

Build this model
from our **FREE**
PRO-PLAN



Piper Comanche

Keep your free cover mounted plan safe. You'll need it to build Simon Delaney's 56" sport scale interpretation of one of the world's most widely used light aircraft

Here's Simon with the prototype Piper - a semi-scale model with ideal sport proportions.

The idea for this model started after seeing several semi-scale light aircraft at my local flying field. Although tempted by kits such as the Graupner Monson and other similar aircraft, I thought it might be fun to design my own light aircraft. It would certainly work out cheaper that way.

There are several advantages with this type of model. The tricycle undercarriage provides effective ground handling on most club sites, the scaly appearance is a bit different from the average sport model and the construction can be kept simple and quick to build. Colour schemes are bright, which makes for good orientation and a bit of embellishment in the cockpit only takes a short time and makes the whole model come to life.

The prototype model used foam wings, although the rib stations are



shown on the wing plan if you wish to make a built up version. The total construction took about three weeks. The Comanche is fully aerobatic on the OS45 used in the original model but would be quite happy with a 30 size engine. If you would like to fly a model which is slightly different from the "run of the mill" 40 size aerobatic planes, then the fun starts here.

If you are going to use the foam

winged version, the first thing to do is ring up Nexus and order them from the plans department. If you prefer to "bash the balsa", then the ribs can be produced by using the sandwich method which involves placing the required number of blanks in between the root and the tip templates shown on the plan. It is up to you whether you wish to sheet the entire wing or just the area in front of the main



spars. In either case the spars should be webbed with 1/16th balsa with the grain vertical. Although the above instructions are brief, the builder who has decided to opt for the built-up version will know what he is doing anyway.

The foam panels have balsa leading and trailing edges and a block tip. Once glued in place these can be sanded to section and the aileron torque rods and tubes added to the trailing edge. I used 12 gauge wire and some scrap plastic tubing with control horns that were adjustable by sliding a captive collet up and down the wire. This is a quick, simple and inexpensive way round a sometimes fiddly job. You can, if you wish, use strip ailerons, but I felt that inset ailerons looked more scale-like and were worth the extra effort. If the latter are used, the inboard trailing edge can be cut away to accept the aileron tube before gluing in place. Next cut the aileron servo box and line with balsa and cut out the undersurfaces of the wing as shown on the plan to accept the 1/4" ply undercarriage plates. These are a lot easier to fit than hardwood blocks as the area can be sanded away with a 60 grade sanding block. I used PVA to glue these in and they never came out, although the prototype model had many stiff landings.

Did I mention joining the wings? Use bandage and resin for the foam winged version. The built-up wing will need two ply braces but I didn't need to tell you that, did I!

Fuselage

Nothing tricky here. Make up two fuselage sides from 1/8th balsa and 1mm ply. Note that the ply doubler finishes 6mm short of the front to allow F1 to align correctly. Glue F2 and F3 to one side, checking that they are at right angles, and when dry, add the other side. Once this is thoroughly dry, pull in the front sides and fix F1 in place. Chamfer some 3/8" triangular balsa strip to shape and glue in

place to reinforce the joint. Pull in the tail end and add the rest of the formers. I used snakes for control runs but balsa pushrods can be used if you prefer. Sheet in the rear of the fuselage underneath, making sure that the grain runs crossways.

Place the wings on the fuselage and drill through F2 and the leading edge of the wing. Fit a 1/4" hardwood dowel to locate the wing and then fit the rear wing mounting fittings by drilling through the wing from inside the fuselage. I used plastic L shaped brackets glued to the sides and supported by hardwood blocks. In the event of a bad landing or - dare I say it - crash, the wing mounting pulls away from the fuselage with the minimum of damage and can be easily repaired. Once satisfied with the wing mounting, remove the wing and add the 1/16th ply plate to the cockpit floor. This gives the fuselage some strength as the large glazed area needs some beefing up.

Glue the tailplane in place, checking for squareness, and then add the rear upper fuselage sides and the top sheet which should be cut oversize and then sanded back to the line of the fuselage sides. I built a floor for the fuel tank from 3/16" balsa sheet and siliconed the tank to it after routing the fuel pipes through F1. Sheet the top front decking with 1/8" balsa sheet, either planked or rolled, and sand to shape. Soft block was used underneath and a hatch can be constructed if you wish - it's always handy to be able to get at the tank.

Glue the fin in place, checking for alignment with the tailplane. On the prototype, I made the rudder horn fit inside the fuselage by using a threaded rod as a torque rod into the rudder. The very end of the threaded portion was bent through 90 degrees to accept a ball link and so kept the rear end looking neat without bits of wire and horns spoiling the look of the model. It did, however, take quite a long time to produce and is definitely not essential.



Glazed look

Next comes the cockpit glazing. First you make an oversize template from some scrap card by wrapping it around the front of the windscreen area and marking the edges with a pen. It might take a few attempts to get it right but once you are happy with the shape you can transfer it onto some acetate or clear plastic sheet.

Now for the clever bit. Remove the nozzle from the front of your heat gun to give a wider area for the heat to play on and gently warm the plastic round the contour of the top sheeting towards the rear window edge. It's worth wearing a gardening glove or similar protection for your hand during this bit and if you've already covered the fuselage in plastic film you'll have to do it all again! Glue the trimmed sheet in place with R/C modeller's glue or silicone, not forgetting to paint inside the cockpit and fit a pilot beforehand. The cowl on the original model was made from balsa block in the time honoured fashion but was later replaced by an old ABS moulding for the top half and some car repair gauze and glass cloth and epoxy for the underneath. This was still being fashioned when the accompanying photos were taken. This is a very quick and fun method of making shaped parts and is something which I'm still trying to perfect.

Holding point

I took the opportunity to finish the prototype in a bright colour scheme as most of my scale models end up in camouflage, etc. Many light aircraft are, however, finished in white with just some stripes which isn't very helpful with orientation - something which we need as much help as possible with. I used orange for the upper wing colour and white for the underneath so I could tell which way up the model was and this proved to be a good choice. The registration letters were bought at my local car accessory shop which was far quicker than making them from Solarfilm.

A steerable nose wheel was incorporated on my model which allowed me to taxi around and gave good directional control during take-off.

Our Comanche is based on one of the early variants of this popular single engined light-plane.

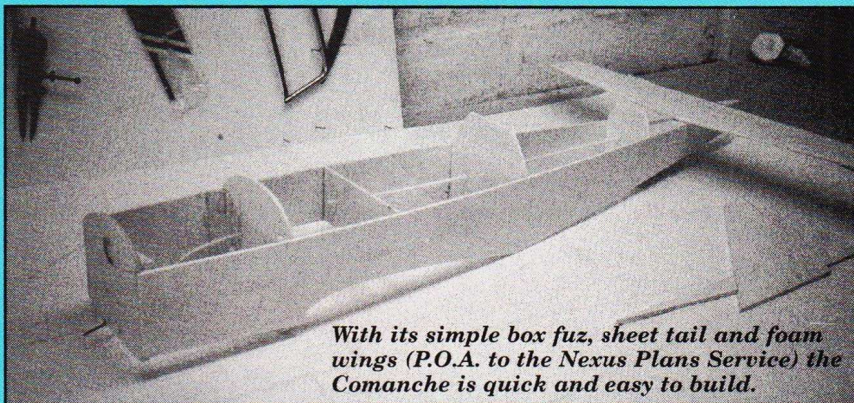
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Plan Specifications

Name.....	Piper Comanche
Designed By.....	Simon Delaney
Aircraft Type.....	Sport Scale
Wingspan.....	56"
Wing Chord.....	11"
Wing Area.....	670 sq.ins.
Aerofoil.....	Symmetrical
Fuselage Length.....	38.1/2"
Tailplane Span.....	21"
Tailplane Area.....	110 sq.ins.
Tailplane Section.....	Flat plate
Fin Height.....	8.1/2"
Engine Range.....	.30 -.45 cu.in.
Fuel Tank.....	8 oz.
Rec. Number of Channels....	Four
Control Functions.....	Rudder, elevator, aileron, throttle
C.G. (from L.E.).....	2.1/2"
Elevator Throws.....	+/- 3/8"
Aileron Throws.....	+/- 1/4"
Rudder Throws.....	+/- 3/4"
Sidethrust.....	None
Downthrust.....	None

Materials Used in Construction

Fuselage.....	Balsa/ply
Wing.....	Built up balsa or veneered foam
Tail Surfaces.....	Balsa sheet
Weight, Ready to Fly.....	5.1/4 lbs.
Wing Loading.....	17 ozs./sq.ft.



With its simple box fuz, sheet tail and foam wings (P.O.A. to the Nexus Plans Service) the Comanche is quick and easy to build.

The OS 45 used in the original model was side mounted which gave good access to the glow plug and the carb lined up neatly with the cooling holes in the full size cowling. A dustbin silencer fits inside the cowl with the gunge blowing out through a hole in the bottom. Incidentally, I use a 12 x 6 prop on this engine which gives very low levels of noise and plenty of power.

Permission to taxi?

What's it like to fly? Extremely easy is the answer! Taxi out and turn into wind. Accelerate smoothly down the runway and ease it off with a touch of elevator. Once you have reached a safe height, reduce the engine power and explore the flight characteristics. I think that you will be pleasantly surprised as the Comanche has no nasty vices and is very aerobatic. The prototype model was flown

by several of my friends for evaluation and the only problem encountered was not being able to get the transmitter back off them as they were enjoying the model so much! Most well known aerobatics (and some I didn't know!) were executed with delight from all who flew the model and I use that as the basis for my judgement. All I ask now is that they use their own fuel in future!

Landings are straightforward. Reduce power gently and keep some in reserve as you line the Comanche up with the runway. Once over the threshold, cut the power and ease back on the stick. I enjoyed landing on the main wheels then letting the nose drop. As the speed bleeds off introduce the steering and taxi back to the pits to refuel and do it all again.

Do try the Comanche. It's a rugged model which should give you many hours of pleasure, which is what it's all about - right? ●