PENNY-WEIGHT FLYING PAPER AIRPLANES

Cut, Fold & Fly – WWII Pacific, Volume 1

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Contents:

• Introduction
• Building Instructions
• How to Fly
• Curtiss P40 “Warhawk” (Flying Tigers)
• Mitsubishi A6M “Zero”
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• Aichi D3A “Val”
• Grumman F6F “Hellcat” (1943 Markings)
• Nakajima Ki-43 “Oscar”
• SBD Dauntless

Notes:

• Print models one sided, “actual size” – do not “fit to paper” or scale when printing!
• You’ll need to put a weight in the nose for level flight:
  o Recommended: if printing on 65 lb. cover stock, use a pre-1982 US penny (3.11 grams) or a 2 cent Euro coin (3.06 grams)
  o If printing on office printer paper, use a post-1982 US Penny (2.5 grams) or 1 cent Euro coin (2.3 grams)
• This is a scan of the only surviving copy of a printed draft manuscript. The original appears to have been printed on an ink jet printer, so there are various patterns in the colors associated with that process. You can touch up your plane with a felt tip marker if you like. (Typos have not been fixed.)
• I have built and flown some of these planes, but not all of them.
• I am unable to provide support, and in general not able to answer queries.
• No warranties of any kind are made. Please build and fly responsibly.
• I hope you enjoy these airplanes as much as I have!

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Paper models of all types are popular in many countries. This form of modeling takes many forms. Called Paper-Card Modeling in Europe, it spans the range from simple folded-paper darts, to complex three-dimensional models of airplanes, ships and buildings.

Paper models were popular in the United States during WWII. Material shortages made it difficult, if not impossible, to make models from balsa wood. Toy makers, too, were effected. With metal in short supply, many makers turned to paper substitutes. Even Lionel trains were put out as paper models in the 1940's. After WWII, paper models declined in the US. with the availability of metal and balsa wood.

The style of paper-plane construction used in this book was developed by Wallis Rigby, an Englishman. He was internationally know for his paper models of airplanes and trains. In addition to Rigby's many books of paper-model WWII airplanes, he developed models similar to those in our book as cereal premiums for General Mills. Mail in two box tops from Wheaties cereal and you received a pair of paper airplanes. In all, this type of model gave thousands of kids and adults their first try at model building.

Rigby's WWII models were simple in design and easy to build for kids of all ages. The planes were good flyers, if a bit fast, and very popular. The models were small and lacked detail. Colors were a bit on the garish side, like a blue P-40 Warhawk or a bright-yellow Nakajima fighter. Scale, too, wasn't so accurate.

We've attempted to retain the simplicity and flavor of the original models. Improvements in layouts and a larger size make the models easy to build and great flyers. And, there are new models that weren't in the Rigby series, like the Douglas Dauntless dive bomber and the US Navy and Marines Wildcat. All models carry scale outlines and details of the real airplane. Colors, too, give an over all scale appearance. Detailed picture instructions make it easy for even young modelers to build a successful flying model.

These penny-weight planes are new models. We made the artwork with the latest in computer technology. For some of the models, custom computer programs allowed us to generate three-dimensional models from aircraft drawings. Other special programs projected these 3D images into flat surfaces used as patterns for the fuselage artwork.

The Simple Tools Needed

Most of what you'll need is already on hand -- just scissors, a single-edge razor blade and some glue will do. However, we do have some suggestions to make it easy. Please follow the step-by-step instructions. There are two basic types of construction -- airplanes with radial engines and in-line engines.

Rather than repeating dozens of steps for each model, there is a single, combined, set of illustrated instructions. Start by Building a Japanese Zero. This shows you all of the construction steps needed for any of the radial-engine models. Next, build the Flying Tigers' P-40. The P-40's in-line engine fuselage construction, and special features like the standard canopy are shared by other models, too. And, extra instructions are given for custom details, like the landing gear for the Achi "Val" dive bomber.

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Use a model knife, or even a small disposable type, with a triangular blade for cutting out slots and the parts. Small scissors are useful for cutting curves, like wing tips. A straight edge as a cutting guide makes it easy to trim parts to shape. For easy building, please follow our instructions: Cut slots, score on the dashed lines, then cut out the part.

One can just bend the parts on the dashed lines, but accurate assembly will suffer. It's best to score along each dashed line. We use a dried out fine-line ballpoint pen, but any blunt blade, like a butter knife, will do. **HINT!** An empty ballpoint pen will still have a bit of ink. Some ink may come out from the heat of your hand. To be sure the pen is completely dry, close the air-vent hole with a drop of cement (the plastic “pencil-type” pens usually have the vent hole at the top end or under the eraser).

The best method of gluing the wing and tail parts together is with an ordinary glue stick -- Dennison’s brand works well. Remember, that paper absorbs water and warps; **DO NOT LAMINATE THE WINGS AND TAIL WITH WATER-BASED GLUE!** In all cases, weight down the laminated parts and let dry. The wing and tail parts must be perfectly flat.

You can use a very light coat of water-based “White” glue for assembly. However, we’ve found that a household cement, like the Duco brand, works best. It dries fast, but slow enough so you can make minor adjustments in part alignment before it sets. For difficult parts, like a nose cone, put a very thin layer of cement on both parts. Let dry, then apply a second coat and assemble.

For a more realistic model, color the cut edges of all parts before assembly. Use a colored marker pen around the edges. During Assembly, after cutting off the tabs on the fuselage, color the cut edges of the tab with marker pens or colored pencils of the same color as the fuselage.

Our last suggestion is the penny weight. Our models were designed to use the early copper pennies for nose weight. Starting in 1983 the US. penny was lightened. Check the date and use pennies dated 1982 or earlier. Or if you have to use the light pennies, and the model stalls, add a tiny piece of modeling clay to the nose. Or, better yet, cement a small paper clip inside of the cowl (in addition to the penny) during assembly. **HINT!** Experiment with a radial-engine model. Complete the nose cowling but don’t cement in place until after your flight test.

Build, Fly and above all, HAVE FUN!
**FLY’N THINGS™**

Penny Weight Paper Models
Building & Flying Instructions

1. **Use These:**
   - White Glue Or Model Cement
   - Glue Stick
   - Single-Edge Razor Blade Or Model Knife
   - Scissors
   - Metal-Edge Ruler Or Straight Edge

2. **AND, Tape And A Cutting Board:**
   - Tape
   - 17 Inches 11 Inches Two Layers Of Corrugated Cardboard, Taped Together Around All Of The Edges.

3. **Score Along Dotted Line Of Wing With The Used Ball-Point Pen Or A Smooth-Edge Butter Knife And Fold Down.**

4. **With Printed Side Down, Coat ONE Inside Surface With The Glue Stick.**
   - Make Sure That You Cover The Complete Wing Area With A Thin Coat From The Glue Stick.

5. **Place Wing On A Flat Surface, Fold Down And Smooth Out Glue. Weight Down So The Glued Wing Dries Flat.**

6. **Score, Fold And Glue The TAILPLANE And RUDDER The Same Way You Did The WING.**
   - Cut Rudder And Tailplane From Sheet. Do Each Part Separately. DO NOT CUT ON OUTLINE!

When Glue Is Thoroughly Dry, Cut Out Along Black Outline.

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8. Follow Steps 9 Thru 11 To Score, Cut Slots And Cut Out Fuselage.

9. FIRST, Score Along All Dashed Lines.

10. NEXT, Cut Out Slots For Assembly Tabs With Model Knife.

11. THEN, Cut Out Fuselage Along The Outside Black Outlines.


Make Straight Cuts Along Tab And Flap Outlines. Then, Make Connecting Cuts.
13. Push all bottom tabs through the matching slots. Apply a light coat of glue to the hatched area. Pull tabs tight, hold until completely dry.

Pull tabs completely through slots.

HINT!
Start with the rear bottom panel first (slots & tabs letter D and E). Do center (B & C) next, and finish with A.

14. Glue hatched area at the top, front of fuselage. Pull tab (F) completely through. Line up fuselage markings. Hold until completely dry.

Cut off tabs when fuselage is completely dry.

IMPORTANT!
Do NOT cut off tabs until the fuselage is completely dry.

RADIAL-ENGINE COWL ASSEMBLY

15. As you did for the fuselage...

Zero cowl shown.

16. Score, cut slot and cut out cowl.

Score and fold up or down on dashed lines.

Zero cowl shown. Other radial-engine cowls do not have the top-panel piece extension.

Tab slot

17. Before folding cowl, curve the center section by pulling it across a round pen or pencil.

Do not curve top-panel of zero cowl.

Pull cowl across with other hand, curving it.

Grip cowl firmly with thumb against pen or pencil.

18. Glue penny to cowl, and fold over big tab. Use plenty of glue. Hold until dry. Then fold as shown.

When glued penny is dry, fold along dashed lines as shown by arrows.

Penny

IMPORTANT!
Penny must be firmly glued into cowl.
19. After Cowl Is Curved And Folded, Shape Around Cowl Front.

**IMPORTANT!** Make sure the Cowl Front is INSIDE the Front Tabs.

Front Tabs

Cowl Front


Curve Cowl Around Front

Glue Cowl Front and Fold Down Tabs.

Pull Tab Through Slot and Glue Bottom of Cowl.

21. When Tabs at Front of Cowl Are in Place, Turn the Cowl as Shown and Hold Firmly Until Dry.

**HINT!** Put a piece of Plastic wrap on Cutting Board to Prevent Glue Sticking.

22. Check to Make Sure All Tabs Are Glued Flat to the Front of Cowl. Reglue if Needed. Then, Trim the Bottom Tab Flush with Side.

Tabs MUST Be Glued Flat to Front of Cowl.

Cut Off Tab Flush with Cowl Side.

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**NOSE CONE ASSEMBLY**

23. Cut Slot in Outside Nose Cone. Cut to Outline and Curve Over a Pen as You Did the Cowl.

OUTSIDE CONE

Glue Area

Cut Slot


24A. When Outside Nose Cone is Completely Dry, Cut Off Tab.

24B. When Outside Nose Cone is Completely Dry, Cut Off Tab.
25. As You Did With The Outside Cone, Cut Slot And Curve Inside Cone. Then, Bend Tabs Up.


26A. Score And Then Bend Tabs UP.

26B. Bend Wide Tabs DOWN

26. When Inside Cone Is Dry, Cut Off Tab At Slot. Bend Wide Tabs DOWN.


28. Apply Plenty Of Glue To The Inside Cone. Slip The Outside Cone On Top. Hold Until Dry.


-- IMPORTANT! Cowl Trim Is Slightly Oversize -- Center On Cowl, Then Trim To Size When Glue Dries.

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**BUBBLE CANOPY ASSEMBLY**


32. ROLL... Do Not Fold Top Of Canopy. Fold Only On The Dashed Lines.

32A. Glue Red-Hatched Areas. Then, Slide Front Tabs Under Middle Tabs. Hold Until Dry.

**STANDARD CANOPY ASSEMBLY**

33. Like The Bubble Canopy, Cut Along Outline, Making Sure That All Slots Are Cut Out.

34. Roll Canopy. Fold ONLY On Dashed Lines.

**FINAL ASSEMBLY RADIAL-ENGINE PLANES**


36. Glue Ends Of Fuselage To Rudder. Check Vertical And Horizontal Alignment Of Rudder And Tailplane. Hold Until Glue Dries.

**IMPORTANT!**

DO NOT Put Cowl Or Canopy On Until Later.

**IMPORTANT!**
DO NOT ATTACH COWL IF THE PLANE HAS A BELLY PAN. SEE STEPS 43 THROUGH 46.

38. For Planes With A Top-Panel Extension On The Cowl, Hook Tabs Into Fuselage Slots As You Slide The Cowl On.


40. For Planes With Cowl Extension, Make Sure The Front Tabs Of The Canopy Go On The Outside.


42. Fold Wing Up EXACTLY Along The Dashed Line In Glue Area. Glue Wing FIRMLY To Bottom Of Fuselage. Hold Until Dry.
BELLY PAN ASSEMBLY

43. Score Along Dashed Lines. Cut Out Belly Pan On Outline.
   Make Sure To Completely Cut Out All Of The Slots

44. Fold DOWN On Both Of The Dashed Lines
   Front Of Plane
   Score On Dashed Lines
   Fold DOWN Both Sides

   Press ALL Ends Of Belly Pan into Position On The Fuselage.

46. Glue Cowl Mounting Areas. Slide Cowl Into Position.
   Glue Cowl Mounting Spots

ADDING FINAL DETAILS

47. Roll Air Scoop And Fold Down On Scored, Dashed Lines.
   Red-Hatched Glue Areas
   IMPORTANT! Glue Folded Edges ONLY To Plane.

48. Top Scoops Are Installed TheSame Way. Make Sure Patterns On Scoop And Fuselage Match!

Zero Shown

P-40 Shown

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**FIXED LANDING GEAR**


![Landing Gear Diagram](image)

50. Fold DOWN On Dashed Lines AS Shown.

![Fold Down Diagram](image)

51. Fold Down Top Tabs As Shown. Glue INNER Surfaces At Back Of Fairing And At Bottom Of Wheel.

![Fold Top Tabs Diagram](image)


![Glue Areas Diagram](image)

**RADIATOR AND COWLING**


![Radiator Diagram](image)


![Glue Areas Next To Slots Diagram](image)

P-40 Shown
55. Typical Inline-Engine Fuselage.

56. Referring to Step 57, follow the instructions of Steps 9 through 11 to score, cut slots and cut out the fuselage.

57. Refer to building steps 9 through 11.

58. Fold scored creases up or down as marked on the dashed lines.

59. Push all bottom tabs through the matching slots. Apply a light coat of glue to the red-hatched areas. Pull tabs tight, hold until completely dry.

60. Glue hatched area at the top, front of fuselage. Pull top tabs (F and G) completely through. Line up markings. Hold until dry.

CAUTION! Do not bend nose tabs at glue area.

HINT! Start with the rear bottom panel first. Do the center and finish with front.

IMPORTANT! Do not cut off tabs until the fuselage is completely dry.
**PENNY-WEIGHT HOLDER**


62. Fold As Shown. Apply Plenty Of Glue To Both Glue Areas. Slide In Penny, Hold Until Dry.

   NOTE: Other Inline-Engine Fuselage Penny Holders Have Tabs Instead Of "Eyes".

   Glue Both Sides Of Penny. It MUST Be Firmly Held In Place


64. Glue Penny-Weight Holder Tabs In Place. Hold Until Dry. Weight Holder Must Be Secure!

   IMPORTANT! Weight Holder MUST Be Secure In The Fuselage. Add Glue Spots Around Edges If Needed.

**NOSE-CONE ASSEMBLY**


   INSIDE VIEW OF CONE!

   66A. Pull Tab Through Slot And Curve Outside Over Glue Area. Bottom Of Cone Has STRAIGHT Sides.

   66B. When Inside Nose Cone Is Completely Dry, Cut Off Tab.

   PRINTED SIDE DOWN!
67. As You Did With The Inside Cone, Score Dashed Lines, Cut Out Slot, Cut To Outline And Curve The Cone.


69. Apply Plenty Of Glue To The INSIDE Of The Cone. Force The Nose Tabs Into The Cone.

70. Hold Inside Nose Cone Against Fuselage. Bend The Bottom Tab Against Fuselage. Hold Cone And Tab Until Glue Dries.

71. Apply Plenty Of Glue To The Inside Nose Cone. Firmly Press The Outside Cone On Top.

72. Hold Cone Until Dry. Finish Construction By Adding Tail, Wings, Canopy And Details As You Did For The Radial-Engine Planes.
FLY PLANE LIKE YOU THROW A DART!


Hold Plane With First Finger On Rudder As Shown

ADJUSTING YOUR PLANE FOR FLIGHT

When Properly Made, Your Model Should Look Like This: Proper Dihedral And Correct Position Of The Rudder And Tailplane


The Rudder Must Be Straight - NOT Curved Or Twisted. It Must Be Vertical And In Line With The Fuselage.

RIGHT
WRONG!

FLY WITH G-LINE INDOORS OR OUT!

For Great Fun Indoors Or Out! Any Of Your Models Fly With G-Line Control. You'll Soon Learn To Make Them Loop And Even Have "Dog Fights" With A Friend. This Picture Shows All That's Needed.

Tie A Thin String Or Thread To A Short Stick. Thread The Other End Of The Line Into The Wing As Shown Below. Start With 6 To 8 Feet Of Line. Swing The Stick Around Your Head From Right To Left.

Your Plane Will Rise And Fly At The End Of The G-Line. It Obey's Your Every Move For Speed And Control. You Will Soon Be Able To Perform Loops, Dives And Landings.

Tie A Light Line To The Leading Edge Of The Wing Near The Tip. Thread Line Through The Wing With A Needle. Tie A Large Knot.

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WWII AMERICAN HELLCAT (1943 Markings) WING
CEREAL-BOX PENNY-WEIGHT PLANE
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SCORE AND FOLD UNDER

LEADING EDGE
GLUE TO FUSELAGE
FOLD UP TO MATCH
DIHEDRAL ON FUSELAGE
GLUE TO FUSELAGE

WWII JAPANESE NAKJIMA KI-43 "OSCAR"
CEREAL-BOX PENNY-WEIGHT PLANE
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