



## SDT 150 ULTRASONIC SYSTEM

### General Description

The compact hand-held SDT 150 ultrasonic system operates like an electronic stethoscope. It quickly pinpoints ultrasound originating from air, gas, liquid or vacuum leaks, or friction in moving parts and converts them to audible frequencies and an easy to read, numerical LED readout. Diagnosing system problems is faster, safer and easier. The SDT 150 will detect and locate ultrasounds even in a noisy environment (+80 dB), because it does not react to extraneous, audible noises. The SDT 150 system serves a wide variety of functions in plant operations, maintenance and quality control.

### Typical Applications

- Early detection of harmful friction in moving parts (i.e. bearings and couplings)
- Evaluating maintenance needs
- Inspecting mechanical equipment
- Identifying product defects
- Projecting equipment replacement
- Injector flow evaluation
- Predictive maintenance evaluation
- Locating air, gas, liquid or vacuum leaks

### Features

- LED and digital displays
- Built-in loudspeaker
- Digital memory
- Variable input sensitivity
- Rechargeable nicad battery
- Direct audio output
- Compact size & Lightweight



The system is manufactured with a rugged design in mind. The cast aluminum housing protects sensitive internally mounted sensors and circuits from the harsh environment and shock. The system comes with a waterproof hard shell case that is lightweight and easy to carry.

### System Contents

- Model 150 ultrasonic detector
- High impedance, 130 dB headphones
- Localization sound probe and insulating extension tube
- High precision contact probe with ultra sensitive 4.5" needle
- Two rechargeable nicad batteries
- Battery charger
- Sturdy carrying case

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## Performance Features

**Operating frequency of 40 KHz** – SDT 150 operates in a frequency range that is best suited for a variety of industrial environments. Almost all ultrasounds caused by friction, pressurized leaks, and electrical arcs have peak outputs close to the 40 KHz range.

**Excellent Signal to Noise Ratio** – The SDT 150 is not sensitive to the background noise, which interferes with obtaining a clear ultrasound signal. It detects and locates ultrasounds even in noisy environments.

**Calibrated LED Display** – LED display reads out in decibels to make confirmation of findings easy among users of different skill levels and hearing capabilities.

**Headphones** – The headphones block as much as 130 dB of background noise to better hear the ultrasounds and more effectively operate the detector.

**Localization Extension Probe** – To distinguish between ultrasounds that are being emitted in close proximity, this probe narrows the signal field for better determining the sources of the ultrasounds.

**Rechargeable Nicad Battery** – Unit includes a recharging connector to make recharging easy.

## Several Applications for SDT Ultrasonic Detection System

**Early Warning of Bearing Failure** – Record baseline ultrasonic readings on critical bearings, motors, conveyors valves and other equipment. Trend the results automatically to determine when to lubricate and/or replace components before they fail!

**More Effective Lubrication** – The SDT 150 can detect when a bearing needs lubrication, as well as when it is over lubricated by observing the noise level of the bearing. While applying lubricant, use it to determine when the grease reaches and quiets the bearing prior to over greasing.

**Diagnose Valve Failure** – Some common problems with valves, such as internal leaks or blockage can be confidently diagnosed. Healthy valves read very quiet while a 'leaker' will emit turbulent noise in the 35+ KHz range. Since this unit only detects high frequency ultrasound, valves can be checked while in service, even in a very noisy environment.

**Verify the Condition of Steam Traps** – Using the SDT 150 with the contact probe, the opening and closing of steam are verified. All types of steam traps are monitored using ultrasound technology because it is fast, effective, non-intrusive, and requires very little training.

**Detect Compressed Air and Gas Leaks** – Compressed air and gas leaks create ultrasonic turbulence when they pass from the pressurized side across the leak orifice to the non-pressurized side (atmosphere). Using the SDT 150, scan along the pipe until the characteristic hissing sound is heard in the headset. With the rubber location probe in place, the leak is pinpointed quickly even in noise environments.

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## List of Uses for the SDT 150 Ultrasonic System:

### Mechanics:

- Bearings
- Nozzles
- Compressors
- Valves
- Gears
- Injectors
- Transmission
- Any moving mechanical part

### Hydraulics:

- Pumps
- Flaps
- Pressure
- Shock Absorbers
- Actuators
- Valves
- Circulating Pumps
- Any hydraulic circuit

### Leaks:

- Pneumatic
- Vacuum
- Tank leaks
- All gas leaks
- Valve leaks

## Product Overview

- o Crystal oscillator
- o Input amplifier in SMT (Surface Mounted Technology)
- o Analog storage
- o Digital memory display
- o Measuring ranges of: -10 to 0 db, 0 to + 99 db (0db =  $1\mu v$ )
- o RMS/DC converter
- o 2 seven segment LED displays
- o 20 dB amplifier
- o Amplifier adjustable from 0 to 60 dB in 10dB increments
- o Audio output (for scope, spectrum analyzer, etc)
- o DC output for transcript in dB
- o Input for accessories
- o 250 mA/hour 9.6 V rechargeable and removable battery
- o Indication of under or over saturation by LED's:
  - Left LED: + 7 dB (p-p 100m V)
  - Right LED: -30 dB (p-p 100m V)
- o Warranty: one year parts and labor



## Technical Data

- o Measuring ranges of: -10 to 0 db, 0 to + 99 db (0db =  $1\mu v$ )
- o Conversion error: +/- 1 dB
- o Average signal/noise ratio: -5 dB / $\mu v$
- o Oscillator frequency: 38.40 kHz
- o 4<sup>th</sup> order Butterworth low pass filter: 2 kHz
- o -3 dB bandwidth: 36.70 – 38.35 – 1.65 kHz, 38.45 – 40.70 – 2.25 kHz
- o Total bandwidth of the receiver: 3.85 kHz
- o Input impedance:  $Z_N = 3.5 k\Omega$
- o Maximum input voltage:  $V_{IN} = 100 mV$
- o Charging time: 8 to 10 hours
- o Charging life without display: 4 hours
- o Charging life with display: 2 hours
- o Dimensions in inches (l x w x h): 10.2 x 3 x 2.3
- o Weight: 2.45 lbs

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