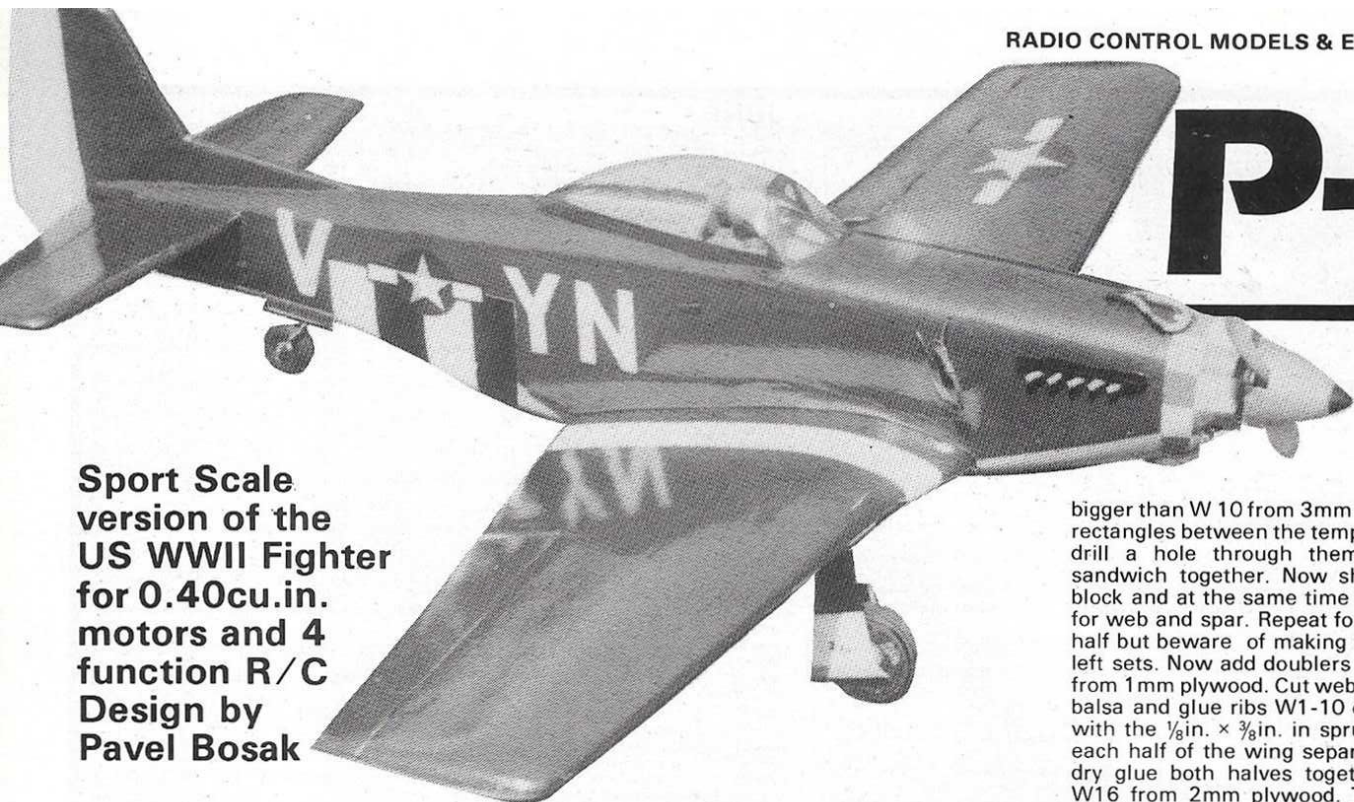




**Sport Scale
version of the
US WWII Fighter
for 0.40cu.in.
motors and 4
function R/C
Design by
Pavel Bosak**

IN A SHORT article published in the French magazine 'Modele', I read that my plans for a semiscale model of the US Navy 'Corsair' FU-4D fighter was the best seller of 1982. This prompted my decision to build a series of the best known fighters of WWII. So to follow the 'Corsair' I have designed a series to a common scale designed around one specific engine size — 0.40cu. in. I first built a P-51 'Mustang' followed by a Japanese 'Zero'.

All the models in this series are relatively small having 1200-1300 mm wing span, and quite high surface loadings in the order of 80-90g/dm². I had several reasons for building these models. First they are compact, even a complete model can be placed in a large suitcase or on the rear seat of a car. Secondly, the powerful motor ensures a reserve of

performance and moreover the heavier the model the more stable it is in a strong wind. The model of the P-51D is semiscale constructed with regard to the most simple and quick methods. The history and the description of the P-51D have been published many times and there are several reference sources such as 'Profiles' available so I do not propose to repeat them. Now to the construction.

Building the wing

This is a conventional all balsa structure using ribs and spars. It is also possible to build the wing from foam and veneer. For a balsa wing cut from 2mm plywood W10, W1 templates for ribs. Cut eight rectangles a little

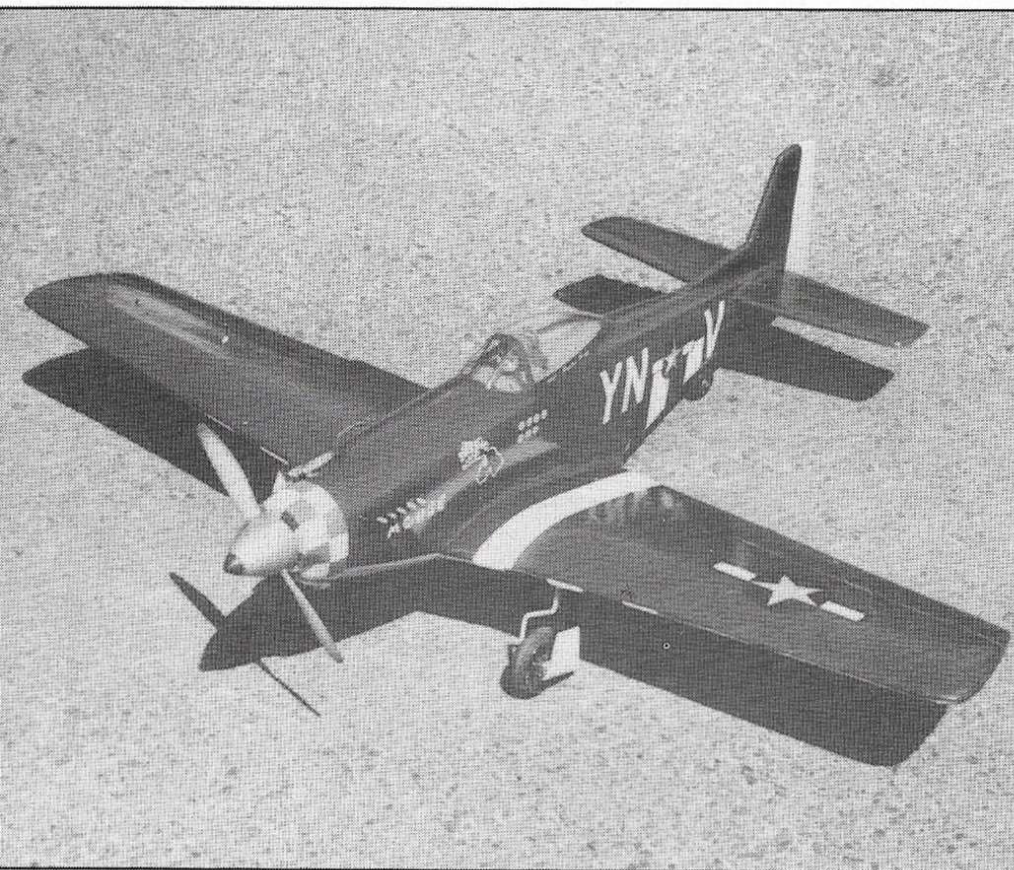
bigger than W 10 from 3mm balsa. Put these rectangles between the templates W1, W10, drill a hole through them and bolt the sandwich together. Now shape the whole block and at the same time cut the notches for web and spar. Repeat for the other wing half but beware of making two right or two left sets. Now add doublers to W1 -2-3 ribs from 1mm plywood. Cut web W11 from 5mm balsa and glue ribs W1-10 onto it, together with the $\frac{1}{8}$ in. $\times$ $\frac{3}{8}$ in. in spruce spars. Build each half of the wing separately and when dry glue both halves together with joiner W16 from 2mm plywood. To get the right dihedral, place one wing half on a flat surface and prop up the other 5cm. Then cut notches for undercarriage mounts in the front part of W1, 2 and 3. These are made from beech blocks 15 $\times$ 12 mm. Screw the 8swg piano wire undercarriage legs to them, then glue these blocks to the notches in W1, 2 and 3. Now glue the section of leading edge W12 from 5mm balsa into place and cover the bottom of the wing with 3mm balsa. Cement W17 between the central ribs W1; W17 is cut from 3mm plywood. Now add a 10mm hardwood dowel into W16, 17 and cement a 1mm plywood rectangular reinforcement between ribs W1. Fit the aileron control pushrod and add the 3mm balsa top wing sheeting. Now glue on the other half of the leading edge W13 from 10mm balsa followed by the central part of the leading edge W15 and the wing tips. When dry sand the wing. Now cut out the ailerons from the basic wing. Add parts W14 from 7mm balsa sand the aileron and fill the ends with 3mm balsa (see sectional view of aileron). Screw control horns to the ailerons and fit with mylar hinges.

Building the tail surfaces

Both parts are of the same construction, a basic balsa frame of 5mm balsa covered on both sides with 3mm balsa. Rudder and elevators are cut from 10mm balsa, elevator halves are connected with 16swg piano wire.

Building the Fuselage

Before starting the fuselage assembly prepare all the parts. First cut the 5mm balsa sides strengthened with plywood doublers as shown. Cut formers F1-5 and the tail wheel mount. Fit captive nut for wing fixing to F4 mounted on a beech block. The tail wheel leg formed from 2mm steel wire if fitted to F7. Epoxy the nuts for engine fixing to the engine bearers. Now assemble the fuselage. Glue the sides to formers F1-5 and glue in the fin. When dry cut the 5mm top fuselage balsa sheeting and fit a 3mm balsa cockpit floor. Cement F7 to the lower rear section and seal it in with balsa block. Glue another block to this block which then represents the rear part of the oil cooler. Fit the tank and throttle control pushrod into the front section and add the front fuselage balsa sheeting. Now check the wing fit with the fuselage, sanding the sides as necessary. Now glue into place parts F6 from 1mm plywood. Loosen the screw holding the wing and into the slot between fuselage and wing place parts F6 covered with glue. Now tighten the screw again trapping the F6 parts in place. Make the wing



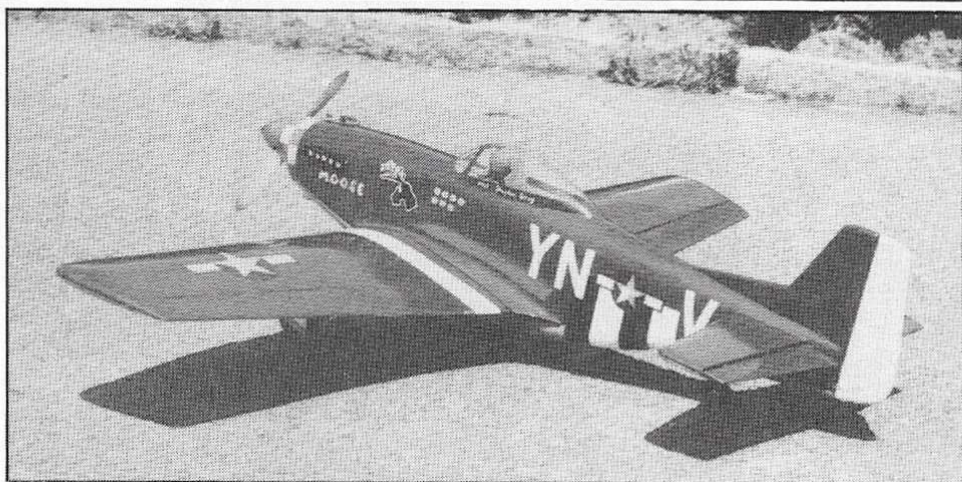
Above: the classic 'Mustang' is a popular subject for all levels of scale modeller, this 0.40cu.in. power model by Pavel Bosak is compact enough to be transported in one piece in most family cars.

D MUSTANG

fillet from a mixture of balsa scrap and glue. (see section X-X). I advise placing polythene sheet between F6 and the wing so that they do not become permanently glued together. Now glue tailplane on square to the fin. Sand the whole model using filler where necessary. Form a cockpit from the thin acetate or similar material. Before gluing in place finish the cockpit interior with seat, instrument panel and pilot figure. Add a fin strake cut from 10mm balsa. Sand the front part of the oil cooler from balsa block, cement it to the wing and sand the whole cooler. Now make the undercarriage doors. Tail wheel doors are two simple rectangles of 1mm plywood, this same material is used for main undercarriage doors. Shape as per the plan. Solder two short wires to the undercarriage legs to which the doors can be epoxy glued.

Painting the model

The whole model should be given a coat of clear dope and sanded till smooth. This is



Above: there is a huge variety of choice in colour schemes for the 'Mustang' many publications such as Profiles include full colour illustrations, no excuse for all over silver scheme.

RADIO CONTROL MODELS & ELECTRONICS

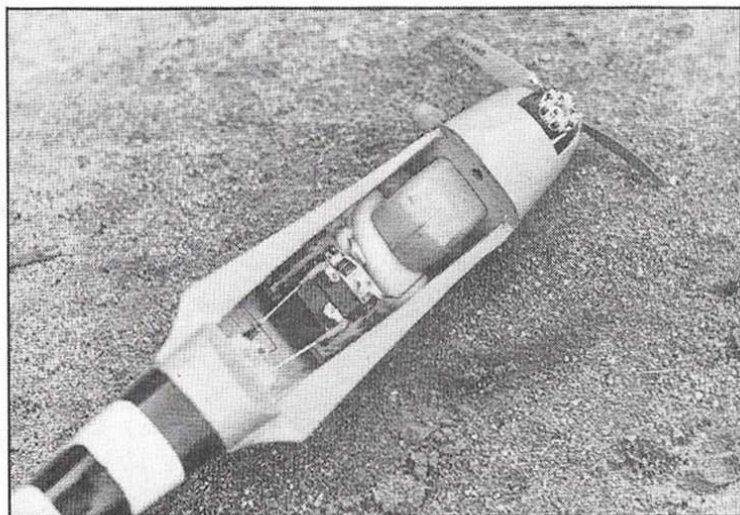
then followed by tissue doped on and then followed by sanding sealer. Colour scheme was done in cellulose followed by fuel proofing.

Finishing the model

Mount the engine, fix servos and R/C equipment. Make up pushrods and retain the wheels to the undercarriage legs with soldered on washers. Push rods must work smoothly. Check the balance point; the position shown on the plan is the extreme rear point. It is better to put it 5mm to the front for the first flights at least so that the model is not too sensitive to elevator.

Flying the model

I do not recommend this model to beginners I will therefore mention only the most important points. Check the engine and R/C system together then line up for take-off with the rudder in neutral position. After several metres the model will lift its tail and after 30-40 seconds will have achieved take-off speed. There should be no problems with the take-off because the model responds to control from the start of the take-off run. Once airborne adjust the trims as necessary. Then set pushrods. The 'Mustang' flies quite fast and I warn those who normally fly models like the *Cessna* or *Piper* not to be caught out. Thanks to its speed the model performs all aerobatic manoeuvres but the most attractive view of the model is during low level beat ups. The model does not have any nasty habits, only landing speed must be higher than usual. It can not be flown across the whole field close to the stall. Taxiing against strong winds can be difficult. The model tends to weathercock into the wind, but this is common to many tail dragger types. I wish many successful take-offs to those who decide to build my P-51D 'Mustang'.



Left: R/C installation is easy, plenty of room and leeway for sliding things about to adjust the balance.

