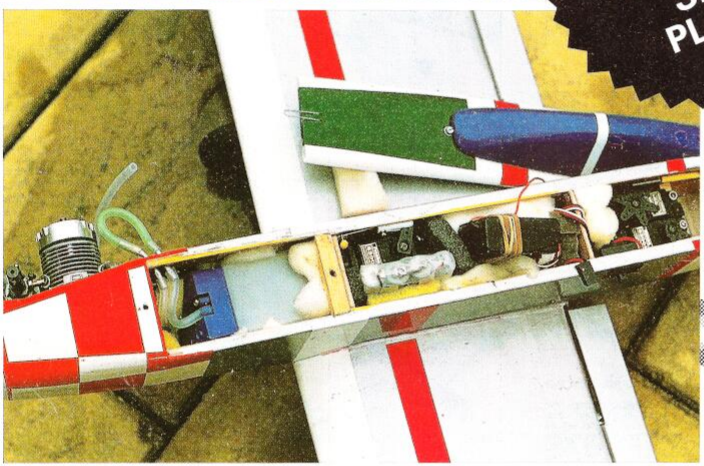
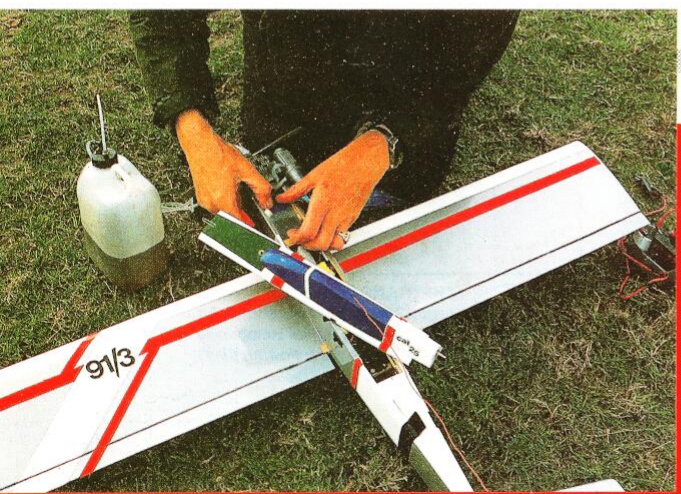
BUILD FROM OUR FULL SIZE PLANS



Following the feline tradition with the latest addition to Harry Gilkes' litter of fast cats!



Cat 25 offers ease of building and excellent access with a broad envelope of flying characteristics dependent upon choice of powerplant. And if you fancy the foam wing version but don't feel confident about cutting your own, Radio Modeller Plans Service can supply a top quality foam wing for £19.25 including UK post and packing. Order as FWTRM458 and allow 28 days for delivery. Alternatively, use the plan to build the traditional wing – and have fun!

Cat 25 is the fourth design of the series to be presented by Radio Modeller, the most recent being Cat 500 in the February '94 issue. Although most of the airframes designed under the CAT (Coventry Air Tech!) marque bear a family 'style', they are not direct scaled up or down versions of each other, but are each designed to suit a specific function or task.

The 'Twenty Five' is aimed at the general club flyer who wants a machine to improve, or even learn or practice, aerobatics using a cooking 25. Alternatively it is an ideal model for the hotdogger freestyle flyer who likes to do everything vertically or at umpteen miles an hour. For this style of flying fit one of the

many ballraced ABS 25s or if you are experienced – ie you have fewer controlled crashes than your fellow flyers – fit a compact 32!

When designing models for the smaller size motors I usually tend to work around a radio package – for 20/25 motors, two standard (148 size) and two midi servos (Hitec 101 or Acoms A10s), but the 'Cat 25' is packaged around standard servos, hence my nickname for it is 'Fat Cat'. The basic design will be familiar to those of you who have built or studied my prior published designs and features access to the fuel and guidance equipment through the top of the fuselage via the dummy cockpit cover. Enough chit chat, let's get down to building.

Fuselage

This is conventional construction, being a basic box of 1/8 (3mm) balsa sides (prototype used liteply) with ply doublers at the nose (1/32-0.8mm) and hardwood or balsa longerons together with balsa sheet strip pieces. Start by cutting out and assembling the basic side assemblies – weight down while drying. Cut out and laminate, as required, all formers, including drilling holes for engine mounting and wing dowel. Next step is to assemble the basic 'box' upside down – use epoxy for this stage. Make sure everything is square and take great care to ensure the plan form is true and symmetrical about the plan centre line.

The top of the fuselage side is also the datum line to enable accurate positioning of the engine bulkhead, wing angle and tailplane settings. The thrust line is zero, the wing is 1/16 (1.5mm) positive while the tail is also zero. Side thrust will depend on engine/propeller combination – I suggest you build in 1 degree right at this stage.

Next stage is to temporarily fit engine mount and engine (less carb and silencer) to F1. Now spot glue forward 1/4in (6mm) top decking, fit the tailplane seat, rear top deck and 3/8 (10mm) engine cowl pieces together with nose ring cut from liteply (see sketches on plan).

Note. If you wish to use a more conventional, fully blended nose/spinner line – use a 2in or 2.1/4 spinner and suitable nose ring. The original prototype used an upright engine, but the sidewinder installation and nose configuration enables various engine types to be used without a mismatch of the spinner.

Back to the balsa butchering; remove engine and razor plane and sand the fuselage to shape.

Hatch/cockpit cover

This is assembled and finished away from the fuselage and follows normal 'Cat' construction being built up on a 1/16 (1.5mm) base, with 1/8 (3mm) sides and top – note that the front part of the top is a cross-grained lamination, and don't forget the 3/16 (5mm) doublers.

When dry, sand to shape and cut into two parts between F5 and F5A – the rear part is glued to the rear deck after covering and the front is glued to front 1/4 detachable decking – again after covering.

Jumping ahead a little, the bottom of the front deck/cockpit cover is cut out to clear the nicad pack and receiver, the top being packed with foam to locate and protect the radio gear. I normally fit the locating dowel and local fixing reinforcements, etc., after covering. OK, that's about all on the fuselage, except for the wing blocks (or use commercial plastic ones).

The wings

As usual on my prototypes I used a foam core on which the leading edge, trailing edge sheeting, etc., is fixed with thinned Copydex, using a thin bead of white glue along all edges. The plan shows either a foam based wing, or conventional built-up structure.

All parts for either wing are the same, with the addition of a balsa/ply main spar and, of course, ribs. (note the ply facing on inner ribs). Assemble the built-up wing by pinning down the trailing edge and packing up the main spar (I use trailing edge stock for packing); add leading edge sheeting cappings, and 1/4in (6mm) LE and let dry thoroughly. Remove from board, turn over, pin down, re-pack under main spar and again add LE, TE and cappings.

When you have two panels – one left and one right, I hope – join together using undercarriage/joiner block – see sketch on plan – and pack up one tip to give total dihedral. After joining and checking for any warp/misalignment, etc., add the hardwood filler blocks and complete centre section sheeting. Finish by sanding to section, add 1/8 (3mm) tips and reinforce centre section with 4in (100mm) cotton (medical) bandage – use white glue well rubbed in.

Cut away centre section to fit fuselage (with foam wings add balsa facing to end faces) and fit liteply facing to front face. Locate dowel hole through F2, drill and fit; finally, fit ply plate for wing bolt reinforcement. Lastly, the centre of the rear TE is cut back to accept a commercial horn set.

Tail feathers

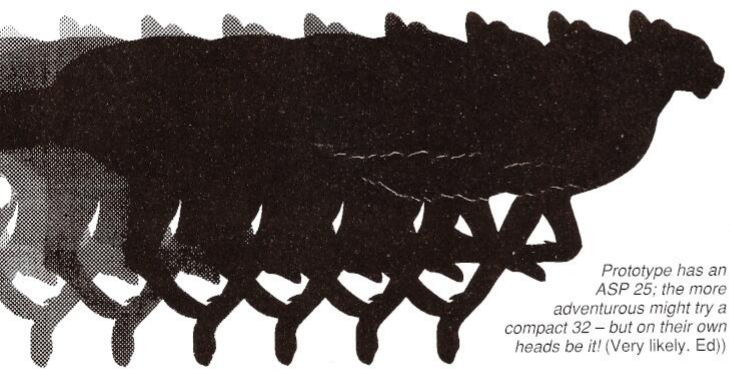
These are made from 3/16 (5mm) sheet for the vertical surfaces, and 1/4in (6mm) for the horizontal bits. Please note the section – no flat plates, thank you! If you are using a cooking motor either use lighter wood or the built up tail as shown on plan. In other words keep the tail end, that's anything behind the wing, light and well sanded. The prototypes have just about balanced right with an ASP/O.S. SF type motor fitted.

Finish and covering

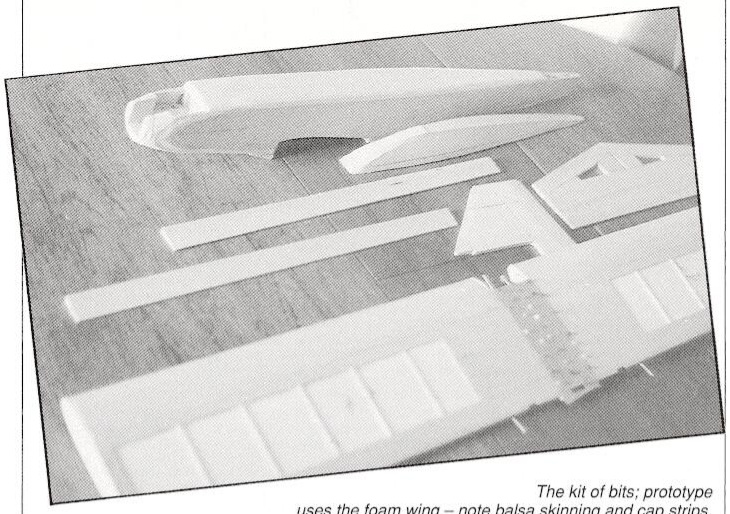
Being naturally lazy I usually use Solarspan or similar covering material, with trim and decoration cut from film or Solartrim. Before covering I fuelproof thoroughly the engine bay, tank compartment and edge of wing seat/radio compartment, and the uncovered areas of the hatch/cockpit cover assembly. Next I Balsalock the fuselage back to the wing trailing edge and root of wing prior to covering these areas with Solartex.

Final stage is to cover the entire model with the chosen film and then assemble the components, ie fit stab to fuselage – using epoxy and small pins – and then add all hinged surfaces. Now cut a slot for the locating tongue on the fin (also remove any local covering under the fin), epoxy in place

CAT 25



Prototype has an ASP 25; the more adventurous might try a compact 32 – but on their own heads be it! (Very likely. Ed))



The kit of bits; prototype uses the foam wing – note balsa skinning and cap strips.

and hinge the rudder. While at this end of the model, fit the tail skid. Complete finishing by sealing hinges, etc., with fuelproofer.

Last lap

Fit the engine and tank (prototype uses a 4oz Slec) and radio. If using all standard servos use a flat pack battery vertical; if using a midi servo for throttle you can use a square pack alongside. DON'T FORGET TO FIX THE PLY PLATE TO SUPPORT THE RX. Use the usual foam to locate and protect the Rx (I use wing type foam block in front of the Rx) and also to pack those leads that tend to get all over the place. Position the switch and charge socket to suit your particular installation.

Setting up

Balance as shown on the plan – the forward position is for training or sport. If you should need to add weight to balance, either fix it to the engine mount – with screws – or in the bottom front of the tank bay – cover with foam to protect the tank. You should also make sure your tank is 'supported' with local foam pads – it avoids that 'frothy coffee' fuel. Right, let's set your version up as per the prototype – to start with anyway!

All throws on low rate setting for normal flying – Futaba Super FF7.
Ailerons: 3/16 (5mm) down, 1/4 (6mm) up.
Elevator: 5/16 (8mm) up, 7/16 (11mm) down.
Rudder: 3/4 (19mm) left and right
Prototype weight, dry: 49 ounces (1390 grams).
Engine: 25 ASP – General aerobatic flying.
Prop: On ASP – 2x6 Graupner, 9x7 APC.
Tank: 4oz Slec

Flying

With the balance point shown and throws listed, you should experience no difficulties. However, if you are still a relative newcomer to 'stick twiddling' get an experienced flyer to give your 'Cat' an airing. Assuming you have avoided warps and the wings and things are all relative to the datum line as per the plan, as I said, you should have no heart stopping moments.

The speed range is quite wide and the stall is straight ahead. Like all smallish models don't expect the 'Cat 25' to fly at vintage model speed – it won't: if the airspeed is getting near stall point you will get a good visual warning, it will start 'porpoising' – so get the nose down, or notch in some power.

General aerobatics are smooth and axial, and tracking is good. If you do get any drifting off heading in loops or bunts and you have no warps, or trim offsets on ailerons/rudder, check the lateral balance and side thrust.

So that's the 'Cat 25' (or my old 'Fat Cat'); go and enjoy yourself, but take care, fly safely and happy landings.