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Stock 40 h.p. Volkswagen engine gives import from Europe  
top cruising speed of 112 m.p.h. It stalls at  
44 m.p.h., but you don't have to worry about power—the  
RF4D performs very well as a glider

# RF4D

## Powered Glider: Fun Flyers' Delight

by DON DOWNIE / AOPA 188441

■ ■ As the saying goes, "There I was, flat on my back at 40,000 feet with the prop stopped."

This isn't quite the case. I was actually flat on my back at 7,000 feet, and it was later that the prop stopped. I made a most soul-satisfying hammer-head stall where the airspeed drifted almost to zero before the rudder came in and the little nose slid off to the horizon and then straight down.

When the engine noise became monotonous, I just shut it off and slithered around in the silent sky like a buzzard looking for lunch.

No, I wasn't out of this world, but that's close. It was pure, 100% flying for fun. No radio, no transponder, no flight plan, no student or copilot and no power chart. I was just boring old-fashioned holes in the sky for sheer enjoyment. This was a flight evaluation where I had a complete, 110% ball! Just as soon as the two-place version of this single-seater comes out, I hope to do it all again.

The airplane—if you choose to call it that—is the latest thing in European imports, the Fournier RF4D. It's just about as different as anything in the air today. It's not quite a bird and not quite a plane, but a careful blending of both.

The Fournier is a powered glider with a stock 40 h.p. Volkswagen engine up-front that swings a tiny 4'4" laminated wood prop up to a 4,000-r.p.m. redline. The RF4D is all wood with conventional plywood construction. All exterior surfaces are covered with fiberglass and finished with epoxy paint. It has a 37-

foot high-aspect ratio wing much like its sailplane sisters, yet the RF4D is fully aerobatic except for high speed "flick" maneuvers.

There's a single, retractable landing wheel, a conventional steerable tail-wheel and two tiny non-retractable plastic-wheeled pogos (outriggers) mounted two-thirds of the way out the wing where the spoilers stop and the ailerons begin.

With so many features that are unconventional for U.S. pilots, the RF4D is naturally an exciting airplane-sailplane to fly. The lines of this French-designed, German-built power glider are exceptionally eye appealing. To the soar-

ing purist, that little engine in the nose may not be welcomed. The true sailplane pilot will gripe about the drag of the non-featherable prop, but glider performance, power-off, is 20:1 or 4-feet-per-second down at 55 m.p.h. That's slightly better than some two-place training gliders.

Flying the present RF4D is strictly a do-it-yourself operation since it's only a single-seater. Check-outs are normally made in a two place sailplane and then you go out on your own. Phil Paul (AOPA 282821), owner of the first Fournier on the West Coast, uses his two-place Czechoslovakian Blanik L13 to check friends out as Fournier pilots. His Aero Sport Aircraft Imports in Lancaster, Calif., handles both the sailplane and the VW-powered-glider.

However, since I've held a commercial glider rating for more than 20 years, Paul dispensed with the check flight. But I didn't climb into the import "cold" without seeing how it handled. Phil Paul gave a most interesting flight demonstration while I shot pictures of the Fournier from his 150 h.p. *Citabria* towplane. We had the *Citabria's* door removed for photography and an American Airlines 707 captain, George Foster, did the flying.

It was easy to see that the Fournier was a lively bird in flight and quite sensitive on the controls. Paul is a copilot with the Flying Tigers on 100-ton CL-44's, and even though he's flown sailplanes for more than 12 years, you could see that the powered glider was dancing a little as we tried to hold a photo formation in steep turns over Fox Field near Lancaster in the Mojave Desert, north of Los Angeles.

Once our picture-taking session was completed, 34-year-old Paul pulled away and "had his enjoys" for the morning with a series of loops, rolls, power-off flight and then a smooth pattern to a landing with the engine restarted. He taxied unaided back to the hangar area



Author Don Downie tries the Fournier's cockpit for size. Downie, a tall man, found that he could just make it.

Photos by the author



with the wing-mounted pogo wheels rolling smoothly every time a wing tip dropped more than about 5°.

I adjusted Capt. Foster's back-pack 'chute and walked toward the beautiful red-and-white hybrid, N1771. The wing-walk for cockpit entry could be just a bit wider for guys who wear No. 12 shoes, but once settled down in the cockpit, you find that there's more than enough room, with just a little extra. Without a seat cushion, I found that I could get the beautifully-clear bubble canopy closed easily with a couple of inches to spare. With the seat of your pants just about 18 inches above the runway, I asked for one narrow cushion. This put my baseball cap flush with the canopy.

The cockpit is completely functional and fairly straightforward. The conventional throttle is on the left with the handbrake, used either for parking or taxiing, just below the instrument panel on the left. Gear retraction is accomplished by unlocking a lever located on the floor just to the right of the wheelwell and then pulling back on a lever at the far right of the cockpit. As this arm goes over dead center, the gear-

down light goes off. Counter-balancing of this retraction cycle makes the force required surprisingly light.

The air-start lever is far enough forward of the gear handle so there's no chance of confusion. Phil Paul explained that air-starts begin with a 90-m.p.h. or faster dive, ignition switch (only single ignition) "on" and then give a stout pull on the starter lever.

There's a 10-gallon fuel tank behind the instrument panel and a dependable Piper J-3 Cub-type dip stick fuel gauge. And, just like the J-3, she'll spill a little fuel on the windshield when you're on your back.

The only thing that I found confusing in the Fournier's cockpit was the marking on the choke and fuel shut-off knobs. Choke is used only for ground starts. It is possible to read the markings on these two knobs wrong (see photo) but an easy remarking would put the proper words over the proper knobs. There's no carburetor heat lever since the VW engine takes its air in over the cylinders and then down to the carburetor intake, so you're running with "carb heat" on at all times.

Also new to the non-sailplane types is the spoiler handle located under your left elbow. This activates two upper-wing vertical gates that pop up to "spoil" the lift, increasing your rate of

sink. Spoilers work somewhat like flaps in that they allow a steep descent without an increase in airspeed.

But enough of this over-the-shoulder preflight. It was time to go flying strictly for fun. Paul called for brakes, fuel, choke and switch "on." The VW fired easily and the choke handle was pushed closed. There was something different about this starting procedure, but it didn't register until I "propped" the little engine later for Capt. Foster. The engine and prop turn counterclockwise, as seen from the cockpit, rather than the clockwise rotation of most U.S. aircraft engines.

I taxied out slowly on the 380x150 Dunlop tire. There really isn't much to do before takeoff. How do you check a single-ignition mag? Make sure that both fuel and choke knobs are full forward. Check the controls for complete freedom, make sure that the trim tab is set for takeoff and you're ready. It's a real trim tab on the left side of the elevator, not a bungee spring.

I checked the bright desert skies for nonexistent traffic and gave her the throttle. Takeoff performance exceeds some of today's trainers and even a couple of family four-placers. Somehow you don't expect this from a 40-h.p. automotive powerplant but gross weight at takeoff is only 860 pounds. In zero

A 40 h.p. aircooled Volkswagen engine powers the German-made powered glider. Owner Phil Paul admires the clean lines of the RF4D at Fox Field, Lancaster, Calif.





wind, you can break ground in 426 feet and climb 690 f.p.m. Service ceiling is a whopping 19,685 while an earlier model, the RF-3, holds a world's class record of 36,800 feet, power off.

In calm air, the counter-clockwise rotation of the propeller calls for a little left rudder, but we had more than enough breeze from the right to compensate. It took almost full right rudder to keep with the center line because of the wind. And you're extremely conscious of that white line when you're practically sitting on it.

Once in the air, it was immediately apparent why the Fournier has such a short control stick. Elevator forces are extremely light and if you get "ham-handed" on the stick, you'll over-control clear out of the traffic pattern. This is strictly a finger-tip ship as far as the elevators are concerned. In fact, if I were using one to rent out, I believe that I'd tighten up a little on the bushings of the push-pull elevator tubes so that there was a bit of friction on the system. Ailerons and rudder are normally heavy.

The rate-of-climb was delightful while visibility over the nose was strictly front-balcony. I guess it's normal to expect a "powered sailplane" to be sluggish in climb, but this one isn't. There was a U.S. two-place trainer shooting landings in the Fox Field pattern and I had no difficulty in out-climbing him.

Puffy late morning clouds dotted the area and I began to spiral up under one of them. The weak lift increased the full-throttle climb to about 800 f.p.m. and soon I was nearing the cloud bases. Since Fox Field is only 10 miles away from the Palmdale military assembly line and jets from both Palmdale and Edwards AFB use this airspace, I gave the clouds a wide berth.

First came stalls with the battery-powered red blinker light coming on before the ship stalled at an indicated 44 m.p.h. During tight climbing spirals, the stall-warner flicked on and off depending on the turbulence. However, there's a good solid buffet before stall and the nose drops straight ahead. Actually, the entire tail section looks (and flies) like the *Cavalier* version of the F-51.

The other Fournier warning device is a horn that blows (also battery operated) when the spoilers are extended with the gear up or the throttle retracted with the gear up. There is no over-ride switch on this gear horn, so for power-off flight, you merely advance the throttle past the point where the horn would blow.

Then it was time for happy fun games; tight turns, dives and generally rolling around in the sky. I nosed down, throttled back a bit to keep the engine below red-line and quickly picked up an indicated 140 m.p.h. Then I pulled back into an easy loop. It was so much fun that I went right into another one. I had my Rolleiflex camera snugly locked

under my left knee and was tempted to make a picture through the windshield while the single-seater was inverted. However, that seemed to be crowding things a little on a first flight. So I took a careful look around for other traffic and picked up a little speed for a slow roll.

Most long-winged sailplanes have considerable adverse aileron yaw—apply right aileron and the nose goes to the left and up—but the Fournier didn't show any of this tendency. It has Freize balanced ailerons with push-pull tubes, not control cables. There was a little splash of gas on the windshield as I came off my back and then the RF4D wanted to "dish out" slightly on recovery despite full top rudder. Either my entry speed was a little slow, the roll too slow or the RF4D could use just a little more rudder control. I'd guess it was a combination of all three.

Since "flick maneuvers" are not recommended, despite the high plus 6 and minus 3 limit load factors, I restricted my spins to a half turn and easy recovery. No problem here, but Phil Paul reported that the Fournier does have a tendency to tighten up in a spin after two turns. However, she'll pop right out of the maneuver just as soon as full back stick and full rudder is released.

So enough fun with the powered part of the Fournier. I pulled up into a stall and shut off the ignition. You don't shut off the fuel because it makes the VW too hard to start. An inquisitive pull on the starter handle and I soon had the prop parallel with the cylinders where it reportedly creates minimum drag. Glide ratio is 20:1.

Golly, it was quiet up there with the VW's 40 horses taking a rest. I heard that silky whisper of the wind as I nosed around under the cloud bases looking for a little thermal to play with. The cumulus were finished building for the morning and the best I could do was to soar for perhaps 10 minutes in an area of zero sink (No, that's not a tub in which you wash dishes in the winter!) without loss of altitude. This is pure sport with the challenge of finding rising air currents always staring you in the face. However, the powered

glider has the desirable capability of an air-start when conditions are not strong enough for motorless flight.

We finally gave up on the thermals, dropped the nose and quickly picked up 90 m.p.h. The ignition switch came "on" and the VW started on the very first pull. I didn't collect a purple heart for a bashed right thumb knuckle that some Fournier pilots report from the unpadded gas and choke controls that are quite close to the path of the starter lever.

Then I peeled off and headed down for the Fox Field pattern at a comfortable 120 m.p.h. Visibility is so good that traffic problems are cut to a minimum. Center-line seating is delightful and you feel more like you're wearing the airplane than flying it.

Just one thing, don't forget to drop the single landing wheel. Gear down speed is 68 m.p.h. However, if you do forget and manage to ignore the horn, there are wooden skids along the bottom of the fuselage to keep damage to a minimum. (This same idea might well be incorporated in some of our U.S. production jobs.)

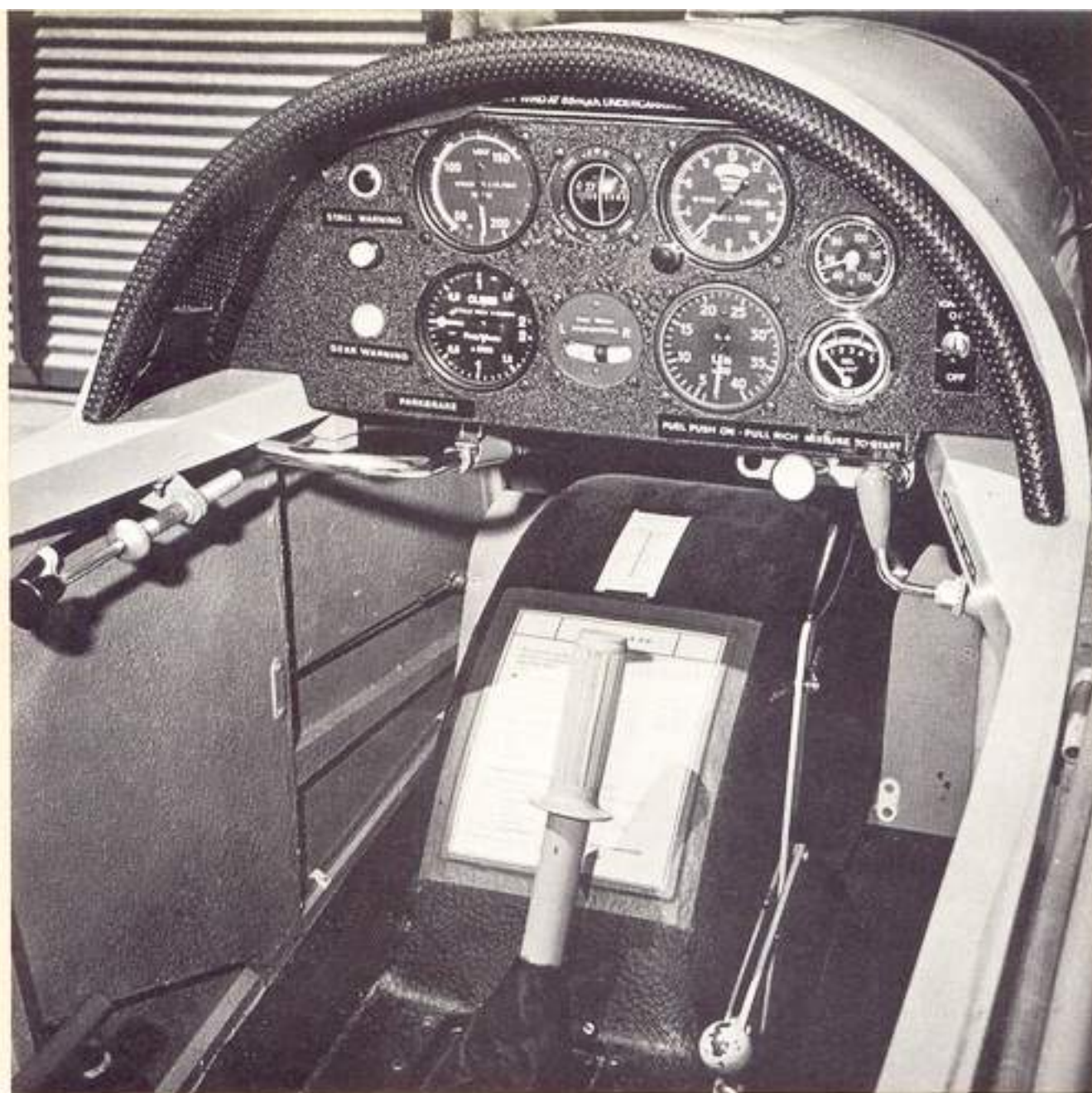
Landing the Fournier isn't difficult, but it is just a bit different from either a sailplane or a conventional power plane. Most sailplanes have a single wheel mounted aft of the center of gravity so that the nose will eventually drop down. You can't do this with that tiny prop out front—and you couldn't taxi very well, either. Thus the landing gear of the RF4D is slightly forward of CG. Recommended procedure is to try to fly it onto the ground at something above stalling speed and "pin it down" with just a little forward stick and full spoilers once you're sure that you're on the ground.

This worked out so nicely the first time that, once the little pogo wheel was on the runway, I decided to try it again. I should have quit while I was ahead, but this was so much flying fun that I fire-walled the throttle and went around again. My second landing ballooned just a bit—and it always seems worse when you're sitting so close to the ground. N1771 asserted that it didn't want to stay on the ground at all and after a couple of unsuccessful tries, I let



Phil Paul (right) and author Downie study wheel details of the Fournier RF4D.





Cockpit and instrument panel of the RF4D. Knob on the floor is the gear lock. The author found labels on fuel and choke confusing (choke knob is concealed by the lever handle on the right side). Both should be forward for takeoff and flight.

her float for a couple of hundred feet at perhaps two feet off the runway to spill off some speed. Then the ship dropped easily in a normal three-point landing. (However, with the RF4D, it's only "two-point" until one of the pogos touches the runway after you run out of aileron control.)

I taxied in, cut the fuel and ignition and reluctantly climbed out. Here's a ship that I hope to fly again on a day when the thermals are popping.

The Fournier RF4D grew out of a single homebuilt in 1961 by Rene Fournier. More than 100 RF-3's were built in France before Sportavia in Schmittheim, Germany, purchased production rights and came out with the present model. Phil Paul reports that more than 100 RF4D's have already logged up to 3,000 hours per aircraft without either structural or engine failure.

Optional equipment includes radio, blind flight instruments, oxygen, 60-pound long-range fuel tanks mounted in the wings and a retractable ski for snowy conditions. Continental Airlines Captain Mira Slovak undoubtedly used more than 60 pounds of extra fuel when he ferried the first RF4D across the North Atlantic Ocean recently.

If you're thrifty at all, you'll really like the power plane performance of the Fournier. Phil Paul picked up N1771 in Denver after Bert Buytendyk (AOPA 249511) had ferried it out from Wooster, Ohio. It took Paul 10 hours and 30 minutes to fly the ship from Denver to Lancaster, Calif., on \$12.10

in fuel costs. He made high altitude landings at Alamoso, Grants and Flagstaff on the 1,050-mile trip into the usual headwinds of the area. RF4D performance is figured at a cruising speed of 112 m.p.h. and a range of 400 miles. At a more economical power setting of 2500 rpm and 70 m.p.h., the RF4D will go 55 miles on a gallon of gas. That's about twice what the ubiquitous VW will do on the ground at the same speed. Paul figures that he can rent his RF4D for about \$8 per hour.

Maintenance costs on the Fournier should be minimum. All plywood is treated with acrylic plastic for long life. The wing and tail fiberglass cover has proven to last for years. And for an engine overhaul, you can put the 135-pound 40-hp VW engine under your arm (if you're a very strong man), carry it to your nearest imported car dealer for a major overhaul. West Coast dealers quote prices around \$245 for a complete overhaul.

The neat two-piece fiber-glass cowling has just two cam-locks on the bottom half of the shell and six on top. It takes perhaps 30 seconds to completely uncowl the engine.

To pilots who have grown up since the days of dual ignition, the single mag concept may seem a little unconventional. To this, Phil Paul remarks, "How often do you see a VW pulled over to the side of the road with mechanical problems?"

So no airplane can really be this good and this much fun to fly without having

any faults? The problem at the moment is in the FAA's "paper work" department. There's a reciprocal agreement between the U.S., France and Germany, among others, to accept certified aircraft of each other's country, but with some reservations. Since powered gliders are relatively new in the U.S. (with the exception of the older Nelson *Hummingbird*, Bowlus *Dragonfly* and a few powered homebuilts), the FAA is in a bit of a quandry of how to license the aircraft (or the glider) and its pilots.

If you fly a powered glider capable of taking off under its own power, should you hold a powerplane license? Then, if you have the capability of shutting off the power in flight and restarting, does this require a glider rating? The Western Region of the FAA threw up its hands and said, "That's a problem for Washington."

However, the present RF4D is a single seater so that both a glider and powerplane student permit would make the pilot legal.

However, what happens after the end of the year when the two-place RF5 becomes available? It's now undergoing German certification flight at Dahlemer Binz Flugplatz, according to Phil Paul. The two-place version is powered with a 65 h.p. engine designed for the VW bus. When the first one of these is imported to the U.S., someone in Washington's FAA is going to have to decide just what kind of ratings are required to carry passengers in a certificated powered glider.

At the present time, the dozen or so RF4D's in this country are licensed only as "experimental" and are in the same category as many homebuilt aircraft. This "experimental" tag is no problem to the owner of a single-place Fournier (list price, \$7,800, East Coast delivery) except for his own personal insurance. However, this "X" certification does present a problem for the operator who wants to use one of these in his flight school.

Once the battle of the paper work is won and the availability of the two-place model for easy checkout, you should see an import that has the performance and for-fun flying to be completely competitive.

Both aerobatic training and soaring are becoming increasingly popular as airborne "finishing schools." From a purely personal standpoint, I wouldn't solo our daughter in a Cessna 150 until I had given her aerobatic dual in a *Citabria* for spins and the capability to roll (not split-"S") off her back. She also had two hops in a Schweitzer 2-22 so that motorless flight was nothing new. However, at the present time, the combination of aerobatic and soaring experience is a complex, expensive endeavor. With the advent of the two-place Fournier RF5 for dual instruction and the existing RF4D for solo practice, the entire training package becomes relatively simple.

And when the two-place RF5 is available, please put my name on the list of prospective pilots, both for additional education and just for fun. □