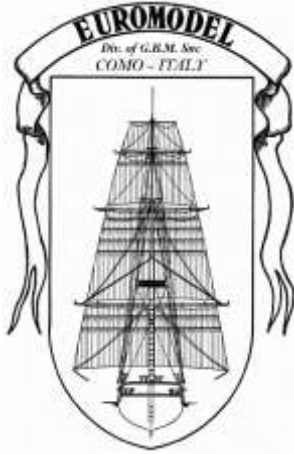


TRANSLATION LINKS

1. type into your browser ... **english+italian+glossary+nautical terms**
2. the translation dictionary ‘Nautical Terms & Expressions’ from Euromodel website



An *interpretive* build of the **La Renommée**

18th. Century
French Frigate
Launched in 1744

Scale 1:70

Checked the
Essential Resource
Information File ?

Sit Back & Read
‘Background Resources
for Building Model Ships’
(temporarily on the Euromodel website
until its transfer to the MSW Forum)

HULL CONSTRUCTION – 01.v.03

My *interpretive* build is based on the supplied drawings, the kit material – and an amount of extra material.

*This work only illustrates how this ship **might** be built. The level of complexity chosen is up to the individual*

This resource information was based on the original text supplied by Euromodel and then expanded in detail as the actual ship was constructed by the author, Peter Coward [Additional support was gratefully received from MSW members Landlubber Mike and J.P. My sincere thanks to them].

Neither the author or Euromodel have any commercial interest in this information and it is published on the Euromodel web site in good faith for other persons who may wish to build this ship. Euromodel does not accept any responsibility for the contents that follow.

This is *NOT* an instructional manual but illustrates my own (including some other MSW members) interpretation based on the drawings and the supplied kit.

- Additional material used was dictated by my own personal choices.
- Greater simplification would be achieved by using the material as it is supplied.

Plan Sheets 1, 2 and 17 were used for the base references. If there was any question about other drawings, it was these three that were referred to.

Model Ship World Forum

I am indebted to those members who were, or are, involved in their own build of the Royal William and have allowed me to add photos from their posts – but not utilising their personal text - in the belief that the images could add both a stimulus and an interest to new builders of this ship. So my grateful thanks go to them – especially those mentioned on the front page !

They have taken the La Renommée build to a much higher level than intended by this kit.

Reference Texts

Historic Ship Models by Wolfram zu Mondfeld (1989)

Seventeenth Century Rigging by R.C. Anderson (1955) [almost a complete copy of his earlier book *The Rigging of Ships in the Days of the Spritsail Topmast, 1600 – 1720* (1927)]

The Construction and Fitting of the English Man of War 1650-1850 by Peter Goodwin (1984)

The Mast and Rigging of English Ships of War 1625 – 1860 by James Lee (1984).



Growing Specific Shapes

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EDITING SUMMARY

LAR.01 has had a major re-editing process

- quarter deck construction [discussions on length, aft sloping bulwark, standards, ensign staff and its support]
- additional photos
- some photos removed
- new/ changed text [comparison of Plan Sheets 3 & 17 re keel cut-outs]
- change in sequence of presentation
- section on rudder removed

Chapter 1: HULL FRAME & DECKING

Keel Adjustments

The original keel cut-outs match Plan Sheet 17 ... but Plan Sheet 3 shows there is a mis-alignment with openings in the two decks that the masts pass through and the slot in the keel – all of which need to act together in producing the correct rake. The first step was to cut out some extra plywood forward of the original position in the keel for both the mizzen and main mast (Fig. 2 below).

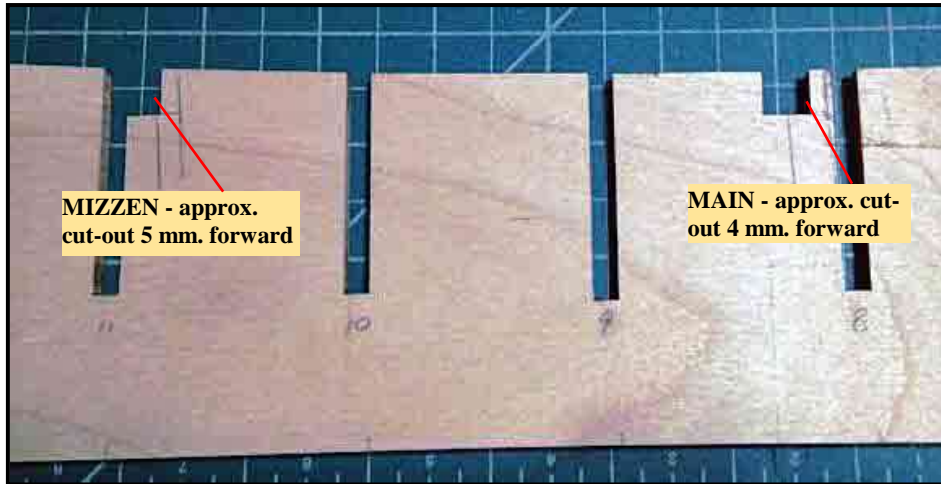


Figure 1: Shifting the Mast Steps (using Plan Sheet 3)

The Fore Mast required only a slight adjustment of about *1 mm*.

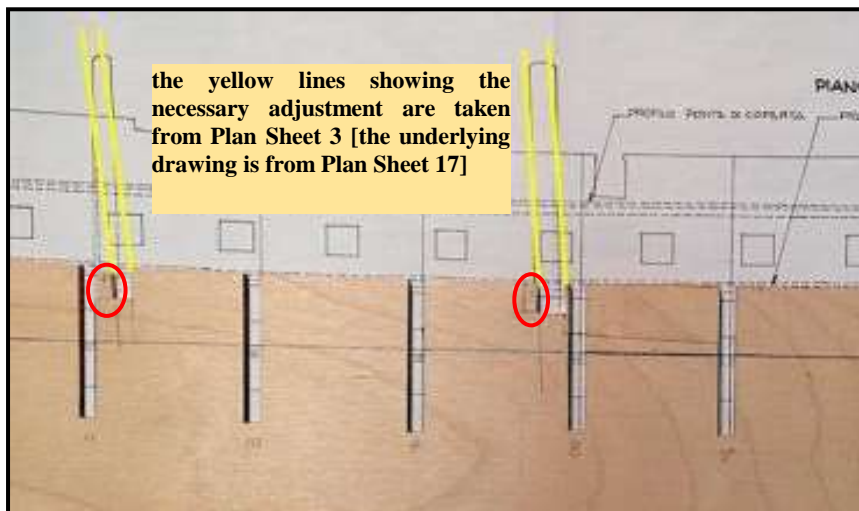


Figure 2: Part-Filling in the Mast Steps



Figure 3: Elongated Gun Deck Hole

The holes provided in the Gun Deck for the above masts needed to be elongated but that was covered by a square mast collar. *Foresight would have led to filling these in before planking !*

The later section on ‘Gun Deck Planking’ gives an explanation for the *longitudinal blank section* along the mid-line of the deck.

Mast Inclinations

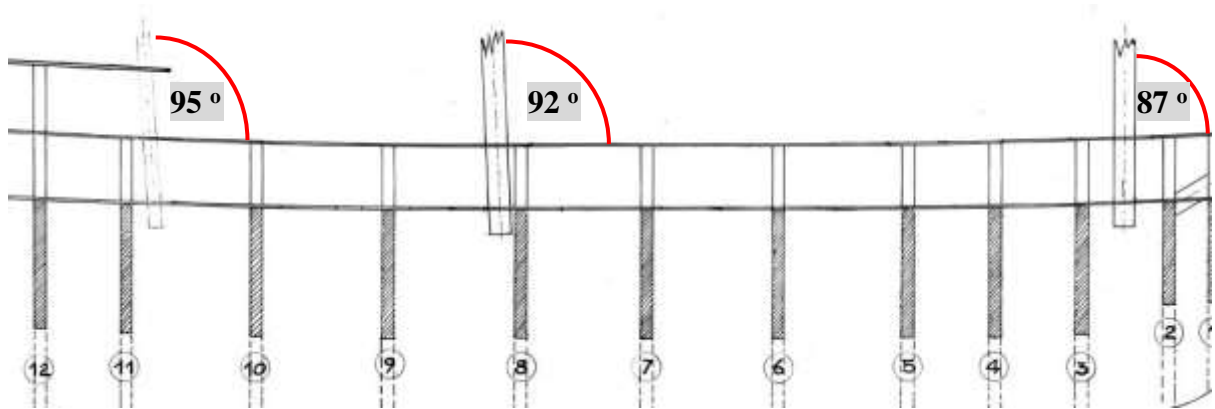


Figure 4: Mast Inclinations (relative to Main Deck)

Main Deck Correction

The laser-cut plywood for the Main Deck has the main hatchway in a slightly different position to the deck drawing in Plan Sheet 2. It was decided that this drawing would be the point of reference for the build and so the opening was re-built **5 mm.** aft. (indicated by red outline in Fig. 5)

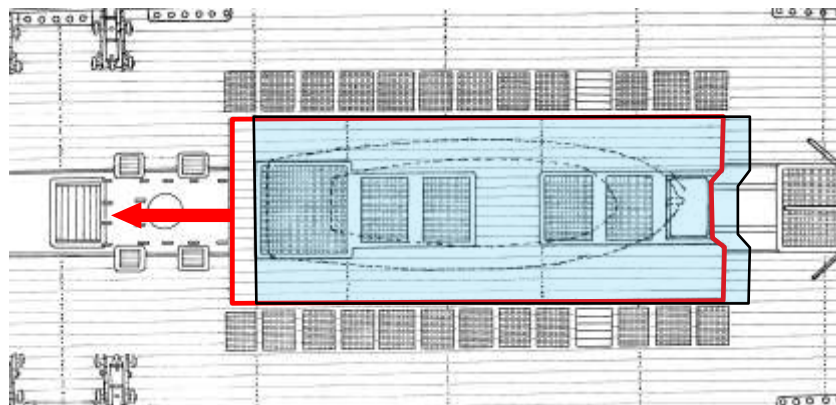


Figure 5: Adjusting the Hatchway

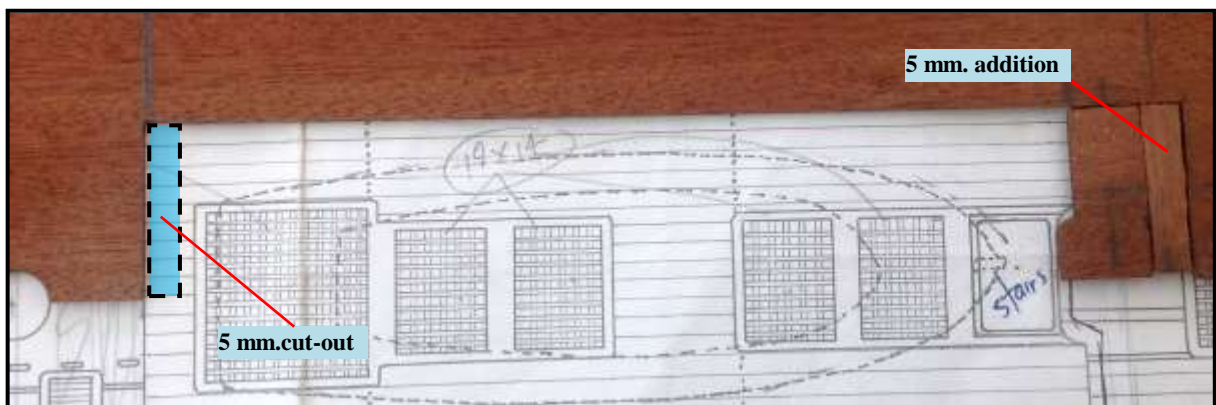


Figure 6: Adjusted Hatchway Over Plan

Frame Assembly

Thirteen of the fourteen transverse pre-cut ‘bulkheads’ (i.e. Nos. 1-13) are slotted into the false keel to determine which joints are too tight and which are too loose. All the joints were an excellent fit with no cleaning up of the fitting surfaces required. The two full-length decks (4 pieces) were included in this dry run.



Figure 7: All Transverse Frames in Position

Alignment of the beams supporting the decks was good but some adjustments were still necessary. All thirteen frames and the deck pieces were then removed from the false keel.

Fixing the Frames in Position

PVA is the adhesive of choice and Frame 8 was glued in first using a set square to check its alignment with the false keel. When this glued joint was fully dry, ‘9’ and ‘7’ were then glued in position and again checking that they were square with the keel. At the same time the diagonal distance between them as well as with the frame ‘8’ was also checked. The glued joints were allowed to dry before proceeding any further. Frames were installed at alternate ends. Square & diagonal measurements and central alignment were constantly checked to ensure correct alignment (Fig. 8).

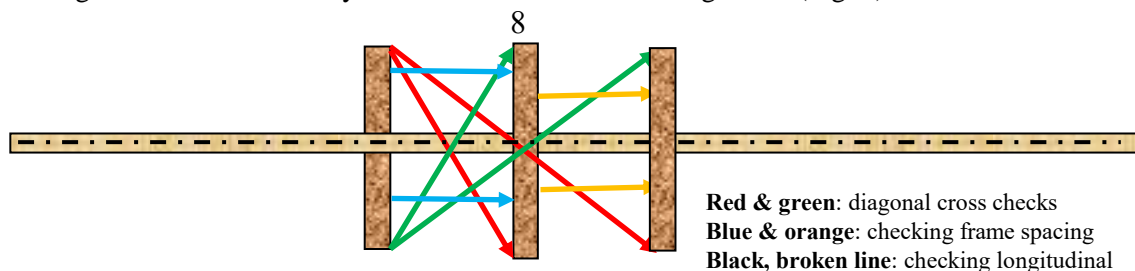


Figure 8: Positioning Frames on Keel

All frames were installed with the *exception of Frame 14*. This frame was not put into position until the lower deck has been inserted through the stern end Frame 13.

Stern

Filler Blocks

Frame 14 proved to be a good fit. The four pieces (No. ‘16’) were glued onto this frame in position as shown on the plan sheet. The stern filler block (30 x 30 x 100 mm.) was somewhat generous in size but this was marked out to correspond in shape to the four pieces (Fig. 9).



Figure 9: Marking Out Two Filler Blocks

The wood was cut to these outlines and further cut to relate to the curved shape of the frame. The two fillers were then glued in place ready for final shaping. This assembly was glued into place after the lower deck was in position.

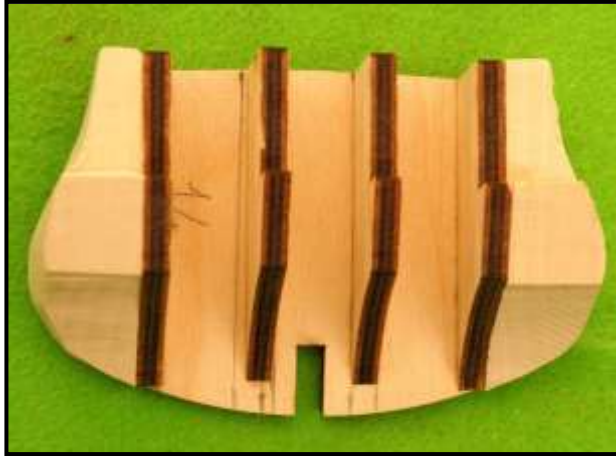


Figure 10: Filler Blocks in Position on Either Side but not Carved

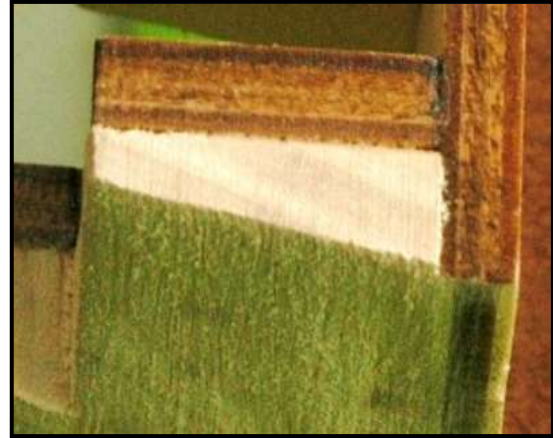


Figure 11: Final Carving; Side View

Piece 17

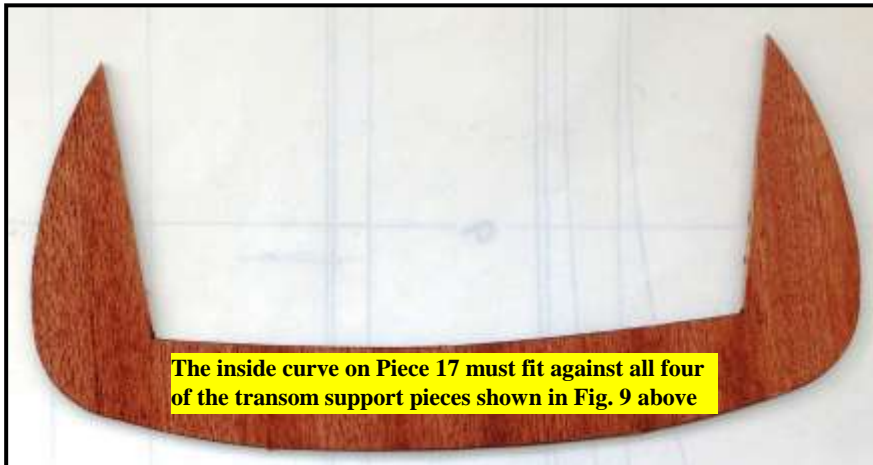


Figure 12: Piece 17

The transom support pieces need to be adjusted to fit the curvature of Piece 17.

After first planking, some of the inside edge of the two sides of Piece 17 needed to be removed.

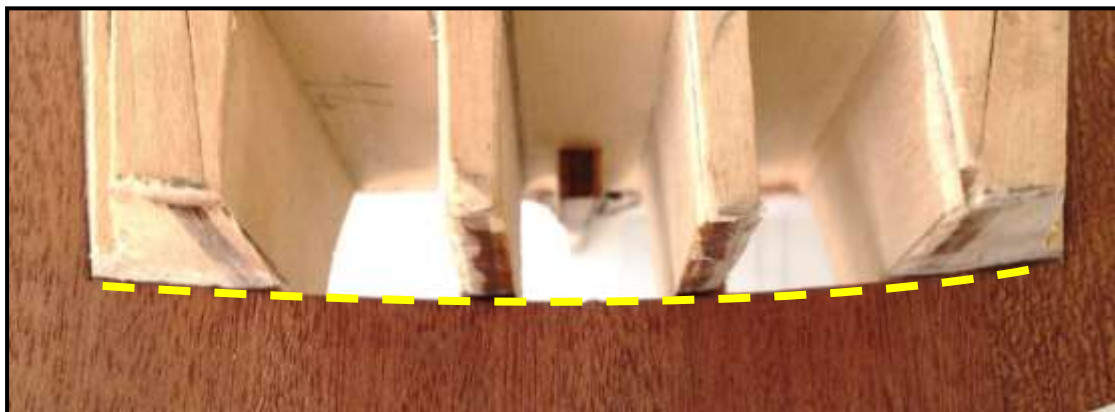


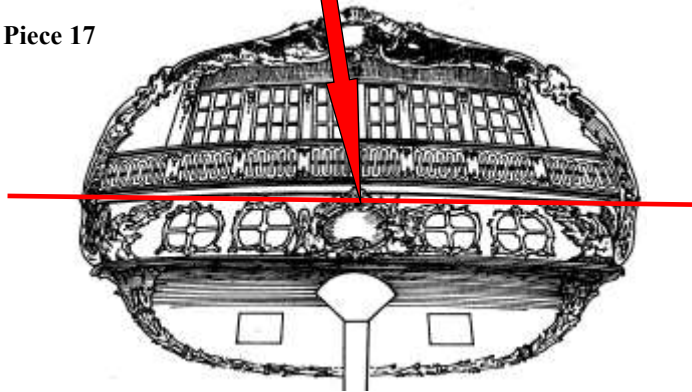
Figure 13: Support Pieces Curved

Athwartship Profile of Piece 17



From Plan Sheet 17, there is a clear indication of a deck curvature athwartships following that of the Main Deck. This is more particularly so at the forward end of the balcony. The aft end shows just a VERY slight curvature allowing the seating of metal piece 11337 (balcony balustrade) which had a curvature along its length.

Figure 14: Profiling Piece 17

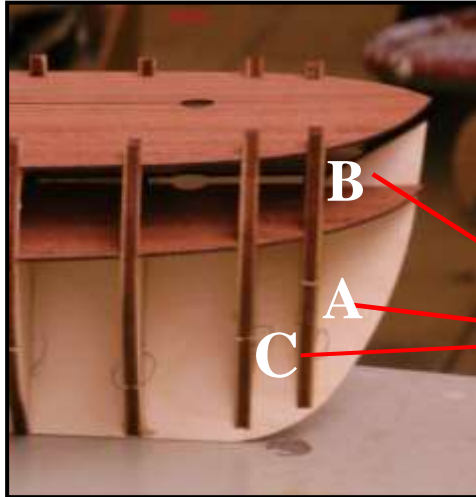


Piece 17 fixed in position in another build where the fit against the support transoms appears to be straight rather than curved as described above. This is the beauty of Euromodel building where variations and interpretations are the norm.

Figure 15: Piece 17 in Another Build

Bow Filler Blocks

Figure 16 shows where three possible sets of filler blocks could be inserted.



Blocks B are the only one provided for; A and C were my own additions.

There are fourteen gunports for the fourteen guns provided and *another gunport* near the bow (position is shaded light green in Fig. 17) but that one is in the same position as block B so a closed gun port was used for that position.

Figure 16: Bow Filler Blocks

Alternative 1: Using Filler Block B *only*

A filler block *35 x 35 x 100 mm*. was supplied for this purpose and its shaping was straightforward. The space for block A was ignored. A channel through the blocks was formed to take the bowsprit mast.

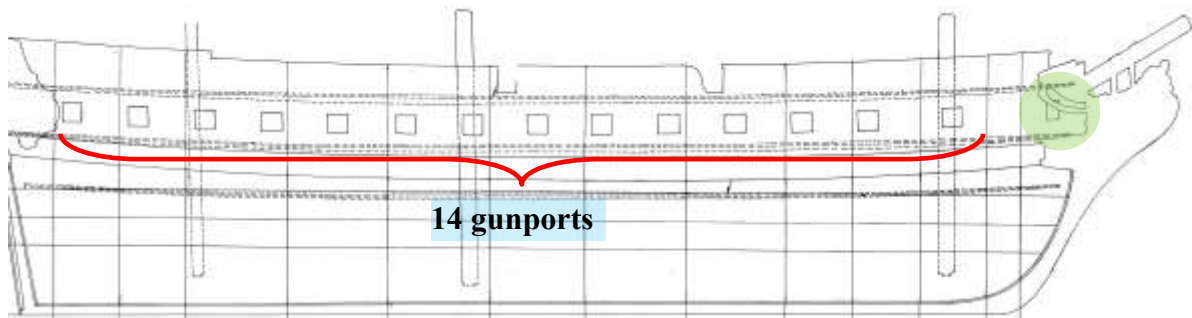


Figure 17: The Fifteen Gunports

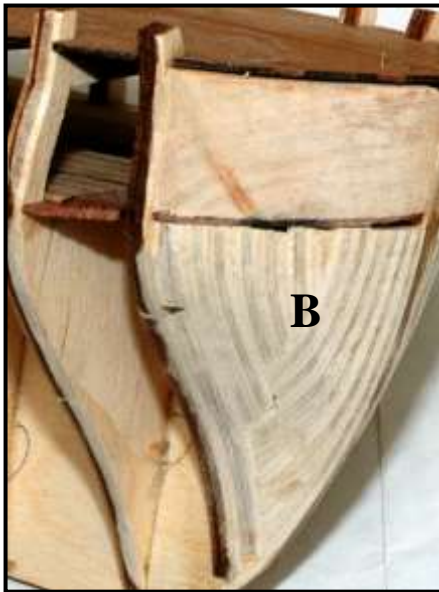


Figure 18: Two Filler Blocks at the Bow

Alternative 2: Using *Two* Filler Blocks

After completing block B, the space below was filled in using some plywood scraps and then shaping as shown in Fig. 18. The presence of this block made the planking process just a little easier.

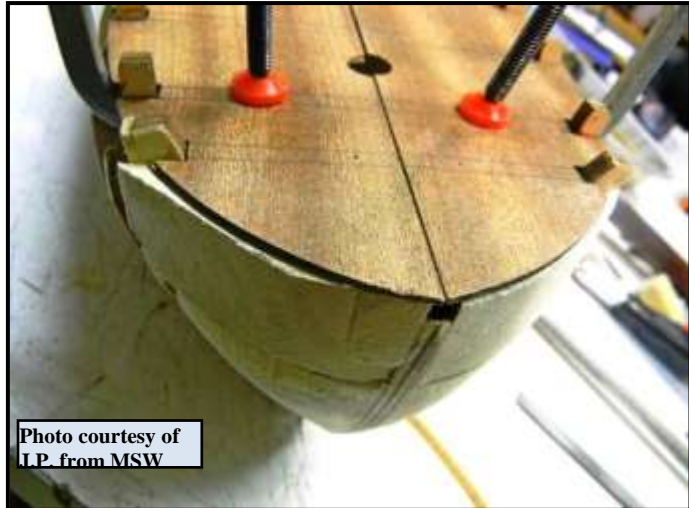


Figure 19: Plan Profiling the Bow Filler Blocks

Fig. 19 shows the important role played by the deck sections in determining the plan profile of the filler blocks. In turn, this also assists in determining the shaping of the frame edges.

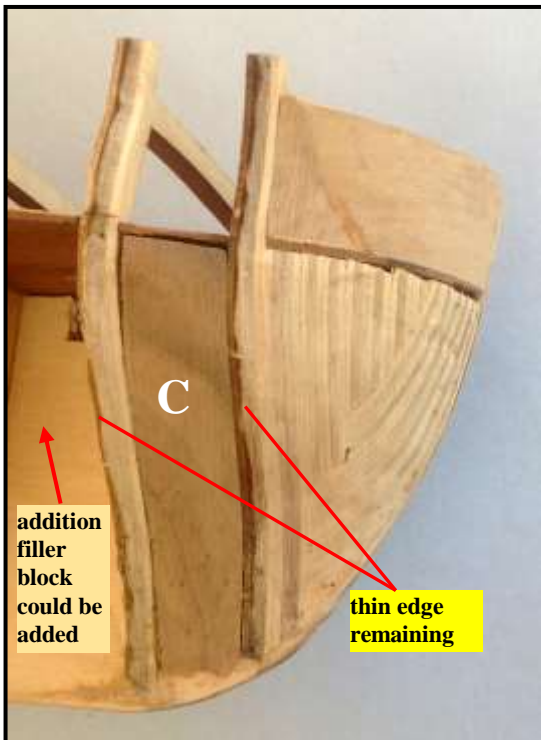


Figure 20: Three Filler Blocks

Alternative 3: Using *Three* Filler Blocks

After completing blocks B and A, I filled in the space between Frames 1 and 2 using some scrap timber (blocks C). The rationale was that shaping this mass of timber would enable the formation of a better longitudinal profile and also allow for the better placement of the first planking at the forward end. It was tried as an experimental alternative and it certainly helped getting the right shape for block A. Fig. 20 illustrates the degree of bevelling that leaves just a narrow line of the original laser-cut frame.

At a later stage, the 2 x 12 mm. wale had to be soaked in ammonia solution and clamped onto the hull. The severe curvature around the bow meant many clamps had to be used. In hindsight, it would have been better if *a third filler block had been added* between Frames 2 & 3 to enable more secure screwing of the clamps.

Frame Profiling

Overall, there were some significant alterations necessary to produce a smooth longitudinal profile. It is recommended that some careful observations along the line of the hull be taken. e.g.

- a. The frame edges were bevelled (Fig. 21) towards each end and here a Dremel power tool with an attached sanding drum was used. Otherwise, any number of hand tools can be used to perform the same function. The frame surfaces were checked continually with a long strip of wood.



Figure 21: Beveling Frame Edges

- b. With a long strip of wood placed longitudinally down the hull side, the frames were checked for alignment. Low frames would require packing with a thin strip where necessary and high frames may need to be reduced. The following two points illustrate what was done but there were other frames involved ...

Frame 8 (refer to Fig. 22) needed packing with some extra first planking below the Gun Deck line, whilst **Frame 10** required packing above the Gun Deck line.

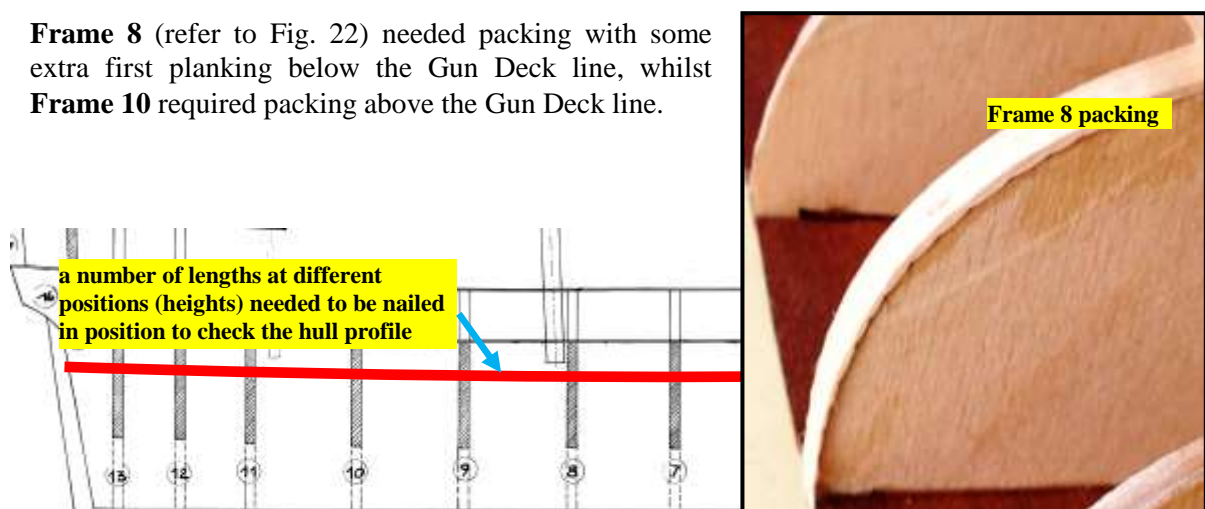


Figure 22: Horizontal Contour of Frame Edges

- Frames 11 & 13 needed to be reduced, again below the Gun Deck line.
- Frame 12 needed to be strongly reduced above and below the Gun Deck line
- Frame 13 especially required some significant alteration to the profile shape.

In other words, the stern section of this ship required a great deal of adjustment.

Main Deck Correction

In preparation for the first planking, the *outer edges of the Main Deck plywood* were trimmed back level with the now angled frame edges.

Gun Deck Planking

An explanation of the La Renommée drawings

Binding Strakes

Plan Sheet 5 shows detailed drawings of the Main Deck and the Gun Deck. What may not be apparent to the builder is the *central blank section along the mid-line in both drawings*. This is intended to illustrate the extra thickness of the central reinforcing planking typically found in French ships. Whilst these ‘binding strakes’ are thicker than the strakes either side, they were generally let down into the supporting beams underneath so that they then became flush with these other strakes. ***To summarise ... both decks are completely planked over in the normal fashion without any evidence of these thicker strakes along the mid-line.***

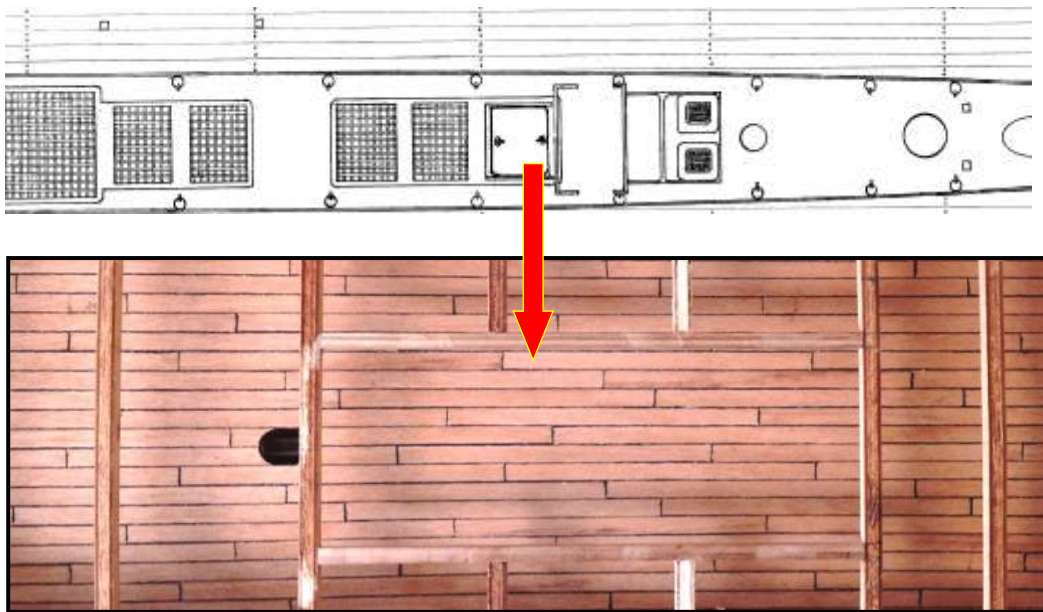


Figure 23: Non-Visible Binding Strakes

Fig. 24 below shows a different interpretation where a builder has deliberately emphasised the binding strakes.

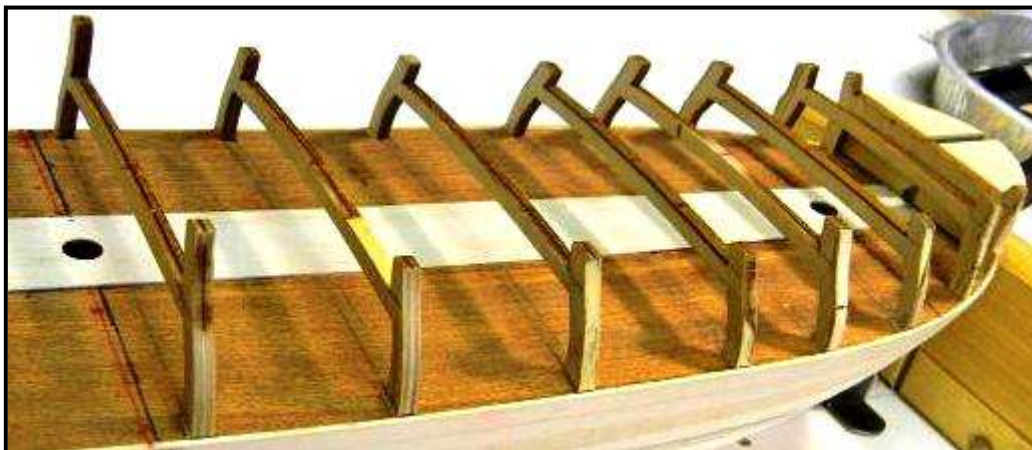


Figure 24: Visible Binding Strakes

Planking Principles

The decking in the 18th century was usually constructed with a very light coloured timber but there is a limit to what a kit can supply in this regard. During this time, the width of decking timber was **8 - 14 inches** [3.0 - 5.0 mm. at this scale of 1:70]. *The kit supplies 4 mm. walnut which really is fine but I chose to go with some lighter-coloured tanganka planks that I happened to have which were 5mm. wide.*



Figure 25: Full-length Timbers Used for Planking

Fig. 25 shows a partially completed build of this ship where planks have been laid the full length of the deck. Whilst looking impressive, such un-interrupted lengths would not have been possible.

This builder has cut *openings into the deck* to accommodate the gratings. My understanding is that the grates should be *above deck level* to lessen the amount of water entering the lower decks.

From European forests, the length of timber varied between **6.1 - 7.3 m.** Settling on **6.4 m.**, the length of planks for this ship at a 1:70 scale would be **91.4 mm.** [drawings show **75 mm.**]

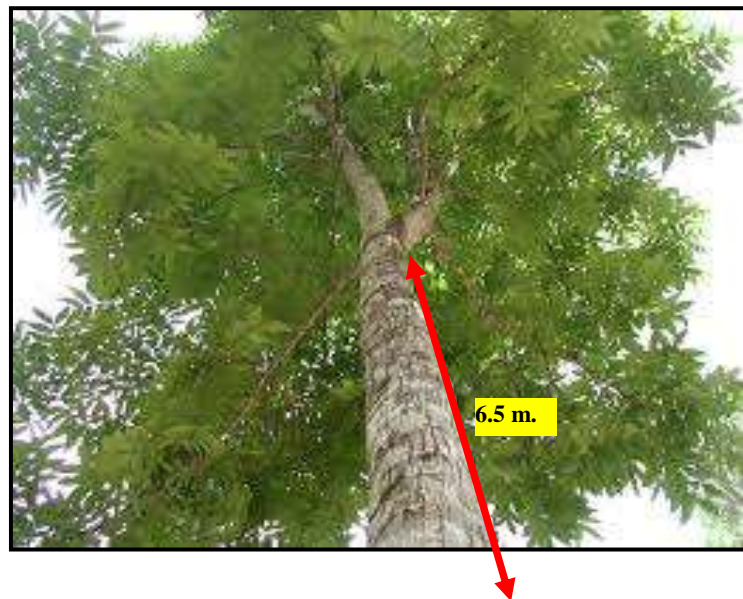


Figure 26: Deck Plank Length

The French version of a *five plank shift* (Fig. 27) was used. Following on from the first line of planks, there will be five lines of planks NOT having their butt joints lining up. The next following line WILL have a butt joint lining up with the butt joint from the first line.

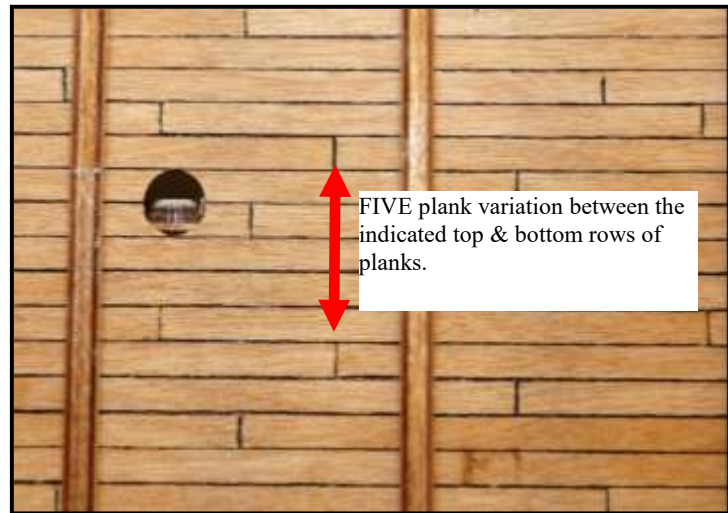


Figure 27: Five Plank Variation on Gun Deck

There were six different lengths used for decks above the Gun Deck ...

- 90 mm,
- 75 mm.
- 60 mm.
- 45 mm.
- 30 mm.
- 15 mm

However, since the Gun Deck was the length of the ship, I just planked this with **90 mm.** lengths.

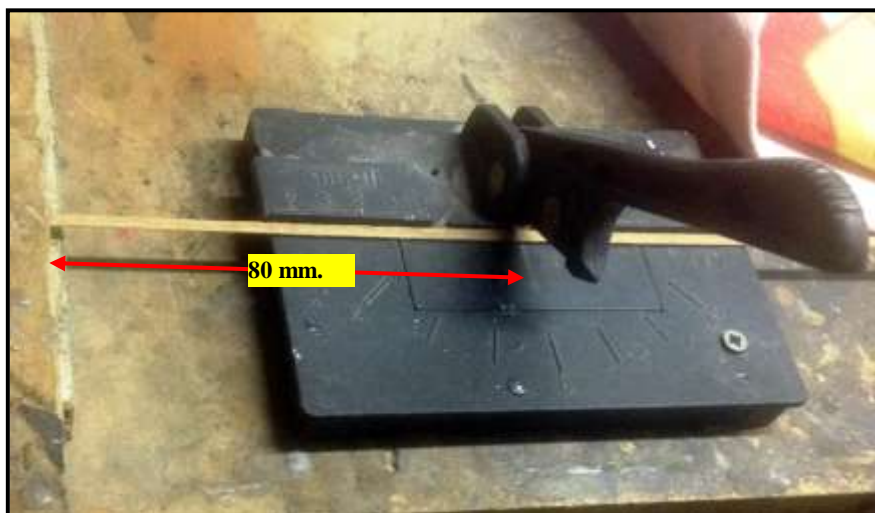


Figure 28: Cutting Jig for Plank Lengths

For this work, the ‘Amati Master Cutter’ is an essential tool for repetitive cutting of plank lengths.

The gap between the plank lines in the actual ships was ‘caulked with oakum and paid with tar’. To simulate this, the sharp and rough edges were lightly sanded back. A black marking pen with a broad, flat tip was quickly and lightly applied to all the edges (Fig. 29). Some builders only do this to *one of the adjacent edges* to avoid too much ‘bleeding’ from the marking pen.

The end grain is very porous and so some use an HB pencil (or pencil block available from art supplies) instead of the black marking pen.

Hindsight suggests the use of an HB pencil for all edges produces the best result.



Figure 29: Plank Edging (before & after)



Figure 30: Bleaching the Deck Planking

As was pointed out on the MSW forum, the decks were well scrubbed and weathered which resulted in the timbers being much paler in colour than that supplied in the kit. This point was overlooked and with a little more care, Fig. 30 from another build says it all. The effect was produced by soaking in household bleach for 20 minutes, rinsing in fresh water and allowing to dry.

Fixing the deck planks. Most choose to do nothing. However, there are a number of approaches to simulate this ...

- very fine drill holes just into the surface – these will fill with the wood sealer when applied and produce a slightly darker spot,
- as above but filling with a slightly coloured wood filler,
- treenailing is sometimes used but I suggest some research on this one by referring to the BACKGROUND RESOURCE file.

At the very least, they should correspond to the original distances between the frames. Whilst this varied a lot, it was often between **4-5 feet** which on this scale converts to approx. **29 mm**. This aspect was not considered in this build.

After sanding down the deck with various grades of sandpaper [the fine dust fills the visible gaps], the surface was then coated with a sealer. This has the advantage of binding any loose wood fibres so that when the final finish is applied to the deck, the result is a very smooth surface.

Main Deck Hatchway Opening Preparation

It was necessary to cut sections out of Frames 6 and 7 and insert longitudinal supporting beams underneath either side of the Main Deck opening (Fig. 31)



Two longitudinal deck support beams in place after cutting through Frames 6 & 7. As evident from the photo, the surface of the remaining side arms of Frame 6 needed to be trimmed down on either side.

Figure 31: Longitudinal Deck Beams

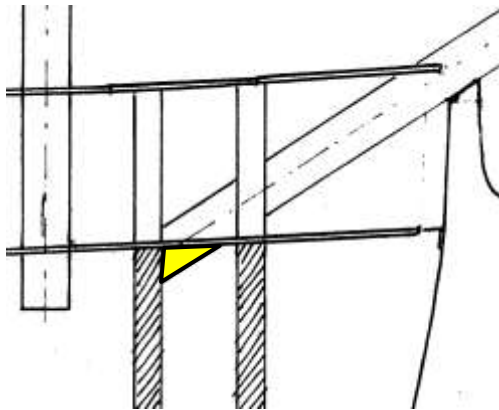


Figure 32: Checking the Base of the Bowsprit Mast

Bowsprit Housing

Before placing the Main Deck in position, the Bowsprit Mast seating was checked - portion of the cylindrical mast needed to be removed (shown in yellow in Fig. 32) rather than create a hole through the Gun Deck. Your choice.

A small housing was created to form a seat for the mast as shown in Fig. 33.



Figure 33: Bowsprit Mast Housing

Quarter Deck



Figure 34: A Basic Deck Construction

Basic Features

Fig. 34 represents a construction by one builder – using Plan Sheet 3 - of a basic approach where detail has been simplified.

- *deck is flat right through to the transom*
- only one set of pin rails per side
- no transom standards (knees)
- deck planking all of same length
- ensign staff support non-conventional

Transom Standards

Both the Euromodel and the Chapman drawings (the latter, Fig. 36) clearly show eight transom standards (*inverted knees*). In British ships, the standards were fewer in number (five or less) and generally **5 – 7 inches** in width. Perhaps this greater number of standards was more typical of Continental ships. From the drawings, the standards are approx. **1.5 mm.** wide (**105 mm. / 4.1 inches** from this scale).

It was common practice for the fore section of the standard to cover just over the last three main frames (Fig. 37). Given that the ‘room and space’ between equivalent faces of any two adjacent frames was approx. **33 inches**, then a fair measure might be something in the region of, say, **66 inches** (i.e. approx. **24 mm.** at this scale). This conforms to the measurement from Plan Sheet 2. The aft section extends up to the base of the taffrail.



Figure 35: Six Transom Standards

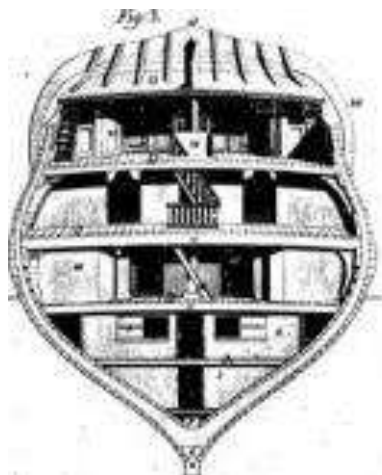


Figure 36: Extract from Chapman's Plate XXXII

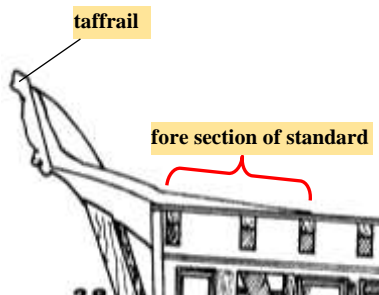


Figure 37: Aft Section of Standard

Ensign Staff

Only shown in Plan Sheet 1 (?) : **3 mm.** tapering upwards to **2 mm.** x **130 mm.**

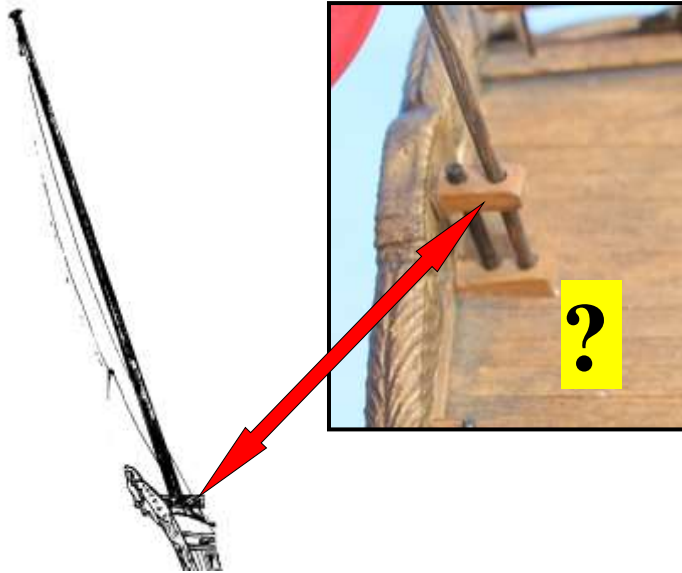


Figure 38: ‘Traditional’ Model Support

Fig. 38, to me, portrays the ‘conventional’ method of supporting the ensign staff (or the French equivalent) in builds with a transom that has a flat inner surface. Given the aft bulwark slope on this deck, such a support is impractical, even though it is ‘inferred’ in Plan Sheet 1.

However, during the time when transom standards were in use, they had two functions – of supporting the transom timbers *and* providing a support for the ensign staff through the use of a *tabernacle* (Fig. 39). This timber baulk provided an excellent support for the staff foot.

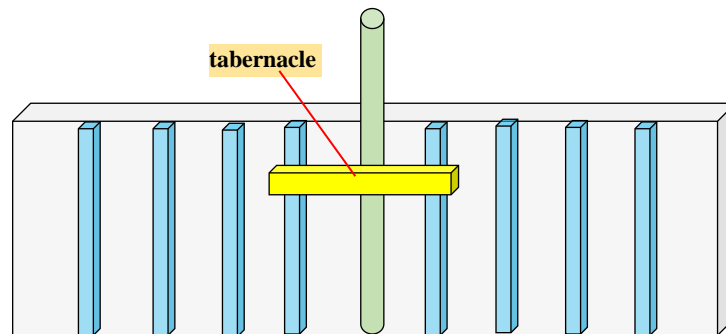


Figure 39: Diagrammatic View of Tabernacle Baulk

Sloping Bulwark

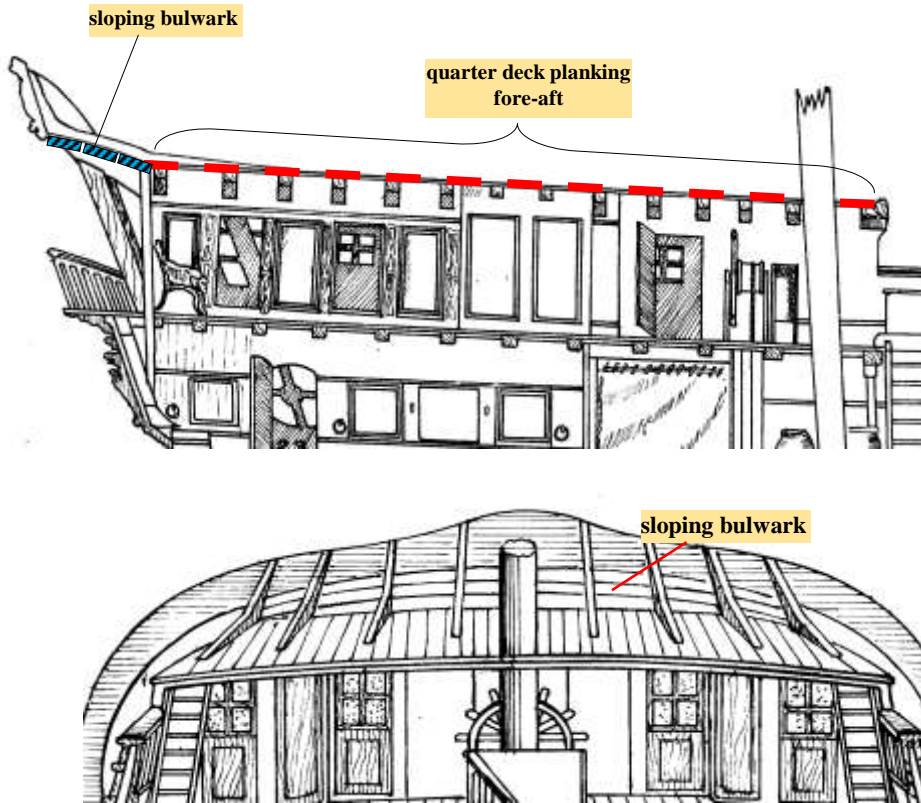


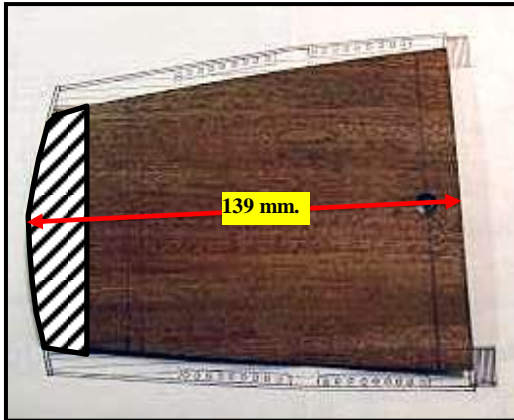
Figure 40: Quarter Deck Sloping Bulwark

A different approach - Fig. 41 shows a build where I suspect that the unfinished deck will be overlain with a few planks athwartships at the stern end to produce the sloping bulwark. Only time will tell on that one.



Figure 41: Different Interpretation of Quarter Deck

Deck Drawing vs Supplied Piece



The supplied piece is of the correct length but appears to be too narrow – in fact it *is correct* but the drawing is not to scale ! The shaded area (27 mm.) at the aft end will be hidden below the aft sloping bulwark.

Figure 42: Quarter Deck - Length vs. Width

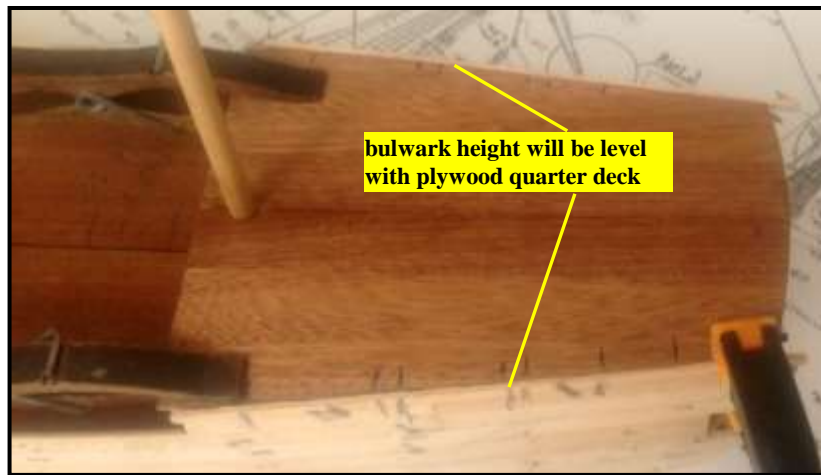


Figure 43: Fitting the Quarter Deck

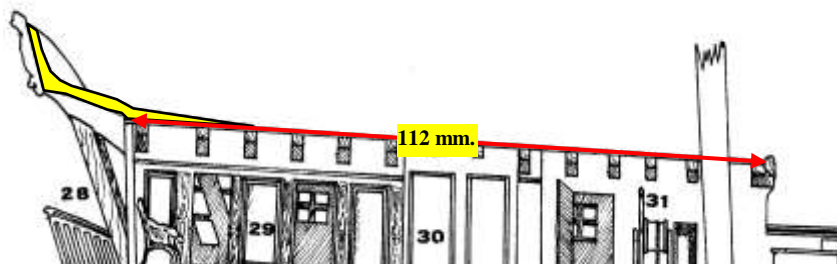


Figure 44: Quarter Deck Length Visible

Deck Positioning

- height of Frame 14 was such that packing was required on the top edge (blue) to bring up to the level as shown in Plan Sheet 3 / Fig. 45 using some scrap first planking
- the height of the four transom supports also had to be raised (orange) with first planking
- the height of Frame 12 had to be reduced slightly

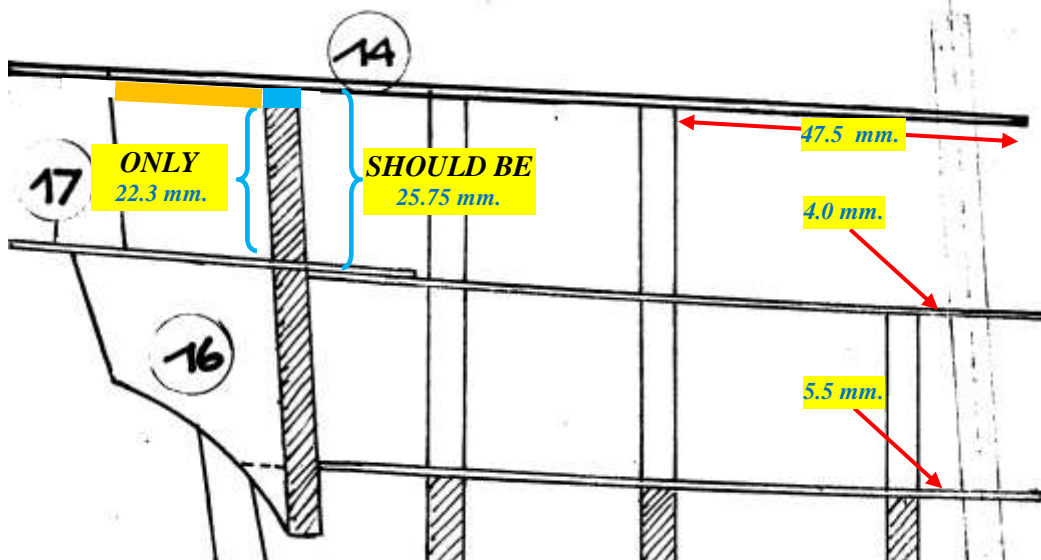


Figure 45: Quarter Deck Positioning

Supporting Frames

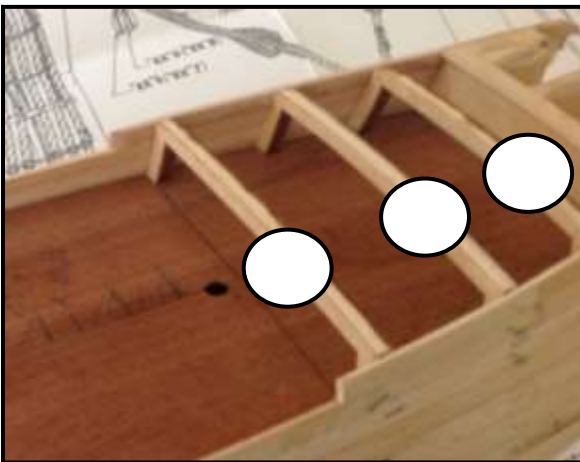


Figure 46: Deck Support Beams

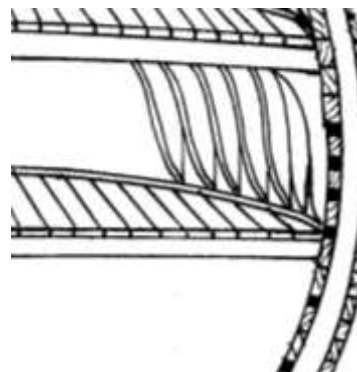


Figure 47: Support With Scratch Hanging Knees and Deck Beams

Ideally, Frames 11 and 12 need to be removed to allow placement of the officers' cabins. Traditionally, the hanging knees would be a part of the internal features of the cabins.

Alternative 1:

Frames 11 & 12 can be left intact but that will cause some adjustments to the positioning and overall shape of the officers’ cabins.

Alternative 2:

Frame 11 can be removed (down to Main Deck level) and then replaced by a historically more correct breast beam. Fig. 48 indicates the correct forward edge (yellow broken line) of the cabin wall and so a decision was made that Frame 11 had to be removed. Frame 12 can have a central section of the deck beam removed to allow for placement of rear cabins. Their top surfaces will then act as ‘deck beams’

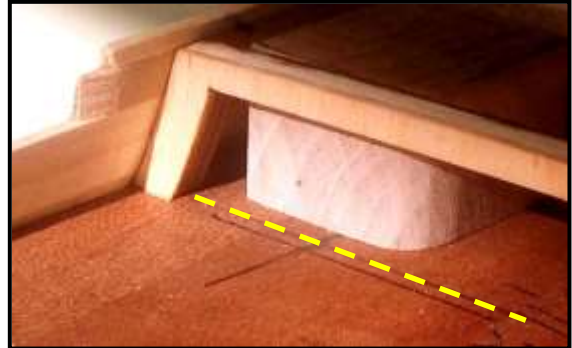


Figure 48: Frame 11 to be Removed

The removal of Frame 11 allowed deck planking to pass over the ‘hole’ in the deck.



Figure 49: Officers’ Cabins

More of this will be discussed at a later stage.

Chapter 2: ARMAMENT

Now seems a suitable time for an important deviation from constructing the hull. Before doing the first planking & cutting out the gun ports, it seems appropriate to construct the complete gun carriages with barrels mounted for the two different sized carriages to check the height of the opening above the deck. *Even more important is the fact that the **carriages will need to be fixed** in position on the Gun Battery Deck before the Main Deck is installed since many gun positions will then be inaccessible. The gun barrels will then be inserted through the gun port opening.*

- **Gun Deck** - 28 x 12 pounders: **43 mm.** cannons/ **21 mm.** carriages
[* Two are mounted at the stern but with closed gun ports, guns at this point are often not shown; also another two are shown at the bow but cannot be included due to the filler blocks]
- **Main Deck** - 12 cannons x 4 pounders: **28 mm.** cannons/ **19 mm.** carriages

Alternative 1: Using Kit Components

The carriages supplied differ markedly from that shown in the drawings and there is far more authenticity that could be built into a gun carriage. In spite of these comments, many builders will elect to build the carriage from the non-modified kit components, add the cannon and paint (perhaps). That is the easiest approach to make.

Fig. 50 illustrates a combination of both approaches (the blue-shaded parts are all the extras).

Legend:

kit-supplied

can be added

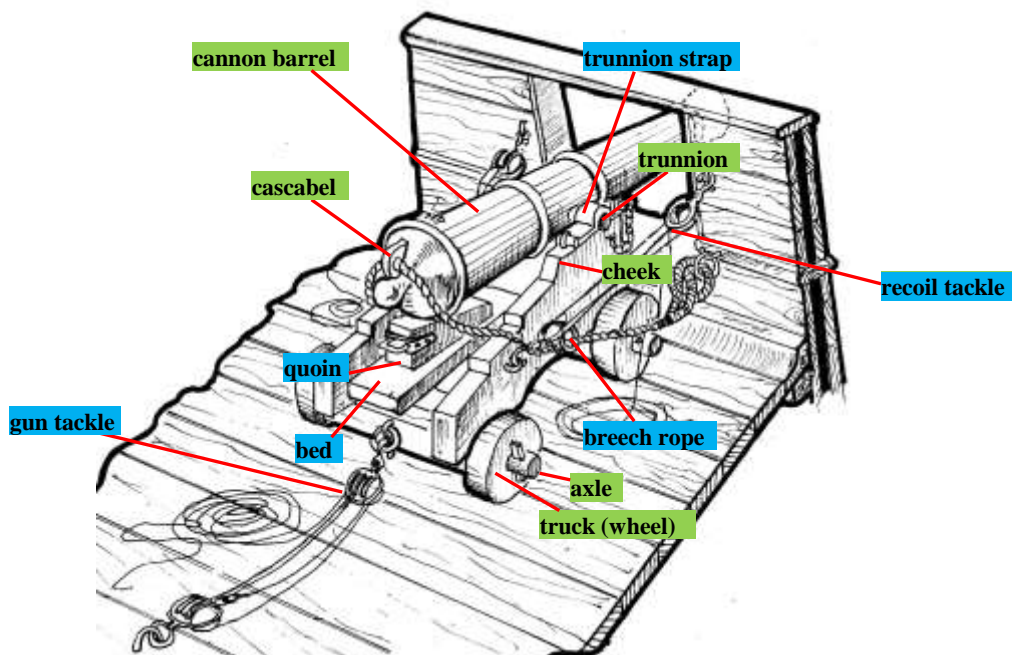


Figure 50: Cannon & Carriage Nomenclature

Fig. 51 is one of the drawings provided by Euromodel for a carriage on the Gun Deck and the detail given in this drawing is for a scratch builder. For many modelers, the task is simple – **utilize the gun carriages as they are provided in the kit.**

As with many other kit manufacturers, Euromodel in the past has not supplied the additional eye pins and blocks that are so much a part of the overall carriage configuration. In this approach, most builders will omit these ‘extras’. However, in recent times, some of these extras are now being added.

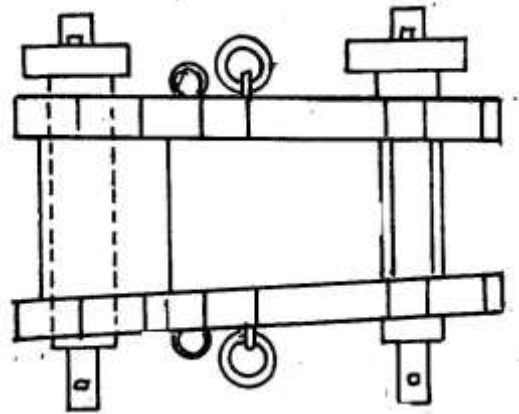


Figure 51: Gun Deck Carriage



Figure 52: Cannon & Carriage; *Standard Kit Build (but not La Renommée)*

There are a small number of guns complete with carriages that must be placed onto the Main Deck. Therefore much effort could be put into creating the gun carriages and associated ropes. For many modelers, the task is simple – *utilize the gun carriages as they are provided in the kit* (Fig. 52).

Alternative 2: Using Modified & Supplementary Components

Post-Construction Comments

The following comments show the steps & changes that were carried out to make a structure similar to that shown in the plan sheets. The philosophy was to adhere to working from the kit and only modifying & adding to what Euromodel supplied for the carriage. In the drawings it can be seen that the typical carriage consists of two vertical sides (*‘cheeks’*) joined by two horizontal *axle trees* as well as the *quoin* used for adjusting the inclination of the cannon seated on a *‘bed’*. There is also the need to look at the use of *ring & eye bolts*. Carriages are hauled to and from the bulwarks via *three tackle systems* – these may or may not be included in the build. There are differences in the tackle systems utilized in England and those on the Continent and it is interesting to note that little information is shown in the plan sheets. A common variation adopted by the French was the use of *two* gun tackles at the rear instead of the traditional one typically shown in English ships.

Gun Carriages

Gun Deck

Fig. 53 ...

<p>Left cannon: Gun barrel lying in the carriage supplied (non-tapered, too long, too high & too wide)</p> <p>Right cannon: Gun barrel lying in a tapered carriage</p>
--



Figure 53: Difference Between 'Square' and a 'Tapered' Gun Carriage

The following details illustrate the modification changes made in this alternative approach.

- carriage cheek is **3.0 mm.** (vs. **2.0 mm.** in drawing)

After considering the plan dimensions, certain alterations were made. You will need to make your own choices ...

- **length** varied, **27.0+ mm.**; this was reduced this to **24.5 mm.** (**23.0 mm.** was just a little too short using the gun carriage supplied),
- **height** (of the 'cheeks') varied, **+/-11.5 mm.**; I reduced the height to approx. **8 mm.** by lowering the top step at the front,
- **width:** was altered to produce a taper of **10-11.5 mm.**



Figure 54: Quoins

Further to this, there were certain variations to the basic carriage configuration ...

- angle for the **leading edge of the cheek**
- construction of the **quoins** (cannon wedges) – Fig. 54 - and supporting **beds**
- construction of the axle and wheel assemblies (**axle trees** and **trucks**). Determination of length allowed for extension past the width of the wheels since cotter pins were inserted into the axles to hold the trucks in place.

<p>Axle lengths will depend on the actual width of each individual carriage ...</p> <p>front axle: carriage + wheels + projection = +/- 10.0 + 5.2 + 2.6 = +/- 17.8 mm.</p> <p>rear axle: carriage + wheels + projection = +/- 11.5 + 5.1 + 2.6 = +/- 19.2 mm.</p>
--

- addition of **eye bolts** and **ring bolts** could be carried out but **trunnion bands** cannot be used due to the insertion of the cannon barrels at a later stage through the gun ports. Note than none of these items are supplied in the kit.

Construction Details (Gun Deck carriages)
(based on kit material)

- STEP 1:** Reduce the gun carriage height down to **8 mm.** causing you to reform the cut-out channels for the gun barrel trunion. The internal height then becomes **6.0 mm.** which conforms to the drawing. Make sure these channels are centred **6.5 mm.** from the original front edge (this will actually be **4.5 mm.** – refer to Step 7).
- STEP 2:** Reduce the thickness of the cheeks to approx. **2.2 mm.** (**2 mm.** is getting a bit too fine)
- STEP 3:** Cut down the centre line of the carriage with a fine-bladed jig saw.
- STEP 4:** Sand the cut edges (see photo opposite) so that combined the *internal dimensions* of the carriage are **6.0 mm.** at the front and **7.5 mm.** at the rear.
- STEP 5:** Cut wheel axles of length **+/- 19.2 mm.** (rear) mm. and **+/- 17.8 mm.** (front) from supplied wooden rod (both lengths make an allowance for what would be cotter pin fitting). Slight chamfering of the ends of the axles prevents the wheels – which are a tight fit – from cracking.
- STEP 6:** Straighten the two axle channels.
- STEP 7:** Glue both half sections of the carriage down onto the two axles.
- STEP 8:** Reduce the carriage length to **23.5 mm.** – by carefully sanding away **2 mm.** from each end.
- STEP 9:** At the front, create an angled slant on each cheek.
- STEP 10:** Paint the carriage with the colour of your choice (e.g. dark red).
- STEP 11:** Glue on the two front **6 mm.** wheels and the two **5 mm.** wheels at the rear. N.B. before sliding wheels onto the axle, test for a tight fit and, if necessary, utilize a round file to increase the wheel hole diameter.
- STEP 12:** Create a quoin (wedge-shaped block) to support the rear of the barrel and glue in place. The interior maximum depth from the plan sheet is **6.0 mm.** Using this figure, calculate the depth of bed.
- STEP 13:** Determine the inclination of the cannon required and utilize a template to maintain uniformity with all the carriages whilst gluing in the quoin (refer to photo below).



Step 1



Step 2



Step 4



Step 4

Main Deck

There are a smaller number of visible guns complete with carriages that must be placed onto the Main Deck.

Only very small adjustments need to be made to the wooden gun carriage supplied but it is still worth doing for the visual effect of creating especially a tapered carriage. Unlike the 12-pounder gun carriages on the deck below, 4-pounder guns are on full view so to retain credibility, they should be modified.



Figure 55: Comparison of Cannon & Carriage Widths

Axle lengths to be cut will depend on the actual width of each individual carriage ...

front axle: carriage + wheels + projection = +/- 7.4 + 4.5 + 2.6 = +/- 14.44 mm.

rear axle: carriage + wheels + projection = +/- 8.2 + 4.5 + 2.6 = +/- 15.30 mm.

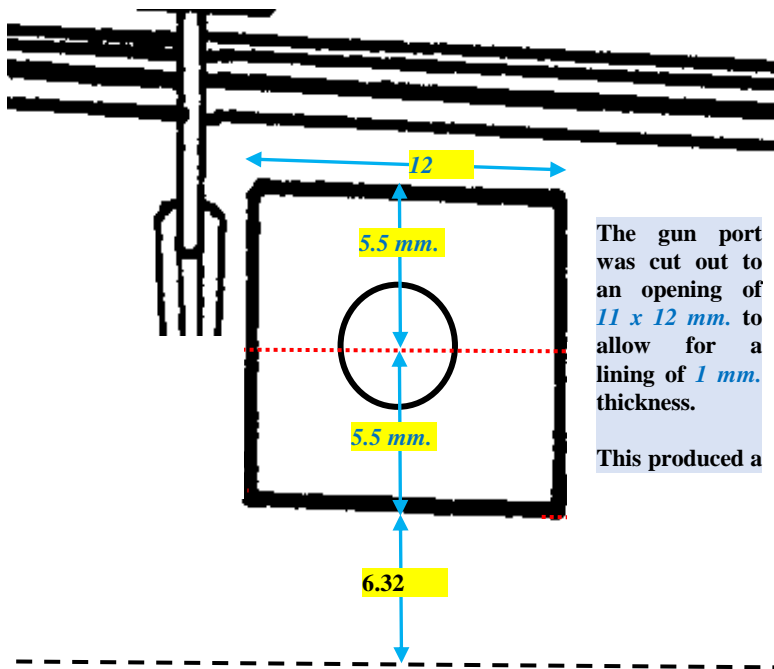
Construction Details (Main Deck carriages)

(based on kit material)

- STEP 1:** Cut down the centre line of the carriage with a fine-bladed jig saw.
- STEP 2:** Sand the cut edges so that combined the *internal dimensions* of the carriage are **7.8 mm.** at the front and **9.1 mm.** at the rear. You may need to sand back a bit too far and then glue in a thin timber. It would have been easier with a slightly larger gun carriage and/or a slightly thinner gun barrel.
- STEP 3:** Cut wheel axles of length **+/- 15.30 mm.** (rear) mm. and **+/- 14.44 mm.** (front) from supplied wooden rod (both lengths make an allowance for what would be cotter pin fitting). Slight chamfering of the ends of the axles prevents the wheels – which are a tight fit – from cracking.
- STEP 4:** Straighten the two axle channels.
- STEP 5:** Glue both half sections of the carriage down onto the two axles.
- STEP 6:** Reduce the carriage length to **19.0 mm.** – by carefully sanding away **1 mm.** from each end.
- STEP 7:** At the front, create an angled slant on each cheek.
- STEP 8:** Paint the carriage with the colour of your choice (e.g. dark red).
- STEP 9:** Glue on the two front **6 mm.** wheels and the two **5 mm.** wheels at the rear. N.B. before sliding wheels onto the axle, test for a tight fit and, if necessary, utilize a round file to increase the wheel hole diameter.
- STEP 10:** Create a quoin (wedge-shaped block) to support the rear of the barrel and glue in place. The interior maximum depth from the plan sheet is **6.0 mm.** Using this figure, calculate the depth of bed.
- STEP 12:** Determine the inclination of the cannon required and utilize a template to maintain uniformity with all the carriages whilst gluing in the quoin (refer to photo below).
- STEP 13:** Cut **8.5 mm.** section of the **1 mm.** brass rod to form the cannon trunnions.
- STEP 14:** You may then wish to supplement what is in the kit by using trunnion straps as well as eye & ring bolts.

The final detailing of all these guns will be discussed in later sections.

Gun Deck Gunport Commentary



Sizing

Having constructed the gun carriages, cannons were mounted onto them (without fixing) to determine the cannon height above what would be the deck surface. The height above the deck is shown in Fig. 56 as 6.32 mm but that depends very much on the carriage construction carried out by each builder. Even with great care, there was still a small variation between individual carriages [The 6.32 mm. allows for 1 mm. lining within the gunport].

Figure 56: Cutting the Gun Deck Gunport (not to scale)

Lateral Positioning

A gun carriage was placed firmly against Frame 13 to determine a gunport position (yellow circle).

From there, gunport centre positions were marked out approximately 34 mm. apart with some small adjustments necessary due to frame positions.



Figure 57: Gunport Positioning

The *Background Resource File* contains some useful information on gun port positioning.

For this ship, the vertical distribution should be checked against the overall measurement of the total gun ports along the hull. Within this measurement small adjustments will need to be made.

A method used by another builder (Fig. 58, below) involved cutting out a drawing that included all of the gun ports and using this as a template for identifying their positions.

N.B. This method ignores the fact that the drawing used involves a set of **3-D measurements transposed onto a 2-D drawing**. Any curvatures on the actual hull, longitudinally and vertically, will be slightly different to that shown on the 2-D drawing (a case of Pythagoras' Theorem at work) – the Background Resource File explains that in more detail. However, it is an individual interpretation and more, or less, it works fairly well.

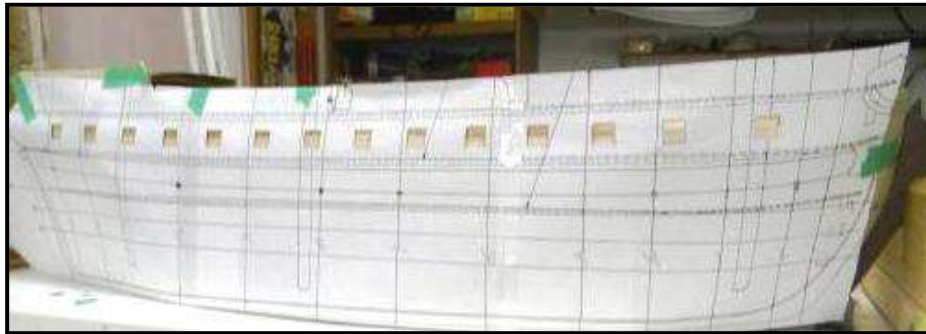


Figure 58: Changing 2-D into 3-D

Gunport Template

This was not the stage at which gunport openings were created – they are just included as an appropriate addition to the above comments! The start of the cut-out for the gunports is shown in Fig. 59.

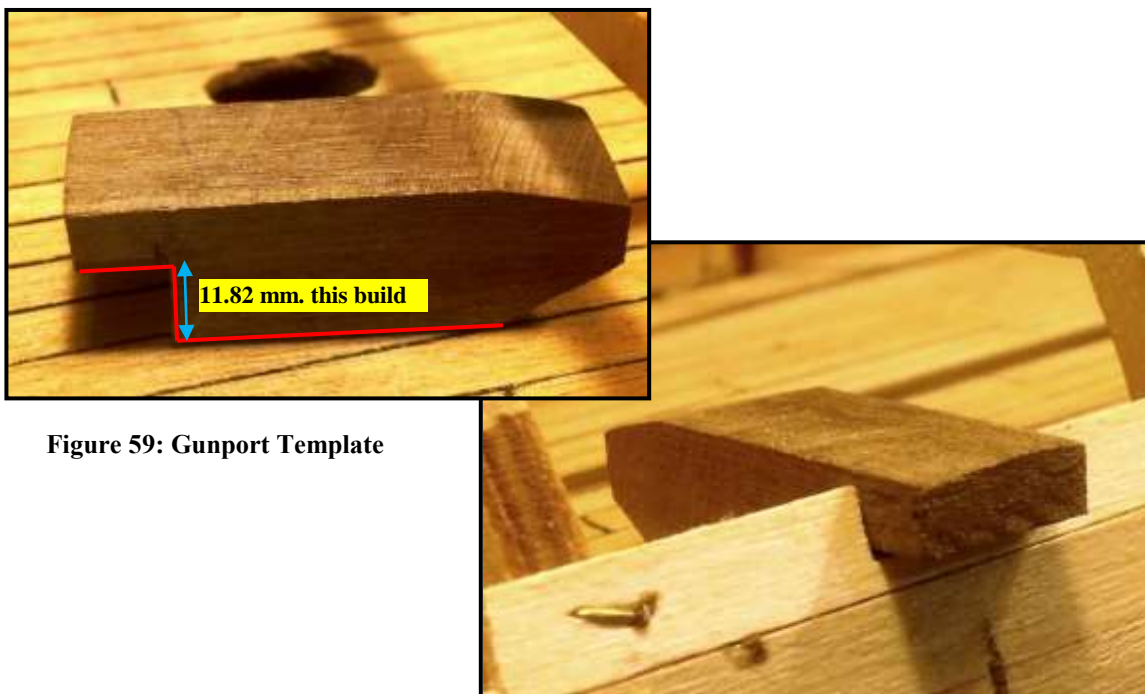


Figure 59: Gunport Template

Chapter 3: FIRST PLANKING

Preparation for First Planking

Consideration needed to be given to the ...

- false keel,
- stern post and the
- bow (or stem) post (which actually is the post and the beakhead support combined together)

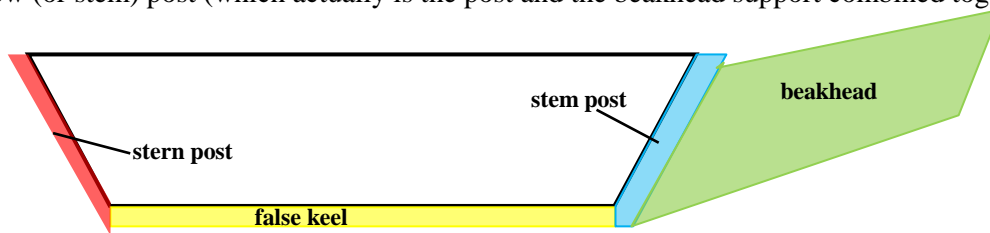


Figure 60: False Keel and Post Terminology

False Keel

For the forward two-thirds of the false keel, the planking will simply butt up against the timber and no ‘rabbet’ groove is required. However, *as the false keel curved up into the forward stem post, there was a section that also needed to be narrowed.*

The drawings show the false keel width to be ...

mid-ship: **7.0 mm.**

stern: **4.5 mm.**

bow: **5.5 mm.**

In this build ...

bow & mid-section - **7.0 mm.** width was preserved

stern with a taper finishing at **4.5 mm.** [Plan Sheet 17 shows the full-length false keel tapering down to **3.5 mm.** and the stern post tapering down to **4.5 mm.** The latter width was chosen]

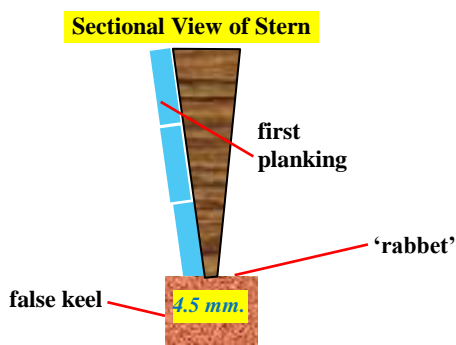


Figure 61 : Stern View of Post & False Keel

Problem: Where the first (and second planking) swept in sharply to the stern post, the TOTAL width could only be **4.5 mm.** (the width of the stem post). But the keel itself was already **5 mm.** thick and the thickness of the first and second planking combined would add **approx 6 mm.!**

Solution: In Fig. 61, the keel (dark brown) was tapered at the aft end edges to **1.5 mm.**, the first planking (pale blue) added and afterwards, sanded back to **2.7 mm.** (i.e. the **2 mm.** first planks were now only **0.6 mm.** thick). This then allowed the addition of the second planking (total of another **1.8 mm.**) bringing the overall thickness to **4.5 mm.**



Figure 62: Keel Taper

Stem Post

The stem post is an upwards extension of the false keel and provides strength to the bow and allows for the joining of the second planking in one common place. As already stated, the laser-cut piece supplied also includes the extension that gives support to the ornate beakhead projecting outwards from the bow.

The plain surface of the stem post can be much enhanced with *lines being carved onto the surface* (as per Plan Sheet 17) to represent a number of timbers joined together.

For some reason, Plan Sheet 5 indicates that the stem post is not on the mid-line of the ship? That fact was ignored.



Figure 63: Stem Post Detailing

Stern Post

[Approx. 90 mm. was cut from the 6 x 7 x 590 mm. supplied timber]

Whilst the vertical and horizontal tapers can be readily constructed, the overall length shown in Plan Sheet 17 is confusing. Fig. 64 illustrates the problem.

‘profile corresponds to that of the false keel’

Consequently, the 87 mm. was produced, allowing for this to be shortened as necessary.

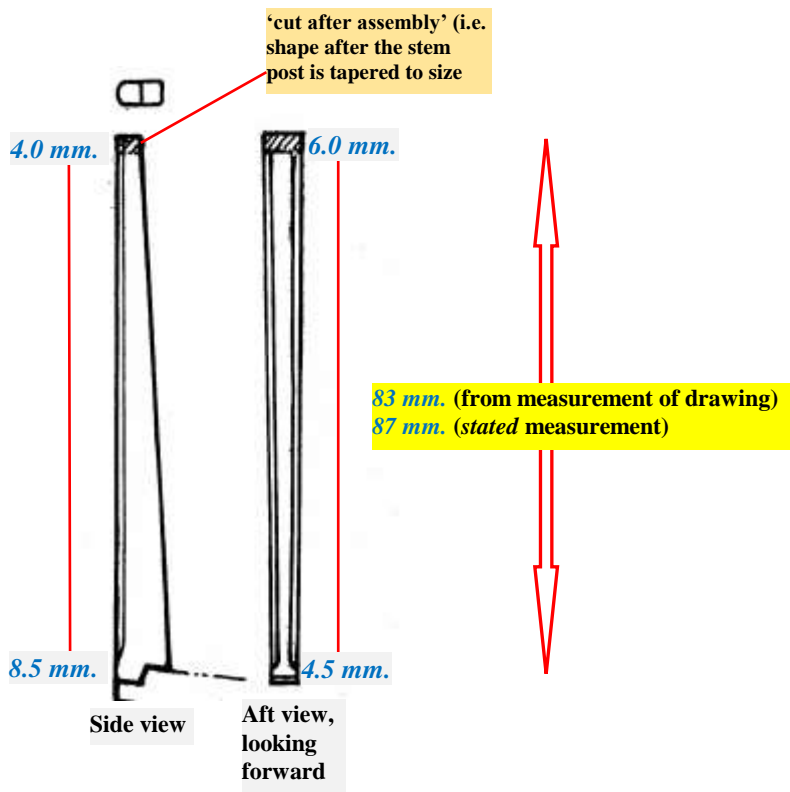


Figure 64: Stem Post Tapering

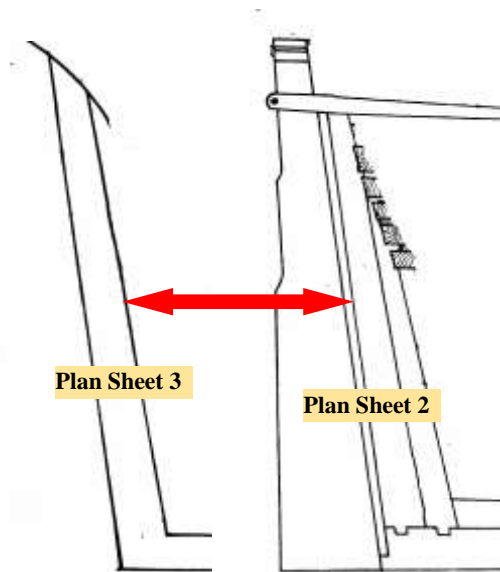


Figure 65: Kit vs Scratch Build

Fig. 65 shows how the stern post can vary in detail – Plan Sheet 3 showing the stern post consisting of two sections along with mortise and tenon joints whilst Plan Sheet 2 is one solid piece butt-jointed against the false keel.

Measurement from both these drawings show the post as being **87 mm.** in length.

In summary, the stern post is 87 mm. in length

The drawings show a width tapering upwards from **8.5 mm.** to **4.0 mm.** so extra timber was added along one edge to increase the width to the 8.5 mm.



Figure 66: Tapered Stern Post (unfinished)

Introductory Comments to Planking

Tutorial Links

A first suggestion is to look at the following reference tutorials ... for many, it may be too complicated but it does describe how planking *should* be carried out. Many builders do not follow what is in this tutorial – and that is their choice – but at least it is a reference point.

<http://modelshipworldforum.com/ship-model-framing-and-planking-articles.php>

Plank Pliability

All of the first planking was applied dry (albeit using a ‘plank bender’) but the following notes might still be useful at some stage also refer to the Background Resource file for another method of bending planks.



Figure 67: Plank Softening

With ammonia solution, only the section to be bent was soaked – by immersing in the original container (Fig. 67).

Obviously the planks will have swollen with immersion in the ammonia solution but temporarily fixing in place produced the desired shape. After 24 hours for the timber to dry (and using a hair drier as well), there were *significant gaps* between the planks (Fig. 68) but when they were removed from the frames and finally glued back in place, this proved to be of no consequence.

Some may choose to soak the planks. Whilst taking a little longer, it is useful to soak the planks in *aqueous ammonia solution* - ('cloudy ammonia' available from supermarkets) or water, placing them in the position required using small nails or clamps, allowing to dry, removing and then refixing in a slightly different position (moist planks will have shrunk whilst drying).

Soaking in ammonia solution produces a far softer and more pliable timber.

[For water soaking - a length of 90 mm. PVC storm water pipe sealed with a cap at the bottom and then filled with water. The width makes it easy enough to retrieve the planks being soaked.]



Figure 68: Drying Out Produces Gaps

First Planking

The previous tutorial mentioned the importance of completing the first planking following the tutorial outline. The idea then is that the second planking simply is a repetition of the planking underneath. In this build, the method was to produce a smooth, solid surface without due regard to that approach but to then attempt some style of ‘correct’ second planking over the first planking.

The planking started at the keel with dry, non-tapered planks added as follows:

The First Plank

- The first plank was curved around the bow section and along the keel to where it began to narrow – approx. **75 mm.** from the stern end.
- The ‘sandwich’ formed in the stern area was eventually sanded back to a minimum thickness of **2.7 mm.**

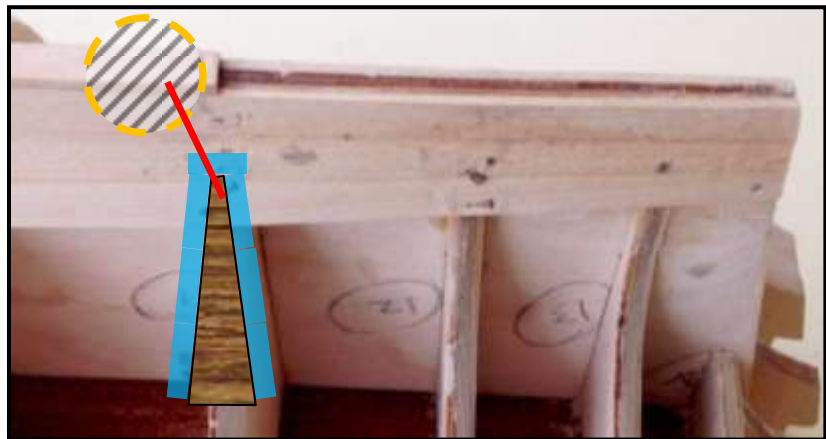


Figure 69: Shortened First Plank

Untapered Planks

- Adjacent to the first plank on the keel edge, **five non-tapered, full-length planks** were added either side. Also, the remaining **75 mm.** section of the first plank over the keel edge was added.
- Two more **non-tapered, full-length planks** were added, this time with the addition of stealers aft and stern (Fig. 70).



Figure 70: Set of Seven Untapered Planks

- **Four non-tapered, full-length planks** were added from the Gun Deck level downwards (first of the three was placed approximately **5 mm.** above the deck level).

Any planks added that are above the Prow Deck level needed to be approx. 3 – 4 mm. forward of Frame 1.

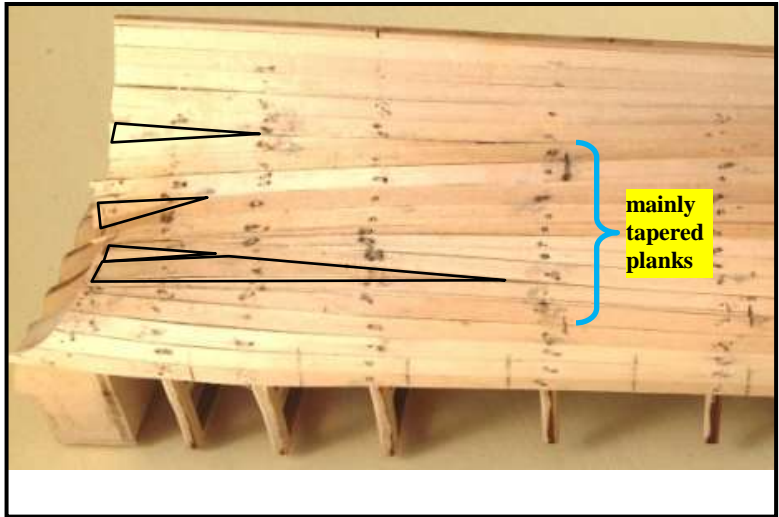


Figure 71: Tapering and Stealers

Tapered Planks & Stealers

The remaining space between the upper and lower full-length, non-tapered planks was filled with planks that were both tapered and often not full length. Care was taken to follow the natural flow and not force the planks into position.

Fixing nails were removed, the hull surface was roughly made uniform with a sanding drum attached to a flexible drive on a Dremel© power tool. Filler was used where necessary and then after drying, the final hull shape was attained through careful sanding. For this step, a foam sanding block was used rather than the conventional hard cork block.

Keel + first planking thickness immediately behind the stern post ...

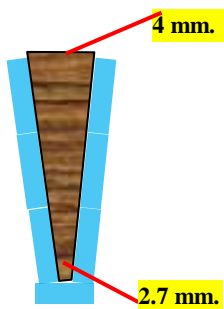


Figure 73: Stern View of Keel

Immediately behind the stern post, the keel finished (first + second planking over keel) width in this build needed to be 6 mm. down to 4.5 mm.

Therefore the first planking width across the stern needed to be 4 mm. down to 2.7 mm. (Fig. 73).

Note that Fig. 73 is purely diagrammatic and not to scale.

Fig. 72 shows the actual tapering ... and a few little gaps between the planking. Wood filler still to be used.



Figure 72: Stern Tapering

Frame Supporting Arms

The ‘supporting arms’ on the upper part of the frames provided in this kit have varying widths and are only intended as a *temporary measure* purely to impart the correct planking curvature. The height of these arms above the deck line was quite variable with respect to each other (Fig. 74) – *they did not determine height* of planking.



Figure 74: Variable Height of Supporting Arms



Figure 75: Removing the Supporting Arms

The arms were removed by making a cut through 3/4 of the arm (Fig. 75) and then carefully snapping off using a pair of pliers. The resultant ‘holes’ were then covered by the Main Deck planking.

Bulwark Thickness

The *bulwark directly above the Gun Deck* was produced from two layers of first planking and only one layer of the second planking over the outside but not on the internal surface. This then produced a thickness of approx. **5 mm**, conforming closely to the **4.5 - 6.0 mm**, found in the lower bulwark (Fig. 76) and afforded extra rigidity to allow the safe cutting out of the gun ports. That was my choice to double the thickness.

The *bulwark directly above the Main Deck* was formed from a single first planking thickness and a second planking strip added to both the inside and outside of the first plank forming the bulwark with a thickness of **4.0 mm**. – conforming reasonably to the indicated dimensions.

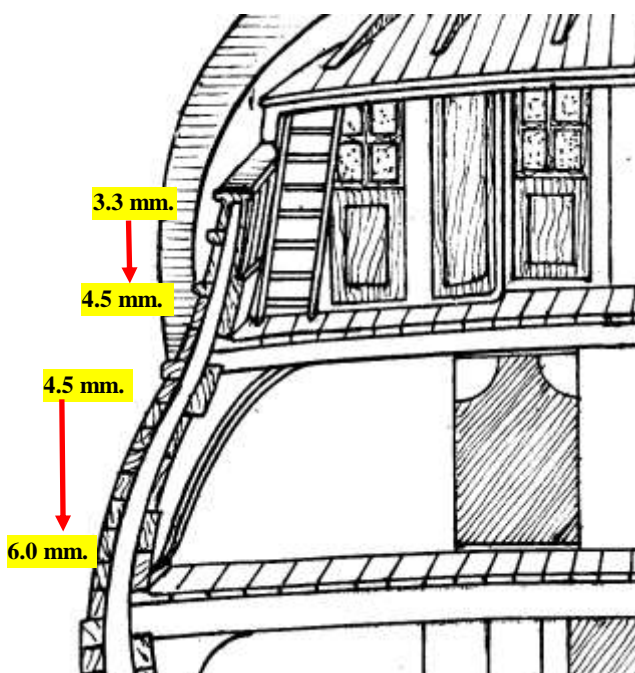


Figure 76: Bulwark Thickness Gradations

The intention was to remove the supporting arms after the first layer of planking had been added and to then add a second layer of the first planking on the inside. This would then give strength for the bulwark to withstand the gunport cutting. Afterwards, the double layer bulwark above the Main Deck would be tapered from **1.3 mm** at the top edge down to **2.5 mm** at deck level in preparation for the second planking on both sides.

In Fig. 79 below, the double first-planking was a choice made for this build and is built up to the under-side of the Main Deck. Done carefully, the top edge acts as a deck support.

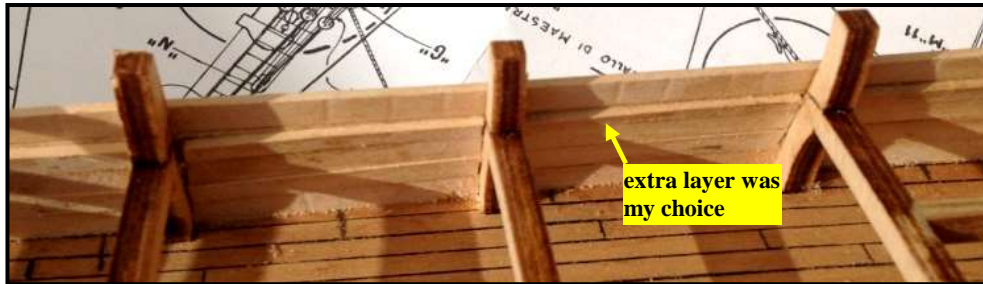


Figure 79: Double First Planking

Gunport cut-outs were started before the second of the first planking was fixed in place.



Figure 80: Beginning the Gunport Cut-Outs

Bulwark Height

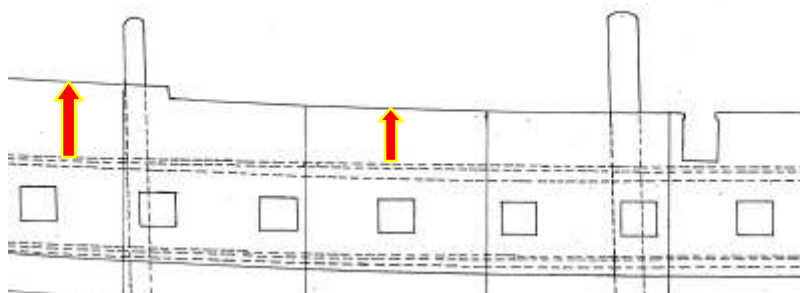


Figure 81: Bulwark Height from Plan Sheet 17



Figure 82: Completed First Planking from Another Build

It was only after the first planking had been finished that the stem, false keel and bow stem were fixed in place.

Fixing the Posts & False Keel

The stem post needed some adjustment to fit the line of the hull and to fix it in place, two long glued nails (Fig. 80) were used as posts to form a solid linkage between the two. All that remained then was to glue the keel in place.

The stem post shown here was fixed onto the keel without any rabbet-type groove. In this build, the idea was to have the first planking butting against the first plank laid along which ran along the keel and around the bow edge.



Figure 83: Supporting Nails for Stem Post



Figure 84: Rabbet Groove

However, Fig. 84 shows an entirely different approach with a rabbet formed taking at least the first planking thickness.

.... so, two different choices !

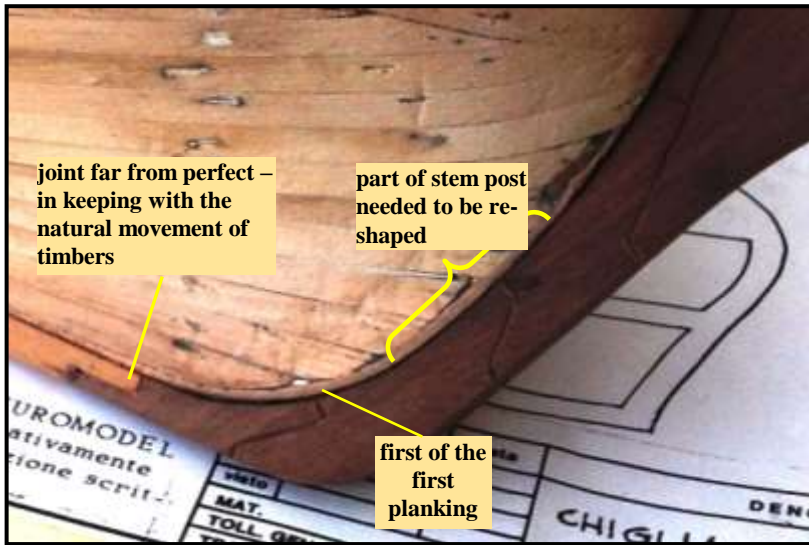


Figure 85: Stem Post - False Keel Joint