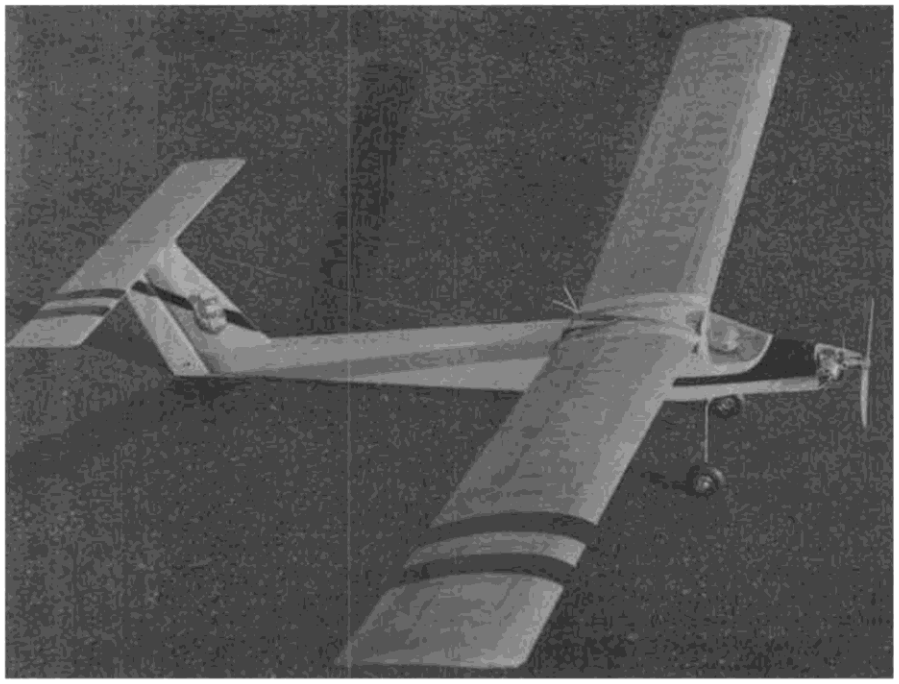


FUJAVAK

By PAVEL BOSAK . . . A slow, docile flier is this sailplane/motorglider from Czechoslovakia, named after a figure from an old European children's story. Makes an excellent choice for a beginner's first airplane.

• I am a keen model builder and I take part in M 3 pattern plane competition. At the beginning I was really enthusiastic about everything but soon I got tired of routine training, which seemed to be endless. I depended on concrete landing sites which are too far from my home. In summer I had to do a decision between bathing in a river or being baked by the sun on the hot concrete landing site. That is why I felt a need to build a model according to these criterias:

1) handlaunch
2) easy transport; small room needed
3) slow flight and landing speed
4) easy starting up engine
5) a chance of making flight longer by thermal soaring
6) a stable model, easy to control

According to these points Fujavak was built. It can be taken to pieces to a nice-looking package. Because a diesel engine is used, only a small bottle of fuel is necessary for flying. Plastic propeller is almost undestroyable. Model flies quietly, slowly, and is easily controlled. It is also easy to change it into a soaring glider.

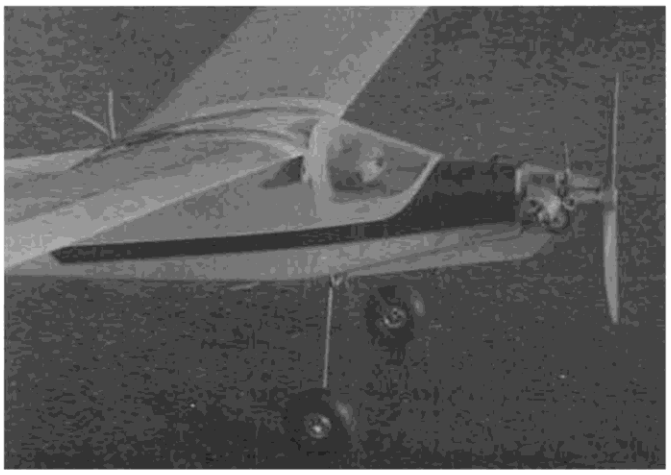
My first version was controlled by its rudder only. With full fuel tank it went up to 1000 feet and from there it glided about 10 minutes. I flew it near a bathing pool and it was a big success. It was controlled by anybody with hands, from older gentlemen to women and girls. It was really fine but I was not fully satisfied. I wanted to fly before the eyes of an audience. That is why I built in a bigger fuel tank and to the engine I mounted an R/C carburetor. Then the flying was fantastic and the model with little throttle flew just about 15 feet above the ground which was admired by children and dogs especially. The last version of Fujavak has also elevator control. Thus equipped, Fujavak can also loop, and landing is also nicer. But for Sunday flying this arrangement is not necessary. I personally prefer two-channel R/C gear with rudder and throttle control. I also built a removable undercarriage for nice takeoffs. To the model belongs also the second half of nose, which, after the engine has been removed and the whole model rebalanced, is screwed to the fuselage and thus we get a nice training glider, easy to take off by tow-hooks and landing ski. I realized in Fujavak everything I wanted, and it was also built in a few versions by members of our club.

BUILDING

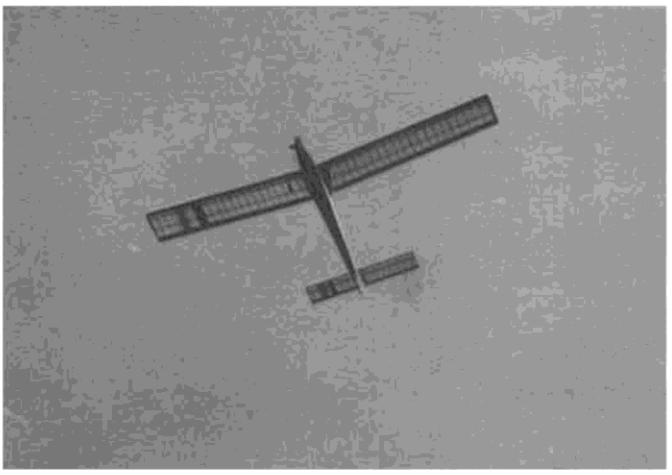
Personally I begin with wings. Cut balsa and plywood ribs, both 1/8 inch. Their shape and number are on the plan. For coupling both halves of wing we use 3/16 steel wire, ten inches long. On it we shall wind tubes of tissue glued with varnish. Beware of sticking tubes on wires! Tubes must easily slide on wire with minimum clearance. With the help of the tubes we shall join three plywood ribs and, according to plan, we shall build the wing frame. Use the rest of ribs

Our Czechoslovakian designer poses with his Fujavak, converted to the glider mode. Well-suited to both hi-start and slope soaring.

Pavel shows how the landing gear plugs into the fuselage; friction keeps it in place. Easily removed if necessary.



Powered version uses a Russian MVVS .09 diesel, gives long, satisfying flights with a 4-oz tank. Note plywood nose skid.



Fujavak's glider-like proportions are obvious in this photo. Slow, low-level fly-bys are easy with this bird.

and 1/8 x 3/16 spruce spars. At the same time cement trailing edge, which must be formed into the shape of a wedge.

The place where the ribs meet the trailing edge is stiffened with balsa triangles. Then we shall make leading edge cover, first the bottom and then top. The space between ribs is stiffened with balsa shear webs and thus we shall get a box beam leading edge. For both wing tips we shall use balsa blocks. For covering use silk, tissue, Monokote, etc. Tissue is the best, I think, because it makes the whole wing stronger. Paint the wing in a frame so that it will not twist.

STABILIZER

Its building is the same as that of the wings. All ribs are the same. They are from 1/16 balsa. Spars are also balsa, 3/16 x 1/8. Elevator tips are from 3/4 x 3/4 balsa block. The space between middle ribs is filled with 1/16 balsa. It is covered with tissue. Beware of twisting during painting.

FUSELAGE

The basic parts of the fuselage are two 3/16 balsa fuselage sides stiffened by 1/32 plywood. Now cut fuselage formers and engine mount. Their material and shape are on the plan. The engine mount is epoxied from seven pieces of 1/32 plywood. Do not forget to lay the plywood pieces cross grain. When dry, file into the proper shape according to the plan. The inner hole must be cut for the engine used. The important thing is the 4° down thrust. Then drill the holes for the engine bolts, and on the backside epoxy the nuts. Now cement the engine mount to former F1.

When dry, construct the whole fuselage and epoxy it. Once again, recheck engine down thrust. Now get a fuel tank ready. Use .015 metal sheet. Draw a tank plan on it, cut it and solder. Then solder the inside tubes. It is also possible to use a plastic tank. The size will depend on the engine used and how long flights you are planning. I use an MVVS 1.5 cc diesel, and with the described fuel tank with four oz. capacity, flights are about ten miuntes long.

Now make a fin. The core of it is a 3/16 balsa frame and a main spar, F5. Fin is covered on both sides with 1/16 balsa. It is also laid cross grain. Sand the fin and cement it to its place in fuselage. Now cover the bottom of fuselage with 3/16 balsa. Fix inside fuselage pushrod for rudder and throttle. Now cover the top of fuselage. Use 3/16 balsa for covering fuselage part from wing to rudder, and for part from cockpit to former F2 use 3/16 balsa planking. The nose is balsa block. The cockpit floor is 1/16 balsa and is pressed from 1/32 butyrate. (It can also be bent along the fuselage.) It is also possible to put a pilot's head into the cockpit. Now sand the whole fuselage and epoxy landing skid made of 1/8 plywood. Inside the fuselage epoxy floor F7, which has a hole for cementing landing skid. According to plan, drill the holes for bamboo pegs. Fix and epoxy 1/32 plywood discs on them. These discs also stiffen the side. Epoxy paper tubes for undercarriage on former F3. The inner diameter must be chosen according to the wire used. Now bind the wings to fuselage and check their incidence. Facing the engine, both wing tips must be at the same height and the rudder must be perpendicular.

Sand the whole fuselage and cover with tissue. Rudder is cut from 3/8 balsa, sanded, covered with tissue and bonded by nylon hinges. Solder the undercarriage according to plan from 3/32 steel wire. The wheels are two-inch Du-Bro. The second nose half is again cut from balsa block.

R/C GEAR

Fujavak was controlled by everything which we know in R/C control, from single-channel bang-bang to three-channel propo set. Choose your set according to how many elements you want to control. The most ideal flying is with two-channel control over rudder and engine. One hand is enough to do everything and in the other you can hold a cigarette.

FLYING

Before flying, check all angles and point of balance. Now try gliding from hand. If it does not fly straight put some

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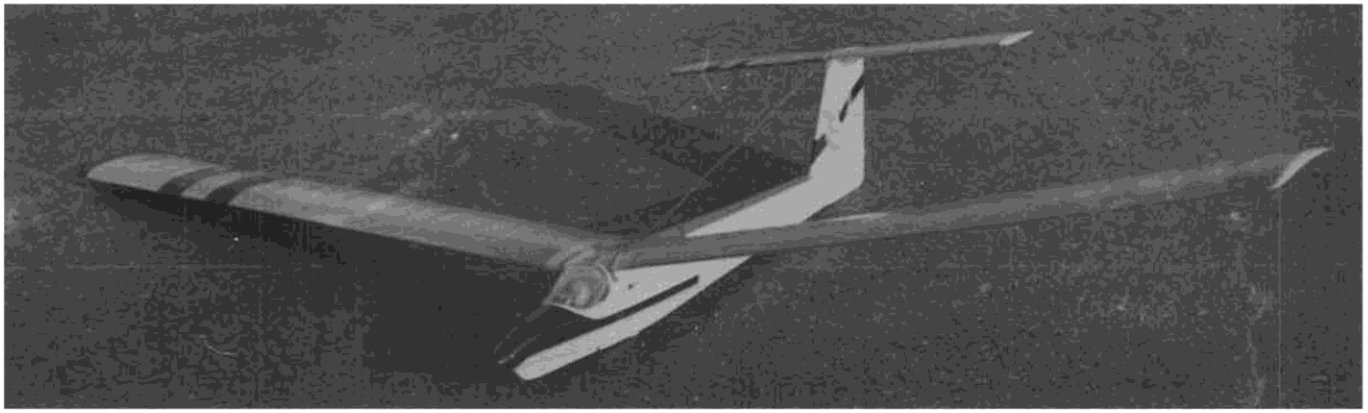

All set to go gliding! Conversion from powered to glider modes takes only a couple of minutes. Pavel prefers flying the model with two channels (rudder/throttle), but the plans show an optional full-flying tail arrangement for those who prefer this type of set-up.

lead into its nose. If the front part of model is too heavy set stabilizer to -4°, but not more! If this is not enough put some lead in the tail or make the front part lighter. It is also possible to move the batteries a little bit backward or to use a lighter propeller. Try gliding with empty tank. Now fill it with fuel, start up the engine, set it at half rpm and throw it against the wind. Set the rudder and elevator displacements so that the model is controlled on both sides with the same easiness. If it turns to the left after the engine stalls, then engine axis must go a little bit to the left too. And the other way round. Then you must set also the rudder. After all that has been done, try flying with full tank. With full throttle model takes off quickly even from the ground. With a little throttle, nice flying can be performed at very little height. If you change your model to a sailplane, try slope soaring or thermic flights with the help of towline or hi-start.

That is all I can say about construction and flying with Fujavak. To anybody who will build it, I wish nice weekends and many flying hours. Questions can be answered by way of correspondence care of **RCMB**. •