

## 16<sup>th</sup> scale Atlas Van Lines Building Instructions

### Preparation

Three sheets of 3/32" X 6" X 36" firm balsa, one sheet of 6" X 12" 1/32" birch plywood, optionally one sheet 1/64" X 6" X 36" birch ply and a few other odds and ends will build this hull (see the material list). Cut the parts exactly to the outlines and transfer centerlines and the other marked features to the parts (3/16" of "safety stock" is shown on the front of the deck, but should not be needed). Make a 1" X 5" X 24" building board.

This boat is sheeted with balsa, making it light and easy to build. This is good for sport running. For heat racing, the deck and bottom sheeting could be laminated with 1/64" birch plywood wing-skin to toughen the hull. Use 3M-77 spray contact cement to laminate this to the outside of the left and right deck, sponson, non-trip panels and tunnel sump before assembly. An alternative to this is to glass the outside with 1oz cloth.

### Tunnel Assembly

Bevel the 4 inside corners of the tunnel strips as shown. Lay these on the building board so the outside edges are 5" wide. Glue the two sump standoffs on top of the inside edges of the tunnel strips where marked. Glue cross grain balsa to the front of the sump strip. Bevel the corners so they nest with, and fit flush with the tunnel strips. Glue the sump strip to the standoffs. Glue the nose planks (or 3/8" aircraft leading edge) so the edge lines up with the front of the tunnel strips. Check that the assembly is flat and the outside edges are 5" wide, trim if needed.

Turn the tunnel assembly over and place it and the control plate on the building board (covered with wax paper). Check that this is flat and the outside width is 5". Glue these together, being sure not to stick them to the building board. The control plate and rear portion of the sump should be flat and level with each other.

### Frame

With the tunnel on the building board, assemble the main stringers, bulkhead-C and the transom without glue. Check the alignment then tack glue. Assemble the rest of the bulkheads and see that the stringers are level with each other and that all bulkhead and transom top edges match with the top of the stringers. When this looks good, start adding CA while the assembly is in this position. Don't glue the base of the sump to bulkheads B & C (the centers of these will be removed later). Glue bulkheads A where shown.

Bevel the base of the rear non-trip panels to match the stringers and glue these between the transom and bulkhead-C. Add the deck strips to the cutouts in the tops of the bulkheads from front to back. Be careful to keep this curve smooth, it will determine the top profile of the deck. Carefully slip the framework off the building board. This will be easy if you covered it with wax paper.

Bevel the outside edges of the sponson bottoms and sides to fit in assembly without a gap. Dampen, heat and curve the sponson bottoms to match the curve of the bulkheads

then glue in place. Add the sponson sides using the same process. Work slowly with these parts. The closer they are to the profile of the support structure, the better. This helps to keep the hull straight and the nose profile smooth.

### Decking

Sand the top edges of the framework to a smooth profile. Trim the top of the side panels to a smooth curve when viewed from both the top and the sides. The correct position of the deck is with the inside edges 2.5" apart. Test fit the deck to rear non-trip fin area. Bevel and/or notch the transition from outside edge to inside edge on the deck so it will be smooth. Make sure that all the edges of the deck will meet with support structure before starting to glue.

The hull may have warped while gluing the bottom sheets. Before the deck is installed, lay the hull on a level surface. If the transom is not flat with the sponson bottoms, block it up level, then glue the deck sides while the hull is tack glued to the building board.

Put wing skin contact cement on the tops of the bulkheads, stringers and side panels. Add contact cement to the inside of the deck (one right, one left). Let this set up per manufactures instructions.

This is the hard part. When using contact cement, once the parts touch together, they are STUCK. Be sure it is right before putting them together. With the boat on the building board, line up the deck to the center of the deck strip (at 2.5") and carefully touch the deck down at bulkhead C. Lay the deck down evenly along bulkhead C to the outside of the hull. Then pull it down to meet the rest of the open structure. Add CA to all the outside seams of the deck.

Trim the deck outside edges flush with the non-trip and side panels. Cut the centers out of bulkheads B and C. Fill any gaps inside the hull in the seams of the deck, bulkheads, bottom, and main stringers with thick CA so water won't find it's way past the exposed areas into the sealed off sections.

If there is a warp in the hull, again, block the transom level and secure the hull to the board while gluing the center deck sections in place. After these are on, the hull cannot be twisted to correct for warps.

Add front deck center piece. The rear center section will go on after the antenna and rudder push rod installation. Note, these templates are not shown on the plans. They will be cut to fit in assembly. Test fit the transom doubler and glue in place.

Test fit the 1/32" birch plywood doubler to the rear face of the right sponson, and glue in place. Add 1/64" birch ply over the ride pads with the front beveled to blend into the sponsons without leaving an edge.

Sand with 180, then 320 grit. Add thin CA to the outside corners of the hull to harden the edges then touch up with sandpaper. Brush a coat of thinned epoxy under the deck, working it into all the hard to get spots. This will water proof the wood where the paint won't reach. The hull is done, if you didn't use too much glue it should weigh 4 or 5 oz.

#### Cowling, Cockpit & Deck Cover

Make a removable hatch cover by either soaking 3/32" balsa in water then heat and bend so it fits, or section, plane and sand 1/8" balsa sheets to the deck profile. Trim the edges to fit into this area without gaps or binding. Sand the top so the curve matches the deck.

Mark the side and top profiles of the cockpit cowling on a block of foam. Use a band saw, large scroll saw, or very sharp knife to rough cut to shape. Get the final shape by sanding until it is smooth. Start with 180 then 240 and finally 400 grit paper. Foam will gouge easily, be careful towards the end. Spackling paste, thinned with water makes a good filler for this. You can toughen the foam with glass cloth and epoxy (test on a scrap of foam before trying resin). This will be painted like the rest of the hull, but test a piece of scrap before endangering good parts. The tail fins and a wing can be made from 3/32" balsa covered with iron on mylar or painted.

#### Hardware:

Bend 1/8" OD brass drive tube to the curve on the plans. Cut and solder 5/32" OD tube for the stuffing box and lube fitting. Cut 1/16" X 3/4" brass sheet for the strut blade. Solder this to 3/16" and 7/32" OD tubes for the strut assembly. Slip a 2" piece of 5/32" OD tube inside this for a propeller bushing. Line this up as shown in the side view and glue the stuffing tube in the hull at bulkhead-D. Line up the strut to position the propeller training edge 1 1/2" behind the transom and 5/8" below the bottom. The strut and rudder brackets can be cut from .06" aluminum angle. Position the motor so the coupler lines up with the wire drive shaft. Mount the rudder and turn fin as shown.

#### Finish:

Sand, fill with spackling past and sand again. Spray sanding sealer, sand and repeat until the finish is smooth. Spray one or two coats of color, add the trim and logo, then spray a coat of clear over everything. Add details like windscreen, driver, steering wheel and gages as desired.

#### Running

This boat handles like most pickle-fork hydros. Punch the throttle hard from a standstill, so it won't dig the nose under (a right turn helps). Once on top of the water you can back off and keep it on a very stable plane at quarter throttle. Full power will give you good straight-line acceleration. Top speed, is smooth with very little spray. The boat will stay flat and maintain good speed through a turn. Reduce power then add rudder, get back on the throttle and play with the balance. The boat will turn very quickly if you use a light touch. After you get use to the performance, you may find that you can hold the hammer down for the whole heat if the water is smooth.

### Specifications:

Type: Electric 1/16<sup>th</sup> scale 1977 Atlas Van Lines unlimited hydroplane  
Dimensions: Length: 21.75", Width: 10.62", Weight: 2¼ LB., RTR  
Material: Hull: balsa & birch ply  
Hardware: custom aluminum & brass  
Motor: 10 – 12 turn brushed or 4200 – 5500 KV brushless  
Battery: 6 cell pack  
Propeller: X430, to X435  
Run time: 2 – 4 min. (depending on battery and state of tune)  
Top speed: 30 + mph. (depending on battery and state of tune)  
EST cost: \$300 - \$500

### Materials used:

- 3) 3/32" X 6" X 36" firm balsa
- 1) 1/32" X 6" X 12" birch plywood
- 1) 1/64" X 6" X 36" (or 12" X 24") birch plywood
- 1) 1/8, 5/32, 3/16, 7/32, & 1/4" O.D. X 12" K&S brass tube
- 1) 1/16" X 1" X 1" K&S brass sheet
- 1) 2" X 4" X 24" Dow blue insulation foam
- 1) Octura OC4WRM small wedge rudder
- 1) Octura 1/8" thrust washer set
- 1) Octura 1/8" prop drive dog
- 1) Octura X430 – X432 – X435 propeller
- 1) Hayes whip antenna
- 1) Small turn fin

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