



KIT REVIEW

No.
102

Sterling
MODELS

STINSON RELIANT

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THE STINSON RELIANT is a beautiful example of those smaller transports from the early thirties that heralded the golden age of American continental flying. Apparently designed in the discipline of what looks right must be right many facets of this handsome tubby little aircraft, particularly the cabin arrangements, became the design standard for its genre, introducing motor car space and comfort to light aviation. It was likened to an automobile passenger compartment dropped into the airframe behind the ample Lycoming radial, the resulting cabin was a full four and a half feet wide which is an excellent characteristic for radio installation in the model.

Immensely versatile the 'Gullwings' became all things to all people in the light aircraft world, from the busy thirties to the fighting forties, establishing along the way a reputation for superb handling, rugged serviceability and excellent load carrying. One is still reputed to be flying the island mails of the Maine coast and there are of course the treasured examples here and in France.

Sterling Models have chosen to present this close to scale version at a span of 58 ins. for four function control and a stated power range from .40 to .56. The choice is a good one, as the aircraft has great visual appeal and character with its elegant wingform blending into the bulbous fuselage, there is a spatted undercarriage and a big radial cowling that bristles with valve-gear blisters. Many were used as executive aircraft, before the term was coined, and most owners were given to exotic colour schemes which are always stimulating to the modeller's interest.

Finding information about the fullsize was a little difficult and I failed to find a complete descriptive article; there is, however, an excellent reference on the kit plan with a nice set of scale drawings which include actual construction and show many dimensions and specifications. The model is a very accurate scale shape and has many scale sections but without any pretensions to Class 1. Tailplane and fin/rudder outlines are accurate but are built as flat plates whereas the fullsize employed rounded and tapering sections.

The model is of conventional balsa and ply construction with ABS plastic vac-mouldings provided for the engine cowling, undercarriage leg fairings and wheel spats.

The kit contained an impressive pile of wood, the bulk being taken up by six sheets of die-cut ply, 21 sheets of die-cut balsa, 20 plain balsa sheets and a large pack of stripwood. Also included are shaped block wing tips and aileron parts plus a couple of other blocks for the fuselage. The remainder of the inventory is

taken up by the nicely detailed ABS mouldings, formed wire undercarriage, all other necessary wire, control horns, connectors, engine mount, nuts, bolts and screws, a decal sheet and a very nice double sided plan which includes sequential building instructions and assembly sketches.

The balsa was of good quality and the die cutting crisp, the ply, however, although light, was quite brittle and splintery and in places the die cutting had suffered as a consequence. Most ply components needed to be helped out of the sheets with a sharp knife and cleaned up with a small file, but the foregoing did not inhibit the fit or finish. The whole is presented in an attractive carton decorated with a colour photograph of a completed model which is handy as a finishing reference.

CONSTRUCTION

I started by separating the die-cut parts from their sheets and the healthy pile of numbered components whetted the appetite for the work to come.

WING

Following my normal routine, I first built the wing, and a very interesting structure it is, in three separate sections i.e. the two individual wing panels and a shoulder fairing. Each wing panel has two distinct bays, with slight reverse taper out to 25 per cent span where the greatest chord and thickness occur, then tapering sharply in both plan and section to an elegant rounded tip. The section varies from rib to rib but is generally semi-symmetrical.

The crux of the wing both in strength and form is a single 1/8 in. balsa sheet spar, to which the inner ribs are slotted 'egg-crate' fashion. This full depth spar runs from the root to the point of maximum chord and when the wing is finally assembled as one piece the ply wing braces butt up to be glued to it. The wing is built with the whole trailing edge touching the building board and the bottom spar pinned down. The washout on the outer panel is achieved by elevating the inner end of the spar on an integral tab so that the leading edge at the root tilts up a full 1 3/4 ins. Apart from the great twist the wing is of conventional construction with the outer panels consisting of ribs mounted between top and bottom spars then sheeted top and bottom forward of the spars. Stout 1/4 in. sheet locating pieces are provided for the ailerons, which themselves are solid but light, completely preshaped and merely need a mitre at the ends to fit them. The tips are pre-cut balsa blocks.

Care must be exercised when producing the leading edges, from the 3/8 in. square provided,

as there is a considerable change of section along the length, but this is well shown on the plan and I found it convenient to roughly shape two handed pieces just oversize before offering them up to the ribs. The centre section is a simple egg crate of die cut components, built flat, sheeted on the top side to produce the characteristic hump back of the aircraft. Wing braces are integral with the centre section and the individual wing panels are slipped on the ends for final assembly. The wing locates to the fuselage with two front dowels and a single bolt at the rear.

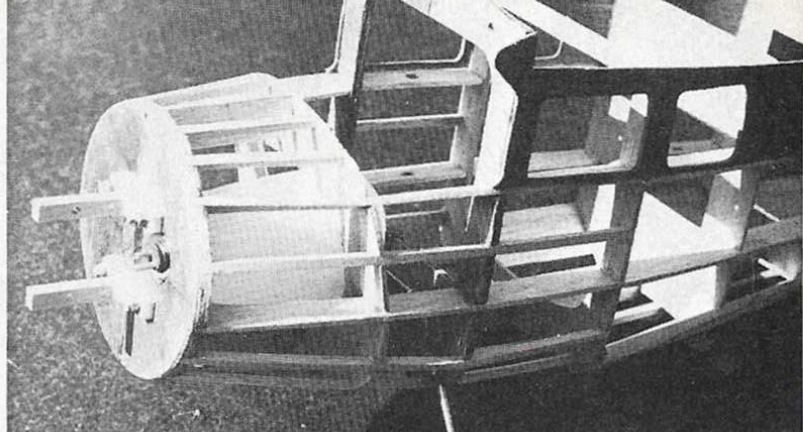
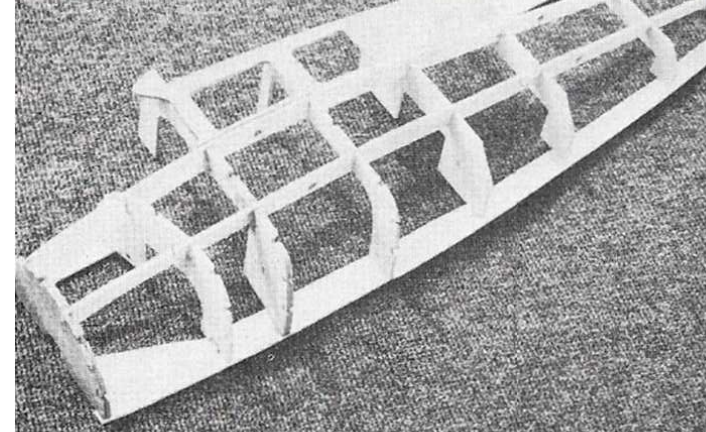
FUSELAGE

After some preliminary work which includes the preparation of laminated formers, construction of the fuselage can proceed. A five part crutch is set up over the plan and the port side is built up of half formers on this outline. The two main side keels are die cut so there is no bending stress (just a bit of a twist) and they are slotted into the formers, a touch of fit and fiddle is required here but when this operation is complete the assembly has rigidity and shape.

To achieve the rather large corner radii aft of the cabin, top and bottom longerons are cut from 3/8 in. sheet and laid on the mitred corners of the formers to be carved to shape later. Before lifting the half shell from the board the pre-cut ply cabin window piece is glued into position. The starboard side can now be made in the same fashion and the basic fuselage is complete.

The single main undercarriage wire is attached to the front cabin former with a four small 'J' bolts provided, making a strong but flexible base for the gear. There is a very sharp change of section between firewall and cabin, going from circular to slabside with generous corner radius. Stringers slotted into formers are used to generate this shape, which is then covered with 3/32 in. sheet which must be applied wet to get the curvature. The rear fuselage is made with the keels and stringers standing proud of the formers so producing unbroken flowing lines from cabin to tail. Final shape is obtained by rounding the corner longerons to the correct section and sanding to a sympathetic line to the stringers. Fin and tailplane fit into their respective slots to produce a stiff strong tail structure and the tail-wheel support wire is bound and glued to the bottom keel, thus completing work on the rear fuselage.

Moving forward, the wing fairing 'eyebrow' is fitted to the cabin and then the small dowel transparency supports. The acetate sheet windows are not fitted until colour finishing is



complete and not until the pushrods are placed in position for the last time. The pattern on the plan for the windscreen is badly wrong so a paper 'try-shape' must be made before cutting the acetate.

Two 'T' shaped aluminium brackets are provided to mount the engine and it is a simple task to set up the engine, without side or down thrust, on the firewall. Due to the limited depth of the cowl the rear of the crankcase is very close to the front bulkhead, which necessitates bringing the business end of the fuel tank out at the port (non exhaust) side of the engine. This in turn requires that the tank is placed diagonally in the nose section but the visible intrusion into the cabin is small.

And so the plastic parts. The engine cowl is a basic bowl to which the 18 individual valve gear fairings are cemented but I waited until the engine had been fitted and all necessary cutouts made before fitting the blisters. They must be cut from the single sheet in which they are moulded, a fiddly job but a satisfying result. The main cowl piece has a representation of the nine cylinder engine in the intake which when painted up looks quite realistic even though generous cut-outs must be made for cooling/breathing. Using self tapping screws the complete cowl is mounted on four small hardwood blocks glued to the front bulkhead. Fitting a commercial silencer would involve a large cut-out in the cowl and the pipe breaking the bottom line of the fuselage so I built a small special to fit in the space available. I fitted an OS 40 which has power in hand to fly the model.

Fairing in the undercarriage and making the integral wing struts is a major job. The upper fairing is a large hollow ABS moulding blending into a tapering two piece balsa leg fairing which is epoxied sandwich fashion over the leg wire. First the end of the plastic moulding is shaped to mate perfectly to the curved underside of the fuselage and then glued firmly in position. Next the light gauge wires for the wing struts are prepared to the correct length with an eye to take a self tapper at one end and bent to an angle at the other, this angled piece is then bound and soldered in position at the top of the undercarriage leg. Finally the balsa fairing parts can be rough shaped, glued in position and finished to complete the leg. This fairing must be chamfered at the top, where it meets the plastic part, to provide a flexing clearance. The wing strut is simply faired with

sheet balsa and sanded to shape.

All that is now required is to make up the spats, each from two half shells with the inner shell recessed to take the vertical leg wire. They are supposed to be retained in position by the fitting of the wheel and the pressure of the leg fairing but I wasn't happy. I fitted two 6BA blind nuts inside the spat, these are encapsulated in layers of offcut plastic sheet and cement, and mine now sports aluminium straps which hold the spats firmly to the undercarriage with 6BA screws. The whole gear took twelve hours to fit and finish but it looks very pretty.

With all the room available radio installation is easy, the kit instructions merely give an indication of position so I chose to mount the switch and servos on rails set across the cabin with the battery and receiver immediately ahead of the front rail. A word of caution, the aircraft is very short coupled and could come out nose heavy. I waited until a good C of G assessment could be made before deciding on battery and servo location.

Finishing and Flying

I covered the completed model with nylon and used a spray finish, bright orange-red and cream with a black pinstripe trim. The transfers are high quality and the large registration letters on the top surface of the wing accepted the crests and hollows along the ribs without problems.

Ready to fly, fuelled up, the point of balance came out just marginally in front of the maker's ideal, and in the absence of any kit instructions on the subject all control surfaces were set to maximum movement for the first air check.

Full power was used for the first take off and after a straight short run the Stinson was airborne in a steady climb requiring only a little down elevator trim to stay comfortable. Then when the model had reached about 100 ft., near disaster overtook us as it pitched down then up and rolled to the right with the engine exercising through its range without selection. The turn back towards the transmitter was more fortunate than controlled and an unsightly downwind dump was achieved on the grass, with the engine still showing its paces unasked. Some interference! Surprisingly the damage was confined to grazed wing tips and a sprung undercart.

Next day, the undercarriage restored to true (30 minutes' work) weather conditions were

Above left: compound curved fuselage shape is produced by 'old fashioned' methods in two halves seen joined together above right before sheet balsa covering.

about the same and I tried again. Another straight run was followed by a good climb and a gentle turn downwind at a safe height, two facts were immediately obvious; the full power of the .40 is too much meat for this little ship and control was over critical, particularly the elevator. I must also admit to overcontrolling a little in memory of the alarms of the previous day, but with the engine throttled back and a little finesse on the sticks the aircraft flew well and looked very realistic. The stall check was something of a non event, as the speed decreased the model assumed an exaggerated nose high attitude and then, very gently, pitched down with wings level when the stall eventually came.

The glide is very shallow and the first landing revealed good control response at low speed. After reducing the control movements we were off again using two-thirds power for take off and operating throttled well back to give a realistic scale speed. Loops are true but tend to be abrupt and care must be exercised not to introduce the slightest aileron movement or it goes all over the shop, rolls are barrelled but this seems fair considering the layout and nature of the model. I would be happy just making low fly-bys just to watch it bustle aggressively past all day.

I enjoy building models as much as flying them and there is plenty of work in this one which took a long time but I did linger over the finish. The kit must rate as a good one, it flies a treat and looks realistic and very pretty in the air, but it must be remembered to set the total elevator movement at three-quarters of an inch maximum, measured at the trailing edge, or the sharp control in pitch will bite. I feel that the power range is overstated and mine would certainly go on a good .30. The Gullwing will be treasured and I hope to keep it a long time.

Distributor: Ripmax Ltd., Green Lane, Enfield, Middlesex. **Price:** £45.90.

Below left: the plastic mouldings referred to in the text are seen here. **Right:** colourful livery of the Akron Zinc Corporation detailed in the kit results in an attractive model.

