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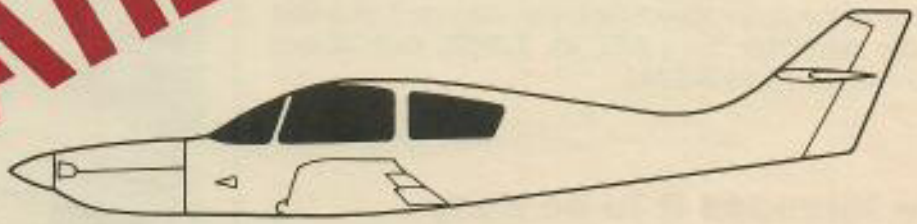
EXPRESS MAIL



The Express Charges Through its First Year with Colors Flying

WIDE WORLD OF abc FLYING

"...Performance nothing short of stunning"..."Virtually guaranteed to turn every head on the ramp"... "Maneuverability is an absolute ball..." **Bill Cox, *ABC Wide World of Flying***

The ABC video was a fitting finale to the public acceptance and press acclaim accorded the EXPRESS in its first year of flight. Demonstrating its painstaking and thorough engineering, the EXPRESS was flown to Oshkosh and introduced to the world only three days after its first flight. Within a month, the EXPRESS was made available to magazine editors and the public for demonstration flights. The response was unanimously enthusiastic:

"... The Wheeler EXPRESS... (is) an extraordinary example of how high tech in the hands of young, creative designers can lead to excellence in airframes"
D.A. Gustafson, *Air Progress*, July 1988

"The new composite Wheeler EXPRESS seats four and goes like SCAT... Now where am I going to get an extra $30K and a spare 1500 hours."
Dave Martin, Editor, *Kitplanes*, February 1988

"It is a legitimate four-place aircraft, with impressive performance. It's responsive yet easy to fly... a comfortable family flying machine."
Vernon Barr, Editor, *Western Flyer*, Nov. 13, 1987

"an emerging standard...The Wheeler EXPRESS takes aim at the general aviation market.."
Bud Davisson, *Popular Mechanics*, April 1988

"The Wheeler EXPRESS is new on the market but is picking up tremendous interest."
Murray Rosansky, *Air Progress*, Vol 2, 1988

ABC Wide World of Flying Video

Aviation writer Bill Cox exercises the EXPRESS in the current ABC WIDE WORLD OF FLYING video magazine. Bill spent three days putting the EXPRESS through its paces and filming our facility and crew in action. Bill has flown over 240 types and flies veeery smoothly, so Ken was co-pilot while Bill did all the work. Single copies of the entire six article tape (Volume 2, Number 6) are available from ABC for $39.95, their phone number is 1-800-999-8783.

We Intended it to be Easy

The EXPRESS has to be much, much more than an outstanding airplane, because before it becomes an airplane, it's just several crates of airplane parts. From the inception of the EXPRESS, we anticipated that its builders would be pilots rather than tinkerers, so the EXPRESS kit was designed to be the easiest and fastest kit possible for the novice builder, within FAA limitations. Now the evidence is coming in from EXPRESS builders that we have achieved our goal, and the EXPRESS kit is earning the same acclaim as the airplane.

Our Builders are Pilots

It's often said of homebuilders that they're not pilots. Some designs definitely attract non-pilots who anticipate one experience and discover another. For example, Frank Christensen, the Christen Eagle manufacturer, describes his builders as non-pilots. In that case it could have something to do with the novice's unpleasant discovery that although aerobatic flying looks really spectacular, they have to get past a barrier of nausea and upchuck to enjoy the sport. Another example is the Mooney PFM (Porsche engine). It was announced that many of the buyers were student or non-pilots, presumably attracted to the Porsche name. Knowledgeable pilots would have a tough time paying $50,000 more than a 205 for the slower, heavier, and less fuel efficient PFM.

And so we're pleased that the EXPRESS is perceived as a pilot's airplane and that experienced pilots buy it. Many of our builders own airplanes ranging from Cessnas and Pipers to Bonanzas, Mooneys and Glasairs, and many of our builders are airline captains as well.

Mike Betts building both wings at once, for maximum efficiency.

Customer Demonstrates Kit Construction in the ExpressLane!

Mike built his eight sawhorses, eight wing supports, and installed all ribs and shearwebs in BOTH wings in only thirty eight (38) hours with no help! Mike says the assembly went as advertised, in fact almost too easy. The pre-cut ribs and other composite parts, were easily aligned with the molded-in index marks, and the assembly manual led Mike through the process without a hitch.

Now we have to be perfectly honest here, Mike has already built an RV-4 and a Glasair FT, so he's not your average builder. On the other hand, building a satisfactory wing jig for most kits can easily be a major project because they leave much of it to the builder's imagination. In contrast, some 14 illustrations and 26 pages of our manual guide the builder in building and aligning our simple wing jig. It consists of just four sawhorses with bolted on plywood saddles to support the wing skin.

Someone like Mike doesn't need that much detail, but it allows the novice to build nearly as fast as the experienced builder because he's not left to find his own solutions. We originally estimated kit construction time to be in the range of 1500 (realistic) hours.

Based on our builders experience, we have revised that estimate downwards to 1000 hours for a Flyer Series Kit! With 50+ kits under construction, and some of our builders devoting nearly full time to their projects, we could have several planes flying by Oshkosh.

About Wheeler Aircraft Company

We occupy two buildings with a total of about 14,000 square feet. One building houses our tooling department, production facility, shipping and receiving. The other contains administrative and engineering offices, a large shop for prototype construction, and our hangar and showroom.

We are a team of 25 people dedicated to manufacturing the finest composite kit aircraft you can buy. All areas including manufacturing, engineering, materials, publications and customer service are staffed by professionals who take a great deal of pride in what they do. It's a job requirement imposed by the team. From our superbly finished tooling and parts to our manual, the quality and dedication speaks for itself.

The nature of our business engenders a close and enjoyable relationship with our customers, and we operate with the philosophy that the builder (and ultimately, pilot) is not only the driving force behind our company, he's an integral part of our team. Already the EXPRESS reflects our customer's influence, both as pilots and builders.

We are engaging in the kitplane business neither as a hobby nor as a "one man show". We have built a solid, capable company encompassing the many disciplines necessary to produce and support a serious, no compromise airplane. The first product of our efforts, the EXPRESS, reflects quality and performance standards beyond the norm for kitplanes, which has earned it the reputation as "an emerging standard". Our reputation and that of our products rests on a solid foundation of technical ability and dedication to excellence.

Offices and hangar in foreground, production facility in background to left.

Production facility interior.

Kit Production

Kit production is on a roll. We've shipped 50+ kits to countries all over the world and hopefully most of the spoolup fits and starts production are behind us. Our major concern is that only top quality parts go out the door, so in some cases we've had to sacrifice delivery in the interest of quality. Our other problem has been getting timely delivery of fabricated hardware from the local vendors who are swamped with Boeing work. We've finally gotten it in our inventory though so we should be able to stay ahead now.

Our Customers are our best salesmen

Some of our builders helped man our booth and the plane at Oshkosh, for which we are very grateful. One new customer who signed up at Oshkosh, Chuck Holcombe, had all his questions answered by people wearing EXPRESS hats at the booth and the plane before he discovered they weren't employees. (We don't sell hats for advertising; you get one with the kit or become an employee). Harry Blalock, a builder from Michigan even volunteered a few kind words at our main forum. Like many others, Harry and his wife Ann flew to Oshkosh in their Bonanza, and camped out by their plane. But their plane had a porta-potty (can I tell them this, Harry?) in the back. With curtain. In his fiberglass EXPRESS, perhaps he can manage a shower as well.

Production Kits Refinements

The EXPRESS was designed to be the finest all-around cross country airplane available; a fine balance between performance and comfort. Thanks to a years experience flying the EXPRESS all over the country (300 hours), and the feedback from the many who have flown the EXPRESS, we have incorporated a number of refinements in the production kits to insure that the EXPRESS meets our design goal as the top of it's class.

1. THICKER WINDSHIELD. The production windshield has been increased in thickness from 1/4 inch to 3/8 inch to make the cabin even quieter. It also gives additional bird-strike protection which is important in the 200+ mph speed range.

2. ELECTRIC TRIM. Electric pitch trim is now standard. We have installed it on the prototype, and it's a GREAT improvement over the previous bungee system. The plane trims beautifully and the pitch forces are no longer masked by the bungee springs, so the feel is superb in both axes. The EXPRESS doesn't require aileron trim thanks to it's long wing span; switching tanks every thirty minutes or so keeps it balanced.

3. GREATER FUEL CAPACITY. We have moved the standard tank location inboard some 4 - 1/2 feet to accommodate greater fuel capacity for the many who asked for it. This further reduces the need for aileron trim and with the standard tanks inboard, roll response will also be faster. The standard configuration is 54 gallons total capacity. Opitonal auxiliary tanks may now be ordered adding 18 gallons per wing for a maximum total capacity of 92 gallons. Hold the coffee please.

4. LARGER WHEELS. 600-6 main wheels will be optional on the FT for improved soft and short field performance due to their greater width and diameter.

5. GREATER USEFUL LOAD. The EXPRESS has a gross weight of 2300 pounds in the utility category which is limited by 500-5 brake and tire capacity. By increasing the tire and brake size to 600-6 and operating in the normal category, the gross weight can be increased to 2663 pounds!

6. MORE LEGROOM. We've added more leg and knee room to accommodate the really large guys.

Retractable Landing Gear Update

Those who must retract their gear will be as pleased as we are with our final design. We have put a tremendous effort into researching and prototyping retractable gear, trying to achieve an economical but simple design which allows the pilot to land on grass, rough, or short fields; a fundamental requirement of a capable cross-country airplane.

We've looked at the simple Mooney type gear which is easy to build and inexpensive, but marginal to useless on anything but a paved landing strip. We've studied every other conceivable type from a fiberglass leg to various types of aircraft oleos as supplied with other kitplanes. Each has overriding drawbacks, ranging from potential retraction difficulties of the fiberglass leg due to creep, to the delivery quagmire experienced by Swearengin, Glasair, and others with the usual oleo sources.

Our final design uses a superb industrial oleo, custom built from off-the-shelf components. It gives us long travel for rough fields, reasonable cost, sudden delivery, and not much weight penalty over the fixed gear. The struts are rebuildable and the damping rate is adjustable. 600-6 wheels are standard.

The retraction system is electro-hydraulic. In the event of electrical or hydraulic system failure, the pilot will be alerted to the failure, but extension won't occur until the pilot manually releases the up-locks.

We're getting a unit ready for drop-testing now and expect to have a retractable plane flying soon, wing kits and pricing to follow.

The Wing at Stall

We're often asked "how does it stall?" Here's what th. tufted wing looks like approaching the stall with 30 degrees of flaps. It's a textbook example for a controllable stall, with the outer wing flying while the root area is stalled.

By the way, we removed our tips and tried a flat rib tip like the old Mooneys and found that considerably more of the outer wing stalled, so the down-turned tips are doing their job. The plane was also slower at the top end with the flat rib tip.

A textbook example of a controllable stall.

Composite Controversy Resolved

In the February issue of *Kitplanes*, Mr. Andy Marshall, a respected industry consultant, thoroughly discredits Lancair's (Neico Inc.) claims that their composite materials are superior to Vinyl Ester wet layup composites. In fact, Mr. Marshall points out the drawbacks of Lancair's materials and the advantages of the wet layup Vinyl Ester resin system, even as Lancair **quotes Mr. Marshall out of context in their ad on the back cover of the magazine!**

After discussing the many problems with prepregs vs. Vinyl Ester resin, Mr. Marshall asks "So Why Use Prepregs and Honeycomb?" His answer is simply that the *prepreg parts are cheaper to produce.*

In the *Canard Pusher*, Burt Rutan's quarterly newsletter, Burt had this to say. "We are alarmed by the trend to paint composite aircraft dark colors. An orange or dark blue or dark red surface can easily reach temperatures of 190 degrees on a warm summer day with no wind. We saw at Oshkosh a deep orange and a dark red (aircraft) parked, unprotected, in the hot sun. We would not have flown in either of these aircraft for any reason. Don't be lulled into a false sense of security by the examples of those who must not have considered the possible consequences of their actions. Paint your airplanes white."

EXPRESS Requires No Bodywork

Speaking of the difference in materials, several of our customers have been to the Lancair shop and noticed that customer Lancairs under construction have to be literally covered with Bondo (a **flammable** polyester resin autobody repair compound) by their builders. They've inquired as to whether that was required on the EXPRESS too, as it appeared to take time and effort to apply and sand, not to mention adding weight unnecessarily.

As Mr. Marshall observes, *all those pinholes in the Lancair skins must be carefully filled, both on the outer and the inner surfaces*, after which the exterior surface must be sanded smooth, primered and finally painted. Bondo is necessary on the Lancair, *not* the EXPRESS.

The EXPRESS skins not only do not have pinholes, but the exterior surfaces are already primered and nearly paint ready. No finishing is required on the inner surfaces! That's just one reason we chose our materials instead of prepregs.

Proven Materials

The EXPRESS is manufactured with <u>proven</u> composite materials conservatively utilized. Our engineering is thorough, and we understand and recognize the limitations and advantages of our materials as well as others. Our materials were chosen as an engineering decision based on material properties to achieve the optimum product. We and other manufacturers reviewed and rejected the composites which Lancair has used, for the very reasons discussed in Mr. Marshall's article in *Kitplanes*.

Of the companies manufacturing the Cirrus, Glasair, Lancair and the EXPRESS, *only Lancair* does not have an engineering staff, and only Lancair has chosen their materials over the Vinyl Ester system.

In fact, of those same companies, only Lancair has relied on vendors and others for their composites design and manufacturing. Their apparent lack of understanding of their own materials is perhaps because they rely on second-hand information. Whatever the reason, Lancair is indeed setting new standards as they claim, but in marketing not engineering, and they're lower, not higher.

Literature

Available Upon Request

- Reprints of the *Kitplanes* Feb. '88 articles about the EXRESS including a pilot report.

Also available is:

- Current Options Price List,
- Options Order Form, and
- EXPRESS Engine and Prop Selection Guide.

Computer Flying Comes of Age

My eight year old son received the computer program *F-19 Stealth Fighter* for Christmas, and late at night, after he's in bed I've been sneaking some time on it. I've tried several other flight simulation programs but they soon get boring. This one's in a different class. It is more like a serious, sophisticated, military flight trainer than a game. The graphics are great, you fly from land bases or carriers, and soon realize why they have two man cockpits in the F-14. The thing really keeps you busy with dog fights, incoming SAMs, evading radar detection, locating the targets, and getting back to base without running out of fuel. My polite, considerate son, who's good at this sort of stuff but in need of all the concentration he can muster with this game, snarls "don't talk to me" when he's on a mission.

If you're good, you'll get promoted as you increase your skills, but the level of difficulty goes from the training level to impossible.

It's very realistic, and the 192 page operations manual is instructive; detailed on military matters from dog-fighting techniques to the nitty gritty of which weapon to use for particular missions. Great fun, it's by Microprose, for IBM's and Commodores.

– Ken Wheeler

A Fast Private Transport

A fast private airplane could spoil a person, especially when you experience the alternatives. With the airlines you face driving through traffic into the major airport, inconvenient schedules, counter hassles, departure delays, layovers, arrival stackup, lost baggage, and expensive fares, not to mention the fact that they don't go where you really want to go anyway, so you'll have to make other arrangements to get to your real destination.But, of course, to really use a private plane requires adequate baggage capacity. Oftentimes there are only two or three of us in the plane, but lots of stuff. For example, when we fly to a small airshow, we take a 2' X 4' folding table, lawn chairs, a cooler, literature, sample parts, flight bags, suitcases, and sometimes one of my sons. On occasion we've added a passenger on the way home by giving a ride to someone in need and going our way. On our way back from the Copperstate airshow in Arizona last year, we happened to land at the same airport in California where the RV-6 gang had landed with a problem.One of their guys had to get back to Portland, so we loaded him and his gear in the back and away we went.

Which, by the way provided another interesting comparison. The fellow had just been in one of the RV's and he immediately commented on the difference between the airplanes. He noticed that the EXPRESS had a much smoother ride in turbulence, and we didn't have to slow down when it got rough. The main reason of course is that although the RV will do 200 mph, its wing loading is quite low, about 14, so that turbulence really hammers the plane (and occupants) at high speeds. The wing loading of the EXPRESS is 18, the same as a Bonanza; high enough for a smooth ride, low enough for a reasonable landing speed.

Oshkosh '88

Wing Kit with ribs, shearweb and hardware installed on display.

Wing Kit Debuts at Oshkosh

We displayed an upper wing skin complete with spar, ribs and shearwebs in our tent this year. Several composite kit manufacturers came by to look and asked how we got such good looking parts. Nothing to it guys! Surrounding it in our 20' x 40' tent were other kit components such as the carry-through structure, a cross-section of our firewall, samples of our pre-assembled, welded and plated hardware and our assembly manual.

After looking at our wing, Roy Lo Presti (President, Lo Presti Piper Aircraft) commented "I wish we (Piper) could build our wings as easily as that." He also commented that our spar carrythrough looked to be a beautiful piece of work.

Burt Rutan commented that the EXPRESS was the best airplane on the field. And it doesn't have even a little canard. Thank you, Burt!

OSHKOSH '88 (cont.)

Getting to OSH

Thanks to Oshkosh, I have regained the same wonderful feeling I had as a kid about Christmas. Only now it's not at home in December, it's 1800 miles away in August, and I get the sleigh ride instead of Santa. Like childhood, everything seems to revolve around this one event... months of anticipation, an intense celebration and months of afterglow. And like Christmas shopping, no matter how firmly we commit to getting it all done early, we wind up working 'till midnight for the last month.

But we do finally leave, and at least half the fun is in getting there. Which means planning the flight, looking for new and interesting sights to fly over or stop at, sharing the trip with friends, meeting other folks and their airplanes bound for OSH, having our airplane marveled at by gas boys, controllers and fellow travelers wherever we stop, marveling at their airplanes and chutzpa (Seattle to Oshkosh in a Mooney Mite?), exercising (and sometimes testing) our navigational skills, and generally having the time of our lives. We're thankful Poberezeny started the EAA far enough away for a good cross-country, and that we didn't design an 80 mph airplane.

This year, our "chase plane" was a turbo Mooney 231, providing an interesting comparison to the EXPRESS. The EXPRESS outperformed (climb rate and speed) the Mooney nearly all the way to 11,500 feet, where we had to fly so the Mooney could keep up. We cruised at about 203 mph true at that altitude (the EXPRESS would have been faster at a lower altitude, but would have left the Mooney) and the EXPRESS burned about ten gallons per hour. We found the EXPRESS to be more economical, quieter, more comfortable, and of course, more fun to fly. (What else?)

We made the trip in two legs of about four hours each. It's remarkable how small the U.S becomes at 200 mph. It's also interesting that 200 mph is the speed that makes the difference. Four hours or so is a reasonable leg, so an 1800 mile trip (Seattle-Oshkosh) at 205 mph requires just one stop and two legs of 4.4 hours each; manageable in a day. At 150 mph, the trip would take 12 hours, more than a days flying. If the speed is increased to 235 mph, it still takes 7.6 hours, or two 3.8 hour legs. As long as they're doing 200 mph or faster, most of our customers have rated comfort as the most important factor. For any serious cross-country flying, a comfortable cabin with room to shift position now and then on a long flight is essential. Four to five hours in an uncomfortable saddle makes it hard to get back on the horse again.

– Ken Wheeler

Ken Wheeler speaks about the Express at Oshkosh forum.

The Four-Place Competitors Left Us Holding the Bag

Neither the Prescott Pusher, the White Lightning, nor the Velocity had booths at Oshkosh this year. On the one hand that might seem great for us, but on the other hand, we were asked repeatedly, "how do I know you'll be here next year?" Their withdrawal from the scene all in the same year left many people uncomfortable with airplane kits in general and us in particular, because we're the new kid on the block.

Market acceptance of the product is the driving force behind success, given adequate management depth to deal with product development, growth, and of course the inevitable times of retrenchment. A marginal product can be promoted and even sold – for a time, but in the long run, advertising hype cannot overcome serious product deficiencies, regardless of the budget. The market (you guys) is a cold-eyed, ruthless judge.

We sold more EXPRESS' in our first six months than Prescott and White Lightning combined sold during the whole time they were in business. And we don't have Prescott's advertising budget. "At last the four-place niche has been filled where so many others have missed the mark." Bill Cox, *ABC Wide World of Flying.*

We'll be here as long as our products are received as well as the EXPRESS has been.

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