



Mrs. Bosak braves the weather when Pavel goes to fly the Jet Trainer.

The Jet Trainer belongs in the R/C aircraft training category. With its engine mounted in the tail, it was designed to be a rugged, easy to fly, pusher powered type trainer. My decision to create a pusher type trainer was based on several factors. I have built and flown many pusher type R/C aircraft. As pusher type aircraft are rather unique, a good trainer design might be quite popular. Virtually all beginners start their R/C flying endeavors with a conventional tractor powered trainer. The subsequent hard landings and crashes frequently result in damage to the engine, particularly to the vulnerable carburetor. A pusher powered design offers far greater protection to the engine (and prop). With the Jet Trainer, a hard landing or minor crash often requires nothing more than wiping the dirt or mud from its nose, checking it for structural damage, and then just flying it again.

The Jet Trainer was designed for three channel control (rudder, elevator and engine), although ailerons could be installed. As a pusher trainer, ailerons are not required. The Jet Trainer is very stable and will fly "hands off" once it is trimmed properly. In fact, if there is sufficient altitude, the Jet Trainer will recover from virtually any awkward position that the beginner may inadvertently place it in, simply by releasing the transmitter sticks. While the Jet Trainer is an R/C trainer, I attempted to incorporate an authentic full size Jet Trainer appearance in its design. The cockpit arrangement is for two side by side seats and my Jet Trainer was finished in camouflage colors to further create a scale image.

JET TRAINER

Designed as a pusher type trainer, there were several factors taken into consideration. The main purpose was to protect the engine from hard knocks and landings in the early learning stage. The Jet Trainer is very stable and once trimmed, will fly "hands off."

CONSTRUCTION

Prior to starting construction, it is highly recommended that the plan sheet be first studied so that the assembly methods and sequence are fully understood. It will also help to cut out all the formed or shaped parts first, so that a "kit" is produced.

Cut the W1 (root) and W11 (tip) wing rib templates from 3/32" plywood or 1/16" aluminum sheet. All eleven wing ribs are made via the interpolation process, with these templates. Eleven rectangular 3/32" sheet balsa rib blanks are cut and sandwiched between the W1 and W11 templates, which are bolted together. The rib blanks are now cut, sanded, and notched, to conform to the end master templates, thus producing a

By Pavel Bosak

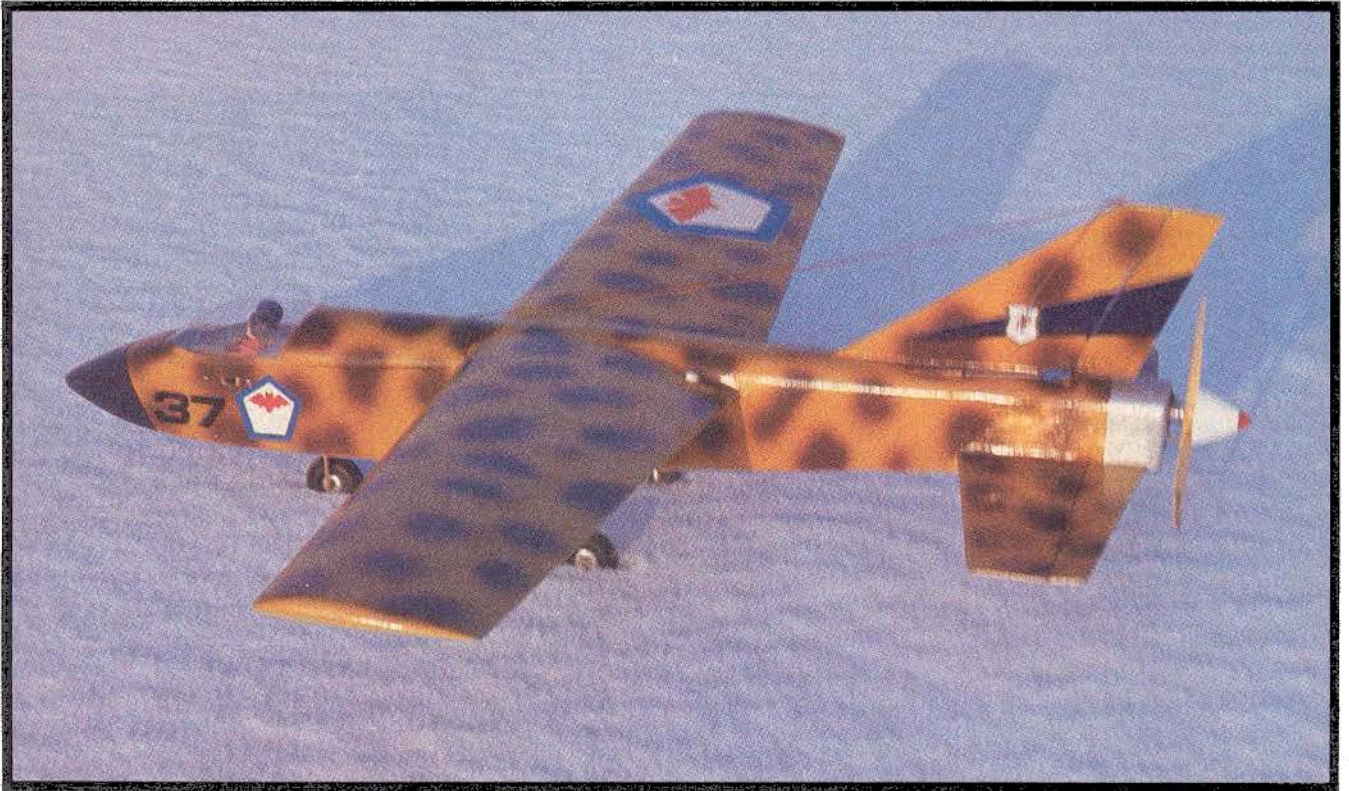
the 3/8" square leading edge cap is glued in place. The balsa wing tip blocks, rib capstrips and bottom center section sheeting are now added. Drill the hole for the 5/16" hardwood dowel in the center of the leading edge and glue the dowel in place along with the soft balsa filler blocks, where the wing

shown on the plan sheet.

Glue the top planking in place from former F3 and F3A rearward and install the vertical fin and rudder assembly.

The nylon wing mounting brackets are now installed. The (F5) wing saddle fairing base strips are now glued in place, using the mounted wing to compress them in place, to the proper wing saddle contour. When the glue has dried, remove the wing and smoothly fillet the areas between the wing saddle bases and the fuselage sides, with a mixture of epoxy and micro-balloons.

The top canopy/equipment access hatch is now assembled after first gluing the hardwood nose block in place. The base of the access hatch (F7)



complete set of wing ribs. The wing ribs for the other wing panel are fabricated using the same master templates. The wing ribs are glued in place on the 3/16" notched main spar (W12) and the 1/8" x 3/8" spruce spars are added. The 3/32" plywood coupler plates (W15) are now glued in place in order to join both wing panel structures together at the proper dihedral angle.

The 3/32" balsa trailing edge sheeting is now glued in place, taking care not to break the delicate rib ends. The 3/16" square balsa leading edge stringer is installed and the 3/32" balsa wing sheeting is added from the spruce spars forward to the leading edge.

After sanding the leading edge face,

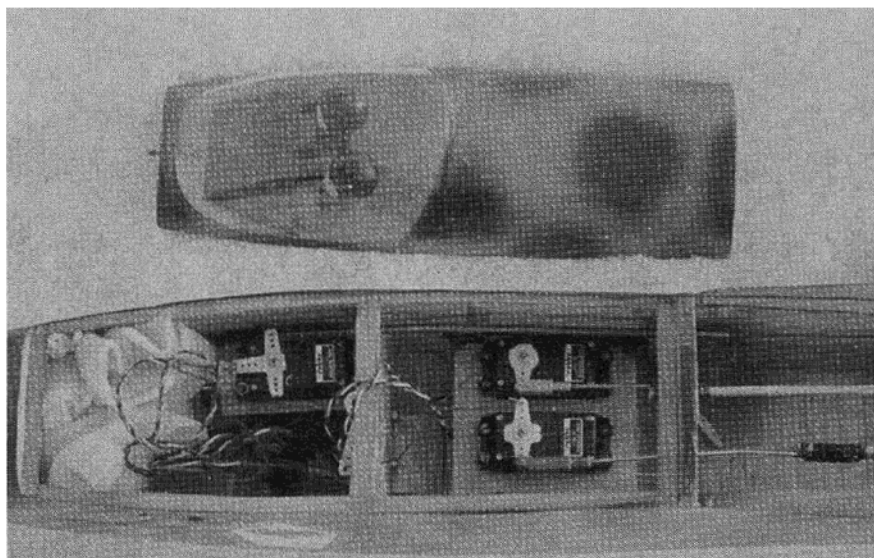
mounting bolts will pass through the trailing edge of wing. The top 3/32" balsa center section sheeting is now added and the entire wing is carefully sanded to the indicated contour.

The fuselage is constructed by gluing the respective formers in place between the two 3/16" fuselage sides. The nylon nose gear bracket and the hardwood, main landing gear blocks are glued in place. Install the plywood engine mounting plate (or conventional engine mount), the stabilizer, and bottom fuselage sheeting.

The fuel tank is now assembled and installed in the fuselage along with the rudder, elevator and throttle control rods. Be sure to arrange the fuel pick-up clunk (inside the tank), as

is solid 1/32" plywood. The 1/32" plywood access hatch base (F6) is the same outline as F7 except that it is provided with access openings into the fuselage interior. Glue the access hatch base (F6) in place on the top of the fuselage. Place the hatch base (F7) on top of F6, and bolt the wing in place on the fuselage. Position former F2A in place on the front wing hold-down dowel. Glue formers F2A and F1A in place on the hatch base (F7). Glue former F3A in place at the trailing edge of the wing center section. Install the cockpit front balsa block, plywood pieces, and the 1/16" music wire front hatch retainer pin.

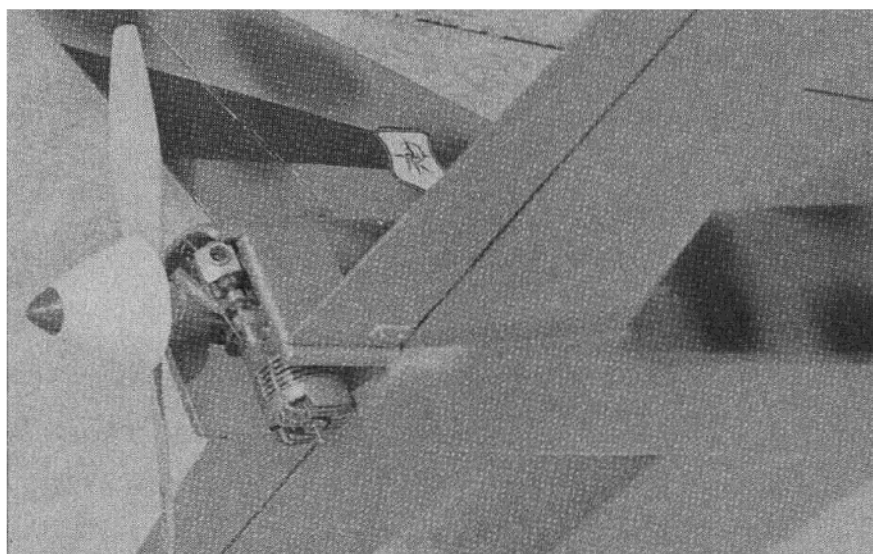
The hatch and wing center section planking is now installed. When the glue has dried, these assemblies are



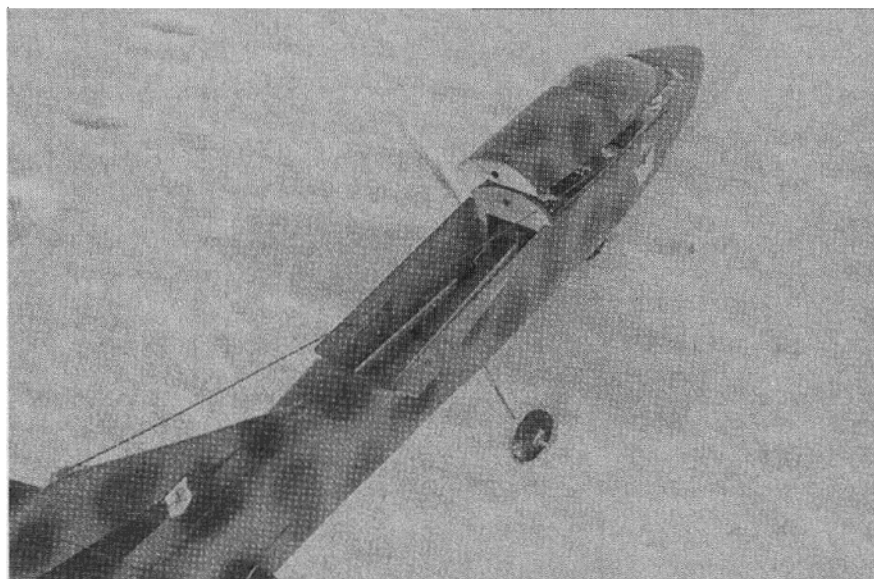
Jet Trainer with hatch removed. Leaves ample room for radio. Rudder and elevator servos on right with throttle servo, receiver and battery pack up front. Plans show 3 servos side by side.

O.A. FUSELAGE LENGTH
38 Inches
RADIO COMPARTMENT SIZE
(L) 11" x (W) 3½" x (H) 3"
STABILIZER SPAN
21½ Inches
STABILIZER CHORD (incl. elev.)
4½ Inches (Avg.)
STABILIZER AREA (incl. elev.)
90 Inches
STAB. AIRFOIL SECTION
Flat
STABILIZER LOCATION
Bottom of Fuselage
VERTICAL FIN HEIGHT
6¼ Inches
VERTICAL FIN WIDTH (incl. rud.)
10 Inches (Max.)

JET TRAINER
Designed By:
Pavel Bosak
TYPE AIRCRAFT
Pusher Powered Trainer
WINGSPAN
51 Inches
WING CHORD
8 Inches (Avg.)
TOTAL WING AREA
400 Sq. In.
WING LOCATION
Shoulder Wing
AIRFOIL
Flat
WING PLANFORM
Double Taper
DIHEDRAL EACH TIP
2 Inches



Pavel has rotated the crankcase 90° to make engine run backwards, thus enabling him to use a tractor prop.



Wing dowel goes into hatch, locking it into place. That white stuff on the ground is snow.

REC. ENGINE SIZE
20 Cu. In.
FUEL TANK SIZE
4 Oz.
LANDING GEAR
Tricycle
REC. NO. OF CHANNELS
3
CONTROL FUNCTIONS
Rud., Elev., Throt.
BASIC MATERIALS USED IN CONSTRUCTION
Fuselage Balsa & Ply
Wing Balsa & Spruce
Empennage Balsa
Wt. Ready To Fly 54 Oz.
Wing Loading 19.4 Oz./Sq. Ft.

sanded to provide a smooth flowing contour from the nose block to the rearward top fuselage planking. Any desired cockpit detailing can now be installed. The Jet Trainer was designed with a two place, side by side seating, cockpit arrangement in mind. The cockpit interior can be as basic or detailed as the builder wishes. The clear plastic canopy is now glued in place. The canopy can be molded by the builder or a preformed, commercially available canopy can be trimmed and modified as required, to fit.

After installing the servo mounting rails, control linkage fittings, etc., the fuselage is fine sanded in preparation for finishing.

Finishing:

Any of the readily available heat shrinkable, film type covering materials can be used to obtain an outstanding finish, or the Jet Trainer may be finished with a conventional epoxy or acrylic enamel painted finish. If a painted finish is used, care should be exercised in order to avoid an excessive weight build-up, due to multiple layers or heavy coats of paint. When finished, install the engine and radio system components and balance the aircraft to the indicated Center of Gravity (C.G.) on the plan sheet. The proper C.G. can be obtained by positioning the battery pack, or adding weight as required. A thorough radio system check should be made, including all control linkages and control rods.

Flying:

Prior to your maiden flight, the radio should be range checked and the engine needle valve properly set, along with the idle adjustment. Assuming that your Jet Trainer was built according to the plans, is warp free, has the proper C.G., and that the control surfaces are set at the indicated angles, the initial test flight will be remarkably easy and trouble free. Any minor airborne pitch or turn tendencies can easily be corrected, via the transmitter trim levers. If your Jet Trainer climbs too steeply at full throttle, yet drops its nose when the throttle is returned to idle, this can be corrected with the addition of a few degrees of engine down thrust. If the opposite is true, a few degrees of engine up thrust will correct that tendency. As a closing note, I would like to remind every Jet Trainer builder that with this model being a pusher design, the propeller is positioned in the area where we normally hold on to our aircraft prior to take-off. A momentary mental lapse could produce painful consequences! I hope you will always keep this in mind and enjoy many happy, safe hours of flying your Jet Trainer. □



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