

I N S T R U C T I O N M A N U A L

PHANTOM

NEW YORK PILOT BOAT, 1868

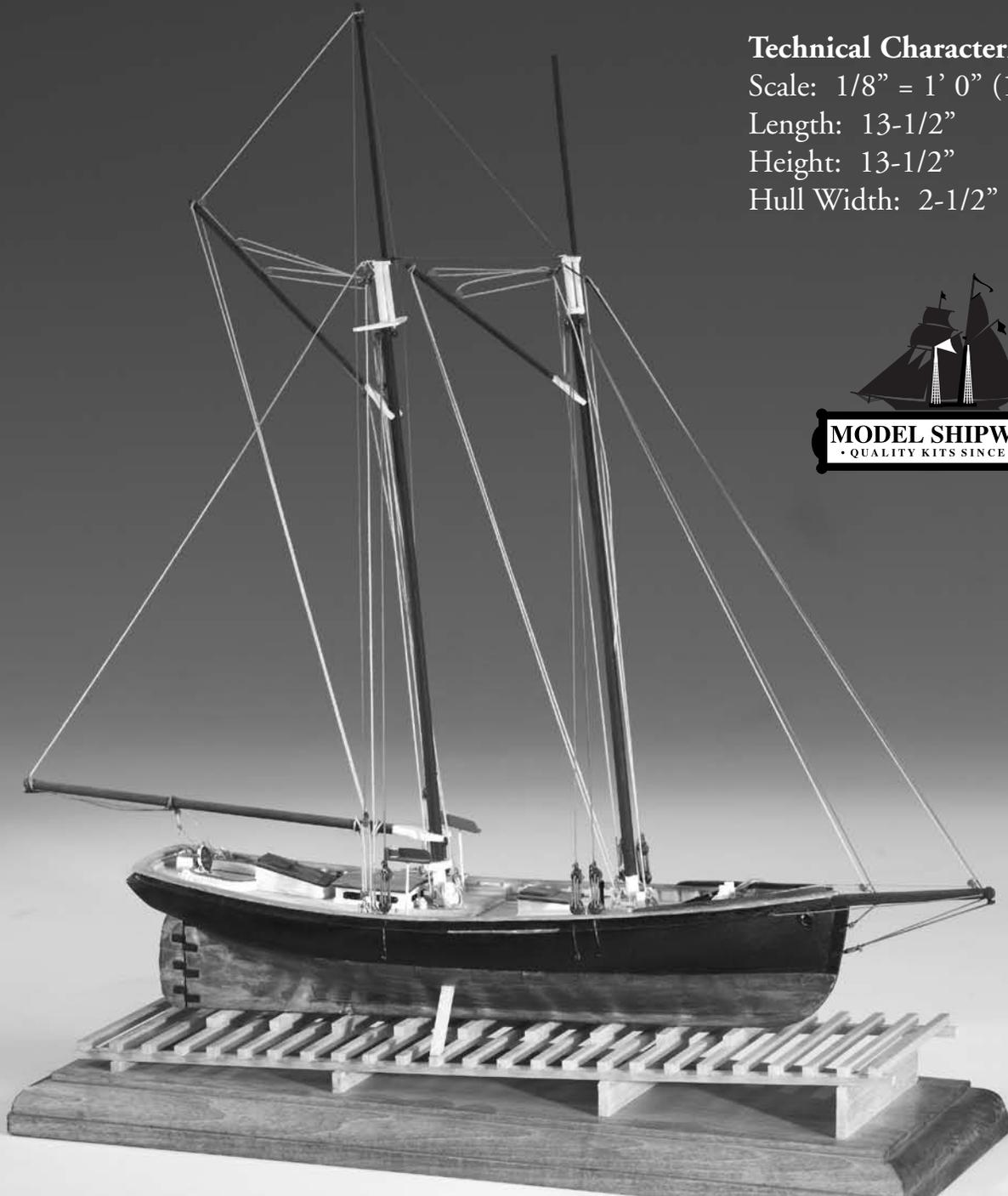
Technical Characteristics

Scale: 1/8" = 1' 0" (1:96)

Length: 13-1/2"

Height: 13-1/2"

Hull Width: 2-1/2"



MODEL SHIPWAYS
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Model Shipways

Kit No. MS2027

Model Shipways Kit No. 2027

PHANTOM New York Pilot Boat, 1868

By George F. Campbell, 1960

Updated Instruction Manual By Ben Lankford

Incorporating suggestions by model builder, Arthur Glaser

The Model Shipways plans for *Phantom* were prepared in 1960 by Mr. George F. Campbell, who passed away several years ago. Mr. Campbell was a noted British marine artist, author, naval architect, and historian. He was a member of the Royal Institute of Naval Architects. One of his most noteworthy publications is *China Tea Clippers*. He also developed the drawings for the *Cutty Sark* restoration in England, developed the Model Shipways kit of *Rattlesnake*, and authored Model Shipways' model handbook, *Neophyte Shipmodeler's Jackstay*.

The Model Shipways plans for *Phantom* are based on hull lines provided by Howard I. Chapelle, taken from a builder's half-model in the Smithsonian Institute. Deck details and rigging are based on photo information from the Peabody Museum of Salem, Massachusetts.

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A Brief History

The *Phantom* and *Pet*, sister schooners, were built in 1868-69 at the Lawlor yard in East Boston, Massachusetts for the Boston port pilots. Dennison J. Lawlor designed them, as is evident from his "trademarks": plumb stem, sharp entry, abrupt bilges amidship, very easy run, and drag of keel. These characteristics persist over his long period of successful designing.

Phantom was sold to the Sandy Hook (New York) pilots and operated out of New York for several years. On March 14, 1886, *Phantom* was the first to aid the sinking British liner *S. S. Oregon* off the coast of Long Island. Her crew oversaw the orderly rescue of 852 people, 400 of whom were aboard when she returned to port. At the time, she was listed as New York Pilot Boat No. 11, displaying those numerals on her main sail. She was lost in the Great Blizzard of March, 1888. The boat keeper, cook, and four seamen went down with the ship.

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BEFORE YOU BEGIN

The Phantom is an interesting model for beginner and expert alike. This kit contains a solid hull which has been machined carved from select, medium-hard, fine-grained basswood. This style hull provides a quick and easy lesson in the basic shapes and proportions of hull design and helps to develop woodworking skills. Although the exterior of the Phantom hull has been carved close to the hull lines as shown on the plans, further carving and sanding is necessary for reasons of accuracy. Shaping and finishing the hull to its final shape are discussed in the instructions.

Constructing the Phantom model also will provide you with the opportunity to develop some scratch-building techniques. During construction, you may want to substitute some of the kit fittings with your own creations. By all means try them, especially if you think you can improve the model.

If you are a beginner, take your time. This model is fairly simple to build but it still has a fair amount of detail and small parts. Make sure you complete one stage before moving to the next. When something goes awry, consider doing it over. Completing this model will prepare you for a more complicated model such as the Sultana or Fair American. The Sultana is another solid hull model, but has more rigging and deck detail. Fair American is outfitted with a plank-on-bulkhead hull that will take you to another level of difficulty. In the meantime, happy modeling!

HOW TO WORK WITH THE PLANS & PARTS

Before starting model construction, examine the kit and study the plans carefully. Familiarizing yourself with the kit will serve two purposes. First, it will let you determine that all parts have been supplied as listed. And second, you'll be surprised at just how quickly handling the parts allows you to better understand the kit requirements. Try to visualize how every part will look on the completed model. Also, determine ahead of time what must be done first. The instructions will help you in this regard, but a thorough knowledge of the plans at the outset is essential.

It is suggested that all small fittings and hardware be sorted into labeled boxes or compartments to avoid loss during the building process.

1. The Plans

Three Plan Sheets and a Template Sheet are provided:

1. Arrangement & Lines - Sheet 1 of 3
2. Rigging Plan - Sheet 2 of 3
3. Suggested Simplification of Rigging Details - Sheet 3 of 3
4. Hull Templates on heavy paper stock for hull carving

The Phantom kit is manufactured to a scale of $1/8" = 1' 0"$. Plan sheets 1 and 2 are drawn to the exact scale that the model is to be built, except where some details have been enlarged for clarity. Most dimensions can be lifted directly off the plans by using a set of draftsman dividers or by using a "tick" strip, which is simply a piece of paper used to "pick up" the dimensions (a roll of calculator tape works very well). Lay your paper strip over the plan and mark the lengths of items carefully with a sharp pencil. Then use the strip to transfer the marks to the wood or item to be made to scale.

2. Making Allowances Along the Way

Try to be exact when following the plans, but use common sense along the way. You may need to make adjustments or allow for small differences in how your model is shaping up; perhaps your mast has too much rake (the angle at which it sits). When lines go to belaying points they should not drape over parts or conflict with other lines. If necessary, move a belaying point or a fairlead. In other words, put yourself on the ship and use your judgement.

3. Understanding Hull Lines

Beginners may not be familiar with hull lines. Buttock lines are vertical longitudinal planes cut through the hull. Waterlines are horizontal planes, and sections are transverse vertical planes. All of these lines define the hull shape and are used by the draftsman to fair the hull form (create regular even curves). A complete set of hull lines is shown on the plans.

4. Kit Lumber

Your kit may contain European limewood, as a substitute for the basswood most of us are familiar with. Both woods are similar in grain and workability. In fact, limewood has superior bending qualities. This will be helpful, since a few of Phantom's rails must be bent to the proper curve. Following are three different methods of bending and shaping wood.

Steam bending - This is done by holding the wood piece you wish to bend over a kettle of steaming water and then bending it. Hold the wood in position until it cools. It should remain nearly in that position, but may spring back slightly.

Soaking - Another method is to soak the piece in warm water for several hours. Try adding a little household ammonia to the water. You can also use pure ammonia. This speeds up the soaking process and makes the wood fibers slippery so the wood can be easily bent. After soaking the wood, shape it to the desired position, using a form. Let it remain there until it has dried completely.

Hot iron - You may also bend wood quickly over a soldering iron, but don't let it get too hot. Large soldering irons with a tubular end is ideal. The tube near the handle will not be as hot as the very end. It is also possible to purchase model plank-bending irons commercially. They are designed for controlled heat.

5. Cast-Metal Fittings

The kit is supplied with Britannia metal castings. The Britannia metal is a great improvement over the white metal that was used in some older kits. Unlike white metal and pewter, Britannia does not contain lead, so there are no possible corrosion problems. Many of these fittings, however, will require final finishing before they are suitable for installing on the model.

Before painting the cast-metal fittings, clean them up by removing all the mold-joint flash. To do this, use a No. 11 hobby blade to cut the flash, then file or sand it

WHAT YOU'LL NEED TO START CONSTRUCTION

with fine sandpaper. It is also suggested that you clean the fittings thoroughly with warm soapy water before applying primer. Make sure they are rinsed thoroughly and allowed to dry before painting.

6. Soldering & Working with Brass

The Phantom had some iron fittings that you can make from brass which you solder together. However, you may desire to use the simplified methods shown on plan sheet 3 to eliminate much of the soldering. If you do solder, the secret is to keep the parts to be soldered clean, and keep the end of your soldering iron clean and well tinned. File or sand the parts, then keep your fingers off. Heat the parts first, then touch the solder. File off any excess solder.

The following tools and supplies are recommended for the construction process. Modelers who have built before may have their own favorites.

A. Knives

1. Hobby knife
2. No.11 blades

B. Files

Set of needle files

C. Clamps

1. A few small C-clamps
2. Wooden clothespins
3. Rubber bands, #16 and #33

D. Tool Set (A small carving tool set or individual gouges and chisels for shaping the hull.

E. Sharpening Stone (Necessary to keep tools razor sharp)

F. Boring Tools

1. Set of miniature drills: #60 to #80
2. 1/16", 3/32" and 1/8" drills
3. Pin vise

G. Miscellaneous

1. Tack hammer
2. Tweezers (a few)
3. Small fine pointed scissors
4. Miniature pliers
 - a. small round
 - b. flat nose
5. Bench vise (small)
6. Soldering iron or torch
 - a. solder
 - b. flux
7. Sewing thread (for seizing; other rigging in kit)
 - a. black
 - b. tan
8. Beeswax block (for treating rigging lines)
9. 1/2" or 3/4" masking tape
10. Wire cutters (for cutting fine wire and strip metal)

H. Sandpaper - Fine & medium grit garnet or aluminum oxide (#100 to #220)

I. Sail Cloth - Light weave cotton or linen cloth if you intend to add sails. A suitable cotton cloth is available from Model Expo.

J. Finishing

1. Paint Brushes
 - a. fine point for details
 - b. 1/4" to 1/2" flat square for hull

K. Supplies (will be covered in detail in the Painting & Staining section and throughout the instructions)

1. Paints
2. Primer
3. Stains and varnish
4. White or Carpenter's (yellow) wood glue
5. Super glue
6. Five-minute epoxy glue
7. Wood filler

Note about glues: White glue, or Carpenter's wood glue (yellow in color; also available in tan color), will suffice for most of the model. Five-minute epoxy provides extra strength for gluing fittings. Cyanoacrylate glue (super glue), such as Jet, can be used for quick adhesion and is ideal for adding a touch to a rigging seizing to hold it in place. The best super glue for most applications is a medium viscosity gap-filling type. The watery-thin type is recommended to fill a narrow crack by capillary action. Contact cement or model airplane-type cement is best for gluing the scribed deck sheeting. White glue will warp the wood sheet.

PAINTING & STAINING

It may seem strange to begin an instruction manual with directions on applying the finishes to the model. Not so! Much time and effort can be saved, and a more professional result can be obtained, if the finishing process is carried out during construction. Proper timing in application of finishes and the use of masking tape to define painted edges should eliminate unsightly glue marks and splotchy stained surfaces. In the end, following these general suggestions will be to your advantage.

Paint

Use a flat-finish paint such as the model paints made by Floquil, Polly-S, Testors, Humbrol, and Model Masters. You could also use artist's paints by Jo Sonja (used by many bird carvers) or Holbein Acryla Gouache. These paints are a combination acrylic-gouache.

Paint Colors

The recommended color scheme for the Phantom is shown on the plans.

Primer

Use a grey primer. Floquil is excellent. The grey color will highlight sanding scratches and other defects better than white primer. Prime all woodwork to be painted, and prime all metal fittings. Lightly sand the primed items. Use a spackling compound, such as Pic-n-Patch brand, to fill any scratches and defects, then re-prime. Careful! Do not prime parts to be stained or varnished.

Stains & Finishes

For natural finished wood, use a protective coating after staining, such as low sheen polyurethane varnish or the Floquil coatings. You can also use an oil-resin mix such as natural Minwax. Floquil stain, or Minwax stains can be used to tone the wood.

Brushes & Procedures

Use good quality soft sable or synthetic hair artist brushes. A small pointed brush is good for details. For the main hull areas, use a 1/4 to 1/2-inch flat brush.

Before painting, clean the model with a tack rag. Apply your paint in smooth even strokes, overlapping the strokes as you go. Thin the paint enough to eliminate brush strokes, but not run. You will need four or five coats of the light colors to cover the grey primer, and maybe only two coats of the dark. Check your finish between coats, and sand or add spackle as necessary to get rid of any blemishes.

Anywhere two colors meet, use masking tape. Electrician's black plastic tape is ideal. It leaves a nice edge and is not overly sticky. Do not use drafting tape. The edges are wrinkled and paint may run under them.

STAGE A

SHAPING THE PRE-CARVED HULL

Sanding alone will not shape the hull enough to precisely match the hull lines. Actual carving should prove to be minimal, but some carving is required, especially at the rail, keel, bow, and stern areas. Particular care should be taken to shape the stern properly, being certain to maintain the symmetry above the rudder.

1. Hull Templates

For exact carving to hull lines, a template is required for the hull profile and each of the nine stations (see figure 1). A template sheet is provided in the kit, printed on heavy stock paper. Cut the templates out carefully with a No.11 hobby blade. Do not use scissors! You will want a nice smooth edge.

2. Carving the Hull

Cut a wooden block from scrap to about 2" x 1" x 3/4" thick. Screw the block to the deck so the model can be held in a bench vise for carving. First, check the accuracy of the profile and correct it as necessary, using a long sanding block (see figure 2).

Next, mark the centerline, rabbet lines (where hull meets keel), and station lines on the model (see figure 3). Place the station marks on the center of the hull bottom and on top of the rail so the marks won't be carved off as you work. This illustration also shows where excess wood must be removed from the hull.

Start carving approximately at Template Station 5 (maximum beam) and progress forward, then aft, using chisels and gouges to cut away excess wood. Avoid carving against the grain by shifting forward or aft of Station 5 until you find a spot where you are going with the grain. Basswood carves easily so you probably won't have much problem with the grain.

Carve very slowly, and take off a little wood at a time. Fit the templates as you go, and

make sure they are fitted perpendicular to the keel. Carve until the template fits reasonably well, then use sandpaper to obtain the final shape. At first, the templates will not fit too well. You must compare the template to the hull and visually decide where to remove wood. Cut a little off, then re-check the template. Sand the stern with a sanding block.

Notice that along the top edge of the hull there is a "waist". The hull planking is thicker below the waist than in the bulwarks. Consequently, there is a little step in the hull side. The templates show this step.

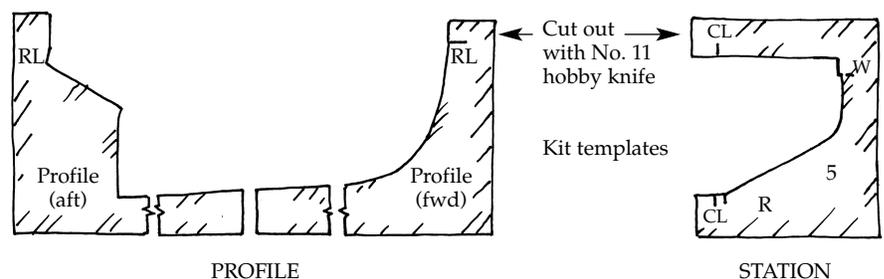
Finally, draw a few horizontal pencil lines (like waterlines) and the station lines on the hull. Use these to visually check the shape of the hull. Hold the hull at various angles, and look to see if the pencil lines are fair (even). If you have any unfairness, dips or bumps, they can usually be found with this visual check. You can also use a stiff stick of wood, about 1/8-inch square, to lay on the hull at various locations. Dips in the hull will show up under the stick.

3. Carving the Deck & Bulwarks

Make yourself a temporary cradle to secure the hull while carving (see figure 4). This cradle also will serve to hold the model for most of the remaining work. Make the cradle so the model sits in it with its waterline parallel to the baseboard and table. The top of the cradle should be below the waterline. Later, when you are ready to paint, or copper, attach a pencil on top of a wooden block, and slide it along the table to mark the location of the waterline.

The machine-carved hull has bulwarks approximately 3/16" thick. They are thicker than required, so they won't break while inside the kit box. The upper surface should be cut to the underside of the cap rail. After you carve the outside of the hull, including the step at the waist, the bulwarks will then be only about 1/16" or 3/32" thick. If necessary, carve the inside of the bulwarks so that the final bulwark thickness above the waist is as close to 1/32" thick as you can get it without damaging the bulwark (see figure 5 for what must be removed). This is the most

FIG. 1 - Cutting Out the Hull Templates



difficult part, so work slowly and be careful not to break off the bulwarks as you carve (see figure 6). After carving, sand the surfaces smooth.

The deck will be covered with the scored planking sheet included in the kit, unless you desire to lay individual planks as an option. In any case, you must first take a chisel and square up the corners at the deck step, the transom, and at the bow, and sand the deck smooth (see figure 7).

Next, make a template of the deck camber and shape or sand the deck curvature as necessary. While doing this, check to make sure the bulwark height is correct. If necessary, carve the deck down so the proper height is maintained.

At this stage, the hull should be fully carved. Go over the entire hull with sandpaper, using #220 grit for the final smoothing. Be careful not to round the upper edges of the rail or at the rabbet. These should be sharp corners.

FIG. 2 - Carving the Hull

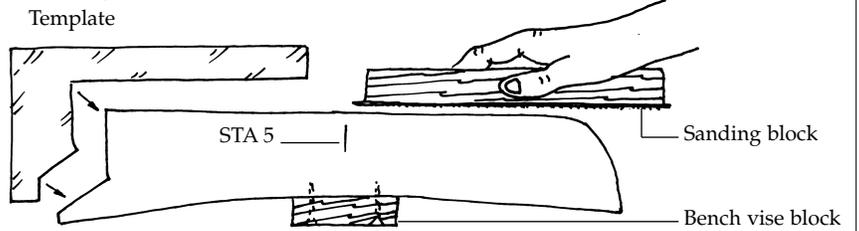


FIG. 3 - Marking the Guide Lines

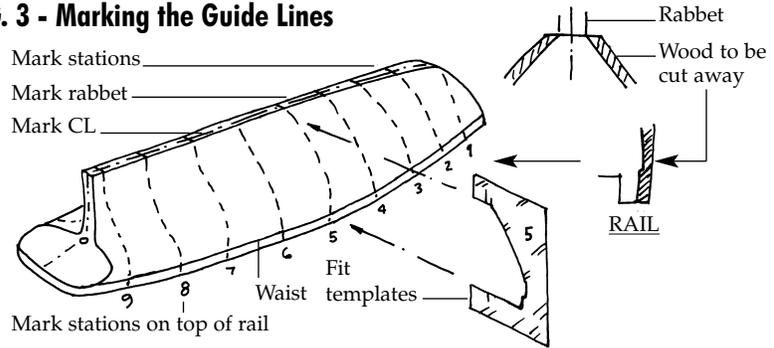


FIG. 4 - Making a Cradle

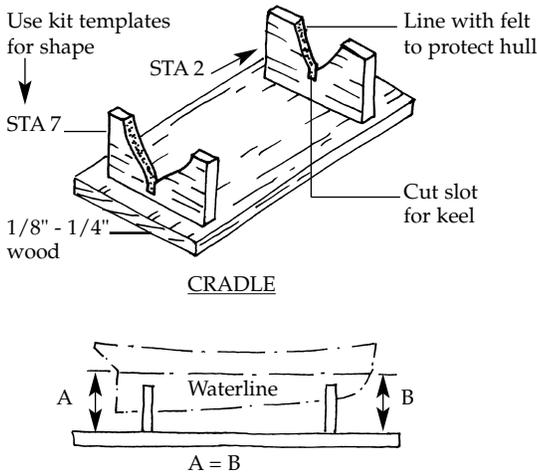


FIG. 5 - Gauging Bulwark Thickness

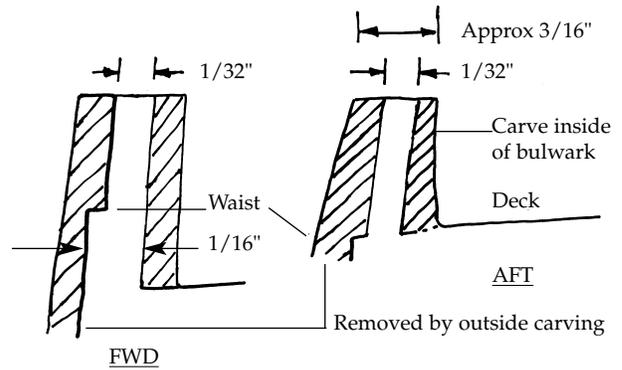


FIG. 6 - Carving the Hull

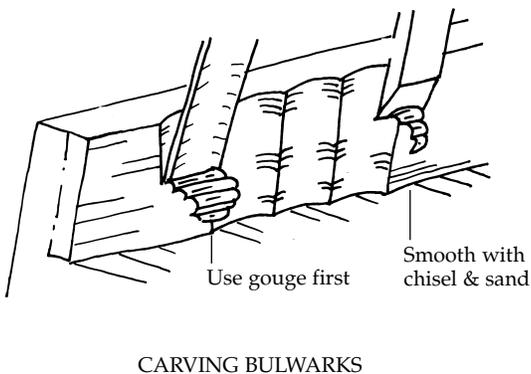
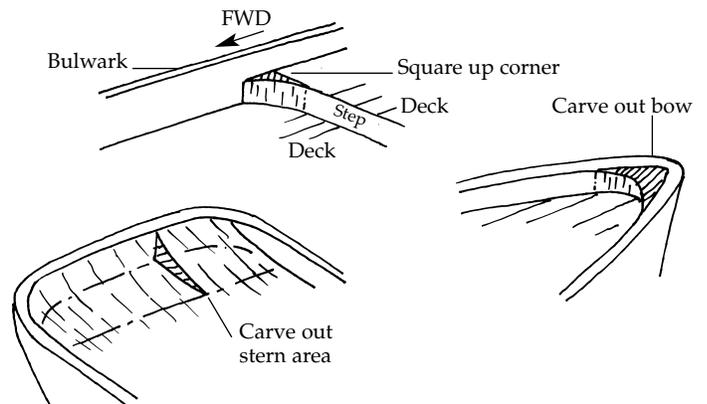


FIG. 7 - Squaring Up Some Corners



STAGE B

COMPLETING THE BASIC HULL STRUCTURES

1. Installing the Keel, Stem & Sternpost

Pre-cut the keel, stem and sternpost and install them (see figure 8). Make sure the grain of the wood is in line with the piece. Use some scarf joints as shown in the sketch. Use pins or dowels to position the parts before gluing. Scrape off any glue squeeze-out. Fill any gaps remaining at the glue joints with wood filler and then sand.

At this stage, drill the pilot holes through the keel for launching ways or pedestal mounting.

2. Installing the Rudder

The rudder can be made now or later (see figure 9 for construction). The pintles and gudgeons are made from the brass strip provided, or by using paper strips.

3. Drilling the Larger Holes in the Hull

Before going any further with the details, drill all the large holes in the hull. These would include a hole for the rudder post and bowsprit, and two mast holes. File the bowsprit hole square after drilling. For the mast holes, make a template so you will drill at the correct mast angle (see figure 10 for some ideas).

4. Holes to be Drilled as Work Progresses

There will be a few other holes to drill as the work progresses. For example, the hawse holes for the anchor cable are drilled through the bulwarks forward. You will also need to drill small holes for inserting eyebolts that hold blocks for the rigging, and holes for pinning various parts in place.

5. Planking the Deck

Note: On the aft deck area, the plans show that the planking is parallel to the bulwarks rather than centerline. If you use the scribed decking in the kit you will have to ignore this curvature. For authenticity, however, you could plank this area of the deck with separate individual planks.

At the deck step, fit the edge plank (see figure 11). Next, make a paper template for each of the two deck areas to fit snugly against the edge planks and the bulwarks. Cut the openings for the masts in the appropriate templates. Place the tem-

FIG. 8 - Installing the Keel, Stem & Sternpost

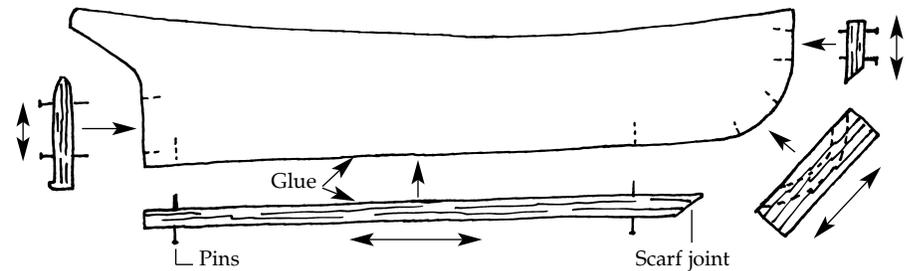


FIG. 9 - Installing the Rudder

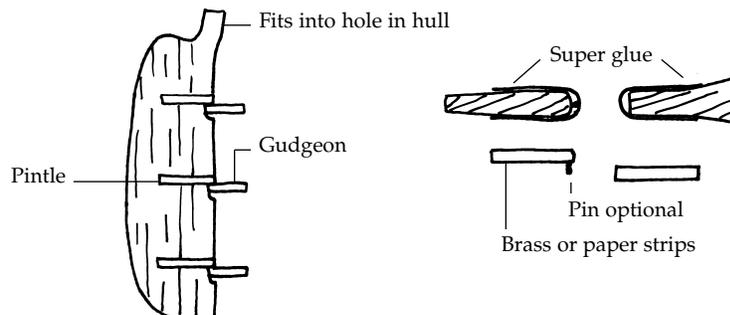


FIG. 10 - Achieving Proper Mast Rake

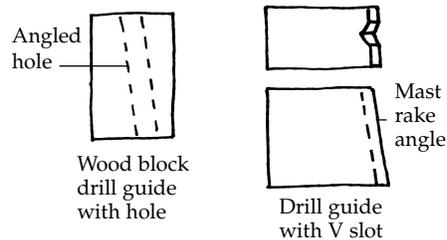
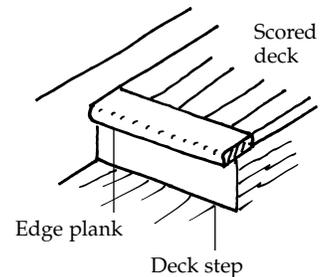


FIG. 11 - Edge Plank at Deck Step



plates on the scored planking and cut the planking with a hobby knife.

Along the bulwarks, flush with the deck or just slightly thicker, there is a waterway-nibbing strake, also called covering board. If you want to add this detail, cut the edge off the scribed deck, the width of the waterway, and glue the waterway to the edge of the sheet (see figure 12).

Make sure the scored lines of the planking are parallel to the centerline. Glue the planking down with contact cement or model airplane-type cement (see gluing notes on page 5).

6. Installing the Bulwark Stanchions & Cap Rail

Before installing the bulwark stanchions (also called timberheads), cut the scupper slots in the bulwarks. Drill a series of small holes along the scupper, then cut out the slots with a hobby knife. Sand the slots smooth.

Cut each bulwark stanchion to length and glue them in place. Cutting and mounting the stanchions is tedious work, so exercise great care in the installation. Check the plans for spacing and appearance. Glue the rail atop the bulwark and stanchions, making sure it extends slightly beyond the bulwark outboard and stanchions inboard. Use pins to help align and hold the rail in place (see figure 13). The splash rail forward is added next on top of the main rail. Steam-bend this in place.

7. Coppering the Hull

You have the option of painting the hull bottom a copper color, or installing the copper included in the kit. If you plan to copper the hull, now is the time to do it before you get any more detail on deck.

To copper your Phantom, the kit includes a roll of 1/4"-wide self-stick copper strip. You can use the strip in long lengths and scribe the seams, or cut off individual plates. Plan sheet 2 shows the size of plate required.

With the hull upside down, use a pencil to mark the seams on the hull as a guide. Begin with the keel at the sternpost and work up to the waterline and forward, lapping the plates as you go. The plates should be applied in belts (see figure 14). Where one belt goes under the next belt, this is called a gore end. A lower belt need only go under the upper belt enough to form a lap. The belt at the waterline is a horizontal single strake.

Though not shown on the plans, the rudder should also be covered. See the photo on the kit and on the sketch.

If you wish to simulate nails in the plating (questionable at this scale) you can use a pounce wheel to indent the copper. Such a wheel is available from Model Expo.

The copper can be left to tarnish naturally, or you can make it a weathered blue-green by applying a chemical called Patina-It. This is also available from Model Expo - www.modelexpo-online.com

FIG. 12 - Waterway Nibbing Strake

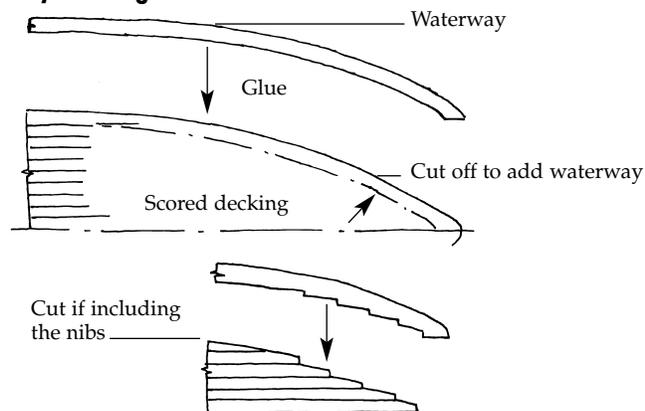


FIG. 13 - Stanchions & Rail

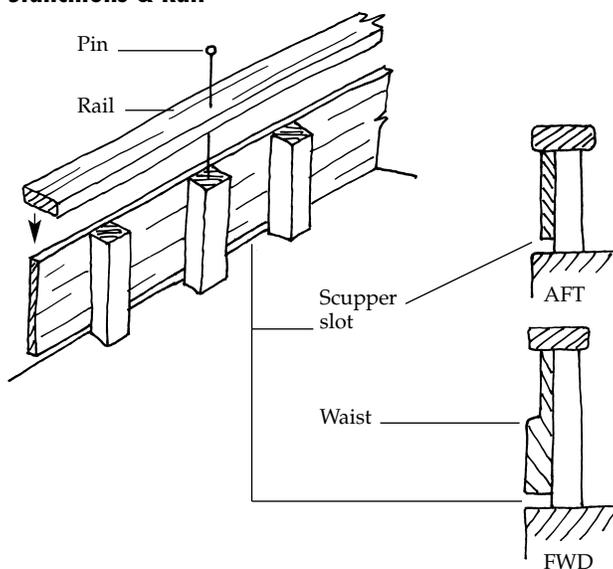
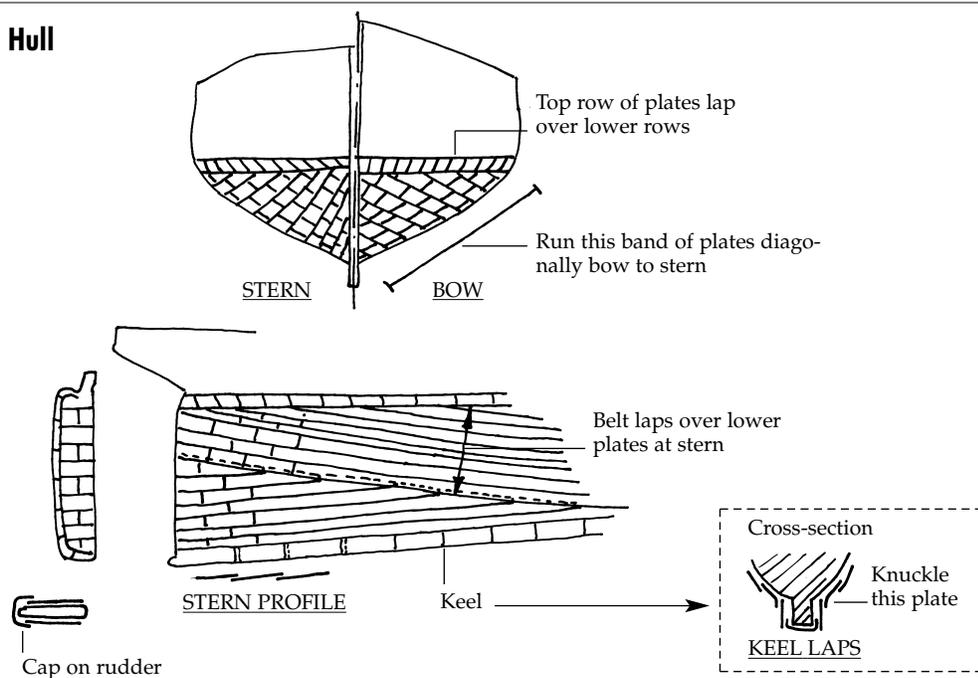


FIG. 14 - Coppering the Hull



STAGE C

MOUNTING THE HULL

Before proceeding with additional work it is best to mount the hull. This step will help prevent details from becoming damaged during handling and will allow you to make any alignments that require a true waterline. Proper mounting of the hull is very important and will allow the accurate building and aligning of the remainder of the model. While any modeler can devise his own mounting, this kit contains a mounting board and launching ways system. A second option, is the use of brass pedestals which can be purchased separately.

1. Launching Ways

This type of mounting is most suitable for models without sails. A separate set of instructions for the ways is included in the kit.

2. Mounting Board with Two Pedestals

If you decide to use the mounting board and pedestals, drill the pilot holes for the pedestals. The model should sit with the waterline parallel to the baseboard. If something went wrong and the balance is off, you can add a brass shim under one pedestal to correct it. One pedestal should be longer than the other, so buy the correct lengths.

Note: It is recommended that either choice mounting piece be finished before mounting the Hull Assembly into place. During mounting, be sure that the rails of the hull are level with the mount. Future alignments, especially the masting, will be gauged from this base.

STAGE D

ADDING THE HULL DETAILS

With the model mounted, you are now ready to add the hull details. Mark the location of all parts in light pencil. Measure from some bench mark such as a mast hole, deck step, or the centerline.

1. Wheelbox, Companionways, & Skylight

Make these parts from the solid wood blocks provided in the kit, or you could build them up from sheet wood (see figure 15 for some details). The steering wheel is a Britannia casting. Paint it to look like a wooden wheel.

The skylight has round bars over the glass. However, at this model scale this detail is almost impossible. You can paint the glass area light blue, and if you feel capable, paint some fine black lines to represent the bars.

2. Britannia Castings

The cockpit coaming, hawse pipe lips, anchor, stove pipe, fife rails, ventilator, pumps, winch bits, cleats, and bollards are all Britannia castings. Clean them up, prime, and paint the parts before installing them on the model. Most of these fittings require that you drill holes in the deck for inserting the fittings. Use a small amount of glue in the holes and be careful not to have any glue squeeze-out.

For the fife rails, make sure the belaying pins holes are clean. You can glue the brass pins in the holes before installing the fife rails.

For some scratch-building practice, try making some wooden or brass fittings and substitute them for the Britannia castings.

STAGE E

MAST & SPAR CONSTRUCTION

The mast and spar dowels included in the kit are round, but not tapered. True to scale, masts and spars should be tapered along their full length. Note also that the ends of the boom, gaffs, and masts are stepped down to provide a shoulder for an eye band.

1. Shaping the Lower & Top Masts: Fore & Main

There are two mast assemblies for the Phantom. They are a fore mast and main mast and are built up in two sections: lower and top. Each should be connected at the doublings by mast caps and lower band (fore) and spreader (main).

Establishing the Correct Curve of the Masts: The correct shape of the masts is shown on the plans. Each of the mast sections should be tapered in a slight (parabolic) curve and not in straight lines (see figure 16). The best way to taper masts from dowels is to cut the taper into squares, then octagons, and finish by sanding into circles (see figure 17). For the Phantom, the diameters are rather small, so you probably can just hand-sand the tapers, or chuck them in an electric drill and sand the taper.

Shaping the Mast Heads: As you shape the masts, square up the mast head at the top and cut the tenon for the mast cap (see figure 18).

2. Assembling the Masts: Fore & Main

Next, assemble the two top masts (the fore is a signal pole) onto the two lower masts by first gluing the caps in place. The main mast has a spreader which can be made from brass wire. Install the top-masts, making sure they line up straight with the lower masts. Plan sheet 2 shows enlarged views of the mast details.

When the mast assemblies are completed, stain and varnish them and set them aside to dry.

Note: Even though sails may not be installed, the fore and mainsail mast hoops should be installed. These can be made from brass wire. Wind a wire around a dowel or drill bit slightly larger than the mast. Then, cut the winding into split rings. Glue or solder the ring together. Place the rings on the masts before you add the main boom rest and before installing the mast assemblies.

FIG. 15 - Companionway

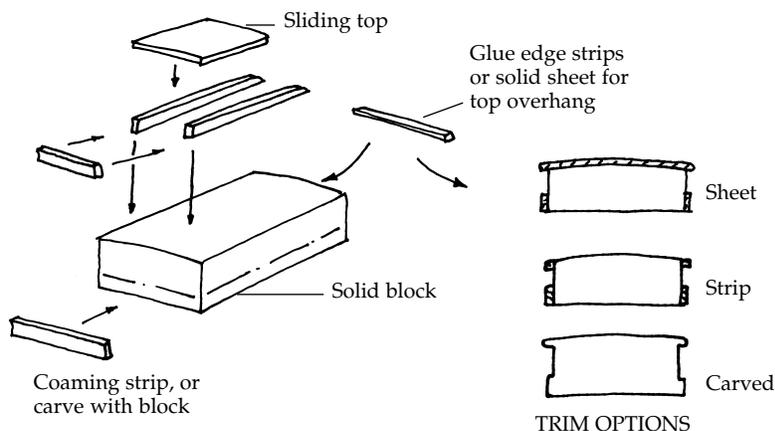


FIG. 16 - Taper On Masts & Spars

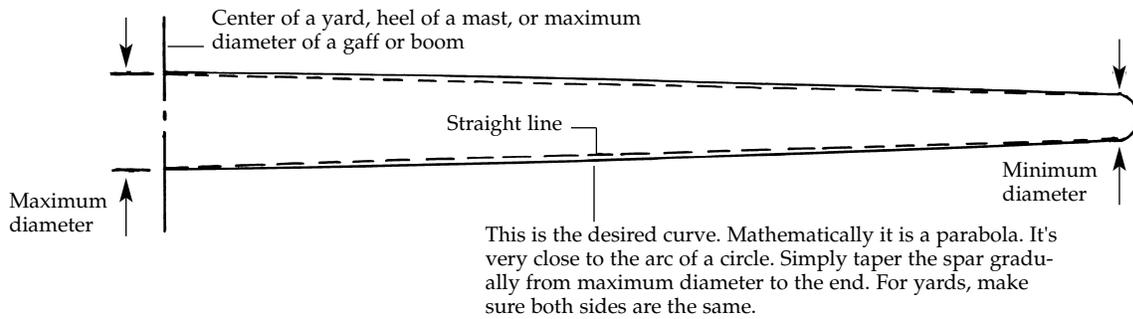
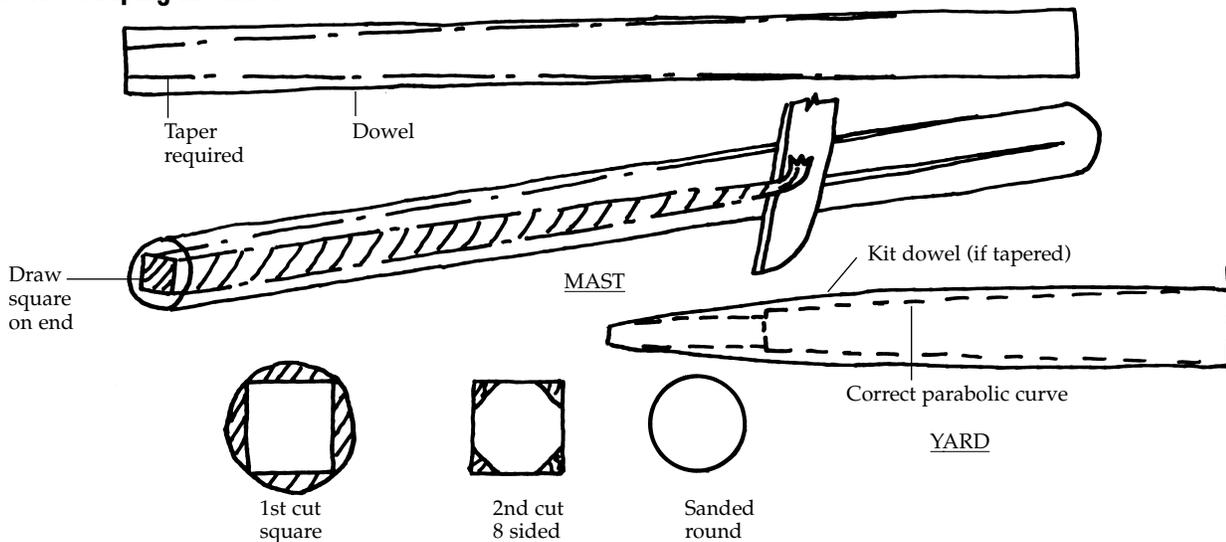


FIG. 17 - Shaping the Masts



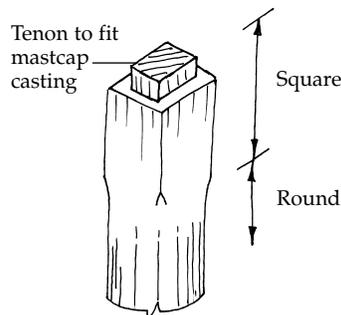
3. Shaping the Spars

Main Boom & Two Gaffs: The boom and gaffs also taper in a slight parabolic curve. The maximum diameter of these spars should be about one-third from their fore end, and then they should taper toward each end. The forward end is slightly larger in diameter than the aft end.

Bowsprit: The bowsprit should be square from the inboard end to about 1/8" outboard, then it should change to a round shape and taper forward. It is best to start with a square stick rather than a dowel. On the inboard end, also cut the tenon that fits between the winch bits.

Finishing Spars: When shaping and fitting of each spar is completed, stain, varnish and set them aside to dry.

FIG. 18 - Top of Lower Masts



4. Main Boom & Gaff Assemblies

The main boom and two gaffs require that jaws be added to their throats for joining to the masts. Plan sheet 3 illustrates how to make the jaws.

Drill holes to represent the sheaves in the main boom. Add the eyebolts, cleats and chocks to all spars as shown on the plans.

5. Mounting the Mast Assemblies & Bowsprit

After staining and varnishing the mast assemblies and bowsprit, they can be placed in the holes you drilled into the hull. The bowsprit hole should be square to fit the square end of the bowsprit. It is suggested that you do not glue the masts and bowsprit into the holes. The rigging will hold them in position. Furthermore, if the model gets restored in the future, the masts can be easily removed.

Check the alignment of the masts and bowsprit. If not straight, looking aft, or at the correct angle shown on the plans, you can shim the holes. If necessary, drill the holes larger to accommodate shimming.

STAGE F

GENERAL RIGGING INFORMATION

For this model you will be concerned with six different basic types of lines:

STANDING RIGGING - 1. Shrouds: there are a total of 6, three on each side of the ship. They are fixed lines that support the lower masts and run from the mast bands on the mastheads to deadeyes and chainplates along the outside of the ship. 2. Main topmast backstay: similar to a shroud, but supports the main topmast on each side of the ship. 3. Stays: are fore and aft fixed lines that support the masts and spars. 4. Footropes: are for seamen to stand on when furling sail;

RUNNING RIGGING - 5. Halliards or Halliards: these are lines that move and are used to hoist sails or flags; 6. Downhauls, Reef tackle, Sheets and topping lift: all these lines move, are used to work the gaffs, boom or sails. Downhauls and reef tackle are used to haul down a spar or sail; Sheets secure the lower ends of the sails; The topping lift passes through a block at the masthead and takes the weight of the main boom by lifting.

You should have no trouble following the leads and the belaying points. When confronted with options, put yourself "on board" the real ship and from that perspective decide what you would do.

1. Rigging Sail Lines

The Phantom model is intended to be completed with sails removed. It looks better on the launching ways mounting system. However, even without sails, some of the rigging lines such as halliards and downhauls should remain, along with their lead blocks. Some of the lines should be hooked together, such as the jib halliards and downhauls. The running ends of these lines should be belayed at their proper locations.

Adding the sail rigging lines on the Phantom adds tremendously to the look of the model, especially at the forward stays where the contrasting black stay and light running lines, along with their blocks, create interesting visual detail.

Sail Making Option:

The sails are shown on the Rigging Plan for those who wish to make them. Sailmaking details can be found in other Model Expo instruction books.

FIG. 19 - Seizings

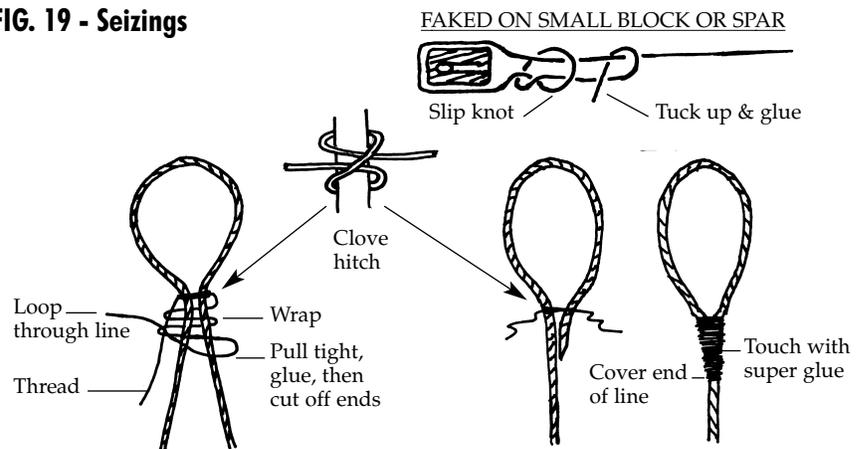
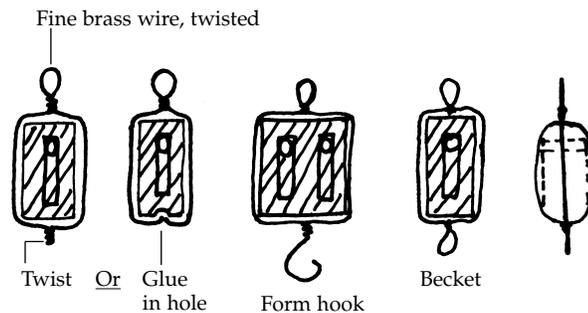


FIG. 20 - Blocks



2. Choosing the Right Size Lines

All of the standing (fixed) rigging is done using the black line in the kit. The black color represents the permanently tarred rigging used on the real ship. Use the heavier line for the shrouds, the stays, and bobstay. Use the next size for the backstays and footropes, and use sewing thread (not in kit) for seizings and lanyards. Lanyards are lines which pass either through deadeyes to tighten the shrouds. The natural color lines in the kit are used for the running rigging that is reaved through blocks.

3. Applying Beeswax to the Lines

Before placing the lines on the model, run the line through a block of beeswax several times. Then, run the line through your fingers. This heats the wax slightly and rubs it into the line. The beeswax will cut down on fuzz and protect the line from moisture.

4. Seizing the Lines

Seizing of lines (binding or securing two lines or different parts of the same line) can be done as shown in figure 19). To prevent seizings from unraveling, add a touch of super glue.

5. Blocks, Strops, & Fittings

The blocks in the kit are so small that it will not be easy for you to create the exact detailing. Some modeling shortcuts are in order (see figure 20).

STAGE G

STANDING RIGGING

1. Bowsprit Rigging

Begin the standing rigging with the bowsprit. Plan Sheet 2 shows enlarged views of the rigging and Plan Sheet 3 shows some model simplifications. Where paper strip is shown for a simplified iron band, you could also use some of the self-stick copper stripping included in the kit.

2. Shrouds

The shrouds are the strong lines that support the masts laterally. They are attached along the outside of the ship using chain plates, lanyards and deadeyes. The chain plates are made of brass wire or strip. To set up the shrouds, make a temporary jig of brass wire to space the deadeyes as you do the seizings (see figure 21 and plan sheet 2). Keep an eye on the masts as you rig the shrouds, so you will not pull them out of line.

3. Stays

Stays also are support lines for spars, but more especially for masts in a fore and aft direction. Install all the fore and aft stays after the shrouds are completed (see plan sheet 2 for enlarged details at the mast-head).

Note that the main topmast back-stays should set up to a tackle at the rail rather than deadeyes. The tackle part is a running line, therefore it should be tan in color. The fixed portion above the tackle is black like the other stays.

4. Footropes

Footropes are required on the bowsprit and the aft end of the main boom. Beeswax these thoroughly so they will hang in a smooth curve.

FIG. 21 - Spacing the Deadeyes with a Jig

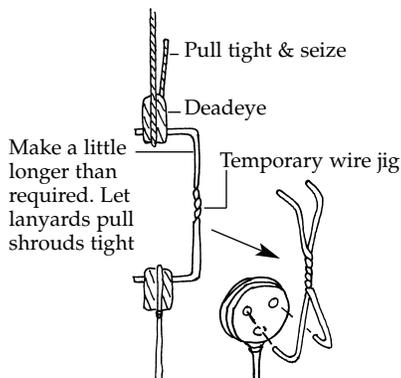


FIG. 22 - Gaff Rigging Details

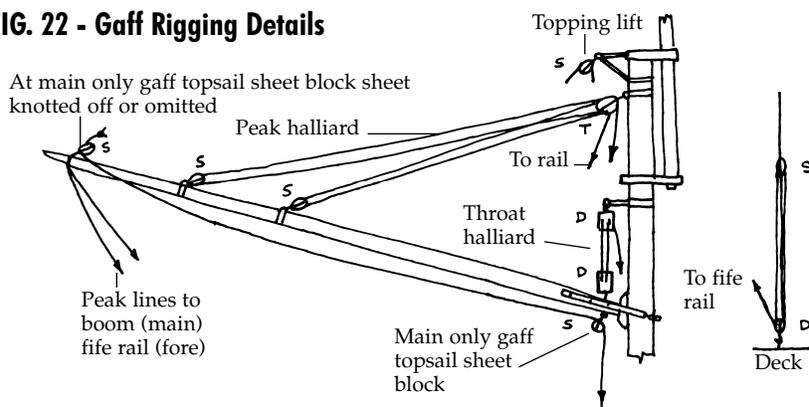
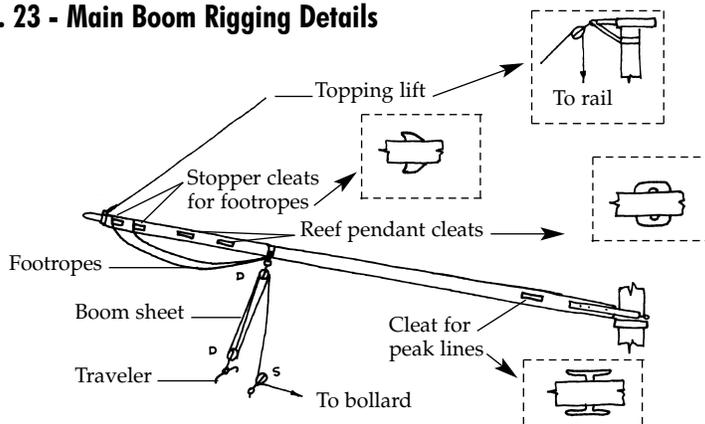


FIG. 23 - Main Boom Rigging Details



STAGE H

RUNNING RIGGING

1. Fore & Mainsail Rigging

Gaff and boom rigging details are next (see figures 22 and 23). The main gaff can be rigged in the up position or down on top of the boom. However, in the up position the appearance is fuller. See the model on the kit box.

The reef pendants and tackle can be omitted if no sails are installed.

2. Jib & Fore Staysail Rigging

Rig the Jib and Fore Staysail halliards and downhauls as shown (see figure 24). Since there are no sails, the sheets will be omitted. If you add sails or furled sails, the sheets must be included.

3. Main Topmast Staysail & Gaff Topsail Rigging

These can be rigged similar to the jib. Connect the halliards and downhauls together. The sheets can be omitted if no sails are used, or you can include the sheet and knot it off at a block.

4. Belaying the Running Rigging

The belaying points shown on the plans illustrate a solution to belaying all the lines, but it is certainly not the only solution. Lines were belayed differently on various ships. You must, however, use some common sense. The lines must lead easily to the belaying points. Each belaying point should have a coil of rope (see figure 25 for some modeling ideas).

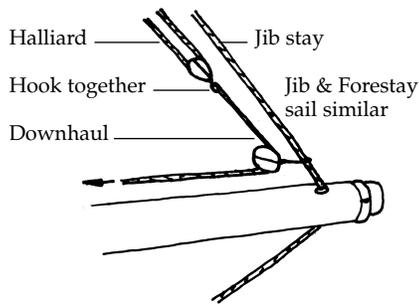
5. Final Touches

After all the rigging is in place, re-check every line, and make sure all the seizings are sound. If necessary, add another touch of super glue to seizings. Check to see if there are any shiny places on the rigging. If necessary, touch up the standing rigging with black paint, or black liquid shoe polish. For running rigging, use a tan stain, or brown liquid shoe polish.

Check to see if any of the painted wooden parts were marred or scratched during the rigging process and touch up as necessary.

Congratulations—you've done it! Your model should now be complete. We hope you like the results and look forward to helping you with your next ship modeling project.

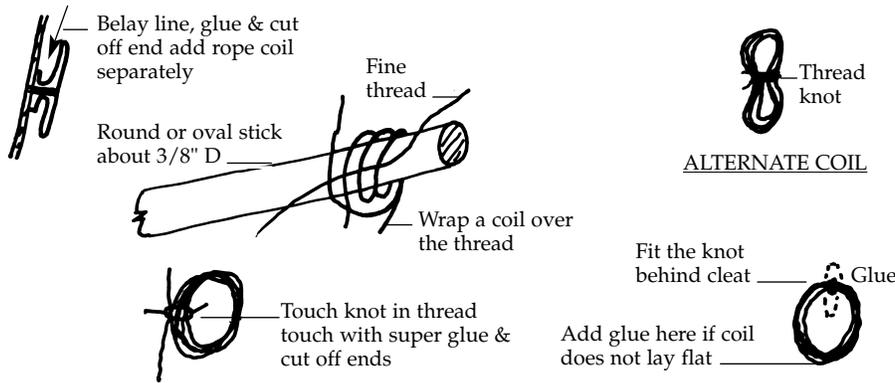
**FIG. 24 - Jib & Fore Staysail
Halliards & Downhauls**



RIGGING LINE DIAMETERS

.10mm (.004")
.20mm (.008")
.25mm (.010")
.40mm (.016")
.50mm (.020")
.60mm (.024")
.75mm (.030")
.80mm (.032")
.90mm (.035")
.95mm (.037")
1.00mm (.039")
1.20mm (.047")
1.25mm (.049")
1.30mm (.051")
1.50mm (.059")
1.60mm (.063")
1.70mm (.067")
1.75mm (.069")
2.00mm (.079")
2.50mm (.098")

FIG. 25 - Rope Coils



CONVERSION TABLE FOR 1/8" SCALE

R I G G I N G

Diameters for Lifesize Vessel	Diameters in Tenths of an Inch	Diameters Converted to 1/8" Scale
		.01 x Inches in 10ths:
5/16"	.3125"	.003" (.08mm)
3/8"	.375"	.004" (.10mm)
1/2"	.5"	.005" (.13mm)
5/8"	.625"	.006" (.15mm)
3/4"	.75"	.008" (.20mm)
7/8"	.875"	.009" (.23mm)
1"	1.00"	.010" (.25mm)
1-1/4"	1.25"	.013" (.33mm)

B L O C K S

Lengths for Lifesize Vessel	Lengths Converted to 1/8" Scale
4"	.04" (1.02mm or 1/32")
5"	.05" (1.27mm or 3/64")
6"	.06" (1.52mm or 1/16")
7"	.07" (1.78mm or 5/64")
8"	.08" (2.03mm or 5/64")
10"	.09" (2.28mm or 3/32")
12"	.13" (3.30mm or 1/8")

**FORMULAS FOR CONVERTING
MILLIMETERS AND INCHES**

1 mm = .03937 of an inch

To find tenths of an inch:

$$.03937" \times \text{mms} = \text{tenths of an inch}$$

To find mms from tenths of an inch:

$$\text{Tenths of an inch} \div .03937" = \text{mms}$$

The Latest* Kits from Model Shipways



*As of the printing of this manual, some of these kits were not yet released. Please see our website (www.modelexpo-online.com) or call 1-800-222-3876 (Mon-Fri 9-5 ET) for availability, prices and expected in-stock dates.



NEW!

HARRIET LANE, UPDATED! BACK BY POPULAR DEMAND

Built in New York for the U.S. Revenue Service in 1857, the *Harriet Lane* was powered by a combination of steam and sail. She was 180 ft. long, with a 30 ft. beam, and carried a 30 lb. Parrott rifle, plus three 9" smooth-bore Dahlgrens. Her design clearly illustrates the transition from sail to steam.

Harriet Lane features a machine carved hardwood hull which needs only light shaping and sanding. We provide plank-scored basswood for decking and cabins, spars and hardwood blocks. Ladders, anchors, paddle wheels, two ship's boats, four cannon with carriages and numerous other fittings are finely cast Britannia metal. We've upgraded the kit to include laser cut paddle wheel covers. Newly Detailed plans and newly written clear instructions by master ship modeler, Ben Lankford, are easy to follow. (Baseboard and brass pedestals are not included.)

Kit features a pre-shaped, machine carved solid wood hull, shaped deck house and superstructure. Other wooden parts include dowels, strips, sheets and blocks. Brass wire and airports, plus over 80 cast Britannia metal fittings outfit your model just like the real tug. Clear plans and instructions make building easy. (Wooden display base and brass pedestals are not included.)

Solid Hull Kit • Entry Level • No. MS2010 • Length 13-1/2" / Height 13-1/2" / Scale 1/8" = 1 ft. (1:96)

Harriet Lane Paint Set: Seven 1 oz. bottles of Model Shipways paint: **No. MS2010MS**

Walnut Display Base: Routed and ready for finishing. 20" x 4-1/2". **No. RH4520**

Brass Display Pedestals: Pre-drilled from top to bottom and slotted to fit the keel. You'll need three. Height 1-1/8". **No. MS0812**



NEW!

FAIR AMERICAN, REVOLUTIONARY WAR BRIG, C. 1778 PLANK-ON-BULKHEAD KIT

Fair American is a reproduction of a model built over 200 years ago, now on exhibit at the U.S. Naval Academy Museum at Annapolis, MD. She is said to represent the 14-gun privateer *Fair American* sailing out of Charleston in 1778.

Plank-on-bulkhead construction uses high quality basswood, the preferred wood of professional modelers. All structural hull parts and major fittings are laser cut, so they fit together with remarkable ease. The kit contains over 60 cut or shaped wooden parts, plus 120 extra wood strips for a second layer of planking, should you wish to build your model with a double planked hull. More than 500 fittings of wood, brass and Britannia metal fittings include 14 brass guns on wooden carriages, cannon, chainplates, bell, anchors and wheel. Seven plan sheets a 48 page instruction book by Erik A.R. Ronnberg, Jr.

and Ben Lankford, plus a 38-page guide to planking the hull make building easy. (Display base and brass pedestals are not included.)

Intermediate Level • No. MS2015 • Length 26-1/2" / Height 22" / Scale 1/4" = 1 ft.

Fair American Paint Set: Six 1 oz. bottles of Model Shipways paint: 1 each/MS4839 Primer, MS4830 Hull/Spar Black, MS4803 Hull Tallow, MS4802 Bulwarks Red, MS4825 Deck Light Gray, MS4969 Gold. **No. MS2015MS**

Walnut Display Base: Routed and ready for finishing. 20" x 4-1/2". **No. RH4520**

Brass Display Pedestals: Pre-drilled from top to bottom and slotted to fit the keel. You'll need two sizes for level display. **No. MS0812** Height 1-1/8" **No. MS0813** Height 1-3/8"

DESPATCH #9 SOLID HULL KIT

The Diesel harbor tug *Despatch #9* was built for the Marine Corps in 1945 at Tampa, FL from a US Army design. Later sold to Standard Oil of California, she worked oil barges in the San Francisco Bay area. Powered by a Busch-Sulzer 6-cylinder engine, she was equipped with practically every modern device of the time, including electric capstan, electric towing machine and watertight doors. *Despatch #9* was 85 ft. long with a 23 ft. beam.

Kit features a pre-shaped, machine carved solid wood hull, shaped deck house and superstructure. Other wooden parts include dowels, strips, sheets and blocks. Brass wire and airports, plus over 80 cast Britannia metal fittings outfit your model just like the real tug. Clear plans and instructions make building easy. (Wooden display base and brass pedestals are not included.)

Entry Level • No. MS2011 • Length 13-1/2" / Height 7-1/2" / Scale 5/32" = 1 ft.

Despatch No. 9 Paint Set: Eight 1 oz. bottles of Model Shipways paint: 1 each/MS4839 Primer, MS4830 Hull/Spar Black, MS4801 Bulwarks Dark Green, MS4816 Deck House Dark Buff, MS4835 Bright Red Trim, MS4828 Iron/Cannon Black, MS4823 Clipper Pearl Gray, MS4962 Aluminum. **No. MS2011MS**

Walnut Display Base: Routed and ready for finishing. **No. RH4512**

Brass Display Pedestals: Pre-drilled from top to bottom and slotted to fit the keel. You'll need two. **No. MS0812**



NEW!



NEW!

DAPPER TOM SOLID HULL KIT

During the early 19th century, many Baltimore clippers were granted privateering licenses by the US government. Only a fast, well handled ship could be reasonably sure of reaching its destination. Privateers like the *Dapper Tom* depended on their sailing abilities and fire power to prey on foreign shipping and to escape the British men-of-war patrolling the high seas.

Kit features a machine carved basswood hull with accurately shaped bulwarks and transom. Fittings include 8 cast metal cannon, mast caps, anchors, capstan and gratings, brass eyebolts and belaying pins, plus hardwood blocks and deadeyes. Scribed decking, wooden masts and yards, and three diameters of cotton rigging provide the finishing touches of authenticity. With the help of clearly drawn plans and illustrated instructions, even first time builders can finish an impressive model. (Display base and brass pedestals are not included.)

Entry Level • No. MS2003 • Length 24"/Height 18"/Scale 5/32" = 1 ft.

Dapper Tom Paint Set: Six 1 oz. bottles of Model Shipways paint: 1 each/MS4839 Primer, MS4830 Hull/Spar Black, MS4801 Bulwarks Dark Green, MS4803 Hull Tallow, MS4835 Bright Red Trim, MS4828 Iron/Cannon Black. **No. MS2003MS**

Walnut Display Base: Routed and ready for finishing. 20" x 4-1/2". **No. RH4520**

Brass Display Pedestals: Pre-drilled from top to bottom and slotted to fit the keel. You'll need two sizes for level display. **No. MS0812** Height 1-1/8" **No. MS0813** Height 1-3/8"

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1. A Dictionary of Sea Terms, Ansted, A., Brown, Son and Ferguson, 1967. A useful collection of general definitions.

2. The Ashley Book of Knots, Ashley, Clifford W., Doubleday & Co., 1944. Great compendium on knots and ropework.

3. The Neophyte Shipmodeler's Jackstay, Campbell, G. F., Model Shipways, 1962. For the beginner, contains general information on modeling, drawing from many types of sailing vessels.

4. The Ship Model Builders Assistant, Davis, Charles G., Marine Research Society, Salem, 1926. Sweetman reprint, 1960. Has many useful articles on model techniques; unfortunately, some of the text dealing with historical aspects of vessels and their construction is inaccurate. Beware of anachronisms.

5. American Ship Models, Grimwood, Victor R., W. W. Norton, 1942. Bonanza reprint. Contains much useful information on modeling techniques and a very good chapter on tools and materials.

Note: Most books are available from Model Expo at www.modelexpo-online.com. Check current catalog or website for availability.

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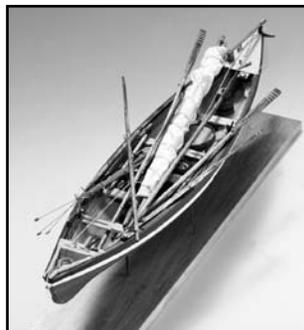
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