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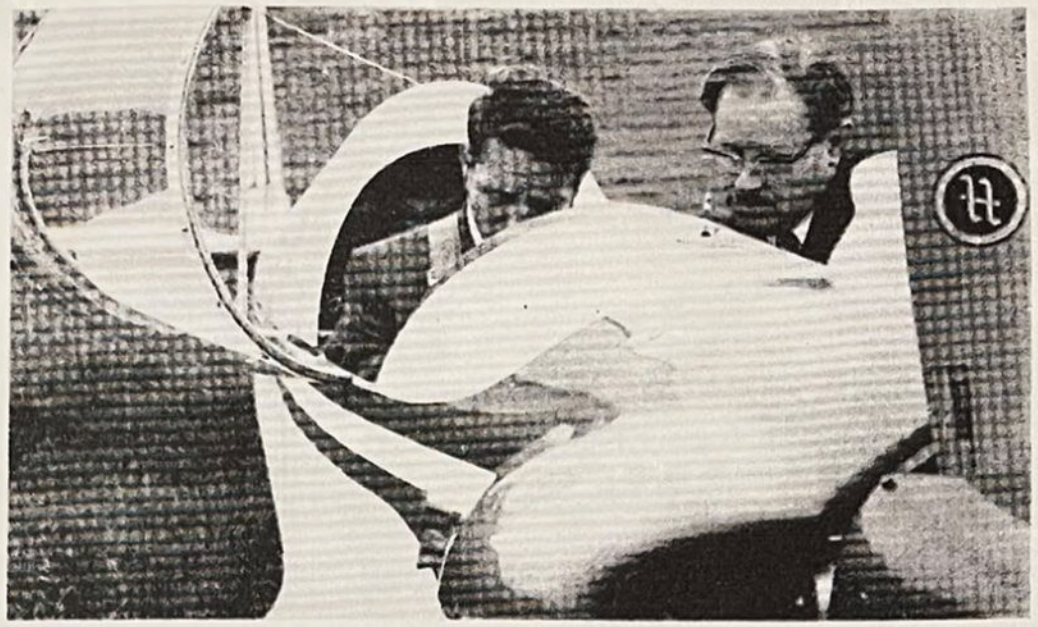
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THE FOURNIER RF-4



PILOT REPORT



Number Nineteen of the Series

by MARK LAMBERT

Fournier RF-4D

Four clubs and several private groups and individuals are now running 13 RF-4D Avion Planeurs in Britain. The message of the new kind of flying that this aircraft offers is steadily spreading. Having flown and reported on the earlier, semi-aerobatic RF-3 in Light Aviation for January 1967, I thought it worthwhile to have a quick look at the definitive RF-4D refined by Sportavia/Putzer in Germany and now being sold in Britain by Sportair Aviation Ltd at Luton. The aircraft I flew was G-AVNX. It is used with public transport C of A for club flying at Stapleford Tawney, where it is hired for £3 6s 8d per hour or £4 per hour according to the number of hours guaranteed by the hirer during a day or month.

Unfortunately the RF-4 costs quite a lot to buy—£2,400 plus £300 duty, if applicable, but the hire fee is moderate, particularly in relation to the fun it allows.

The fascination of the RF-4, and justification for the cost, is the extreme variety of experience one can obtain. For many people, the still-unusual experience of a genuine single-seater must almost be sufficient attraction. The possibility of covering ground quite rapidly at low cost, or the prospect of some aerobatics or the ability to one's hand at soaring are opportunities rare or impossible in present club aircraft of any size. But the RF-4 has a charm all its own which is worth savouring whatever else one is looking for.

First of all, the main changes in the RF-4D are strengthened structure, greatly improved ailerons, rounding of the lower corners of the rear fuselage, addition of a wing-root fairing and a hand-starter for the engine. This last can be used on the ground, but finds its real application in giving the engine an initial twiddle in flight to restart it without the prolonged dive previously required. Strengthening makes all normal, non-flick aerobatics possible at a slightly reduced gross weight of 820 lb, which still allows for full fuel and a 165 lb pilot. Maximum non-aerobatic gross weight accommodates extra-heavy pilots and some 22 lb of baggage in the locker behind the seat.

Aerobatic stressing is nominally given at +4.4g and —1.8g but has been checked at far higher levels. Inverted flying is limited as in other aircraft, by the engine oil system and fuel supply.



The rounded fuselage and wing-root fairing supposedly reduce drag and may marginally affect directional characteristics in certain circumstances. Most significant and definite improvement from the handling point of view is the vastly improved ailerons, which now give the RF-4 a very respectable rate of roll with quite light aileron forces. Rudder size and effectiveness are marginally increased and the elevator appears to have been made slightly heavier. The overall result is much better harmonisation of controls, reduced adverse yaw in turns and pitch-axis handling less likely to lead to inadvertent overstressing.

For many months I have cherished the memory of the 118 mph I observed at 3,500 rpm on a very cold day in the RF-3. I was therefore disappointed to observe only 100 mph at 3,150 rpm and 103 mph at 3,300 rpm in G-AVNX, but it obviously had had some pretty intensive club use. I noticed that the ailerons appeared to be floating slightly up with the stick carefully centred and the aircraft was flying decidedly left wing heavy. There may have been some ASI error, but the indicated rate of climb was also slightly below par, indicating some 200 ft/min less than I would have expected. Perhaps the engine was getting tired or the airframe needed polishing. Other RF-4s are up to scratch in speed and climb.

Flying for the first time in formation, with an Aircoupe for photography, I was delighted with the crisp handling and ease of manoeuvring close alongside the other aircraft. Visibility for formating from a wide variety of angles was excellent and cockpit comfort was unusually good. There was plenty of room in the cockpit, despite the large mainwheel bay between my knees, and the quick-adjusting five-strap harness was unusually comfortable and effective—and easy to adjust.

Mainwheel retraction and extension still require a little timing for clean operation. You have to switch the right hand from the locking lever to the main operating lever very quickly to make use of the natural swing of the gear as airstream or balance spring have their effect. At its forward, gear-down position, the main lever is virtually out of reach if you are strapped in, but a finger tip at full stretch, or a nudge with

(above)
Eric Thurston briefs Mark Lambert at Stapleford before take-off.

the foot will fix it. Both up and down locks engage with an unmistakable clunk. In any case, the forces are not remotely as high as in, say, a Mooney: neither does one end up inducing semi-aerobatic manoeuvres with the left hand on the stick while working the lever with the right. A big red warning lamp lights whenever the throttle is returned with the gear up. For some reason, extension is more easily forgotten in this aircraft and Sportavia have sensibly applied balsa rubbing strips to cushion a wheel-up landing.

More of a nuisance is the right-hand positioning of the trimmer, which has to be used after making large changes in power.

The airbrakes no longer tend to suck open if not locked in, though perhaps this has been achieved by friction in the control run rather than by any deliberate geometry. They are now cleared for use at all airspeeds, though they should not be moved out into the airstream at more than 110 mph. Diving out of a loop they produced useful retardation without apparent trim change. In level flight at below 100 mph they produced a sharp downward jerk though not a lasting trim change.

Flying in formation I noticed that they did not produce much retardation. Their main action was to dump lift, an effect which became markedly apparent when adjusting a glide approach. I did not have to lower the nose much to hold speed: the rate of sink simply increased a great deal. At a normal 70 mph approach speed, sinking tendency could be checked with elevator during the flare, but at about 60 mph, the sink became more determined and I thought it wise to keep my hand on the airbrake lever, ready to reduce sink if necessary right up to moment of touch-down. A slow flare with airbrake extended easily leads to a tail-first touchdown.

The trim change from extension or retraction of the main wheel proved minimal, but engine power changes produced considerable trim changes. With wheel and airbrakes extended, full aft trim stabilised 70 mph and the RF-4 then descended at an indicated 800 ft/min. Application of full power induced a considerable nose-up rotation, but this could be instantly cancelled by returning the trim lever to neutral. Both hands could then be applied to gear and airbrake retraction, leaving the RF-4 happily climbing hands-off. There never seemed to be anything critical happening in the RF-4.

The effect of that very long, lightly loaded wing on handling is intriguing. Now that the ailerons confer a really useful rate of roll, one can enjoy the unusual disinclination of the RF-4 to roll away from level flight on its own, even in gusts. The low wing loading

Sportavia RF-4D Avion Planeur

(39 h.p. Rectimo 1,200 c.c.)

Span, 37 ft; length, 19 ft 10 in; wing area, 122 sq ft; aspect ratio, 11; empty weight, 595 lb; gross weight, 860 lb reduced to 820 lb for aerobatics; fuel capacity, 8.3 Imp gal; wing loading, 7.1 lb/sq ft; power loading, 22 lb/h.p.

Performance *Never exceed speed, 155 mph; max full control speed, 124 mph; normal cruise, 112 mph at 2.1 Imp gal/hr; economical cruise, 56 mph at less than 1 Imp gal/hr; stalling speed, 44 mph minimum sink, engine stopped, 4 ft/sec at 55 m.p.h.; best glide ratio, engine stopped, 1 in 20 at 59 m.p.h.; rate of climb, 690 ft/min; take-off to 50 ft, 885 ft; landing from 50 ft, 755 ft; service ceiling with engine, 19,000 ft.*

ought to make it more sensitive to rough air, but bumps produced a level bounce rather than a change of attitude. Even large rudder angles induced practically no roll. Yet use of aileron induced only slight adverse yaw—less than a skid ball's width with very nearly full aileron at around 90 mph. I would class the rudder as slightly weak for aerobatics, but it was adequate for a perfectly comfortable stall turn to the right, that is, favoured by engine torque reaction. Normal rolls were quite straightforward with enough aileron to complete the manoeuvre promptly. This was an improvement over the RF-3, but the RF-4's nose definitely tended to drop when emerging from the roll and fair forward stick was necessary while inverted.

Of special interest for an aircraft which will be aerobatted without preliminary dual instruction by pilots of possibly limited experience, was the rate of acceleration in a dive and the likelihood of overspeeding the engine. The RF-4 accelerated quite well to its 124 mph looping speed, but the throttle had to be retarded very considerably to hold the rpm within the 3,600 limit. The aircraft went up and over the loop very smoothly and there was no need to hurry the manoeuvre in order to preserve speed at the top.

The degree of control and the stressing are, of course, nowhere near the level required by the specialists in exotic aerobatics. For one thing, many of the usual aerobatics are performed at speeds close to the 124 mph maximum for brusque application of full control deflection. Smoothness was in fact the dominant impression of aerobatics in the RF-4. It felt unusually good.

Another factor simplifying aerobatics in the RF-4 was the extremely docile stall. Virtual absence of aerodynamic warning was covered by a conventional vane and warning light and buzzer, but the stall itself produced neither wing- nor nose-drop and occurred with the ASI needle virtually off the clock, well below 50 mph indicated. With the low wing loading, quite high g-loadings could be applied before even the stall-warner sounded. In parenthesis, I would have liked a g-meter to give me some precise indication of actual loading. I did like the way in which both ailerons and elevator heavied-up at beyond 100 mph, providing a definite sensation of increasing speed. With its special ability to expose inexperienced pilots to possibly unfamiliar flight conditions, the RF-4 must show its feelings quite distinctly. The fact that it seems to do this, even though it preserves a classic feel and high performance relative to the horsepower speaks volumes for the designer's skill.

So the RF-4 flies extremely smoothly and enjoyably. Socially, it is also remarkable for its superb appearance and because it makes very little noise. It is likely to excite people, but not to disturb them. I believe that the much lamented Cosmic Wind showed a select few pilots some characteristics more usually found only in jet aircraft—with few of the attendant problems in other directions. Each new exotic aircraft raises one's hopes of rising to the same level of excellence. None that I know has got closer to it than the RF-4.

Close cowl close up: the front end makes as little aerodynamic fuss as possible.

