

System AQUAPHON®



Receiver AQUAPHON® A 100
Electro-acoustic water leak detection

Innovative technologies

The principle

When a pressurised water pipe develops a leak the water flows out it into the surrounding soil at high speed, which causes:

- The pipe material to vibrate at the exit point. This vibration, or sound, is transmitted by the pipe. This "noise" (called structure-borne) can be heard with the **AQUAPHON® A 100** even at remote contact points, e.g. valves.
- The water jet and the pipe, in the vicinity of the leak, also induce vibration into the surrounding soil. This "noise" (called ground-borne) is transmitted to the surface, where it can be picked up by the **AQUAPHON® A 100**.

The importance of listening

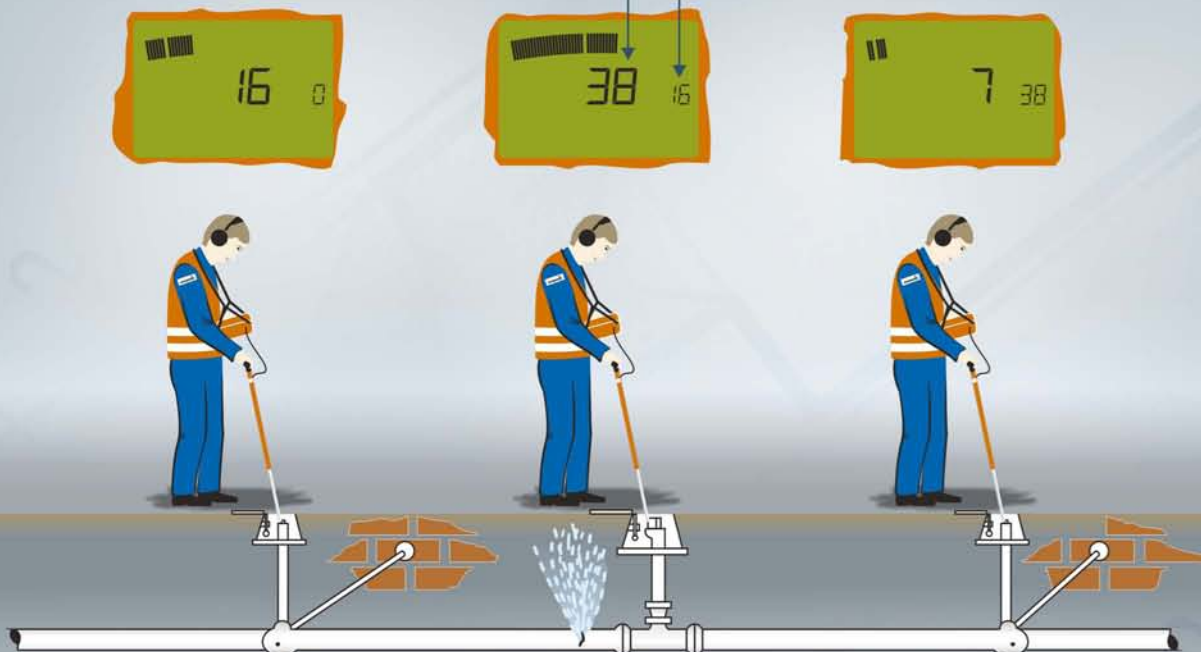
Combined with the advantages offered by the graphics of the integral LCD the human ear remains an important tool for assessing incoming noises. Practice enables noises of different types and tones to be differentiated and actual leak noise to be distinguished from extraneous noise. To assist the operator the **AQUAPHON® A 100** is supplied with headphones that provide outstanding sound reproduction.

Preliminary location using the test rod

In metallic pipes structure-borne sound is transmitted over particularly long distances. This makes the test rod very effective for preliminary location.

● Digital value for noise intensity at **current** measuring point.

● Digital value for noise intensity at **previous** measuring point.



Electro-acoustic water leak detection

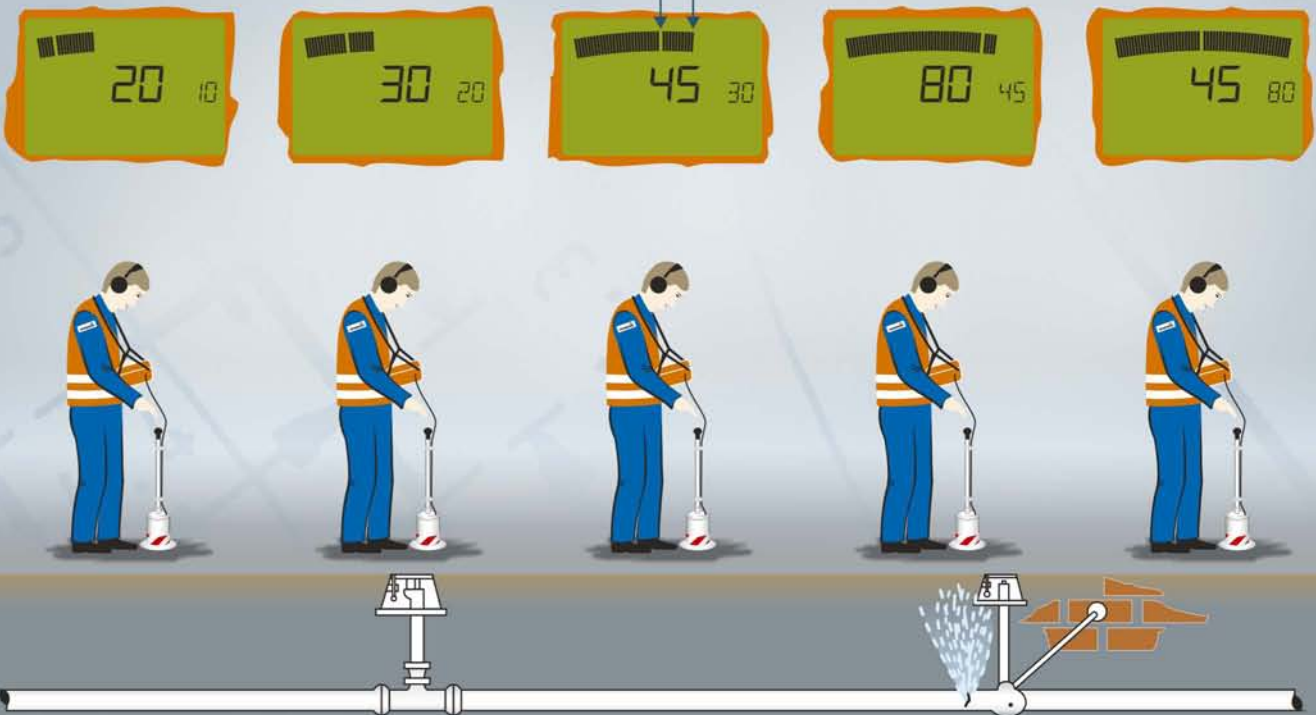
Location with the ground microphone

Structure-borne sound is not transmitted very well by non-metallic pipe materials. Taking readings at the valves with the test rod may not lead to satisfactory results. In these cases, by using the ground microphone, the sections between valves should also be checked. Using the ground microphone at regular intervals enables the leak to be located with sufficient accuracy for confident excavation. The **AQUAPHON® A 100** shows a precise display comparison of the noise levels between locations.



Is the noise getting louder or quieter? What is the trend? The LCD digital and analogue display is of great assistance, especially for beginners or less experienced operators, in answering these questions.

- Analogue value for noise level at the **previous** measuring point.
- Analogue value for noise intensity at the **current** measuring point.



The hearing-protection function

When developing the **AQUAPHON® A 100** an important consideration was providing the operator with protection from accidental exposure to high noise levels. With other instruments an uncomfortable sound level can be heard when the test rod slips from the contact point, or the headphones are activated too soon, or not soon enough, or something falls close to the ground microphone.

A novel technology makes this danger a thing of the past. The incoming noise is constantly analysed. When a very loud noise is picked up the sound in the headphones is immediately muffled. If the noises increase even further, the headphones finally are switched off completely.

Once this noise source has ceased the **AQUAPHON® A 100** automatically reverts to normal. The hearing-protection function can be adjusted to suit the wearer's comfort in any given environment.

The filter-optimisation function

The filter-optimisation function of the **AQUAPHON® A 100** allows it to detect a leak even when the sound is very muffled.

The receiver takes a noise sample with the ground microphone. This is automatically analysed and the instrument automatically sets the optimum frequency range to render the sound of the leak particularly clear.

Specifications



AQUAPHON® A 100

- 1 Ground microphone BO-4
- 2 Ground microphone 3P-4
- 3 Handle H-4
- 4 Test rod T-4 with various adapters
- 5 Headphones stereo
- 6 Charging station HS
- 7 **AQUAPHON® A 100**
- 8 Carrying system "Triangle"
- 9 Microphone EM 30



The **Ground microphone BO-4** is especially suitable for paved surfaces. The outside housing of the microphone is acoustically insulated from the internal microphone. The microphone body is mounted in a flexible rubber membrane which can move freely within the housing and it is therefore unaffected by rugged surfaces.

The **Ground microphone 3P-4** is for use on unpaved surfaces. A ground spike (supplied) can be screwed on for use in soft ground. Its tripod foot ensures stable contact at all times.

Easy-to-maintain microphones: Cables are wearing parts. Therefore all microphone cables have been designed to be replaced by the field operator. This means low service costs and less down time.



Technical data

- Automatic microphone recognition – appropriate frequency settings automatically selected
- Digital signal processor – for significant reduction of hissing
- Hearing-protection function – operator's hearing no longer in danger
- Filter-optimisation function – makes even difficult to distinguish sounds easier to hear
- Delayed-action display function – displays the lowest level of noise. More useful than the loudest!
- Memory function – no need to remember the last reading. Know if the leak is closer or further away
- Large illuminated display
- Built-in re-chargeable batteries – integral charging/buffering automatic, battery level display
- Charging via charging station HS with 12 V supply
- Operating time: approx. 12 hours
- Operating / storage temperature: -10 °C ... +50 °C / -25 °C ... +70 °C
- Weight: approx. 1.0 kg
- Dimensions (W x H x D): approx. 12.5 x 18 x 6.5 cm



Leak detection within structures can involve working in some tight locations. To carry out this work we provide the small, light, microphone EM 30 complete with short probe tip. Also available: Magnet, tripod and compact case.



AQUAPHON® AF 100
Combination receiver
for electro-acoustic
water leak detection and
pipe location

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