



**A**t EAA AirVenture Oshkosh 2005, 13 aircraft on display in the Light-Sport Aircraft (LSA) Mall—which put LSA on center stage just south of AeroShell Square—had their airworthiness certificates as special light-sport aircraft (S-LSA). (A 14th aircraft, the Savage Cub, exhibited in the North Commercial Area, also earned its S-LSA certificate, but only had one aircraft to display.) That 14 aircraft earned S-LSA certificates

in the short span of three and a half months since the FAA announced the availability of the final consensus standards for LSA-category airplanes is an unprecedented accomplishment. No one can recall when so many airplanes have been certificated in such a short time.

One of those baker's dozen plus one is the Jihlavan (pronounced "YEE-la-von") KP-5, better known to Americans by its importer's name—Kappa Aircraft KP-5. It is an elegantly

styled, all-metal LSA with a high-visibility cockpit, a high-performance wing with well-regarded Fowler flaps, tough trailing link landing gear, and the popular Rotax 912 powerplant. In its ready-to-fly form, the KP-5 sells for about \$88,500. But, Edwin Miller, president of Kappa Aircraft based in Pocono Pines, Pennsylvania, says interested buyers should check with his staff to determine the current price depending upon the euro exchange rate.

# An All-Me

Kappa's KP-5...a great trainer and more!

## Rising From the Fall

Like many contemporary Eastern European producers, Kappa 77, a division of Jihlavan, started life as an aircraft manufacturing facility after the Soviets left the Czech Republic. It took a few years of difficult adjustment before countries like the Czech Republic began to rebuild private businesses, which had existed widely before the Soviet occupation.

Kappa 77 and Jihlavan worked together to produce the KP-5 that Kappa Aircraft distributes to American buyers as an S-LSA. Jihlavan, a 250-employee component manufacturer specializing in aeronautical hydraulics and actuators, had always provided the facility and workers for Kappa. It began assisting Kappa 77 financially in 1998; in late 2004, when Kappa 77's financial difficulties increased, the larger company purchased all design rights and continued production of Kappa's aircraft. About 90 employees are involved in the Jihlavan airplane division. Ed said, "All the same employees are making Kappa airplanes, so we have labor continuity." (Jihlavan manufactures components for Boeing, General Electric, SAAB, and many more aerospace companies. Since organizing in 1952, Jihlavan has built parts for MiGs, L-39s, and many other aircraft.)

Antonin Pistek, the chief designer for the KP-2U Sova, an airplane much like the KP-5 but with retractable gear, also led the design team for the KP-5. As it happens he is also leading the design of Evektor's VUT 100 Cobra, a five-seat general aviation aircraft that made its debut at Aero 2005 in Friedrichshafen,

Germany, earlier this year and was displayed at EAA AirVenture by Evektor importer, Sport Aircraft International of Kerrville, Texas.

## The Americanized Kappa KP-5

For the U.S. market, Jihlavan had a delicious opportunity. It could increase the aircraft's gross weight above any previous limits allowed (by regulation) in countries where the airplanes are sold. In Australia, the KP-5 is approved to a maximum takeoff weight of 544 kilograms, or 1,199 pounds, which is what Kappa Aircraft uses for its S-LSA version. Limited to 120 knots maximum speed (138 mph), the fixed-gear KP-5 with wheelpants fits the LSA rules well and is less complex to operate, exactly as the FAA intended for LSA.

As Americans have looked over the all-metal, low-wing KP-5 at air shows and on Sport Pilot Tour stops, everyone seems to notice its distinctive Fowler flaps first. Jihlavan's engineers, led by Pistek, extended the aircraft's Fowler flaps well beyond the wing's trailing edge, adding considerable square feet of area. The flaps also arc downward with a smooth gap to supply optimal airflow over the surfaces.

The flaps are controlled via mechanical linkages and are quite effective with 10 and 35 degrees of deployment guided by a track arrangement. In flight you can see and feel the effect of their moving aft to the first

notch; then you sense a noticeably separate action as they descend to the second position.

Switches on either the left or right joystick operate electric in-flight trim—but not both to avoid pilots simultaneously moving that control. As is often the case when installed in this location, the switch offers a fairly fast response rate so you hit the button a series of times but rarely hold it down. A small indicator mounted to the left of the air-speed indicator on the far left side of the instrument panel provides a good visual



display of which way you're moving the trim. You also can feel the effects of trim quickly, which is good because the indicator is not a ready glance for pilots in the right seat.

Each joystick also has a push-to-talk switch allowing you to keep your hand where it belongs during takeoffs and landing. Across the panel all electric switches are guarded to prevent their inadvertent movement.

The KP-5's panel clearly has room for any instruments that pilots may wish to have. A moving map instrument in the center of the panel offers pilots the

# etal Beauty

DAN JOHNSON



BONNIE BARTEL

of that aircraft have appreciated the extra room.)

The KP-5's cloth-covered seats, though not heavily padded, proved quite comfortable. Four-point seat belts are standard, and the whole interior has a carpeted finish; simple, but nicely achieved. Ed advised that a new seat design that is shaped better to the human form is used in later model KP-5s. For the American market, Jihlavan Airplanes will supply aircraft to Kappa without interior appointments. AirTex of Fallsington, Pennsylvania, will provide the interior appointments to allow greater customization for American buyers.

Visibility through the KP-5's large, aft-latching canopy is broader than it may appear, even to the aft. In the heat of Florida, where I flew the aircraft, the cabin didn't warm up uncomfortably thanks to air inlets. Future KP-5s will be supplied with a tinted canopy.

The canopy latches fore and aft, making for a secure closure. In the aircraft I flew, the latch control was on the left side, but it has been redesigned and mounted instead on the overhead canopy support with pins that secure the sides of the canopy. Now, it can be opened or closed with one motion, and either occupant can reach the latch handle.

The KP-5 has a large baggage area capable of holding 66 pounds aft of the seats, which flip forward for easy access to the area. A lever between your legs adjusts the seat position to eight different locations. Using a technique similar to removing a drawer from a desk, you can easily remove either seat to fill the cargo area to its maximum allowed capacity.

During our test flight, Ed offered the use of his Bose noise-canceling headsets, and they performed brilliantly. Ironically, afterward my recorded notes were difficult to understand because the engine noise was greater than I realized, so I didn't talk as loudly into my recorder as I frequently do. When I removed my headset for a short check, though, the noise level didn't seem much different than other airplanes in KP-5's class.

opportunity to use the latest technology, and an angled space in front of the left-seat pilot is intended to hold attitude indicator.

The throttle lever, which is located between the seats in a center console (along with the flap handle), was a bit of a reach from the right seat, which sits aft of the left seat by about 8 inches. However, typically, the left-seat pilot will handle most throttle action, and the reach from that seat is reasonable.

That staggered seating allows each

pilot to see well left and right and gives the left-seat pilot a definite pilot-in-command feel, which should work well for instructors to instill confidence in their students. It also ensures that two large people won't be constantly rubbing shoulders. And, it allowed the KP-5's engineers to keep the cabin width narrower, thereby improving performance and fuel consumption. Some may not care for this arrangement, but it has clear benefits. (Earthstar Aircraft's Odyssey uses a similar seating arrangement for the same reasons, and owners

## A Sweet Flying Experience

However, my recorder did easily capture this comment I made while Ed and I flew around central Florida: “The KP-5 is one of the best handling aircraft I’ve had the pleasure to fly.” Harmony in the controls is quite good. Pressures are light, and response is crisp without being sudden. Experienced pilots will appreciate its fine combination of control ease and authority. Yet, the KP-5 also should make a good trainer; its sturdy landing gear serves this purpose.

The controls weren’t at fault, but I tended to raise the nose too much, and we continuously climbed gently when I didn’t mind the altimeter. When the nose is in the proper attitude, it appears you are beginning a shallow dive. However, the good visibility over the nose creates a favorable impression once you adapt to this positioning.

The 100-hp Rotax 912S engine provided terrific performance at its near 1,200-pound gross weight. (Ed and I actually flew at a weight modestly less than the gross weight allowed.) Climb rate was 800-900 fpm at 2,000 feet MSL on an 80°F, moderately humid day in central Florida.

At about 4900 rpm, we were running 115-120 mph. Apparently its lighter weight and leaner cabin width help the KP-5 slip through the air easily.

Engine idle sink rate was also good, averaging about 450 fpm with some portion of the two-minute test showing 320 fpm, an excellent performance among light aircraft (and noticeably better than most GA aircraft).

The KP-5 designers report that with retractable gear and an adjustable prop, the aircraft’s glide ratio can reach 18-to-1. Of course, with its fixed gear and prop, the LSA version performs closer to 14-to-1. Regardless, the KP-5 clearly stretches a glide well and sinks slowly.

Every one of my landings in the KP-5 went exceedingly well; I credit the airplane more than my technique. Given the combination of a low sink rate with effective flaps and good, low-speed handling, the KP-5 accommodates takeoffs and landings with ease.

During the flight, I performed approach and departure stalls plus

“The KP-5 is one of the best handling aircraft I’ve had the pleasure to fly.”

accelerated stalls. Most of them fell to the right a little faster than I’d consider optimal, but recovery was always easy. In no case did I require any power to recover from a stall with minimal altitude loss.

After noting the right-hand break, I paid extra attention when I did accelerated stalls to the right. But even with the wing bank at about 45 degrees, the KP-5 rolled out level, confirming the reasonable stall characteristics of this airplane. My speculation is that this good quality may result from slipstream effect on the tail.

In accelerated stalls, a pronounced burbling identified incipient stall. This was less evident in straight-ahead stalls, but when the nose fell through, it proved quite a benign action.

All stalls came at low speeds. Given instrument error at the bottom of the range, I don’t know if I can believe the 38 mph indicated. This represents only 33 knots, making it 12 knots slower than the maximum for LSA. Regardless of the actual numbers, it’s clear the KP-5 stalls very slowly, a great attribute for an instructional aircraft. All stalls were done without using the superb Fowler flap system.

Although the KP-5 slows down well, as proved by my experience, controls

remain responsive right down to minimum flying speeds. With those Fowler flaps extended well aft, Kappa seemed content flying at 45 mph.

You may deploy the flaps at 68 mph. However, deploying them requires a physical effort to get to the second notch. My in-flight recorded notes reflected that I had to yank on the lever to engage maximum flaps. A better technique would help and perhaps a bit of lubrication was needed. And, I may have been deploying them at a speed slightly higher than the recommended 68 mph. Design engineers noted that the use of mechanical actuation keeps pilots from too easily lowering the flaps above that recommended speed.

Fuel, your choice of low-lead avgas or high-test auto gas sources, is stored in 8.5 gallon tanks in each wing. You can add two more 4-gallon tanks for a total of 25 gallons, which equates to more than five hours of range and could take you as far as 750 miles on the aircraft’s 4 to 4-1/2 gph burn rate. You can switch between the KP-5’s tanks in flight, which is unusual in an LSA, allowing pilots to burn one side more than the other to aid lateral balance.

I was impressed with how well the engine installation provides good cooling. We flew in Florida in late October, and conditions were still warm and humid. Never did I note the oil or cylinder head temperatures rising into the higher green ranges. When flying in colder months, Ed uses some baffling to keep temperatures in range. The engine installation also succeeds at isolating vibration from the Rotax 912S powerplant.

Toe brakes are installed only at the left-seat position—or the right if preferred—but not both due to limitations in the hydraulic reservoir. To date, most American customers have ordered an optional handbrake mounted on one or both joysticks. The handbrake is also hydraulic. If buyers choose this option, the rudder pedals can be adjusted for greater seating versatility.

## Catch a KP-5

At the KP-5’s selling price in the neighborhood of \$88,500, you get

# A Glimpse at the S-LSA Certification Process

**TOM GUNNARSON**

Recreational aircraft ownership can bring great joy and satisfaction. From the pride of knowing a plane is solely yours to outfitting it to your personal tastes to the convenience of flying it where and when you desire, private ownership can bring many joys.

The new sport pilot and light-sport aircraft (SP/LSA) regulations are reawakening interest in basic flying in non-complex, two-seat aircraft harkening to the golden age of aviation when requirements for personal flight were minimal. New-age materials, components, and manufacturing processes, along with an existing worldwide industry producing aircraft to strict weight limits, have created a plethora of ready-to-fly aerial deuce coupes just waiting for the right regulatory environment to burst on the American recreational aviation scene. Not surprisingly then, the first aircraft certificated in the special light-sport aircraft

(S-LSA) category were imports from Europe where manufacturers have been building these aircraft for 20 years.

The S-LSA certification process includes many elements found in standard, production-certificated aircraft manufacturing. Unique to LSA is the use of industry-generated consensus standards in lieu of FAA standards. Also, instead of the FAA certifying that a manufacturer meets the standards, it relies on a declarative system whereby a manufacturer presents documentation to the FAA showing that it has complied with FAA regulations and the consensus standards specific to LSA.

Are you curious about this new development in the lighter side of general aviation but hesitant to jump in and buy one of the growing number of ready-to-fly models without knowing more about this new certification process? Let's take an abbreviated look at the process and follow a real-life example of S-LSA certification from start to finish.

## A Three-Step Process

A manufacturer wishing to produce ready-to-fly aircraft in the LSA category must complete three basic phases before a salesperson can hand the keys over to a new owner.

Step One—The ASTM standard for the design and performance of LSA describes the minimum standards a manufacturer must meet for the design, construction, flight envelope, strength, and controllability of an LSA. A manufacturer must document every step and have test results to back them up. A manufacturer must also produce a set of manuals including aircraft operating instructions, maintenance and inspection procedures, and a flight-training supplement. The manufacturer must also establish and maintain a quality assurance program and a continuing operational safety plan.

Step Two—Once an aircraft meeting the LSA definition and complying with all ASTM standards is produced and all documentation



**Straps on the vertical tail unit and index numbers at each bulkhead on the KP-5 production prototype are remnants of the structural testing performed to verify calculated load strength. A report of the test procedure and results, along with any subsequent modifications to meet the certification standard, was produced for each test area. In the background workers assemble what will become the first KP-5 to be issued an S-LSA certificate.**



**An incoming supply of flap tracks have been inspected and placed in a controlled parts storeroom, thereby meeting an early step in the factory quality control system. Documents follow each part through the production process including design drawing, assembly instructions, inspection records, and finally to the permanent archives for each aircraft off the assembly line.**



**Prior to the first S-LSA inspections for the KP-5, Kappa Aircraft owner Edwin Miller (on right) and LSA consultant Tom Gunnarson visited the geographically closest MIDO in New Cumberland, Pennsylvania. A morning was spent reviewing the compliance documentation and the inspection process with MIDO personnel Robert Costa (left) and Henry Cooper (center).**

many items as standard equipment, including: two hours of orientation flying; an Icom 200 radio and antenna; basic VFR flight instruments and basic engine instruments; an ELT (required on an LSA but not always included in the base price); hydraulic brakes; dual controls; cockpit lock; electric

trim; two (tail and belly) anti-collision lights; fuel gauges; fuel pressure gauge; oil temp; tachometer; oil pressure; CHT; battery recharging indicator; 12-volt socket; engine hour meter; VSI; altimeter; ASI; compass; and bank indicator. Of course you can add more accessories or finish your interior more

expensively, but the base price airplane provides all you need.

Fortunately, Jihlavan's production capacity should allow many of these wonderful airplanes to arrive in America. Based on what I've seen from mixed audiences of new, returning, and current pilots, the low-wing KP-5 is well

is prepared, the manufacturer (or agent, if the aircraft is imported) can request an airworthiness inspection of the aircraft from the local FAA office—either a Manufacturing Inspection District Office (MIDO) or Flight Standards District Office (FSDO). Prior to the inspection, the manufacturer meets with the MIDO or FSDO to review the compliance documentation.

Step Three—The airworthiness inspection consists of a general airworthiness inspection along with a records inspection and document review. LSA must have a completed Statement of Conformance form along with traditional registration and markings. Unique placards include “Light Sport” and a passenger warning stating, “This aircraft was manufactured in accordance with LSA airworthiness standards and does not conform to standard airworthiness category requirements.”

When the designated airworthiness rep-



**Checklist in hand, FAA MIDO inspector Robert Costa inspects the KP-5 cockpit with Edwin Miller providing answers as questions arise.**

resentative (DAR) or FAA inspector finds everything in order, he or she will issue an airworthiness certificate and operating limitations. The aircraft is then ready to supply to a customer.

*Tom Gunnarson is a 25-year veteran of the recreational aviation industry. He has managed flight schools and aircraft sales and service centers across the country. For 12 years, he oversaw one of the national ultralight safety programs, conducting more than 50 initial and recurrency seminars for flight instructors and examiners who trained and tested more than 75,000 participants. Gunnarson is a board member of the Light Aircraft Manufacturers Association and a member-at-large of the ASTM F37 executive subcommittee on LSA. He is currently providing aviation consulting services specializing in LSA. (Kappa Aircraft is one of his clients.) He can be reached at tomgunnarson@earthlink.net.*



**A jubilant Edwin Miller proudly displays the first S-LSA airworthiness certificate issued to the KP-5 on July 19, 2005, just days before heading to Oshkosh to display at EAA AirVenture. At left is newly minted S-LSA DAR, Jim Willess, with FAA MIDO-44 inspector Robert Costa.**

regarded—at least by those not put off by the staggered seating. Those who prefer high-wing airplanes have other choices, but in the low-wing, all-metal sweepstakes, Kappa has a winner with this airplane.

Pilots considering a new LSA have many interesting choices. As impor-

tant as the aircraft itself is the stability of the organization behind the plane and the people who will support it, no matter whether it's imported or domestic. Unless I miss my guess, given Jihlavan's financial stability, the KP-5 will find a substantial following in the United States.

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# SPECIFICATIONS

## Kappa KP-5

(Note: All specs and performance figures provided by factory. Figures are *unverified* except as otherwise stated in article.)

### Dimensions

Wingspan—32.5 feet  
Wing area—128 square feet  
Length—23.6 feet  
Height—8.6 feet  
Seating—2 side-by-side, staggered  
Empty weight—683 pounds  
Gross weight—1,199 pounds  
Useful load—516 pounds  
Payload—414 pounds (standard tanks)\*  
Fuel—17 gallons\*  
Wing loading—9.3 pounds/square foot  
Power loading—14.3 pounds/hp  
Powerplant—80-100 hp  
Baggage area—66 pounds including optional hat rack

\*Standard tanks hold 17 gallons; optional two tanks at 4 gallons each. Payload with optional tanks, 366 pounds.

### Performance

Never exceed speed (VNE)—162 mph  
Maximum cruise speed—138 mph  
Stall speed—38 mph (see article)  
Max rate of climb—1,100 fpm  
Takeoff distance—300 feet  
Landing distance—450 feet  
Cruise duration—4.0 hours (no reserve)  
Cruise range—450 miles\*  
Fuel consumption—4-4.5 gph

\*Range with optional fuel tanks, 650 miles.

### Contact

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Edwin Miller III is leading the charge to bring the Kappa KP-5 to the U.S. marketplace.



AARON LURTH PHOTOS

The all-metal, low-wing KP-5 with its massive Fowler flaps deployed. Note the up-turned wingtips used to maintain airflow contact over the full surface of the wing. The cantilever-winged aircraft features a flip-forward canopy makes entry and exit relatively easy.



The seats of the KP-5 are staggered, with the right seat approximately eight inches aft of the left seat, offering extra shoulder room. The throttle and flap controls are located in the center console. The area aft of the seats, which flips forward for access to the area, can accommodate up to 66 pounds of baggage. U.S. buyers also have the option to purchase a customized interior.

The KP-5 comes standard with a full complement of instruments; however the moving map (center) and attitude indicator (angled area at left) are options.

