



FireCraft[®]
Safety Products

trACer[™]

Non-Contact AC Voltage Detector



Operating Manual

U.S. Patent No. 9,091,707

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trACer™ Operating Manual



1. **WARNINGS** and **CAUTIONS**

Before using your FireCraft® trACer™, read this entire manual carefully.

EXERCISE EXTREME CAUTION at all times when approaching areas where live voltage may be present.



Whether using the FireCraft® trACer™ to detect live voltage or taking action AFTER detection of live voltage, the user MUST always exercise extreme caution.



Failure to exercise extreme caution or failure to use the FireCraft® trACer™ in strict accordance with the directions in this manual can result in SEVERE INJURY OR DEATH.



A major danger exists when a mains power grid fails. When a short is detected on a mains power circuit, or when the circuit fails, automated utility equipment will attempt to reconnect AC (mains grid) voltage. These automatic reconnects are computer controlled by the power company. While there are no firm rules regarding interval and frequency of these automatic reconnects, they usually cease after three or four retries in the first minute following a supply grid shorting event.



Whenever a downed wire is located, it is essential to make certain that the power company has actually disconnected that section of the mains circuit. Downed wires should always be treated as if they were "live" and energized. Only the local utility companies have qualified personnel to properly disconnect and ground active mains feed circuits, and to assure safe handling of the wires.



The FireCraft® trACer™ does NOT detect or warn of hazards from DC (direct current), such as found in car batteries and on subway rails. The FireCraft® trACer™ also does NOT warn of shielded AC voltage (contained within metal electrical conduits). EXTREME CAUTION must be exercised when using the FireCraft® trACer™ in locations where multiple live AC conductors may be present. In such situations, care must be taken to avoid inadvertent contact with one AC source while pinpointing another source.

(See Section 5, Using the trACer™, for further information)

2. Basic Description of the trACer™

Thank you for purchasing the finest instrument available for locating unshielded AC voltages. The FireCraft® trACer™ is a non-contact digital device that senses 40 to 70 Hz AC line voltages, and provides both visual and audible signals to the user indicating the presence of unshielded voltage.

The warning signals, both audible and visual, increase in frequency as you get closer to the voltage source. The detection capacity is highly directional, allowing the user to pinpoint the source of the AC voltage quickly and accurately.

Please read the following section, Get to Know the trACer™, before using the unit in a live, investigative setting.

3. Get to Know the trACer™

Before using the trACer™ as an investigative tool, it is strongly suggested that you familiarize yourself with the unit and its features.

IMPORTANT: Practice the scenarios below before using in a live setting.

The trACer™ has a Self-Test at Startup

Turn the unit on by pushing the red On/Off Button. The button is located on the top side of the unit. The unit will go through a 5-second self-test, indicated by a series of rapid beeps and red light flashes. Once the beeps and flashes stop, the trACer™ is ready to use.

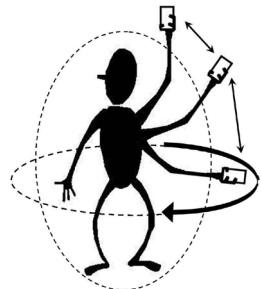
The trACer™ is Directional

The FireCraft® trACer™ actually locates the voltage source. Think of it as a flashlight that detects voltage. Aim the trACer™ at a known power source. Slowly move closer to the power source. Notice how you can locate the source of the AC voltage.

How to Hold the trACer™

Hold the trACer™ extended from your body, at arm's length, parallel to the ground, with the sensor antenna facing forward and the printed side facing up so you can clearly see the red indicator light.

As you search in different directions for the AC power source, keep the unit extended from your body.





Using the trACer™ Indoors

AC detection ranges and sensitivities are relative depending on how the AC source is shielded, insulated, installed, damaged or exposed. The sensitivity and detection distance of the trACer™ will vary with building design, construction materials and immediate surrounding environment.

If you are inside an office or enclosure that has multiple sources of voltage (outlets, lights, computers, printers, extension cords), the trACer™ may beep as you move around. This is normal. Hold the unit still, and the beeping should cease. As you move around inside a building, you may encounter “hotspots” of voltage signals. As you move closer to a cord, light or other power source, the beeps will increase in frequency. This is how you pinpoint the voltage source. Do the following test to get familiar with using the trACer™ indoors:

Slowly approach a live electrical outlet, starting about 24 inches from the outlet. Notice how the beep and flash frequencies increase as you get closer to the outlet.

Using the trACer™ Outdoors

If you are outside near a power line, turn the trACer™ on when you are about 100 feet away. Point the unit toward the power line, keeping it at arm’s length. Walk toward the power line. As you get closer, notice how the beeps increase in frequency. Aim the unit toward the ground, below the power line. As you point the trACer™ away from the line, the beeps will slow down. As you point it back to the power line, beep frequency increases. That demonstrates the directional feature of the trACer™.

By familiarizing yourself with the FireCraft® trACer™ under controlled circumstances, you will be better prepared for using the device in emergency situations.

In summary, the trACer™ yields reliable and consistent results in the field. However, because it is measuring AC signals, it can be affected by its surroundings. It is, therefore, important to assess your surroundings when using the trACer™ and take into consideration the impact of various environmental factors, such as building materials, physical proximity to obstacles, and atmospheric conditions.

4. Functional Description of the trACer™

The FireCraft® trACer™ is a hand-held AC voltage detector that measures relative AC field signal strength. The method of detection,

trACer™ Operating Manual

measurement, and the device's automated output of both visual and audible outputs, provide the user with cues as to the relative signal strength and proximity to the user of a 40-70 Hz AC source, such as a utility mains power line, AC powered circuits, or powered AC devices.

The user turns on the device by means of the On/Off button located on the top side of the unit.

The unit boots up and performs internal built-in test functions. The unit will test the state of charge of the battery and indicate a 'pass' or 'fail' via visual and/or audible output by:

- Emitting a series of quickly repeating beeps and light flashes for a period of five (5) seconds, indicating a 'pass' condition and that the device is ready for use.
OR
- Emitting only a slow beep, indicating a 'fail' condition, which repeats until the device is turned off or the battery is removed or replaced.

During usage, should the battery voltage drop below predetermined operating limits, the device will emit only a slow beep indicating a 'fail' situation, to be remedied by installing a new battery (refer to Section 7, Replacing the Battery).

Upon completion of the initial self-test, the unit begins to sample the local environment for AC voltage. The visual and audible cues (red indicator light and beep) are synchronized to trigger simultaneously. They are timed to repeat slowly at a 'relatively' long distance from the detected AC voltage source, and to increase in frequency as the user becomes 'relatively' closer to the detected AC voltage source. The frequency of the light and sound outputs slows down as the user gets farther away from the detected AC voltage source.

5. Using the trACer™

Before using the FireCraft® trACer™ as an investigative tool, please read Section 3, Get to Know the trACer™.

Turn the trACer™ on by pushing the red On/Off Button. The On/Off Button is located on the top side of the unit.

Allow the unit to self-test: wait for the rapid beeps and red flashes to stop (approximately 5 seconds).

If the unit emits slow, steady beeps without red LED flashing, this means the battery is low and should be replaced before proceeding (see Section 7 for instructions).

Hold the trACer™ in front of you, at arm's length, parallel to the



ground, with the sensor antenna facing forward and the printed side facing up. Slowly move it from side to side. NOTE: This unit is directional. If you see a wire or device that you specifically wish to check for voltage, point the unit directly at the suspected source and slowly approach.

If you are not certain of the location of a suspected AC source, hold the unit at arm's length and slowly rotate in a complete circle, pointing the unit at the horizon. If the unit emits a beep and flash, note the direction in which it is pointing and slowly move forward in that direction toward the suspected AC source, holding the unit in front of you as you walk.

The pace of the beeps and light flashes should increase when you are getting closer to the AC voltage source, and will continue to increase until you are at the power source. At that point, the frequency of beeps and flashes will reach its highest level.

Once you have located the voltage source, or confirmed that AC voltage is present, DO NOT proceed to touch the trACer™ to the wire or device. Your trACer™ has served its function in locating the AC voltage source; it is not to be used for moving wires or for any purpose other than sensing live AC electric fields.

Turn off the unit when detection activities have been concluded, and place it in the hard carrying case (included with the unit).

6. Typical Applications

Indoor Assessment: Determine whether AC outlets or power cords are energized; assess non-power lines, such as cable TV; trace wiring within walls.

Vehicular Incidents: Assess the site and vehicle for potential exposure to AC voltage; verify power disconnect.

Building Collapse / Urban Search & Rescue: Detect unknown sources of unshielded and potentially hazardous AC voltages; verify proper power disconnect.

Structure Fires: Identify nearby high voltages and potential dangers from electrical wires during size-up, investigation, and salvage/overhaul operations.

Storms and Disaster Recovery: Identify energized wires on roads or structural parts in collapsed building and flooded sites; assess the extent of a power outage.

Swimming Pools or other Wet Environments: Determine if water or damp ground is energized.

7. Replacing the Battery

The FireCraft® trACer™ comes with a fresh DieHard® 9V alkaline battery. When replacement is indicated by the unit's built-in test, we recommend replacing with a new DieHard® 9V alkaline battery to obtain maximum useful life.

To change the battery, remove the red protective boot. The battery compartment is located on the back of the unit. To open, slide the lid of the compartment toward the edge of the unit. Remove the lid and lift the battery out, being careful not to pull the wires. Carefully remove the clip from the top of the battery. Attach the clip to the new battery, noting that the battery will only fit one way. Place the battery back in the compartment, and replace the lid and red protective boot.

8. Care and Service

Care

The FireCraft® trACer™ is water resistant. However, care must be taken to avoid immersing the unit in water or getting it wet. The unit should be dry before being stored. If the unit gets wet:

- Gently shake the unit to remove any water from the speaker.
- Remove the red protective boot and dry both the boot and the trACer™ with a soft cloth.
- Remove the battery and leave the battery compartment open to allow the unit to dry.

Note: Do not use a hair dryer or compressed air to dry the trACer™.

Cleaning

Do not use abrasives or solvents. Use mild detergent and water to remove grease stains. Dry with a soft, dry cloth.

Service

The FireCraft® trACer™ carries a limited 2-year warranty. Should you wish to have the trACer™ checked, or if the unit does not function properly, contact FireCraft®:

Phone: 1-800-369-1800 (614-487-8197)

Email: sales@firecraftsafety.com

Returns

DO NOT return the unit without first contacting FireCraft® to obtain a Return Authorization Number. Instructions on how to return the unit will be provided when you call for your Return Authorization Number.



9. Troubleshooting

Problem	Probable Cause	Suggested Solution
Unit Does Not Turn On	Loose or dead battery	Check/Replace battery, page 9
	Other	Call for service: 1-800-369-1800
Continuously Beeps	Excessive movement	Hold still for a moment—refer to Using the trACer™ Indoors, page 6
	Low battery	Check/Replace battery, page 9
All Other Problems	Call for Service: 800-369-1800 (614-487-8197)	

10. Replacement Parts

The FireCraft® trACer™ package includes the unit, red silicone rubber protective boot, DieHard® 9V alkaline battery, operating manual, quick reference card and hard carrying case.

Replacement Parts

Part Description	Part Number
FireCraft® trACer™	trACer-3
Red Silicone Rubber Boot.	trACer-Boot
DieHard® 9V alkaline battery (2)trACer-9V
Operating Manual	trACer-3-OM
Quick Reference Card.	trACer-QR
Hard Carrying Case	trACer-CC

To Order:

Email: sales@firecraftsafety.com
 Fax: 1-800-969-8886

Shipping:

Standard Shipping is UPS Ground. Other shipping options are available.

11. Limited Warranty

Your FireCraft® trACer™ is warranted to be free from defects in materials and workmanship for a period of two (2) years after purchase. If your unit should become inoperative from such defects within the warranty period, the unit 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 use or maintenance. Proof of purchase may be required before warranty is rendered. Units out of warranty will be repaired, if possible, for a service charge. Internal repair or maintenance must be completed by a FireCraft® authorized technician. Violation will void 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.

12. Specifications

Housing	Injection molded ABS; Flame Retardant; Color: Black
Housing Size	5.5 x 3.25 x 1.03 in. (139.7x 82.55x 26.16 mm)
Protective Boot	Silicone rubber; Color: Hi-Vis Red
Battery	One (1) DieHard® 9V alkaline battery
Battery Change	Removable cover on back of unit
Self-Test	Internal five (5)-second built-in test function after turn-on; Test includes battery charge level; Built-in low battery warning
Electronic Design	Unit is digital.
Frequency Range	Detects AC voltages from 40 to 70 Hz.
Warning Signal Indications	Both audible (beep) and visual (LED) signals increase or decrease in frequency depending upon proximity to AC voltage source.
Weight of trACer™ unit (with battery)	0.6 lb (0.3 kg)
Shipping Weight (including carrying case, unit, packaging)	1.8 lbs (0.82 kg)
Carrying Case Size	10.3 x 8.2 x 3.09 in.(261.6 x 208.3 x 78.5 mm)
Shipping Box Size	10.375 x 8.625 x 3.5 in. (236.5 x 219.1 x 88.9 mm)
Switch	Single on-off button
Water Resistance	Splash-proof
RoHS Compliant	Yes
Temperature Range	Operating: -22° to +122° F (-30° to +50° C)
	Storage and transport: -40° to +158° F (-40° to +70° C)

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