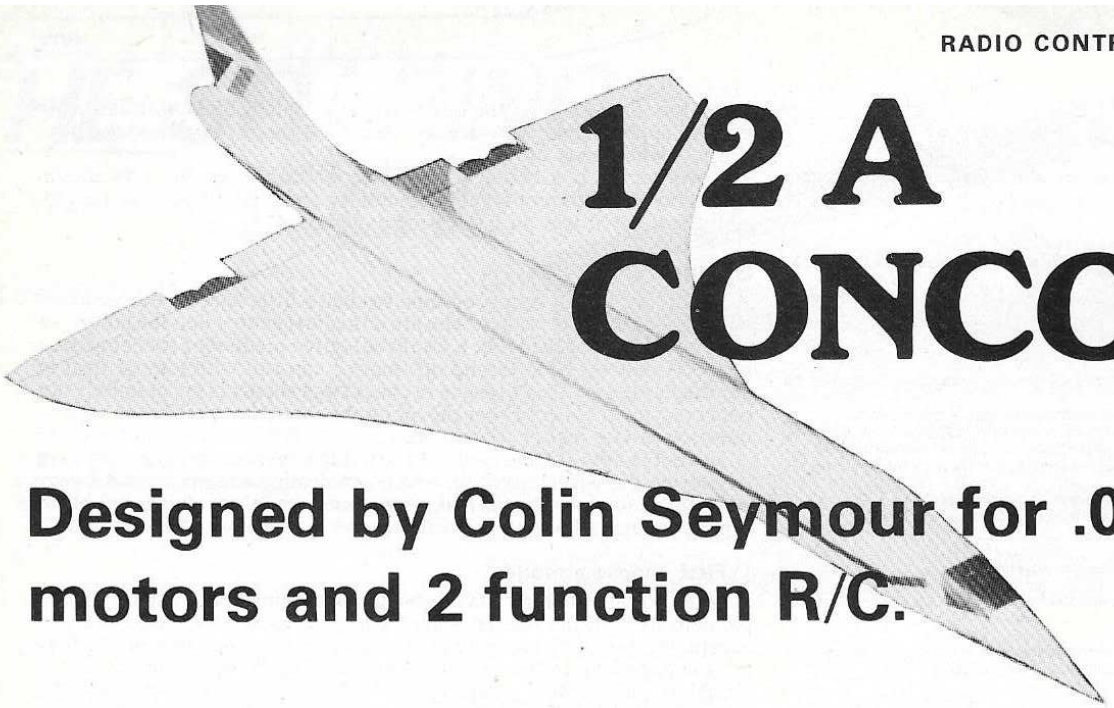


1/2 A CONCORDE

Designed by Colin Seymour for .049 cu. in. motors and 2 function R/C.

THE idea of building a Concorde, and subsequent motivation, was inspired through remembering the successful free flight Concorde (featured as a free plan in *Aero Modeller*) and the apparent ease and informality of flying *scale only* models at the ever successful MAP Scale day each June at Old Warden.

My original model (and subsequently this also) was scaled up from the *Airfix* plastic 1/144th scale kit using the finished model. It was apparent from the beginning that using funnyfarm measurements would ease the multiplication by 3 needed to arrive at the desired 1/48th scale. There are intentionally slight deviations (artistic licence) from the true scale. This occurred when I rounded up or down a few measurements for simplicity.

Wings

Edge joint sufficient pieces of 1/8 in. sheet balsa to make up the wing. This is easily done by first *Sellotaping* the sheets together on one side then opening out using the tape as a hinge applying PVA and finally closing the joint. Weight the assembly until dry. Prick through the wing outline from the plan and cut to shape. On the underside build the engine nacelles using 1.5 mm ply where shown. Sand the parts prior to assembly, leaving the top and rear nacelle parts off until after fitting the elevons.

Elevons were each made in one piece, sanded to the cross section shown on the plan. Recess to accept rod and tube hinge/linkage and outer elevon hinge. Take care not to epoxy the rods to the tubes. Final alignment of tubes and rods should be verified by offering the elevon to the wing to check correct alignment with the nacelles. With care, the rods, tubes and hinge can be bonded to the elevon and then to wing and engine nacelles in one operation. Slot and trim elevon flush with the nacelle and slot the inner elevon then finish off the nacelle. To give a slight washout effect at the wingtips (where LE meets TE) sand the top wing surface flat and the underside curving up to meet it. Sand remaining portion as a flat bottom section.

Make a fin from 3 mm balsa sheet with the grain vertical.

Sliding Servo

Having only a few servos to share between a small fleet, I devised a servo tray for this model which has the advantage of 'clip-in' action which removes all pressure from the tube and rails as happens with self tapping screw assembly. Also it makes a modular assembly, the need for which will be explained later. This system can easily be adopted for multi servo securing so keep it in mind for your future models.

Make the sliding servo tray end pieces from

6 × 6 mm (¼ in. square) hardwood allowing 1 mm clearance at each end for the servo. Drill out and fix the servo locating dowels (3 mm) using the servo as a pattern. Epoxy the tubes to the side plates and bind lightly to maintain the central axis to side plates. Add a 1 mm clearance both sides to the overall width to determine length of rail-end supports. Insert the rails into the tubes and epoxy into one rail-end support. When dry, slide the frame along to determine maximum movement, then add a clearance of plus 6 mm and epoxy rails into 6 × 6 mm end support. Fix locating pegs for the fixed servo to the middle rail-support and end-support. Position the fixed servo in place with clearance and epoxy the side piece and clamp. *Evo-stik* contact adhesive was used to fix the hinges, firstly to servo end pieces, then to the servo clamps positioned squarely on top of the locating pegs and mated with the hinge. Recess the sides of the servo clamps to take an elastic band.

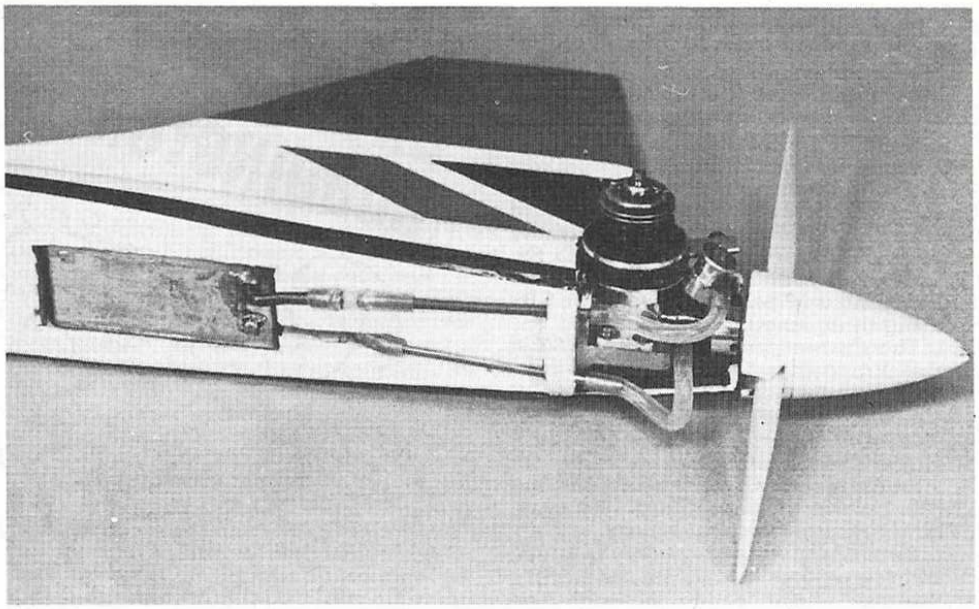
Fuselage

Prior to making templates F1 (2 off) check that your radio gear will fit. If the servos need more room increase the fuselage depth slightly, Futaba servos 15 & 16 m fit snuggly.

1.5 mm (1/16) Balsa sheet (4 ins. wide) was used to sheet the fuselage. If you use obeche or mahogany veneer, take their different thicknesses into account when making templates. Attach the templates to the foam, aligning the straight edge (trim foam full length if necessary with foam cutter). Cut out 4 pieces 24 ins. long. Place two pieces together and Sellotape around. Trim vertically for left side thrust. Epoxy the engine mounting former F2 to the top part of the foam. Space the top and bottom 3 mm apart with scrap balsa, Sellotape around fuselage 215 mm from the rear end, divide circumference into 8. (See sketch on the plan.)

Note: while cutting taper, between positions 1 to 2 and 8 to 1 very little if any foam will be removed. Between 3 to 4 and 6 to 7 there should be no spacing material because the wire may be caught.

With two pieces tapered and two pieces so far untouched, stick to fuselage centre pieces (2 off) with thinned down *Copydex*, at the same time joining the foam butt joint fashion. To the bottom add the 0.8 mm ply rear face and 3 mm locating dowel. Drill out F2 to accept the locating dowel and trim the centre fuselage pieces maintaining the tapered form at the end. Cut off the nose foam core piece perpendicular to the end of the centre fuselage piece (save until later). Cover the top and bottom cores with 1.5 mm balsa 4 ins. wide, 36 ins. long, extending past and over F2 on the top core to form an engine cowl (what there is of it). Trim flush with the left side (from rear) enough to screw on metal engine mounting and engine. Space the supersonic spinner (same thickness as prop boss) and screw lightly in place. Split the extended sheeting and shape to blend in with the spinner adding F3 (what there is of that as



well). Binding will help until the glue has set and maintain the shape with a light coating of epoxy adhesive. Recess to accept modified 30 c.c. C/L tank. Slot the top and fit the fin, also fit the 1.5 mm ply front facing.

With the bottom core covered and front 0.8 mm ply facing fitted, place the complete fuselage on a long flat surface and score all around with knife blade blocked up to a height of 20 mm, taking care towards the tapered end. Do the same again with the blade 23 mm high. Remove the 3 mm wide strip of balsa from each side, cut out the 3 mm slice of foam with the foam cutter. Stick the wing to the top part of the bottom fuselage recessing to take the elevon control horns, then stick the bottom piece to underneath of wing. Using 6 × 6 mm (¼ in. × ¼ in.) balsa build onto under the wing the fuselage under-side tapering in depth towards the leading and trailing edges of the wing root. Sheet this with 1.5 mm balsa cross grain.

Nose

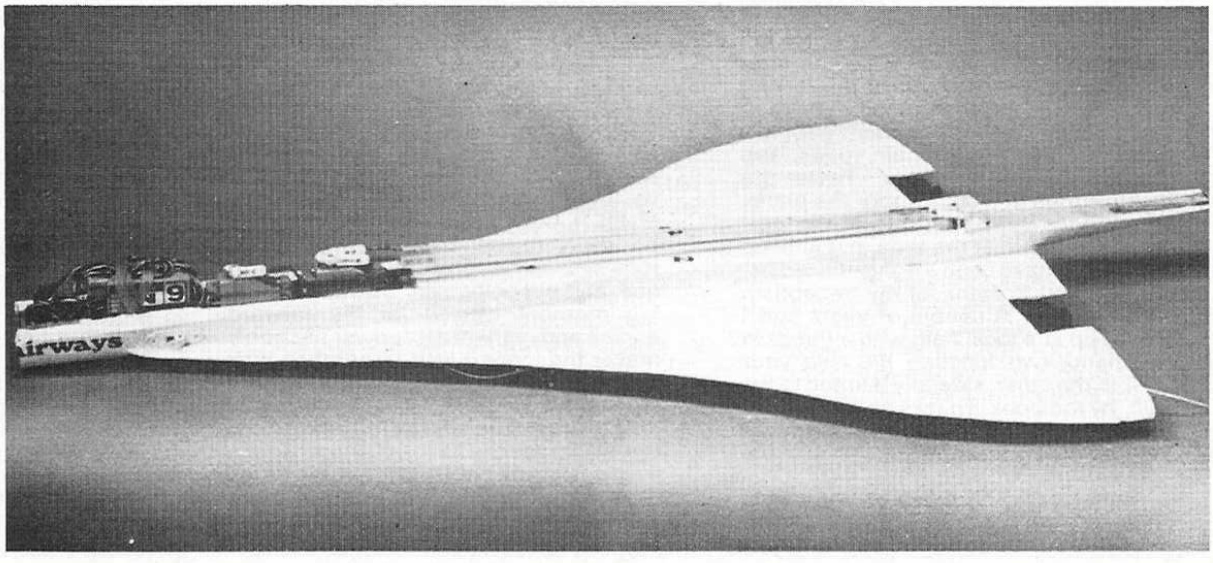
Stick the nose centre template piece between the nose cores with *Copydex* and trim vertically with cutter. Pin side template pieces in place aligning them with the datum marks with centre template. Trim horizontally, cutting the balsa centre template with blade. Mark new centre lines as these are used as high spots. Using a blade (Sunlane razor plane) in a slicing action trim progressively to desired profile. To prevent the foam beads being pulled out use a stroking action when smoothing down with wet or dry 240 or 360. You will be surprised at the finish of the foam. Cover the rear end with 1.5 mm balsa for 60 mm and the rest with 0.8 mm balsa sheet. Sand down well. Completely cover (heat shrink covering was used) refit engine, tank, spinner prop and tubes. Tape the fuselage and nose together.

With three pairs of hands and model inverted, place mixer module (fitted with servos), the receiver and 225 Mah power pack. Juggle these around until the model balances at 53 per cent of the wing cord (from front) which point is 33 mm in front of the nacelles. Mark this position and transfer it to the inside of the bottom fuselage. Better positioning and spacing may be obtained with the power pack in front of the servos followed by the receiver. Cut out the balsa and foam to suit. Epoxy the mixer in place not forgetting to recess the wing (from inside) so that there is no interference to the sliding servo. Recess the top fuselage so that there is no interference with servo output arms and pushrods. It may seem time consuming to juggle around with the flight pack, but it does dispense with unnecessary ballast, and because of the long moment arm very little trimming ballast if any is needed in nose or tail.

Flying

With the engine really peaking (crankcase pressure to tank was used as well as a 6 × 4 pusher prop cut down to 5½ × 4), ask your local Olympic javelin thrower to get it airborne. Maintaining orientation is the only flying problem I encountered, so watch carefully. Concorde is fast and very responsive to roll control with some nose down pitching when turning. It becomes airborne very well from a bungee launch and a hook position is indicated on the plan. As fuel is used up there will be C of G movement, causing the elevators to become slightly less positive. Using the pressurised fuel system one could, however, mount the tank on the balance point and avoid this problem altogether.

- Now set your engine into reheat and GO!



Above; authors T.D. 051 runs on timed crankcase pressure tapped from the nipple moulded onto the T.D. front housing. First prototype was powered by a Cox Black Widow .049. Right; R/C equipment revealed – those long pushrods should be a hard grade of balsa.