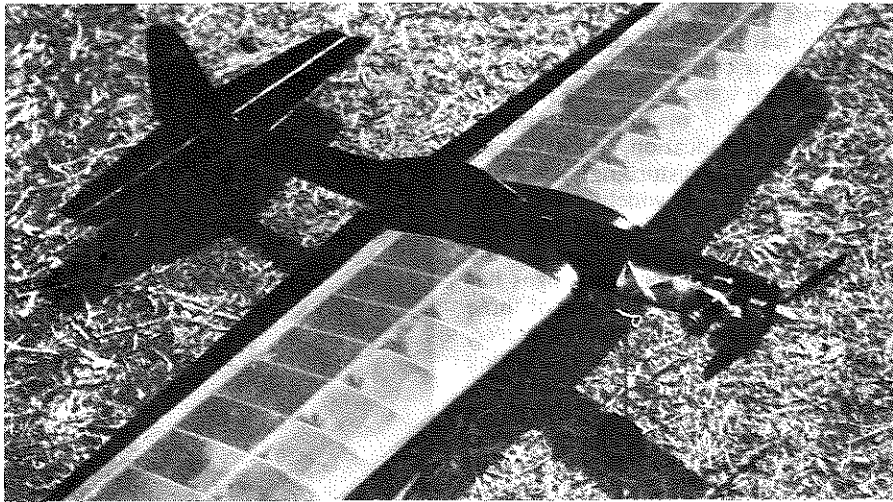


Star

INTERCEPTOR



1/2A C/L STUNT

By FELIPE ALVIREZ . . . Winner of Senior 1/2A Stunt at the 1976 Nationals, in the hands of Leonardo Silva. A popular new event .

• Having talked to many friends about their needs or wishes about control line aerobatic planes, I have found that most of them look for, or would like to have a plane with the following features:

1. Inexpensive
2. Easy to build
3. Easy to get, unsophisticated components
4. Easy to handle and carry to the flying field
5. Low operating costs
6. Strong, to take great punishment
7. Can be flown almost any place
8. Capable of flying the complete competition pattern.

That's too much for a plane, isn't it? Wrong! When I sat down, trying to find if it could be done, I chose the TD .049 (or .051) for being an incredibly powerful engine, very light, easy to get, and with availability of all spares. After several calculations of lift, drag and weight, emerged a plane of 34 in. wingspan, with 255 sq. in. of wing area; weighing 8 oz., and that flew the pattern easily. Not only that, it is the only plane that I have seen that, while performing the pattern, has crashed vertically against the grass, coming from that without damage.

You have to watch this plane flying to believe it, from both positions; outside the circle, as spectator, or at the handle, to see that I am not kidding.

And you will enjoy it a lot by the way. Since 1968, when I designed the basic plane, and just making a few modifications to date, I have seen this craft in the hands of youths (from eleven up) who had a background of only a Baby Flite Streak or similar plane, enjoying it and learning the entire pattern with ease. Of course, I taught them how to build and fly it, but what they got in a very short time was tremendous skill, comparable only to what many men who I know have acquired several years and many planes later. Even if the plane was designed with the purpose of popularizing advanced stunt in a nutshell, for everybody, I am certain it will catch more with youngsters, as their budgets and preference of not so big planes put it in a favored place.

As in any plane, the most important thing is the wing . . . it was designed with an airfoil thick enough for generating all the lift necessary for tight consecutive loops and corners, and enough drag for slowing down the plane sufficiently for thinking what you are doing, and allowing a very strong but light structure. The sweepback was embodied to eliminate the tendency to yaw and shake into a corner, that is often found with constant chord wings. The inner panel is 1 inch longer than the outer, for added line tension in overhead maneuvers, and the flaps help a lot in tighten-

ing the figures. The positioning of the stabilizer allows extra-short takeoffs in very rough fields without nosing over, when you give it full "up" signal momentarily (it flies in practically any grass field). One extra bonus . . . most of the boys fly it with standard dacron lines of 43 ft. (cheap!)

CONSTRUCTION:

Building the plane does not represent a difficult task. It was designed to build quickly and does not demand any particular skill. Although it is very simple to build and employs standard techniques, it is advisable to have some previous experience building and flying model airplanes (if you have built planes like the Top Flite Junior Aces or Sterling Baby Ringmaster you are OK), for this little bomb will outmaneuver you if you have not tried basic stunt before. Remember that it flies like the big ones, but its response is much faster!

The main ideas to keep in mind are:

1. Double cement all the joints, but use the cement sparingly.
2. When sanding, round all edges for streamliness and lightness.
3. Cover the wing with Japanese tissue and just clear dope it. Paint only wooden surfaces. Paint weighs much more than clear dope.
4. If you prefer, use some of the plastic coverings, like Super Monokote. They really build light.
5. Become accustomed to use mufflers. Tatone and Cox have some very efficient ones. They will help you more than any other thing, to obtain or to keep flying sites available. And it is more pleasing to fly a silent machine. Easy with the nerves.

WING:

Cut the ribs by the lazy boy method, making 1/32 plywood or tin can templates of the root and tip ribs, and then sandwich as many rectangles as ribs needed and slice the surplus wood, cutting the grooves for the spars, leading, and trailing edges. For the left wing, it is time to punch the holes for the leadouts. After this, carefully mark each rib and remove 1/16 off from the upper and lower edges of ribs Nos. 1 and 2 (it's for the planking). Sand smoothly but don't round the corners.

The wing is built by pinning down the lower portion of the trailing edge to its place on the plan, then tracing the position of the ribs in the spars and leading edge and then assembling all the

ribs to the spars, with the help of pins and rubber bands. At this step, place the bellcrank platform (already drilled for the bellcrank screw), in the grooves of Nos. 1 and 2. Then pin down some scraps of balsa in four or five places along the position of the spars, for shimming the lower spar, and pin down the aft portion of the ribs to the lower trailing edge, checking for alignment (ribs vertical and square to the trailing edge). Then pin the leading edge, and after checking for alignment, glue all joints. Let it dry thoroughly and remove the pins that fix the ribs to the trailing edge and to the board, cementing the upper portion of the trailing edge to the ribs. *Let it dry overnight.*

After removing the wing from the board, cement the remaining joints and check for warps. If any, steam the wing and place it on the board. Put some *Model Builder* magazines (they are thicker and will transmit more wisdom to your plane) over the lifted portions and let the wing dry overnight. Once straight, glue the wing tips and reinforce the bellcrank platform with 1/8 sq. strips. Note that the platform protrudes 1/8 through the ribs, for reinforcing it in both sides of the ribs.

Bend the flexible leadouts (Perfect No. 232) over the bellcrank (check for freedom of movements) and wrap about a 1/2 inch with thin copper wire and solder. Bend the 1/16 wire pushrod and hook it to the bellcrank, placing a keeper (Perfect No. 248) so you won't worry about some day your plane going amuck. Never run risks. Do not use solder to fix the push rods, because it may become brittle unexpectedly and you lose a plane. If the keepers are not available, bend some from paper clips. Bolt the bellcrank, making sure everything runs free and then put a blob of cement or

epoxy on the bellcrank's nut for avoiding that someday it will become loose.

Plank the center section and sand the wing thoroughly (round off the leading edge). Sandwich the counterweight with some scraps of 1/16 balsa. Now your wing is ready for installing it on the fuselage.

FUSELAGE:

Use maple for the engine bearers (1/2 by 3/8 sliced in half, so you will have two bearers of 3/8 x 1/4) that will fit the wing's curvature, resting on the wing plank. Glue them in place, sandwiching the nose with 1/16 plywood. Do not forget to glue the cockpit in place, for it gives added strength to the joint of the nose to the wing. Glue stab platform, dorsal fin and rudder (check left turn indicated), let it dry, and sand to shape.

ASSEMBLY:

Glue the wing to the fuselage (square it in front on top view), let it dry overnight (or epoxy), and glue the reinforcing cloth. Never underestimate its strength, as it distributes the strain on a larger area and avoids vibration as well. Now place the flap horn (Clary 6781, small), drilling a 1/16 hole in the fuselage behind the trailing edge and inserting it from the right side, connecting the pushrods and the keepers, drilling a 1/16 hole in each flap at the horn position, and aligning both from the rear so one will not be higher than the other. Bend the horn (with flaps removed) until they are aligned. Glue the flaps in place with the cloth hinges.

Cut, sand, and assemble the elevator and stabilizer. Install the elevator horn in place (Perfect No. 231) and connect the elevator pushrod and, with flap leveled, position the stabilizer in place, moving it back and forth until the elevator is leveled too. Mark its position and glue it in place, square it and pin it down, letting it dry completely. Glue

the reinforcing triangles and cloth. This procedure gives you a perfect alignment between wing flaps and elevator, and insures you that the plane will fly the same on both inside and outside maneuvers.

Center the fuel tank (Perfect No. 20) with the engine's thrust line, trace its position and drill the mounting holes accurately, for it will pay you. A slightly lower or higher tank position gives different engine run when flying inverted or performing inside and outside maneuvers. Trace and drill engine's mounting holes, checking with propeller vertical to avoid up or down thrust. Place two washers on front bolts between engine and plane. Bend the landing gear (use C.G. 1-3/8 wheels, they are light!) Finish details, sand, cover, dope, paint and install everything. Now, the great moment.

FLYING:

One word about balancing the model. It is recommended to build the plane light. This way it will fly better and will level a little nose heavy. It is convenient for the first flights for familiarizing with its characteristics, before you try to learn or improve on all the maneuvers in the book. Then you can add some weight (some small coins or solder glued on the bottom surface of the stabilizer will work) until it makes all the corners as you dreamed. It is easier and lighter to add some weight to the tail than to the nose.

If you are learning maneuvers, try to receive some advice from an expert (better if he flies with you), organize your friends in groups (or clubs, categories), try to help the newcomers, keep learning and don't hesitate to write us about any question or comments about the plane and how to organize a club and, over all, enjoy flying it! ●