



Angelus introduces the U20 Ultra-Skeleton Tourbillon

The entire U20 Ultra-Skeleton Tourbillon watch has been conceived as a beautiful mechanical *haute horlogerie* sculpture. Built like a supercar, its design is streamlined and based on structural optimization. Made of sapphire, carbon and titanium, the U20 is at the forefront of cutting-edge watchmaking.

From the movement to the case design, every aspect of the U20 has been conceptualized to allow light to enter the watch and reveal the splendor of the movement's architecture and tourbillon. The first elements one sees are the raised dome sapphire crystal of the carbon case and the mirror-polished beveled edge of the monobloc titanium lugs, all reflecting the light.



U20 Ultra-Skeleton Tourbillon

Manufacture Angelus A-250 calibre, one-minute flying tourbillon, *haute horlogerie* movement with sapphire main plate and skeletonized blue satin-finished titanium bridges, diameter 42.00 mm

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A deeper look reveals the virtually transparent movement floating in the case and allowing an unobstructed view through the watch. The quest for transparency and three-dimensionality is essential in the world of ultimate high-end watchmaking. The goal is to present the essence of the movement by removing any superfluous material. What seems to look deceptively simple to achieve requires great artistic vision and engineering prowess. The more material that is removed, the more the structure of the movement has to be carefully calculated to ensure rigidity and sturdiness.



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The U20 Ultra-Skeleton even goes a step further. It does not boast an ordinary movement that has been skeletonized afterwards, but a tourbillon movement that has been created from scratch to be symmetrical, transparent and resplendent.

To further enhance transparency, the U20 features a sapphire main plate. The bridges have been made of blued titanium and have been skeletonized to increase transparency even further. The bridges' beam shape also maximizes rigidity - the latter being essential for chronometric precision.



The discerning eye will be pleased to discover that *haute horlogerie* has not been sacrificed on the altar of transparency: components in the Ultra-Skeleton Tourbillon have been hand-chamfered, hand-polished and hand satin-finished to ensure that they look as good as they are filigree.

And to further increase visibility into the top of the three-dimensional movement, the U20 Ultra-Skeleton Tourbillon features a unique design element. The case dispenses with a bezel and instead uses a sapphire crystal dome, which also allows a sideways view onto the movement.

The U20 Ultra-Skeleton Tourbillon deserves closer inspection, which reveals many of the well-thought-out details that go into transforming a skeleton watch into an ultra-skeleton *haute horlogerie* watch: the variable inertia balance wheel of the tourbillon is especially designed and crafted to minimize air friction; the sapphire main plate is polished to the highest optical grade; ruby bearings are set into solid gold *chatons*. The ultra-light case, entirely made of carbon-fiber, titanium and sapphire, has been designed to echo the visual lightness and the technical feel of the timepiece.

The U20 Ultra-Skeleton Tourbillon is available in a limited edition of 18 pieces in carbon-fiber/titanium case.

The U20 Ultra-Skeleton Tourbillon in detail

To maximize transparency, the U20 Ultra-Skeleton Tourbillon makes extensive use of sapphire in both the construction of the movement as well as the case. The movement is based on a sapphire main plate, with key components supported by beautifully hand finished, blue skeletonized satin-finished titanium bridges.

The absence of a dial and the use of a sapphire crystal dome set directly onto the carbon fiber case allow full visual access to the movement from both the top and sides, accentuating the three-dimensionality of the movement's architecture.

The titanium lugs, which are securely attached to the carbon fiber case and reinforced with an armature of carbon fiber, have a very technical shape and echo the titanium bridges of the movement. However, the intricacy of the lugs is softened by the clever use of polished chamfered edges and contrasting satin-finished surfaces.

Special sapphire main plate

The sapphire in the U20 Ultra-Skeleton Tourbillon is very specific, offering the essential characteristics necessary for use in a *haute horlogerie* timepiece. The sapphire main plate is first crafted from a solid block of sapphire before being painstakingly polished to be perfectly transparent. This elaborate process results in a very precise main plate with tolerances in the micron range. The latter is important as the sapphire used throughout the Ultra-Skeleton Tourbillon is not decorative but 100% functional.



Manufacture Angelus A-250 calibre

Central hours and minutes, one-minute flying tourbillon, *haute horlogerie* movement with sapphire main plate and blue skeletonized satin finished titanium bridges, all steel component edges are hand-chamfered and hand-polished, flat surfaces mirror-polished or satin-finished, diameter 32.60 mm

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Movement elements

The heart of the U20 Ultra-Skeleton Tourbillon is the flying tourbillon. The tourbillon is "flying", which means that it does not require an upper supporting bridge. This helps to maximize the three-dimensionality of the movement and allows maximum appreciation of the technical and aesthetical refinements throughout the movement.

The tourbillon's steel cage is hand chamfered and polished with flat surfaces either mirror-polished or satin-finished.

The variable inertia balance wheel is regulated by four gold weights around its perimeter. In the quest for high performance, the rim of the balance wheel has been milled to maximize aerodynamics and reduce air resistance.

The highly engineered movement further features beam-type titanium bridges which are skeletonized to increase transparency even more.

The titanium mainspring barrel bridge is supported by slim pillars set directly into the sapphire main plate to optimize visual lightness.

All wheels throughout the entire gear train have a specially developed six-spoke design, again in the quest for maximum rigidity for minimum mass.

All of the rubies, which actually act as low-friction bearings, are fitted into solid gold chatons that are embedded in the sapphire main plate. Gold chatons not only look good and attest to the movement's *haute horlogerie* bona fides, they are also non-magnetic and corrosion resistant like the sapphire itself.



U20 Ultra-Skeleton Tourbillon Technical Specifications

Features and Indications

Central hours and minutes, one-minute flying tourbillon, *haute horlogerie* manufacture movement with sapphire main plate and blue skeletonized satin-finished titanium bridges

Movement and Finishing

Calibre:	Angelus A-250, manual-winding with flying tourbillon, sapphire main plate and blue titanium bridges
Jewels:	18, set in solid gold chatons
Diameter:	32.60 mm
Height:	5.78 mm
Power reserve:	90 hours
Frequency:	21,600 vph / 3 Hz
Balance:	variable inertia regulated by four gold weights, minimal air-resistant design
Escapement:	Swiss lever
Gear train:	exclusive Angelus 6-spoke design to maximize rigidity
Complications:	one-minute flying tourbillon, ultra-light form
Tourbillon cage:	steel, hand-chamfered and hand-polished
Movement finishing:	<i>haute horlogerie</i> , all steel component with hand-chamfered and hand-polished edges, flat surfaces mirror-polished or satin-finished

Dial

Material:	sapphire dial is actually the movement main plate
Hour and minute markings:	printed spokes on outer chapter ring
Hour and minute hands:	rhodium-treated and skeletonized

Case

Material:	NPT carbon-fibre and titanium
Diameter:	42.00 mm
Height:	10.30 mm including sapphire crystals
Crown:	engraved with ANGELUS logo; 2 positions: 1. winding, 2. time-setting
Back:	sapphire display back
Distance between lugs:	21.00 mm
Water resistance:	30 m / 100' / 3 atm
Crystals:	Sapphire crystal dome with anti-reflective coating on inside surface

Strap and buckle

Material:	stealth black alligator leather with titanium insert
Length range:	75 mm to 115 mm
Width:	21 mm
Buckle:	titanium, pin buckle engraved with Angelus logo

Limitation and reference

Limited Edition:	18 pieces
Reference:	OTCAB.U01A.C004T



Angelus History

The story of Angelus began in 1891 when brothers Albert and Gustav Stolz founded the Angelus fabrique d'horlogerie in Le Locle, Switzerland. The company quickly became renowned for developing and manufacturing pioneering movements and timepieces, both for itself and for other brands.

Over the past century, Angelus earned an illustrious reputation for creating exceptional chronograph and multi-complication wristwatches, multi-display travel clocks with long power reserves, and alarm watches. Along the way, Angelus achieved a number of watchmaking world-firsts, including the first wristwatch with big date, first series wristwatch chronograph with calendar, first wristwatch with alarm and date, first automatic repeater wristwatch, and first fully waterproof repeater wristwatch.

Along with many other prestigious brands, Angelus found it difficult to compete with the arrival of quartz watches in the 1970s and the company ceased operations in the early 1980s.

After lying dormant for 30 years, Angelus has now been revived by new management who have spent three years developing the next generation of visionary timepieces, the first of which is the U10 Tourbillon Lumière, which was followed up by the U20 Ultra-Skeleton Tourbillon. All models have been developed at the Angelus manufacture in La Chaux-de-Fonds, just a stone's throw from where the Stolz brothers established their original *fabrique*.

For **high resolution images** please find here the link:
<http://www.angelus-watches.com>

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