



SERIES 456




Sinn

SPESIALUHREN ZU FRANKFURT AM MAIN



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***“The majority of developments
still lie ahead of us!”***

Lothar Schmidt

Dear customer,

we know from numerous conversations that the people who buy our watches do so out of conviction. This includes people with a pronounced affinity to technology who are fascinated, for example, by the solutions we have devised for protection from magnetic fields and scratch resistance. Some of our customers, such as divers, pilots and the German GSG 9 special police unit, rely on their watches in their respective careers because their lives depend on it.

They all swear by the performance, resilience and durability, as well as the quality and precision of our

watches. This is why independent institutes regularly verify and certify the water and pressure resistance of our diving watches.

Selected pilot watches are tested and certified by independent institutions according to the DIN 8330 Horology – Aviator watches in an extensive and complex type verification process. This ensures that a DIN 8330-compliant pilot watch is a suitable all-round replacement for the on-board timekeeping instruments available to pilots. Functionality is our top priority and ultimately determines the design. Only the technical features that are really needed can be found on our watches. Because we believe that products have to speak for themselves.

The basic question that we ask ourselves is: which innovative technologies and materials can be employed for our craft and provide solutions for rendering our watches even more practical for everyday use? It is often worth indulging in a little lateral thinking to see what is going on in other industrial sectors or fields of science. We repeatedly go to the limits of physical resources to upgrade our watches – with the aim of making what's good even better. Most of our best developments are yet to come!

We are delighted that you have decided to buy a SINN timepiece and hope that it will continue to give you pleasure for many years to come.

Your Team from Sinn Spezialuhren



Sinn

ENGINEERING OF TECHNOLOGY IN MADE

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SINN SPEZIALUHREN ZU FRANKFURT AM MAIN

In 1961, pilot and blind-flying instructor Helmut Sinn laid the foundation for our company. Since then, we have been passionately dedicated to crafting high-specification mechanical watches. A new era began in 1994 when graduate engineer Lothar Schmidt took over the company. His innovative spirit gave decisive momentum and set the course for a forward-looking direction and continuous development. Today, the name Sinn Spezialuhren stands for exceptional timepieces distinguished by outstanding mechanical stability and remarkable design.

Technical innovations

Whether it's scratch resistance, independence from temperature fluctuations, or sensitivity to magnetic fields: we have always been motivated to invest in our own developments in order to continuously enhance the everyday performance of our mechanical wristwatches. Drawing on our expertise and experience, we have addressed a wide range of areas and, as a result, created highly precise instruments.

One of the first developments following Lothar Schmidt's acquisition of the company in 1995 was **Ar-Dehumidifying Technology**. A drying capsule, EDR seals and protective gas filling serve as the key elements that ensure greater functional reliability and freedom from fogging – providing a consistently clear view of the dial. The result: outstanding reliability, consistent precision and extended warranty periods.

Temperature Resistance Technology ensures absolute functional reliability in a range from $-45\text{ }^{\circ}\text{C}$ to $+80\text{ }^{\circ}\text{C}$. Thanks to the use of special oil, the movement remains fully operational even under extreme temperature conditions. Users benefit from a timepiece that performs with dependable stability and ruggedness – even when exposed to the most demanding environments.

Another milestone is our **DIAPAL Technology**. By selecting special material combinations for the Swiss anchor escapement, we are able to ensure smooth interaction – entirely without lubrication. Experience has shown that the escapement is the most sensitive component of a mechanical movement. In other words, the quality of lubrication in this area has the largest impact on the accuracy of the entire movement. The result? Long-term accuracy, impressive functional reliability, and an extended service life. Reduced maintenance requirements – with full functionality maintained.

Selected mechanical watches are protected against magnetisation by a **Magnetic Field Protection** of up to 100 mT (= 80,000 A/m = 1,000 gauss). This technology also serves to ensure long-lasting, interference-free functional reliability. The advantages: consistently stable time display and less need for service interventions such as demagnetisation.

While our primary focus is on mechanical timepieces, we also offer quartz watches in our collection. For selected models of this kind, our proprietary **Q Technology** provides unique shielding against electromagnetic impulses. This ensures a high level of wearing comfort – especially for individuals who are sensitive to electromagnetic radiation.

Divers and water sports enthusiasts particularly value our **HYDRO Technology**. Thanks to a special oil filling, which ensures water resistance and pressure resistance up to a diving depth of 5,000 metres (= 500 bar), we are able to guarantee reflection-free readability under water from any angle – along with absolute freedom from fogging.



Our **TEGIMENT Technology** – a special surface hardening process – significantly increases the scratch resistance of cases and bracelets. The result: fewer visible signs of wear and a consistently high-quality appearance, even after prolonged daily use. Ideal for everyday wear, but also for demanding operational environments. This technology forms the basis for our **Black Hard Coating**. Due to the large and sudden difference in hardness between the hard coating and the base material, this combination tends to fail under stress. The reason is that the hard shell (the colour layer) is applied directly onto a significantly softer core (the case material) without any transitional layer. Under localized stress, the base material yields and cannot

sufficiently support the outer layer. This phenomenon is known as the “eggshell effect”. In contrast, the hardness of the TEGIMENT surface supports the hard coating. Additionally, we achieve a uniform, deep black colour with extremely high colour stability. The black finish gives the watch a modern, sporty, yet elegant look – qualities that particularly highlight the character of a SINN watch.

Another distinctive feature is the **Captive Safety Bezel** – a special construction used in selected diving watches. It is characterized by two essential functions: it cannot be lost and is protected against accidental rotation. This minimizes the risk of loss or misadjustment, safeguarding the watch’s measurement and display functions. Operation is easy, even when wearing gloves. It is a technology that skillfully combines maximum safety with smart user-friendliness.

Our innovative strength is also evidenced by the **DSP technology** in the newly designed watch cases for model 717 and the 903 series. Thanks to DSP technology, they boast an impressive water resistance of up to 20 bar. The rotating bezel on these timepieces can be operated directly on the outer diameter. These functional and high-quality timepieces are entirely in keeping with the tradition of the Sinn Spezialuhren brand.

Each of these technologies contributes to making our watches far more than just instruments for telling time: they are reliable companions for work and leisure, for professionals and watch enthusiasts alike – engineered to meet a wide range of tasks and challenges. Thanks to their high level of innovation, they fulfill the desire for exclusivity, because with this technical sophistication, SINN watches are truly unique companions designed for everyday use over many years.

Exceptional Materials – Expertise in Metallurgy

We claim a high level of expertise in the field of metallurgy. The following examples speak for themselves – such as the T50 GOLDBRONZE model, introduced in 2023. For the first time, we used a bronze alloy developed and patented by us for both the case and the captive diver's bezel. This alloy, named Goldbronze 125, consists of one-eighth gold and features an exceptionally high degree of purity in all other alloying elements as well. Although Goldbronze 125 still develops surface darkening through oxidation – known as patina – the gold content in the alloy results in a significantly higher resistance to environmental influences than conventional bronze. This leads to improved skin compatibility and enhanced corrosion resistance, particularly in seawater environments.

Our timepieces made from genuine, fire-welded Damascus steel – forged using traditional techniques – also exemplify the use of extraordinary materials in watchmaking. These include the 1800 DAMASZENER, 1800 S DAMASZENER and 1800 S GG DAMASZENER models. For the characteristic texture of the Damascus steel, the dial and the center part of the case are forged from a single block of material. The 1800 TITANDAMASZENER, on the other hand, represents a challenge of an entirely different kind. The traditional production of titanium damascus requires an extremely demanding process. Here, we succeeded in combining the base materials Titanium Grade 2 and Grade 5 in an impressive display of craftsmanship and advanced production technology. The result is a one-of-a-kind fusion of masterful forging and modern engineering.

Form Follows Function

All of these developments are driven by our core conviction: that in the design process of our timepieces, form must consistently follow function and the intended purpose of use. A prime example of this philosophy is our mission timers (EZM), which are specifically developed for pilots, divers, emergency physicians, and members of fire and rescue services. Special units of the German Federal Police – such as GSG 9, the Navy Special Forces Command (KSM), and the special unit of the German Customs Authority, the Central Customs Support Group (ZUZ) – also rely on our mission timers. The goal here is to develop watches that perform flawlessly both in everyday life and in clearly defined professional operations.

Tested and Certified

We place great importance on ensuring that the technical specifications of our watches are verifiable. Since 2005, independent testing institutes have been examining our diving watches for pressure resistance and water resistance. In addition, since 2006, they have undergone an official certification process in which they are classified as part of diving equipment and tested based on European diving equipment standards – a unique procedure in the watch industry. Selected pilot watches undergo a complex type testing process carried out by neutral institutions in accordance with “DIN 8330 – Horology – Aviator watches”. This ensures that a pilot watch certified to DIN 8330 can fully replace the timekeeping instruments installed in an aircraft. It must not be affected by the physical demands of flight operations, must not pose any risk to the crew or the aircraft, and must be compatible with the other onboard instruments.

Engineered for Professional Use

Many awards earned by selected SINN watches demonstrate that outstanding design quality and uncompromising functionality are not mutually exclusive – in fact, they complement each other. One such example is the EZM 12, which received both the Red Dot Award in 2019 and the German Design Award in 2020. The EZM 12 stands out through its purposeful design as a mission timer developed specifically for emergency medical professionals in rescue operations. With its three distinctive display features – the PulsRotor, an inner rotating bezel that counts up, and an outer rotating bezel that counts down – this timepiece provides rescue personnel in air ambulance services with a vital instrument designed to help them keep track of critical, life-saving time.



High-quality mechanical movements

From the robust case and the polished crystal to the exquisitely decorated movement, we make sure that each and every detail in our watches is fit for purpose. In addition to our technology, the heart of any SINN watch is the fascinating mechanical movement. That is why we rely only on selected renowned manufacturers.

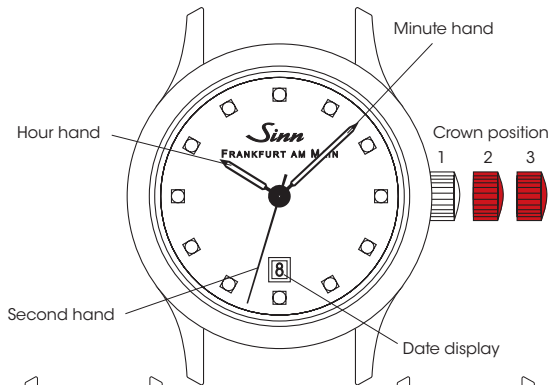
“SZ movements” is the name given to our movement modifications. The results are high-quality calibres characterised by impressive features. An example of this is the SZ04 with regulateur for the 6100 REGULATEUR series.

The model series 140, 156.1 and model 717 uses our proprietary chronograph development, the SZ01. It was modelled on the Lemania 5100 calibre used in the EZM 1. One of the biggest differences between the SZ01 and the Lemania 5100 is the former’s stopwatch minute display. This feature now makes it even easier and quicker to record stop times more accurately. The aim of this modification was to significantly improve the readability of the chronograph function.

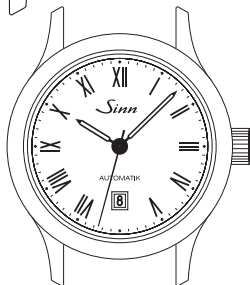
The SZ calibres 02, 03, 05 and 06 are a modification of the SZ01 movement, characterized by an off-center 60-minute counter. The 60-minute scale of the stopwatch minute counter is much simpler and more intuitive to read than the 30-minute scale commonly found in other watches.



INSTRUCTIONS FOR USE



Dial variant: arabic numerals



Dial variant: roman numerals

Winding the watch (crown position 1)

The movement is wound manually by turning the crown *clockwise*. Under normal circumstances, a few turns of the crown are enough to start the movement. We recommend 20 full turns of the crown for the initial use. Simply wearing the watch every day should suffice to keep the self-winding mechanism wound. The power reserve allows you to take off your watch overnight without having to rewind it. About 40 turns of the crown by hand will wind up the watch completely. Because the winding mechanism of your watch is designed for automatic winding with minimal winding speed, the watch should be wound at a moderate, consistent speed when winding by hand to avoid damaging the movement.

Time adjustment (crown position 3)

In crown position 3, the motion is paused. This helps you to set the watch precisely. Please make sure the date changes at midnight and not at midday. Just move the hands forward until the date changes. Afterwards you attempt to set the time. We recommend moving the hands past the desired minute marker and then adjusting it backwards. The movement restarts as soon as the crown is no longer in position 3.

Quickset date adjustment (crown position 2)

Set the crown in position 2 and turn it *clockwise* until the correct date appears in the date display window.

ADJUSTING THE LENGTH OF THE SOLID BRACELET

If you don't know how to shorten or lengthen the solid bracelet, please contact your SINN dealer or the watchmakers in our customer service department in Frankfurt am Main. Our customer service employees are also happy to help you over the telephone.

Determine the relative lengths of the two sides before adjusting the length of the bracelet. To ensure maximum comfort, both sides of the bracelet should contain the same number of links. If this is not possible, the top bracelet strap (above the 12 on the clock) should be longer.

It is not necessary to detach the solid bracelet from the watch or the clasp.

1. Loosen the screws on the side of the bracelet link which is to be removed or added.
2. Remove the superfluous bracelet link or insert a new one.
3. Before screwing tight, add a small drop (no more!) of thread-locker (AN 302-42 medium-tight) to the thread of the bracelet screw.



Warning

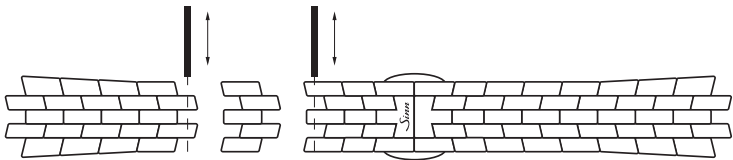
Safety note!

Thread-locker (AN 302-42 medium-tight) contains:

2-hydroxyethyl methacrylate, cumene hydroperoxide.

May cause an allergic skin reaction. May cause respiratory irritation.

Wear protective gloves. UFI: 51T6-80C3-800Q-SCR2





**456 TW70 WG, 456 TW12 and
456 TW70 GG.**

Luminous design.



**456 St Mother-of-pearl W and
456 St GG Mother-of-pearl W.**

Luminous design.



456 St I and 456 St GG I.

Luminous design.

TECHNICAL DETAILS

Mechanical Movement

- Self-winding mechanism
- Hand adjustment with stop-second function
- 28,800 semi-oscillations per hour
- Anti-magnetic as per DIN 8309

Watch Case

- Stainless steel, polished
- Sapphire crystal glass in front
- Transparent case back made of sapphire crystal glass
- Case back screw-fastened
- Meet the technical requirements for water resistance, as set out in standard DIN 8310
- Water-resistant and pressure-resistant to 20 bar
- Low pressure resistant
- Band lug width 14 mm
- Case diameter 28 mm

456 TW70 GG

- Black electroplated dial
- Decorative ring of 18-carat yellow gold
- 70 Top Wesselton diamonds

456 TW70 WG

- Black electroplated dial
- Decorative ring of 18-carat white gold
- 70 Top Wesselton diamonds

456 TW 12

- Black electroplated dial
- Decorative ring of 18-carat yellow gold
- 12 Top Wesselton diamonds

456 St GG I

- Black electroplated dial
- Decorative ring of 18-carat yellow gold

456 St I

- Black electroplated dial

456 St GG Mother-of-pearl W

- Mother-of-pearl dial
- Decorative ring of 18-carat yellow gold

456 St Mother-of-pearl W

- Mother-of-pearl dial



ADVICE

Water resistance

In its original condition, your watch fulfils the technical requirements of water resistance according to DIN 8310. The static compressive stress of your watch is given in bar. Each and every one of our watches is tested for water resistance. However, in everyday use it is important to note that seals can suffer from wear and ageing over time due to a wide range of factors which arise when wearing a wristwatch. We therefore recommend having the water resistance checked at least once a year. To ensure your watch retains its water resistance for as long as possible, rinse it with tap water if it comes into contact with seawater, chemicals or the like. Continual mechanical stress in the form of shocks and vibrations can also not only reduce water resistance, but also increase wear and tear of the movement. Care should therefore be taken to protect your watch from unnecessary impacts.

Accuracy

The measured results of the watch's rate are always "snapshots" taken under laboratory conditions. For this reason, we also take each owner's individual movements into account when making a specific regulator correction. It is therefore only possible to judge the accuracy of your watch after it has been in operation for approximately eight weeks. In the event of a deviation, please keep a daily record of its timekeeping over an extended period, for example one week.

Do you have any questions? Our employees will be pleased to advise you.

Telephone: + 49 (0)69 / 97 84 14-400

Telefax: + 49 (0)69 / 97 84 14-401

E-mail: service@sinn.de



SERVICE

Does your SINN watch need an inspection, repair, retrofitting or reconditioning?

If possible, please use our service order form. For information about our service order form, please refer to the section entitled "Customer Service" on our website www.sinn.de/en and to the section entitled "Servicing and repairs" in our general terms and conditions at www.sinn.de/en. We would be happy to send you a copy of the general terms and conditions.

Our international partners generally offer on-site service. However, should they be unable to provide a certain service, they will organise the safe dispatch and return of the SINN watch to our manufactory in Germany. Please be aware that our partners will wait until they have a sufficient number of SINN watches before they post a shipment, in order to keep transport costs and customs duties to a minimum. This will increase the processing time.

Alternatively, you can send your SINN watch to us directly. You will be required to cover the postage costs for the delivery and return shipment, which vary depending on the country. For insurance reasons, we strongly recommend sending us any return goods by registered parcel post. We regret that we are unable to accept deliveries with unpaid postage!

In case you have a chance to drop off your watch directly at our office in Frankfurt am Main we look forward to your visit. Please make a note of our opening times.

For information about our service, please refer to the section entitled "Customer Service" on our website www.sinn.de/en or +49 (0)69 / 97 84 14-400.

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Technische Änderungen vorbehalten.

Technical specifications are subject to changes.



