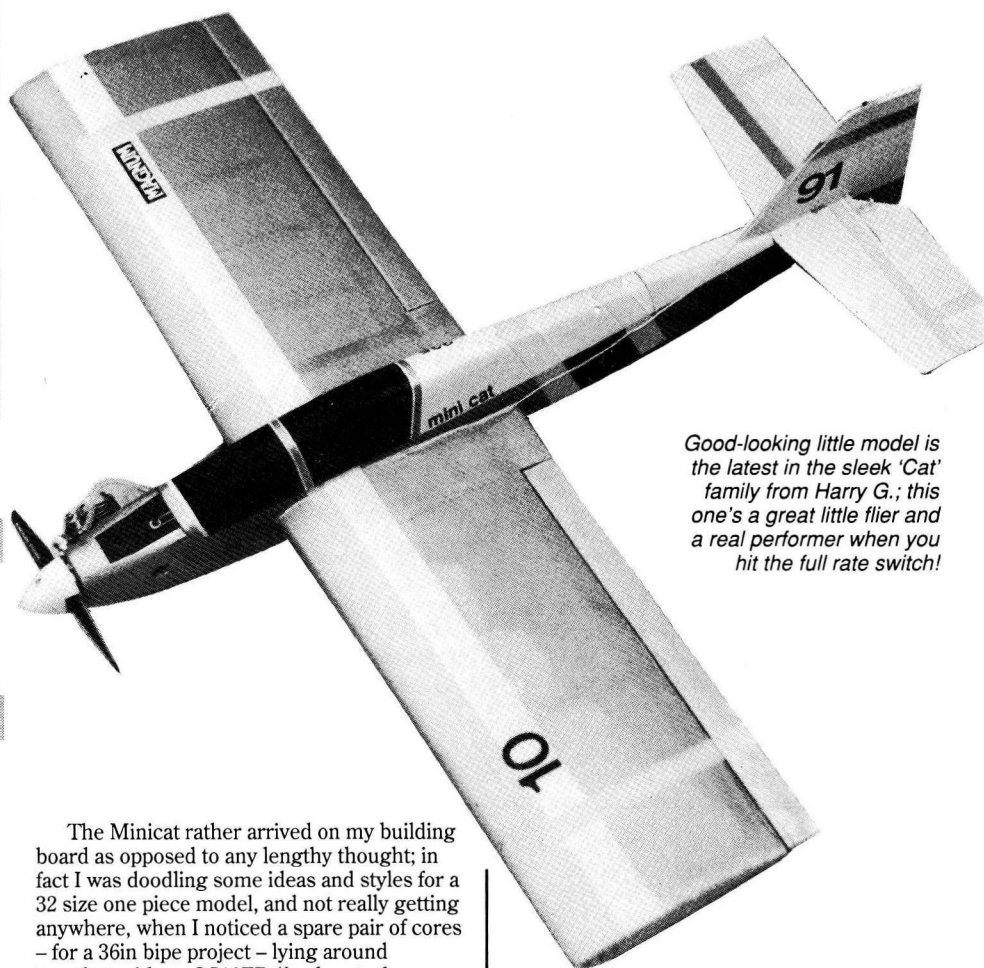


Mini Cat



Good-looking little model is the latest in the sleek 'Cat' family from Harry G.; this one's a great little flier and a real performer when you hit the full rate switch!



Build Harry Gilkes' 30in span, .10-powered fighting tom!

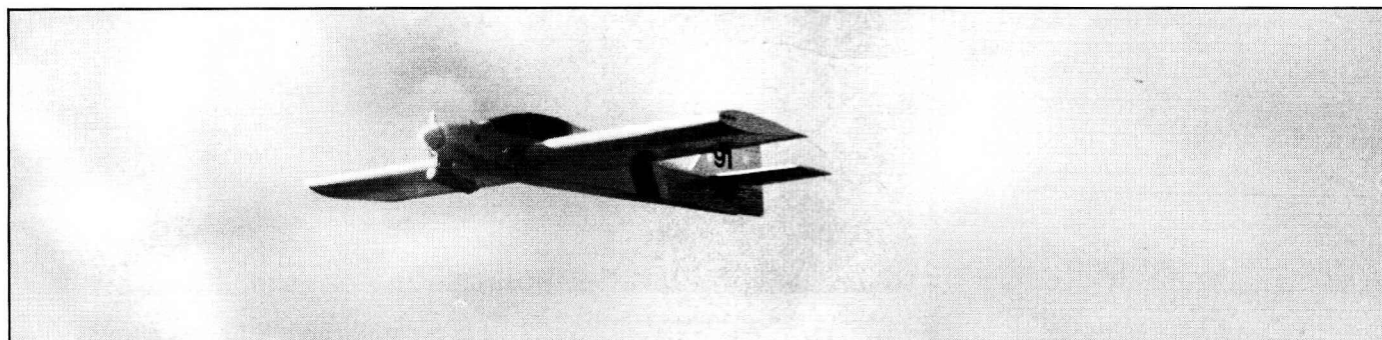
The Minicat rather arrived on my building board as opposed to any lengthy thought; in fact I was doodling some ideas and styles for a 32 size one piece model, and not really getting anywhere, when I noticed a spare pair of cores – for a 36in biplane project – lying around together with an OS10FP (fresh out of a vintage model). So a clean sheet of paper and a few calculations relative to my Alleycat (July '92 RM) linked to the new styling sketches and four mini servos, and Minicat was born. Certain changes have been made from the Alleycat layout, most noticeable being the lower aspect ratio to obtain maximum area in the smaller span. However, let's get on with balsa and ply manipulating, starting with the...

Wings

As usual with my prototypes I used foam wings: if you wish to follow this option, just cut basic cores – as wing rib basic section, and fit LE and TE strip and sheeting – as per built-up wing. Use thinned Copydex with white glue for all strip and cappings. One important point – slot in a full depth stiffener, 9-10in total length,

wing. The model is so designed that the wing really needs building first. Start by kitting your wing complete. There are only 14 ribs plus tips – so that part is not exactly time-consuming. Stack the rib blanks and razor saw the standard 1/8 (3mm) wide spar slot – modify the root ribs later to fit spar assembly.

Use a good straight edge to cut out the spar – from 1/8 balsa or lite ply – and epoxy on the laminated ply reinforcements. Note that they fit flush to the bottom edge of the spar, on the rear face. Now to assemble the wing. Pin down the bottom TE sheet and add 1/8sq TE. Next fit ribs to spar – after modifying centre rib slots – using white glue. Glue the spar/rib assembly to the TE bottom sheeting, by pinning well and packing under main spar area. (I use TE stock for this; needless to say,



The Minicat is the smallest of the cat family to date, although I have a redundant TD 02 and 051 at the moment, so who knows?

However, back to the model in hand, which is really designed around the Hi-tec 100 size mini servos for full house (but three channel versions would easily accommodate Acom AS 10s) and a repackaged 225/250 nicad pack – more on that later.

in the same position as the built-up wing spar shown on plan. Make this stiffener up from three laminations of 1/16 (1.5mm) ply by 7/8in (22mm) deep. Allow clearance in the slot to ensure you do not wipe off the adhesive when fitting – use epoxy. Also cover the centre section of the wing with 4in (100mm) cotton bandage using white glue well rubbed into the weave (at least two coats).

So let's get back to the plan and the built-up

On low rate control surface settings, Mini-Cat is as docile as a kitten...

make sure all parts are in line, at 20 degrees in plan, and of course your building board is flat and true. Now add the 1/16 (1.5mm) LE. Before adding the upper TE sheet cut away rear edge of root tips – see plan – and epoxy the 3/16 (5mm dia) dowel or aluminium tube in position to reinforce this area of the root.

Next stage is to notch out root ribs to take 9in long upper spar reinforcement of 3/16sq spruce (or ali tube – again epoxy in place).

Now add the upper LE 1/16 sheeting and centre section sheeting, not forgetting the rib cappings. Now relax and let the whole thing dry out making sure everything is true and weighted down. Next stage is to remove the part-finished wing from the board, turn over, carefully pin down and rejig. When satisfied that it is all true and straight complete the LE and centre section sheeting and cappings, also the 1/4 LE (or two laminations of 1/8 sheet). Let it all dry well – with weights – and then remove from board, complete by adding tips,

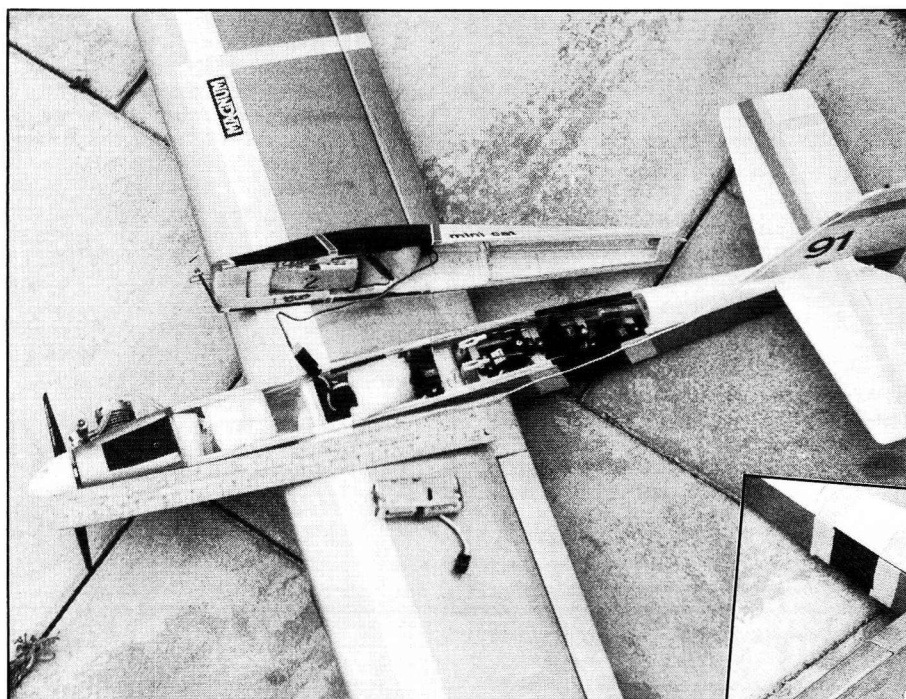
the obvious RH and LH remark! Use aliphatic glue for all fuselage structure, with the exception of the engine mounting, F1, F2 and the top and bottom 3/8 sheet of the engine bay area. For these areas use a good hard setting epoxy – not the 5min soft stuff. First real build operation of fuselage is the motor mounting. This is not difficult but requires some care and patience – see exploded view on plan. Start by fitting hardwood mountings to F1, fillet well with hard setting epoxy and check for square in all views while setting, ensuring all joints/faces are at 90 degrees (side thrust is added with shims).

When really dry carefully mark the engine

fuselage position on wing surface. Also check wing is at 90 degrees to sides in front view. When sliding sides over wing it is advisable to sand some clearance and locally shim the wing to give the setting dimensions shown on the plan. The gaps can be filled with scrap and epoxy.

When completely satisfied everything is true and square, epoxy in place the 3/8 (or 3/16 lams) to form the bottom and top of cowlings. Next add the bottom sheeting, leaving the areas under the wing open at this stage. Finish by adding rear block decking and local crosspieces and stab support sheet fill in. Next stage is to cut out LH front side to allow engine to be slid over 6BA fixing – with shims to give side thrust of at least 1 degree for 10 size motor (if using the newer 12 size it may be advisable to increase to 1.1/2 degrees). Fill in around motor (less carb at this stage) with scrap sheet/block to enable a smooth line to be obtained when blending in to the ply nose ring, which can be fitted at this stage giving about 1/16 to 3/32 clearance to spinner.

Remove engine and refit carb, to enable final trimming of engine opening after initial shaping and sanding. However, before we get to that stage, tack glue cockpit cover 1/16 balsa base, and build up cockpit cover on to it. You now have on your bench an ugly, boxy lump of an airframe – not to worry, a balsa knife, razor plane, sandpaper and your expertise will soon produce the sleek (well I think it is!) looking basic Minicat. After sanding, remove the cockpit cover assembly,



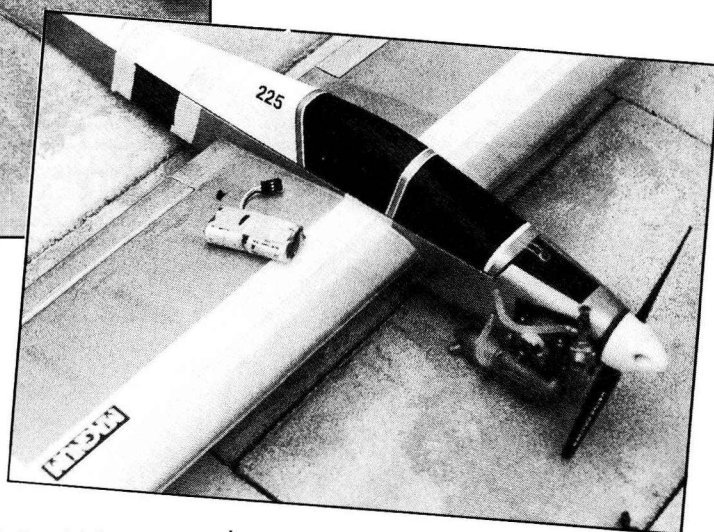
aileron horns, fixed TE root (aileron) fairings – which extend into fuselage – and sand to shape. Final stage of wing construction is to cover the centre section with 4 inch wide good quality cotton bandage using white glue (see foam wing comments – do not omit this reinforcement) Ok, that's all that can be done to the wing, so let's move on to the...

Fuselage/engine mounting

Regarding the latter, if you wish, this can be replaced by a small commercial engine mount – take the plan and engine with you to your dealer. However, I will carry on as though you are going to build in the mounting, as this is the first item of the fuselage build. The plan dimensions suit either the OS10FP or the Magnum 10GP so if using any other motor carefully check out the width between bearers. The engine bay length should be OK. You might just be able to cram an OS15FP in there – wow! Hope your eyesight and reactions are 10/10! (The new range of 12 size motors by ASP/Super Custom may also be suitable).

Start by kitting your fuselage parts complete and mark all centre and reference lines. Note: use a good straight edge to cut top edge of fuselage. This is your datum, both for wing angle of attack which is plus 1mm to 1.5mm max. Also note that both sides are full length. On the right hand side also mark the approximate line to cut out to clear engine lugs and crankcase, less carb. This is removed for initial fitting and shaping. Add 0.4mm ply doublers and 1/8sq spruce longerons to the inside of the basic sides – I shall resist making

Accessibility is excellent; note required 225 nicad pack (described on plan) and 1ft rule for scale. Motor is Magnum 10.



mounting screw holes, drill and tight tap through 6BA. Fit suitable length screws from LH side with a lock nut under the head of the screw to lock in place – see plan. I usually run cyano down the threads just before locking up. The engine is held by 6BA nyloc or similar type fitted with a long box spanner. Now for the fuselage proper – two options here, either assemble fuselage as separate unit and alter slide onto wing (in this case you will need to fit a temporary bulkhead in front of wing – see plan). The second option is to assemble straight on to the wing – in this method you will need to cut a slot to fit F2.

Basic fuselage build is the same for both options. Starting with F1, engine mounting assembly, fit this with epoxy and make sure it is square in plan and the bearers are parallel to the top edge of the fuselage sides. Continue by adding F2 (or dummy) F5A and B and then pulling in rear sides to form lower rudder post.

Important

Ensure fuselage is true in plan and also at 90 degrees to wing ie., mark joint line to

add the location dowel (F6 area) and carefully mark and cut the fin slot. Also at this stage trim the cowl opening for carb and linkage clearance. The front cockpit retainer wire loop, and fuel feed connection tubes are fitted after covering. At this stage, with wing fitted carefully, epoxy fillet both inner and outer joints of wing to fuselage. The lower 3/32 sheeting under the wing can now be fitted. All that remains now is...

Tail feathers and ailerons

These are the simple bits; choose light but firm wood, and sand to section – no blunt rounded angles! Regarding the ailerons, use firm medium stock, with no twists or warps. One point while on control surfaces; use good quality mini pinned hinges – remember that small nicad pack. We are on the home straight now, and that leads us to...

Finish

The Minicat shown in the photos has my normal finish ie, fuselage to rear of wing and

wing root – covered with Solartex and then the whole model covered with Solarspan, and then fully fuel proofed in the engine bay, tank bay and radio compartments including inside cockpit cover. After hinging I also proof the areas around hinges.

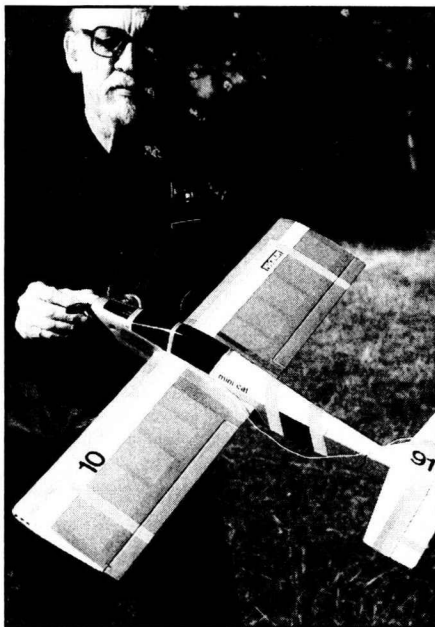
Radio installation and fuel system

This is quite straightforward. The pushrods used are 3/16sq and the wire ends are 18swg. Re-drill the output discs to take the 18swg. The aileron horns are 16swg with modified clevises fitted on the ends with cyano and the pinned half arm removed. The 24swg throttle wire runs through a plastic tube including through the radio compartment. Switch is mounted in the top of the cockpit cover and the battery pack is stowed, wrapped in foam, in the front end of the cover. Make up your pack as plan from 225/250 cells, or if you have an already made up pack, very carefully remove the sleeving and you can iron out the cells flat with the positive and negative lead in the centre. Place a piece of hard rubber or ply between the positive and negative connections and bind to a piece of thin ply with Sellotape.

When you have the servos installed cut away the base of the cockpit cover to clear. While on the subject of cutting bits away, cut only the minimum size openings in the wing centre section to fit the Rx and throttle servo. This also applies to the wing LE in the tank bay – use a 2 or 3oz tank and make sure you have fuel proofed any exposed structure in the tank bay. Finally fit the tank and pressure tap tubes, cyano and fuel proof joints. So now to...

Power units/props

The prototype was powered originally by an OS10FP ABC, and typical of small models,



Cat-fancier Gilkes with the prototype. Get building!

propping did cause a little difficulty. Various flights were tried with 7x4 and 7x6 Graupner/Master airscrews and finally best results have been obtained with 7x6 trimmed down to 6.5/8 (167mm). Remember to use a stiff type prop – there is no undercarriage. Later the engine was changed to a Magnum 10GP which, after tricky initial running in on straight fuel (very tight) and a slight increase in nitro, to reduce the needle sensitivity, resulted in an improvement in performance, but this may be the particular motors I have, and being fair the OS10 had spent all its prior running on a big prop in a vintage model. So let's get the Minicat into its element and go...

Flying

Before setting off to the field set your throws as follows – all figures are in inches and on low throws using a Futaba Gold (with Futaba 115Rx)

Ailerons: up 1/4 down 5/32

Elevator: up 9/32 down 3/8

Rudder (full): 1.1/8 each way

Throttle to stop on trim back

So let's go flying. Batteries charged and spare pack? The Minicat has no vices – honestly, just ensure you get a good launch, nose slightly down and pushed firmly forward – not thrown like a javelin.

Set the motor slightly rich if using the combination mentioned to allow the motor to unwind a little. If you have built accurately the Mini will go away, with only usually a touch of right rudder. Let the nose drop, don't be tempted to haul on the stick. In the air it should be renamed 'Minikitten', it is so smooth and gentle in its control response, that is until you hit the full throw switches, then rolls become the Red Arrow twinkle type and it will flick and snap with the best. However, he warned; it is small and it covers the airspace at a good rate of knots – so don't take your eyes off it.

Landing is easy – line up, stop motor and you will find a nice easy controlled long glide will follow. Alternatively, especially if there is some wind, approach nose high on power and chop the motor at about 5ft.

Well that's my Minicat – the third member of the pack that ASP has kindly presented. I hope you like it, and let's hear from you, and see your pictures via the editor. Happy landings.

