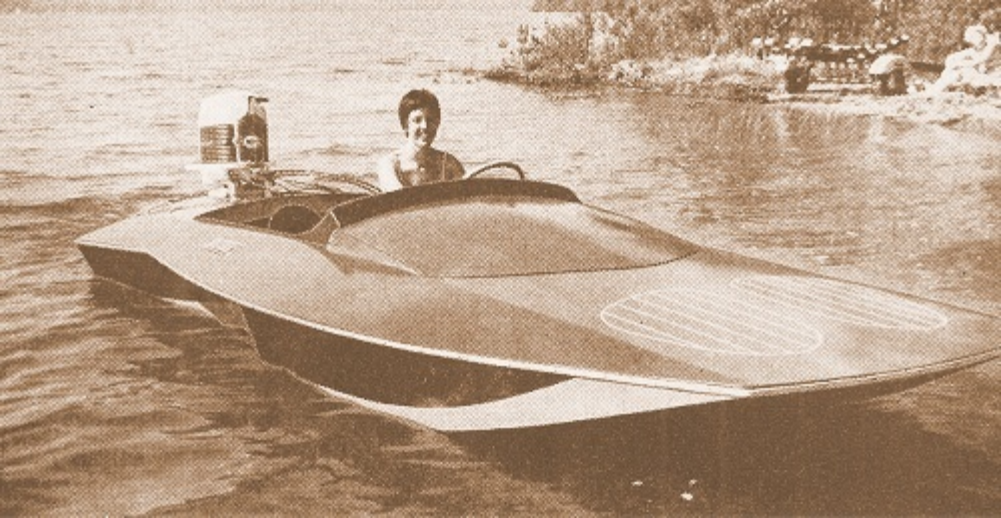
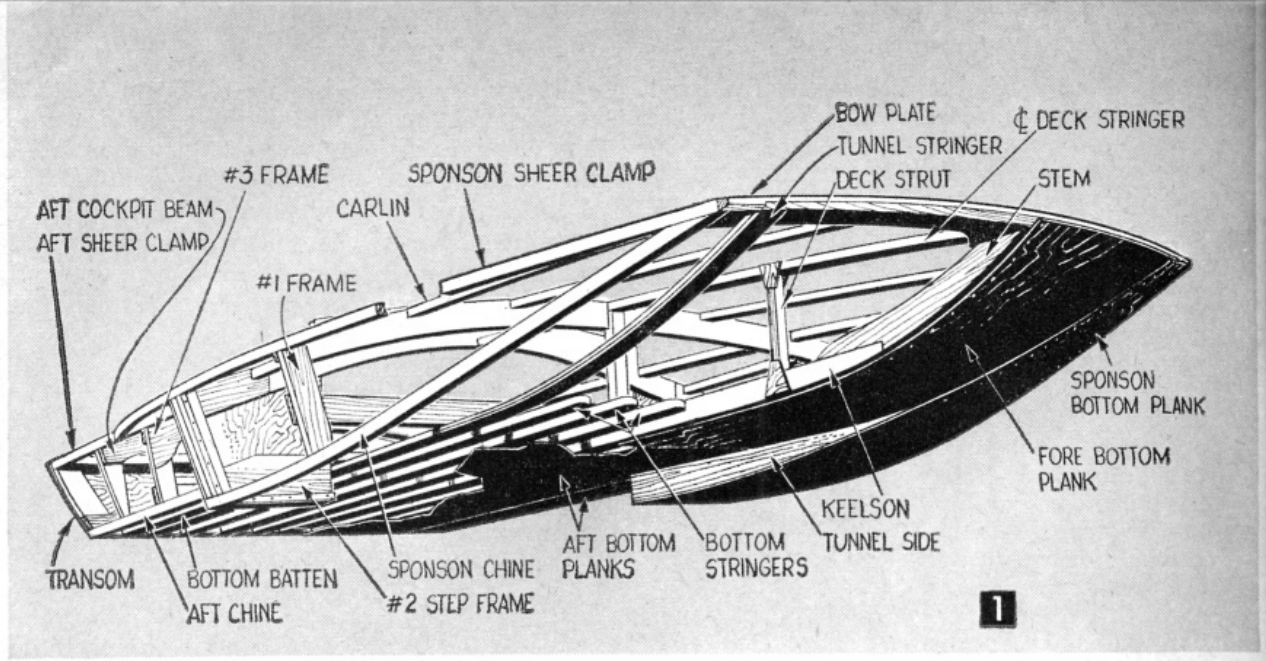




3-Point Sports

Part 1: How to build the framework for your 13-ft. 7-in., two-passenger, twin-sponsoned hydroplane

By WILLIAM D. JACKSON

COMPETITION-bred, three-point hull designs, featuring high efficiency, smart appearance, and relatively simple lines are a good first choice for boat builders who want fast sports boats with maximum economy.

Beyond the initial cash saving gained by building the boat yourself, there's the added economy of being able to use stock 40- to 50-*hp* outboard engines to attain speeds of 50 *mph* as the original model did driven by a stock 45-*hp* Mercury outboard engine.

Recommended construction is ¼-in. mahogany plywood over sawn spruce frames. For use with engines larger than 50 *hp*, ⅜-in. plywood should be used for sponson and bottom planking.

Begin construction by drawing a full-size pattern of each frame as in Fig. 3. If you wish to purchase these ready to use, Craft Print No. 349 (see page 97) includes a duplicate set of the original full-size patterns for all frames and other less-simple structural parts. Secure the patterns to the stock with thumbtacks, nesting the parts to avoid wasting lumber.

Transferring the patterns to the stock is accomplished by using a pattern transfer tool (Fig. 2D). (Available from SCIENCE and MECHANICS, Product Division, 505 Park Ave., New York 22, at $2.00.) After running the wheel of the tool along the pattern outlines, cut the parts out, using the marks as a guide for your bandsaw or sabersaw blade.

When Assembling Frames, tape the full-size paper patterns to a 4x8-ft. sheet of plywood and place the frame members in position over them. Fasten all joints with *Weldwood* Plastic Resin or Resorcinol glue and secure them as in Fig. 3. When all of the frames are assembled and the glue has dried for 24 hours, cut notches for the keelson at the centerline of the bottom framepieces and bevel the transom 13°.

Next assemble the bow plate, stem, and keelson in Fig. 4 and make up the horses to support the framework as in Fig. 2C. Be sure the floor of the working area is level and the height and location of the supports accurate so you will get the correct angle of rise along the keelson. Fair the fore end of the keelson into the stem with a jack plane.

Now lay out the locations of the frames and transom and begin assembly by attaching #2 step frame to the keelson. Be sure the frame hangs plumb and is square with the keelson, then attach 1x2 stock between the outboard ends of the frame and the floor to maintain alignment while you install the rest

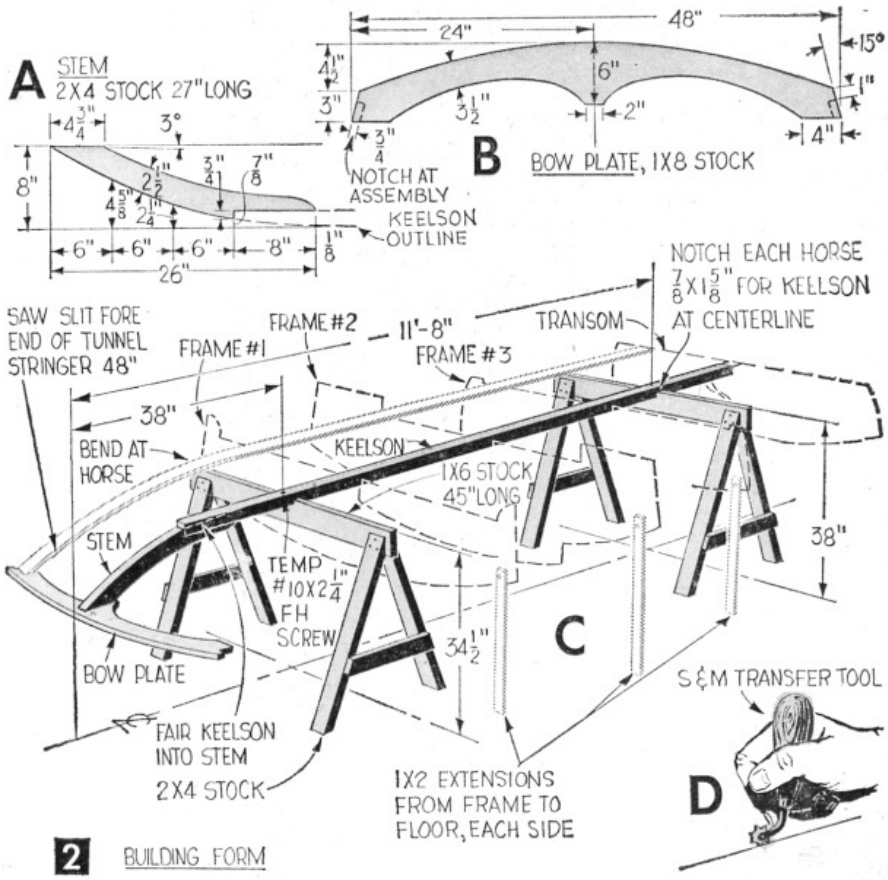
Hydro

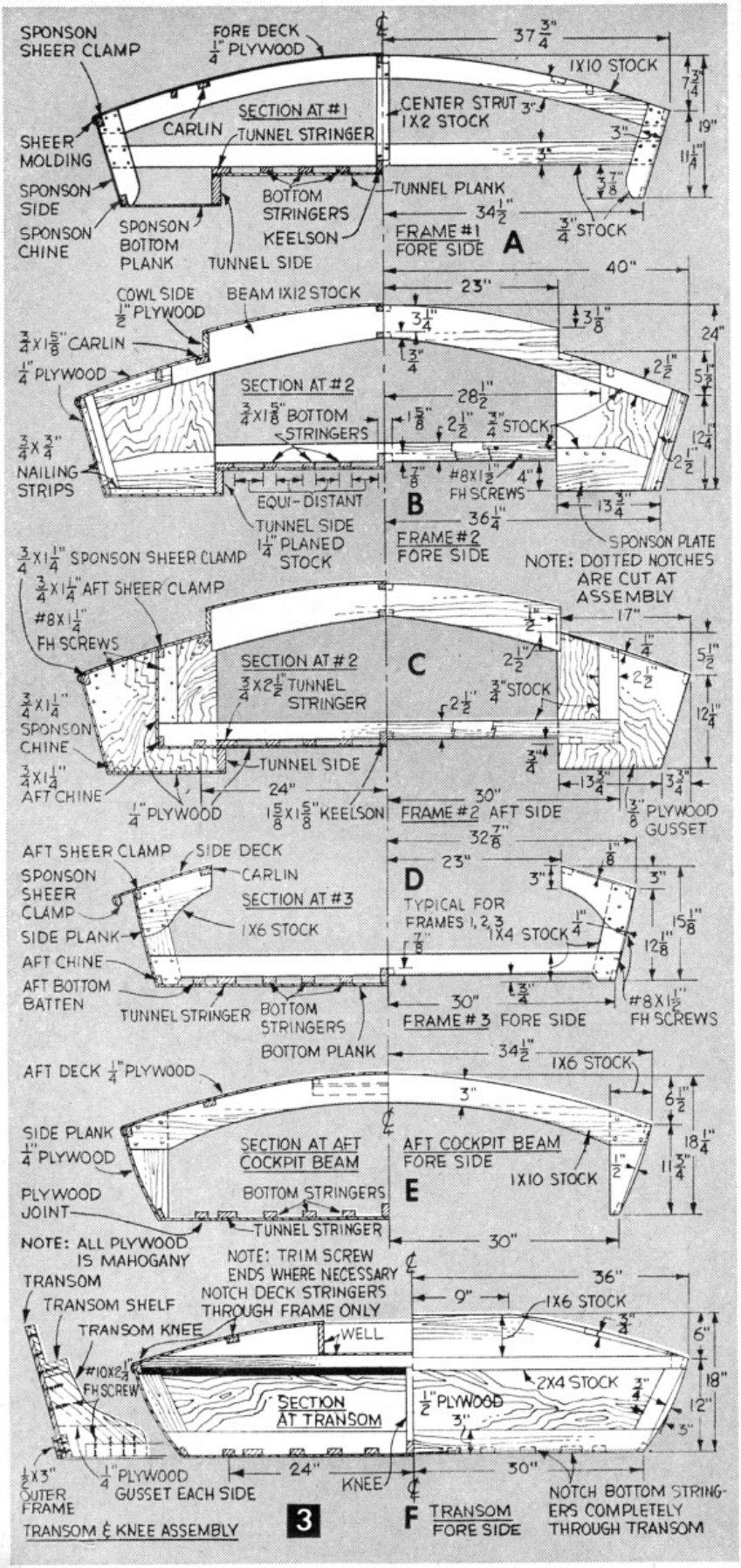
Full-Size Pattern Set No. 349

of the frames. When frame #3 is in place, cut the keelson to length and install the transom and knee assembly (Fig. 3F).

To make the assembly rigid enough to work on, clamp the eight bottom stringers (Fig. 4B) in place on the frame bottoms and drill 3/32-in. pilot holes for #8 screws. Note that the stringers are not notched into the frames, but are attached to the edges with glue and two screws to each joint.

Sheer Clamps. Cut the stock for the sponson sheer clamps (Fig. 4A) next and install these flush with the edges of frames #1 and #2 fitting the fore ends into notches in the bow plate. To obtain a good fit at each frame, cut the notches





slightly undersize and then clamp the stock in place while you run a handsaw between the frame and the clamp strip. When the clamps fit, coat the contacting surfaces with glue and secure with one screw to each joint. To prevent wringing the hull out of shape, install both clamp strips at the same time, working alternately on each side of the frames. Leave the sponson clamps free aft of the step frame until the aft clamps are in place, then bevel their ends and attach them to the aft clamp so they form a fair curve. Go on to install the sponson and aft chines, using the same method.

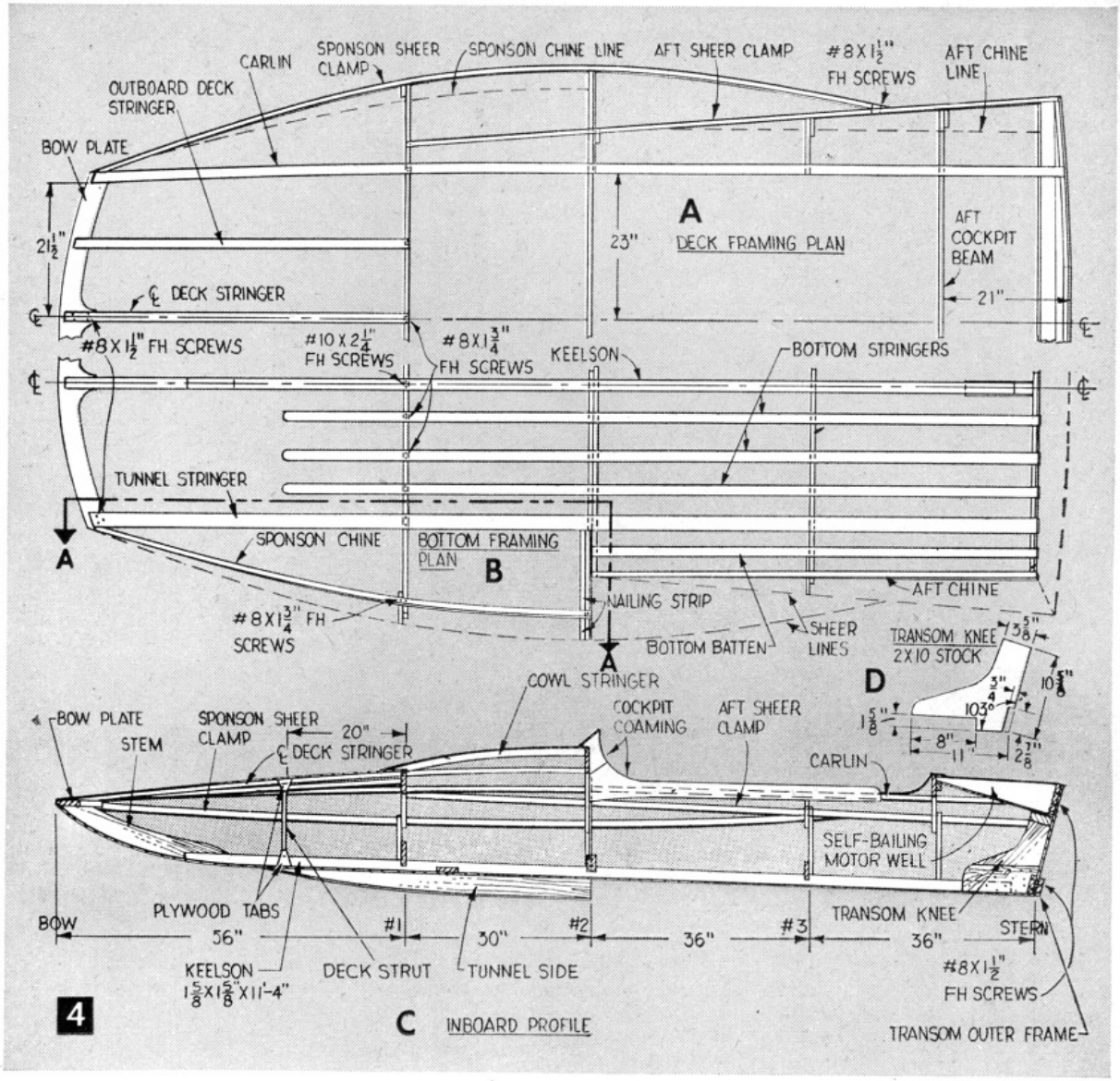
Tunnel Stringers are installed next and are formed directly over the forward horse while being installed on the framework (Fig. 2). Make a 48-in. slit in the fore ends of the stock and then clamp them in place, locating as in Fig. 4B. Bend down the fore ends and mark the bevel where they meet at the bow plate.

Before removing the stringers to cut the bevel, drill pilot holes for screws at the stringer-frame joints so you can relocate the stringers in exactly the same position.

Fill the slit and coat the contacting areas of the stringers and frames with glue and then install the stringers, working from the transom forward, with two #8 x 2-in. screws to each joint.

Fairing the Frames. To prepare the framework for fitting of the bottom planks, first trim the stringers flush with aft side of the transom. Then fair the framework by laying a ¾-in.-sq. x 10-ft. strip of lumber over it in several positions.

Sight along the strip to



MATERIALS LIST—3-PT. HYDRO

Amt. Req.	Size and Description	Use
	FRAMEWORK	
(Parentheses indicate stock size to be used when ordering only.)		
1	(2x10) x 16"	transom knee
2	(2x4) x 10'	stem, tunnel sides, transom shelf
1	(2x2) x 12'	keelson
1	(1x12) x 60"	#2 frame beam
2	(1x10) x 8'	beams, well sides, beam knees
1	(1x8) x 48"	bow plate
1	(1x6) x 10'	transom beam, sponson plates
3	(1x6) x 14'	chines, stringer, lift rails
4	(1x4) x 10'	clamps, deck stringers
8	(1x4) x 8'	aft chines, cowl sides
		frame crossmembers
1	½ x 48" x 72" mahogany plywood	transom, coaming, dash seats
1	⅜ x 18 x 36" mahogany plywood	sponson ends
4 doz.	#10 x 2¼" *fh* wood screws	
2 gr.	#8 x 1¾" *fh* wood screws	
1 gr.	#8 x 1¼" *fh* wood screws	
5 lbs.	Weldwood Plastic Resin Glue Powder or equivalent in Resorcinol	

locate high spots that would prevent the plywood from attaching smoothly and making full contact with the frames and trim these down with a plane and rasp. Also bevel the fore edge of the bow plate except at the forward end of the sponson where a strip of lumber will be added as filler.

Part 2, appearing in your Jan. '63 issue of S&M, will continue with the construction of the framework and planking, completing your three-point hydroplane.

Full-Size Patterns Available

● Full-size Pattern Set No. 349 complete with enlarged size plans for building your 3-pt. hydroplane are available at $5. To avoid loss of coin or currency in mails, remit by check or money order (no stamps or C.O.D.'s) to Craft Print Division, SCIENCE and MECHANICS, 505 Park Ave., New York 22, N. Y. Now available, our new illustrated catalog of "194 Do-It-Yourself Plans," 25¢ (refundable on first order).

3-Point Sports

Part 2: Installing planks and decks, and putting finishing touches on your 50-mph sportster

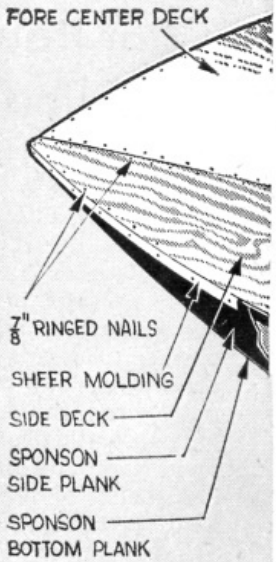
By WILLIAM D. JACKSON

AFTER fairing the areas to be covered by the bottom planks as described in Pt. 1 (Dec. '62 S&M), you are ready to attach the plywood panels to the framework. In general, the same techniques are used for attaching the panels to the frame, whether they are decks, planks, or trim. In some cases, however, you can reduce waste and have smaller pieces to work with if you make a paper pattern of the area to be covered.

For the aft side planks (Fig. 6) and other areas not needing patterns, temporarily clamp rough-cut sheets of plywood to the framework with the best side facing out. Trace the outlines of all stringers and frames on the plywood and then remove it to drill 5/32-in. locating holes for fastenings at 12-in. intervals in the centers of the outlines.

Next brush glue on the contacting surfaces of the parts and replace the panel, lining it up with the traced outlines. Drive #7 x 7/8-in. *fh* galvanized wood screws at each locating hole and 7/8-in. ringed nails along a line connecting the holes. Space these nails at 2-in. intervals along the edges of the panels and 4 in. where the panel contacts the framework. When the glue has dried, trim the plywood edges with a saw so they are flush along the chines and transom. Go on to attach the bottom planks, lapping the edges of the side planks (Fig. 3). Be sure to remove the temporary hold-down screws joining the keelson and support.

Where panels meet between frames as in Fig. 7, join their edges with a butt batten (Fig. 6D) made from two pieces of the ply-



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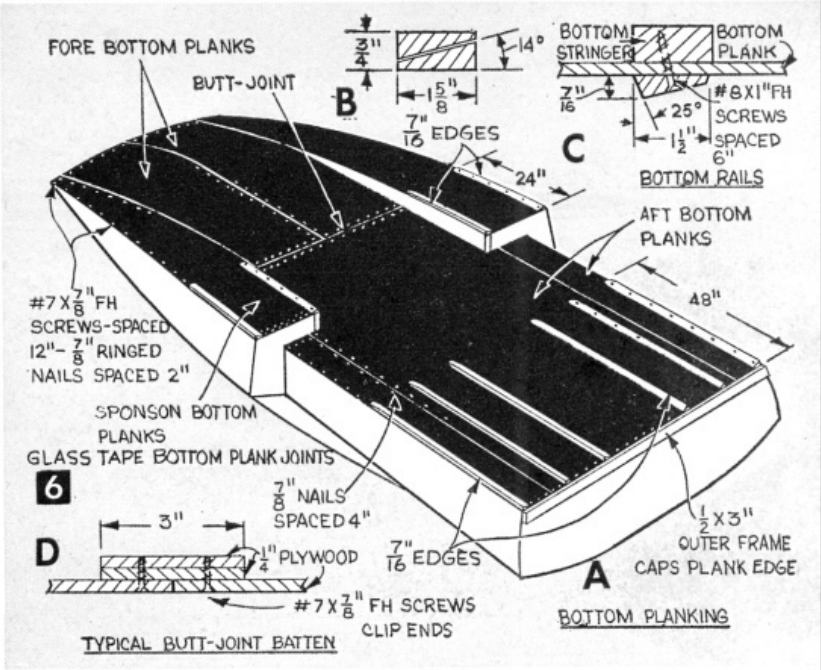
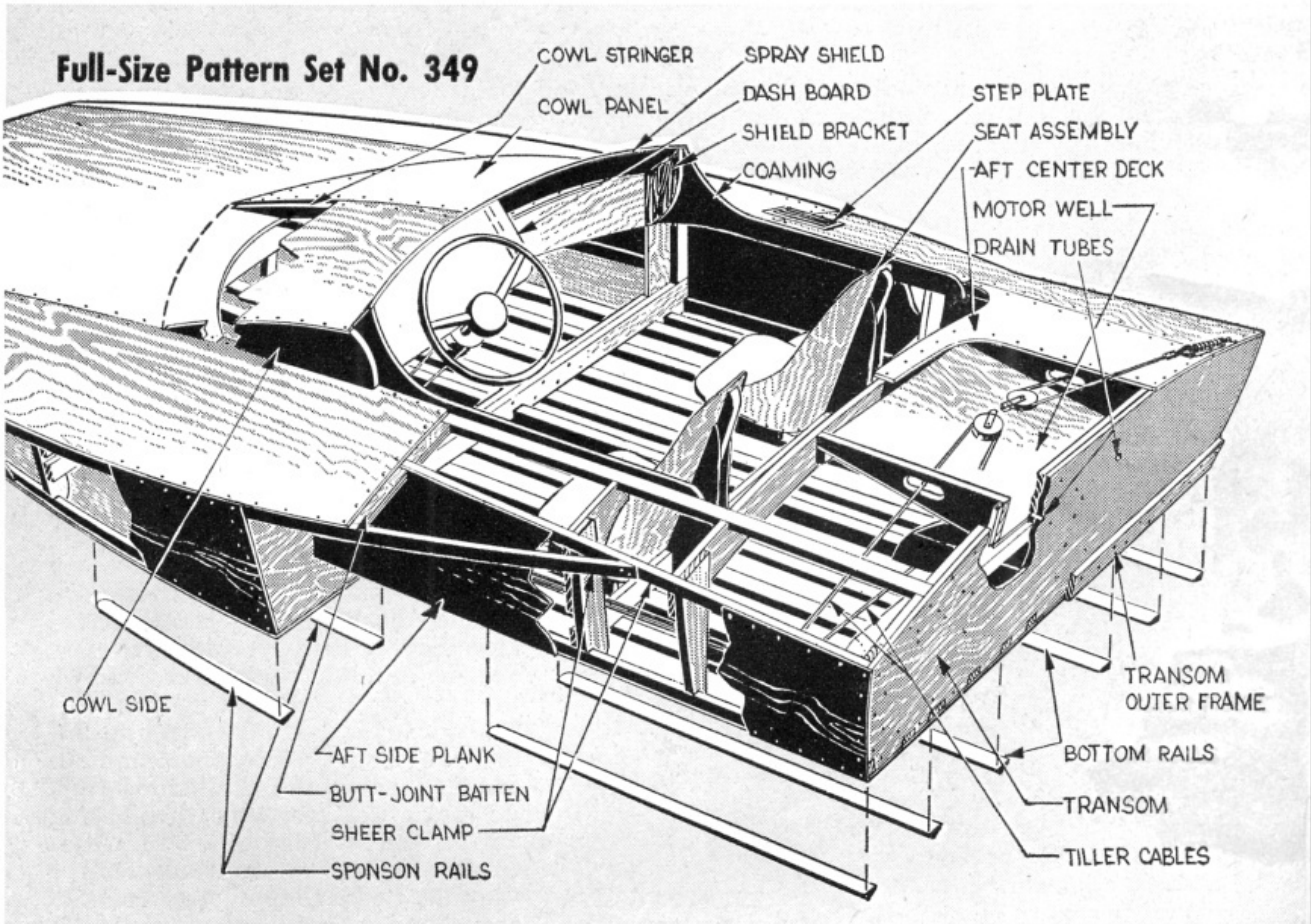
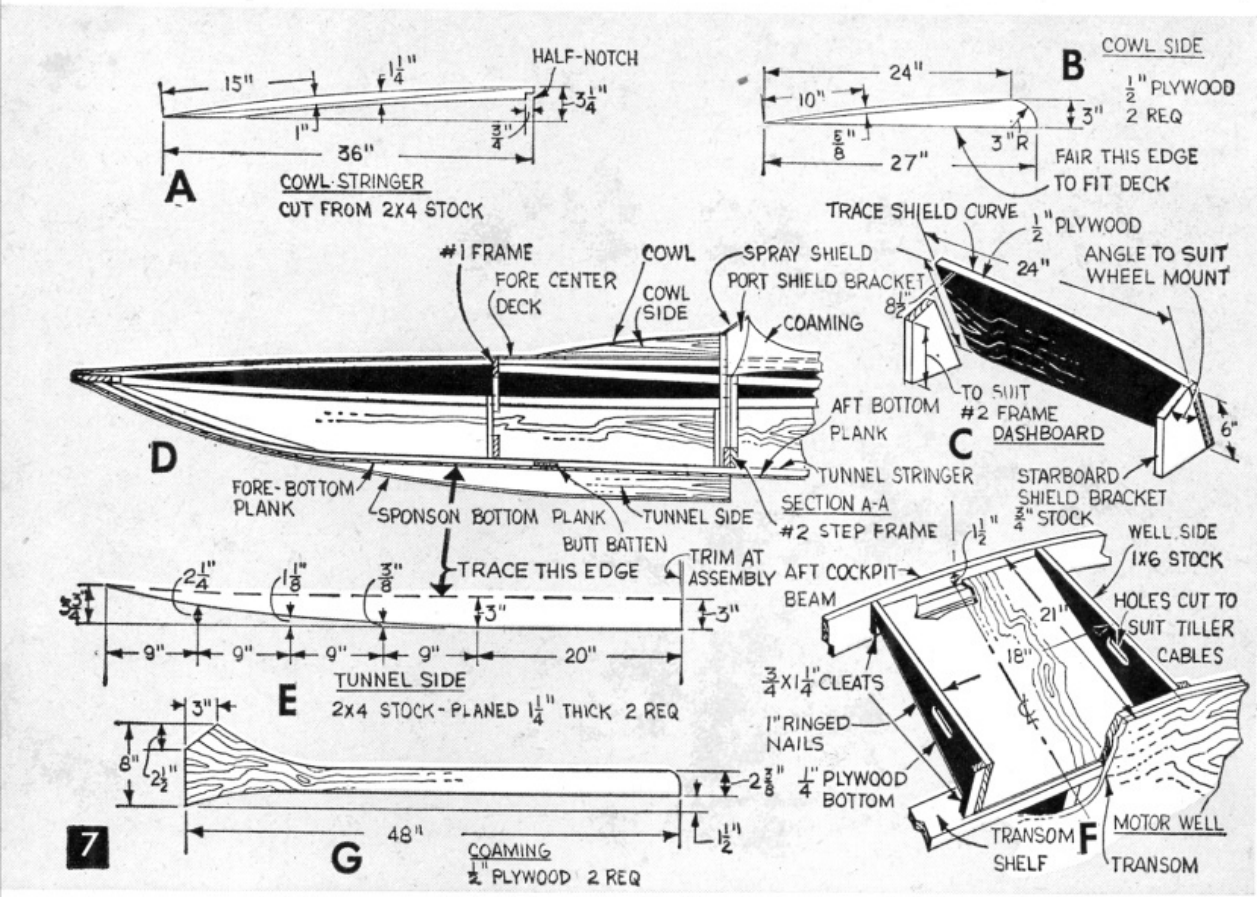
wood stock, cutting the length to fit between the stringers. Then fit and attach the next plywood panel to meet the first on the centerline of this batten.

When the side and bottom planks are in place, trace the edge of the fore-bottom plank (Fig. 6) onto 2 x 4 stock that has been planed to 1¼-in., then go on to complete the layouts for the tunnel sides as in Fig. 7E. Cut these out and attach with glue and screws through the tunnel stringers and the fore-bottom planks.

Finishing the Bottom. Now cut and fit the sponson side and bottom planks, in that order, so the bottom planks lap the edges of the sides. After cutting and temporarily installing the bottom rails (Fig. 6C), remove

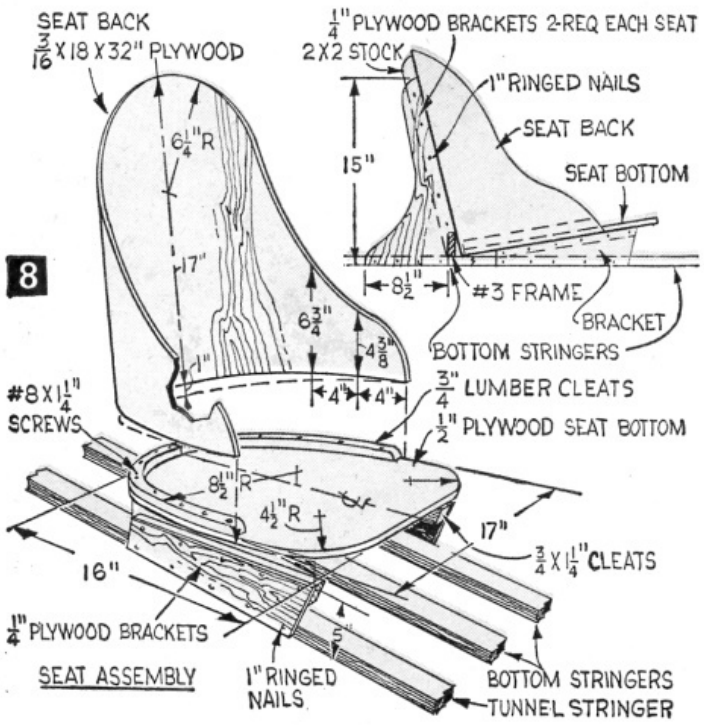






them to round the sharp edges at the plank joints and install 4-in. widths of woven glass tape where plywood edges are exposed. Be sure the plywood is clean and free from paint and oil for at least 3 in. on each side of the joint, then apply the tape according to the manufacturer's instructions.

When the resin has cured, reattach the rails and apply two coats of plywood sealer and two coats of epoxy bottom enamel. Sand lightly with fine abrasive paper between coats of sealer and with very-fine wet-or-dry paper between coats of enamel. If desired, the bottom paint may be carried up onto the side planks as trim.



Turning the Hull. Get plenty of help to turn the hull over as it is quite fragile until the topside framing and decks are in place. Set the framework on a pair of padded saw horses, and then install the deck stringers and carlins. These are notched flush into the frame beams after having first been located as in Fig. 4A and the locations marked on the beams. Also install the aft cockpit beam (Figs. 3 and 4) and assemble the cleats, sides, bottom, and drain tubes for the self-bailing well.

Now is the best time to seal and varnish the interior of the hull. After cleaning away all sawdust with a vacuum cleaner, apply two coats of sealer and a coat of spar varnish to

MATERIALS LIST—3-POINT HYDRO

Amt. Req.	Size & Description	Use
5	1/4" x 4' x 8' mahogany plywood	planks, decks, well
1	1/4" x 4' x 6' mahogany plywood	fore-bottom planks
1	1/8 x 24 x 48" mahogany plywood	cowl
	(Mahogany plywood available from Harbor Sales, 1501 Warner St., Baltimore 30, Md.)	
4 lbs.	7/8" x .109" Stronghold galv. annular-ring nails	
1 gr.	#7 x 7/8" fh cadmium-plated screws	
1 qt.	mahogany paste filler	
1 1/2 pts.	wood putty	
2 qts.	epoxy enamel	
1 gal.	spar varnish	
2 qts.	plywood sealer	
12 yds.	4-in. glass-reinforced tape w/resin	
2	3/4"D x 2" copper drain tubes	
2	1 1/4" x 18' sheer moldings w/screws	
1	20" steering wheel and cable kit	

the frames and planks, carefully avoiding surfaces such as the tops of stringers that are to be glued later.

The next step is to fair the deck framing and then install the fore and aft center decks (Fig. 5), fitting them as you did the plywood panels for the bottom planks. Make a paper pattern for the aft deck to duplicate the curves at the aft end of the cockpit. Note that the side decks must be notched so they can overlap the carlin along the cockpit, but will butt against the edges of the center decks.

Install the cowl sides, center stringer, coamings and spray shield brackets as soon as the main decks are in place. Then make paper patterns to determine the shape of the cowl panels and spray shield.

Seal and varnish the underside of each panel before it is installed, again avoiding areas to be glued. Attach the decks with glue and nails, seating the nails the last 1/16 in. with a nail set to avoid hammer marks on the plywood.

Make up the seats as in Fig. 8, and temporarily install these along with the dashboard, steering wheel, cables, fittings, and trim (Fig. 5). When all screw holes have been located, remove the parts while you varnish the decks and side planks.

After sanding the hull and filling the nail head indentations with a wood putty such as *Famowood*, apply a paste wood filler to which you have added mahogany stain. Let this dry according to the instructions and then rub it off across the grain with a piece of burlap. Now apply two coats of spar varnish, let dry, and reinstall the fittings.