Dissecting The Light-Sport Aircraft Revolution

The final rule has arrived with a few surprises.

BY RON WANTTAJA

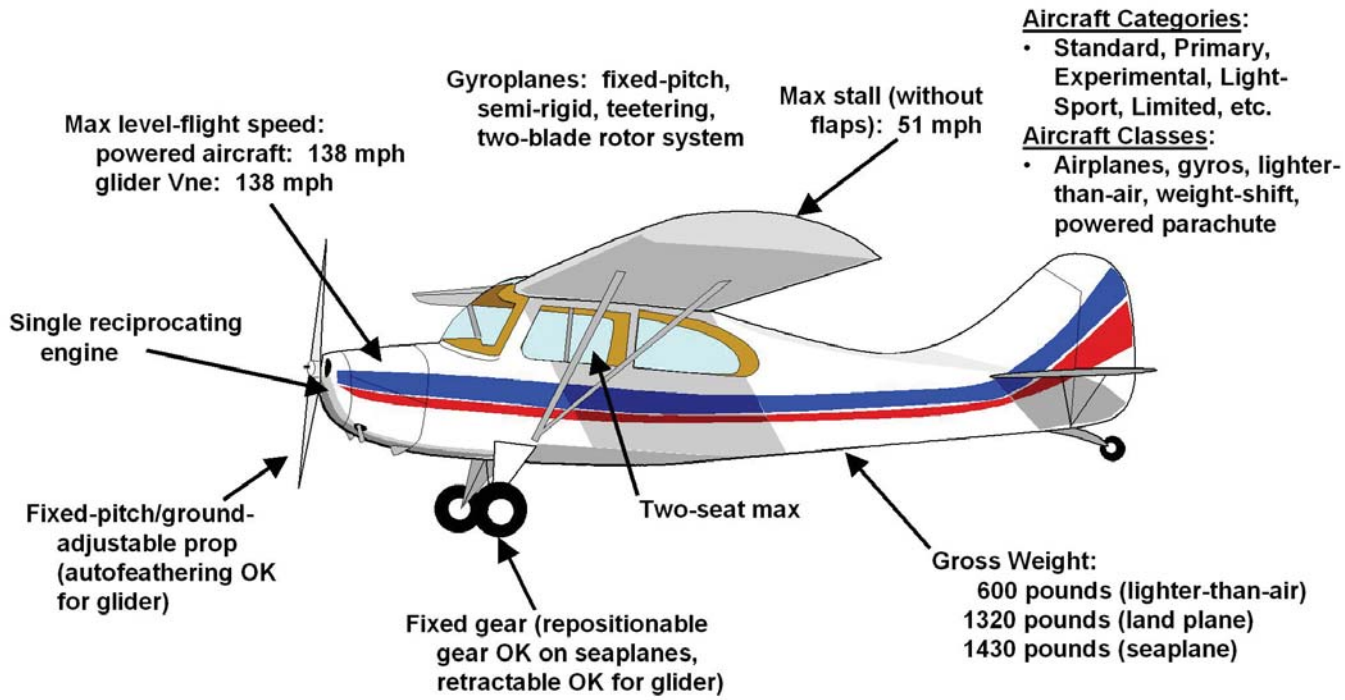

Figure 1: Features of aircraft meeting the Light-Sport Aircraft definition.

Amazing. One might be forgiven for believing that it would never happen. For thinking that the Sport Pilot/Light-Sport Aircraft proposals were forever doomed to spiral downward, never breaking past the event horizon of a bureaucratic black hole.

But even Stephen Hawking isn't right all the time. And Sport Pilot and Light-Sport Aircraft (LSA) are now an integral part of the aviation landscape, officially unveiled by the FAA on July 20, 2004.

Make no mistake about it: The two programs herald a major revolution in the American regulatory environment. Changes in the FARs alone amount to a hundred pages. This is the biggest change in aviation since a CAA official years ago said, "Let's have them paint on a number beginning with *N*..."

The final versions of the rules are a bit different from what had been released for comment as a Notification of Proposed Rule Making (NPRM). There are pleasant surprises; there are unpleasant ones.

The new rule was scheduled to become effective on September 1, 2004, though new planes and pilots won't be licensed until January 2005 at the earliest. Let's dive in and look at what's new.

The Linchpin

With changes in eight different parts of the FARs, one in Part 1 (Definitions and Abbreviations) ripples though the entire document. In 14 CFR Part 1, the FAA defines an entirely new type of aircraft—the Light-Sport Aircraft. The new definition comprises the aircraft characteristics illustrated in Figure 1.

The definition changed for the better since the original NPRM. The gross-weight limit was increased to 1320 pounds with another 110 pounds if the aircraft is designed to operate from water. The former two-tier limit on stall speed was changed to a straight 45 knots clean.

Gyroplanes are included, but not helicopters. Powered aircraft must have only a single reciprocating engine and can have a maximum level-flight speed of 120 knots (138 mph). If the aircraft is a glider, its never-exceed speed must be 120 knots or less.

Gliders can have retractable gear within the LSA definition, but not powered aircraft. Aircraft designed to operate either from land or water may only have *repositionable* gear. Initial interpretation of this aspect was that the gear

ILLUSTRATIONS: RON WANTTAJA

position could only be changeable on the ground or water, not in flight. However, the FAA clarified at Oshkosh *AirVenture* that the gear can be repositioned one time in flight to allow for the appropriate landing surface—water or land—regardless of the takeoff surface.

This new aircraft definition is the linchpin of most of the rest of the changes. The new Sport Pilot license sets the minimum requirements to fly aircraft that meet the definition. New, low-cost aircraft can be certified using a less complex process, with new repairman certificates to minimize the cost of keeping them maintained.

Two new classes of aircraft have been added: Powered Parachutes and Weight-Shift-Control Aircraft (what we call *trikes*). While intended for aircraft in the new Light-Sport category, Private and Commercial pilots will be able to earn ratings in these classes, too.

Finally, the FAA is tightening the screws on ultralights. The new rule eliminates the exemptions granted to allow two-seat ultralights to be used as trainers and insists that all ultralights now completely comply with Part 103 limits. However, the Sport Pilot and aircraft certification aspects of the new rules soften the blow.

Current homebuilt rules are not significantly changed. You can still license homebuilt aircraft, even those that qualify as LSAs, as Experimental/Amateur-Built and receive the traditional Repairman Certificate.

The Sport Pilot

The Sport Pilot license was developed in conjunction with the new definition of Light-Sport Aircraft. It recognizes that pilots flying simpler aircraft don't need much of the training included in the standard Private Pilot curriculum. It also includes the ability to use a driver's license in lieu of an FAA medical and a new Sport Pilot Instructor rating. Persons holding Recreational or Private licenses can exercise Sport Pilot privileges without needing additional training or passing any tests, as long as they comply with the medical and other limitations of the Sport Pilot rules.

The Medical Controversy

The new license includes one greatly anticipated feature—Sport Pilots are not required to obtain an FAA medical. The FAA accepts that the possession of a valid state driver's license demonstrates the holder has the minimum level of health necessary to fly these simple aircraft. As long as their driver's license is valid, the pilot is allowed to assess his or her health and determine if any medical condition precludes safe flight.

Unfortunately, there's one big exception. If a pilot had previously possessed an FAA medical and their most recent medical had been suspended or revoked, that person will *not* be able to use a driver's license in lieu of a medical. Similarly, if a pilot's most recently applied for medical has been *denied*, the same is true. And finally, the same situation holds true if the person's most recent "Authorization for Special Issuance of a Medical Certificate" had been withdrawn.

This was an unpleasant surprise for thousands of pilots who had hoped to return to the air. There are obviously some inequities. Take a Commercial Pilot with 5000 hours total time who is denied a medical after failing an FAA physical and a 20-hour Sport Pilot with the same medical condition. The 20-hour pilot is allowed to decide if his

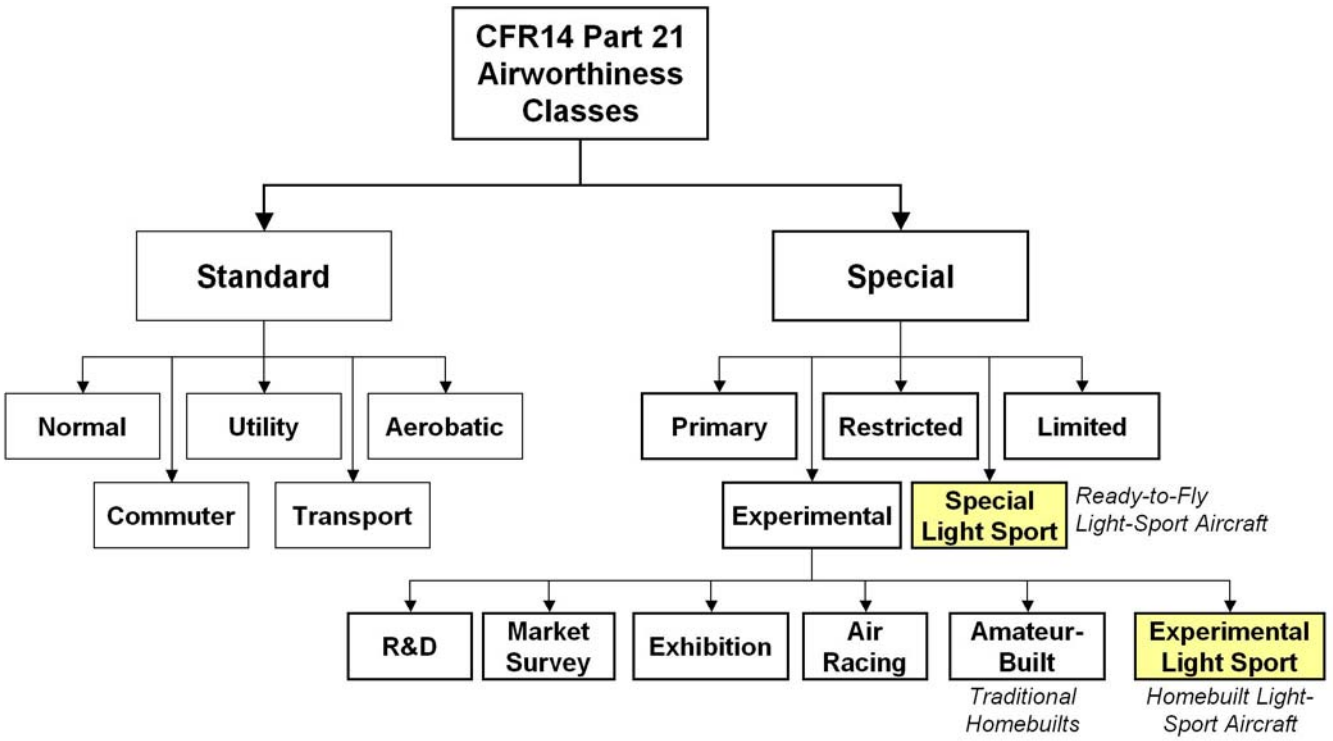

Figure 2: Two new classes of aircraft—Special Light Sport and Experimental Light Sport—were created by the new rule.

condition would permit him to safely fly a Piper Cub, but the vastly more experienced pilot isn't permitted to make the same assessment.

At press time, this subject is still being discussed by the FAA and the EAA. The EAA is asking for a simplified approval process that will allow these pilots to regain a level of medical certification sufficient for exercising Sport Pilot privileges. We'll announce any developments as they come.

Earning the Basic License

Sport Pilot students start out the same as any other student except they are not required to obtain a Class III medical. The aeronautical experience required for the license is pretty basic. Between 10 and 20 hours of flight time are required, depending upon the class of aircraft (airplane, glider, powered parachute, etc.). Ultralight pilots registered with FAA-recognized organizations receive credit for their previous flight time.

In addition to flight training, students must either receive ground training from an instructor or complete a home-study course on the usual topics including aerodynamics, weather and regulations. Both a knowledge test and a practical test (including both oral and flight portions) are required to earn the Sport Pilot license.

There is also a new flight instructor certificate with a Sport Pilot rating. Between 25 and 150 hours total time are required (depending upon the aircraft class), and applicants must pass a knowledge test and a flight test. Like the basic license, persons who are registered ultralight flight instructors with FAA-recognized ultralight organizations may use their ultralight time toward the aeronautical experience requirements.

Like other license holders, Sport Pilots must undergo a flight review every two years. Time flown as a Sport Pilot counts towards the aeronautical experience requirements for higher licenses.

Limitations

Sport Pilots are limited to aircraft that meet the FAA's Light-Sport Aircraft definition, but the aircraft do not have to be licensed as such. Sport Pilots can fly Standard, Primary, Experimental, Limited and just about any other category of aircraft. Any aircraft that meets the standard can be flown by a Sport Pilot.

However, while LSAs have a maximum level-flight speed of 138 mph, newly minted Sport Pilots are limited to 100 mph. They need additional training for an endorsement to allow piloting an aircraft capable of the higher limit.

Sport Pilots are limited to day VFR at altitudes of 10,000 feet MSL or below. They must fly with visual contact to the ground—no "VFR on top."

Figure 5: The definition of an Experimental Light-Sport Aircraft.

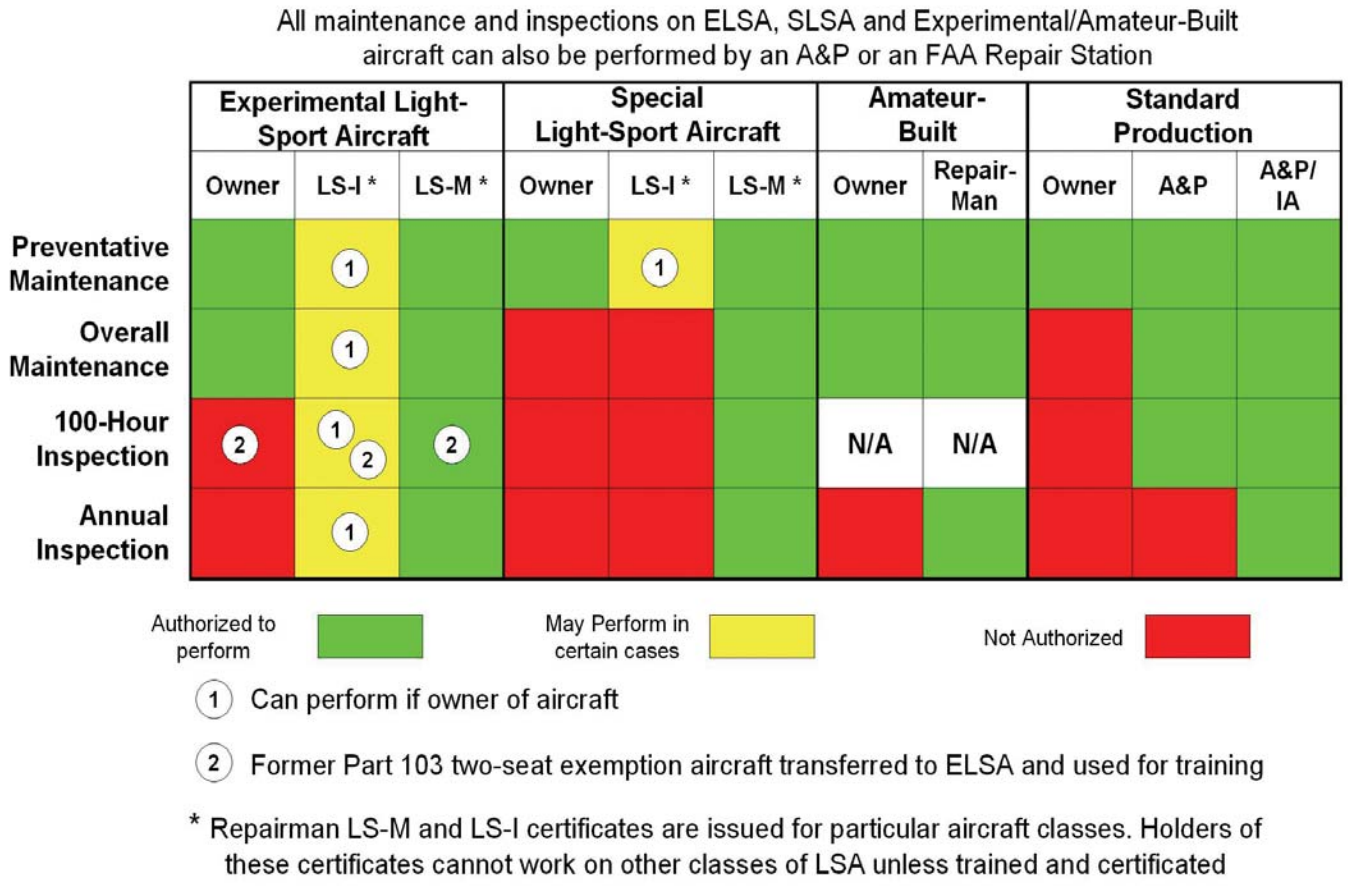

Figure 4: Qualifications required to perform maintenance and inspections on various aircraft categories.

Light-Sport Aircraft

CONTINUED

They cannot fly an aircraft for a sales demonstration or as part of a business, nor can they tow any other aircraft.

They cannot fly within Class B, C or D airspace unless they receive additional training and the appropriate endorsement. Even with this endorsement, a Sport Pilot is not allowed to land or take off from airports that require at least a Private Pilot license (these airports are identified in FAR Part 91, Appendix D, Section 4).

Finally, the license is not valid outside the U.S. unless that country grants specific permission.

Make and Model vs. Sets of Aircraft

Upon receiving your license, the FAA endorses your logbook as to the category, class, make and model of aircraft in which you may act as pilot in

	Airplane	Glider	Rotor/Gyro	LTA (Airship)	LTA (Balloon)	Weight-Shift	Powered 'Chute
Sport Pilot License							
Total Flight Time (Hours)	20	10	20	20	7	20	12
Dual Hours	15	10 Flights	15	15	3 Flights	15	10
Solo Hours	5	2	5	3	1 Flight	5	2
X-Country Training (Hours)	2	N/A	2	2	2	2	1
Solo X-Country Distance (nm)	75	N/A	50	25	-	50	10
Flight Test Prep Hours (within 60 Days of test)	3	3	3	3	3	3	3
Repairman Certificates							
LS-M Training (Hours)	120	80	N/A	80	80	104	104
LS-I Training (Hours)	16	16	N/A	16	16	16	16

Figure 6: Training requirements for Sport Pilot license and for LSA Repairman Certificates.

command. The original NPRM proposed that Sport Pilots would require a checkout and endorsement in every make and model of aircraft that they wished to fly. Comments received by the FAA convinced them to institute the concept of "sets" of aircraft.

The FAA and the industry are going to form a working group to identify groups of makes and models of LSAs with similar performance and operating characteristics. After gaining an endorsement for any particular LSA, a Sport Pilot will be authorized to fly any other aircraft within the same set without a checkout or logbook endorsement.

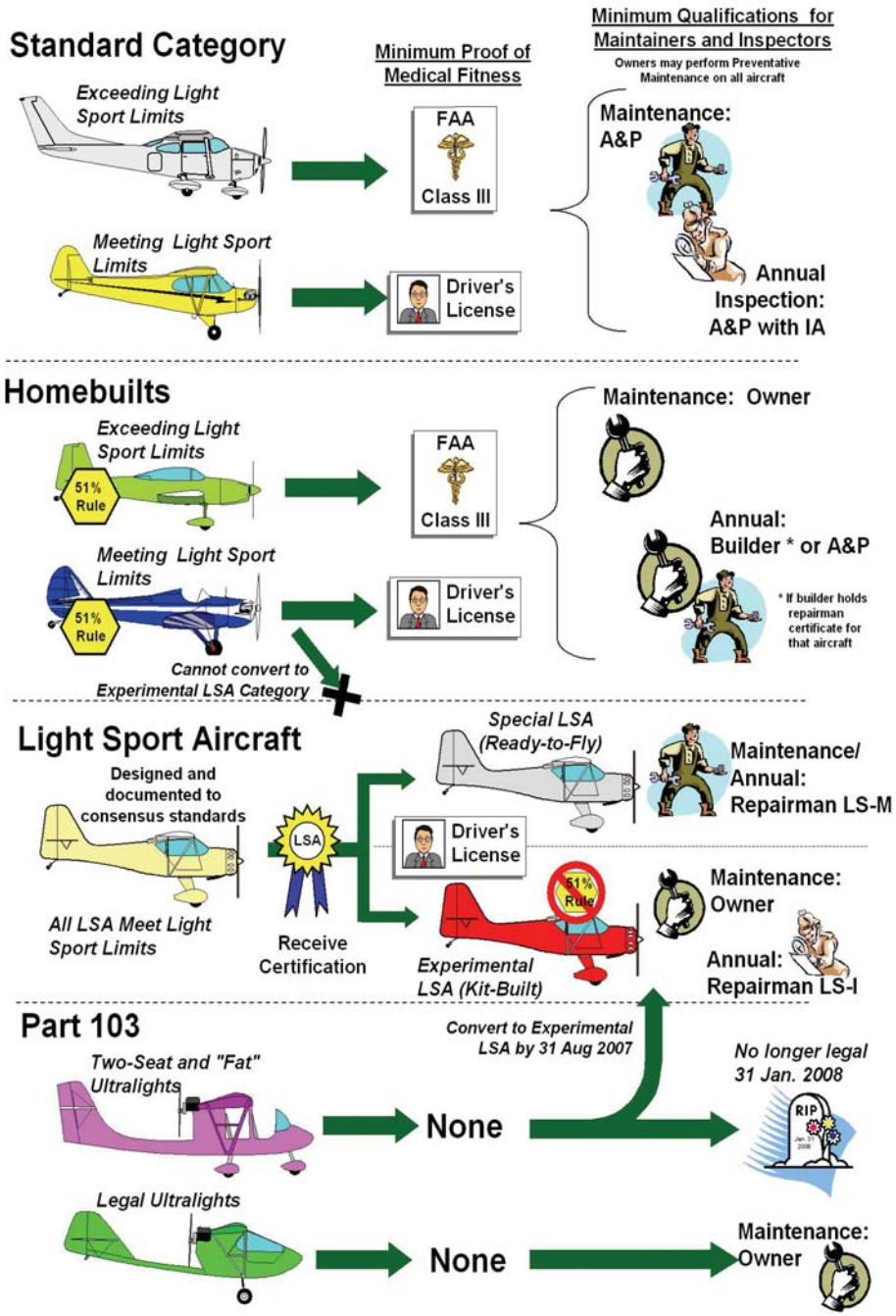

Figure 3: Medical certification requirements and maintenance and inspection requirements for four categories of aircraft.

Light-Sport Aircraft

All those new pilots need something to fly. Hence, the FAA created two new categories of aircraft: Special Light Sport Aircraft (SLSA) and Experimental Light Sport Aircraft (ELSA). The SLSA is for aircraft sold ready-to-fly, and ELSA are homebuilts. Figure 2 illustrates where these aircraft fall in the existing certification hierarchy.

The new categories engendered two new Repairman Certificates: Light-Sport Maintenance (LS-M) and Light-Sport Inspector (LS-I).

Special Light-Sport Aircraft

The key point in the Special Light-Sport Aircraft (SLSA) category, which will be sold ready-to-fly, is the use of *consensus standards*. As far as these aircraft are concerned, the FAA has gotten out of the business of approving aircraft designs.

The consensus standards will not only establish design, manufacturing, quality control and testing criteria, but also the required level of documentation, such as the airplane flight manual and maintenance procedures. They'll also address how aircraft companies must track safety-of-flight issues and how the company will ensure that SLSAs in the field continue to conform to the consensus standards. Several aviation organizations and a large number of aircraft manufacturers are working with the American Society for Testing and Materials (ASTM) to develop these standards. We expect that they'll be published in the coming months.

As written now, when applying to the FAA for certification of an aircraft, the company merely attests that it meets the consensus standards by issuing a Statement of Compliance with each aircraft serial number. However, there is discussion in the industry on the topic, and it remains to be seen whether the consensus standards will require any kind of independent audit or certification that an aircraft meets the standards.

None of the FAA's normal aircraft- and engine-certification regula-

tions are imposed, and SLSA manufacturers are not required to use FAA-approved components. But any component they use, such as an automobile engine conversion, must comply to the consensus standard.

The SLSA manufacturer is required to monitor the reliability of its products, and, if necessary, issue Safety Directives. Compliance is mandatory, though an owner can appeal. Also, if an FAA-certified part is used on the aircraft, it is subject to Airworthiness Directives.

According to the FAA, the first SLSA airworthiness certificates will be issued in January 2005, assuming the consensus standards have been finalized by then.

Experimental Light-Sport Aircraft

The Experimental Light-Sport Aircraft (ELSA) category was created to allow kit versions of Light-Sport Aircraft. Unlike "normal" homebuilts, ELSA kit buyers are not limited by the major-portion (51%) rule. ELSA kit manufacturers are free to sell their products at whatever degree of completion they wish, from 0% (plans-built) to 99%.

Of course, there's a catch. To qualify as an ELSA, an aircraft design must first be certified as a SLSA. In other words, the manufacturer must design and manufacture a prototype to the consensus standard and develop all the flight and maintenance instructions the standards require. Once they receive SLSA certification on this prototype, the manufacturer can build either ready-to-fly aircraft or ELSA kits.

While builders of 51% rule homebuilts can make whatever changes they wish, an ELSA builder must strictly follow the manufacturer's assembly instructions.

There are two other routes to ELSA. First, if an owner of a SLSA doesn't want to comply with a manufacturer's mandatory Safety Directive, they can re-certify the aircraft as an ELSA.

Second, owners of two-seat ultralights operating under the Part 103 trainer exemption and "fat" ultralights (those which do not meet Part 103) can convert to ELSA through August 2007.

LSA Maintenance

Like other categories of aircraft, the owner of any LSA is allowed to perform specific preventative maintenance tasks. Beyond that, permissions vary.

A&P mechanics are allowed to perform all maintenance, inspections and repairs on Light-Sport Aircraft. Similar authority is granted to those who gain the new Light-Sport Maintenance Repairman Certificate (LS-M). The LS-M certificate can be earned after an 80- to 120-hour course. An LS-M allows the holder to perform only those procedures which are spelled out in the manufacturer's maintenance manuals and in which he or she has received the necessary training.

ELSA owners are allowed to perform all maintenance on their aircraft. ELSA annual inspections may be performed by an A&P, an LS-M repairman or someone holding the other new Repairman Certificate—Light-Sport Inspection (LS-I). The LS-I certificate allows the holder to perform the annual inspection *only* on an ELSA that he or she owns. The certificate requires just 16 hours or training. Unlike the Repairman Certificates for Experimental/Amateur-Built aircraft, the LS-I certificate doesn't require the holder be the builder of the aircraft.

LS-I and LS-M licenses are not restricted to a particular make and model, a change from the original NPRM. A person with an LS-I can inspect any ELSA they currently or subsequently own.

Limitations

SLSA aircraft can be rented, leased, used for flight instruction and can tow either LSA or ultralight gliders for hire. Remember, though, that persons with Sport Pilot licenses cannot fly tow planes...the tow pilot must hold a Private license or higher. ELSAs can also tow gliders for hire, and, until 2010, the owner of an ELSA can provide flight instruction for hire in his aircraft.

When either SLSAs or ELSAs are used in for-hire operations, the aircraft must undergo 100-hour inspections by an LS-M or A&P.

As part of the consensus standard, SLSA manufacturers specify the allowable replacement parts and any allowed alterations. If unauthorized parts are installed or alterations are performed other than those approved by the manufacturer, the aircraft is considered in violation of the consensus standard and is not airworthy.

One final fillip in LSA certification: Rotorcraft, including gyroplanes, are *not* included. Other than two-seat ultralight training gyros transitioned to ELSA, gyros cannot receive either SLSA or ELSA certification. Persons flying as Sport Pilots *can* operate gyroplanes, as long as the gyro conforms to the general definition of an LSA. But the gyros themselves will have to be certified in the Experimental, Primary or Standard categories.

Living the Revolution

Revolutions are generally hard on both participants and bystanders. But the Sport Pilot/Light-Sport Aircraft revolution is likely to be different. Having more people become pilots is a good thing—it'll help increase aviation's political clout, and it will stimulate the aircraft industry. The new LSA category promises good new aircraft at affordable prices and a growing market for traditional aircraft as Sport Pilots look to move up to faster and more capable planes.

The Experimental/Amateur-Built category will benefit as well. Planes like the Pietenpol and Baby Ace may not get certified as Light-Sport Aircraft, but engines and other components developed for the LSA market will be excellent choices for small homebuilts.

There are some disappointments and still some confusion to be cleared up. But when the smoke clears, hopefully the rule will prove a success for the entire aviation community.

FOR MORE INFORMATION, visit www.kitplanes.com/sportplanes/ for links to the original FAA documents and additional information on the new rule.