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PATEK PHILIPPE  
GRAND MASTER CHIME

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Reference 6300/403G-001



PATEK PHILIPPE  
GENEVE





## The Patek Philippe Grandmaster Chime

### AT A GLANCE

The stellar creation among the commemorative pieces for the 175<sup>th</sup> anniversary of the Manufacture in 2014, the Patek Philippe Grandmaster Chime made its entry into the current collection in 2016 with a white gold case. In 2022, Patek Philippe has further enhanced the mechanical perfection of this model by launching exclusive Haute Joaillerie versions, followed in 2023 by a “two-tone” new version in white and rose gold.

In 2023, the Manufacture is also introducing a new Haute Joaillerie version set with 118 baguette-cut emeralds (7.87 cts) and 291 baguette-cut diamonds (20.54 cts). This precious adornment is enhanced by the “invisible setting” technique on the caseband as well as on the sides of the lugs and the swivel links. The “baguette setting” technique is illustrated on the two bezels. The time side is set with a double row of 96 baguette-cut emerald (6.99 cts), the bezel calendar side and case, with 291 baguette-cut diamonds (20.54 cts). The fold-over clasp in white gold is set with 22 baguette-cut emeralds (0.88 ct). This timepiece is accompanied by matching cufflinks in white gold, each set with 32 baguette-cut emeralds (totaling 64 baguette-cut emeralds, 1.1 ct).

The double-faced reversible case is distinguished by its patented rotation mechanism enabling the timepiece to be worn at will with either dial visible. The two gold dials are attired in an elegant ebony black opaline color, with hand-guilloché *Clous de Paris* hobnail pattern on the time side.

With its 20 complications, this model is the most complicated Patek Philippe wristwatch in current production. Its three-gong striking mechanism offers five chiming modes: *grande sonnerie*, *petite sonnerie*, minute repeater and two patented world exclusives: an alarm with time strike and a date repeater sounding the date at will. The manually wound 300 GS AL 36-750 QIS FUS IRM caliber, consisting of 1,366 parts, also incorporates a perpetual calendar with a four-digit year display.



The Patek Philippe Grandmaster Chime

COMPLICATIONS

N°1	GRANDE SONNERIE	N°11	SECOND TIME ZONE DAY/NIGHT INDICATOR
N°2	PETITE SONNERIE	N°12	INSTANTANEOUS PERPETUAL CALENDAR
N°3	MINUTE REPEATER	N°13	DAY-OF-WEEK DISPLAY
N°4	STRIKEWORK MODE DISPLAY SGP (SILENCE - GRANDE SONNERIE - PETITE SONNERIE)	N°14	MONTH DISPLAY
N°5	ALARM WITH TIME STRIKE	N°15	DATE DISPLAY (ON BOTH DIALS)
N°6	DATE REPEATER	N°16	LEAP-YEAR CYCLE
N°7	MOVEMENT POWER-RESERVE INDICATOR	N°17	FOUR-DIGIT YEAR DISPLAY
N°8	STRIKEWORK POWER-RESERVE INDICATOR	N°18	MOON PHASES
N°9	STRIKEWORK ISOLATOR DISPLAY (CHIMES ENABLED/DISABLED)	N°19	24-HOUR DIAL AND MINUTE SUBDIAL
N°10	SECOND TIME ZONE	N°20	CROWN POSITION INDICATOR RAH (WINDING [R] - ALARM [A] - TIMESSETTING [H])

The 20 complications are controlled and powered by the Patek Philippe caliber 300 movement which consists of a total of 1,366 individual parts. It is difficult to imagine how so many components can be accommodated in the case of a wristwatch and interact smoothly with one another.





## DISPLAY

1 Hour | 2 Minute | 3 24-hour and minute subdial | 4 Second time zone | 5 Alarm with time strike | 6 Alarm ON/OFF | 7 Strikework isolator display (chimes enabled/disabled) | 8 Second time zone day/night indicator | 9 Movement power-reserve indicator | 10 Strikework power-reserve indicator | 11 Strikework mode indicator SGP (Silence/Grande Sonnerie/Petite Sonnerie) | 12 Crown position indicator RAH (Winding [R] – Alarm [A] – Timesetting [H]) | 13 Moon phases | 14 and 15 Date display (on both dials) | 16 Day-of-week display | 17 Month display | 18 Four-digit year display | 19 Leap year cycle



## FUNCTIONS

A Chime selection (Silence/Grande Sonnerie/Petite Sonnerie) | B Pusher for second time zone (+1 hour) | C Pusher for second time zone (–1 hour) | D Day-of-week correction | E Date correction | F Month correction | G Date repeater | H Alarm ON | I Year correction (+1 year) | J Year correction (–1 year) | K Winding the movement | L Winding the strikework | M Minute repeater on demand | N Alarm time setting and alarm OFF | O Handsetting



300 GS AL 36-750 QIS FUS IRM  
TIME SIDE



300 GS AL 36-750 QIS FUS IRM  
CALENDAR SIDE



300 GS AL 36-750 QIS FUS IRM  
VIEW OF BRIDGES





## The Complications

# THE GRANDE SONNERIE THE PIECE DE RESISTANCE

The *Grande Sonnerie* accompanies the owner of the Patek Philippe Grandmaster Chime throughout the day with automatic acoustic indications of the time. At the top of every hour, it strikes the number of hours as low-pitched tones. The quarter-hour chime begins with the hours in low-pitched tones followed by the number of elapsed quarter-hours with a triple strike in three different pitches, whereby each quarter-hour has its own distinctive three-strike sequence. An explanation: From the highest to the lowest, the three tones are called ding, dang, and dong. At 4:45, we thus first hear dong-dong-dong-dong for the four hours (4 o'clock) and then ding-dong-dang, dong-dang-ding, dang-ding-dong for the three quarter hours (45 minutes). If this is deemed too dramatic, the watch can be set to the *Petite Sonnerie* mode.

Now, the hours are struck only at the top of the hour and the quarter-hours only with a quarter strike. At 4:30, only the two quarter-hours are struck with ding-dong-dang and dong-dang-ding. Owners who prefer to enjoy the passage of time in silence merely need to slide the sonnerie switch in the case flank at 9 o'clock down to the bottommost position. The hours will elapse without so much as a whisper.



## THE BIG CHALLENGE

In wristwatches, a *Grande Sonnerie* ranks among the rarest Grand Complications. This is because of the extreme degree of miniaturization and the nature of the power source. In minute repeaters, the energy required by the striking mechanism is built up by pushing a slide in the side of the case. Conversely, the *Grande* and *Petite Sonneries* must fully rely on the energy previously stored in the movement. Given their limited case volumes, this poses much greater problems in wristwatches than in pocket watches, which are much larger and therefore more likely to feature a *Grande* and *Petite Sonnerie*. Patek Philippe was always against endowing a wristwatch with a *Grande Sonnerie* unless its power reserve could handle a complete chiming sequence for comfortably more than a full calendar day without any noticeable

slowing of cadence. In the Grandmaster Chime, the engineers and watchmakers attained this objective with power to spare. The power reserve for the *Grande Sonnerie* is 30 hours, even though the quarter-hours are sounded by triple rather than double strikes... and each additional strike requires a little bit of extra energy. But it was a rocky road to this point, and the engineers had to overcome many obstacles. Without latest-generation materials and manufacturing technologies, they would have remained insurmountable. The Patek Philippe Grandmaster Chime is the first watch in which a *Grande Sonnerie* was miniaturized to the format of a wristwatch without compromising its authenticity.





## HOW TO USE – THE GRANDE SONNERIE

**Important:** To assure the functionality of the automatic strike sequence with the *Grande* and/or *Petite Sonnerie*, the bell-shaped aperture ❶ in the 24-hour dial at 1 o'clock and the small rectangular enabled/disabled window ❷ at 1:30 must be white.

If the bell-shaped aperture shows red, this means that the alarm function has been activated, so all other striking mechanism functions are disabled. If the small rectangular window is red, the chiming mechanism does not have enough power and its spring must be tensioned with the winding crown ❸. To assure that the different chiming functions are always available, it is recommendable to fully wind the strike train barrels so that the small gold hand in the power-reserve indicator ❹ at 3 o'clock (SONNERIE) is in the topmost position. The twin spring barrels for the *Grande Sonnerie* and all other chiming functions is wound by turning the crown counter-clockwise. This requires that the crown be pushed home; at the same time, the crown position indicator ❺ between 4 and 5 o'clock must point to "R". When fully wound, the striking mechanism of the Grandmaster Chime in the *Grande Sonnerie* mode has a power reserve of about 30 hours. The frequent use of the minute and/or date repeaters may decrease this reserve.

**Note:** To wind the twin mainspring barrels of the going train, the crown must be turned clockwise in position "R".

In the side of the case at 9 o'clock, opposite the crown, there is a small slide switch ❻ with a notch that can be used to select the operating mode of the striking mechanism. If the switch is in the middle position (notch aligned precisely with 9 o'clock), the *Grande Sonnerie* mode is active. At each quarter hour, it will automatically indicate the number of hours with low-pitched tones, followed by triple strikes for the quarter-hours. If the slide is pushed up toward 12 o'clock, the *Petite Sonnerie* mode will be activated. At the top of the hour, the watch automatically strikes the hours with low-pitched tones but thereafter omits the hours when sounding the quarter-hours with the respective number of triple strikes. If the slide switch is set to the lowermost position, the striking mechanism is disabled. The selected operating mode is displayed on the dial in a small aperture ❼ between 7 and 8 o'clock. A small gold hand points to "G" (*Grande Sonnerie*), "P" (*Petite Sonnerie*) or "S" (Silence), depending on the position of the slide.







## The Complications

# THE MINUTE REPEATER THE CURRENT TIME AS A TUNE

The time strike on demand, another way to express the function of the minute repeater, is among Patek Philippe's fundamental competencies. It is legitimately referred to as the queen of complications – because the *Grande Sonnerie* can claim the title of empress with equal justification. What can be more mystical than to activate the repeater in the dark, or with one's eyes closed, and then listen in rapture as the time is being struck to the minute with a crystal-clear, harmoniously polyphonic suite of tones. First, the hours are sounded with low-pitched tones, followed by the number of quarter-hours with multiple strikes, and finally, with high-pitched tones, the number of minutes that have elapsed since the last quarter-hour. Patek Philippe timepieces have a legendary reputation with regard to the acoustic quality of these time strikes.

The Manufacture has no peers in terms of the diversity of intonations, especially since the phenomenal Star Caliber 2000, the world's first portable watch capable of playing the complete Westminster chime in the original sequence as struck by the bells in the Big Ben clock tower in London.



In the Patek Philippe Grandmaster Chime, the minute repeater is an integral part of the mechanism for the *Grande Sonnerie* and is therefore actuated in a different way than is the case with other Patek Philippe wristwatches endowed with minute repeaters. In the latter, a slide in the case flank must first be moved to charge the strikework with the necessary amount of energy. With the Grandmaster Chime, all it takes to set the fine-toothed racks and snails in motion is gentle pressure on the pusher in the winding crown. They sample the current time displayed on the dial and trigger small hammers that indicate the time acoustically on three gongs.

This may sound like the function of the *Grande Sonnerie*, but in addition to the hours and quarter-hours, this minute repeater also counts the number of minutes that have elapsed since the last quarter-hour. The lengthiest time signal occurs at 12:59: 12 low tones, three triple strikes for the three quarter-hours, and then 14 high-pitched tones for the 14 minutes that have elapsed since the third quarter-hour. So the time is struck with 35 tones.





## HOW TO USE – THE MINUTE REPEATER

The minute repeater strikes the time on demand at any hour. This is done by pressing the pusher in the winding crown ❶ all the way in and then releasing it. Now, the time shown on the dial is indicated acoustically as previously described: first the hours, then the quarter-hours, and finally the minutes.

Adjustments such as setting the time should be avoided while the minute repeater is running and for about 5 seconds after the last tone has sounded. All other functions are blocked by elaborate isolator mechanisms to prevent the movement from being damaged.

**Important:** Once the alarm function has been activated, all other strikework functions are disabled. The minute and date repeaters are blocked as well. This disabled status is indicated by a bell-shaped aperture ❷ in the 24-hour alarm-time dial: if it is red, the alarm is active and all other strikework modes are suppressed.

If it is white, the alarm is switched off and all functions are enabled. The small rectangular power-reserve warning window ❸ between 1 and 2 o'clock must also be white. If it is red, the strikework mechanism does not have enough energy and is blocked. Turning the crown counterclockwise rewinds the spring barrels and the warning window will switch to white: all strikework functions are enabled again. To assure that the different chiming functions are always available, it is recommended to fully wind the strikework barrels so that the small gold hand in the power-reserve indicator ❹ at 3 o'clock (SONNERIE) is in the topmost position. The twin spring barrels for the minute repeater and all other chiming functions is wound by turning the crown counterclockwise. This requires that the crown be pushed home; at the same time, the crown position indicator ❺ between 4 and 5 o'clock must point to "R". When fully wound, the striking mechanism of the Grandmaster Chime in the *Grande Sonnerie* mode has a power reserve of about 30 hours. The frequent use of the minute and date repeaters may diminish this reserve.







## The Complications

# THE ALARM A GENTLE REMINDER

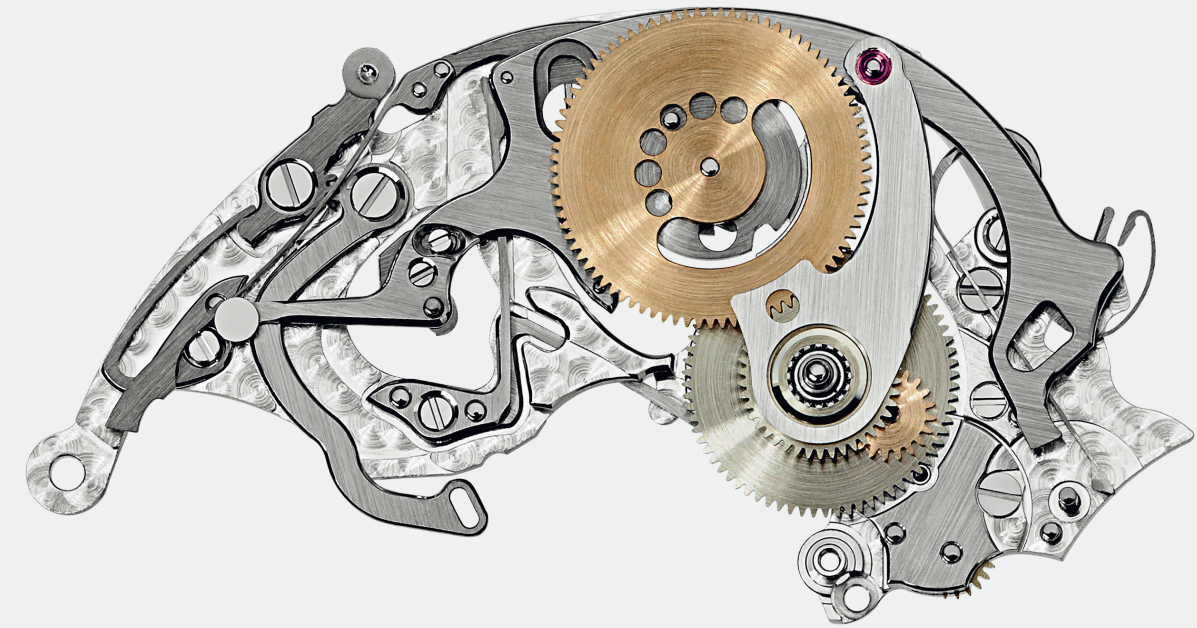
The alarm is a particularly useful strikework function: it provides reminders for appointments not to be missed. It discreetly notifies the owner of the watch that the parking meter is about to expire, the live broadcast of the Wimbledon final is coming up, or a rendez-vous is imminent, reliably sparing the embarrassment of being late.

For the first time in the history of watchmaking, the Patek Philippe Grandmaster Chime uses the minute repeater strike sequence as an acoustic alarm signal, with the significant difference that the user defines the alarm time in advance. With the 24-hour subsidiary dial at 12 o'clock, the desired alarm time can be set in quarter-hour steps. However, the alarm will always sound two minutes before the full quarter-hour – for a good reason. If 1 o'clock is set as the notification time, the alarm mechanism would briefly strike the full hour once, a signal that is easily missed in distracting circumstances. Therefore, the Grandmaster Chime sounds the time at 12:58 with 12 strikes for the hours, three triple strikes for the quarter-hours, and 13 strikes for the minutes. This adds up to a total of 34 strikes, which can't be missed.



It must be noted that all other chiming functions are disabled when the alarm function is activated. The *Grande* and *Petite Sonnerie*, the minute repeater, and the date repeater will remain mute until the alarm has sounded or is deliberately switched off. This is done by pulling the crown to position “A”

(crown position indicator between 4 and 5 o'clock). The status of the alarm is indicated by the color in the bell-shaped aperture inside the alarm-time dial: it is red when the alarm function is activated. Once the alarm has sounded or was deliberately deactivated, the color changes to white.





## HOW TO USE – THE ALARM

On the 24-hour hour dial **3** at 12 o'clock, the desired alarm time can be set with quarter-hour accuracy at least 30 minutes or at most 22 hours in advance. To allow the alarm time to be set, the crown **1** is pulled to the alarm setting position. The small gold hand in the crown position indicator **2** between 4 and 5 o'clock will then point to the letter "A" (Alarm). Now, the hand in the subsidiary alarm time dial **3** at 12 o'clock can be advanced to the desired time. It can be set in quarter-hour increments.

If the hand is not precisely aligned with a quarter-hour marker, the alarm will sound at the quarter-hour that is closer to the marker. After the alarm time has been set, the crown is pushed home again. Then, to activate the alarm function, the pusher **4** at 2 o'clock must be pressed. The color in the bell-shaped aperture **5** inside the alarm-time dial switches from white to red.

Caution: From now on, all other chiming functions are disabled. As soon as the alarm time has been attained and the alarm melody has finished playing, the alarm display switches to white and the other chiming functions are enabled again.

The alarm function can be manually canceled. When the crown is pulled to position "A", the alarm display will switch to white confirms that the alarm function has been turned off.

**Important:** The alarm can only function if the small rectangular power-reserve warning window **6** between 1 and 2 o'clock is white. If it is red, the strikework does not have enough energy and is blocked. Turning the crown counterclockwise rewinds the spring barrels and the warning window will switch to white. To assure that the different chiming functions are always available, it is recommended to fully wind the strikework barrels so that the small gold hand in the power-reserve indicator **7** at 3 o'clock (SONNERIE) is in the topmost position. The twin spring barrel for the alarm and all other chiming functions is wound by turning the crown counterclockwise. This requires that the crown be pushed home; at the same time, the hand in the crown position indicator **2** between 4 and 5 o'clock must point to "R". When fully wound, the striking mechanism of the Grandmaster Chime in the *Grande Sonnerie* mode has a power reserve of about 30 hours. The frequent use of the minute and date repeaters may decrease this reserve.







## The Complications

# THE DATE REPEATER A WORLD FIRST

A date display is one of the elementary functions of a wristwatch. In Patek Philippe's Grandmaster Chime, it is therefore present on both dials. In fact, it is a perpetual analog date that recognizes the different number of days in each month and the leap year cycle, so it always displays the correct date.

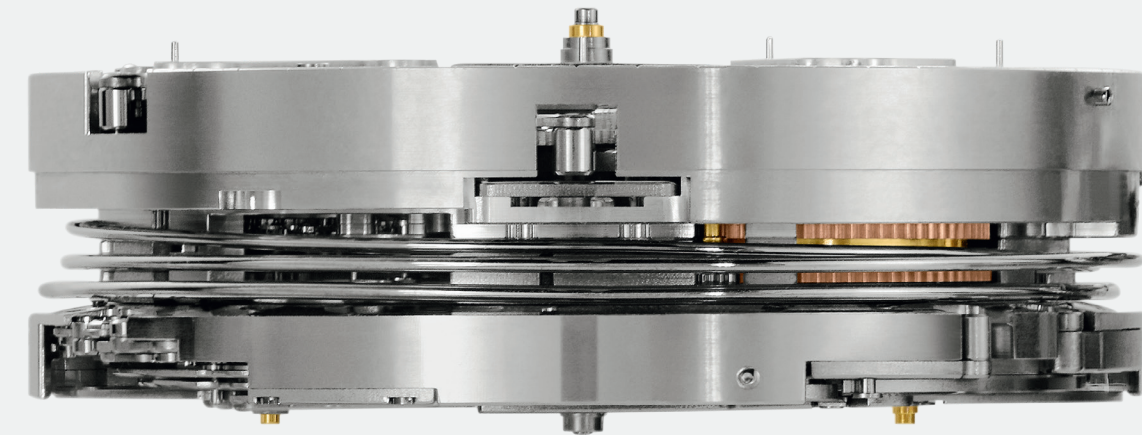
The only exceptions are the so-called secular years which cannot be divided by 400 without a remainder. In such years, the leap day is skipped. The year 2000 was a leap year, but February 29 will be omitted in 2100, 2200, and 2300. In those years, the perpetual calendar will have to be manually corrected.



The Grandmaster Chime not only displays the perpetual date with the subsidiary dials at 6 o'clock on both sides, but thanks to a refined repeater mechanism – a world debut –, it also indicates the date acoustically. When the pusher at 4 o'clock is actuated, a mechanism composed of snails, racks, wheels, and a centrifugal governor begins to sound the date in tens and ones: one high-low strike represents ten days, and one high strike marks each day that has elapsed since the last ten-day period. The 26th of a month is thus sounded with two high-low strikes and six single high strikes. Even though the strikework is endowed with three gongs in three different pitches, a double strike was chosen for the ten-day periods to rule out any confusion with the strikes of the *Grande Sonnerie*, the *Petite Sonnerie*, or the minute repeater.

An acoustic date indication has never existed before, not to mention a perpetual date repeater in a wristwatch. But it fits seamlessly into the timeline of innovations pioneered by Patek Philippe, which

in 1924 presented the world's first wristwatch with a perpetual calendar and in 1989, on the occasion of the Manufacture's 150th anniversary launched two models that instantly rang in an ardent comeback for wristwatches with minute repeaters. For this reason, the Grandmaster Chime with its perpetual date repeater can be seen as a logical next step. It was inspired by a discussion that Thierry Stern had ten years ago with a long-standing collector of Patek Philippe timepieces, in which the subject of an acoustic calendar indication was touched upon. The Manufacture's current President had never before heard of such a watch and mentioned the topic at the next Monday meeting during which timepieces commemorating the 175th anniversary were talked through. Everyone in attendance was surprised. Even the historically well-versed Patek Philippe specialists were not aware of the existence of such a complication and research at the Patek Philippe Museum proved fruitless as well.





## HOW TO USE – THE PERPETUAL DATE REPEATER

The calendar sound sequence is triggered by pressing the rectangular pusher at 4 o'clock ❶ and fully releasing it again. The current date is then sounded as previously described. If the date repeater does not work, an already initiated strike sequence may not have ended yet or the alarm function is active.

In the first case, a renewed attempt a few seconds later should be successful. However, if an alarm time has been programmed, the alarm function will first have to be deactivated before another chiming mechanism mode can be selected. For this purpose, the crown ❷ must be pulled to position “A” (crown position indicator ❸ between 4 and 5 o'clock). This will cause the alarm display ❹ to switch to white. A readily audible tone (one “ding” strike) confirms that the alarm has been canceled.

The small rectangular power-reserve warning window ❹ between 1 and 2 o'clock must be white as well. If it is red, the strikework mechanism does not have enough energy and is blocked. Turning the winding crown ❷ counterclockwise rewinds the spring barrels and the warning window will switch to white: all strikework functions are enabled again. It is recommended to fully wind the strikework spring barrel; its state of wind is displayed by the SONNERIE power-reserve indicator ❺ at 3 o'clock. When the hand is in the topmost position, the barrel has enough energy to power the acoustic indications at any time.







## The Complications

# THE CALENDAR — INSTANTANEOUS AND PERPETUAL

Where most wristwatches have a case back (with or without a view of the movement), the Patek Philippe Grandmaster Chime presents a stage that alongside hours and minutes is also dedicated to much larger units of time. It belongs to the full perpetual calendar. Besides the date, it also displays the day, month, leap year cycle, and the year, automatically recognizing the number of days in each month and taking the additional day in leap years into account. In ordinary years, it switches directly from February 28 to March 1, but in leap years also displays February 29. If the watch is regularly wound, the calendar requires no correction until 2100, the year in which the leap day is skipped in accordance with the Gregorian secular year rule.

In the Grandmaster Chime, the perpetual calendar has its own dial, an extremely elegant one in fact, with a lucid layout that assures excellent legibility. Connoisseurs who are familiar with the timepieces launched by the Manufacture in the past four decades might come to the conclusion that this dial bears the signature of Philippe Stern, the long-standing President and current honorary President, a rumor that has neither been confirmed nor denied. At any rate, the development of the Grandmaster Chime began under his leadership and was completed under the supervision of his son Thierry, whose influence is allegedly noticeable in the dial on the strikework side of the watch.



The symmetry of the dial is calm and composed, providing each indication with just the right amount of space. The dominant 24-hour dial at 12 o'clock presents the course of time during a full day with an hour and a minute hand. The subsidiary dial on the bottom side, at 6 o'clock, features an analog date on the outer scale and displays a complete leap year cycle in the center with quadrants numbered 1 to 4. The 4 identifies a leap year. The day is indicated at 9 o'clock and the month at 3 o'clock. A gold-framed

aperture in the midst of these four subsidiary dials presents the four-digit year, a very rare indication in wristwatches. A patent application has been filed for its mechanism, which has two fascinating innovations that assure the utmost in convenience: the year display is synchronized with the perpetual calendar and can be easily incremented up or down with two correction push pieces.





## TO THE NEXT DAY IN THE BLINK OF AN EYE

Fundamentally, the functionality of the instantaneous perpetual calendar in the Grandmaster Chime is no different from other Patek Philippe perpetual calendars: at midnight  $\pm$  2 minutes, it advances all calendar displays to the next day, instantaneously and simultaneously. Here, instantaneous switching to the next day is indispensable because the date in the caliber 300 movement is connected with a separate repeater that can sound the date on demand. If the date were to lag behind or switch semi-instantaneously, the calendar strike would have to be disabled for several hours before and after

midnight; this is because the date repeater relies on a mechanism with snails and racks as is the case in minute repeaters. They obtain the current date from the calendar module and transmit this information to the chiming mechanism. For this reason, the date indication must always be unambiguous, which is possible only if it advances instantaneously. The jump forward takes place between 2 minutes before and 2 minutes after midnight.





# HOW TO USE – WINDING AND SETTING THE TIME

## Winding the watch

The Patek Philippe Grandmaster Chime is a manually wound mechanical watch. It is wound with the crown **3** pushed all the way home. This position can be verified with the crown position indicator **4** between 4 and 5 o'clock when its hand points to “R” (*Remontage*=winding). To fully wind the watch, the crown is turned clockwise until the small gold hand in the power-reserve indicator at 9 o'clock reaches the topmost position. The twin mainspring barrels are now completely tensioned and will keep the watch running for at least 72 hours.

**Note:** When the crown is turned counterclockwise in position “R”, it will wind the twin spring barrels that power the strikework mechanism.

## Setting the time

The time of day on the subsidiary dial **1** at 12 o'clock is local time, corresponding to the indication of the white gold hands on the opposite side of the watch. The watch should be removed from the wrist before setting the time: this will avoid lateral pressure on the winding stem that in the course of

time could damage the stem tube. As is customary, the winding crown **3** is used to set the time. For this purpose, the crown is pulled to the outermost position. The gold hand of the crown position indicator **4** between 4 and 5 o'clock now points to “H” (*Heure*=hour). The hour **2** and minute **5** hands are set to the correct time by turning the crown in the appropriate direction. The last movement of the hands should always be clockwise to assure that the dial train wheels are properly meshed. The thinner time-zone hand **6** with the ring-shaped tip turns in the same direction, and if it indicates the time in a different time zone, that difference will be preserved. If you move the hour hand beyond midnight, this will advance all calendar displays on both faces of the watch by one day. Turning the hour hand beyond midnight in the counterclockwise direction may cause the calendar to desynchronize when the next date change takes place. The displays can be corrected with the push pieces in the case flank. However, the calendar mechanism will not sustain any damage. Nonetheless, it is advisable to move the hands beyond midnight only in the clockwise direction.





# HOW TO USE – THE CALENDAR

## Operating and correcting the perpetual calendar

The calendar displays can be corrected with the labeled push pieces in the case flank. To prevent damage to the push pieces or the case, use only the correction stylus supplied with the watch.

## Setting the date (subsidiary dial at 6 o'clock)

The date is set with the push piece ❶ at 5 o'clock. Each full actuation of this push piece advances the date hand on both subsidiary dials ❷ at 6 o'clock by one day.

## Setting the day (subsidiary dial at 9 o'clock)

The day is set with the push piece ❸ between 2 and 3 o'clock. Each full actuation of this push piece advances the weekday hand on the subsidiary dial ❹ at 9 o'clock by one day.

## Setting the month (subsidiary dial at 3 o'clock)

The month is set with the push piece ❹ at 3 o'clock. Each full actuation of this push piece advances the month hand on the subsidiary dial ❺ between 2 and 3 o'clock.

## Setting the year (in the center of the dial) and the leap year cycle (subsidiary dial at 6 o'clock)

The Grandmaster Chime features a four-digit year display ❷ and a small leap-year cycle dial ❸ with quadrants numbered 1 to 4; the 4 indicates a leap year. Because the leap-year cycle is correlated with the year, the two displays are mechanically connected. But unlike the other calendar indications, they do not jump instantaneously from one year to the next. The process takes several hours. Then again, they offer the convenience of a bidirectional correction feature. Corrections are made with the + ❹ and – ❺ push pieces. Each full actuation of these push pieces changes the year display by one year and moves the leap-year hand forward or backward by one quadrant.







## The Complications

# SECOND TIME ZONE AND MOON PHASES

The Patek Philippe Grandmaster Chime presents a repertoire of acoustic functions unlike any other timepiece in the world. But this is just the resonant facet of the watch, because it also tells the time in the customary way and features useful complications such as the integration of a second time zone with day/night indication and a moon-phase display, still one of the especially poetic functions of a timekeeping instrument.

For this reason, some attention must also be devoted to the going train which fulfills the extremely strict rate accuracy criteria of the Patek Philippe Seal, as do all other timepieces crafted by the Manufacture. It is a requirement that imposes considerable challenges for all the interfaced complexities such as the different chiming modes and the instantaneous perpetual calendar.



## PRECISION WORK

The power source – twin mainspring barrels – will let the watch run for at least 72 hours after it has been fully wound. This is a comfortable margin for keeping the perpetual calendar updated in the event that the watch is not worn for two or three days. The energy is apportioned by an escapement that has three special features. The balance frequency of 3.5 hertz or 25,200 semi-oscillations per hour is unusual, but not new in a Patek Philippe watch. It is the ideal midpoint between the higher rate accuracy at 4 hertz and the higher power reserve at 3 hertz. The second special feature is the configuration of the escapement referred to as *renversé* (reversed) by watchmakers. Its escape wheel rotates counterclockwise, which calls for a mirror-image alignment of the escape wheel teeth with appropriate modifications of the lever. The third special element is the Spiromax® balance spring made of Silinvar®, a silicon derivative. Presented

by Patek Philippe as a patented world debut in 2006, it has since been continuously refined. The technology has matured and assures excellent rate accuracy and dependability, now also in watches of the regularly produced collection. Although it is a flat hairspring that expands and contracts in one plane, it “breathes” just as concentrically as a balance spring with an overcoiled Philips terminal curve. But it allows perceptibly thinner movements, a big advantage for a highly complex watch such as the caliber 300. Its isochronism, the uniformity of a balance spring’s oscillations, is also a decisive prerequisite that enables the Grandmaster Chime to meet the strict specifications of the Patek Philippe Seal with respect to the rate accuracy of mechanical timepieces. With a maximum daily rate deviation of –3 to +2 seconds, it even outperforms officially certified chronometer timepieces.

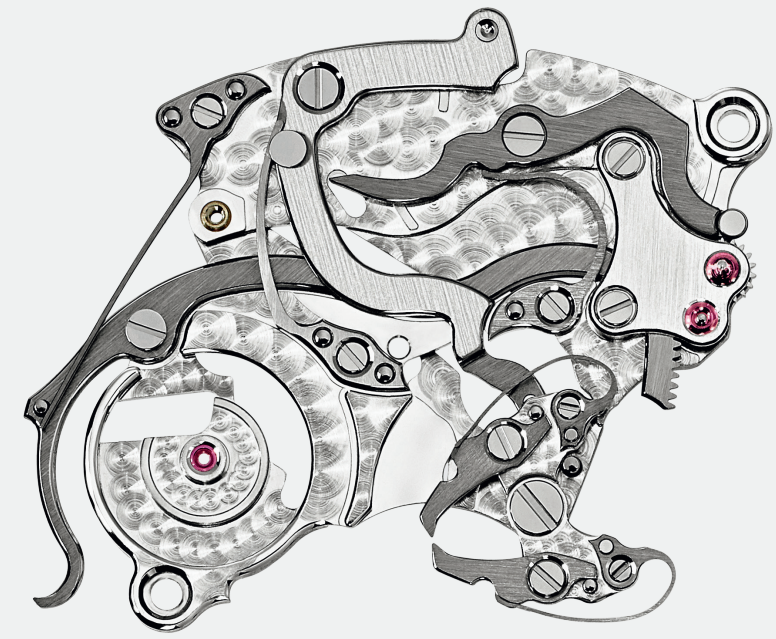




## SECOND TIME ZONE

When Patek Philippe was incorporated, journeys across entire continents and overseas were uncommon and occasionally perilous. Antoine Norbert de Patek's diary contains many entries describing trips throughout Europe and to the still young United States of America. Timepieces with two time zones were needed only for navigation on the high seas. Today, we can easily travel from one continent to another, taking off at 12 noon in Paris and arriving in New York at 2.30 p.m. after an eight-hour flight across 6 time zones. Therefore,

it is good to know what time it is elsewhere, for example when loved ones or business partners are vacationing or working on another continent. For this purpose, the Grandmaster Chime features a time-zone mechanism with which the gold hour hand can be set to a second time zone in either direction in one-hour increments. This hand is coupled to a day/night indicator to prevent confusion and unintended calls that would wake up someone in the middle of the night.

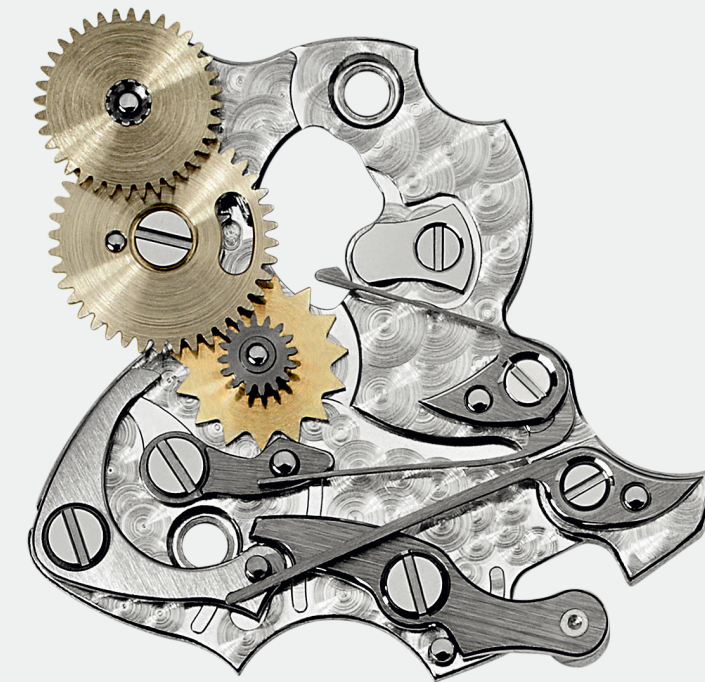




## MOON PHASES

The first man set foot on the moon 130 years after Patek Philippe was founded; meanwhile, even the dark side of our planet's satellite has been precisely mapped. But the moon has lost none of its fascination and mystique. For many people, it is and will remain a romantically revered symbol that lulls some to sleep and robs others of it. This is why in horology, the waxing and waning of the moon ranks among the oldest and most popular astronomical complications.

The dial of the Grandmaster Chime is also endowed with a moon-phase display in a decorative, characteristically contoured aperture. It owes much of its fascination to the extraordinary precision which eliminates the need for a manual correction during the owner's entire lifetime. The ingenious wheel train reproduces the lunations so accurately – with a maximum daily deviation of less than 2 seconds – that it takes more than 122 years for the display to be off by merely one day.





# HOW TO USE – SECOND TIME ZONE AND MOON PHASES

## Selecting a second time zone

The main dial of the Grandmaster Chime has three hands: two white gold hands for the hours ❶ and minutes ❷ that indicate local time, and a short pierced white lacquered hand ❸ for the hour in a freely selectable second time zone. It can be adjusted hour by hour in either direction with the pushers ❹ (+1 hour) and ❺ (–1 hour) in the case at 8 and 10 o'clock without affecting the positions of the two local time hands or of the other time indications. If the owner selects a time zone west of the current location, the time-zone hand must be moved counterclockwise and vice versa for a time zone to the east. When a time zone is selected, the day/night indicator in the small square window ❻ at 2 o'clock changes as well, so apart from the hour in the second time zone, the watch also displays the time of day there.

## Setting the moon phase

The moon-phase display ❼ is adjusted with the correction push piece ❽ in the case flank between 4 and 5 o'clock. To prevent damage to the push piece or the case, corrections should only be made with the correction stylus that comes with the watch. Each time this correction push piece is pressed, the moon-phase display will advance by one day. Press the push piece repeatedly until the full moon appears in the aperture. Consult a moon-phase calendar or [www.patek.com](http://www.patek.com) and count the number of days that have elapsed since the last full moon (relative to the current date). To set the correct moon phase, press the push piece ❽ between 4 and 5 o'clock as many times as days have elapsed since the last full moon. Now, the moon-phase display is correctly set.





PATEK PHILIPPE  
GRANDMASTER CHIME

# OVERVIEW TIME IN TRANSIT

THANKS TO AN INGENUOUS TWIST,  
THE GRANDMASTER CHIME IS  
A DOUBLE-FACE WRISTWATCH WITH  
TWO ABSOLUTELY COEQUAL DIALS



Manually wound mechanical movement. | Caliber 300 GS AL 36-750  
*Grande Sonnerie/Petite Sonnerie*). | Alarm with time strike. | Date  
(chimes enabled/disabled). | Second time zone. | Second time zone day/  
Leap year cycle. Four-digit year display. | Moon phases. | 24-hour and minute

QIS FUS IRM. | *Grande Sonnerie, Petite Sonnerie*, minute repeater. | Strikework mode display (Silence/  
repeater. | Movement power-reserve indicator. | Strikework power-reserve indicator. | Strikework isolator indicator  
night indicator. | Instantaneous perpetual calendar. | Display of day and month. | Date display (on both sides).  
subdial. | Crown position indicator (winding [R], alarm setting [A], timesetting [H]).





## Design

# A MEDALLION WITH TWO FANTASTIC SIDES — THE DOUBLE-FACE REVERSING CASE

In view of its extremely intricate design and features, the case of the Grandmaster Chime itself would easily deserve the attribute Grand Complication. But the term is reserved for degrees of complexity of a movement, so Grand Construction was deemed fitting for this exclusive masterpiece. Given its uniqueness, its artisanal perfection, and its aesthetic appeal, the case is an opus consistent in sophistication with the elaborate movement within. It is in a class of its own, as easily illustrated by just a few comparisons.

While a conventional case, including the back, middle, bezel, crystal, crown, and lugs usually consists of no more than twelve parts, the one developed for the Grandmaster Chime has no fewer than 214 components. The development phase that began when engineers Eric Le Gall and Sébastien Fivaz were entrusted with the assignment and ended temporarily with the first near-series prototype lasted two years. Another year elapsed before its construction and functionality had been refined to the state where it was ready for a patent registration. The production and assembly of the case reflect its complexity, requiring several more weeks of work to mill, shape, and adjust the individual components that are made of solid gold, hard ceramic materials, copper-beryllium, and steel. In the end, all this work is indispensable to assure that the sound quality of the chimes can fully unfold and also that all of the manifold functions of the watch can be used as intended.



## A CASE WITH TWO SIDES

The kickoff for the development of the Grandmaster Chime case had to wait until all complications of the timepiece and their functions had been defined. In a watch this complex, the case not only protects the movement but also extends it to the outside with all the components needed to control the elaborate mechanisms. From this point on, the case engineers work hand in hand with the movement specialists. At Patek Philippe, this is standard procedure, because each watch is considered an entity with its case and movement.

In their work, the casemakers were confronted with the difficult task of equally prioritizing both functional sides of the watch. The first wristwatches with reversible cases appeared

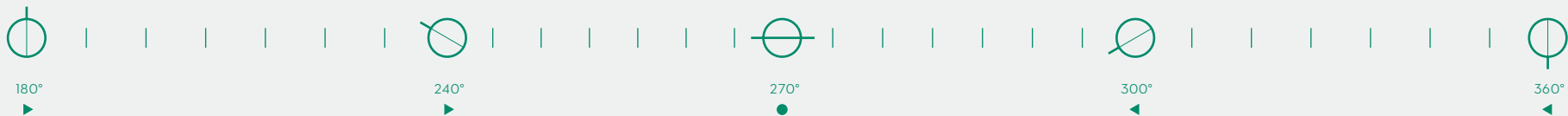
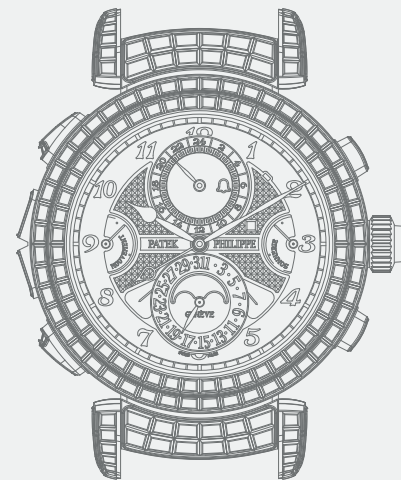
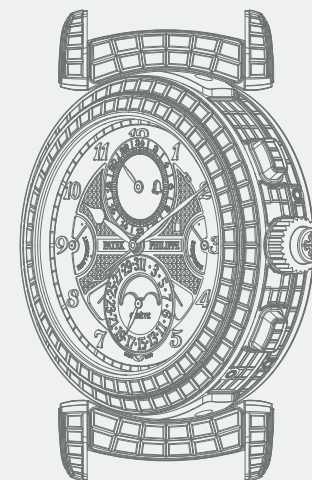
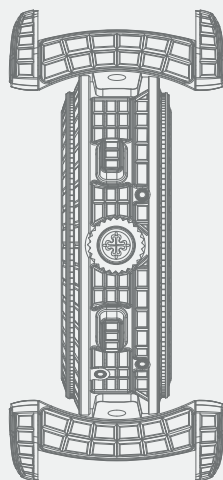
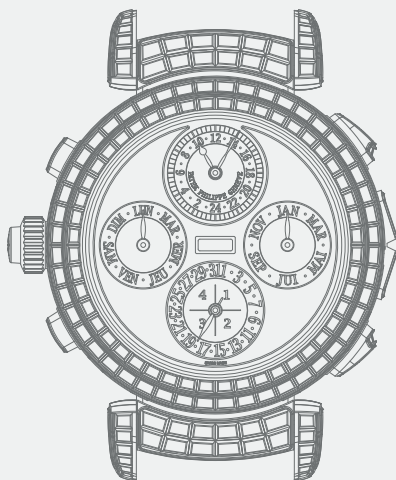
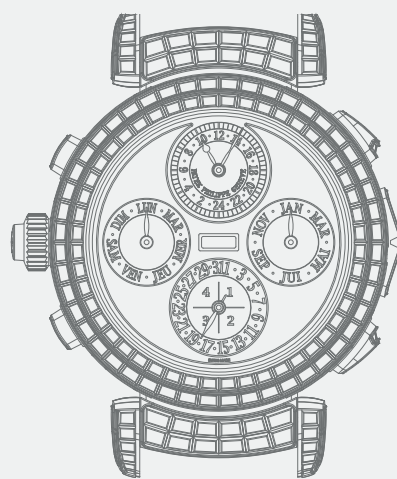
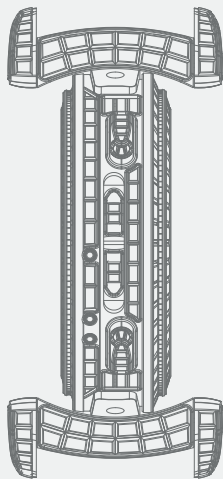
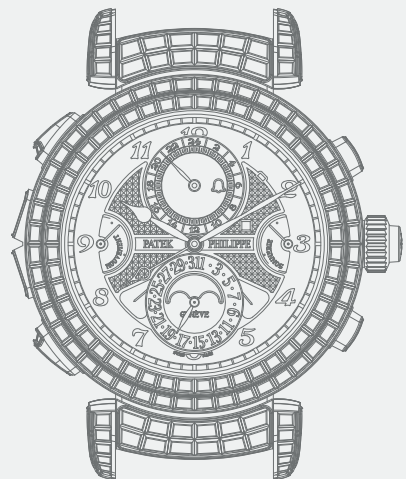
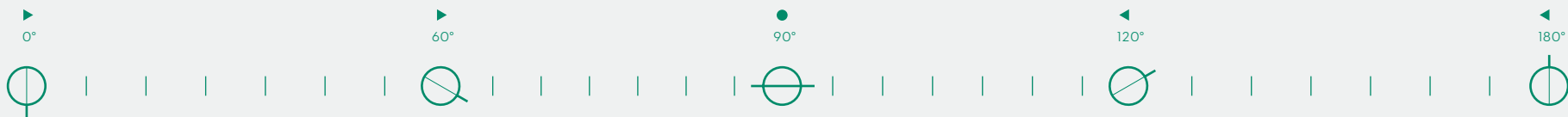
about 80 years ago, but only a few of them proved to be convenient and dependable. For round watches with diameters of over 40 millimeters, no really practical and uncompromising solutions for wearing a timepiece on either side had ever been presented so far. The challenge was all the more formidable as the case also had to accommodate functional elements such as the two time-zone pushers, various recessed correctors, the slide switch for the chiming mechanism, and others. They transmit commands to the movement via multiple levers that had to be integrated inside the case in separate niches. Engineers Eric Le Gall and Sébastien Fivaz had to explore uncharted territory to fulfill these requirements with elegance and assurance.





THE TWO SWIVEL HINGES AT 12 AND 6 O’CLOCK

ARE THE PROVERBIAL LEVER AND FULCRUM OF THE GRANDMASTER CHIME. THEY ALLOW THE CASE TO BE EFFORTLESSLY ROTATED ABOUT THE VERTICAL AXIS AT ANY TIME.



OPERATION

Turning the watch case is simple and effortless. For this purpose, the watch must be removed from the wrist. Thanks to the fold-over mechanism, the two strap halves form a closed ring even when the clasp is open. Now, the strap is grasped on both sides as close as possible to the lugs and gently pulled away from the case. This releases the latches in the lugs and the round case can easily be turned through 180° with a finger. As soon as it is horizontally aligned, the strap halves are released, automatically causing the case to interlock with the lug pods.



## THE CASE WITH THE INGENUOUS TWIST

The specification dossier already dictated that the case should not exceed the dimensions of the Sky Moon Tourbillon, Patek Philippe's most complicated regularly produced wristwatch at the time. But the Grandmaster Chime had to be made wearable on both sides at will, either with the *sonnerie* dial or the perpetual calendar dial facing up. Because this watch is a chiming timepiece with gongs that wrap around the movement, a round case was the obvious choice. And it soon became clear that the most elegant solution for achieving perfect reversibility of the case around the axis from 12 to 6 o'clock would be found in the vicinity of the strap lugs. Designers of other brands had repeatedly experimented with this approach for several decades. But each time, they were stymied in the technical implementation phase, because a reversing mechanism must not only allow the case to be flawlessly rotated through 180°:

the functional integrity of the mechanism must also be guaranteed in the long term. In other words, the owner of a Patek Philippe Grandmaster Chime must be able to rely on the reversibility of the case multiple times a day and for such a long time that coming generations can delight in the fascination of this double-face timepiece as well.

As a rule, strap lugs are integral elements of the case middle, at least in that they are screwed or brazed to the flank. In the Grandmaster Chime, however, they are the fulcrum of the functional principle of the watch and on the one hand must firmly secure the case on the strap and thus on the wrist, regardless of the selected position. On the other, they must afford such a degree of freedom that the watch can be effortlessly rotated from one side to the other.



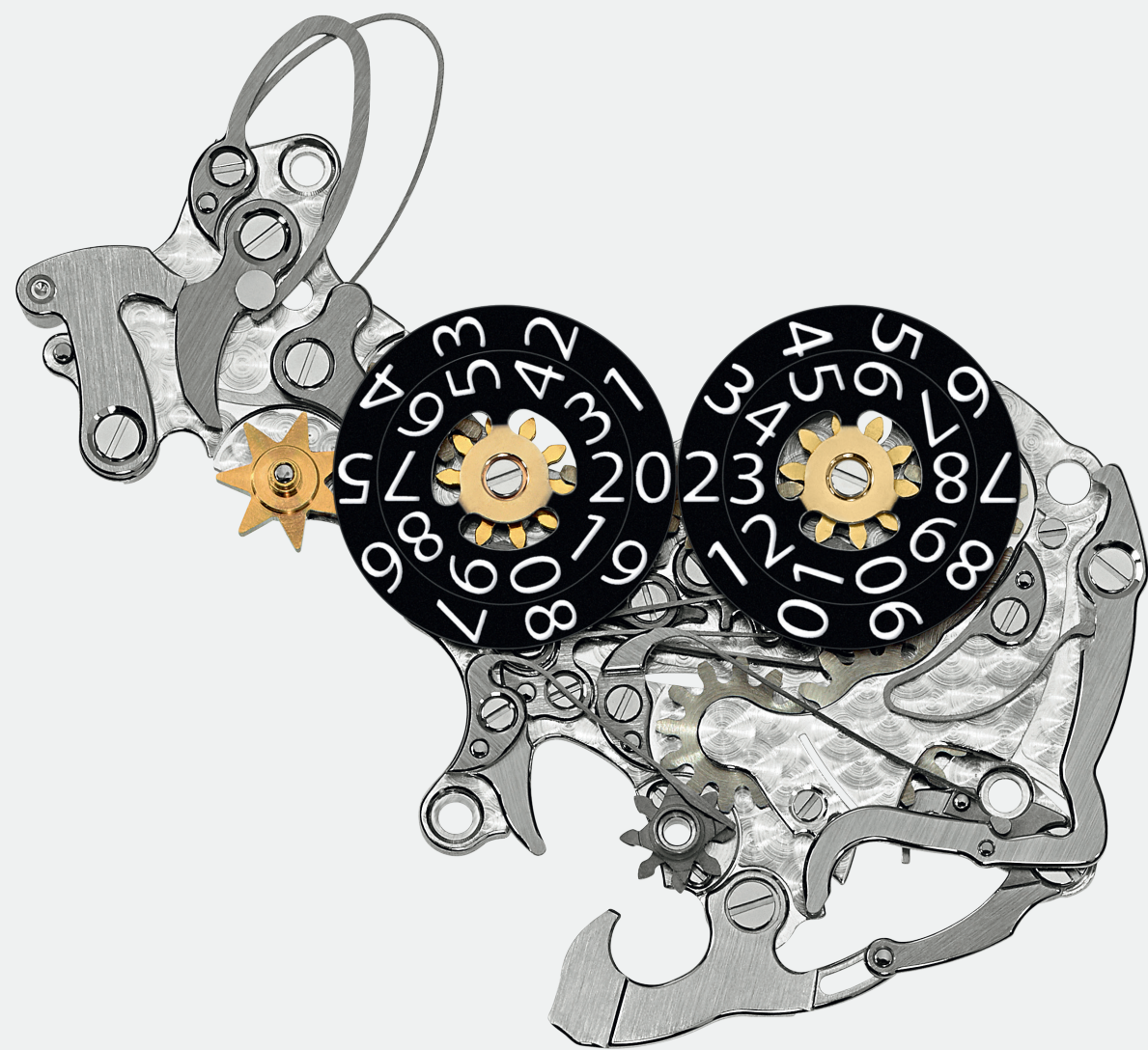




With the reversing mechanism for the Grandmaster Chime, Patek Philippe succeeded for the first time in creating a device that allows a large round case to be easily and reliably rotated about its longitudinal axis without any compromise whatsoever to the functionality of the watch. Accordingly, the Grandmaster Chime does not have a front and a back face in the ordinary sense. It has two equivalent sides of equal distinctiveness, whichever way it is worn. When the crown points to the right, the user sees the dial with the time displays. The other side shows the full perpetual calendar with a 24-hour dial and the four-digit year display.

The strap lugs with the reversing mechanism alone are much more complex than an ordinary timepiece case. Each lug consists of over 30 individual parts, most of them dedicated to the coupling arrangement within the lug pod. A lateral tug of the strap operates a spreader mechanism that retracts the four pins (two per side) that latch the lugs to the case. Now, the case is only connected to the lug pods via the rotary shafts and can be freely turned. When the strap is released, springs press the pins against the watch case again, allowing them to engage with their respective bores in the case as soon as it is properly aligned. Now, the case and the lugs are firmly and reliably interlocked again.





**FOUR-DIGIT YEAR DISPLAY MECHANISM**  
Patent No. CH 708 001 A2

## Tradition and Innovation

# PATENTS AND INNOVATIONS

The Patek Philippe Grandmaster Chime is unlike any watch ever crafted before. Some of its complications are familiar, others are totally new. But what is absolutely different is the combination of these complications and the way they were miniaturized to fit the format of a timepiece that truly deserves to be called a wristwatch.

The movement and case engineers had to devise many new approaches to successfully and reliably fulfill the requirements of the specification dossier. Patents were granted for six of their innovations, but other achievements are genuinely trailblazing even without patent protection for the unique execution, the stringent technical specifications, and the novel material technologies. The following pages will acquaint you with some of these feats.



## ALARM MECHANISM WITH TIME STRIKE

Patent No. CH 703 615 A2  
Also listed as CH 703 635 A2

This patent recognizes the innovative idea and the technical implementation of a mechanism that allows a preselected alarm time to be acoustically indicated with the minute repeater’s chiming mechanism by striking the number of hours, quarter-hours, and minutes when the alarm time has been attained.

## ISOLATION OF THE GRANDE SONNERIE IN THE SILENCE MODE

Patent No. CH 703 950 B1

This patent protects the idea and the technical implementation of the isolator mechanism that switches the *Grande Sonnerie* to the silence mode.

## SELECTION OF THE STRIKework OPERATING MODE

Patent No. CH 706 080 B1

This patent protects the mechanism with the single slide switch in the case flank at 9 o’clock. It is used to freely select the operating mode of the chiming mechanism or disable it: “G” for *Grande Sonnerie*, “P” for *Petite Sonnerie*, and “S” for Silence. Formerly, two separate switches were needed to select these three modes.

## DATE REPEATER

Patent No. CH 705 117 B1  
Also listed as FR 2 919 398 A1 and DE 10 2008 040 353 A1

This patent names Manufacture President Thierry Stern as the inventor. It recognizes the idea of an acoustic calendar indication and its technical implementation with a mechanism that samples the date information of the perpetual calendar and transmits it to the repeater mechanism.

## REVERSIBLE WRISTWATCH CASE

Patent No. CH 705 240 A2

This patent recognizes the idea of a wristwatch case that can be rotated on the axis from 12 to 6 o’clock and protects the technical implementation of this idea with a rotation and interlocking mechanism in the lugs of the case.

## FOUR-DIGIT YEAR DISPLAY MECHANISM

Patent No. CH 708 001 A2

This patent emphasizes the innovative aspects of the design of the four-digit year display, which is automatically synchronized with the leap-year display and has a mechanism that allows the convenient correction of the display in either direction. Most year displays can be reset only by watchmakers who have to uncase the movement for this purpose. In the caliber 300, the four-digit year display can be advanced or reversed in one-year steps with the correction push pieces (“+” and “–”) in the case and the correction stylus delivered with the watch.



## THE STRIKework DIFFERENTIAL

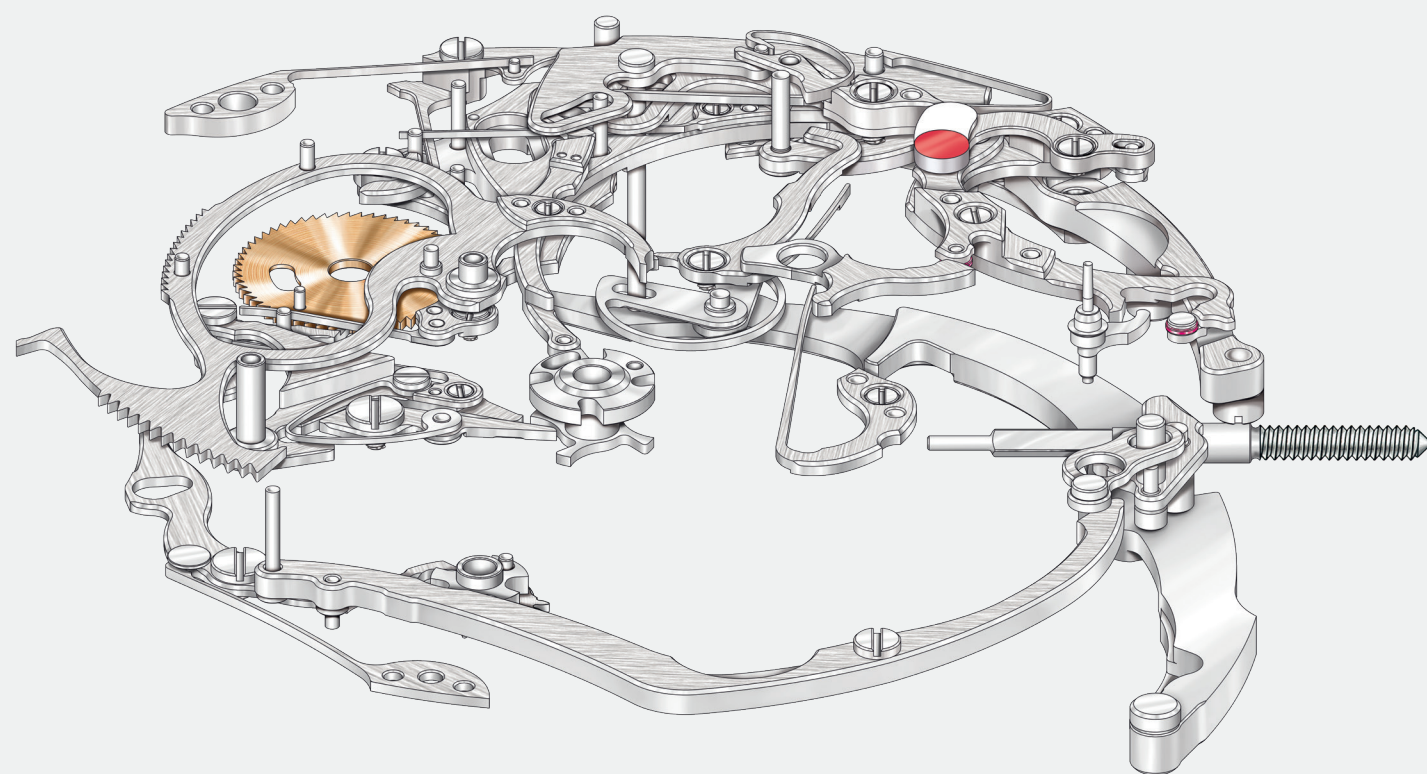
A central component in the caliber 300 is unusual for a *Grande Sonnerie* mechanism: it is the differential between the energy source (two strikework spring barrels) and the two strikework mechanisms for the *Grande Sonnerie* (including the minute repeater and the alarm) and the date repeater. Its purpose is to assemble the time and date information needed to execute the individual chiming functions. On the calendar side, the current date is sampled with the 10-day and 1-day snails. The three snails of the *Grande Sonnerie* show the angular positions of the hour-wheel pipe and the cannon pinion with the minute hand for a reading of the current time with one-minute accuracy.

In conventional *Grande Sonnerie* watches, the energy is transmitted in a continuous flow of power from the spring barrels via the racks to the hammers. The situation is much more complex

in the Grandmaster Chime, because apart from the *Grande Sonnerie* including the minute repeater, it can also strike the date. Hence, the power from the spring barrels must be routed either to the control mechanism of the *Grande Sonnerie* or to that of the date repeater. This concept requires a differential train with one input for the spring barrel energy and two outputs for the different strike functions. Despite its small diameter of merely 7.2 mm, it consists of 19 individual parts, including an 11-part ball bearing with seven tiny balls, each with a diameter of 0.3 mm. Nonetheless, it is robust enough to transmit a torque of more than 1,700 gmm from the strikework spring barrels. The engineers who conceived and developed it, and the watchmaker who assembles it to a functional whole, deserve recognition for this stroke of genius.







## Tradition and Innovation

# “SPLENDID ISOLATION” FOR CONVENIENCE AND USER-FRIENDLINESS

Patek Philippe’s Grandmaster Chime is a grand complication wristwatch unlike any other. Along the 175-year route to this timepiece, the Manufacture continually and systematically worked its way through all conceivable horological complications and now masters the broadest repertoire of challenges that collectors and enthusiasts agree to represent the pinnacle of watchmaking ingenuity.

The more complications integrated in a mechanical timepiece, the more elaborate its inner life. But every additional function makes it a little more difficult to operate. So the Manufacture’s goal was to design complicated watches in such a manner that they would be as simple to use as possible. Understandably, measures that preclude inadvertent user-induced malfunctions were high up on the priority list. When so many tiny components interact with one another in carefully orchestrated sequences, unintended manipulations may not just disrupt the functionality of individual mechanisms but in the worst case can also cause damage.



For over 25 years, Patek Philippe has been endowing more and more new movements with so-called isolators that defeat actions which could cause mechanical conflicts and damage parts. These additional mechanisms generally use levers and springs to suppress unwanted interventions, either by disengaging certain component groups or by mechanically blocking the activation of certain functions until a potential conflict situation has been cleared. In the caliber 300 of the Grandmaster Chime, this philosophy has been advanced to a new level.

## CONTROLLED FORCES

When 1,366 parts interact in the case of a wristwatch, each one must be as small as possible to be accommodated in the available space. Thus, some levers are a mere quarter of a millimeter thick, and many wheels, arbors, and pinions are so small that a loupe is required to identify them. The differential that selects the individual strikework functions rotates in a ball bearing with a diameter of three millimeters containing seven 0.3-millimeter ceramic balls, yet it can transmit forces of up to half a kilogram. Because this differential can transmit power in two directions, it is very important to avoid force vectors in both directions at the same time. From the very beginning, Cédric Fague and Ludovic Punzi developed auxiliary mechanisms that prevent such conflicts. The three isolator mechanisms described below are good examples.

## ALARM OR GRANDE SONNERIE

If the alarm function is activated with the pusher at 2 o'clock, the *Grande* and *Petite Sonnerie* as well as the minute and date repeaters are mechanically blocked. This is done with a system of levers, springs, and rockers that transmit the alarm pusher command to the other strikework functions, which are then either disconnected or blocked. As soon as the alarm has sounded or is canceled by pulling the crown, the isolator mechanisms are deactivated and the functions enabled again. Conversely, the alarm function is blocked while the *Grande* or *Petite Sonnerie* or the minute repeater are active.

## ISOLATION OF ALL STRIKE MODES

A further isolator function disables all strike modes if the twin spring barrels of the strikework mechanism no longer has enough power to execute the chiming sequences with perfect sonority and in the exact rhythm. This precautionary measure makes it impossible for the Grandmaster Chime to execute a strike that does not comply with Patek Philippe's strict quality criteria. Insufficient power is available if the small round window in the dial between 1 and 2 o'clock is red. The spring barrels can be wound by turning the crown counterclockwise. The strikework functions are enabled when the round window shows white. To assure that all chiming functions are always available, it is recommendable to fully wind the strikework barrels so that the small gold hand in the power-reserve indicator at 3 o'clock (SONNERIE) is in the topmost position.



WINDING CROWN OR TIME STRIKE

Another isolator mechanism is coupled with the winding crown whose stem extends through the case into the movement. The crown can be pulled out to two positions to either set an alarm time (position “A”) or the time of day (position “H”). When either of these settings is performed, a strikework function conflict could occur. Therefore, the *Grande* and *Petite Sonnerie*, the minute repeater, and the alarm are isolated when the crown is pulled.

Patek Philippe’s isolator philosophy suppresses a response to mechanical commands that could cause collisions or interfere with one another; it is a decisive prerequisite for optimizing the functionality of the Manufacture’s grand complication timepieces and assuring their reliability and integrity in the long term. Of course, it also contributes significantly to the lasting value of Patek Philippe watches.

ISOLATOR MECHANISMS IN THE CALIBER 300 MOVEMENT

	Minute repeater	Grande/Petite Sonnerie	Date repeater	Alarm with time strike
Action				
Minute repeater	Allowed <sup>1</sup>	Isolated	Isolated	Isolated
Grande/Petite Sonnerie	Allowed <sup>1</sup>	●	Allowed <sup>4</sup>	Isolated
Date repeater	Allowed <sup>2</sup>	Allowed <sup>2</sup>	Allowed <sup>5</sup>	Isolated
Alarm with time strike	Isolated	Isolated	Isolated	●
Winding crown pulled	Isolated	Isolated	Allowed <sup>3</sup>	Isolated
Insufficient strikework power reserve	Isolated	Isolated	Isolated	Isolated

<sup>1</sup> An ongoing time strike is stopped, the minute repeater starts

<sup>2</sup> As soon as the date repeater is finished, the minute repeater or *Grande/Petite Sonnerie* starts

<sup>3</sup> No interaction between the winding stem and the date repeater

<sup>4</sup> The *Grande/Petite Sonnerie* is interrupted and continues after the date repeater has finished

<sup>5</sup> An ongoing date repeater sequence is interrupted and a new sequence starts









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GENEVE