
ULTRA-TRAC[®] APL

ACOUSTIC PIPE LOCATOR

INSTRUCTION MANUAL

Read and understand instructions before use.



Patented



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ULTRA-TRAC® APL

A C O U S T I C P I P E L O C A T O R

Instruction Manual

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Ultra-Trac APL Instruction Manual

General Description

The Ultra-Trac® APL is an acoustic pipe locator designed to locate piping systems constructed of any material including (but not limited to): plastic, metal, clay, concrete, fiberglass, cast and ductile iron. The piping systems can also be located regardless of the type of surface above the pipe such as gravel, soil, grass, concrete or asphalt.

The Ultra-Trac® APL uses a highly specialized acoustic transducer (actuator) technology that requires coupling with the ground surface to send the signals into the ground. Highly sensitive accelerometers sense the reflected energy. The data is processed and converted into easy to understand results on the display. There is no connection to the piping system required with the Ultra-Trac® APL.

The Ultra-Trac® APL is not affected by electrical fields or overhead power systems. Tree roots, rocks and other such subterranean structures do not interfere. The system also incorporates noise cancellation technology that eliminates false readings due to traffic or equipment that may be operational in the area of the test.



Safety and Care

- Follow your company and other applicable safety procedures when operating this device.
- Do not place this instrument in areas where live electrical power may be present.
- Do not open the housings at any time unless factory authorized to perform service.
- Do not use in the presence of hazardous gases or chemicals.
- Follow Federal, State and local regulations when disposing of any batteries.
- Do not immerse this product in water.
- Keep in the provided case when not in use or during shipping to reduce the chance of damage.

What is included:

- Ultra-Trac® APL with carrying case (926-00000-01)
- Recharging adapter (871-00029)
- Measuring tape (360-00342)
- Instruction Manual (750-00054)
- Quick Start Guide (750-00055)

Replacement Parts:

- Actuator plate (360-00326)
- Accelerometer housing (360-00320)
- Carrying Case (872-00016)

Specifications:

- Size (inches): Handle 48; Base 20" X 10" X 10" (L x W x H)
- Weight: 20 LBS
- Operational Temp: -4°F to 122°F (-20°C to 50°C)
- Storage Temp: -20°F to 140°F (-28.9°C to 60°C)
- Battery life: 25hrs
- Battery type: 14vdc Lithium-ion
- Recharge time: 10 hours
- Time per slice: <5 seconds
- Time per 20 slice scan: <2 minute

Detection specifications:

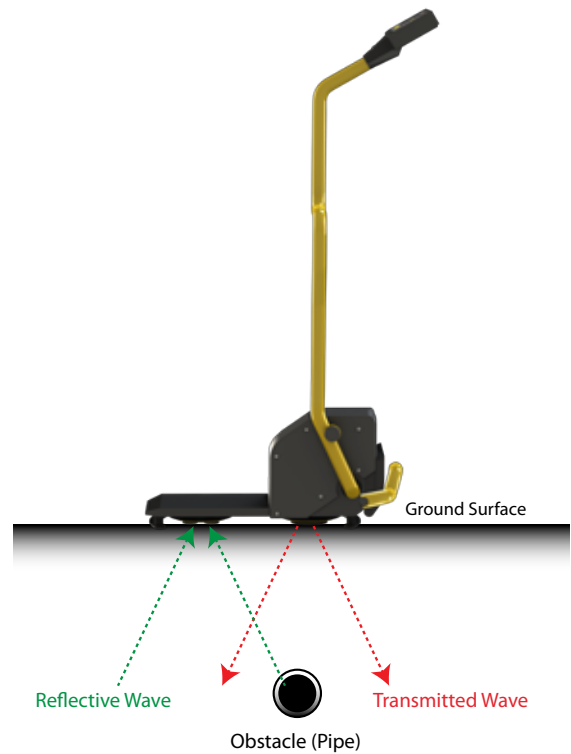
- 1/2" ID pipe ≤30"
- 2" ID pipe ≤ 48"
- 4" ID pipe ≤96"
- Accuracy: better than ±18" of marking plus selected slice distance
- Multiple pipes close together can cause inaccurate readings for target pipe
- Does not measure depth
- Detects any pipe material
- Detects up to three pipes per scan distance (May be changed to five using Options Menu)



Principle of Operation

The Ultra-Trac® APL is set on the ground. The manner the operator uses the device will create good coupling with the ground. A button is pushed to send a signal (pings). The pings will last approximately 2 seconds. This is called a slice. The operator then moves 6-12" either to the right or left and perform another slice. After numerous slices a button is pressed to map pipe. A series of at least 5 slices followed by mapping the pipe creates a display result called a scan. Multiple scans create the final result for locating the piping system.

The Ultra-Trac® APL locates the voids in the ground created by a pipe through the science of impedance mismatch. The speed of sound through ground materials versus the internal portion of a pipe (even when filled with liquid) is detectable using the Ultra-Trac® APL. The acoustic wave pattern of specific timing and frequency is monitored and processed using the accelerometers. Based on the return signature the instrument will determine if a void is present within the minimum requirements as set in the software.



Review:

1. APL is placed on the ground.
2. Good ground contact (coupling) is required
3. Transmitter (Actuator) sends a set of "pings"
4. Receivers (Accelerometers) listens to reflected ping.
5. Strength, speed and duration of the reflected pings are monitored.
6. Each activation of the transmitter and receiver device is a "slice"
7. A series of at least 5 slices, followed by mapping the pipe creates a display result called a scan.
8. A single scan is not a full search

Detection Specifications:

- 1/2" ID pipe $\leq 30"$
- 2" ID pipe $\leq 48"$
- 4" ID pipe $\leq 96"$
- Accuracy: better than $\pm 18"$ of marking plus selected slice distance
- Multiple pipes close together can cause inaccurate readings for target pipe
- Does not measure depth
- Detects any pipe material
- Detects up to three pipes per scan distance (May be changed to five using Options Menu)

Features – Control box

The control box is located at the end of the handle. This houses the display, operational buttons, speaker and scan button.

Features – Chassis

The bottom of the instrument is referred to as the chassis. The chassis houses the battery, the components and electronics to operate and the actuator and accelerometers, the battery charging port, the handle connection and locking mechanism, and the kickstand.



Battery Charging Port



Accelerometers

Actuator



Handle Locking Mechanism

Battery Charging

1. Open the box containing the charger and the assortment of wall plug adapters. Install the proper adapter for your global requirement.
2. With the instrument off remove the cover from the battery charge port located on the left side of the chassis.
3. Insert the charge adapter and secure by rotating the locking ring clockwise to prevent accidental disconnection. Do not over tighten.
4. The green light on the control box will illuminate indicating there is a connection.
5. The red light will begin flashing within 60 seconds indicating charging is in progress.
6. A solid red light indicates charge is complete.
7. The green light may turn red if there is a failure to properly charge. Disconnect the charger and reconnect to attempt again.

WARNING: Do not attempt to service this battery unless factory authorized.

Operation of Instrument



1. Unfold the Handle

Unfold and lock the handle in the upright position using the locking pin. The locking pin is held in place using a $\frac{1}{4}$ turn action.



2. Extend the Kickstand

Extend the kickstand downward from the front to support the instrument.



3. Power ON

Press the power button until a beep is heard and release. The display will illuminate for approximately 15 seconds though it will be blank while the programming loads into the secondary processor. The Sensit Technologies logo will illuminate followed by the first onscreen prompt.



4. Select a Depth

Select the depth using the corresponding A or C button.

Normal is used for up to 10 ft (3m) depths.

Deep is used for depths greater than 10 ft (3m).



5. Select Scan Direction

Select the desired direction of travel you wish to perform the slices using the corresponding A or C buttons.

Operation of Instrument



6. Select Step Distance

Select the desired distance per slice. Six inch slices produce the most accurate results as all readings are to the nearest slice width plus or minus regulatory requirements of ± 18 inches from the marking.



7. Prepare to Take First Reading

Observe the two “check” marks in the upper right corner of the display. This indicates the accelerometers are ready for a reading.

Any “plus sign (+)” sign indicates a fault or disconnect. Any “minus sign (-)” indicates the accelerometer has been physically struck and will require a few seconds to return to a zero condition.

The top line will also indicate selected slice width and an arrow showing selected direction of travel.



8. Options Menu

The options menu can be selected by pressing the A button. After entering the menu use the A or B button to highlight the desired action. Use the C button to select and perform the action.

The selections include:

- Continue the current scan (accidental activation of options menu)
- Redo last slice
- Switch scan direction
- Change sensitivity*
- Change number of pipes detected per scan (3 or 5)

*Sensitivity: This adjustment is to help locate in different soil conditions when the normal setting is producing no readings or too many readings.

Sensitivity Settings include:

- Extra Sensitivity (Denoted by “X” on screen)
- Medium Sensitivity (Denoted by “M” on screen)
- Low Sensitivity (Denoted by “L” on screen)

Performing a Locate

Determine the area to grid.

Plan to perform 12-25 ft scans in such a manner the area is covered. In areas with multiple systems to identify, use six inch slices and a maximum of 26 slices per scan (approx. 12 ft (4m)).



What to avoid

When testing, always perform a scan on surfaces of like material. A scan requires a minimum of 5 slices on pavement, gravel, grass or dirt.



Do not perform 12" scans on loose or freshly excavated soil. Soft soil requires narrow slice distances.



Do not mix surface types in a single scan.



Do not perform a slice on large cracks or expansion joints.

Performing a Locate



Press Scan Button



1. Set the Measuring Tape

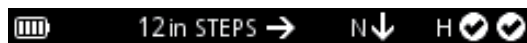
Place the measuring tape on the ground in the area you wish to test. Align the housing of the APL with the beginning point of the measuring tape. With the instrument displaying “take first reading”:

- Place the kickstand in the up position. A magnet on the front of the chassis housing will keep it in place.
- Place your foot on the foot pad
- Push forward on the handle creating good coupling to the ground. The actuator is spring loaded so you will feel the tension.
- Press and release the scan button. When the slice is completed a beep will be heard and the display will show it is ready for the next slice. Three beeps indicates improper force was applied to the handle. The unit will prompt you to retake that slice.



- Move the selected direction and distance corresponding to the measuring tape on the ground (6 or 12 inches).

The display will track what distance the next slice should be performed.



Take reading at 60 in.



Performing a Locate (Continued)



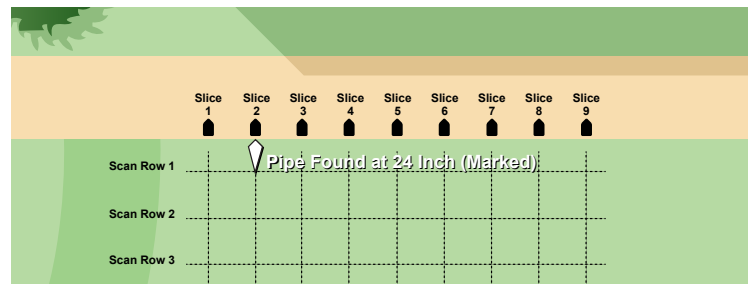
- f. Continue to perform the desired number of slices to perform the scan.

When completed, press the C button to display the pipe map results.



The display will show where a pipe (or void) was found corresponding to the measuring tape reference.

Mark the corresponding location on the ground.



If no pipe (or void) is found, the display will indicate No pipes found.

Performing a Locate (Continued)



- g. Move the measuring tape to next parallel position forward or backward 5 to 15 ft and repeat the scan procedure.

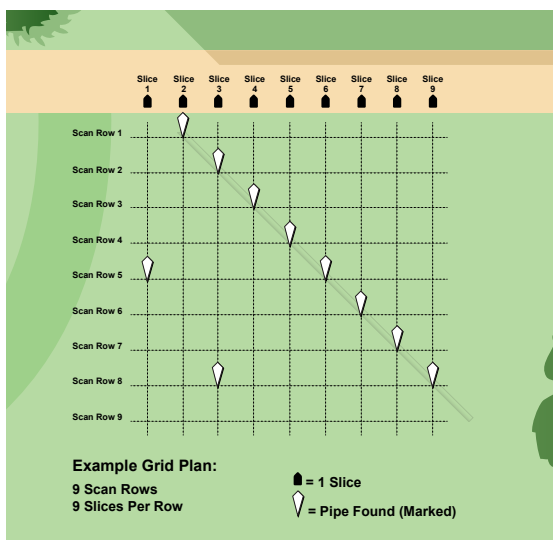
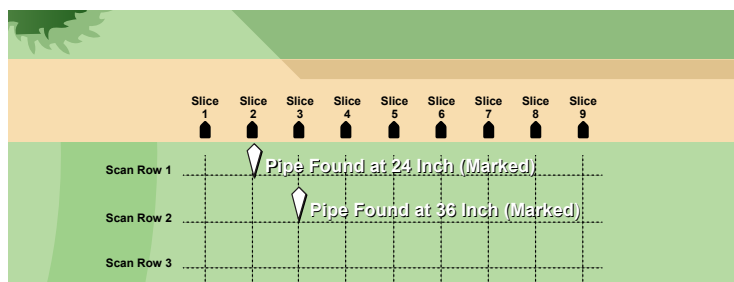
If all settings from the previous scan are desired, press the B button to begin a new scan using the same settings.

- h. If new settings are desired, press the C button to create new settings.

Pressing the A button returns back to the results of the previous scan.

Repeat the scan procedure. The display will show where a pipe (or void) was found corresponding to the measuring tape reference.

Mark the corresponding location on the ground.



- i. Always make a scan perpendicular to make certain there are no pipes parallel to your scans. **The APL will only detect a pipe if it crosses it.**
- j. Review the results and align the marks to follow the piping system. A mark on its own may indicate a single void in the ground. Here is a representation of marks created in a grid area.

Maintenance

The Ultra-Trac® APL is designed to be relatively maintenance free. It is important to keep the actuator and accelerometers clean of mud and debris. **Good results are the result of good coupling with the ground. In the field it is important to:**

- Keep the instrument clean from dirt/debris build up on the bottom of the chassis
- Do not submerge this instrument in water.
- Do not operate in wet weather if the housing is damaged or the cover is missing for the SD card on the control box housing.
- Check for damaged bellows or cracked components on the actuator and accelerometers. Repairs are required if these are damaged or badly worn.
- Only factory authorized repair personnel can perform repairs to this product.

Settings

Pressing the A and B buttons simultaneously will activate the Settings Menu. Using the A, B, or C button, move and select the item you wish to adjust.

- Date/Time
- Screen Contrast
- Reset to factory settings

Notes

Warranty

Your Ultra-Trac® APL is warranted to be free from defects in materials and workmanship for a period of two years after purchase. The actuator and accelerometers are warranted for one year. The accelerometer housing assembly and the actuator foot (both continuously contacting the ground) are considered replacement items with a 90 day warranty. If within the warranty period the instrument should become inoperative from such defects the instrument will be repaired or replaced at our option. This warranty covers normal use and does not cover damage which occurs in shipment or failure which results from alteration, tampering, accident, misuse, abuse, neglect or improper maintenance. Proof of purchase may be required before warranty is rendered. Units out of warranty will be repaired for a service charge. Internal repair or maintenance must be performed by a Sensit Technologies authorized technician. Violation will void the warranty. Units must be returned postpaid, insured and to the attention of the service department for warranty or repair.

This warranty gives you specific legal rights and you may have other rights which vary from state to state.

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