



LKS  
1000  
**V3+**  
**PRO**



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Testing Equipment Since 1969!

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Berg Engineering & Sales Company, Inc.

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**Bluetooth**



**Speaker**  
(optional)



**Headphones**  
(optional)



**COMPRESSED AIR LEAK  
DETECTION**



**COMPRESSED AIR LEAK  
DETECTION**



**STEAM TRAP  
INSPECTION**



**CORONA, PARTIAL  
DISCHARGE DETECTION**



**VACUUM LEAK  
DETECTION**



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# LEAKSHOOTER® LKS1000-V3+PRO

## Ultrasonic compressed air, gas and vacuum leak detector with camera.

Compressed air is a costly form of energy and 20 to 40% of it is lost through leaks.

Systematically checking for and eliminating leaks can therefore bring considerable energy savings.

LEAKSHOOTER® LKS1000-V3+PRO is a unique and sensational detection device:

- It uses a camera and a dynamic on screen target to precisely find leak location (patent).
- It features a new concept of Steam Trap diagnostic: The STRAPSHOOTER+®.

The STRAPSHOOTER+® program is an Easy to use firmware which can automatically diagnose your Steam Trap condition state.

LEAKSHOOTER® LKS1000-V3+PRO is extremely sensitive, capable to find compressed air leaks (not bigger than the size of syringe needle) at a distance of 20m.

The LEAKSHOOTER® LKS1000-V3+PRO is used like a camera.

When it comes near a leak, a dynamic yellow target appears on the large colour screen. The target turns red and shrinks as it approaches the source of the leak. A bar graph at the bottom of the screen accompanies and facilitates the search.

When the device is facing the leak, a cross appears in the centre of the target. It is then possible to photograph and save the precise location of the leak.



APPROXIMATE SEVERITY OF  
**LEAK & FLOW & COST**  
(0-10) (m³/h) (€, \$, £)

VERY SMALL

SMALL

MEDIUM

BIG

VERY BIG




Each photo is numbered, dated and timed and shows the dB RMS level of the leak.

The photos can be uploaded directly onto a PC via a USB cable (supplied), ready to be attached to inspection reports.


It is still possible, whilst visually searching for a leak, to use the traditional method of leak detection, listening for the hissing sound of the leak using the professional headphones also supplied, which can be plugged directly into the device.

Various accessories are available for the LEAKSHOOTER® LKS1000-V3+PRO enabling it to be used for other applications as well as leak detection.


ACCESSORIES



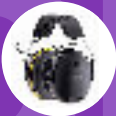
Detection in hard to reach areas with sensor:  
LKS FLEX – Flexible probe 400mm long




For Steam trap control:  
LKSPROBE  
Mechanical US Sensor



Tightness and sealing control:  
LKSDOME  
Ultrasonic emitter



Listening:  
LKS HEAD – Bluetooth Headphones



Listening:  
LKSSPEAKER  
Bluetooth Speaker

# NEW!

## STRAPSHOOTER+<sup>®</sup> program: Detect defective trap in seconds!

Steam Trap Surveys with traditional detector is often complex and is not accessible to everyone.

Simply check temperatures on the Inlet and Outlet trap pipes.

Hear what happened in the trap and wait about the AUTO mode conclusion.

LEAKSHOOTER<sup>®</sup> LKS1000-V3<sup>+</sup>PRO uses:

- Ultrasonic contact probe to analyze the Steam Trap working progress.
- Embedded 160x120 pixels infrared camera to measure the pipe T° IN & T° OUT.
- STRAPSHOOTER+<sup>®</sup> program to see, hear, analyze with AUTO mode and report the Steam Trap condition state.
- Embedded camera to take the Steam Trap picture for reporting.

**Can detect not OK: BIG LEAK-CLOSED-DROWNED-FAST CYCLING-UNKNOWN and OK: CYCLING-MODULATING steam trap conditions.**

(Compatible with ball float, inverted bucket, thermodynamic and thermostatic traps.)

Example of an  mode acquisition with an OK modulating trap  
(ex: Mechanical ball float)



**Modulating**



# With embedded Thermal Camera (160x120 pixels with 50 mK sensitivity)

Example of a thermodynamic steam trap thermal view





# Live-steam losses caused by leaking steam traps represent a major economic factor!

## How much does it cost?

STEAM LEAKAGE = A (kg/h)

OPERATION HOURS = B (h/year)

STEAM UNIT COST = C (± 20€/1.000 kg)

$$\text{COST} = (A \times B \times C) / 1.000 \text{ (€/year)}$$

## Example for only one leak:

With continuous operation, B = 8.000h/year

**Small leak**

(4 kg/h)

**= 640 €/year !**

**Standard leak**

(7 kg/h)

**= 1.120 €/year !**

**Medium leak**

(15 kg/h)

**= 2.400 €/year !**

**Big leak**

(70 kg/h)

**= 11.000 €/year !**

Please note these values are approximate.



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# SPECIFICATIONS LKS1000-V3+PRO

Sensitivity	Detects a leak of 0,1 mm at 3 bars at 20 m
Camera	Colour 640 x 480 pixels + LED lighting
Display	LCD colour 5.7" 640 x 480 pixels
Pictures	BMP, number, name, date and time
Dynamic target	White circle for leak detection Colored circle with cross for the leak severity
Measurements (STRAPSHOOTER+® mode)	dB RMS and max RMS – Auto mode & Real time RMS curve
Memory	Up to 1000 pictures, can be uploaded to PC
Communication	USB cable supplied
US sensor	Open type - Bandwidth $\pm 2$ kHz to - 6 dB - Central frequency 40 kHz $\pm 1$ kHz - Adjustable frequency mixer from 30 to 50 kHz - Adjustable gain from 40 to 106 dB
Thermal Camera	Flir Lepton 160x120 pixels, 50mK sensitivity, -10°C to +400°C, adjustable emissivity $\epsilon$
Headphones	Adjustable volume
Power supply	Nickel-metal hybride (NiMH)
Autonomy	6 hours
Temperature range	- 10°C to + 50°C
Dimensions	H : 310 mm - W : 165 mm - D : 65 mm
Weight	700 gr for the LKS1000 3,8 kg including ABS case
CE Standards	CEM 2004/108/CE : EN61000-6-4 & EN61000-6-2
Accessories	<ul style="list-style-type: none"> <li>• Ultrasonic emitter Reference : LKSDOME</li> <li>• Flexible 400 mm US Sensor Reference : LKSFLEX</li> <li>• Flexible 1500 mm US Sensor Reference : LKSFLEX1500</li> <li>• Mechanical US sensor (steam tr: Reference : LKSPROBE</li> <li>• Bluetooth headphones Reference : LKSHEAD</li> <li>• Bluetooth Speaker Reference : LKSSPEAKER</li> </ul>



SYNERGYS TECHNOLOGIES has been established in 1996 in France, to offer innovative and professional solutions for preventive and predictive maintenance.

SYNERGYS TECHNOLOGIES is the inventor of the ultrasonic visualization concept with the LEAKSHOOTER®, the contour visualization concept with the T°SHOOTER® and of the MCP (Machine Condition Picture) concept with the VSHOOTER®.

We are present worldwide with professional and trained distributors.



**SYNERGYS**  
TECHNOLOGIES

LEAKSHOOTER® a SYNERGYS  
TECHNOLOGIES innovation



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