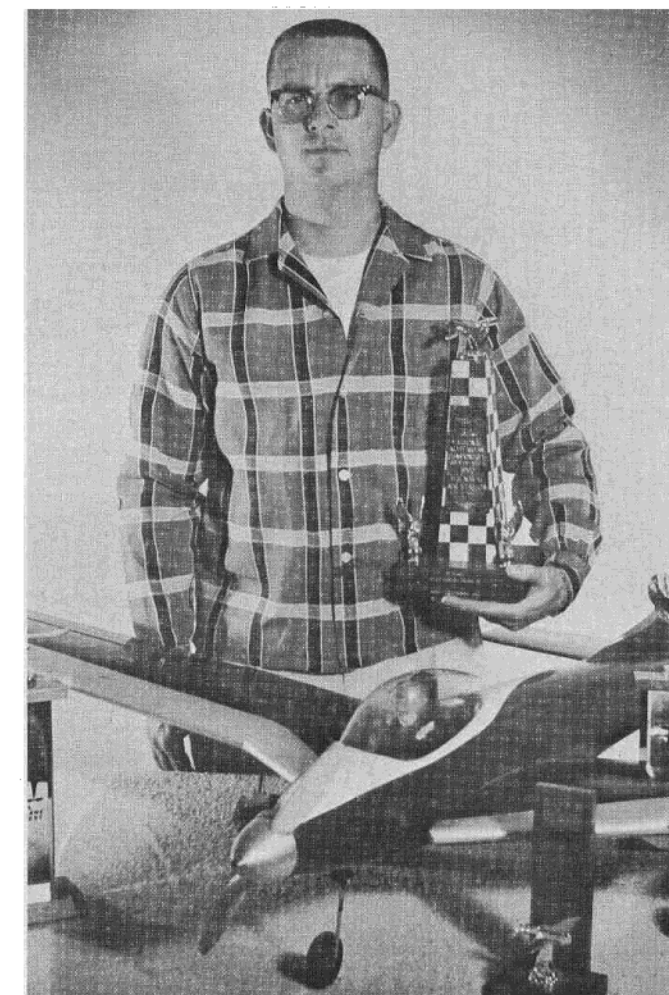


F-9 features side-mounted Super Tigre 56 and flying stabilizer. Sleek lines and high wing loading make this ship a smooth, fast competition machine.



Darryl, F-9, and hardware

## Jet-Like Multi was Highest Placing Reed Ship at '63 Nationals

# F-9

by Darryl Usher

●The F-9 was designed strictly as a contest ship, and since each person has his own personal likes and dislikes, I hope it will prove to have a little something for everyone.

Personally, I have always preferred a high wing loading, because it allows the engine to idle faster with a steeper landing descent, which makes it easier to hit the spot. After building several small airplanes around regular engines, it was decided that the larger models fly more smoothly, but the only way to get the Vertical Eight was with a bigger engine. The F-9 was built with a .45. No effort was made to build it light, and you will notice it has a full length 1/32" plywood doubler and 1/2" ply firewall. You will also notice a large amount of dihedral which takes care of the plane on takeoff, straight flight, and landing.

The large vertical fin will hold the F-9 in a normal turn with ease.

The flying tail was designed just to be different, but it has proven its worth in being quite easy to trim and fly. On the first flight I set the flying tail at what looked to be good and level. Later it was measured by blocking the airplane up until the wing was level, only to find it needed more "up", until it measured level with full up-trim.

Then out to the flying field—alone! If it was to crash, I could do without the "I told you so's." Fly it did, albeit needed even more up. In addition, it proved to be somewhat nose heavy, so clay ballast was added in the jet pipes. (Quite handy).

I like an airplane that is easy to fly during the landing, which means that power-off must not change the trim of

the craft. This is accomplished by changing the C. G. to the rear and adding a little down-thrust.

Trimming an airplane is a story in itself and this is simply my approach to the problem. First, I get the airplane to glide both fast and slow with no turn and a nice descent. If it turns when going fast, adjust the ailerons—when slow, adjust the rudder. Adjust the engine thrust up or down so that when the throttle is cut the airplane will not climb or dive. The side thrust is adjusted so that if the ship is pulled off the ground early, it will not swing radically to the right or left.

After the F-9 was trimmed for flight, it was found completely reluctant to spin. More up elevator was necessary, and a servo over-travel was installed. The only reason for this was to slow the

elevator action down. It is not jumpy on elevator, but the down travel was already set for full down for Outside Loops, so the over-travel seemed to be the easiest solution at the time. The total travel could be increased and the down elevator portion of the printed circuit taped off to cut the down elevator for the outside maneuvers.

Subsequent flight tests made it quite evident that the .45 would not handle the seven pound ship as was desired. In an effort to lighten the plane, the battery pack was moved from behind the first bulkhead to the center of the wing. The ballast, added to the tail, was removed. This was not a big change and little difference was observed.

## THE F-9

The Super Tigre .56 with its new throttle came into existence about three weeks prior to the '63 Nats', and a fast engine switch took place. Idle problems with the new mill took the better part of the first week, and trying to get a pylon racer ready for competition took the next two, so off to the Nats we went—new engine, nose heavy, and NO pylon racer!

After several flights at the Nationals, I replaced the weight in the tail to offset the new engine and larger fuel supply. No trouble with fuel draw has been experienced, but care should be taken to keep the fuel meticulously clean.

The F-9 sits high and light on the nose wheel, with brakes being used on the main gear. In windy weather, put the brakes on and taxi with more engine in order to keep the nose wheel firmly on the ground. The brakes were operated on down-trim. The nose high attitude will make very nice take-offs, but require you to hold the nose high when landing. This is where the high wing loading and rearward C. G. comes in handy. The plane will land on the main gear and tail skid. The nose should stay up with ease during the landing, but if not, move the C. G. back a little at a time. I fly off the grass most of the time, and takeoffs are very easy.

The original model has a  $\frac{1}{2}$  turn spin recovery, but this may vary depending on control travel and overall gross weight.

Construction-wise, it is better to build the wing first so the fuselage and wing can be matched with the top of the fuselage left open. The wing is standard construction with  $\frac{3}{32}$ " sheet throughout. The type of control hinges and linkage will be left to your preference. The battery pack was carried in the wing of the original F-9. This was necessary in order to leave room for fuel and to aid in moving the C. G. to the rear. The landing gear is  $\frac{1}{8}$ " wire and should be cut to give the needed propeller clearance.

The fuselage sides are cut from  $\frac{3}{32}$ " sheet balsa stock with  $\frac{1}{32}$ " ply doublers contact cemented on full length. Assemble the sides to the bulkheads and firewall, omitting the nose and tail at this time. After this assembly sets up,

put on the nose ring and tail. At this time, the wing can be fitted and the wing hold-down glued in place. (No more oily rubber bands!) A  $\frac{1}{2}$ " triangular piece of soft balsa was used in the lower corner of the fuselage so the bottom edge can be rounded off. The



top formers between those shown are rounded off using the others as a guide. Finally, the top is planked with  $\frac{1}{4}$ " X  $\frac{1}{8}$ " strips.

The stabilizer is built in one piece using a  $\frac{3}{8}$ " brass tube with a dowel in the center as a stiffener.  $\frac{1}{8}$ " dowels going through the tubular spar are glued to the stab ribs tying the stab and spar together. Cut out a slot in the fuselage to let the spar down to the proper location, then the nylon bearings are glued in place. I used cable clamps on the inside to take up the end play, although anything could be used inside or outside for this purpose. Be sure the push-rods are on at this time. The vertical fin and two fairing blocks are glued on—they can be rough-cut first and finished after they dry.

Install the nose wheel and block. The original nose wheel can be removed at any time to facilitate service and replacement. The nose block is cut to let the engine oil drain out into the nose wheel-well. The engine cut-out is made and the engine compartment covered with fibreglass resin to keep it from soaking up fuel. The entire airplane is covered with silk and doped.

The fuel tank is a large balloon (5 & 10 cent store variety), holding about 12 ounces of fuel. A length of tubing in the neck will keep the fuel line from collapsing where it is wrapped. Use a refueling bulb and remove the air from the tank, then hold the line closed and fill the bulb with fuel, filling the tank part way, again holding the line closed and filling the bulb. Repeat until the tank is full. If you always empty the tank before you fill, you will find that 3 to 4 bulbs will fill it to capacity. This way there will be no air in the tank—all fuel.

Good luck with the F-9.

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