SONOTEC

SONAPHONE

Ultrasonic Testing Device for Preventive Maintenance

User Documentation:
Parabolic Sensor BS30

Revision: 1.4 | 2020-09-14
Subject to technical modifications.

Content

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1 Information on this document

1.1 General

This document forms part of the parabolic sensor BS30 and should therefore be stored in its immediate vicinity where it can be accessed by all operators at any time. It contains all the instructions to ensure safe operation of the parabolic sensor with the SONAPHONE , as well as all the information needed to ensure proper and efficient use. It must therefore be read prior to commissioning and before carrying out any further steps.

⚠ WARNING The parabolic sensor BS30 must only be operated by users who have read (in full) and understood the safety information in the corresponding document and the provided user documentation. Also observe the information in the technical data sheet.

This document has been created with all due care. SONOTEC does not assume any guarantee of the completeness, correctness and current validity of the provided data, and is not liable for errors or omissions,

Please note that the user documentation for the SONAPHONE is made up of different sections due to the device's modular construction. The scope of supply will vary depending on the device and accessory options that have been ordered.

1.2 Symbols used

Hazards or special information are indicated in the following ways:

⚠ WARNING	Warns of possible **imminent danger** which, if ignored, may lead to **lasting adverse health effects and/or serious material damage**.
⚠ CAUTION	Warns of dangers which, if ignored, may lead to **injury and/or material damage** – including financial losses due to operational interruptions.
ATTENTION	Warns of dangers, which, if ignored may lead to **material damage** - including financial losses due to operational interruptions.

Note!
This section provides information or draws attention to special features.

2 Sensor description

2.1 Applications and designated use

The parabolic sensor is used for the accurate detection of ultrasonic waves over distances of up to 35 m. The following testing work can be carried out in combination with the SONAPHONE:

- Detection of leaks in compressed air, gas and vacuum systems
- Detection of electrical partial discharges and insulation damage
- Tightness testing of windows, doors, vehicles or containers
  (in combination with the SONAPHONE T ultrasonic transmitter)

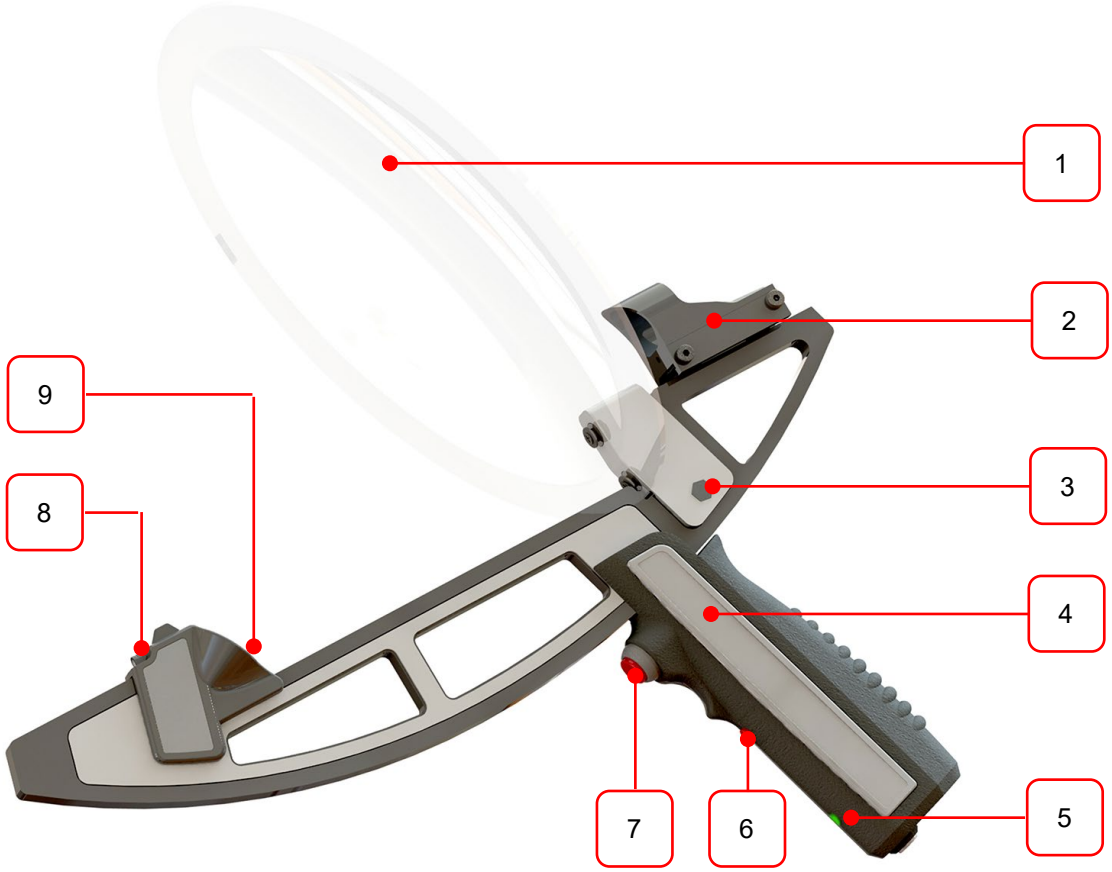
2.2 Functioning

The parabolic reflector reflects ultrasonic waves and bundles these together for the ultrasonic microphone.

The ultrasonic microphone in the sensor converts sound pressure fluctuations in the air into an electrical signal over a wide frequency range. This electrical signal is amplified and digitalized within the sensor. Further data processing and output takes place in the testing device.

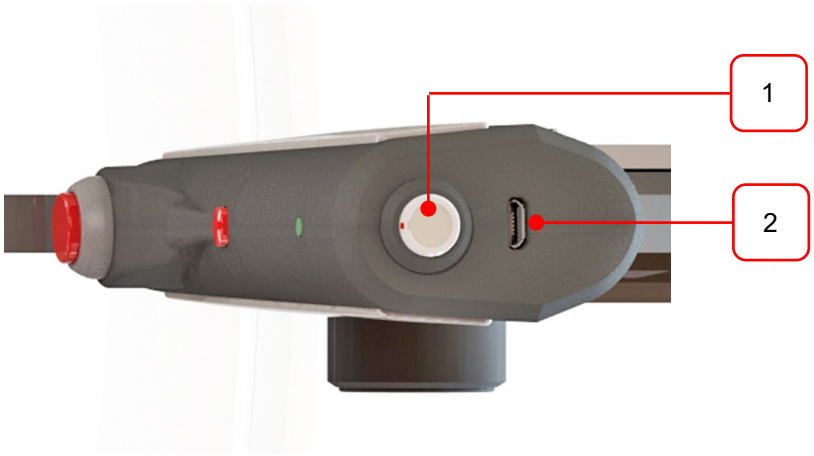
The target laser and the **red/green dot sight** also help with the precise location of damage areas. If the sensor points towards the damage area during the search, the precise location can be detected by means of acoustic signals, by pivoting the sensor and searching for a local maximum sound level. The target laser and the red/green dot sight highlight the position of the damage.

2.3 Sensor elements



No.	Sensor elements
1	Parabolic reflector
2	Red / green dot sight (changes may occur over the course of device development; see manufacturer's operating manual)
3	Parabolic reflector holder with locking screw (on the rear)
4	Handle with control and display elements
5	Status LED: Sensor on/off
6	Target laser on/off (press and hold)
7	Starting/stopping the measurement recording
8	Integrated target laser
9	Ultrasonic microphone with acoustic horn

2.4 Sensor connections

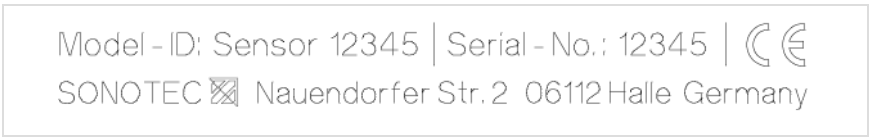


No.	Connections
1	Socket for sensor cable with marked plug-in position
2	USB connection (for service work only)

2.5 Device identification/type label

Laser class 2 identification:

The type label is located on the back of the device, and should be to hand in the event of a service call. As well as the sensor designation, the following information can also be found on the housing:



3 Operation of the parabolic sensor

⚠ WARNING

Risk of injury to eyes

The target laser (laser class 2) can cause serious eye damage. Never look into the laser beam. Never direct the laser at other people or vehicles. Please note that reflected laser light can cause eye injuries in the event of prolonged use.

ATTENTION

In the very rare event that the parabolic reflector breaks, there may be sharp edges that can cause cutting injuries. When using the sensor, make sure not to damage the parabolic reflector.

Note!

The material of the parabolic reflector may be damaged by scratches. These do not have any impact of the functionality of the sensor. Scratches can be avoided by careful handling of the sensor.

3.1 Assembling and disassembling the parabolic reflector

To assemble the parabolic reflector:

1. Hold the sensor handle with one hand, and the parabolic reflector onto the parabolic reflector holder with the other hand, so that the reflector is pointing in the sensor's testing direction.
2. Guide the parabolic reflector holder into the insertion position on the sensor from above, and slide the holder towards the handle and red/green dot sight using light pressure before fixing it in place so that is always in the same position on the sensor for the location of damage areas.
3. Rotate the locking screw to attach the holder.

↳ The sensor is ready to operate.

To disassemble the parabolic reflector:

1. Hold the sensor handle with one hand, and use the other hand to undo the locking screw on the parabolic reflector holder.
2. Take hold of the parabolic reflector holder from above, and carefully pull it out of the insertion position on the sensor.

3.2 Connecting the sensor to SONAPHONE

ATTENTION **Risk of damage to the connectors!**
Take note of the red dots indicating the plug-in position on the plug and socket.

⇨ Connect the sensor to the device using a SONAPHONE sensor cable in accordance with the dots.

↳ The sensor is powered via the cable, and the test data is transferred to the SONAPHONE automatically.

↳ The sensor is ready for operation when the operating display LED lights up green.

3.3 Using the laser and the red/green dot sight

With the laser and the red/green dot sight, the BS30 offers two **independent methods** of precisely locating leaks. For information of using these device, please refer to Section "3.1 Assembling and disassembling the parabolic reflector“ on page 11, the information in the technical specifications and the manufacturer's documentation relating to the red/green dot sight.

Usage will depend on factors such as the size of the system, the distance to the leak, the light conditions and personal preferences.

⇨ Use the laser (button on the sensor handle) for leak detection if:

- there is **no risk** of dazzling people with the laser beam
- the target laser for locating in the testing area is clearly visible.

For precise locating at close range and for the evaluation, the airborne sound sensor BS10 can then be used with the precise locator attachment, for example.

⇨ Use the red/green dot sight to locate the leak if:

- there is a risk of dazzling or obstructing people with the laser beam
- the dot from the target laser for locating the leak is not visible
- the damage area for laser-bearing is too far away.

1. Remove the protective caps from the red/green dot sight.
2. Use the brightness control to select the required color and intensity (see also the manufacturer's operating manual).
3. Switch the red/green dot sight off again after use, and put on the protective rubber caps to protect the lens.

3.4 Operation via the buttons on the sensor

Measurements can be controlled via the touchscreen on the device or via the button on the sensor itself.

Testing can be started or stopped via the "Start/stop recording" function key. The integrated target laser and the red/green dot sight also help with the precise location of damage areas.

3.5 Cleaning and maintenance

ATTENTION The parabolic reflector on the sensor may be damaged by incorrect cleaning and aggressive cleaning agents. Never use cleaning agents that contain solvents to clean the parabolic reflector.

The sensor and the parabolic reflector are maintenance-free. They can be cleaned externally using a damp cloth and a mild, non-abrasive cleaning agent.

4 Disposal

Electrical and electronic equipment can pose serious health and environmental risks if it is not properly disposed of. For this reason it must not be disposed of in domestic waste according to WEEE directive 2012/19/EU (Waste Electrical and Electronic Equipment Directive) but separately at designated collection points or has to be sent back to the manufacturer.

The following symbol on the device refers to the legal obligation in Germany to arrange a separate disposal for electronic equipment.

It has to be handled according to specific processes (e.g. concerning the batteries or circuit boards) to ensure a safe, environmentally-friendly recycling or the separate disposal of different device components.

The taking back of used equipment is regulated differently in the various countries and regions. Consult the local authorities and other competent public authorities to inform yourself about the taking back conditions of commercially used electrical equipment. The device and also the battery do not contain harmful substances that have to be labelled separately regarding the disposal as mercury (Hg), cadmium (Cd), lead (Pb) or hexavalent chromium (e.g. in galvanized parts or circuit boards).

5 Warranty

The SONAPHONE ultrasonic testing device and its corresponding sensors comply with the current state of the art and the safety regulations. All devices and accessory parts are factory tested and are delivered in a safe condition for operation. We reserve the right to make modifications to the device as part of ongoing product development, and to make changes to the shape and color.

Within the warranty period, SONOTEC GmbH will rectify, free of charge, all defects caused by material or manufacturing errors. At its own discretion, SONOTEC GmbH will provide a guarantee in the form of either a repair or the replacement of the defective device or component. The warranty does not cover the internal batteries or damage caused by improper use, wear or interventions in the device or sensors. The warranty also does not cover any defects that have only a negligible impact on the value or usability of the device.

The recording of valid test results, the interpretation of these results and any measures that are derived as a result are exclusively the responsibility of the user. SONOTEC does not assume any guarantee for the correctness of the recorded test values or test results. SONOTEC accepts no liability for any errors or damage that arise as a result of the further use of the recorded test and measurement values.

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