DAWN TRADING - LUMINA

by Klaus Weiss

The Lumina is an entry level, 2 metre glider, which is manufactured in Australia exclusively for Dawn Trading.

This glider can be used on the slope or for flat field thermal flying and has the option to be converted to electric power as well.

If deciding to build the electric powered option, Dawn Trading recommends the use of the Precedent SLEC motor control, as this allows the model to be controlled with the standard 2 channel transmitter.

If you do build this model as an entry level electric powered glider, then the Precedent 121 Electric conversion kit would be a suitable choice.

The Lumina has been designed with a constant chord, polyhedral wing which should give a good account of itself both on the flat field and on the slope, particularly when wind conditions aren't too strong.

The contents of the kit box are well packaged and the parts are clearly labelled for easy identification. Balsa quality in the review kit was first class and the ribs were machine cut and precise. It was pleasing to receive a kit where the ribs did not have to be punched out of a die cut sheet. All of the necessary hardware came packaged in plastic bags. The only items which required shaping, were the wing leading edge and the noseblock.

Discussions with the manufacturer have resulted in a few changes to the initial kit, including the proposed addition of a pre-shaped leading edge. The plans are comprehensive and sharp. The 14 page instruction booklet should help the newcomer with any difficulties during the construction sequence of the Lumina.

In all, this is a well presented, economical, kit which has been designed and manufactured in Australia.

CONSTRUCTION.

Begin the sequence as outlined in the booklet. Pin down the pre-cut fuselage side F1 and glue the doublers F2 and F3 in place. I used Aliphatic wood glue and pinned the doublers in place until dry.

In the instruction booklet diagram, it shows the 3mm strips stopping at F3, but the bottom strip should be continued through to the end of the fuselage, as shown on the plan. Glue the 9.5mm triangular stock in the location shown in the instruction booklet. Continue as per instructions and make the second side of the fuselage.

Make sure you build an opposite side and do not duplicate the side you have just built. It happens on occasion, even to 'experienced builders.'

Hold the two fuselage sides together and ensure they are identical. If not, then sand

lightly until you get them spot on. Line up the fuselage side over the plan and glue the doublers F1 and F3 in place.

If the instruction booklet and the plans differ, always follow the plans. If you have one of the early Lumina kits, there will not be top and bottom 9.5mm x 5mm pine strips to reinforce the wing saddle and tow hook plate, so make some up and glue them in place.

Use 30 minute epoxy to glue bulkheads F4 and F5 in place. Line up the fuselage sides over the plan view and join them, ensuring everything remains in alignment. Use Cyanoacrylate to glue on the bottom F6, and top F8 & F9. I used epoxy to glue bulkhead F7 in place. You could use Cyano for the entire construction, apart from the wing joiner tubes, if you wish. Lay the fuselage aside for the time being and commence construction of the wings.

WINGS.

Pin the spars in place over the plans, ensuring they are flat and secure. Make sure you do not drive pins through the spars as this will weaken them significantly.

Place the pre-cut ribs over the spars and line them up as per plan. If you have one of the initial kits, you will find that the leading edge of the ribs are some 4mm back from the location shown on the plans. There was an error during the printing of the plans and this will not affect the model in any way. The discrepancy has been rectified in subsequent kits.

When balancing the Lumina, make sure to measure the CG range rather than balance it on the spar location. The wing is straightforward and quick to build. The machine cutting is superb and everything fits precisely. Pin the trailing edge in place, ensuring the ribs are securely butted to it. I used cyano to glue the ribs in place. Continue building the outboard wing as per instructions. I was not impressed with having to shape the leading edge, particularly when the rest of the kit is so well manufactured.

The balsa was quite hard and not easy to shape, especially when sanding close to the ribs. After more discussions with the manufacturer, it will be pleasing to note future kits will have pre-shaped leading edges as well. The instructions for fitting the wing joiner are concise and should not present the builder with any difficulty. Cut the holes through the ribs with the brass tube and save the balsa cut-out disk for later use. I placed a piece of the 9.5mm x 5mm fill balsa in place, to guide the brass tube for the cut through the second rib, ensuring it lined up perfectly. When the fill pieces are glued in place, place the balsa disk back into the brass tube and cyano it in. This will prevent any epoxy from getting into the tube later on. Follow the instructions for gluing the wing joiners in place and they will not move.

Continue building the wing, paying attention that the shear webs are a good fit, as they add rigidity and strength to the wings. Install the dihedral (polyhedral) brace and test fit the inner and outer panels. Make sure everything lines up and then block up the tip section 35mm, (previously 28mm on initial release kits) making sure that the inboard section is pinned down flat on the board and use 30 minute epoxy to glue the brace and ribs in place. Clamp the sections together with clothes pegs or similar and make sure that the wing leading edges are in a straight line. We do not want any forward or rearward sweep when the two wing halves are eventually joined together and banded to the

fuselage. Build the other wing half in the same manner, using the heavy lines on the plan as your guide.

Take care to build the opposite panels to those you have just completed. Finish sheeting the wings and then sand them smooth.

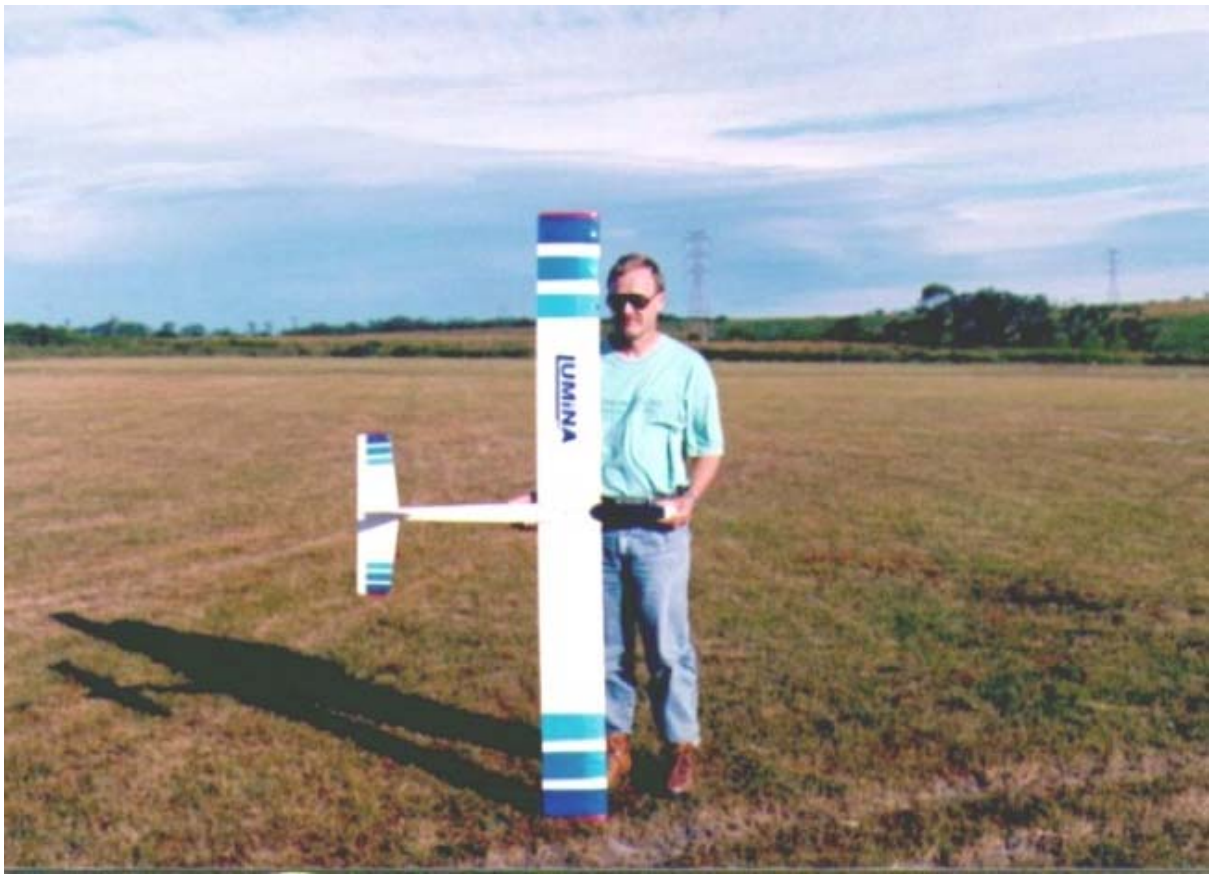
The instruction booklet outlines the options for attaching the nose block and hatch cover for either electric or glider operation. Shape the two items, in similar lines to the plan.

The tailplane is cut to shape and only requires hinging and a slight sanding to shape on the leading edges of the fin and trailing edges of the elevator. The elevator is not tapered, as it was decided an entry model of this nature would not greatly benefit from such a refinement. Bevel the leading edges of the elevator and rudder, after the hinge slots have been cut.

Cut the holes for the wing dowels and fit the tow hook plate into the location shown on the plans. I opted to use a commercial towhook and substituted it for the 1.5mm wire supplied.

The model was covered in *Solarfilm* and the radio gear installed.

I used a 1200MAH sub C receiver pack up front and placed the two servos directly behind F4. If using an AA size pack, then some nose weight will be required. The servos can be moved around to help balance the model.



FLYING.

A hand launch at the local field proved satisfactory so the Lumina was committed to the high start. The launch was straight up the line and with a light breeze blowing, gained very good height. I let it fly off the high start by itself, rather than zoom off, and went in search of a thermal or two.

The Lumina required very little trimming and response with the recommended control throws was gentle. The thermals were popping off at regular intervals and the model climbed to impressive height in short order. Loops were as tight as you wanted to make them and height could be lost by initiating spiral dives. The Lumina was coaxed down after 15 minutes as it encountered bands of lift all over the flying field. Landing was no problem and the model virtually landed itself with a click of down elevator.

The Lumina has been flown by a number of learners since initial flights and is quite a good trainer. I have not see a Lumina which has the electric power option, so I can't comment on performance, but as an entry level glider it performs the role quite well.

SUMMARY:

The Lumina is aimed at the beginner to radio control gliding and performs admirably. It represents good value for the person wanting to start off in radio control and the 2 metre wingspan is one which has been found to be the most popular choice for glider kits.

The Lumina is easy to build, flies well and is manufactured in Australia.

FOOTNOTE:

The early Lumina kits were found to have a few discrepancies, mainly due to printing errors on the plan. The spar slots in the ribs did not line up with the plan and the balance point was found to be in the wrong location.

If you have one of the initial Lumina kits, it is most important that you move the CG balance point forward by 30mm from the point shown on the plans.

The new Lumina kits also have increased dihedral angles, which should provide greater stability. The angle on the initial kits could be increased to give 35mm under the polyhedral join and 80mm under the tip when the wings are joined. All new Lumina kits have had these minor problems corrected and the glider flies very well, once the correct balance point has been established.