

Setting Standards



Jaeger-LeCoultre's Master Tourbillon was unveiled at this year's Geneva trade fair to intense interest. While the words 'tourbillon' and 'interest' are becoming increasingly hard to join together, there was good reason for an industry filled to surfeit by tourbillons to sit up and pay attention to Jaeger's latest. In a word, it was price.

James Gurney

It would be quite forgivable for anyone not intimately involved in the watch industry to assume that the tourbillon retains its status as the ultimate in watchmaking skill and the ultimate in exclusivity. Even five years ago, the idea that the tourbillon might lose its lustre as an addition to either a private collection or a watch house's portfolio would have been nearly absurd. Ever since the tourbillon was miniaturised for wristwatch use by houses such as Breguet, Audemars Piguet and Patek Philippe, the pitch has been that such watches represent the apogee of the watchmaker's craft, with very few able to make them and equally few able to afford the prices demanded. The cachet of the tourbillon was undeniable, as was the expertise and time invested. Indeed, when Girard-Perregaux decided to recreate the Three Gold Bridges tourbillon in wristwatch form at the end of the Eighties, there were no plans or drawings to work from. The company's watchmakers had to take apart and study the originals - none of which were made with the requirements of series production in mind.

Such a simple situation was clearly never going to last. As the demand for high-end watches soared over the last decade, demand for tourbillons has increased in line. Initially, the demand remained far ahead of supply for both consumers and watch brands, even though specialist tourbillon makers such as Girard-Perregaux and others were able to step up production as designs and techniques were refined. This could not, however, happen overnight as classical tourbillons remain very expensive to produce, and large numbers of components are highly labour intensive in terms of assembly and regulation.

Naturally, the gap left by the limited supply was deliberately targeted by movement suppliers, leading to the present situation where a brand can choose between several different sources, qualities and prices. At the top



Jaeger-LeCoultre's new Master Tourbillon has met and even exceeded all expectations, following the announcement at this year's Salon International de la Haute Horlogerie that Jaeger would be making a '£25,000' tourbillon. The unlimited steel version (no picture available at time of publication) will in fact retail at £25,300. Pictured is the pink-gold model, limited to 500 pieces (£30,700).

(Below right) At the least expensive end of the tourbillon spectrum is Chronoswiss' Tourbillon Regulator in steel (£19,650). The Swiss Time Technology (STT) tourbillon calibre is used - recognisable by the distinctive 'arc and spire' shape of the carriage. STT has recently been acquired by Bovet (see News, p.6).

(Right) Another STT tourbillon customer is Alain Silberstein, whose crazy 'Tourbillons d'Art' limited editions (ca £30,000) meld serious horology with the French designer's typically kaleidoscopic approach to aesthetics.

(Below) The tourbillon is perhaps the most famous of Abraham-Louis Breguet's inventions, patented in 1801 as a means of compensating for gravity's effect on the balance wheel in vertical positions by rotating the whole escapement once a minute inside a carriage. The master's eponymous brand now manufactures many different tourbillon watches, in keeping with its notable heritage. (Ref. 5317 pictured, in yellow gold; £61,050.)



remain the traditional houses, along with several newer concerns such as Christophe Claret and La Joux-Perret, whose high-quality, low-quantity offerings exist on the same plane. Tourbillons have also become available at lower prices from both Swiss sources and even from China. The Swiss-produced STT tourbillon made an immediate impact by making tourbillons available to smaller brands such as Chronoswiss and Alain Silberstein at prices that were tens of thousands of pounds cheaper than the alternatives.



While the increased availability of tourbillons to consumers is no bad thing in itself, the market has become dangerously confused. With so many new labels adorning tourbillon watches, it has become very difficult to account and justify the wide differential in prices. The arrival of Chinese-made tourbillon movements at under \$5,000 has called the cachet and purpose of the tourbillon into serious question. Patek Philippe, Breguet and Girard-Perregaux can still be relied upon to match complexity and finish to the price ultimately sought of the consumer, however confidence in tourbillons generally has declined as buyers find it hard to separate the wheat from the chaff in value terms. Simply put, there has been a growing market sentiment that tourbillons were generally over-priced and poor value. Add to this the fact that many tourbillons are not even that good as timekeepers and you have a damaging situation for the watch business as a whole.

(Above) Chanel's 'serious fashion watch' was given an upgrade in 2005, when a La Joux-Perret tourbillon calibre made a home of the J12's hi-tech ceramic case (£82,450). The carriage is suspended beneath a remarkably bold but well-judged bridge design.

(Top right) Through the caseback of Girard-Perregaux's wwtc Tourbillon (SFr.189,000; approximately £80,150), one can admire the *manufacture's* famous Three Gold Bridges tourbillon movement. Originally designed in the mid-19th century with function in mind, the spring barrel, going train and tourbillon cage each hang from their own gold bridge. The movement was first miniaturised for a wristwatch in 1991, after 20 replicas of the original pocket watch were made in 1981.

(Right) The platinum-cased Malte Tourbillon from Vacheron Constantin, whose tourbillon carriage bears Vacheron Constantin's famous 'Maltese cross' corporate symbol (£74,250).





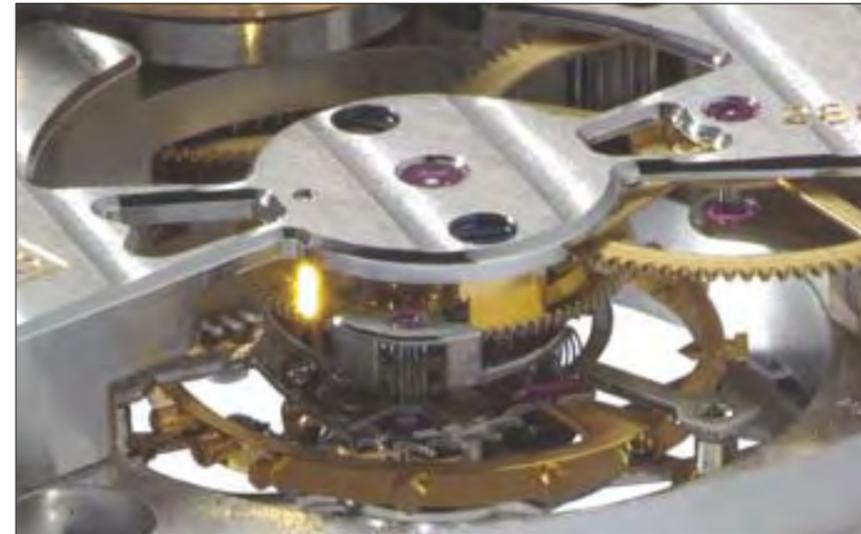
Benchmark precision

Rumours of Jaeger-LeCoultre's new tourbillon were circulating well before the Geneva salon with one key quality that kept interest going - price. That Jaeger-LeCoultre was going to launch a tourbillon for approximately £25,000 - roughly a quarter to half the price of the typical new tourbillon - simply demanded attention from the press. The significance here was that inflated prices being asked for some tourbillons would be thrown into stark relief. Remarkably, the rumour turned out to be true. And as this was Jaeger-LeCoultre, it was a fair guess that the movement would not just be setting standards in terms of price.

On visiting Le Sentier in July, *QP* was able to learn just how thoroughly Jaeger-LeCoultre has set the benchmark for future tourbillons. Quite apart from the price, there is one aspect to tourbillons that is all too rarely mentioned. As touched on above, tourbillon wristwatches only occasionally match up to conventional watches in terms of reliability and precision - a function of the mechanism's complexity and inherent instability. As the tourbillon was originally conceived as a means of improving rate precision (by rotating the escapement constantly to compensate for gravity's pull on the delicate balance wheel), such shortcomings represent a fundamental failing. And while few people worry too much about rate precision in mechanical watches, consumers nevertheless expect to feel confident that a tourbillon should perform better than a conventional watch. Conversely, it should be said that the difficulty encountered in making tourbillons actually work also accounts for their desirability - the labour and skill drive up their cost and reduce supply.

(Above) Limited to 200 pieces, the Master Tourbillon in platinum (£42,600), measuring 41.5 mm across. A second time zone is displayed on a subdial at 12 o'clock, and the new circumferential date indicator uses a patented device that can be adjusted in both directions. The date hand crosses between the 15th and the 16th of each month at an accelerated rate to avoid obstructing the view of the spinning tourbillon cage.

(Right) Jaeger's new self-winding calibre 978. The 22 ct rose-gold monobloc oscillating weight is perforated and decorated with matt, shiny and chiselled reliefs. Cal. 978's power reserve is 45 hours and consists of 302 parts including 33 jewels.

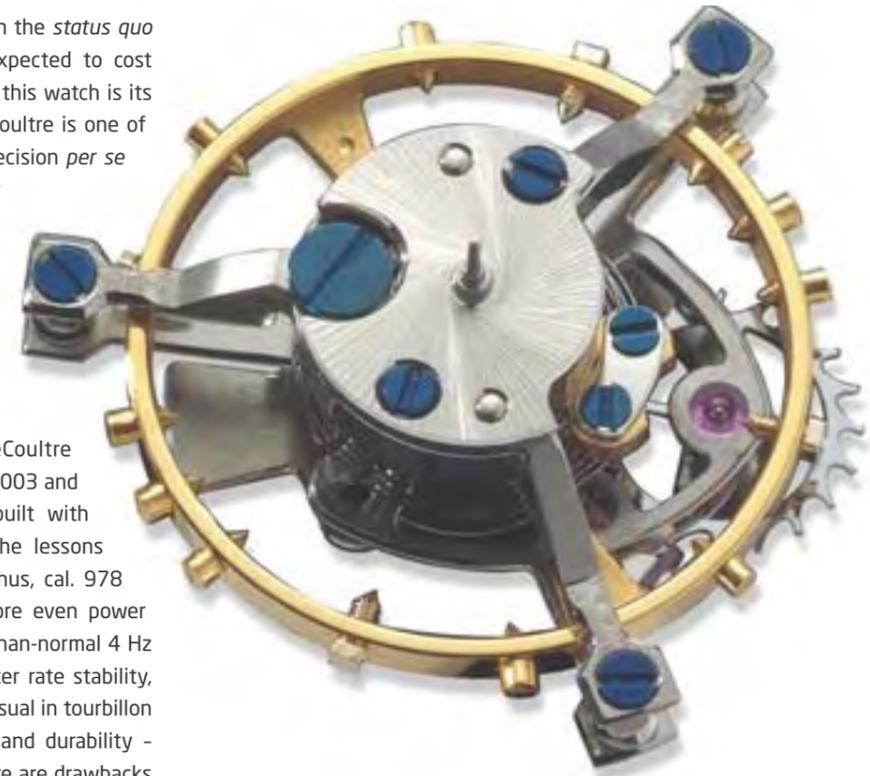


Jaeger's new tourbillon cage removed (below) and *in situ* (left). A normal tourbillon's rotation uses up a considerable amount of energy, proportionate to its size. Since the energy available in any movement is limited, the solution most commonly adopted by watchmakers is to reduce the balance's frequency, the size of the cage, and thus the size of the balance, which in turn compromises the mechanism's precision. Jaeger-LeCoultre's master watchmakers designed an entirely new balance of sufficiently generous dimensions to provide the energy necessary to keep the cage in motion and maintain the 28,800 vph frequency typical of a high-precision movement. The answer was a light, titanium alloy cage (0.33 g), a larger-than-usual balance and a compact escape anchor that can fit into the restricted space of the cage (its purple rectangular jewel just visible, left).

So while the Master Tourbillon's first break with the *status quo* is indeed price (the steel-cased version is expected to cost £25,300), the longer-lasting benchmark set by this watch is its exceptional precision and reliability. Jaeger-LeCoultre is one of the very few companies to make a virtue of precision *per se* (the norm is to stress complexity, design or finish) and this value permeates recent projects from the larger Reverso movements to the Compressor Extreme Chronograph. Even for Jaeger though, the quest for precision is about ease of use - who wants to wear a watch that needs careful cossetting?

The genesis of calibre 978, as Jaeger-LeCoultre designates it, lies in the Reverso Tourbillon of 2003 and 2004's Gyrotourbillon. Both of these were built with stability at the heart of their designs and the lessons learnt were applied to the new movement. Thus, cal. 978 is both automatically wound, leading to a more even power supply in normal use, and fitted with a larger-than-normal 4 Hz (28,800 vph) balance wheel, imparting a greater rate stability, in theory at least. Both elements are highly unusual in tourbillon movements for the practical reasons of bulk and durability - while a faster rate is more stable on paper, there are drawbacks relating to energy and force requirements.

Overcoming these hurdles was the main challenge facing Jaeger-LeCoultre's watchmaking team. The first element to their solution was the incorporation of a titanium alloy tourbillon cage, designed using CAD for the best possible combination of weight distribution, dynamic stability and strength - qualities that in turn mean less energy consumption and the possibility of using a larger, faster balance wheel. Matched with a new cage and balance is an ultra-light and compact escape anchor made of nickel and formed using gas-deposition (a technology that has



moved from cutting-edge to near matter-of-course in the space of a few years).

Running a large, fast balance does mean a greater power requirement than either a conventional escapement or a traditional, slower tourbillon, even with the weight savings gained from the new tourbillon cage. The inertia of the balance wheel is quoted as 11.5 mg/cm² (adjusted with the screws on the edge of the balance), much nearer the >15 mg/cm² of a standard watch than the 5 mg/cm² of a typical tourbillon balance.

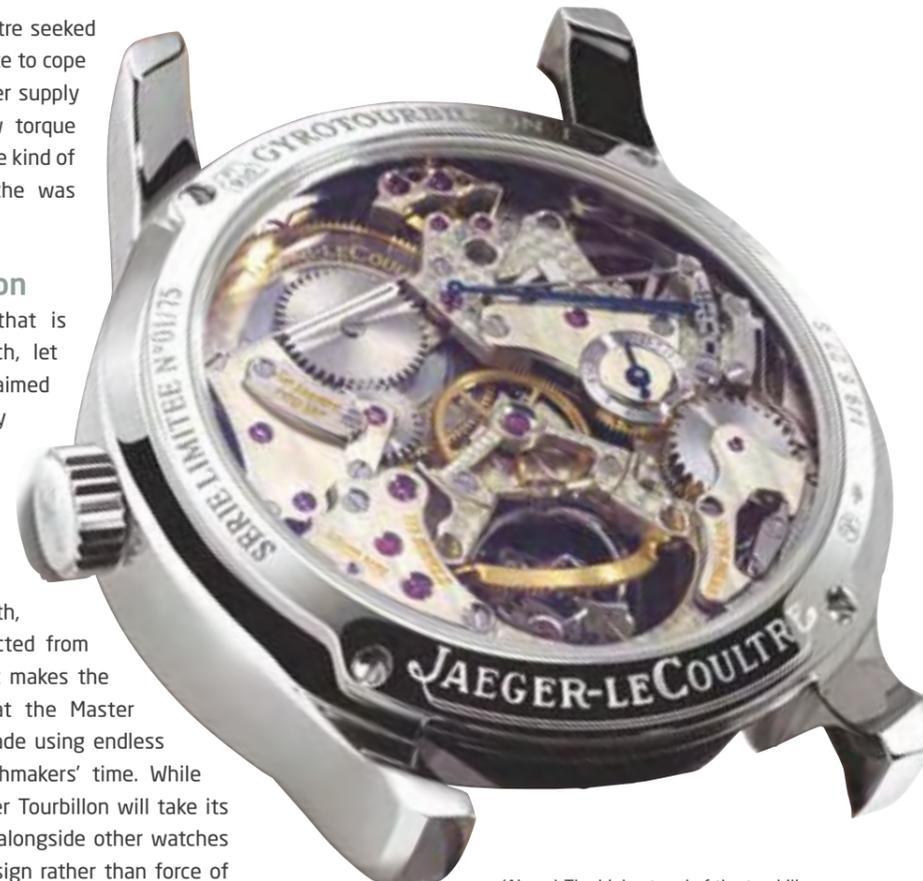
The genesis of calibre 978 lies in the Reverso Tourbillon of 2003 and 2004's Gyrotourbillon - both built with stability at the heart

To achieve the precision Jaeger-LeCoultre sought meant not only a power supply adequate to cope with the higher inertia but also a power supply maintained within a relatively narrow torque band, which, as it happens, is exactly the kind of function Jaeger's 'Auto-Tractor' ébauche was designed to perform.

Industrialising the tourbillon

The result is a rate of precision that is exceptional for any mechanical watch, let alone a complication. The minimum claimed precision is $-1/+6$ seconds a day (with some test watches maintaining 0/0 for long periods of time) - far superior to the $-4/+6$ COSC standard, particularly as this is the rate for the finished watch rather than specially prepared uncased movements. In truth, this is the sort of performance expected from high-end tourbillon watches, but what makes the achievement more remarkable is that the Master Tourbillon was not conceived to be made using endless hours of the most experienced watchmakers' time. While carefully made and finished, the Master Tourbillon will take its place in the series production system alongside other watches in the Master Series - precision by design rather than force of labour if you will.

And it is the series industrialisation of the watch that is the key to the price and the associated shift in expectations that the Master Tourbillon is creating. Stéphane Belmont, Marketing Director at Jaeger-LeCoultre, was keen to stress the point that the movement was not designed in-house just to bolster Jaeger-LeCoultre's image; rather the movement was designed to fit in with the skills that the company already master and to mesh with the production system. Jaeger actually seems to be pretty pleased with quite how low it managed to keep the cost - not a boast that you hear too frequently in the watch industry. Belmont was also keen to stress that prices are set in relation to costs rather than any premium relating to perceived complication or rarity.



(Above) The highest end of the tourbillon spectrum. In 2004, Jaeger-LeCoultre stunned the press gathered at its SIHH press conference with the Gyrotourbillon (Sfr.390,000 on launch), whose spherical double-axis mechanism was built for stability, as well as a mesmerising spectacle.

At an expected retail price of £25,300, the Master Tourbillon is not exactly democratising the tourbillon, but it does set a benchmark against which claims and prices can be measured. The purely artisanal tourbillons of Breguet and Girard-Perregaux will still command prices relative to the intense labour involved in their creation as will the increasingly bizarre creations of the industry's fringe artists such as the \$360,000 Jacob & Co./Bunter/BNB 'Quenttin' shown in Issue 20. The rest of the industry will just have to try a little bit harder to justify their prices in the face of the Master Tourbillon. ○