Wassmer WA 52 Europa

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My 16-year-old Jensen 541R has been a source of much pleasure. In its heyday the 541 must have been more or less unique, for its beautifully styled body was made in fibreglass – Jensen started using the material some quarter-century ago, and were one of the first in the world to have a production line making fibreglass car bodies. Mind you, no attempt was made to carry road stresses in these bodies, and my car has a tubular chassis that looks as though it was put together with bits from the Forth Bridge. While no-one would claim that fibreglass is *the* perfect material it nevertheless offers some very attractive features: there is no corrosion; it may be moulded into complex shapes of large size without external evidence of joints; a smooth, rivet-free surface is possible; and when production runs are modest, it can be cheaper than other methods of construction. There are other properties that make fibreglass a useful material. It has firmness and to some extent the character of tempered steel, so one finds it in fishing rods and Olympic standard poles for high-jumping events. It can be built up around relatively inexpensive plaster or concrete moulds, and these are certainly cheaper to make than costly metal press tools. And when it is necessary to strengthen a particular area it can be built up gradually in thickness, thus ensuring good distribution of the loads. So it is hardly surprising that the small boat industry has gone into fibreglass in quite a big way. If Jensen no longer use the material in their car bodies, other specialist manufacturers do.

So it's strange that the plastic plane has been so long in coming. The Miles concern did quite a lot of research years ago into plastic structures and what they called 'improved wood', ie wood impregnated with plastic. Fibreglass is firmly established as the leading material for the construction of high-performance sailplanes. And for some years

The Europa is excellently finished, with a smooth surface free of joints, seams or rivets. The doors, which have usefully low sills, open upwards like a gull-wing Mercedes. The 160 hp Lycoming has a constant-speed prop.

now many light aircraft have used fibreglass for non-structural parts such as cowlings and wing-tips. Probably the first serious attempt at producing an all fibreglass (powered) airframe was the Windecker Eagle in the United States. Then Wassmer, the old-established manufacturers based at Issoire in France, came out with the 150 hp WA51 Pacific in the early 1970s. From this design was developed the 160 hp WA52 Europa, the subject of this article, and its 180 hp brother, the Atlantic.

Unlike cars with fibreglass bodies these Wassmer aircraft use the material structurally. They are certainly nicely finished; the entire exterior, wings and fuselage, have a surface reminiscent of those high-quality heat-resistant table mats. The wing carries a pair of electrically-operated Fowler-type flaps. It is of relatively small area, 133.5 square feet as opposed to the more usual 150-175 square feet for a light aircraft in this class, and other than some tracking for the flaps the structure is of very clean design. The wings have slight taper and their leading edges sweep forward as they near the fuselage. There are two 16½ gallon tanks, each filled through an over-wing point, and although it is not cleared by the *British* authorities, Wassmer offer an additional 15 gallon tank mounted in the fuselage behind the rear seats. The ailerons are set well inboard from the wing-tips.

The all-moving tailplane and the fin/rudder surfaces are all free of joints, seams or rivets; one could almost imagine that the Wassmer Europa is an Airfix model come to life.

The fuselage is nicely proportioned and the cowlings fit closely around the 160 hp Lycoming engine, which in this model drives a constant-speed propeller. I have made unfriendly remarks before about badly-designed undercarriage fairings – in particular those fitted to some American aircraft: you pay extra for spats and other coverings which do enclose the wheels but still contrive to leave the brakes and torque links out in the breeze. No wonder they contribute so little to the cruise performance. The Europa's undercarriage suffers from the same design weakness, and I suspect this more than anything else is responsible for the rather disappointing cruise performance of this otherwise clean design.

There is a walkway on each wing root, and entry to the cabin is made particularly easy by provision of two upward-hinging doors that remind one of the Mercedes 300SL or the Miles Messenger and Gemini of immediate post war days. The cabin is comfortable, with two firm but well-designed adjustable seats for the pilots, and a rear bench. Although this is big enough for two people, maximum weight allowed on a British C of A is 190 pounds. This means two seven-stone women or children, or one 170 pounder and 20 pounds of baggage. For practical purposes the Wassmer Europa must be regarded as a three-seat aircraft or a 2+2.

The instrument layout is tidy and all controls are convenient, with the exception of the electric flap switch which is next to the throttle on the central console. Although it has guards fitted either side I found it easy to move the flap switch inadvertantly while adjusting the throttle. Also on the central console are the elevator trim wheel and its indicator, the flap position indicator, the propeller control and the fuel cock. All switches are of the thermal overload circuit breaker type, with a large green button to press for *on* and a smaller red one for *off*. There are no toe brakes – just a hand toggle which doubles as a parking lever. There is plenty of room for radio, and the 'flight deck' is set off nicely by a pair of rams-horn control wheels which the manufacturers claim to be of similar shape to those in Concorde.

The Lycoming engine fitted to the Europa is very similar to those used in the Twin Comanche, except that it is not fuel-injected and must therefore be started in the manner usual for carburettor motors. Taxying is simple enough using the somewhat firm nose-wheel steering through the rudder pedals assisted by the brakes as required. The small wing is loaded at 17.5 pounds per square foot, which is quite high for this power of aircraft. The owner's manual recommends use of 12½° of flap for take-off. At that setting the Fowlers extend to their maximum area-increasing position and depress slightly to increase the camber. With full fuel, two adults and quite a lot of luggage in the cabin we lifted off after 13 seconds. The OAT at ground level was +32°C, so our density altitude was 2,500 feet. There was a lot of thermal activity low down and this made it almost impossible to measure an accurate rate of climb. In the first minute, we went from 1,500 feet to 1,900 feet, a not-very-inspiring 400 fpm; yet the next minute added 1,000 feet, so from 1,500 feet we had averaged 700 fpm. The English manual for the aircraft quotes a maximum climb rate of 784 fpm from sea level, and while I accept this as a fair figure, the →

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5 fpm claimed by the manufacturer is pure ıtasy – unless the 95 knots recommended best rate of climb in the English manual is ster than that advised by Wassmer. Cer-nly the aircraft is in a very flat climbing atti-de at that speed. Frankly I suspect the itish manual; it is a very incomplete affair, d other than a recommended cruise setting ere are no tables giving percentage power m and manifold pressure) against altitude. the only figures given, 2,300 rpm and 85 ezes' manifold pressure (sounds like some d of pasta), we indicated 110 knots at 000 feet. There was no outside air tempera-e gauge on the aircraft tested, but estimat-g a 9° drop from the sweltering 32°C at ound level, 23°C combined with 3,000 feet ns this into a TAS of 117 knots (135 mph). cording to Wassmer the aircraft should ise at 250 km/h which is 135 knots (155 ph). Assuming we had gone up to 7,000 et, and allowing for the temperature on the y of test, I calculate we should have to indi-te 120 knots to attain 135 knots true. At 000 feet I found one required 2,400 rpm for s IAS using the recommended 85 piezes (I sh I knew what that was in rods, poles and rches), so either the manufacturers are ing optimistic or the power setting recom-ended in the British manual is less than %. Perhaps it is a case of a little of both.

e rams-horn control yokes are similar in ape to those in Concorde, or the HS-25. The panel is very attractive, with a ntre console (like that in some sports rs) between the pilots housing power ers, flaps and trim. The seats are tably comfortable.

Even at 2,400 rpm the Europa is commendably quiet, and the all-round visibility is above-average. The ailerons are good, the rudder is very light in comparison to most modern designs, and the elevators have a nice feel to them. Clean the Europa stalls at 62 knots IAS; flap 12° reduces this to 55 knots, and full flap (30°) results in a g break at 52 knots. In each case there was a gentle right wing drop.

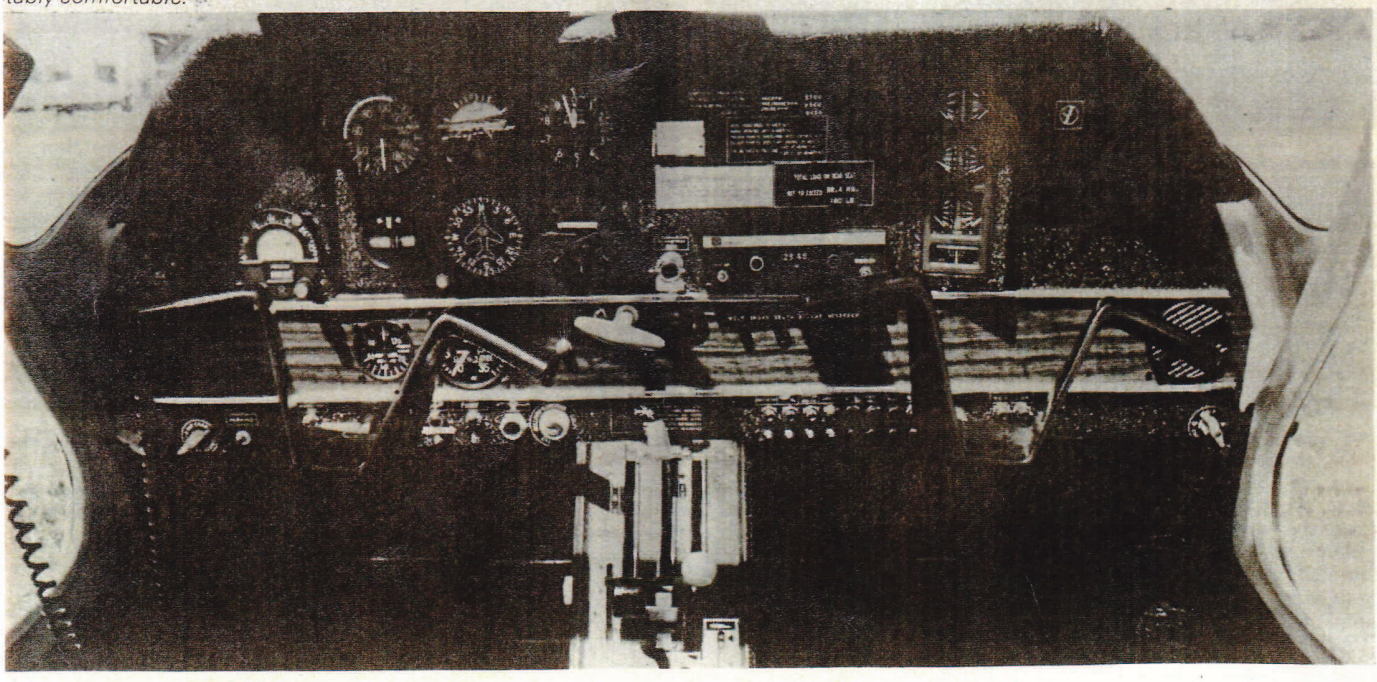
Lateral stability is moderate (perhaps a little better than the average modern light aircraft); directional stability is adequate if less pronounced than is usual these days, but damping in pitch is excellent. Generally I liked the handling and also the Concorde-type control yoke, which is natural to the feel, and I would imagine comfortable on a long journey. While the cabin is not the most luxurious I have seen in a modern light aircraft, it is businesslike, and once you have found out which way to turn the cabin air controls (one for cold, another for hot) ventilation is quite good. I should imagine one could become very attached to the aircraft ... it has a nice, cosy feel to it.

The flaps may be lowered at any speed up to 105 knots, but their operation is a rather slow business and I feel the manufacturers should either alter the gear ratio of the motor, or better still arrange a follow-up device so that a pilot may select a particular number of degrees on the switch and leave the flap mechanism to get on with the job. At present one has to hold down a spring-loaded switch and wait for the flaps to crawl to the required setting. I do not think Wassmer have done enough work on these flaps. Having gone to the trouble of designing a wing of compact size fitted with area-increasing flaps, it is a pity they are not capable of producing more drag when the occasion requires it. For at the recommended 58 knots the Europa has a flat approach, and I would imagine this could be improved by increasing flap depression from the present modest 30°. As it is, even with the lowest power settings the aircraft holds a rather nose-high attitude on finals, and when the time comes to round-out there is very little change in pitch followed by a fair amount of float before contact is made with the landing area. After landing the elevators remain powerful enough to hold off the nose-wheel until the speed has reduced to the point where they run out of airflow, and then the effective brakes may be applied.

In comparing the Wassmer Europa with other aircraft of the same category one must bear in mind that fibreglass airframes are still relatively new, and like so many pioneering enterprises, this one pays certain penalties for being among the first. The principal price paid is weight. Not enough is known about fibreglass and its quality or dimensional control to allow the accurate weight-shedding exercises that have gone since become normal practice in the construction of wood, steel or light alloy airframes. On the contrary the Europa must contend with the 'ignorance factor', and deal with it by allowing more material where it matters than might be considered necessary in the light of future experience. Obviously more material means more airframe pounds, and a corresponding reduction in useful load. The following figures for some of the popular light singles within the 150-160 hp bracket make interesting reading, because even the relatively small wing of the Europa does not prevent it having a higher empty weight than the others.

	Empty wt. (lbs)	*Max. wt. (lbs)*	*Useful load (lbs)*
Wassmer Europa 160 hp, VP prop.	1,426	2,336	910
Cessna 172 150 hp	1,370	2,300	930
Grumman Cheetah 150 hp	1,250	2,200	938
Piper Warrior 150 hp	1,301	2,325	1,024
Robin DR400/Knight 160 hp fixed prop.	1,240	2,330	1,090

There is no doubt in my mind that fibreglass has a future for light aircraft. It is an ideal form of construction when production runs have got beyond the one-off stage but do not justify an investment in expensive metal press tools. There is no corrosion. Exterior finish can be very good. Repairs are relatively simple, and making complex shapes presents few problems. The weight difficulty might be



dealt with in future by introducing carbon fibres or some such in highly-stressed areas – it is only a matter of time before this exciting new material comes down in cost to more acceptable levels.

The weight restriction in the rear of the cabin is another matter. By now some 200 Pacific/Europa/Atlantic aircraft have been sold in France and Italy, and these are flying with four people and baggage, so it is tempting to point the finger at the CAA Airworthiness Division and accuse them of being unreasonable. However it is not as simple as that, because my enquiries reveal that the gentlemen at Redhill did their best to get the design through. But the problem is that in Britain single-engined aircraft may fly in IMC and at night; and it appears that with a full load in the back of the aircraft, although it handles perfectly well at normal cruising speeds, with flap down on the approach stability in pitch was not considered good enough for a pilot of average ability. I believe the manufacturers are looking at this problem. One must acknowledge that however unimportant it might be under ideal conditions, stability on the approach must be regarded as vital when flying at night or while doing an ILS in poor weather.

Assessing this interesting aircraft in few words I would say it is good to look at, has a quiet and comfortable cabin, and handles quite nicely. While it is not as fast as it should be, improved undercarriage fairings might add another four to five knots to the cruise. It could be that these Wassmer fibreglass aircraft will go down in aviation history as the lightplanes that started the move away from boilerplate technology, and paved the way for the first real breakthrough in aircraft construction since light alloys appeared in WW1. □

Wassmer WA52 Europa

Dimensions

Wing span	30 ft 10 ins
Wing area	133.5 sq ft
Wing loading	17.5 lbs/sq ft
Power loading	14.6 lbs/hp
Length	24 ft 7 ins
Height	6 ft 10 ins

Weights

Maximum authorised	2,336 lbs
Empty (standard)	1,426 lbs
Useful load	910 lbs
Fuel capacity	33 imp galls
Maximum baggage	99 lbs
Max load in rear cabin	190 lbs

Performance

Maximum speed	143 kt (163 mph)
75% cruise at optimum height	135 kt (155 mph)
Measured cruise (recommended handbook power setting)	117 kt (135 mph)
Rate of climb at sea level	784 ft/min
Service ceiling	14,500 ft
Range at 75% power	445 nm (510 sm)
Range at optimum cruise speed	491 nm (565 sm)
Take-off distance (50 ft screen)	350 m (1,150 ft)
Landing distance (50 ft screen)	400 m (1,300 ft)

Engine

Lycoming 0-320-D1F developing 160 hp at 2,700 rpm.

Propeller

Hartzell HC-C2YL constant speed, two blade metal.

Distributors

Rollason Aircraft and Engines Ltd., Shoreham Airport, Sussex.

Price

Basic aircraft ex factory F132,000 – at F8.40 to the £·£15,715. A Wassmer Europa equipped with a full instrument panel. NAV/COM etc would cost around £18,000 plus VAT.