

L-17.ORG

PRESERVING NAVION MILITARY HERITAGE

L-17/U-18 Military Paint and Markings Guide

Version 1.0 published July 8, 2005

Written by Bill Lattimer (billla@warbird.org), owner/pilot Ryan L-17B USAF 48-1007 and L-17.ORG webmaster

1	Introduction	2
2	Thoughts on Authenticity	2
3	Paint.....	2
3.1	Base Color.....	2
3.2	Cowl.....	2
3.3	Main Fuel.....	2
3.4	Aux Fuel	3
3.5	Walkway	3
3.6	Prop.....	3
4	Markings.....	3
4.1	Stencils.....	3
4.2	National Insignia	3
4.3	Tail Number	4
4.4	Data Block	4
4.5	“Buzz Code”	4
4.6	NO STEP	5
4.7	NO PUSH.....	5
4.8	Fuel Fill.....	5
4.9	Cargo Shelf	5
4.10	Other U.S. Army/U.S. Air Force-specific Markings	5
4.11	Additional Decals/Markings.....	5
5	Summary Parts List	6
5.1	United States Air Force.....	6
5.2	United States Army Air Forces.....	6
6	References/Resources.....	6

1 Introduction

This document is intended to provide guidance on applying historically accurate military paint and markings to North American Aviation/Ryan L-17/U-18 NAvion. Information contained in this document has been gathered from a broad variety of sources, including North American Aviation and Ryan blueprints, operational photographs and Internet sources both military and civilian. While it's impossible to recognize everyone that contributed to this document, I want to thank **everyone** for adding their pieces to the puzzle.

This is a living document, and changes as required to incorporate new information. The current version of this document can always be found in the Downloads section of WWW.L-17.ORG. This document is available only as an Adobe Acrobat (.PDF) file to ensure consistency of content and updates. Throughout this document, you'll see "Work in Progress" markers [WIP] that indicate active tasks or areas that are under revision or research.

DISCLAIMER: This document is intended to offer general guidance on applying historically authentic military paint and markings. It is neither a comprehensive guide to paint, decals, stencils, etc. nor an authoritative reference on the techniques discussed. **The author takes no responsibility as to the accuracy of any information provided.**

2 Thoughts on Authenticity

Everyone wants a warbird. They look great in the air, get looks and waves taxiing by and honor our veterans. But what defines a "warbird", and who decides what is "authentic"? My definitions of these two "loaded" terms are simple – a "warbird" is an aircraft with verifiable military service, and "authentic" means as close to original condition as we can get within reasonable constraints. Can a "civilian" NAvion be painted in "authentic" L-17 colors and markings? Absolutely! Does this make that aircraft a "warbird"? Unfortunately not. Does this mean that "civilian" NAvion owners shouldn't paint their aircraft in military colors? Of course not! Any aircraft in military markings is a proud celebration of our history and pays homage to our veterans. It does mean, from my perspective, that owners of these aircraft should not describe them as "warbirds", production L-17s, as they do not have military service history. Note instead that they share a common heritage with the military aircraft and enjoy them for what they are and their proud relationship with the 265 production L-17s.

3 Paint

The intent of this section is not to try to provide a reference for paints, equipment, etc. but to offer information on historically accurate colors.

The current guide for military colors is Federal Standard 595 (FS595). This guide can be used to determine the best possible match for the older military numbering system with modern paints. L-17.ORG is working to determine if a mapping between these systems exists or can be created [WIP]. FS595 can be ordered from the U.S. Government by via fax. Fax a sheet of paper with your name and mailing address and stating that you want a copy of Federal Standard 595 to DODSSP (Department of Defense Single Stock Point), Philadelphia, PA at (215) 697-1462. This generally takes a few weeks to arrive.

3.1 Base Color

Base color for USAF and USAAF aircraft is still under research. We know that these aircraft were delivered by North American/Ryan in USAF colors (Gray 36231) as **all** L-17s were procured by the USAF then transferred to the USAAF. In service, historical photos show everything from bare metal or a light coat of zinc chromate through a USAF grey and Army Olive Drab (O.D. Green 34151). There is even a T.O. (available on WWW.L-17.ORG) that allows Gloss Olive on aircraft not in a front area. This means that almost any color could likely be found on an operational L-17 and could be considered authentic.

3.2 Cowl

From the NAA blueprints, the cowl is painted Medium Green Color #612. The pattern can be derived from the **blueprint section** [WIP] reproduced below.

3.3 Main Fuel

The fuel fill is surrounded by a 7" red square centered on the filler cap and parallel to the line of rivets that pass just ahead of the cap. The cap should also be painted red.

3.4 *Aux Fuel*

The fuel fill is surrounded by a red square centered on the filler inlet, details under research.[WIP]

3.5 *Walkway*

½” wide stripe around walkway 145-53091 in Flat Black Lacq. #604. The blueprint fragment below provides dimensions for the walkway. [WIP]

3.6 *Prop*

3” of the tip are painted in Orange Yellow #506.

4 **Markings**

Application of markings using modern technology of decals and paint masks is beyond the scope of this document. The intent is to outline where the markings should be applied, but not how.

Typically, positions for markings use some type of blueprint reference. In the case of the NAvion, there are a set of leveling lugs on the fuselage right side just aft of the cowl. With the aircraft level, a string can be tied to the front lug and then taped to the aft fuselage to provide a level reference. This line will be referred to throughout this document as the **reference line**. Paint blueprints also commonly reference Station Numbers; these locations can be found in the Structural Repair Manual and often in Parts Manual as well.

4.1 *Stencils*

There are two main types of stencils used on the L-17:

- **“Universal” stencils.** This lettering is seen very commonly in Korean War-era photos, but the date this stencil came into use is under research [WIP]. **Sample:**

U.S. AIR FORCE

- **“Standard” stencils.** Although this is still under research, there are basically 3 types of stencils in common use for military aircraft. The serif-type stencils are certainly incorrect; military use of the stencils had ended by the end of World War II. “Common Stencil B” is Viet Nam-era, leaving **“Common Stencil A”** for Korean War era aircraft. **Sample:**

U.S. ARMY

4.2 *National Insignia*

The National Insignia, affectionately know as the “Stars and Bars”, is one of the most-recognized markings on military aircraft and is still in use today in a more modern form. There are well-documented specifications for these insignia and readily-available correct decal and stencil kits, so this section will focus only on the size and placement of the insignia.

There are typically four (4) National Insignia on the L-17:

- **Fuselage**, both sides: 20” diameter National Insignia centered on Station 197.75 with the bottom of the Insignia exactly on the **reference line** and parallel to it. Note that early aircraft may have had the National Insignia centered on Station 224, and in the field the common practice (per T.O. [WIP]) was to place it midway between the horizontal stabilizer and the trailing edge of the wing. Overall, this means that almost any location could be considered authentic and was likely seen on operational aircraft.

- **Left wing**, top: 30” diameter National Insignia centered on Station 145 with the bottom of the Insignia right on the trailing edge of the wing. The Insignia should be parallel to the line of rivets that cross directly in front of the fuel tank inspection hatch.
- **Right wing**, bottom: 30” diameter National Insignia centered on Station 145 with the bottom of the Insignia right on the trailing edge of the wing. The Insignia should be parallel to the line of rivets [WIP].

4.3 Tail Number

The tail number is a condensed version of the aircraft serial number, or what is commonly referred to as the bureau number or “BuNo”. The serial number consists of the last two digits of the year the aircraft was ordered (Example: 1948 = 48) followed by a dash and the sequence number – four (4) digits for the L-17. Example: **48-1007**. The tail number consists of the last digit of the order year, followed by the sequence number, prefixed with 0 as required to make a minimum of 4 digits. Example: **81007** or **80921**.

- For more information on serial numbers in general, see Joe Baugher’s excellent site <http://home.att.net/~jbaugher/usafserials.html>
- For information on valid L-17 serial numbers, see WWW.L-17.ORG. For L-17 replicas, consider selecting a number outside of the range of production L-17s – possibly based on the NAA/Ryan manufacturer serial number. For example, a 1950 NAVion NAV-4-2214 might use a BuNo **50-2214** with a tail number of **02214**. This allows some level of historical accuracy without confusion with or duplication of an production L-17 number.

The tail number consists of 4-1/2” Universal stencil centered on the vertical stabilizer and positioned 40” from the **reference line**.

4.4 Data Block

The aircraft data block appears only on the left side of the fuselage. The reference location is still under research [WIP]; the best reference at this time is operational photos from L-17.ORG

Stencil	Notes
<p>U.S. ARMY L-17-B AAF SERIAL NO. 48-1007</p> <p>U.S. AIR FORCE L-17-A USAF SERIAL NO. 48-1007</p>	<ul style="list-style-type: none"> • ¾”, black, Common Stencil A, left justified • Some early L-17A/C aircraft have been seen marked: <p style="text-align: center;">L-17A-1-NA</p>
<p>SERVICE THIS AIRPLANE WITH AN-F-48 GRADE 80 AVIATION FUEL IF NOT AVAILABLE SEE T.O. 06-5-1 FOR EMERGENCY ACTION SPECIAL PROJECT DEL. 5164 NOT SUITABLE FOR AROMATIC FUEL</p>	<ul style="list-style-type: none"> • ½”, black, Common Stencil A, left justified
	<ul style="list-style-type: none"> • There is often a fire extinguisher block here as well; this is currently under research. [WIP]

4.5 “Buzz Code”

Research indicates that “buzz codes” were used only for USAF aircraft, and appear to be rare or non-existent on in-theater (Korean War) aircraft. The buzz code prefix is “**LJ**” for L-17A/C, and “**LD**” for L-17B, followed by the last three digits of the tail number.. “Universal” letters for the buzz code are 14” high, 9-1/4” wide and 2-1/2” thick. They are located centered between the National Insignia and the leading edge of the horizontal stabilizer 7” above the **reference line**. Example for Ryan L-17B 48-1007 (tail number 81007):

LD-007

4.6 NO STEP

“NO STEP” markings are 1” tall in a Common Stencil A.

- One on each flap, in line with the second rib from the fuselage side
- One on each wing-to-fuselage fairing, inline with the rib stencil

4.7 NO PUSH

“NO PUSH” markings are 1” tall in Common Stencil A.

- One centered on each side of the horizontal stabilizer in the top ½ of the leading edge skin

4.8 Fuel Fill

L-17/U-18s were aggregated with civilian NAvions by the FAA in 1969. Modern marking and labeling requirements apply even on historical aircraft. Some compromises in authenticity may be required to meet current FAA requirements; check with your A&P IA before applying these markings to ensure they meet current standards.

“GRADE 80 AVIATION FUEL” marking is ½” tall in Common Stencil A, located just above each fuel fill

4.9 Cargo Shelf

Stencil	Notes
<p style="text-align: center;">166 POUNDS MAXIMUM BAGGAGE ALLOWABLE CARGO COMPARTMENT NORMAL CATEGORY SEE OPERATIONS MANUAL</p>	<ul style="list-style-type: none"> • 1”, black, centered, Common Stencil A. Yellow would be valid if the shelf is black instead of grey.

4.10 Other U.S. Army/U.S. Air Force-specific Markings

Tail Markings

Some L-17s have “U.S. ARMY” or “USAF” on the tail above the tail number. It has not been possible to determine any consistency to date in the size, stencil or placement of these markings, but these were not applied at the NAA or Ryan factory.

Fuselage Markings

USAF aircraft that were not in-theater (used for ROTC or other utility duties) have a 12” Universal stencil on the fuselage “U.S. AIR FORCE”. This stencil is located starting at the very front of the cowl along the **reference line**.

Under-wing Markings

Both USAAF and USAF aircraft had under-wing markings on the underside of the left wing in 30” Universal stencil. This is still under research [WIP], but for USAF aircraft it appears to be “USAF”. For USAAF aircraft, both “U.S. ARMY” and an “A-“ suffixed with the last 3 digits of the tail number appear. Example: USAAF L-17B 48-1007 would be “A-007”.

4.11 Additional Decals/Markings

[WIP] Additional decals are under research.

5 Summary Parts List

The purpose of this section is to provide a parts list to allow an owner to purchase the stencils and decals required to complete an authentic military marking scheme.

5.1 United States Air Force

Incomplete [WIP]

Qty.	Description
2	20" National Insignia
2	30" National Insignia
2	4-1/2" tail number
2	14" "Buzz Code"
1	Data Block U.S. AIR FORCE L-17-B USAF SERIAL NO. 48-1007
2	U.S. AIR FORCE on side of fuselage
1	USAF under wing

5.2 United States Army Air Forces

Incomplete [WIP]

Qty.	Description
2	20" National Insignia
2	30" National Insignia
2	4-1/2" tail number
2	14" "Buzz Code"
1	Data Block U.S. ARMY L-17B AAF SERIAL NO. 48-1007
1	U.S. ARMY Under wing
1	U.S. ARMY Tail Number

6 References/Resources

Joe Baugher BuNo Site

<http://home.att.net/~jbaugher/usafserials.htm>

Rick Larson Stencils

<http://www.militarystencils.com/>

