Minnie Mambo

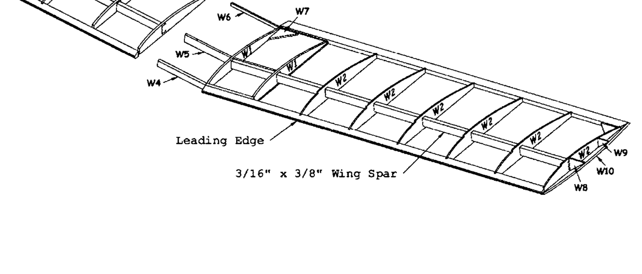
The Minnie Mambo was one of the more popular 1/2A kits in its day and is relatively easy to fly. The following construction notes referances to a kit have been removed but the remaining follow the original Sterling kit. A plan view and bulkheads have been added to the field of the drawing so that it can be scratch built. The bulkheads shown are hollowed out for a more easy installation of modern day equipment. Also the original bottom trap door has been left off the drawing for I don't think that it is needed. Please note: The original notes were for solvent cements like Ambroid - Sig - etc. Most builders will use a cyanoacrylate (instant glue) which must be used sparingly. Hope you enjoy an oldy but goody from the past!

GENERAL INFORMATION AND PRECONSTRUCTION NOTE

Pay careful attention to, and follow the notes step by step exactly as they appear on the plans. Examine the drawings before starting construction. For maximum strength, coat parts with cement (lightly), allow to dry, and then join with second coat. This is known as pre-glueing.

WING ASSEMBLY STEP 1

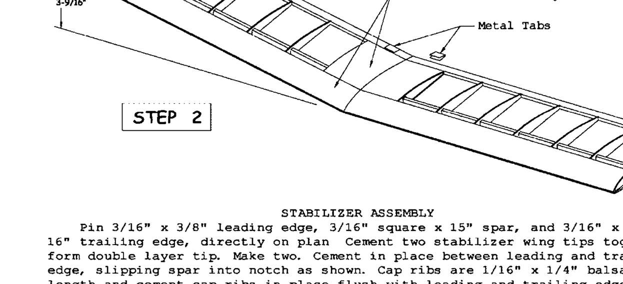
Build wing on flat surface, directly over plan Cover plan with wax paper to prevent frame from sticking. Take time and care in construction using plenty of cement and allowing ample drying time so that wing is built straight without warps. Prepare to assemble wing frame by cementing half the length of plywood dihedral gussets W4, W5 & W6 to the leading edge spar and trailing edge as shown in sketch. Allow to dry thoroughly. Pin trailing edge down on plan. Slide ribs onto spar in numerical order shown. Insert ribs into notches in both the leading and trailing edge. Pin down leading edge against front of ribs and cement all ribs securely. Cement rear corner gussets W7 in place. Cement wing tip floor W10 against rib W2 Cement triangular tip gussets W8 and W9 in place at location shown on sketch and wing drawing against W2 and flush with top of rib, use cement generously and hold parts with pins if necessary, until thoroughly dry. Bottom center section covering is shown on sketch for clarity only. It is



installed in next step Opposite wing panel is built in same manner. When both wing panels are thoroughly dry, they are assembled to each other to form complete wing. Apply coat of glue to protruding plywood dihedral gussets and ribs and then slide opposite panel in place. Pin down one panel to flat surface and raise other panel until bottom of rib is 3-9/16" high, which will make plywood gussets flush with leading edge, trailing edge and spar. When dry, all center section dihedral joints (especially the butt joints) should be given an additional heavy coat of cement to insure maximum strength and wing set aside to dry thoroughly. Check wing constantly, to see that it does not develop any warps.

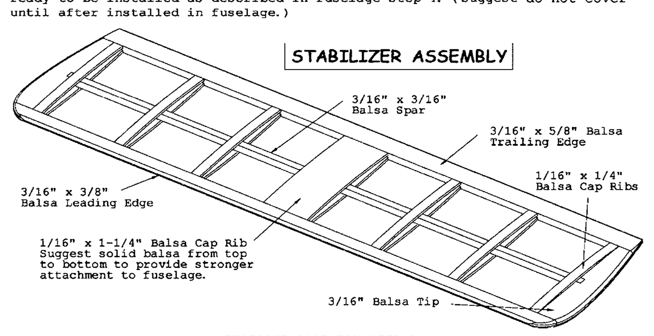
STEP 2

Cover bottom of center section (rib W1) with 1/16" x 3" sheet balsa. Cover the top leading edge of wing with 1/16" x 3" x 22" sheet cut in half to make two pieces 1-1/2" wide. Carve leading Edge to accept this sheeting. Note: ribs W2 are notched to receive this covering and that it extends over and is cemented to top of leading edge. Cover the top center section of wing as shown with remainder of 1/16" x 3" sheet balsa. All sheet covering can be held in place with pins until thoroughly dry. When structure is completely dry, remove any pins and sand smooth with fine sand paper. Leading edge and sheeting is sanded to match curve shown on side view. Carve and then finish by block sanding trailing edge. Bend metal tabs from any available thin metal (tin can may be used) and cement to trailing edge at location shown This will prevent being damaged by rubber bands which hold wing on model. Cover wing with silkspan (applied wet) grain running spanwise. Check wing constantly while covering to prevent any warps from developing. When silkspan is dry, apply two coats of clear dope. If warp should occur, apply an additional coat of dope and twist wing in opposite direction, holding until dry. Wing is now ready to be painted as described in final assembly note.



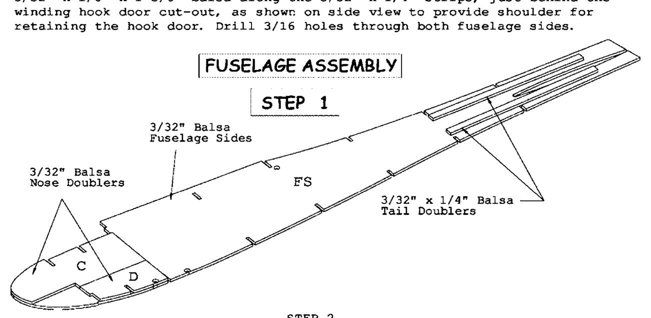
STABILIZER ASSEMBLY

Pin 3/16" x 3/8" leading edge, 3/16" square x 15" spar, and 3/16" x 5/8" x 16" trailing edge, directly on plan Cement two stabilizer wing tips together to form double layer tip. Make two. Cement in place between leading and trailing edge, slipping spar into notch as shown. Cap ribs are 1/16" x 1/4" balsa. Cut to length and cement cap ribs in place flush with leading and trailing edge, which will cause them to bow, as shown. Make the center section cap ribs from 1-1/2" wide. (Recommend this center section to be solid for stab/fuselage interface strength.) Allow structure to dry, then turn over and install bottom cap ribs in same manner. Trim tips to shape and round off leading edge and tips, tapering trailing edge, as shown on side view. Cover with silkspan tissue (applied wet), grain running spanwise. When dry, apply two coats of dope Stabilizer is now ready to be installed as described in fuselage step 4. (Suggest do not cover until after installed in fuselage.)



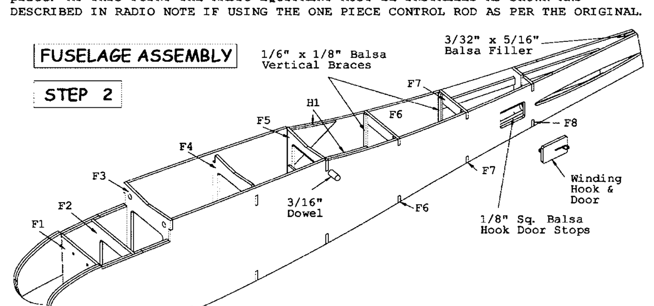
FUSELAGE ASSEMBLY STEP 1

Start fuselage assembly by cementing C & D to side FS as shown. Make 1 each right and left side sketch shows right side. Make winding hook door by carefully cutting out on rear of LEFT FUSELAGE SIDE ONLY. Side view shows position & size. Complete winding hook door as described in detail note. Cement 3/32" x 1/4" x 5-3/4" strips to both fuselage sides from front of notches for F7 back, in position shown on sketch and shaded lines on side view. Cement 2 of 3/32" x 1/8" x 1-3/8" balsa along the 3/32" x 1/4" strips, just behind the winding hook door cut-out, as shown on side view to provide shoulder for retaining the hook door. Drill 3/16 holes through both fuselage sides.



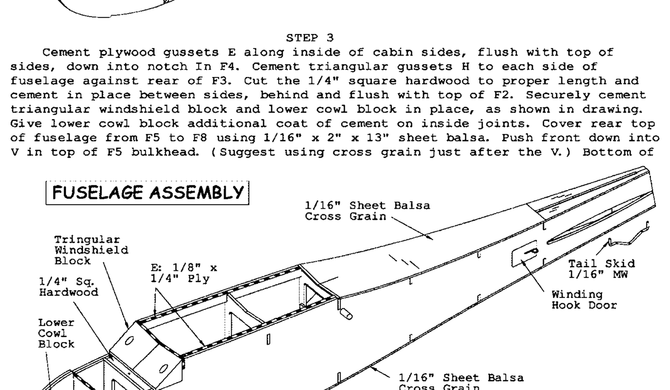
STEP 2

Assemble fuselage by cementing sides together using a 3/32" x 5/16" filler between them at back. Add bulkheads F8, F7, F6 and F5, slipping them into their respective notches in fuselage sides. Allow to dry. Meanwhile, cement F5A to either side at rear of F5, and 1/16" x 1/8" vertical braces against inside of fuselage sides at F6 and F7 as shown. Install remainder of bulkheads F4, F3, F2, and F1 as shown. Hold with pins or rubber bands if necessary, allow to dry thoroughly. Cut a 2-3/4" length of dowel. Insert dowel through fuselage sides against F5, allowing ends to stick out 1/4" on each side. Cement securely in place. AT THIS POINT THE RADIO EQUIPMENT MUST BE INSTALLED AS SHOWN AND DESCRIBED IN RADIO NOTE IF USING THE ONE PIECE CONTROL ROD AS PER THE ORIGINAL.



STEP 3

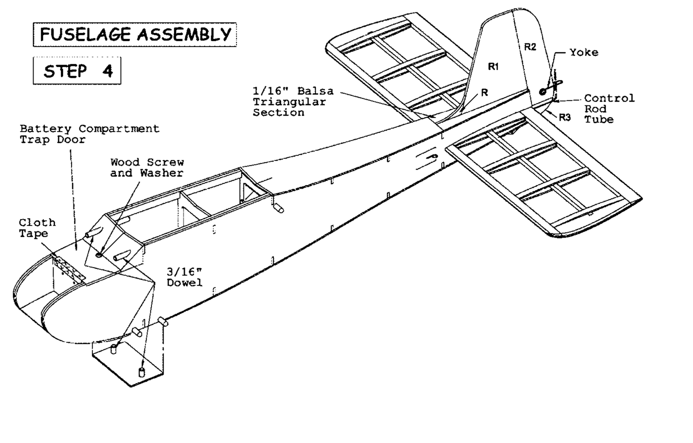
Cement plywood gussets E along inside of cabin sides, flush with top of sides, down into notch In F4. Cement triangular gussets H to each side of fuselage against rear of F3. Cut the 1/4" square hardwood to proper length and cement in place between sides, behind and flush with top of F2. Securely cement triangular windshield block and lower cowl block in place, as shown in drawing. Give lower cowl block additional coat of cement on inside joints. Cover rear top of fuselage from F5 to F8 using 1/16" x 2" x 13" sheet balsa. Push front down into V in top of F5 bulkhead. (Suggest using cross grain just after the V.) Bottom of



Fuselage is covered using 1/16" balsa cross grain. Use 1/16" plywood above landing gear to back-up knock-off landing gear (see Step 4 isometric and side view). Bend tail skid, (shown full size on side view) using 1/16" wire and cement in place. Trim windshield block and plywood gussets E to V shape of F3 shown. Drill 3/16" holes through H on both sides of fuselage where holes have been previously drilled in sides. Cut two 3-1/8" lengths of dowel and insert through holes, then securely cement to inside of fuselage. Ends should extend 1/4" on each side.

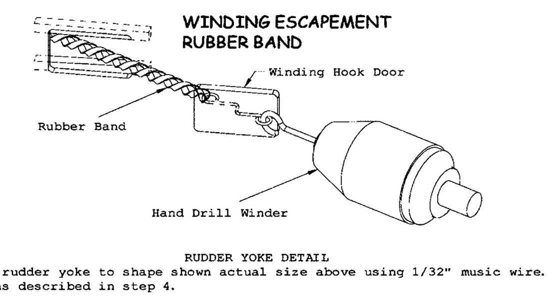
STEP 4

Install battery compartment trap door. Hinge front with cloth tape and drill hole at rear for wood screw and washer in same manner. Trim bottom cowl block to shape shown on sketch and side view. Sand entire fuselage smooth with fine sandpaper, rounding corners slightly. Drill two 3/16" holes on each side of windshield block at location shown on side view, flush with insides of plywood gussets E. Cut two dowels 2" long. Insert into holes and cement securely in place along gussets E. Position landing gear on plywood section on bottom of fuselage and drill 3/16" holes through plywood at location of holes on landing gear. Cut two 1/2" lengths of dowel and securely cement into holes allowing 1/8" to stick out on bottom as shown on side view. Slide stabilizer into slot at rear of fuselage and securely cement in place. Be certain that stabilizer is horizontal to fuselage when viewed from front and squarely in place when viewed from top. Cement rudder parts R and R1 together, as shown on plan side view. Sand smooth and round edges. Unit is now cemented to top of fuselage into notch in F8. Be certain rudder is vertical and cemented securely in place. When dry, complete top skin covering by cutting two triangular sections from 1/16" sheet which fit from F8 to end of fuselage as shown. Cement R3 to rear of fuselage against bottom of control-rod tube as shown. When dry, sand smooth, rounding edges. Sand R2 smooth, rounding edges, and assemble to rudder and fuselage with hinge stitches or your hinge of choice. Bend yoke from 1/32" wire, using pattern provided. Drill hole in R2 at location shown and mount yoke with #2/56 machine screw, two washers, and locknut - washer against wood.



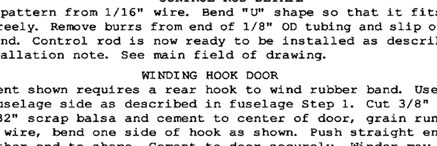
WINDING ESCAPEMENT RUBBER BAND

Sketch shows how drill-winder is engaged in outside door-hook. Be sure to wind so that escapement revolves in proper direction, then replace door.



RUDDER YOKE DETAIL

Bend rudder yoke to shape shown actual size above using 1/32" music wire. Install as described in step 4.

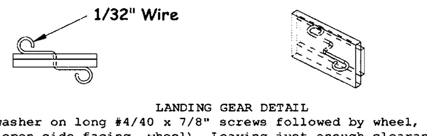


CONTROL ROD DETAIL

Bend to pattern from 1/16" wire. Bend "U" shape so that it fits over pin in escapement freely. Remove burrs from end of 1/8" OD tubing and slip over rod then make last bend. Control rod is now ready to be installed as described in radio control installation note. See main field of drawing.

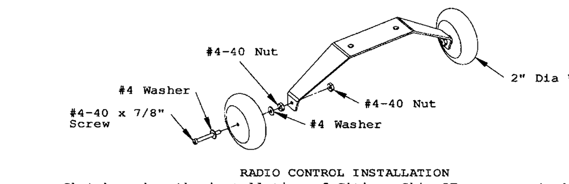
WINDING HOOK DOOR

Escapement shown requires a rear hook to wind rubber band. Use section cut from left fuselage side as described in fuselage Step 1. Cut 3/8" x 1" strip of 1/16" or 3/32" scrap balsa and cement to center of door, grain running opposite. Using 1/32" wire, bend one side of hook as shown. Push straight end through door, then bend other end to shape. Cement to door securely. Winder may be made by bending one end of a piece of wire to a hook. Insert other end in a hand drill as shown. Tighten securely.



LANDING GEAR DETAIL

Slip washer on long #4/40 x 7/8" screws followed by wheel, another washer, then nut (open side facing, wheel). Leaving just enough clearance so wheel spins freely. Insert into hole in landing gear and secure with nut on opposite side (flat side toward gear). Tighten nuts towards each other securely. Landing gear is installed on dowels in bottom of fuselage. Hold in place with rubber bands.



RADIO CONTROL INSTALLATION

Sketches show the installation of Citizen-Ship SE escapement. Mount escapement on F, see drawing for detail. Cement across front of F5, shown on side view. Make rudder Control rod (mount tube before second bend) using full size drawings. Insert rod through fuselage and attach to escapement. Engage rear in rudder yoke. Yoke can be raised or lowered to adjust distance of rudder travel. CONTROL ROD MUST BE GROUNDED by soldering fine length of wire from control rod to body of escapement. When installing receiver and batteries, wrap them in foam rubber for a snug fit. Then insert into their respective compartments. This will prevent damage. Make up an extra set or two of batteries for field replacement. Install antennae. Make loop of 1/8" flat rubber and attach to escapement and winding door hook, as shown. Be certain to wind rubber the right way, so that escapement revolves in proper direction. Check out system with transmitter before every flight WHILE ENGINE IS RUNNING.

FINAL ASSEMBLY AND PAINT NOTE

When wing and fuselage have been competed as described in their respective steps, model is then ready to be painted using hot fuel proof paint. Any radio equipment in model should be covered to protect it from paint. Original Minnie Mambo painted red with yellow trim. Windows shown on side view are painted silver. Since Minnie is original design, it may be painted to suit the individual taste of the model builder. Install engine in fuselage using #2/56 screws and nuts. Access for nuts is made through battery compartment. Engine shown is Cox Golden Bee .049. Any other similar engine may be used. Cement strip of fine sand paper to top of E and cabin side, and against bottom of wing in corresponding position. This will prevent wing from shifting Wing is secured by wrapping rubber bands across wing from 3/16 dowels on either side of fuselage at rear, to both dowel pins protruding from front of cabin. Place finished-landing gear (see note) on fuselage. Moisten colorful Minnie Mambo decal and slide in position.

FLYING INSTRUCTIONS

Be certain model balances (nose slightly down) 2" to 2-1/4" behind front of wing, add weight if necessary. Check that all surfaces are free of warps and are in proper alignment with each other. Any deviation may result in erratic flying. Flight testing is done in calm weather. Experienced modelers may test glide model, however, it is not recommended for beginners. All power testing is done only after radio equipment has been checked out for a distance of at least 500 feet with the engine running. Throttle engine up and launch into any prevailing wind at normal flying speed with nose slightly down. Model should fly smoothly, either level or climbing slightly. If model stalls, add 1/16 balsa under rear of wing. If model dives, add it to front of wing. In both cases, check the balance before adding shim. Stalls may also be corrected by tilting front of engine down,(down thrust). Once model is in air, DO NOT ATTEMPT TO CONTROL WITH RADIO UNTIL AN ALTITUDE OF AT LEAST 100 FT HAS BEEN ACHIEVED. Inexperienced radio flyers may cause model to crash if it hasn't sufficient altitude. In most cases, model will recover its flight path if left alone. Give short beeps to control model while engine is running, longer beeps will be necessary when model is gliding after motor has stopped. Experience will enable you to do many maneuvers with your Minnie Mambo. GOOD LUCK AND GOOD FLYING!!