

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

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1 Introduction

This document is intended to provide guidance on applying historically accurate military paint and markings to the 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. This collection wouldn't have been possible without hundreds of contributors and I thank them all for their experience, expertise and passion!

This is a living document and changes as required to incorporate new information. The current version of this document can be requested via email at bill.lattimer@outlook.com as a .PDF file to ensure consistency of content and updates. If you copy from this document, please reference the source. **Throughout this document you'll see "Work in Progress" markers [WIP]** that indicate active tasks or areas that are under revision or research. As always, suggestions, information and references from enthusiasts are always welcome!

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 honor our veterans, look great in the air and get looks and waves taxiing by. 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"? No. 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 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 246 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. Where a color is noted, it's done so using interpolation to the best possible to current paint standards.

As of 2/14/17 the guide for military colors is SAE AMS-STD-595 "Colors Used in Government Procurement". This guide can be used to determine the best possible match for the older military numbering system with modern paints. More information is available at www.gsa.gov/colorstd and an online preview (and orderable color fan) is at <http://ams-std-595-color.com/>.

3.1 Base Color

All L-17s were originally delivered in "Dark Gull Grey" **36231** as they were all procured by the USAF even when ordered by the Army. At the time the Army was restricted from purchasing fixed-wing aircraft - but that is another story. In-service historical photos show everything from bare metal or a light coat of zinc chromate through grey (as noted above) and Olive Drab **34088**. There is a Technical Order (T.O.) that allows Gloss Olive on aircraft not in a front line area. Practically speaking this means that almost any color could likely be found on an operational L-17 and could be considered authentic. There is no operational record of L-17s serving with the U.S. Navy, U.S. Marine Corps or the U.S. Coast Guard although that should not be read as precluding the possibility of service with those branches. Many L-17s ended up in military flying clubs or the Civil Air Patrol (U.S. Air Force Auxiliary) before being released from military service.

3.2 Cowl

From the NAA blueprints the cowl is painted Medium Green Color #612 [WIP]. In current practice this is usually painted a semi-gloss black. The pattern can be derived from the **blueprint section** reproduced below [WIP]

3.3 Main Fuel

The fuel fill is surrounded by a 7" Insignia Red **11136** 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 the same red.

3.4 Aux Fuel

The fuel fill is surrounded by a 7" Insignia Red **11136** square centered on the filler inlet, details under research. [WIP]

3.5 Walkway

1/2" wide stripe around walkway 145-53091 in Flat Black #604 [WIP]. The blueprint fragment below provides approximate dimensions for the walkway [WIP].

3.6 Prop

3" of the tip are painted in Orange Yellow **14538**.

3.7 Civil Air Patrol Colors

Typically, the CAP added two International Orange 12197 bands to the standard USAF paint scheme of the late 50's and early 60's. The first encircles the cowl completely and the second is circles the fuselage between the fixed vertical stabilizer fin and the rivet line forward of the L-10 antenna mounting point.



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 and what they consist of but not how they should be applied.

4.1 Location References

Typically, positions for markings use some type of blueprint reference. In the case of the L-17, there are two:

- **Reference Line:** 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**.
- **Station Numbers:** Paint blueprints also commonly reference Station Numbers; these locations can be found in the Structural repair Manual and often in Parts Manual as well. They represent a structural member and so a specific line of rivets.

4.2 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 a broad number of stencil fonts in use. When in doubt, use period references for the correct choice. Active-duty L-17s would have likely used "Standard Military Stencil (B)" or "Stencil Style (D)" based on photos and research - see www.militarystencils.com for visual reference. Note that while vinyl or very clean, clear stencils are commonly used today due to the value and show quality of warbirds, these were typically applied quickly, often in the field, and using oilboard-type stencils. They were far from perfect, but that is the human touch that makes the aircraft more authentic.

Sample:

U.S. ARMY

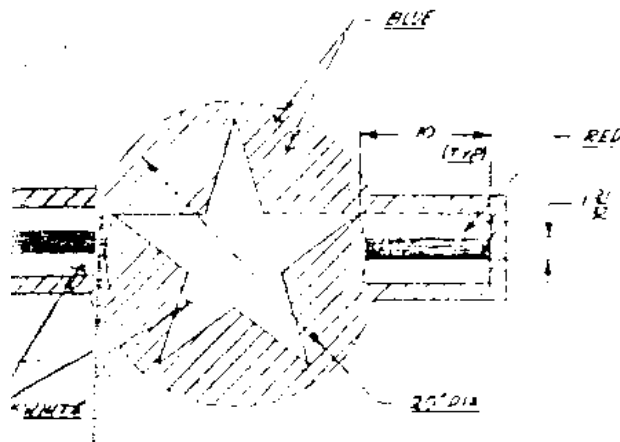
4.3 National Insignia

The National Insignia, affectionately known 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.

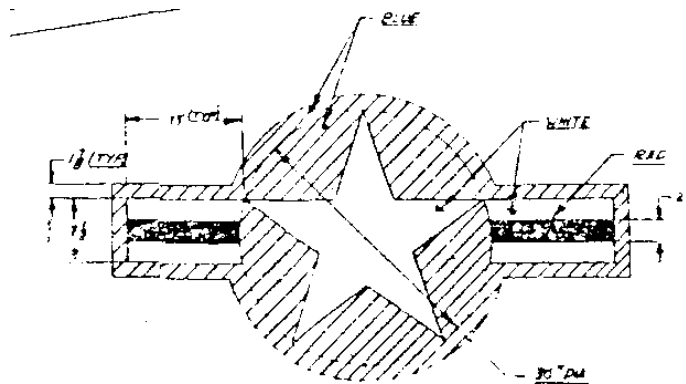
NOTE: the definitive reference to the National Insignia is USAF Technical Order 1-1-4 EXTERIOR FINISHES, INSIGNIA AND MARKINGS, APPLICABLE TO USAF AIRCRAFT. This is easily searched for and downloaded as a .PDF from numerous sources. The blueprint fragments below are from North American original blueprints.

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

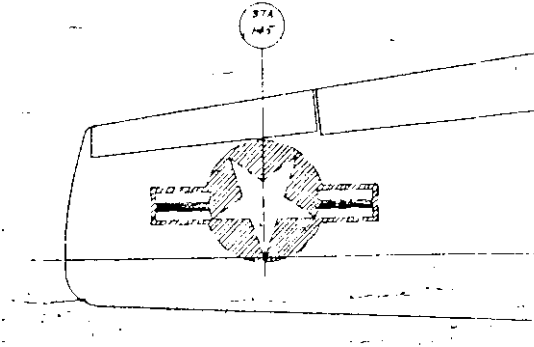
- **Fuselage**, both sides: 20" diameter National Insignia centered on Station 197.75 with the bottom of the Insignia exactly on the **reference line** and parallel to it. Note that early aircraft may have had the National Insignia centered on Station 224, and in the field the common practice per T.O. 1-1-4 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.



- **Wings**, both wings, 30" star diameter as below:



- **Left wing, top**; 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**; 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 crossing the marking.

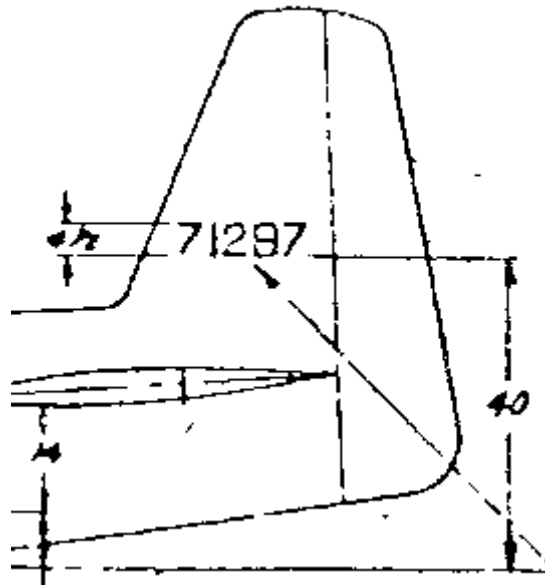


4.4 Tail Number

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 - three (3) or 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 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 BuNo **50-2214** with a tail number of **02214**. This allows some level of historical accuracy without confusion with or duplication of a 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**.



4.5 Data Block

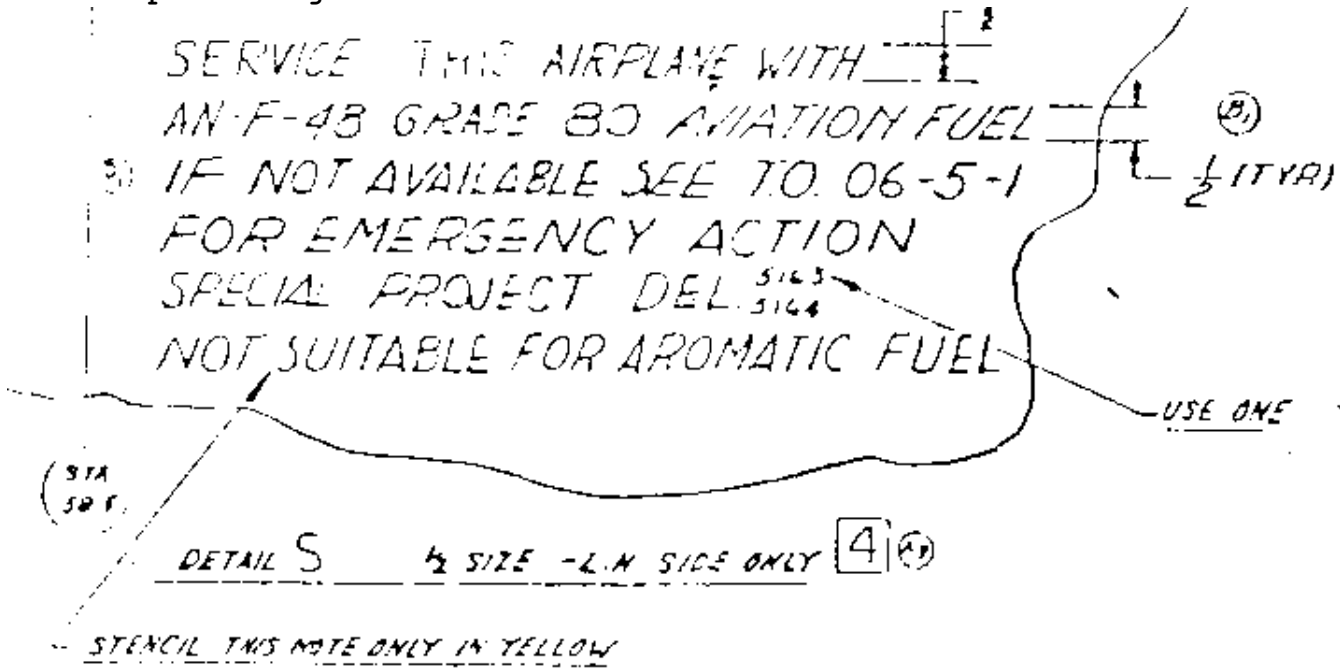
The aircraft data block appears only on the left side of the fuselage. The best reference at this time is operational photos from L-17.ORG and as represented below. **Note** in the reference photo to addition of a "G" code after the Ser. No. is an artifact of a temporary practice, per Joe Baugher:

"For a few years during the late 1940s and early 1950s, the serial number displayed in the Technical Data Block often carried a suffix letter, which was not actually part of the official serial number. Five letters were used: A for US Air Force, G for US Army, N for Air National Guard, R for Air Force Reserve, and T for Reserve Officers Training Course (ROTC). For a while the letter M was used for USAF aircraft associated with American embassies in foreign countries, but this use was discontinued in August 1955."

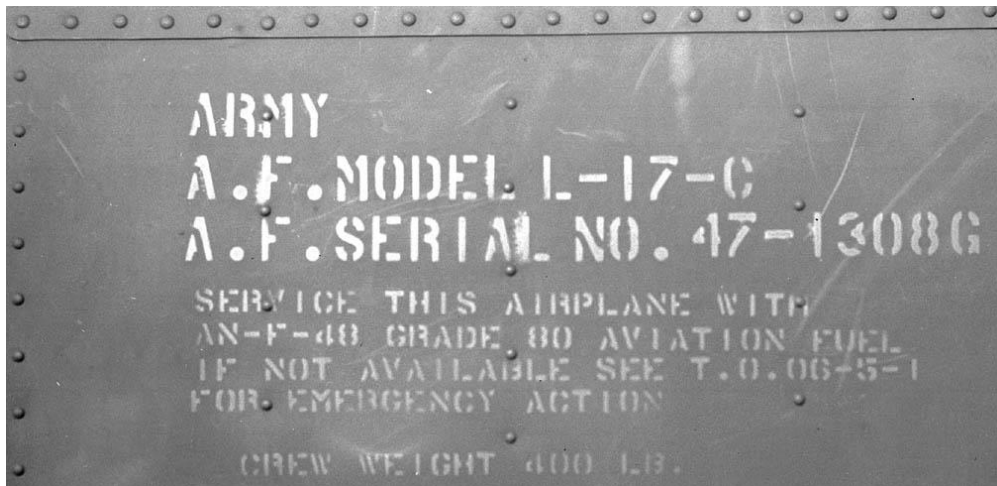
http://www.joebaugher.com/usaf_serials/usafserials.html

Stencil	Notes
<p>ARMY A.F. MODEL L-17-B A.F. SERIAL NO. 48-1007</p> <p>U.S. AIR FORCE U.S. AIR FORCE L-17-B A.F. SERIAL NO. 48-1007</p>	<ul style="list-style-type: none"> • Markings vary significantly; some examples provided. • 1", black, left justified against station 59.5. • 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", yellow on OD/black on other colors, left justified against station 59.5 and aligned with the block above. • The Special Project line was often omitted in later markings. Project could be 5164 or 5163. • NOT SUITABLE FOR AROMATIC FUEL warning also often not painted. • May also contain "CREW WEIGHT 400 LB."

NAA Blueprint Fragment



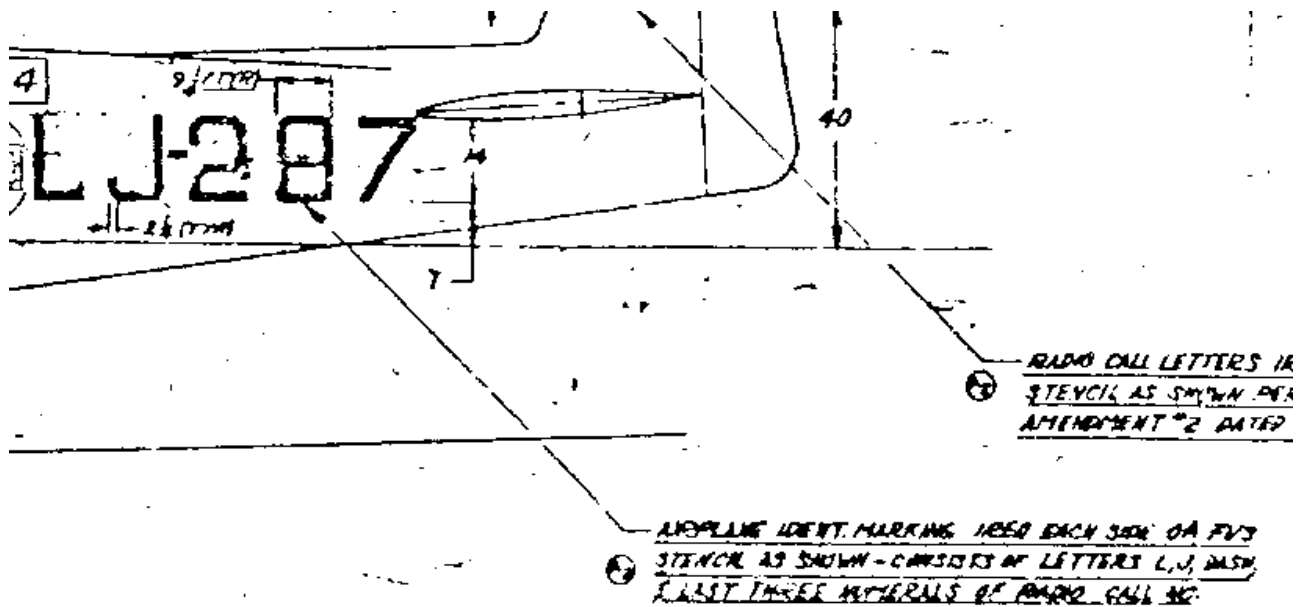
Suffix Code Examples:



4.6 "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 North American L-17A/C, and "LD" for Ryan 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



4.7 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

4.8 NO PUSH

"NO PUSH" markings are 1" tall in Common Stencil A.

- One centered on each side of the horizontal stabilizer in the top 1/2 of the leading edge skin

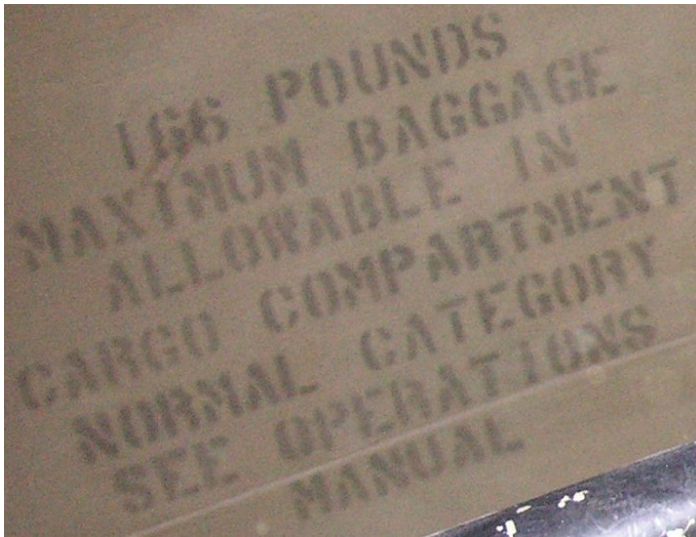
4.9 Fuel Fill

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 1/2" tall in Common Stencil A, located just above each fuel fill

4.10 Cargo Shelf Cover



Stencil	Notes
<p style="text-align: center;">166 POUNDS MAXIMUM BAGGAGE ALLOWABLE IN 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 cover is black instead of OD or grey.

4.11 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 "A-"

suffixed with the last 3 digits of the tail number appear. Example: USAAF L-17B 48-1007 would be "A-007".

4.12 Additional Markings

- There is often a fire extinguisher block underneath the data block consisting of a red square with a white or yellow border and white stencil of FIRE EXTINGUISHER; this is under research.
- There was often a red cross on a white square background on the left side of the canopy behind the side window; this is under research

4.13 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.

4.14 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

4.15 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

5 Appendix A: Work in Progress References/Resources

Disregard section; notes/placeholders only.

Joe Baugher BuNo Site
Rick Larson Stencils

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