



Photos by the author except as noted.

PILOT FLIGHT CHECK: The ROBIN HR100/285 TIARA

by ALAN BRAMSON

■ ■ It sits low on the ground, a thing of great beauty with a Spitfire-like nose, a large, three-blade propeller, and the biggest expanse of canopy you have ever seen on a small plane.

A close examination reveals the complete absence of rivet heads, a paint job of the highest order, and sleek, flowing lines from nose to tail. There is an irresistible temptation to touch, and it is then that you notice the firm feel of the wings and fuselage—more like a car than the frail, flexing panels of most light aircraft.

Looking through the deep windows, you see a superb instrument panel, neatly laid out with a scale of equipment that, not so many years ago,

This Spitfire-nosed Gallic four-seater boasts range; speed; superb cockpit visibility.

Flown in England for The PILOT, it may soon have a U.S. distributor

Robin Tiara in flight, Bramson in the left seat. Photo by James Gilbert.



ROBIN TIARA continued

would have made an airline captain green with envy.

"She will fly nonstop 1,300 miles at more than 190 mph," you are told, so by now you can be forgiven for imagining that the Robin Tiara is the product of some large concern employing thousands of staff and enjoying great resources. For few would disagree that the aircraft is a great technical achievement.

In fact, the HR100 Tiara was designed and is built by Avions Robin of Dijon, France, one of the smallest aircraft manufacturers in the world.

The first few HR100s, known as Royals, were powered by a 200-hp Lycoming engine, but most examples so far delivered have a 210-hp Rolls Royce Continental. The wing of the Royal has four fuel tanks, holding no less than 120 gallons and offering a staggering range of almost 1,700 miles at 75% power. Bearing in mind the Royal's fixed undercarriage, a 162-mph cruise (TAS) at this power is outstanding in a full four-seat aircraft with a roomy cabin.

(These figures are no myth. Earlier this year I flew a Royal in the Robin West African Air Rally, a 7,000-mile

jaunt that took us beyond Dakar and back, all within a period of 12 days. We flew several legs of over 1,000 miles and landed with more fuel than is carried by many light aircraft with full tanks.)

Recently the HR100 has been given a five-inch fuselage extension, retractable gear, and a choice of two more powerful engines: a 235-hp Lycoming O-540-B in the HR100/235 and a 285-hp Continental Tiara 6-285 in the HR100/285, subject of this article.

The Tiara is a remarkable engine in that the propeller is driven off the camshaft, which in turn is linked to the crankshaft through beefed-up gearing and a device known as a vibratory torque control that contributes to the exceptional smoothness of the engine. In effect, this arrangement results in an efficient, relatively small, high-revving engine driving a large three-blade propeller at half engine speed, i.e., near optimum rpm. The more conventional Continental IO-520 engine, with the same 285 hp as the Tiara, is 40 pounds heavier and has a capacity of 520 cubic inches as opposed to the Tiara's 406 cubic inches.

Such a revolutionary engine was bound to raise eyebrows and provoke the skeptics to question the wisdom of using it in a passenger-carrying plane,

and it is interesting to note that Robin of France is the first to offer a production touring aircraft with the Tiara. By now, however, the engine is no longer an unknown quantity, since it has for some time been fitted in the Piper Pawnee Brave agplane. Currently the Tiara is "lifed" at 1,200 hours, and there is talk of this being extended in the light of operational experience.

External impressions of the HR100 Tiara have already been recorded. Entry to the cabin is via a forward-sliding canopy—unique to Robin aircraft—that has the advantage of opening to reveal much of the cabin area and closing to provide a large, clean, transparent area that blends in smooth conformity with the fuselage. The seats have been carefully contoured, those for the pilot and copilot sliding and tilting to provide a wide range of postures relative to the controls.

The deep panel contains a basic "T" flight-instrument arrangement and allows ample room for the most adequate radio fit. The flight-checked aircraft, G-BCMR, was the first production example to leave Dijon. It carried two com sets, two VORs, an ILS, marker lights, a digital ADF, a DME, a transponder, and a simple autopilot. To the left of the instruments was a neat

ROBIN HR100/285 TIARA

Specifications

Engine	Rolls Royce Continental Tiara 6-285, fuel injected, developing 285 hp at 4,000 rpm (engine), 200 rpm (propeller)
Seating	4
Wingspan	29 ft 9 in
Wing area	155 sq ft
Length	24 ft 9 in
Height	8 ft 10 in
Max weight	3,100 lb
Empty weight	1,850 lb
Useful load	1,250 lb
Fuel capacity	120 gal
Price ex-Dijon, (excluding radio, but including simple autopilot, full lighting, full anti-corrosion treatment, and many extras)	\$54,240

Performance

Never-exceed speed (Vne)	224 mph
Max speed, sea level	200 mph
Cruise speeds:	
75% power, 7,000 ft	193 mph
65% power, 7,000 ft	182 mph
Rate of climb (75% power)	1,200 fpm
Range:	
75% power, no reserve	1,325 sm
65% power, no reserve	1,450 sm
Takeoff run (approx)	900 ft

Mike Romeo's well-equipped panel included two coms, two VORs, ILS, marker lights, ADF, DME, transponder, and simple autopilot.



annunciator panel of warning lights.

Between the pilot's and copilot's seats is a central power console that carries the throttle, propeller, and mixture controls. The five-position fuel cock (OFF and four wing-tank positions) is accompanied by four fuel gauges. Like its lower-powered brother, the Royal, the HR100 Tiara holds 120 gallons.

There is a good heater system and, having picked up windscreen ice on the way back from Africa, I can tell you that the system works well enough to provide two clear patches. Each occupant has an adjustable fresh-air vent, and stale air leaves the cabin through a tube in the tail cone, a quieter arrangement than the usual duct mounted above or below the fuselage.

To an American, perhaps the most vivid impression on settling into the aircraft would be surprise at the helicopter-like view from all seats. In all current Robin models, the side windows come down to elbow level. And since the breed tends to fly slightly nose down, the view ahead is superb.

Behind the rear seats is the luggage area, which can be reached from the cabin or through its own external door. Although by U.S. standards it is not overgenerous in volume, we were surprised during the African trip by its capacity, which was adequate for four people.

Although the Tiara is fuel injected, you start it like a carburetor engine. The electric primer is switched on, the throttle is opened to attain fuel flow, the ignition key is turned through LEFT-RIGHT-BOTH to START, and the big propeller bursts into life with a suddenness only equaled by its abrupt stop when the engine is closed down at the end of the flight.

Taxiing is very simple, steering being effected through the nosewheel, which

is coupled to the rudder pedals. The ride over grass is good, and the toe-operated disc brakes are powerful and progressive. Frankly, I could do without the two knobs that have to be pulled up for parking. Why have one for each wheel?

Magneto and propeller checks are carried out at 1,300 rpm, corresponding to an engine speed of 2,600 rpm. The electric flaps are set to about one-third for takeoff, but for some reason the electric fuel pump is not recommended for the takeoff or the landing.

There were four of us in the aircraft, and we had more than 75% maximum fuel, so Mike Romeo must have been within 200 pounds of its maximum weight. There had been heavy rain for some days, and the 1,800-foot grass runway was soft. It was also noticeably uphill; yet the aircraft lifted off at about the halfway mark.

The electro-hydraulic undercarriage came up very quickly, and so did the airspeed. After raising the flaps, we reduced power to 1,800 rpm and 24 inches mp (this represents around 75% power at low levels) and settled into

a 1,200-fpm climb at 95 knots (109 mph).

From the ground, an HR100 Tiara taking off sounds like no other light-plane. The engine note is quiet, like a distant Ferrari, and there is an absence of propeller snarl. In the aircraft, normal conversation is possible throughout the flight.

At 2,500 feet I leveled out and brought back the power to 1,700 rpm and 22 inches mp (65% power). This produced an IAS of 145 knots (167 mph), which trued out at just over 150 knots (174 mph). Time did not permit further cruise checks, but the manufacturers claim an optimum altitude cruise of 182 mph at 65% power and 193 mph at 75%, while the absolute ranges at those power settings are 1,450 and 1,325 statute miles, respectively.

Generally there is a firm but responsive feel to the HR100 Tiara. Little if any rudder is needed for accurate turns, and the crisp controls would, I believe, delight those pilots who have been used to less direct handling. As in most modern light aircraft, lateral

The Robin Tiara's seats are carefully contoured for comfort on extended flights. Pilot's and copilot's seats slide and tilt, providing a wide range of postures.



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stability is neutral, but damping in pitch is very powerful indeed.

From a trimmed 145 knots, I raised the nose and then released the wheel. We entered a descent with the speed increasing to 155 knots (179 mph), at which point the nose returned slowly to the original 145 knots.

Closing the throttle for the stall, the usual gear-warning horn was accompanied, at 75 knots (87 mph), by a stall warner loud enough to awaken the dead. The only more blatant one known to me is that of the Lake Amphibian. Perhaps the manufacturers do it to show how quiet they have made their aircraft!

I recorded these stalling speeds: clean—65 knots IAS (75 mph); half flaps, wheels up—61 knots IAS (71 mph); full flaps, wheels up—55 knots IAS (64 mph). At no time was there any tendency for a wing to drop.

Although the HR100 Tiara has less range than the lower-powered Royal, it will nevertheless remain in the air for up to eight hours, and the seats have

been designed to remain comfortable during such flights. Likewise, the firm, responsive controls, allied with excellent pitch and directional stability, make the aircraft a fine instrument platform.

Approaching for landing, one must remember that the HR100 Tiara is very much faster than the general run of light aircraft. For example, only modest power settings will result in a cracking 160 mph. However, a by-product of the large, three-blade Hoffman propeller is that closing the throttle fully provides good aerodynamic braking—so much so that this should be delayed while landing until the roundout.

A final approach of 80 knots (91 mph) will set up the aircraft nicely for a landing that is straightforward in every way, the elevators retaining power enough during the run to hold the weight off the nosewheel and so insulate it from post-landing hammering. This is important with any aircraft, particularly while operating from grass surfaces.

At a maximum weight of 3,100 pounds, the HR100 Tiara is very light for its power. At present, filling the

120-gallon tanks means taking one less passenger, and I have advised the manufacturers to get the type certificated at 3,300 pounds. Thus it would be possible to fill the cabin and the tanks, then fly 1,300+ miles nonstop. Indeed, I am told that something of the kind is already being considered, but let us look at the aircraft as it exists today.

With four people and luggage, the HR100 Tiara will fly you from New York to Detroit in 2 hours 20 minutes, or from Miami to Saint Louis in 5 hours 10 minutes nonstop, while a trip from Boston to El Paso—the best part of 2,000 miles—could be undertaken in a day, making only one refueling stop.

What can the aircraft carry? At its maximum authorized takeoff weight of 3,100 pounds, there is a useful load of 1,250 pounds. One could use this by carrying two occupants at 168 pounds, another two at 126 pounds, plus 65 pounds of luggage, and still be able to put in 100 gallons of fuel. And this, at 75% power, would give you an 1,100-mile range that could be extended to 1,200 miles by slowing down to a 180-mph gallop (65% power).

Arrangements are now in progress for Robin aircraft to be distributed in the U.S. Pierre Robin is known to favor limiting the growth of his company so he can continue to exercise personal control over every aspect of his remarkable aircraft. Consequently, Robin production numbers are likely to remain in hundreds rather than thousands of aircraft per year.

My own experience with Robin airframes has been one of utter reliability, superb performance, and the endless pleasure of being able to see properly out of the cabin. As noted earlier, the engines fitted to Robin aircraft are either Lycoming or Continental, so spares are no problem in the U.S.

G-BCMR was brought to my local airfield the other day so that I could take pictures for this article and at the same time check some of the figures I had recorded during my original flight test. Two eager admirers of the aircraft sat in the back, while the company pilot slid across to the right seat and made room for me.

We lifted off at a modest 70 mph. By "wheels up," the aircraft was climbing like a fighter at 110 mph. A miserable gray cloud base, hovering some 500 feet above the airfield, came down to meet us, and within seconds it was a case of being on the clocks and climbing straight through. This was my first instrument flying in the Robin Tiara, and I was impressed.

At 3,000 feet, we shot out of the top into clear air, reduced power, and settled down to an indicated 175 mph. The enthusiasts in the back were impressed with the low noise level and the 200 mph that comes up in the shallowest descent attitude.

I'm not a betting man, but if I were, I'd bet that the Robin Tiara will enjoy a big following among discerning pilots who expect the outstanding from their aircraft. □