Arnold S. — A 1:24-scale yard tug
Part 1: The hull

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Arnold S. is a small, yard tug. The boat is a composite of features found on several yard tugs here in Maine. The plans are drawn to 1:24 scale (1/24), which will also work well in 1:25.5 scale. However, if you are working in 1:20.3 scale, enlarge these drawings to 119.1%. The boat is for display only, replace the hull with a 1/24- or 1/25.5-scale hull on the plans for 1/24 or 1/25 scale. The boat will still be consistent with the range of sizes that can be found in small yard tug.

The model is built of balsa and plywood. When sealed inside and out, it can be operated in water with an electric motor and radio control. This is a two-part construction article. This first part is concerned with building the hull. The second part will deal with the deck house, rigging, and RC installation.

Construction

Begin by cutting out the deck halves and frames from 1/16-inch balsa. Cut the keel parts from the same wood. If you are building a working model, you will need 1/16-OD brass tubing (enlarged in Power Package #61-A). Build the hull over the plan. If the model is for display only, make the 1/16-scale hull with 1/8-diameter dowel. Complete the hull by gluing 1/8-square strips along both sides of the hull, from F1 to F5.

Make two chines from 1/16-square strip, laminated together. Protect the plan with waxed paper and pin the chines to the appropriate curve. Glue the deck halves together if you want to simulate a planked wood deck. Scribe the deck halves with a 1/2 pencil as shown on the plan.

Begin assembling the parts of the hull by mortising the features to the hull. Fit the deck in place, checking that it follows a smooth curve similar to that shown in the plan. When things look tight, reinforce all the glue joints. Now add the chines to each side of the hull.

Using a sanding block and 220 sandpaper, file the edges of the hull framework to prepare for planking the sides. Use poster board to make patterns for the sides, which will fit the top of the hull. Cut the sides from 1/16-solid strip and glue them in place. When satisfied, sand the hull smooth, fitting all irregularities with spackle. Use 220 sandpaper for the final sanding.

Now fit and glue a 1/16 x 1/4 x 1/8 strip to the deck. This strip is to be used around the whole deck and be recessed 1/16 from the edge of the hull. Fit the balsa strip and glue it to the hull. At the stern, use 1/16 x 1/8 x 1/8 strip, (grain vertical) for the bittworks. Add the 1/16-square headers to the sides of the bittworks. The opening for the step shown on the plan (1/16 per side). Cut the rail caps (K1, K2, and K3) from 1/16-balsa. Sand the top of the bittwork flat and smooth and glue the rail caps in place. Sand the rail caps smooth. Make the 1/4 x 1/4 buffer post at the stem. Fit and glue the two rails of 1/16 x 1/16 strip around the outside of the hull to form a 1/8-in-bowl rail. Begin by cutting the openings for wooden or metal bitts to the 1/16-scale model. The bitts are completed using 1/16 x 1/16 x 1/8 strip, (grain vertical) for the bittworks. The opening for the step shown on the plan (1/16 per side). Cut the rail caps (K1, K2, and K3) from 1/16-balsa. Sand the top of the bittwork flat and smooth and glue the rail caps in place. Sand the rail caps smooth. Make the 1/4 x 1/4 buffer post at the stem. Fit and glue the two rails of 1/16 x 1/16 strip around the outside of the hull to form a 1/8-in-bowl rail. Begin by cutting the openings for wooden or metal bitts to the 1/16-scale model. The bitts are completed using 1/16 x 1/16 x 1/8 strip, (grain vertical) for the bittworks. The opening for the step shown on the plan (1/16 per side). Cut the rail caps (K1, K2, and K3) from 1/16-balsa. Sand the top of the bittwork flat and smooth and glue the rail caps in place. Sand the rail caps smooth. Make the 1/4 x 1/4 buffer post at the stem. Fit and glue the two rails of 1/16 x 1/16 strip around the outside of the hull to form a 1/8-in-bowl rail.

At this point, the hull is ready for finishing. All details add a weathered look to the hull. It is not necessary to add the final sanding. The rail caps are completed using 1/16 x 1/16 x 1/8 strip, (grain vertical) for the bittworks. The opening for the step shown on the plan (1/16 per side). Cut the rail caps (K1, K2, and K3) from 1/16-balsa. Sand the top of the bittwork flat and smooth and glue the rail caps in place. Sand the rail caps smooth. Make the 1/4 x 1/4 buffer post at the stem. Fit and glue the two rails of 1/16 x 1/16 strip around the outside of the hull to form a 1/8-in-bowl rail. Begin by cutting the openings for wooden or metal bitts to the 1/16-scale model. The bitts are completed using 1/16 x 1/16 x 1/8 strip, (grain vertical) for the bittworks. The opening for the step shown on the plan (1/16 per side). Cut the rail caps (K1, K2, and K3) from 1/16-balsa. Sand the top of the bittwork flat and smooth and glue the rail caps in place. Sand the rail caps smooth. Make the 1/4 x 1/4 buffer post at the stem. Fit and glue the two rails of 1/16 x 1/16 strip around the outside of the hull to form a 1/8-in-bowl rail. Begin by cutting the openings for wooden or metal bitts to the 1/16-scale model. The bitts are completed using 1/16 x 1/16 x 1/8 strip, (grain vertical) for the bittworks. The opening for the step shown on the plan (1/16 per side). Cut the rail caps (K1, K2, and K3) from 1/16-balsa. Sand the top of the bittwork flat and smooth and glue the rail caps in place. Sand the rail caps smooth. Make the 1/4 x 1/4 buffer post at the stem. Fit and glue the two rails of 1/16 x 1/16 strip around the outside of the hull to form a 1/8-in-bowl rail.