

# INSTRUCTION MANUAL MANUAL DE INSTRUCCIONES MANUEL D'INSTRUCTIONS

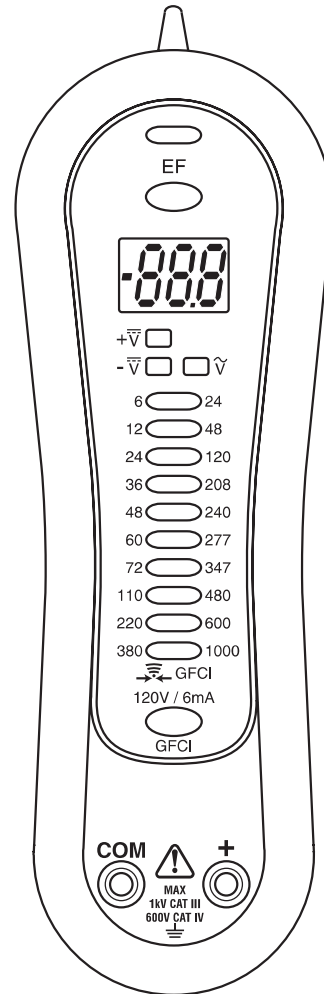


## GT-65 • GT-95

### Voltage and Continuity Testers

### Verificadores de tensión y continuidad

### Contrôleurs de tension et de continuité



**Read and understand** all of the instructions and safety information in this manual before operating or servicing this tool.



**Lea y entienda** todas las instrucciones y la información sobre seguridad que aparecen en este manual, antes de manejar esta herramienta o darle mantenimiento.

**Lire attentivement et bien comprendre** toutes les instructions et les informations sur la sécurité de ce manuel avant d'utiliser ou de procéder à l'entretien de cet outil.

## Description

The Greenlee GT-65 and GT-95 Voltage and Continuity Testers are intended to measure voltage and verify continuity. Each model has LEDs to indicate common voltages. They also have non-contact and single-probe voltage detection capability.

In addition, the GT-95 has an easy-to-read LCD and a shaker to signal AC voltage measurement. This model can trip a ground-fault circuit interrupter (GFCI). The LEDs glow green at low voltage, and change to red when the measured voltage presents a shock hazard.

Both models have an indicator self-test feature that allows the user to verify the functionality of the voltage-indicating LEDs, the continuity beeper, and the GT-95 LCD.

## Safety

Safety is essential in the use and maintenance of Greenlee tools and equipment. This instruction manual and any markings on the tool provide information for avoiding hazards and unsafe practices related to the use of this tool. Observe all of the safety information provided.

## Purpose of This Manual

This instruction manual is intended to familiarize all personnel with the safe operation and maintenance procedures for the Greenlee GT-65 and GT-95 Voltage and Continuity Testers.

Keep this manual available to all personnel. Replacement manuals are available upon request at no charge.

All specifications are nominal and may change as design improvements occur. Greenlee Tools, Inc. shall not be liable for damages resulting from misapplication or misuse of its products.

® Registered: The color green for electrical test instruments is a registered trademark of Greenlee Tools, Inc.

***KEEP THIS MANUAL***

## Important Safety Information



### SAFETY ALERT SYMBOL

This symbol is used to call your attention to hazards or unsafe practices which could result in an injury or property damage. The signal word, defined below, indicates the severity of the hazard. The message after the signal word provides information for preventing or avoiding the hazard.

#### **DANGER**

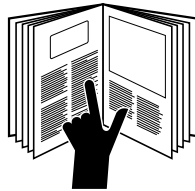
Immediate hazards which, if not avoided, **WILL** result in severe injury or death.

#### **WARNING**

Hazards which, if not avoided, **COULD** result in severe injury or death.

#### **CAUTION**

Hazards or unsafe practices which, if not avoided, **MAY** result in injury or property damage.



#### **WARNING**

**Read** and **understand** this material before operating or servicing this equipment. Failure to understand how to safely operate this tool could result in an accident causing serious injury or death.

## Important Safety Information



### **⚠ WARNING**

Electric shock hazard:

Contact with live circuits could result in severe injury or death.

### **⚠ WARNING**

Electric shock and fire hazard:

- Do not expose this unit to rain or moisture.
- Do not use the unit if it is wet or damaged.
- Use test leads or accessories that are appropriate for the application. Refer to the category and voltage rating of the test lead or accessory.
- Inspect the test leads or accessory before use. They must be clean and dry, and the insulation must be in good condition.
- Use this unit for the manufacturer's intended purpose only, as described in this manual. Any other use can impair the protection provided by the unit.

Failure to observe these warnings could result in severe injury or death.

### **⚠ WARNING**

Electric shock hazard:

- Do not apply more than the rated voltage between any two input terminals, or between any input terminal and earth ground.
- Do not contact the test lead tips or any uninsulated portion of the accessory.

Failure to observe these warnings could result in severe injury or death.

### **⚠ WARNING**

Electric shock hazard:

- Do not operate with the case or battery cover open.
- Before opening the case or battery cover, remove the test leads from the circuit and shut off the unit.

Failure to observe these warnings could result in severe injury or death.

## Important Safety Information

### WARNING

Electric shock hazard:

- Unless measuring voltage, shut off and lock out power. Make sure that all capacitors are discharged. Voltage must not be present.
- Using this unit near equipment that generates electromagnetic interference can result in unstable or inaccurate readings.

Failure to observe these warnings could result in severe injury or death.

### CAUTION

Electric shock hazard:

Do not change the measurement function while the test leads are connected to a component or circuit.

Failure to observe this precaution may result in injury and can damage the unit.

### CAUTION

Electric shock hazard:

When testing GFCIs installed in two-wire systems (no ground wire available), the tester may give a false indication that the GFCI is not functioning properly. If this occurs, recheck the operation of the GFCI using the test and reset buttons. The GFCI test button feature will demonstrate proper operation.

Failure to observe this precaution may result in injury and can damage the unit.

### CAUTION

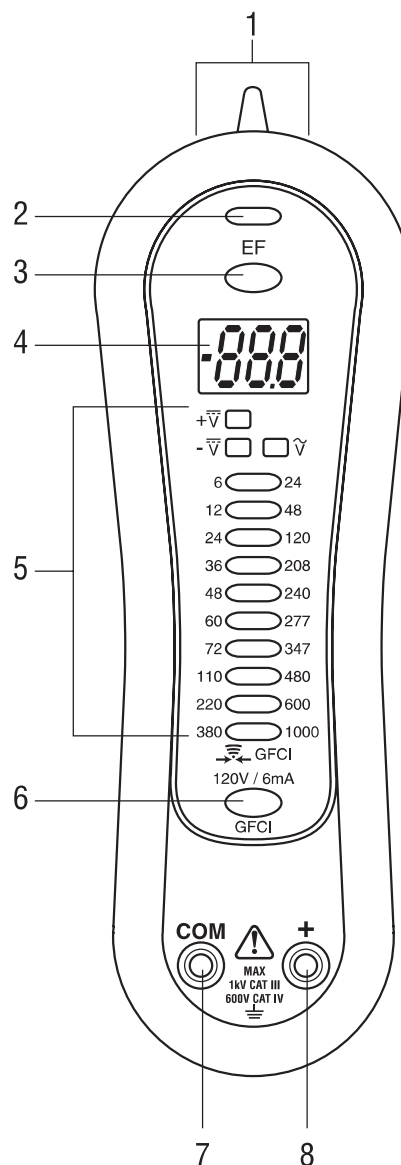
Electric shock hazard:

- Do not attempt to repair this unit. It contains no user-serviceable parts.
- Do not expose the unit to extremes in temperature or high humidity. Refer to "Specifications."

Failure to observe these precautions may result in injury and can damage the unit.

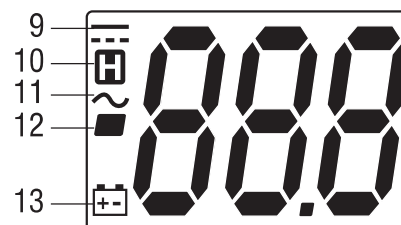
## Identification

1. Non-contact voltage detection (EF) antenna
2. Non-contact voltage detection (EF) LED
3. Non-contact voltage detection (EF) button
4. Display (GT-95 only)
5. LEDs
6. GFCI test button (GT-95 only)
7. Negative, common (COM), or ground input terminal for all measurements
8. Positive (+) input terminal for all measurements



## Display Icons


9. DC volts
10. Auto-Hold is activated
11. AC volts
12. Polarity indicator
13. Low battery indicator




## Symbols on the Unit

- Warning—Read the instruction manual
- Risk of electric shock
- Double insulation

## Using the Features

- **EF** Press and hold to detect the electric field that surrounds current-carrying conductors. The EF LED will blink once, and the beeper will emit a short sound. Signal strength is indicated by tone and flashing of the EF LED. For the GT-95, signal strength is also displayed as a series of dashes on the display.
  - Use the tester's built-in antenna (refer to the "Identification" section on the previous page) for tracing live circuits or locating a break in a wire.
  - For more precision, such as distinguishing between current-carrying and ground wires, connect a test lead to the + input terminal and use it as a probe.
- **Auto-Hold** This feature automatically activates when the tester is removed after making a voltage reading. The LEDs flash the last measured value for 10 seconds. The GT-95 LCD holds the last measured value and displays the  icon.
- **Overvoltage Warning** The 1000 VAC/380 VDC LED flashes if these levels are exceeded. The GT-95 LCD displays "OL" above 1000 V AC or DC.
- **Indicator Self-Test** Short the two test leads together. The Continuity LED will light, and the beeper will sound. With the leads still shorted, press and hold the **EF** button. The beeper will turn off. The 13 voltage-indicating LEDs will illuminate for approximately 2 to 3 seconds and then turn off. On the GT-95, five of the LEDs will change from green to red, and all the digits and icons in the LCD will be visible. At the conclusion of the test, the Continuity LED and beeper will then turn back on.
- **Shock Hazard Warning (GT-95 only)** The voltage LEDs are red if the measured voltage is above 54 VDC/30 VAC. Below these levels, the LEDs are green.
- **Shaker (GT-95 only)** If enabled, the shaker signals that an AC voltage greater than approximately 19 V is present between the test leads. To enable or disable this feature, remove the leads from any voltage or continuity source. Press and hold first the **GFCI** button and then the **EF** button.
  - The shaker will remain on until the buttons are released to confirm that this feature is enabled.
  - The shaker will turn on briefly to signal that this feature has been disabled.

## Operation

	<b>⚠ WARNING</b>
	<p>Electric shock hazard:</p> <p>Contact with live circuits could result in severe injury or death.</p>

<b>⚠ CAUTION</b>
<p>Electric shock hazard:</p> <p>Do not change the measurement function while the test leads are connected to a component or circuit.</p> <p>Failure to observe this precaution may result in injury and can damage the unit.</p>

1. Refer to “Typical Measurements” for specific measurement instructions.
2. Refer to the Test Table for test instructions.
3. Perform the Indicator Self-Test as described in “Using the Features.” Test the unit on a known functioning circuit or component.
  - If the unit does not function as expected on a known functioning circuit, replace the battery.
  - If the unit still does not function as expected, send the unit to Greenlee for repair. Refer to the instructions under the Warranty.
4. Take the reading from the circuit or component to be tested. The LEDs illuminate as shown in the LED Table.

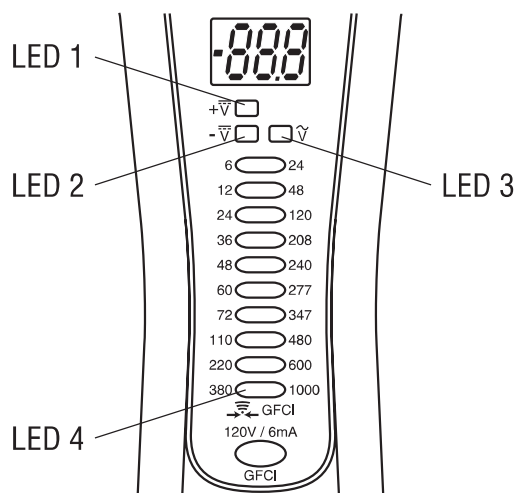


## Operation (cont'd)

### Test Table

To test/verify this value:	Connect the red lead to:	Connect the black lead to:	The tester will indicate:
Continuity	Component or circuit under test	Component or circuit under test	Tone for resistance of 0 to 50 k $\Omega$ (approximately)
AC voltage	Component or circuit under test	Component or circuit under test	Voltage of 15 V or greater*
DC voltage	Component or circuit under test	Component or circuit under test	Voltage of 4.5 V or greater, plus polarity*
GFCI (GT-95 only)	Hot or live conductor	Earth ground	Refer to "Typical Measurements" for complete testing instructions.

\* GT-95 also displays voltage on LCD.

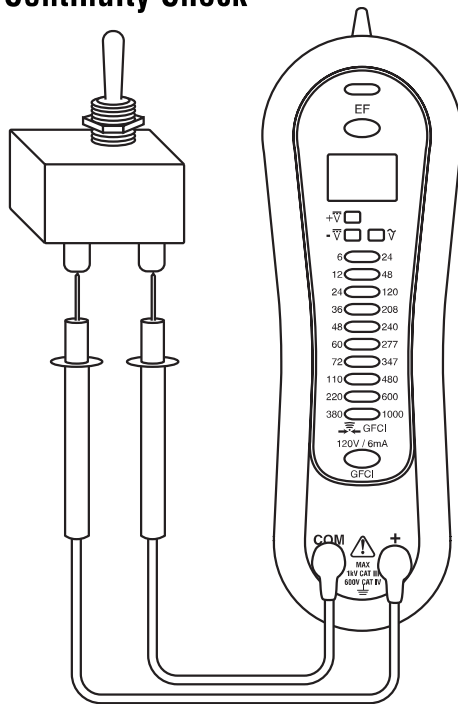


### LED Table

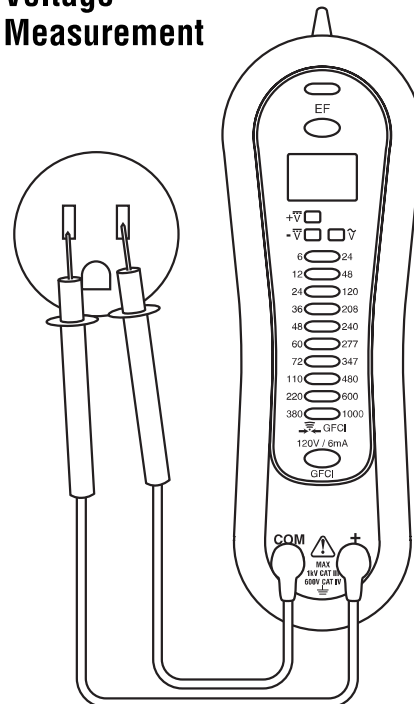
LED Illuminated	Indication
LED 1	Positive (+) DC of 4.5 V or more
LED 2	Negative (–) DC of 4.5 V or more
LED 3	AC of 15 V or more
LED 4 only	Continuity present
Other voltage LEDs	Approximate voltage level

## Typical Measurements

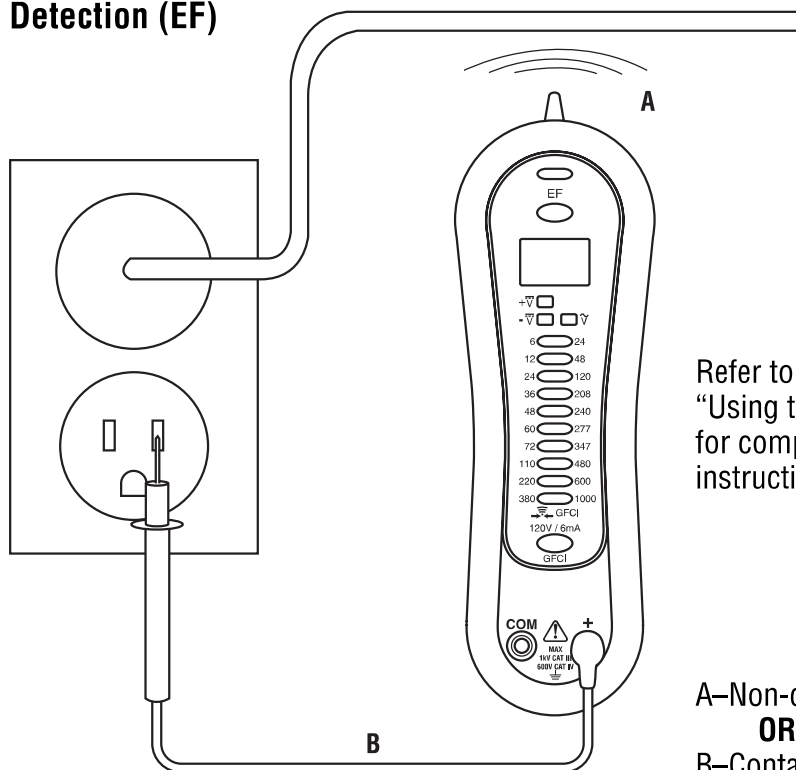
### Continuity Check



### Voltage Measurement



### Electric Field Detection (EF)



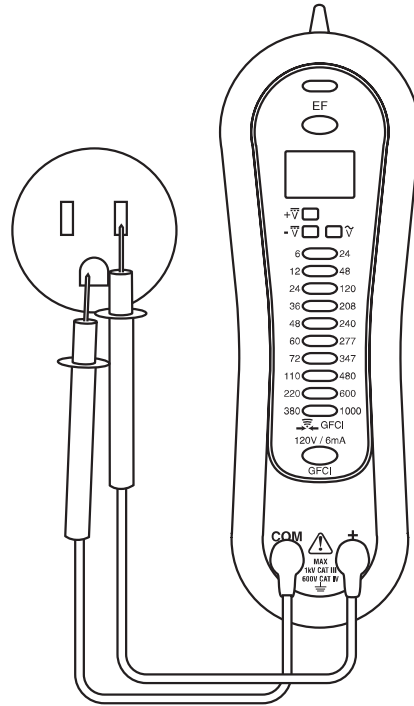
Refer to  
“Using the Features”  
for complete  
instructions.

A–Non-contact  
**OR**  
B–Contact

## Typical Measurements

### GFCI Test (GT-95 only)

1. Consult the GFCI manufacturer's installation instructions to determine that the GFCI is installed in accordance with the manufacturer's specifications.
2. Check for correct wiring of the receptacle and all remotely connected receptacles on the branch circuit.
3. Operate the test button on the GFCI installed in the circuit. The GFCI must trip.
  - If the GFCI does not trip, do not use the circuit. Consult an electrician.
  - If the GFCI does trip, reset the GFCI. Then connect the GT-95 to the receptacle to be tested, as shown.
4. Press the **GFCI** button on the GT-95 for a minimum of 6 seconds when testing the GFCI condition.
  - The Continuity/GFCI LED will turn on when the GFCI button is depressed. It will turn off when the GFCI trips.
  - If the GT-95 fails to trip the GFCI, it suggests:
    - A wiring problem with a totally operable GFCI, or
    - proper wiring with a faulty GFCI.



Consult an electrician to check the condition of the wiring and GFCI.

## ⚠ CAUTION

Electric shock hazard:

When testing GFCIs installed in two-wire systems (no ground wire available), the tester may give a false indication that the GFCI is not functioning properly. If this occurs, recheck the operation of the GFCI using the test and reset buttons. The GFCI button test function will demonstrate proper operation.

Failure to observe this precaution may result in injury and can damage the unit.

## Specifications and Accuracy

Polarity: Automatic

Voltage Range: 19 to 1000 VAC, 5 to 1000 VDC

Internal Basic Load: 0.8 W at 600 V (approximate)

Input Impedance: 460 k $\Omega$  || 160 pF (nominal)

Number of LEDs: 14

LED Threshold: The following table gives nominal thresholds.

AC Tolerance:  $\pm$  (2.5% of reading + 4 V)

DC Tolerance:  $\pm$  (1% of reading + 2 V)

AC Marking	AC Threshold	DC Marking	DC Threshold
24	19	6	5
48	38	12	10
120	96	24	19
208	166	36	30
240	224	48	42
277	259	60	54
347	312	72	66
480	414	110	91
600	540	220	176
1000	800	380	304

Frequency Range: DC and 45 to 65 Hz

Test Current: Less than 2.5 mA

Wireless Electric Field Detection (EF):

Indication: Bar graph segments and audible beep tones are proportional to the field strength.

Detection Frequency: 50/60 Hz

Detection Antenna: Top of unit

Typical Voltage	GT-95 Bar Graph Indication
15 V to 55 V	—
30 V to 95 V	--
55 V to 170 V	---
above 120 V	----

## Specifications and Accuracy (cont'd)

Continuity Test: 0 to 50 k $\Omega$

Test Current (typical): 0.7  $\mu$ A

Open Circuit Voltage: Less than 2.0 VDC

Indication: Tone and LED

GFCI Test (for 120 V nominal circuits only—GFCI test is disabled above 132 V and below 80 V):

Test Current: 7.5 mA nominal at 120 V

Impedance: 16 k $\Omega$  nominal

Internal Load: 0.9 W @ 120 V

Operating/Storage Conditions: -10 °C to 50 °C (14 °F to 122 °F)

0% to 85% relative humidity

Altitude: 2000 m (6500') maximum

Pollution Degree: 2

Indoor use only

Remove batteries before storing.

Battery: Two 1.5 V batteries (AAA, NEDA 24A or IEC LR03)

Measurement Categories: CAT IV, 600 V / CAT III, 1000 V per UL 61010

### GT-95 Only

Display: 3-digit LCD (999 maximum count)

Display Turn-on Voltage: 15 VAC, 5 VDC (nominal)

Voltage Resolution: 1 V (AC or DC)

LCD Accuracy:

ACV:  $\pm$  (2.5% of reading + 4 V)

DCV:  $\pm$  (1% of reading + 2 V)

## **Measurement Categories**

These definitions were derived from the international safety standard for insulation coordination as it applies to measurement, control, and laboratory equipment. These measurement categories are explained in more detail by the International Electrotechnical Commission; refer to either of their publications: IEC 61010-1 or IEC 60664.

### **Measurement Category I**

Signal level. Electronic and telecommunication equipment, or parts thereof. Some examples include transient-protected electronic circuits inside photocopiers and modems.

### **Measurement Category II**

Local level. Appliances, portable equipment, and the circuits they are plugged into. Some examples include light fixtures, televisions, and long branch circuits.

### **Measurement Category III**

Distribution level. Permanently installed machines and the circuits they are hard-wired to. Some examples include conveyor systems and the main circuit breaker panels of a building's electrical system.

### **Measurement Category IV**

Primary supply level. Overhead lines and other cable systems. Some examples include cables, meters, transformers, and other exterior equipment owned by the power utility.

## **Statement of Conformity**

Greenlee Tools, Inc. is certified in accordance with ISO 9000 (2000) for our Quality Management Systems.

The instrument enclosed has been checked and/or calibrated using equipment that is traceable to the National Institute for Standards and Technology (NIST).

## Maintenance

### CAUTION

Electric shock hazard:

- Do not attempt to repair this unit. It contains no user-serviceable parts.
- Do not expose the unit to extremes in temperature or high humidity. Refer to "Specifications."

Failure to observe these precautions may result in injury and can damage the unit.

## Battery Replacement

### WARNING

Electric shock hazard:

- Do not operate with the case or battery cover open.
- Before opening the case or battery cover, remove the test leads from the circuit and shut off the unit.

Failure to observe these warnings could result in severe injury or death.

1. Disconnect the unit from the circuit.
2. Remove the two screws from the battery cover.
3. Remove the battery cover.
4. Replace the batteries (observe polarity).
5. Replace the cover and screws.

## Cleaning

Periodically wipe the case with a damp cloth and mild detergent; do not use abrasives or solvents.