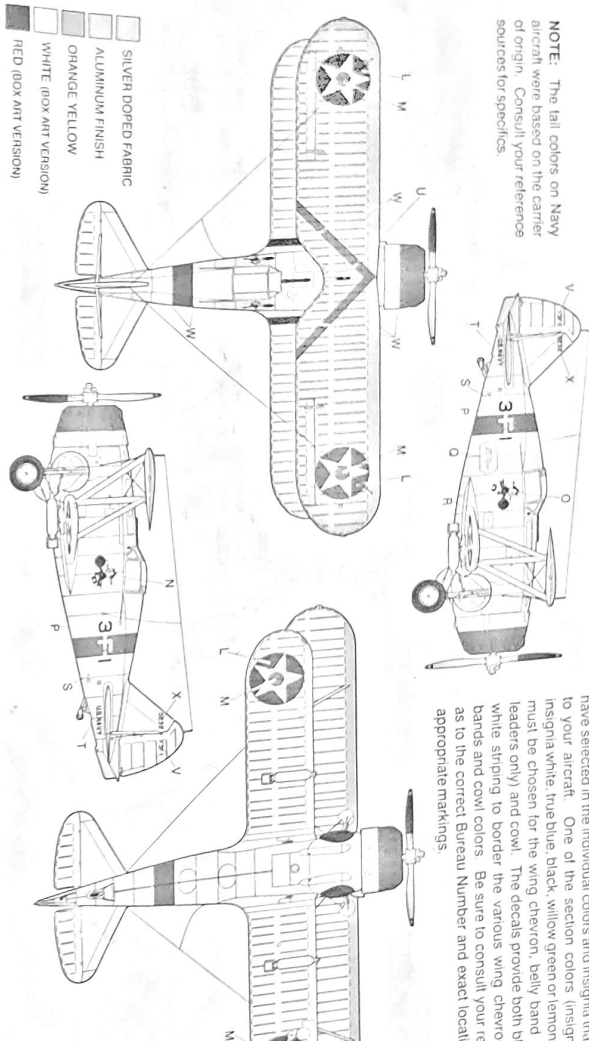


STEP 16 - DECAL PLACEMENT AND FINISHING

NOTE: The tail colors on Navy aircraft were based on the carrier of origin. Consult your reference sources for specifics.

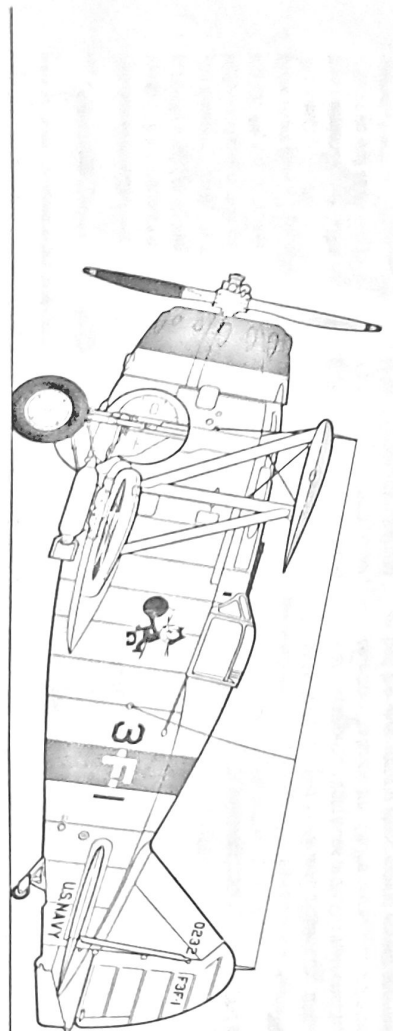


The box art model is depicted in these illustrations. Decals included in this kit will allow you to represent virtually any of the 57 F3F-1s that were built. Finish the model as you see it in the individual colors and insignia that have been selected for the individual aircraft. One of the section colors (insignia) is white, true blue, black, willow green or lemon yellow. The colors for the wing chevron, belly band (leaders only) and cowling. The decals provide both the white striping to border the various wing chevron bands and cowling. Be sure to consult your reference to the correct Bureau Number and exact local appropriate markings.

- SILVER DOPED FABRIC
- ALUMINUM FINISH
- ORANGE YELLOW
- WHITE (BOX ART VERSION)
- RED (BOX ART VERSION)

GRUMMAN F3F-1

3413 0200



F3F-1

INSTRUCTIONS

First flown on March 20, 1935, the F3F-1 was an improvement over the previous Grumman F2F series. With a longer fuselage and increased wing span, the F3F-1 proved to be more stable than its predecessor. After a rather inauspicious start (the first three prototypes crashed), deliveries began in January of 1936, with all aircraft being completed by September of 1936. After 5 years of very active fleet

duty in the hands of Navy and Marine pilots, the dash ones were finally retired to the rosters of training schools and technical training classes. The F3F-1 marked the beginning of the end of the biplane era. But before they disappeared, they helped to train a generation of pilots who would go on to courageously defend a country that was ill-equipped for the looming world war.

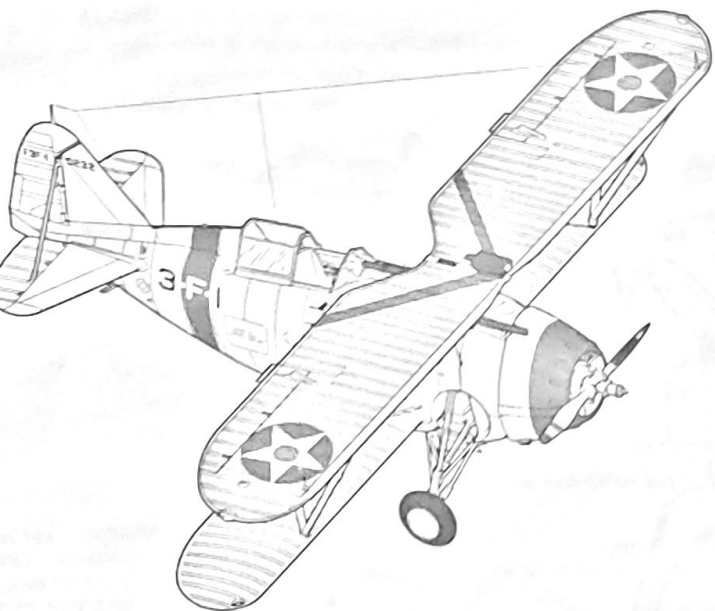
The decals included in this kit will allow you to model virtually any one of the 57 F3F-1's that were constructed. There is ample reference material currently available on these planes to document any particular aircraft you choose. Study the many subtle differences in these planes, and before you start construction, consult the paint chart that is included with this kit. Be sure to paint and finish as you build. And remember - these planes were maintained in topnotch condition!

The fuselage on these aircraft was constructed of aluminum. Since these airplanes operated in salt water environments, all metal surfaces (interior as well as exterior) were first coated with zinc chromate primer, over which was applied an aluminum pigmented lacquer. The result was a satin finish. We recommend the use of a non-buffing type aluminum metalizer to best reproduce this finish. External aluminum components were anodized, and steel parts such as landing gear, arrestor hook, etc., are best duplicated in "aluminum" or "steel." Even though some early Navy ship-based fighters were painted grey, this was not the case with these planes. This information is based on Grumman painting documents.

Both the upper and lower wings were fabric covered. The upper surface of the top wing was an orange yellow very close to FS 13538 (Orange yellow, not chrome yellow, was the Navy name for the color. Remember, this is before we had ANA and FS numbers to go by). The upper surface color of the upper wing wrapped around the leading edge onto the lower

surface. This color on the lower surface extended back anywhere from a few inches from the leading edge to all the way to the rear edge of the front leg of the "N" struts. Contemporary photos show there was a wide variance in the location of this dividing line. The wing surfaces were first doped taut, then painted in orange yellow and silver lacquer, which resulted in a highly reflective finish. The differing reflectance between the wing and fuselage surfaces was noticeable. The wing walks and the lower wing-tip hand holds were black. The propeller blades had 4" warning stripes on both sides of the tips that consisted of red, yellow and blue from the tip inward. On the rear surface of the blades, some aircraft had the blue warning stripe extend inward approximately 24 inches. This acted as an anti-glare surface.

The photo etch rigging in this kit has been designed to give an accurate representation of the real thing. The actual airplane had flat stainless steel (unfinished) flying wires with internal adjustments, so do not alter the finish on the photo etch if you want a correct representation. By carefully following these instructions, you will be able to reproduce the look of the rigging easily and in scale. You may wish to add a small brace at the point where the flying wires cross. On the real planes, all four wires passed through this brace. This is a bit of a modelling challenge! We strongly recommend that you complete all painting and apply all markings before installing the photo etch rigging in Step 15.



MODEL PAINT REFERENCE CHART*

	FEDERAL STANDARD	MODEL MASTER	HUMBROL	GUNZE SANGYO AQUEOUS	GUNZE SANGYO MR. COLOR	XTRA COLOR	FLOQUIL CLASSIC MILITARY
ALUMINUM	17179	1781	56	8	218	X142	303121
BLACK	17038	1749	21	12	33	-	303010
ORANGE YELLOW	13538	1707	154	329	329	X106	303228
INSIGNIA RED	11136	2718	19	3	3	X103	-
INSIGNIA WHITE	17875	1745	22	1	1	X141	303116
TRUE BLUE	15102	2030	-	25	34	X152	303275
WILLOW GREEN	14187	2028	-	-	-	X151	-
LEMON YELLOW	13655	2023	99	4	4	X108	303078
BURNT METAL	-	1415	-	76	61	-	-

*This chart is provided only as an aid to the modeller and is the closest match possible from each paint manufacturer at the time of printing.

The model paints in this chart may be available in gloss or matte finish! The Federal Standard numbers are prefixed for a gloss finish. Consult your reference for the correct reflectance on your model and use a final finish of gloss or matte accordingly. Commonly used modeling colors will be necessary to finish small details.

IMPORTANT

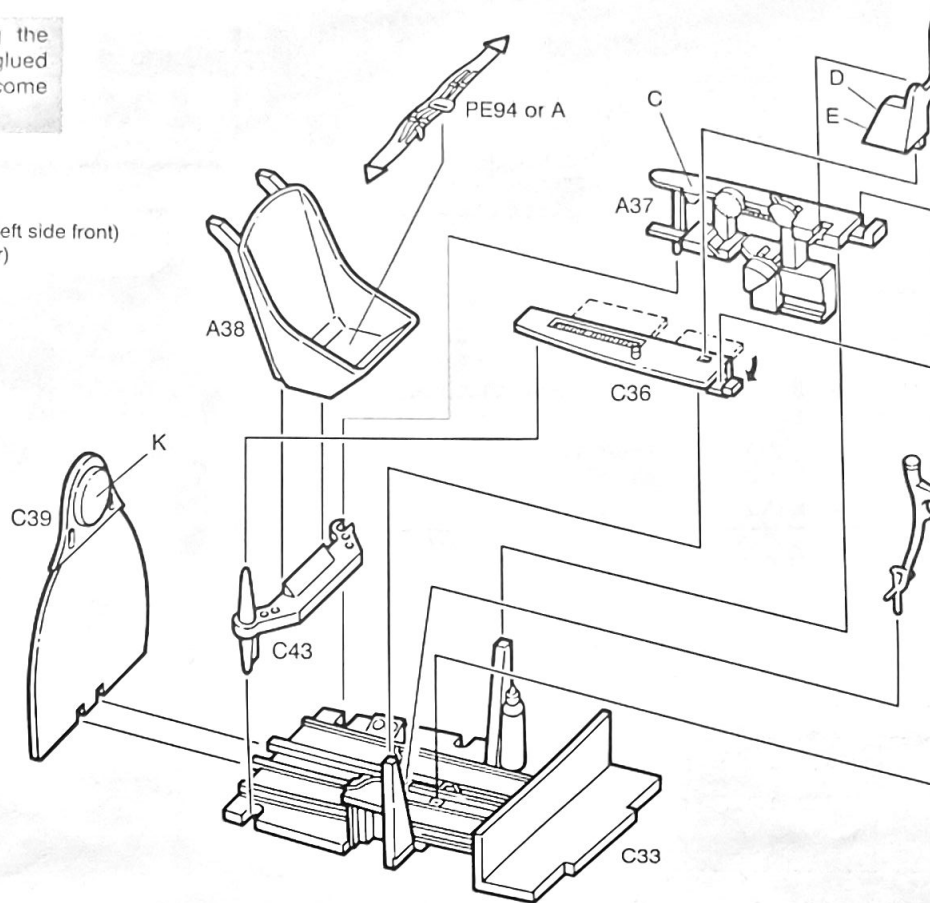
This kit contains a number of small parts that require extra care in handling. The assembly is very straightforward and progresses in the normal manner. The parts will "self align" in most cases. Still, we will remind you to double check to insure that parts are in the proper location. You may choose to vary the assembly sequence slightly, but we strongly suggest that you do not stray too far from these instructions. The surface detail and thin parts in this kit are very delicate. To avoid damage, use glue sparingly.

STEP 1 - COCKPIT ASSEMBLY

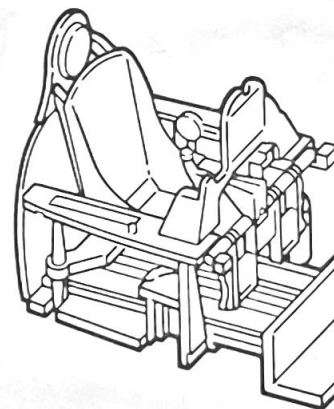
The cockpit will benefit from having the various pieces painted before they are glued into position. Trust us - they will become inaccessible once they are in place.

PAINT INSTRUCTIONS

- C39 - aluminum with medium green headrest
- C33 - aluminum with brown fire extinguisher (left side front) and willow green oxygen bottle (right side rear)
- C43, A38, C36, C35, A34 - aluminum
- PE94 - tan or light grey
- A37 - aluminum with black throttle knob
- PE101 - unpainted



- △ Begin construction by gluing the seat frame (C43) to the cockpit floor (C33).
- △ Carefully fold the right cockpit console (C36) to form a 90° angle and glue to the locators on the seat frame and on the cockpit floor. Make sure that the forward portion of the fold is vertical so as not to interfere with the rudder pedals when they are installed.
- △ After painting the pilot's seat (A38) and the photo etch seat belt (PE 94), carefully press the seatbelt down into the pilot's seat. Allow the belt to follow the contours of the seat. Glue in place with cyanoacrylate (CA) cement. As an alternative, you may elect to use the decal seat belt (A).
- △ Glue the seat to the seat frame.
- △ After painting the cockpit rear bulkhead (C39) and applying decal (K) to the headrest, glue the bulkhead to the cockpit floor (C33) and to the seat back.
- △ After painting the left cockpit control console (A37) and applying decal (C) to the location shown, glue the console to the seat frame and to the cockpit floor.
- △ Glue the control stick (C35) to the rearmost locating hole in the cockpit floor.
- △ The photo etch fuel selector shaft (PE101) stands between the protrusion on the front of the rudder pedals and the forward locating hole on the cockpit floor. It will be easier to glue this part to the floor using CA cement before the rudder pedals are installed. Keep it vertical and centered.
- △ The rudder pedals (A34) are placed into the locating slots on the top surface of the left and right cockpit consoles and glued in place. Make sure the pedals are vertical and level.
- △ The instrument panel (E61) is first painted (with exception of the instrument dials). After the panel and levers are finished to your satisfaction, they may be placed on the back of the instrument panel of the instrument panel decals on the decal sheet and the other is printed face down. The face directly on the instrument panel, while the face turned over and placed on the decal paper to insure good adhesion. The choice is left to the builder. The dials line up behind the dial openings and all decals (D) and (E) to the right front protrusion of the instrument panel.
- △ When the panel is completely dry, glue the finished tops of the left and right control consoles. Be sure the panel is vertical, with the notch on the top of the fuselage.



STEP 2 - INTERIOR/FUSELAGE

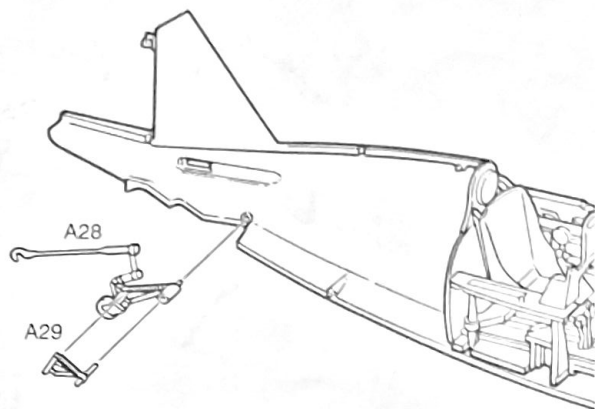
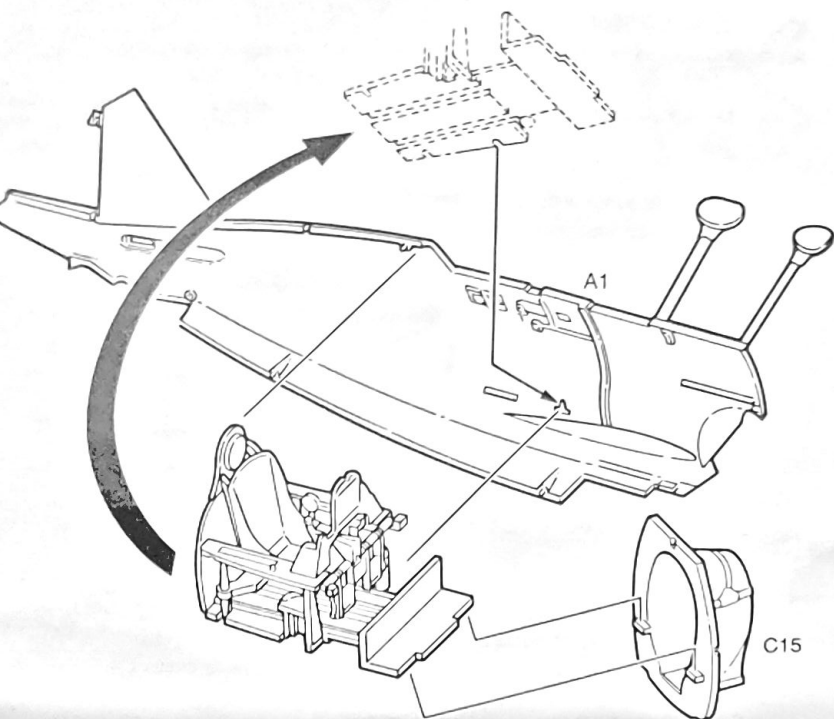
PAINT INSTRUCTIONS

A1 - aluminum interior surface

C15 - aluminum

A28, A29 - aluminum with dark grey tire

Note: Carefully remove the fuselage halves from the tree to avoid damaging the delicate rib on the bottom of the fuselage.



△ Glue the fuel tank/forward bulkhead (C15) to the front of the cockpit floor. The tabs on the tank/bulkhead fit underneath the front edge of the cockpit floor. Be certain to check alignment (The tank/bulkhead should be 90° to the floor and centered on the front edge).

△ Glue the right tail wheel frame (A29) to the left tail wheel/arristor hook (A28).

△ Glue the completed tail wheel/arristor hook assembly into the locator on the left fuselage half (A1). The arristor hook should rest against the forward edge of the hook opening. Be sure to keep this assembly very straight, as the right side pin must go into the right side locator.

△ The cockpit floor assembly is now placed on to the locators in the left fuselage half. Do not glue the cockpit assembly to the fuselage at this time. This will allow everything to be adjusted and aligned more precisely when the fuselage halves are joined in Step 3.

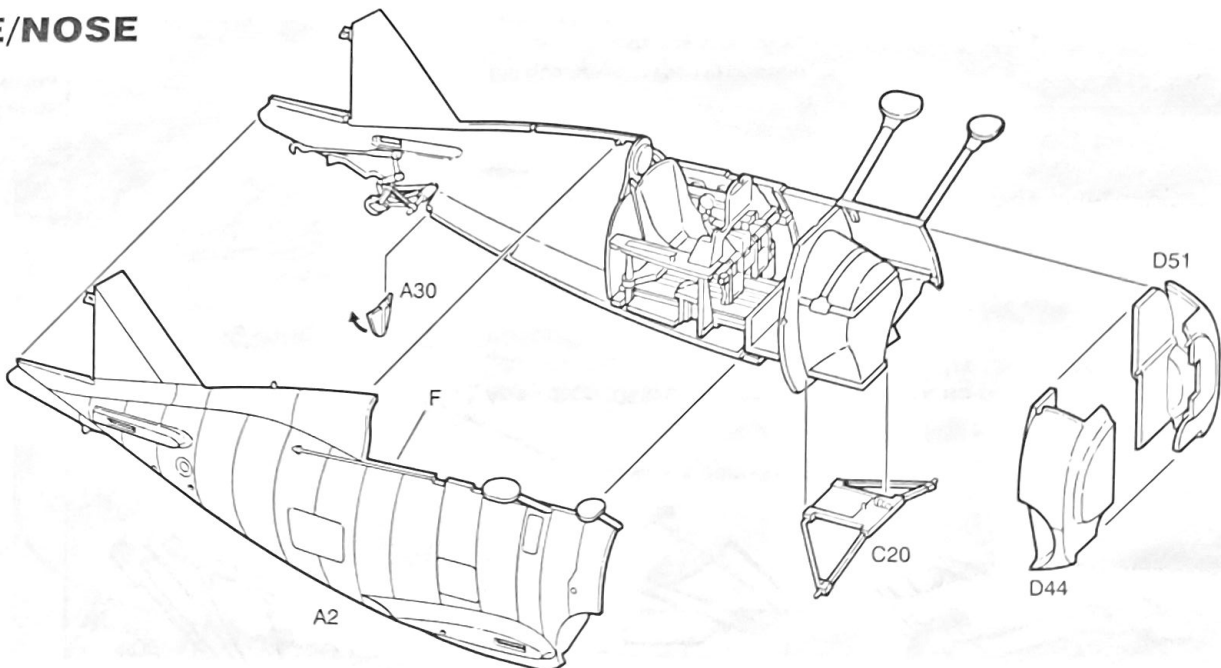
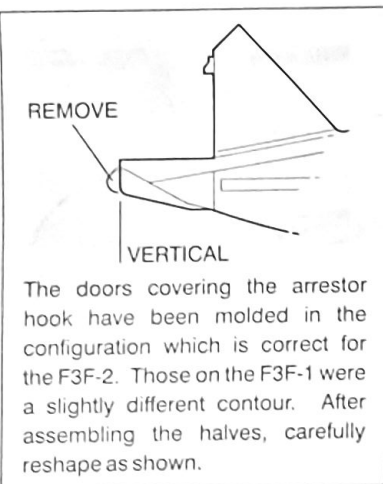
STEP 3 - FUSELAGE/NOSE

PAINT INSTRUCTIONS

A2 - aluminum interior surface

D51, D44, A30 - aluminum

C20 - aluminum with steel "A" arms



△ Apply decal (F) to the top inside right fuselage half (A2) as shown, positioning the decal just behind the engraved crank assembly detail and just above the protruding tab. After test fitting, carefully glue the right fuselage half (A2) to the left fuselage assembly, trapping the interior assembly in place (see Step 2). Make sure that the tail wheel assembly lines up in the right side locator. You can now align the headrest portion of the cockpit rear bulkhead and carefully glue in place.

△ Glue the left intermediate cowl (D51) to the right intermediate cowl (D44).

△ Glue the intermediate cowl assembly to the front of the fuselage assembly.

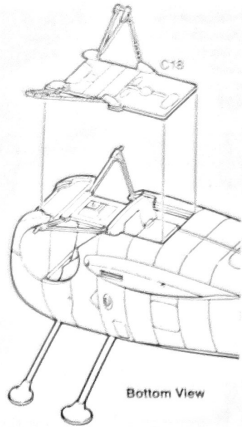
△ Glue the fuel tank base/upper "A" arms (C20) to the bottom of the fuel tank.

△ Finally, add the tail wheel door (A30) to the tail wheel and the fuselage.

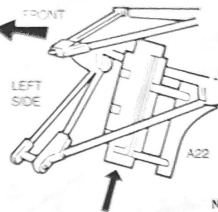
Note: We recommend that the rudder be added at the end of construction to ease in the placement of decals and to protect the delicate radio antenna from potential breakage.

STEP 4 - "A" ARMS/LANDING GEAR DOORS

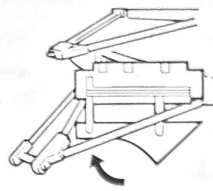
PAINT INSTRUCTIONS
 C18 - aluminum with steel "A" arms
 A22, A23 - aluminum



△ Glue the fuselage underside/lower "A" arms (C18) to the bottom of the fuselage and to the intermediate cowl. Allow to dry thoroughly before proceeding to the next step.

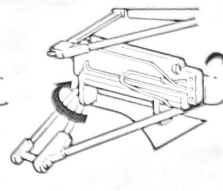


The landing gear "A" arms are delicate. So be patient with this assembly. You are about to add the landing gear doors/fuel tank sides. They look like they'll never make it. But they will fit perfectly.



NOTE: These views are from the top side.

△ Apply decal (G) to the left landing gear door/fuel tank side (A22) in the location illustrated. Carefully insert the left landing gear door/fuel tank side (A22) up through the lower "A" arms and against the rear of the opening as shown. Rotate upward between the upper and lower "A" arms and tilt back into position against the side of the fuel tank as shown in the illustration. When in position, the fuel tank side sits at an angle. Glue in place.



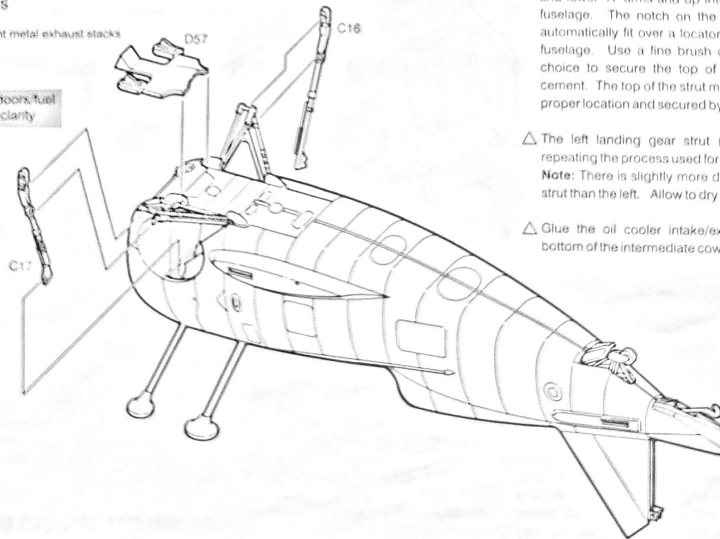
△ **Note:** No decal is added to the right landing gear door/fuel tank side. Decal (G) goes onto the left piece only. Now, repeat the preceding step (with the same care and patience) with the right landing gear door/fuel tank side (A23).

STEP 5 - LOWER NOSE/LANDING GEAR

PAINT INSTRUCTIONS

C16, C17 - steel
 D57 - aluminum with burnt metal exhaust stacks

NOTE: Landing gear doors, fuel tank sides omitted for clarity



△ Glue the right landing gear strut (C17) to the upper and lower "A" arms and up into the opening in the fuselage. The notch on the top of the strut will automatically fit over a locator on the inside of the fuselage. Use a fine brush or applicator of your choice to secure the top of the strut with liquid cement. The top of the strut may be checked for the proper location and secured by viewing from above.

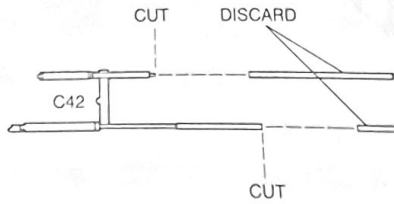
△ The left landing gear strut (C16) is installed by repeating the process used for the right strut.
Note: There is slightly more detail on the right gear strut than the left. Allow to dry thoroughly.

△ Glue the oil cooler intake/exhausts (D57) to the bottom of the intermediate cowl.

STEP 6 - MACHINE GUNS

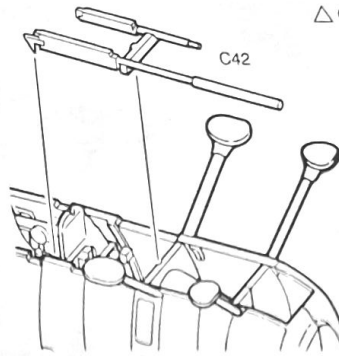
PAINT INSTRUCTIONS

C42 - black
D52 - aluminum

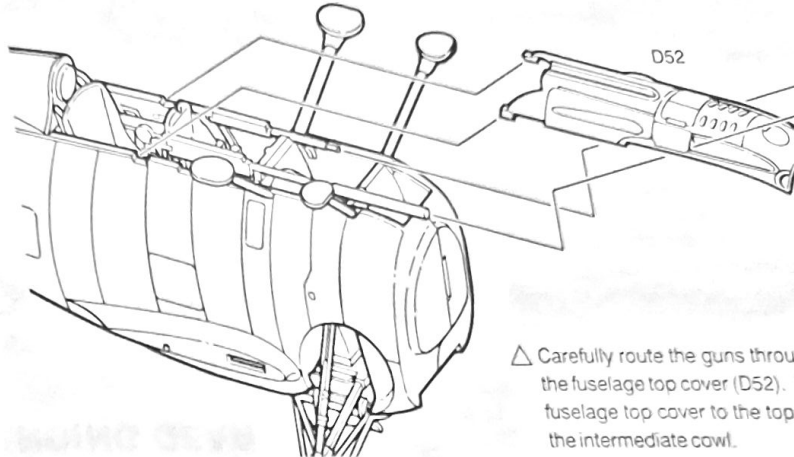


△ After removing the overflow tabs from the machine guns (C42), you must modify the guns for this version of the F3F. Using the illustration as a guide, trim the left .30 cal. gun barrel at the point where the blast tube joins the barrel. The right .50 cal. barrel should be trimmed at the notch in the forward part of the barrel.

Note: The "barrels" on these guns were not actually part of the guns. They were blast tubes. These tubes carried the gasses forward away from the aircraft interior. They allowed the rear of the guns to be located in the cockpit within easy reach of the pilot for charging.



△ Glue the machine guns (C42) to the locator on the top of the gas tank bulkhead and to the right side of the instrument panel as shown. Maintain alignment with fuselage.



△ Carefully route the guns through the fuselage top cover (D52). fuselage top cover to the top the intermediate cowl.

STEP 7 - ENGINE

PAINT INSTRUCTIONS

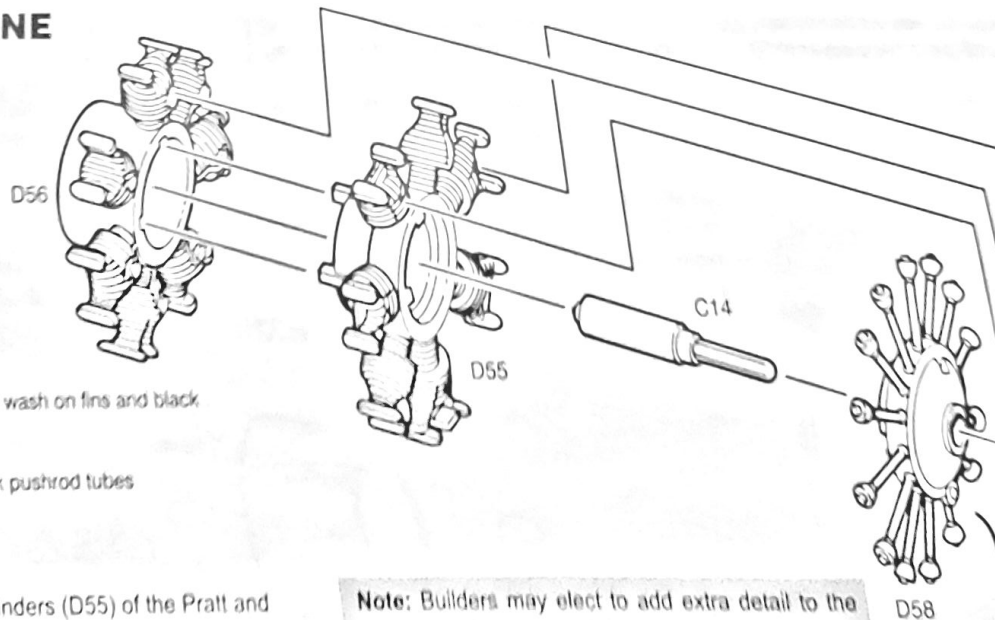
D55, D56 - aluminum with black wash on fins and black rocker arm boxes

C14 - no paint necessary

D58 - gloss light grey with black pushrod tubes

PE102 - dark brown

D87 - black



△ Glue the front row of cylinders (D55) of the Pratt and Whitney R-1535-84 engine to the rear row (D56) of cylinders.

△ After painting the engine front case (D58), apply decal (H) in the position shown. Glue the front case to the front row of cylinders, trapping the propeller shaft (C14) between the two parts. Do not allow cement to come into contact with the prop shaft or the prop won't turn. And don't let just anyone turn it!

Note: Builders may elect to add extra detail to the engine with the photo etch ignition set.

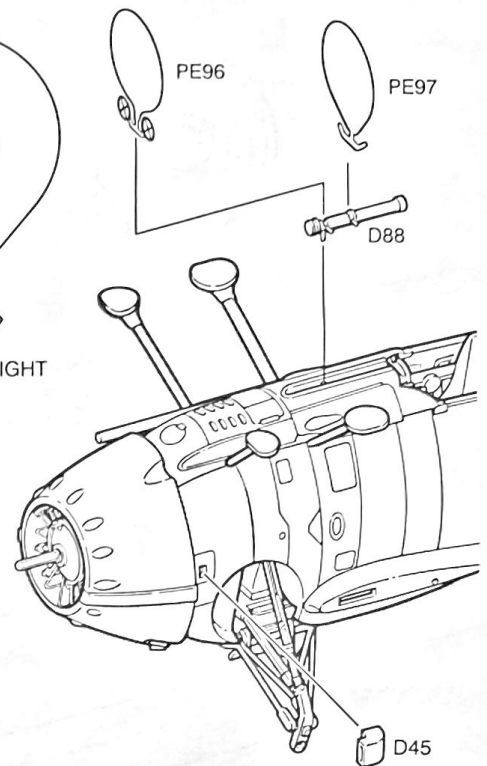
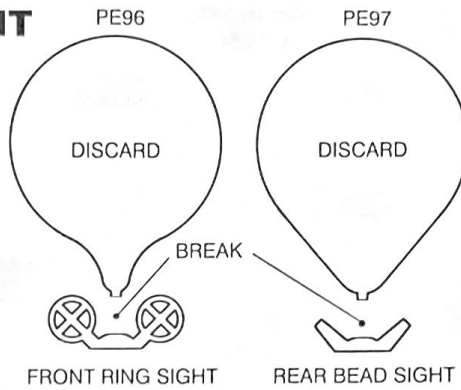
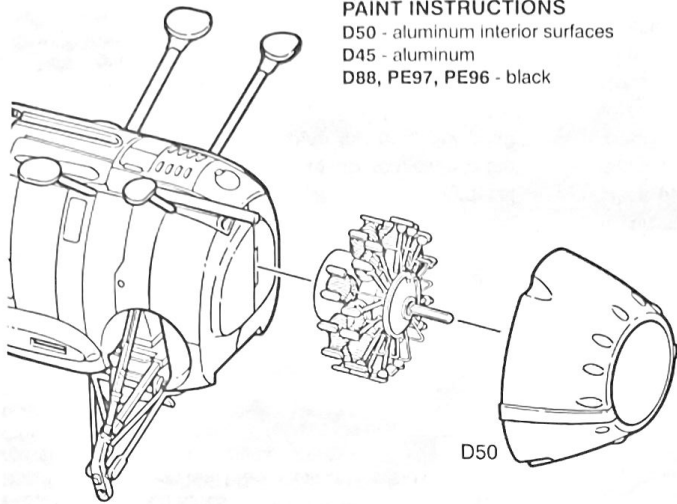
△ If you are using the photo etch wiring set, carefully place the wires (PE102) on the front of the engine crankcase and glue in place. Use a CA type cement to secure this piece. Place the spark plug ends of the wires into the holes on the cylinders and glue in place. Notice that the wires alternate, long and short. The long wires go into the rear row of cylinders, while the short wires go into the front row.

△ Now add the ignition ring (D87), again with CA, to the front surface of the photo etch ignition wires.

STEP 8 - ENGINE/COWL/GUNSIGHT

PAINT INSTRUCTIONS

D50 - aluminum interior surfaces
 D45 - aluminum
 D88, PE97, PE96 - black



△ The engine assembly is now glued to the firewall. Note that the slot in the firewall is offset to the left side. Center the engine.

△ The cowl (D50) is now placed over the engine and carefully glued in place where its inner surfaces come in contact with the engine cylinders.

△ Glue the carb intake (D45) to the left side of the fuselage.

△ After placing a small amount of CA cement into the rear slot in the telescopic gun sight (D88), very carefully place and align the photo etch rear bead sight (PE97) into the slot. After allowing it to thoroughly dry, very carefully bend and break off the gun sight mounting tab. Insufficient drying time may result in pulling the sights out of the locating slots rather than breaking the tabs off.

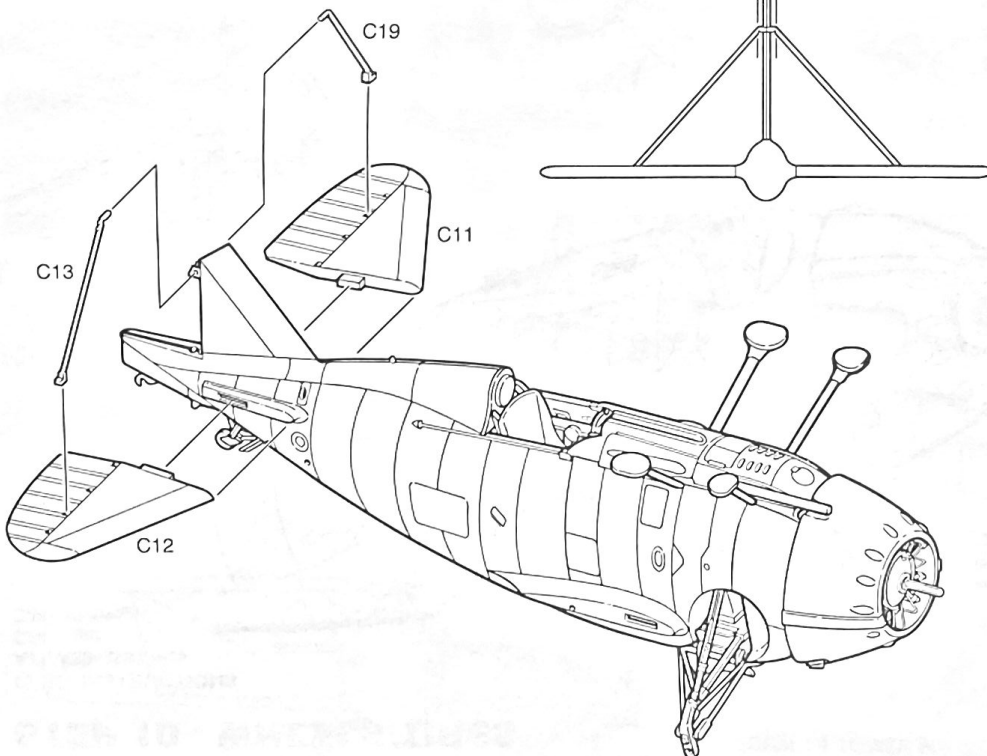
△ Repeat this process using the photo etch front ring sights (PE96) in the front slot.

△ Glue the telescopic gun sight assembly to the locator on the fuselage top.

STEP 9 - REAR STABILIZERS

PAINT INSTRUCTIONS

C19, C13 - match color to horizontal and vertical tail colors of the particular aircraft you are modelling



△ Glue the left horizontal stabilizer (C11) to the left fuselage side.

△ Glue the right horizontal stabilizer (C12) to the right fuselage side.

Note: When removing the horizontal stabilizer braces from the tree, be sure not to remove too much material from the top ends. The pins that locate at the top of the vertical fin do not fit flush; they actually extend out from the surface of the tail as shown in the accompanying illustration. We recommend that you not glue the tops of the horizontal stabilizer braces until both have been installed. Let the pins touch and center in the middle of the vertical tail, and after everything lines up, apply a small amount of glue to hold the pieces in place.

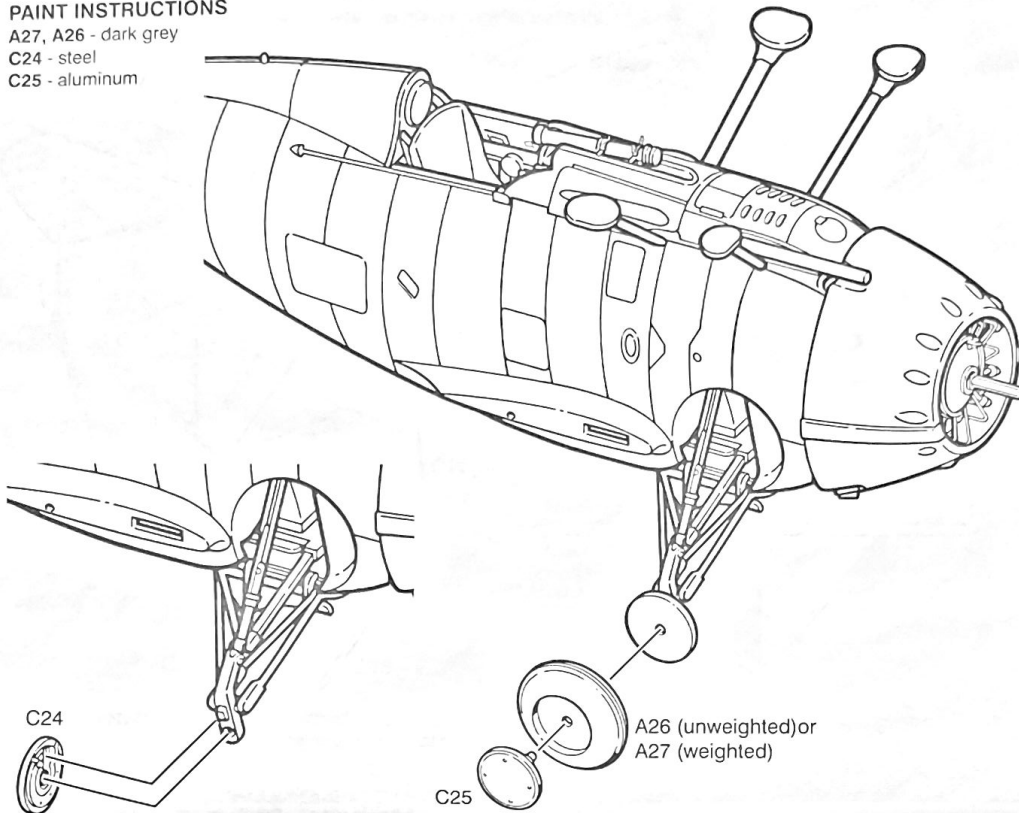
△ Glue the left stabilizer brace (C19) to the top of the left horizontal stabilizer. Place the top end into the locating hole on the left side of the vertical fin. Do not glue yet.

△ Glue the right stabilizer brace (C13) to the top of the right stabilizer. Place the top end into the locating hole on the right side of the vertical fin. Center both braces in the top locator and carefully glue the braces in place.

STEP 10 - WHEELS/TIRES

PAINT INSTRUCTIONS

A27, A26 - dark grey
 C24 - steel
 C25 - aluminum



△ Glue an inner main wheel (C24) onto the left and right landing gear struts. The wheels will naturally assume a positive camber angle when viewed from the front. Use the front view drawing in Step 11 for reference.

△ Select the tires of your choice. You may use either unweighted (A26) or weighted (A27) versions.

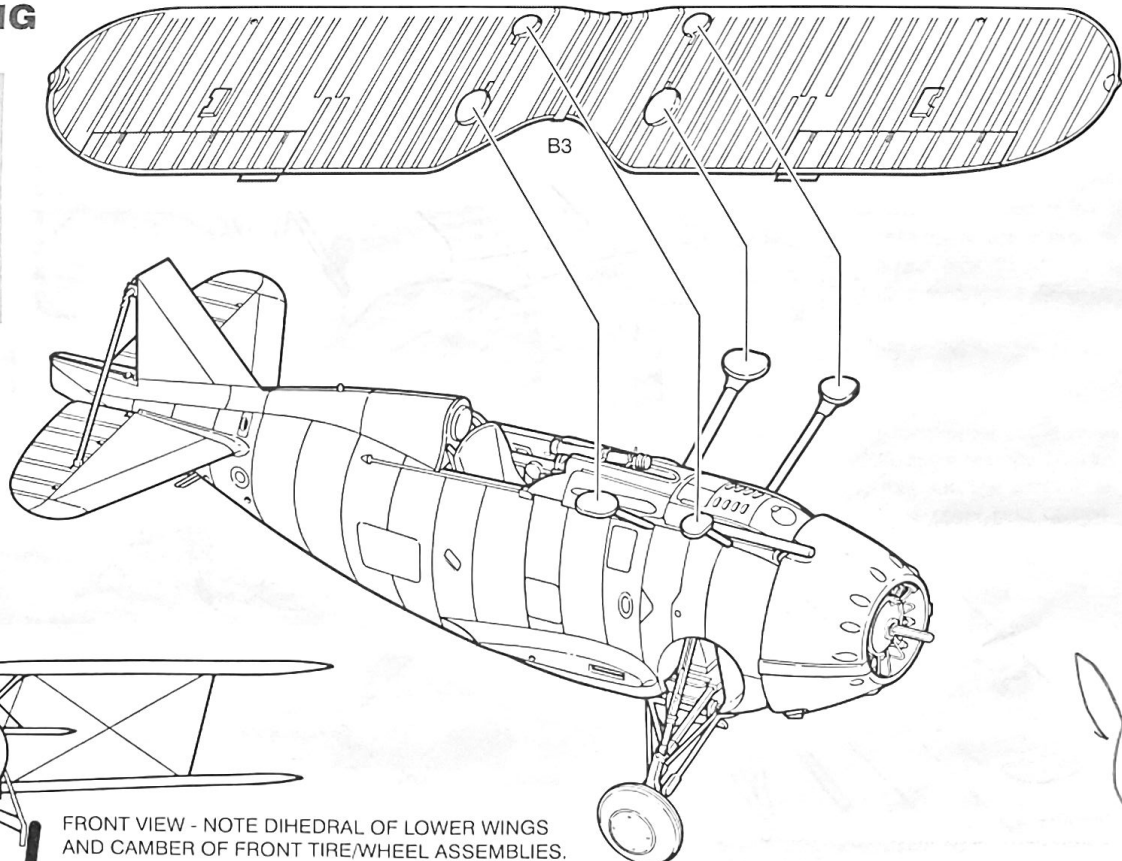
△ Slide an outer main wheel (C25) through the selected tire. Do not glue.

△ Locate the tire and outer main wheel assembly to the left and right landing gear struts. Apply a small amount of glue to the axles where they pass through the strut. When this assembly is dry, you may place the model on a flat surface, rotate the weighted tires until they are flat on the surface and apply a small amount of glue to hold them in position. If you are using the unweighted tires, you can glue the assembly together when it is installed onto the strut. Again, refer to the front view illustration in Step 11 to make sure your plane has the correct positive wheel/tire camber.

STEP 11 - UPPER WING

Note: The wings on this kit will "self-align" when assembled properly. We recommend that you assemble the upper wing, the lower wings and the "N" struts as a unit and make any minor adjustments while the cement is still drying. After you are completely satisfied, allow the parts to dry thoroughly before proceeding.

△ Glue the upper wing (B3) to the four cabane struts on the fuselage. Make sure the wing is firmly in place. Do not allow the photo etch locating slots to become filled with softened plastic, or you may experience difficulty in locating the flying wires in Step 15.



FRONT VIEW - NOTE DIHEDRAL OF LOWER WINGS AND CAMBER OF FRONT TIRE/WHEEL ASSEMBLIES.

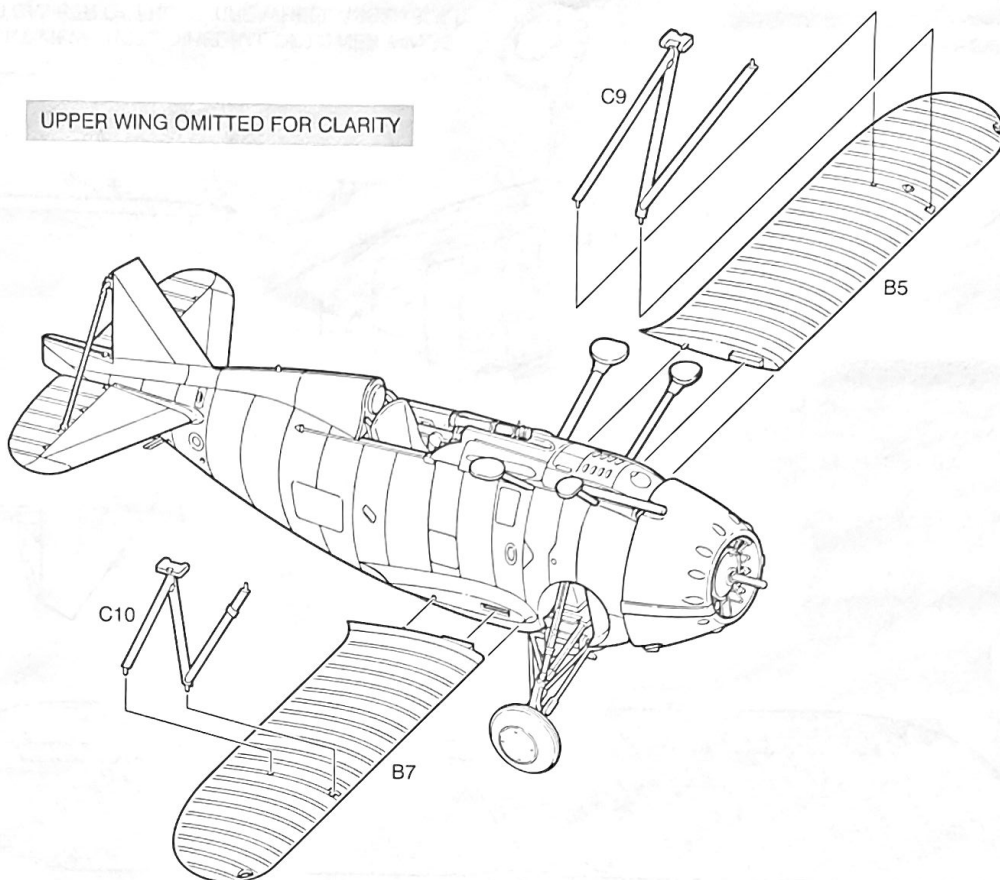
STEP 12 - LOWER WINGS

PAINT INSTRUCTIONS

B5, B7 - Black wing walks and hand holds
C9, C10 - aluminum

- △ Glue the left lower wing (B5) to the left side of the fuselage.
- △ Glue the right lower wing (B7) to the right side of the fuselage.
- △ Glue the left "N" strut (C9) between the upper and lower left wings.
- △ Glue the right "N" strut (C10) between the upper and lower right wings. Once again- Do not allow the photo etch locating slots to become filled with softened plastic or you may experience difficulty in locating the flying wires in Step 15. Refer to the front view illustration in Step 11 for general wing angles, and check all alignments.

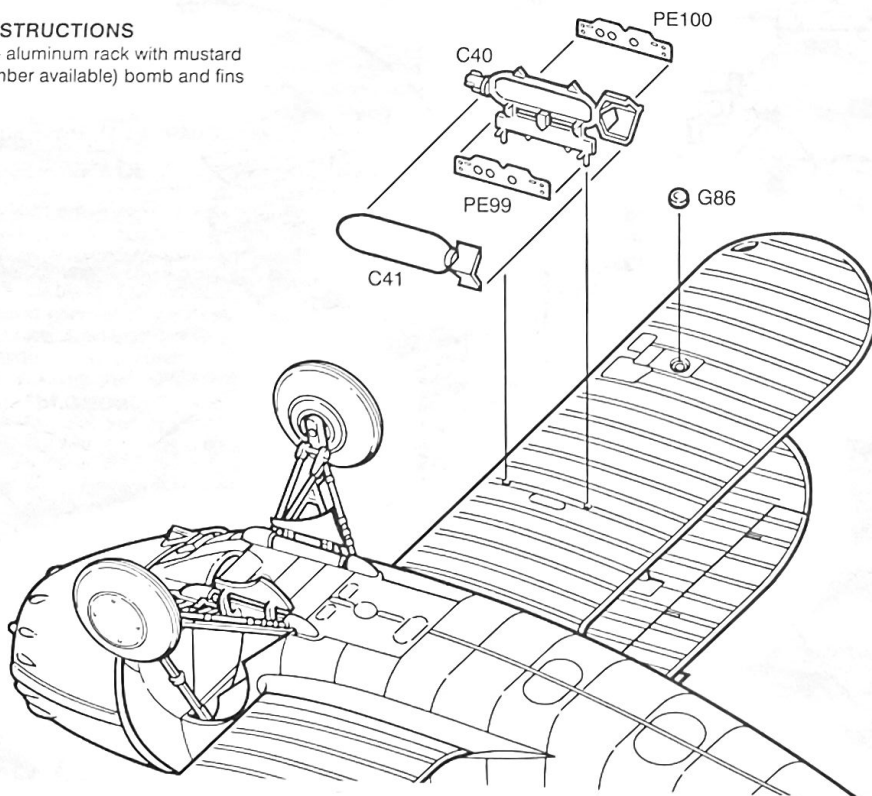
UPPER WING OMITTED FOR CLARITY



STEP 13 - BOMB ASSEMBLIES

PAINT INSTRUCTIONS

C41, C40 - aluminum rack with mustard
(no FS number available) bomb and fins

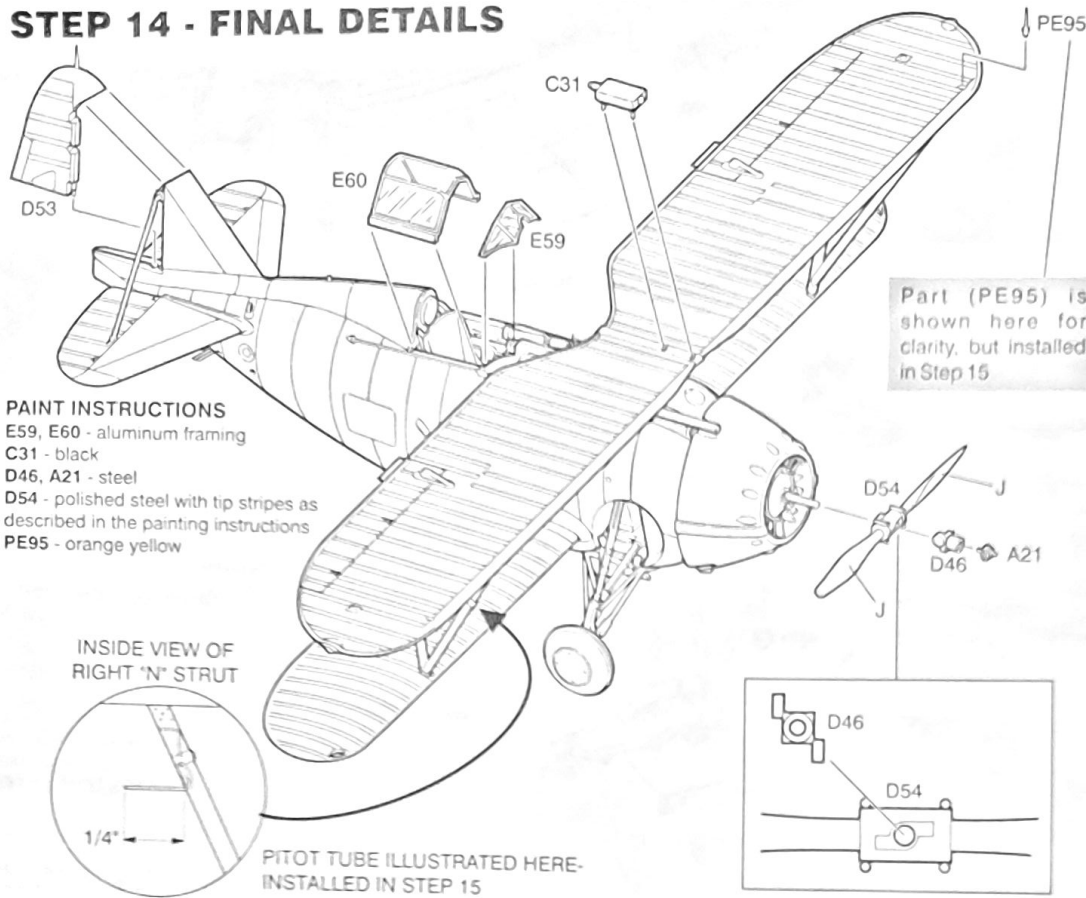


- △ Glue one bomb half (C41) to one bomb half (C40). Repeat the process for the second bomb.

NOTE: Each (C41) half will fit only the (C40) half molded directly opposite it on the tree.

- △ Using CA cement, carefully glue one photo etch bomb rack face (PE99) to the right side of each bomb rack. Orient as shown; the pair of larger holes goes to the front, with the single hole to the rear. Glue one left bomb rack face (PE100) to the left side of each bomb rack, orienting the same.
- △ Glue one bomb assembly to the bottom of each wing.
- △ After painting the landing light recess bright silver, glue the landing light (G86) to the bottom of the left wing. We recommend that you use white glue, clear gloss acrylic or some other kind of non-crazing cement to hold this piece in place.

STEP 14 - FINAL DETAILS



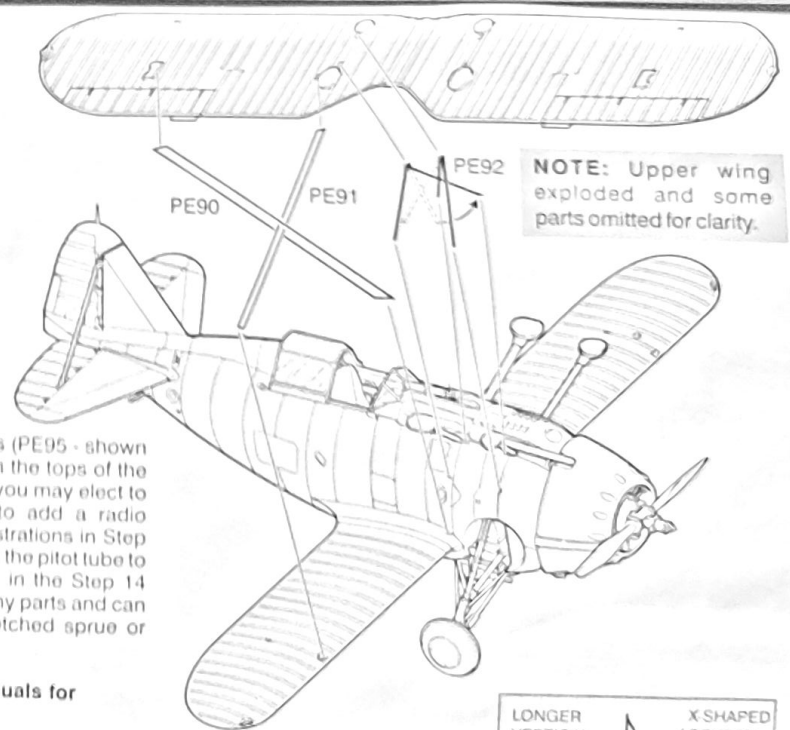
PAINT INSTRUCTIONS

E59, E60 - aluminum framing
 C31 - black
 D46, A21 - steel
 D54 - polished steel with tip stripes as described in the painting instructions
 PE95 - orange yellow

- △ Using non-crazing cement, carefully glue the windshield (E59) to the fuselage top, placing it over the telescopic gun sight.
- △ Now install the pilot's canopy (E60). It may be positioned open or shut. Note that the slight downward curvature at the top of one end goes to the front.
- △ Glue the gun camera (C31) to the locators in the top of the upper wing with the projection facing to the rear as shown.
- △ After painting the propeller (D54) and applying a decal (J) to each blade, gently push the propeller onto the propeller shaft.
- △ Glue the propeller pitch counter weights (D46) to the front of the propeller, orienting as shown in the detail drawing.
- △ Glue the propeller hub cap (A21) to the front of the propeller.
- △ If you haven't already installed the rudder, (D53) it is probably safe to do it now. Or if you prefer, it may be added after you have installed the rigging in the next step. See, we really are trying to save that little radio antenna for you!

STEP 15 - PHOTO ETCH RIGGING

- △ The cabane wires (PE92 & PE93) are very rigid and need to be bent so that they more easily fit into the locators in the upper wing and fuselage sides. Carefully bend the "X" wires to the inside, matching the angle on the diagram in the lower right corner of this page.
- △ Carefully place the right cabane wires (PE92) into the two pairs of locating slots on the fuselage side and up into the slots on the underside of the upper wings. When you are comfortable with the location, using a very small amount of CA or white glue, tack in place. Repeat this process on the opposite side using the left cabane wires (PE 93).
- △ Starting with either side, locate and glue the large double flying wire (PE90) between the slot in the rearmost upper portion of the "N" strut attachment to the upper wing and the slot toward the front of the lower wing to fuselage fairing. Glue in place. Repeat for the opposite side.
- △ After you are sure that the double flying wires are thoroughly dry, carefully feed a short double landing wire (PE91) through the center of the double flying wire. Attach the ends to the slot just outboard of the rear cabane strut where it meets the underside of the upper wing and the slot located just inboard of the forward edge of the "N" strut where it glues into the lower wing. Glue in place. Repeat for the opposite side.
- △ Glue the wing radio antennas (PE95 - shown in Step 14) to the locators on the tops of the wings. When these are dry, you may elect to use your favorite material to add a radio antenna as shown in the illustrations in Step 16. You may also elect to add the pitot tube to the right "N" strut as shown in the Step 14 illustration. These are very tiny parts and can be best duplicated with stretched sprue or fine wire.



Accurate Miniatures would like to thank the following institutions and individuals for their help in the preparation of this kit:

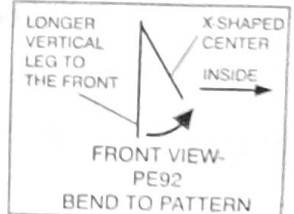
National Museum of Naval Aviation
 San Diego Aerospace Museum
 Natasha Yushkevich
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 Clark Macomber

Dale Caldwell
 Dana Bell
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 John Elliott

Hill Goodspeed
 Jim Sawruk
 Larry Webster

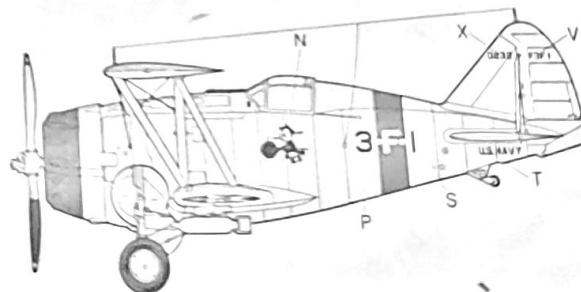
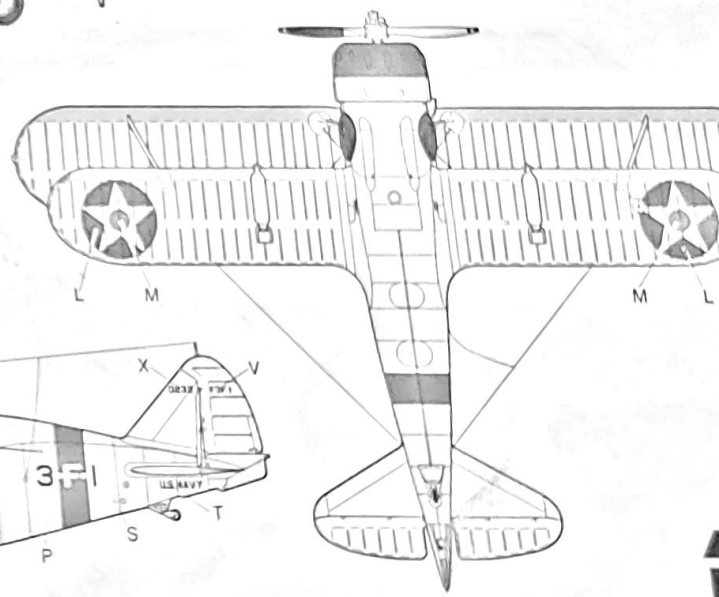
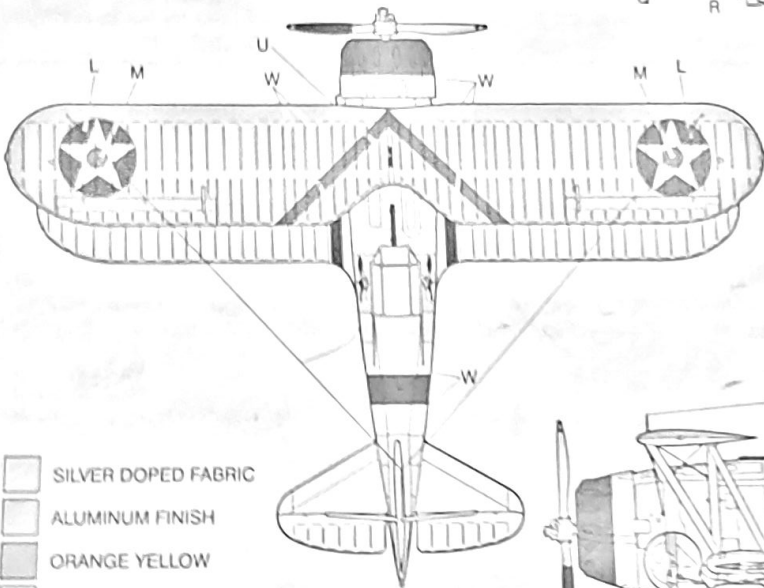
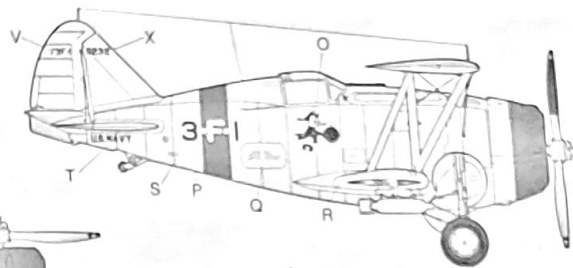
Please visit our website at www accurateminatures.com.






Your Grumman F3F-1 is now complete. We hope that you have enjoyed the building experience. Feel free to let us know if you like these types of "wind in the wires" aircraft.



STEP 16 - DECAL PLACEMENT AND FINISHING

NOTE: The tail colors on Navy aircraft were based on the carrier of origin. Consult your reference sources for specifics.



-  SILVER DOPED FABRIC
-  ALUMINUM FINISH
-  ORANGE YELLOW
-  WHITE (BOX ART VERSION)
-  RED (BOX ART VERSION)

The box art model is depicted in these illustrations. The decals included in this kit will allow you to represent virtually any of the 57 F3F-1's that were built. Finish the model you have selected in the individual colors and insignia that apply to your aircraft. One of the section colors (insignia red, insignia white, true blue, black, willow green or lemon yellow) must be chosen for the wing chevron, belly band (section leaders only) and cowl. The decals provide both black and white striping to border the various wing chevrons, belly bands and cowl colors. Be sure to consult your reference as to the correct Bureau Number and exact locations of appropriate markings.



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3413-0300 F3F-1



M

M



L

F3F-1
F3F-1

F3F-1
3F-1



O

N

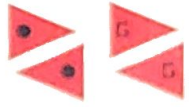


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U.S. MARINES

U.S. MARINES



-F- -F-

U



-MF- -MF-

3

I_P 3

I_J



0232 X 0232

XF3F-1

XF3F-1

A

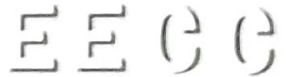


W

C

H

U.S. NAVY T U.S. NAVY



FACE DOWN

K = S * D * E
-R = - G
- - - Q - - - F

DISACLEAR 11

