The wristwatch was a watch and indispensable instrument for flying for a multitude of practical reasons. The pilot's could check flight times, remaining fuel (via calculation), location (via calculation) et cetera. Time was inextricably intertwined with flight. This became extremely important during bombing missions of the WWII. Precision timing was then absolute necessity and specialized watches started to emerge.

Modern day pilot's watches are fundamentally shaped by one company - IWC (International Watch Company) based in Schaffausen , Switzerland.

IWC is not a newcomer or new kid on the block with a range of pilot's watches just because it's the 'in thing' to be selling today. IWC have in fact been involved in pilot's watches since 1930s. The very first IWC pilot's watch began life in 1936 and was dubbed "Special Watch for Pilot's". It basically combined all the features that were deemed necessary for its specific nature of function. It had high legibility and a rotating bezel that could be operated with a gloved hand.

IWC Ref 436 "Special Watch for Pilots", Shown is one from 1939. This was watch first produced in 1936.

This original 1936 watch also featured antimagnetic protection and this was a must give that aviation was increasingly exploiting new inventions in on transmitting devices, radios and radar.

At the beginning of WWII the German Luftwaffe / Reich's Aeronautics Ministry (RLM) collaborated with the German Naval Observatory and invited various watch companies to submit watches for testing. IWC (and other watch companies) were to develop and produce a very precise watch specially just for pilot's use. It was designed as a navigation watch or observation watch. The Germans demanded absolute precision and each individual piece was tested at the German Gesundbrunnen Marine Observatory in Glashutte before being released into service.

The institute assigned one of three classes: (1) Special Class (2) First Class (2) Second Class. The IWC was assigned to "B" Watch (i.e navigation watch) First class. These standards also stipulated that the best materials and engineering components were to be used. They had to be equipped with high quality balances and have a specially treated balance spring with "breguet" curve. The was regulated in six positions at three different temperatures - YES! Three different temperatures.

I do not know of any manufacturer today that even attempts regulation at 3 differing temperatures!
Documents from that era also confirm that the watches had to be reliable at -20 degrees C.

It was designed to be worn over the thick flying suit on the arm or even on the thigh - hence the over-long leather strap riveted to the strap attachments. The watch was not kept by the pilot but issued at the start of a mission and most certainly used as a navigational aid for night and long-range reconnaissance on long-distance flights. It may also have been used by bomber pilots also. However, it appears less likely that it could have been intended for fighter pilots or Stuka pilots.

The watch also had to have a "Hacking" mechanism (i.e. Second hand would stop when the crown was pulled) We take this for granted now, but back in the day the invention of stop-second itself was considered a complication on a watch. With the "hacking" feature the pilot could then synchronize his watch exactly with his counterparts or a known timing signal. Typically before a flight the watch would be synchronized with a Chronometer on the ground in the flight preparation room.

The Legendary IWC Ref 431, Big Pilot's Watch for German Air Force.
Shown here is an example from 1940

IWC choose the Cal 52 for the base and this was outfitted with some unique modifications. The exact designation of the Caliber used in the IWC "B-uhr" was "52T 19 H6 S.C". The 'T' stood for tirette which means hand setting by pulling on the crown. 19 is the movement diameter at 19 lignes (or 42.25mm) and H6 is the height of the movement at 6mm. The 'S.C.' meant that this movement had 'Seconde Centrale' and the gear mechanism for indirect propulsion of the central second hand by the elongated 3rd wheel pivot was added to the normal Cal 52.

The IWC Cal 52 as seen in a Pocket Watch (Without Center Seconds)

The IWC Cal 52T SC which powered the IWC Ref 431 Big Pilot's Watch for German Air Force

For the IWC enthusiast and collector you may wish to know that the IWC factory ledger list the diameter as not as 19 lignes but 19/22. The '22 lignes' appears because the movement was outfitted with a movement ring that increased the diameter to 22 lignes for fitment into the large case.

Mechanically this movement was top class Schauffhausen workmanship. 16 jewels, Swan neck fine adjustment, slit metallic balance with weight screws and fine adjustment screws. The balance spring was of the breguet overcoil variety terminal curve. The steel lever of the Swiss lever escapement was polished glossy but the escapement wheel was matte finish. The plates, bridges and movement ring was gold plated. The visible wheels were all embellished with a sunburst finish.

An exact total of 1200 such movements were manufactured and bore the serial numbers 1013801 to 1015000.
1000 of these were delivered to the German Luftwaffe using a recipient named "Siegfried Heindorf" in Berlin as watches. The first batch consisted of watches were equipped with a cylindrical crown and the later batch had the conical crowns that we associate so strongly with today as a design cue.

The remaining 200 Cal 52 S.C. movements were delivered and used as deck watches by the British Royal Navy.

The German B-uhr watch was a steel case with diameter 55mm (today's modern IWC big pilot is 46mm so at 55mm is the original grand daddy of big pilots is living large!). Horn to horn the watch as 67mm and its case height was 17.5mm. The dials werre 0.9mm thick and had a diameter of 49mm. The glow in the dark coating used was radium.

IWC Ref 431 from 1940 - The Original Big Pilot's Watch

One notable marking is the fact that "FL.23883" was stamped on the side of the case. "FL" stood for Fliegnummer (flying number) and '23' meant a device for flight monitoring. The final '883' digits were actually assigned by the German Testing Office for Aeronautics (Deutsche Versuchsanstalt für Luftfahrt).


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IWC Ref 431 seen from the back - Stamped "BA 2690":

**Stamp in black color BA=factory control, the stamps have been made by certified examiner, who has ensured that the watches, they have stamped correspond in their execution to those of the sample examination of the DVL: Deutsche Versuchsanstalt für Luftfahrt.*

The "Conical" crown on the IWC Ref 431 that we associate so much with pilot's watches today.
The oversized crown allowed the wearer to operate the watch with gloves on.

IWC was not the only supplier of this navigational watch to the German Luftwaffe. The navigation wristwatches designated "FL23883" came from IWC, Lange & Soehne, Wempe, Walter Storz (Stowa) and Lacher & Co (Laco). There were all extreme horological specialties and are more than worth their weights in gold present day.

Shown below is a similar German Air Force FL 23883 watch

This time supplied by a maker in the Glashutte Region of Germany.

Note that the same numbers "FL.23883" are stamped on the side of the case.