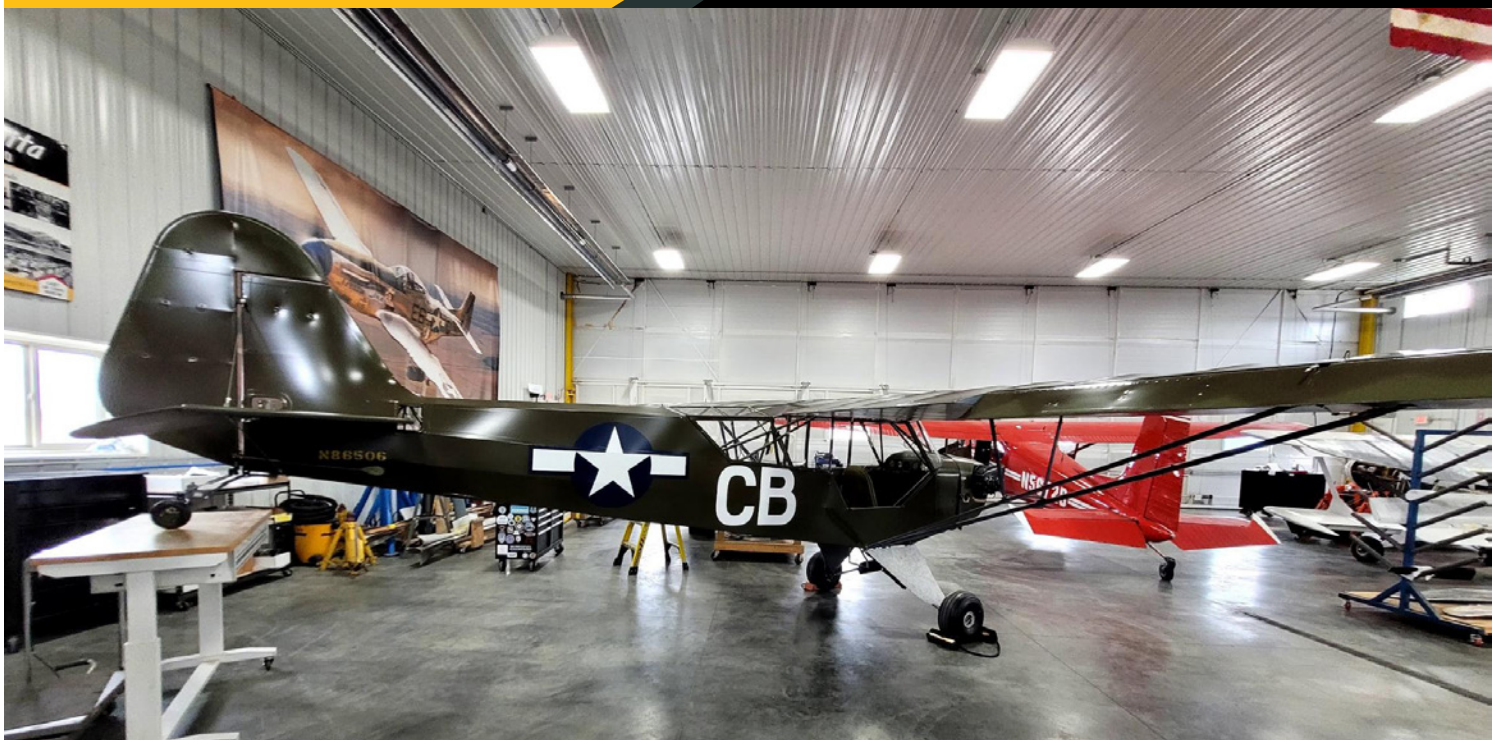
Piper L-4H Grasshopper

44-79780 Restoration, Spring Update

AIRCORPS AVIATION

by Chuck Cravens



As the L-4 nears completion, the landing gear, engine installation, instrumentation, and control systems in the cockpit cabin received attention. A restoration milestone was reached as the Grasshopper now rests on its own wheels. A more significant event was the move to the hangar for assembly.

Landing Gear

The simple yet effective, bungee-sprung landing gear has been completely installed. A set of skis has been obtained and restored, so the L-4H will be capable of operating from a snow-covered field.

Joe works on the main landing gear.

Here is a closer view of the right side main gear.

The Grasshopper is up on its gear!

The landing gear bungee covers are one of the identifiers that you are looking at a version of the Piper Cub.

Flying off the snow will be another option for this L-4 when these skis are installed.

Fuselage

The control surfaces have been attached to the empennage, all the windows are in place, and fine-detail painting/stenciling is underway.

The firewall has been installed.

The extensive windows are in place.

The extensive glazing is the primary feature that distinguishes an L-4 from a regular civilian J-3 Cub.

The term glazing is a little misleading in this instance because it implies the use of glass, but the windows in an L-4 are made of acrylic plastic.

The glazing atop the fuselage allows great upward visibility.

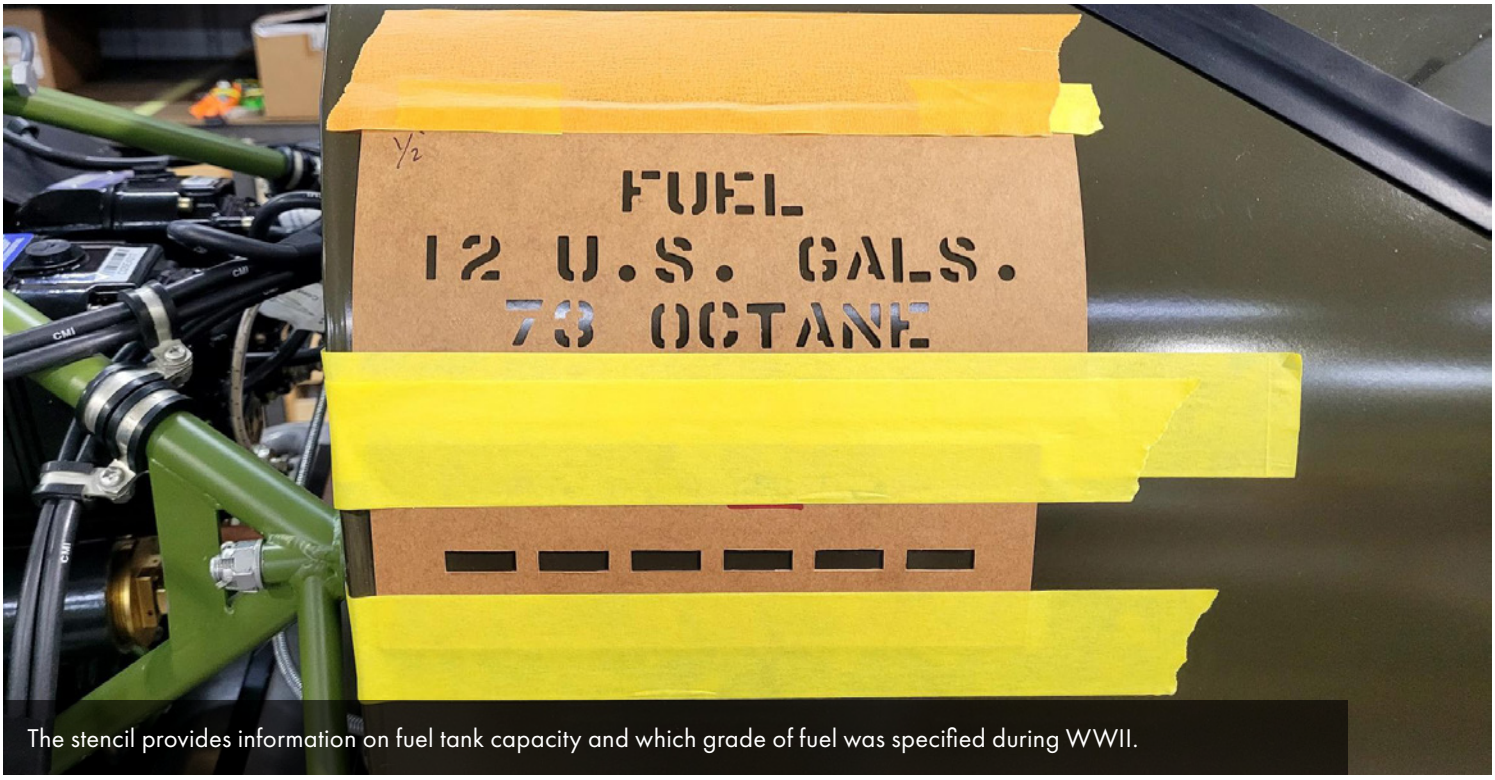
This L-4H was built with the 3-piece windshield.

The elevators have been installed.

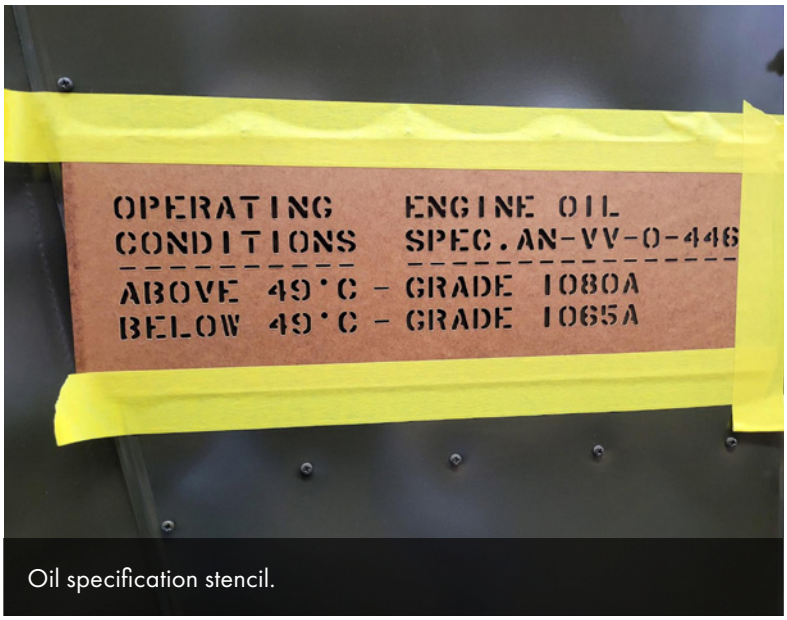
The next step will be installing the rudder.

The lighter colored edge "blotches" are visible on the newly installed rudder.

A stencil has been applied to the boot cowl in preparation for completing the details of the military color scheme.



The stencil provides information on fuel tank capacity and which grade of fuel was specified during WWII.



Oil specification stencil.

The elevator horn and cable turnbuckle.

"N" number stencil.

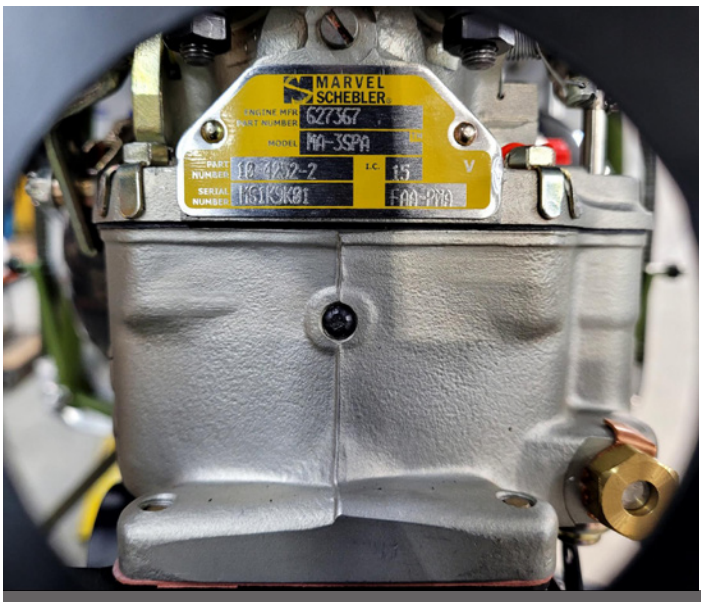
Engine Installation

Besides the landing gear installation, another restoration milestone was reached as the little Continental four-cylinder was mounted on the Grasshopper. Originally, a Continental A-65-8 (military designation O-170-3) was installed. The C-90-8 chosen for this L-4 is a slightly larger displacement flat-four engine, offering more torque and horsepower.

The Continental C-90-8 is in place.

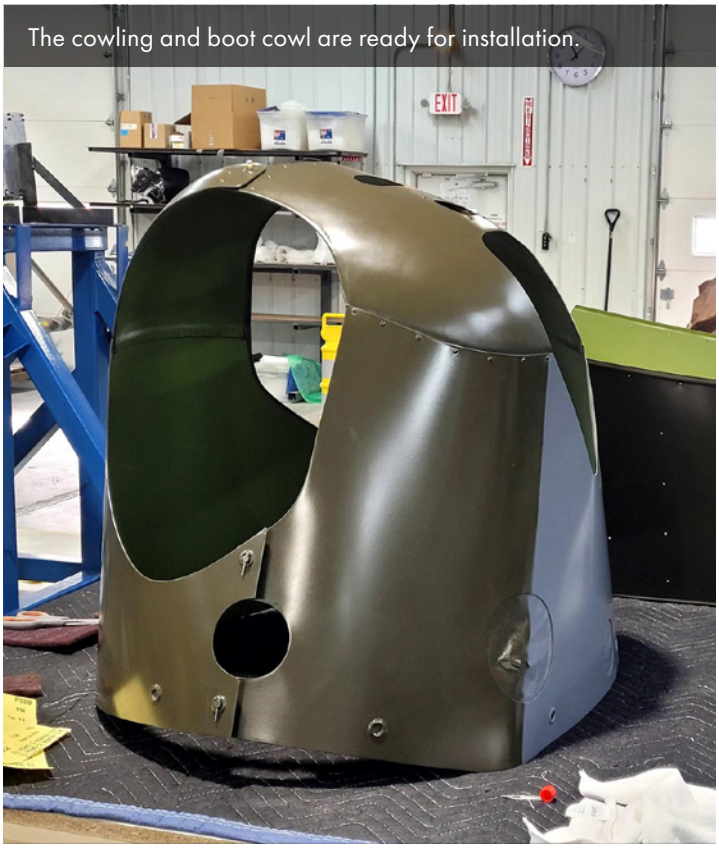
Left side view of the C-90.

The oil tank, carburetor, and air intake.

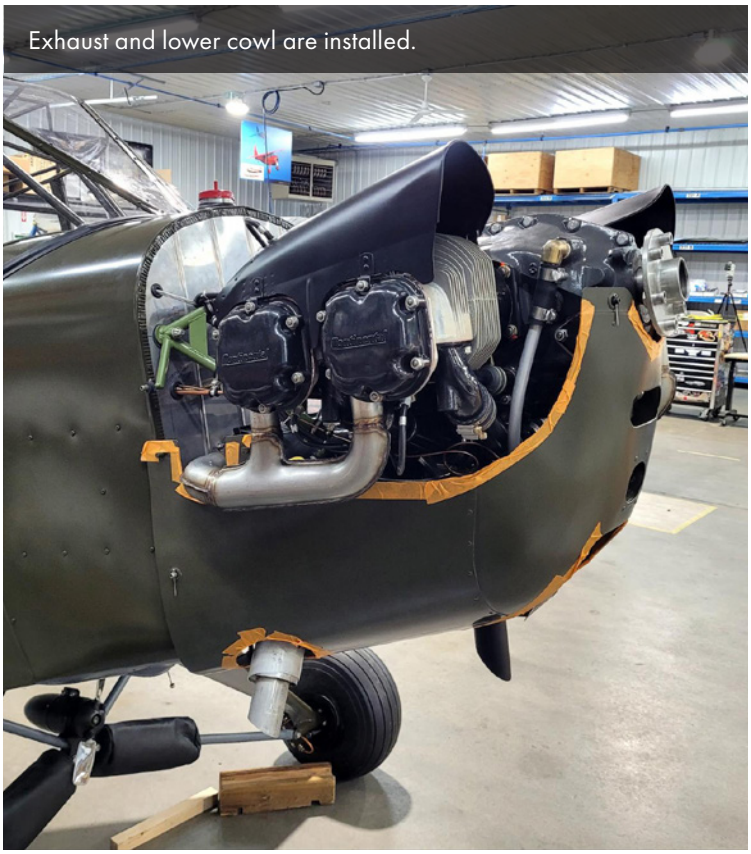


The carburetor is a Marvel Schebler MA-3SPA

The cowling and boot cowl are ready for installation.

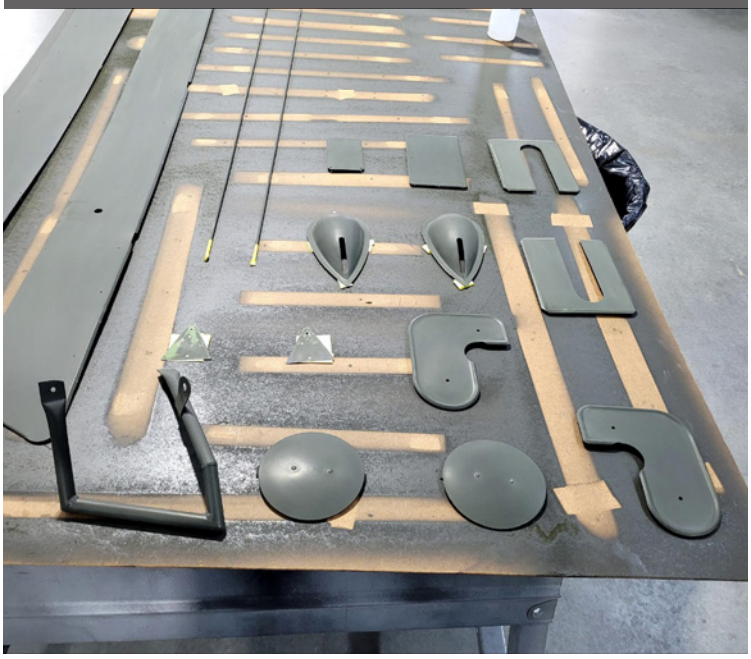


Exhaust and lower cowl are installed.



The fuel cap and fuel indicator float are installed.

Many small parts have been painted, such as inspection covers, wing fairings, and the step

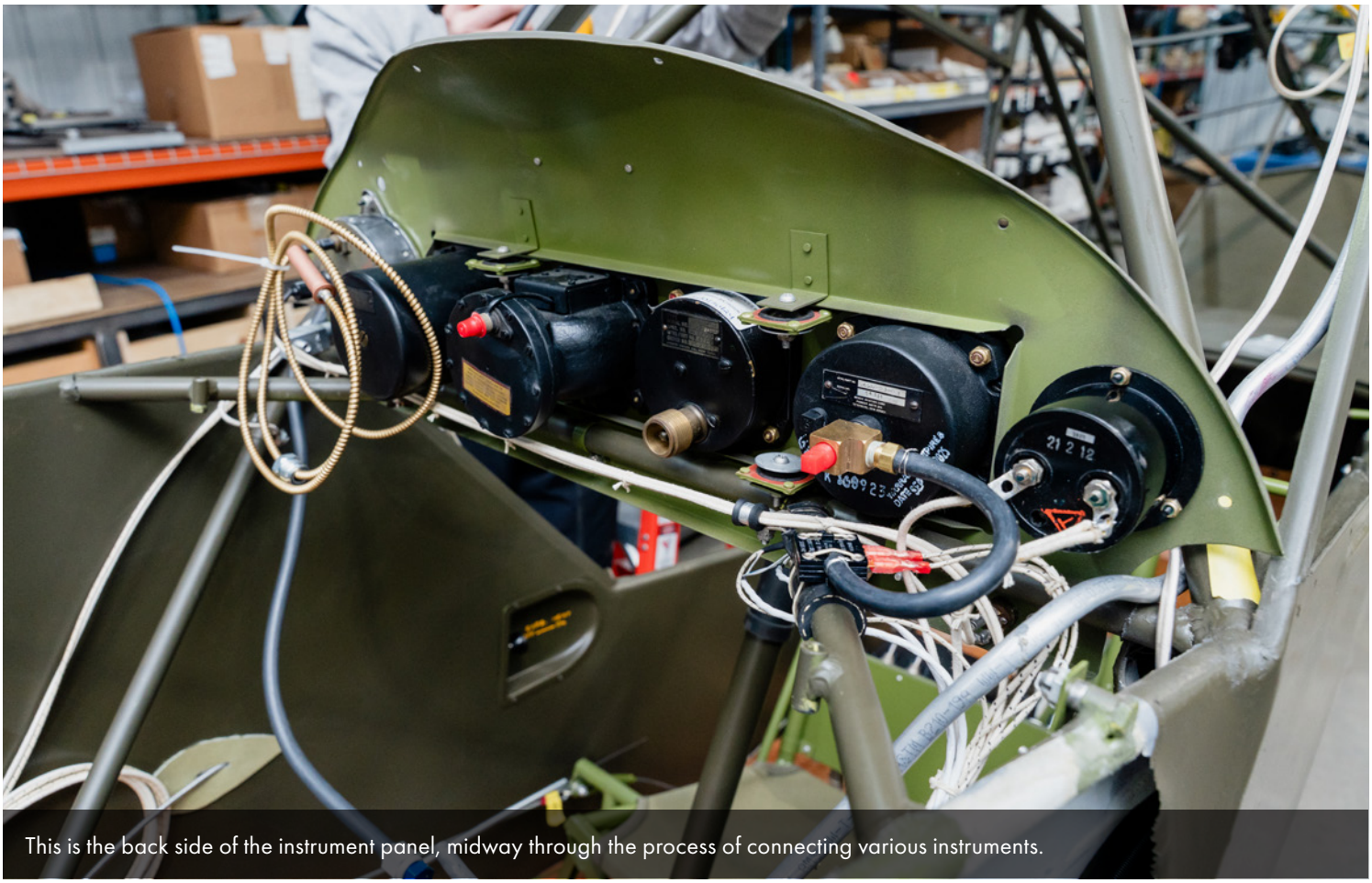


Cockpit Cabin

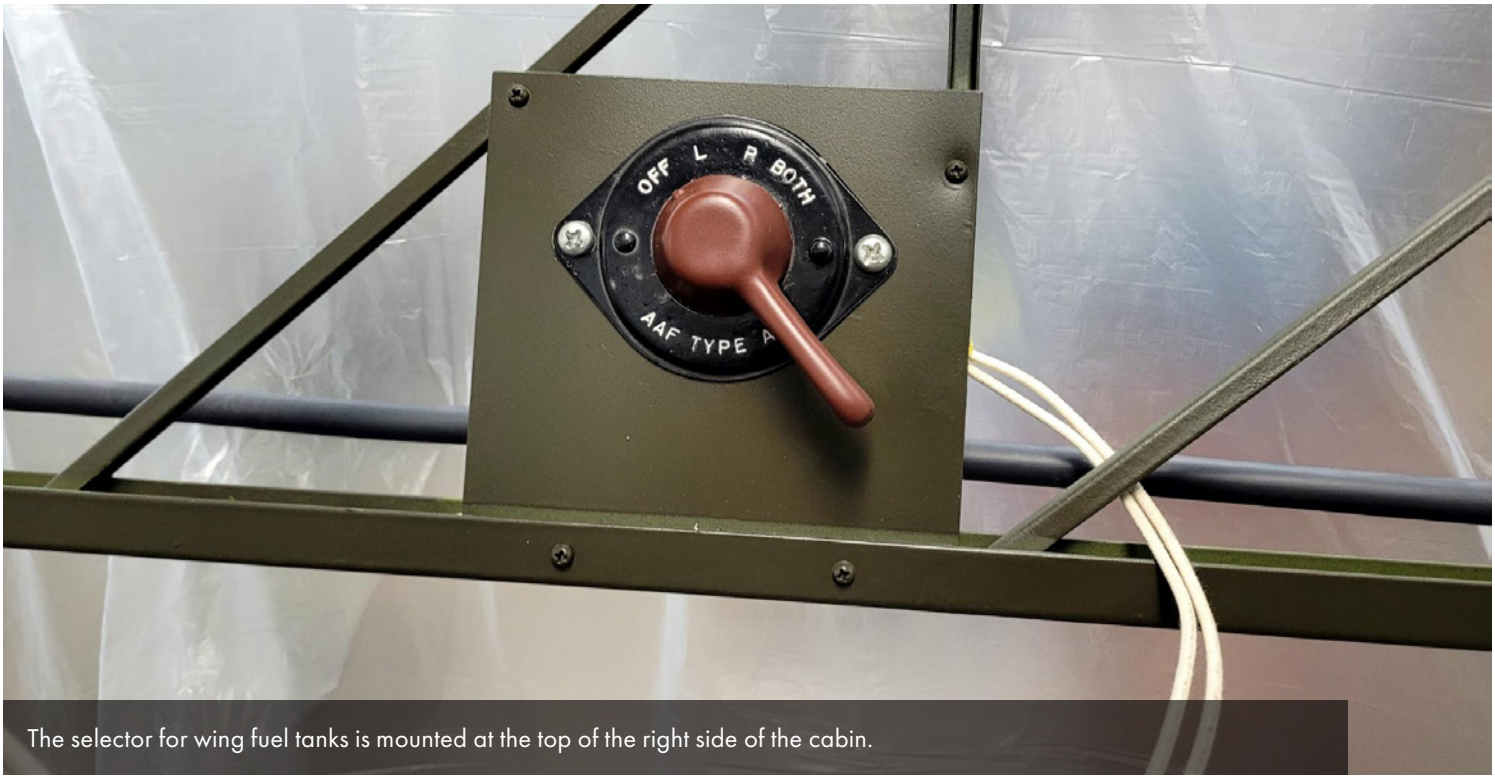
Wiring, instrument connections, and control systems connections were the focus of work inside the cabin.

The instrument panel is complete.

The instrument panel, front control stick, rudder pedals, heel brake pedals, and the lower part of the fuselage fuel tank are all visible in this photo.



This is the back side of the instrument panel, midway through the process of connecting various instruments.



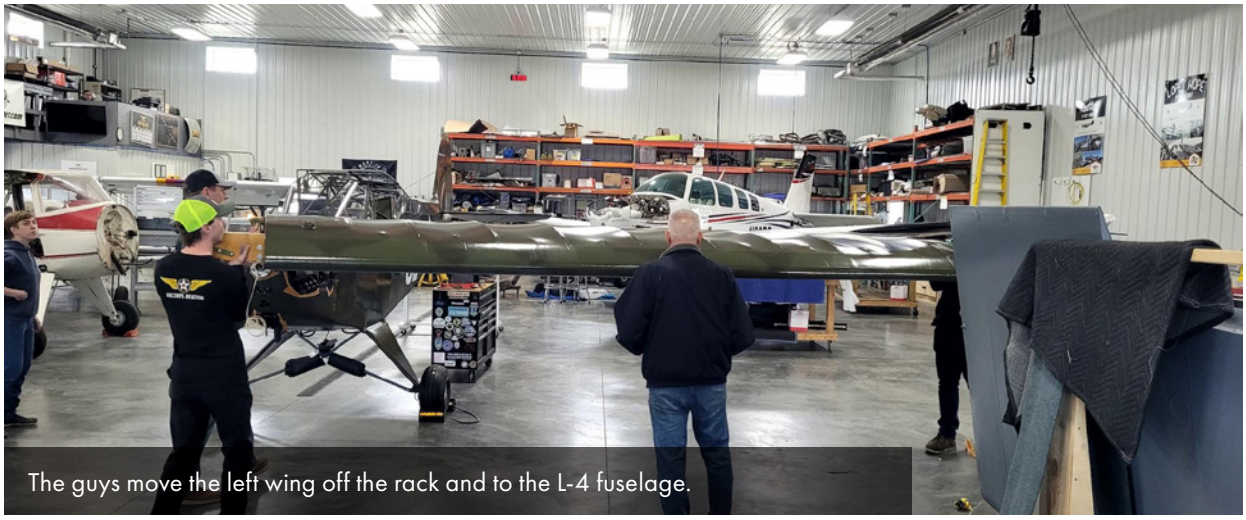
The selector for wing fuel tanks is mounted at the top of the right side of the cabin.

The tubular push rod from the two control sticks connects to a bellcrank that is linked to the elevator by cables.

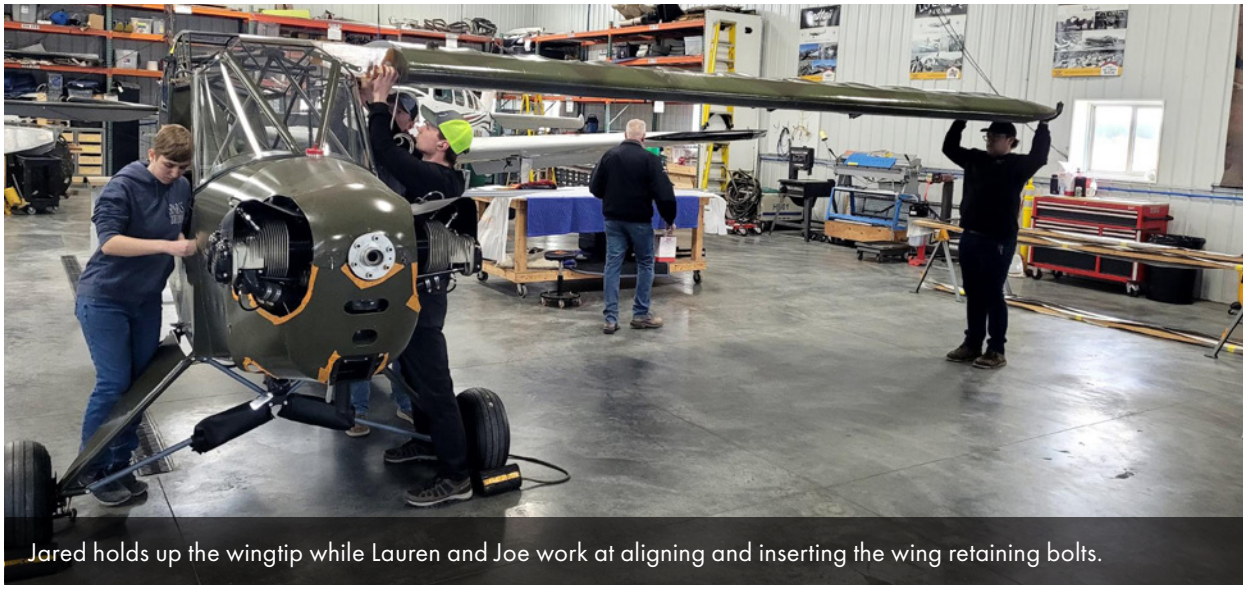
The elevator control cables run back through holes in the plywood lower rear wall of the cabin.

Inside view of the 3-piece windshield.

The wings await installation in a wing rack at the hangar.

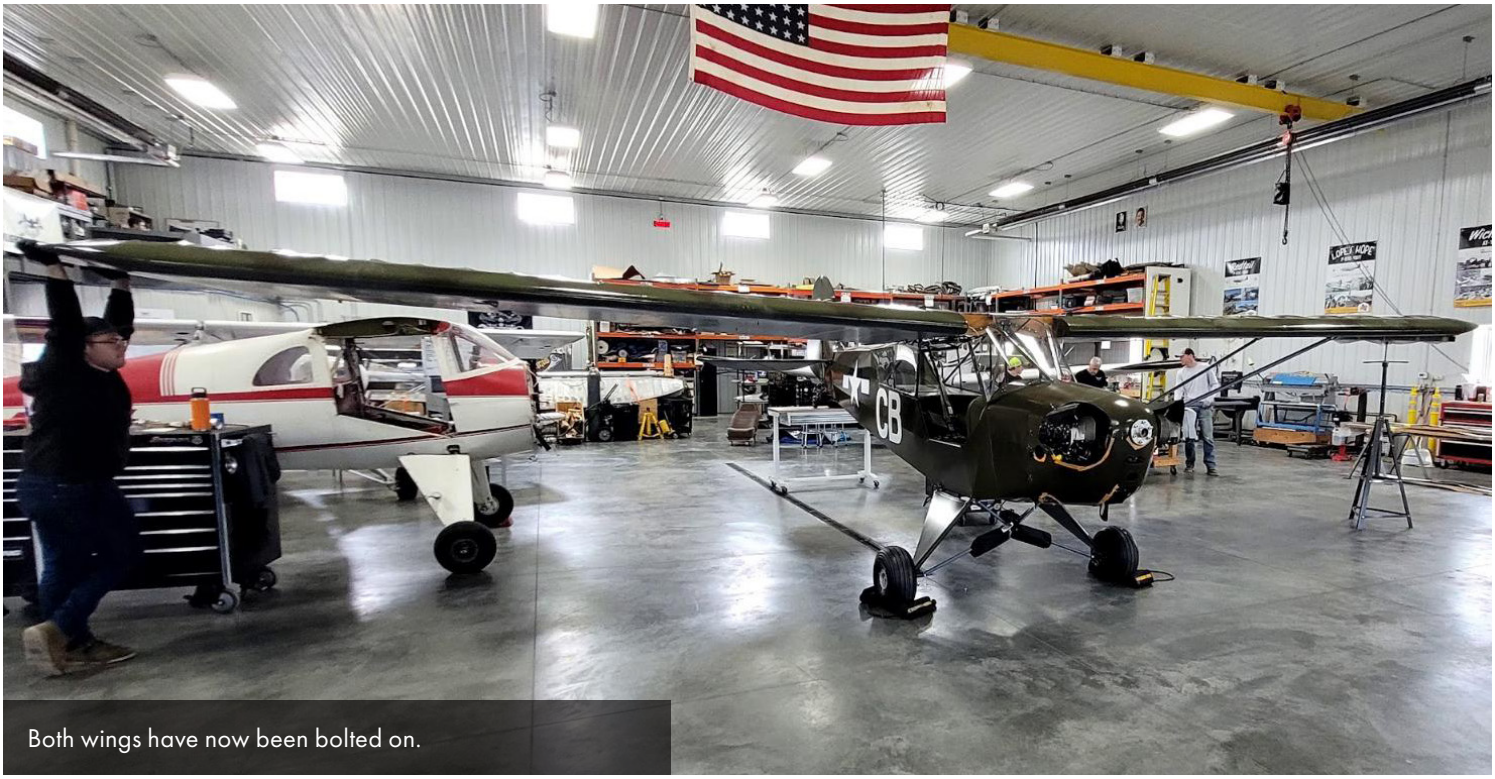


The guys move the left wing off the rack and to the L-4 fuselage.



Jared holds up the wingtip while Lauren and Joe work at aligning and inserting the wing retaining bolts.

The main spars have steel straps that extend past the tip of the spar and bolt to the fuselage just behind the windshield.



Both wings have now been bolted on.

The jury struts support the lift struts and connect them to the wing about halfway between the fuselage and the outer strut attachment on the wing. They stabilize the lift struts from resonance or vibration. They also prevent the struts from buckling under negative loads.

The L-4H has all the wing struts in place. The next step will be the wing root fairings that bridge the gap between the fuselage and the upper surface of the wings.

Piper J-3 and L-4 Production

Piper J-3 at a fly-in in 2011, photo by David Miller, CC-BY-2.0, Flickr images reviewed by FlickreviewR

In 1938, Piper Aircraft launched its new light plane, the J-3 Cub. They produced 736 that first year. "With the threat of war escalating, the Civilian Pilot Training Program (CPTP) was launched in 1939, creating a massive surge in demand for training aircraft to prepare military pilots. Consequently, Piper accelerated production, manufacturing approximately 1,300 of its iconic J-3 Cubs that year to meet the need for affordable, accessible trainers".[1] In 1940, the number produced jumped to over 3,000.

War experience created a growing interest in the use of light aircraft for liaison and observation duties in direct support of ground forces.

Piper developed a slightly modified J-3 with much more window area, particularly above and behind the standard windows on a J-3. This military version of the Cub was originally designated 0-59 and changed to L-4 in April 1942.

1) Piper Aircraft, The Piper Cub: The History of an Aviation Icon, May 25, 2022, https://www.piper.com/blog/piper-cub-history/ accessed April 20, 202creating,6

WWII Piper L-4 Advertisement

The U.S. military procured a total of 5,413 Piper L-4 Grasshoppers—including the O-59, L-4A, L-4B, L-4H, and L-4J variants, as well as the Navy's NE-1 and NE-2 versions—between 1941 and 1945. That number varies slightly by source, but 5,413 is the most frequently cited number of L-4 production that includes only military Piper variants based on the J-3.

44-79780 was the 236th L-4H from a production run of 500 (Serial numbers 44-79545 through 44-80044). 1,801 of the total number of L-4s were L-4H versions, making the H the most produced L-4 variant.

Thousands of L-4s remained in the US for the duration of WWII, training pilots and serving liaison duties for Army units in training. The little Piper is common in the United States and Canada, but combat veteran L-4s are rare in the United States.

The L-4H is nearing readiness for final assembly.