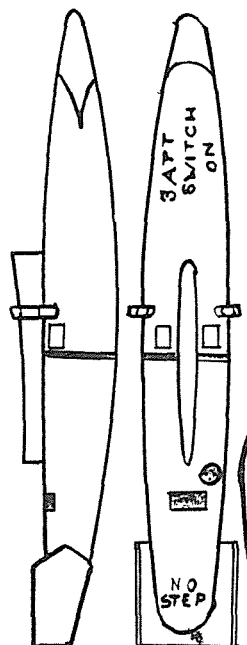
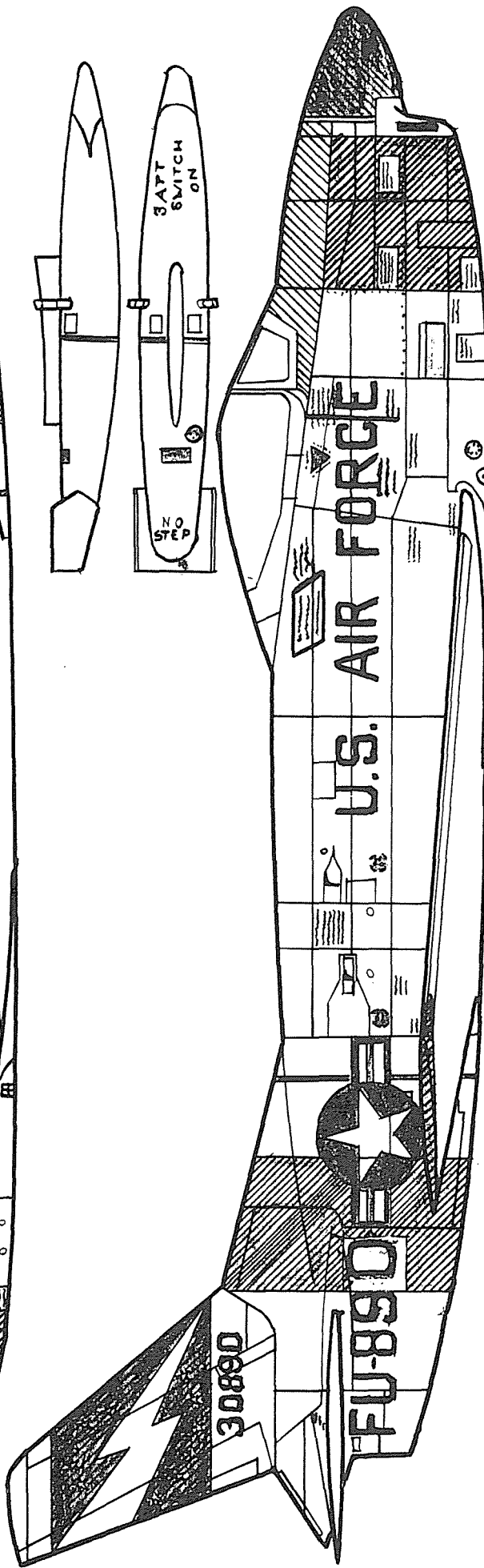
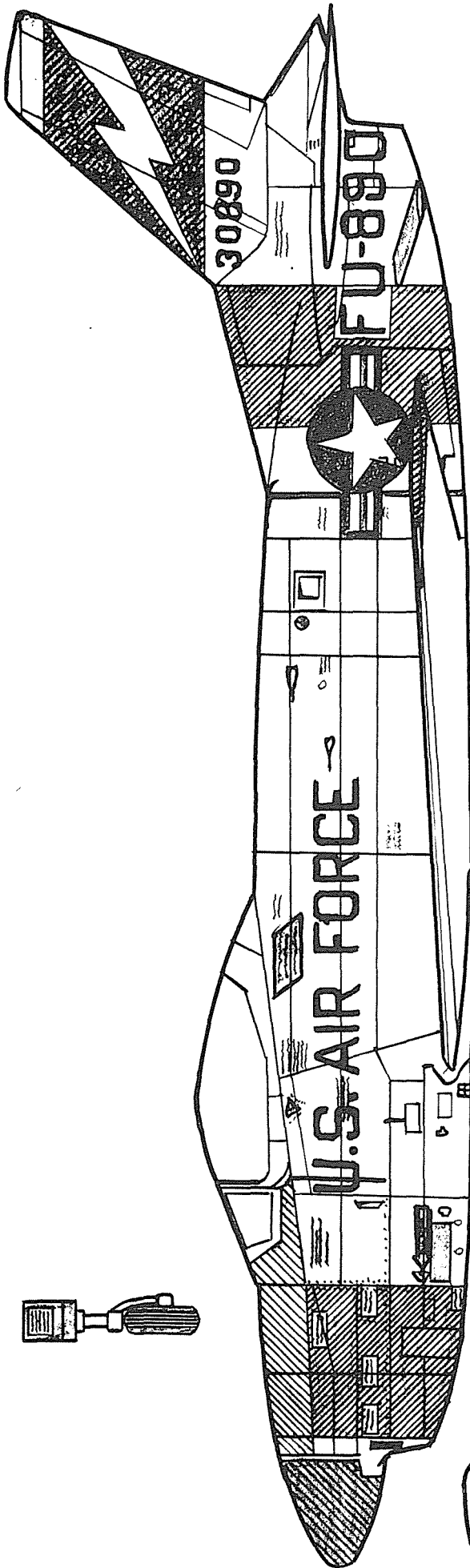


F-86 D-45-NA



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FINISHES AND MARKINGS OF USAF AIRCRAFT

Aircraft markings and color schemes have long held a fascination for the aviation historian. Each aircraft assumes a personality all its own by reason of its various marking and distinctive color scheme. From the "Circus" color schemes of World War I, to the high-visibility paint used on present day jets, markings have always been an important feature of each aircraft.

Late in World War II the AAF dropped its olive drab and gray camouflage scheme and since then all USAF aircraft, with the exception of night action planes, have been natural metal in finish. To some, this leaves little in the way of an interesting exterior. Further study will show that aircraft are being painted for various purposes, and with the addition of numerous stencils and other identification markings, aircraft of the USAF have become very colorful. For those with a basic background of a scale display model builder, exterior finish and markings are of great interest. This article does not attempt to describe the various Squadron, Group or Command markings, but merely outlines the standard exterior finishes and markings in use today on aircraft of the USAF.

I. USAF STANDARD AIRCRAFT EXTERIOR FINISHES

Metal Exterior Finishes - The standard USAF aircraft exterior finish is a natural clad metal. It is Air Force policy not to paint aircraft in their entirety solely for the sake of appearance. There are however, various exterior overall paint schemes in use. F-102 and F-106 aircraft are painted overall light gray. A jet black finish is used on intruder aircraft as the B-57, and drone aircraft are painted insignia red overall.

Fabric & Wood Exterior Finishes - All fabric covered aircraft and fabric control surfaces are aluminized. Exterior plywood surfaces of aircraft are finished with two coats of varnish, and sanded down before two final coats of aluminized varnish are applied.

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High-Visibility Finishes - The latest exterior finish being applied to USAF aircraft in the Zone of Interior is a fluorescent orange, high-visibility paint. The paint was tested on 1600 aircraft of the Air Training Command from June, 1957 to May, 1958, and was officially approved for general application. Official color description is "Blaze Orange." From available information, all aircraft, except operational fighters and bombers, will display the high-visibility paint to lessen the chance of mid-air collision. From photos available, the standard practice is to paint the nose and forward section of the fuselage a solid fluorescent orange, depth varying according to each aircraft. A 36" band, approximately 3 ft. forward of the leading edge of the horizontal stabilizer will encircle the fuselage, or the entire aft portion of the fuselage from the tip of the tail forward, to a distance even with the edge of the fin will be painted. A 36" wide area of the upper and lower surfaces of the outer wing sections, from the wing tip inboard, and wing tip fuel tank is also painted.

Anti-Glare Finishes - To reduce glare, lustreless olive drab or black is applied to the top of the fuselage in front of the cockpit and on the inside upper 1/4 of the engine nacelle, forward of the leading edge of the wing on multi-engine, propeller driven aircraft. Black enamel, heat resistant paint may be used to protect surfaces exposed to corrosion or exhaust gases. Areas usually painted are lower fuselage sections and engine nacelles.

Solar Resistant Finishes - The exterior upper portion of the fuselage of all transport aircraft used primarily as personnel carriers may be painted insignia-white to reduce cabin temperatures. The lower boundary of the white finish will be on a line even with the upper or lower row of windows.

Finish for Aircraft Operated in Cold Weather Areas - Aircraft assigned to operate during any part of the year, in or through that portion of the cold weather areas beyond the limit of the Zone of Interior will have designated external surfaces finished in insignia-red. This finish, commonly known as "Arctic" markings is applied to the upper and lower surface of the outer wing sections, approximately 25% of the wing span. The entire aft portion of the fuselage, from the tip of the tail forward, for a distance equal to approximately 25% of the total fuselage length and both side of the stabilizers, including metal control surfaces will be painted. These markings facilitate observation of grounded aircraft in the event of a crash or forced landing in snow covered areas, regardless of the attitude of the aircraft after coming to rest.

II. USAF STANDARD AIRCRAFT INSIGNIA AND MARKINGS

USAF Standard Insignia - The national star and bar insignia is placed on all aircraft. It is applied so that normal flight attitude shows the top point of the star pointing upward on fuselage surfaces, and forward on wing surfaces. For wing surfaces the diameter of the blue circle is the standard size which is nearest to, but does not exceed 75% of the distance between the leading edge of

the wing and the aileron cut-out at point of application. Diameter of the blue circle will be no more than 60" nor less than 30". Insignia will be placed on the top surface of the left wing and on the lower surface of the right wing, in-board of each wing tip approximately one-third of the distance from the wing tip to the fuselage.

Fuselage insignia will have a diameter not greater than 75% of the height of the fuselage. Diameter of the blue circle will be no less than 20" or more than 50". The star and bar insignia will be placed on each side of the fuselage between the trailing edge of the wing and the leading edge of the stabilizer. If the fuselage position as specified is impractical, the insignia may be placed on such other parts of the fuselage as will permit its being readily seen from the side.

U.S. Air Force Markings - The markings "USAF" are placed on the lower surface of the left wing and the upper surface of the right wing. Height and location will correspond insofar as possible with the national star insignia on the opposite wing of the aircraft. Width of the letters will be two-thirds the height, width of strokes and spaces one-sixth of the height. The tops of the letters face toward the leading edge of the wing.

The markings "U.S. AIR FORCE" will be placed on each side of the fuselage of all aircraft, size and location of the lettering to be specified by T.O. for each type aircraft. Because of the large number of aircraft types, it is not feasible to describe each location. In general, this marking is carried on the forward section of the fuselage, height depending on the size of the aircraft. Standard height for most fighter aircraft is 12", transport aircraft is 30", and bomber aircraft vary according to size, from 18" to 36". Maximum height of lettering used is 36", minimum height is 6". The markings described consist of vertical block type lettering; insignia-blue or black on aluminized surfaces, insignia-red on black finish, and white on red surfaces of drone aircraft.

Organization Insignia & Markings - Insignia and markings of major Air Commands and activities are authorized by Air Force regulations. No specific location on the aircraft is mandatory, but each major command must submit to Headquarters USAF for approval of any markings. In no case will the size of any insignia exceed 50 per cent of the height of the fuselage nor does any Command or organizational lettering exceed one-half the size of the "U.S. AIR FORCE" markings.

Identification Markings - Identification markings, commonly called "Buzz Numbers," are placed on each side of the fuselage of all types and models of fighter, light bombardment, and trainer aircraft. These markings are used to prevent buzzing, and for easy identification of the aircraft from the ground. Location on the fuselage will depend on the fuselage surface available. Numbers will be of the largest size practicable, in no case are they smaller than 8 x 11 inches, nor larger than 32 x 48 inches. The first letter of the marking

identifies the type of aircraft, the second letter is the equivalent of the model number, and the numerals used will be the last three digits of the aircraft serial number. The letters to be used for various types and models are shown in Table 1.

Table 1.

<u>Aircraft</u>	<u>Letter Equivalent</u>	<u>Aircraft</u>	<u>Letter Equivalent</u>
F-51	F	T-6	A
F-80	T	T-7	B
F-84	S	T-11	C
F-86	U	T-28	L
F-89	V	T-29	P
F-94	A	T-33	R
F-100	W	T-34	D
F-101	B	T-37	E
F-102	C	T-38	F
F-104	G		
F-105	H	B-25	C
F-106	E	B-26	D
		B-45	E
		B-57	A
		B-66	B

Radio Call Numbers - All USAF aircraft display radio call numbers of not less than 5 numbers, and they are applied to both sides of the vertical stabilizer and rudder assembly. For smaller aircraft the suggested minimum size is 8" wide and 12" high, but if numbers this size cannot be applied due to lack of space, they will be made as large as possible. On medium and heavy bombardment aircraft and on all other four-engined aircraft, numerals will be 18" in height. Radio call numbers are derived from the aircraft serial number. The first numeral of the contract year and the hyphen will not be used in the radio call number. If five numerals are not available, zeros will be used to fill-in to five numerals. Example; Radio Call Numbers for aircraft Serial No. 56-6392 will be 66392.

When aircraft are 10 years old there is a possibility that two sets of radio call numbers could be identical. To prevent this, the Symbol 'O-' will precede call numbers derived from serial numbers of aircraft which are ten years old.

Jet Aircraft Warning Stripe - A 2 inch wide insignia-red stripe will be painted around the fuselage outside of the power plant housing of each aircraft to mark the plane of rotation of the turbine rotor, as a warning for ground personnel not to stand in line with this area when turbine rotors are in motion as there is a possibility of turbine rotor failure and resultant injury to ground personnel. Note; Painting of the 2 inch wide red stripe is not required on those air-

craft that have been painted white to reduce thermal radiation.

Markings For Air Attache Aircraft - The standard marking is an American flag painted on both sides of the vertical stabilizer, either above, below or forward of the radio call number. The flag will be positioned horizontally and in such a manner that the union will be uppermost. The bars of the flag will appear to be trailing at all times. If possible, the flag should be 2 feet high and 3.8 feet long for C-47 aircraft and larger type aircraft. For smaller aircraft, the size of the flag will be reduced proportionately.

Markings For Drone Aircraft - All of the exterior surface of drone aircraft will be painted red except the upper surface of the wing, which may be left unpainted. All numerals, letters and markings except the national star insignia will be applied with insignia-white enamel.

Markings For Search And Rescue Aircraft - In addition to other required markings, all aircraft engaged in search and rescue operations have the following markings. Wing tip floats and struts and the upper and lower surfaces of both wing tips will be painted orange-yellow. Area on wing tips to be painted inboard from the wing tip to a distance equal to 7 per cent of the wing span. A black border 6 inches wide will be added inboard. A 36 inch orange-yellow band placed approximately 3 feet forward of the leading edge of the horizontal stabilizer will encircle the aft portion of the hull (or fuselage), but not to extend onto the last step of the keel. Two 6 inch black stripes will be added as borders. Using insignia-white color vertical block type letters, the word "RESCUE" will be applied on a blue background stripe to both sides of the vertical stabilizer and rudder spaced between the radio call numbers and the top of the vertical stabilizer. The letters will be a minimum height of 6 inches and the blue background stripe a minimum of 12 inches in height. A 3 inch wide band, orange-yellow in color, will be applied at the top and bottom of the blue background stripe.

Miscellaneous Standard USAF Markings - The individual aircraft serial number with aircraft model and type data is stenciled on the left side of the fuselage near the pilots compartment on every USAF aircraft. Lettering will be 1 inch in height. Battery location markings will be stenciled in lettering 1 inch high on the left side of the fuselage. Lift points will be indicated by an arrow pointing to them, and the word "LIFT" will be painted above the lift point in letters 1 inch high.

Markings identifying escape hatches, doors and exits on the outside of aircraft will be painted orange-yellow. All external releases for operation of emergency exit panels will be marked "EXIT RELEASE" on the outside of the aircraft to facilitate quick identification. The wording that describes the operation of the exit release will be standard English terminology such as "PULL," "PUSH," "TURN," or "SLIDE." Letters will be at least 1 inch high, and preferably 2 inches high.

Each aircraft has been visually inspected for areas which may be cut through

for rescue when entrance or exit cannot be made in any other manner. Corner markings are stenciled on the outside of the fuselage marking the limits of these areas. The horizontal and vertical bars of the corner markings will be 3 inches long and 1 inch wide. "CUT HERE FOR EMERGENCY RESCUE" is stenciled in the center of the four corner markings, letters will be 1 inch in height.

All walkways are differentiated from the other external surfaces of the aircraft by a black border 2 inches wide. The surrounding areas immediately adjacent to the walkway will be marked "NO STEP." A red band, 1 inch wide is painted around fuel filler caps. The capacity of the aircraft tanks and the type of liquid contained will be stenciled on or near the filler caps.

All aircraft equipped with an ejection seat have a red equilateral triangle with 9 inch sides, with the apex pointing downward, and the word "DANGER" in red on each side of the triangle, placed on each side of the fuselage below the canopy hinge. The words "EJECTION SEAT," in white letters, are painted in the red triangle.

Special markings for normal and emergency release accesses for the external canopy on jet aircraft jettisoned by cartridge actuated devices, are located on the fuselage sides. A yellow arrow, approximately 18 inches long and 3 1/2 inches in height, outlined in black, with the word "RESCUE" in 2 inch high black letters is located either forward or aft of the access door. The axis of the arrow may be rotated 45 degrees above or below the horizontal position, in order to clear other markings or obstructions. A black placard, approximately 24 inches long, with 1 inch high yellow lettering, containing operating instructions is painted below the arrow.

On the opposite side of the fuselage, located at the same station and water line as the RESCUE arrow, is painted a black placard approximately 14 1/2 inches wide and 8 inches high. A yellow block with the word "RESCUE" in 2 inch high black letters is superimposed on the upper portion of the black placard. Below this yellow block, in 1 inch high yellow letters, is the wording "EMERGENCY ENTRANCE CONTROL ON OTHER SIDE."

Conclusion - As an example of an operational aircraft with the various markings and finishes as described, (Figure I) shows as F-86D-45-NA, "Sabre," attached to the 56th. Fighter Group, O'Hare AFB, Illinois. I wish to thank fellow AAHS member Pat Stein for his research and effort in preparing the drawing.

Color Scheme

Dark Brown - Radome; Dark Green - Anti-glare panel; Blaze Orange (Fluorescent) - Bands around fuselage nose and aft section, wing tips.

Red - Warning stripes, fuel overflow tube, ejection seat triangle, fuel filler caps. Lime Green - Tips of wing tanks, placard with pilot & crew chief's names; outlined in black.

Tail markings of the 56th. Fighter Group - Yellow lightning flash and stars, black background.