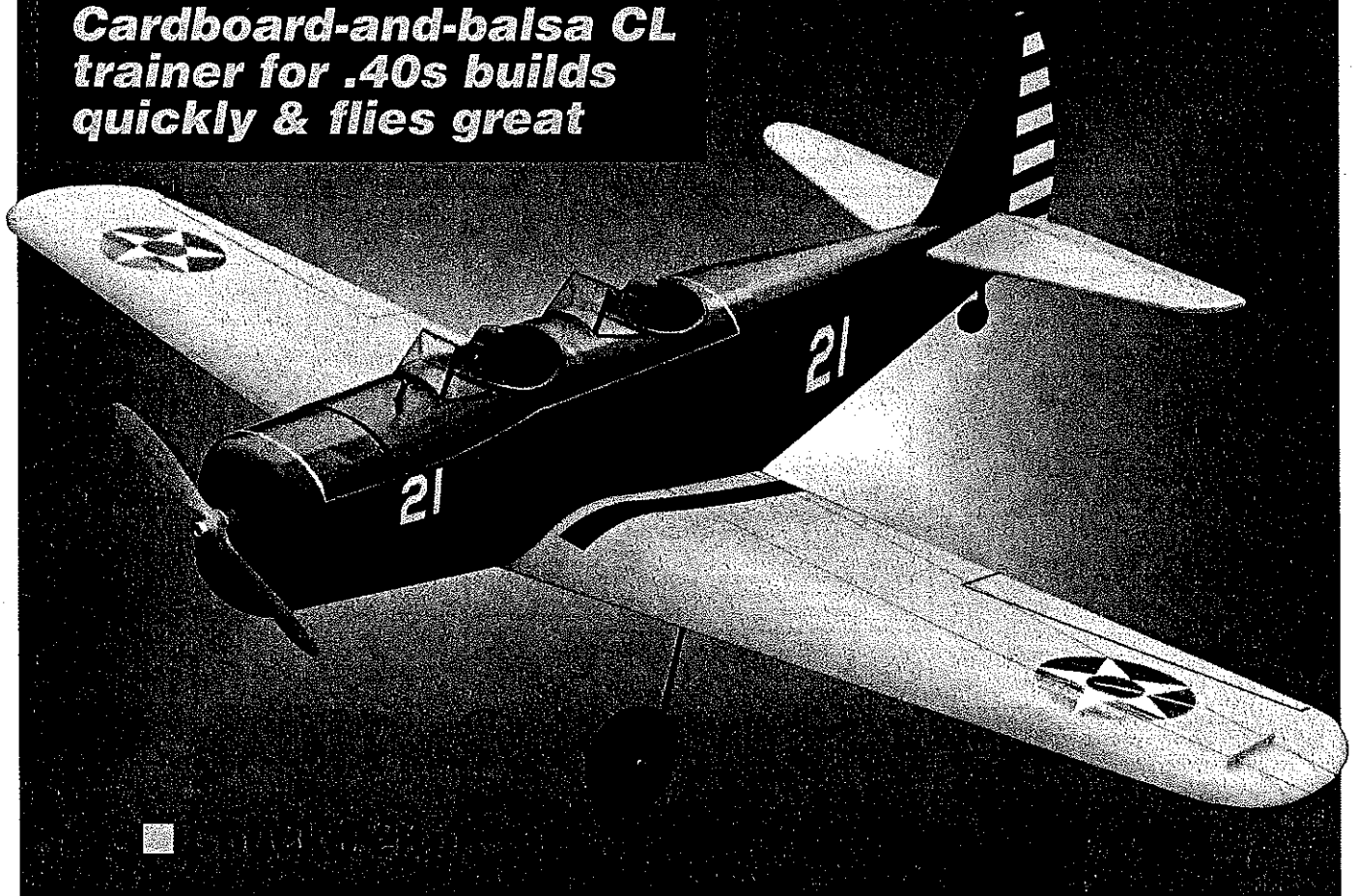


# Fairchild PT-19

**Cardboard-and-balsa CL  
trainer for .40s builds  
quickly & flies great**



Like its full-scale counterpart, this PT-19 model is a rugged and dependable trainer. The model is constructed primarily from 1/8-inch corrugated cardboard, which greatly reduces building time and cost.

The wing is built from two large pieces of cardboard, with cardboard ribs and a single spar. The tail surfaces and fuselage are primarily cardboard, with little internal bracing. The result is a low-cost, lightweight, fast-building model that has good Scalelike appearance and can take plenty of punishment at the flying field.

The model is built to a scale of 1 inch equals 1.2 feet, with a 60-inch wingspan and 46-inch length. Engines of .40 to .50 size can be used. The airfoil is flat-bottomed with a curved upper surface, due to the scoring and folding technique employed. Its size and stability make it a good sport-flying model.

The Fairchild PT-19 is a popular subject for Scale models, and rightly so, since the PT-19 was instrumental in training World War II fighter pilots.

Fairchild Aircraft Division of Hagerstown, Maryland developed the aircraft in 1938 to fill the need for a rugged and dependable monoplane military primary trainer. The initial submission of the aircraft to the Army Air Corps in 1938 resulted in an order for 270 airplanes. The Cornell series, which included the PT-19, PT-23, and PT-26 variations, was perhaps the most widely used Allied monoplane trainer before and during WW II; more than 7700 were produced.

### CONSTRUCTION

Before we begin, take a look at these special tips for working with cardboard:

Cardboard varies in weight, but any 1/8-inch corrugated cardboard

will do. Sources of this material include box manufacturers and local shopping centers, where you can find stacks of discarded boxes. Look for cardboard with brown paper on one side and a white finished paper on the other; placing the white paper on the outside of the model results in a smoother finish and neater appearance.

Water-based glue, such as white glue or Titebond, is recommended. Contact cement is not recommended, since parts cannot be shifted when gluing surfaces.

Scoring of the fold lines is done with a screening tool, available at any hardware store. It consists of a handle with a 1½-inch-radius wheel at one end, which is run along a straightedge on the fold line.

Waterproofing cardboard is quite simple, and can be done to the raw material before you cut out the parts. Mix 25% clear polyurethane with 75% paint thinner (the cheapest hardware-store variety), brush the mixture liberally onto the cardboard sheet, and allow to dry for 48 hours. This adds no appreciable weight to the material, renders the cardboard waterproof, and it will cut sharply and cleanly.

Cardboard gives a solid surface with no open areas to cover, and is non-porous. The easiest finishing method is to give two coats of clear dope, sanding lightly between coats with #400 sandpaper, followed by three coats of color dope. However, a wide variety of finishing materials may be used on the cardboard. Coverings such as Solarfilm, MonoKote, and vinyl paper can be used, but for best bonding do not pre-dope the surfaces when using these materials.

All seams, joints, and exposed edges are covered with strips of gummed paper tape. Obtain a one-inch-wide roll from a stationery store, cut thin strips to length, dip in water, and smooth over the seams.

Cut out all cardboard and wood parts using the template outlines. Be sure to note the direction of the corrugations. Score and fold cardboard parts as indicated on the plans.

**Empennage:** The fin, rudder, stabilizer, and elevator are made from two pieces of 1/8 cardboard laminated crossgrain to give 1/4 surfaces. Add a 1/8 x 1/4 balsa strip to the fin leading edge and round off. Add 1/8 x 1/4 balsa to the stabilizer leading and trailing edges and round off. Glue the elevators to the 1/4 dowel. Add 1/8 x 1/4 inch balsa to the remainder of the elevator leading edge and round off. Seal all raw edges with gummed paper tape. Hinge the elevators to the stabilizer with cloth hinges at four places.

**Wing:** Make the spar by capping each 1/4 balsa spar half with 1/4 square spruce strips top and bottom. Join the spar halves with 1/8 plywood joiners front and rear at the centerline. Glue the 1/8 plywood gear mount into each wing panel. Glue the right side of the wing spar onto the right wing panel. Glue cardboard ribs W1 through W9 into the right wing. Add a cardboard doubler over the gear mount between W3 and W4. Glue a one-ounce weight to the right wingtip.

Glue the left wing panel to the left spar in similar fashion. Add the ribs and gear doubler to the left wing. Apply glue to the top of the wing spar, the top of the ribs, and the trailing edge. Fold the top wing surface down and pin securely until dry.

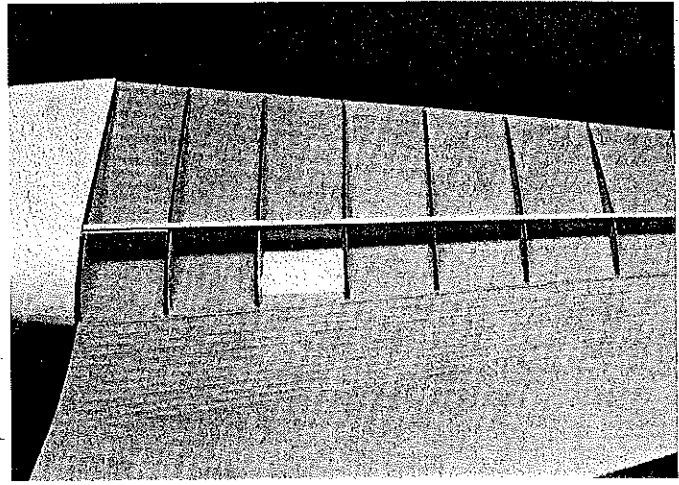
Glue the balsa tips to the wing. Make a line guide from 1/8 plywood. Cut a slot in the left wingtip and glue the line guide in place. Cover the trailing edge and all seams with gummed paper tape.

**Fuselage:** The sides are outlined with triangular symbols on the plans. Line the upper and lower edges of each fuselage side with 1/8 x 1/4 balsa. The strips are recessed 1/8 inch from the fuselage edges. Bevel the strips at the aft end of the fuselage so that the cardboard sides will come together. Add cardboard supports to each fuselage side above the fuel tank and below the bellcrank.

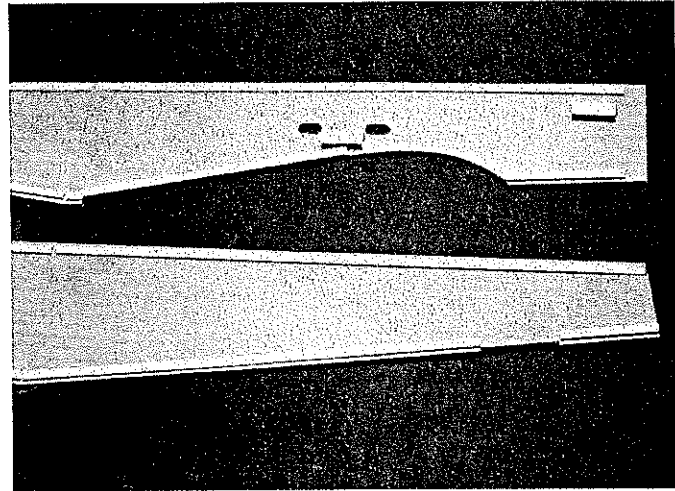
Make the firewall (C1) from 1/4 plywood. Locate the mounting holes for a KM-40 engine mount on the face of C1. Drill the mounting holes and install blind nuts on the back side. Drill a hole in C1 for a fuel tubing exit. Line all four back edges of C1 with 1/2 triangular balsa for bracing.

Glue C1 to the right side of the fuselage. When dry, attach the left side of the fuselage to C1. Attach the fuel tank to the 1/8 plywood support (the fuel tank may be attached to the support with rubber bands).

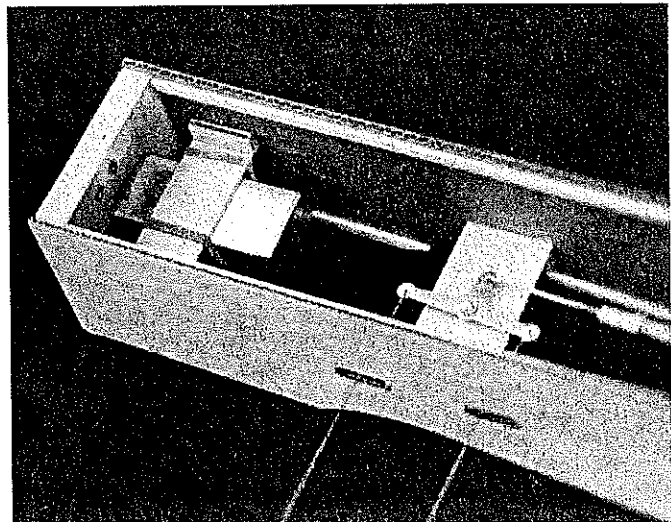
Make a pushrod from 3/32 wire and 1/4 square spruce and attach it to the bellcrank, along with the leadout wires. Install the tank and



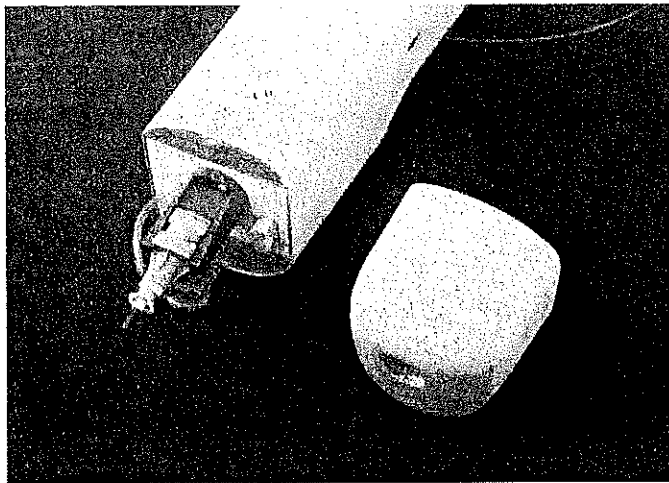
Wing has single spar, cardboard ribs, and leading edge folds for curved upper surface. Gear mount insert 1/8 plywood.



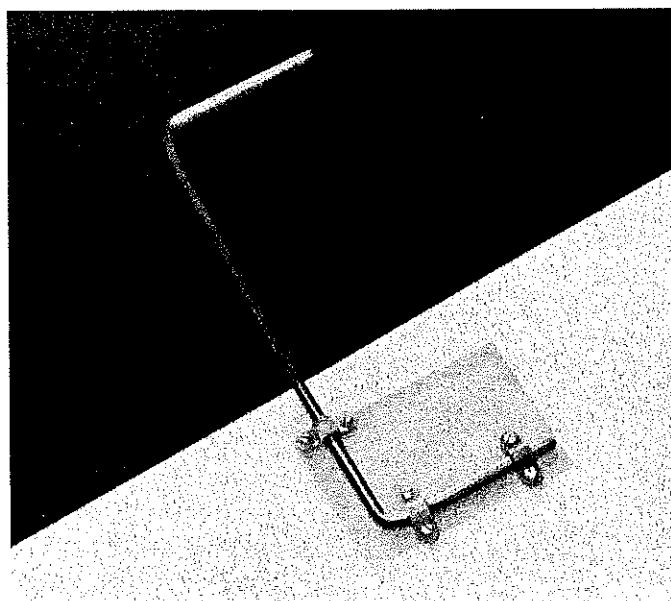
Fuselage sides are lined with balsa strips and have cardboard supports for bellcrank and fuel tank mounting.



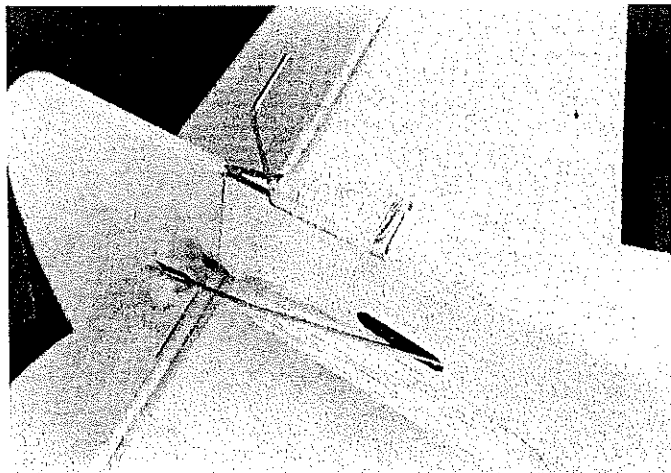
Fuselage sides joined to firewall with fuel tank and bellcrank installed. Firewall back face edged with triangular balsa.



Engine compartment showing KM 40 mount, shaft extension, and maple blocks used for cowl attachment.



Main gear mounted to 1/8 inch plywood insert with nylon gear clips. Slip fuel tubing over gear wire to simulate strut.



Empennage LEs are capped with 1/8 inch balsa and rounded off. Tailwheel wire is attached to platform with nylon thread. Note triangular balsa brace between stab and fuselage.

bellcrank assemblies by gluing the plywood supports to the cardboard supports on the fuselage sides.

Glue the fuselage sides together at the tail and glue F1 and F2 in place to cover the top fuselage. Be sure to bring the fuel tubing fill and overflow lines out during all covering operations. Cover the bottom fuselage with F3, F4, and F5.

Add bulkheads A through F to the top fuselage, adding 1/8 x 1/4 stringers down the center. Cover bulkheads A through F with top decking pieces D1, D2, and D3, which have been scored and folded. Add the three G bulkheads, with stringer, to the forward bottom fuselage and cover with D4.

The cowl is built up from 1/2 balsa sheet, sanded and hollowed out as shown in the top and side views. Maple blocks (already drilled and with blind nuts installed) are epoxied to C1. Add 1/8 plywood pieces to the inside of the cowl sides, in line with the maple blocks.

A 4-40 bolt is used to attach the cowl. Use a prop shaft extension to give adequate spinner clearance. Cut holes in the cowl block for the cylinder head, exhaust, and needle valve.

Glue the horizontal stabilizer to the fuselage. Add triangular balsa to the bottom of the stabilizer for bracing. Glue the fin to the fuselage. Add scrap balsa bracing between fin and stabilizer intersection and round off as shown in view C-C. Add the rudder to the fin, with the trailing edge offset 1/2 inch to the outside of the flying circle.

Make the tail wheel gear from 3/32 wire. Bend as shown, place on the 1/8 plywood support, wrap with nylon thread, and smear with glue. When dry, glue in place in the bottom fuselage cutout.

Make the main gear from 5/32 wire. Slip black fuel tubing over the wire to simulate gear struts. Attach the gear assemblies to the supports in the bottom wing with nylon gear clips.

**Finish:** Paint and trim the model before final assembly. The color scheme is yellow for wing and horizontal stabilizer; dark blue for fuselage and fin; red and white stripes on the rudder. The lettering and insignia are made from MonoKote.

Make the canopies from thin plastic and epoxy to the fuselage. Make cockpit combing from black fuel tubing split lengthwise. Outline the canopy with strips of black MonoKote. The aileron outlines are also made from black MonoKote.

**Final assembly:** Glue the wing to the fuselage. Pass the leadout wires through the wingtip line guide and tie off. Attach the nylon control horn to the elevator and hook up the pushrod. Attach 3 3/4 diameter wheels to the main gear and a 1 3/4 wheel to the tail gear. Attach an 11 x 6 prop to the engine, balance the model at the point shown on the plans, and your PT-19 is complete.

If you have any comments, suggestions, or questions concerning the cardboard PT-19, please write to me:

Chuck Felton  
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Space 86  
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### Fairchild PT-19

Type: CL Sport

Wingspan: 60 inches

Engine: .40 glow

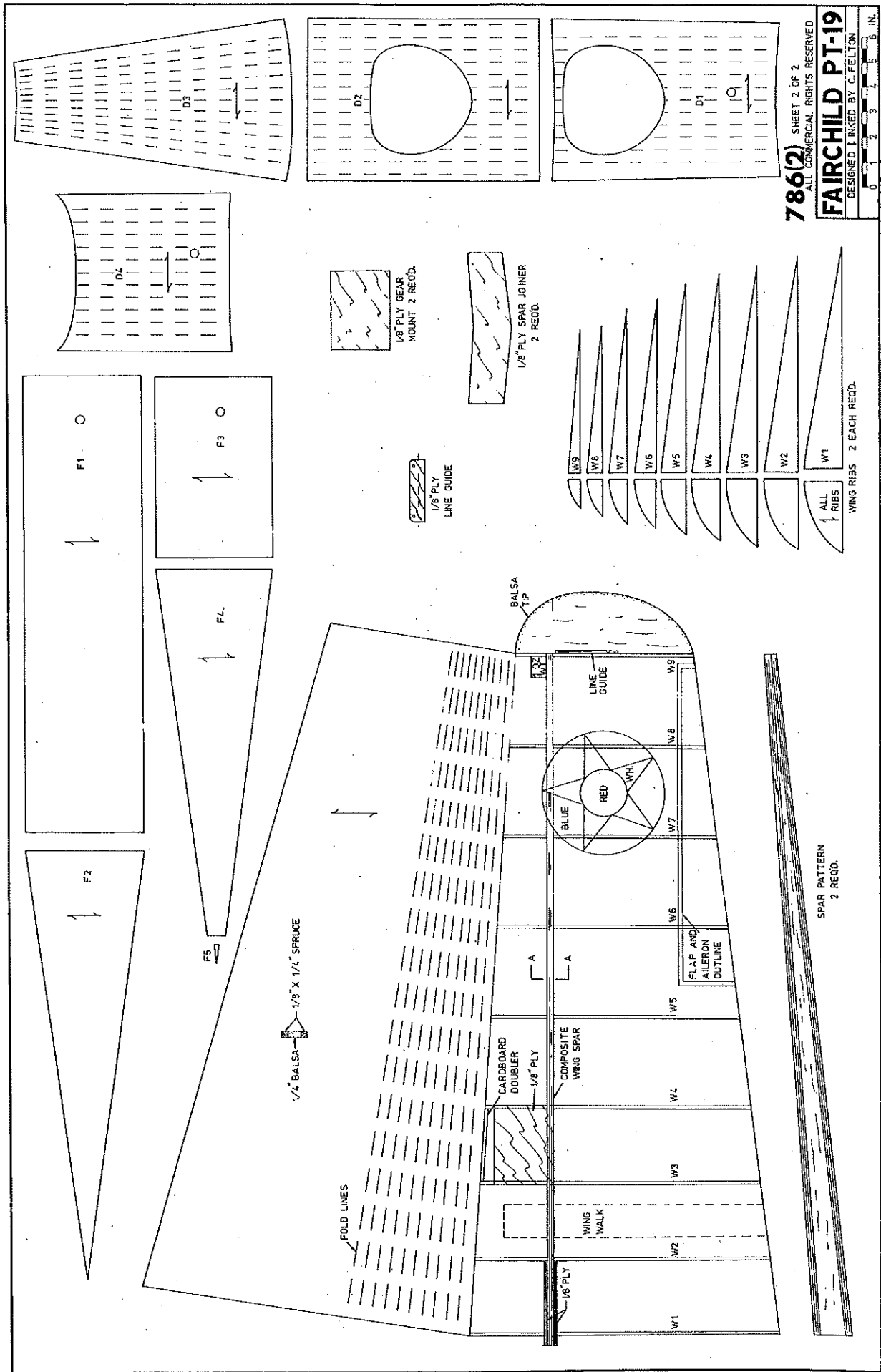
Flying weight: 48 ounces (approx.)

Construction: Cardboard/balsa

Covering/finish: Dope or film







786(2) SHEET 2 OF 2  
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**FAIRCHILD PT-19**  
 DESIGNED & LINKED BY C. FELTON

SPAR PATTERN  
 2 RECD.

WING RIBS 2 EACH RECD.

1/8 PLY  
 LINE GUIDE

1/8 PLY GEAR  
 MOUNT 2 RECD.

1/8 PLY SPAR JOINER  
 2 RECD.

W9  
 W8  
 W7  
 W6  
 W5  
 W4  
 W3  
 W2  
 W1  
 ALL RIBS  
 WING RIBS 2 EACH RECD.

1/4 Balsa - 1/8 x 1/4 Spruce

Balsa Tip

LINE GUIDE

BLUE

RED

WH

FLAP AND ALLERON OUTLINE

CARDBOARD DOUBLER 1/8 PLY

COMPOSITE WING SPAR

WING WALK

FOLD LINES

F1

F3

F2

F4

F5

D4

D3

D2

D1

19