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# Crashworthy

So-called 'shock-proof' watches have been around for decades - but now the young and upwardly mobile Bremont brand looks set to redefine term with a pilot's model, which has survived everything one of Britain's leading military equipment suppliers could throw at it. QP dropped in at ejection seat manufacture Martin-Baker to find out what it's all about.

**Simon de Burton**



The Bremont MB2 Anti Shock Automatic is a shock resistant watch, which has had its robustness tested at the Martin-Baker ejection seat facilities.



It was a brave move on the part of aviator brothers Nick and Giles English to launch Bremont into the competitive pilot's watch sector three years ago, but by combining a quality product with their own enthusiasm the pair have earned the brand both success and respect in a remarkably short space of time.

Bremont's reputation, that of serious watches that are made 'by pilots for pilots', is now set to be further enhanced thanks to its latest model, which promises to establish a new benchmark for shock resistant timepieces having been tested to the limit, not in the traditional environs of a watch factory, but at the headquarters of the world's leading ejection seat manufacturer, Martin-Baker.



To most people outside of the aviation industry, the Martin-Baker name means very little - but for the military pilots of almost 90 air forces around the world it literally represents the difference between life and death. As this edition of QP went to press, Martin-Baker ejection seats had saved no fewer than 7,283 lives since J.O. Lancaster used his MK I seat to escape from a stricken AW52 aircraft in May 1949.

This year alone, 18 pilots have had to call upon their Martin-Baker seats, the most widely publicised incident taking place in May when an un-named RAF pilot was captured on film ejecting from a Harrier jump jet that had burst into flames on the runway at Afghanistan's Kandahar airfield following an engine failure.

It was partly a desire to achieve wider recognition for what this remarkable company does that Andrew Martin, the 34-year-old grandson of the firm's founder Sir James Martin, decided to go in search of a watch brand with which to form a collaboration. At its 22-acre production facility in Higher Denham, Middlesex - where Martin-Baker has been based for more than 70 years - Andrew told QP how the partnership with Bremont came about.

"The English brothers approached us several years ago, some time before the first Bremont watches had gone into production," explained Andrew.

"We liked the idea, but if we were going to have our name associated with a watch it clearly had to be a watch that was up to the job and had already proved its worth, so we asked them to get the brand established and then come back to us. In the interim, we decided to take a selection of the best-known aviation watches on the market and put them through the sort of tests and stresses that our ejection seats have to endure as a matter of course - I don't want to name the brands we tried, but I can tell you that not one of them came close to the required standard."

As requested, the English brothers returned to Martin-Baker last year, once Bremont was fully up and running. They submitted some watches for testing, and the results were surprisingly satisfying.

"The watches were standard production models, but they still performed far better than their rivals," says Andrew.

"The weak spots were quickly identified and that enabled the necessary modifications to be made in order for



The movement is encased in a faraday cage, which is surrounded by shock-dampening movement suspension and then sealed behind a screw-down caseback.

## For two people who are as keen on flying as we are, it is the ultimate partnership

them to be brought up to a standard that makes them worthy of carrying the Martin-Baker name - and we now believe the Bremont M-B is probably the most resilient watch available."

### Put through its paces

When one sees the type of tests that the watches have endured, it becomes apparent that this might well be a statement of fact. In addition to having survived no fewer than nine live ejections at speeds of up to 600 knots and at forces of up to 30G, the main 'guinea pig' watch has been subjected to hours on a vibration device to simulate the entire service life of a military helicopter; it has also been housed inside a corrosive fog exposure cabinet, which represents spending six months on the deck of an aircraft carrier, and placed inside a heat chamber that creates variances from minus 40 degrees Fahrenheit to plus 120 degrees.

As Andrew put it: "Our ejection seats have to be able to function properly, whether they are in the heat of the Nevada desert in summer or on a Finnish air base in the middle of winter - the watch will have to do the same."

One of Bremont's claims for its 'standard' aviation watches is that the cases are hardened to 2,000 on the Vickers scale, around nine times more than regular watch-grade stainless steel. But the M-B watches go further than that: the movement is protected by a Faraday cage and supported by a specially-designed 'suspension' system that enables it to absorb the massive shocks meted out by, for example, Martin-Baker's front-impact test, which simulates the 18.4 G force of a crashing aircraft.

To ensure reliability is maintained, the M-B watches are not overly complicated: they are simple three-handers with a rotating inner bezel and day and date windows. The dials carry the official warning symbol found on all ejection seat-equipped aircraft and details and colours will reflect the features and colours found on Martin-Baker products.

Initially, two versions will be made, each with a sub-£3,000 price tag: The M-B 1 will have a red anodised case centre denoting the fact that it is only available to people who have escaped from an aircraft using a Martin-Baker seat, and the M-B 2 which will be available for public purchase.



The MB1 (right), with 'Martin Baker' on the dial and a red anodised case will only be available to people who have escaped from an aircraft using a Martin Baker seat. MB2 (left) will be available to the public. Both cost £2,850.





The Bremont MB series withstood the rigorous testing that Martin Baker put their ejection seats through.

## The company has produced more than 80,000 seats since the 1940s

What impressed me most about the collaboration is the fact that Bremont was brave enough to hand its products over to Martin-Baker for evaluation - it seems to give the tests considerably more meaning than if they had been conducted 'in-house' by the brand. And, to enhance the patriotic aspect of these two British-based companies joining forces, final assembly and quality control of the M-B watches will be carried out in the U.K. at Bremont's Henley-on-Thames 'atelier.'

"Although our watches use Swiss movements we have always been proud of the fact that the product is British-based and uses some British components. Since it will be assembled in Henley the M-B will be more Anglo than any of our other watches. Giles and I both appreciate the fact that Martin-Baker is a family-owned, British company that produces the very best products in its field. For two people who are as keen on flying as we are, it is the ultimate partnership."

And, as Andrew Martin observes, surviving ejectees should be properly chuffed, too.

"Until now the only membership badge we have been able to offer them is the Martin-Baker ejectees' tie - a dedicated watch is going to seem far more significant."

### The Martin-Baker Story

Sir James Martin OBE, was an inventor and engineer born in Ulster in 1893. He arrived in London in his early 20s with £10 in his pocket and established a business making engines and specialist vehicles in Acton, west London. Baker subsequently moved his operation to Higher Denham, Middlesex, where he began to build aircraft in collaboration with his friend, the test pilot Captain Valentine Baker. The M-B1 low-wing monoplane underwent its first tests in 1934, but it was the M-B 3 developed a few years later that proved pivotal to the future of the Martin-Baker company.

In September 1942, Captain Baker was flying one of the aircrafts when an engine failure caused it to crash, killing him outright. This, together with the rapid advancement of aircraft technology brought about by the war, led Martin to invent the ejection seat, which was tested for the first time in July 1946.





This 'pre-MK I seat' first came into its own when it saved the life of J.O. Lancaster in May 1949.

That early model, however, required the pilot to separate himself from the seat and deploy a parachute manually, an operation that took more than nine, vital seconds to complete. It was this that led Martin to begin work on making the entire sequence of events automatic - the latest seat, the MK 16, costs up to £150,000 and combines an under seat rocket motor to shoot the seat from the aircraft with a system of pyrotechnic canisters that retract the harness unit to prevent the pilot from being fatally jarred by the massive force. The entire operation, from activation to parachute opening, now takes under two seconds.

Since ejection seats are only used once, they need to have a life span of many decades - many military aircraft flying today carry Martin-Baker seats that were originally fitted during the 1950s, but regular maintenance means they will (hopefully) prove as reliable as the day they were made. The company has produced more than 80,000 seats since the 1940s and has sites in the U.K., France, Italy and the United States.

It carries out much of its testing using a 1949 Gloucester Meteor that is the oldest certified military aircraft in the world. Ejection tests are also conducted at the firm's facility in Northern Ireland where a length of railway track carries an aircraft fuselage fitted with prototype ejection seats. The fuselage is mounted on a set of bogey wheels powered by surface-to-air missiles to provide huge acceleration and G-force, with the seats being activated by remote control. ⌚

**Further information:** [www.bremont.com](http://www.bremont.com) / [www.martin-baker.co.uk](http://www.martin-baker.co.uk)

