

# Practice Makes Perfect

An off-field excursion gives us a chance to double up our Tri-Pacer restoration



**W**hen I saw him again on that May afternoon, Mike Pavao was walking unsteadily across the farmer's field with blood on his shirt, swearing.

● A few minutes before, it had become obvious that the improbable, *the unthinkable*, had happened. Our fastidiously restored Timeless Tri-Pacer, having sailed through its first flight with only the most picayune of squawks,

had come to rest not on Clarksburg, California's turf strip but in a plowed field adjacent to the approach end of the runway. ● "It just quit," said Pavao about the engine, trudging through the field. "No warning, nothing." When it lost power, the Tri-Pacer was just beyond gliding range of the end of the runway. Complicating matters is the fact that landing short at Clarksburg is not an option thanks to swampy land along the western perimeter. Realizing the short-wing Piper wasn't

going to make the runway, Pavao turned it into the southerly wind and did his best with a rough, recently plowed field. It came to rest, upside down, balanced between the crumpled cowling and windshield header. Five months of work rendered moot, just like that. Spirits in the close-knit Clarksburg Air Repair shop sank. ● As we gathered our wits and let the shock subside, the Tri-Pacer's tremendous strength became obvious. Most important, Mike was unhurt save for cuts on his nose. As for the airplane, the engine mount and nosewheel structure were no longer as one, and the firewall-forward sheet metal was junk, but the rest appeared almost undamaged. In fact, aside from the tip of the rudder, which contacted the ground and bent the upper tube, the entire fuselage was unscathed. ● Early the next morning, six of us wrested the airplane from the field, removed the wings, and loaded the PA-22 onto a flatbed trailer for the short ride back to the airport. Our

Marc E. Cook



A short trailer ride returns the Tri-Pacer to a distraught group of mechanics.



most pressing tasks were to determine the extent of the damage and to uncover the reason for the engine stoppage.

We were genuinely amazed to find

the first issue concluded within the hour. All of the cowling pieces would require replacement, as would the

compression, all the valves worked. Both new Slick magnetos worked flawlessly on the test bench, and there was no evidence of airbox or air-filter blockage.

## Outstanding in the field

### A new-limits overhaul for our O-320

Of the myriad roads to follow at overhaul time, a few are well trodden. While sales of factory-new engines—every piece is literally brand-new—are comparatively slow in the aftermarket, both Continental and Lycoming have pushed hard to fill the overhaul market as original-equipment contracts have become slim pickings.

Lycoming offers both factory remanufactured and overhauled engines. Remanufactured engines have essentially all-new parts but may use some major overhauled components such as cases, crankshaft, and accessory gears. Lycoming builds remans with new cylinders, pistons, camshafts, and ancillaries like the oil pump. With the Lycoming overhaul, you may end up with more used, overhauled parts—reflected in the lower cost of the overhaul—but you may not. Depending upon avail-

ability of cores, you might get lucky and find your engine to have many new components; it's just the luck of the draw.

Lycoming currently offers both remanufactured and overhauled O-320-B2Bs, as found in our Timeless Tri-Pacer. In the past sweepstakes airplanes, we have used factory remans with good success. Such a route produces no unseemly surprises—like the overhauler's call to say your crank is bad and your camshaft is shot, so expect to spend a few thousand more than you had planned. By returning the core in toto, you have the opportunity to make cracked jugs, ground-down cam lobes, and obsolete oil pumps somebody else's problem. Another advantage of the factory route is time: You can arrange to have your refurbished engine arrive soon after the old one has come off the firewall.

We, however, had time. Because we knew the Tri-Pacer's airframe restoration would take several months, the time was available to do the engine locally. Quite locally, in fact; Loren "Smitty" Schmidt assembles all of Clarksburg Air Repair's engines—he's been an engine man for more than 30 years. In addition to Schmidt's hard-won expertise, the Clarksburg facility has gained much of the high-tech tooling and testing equipment that was part of the Sacramento Sky Ranch overhaul shop, run by the hyper-knowledgeable John Schwaner.

Moreover, we felt that a field overhaul would give us much the same experience as many Tri-Pacer owners endure at TBO. Let's face it: You don't often plop down \$13,000 for a factory-remanufactured engine when many Tri-Pacers aren't worth twice that—including the airframe. A basic overhaul from Clarksburg, reusing your cylinders, runs about \$8,000 on something like an O-320, figuring on about

\$4,500 in basic labor and the rest for parts.

Deciding to go with a smaller shop for overhaul should include some homework. Ask for a list of recent overhaul customers and randomly pick two or three to contact—be wary of cherry-picked candidates supplied by the overhauler. Look around the shop. It should be reasonably clean and tidy, but remember also that we're not talking about open-heart surgery—an engine builder with grease under his fingernails is not a bad thing. Compare warranty coverage. Clarksburg, for example, covers parts and labor for nine months or 200 hours (prorated at 30 hours a month) and parts only to 600 hours on nongear engines. Many of the factory warranties are better, but you have one advantage in dealing with a good, small shop: Face-to-face contact with the people who can make decisions about warranty claims.

Even though we decided against having an all-new engine, we did opt for all-new



The morning after: Steadied by ropes, the Tri-Pacer is righted for return to the shop.



Pavao, who owns a Cessna 140—one of the most carb-ice-prone airplanes around—is religious about using carb heat, so carb icing was ruled out.

Focus then turned to the Tri-Pacer's fuel system. Pavao flew on the right tank after I had made most of the 45-minute first flight on the left; his flight was less than 15 minutes long. Circuitous plumbing of the right tank—

the line from the aft port comes down behind the front door, runs along the floor, and then travels back up to the instrument panel where it tees with the line from the front port—necessitates a placard warning pilots to use the right tank only in level flight when it's less than one-third full. Our calculations indicated there should have been about eight gallons—more than a

third—in that tank. Still, we kept in mind that the right tank could have failed to feed the engine.

Next, our attention turned to the carburetor. Precision Airmotive had provided us with a new MA4 carburetor for the project. When it was installed, all of the fuel lines were flow-checked and both tanks drained to remove any debris. None was found. After the accident, we found fuel in all of the lines, from both the left and right tanks, as well as in the line from the gascolator to the carburetor. The carb float bowl was empty, which is not surprising since the airplane sat inverted overnight. The local FAA investigator had the carb sent back to Precision for testing, where it received a clean bill of health.

For good measure, Clarksburg Air Repair's Steve Wilkie disassembled and carefully inspected it as well, finding nothing amiss. A possibility—supported by a goodly number of service difficulty reports on the subject—is that the float stuck with the fuel-inlet valve

parts where they made sense and had the overhaul performed to new-limits specifications. (These are the clearances and dimensions that are used in new engines. Service limits—to which many overhauls are performed—are much more generous and, ultimately, make a low-buck overhaul false economy.) In fact, about all that's left of the original O-320-B in our Tri-Pacer is the crankshaft and cases.

Lycoming chipped in with a raft of new parts, including camshaft, tappets, accessory gears, bearings, and seals. Inside our sub-1,000-hour engine we found a cam lobe about half eaten (with a correspondingly chewed-up tappet) and a now-obsolete oil pump. (Lycoming has tried varying combinations of materials in the pump gears since our engine was built in the 1970s.) Otherwise, though, the engine was clean and in good shape; the crankshaft, once inspected, was put back into the engine with a minor polish job.

Sometimes you discover

that the march of progress at the engine manufacturer has left you behind. We ordered a new cam for the O-320, as anyone overhauling a Lycoming ought to do, but discovered when the parts arrived that the new cam is built with the drive gear integral to the shaft; the old had a bolt-up gear. Not a big deal, but we then needed to order a similarly late-spec accessory case, tach drive, and various other seals to make everything fit. Again, not a deal-killer—particularly since the new cam-drive setup is probably less prone to failure—but unexpected. Beyond that, our little four-banger went together quickly. The O-320 is a familiar engine, well-understood by overhaulers, and easy to get parts for.

Lycoming has been aggressively pushing new cylinders for overhauled engines on the theory that many of the jugs are simply worn out from too many thermal cycles, too many overhauls and weld-repairs, and just old age. Superior

Air Parts has also capitalized on the recent demand for new cylinders by producing the Millennium series. Though we have experience with these investment-cast cylinders on our corporate Beech A36's IO-550 Continental, we haven't much with the versions for the parallel-valve Lycoming.

Superior supplied us with a set for the O-320, in the original narrow-deck configuration—Lycomings come with either thin mount flanges with reinforcing plates (narrow deck) or thick flanges (wide deck). Upon first seeing the new cylinders, it's easy to be amazed at the smoothness and consistency of the castings. On its maiden flight, the Tri-Pacer showed far more vigor than before, easily climbing out at light weights to the tune of 1,000 fpm. The engine was also noticeably smoother than before, partly the result of new engine mounts.

In addition to the engine essentials, we replaced both magnetos with new Slicks

and fitted the Unison Slick-Start system; this is basically like the old "shower of sparks" system that uses battery voltage to help boost spark strength during starting. We managed only a handful of starts in mild weather before the mishap, so we'll report later on how well this system works in colder and hotter weather.

Other accessories were either overhauled or replaced with new. As mentioned, the carburetor is a new Precision Airmotive unit, and we also used Precision's new Lamar lightweight starter. The alternator was a recent addition to the Tri-Pacer before we bought it, so it received little more than a new belt and some tidying of the wiring.

As we gain more experience with this package of accessories, we'll let you know how it all works. For now, the signs are promising that our conservative overhaul and replacement policy will provide a durable powerplant, building on the sterling reputation of the O-320 itself.

—MEC





open, raising the level of fuel in the float and flooding the engine. This theory is consistent with Pavao's report of the engine coughing while the throttle was pumped during the last part of the fateful descent. But there is no material evidence to prove this theory.

Clarksburg's staff assembles to steady the repaired wing and reattach a new lift strut.

In fact, we don't at press time know exactly why the engine quit. But, as you read this, a comprehensive flight-test profile will have been flown to help determine if the flow from the right tank

can become critical at fuel levels *greater* than one-third during certain maneuvers, or if there are some other flow anomalies. We are also evaluating changing the standard fuel system. Frank Sperandeo was granted a field approval for changes to the right-tank



plumbing that resulted in substantial increases in fuel flow. His modification changes the routing of the aft pickup lines to eliminate some bends and the need for the fuel to climb as far before reaching the fuel selector (Form 337 drawings are available from the Short Wing Piper Club; contact the club on the Web at [www.shortwing.com](http://www.shortwing.com)).

In the meantime, repairs on the airplane have progressed with eye-opening speed. Clarksburg's crew put on a full-court press to ready the airplane for Oshkosh, pushing aside other business, weekends off, and evenings home with the kids. By far the biggest portion of the job has been to rework the wings, because the covering had to be removed entirely and every component carefully inspected. It has been on the minds of Wilkie, Renner Brewer, Mark Keema, Scott Monroe, and the rest of the Clarksburg staff that the airplane has to be in as good a shape as before the incident.

As previously planned, the Tri-Pacer's next stop is in Santa Maria, California, for installation of the avionics and instruments. There it will be joined by the interior furnishings and final prep for Oshkosh. With a bit of luck and good

## *Incident or accident?*

After an airplane gets bent—as with our Timeless Tri-Pacer—one of the first questions to arise is: Do we have to call the feds? The answer most often is, surprisingly, no.

In cases of aircraft accidents, the FAA is not the controlling agency, the National Transportation Safety Board is. And, according to NTSB Part 830, you are required to report aircraft *accidents* and some *incidents* expeditiously. Accidents can take place only between the time persons board an aircraft with the intention to fly (making the rule stick in case the aircraft never actually flew) and the time they disembark, and must involve death or serious injury or result in substantial damage to the aircraft. A full listing of the Part 830 requirements is available on the AOPA Web site.

Serious injury, by the NTSB definition, involves broken bones (aside from simple fractures of the toes, fingers, or nose); hospitalization for

more than 48 hours within seven days of the accident; or second- or third-degree burns over more than five percent of the body.

Substantial damage adversely affects the structural strength, performance, or flight characteristics of the aircraft, and would normally require major repair or replacement of components. Substantial damage is not failure or damage of one engine; bent fairings or cowlings; dented skin; ground damage to the propeller; or damage to the landing gear, wheels, brakes, tires, flaps, engine accessories, or wing tips. Generally, then, a gear-up landing is not considered substantial damage.

If your mishap does not involve substantial damage or serious bodily injury, you don't have to report anything to the FAA or NTSB. But you should, as soon as possible, get on the phone to your insurance company to get the ball rolling on repairs.

—MEC





Repainting was necessary on only the cowling and wings (above right). After the off-airport excursion, four-point safety harnesses were installed at each of the four seating positions.



flight-test weather, we'll have the Timeless Tri-Pacer there for you to see—in the flesh and, true to its plucky nature, none the worse for wear. □

Links to all Web sites referenced in this issue can be found on AOPA Online ([www.aopa.org/pilot/links.shtml](http://www.aopa.org/pilot/links.shtml)). E-mail the author at [marc.cook@aopa.org](mailto:marc.cook@aopa.org)

## Help with the process

*Exhaust system*  
Wall-Colmonoy Corporation  
4700 South East 59th Street  
Oklahoma City, Oklahoma 73135  
Telephone 405/672-1361

*Carburetor and starter*  
Precision Airmotive  
3220 100th Street, Southwest, #E  
Everette, Washington 98204  
Telephone 425/355-6400 or visit the Web site at [www.precisionaviation.com](http://www.precisionaviation.com)

*Millennium cylinder assemblies*  
Superior Air Parts  
14280 Gillis Road  
Dallas, Texas 75244  
Telephone 610/366-8937 or visit the Web site at [www.superair.com](http://www.superair.com)

*Major engine components, including camshaft, pistons, bearings, and seals*  
Textron-Lycoming  
652 Oliver Street  
Williamsport, Pennsylvania 17701  
Telephone 717/327-7278 or visit the Web site at [www.lycoming.textron.com](http://www.lycoming.textron.com)

*Slick magnetos and harness, SlickStart spark booster system*  
Unison Industries  
530 Blackhawk Park Avenue  
Rockford, Illinois 61104  
Telephone 815/965-4700 or visit the Web site at [www.unisonindustries.com](http://www.unisonindustries.com)



## Any Lender Can Understand Why You Need The Money. But Does Yours Understand Why You Need An Airplane?

We understand perfectly. In fact, nearly half of our Cessna Finance staff are licensed pilots—who appreciate airplanes as business tools—and whose aviation lending experience can save you more time, money and hassles than you'll ever know. When you need to move fast, we're ready: Offering quick pre-qualifying, flexible terms, plus loan approvals in as little as 24 hours. We know the market, the values, the equipment. And, above all, we know we can find a way to put you into the new or pre-owned aircraft you want. Because we've already done it over 150,000 times. To see the benefits for yourself (plus a free aircraft loan-value analysis), just call: (888) 355-5332.



WRITE IN NO. 36 ON READER SERVICE CARD



# The Reluctant Trike

## The Europa kitplane becomes a three-wheeler

BY PETER UNDERHILL

**W**hen I flew the prototype Europa four years ago, I subsequently wrote that I hoped Ivan Shaw and his team would “ignore fashion...and never develop a tricycle-gear version.” Being a canny Yorkshireman, Shaw chose to ignore the comments of a dyed-in-the-wool aviation hack and did it anyway. He reckoned that many potential customers for his kits would have learned to fly in Cessnas, Pipers, or Grummans and might be put off by the unusual retractable monowheel/tailwheel landing gear, preferring instead a more conventional undercarriage. ■ His research also suggested that, while as many as 60,000 pilots start their pilot training in the United States every year, an almost equal number of disenchanting pilots drop out of recreational aviation and are lost to the hobby for good, mainly because of the high cost of aircraft ownership or rental. Shaw is therefore determined to address this vast potential marketplace and, to his credit, it looks like he's got it right—again. ■ The worldwide interest







The tricycle-gear Europa uses the same one-piece molded instrument panel as its monowheel sibling (left). The selection of instruments and avionics is left to the builder.

in the Europa has remained high since the design's introduction in the early 1990s, and the small but dedicated team at Europa Aviation in Kirkbymoorside on England's North Yorkshire Moors has delivered more than 400 kits to 27 different countries. By late 1997, more than 60 had taken to the air. Only 25 of the 400-plus sold have been of the new tri-gear version; although, to be fair, most of the marketing focus and sales drive has hitherto been on the tundra-tired monowheel model.

The prototype Europa, G-YURO, was powered by the air- and water-cooled four-cylinder Rotax 912, and the vast majority of homebuilders opted for the same powerplant. A Rotax 914T Turbo version was later developed by Shaw. At least one is in the United States operat-

ing as Europa's American demonstrator. Flown by Shaw himself, that aircraft won the 1997 Unlimited Sun Dash 1250 race outright at the Sun 'n Fun EAA Fly-In, turning in a race speed of 164 mph from a standing start and easily beating into second place the Rotax 914T-powered Katana (by a considerable margin of 34 mph). A number of builders have chosen this more powerful version, especially those intending to operate in hot-and-high conditions. Other engine options include the NSI-converted Subaru EA81 automobile engine (at least two are flying behind this powerplant), the Australian 80-hp Jabiru, the Continental C-90 or O-200, and the Mid-West Engines (originally Norton) AE100R twin-bank rotary engine producing 100 hp at 7,000 rpm. It is this latter engine





that powers the prototype tri-gear Europa.

The general consensus seems to be that the tri-gear looks more attractive than its monowheel counterpart when sitting on the ground. In the air the reverse is true, as retracts inevitably look better than those dangling Dunlops, although to the pilot there is little or no perceived difference. The aircraft is very simple in concept and the pre-flight walk-around is straightforward. On the tri-gear demonstrator, the wing-to-fuselage joint has been smoothed off with silicon compound, so the wings are, in effect, permanently fixed. However, as with the monowheel version, they—together with the tailplane—are normally removable. The whole process

of rigging and derigging takes only five minutes, allowing the aircraft to be towed on a purpose-built trailer. The main gear legs are tapered steel tubes (similar to those fitted to Cessnas, Stoddard-Hamilton's GlaStar, and Van's RV-6 aircraft) and carry hydraulic disc brakes and 4.50×5 wheels, while the fully castoring nosewheel is another 4.50×5 wheel. All three wheels are closely spatted, keeping drag to a minimum.

With the modular construction concept, a Europa builder can buy and build his tailplane and rudder to gain experience before deciding which variant to complete. The tri-gear fuselage module is around \$750 more expensive, all other module prices being identical.

Getting into the tri-gear is not quite

so easy as the monowheel, as the wing walkway is considerably higher. The gull-wing doors are supported by gas struts and move up and down easily, while the door latch is a simple lever on the forward lower corner. The combination lap/shoulder harnesses are simple to put on and adjust, and comfortable in flight.

The attachment points of the main gear are just behind the two seats but still leave ample baggage space of 13.5 cu. ft. However, the area normally occupied by the retracted monowheel and its operating lever (which simultaneously retracts the flaps and outriggers) can now be used as an additional small baggage locker. The total baggage load limitation is 80 lbs. Continued develop-

---

**The general consensus seems to be that, on the ground, the tricycle-gear Europa looks more attractive than its monowheel counterpart.**





---

## In order to keep production costs down, the Europa models have a high commonality of parts.



Although the tri-gear wins the appearance award on the ground, in flight there is little difference between the models.

---

4,000 rpm. (Remember, this is a rotary.) The propeller is driven through a reduction gearbox with a ratio of 2.964:1. A critical instrument is an EGT gauge, situated just to the right of the main flight instruments, with twin needles showing the conditions within the rotor chambers. If one needle drops off line after a power reduction and reapplication (as, for example, following a stall or during a go-around), then one of the chambers has gone *cold* (prob-

ably due to a *rich cut*).

have been solved with the recent introduction of fuel injection replacing the twin carburetors. The final difference is that the rotary runs the opposite way from most conventional engines, is rather "peakier" than a Rotax, and sounds very much like a two-stroke (which in effect it is, having no valves); it is also noisier and thirstier. The former is true because the rotary-powered airplane does not have the same level of silencing equipment as the Rotax-powered model, although this can be fitted by individual builders. However, little can be done about the latter; it is a trait of rotary powerplants, although Mid-West Engines claims that its new fuel-injected version does improve fuel efficiency over the carbureted version.

ment of the whole central console area of the monowheel version has been carried across to the tri-gear and has resulted in a much narrower molding, giving more hip room for, shall we say, lower-aspect-ratio pilots.

It is no surprise that Europa has worked to ensure as much commonality of parts as possible between the two versions, as this keeps production costs down. Thus, the instrument panel is the same molded and easily removable one-piece assembly as the monowheel Europa. The choice of which dials and avionics to fit is left to the individual builder.

Starting and operating the Mid-West rotary is a little different from the procedure for a conventional aircraft engine. It has two electric fuel pumps, which must be exercised individually once the master switch has been selected On. A red push-button primer is then activated for a few seconds, after which both magneto switches are turned On and the starter button pressed. The engine normally wakes up after a few spins of the three-blade Warp Drive propeller and is warmed up at

With the early development engine fitted to the demonstrator, it was sometimes reluctant to fire up again, although this problem appears now to

The pretakeoff run-up is simply a case of checking both mag switches individually and selecting both of the fuel pumps to On. A full-power check takes the tachometer to unfamiliar readings (for pilots of conventional propeller-driven airplanes) as it winds its way around to almost 7,000 rpm. The electric flaps deploy to their full 27 degrees of droop in about three sec-

---

Pilots will notice that the rotary engine turns in the opposite direction of conventional aircraft engines. Note the pitch of the three-blade Warp Drive propeller.





The tricycle-gear Europa (top) partakes of some formation flying with two monowheel models.



onds, while the electric trim is normally set slightly nose down, using a rocker switch adjacent to the little ribbon position indicator on the lower center of the panel.

The disc brakes are operated by two pedals sprouting from the cockpit floor just inside and aft of the rudder pedals. Steering on the ground can be done by rudder alone, but for maneuvering in tight spaces, the application of one

brake and a short burst of power will spin the tri-gear around in little more than its own wingspan.

With full power applied, the rudder rapidly becomes effective and requires the application of considerable left pedal during the early stages of takeoff. The stick is eased back to take the weight off the nosewheel, and at around 50 knots the airplane flies off normally, with a slight check forward

required after liftoff to allow the speed to build toward best climb of 80 knots and the flaps to be brought in once 500 feet has been passed. In the climb, with two fairly hefty occupants and half tanks, we ascended at more than 1,100 feet per minute. I found that a lot of left rudder was needed to maintain balanced flight, while even in level cruise the ball was a full diameter left of center, suggesting the engine may

#### Europa Tri-gear

Price: See notes below

Specifications		Performance	
Powerplant	Rotax 912, 80 hp	Takeoff distance, ground roll	590 ft
Length	19 ft 2 in	Maximum demonstrated crosswind component	14 kt
Height	7 ft 0 in	Rate of climb, sea level	700 fpm
Wingspan	27 ft 2 in	Maximum level speed, sea level	130 kt
Wing area	95 sq ft	Cruise speed/endurance w/45-min rsv, std fuel (fuel consumption)	118 kt @ 75% power, best economy
Wing loading	13.7 lb/sq ft		8,000 ft (26.4 pph/4.4 gph)
Power loading	16.25 lb/hp	Landing distance, ground roll	656 ft
Seats	2	<b>Limiting and Recommended Airspeeds</b>	
Cabin width	44 in	V <sub>NE</sub> (never exceed)	165 KIAS
Empty weight, typical	800 lb	V <sub>SO</sub> (stall, in landing configuration)	44 KIAS
Useful load, typical	500 lb	<i>Builders have a number of engine options, including the 80 hp Rotax 912 or turbocharged 100 hp 914T engines, converted Subaru EA81 automobile engines of 100 or 118 hp, or the</i>	
Payload w/full fuel, typical	389 lb		
Maximum takeoff weight	1,300 lb		
Fuel capacity, std	18.5 gal		
	111 lb		
Fuel capacity, w/opt tanks	27.6 gal		
	165.6 lb		
Baggage capacity	80 lb		
	13.5 cu ft		

Mid-West Engines 100-hp twin-bank rotary. The Continental C90 or the O-200 are also possibilities.

The kit is available in three airframe modules plus a firewall-forward module. Using the exchange rate at press time, the Europa tri-gear kit costs \$21,132 and the monowheel kit is \$20,377, not including engine, freight charges from the factory, or sales taxes.

For more information, contact Europa Aviation Limited, Unit 2a, Dove Way, Kirby Mills Industrial Estate, Kirkbymoorside, North Yorkshire, YO6 6NR, England; telephone 44 1751 431773; fax 44 1751 431706; or visit the Web site ([www.europa-aviation.co.uk](http://www.europa-aviation.co.uk)).

All specifications are based on manufacturer's calculations. All performance figures are based on standard day, standard atmosphere, sea level, gross weight conditions unless otherwise noted.



need a little more offset to straighten things out.

In the air the tri-gear version has the same delightfully crisp control responses and excellent field of vision as its monowheel parent. The roll rate in particular is superb, and the Europa is designed for basic aerobatics in the experimental category. It is surprisingly quick, too, considering what is left dangling in the breeze. A full-throttle straight-and-level run took the tachometer to its redline of 7,200 rpm, producing an indicated airspeed

of 126 knots. A more relaxed cruise of 6,000 rpm returned an indicated 110 knots with a fuel burn of around six gallons per hour; throttling back still further to a more economical 5,000 rpm settled us at a needle's-width over 90 knots.

The stall was not quite as docile as I had previously experienced in Europa's monowheel demonstrators, but this particular example is slightly right-wing heavy (due to a slight inadvertent twist incorporated during the build), and departure is therefore a little more

## ELITE Personal Simulators™

For the best in simulation technology...  
join the flying **ELITE!**



- Unsurpassed attention to detail!
- Single, twin and jet aircraft
- Free US & Canadian Nav Data
- Simple to advanced avionics
- Trimble GPS with real GPS data
- Moving Map
- Instruments and systems failure
- ATC voice scenarios
- Dynamic weather modeling
- Choose from six PCATD models
- Various flight controls available
- Windows 95, Macintosh & DOS
- Software starting at only \$349

PC-ATD  
FAA APPROVED  
PC-based Aviation  
Training Device



Aviation  
Teachware  
Technologies

PO Box 4837  
Winter Park, FL 32793

Call 1-800-557-7590

for more information and demo CD

Tel: (407) 277 7700, Fax: (407) 277 7623

E-Mail: [info@flyelite.com](mailto:info@flyelite.com)

VISIT US ON THE INTERNET  
[www.flyelite.com](http://www.flyelite.com)

WRITE IN NO. 108 ON READER SERVICE CARD



The baggage area, located behind the Europa's two seats, has a maximum capacity of 80 lbs.

positive. Both clean and dirty, and with and without power, the left wing and nose dropped more markedly. Slow flight is no problem, but again I had to keep a careful eye on the ball to ensure that we were properly trimmed. If a Europa is built and rigged properly, it's a total pussycat in the stall regime.

Back in the pattern the tri-gear is as





stable and uneventful as its retractable brother—although, being a slippery shape, it requires the same degree of advance planning. Flap speed is 83 knots, and the normal approach speed of 60 knots is perfect (in no-wind conditions) to arrive over the numbers and, with a normal flare, put the aircraft on the ground in a slight nose-up attitude. I carried a touch of power down final to control the sink rate, rolling it off just before the flare. The gear can absorb a reasonable amount of sink with no worries.

Many potential Europa customers who have flown only aircraft with tricycle gear may well have been put off building one because of its unusual monowheel arrangement, although there is very little reason for such reticence. Now, however, these individuals can choose a tricycle-gear version that is equally as capable and as much fun to fly as the monowheel, with the added benefit of possessing excellent ground manners. Fitted with a Rotax 912 (or even a 914T) it should deliver the same sparkling performance and thoroughly

enjoyable handling of the original design. □

*A U.S. dealer, Europa Aviation Inc., is located at 3400 Airfield Drive West, Lakeland, Florida 33811; telephone 941/647-5355; fax 941/646-2877.*

*Peter R. Underhill of Luton, Bedfordshire, England, former chairman of the Popular Flying Association and former editor of Popular Flying, has logged 2,500 hours during 22 years as a pilot. He owns a Jodel D.140.*



## “Two Trips to the Moon Taught Me the Value of Good Simulator Training”

*Gene Cernan, Capt. USN, Ret.  
Gemini/Apollo Astronaut,  
Cessna 421 Owner/Operator*

“After three trips into space and two trips to the moon, you might think that the ability to handle engine-out instrument approaches to minimums comes standard with the title of astronaut. The truth is that no matter what your level of experience is, there is no substitute for good training — the kind I get at SIMCOM. The classroom and simulator sessions are terrific and with only two students to one instructor I definitely came away feeling more confident about flying my airplane and managing its systems.”

*Call SIMCOM before you make your next simulator training decision. A free video tour is available on request.*

**1-800-272-0211**



**SIMCOM**  
TRAINING CENTERS

**Great Pilots Make Great Choices**

Orlando, Florida and Scottsdale, Arizona  
7500 Municipal Drive • Orlando, FL 32819 • Tel: 407-345-0511 • Fax: 407-345-1282 • [www.simulator.com](http://www.simulator.com)

SUPER KING AIR • KING AIR • BARON • TWIN CESSNA • CHEYENNE • NAVAJO • AEROSTAR • PILATUS PC-12

WRITE IN NO. 186 ON READER SERVICE CARD