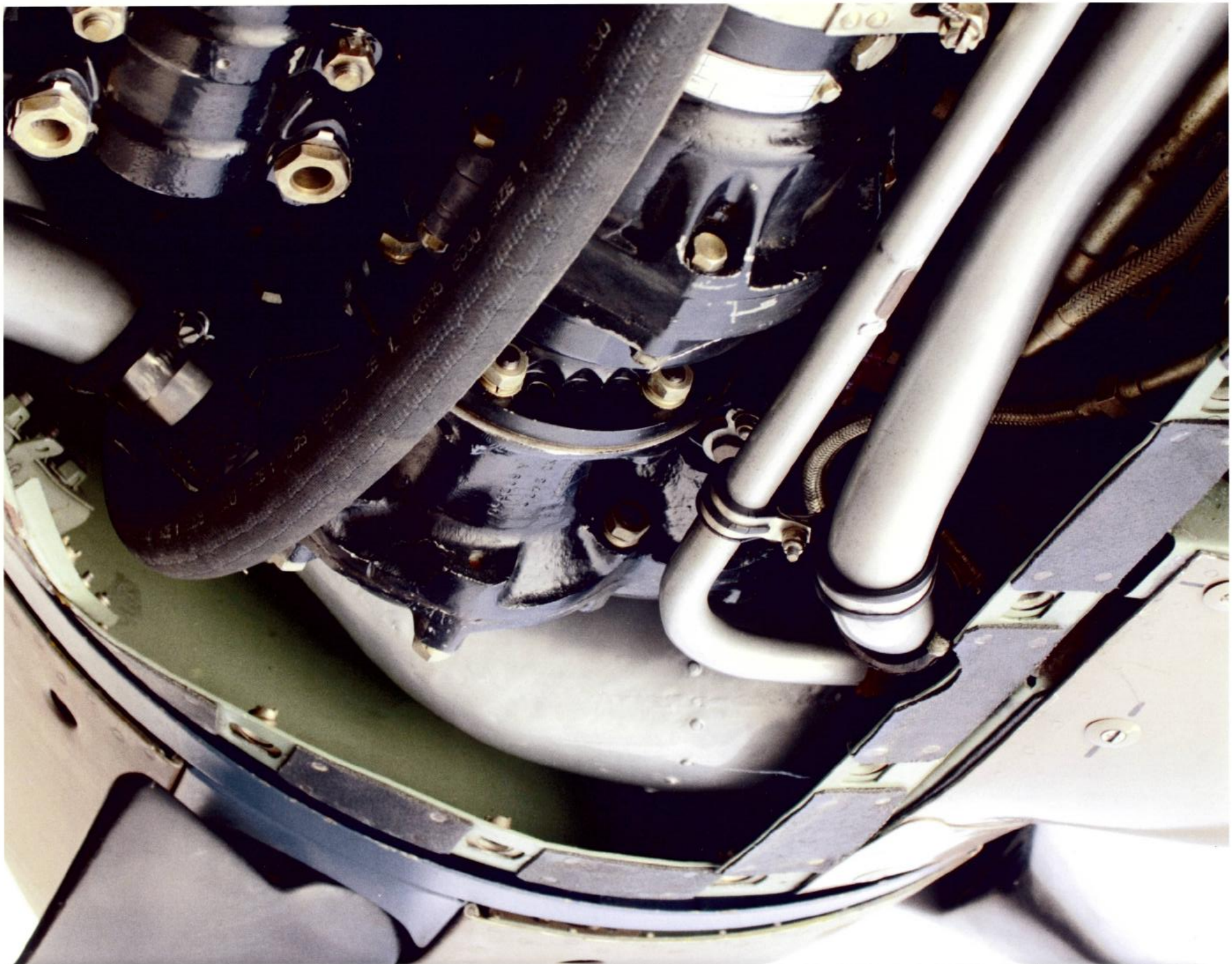


Central seconds: the 19-ligne Caliber 52 S.C. from 1940

The Movements of IWC's Pilot's Watches: A History of Calibers

Ever Upwards

by Gisbert L. Brunner

High flights have been a theme of IWC ever since the firm was founded in 1868. An American named Florentine Ariosto Jones intended to produce 10,000 pocket watches annually at Rheinfall in Schaffhausen, and, naturally, to sell those timepieces to prosperous customers. But the flying machine called "International Watch Co." wasn't quite up to the task. Jones steered too abruptly, his craft strayed into turbulence and the whole daring enterprise crashed and burned. His successor, another American named F. Seeland, suffered a similar fate. He too was unable to keep the business aloft for long. But before IWC came smashing down, he abandoned the airship and pulled unfurled his parachute. A Swiss captain came on board and IWC once again taxied down the runway, but this time the airplane was loaded with plenty of creative ideas and equipped with a powerful motor. Strong headwinds facilitated its ascent into high altitudes, where IWC subsequently remained with only occasional interruptions to refill its tanks. A German pilot took the controls in 1978. Günter Blümlein proved to be an excellent navigator at stratospheric heights. He revived IWC's grand tradition of pilot's watches. IWC's current captain, Georges Kern, knows that good timing is one of the most important skills in piloting an aircraft. Of course, we don't mean to imply that the first two pilots crashed due to a dearth of good timepieces. Then as now, there has never been any doubt about the reliability and accuracy of IWC's products. But pilot's watches necessarily embody a very unusual species of timepiece. Extreme demands have always been placed on them, especially in the pioneering years of aviation. Pilot's watches must cope with strong vibrations, extreme temperature variations and powerful magnetic fields. These demands, the striving for safety and the fundamentally challenging activity of flight itself all require special wristwatches with movements that are simultaneously precise and reliable. These are exactly the sort of watches that, for

more than seven decades, have earned IWC its unchallenged reputation as a pioneer in the genre of pilot's watches.

IWC's First Wristwatch for Pilots

The history of transporting passengers through the air attained its first high point in the 1930s, when the legendary DC-3 took off on its maiden flight. Military aviation, of course, was already looking back on its own colorful history at this time. Locomotion through the sky was a rigorous ordeal for pilots. Radio navigation was still in its infancy and no one had yet dared even to dream of electronic instruments. Robust and precise timepieces were absolutely indispensable – and often lifesaving – companions. IWC introduced the first wristwatch designed specifically for pilots in 1936. An uncommonly rare item nowadays, this timepiece was a highly legible navigational instrument with a black dial, large luminous numerals and eye-catching luminous hands. Pilots could set flight time by rotating its bezel, which was marked with an arrowhead. It encased the Caliber 83, a 12-ligne bridge movement measuring 26.5 millimeters in diameter and 4.1 millimeters in height, with a balance that oscillated at the relatively leisurely pace of 18,000 vibrations per hour. IWC's watchmakers adjusted its antimagnetic escapement at temperatures ranging from –40° to +40° Celsius. The stainless steel case and unbreakable crystal were fitted with lead insulators to keep out moisture and dust. The album at the manufactory in Schaffhausen notes that one of the first deliveries of this "Special Watch for Pilots" was sent to Novotny/Freund in Prague in 1936. IWC probably delivered several hundred pieces to various customers between 1939 and 1941. How many of these watches still survive? That's one of the greatest unsolved riddles in the watch world. On the rare occasion that one of them surfaces at an auction, at a collectors' swap or in a merchant's horde, this rara avis typically commands a correspondingly high price.

The Big Pilot's Watch with Caliber 52 S.C.

At the beginning of World War II, the German Luftwaffe commissioned IWC to develop a professional pilot's watch with large dimensions that would be impossible to misread. The military offices and commands precisely formulated the visual and technical specifications that IWC was expected to fulfill. For example, each individual specimen would be required to pass the tests administered by the German Naval Observatory in the "First Class" category for precision pocket watches. The fine adjustments were to be conducte in six positions and at three temperatures.

Other characteristics included a matte steel case measuring 55 millimeters in diameter, a large and readily grasped winding-crown, a distinctive dial, highly visible luminous numerals and hands, and a long leather strap so that the watch could be worn over the sleeve of a flight suit. This model had an additional inner dust cover atop the movement and beneath the case's steel back.

Withstood extreme temperatures: the Caliber 83 with antimagnetic escapement

A tidbit for watch aficionados: the Caliber 89 underwent 44 days of testing

IWC equipped its model with the tried-and-tested Caliber 52 S.C. (19 lignes, 43.15 millimeters in diameter, 7.5 millimeters in height). The abbreviation "S.C." stands for the French phrase *seconde centrale* ("central seconds"). IWC manufactured 1,200 of these calibers between 1940 and 1945. They were encased in the aforementioned wristwatches for pilots, in deck watches and in IWC pocket watches for civilian use. For security reasons, the case numbers of the military models were reissued in civilian timepieces. The case numbers of watches that were made for the British air force are listed twice in IWC's archives because the client wanted the numerical sequences to be identical on the movements and cases. Furthermore, the last four digits had to be enameled into the dials. After the corresponding case numbers had been assigned to the movements, IWC had to rely on the admittedly unconventional doubling method. IWC delivered timepieces for the German Luftwaffe via a dealer named Heindorf in Berlin. Precise information about these lavish timepieces is available to their proud owners; in return for a small surcharge, IWC will gladly furnish a corresponding excerpt from the manufactory's ledgers.

The "W.W.W." Military Wristwatch

Like IWC's first pilot's watch, the W.W.W. ("Mark X") wristwatch for military applications encased the Caliber 83. Exactly 6,000 of these special watches (with cases serially numbered from 1,131,001 to 1,137,000) were constructed in Schaffhausen in 1945. On the back of its case, each watch in this series bore its individual number (rangeing from 12,021 to 18,021) and the letter *M* which stands for "military." The black dial had a small seconds-hand, luminous Arabic numerals at the hours and a *chemin de fer* (railroad) minute-circle. The dials of these models crafted for the British army were marked with IWC's logo and the so-called "Broad Arrow," which identified them as property of the British Crown. Although shock absorption had already been invented, W.W.W. had to make do without it because negative effects on the precision couldn't be completely prevented back then.

Good rate results: ultra-slim, 34-jewel, self-winding Caliber 884

Eta's Caliber 2892-A2 is the basis for IWC's robust Caliber 30110 for the Mark XVI

The Legendary "Mark 11"

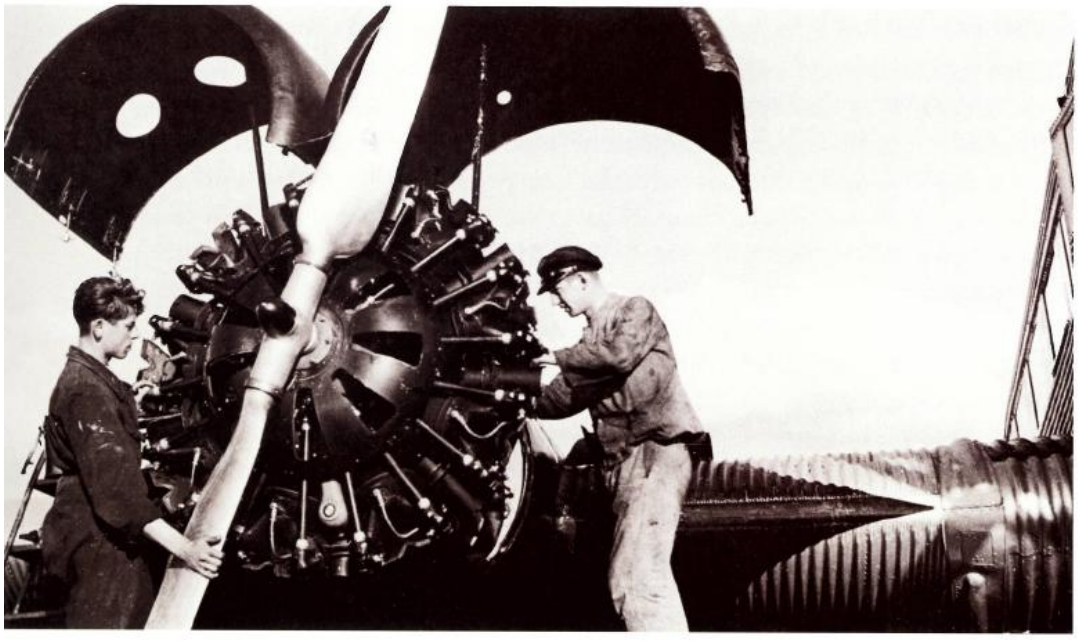
There's probably only one pilot's wristwatch that truly deserves the epithet cult watch – the Mark 11, which has risen into the air on the wrists of countless pilots since 1948. But not only did military pilots entrust their precious time to the Mark 11. Captains who flew for renowned civilian airlines likewise relied on this timepiece. Their choice was not a mere coincidence. IWC put all its experience with pilot's watches into the construction of this timepiece's movement and case, then augmented this expertise with knowledge gained from the latest developments in the fields of watchmaking and metallurgy. The Mark 11 was the first timepiece in which IWC placed an additional soft-iron inner case to provide effective protection against magnetic fields.

A tasty tidbit for aficionados of fine watchmaking was the newly designed 11.75-ligne Caliber 89 (26.5 millimeters in diameter, 4.25 millimeters in height, 18,000 vibrations per hour), which featured both a patented mechanism to propel the central seconds-hand and stop-seconds function. Before delivery, each Mark 11 was subjected to the 44-day testing program for "Navigator Wrist Watches." Among other ordeals, the accuracy of the watch's rate was tested in five positions and at temperatures ranging between –5° and +46° Celsius. The dials of specimens destined for delivery to the Royal Air Force were marked with the Broad Arrow. The military details on the back, which included the unit's designation and the year of construction, were engraved on the premises at IWC.

IWC shipped the final specimens of the Mark 11 to concessionaries in 1984. The Royal Air Force began removing the Mark 11 from active duty at approximately the same time. As part of an unspoken agreement, collectors and aficionados of these wristwatches were able to purchase them for roughly 150 deutschmarks each. This moment in time marked the beginning of the steep rise in the Mark 11's popularity, which saw this timepiece climb to the status of a cult watch that epitomizes the pilot's watch. This ascent also coincided with a similarly precipitous rise in its price.

The Mark XII – An Intermezzo for Latecomers

The sad thing about the fascinating story of the Mark 11 is the fact that despite exorbitant collectors' prices, the market is as good as swept clean The quest for one of these timepieces is like the proverbial needle in a haystack. Frustrated fans of the Mark 11 have sometimes tried their luck by going directly to IWC, but without success; IWC's stock of Mark 11s was, and still is, exhausted. The people in Schaffhausen revived the legendary Mark 11 in an updated version, which they launched in 1996. To avoid confusion with the classic predecessor, they added a digit to the name of the newcomer, calling it the "Mark XII." The difference between the Mark XII and its forebear is only apparent at a second glance, as the design of its case and dial was almost identical to the styling of the Mark 11. The most obvious changes were the date display at the "3" and the word *automatic* on the dial. The ultra-flat, 34-jewel, self-winding Caliber 884 (26 millimeters in diameter, 3.25 millimeters in height) achieved good rate results, which was due in part to the balance's frequency (28,800 vibrations per hour) and the careful adjustment that the movement received in five positions. The central rotor wound the mainspring in both directions of rotation, ultimately building up a 45-hour power reserve. This modern caliber from the house of Jaeger-LeCoultre was equipped with a stop-seconds function and a mechanism to support rapid resetting of the date via the crown. Like the Mark 11, this model too had an inner case made of soft iron to protect its movement from the negative effects of strong magnetic fields. To protect the movement against penetration by moisture and dust, the case had a screwed crown and was watertight to five atmospheres. The scratch-resistant sapphire crystal was protected against



low pressure. Conventional pilot-watch freaks with a penchant for understatement could have the Mark 11 in a satin-finished steel case; an aficionado who put a premium on precious metal could strap the Mark XII's gold case to his wrist.

Time Coordination for Frequent Flyers

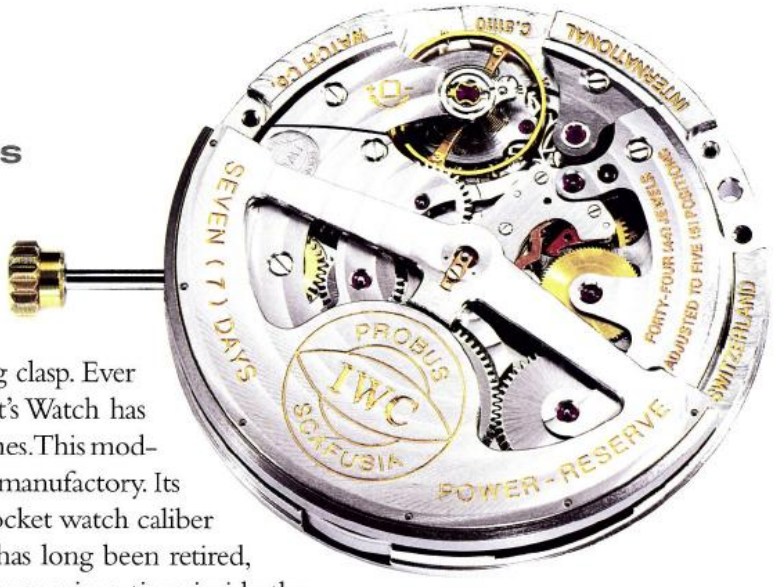
Both long-haul flights and long-distance telephone calls will cross one or more time zones, leaving the time display on a conventional pilot's watch behind. To restore the watch's synchrony, the crown must be extracted, then twisted until the hour-hand and minute-hand show the correct local time. Afterwards, it can be difficult to bring the minute-hand into its proper position. Annoyances of this sort were summarily eliminated in 1998, when the "UTC" (Universal Time Coordinated) debuted. A digital 24-hour indicator continued to keep coordinated world time while the central hour-hand advanced or retreated by hourly increments in response to corresponding twists of the extracted crown. The date display at the "3" was coupled to the hour-hand via Maltese cross switching. It goes without saying that the self-winding movement (Caliber 37526) ticked inside a protective inner case of soft iron that reliably conducted magnetic fields around the movement. IWC used a robust Eta 2892-A2 as the basic caliber, which was reworked according to IWC's quality criteria. An intelligent time-zone indicator is borne on the front. The same is true of its successor, the Caliber 30710, in the new UTC. The date disk is printed differently, as the arc-shaped date window was shifted to the lower half of the dial.

Intelligent time-zone mechanism: the Caliber 30710 in the new UTC

The Mark XV, or Somewhat More Size Doesn't Hurt

With a diameter of 36 millimeters, the Mark XII is comparatively small by contemporary standards; men and women alike have come to prefer significantly larger timekeepers on their wrists. In 1999 IWC read the writing on the wall and acted accordingly. The people in the design and development ateliers in Schaffhausen gave the bestseller a new outfit that would equip it for the 21st century. The "Mark XV," which was two millimeters larger than its predecessor, debuted in 2000 – right on time for the start of the new millennium. IWC technicians also made some changes to the watch's inner life. As users of IWC's pilot's watches don't always treat their eye-catching instruments as gently as watchmakers would like, technicians replaced the exclusive but somewhat delicate Jaeger-LeCoultre mechanism with a caliber from the house of Eta. IWC renamed the rotor-equipped caliber that Eta calls the "2892-A2" with its own numeric designation: the 37524. Renaming the movement wasn't mere vanity, because the watchmakers in Schaffhausen had significantly refined and optimized the re-christened caliber.

Pure Opulence: The Big Pilot's Watch



The so-called "Big Pilot's Watch" fully deserves its name. Its case measures no less than 46 millimeters from rim to rim. This timepiece tips the scales at 150 grams, including its leather strap and folding clasp. Ever since its debut in the spring of 2002, the Big Pilot's Watch has ticked at the top of IWC's assortment of pilot's watches. This model is also the largest wristwatch ever offered by the manufactory. Its styling derives from the navigator watch with its pocket watch caliber 52 S.C., which debuted in 1940. Caliber 52 S.C. has long been retired, while the opulent, self-winding Caliber 5011 keeps precious time inside the newcomer. It is the largest self-winding movement to be found in any wristwatch.

With Pellaton winding mechanism and elastically borne rotor, the amply dimensioned Caliber 51110 is 38.2 millimeters in diameter

The 5011 is based on the legendary IWC 8541 and on the Caliber 5000, which debuted in 2000. IWC's chief design engineer Kurt Klaus and his crew spent four long years working on this development. Its stately diameter of 38.2 millimeters and by no means modest height of 7.44 millimeters were deliberately chosen. The close relationship between this movement and Caliber 8541 includes the so-called "Pellaton" winding mechanism with a cam. An elastic bearing for the rotor and fine regulation for the index pointer via a cam are borrowed from the classic. The oscillating and escapement system with screw balance and self-compensating Breguet balance-spring, on the other hand, come from Caliber 89, which ticked inside the Mark 11. The balance oscillates at a frequency of 18,000 vibrations per hour. The power reserve of this mechanical marathon runner is as impressive as it dimensions. Theoretically, at least, this finely tuned microcosm of some 290 components would continue to run for 204 hours between fill-ups, if it were not for an intelligent mechanism that stops its movement after seven days, or 168 hours, have elapsed. The remaining power remains in the barrel as a reserve to overcome inertia when the watch is restarted. Like the Caliber 5000, the Caliber 5011 indicates the momentary tautness of its mainspring on a power-reserve display at the "3." But unlike the Caliber 5000, the Caliber 5011 has a central seconds-hand and a date display.

The antireflective crystal is protected against sudden drops in pressure. An inner case made of soft iron protects the movement against magnetic fields up to 32,000 A/m. (According to the official norms, the minimum value for a watch deserving the name "antimagnetic" is a mere 4,800 A/m.) Other attributes include a screwed back, screwed crown, and watertightness to 60 meters. This model is produced in unlimited editions in stainless steel and white gold, as well as in a limited platinum edition of 500 specimens. The newest versions encase the equally large self-winding Caliber 51110. Its balance completes 21,600 semi-oscillations each hour. The speedier frequency of the balance further improves the accuracy of the rate, although this is one detail that has never given cause for complaint in IWC's timekeepers.