

# H.M. BOMB VESSEL

## GRANADO 1756



### **Manual 1 of 2**

### **Hull Construction, Masting & Rigging**

Additional photos of every stage of construction can be found on our website at:  
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# HM Bomb Vessel Granado

## (1756)

Twelve bomb vessels, including Granado, were built at the outbreak of the War of Jenkins's Ear in 1739. Designed for laying siege from the sea, these ketch rigged vessels were constructed to accommodate large heavy mortars with their destructive recoils.

Granado was ordered on September 14th 1741, and the keel was laid on November 18th 1741. Although it is uncertain who designed Granado, it is commonly attributed to Thomas Slade, the naval Surveyor who oversaw the construction of the ship at Ipswich. Granado was unusual in that she was designed to be used as either a sloop or a bomb vessel, being constructed with a conventional square stern, as opposed to the more conventional pink stern of mortar vessels. Launched on June 22nd 1742, Granado was taken to Harwich, fitted out and put in commission as a sloop.

An Admiralty Order on July 15th 1745 was issued 'to fit her (Granado) as a bomb' but this order was reversed on July 17th 1745, and Granado remained as a sloop. It was not until 1756, that Granado was fitted for the first time as a bomb vessel from an Admiralty Order on July 26th 1756. Between the launch of Granado on June 22nd 1742, and her fitting as a bomb vessel July 26th 1756, a number of changes had been made to her configuration as compared to the original Admiralty plans; the most noticeable of these are as follows:

1. Two extra 4pdr carriage guns were added (Admiralty order of June 20th 1745) bringing the total 4pdr carriage guns to 10.
2. Two bow chaser gun ports were added allowing accommodation of the extra guns either under the forecastle as bow chasers or at the fifth gunports.
3. The mortars as shown in the Admiralty plans are two 13 inch mortars, however, when fitted as a bomb vessel this was actually changed to 1 x 13inch and 1 x 10inch mortar. This is confirmed by the provisions list on March 30th 1757, which details 50 large and 50 small shells.

It was during this first period as a bomb vessel that Granado was involved in her most active role:

On January 22nd 1759, Granado and the squadron under command of Commodore John Moore anchored off Basse Terre. The following morning the citadel and batteries of Basse Terre were bombarded. By January 24th, troops had occupied the forts of both Basse Terre and Fort Royal, the town had been devastated by fire caused by the carcasses discharged from the bomb vessels.

On February 7th, the fleet moved to attack Fort Louis at the entrance to Cul de Sac Bay. The attack began the following day and by February 15th, the bombardment ceased with the capture of the Fort.

Granado remained as a bomb vessel until March 20th 1760 and the Admiralty Order to fit her as a sloop.

Granado was again converted to a bomb vessel in August 1761, and she remained as such until she was sold on August 30th 1763, for £575. During this period Granado was involved in the action of capturing Morro Castle and El Morro in the West Indies and the capitulation of Havana on August 13th 1762.

## Getting started

Granado is an exact scale model designed using original Admiralty plans. All fittings, masts and rigging have been researched using contemporary sources and the most up to date reference material available.

Although the kit is as prefabricated as we can make it, basic woodworking skills are required. Estimated build time is between 6 & 8 months of evening work, so a work space will have to be put aside for the job. Do not remove parts from the CNC cut sheets until actually required.

Carefully study the plans in conjunction with the instructions until you are confident to tackle each stage of construction.

Patience is the key word when building any model; treat each stage as a separate project and the overall effect of the completed subject will be enhanced.

## Recommended Tool List

- 1: Craft knife
- 2: A selection of needle files
- 3: Razor saw
- 4: Small wood plane
- 5: Pin vice or small electric drill (the latter is the more recommended item)
- 6: Selection of drill bits from 0.5mm to 3mm
- 7: Selection of abrasive paper and sanding block
- 8: Selection of good quality paint brushes
- 9: Long nose pliers and wire cutters/snips
- 10: Good quality tweezers
- 11: Dividers or compass
- 12: Steel rule (300mm)
- 13: Clothes pegs or crocodile clips
- 14: Tee-Square
- 15: Good quality pencil or Edding pen
- 16: Masking tape
- 17: Good quality sharp pair of small scissors

## Paints, stains and adhesives

- 1: White PVA wood glue
- 2: Walnut wood dye/stain (for masts & booms)
- 3: Cyanoacrylate (super glue) thick and medium viscosity (Admiralty Glues, Thick (AG9103) & Medium (AG9102))
- 4: Walnut wood filler
- 5: White spirit
- 6: Matt polyurethane varnish (not satin or gloss)
- 7: Black paint for 'woodwork' (Admiralty Paints: Dull Black, AP9105)
- 8: Black paint for 'ironwork' (Admiralty Paints: Matt (Metal) Black, AP9106)
- 9: White paint (Admiralty Paints: Matt White, AP9111)
- 10: French blue paint (Admiralty Paints: French Blue, AP9117)
- 11: Yellow ochre paint (Admiralty Paints: Yellow Ochre, AP9115)
- 12: Red ochre paint (Admiralty Paints: Red Ochre, AP9116)
- 13: Gold paint (Admiralty Paints: Gold/Brass, AP9125)
- 14: Brown (wood/leather) paint (Admiralty Paints: Wood (Walnut) Brown, AP9119)
- 15: Matt Flesh paint (Admiralty Paints Matt Flesh, AP9120) (Required if painting to the Heraldic colour scheme as outlined in Transom Decoration (**Note:**) on Page 29)
- 16: Black Indian ink

We highly recommend the use of Admiralty Paints; this is a new brand of paint which contains a specific range for 17th / 18th / 19th Century Man of War colours. This range of scale paints has been colour matched to the Admiralty colours, as still used on HMS Victory in Portsmouth. Unlike other manufacturers, these **are not** toy paints and have been designed specifically for use on model ships to give consistent coverage and colour. In order to achieve this, they may contain lead / lead chromate and as such should not be used on children's toys or surfaces that may be chewed.

## Before You Begin

Before you start building this model a little forethought now will be well worth the time given to it throughout the building process.

Although the majority of suggestions will be second nature to the more experienced modeller, this kit and others in the series, can be built by the less experienced, given sufficient information.

The instructions and parts manual has been compiled to give as much information as practicable together with additional diagrams, photos and a complete set of actual scale technical plans.

Wherever possible we have tried to explain technical terms, in particular nautical terminology, but it pays to have a good selection of reference books to hand.

At a scale of 1:64, the model has an overall size of 785mm (L) x 340mm (W) x 590mm (H) and you should consider this when setting aside a work area for the build. You will also need regular access to both sides of the model, especially when rigging, you will therefore need an area large enough to walk around the model or large enough to easily turn the model through 180 degrees without risking damage. Also ensure the cords for any power tools will not interfere with the model.

A 5mm ply stand is provided with the kit. This will primarily be used to support the hull during the build process. Ideally this stand should be secured to an adequate baseboard. Upon completion, the model can be placed on a display stand of your choice.

During the build it will be necessary to sand down large areas, after the first and second planking and at other stages, it is therefore advisable to work in a well ventilated area and / or wear appropriate protection. The same applies when using paints, stains, glues, fillers etc. Good lighting is also essential to the modelmaker.

The structural parts of the model are cut from high quality birch plywood, the remaining wood parts are cut from high quality walnut ply and solid walnut.

Take particular care when removing parts with a craft knife and ensure all parts are identified and marked with pencil before removal. Lay the sheet from which you are going to cut the parts on a rigid flat cutting board for removal. Use a heavy-duty craft knife with a good strong blade to cut through the tabs holding the parts in place. It will also be an advantage to paint the brass etched fittings prior to removal from the sheet; they can then be touched up again when in place. Alternatively, when cutting brass or copper parts, a good pair of stout scissors will suffice.

Before each stage of construction, study both the manual and the plans until you are confident in the task ahead.

The majority of the model will be painted during various stages of the build. It is important to think ahead to the next stage in the construction process and paint the various parts at a convenient time, usually before securing on the model. It is often a good idea to paint parts for the next stage and while they are drying you can be working on the current stage.

Wherever possible, offer the parts together in a 'dry' fit before final assembly.

## Before Planking the Hull: A Note

In order that the final width of the planked hull will match the width of the stern post, some sanding will be required prior to both first and second planking.

Before the first planking is applied as described on page 6:

1. Using **Plan Sheet 1** for reference, mark the bearding line onto the keel.
2. Gently sand the shaded area, sternwards, until you have a taper that runs from 5mm wide at the bearding line to **2mm** wide at the stern.
3. Continue as instructed with the first planking and upon completion the width at the stern will be 5mm.

Before the second planking is applied as described on page 7:

1. Note the bearding line onto the first planking, again using **Plan Sheet 1** for reference.
2. Gently sand the shaded area, towards the stern, until you have a taper from the bearding line to **3mm** wide at the stern.
3. Continue as instructed with the second planking and upon completion the width at the stern will again be 5mm.

## Initial Hull Construction

Remove the main keel (11) from the 5mm ply sheet together with the 5mm walnut pieces, the stem (27), the false keel (28) and the stern post (29).

Although the stern post should be identified and removed, it should not be glued into position until a later stage having regard to the instructions re: the keel and hull reduction from the bearding line to stern post. Glue the stem and false keel into position along the ply keel using PVA wood glue. It is important that this whole structure remains perfectly flat, straight and in line whilst drying. Tape and or small clamps can be used to assist.

A suitable building board should be considered at this point. Construct the board from MDF or similar sturdy material. The board should be long enough and wide enough to protect the hull throughout construction. Consideration should also be given to the way in which the model will be displayed; it is recommended that using a 3mm drill, drill two holes vertically up into the keel centrally, one directly behind bulkhead 7 (far enough back to support the model but not so far back as to interfere with the bearding line as discussed on page 3), and one centrally between bulkheads 3 and 4. Drill each of these holes approximately 30mm deep and glue a piece of 5mm scrap wood to either side of the keel, at the hole, but positioned approximately 5mm from the bottom of the ply keel so as not to interfere with the planking. Upon completion of the model, two brass or stainless steel rods can be used to support it on your chosen display board.

Identify and remove, from the 5mm ply sheet, bulkhead 1 (1) and, from the 3mm walnut sheet, the bowsprit step (72). Glue the bowsprit step into position (jigsaw fashion) on bulkhead 1 as shown (*Photo 001*).

Identify and remove bulkheads 2-10 (2-10), from the 5mm ply sheet.

**Note:** The false bulkhead (15) is not used during this building sequence; it will be fitted and glued later, during the construction of the quarterdeck bulkhead assembly.

Clean out any debris from the slots of the bulkheads and the keel and push fit the bulkheads into position making sure that they sit firmly and squarely into the keel.

**Note:** Bulkhead 1 should be positioned such that the 3mm bowsprit step is in the forward face of the bulkhead, it is also a good idea to varnish the bowsprit step at this stage to prevent any unnecessary staining from glues etc. as the after face will be visible on the completed model.

**Note:** Take particular care in the location of bulkhead 7, that it is positioned into the correct corresponding slot in the keel. It could easily be confused with the slot for the mizzen mast.

Once that you are happy with the fit of the bulkheads they can be glued into position, ensuring that they remain level athwartships and at right angles to the keel, they must also be parallel to each other. This entire structure should now be put to one side and allowed to dry thoroughly.

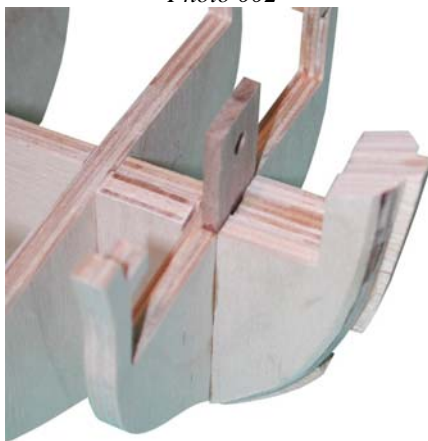
Identify and remove, from the 5mm ply sheet, the plank termination patterns (12 & 13). They should be glued into position as shown on *Plan Sheet 1* and (*Photo 002*).

The outer stern extensions (56) can now be identified and removed from the 3mm ply sheet and glued into position in the outer slots, after face, of bulkhead 10. The inner stern extensions (55) can also be identified and glued into position in the inner slots, after face, of bulkhead 10. All of these extensions should be correctly fitted and glued, it is important that they are at right angles to bulkhead 10 and that they sit securely into the slots as shown (*Photo 003*).

*Photo 001*



*Photo 002*



*Photo 003*



## Gunport Patterns

The gunport patterns (150) should now be identified and removed from the 1.5mm ply sheet. These patterns will be glued into position in conjunction with the first lower planking of 1.5x5mm lime. However, it is important that this whole section 'Gunport Patterns' should be read through and understood prior to any fitting. The gunport patterns themselves form an integral part of the building process.

When the patterns are ready to be glued into position a dry fit should be conducted first to ensure their correct positioning. With the keel and bulkhead assembly thoroughly dried, some bevelling of the bulkheads and plank termination patterns will be required. Using a length of 1.5x5mm lime, lay the strip along the edges of the bulkheads and form it around the shape of the hull. You should clearly be able to see where the bevelling will be required to allow the strip to sit 'flush' against each bulkhead.

**Note:** The area to be bevelled also includes the location of the gunport pattern.

It will be necessary to bevel the fore edges of bulkheads 1 & 2, the aft edges of bulkheads 8 & 9 and both the underside and aft edges of bulkhead 10. The termination patterns, fitted previously, should also be bevelled accordingly.

**Note:** Where the gunport patterns lie between bulkhead 8 and the aft edge of the outer stern extensions, the run along their top edge should be virtually straight.

Firstly, the gunport pattern shapers (14) should be identified and removed from the 5mm ply sheet and precisely glued together, one on top of the other forming a pattern with overall thickness of 20mm. It is essential that this shaper is used to prevent any distortion of the gunport pattern at the site of the forward gunports.

With the gunport pattern shaper assembled and thoroughly dried, soak the front of the gunport pattern, from the second gunport forward, in water for approximately 20 minutes. Once soaked, the forward end should be slotted into the gunport pattern shaper and formed around it. Hold the pattern in position against the shaper with clamps, tapes, rubber bands or similar for 30-45 minutes to ensure the pattern retains the shape when removed (*Photo 004*).

**Note:** Take particular care at the positions of the gunports when easing around the shaper to ensure there is no distortion.

**Note:** Remember to turn the pattern over when shaping the second gunport pattern to make one port and one starboard pattern. Upon completion do not throw away the shaper as it is required again at a later stage.

After shaping, the gunport patterns can be dry fitted and then glued into position using PVA wood glue. The following instructions will assist in the fixing of the pattern to the hull, you should read through them first, noting that they are not in any specific order but rather must all be considered together:

1. The front leading edge of the pattern should be slightly bevelled to allow the pattern to sit flush against the stem.
2. Any excess in the length of the pattern should be removed from the after end such that it sits flush to the after edge of the outer stern extension pattern, this is essential and must be achieved (*Photo 005*).
3. The lower notch in the pattern should lie 50/50 across bulkhead 7 as shown on **Plan Sheet 1** and (*Photo 006*).
4. The top edge of the pattern should be flush, at the bows, with the top of the bulkhead 1 & 2 uprights. Likewise the pattern should be flush at the top with the top of the outer stern extensions.

After a dry fit, the pattern should be pinned and glued into position along the edges of the bulkheads and bulkhead uprights, noting that the bulkhead uprights will be broken off at deck level during a later stage of construction.

This procedure should be repeated for the opposite side taking care that both patterns are symmetrical, checking across the hull to ensure that the gunport cut outs of each pattern (port and starboard) are aligned to those opposite. This whole assembly should now be set aside to dry thoroughly, offer support to the assembly to prevent distortion.

*Photo 004*



*Photo 005*

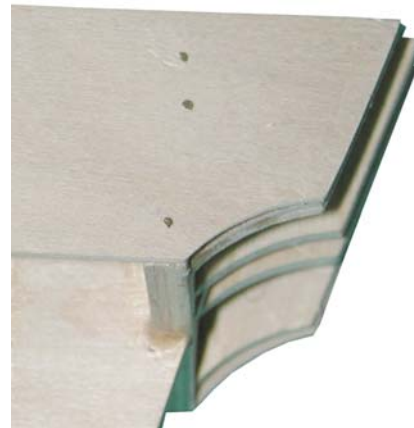




Photo 006

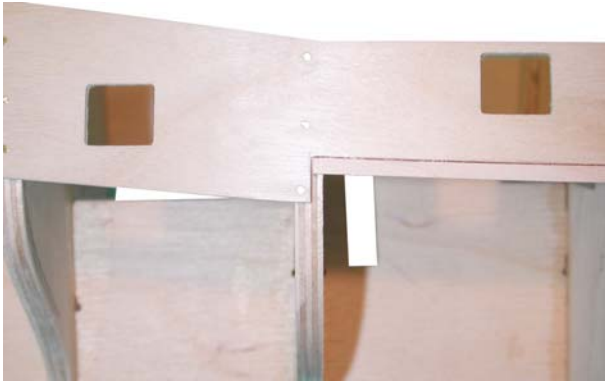
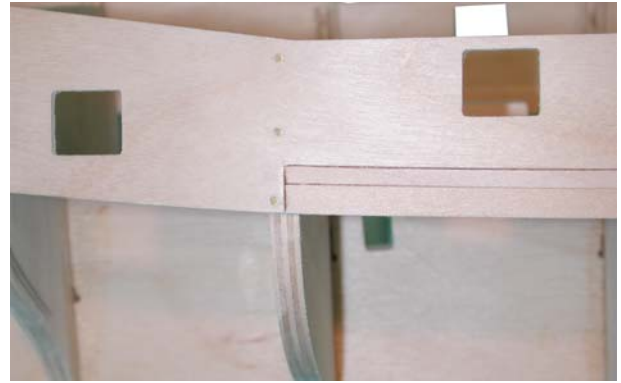


Photo 007



## First Planking

Having tapered the keel from the bearding line aft as previously instructed on page 3, the first planking, of 1.5x5mm lime, can be started below the gunport pattern.

The first plank to be laid each side is a length of 1.5x5mm lime trimmed to 1.5x3mm. This plank will run from the notch in the gunport pattern at bulkhead 7, around to the bows as shown on **Plan Sheet 1** and (*Photo 006*). The second plank is of 1.5x5mm lime and also runs from bulkhead seven to the bow, the lower edge of this plank should form a continuous line with the lower edge (aft) of the gunport pattern (*Photo 007*).

The third plank and the remainder of the first planking is from 1.5x5mm lime and will run the whole length of the hull bearing in mind the following points:

1. Ensure all bulkhead bevelling has been achieved.
2. The planking will commence from the underside of the gunport pattern down to the keel, each plank should be pinned and glued into position with PVA wood glue. As the plywood bulkheads are very strong, it is recommended that 0.5mm holes be drilled into the bulkheads before the insertion of the pins. When pushing the brass pins into the planks and bulkheads, leave at least 3mm protruding so that they can be easily removed once the planks are secure.
3. Before pinning and gluing the lime planking into position, it should be soaked in water for a short period. This will assist in both the shaping of the plank around the hull and the tapering of the plank.
4. At the bows, the planking should lie against the already bevelled plank termination patterns and butt up against the stem. For guidance, the lime planking will follow the line of the gunport pattern.
5. At the stern, the lime planking should terminate flush with the after face of bulkhead 10. Where the planking runs against the underside of bulkhead 10 you may find it beneficial to bevel and secure some scrap 5mm ply wood to the forward face of bulkhead 10, thus increasing the surface area for gluing the planks to.
6. On the underside of the hull, the sides of the final planks will butt up against the false keel.

**Note:** For best results, all planks should be allowed to lie naturally, do not try to artificially bend them with nippers / plank benders, or force them into position. As you start down to the curved side of the bow, the planks will need to be tapered to follow their natural run. In order to determine the amount of taper required for each plank to lie naturally, lay the plank from the 4th bulkhead around to the bow; mark the excess area of the plank that overlaps the plank immediately above it. Repeat this process for the stern also.

Before cutting the taper into the planks, soak them in warm water for an hour or so as this will minimise the chance of the knife blade following the grain of the wood rather than the edge of the steel rule.

Lay the first wet plank to be tapered on a clean, flat surface (a cutting mat is ideal). Press firmly with a steel rule onto the marked taper line on the plank and score down the line with a heavy-duty craft knife **several times** until the excess is cut off (**do not attempt to cut the plank in one pass!**).

Use this planking method right down the hull. When planking is almost complete you will notice triangular shaped gaps at the stern (and bow to a lesser degree). This was also the case in full size practise, although not so simplified. The use of triangular shaped planks (called stealers) are needed for these gaps. Cut these to shape using the excess limewood from the ends of the planking and glue them into the gaps (shown in *Photo 008* and *Photo 009* for the second planking but the first planking uses the same principles).

Trim the excess stern planks at bulkhead 10 to shape, apply a coat of watered down PVA wood glue to the inside surface of the first planking and leave the hull to fully cure for at least 24 hours.

The next stage is to sand the hull with a coarse grade abrasive paper, followed by a medium grade. This will obviously entail a few hours work but it will form the basis for the second planking, remember to remove all pins before sanding begins.

The building cradle (16-18) can now be constructed; ideally this should be squarely and firmly secured to a building board of your choice.

Photo 008



Photo 009



### Second Planking, From the Wale to the False Keel

The second planking is laid using 1x4mm walnut, as always the planking should be soaked for a short period before required. The gluing of the second planking differs from the first as the whole under surface of the walnut strip is glued to the surface of the first planking as well as edge to edge. Also, the best glue to use for the second planking is medium super glue. This is to avoid the use of pins, eliminating pinholes that would have to be filled prior to finishing. Super glue will stick the planks as well, if not better than, PVA wood glue. Around the bow area, where the walnut strip has been soaked in water, take extra care – wet wood and super glue will bond more or less instantly! Great care is needed to attain as neat a job as possible to minimise the need for filling.

Before progressing, taper the first planking from the bearding line aft as previously instructed on page 3, the effects of this taper can be seen in (Photo 009).

The first plank to be laid of the second planking is also the lowest plank of the wale as shown on **Plan Sheet 1** (still 1x4mm walnut) the vital measurements are as follows:

1. At the bows, the lowest edge of the plank is 63mm up from the bottom edge of the false keel.
2. The lowest edge of the plank directly under the third gunport is level with the waterline, 53mm from the bottom edge of the false keel.
3. At the stern, the bottom edge of the plank blends in 1mm below the lowest corner of the gunport pattern, where the stern counter will be fitted at a later stage.

Once this first walnut strip has been laid, two more strips of 1x4mm walnut should be laid directly above it, these three strips now laid also form the basis of the wale. With these three strips laid on each side of the hull, the wale proper should be laid; this is done by gluing three further 1x4mm walnut strips directly onto the three just laid, each side.

You will notice that the upper planks intersect the aftermost cabin light and this area should be cleared taking care to trim them to exactly the same size as the opening in the gunport pattern. With the wale in position it can now be sanded smooth and painted dull black.

The second planking, **below the wale only**, can now be continued with. Work down the hull on alternative sides when planking, until you reach the false keel. The same principles as applied to the first planking should be adhered to.

Once the planking below the wale is completed and has dried thoroughly, it can be sanded smooth, the waterline can be marked on and the area from the waterline down painted white. The whole of the exposed stem, above the waterline should also be painted dull black (white below the waterline).



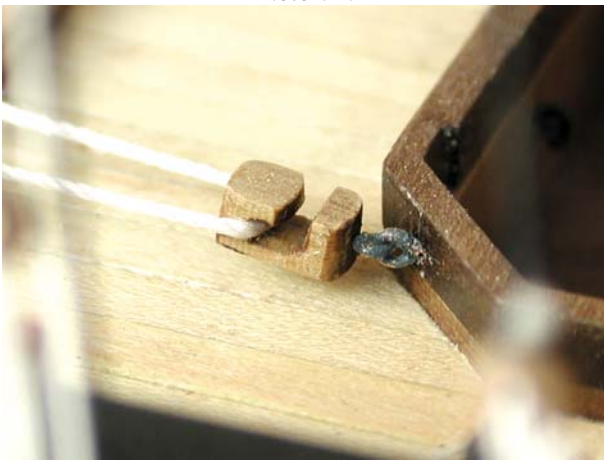
## The Upper Gun Deck

Identify and remove the upper gun deck (195), from the 0.8mm ply sheet.

Using a pair of long nose pliers or side cutters, remove the bulkhead uprights of bulkheads 1-7, down to deck level and sand smooth to the bulkhead camber. Before fitting the gun deck, mark on and draw a centre line along its length, with this done, offer the ply deck into position and check for any high spots across the bulkheads. When satisfied with the fit, pin and glue the deck into position noting the following points:

1. The locating holes, in the deck, for the masts must sit directly and centrally over their respective holes in the keel. Similarly for the mortar pit cut outs, noting that these cut outs are slightly oversized to allow easier positioning, this loose fit will be compensated for when planking the deck.
2. With the mast holes and mortar pit cut outs aligned, you will notice the slots in the after edge of the deck, for the curved quarterdeck bulkhead support pillars, should also align laterally to the slots in bulkhead 7, however, the fore edge of these slots will not quite align to the fore face of this bulkhead, this is correct **do not file the slots out**.
3. The centre line should be positioned to the top; it will be required during the planking of the deck at a later stage.

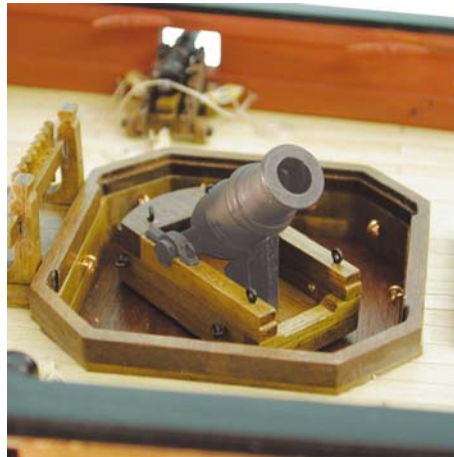
*Photo 010*



*Photo 011*



*Photo 012*



## The Mortar Housings

Identify and remove the mortar pit surround base (63), the mortar pit base (155), the mortar pit surrounds (30), and the mortar pit surround tops (45). Using **Plan Sheet 2, 'Mortar housing assemblies'** for reference, assemble the mortar pit surrounds as shown, taking care that each component fits true, centrally and square to the mortar pit surround base.

When this basic assembly has thoroughly dried, 10 ringbolts will need to be fitted to each housing. The ringbolts are constructed using 40 copper eyelets. Gently open one copper eyelet enough to pass the ring of a second copper eyelet through, with the second copper eyelet in position, gently close the first eye again and trim the 'stem' off one eyelet. Repeat this until you have twenty ringbolts and paint matt (metal) black. Drill 0.65mm holes through the mortar pit surround, from outside in, to take the ringbolts. The holes should be drilled centrally, on the vertical plane, through the middle mortar pit surround located as shown on **Plan Sheet 9, 'Mortar housing ringbolt arrangement'**. When the ringbolts have been fitted to the inside face of the mortar pit surround, trim the 'stem' flush with the outside of the mortar pit surround.

Once varnished and dried, the housings can be glued into their respective positions. The central locating hole for the mortar bed should sit directly over the centre line of the keel. Also, the housings should sit level and with the outer faces running parallel to the keel.

**Note:** Before gluing the after (10") mortar housing in position, two 0.65mm holes must be drilled, running fore and aft, into the forward quarters of the mortar pit surround top, approximately 20mm either side of the centreline and 3.5mm down from the top face. Into these holes (one each side) glue a copper eyelet, painted matt (metal) black, with the eye running up and down, ready to accept the messenger snatch block at a later stage of construction as shown (*Photo 010*).

Again using **Plan Sheet 2, 'Mortar housing assemblies'** for reference, identify and remove the lower longitudinal housing (60), the upper longitudinal housing (61) and the mortar pit traverse bulkhead (62). Clean up the lower longitudinal housing and dry fit it into the mortar pit surround as shown, taking care that the profiled 'slot' faces outboard. To form the removable strongback, cut a length of 3x3mm walnut approximately 10.75mm long to fit into the slot between the mortar pit surround and the lower longitudinal housing. Glue a length of 1.5x1.5mm walnut centrally to the top face of this strongback. Make up the upper longitudinal housing and mortar pit traverse bulkhead assembly as shown, gluing the mortar pit traverse bulkheads in between the lower longitudinal housings, taking care that the assembly remains square. This assembly now sits over the lower longitudinal supports, you will notice that at this stage it will not sit down flush against them, to achieve this you must gently sand the top face of the 1.5x1.5mm walnut of the strongback, **do not** sand the bottom face of the 3x3mm walnut.

Identify and remove the mortar pit canopy ends, outer and inner, (156 & 157). The canopies are best assembled 'in situ' on the upper longitudinal housing and mortar pit traverse bulkhead assembly; take care, however, not to glue the canopies to this assembly.

Position the outer canopy ends on the upper longitudinal housing and mortar pit traverse bulkhead assembly, outside the rabbet, and position the inner canopy ends half way along (approximately 26mm), on top of the rabbet.

**Note:** The orientation of the profiled slot on the inner canopy ends is unimportant, this simply marks the cut line for the area beneath to be removed upon completion of the canopy assembly.

Start by gluing the side planks into place, this plank is from 1x5mm walnut, the bottom edge runs flush along the upper longitudinal housing, outside the rabbet and flush with the lower edge of the outer canopy end, as the inner canopy end is raised up on the rabbet it will not be flush to this. These side planks will also sit proud of the top edges of both the inner and outer canopy ends, do not trim this as it will eventually form a flush edge to the top planking. Repeat for the second half of the canopy. Allow this assembly to dry thoroughly.

The canopy top planking is constructed next from 1x4mm walnut but each plank is reduced and bevelled slightly to an overall width of approximately 3.5mm. The first plank is laid down the centre line of the canopy, it is an advantage for the aesthetics of the ship to construct the pair of canopies for each individual mortar housing from one length of 1x4mm walnut, i.e. lay the central plank to the first half of the canopies and then, continuing with the same length of walnut lay the central plank of the second half of the canopy. Three further planks will need to be laid either side of these central planks to finish the assembly.

The outer planks can now be bevelled to the camber of the canopy top planking.

Four ringbolts per canopy half (total 16 ringbolts from 32 copper eyelets), constructed as before, must now be secured one into each corner of each canopy as shown (*Photo 011*). With the canopies completed, the area below the profiled slot on the inner canopy end can now be removed by cutting through at the slot and sanding smooth.

The side housing covers are assembled next from 0.5x3mm walnut. Glue three lengths of 0.5x3mm walnut, each 30mm long, edge to edge forming a 'sheet' 30mm by 9mm. Cut out the paper side housing cover template from **Plan Sheet 9, 'Side housing cover templates'** and lay it over the 'sheet' and trim the sheet to size. When done, remove the paper template and plank one side of the resultant wooden sheet at right angles, i.e. from port to starboard and trim to size. This will result in side housing covers approximately 1mm thick, repeat this process until you have 4 port and 4 starboard covers. Each housing cover should now be offered up into position and gently sanded to fit – with the three fore and aft planks to the top. Two ringbolts must now be secured to the top face of each side cover as shown (*Photo 011*) (total 16 ringbolts from 32 copper eyelets).

Upon completion of the mortar housings, the whole assembly and component parts should be lightly varnished and can either be glued together to form a solid structure or left to dry fit as authentic removable components.

## The Mortar Beds

The assembly of the 10" mortar bed is identical to that of the 13", as follows. Identify and remove the mortar bed base (64/68), timber baulks (65/69), upper baulks (46/47), cheeks (66/70) and transverse piece (67/71). Using *Plan Sheet 2, 'Mortar bed assemblies'* for reference, assemble the mortar pit bases as shown. Glue the timber baulks to the base, ensuring the sides and after curved edge all align. The transverse piece can next be positioned onto the base, across the forward face of the timber baulk. Now glue the upper baulk to the timber baulk, again ensuring the sides and after curved edge all align and with the profiled curved edge of the upper baulk to the top. The cheeks are now fitted against the forward face of the upper baulk and the top face of the timber baulk. A length of 2mm dowel, 7mm long can now be located into the hole of the mortar bed, this simulates the iron spindle to locate the bed into the housing base and allows it to rotate.

Identify the correct mortar, chock and hinged trunnion cap for each bed assembly. Position the mortar into the trunnion slot of the cheeks, and dry fit the hinged trunnion caps, bending them around the mortar trunnion, noting that the end of the hinged trunnion cap with a hole through it is positioned to the front. When you are happy with the fit, remembering that you must allow enough 'play' for the mortar to be elevated, secure the hinged trunnion cap into position with superglue. When the glue has thoroughly dried, drill a hole down into the cheek, through the hole in the hinged trunnion cap, into which a copper eyelet is to be positioned, with the ring running fore and aft as shown on (*Photo 12*). Eight more copper eyelets are to be positioned into the mortar bed as shown on *Plan Sheet 9, '13" mortar bed eyelet arrangement' & '10" mortar bed eyelet arrangement'*. The chock can either be glued into position against the underside of the mortar as shown on (*Photo 12*) or left in the mortar housing to allow the mortar to lie flat.

**Note:** The mortar, chock, copper eyelets and hinged trunnion cap should all be painted matt (metal) black, the bed itself is lightly varnished.

## The Upper Gun Deck Planking

The upper gun deck is planked with 0.5x4mm maple. The first planks to be laid on the upper gun deck should run fore and aft along the outboard sides of the mortar housings as shown on *Plan Sheet 2, 'Main deck planking'*. This may appear to be unconventional, but because of the complex shape of the housings, it is the easiest way in which to plank the deck.

Where the planks intersect the locating slots for the curved quarterdeck bulkhead support pillars, these slots should be marked onto the planking but do not trim the planks at this stage. They are best trimmed off when the curved quarterdeck bulkhead support pillars are finally positioned, this will allow for any fore and aft or lateral movement required when fitting the bulkhead. The planking should also run all the way forward to the bows.

Continue to plank the deck outboard to each bulwark. With the outboard deck planked, the central area can now be finished by working inboard from the first planks laid. Cut, trim and dry fit the planks to ensure they meet accurately at the centre line drawn on previously. Remember to cut the openings for the masts and hatches etc. as you progress. When the planking is complete, apply a coat of varnish to seal.

**Note:** For added authenticity you can lay the planks with a 'three-butt shift' as shown on *Plan Sheet 2, 'Main deck planking'*, in this case the planks should either be cut to a length of 130mm or laid full length and the join line, every 130mm, scored into the plank with a sharp knife (visually, this latter method often looks the most appealing). The end of each subsequent plank should then be offset from its neighbour by 32.5mm such that the ends of every fourth plank only align.

## Inner Bulwark Patterns

Identify and remove the inner bulwark patterns (158) from the 1.5mm walnut sheet. When these bulwark patterns are shaped for fitting it is vital to realise that the profiled slot towards the after end will be positioned to face inboard as it forms an integral part of the curved quarterdeck bulkhead assembly.

The inner bulwark pattern should be soaked in water, for a **maximum** of 30 minutes, and then formed around the gunport pattern shaper. It should be dealt with in the same manner as the gunport pattern; ensuring one port and one starboard inner bulwark are formed by turning the gunport pattern shaper over.

When you are happy with the shape of the inner bulwark pattern, it can be dry fitted against the inner face of the gunport pattern, checking that it fits fairly flush along the decking and that the ports all marry up accurately, some light sanding may be required (any gaps between the inner bulwark pattern and the deck will be covered by the spirketting at a later stage). The forward edge of the inner bulwark pattern will also require trimming to allow it to butt up against the plank termination patterns either side of the upright of the keel. When satisfied with the dry fit, glue it firmly into position using clamps where possible, all the time checking that the gunport cut outs remain aligned.

## Lining the Gunports Without Lids

The second through sixth gunports each side do not have lids. They should now be lined using 1x4mm walnut. Glue the lining into position, bottom and top first then each side. When the lining has been applied and allowed to dry thoroughly it should be sanded back flush to both the inner bulwark pattern and the outer gunport pattern. The remaining chase ports and cabin lights with lids will be lined in a different manner at a later stage of construction.

## Completion of the Second Planking

The second planking from the wale up can now be completed with 1x4mm walnut strip. This planking should be done as before, soaking the planks, but there should be little or no need to taper any of these remaining planks. However, the topmost plank will need to be trimmed flush to the top of the gunport pattern. Each of the gunports and cabin lights should be cleared as you progress. The planking over the lined gunports should be trimmed flush with the inner surface of the linings while the planking over the currently unlined chase ports and cabin lights should be trimmed flush with the openings in the gunport pattern. It is advisable at this stage to sand the hull smooth, touch up any paint and seal exposed timber with varnish. The stern post (29) should also now be fitted and painted white below the waterline.

## Lining the Gunports With Lids

The chase ports and cabin lights have lids or, in the case of the chase ports, double doors. The way in which these gunports are lined differs from those gunports without lids. They are lined with 1x4mm walnut strip but this lining must be set back 1mm from the ships side, refer to **Plan Sheet 1, 'Gunports with lids'**. It is of absolute importance that the linings are set back into the openings by 1mm. The gunport lids themselves have been cut to allow for this and the brass etched hinges have also been designed likewise. The hinges will be glued into position onto the gunport lid and the ships side as shown on **Plan Sheet 1, 'Attaching gunport lids and hinges'**. If the recessing has not been carried out correctly then the hinges will not fit. The lids themselves will be very delicate when positioned and as such will be fitted at a later stage. With all of the gunports and cabin lights now lined, they can be painted red ochre, the outboard face of the lining for gunports with lids however, should not be painted red ochre but left natural and varnished; only the inside faces and inboard edge will be painted red ochre.

**Note:** The inboard edge of the lining should be sanded flush to the inner bulwark.

## Inner Bulwark Spirketting

The spirketting is formed using a length of 1x7mm walnut strip. Dry fit it against the inboard side of the inner bulwark so that it lies level with the bottom edge of the upper gun deck gunports and flush along the deck (*Photo 013*). This plank butts up against the plank termination patterns in the bow (some soaking may be required) (*Photo 015*) and runs aft in one continuous length to the profiled slot in the after end of the inner bulwark pattern, which forms part of the quarterdeck bulkhead screen and should be trimmed to follow this. It is imperative that the spirketting is trimmed accurately to this slot and to achieve this you may find it of benefit to position a piece of scrap 0.8mm ply into the slot, there should be no gaps between this scrap material and the spirketting as shown on **Plan Sheet 2, 'Inner bulwark spirketting & sheer rail'**.

*Photo 013*



*Photo 014*



*Photo 015*



*Photo 016*



## Inner Bulwark Sheer Rail

The inner bulwark sheer rail is formed using a length of 1x10mm walnut strip. Dry fit the sheer rail against the inboard side of the inner bulwark (some soaking may be required), you should consider each of the following points when positioning the sheer rail: (the position of the 'break of forecastle' is shown on **Plan Sheet 1**)

1. The lower edge of the inner bulwark sheer rail should align to the top edge of the second through sixth gunports and as such should run parallel with the top edge of the spirketting (*Photo 013*, note the capping, which is fitted at a later stage, is also shown in this photo).
2. The top edge of the sheer rail should be approximately 2.5mm below the top of the inner bulwark pattern at the break of the forecastle, as shown on **Plan Sheet 2, 'Inner bulwark spirketting & sheer rail'** and (*Photo 014*) so that when the forecastle deck is positioned onto the sheer rail and planked, it is seated 1mm below the top of the inner bulwark at this point.
3. The sheer rail continues forward and should lie level with the top of the keel and termination patterns at the bows (*Photo 015*). The outboard edges of the forecastle deck, when fitted, will sit on this sheer rail and the termination patterns and will also lie on the bowsprit step.
4. You will notice that from the break of the forecastle to the bows, the sheer rail and spirketting no longer run parallel and indeed the sheer rail fouls the chase port. This is correct and the chase port should be cleared as shown (*Photo 015*). Similarly the lower edge of the sheer rail forward to the plank termination patterns should be tapered as shown.
5. When the plank has been glued into position and thoroughly dried, the top edge, aft from the break of the forecastle, should be trimmed and sanded flush with the top edge of the inner bulwark pattern (*Photo 015*).
6. As with the spirketting, the after edge of the sheer rail should be trimmed precisely to follow the profiled slot in the after end of the inner bulwark pattern.
7. With the spirketting and sheer rail in place, the whole of the inner bulwark should be painted red ochre.

## Upper Gun Deck Gratings, Hatches, Coamings and Spanshacks

Starting from the bows, the first opening to be lined, with 1.5x1.5mm walnut, is for the galley flue. It is situated directly behind the bowsprit step and when lined, the opening should measure 6mm x 6mm to accept the flue uptake at a later stage.

The fore access hatch is to be lined with 2x3mm walnut and fitted with a grating. The lining should be orientated such that the lining is 2mm wide and stands 3mm from the deck. Make up a grating set from the grating strips (301) which are to be slotted together as shown (*Fig 001*) and, when completed, brush on watered down PVA glue to secure the strips. Once dry, trim and sand the grating to measure approximately 24mm by 13mm. With the grating made up and trimmed to size, glue the coaming strips around the outside edge, remembering their correct orientation and ensuring the grating is flush with the top edges of the coaming. When thoroughly dried, this whole assembly can be glued into position over the locating hole in the deck.

The fish davit span shackles (220) should be identified on the brass etched sheet and painted matt (metal) black. Drill two 0.65mm holes (one each side) into the deck to accept the spanshacks, they should be located approximate 1mm forward of the fore mortar housing and 29mm from the centreline, using **Plan Sheet 2, 'Main deck layout'** for reference. Bend the spanshackle over, at the hinge point, to allow it to lie on the deck, and fix into position.

The main hatch, located between the mortar housings is to be lined next with 2x3mm walnut orientated as per the fore access hatch lining. Locate and identify the main hatch cover (fore) (165) and the main hatch covers (166). Make up the lining, off the model, which should have overall outside dimensions of 29mm by 29mm, this overall outside measurement will be critical when laying the deck reinforcement planking shortly, as a result, the overall inside dimensions should be 25mm by 25mm to accurately fit the main hatch covers. When you are happy with the lining it can be glued into position over its locating hole in the deck, again it is critical for the laying of the deck reinforcement planking that this lining is glued on centrally and squarely. With the lining in position, a recessed lip must be made up using 1.5x1.5mm walnut. This lip will provide the support for the main hatch covers and should be positioned 1.5mm down from the lining top edge so that the covers will sit flush with the top of the lining when in position.

**Note:** The fore hatch cover should be positioned to the front of the lining and with the cut out semi-circles forward into the corners of the lining. The 1.5x1.5mm walnut recess will need to be cleared of the area below these semi-circular cut outs to allow free passage of the anchor cable when rigged.

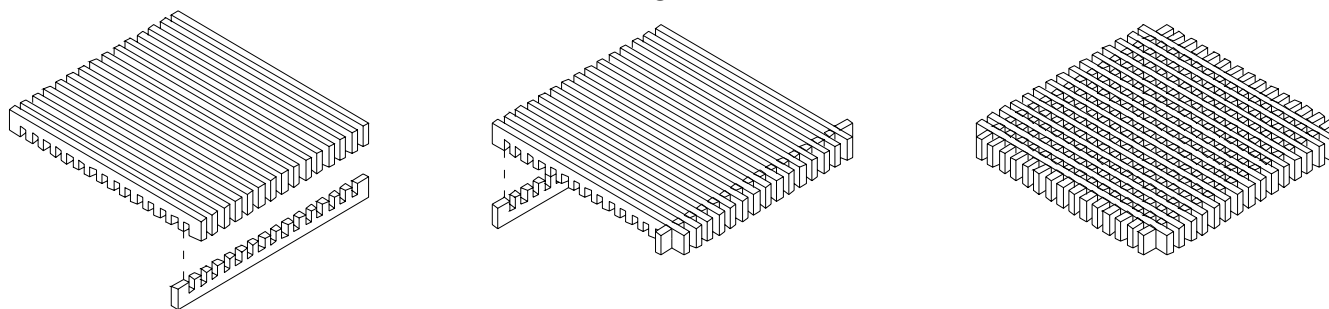
All four hatch covers should be fitted with a pair of ringbolts from 16 copper eyelets positioned as shown (*Photo 016*). The hatch covers should be varnished and can either be glued into position or dry-fitted as removable components.

Referring to **Plan Sheet 2, 'Main hatch & deck reinforcement'**, the deck reinforcement planking can now be laid between the main hatch lining and the forward mortar housing using 2x5mm walnut and 2x4mm walnut. Cut one length of 2x5mm walnut to fit between the main hatch lining and the forward mortar housing. This plank can then be laid down the centre line.

Remembering to clear the mast hole as you progress, six planks (three each side) of 2x4mm walnut should also be laid. When these planks have all been laid their outer edge should form a continuous run with the outer edges of the main hatch lining, i.e. an overall width of 29mm.



Fig 001



## Fitting the Forecastle

**Note:** If you are intending to fit a pair of 4pdr cannons at the chase ports they will need to be assembled, fitted and rigged prior to the fitting of the forecastle as access will be very limited once the forecastle is in place. Instructions for the assembly and fitting of the 4pdr cannons can be found on pages 19 & 20 (*Photo 017*).

Identify and remove the forecastle aft support beam (25) from the 5mm walnut sheet and the forecastle deck (197) from the 0.8mm ply sheet.

Offer the forecastle deck into position and trim it to fit as necessary (dry fitting only at this stage) with the following consideration in mind, it will be of benefit to identify, with a mark, the top and bottom faces on the deck:

1. The 6mm by 6mm cut out in the deck must be located directly and squarely above the 6mm by 6mm galley flue opening in the upper gun deck beneath.
2. The forecastle will sit onto the 'lip' created by the inner bulwark sheer rail, and across the top of the bowsprit step.
3. The camber which will be created by the bowsprit step and the forecastle aft support beam, when fitted, must be adhered to.

When you are happy with the fit of the forecastle and with it dry fitted in place, gently mark onto the inner bulwarks of the hull the position of the aft edge of the forecastle. The forecastle should now be removed and the **underside** of the 6mm by 6mm opening for the galley flue can be lined with 1.5x1.5mm walnut, however, only the forward and side edges should be lined, **do not** line the after edge as it will foul the forecastle aft support beam when fitted.

The forecastle aft support beam should now be offered into position on the hull, at the position of the after edge of the forecastle previously marked onto the inner bulwark. The outside edges of the support beam should be trimmed to dry fit neatly flush against the inner bulwark at this point (*Photo 017*).

When you are happy with the fit of both the forecastle deck and the aft support beam, they should be glued into position together, with the support beam located under the forecastle deck and flush with the after edge (*Photo 018*).

The galley flue between the upper gun deck and the forecastle can now be fitted (*Photo 018*). The flue is cut from a length of 6x6mm walnut and painted matt (metal) black. It is glued into position down through the hole in the forecastle, into the hole in the upper gun deck. When fitted and thoroughly dried, it should be sanded flush to the forecastle ply deck.

*Photo 017*



*Photo 018*



## Planking the Forecastle

The forecastle is planked with 0.5x4mm maple. Mark the centreline down the forecastle and, referring to **Plan Sheet 2, 'Forecastle deck planking'**, plank either side of this line outwards to the bulwarks, clearing the bowsprit opening and galley flue opening as you progress. Also, using a length of 8mm dowel for reference, you must file out a notch in the bulwarks to accept the bowsprit, noting that nothing should be removed from the stem itself as this forms the locating angle and support for the bowsprit (*Photo 17 & Photo 18*).

The upper face of the 6mm by 6mm galley flue opening can now be lined (all four sides) with 1.5x1.5mm walnut, and the whole deck varnished to seal.

The exposed area of the forecastle bulwarks, from the break of the forecastle around to the stem, should now be planked with 1x4mm walnut and painted red ochre (*Photo 018*).

**Note:** Unlike the main deck, there is no planking offset on the forecastle as the planks are sufficiently long to run the full length of the deck.

## The Stern Fascia and Stern Counter

Identify the stern fascia (167) and stern counter (168) from the 1.5mm walnut sheet. Referring to (*Fig 002*), temporarily pin the stern fascia across the stern extensions, there are several points of reference to note when doing this as follows:

1. The top edge of the fascia should be positioned approximately 1mm down from the top rearmost edge of the bulwarks. This will allow for the taffrail capping to be fitted at a later stage.
2. The inner most fascia window openings should have their edges equally spaced between the inner stern extensions.
3. The top edge of the lower projections, either side of the fascia, should be level with the top plank of the wale. The outer edge, slightly in from the projections, should be trimmed flush to the hull sides.

At this stage consideration should be given to the way in which you will glaze the windows. It can either be done at a later stage when fitting the brass etched window frames by cutting 5 individual pieces to fit into the recessed frame or it can be done at this stage by securing one continuous length across the inside face of the stern fascia. In either case, PVA should be used to prevent discoloration.

When you are satisfied with the dry fit of the stern fascia, it can be glued into position; if any pins are used during this stage you must ensure that they do not distort the natural curve of the stern fascia across the stern extensions. The fascia should not be painted until the stern decoration is fitted at a later stage.

After soaking in water for a **maximum** of 30 minutes, offer the stern counter (168) into position. The primary fixing position to note will be the central opening for the rudder. The counter is slightly oversized to allow for variances in hull planking and some sanding may be required. The counter should be bevelled top and bottom to allow it to 'feather' into the stern fascia above and the lower planking under bulkhead 10 below. Great care should be exercised with the counter during this procedure, particularly at its centre point.

The counter can now be planked athwartships using 1x4mm walnut strip, again the top and bottom planks should be bevelled to 'feather' in. The planks should also be sanded to maintain the convex shape as necessary (*Photo 019*).

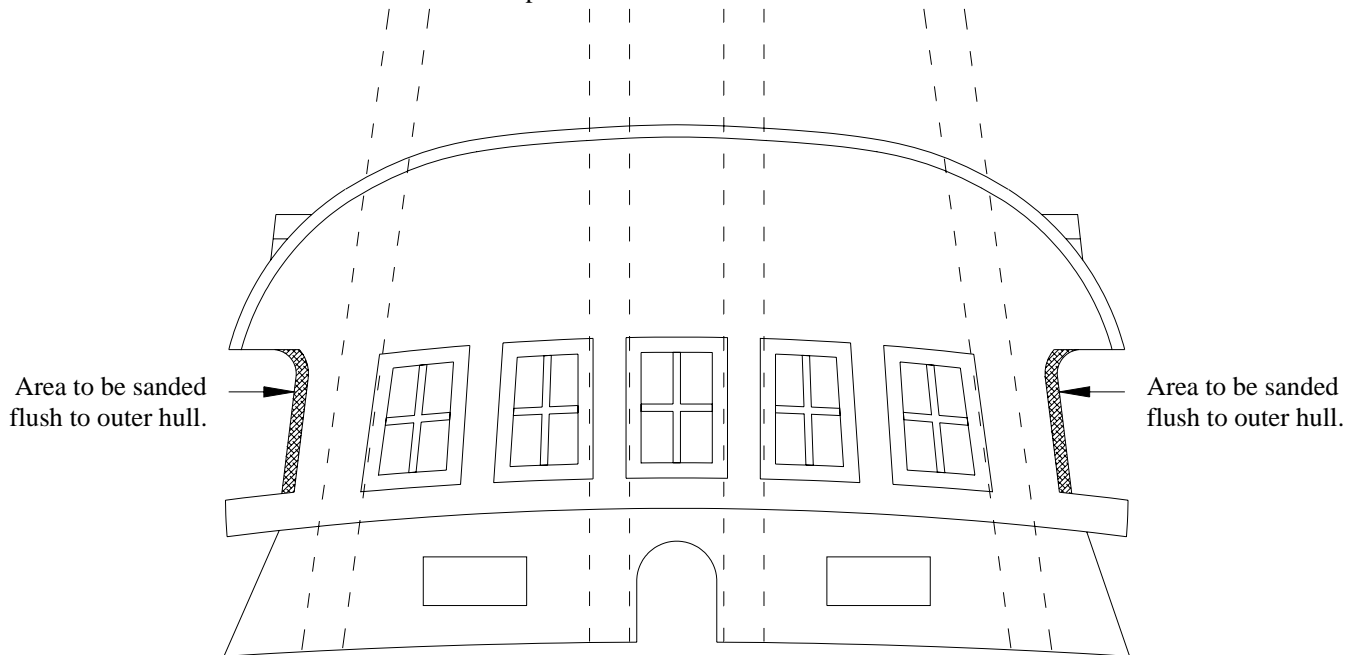
Two vents should be scored into the counter, one either side of the rudder as shown (*Fig 002*). They measure 8.5mm wide by 7.5mm high. The brass etched vent hinges (239) can now be glued into position together with the four (two per vent) brass etched ring bolts (210). The Stern counter should be painted dull black and the brass etched components should be painted matt (metal) black. Two pairs of 'dummy' tackles can now be rigged of 0.1mm natural thread, from the brass etched ring bolts into a 0.5mm hole drilled through the counter above the vent.

*Photo 019*

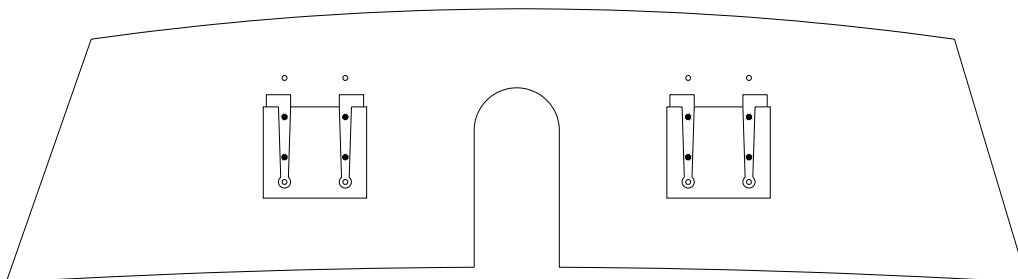


Fig 002

Position of stern extension patterns behind fascia in relation to the window frames.



Positioning of the stern vents (8.5mm wide by 7.5mm high) to be scored into the planking of the stern counter. Note also the positioning and orientation of the hinges (239) and the 0.5mm hole drilled above the hinges for the Rigging of the stern vent tackles.



## The Quarterdeck Bulkhead

The quarterdeck bulkhead assembly is vitally important to the overall aesthetics of the model and as such you should take your time, read this entire section carefully before progressing and check, re-check and check again all measurements before cutting anything, particularly the bulkhead panels. The slots in the curved pillars are only 0.75mm deep and 1mm wide so any errors in the shaping of the bulkhead panels will show. All components should be dry fitted only until you are confident of their positioning relative to the surrounding components.

Each of the curved pillars are identical and can be used in any position.

Identify and remove the curved pillars (159) from the 1.5mm walnut sheet. Also, identify and remove the false bulkhead (15) from the 5mm ply sheet. This bulkhead will fit into position across the keel and behind bulkhead seven, butting up against the keel upright at this position as shown on **Plan Sheet 1**.

Glue together the pairs of curved pillars, to form 6 complete curved pillars. Ensure that the grooves face outboard to accept the bulkhead panels at a later stage and that once glued together, the pairs are perfectly aligned to one another with no lips. If there are any overlaps, 'lips', it will be impossible to fit the screens into position in a straight line between the bulwarks.

Temporarily fix the false bulkhead into position, you should support this bulkhead to ensure that it remains square across the hull and that the outer edges are equidistant to the inner bulwarks. Dry fit the curved pillars between this false bulkhead and bulkhead seven, the deck planking will need to be trimmed to fit to the curved pillars at this stage. Take care that each pillar is running parallel to its neighbouring pillars and that they are all parallel to the keel, fore and aft, and that they are all vertical. Any alteration required to do this should only be done by gently manipulating the orientation of the false bulkhead, no trimming or shaping is required.

When you are happy with the fit and the trimming of the deck planking, identify and remove the two outer screen panels (205) from the 0.8mm ply sheet. This phase of construction will require the removal of the outermost curved pillars. With the curved pillars removed, the outer edges of the screen panels should be cut to fit against the inner bulwark when positioned in the pre-profiled groove. You should continue to remove material from the outside edge until it is possible to re-position the outer curved pillars, by sliding the groove in the curved pillar down over the inner edge of the outer screen, the lower edge of the screen should also fit flush against the deck planking.

When you are satisfied with the fit of the outer screens, the remaining screen panels (202-204) can be identified, removed from the 0.8mm ply sheet and fitted into their respective curved pillar slots. Light sanding may be required until a perfect fit is attained.

**Note:** No components have been permanently fitted at this stage.

When you are happy with the fit of each component, the centre (202), second (203) and third (204) screen panels can be removed and put to one side (after marking each one to ensure it can be re-fitted in the correct slot at a later stage). This will leave just the outer screens, the curved pillars and the false bulkhead dry fitted in place.

Remove the outer curved pillars and the outer screens and paint the forward face of the outer screen French blue. When the painting has been completed and allowed to dry thoroughly, the outer screens can be re-positioned along with the outer curved pillars. After checking for fit again, **all** of the curved pillars, the false bulkhead and the **outer screens only** can be finally fitted and glued into position. With the assembly thoroughly dry, a length of 0.5x3mm walnut should be glued to the front edge of each pillar, from flush to the deck to flush with the top edge. When the whole assembly has dried thoroughly, carefully sand off any high spots along the top edges to allow the ply quarterdeck, when fitted at a later stage, to sit flush on top of the assembly, while retaining the in-built camber (*Photo 020*, note that the screens are only temporarily fitted in this photo).

**Note:** The curved pillars are not painted but will be varnished to seal, bear in mind that after varnishing, the fit of each screen may need to be re-confirmed.

The decoration of the remaining bulkhead screens (203, 204 & 205) is applied next. After much testing, a very specific method of fitting the decals (289) has been found that will show off the decoration, as if it were hand painted, and eliminate any sheen reflection usually associated with decals. This is done as follows:

1. Start by painting the five remaining screens French blue, sand and repeat until a smooth surface is attained.
2. The decals should now be cut out oversized, the curved line marked on the bottom of each decal denotes the bottom edge of the screen and should be adhered to by trimming the bottom edge until the line itself has just been removed.
3. Each decal should now be dry fitted, do not remove the backing, against its corresponding screen panel (*Photo 021*), aligning the bottom edge of the decal to the bottom edge of the screen. With these edges aligned, the sides and top of the decal should be trimmed to precisely fit the screen.
4. The back of the decal has a tacky film to it (once the backing has been removed). With the backing removed, the back of the decal should also be painted French blue, directly onto the tacky film. Coat as required to achieve an even covering.
5. When both screen and decal paints are thoroughly dried, the decal is glued to the screen with PVA.

The four hinges of the cabin doors (237) can also now be painted matt (metal) black and glued to the corresponding screen as shown on **Plan Sheet 9, 'Section through bulkhead 7'**, using PVA glue. With the screens completed they can each be secured into place in the curved pillars, again using PVA brushed onto the after face and pillar supports when in position (*Photo 021*).

**Note:** PVA glue only should be used; super glue / cyanoacrylate will cause discoloration of the decals.

Photo 020



Photo 021



## Fitting the Quarterdeck

Identify and remove the quarterdeck (196) from the 0.8mm ply sheet.

Remove the bulkhead uprights (bulkheads 8 – 10), and the uprights of the stern extensions and sand them flush. Offer the quarterdeck into position such that the forward edge is flush with the 0.5x3mm walnut overlay on the front face of the curved pillars. Trim as necessary to achieve a good fit, ensuring that the locating hole for the rudder head is central between the two inner stern extensions. With a good fit achieved, the quarterdeck can be glued into position.

## The Quarterdeck Planking

The quarterdeck is planked with 0.5x4mm maple. Mark the centreline down the quarterdeck and, referring to *Plan Sheet 2, 'Quarterdeck planking'*, plank either side of this line outwards to the bulwarks, clearing the companionway and rudder head opening as you progress. Upon completion a grating measuring 12mm by 12mm should be made up and lined with 2x2mm walnut strip and the assembly should be glued into position over its locating hole in the quarterdeck, when in position you will notice the grating sits down into the locating hole onto the keel, as a result the grating may require some sanding to allow the coaming to sit flush on the deck. Upon completion, seal the whole quarterdeck with varnish.

**Note:** Unlike the main deck, there is no planking offset on the quarterdeck as the planks are sufficiently long to run the full length of the deck.

## The Quarterdeck Bulwarks

Using a piece of scrap 1.5mm walnut ply, cut out the shape of the bulwarks above the quarterdeck and glue into position. The bulwark should then be planked with 1x4mm walnut strip. Remove any excess from the top edge of the bulwark, back to the shape of the gunport pattern and the bulwark should then be painted red ochre.



## The Capping Rails

Identify the main capping rail (108) and the forecastle capping rail (107) and remove them from the 2mm walnut sheet, also, identify and remove the capping step (forecastle to main) (32) from the 5mm walnut sheet. Referring to **Plan Sheet 2** temporarily, but securely, fix the main capping into place with the following considerations:

1. The front end of the main capping is bevelled slightly to lead into the break of the forecastle. Any excess length is to be removed from the after end.
2. The main capping is wider than required to allow for any deviation during the building process, however, the inner edge of the capping should be aligned to the inner face of the bulwarks, and excess should be removed from the outboard face of the capping only. This will ensure the cut outs in the after part of the capping are centrally aligned and that the pinrail appears flush to the bulwark.
3. Check across the hull to ensure that the pinrails and the cut outs in the after part of each capping (port and starboard) are aligned to those opposite.

Again using **Plan Sheet 2** for reference, the forecastle capping can also now be temporarily but securely fitted with the following considerations:

1. With a length of 8mm dowel in position, to simulate the bowsprit, the capping should be positioned flush against this at the stem. Check also that when viewed from above the capping rails align at the bowsprit as if to form a continuous run.
2. The largest cut out in the capping, for the knightheads should be positioned towards the stem.
3. All of the cut outs should be positioned centrally along the top of the bulwark. Unlike the main capping, both inboard and outboard edges of the forecastle capping will overhang the bulwark.

With the forecastle and main capping securely but still temporarily positioned, you should begin reducing the 'overhanging' edges back to be flush with the inner bulwark and outer hull sides. At this stage it is recommended that the inner face be sanded as flush as possible to the inner bulwark while the outer face should be roughly sanded flush as final sanding of the outboard face can be done after the capping rails have been permanently secured in place.

When you are happy with the fit of the inboard edges, the capping rails should be removed from the hull and this inboard edge should be painted dull black. When thoroughly dry, re-fit the capping rails permanently with glue back into the positions they were removed from.

The capping step can now be fitted at the break of the forecastle. It should be positioned flush against the top of the bulwark, with no gaps, and the main capping. The forward edge will need to be reduced to run into the forecastle capping, again with no gaps and both the inboard and outboard faces sanded flush and the inboard face painted dull black.

With the capping rails firmly fixed in position, the outboard edges can now be sanded flush to the hull sides. The top and outboard faces of the forecastle capping and step can now be painted dull black. The top and outboard faces of the main capping will also be painted dull black but only after fitting of the brass rail (sheer rail).

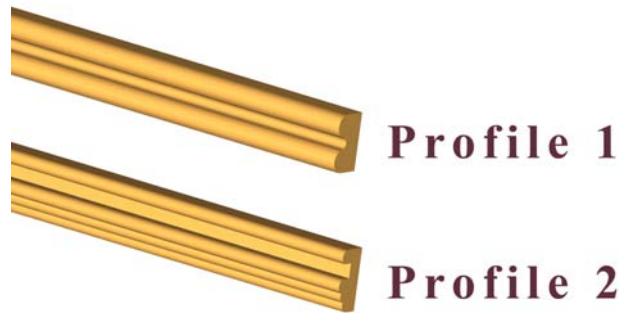
Identify, remove from the 4mm walnut sheet and paint dull black the fish davit cleats (49). These can now be glued into position on the main capping, directly aft of the forecastle capping step as shown on **Plan Sheet 1, 'Hull detail'**.

## The Sheer Rail

The sheer rails are formed from the two 500mm lengths of brass extrusion (282) profile 1 (*Photo 022*), one each side. They are fitted as follows:

1. Before working with the brass extrusion on the model it is advisable to wash the extrusion in warm soapy water to remove any oils that may otherwise discolour the wood and hinder both painting and adhesion.
2. You should start at the bow. To obtain roughly the correct shape at the bow you can once again use the gunport pattern shaper as a template. You will find the brass much easier to work with when warmed, do not use an intense heat as this will deform the detailed shape of the rail or even melt the rail completely.
3. You will need to bevel the front edge to sit flush against the stem.
4. The rail should run parallel to the forecastle capping around the bow, and should remain flush to the top edge of the main capping from the break of the forecastle all the way to the transom as shown on **Plan Sheet 1, 'Hull detail'**.
5. When you are happy with the shape and fit of the rail, it can be glued into position, you should roughen the back face of the rail with rough sandpaper to ensure a good contact. The rail should be painted dull black either before positioning on the model or after positioning having masked off the hull.
6. The area between the sheer rail and the forecastle capping rail should now be painted French blue.
7. If not done previously, the top of the main capping rail can now be painted dull black.

Photo 022



### Main Deck Inner Bulwark Fittings

Using **Plan Sheet 2, 'Main deck layout' & 'Main deck inner bulwark fittings'** for reference, fit the inner bulwark cleats (259 & 260), kevels (118), timberheads fore (37) and timberheads aft (36), remembering to drill all sheave holes as shown prior to fitting.

### Main Deck Guns and Carriages

Identify the 4pdr turned brass cannon barrel (277) (*Photo 023*).

When completed, the gun carriage should be left natural and varnished to seal. The axle stubs, barrel and other ironwork should be painted matt (metal) black.

Identify the gun carriage components; carriage sides (160), rear axle (161), front axle (162), rear wheel (101), front wheel (100) and quoin (76).

Make up all of the gun carriage assemblies as shown on the **Plan Sheet 9, '4pdr cannon carriage eyelet arrangement'**. The shorter wheel axle is located at the front to give the carriage a taper when viewed from above.

**Note:** Do not fit the wheels until the carriage has been assembled.

The larger wheels fit on the front of the carriage to compensate for the deck camber. The wheels themselves are simply varnished, not painted.

Cut a bed bolt for each carriage from the 1mm brass wire (321), painted matt (metal) black, and glue into place. Glue the stool bed into place, but do not glue the quoin to the stool bed until the cannon is rigged into position, to ensure correct elevation of the cannon.

**Note:** The stool beds are positioned approximately 1mm forward of the rear of the carriage sides, the stool beds are 0.5x3mm walnut.

Mark the eyelet positions on each carriage and drill with a 0.5mm drill. There is also an eyelet at the centre of the rear and front axles. Cut the stems of the brass eyelets (210) from their brass etch sheet leaving 2mm for gluing into the carriage and glue in place.

When completed, varnish the carriages as previously described. Carefully push the wheels onto the axles.

Cannon trunnions are cut from 1.5mm brass wire and should be long enough to reach the outer wall of the carriage sides. Glue in place through the cannon trunnion hole and position on the carriage.

**Note:** Check the cannon orientation beforehand, the trunnion hole is drilled slightly off centre and should be nearer the bottom of the barrel when in place (*Photo 023*).

All cannons should be painted matt (metal) black.

Cut out the trunnion brackets (234) from their brass etched sheet. Fit by bending the thinned centre of the bracket around the trunnion, carefully drill down through the holes in the bracket, with a 0.7mm drill, into the carriage sides. Fix in place with the dome head pins (284), these can be cut short before fixing. Paint the trunnion brackets and pins matt (metal) black.

**Note:** The cannon trunnion is not glued to the carriage or the trunnion bracket, it should be free to allow the cannon to be raised or lowered with the quoin when fitted.

## Rigging of the Main Deck Guns

All of the guns on the main gun deck were fully rigged on the prototype and sufficient rigging has been provided to allow you to do the same. If you wish to rig these guns it should be done now.

At each gunport location, four brass etched eyelets (210), painted matt (metal) black, should be positioned as shown on **Plan Sheet 2, 'Inner bulwark spirketting & sheer rail'** by drilling a 0.5mm hole into the bulwark and spirketting to accept the eyelets, taking care not to drill through the outer hull. There is also one eyelet directly behind the carriage secured to the deck as shown on **Plan Sheet 2, 'Main deck layout'**, again drill a 0.5mm locating hole for each eyelet.

Attach two 2.5mm single blocks to the brass eyelets on each cannon carriage, one either side of the carriage as shown (*Photo 024, noting that the provided 2.5mm blocks are walnut, not natural as shown in the photo*). Attach another 2.5mm single block to the brass eyelet in the deck behind each cannon.

Position each cannon at their gunport and adjust the height of the cannon with the quoin (76) until you are happy with the appearance. Glue the quoin at this position and rig the cannon.

### The Breeching Rope:

The breeching rope is from 0.25mm natural thread. It is secured directly to the lower outer brass eyelet in the bulwark, passes over and loops once around the cannon cascable, then is secured directly to the lower outer brass eyelet in the bulwark on the opposite side (*Photo 024*).

### The Gun Tackle:

Attach two 2.5mm single blocks per carriage (one each side) to the upper, inner brass eyelets in the bulwark at each gun location, the falls of 0.1mm natural thread should be tied into the arse of these blocks at the same time. The running end then passes through the 2.5mm single block in the carriage side, back and through the 2.5mm single block in the bulwark and then down as a coil of rope (cheese) on the deck (*Photo 024*).

**Note:** The gun tackle is rigged 'over' the breaching tackle.

### The Training Tackle:

Attach a single block to the brass eyelet in the aft face of the aft axle of each carriage, the falls of 0.1mm natural thread should be tied into the arse of this block at the same time. The running end passes through the 2.5mm single block attached to the brass eyelet in the deck, back and through the 2.5mm single block in the carriage axle and down as a coil of rope (cheese) on the deck (*Photo 024*).

Once the rigging is in place, brush watered down PVA over the ropes and blocks. Again, time effort and patience is required for best results.

*Photo 023*



*Photo 024*



## The Windlass and Belfry

Using **Plan Sheet 2, 'Windlass & belfry assemblies'** for reference, identify and remove the belfry (80) from the 3mm walnut sheet and the fore and aft belfry profiling (163) from the 1.5mm walnut sheet. Glue the fore and aft belfry profiling to the belfry as shown, flush to the top and with the profiled edge facing away from the belfry.

Identify and remove the headstock (164) from the 1.5mm walnut sheet. Drill a locating hole for the brass etched crank (216) and glue the crank, painted matt (metal) black, into position, with a 0.1mm bell rope tied into the end and hanging down approximately 20mm. The cast bell should be glued to the underside of the headstock after being painted brass. The headstock itself can now be glued into position in the belfry as shown.

Referring to **Plan Sheet 9, 'Section through belfry'** and bearing in mind that the face of the belfry with profiled as well as cut through holes will face aft on the model, drill two holes, one in each upright, of 0.65mm to take a dome headed nail which will hold the pawl in place. The holes should be positioned approximately 2mm up from the bottom of the cut through hole and through the centreline of the belfry upright. Identify and paint matt (metal) black four brass etched pawl halves (243), each required pawl is then formed by gluing together two halves. Push a dome headed nail, painted matt (metal) black, through the hole in the pillar upright, through the pawl in the cut out of the pillar upright, and out the other side of the upright, repeat for the other side. Glue the nail (but not the pawl) into position and cut off the exposed head and point of the nail.

Identify and remove the warping head inner ends (102) and warping head outer ends (103) from the 2mm walnut sheet. Also identify and remove the warping head wide skins (200) and narrow skins (201) from the 0.8mm ply sheet. Make up the warping heads with the following considerations:

1. The profiled hole in the warping head inner end should face out from the warping head, i.e. they should remain exposed after assembly of the warping head.
2. The wide and narrow skins will each require a small mitre down their long edges to allow them to sit flush to the neighbouring skins.
3. The inner and outer ends will also require slight bevelling to allow the skins to sit flush to them.
4. The holes in the skins are located towards the warping head inner end.

Identify and remove the windlass centre barrel ends (102) from the 2mm walnut sheet and the windlass centre barrel pawl backings (79) from the 3mm walnut sheet. Also identify and remove the centre barrel wide and narrow skins (198 & 199). Make up the centre barrel with the following considerations:

1. The profiled hole in the centre barrel ends should face out from the centre barrel, i.e. they should remain exposed after assembly of the centre barrel.
2. The centre barrel pawl backings should be located over the second, from each end, hole in the skins, resulting in a notch behind each pawl hole.
3. The skins will each require a small mitre down their long edges to allow them to sit flush to the neighbouring skins.

You should take care to ensure the warping head and centre barrel assemblies remain square during construction.

Identify and remove the centre barrel and warping head locating rings (31) from the 5mm walnut sheet. Glue the rings into the profiled ends of the centre barrel.

Identify and remove the windlass finger and thumb formed timberhead (77) and the windlass cheek (78) from the 3mm walnut sheet. Glue these together around the locating rings of the centre barrel. The Warping head assemblies can now also be glued to the locating rings.

**Note:** You should ensure the wider skins of both the centre barrel and the warping heads are positioned to the top and bottom (and fore and aft) of the assembled windlass.

The banding around the windlass as shown on **Plan Sheet 2, 'Windlass & belfry assemblies'** is made from cartridge paper.

The iron strap around the base of the cheek and timberhead of the windlass is a brass etched component (212) and should be painted matt (metal) black and glued into position as shown.

The completed assembly should now be stained walnut and varnished to seal.

The Belfry is positioned centrally across the main deck vertically and flush against the after edge of the forecastle, the windlass is glued into position directly behind the belfry such that the pawls sit into the topmost pawl slots of the centre barrel (*Photo 025*).

Hand spikes can be fashioned from 1.5x1.5mm walnut if desired.

Photo 025

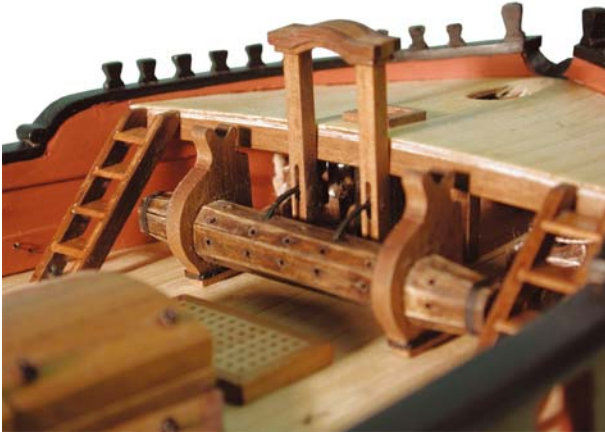


Photo 026



## The Elm Tree Pumps

There are four elm tree pumps to be made up, each is assembled in the same way but you should be careful to ensure the correct positioning of the outlet in relation to the handle. The handles should be facing forward and outboard with the outlet at 90 degrees to the handle, facing aft and outboard on each pump (*Photo 026*).

The yokes and connecting rods should be painted matt (metal) black and the outlets and casing should be painted dull black, while the brake handle should be painted walnut.

Identify and remove the elm tree pump casings (48) from the 4mm walnut sheet and glue them together, aligned in pairs to form 4 sets.

Identify and carefully remove from the brass etched sheet the left and right handed yokes (241). Glue a left and right handed yoke together ensuring that they marry exactly. Also make sure that the small dimples, on the profiled face of the yokes, face toward each other. Take care at this stage not to glue the dimples together as they will need to be separated when the pump handle is 'sprung' into place. Make up four sets of yokes.

Glue the completed yoke assemblies to the side of the pump bases ensuring that it is vertical; the small lip in the yoke sits against the top edge of the base as shown on *Plan Sheet 2, 'Elm tree pump assembly'*.

Identify and remove the brake handle (242) from the brass etch sheet and, using 0.75mm brass wire, fashion a small loop in one end so that it fits into the larger hole of the brake handle and forms the connecting rod. Pass the rod through the casings and position the handle onto the pivot formed by the two dimples of the yokes.

The handle should be glued into position at your desired angle and the connecting rod can either be trimmed flush with the bottom of the casing or left protruding by approximately 5mm to use as a locating 'lug' when fitting the pumps to the deck. The outlets should be glued to the pump casing orientated as stated previously; they are fashioned from 2mm dowel. The finished assemblies can now be glued into place.

## Jeer Bitts & Main Topsail Sheet Bitts

Identify and remove the jeer bitts (73) and the topsail sheet bitts (74) and the bitt pin cross pieces (75) from the 3mm walnut sheet.

Drill 1.5mm sheave holes through each bitt centrally, fore and aft, approximately 3mm below the notch for the cross pieces.

Glue the cross pieces into the notches of the bitts centrally so that the distance between the bitts is 19mm internally, and 25mm externally as shown *Plan Sheet 2, 'Main hatch & deck reinforcement'*. When the assemblies have completely dried they should be glued and pinned centrally into position on the deck reinforcing timbers as shown with the cross pieces both orientated to the aft and with the jeer bitts aft of the sheet bitts.

## Main Deck to Quarterdeck Ladders

Identify and remove the main deck to quarterdeck ladder sides (104) from the 2mm walnut sheet. The treads of the ladders are from 1x5mm walnut cut to a length of approximately 8mm to give an overall width to the assembled ladder of 10mm.

To assemble the ladders, slot a tread into the top and bottom of each ladder and glue into place, ideally a small jig should be made to keep the assembly square. When dry, the remaining treads can then be pushed into the slots and brushed with watered down PVA. Varnish to seal the assembly.

When the assemblies are thoroughly dry, they can be glued into place as shown *Plan Sheet 2, 'Main deck layout'*. In order for the ladder uprights to sit flush against the quarterdeck bulkhead, it may be necessary to file a small notch in the first tread to allow for the curved pillar upright (*Photo 021*).



## Main Deck to Forecastle Ladders

Identify and remove the main deck to forecastle ladder sides (105) from the 2mm walnut sheet. The treads of the ladders are from 1x5mm walnut cut to a length of approximately 8mm to give an overall width to the assembled ladder of 10mm. To assemble the ladders, slot a tread into the top and bottom of each ladder and glue into place, ideally a small jig should be made to keep the assembly square. When dry, the remaining treads can then be pushed into the slots and brushed with watered down PVA. Varnish to seal the assembly.

When the assemblies are thoroughly dry, they can be glued into place, centrally between the bulwark and outboard end of the windlass warping head, as shown *Plan Sheet 2, 'Main deck layout'* and (*Photo 025*).

## The Quarterdeck Barricade Assembly

Identify and remove the quarterdeck footrail (169) and quarterdeck breastrail (170) from the 1.5mm walnut sheet. Identify the 10mm pillars (303) and glue them centrally to the top face of the footrail over the locating holes. Using *Plan Sheet 9, 'Section through bulkhead 7'* for reference, cut four 4mm lengths of 3x3mm walnut strip and glue these centrally to the underside of the footrail, again over the locating holes i.e. directly under the pillars. Glue this assembly into position on the quarterdeck as shown on *Plan Sheet 2, 'Quarterdeck layout'*, you will need to bevel the bottom edges of the 3x3mm walnut strip to the camber of the deck to keep the pillars vertical. With the assembly in place, glue the breastrail across the top of the pillars taking care that the profiled face is down toward the deck. The whole assembly should be painted dull black (*Photo 021*).

## The Quarterdeck Rough Tree Rail

Identify and remove the quarterdeck timberheads (110) from the 2mm walnut sheet.

**Note:** The quarterdeck timberheads have a definite fore and aft face, the vertical edge (as cut) is always positioned aft while the angled (as cut) face is always positioned forward. When positioned into the slopping capping, this will give the appearance that both faces are angled.

Taking the orientation of the timberheads into consideration, secure them into their locating holes (10 each side starting from aft) in the quarterdeck capping.

With the timberheads in place, identify and remove the main brace sheave block (51) from the 4mm walnut sheet. This sheave block can now be secured centrally into position between the fourth and fifth (from aft) timberheads, directly above the aft cabin light. Some shaping of this block may be required to ensure a tight fit.

Identify and remove the quarterdeck rough tree rail (109), from the 2mm walnut sheet, and secure into position onto the timberheads. When this assembly has thoroughly dried, identify and remove the quarterdeck rough tree rail step (33), from the 5mm walnut sheet, and secure into position against the fore edge of the rough tree rail and down onto the capping rail. Some shaping of the after face of the step will be required to form a continuous run with the rough tree rail.

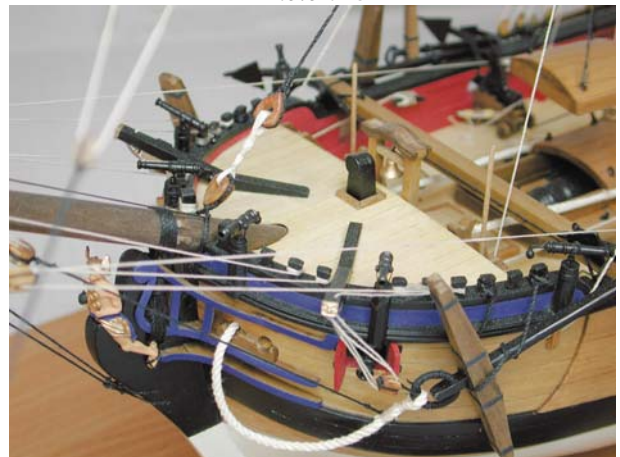
Directly in front of the rough tree rail step you will notice two locating holes, these are for the finger and thumb timberheads (117) which should be glued into position now, orientated as shown *Plan Sheet 2, 'Main deck inner bulwark fittings'*.

This whole rough tree rail assembly, timberheads etc. should all be painted dull black (*Photo 027*).

*Photo 027*



*Photo 028*



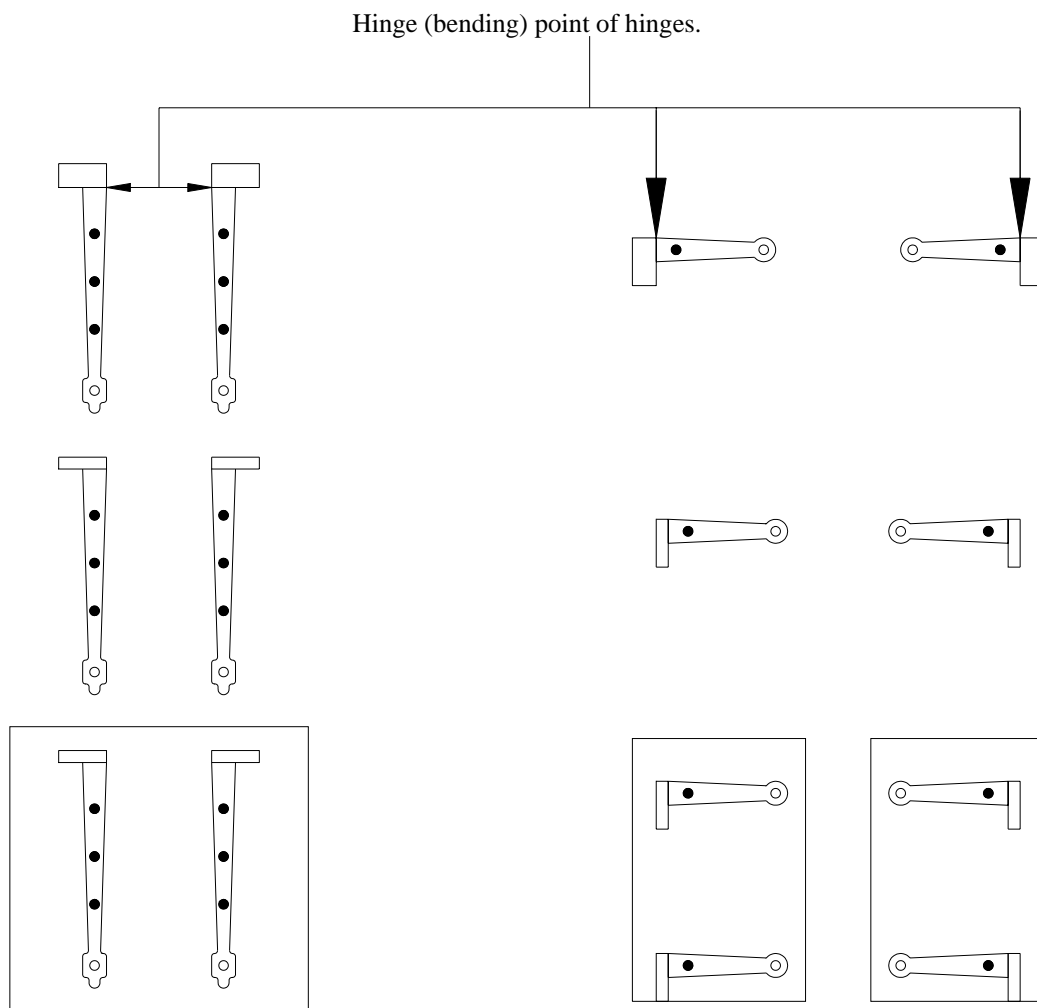
## The Quarterdeck Inner Bulwark Fittings

Using *Plan Sheet 2, 'Quarterdeck layout' & 'Quarterdeck inner bulwark fittings'* for reference, fit the inner bulwark small cleats (261) (2 per side) and kevels (34) (1 per side) as shown, remembering to drill all sheave holes through the kevels as shown prior to fitting. It is also advisable to pin the kevels into place as they will take some rigging strain, the outboard face of the kevel (that which sits against the inner bulwark) must also be shaped to fit flush against the bulwark, rough tree rail and supporting timberhead (eighth from aft).

## The Forecastle Fittings

Identify and paint matt (metal) black the galley flue (265), this should be pinned and glued into place in the coaming on the forecastle. Identify and remove the two knightheads (81). After painting dull black, these should be glued into position in the foremost (large) locating holes in the forecastle capping. Identify and remove the eighteen forecastle timberheads (111). After painting dull black, these should be glued, nine per side, into their locating holes in the forecastle capping (*Photo 028*).

Fig 003



Note that the hinges, after being bent through 90 degrees, are set back 1mm from the edge of the lids/doors.

## The Catheads

The positioning of the catheads is critical to ensure that the headrails and bow chase port doors etc. all fit and align correctly (*Photo 029*), it is important therefore to consider the following points during this phase of construction, (the whole assembly should be dry fitted to check alignment first):

1. The cathead should be fitted as close as possible to, but without fouling, the third from forward timberhead (fourth including the knighthead).
2. The aft face of the cathead, from the point where it crosses the bulwark passing outside of the hull, should be positioned just in front of the forward edge of the bow chase port.
3. It is worth fitting the forward door of the bow chase port, including hinges, to ensure the correct positioning of the cathead, cathead knee and cathead knee continuation.
4. With the forward door of the bow chase port fitted, the cathead knee continuation piece should fit flush against the underside of the brass sheer rail and run down as close as possible to the forward door of the bow chase port such that it is virtually flush against the door when open.
5. Ensuring the above points 1 & 2 are met, the positioning of the cathead knee continuation piece in relation to the bow chase port should also provide a datum for the correct positioning of the cathead knee and cathead above.

Identify and remove the bow chase port doors (172) (these can either be fitted finally now or at a later stage of your choosing, but the forward door must be temporarily fitted now to aid the alignment of the cathead assembly). Identify the door hinges (238) and glue them into position as shown (*Fig 003*). The hinges should fit approximately 1mm from the edge of the door with the hinge pintle bent back to 90 degrees. The inner face and the edges of the door are painted red ochre, the hinges are matt (metal) black. The outer face of the door remains natural and should be varnished to seal. Glue the doors into position, the door itself is glued into the recess of the gunport with the pintles of the hinges glued to the ships outer hull.

Identify and remove the cathead knee continuation piece (130), from the 2mm walnut sheet. Offer the cathead knee continuation piece into position tight up against the underside of the brass sheer rail and as close against the bow chase port door as possible.

The inboard face (that which sits against the hull) of the cathead knee continuation piece will require slight sanding to introduce the curvature of the bow so that it will lie flush against the hull. When the cathead knee continuation piece is finally fitted, the "arm", leading forward, should run virtually parallel with the brass sheer rail. The outboard face of the cathead knee continuation piece should be painted French blue, the remainder should be left natural but varnished to seal.

Identify and remove the cathead knee (92) from the 3mm walnut sheet. Offer the knee into position above the cathead knee continuation piece; it will be necessary to bevel the vertical section, inner and outer faces, in order to sit with the inner face flush against the hull side and the outer face to follow the contour of the brass sheer rail that it sits upon. (The knee should fit from the underside of the cathead, when fitted, to the top edge of the brass sheer rail).

When you are happy with the fit of the knee, the outboard face should be painted French blue, the remainder should be left natural but varnished to seal.

Identify and remove the catheads (91) from the 3mm walnut sheet and offer them into position against the cathead knee and as shown on **Plan Sheet 1, 'Hull detail'**. In order to allow the cathead to sit tight against the inboard forecastle bulwark a small amount will need to be filed out of the notch in the cathead to the same angle as the bulwark. When you are happy with the fit of the catheads they should be removed and before finally fixing in place you will need to drill a number of sheave holes and fit a cathead cleat.

Using **Plan Sheet 4** for reference, the cathead cleats (1 per cathead) are made up from 1.5x1.5mm walnut with two notches filed out as shown. They are fitted to the after face of the catheads, located as shown.

Again using **Plan Sheet 4** for reference, drill four 0.6mm holes, as shown, in the end of the cathead (top to bottom), these will simulate the sheaves and are used when rigging the cat falls at a later stage. A fifth hole also needs to be drilled part way through the cathead, from below, just behind (inboard of) the four holes already drilled, this is to take a copper eyelet which should be fitted now. The whole cathead assembly is painted dull black.

Locate the cathead decoration (lions head) (266), this should be painted gold and glued to the outer face of the cathead now.

When you are satisfied with the fit of each component and, when positioned, they run in line as one whole assembly, they can finally be secured into place.

## Lower and Upper Cheeks

Identify and remove the lower pair of cheeks (128) from the 2mm walnut sheet. These cheeks sit on top of the wale and against the prow. In order to achieve a good fit, each side of their respective faces should be bevelled accordingly. When you are satisfied with the fit, they can be glued into position.

Upon completion, the front curved edge should be painted French blue, the top should be varnished and the underside can be painted dull black to blend into the wale.

Identify and remove the upper cheek (127) from the 2mm walnut sheet, clear the head timber slots and offer it into position in the slot in the stem (the knee of the head). Some filing may be required to the front face of this slot in order to allow the top leading edge of the cheek to lie flush with the continuation of the curve in the stem. The bottom face of the slot will also require some sanding to allow the upper cheek to run parallel with the lower cheeks below. Both upper and lower cheeks should run parallel with each other separated by a 4mm gap as shown on **Plan Sheet 1, 'Hull detail'** (*Photo 030*). A small amount of the after edges of the upper cheek will require some bevelling to ensure it fits flush against the hull. When you are satisfied with the fit and alignment, the cheek can be glued into position. The leading edges are painted French blue, as with the lower cheeks, however, the top and bottom faces should both be left natural and varnished.

Identify and remove the hawse hole bolsters (131) from the 2mm walnut sheet. Glue the bolster into position noting that the inboard edge (the edge closest to the stem) of the bolster should be located 7.5mm from the stem. This is to ensure that the inboard bower anchor hawse hole is correctly located and will not foul the plank termination patterns when drilled out. Once the bolster has been glued into position as described, the hawse holes themselves can be drilled through the hull using a small pilot drill and then enlarged to 3.5mm diameter to match the hawse hole bolsters (*Photo 030*). The bolster is left natural but varnished to seal.

## The Headrails

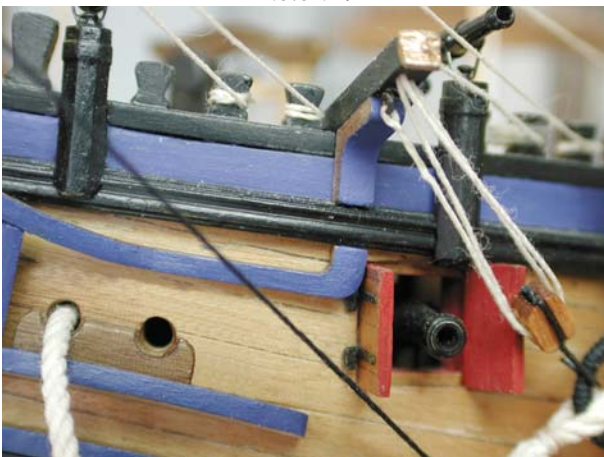
Identify and remove the headrail (184) from the 1.5mm walnut sheet. Offer the headrail into position, the forward end is located against the back of the stem and with the outboard face of the headrail running into the outboard face of the stem. The after end is located against the hull and the forward end of the cathead knee continuation piece to form one continuous run. The headrail itself has been cut longer than required and should be trimmed a little at a time from the front edge until a good tight fit is achieved (*Photo 030*).

When you are satisfied with the fit of the headrail it should be painted French blue on the outboard face and all other faces are left natural but varnished to seal. The headrail can now be secured into position.

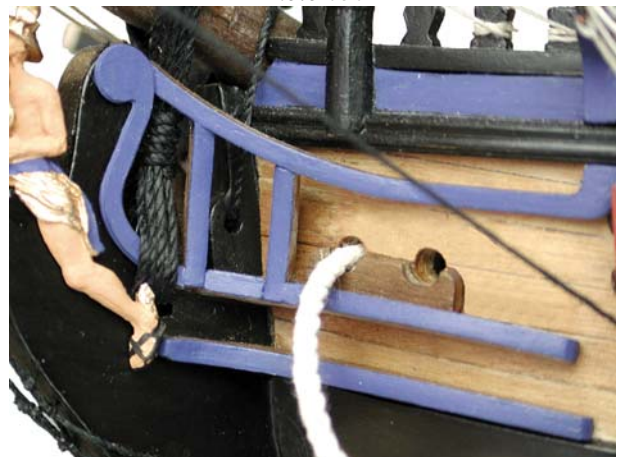
Identify and remove the head timbers (132 & 133) from the 2mm walnut sheet. There are two pairs, the longer pair are the fore head timbers (132), the shorter pair the after head timbers (133). The head timbers are notched at one end and this end fits onto the top and into the head timber slot of the upper cheek. The opposite end leads up and should be secured against the underside of the headrail, with the outboard edge of the head timber running in flush with the outboard face of the headrail. The head timbers have been cut longer than required and should be trimmed a little at a time from the upper edge until a good tight fit is achieved. The headrails should be painted French blue on their outboard face, the remaining faces are left natural and varnished to seal (*Photo 030*).

Identify and remove the hair bracket (244) from the brass etched sheet. This bracket should be painted French blue and fitted into position against the stem, forming a continuation of the upper cheeks as shown on **Plan Sheet 1, 'Hull detail'**.

*Photo 029*



*Photo 030*



## The Anchor Lining

The anchor lining is from 1x10mm walnut. Cut three 22mm lengths of 1x10 walnut and glue them together, edge to edge, forming a sheet 22mm long by 30mm wide. This sheet can then be trimmed to size with the following considerations: (*Photo 031*)

1. The after face should align to the forward edge of the second gun port.
2. The lining fits flush against the hull in between the top of the wale and the underside of the brass sheer rail.
3. The 'run' of the planks of the anchor lining should follow the 'run' of the hull planks beneath.
4. The forward edge should be cut in a smooth sweep, shaped as shown on *Plan Sheet 1, 'Hull detail'*, from 9mm long along the top edge to 20mm long along the bottom edge.

*Photo 031*



## The Fenders

Identify and remove the fenders (116) from the 2mm walnut sheet. The first fender on each side of the hull should be positioned flush against the forward edge of the third gunport. The top edge should be just below flush with the top of the capping and the lower edge should sit flush to the top of the wale. The second fender on each side is positioned in the same manner but 5.5mm forward of the first fender, as shown on *Plan Sheet 1, 'Hull detail'*. A notch has been cut out of the top of the fenders to allow for the brass sheer rail, however, this face will require some further sanding to allow it to sit flush against the hull and rail.

## The Side Steps and Entry Ladder

Identify and remove the side steps (129) from the 2mm walnut sheet. There are 5 steps on each side of the hull and are positioned as shown on *Plan Sheet 1, 'Hull detail'*. The forward edge of the steps are set back 14mm from the aft edge of the fifth gunport and are uniformly spaced between the top of the wale and the bottom of the brass sheer rail, the profiled edge of the steps is positioned downward and each step must remain parallel to the keel, they **do not** follow the 'run' of the hull planking.

Identify and remove the entry ladder sides (106) from the 2mm walnut sheet. The treads of the side entry ladders are from 1x5mm walnut cut to a length of approximately 10mm to give an overall width to the assembled ladder of 12mm.

To assemble the ladders, slot a tread into the top and bottom of each ladder and glue into place, ideally a small jig should be made to keep the assembly square. When dry, the remaining treads can then be pushed into the slots and brushed with watered down PVA and varnish to seal the assembly.

With the assemblies completely dry, glue into place directly inboard of the side steps, as shown on *Plan Sheet 2, 'Main deck layout' & 'Main deck inner bulwark fittings'*.

Identify and remove the entry port stanchions (246) from the brass etched sheet. Before these are fitted you must drill a 0.5mm hole through the 'ball' in the top of the stanchion to take the hand rope. When the hole has been drilled, paint the stanchions matt (metal) black and pin them in place as shown on *Plan Sheet 1, 'Hull detail'* using a 0.8mm hole drilled into the capping rail. The hand ropes can now be rigged from 0.25mm natural thread. Tie an overhand knot in one end of the thread, lead the opposite end of the thread through the hole in the 'ball' of the stanchion (from inboard to outboard) until held by the knot and lead the thread down the hull. Drill a 0.5mm hole through the hull level with the lower step and push the end into this hole and secure with glue.



## The Sweep Ports

Identify the sweep port hinges (235), to be painted matt (metal) black (ideally before removing from the sheet), the sweep port lids are from 0.5x3mm walnut strip. Try to use one single length of walnut strip when constructing the lids in order to prevent shade changes in the finished result.

Do not cut the lid length from the walnut strip (approximately 3.75mm upon completion) but cut a manageable length of around 100mm. Cut a painted hinge from the sheet and, where possible, keep the 'legs' of the hinge joined by the sprue to help prevent the hinge deforming.

**Note:** 9 port hinges and 9 starboard hinges are required as shown (*Fig 004*).

Taking great care to position the hinge centrally, glue it into position on the end of the walnut strip using cyano, noting that the back face of the hinge is stepped to allow contact between the hinge and the hull when fitted. Once dry, cut the sweep port lid from the length of walnut (approximately 3.75mm long).

With the 18 lids completed, using **Plan Sheet 1, 'Hull detail'** for reference, mark the locations of the sweep ports onto the hull. There are three methods for fitting the sweep ports as follows: (*Photo 032 & Photo 033*)

To fit the sweep port lids in the open position:

Drill and fit one brass eyelet (210), painted matt (metal) black, to the centre of the inboard face of each sweep port lid. This inboard face should be painted red ochre but leaving the outboard face and edges natural.

Mark the locations of the sweep ports onto the hull and cut a rectangular hole, approximately 2.5mm high by 3.25mm long, through the ships side. Upon completion, the sills/linings of these openings should be painted red ochre. Drill a pair of 0.5mm holes just forward of each port opening in the hull to accommodate the 'legs' of the hinge such that the lid is central. The 'legs' of the hinge, after removing the sprue, can now be glued into these holes using cyano.

To fit the sweep port lids in the closed position (method 1):

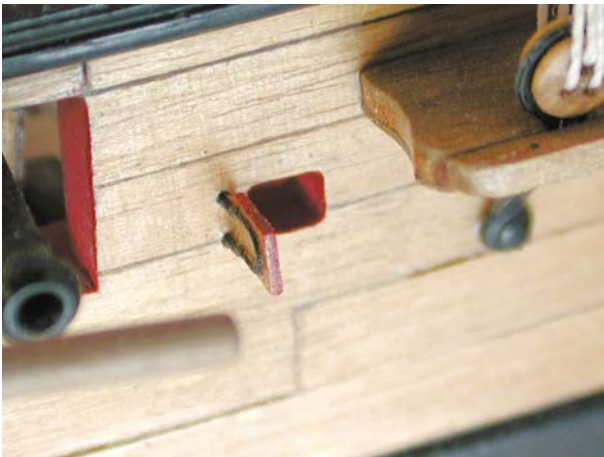
Drill and fit one brass eyelet (210), painted matt (metal) black, to the centre of the inboard face of each sweep port lid. This inboard face should also be painted red ochre but leaving the outboard face and edges natural.

Mark the locations of the sweep ports onto the hull and cut a rectangular hole, approximately 2.5mm high by 3.25mm long, through the ships side. Upon completion, the sills/linings of these openings should be painted red ochre. The lids can now be glued into position to completely cover the sweep port openings, after removal of both the sprue and the 'legs', but taking care not to remove the hinge.

To fit the sweep port lids in the closed position (method 2):

Mark the locations of the sweep ports onto the hull and, without drilling an opening through the hull, simply glue the lids with hinges into position, after removal of both the sprue and the 'legs', but taking care not to remove the hinge.

*Photo 032*



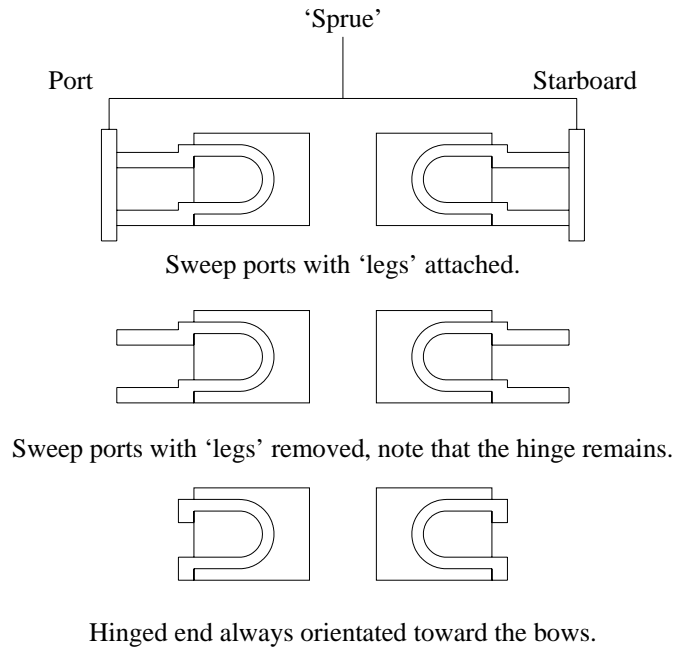
*Photo 033*



## The Scuppers

Identify and, after painting matt (metal) black, remove the scuppers (211) from the brass etched sheet. Using **Plan Sheet 1, 'Hull detail'** for reference, glue the scuppers into position with cyano. When dry, the area inside the scupper can be painted dull black to simulate a hole.

Fig 004



## Transom Decoration

**Note:** After researching, it was found that no information for the colouring of the transom and quarter decoration survives and as such was likely to simply have been varnished wood, (*Photo 034*). However, having researched the heraldic colours (yellow ochre, red ochre, French blue, gold, dull black and matt white) and their usage at the time we have painted the decoration accordingly in order to pick out the detail (*Photo 035*), this also applies to the figurehead, quarter badge etc. and you must decide which colour scheme you prefer to use on your model. If you decide to paint the decoration in the heraldic colour scheme you may wish to obtain Matt Flesh paint (Admiralty Paints: Matt Flesh, AP9120).

Identify the stern light window frames (233) and remove them from the brass etched sheet, after painting either wood (walnut) brown or yellow ochre. If you haven't already glazed the windows with one length of glazing as mentioned in 'The Stern Fascia and Stern Counter' section, you will now need to cut 5 pieces of glazing to fit into the window recesses and fix in place with PVA. With the stern lights glazed, the frames should now be fitted also, again using PVA as cyano will cloud the glazing. Identify and paint accordingly the transom decoration casting (269). The casting will need to be gently shaped to the curvature of the stern fascia against which it will be fixed, ensuring that the pillars run between the stern lights and that the upper edge remains flush with the upper edge of the fascia. When you are happy with the fit, glue into position either with PVA or cyano (cyano should still be used sparingly around the window frames).

Identify the brass extrusion (283), profile 2 (*Photo 022 & Photo 035*), paint either yellow ochre or wood (walnut) brown, cut to length and glue into position against the underside of the transom decoration casting and against the stern fascia, running across the full width of the fascia as shown (*Photo 035*), orientated such that the groove in the extrusion is offset to the top (*Photo 045*). The extrusion will require shaping as before to the correct curvature.

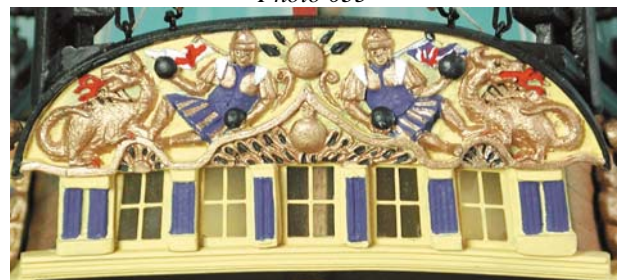
Identify the brass extrusion (283), profile 2 (*Photo 022 & Photo 045*), paint either yellow ochre or wood (walnut) brown, cut to length and glue into position at the join of the second planking and the lower edge of the stern counter. The extrusion should run from the outer edge of the counter to the stern post, orientated such that the groove in the extrusion is offset to the top.

The taffrail capping of 1x4mm walnut painted dull black can now be fitted, centrally, to the upper edge of the stern fascia and transom decoration. The capping should be soaked in water prior to fitting to make the walnut more pliable for fitting around the curve of the taffrail.

*Photo 034*



*Photo 035*



## Channels & Chainplates

Identify and remove from the 2mm walnut sheet the 8 channels, 4 each side (112-115). Using **Plan Sheet 1, 'Hull detail'** for reference, fit the appropriate deadeyes (to be left natural) and chainplates (to be painted matt (metal) black) to each channel, taking care that the channel is correctly orientated as shown. With the chainplates in position on the channels, a length of 1.5x1.5mm walnut should be glued to the outboard face of each channel 'locking' the chainplates into their respective slots, ensuring that the deadeye 'eyes' are orientated as shown.

The studding boom bracket in the forward end of the main channel (fore) (112) should be lined, top and bottom, with the brass etched eyeplates (250), painted matt (metal) black. You should also ensure the hole in the end of the eyeplates and channel will accept 1mm brass wire, to accommodate the lower studding sail boom gooseneck at a later stage.

Copper eyelets (275), painted matt (metal) black, should also be fitted into the top face, of the after end of the main channel (aft) and the top face, of the after end of the mizzen channel as shown on **Plan Sheet 9**.

Using **Sheet 1, 'Hull detail'** for reference, pin and glue the channels into position on the hull, taking care that the channels run parallel to the sheer rail and are positioned 4mm beneath the sheer rail, to accommodate the channel knees when fitted. The mizzen channel should also be positioned 4mm beneath the sheer rail at its forward end but the after end will run slightly away from the sheer rail.

With the channels fitted, the lower end of the chainplates can be bent into position against the hull and glued and pinned with dome headed pins (284), painted matt (metal) black. The chainplates should be angled aft by varying degrees, as shown on **Sheet 1, 'Hull detail'**, taking care not to obscure the sweep ports.

Once completed, using **Plan Sheet 9** for reference, locate, paint wood (walnut) brown and fit the channel knees (249), two on each of the main channels (fore), main channels (aft), and mizzen channels, they fit flush against the top of the channel, the hull and, in the case of the main channels (fore & aft), against the underside of the sheer rail.

## Swivel Guns

The swivel gun pedestals are constructed from 4x4mm walnut, cut lengths approximately 100mm long and, using a draw knife, file or similar, form the square section into an octagonal section. Using **Plan Sheet 1, 'Hull detail'** for reference, cut the pedestals to length as required from these octagonal sections. Offer each pedestal into place and file out a notch to accommodate the sheer rail, capping rails and roughtree rails where necessary (*Photo 038*). When you are happy with the fit, drill a 0.65mm hole down through the top face of each pedestal to accommodate the swivel gun pintle (dome headed nail (284)) when fitted. The pedestals can now be fitted, noting that the pedestals situated at the main channels (one fore and one aft) will need to be cut to sit flush against the channel and the 'cut off' end glued against the underside of the channel.

With the pedestals in position, you can fashion the chesstrees (one each side) from 2x2mm walnut for the third (from the bow) pedestal. The chesstree should measure 7mm long and have a 0.75mm hole drilled fore and aft through it 3.5mm from the underside. The chesstree is left natural (*Photo 039*).

Identify the turned brass 0.5pdr swivel guns (276) (*Photo 036*) and the brass etched swivel gun brackets (219). Using **Plan Sheet 9, '0.5pdr swivel gun assembly'** for reference, form the training handle by gluing the pointed end of a dome headed pin into the hole in the after end of each swivel gun and bending the pin downward through 90 degrees at a distance of approximately 2.5mm from the gun, noting that downward is in relation to the trunnion hole which is offset and when fitted will be positioned offset to the underside. When the pin is secured into position, trim the dome head off the pin, and trim the downward pointing shaft to approximately 2mm in length. Using good quality cyanoacrylate (super glue) glue the training handle ball (286), centrally, to the end of the training handle.

Using a pair of long nosed pliers as a template, bend each swivel gun bracket over them until the 'legs' are running perpendicular to the base with a separation of approximately 2mm, noting that the 'stepped' central ring should be positioned downward as shown, so that the stepped end rings are stepped outward. A dome headed pin should now be inserted down through the hole in the central ring. With this pin in position, the swivel gun trunnion hole can be aligned with the holes through the end rings and secured there with a dome headed pin. When the assembly is completely dry the dome headed pin used as a trunnion can be trimmed flush with the bracket, removing both the point and the dome head.

This whole assembly can now be painted matt (metal) black ready for fitting to the model (*Photo 037*) but due to their delicate structure, fitting should be done at a time of your choosing. You will also note that although there are 18 pedestals, only 12 guns were carried and these would have been moved around the pedestals as required.

Photo 036



Photo 038

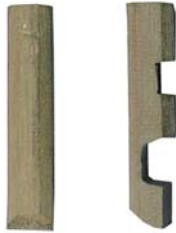


Photo 037



Photo 039



## The Rudder

Identify and remove the rudder (26) from the 5mm walnut sheet. Also identify the rudder pintle straps (225, 227, 229 & 231) and the hull gudgeon straps (226, 228, 230 & 232) on the brass etch sheet. The straps are grouped together on the brass etched sheet and it is advisable only to remove each pair at a time as needed, also the hole, for the pintle and gudgeon, should be opened up to accommodate them prior to removal from the sheet. The pintles are formed from brass dome headed pins (284) with their heads removed and the gudgeons are formed from copper eyelets (275). When completed and in position, the straps, pintle and gudgeon pins are painted white below the waterline and matt (metal) black above the waterline. Similarly the rudder is painted white below the waterline but left natural above.

Each strap will have to be bent with the half etched area facing outboard, ideally a pair of long nosed pliers should be used. Glue each rudder pintle strap into position as shown on **Plan Sheet 1, 'Hull detail'**, with the following considerations:

1. The straps sit tight up into the rudder cut outs as shown.
2. The ends of the straps will lie close to the after edge of the rudder.
3. The straps should run perpendicular to the leading edge of the rudder.

Drill a 0.65mm hole through the centre hole of the strap and into the rudder to accommodate the pintle. The pintle (fashioned from a dome head pin (284)) should be glued into the locating hole and bent downward through 90 degrees, allowing at least 3mm for the downward length to fit into the gudgeon, whilst ensuring the pintle remains within the leading edge of the rudder i.e. within the cut out 'notch' of the rudder.

With the four pintles and straps in position, using masking tape offer the rudder into position up through the stern counter so that the lower edge of the rudder is flush with the lower edge of the false keel. Mark on to the sternpost the positions of the gudgeons (copper eyelets) in relation to the pintles, the gudgeon position should be approximately 0.7mm below the pintle. The rudder can now be removed and the locating holes (0.65mm) for the gudgeons drilled into the stern post. Temporarily position the gudgeons into position and re-position the rudder to confirm the fit. When you are happy with the assembly, remove the rudder and fit the gudgeon straps and gudgeons to the rudder post in a similar manner to the pintle straps. The gudgeon straps should lie flush against the hull and will need to be slightly bent to achieve this and should also run perpendicular to the aft edge of the rudder post. Do not re-position the rudder at this stage.

**Note:** Although vessels of this size were commonly fitted with 5 sets of pintles, gudgeons and straps, it was found during research of admiralty plans that Granado was only fitted with 4 sets. The two smallest rudder straps on the brass etch sheet (unnumbered) are therefore not required.



Photo 040

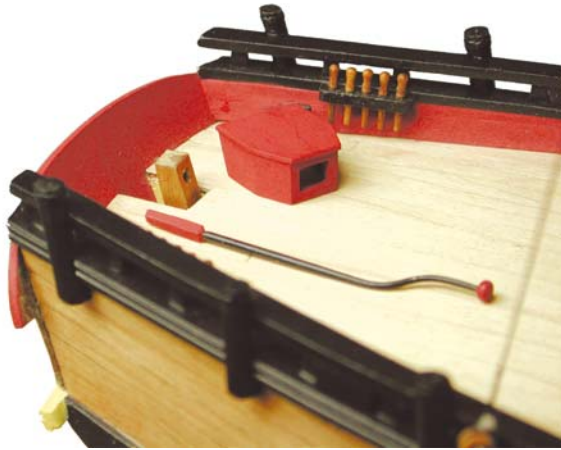


Photo 041

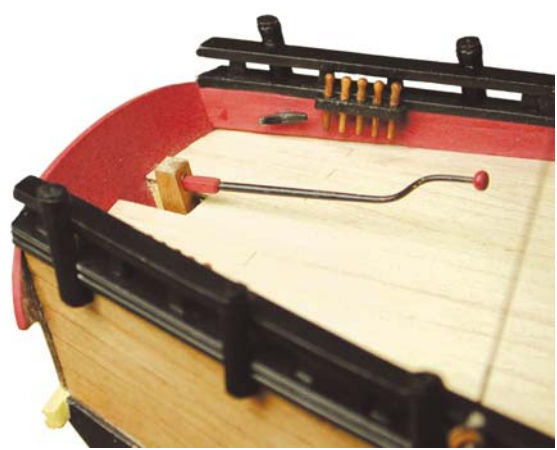


Photo 042



## The Tiller

The tiller is scratch built from 1.5mm wire and 2x2mm walnut strip. Using a length of 1.5mm wire cut to 60mm long form the tiller handle by tapering from 1.5mm at one end to 1mm at the other, using a file or other abrasive material. Using pliers, introduce the shape into the brass as shown on *Plan sheet 4*. The handle cap is made from a small piece of 3mm dowel and painted red ochre. After shaping the tiller handle should be cut to approximately 43mm long.

The tenon is fashioned from a 10mm length of 2x2mm walnut strip. It should remain square throughout its length but be tapered as shown on *Plan Sheet 4*. A 1.5mm hole is drilled in the forward end to accept the tiller bar which should be glued into position.

The opposite end of the tenon is to be located in the mortice of the rudder head. The tenon should be painted red ochre and the tiller bar painted matt (metal) black (*Photo 040*).

## The Rudder Mortice

The rudder mortice is drilled into the headstock of the rudder and will take the tenon of the tiller. The drill should be kept parallel with the top and bottom edges of the rudder as you proceed with the following considerations:

1. Use a 1mm pilot drill to start.
2. The hole is drilled fore and aft.
3. The hole should be positioned 2.5mm down from the top edge of the rudder.
4. The hole should be drilled centrally and remain central along its length.

Once the hole is drilled, it should be enlarged using a small file and made square, do not exceed 2mm square. Ideally the mortice hole should be slightly tapered to accept the tiller tenon. The rudder can now be re-positioned on the model (*Photo 040*) and the tiller inserted into the mortice (*Photo 041*).



## The Tiller Housing

Identify and remove the tiller housing components (185-187 & 134) from the 1.5mm and 2mm walnut sheets. Before the side panels (185) are glued to the underside of the canopy (134), slightly bevel their inner leading edges so as to create a mitre with the remaining panels. Glue the side panels into position so that their rear edges are flush with the back of the canopy. When the tiller housing is completed, the back edge of the canopy will be tapered to the same angle as the sides so that it fits flush to the inner face of the stern fascia, while the assembly remains flush to the deck. Gently sand and mitre the front panel (187) and glue it into position centrally across the front underside of the canopy. The housing quarter panels (186) should also be mitred and glued into position. The completed housing should be painted red ochre and glued into position centrally over the tiller and rudder head (*Photo 042*).

## The Tabernacle

Identify the shoe (140), stiffener (94) and staff cap (141) from the 2mm and 3mm walnut sheets. The after edges of the shoe and cap and their slots will need to be bevelled to run flush with the stiffener and inner face of the stern fascia. The stiffener should be glued between the shoe and cap so that the top and bottom edges are flush and the whole assembly painted red ochre and glued centrally to the tiller housing and inner stern fascia face. The ensign staff can now be made up as shown on **Plan Sheet 4** but, will not be fitted until the driver boom is in place at a later stage.

## The Hull Decoration

### *The Figurehead:*

Identify the cast metal figurehead (267), of the Greek god Hermes, and sceptre (268). Using (*Photo 043 & Photo 044*) for reference paint the figurehead and sceptre as shown or, if desired, wood (walnut) brown. Into the left clenched fist of Hermes, drill a 0.75mm hole just deep enough to accept the sceptre and glue into position. The figurehead can now be glued into position on the stem.

### *The Quarter Badge:*

Identify the cast metal quarter badge (272). Using (*Photo 045*) for reference paint the quarter badge as shown or, if desired, wood (walnut) brown. Using **Plan Sheet 1, 'Hull detail'** for reference, offer the quarter badge into position on the hull and mark the position of the windows. This area of the hull (the position of the windows) should now be painted dull black. The quarter badge can now be glued into position on the hull, you should note that a small section of the lower inboard face of the quarter badge will need to be filed away to allow for the wale, also the window can be glazed, on the inboard face of the quarter badge, to add depth (*Photo 045*).

## The Cabin Light Lids

Identify the four cabin light lids (171) and remove them from the 1.5mm walnut sheet. The inboard faces and the edges should be painted red ochre.

Identify, paint matt (metal) black and remove the cabin light hinges (240) from the brass etched sheet. These should be fitted in a similar manner to the chase port hinges, set 1mm back from the top edge of the lid, noting that there is one left and one right handed hinge per lid as shown (*Fig 004*). With the hinges in position, locate, paint matt (metal) black and remove two brass etched eyelets (210) per lid. Drill a 0.5mm hole into each lid, through the hole in the end of the hinge to accept the eyelets and glue into place.

The lids can now be glued into position on the model. When the assembly is thoroughly dry, drill a 0.5mm hole just above each hinge, to accommodate the lid tackle of 0.1mm natural thread. The tackle runs from the brass eyelet and is secured into these holes.

### *The Quarter and Lower Finishing Figures:*

Identify the cast metal quarter finishing figure (270), of a Roman Legionnaire, and the lower finishing figure (271), of a marine reptile and paint as shown (*Photo 045 & Photo 046*), or wood (walnut) brown if desired.

The Roman Legionnaires can now be fitted. Using (*Photo 045 & Photo 046*) for reference, the base of the figure is positioned against the hull side and the underside of the stern fascia extension, with the head resting against the taffrail.

The lower finishing figure can now be fitted, it is glued against the after end of the wale and the 'tail' butts against the base of the Roman Legionnaire.

Photo 043



Photo 044



Photo 045



Photo 046



## Bowsprit & Mast Assembly

You may find it easier, to avoid turning the round dowel into an oval dowel when tapering, by using a David plane, draw knife or similar as follows:

1. Slice the dowel (running with the grain), from a round at the start point of the taper to a square at the end of the taper.
2. Repeat this process so that the dowel runs from round at the start of the taper to an eight sided polygon at the end of the taper.
3. Repeat step two as desired so that the dowel runs from a round at the start of the taper to a 16 or 32 sided polygon at the end, of a diameter marginally more than that required.
4. Using medium sandpaper, followed by fine sandpaper the taper can be gently sanded round along its length.

### Bowsprit

Using **Plan Sheet 4** for reference, construct the bowsprit to the dimensions shown. Using **Plan Sheet 4, 'Bowsprit bees'** for reference, fit the bees and sheaves (179 & 122). You should note that the profiled 'sheave' slot of the bee sheaves (122) should be positioned against the bowsprit and at the forward slot (for the starboard) and after slot (for the port) of the bees, the opposite hole is therefore obscured by the opposite end of the sheave. The spritsail yard saddle (136), the jibboom heel chock (137) and stop cleats constructed from 1.5x1.5mm walnut should also now be fitted.

Mark onto the bowsprit (and main lower mast when constructed), the positions as shown on **Plan Sheet 4** of the wooldings and woolding hoops. The woolding hoops are made from black cartridge paper which should be cut into strips of approximately 1.25mm wide and 100mm long. Using diluted PVA glue, wrap the strip of cartridge paper around the mast, three times to build up sufficient depth, starting and finishing at the same point to give a uniform thickness. Cut off any excess. Repeat this process for each of the woolding hoops, ensuring that they remain square to the bowsprit / mast.

Drill a 0.65mm hole into the bowsprit / mast directly **below** the uppermost hoop of each woolding, and glue the woolding rope of 0.5mm black thread into this hole. The thread should now be lashed with several turns to completely cover the exposed bowsprit/mast between the hoops. Once completed, seal by brushing on watered down PVA.

The bowsprit cap (82) is made as shown on **Plan Sheet 4, 'Bowsprit cap'**.

**Note:** It is extremely important that the bowsprit and jibboom holes through the cap are offset to the port as shown; this will allow the ensign staff to be positioned to the starboard. It is also important that the cap, when fitted, is perpendicular to the keel and the top and bottom are bevelled to follow the angle of the bowsprit. The holes through the cap should also be angled; this can be achieved by drilling small holes and filing them out with a needle file.

**Note:** When the bowsprit assembly is complete, the bowsprit and jibboom, although offset to port, will run in line with each other.

The general construction of the masts are identical, therefore, a detailed construction of the main mast only will be given.

### The Main Lower Mast

Using **Plan Sheet 3** for reference, make up the main lower mast to the dimensions given as follows:

The lower mast is made up in two parts, the upper part is constructed from 7x7mm walnut cut to a length of 79mm.

On the top of the 7x7mm length, mark out a 4.5mm square. Follow the lines of the square down the wood to a distance of 5mm. Using a fine razor saw, saw at right angles across the dowel to each pencil mark at the 5mm line. Form the square section using a craft knife, saw, file or similar.

The second half of the main lower mast is constructed from 8mm dowel, cut to a length of 238.5mm. Mark, in pencil, the point 111.5mm from the base of the main lower mast, using a craft knife, plane, saw, file or similar, taper the dowel from 8mm round at this point down to 7mm round at the opposite end. The length below this point (111.5mm) should remain at 8mm round.

The two halves can now be joined by drilling a 1.5mm hole, centrally down into the lower half, at the 7mm round end, and up into the upper half, at the 7x7mm square end and gluing together with the use of a length of 1.5mm brass rod. Do not be concerned by the variation in colour between the two different woods as this area is later painted dull black, the join is also further braced by the bibbs as applied next.

Offer the bibbs (175) to either side of the mast and mark their positions onto the mast, bearing in mind that the profiled area of the lower end should face outboard, also the top edge does not sit perpendicular to the mast but is angled to allow the main top, when seated onto this edge, to remain perpendicular to the keel when the mast is shipped at the correct angle, determined by the locating hole for the mast in the keel.

Glue the cheeks to the mast taking care to ensure they are at the same height as each other, remembering that the main top will be located directly on to them.

Identify the main lower mast top platform (174), gunwale (173), crosstrees (87) and trestletrees (86). Using **Plan Sheet 3, 'Main top'** for reference, glue the gunwale to the platform and using 1.5x1.5mm walnut for the battens, glue these to the platform, within the gunwale as shown.

Glue together the crosstrees and trestletrees as shown. The 'notch' in the trestletrees is a locator for the fid of the topmast when fitted and should be toward the front of the assembly, similarly the profiled areas of the trestletrees should face inboard. When complete, glue the crosstree and trestletree assembly to the underside of the top platform. At this stage, put the lower mast and top assembly to one side; **do not** glue them to one another.

## The Main Topmast

The main topmast is assembled from 8mm dowel. In a similar manner to the lower mast, mark an octagon on the top of the topmast. Using a pencil, mark down the complete length of the dowel all eight lines parallel to each other. Hold the pencil in a normal manner between thumb and forefinger and using your middle finger as a guide, draw down the mast. This is a simple method which becomes very efficient and accurate with a little practise. With the eight lines drawn down the mast, draw the octagon to the base of the mast also. These lines will enable you to easily carve each of the octagonal areas onto the mast in-line with each other.

Using *Plan Sheet 3* for reference, make up the topmast to the dimensions given.

**Note:** Take care in drilling the locating hole for the fid through the square section as shown, as this will be fitted into the notch on the main top trestletrees and if drilled at the wrong height will make correct alignment of the mast impossible. Beware not to fit the fid at this stage or the topmast will not pass through the cap. All fids are made from 1.5x1.5mm walnut to a length of 5mm longer than the width of their respective mast.

The first 8mm from the base of the top mast is a 4.5mm octagon, the next 14mm should be 4.5mm square, followed by another 4.5mm octagonal section for 33mm. From the top of this octagonal section, through a length of 110mm, the mast should be tapered from 4.5mm round down to 3mm round.

The octagon at the top of this round section is tapered from a diameter of 3mm to a diameter of 4.5mm along a length of 15mm.

The remaining top 20mm of the mast is 3mm square.

Identify the main topmast trestletrees (120) and main topmast crosstrees (177) and, referring to *Plan Sheet 3*, '*Main topmast top*', assemble the topmast top as shown.

## The Main Topgallant Mast

The main topgallant mast is assembled from 6mm dowel. Using *Plan Sheet 3* for reference, make up the topgallant mast to the dimensions given.

Mark the octagons and squares onto the mast as described previously, taking care that they are all in-line. Take care also with the positioning of the fid.

With all three sections of the foremast constructed, the mast as a whole can be assembled.

Starting with the lower mast, referring to *Plan Sheet 3* mark the positions and fit the mast woodings, as previously described.

Identify the main mast cap (35) and main topmast cap (83), noting that the main topmast cap has been produced in two halves. Dry fit the main top and main mast cap to the lower mast. **Do not** secure. Now dry fit the topmast, up through the cap, insert the fid and position it into its locating notches on the trestletrees. Dry fit the topmast top, topmast cap and topgallant mast in a similar manner. None of the individual components (lower mast, topmast, topgallant mast, caps & tops) should be glued to one another at this stage.

With everything dry fitted together, manoeuvre the topmast to run parallel and in-line vertically with the lower mast, at the same time, the lower top should remain parallel to the keel, i.e. not perpendicular to the mast. When you are happy with the alignment, glue the lower mast, lower top, cap, fid & topmast securely in position.

This process should be repeated with the topmast, topmast top, cap, fid and topgallant mast.

With the assembly complete, attach the bolsters, of 3x3mm walnut sanded or filed to quarter rounds as shown, to the lower top and the bolsters, of 2x2mm walnut sanded or filed to quarter rounds as shown, to the topmast top.

Using a length of 0.5x3mm walnut, cut to 0.5x1mm to simulate the battens, attach these battens to the top square section on the lower mast as shown (ensure the mast banding, of cartridge paper, as shown on *Plan Sheet 3*, has been applied first). Also, secure the jeer block strop cleats (126) to the sides.

Finally locate and fit the mast truck (189).

**Note:** A 0.5mm hole, to simulate a sheave, should be drilled fore and aft through the main topgallant mast, at a distance of 5mm below the hounds (top octagonal section), this will be required when rigging the main topgallant yard tie.

## The Mizzen Mast

Using **Plan Sheet 3** for reference, the mizzen mast is constructed in the same manner as the main mast with the following points of note:

1. The mizzen lower mast is made from one length of 6mm dowel, the topmast from 6mm dowel and the topgallant mast from 4mm dowel.
2. There is a pronounced rake on the mizzen mast as can be seen on the drawings. This angle is pre-determined by the mizzen mast slot in the keel.
3. The bibbs (176) and tops (Lower; 119, 88, 89 & 90. Topmast; 121 & 178) are to be fitted with the same considerations as the main mast, i.e. the top edges of the bibbs are angled to allow the top to run parallel to the keel when the mast is shipped at the correct angle, determined by the locating hole for the mast in the keel.
4. The mizzen lower mast, at the point of the bibbs should be 3.5mm square on the after and side faces, but the forward face should remain rounded and follow the run of the rest of the mast below as shown on **Plan Sheet 3**.
5. Do not forget to fit the driver boom saddle (143), positioned 45mm off the deck, and also the mizzen mast pin rail (135), positioned 20mm off the deck, noting that the driver boom saddle must be fitted before the pin rail.

The mizzen mast cap (84) and mizzen topmast cap (85) are also required during the construction of the mizzen mast.

## Masts, Bowsprit & Boom Colours

The masts are painted as follows:

All of the masts, bowsprit, jibboom, booms etc are to be stained walnut. The yards, wingsail gaff, driver boom and gaff are all painted dull black but, the booms are left natural (stained walnut). The area of the masts to be painted dull black are as follows:

1. The lower masts: from the lower edge of the bibbs, up to and including the cap, this incorporates the lower part of the topmasts also.
2. The topmasts: from the lower edge of the hounds (for the main mast) and the underside of the topmast top (for the mizzen mast), up to and including the cap, this incorporates the lower part of the topgallant masts also.
3. The main topgallant mast: from the lower edge to the upper edge of the hounds.
4. The Bowsprit: from the jibboom heel chock, up to and including the bowsprit cap, this incorporates the inboard end of the jibboom and the jackstaff also.

*Photo 047*





## Yards & Booms

Using **Plan Sheet 4** for reference, make up the yards and booms to the dimensions shown. The sling cleats (125, 180-183) should also be fitted as shown.

**Note:** The central octagonal sections of the main and mizzen topmast yards are formed by gluing, with diluted PVA, appropriate lengths of black cartridge paper to the yard. Conversely, the main yard octagonal section is formed by shaping the dowel itself.

**Note:** The lower studding sail boom should be constructed now but will not be fitted until a much later stage when instructed. The gooseneck is formed from 1mm brass wire (321) and should be shaped as shown, with a straight 90 degree bend.

The stop cleats on all yards are constructed from 1.5x1.5mm walnut shaped as required.

**Note:** The main yard studding sail booms are secured to the main yards through yard rings as shown on **Plan Sheet 4** and are offset through 45 degrees above and forward of the yard, the inner most end of the boom is lashed to the yard with 0.5mm black thread. The outermost rings are located, using 0.75mm brass wire (320), to holes drilled into the end of their respective yards, through the brass etched boom iron straps (215).

## Mast, Yard & Top Blocks

With the masts and yards assembled and referring to **Plan Sheet 5** and (*Fig 005 - 012*) fit the blocks and eyelets to the masts, yards and tops as shown. Unless otherwise shown, the smaller blocks (2.5 - 3mm) should be attached with 0.25mm black thread, the 5mm blocks should be attached with 0.5mm black thread and the 7mm blocks are attached with 1.0mm black thread.

**Note:** All of the blocks on the main yard should be positioned directly on top of or directly underneath the yard, i.e. they are all 'behind' the booms.

**Note:** No blocks should be painted on any part of the model.

## Yard Horses (Footropes)

Referring to **Plan Sheet 5**, the main and mizzen topmast and topgallant yard horses are fitted from 0.25mm black thread. The outer end is seized to the yard, outside the stop cleat, the horse then leads inboard and through stirrups of 0.75mm brass wire where appropriate and the end is seized to the yard, outside the sling cleat on the opposite side i.e. port horse to starboard sling cleat and vice versa.

The Spritsail yard horses are constructed from a single length of 0.25mm black thread, the ends are seized directly to the yard, outside the stop cleats. The centre of the horse is then lashed to the centre of the yard with 0.25mm black thread.

Due to the era of this ship the main yard and crossjack yard horses, of 0.25mm black thread, are rigged a little differently to usual. The horses are seized outside the stop cleats and lead inboard but, rather than being seized directly to the yard, outside the sling cleats on the opposite side as usual, a 3mm deadeye is seized into the end of the horse, directly beneath the sling cleat, port sling cleat for the port horse and vice versa. A lanyard is then set up between the two deadeyes and when complete, the central point of this lanyard is lashed to the centre of the yard with 0.25mm black thread, as shown on **Plan Sheet 5** & (*Photo 047*).

## Stepping the Masts

Using **Plan Sheet 5** for reference, temporarily drill and pin the yards in place on the masts, the spritsail yard is positioned directly in front of the spritsail yard saddle and on the underside of the bowsprit as shown on **Plan Sheet 7**. With the locations marked, drilled and pinned, remove the yards and set them to one side, they will not be finally fitted until needed for the running rigging.

Identify the mizzenmast coat (123) and main mast coat (124). Pass the masts through their respective coats and step the masts into their locating holes on the deck, adjust the masts to the desired rakes and secure the coat to the deck (ensure the masts are all vertical when viewed fore and aft). Secure the masts in place.

## 'Top' Hand Rails

Identify and paint matt (metal) black the rail stanchions for the tops (245). Using **Plan Sheet 3** for reference, the stanchions are fitted to the top of the gunwale, in their pre drilled locating holes. There are four stanchions fitted across the back of the main top and three across the mizzen top. Cut to length and paint dull black lengths of 1.5x1.5mm walnut to fit into the 'U's' of the rail stanchions across the tops, as hand rails. The hand rails should be approximately the same length as the width of the top, but not exceeding this measurement.

## Main Lower Top Blocks

Fig 005  
Main Lower Top (Top side)

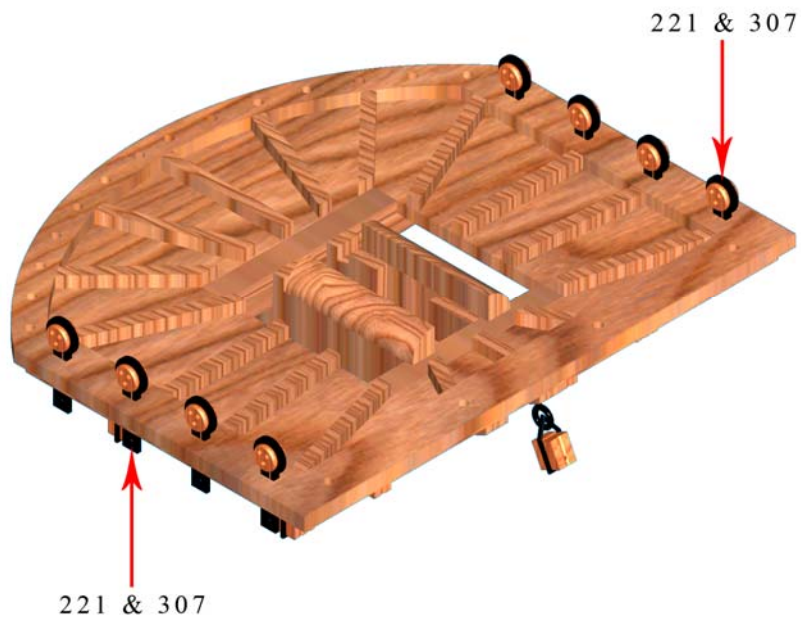
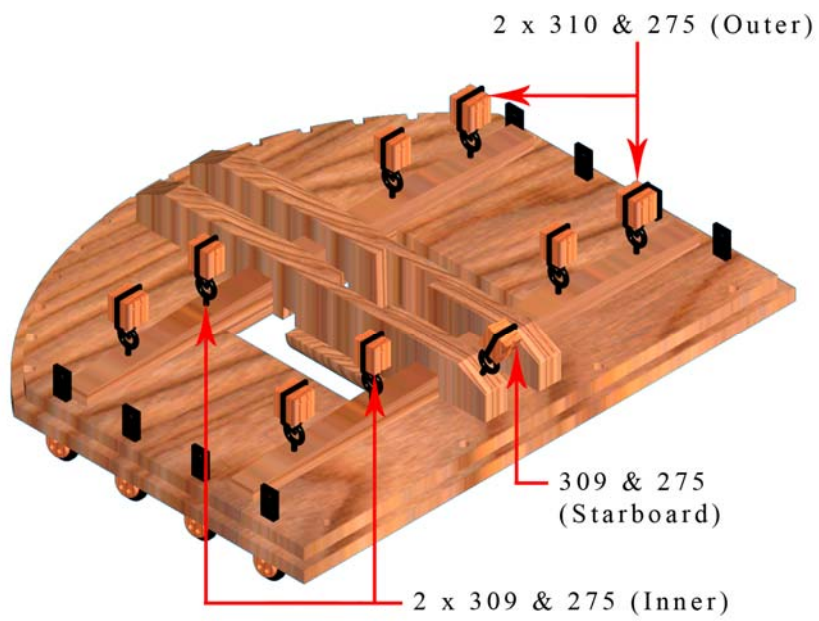
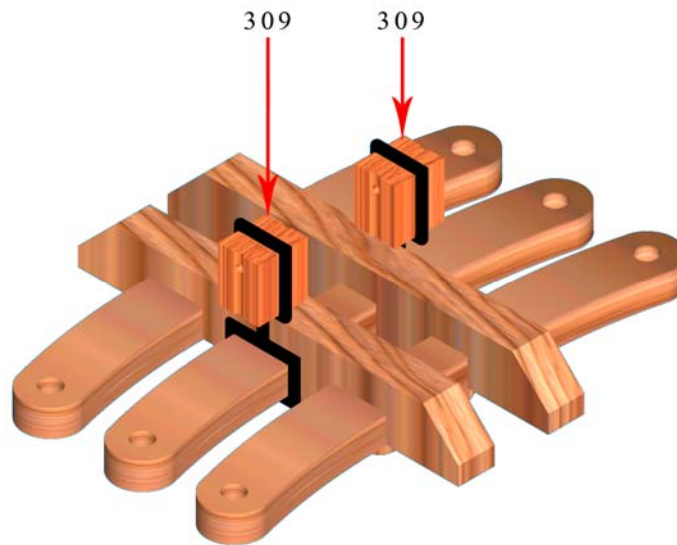


Fig 006  
Main Lower Top (Underside)



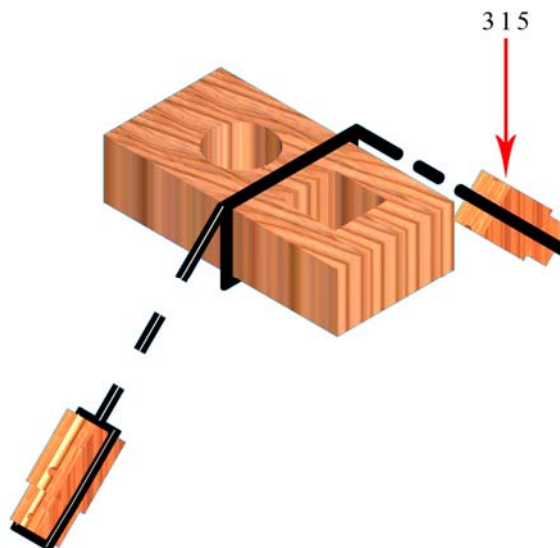
## Main Topmast Top Blocks

Fig 007  
Main Topmast Top (Underside)



## Main Lower Mast Cap Blocks

Fig 008  
Main Lower Mast Cap



## Mizzen Lower Top Blocks

Fig 009  
Mizzen Lower Top (Top side)

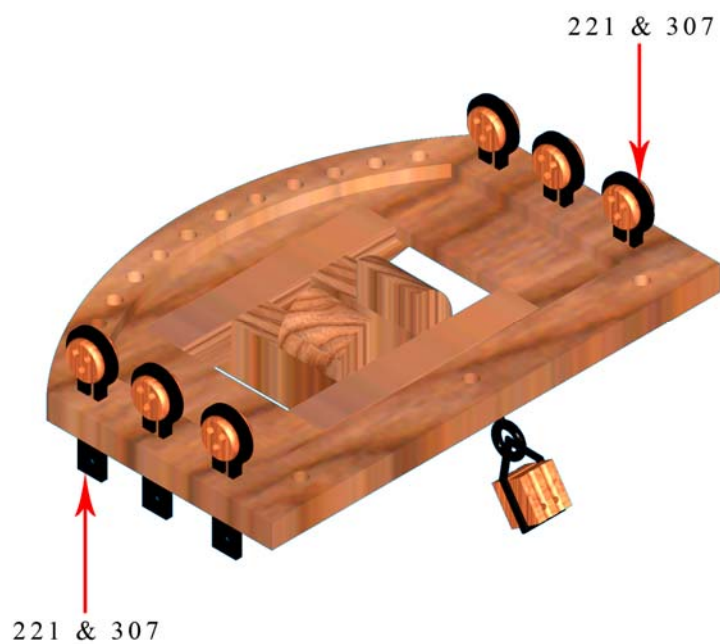
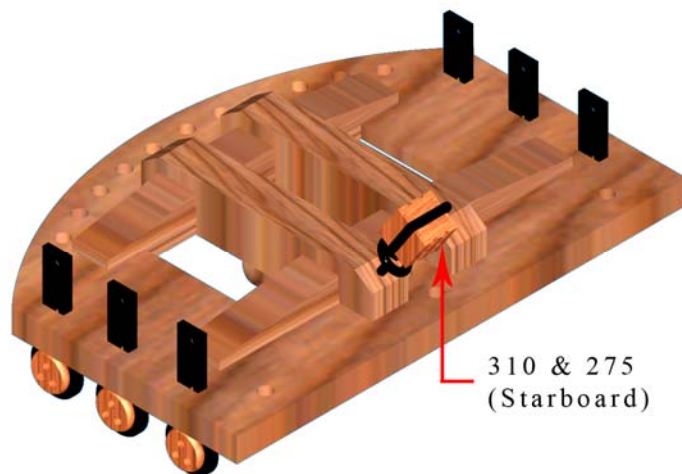
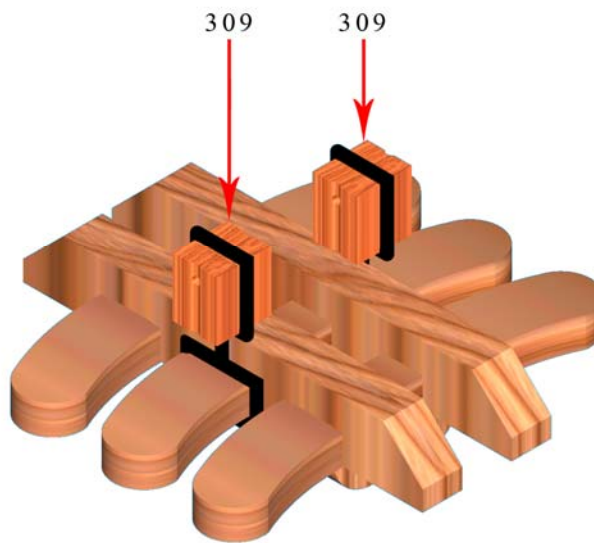


Fig 010  
Mizzen Lower Top (Underside)



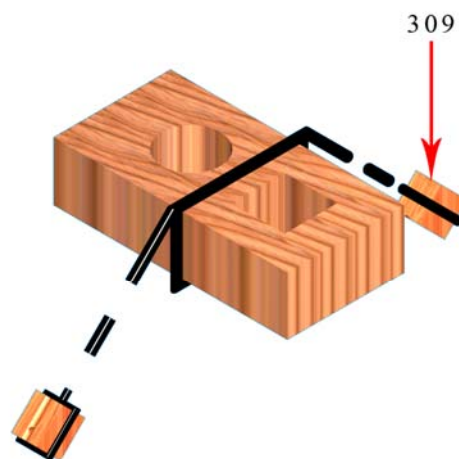
## Mizzen Topmast Top Blocks

Fig 011  
Mizzen Topmast Top (Underside)



## Mizzen Lower Mast Cap Blocks

Fig 012  
Mizzen Lower Mast Cap





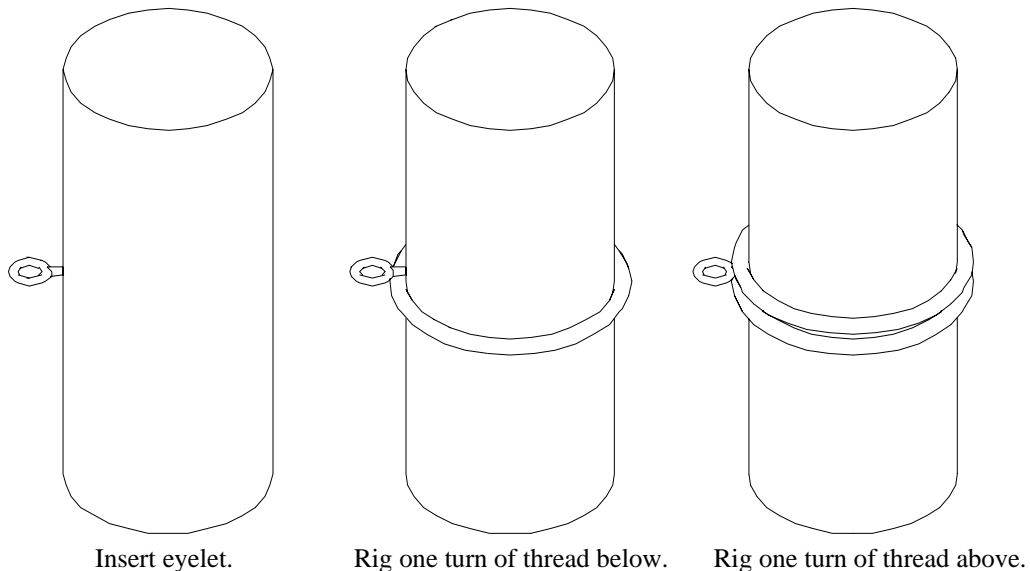
## Standing Rigging

**Note:** All *b* numbers in these rigging instructions refer to belaying points as described. All of these points can be found on *Plan Sheet 9*.

The rigging plans have been drawn following extensive research, contemporary and modern. We would recommend that you follow these drawings exactly unless you are converting the model to an earlier or later version of the ship.

**Note:** Never use super glue on the rigging unless specifically stated in the instructions. Brushed on watered down PVA should be used for the majority of the knots. Super glue can be applied to the end of the rigging to aid threading through the blocks. Where a copper eyelet (275) (with rigging passing through it) is secured directly to a mast or yard as a thimble, a turn of 0.25mm black thread should be lashed around the mast, once close below the eyelet and once close above the eyelet. This is to simulate a thimble as shown (*Fig 013*).

Fig 01



### Anchor Cable and Messenger:

It is beneficial to rig the anchor cable (excluding the anchors) and messenger before any other rigging as you will need full access to the model.

Identify and tidy the messenger snatch block (50), rounding the corners and cleaning the slot. Trim and insert, into the crown of the messenger snatch block, a copper eyelet, ensuring that the eyelet is at right angles to the eyelet already positioned in the forward quarters of the after mortar pit surround, so that the messenger snatch block will lie as shown (*Photo 010*). Join the eyelet of the messenger snatch block to the eyelet in the forward quarters of the mortar pit surround by carefully opening one eyelet, inserting the other and then carefully closing the eyelet again.

The messengers (one each side) are of 1mm natural thread and are rigged as follows:

1. For the port messenger; rig two turns of thread around the windlass, starting against the inboard face of the standard, the messenger runs from aft, under the barrel, up the front of it and back over for two turns. On the second turn, glue the messenger to the underside of the windlass and trim to hide.
2. The now running end, currently against the inner face of the standard, now passes aft along the deck, outboard of the elm tree pump and leads through the messenger snatch block, forward again, inboard of the elm tree pump, back to the windlass.
3. The running end now passes over the top of the windlass barrel, down the front of it, under and back up for two turns travelling outboard. Again on the second turn, glue the messenger to the underside of the barrel and trim, ensuring the messenger remains taut such that it is suspended off the deck.
4. The Starboard messenger is rigged in a similar manner bearing in mind that when the windlass was turned, both messengers must be moving in the same direction, when in use, i.e. either hauling in or letting out the anchor cables.

The anchor cable of 1.8mm natural can now be rigged. Thread one end of a 500mm length of 1.8mm natural thread through the inboard hawse holes (one each side), from outboard to inboard. Carefully pass this end aft along the main deck, passing over the windlass barrel and down through the corner holes in the foremost main hatch cover. In the opposite end, tie a loose figure of eight knot simply to stop the cable pulling through the hawse hole until it is required at the end of the rigging process.

'Nippers' of 0.1mm natural thread can now be rigged. These are simple clove hitches used to attach the anchor cable to the messenger spaced at approximately 25mm intervals.

### Tackle Pendants:

Only one pair of tackle pendants is required and only to the main mast.

The tackle pendants are from 0.5mm black thread. Lead the pendant up through the main top lubber's hole, pass it round the back of the lower mast head and back down through the lubber's hole, opposite side. The pendants hang down 41mm below the top, (level with the catharpins when fitted) and a 5mm single block is seized into each end.

**Note:** The lubber's hole is the hole in the top (through which the lower mast head passes).

### Lower Mast Shrouds:

Shrouds are next to be set-up and a formal sequence must be adhered to. Forward starboard, forward port alternating. The main lower mast shrouds are from 1mm black thread, as shown on *Plan Sheet 6* together with the appropriate deadeye sizes (The deadeyes are attached to the channels as shown on *Plan Sheet 1, 'Hull detail'*). Roughly measure out the length of the first pair of shrouds and rig one end with the appropriate size deadeye. The upper and lower deadeyes need to be correctly and uniformly spaced. The spacing for the lower mast deadeyes should be 15mm. A small jig can be made as follows, cut two lengths of 1mm wire approximately 35mm long, bend 10mm from each end to an angle of 90 degrees. This should leave 15mm between each end. A similar jig can be made (in different size material) for different size blocks. One end of the jig can be slotted into the middle hole of the lower deadeye with the other end into the middle hole of the shroud deadeye. Thread the loose end of the shroud up through the main top lubber's hole around the mast, back down through the main top lubber's hole (same side) and down to the second deadeye. Insert a loose deadeye into the second spacing jig with the other end of the jig in the corresponding deadeye. The loose end of the shroud should then be wrapped around the deadeye with 0.25mm black thread. Tie the pair of shrouds together near the tops, with a simple clove hitch, using 0.25mm black thread and then push the knot up to the bolster. Rig the lanyards (cable laid) to the deadeyes using 0.5mm natural thread as shown on *Plan Sheet 6, 'Rigging detail'*. Continue this procedure until all the lower mast shrouds have been set up, bearing in mind that the shrouds will need to be cut to a longer length as you progress.

**Note:** The Main backstay is set up as a shroud as shown on *Plan Sheet 6*. They (port and starboard) are formed from a single piece of 1mm black thread which passes up through the lubber's hole, round the back of the lower mast head and back down through the lubber's hole, opposite side. Deadeyes set up with 15mm spacing as per the shrouds.

There is a futtock stave to each of the main lower shrouds, mizzen lower shrouds and main topmast shrouds. These are cut from 0.75mm brass (320) to the length of the spread of the shrouds at the position to which they are to be tied using 0.25mm black thread, as shown on *Plan Sheet 6*. Tie each shroud to the futtock stave with a simple clove hitch.

**Note:** The futtock stave is positioned across the shrouds at a distance as far below the 'top' as the mast cap is above the 'top' as shown on *Plan Sheet 6, 'Shroud, futtock stave & catharpin assembly'*.

The main lower mast port futtock stave is lashed to the opposite (starboard) futtock stave by ropes called catharpins as follows:

There are 3 catharpins from 0.25mm black thread. They are positioned between the 2nd and 3rd, 4th and 5th, and the 6th and 7th (main backstay) shrouds.

The mizzen lower mast shrouds are set up in the same way as the main lower mast shrouds but from 0.75mm black thread. Again the upper and lower deadeyes should be uniformly spaced but with a 12mm jig. The lanyards are rigged (cable laid) from 0.25mm natural.

**Note:** It is imperative that the mizzen shrouds are passed through the mizzen shroud pinrail (188) when being rigged. Leave the pinrail loose until the shrouds have been set up at which time it can be permanently positioned directly above the position where the lanyards have been secured to the shroud.

The mizzen futtock stave is cut from 0.75mm brass to the length of the spread of the shrouds at the position to which they are to be tied using 0.25mm black thread, as shown on *Plan Sheet 6*. Tie each shroud to the futtock stave with a simple clove hitch.

(Similarly to the seventh main shroud, the fourth mizzen shroud is actually the mizzen backstay).

### Futtock Shrouds:

Identify the 2.5mm deadeyes and futtock strops (221). Insert a deadeye into each strop and position the strops into the slots as shown on *Plan Sheet 6, 'Fitting of deadeye futtock strops'*. The futtock strops are attached to the futtock staves by the futtock shrouds and small brass etched rigging hooks (217), as shown. The futtock shrouds are 0.75mm black thread for the main mast and 0.5mm black thread for the mizzen.

**Note:** The main mast futtock shrouds are secured to the futtock stave between the 1st and 2nd, 2nd and 3rd, 3rd and 4th, and 5th and 6th lower mast shrouds.

### Topmast Shrouds:

The topmast shrouds are set up in a similar manner to the lower mast shrouds using the appropriate size material as shown on **Plan Sheet 6**. There is a pair of 0.75mm brass futtock staves on the topmast shrouds positioned and secured as already described above, there are no catharpins.

**Note:** The upper and lower deadeyes should be uniformly spaced with a 12mm jig.

### Topgallant Shrouds:

Although no deadeyes are used, the main topgallant shrouds are set up in a similar manner to the lower and topmast shrouds. The first pair is tied off to the topmast futtock stave, passes up through the hole in the end of the first topmast crosstree, leads round the topmast hounds as shown and passes back down through the hole in the second topmast crosstree and is secured to the futtock stave. Again the shrouds should be tied with a simple clove hitch close under the hounds.

The third main topgallant shroud is paired with the main topgallant backstay. It is tied off to the topmast futtock stave, passes up through the hole in the third topmast crosstree, round the mast head and then leads down to the main backstay stool where a 3mm deadeye is seized into the end and set up to a second 3mm deadeye in the stool with 0.1mm natural thread.

**Note:** The deadeyes are spaced with a 12mm jig.

There are no mizzen topgallant shrouds.

### Ratlines:

This stage will require a considerable amount of time and patience but the end result will be its own reward.

For the main lower shrouds, before starting, a length of 0.75mm brass must be cut to the length of the spread of the shrouds (including the main backstay) and secured directly above the position where the lanyards have been secured to the shroud, to form a shroud batten as shown on **Plan Sheet 6**.

0.1mm natural thread is used for the ratlines and is secured to each shroud with a clove hitch as shown on **Plan Sheet 6, 'Rigging detail'**. They should be uniformly spaced approximately 5mm apart, from the shroud batten up to the futtock stave. Leave about 15mm of excess thread at each end of each row of ratlines; this will make the process of trimming the ends much easier.

**Note:** For the main lower mast, the main backstay (7th shroud) is omitted for the first five ratlines above the deadeyes, that is to say the ratlines are only rigged to the 1st – 6th shrouds. The sixth ratline is also rigged to the main backstay (7th shroud).

The next 5 ratlines then omit the main backstay (7th shroud), and the next ratline again includes the main backstay (7th shroud), this sequence continues up to the futtock stave as shown on **Plan Sheet 6**.

The mizzen shrouds and backstay (4th shroud) are all rigged with ratlines, spaced at 5mm intervals (no omissions). However, no shroud batten is required; this is effectively formed by the mizzen shroud pinrail.

The topmast shrouds, main topgallant shrouds and all futtock shrouds are also all rigged with ratlines spaced at 5mm intervals (no omissions), also without shroud battens.

When all the ratlines are finally rattled, stain them by carefully brushing on black Indian ink. Before applying the ink cover the back of the shrouds with paper to ensure no drops of ink are spilt on the deck. When the ink has dried it may be necessary to pull the ends of the ratlines to bring the shrouds back to shape as a slight shrinking may have occurred as the ink dried. Finally cut off the excess thread with a small sharp pair of scissors.

### Bowsprit:

The bowsprit can now be glued into position through the forecastle deck and into the mast step, ensuring that the cap remains vertical both from the front and side views. The bowsprit is also held in position by one set of gammoning of 5 turns in 1mm black thread. The gammoning passes over the bowsprit in front of the gammoning cleats, down past the headrails and through the gammoning slot in the stem.

**Note:** With five turns of gammoning in place, do not cut or tie off the end, instead pass it around the centre of the gammoning, within the headrails, five times and secure off to itself.

Extreme care should be exercised when rigging the gammoning to avoid damaging the headrail and timber assembly.

### Driver Boom and Driver Gaff:

It would be normal practice to attach these now, however in order to keep the model to a more manageable size it will be beneficial to ship them at a later stage as described. If you prefer to ship them now, all required instruction can be found on pages 57 & 58.

### The Mizzen Stay:

Referring to **Plan Sheet 6**, the mizzen stay is of 1mm black thread and requires an eye and mouse as follows

1. Seize a loop at the end of the stay large enough for the stay to run through it. This loop is called an eye.
2. Using 0.5mm black thread, wrap the thread around the stay at a distance of 45mm from the eye and create a bump large enough to simulate a mouse and prevent the eye from passing over it **Plan Sheet 6, 'Eye & mouse setup'**.
3. Thread the eye end of the stay up through the mizzen top lubber's hole from the port side around the mast and back down through the lubber's hole, starboard side.
4. Lead the running end of the stay through the eye until it is held by the mouse.

A 5mm deadeye is lashed to the after side of the main mast 30mm above the deck using 0.75mm black thread.

A 5mm deadeye is also seized into the end of the stay approximately 15mm from the deadeye in the after face of the main mast. A lanyard of 0.25mm natural thread is then set up between these two deadeyes and is belayed back onto the stay.

### The Mizzen Topmast Stay:

Referring to **Plan Sheet 6**, the mizzen topmast stay is of 0.5mm black thread and requires an eye and mouse (the mouse positioned 45mm from the eye).

The eye is passed around the topmast head, **over** the crossrees and down between the trestletrees in front of the crossrees. The running end is passed through the eye until it is held by the mouse.

A 5mm deadeye is lashed to the after face of the main mast with 0.25mm black thread directly beneath the jeer strop cleat.

A 5mm deadeye is seized into the end of the stay approximately 15mm from the deadeye in the after face of the mast. A lanyard of 0.1mm natural thread is then set up between these two deadeyes and is belayed back onto the stay.

### The Main Stay:

Referring to **Plan Sheet 6**, the main mast stay is of 1.3mm black thread and requires an eye and mouse (the mouse positioned 110mm from the eye). Thread the eye end of the stay up through the main top lubber's hole from the port side around the mast and back down through the lubber's hole, starboard side. Lead the running end of the stay through the eye until it is held by the mouse.

A 7mm closed heart block is held in a collar of 0.75mm black thread which passes from the block down around the bowsprit, through the hole in the stem and back to the block.

A 7mm closed heart block is secured into the end of the main stay approximately 15mm from the block in the collar and they are lashed together with 0.5mm natural thread as shown on **Plan Sheet 6, 'Method of seizing closed heart 'collar' to closed heart of 'stay'**.

### The Main Preventer Stay:

The main preventer stay is of 1mm black thread and requires an eye and mouse (the mouse positioned 110mm from the eye).

Thread the eye end of the stay up through the main top lubber's hole from the port side around the mast and back down through the lubber's hole, starboard side. Lead the running end of the stay through the eye until it is held by the mouse.

A 7mm closed heart block is held in a collar of 0.75mm black thread, to the bowsprit, positioned directly behind the jibboom.

A 7mm closed heart block is secured into the end of the main preventer stay approximately 15mm from the block in the collar and they are lashed together with 0.25mm natural thread.

### The Main Topmast Stay:

The main topmast stay is of 0.75mm black thread and requires an eye and mouse (the mouse positioned 50mm from the eye).

The eye end of the stay is passed around the topmast head, from port to starboard, between the second and third crossrees.

Lead the running end of the stay through the eye until it is held by the mouse.

The running end then travels down through the forward starboard sheave hole in the bees and leads in towards the bow where a 3mm single block approximately 30mm from the bow is seized into the end. At the same time, the tackle falls of 0.1mm natural thread are tied into the arse of this 3mm block.

A copper eyelet painted matt (metal) black is secured into the bow as shown on **Plan Sheet 6**, directly under the starboard knighthead. A 3mm single block with a small rigging hook (217) seized into its arse is hooked into the copper eyelet (hook up). The tackle is then set up between the two blocks and the falls are belayed to the starboard knighthead (**b1**)

### The Main Topgallant Stay:

The main topgallant stay is of 0.25mm black thread. The standing end is tied off at the main mast hounds as shown on **Plan Sheet 6**. The running end passes through a 3mm single block secured to the end of the jibboom it then leads in towards the bow where it is lashed to the collar of the main stay (**b2**) port side.

#### The Mizzen Topmast Backstay:

The mizzen topmast backstay is of 0.5mm black thread. Using **Plan Sheet 6** for reference, the mizzen topmast backstay is set up in a similar fashion to the shrouds using two 3mm deadeyes, one seized into the end of the backstay, the other hooked with a small rigging hook (217) into a copper eyelet, painted matt (metal) black, positioned 5mm aft of the foremost cabin light as shown. The deadeyes should be spaced with a 12mm jig and rigged with a 0.25mm natural lanyard. The backstay passes round the back of the mizzen topmast head, between the second and third crosstrees and down to an identical arrangement on the opposite side.

#### The Mizzen Topgallant Mast Backstay:

The mizzen topgallant mast backstay is of 0.25mm black thread. Using **Plan Sheet 6** for reference the mizzen topgallant mast backstay is set up in a similar fashion to the mizzen topmast backstay using two 3mm deadeyes, one seized into the end of the backstay, the other rigged with a small rigging hook (217) into a copper eyelet, painted matt (metal) black, positioned 7mm forward of the aftermost cabin light as shown. The deadeyes should be spaced with a 12mm jig and rigged with a 0.1mm natural lanyard. The backstay passes round the topgallant mast head as shown and down to an identical arrangement on the opposite side.

#### The Main Topmast Breast Backstay:

The main topmast breast backstay is of 0.75mm black thread. Using **Plan Sheet 6** as reference, seize a 3mm deadeye into the lower end of the stay. It is set up in the same manner as a shroud to another 3mm deadeye in the main channel (fore) (spaced with a 12mm jig) in a chainplate with a 0.1mm natural lanyard. It then leads up outside the main lower mast top and round the back of the topmast head, between the second and third crosstrees and back down to an identical arrangement on the opposite side.

#### The Main Topmast Running Backstays:

Referring to **Plan Sheet 6**, the main topmast running backstay is of 0.75mm black thread. It is set up in the same way as the Main Topmast Breast Backstay, with a 0.1mm natural lanyard, to the foremost 3mm deadeye of the main channel (aft).

#### The Main Topmast Backstay:

Referring to **Plan Sheet 6**, the main topmast backstay is of 0.75mm black thread. It is set up in the same way as the Main Topmast Breast Backstay, with a 0.1mm natural lanyard, to the aftermost 3mm deadeye of the main channel (aft).

#### The Bowsprit Shrouds:

The bowsprit shrouds are of 0.5mm black thread. There are two shrouds (one either side) made up using 5mm deadeyes and arranged as shown on **Plan Sheet 6**. The standing end is tied into the copper eyelet in the hull as shown and a lanyard of 0.25mm natural thread, with a 15mm jig used to separate the deadeyes.

#### The Bobstays:

There are two bobstays each of 0.5mm black thread. They are set up in a similar manner to the bowsprit shrouds also using 5mm deadeyes. They are tied off through the holes in the stem as shown on **Plan Sheet 6**. Again the deadeyes are separated using a 15mm jig and have a 0.25mm natural lanyard.



### The Crowsfeet:

The main preventer stay crowsfeet are of 0.1mm natural thread. A 3mm single block is lashed to the preventer stay approximately 40mm forward of the mouse. A second 3mm single block is lashed to the end of the euphroe block (213), with the falls of 0.1mm natural thread tied into the arse of the block at the same time. The tackle is then set up between these 3mm blocks as shown (*Fig 014*) leaving a gap of 12mm between the blocks, with the falls belayed to the preventer stay directly forward of the 3mm block. The crowsfeet are then rigged as follows:

1. A figure of eight knot is tied into the end of the 0.1mm natural thread.
2. The running end is led **up** through the **port** centre hole in the leading edge of the top, until held by the knot, and taken down to the aft most hole in the euphroe block (passing through the euphroe block from **port** to **starboard**).
3. It is then led to the top and passed **down** through the centre **starboard** hole, led under the top and **up** through the neighbouring hole to **starboard**.
4. It is then taken back down and through the next hole in the euphroe block (passing through the euphroe block from **starboard** to **port**).
5. Next, to the leading edge of the top and **down** through the next hole to **port** of the standing end, under the top and **up** through the neighbouring hole to **port**.
6. Back down to the euphroe block and so on until it passes **down** through the outermost **starboard** hole in the top where it belays around the neighbouring run under the top.

The mizzen stay crowsfeet are set up in the same manner but the 3mm single block is positioned 30mm forward of the mouse and the mizzen euphroe block (214) is used.

### The Wingsail Gaff:

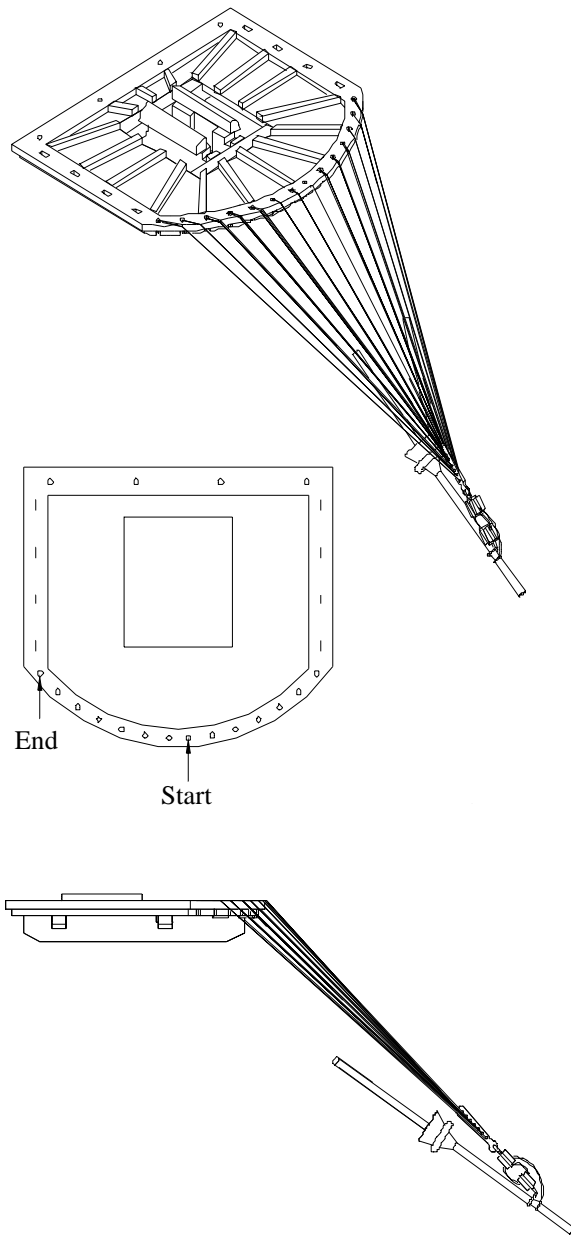
Referring to **Plan Sheet 4**, make up the wingsail gaff as shown. To the wingsail gaff, secure one 3mm single block to a copper eyelet at the throat of the gaff jaws (138) using 0.25mm black thread as shown, a second 3mm single block is lashed to the gaff approximately 28mm from the end.

Referring to **Plan Sheet 7**, the wingsail gaff is secured to the mast with 17 parrel beads, on 0.25mm black thread.

A 3mm single block is secured to a copper eyelet on the starboard trestletree as shown on **Plan Sheet 9**, the throat halyard falls of 0.25mm natural thread are secured into the arse of this block at the same time. The running end passes down through the 3mm single block on the throat of the gaff, back up and through the 3mm block on the trestletree and then passes down the starboard side of the gaff and is belayed to the fourth from starboard belaying pin on the main jeer bitts (**b3**).

The standing end of the topping lift (0.5mm natural thread) is secured 13mm from the end of the gaff. It then passes up, through a 3mm single block lashed to the after face of the main mast head, directly under the cap, back down and through the 3mm block on the gaff, up through another 3mm single block lashed to the after face of the main mast head, beneath the jeer strop cleats. It then passes down, starboard side, through the main top lubber's hole and is belayed to the third from starboard belaying pin on the main jeer bitts (**b4**).

Fig 014



## Running Rigging

The yards should now be fitted to the masts as follows.

### The Main Yard:

The main yard is held in place by a parrel truss and jeers.

The parrel truss is made up of 22 beads (287) and 12 ribs (236). The parrel ropes are 0.5mm natural thread. The ropes are formed into the parrel falls in the following manner.

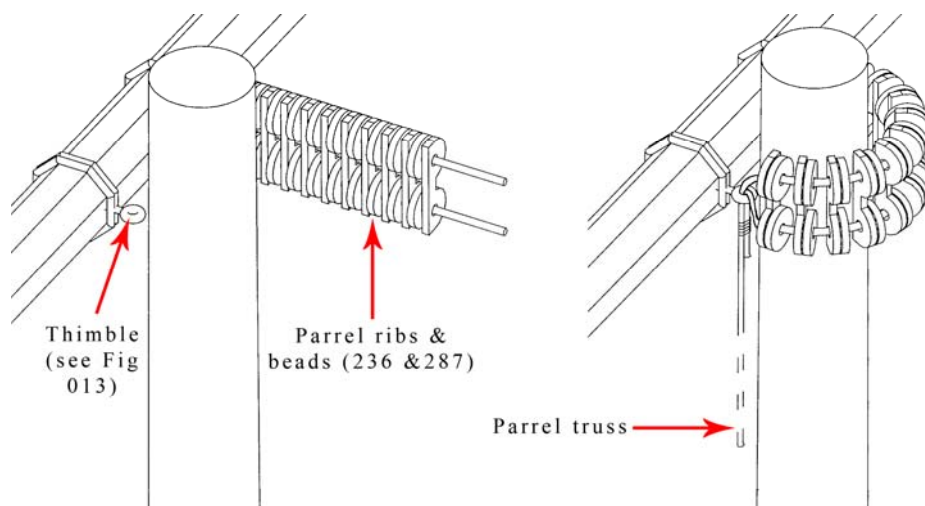
The ropes and falls are made from one piece of material: (*Fig 015*)

1. Firstly simulate a thimble by drilling and securing a copper eyelet, painted matt (metal) black, to the after face of the yard, 5mm port of centre, and passing two turns of 0.5mm black thread around the yard, one port and one starboard of the copper eyelet.
2. Tie and form a small eyelet in the parrel rope approximately 60mm from one end and pass it over the yard (starboard of the mast) so that the eyelet lies within the sling cleats, against the forward face of the yard.
3. Pass both ends of the rope around the main mast, threading on the beads and ribs as you go.
4. With all of the beads and ribs in place, lead both ends of the parrel rope down through the copper eyelet in the after port face of the yard, see step 1 above.
5. Sieze the short rope to the longer rope with 0.1mm natural thread approximately 15mm below the yard.
6. The longer rope is the parrel truss and leads down to the deck.
7. Seize a 3mm single block into the end of the parrel truss, approximately 30mm above the deck, falls of 0.25mm natural thread should be secured to the arse of this block at the same time.
8. A 3mm single block should now be secured into a copper eyelet in the deck aft and to the port of the main mast as shown on **Plan Sheet 9**.
9. The tackle is now set up between these two 3mm single blocks and the falls are belayed to the outboard port belaying pin of the main jeer bitts (**b5**).

Referring to **Plan Sheets 5 & 7**, rig the mast head lashings of three turns of 0.5mm black thread over the jeer block strop cleats, crossing the mast. Next, the two upper 7mm double jeer blocks are to be held in a strop of 1mm black thread, the strop passes up through the main top lubber's hole and is lashed to the mast head lashings so that the jeer block is positioned approximately 15mm below the underside of the top. One pair of 7mm single jeer blocks are now lashed to the yard, within the sling cleats as shown on **Plan Sheet 5**. The jeer falls themselves are of 1mm natural thread and are secured around the yard with a timber hitch. They are positioned close to the centre of the yard and must remain within the sling cleats. Referring to **Plan Sheet 7**, the falls lead directly up through the inboard sheave of the double jeer block down through the single jeer block and back up through the outboard sheave of the double jeer block. The running end then passes behind the yard, down to deck and through the sheave holes in the main jeer bitts where they are belayed (**b6**).

The main yard tackles should also now be rigged as follows. The 7mm sister blocks (one each side) are held in pendants (66mm long) of 0.5mm black thread on the end of the main yard as shown on **Plan Sheet 5**. Two 5mm single blocks (one each side) are hooked, with a large rigging hook, onto the main lower mast shroud catharpins (hook up) and the yard tackle falls of 0.25mm natural thread are also secured to the arse of this block at the same time. A tackle is set up between this block and the 7mm sister block in the pendant on the yard, passing through the smaller sheave of the sister block, back to the hooked 5mm single block, back and through the larger sheave of the sister block. From here the running end leads back and through the 5mm single block for a second time (although unusual, this is to simulate the tricing line) and leads down to deck where it is belayed to the cleats on the main gun deck inner bulwark, positioned between the two levels. (**b7**)

Fig 015



### The Main Topmast Yard:

The main topmast yard is held in place by parrel beads, no falls are required, and a tie.

12 parrel beads are secured in position with 0.25mm black thread within the sling cleats.

The parrel rope passes over and around the yard and is then loaded with parrel beads, around the mast and is then secured around the yard on the opposite side. The ropes should remain within the sling cleats.

The tie (one each side) is of 0.5mm natural thread. Initially, the tie is set up as per the shrouds, that is to say that it passes around the head of the mast, over and above the shrouds, into one end a 5mm single block is secured so that it hangs approximately 10mm below the trestletrees, passing between the first and second crosstrees, the opposite end forms the running end and also passes down between the first and second crosstrees. Lash the pair of 'legs' together near the tops, with a simple clove hitch, using 0.25mm black thread and then push the knot up to the bolster, again as per the shrouds. The running end of the **port** tie reeves through the **after sheave**, from **port to starboard**, of the 5mm double tie block on the yard, it then passes up and through the 5mm single block of the **starboard** tie and immediately down 'outside' and aft of the main top. A 3mm single block is seized into the end of the tie approximately 35mm below the main top, the falls of 0.25mm natural are secured into the arse of this block at the same time. The running end of the **starboard** tie follows a similar route, passing through the **forward sheave** of the 5mm double tie block on the yard, **starboard to port**, up through the 5mm single block of the **port** tie, down 'outside' and aft of the main top with a 3mm single block and 0.25mm natural falls seized into the end, 35mm below the main top. 3mm single blocks (one each side) held in 30mm pendants of 0.5mm black thread are now rigged into the copper eyelets on the main channel (aft) positioned as shown on **Plan Sheets 7 & 9**. A tackle is set up between these blocks and the ties with the falls being belayed to the deadeye strop of the main backstay (b8).

### The Main Topgallant Yard:

The main topgallant yard is held in place by parrel beads, no falls are required, and a tie.

6 parrel beads are secured in position with 0.25mm black thread within the sling cleats.

They are rigged as per the main topmast yard parrels.

The tie is of 0.25mm natural thread. Referring to **Plan Sheet 7**, the standing end is secured at the hounds above the standing rigging, it then leads down and through the 3mm tie block lashed to the centre of the topgallant yard, back up and passes through a 0.5mm hole (sheave) drilled fore and aft through the topgallant mast 5mm beneath the hounds. It then passes down behind the mast and is belayed to the **aftermost port** futtock strop in the main top (b9).

### The Crossjack Yard:

The crossjack yard is held in place by a sling and a tie.

The sling is 0.5mm black thread, pass the rope around the yard and lash together against the after face, pass the 'legs' of the rope around the back of the mast and around the opposite side of the yard, where it is lashed together in a similar manner against the after face. Remembering that the sling must remain within the sling cleats.

A 5mm single block is lashed to the centre of the yard with 0.25mm black thread. Referring to **Plan Sheet 7**, the tie of 0.5mm natural is formed by creating a small eye in one end; the opposite end passes through the 5mm single block on the yard (from **starboard to port**). It then leads up through the mizzen top lubber's hole and around the back of the mast head, back down and through the lubber's hole on the other side of the mast head and back to its own eye where it is passed through and seized back onto itself.

### The Mizzen Topmast Yard:

The mizzen topmast yard is held in place by parrel beads, no falls are required, and a tie.

7 parrel beads are secured in position with 0.25mm black thread within the sling cleats. They are rigged as per the main topmast yard parrels.

The tie is of 0.25mm natural thread. Referring to **Plan Sheet 7**, the standing end is secured around the mizzen topmast head, it then leads down, **port** side, between the first and second crosstrees, through the 5mm single tie block (**port to starboard**) on the centre of the topmast yard, back up and reeves through a 0.5mm hole (sheave) drilled fore and aft through the topmast head 20mm below the top. It then passes down outside the mizzen top, **starboard** side and a 3mm single block is seized into the end approximately 30mm below the mizzen top with the falls of 0.25mm natural into the arse of this block at the same time. A 3mm single block is seized into a 30mm pendant of 0.5mm black thread rigged to a copper eyelet on the mizzen **starboard** channel positioned as shown on **Plan Sheets 7 & 9**. A tackle is set up between this block and the tie with the falls being belayed to the **aftermost starboard** belaying pin of the mizzen shroud pinrail (b10).

### The Mizzen Topgallant Yard:

The mizzen topgallant yard is held in place by parrel beads, no falls are required, and a tie.

6 parrel beads are secured in position with 0.25mm black thread within the sling cleats. They are rigged as per the main topmast yard parrels.

The tie is of 0.25mm natural thread and, referring to **Plan Sheet 7**, is rigged as per the main topgallant yard tie and is belayed to the **aftermost port** futtock strop in the mizzen top (b11).

### The Spritsail Yard:

The spritsail yard is held in place by a sling and a standing lift.

The yard is positioned directly in front of the spritsail yard saddle as shown on **Plan Sheet 7**. The sling is of 0.5mm black thread and is rigged as per the crossjack sling, again remember that the sling must be contained within the sling cleats.

For the standing lift, a 3mm deadeye is held in a 30mm long pendant of 0.25mm black thread on the spritsail yard as shown on **Plan Sheets 5 & 7**. A second 3mm deadeye is lashed directly to the bowsprit, with 0.25mm black thread, forward of the centre woolding as shown on **Plan Sheet 7**. A lanyard of 0.1mm natural thread is then set up between them.

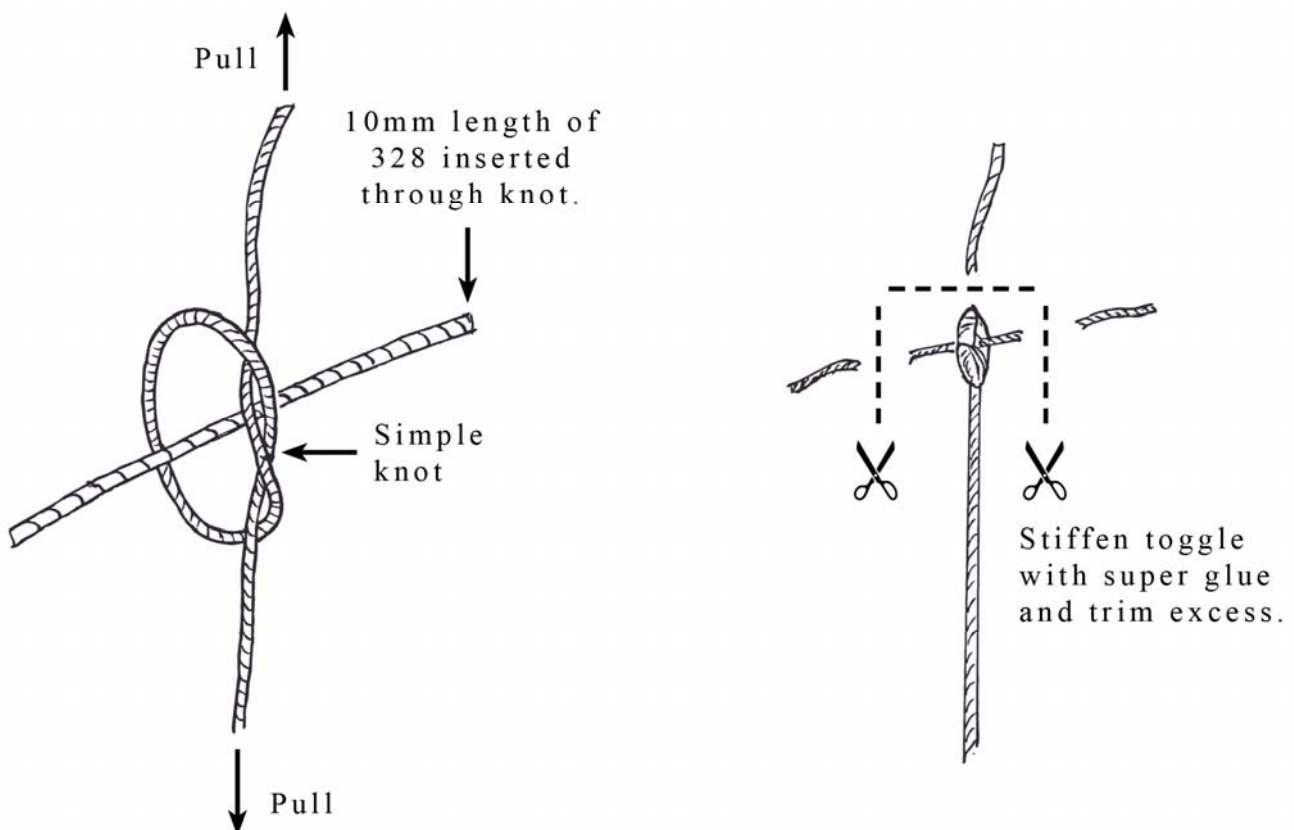
The next stage is the lifts and buntlines for each yard as follows.

### The Main Yard:

The main yard lifts (one each side) are of 0.5mm natural thread. A pair of 7mm sister blocks are held in a span around the centre of the main mast cap, using 0.75mm black thread, as shown on **Plan Sheet 5**, and the resultant pendant should be approximately 20mm long. Referring to **Plan Sheet 7**, the standing end of the lift is lashed to the end of the yard close to, but outboard of, the lift block. The running end then passes up and through the lower sheave of the 7mm sister block, back down and through the 3mm single block, stropped to the 5mm single block on the yard. It then passes back up and through the upper sheave of the 7mm sister block, from here, it passes down through the main top lubber's hole and through the sheave of the forward most kevel abeam the main mast where it is belayed (**b12**).

The main yard buntlines are of 0.25mm natural. Tie a toggle in the end of the buntlines (**Fig 016**). Referring to **Plan Sheet 7**, the inner buntlines (one each side) pass through the inner 3mm single buntline blocks on the yard and travel up through the 3mm single blocks held inboard, forward, under the main top. They then run aft, along the underside of the top, and through the inboard, after, 3mm single blocks held under the top, and down to the main jeer bitts where they are belayed to the 3rd (from each end) belaying pins (**b13**). The outer buntlines start at the outer 3mm single buntline blocks on the yard, then pass through the outer sheave of the 3mm double blocks held outboard, forward, under the main top. They then run aft, along the underside of the top, and through the outer sheave of the 3mm double blocks held under the top outboard, aft. From here they pass down to the main jeer bitts where they are belayed to the 2nd (from each end) belaying pins (**b14**).

Fig 016





### The Main Topmast Yard:

The main topmast yard lift, due to the period of the ship, is formed with the main topgallant sheet and the main topgallant clueline and as such will be rigged with these at a later stage.

The buntlines (one each side) are of 0.25mm natural thread. Two 3mm single blocks are lashed to the 5mm double tie block on the yard as shown on **Plan Sheet 5**. Referring to **Plan Sheet 7**, again tie a toggle in the end of the buntline. Pass the line through the 3mm single buntline block on the yard and it then travels across and through the 3mm single buntline blocks held in a span to the tie block and up through the 3mm single blocks lashed one each side to the centre crosstree (port buntline to port block and vice versa). They then lead down 'through' the main top and belay to the topsail sheet bitts second (from each end) belaying pins (**b15**).

### The Main Topgallant Yard:

The main topgallant yard lifts (one each side) are of 0.25mm natural thread. A pair of 3mm single blocks in a span (one per side) must now be secured at the hounds of the topgallant mast, above the shrouds as shown on **Plan Sheet 7**. The standing end is made fast above the topmast rigging (shrouds, backstays etc.) as shown on **Plan Sheet 7**, and leads down to the 3mm single lift block at the stop cleat on the yard, back up and through the 3mm single block at the topgallant hounds. It then passes down and is belayed to the second from the front futtock strop on the main top (one each side) (**b16**).

### The Crossjack Yard:

The crossjack yard lifts (one each side) are of 0.25mm natural thread. A pair of 3mm single blocks (one each side) are held in a span around the centre of the mizzen mast cap, using 0.5mm black thread, as shown on **Plan Sheet 5**, the resultant pendant should be approximately 6mm long. Referring to **Plan Sheet 7**, the falls of the lift should be tied into the arse of these blocks at the same time. The falls then pass down and through the 3mm lift block stropped to the 5mm block on the yard. They then reeve back up and through the block in the span it then travels down through the mizzen top lubber's hole to the foremost pin of the mizzen shroud pinrail where it is belayed (**b17**).

### The Mizzen Topmast Yard:

The lifts (one each side) are of 0.25mm natural thread. Referring to **Plan Sheet 7**, a pair of 3mm single blocks are held in a length of 0.25mm black thread (this is simply a length of thread with a block secured in each end which is then 'draped' over the topmast top bolsters), passing between the second and third topmast top crosstrees, around the back of the topmast head and back down the opposite side so that the blocks are positioned as close as possible below the topmast top crosstrees. The standing end of the lift is lashed around the centre of the topmast cap, from here it passes down and through the 3mm single lift blocks on the yard, back up and through the blocks held in the span. It then travels down through the mizzen top lubber's hole to the centre belaying pin of the mizzen shroud pinrail where it is belayed (**b18**).

The buntlines (one each side) are of 0.1mm natural thread and are rigged as per the main topmast yard. They pass down through the mizzen top lubber's hole to the upper mizzen mast pinrail belaying pins where they belay (**b19**).

### The Mizzen Topgallant Yard:

The mizzen topgallant yard lifts (one each side) are of 0.25mm natural thread. A pair of 3mm single blocks in a span (one per side) must now be secured at the hounds of the topgallant mast, above the shrouds as shown on **Plan Sheet 7**. Referring to **Plan Sheet 7**, it is rigged as per the main topgallant yard lift and is belayed to the central mizzen futtock strop (**b20**).

### The Spritsail Yard:

The spritsail yard lifts (one each side) are of 0.25mm natural thread. Referring to **Plan Sheet 7**, a pair of 3mm single blocks (one each side) are lashed to the collar of the main preventer stay. The standing end of the lift is secured to the bowsprit, directly aft of the jibboom heel chock. The running end then runs out and through the 3mm single lift block, at the stop cleat on the yard, and back through the 3mm single block lashed to the main preventer stay collar. It then leads in to the forecastle, where it is belayed to the second, from the front, timberhead (**b21**).

The cluelines and sheets are the next stage as follows. You should note that the **lower** yard cluelines and sheets run between the **lower** yards and the **hull**, the **topmast** yard cluelines and sheets run between the **topmast** yards and **lower** yards and the **topgallant** yard cluelines and sheets run between the **topgallant** yards and **topmast** yards. This is worth bearing in mind and may appear to be obvious but this stage of the rigging can become confusing.

The main lower yard cluelines and sheets will not be rigged until the end of this stage (along with the tacks) to allow easier access for the rest of the rigging.

Refer to **Plan Sheet 8** for the clueline standing end positioning of each yard, the positioning of the sheet and clue garnet strop assemblies should be as per the text, not as shown on the plan (as the plan is a 2D representation of 3D objects it is impossible to show this positioning exactly).

### The Spritsail Yard:

The cluelines (one each side) are of 0.25mm natural thread. To start, referring to (Fig 017 & 018), assemble one sheet and clue garnet strop assembly by tying together one 3mm single and one 5mm single block. The standing end of the clueline is positioned as shown on **Plan Sheet 8**, it then passes through the 3mm single clueline block on the yard and leads into the forecastle where it belays to third, from the front timberhead (**b22**). Once assembled, the sheet and clue garnet strop assembly should hang approximately 30mm from the yard. The sheets (one each side) are rigged from 0.25mm natural thread, and due to the period of the ship are rigged as a running sheets. As a result both ends are running, the first is belayed to the sixth, from the front timberhead (**b23**), it then passes through the 5mm single block of the sheet and clue garnet strop assembly and leads back to the main deck where it is belayed to the second, from the front, cleat on the inner bulwark abreast the main topsail sheet bitts (**b24**).

Fig 017

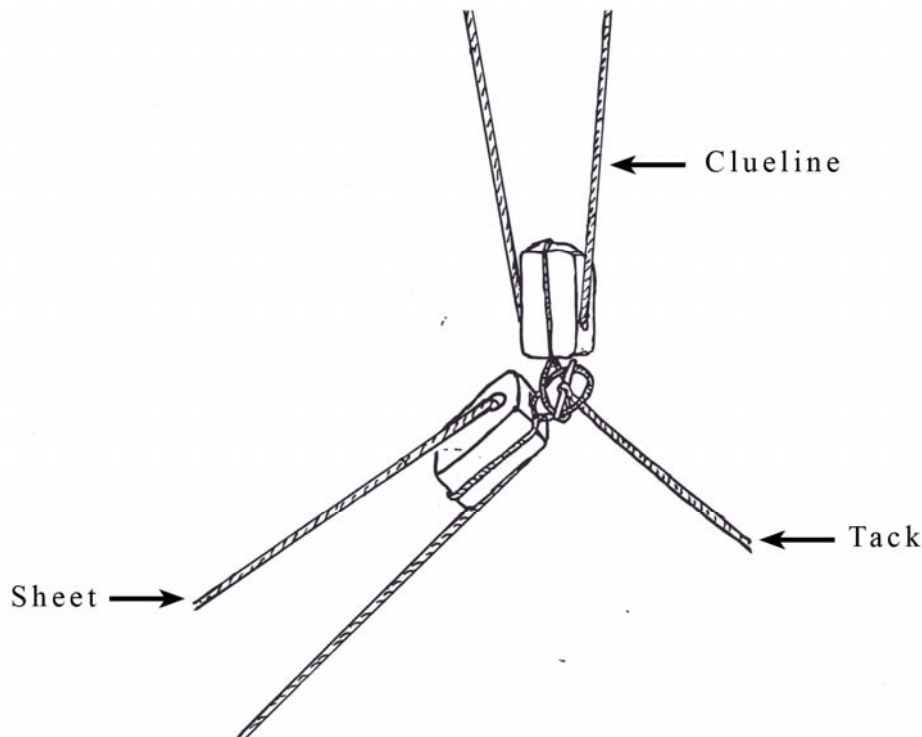
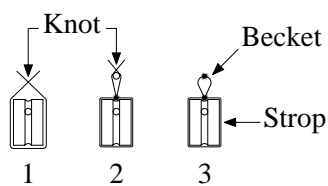
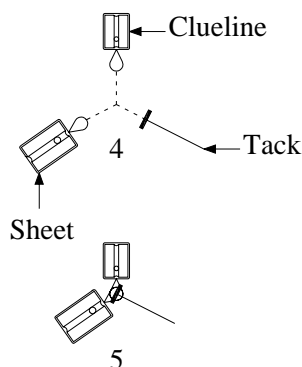


Fig 018



1. Form a strop around the block.
2. Using a piece of 2mm dowel or similar, tie a becket into the strop.
3. With the strop and becket complete, harden the becket with a touch of superglue.

Repeat steps 1-3 as required.



4. Take one 3mm block and one 5mm block and align their beckets.
5. Tie the beckets together to form the sheet and clue garnet strop assembly. (Where required, pass the tack, with toggle, through the beckets until held by the toggle).

### The Main Topmast Yard:

The main topmast yard sheets (one each side) are of 0.75mm natural thread. **The easiest method of rigging the sheet is to work backwards, that is to say you will start at the belayed end and work to the sheet block.** The sheet is belayed to the head of the topsail sheet bitts (**b25**). Referring to **Plan Sheet 8**, the sheet then leads up through the inner 5mm block (on the main **lower** mast yard), along the aft face of the yard and through the 5mm sheet block, at the stop cleat on the **lower** yard. It then leads up towards the 3mm single clueline block on the **topmast** yard. A 3mm single block is seized in the end of the sheet approximately 40mm from the clueline block.

The cluelines (one each side) are of 0.25mm natural thread. The standing end is made fast to the **topmast** yard as shown on **Plan Sheet 8**. It then reeves through the 3mm single block in the end of the sheet, back up through the 3mm single clueline block on the **topmast** yard, it then passes down through the main top lubber's hole and is belayed to the outermost pins of the main topsail sheet bitts (**b26**).

### The Main Topgallant Yard:

The main **topgallant** yard sheets, which also form the **topmast** yard lifts (one each side), are of 0.25mm natural thread. Again it is worked backwards. Referring to **Plan Sheet 8**, a pair of 5mm single blocks are held in a length of 0.5mm black thread (this is simply a length of thread with a block secured in each end which is then 'draped' over the topmast top bolsters), passing between the second and third topmast top crosstrees, around the back of the topmast head and back down the opposite side so that the blocks are positioned as close as possible below the topmast top crosstrees. The sheet/lift is belayed to the third, from the front main lower shroud directly above the upper deadeye (**b27**). It passes up through the main top lubber's hole and through the 5mm single block in a span around the topmast head it then passes out and down to the 5mm single lift/sheet block on the end of the **topmast** yard, it then leads up towards the 3mm single clueline block on the **topgallant** yard. A 3mm single block is seized in the end of the sheet approximately 20mm from the clueline block.

The cluelines (one each side) are of 0.25mm natural thread. The standing end is made fast to the **topgallant** yard as shown on **Plan Sheet 8**. It then reeves through the 3mm single block in the end of the sheet, back up through the 3mm single clueline block on the **topgallant** yard, it then leads down through the main top lubber's hole and belays to the outermost belaying pins of the main jeer bitts (**b28**).

### The Mizzen Topmast Yard:

The mizzen topmast yard sheets (one each side) are of 0.5mm natural thread. Referring to **Plan Sheet 8**, it is rigged as per the main topmast yard sheet, but is belayed to the lower belaying pin in the mizzen mast pinrail (**b29**). A 3mm single block is seized into the standing end approximately 20mm from the 3mm single clueline block on the **topmast** yard.

The cluelines (one each side) are of 0.25mm natural thread. The standing end is made fast to the **topmast** yard as shown on **Plan Sheet 8**. It then reeves through the 3mm single block in the end of the topmast yard sheet, back up through the 3mm single clueline block on the **topmast** yard, it then leads down through the mizzen top lubber's hole and belays to the centre pin of the mizzen mast pinrail (**b30**).

### The Main Yard:

To start, referring to (*Fig 017 & 018*), assemble one tack, sheet and clue garnet strop assembly by tying together one 3mm single block, one 5mm single block and securing the 0.75mm natural thread tack, with its toggle, through the loop.

The main yard cluelines (one each side) are of 0.25mm natural thread. The standing end is made fast to the main yard as shown on **Plan Sheet 8**. It then reeves through the 3mm single clueline block (of the tack, sheet and clue garnet strop assembly) positioned approximately 40mm directly below the standing end, back up through the 3mm single block on the main yard. It then passes down and is belayed to the outer end of the main topsail sheet bitts cross piece (**b31**).

The main yard sheets (one each side) are of 0.5mm natural thread. Referring to **Plan Sheet 8**, the standing end is rigged to a copper eyelet on the hull, just forward and level with the bottom sill of the aftermost gunport as shown. It then leads up and through the 5mm single sheet block (of the tack, sheet and clue garnet strop assembly), back down and is belayed to the finger and thumb timberheads (**b32**).

The main yard tacks (one each side) are of 0.75mm natural thread. The standing end should already be secured with a toggle to the tack, sheet and clue garnet strop assembly. Referring to **Plan Sheet 8**, it then passes down, through a 0.8mm hole (sheave) fore and aft through the chesstree and then leads through a 0.8mm hole (sheave) in the hull 5mm forward of the chesstree. From here it is led aft and belays to the first cleat on the inner bulwark (**b33**).

The braces are the next stage. Attach all brace blocks as shown on **Plan Sheet 5**; they are then rigged as follows.

### The Spritsail Yard:

The spritsail braces (one each side) are of 0.25mm natural thread. Referring to **Plan Sheet 8**, the standing end is lashed directly to the main preventer stay, approximately halfway between the 'mouse' and the bowsprit. It travels down and reeves through the 3mm single blocks held in a pendant (47mm long) on the end of the spritsail yard.

Two 3mm single blocks are held in a span around the main preventer stay, positioned 106mm from the top. The brace passes up and through these blocks and passes through the inboard sheave of the fore 3mm double block held outboard under the main top, they then run aft, along the underside of the top, and through the inboard sheave of the after 3mm double block held under the main top. From here it travels down to the deck and is belayed to the main topsail sheet bitts, around the end of the cross piece (75) (**b34**).

### The Main Yard:

The main yard braces (one each side) are of 0.25mm natural thread. The standing end is made fast to a copper eyelet, painted matt (metal) black, positioned above the aftermost cabin light, as shown on **Plan Sheet 8**. From here it leads up and through the 5mm single blocks held in a pendant (75mm long) on the end of the main yard, back down and through the main brace sheave block (51) from outboard to inboard, it then leads forwards and is belayed to the cleat positioned halfway along the quarterdeck inner bulwark (**b35**).

### The Main Topmast Yard:

The main topmast yard braces (one each side) are of 0.25mm natural thread. In order to rig the main topmast yard braces, referring to **Plan Sheet 8**, a pair of 5mm single blocks must be held in a span, of 0.5mm black thread, around the mizzen mast positioned directly above the crossjack yard. The blocks should travel forward and be held 30mm from the mizzen mast. The standing end of the brace is made fast directly behind the blocks, to the 'legs' of the span. The running end leads forward and through the 5mm single block held in a pendant (55mm long) on the end of the main topmast yard. They then pass back and through the blocks held in the span (always portside to portside and vice versa) they then travel to the deck where they are belayed to the quarterdeck breastrail (170) (**b36**).

### The Main Topgallant Yard:

The main topgallant yard braces (one each side) are of 0.25mm natural thread. The standing end is lashed to the mizzen topmast between the topmast cap and the trestletrees, as shown on **Plan Sheet 8**. The running end passes up, forward and through the 3mm single blocks held on a pendant (33mm long) on the end of the main topgallant yard, it then passes back and through a pair (one each side) of 3mm single blocks held in a span around the mizzen topmast head, directly below the standing end of the brace, the blocks should be held 15mm from the mast. From here they travel down to the deck, through the mizzen top lubber's hole passing aft of the crossjack, and are belayed to the quarterdeck breast rail (**b37**).

### The Crossjack Yard:

The crossjack yard braces (one each side) are of 0.25mm natural thread.

**Note:** It is important to realise that the braces will pass forward and cross each other i.e. **port** brace to **starboard** shroud and **starboard** brace to **port** shroud.

Referring to **Plan Sheet 8**, the standing part of the **starboard** brace is made fast to the **port** main backstay (7th shroud), at a height level with the crossjack. The running end passes aft and through the **starboard** 5mm single block held on a pendant (55mm long) on the end of the crossjack. It now passes back and through a 5mm single block lashed to the **port** backstay (7th shroud), positioned 15mm below the standing end of the brace. From here the running end passes down and through a 0.5mm hole (sheave) drilled fore and aft through the **port** main deck timberhead (aft) (36) where it is belayed (**b38**). The port brace is mirrored in the same manner.

### The Mizzen Topmast and Topgallant Yards:

The mizzen topmast and topgallant yard braces will be rigged with the driver gaff.

The driver boom and driver gaff should now be fitted as follows.

### The Driver Gaff:

Referring to **Plan Sheet 4**, make up the driver gaff as shown including the copper eyelet at the throat of the gaff jaws (139) and a 3mm single block lashed to the gaff approximately 25mm from the end. To the driver gaff, seize one 3mm single block to the copper eyelet at the throat of the gaff jaws using 0.25mm black thread as shown on **Plan Sheet 7**, noting that the falls (for the throat halyard) of 0.5mm natural thread are rigged into the crown of this block at the same time.

The driver gaff is secured to the mast with 8 parrel beads, on 0.25mm black thread.

A 3mm double block is seized to a copper eyelet on the starboard trestletree as shown (Fig 010), the throat halyard (standing end currently in the crown of the 3mm single block at the throat of the gaff) can now be set up as follows. The running end passes up and through the **port** sheave of the 3mm double block on the trestletree, back down and through the 3mm block at the throat, back up again and through the **starboard** sheave of the double block. From here the running end passes down, **starboard** side, and through a 0.75mm hole (sheave) passing fore and aft through the starboard quarterdeck kevel where it is belayed. (**b39**)

The gaff topping lift is of 0.5mm natural thread. There are two 3mm single blocks lashed to the mizzen mast head, the first is positioned directly under the cap, the second is positioned half way between the cap and the mizzen top, both to the aft of the mast. The standing end of the gaff topping lift is made fast to the driver gaff as shown (Fig 019) approximately 12mm from the end of the gaff. It then passes through the 3mm single block lashed directly under the mizzen mast cap, back down and through the 3mm single block lashed 25mm from the end of the gaff, back up and through the second 3mm single block on the mizzen mast head (between the cap and the top). From here the running end passes down through the hole in the top (directly aft and central of the after crosstree, and leads to deck where it is belayed to the quarterdeck breastrail (**b40**).

A pair of 3mm single blocks held in a span are put over the end of the driver gaff next (for the mizzen topmast yard braces), the blocks should be held approximately 6mm from the gaff.

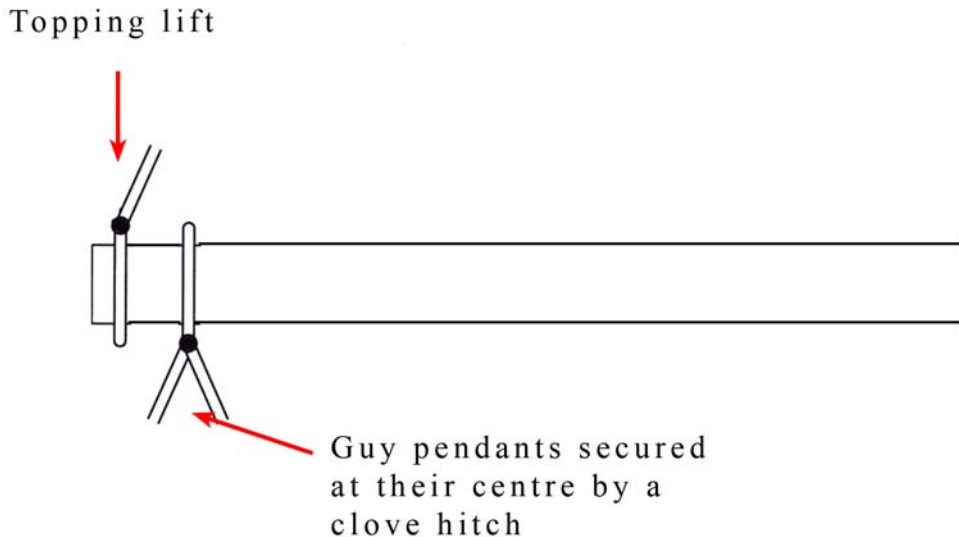
The mizzen topmast yard braces (one each side) are now rigged of 0.25mm natural thread. The standing ends can now be made fast to the end of the driver gaff, behind the 3mm blocks in a span. The running ends then reeves through the 3mm single brace blocks held in a pendant (33mm long) on the end of the mizzen topmast yard and back down, through the two (one per side) 3mm single blocks held in a span to the end of the driver gaff. They then belay to the forward belaying pins (one each side) of the quarterdeck pinrail (**b41**).

A pair of 3mm single blocks are now held in a span around the end of the driver gaff (for the mizzen topgallant yard brace), the blocks should be held approximately 5mm from the gaff.

The mizzen topgallant yard braces (one each side) are now rigged of 0.1mm natural thread. The standing ends can now be made fast to the end of the driver gaff, behind the 3mm blocks in a span. The running ends then reeves through the 3mm single brace blocks held in a pendant (20mm long) on the end of the mizzen topgallant yard and back down, through the two (one per side) 3mm single blocks held in a span to the end of the driver gaff. They then belay to the second belaying pins (one each side) of the quarterdeck pinrail (**b42**).

The vang pendants of 0.5mm black thread are now rigged. Measure the length of thread required (approximately 100mm total). At the centre of the vang, throw a clove hitch over the end of the driver gaff. Seize a 3mm single block into each end (approximately 43mm from the end of the driver gaff), the falls of 0.25mm natural thread are also rigged into the arse of these blocks at the same time. A 3mm single block is attached with a large rigging hook to the outboard copper eyelets positioned in the taffrail capping as shown on **Plan Sheet 7**, 'Inner face of stern fascia'. A tackle is set up between these blocks and the running end belays to the aftermost pins of the quarterdeck pinrail (**b43**).

Fig 019  
Rigging sequences for the driver boom.



The Driver Boom:

Referring to **Plan Sheet 4**, make up the driver boom as shown.

The driver boom jaws (93) are held in place by parrel beads and the driver boom saddle.

Use 5 parrel beads secured in position with 0.25mm black thread.

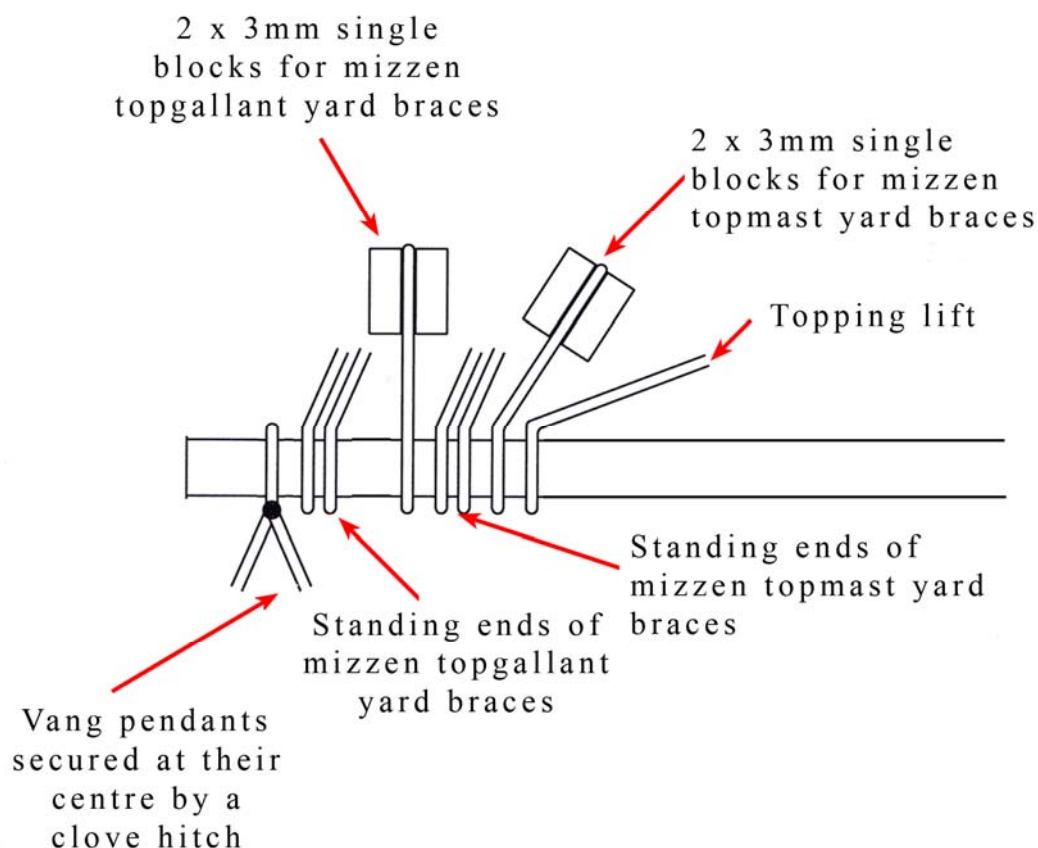
The guy pendants of 0.25mm black thread go over the end of the driver boom first in a similar manner to the driver gaff vang pendants, using a clove hitch as shown (*Fig 020*). Seize a 3mm single block into each end (approximately 15mm from the end of the driver boom), the falls of 0.1mm natural thread are also rigged into the arse of these blocks at the same time. A 3mm single block is attached with a large rigging hook to the inboard copper eyelets (one each side) positioned in the taffrail capping as shown on **Plan Sheet 7, 'Inner face of stern fascia'**, a tackle is set up between these blocks and the running ends belay to the aftermost cleats in the quarterdeck inner bulwark (**b44**). The boom itself should be positioned off centre to the port side to allow the ensign staff to be shipped.

The topping lift of 0.5mm natural thread is now put over the end of the driver boom. It runs upwards and forwards through a 3mm single block lashed to the mizzen mast, close under the mizzen top, on a short 3mm pendant. The running end now passes down, travelling towards the port quarterdeck kevel and has a 3mm double block seized into its end, approximately 100mm below the mizzen top. A 3mm single block with a large rigging hook is hooked into a copper eyelet on the aft of the port mizzen channel as shown on **Plan Sheet 9**, the falls of 0.25mm natural thread are also seized into the crown of this block at the same time. A tackle is now set up between these two blocks and the running end passes through a 1mm hole drilled fore and aft through the port quarterdeck kevel where it is belayed (**b45**). A small span of 0.1mm natural thread is now rigged between the boom and the topping lift; it is positioned 50mm from the end of the driver and is secured to the topping lift approximately 40mm from the standing end of the topping lift.

The ensign staff and jack staff should now be shipped.



Fig 020  
Rigging sequences for the driver gaff.



#### The Lower Studding Sail Boom:

The lower studding sail booms (one each side) can now be fitted into the eyeplates (250) on the main channel (fore). With the boom in place, it should be swung aft to rest up against the deadeye chainplates and is lashed, with 0.25mm black thread, to the chainplate of the aftermost 5mm deadeye.

#### The Main Stay Tackle:

Referring to **Plan Sheet 6**, the main stay tackle pendant, of 0.5mm black thread is seized to the main stay, directly above the centre point of the foremost forward mortar canopy. It should be 35mm long and have a 5mm double block seized into the end. A 5mm single block, with a large rigging hook (218) seized into the crown and falls of 0.25mm natural seized into the arse should be rigged. The tackle is set up between these two blocks and the running end passes down, under and around the windlass end, outside the finger and thumb timberhead port side (**b46**). The mortar canopy can now be suspended from the tackle using large rigging hooks and strops of 0.25mm black thread.

## Ground Tackle

### The Fish Davit:

The fish davit is made from 5x5mm walnut. Using **Plan Sheet 4** for reference, make up the fish davit as shown. Two holes (one each end) of 0.65mm should be drilled into one face of the fish davit approximately 22mm from either end, taking care not to drill all the way through the fish davit. Paint two copper eyelets (275) matt (metal) black and secure them into these holes; these form the 'topping lift' eyebolts on the now upper face of the fish davit. Drill two further holes of 0.5mm fore and aft (i.e. running at right angles to the copper eyelets), this time all the way through the fish davit, at a distance of approximately 18mm from either end. Using a length of 0.25mm black thread, rig the hand ropes through these holes to form one continuous loop. Overhand knots should also be tied into the hand rope at 8mm intervals.

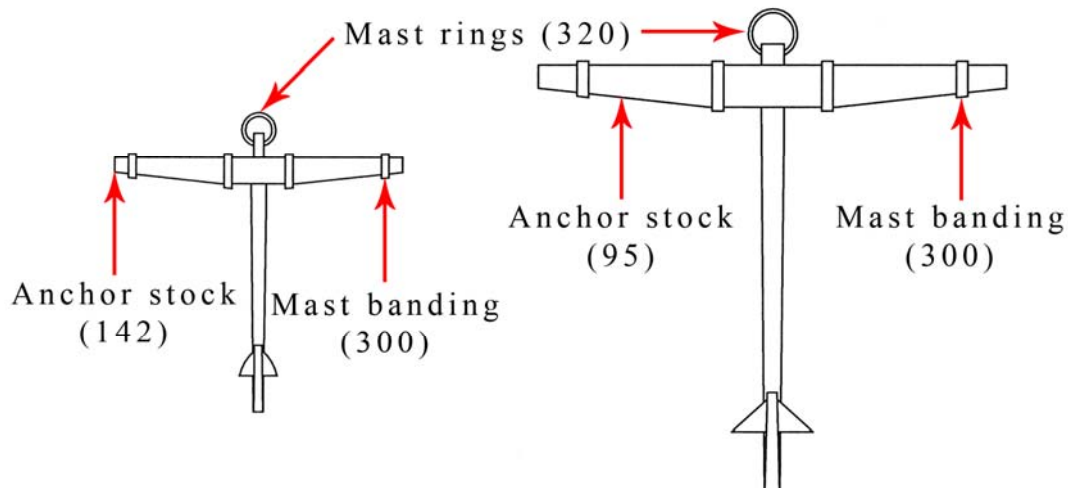
Four further copper eyelets (two for each side) should be painted matt (metal) black. These eyelets are to be drilled and fitted centrally into the main capping rail, one close behind each fish davit cleat and one directly behind each forecandle capping step (down through the davit cleats).

The fish davit should now be laid across the davit cleats, centrally and with the 'topping lift' eyebolts to the top, and secured there with 0.5mm black thread rigged between these topping lift eyebolts and the pair of eyelets on the capping rail, to form a 'triangular' strop, with all rigging passing over the fish davit (*Photo 048*).

### The Anchors:

Identify the cast metal bower anchors (255 x 2), sheet anchor (255 x 1, identical to the bowers), kedge anchor (257 x 1), bower & sheet anchor palms (256 x 6) and kedge anchor palms (258 x 2). Glue the palms centrally to their respective anchors and paint each assembly matt (metal) black. Identify the bower and sheet anchor stocks (95) from the 3mm walnut sheet and the kedge anchor stocks (142) from the 2mm walnut sheet. The stocks should be glued around the head of their respective anchors, centrally at the 'square' section. The anchor stock hoops are formed from cartridge paper, these should be 1.5mm wide for the bowers and sheet, 1mm wide for the kedge anchor. The anchor rings for the bowers and sheet are formed from 1mm brass wire, wrapped around a 6mm piece of dowel and trimmed to form a continuous ring. The puddening is formed from 0.25mm black thread. The anchor ring for the kedge is formed in a similar manner from 0.75mm wire wrapped around a 4mm piece of dowel and the puddening is formed from 0.1mm natural thread painted / stained dull black when in place. The head of the anchors must be drilled to accept the anchor rings.

Fig 021



### Stowing the Bower Anchors:

The bower anchors (one each side) are stowed as shown (*Photo 049*). The anchor cable is seized to the anchor ring by passing the cable through the ring and back on itself; the running end is then secured to the 'standing' part with two small whippings of 0.25mm natural thread. The anchor stock and shank are then held in a strop, of 0.75mm black thread, running between the first and third forecastle timberheads (from aft).

### Stowing the Sheet and Kedge Anchors:

The kedge anchor is lashed to the shank of the sheet anchor with 0.75mm black thread. The sheet anchor is then stowed, on the starboard side, with the anchor stock held in a strop, of 0.75mm black thread, to the copper eyelet in the capping directly aft of the fish davit cleat and the shank held in another strop running through the third (from the bows) gunport (*Photo 050*).

### The Cat Falls:

The cat falls (one each side) are from 0.25mm natural thread. Secure a large rigging hook (218), painted matt (metal) black, into the arse of a 5mm double block. Secure the 0.25mm cat falls to the copper eyelet in the underside of the cat head, from here the falls lead down, through the first sheave of the double block, up and through the inboard forward sheave hole in the cat head, back down through the outboard forward sheave hole in the cathead, through the second sheave of the double block, up through the outboard after sheave hole in the cat head and is then taken aft to the fifth and sixth (from aft) forecastle timberhead (*b47*) where it is belayed in a figure of eight fashion, with the 5mm block hooked to the anchor ring of the bower anchors.

*Photo 048*



*Photo 049*



*Photo 050*

