



LEADING SWISS PRODUCTS



WAIO[®]

Operating instructions

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Info



The original text of these instructions is written in German.

Translations are made for information purposes only. In cases of doubt, only the German version shall be decisive.

Manufacturer

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Product

WAIO

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1 General information

Purpose of the documentation

This documentation contains the necessary information for the proper operation of the device.

This allows the user to perform operating or maintenance procedures efficiently.

For reasons of safety and environmental protection, the service instructions must be followed. In any case, the documentation should be consulted.

Liability

Witschi Electronic AG assumes no liability for errors or omissions.

Conformity with standards and guidelines

The "CE" marking confirms that this product complies with the European requirements regarding safety, health, environmental and user protection.



See also the declaration of conformity supplied with the machine.

Proper use

The instructions in this document must be observed, in particular the safety precautions.

General information

This document has been prepared on the basis of the information available at the time of its publication.

These instructions enable safe and efficient handling of the WAIO leak tightness testing device (referred to in the following as "device" or "WAIO"). These instructions are an integral part of the device and must be kept near the device so that it can be accessed by personnel at all times.

Personnel must have carefully read through and understood these instructions before starting work. To ensure safe working, the safety indications, warnings and instructions must be followed.

In addition, the local health and safety regulations as well as the general safety rules for operation of the WAIO must be observed.

Illustrations contained in these instructions are intended for illustration purposes only and may deviate from the model sold.

1.1 Technical support

Rating plate



WAIO
 Typ 31.2620
 Nr. 20019
 Year 2024
SWISS MADE



The identification plate of the WAIO is located on the underside of the device and contains the following information:

- Manufacturer
- Device name
- Type
- Serial number
- Year of manufacture

Technical support inquiries

To request technical support from Witschi Electronic AG, proceed as follows:

- a) Observe the specifications on the machine's rating plate.
- b) Try to clearly identify the error that occurred.
- c) Contact the customer service of Witschi Electronic AG.

Customer service

The point of sale can provide you with technical information.

The nearest point of sale can be found on the Witschi Electronic AG website www.witschi.com.

Witschi Electronic AG would also be pleased to receive information and feedback, which can be helpful for the improvement of the products.

Information on customer service

Address: Witschi Electronic AG
Bahnhofstrasse 26
3294 Büren an der Aare
Switzerland

Telephone: +41 32 352 05 00

Fax: +41 32 351 32 92

Internet: www.witschi.com

E-mail: service@witschi.com

1.2 Definitions

User

The user is the owner of a device which he or she uses as the owner or which he or she gives to third parties for use.

Operator

The operator is the person who carries out production or operating processes with the device.

Technical personnel

Technical personnel are defined as all persons whose training and qualifications entitle them to carry out installation and maintenance work on the device. Any work on the electrical and mechanical components of the device must be carried out by Witschi Electronic AG. A device is defined as the entirety of the WAIO.

Device

1.3 Guarantee

Witschi Electronic AG grants two years warranty on the new WAIO. Further information can be found in the **Warranty information document** supplied with the WAIO.

2 Safety

This section provides an overview of all the important safety aspects that ensure personal protection and safe and trouble-free operation. The relevant sections contain additional warnings on the various tasks.

Mandatory



All safety and protection regulations described here must be read and observed in order to avoid damage to equipment, persons and the environment.

The legal regulations, accident prevention and environmental protection measures as well as the relevant technical regulations for safe working methods in the country of use and at the place of installation of the device must also be observed.

2.1 General pictograms

DANGER



This combination of symbol and keyword indicates an imminently hazardous situation that will result in serious or fatal injury if not avoided.

WARNING



This combination of symbol and keyword indicates a potentially hazardous situation that can result in serious or fatal injury if not avoided.

CAUTION



This combination of symbol and keyword indicates a potentially hazardous situation that can result in minimal or minor injury if not avoided.

Caution - material



This combination of symbol and keyword indicates a potentially hazardous situation that can entail material damage if not avoided.

Caution - environmental



This combination of symbol and keyword indicates a potentially hazardous situation that can entail environmental damage if not avoided.

Prohibition



Mandatory advice to follow.

Mandatory

Applicable guideline, measure.

Info

Informative comment.

Tip

Recommendation or advice.

2.2 Proper use

The "WAIO" device is used for testing the water resistance of watches by means of positive and negative pressure. It can also be used to demagnetise watches. It is additionally used to check the chronometry of watches.

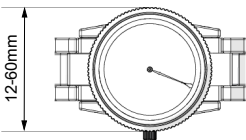
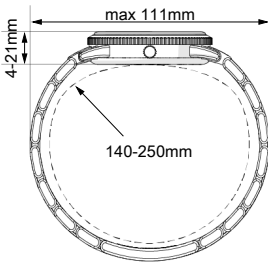
The WAIO can be used to test mechanical watches and analogue quartz watches.

The device is intended for watches with the following maximum dimensions:

- Width: Max. 111 mm
- Height of the watch case: 4 mm to 21 mm
- Circumference of the watch (watch + bracelet): 140 mm to 250 mm
- Diameter of the watch case: 12 mm to 60 mm (with crown, maximum 65 mm)
- Weight of the watch: Max. 260 g incl. bracelet

Proper use also includes observing all the information in the instructions.

Any use that deviates from proper use is considered improper use.



CAUTION

Risk of injury if the device is not used properly!
Improper use of the WAIO can result in hazardous situations.

2.3 Safety sign

The parts of the device which represent a danger are marked with a safety label.

Mandatory

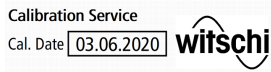


Make sure that the safety labels on the device are clearly legible and clean!

If the labels become dirty or illegible over time, so that hazards can no longer be identified or service instructions can no longer be followed, they must be replaced with new ones and affixed to the same place.

2.3.1 Labels on the device

Calibration of the WAIO



The stickers listed below are affixed to the WAIO.

The sticker on the underside of the device shows when the device was last calibrated.

Info



The reliability of the measurement results is guaranteed by regular calibration of the WAIO.

2.3.2 Labels on the power supply unit

Electrical and electronic components



The labels below are affixed to the power supply unit.

The electrical and electronic components in the device contain toxic substances. The device must therefore be disposed of in a recycling depot or by a specialised company.

CE conformity



The "CE" marking confirms that this product complies with the European requirements regarding safety, health, environmental and user protection.

2.4 Residual risks

Cracked glass

⚠ CAUTION



Risk of injury from cracked glass!

The positive pressure can penetrate into leaking watches during the test. If this is the case, the interior of the watches will be under pressure after the test. The glass in the watch can then splinter or shatter. If splinters get into the eye, this can cause injuries.

Mandatory



Observe the instructions for wearing safety goggles in this Operating instructions!

If it is necessary to wear safety glasses, make sure that other people in the room are at an appropriate distance from the device.

Moving parts

 **CAUTION**



Risk of injury from moving parts!

Moving parts inside the device can cause serious injuries including loss of limbs.

Mandatory



Return a defective device to the manufacturer immediately!

To avoid damage of any kind.

Risk of crushing

 **CAUTION**



Risk of crushing when closing the bell cover!

There is a risk of crushing between the bell cover and the housing of the device when closing the bell cover.

- Before closing the bell cover, make sure that no body parts or objects are inside the closing area.

Current

Caution - material



Material damage due to short circuit!

Damage to the insulation on the power cord or the power supply unit can result in a short circuit and damage the WAIO.

Mandatory



Follow the obligations set out below:

Work on electronic components of the WAIO must only be carried out by customer service!

Failure to do so could void the warranty.

Always disconnect the mains plug before cleaning, maintenance or repair work!

To avoid electric shock.

To disconnect the power supply unit from the power supply, only pull on the plug itself, never pull on the cable.

To avoid damage to the cable.

Observe the following recommendations to avoid short circuits:

- If the power cord or power supply unit is damaged, disconnect the mains plug and have the power supply unit repaired.
- Position the power cord so that it cannot be damaged by external influences.
- Ensure that access to the power supply is always guaranteed.
- Protect live parts from moisture.

Opening the housing

Caution - material



Material damage due to opening the housing!

When opening the housing, there is a risk that internal components of the device or the housing may be damaged.

Mandatory



The housing must be opened by a qualified person and in accordance with the instructions Opening the bell cover in an emergency [► Page 67]!

If the housing is opened by an unqualified person, this will invalidate the warranty and Witschi Electronic AG will not be liable for any accidents.

Mandatory



In the event of malfunctions or problems that cannot be solved with the help of these instructions, contact the manufacturer!

Failure to do so could void the warranty.

Test pressure

Caution - material



Material damage due to excessive test pressure!

Applying excessive test pressure can damage the watch being tested and/or the WAIO.

Mandatory



Follow the obligations set out below:

Make sure that the watch can withstand the pressure!

To avoid damaging the watch.

Only check watches for which a maximum water depth is specified, without exceeding the limit value!

Observe the following rule: 10 m depth = 1 bar test pressure.

Check watches with no special information at a maximum pressure of 2 bar!

To avoid damaging the watch.

Touchscreen

Caution - material



Material damage due to operating the touchscreen with sharp objects!

The touchscreen can be damaged if it is operated with sharp objects (for example with ballpoint pens).

- Operate the touchscreen with the stylus provided for the purpose or with your fingers.

2.5 User responsibility

The device is intended for commercial use. The user is therefore subject to the statutory obligations of occupational health and safety.

In addition to the safety instructions and warnings in these instructions, the applicable regulations regarding safety, occupational health and safety and environmental protection for the operation of the device must also be observed.

The following must be taken into account:

- The user must learn about the applicable occupational health and safety requirements and identify additional hazards as part of an assessment of the existing risks, depending on the specific working conditions at the device's site of operation. The user shall take account of this assessment to create operating instructions for the use of the device.
- Throughout the service life of the device, the user must ensure that the operating instructions which he or she has drawn up comply with current regulations and, if necessary, adapt them.
- The user must ensure that all persons who use the device have read and understood these instructions. In addition, the user must also ensure that personnel are regularly trained and informed of the hazards.
- The user must provide personnel with the required protective equipment and ensure that the required protective equipment is worn, see *Personal protective equipment* [▶ Page 14].

- The owner must ensure that the service intervals specified in the instructions are complied with.
- The owner must ensure that the service intervals for the components (especially the compressor) are complied with.

2.6 Personnel qualifications

CAUTION



Risk of injury in the event of inadequate personnel qualifications!

If unqualified personnel carry out work on the device or stay in the device's danger zone, there is a risk of injury and significant material damage.

Mandatory



Follow the obligations set out below:

All activities may only be carried out by qualified personnel!

To avoid operating errors.

The operator of the device must have the appropriate knowledge and have completed the necessary training for the correct handling of watches!

In addition, during training, the operator must be informed by the user of the tasks assigned to him or her and of possible hazards in the event of improper behaviour. The operator may only carry out tasks that go beyond the scope of use in normal operation where this is specified during training and the user has specifically entrusted the operator to do so.

Unauthorised persons must keep a safe distance from the device!

To avoid unnecessary dangers.

2.7 Personal protective equipment

Personal protective equipment is a device or equipment worn or held by a person to protect him or her from one or more risks which could threaten his or her safety or health.

Safety goggles



Safety goggles protect the eyes from flying splinters of glass.

Safety goggles must be worn for the following activities, in particular:

- When removing leaky watches upon completion of a test.

Mandatory



Observe the instructions for wearing safety goggles in this Operating instructions!

If it is necessary to wear safety glasses, make sure that other people in the room are at an appropriate distance from the device.

2.8 Spare parts

⚠ CAUTION



Risk of injury if incorrect spare parts are used!

The use of incorrect or defective spare parts can lead to hazards for personnel, material damage, malfunctions or even complete failure of the device.

- Only use original parts from Witschi Electronic AG or parts approved by Witschi Electronic AG.
- If unclear, contact customer service, see [Technical support](#) [Page 7].

Info



For a list of spare parts, see [Accessories and spare parts](#) [Page 54].

2.9 Noise emissions

The noise emissions from the WAIO are below 75 dB(A) and have been measured according to the guidelines EN ISO 3740:2001-03 and EN ISO 11200:2014-10.

3 Initial operation

3.1 Moving the device

CAUTION



Risk of injury and material damage due to improper transport!

In the event of improper transport, the device may fall or tip over. This may cause personal injury or serious damage to property.

Prohibition



Never transport the WAIO when it is connected or switched on!

Handling may be severely impaired and components of the device may be damaged.

Mandatory



Follow the obligations set out below:

Always transport the packages vertically and never throw them!

Observe the markings on the packaging!

Do not remove the WAIO from its packaging until shortly before commissioning!

The packaging protects the WAIO from external damage.

Always carry the WAIO with both hands on the sides!

This prevents the device from falling over.

Only technical personnel are authorised to install the WAIO!

The technical personnel are trained in proper installation.

3.2 Transport inspection

When accepting the device, check all components and make sure that no parts have been damaged during transport.

Additionally, check whether the device is complete.

Proceed as follows if there is visible transport-related damage:

- a) Do not accept the delivery.
- b) Make a note of the extent of the damage on the transport company's delivery note.
- c) Write a complaint.

Mandatory



Report damage or missing parts to Witschi Electronic AG immediately!

Claims for damages can only be made within the applicable claim periods.

3.3 Storage conditions

Store the device and packages under the following conditions:

- Storage temperature -20 °C to +70 °C.
- Relative humidity maximum 80%, no condensation.
- Do not store outdoors.
- Store in a dry and dust-free condition.
- Do not expose to any aggressive media.
- Protect against sunlight.
- Protect against mechanical impact.
- Do not place anything on top of the device packaging.

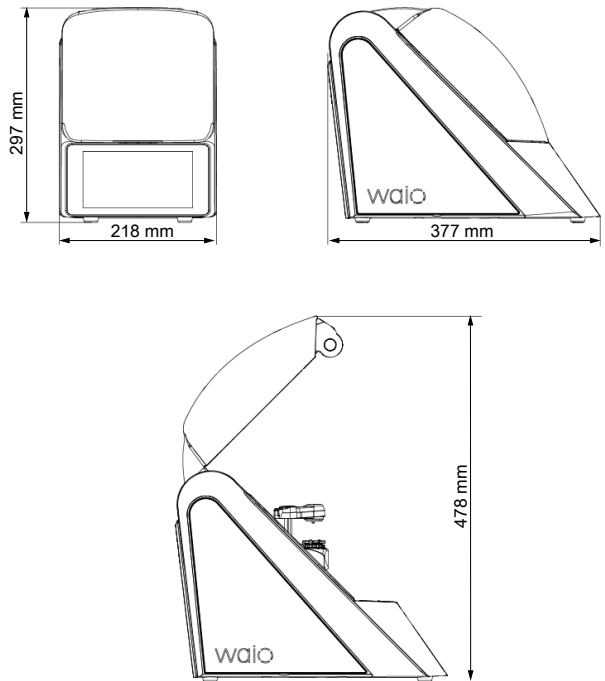
Info



Reusable packaging

Store in a dry and clean place.

3.4 Space requirement



Please take the following additional space requirements into account to ensure that the appliance functions properly:

- Lateral: Approximately 50 mm per side;
- Rear: Approximately 100 mm;
- Top with device open: Approximately 50 mm.

3.5 Installation site requirements

The WAIO is designed for use on a workbench in an environment that is as dry and dust-free as possible. The WAIO is not suitable for outdoor use.

Caution - material



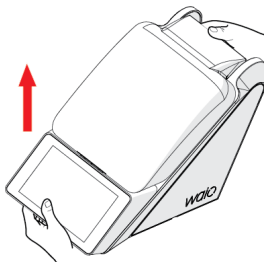
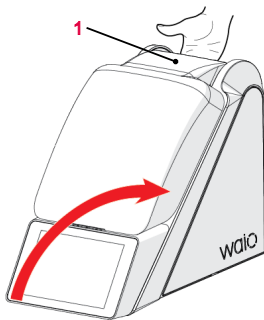
The results of the tests may be incorrect in the case of an unsuitable installation location!

To achieve precise results, the WAIO and the test object must be at room temperature.

The following instructions must be observed for reliable measurements:

- Do not position the WAIO and test object in the vicinity of radiators or open windows.
- Do not expose the WAIO or the test object to direct sunlight.
- Use the WAIO on an even and horizontal surface.
- The installation site must be vibration-free.

3.6 Transport



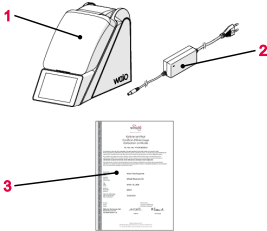
✓ Due to its weight, it is advisable to lift the WAIO with both hands using the following procedure.

- a) Hold the WAIO handle **1** with one hand.
- b) Tilt the WAIO slightly to the right.

- c) Place the second hand at the front on the underside of the WAIO.
- d) Lift the WAIO with both hands.

3.7 Equipment list

Equipment included in the scope of delivery for the WAIO



No.	Description	Function
1	WAIO	Measuring the tightness, chronometry and demagnetisation of watches.
2	Power supply unit (12 VDC, min. 80 W)	Provides power to the WAIO.
3	Calibration certificate	-

Info



Please contact the points of sale to order accessories or spare parts.

Your nearest point of sale can be found on the website www.witschi.com.

3.8 Initial operation

Commissioning of the WAIO includes connection to the power supply and all connections required for smooth operation (network, etc.).

3.8.1 Current

Caution - material



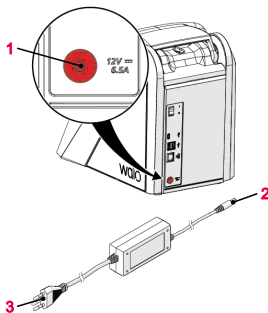
Risk of material damage if an unsuitable power supply unit is used!

Using an unsuitable or damaged power supply unit can result in a short circuit. This may damage the device.

- Only use the power supply unit supplied with the device.
- Position the power cord so that it cannot be damaged by external influences.

Required equipment

Connecting



Disconnecting

- One WAIO
 - One power supply unit
- Make sure that the voltage of the local power supply is suitable for the power supply unit.
 - ⇒ 100/240 VAC, 50/60 Hz, 1.3 A.
 - Connect the appliance connection **2** to the power connection on the WAIO **1**.
 - Connect the power supply unit connection **3** to the local power supply.
 - ⇒ The power supply is now connected.
- Switch off the WAIO.
 - Disconnect the power supply unit connection **3** from the local mains network.
 - Disconnect the device connection **2** from the power connection on the WAIO **1**.
 - ⇒ The power supply is now disconnected.

3.8.2 Connection to Wicotrace 360° via WLAN

The following requirements must be met when using the WAIO with Wicotrace 360° in a wireless network.

Required equipment

- WAIO
- Internet connection with access to Wicotrace 360°.

Connecting

- a) For configuration of the network, see the *Setting up Wicotrace 360°* [» Page 62] section.

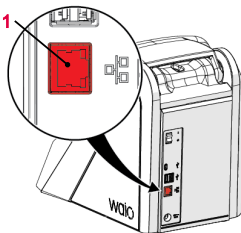
3.8.3 Connection to Wicotrace 360° via Ethernet

The following steps are necessary when using the WAIO with Wicotrace 360° via Ethernet.

Required equipment

- WAIO
- Ethernet cable (not included in the scope of delivery of the WAIO)
- Internet connection with access to Wicotrace 360°.

Connecting



- a) Ensure that the WAIO is switched off.
- b) Connect the Ethernet cable **2** to the network.
- c) Connect the Ethernet cable **2** to the network connection **1** of the WAIO and switch on the WAIO.

⇒ The WAIO is now connected to the network.

⇒ For configuration of the network, see the *Network* [» Page 62] section.

Disconnecting

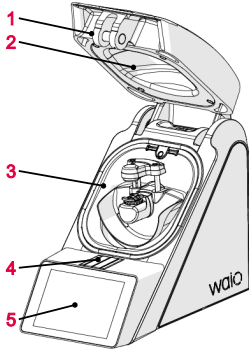
- a) Ensure that the WAIO is switched off.
- b) Disconnect the Ethernet cable **2** from the network.
- c) Disconnect the Ethernet cable **2** from the WAIO.

⇒ The WAIO is now no longer connected to the network.

4 Description

4.1 WAIO

Front view

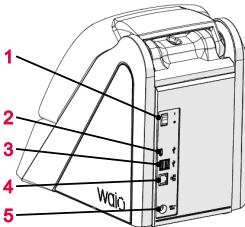


- 1 Bell cover
- 2 Demagnetising coil
- 3 Test chamber
- 4 Flap over catch
- 5 Control and display element

The bell cover covers the test chamber **3**. During testing, the bell cover **1** is closed and locked by the catch under flap **4**.

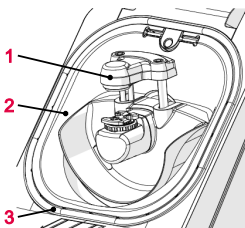
The bell cover opens and closes automatically before and after testing a watch.

Rear view



- 1 Main switch
- 2 USB connector type C
- 3 2x USB connector type A
- 4 Network connection
- 5 Electrical connection

Test chamber

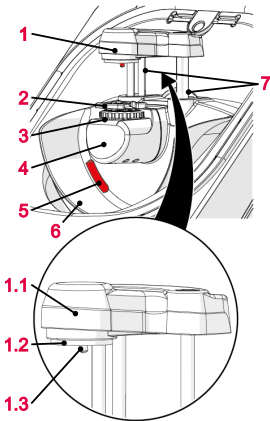


- 1 Sensor unit
- 2 Test chamber
- 3 Seal (O ring)

The measuring procedures are carried out in the test chamber **2**. It contains the sensor unit **1** with the watch support and other sensors. When a measuring procedure is started, the bell cover closes so that it rests against the seal **3**. This ensures that the test chamber is sealed. The pressure required for the leak tightness test can now be built up and maintained in the test chamber.

The pressure and vacuum are generated by the compressor built into the test chamber.

Sensor unit



- 1 Deformation sensor and mechanical signal pickup
- 1.1 Sensor head
- 1.2 Soft foam cushion (to hold the watch in place)
- 1.3 Stylus for measuring the deformation (deformation sensor) and the mechanical watch signal (mech. signal pick-up)
- 2 Soft support (Scratch Protect) with non-slip coating
- 3 3-point support (manually adjustable)
- 4 Signal pickup for analogue quartz watches
- 5 Illumination for results display (green/red)
- 6 Insert tray (to protect and restrict bracelets)
- 7 Guide and drive rods of the sensor head

This assembly is mounted on a rotating device, which allows the test positions to be approached. The presence of a mechanical watch or an analogue quartz watch can be determined using the measuring sensors, thus enabling fully automatic measurement.

The manually adjustable 3-point support **3** is used to measure housings with a diameter of **11 mm to 60 mm**.

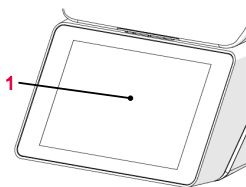
The drive rods **7** automatically raise or lower the sensor head **1.1** onto the watch when the bell cover opens or closes.

During the leak tightness test, the deformation sensor **1** measures the deformation of the watch case. The watch is placed fully automatically from the soft support **2** onto the 3-point support **3** to enable deformation measurement. The sensor head **1.1** moves the stylus **1.3** onto the watch crystal to perform the measurement.

For demagnetisation processes and chronometry measurements, the soft support **2** is raised again fully automatically and the sensor head **1.1** moves further down until the watch is securely clamped between the soft foam cushion **1.2** and the soft support **2**.

This means that the watch is held securely while changing the test position. The insert tray **6** provides sufficient protection against scratches for all types of bracelets.

Control and display element

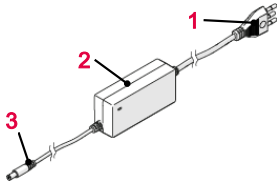


- 1 Touchscreen

Using the touchscreen, it is possible to navigate through the menus and edit the test settings. It also shows the progress and results of the test.

4.2 Included accessories

Power supply unit



- 1 Power cable (country-specific)
- 2 Transformer
- 3 Power connection (on device)

Item no.: JA01-GST90A12-GP1M

The WAIO is connected to the power supply using the power supply unit with the following key figures:

Description	Unit	Value
Input voltage	VAC	100 to 240
Input current	A	1.3
Input frequency	Hz	50 to 60
Output voltage	VDC	12
Power	W	min. 80

4.3 Procedure of a tightness test

A test may consist of several tests

If a test is performed with multiple tests, the following procedure is repeated.

Determining the initial value

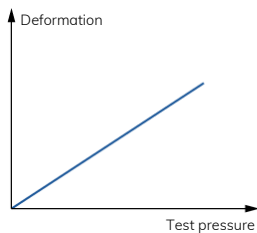
After starting the test, the sensor head is moved into position and the starting value of the deformation is set to zero.

Build up pressure, recording the deformation behaviour of the watch case

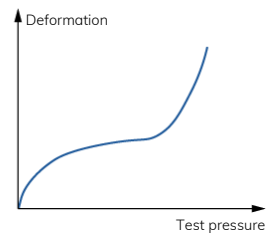
The test pressure is built up in the test chamber. In order to compensate for pressure losses caused by the heating of the air, the test pressure is continuously regulated during the measurement.

The deformation behaviour of the watch is continuously recorded during pressure build-up and automatically included in the evaluation algorithm.

Linear deformation behaviour



Non-linear deformation behaviour



Duration of an automatic measurement

The WAIO has a new evaluation algorithm which detects elastic deformation in watches and automatically compensates it.

In the standard setting, the WAIO automatically determines the required measuring time for each measurement. The software continues the measurement until a meaningful result is obtained.

The measuring time for a simple OK/not OK statement is shorter than the output of a precise leak rate. It should also be noted that narrower limit values lead to longer measuring times. The maximum time per test pressure is limited to 300 seconds with automatic measuring time.

For optimum results in terms of precision and test duration, we recommend using the automatic measuring time.

4.4 Definitions

Deformation measurement

The measuring method of the WAIO is based on the principle of deformation. The watch is subjected to positive pressure to compress the watch housing, or a vacuum to expand it. The faster the deformation is compensated, the larger the leak in the watch case. The deformation of the case within a certain time serves as the basis for the measurement to determine whether the watch is leakproof or not.

Leak-tight watch

Under constant pressure, the deformation of the watch housing remains constant.

Leaky watch

Under constant pressure, the deformation of the watch housing is reduced.

The difference between the pressure in the test chamber and the pressure in the watch housing is being compensated at a rate which is above the limits of the leak rate.

Limit

The limit represents the maximum permissible leak rate. If the leak rate exceeds the predefined limit, the watch being tested is classified as non-leak-tight.

Relative to the diameter of the watch housing, the following standard values apply:

Diameter of the watch glass	Volume	Limit
$\varnothing_{\text{Glass}} < 20 \text{ mm}$	1000 mm ³	50 µg/min
$20 \text{ mm} < \varnothing_{\text{Glass}} < 40 \text{ mm}$	2100 mm ³	
$40 \text{ mm} < \varnothing_{\text{Glass}}$	4000 mm ³	

Info



The lower the leak tightness limit, the longer the measurement takes.

This must be taken into account during configuration.

Leak rate

The ISO 22810 standard specifies the leak rate in µg/min and defines 50 µg/min as the limit value for leak tightness at a test pressure of 2 bar. The WAIO is configured by default according to these standard specifications.

To calculate the leak rate, the measuring algorithm needs the exact air volume in the watch case. The watch sizes suggested in the measuring program are suitable for a qualitative consideration – we recommend determining the inner volume of the watch beforehand. The inner volume can be determined from the watch's design data.

Info



Negative leak rate

A negative leak rate may be displayed at the start of the measurement.

A negative leak rate can be caused by a number of factors, e.g.:

- Elastic deformation of the test specimen;
- Thermal influences.

As the measuring time progresses, the measuring algorithm of the WAIO compensates for these influences and displays a more accurate result. This makes it more reliable and faster than an algorithm used for conventional deformation measurement.

However, the end result may also display a negative leak rate. This usually occurs with leak-tight test specimens, in which case compensation cannot be fully performed. However, the reliability of the measurement is still guaranteed.

Significant negative leak rates indicate that the automatic compensation was insufficient for the test specimen. Manually setting a longer measurement time may remedy this.

If you have any questions, please contact customer service, see *Technical assistance* [[Page 7](#)].

4.5 Reference to standard ISO 22810

Leak-tight watch in accordance with standard ISO 22810

Standard ISO 22810 defines that a watch shall be classified as leak-tight if less than 50 µg of air penetrates the watch per minute at a test pressure of 2 bar.

Relationship between volume and deformation

The ISO 22810 standard does not take into account the volume of the watch. This means that the leak rate of 50 µg per minute applies to all watches, regardless of their size.

When testing according to the principle of deformation, the reversion depends on the free volume in the watch. In a watch with a small volume, the reduction in deformation is more pronounced with the same amount of penetrating air. The free volume must be programmed in the watch for a standard-compliant test.

Interpretation of ISO 22810

The standard is based on a pressure of 2 bar or 0.5 bar. No limit value is specified for other pressures. **It is therefore assumed that the limit of 50 µg per minute applies for all test pressures.**

5 Use

5.1 Safety during use

Cracked glass

CAUTION



Risk of injury from cracked glass!

The positive pressure can penetrate into leaking watches during the test. If this is the case, the interior of the watches will be under pressure after the test. The glass in the watch can then splinter or shatter. If splinters get into the eye, this can cause injuries.

Mandatory



Observe the instructions for wearing safety goggles in this Operating instructions!

If it is necessary to wear safety glasses, make sure that other people in the room are at an appropriate distance from the device.

Risk of crushing

CAUTION



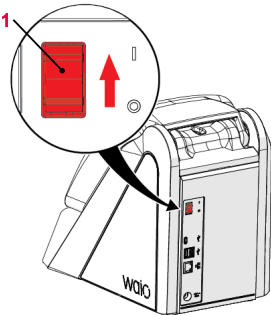
Risk of crushing when closing the bell cover!

There is a risk of crushing between the bell cover and the housing of the device when closing the bell cover.

- Before closing the bell cover, make sure that no body parts or objects are inside the closing area.

5.2 Basic operation

5.2.1 Switch on the WAIO



- ✓ The WAIO has been commissioned correctly, see Initial operation.

- Switch on the WAIO by pressing the switch **1** in the direction of the arrow.
 - ⇒ The home screen appears.
 - ⇒ The bell cover opens.

Info



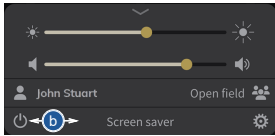
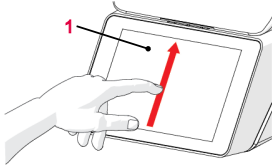
When the WAIO is switched on for the first time, the display language can be selected on the displayed screen.

The display language can be changed at any time, see Language selection.

- ⇒ The "Programs" screen appears.
- ⇒ The WAIO is ready for operation.


5.2.2 Enabling screen saver or standby

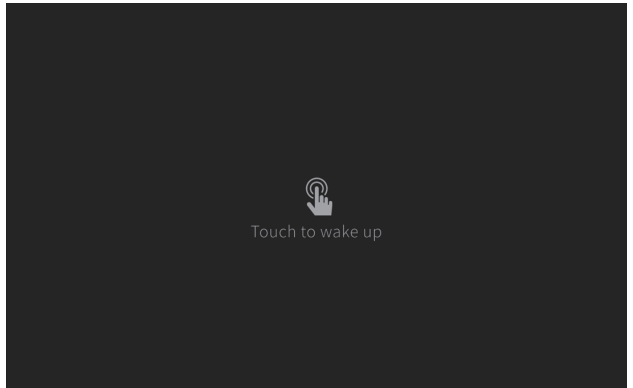
Switching to the screen saver or standby



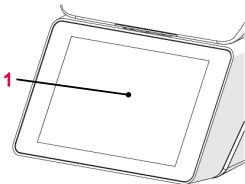
✓ The WAIO is switched on, see [Switch on the WAIO](#) [Page 28].

- a) Swipe the touch screen **1** with your finger in the direction of the arrow.
 - ⇒ The Quick settings menu appears.

- b) Press "Screen saver" or tap  to switch the WAIO to standby.
 - ⇒ The bell cover closes and is locked.
 - ⇒ The WAIO is in standby or screen saver mode (standby screen is always black).
 - ⇒ The screen saver is displayed.



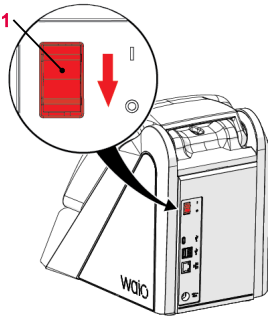
Exiting the screen saver/standby



✓ The WAIO is in standby.

- a) Touch the touch screen **1** to exit "Standby" or "Screen saver" mode.
 - ⇒ The bell cover opens.
 - ⇒ The screen returns to the display that was active before switching to standby.

5.2.3 Switching off the device




Tip



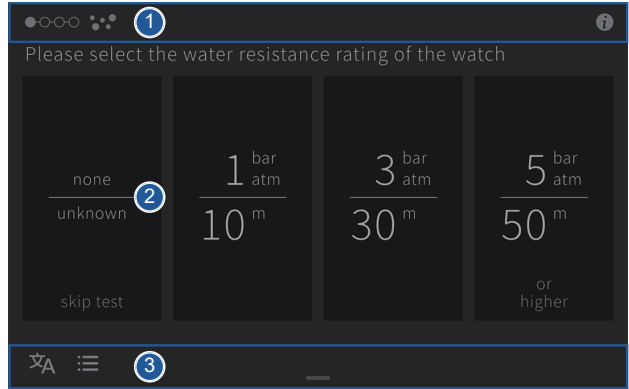
If the device is not going to be used for a short period of time, enable standby mode.

See *Enabling screen saver or standby* [▶ Page 29].

- If necessary, remove the watch from the test chamber.
- To activate  mode, see *Enabling screen saver or standby* [▶ Page 29].
⇒ The bell cover closes and is locked.
- Switch off the WAIIO by pressing the switch **1** in the direction of the arrow.
- Cover the WAIIO with the corresponding dust cover.

5.3 Main screen

The high-resolution 7-inch screen (1280 x 800 px) with touch function displays three different areas.



No.	Description
1	Screen header, see Header [Page 31].
2	Display area of the current page. See Performing measurements [Page 33].
3	Screen footer, see Footer [Page 32].

5.3.1 Header

On each screen, the header is displayed at the top with the following information:











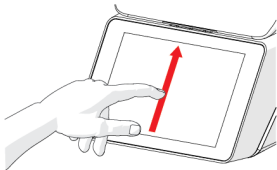
No.	Description
1	Display of the steps to perform a measurement: Empty: Next step; Grey: Current step.
2	The Wicotrace 360° connection is active.
3	Call up context-sensitive help.

5.3.2 Footer

The lower bar is always displayed with the following information:



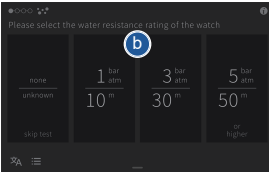
No.	Description
1	Interactive area with various buttons: <ul style="list-style-type: none">  Return to the measuring steps;  Back to the main menu;  Selection of the display language;  Lower the soft support;  Lift the soft support;  Open the bell cover;  View test results online.
2	Information on the current measurement step.
3	Interactive area with information: <ul style="list-style-type: none"> Time of the current measurement;  Go to the next measuring step.



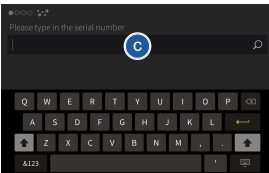
- a) Swipe your finger from bottom to top across the entire touch screen to access the Quick settings menu; see *Quick settings menu* [▶ Page 55].

5.4 Performing measurements

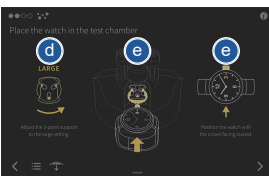
5.4.1 Entire process



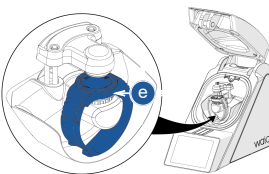
- a) Log in the user. See [User login](#) [▶ Page 34]
 - ⇒ This step is only necessary if the connection to the Wicotrace 360° needs to be established.
- b) Select the pressure displayed on the watch (1, 3 or 5 bar) or select (none/no unknown) if there is no specification on the watch.



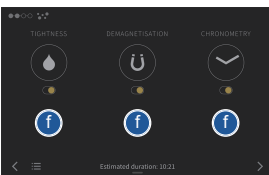
- c) Enter the serial number of the watch to be tested. The serial number is engraved on the underside of the case.



- d) Manually adjust the 3-point support to the size of the case.
- e) Centre the watch on the soft support with the crown facing the inside of the WAIO. Make sure that the bracelet is in the protective cage but not touching it and then proceed to the next step with



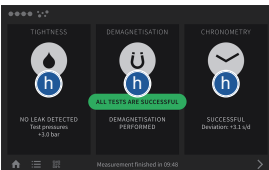
- ⇒ The device checks whether the watch is present. See [Positioning the watch](#) [▶ Page 35].
- ⇒ The device automatically checks whether an analogue quartz watch or mechanical watch has been inserted. See [Detecting the signal](#) [▶ Page 37].



- f) After the watch has been successfully detected, the test steps to be carried out are displayed. You have the option here to deactivate test steps if they are not to be carried out. Then

proceed to the next step with

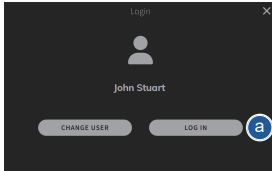
- ⇒ The device performs the specified test steps. See [Test step](#) [▶ Page 38].



- g) Wait until the entire measurement is completed.
 - ⇒ The general status of each test step is shown.
- h) In the results overview, you can click on the respective test step to access the tables with the values and measurement tolerances.
 - ⇒ The measurement results are saved both on the device and on the Wicotrace 360°. See [Measured results](#) [▶ Page 47].

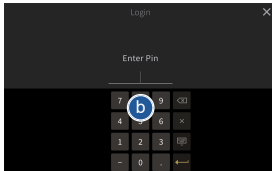
5.4.1.1 User login

Same user

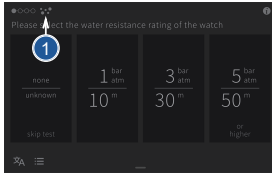


- ✓ The device must be connected to Wicotrace 360°. See [Setting up Wicotrace 360° \[Page 62\]](#)

a) Log in the user.

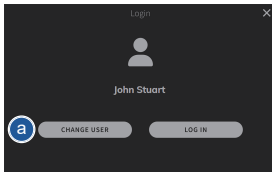


b) Enter your personal PIN and confirm.



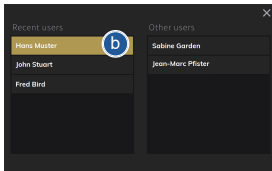
⇒ The user is logged in and the symbol 1 is displayed.

Changing the user

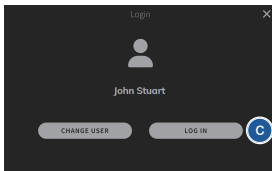


- ✓ The device must be connected to Wicotrace 360°. See [Setting up Wicotrace 360° \[Page 62\]](#)

a) Change the user by pressing the (CHANGE USER) button.

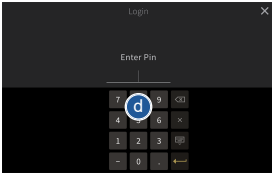


b) Select the user name.

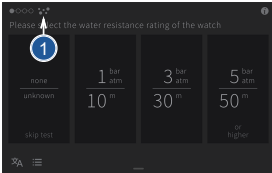


c) Log in the user.

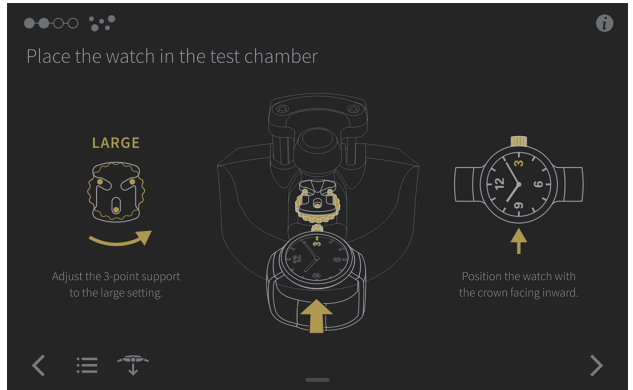
d) Enter your personal PIN and confirm.



⇒ The user is logged in and the symbol 1 is displayed.



5.4.2 Positioning the watch



Temperature

Mandatory



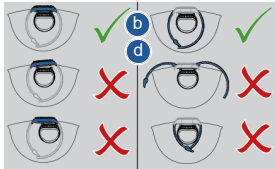
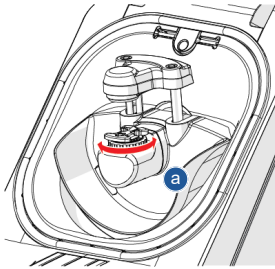
The watch must be exposed to the same ambient temperature as the WAIO during the test




Temperature fluctuations in the case during testing may affect the test result.

- Keep the watch next to the WAIO before testing.
- If the watch has come directly from the user's wrist, wait until the watch has reached the ambient temperature.

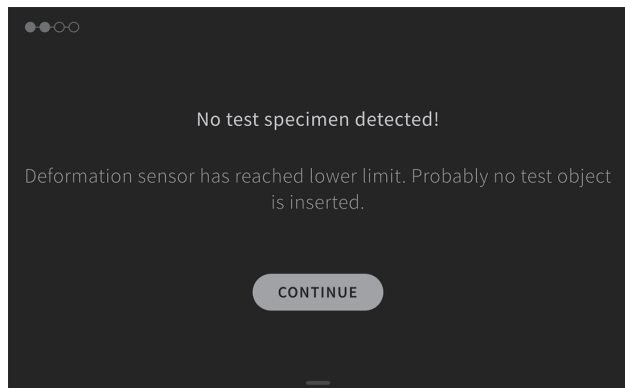
Positioning the watch

It is important to position the watch correctly in the WAIO.



- a) Manually adjust the 3-point support in the test chamber to the diameter of the watch case.
 - b) Position the watch with the crown facing the inside of the WAIO so that the stylus of the sensor head is centred on the watch when it is lowered.
- c) Carefully place the bracelet in the protective cage.
 - ⇒ The watch must be stable on the soft support.
 - ⇒ The bracelet must be positioned between the soft support and the protective cage without touching them.
 - ⇒ For watches that are either small or have a special shape, it is recommended to check the stability between the watch and the 3-point support: Carry out steps d) and e).
 - d) Use  to lower the soft support.
 - ⇒ The watch must remain in the horizontal position and must not move sideways.
 - ⇒ If the watch moves, repeat steps b) and c).
 - e) Use  to lower the soft support.
 - f) Then proceed to the next step with .
 - ⇒ The device checks whether the watch is present.
 - ⇒ The device automatically checks whether an analogue quartz watch or mechanical watch has been inserted. See *Detecting the signal* [▶ Page 37].

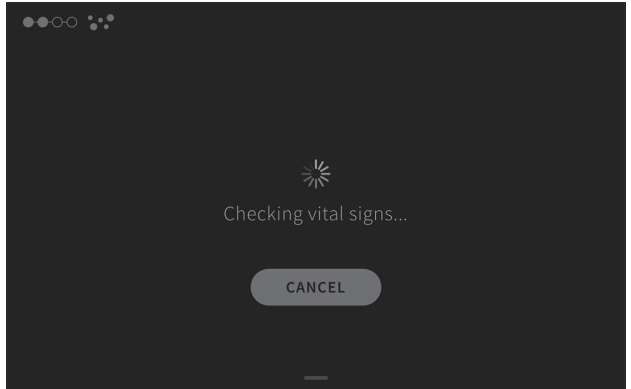
Incorrect positioning



The screen shown above is displayed if the user has not inserted the watch or if the watch is not positioned correctly on the soft support.

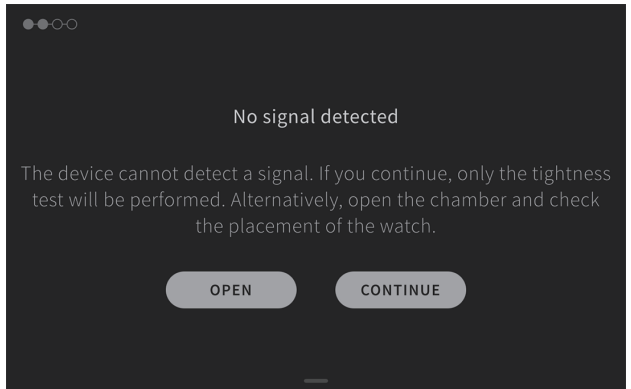
5.4.3 Detecting the signal

Searching by watch type



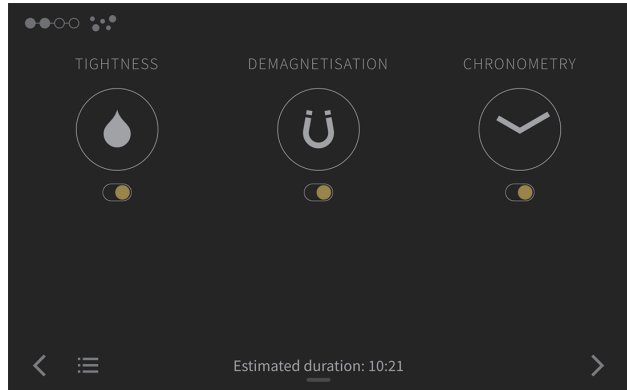
After confirming that the watch has been inserted correctly, the WAIO uses the measuring sensors to check whether the watch is a mechanical watch or an analogue quartz watch when the bell cover is closed. According to its analysis, the WAIO automatically displays the selection of suitable measurement types.

No signal from the watch





If the watch was manually placed incorrectly in the test chamber or the rate of the watch was not measured by the WAIO, the screen shown above will be displayed. It is possible to open the bell cover to reposition the watch or proceed to perform a leak tightness test only.

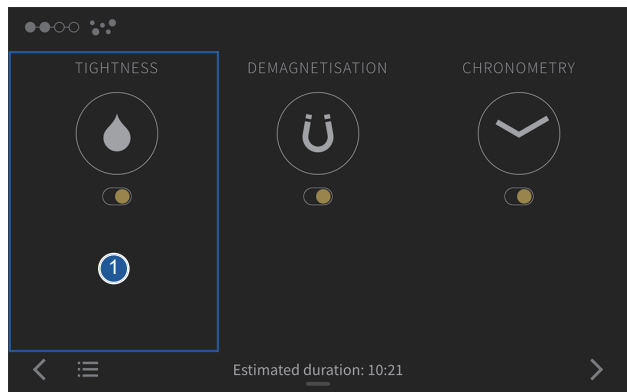
5.4.4 Test step



For mechanical watches, all three test steps are activated by default. For analogue quartz watches, however, only two test steps (tightness and chronometry) are activated.

-  The test step is activated;
-  The test step is deactivated.

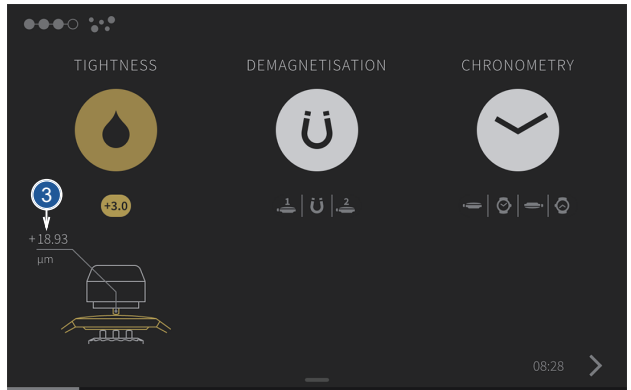
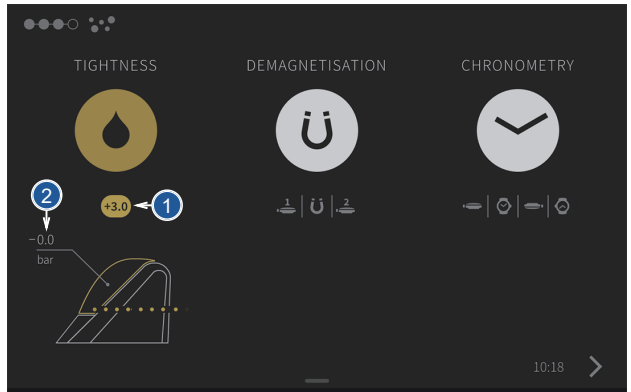
5.4.4.1 Leak tightness



The leak test **1** is carried out with the previously selected test pressure. See Entire process [[Page 33](#)]

The leak tightness test takes place in a single test position.

Internal leak test procedure



No.	Description
1	Leak test and display of the selected pressure
2	Display of the pressure measurement
3	Display of the deformation measurement

Measurement criteria

Deformation

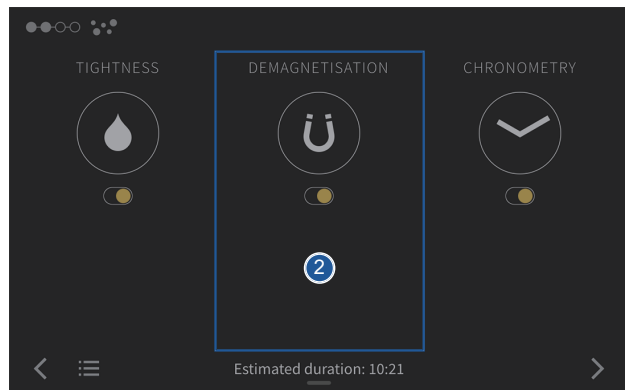
The deformation measurement detects the deformation of the watch case under pressure. The deformation sensor works very accurately and detects even the smallest changes.

Leak rate

The deformation measurement can be used to determine the leak rate.

Standard program	
Test positions	CH
Pressure	1.0–3.0 or 5.0 bar can be selected
Measuring time	AUTO (20 s to 300 s, depending on the type of watch)
Tolerances	Deformation: 0 µm and 1200 µm; Comment: Complete range; Leak rate: Overpressure (Std, +1, +3 or +5 bar can be selected): 50 µg/min; Comment: The limit value for the leakage rate is ±50 µg/min in accordance with ISO 22810:2010

5.4.4.2 Demagnetisation



Test step **2** only applies to mechanical watches. This test step is not activated for an analogue quartz watch.

The WAIO measures the rate deviation of the movement before and after demagnetisation of the watch. The difference between these values can be used to determine whether a relevant magnetisation was present in the watch.

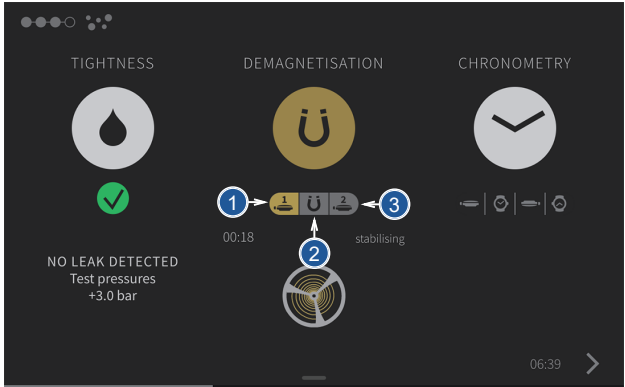
Demagnetisation

The WAIO demagnetises the watch in three test positions. The watch is demagnetised in all three test positions by means of a decaying oscillating magnetic field.

Functional criteria

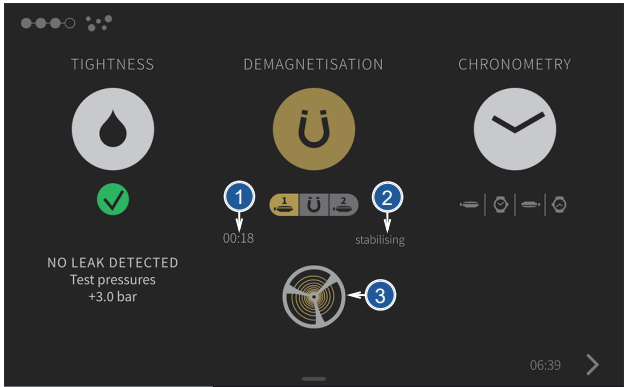
Standard program	
Test positions	CH; CH+45; CH-45
Test step	AUTO

Internal demagnetisation process



No.	Description
1	Rate measurement before demagnetisation in the CH test position
2	Demagnetisation in the CH, CH+45 and CH-45 test positions
3	Rate measurement after demagnetisation in the CH test position

Description of current test step



No.	Test step description
1	Remaining time
2	Test step designation
3	Symbol

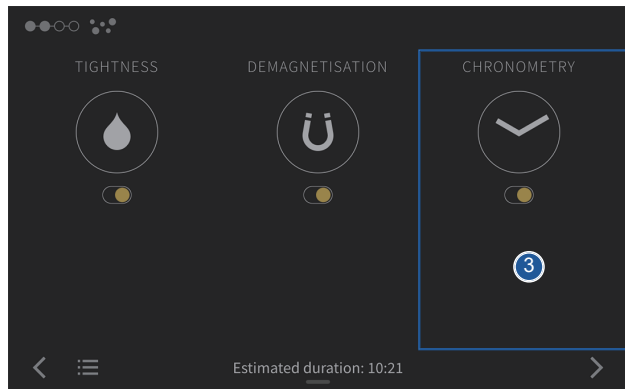
Measurement criteria

Measuring magnetisation

After a stabilisation time, the WAIO measures the rate of the movement before demagnetisation in the CH test position. Then the watch is demagnetised in the three test positions. Finally, the WAIO measures the rate a second time after demagnetisation. The result of the measurement is thus the difference in rate before and after the demagnetisation cycle.

Standard program	
Test positions	CH
Stabilisation time	20 s
Measuring time	40 s
Tolerance	-
Test step	AUTO

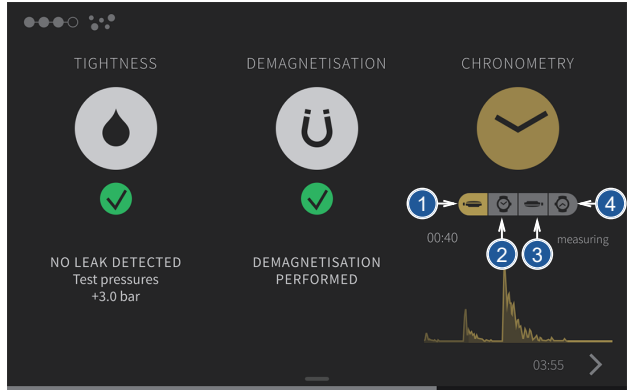
5.4.4.3 Chronometry for a mechanical watch



The WAIO uses an acoustic sensor to measure the striking noise of the movement. The rate measurement **3** of the watch is carried out in four test positions.

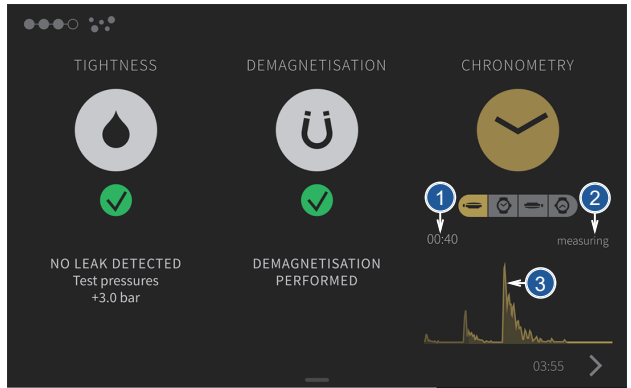
A stabilisation time is required for each test position before the device measures the movement. After the measurement, the sensor unit rotates to the next test position and the measurement is repeated until the last test position is reached.

Internal chronometry process



No.	Description
1	Measurement in the CH test position
2	Measurement in the 12H test position
3	Measurement in the CB test position
4	Measurement in the 6H test position

Description of current process step



No.	Test step description
1	Remaining time
2	Test step designation
3	Symbol

Measurement criteria

Rate deviation

The rate deviation of a watch, measured in seconds per day, corresponds to its frequency deviation. It indicates how much the oscillation frequency of the oscillator (balance wheel) deviates from the ideal frequency. A low absolute value of this deviation indicates an accurate watch.

Beat error

The beat error is the position-dependent asymmetry of the balance oscillation in mechanical watches. It is evident in the fact that the balance does not oscillate the same distance in both directions, and is measured in milliseconds.

Amplitude

To assess the amplitude of the watch, the amplitude must be measured. The amplitude corresponds to the angle between the equilibrium position (rest position of the balance) and the maximum rotation (turning point). The lift angle parameter is required for this measurement.

Standard program	
Test positions	CH; CB; 6H; 12H
Lift angle	50°
Beat rate	AUTO, from 3600 to 72,000 Vib/h
Stabilisation time	20 s per test position
Measuring time	40 s per test position
Integration time	2 s
Test mode	Standard
Increase	AUTO
Tolerances	Rate: -10 s/d to +15 s/d; Beat error: 0.8 ms; Amplitude: 200° to 330°

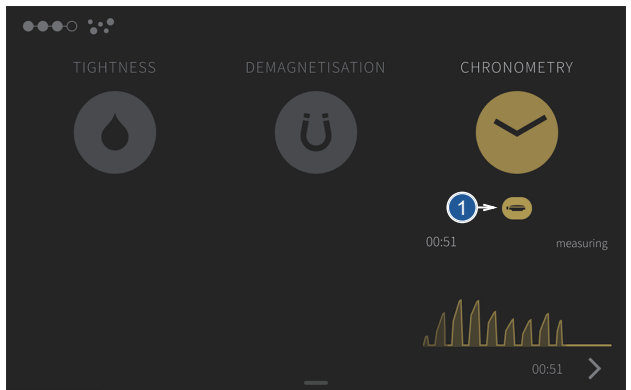
5.4.4.4 Chronometry on an analogue quartz watch



The WAIO measures the pulses of the motor coil with an inductive sensor.

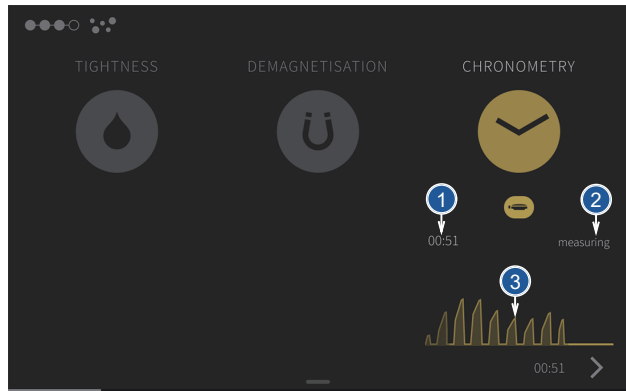
The measurement **3** of the watch is carried out in a single test position. The test time is slightly longer for analogue quartz watches with inhibition. In this one test position, a stabilisation time is also required before the device measures the movement.

Internal chronometry process



No.	Description
1	Measurement in the CH test position

Description of current test step



No.	Description of process step
1	Remaining time
2	Test step designation
3	Symbol

Measurement criteria

Rate deviation

The rate deviation of a watch, measured in seconds per day, corresponds to its frequency deviation. It indicates how much the oscillation frequency of the oscillator (quartz) deviates from the ideal frequency. A low absolute value of this deviation indicates an accurate watch.

Duration of the motor pulse

This is the duration of the motor coil pulse that is measured and recorded by the WAIO.

Motor power level

The power level of the motor indicates the duration of the pulse in percent during one pulse period. This means that if the coil of a motor is switched on for half the time and switched off for the other half, the power level of the motor is 50%.

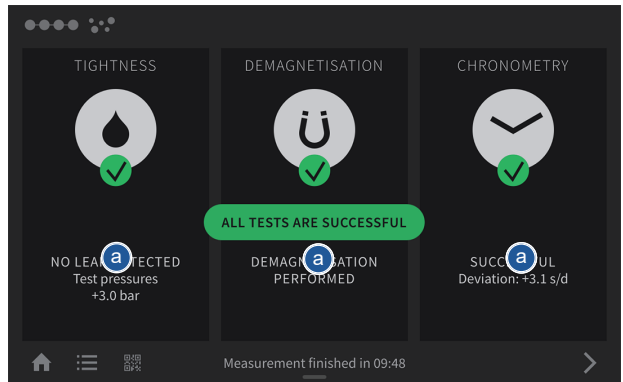
Standard program	
Test position	CH
Measuring time	AUTO (60 to 120 s)
Pulse period of the motor	AUTO
Inhibition time	Inactive
Temperature compensation time	Inactive
Tolerances	Rate: -1 s/d to +1 s/d

5.5 Measured results

The WAIO sends the measurement results to the Wicotrace 360° database, provided communication has been established.

Display

The results are first displayed in short form. The results can also be displayed in detail in numeric form.



a) Tap a test step to switch to the numerical display with measured values.

Analysing the measured values

Colour	Description
White	Measured value without applying a tolerance
Green	Measured value within the applied tolerances
Red	Measured value outside the applied tolerances

5.5.1 Leak tightness

Numerical display



The numerical display provides the following information:

- 1 Test step
- 2 Result of the test
- 3 Test pressure
- 4 Test measuring time
- 5 Measured deformations for the test
- 6 End result of the test

5.5.2 Magnetisation

Numerical display



The numerical display provides the following information:

- 1 Test step
- 2 Rate measurement before demagnetisation
- 3 Rate measurement after demagnetisation
- 4 Difference between the two measurements (2 and 3)
- 5 End result of the test

5.5.3 Chronometry

Numerical display

POSITION	RATE	s/d	BEAT ERROR ms	AMPLITUDE
CH	+0.0		0.1	263.4
CB	+3.4		0.1	265.0
6H	-1.4		0.0	242.3
12H	+10.6		0.1	241.4
X	+3.1		0.1	253.0
D	-12.0		0.1	23.6

TEST PASSED

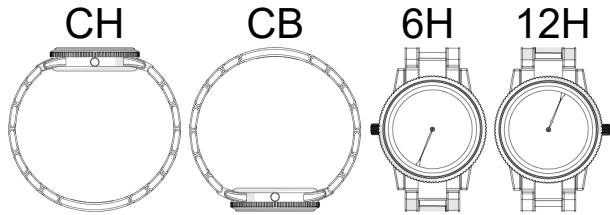
The numerical display provides the following information:

- 1 Test step
- 2 Measured values in the CH position
- 3 Measured values in the CB position
- 4 Measured values in the 6H position
- 5 Measured values in the 12H position
- 6 Average values
(X = average value of all test positions)
- 7 Delta between the measured values
(D = maximum difference between the various test positions)
- 8 End result of the test

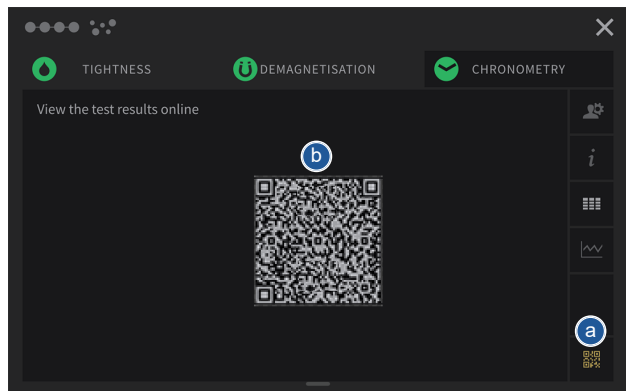
Analysing the measured values

- ✓ If the measured amplitude value is very low:
 - a) Make sure that the watch is sufficiently wound.
 - b) Repeat the measurement.


Description of the test positions



5.5.4 View measurement results online



The measurement results can be viewed online using a smartphone.

- ✓ **The device must be connected to Wicotracer 360°.** See [Network](#) [Page 62]
- a) Show QR code 
 - ⇒ The QR code is displayed.
- b) Scan the QR code with your smartphone.
 - ⇒ The smartphone is connected via the Internet and the measurement results can be viewed online.

6 Maintenance

6.1 Safety during maintenance

Improper maintenance

Prohibition



Never force the device cover to open when the device is under pressure!

Otherwise parts could be ejected.

Short circuit

Caution - material



Danger of material damage due to short circuit!

Damage to the insulation on the power cord or the power supply unit can result in a short circuit and damage the WAIO.

Mandatory



Follow the obligations set out below:

Work on electronic components of the WAIO must only be carried out by the customer service of Witschi Electronic AG!

Failure to comply with this requirement will void the warranty.

Position the power cord so that it cannot be damaged by external influences.

This avoids the risk of damaging the power cord or power supply unit. If any of the components are damaged, disconnect the mains plug and have the power supply unit repaired.

Always disconnect the mains plug before cleaning, maintenance or repair work!

Ensure that access to the power supply is always guaranteed.

To disconnect the power supply unit from the power supply, only pull on the plug itself, never pull on the cable.

Protect live parts from moisture!

Moisture can cause a short circuit.

6.2 Maintenance schedule

Caution - material



Risk of damage to the WAIO due to insufficient maintenance!

If the WAIO is not maintained, proper operation of the device cannot be guaranteed.

- Make sure to comply with the maintenance cycles specified in the following maintenance plan.

⇒ Non-compliance will void the warranty.

Info



The following maintenance plan is intended for the operator of the WAIO.

Maintenance of the WAIO does not require a specialist technician.

Interval	Maintenance task	Personnel
Daily	Clean the seal with a dry microfibre cloth. See <i>Cleaning the seal</i> [▶ Page 53]. Make sure that the bell cover is closed at the end of the day. See <i>Switching off the device</i> [▶ Page 30].	Operator
Annually (recommended)	Have the WAIO recalibrated. To do so, contact the point of sale. See <i>Technical support</i> [▶ Page 7]. The sensor unit can be sent in individually. See <i>Replacing the sensor unit</i> [▶ Page 53].	Customer service
After 50,000 tests or every 8 years, at the latest	An inspection must be carried out on the WAIO. The message "Inspection required. Call Witschi service" appears when starting the WAIO. To do so, contact the point of sale. See <i>Technical support</i> [▶ Page 7]. Comment The compressor is designed for 50,000 cycles at 3 bar. (In the case of constant use with measurements at 5 bar, the service life is halved). The number of tests since initial commissioning can be found in the menu Settings > Info > Operating information .	Customer service

All other maintenance and repair work must be carried out by Witschi Electronic AG. To do so, contact the point of sale. See *Technical support* [▶ Page 7].

Caution - material

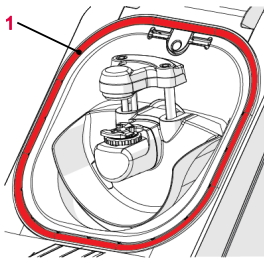


Respect the environment!

For any shipment by the user, the following conditions must be observed:

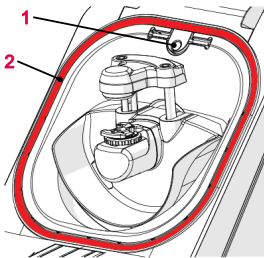
- Main device: Send in original Witschi Electronic AG reusable packaging.
- Sensor unit: Send in appropriate individual packaging.

6.3 Cleaning the seal (O ring)



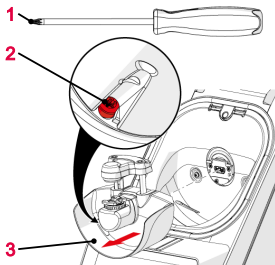
- ✓ The WAIO is switched off and the bell cover is open.
- a) Clean the seal **1** with a microfibre cloth.

6.4 Replacing the seal (O ring)



- ✓ The WAIO is switched off and the bell cover is open.
- a) Lift the seal **2** with the push button **1** and remove by hand.
- b) Remove dust particles and other deposits from the seal groove **2**.
- c) Insert a new seal **2**.

6.5 Replacing the sensor unit



- ✓ The WAIO is switched off and the bell cover is open.
- a) Unscrew the screw **2** using a Torx screwdriver T10 **1**.
- b) Remove the sensor unit **3**.
- c) Attach the new sensor unit **3**.
- d) Tighten the screw **2**.

6.6 Accessories and spare parts

Ordering spare parts

To order accessories or spare parts, please contact technical customer service; see the *Technical support* [▶ Page 7] section.

Your nearest point of sale can be found on our website www.witschi.com.

Accessories

Accessories	Item no.
Reference leaks	42.40.xxx
Individual side panel right/left	On request

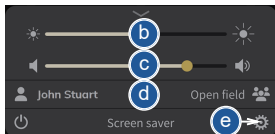
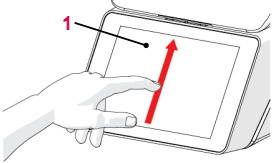
Spare parts

Accessories	Item no.
Power supply unit 100–240 VAC/12 VDC/36 W	JA01-GST90A12-GP1M
Seal (O-ring) of the bell cover	NA04-OR138x05
Protective cover	31.24.04.30

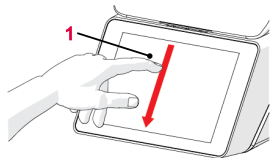
7 Settings

7.1 Quick settings menu

Opening the quick settings



Closing the quick settings



✓ The WAIO is switched on, see [Switch on the WAIO](#) [Page 28].


a) Swipe the touch screen **1** with your finger in the direction of the arrow.

⇒ The quick settings appear.

b) Move the slider left to decrease the brightness and right to increase the brightness.

c) Move the slider left to decrease the volume and right to increase the volume.

d) Press the user name to log in another user.


e) Press  to open the Settings menu.

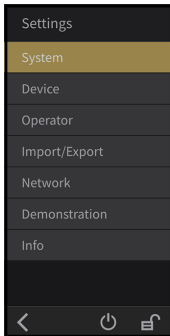
a) Swipe the touch screen **1** with your finger in the direction of the arrow.

⇒ The settings window is closed.

7.2 Settings

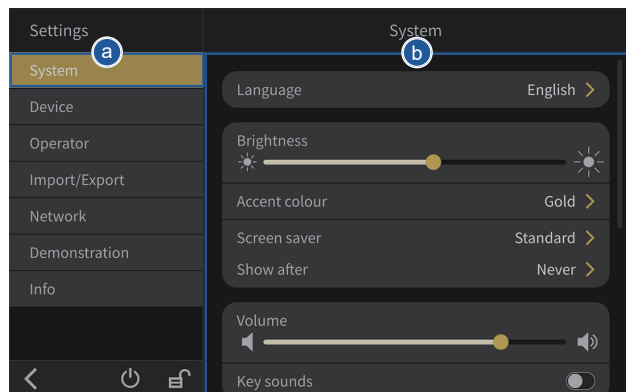
The settings of the WAIO can be changed in the settings. Proceed as follows to access the settings:

- a) Swipe your finger from bottom to top across the entire touch screen; see Quick settings menu [▶ Page 55].
- b) Press  to access the settings.
⇒ The Settings menu is displayed.



7.3 System

On the **System** screen, the display language, brightness, volume, etc. can be changed.



- a) Select **System** from the list.
⇒ **System** is highlighted in an accent colour and the right-hand window shows the system options.
- b) Select the desired option in the window.
⇒ Use the scroll bar on the right side of the window to display further non-visible options.

7.3.1 Automatic software update

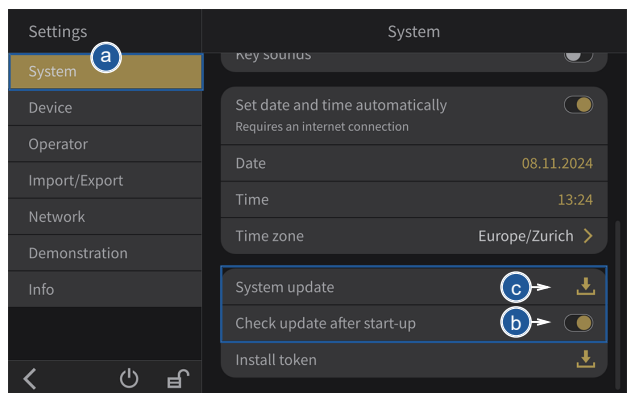
It is possible to configure an automatic update of the software. The WAIO must have an Internet connection in order to be able to communicate with the Witschi Electronic AG update server.

Info



Information on how to download the updates can be found on our website at www.witschi.com.

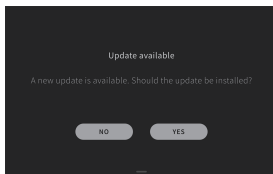
If you register your WAIO on our website, we will notify you personally about important updates.



- ✓ **Connect the WAIO to a network that has Internet access using an Ethernet cable or WLAN.**
- a) Select **System** from the list.
 - ⇒ **System** is highlighted in an accent colour and the right-hand window shows the system options.
- b) The user can configure the system so that it checks whether there is an update available when it is switched on.
 - ⇒ The button is highlighted with an accent colour when the function is activated and grey when it is not activated.
- c) Or press to look for an update.

After start-up or a search

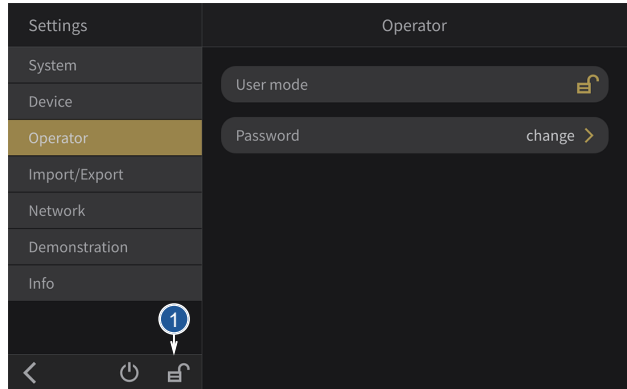
When the update is accepted, the device will automatically install the new software. The WAIO must not be switched off during the update.




7.4 User management

7.4.1 Administrator and user modes


The device has two modes, administrator mode and user mode.



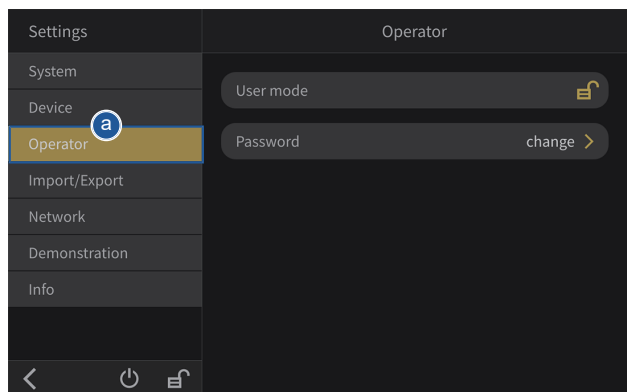
Administrator mode

Administrator mode enables access to all device settings, and the symbol  (1) is displayed on the screen.

User mode

User mode deactivates or removes the following functions/settings, and the symbol  (1) is displayed on the screen.

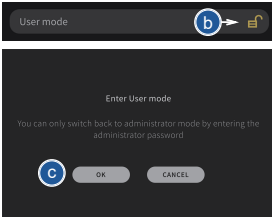
7.4.2 Activating user mode



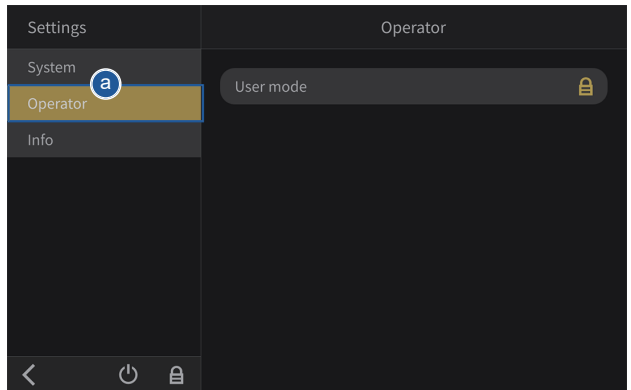
a) Select **Operator** from the list.

⇒ **Operator** is highlighted in an accent colour and the right-hand window displays the user options.

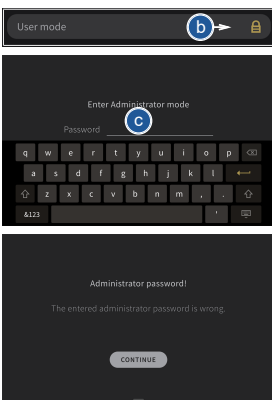
- b) Activate user mode by pressing
- c) Press **OK** to confirm.



7.4.3 Activating administrator mode

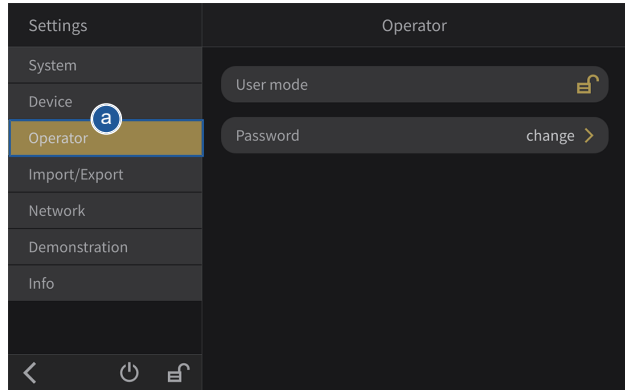


- a) Select **Operator** from the list.
 - ⇒ **Operator** is highlighted in an accent colour and the right-hand window displays the user options.
- b) Activate administrator mode by pressing
- c) Enter the password.
 - ⇒ The default password is **witschi**.
- d) Press **OK** to confirm.



⇒ In the event of an error, an information window appears.

7.4.4 Changing the password



a) Select **Operator** from the list.

⇒ **Operator** is highlighted in an accent colour and the right-hand window displays the user options.

b) Open the window for changing the password by pressing **Change**.

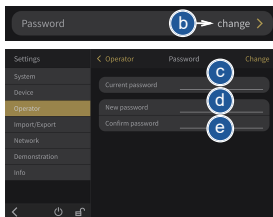
c) Enter the current password.

⇒ The default password is **witschi**.

d) Enter the new password.

e) Confirm the new password.

f) Press **OK** to confirm.



7.5 Import/export

7.5.1 Exporting measurements

Info

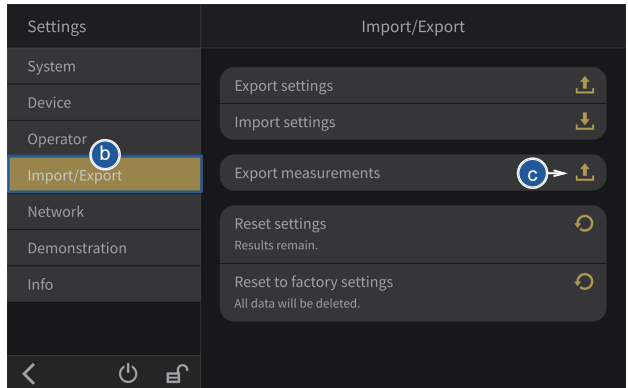
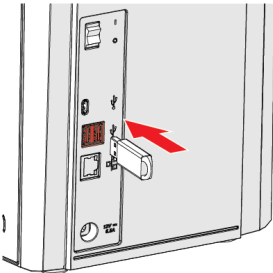


This function is intended for analysis by Witschi Electronic AG Customer Service.

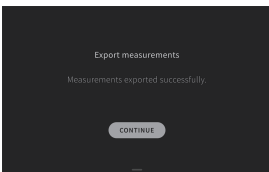
The WAIO allows you to export measurement data using a USB stick. This enables the measurements that have been performed to be analysed by Witschi Electronic AG.

Exporting

- a) Insert the USB stick on which the measurement data is to be stored in the WAIO.



- b) Select **Import/export** from the list.
 - ⇒ **Import/export** is highlighted in an accent colour and the right-hand window displays the import/export options.
- c) Press **Export measurements**.
 - ⇒ A window appears confirming the successful completion of the measurement data export.
 - ⇒ The measurement data from WAIO was exported to the USB stick in the **measurements** folder. The files are named as follows: e.g. **20241003134259_SN34567333.json** (date, time and serial number).
- d) The measurements are now on the USB stick. This can now be unplugged and the measurements are now available on the USB stick for evaluation.

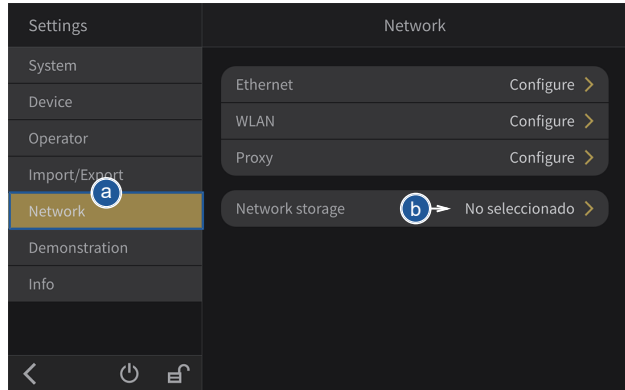


7.6 Network

7.6.1 Setting up Wicotracer 360°

Creating communication

- ✓ You must have a Wicotracer 360° account.
- ✓ You must have set the device PIN.
- ✓ You can find all the information in the Wicotracer 360° instructions.

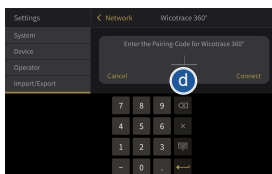


a) Select **Network** from the list.

⇒ **Network** is highlighted in an accent colour and the right-hand window displays the network options.

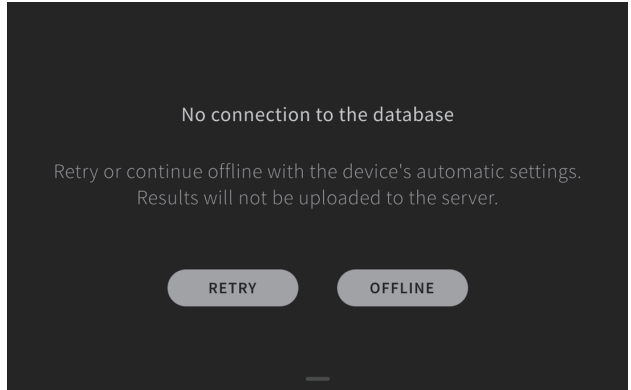
b) Select and configure **Wicotracer 360°** for network storage.

c) Generate a pairing code using **Wicotracer 360°** software.



d) Enter the pairing code and connect.

⇒ The device connects to **Wicotracer 360°** and the URL is displayed.

No communication

If no connection to the Wicotrace 360° is possible, there may be various reasons for this:

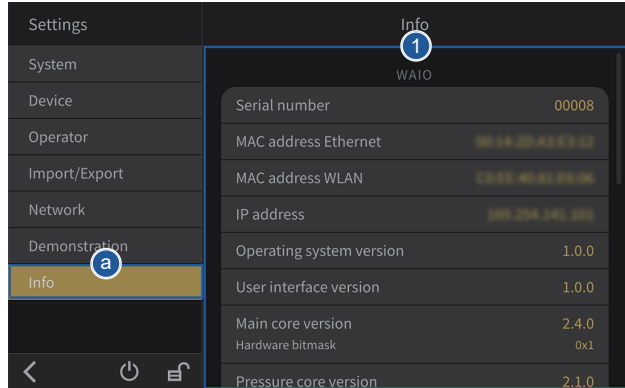
- Network connection (see [Network](#) [▶ Page 62])
- Poor internet connection
- Wicotrace 360° temporarily unavailable

If the problem cannot be solved in the short term, you can continue working **offline** in standalone mode.

7.7 System information (info)

This menu displays the following information:

- Serial numbers
- IP address
- Versions of the different systems and programs
- Information on device operation (cycle counter, measuring counter, etc.)
- Last calibration
- Legal information (licenses)



a) Select **Info** from the list.

⇒ **Info** is highlighted in an accent colour and the right-hand window displays the system information **1**.

Tip



Use the scroll bar on the right-hand side of the window to display non-visible information.

7.8 More functions

All other functions such as device, user, etc. are to be used within the same framework.

8 Troubleshooting

8.1 Error messages

Info



Error messages appear when there is a malfunction on the device.

The following table contains information on the possible causes of an error message and information about troubleshooting.

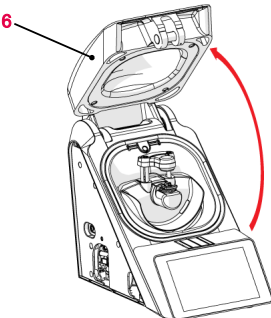
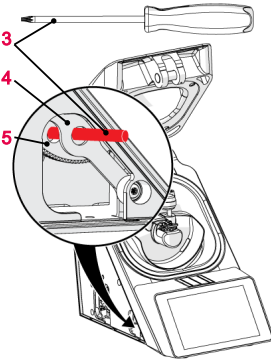
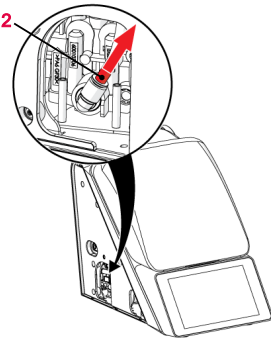
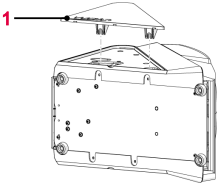
The most important malfunctions are described below. Contact customer service if the error continues after taking all troubleshooting measures.

Error message	Cause	Remedy
No test specimen detected! Sensor unit has reached the lower limit. Probably no test specimen inserted.	No test specimen was inserted.	Insert test specimen.
Bell cover blocked! Check whether free movement of the catch is possible.	Object jammed.	Remove object.
Catch blocked! Check whether free movement of the catch is possible.	Object jammed.	Remove object.
Sensor unit blocked! Check whether free movement of the sensor unit is possible.	Object jammed.	Remove object.
Positive or negative pressure in test chamber! Chamber cannot be opened or closed.	Pressure could not be released from the chamber. Sensor unit was not installed correctly and this could result in communication errors.	<i>With open bell cover:</i> Check whether the deformation sensor is fitted correctly (see Replacing the sensor unit [Page 53]). <i>With closed bell cover:</i> Release the pressure manually and open the bell cover (see Opening the bell cover in an emergency [Page 67]).
Communication error! Check whether the sensor unit is fitted.	Sensor unit was not installed correctly.	Check that the sensor unit has been fitted correctly.
Vibration detected The measuring result is unreliable. Continue measuring?	A vibration was detected during the test. Vibrations can falsify the measuring result.	Place the test device in a suitable, vibration-free location.

8.2 Malfunctions

Description of malfunction	Cause	Remedy
Incorrect test result	The watch is not positioned correctly.	Reposition the watch. See <i>Positioning the watch</i> [Page 35].
	Adhesive or protective film on the watch case.	Remove the adhesive or protective film.
	The watch is not at ambient temperature.	Wait until the watch has warmed up or cooled down. Repeat the test.
	More and more incorrect test results occur. The device is not properly calibrated.	Have the device calibrated by customer service. See <i>Technical support</i> [Page 7].

8.3 Opening the bell cover in an emergency



The bell cover can be opened manually in the following cases:

- The test chamber does not open automatically, for example after a power failure.

CAUTION



Risk of injury from cracked glass!

The positive pressure can penetrate into leaking watches during the test. If this is the case, the interior of the watches will be under pressure after the test. The glass in the watch can then splinter or shatter. If splinters get into the eye, this can cause injuries.

Mandatory



Wear safety goggles during the entire bell cover opening process!

- Disconnect the WAIO from the power supply.
 - ⇒ The remaining pressure in the test chamber escapes.
 - ⇒ See *Disconnecting the power* [Page 20].
- Loosen both lower fastening screws and remove the left side panel **1**.
- Disconnect the air hose **2** from the quick-release coupling so that the residual pressure can escape.
 - ⇒ The pressure is released.
 - ⇒ Wait until the pressure has completely dissipated.
- Insert the Torx or Phillips screwdriver **3** through the opening **4** into the hole in the yellow gear wheel **5**.
- Turn the yellow gear wheel **5** clockwise as far as it will go and the hook until it detaches from the bell cover **6**.
- If turning the screwdriver **3** is not sufficient, continue turning the yellow gear wheel **5** by hand.
- Open the bell cover **6**.
- Reassemble the device in the reverse order.
 - ⇒ If the device is defective, send it in for repair, see *Technical assistance* [Page 6].

9 Decommissioning and disposal

Decommissioning

Prohibition



Never force the device cover to open when the device is under pressure!

Otherwise parts could be ejected.

✓ **The WAIO is switched off.**

- a) Switch off the other used accessories properly.
- b) Pull out all cables (USB/Ethernet).
- c) Disconnect the power supply unit connection from the local mains network.
 - ⇒ The WAIO is non-operational.

Disposal

If no return or disposal agreement has been made, return the device to a recycling point.

Caution - environmental



Improper disposal poses an environmental hazard!

Improper disposal can result in environmental pollution.

- Always contact a specially approved body for disposal of the device.
- If there is any uncertainty, contact the local government or a company specialising in waste management to find out about the conditions for environmentally sound disposal.

Electrical and electronic components



Electrical and electronic components must not be disposed of with household waste, but must be disposed of at a recycling centre or a specialised company.

10 Data sheet

Dimensions and weight

Name	Value	Unit
Weight	14	kg
Width	218	mm
Height with closed bell cover	297	mm
Height with open bell cover	478	mm
Depth	377	mm

Technical data

Name	Value	Unit
Vacuum range	-0.1 to -0.5	bar
Pressure range	0.1 to 5	bar
Accuracy of the test pressure	± 80	mbar

Connection values for power supply

Name	Value	Unit
Mains voltage	100 to 240	VAC
Mains frequency	50 / 60	Hz

Power supply unit output values

Name	Value	Unit
Voltage	12	VDC
Maximum current consumption	5.0	A
Maximum power consumption	80	W
Standby power consumption	7.5	W

Ambient conditions

Name	Value	Unit
Temperature	15 to 35	°C
Relative humidity (non-condensing)	max. 80	%

Emissions

Name	Value	Unit
Noise emissions	< 70	dB(A)

Notes

Notes



☞ LEADING SWISS PRODUCTS



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