



"Your Direct Source for Plant Maintenance, Reliability, Test & Measurement"

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Ultrasonic Leak Detection

How does it work???

As the name implies [ultrasonic leak detectors](#) detect the ultrasonic sound of a leak. You are probably familiar with the hissing sound a large leak makes. Smaller leaks also emit sound, however the frequency is too high for our ears to detect it. By a process called heterodyning, Ultrasonic Leak Detectors translates the ultrasonic hissing sound to a lower frequency where it can be heard through headphones, and leads you to the source. As you get closer, the sound gets louder and/or the LED meter increases. Decrease the sensitivity as you close in on the leak to easily pinpoint its location. Some leaks can be heard from several feet away, therefore direct access to the leak is not always necessary. As long as the leak is turbulent, there will be enough sound to be detected ultrasonically. Ultrasonic's can detect pinhole leaks with as low as 1 psi. However, the more pressure behind the leak, the more turbulence there will be, and the easier it will be to locate.

Ultrasonic Leak Detectors are most sensitive to sounds around 40 kHz, that's twice the frequency of the best human hearing. Any turbulent gas will generate ultrasound when it leaks, therefore it does not matter what gas you are leak testing. Ultrasonic's will detect air, nitrogen, new or old refrigerants, or even air as it rushes into a system under vacuum.

[Ultrasonic Leak Detectors](#) are so sensitive to sound that it will let you hear the blink of the human eye, but again it is not gas specific. For example, a leak test can be done in an enclosed area which is saturated with refrigerant, and the only indication an ultrasonic will give you is the sound of the leak. But because the ultrasound is focused on a specific band of sound... wind noise, voices, traffic, and most normal operational background noise will NOT be detected.

Condition Monitoring

Friction in moving equipment also generates ultrasonic sound. As lubricants break down and bearings wear, serious defects are clearly heard, while subtle defects create noticeable changes in ultrasonic sound levels. These subtle changes indicate that a particular bearing or gearbox is starting to fail.

Airborne Applications including:

- Vacuum Leaks
- Welds
- Substations
- Heat Exchangers
- Seals
- Pumps
- Tanks
- Air Brakes
- Gaskets
- Pressure Leaks (all types)
- Electrical Arc (including CORONA)
- Caulking (air infiltration)
- Wind Noise Problems
- Junction Boxes

Contact Applications including:

- Bearings
- Gear Boxes
- Line Blockage
- Steam Traps
- Valves
- Compressors
- Motors
- Pipes
- Flow Direction
- Underground Leaks