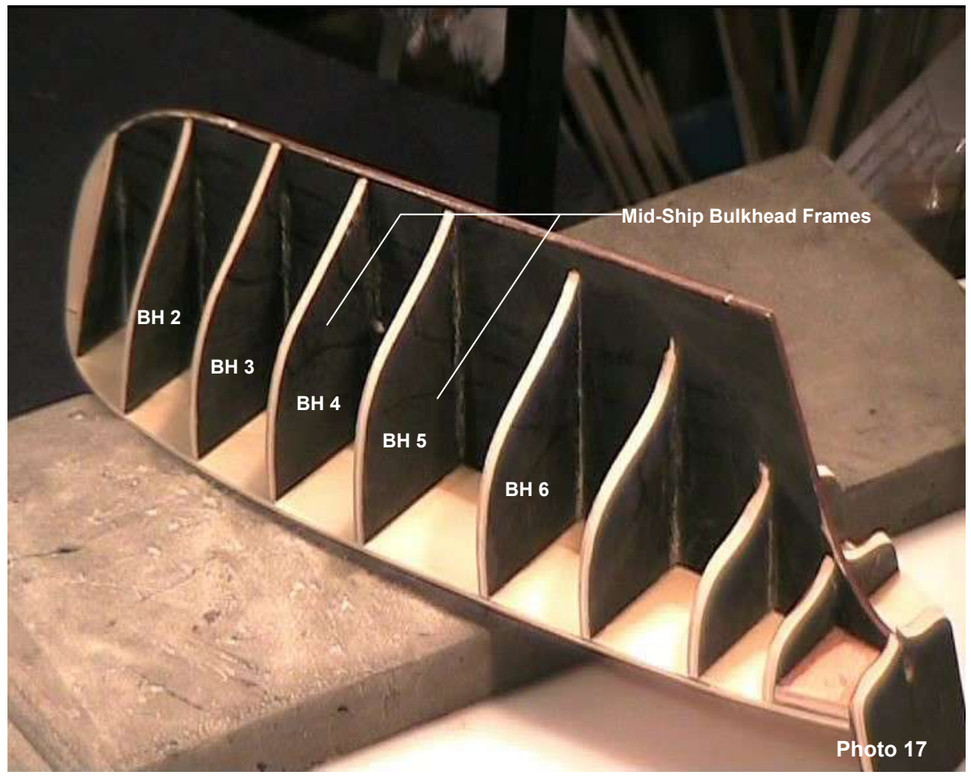

Photo 17

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Mid-Ship Bulkhead Frames
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 bulkhead frames and the keel. As an example let's say the measurement from the top of the mid-ship bulkhead frames 4 & 5 to the keel is 120mm. We need to determine how many plank will fit into this area across the mid-ship frames. We do this by dividing 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 bulkhead frames.

Fore Bulkhead Frames
Now let's say the measurement from the top of the bulkhead frame 2 to the keel is 80mm. As 24 planks will have to fit into this area also then the plank width at bulkhead frame 2 will need to be reduced. To determine the width of the plank at frame 2 you divide 80mm by 24 planks that is 80/24 = 3.33mm. So the plank wide at bulkhead frame 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 frame 3.

Stern Bulkhead Frames
You will recall that the area between the bottom edge of the keel and the bottom of the bulkhead frames 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 bulkhead frames 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.

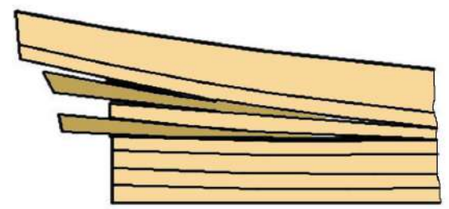

Figure 2

5.7.2 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 limewood P36. It is a white/cream coloured timber. 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 frames. This space will allow for the bulwark to be fitted later. Using one of the identified 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 PVA glue to this plank and use planking screws to hold the plank in place while the glue sets. Repeat this process for the other side of the hull.

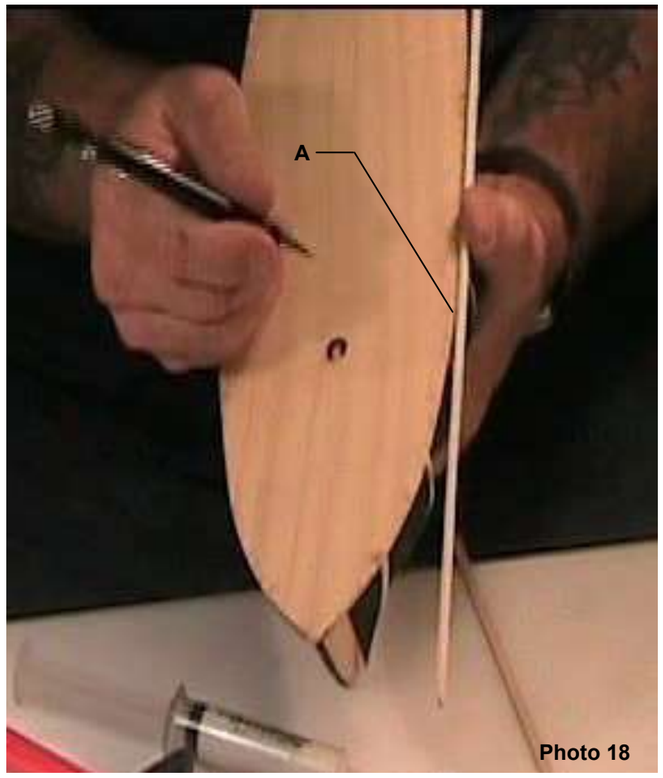

Photo 18

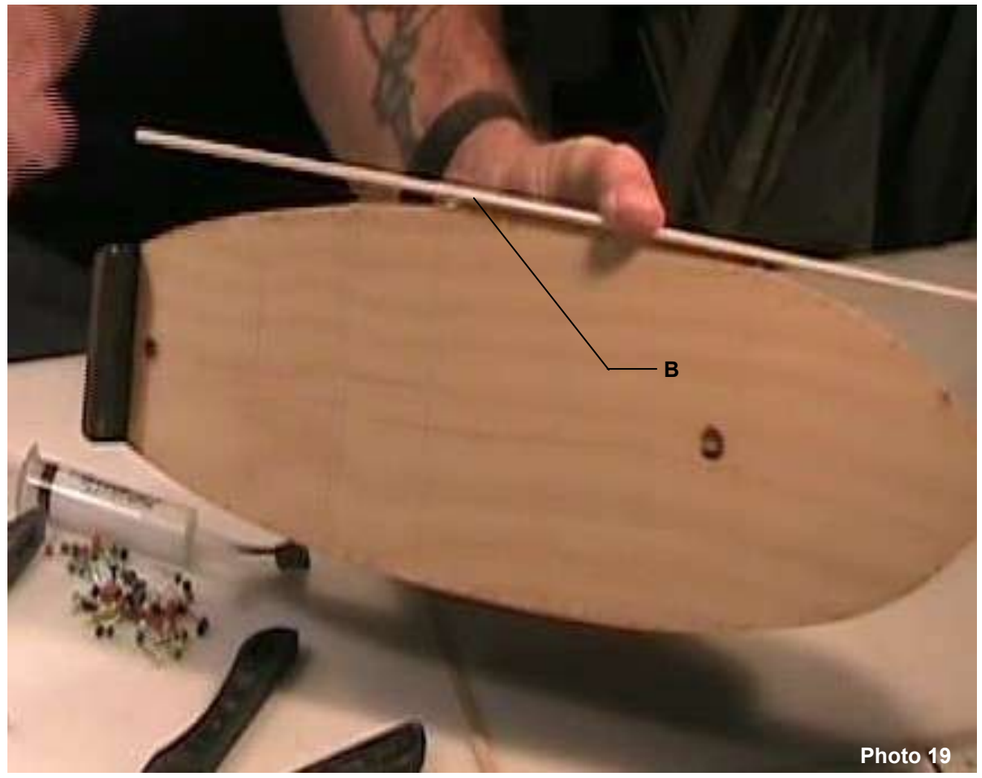

Photo 19

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.

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.

Photo 20

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.

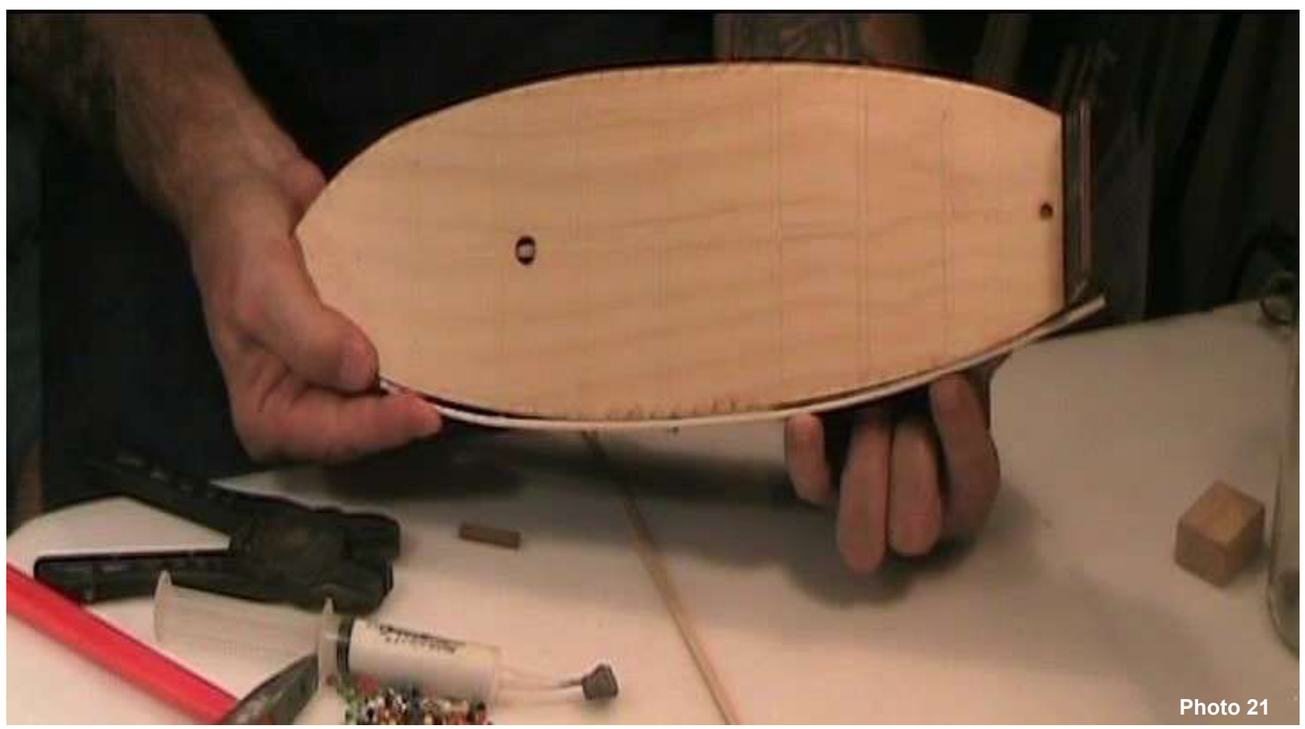

Photo 21

Now that you have shaped the first plank it is now time to fit it in position. Note again that the first plank will **not be tapered**. Use PVA glue to fix the first plank in position. Make sure that both planks (left and right or “port” and “starboard”) follow the same line and are a mirror image of each other.

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.

Photo 22

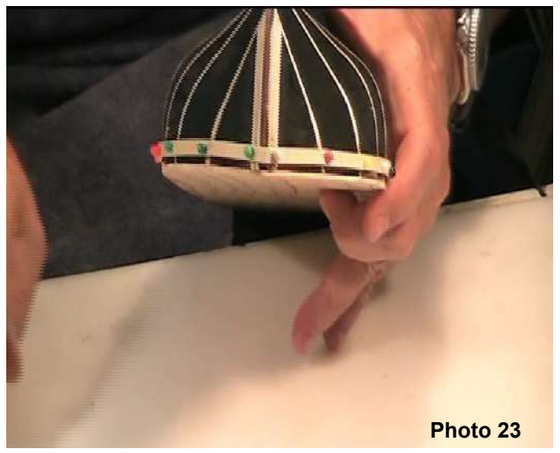

Photo 23

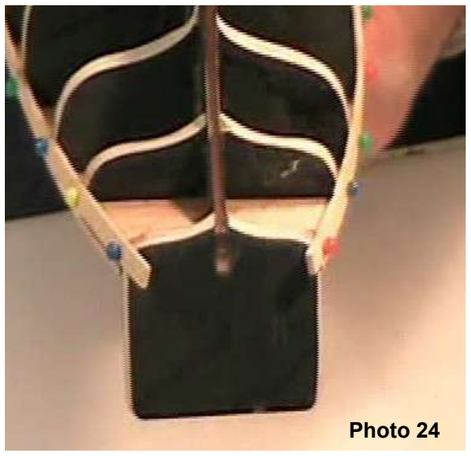

Photo 24

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5.7.3 Fitting the Second Plank

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

Step 1: On the **mid-ship bulkhead frames** mark a position **approximately** halfway to the keel from the bottom edge of the **first plank** - the same distance down on each **mid-ship bulkhead frame** 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 bulkhead frame.** 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 bulkhead frames - 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 bulkhead frames to the bow and stern of the mid-ship bulkhead frames. 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 frames 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— Figure 3 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.

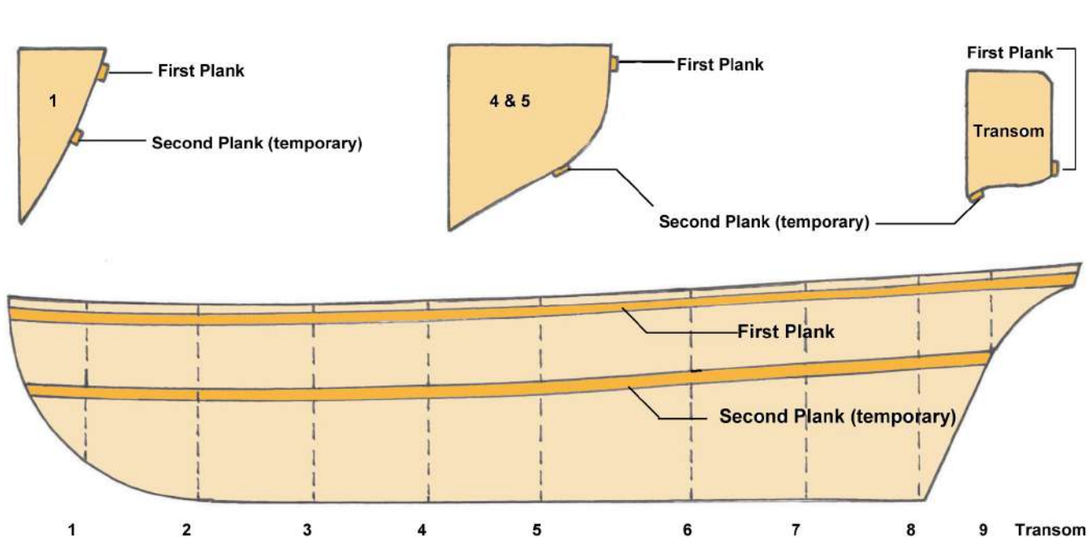

Figure 3

5.7.4 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 bulkhead frames. You may also need to include the transom as well. To determine the plank width at each bulkhead frame 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 your table— see Table 1

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 frame. Record in Table 1 below.

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

Table 1

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.

Photo 25

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Lower Band Planking
Fit two planks along the edge of the keel on both the port & starboard sides. 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 frames divide the distance by 5 (width of plank) to determine the number of planks (N) to fit into this area. The distance at each frame divided by the number of planks (N) will give the width of each plank at the respective bulkhead frame. Mark these widths on to the plank at each bulkhead frame 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 hollows.


Photo 26


Photo 27

5.7.5 Bulwarks

The Bulwarks are P19A/B. Identify the starboard 19A and port 19B bulwarks and mark with a pencil accordingly. Trial fit the bulwarks to fill the 4mm gap at the top of the planking. To achieve the required bend in the bulwarks they will need to be wet molded. To achieve this first use the deck shape from the 2mm plywood sheet and draw its outline of a board. Fit nails along the outline of this shape. Fully immerse the bulwarks in water for 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.

Photo 28

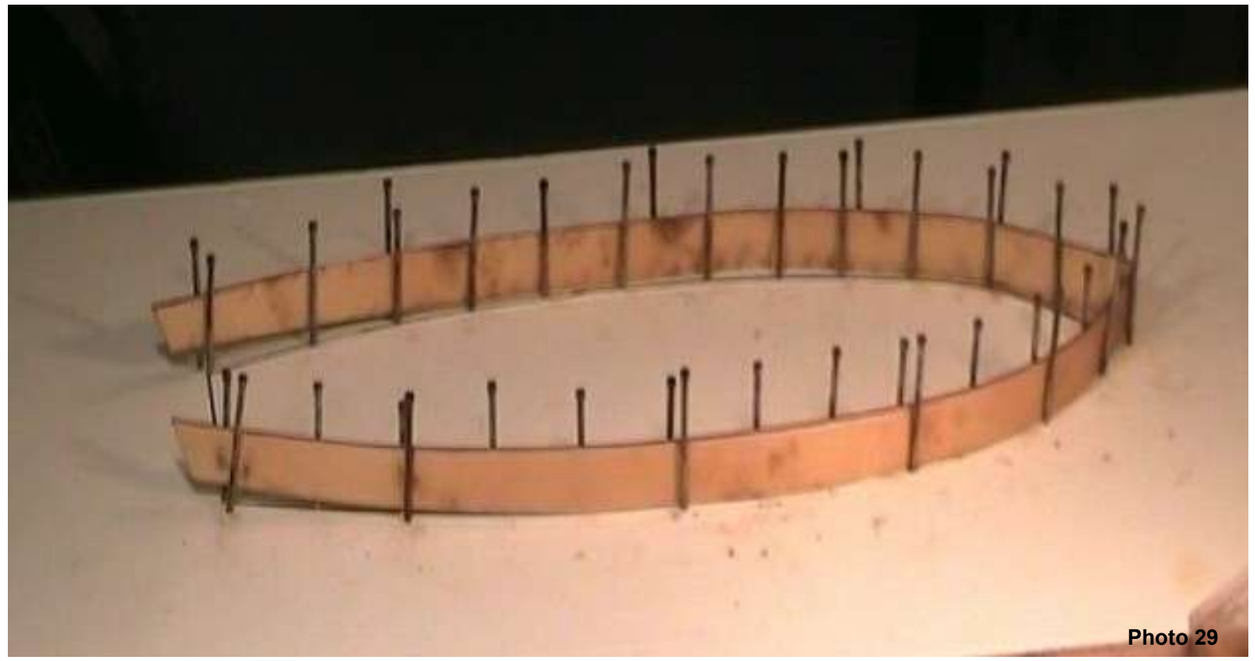

Photo 29

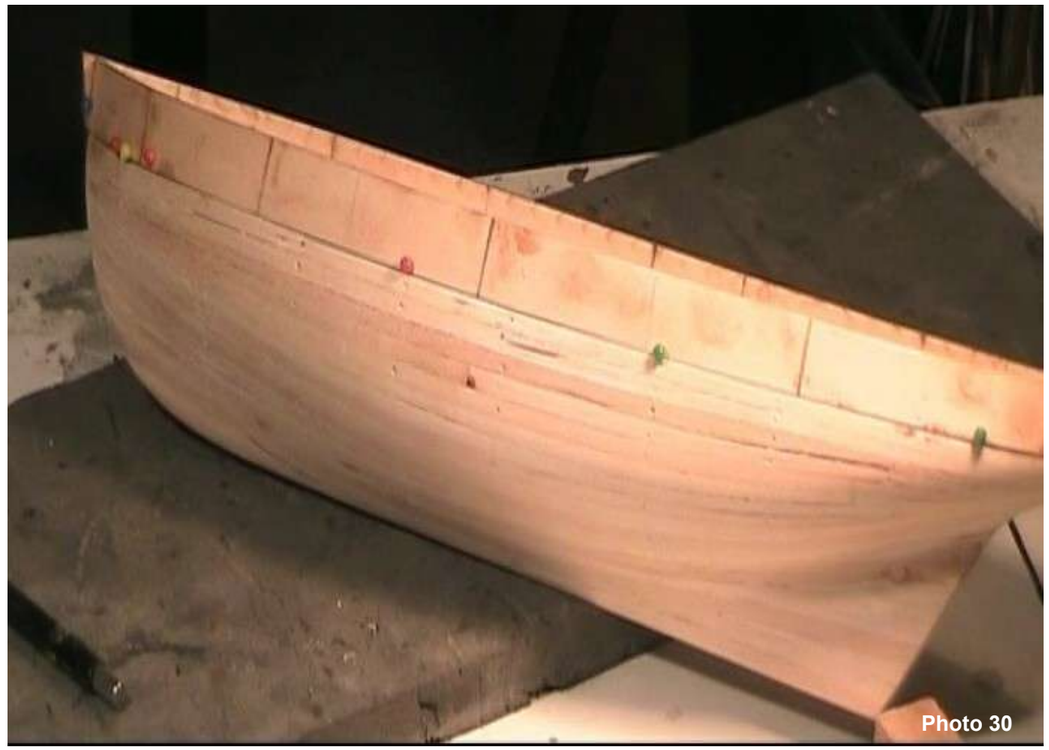

Photo 30

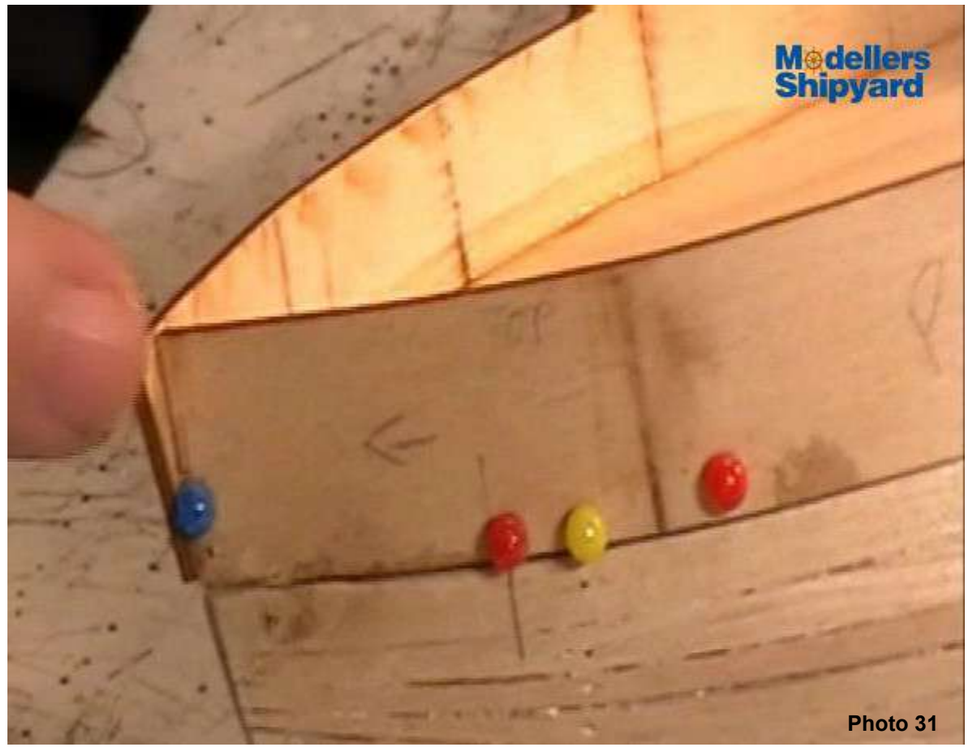

Photo 31

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SHEET 12

5.7.6 Deck Planking

Use the 0.6x4x400mm silver ash P37 for the deck planking –white/cream coloured timber. This timber will be used to cover the false deck to simulate deck planking. Using the silver ash timber strips cut enough into 100mm length pieces to cover the deck. Use the jig Figure 4 to achieve this. Bundle approximately 20 lengths at a time of these pieces together using “dog clips”. Run a dark soft pencil along the edge and end of the bundled planks. This will simulate tar caulking between the deck planks. Repeat this until there are enough lengths to cover the whole deck.

Apply a thin film of PVA glue on the deck to fix the planks in place. Always be sure to remove any excess glue with a damp cloth.

Draw a line along the centre of the deck from end to end. Lay the first series of planks end-to-end along this line. Note where the holes are for the mast and rudder. For the next line of planks on the right hand side off-set them by half the length of the plank. Repeat this process until the right hand side of the deck is covered. Repeat the process again for the left hand side of the deck but off-set the planks by half the length of the plank. Trim the planks in and around the bow and stern.

At the mast hole and the rudder hole drill through the deck planks. Finish the deck with a fine grade sandpaper. Spray the completed deck with a clear satin or matt finish to seal the surface.


Photo 32


Photo 33


Photo 34

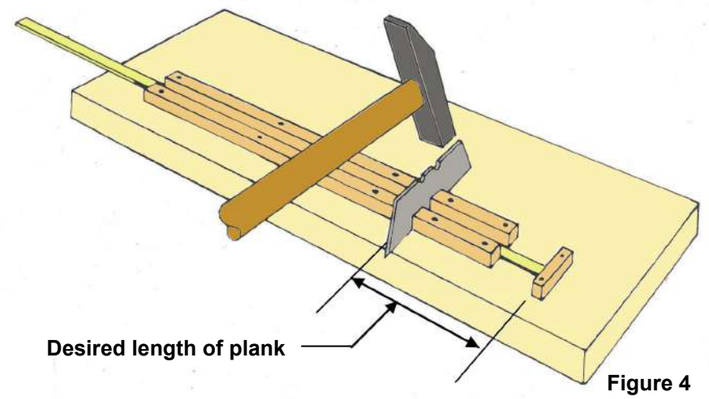

Figure 4


Photo 35

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SHEET 13

5.7.7 Bulwark Extension

Identify the 2x4mm walnut P40. Cut a length to fit **side-on** to the top of each bulwark. Use a hand help plank bender to achieve the required bend at the bow. Use a two part epoxy resin to glue the bulwark extension in place. Use bull dog clips to hold the timber in place while the glue sets.

Photo 36

5.7.8 Inner Bulwark & Transom

Plank the inside of the bulwark and transom using 0.6x5mm mahogany strip P38. Fit and glue in place a length of 2x3mm walnut strip P41 as the deck trim on the inside of the bulwark. Do this for both the port and starboard sides. Use a length of 2x3x100mm walnut P42 as the deck trim at the base of the transom. Using 2x3mm walnut P41- 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.

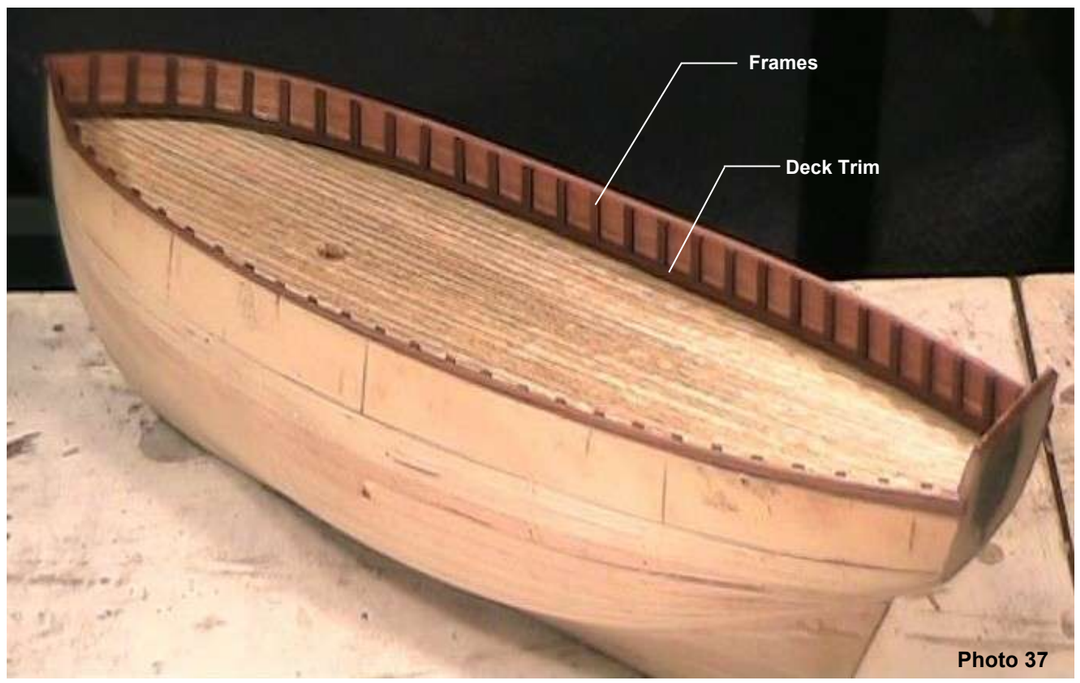

Photo 37

5.7.9 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 mahogany strips P38 as the second layer of planking. Identify these planks before proceeding. To glue the planks in place use a non-drip contact type adhesive such as “Selley’s Gel Grip”. 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.

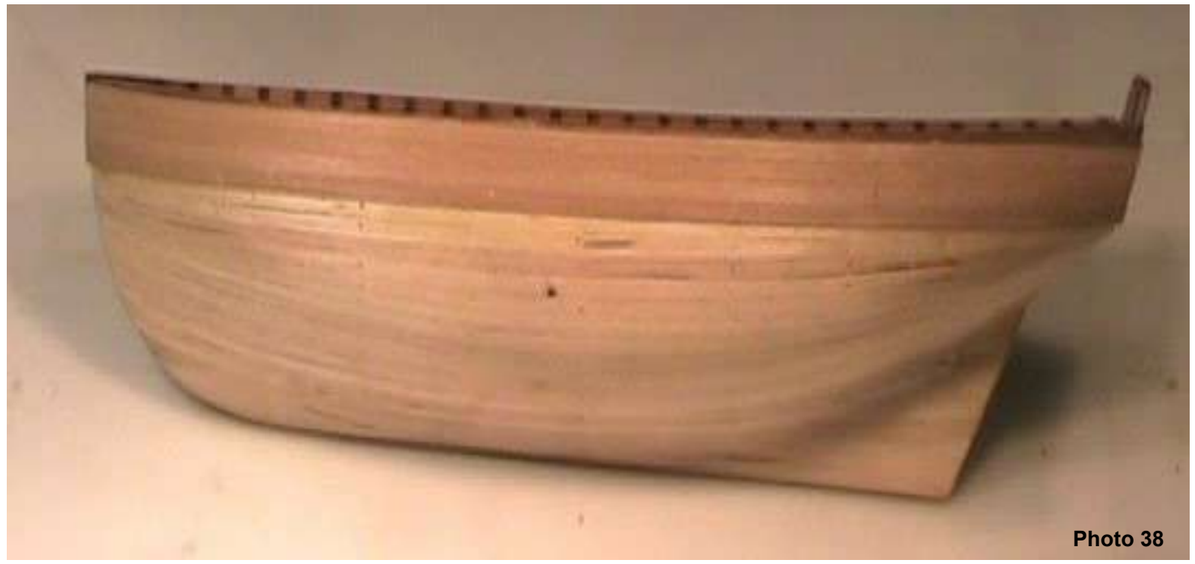

Photo 38

Photo 39

Complete the second layer of planking by apply the planking principles previously used for the first layer of planking.

For the fitting of the next few planks some tapering fore & aft may be necessary.

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SHEET 14

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.

Photo 40

Photo 41

5.7.10 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.

Photo 42

5.7.11 Stem Post, Stern Post and Keel

Identify the stem post P14, stern post P15 and keel P39. Plank the stem post using 0.6x5mm mahogany P38. 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. Plank the stern post and keel using 0.6x5mm mahogany strip P38.

Photo 43A

Photo 43B

Photo 44

5.7.12 Rudder & Tiller

Plank the rudder with 0.6x5mm mahogany strip P38. Drill a 5mm hole through the hull to take the rudder. Shape the top end of the rudder to fit through this hole. Fit the rudder using the rudder hinges P95 and nails P97. Identify the tiller P43 - shape and fit tiller to the top of the rudder post. Apply a walnut or teak stain to the tiller is desired.

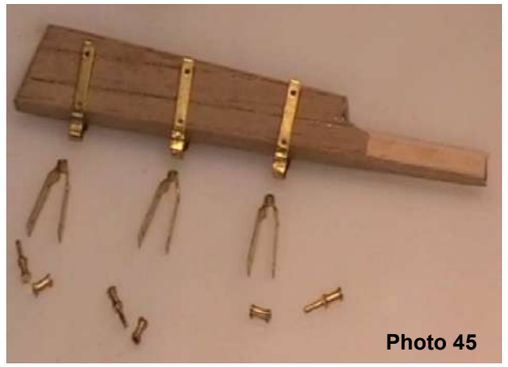

Photo 45

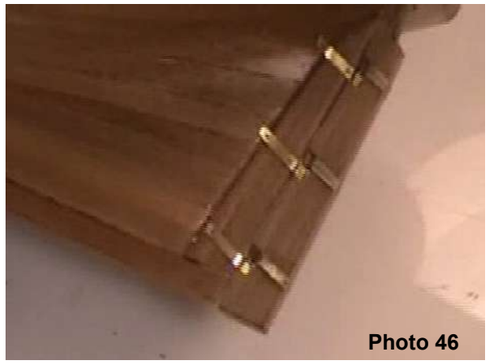

Photo 46

Photo 47

5.7.13 Wales & Transom Cap

Identify the 0.6x4mm silver ash strip P37. Fit and glue in place two strips along the length of the hull 15mm below the top of the cap rail. For the wale trims use two lengths of 2x3mm walnut P41- fit and glue in place on the upper and lower edge of the silver ash strips. For the transom cap use 2x4mm walnut P40 - fit and glue in place a length across the top of the transom.

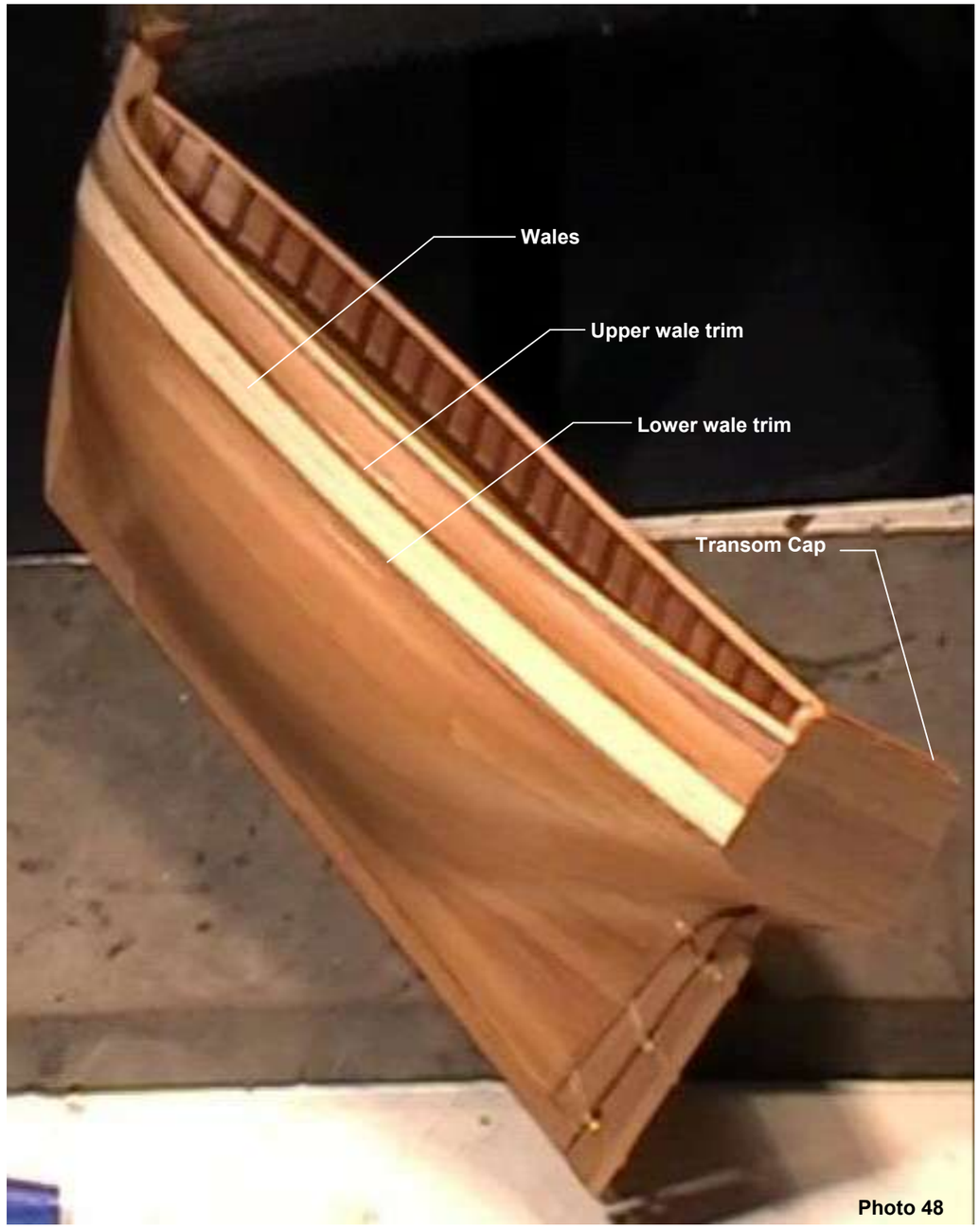

Photo 48

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SHEET 17

5.7.14 Cap Rail
Identify the 2x4mm flexible beech P44. Cut two lengths to fit along the top of the bulwark. At the transom you will need to check the end to fit neatly. Glue in place and trim off any excess. Identify the 2x2 limewood P45. Fit and glue in place this timber on the outside of the flexible beech previously fitted to create a 6mm wide cap rail.


Photo 49


Photo 50


Photo 51

5.7.15 Channels
The channel is a wooden platform projecting from the hull over which the deadeye straps sit. The channels allow the lower deadeyes to secure the shrouds to the hull. The channels are P21 & P22. Identify these parts from the 2mm laser cut plywood sheet.

Cut four 1mm slots to a depth of 2mm into the outer edge of each channel at the distances shown in Figure 5. The deadeye straps will be fitted into these later. Fit two 3mm eye pins P49 as shown. These will be used later for the top mast shrouds.

Paint the channels black if desired. See Sheet 19 for the placement of the channels.

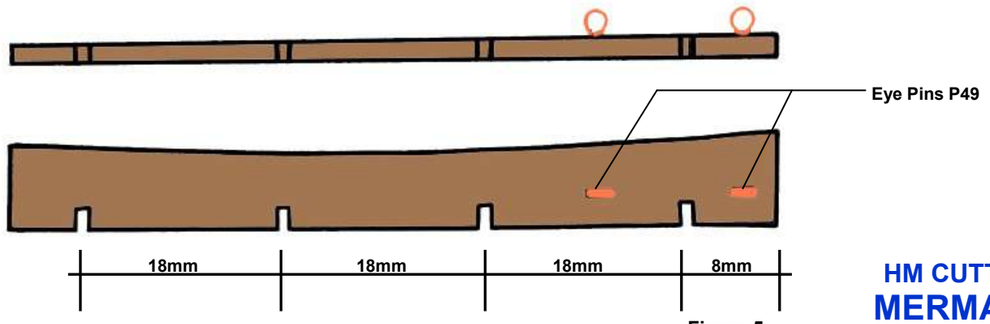

Figure 5

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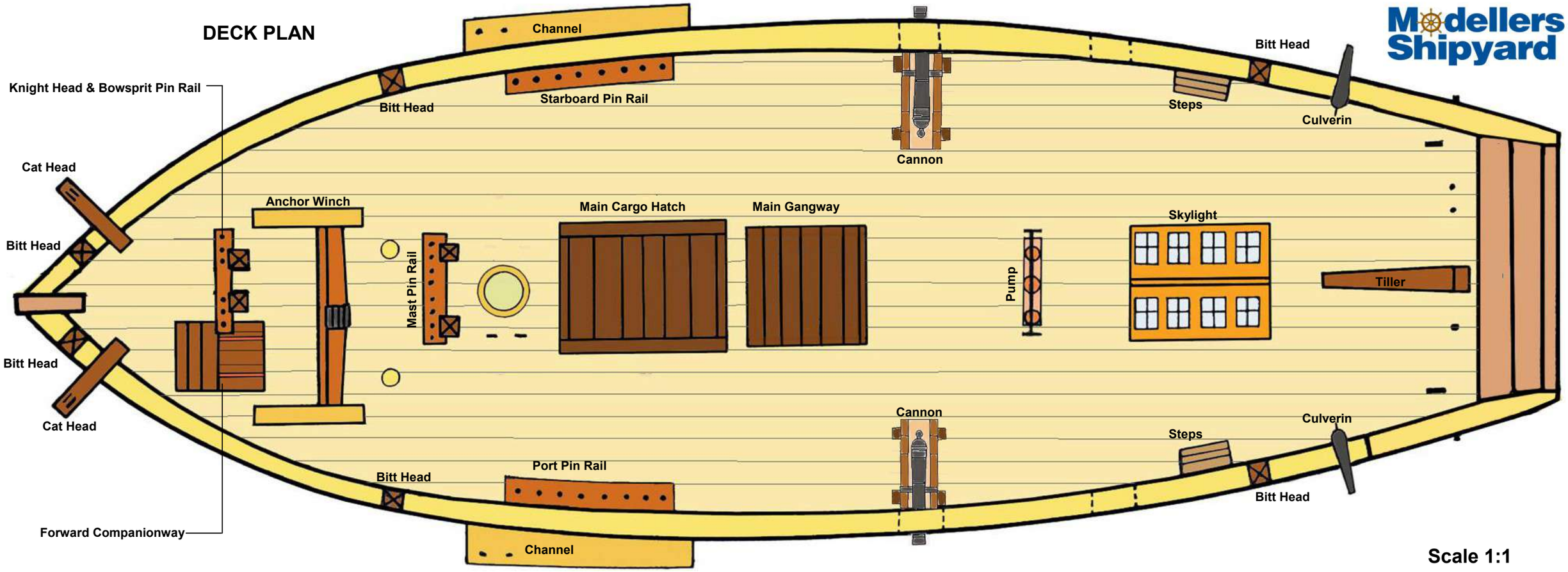
SHEET 18

DECK PLAN



PROFILE

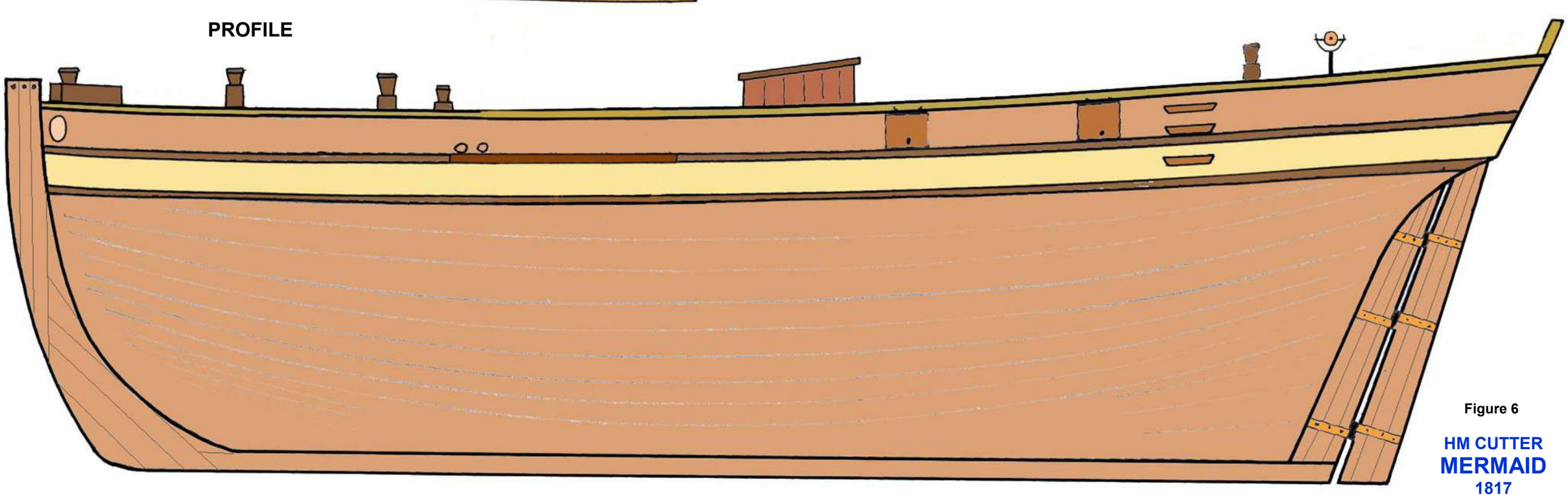


Figure 6

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SHEET 19

Scale 1:1

5.7.16 Gun Ports

Identify the location of the gun ports from Sheet 19. Mark and cut-out the holes to fit the gun port frames. Fit and glue in place the gun port frames with lids P47.

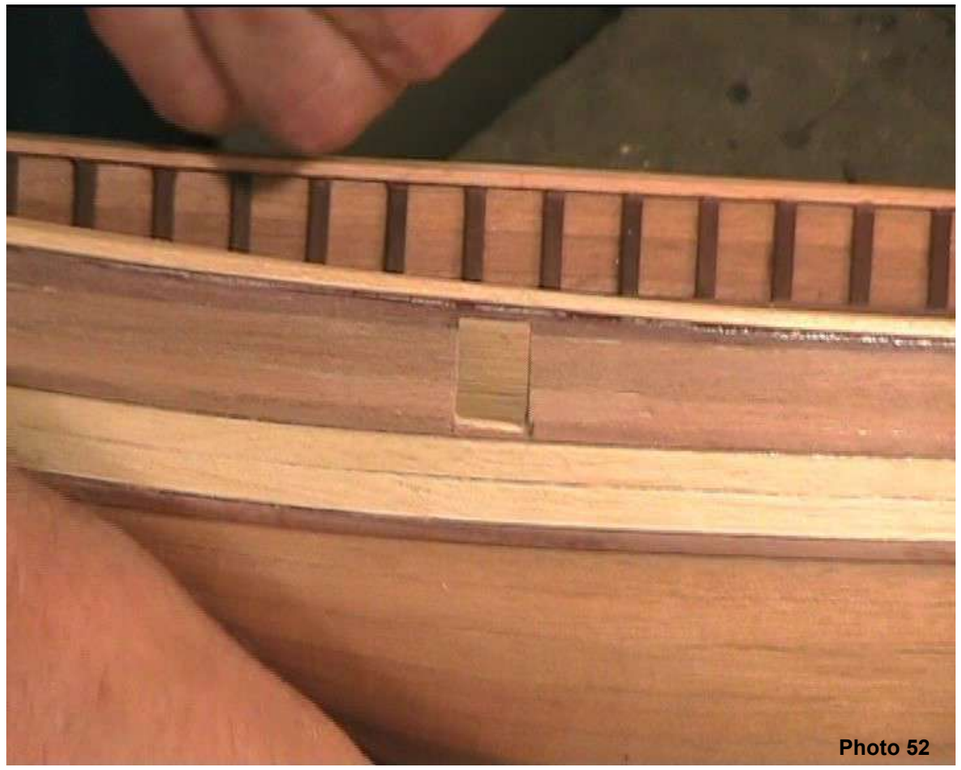

Photo 52

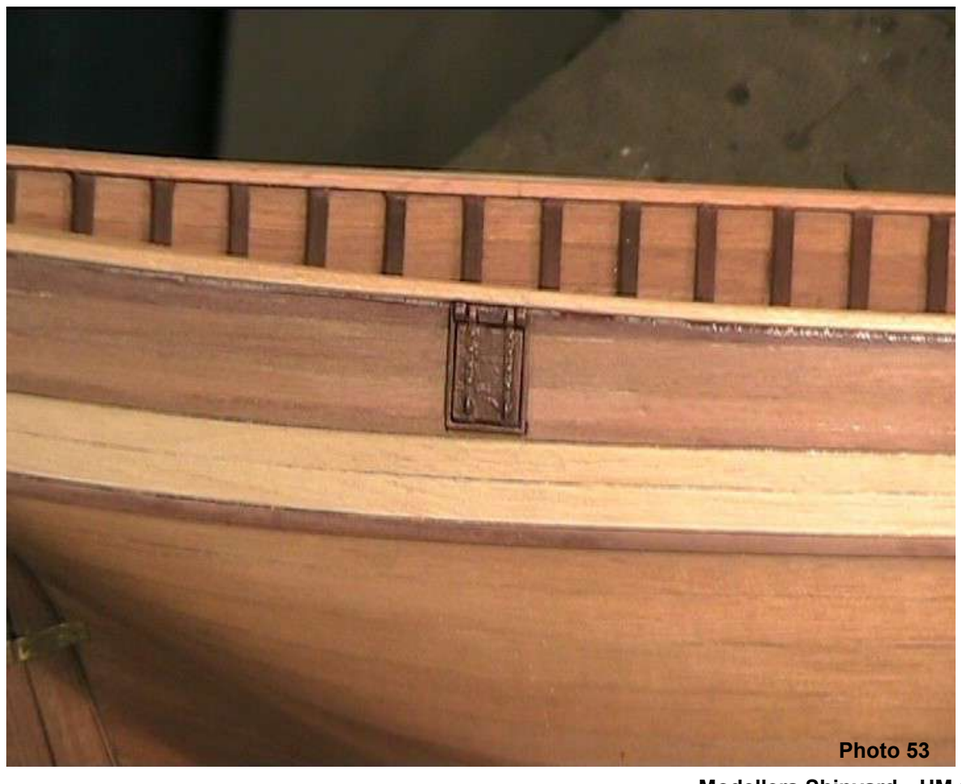

Photo 53

6.0 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, carronades, 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.

6.1 Main Cargo Hatch

Identify the main cargo hatch base P33. For the cargo hatch trim use P46. Cut lengths to fit around the base. Place these pieces around the edge of the base. Using 1x6mm walnut P48 cut 6 lengths 28mm long. Fit and glue these pieces across the base. Fit eye pins P49 with 3mm brass rings P50 in place as shown.

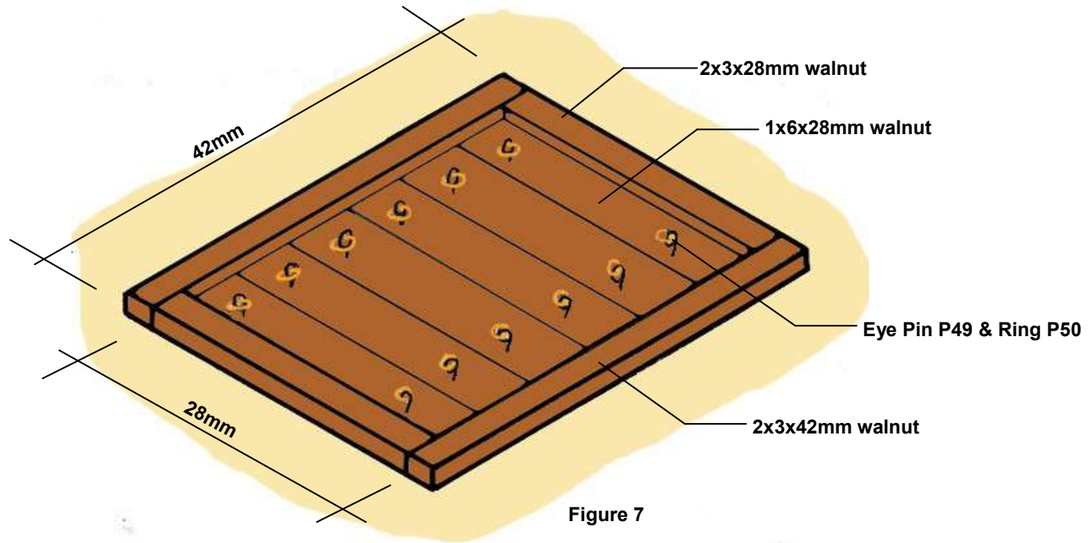

Figure 7

6.2 Forward Companionway

Identify the forward companionway base P20. Fix in place 1x3mm walnut P51 around the base. Fit 0.6x5mm mahogany strip P38 across the top of the base in the same alignment as the deck planks. Fit two lengths of 1x6mm walnut P48 on the cross alignment to the above strips. Fit two pieces of 1x2mm walnut P52 as the hatch runners.

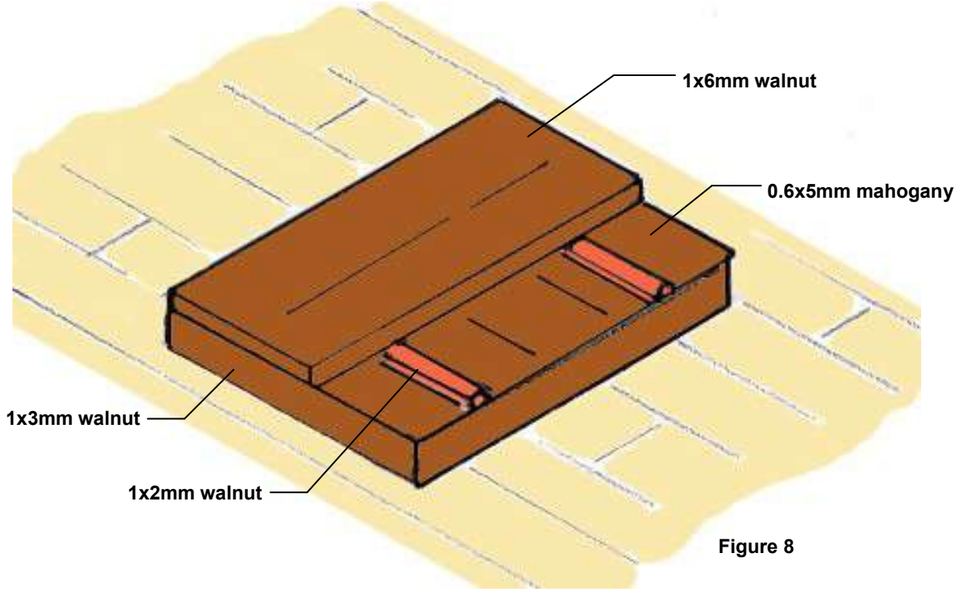

Figure 8

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SHEET 20

6.3 Main Gangway
The main gangway parts are P25 - P29 & P53. Identify these parts and assemble the main gangway. Using 0.6x5mm mahogany lengths P38 cover the sides, front and roof. Using 1x2mm walnut P52 place a trim around the base and the four corners. Paint the door if desired.

Photo 54

6.4 Skylight
The skylight parts are P30 - P32. Identify these parts and assemble the skylight. Using 0.6x5mm mahogany P38 cover the sides, ends and roof.. Fit the skylight windows P54. Using 1x2mm walnut P52 place a trim around the base. Using 1x2mm walnut P52 fit a length along the joint of the two roof halves.

Photo 55

6.5 Anchor Winch
Identify the anchor winch P57. Assemble as shown.

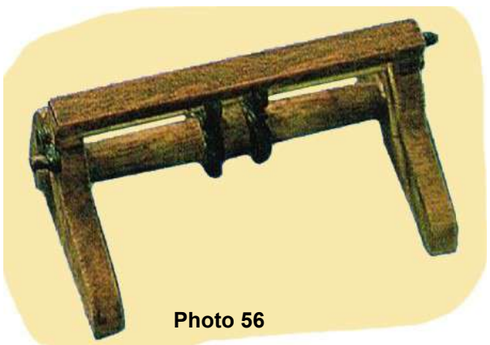

Photo 56

6.6 Pump
Identify the pump P64. See Sheet 19 for the placement of the pump on the deck.

Photo 57

6.7 Cannons
Identify the cannons P56. Assemble the two cannons as shown. See Sheet 19 for the placement of the cannons

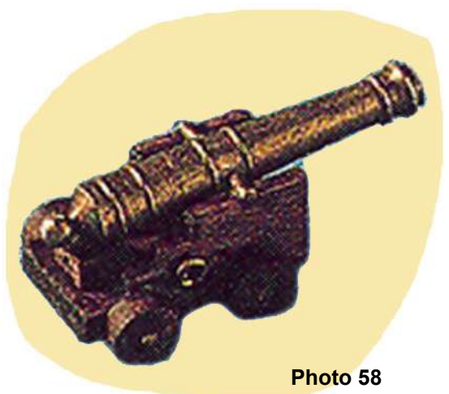

Photo 58

6.8 Davits
Identify the davits P17A/B. Use a file to fit each davit to the location indicated. File & sandpaper to slightly round the edges. Apply a walnut or teak stain to each davit. Glue each davit in place.

Photo 59

6.9 Culverins
Identify the culverins P62. Fit and glue the two culverins in place 5mm along the cap rail from the end of each davit.

Photo 60

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SHEET 21

6.10 Mast Pin Rail

Using 5x5mm walnut P58 and 1x6mm walnut P48 build the mast pin rail following Figure 9. Drill eight 1.5mm holes along the length of the 1x6mm walnut. Fit and glue this piece into the 1mm slots as shown. Fit 8 belaying pins P59. Place the mast pin rail as indicated on Sheet 19 and glue in position.

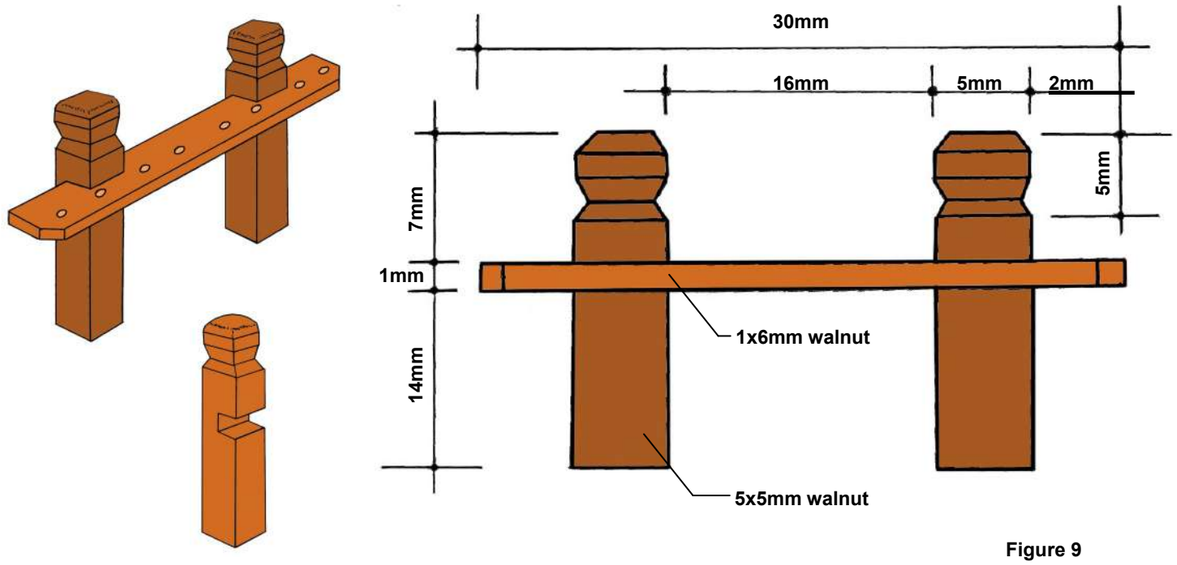


Figure 9

6.11 Knight Heads and Bowsprit Pin Rail

Using 5x5mm walnut P58 and 1x6mm walnut P48 build the knight heads with bowsprit pin rail following Figures 10 & 11. Drill six 1.5mm holes into the outer pin rail as shown. Fit and fix the knight heads with pin rail as indicated on Sheet 19.

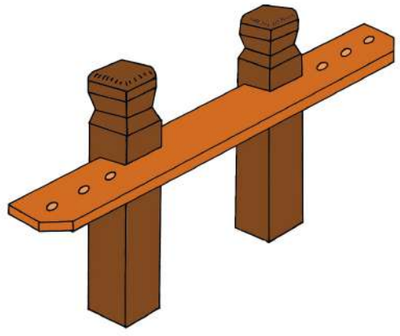


Figure 11

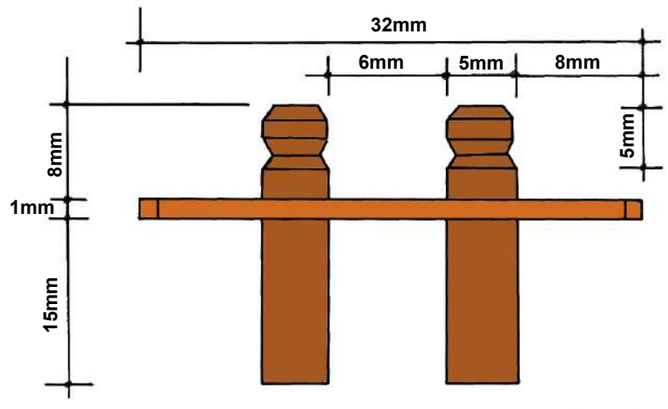


Figure 10

6.12 Bitt Heads

Using 5x5mm walnut P58 make 6 bitt heads following Figure 11. Locate the bitt heads on the cap rail as indicated on Sheet 19.

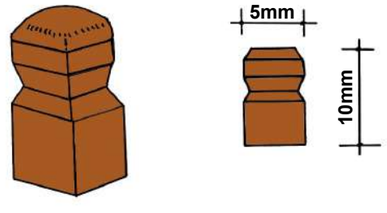


Figure 11

6.13 Port & Starboard Pin Rails

As shown Figure 12 using 1x6mm walnut P48 cut two lengths 55mm long. Drill seven 1.5mm holes along the length of each. Shape, fit and glue each length on the underside of the cap rail 125mm from the stem post as presented on Sheet 19.

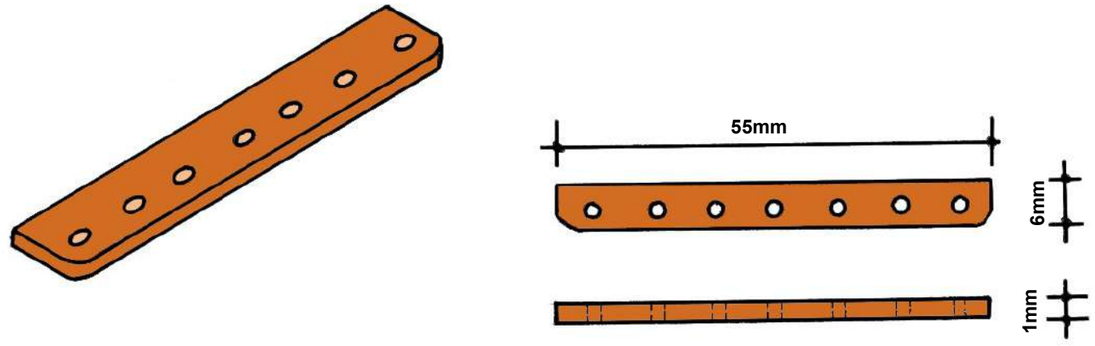
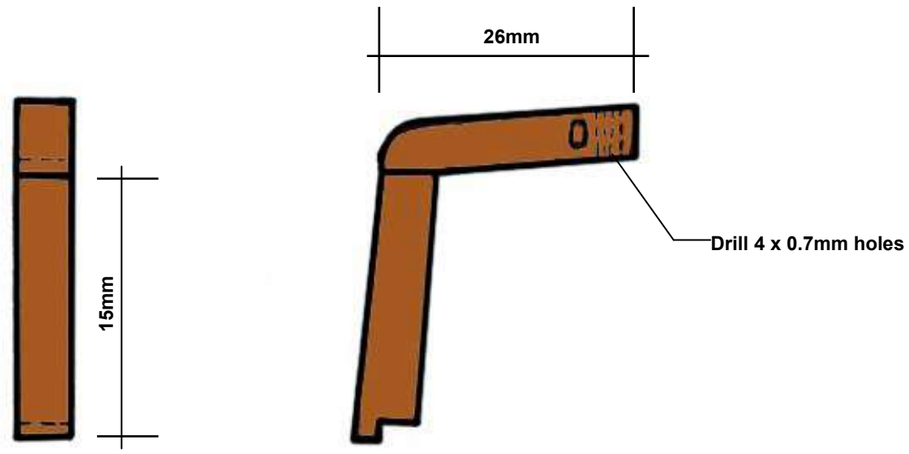


Figure 12

6.14 Cat Heads

Using 5x5mm walnut P58 cut two lengths 26mm long and two lengths 15mm long. Build the cat heads following Figure 13. At the outer end of the two 26mm lengths drill four 0.7mm holes as shown. Fit each cat head in place 30mm along the cap rail from the stem post on the starboard and port sides.



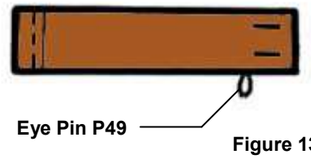


Figure 13

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6.15 Anchors

Drill two holes in the deck as shown for the hawse pipes P65 as shown. Fit the hawse pipes. Drill two 3mm holes through the bulwark on the port and starboard sides as shown.
Identify the anchors P55. Assemble the anchors. Using 2mm cord P66 cut two lengths 250mm long. Taking one end of this cord, thread it through the large brass ring on the end of the anchor shaft, wrap approximately 15mm back on itself and secure with cord H P67. Feed the other end of the 2mm cord through the hole in the bulwark and wrap around the winch—note the direction shown.
Thread the remaining 2mm cord into the hawse pipe.

For the anchor pulley - shape and fit an eye pin P49 into one end of block D. Fit an eye pin P49 to the side of each cat head as shown. Using block D and cord H assemble the anchor pulley as shown. Start at the eye pin and follow Figure 14B. Tie-off at the bow bitt head. Repeat the process for the second anchor.


Photo 61


Photo 62


Photo 63

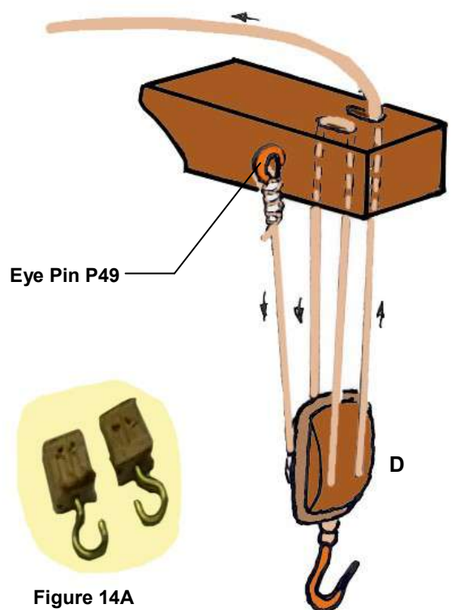

Figure 14A

Figure 14B

Photo 64

BLOCK KEY			CORD KEY		
Size	2 Hole	1 Hole	Size	Fawn	Black
4mm	E	A	0.25mm	G	—
5mm	B	C	0.5mm	H	—
7mm	D	—	—	—	—
Violin	F	—	1.0mm	—	K

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6.16 Ladders

Identify the ladder parts P60 - P61. Assemble as shown Figure 15. Glue the ladders in place as shown Sheet 19.

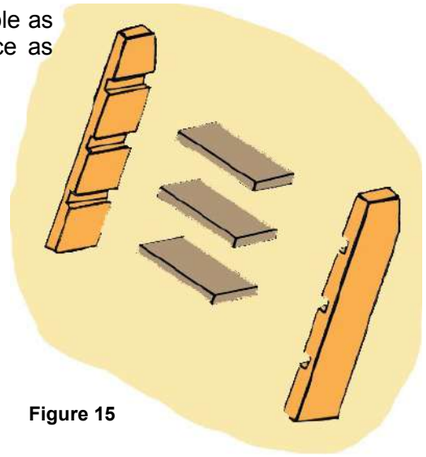

Figure 15

6.17 Boats

Identify the two boats P70 & P71. Paint both boats white. Using 0.6x5mm mahogany strip P38 fit-out the boats with seats and railing trim.

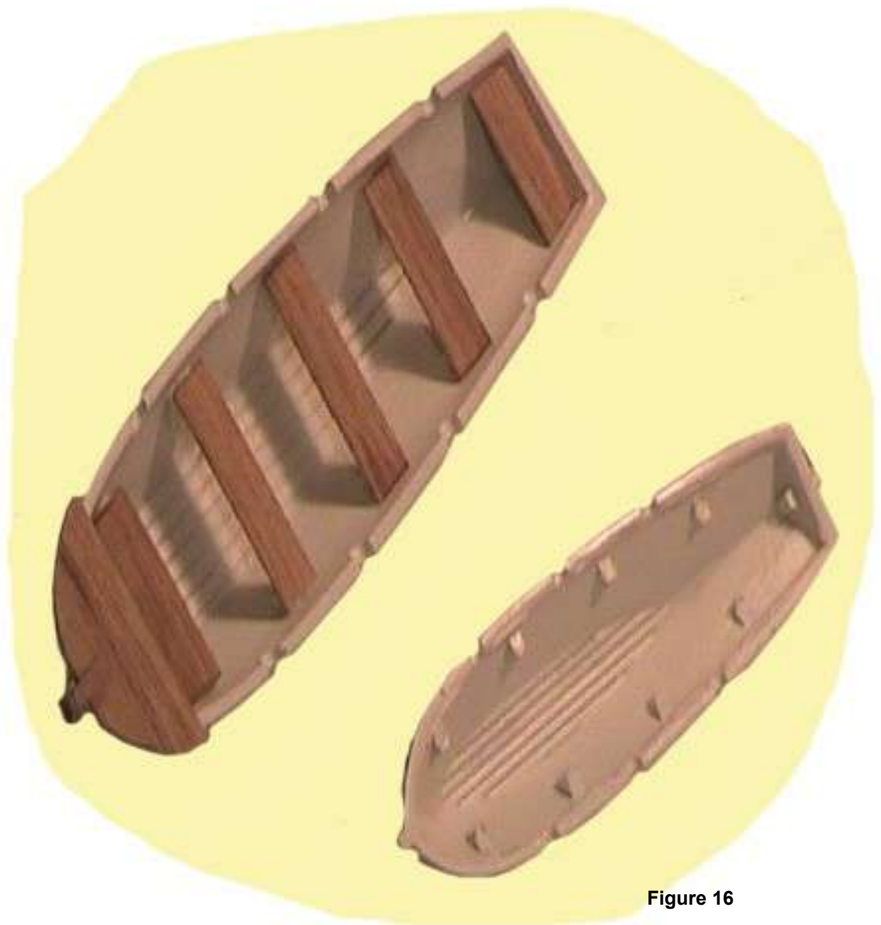

Figure 16

6.18 Bulwark Steps

Identify the 3x3mm walnut L section P63.Cut 6 lengths each 15mm long. Fit to the bulwark as shown Sheet 19.

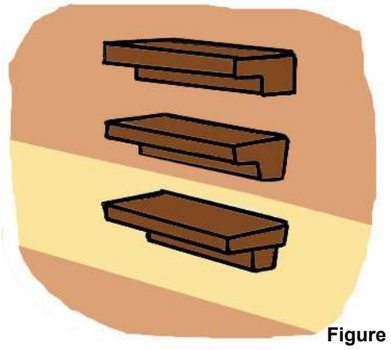

Figure 17

6.19 Boat Rigging

Fit 4 eye pins P49 to the fore and aft port and starboard side of the larger boat. Nest the smaller boat on to the larger boat. If desired make some oars from scrap dowel. Cut enough length of cord H P68 to cross from one eye pin to the other to tie the smaller boat in place. Tie a ring P50 In the middle of the cord.

Drill 4 x 0.7mm holes 15mm in from the outer end of each davit as shown in Figure 19. Fit a cleat P72 to the top of each davit as shown. Identify 2 x 4mm 2 hole blocks P85. Shape and fit an eye pin P49 into the end of each block. Use cord H reeve the block to the davit and the boats. Terminate the rigging at the cleat on each davit.

Figure 18

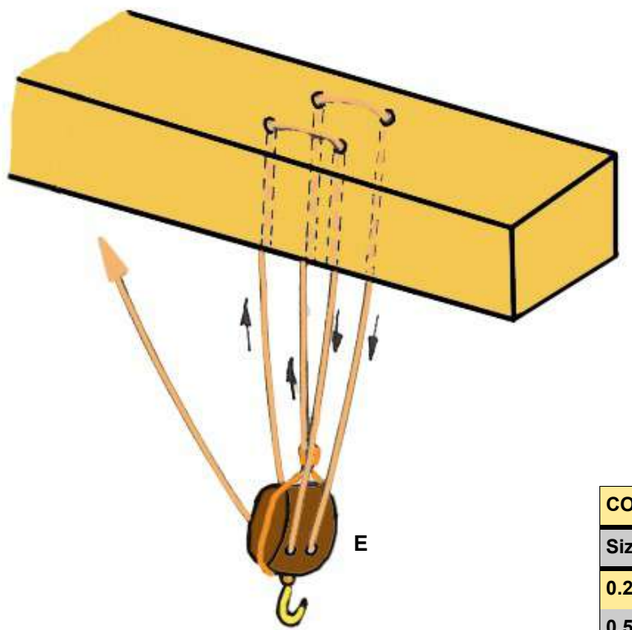

Figure 19

Photo 65

CORD KEY			BLOCK KEY		
Size	Fawn	Black	Size	2 Hole	1 Hole
0.25mm	G	—	4mm	E	A
0.5mm	H	—	5mm	B	C
—	—	—	7mm	D	—
1.0mm	—	K	Violin	F	—

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7.0 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 and using the technique presented in Figure 20. Once they have all been shaped and tapered apply a walnut or teak stain 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.

7.1 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 Figures 21 & 22. Use 2x2mm limewood P45 to make the boom rest supports. Fit and fix the supports and the boom rest P72 as shown. Assemble the lower and upper masts as shown Figure 24. At the masthead cut 4 lengths of copper strap P77 to fit around the upper mast—Figure 23. Fit an eye pin P49 into the upper mast cap and through the top three copper straps. Attach blocks to these eye pins as shown.

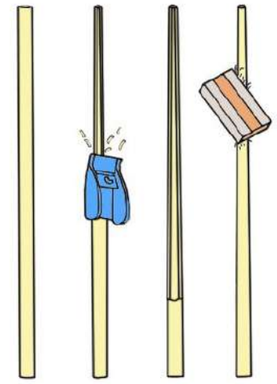


Figure 20

Lower Mast 10dia x 330mm P75 - tapered to 7mm

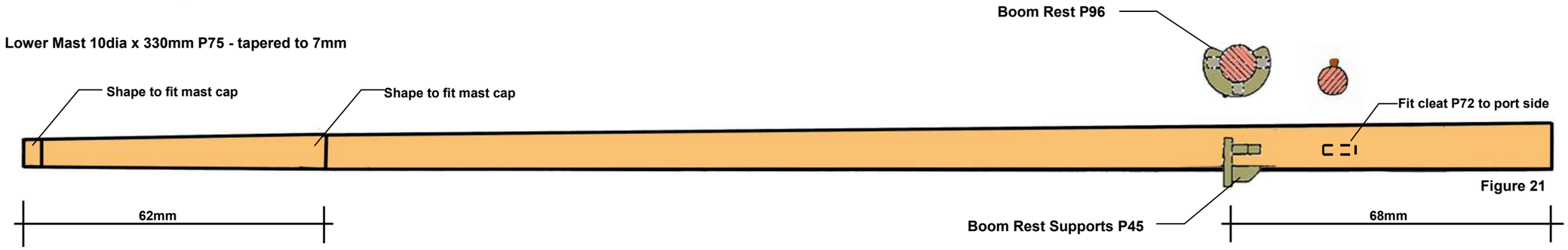


Figure 21

Upper Mast 5dia x 225mm P76 —tapered to 2.5mm

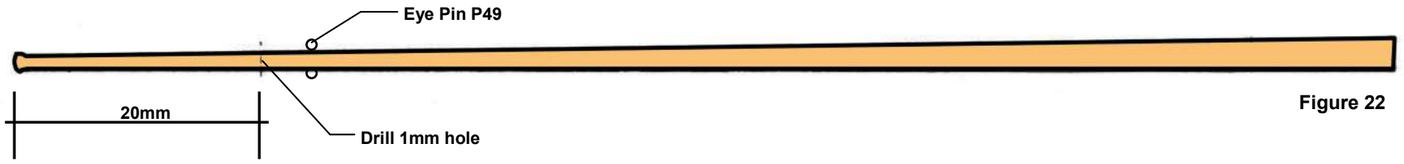
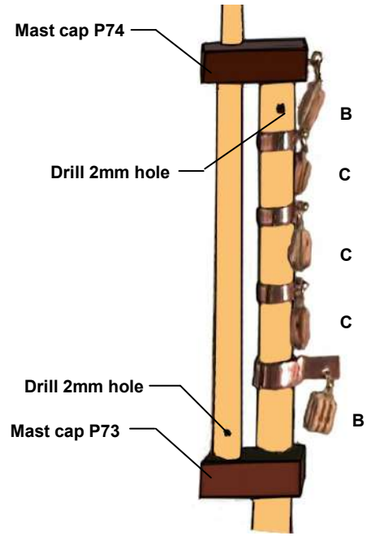


Figure 22

BLOCK KEY			CORD KEY		
Size	2 Hole	1 Hole	Size	Fawn	Black
4mm	E	A	0.25mm	G	—
5mm	B	C	0.5mm	H	—
7mm	D	—			
Violin	F	—	1.0mm	—	K



Masthead Figure 23

Assembled Mast

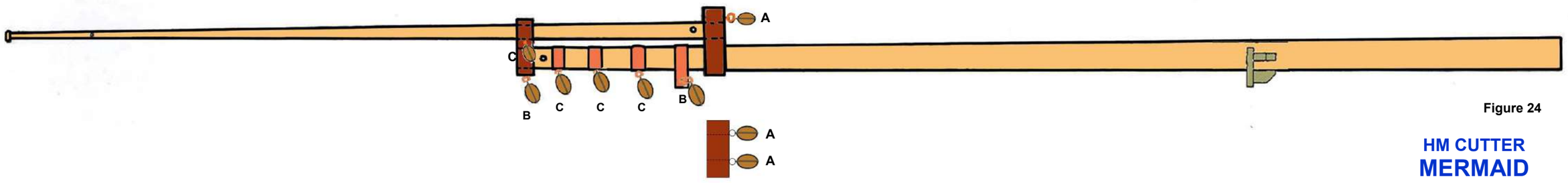


Figure 24

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7.2 Bowsprit, Gaff, Boom & Yards

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

Bowsprit 6dia x 250mm P88 —tapered to 4mm

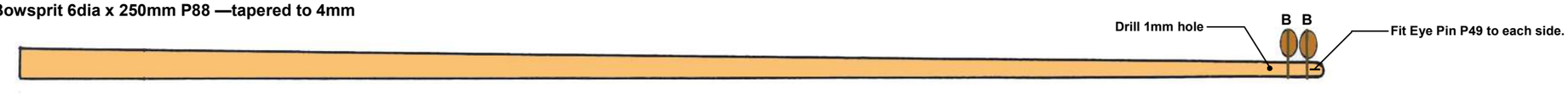

Figure 25

Gaff 5dia x 220mm P76 —tapered to 3.5mm

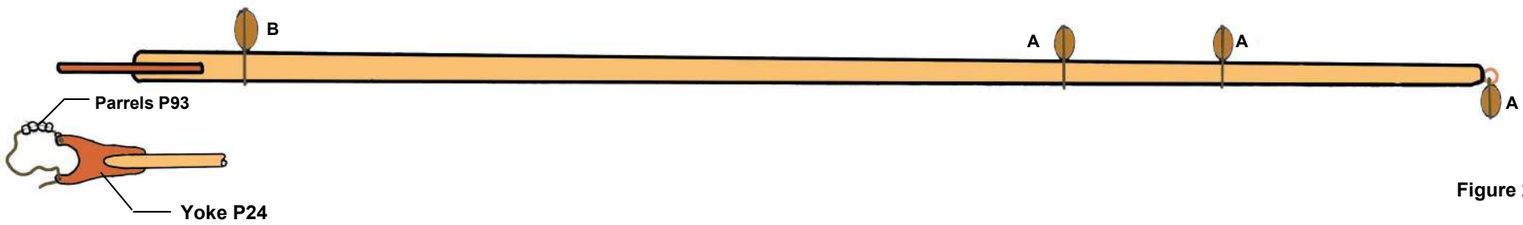

Figure 26

Boom 6dia x 310mm P89 —tapered to 3mm

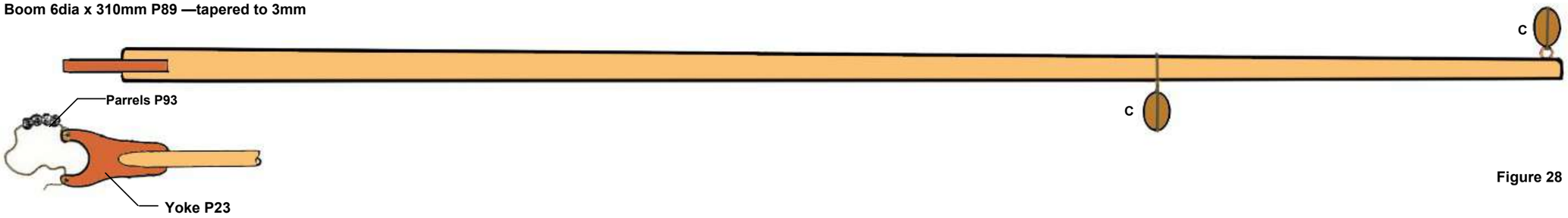

Figure 28

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

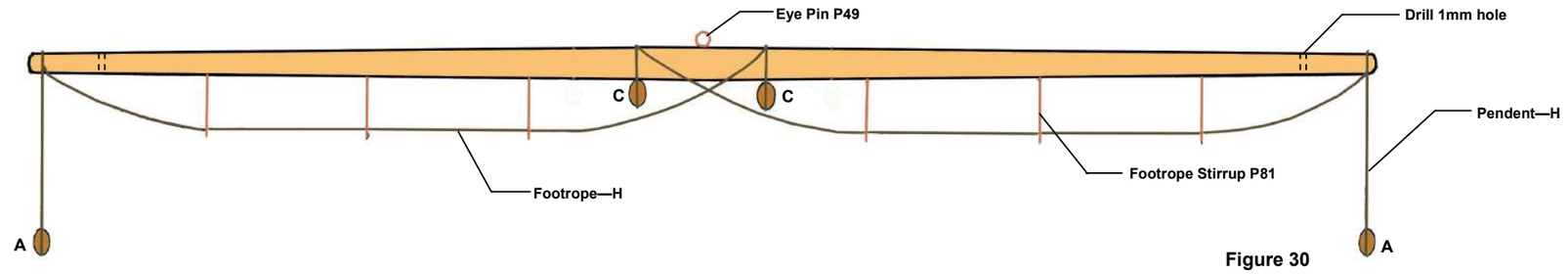

Figure 30

Topsail Yard 3dia x 115mm P80 —tapered to 2mm

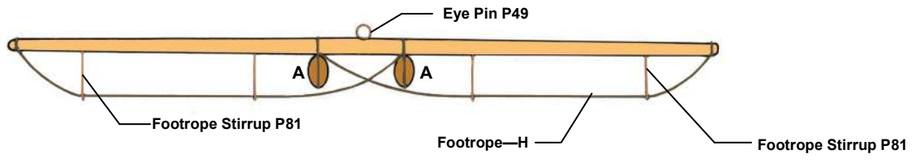

Figure 31

Topmast spreader 3dia x 100mm P80 —tapered to 2.5mm

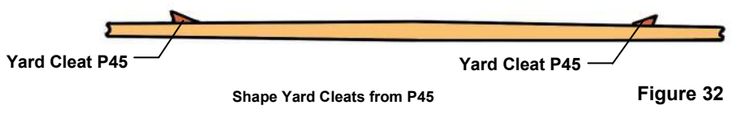

Figure 32

BLOCK KEY			CORD KEY		
Size	2 Hole	1 Hole	Size	Fawn	Black
4mm	E	A	0.25mm	G	—
5mm	B	C	0.5mm	H	—
7mm	D	—			
Violin	F	—	1.0mm	—	K

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7.3 Mast Heel & Mast

Fit the mast heel P78 in place over the mast hole. Fit and glue the assembled mast in place vertical to the deck. There is **no** fore of aft rack on the mast.

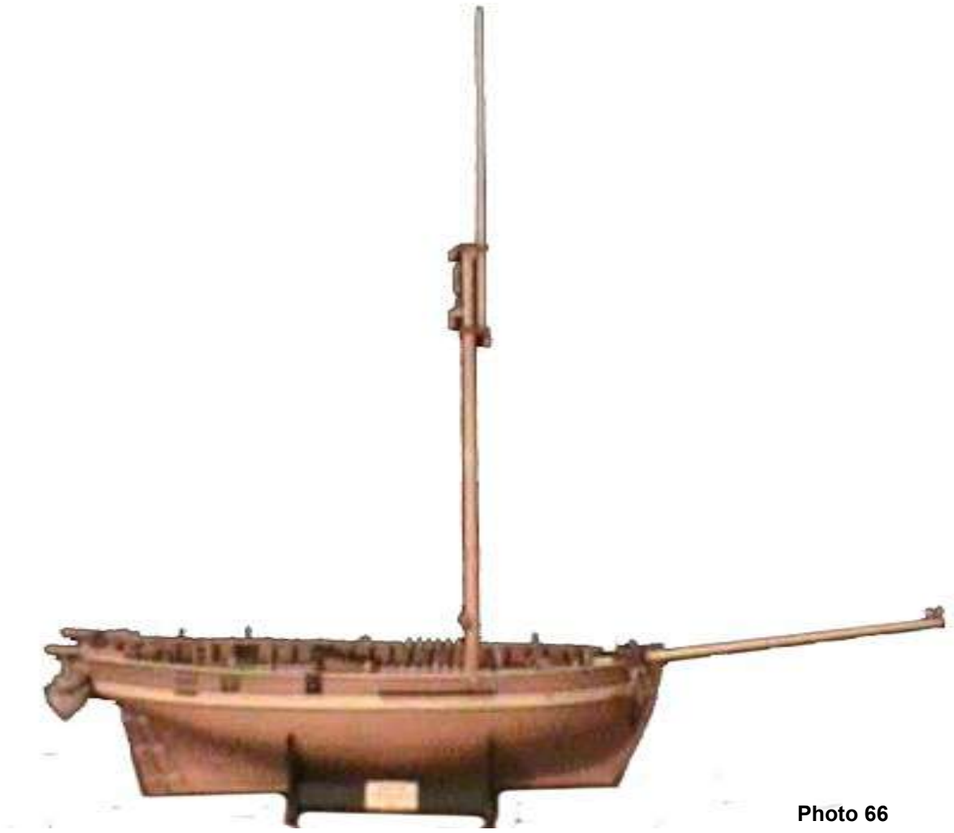

Photo 66

7.4 Bowsprit

The Mermaid is furnished with a straight running bowsprit. It is a large spar projecting fore and to the side of the stem. Shape a slot in the bulwark on the starboard side of the stem post to take the bowsprit. Fit and glue the bowsprit in place between the knightheads and below the bowsprit pin rail at a rising angle of approximately 5 degrees.

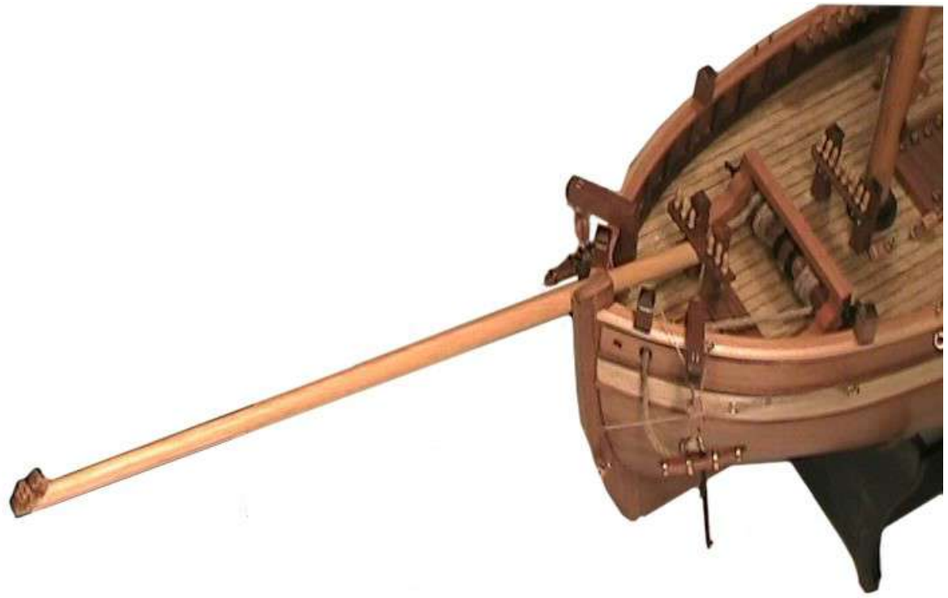

Photo 67

7.5 Deadeyes (Lower) and Deadeye Straps

The lower deadeyes are 5mm P91 and are fitted into deadeye straps P90 which are inserted into the slots previously cut into the outer edge of the channel. Make sure 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.

Once the complete row of deadeye straps are installed use 1x3mm walnut strip P51as channel capping - fixed along the front of the channel.

The bottom of each deadeye strap is fixed to the hull with brass nails P97 below the channel **once** the extension of the angle of the shroud is known. **Note:** Do not fix the deadeye straps to the hull yet as the extension angle is not known at this stage.

The deadeye strap once fixed to the hull should be in a straight line with its respective shroud—this is achieved by extending the 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.

Photo 68

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8.0 Rigging

8.1 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.

8.2 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.

8.3 Standing Rigging

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

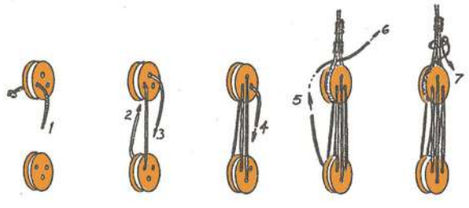
8.4 Shrouds

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 wire jig- Figure 33. 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, the upper deadeye is attached to the shroud. Using a short length of cord G seize the two shrouds together around the mast at the mast cap - Figure 35. Once the first pair of shrouds has been completed, the exercise is repeated on the starboard side, then back to the portside 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. Fit a lanyard strip using 2x3mm walnut P46 as shown.

8.4.1 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 Figure 34.



Reeving Deadeyes Figure 34

Deadeye Jig Figure 33

Shrouds

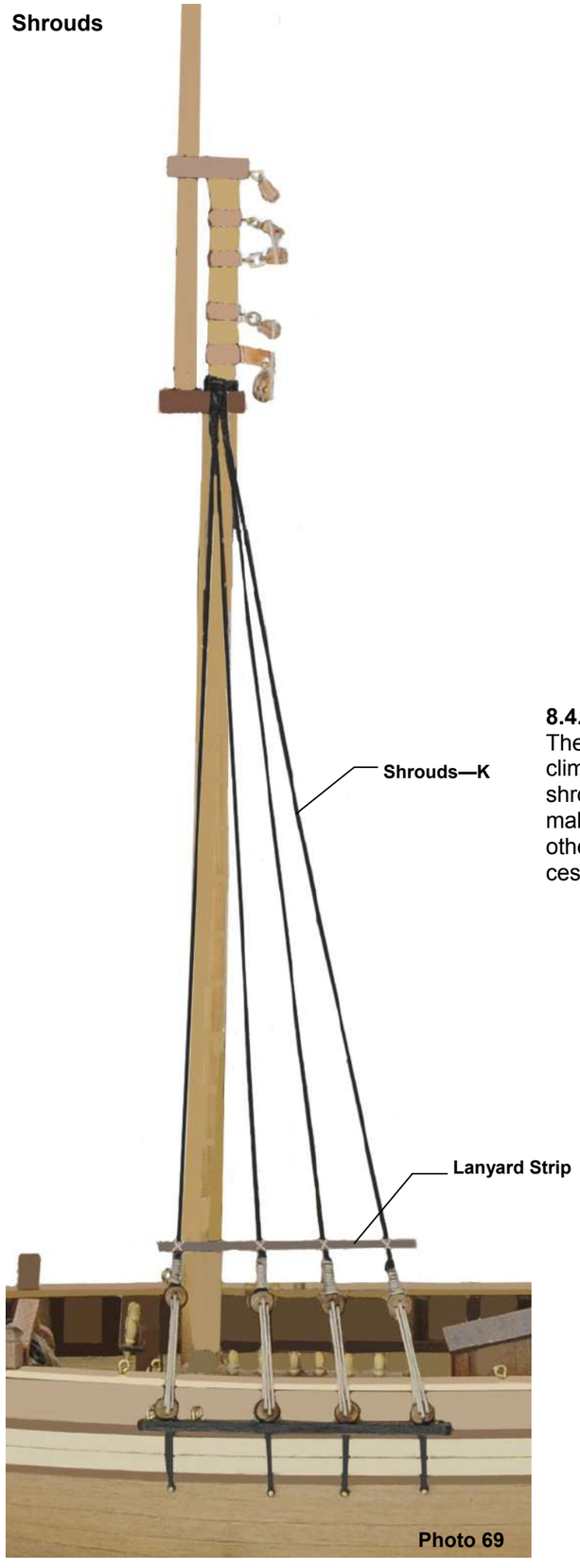


Photo 69

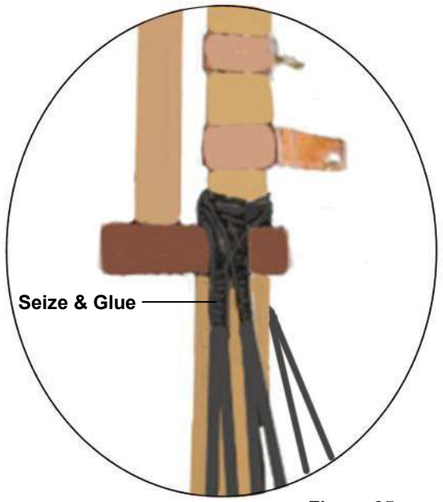


Figure 35

8.4.2 Ratlines

The ratlines are the rope ladders used by the crew to climb up the mast. Using cord G tie off the ratlines to the shrouds. Space the ratlines approximately 5mm apart making sure they are horizontal and parallel with each other. Seize each knot with a dab of glue and trim excess cord—Figure 36

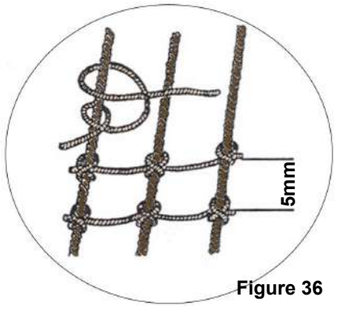


Figure 36

BLOCK KEY			CORD KEY		
Size	2 Hole	1 Hole	Size	Fawn	Black
4mm	E	A	0.25mm	G	—
5mm	B	C	0.5mm	H	—
7mm	D	—			—
Violin	F	—	1.0mm	—	K

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8.5 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 P49 and a ring P50 to the belaying points on the deck, cap rail, channels and inner bulwark The numbers presented on the following drawings & photos correspond to the belaying points indicated Figure 37.

Modellers Shipyard

BELAYING PLAN

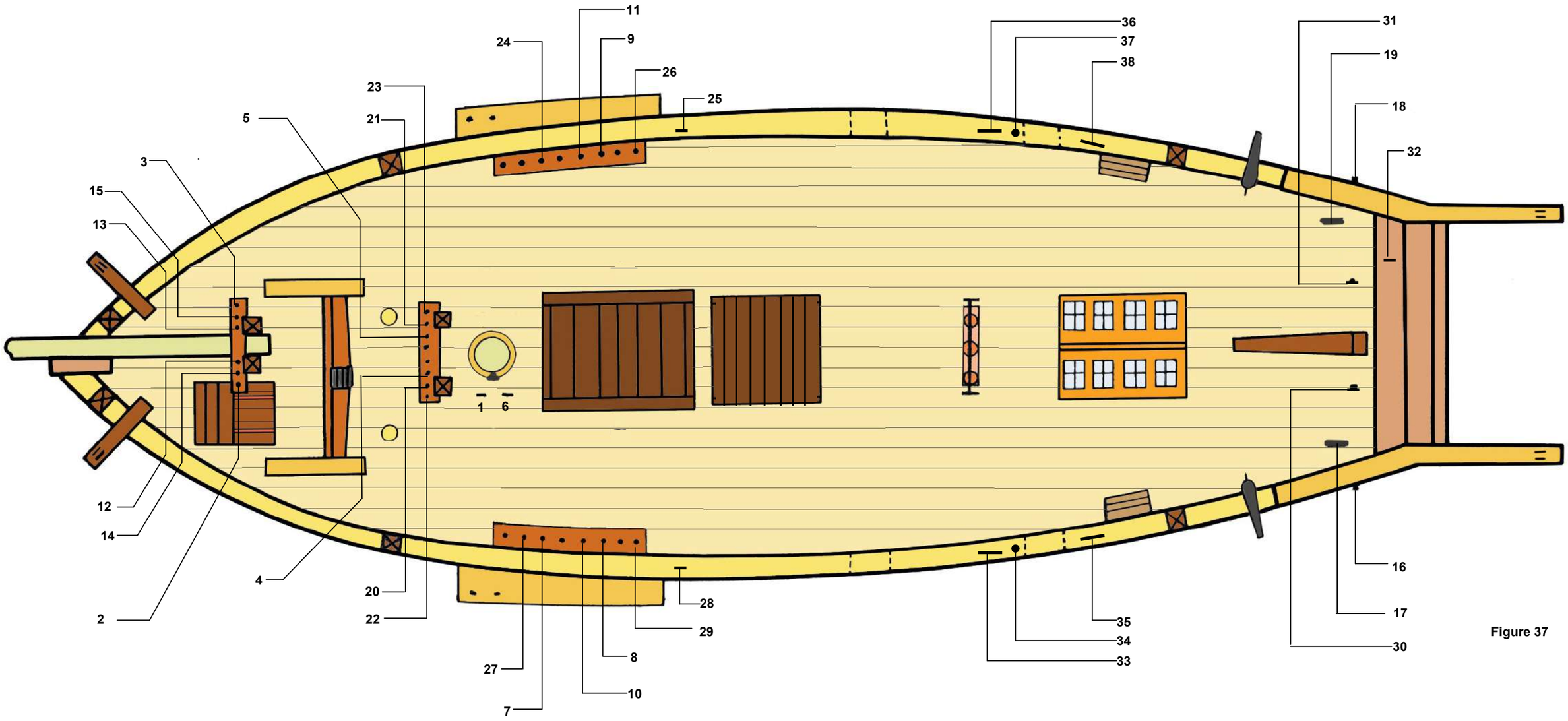
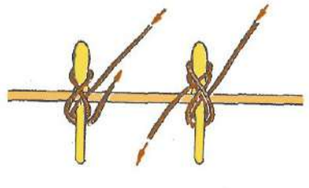
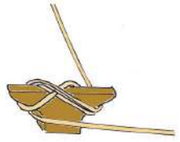


Figure 37



Belaying pin tie-off Figure 38



Cleat tie-off Figure 39

Block Tie-offs Figure 40

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8.6 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 the deck—Figure 42. Terminate at block C - P83. Fit a block B - P84 to Point 1. Reeve these two blocks with together with cord H —Figure 43. Tie-off at the cleat fitted to the mast.

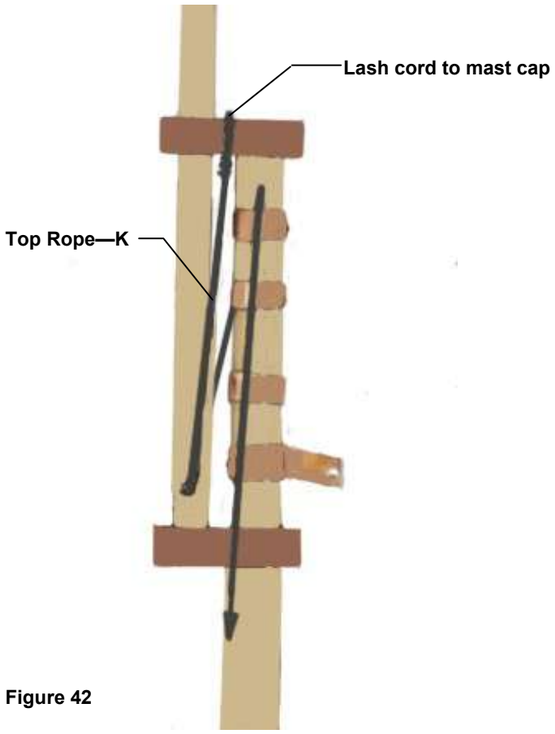

Figure 42

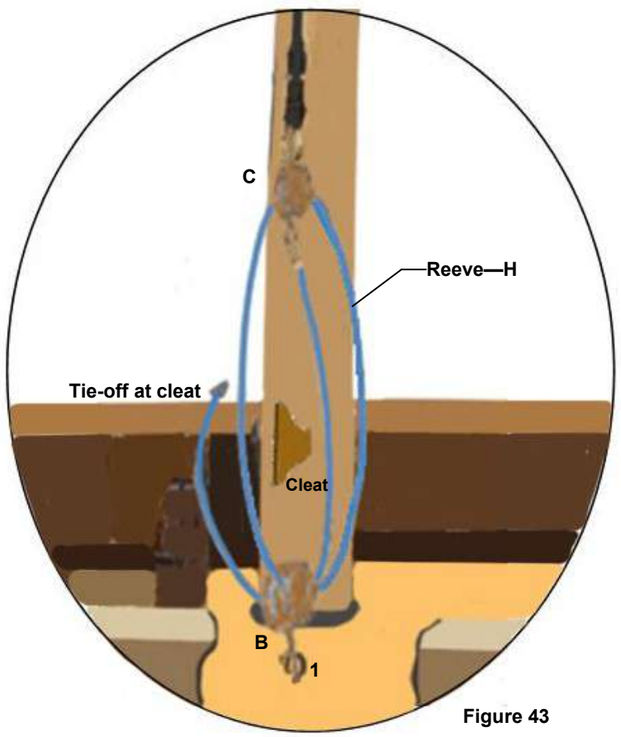

Figure 43

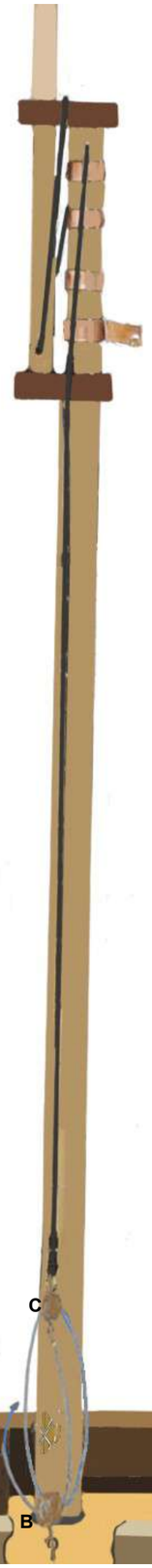

Figure 41

8.7 Topmast Spreader

Identify the topmast spreader previously made.
Fit and fix it in position across the top of the lower mast cap. Align so that the yard cleats are facing the stern of the model.

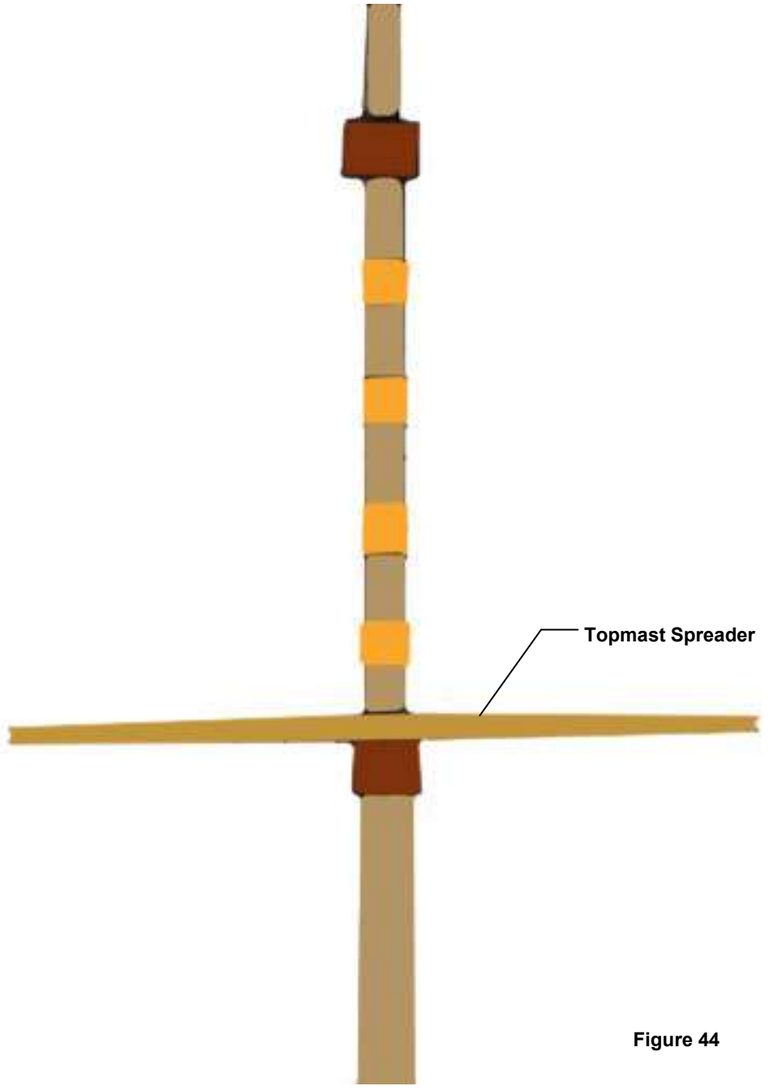

Figure 44

BLOCK KEY			CORD KEY		
Size	2 Hole	1 Hole	Size	Fawn	Black
4mm	E	A	0.25mm	G	—
5mm	B	C	0.5mm	H	—
7mm	D	—			—
Violin	F	—	1.0mm	—	K

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8.8 Forestay

Stays are to prevent the mast from springing when the ship is pitching. There are fore & aft stays.
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 P91 to the other end of this cord. Use cord K to reeve between the deadeye and the holes in the stem post as shown.

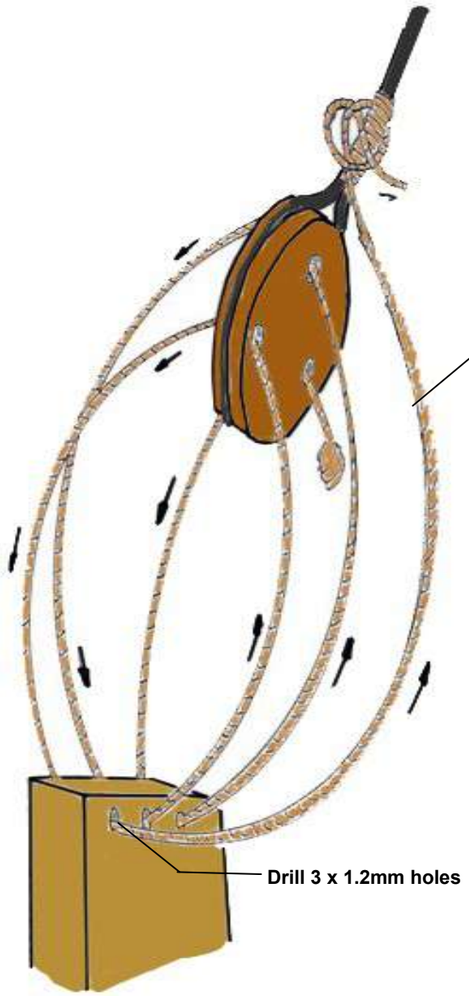

Figure 47

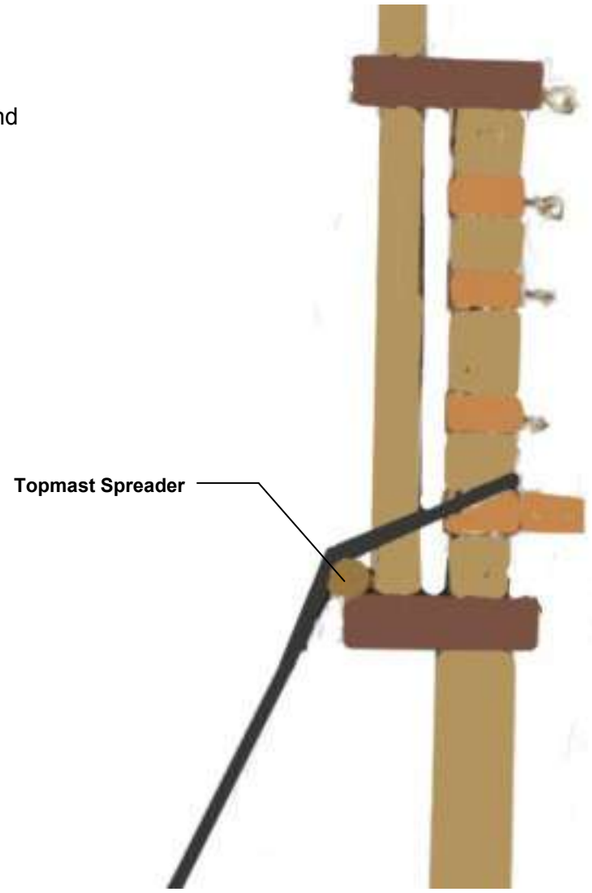

Figure 46

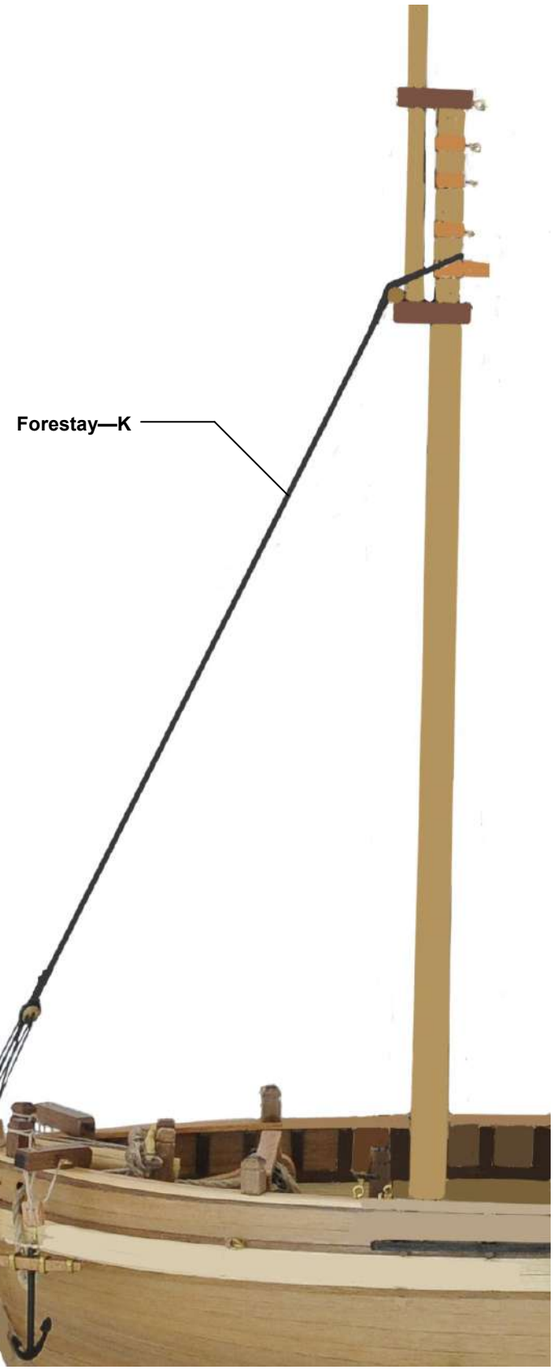

Photo 70

BLOCK KEY			CORD KEY		
Size	2 Hole	1 Hole	Size	Fawn	Black
4mm	E	A	0.25mm	G	—
5mm	B	C	0.5mm	H	—
7mm	D	—			—
Violin	F	—	1.0mm	—	K

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8.9 Backstays

For the port side backstay fit two straps P92 to the bulwark. Fit a block to the fore strap. Fit two cleats P72 to the rail cap at Points 33 & 35. Fit an eye pin P49 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.

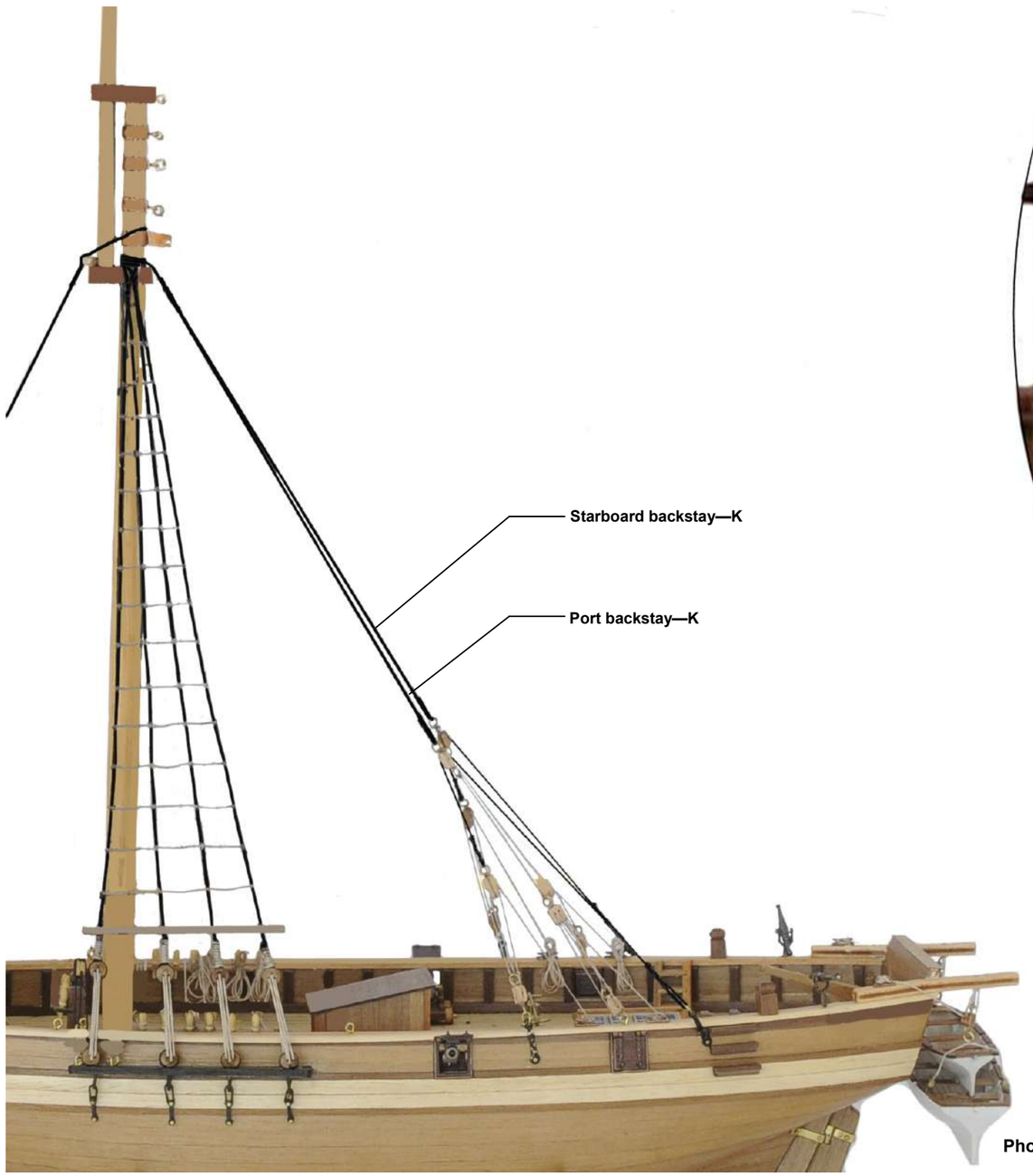

Photo 71

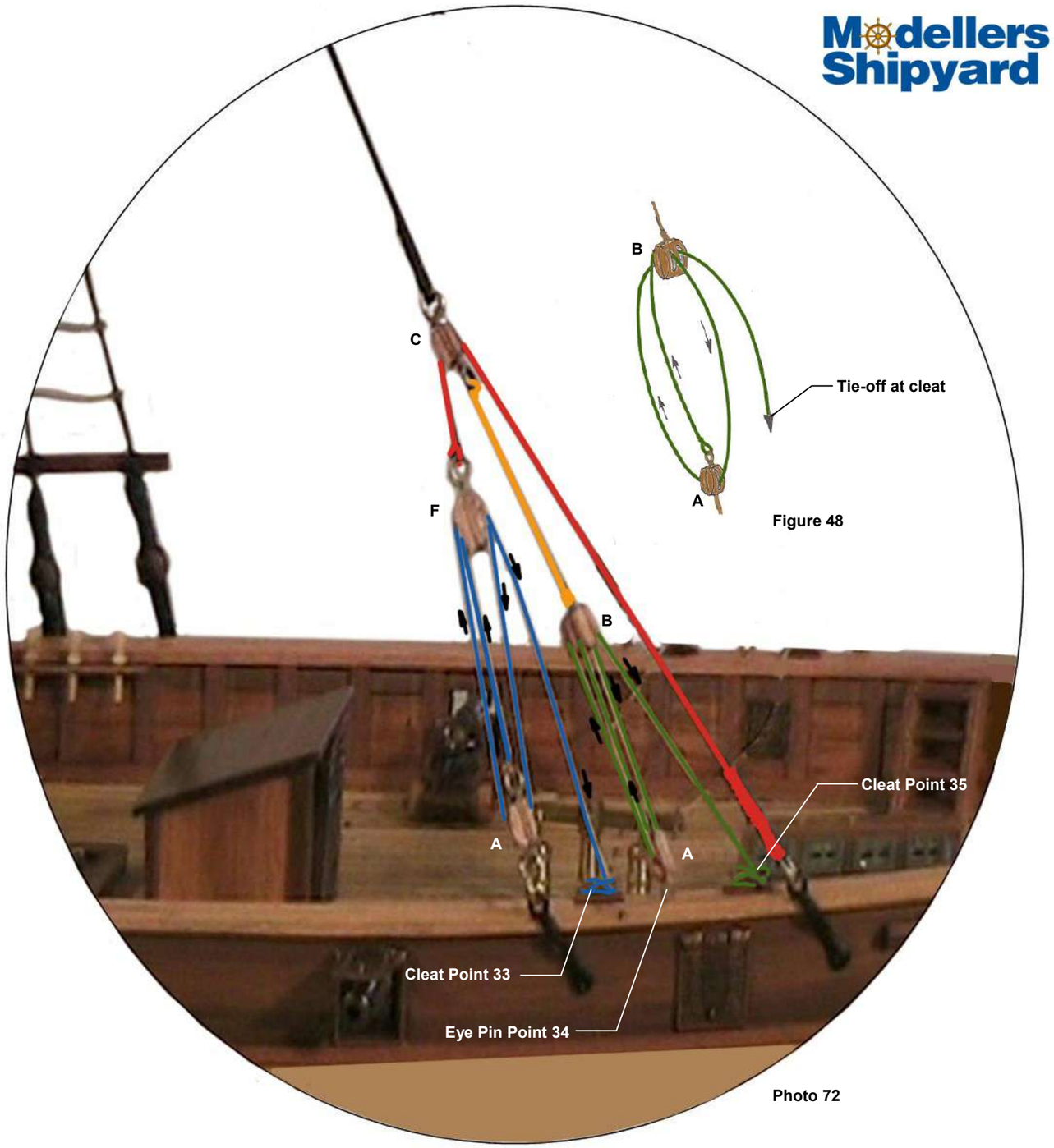

Figure 48

Photo 72

BLOCK KEY			CORD KEY		
Size	2 Hole	1 Hole	Size	Fawn	Black
4mm	E	A	0.25mm	G	—
5mm	B	C	0.5mm	H	—
7mm	D	—			—
Violin	F	—	1.0mm	—	K

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8.10 Top Mast Shrouds

Fit and glue in place a brass ring P50 25mm from the top of the mast. Attach blocks A as shown to the eye pins P49 fitted to the channel. 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. Reeve the blocks together using cord H. Repeat these steps for the starboard side.

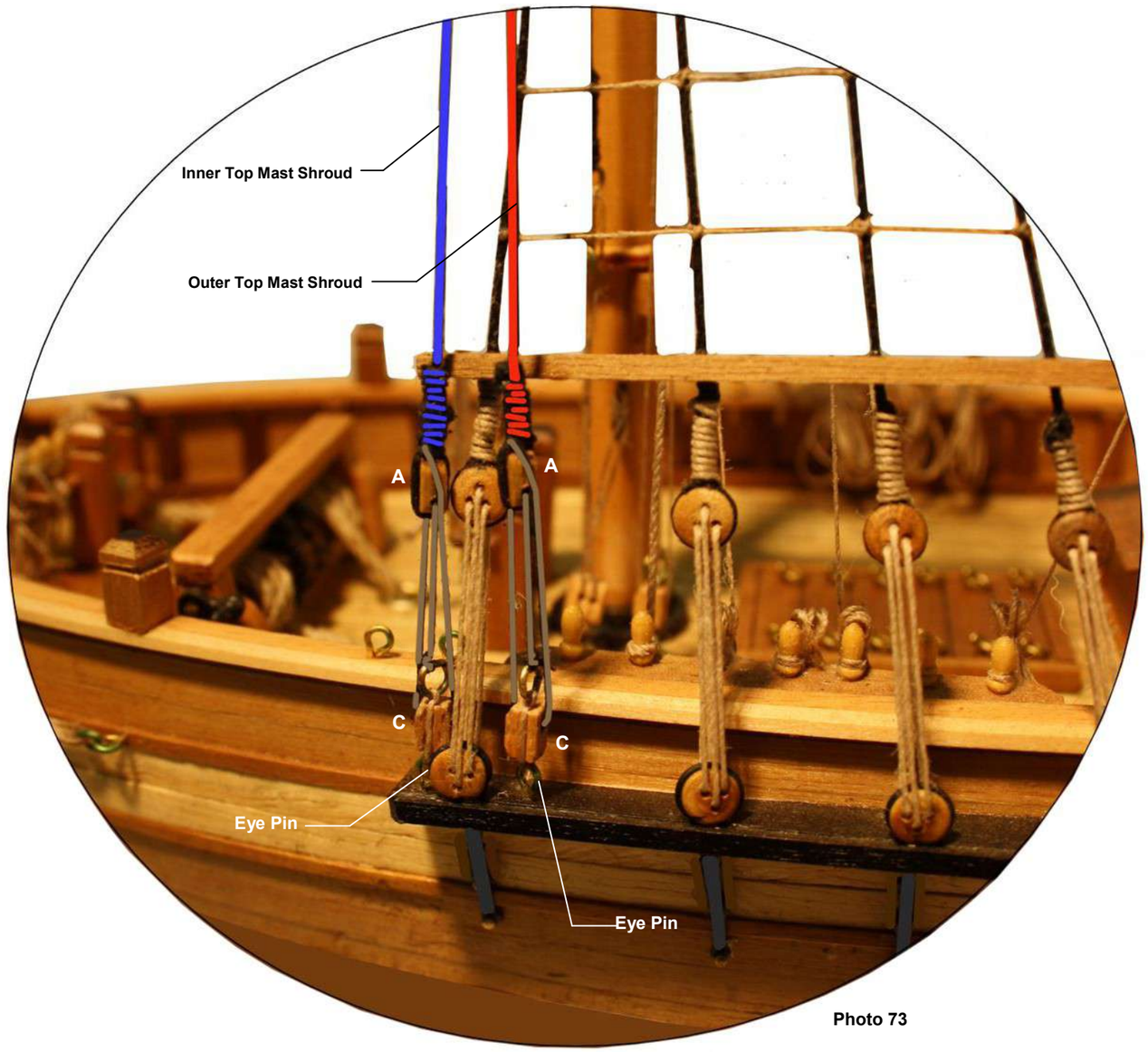

Photo 73

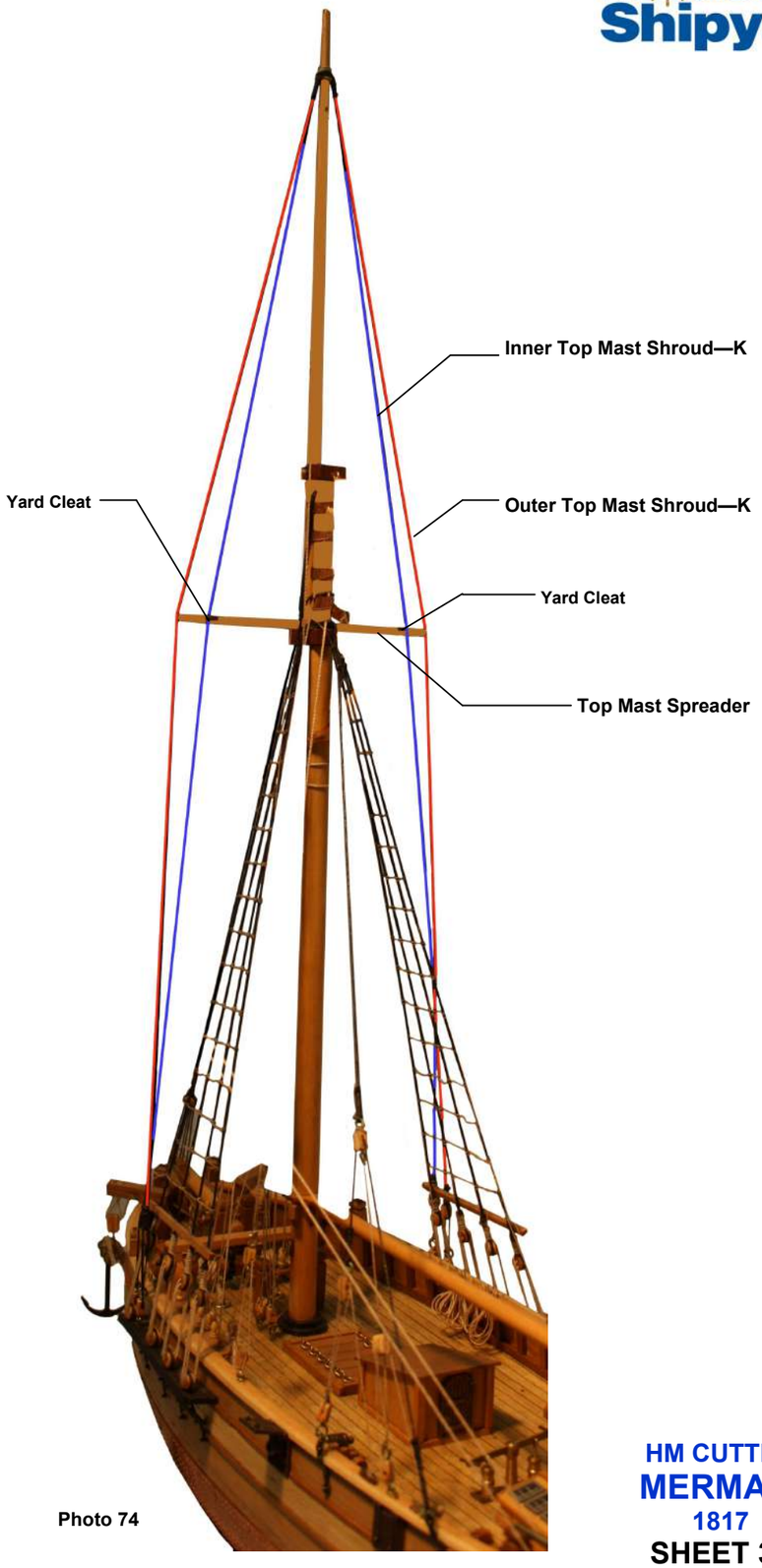

Photo 74

BLOCK KEY			CORD KEY		
Size	2 Hole	1 Hole	Size	Fawn	Black
4mm	E	A	0.25mm	G	—
5mm	B	C	0.5mm	H	—
7mm	D	—			—
Violin	F	—	1.0mm	—	K

9.0 Fitting the Yards

It is now time to fit the top sail yard and the lower yard to the model.

9.1 Topsail Yard

Using cord K tie the topsail yard to the mast as shown.

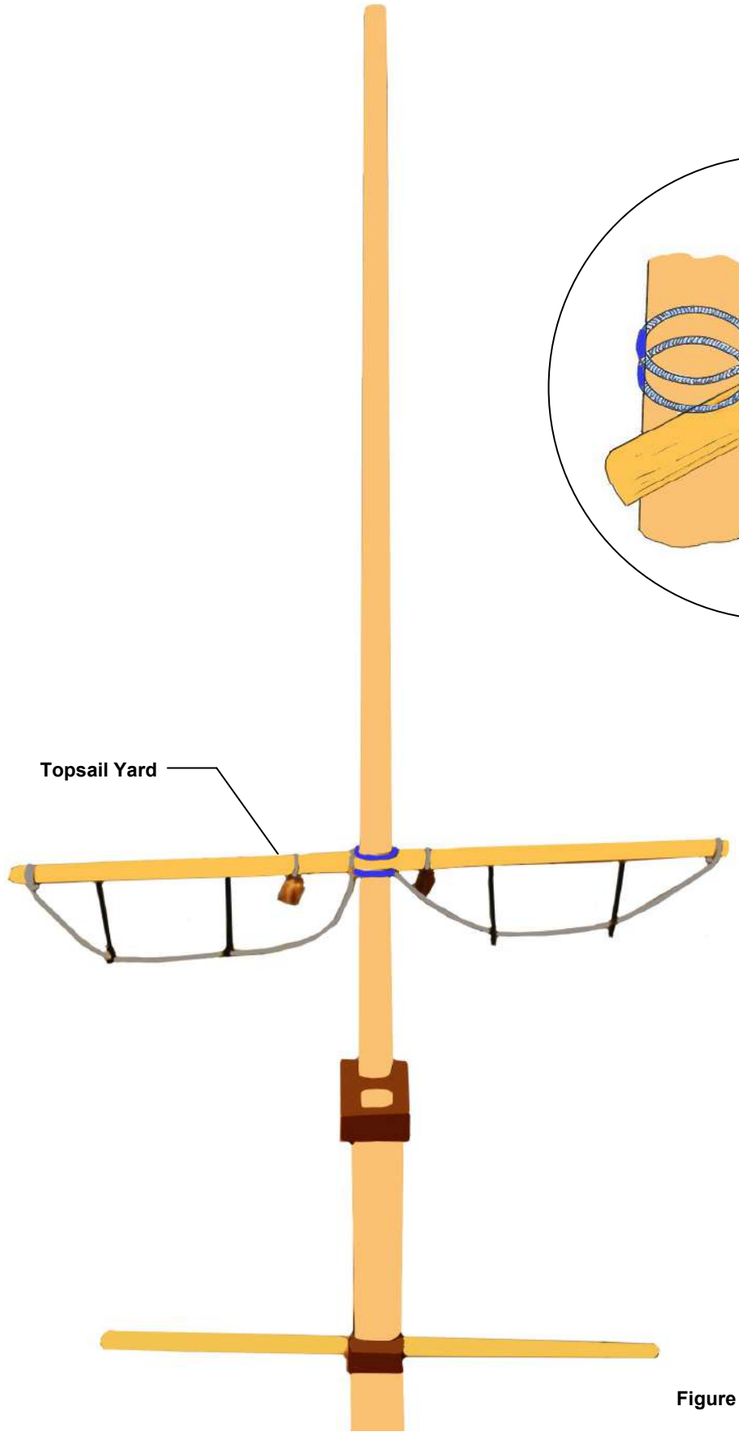

Figure 49

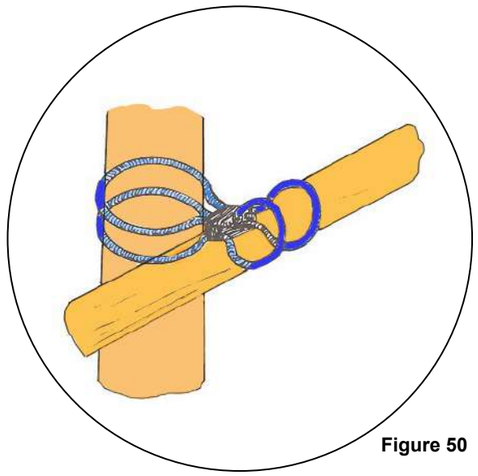

Figure 50

9.2 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 lower yard.

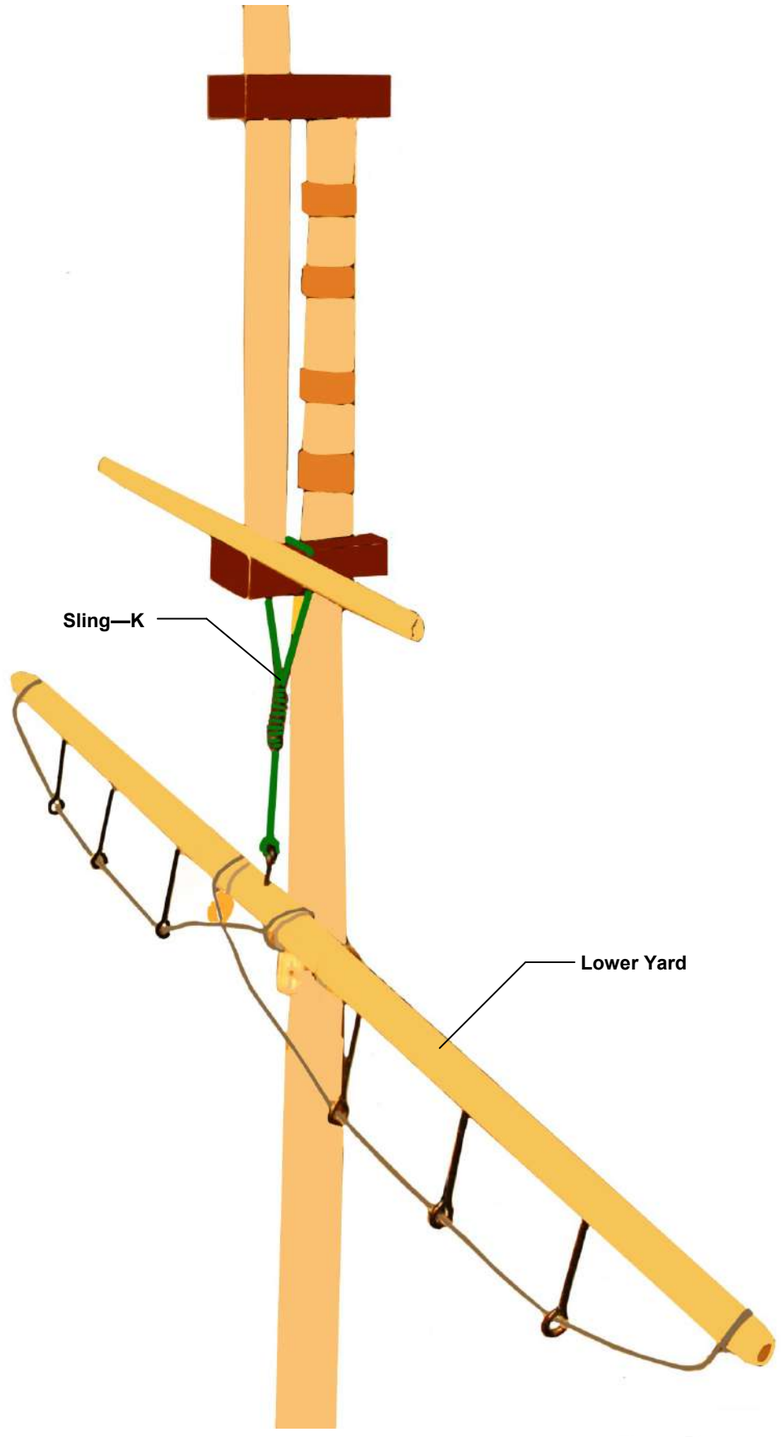

Figure 51

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

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

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10.0 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.

10.1 Jib Outhaul & Inhaul

Outhaul

Fit the bowsprit ring P79 to bowsprit approximately 55mm from stem post. Fit three small brass rings P50 to this ring. Fit block A as shown. Drill hole in bulwark as shown. Using cord H rig as shown. Terminate at Point 2

Inhaul

Tie a loop of cord H to the two outer rings P50 attached to the bowsprit ring. Attach a length of cord H to this loop and take back and terminate at the **port side knight head**. Terminate at Point 3.

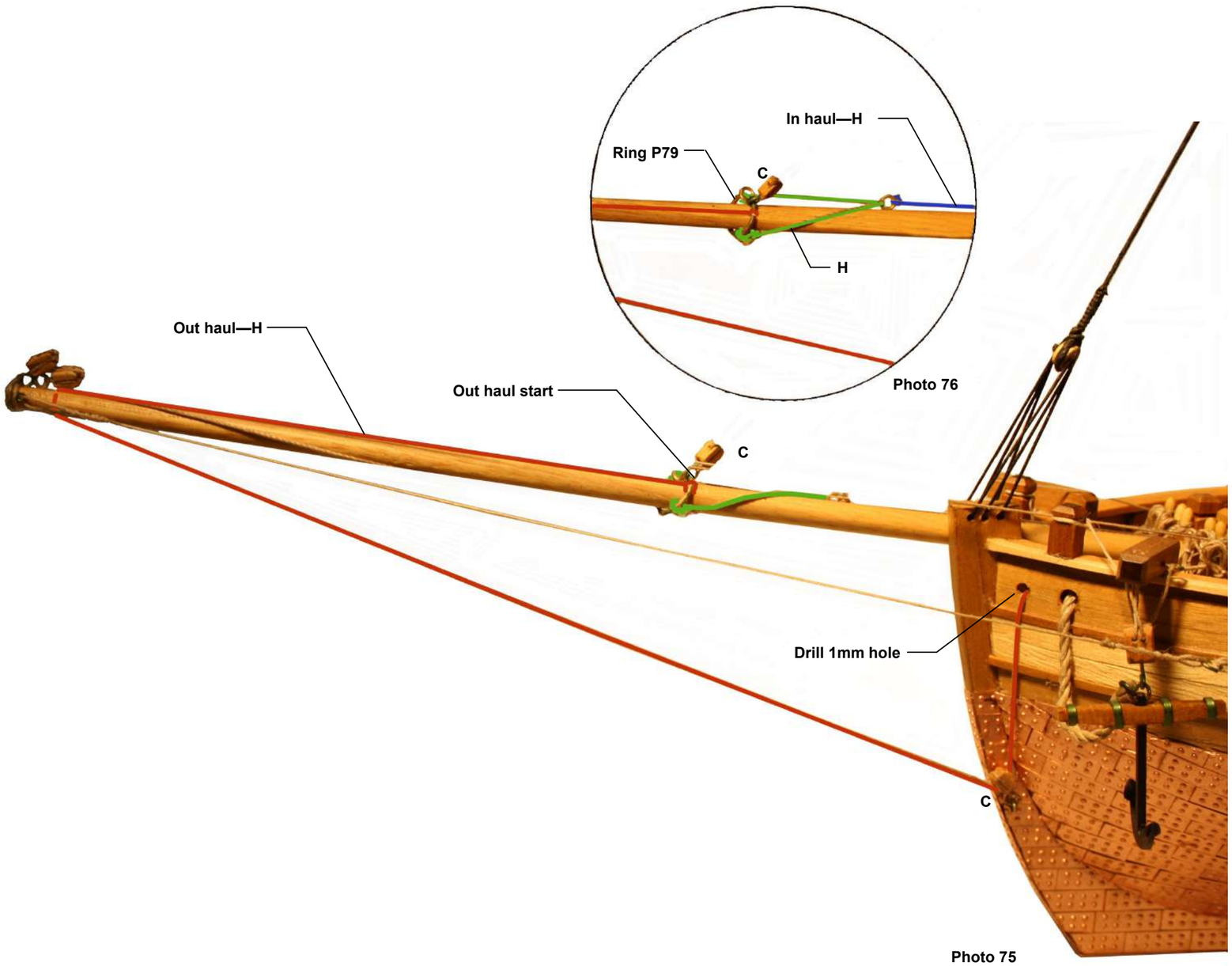

Photo 75

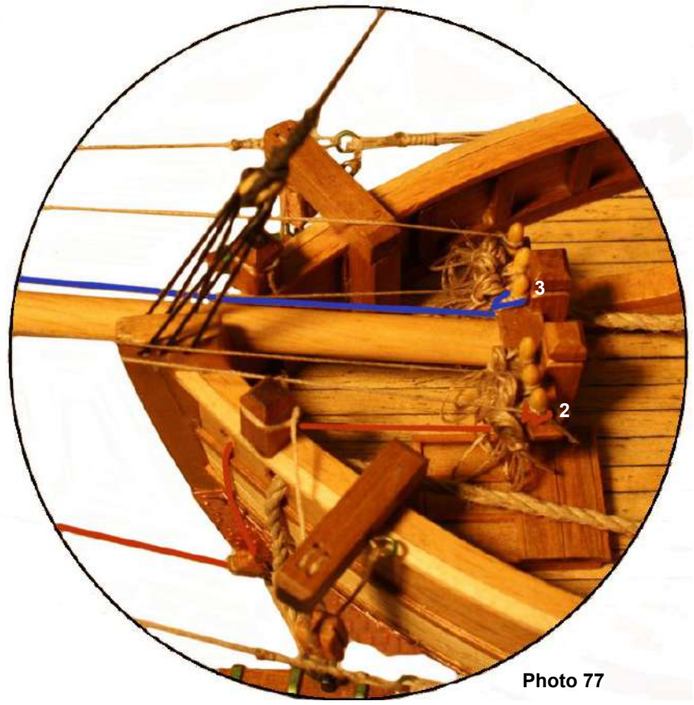

Photo 77

Photo 76

BLOCK KEY			CORD KEY		
Size	2 Hole	1 Hole	Size	Fawn	Black
4mm	E	A	0.25mm	G	—
5mm	B	C	0.5mm	H	—
7mm	D	—			—
Violin	F	—	1.0mm	—	K

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10.2 Jib Halliard

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

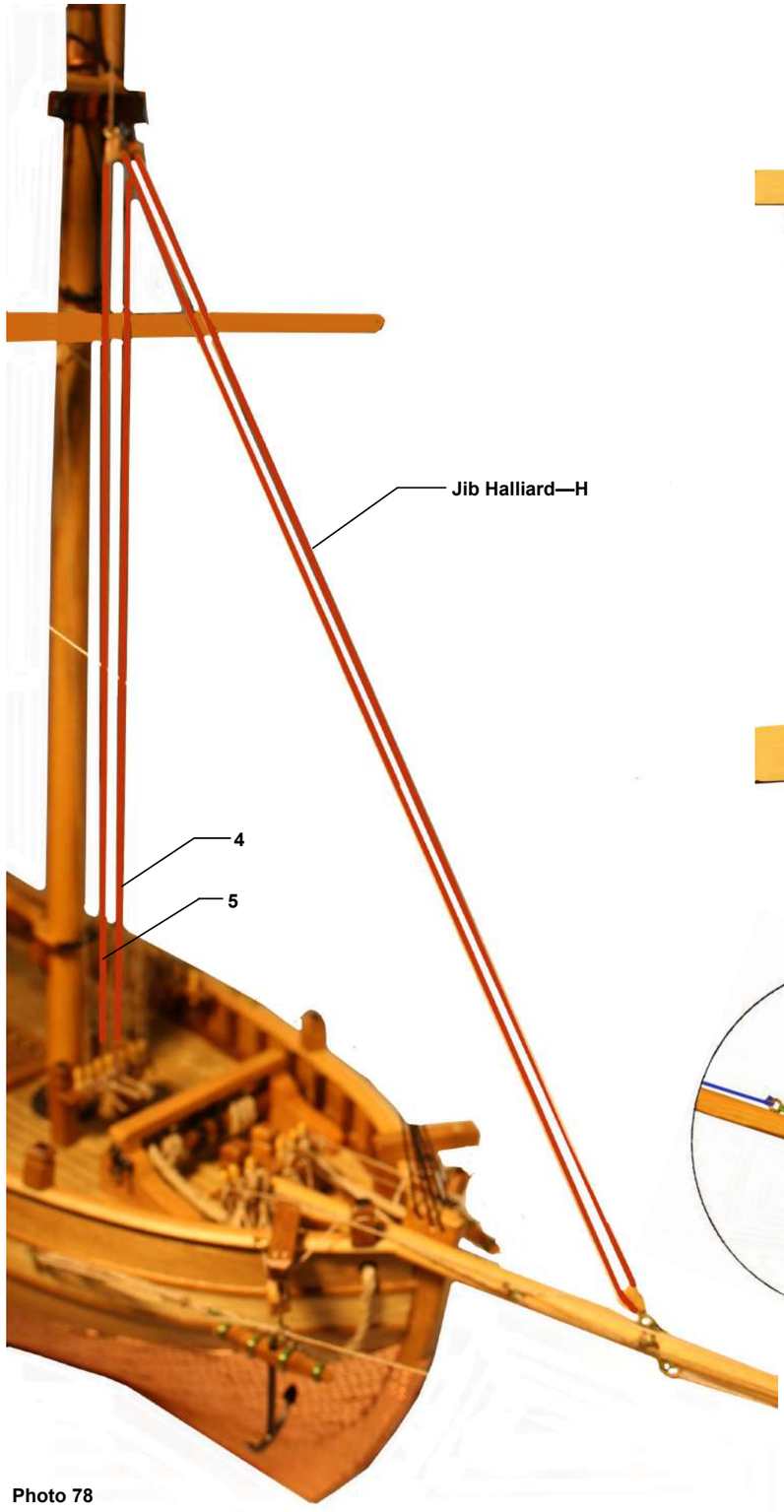

Photo 78

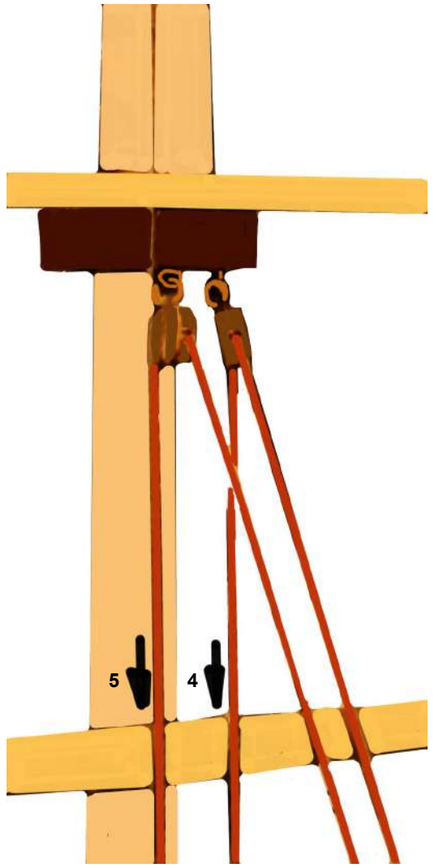

Figure 52

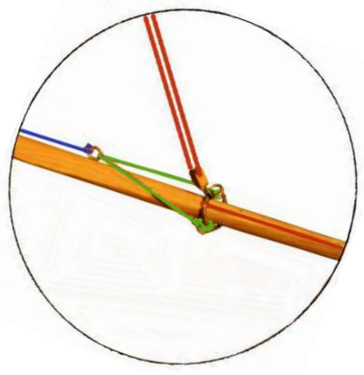

Photo 79

10.3 Topsail Yard Halliard

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

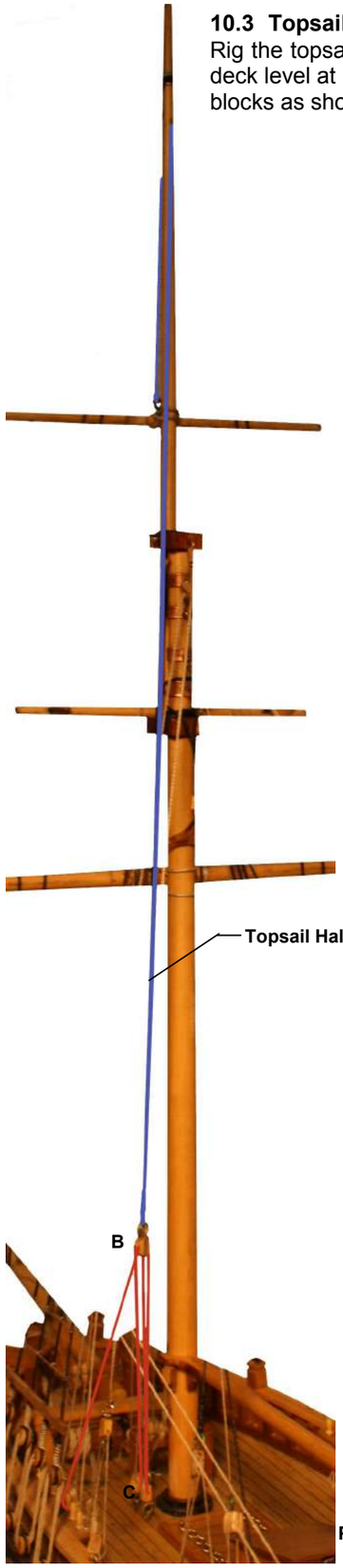

Photo 80

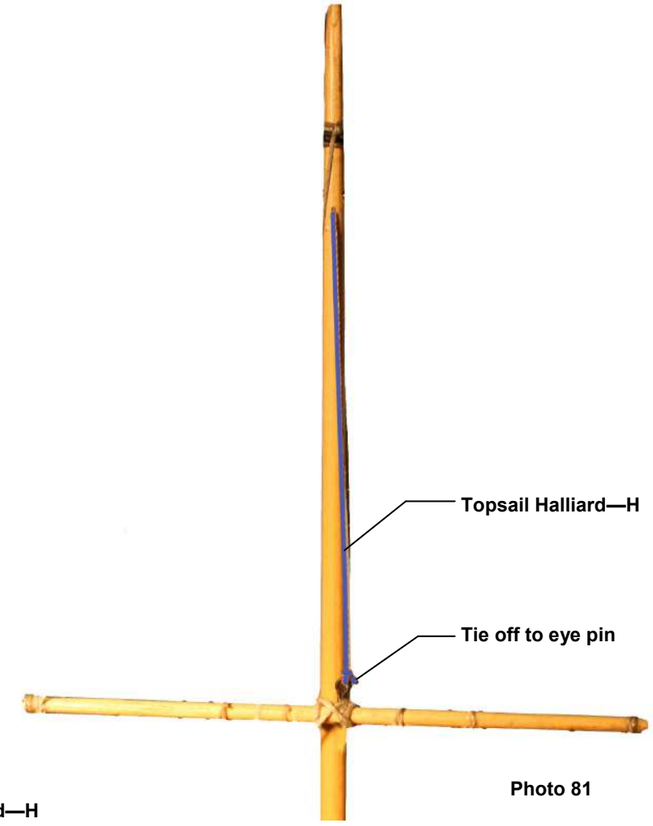

Photo 81

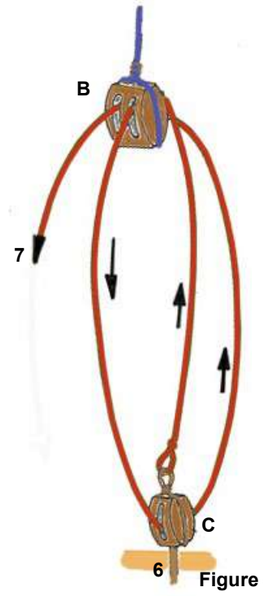

Figure 53

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

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

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10.4 Bowsprit Guys

The bowsprit guys are ropes used to steady the bowsprit. Fit eye pins P49 & rings P56 as shown. Using cord H jig the guy and complete the lashing on the port and starboard sides.

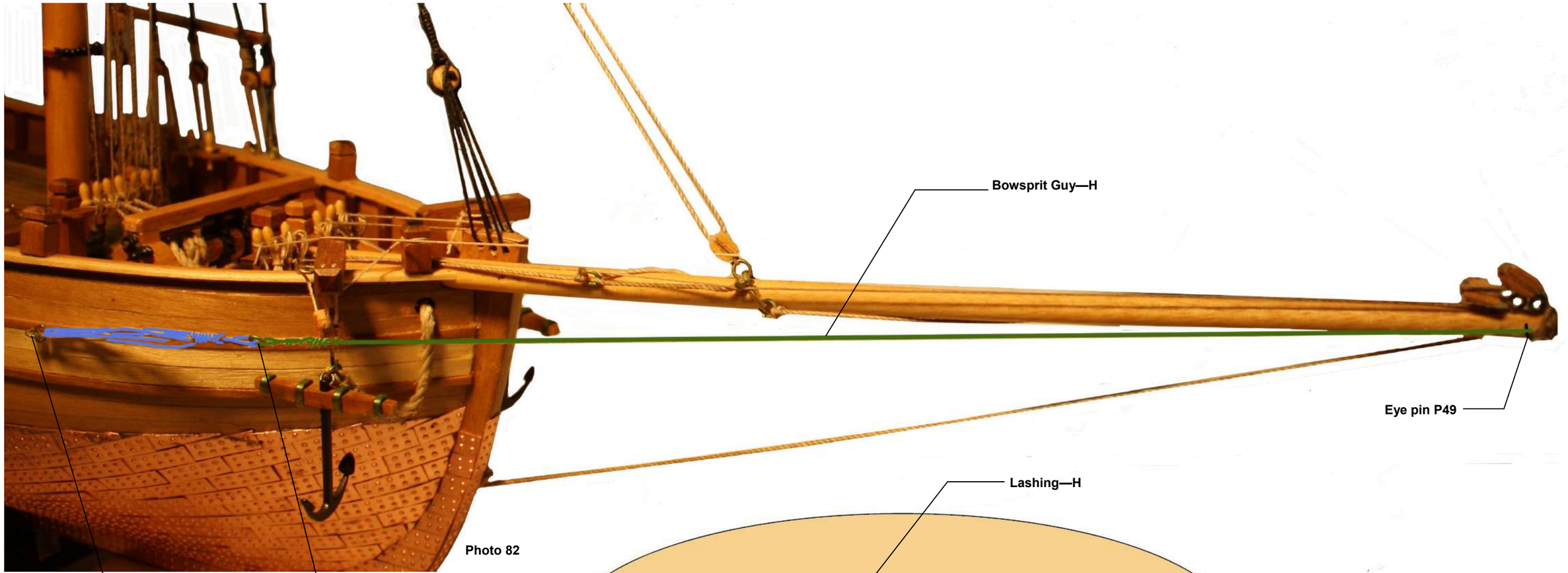

Photo 82

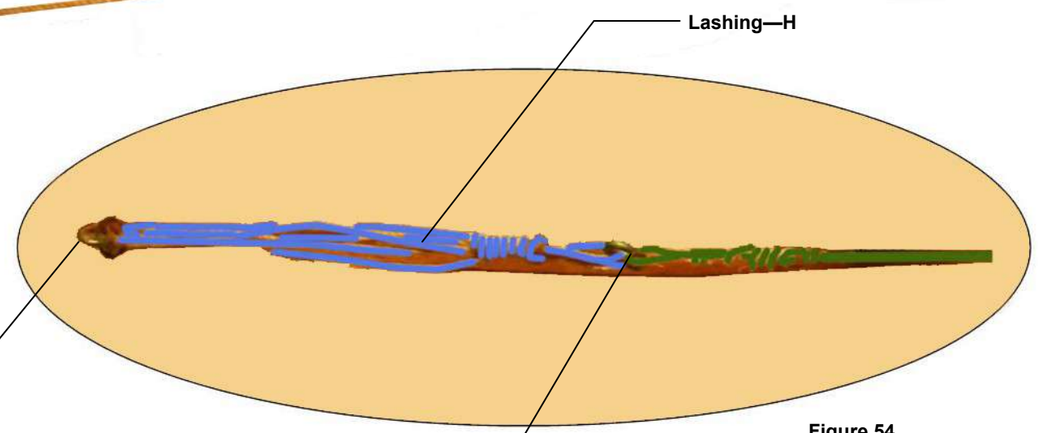

Figure 54

BLOCK KEY			CORD KEY		
Size	2 Hole	1 Hole	Size	Fawn	Black
4mm	E	A	0.25mm	G	—
5mm	B	C	0.5mm	H	—
7mm	D	—			—
Violin	F	—	1.0mm	—	K

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10.5 Lifts

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

10.5.1 Lower Yard Lifts

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

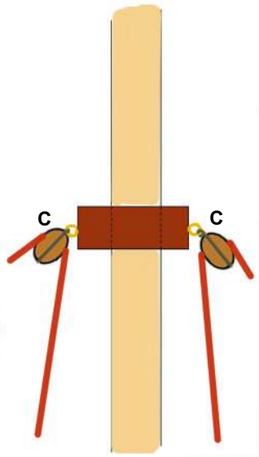

Figure 55

Photo 83

10.5.2 Topsail Lifts

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

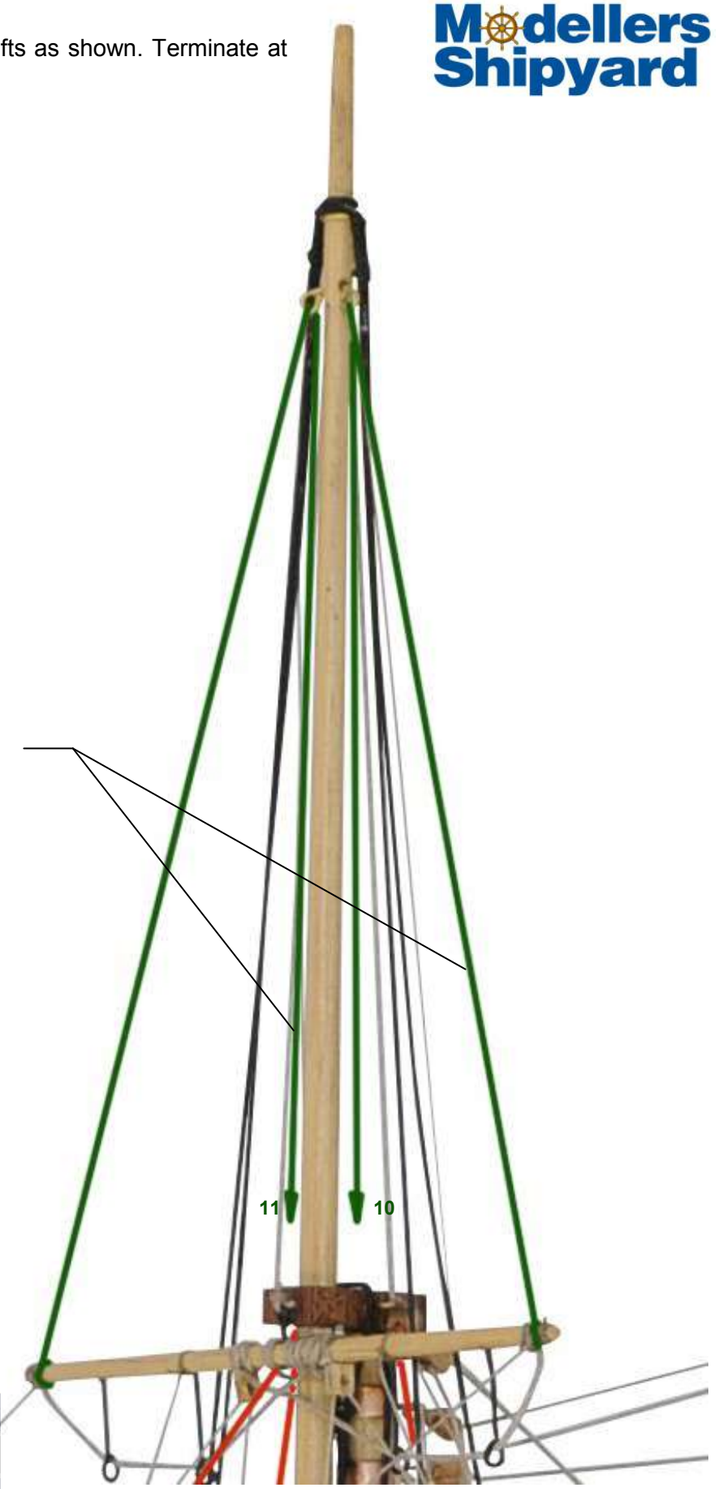

Photo 84

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

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

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

10.6.1 Lower Yard Braces — Fore
Rig the lower yard braces as shown. Terminate at Points 12 & 13.

10.6.2 Topsail Yard Braces
Rig the topsail yard braces as shown. Terminate at Points 14 & 15.

10.6.3 Jib Stay
Rig the jib stay as shown.

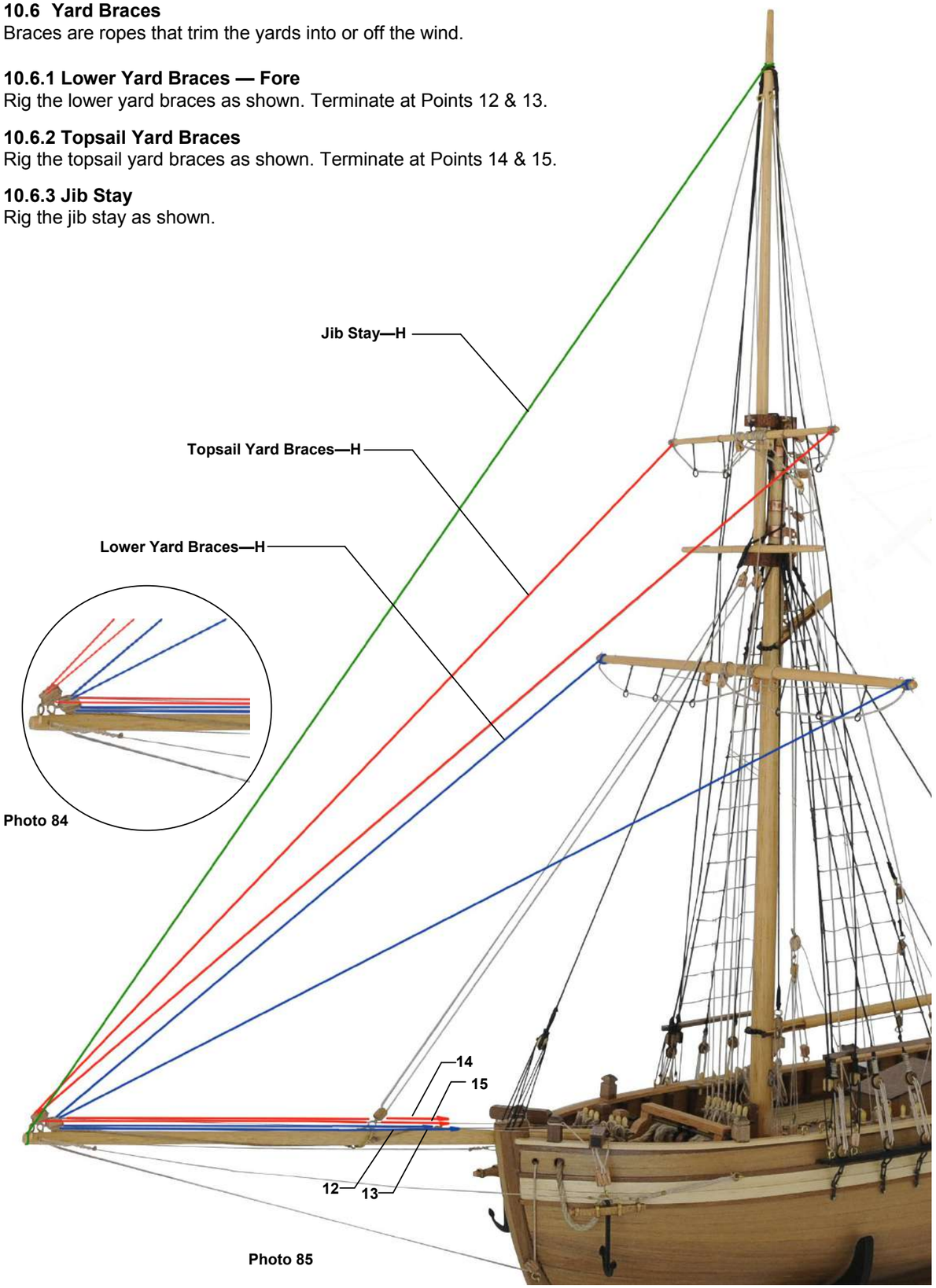

Photo 84

Photo 85

10.6.4 Lower Yard Braces — Aft
Attach pendants. Rig braces to lower yard as shown. Start at Points 16 & 18 and terminate at Points 17 & 19.

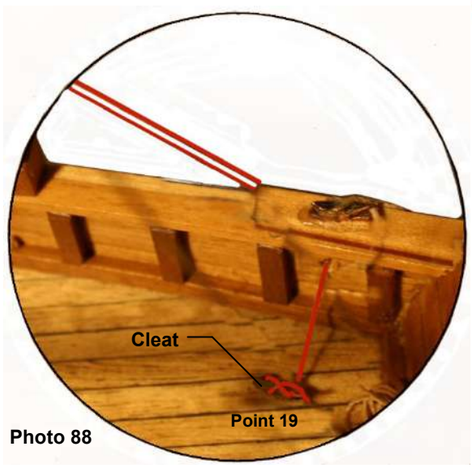

Photo 88

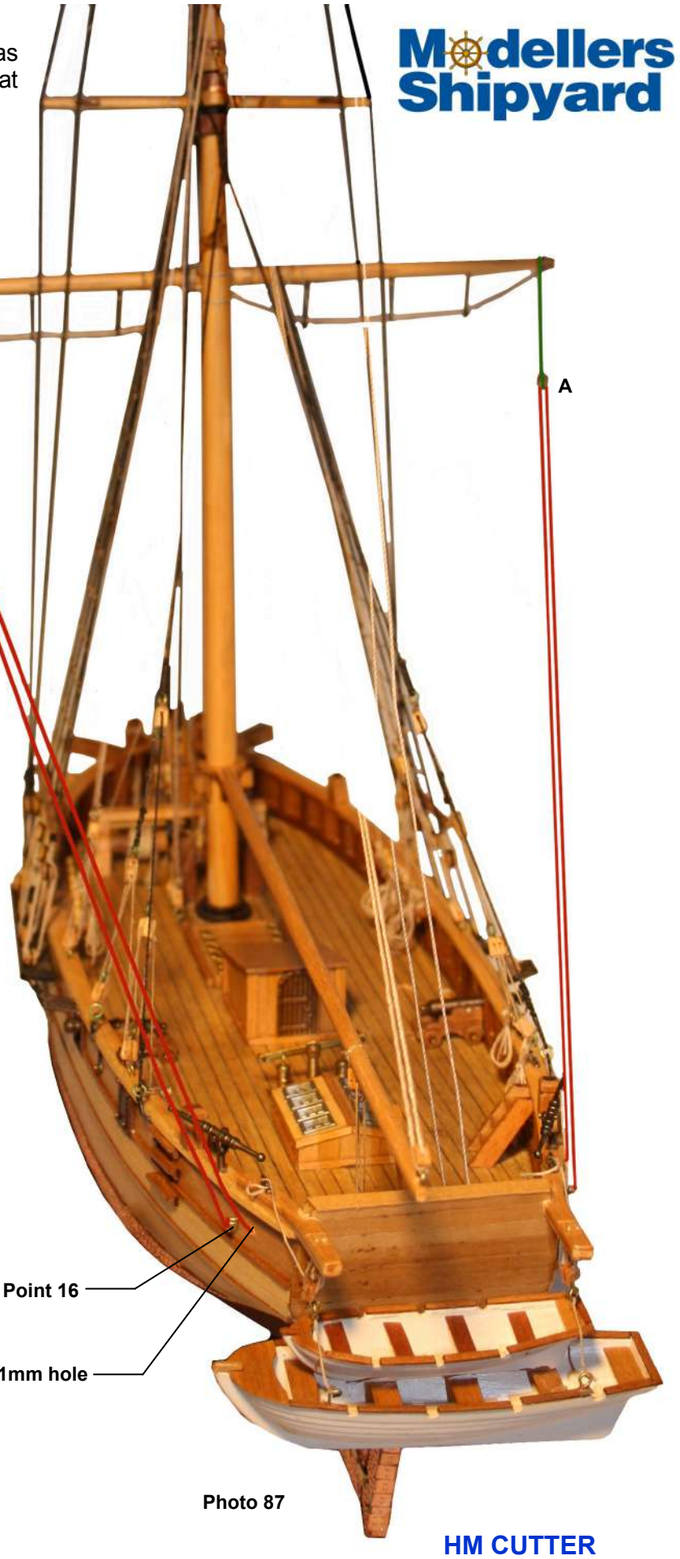

Photo 87

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

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

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10.7 Cluelines & Sheets

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

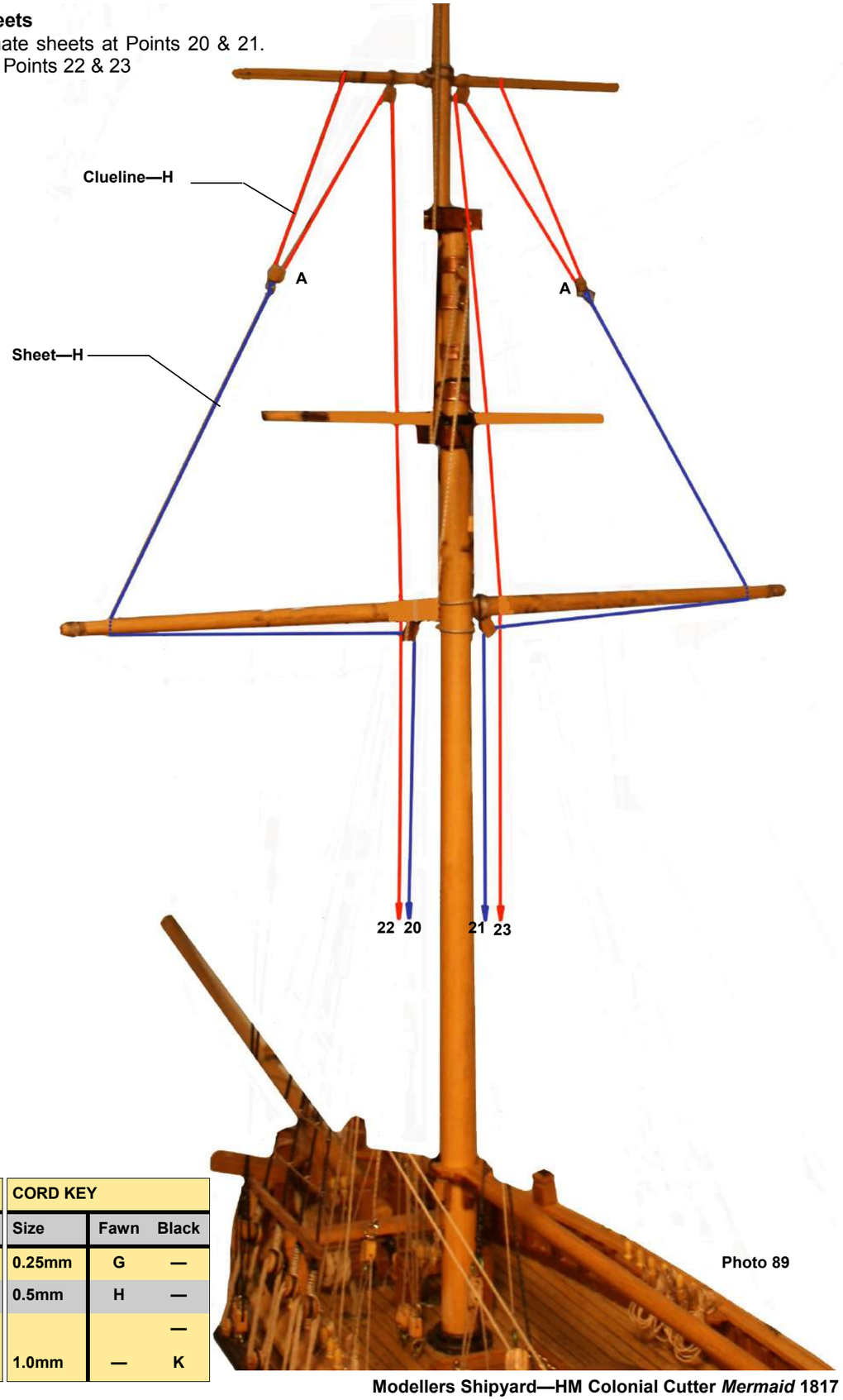

Photo 89

10.8 Throat Halliard

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

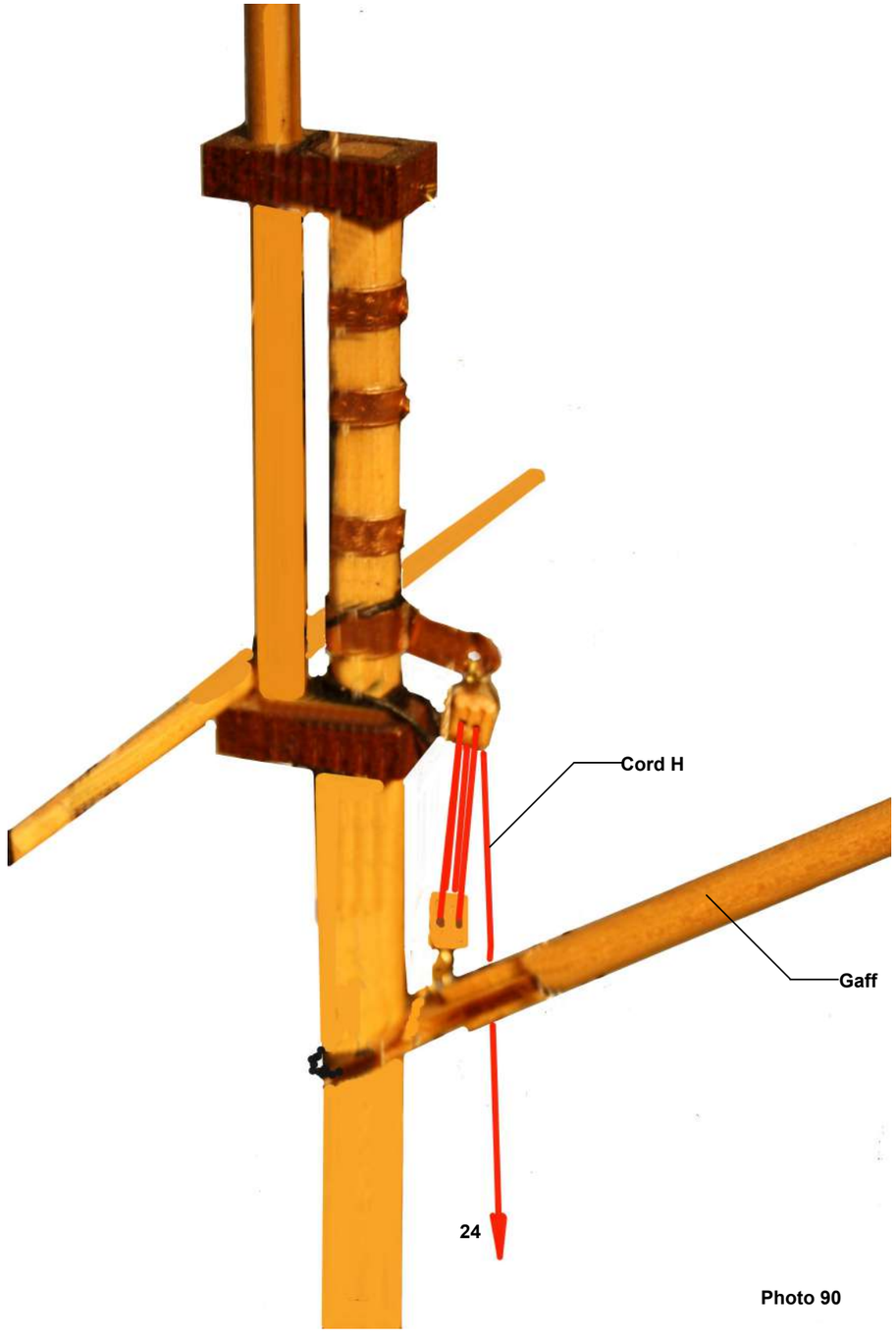

Photo 90

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

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

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10.9 Peak Halliard

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

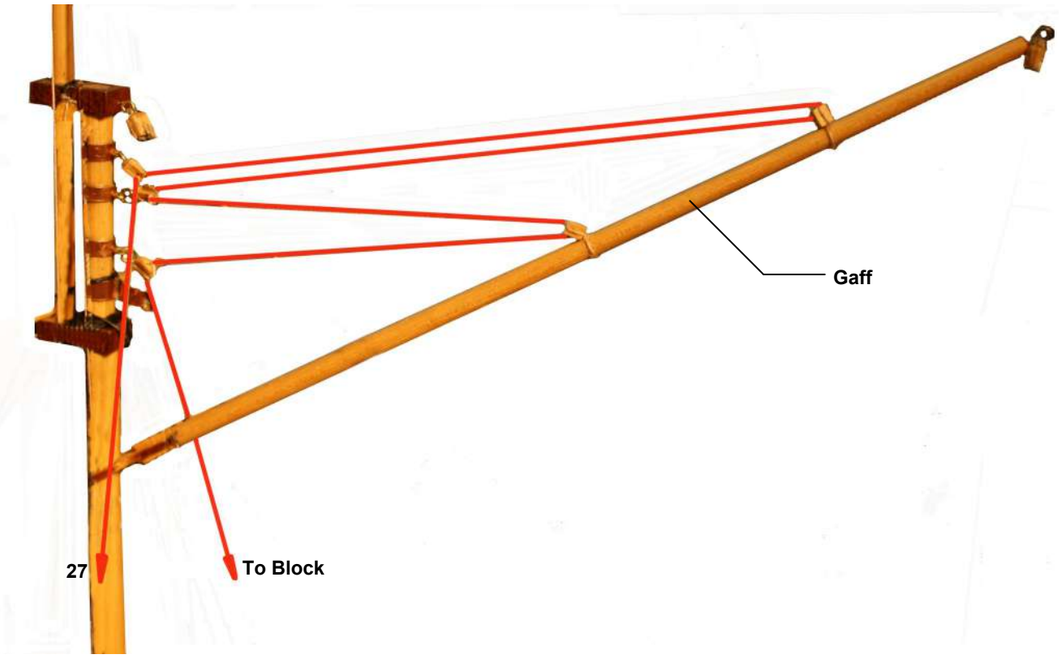

Photo 91

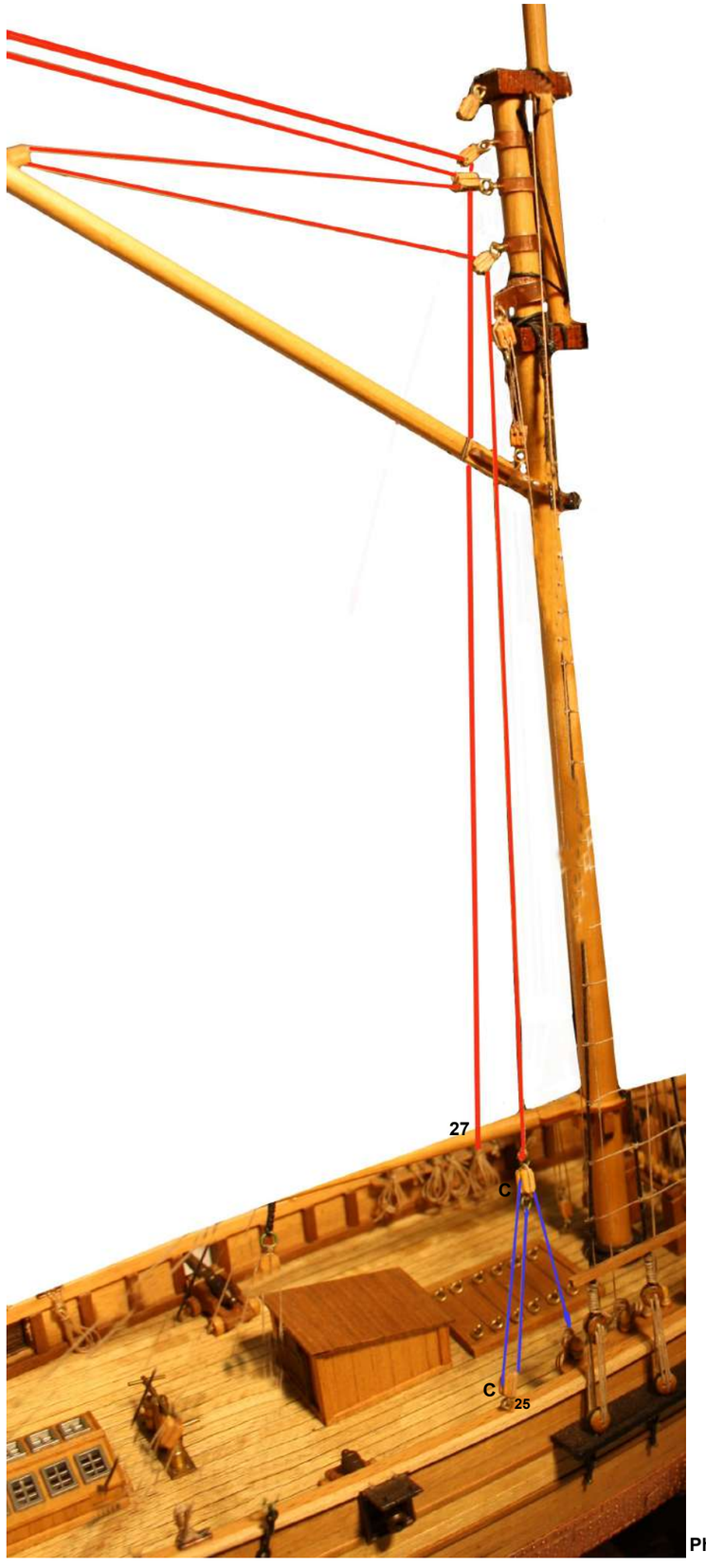

Photo 92

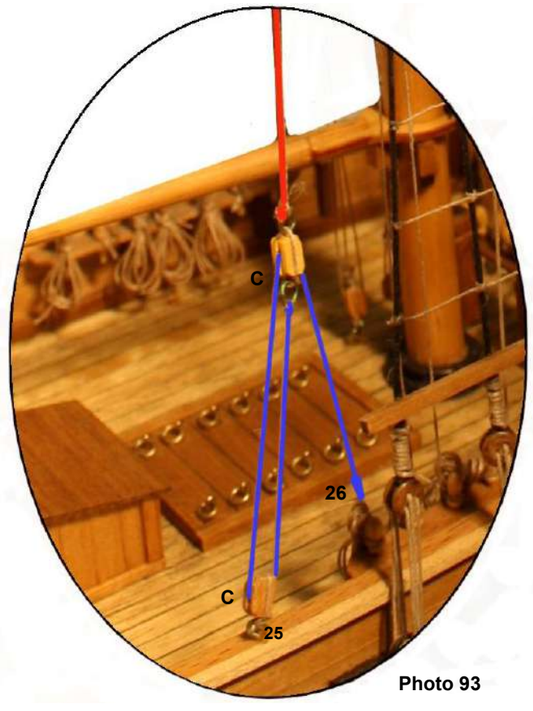

Photo 93

CORD KEY			BLOCK KEY		
Size	Fawn	Black	Size	2 Hole	1 Hole
0.25mm	G	—	4mm	E	A
0.5mm	H	—	5mm	B	C
		—	7mm	D	—
1.0mm	—	K	Violin	F	—

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10.10 Topping Lift

The Topping Lift controls the boom. Fit the boom to the mast. Use parrel beads P93 to tie the yoke to the mast. Fit blocks and rig as shown. Terminate at Point 29.

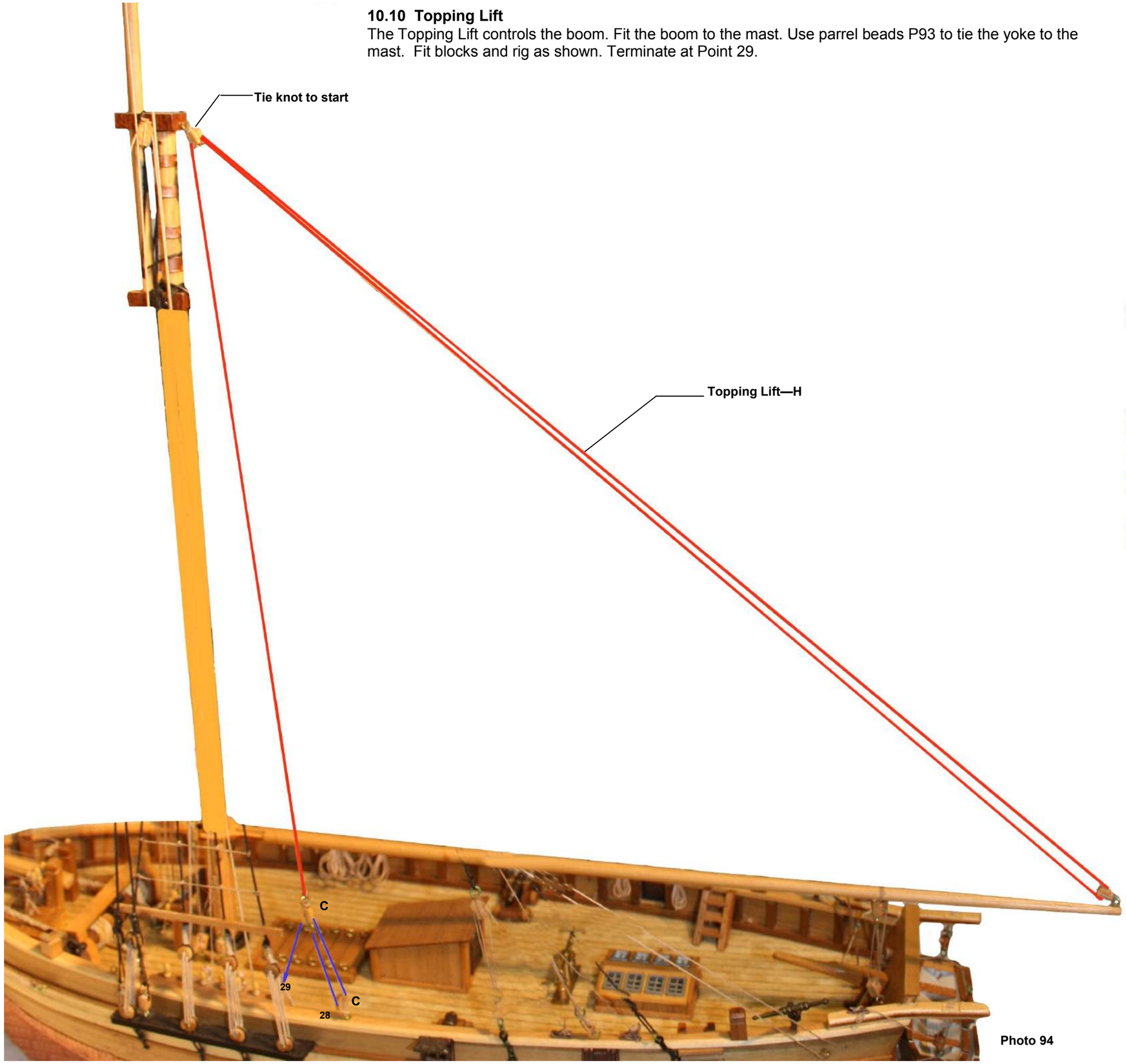

Photo 94

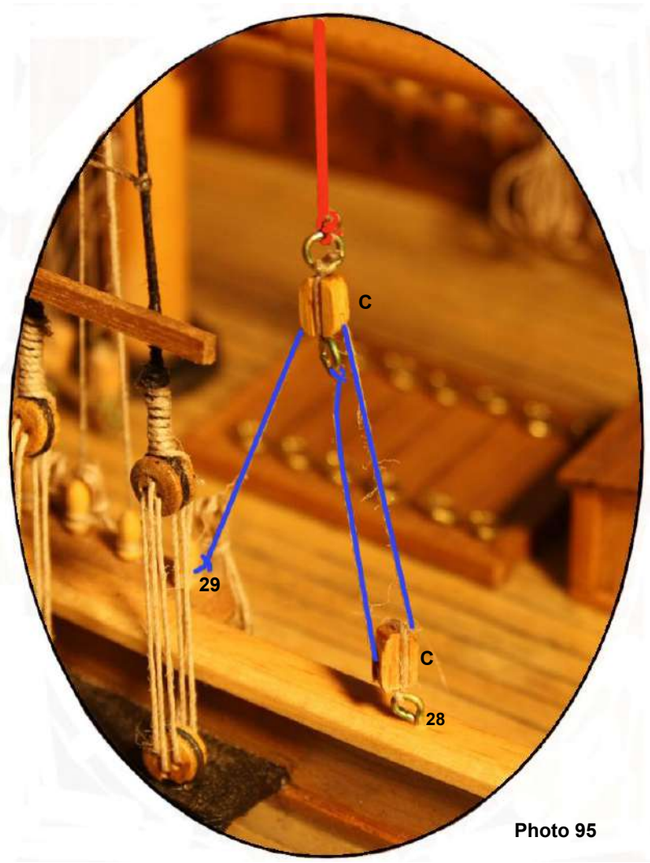

Photo 95

CORD KEY			BLOCK KEY		
Size	Fawn	Black	Size	2 Hole	1 Hole
0.25mm	G	—	4mm	E	A
0.5mm	H	—	5mm	B	C
		—	7mm	D	—
1.0mm	—	K	Violin	F	—

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10.11 Mainsheet
Rig the mainsheet as shown. Terminate at Point 30

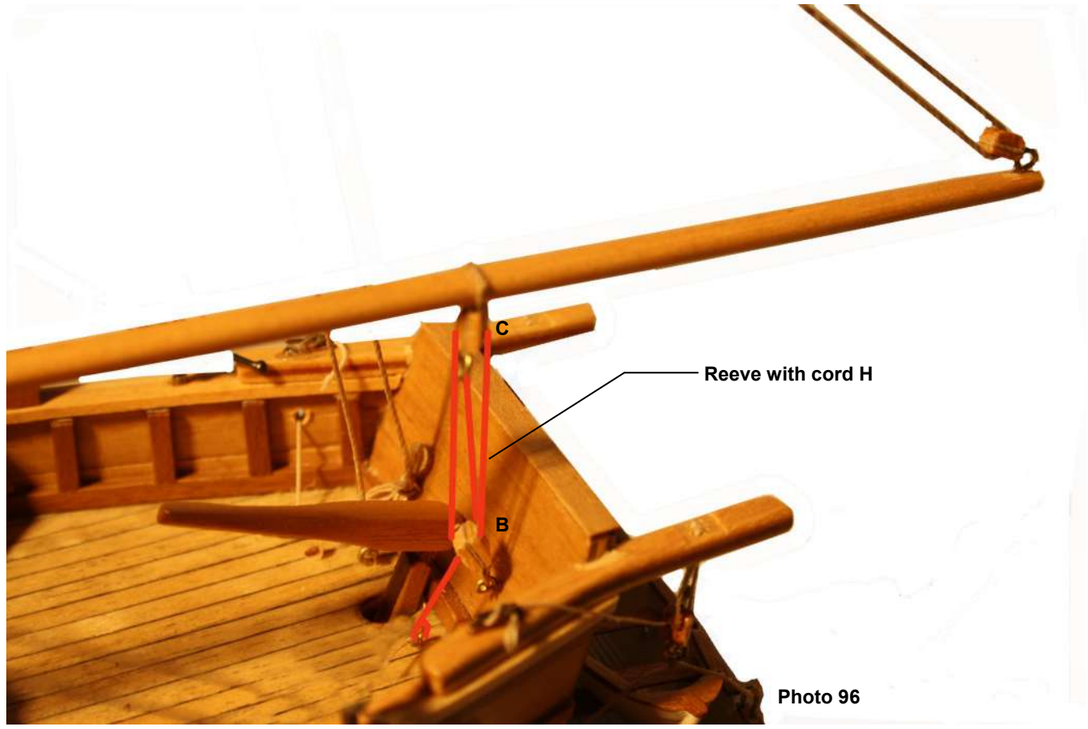
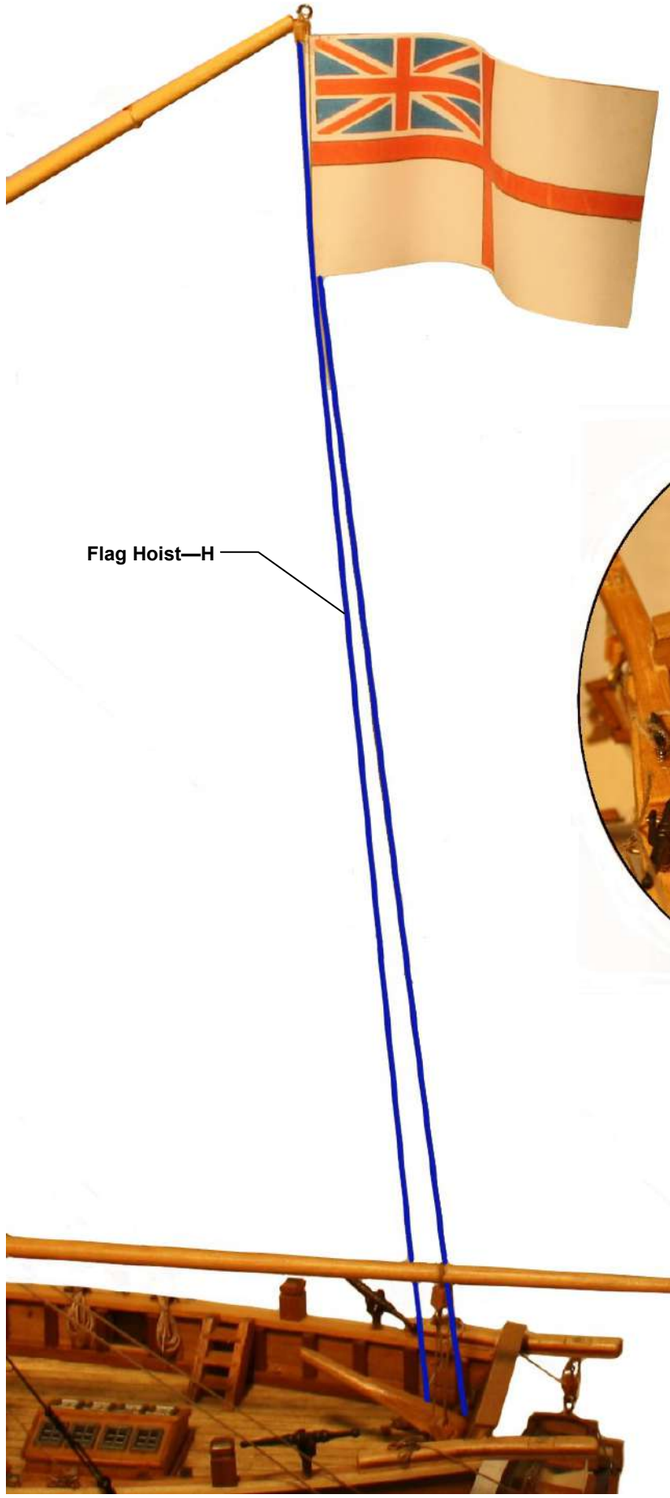


Photo 96

10.12 Flag Hoist
Rig the flag hoist as shown. Start at Point 31 and terminate at Point 32
Attach the flag P94 by applying a paper based glue to the inside of the flag, folding in half and attaching to flag hoist.



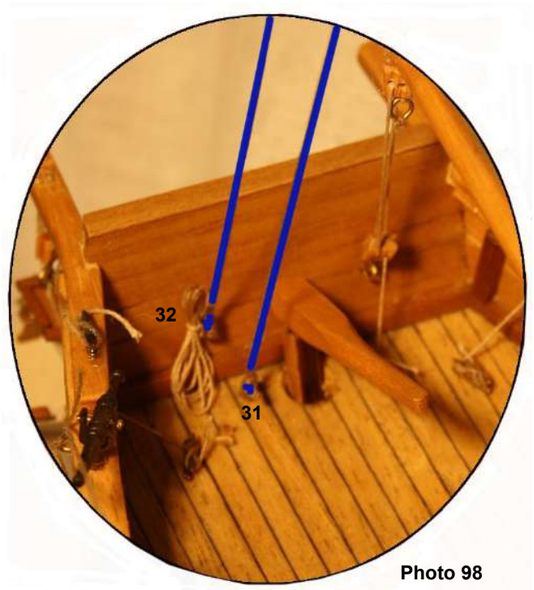


Photo 98

Photo 97

CORD KEY			BLOCK KEY		
Size	Fawn	Black	Size	2 Hole	1 Hole
0.25mm	G	—	4mm	E	A
0.5mm	H	—	5mm	B	C
		—	7mm	D	—
1.0mm	—	K	Violin	F	—

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11.0 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.

Photo 99

Photo 100

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