
The author with his Mo-Jo prototype designed for the Midwest-RCM Air Races. Min-X 1200 Pulsemitter and Receiver, Rand LR-3 actuator, McCoy diesel. Mo-Jo is fast but easy to fly.

# MO-JO

**The first of the new Midwest-RCM Air Racers, the Mo-Jo is a Class B machine designed for .09-.10 size mills and single channel proportional. A top contender for this new event. The Mo-Jo will bring home the hardware for you!**

BY ED SIMPSON

". . . go out and fly simple proportional. You'll love every minute of it!"

This concluding statement from the article, "Return of the Ghost" (RCM, April 1966), sums up all I can say about this type of flying, with the possible exception that the Midwest-RCM Air Races are a natural for the Ghost systems. I prefer to call them, simply, "Ghost," since the appearance of the new actuators and reliable single channel proportional systems has reduced the "gallop" to a smooth trot.

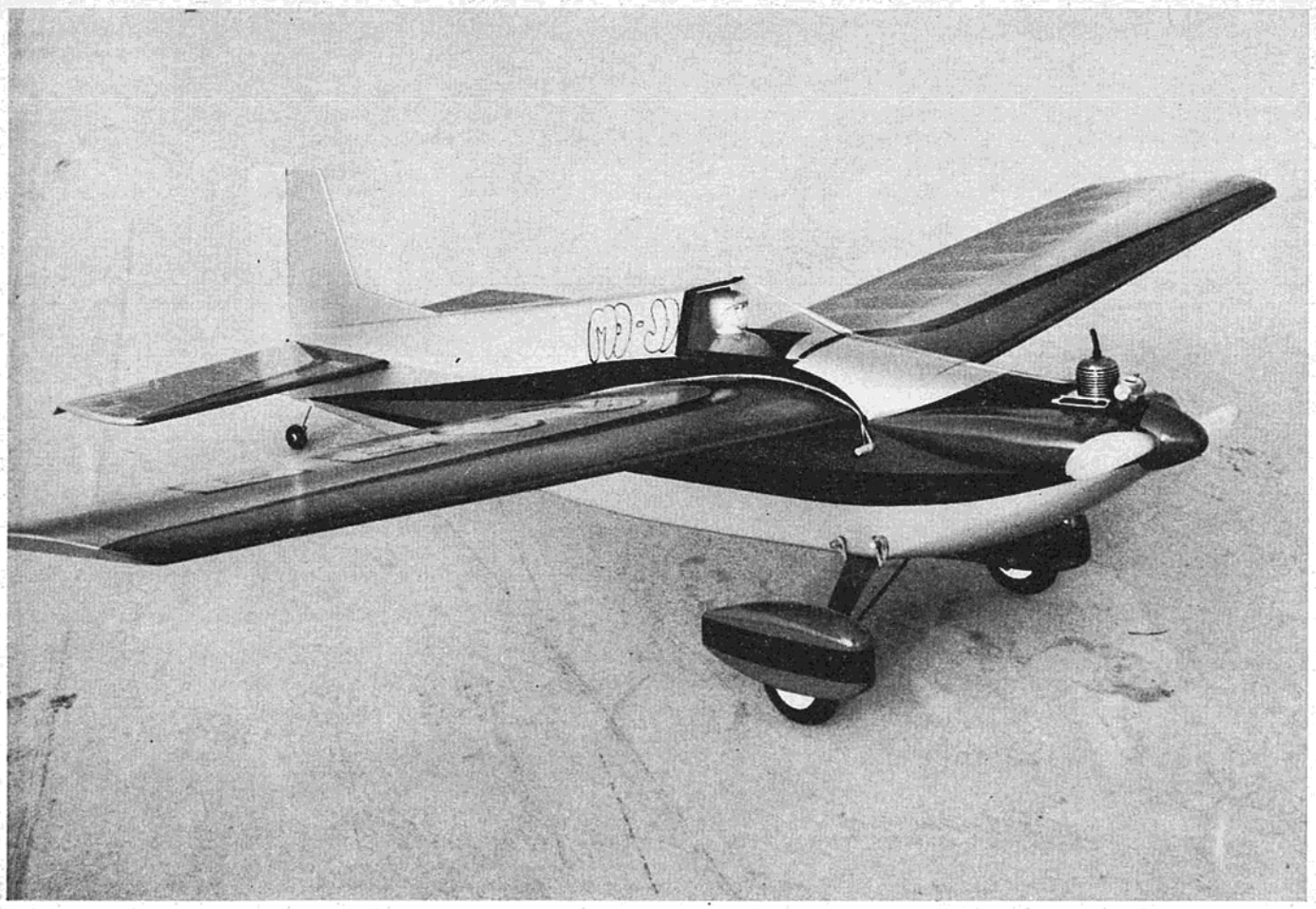
The MO-JO (a good luck piece) was designed around the proposed Midwest-RCM Air Race rules and qualifies for Class B competition. This type of model is not limited solely to pylon racing, although it does that best, since they are very maneuverable with the higher speeds and smaller moveable surfaces smoothing out the flight. In my own particular area, several modelers have shown an interest in flying this proposed event. Some are currently building their own designs while a racing program is being established. The MO-JO is fun to fly by itself, but the real excitement comes only when you get one or two more in the air with you! With the Tee Dee .09 installed, the speed is estimated to be about sixty miles per hour, yet with the Min-X 1200, Rand LR-3 actuator, and seven 600 MAH nickel cadmium cells, the landing speed is surprisingly low.

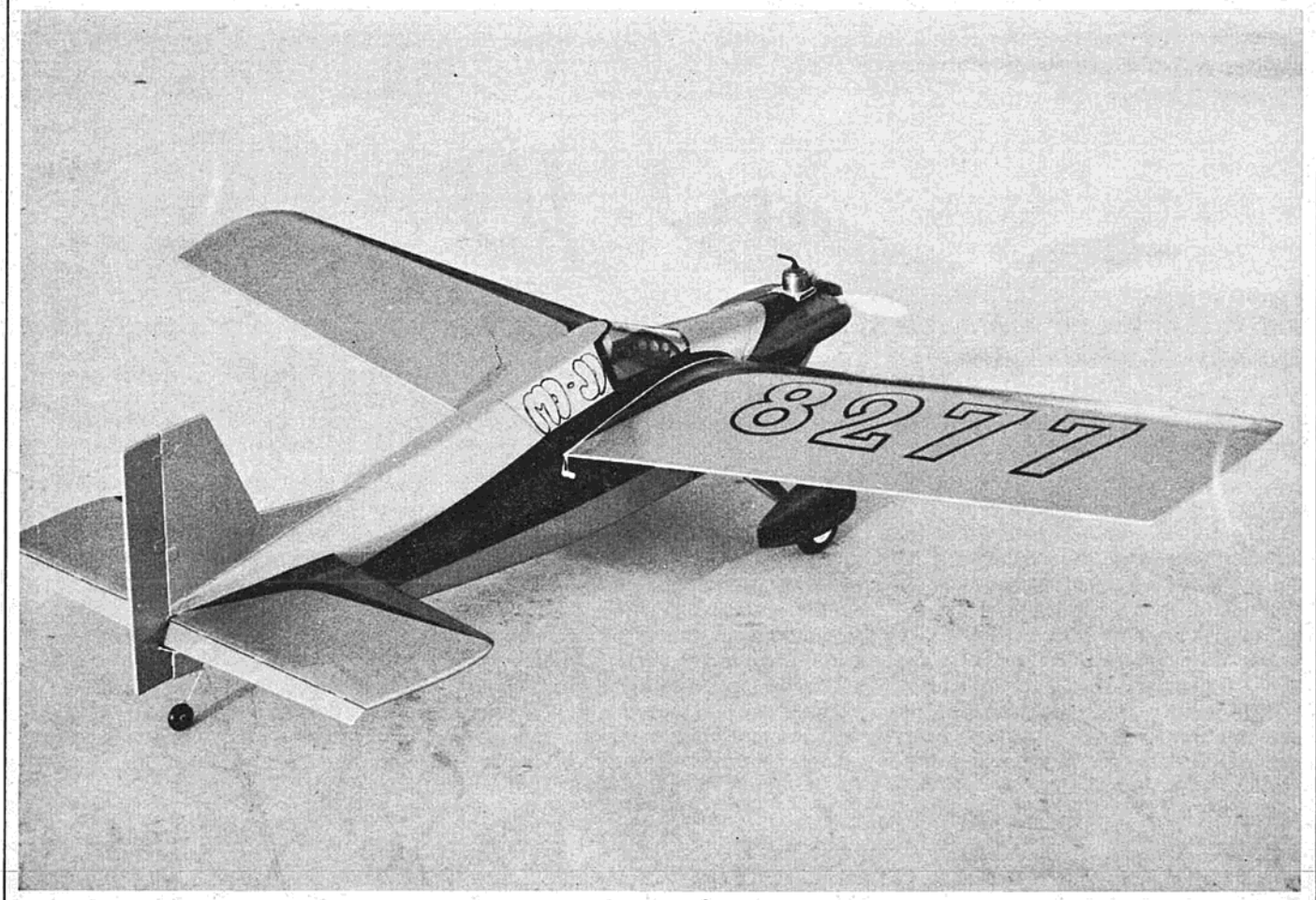
## CONSTRUCTION

Medium weight wood is used throughout construction of the MO-JO. Be sure to pick firm, straight grained "C" stock balsa with the exception of the leading edge wing sheeting which should be "B" grain.

**Fuselage**

Cut two sides from ⅛" sheet and ce-

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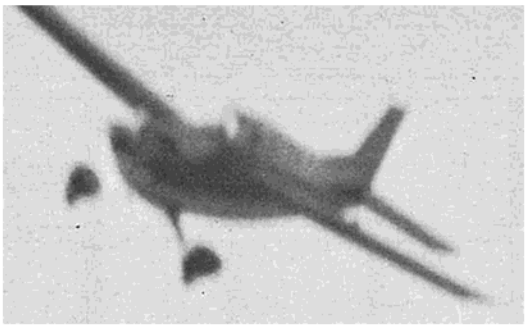

ment the 1/16" plywood doublers to the inside of each. Cement the 3/16" square longerons in place. Cut out bulkheads #2, 3, and 4, and cement to one fuselage side. When dry, add the remaining side, checking for squareness with a draftsman's triangle. Pull the rear of the fuselage together and cement. Install bulkheads #5 and #6. Cut the engine mount from 1/8" ply and use white glue to secure the 1/4" square maple engine bearers to the underside of the mount. Soak the outside section of the fuselage sides forward of bulkhead #2 with water, pull together, and use white glue to mount the engine assembly in place. To assure a close, even fit at the spinner, cut out the 3/32" nose ring using the spinner for the outline. Now, slip the ring over the front of the engine and mount the prop and spinner. Position the engine in the mount cut-out with nose ring snug against the front edge of the mount. Mark, drill holes, and install the blind mounting nuts. Although not drawn on the plans, a few degrees of downthrust is recommended. Mount the engine with one washer under each rear mounting hole, position the nose ring in place, and cement to mount. Carve the bottom balsa block and cement in place. When dry, remove the spinner. Now, cut a hole in a piece of sandpaper, slip it over the crankshaft, reinstall spinner and prop, and rotate prop to sand off approximately 1/64" from the nose ring.

Cut the turtledeck top from 1/8" sheet and cement to formers. Now add the top sheeting. Build up the cowl hatch and removable cockpit section. Tack cement this assembly to fuselage and sand as a single unit.

Now apply two or three coats of a talc and dope sealer plus one coat of clear butyrate dope, sanding between coats. Cover the model with silk.

The cheek blocks for the cowling hatch can be carved from balsa or molded from fibreglass. We used the latter on the original. These are cemented to the top hatch only and act as a key for the hatch. This hatch-cheek assembly is held down by a long 4-40 bolt threaded into the 1/8" ply engine mount.

**Wing**

Pin down the leading edge and the 1/16" x 1" bottom trailing edge. Cement in the bottom capstrips and then add the bottom spar. The tapered ribs are easily cut by making an extra #1 rib, cutting it off at the trailing edge to the length of a #2 rib. With a straight edge, cut off a strip from the bottom leading edge to the top trailing edge. Repeat this process for the remaining ribs. Duplicate each rib for the opposite wing panel. Notch the ribs and cement in place. Carve the leading edge top shape while the panel is still on work board. Make sure this is flush with the top of the ribs. Cement in place the top spar and sheeting, capstrips, and top trailing edge. When dry, shape and sand the leading edge as well as sanding all the capstrips flush. Build the opposite panel and center section. Be sure to check-fit the panels to the center section before applying cement. Check to make sure you have the proper dihedral angle before the glue dries! When dry, cut notches from the bottom of ribs #1, #2, #3 for the 1/8" ply dihedral joiner. Carve the tips from medium balsa and cement in place. Sand the wing assembly, apply two coats of sealer and one coat of dope. Sand lightly and cover with silk. Cut the cockpit assembly from the fuselage, and cut the roof airfoil outline from the bottom. Be sure to cut this slightly under-size, and with wing in place, trim until everything fits flush.

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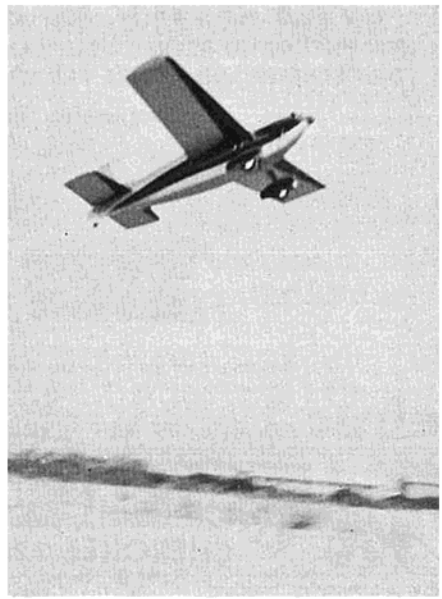

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**Stabilizer & Fin**

The stabilizer is built flat on the plans. The fin and rudder is cut from ⅛" sheet. Cement the elevator joiner dowel well and cover with silk. Cut notches for the stab and fin and cement in place. Cloth hinges may be used, or you can try Ken Willard's Monokote hinges (Top Dawg, RCM July 1966). Do not use nylon sheet type — no use overloading your actuator deliberately!

**General**

Sturdy wheel pants can be made from medium balsa and covered with fibreglass cloth. Mounted as shown on the plans, they will "give" under shock, but will stay in place under normal flight conditions. Commercially available dural gear may be used or you can fabricate your own from .032" hard aluminum.

Finish the MO-JO in bright colors and add some flashy numbers. Our original was finished with a base of silver and orange mixed together. Trim was green and black. However, on a hazy day, things get a little fuzzy at the far pylon!

**FLYING**

Be sure your MO-JO balances as shown on the plan, adding weight as necessary to achieve the proper CG. Be absolutely certain all surfaces are free of warps. For best racing trim, wash out the right wing panel approximately 3/16" at the tip. This makes for better pylon turns (left) without a tendency to drop the nose abruptly. Another added advantage is a quicker recovery after the turn. Drift to the right, if any, can be corrected with rudder trim. Adjust the elevator so that almost full down trim is required for level flight. This eliminates gallop entirely while still allowing plenty of up for emergencies.

Now it's your turn. Get a couple of these little Midwest-RCM Air Racers airborne and watch the sport flyers come around.

And you'd be surprised. Even some of the "multi" guys are getting converted!

Ed Simpson's Mo-Jo comes in for a landing. Fast and easy ot fly, this Midwest-RCM Air Racer was designed to put competition in the realm of the sport flier.