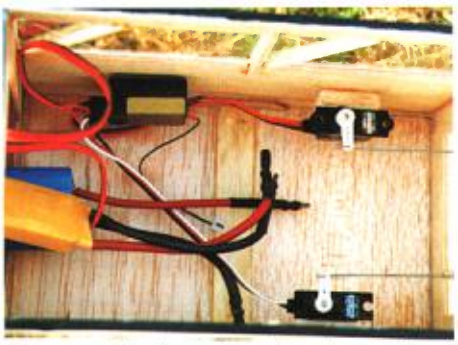
Renard R17

A simple 40" span scale model for 3-function R/C and a geared 400 electric motor

Not everyone's ideal scale subject - but I was hooked by its simplicity!

Whilst I realise that the Renard R17 may not be everyone's idea of an ideal subject for a model, I was hooked from the moment I first came across the type. Much as I hate to use the word, she is just so cute. Her angular, boxy appearance is so full of character that I felt almost compelled to start drawing. I openly admit that the only information that I had to work from was a 'Peanut' scale plan and a photo, but since they seemed to contain all the information required it was enough for me. The type of models that I favour don't require reams of documentation since they are intended as easy to build and fly, everyday models. I'm not for spending hundreds of hours building a model that I'll then be too worried about to enjoy flying. My models work hard for a living, and as such need to be practical and usable, and they get to see plenty of air. Since this is usually for very little sign of wear and tear, perhaps I'm doing something right - I like to think so.



A low cost installation with plenty of space.

Construction

This has been kept as simple and as straightforward as I could make it. I am a firm believer in not using five pieces of wood if one will do. You'll find that models usually tend to work out lighter that way, which is one of the major factors in success with electric power (they are also much easier to repair).

Bearing this in mind, a highly detailed set of building instructions should hardly be required for this model. So rather than bore you with stick piece A to piece B, I'll run fairly briefly through the general order in which my model was built. Any areas that I feel deserve special attention, I'll deal with in more detail. So instruction number 1 is, don't 'beef-up' the structure. I know that it looks quite fragile, but I can assure you that it isn't. Handled properly this model will provide you with many pleasant hours of flying. Treat her with the respect she deserves and she will repay you many times over.

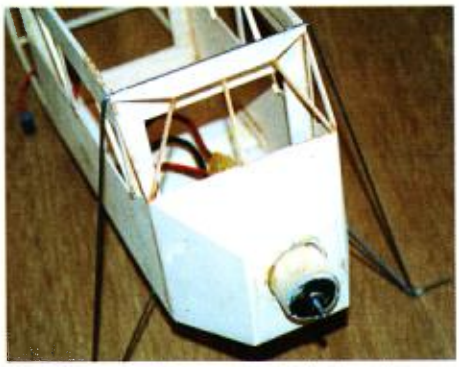
Installation

A strange place to start a construction article, but I thought you might like to know what equipment is required before you get the model started.

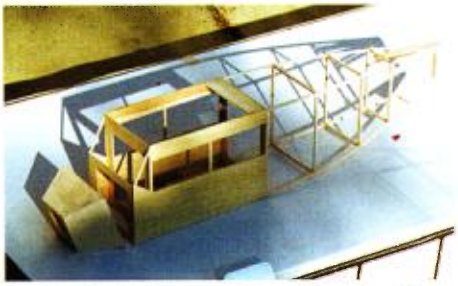
The current availability of mini and micro R/C gear at very reasonable prices has, more than any other single factor, made success with these small, light models an affordable reality.

My model uses a Jeti 4 Rx, two of the excellent 9 g type servos and a Kontronic Easy 1000 speed controller. This, or similar combinations, have served well and reliably in many of my models. It allows us to assemble an airborne control package that weighs less than 2 oz (56 g) and costs less than £90.

The Rx and servos are mounted onto the



Speedgear 400 motor installation is quite straightforward. Note the piano wire u/c installation.



A simple fuselage construction that is very light and strong.

Basic 3-piece wing construction before joining. Note scalloped TE.

fuselage sides with servo tape with the linkages to the rudder and elevator being made using lightweight push rods. Mount the servos fairly centrally in the cabin area and use the weight of the Ni-Cad pack to assist with balancing the model's C of G at the point 2 3/8" (60 mm) from wing LE.

Now the power train. Because of the need to enclose it in the dummy crankcase, I chose to use an in-line geared motor. You might be able to get away with using an un-geared motor, but I haven't tried one. On the prototype model I used a Graupner 7.2v Speedgear 400 which, with its 4:1 gearing, turns an 11" x 7" propeller at an almost miserly rate of amps. The one item that I refuse to cut cost on in my models is the Ni-Cad pack. My models of this size all use 7 x 500 AR cells from Sanyo, I have yet to find anything to equal them. They will deliver a higher current than cheaper cells (not so important on this model), charge at a higher rate and last for longer. A few extra pounds spent here is well worthwhile, and will actually work out cheaper in the long run.

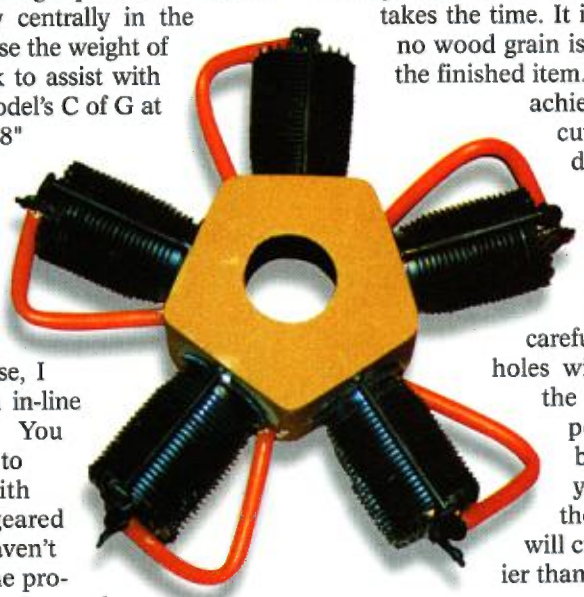
The motor mounting system shown works very well since it allows for easy setting-up of thrust lines, and is dealt with in more detail later. My Ni-Cad pack is retained with a dab of silicon sealer, but could just as easily be fitted to a liteply plate using Velcro. You should keep a closer check on balance using this system, but it would mean that you could change packs between flights.

Details

I'll deal with the details of the model at this point simply because once they are made it is a great incentive to actually finish the model. They are an essential ingredient since the model would look very plain without them.

The wheel type used were purchased from SAMS, the free flight people. They are really intended for very light models, but have proven to be usable for our needs provided we keep our landings gentle.

The dummy engine takes rather longer. The actual cylinders are fairly easy, being modified Williams items (SAMS again), it is the crankcase that takes the time. Once you have the parts cut out it goes together quickly enough, it's the sanding, sealing, more sanding and priming that takes the time. It is important that no wood grain is left showing on the finished item. This is easier to achieve if you leave cutting the cylinder holes until after the priming. Use a piece of sharpened brass tube to carefully cut out the holes with each face of the crankcase supported from behind, not with your finger though, as the tube will cut flesh even easier than balsa.



Dummy Williams 5-cylinder engine adds scale realism.

All that remains is to assemble and paint your engine. Humbrol enamels are fine for this job.

Tail Surfaces

By far the easiest parts of the entire model. Use firm, but not rock hard, light 3/32" balsa sheet, after which they are shaped, sanded and have the elevators joined. The slots for the 1/32 ply horns may be cut at this stage, but don't fit the horns until after covering is completed.

Fuselage

Now to some serious building.

Once you have made up the fuselage side-frames, including the liteply cabin areas, they may be joined over the plan using F2, F3, F4, the u/c plate and the wing bolt plate. Fit the 1/16 lower fill pieces to help prevent bowing as the tail end is pulled in and joined. Wire parts A, B and C are now bound and cyanoed to the formers and then bound and soldered together. Now the next awkward part:

Measure the length of the nose side panels and top and bottom panels from the plan and cut to size. Assemble the nose around F1, noting that the top and bottom pieces butt against F1 and go between the sides, as does F1. So far so good?

The ply motor tube should be rolled around the motor unit and glued, but not to the motor. The easiest way to do this is to sand a taper along one end of the ply so that it won't form a step (a potential weak spot) once the ply is rolled. One layer of ply is sufficient, so trim off the excess and sand away the resulting step where the ends overlap. Wrap a layer of masking tape around the motor and lightly epoxy it into the tube. You can see from the plan roughly how much motor should protrude, but don't worry about being exact. You can adjust the amount of tube passing through F1 to get the position right. Temporarily glue crankcase to the front of F1 and use it to centre up the motor shaft before epoxying the motor tube securely to F1. If you ensure the accurate positioning of the crankcase, and that the shaft is central where it exists, then the thrust lines should be set up exactly as intended. Spot gluing the tube to F1 with cyano will help to hold it in place while you apply the epoxy. Once dry, the crankcase should be removed until after covering.

All that remains now is to epoxy the nose firmly onto F2 before adding F3A and the cocktail stick cabin frames. Carefully sand overall and your fuselage is ready to cover.

Wings

The wings are really very straightforward to build and should cause no problems at all.

Begin wing construction with the centre-section, building in the dihedral brace as you proceed. At this stage the dihedral brace is nothing more technical than a 3/4" wide strip of 1/16 ply. The 1/8 balsa infill at the front underside of the c/s should also be added and a check made that the ribs are upright before the glue to dries.

The wing panels are totally conventional in structure, and should be built in the normal fashion. Check that the 3/32 root ribs R2 lean in about 2 degrees to allow for dihedral and all other 1/16 R2 ribs are vertical.

Having sanded the wing panels and c/s, and scalloped the trailing edges, it is time to join them. With the c/s pinned firmly down to the board, slot the root ribs for the ply brace and glue them in place. Ensure that they fit snugly against the c/s and are securely pinned down at the root while the tips are packed up (1/2" or 12 mm under R2, 4" from tip) as indicated on the plan. Once the glue is completely dry the excess brace material on the underside is trimmed and sanded away flush with the spars. I have found this to be the best method of obtaining equal dihedral as it avoids any temptation to align the wing panels with the brace rather than the c/s.

The wing mount piece is fitted after covering but before the cabin glazing has been added. It may however be made up at this point.

Tail assembly reveals tiny pushrod and control surface linkages.

Author hand-launches his Renard R17 with ease.

Covering and Finishing

The prototype model is covered entirely with Lightspan attached with Balsalock. Take care not to shrink in any warps.

All the paint work, frames, interior, etc. is done with Humbrol enamels and the glazing is attached with R/C Modellers glue which works very well and dries clear. The registrations on my model are from commercial DIY car number plate types, although cut vinyl ones would be even better.

The wheels can be retained either by soldered washers (be careful with the heat near those wheels), or as I did with short lengths of insulation cyanoed onto the ends of the axles. My dummy engine is glued in place, but you may prefer to make yours removable. These electric motors need very little attention and I haven't found it necessary to access the ones in my models yet.

Assembly

The most important factor of the assembly stage is to ensure that the wing is accurately aligned on the fuselage before drilling the holes for the wing fixing screws, and especially important since the tail surfaces are fitted using the wing/fuselage assembly as a guide. Screw the wing onto the fuselage - but not too tight. Now working through the unglazed cabin windows, slip the wing mount piece into the holes in F3 and epoxy firmly onto its seating and the mounting piece is held equally firmly against the c/s until the glue is completely set. The wing will now go on accurately every time (remove the screws and apply a drop of thin cyano into the screw holes to make them more durable).

It is now a fairly simple task to glue the tail surfaces in place with 5-minute epoxy and to hinge the control surfaces. Complete the installation, as described earlier.

Flying

With the model balanced as shown, flying should cause very few, if any, problems. My model will take off from our grass strip quite easily. She takes a little while to pick up speed, but tracks quite straight, nothing a little rudder correction won't remedy.

Relaxing gentle turns are effortless.

SPECIFICATIONS

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Wing Span: 40" (1016 mm)
Wing Chord: 8 1/4" (210 mm)
Length: 27" (687 mm)
Prototype motor: Graupner Speedgear 400
Propeller: 11" x 7"
Battery: 7 cell Sanyo 500 AR

The climb out is a very sedate affair.

The climb out is a very sedate affair - an extra cell in the Ni-Cad pack would hurry things along a bit but would spoil the enjoyment of such a sedate model which makes her extremely relaxing to fly. Her aerobatic repertoire is limited to loops and perhaps the occasional stall turn, but this isn't the type to throw about the sky. She was designed to be a leisurely flyer, and is exactly that! She may well be one model that I hang on to.

RCMW

Peter Rake

Construction & Flying Guide

The Renard R17 is simple to build and fly, although some previous aeromodelling experience would be of an advantage. Novice and beginners should seek assistance for first flights.

Plan Details

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