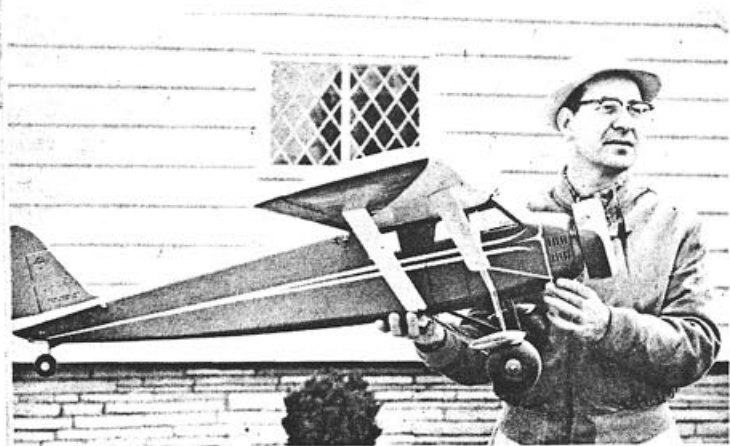


by CHESTER D. LANZO

Increased dihedral and stunt type airfoil only noticeable departures from true scale. Even rib spacing, spar positions, are to scale.

From Wylam plans, an all-time great designer produces an RC scale job that will

go down in history. For multi, up to .45, it stunts like crazy. Stable for single.



Automatic caption machine speechless, for once. Chet a top man in rubber, gas, scale and radio—flew RC at the Nationals in 1937.

Stinson S ... for R.C.

In distinctive, authentic Stinson color scheme, Chet's lovely oldtimer is a six-foot job, weighing 6½ pounds for 5½ sq. ft. of wing area.

► The Junior Model "S" was probably the most well-known of all the airplanes produced by Stinson. Powered with a 215 h.p. Lycoming engine, this ship was produced in large quantities from 1928 to 1933.

An attempt to produce a good-flying-scale airplane with most of the properties of a contest type radio-control stunt airplane was the main reason for modeling the Stinson "S". An effort was also made to incorporate as many as possible sound ideas used in conventional scale models.

The model has a wingspan of 72" and a chord of 11" giving a wing area of 5½ sq. feet. The total weight with radio is 6½ lbs. Landing gear is of a semi-torsion type with large airwheels for good take-offs. Power is a horizontal K&B 45 with simple radial mounting. Using an 8-channel reed receiver, the following movable controls are obtained: full-trim motor speed, steerable tail wheel, ailerons, elevators and rudder.

Stinson Model "S" bears a striking resemblance to modern day contest RC ships. Tail areas, wing areas, dihedral, landing gear, nose- and tail-moment arms, as well as side fuselage area and depth might lead one to believe this is where some of the present day contest designs were obtained.

Wing: The big Stinson used a wing section similar to the Clark Y. But to improve the inverted flying characteristics of the model the NACA 2415, a fairly thick section, was substituted. Also, an additional amount of dihedral produces a stable model with good spiral recovery. The wing is built in two pieces; the (Continued on page 59)



left panel is shown on the drawing. To make the right panel, just pin the trailing edge in place of the leading edge; because the rib spacing is identical you will have the opposite panel. After the two panels are built add the $\frac{1}{8}$ " plywood dihedral braces and join to give the $3\frac{1}{2}$ " dihedral at each wing tip. Notice that the strut-retaining tubes are braced and cemented in place before covering. Movable ailerons may be omitted to greatly simplify construction of the wing. The leading edge is sheeted with hard $1/16$ " on both the top and bottom surfaces. The top and bottom of the center-section are also sheeted—also the trailing edge—with $1/16$ " balsa.

The wing is mounted so as to knock off forward in a hard landing; this proves to be a very effective method of absorbing shock in a nose-first landing. Two degrees of incidence in the wing and one degree negative in the stabilizer gives a total of plus three. This amount of longitudinal dihedral produces good dive-recovery characteristics. All rib spacing is similar to the full size ship and spars are placed in the original positions. The use of solid balsa wing tips allows the wing to absorb abuse encountered in flying. Ailerons of soft balsa further simplify wing construction and increases the ability of the surface to take punishment.

The CG (center of gravity) should check out at 33% of the wing chord as shown on the drawing—this is 3% from the leading edge. For rudder-only single-channel flying, to make the ship a bit more lively the CG may be shifted to 40%. This will require changing the stab to zero degrees incidence.

Fuselage: Spruce longerons are used as they seem to take shock much better than balsa. Fill in the sides between the uprights with $3/16$ " cross pieces on both the top and the bottoms of the frame. After all cross pieces are in place, add formers to the top rear of the fuselage and also plank. The flat portion of the body sides is also planked with $\frac{1}{8}$ " sheet balsa. Solid balsa blocks are cemented to top and bottom of nose section and blended into the contour of the fuselage. A $\frac{1}{8}$ " thick plywood firewall is cemented to a $\frac{1}{8}$ " balsa back-up block to provide a solid mounting for the tapered radial mount.

A $\frac{1}{8}$ " plywood floor is placed in the bottom of the fuselage for mounting of all the radio equipment and servos. One-sixteenth Plexiglass was used for windows but celluloid could be substituted.

After the $\frac{1}{8}$ " wire landing gear is bent to shape and installed against the $\frac{1}{8}$ " plywood floor with "J" bolts, $\frac{1}{8}$ " x $\frac{3}{8}$ " balsa is blended into a streamline shape to simulate the actual landing gear struts. Cover struts with nylon.

If the weight is kept at 6½ lbs., the Torpedo .45 should be adequate power. Mounted behind the firewall is a Dmeco 4-oz. clank tank. The .45 engine runs about 10 minutes with this tank. The horizontal mounting of the engine will allow the exhaust to be deflected downward and away from the plane rather than up and over. The little fenders that fit over the wheels are carved from solid balsa and then covered with nylon to increase their strength. A .030" wire support is bent to fit under the fender and is held against the $\frac{1}{8}$ " tube hydraulic shock strut with $1/32$ " x $\frac{1}{8}$ " brass collar soldered in place.

The four wing struts are shaped from $5/16$ " sheet balsa to a streamlined contour. One-sixteenth diameter wire rods are imbedded into them and are used to hold the struts to the wing. At the body, small hooks similar to the ones used on the servos, hold the struts in position. When test flying, all of the struts as well as the fenders and motor cowling are removed to prevent

damage until the airplane is fully trimmed out. With the engine cowling in place a small metal clip is placed over the glow plug and extends outward so that an electrical connection may be made to the glow plug.

The airwheels are Trexlers and have an advantage in that they can be blown up to the diameter specified. After sanding the cowling to shape cover with nylon or fiberglass. Fiberglass will give a more durable unit. The cowl so mounted that upon hitting an object it will deflect at a hinged point on the motor mount.

Rudder and Fin: Construction of the fin is $\frac{1}{8}$ " sheet balsa, streamlined to the section shown on the drawing. Upper balance over rudder is also $\frac{1}{8}$ " sheet as well as the trailing edges, which are cut from $\frac{1}{8}$ " sheet balsa. Hinges are the old reliable figure-8 type made of heavy nylon cloth cemented after the covering is completed.

Stabilizer: The leading edge on the stabilizer might appear to be a problem but is very easily bent from $\frac{1}{8}$ " sq. spruce over the mouth of a steaming kettle. Use heavy gloves to protect the hands in the process. If this can't be done, construct the leading edge from $\frac{1}{8}$ " x $\frac{1}{8}$ " sheet balsa instead. The ribs are pieces of $\frac{1}{8}$ " x $\frac{1}{8}$ " balsa which are sanded to shape after the stabilizer and elevator assembly is completed. The fin is cemented solidly in place in a neutral position on top of the stabilizer. Both stabilizer and rudder are removable as a single unit.

Color Scheme: The model was covered with nylon and then given three coats of clear butyrate dope, followed by two coats of colored butyrate. Color scheme may be any combination of dark and light colors separated by a thin pin stripe. I used Cadillac red and cream with a black pin stripe. Under carriage was painted red and all struts cream.

Radio Installation: Shown is a typical installation for an orbit 8-channel receiver. Any other type receiver may be substituted. Shift the whole unit forward or back to change CG position. Motor control servo will have to be placed on side best suited for particular throttle used.

Flying: The Stinson behaves similar in every respect to most stunt-type RC contest models. Just be sure that you have adequate flying speed at all times, especially when flying close to the ground. A stall will usually allow one wing tip to drop with a resulting rapid loss of about 25 ft. of altitude before pull out.

When test hopping the Stinson, remove the cowling and all struts for the first flights to cut down on damage to these parts. (They don't add anything to the flying qualities of the plane but just make it look pretty.) Check on the CG position and make sure it is situated as shown on the drawings. No flying should be attempted with the CG aft of the position shown. Placing the CG back of the point shown will cause the model to stall in flight with a resulting tendency to spin at the crest of each stall making the model almost impossible to control.

The movable portion of the rudder is large on the Stinson, so for the first flights place the rudder pushrod in the outer most hole on the rudder horn. While in flight never hold full rudder for a long period. It is best to give short pulses of control rather than prolonged holdings.

A take off is probably the best way to get a new plane into the air and this is best accomplished on a smooth field or runway. Never pull the ship off the ground by giving up control to the elevator for a long period. This is tricky and the resulting stall and quick fall off on a wing tip will usually bruise your model badly. If

the field is not adequate for a fast clean take-off, hand launching may be tried. Grasp the fuselage with the left hand below the landing gear and with the right hand placed near the leading edge of the stabilizer, run forward into the wind at a fast pace and push the model smartly forward with the right hand allowing the ship to be airborne.

The inside loop is probably the easiest maneuver to perform and the Stinson does this very well. After the model is airborne with about 200 ft. of altitude, head it into the wind and level off the wings with the horizon. Next apply a little down elevator to gain speed, then pull up elevator until the ship has almost completed the loop. Just before coming to horizontal position, neutralize the controls. Outside loops are made in the same manner but with more altitude. Rolls are made easily with the Stinson as they are slow and very deliberate and, because of this, allow adequate altitude. Just hold the ailerons in full right or left position along with high speed engine and roll will result. Neutralize controls just before the wings are horizontal. Spins are not difficult with the Stinson. Put the engine in low speed and apply quick and short blips of up elevator until the model stalls, holding full up and with the application of full right or left rudder one wing will fall off and the model will start into the spin. Hold the controls until you wish the spin to cease, neutralize and the ship will pull out of the spin automatically without further application of control.

Inverted flying is best accomplished by placing the engine in high speed and doing one half inside loop, and then giving full up elevator for a short period until the model is flying level inverted. Apply right or left rudder to restore any tendency to fall off on either side. Full down elevator will return the ship to normal flight. For power landings, apply low power to the engine and head into the wind until about 2 ft. off the ground. Next, apply a quick short blip of up elevator to drop the tail. Do not hold up elevator long as it will result in a stall. The glide flight of the Stinson is excellent and no trouble should be experienced in deadstick landings. Some difficulty was experienced with elevator flutter in high speed dives with engine at full throttle. This was easily corrected by adding a counter balance of about $\frac{1}{4}$ oz. of lead on a $1/32$ inch wire rod extending forward of the elevator hinge points about $1\frac{1}{2}$ inches. Place at each tip of the elevator. On your ship this might not prove necessary.