

Free time? Try our free plan!

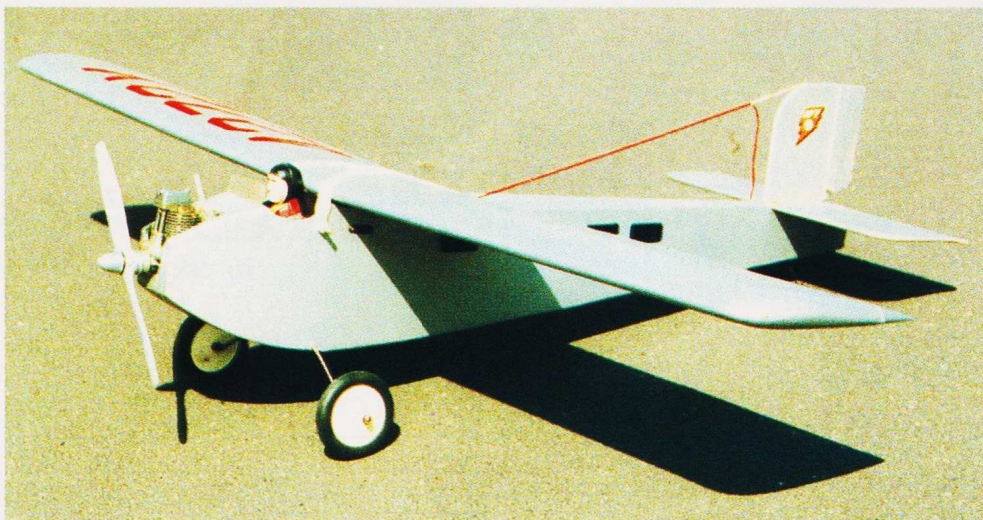
Philcan Sport Sedan

The Sport Sedan is a development of the original Philcan Sedan design.

This model was a simple to build three function trainer, that looked a little bit different, and proved to be very easy to fly.

Since our club flying site is rather restricted in size this encourages the use of small models. I still had the Philcan Sedan, it had been out on loan to a friend for several years, but I wanted something that would be a little more interesting to fly than a trainer. I decided that a redesign of the Sedan might be just what I wanted so out came the drawing board and here is the result.

The wing was reduced in size and inset ailerons incorporated along with a reduction in dihedral. The wing tips were altered in shape and the elevator and rudder corners were rounded off. To add to the 1930's appeal I fitted vintage style wheels, these also help when flying from the rough grass field. I did not consider it necessary to build a new fuselage and tail unit, so I just built new wings and did the very basic modifications. I also decided to use the OS 20 four stroke that was fitted rather than a larger 40 size motor. This has proved to be quite satisfactory and the model has all the power it needs to do the mild aerobatics that it is capable of. As the OS 20 is no longer available I would suggest using the excellent OS 26 four stroke. You could of course use a small two stroke engine but although they can be silenced well below the recommended noise limit, it is the high pitched whine that seems to annoy the general public and leads to complaints.



I would think that most modellers who have completed a built up model from a kit would be able to cope with the construction techniques that are used on the Sport Sedan, take a look and see what you think.

Building the model

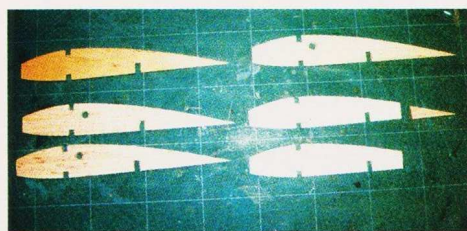
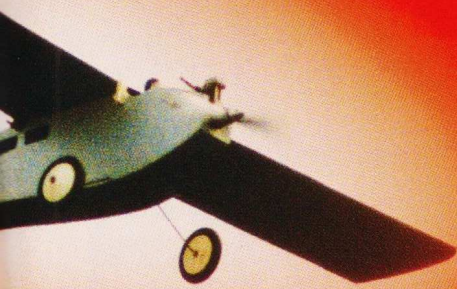
If you want to see an early result from your labours start off with the tail unit. All the components are from medium grade 3/16" sheet balsa. As the tail surfaces are basically rectangles the shapes can be measured directly onto the wood, if however you want a pattern, trace the shapes onto tracing paper and transfer the pattern by pricking through the paper onto the wood. The leading edges should be rounded off to the shape shown on the drawing. The rudder and elevator should be of a triangular section, again this is shown on the



Joining the wings, pack up the tips 3/4" each side.

side elevation of the fuselage. No carving is required, you will be able to remove the excess balsa with sandpaper paper. I use the Scotch Super Grade that is available at most of the DIY outlets the, 120 grade will remove the excess wood rapidly. Always use a sanding block for this operation, either a commercial cork one or one from a piece of block balsa.

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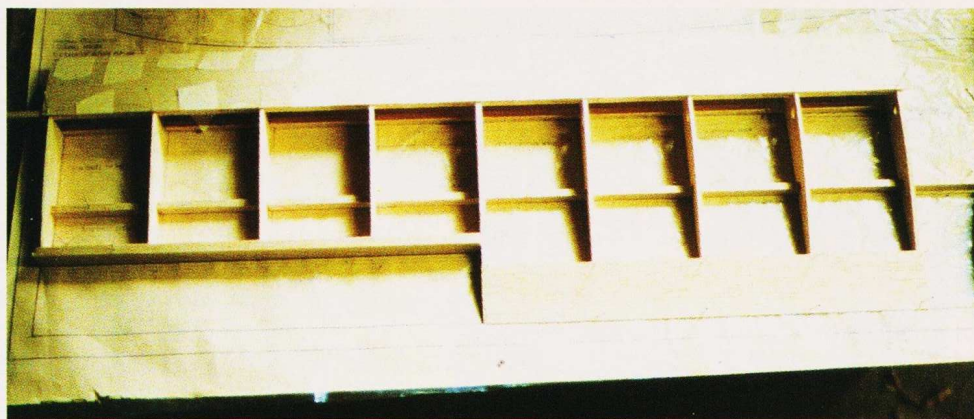
Plywood wing rib template and assorted ribs.

Perhaps I should have said at the beginning of the building instructions that I think that it is best to cut out all the parts before starting to assemble any of the components. For the wing ribs make a template from 1/16" plywood. It is then a simple task to produce accurate ribs by cutting round the template that is placed onto a sheet of balsa of the required thickness. With careful planning when doing this operation very little material is wasted. The cost is much reduced, and along with the another savings it is a very good reason for building a model from a plan. Another advantage, not always appreciated, is the ability to choose the quality of the materials yourself. How often do you have to discard a piece of wood in a kit?

For the other parts that need cutting out use the previously mentioned tracing paper method, but if you have your own pet way use that.

Fuselage

You will need to butt join some 3/32" sheets of balsa to get the width that is needed for the fuselage sides. Select sheets



The port wing under construction, note the use of masking tape to hold the sheet leading edge in place.

that are of a similar quality and check that the edges are straight before attempting to join them. If there is a problem here, trim with a straight edge. Using masking tape to fasten the sheets together with a couple of pieces on one side only. Run cyano down the edge, lay flat down on the building board and tape the other side. This is a quick method but be careful to align the sheets correctly before the glue goes off. Again I traced out the fuselage side shape and transferred the shape onto the balsa by pricking through. Draw round the front fuselage portion onto 1/32" ply for the doubler. The doubler is attached to the balsa side with a contact adhesive, I use Evo-stik, remember to make up a pair of sides. Next make up the balsa formers from 1/8" sheet strip, cut the pieces approximately to size, glue and then cut to the finished size. There is an 1/8" sheet balsa doubler fitted under the wing mount and a 1/16" ply doubler at the tailplane mount. When these are in place the fuse-

lage is ready to be assembled. Make up a sub assembly of the engine hearers and formers F1, F2 and F3. Use 5 minute epoxy and make sure that the unit is accurate before the adhesive hardens. Glue the sub assembly at F3 and former F4 onto one of the fuselage sides. When dry add the second side.

Pull in the sides at the rear and glue in the stern post. The balsa formers F5 and F6 and the 1/16" ply former F7 can then be added. Use epoxy to fasten the front of the sub assembly in place, copious quantities of masking tape need to be used to pull the fuselage sides into place. Mount the ply undercarriage plate and fit the undercarriage legs in place, add the ply doublers and the ply gussets. The top and bottom 1/16" sheeting is fitted with the grain across the fuselage. Fit the tailskid before sheeting. Fit the tank floor and cockpit floor before fitting the 1/4" sheet nose. The 3/16" sheeting at the nose is again fitted with the grain running across the fuselage. Do not fit the 3/16" sheeting forward of F1 until after the engine is fit-

Pilot and engine bay.



ted. Make sure that the bolts are held in place with a piece of wire soldered across the screwdriver slots. There is nothing worse than having to cut away the cowl to stop the bolt rotating when tightening up the engine nuts. There is ample room in the fuselage for the radio gear. Use small servos and a lightweight battery if you have them, the lighter the model is, the better it will fly.



and then glued the soft block balsa tips in place. After shaping the ailerons are easily cut away. Make the horns from GRP printed circuit board and epoxy in place. The position shown on the plan will give a small amount of differential movement to the aileron, more up than down.

The bell cranks are mounted on ply plates, check that the push rods will not foul the spars before fixing in place with epoxy. All the hinges are strip mylar, I rough them up with sandpaper and epoxy them in place.

Wings

The wings are built directly over the plan. Pin down the front and rear spars and fit the ribs. Add the aileron spar and the false leading edge. Sand the rear of the 1/16" sheet trailing edge to a feather edge, you will find that this taper is about 6 mm (1/4") from the edge, glue to the ribs and pin in place. Add the top 3/16" square spar and when dry fit the 1/16" balsa webbing with the grain running vertical. Shape the false leading edge at the top and then add the top 1/16" sheeting and cap strips. The wing panel can be taken off the board and the bottom 1/16" sheet trailing edge fitted with the wing inverted and pinned down at the trailing edge.

When both panels are at this stage they can be joined by building the centre section. The first job to do is to fit the plywood dihedral braces to one wing panel. Place a 3/4" (12 mm) piece of packing under the tip rib and a piece of 1/16" (1.5 mm) packing under the root rib at the bottom front spar. Build the centre section onto the panel, don't forget to place the packing pieces under the spars and ribs, note that the bottom of the trailing edge will be in place. Slot the ribs in the second panel and join to the centre section and other wing panel. The 3/4" packing piece under the tip rib will ensure the correct dihedral angle. Complete the sheeting of the top of the centre section. Remove from the board when dry and add the lower wing sheeting and cap strips.

Build the ailerons on the sheet base. Glue the spar in place and add the ribs. Cap with 1/16" x 1/4" balsa at the trailing edge and then cap the ribs. Sand the spar to shape and then use a razor plane to shape the spar at the leading edge so that it can move up and down. I taped the ailerons in place

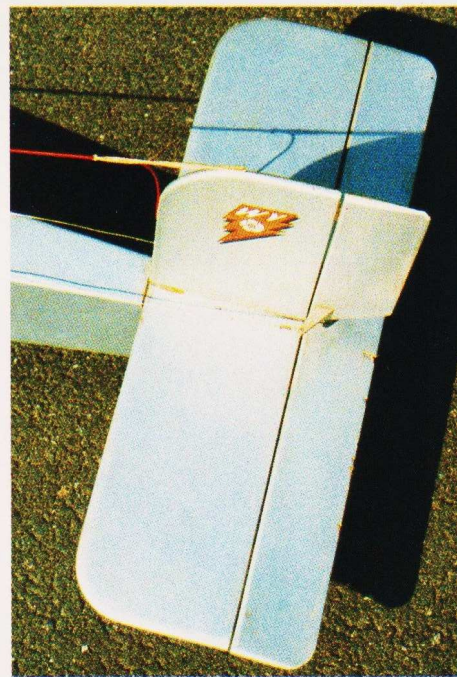
Covering and finishing

The original model had been covered mostly in a silver iron on fabric. Fortunately I had some in stock so the new wing followed suit. The tailplane, elevator, fin and rudder were covered with lightweight tissue and sprayed silver from a touch up can. The fuselage and tailplane were fuel proofed with a two part proofer. The only trim that was applied was the pseudo US registration on the wing and the black Solartrim windows on the fuselage. I have been amazed how well the markings on the wing show up when the model is in flight, I had in fact thought of adding a red flash to the fuselage sides but haven't got round to it yet.

Flying

There was no doubt that the model was going to fly, the wing section was the same as the rudder only model and the reduction in area was only small. After double checking the control movements the engine was started and tuned for maximum power. After a short run the model was in the air and flying as if on rails. There was the need to feed in a little down elevator and right rudder but no other alterations were made on the first flight. I did in fact land the model

after about ten minutes as the engine had gone off song. With the engine now running at full power I tried some aerobatic



Tail unit showing closed loop rudder cables.



manoeuvres. The stall turn was very nice, the roll rate was not excessive into wind but looked a lot better down wind. The only serious deficiency was with inverted flight, the model did not seem too happy but it didn't look the right kind of manoeuvre for this model. The model is great fun but don't expect a vibrant vertical performance. All the manoeuvres require a dive to build up speed but it will do most of what I want which was the point of the exercise. For anybody wanting a model that will fit easily into the car, cost very little to build and be a snip to fly, take a look at the Philcan Sport Sedan, it might be just what you are looking for.

RCMW

Control surface movement:-

Rudder 1" each way.
Elevator 1/2" up and down.
Ailerons 3/8" up, 1/4" down.

Phillip Kent