ESPRIT model

LAMINAR

THE NAME SAYS IT—THE FIRST GLIDER TO USE A LAMINAR AIRFOIL

BY Gene Cope

JETI usa

Designed and built in the Czech Republic by Rudý Letov, the XLF-207 Laminar was a follow-on to the well-known 1950s Lunak LF-107 aerobatic glider. What made the XLF-207 Laminar unique for its time, was that it was the first European sailplane built using revolutionary laminar airfoil design for its wing sections.

The Laminar's first flight was made in August 1951, in the city of Letnany, in the Czech Republic. The glider was simply a modification of the Lunak, but was fitted with a laminar flow wing, which made it a standout performer for its day.

What attracted me to the Esprit Model's version of the glider was its unique design, the fact that the fuselage was composite, the wings were made of foam sheeted in wood and that it was quite affordable, which matters to someone on a budget. Also, I had ordered from Esprit Models previously, and I found their customer service to be very good, including safe, secure and fast shipping. So, it was pretty easy for me to make the decision to buy a XLF-207 Laminar from Esprit.

Then too, Reichard Model Sport recaptures the historic design lines and the nostalgia of the Laminar in their 4.4-meter wingspan version. The model is very well built and finished, including the wings being factory built and covered. The horizontal stabilizer and rudder are built and covered. Also, the fuselage comes painted, with a canopy frame and vacuum-formed canopy. Reichard provides a good hardware package as well. Suffice it to say, this is quite a good almost-ready-to-fly glider package.

My XLF-207 Laminar glider was shipped via UPS from Esprit. It came packaged well in a large box. All components—wing, stabilizers, rudder, canopy— were covered in bubble wrap to protect them against damage. Consequently, when I opened the model's kit box, to photograph the parts for this review, I found all the parts and pieces in perfect condition.

This glider was designed for slope soaring, winch launching and especially aerotowing. You'll be interested to know the model uses a wing that has molded fiberglass leading edges, which will reduce the chance of damage during takeoffs and landings. Its 4.4-meter wingspan wing uses the HQ 3.0/13 and HQ 3.0-10 airfoils sections (3 percent camber, 13 percent thick and 10 percent thick respectively). The wing's double-tapered planform in combination with the Helmut Quabeck airfoils make for a fantastic flight platform. Note that the Laminar's wings have split ailerons, a flap and a double-gate spoiler. The fuselage is a molded, epoxy impregnated composite construction. The overall construction techniques make for a very lightweight airframe.

FEATURES

- Almost ready to fly
- Fiberglass, composite fuselage
- Foam wings sheeted in wood
- Two-piece wing w/ steel joiner
- Foam sheeted elevators
- Main landing wheel
- Elevator & rudder pushrods
- Double-gate spoilers
- Hardware package

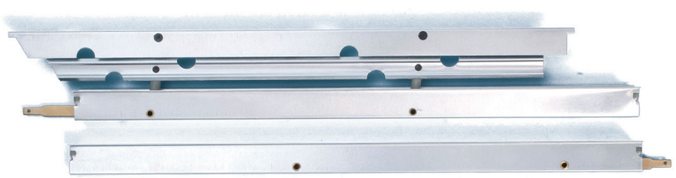
NEEDED

- Transmitter - Jeti DS16 used
- Receiver - Jeti Duplex R14
- Servos - Hitec (4) HS5085MG, (3) HS-5485HB, (2) HS-125MG, (2)

Once the parts were out of the box, the quality of the XLF-207 Laminar ARF is apparent. Its wing planform is not typical and will be easy to recognize in the air.

- HS-5245MG, (1) HS-645MG
- Extensions - (2) 36 in., (2) 24 in.
- Medium / thin CA
- Epoxy - 30-minute
- CA - Zap® thin / thick
- Adhesive - Goop®
- Tools - Miscellaneous
- Batteries Plus 4000-mAh NiMH

Hitec servos were used exclusively to drive the control surfaces on the XLF-207. They provide lots of torque and reliability for ultra positive control.



The spoilers provided in the kit are top quality and are operated by the Hitec HS-125MG servos. The are shown here in an open and in a closed position.

IN FLIGHT

I opted to maiden the XLF-207 Laminar in slope lift, rather than doing so by aerotowing. In so doing, I was able to get the model trimmed properly during the first flight, and set the control surfaces so they had the proper throws values.

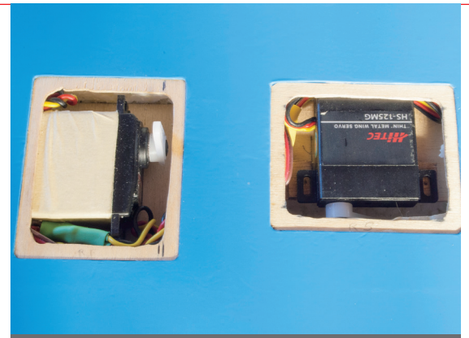
Because it is known as a world class slope soaring site, and because it is near my home, I chose Eagle Butte as the site for the maiden flight. The day I picked for the flight the wind was blowing about 20 mph, and it was blowing from the southwest, which is perfect for good lift conditions at Eagle.

After range checking the Jeti radio system's performance, I had Wil Byers launch the model and give me some nerve-calming instruction beforehand. His advice was the fly the glider straight out and away from the slope for at least 100 yards, with it diving at about a five-degree angle. Then I was instructed to just ease off the down elevator control until the glider was climbing nicely, which it did exceedingly well.

A servo mount plate (not provided) and new cover frame are shown ready for a servo. The new cover frames were fitted and marked to insure proper placement.

I was pleased to find the model required absolutely zero roll and yaw trim. Due to the 20 mph wind, I added three clicks of down elevator trim to maintain good penetration speed.

After the trims were set, I let Wil fly the glider for a few minutes. What we found was the XLF-207 Laminar has very well-coordinated controls. As I have the model's controls set there is no adverse yawing (skidding) in roll. The rudder

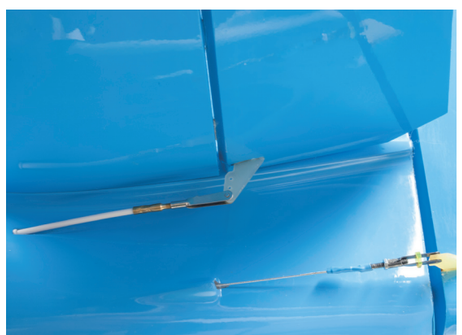


The flap servo was wrapped with masking tape, and then glued to the plywood plate with epoxy. The epoxy provides strong bond. The spoiler servo is screwed in position. Notice that the flap servo's arm was positioned at 90 degrees to the control surface.

The spoiler's mount bar height was set using the spoiler and spoiler cap as a way to position the cap at the wing's surface as the epoxy cured.

The new spoiler cap fit with just a slight gap between cap and the wing. They sit absolutely flush with the wing's upper surface.

The fiberglass control horns and metal control rods provide positive control responses between the servos' arms and control surfaces.



The elevator's control rod is a hard wire core surrounded by a plastic sheath. It slides in an outer sheath. The rudder uses a pull-pull cable system.

is exceptionally effective at yawing the glider. Then too, the control response of the elevator is quite good, but not overly excessive, which could otherwise make the model a bit pitch sensitive.

What I really like about this model is when you deploy the spoilers there is no noticeable pitch change up or down. The model just slows in airspeed a bit and starts losing altitude. This is superb for a model of this type in that it makes it easy to set up a good landing approach that is controllable and predictable all the way to the ground.

We found the model loops well. It also has good penetration against the wind. As such, we made a number of passes over the hill's lip and face for our cameraman to get photos. Then the landing approach was made easy, with the spoilers being modulated as needed to control the model's approach height. Note we were not able to do a rolling, wheel landing at Eagle Butte because the landing zone needed to be groomed for such.

A Jeti Duplex R14 channel receiver provides independent control adjustment to all 11 servos. A Jeti vario is also used in the XLF-207 ARF.

The pilots seat was fabricated out of polystyrene plastic. The pilot hides the receiver. The vario is fastened to the wing jointer box with Velcro tape.

The wing profile of the Laminar XLF-207 is very distinctive and quite easy to spot in the air. The wings' servo covers hide the servos neatly on the lower wing surface.

Controlled and descending turns, with spoilers out, were used to keep the Laminar close to my camera man because of the strong lift.

I'm posing with Laminar before its maiden flight, which was done in slope life at the Eagle Butte site near Richland WA.

HANGAR DEBRIEF

Here is what I can tell you about my XLF-207 Laminar: It is a superb buy, being priced at only $895.00, plus shipping from Florida.

The reason I say this is that it sports a 173.5-in. wingspan. It is built well. Importantly, the model really flies and soars well on the HQ airfoil sections. It was also quite easy to assemble, including making a pilot seat and fitting the receiver and variometer. Believe me when I tell you there is plenty of room in this model for all your radio system, pilot and some telemetry gear.

Additionally, if you are looking for a glider that you can slope soaring, winch launch and aerotow, the XLF-207 Laminar is an exceptional pick. At the slope it required less than three steps forward and a good push to get it flying. I like that its roll control is enough for doing some mild aerobatics, yet the model is not hard to control. When the temperatures start to rise again this spring I'll be dialing this glider in for some thermal searching at my

Wil Byers just launches the Laminar into a good 15 mph head wind with a good heave. It flew out straight and level.

The laminar is shown here diving with spoilers opened to keep it below the hilltop, which was not an easy task in the 20-mph wind that was blowing.

The Laminar XLF-207, with its multiple control surfaces, provides rock solid control whether sloping or aerotowing.

Penetration into the wind was very good! The Laminar easily made passes back over the crest of the hill for cameraman.

With the wind picking up, and the Laminar only weighing in at 16 pounds, it was time to make one final pass over the hilltop and then set up for a landing.

airfield in Yakima. I'm 100 percent confident that I'll have little if any difficulty finding lift with this glider.

I'll end by saying that if you are searching for a new soaring machine for the 2014 season, the Esprit Model's Laminar is a good choice. You certainly won't need to spend thousands of dollars to get a glider that will give you hours of soaring enjoyment. So, point your browser at *espritmodels.com.* Then pick the sailplanes tab and the drop-down menu for scale. You'll find it there. Esprit will have it on its way to you in a safe and secure shipping box in not time.

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SPECIFICATIONS

Wingspan :	173.5 in. (4400 mm)
Wing area :	1510 in.² (97.4 dm²)
Total area :	1716 in.² (110.7 dm²)
Weight :	256 oz. (7257.5 g)
Wing loading :	21.476 oz/ft²
Airfoil :	HQ 3/13, HQ 3/10
Transmitter :	Jeti DS-16
Receiver :	Jeti Duplex R14
Battery :	6-volt 4000-mAh NiMH
Variometer :	Jeti
Servos :	Hitec - (4) HS5085MG,(3) HS-5485HB, (2) HS-125MG, (2) HS-5245MG, (1) HS-645MG
Price :	$895.00

DISTRIBUTOR

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espritmodel.com

With the spoilers out, the Laminar descends to a smooth landing just back of the ridge's lip—spoilers were modulated to control the rate of descent.

BUILD

Assembly of my Laminar was straightforward and easy. The wings, horizontal stabilizer and rudder come factory built and covered. There were a few minor wrinkles in the covering material, but those were easy to remove with a heat gun and covering iron. I don't think I needed to spend more than about 30 minutes removing them from the wings, stabilizers and rudder.

I encountered no problems with the model's assembly until I got to the servo covers' frames. They were smaller than their respective openings in the foam wings. Consequently, new frames were fabricated out of 1/16-in. plywood and then glued into place. Also, their servo covers were cut out of 1/64 in. plywood. The covers were then slotted for the servo arms.

The spoilers' caps were also found to be smaller than their respective openings. As a result, I had to make new caps. I cut them from 1/32-in. plywood and sanded them to fit their openings in the wing tops. They were then covered in Sky Blue covering, as were the new servo covers.

I talked to Esprit Models about these two problem areas and they assured me that they would be remedied on future Laminars.

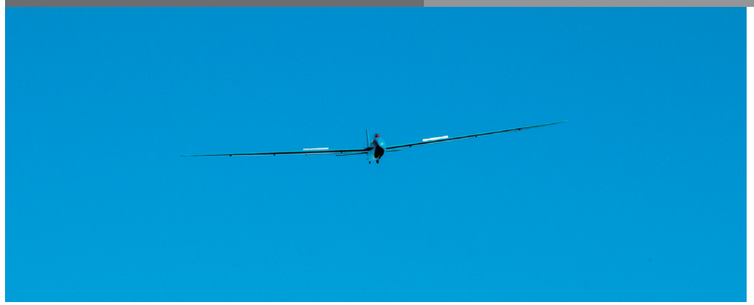
You'll find that the servo installations in the Laminar are easy to complete. I outfitted my Laminar with Hitec servos because they have plenty of torque for this glider and they do not draw too much current, even under load. The ailerons are mated to four HS-5085MG, the flaps use two HS-5245MG and the spoilers employ two HS-125MGs. For the rudder and elevators I fitted the model with HS-5485HB (one for rudder and two for elevators). The tow release mechanism is controlled by an HS-645MG, which is a high-torque servo—I chose it to assure a release when needed, even under heavy line tensions that sometimes occur during an aerotow.

The servos were glued into the wings with epoxy resin. All the servos' arms were preset such that they were positioned at 90 degrees relative to the flaps' and ailerons' positions—this allows for equal control throws both up and down, even though the model is set to have differential aileron control.

The Laminar required one pound eight ounces of lead shot, plus four drams of 30-minute epoxy in the fuselage's nose to set its center of gravity. The finished glider weighs 16 pounds even, with its center of gravity set at the manufacturer's recommend 100 mm (4 inches) mark, which is back of the wing's leading edge at the root. I was careful to set the model's center of gravity in its flight-ready configuration, which included a 1/4-scale pilot and a 5-cell 4000-mAh NiMH battery pack.

I used a Jeti Duplex R14 receiver for the model on-board control system. What I like about this receiver, in combination with my Jeti DS-16 transmitter, is that it gives me the flexibility to use individual channels for every control function. Also, the DS-16 lets me program specific channels for the functions; i.e., I used channel one for right aileron and channel two for left, and so forth. This made programming the flaps, spoilers and elevators especially easy. Also, the programmable mixes were then easy to do as well. Additionally, the DS-16 offers easy flight mode set ups, so it only took me about 30 minutes to program into the transmitters memory all the functions I wanted to use for this glider.

All in all, this was a very easy glider to assemble and ready for soaring.



CONTROL THROWS

	High (+/-)	Low (+/-)
AILERONS	.75 in. (19 mm)	.5 in. (13 mm)
ELEVATOR	1 in. (25 mm)	.75 in. (19 mm)
RUDDER	1.50 in. (38 mm)	1 in. (25 mm)
FLAPS	mid .75 in. (19 mm)	land 1.50 in. (38 mm)

CENTER OF GRAVITY

3.3–3.8 in. (84–96 mm) back of the leading edge of the wing