

Stargazer

17 shades of haute horlogerie

Konstantin Chaykin's Stargazer is the most complicated watch ever to be made in Russia. The new Wristmon features 17 complications, with 664 parts, and the watch itself features a double-sided case with two dials and pre-shaped reversible strap.

Konstantin Chaykin is an independent, Russian watchmaker and a member of the Academy of Independent Creators in Watchmaking (AHCI). In 2003, the first creation was a tourbillon table clock, the only model to be made in modern-day Russia at the time. Chaykin is one of the most prolific inventors in the field of watchmaking, with more than 90 registered patents of inventions in his name. For his achievements, he was awarded the Gold Medal of the World Intellectual Property Organisation (WIPO).

His outstanding creations include a series of four Computus Clocks that calculate the date of Orthodox Easter, including the Moscow Computus Clock, with 27 complications and 2,506 parts. It is one of the most complicated table clocks in the world. The Joker model with an anthropomorphic dial, released in 2017, instantly gained widespread popularity among collectors and started a whole family of wristmons, recognisable characters with special personalities and their own history. In the past 6 years, the watchmaker has released more than 25 models in this collection, which has become his calling card.

Stargazer is the new protagonist in a collection of Wristmons endowed with own-produced movement and original complications. This watch opens another chapter in the chronicle of Konstantin Chaykin's unique handiwork. While working on this watch, Chaykin concentrated on the idea of creating a ultra-complicated watch.

"I wanted to mark the 20th anniversary of our manufactory by combining my three main creative areas – ultra-complex watch mechanics, an anthropomorphic design and the theme of space exploration," explains the watchmaker. "The result is a highly sophisticated watch, in fact the most complicated wristwatch I have ever created. 11 of its 17 functions are astronomical. And for their pointers to have a harmonious design, I created two anthropomorphic dials at once".

Both watch dials are partially skeletonised, meaning the work of the movement is visible. The parts on the main dial are plated with ruthenium, which gives them a darker colour, and on the tourbillon side with lighter rhodium. Due to this feature, the dials are named Dark and Light sides.

On the dark side, with the signature joker-indication module, the eyebrows indicate the length of the day and night, the nose is the equation of time indicator, and the third eye serves as a miniature but technically detailed planisphere – a star map. It is probably the smallest star chart in the history of

watchmaking. This dial also features a 24-hour display of mean solar and sidereal time. The smile of the watch acts as a retrograde indicator of the day of the week, and there is a zodiac ring along the edge of the dial.

On the light side, the eyes act as a continuous moonphase indicator and a solar activity indicator. The moonphase is displayed in a ring so that the disc of the display with the two gold-plated moons is almost completely visible. On this side there is also a tourbillon that resembles a mouth wide open in astonishment, and its titanium carriage is in constant motion. The complications, unparalleled in the history of watchmaking, are located on the lighter side of the Stargazer; patents for these new inventions are being registered.

Konstantin Chaykin has invented a new type of moonphase of the discrete type. It shows four traditional moon phases – new moon, waxing moon, full moon and waning moon - and has a jumping action. The phases are marked with icons, making it easy and convenient to read it. Especially for this watch, Konstantin Chaykin has created another original complication, a sunrise and sunset azimuth indicator. The hands on the dial will help the watch owner to easily view the point on the horizon where the sun will rise and set.

Konstantin Chaykin developed a special reversible double-sided design so that the wearer could use both dials as a face equally. The watchmaker has thought of every detail, and the result is truly innovative. The completely symmetrical case is equipped with swinging H-shaped lugs, to which a double-sided leather strap is attached, allowing the watch to be worn inside out. Even the strap of the Stargazer was reinvented by Chaykin. It is reinforced with curved stiffeners: if you press it slightly, it will bend the other way. The buckle also has reversible design. As a result, it is easy to turn the watch round: the Stargazer is simply removed from the wrist and immediately put on again, with the other side facing up.

The case of the new watch and the metal elements of the strap are made of genuine ‘bulat’ stainless steel – a unique alloy used only at the Konstantin Chaykin manufacture. The watchmaker considers ‘bulat’ to be one of the best materials for making watch cases: it is hard and durable, practically scratch-proof, and its surface texture is pleasant to touch. Konstantin Chaykin uses ‘bulat’ steel only in his finest creations, making this material truly exclusive.

Stargazer

Brief list of complications

Dark side

1. "Regulator" display of mean solar time hours and minutes
2. Length of the day
3. Length of the night
4. Equation of time
- 5-6. Retrograde day of the week indicator
7. Zodiac
8. Map of the Northern Hemisphere starry sky
9. 24-hour mean solar time indicator
10. 24-hour sidereal time indicator

Light side

- 11–12. Astronomic precision moonphase and moon age display with a deviation of one day in 122 years and a differential mechanism for driving and setting the display
13. 4-stage discrete moonphase indicator (**world premiere**)
14. Solar activity cycle and current cycle duration indicator (**world premiere**)
15. Sunrise azimuth indicator (**world premiere**)
16. Sunset azimuth indicator (**world premiere**)
17. Tourbillon

Stargazer

Full list of complications

4-stage discrete moonphase indicator (world premiere)

There are four main phases of the moon – waxing moon, full moon, waning and new moon. In astronomy, four more intermediate phases are added to these to describe the phenomenon in more detail, so that there are eight phases in total. Typically, the moonphase pointer in a mechanical watch shows the moon's phase in half-day or one-day increments. The new type of pointer displays the four main phases with jumping action.

Sunrise and sunset azimuth display (world premiere)

This two-hand indicator helps the wearer to anticipate the place on the horizon where the sun will rise and set. This is done by holding the case horizontally and pointing the 360-degree marker of the solar compass dial to the north (the watch bears the manufacturer's logo in place of this marker). The yellow arrow shows the position of the sunrise and the blue arrow shows the position of the sunset on the horizon line. Since the observed azimuths of sunrise and sunset depend on the geographical coordinates

of the location to be chosen by the owner of the watch, Konstantin Chaykin will adjust its mechanism accordingly.

Astronomic precision moonphase and moon age display with a deviation of one day in 122 years and a differential mechanism for driving and setting the display

This classic complication is designed as the eye of the light side of Stargazer and is located on the right side of the dial, at the 2 o'clock position. The design feature of this indicator is a fully open lunar disc with a circular aperture that gives an image of the phase of the moon. This pointer provides a smooth phase change as the pointer switches once a day, at midnight, complementing the 4-stage discrete moonphase indicator next to it. In the upper part of the indicator there is a dial with the moon's age.

Usually, when designing a mechanism of this type, the lunar month is rounded off to 29 days and 12 hours. In reality, the moon turns 44 minutes slower. Because of this, lunar calendars usually give an error of one day in three years. Stargazer is 40 times more accurate: an error of one day will occur only after 122 years. Besides, the indicator mechanism has drive and correction with a differential gear. The differential allows wearers to set the display without affecting the accuracy of the watch itself.

Indicators of the solar activity cycle and duration of the current cycle

The solar activity cycle indicator is an astronomical indicator rarely found in watches. In the Stargazer watch, this indicator is designed in the form of the eye of the reverse of the character's face, which is located on the left side of the dial, at the 10 o'clock position. Like the classic moonphase indicator on the other eye of the character, it uses an open design with a fully visible solar disc that is marked with sunspots. On its edge at the top is an indicator displaying the length of the current cycle in years, which is not considered a separate function.

Tourbillon

The tourbillon, considered the king of complications, is located on the light side of the Stargazer watch in the classic position, at the 6 o'clock marker. The complication plays an important role in creating the anthropomorphic design of the dial: when looking at the Stargazer watch, it appears as if it were a mouth open in amazement. The tourbillon was invented by the famous watchmaker Abraham-Louis Breguet more than two centuries ago for use primarily in pocket watches. Konstantin Chaykin, at the very beginning of his watchmaking career in 2003, designed and manufactured Russia's first tourbillon table clock. In honour of his first tourbillon, and to mark the 20th anniversary of its manufacture, which will be celebrated in 2023, he decided to equip the Stargazer watch with this precision mechanism, in which he for the first time used a titanium for the carriage of his signature «alpha» design.

Display of hours and minutes of mean solar time on a regulator dial

A regulator dial is a type of dial where the hour and minute hands are placed in different parts of the dial, on a different axis. This complication originated in the 17th century, when watchmakers checked and, accordingly, regulated the running of manufactured watches by a reference clock, which was called a regulator. The regulator dial with the hour indicator on the left and the minute indicator on the right is a characteristic feature of the Joker-indication, originally developed by Konstantin Chaykin in 2016-2017 for the Joker watch and subsequently used in all models of the Wristmons collection. The hour and minute indicators on the main dial of the Stargazer display the mean solar or civil time.

Equation of time

The equation of time complication is designed to indicate the difference between mean and true solar time. This difference arises from the elliptical shape of the Earth's orbit in its rotation around the sun and the tilt of the Earth's own rotation axis relative to the orbital axis. For these reasons, the observed motion of the sun across the firmament occurs with a slight irregularity, so that noon at true solar time, defined as the moment of passage of the sun through the zenith (or meridian), shifts during the year relative to noon at mean solar time in the range of +14.3 to -16.4 minutes. It is thought that the equation of time was first incorporated into a mechanical clock by Jost Bürgi, a Swiss mathematician, astronomer, clockmaker and manufacturer of scientific instruments who worked in the late 16th and early 17th centuries. In the Stargazer watch, this pointer is placed on the nose of the dark side.

Length of the day and night indicators

The day and night duration indicators are located above the character's eyes on the dark side of the watch, making them look similar to eyebrows. As a result, in addition to their primary function, they make the character's face look more emotional.

Retrograde day of the week indicator

This complication is in the form of a mouth on the dark side of the watch. In the retrograde weekday indicator, the pointer moves to a new day at midnight, and when Saturday is over, the pointer makes a long jump back to Sunday. This complication requires the use of a special snail eccentric, a probe lever and a coil spring. This type of indicator is one of the most important for creating the anthropomorphic design, as it imparts the dial's characteristic smile.

Zodiac sign indicator

The zodiac ring is located on the outer ring of the dial on the dark side of the watch and displays the position of the sun on the ecliptic throughout the year. The dial is labelled with the names of the 12 zodiac constellations, which allows wearers to make a rough approximation of the current month and date (with an accuracy of a few days).

Star map of the Northern Hemisphere

A miniature star chart is located in place of the character's third eye on the dark side of the watch, at the 12 o'clock position, and it displays a view of the starry sky to an observer located in the Northern Hemisphere. The star map is in constant rotation, albeit very slow, imperceptible to the eye, making a rotation per sidereal day, which is about 3 minutes 56 seconds shorter than a solar day. The Stargazer star chart is only 6 mm in diameter, yet it shows all the major constellations visible from the Northern Hemisphere. It is quite possibly the smallest indicator of its kind ever used in watchmaking.

24-hour mean solar time indicator

This pointer, which supplements the basic hour and minute hands with information about the time of day in 24-hour format, is almost mandatory for clocks and watches with astronomical and calendar functions. The complication is designed as a rotating ring with a 24-hour scale, mounted coaxially with a star chart on the dark side of the watch at 12 o'clock. It can be used as a day/night or am/pm indicator.



24-hour sidereal time indicator

The sidereal time indicator is a hand with a star-shaped tip, mounted on the same axis with the star chart and the 24-hour mean solar time display on the dial of the dark side of the watch at 12 o'clock. Konstantin Chaykin intended this hand to display the sidereal time on the same 24-hour scale used in the 24-hour mean solar time indicator. In this way, Konstantin Chaykin achieves the maximum degree of complexity by combining three complications on a single sub-dial. The duration of the 24 hours of sidereal time is shorter than the duration of the solar day by about 3 minutes and 56 seconds. For an astronomer, sidereal time is important because it shows at what angular speed the stars move across the sky.