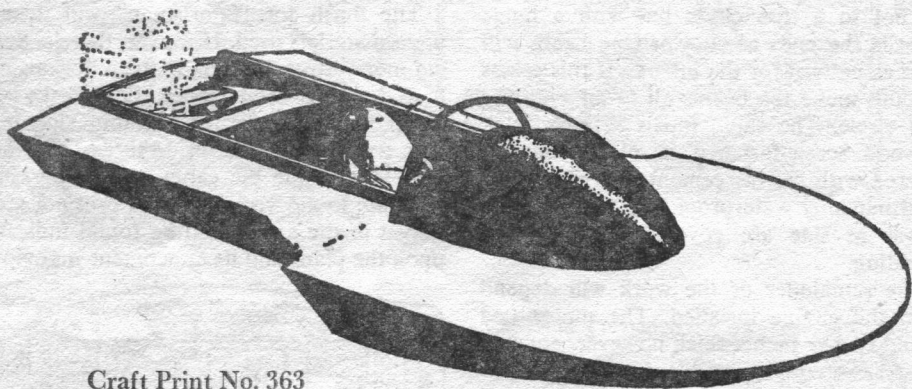


CAB-OVER HYDRO

Originally called the X-1, this three-point hydroplane has hit 75 mph. Closely resembling big Unlimited Class hydros, it can be powered by 50 to 100 outboard horses



Craft Print No. 363

□ THE X-1 is a boat for the man who not only wants to build a fast craft, but wants something extra to satisfy his ego. This 14' "cab over" three-point hydroplane will reach speeds up to 75 mph, and its appearance is similar to some of the big Unlimited Class hydros that race for the Gold Cup.

In action, the X-1 could be compared to a two-stage rocket. A racing driver friend of ours explains it this way: "The first stage is like a hog wallowing as the hull is struggling to become airborne. The throttle is gradually applied until the hull breaks loose from the water. Then, in the second stage, the boat has left behind the suction that has held it to the water; it's as if brakes were suddenly released as the hydro shoots forward. The hull appears to be supported

only on a fine mist, and the propeller, only partially submerged, throws back the rooster tail that's characteristic of hydros."

You can use anything from a 50 hp motor to a 100 hp outboard on the X-1. With the big engine, you can expect a top speed of about 75 mph; with a special lower unit that cuts down on drag, speed will be even higher.

Lumber. Western spruce is the first choice for frames and stringers, but hemlock, white fir, or Douglas fir are wholly satisfactory. Plywood for sides and bottom must be the best grade, either Marine or AA, because of the stresses which a hydro must withstand. If the boat is going to be painted, use Douglas fir; if it is to be varnished, we suggest African mahogany plywood.

Fastenings. Use cadmium-plated steel screws to fasten plywood to framing; ringed nails and screws are used for fastening stringers and frames together. Thin gauge ringed nails, 1" long, may be used to fasten decking to the framing; use bronze nails if the deck is to be varnished, as sanding in preparation for the varnish will take off the plating of galvanized nails.

Mix fine sawdust with a waterproof glue such as Weldwood; this makes a non-drip glue that should be used on all mating surfaces before fastening with screws or nails.

Patterns. Full size patterns will be needed for many of the structural members, including the stem plate, transom, and frames #1-#4. A 4' x 8' plywood panel placed across two sawhorses makes an excellent drawing board. Use either wrapping paper, or the paper, available without charge from most lumber yards, that's used as wrapping around wallboard. Draw the patterns on the paper, following the dimensions shown. **Construction.** Cut out the transom from $\frac{3}{4}$ " plywood and use it as a guide to mark the transom framing. Cut the framing members to shape, and fasten them to the transom with $1\frac{1}{2}$ " #8 screws, spaced about 3" apart, after coating mating surfaces with glue.

Side and bottom frame members are 3" wide, and are sawn from standard 1x4's. Chine joints at frames #1, #3, and #4 are secured with $\frac{1}{4}$ " plywood gussets fastened by 1" #8 flat head screws. Make up the keelson as shown in Figs. 2 and 3, using a 2x4x14'. Make up the stem as shown in Figure 4.

Notch all frames, except at the transom, for the keelson. A 2x8 knee is used at the transom, with $\frac{1}{4}$ " plywood gussets on each side of the knee. Fasten the transom to the knee with $1\frac{3}{4}$ " #8 flat head screws; $2\frac{1}{2}$ " #10 flat head screws are used to attach the keelson to the knee. Fasten the gussets to the knee and keelson with 1" #8 flat head screws.

Position the frames on top of the keelson at their respective places, and fasten them with one $2\frac{1}{2}$ " #10 flat head screw at each joint. Notch frames #1 and #2 for the stem plate, and position this unit in the notches. Before fastening, fit the stem to the keelson and stem plate. Use $2\frac{1}{2}$ " #10 screws to fasten the stem to the plate and keelson, and two $1\frac{3}{4}$ " #8 screws at each plate to frame joint.

A single 1x4x10' is cut in half lengthwise

to make the two chines. Notch the frames for the chines, and use one $1\frac{3}{4}$ " #8 flat head screw to fasten the chines at each frame.

Four 1x6x10's are cut in half lengthwise to make up eight battens. These battens are spaced equidistant between the chines and keelson. It will be necessary to notch the transom framing and frames #1 and #2 for the battens, but not frames #3 and #4. Fasten the battens in place with $1\frac{3}{4}$ " #8 flat head screws, and then fair the framework so the plywood will lie flush against it at all joints. Chine and batten joints along the outside of the transom are closed with an outer frame made from 1x4x7' stock. Coat mating surfaces with a good synthetic rubber sealant, and screw fasten the frame to the transom with $1\frac{3}{4}$ " flat head screws. Suitable sealing compounds are often marked: "Contains Thiokol polysulphide base."

The after bottom plywood is attached first. It will be necessary to butt lengths of plywood together to make up the full length of the bottom; use $\frac{3}{4}$ " plywood backing blocks between the battens along the butt joints. Coat adjoining faces of plywood and framing with glue, clamp the wood in place, and fasten with 1" #8 flat head screw spaced about 2" apart. Secure the forward bottom plywood in the same manner, slitting the extreme fore end of the plywood so that it will bend readily over the stem.

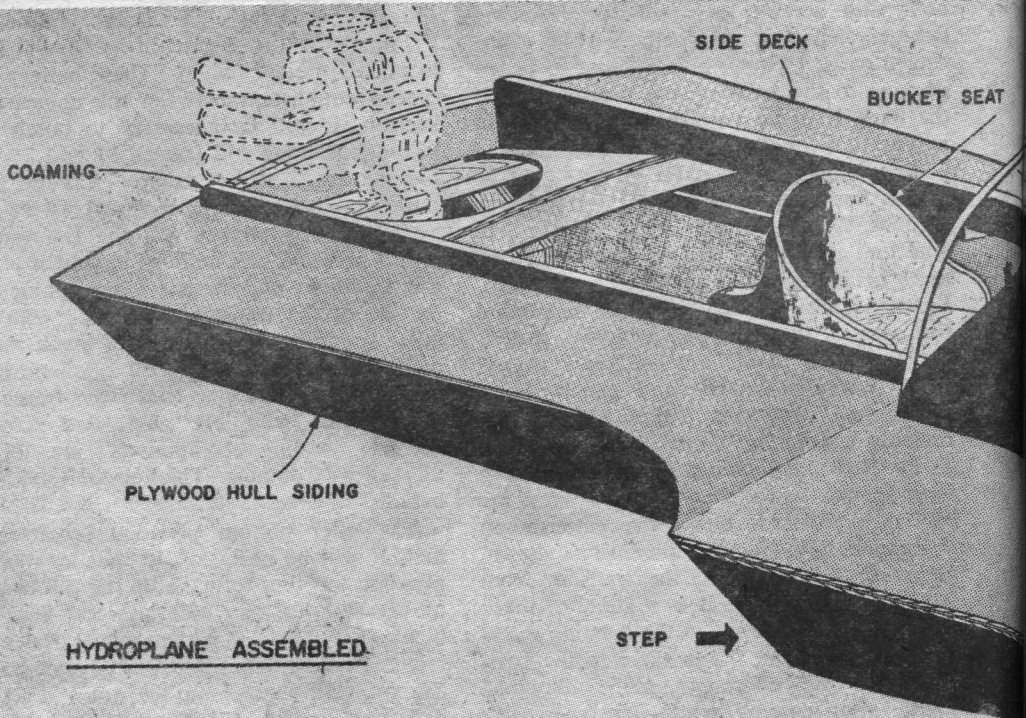
Side panels are attached next; the after sides first. Lay a piece of corrugated cardboard in place on the after sides, and mark the shape on the cardboard. Cut the cardboard to size with a pair of tin snips or heavy shears, and use it as a pattern for the plywood. Cut out the plywood, and fasten to the after sides in the same manner as the bottom panels.

Make up a similar cardboard pattern for the forward panels. These can be cut slightly oversize from the plywood, as it will take some careful trimming and fitting in order to have the side plank assume a 3 degree lift at the chine.

Note that these forward panels are installed *before* the forward chine members. The chine members are made of three layers of $\frac{1}{4}$ " plywood glued together. They are cut to shape, rather than bent. With the forward side panels in place, fastened to the sides of the stem plate, you can use cardboard to get the shape for the chines. When the chine members are made up, they

(Text continues on page 87)

CAB-OVER HYDRO.



HYDROPLANE ASSEMBLED.

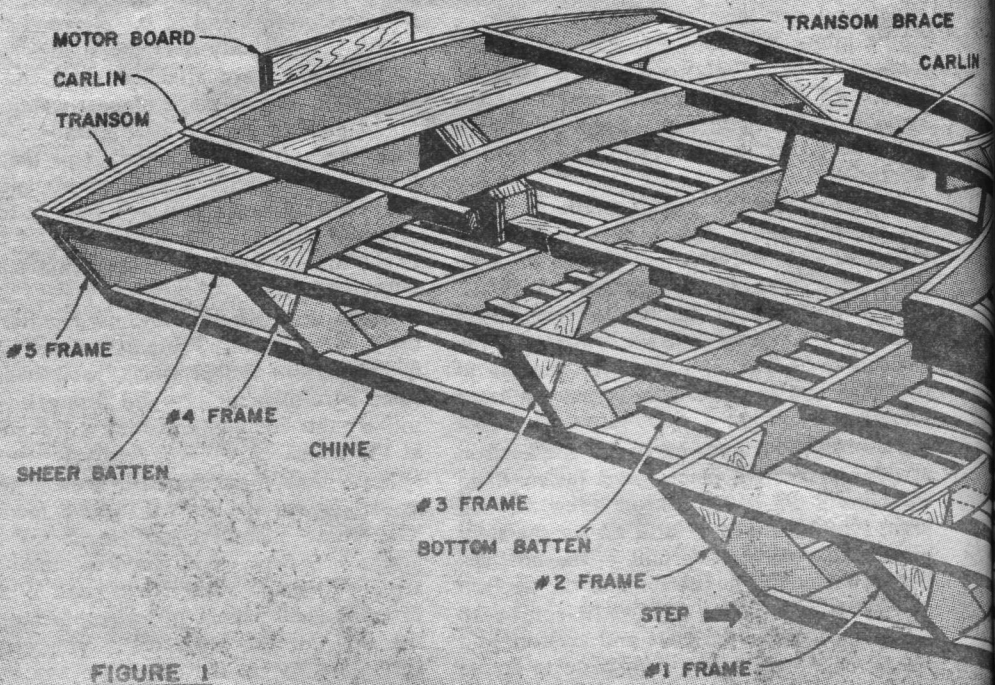


FIGURE 1

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RLIN

ER

WINDSHIELD

HOOD

FORE DECK (SEE FIGURE 4 FOR DETAILS)

TUNNEL (UNDER)

SHEER BATTEN

DASH BOARD with HOOD STRUTS

SHEER PLATE

DECK BATTEN

CHINE

KEELSON

STEM

CENTER DECK BATTEN

SPONSON STOCK

CARLIN

SHEER PLATE

CAB-OVER HYDRO.

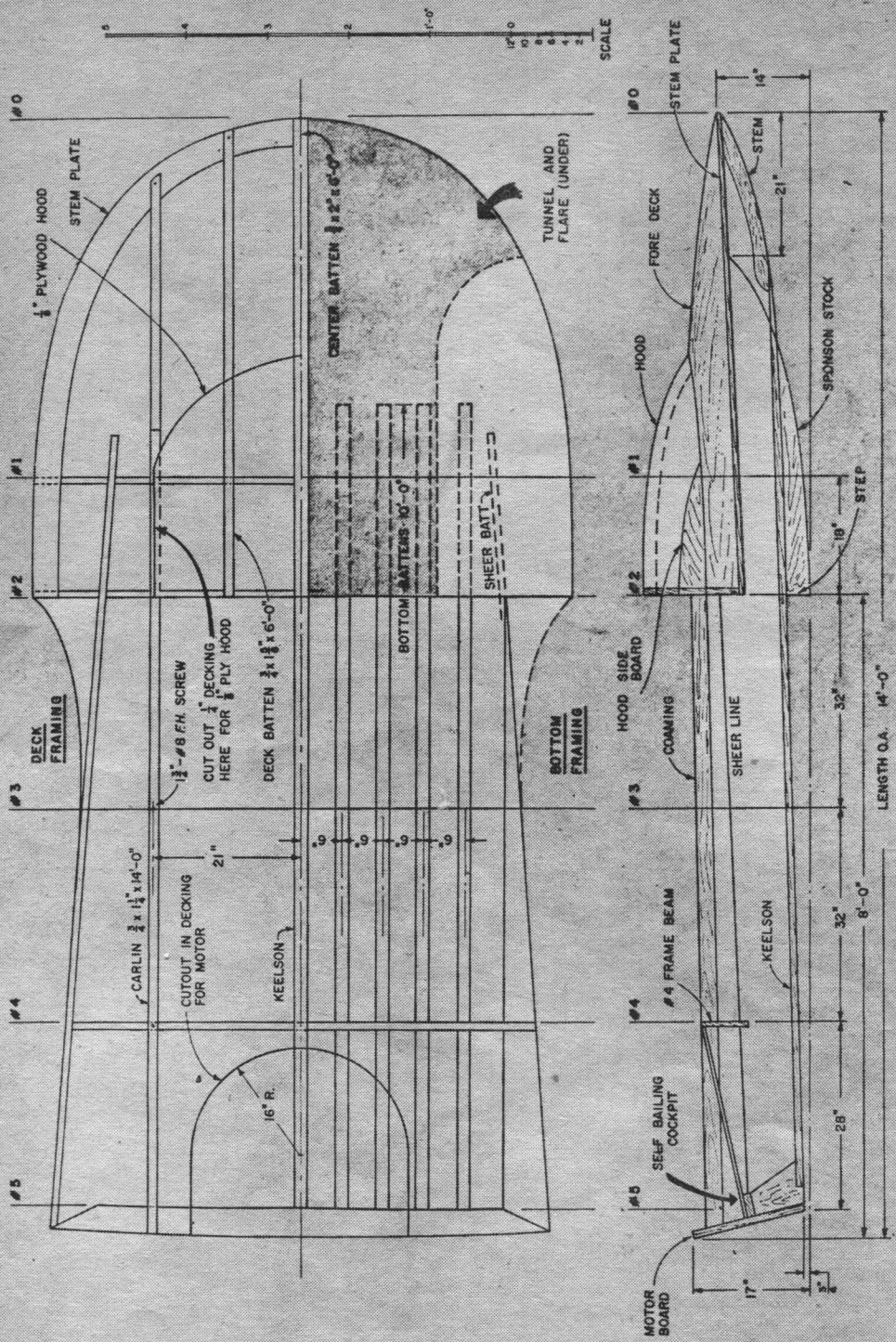


FIGURE 2

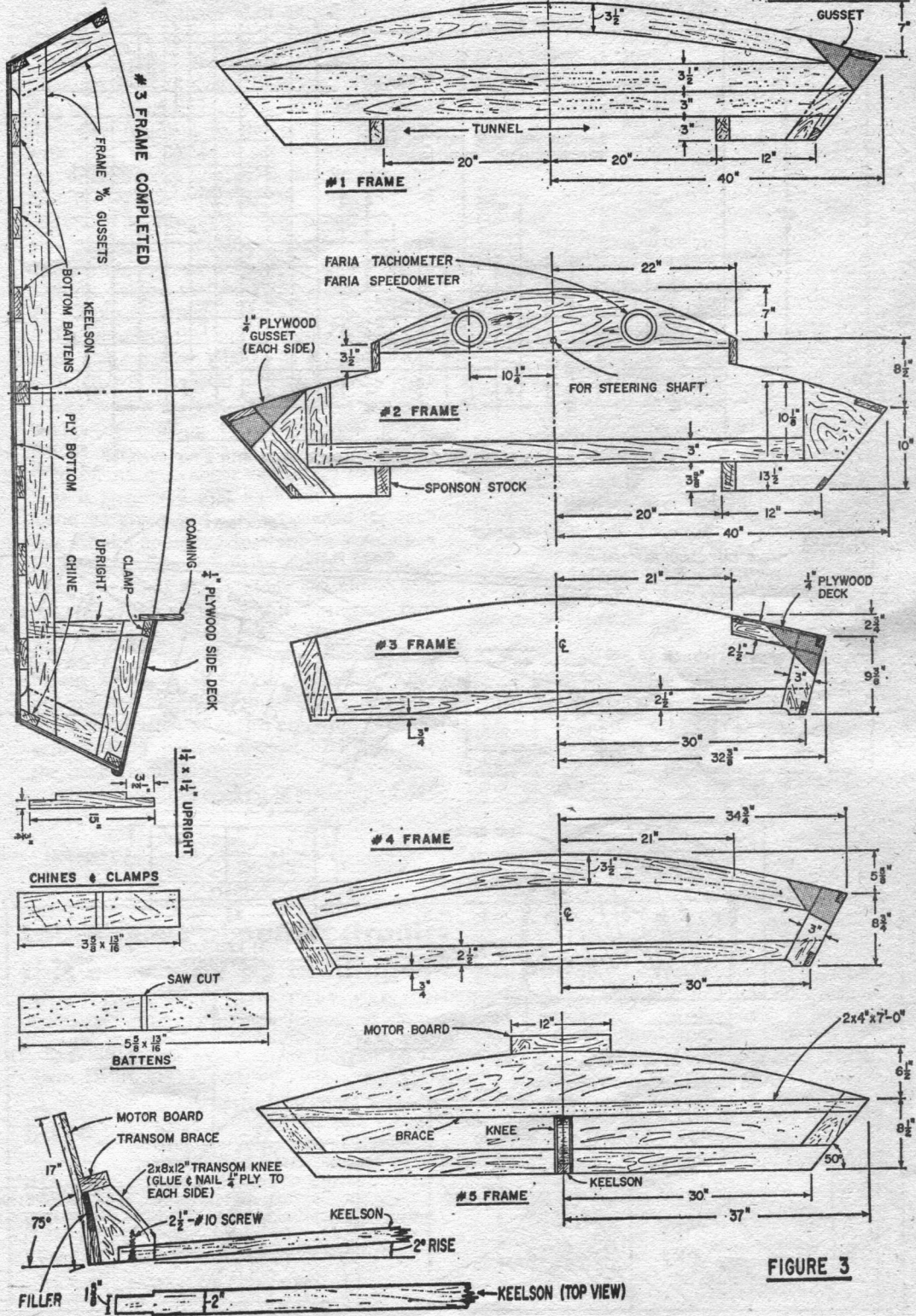
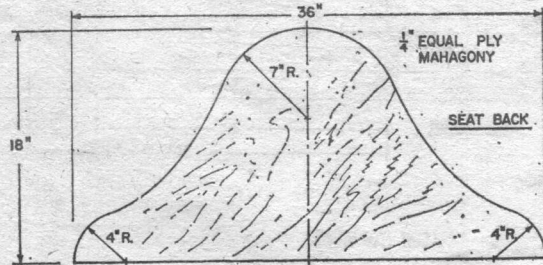
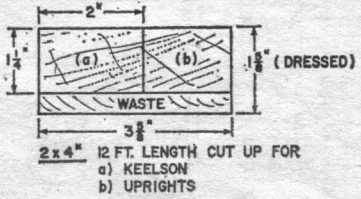
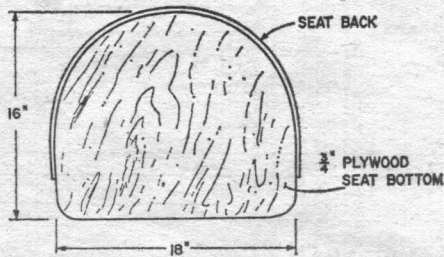
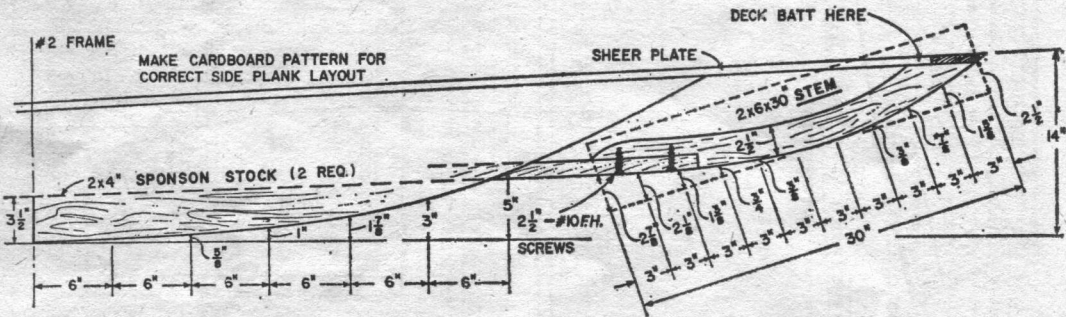
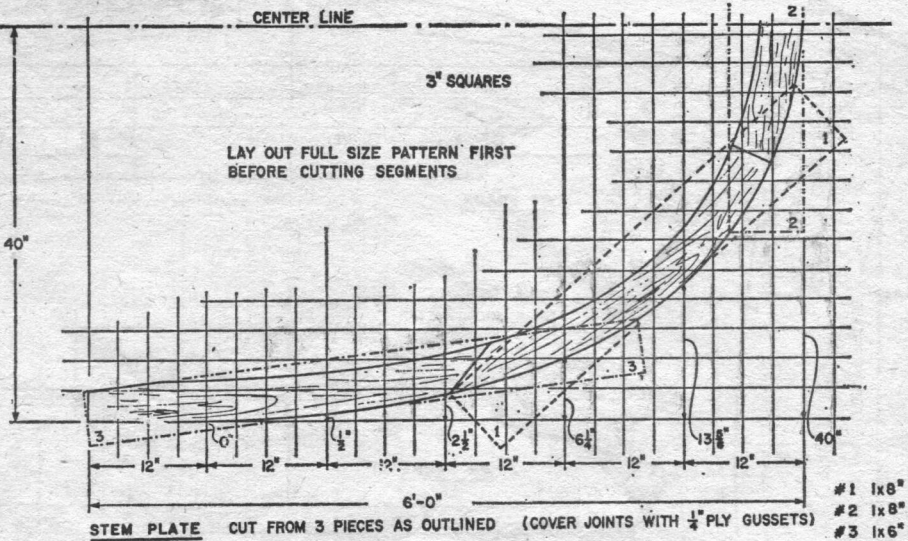


FIGURE 3

CAB-OVER HYDRO



BUCKET SEAT

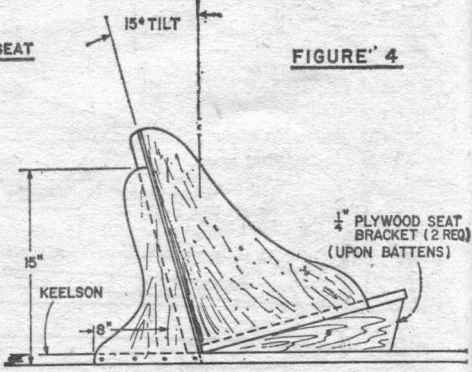


FIGURE 4

are placed in position, and the side panels are fastened to them with 1" #8 flat head screws.

Figs. 2 and 4 show how the two tunnel sides are shaped from a 2x4x6', and how they are given a 3 degree lift. The tunnel sides are fastened to the bottom plywood with 1 3/4" #8 flat head screws started from the underside of the plywood. Be sure all mating surfaces are coated with a good sealant. The tunnel bottom panel, of 1/4" plywood, is cut to shape. Again, you can use corrugated cardboard to make up a pattern. Secure the panel in place with 1" #8 flat head screws.

To complete the hull planking, shape the after plane bottom planks to fit, and install with 1" #8 flat head screws after coating chines with a sealant. To trim and fair plywood edges along the chines, use power sander with a coarse grit paper. This will sand off excess rubber sealant.

It is suggested that an extra pad of plywood be glued and screw fastened on each side of the sponsons forward to strengthen them. The pads should be about 24" long. Then the plank edges along the chines can be covered with 4" width fiberglass tape and resin.

Deck carlins extend from the transom to the stem, as shown in Figure 1. They are notched into the frames, but lapped over the stem. Fasten at each joint with 1 3/4" #8 screws. Deck battens are notched flush into the deck framing.

The self-bailing cockpit is made up of 1/4"

MATERIALS LIST

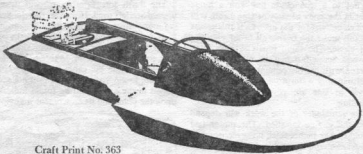
Keelson	1—2x4x14 (use waste to make frame uprights)
Bottom Battens	4—1x6x10' (cut two widths, makes 8 pieces)
Sheer Battens	1—1x4x10' (cut two widths, makes 2 pieces)
Chines	1—1x4x10' (cut two widths, makes 2 pieces)
Deck Beams	4—1x8x8'
Deck Battens, Sea	2—1x4x8'
Framing	(cut as needed)
	1—2x4x8'
Framing	6—1x4x8'
Stem	1—1x6x10'
Bow Plate	1—1x8x10'
Sponson Framing	1—2x4x8'
Carlins	2—3/4"x1 1/4"x14'
Self Bailing Well	Waste from above lumber
Framing	
Bottom, Sides, De	8—1/4"x4'x8' plywood
Cowl	1—1/8"x2'x4' plywood
Transom	1—3/4"x18"x80" plywood

FASTENINGS

2 Doz.	2 1/2" #10 flat head screws
6 gross	1" #8 flat head screws
6 gross	1 1/2" #8 flat head screws
1 gross	1 3/4" #8 flat head screws
2 lbs.	glue
1 qt.	butyl rubber caulking sealant

plywood for the bottom, and 3/4" stock for the sides. Provide a cutout in the 1/4" plywood decking for the motor. Glue coat both the framing and decking along mating surfaces, and fasten the decking in place with 1" #8 ringed nails. See Figure 1 for hood and dash board details. ■

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