

# ULTRAPROBE® 9000

Digital ultrasonic inspection system for predictive maintenance with easy software reporting tools

The Ultraprobe® 9000 is a digital ultrasonic inspection, information, storage and retrieval system that's versatile and easy to use (most operators learn within 15 minutes!). This Ultraprobe® will help move you through inspections quickly. Whether used for troubleshooting or a pre-planned route, data is easily viewed on the display panel and stored with the push of a button.



*Scale is in calibrated decibels traceable to NIST*

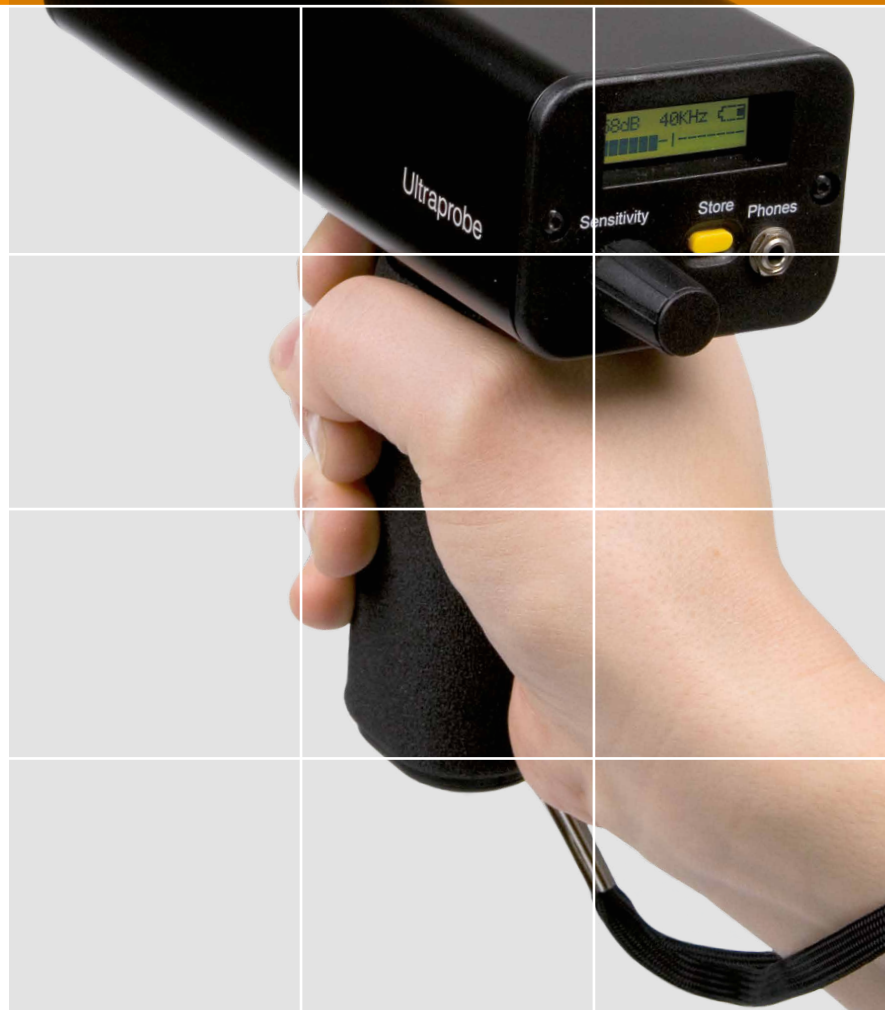
The easy-to-read display panel offers calibrated decibel readout and a 16-segment bar graph, which instantly registers sound intensity changes and simultaneously registers peak hold as you scan.

The Ultraprobe® 9000 engineering combines the best of both worlds:

- Scans as quickly as with analog instruments
- Uses the digital information to store and trend

On board data logging utilizing **Ultratrend DMS™ (Data Management System)** provides:

- Multiple data views
- History table/spread sheets
- Trend charts
- Export files to MS Excel
- Flexibility as never before!



## UE Systems unique Spin and Click™ technology makes sophisticated inspection simple and quick!

You'll be amazed at how much you can accomplish with only 2 controls.

By just **"spinning"** and **"clicking"** you can:

- Locate and identify potential problems
- Store data
- Change frequency and sensitivity quickly
- Download data via USB output
- Adjust basic operation modes
- Select "snap shot" function... and more!





### Ultraprobe® 9000 features

- Open Platform Software
- Interchangeable Modules
- Frequency Tuning
- Spin and Click™ Technology
- Ultratrend Sound Filtration
- 120 dB Dynamic Range
- Acoustic Isolating Headphones
- Environmentally friendly rechargeable batteries
- Easy interface for most Vibration Analyzers including SKF, ENTEK, DLI, CSI, DI

### Typical Ultraprobe Applications Data Based Mechanical Inspection/Trending

- Bearing Conditions
- Rubbing Conditions
- Cavitation
- Gears/Gear Boxes
- Pumps/Motors
- Lack of Lubrication

### Data Based Leak Detection/ Energy Audits

- Compressed Air
- Compressed Gases (O<sub>2</sub>, NO, etc.)
- Vacuum Leaks
- Seals and Gaskets
- Condenser Tubes
- Cockpit Windows
- Hatches
- Boilers
- Heat Exchangers
- Valves
- Steam Traps

### Data Based Electrical Inspection

- Arcing
- Tracking
- Corona
- Switchgear
- Transformers
- Insulators
- Relays
- Bus Bars

### Ultraprobe® 9000 Specifications

<b>Construction</b>	Hand-held pistol type made with coated aluminum and ABS plastic
<b>Circuitry</b>	Solid State SMD Digital Circuitry with temperature compensation
<b>Frequency</b>	20 kHz to 100 kHz (tunable in 1 kHz increments)
<b>Response Time</b>	< 10 ms
<b>Display</b>	16 x 2 LCD with LED Backlight
<b>Memory</b>	400 storage locations
<b>Battery</b>	NiMH Rechargeable
<b>Operating Temperature</b>	0 °C to 50 °C (32 °F to 122 °F)
<b>Outputs</b>	Calibrated heterodyned output, decibel (dB) frequency, USB data output
<b>Probes</b>	Trisonic Scanning Module and Stethoscope Module
<b>Headset</b>	Deluxe noise attenuating headphones for hard hat use
<b>Indicators</b>	dB, Frequency, Battery Status and 16 Segment Bar Graph
<b>Sensitivity</b>	Detects 0.127 mm (0.005") diameter leak @ 0.34 bar (5 psi) at a distance of 15.24 m (50 ft.)
<b>Threshold</b>	1 x 10 <sup>-2</sup> std. cc/sec to 1 x 10 <sup>-3</sup> std. cc/sec
<b>Dimensions</b>	Complete kit in Zero Halliburton aluminum carrying case 47 x 37 x 17 cm (18.5" x 14.5" x 6.5") Pistol Unit: 0.9 kg (2 lbs.) Complete carrying case: 6.4 kg (14 lbs.)
<b>Weight</b>	1 kg (2 lbs.)
<b>Warranty</b>	1-year parts/labor standard, 5 years with completed warranty registration card.
<b>Display Modes</b>	Real Time, Snap Shot, Peak Hold and Storage Display *depends on leak configuration **specify Ex rating if needed at time of order



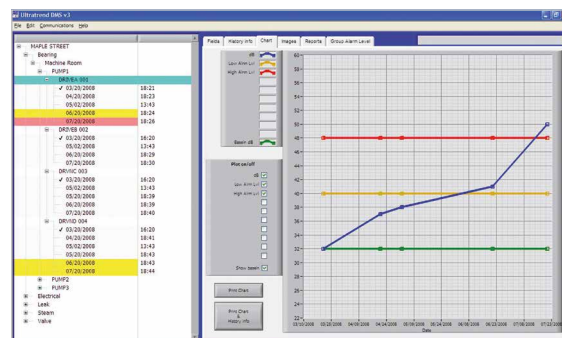
Stethoscope module



Long range module



Close focus module



DMS - Data Management Software



# ULTRAPROBE®

## Accessories



### DHC Noise Isolating Headphones

There are two models. Both meet or exceed ANSI specifications and OSHA standards with over 23 dB of noise attenuation. DHC-2 has a headband loop to keep the phones over the ears while DHC-2HH is for Hard Hat use. The DHC-2HH is standard equipment for Ultraprobe® models except the model 100.



### LRM Long Range Module

A uniquely designed parabolic microphone that lets you detect leaks and electrical discharges at a distance. The LRM doubles the detection distance of standard scanning modules.

Ultraprobe® 550, 2000: **LRM-2**  
 Ultraprobe® 3000: **LRM-3**  
 Ultraprobe® 9000 & 10,000: **LRM-9/10**



### UWC Ultrasonic Wave Form Concentrator

More than double the detection distance of standard scanning modules with this extremely sensitive and directional parabolic dish. The UWC utilizes seven transducers to provide pinpoint accuracy with a 5° reception field. Detection Range: 34 bar (5 psi) through 0.127 mm (0.008") orifice at distance of 30.48 m (100 ft).

Ultraprobe® 550, 2000: **UWC-2000**  
 Ultraprobe® 9000 & 10,000: **UWC-9/10**



### HTS Holster

Carry your Ultraprobe® on your belt, hands free. Be sure to order the correct holster for your Ultraprobe® model.

Ultraprobe® 100: **HTS-1**  
 Ultraprobe® 201: **HTS-201**  
 Ultraprobe® 550, 2000, 9000: **HTS-2**  
 Ultraprobe® 3000: **HTS-3**  
 Ultraprobe® 10,000: **HTS-10**



### RAS/RAM Remote Access Sensor

When accessibility is an issue such as when a motor is contained within a closed cabinet, or a test point is in a hard-to-reach area, the RAS/RAM is an answer. Mount the RAS Sensor on the test point and run a cable to an access area where the RAM (Remote Access Module) can be placed. When the point is to be tested, plug the RAM into your Ultraprobe and view or data log the information.

Ultraprobe® 550, 2000: **RAS-2**  
 Ultraprobe® 9000 & 10,000: **RAS-9/10**



### CFM The Close Focus Module

Enhances leak detection of low level leaks and negative pressure (vacuum) leaks. Designed for close up scanning. The receiving chamber focuses all low level acoustic energy straight to the transducer with little loss of energy.

Ultraprobe® 550, 2000: **CFM-2**  
 Ultraprobe® 9000 & 10,000: **CFM-9/10**



### RAS-MT

Uses a magnetic mountable transducer with a cable that is plugged into an Ultraprobe®, which is put on a test point. Ideal for bearing inspections and hard to reach test points.

Ultraprobe® 550: **RAS-MT-2 (+RAM)**  
 Ultraprobe® 2000: **RAS-MT-2 (+RAM)**  
 Ultraprobe® 3000: **RAS-MT-3 (+RAM)**  
 Ultraprobe® 9000: **RAS-MT-9 (+RAM)**  
 Ultraprobe® 10,000: **RAS-MT-10 (+RAM)**



### Compressed Air Leak Tag

A three-part leak tag system for your compressed air leak surveys.  
 Part 1: the Leak Location Marker.  
 Part 2: Leak Data, which includes relevant test information. Use this to log information for reference and to act as a work order.  
 Part 3: the Repair Tag. This acts as a follow up to document the repair and to assure that it was performed correctly.

### MP-BNC-2 Miniphone to BNC Connector

Connects an Ultraprobe® to most recording devices, lap top computers and vibration analyzers.

### Y-Splitter

Fits in the headphone jack and connects either two headphones or a headphone and an audio/vibration cable simultaneously.

### UE EXC Shielded Cable

Plug one end into an Ultraprobe® and plug one of the interchangeable modules into the other end to extend your reach.  
 Standard length is 2.4 m (8").

Ultraprobe® 100: **EXC-1**  
 Ultraprobe® 550, 2000: **EXC-2**  
 Ultraprobe® 3000: **EXC-3**  
 Ultraprobe® 9000 & 10,000: **EXC-9/10**

### UE X2 Adapter

Charges a battery outside the main pistol unit. Attaches to the standard Ultraprobe® BCH metered pistol recharger and to the battery.

### Nylon Cover for Zero Halliburton Cases

Protects your carrying case from scratches and bangs.

Ultraprobe® 2000, 9000: **CC-UPZH-2S**  
 Ultraprobe® 3000: **CC-UPZH-2S**  
 Ultraprobe® 10,000: **CC-UPZH-10S**



### Flexible telescoping scanning/contact module

Reach into areas where it is difficult for approach. The telescoping action of the module gives you extended reach. Available in contact or scanning type.



### WTG2SP Pipe Threaded Warble Tone Generator

1" NPT male threaded nipple with adapters for 3/4" and 1/2" female nipples, 0 turn amplitude adjustment dial. Rechargeable Ni-cad batteries.

### FMTG-1991 Multi-Directional Tone Generator

With four transducers to cover a 360° pattern of ultrasonic output. Suction cup mount (magnetic mount optional). Rechargeable Ni-cad batteries.



### WTG-1 Ultrasonic Warble Tone Generator

The standard tone generator with two amplitude positions: low and high. In high covers up to 4000 cubic feet of uninterrupted space. Rechargeable Ni-cad batteries.





# ULTRAPROBE®

## Ultrasound Applications

Common Uses of Airborne and Structure-borne Ultrasound Technology

### Valves

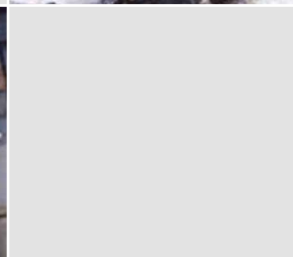
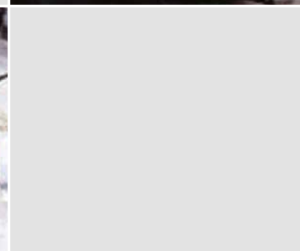
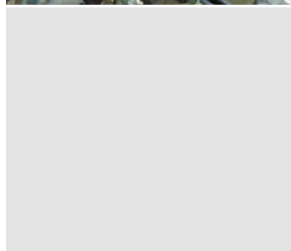
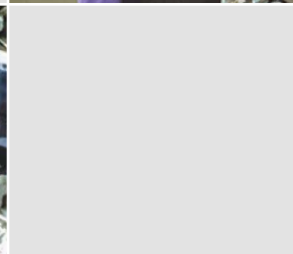
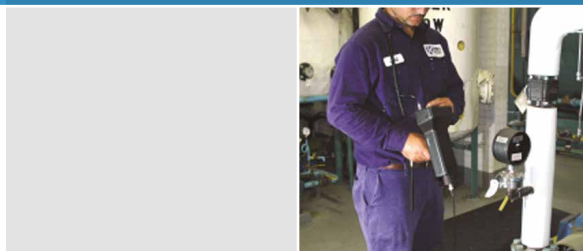
Valve activity such as leakage or blockage can be accurately checked while the valve is on line. Properly seated valves are relatively quiet while leaking valves produce a turbulent flow as the fluid moves from the high pressure side through the leak to the low pressure side. Due to a wide sensitivity and ultrasonic frequency selection range, all types of valves even in noisy environments can be accurately tested.

### Valve Stems

Valve stems may be quickly tested for leaks to atmosphere.

### Pressure/Vacuum Leaks

As any gas (air, oxygen, nitrogen, etc.) passes through a leak orifice, it generates a turbulent flow with detectable high frequency components. By scanning the test area with an Ultraprobe, a leak can be heard through the headset as a rushing sound or noted on the display/meter. The closer the instrument is to the leak, the louder the rushing sound and the higher the reading. Should ambient noise be a problem, a rubber focusing probe may be used to narrow the instrument's reception field and to shield it from conflicting ultrasounds. In addition, Frequency Tuning (available in most models) dramatically reduces background noise interference to provide ease of ultrasonic leak detection as never before experienced.



### Steam Trap Inspection

Major steam trap manufacturers have recommended ultrasound inspection of steam traps as one of the most reliable methods available. By converting the ultrasonic elements of a working steam trap into the audible range, Ultraprobe® allows users to hear through headphones and see on a display/ meter the exact condition of a steam trap while it is on line. Blow-by, machine gunning, oversized traps or line blockage are all easily detected. Frequency tuning enhances Ultraprobe's ability to discriminate between condensate and steam. Ultraprobe® markedly reduces confusion from extraneous sounds or from heat transfer, even when traps are extremely close together.

**Reciprocating Compressor Valve Analysis** has become so successful with the Ultraprobe®, many engine analyzer companies now offer instruments with an ultrasonic input port.

### Bearing Inspection/Monitoring

Bearing Inspection/Monitoring Ultraprobe® detects the earliest stage of bearing failure. NASA research has demonstrated that ultrasound bearing monitoring will locate potential bearing failure long before it is detected by traditional heat and vibration methods. With the Ultraprobe, users hear the sound quality of a bearing as well as monitor amplitude changes on the display/meter. This provides the ability to trend, trouble shoot and confirm potential bearing problems. Bearing inspection is easy with the Ultraprobe®. Requiring only one test point and very little training, users will learn to test bearings within minutes. Frequency Tuning makes it easy to tune into a bearing and isolate it for analysis regardless of competing signals. Even current vibration programs will achieve enhanced diagnostic ability with an Ultraprobe®. Most vibration analyzers are easily connected to an Ultraprobe.

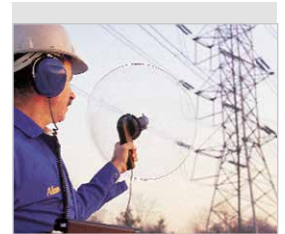
### Prevent over-lubrication

with the Ultraprobe® 2000 by simply lubricating only until the meter reaches as pecified level. Over lubrication is one of the most common causes of bearing failure.

### General Mechanical Inspection

of pumps, motors, compressors, gears & gear boxes: All types of operating equipment may be inspected with an Ultraprobe®. Since Ultraprobe works in a high frequency, short wave environment, problems such as cavitation in pumps, compressor valve leakage or missing gear teeth may be heard and isolated. Ultraprobe's Frequency Tuning\* allows users to quickly "tune in" to problem sounds and recognize them with little previous experience due to the clarity of the heterodyned signal.

\*Not all models have frequency tuning.



*Accessories for enhancing test procedures available*

### Electrical Inspection

Arcing, tracking, & corona discharge: Arcing, tracking, & corona discharge produce ultrasound at the site of emission. These electrical discharges can be located quickly by scanning an area with Ultraprobe. The signal is heard as a frying or buzzing sound in the headset. As with pressure or vacuum leak detection, the closer the instrument is to the discharge, the more intense the signal. Test: switchgear, transformers, circuitbreakers, bussbars, relays, junction boxes, insulators, and other electrical gear.

### Heat Exchangers, Boilers & Condensers

In-leakage or pressure leakage can be readily located with the Ultraprobe. Fittings, valves, flanges are all easily scanned for leakage. The high frequency, short wave nature of ultrasound allows operators to pinpoint the location of a leak in high noise environments. Condenser tubes and heat exchanger tubes may be tested for leakage through three methods: vacuum, pressure, ultratone.

**Vacuum.** The tube sheet is scanned for the tell-tale rushing sound produced as the leak draws air into the tube.

**Pressure.** Additional testing may be performed when the system is off-line utilizing air pressure around the tube bundle and scanning for the rushing sound produced from the leaking tube.

**Ultratone.** A unique method that is also employed for heat exchangers is the "Ultratone" method in which a powerful high frequency transmitter floods the shell side of the exchanger with ultrasound. The generated sound will follow the leak path through the tube. A scan of the tube sheet will indicate the leaking tube.



*Test/Trend all types of machinery*





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