

SOUTHERN SAILPLANES - RICOCHET.

by Klaus Weiss.

Southern Sailplanes is a well known name amongst the Australian modelling fraternity, particularly those who fly slope or thermal sailplanes.

The Ricochet range is not new, having first come to prominence in 1981, where in its untried condition, it was flown to a respectable 10th place at the World Championships, in a field of 66 International competitors. Not a bad introduction to the contest scene.

Since that introduction, the Ricochet has undergone many design enhancements, and is a very classy performer both on the slope and off the flat field.

The Ricochet has been designed in such a way, that any one of five wing kits can be used on the one fuselage, effectively providing the modeller with a 'range' of different models, for the price of a specific wing kit. (An initial, complete kit must be bought first.)

The Ricochet has plug in wings in the following configurations;

The Sport Wing, which is a 2.51m span, foam core wing with balsa sheeting. It performs well on the slope or thermal flying.

The Thermal Wing, is also 2.51m span and has a composite, foam 'D' box, with balsa ribbed trailing edge. This wing offers contest performance on the flat field.

The Bullet Wing, has a 2.2m span and has been designed to give outstanding performance on the slope. With these wings plugged in, and with ballast, the Ricochet is transformed into a speed machine, yet can still be flown at a sedate speed. The Bullet wings have flaps and ailerons, with optional spoilers.

The Slope wings, span 2.07m, and as the name suggests, have been designed to be used on the slope. This version is responsive and aerobatic, and can be flown in fairly light winds.

The Unlimited Wing, is the latest version in the Ricochet line, with a span of 2.75m and five function control. It can be flown off the slope or in thermal competition, which is the role for which it has been designed. The Unlimited Class Ricochet is able to be flown in many conditions which would ground many other designs. The ULC Ricochet has ballast tubes in the wings, and these can be loaded with, up to, 462gm (16.3 oz) of #2 ball sinkers or steel rods of suitable lengths, when conditions dictate the use of ballast.

This kit is without doubt, one of the most outstanding sailplane kits available in Australia, at the time of writing, and offers the versatility to become a range of 'different' models, just by plugging in one of the available wing kits.

This review covers the ULC version, which utilises the tried and proven Eppler 205 wing section.

THE KIT.

Comes delivered to the front door by courier, and is housed in a very large box. The contents are packed neatly, and when removed from the box, give the impression of a quick build time. First impressions are not always correct however, and there is a fair amount of building involved in this kit.

The wings and tailplane are cut from white foam and are of a very high standard. They need to be sheeted with balsa, but all the slots, holes and bays are pre-cut, saving a lot of fiddly work trying to get things to fit properly.

The fuselage is finished in a brilliant white gelcoat finish, which is better than that found on many, more expensive kits. It has been laid up with chopped strand/mat, with a specially formulated, high impact strength resin. Critical stress areas have been built up, to give optimum strength, adding further protection in the advent of a hard landing or crash.

The ULC Ricochet kit contains all of the hardware required to complete the kit, and a comprehensive, 26 page instruction booklet, to assist in the construction sequence.



CONSTRUCTION.

It is probably easier to follow the sequence, as outlined in the booklet, so commence with the wings. The wings must finish up straight, or the performance will suffer. No bows or twists, thanks.

Glue the 1.5mm balsa sheets together, to form the wing skins. Be careful with the glue joints, as we are aiming for a near perfect, flat sheet, with invisible joints. When the sheets have been successfully joined, cut them to size, making up a top and bottom wing skin. Splice in the tip extension balsa sheet. Don't be tempted to butt glue the tip sections. The outlined splice is very easy to do and will maintain strength, whilst resisting bowing stresses.

Glue the foam tip section to the main cores, using 30 min epoxy. Leave the cores in their jackets and maybe place some weight on top of them while they cure. Remember to slide

the top and bottom jackets away from the glue joint, by a few millimetres, as we don't want them glued onto the cores. The cores have been cut with slots for 'snakes' to control the ailerons, so if you want 4 servo controls in the wings, you need to cut the recesses yourself.

The Ricochet was designed before the popular use of the computer radio, so has been designed for use with servos mounted in the fuselage. When flown with a computer radio, the model can make use of the many functions and mixes available. Handling is enhanced, with the use of aileron/rudder coupling, crow, flap/elevator mixing, T.E. camber, differential, etc, etc, etc.

If you do not have a computer radio, then Southern Sailplanes has details for setting up a number of mechanical mixers, in their Bullet Wing instruction booklet. Prepare the cores, by lightly sanding, and removing the 'angel hair'. Epoxy the dihedral tubes in place, as outlined. If using spoilers, then prepare the bays and also the aileron control rod recesses, prior to sheeting with balsa.

Southern Sailplanes recommends Bostik Latex #12 for sheeting the wings, but I prefer to use wing sheeting epoxy resin, and did so on this occasion. When you use a contact adhesive, such as latex, you only get one shot at proper alignment of the skins. If you make a mistake with the resin, it is an easy matter to lift off the sheet and realign it, as the resin I use takes an hour or more to go off. Do the top and bottom skins at the same time. Lay the sheeted cores back in the jackets and pile on weight, or if you have a press or vacuum bagging equipment, do them that way. Leave them to cure for at least 24 hours. When you remove them from the jackets, trim the sheeting and glue on the leading edge and tip blocks. Shape to the correct profile, and if fitting spoilers, cut out the sheet above the pre-cut bays. Fit the spoilers and set the wing aside.

Open up the access holes in the fuselage. Drill the holes undersize, and finish off with a needle file, as the gelcoat will chip away and leave a marred finish on an otherwise perfect fuselage, if you attempt to drill out to full size. A Dremel tool comes in very handy when opening up the holes, but is by no means a necessity. Slide on the wings and check the fit. Support the fuselage in a cradle (I used a styrene fruit box) and fit both wings. Drill alignment pin holes, as outlined in the instructions, ensuring the wings slide off and on, easily. You don't need to drill and shape the flap drive holes if you are using separate servos, so keep this in mind.

Construct the stabiliser and rudder, in much the same way as you did the wings. Make sure that the stab wires are properly aligned, so that incidence between the stab halves is maintained. Again, sit the cores in their jackets when gluing. When mounting the stabs to the fuselage, make sure that they are square and parallel to the wings, before epoxying the ply cheek plates into the fin. These plates will ensure proper alignment, and prevent slop.

There are no problems involved in the rudder fitting, and the instruction booklet details the steps quite adequately. Do not glue in the rudder and fin post until final hookup, as the control rod, linkage and bellcrank need to be installed prior to this step.

It is now time to cut the ailerons and flaps from the wing. This process is straightforward and well explained. Keep gaps to a minimum on the finished surfaces, and ensure bevels

are even. I used hinge tape on the ailerons and flaps, rather than the Econocote hinging as described in the instructions.

When using fuselage servos, rather than wing servos, the drives and linkages required are a bit fiddly and time consuming to construct, but hang in there and they will all work as they are supposed to. I changed the aileron drive slightly, by inserting a full length brass cable inside the Sullivan inner snake. There is no slop using this method and only a miniscule weight penalty.

The radio installation can be a bit tight, particularly as some of the control rods have to go over the dihedral brace, whilst others need to go under, but everything worked without any sign of binding. Wing servos help a lot in this area, and I would recommend this option. There is no mention of a plywood towhook base in the instructions, so you need to manufacture one and epoxy it in. You need the base to distribute the enormous launching forces, otherwise the hook will definitely pull through the glass fuselage. I covered the Ricochet in Super Monokote, which is a strong covering, available in a large range of colours.

I approached a local graphics company to cut some self adhesive vinyl lettering for me, so that the model would look a little more eye catching, and it succeeded.



FLYING.

The finished weight of the ULC Ricochet was 2.45kg (5.4lbs), with all radio gear installed. An additional 190gm (6.7oz) was required in the nose, to balance at the recommended C.G. Throws were set up as per instructions, for the initial flights.

Ideally, flight testing is a long process, carried out over a month or so, in order to optimise the models performance, but in review kits, this luxury is not usually an option, due to

deadlines etc.

The first flight was carried out on a fine day, with a slight crosswind blowing. The model tracked true up the winch line and only the rudder was used to compensate for the crosswind. This is a clean model and the speed is deceptive, after flying floaters for many years. Trims were not touched, and the Ricochet responded well to all inputs. The landing approach was set up and the Ricochet just flew right on past, inches off the ground, for almost the entire length of the field. Have to be aware of that, in future.

On the next launch, the rudder/aileron coupling was switched on, and the model handling improved a great deal. On landing, the coupled spoiler/flap function was switched on, and the Ricochet virtually stopped in its tracks and was guided down to a spot landing at my feet. Control authority remained positive, and there was little pitch change when the spoiler/flap was deployed. With a little fine tuning, spot landings should be the order of the day. (How come it doesn't always turn out that way during competition?)

The Ricochet is a fast model, but it is also very responsive and forgiving (stable) should a mistake be made. As I said earlier, there is going to be a lot of flight time needed, in order to get the best from this model, and I am sure that the best performance will entail fitting wing servos and utilising the computer radios capabilities.

A trip to the slope saw the wind blowing at a steady 15 knots, with powerful lift. The Ricochet was pushed out into the lift and climbed smoothly out over the ocean. A click of down trim, and the big model was ready for fun. It looked absolutely huge, in comparison to the other slope soarers, but lost nothing in speed. A dive and fly past from height, caught everyone's attention, as the Ricochet has a distinctive whistle, and a couple of lazy rolls on the climb out looked fantastic. A real head turner, this model.

Loops can be large or small, and the inertia of this heavy model carries it back almost to the point where the manoeuvre was commenced. A bit of down flap slows her right down, for some slow speed passes along the slope face. Lots of fun flying this big model on the slope, but the time must come when it needs to be brought in, and on this particular slope, the small piece of turf where you need to land, looked like a tablecloth to me. A few approaches, flaps down, spoilers up, showed that it would slow down very well, but it still needed to yaw around sharply at the same time, in order to face into wind and land facing down the slope. If the big wings came in and hit across the slope, I was sure it would break the fuselage. Oh well, here we come downwind, a coupled turn out over the road and Armco fencing, back into wind, over the low fence, spoilers/flaps out and a gentle drop onto the grass. Easy. Tell my frayed nerves, shaking knees and thumbs, that.

I am looking forward to further flight testing and some competition work with the ULC Ricochet, and indications are that I will not be disappointed. I will buy a set of Bullet wings for the Ricochet and get in some real high speed slope soaring.

The Southern Sailplanes Ricochet is a high performance, world class glider, which has been designed and manufactured in Australia. It is competitively priced and should provide years of enjoyment. Ralph Learmont is quite flexible in the ordering structure of

this model, so give him a call if interested.

There are a lot of developments going on at the moment in the U.S.A. and Europe, in relation to F3B and Unlimited/Open Class sailplanes, but at this point in time, the Ricochet is amongst the forefront. Composite technology is ever progressing, and I am sure that Southern Sailplanes will continue to enhance the manufacturing process, in order to keep up with the ever changing technology, in the meantime, I am going to go out and fly some more.

Review model supplied by Southern Sailplanes, 10 Sturdee Rd, Mitcham Victoria 3132.
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