

# BIG TIGER

BUILD FROM OUR  
**FULL SIZE**  
PLANS!



## Claus Maikis' profile stunter for .35 motors has a story behind it

DO you like to turn over the leaves of old Aeromodeller issues, like me? Those issues as old as your modelling career, with the lower paper quality, inferior reproduction and smaller letter types. Now and then, in leisure hours, I blindly grab one bound vintage of about 'four feet' of Aeromodellers, some of which have been resting in the bookcase for more than quarter of a century (I'm afraid that dates me). Sometimes it's amusing to see again what we read and saw and dreamed of long ago; to see which ideas have inspired us, and which ones have caused our crashes.

There are those articles which we skipped in deep scorn, and those which we swallowed with excitement. There are plans which we built, and those which we kept in the back room of our mind to realise some fine day. One of these ideas was Ray Malmstrom's Ole Tiger design in the January 1970 issue. It's just a cute little aeroplane. But - being slightly competition orientated, this nice idea was always kept in mind. Other projects always had first priority, so that little tiger never came into life.

### Soft spot hit

Recently I came over that article again. Suddenly I saw the possibility for a 35 size profile stunt model. The idea of a 35 aeroplane always hits a soft spot in my brain. Is it because I started stunt flying with the first OS Max 35? Because I honed my skills with many a profile stunter? I've always been attracted by simple

*Remember Ray Malmstrom's rubber powered original? This version spans 48in and stunts beautifully. OS 35 FP with muffler, and tank on pressure turns 10 x 6 prop.*

things, simple ideas, simple designs. It's a total error to think that such things must be primitive. To make things simple is more difficult than to make them complicated. So I'm never embarrassed to design a simple profile stunt model for a 35 engine. That's how Big Tiger was born.

With most modern stunt technology occurring in America nobody knows which way control line aerobatics is going in the future. However, I feel there will always be the demand for a 35 size aeroplane. Below the 6cc capacity enjoyable and competent aerobatic flying isn't possible. More than 6cc is interesting for the diehard competition flier, but not absolutely necessary (remember that Bob Gieseke was World Champion with a Fox 35 powered Nobler!).

### Fully satisfied

The majority of sport stunt flyers are fully satisfied with a 35 size aeroplane. There's no manoeuvre you can't do convincingly. Maybe not quite as perfect as with a fully grown up serious stunter, but - let's face it - do we all really want to be world champions? Beginners, especially, don't need more than a 35 engine. I've always one 35 aeroplane ready for local contests, for contests with small flight circles and for that casual Sunday morning fun flying. So the enlargement of Mr Malmstrom's creation made sense. The criteria for the Big Tiger design were the following thoughts.

Those who have learned some simple stunts and want to improve need an aeroplane which is capable of such manoeuvres as they are described in the FAI schedule. That means: size, aerodynamics and performance must meet the requirements for those manoeuvres. The aeroplane should have simple construction, since those occasional crashes cannot be

avoided. The result is a 35 size model with profile fuselage, with adequately shaped airfoil, and with flaps.

Tailplane construction can be of sheet balsa. A small disadvantage of profile fuselages is the possible problem of engine vibration, so there should be some kind of fuselage stiffening. An engine cowl can serve this purpose. Finally, you should offer a little more than the usual simple profile look. Engine cowl and wheel spats are not that much work. After all, the finished aeroplane should really look like Ray Malmstrom's little one. I happened to have a balsa wing kit for a 35 size aeroplane, the SIG Chipmunk, which is known for its stunting capabilities. So wing size and airfoil were already decided. Since the fuselage nose might come out a little heavier than usual, the tailplane need not be built up. Instead solid sheets of medium hard balsa are more adequate, fully sufficient and add to the simplicity of the design. Of course you could omit the engine cowling and get away with a little less work. But - please - do Mr Malmstrom a favour and shape them carefully and pretty.

### Let's begin!

I usually commence construction with the wing. After making two rib patterns A and B from plywood, all 22 ribs are produced by the sandwich method in one block. When finished all ribs are numbered from 1 to 22.

Ribs 1 to 4 are shaped to the dotted line to accept the wing planking. Now use all ribs with even numbers for the left wing panel, odd numbers are for the right panel. Wing is built up in the usual manner. It's helpful to use some kind of jig which consists of four 'negative rib' shapes. I cut these according to the outline of rib pattern A and B, two each.

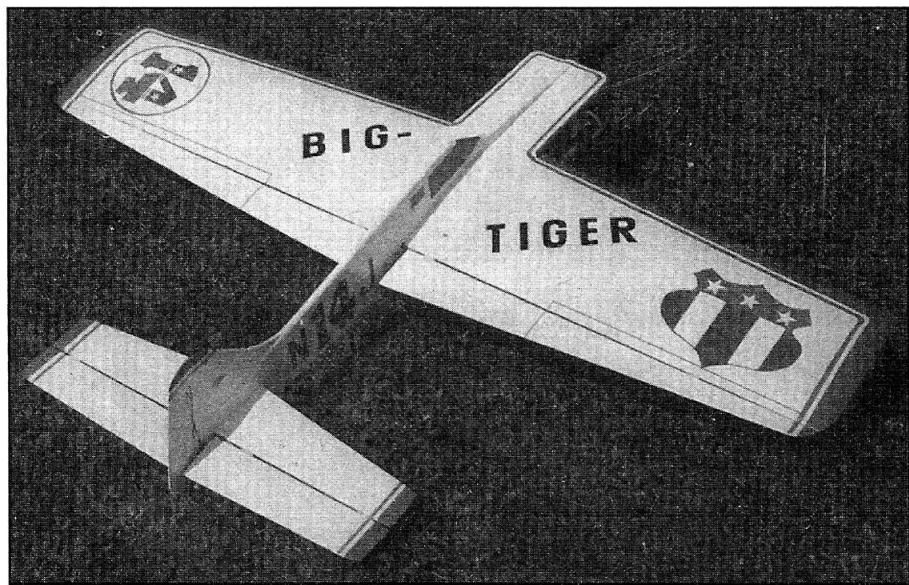
Be sure that the centre line of all ribs has

the same distance from your building board, or your wing will have anhedral. After adding the bottom planking the control system should be installed. This is unusual in that both pushrods leave the wing at the bottom side. Therefore the bellcrank has to pushrod arms (the longer one actuates the elevator pushrod).

For the horns, I see no other solution than to produce them yourself. It's not that difficult, but you'll need a blow torch. I use the Camping Gaz torch (it should be available in Britain, too). It's not expensive; solder is available from the same brand, it's perfect for our purpose (use the small torch tip), it can be used for many other applications, and replacement cartridges are cheap. Of course any other brand will work as well. But remember - the horns *must* be silver soldered!

With the control system installed - pushrods already fixed - the wing construction may be finished. I prefer RC plastic hinges for all control surfaces, the type with the wire pivot. The hinges must work absolutely freely. Sometimes I even rework the bearing parts to eliminate any friction. Be sure that the flaps are in 'neutral' position when the bellcrank is in neutral. This can easily be achieved by making the pushrod a trifle too long, and then adjusting it by bending where it leaves the wing cutout. Don't skip the centre rib parts, they are essentially necessary in a profile model. Only this way will you get a solid fuselage to wing connection.

After making the tailplane fuselage construction will start by cutting the two balsa main parts. The top part may be cut from a stiffer sheet. Shape the wing cutout slightly smaller than the actual wing centre section; perhaps you should use a card pattern cut according to your particular wing. Cut off the bottom section, which allows the wing to be installed.



**Simple lines, simple shapes save building time - so spend effort on the colour scheme and create a great Big Tiger!**

equal dimensions. This would be difficult to obtain since the engine centre line lies on the right hand fuselage side. So we have to 'cheat' a little here. Build the left cowl first, so you have an idea of how you fit the parts together and to the wing. Of course the (vertical) cowl width will have to fit your particular engine. But I think most 35 engines can be hidden under the cowl as shown on the plan. It might be necessary to remove some material for the engine mounting lugs. Build the right cowl and cut a former which fits exactly inside.

Glue this former to the fuselage right in front of the wing. Then cut off the rear part of the cowl and glue it to the fuselage and wing. The former serves as a mounting guide for

inside and the engine compartment. Before starting the finish carefully oil the hinges so no paint can creep in and stiffen the control system.

## Tanks

I don't give any hints for the finish here, it has been done so often. Let's look at the tank and the engine instead. The tank, as shown on the plan, has a capacity of 108cm (about 3 1/2 ounces). This should be suitable for most 35 engines with muffler (be friendly - use one).

Of course other tanks can be used, too. However care should be taken that the cooling air has enough room to find its way to the exit. Also, on profile aeroplanes the tank usually has to be mounted with its centreline higher than the engine centreline. With a flat tank as shown on the plan it's possible to find the correct position by mounting the tank up to the required level. With a deep tank there might be problems. Depending on the final tank shape and position it might be helpful to glue a stiffening former inside the rear end of the cowl.

The airplane was powered with an OS 35 FP, but any good 6cc engine will do. I have no experience with any of the new hot 25 or 30 engines, so I cannot give any advice. I will, however, advise against using a 40 engine - except those which are derivatives of 35s, of course, like the OS 40 FP and the new Merco 40. Most 40 engines are in another category and much too heavy. Such a relatively small aeroplane as the Big Tiger will get too heavy overall, and it will be hopelessly nose heavy with those powerful new 40s.

The aeroplane in the accompanying photos was built by a friend. I talked him into taking great pains with the finish. He reported that it took him almost as much time to do the finish as he needed for the framework.

I think it can be done in less time. Anyway - the result is worth some endeavour. The original Aeromodeller drawings were used as a pattern. They can easily be enlarged at the copy shop to the desired size, and then transferred to masking film. Yes, I know, it's a little more work than just a uniform dull grey paint job. After all, you can't get anything without doing anything. If you want to be proud of your latest creation, you have to build it.

If you want to enjoy its pretty looks, you have to paint it. You'll never get something for nothing. Just wait for those friendly remarks from your club members or fellow competitors when you present your new beautiful Big Tiger.

Now - do that bow to old Maestro Malmström!



**Ready to race? Not quite - Big Tiger circulates as slowly as any good aerobatic machine should. OS 35**

Now the ply side doublers should be prepared and the undercarriage wire bent. Fuselage parts are joined, engine bearers and hardwood insert added, side doublers slid into place, undercarriage installed and sewn on to the fuselage. Now the wing cutout is carefully shaped and the wing installed. Fuselage bottom section can be replaced now. The tailplane slips into the fuselage from the rear end. Close the slot with scrap making sure no glue can creep into the brass brushing. Connect the elevator to the pushrod and check the 0-degree setting of the control surfaces. Add the tail skid and the fin, install the rudder with about 10 degrees outboard deflection.

## Cheeky!

The left and the right cheek cowl are not of

the cowl. Install the beech dowel which helps to mount the cowl, then add the two part nose ring. Install your engine with spinner and carefully shape the whole nose section. Do it with devotion - onlookers will judge your craftsmanship mainly on how you executed this part of your aeroplane.

In case you want to add the wheel spats (you should!) you'll have to solder big washers to the undercarriage legs first. Glue all parts together - only tack glue the outer parts, fix part to washer with glass cloth, install wheels, then replace outer parts. Add ply fairing with nylon landing gear clips. Remember that when you mainly fly on grass you should omit the wheel pants and use bigger wheels.

Cover the removable cowl with glass cloth, and give one coat of epoxy resin to the cowl