



Consider a "Citabria"

Photos by the Author

by Dick Mathis

**Just a Profile,
but easy to love.
Good Stunting potential
with this unusual
high-winged Controline.
For .29 to .40
engines.**

High-wing controline stunters are rare. Stunters with dihedral in the wings are rare too. High wing stunters with dihedral wings are rarer yet. High wing stunters with dihedral wings that have leadouts exiting the wing tip (rather than several inches below the wing on exposed outriggers so they will be on the centerline of the airplane) are impossible and shouldn't even be tried; or so prevailing thought on controline design has indicated.

This high wing taboo has hurt controline design for years because a lot of our favorite full-size airplanes have been high winged and it's frustrating not to be able to model them. I remember one breakthrough of the taboo years ago by stunt pioneer Bob Palmer. It was called the "Challenger" and featured a moderate shoulder-wing layout, which was rather attractive. Not much came of it though, even though Bob saw many possibilities in it for stunt. Being an

irreverent sort when it comes to hallowed model airplane traditions, your author wondered why the "Citabria" couldn't be made to fly stunts just fine and still look like a "Citabria." After all, if one places the wing in the middle of a "Citabria" it looks funny and all the people inside fall out the hole in the top when it flies upside down.

The result is rather exciting. It looks right due to the dihedral and tall wing mount that the real one has too, and it has the wing leadouts inside the wing where they don't create lots of drag, look better and are easier to build. It also flies just fine. In fact, it flies just like any other good sport stunter, or better than most. The wings don't wobble; it doesn't do barrel rolls; and it doesn't go slack on the lines, as everyone predicted. Think of the possibilities this opens up. If the jaunty "Citabria" doesn't grab you, how about a Piper Cub or a Lockheed Vega? Keep the moments close to the "Citabria," rake the leadouts back as shown, locate the center of gravity in about the same place, and your own design should fly fine.

If you like the "Citabria" enough to build it, I suggest wandering around local airports until you find one and use it as inspiration for the paint scheme. The Aerona factory custom paints the "Citabria" ("Airbatic" spelled backwards) to the customer's order, so almost anything can turn up and it is guaranteed to be gaudy. The real ship is stressed to be fully aerobatic and has proven to be quite popular.

Building Notes

Construction is straightforward. The balsa used in the fuselage and tail surfaces should be firm but not rock hard, lest the finished model be tail-heavy. Otherwise, overall weight is not too critical because

there is lots of wing area to keep things flying. Avoiding misalignment and warps is as important as it is with any other airplane.

The Wing

Build the wing in two halves. Start by pinning a trailing edge piece to the plans and gluing ribs in position. Quickly attach the leading edge to the ribs before the trailing edge glue sets, checking to make sure the ribs are aligned vertically. Once this is dry, glue on the top trailing edge piece and the top spar. When this assembly is dry enough to remove from the building table, flip it over and pin the trailing edge back down so the other spar can be installed and left to dry thoroughly. The same procedure produces a second wing panel. Trim the center ends of the panel so they will match up at the correct dihedral angle. Make sure that in doing this no sweep-back or sweep-forward creeps into the wingspan. It is a good idea to coat the ends of the pieces to be joined with glue and let it dry. The glue will soak into the open end grain and, when combined with the second coat of glue to join the wing halves, give a good joint. Let the wing dry thoroughly with the dihedral blocked up securely. The next step concerns installing the dihedral gusset and the bellerank platform, which should have the bellerank hole already drilled. The wing tips should be mounted with care to make sure they align with the airfoil centerline. If you want to use the wing struts (they are not essential to the strength of the wing, but they look realistic), install the strut mounts flush with the wing bottom and install the blind nuts now. Fix the bellerank and leadouts so they don't bind against any ribs. Run the pushrod into the bellerank and plank the center-



section. The wing is ready for sanding and covering. Be sure to sand the leading edge blunt as shown, as it makes the "Citabria" a much smoother flyer than when it is left sharp. Any covering works on the wing.

The rest of the model follows conventional practice until it comes to mounting the wing to the fuselage and installing the wheel pants and wing struts. The wheel pants should be omitted and 2½" diameter wheels used if most of your flying is off grass fields, even if it looks less realistic. If you have a paved circle, by all means

use the wheel pants. The drawings are self-evident, but it should be emphasized that the wheels need to have lots of freedom inside the pants. Be sure to fuelproof the wing struts are built to last. Take care in binding the aluminum fittings to the struts so that when they are tightened down they do not warp the wing. I suggest screwing the fittings in position and then fitting the struts to them so they can be glued on while in alignment. They can thereafter be removed and finished handily.

The wing-fuselage mount is amply strong if a lot of epoxy glue is used. No stress cracks have shown up at all on the prototype which is unusual for a profile airplane. Be sure to leave the planking on the bottom of the wing bare where the fuselage mounts, so the glue will have something to grip.

It is important to de-sensitize the control system as much as possible by using the innermost hole in the bellerank and the outermost hole in the control horn. Small belleranks and short elevator horns are not

Photo top left: Amazing realism for a "Profile" design. Fully stuntable and will do complete A.M.A. Pattern. Above: On this Profile, even dirty side

doesn't look bad. Tank must be mounted level with engine's venturi. Photo below: In flight shot demonstrates good stability with high wing.





The "Citabria" as a Profile is easy to build up, distinctive and kind of lovable (before exhaust). A gaudy beast, in orange, white and blue. K&B

Super Poxy and MonoKote. The wheelpants perform well on cement runways, but beware of the springtime mud. Well proportioned for aerobatics.

ance the model, add it (the crankcase back plate makes a good place) and if there are wing warps, heat them out. The ship balances on the spar.

In flight, the "Citabria" has no particular vices. It will corner nicely if you like square maneuvers, and it keeps excellent line tension in overhead maneuvers. It turns slightly better inside than outside, but that would be expected given the high wing force arrangement. Landings are a little different, it seems, due to the tendency of high wing designs to sort of hang on the wing. One time, Rick over-controlled and literally stopped the "Citabria" in mid-air while gliding in for a landing. I suggest flying low when the engine begins to run out of gas and keeping speed up until the wheels touch down. If you like to "flare

out" your landings, remember the "Citabria's" wing is operating in a relatively higher air cushion (even when the wheels are on the ground) than a mid-wing airplane does, and accordingly it doesn't lose lift so quickly and you may find yourself landing three feet above the ground, as Rick did.

The "Citabria" has been tested in very high winds to make sure it isn't just a fair weather friend and, whether you believe it or not, it behaves admirably, high wing, dihedral, enclosed leadouts and all. It fits somewhere in the "Magician" and "Midwest WWII series" class in flying ability; definitely above the training machines; but below the full stunt types such as the "Nobler." In all, it is a real attention-getter because it is unique, but it is a solid, vice

free design that generates lots of flying pleasure for the capable flyer as well.

Oops! One other thing occurred to me. If it seems to you that the ship doesn't like to roll on landing (this should only happen on paved circles) you should angle the wheels in toward the circle. What happens is the leadouts are located so far behind and above the wheels they cause the ship to angle away from the circle too much and the wheels scrub rather than rolling. By placing a washer or two under the front of the inboard landing gear and the back of the outboard one, the wheels can be angled in. One other thing concerns the removable wheel pants. How do you get the washers on each side of the wheel? Simply tack glue them to the wheel hub before inserting the wheel. E



At left: Matt Smith does honors as Rick applies a shade of "up-elevator" to unstick it. It's lightly loaded for the power, so it almost jumps up. Below: Past practice has been to bring leadouts from center of the mass.

