

**A three-way CLUB**  
*Interested in the new C*  
**DAVID BODDINGTON presents**

# INTRO • HOT 20

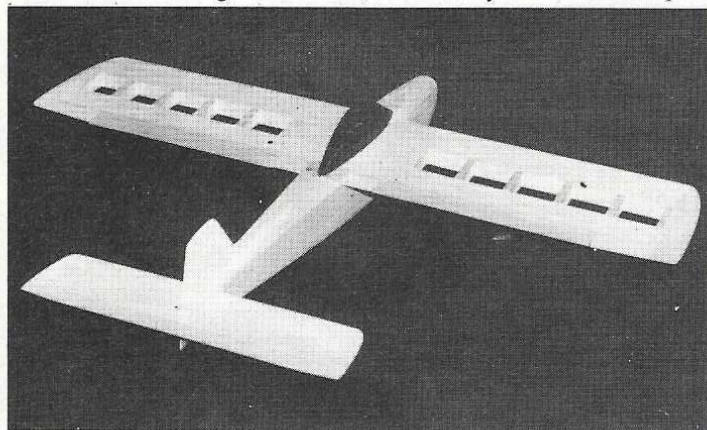
**D**ESIGNED primarily for the Club 20 Pylon racing class (also for Quarter Midget with engine control), the 'Hot 20' and 'Intro' are also very useful sports aerobatic models capable of exciting manoeuvres. Should the model be constructed with aerobatic flying as the main purpose, a clunk tank may be fitted. A metal tank will give only a limited amount of inverted flying, which is intentional and is to allow the engine to be stopped at the completion of the race. A good .19 or .20 cu. in. capacity R/C engine should be adequate power for all forms of flying and, for sports flying, a .15 cu. in. engine is adequate.

Whether you fly the models as pylon racing aircraft or sports models you should find them fast, responsive and enjoyable.

The 'Intro' is the easier to build of the two models and is a little 'squarer' in looks. It is not however, noticeably slower in racing and should prove to be highly competitive. Two versions of the 'Hot 20' are shown, one in the guise of a semi-scale Mustang – referred to locally as the 'Mustard' for fairly obvious reasons. Detailed instructions cover the building of the 'Hot 20' and I have added a few notes at the end regarding the differences in building the 'Intro'. The 'Intro' should be suitable for anyone who has built two or three models previously.

## General

Before commencing construction, familiarise yourself with the plan

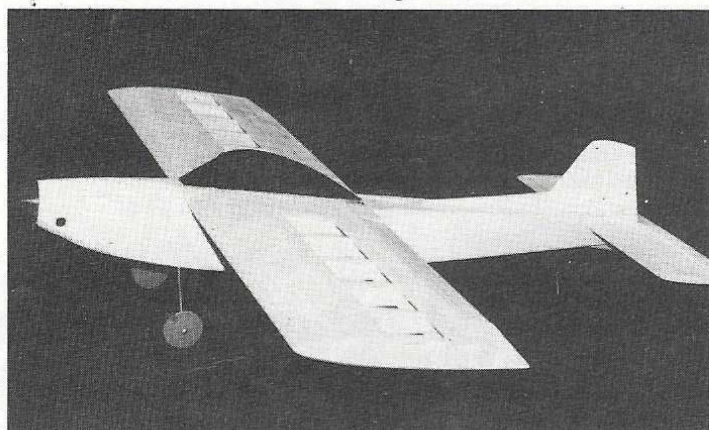


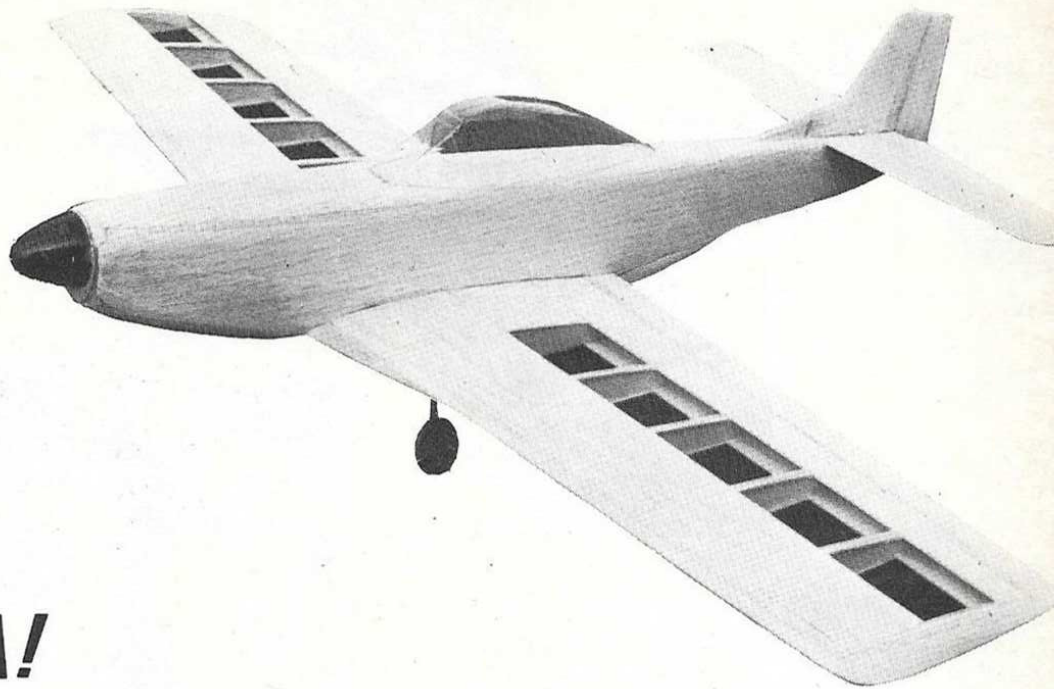
and instructions. Sketch on the plan the proposed position of your radio equipment, the models are more likely to finish nose heavy than tail heavy, and the radio installation should be kept rearwards. With modern miniature radio equipment there should be no installation difficulties but the use of 225 mAH Nicad cells, for the airborne power pack, is preferable to dry batteries. An all-up weight in the region of 2 lb. 4 oz. can be easily achieved (minimum permissible racing weight 2 lb. 2 oz.), particularly when plastic film coverings are used. I would recommend cutting out all balsa wood and plywood parts before commencing construction.

## Construction

White P.V.A. glue can be used for the majority of construction but epoxy adhesive should be used for positioning the fuel tank and impact adhesive may be used for gluing the 0.8mm ply doublers (F8) to the fuselage sides (F7).

**If simplicity is what you are looking for in a Club 20 racer, then the Intro is for you. Actually, simplicity and serviceability are the prime requirements of pylon-racing – just ask any of the top notch F.A.I. race men and they will confirm.**





**Hot 20 BONANZA!**

*Hot 20 racing class?*

*Three designs in one feature*

# HOT 20 • MUSTANG

## Wing

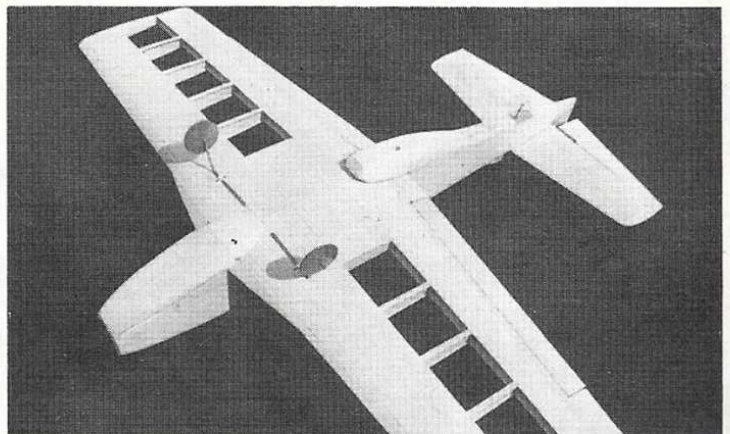
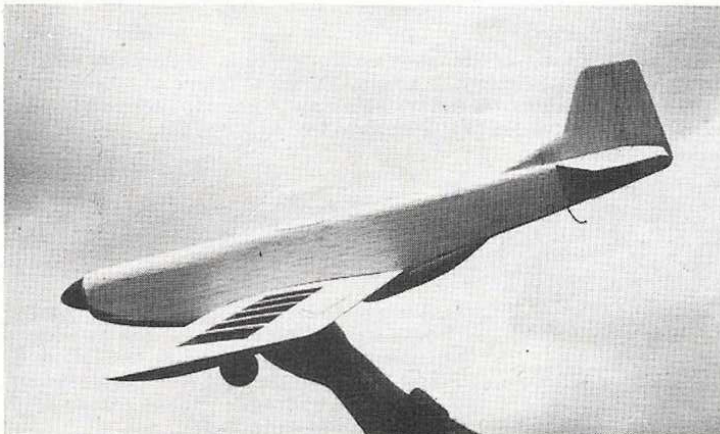
The wing halves are built over the plan which should be protected with thin transparent plastic or by rubbing dry soap or candle wax on the plan to prevent sticking. Commence construction with the port wing. Pin down the leading edge (W9) and trailing edge (W15) with scrap packing pieces under each, as shown on the wing section. Pin down the main spar (W12) and glue in position wing ribs W1 to W8 taking care that they are correctly aligned at the leading and trailing edges—marking a centre line on the ribs and the leading and trailing edge strip will assist here. Note that rib (W1) overhangs into the starboard wing by  $\frac{1}{8}$  in. Glue the centre section reinforcement (W23) (from  $\frac{3}{8}$  in.  $\times$   $\frac{1}{2}$  in.  $\times$  2 in.) in position. When all the ribs are dry, glue the top leading and trailing edge sheeting (W10 and W13) in position followed by the  $\frac{1}{16}$  in.  $\times$   $\frac{5}{16}$  in. capping strips (W19) and centre section top sheeting (W20). Remove the wing panel from the plan.

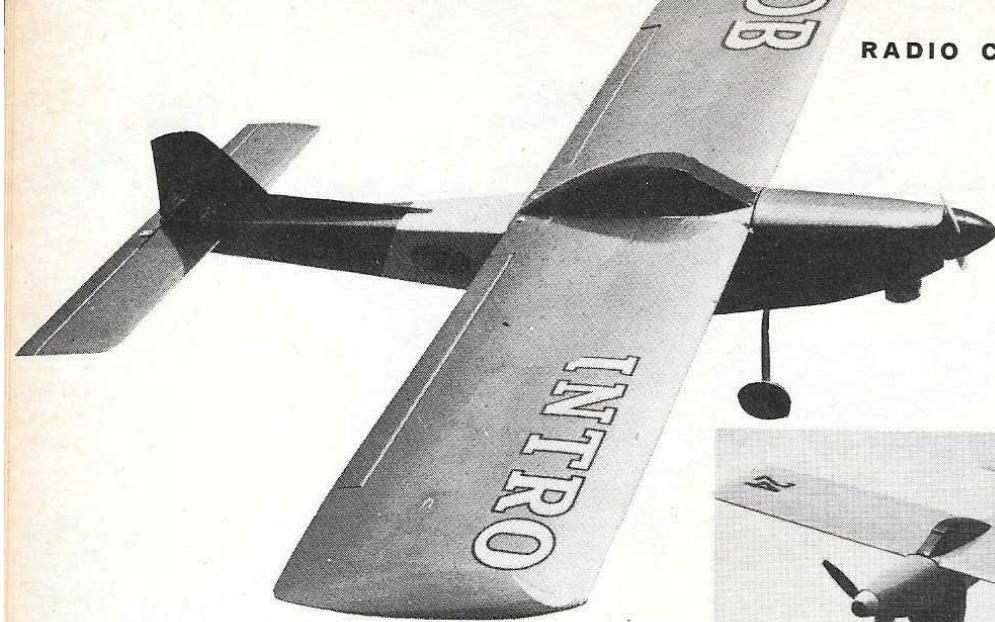
The starboard wing is built onto the port wing and the port wing tip

must be raised 2 in. at its tip to attain the correct dihedral. Build the starboard wing in a similar manner to the port wing, the top sheeting overlapping onto rib (W1).

When dry, remove the whole wing from the building board. Cut slots in ribs W1, 2 and 3 ( $\frac{1}{16}$  in.  $\times$   $\frac{1}{2}$  in. deep) immediately behind the main spars and glue the dihedral brace (W30) in the slots. It may be necessary to cut away part of the centre rib (W1) to allow for the installation of the aileron servo and this, together with fitting a  $\frac{1}{8}$  in. scrap crosspiece (W26) should be carried out at this stage. Drill the leading edge (W9) and (W23) to receive the  $\frac{3}{16}$  in. dia. dowels (W26). These should be epoxied in place after the wing has been sanded and covered. Glue the 1.5mm  $\times$   $\frac{3}{8}$  in. plywood undercarriage bearer (W28) and  $\frac{3}{8}$  in.  $\times$   $\frac{3}{8}$  in. grooved hardwood block (W27) in position. The bottom leading edge sheet (W11) may now be added, cutting carefully around W28, together with the centre section (W21) and trailing edge (W14) sheet. The basic wing construction is completed by adding the outside trailing edge piece (W17) and wing tips (W22) in place. Cut trailing edge  $\frac{5}{16}$  in.  $\times$  1 in. piece (W18) to shape and cut or file a groove in the front edge to receive the aileron linkage. Grooves must also be formed in the trailing edge strips (W15). The aileron linkages should now be made, as shown on the sketch on the plan, note that the lengths of the brass tubes (A4) and aileron torque rods (A5) vary in length for the port and starboard

**Hot 20 and 'Mustang' have similar airframe structure – the later is simply a slight gilding of the lily. Either will suit the modeler who likes his racers to have a little appearance about them.**





Strangely enough the Intro looks very like one of the very early (1965 vintage) Goodyear racers, Phil Kraft's Go-Go Fli, which was certainly a goer in its time. Intro will go together in a minimum of time, and shoulder wing layout ideal for hand launching as practised at most Club 20 meetings.



wing. Bend the threaded rod (A5) immediately below the thread, slip on the brass tubing (A4) and bend the rod in the directions and to the lengths shown, cutting off the surplus rod. Cut off the long prong from one of the clevises (A1) - leaving the prong with the hole in it. Make the opposite aileron linkage similarly. Aileron pushrods (A3) and clevises (A2) are connected from the servo to the arm (A1) in the normal way, ensuring that the ailerons operate in the correct sequence. Glue the trailing edge piece (W18) to the trailing edge strip (W15), with the aileron torque rod inserted, taking care not to get adhesive on to the linkage. Trim the 0.8mm plywood top reinforcement (W25) to the wing. The aileron (W16) leading edge should be chamfered, to allow deflection, and grooved and drilled to accept the torque rod (A5). Ailerons are fitted to the wings, after covering, with the mylar hinging strip (A6). Drill a 5/32 in. hole (F22) through the trailing edge reinforcement to take the 4 B.A. wing retaining bolt.

### Fuselage

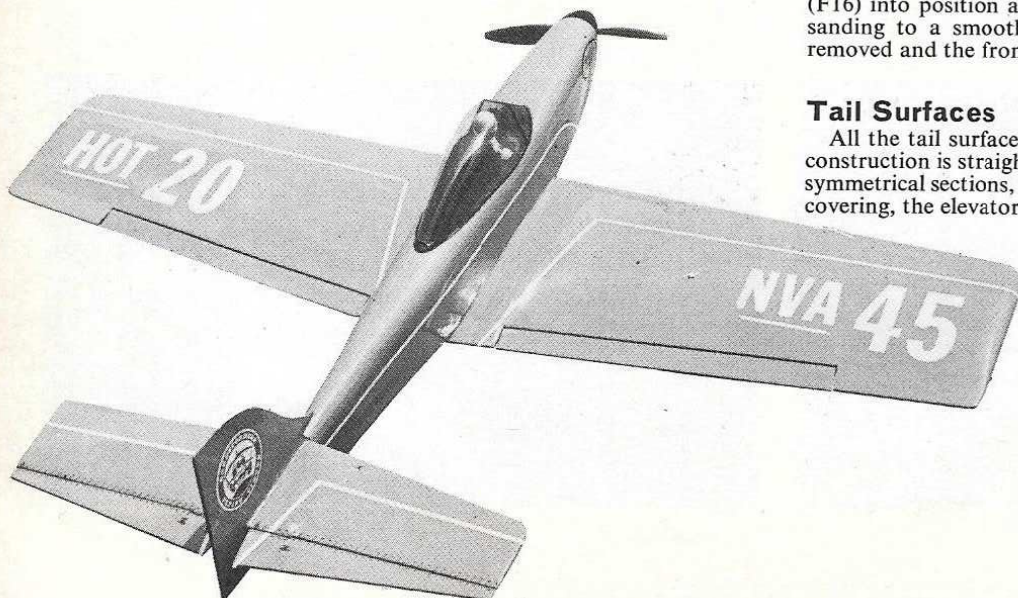
The basic fuselage is constructed upside down, onto the 1/4 in. top decking (F23). Mark the position of the formers F2-F6 on to the underside of (F23) and pin down on to the building board. Glue 1/2 in. triangular stock (F9) to the line denoted by the inside of the fuselage sides (F7). It will be necessary to saw cut the triangular stock to obtain the fuselage curvature. The .8mm plywood doublers (F8) should be glued to the 3/32 in. fuselage sides (F7), one left and one right. 3/16 in. sq. strip (F12), 3/32 in. x 3/8 in. (F19 and F20) and additional 3/32 in. doubler (F15) are now glued to the fuselage sides. Mark and drill the

nylon engine mount (EMI) to suit your engine, the engine is held in position with self-tapping screws (EM2). Drill (including hole for fuel feed tube (FT3), and countersink former F3 and bolt the engine mount to it with 4BA countersunk screws and nuts. Drill 3/16 in. holes in former F4 for the wing dowels (W26). Bend the tail skid (F21) as shown on the drawing and bind and glue it to former F6. Glue formers F1/F2 to F6 vertically onto the top block (F23). Sand the inside of the stern-posts of the rear of the fuselage lightly to allow them to join at the correct angle. When the formers have dried, glue the sides in position to the formers, triangular (F9) and top sheeting (F23). Pin the sides to the formers and hold the rear together with clothes pegs. After the glue has dried, the fuselage can be removed from the building board and the inside of the engine and fuel tank bays grain filled and fuel proofed. The 1/16 in. underside rear sheeting (F17) can be glued and pinned in position, also the 1.5mm tail skid plate (F18). Epoxy and sew the tail skid to the plate. 1/2 in. triangular pieces (F10) should be glued between F2 and F3 and F3 and F4 and also vertically behind F3.

The fuel tank should also be constructed at this time and epoxied into position with scrap 1/4 in. and 1/2 in. fore and aft of the tank. All seams of the tin tank (FT1) must be soldered. Drill holes for, and solder in position, the brass vent (FT2) and feed pipes (FT3); the feed pipe is bent to terminate at the rear bottom of the tank - lightly solder in position. The lid (FT4) is finally soldered into position, and the whole tank pressure tested for leaks. Filling the tank with fuel is achieved by holding the model vertically on its nose and filling through FT2, the tank will vent through the engine needle valve. Tack glue the bottom 1/2 in. block (F16) into position and shape this and the remainder of the fuselage, sanding to a smooth finish. The bottom block (F16) may now be removed and the front carved out to receive the engine and silencer.

### Tail Surfaces

All the tail surfaces are made up from 3/16 in. sheet parts and the construction is straightforward. Sand the fin, tailplane and elevators to symmetrical sections, the tail surfaces may be glued to the fuselage after covering, the elevators (T3) are joined by 14g wire (T4).



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## INTRO & HOT 20

### Undercarriage

Retain the  $1\frac{3}{4}$  in. diameter wheels with washers soldered to the undercarriage legs (UC4). The undercarriage legs are held in position on the wing with nylon saddles (UC3) screwed with small screws to the 1.5mm plates (W28).

### Radio Installation

This will depend on the type of equipment to be used but, as the model is likely to finish nose heavy, keep the equipment as far to the rear as possible. Movement of the ailerons and elevator should be kept to  $\frac{1}{8}$  in.- $\frac{3}{16}$  in. up and down for the ailerons and  $\frac{3}{16}$  in.- $\frac{1}{4}$  in. up and down for the elevators. Use the outside hole on the elevator horn to limit the elevator movement to start with. When you have become proficient at flying with the limited control surface movements they may be increased.

### Finishing

Tissue, nylon or plastic film covering may be used on these models - nylon will result in a tougher model at the expense of slight additional weight. The model may be made more attractive by decorating it with racing numbers, sponsors transfers and fitting the  $1\frac{3}{4}$  in. dia. spinner.

### Flying

Keep the balance point well forward, ensure the radio equipment

and engine are operating reliably. The hand launch should be flat and fast but the pilot will need to hold on some right aileron and a little up elevator. Consistent and fast racing times will only result from practising flying an accurate course knowing how to start and adjust your engine, and keeping your model well maintained. You will also need the assistance of a well-briefed caller and pit man!

### 'Intro'

### Construction

Similar constructional methods are used in the 'Intro' with the following variations.

### Fuselage

This is not built upside down on the top sheeting but constructed in the conventional manner. Check carefully that formers are both square to the fuselage sides and upright. The undercarriage is easily removable by unscrewing the nylon clamps and sliding the unit out, the triangular piece of plywood (F4B) helps to keep the undercarriage firmly in place when it is on the model.

### Wings

$\frac{3}{32}$  in. balsa-wood strips (W10 and W17) are glued to the leading and trailing edges before construction is commenced. This gives an easier support for the  $\frac{1}{16}$  in. leading and trailing edge sheeting.

The remainder of the building should be self-explanatory from the plans. For experienced pilots it is possible to dispense with dihedral for the wings and in this case, the wing may be built as one complete unit.

Keep the control surface movements as for the 'Hot 20'.

I hope you enjoy building and flying either, or both, of these racers. Let me know how you get on and also if your club or group are interested in taking part in some Club 20 racing.

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