



APPLICATION NOTE

LEAK DETECTION

AT COMPRESSED AIR, GAS AND VACUUM SYSTEMS WITH SONAPHONE E

SONOTEC 

APPLICATION

Whether in large-scale industrial production, on assembly lines in medium-sized companies or in small workshops – compressed air has an important role to play almost everywhere. And it accounts for a large proportion of energy needs. Regular checking of the compressed air system to identify leaks reduces operating costs appreciably. Around 30 percent of the energy used in compressed air systems is lost through leakages. The leaks typically occur at couplings, valves or gates, as well as on faulty hoses, screw and flange

connections or corroded pipework. If these leakages remain undetected, even the best compressed air control can be of no further help. The compressors have to compensate for permanent pressure loss. They run for longer, need more energy and wear out faster. The result is higher costs. The regular detection and rectification of leakages, which are often only millimetres in size, therefore contributes to a huge cost saving and improvement in energy efficiency.



Further Applications of the SONAPHONE

- Tightness Testing
- Steam Trap and Valve Inspection
- Bearing Monitoring and Lubrication
- Detection of Partial Discharges

SOLUTION

Using SONAPHONE technology, anybody can locate leakages and seal failures in compressed air, gas and vacuum systems quickly and easily. If gas escapes from a leak it causes turbulences, which generate ultrasound. These ultrasonic signals are initially inaudible to the human ear. The ultrasonic testing equipment from SONOTEC converts the signals into optically and acoustically perceptible information for the user. In addition to the fast, reliable

location of compressed air and gas leaks, the handy ultrasonic detection devices of the SONAPHONE product family are also suitable for tightness testing of various systems, wear control on rotating machinery and providing evidence of partial electrical discharges where there is insulation damage. The checking of steam traps and valves is another task covered by the mobile devices.

FURTHER PRODUCTS FOR PREVENTIVE MAINTENANCE

SONAPHONE

Digital ultrasonic testing device with innovative sensors and intelligent software

- Intuitive user-friendly software
- New applications (e.g. leak classification)
- Test reports created quickly and easily

SONAPHONE *Pocket*

Compact ultrasonic testing device for leak detection on compressed air systems

- Compact, intuitive, robust
- Extensive accessories
- Easy to handle

SELECTION OF ACCESSORIES



The leakages are determined precisely by using the **directional tube with tip**. The attachment for the L60 shields lateral ultrasonic sources and can easily be plugged in and taken off with just one hand.



In order to grossly narrow the location of leakages, the **acoustic horn** is used in combination with the L60. The attachment makes leak detection possible from a distance of up to 8 meters.



The **flexible airborne probe L63** can be used in areas that are hard to access thanks to its malleability.



The most important probe for leak detection is the **airborne probe L60**. It is suitable for leak detection at distances of up to 3 meters.



PROCEDURE

Leaks are easy to find especially with the „gross to fine“ method. First, the area is roughly determined using the acoustic horn in combination with the airborne sound probe L60. Then the position of the leak is accurately determined with the L60 and the directional tube with tip.

1. Switch on the device. Make sure that the 40 kHz frequency is selected.
2. Now, select an appropriate probe and a suitable attachment, depending on the distance and accessibility of the area to be tested. For distances of up to 8 meters, we recommend the acoustic horn in combination with the airborne probe L60. The attachment can also be removed for areas of up to 3 meters.
3. Familiarize yourself with your test environment. To do so, locate the existing compressed air components and rule out foreign ultrasonic sources. Accustom yourself to the existing ambient noise.
4. Now the test begins. Put on the headphones and follow the audible and visual signals on the display. Turn the control knob to individually adjust the volume.
5. An increasingly louder noise and an increasing level on the display both indicate an ultrasound source and therefore a leak in a compressed air, gas or vacuum system.
6. To limit the potential leak area, move the probe to the right, to the left, up and down. Follow the acoustic signal and significantly narrow down the potential location of the leak. Some simple but effective shielding techniques against other sources of ultrasonic sound can significantly simplify leak detection. For example, you should close open doors or use your body to shield the area you are searching from foreign sources of sound.
7. If you have been using the acoustic horn, you can now switch your equipment and begin „fine“ leak detection.
8. In order to pinpoint the exact source of the leak, you can expand the L60 airborne probe with the directional tube with tip. Search the area once more and concentrate on the sound coming from the headphones while watching the changing values on the display. Please note that ultrasound is reflected from surrounding walls and objects. Therefore, make sure that you have located the leak and not its opposing reflection.
9. In difficult access areas, the flexible airborne probe L63 should be used. The 30 cm long special probe makes parts of the system that are difficult to reach much easier to test.
10. Once you have found the leak, mark it with a filled-out Leak Tag and arrange its repair.



SONOTEC preserves the right to change technical specifications without further notice. (Rev. 1 / 2016-08-09)

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