IS THERE AN L-5 IN YOUR FUTURE?

By James H. Gray

Known affectionately during World War II as the "Flying Jeep", the Stinson L-5 Sentinel is a truly wonderful and unique aircraft, both in handling quality and design. It is also a bona-fide “warbird", unlike some other light aircraft that were adapted for wartime use. While there are other planes of similar appearance, and many of more recent lineage that have superior performance and greater economy, and a few that are as ruggedly constructed, taken as a whole there arguably isn't another “warbird” that is as affordable, safe, free of vice, fun to fly, and as rich in military history as the Sentinel. To fully appreciate this you really have to get to know the L-5, and a few hops around the patch probably won't do it; but ask any owner or former liaison pilot and they will more than likely rhapsodize on the positive aspects of flying a Sentinel. A lot of L-5 pilots who have flown a wide variety of military and civilian aircraft place the Sentinel right at the top of their list of favorites, and that is saying something! Unfortunately, there aren't a lot of airworthy examples around -- about 80 in the U.S. and another 35 elsewhere -- so it isn't an easy airplane to become acquainted with unless you know somebody who owns one.

If you happen to fall under the L-5's spell, which is very easy to do, there are a few basic things you should know that could temper your enthusiasm for it. There are also some things that the more hesitant buyer might not be aware of that could sway him or her into buying a "flyer" or restoring a project aircraft. Perhaps the best thing a prospective buyer can do prior to "taking the plunge" is to contact the Sentinel Owners and Pilots Association for more information (see www.sentinelclub.org). A more helpful and dedicated type club you will not find, and the documentation they have on the aircraft is in itself quite extraordinary.

On the negative side of the ownership balance sheet, the Lycoming O-435 has been out of production for about a half-century, so there is no manufacturer support for it and some of the NOS (New Old Stock) components have fallen into very short supply. What's more, the recommended TBO is only 1200 hours, many overhaul shops will not work on them, and most mechanics are simply not familiar with the 1940’s vintage Lycoming. Unfortunately, no other engines have been STC'd for use on the L-5, so unless you're willing to pursue a field approval on your own, there are no alternatives. Also, at an average fuel burn of 11 gph, the operating cost may be higher than you may wish to pay for pleasure flying, and since the oil only passes through a pair of screens and is not filtered, frequent oil changes are a must, further increasing the hourly cost. On the other hand, the brutish six-cylinder O-435 is part of the mystique of the airplane. Its loud, unmuffled exhaust immediately causes the pulse to quicken, and it provides an exhilarating sensation on takeoff each and every time. In cruise (110 mph @ 2250 rpm), the low, earthy growl is more reminiscent of a radial than an opposed engine, and the big low-compression jugs make for a smooth running powerplant. The engine doesn't really work very hard, even on takeoff, so there aren't many maintenance issues that crop up as long as you operate it intelligently (i.e. no long power-off descents or excessive idling on the ground). Fortunately, there are a lot more used 0-435's around than Stinson L-5's, so spare engines (a good source of replacement parts) are fairly easy to come by and not terribly expensive.

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One of the potentially big drawbacks to owning an L-5 is the wood construction of the wings and stabilizers. If they are in good condition and have been kept dry, they pose no serious problem, (in fact they're stressed to +10 and -4.6 g's!), but if they have been allowed to sit outside in the weather for a number of years, there can be all sorts of trouble that is expensive to fix. L-5 woodwork is not complex, but it is notoriously difficult to assess without removing the fabric, so it takes an experienced eye to detect incipient problems. Also, about half the 3,950 L-5's built between October 1942 and September 1945 were constructed using casein glue that, after sixty years, simply cannot be trusted no matter how good the condition of the wood is. Casein, which is an animal protein that appears tan in color, was banned from aircraft construction and repair long ago because, even under the best of conditions, it does not hold up well. Not only does it have low adhesion after many years in service, it is also subject to the ravages of a waterborne microbe that literally eats the stuff, leaving nothing behind but a glue-free joint and a little powdery residue. While there is no Airworthiness Directive (AD) mandating it, casein-glued L-5 components should be entirely rebuilt or replaced before being used. Unfortunately, there are a few "casein L-5's" out there that are still flying, so this is something to watch out for. Most of the later aircraft, particularly the L-5B thru L-5G ambulance models, were built using resorcinol. This black, synthetic formaldehyde resin compound is very reliable and has shown few instances of serious degradation over time. It is still generally regarded as the only adhesive that is suitable for use on certified wooden aircraft, and it is readily available to the restorer. Caution! A few ambulances have been discovered with casein wings and stabilizers, while some observer models have been found to have the later resorcinol type installed, so it is best to determine what glue was used for construction or major repairs before you commit to buying an L-5.

Although there are a few other relatively minor issues with the L-5 that can make ownership less than joyous (notably leaky fuel selectors, worn out landing gear oleos, and leaky original brake components), the one item that can really make or break the plane for many people is the tailwheel. The original Lakes State assembly is arguably as good as any steerable tailwheel ever devised, and in good condition it has remarkably positive handling qualities even compared to modern tailwheels, but if it is badly worn and / or improperly rigged, the normally docile L-5 (which can be easily mastered by even low-time tailwheel pilots) can turn into a real beast on the ground. Unfortunately, the Lakes State was only manufactured for use on the L-5 and the supply of spare parts dried up long ago, so a complete rebuild can be a major undertaking, but it is well worth the expense and effort. Even a modern replacement such as a Scott or Maule (for which there are no STC's for the L-5 and the mods are not particularly easy to make) will not behave any better than the stock unit.

From a flying standpoint, the L-5 is hard to beat. The pushrod-actuated, ball-bearing supported flight controls are as smooth and well harmonized as any you will ever encounter, and give the L-5 a "big airplane feel" of solidity without sacrificing nimbleness. The airplane will actually do exactly what you want it to without having to develop a special "rapport" with it, as many other planes demand. In fact, it feels so "right" in the air you may not even notice how easy it is to fly, much the same way you don't often notice your own breathing. It is also one of the most stall and spin resistant aircraft ever designed, and therefore is capable of performing maneuvers that you would not dare try in another airplane without some trepidation, especially close to the ground. In the hands of an accomplished pilot, the L-5 can perform some truly astonishing feats, and this is what convinced the military to order them in the first place. No, it isn't a spectacular STOL performer as measured by modern standards, but it is no slouch either. One other factor that is not often considered: it is an extremely rugged airplane that is amazingly crash-worthy. Should you ever have the misfortune to "cashier" one, chances are good that you'll survive without a scratch, much less a serious injury, especially if you are wearing a 4-point harness.

If there is one drawback to the L-5's design, it is the smallish rudder. You don't want to raise the tail too early on takeoff because the plane can suddenly develop an abrupt urge to swerve off the runway. You can compensate of course, but the seven-foot prop and low torque engine make the L-5 behave much more like a “heavy iron” warbird than a "puddle jumper", and it can catch the unwary off guard. While the rudder is more than adequate for all maneuvers, including beautiful aileron rolls and hair-raising slips, it can be easily overpowered on takeoff or landing by gusty crosswinds above 20 mph. This is no worse than what you’d encounter in a Stinson 108 Voyager, so other than that minor flaw, the L-5 is truly a pilot’s airplane worthy of serious consideration.

From a collector’s standpoint, the Sentinel has a remarkable heritage, with a much richer history of military service than the cadet trainers and other unarmed warbirds of its day, with the possible exception of the Piper L-4 Cub. Although many of the surviving L-5's in the U.S. never made it overseas, some of them did, so it is possible to find one that actually operated in a combat theater during WWII or the Korean conflict. If this is your particular interest in owning a true veteran, the L-5 possibly represents the best "bang for the buck" of any warbird available.

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PROS OF L-5 OWNERSHIP:

- Fun, fun, fun!
- Draws a crowd at fly-ins and airshows if restored in military colors.
- Easy to fly, even for low-time taildragger pilots.
- Insurance not outrageously expensive.
- Pilot has great visibility for a high-wing aircraft.
- Exceedingly smooth, well harmonized controls.
- Good short field performance. Comfortably handles 1000' strip w/ 50' obstacle under most conditions at max gross weight.
- Superb low speed handling, very stall resistant.
- Virtually spin proof except at extreme aft CG.
- Relatively low maintenance if flown intelligently;
- Engine and airframe easy to work on.
- Low-compression engine is easy to start, even when hand-propping.
- Very few AD's and service bulletins, which are all minor except for optional Hartzell controllable prop.
- 750-800# useful load. 500-550# with full tanks.
- Rich military history and a TRUE warbird, not just a civilian aircraft adapted to military use.
- Extraordinary documentation, including every manual imaginable, factory blueprints, and excellent club support.
- Many parts can be easily owner-manufactured if not available.
- Used engines are in fairly good supply and relatively inexpensive to buy for use as spares.

CONS OF L-5 OWNERSHIP:

- Difficult to enter and exit for the not-so-limber.
- Noisy, drafty, uncomfortable, bare-bones interior.
- Cold in winter. No provision for cabin heat or windshield defrost.
- Engine TBO only 1200 hours.
- Some engine parts scarce and expensive. Many shops will not overhaul the engine, and most mechanics are unfamiliar with the O-435.
- Engine accessories are expensive to repair or replace.
- No STC's available in the U.S. for alternate engines and few useful STC's for the airframe.
- High operating costs. Averages 11 gph @110 mph in cruise and 20 gph at takeoff power.
- 36 gallons of fuel = short cruising range
- No filtering of oil other than screens, requiring oil changes every 25-50 hours, maximum.
- Smallish rudder is inadequate in strong crosswind conditions
- Poor ground handling if the tailwheel is worn out or improperly rigged.
- Wooden wings and stabilizers are a liability if not hangared and well-maintained. Requires very experienced eye to assess woodwork.
- Many examples that are still flying were built with casein glue and should have a complete rebuild. Glue joints cannot be trusted unless assembled with resorcinol.
- High empty weight (1400-1600#) makes ground maneuvering by hand difficult for one person on soft, rough, or inclined surfaces.

L-5 Observer

L-5 Ambulance

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