



# Leakage

Leakages are a major problem for your compressed air system. Did you know that the biggest waste of energy in compressed air systems is caused by leakages? Almost as much as 30% of the cost of compressed air can be saved by eliminating leakages. Based on this, it is necessary to frequently check your compressed air systems to detect and eliminate leakages. With our Leak Check series you get all the function needed to detect leakages and measure the energy and more importantly the money wasted.

While Leak Check is reliable in detecting leaks the Leak Check Pro1 / Pro2 is also able to calculate the costs those leaks will cause over time. The user gets a review about the actual state of the tested system and about the estimated potential cost savings.

## **Our leak detectors are suitable for the following gas types:**

- ▶ Air / compressed air
- ▶ Argon (Ar)
- ▶ Oxygen (O<sub>2</sub>)
- ▶ Nitrogen (N<sub>2</sub>)

## Leak Check Pro 1/ Pro 2

Leak detector with camera indicates leakage rate in l/min and costs in €



Find out your leak rate (l/min) and potential saving (€/year)



Find the smallest leaks in far distance



Auto level: adapts the sensitivity automatically to the environment and eliminates the ambient noise reliably



Photograph leaking parts



Describe the leak and necessary actions



Transmit the leak details via USB to your desktop software



Create an ISO 50001 report



Seek the leak the whole day (9 hours)



The Leak Check meets the requirements of Class I „Standard Test Method for Leaks with ultrasound“ (ASTM Int. - E1002-5)

Costs per year						
Pressure	Leak size - Diameter (mm)					
	0,5 mm	1,0 mm	1,5 mm	2,0 mm	2,5 mm	3,0 mm
3 bar	90 €	361 €	812 €	1.444 €	2.256 €	3.248 €
4 bar	113 €	451 €	1.015 €	1.805 €	2.820 €	4.061 €
5 bar	135 €	541 €	1.218 €	2.166 €	3.384 €	4.873 €
6 bar	158 €	632 €	1.421 €	2.527 €	3.948 €	5.685 €
7 bar	180 €	722 €	1.624 €	2.888 €	4.512 €	6.497 €
8 bar	203 €	812 €	1.827 €	3.248 €	5.076 €	7.309 €

Table: Leakage costs within one year in case of operation 24 h/365 days, calculated with compressed air costs of 1.9 ct/Nm³.

## Leak Check Pro 1/ Pro 2 is a consistent advancement



The new leak meters Leak Check Pro 1/ Pro 2 with integrated camera and leakage calculation are ideal measuring instruments which help to find and document even smallest leakages (0.1 l/min corresponds to approx. 1 € per year) easily even in far distances.

Leak Check Pro 2 is the worldwide first leak meter with an additional freely assignable sensor input for all PMH sensors. In addition to the leakage measurement and detection also all necessary measurements with regards to dew point, flow, pressure, and temperature - can be carried out.

### Accessories

- ▶ **Acoustic trumpet** - bundles the acoustic waves of smallest leakages, disturbing ambient noise will be eliminated
- ▶ **Focus tube with focus tip** - for precise locating of smallest leakages in narrow areas
- ▶ **Optionally available** - Gooseneck enables a positioning of the leakage on the spot – even in case of hardly accessible locations. Noise is hidden.
- ▶ **Optionally parabolic mirror** - for leak detection at long distances. Laser pointer and camera integrated.

### Leak detection at:

- ▶ Compressed air, gas, steam and vacuum systems
- ▶ Steam Traps
- ▶ Seals

The noise-proof headset enables the leak detection also in EXTREMELY loud ambient. The ambient noise will be faded out, the leakage (inaudible ultrasonic sound) will be transformed to an audible signal. The laser grants an exact locating.

### Options



Acoustic trumpet



Focus tube with focus tip



Optionally available



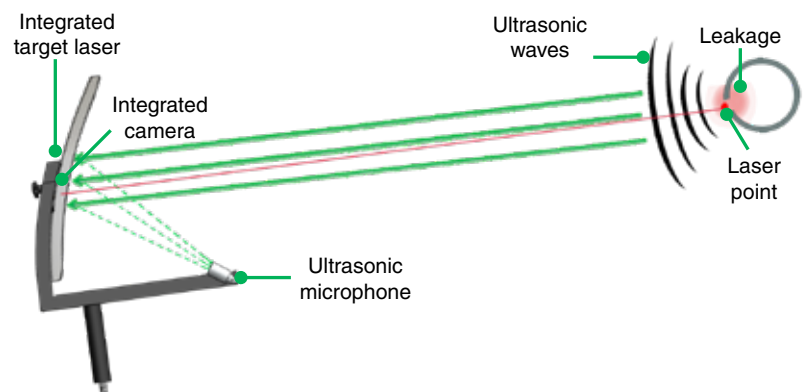
Parabolic mirror



Noise-proof headset

## Professional accessory parabolic mirror

By bundling the ultrasonic waves in the parabolic mirror, even the smallest leaks of 0.8 l / min (ca. 8 € p.a.) at a distance of up to 10 - 15 m can be localized with pinpoint accuracy ( $\pm 15$  cm). The shape of the parabolic mirror ensures that only ultrasonic waves of the targeted leak are evaluated. Disterbing noise is reduced to a minimum.



Checking high voltage overhead lines for corona discharge



Accurate leak detection during operation with laser pointer and integrated camera



Leakage files stored in Leak Check Pro 1/ Pro 2 are exported to a USB stick for issuing a report by software



If the leakage is detected and stored, the following data are also stored in the Leak Check Pro 1/ Pro 2 and will be available after the export to the PMH Leak Reporter software to issue a report:

- Photo of the leakage
- Date/time
- Company name/department / machine
- Size of the leakage in liters/min (unit selectable)
- Costs of the leakage per year in € (currency selectable)

Detailed reports can be issued via PC software, which can be placed at the disposal of the operators of compressed air systems resp. the head of the respective department.

The report can be issued for the whole company or for each department and it documents the detected leakages easily and clearly. Due to the summation at the end of the report it is easy to get an overview on the whole leakage amount in liters/min as well as the total leakage costs per year.

Leak Tags in hardcopies for documentation on-site

## Leakage - report for ISO 50001 Audits

Building	Place	Date	Time	Inspector	Size	Cost	Year	Status	Priority
Building 1	Place 1	2018-04-10	10:00	Inspector 1	10.00	100.00	2018	Open	High
Building 2	Place 2	2018-04-10	11:00	Inspector 2	20.00	200.00	2018	Open	High
Building 3	Place 3	2018-04-10	12:00	Inspector 3	30.00	300.00	2018	Open	High



## Leak Check Pro 1/ Pro 2



Transportation case Leak Check Pro 1/ Pro 2



Transportation case with  
Parabolic mirror

Transportation case with Parabolic mirror

Description	Order no.
<b>Set Leak Check Pro 1 consisting of:</b>	2255331710
Leak Check Pro 1 leak detector with acoustic trumpet, and integrated camera, 100 leak tags for marking the leakages on site	2255332718
Transportation case	2255332719
Sound-proof headset	2255332720
Focus tube with focus tip	2255332721
AC adapter plug	2255332722
Helix cable for connecting the ultrasonic sound sensor, length 2 m, (extended)	2255332723
<b>Set Leak Check Pro 2 consisting of</b>	2255332456
Leak Check Pro 2 leak detector incl. acoustic trumpet, with integrated camera and additional input for external sensors, 100 leak tags for marking the leakages on site	2255332724
Transportation case	2255332719
Sound-proof headset	2255332720
Focus tube with focus tip	2255332721
AC adapter plug	2255332722
Helix cable for connecting the ultrasonic sound sensor, length 2 m, (extended)	2255332723
<b>Equipment</b>	
PMH Leak Reporter – for detailed ISO 50001 reports. Gives an illustrated survey of the found leakages and their possible savings. Measures for elimination including status display can be defined for every leakage - License for 2 computers	2255332459
Gooseneck for leakage detection at sites which are difficult to access (length 600 mm)	2255332460
Gooseneck for leakage detection at sites which are difficult to access (length 1500 mm)	2255332729
Parabolic mirror for leak detection at long distances, incl. Transportation case	2255332461
Ultrasonic tone generator for leak testing	2255332725
500 leak tags for marking the leakages on site	2255332726
<b>Calibration</b>	
Recalibration Leak Check Pro 1/ Pro 2	2255332727
<b>Further sensors / accessories for connection to Leak Check Pro 2</b>	
PDP Sens 1/2 dew point sensor for mobile devices, -80...+20°Ctd, incl. mobile measuring chamber, 5 m connection cable and perforated protection cap	2255332526
Flow sensor Flow Check Universal , Max version (185 m/s) sensor length 220 mm, incl. 5 m connection cable	2255332524
Standard pressure sensor PMH 16, 0...16 bar, ± 1 % accuracy of f. s	2255330414
Differential pressure sensor 1.6 bar diff.	2255332486
Connection cable for pressure, temperature or external sensors on mobile instruments, ODU / open ends, 5 m	2255332514
PMH Basic - data evaluation in graphic and table form - reading out of the measured data via USB Stick Ethernet. License for 2 computers	2255332468

Technical data Leak Check Pro 1/ Pro 2	
Working frequency	40 kHz ± 2 kHz
Connections	3.5 mm stereo jack for headset Power supply socket for connecting an external recharger
Laser	Wave length: 645-660 nm Output power: < 1 mW (laser class 2)
Display	3,5" Touch screen
Interface	USB interface
Data logger	8 GB SD memory card (100 million values)
Power supply	Internal rechargeable Li-Ion batteries approx. 9 h continuous operation, 4 h charging time
Ambient temperature	0-+50°C
EMC	DIN EN 61326
Auto level	Adapts the sensitivity automatically to the environment and eliminates the ambient noise reliably
Sensitivity	min: 0.1 l/min at 6 bar, 5 m distance, approx. 1€/year compressed air costs

Technical data external sensor input (only Leak Check Pro 2)	
Measuring range	Please see external PMH sensors
Accuracy	Please see external PMH sensors
Voltage supply	Output voltage: 24 VDC ± 10% Output current: 120 mA in continuous operation

## Leak detector Leak Check

### Features & Benefits

- ▶ Robustness and low weight ensure fatigue-free use in industrial environments
- ▶ Improved detection of leaks with optional acoustic trumpet
- ▶ Modern lithium-ion battery with high capacity, external recharger
- ▶ Minimum operating time 10 h
- ▶ Easy operation via keypad
- ▶ Leak detection in compressed air lines, gas, vapor and vacuum plants
- ▶ Leak detection in door seals
- ▶ Leak Check with focus tube and focus tip for precise locating.
- ▶ The set includes a robust impact-proof transportation case which contains all necessary components and accessories.
- ▶ Sound-proof headset enables leak detection in extremely noisy environments



Leak Check is available either as standalone device or in a complete set



If gases escape through leaks in piping systems (e.g. untight screwed connections, corrossions and so on) ultrasonic noises are generated. By means of Leak Check even the smallest leakages which cannot be heard by the human ear and which are not visible due to their size can be detected even from distances of several meters. Leak Check transforms the inaudible signals into a frequency which can be identified. By means of the comfortable sound-proof headset these noises can be realized even in extremely noisy environments.

The Leak Check leak detector convinces by its obviously refined sensor technology and its improved support in the tracing of leaks. By means of the integrated laser pointer which serves for target heading the leak can be localized more accurately.

Through the use of a specially designed trumpet, a better bundling of the sound waves is achieved. This trumpet acts like a directional microphone, suppressing unwanted noise and facilitating the pinpoint location of leaks even in hard-to-reach areas. Due to the special design of the bell, the use of the laser pointer is not hindered.

A handy ultrasonic transmitter is available for detecting leaks in pressureless systems. The transmitter is positioned so that the sound can enter the piping system. The ultrasonic signal penetrates the smallest openings, which can then be detected with the Leak Check.

Even very small leaks at hatches, doors and windows can be detected.

Description	Order no.
<b>Set Leak Check consisting of:</b>	2255330400
Leak Check Leak detector	2255332730
Transport case	2255332719
Sound-proof headset	2255332720
Focus tube with focus tip	2255332721
Battery charger	2255332722
Acoustic trumpet	2255332728
<b>Accessory, not included in the set:</b> Ultrasonic tone generator	2255332725

Technical data Leak Check	
Working frequency	40 kHz $\pm$ 2 kHz
Connections	3.5 mm stereo jack for headset. Power supply socket for connecting a external recharger
Laser	wave length: 645-660 nm output power: < 1 nW (laser class 2)
Operating duration	10 hours
Charging time	approx. 1.5 hours
Operating temp.	0 to 40 °C
Storage temp.:	-10 °C to 50 °C

Costs per year						
Pressure	Leak size - Diameter (mm)					
	0,5 mm	1,0 mm	1,5 mm	2,0 mm	2,5 mm	3,0 mm
3 bar	90 €	361 €	812 €	1.444 €	2.256 €	3.248 €
4 bar	113 €	451 €	1.015 €	1.805 €	2.820 €	4.061 €
5 bar	135 €	541 €	1.218 €	2.166 €	3.384 €	4.873 €
6 bar	158 €	632 €	1.421 €	2.527 €	3.948 €	5.685 €
7 bar	180 €	722 €	1.624 €	2.888 €	4.512 €	6.497 €
8 bar	203 €	812 €	1.827 €	3.248 €	5.076 €	7.309 €

Table: Leakage costs within one year in case of operation 24 h/365 days, calculated with compressed air costs of 1.9 ct/Nm<sup>3</sup>.