



Sling Goes Big



Four-seat homebuilt crosses the Atlantic to show its stuff.

BY PAUL DYE

If you had been asked to take a demo ride in a little high-wing silver monoplane from Le Bourget Field in Paris in late May of 1927, would you have turned it down? How about an offer to climb into a long-winged, multi-boom and pod, Rutan-designed airplane at Christmastime in 1986 and take it around the patch? The owners of these airplanes might have apologized for the machines being a bit dirty and smelly, but it isn't often that you get to be close enough to history to see the sweat stains and feel the rub spots on the controls. None of us were lucky enough to be in the right

place at the right time to be given such an opportunity by Charles Lindbergh or Dick Rutan, but interesting opportunities still arise. I was fortunate to be in Oshkosh this past July to see the arrival of a new, four-seat aircraft that had just been flown to AirVenture by its creator and his son. Their departure point? South Africa, just a few days before. And not only was I fortunate to see the airplane up close, I was offered a chance to fly it the next day.

It is hard to argue the success of a new aircraft design when the prototype has just flown to Oshkosh from across the

big pond and is ready to offer demonstration and evaluation flights the very next day. The Airplane Factory, manufacturer of the Sling 4, knows this. With very little fuss, they did an oil change, checked under the cowl, and pronounced it ready for inspection by the flying press. It's not often that you get to try a new airplane that just flew a third of the way around the globe, and there was no way I would have passed it up.

The Sling 4 started out on the design table as a 2+2 airplane to complement the successful Sling LSA that has been flying as a kit aircraft (and as a ready-to-fly

plane in South Africa) for several years. KITPLANES® reviewed the original Sling in January 2013 and found it to be a highly competitive two-seater in the LSA market. Mike Blyth, owner, designer, and president of The Airplane Factory, has made around-the-world flights in the Sling LSA and the Sling 4, proving that both aircraft are sound designs with excellent reliability and the capability to go the distance.

With the Sling 4, he wanted more—more room, more fuel, and more capability—without sacrificing the good qualities of the smaller airplane. He wanted a large enough cabin to actually carry four people—or two people and lots of gear—and he wanted reasonable cruise speeds and panel space for enough equipment to fly IFR.

Cabin space is always an issue with homebuilt aircraft. True four-seaters are vastly outnumbered in the Experimental market because it takes time and money to build a larger airplane. There are a number of them available, but not that many are built compared to the two-seat (or one seat) kits that are out there. The airplane that will invite the most direct comparison to the Sling 4 by many will probably be Van's RV-10, and in truth, the front seat room for each is qualitatively comparable. The Sling 4 is not a tiny airplane with four seats crammed in—it is a generously



The front seats and panel of the Sling 4 show a distinctly capable airplane that also puts an emphasis on pilot and passenger comfort. The center throttle has a nice feel and has “gates” that are lifted when the pilot wants to go into turbo-boost territory.

proportioned plane that can carry four reasonably sized adults. At that point, however, the comparison tree splits, as the Sling is designed for a cruise speed down near 120 knots, whereas the much more powerful RV-10 will true out at about 160—albeit, burning a great deal more fuel to do so.

The Sling will fill a niche more akin to that of production fixed-gear four-seaters like the Cessna 172 or Piper Cherokee, a market niche that is hardly a niche when you look at the numbers built over the many decades of production. Imagine an airplane capable of cruise loads and numbers like the Cessna, then compare new prices between the homebuilt

and the certified airplane. There is hardly a comparison. In these days of five- or six-dollar-per-gallon avgas, more people are realizing that speed costs fuel—which means lots of money—and the increase in cost is non-linear. The Sling 4 will do 120 knots burning 6 gallons per hour, which might just be a sweet spot for many.

Kit and Construction

The Sling 4 is a conventionally constructed, all-aluminum aircraft that uses pulled rivets for most of the structure, simplifying assembly for the average builder. The spars are built with solid rivets for strength and are pre-assembled for simplicity. Kit components such as ribs, bulkheads, and skins are CAD/CAM designed and manufactured, and pre-punched for easy jig-less construction. Fiberglass components are typical for modern metal kits—the cowlings, intersecting fairings, and wingtips being the primary locations for the material. AN hardware is used throughout to maximize compatibility with U.S. parts used throughout the world.

Although KITPLANES® was unable to visit the factory for this review, we examined typical component parts on display at Oshkosh, and both the quality of forming and the fit appeared excellent. The entire kit industry has made tremendous strides with pre-punched components in the past decade, resulting in the construction of better airplanes with less



The rear seats are roomier than one would expect in an airplane that started out as a 2+2 concept. Our test flight included a full-sized rear-seat observer who had no complaints about the leg room.



The characteristic gull-wing doors have thin frames and lots of glass, giving the cockpit an open and airy feel. Good visibility into turns is always a good safety feature.



The Airplane Factory makes heavy use of MGL EFIS components in their aircraft, since they are both South African products and share a U.S. distributor. Although MGL has a lower market share in the American EFIS market, it's hard to argue against a system that can make transatlantic (and global circumnavigation) flights without missing a beat.

About the Company

Americans sometimes forget that there are mature and vibrant kit companies located in other parts of the world, and The Airplane Factory is a good example. Located in Johannesburg, South Africa, the company has a staff of 75 full-time employees turning out kits and completed aircraft for an international market. The U.S. distributor, The Airplane Factory, Inc., located at the Torrance, California airport, is in a perfect location to handle the delivery of assembled aircraft, kits, and help out builders if they fly in for assistance in fine-tuning their aircraft. Kits for either the original Sling or Sling 4 are sent from South Africa in containers to Torrance, then can be delivered wherever builders desire.

The Airplane Factory has been delivering Sling 2 kits in the United States for about 10 months and has shipped six so far. Two Sling 4 kits have been ordered. With the size of the factory and number of completed aircraft in South Africa, builders can have a certain amount of confidence in the company's ability to stay with them for the long haul. The use of the proven Rotax engine is another plus for those looking for long-term service and support.

—P.D.

effort than ever before. Being a new aircraft design, with almost no completed kits on the market, it is hard to predict build time, but the completeness of the kit and maturity of the design should mean that build times will be reasonable.

The Sling 4 we flew was equipped with the factory-preferred MGL EFIS, and it performed well on our test flight. Although not as large of a player in the American market as they would like, The Airplane Factory's U.S. distributor in Torrance, California is also the U.S. representative for MGL and can provide equipment and support for the systems. With the aircraft's electrical harness and panel designed around the MGL suite, extra effort would have to be expended by those choosing to go a different path, although this is not prohibited by the design. American builders will definitely get a more worldly view of systems components ahead of and behind the firewall with this international design.

The engine selected for the Sling 4 is the Rotax 914 UL Turbo, producing 115 hp for takeoff and 100 hp continuous power. For those used to thinking of four-seat airplanes being hauled around by 180-hp Lycomings, this seems a little small—but this is not a fast-mover like a Glassair, Lancair, or RV. Most of us started our flying careers cruising around in aircraft in the speed

range of the Sling 4, and they served us quite well. Perhaps what surprises people looking at the Sling 4 is that its styling makes it look like it should be going a lot faster. But it is hard to argue with a fuel burn of six gallons per hour. The turbocharger allows maximum continuous power to be obtained as high as 15,000 feet, so while 100 hp doesn't sound like a lot, maintaining that horsepower to that altitude is healthy competition for normally-aspirated four-bangers. At that altitude, the average non-pumped Lycoming is lucky to be putting out 50% rated power, and we can all do the math on that.

The Sling 4 can be purchased as sub-kits, although it should be remembered that everything is coming to the U.S. from South Africa, and there are advantages to shipping in bundles. The basic kits include the empennage, wing, fuselage, undercarriage, canopy, instrument panel, and finish kits. The total for these airframe kits is slightly more than \$36,000. Adding the engine, prop, and standard extras (instruments, radios, interior, etc.) will cost another \$66,000, for a total flyaway price of about \$102,000—labor and time not included. The Airplane Factory can also provide options that will bring the panel up to IFR standards, add exterior lights, and there is an optional Magnum 601



The slender Airmaster prop is complemented by the radically tapered spinner to give a very bullet-like look to the nose of the Sling 4.

whole-aircraft parachute designed for the aircraft.

Despite the Sling 4 being a new kit, it is clear that it is quite mature. The company has built several completed aircraft for their local market and, as of this writing, has orders for several kits.

In order to help with inventory and plans control, The Airplane Factory has developed an iPhone/iPad app that works with bar codes that are attached to every part. A builder can use the camera on their device to scan the bar code and see the part name, number, and plans page on their screen. The data tells them how many of each part there should be, how many have been used, and how many are left. They can also bring up the relevant plans pages right on their device, as all of the plans and instructions are digitized and part of the app. This gives the builder a complete electronic set of plans and instructions—an amazing advance for those of us who are still getting used to simply having accurate paper plans for our project.

Taking It Up

It was a beautiful, smooth Oshkosh morning when we flew the Sling 4. The loading was significantly different than when it arrived the day before. Gone were the survival suits, extra satellite

“I recently purchased my new EXP 370 directly from Titan Aircraft Engines and it has gobs of power, runs like a sewing machine, even at lean of peak.”

Paul Kendrick
Owner/builder RV7 - N143JL



TITAN
AIRCRAFT ENGINES

What's your Titan story?

www.titanengine.com
210.820.8140



Full wheelpant is part of the aerodynamics that give the airplane good performance on a limited amount of horsepower. While Americans are used to hanging larger engines on their airplanes to go faster, fuel-cost-conscious pilots from other parts of the world consider a turbo Rotax to be large enough.

trackers, rations, water, and tankage for 19 hours of fuel. Instead, we loaded up with three medium sized adults, full fuel, a camera—and two copies of the Oshkosh NOTAM, just to make sure. The third set of eyes in the back seat was a welcome addition on a day when everyone wanted to be in the air for a dawn patrol.



A rear baggage access door is nice when you consider that cabin entry through the gull-wing doors is a long way from the baggage bin.

The panel of this particular aircraft was well equipped and centered around a large MGL EFIS. In addition to the EFIS and standard aircraft equipment, there were switches for the second alternator and backup electrical system. Installed specifically for the long flight were a vacuum ADI powered with an external venturi and a high-frequency radio. A CDI was hidden inside the glove box for added redundancy.

I elected to try the airplane from the right seat and my hands fell naturally to the stick and throttle quadrant. The throttle is mounted on the center console and feels like what you would find

in a small business jet—it was T-shaped, with gate levers on the front that you lifted to push into the turbocharged regime. While this might sound like a little airplane trying to be a big one, it actually worked well to keep the pilot in an economical place during most maneuvering flight. The seating was very comfortable—roomy, in a nice position, and with appropriate cushions. I can see how Mike and his son could stand to be in the cockpit all the way from South Africa to Oshkosh.

The Rotax 914 started the way we have come to expect—just like a car. It was smooth from the start, and warm-up was reasonably quick. As we were flying from Oshkosh during AirVenture, the taxi was a bit involved as we wound our way through the sea of volunteer flagmen, so we had plenty of time to examine the ground handling. Taxi control was excellent, as you'd expect with a swiveling nosewheel and brakes (fast becoming a standard for new tricycle designs). Mike was thorough and practiced on the pre-takeoff checklist, and we were ready to go when the pink shirts cleared us on to Runway 27 for an immediate takeoff. I watched as Mike added power and was surprised at just how smooth the Rotax with turbo was as it spooled up to take-off power. In fact, the entire airplane was smooth—similar to the feel you get in a turboprop. Granted, the acceleration was still what you'd expect from a 115-hp airplane, but it was no slouch

Builder's App

The Airplane Factory has taken kit building one step further with the addition of the Sling Builder App for the iPhone and iPad. The factory knows that providing customers with the best support possible is one of the most important parts of kit building and has taken advantage of the technology and convenience that smart devices provide.

Features of the app include:

- Bar code scanner for inventory and organizational assistance
- Useful documents such as builder's manuals, POHs, and maintenance manuals
- How-to videos
- Latest news from the company
- Builders' forum and picture upload (coming soon)

The most impressive feature right now is how easy the app makes it to inventory and organize kit parts. Using the built-in bar code scanner, builders can scan the bar code on a part when taking it out of the box, and the app will inventory the part, tell the builder which pile to place it in for ease of assembly, and will also give a direct link to the page in the builder's manual that contains the part for quick reference.

The app is titled *Sling Builder* and is listed in the iTunes store for free (<https://itunes.apple.com/us/app/sling-builder/id673309860?mt=8>).

—P.D.



SLING 4

Kit price	\$36,310
Estimated completed price	\$102,245
Estimated build time	1000 hours
Number flying (at press time)	9
Powerplant	Rotax 914 UL, 115 hp @ 5800 rpm
Propeller	Airmaster 3-blade, electric constant-speed

AIRFRAME

Wingspan	32.7 ft
Wing loading	14.8 lb/sq ft
Fuel capacity	48.8 gal
Maximum gross weight	2028 lb
Typical empty weight	1036 lb
Typical useful load	992 lb
Full-fuel payload	703 lb
Seating capacity	4
Cabin width	45 in
Baggage capacity	88 lb

PERFORMANCE

Cruise speed	118 kt
Maximum rate of climb	800 fpm
Stall speed (landing configuration)	48 kt
Stall speed (clean)	54 kt
Takeoff distance (to 50 ft agl)	1476 ft
Landing distance (from 50 ft agl)	1148 ft

Specifications are manufacturer's estimates and are based on the configuration of the demonstrator aircraft.

Louvers on the top cowl help cool the turbo Rotax package.

when it came to getting off the ground. With three onboard, we were up and away, and had to make sure that we stopped the climb to stay under the NOTAM departure altitude of 1500 feet as we climbed over the Wisconsin farmland to the west.

Mike offered me the controls as we crossed the fence, and I was pleased at what I felt—a solid, yet responsive airplane that stayed where I put it—and maneuvered as I wished, when I wished. Visibility into the turns was good, with the gull-wing doors providing overhead views in the high-traffic environment. It seemed that there were several new

aircraft launching (with camera ships) for photo missions, so the airspace was busy, and seeing traffic was a high priority.

Once clear of the show, we climbed to 3000 feet above the terrain and performed some normal clearing turns, then steepened them up to 60 degrees of bank. The airplane performed nicely, and the pitch and roll axes were nicely harmonized. Maintaining altitude with changing bank angles was effortless, and it took a small amount of rudder to keep the ball centered. Minor pitch pulses on the stick were quickly damped, and there was no tendency for overshoot or oscillation.

Slowed down to just above the stall, the airplane remained solid. There was a nice buffet before the stall, and recovery was uneventful—straight-ahead, with very little nose drop. Recovery was simply a matter of relaxing the back pressure a small amount to break the stall, then adding power to maintain altitude. We didn't do power-on stalls, but I would anticipate that they would



be benign since we are not talking about gobs of horsepower on the front end.

The turbocharged Rotax was easy to manage; when we wanted a little more power than normal aspiration would provide, I simply lifted the gate on the throttle that allows it to go into boost. I must admit—the design care that went into the throttle quadrant was obvious and makes this feel like you're flying a much bigger, more sophisticated aircraft—something that burns kerosene. The rest of the cockpit was just as nice with well-appointed side-walls, seats, and center console. Clearly, The Aircraft Factory has this one ready for market and has experience building completed aircraft for customers (which is legal in South Africa).

When it was time to head back to the show, the value of having three aboard became obvious. Flying like a three-man cockpit of old, Mike handled the controls, I looked for traffic and navigated, and our backseater read the NOTAM step by step as we needed it. I was glad to have three pairs of eyes on this Thursday morning for the weather was marvelous, and despite Thursday being a traditional slow day with many more departures than arrivals, the path from Ripon to Fiske was alive with airplanes. The Sling handled 90 knots just fine, however, and we motored up the tracks to be cleared to head east and to plan on 36L.

Although Mike performed the landing, it felt and looked very much standard, and we turned off on the pavement for the short taxi back to display parking. Shutdown was simple and Rotax-like, with the



The engine compartment of the Sling 4 with the Rotax 914 turbo is a busy place. With dual carburetors and liquid cooling, the plumbing is a little more complicated than most homebuilders are used to, but the package provided by The Aircraft Factory is complete.

sudden stop of the geared prop beginning to seem normal, now that these engines have entered the mainstream.

A Nice Four-place Cruiser

So, what do we make of the Sling 4? It is a nice looking airplane with good handling that can seat four reasonably well, and two in luxury with a fair amount of baggage. It makes the most out of its 115-hp engine, and if your trip lengths are reasonably close, the cruise speed that you are missing over a larger four-seat airplane is not significant. Clearly, this airplane has very long legs, as evidenced by its flight from South Africa to Oshkosh, but it didn't break any speed records getting there. The truth is, the Sling 4 will serve many people's missions quite well—taking three or four people on a lunch trip for instance

is a snap. We all know the old adage that if you want to travel with two people, you need a four-seat airplane. Travel with four? You need six places. That covers the way most people pack their luggage for traveling. It can be a little tight traveling with two and baggage in a two-seater, yet they make up the majority of the Experimental aircraft fleet these days.

If you are not in a terrible hurry, the Sling 4 makes sense, giving two the capability to pack for a week and go a fairly long way—or four to pop over to the next state for some local cuisine. The airframe has a solid heritage in the original Sling, it is reasonably easy to build, and the componentry is well supported. If you have the occasional need to carry more than one passenger, the Sling 4 is an airplane to investigate. †



**100% GENUINE LYCOMING PARTS
NO SURPRISE PRICING
ABSOLUTE ZERO-TIME ENGINE
UNMATCHED QUALITY STANDARDS
LESS DOWNTIME, MORE AIRTIME**



No one knows your factory engine better than the factory that built it in the first place. Only Lycoming can rebuild your engine to factory-new specifications that come with a zero-time log book, a two-year factory warranty, and increases to your airplane's value. There is no comparison.

Visit your local distributor or call Lycoming at 1-800-258-3279 and ask how you can save up to \$5,000 on a rebuilt engine*. Learn more at Lycoming.com



*Certain restrictions apply. Exchange engine core requirements will be dependent upon the selected offer. Contact your distributor or visit Lycoming.com for more details. Offer subject to change or end at any time.
© 2014 Avco Corporation. All rights reserved.

LYCOMING