

Breathalyzer

ACE AL7000

Operating manual – EN

Author's Liability

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Introduction

Thank you for purchasing our ACE AL7000 breathalyzer! It measures the alcohol concentration in human breath using a semiconductor sensor and calculates the blood alcohol content. The test results are very reliable and have a tolerance of $\pm 0.100\%$ (per mill = g/L) with reference to 0.500% at 25°C ambient temperature.

The measurement results are displayed as a 4-digit number with 3 decimals and are interpretable 1: 1 (for example the display shows the value $0.36 = 0.36$ per mill).

The sensor inside the device can be calibrated. To maintain the measurement accuracy of this device and the sensor warranty, it should be calibrated regularly. For a calibration service, you can send the device to the service address specified at www.alkomat.net.

The device must only be used pursuant to the instructions mentioned in this manual. All measured values determined by this breathalyzer are only a guide and not legally binding. Breath tests should be carried out using clip-on mouthpieces (one new mouthpiece should be used per test for reasons of hygiene and to avoid falsified readings).

Note to country-specific Measurement Units

Customers in the EU receive the breathalyzer with ‰ (per mill) as default setting, in the UK the default setting is mg/L, and in the USA, it is % BAC. In the chapter „Technical data,“ you will find information about the accuracy concerning the different measurement units. Please check the website of the Department of Transportation, the website of the Ministry of Transport, or automotive clubs to become informed about the current alcohol limits in your country.

Scope of Delivery

- 1 Digital ACE AL7000 Breathalyzer with semiconductor sensor
- 2 AA batteries (1.5 V)
- 5 Mouthpieces with Rebreather Stop
- 1 piece 12V car adapter (no charging function)
- 1 Soft bag with Snap Hook
- 1 Hand Strap
- 1 Quick Start Guide (in German & English)
- 1 Manual (multilingual)

Label of Individual Components



1. Mouthpiece and Mouthpiece Slot
2. Digital LED Display
3. Power Button
4. Air Outlet (always leave this part unblocked)
5. Car Adapter Connection
6. Battery Compartment Cover (at the back of the device)
7. Sensor Cover (at the back of the device)

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Tips to Receive the Most Accurate Results

- A) Wait at least 15 minutes after your last sip of alcohol. Do not eat, drink, or smoke during that time.
- B) Do not open the casing.
- C) Do not keep the breathalyzer in cold, hot, moist, or badly ventilated places.
- D) Keep the breathalyzer out of the reach of children.
- E) Conduct three inlet tests after long storage before conducting the actual alcohol test.
- F) Do not drop the breathalyzer.
- G) Change the battery if it is depleted. Diminished battery capacity leads to incorrect test results.
- H) Do not conduct tests in loud (sound waves disrupt the sensor), drafty, or poorly ventilated places.
- I) After a test result of 1.000 per mill (per mill = EU setting) / 0.100 % BAC (% BAC = US setting) / 0.500 mg/L (mg/L = UK setting) or higher the sensor needs rest time. In this case wait at least three minutes before starting the next test.
- J) Do not conduct tests in very cold, very hot, or an unventilated, smoky ambience.
- K) Store the breathalyzer in a way to avoid penetration by dust or liquids.
- L) Blowing too hard may cause damage to the sensor as saliva flows into it.

Preparation for the Test

1. Push the battery cover (on the back of the device) downwards and open it. Install the 2 AA batteries (delivered together with the device) in the battery compartment while taking note of the battery polarity. Close the battery cover again.
2. Insert a mouthpiece into the slot on the right front side of the breathalyzer. Ensure whether it is securely fitted. It is highly recommended to use a new mouthpiece for every test for sanitary reasons.

Conducting the Measurement

1. Push the power button on the front of the device, then you hear one beep tone and shortly will see the number of all tests ever performed with the device – this is only shown as long as you keep pressing the power button. If you don't press it anymore then you see "WAIT" on the right top corner of the display, additionally a countdown starts.
2. Wait until the end of the countdown, you hear 2 beep tones and you see "blow" on the display.
3. As soon as you see "blow" start blowing steadily into the mouthpiece for 4 seconds, the device will beep constantly during the test. Tip: Blow like you would whistle without a tone (but without a break).
4. As soon as the beep stops and a 2-fold beep is heard, the test is finished. If the breath test was interrupted or too weak, „Flo“ appears on the display. In this case, perform the test again and press the start button.
5. After a successful breath test, the device evaluates the measurement result. The digit „0“ moves from left to right across the display. After a few seconds a beep sounds and the measuring result is shown on the display with 4 digits (with 3 decimal places) in per mille (=g/L). After 10 seconds you will hear several beeps, which announces the automatic switch-off of the instrument.

Note: For a new test, simply press the start button again. You can also switch off the device manually by pressing the start button continuously for approx. 3 seconds, „Out“ appears on the display and the device is switched off.

ACE Instruments Recommends

- Always use a new mouthpiece for each person and test that is conducted. ACE Instruments assumes no liability for any damages that may arise when several people use the same mouthpiece for multiple tests.
- Only use the provided individually packaged and hygienic mouthpieces. During each test the breathalyzer's internal and external parts come into contact with human secretion (saliva, blood, sweat, etc.)!
- Use safety gloves when pulling out a mouthpiece used by another person! You can buy appropriate gloves at ACE Technik (www.ace-technik.de).

IMPORTANT NOTICE

- WHEN YOU HAVE EATEN, DRUNK ALCOHOL OR, SMOKED A CIGARETTE, WAIT AT LEAST 15 MINUTES BEFORE STARTING THE MEASUREMENT. ANY TEST CONDUCTED PRIOR TO THE EXPIRATION OF THE RECOMMENDED WAITING PERIOD WILL RESULT IN INACCURATE RESULTS.
- IF THE TEST RESULT IS BELOW 0.10‰ (PER MILL = g/L) OR 0.01% BAC (US setting) OR 0.05mg/L (UK setting) THEN THE DEVICE SHOWS 0.00 (‰ OR % BAC OR mg/L – depending on the setting) ON THE DISPLAY. THIS HAPPENS BECAUSE AT A LOW RANGE OF ALCOHOL CONCENTRATION IT IS POSSIBLE TO MEASURE OTHER MATERIALS IN YOUR MOUTH.
- This breathalyzer is a high quality and sensitive measurement device. To maintain the accuracy of the sensor, it should regularly be used. If the device is not used for an extended period, the sensor can dry out. ACE Instruments recommends using the breathalyzer at least 2 times per month (even if you have not been drinking alcohol).
- Due to changes in the product, the procedures stated can change. This can take place without prior notice or adaptation of the operating manual and is no cause for complaint, return or price reduction. The user is responsible for recognizing discrepancies between the operating manual and the actual handling of the breathalyzer and must react accordingly.

Only Use Original ACE Instruments Mouthpieces

- Guarantees test result accuracy
- Guarantees hygiene of you and the device
- Guarantees full warranty of this device

ACE INSTRUMENTS ADVISES

EVEN IF YOU GET A RESULT MEANING „SAFE RANGE“, YOU SHOULD NEVER DRIVE AFTER CONSUMING ALCOHOL OR DO ANY OTHER ACTIVITIES THAT ARE SEVERELY IMPAIRED BY ALCOHOL CONSUMPTION AND MIGHT ENDANGER YOUR HEALTH AND SAFETY OR THE HEALTH AND SAFETY OF OTHERS.



Display Indications

Display	Meaning	Action
BAT	The testing cannot be performed because the battery is low.	Replace with new batteries.
CAL	The device should be calibrated (to maintain measurement accuracy and sensor warranty). Alternatively, the integrated sensor can be replaced with a new sensor.	Switch the unit on again and blow vigorously, constantly and long enough into the mouthpiece or mouthpiece opening (depending on the mode selected). It is best to blow as if you were whistling without sound.
blow	This display appears after the start and at the end of the countdown. The device is ready for the breath test,	Start blowing evenly into the previously attached mouthpiece for 4 seconds. When the beep stops and a click tone and a double beep tone can be heard, the test is finished.
Flo	This display appears if you have blown incorrectly or too weakly.	Press the start button, the countdown will start again and "BLOW" will appear on the display. You can now perform a new test.
Out	If the device has not received a breath sample or has not received a sufficient breath sample, "Out" appears on the display and the device switches itself off automatically. This also happens after 1 minute if no use is made during this time.	Press power button to restart the countdown cycle and retest.

Change of the Sensor

1. Open the sensor cover with a suitable, non-sharp tool or with a fingernail.
2. Pull the sensor out of the housing with your fingers or a tool that is not too hard (tweezers).
3. Insert the new sensor into the housing with your fingers or a suitable tool. Make sure that the contacts on the sensor are inserted into the contacts of the pedestal.
4. Close the sensor cover. If it is difficult to close the sensor cover, the sensor is not seated correctly. In this case, repeat the insertion of the sensor. Sensors. The sensor is also not seated correctly if "Err 2" appears on the display after the next switch-on. Repeat the insertion of the sensor.



Calibration

To maintain the accuracy of the breathalyzer, ACE Instruments recommends a calibration after 300 tests or approx. every 6-12 months (depending which incident happens first). For a calibration service you can send the device to ACE Instruments (see www.alkomat.net). The calibration is not mandatory, but the accuracy of the breathalyzer will decrease steadily and additionally the warranty for the sensor expires.

We recommend sending it as a parcel, so that in case of loss an inquiry or proof of delivery is possible.

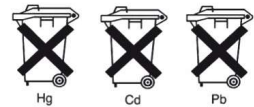
Battery Notices

The device associated with this operating manual contains 2 AA Alkaline batteries (1.5 V). These batteries are non-rechargeable. The use of a rechargeable battery is not possible with this device and can damage it. If the included batteries are depleted, they must not be thrown away into household waste. Used batteries may contain harmful substances that can cause damage to the environment or your health. Please return all depleted batteries to electrical appliance stores, who collect them for free.

Battery Exchange

To replace the batteries, push the battery cover on the rear of the unit downwards and replace the discharged batteries with new ones. Be aware of the polarity when inserting the batteries (+/- pole). Close the battery compartment cover again. In the EU, the return of used batteries is mandatory by law. All depleted and rechargeable batteries will be recycled. This way valuable resources like iron, zinc and nickel can be retrieved and reused. Battery recycling is the easiest lesson in environmental protection – so please support it!

The shown garbage bins mean that batteries or rechargeable batteries must not be thrown into the household waste. The signs below the garbage bins are acronyms for the chemical substances inside the battery:



- Hg: Battery contains Mercury
- Cd: Battery contains Cadmium
- Pb: Battery contains Lead

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Technical Data*

Sensor	Semiconductor Sensor
Accuracy	+/- 0.100‰ (per mill) with reference to 0.500‰ at 25°C (per mill = default setting) OR +/- 0.010% BAC (Blood Alcohol Concentration) with reference to 0.050 % BAC at 25°C OR +/- 0.500mg/L with reference to 0.250mg/L at 25°C
Detection Range	0.000 to 4.000‰ (per mill) OR 0.000 to 0.400% BAC (USA) OR 0.000 to 2.000mg/L (UK)
Warm-up Time	Within 15 up to 20 seconds at 0.5‰. This may vary depending on the value of per mill / BAC which was measured.
Dimension	105 x 50 x 18mm (H x W x D)
Weight	98g (batteries included)
Power Supply	2 pieces of 1.5V AA Alkaline batteries
Working Temperature	10°C to 40°C
Storage Temperature	0°C to 40°C
Calibration	Recommendation: Every 6-12 months or after 300 tests. For a calibration service you can send the device to ACE Instruments (see www.alkomat.net).

*The technical data are subject to change without prior notice for functional improvements.



Warranty and Liability

ACE Handels- und Entwicklungs GmbH (ACE Instruments) provides a warranty of two years after purchase for material and processing errors of the product (see attached warranty and liability declaration) in all versions and designations; and a warranty of one year for the sensor. This warranty includes the electronics as well as the casing and sensor without sampling components. Components that inevitably degrade over time (such as fuses) are not part of this warranty. The warranty is valid from the date of delivery or from the date of first activation (always the shorter period), if not stated otherwise in the accompanying ACE Instruments product literature.

Limitation of Warranty and Liability

1. PRODUCT DESCRIPTION

ACE Instruments rejects any further expressly stated or implied warranty, including the marketability and suitability for a determined purpose. This warranty especially excludes calibration. After changing the sensor, calibration is absolutely necessary. If an exchange of the sensor or a calibration is required for a product, the user may receive a cost estimate. Should the user reject the estimate, ACE Instruments will send the product back unrepaid/not calibrated and the product will be labelled accordingly. Should the product not fulfil the warranty, the claim of the buyer and the obligations of ACE Instruments are limited exclusively to the discretion of ACE Instruments for exchange, repair of the affected goods or reimbursement of the purchasing price for the faulty merchandise.

2. APPLICATION RESTRICTION

ACE Instruments is by no means liable for additional, incidental or consequential damage such as, among others, lost profit and downtime that result from selling, producing or using products that are part of this application restriction. This is independent of any claims emanating from, for instance, contracts, negligence or other culpable actions.

The product, which is accompanied by this warranty and liability declaration (no matter the version or designation), in particular cannot be used in a legally binding manner to determine one's capability to operate vehicles or execute action that could lead to personal injury or injury to others under the influence of alcohol.

The thorough check for damage of all products upon receipt, calibration suitable for the given use by the buyer and the proper use, maintenance and service according to the instructions of the accompanying ACE Instruments product literature are mandatory prerequisites of this warranty. Maintenance and service work performed by non-qualified persons as well as the use of non-approved consumables or spare parts results in the voiding of this warranty. As for all technically challenging products, it is a fundamental prerequisite and mandatory for ACE Instruments warranty that all users of these product are familiar with the properties and restrictions of the devices as stated in the respective literature.

3. ADVICE RESTRICTION

The buyer is solely responsible and confirms that they have checked the intended use and suitability of purchased goods for any purpose. Between the two parties it is expressly agreed that all technical or other advice given by ACE Instruments regarding the use of goods or services is free of charge and made under risk to the buyer exclusively. Therefore, no obligation or liability can result to ACE Instruments from any recommendation or their consequences.