# LSA Maintenance: Owners Have Familiar Options

BY DAVE HIGDON

More than three years since its final acceptance, the rules and regulations for the sport pilot and light-sport aircraft continue to suffer from a persistent level of confusion within the general aviation community.

Sometimes problems arise regarding privileges, other times compliance and approval. Often, incorrect understanding stems from incomplete knowledge of a subtlety of these regulations.

Whatever the cause, the points of confusion run the gamut — from a different scope of privileges in LSAs varying according to the license to, conversely, privileges sport pilots enjoy in aircraft approved under roles other than the ASTM consensus standards.

Some of these subtleties exist within the realm of FARs applying to LSA maintenance: who can do the work; what work can they do; what qualifies them to perform the work.

For maintenance shops, the distinctions — understood and aptly worked — could open the hangar door to new customers and the possibility of tapping a source for maintenance technicians who might not currently see today's standard A&P certificate as a potential career path.

Photo courtesy Cessna Aircraft.

*The Cessna Sport is a proof-of-concept airplane, first flown in October 2006. Primarily constructed of aluminum, it is powered by a Rotax 912 and sports dual control sticks.*

Misapplication of these rules — through misunderstanding or otherwise — as with anything regulated by our friendly aeronautical authorities, puts the errant inline for sanctions and penalties similar to making the same kind of mistake in other areas of aviation.

Still, those differences, once understood, are fairly easy to fathom and follow.

## So Many Changes, So Very Quickly

In a way, this confusion is understandable. The single-act promulgation of new rules with such sweep and scope — and covering both a new category of license and a new stratum of aircraft — inundated even those familiar with the proposals through their active participation in the development.

Between publication of the proposal, the comment period, publication of the final rule and its effective date, bits and pieces of the good and bad of the proposal received varying degrees of reporting. The public didn't necessarily track the ebb and flow well enough to pick up on some of the more nuanced aspects of the rules

Just look at the subtleties of aircraft open to the holder of a sport pilot ticket. The range actually exceeds the inventory of models approved with statements of compliance under ASTM rules — the rules which, by incorporation, the FAA adopted by changing several FARs, FARs 61, 91, 43 and 65, to name but a few.

As desired, a sport pilot certificate holder enjoys all the available privileges of the license in special light-sport aircraft (S-LSA). Those same privileges apply to experimental light-sport aircraft (E-LSA), a category allowing for owner assembly of a kit exceeding 49 percent complete.

But the sport pilot ticket also allows the holder to fly any aircraft approved under the old CAR 3 or FAR 23, as long as the aircraft itself fits within the parameters of the general LSA rules: 1,320 pounds maximum weight, 120 knots top speed, two-place, etc. And regardless of the equipment, the sport pilot may fly only within the limits of the license itself: day, VFR, not above 10,000 msl, no night, IFR, Class B, Class C, etc.

Got that? Simple, right?

Well, for some people, the confusion seems to start here.

According to the letter of the FARs, an appropriately qualified pilot may fly the very same LSA at night and IFR, as long as such flight falls under the manufacturer's prescribed operating limitations and the installed equipment meets the requirements for the conditions.

This little nuance made some question the wisdom of allowing flight at night in an S-LSA "given the limits of the sport pilot certificate," as one pilot told me.

Nonetheless, the LSA flexibility varies little from a situation in which a non-night-qualified or non-night-current, non-instrument pilot flies an IFR-legal airplane — the aviator can't legally do IFR or night, even if the conveyance can.

Thus, we hear these little conundrums misunderstood or misinterpreted.

Private pilots often miss this subtlety. The operating privileges and restrictions attach to the pilot's qualifications, just as the aircraft's equipment must match those required for the type of operations.

It's not difficult to conceive how confusion continues to arise over the area of LSA maintenance, upkeep and condition inspections — what the rest of aviation terms "The Annual."

Let's take a look at the parameters of who can work on what and the training required by the LSA rules.

Photo courtesy Jabiru Aircraft.

*The Jabiru J170 light sport trainer is manufactured in Shelbyville, Tenn.*

## Maintenance Flexibility, But No Panacea

Maintenance rights, requirements and privileges constitute the second front among the lesser-understood issues revolving around the sport pilot certificate and the LSA segment itself — lesser understood both outside of and within the LSA community.

"An LSA owner can go to school for a couple of days and come out with authorization to conduct the required annual 'condition inspection,' right?" a long-time pilot asked recently.

Well, yes, maybe — but not necessarily.

This piece of confusion comes along more frequently than others — and understandably. Before explaining further, let's resolve a couple of issues right off.

First, it's worth knowing the same FAR 43 range of owner-performed maintenance — preventative and routine items, such as oil changes, bulbs, spark plugs, wheels and tires — remains available. However, the sport pilot may exercise this privilege only on an owned aircraft.

For CAR 3/FAR 23 aircraft and a private pilot or better, the regulations allow owners and operators both this avenue.

Second, let's define some terms.

## Repairman Certificate X2?

### The Inspection Authorization

In reality, within the bounds of light-sport aircraft, the FAA created two levels of repairman certificates: one with inspection authorization, the other with maintenance authorization.

How the FAA chose to define these terms essentially upends general use of the inspection authorization and complicated the long-used repairman certificate.

For years, the original builder of an experimental/amateur-built aircraft enjoyed the option of applying for a repairman certificate, which allowed an owner the latitude to maintain and repair his or her airplane and any non-FAA approved components, such as non-certificated engines. The annual condition inspection also fell under this repairman certificate.

Under the parameters of the LSA rules, the light-sport repairman with inspection authorization, or LSR-I, allows the holder to perform the annual condition inspection and return-to-service on only an owned E-LSA — one approved after owner assembly or one converted from S-LSA to E-LSA.

It takes only an application to the FAA by the owner of an S-LSA to take the LSA from special to experimental.

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Some individuals might consider the change worthwhile for the privilege of handling their own condition inspections. But as industry insiders point out, this change in approval involves a change in the limitations on the aircraft and typically reduces the changed plane's market value.

Such a changed plane may return to its S-LSA status and regain the wider set of operating limitations only at the hands of the original manufacturer.

Still, some owners may consider this certificate worth having — if only for the knowledge and insight into their planes available from the training.


Photo courtesy Dynon Avionics.

***A Flight Design CT is equipped with Dynon's EFIS D100 and EMS D120, the Bendix/King KMD 150, an intercom, and a Becker comm/transponder package.***

## Repairman Certificate X2?
### The Maintenance Authorization

It takes a light-sport repairman certificate with a maintenance authorization, or LSR-M, to conduct the yearly condition inspection and 100-hour inspections as well as to perform general maintenance and repair.

Or, as the rules allow, a duly licensed A&P also may perform these duties.

Nonetheless, under either piece of paper, the maintenance provider must receive type-specific training approved by the manufacturer and perform the work to standards of the LSA-maker's origin — similar to a fresh A&P rated to work on sheet-metal piston planes who must gain additional training and qualifications to work on a composite, pressurized turbine-powered bird.

The path to the LSR-M is where the rules could provide a path to attract and qualify new talent.

## Getting LSA Maintenance Rated:
### Days or Months, Not Years

The training required to obtain the two light-sport repairman certificates pales compared to the normal time a student takes to work through the A&P syllabus, demonstrate the various requirements and pass the tests.

Qualifying for the LSR-I, or light-sport repairman with inspection authorization, requires a 16-hour course — two days — and the details tend to be fairly generic. The course must be specific to one of the various LSA categories: fixed-wing; weight-shift; powered parachute; lighter-than-air; and glider.

The certificate carries neither an expiration date nor any renewal requirements, and exercising the privileges of the LSR-I entails no further model-specific training.

The LSR-I earned, however, is category specific, which means the pilot needs to take a separate 16-hour class for each category, from fixed-wing to glider.

Obtaining an LSR-M, or light-sport repairman maintenance authorization, requires anywhere from 80 hours to 120 hours of training and qualification, time dictated by the category of the LSA.

The LSR-M for the prototypical fixed-wing LSA category requires 120 hours, while the lighter-than-air and glider categories come in at 80 hours, and powered parachutes and weight-shift craft sandwiched between the extremes at 104 hours.

Earning the LSR-M, however, satisfies only the first step in the process of training and qualifying to work on a particular model. Additionally, the FAA requires the LSR-M to receive product-specific training before exercising those privileges.

After the product-specific training, the LSR-M must work to the approved standards of maintenance established and approved by the manufacturer to cover the peculiarities and requirements for fixing and maintaining a specific model.

In general, according to a provider of type-specific training for one model, factory training adds another 40 hours of type-specific and hands-on training to the time spent earning the LSR-M. This means an enterprising shop with an energetic prospect could theoretically go from zero time to model-qualified and FAA-legal in four weeks — three (120 hours) for the base LSR-M, plus another week, or 40 hours, to receive the type-specific education.

Rainbow Aviation in Coming, Calif., currently is the only company FAA-approved to provide both the LSR-M

and LSR-I classes. The cost for the weekend-scheduled, two-day course for LRS-I generally is less than $400. The cost for the three-week, 120-hour LSR-M class varies according to locale and the availability of special discounts the company offers — but figure near $5,000, plus expenses.

Add in another $1,000 for model-specific training, and a person can, at least theoretically, go from zero time to LSR-M qualified for a training investment of about $6,000, plus accommodations, meals and travel.

Given this opportunity, the option of taking a month to train holds some appeal to many an LSA owner — again, if only for the increased knowledge and understanding the training brings to the owner and pilot.

But for the ambitious or frugal owner, the four weeks of training offers the potential for considerable long-term savings. Savings on condition inspections and long-term maintenance can add up to cover those costs in as little as three to six years.

Annual condition inspections, 100-hour inspections (for rental S-LSAs) and other routine maintenance fall under this certificate. For a LSA owner who keeps the same plane for years, the juice could be well worth the squeeze.

One limitation worth remembering: The LSR-M approval does not allow the holder to work on aircraft the FAA approved under CAR 3/FAR 23 — even if those aircraft fall within the LSA definition.

## Potential Beyond the LSA

For the shop owner interested in netting some of the work growing out of expanding S-LSA registration numbers — nearing 2,500 as of last check — LSR-M and specialty training open an avenue to hiring new help trained and priced to the light-sport market without cannibalizing the shop's existing A&P staff at prices that could discourage the LSA client.

Additionally, for the non-owner interested in a career in aviation, the LSR-M offers a fast-track onramp into the business through the light-sport industry.

Thanks to the FAA, the LSR-M certificate opens the door to other, wider opportunities outside of and within the sport-aircraft arena.

For example, a LSR-M can serve as a steppingstone to an A&P and DAR rating. Individuals with LSR-Ms can apply for authorization to take the A&P written and practical exams for general aviation.

According to FAA Order 8130.33, this includes:

- Anyone who holds a light-sport aircraft repairman certificate maintenance rating and has performed a minimum of five condition inspections on light-sport or two-place ultra-light training vehicles of the same class and complexity for which authorization is sought.
- A repairman who keeps a portfolio of his work and has worked in the field for 30-plus months under his own supervision.

While Rainbow Aviation is the only company publicly offering the LSR-M course, it only offers the course for airplane, weight-shift and powered-parachute categories. The company also offers the LSR-I course for the same categories several times a year.

Model-specific training currently available is generally offered through the factory, dealers or distributors.

## Aero Technical Institute: CT-Specific Training by a CT Distributor

Florida's Aero Technical Institute is an excellent example of a training provider geared to a specific model: the Flight Design line of CT S-LSAs handled by its sister company, Lockwood Aviation in Sebring, Fla.

According to Dean Vogel, an ATI instructor, the CT class evolved as the factory first established baseline maintenance and training requirements, then it expanded both.

"Initially, Flight Design made the requirement a Rotax school," Vogel said. "Then, the company developed an entire airframe course for people to work on a CT."

The 40-hour course spends three days on the airframe, the avionics, flight-control systems, landing gear, assembling and disassembling the plane, and servicing the standard-equipment BRS airframe parachute and its solid-fuel rocket.

The remaining two days, Vogel said, go toward service instruction for the Rotax UL912 engines used on the CT.

"If you take the CT-specific course we offer, you also get the basic Rotax service course — systems, installation, operational and inspections," Vogel said, "which covers up to what a normal 100-hour inspection would cover."

Because Lockwood Aviation also is a long-time Rotax distributor and service center, ATI offers more advanced courses for the Rotax four-strokes, 80-, 100- and 115-horse turbo-charged.

"We offer another two-day course, the Rotax maintenance course, and what it covers includes troubleshooting problems and disassembling components that it makes sense to remove while the engine is still hanging on the airframe," Vogel said.

"We've had quite a few owners who've come through the CT course who weren't LRS-Ms or A&Ps," he said. "They came through the course because they wanted to know more about their airplane."

Knowing more about how a plane works is seldom a waste as far as pilots

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## LSA MAINTENANCE

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are concerned. Knowing about the specifics of LSA maintenance also could prove fruitful for any shop interested in growing its business or expanding into a new arena.

From the looks of the industry to date, the light-sport market is far from reaching its potential — or its peak. ❑

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*If you have comments or questions about this article, send e-mails to avionicsnews@aea.net.*