

# TORERO

BY WILLIE SMITH

## Full Size Timely Plan Available

● When a man bites a dog — that's news! When I try to write something, that's new! In other words, writing for me is a chore and somehow beyond my mental capacity. (Ed's note: You too, Willie?).

Almost as bad is choosing a name for your favorite "toy" — which is even worse than choosing a name for your kids. At least with the kids you have a wife to say no! After devoting considerable time and thought to a name, I finally turned to serious research and grabbed the first one I heard mentioned. By the time I had convinced myself it was original, lo-and-behold, I saw the same name on a new ship in a hobby magazine. The only alternative left was to use the second name I heard, and that is how we came up with the name "Torero," which means "the bull fighter." Since fighting bulls is, in my opinion, almost as stupid as flying radio airplanes, I just couldn't let it pass by!

I'm not an expert with models, and don't pretend to be (unless you ask me), but nevertheless, will comment on a few of the models I have flown. Each had many good features to recommend them, but also lacked a few traits I personally desired in a model. I rumbled through many kits trying to find what I wanted, but there were none that had seven and a half pounds total weight printed on the box! Once I did build a kit that weighed less than seven and a half pounds — it was designed by some big handsome Eastern fellow who I later heard was some sort of champion. This one was just too fast for me — the ship seemed to be at least half a maneuver ahead—but could it outside loop! During this period there was all kinds of talk about how silly the West Coast boys were building ships with thin wings. I can only guess that this big handsome fellow wanted to find out once and for all whether the Western boys knew what they were talking about or not, so he tried a thick wing. But 19%! Oh well, I heard he was an even bigger champion with that one — think what he could do with a 50% section!

After being an omniscient observer (?) for some time, and begging to fly different ships, a brilliant idea struck home. Why not combine the things I liked about these other ships and see if I could make one fly. First of all, I knew I had to have something that would fly at seven pounds. Since I can't normally make anything come out less than seven and a half, I was obviously shooting for a light one! I guessed I

should have a larger wing, and this posed a serious problem — should it be longer or wider? (To me, a chord is some kind of obsolete musical expression.) Knowing nothing about wings, I tried a little of each. The best way to get a wing 13" wide is to stretch a 12" wing an inch. Which is exactly what I did. That took care of the wing. (See how easy it is? All you need is a good set of plans to alter!)

Clarence Lee once told me that my engine wouldn't idle because my fuel tank was too high. I just had to design the proper level, so with extreme mathematical precision, asked Clarence how high it should be. The nose of the Torero was then drawn around the fuel tank. (This design work is a snap, if you ask me!).

Another design requirement was to have a ship that would take most any kind of radio and battery pack, so this meant a large fuselage. (You never know from one minute to the other what kind of second hand equipment you might have a chance to buy!). The air scoop under the nose makes for more battery room and also makes an excellent oil drain. It was surprising to find out that even a little air came through, with the updraft helping to keep the oil out of the fuel requirement.

A further pre-requisite was a ship with no loss of control at very low speeds, and with no tendency to snap roll. I wasn't sure just where to copy these ideas so was forced by necessity to try some ideas of my own. (What a revolting development that was!). A real scientific approach was used to cope with this aerodynamic problem. I guessed. Boy! Did I make out! I flew at a contest in Fresno that had a snap roll in their pattern, and try as a might I couldn't do one! And about that slow speed control — I have witnesses to prove that Jack Byers stopped his Torero in mid-air and took off again, needless to say, with no loss of control. For spot landings you simply throttle down to a stop over the spot, then settle down on it like a helicopter . . .

About this time a few of the boys were flying the new proportional gear, and I was really envious of their smooth elevator action. Not being able to stand it any longer, I decided to do something about it. Not knowing how to design a stab and elevator to give the desired results, I figured to alter some existing stab. Having heard at some time or another that tip plates

### SPECIFICATONS

SPAN:	70"
AREA:	914 SQ. IN.
LENGTH:	48"
WEIGHT:	7 LBS.
CHANNELS:	8 — 10
CONTROLS:	REMT REMAT
CLASS:	II, III
ENGINE:	.45 — .56
THRUST	0° DOWN 0° RIGHT
INCIDENCE:	
STAB	0°
WING	0°

## THE TORERO

make a wing more effective, I thought, quite logically, that it might work on a stab as well. As long as we were thinking along the lines of tip plates, we might as well just put a fin and rudder on each end of the stab. Since the stab would, in effect, be larger, an equal size elevator would give a smoother response. Could it be just possible that win rudders would tend to slice through the air instead of twisting, giving more axial roll? Why not! Having gone this far, what could I lose? You might also think about what happens when the rudders and fins are out of the way of the prop blast, too.

One item I believe was original — if you will notice, the thrust line runs from fore to aft. I mean, the thrust line follows the motor mounts and comes up quite high on the fins. Since everything is set zero degrees in relation to the thrust line, the ship flies with the tail in a lower attitude than that which you are accustomed to seeing. This give a better fuel level for taxiing, and permits the fuselage to sit level in relation to the ground. Not only does it look better, but it still has effective negative incidence when rolling on its gear. That is supposed to make the ship easier to land without bouncing.

All kidding aside, the Torero handles like a baby at both low speed and at full bore. The ground handling is excellent even in the wind, and the ship leaves little to be desired in its ability to go through a winning contest pattern. In the hands of proficient flyers, it has proved its worth in many contests. If you can land fairly well, you can fly the Torero with no trouble at all. With a 60" wing, you have to skip no maneuvers in Class II, and no reversal of rudder control is required when inverted.

Construction of this model is not too different from current practices. I can tell you a little bit about my own methods, but don't be afraid to deviate a little and adapt your own building procedures. You will do a better job if you do things in a manner to which you are accustomed.

It's difficult for a person to build his first model from plans unless he had highly detailed plans and instructions. Since the Torero is a ship that should not be built and flown by a modeler without a little previous multi-experience, neither the plans or the construction data are highly detailed.

The front and rear spars of the wing and stab are full depth, and notched to accept the ribs. I cut and notch the ribs and spars first. Lay the front and

rear wing spars on top of each other and glue the balsa doublers in the center. I use one 1/4" rib in the center of the wing. I prefer to use 1/16" sheeting and cap strips on the wing, although you may try 3/32" sheeting if you prefer, and if you can manage the extra weight. Build the wing first, then mark and saw out the ailerons with a razor saw after the sheeting is in place. The only plywood used in the wing is the servo platform and the section of rib to which the aileron horn is fastened with sheet metal screws. The appearance of the wing tips shown on the plans is good, and flies equally as well, but in order to save weight a silk-covered frame with equal angle from top to bottom of wing can be used for the tips, if desired. Different tips will not affect the flight enough to matter.

Since the original plans were drawn, I have found that the plywood doublers on the fuselage are of little value, so I recommend using 3/32" sheeting for the sides and doublers. This seems to be just as strong in a crash and has the additional advantage of saving some weight. If you build as I do, all these little things which will save weight will make the difference between a seven and an eight pound airplane!

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