An easy-to-build sport Nieuport and an inexpensive Ace rudder-only system - - - hours of flying pleasure with a minimum of hassle.

PEPPE LA PEUW

Dick Erickson's sort-of-scale Nieuport for rudder-only pulse proportional. Photos by Dick Fish.

● From out of the past comes a roaring throb of a World War I aeroplane, an .020 powered rudder-only bi-plane known as the Nieuport, in this case, "Peppe La' Peuw", so named for its lively performance and aerobatic ability. A stand-way-off-scale all sheet balsa replica of a famous aeroplane that will have you smiling before, during, and after every flight into the blue yonder.

In this day of everything inflationary, the current trend towards lower building and operating costs of smaller R/C aeroplanes is something to think about. Every modeler has a choice of countless designs to build and fly and, overall, this great hobby has much to offer. My own thinking and choice has always been with small models, from my Goldberg 1/2A Skylane with a Rand Galloping Ghost (still flyable), to the present series of rudder-only .020 and .049 powered bunch of fun. Rudder-only flying offers maximum building and flying pleasure, while the dependable Ace Pulse System maintains complete control with its low cost and super dependability. With only a flapping rudder to control our enjoyment, rudder-only flying is an art of fascination - - - it's all done with any good design and a little practice.

This Nieuport was designed to fly with a minimum of effort, the sight of it cruising around is enough to satisfy anyones interest. While some .020 powered models tend to be a handful because of their size and "scale effect", this design was thought out thoroughly with flying ability first. With all the down and side thrust in the engine, it looks like it's ready to fall out of the cowl, but then with all the power in a T.D. .020, it is very necessary. A Pee Wee .020 would have been plenty of power for sport flying, but I was after more than that - - - I wanted performance for whatever my thumb could come up with. I have always used a Vogt throttle on my T.D.'s, since this enables you to select any amount of power from the engine. The throttle is a two piece aluminum sleeve which can be pre-set before launch.

So, if you like peppy rudder-only aeroplanes and have some "stick time" with only a rudder, "Peppe La' Peuw" will make you happy, for nothing beats low cost fun R/C.

CONSTRUCTION

Check the Bill of Materials for the necessary wood and miscellaneous materials used. Cut out the fuselage sides from 1/16" medium balsa following the arrows for the exact outline. Pin the sides down to construct a right and left side, then outline each side as shown with 1/8" square balsa and the 1/16" balsa lower wing doubler and dowel gussets.

While they are drying, cut out the firewall from 1/8" ply and drill the engine mounting holes for the 2-56 blind nuts. Two sets of holes are shown, depending on whether you use either a Pee Wee or T.D. The T.D. is mounted with the regular back plate as a separate fuel tank is used. Push the blind nuts into the firewall and screw the engine in place until the blind nuts just start to bite. Push some epoxy under, and around, the blind nuts then tighten the screws all the way. This procedure holds everything in alignment, making it much easier to remove and re-install the engine for cleaning or switching from one plane to another. Cut out former F-2 from 3/32" balsa, noting the

grain direction. Remove the completed fuselage sides from the plan and pin them upside down over the plan top view. Glue in former F-2 and epoxy the firewall in place between the fuselage sides. Check with a small square to make sure they are vertical. Also, be sure the firewall has the proper side thrust, shown dotted in the top view for construction purposes.

While this part of the assembly is drying, cut out the rest of the fuselage formers from 1/16" balsa. The upper wing cabane struts can be made up now. Bend the two cabanes from 1/16" wire as shown on the side view. Cut two 1/8" dowels to length, round off the ends slightly, and then bind them to the wire cabanes. Build these accurately as the upper wing incidence angle depends on this. I use Goldberg 1/2A U-Control Dacron thread for all my thread bindings and rudder hinges - - - it's inexpensive and very strong.

Remove the fuselage structure from the board and install all the rest of the fuselage formers except F-5. The latter is glued on after the fuselage is pulled together at the tailpost. Glue in the rear 1/8" square fuselage cross pieces and then former F-5.

Bend up the landing gear from 1/16" wire, lay it against the firewall, and draw around its outline with a pencil. Drill twenty 1/16" holes as shown on the firewall front view, then bind the landing gear to the firewall with soft copper wire and epoxy well. Install the upper wing cabane struts next, spot gluing each in place as seen on the side and top views. Lay the fuselage accurately over the side view after the glue has set and check the incidence angle. Now epoxy the cabanes on permanently. At the same time the 1/16" sheet fuel tank mount is epoxied over the cabanes as seen in the side view. Using a "Perfect" #5 tank, cut out the two holes in the tank mount for the fuel and vent lines, then using Silicone RTV glue, install the tank permanently.

Build the rudder torque rod next, as it will have to be slipped into the fuselage before going any further. Bend up the front yoke first, making sure the loop that engages the actuator arm is a loose fit to prevent binding. Cut out the torque rod bearing plate from 1/16" ply, drill a 1/16" hole on center, and slip it on the front yoke. Cut the 1/8" square hard balsa torque rod to length, then drill a hole at one end for the yoke to slip into. Spot glue the yoke to the torque rod and, when set up, wrap this joint with thread. Bend the rear half of the torque rod leaving the end that engages the rudder yoke straight until later. Bind with thread and coat the bindings liberally with glue and set aside to dry. Cut out the actuator mounting board from 1/16" ply and drill the center hole to fit the actuator. Then drill eight 1/32" holes where shown and, with needle and thread, bind the actuator to the board. I always put a little glue on the thread after sewing to hold the actuator tightly.

Drill a 1/16" hole in the rear of the fuselage as shown in the side view, and slip the completed torque rod through the fuselage bottom, starting just ahead of former F-6. Spot glue the mounted actuator to the front of former F-2, making sure it is at the height shown in the side view and on center when viewed from the top. Engage the torque rod to the actuator arm, making sure the torque rod lines up with the actuator from the top and also is the same height. Glue the torque rod bearing plate to the fuselage sides and let it dry thoroughly. Before removing the actuator from the fuselage, mark the actuator board to former F-2 for reference so that, when it is glued in permanently, it will still line up. Remove the actuator from the fuselage until all sanding is done, then it can be permanently glued in place.

Sheet the lower fuselage next. The front sheeting is 1/16" ply from the firewall to former F-6. The rest of the lower sheeting is 1/16" balsa cross grained. Score the sheeting on the center back 1" from former F-2 to make it conform to this former. Now, the upper 1/16" sheeting can be made. I cut a template from light cardboard first, since it's a lot easier and cheaper to fit a piece of cardboard around the cabane struts. Cut out the cockpit hole also, then fit the template length from the front former F-3 to the center of F-4 which leaves a little gluing area for the rear sheeting on F-4. Trace the template to a piece of 1/16" balsa and cut it out. Wet the sheeting with water on the outside and bend it over the formers. Hold in place with masking tape until the sheeting is dry again. Remove the formed sheeting for a minute and drill a hole in former F-3 for the fuel line to pass through. Also, slip on a continuous piece of fuel tubing 1½" long over the vent pipes. Cut a 1/4" x 3/8" hole in the upper sheet for the vent tubing to slip through to the outside. Now, glue the sheeting in place, using masking tape again to hold in place. The rear upper sheeting is 1/32" balsa, again using a cardboard template as before. Trace and cut from balsa, wet and hold in place with masking tape until dry, then glue in place permanently. The fuselage side sheeting is also 1/32" balsa. Make a cardboard template and leave the rear edge where the sheeting meets the fuselage sides at former F-4 slightly long so the sheeting can be bevel sanded to form a smooth joint. Glue the sheeting in place, holding until dry with masking tape and pins. The small gap between the fuselage sides and sheeting at the lower wing saddle can be filled in with glue. Now sand the completed fuselage. None of the corners have much of a radius as these old aeroplanes were pretty "boxy".

The cowl is built next. Cut out C-1 from 1/8" balsa and C-2 from 1/16" plywood. Drill two 1/16" holes in C-2 as shown for mounting the cowl with #2 wood screws. Cut five cowl spacers to the size indicated and mark their location on former C-2. Pin C-2 down to the board and glue the spacers in place. When the glue has set up, glue C-1 in place on the spacers. Cut three pieces of 1/16" sheet balsa 1" long and glue together to form a piece 1" by 9". Starting at the bottom, wrap this piece around the cowl structure. Check its fit and then glue in place.

When dry, the completed cowl can be

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Designed By: Dick Erickson

TYPE AIRCRAFT
R/O Sport
WINGSPAN
22⅞" (upper)
20" (lower)
WING CHORD
4" avg. (upper)
2-9/32" (lower)
TOTAL WING AREA
140 Square Inches
WING LOCATION
Biplane
AIRFOIL
French Clark Y
WING PLANFORM
Constant Chord (mostly)
DIHEDRAL, Each Tip
1⅛ Inches (both wings)
O.A. FUSELAGE LENGTH
16 Inches
RADIO COMPARTMENT AREA
(L) 4" X (W) 1⅞" X (H) 2"
STABILIZER SPAN
10 Inches
STABILIZER CHORD (incl. elev.)
3¼"
STABILIZER AREA
25.3 Square Inches
STAB AIRFOIL SECTION
Flat
STABILIZER LOCATION
Top of Fuselage
VERTICAL FIN HEIGHT
2 Inches (Average)
VERTICAL FIN WIDTH (incl. rudder)
3⅛" (Average)
REC. ENGINE SIZE
Cox Pee Wee .020 or T.D. .020
FUEL TANK SIZE
1/2 oz. (french wine only)
LANDING GEAR
Conventional
REC. NO. OF CHANNELS
Single (pulse)
CONTROL FUNCTIONS
One Flapping Rudder

BASIC MATERIALS USED IN CONSTRUCTION

Fuselage	Balsa and Ply
Wing	Balsa
Empennage	Balsa
Weight Ready-To-Fly	11 Ounces
Wing Loading	12.8 Oz./Sq. Ft.

BILL OF MATERIALS

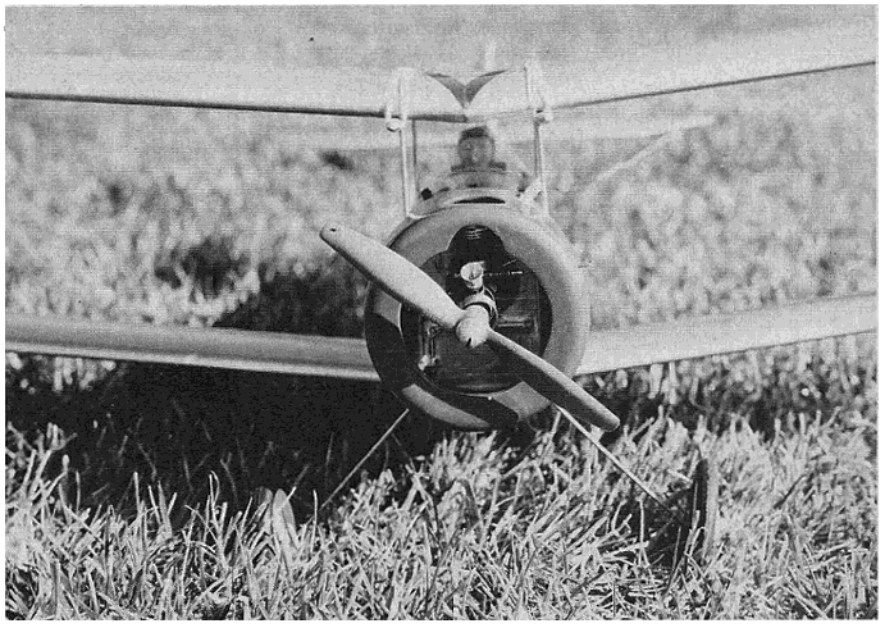
1 — 1/16" x 4" x 48" medium balsa
4 — 1/16" x 3" x 36" medium balsa
3 — 1/8" x 1/8" x 36" medium hard balsa
2 — 3/16" x 1/4" x 36" medium balsa
1 — 3/32" x 3" x 15" "C" grain balsa
1 — 1/32" x 3" x 20" medium balsa
1 — 1/8" x 3" x 4" medium balsa
1 — 2" x 2" x 1/8" ply
1 — 3" x 8" x 1/6" ply
1 — 1/8" x 16" dowel
1 — 1/16" music wire
1 — .045 music wire
1 — .020 music wire
1 pr. 1½" vintage wheels
1 pr. 1/16" wheel collars
1 — roll Goldberg 1/2A U-Control Dacron Thread
2 ft. soft copper wire
6" plastic fuel line tubing

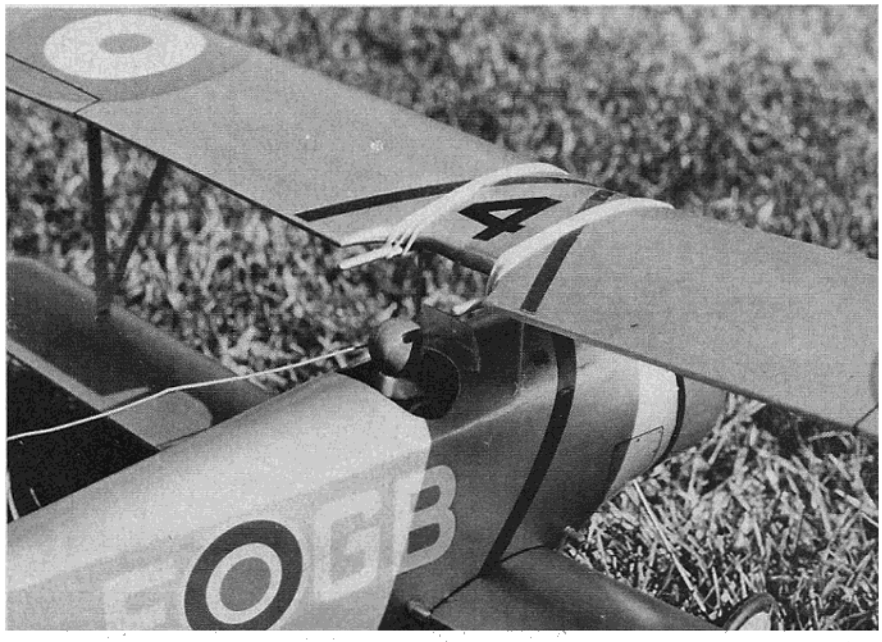
sanded rounding off the front edge as seen in the side view. With all the down and side thrust in the firewall, the cowl has to be "shimmed" with scrap balsa so it comes out straight with the fuselage. Start with two pieces of balsa 1/2" wide and 1⅞" long glued to the firewall and formers FS-1 and FS-3. Block sand these pieces until the cowl fits square to the fuselage. Now the two holes for the cowl mounting screws can be drilled. I always run the screws in to make the threads and then coat these threads with epoxy using a common pin to get the epoxy down into the holes. This makes the threaded hole strong and also fuel proofs them. Bolt the engine to the firewall; mount the cowl in place; and cut the hole in the top of the cowl for the cylinder head and also the needle valve. Cut out the fin, rudder and stab from 3/32" "C" grain balsa. Outline the stab with the wood grain as shown. Past experiences with 1/16" sheet rudders and stabs have proven they warp too easy in time, thus the 3/32" wood size used now. Block sand the tail feathers when completed, then glue the stabilizer to the fuselage. Glue the fin in place on the stabilizer, but leave the rudder off until later. Bend up the rudder yoke from .020 wire and drill a hole in the rudder for the 2-56 bolt and nut.

The upper and lower wings are 1/16" sheet balsa using 4" wide stock for the upper wing and 3" wide stock for the lower wing. Cut out the upper wing sheets and splice as shown at the trailing edge tips. Cut the ribs from 1/16" sheet and mark for future reference. Pin the bottom wing sheeting over the plans, gluing the 3/16" by 1/4" leading edges over the sheeting. Glue all the ribs in place noting that the center ribs are angled outward 1/16" to allow for dihedral. When the assemblies are dry the leading edges are block sanded to an angle that will allow the upper sheeting to match the airfoil shape. Also, the upper wing sheeting is sanded along the trailing edge where it meets the lower wing sheeting. Fill in the upper wing center, then cut out with 3/16" x 1/4" balsa and blend with the rib shape.

Remove all the pins from the construction so far and glue on the upper wing sheeting using rubber bands stretched over the top at each rib station between pins along the leading and trailing edges. Cut out the wing tips from soft balsa and glue in place after the wings are removed from the board. Block sand the wing panels, blending in the tips and to the tip cross section. Keep the leading edges quite blunt with a smooth radius. Pin half of each wing panel down flat over the wing plan, then raise the other tip to the proper dihedral and glue the wing halves together. The center sections are reinforced with half-inch wide fibreglass cloth and 2 or 3 coats of blue.

Build the wing interplane struts from 1/16" x 1/4" hard balsa. Push a common pin into the ends of each, as shown, and cut off with a quarter inch sticking out. Smear some epoxy over the struts where the pins are into the wood for strength. These struts are optional but a Nieuport ain't a Nieuport without them!





Bend the tail skid from .045 wire and its support from 1/16'' hard balsa. Spot glue the tail skid in place, then smear some epoxy to both joints. Drill the holes for the lower wing dowels, then cut the dowels to length allowing a half inch to stick out of the fuselage. Glue the dowels in place if you intend on using a dope finish, but leave them out until later if you plan on covering your Nieuport with a plastic covering.

My French Nieuport (sorry Snoopy) was given two coats of clear dope and then covered with Japanese tissue stuck on with a mixture of 90% thinner and 10% clear dope. (I hadn't finished an aeroplane with dope for years but I felt a doped silver finish would be more realistic.) Brush on 3 coats of thinned silver dope and 2 coats of dull clear. I had some old decals from a Guillows rubber band powered (what's that?) kit to dress up my Nieuport. I also added some red stripes to the fuselage and upper wing to finish it off. Give the inside of the cowl and firewall a coat of Hobbypoxy #2 to fuel proof. I hate aeroplanes that get fuel soaked when it's so easy to spend a little extra time to prevent it!

Well, that great day of test flying is getting close. Install the engine, hook up the fuel line, and cut the fuel tank filler and breather tubing allowing a half inch to stick out. Use silicone RTV to seal the tubing where it passes through the fuselage. Slip on the 1½'' vintage wheels and secure with collars. Install the radio gear with the receiver and batteries well wrapped in foam rubber. Sew the rudder to the fin with a Figure 8 stitch, bolt the rudder yoke back on, and bend the end of the torque rod as seen in the side view. Slip on a piece of shrink tubing over the torque rod to prevent interference. Turn the radio on and check the rudder throw so it is equal to the right and left. Rubber band the wings on and check the C.G. - - - my Nieuport took a half ounce in the nose to balance.

Now it's time for some fun. I don't test glide a rudder-only ship since it doesn't prove it's going to fly. Simply range check the radio, fire up the engine and run it slightly rich for the first flights. Give ''Peppe'' a gentle toss to where it belongs in the sky and fly it. Any turning under power can be corrected with side thrust changes. Little or no climb is corrected with less downthrust, while zooming or hanging on the prop is corrected with more downthrust. When the engine quits, the glide should be flat with no stalling. If she stalls in the glide, add a 1/32'' balsa shim under the trailing edge of the upper wing. If the glide is too steep, add a 1/32'' shim under the leading edge. As with any rudder-only aeroplane the glide should be trimmed first, then work on the powered part after that. Without trying to sound like trimming out a rudder-only is a hassle, any model has to be trimmed, no matter how many channels are under your thumb.

Nothing is more beautiful than a single channel model cruising around under complete control from just a rudder to ''stay with the program''. My Nieuport didn't fly ''off the board'' on the first flights - - - in fact, I spent six minutes doing climbing left turns until the engine quit. More down and right thrust cured my problem and many beautiful flights followed. The original plans were changed to what you have now.

''Peppe La' Peuw'' will give you many flights of relaxation, and I think this is what this great hobby is all about. □

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