



INTRODUCING

## MASTER HYBRIS INVENTIVA GYROTOURBILLON À STRATOSPHERE

CALIBRE 178, THE NEXT GENERATION MULTI-AXIS TOURBILLON

### KEY FACTS:

- **Triple-axis tourbillon:** the groundbreaking Gyrotourbillon À Stratosphère's three axes cover 98 percent of possible positions, guaranteeing an unprecedented precision
- **A new patent-pending construction:** the Gyrotourbillon À Stratosphère alone comprises 189 components
- **Extreme lightness:** the triple-axis tourbillon weighs only 0.78 grams
- **Sculptural beauty:** the Calibre 178 is highlighted by Métiers Rares™ finishes, including guillochage, enamel and lacquer – transforming movement components into a dial-like masterpiece

The new Master Hybris Inventiva Gyrotourbillon À Stratosphère is the latest in a long line of inventions nurtured by Jaeger-LeCoultre's pursuit of precision, which began almost two centuries ago. The triple-axis tourbillon construction of Calibre 178, for which several patents have been filled, ensuring 98 percent coverage of all possible positions, is arguably the most precise tourbillon wristwatch with the widest positional coverage ever created by Jaeger-LeCoultre. It also marks the inauguration of a new series within the Hybris line: Hybris Inventiva. Nestled within a finely finished 42 mm platinum case, the calibre housing the new triple-axis tourbillon is meticulously finished and hand-decorated with Métiers Rares™ including guillochage, enamel and lacquer to highlight its distinctive architecture.

### HYBRIS INVENTIVA: A NEW LINE HONOURING TECHNICAL BREAKTHROUGHS

Jaeger-LeCoultre unveiled the Hybris Mechanica series in 2003 as a collection inspired by a spirit of invention and a desire to push the boundaries of watchmaking by combining several reimagined high complications into one timepiece. The Hybris Artistica concept was revealed in 2014 as a collection of Métiers Rares™ expressions of existing high-complication models, designed to highlight the rare artistic handcrafts such as engraving, enamelling and guilloche that are brought together within the Manufacture. Now Jaeger-LeCoultre unveils a third Hybris line: Hybris Inventiva.

Timepieces featured for the Hybris Inventiva series will only ever showcase a single complication – but one so remarkable and groundbreaking that it will change the course of the Maison's history. The Hybris Inventiva name is apt, since the calibres evolve from internal discussions hypothesising the invention of



“impossible” complications. These discussions can last for years but, despite their apparent impossibility, the groundbreaking ideas eventually evolve into real research pieces that are worked on and tested for more years – and at times decades – with only a handful of people inside the Manufacture aware of their existence. This allows the master watchmakers and engineers the space and time needed to make possible the apparently impossible.

Until now, such exploratory prototypes were kept in-house as highly confidential and purely conceptual pieces. With the Hybris Inventiva series, after many more months or even years of testing the prototype calibres, Jaeger-LeCoultre officially reveals the breakthrough to the public, always in very limited, numbered editions. Following the *modèle maître* (master model) principle, a Hybris Inventiva piece may then become the basis for potential future reinterpretations – whether combined with other complications in an extraordinary calibre to become a Hybris Mechanica (ultra-complication) piece and then reinvented through the artistic lens of the Métiers Rares™ atelier as a Hybris Artistica piece.

#### **A NEXT-GENERATION MULTI-AXIS TOURBILLON**

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The tourbillon was initially invented for pocket watches to help combat the greatest enemy of precision: gravity. As the pocket watch was worn upright in one position, gravity eventually influenced the accuracy of its movement. The tourbillon, which spins the movement’s oscillating system around its own axis in a regular rhythm, was invented to effectively counter this natural effect. Today, with wristwatches being the prevalent personal timekeeper, watchmakers understand that multiple-axis tourbillons do much more than a single-axis tourbillon to prevent gravity from influencing their precision.

In 2004, Jaeger-LeCoultre embarked on a groundbreaking series of multiple-axis inventions with the unveiling of the first Gyrotourbillon. The first generation of the revolutionary double-axis tourbillon was meticulously engineered to ensure its oscillating system was never stationary in the horizontal position, solidifying Jaeger-LeCoultre’s pioneering role in multi-axis tourbillons. Building upon this foundational achievement, each subsequent generation of the Gyrotourbillon pushed the boundaries of precision and artistry. The second generation was distinguished by a new construction meticulously tailored to fit the iconic Reverso case. The third generation then ushered in the first Flying Gyrotourbillon, graced with the innovation of a spherical hairspring. The fourth generation achieved a full flying status, becoming the fastest Gyrotourbillon to date. The fifth generation showcased a triumph of miniaturisation, harmoniously integrating the Gyrotourbillon with a constant force mechanism.

Now, representing almost eight decades of accumulated expertise in tourbillon regulators, the Master Hybris Inventiva Calibre 178 Gyrotourbillon À Stratosphère, for which several patents have been applied for, takes the technology even further, to become a tourbillon within another tourbillon within yet another tourbillon. The kinematics of this triple-axis tourbillon achieves 98 per cent of all possible positions to compensate for the negative effects of gravity on the precision of the watch. To optimise isochronic



performance, the Gyrotourbillon À Stratosphère is fitted with a cylindrical balance spring – a shape that beats concentrically in every position, regardless of amplitude (the back-and-forth swing of the balance wheel), position or power reserve – and runs on ceramic ball bearings to minimise friction. Its three titanium tourbillon cages rotate along X, Y, and Z axes at three different speeds – respectively, 20 seconds (inner cage); 60 seconds (centre cage or ‘cage of reference’); 90 seconds (outer cage) – to ensure that all positions are constantly covered. No other 4 Hz tourbillon on the market currently covers such a wide range of positions, giving gravity almost no chance to adversely affect the precision of the oscillator. The development of this supposedly impossible feat was initially sparked by the invention of the Gyrotourbillon, which already reached an outstanding 70 percent positional coverage in 2004.

For the last 22 years, Jaeger-LeCoultre has worked to improve upon that tourbillon’s miniaturisation, as well as different angles of inclination of the axes, eventually leading to the creation of the ultra-precise Gyrotourbillon À Stratosphère. Taking its name from the ‘quiet layer’ of Earth’s atmosphere – the optimal cruising altitude for large jets, unaffected by turbulence – the Gyrotourbillon À Stratosphère is composed of 189 components – almost double the number of components typically found in an entire time-only mechanical calibre – while only weighing 0.783 grams.

#### **SCULPTURAL BEAUTY HIGHLIGHTED BY ARTISTIC DECORATION**

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Calibre 178 stands as Jaeger-LeCoultre’s most profound achievement in harmonizing mechanics and decoration. Unprecedentedly, techniques typically reserved for the dial have been meticulously applied across its barrel covers, plates, and bridges, forging a seamless visual tapestry that utterly blurs the distinction between the dial and the movement. This transforms the calibre itself into a breathtaking work of kinematic art. Calibre 178 is decorated with 16 different techniques: sandblasting, perlage, polishing, flat polishing, straight graining, linear brushing, circular brushing, Côtes de Genève, diamond polishing, snailing, sunray brushing, bevelling, guillochage, lacquering, lapping finish, and enamelling.

**65 hours of hand-bevelling:** The sheer scale of this artistry is vividly demonstrated by the meticulous hand-bevelling. This intricate work is applied to 55 individual components – including 20 bridges, 18 cage components, 11 wheels, and 6 parts of the mechanism – and features an astonishing 64 inner angles, a true testament to extreme precision. Furthermore, the calibre incorporates 33 components crafted from solid gold. The use of such precious materials for plates and bridges presents an additional challenge during assembly, requiring the watchmaker to exercise exceptional care and skill.

**A front-side adorned with blue enamel:** On the front of the watch, the 18K white gold (750/1,000) movement plates are decorated with sunray guilloché and then coated with translucent blue enamel. The visible hollowed-out 18K white gold (750/1,000) bridges are filled with blue lacquer to match the design, and even the covers of the two large spring barrels – unmistakable from the dial side at approximately 2 and 10 o’clock – are engraved and hand-lacquered in the same blue.



**A fascinating play of volume:** The decoration continues on two decentralised dial rings: the top ring bearing the hour-and-minute display reveals not only the hand arbour in its open-worked centre but also more of the decorated twin spring barrels. The second decentralised ring surrounds the triple-axis Gyrotourbillon A Stratosphere at 6 o'clock and displays markings for 30 seconds (twice 15 seconds); the seconds are displayed by a small red arrow that travels around this subdial. The visuals add to the sculptural conception of the calibre, which plays with volumes in a fascinating manner. The spotlight, however, remains fully on the centrepiece: the triple-axis Gyrotourbillon À Stratosphère.

**A spectacle revealed on the caseback:** The entire back of the watch is visible beneath a transparent sapphire crystal case back, providing the owner with an excellent view of Calibre 178's support system. This features solid White Gold 18K (750/1000) bridges, traditionally decorated with Côtes de Genève, hand-bevelling, and high polish. These are complemented by 53 ruby jewels, some in gold chatons, whose deep red color contrasts with the monochrome white gold-and-steel aesthetic.

The design of the highly polished stainless-steel bridge holding the Gyrotourbillon À Stratosphère from the back was inspired by the tourbillon bridge of Jaeger-LeCoultre's seminal 1946 pocket watch tourbillon. For this, and the bridge supporting the hours-minutes arbour, stainless steel was chosen rather than gold, due to the need for a much more resistant material in these two positions.

**Precision and power reserve:** Ensuring high precision, the manually wound Calibre 178 beats at 4 Hz (28,800 vph) and offers a remarkably long power reserve of 72 hours, requiring a rewinding once every three days.

As a Hybris Inventiva piece, the apparently simple elegance of the platinum case belies a complexity of detail. Polished, brushed and micro-blasted finishes create a fascinating play of light with every movement of the wrist, perfectly complementing the complexity of the groundbreaking technical achievement within.

## TECHNICAL CHARACTERISTICS

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### MASTER HYBRIS INVENTIVA GYROTOURBILLON À STRATOSPHERE

**Case:** Platinum (950/1000)

**Dimensions:** 42 x 16.15 mm

**Calibre:** Manually wound Jaeger-LeCoultre Calibre 178

**Functions:** Hours, minutes, seconds; triple-axis Gyrotourbillon À Stratosphère

**Power reserve:** 72 hours

**Front dial:** Ring dial decorated with guilloché and translucent blue enamel

**Case back:** Transparent

**Water resistance:** 50m

**Strap:** Blue alligator leather with small scale lining; 18K white gold (750/1000) adjustable folding buckle

**Reference:** Q5306480

Limited edition of 20 pieces



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## **ABOUT THE VALLEY OF INVENTIONS**

Celebrating Jaeger-LeCoultre's origins in the Vallée de Joux, which remains its home to this day, The Valley of Inventions pays homage to an isolated valley where, 600 years ago, refugees from elsewhere in Europe found safe haven. The challenging environment and brutally cold winters required its early inhabitants to develop resilience, patience and inventiveness in order to survive. Ten generations later, in the early 19<sup>th</sup> century, a self-taught watchmaker, Antoine LeCoultre, began to invent machines that laid the foundations of modern watchmaking by enabling the measurement and cutting of watch components to an unprecedented degree of precision. From the first LeCoultre watchmaking atelier in 1833, this spirit of inventiveness and pursuit of precision have defined the Maison. A series of inventions and technical breakthroughs resulted in calibres that were sought after by many other leading names for use in their own watches, giving rise to the Maison's designation: The Watchmaker of Watchmakers™. Marked by the award of more than 430 patents to date, these ongoing inventions continue to nurture Jaeger-LeCoultre's pursuit of precision, guiding it to this day and into the future.

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## **ABOUT JAEGER-LECOULTRE – THE WATCHMAKER OF WATCHMAKERS™**

Since 1833, driven by an unquenchable thirst for innovation and creativity, and inspired by the peaceful natural surroundings of its home in the Vallée de Joux, Jaeger-LeCoultre has been distinguished by its mastery of complications and the precision of its mechanisms. Known as the Watchmaker of Watchmakers™, the Manufacture has expressed its relentlessly inventive spirit through the creation of more than 1,400 different calibres and the award of more than 430 patents. Harnessing over 190 years of accumulated expertise, La Grande Maison's watchmakers design, produce, finish and ornament the most advanced and precise mechanisms, blending passion with centuries-old savoir-faire, linking the past to the future, timeless but always up with the times. With 180 skills brought together under one roof, the Manufacture creates fine timepieces that combine technical ingenuity with aesthetic beauty and a distinctively understated sophistication.

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