JUNIOR TELEMASTER

BUILDING NOTES

BUILDING THE WING

Because the Jr. has a flat bottom wing, the wing panels are built right over the plans. Since the entire wing plan is provided, both of the wing panels are built at the same time. The right and left wing panels are not glued together however, until the center tapered section is added to build in the proper dihedral.

With the plans covered with wax paper and fastened to a flat building board, pin down and glue the leading edges, bottom leading edge sheeting, bottom trailing edge sheeting bottom center section sheeting and bottom cap stripping. Apply glue to the length of the lower wing spar and position on the bottom leading edge sheeting using tip and root ribs as locating jigs and pin securely in place. Glue all ribs in position followed by gluing on the trailing edge and top wing spar pieces. Carefully bevel the top of the trailing edge to conform to the wing airfoil. Now glue and install the top trailing edge sheeting, top leading edge sheeting,top center section sheeting and top cap stripping. Note that the outside edge of the tip rib cap stripping should be flush with the outside face of the tip ribs.

Remove both wing panels from the building board and using a flat sanding block, sand the face of the tip and root ribs and sheeting flush. Glue the triangular tip blocks in place, positioning the bottom edge of triangle stock even with the bottom edge of the tip rib bottom cap stripping.

Use epoxy to glue the tapered stock to the root rib on one wing panel. The thicker edge should be toward the bottom side of the wing panel and aligned with the bottom edge of the rib. Then cut and sand the top edge of the tapered stock to the rib contour. Using 5 munute epoxy, glue both wing panels together. Make sure that the leading and trailing edge of the wing panels are properly aligned.

Sand the leading edge to the shape as shown on the wing side view. As the wing tips are sanded to the wing contour they will automatically achieve the proper curve as shown on the plans top view. Use 3 -4oz. glass cloth and resin to reinforce the top and bottom sides of the wing center section.

Mark the bottom side of the aileron stock and cut the ailerons to the proper length. Drill the hole for the aileron torque rod in the leading edge of each aileron and sand the tip end to the proper shape.

BUILDING THE STAB AND ELEVATOR

Working on your flat workbench covered with a piece of waxed paper, glue the forward and rear stab pieces together. Notch out the inboard leading edge of each elevator half as necessary for the hardwood dowel torque rod. Then, working against the trailing edge of the stab, glue the 3/16 hardwood dowel in place to each elevator half. Be careful not to glue the dowel or elevator halves to the stab.

BUILDING THE FUSELAGE

Before you begin building the fuselage there is some preparation work to do. Using the engine mount screw holes as a guide, mark and drill the holes in bulkhead #1. Also drill the holes for the fuel lines and throttle linkage. Blind nuts are recommended to mount the engine mount to the firewall. A drop of epoxy under the shoulder of each blind nut will assure they'll stay in place if you want to remove the engine mount some time later after the plane is built.

Carefully mark the inside of the right and left fuselage side bottom pieces. Measure and mark the location of bulkhead # 3 and the 3/16 sq. balsa brace aft of bulkhead #3. Using bulkhead #1 as a spacer, glue the fuel tank compartment doubler in place on the inside of both fuselage sides. Glue the top and bottom fuselage side pieces together, wiping off excess glue before it sets up. Add 3/16 sq. vertical brace aft of bulkhead #3.

Working on one of the fuselage sides, glue bulkheads #2 and #3 in place. They should be at 90° to the fuselage side. Glue the other fuselage side to the bulkheads. With the fuselage upside down and pinned to the plans top view, glue and pin the fuse sides together at the tail. Bulkhead #1 is then glued and clamped in place. Wipe off any excess glue from behind the bulkhead so it won't be in the way when the triangle stock in installed later.

Add the top and bottom 3/16 sq. cross braces 8 inches aft of the bulkhead #3, the 3/16 sq balsa dowel support braces on the back of bulkhead #3 and on the front of bulkhead #2. Also add the 3/16 sq balsa brace in front of bulkhead #3 flush with the bottom

Add the 1/16 ply fuel tank compartment bottom sheeting. Next, locate the larger of the notched hardwood landing gear blocks and the two smaller notched blocks.

The larger hardwood piece is glued in place with the notched or grooved side down. The smaller pieces are glued in place on top of the larger block with the grooved sides toward the fuselage sides. The groove in the piece for the right landing gear should be oriented to the front. The groove in the piece for the left landing gear should be oriented toward the rear of the fuse. File a clearance notch in each end of the bottom piece that will align with the notch in each side piece. Glue the bottom and side pieces in place. Slide the landing gear wire in and out of the side pieces while the adhesive sets to nake sure the slots won't get clogged with glue. Clamp the pieces in place.

Add the 1/16 balsa bottom sheeting cross grain down the bottom of the fuse. Glue the 3/8 tri stock behind the sides and bottom of bulkhead #1. All the 1/4 tri stock along the bottom front of bulkhead #2, along the back of the bottom landing gear block, and along the wing saddle between bulkheads #2 and # 3.

Drill the holes for the wing holddown dowels and glue them in place both to the bulkheads and to the balsa support you glued in place earlier. Glue the 1/8 balsa cabin front piece in place and add the 1/4 tri stock along the top and behind the cabin front. Use the fin to locate the 1/8 balsa stabilizer., and glue it in place.

Draw a center line from the top side to the bottom side of the stab. With the center line as a reference, glue the fin in place to the top side of the stab. Make sure that the fin is at 90^{o} to the surface of the stab. Then glue the stab/fin in place onto the fuselage. The leading edge of the stab should rest on the stab shim. Add the 3/8 balsa tri stock along the fuselage sides at the bottom of the stab. Add the 1/4 tri stock along both sides of the fin/stab joint.

Glue the 1/16 balsa top fuselage sheeting in place, cross grain. Add the 3/32 balsa wing stop. Drill the engine mounting screw holes through the hardwood thrust wedge. Using the engine mount screw holes as a guide, glue the hardwood thrust wedge in place. Check the angle as shown on the plans. Glue the two 3/8 balsa blocks in place on the nose.

After you've checked out your fuel tank and battery installation the fuel tank compartment top piece may be glued in place. However, to make your life easier when it comes to installing the fuel tank and battery pack, you may want to add 2 blocks along the inside top edges of the fuel tank compartment sides so you can bolt the hatch down in place instead of using glue.

To install the tail wheel, the tab on the strut is glued and pinned into a slot cut into the tail of the fuselage. Ideally, the tab should be as low in the tail of the fuselage as possible, and the tail of the fuselage should be reinforced with some resin and 3 or 4 oz glass cloth. Next, a hole should be drilled into the leading edge of the rudder for the tail wheel tiller arm. It is recommended that both sides of the rudder in the area of the hole for the tiller arm be reinforced with some glass cloth and resin. While you're working with the rudder, sand a half-round notch in the leading edge for clearance of the hardwood elevator dowel.

Finish sand the entire fuselage and wing. After wiping the entire airframe clean with a damp rag, it may be covered with any of the plastic heat sensitive covering materials. Al least 4 hinges should be used for each aileron, with the outboard hinge within 1/2" of the aileron tip. Three hinges should be used for the rudder and a minimum of 3 for each elevator half.

The aileron servo well should be cut into the bottom side of the wing with a hardwood rail glued in place to the wing skin and to the spar for the servo hold down screws. Hardwood rails should also be used inside the fuselage servo compartment to mount the fuselage servo tray at the proper location for the desired CG.

The receiver on/off switch should be mounted on the fuselage side opposite the muffler to keep it free of oil. The receiver antenna should exit the fuse on the same side but as close to the receiver as possible. Keep the antenna wire away from any other wires inside the fuselage. The back end of the antenna wire may be anchored to the top of the fin with an elastic band to keep it stretched-but not too tight. If the antenna on your radio is longer than the fin, let the back end hang free.

The elevator and rudder horns should be installed as shown on the plans. Either wood dowel or Ny-Rod type pushrods may be used. When the pushrods and servos are properly installed, pushing up on your transmitter throttle control will open up the carburetor. Pushing right on your aileron control will make the right aileron go up and the left one go down. And visa versa. Push right on your rudder control and the rudder will move to the right. Push down on your elevator control and the elevator should go up to make the airplane climb. (For a much more detailed description of R/C installations see RC MODELER MAGAZINE'S FLIGHT TRAINING COURSE, VOLUME 1)

Put on the wheels, check out the operation of the radio and control surfaces, wing up the engine, and let her rip.

PARTS LIST

* PARTS IN PLASTIC BAG

JR. TELEMASTER

RUDDER		
FIN	3/16 balsa	1
RUDDER	3/16 balsa	1
* DORSAL	3/16 balsa	1
STABILIZER		
STABILIZER	3/16 balsa	1
ELEVATOR	3/16 balsa	2
*ELEVATOR CROSS BRACE	3/16 doewl	1
WING		
LEADING EDGE SHEET	3/32 x 1 1/2 x 24	4
TRAILING EDGE WHEET	3/32 x 3/4 x 24	4
SPAR	1/4 x 3/8 x 24	4
LEADING EDGE	3/8 x 11/16 x 24	2
TRAILING EDGE	3/16 x 1/4 x 24	2
AILERONS	1 in x 20	2
*AILERON CENTER SECTION	PINE GROVED	2
CENTER SHEET	3/32 x 4 x 5	4
CENTER SHEET	3/32 x 1 3/4 x 5	4
WING TIPS	TRIANGLE	2
CENTER RIB	BALSA (NOT SHAPED)	1
CAP STRIPS	3/32 x 1/4 x 36	4
ONE SET RIBS	BALSA	1 set
FUSELAGE		
UPPER SIDE	1/8 balsa	2
LOWER SIDE	1/8 balsa	2
MOTOR SIDES	3/8 balsa	2
TANK BOTTOM	1/16 ply	1
FIREWALL	1/4 ply	1
BULKHEAD 1 and 2	1/8 balsa	2
TANK DOUBLER	1/8 balsa	2
TOP SHEET	1/6 x 3 x 18	1
BOTTOM SHEET	1/16 x 3 x 36	1
HATCH	1/8 balsa	1
*CABIN FRONT	1/8 balsa	1
*WING DOWEL	3/16 dowel	2
*LANDING GEAR BLOCK SIDE	HARDWOOD GROVED	2
*LANDING GEAR BLOCK BOTTOM	HARDWOOD GROOVED	1
*STABILIZER SHIM	1/8 balsa	1
*MOTOR MOUNT WEDGE	HARDWOOD	1
CROSS BRACING STOCK	3/16 x 3/16 x 18	1
TRIANGLE STOCK	1/4 x 36	1
TRIANGLE STOCK	3/8 x 18	1
TRIANGLE STOCK	3/8 x 8 1/2	1
MECHANICAL		
LANDING GEAR	1/8 wire	2
MOTOR MOUNT	.19	1
AILERON TORQUE RODS	right and left	2
RUDDER HORN	nylon	1
ELEVATOR	nylon	1
LANDING GEAR PLATE	metal	3
4-40 BOLTS		4
4-40 nuts		4
2/52 x 3/8 SCREWS		10