A 9'0" SPAN AEROBATIC MODEL FOR 4 FUNCTION RADIO CONTROL & 6·5cc (·40cu in) ENGINES.

MINI-ATLAS

designed by D. PARKER.

£1:75

The R.C.M.&E. Plans Service
18-20 Bridge Street, Hemel Hempstead, Herts.

ALL WOODS BALSA UNLESS STATED OTHERWISE.

F.1. 1/16"PLY

F.2. 1/4"PLY

CRESCENT N°5 ENGINE MOUNT

F.3a. 1/16"PLY

CHAMFER

F.4a. 1/8"PLY

F.4. 1/8"PLY

F.4b. 1/16"PLY

CHAMFER

F.3b. 1/8"PLY

F.3. 1/8"PLY

1/2" SHT TOP

1/4" SHT STRAKE

1/4" SHT FIN

MYLAR HINGES

SHEET JOIN LINE

FIN LET INTO TOP SHT

1/4" SHT RUDDER

SHEET JOIN LINE

COMMERCIAL CANOPY CUT TO FIT

F.3a. SCRAP 1/4" SHT

SCRAP SHT

1/2" SHT

1/4" SHT

F.1. FUSELAGE DATUM

F.2.

TANK BAY 8oz KAVAN SQUARE USED ON ORIGINAL

F.3.

DENOTES 1/32" PLY DOUBLERS

1/2"Δ

1/16" PLY TREBLER

1/4" PLY PLATE

F.4.

BALANCE

AILERON SERVO

F.4a.

F.4b.

DENOTES 3/16" SHT FUSELAGE SIDES

1/2"Δ CORNER PIECES

1/4" SHT SUB FIN

2" DIA SPINNER

FRONT VIEW

F.3b.

1/4" SHT BOTTOM

8SWG NOSELEG FIX BETWEEN ENGINE MOUNT & F.2.

1/2" SHT

3/8" SHT BOTTOM

1/2"Δ

HOLE FOR BOLT ACCESS

8 SWG MAIN LEGS

MAIN U/C LEG 2 FROM 8SWG

2" DIA NOSEWHEEL

2" DIA MAINWHEELS

NOTE WING SECTION SHOWN ABOVE IS ON ℄ OR W.1. – SECTION AT FUSELAGE SIDE, OR W.2. IS SHOWN BY DOTTED LINE, a Δ or ▽

CONTROL SURFACE MOVEMENTS

AILERON	3/16" EACH SIDE OF NEUTRAL
ELEVATOR	1/2"
RUDDER	1"

MEASURED AT EXTREMITY OF SURFACE

ROOT RIB SECTION

RIB REFERENCE LINE

TIP RIB SECTION

MAKE WING RIBS BY SANDWICH METHOD. USE REAR OF FRONT SPARS AS REFERENCE LINE CUT ROOT & TIP RIBS FROM PLY MARK ℄ & REF LINE ON RIBS PUT TIP RIB ON ROOT RIB, LINING UP ON LINES, DRILL 3 HOLES FIT BLANKS FOR ONE WING PANEL BETWEEN PLY RIBS & SHAPE BLANKS

14 SWG JOINER

TAILPLANE & ELEVATOR FROM 1/4" SHT

MYLAR HINGES

1/2" SHT SIDES

3/16" SHT SIDES

1/32" PLY DOUBLER

1/16" PLY TREBLER

F.1.

F.2.

1/4" SHT TO HERE

F.3.

1/2"Δ

1/4" PLY PLATE

F.4.

1/2"Δ

1/4" DIA DOWEL

COVER CENTRE 3" OF WING WITH GLASSCLOTH & RESIN, BEFORE COVERING WING

STARBOARD WING PANEL SHOWS FINISHED STRUCTURE AFTER SHEETING.

PORT WING PANEL SHOWS BASIC STRUCTURE

3/8" SHT L.E.

1/8" PLY

1/4" SHT ROOT RIB

1/4" SQ. FRONT SPARS TOP & BOTTOM

1/8" SHT

3/32" SHT TOP & BOTTOM

3/32" = 1/4" CAPSTRIPS TOP & BOTTOM

BLOCK TIPS 1" = 1 1/8"

ALL RIBS FROM 3/32" SHT

1/8" = 1/4" REAR SPARS, TOP & BOTTOM

T.E. JIG FROM 3/16" or 1/4" SHT

1/16" PLY, BLOCK SUPPORTS

1/2" = 3/4" H/WOOD GROOVE U/C BLOCKS

1/4" SQ H/WOOD SERVO RAILS

3/32" SHT TOP & BOTTOM

JIG BLOCK

1/4" SHT T.E.

JIG GOES HERE

JIG BLOCK

BOLT HOLES

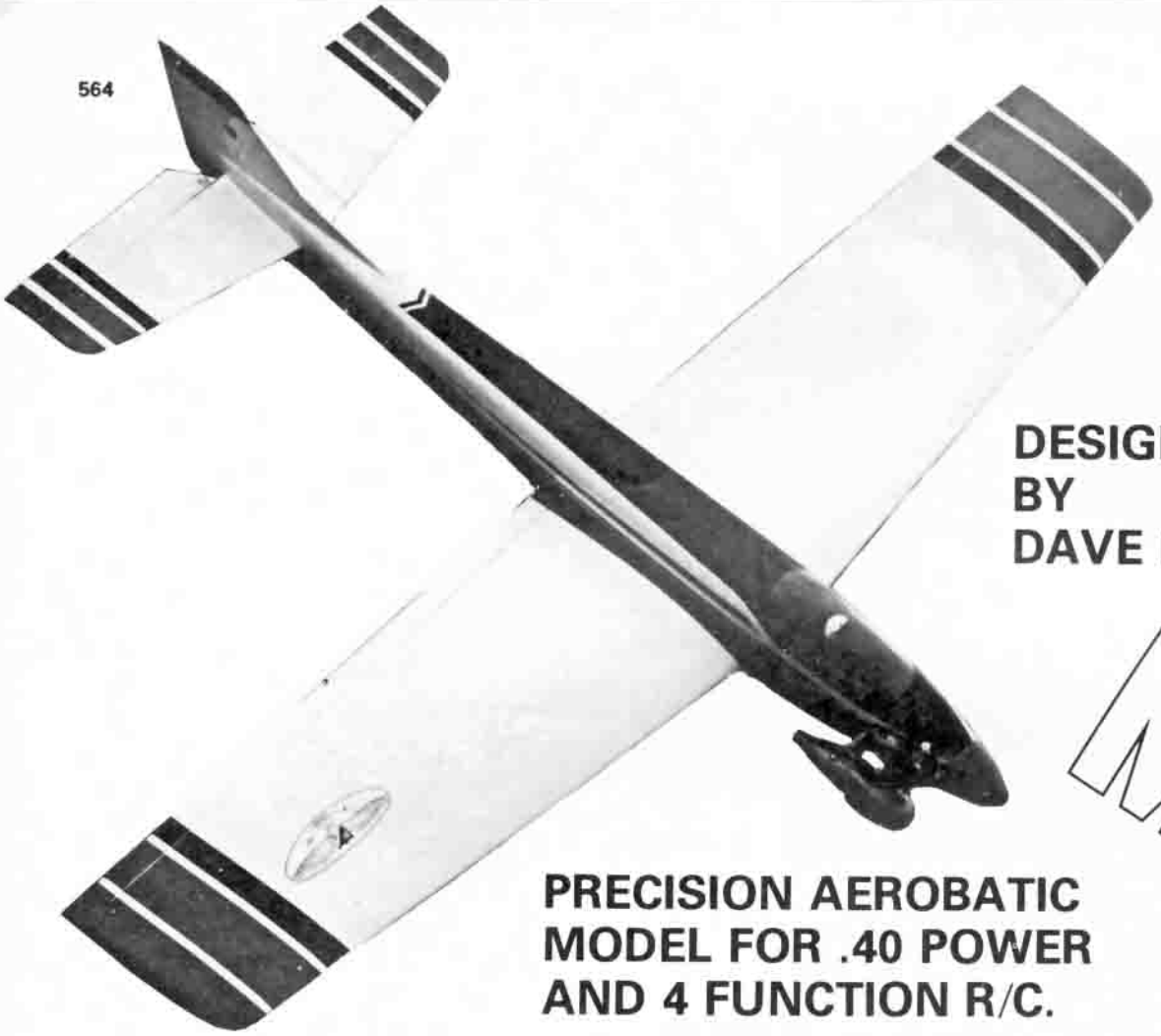
MYLAR HINGES

AILERON 3/8" = 1"

14 SWG AILERON HORN

PLASTIC TUBE

RC.1315



DESIGNED BY DAVE PARKER

MINI

PRECISION AEROBATIC MODEL FOR .40 POWER AND 4 FUNCTION R/C.

FOR some time I have been building .60 powered aerobatic models and living with their large size, transport difficulties and the general high running expenses of a performance model. The modern generation of Schnuerle-ported high performance .40 cu. in. engines however, make it quite possible to obtain really good aerobatic performance with a more manageable size of model and *R.C.M.&E.* has already published plans for several to prove the point.

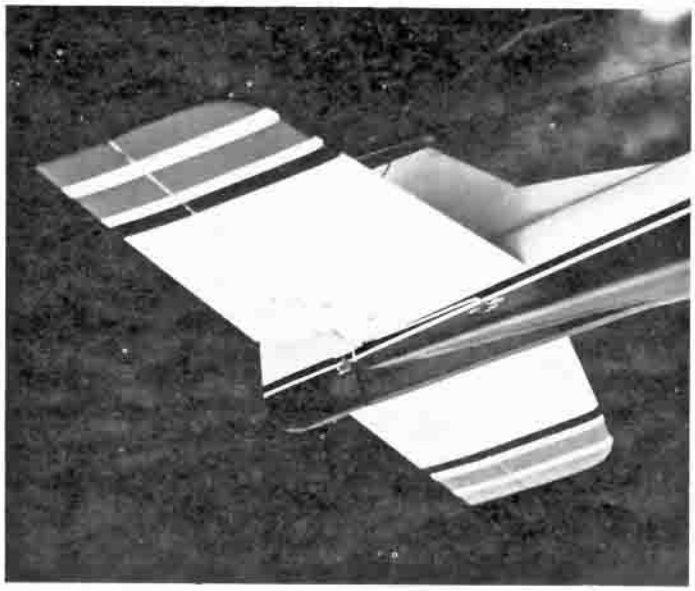
With these points in mind, Wolfgang Matt's Atlas World Championship winning design was immediately the aeroplane I wanted to reproduce as a basis of my own venture into .40 aerobatic machines. Even allowing for the lighter weight of .40 engines and the fact that such motors offer outputs as high as a two year old .60 the original size aeroplane would be too big and complicated to construct and in any case, a smaller size airframe was half the exercise. Therefore I scaled down the outlines and preserved the sections and moments to produce a 'Mini Atlas', naturally with due acknowledgement to Wolfgang Matt.

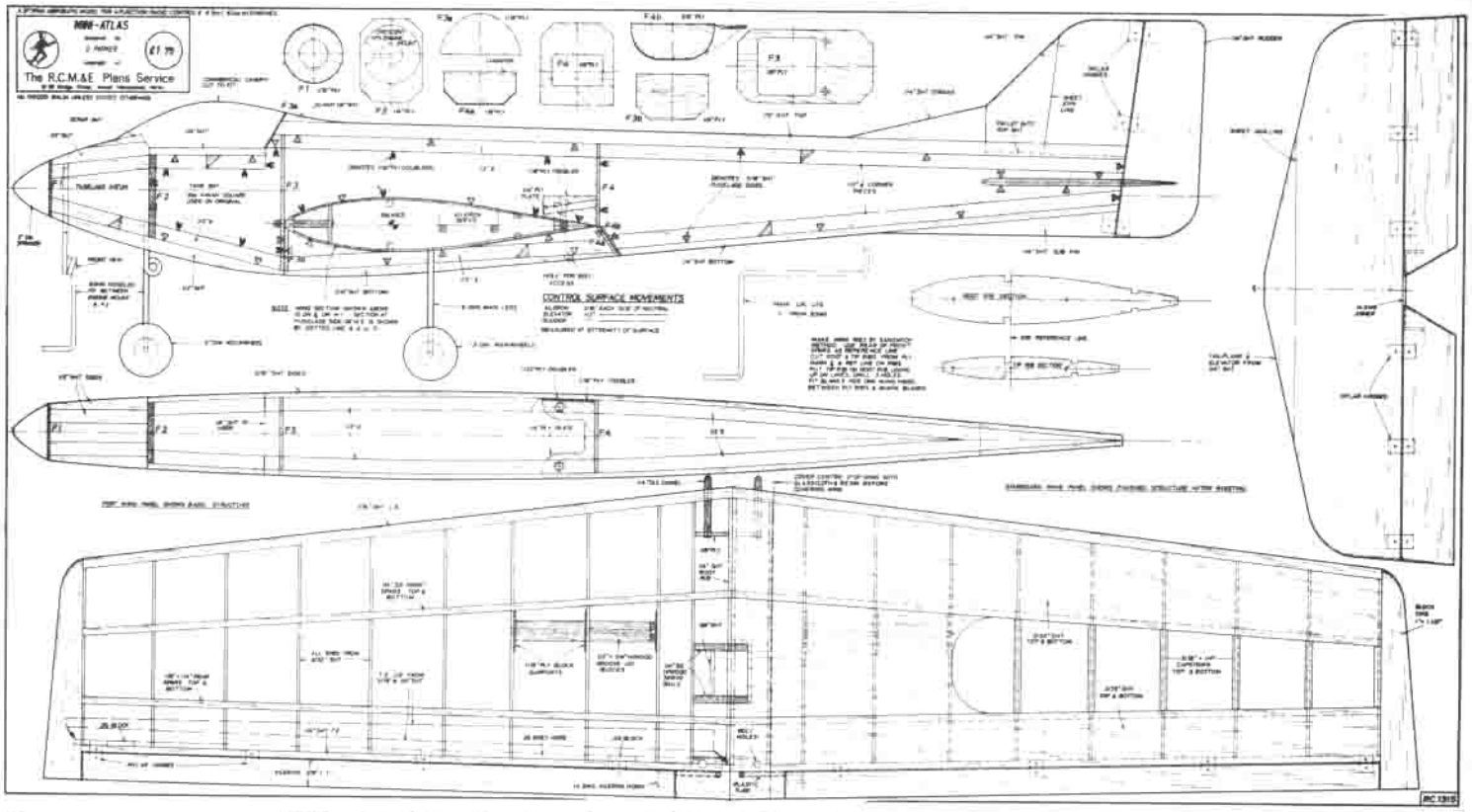
Fuselage

The construction of the fuselage is straightforward and should present no problems for the average modeller. The basic procedure is set out below. Cut two identical fuselage sides by taping together two sheets of $^3/_{16} \times 4 \times 36$ in. medium balsa. Mark the position of the 0.8mm ply doublers onto the fuselage sides, making sure of producing one left and one right hand side. Bond the doublers to the sides using contact adhesive. Then PVA glue the four pieces of $^1/_2$ in. triangular section on to the fuselage sides, followed by F2, epoxy glued into position square to the fuselage side.

Cut a scrap piece of $^1/_4$ in. sheet balsa to the same width as F2 $2^5/_{16}$ in. $\times$ $2^5/_{16}$ and check that it is square. This is to be used as a dummy former and is placed just forward of the F4 position, but do not glue in place. Next, glue the second fuselage side to F2 propped up parallel to the first by the dummy former. Check that the front and rear ends of the fuselage sides are level with one another, using a square placed on your building board. When the assembly is completely dry remove the dummy former and install F3 and F4 using epoxy.

Left: the pushrods exit neatly under the tailplane. Right: the author's model is powered by O.S. .40 F-SR. Note use of silencer pressure.





Full size copies of plan shown here at 1/7th full size can be obtained from R.C.M.&E. Plans Service, price £1.75 including V.A.T. When ordering please quote Plan RC/1315 and allow 15p post and packing.

MINI ATLAS

Place the assembly over the fuselage plan view and epoxy the rear fuselage sides together, taking special care to ensure that the fuselage is perfectly true. This is particularly important for an aerobatic type model because any slight twist will affect aerobatic performance.

Fix the noseleg to F2. On the original this was fixed between a Crescent metal motor mount and F2. Next, glue in place the ¼ in. sheet cockpit floor, white glue the top and bottom sheet to the fuselage and epoxy F4B to the bottom.

Cut out and epoxy the ½ in. sheet cowl top into place, which then has a further piece of ¼ in. sheet glued on top of it. Fit two pieces of ½ in. triangular section inside the cowl.

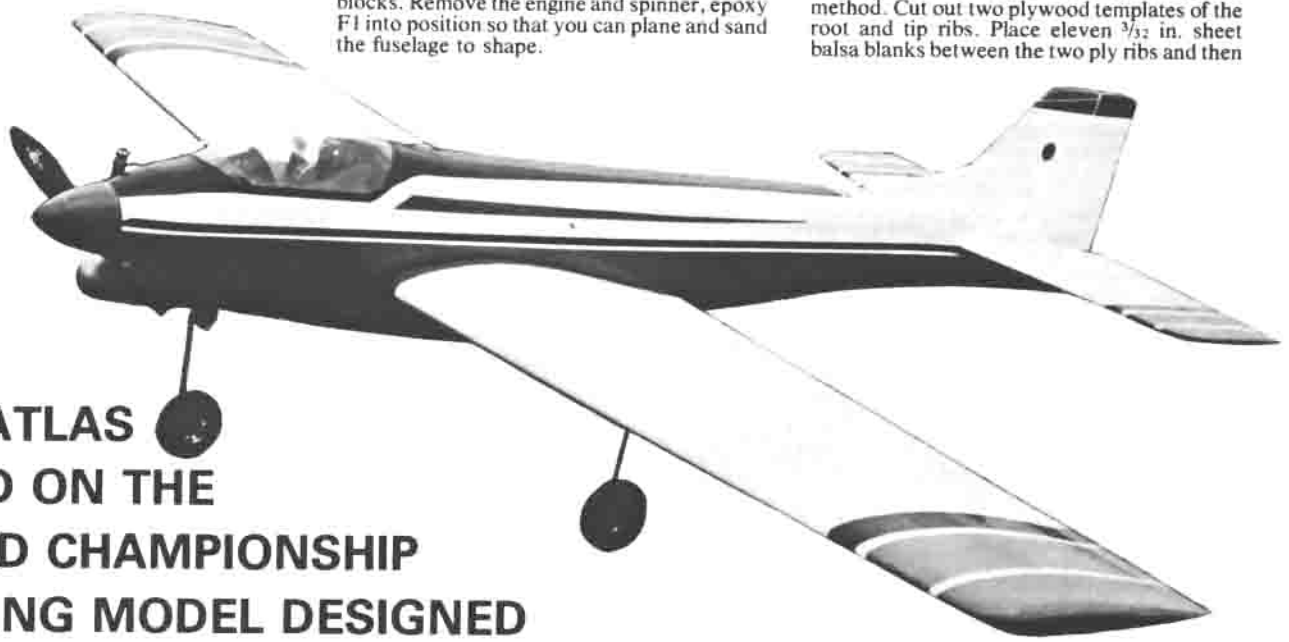
Fit the engine and spinner, using the latter as a guide to mark its outline onto the cowl blocks. Remove the engine and spinner, epoxy F1 into position so that you can plane and sand the fuselage to shape.

Sand and shape the tailplane and fin to section, thereafter gluing the tailplane to the fuselage and ensuring that it is square and parallel to the wingseat. Cut a slot in the top of the fuselage, then epoxy the fin into position. Glue the subfin to the bottom of the fuselage and epoxy the ¼ in. ply wing mount plate and 1/16 in. ply reinforcement panels into place. The canopy used on the original was from a large Micro-Mold bubble canopy, which should be trimmed to fit.

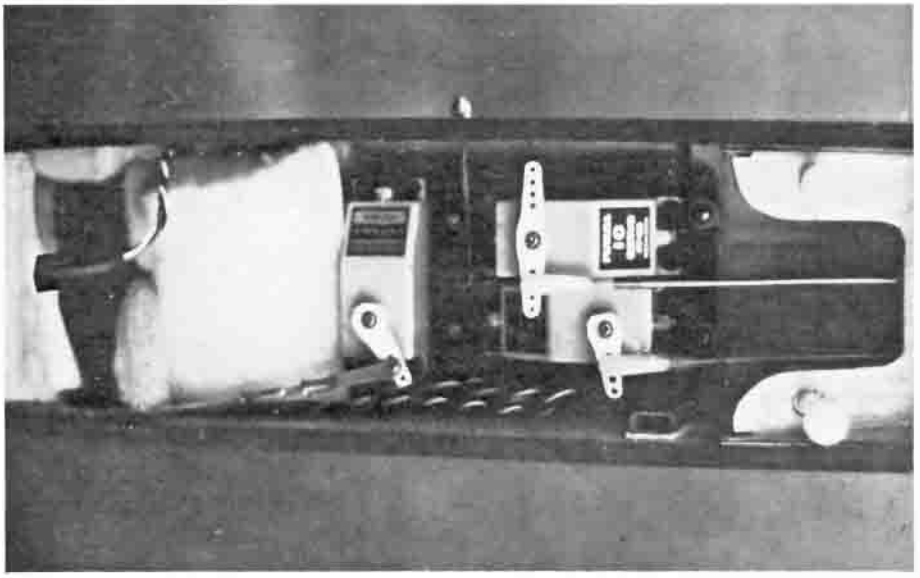
Wing

The wing on the original model was made from veneered foam. For those people who prefer a built-up wing I have included this on the plan and I will run through the construction sequence.

Wing ribs are made using the sandwich method. Cut out two plywood templates of the root and tip ribs. Place eleven 3/32 in. sheet balsa blanks between the two ply ribs and then



MINI ATLAS BASED ON THE WORLD CHAMPIONSHIP WINNING MODEL DESIGNED BY WOLFGANG MATT



sand to shape. Cut notches for spars at this stage. Repeat this procedure for the second half wing. Cover the plan with polythene to prevent the structure sticking and build the wing upside down on the building board, so that the top surface of the wing is left flat. This taper will give the underside of the wing a small amount of dihedral.

Make two simple wing jigs from 1/4 in. or 3/16 in. sheet as shown on the plan, pin the jigs over wing image. Pin the 1/4 in. × 1/4 in. main spars in place and glue all the ribs to the spars.

Make sure that the trailing edge of each rib is seated firmly on the jig and glue the 1/4 in. × 1/2 in. trailing edge to both wing panels. Glue the rest of the spars into the wing structure together with the ply doublers, undercarriage blocks and bottom sheet.

When set, remove the basic structure and replace over the plan the right way up, resting the trailing edge on the jig strip. Sheet the right hand panel as shown on the plan and leave to dry before repeating the operation for the left hand wing panel. Add 3/8 in. leading edge, the centre section of the trailing edge and the torque rods, making sure that these are the right way up.

Add the wing tips, cap strip the wing top and bottom, carve and sand the whole wing to shape. Reinforce the centre section with 3 in. glass fibre tape and resin.

Drill the holes for the wing bolts and bolt the wing to the fuselage. Drill the holes for the wing leading edge locating dowels and glue the dowels in place. Cut the ailerons from 3/8 in. × 1 1/2 in. trailing edge stock.

Cover the lower halves of Formers F3 and F4 with masking tape to prevent the underwing fairing from being glued to the fuselage during assembly. Glue one piece of 1/2 in. triangular section to each of the 3/16 in. sheet underwing fairing sides, making sure that you have made one right and one left hand. Glue F3A and F4B to the wing and when dry, glue the underwing fairing sides to the wing, F3A and F4B. Add the 1/4 in. bottom sheet and when completely dry, plane and sand the fairing to section and blend into the fuselage shape.

Covering

This is always a very topical subject and each modeller will have his or her own favourite way of finishing the model. The original AQUARIUS was covered using iron-on film and I must admit that I find Humbrol Flight Span very easy to work with. It has always given me first class results.

Dave Parker displays prototype Mini Atlas against a wintery backdrop. Proportions of the Atlas obviously scale down well, in the case of Dave's model right down to the colour scheme of Wolfgang Matt's big original.

Above: Futaba servo tray used on original model. Note charging socket retained neatly in place with servo tape. Below: the large underwing fairing is permanently attached to the wing before the model is finished.

Setting up and flying

Set up the control throws as shown on the plan for your first test flight. In particular, remember that the ailerons are quite sensitive even with the small movement shown.

If I have said it once I have said it a thousand times – make sure that the model balances as shown on the plan. It is surprising to see the number of experienced fliers who will attempt to fly a new model without checking that the balance point is correct. When asked after the crash if the balance point was in the correct place as shown on the plan, they always reply "I was in such a rush to get the model ready to fly for this weekend, that I completely forgot to check it". Make sure that you check that the balance point is as shown on the plan and be equally certain your engine runs and throttles reliably. In particular, do not set the mixture too lean for the first flight.

Before releasing the model check that all the controls function, and function the correct way. On take off the Mini Atlas should only require a small amount of rudder to make it track straight.

Let sufficient speed build up, ease back on the elevator and she will rotate with ease. Climb gently to a safe height and adjust the trims as required before familiarising yourself with the model's aerobatic capability. Mini Atlas is capable of doing the complete FAI Aerobatic Schedule and should give you a cost effective means of getting into 'big time' aerobatic competitions if that happens to be your aim. For most of us of course, such is not the case but even at your club field, R/C aerobatics is fun – a test of your plotting skill, so make the most of it.