

Sculpture in motion

Fournier

RF-4D

A graceful, strong, aerobatic motor-glider with delightful handling.

Story by **Bob Grimstead** Photos by **Karen Grimstead**.





Sink rate in glider mode is 256 fpm at 56 kt. Facing page: a recoil starter restarts the engine in the air, but on the ground you have to swing the prop by hand. Undercarriage is a single retractable wheel.

I SN'T THIS AEROPLANE beautiful? It is a Fournier RF-4D: a graceful aircraft crafted by visionary French painter, musician and sculptor, René Fournier. Although initially conceived as a motorised glider (one of the first) it is aerobatic, with delightful handling, and strong (stressed to 13g and tested to destruction at no less than 13.8g). Constructed by hand from nature's composite (wood) with the skill and efficiency of a German company – Sportavia-Putzer – it burns a miserly ten litres of fuel per hour while cruising at 100 knots. Now ask yourself, if this aircraft is so good, why are there not thousands of them?

Actually, 155 were made (plus 89 earlier RF-3 and 225 more two-seaters) but in their day, they were comparatively expensive. In 1968, an RF-4 cost \$5,500 but by 1972 this had risen to \$8,500 – this at a time when a brand new, two-seat, Bellanca-built Aeronca Champ sold for just \$4,995. Nevertheless, more than forty years after its creation, there are still hundreds of this almost mythical family flying all around the world, with a couple of score or more in the UK. They are not only used as self-launched gliders, but as dedicated aerobatic machines and highly-efficient personal transports, as well as for pure fun flying. See: www.fournieruk.com

My life as a Fournier pilot started in 1970, after leaving commercial flying college with the frighteningly tiny total of 237 hours, and a

fortnight's leave before joining BOAC, then Britain's national long-haul airline. Having 250 hours would push me two years up the pay scale. So I found Sportair, a Biggin Hill club that rented out its Fourniers at a mere £4 per hour, or £15 for a day's use with the pilot paying for fuel. I got those thirteen hours in just two November days. But I got so much pleasure from them I continued flying Fourniers for several years and actually won a competition in one – the only time I won anything in an aeroplane.

I later joined the Tiger Club's Turbulent Display Team, bought my own Turbulent, and had lots of fun. Our leader, John Taylor, left to form the Unipart Fournier duo with Brendan O'Brien. Subsequently other team members joined him to become the Skyhawks display trio, streaming smoke from their RF-4 wingtips and flying balletic routines to the music of Pink Floyd. I admired and envied them, but chose the commercial airline life, going off to fly Boeing 747s around the world for British Airways.

Twenty years on, I am retired, living in Australia, flying now just for pleasure, and finally hoping to get my own aerobatics up to display standard. And a local Fournier was for sale – a 1968 example that had been imported into Australia in 1982 with another RF-4 and a two-seat RF-5. Rebuilt, re-covered in Polyfiber just over a decade ago and resprayed blue and

white, it looked lovely and flew nicely, albeit slightly lethargically in Australia's high summer temperatures. I just had to buy it.

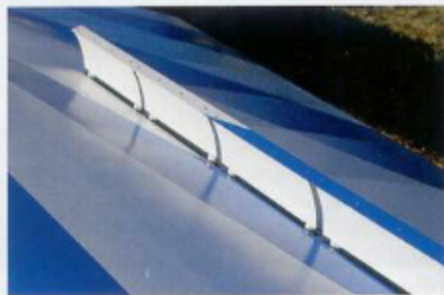
The Fournier's airframe is brilliantly conceived. There is not a spare ounce of mass, no fitting is bigger than it needs to be, and each component integrates with the others in innovative and highly efficient ways. Built of pine and spruce, with Finnish birch plywood and Dacron fabric covering, the massively strong structure weighs a mere 628 pounds. The long, 11.2:1 aspect-ratio wings' laminated pine spar and ply leading-edge D-box form the trusty and oft-used NACA 23015/23012 aerofoil. This wing section was originally perfected for sailplanes, and its convex undersurface is good for inverted flight.

The bicycle undercarriage incorporates a single, retractable 500 x 5 main wheel with rubber bungee suspension and a steerable solid tailwheel with compressed rubber suspension. These are supplemented by two skinny underwing outriggers (roller-blade wheels on nylon rods) to keep the wingtips off the ground.

The engine is a French Rectimo-modified 1,192 cc 1960s Volkswagen Beetle car motor with single ignition and no carburettor heat, since the air intake continuously breathes warm air. Rectimo claimed it produced 39 roaring, snorting, thundering horsepower in ISA at sea level (or, at least, it might have, 1,000 hours and 36 years ago). Mine mustered 35.1 hp on a



Cruising at 100 kt gives four hours endurance. Below: 35 hp Rectimo V6 engine. Spoilers are an essential landing aid.



you have to be quick to apply drift once you are airborne, to prevent being blown away downwind. The crosswind limit in the manual is fifteen knots but I have flown in more than that.

With such a low wing-loading, the aircraft floats into the air at around fifty knots after a run of 300 or 400 metres (unless it is very cool), for a 55-knot initial climb until the wheel is up, after which you can accelerate to 70. All the controls are light and responsive; the elevator in particular is delightfully sensitive. This can cause some overcorrection initially, especially when retracting the wheel, which requires a change of hands on the stick.

Thanks to the low span-loading, the climb rate is around 500 fpm, although the manual quotes 690 in ISA. It sometimes takes me as much as twenty minutes to stagger to 6,000 feet on a hot day, but this is not a full-on contest machine, so I take advantage of any convenient thermals – there are usually plenty when it is hot. Turning into the lift and circling tightly at fifty knots, those long wings will often lift us at well over 1,000 fpm.

GREAT FUN TWIZZLING

The thing that most impressed me on my first Fournier flight was the outstanding visibility from that panoramic perspex canopy. You can see not only all around, including directly behind you, but also almost straight down over

that skinny wing, both ahead and behind. It was also a little strange to be propelled by a tiny Volkswagen's dugga-dug-dug rather than a jet's whoosh or a Lycoming's thrum.

The delightful handling, with light and well-harmonised controls, also impressed me, although the roll-rate is inevitably fairly leisurely. Some rudder is needed for turns as the adverse yaw is quite marked. Control pressures do rise with increasing speed, but only slightly, and all axes remain pleasantly light at all speeds up to the V_{ne} at 135 knots.

The Fournier's stall is viceless, with or without power or spoilers. The aeroplane's negligible drag means it takes a while to slow down enough to reach the break, which comes at 40 knots clean, 41 with spoiler, and is preceded by the warning light around five knots higher, and minimal, high-pitched buffet. Recovery merely requires reducing stick back pressure; moving it forward will only cause a greater height loss. Power on, a slight wing-drop sometimes accompanies the stall, but control in all axes remains good right up to the break. The height loss is generally little more than 100 feet, with or without power (the manual says '65 feet').

Steep turns are most enjoyable; the speed drops off very slowly in banks up to 60°. You can roll to greater angles but then you lose height because of the limited power. Nevertheless, it

PRaised BY PILOTS

RENOWNED DISPLAY PILOT and broadcaster Brendan O'Brien wrote (in *Aeroplane Monthly*) that the Fournier RF-4 was his favourite aeroplane. Ex-Skyhawks Fournier display team leader John Taylor said: "The Fournier is in a class of its own." Former display pilot Matthew Hill said, "The Fournier is a strong old bird. One pulled 7g and showed no signs of complaining at all. If for any reason it goes quiet, you can look ahead for a place to land rather than underneath you! Fourniers are now much in demand because they are very quiet and have low fuel consumption."

UK display and corporate pilot and aviation journalist Peter Turner said, "Glad to hear you have bought an RF-4. You will love it. It is one of the nicest aeroplanes I have flown."

South African display pilot Peter Goldin said, "My Fournier is one of the sweetest flying planes and very pretty. It can do many aerobatics (about fifty per cent of my flying). I once pulled 7.7g, and there was no damage at all. It goes cross-country at reasonable rate, sips fuel and glides a long way. I once climbed it to 18,300 ft by a large cumulonimbus, cut the motor and glided about fifty miles home."

The first UK Silence Twister builder Peter Wells said, "The Fournier RF-4 is widely regarded as the finest single-seat light aircraft ever made..."

can be immense fun, twizzling around on the spot at four or five g, and watching the upper wing skin wrinkling under the loads.

The maximum cruise power of 3,300 rpm gives just below 100 knots TAS, at the miserly consumption of under ten litres per hour, giving you nearly four hours endurance from the 38-litre tank. Reducing to sixty knots, this frugal motor sips fuel at just four litres per hour for a near ten-hour endurance, or a 550 nm range. And that is precisely how I clocked up those necessary thirteen hours, 35 years ago!

Back in 1970, Fourniers entered many air races. One won the Dawn to Dusk contest in a single day by flying 1,234 miles in 14 hr 21 min, averaging 99 kph and using just 116 litres of fuel. American airshow pilot Mira Slovak flew his RF-4 all the way over the Atlantic for an air race (in which he won his class, taking 175 hr 42 min) and then all across America. After crashing it, he did the whole thing a second time with a replacement aeroplane! That Fournier, N1700, now hangs in the Seattle Museum of Flight.

Mine does the most delightful, gentle, elegant aerobatics, although its very basic fuel system (a gravity-fed carburettor) means the engine stops under the slightest negative g, but the airframe is so clean she only slows a little and hardly at all if you follow a slightly downward path through each manoeuvre. She burns around a