

JAEGER-LECOULTRE

JAEGER-LECOULTRE - Duomètre à Quantième Lunaire

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The Duomètre à Quantième Lunaire embodies the latest in horological achievements of Jaeger-LeCoultre: it displays time with a jumping seconds hand showing 1/6th of a second increments and additionally providing the date and the age of the moon in a separate sub dial. The true genius of this watch however lies within the Dual-Wing movement concept, which features two independent power supplies: one entirely dedicated to creating a perfect timing foundation - regulated by escapement and balance -, the other solely for the display of time - hour, minute and seconds hands - as well as date and the age of the moon for the Northern as well as the Southern hemisphere. Both are synchronized through the jumping seconds hand mechanism driven by the escapement.

With the Duomètre line, Jaeger-LeCoultre breaks new ground in terms of the accuracy of mechanical wristwatches, for it devised a completely new movement structure in order to gain the highest possible precision. Therefore the watchmakers have come up with the so called Dual-Wing concept to bypass a common problem in mechanical watches: any additional complication reduces the power of the winding barrel thus depriving the escapement of a steady flow of energy from the winding barrel. The regularity of the winding barrel's energy to the going train and escapement remains of primary importance in order to measure time with the precision demanded for today's mechanical wristwatches.

Hence the influence of any given complication to the long-term rate of a watch can lead to deviations in time measurement hardly acceptable in such a valuable timepiece. This fact can be overcome by using a fully independent power source to run the complication, separating its power supply from that of the basic movement, which in turn is fed by its own winding barrel thus ensuring a constant flow of energy. Therefore the dual-wing concept, first introduced in the Duomètre à Chronographe in 2007, is now incorporated in the new Duomètre à Quantième Lunaire leading to a tremendous increase of accuracy in complication movements.

Their utmost attention to such details proves that the specialists at Jaeger-LeCoultre have developed a dual-wing calendar-watch of exceptional characteristics, with levels of accuracy that until now could only have been reached by watches without complications. Such a sophisticated approach to timekeeping precision is a typical advantage that 178 years of expertise in high horology can bring.

The new Jaeger-LeCoultre Calibre 381 is executed and decorated with distinguishing decors for the corresponding parts of each function of the movement. These fine details can be appreciated through the sapphire case back of the wristwatch, visually in accordance with the typical Duomètre-design: classical and understated with a touch of extravagance. Even though the watchcase houses a complex movement, its open worked dial provides clarity and ensures easy reading by being divided into two sections according to their functions: Hour and minute on the right hand side, date and moon phase on the left hand side, a central seconds hand and the jumping seconds in the lower middle of the watch.

The Duomètre à Quantième Lunaire will be produced in a limited edition of 200 white gold watches. With the new Duomètre à Quantième Lunaire, the watchmakers of Jaeger-LeCoultre are setting standards in the world of haute horlogerie by pushing precision to new heights.

The Dual-Wing Movement - a different concept of timekeeping

Since the brand's inception 178 years ago, the quest for precision and reliability was the driving force and inspiration behind the efforts of the watchmakers of Jaeger-LeCoultre. With each new invention the Manufacture could build upon the know-how gained through the design and production of some of the most astounding movements in the history of Swiss watchmaking: the Gyrotourbillon I with its spherical tourbillon; the Master Minute Repeater with its unique sound system; the Reverso grande complication à triptyque, the most complicated swivel-watch; the Master Compressor Extreme LAB, the first watch running completely without lubrication; and the Hybris Mechanica à Grande Sonnerie, the longest sonnerie of all times. Those pinnacles of horological genius alone guarantee the Manufacture a leading position in the history books of the Swiss watchmaking industry.

For the newly developed dual-wing movement, Jaeger-LeCoultre has once again left the beaten paths in order to invent a completely new movement design that focuses on the issues of accuracy for mechanical watches with complications. In a traditional complication wristwatch any function not constantly attached to the going train makes the watch's rate deviate upon its activation: a chronograph as it is switched on, a repeater while ringing or even a calendar function that couples just once a day into the running movement - each leads to a drop in the amplitude of the balance wheel, and a deviation in timing, as they absorb power for their own requirements. Those amplitude-changes, summed up in the course of weeks, lead to an intolerable inaccuracy in the measurement of time.

To bypass this problem, the Duomètre watches feature two independent watch-mechanisms within one calibre: one going train is serving the measurement of time and the other the operation of the complication - with both being synchronized through the jumping seconds hand mechanism, the so-called "Seconde Foudroyante". This shared regulating organ ensures chronometer-worthy precision without interruption as no complication is coupled into the gear train of the timing device.

In 2007, Jaeger-LeCoultre launched a chronograph as first watch of the Duomètre line, the Duomètre à Chronographe. Being one of the first chronograph watches with a completely new movement constructed within the last 160 years - it was honored for its unique concept with prestigious awards from the watch world.

With this year's Duomètre à Quantième Lunaire, the Grande Maison presents a date mooncomplication in the dual-wing concept. It shows hour, minute, second and a jumping-second as well as date and age of the moon for the northern and the southern hemisphere. Although the Duomètre à Quantième Lunaire houses an exceptionally complex calibre with two barrels and over 369 parts, it features easy readability and a sleek design.

The new Jaeger-LeCoultre Calibre 381

The Dual-Wing Jaeger-LeCoultre Calibre 381 is dedicated to achieving the highest possible precision for a mechanical movement. And thanks to its unique concept the watch reaches a level of accuracy unprecedented for complicated watches. The calibre is divided into two sections just like two wings - hence the name dual-wing. On each side sits one barrel with its mainspring guaranteeing a power reserve of 50 hours: one for hour, minute, seconds, jumping seconds, the date and the age of the moon, the other for the escapement device to ensure a constant power supply. Both springs are wound through the crown: rotating it clockwise, winds the timing barrel (escapment), turning the crown counter-clockwise winds the power reserve of the functions (hour, minute, seconds, jumping seconds, date, moonphase).

The Jaeger-LeCoultre Calibre 381 is remarkably beautiful and superbly finished. It features a large balance wheel of 10 millimeters in diameter and an inertia of 11.5 mg cm² beating at a frequency of 21,600 vibrations per hour or 3 Hertz. And its newfound freedom in movement design represents a technical breakthrough, implemented in harmony with the noble traditions of fine watchmaking.

The jumping seconds hands

Coupling the two mechanisms via the jumping seconds hand mechanism brings advantages to this unusual watch: the watch can be adjusted to a timing signal without stopping the escapement - thereby making it even more of a precision watch.

The watch features two seconds hands. One at the center and a second one at 6 o'clock: a jumping seconds hand accurate to 1/6th of a second. Setting the time is easily performed by pulling the crown: Then both seconds hands, the center seconds hand and the jumping seconds hand jump to the zero-position leaving the escapement running. Pushing the crown activates both hands simultaneously by re-coupling into the running escapement.

Once released, the wheels of the hands simply interlock with the active mechanism and begin to turn on the spot at the speed of the clock, which is 3 Hertz. This accuracy is reached instantaneously because the balance has been breathing even with the hands on hold. Whereas with the traditional second's stop, which freezes the balance wheel, the watch needs several minutes before it is back in its original rhythm - minutes, in which the balance wheel has to pick up speed again and which add up to a time deviation of many seconds. Thus precise adjustment with a timing signal for normal watches remains an illusion.

The mechanism behind the two hands is based on two escape wheels fixed to the same axis: one works with the lever while the other is driving the seconde foudroyante through the jumping seconds star. Upon pulling the crown, a lever is stopping the jumping second when it reaches the zero-position. At the same time a "return to zero" hammer pushes the central second's hand to the 12 o'clock position through the use of a seconds heart cam. No other watch allows for such an accurate setting of the time, and this technical feature is perfectly in line with Jaeger-LeCoultre's quest for even more accuracy in timekeeping.

The moon phase and date

The complication of the Duomètre à Quantième Lunaire shows on the one hand the most important calendar function - the date - and on the other hand the most romantic one: the age of the moon. The date indication runs around the sub dial on the left side of the watch. A long hand in the center indicates the age of the moon.

With the duration of the lunar cycle, the watchmakers of Jaeger-LeCoultre relied on the traditional star wheel with 59 teeth, which shows a full moon cycle in 29.5 days. Because the length of the cycle in nature is 29.53 days, an error of 44 minutes and 2.8 seconds per month (or 9 hours per year) occurs with the indicated age of the moon. It sums up to a full day in the course of three years - a deviation easily corrected through a pusher on the side of the case at the 12 o'clock position.

Sleek design and exceptional finishing

The Jaeger-LeCoultre Calibre 381 is beautifully finished to the highest standards of classical watchmaking, as can be admired through the sapphire case back: The two independent barrels are sanded and bevelled by hand, while the ratchet-wheels are brushed with sunray-patterns and engraved and gilded "Mouvement" and "heure/minute" indication respectively. The handbevelled bridges, as well as the polished sinks distinguish between the standard watch mechanism and the date-moon-complication in the dual-wing concept: the bridges of the first are held in taut, straight shapes and the latter in arabesque motives. The going trains are circular satin-brushed. The wheels and pinions feature sanded and smoothed surfaces. Flame-blued steel screws and a base plate of untreated nickel-silver highlight the complex nature of this exceptional calibre and its roots in traditional high horology.

The 42-millimeter-watch-case has the distinct aesthetics of the Duomètre collection: polished and satin brushed finishes harmonize with the cambered sapphire glass - the design having its roots in the lines of the most famous pocket watches built by Jaeger-LeCoultre. Following the Duomètre principle, the case is produced only in precious materials - as to highlight the value of the dual-wing concept. The watch will be delivered in a limited edition of 200 in white gold, combining the traditional look of its historical predecessors with an up-to-date movement that lifts mechanical timekeeping to the demands of today.

The case, which is waterproof down to 5 bar, uses a push button at 10 o'clock to set the date and a pusher between the lugs at 12 to adjust the moon phase. The lugs of the case are formed seamlessly into the lines of the matt black or chocolate brown alligator strap with a double folding clasp.

The finely grained surface treatment of the Duomètre à Quantième Lunaire's dial reflects purity and culminates in peerless readability. The different functions are all set apart in their own sub dials - divided according to the double-wing movement concept: Hour and minute placed on the right hand side, date and age of moon on the left, the large seconds hand at the center of the dial and the jumping second's hand on the lower middle part.

To see this exceptional movement in full bloom however, the designers have also used a sapphire glass in the case back.

The Duomètre à Quantième Lunaire is a splendid new interpretation of the Dual-Wing concept. In a unique mix of aesthetic purity and mechanical complexity it illustrates Jaeger-LeCoultre's leading role in the field of high watchmaking: setting the pace for new inventions through the knowledge of its past and profound research in contemporary watchmaking.

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Technical Specifications:

- Movement:
- mechanical manually-wound Jaeger-LeCoultre Calibre 381, crafted, assembled and decorated by hand
 - 21,600 vibrations per hour
 - 50-hour power reserve
 - 369 parts
 - 40 jewels
 - 7.25 mm high
 - 33.7 mm diameter
 - two independent barrels

- Functions:
- hours, minutes, seconds, jumping-second, date, moon-phase (North and South), age of the moon, power reserve
 - movement power reserve

Dial:

- black, matt with appliqués numerals

- Hands:
- hour and minute: leaf-type, brass, gold-plated
 - seconds: baton with pear-shaped counterweight, gold-plated

- Crown:
- 1 crown to start the watch, to wind the watch functions power reserve, to wind the movement power reserve and to adjust the hours and minutes
 - 1 push piece to set the date
 - 1 corrector to set the moon phase

- Case:
- diameter 42 mm, thickness: 13.5 mm
 - 18-carat white gold
 - welded lugs
 - polished and satin-brushed finishing
 - cambered sapphire crystals, hardness N° 9, glareproofed on front and back
 - water resistance: 5 atm

- Straps:
- matt black alligator leather with folding clasp in 18-carat white gold