The story of the world’s most popular dive watch

BY GISBERT L. BRUNNER
he story of the Submariner, launched in 1953, really begins in 1926, when Rolex introduced its now-famous water-resistant Oyster case. Thanks largely to its threaded back and screw-down crown, the case provided a degree of impermeability no watch company had achieved before. The Oyster became even more resistant to water and dirt in the early 1930s, when Rolex began incorporating its new, self-winding rotor mechanism. (Rolex dubbed its self-winding watches “Perpetual.”) Not having to wind the watch manually meant that the crown needed to be unscrewed only occasionally for setting. Rolex had discovered with its first manual-wind Oyster watches that failing to screw the crown down after winding rendered the supposedly water-resistant watch vulnerable to water and dust entering the case through the crown hole.

As the 1930s progressed, Rolex began to develop watches made specifically for use under water. (The early Oyster and Oyster Perpetual were not thought of as watches for swimming; the point of their impermeable cases was to protect the movement from dirt and accidental exposure to moisture.) The Rolex catalog from 1935 shows a 47-mm wristwatch, Ref. 2533, which has a cushion-shaped Oyster case and a pocketwatch manual-wind movement from Lépine, with a small-seconds display at 9 o’clock. At the time, though, the watch was simply too large for prevailing tastes, and was not a commercial success. But it was a harbinger of a now-well-known dive-watch collaboration that paired Rolex with the Italian company Panerai, which at the time supplied underwater equipment to the Italian Navy. In the mid-1930s, the Navy asked Panerai to supply it with dive watches. Because Panerai had no watchmaking capacity of its own, it turned to Rolex, which sent it watches with Oyster cases and movements made from ébauches from the Swiss watch-and-movement maker Cortébert. Panerai delivered its first dive-watch prototype to the Italian Navy in 1936, and the company continued to use Rolex-supplied movements into the 1950s. The partnership with Panerai gave Rolex important experience in the manufacturing of dive watches.

IN THE EARLY 1950S, Rolex decided to make its own bona fide dive watch. The idea came from a Rolex director and marketing executive named René-Paul Jeanneret, who was a diving enthusiast and friend of Jacques-Yves Cousteau. Thanks to his hobby, Jeanneret was aware of the technical and design requirements for a dive watch. He persuaded Hans Wilsdorf, who had led a century after founding Rolex was still at the company’s helm, to initiate a professional divers’ watch project.

In 1953, Rolex made a spectacular move. That September, Swiss scientist Auguste Piccard, in the submersible vessel Bathyscaphe FNRS-2, descended an amazing 3,131.8 meters into the ocean. Wilsdorf, a marketing genius, had seen to it that a specially developed Rolex, equipped with a strikingly luminous dial and prominent Rolex logo, was affixed to the vessel’s hull. When the submarine rose out of the water, the timepiece emerged unaffected by the dive and was ticking normally.

That same year, Rolex introduced the first Submariner. It was water resistant to 100 meters, but Rolex soon increased these specs to 180 meters. The watch had a matte, black dial, large luminous markers and luminous hands for the hours, minutes and seconds. It also had a knurled rotating bezel with clear markings in five-minute increments and an arrow-shaped zero marker with a luminous dot pointing toward the center. Rolex described it as “The Diver’s Friend.”

The earliest Submariners did not have the white Submariner name on their dials. It appeared only at the end of 1954. Nor did they have the signature crown guard—the two “shoulders”—on the right side of the case.

In collectors’ circles some early Submariner models are known as “James Bonds.” And for good reason: in the first four James Bond films, Agent 007 wore Rolex watches, as he did in the novels by Ian Fleming. The watches bore the reference numbers 6200, 6538 and 5510.

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By the time it hit the market, the Submariner had passed rigorous field tests. The Institute for Deep Sea Research in Cannes issued a report on Oct. 26, 1953, on the five months of tests it had conducted with the watch, consisting of 132 dives in depths of 12 to 60 meters. The statement from the laboratory read as follows: “Despite the extremely high salt content of the Mediterranean waters, and the tropical temperature and humidity to which the watch was exposed between the individual dives, it showed no corrosion at all. Likewise, no moisture was detected within the watch. All other previous tests with water-resistant watches from top brands showed water penetration from the first moment of the dive, indicated by the condensation that formed on the inner surface of the crystal. The watch was worn multiple times during dives, with an extended crown (i.e., the crown was pulled out to the position for setting the hands). To conclude these tests, the watch was attached to a thin cord and dropped to a depth of 120 meters — twice as deep as 60 meters, the maximum depth achievable with self-contained compressed air equipment. No leaks were detected even after a one-hour period at this depth.”

Rolex had consulted a number of experts while developing the watch. Jeanneret offered many ideas for the outer design of the case, dial and rotating bezel (which at that time still turned in both directions) for underwater reading of the remaining time of the dive.

In 1959, the first Submariner with a crown guard (Ref. 5512) was introduced. The crown guard gave the watch the distinctive shape we now associate with the Submariner.

The launch coincided with another impressive Rolex diving feat. On Jan. 23, 1960, the submarine Trieste, with its 2-meter-wide pressure sphere, big enough to hold two people, descended for the 63rd time into the depths — this time with the goal of reaching the Challenger Deep in the Mariana Trench, the deepest point in the ocean. Inside the pressure sphere were Piccard’s son, Jacques Piccard, and the American Marine lieutenant Dan Walsh. Outside the sphere was a very special Rolex prototype, a watch, with Oyster case, designed to withstand the pressure of the 10,916-meter descent, which exerted a pressure on the vessel of about 1,235 kg/m². The idea, of course, was to prove that the Oyster case could survive the ordeal.

Excitement was great when the sphere resurfaced after its triumphant dive. How would the watch look? Would the hands still show the correct time? Just as with the 1953 Bathyscaphe dive, the Rolex emerged unscathed. It looked and ran exactly as it had above the water.
Later that decade, Rolex introduced a new dive-watch feature. It was designed to solve a problem that had emerged as a result of the introduction into professional diving of breathing gases that blended oxygen and helium. These gases enabled divers to descend deeper than before. But divers who wore their watches in decompression chambers filled with the new gas mixture often faced a rude surprise. Helium molecules penetrated the watch crystals and seals and entered the watch cases, and when the pressure in the chamber was reduced during decompression, the helium gas that had built up inside the watch was unable to escape quickly enough, so the watch crystal popped off the watch like a Champagne cork.

Among the divers using these new gas mixtures were those employed by the French firm Compagnie Maritime d’Expertise (Comex). Comex worked with Rolex to find a solution to the popping-crystal dilemma and in 1967 Rolex patented a valve that allowed the dangerous buildup of gas to escape easily. At first Rolex used the valve in standard Submariner models (Ref. 5513). A modified version was produced in Geneva solely for Comex. It bore the Comex name on the dial and a special identification number on the back. The second signed Comex series was given its own unique reference number, 5514.

In 1966 Rolex developed the Sea-Dweller, at first marketed as a particularly water-resistant version of the Submariner. (It was water-resistant to 600 meters. In 1978, Rolex introduced the new Ref. 16600 with a sapphire crystal and an improved helium valve. (These days, Sea-Dweller models have helium-release valves; submariners don’t.) This watch withstood depths to 1,220 meters. The 1665 existed for several more years, but after 1981, the company produced only the heftiest version of the Sea-Dweller, the 16600.

It was not until 1981 that the Submariner was equipped with a unidirectional bezel. It took so long because starting in 1952, Blancpain held a patent for a ratcheting rotating bezel, which it used on its Fifty Fathoms watch. In 1979, Rolex introduced the new Ref. 16600 with a sapphire crystal and an improved helium valve. (These days, Sea-Dweller models have helium-release valves; submariners don’t.) This watch withstood depths to 1,220 meters. The 1665 existed for several more years, but after 1981, the company produced only the heftiest version of the Sea-Dweller, the 16600.

The Sub Through the Years

The history of the Submariner is one of gradual evolution. The following table lists a half-century of Submariner models and their distinguishing features.

<table>
<thead>
<tr>
<th>YEAR</th>
<th>REF.</th>
<th>FEATURES</th>
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<tbody>
<tr>
<td>1955</td>
<td>6538</td>
<td>Formerly Ref. 6204 with Cal. 1030 developed in 1953</td>
</tr>
<tr>
<td>1956</td>
<td>6536</td>
<td>Formerly Ref. 6205 with Cal. 1030 developed in 1956, both now have a slightly larger crown.</td>
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<tr>
<td>1957</td>
<td>6536/1</td>
<td>Chronometer version of Ref. 6536 with Cal. 1030</td>
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<tr>
<td>1958</td>
<td>6538</td>
<td>Great Britain selects the Submariner for the Royal Navy</td>
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<tr>
<td>1959</td>
<td>6538</td>
<td>New hand design; luminous dot on second hand’s shifted toward center.</td>
</tr>
<tr>
<td>1960</td>
<td>6538A</td>
<td>Rotating bezel gets minute scale for first quarter hour.</td>
</tr>
<tr>
<td>1961</td>
<td>6539</td>
<td>The 6539 has the same thick case as Ref. 6200.</td>
</tr>
<tr>
<td>1962</td>
<td>6539</td>
<td>Red zero-point triangle on rotating bezel</td>
</tr>
<tr>
<td>1963</td>
<td>6539</td>
<td>Royal Canadian Navy selects the Submariner. Military versions have ID and service numbers on the caseback, otherwise they are like standard models.</td>
</tr>
<tr>
<td>1964</td>
<td>6539</td>
<td>Formerly Ref. 6200 with Cal. 1530 introduced in 1958</td>
</tr>
<tr>
<td>1965</td>
<td>6539</td>
<td>5508 with Cal. 1530; zeros on the bezel are more angular.</td>
</tr>
<tr>
<td>1966</td>
<td>6539</td>
<td>Crown guard, case diameter is now 40 mm (was 36 mm); “Superlative Chronometer, Officially Certified” is printed on dial.</td>
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<tr>
<td>1967</td>
<td>6539</td>
<td>“Superlative Chronometer, Officially Certified” is printed on dial.</td>
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<td>1968</td>
<td>6539</td>
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<td>1969</td>
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<td>1971</td>
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<td>1972</td>
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The Climber’s Timer

We test the latest version of Rolex’s classic Explorer, originally made for a Mount Everest expedition, now with a larger case and new caliber.

BY JENS KOCH
PHOTOS BY NK SCHÖZEL

Pros
- Classic design
- Outstanding craftsmanship
- Well-constructed manufacture movement

Cons
- No date display
- Hands are too short
he 1950s were a decade of adventure. Mankind strived to conquer nature, to de-
scent to the depths of the ocean's trenches and to climb to the peaks of the world's tallest mountains. The first mountaineers reached the summit of Annapurna, more
than 26,000 feet above sea level, in 1950. Edmund Hillary climbed Mount Everest, the world's tallest peak, in 1953. Seven years later, the bathyscaphe Trieste descend-
ed to the planet's deepest point: the bottom of the Marianas Trench, more than 35,000 feet below sea level. It should come as no surprise, then, that the decade also saw the debut of two Rolex watches tailored to ad-
venturous pursuits: the Submariner divers' watch and the Explorer expedition watch, both in 1953.

The first Explorer watches were provid-
ed as tools for the successful Everest expe-
dition of May 1953. Rolex released a mod-
ified version of the Explorer later that year, with a black dial and painted-on luminous indices and numerals, which made it more legible under all lighting conditions. This
model was designed to live up to the prom-
ise implicit in its name, by satisfying all the
requirements of expeditions and other ad-
ventures. The Explorer underwent more improvements over the years (see “The Evolution of the Explorer” sidebar) and, beginning with the 1989 model, it was also
designed to be more luxurious. Its indices
and numerals have been made of gold since then, although there is still luminous mate-
rial inlaid into the indices.

The latest version of the Explorer, launched last year, has a bigger case: 39 mil-
limeters, versus the previous model's 36
millimeters. It also has a new type of shock absorber, along with an in-house, Para-
chrom hairspring and a new Oyster-
lock folding clasp.

The watch's new size is just right: the dial's proportions look good in the enlarged case. But the narrow and somewhat short hands don't quite fit into the otherwise pretty picture. The minute hand is especially problem atic: the one on the previous Explorer extends all the way to the m inute circle, but the tip of this one falls quite a long way from it. However, except for this flaw, the design is excellent and the watch's classic look is easily recognizable. A ll surfaces, with the sole exception of the upper side of the bracelet, are polished. As with nearly all Rolex watches, the flat,
sapphire crystal rises above the plane of the bezel, but its perimeter is bevelled to deflect the force of a blow. Rolex's crown-shaped lo-
go is laser-etched into the crystal at the “6” as proof of the watch's authenticity. Additional anti-counterfeiting details include the let-
ters of the name "Rolex" engraved into the m etal flange around the
dial, the Rolex logo at 12 o'clock and a serial num ber at 6 o'clock. Additional anti-counterfeiting details include the let-
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THE EXPLORER IS THE FIRST STEEL WATCH IN WHICH ROLEX DEPLOYED ITS OWN SHOCK-ABSORPTION SYSTEM. KNOWN AS “PARAFLEX,” THE DEVICE ABSORBS SHOCKS MORE EFFECTIVELY AND SIMPLIFIES THE ASSEMBLY PROCESS.
Mount Everest Mystery

On May 29, 1953, Edmund Hillary and the Sherpa Tenzing Norgay became the first human beings to set foot atop the summit of Mount Everest, the world’s tallest peak, which rises 29,000 feet above sea level. Opinions differ about which wristwatches they wore on this historic occasion. Rolex probably equipped the expedition’s Western mountaineers (but not the Sherpas) with the Oyster Perpetual, References 6098 and 6150. Antiquorum recently auctioned one of these expedition watches in Geneva for the incredible sum of 145,300 Swiss francs. But Smiths, an English brand, also claimed in its post-ascent advertising that its watch had reached the summit together with Hillary, who later gave his Smiths watch to the Clockmakers’ Museum in London, where it is on display as the watch that was worn on the first successful ascent to the peak of Mount Everest. To date, nowhere in the Rolex literature is there mention of the fact that the Beyer Watch Museum in Zurich claims that its Rolex Reference 6098, with pale dial, was supposedly worn by Hillary on the first climb to the top of the world. Is this a contradiction? Or did Hillary wear both watches? Norgay is also believed to have worn a Rolex, which the Swiss mountaineer Raymond Lambert had given him as a gift. This particular watch is rumored to be in Rolex’s possession today. The firm—with its characteristic discretion—neither confirms nor denies this.

Top-quality craftsmanship is also evident in the bracelet. Like the clasp, it has a completely satin-finished upper surface and polished flanks, which ensure that it perfectly matches the case. However, compared to the big 39-mm-diameter case, the bracelet tapers to a rather narrow width at the point where it joins its clasp. The improvements aren’t confined to the watch’s exterior. Its movement, Rolex Caliber 3132, is well protected under a fully threaded screw-down back. This movement differs from Caliber 3130, which powered the previous Explorer, because of its Parachrom hairspring and Paraflex shock absorbers. It’s based on the familiar Caliber 3135 with date display, which powers the Submariner and the Datejust. These Rolex manufacture calibers are regarded as the best automatic movements on the market, a distinction they’ve earned thanks to their structure, which is designed for robustness, longevity and very precise fine adjustment. A
The Evolution of the Explorer

The "Pre-Explorer" (References 6098 and 6150) debuted in 1953 with Caliber A296 and a black dial, Arabic numerals for the 3, 6 and 9, and hands with Mercedes-logo adornments. The Explorer insignia first appeared later that year, on the dial of the successor Reference 6298 and 6320, but pale dials were also used. Reference 6610 premiered in 1959: it contained Caliber 1030, which enabled Rolex to use a flatter back. These early Explorer models used gold as the color for the hands and minute circles. Reference 6610 was replaced in 1963 by Reference 1016, which contained Caliber 1560; the water-resistance was increased from 50 to 100 meters. This reference remained in production for a quarter of a century. Starting in 1975, it was equipped with Caliber 1570, which gave it a stop-seconds function, and massive links were used in its bracelet.

The Explorer underwent major revisions in 1989: Reference 14270 had a different case, a crystal made of sapphire, applied white-gold indices with luminous material, and Caliber 3000 ticking inside its case. Reference 114270, with massive lugs and containing Caliber 3130, replaced this model in 2001. This reference was later given a crown-shaped logo lasered into the glass and a flange with the word "Rolex" engraved all around it. In 1971, Rolex's Explorer II model joined the traditional Explorer: it had an additional 24-hour display and was later given an hour hand that could be reset in hourly increments.

The practical folding clasp has a bracelet extender and bears Rolex's crown-shaped logo.

stead balance bridge replaces a conventional cantilevered balance cock. Two knurled screws are used to adjust the balance's vertical clearance. The hairspring's Breguet terminal curve contains an index in favor of Microstella nuts along the balance's hoop. Red anodized reverser gears minimize friction in the self-winding device.

The Parachrom hairspring is made of a blue niobium-zircon alloy and is immune to the influence of magnetic fields. It is also claimed to be 10 times less susceptible to vibrations than a conventional hairspring.

The Paraflex shock-absorption system (another Rolex invention) provides improved protection against sharp blows. This is the first time that Rolex has installed the system in a steel watch. The Paraflex mechanism had previously been used only in the Cellini Prince and the Day-Date II, both of which are available only in precious-metal cases. In the Paraflex system, the spring that returns the upper bearing jewel to its original position is symmetrical and smooth on both its faces so that it can be inserted on both sides, which makes the assembly process much easier. The spring is also less likely to jump out of its anchorage when a strong blow strikes the watch. Its shape, which extends over the center of the balance staff, makes it less yielding, which improves its ability to resist deformation. Furthermore, the spring bears two markings: one for the maximum oil level and one for the minimum. The Paraflex system is another example of Rolex striving to take what's already good and make it even better.

The movement's construction is solid, and its decorations are impressive, despite the fact that the case has no viewing window in its back. Rolex's standard piercings adorn the rotor, and the self-winding bridge sports a sun-burst pattern. Other bridges are embel- lished with circular graining, a pattern that resembles tiny clouds. All bridges and plates are coated with a layer of rhodium and their edges are bevelled and polished. The polished heads of the screws look particularly handsome.

Rolex is renowned for its precision, and the watch we tested did not disappoint in this area. It gained three seconds per day when tested on the wrist. The values measured on the timing machine (a Witschi Chronoscope X1) were similar. Averaging the values in all positions resulted in a daily gain of 3.7 seconds. However, the amplitude declined noticeably in the hanging positions. The greatest deviation among the various positions was seven seconds, which slightly exceeds the maximum allowable for chronometers. In fairness, however, we must disclose that we tested this watch in each position for only a half hour on the timing machine (not for 24 hours, as the COSC chronometer-testing authority does), and used that measured deviation to calculate the assumed variance over 24 hours. In any case, the results indicate that you should not need to bring this timepiece to a watchmaker for fine adjustment.

Considering all the improvements Rolex made to the new Explorer, it's not surprising to learn that it costs a bit more than its predecessor. It sells for $5,725, whereas the previous model was $5,150. Overall, the cost seems reasonable for a vastly updated watch that can ascend to the peak of a mountain and still look good peeking out from a shirt cuff under a business suit.
Rolex unveiled its first new complication in years at the 2012 Baselworld watch fair.

The calendar mechanism, which changes instantaneously, is relatively simple, Rolex says: the company has added just two gear ratios and four gear wheels to its existing instantaneous date calendar. As Rolex explains it, “The mechanism is designed around a fixed planetary gear wheel at the center of the movement. A satellite wheel engages with the planetary wheel and rotates, or brings the planetary wheel in one month, driven by the date disk. The satellite wheel is fitted with four fingers for the four 30-day months (April, June, September and November).

“The gear ratio between the satellite wheel and the planetary wheel is calculated in such a way that at the end of each 30-day month – and only in these months – one of the satellite’s fingers receives an additional impulse from the date-change mechanism. This makes the calendar disk jump two days (from the 30th to the first) within a few milliseconds to display the correct date.” Rolex has dubbed the mechanism “Saros,” a Greek word that refers to the approximately 18-year cycle that can be used to predict when eclipses will occur. Rolex chose the name because it brings to mind the revolutions of the Earth and moon, which are like the motion of the satellite wheel (the Earth) with its four fingers (the moon).

The calendar has an unusual month display. The hour numerals correspond to the 12 months of the year. Next to each numeral is a window. The window for the current month (e.g., “III” for April) is black; the other 11 windows are white. (On the brown-dial model, the correct month is indicated by a white window for better contrast.)

To set the watch, you use both the bezel and the crown. First you rotate the bezel to one of three positions to select which of three functions − date, local time or home (24-hour) time – you want to set. Then, using the crown, you set the function, going either forward or backward. Rolex says, “The heart of the mechanism is a double cam and levers that engage various gear trains inside the movement according to the function selected. One of these cams is activated by pulling out the winding crown; the other is driven by rotating the bezel [Rolex calls it a “Ring Command Bezel’’] to activate setting wheels located in the middle case of the watch.”

Caliber 9001, which has bi-directional winding, is, like all Rolex calibers, certified by COSC. It has a stop-seconds function and a power reserve of 72 hours. The movement has 380 components and is protected by seven patents, four of them new.

The case is 42 mm in diameter and water resistant to 100 meters. It comes in white, yellow or rose gold. The white- and yellow-gold models have Oyster-style bracelets; the rose-gold version has a leather strap. U.S. prices were not available at press time.

— NORMA BUCHANAN