



# ACE X

## Breathalyzer

**Operating Manual**

[www.ace-instruments.net](http://www.ace-instruments.net)

# ACE X Breathalyzer

## Operating Manual



# ACE Instruments

Thank you for purchasing our ACE X Breathalyzer. It measures the alcohol concentration in human breath using a digital fuel cell sensor and calculates the blood alcohol level. The device must only be used pursuant to the instructions mentioned in this manual. In case of any questions you may contact the distributor (ACE) by email to [info@ace-instruments.net](mailto:info@ace-instruments.net), [www.ace-instruments.net](http://www.ace-instruments.net)

### Short description:

The ACE X Breathalyzer is a fuel cell alcohol testing device, which can be operated by only one button and shows reliable test results in % BAC (default setting). The legal limit in the USA is 0.08% BAC (status: Oct 2016). You can interpret the test result this way: e.g. the display shows 0.03 = 0.030% BAC. Tests can be done in an active and a passive mode (see chapter "Conducting the measurement").

To maintain the measurement accuracy of this breathalyzer it should be calibrated regularly. For a calibration service you can send the device to ACE Instruments (see [www.ace-instruments.net](http://www.ace-instruments.net)). For each breath test a new mouthpiece is required.

### Scope of delivery:

- 1 Digital fuel cell ACE X Breathalyzer  
(3 decimals after white dot on the display)
- 1 Soft case
- 5 mouthpieces
- 2 pieces AAA batteries  
(1.5V, LR03, Alkaline), already inside the device
- 1 Operating Manual
- 1 Quick Start Guide

### Label of individual components:



### This way you receive results that are as accurate as possible:

- 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 0.100% BAC (% BAC = basic setting) or higher the sensor needs rest time. In this case wait at least three minutes before 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. Open the battery compartment cover at the back of the device: First push the cover up and then sideways. Then you have to remove the small paper inside the battery compartment which prevents the battery discharge. If you exchange old batteries against new ones please mind the battery polarity (+/- pole).
2. For the active mode operation put a mouthpiece on the mouthpiece connection, which is on top of the device. Make sure it is attached properly. Use a different mouthpiece for each test person. Avoid blowing cigarette smoke into the tester! The passive mode is described in chapter "Conducting the measurement".

## ACE INSTRUMENTS RECOMMENDS:

- ALWAYS USE A NEW MOUTHPIECE FOR EACH PERSON AND TEST THAT IS CONDUCTED. ACE INSTRUMENTS ASSUMES NO LIABILITY FOR ANY DAMAGES WHICH ARISE WHEN SEVERAL PEOPLE USE THE SAME MOUTHPIECE FOR MULTIPLE TESTS.
- ONLY USE THE PROVIDED SINGLE PACKED AND HYGIENIC MOUTHPIECES – MORE ARE AVAILABLE AT [WWW.ACE-INSTRUMENTS.NET](http://WWW.ACE-INSTRUMENTS.NET). 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 E.G. AT ACE TECHNIK ([WWW.ACE-TECHNIK.DE](http://WWW.ACE-TECHNIK.DE)).

## Conducting the measurement:

1. Press the power button to turn on the device\* (the device beeps once).
2. The device warms up until you can see "0" on the display (additionally the device beeps twice).
- 3.a) Active mode: As soon as you can see "0" on the display blow through the mouthpiece into the unit for 4 seconds (you can hear a beep tone during the test) until the sound (a "tic-tac" tone) concludes.

- 3.b) Passive mode: For this mode you don't need a mouthpiece. As soon as you can see "0" on the display, hold the mouthpiece connection on top of the device in front of your mouth and press the power button while you exhale. You see 4 times a "0" blinking on the display and then the result: If you see "P" (= Pass) then the test result is below 0.02% BAC and if you see "F" (= Fail) then the test result is higher than 0.02% BAC. For DUI the legal limit in the USA is 0.08% BAC (status: Oct 2016).

\*If you press the power button constantly for 2 seconds, you can see the letter "C" and "A" - each followed by a number. Please read the display indications for the explanation of the meaning!

**IMPORTANT NOTICE: WHEN YOU HAVE EATEN, DRUNKEN 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 0.005 % BAC THEN THE DEVICE SHOWS 0.000% BAC ON THE DISPLAY. THIS HAPPENS BECAUSE AT A LOW RANGE OF ALCOHOL CONCENTRATION IT IS POSSIBLE TO MEASURE OTHER MATERIALS IN YOUR MOUTH.

## Only the usage of original ACE mouthpieces ...

- Guarantees test result accuracy
- Guarantees 100 % hygiene
- 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:

|        |                                                                                                                                                                                                                                                                                                                                 |
|--------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| FLO    | The breath sample was interrupted or not strong enough for a measurement. After the sensor warmed up itself automatically, please blow steadily and without a break into the mouthpiece (like you would whistle).                                                                                                               |
| BAT    | The battery power is low. Please replace the 2 batteries inside the device with 2 new ones (type AAA, 1.5V, LR03, Alkaline batteries). Be aware of the polarity when inserting the new batteries (+/- pole). Do not use rechargeable batteries!                                                                                 |
| CAL    | If you tested over 1.000 times, the ACE X will display "CAL" sign for 3 seconds when warming up for test. This "CAL" sign informs about the appropriate time for calibration. For a calibration service you can send the device to ACE Instruments (see <a href="http://www.ace-instruments.net">www.ace-instruments.net</a> ). |
| OUT    | The device turns off (either by pressing the power button constantly for 4 seconds or 10 seconds after displaying the test result).                                                                                                                                                                                             |
| C or A | "C" and "A" is shown when putting on the device and keeping pushed the power button.<br>C = The number of all tests conducted with the device (starting with zero after a calibration)<br>A = The number of tests where alcohol was detected                                                                                    |
| P or F | Only displayed in the passive mode, see description in chapter "Conducting the measurement".                                                                                                                                                                                                                                    |

## Calibration:

To maintain the accuracy of the breathalyzer, ACE recommends a calibration every 6 - 12 months. For a calibration service you can send the device to ACE Instruments (see [www.ace-instruments.net](http://www.ace-instruments.net)). The calibration is not mandatory, but the accuracy of the breathalyzer will decrease steadily without it.

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

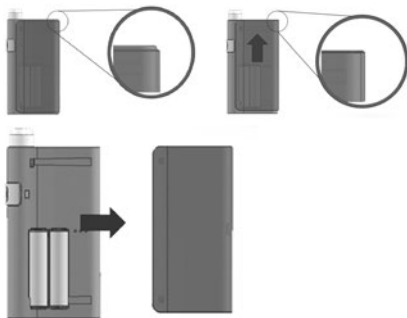
Due to changes in the product, the procedures stated can change. This can take place without prior notice or adaptation of the operating manual and is no cause for complaint, return or price reduction. The user is responsible for recognizing discrepancies between the operating manual and the actual handling of the breathalyzer and must react accordingly.

## Battery Law notice (BattG):

The device associated with this operating manual contains two AAA Alkaline batteries (1.5 V) in delivery condition. These batteries are not made for recharging. The use of rechargeable batteries is not possible with this device and can damage it. If the included batteries are depleted, they must not be thrown into the household waste. Used batteries may contain harmful substances that can cause environmental or health damage. Please return all depleted batteries to electrical appliance stores, who collect them for free.

## Battery exchange:

To replace depleted batteries against new ones, first push the battery cover up and then sideways. Then replace the depleted batteries with two new ones. Be aware of the polarity when inserting the new batteries (+/- pole). Put the battery compartment cover on the rear panel and push it gently down.



All depleted batteries will be recycled. This way valuable resources like iron, zinc and nickel can be retrieved and are reusable then. Battery recycling is the easiest lesson in environmental protection - so please support it! The shown garbage bins mean that 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

#### Technical data:

|                          |                                                                                                                                                                                    |
|--------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Statement of the BAC     | 0.000-0.400% BAC (the default setting of your device is BAC)                                                                                                                       |
| Accuracy                 | +/- 10% at 0.050% BAC (Blood Alcohol Concentration)                                                                                                                                |
| Warm-up time             | 3 seconds up to max. 4 minutes (the waiting time depends on the alcohol level which was measured before => the more alcohol in the breath, the longer the sensor needs to warm up) |
| Sensor                   | Fuel cell sensor                                                                                                                                                                   |
| Response time            | Within 10 seconds at 0.100% BAC                                                                                                                                                    |
| Energy supply            | 2 pieces AAA batteries (1.5V, LR03, Alkaline)                                                                                                                                      |
| Dimensions of the device | 53.8 x 97.5 x 18 mm                                                                                                                                                                |
| Weight                   | 83 g (including batteries)                                                                                                                                                         |
| Ambient conditions       | Operation: 5-40°C<br>Storage: 0-50°C                                                                                                                                               |
| Calibration              | Every 6-12 months<br>For a calibration service you can send the device to ACE Instruments (see <a href="http://www.ace-instruments.net">www.ace-instruments.net</a> ).             |

## WARRANTY AND LIABILITY

### WARRANTY

ACE Instruments (ACE) provides a warranty of two (2) years after purchase for material and processing errors for the product (see attached warranty and liability declaration) in all versions and designations; and a warranty of one (1) year for the sensor. This warranty includes the electronics as well as the casing or sensor without sampling components. Components that are inevitably destroyed upon effectiveness (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 product literature.

### Misuse:

OTHER APPLICATIONS OF, OR MODIFICATIONS TO, THIS BREATHALYZER CONSTITUTE A MISUSE AND ENTAIL A RISK OF PERSONAL INJURY AND/OR DAMAGE TO THE DEVICE. ACE SHALL ASSUME NO LIABILITY FOR INJURY/DAMAGE CAUSED BY MISUSE OF THE DEVICE. THE DEVICE IS NOT INTENDED FOR COMMERCIAL USE.

ACE SHALL NOT BE HELD LIABLE FOR ANY DAMAGES THAT OCCUR AS A RESULT OF ANY UNAUTHORIZED MODIFICATIONS, REENGINEERINGS OR AMENDMENTS MADE TO THIS BREATHALYZER OR ITS IMPROPER USE.

### LIMITATION OF WARRANTY AND LIABILITY

#### 1. Product description:

ACE 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 WILL SEND THE PRODUCT BACK UNREPAIRED / UNCALIBRATED AND THE PRODUCT

WILL BE LABELLED ACCORDINGLY. SHOULD THE PRODUCT NOT FULFIL THE WARRANTY, THE CLAIM OF THE BUYER AND THE OBLIGATIONS OF ACE ARE LIMITED EXCLUSIVELY AND AT THE DISCRETION OF ACE TO AN EXCHANGE OR REPAIR OF THE AFFECTED GOODS OR TO A REIMBURSEMENT OF THE PURCHASING PRICE FOR THE FAULTY GOODS.

## 2. Application restriction:

ACE IS ON NO ACCOUNT LIABLE FOR ADDITIONAL DAMAGES, INCIDENTAL DAMAGES OR CONSEQUENTIAL DAMAGES SUCH AS, AMONG OTHERS BUT NOT LIMITED TO, LOST PROFIT AND DOWNTIME THAT RESULT FROM SELLING, PRODUCING OR USING PRODUCTS, WHICH ARE PART OF THIS APPLICATION RESTRICTION. THIS IS INDEPENDENT OF ANY CLAIMS, SUCH AS FROM CONTRACTS, NEGLIGENCE OR OTHER CULPABLE ACTIONS.

THE PRODUCT, WHICH IS ACCOMPANIED BY THIS WARRANTY AND LIABILITY DECLARATION, NO MATTER IN WHICH VERSION OR DESIGNATION, CAN ESPECIALLY NOT BE USED LEGALLY BINDING TO DETERMINE CAPABILITY TO OPERATE VEHICLES OR TO EXECUTE ACTION THAT COULD LEAD TO DAMAGE TO ONESELF OR OTHERS UNDER THE INFLUENCE OF ALCOHOL.

THE THOROUGH CHECK FOR DAMAGE OF ALL PRODUCTS UPON RECEIPT, A CALIBRATION SUITABLE FOR THE GIVEN USE BY THE BUYER AND THE PROPER USE, MAINTENANCE AND SERVICE ACCORDING TO THE INSTRUCTIONS OF THE ACCOMPANYING PRODUCT LITERATURE BY ACE ARE MANDATORY PREREQUISITES FOR THIS WARRANTY. MAINTENANCE AND SERVICE WORK BY NON-QUALIFIED PERSONS, AS WELL AS USING NON-APPROVED CONSUMABLES OR SPARE PARTS ARE A MISUSE, AND ALL WARRANTY RIGHT SHALL SEIZE IMMEDIATELY. AS FOR ALL TECHNICALLY CHALLENGING PRODUCTS, IT IS A FUNDAMENTAL PREREQUISITE AND MANDATORY FOR THE WARRANTY BY ACE THAT ALL USERS OF THIS PRODUCT ARE FAMILIAR WITH THE PROPERTIES AND RESTRICTIONS OF THE PRODUCT AS STATED IN THE RESPECTIVE LITERATURE.

## DISCLAIMER



TO THE EXTENT PERMITTED BY LAW, THIS WARRANTY AND THE REMEDIES SET FORTH ABOVE ARE EXCLUSIVE AND IN LIEU OF ALL OTHER WARRANTIES, REMEDIES AND CONDITIONS, WHETHER ORAL OR WRITTEN, STATUTORY, EXPRESS OR IMPLIED. AS PERMITTED BY APPLICABLE LAW, ACE SPECIFICALLY DISCLAIMS ANY AND ALL STATUTORY OR IMPLIED WARRANTIES, INCLUDING, WITHOUT LIMITATION, WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE AND WARRANTIES AGAINST HIDDEN OR LATENT DEFECTS. IF ACE CANNOT LAWFULLY DISCLAIM STATUTORY OR IMPLIED WARRANTIES THEN TO THE EXTENT PERMITTED BY LAW, ALL SUCH WARRANTIES BE LIMITED IN DURATION TO THE DURATION OF THE EXPRESS WARRANTY AND TO THE REPAIR OR REPLACEMENT SERVICE AS STATED ABOVE. EXCEPT AS PROVIDED IN THIS WARRANTY AND TO THE MAXIMUM EXTENT PERMITTED BY LAW, ACE IS NOT RESPONSIBLE FOR DIRECT, SPECIAL, INCIDENTAL OR CONSEQUENTIAL DAMAGES UNDER ANY LEGAL THEORY.

Some countries, states and provinces do not allow the exclusion or limitation of incidental or consequential damages or allow limitations on how long an implied warranty or condition may last, so the above limitations or exclusions may not apply to you. This warranty gives you specific legal rights, and you may also have other rights that vary by country, state or province. This Limited Warranty is governed by and construed under the laws of the country in which the product purchase took place.

## 3. Advice restriction:

The buyer confirms that he has checked the intended use and suitability of purchased goods for any purpose in sole responsibility. Between the two parties it is expressly agreed upon that all technical or other advice by ACE regarding use of the goods or services is free of charge and was made with to the exclusive risk of the buyer. Therefore no obligation or liability can arise to ACE from any recommendation or their result.

# ACE Instruments

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