

TRIPLETT

Model 9320-A

**True RMS
AC/DC Clamp-On Meter**
Instruction Manual



 **TRIPLETT**




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
1: INTRODUCTION

The **Triplet Model 9320-A** is a True RMS 3 3/4 digit, handheld, battery operated, autoranging Clamp On Ammeter and Multi-tester. It performs the basic electrical measurements required by the homeowner as well as advanced measurements useful to the professional electrician. It measures AC and DC Voltage, AC and DC Current, and Resistance (Ohms). It also has a Diode Test function, and a Continuity Beeper. Advanced functions include the measurement of Capacitance, Frequency (including Frequency through the Clamp-On), and Temperature. A backlit LCD display makes the meter useful in areas with poor lighting and convenience features like Data Hold, Min/Max Memory, and Auto Power Off add to the usefulness of the product. Overload protection makes the meter resistant to damage from accidental overloads.

2: SAFETY RULES & WARNINGS

- 2.1 Read all instructions in this manual before using this meter. Failure to do so may result in damage to the meter or injury to the user.*
- 2.2 Prior to using the meter in any situation which could result in injury to the user, in order to verify that the meter is functional and producing a valid reading, test the meter on a circuit(s) known to have potentials equivalent to the potential that is to be measured. For example, before using the meter to determine if an AC power line is energized with 120VAC, test the meter on a line known to be energized with 120VAC. Failure to do so may result in damage to the meter or injury to the user.*
- 2.3 Do not use this meter with its case open, or with parts removed. Doing so may damage the meter and/or injure the user.*
- 2.4 When using this meter in schools and workshops, responsible teachers or skilled personnel must control the usage of this meter. Failure to observe this precaution may result in damage to the meter or injury to the user.*
- 2.5 Follow the recommendations of any Trade Organizations or Regulatory Agencies whose scope encompasses the use of this meter. Failure to do so may result in damage to the meter or injury to the user.*
- 2.6 Do not open this meter for maintenance without first disconnecting the test leads from all external circuitry. Failure to observe this precaution may result in damage to the meter or injury to the user.*
- 2.7 Repairs and maintenance must only be carried out by qualified service personnel or qualified electricians / technicians who know the dangers of, and the safety rules applicable to this type of equipment. Failure to observe this precaution may result in damage to the meter or injury to the user.*
- 2.8 Always set the meter to the appropriate range or mode before connecting it to the circuitry to be tested. Failure to observe this precaution may result in damage to the meter or injury to the user.*
- 2.9 Check the condition of the test leads before making a measurement. Do not use the test leads if there is damaged insulation or exposed metal. Failure to observe this precaution may result in damage to the meter or injury to the user.*

- 2.10** Make sure test leads are properly inserted and seated in the meter's input jacks. A loose test lead may cause the user to believe that no hazard exists, when in fact, dangerous voltages or currents may be present. Failure to observe this precaution may result in damage to the meter or injury to the user.
- 2.11** Do not touch the tips of the test leads when making a measurement. Do not touch live circuitry when making a measurement. Failure to observe this precaution may result in damage to the meter or injury to the user.
- 2.12** Before using the meter, examine both the meter and the test leads for damage. Do not use the meter if damage (damaged insulation, exposed metal, cracked case, burnt smell, etc.) is evident. Failure to observe this precaution may result in damage to the meter or injury to the user.
- 2.13** Insert the test leads in the jacks specified in the instructions for performing particular tests. Inserting the test leads in incorrect jacks can damage the meter and/or injure the user.
- 2.14** Do not exceed the maximum voltage or current limitations of the meter (see product specifications). Doing so may damage the meter and/or injure the user.
- 2.15** Do not apply voltage or current to the input of the meter when it is set to any of the Ohms Ω ranges. Doing so may damage the meter and/or injure the user.
- 2.16** Do not apply voltage or current to the input of the meter when it is set to the Diode Test  or Continuity Beeper  modes. Doing so may damage the meter and/or injure the user.
- 2.17** Do not apply voltage or current to the input of the meter when it is set to the  Capacitance mode. Doing so may damage the meter and/or injure the user.
- 2.18** Do not apply voltage or current to the input of the meter when it is set to the Temperature measurement mode. Doing so may damage the meter and/or injure the user.
- 2.19** Do not attempt to measure current on bare conductors that are elevated above earth ground by more than 600V AC.

- 2.20** Do not rotate the Function switch with the test leads connected to the circuitry to be tested. Doing so may damage the meter or the circuitry, and/or injure the user.
- 2.21** For maximum safety, turn the equipment or voltage source off before connecting the test leads. Make certain that no capacitors in the circuit being tested remain charged to a high voltage. Set the Meter to the appropriate AC or DC Voltage range. If the voltage is unknown, set the Meter to the highest range. Re-apply power and observe the meter reading.
- 2.22** Do not apply voltages to the input of the meter which are elevated above the earth ground potential by more than 600V AC/DC. Doing so may damage the meter and/or injure the user.
- 2.23** Do not continue to use meter when the “low battery” symbol  is displayed. The displayed reading may be in error and lead the user to believe that no hazard exists, when in fact, dangerous voltages or currents may be present. Failure to observe this precaution may result in damage to the meter or injury to the user.
- 2.24** Use caution when working with voltages above 25 volts AC or 35 volts DC. Such voltages may cause a life threatening electrical shock.
- 2.25** This meter is not for use by children. Failure to observe this precaution may result in damage to the meter or injury to the user.
- 2.26** Do not use this meter to make measurements in adverse environments such as rain, snow, fog, or locations with steam, explosive gases or dusts. Doing so may damage the meter and/or injure the user.
- 2.27** Do not use meter in condensing atmospheres. That is, do not use meter in conditions where ambient temperature and humidity could cause condensation of water inside of meter. Doing so may cause injury to the user.
- 2.28** Do not use the meter if either the meter or the test leads are wet, either from exposure to the weather, or after cleaning the case of the meter. Doing so may cause injury to the user.
- 2.29** Do not attempt immediate use of the meter when bringing it from a cold environment to a warm environment. Condensation of water, inside and outside of the meter, may produce dangerous measuring conditions. Allow the meter to warm to room temperature before using. Failure to observe this precaution may result in damage to the meter or injury to the user.

- 2.30** Do not modify the meter. Changing the design may make the meter unsafe and may result in injury to the user.
- 2.31** Use caution when attempting to evaluate if a dangerous voltage is present. The meter will not read AC voltage if it is set to DC, nor will it read DC if it is set to AC. For example, if the meter is set to 400VDC, it will not measure a dangerous AC voltage, even if the probes are inserted into a household AC wall outlet.
- 2.32** Do not touch the metallic portion of one test lead if the other test lead is connected to a live circuit. The current from the live circuit may pass through the meter and appear on the unconnected test lead. Failure to observe this warning may result in user injury.
- 2.33** Do not attempt to use meter when no display is present on LCD. Doing so may damage the meter and/or injure the user.
- 2.34** Use caution when measuring circuits containing capacitors. Capacitors can store dangerous or lethal levels of electricity, even when the circuitry which they are in has been disconnected from its power source. Some capacitors could source enough energy to damage the meter and/or injure the user.
- 2.35** Use caution when using this meter to measure voltages in industrial applications where the High Energy circuitry is used. High Energy circuitry is usually regarded as any circuitry capable of supplying over 4000 watts to a load before a safety device (like a fuse) interrupts the circuit. For maximum safety, use of Lineman's Gloves conforming to ASTM D120 is recommended. See product specifications for Category III statement.
- 2.36** Do not attempt to test charged capacitors. Only discharged capacitors may be tested. If you wish to test a capacitor, discharge it using an approved method before connecting it to the meter. **Caution:** Some capacitors can store dangerous lethal charges. Discharging these capacitors can be dangerous unless an approved method is used. Failure to observe this precaution may result in damage to the meter or injury to the user.
- 2.37** When you use the meter to check a high-voltage circuit, do not try to connect both test leads at once. Instead, clip one probe to the neutral or ground lead of the circuit (usually a bare, green, or white wire in AC wiring circuits) using the insulated slip-on Alligator Clips. Then probe for voltages with the other test lead. This helps prevent you from accidentally touching a hot wire, since you need to concentrate on only one test lead. Failure to observe this precaution may result in damage to the meter or injury to the user.

- 2.38** *If there is any doubt about the condition of the meter (i.e. safe vs unsafe), remove the meter from service and secure it in a location that will prevent its unintentional use. Failure to observe this precaution may result in damage to the meter or injury to the user.*
- 2.39** *Do not use the meter if it does not appear to work correctly on all ranges and in all modes. Failure to observe this precaution may result in damage to the meter or injury to the user.*
- 2.40** *Do not use the meter if it has undergone long-term storage under unfavorable conditions. Failure to observe this precaution may result in damage to the meter or injury to the user.*
- 2.41** *Do not use the meter if it may have been damaged in transport. Failure to observe this precaution may result in damage to the meter or injury to the user.*
- 2.42** *Always connect one of the meter's alligator clips to the low side of a power circuit first. Never clamp onto a hot wire first, (usually red, black, or blue in AC wiring circuits.) If you clamp onto a hot wire first, and touch the other probe, you could receive a shock. Failure to observe this precaution may result in damage to the meter or injury to the user.*
- 2.43** *To avoid damage to the meter and possible user injury, disconnect test leads from test points before changing the function/range. Failure to observe this precaution may result in damage to the meter or injury to the user.*
- 2.44** *Avoid usage near strong magnetic fields (magnets, loudspeakers, transformers, motors, coils, relays, contactors, electromagnets, etc.). The meter may display readings that are in error, causing the user to misinterpret the hazards present. For example, the meter may indicate a low voltage when high voltages are actually present. Failure to observe this precaution may result in damage to the meter or injury to the user.*
- 2.45** *Avoid usage near strong electrostatic fields (high voltage power lines, televisions, computer monitors, etc.). The meter may display readings that are in error, causing the user to misinterpret the hazards present. For example, the meter may indicate a low voltage when high voltages are actually present. Failure to observe this precaution may result in damage to the meter or injury to the user.*

- 2.46** *Avoid usage near strong RF fields (radio or television transmitters, walkie talkies, cellular phones, etc.). The meter may display readings that are in error, causing the user to misinterpret the hazards present. For example, the meter may indicate a low voltage when high voltages are actually present. Failure to observe this precaution may result in damage to the meter or injury to the user.*
- 2.47** *Remove the battery when the meter may be left unused for longer than 1 month. Chemical leakage from the battery could damage the meter, leading to user injury.*
- 2.48** *Do not use the meter if there is evidence of chemical leakage from the battery. Leakage could damage meter and lead to injury of user.*
- 2.49** *Observe whether D-HOLD function is activated. The meter may not show the presence of dangerous potentials when D-HOLD is activated. For example, if D-HOLD is applied when the meter is reading zero, and 120VAC is subsequently applied, the meter will continue to read zero. Failure to observe this precaution may result in damage to the meter or injury to the user.*
- 2.50** *Do not use the thermocouple to measure the temperature of objects that are electrically "live". Failure to observe this precaution may result in damage to the meter or injury to the user.*

3: INTERNATIONAL SYMBOLS

The following International Symbols may be used in this manual and on the case of the meter to identify, caution, or warn the user of important product limitations or important operational procedures that must be followed to ensure safe usage of the product.



Low Battery



Ground



See Instruction Manual



AC



DC



Fuse



Double Insulated



Beeper



Diode



AC or DC



Dangerous Voltages




Capacitance

4: PRODUCT FEATURES

- 4.1 True RMS AC Voltage and Current measurements
- 4.2 3 3/4 digit resolution (4000 counts)
- 4.3 Autoranging on Voltage, Resistance, Frequency, and Capacitance
- 4.4 AC and DC Current Measurements (Clamp-On) to 1000A
- 4.5 38mm (1.5") max conductor diameter, 32mm (1.3") jaw opening
- 4.6 AC and DC Voltage Measurements to 600V (CAT III)
- 4.7 Resistance Measurements to 40 Meg Ohms
- 4.8 Capacitance Measurements to 4000uF
- 4.9 Frequency Resolution of 0.01Hz at 60Hz (60Hz measures 60.00Hz)
- 4.10 Temperature Measurement in C or F with K type Thermocouple (included)
- 4.11 Auto Power Off increases battery life (defeatable)
- 4.12 Continuity Beeper
- 4.13 Diode Test
- 4.14 Data Hold
- 4.15 Relative Mode cancels zero error and offsets
- 4.16 Min/Max function memorizes highest and lowest readings
- 4.17 Backlit LCD Display
- 4.18 Overload Protection
- 4.19 Double Insulated Design
- 4.20 CE Mark (EMC / LVD)
- 4.21 3 Year Warranty

5: SPECIFICATIONS

- 5.1 **Display:** 0.58" (15mm) high LCD
- 5.2 **Display Resolution:** 4000 counts, 0000 to 3999
- 5.3 **Overrange Indication:** Displays "OL"
- 5.4 **Measurement Rate:** 3 to 4 measurements per second
- 5.5 **Low Battery Annunciator:** 
- 5.6 **Jaw Dimensions:** Accepts 38mm (1.5") max conductor diameter if jaw is slipped over end of conductor. 32mm (1.3") max conductor diameter if jaw is opened and clamped over conductor.
- 5.7 **Operating Conditions:**
Temperature: 0 to 40 degrees C (32 to 104 degrees F)
Relative Humidity: less than 80%
- 5.8 **Storage Conditions:**
Temperature: -20 to 60 degrees C (-4 to 140 degrees F)
Relative Humidity: less than 90%
- 5.9 **Case Dimensions:** 219 x 84 x 45 mm, (L x W x H)
8.63 x 3.31 x 1.75 inches (L x W x H)
338 grams, 0.75 lbs. (w/ battery, w/o leads)
- 5.10 **Weight:** 338 grams, 0.75 lbs. (w/ battery, w/o leads)
- 5.11 **Battery:** 1 standard 9 volt alkaline battery (Triplett PN 37-48)
- 5.12 **Battery Life:** approx. 100 hours continuous usage except for current ranges.
approx. 30 hours continuous usage in current ranges.
- 5.13 **Insulation:** Double Insulated (Protection Class II)
- 5.14 **Approvals:** IEC 1010-1 (EN61010-1)
Overvoltage Category (Installation Category)
Category II to 1000 volts DC
Category II to 750 volts AC
Category III to 600 volts AC/DC
IEC 1010-2-032
CE: EMC, LVD

Note:

- a) The following accuracy specifications are valid at 23 degrees C, +/- 5 degrees C, Relative Humidity less than 75%
- b) The specifications are in the form "+/- (x % of reading + LSD)" where LSD is "Least Significant Digit".

TRMS AC Current

Range	Resolution	Accuracy
400A	0.1A	$\pm(2.0\% \text{ rdg} + 5 \text{ LSD})$
1000A	1A	$\pm(2.5\% \text{ rdg} + 10 \text{ LSD})$



Overload Protection: 1000A max for less than 60 secs
Frequency: 40Hz to 100Hz
Display: AC True RMS

DC Current

Range	Resolution	Accuracy
400A	0.1A	$\pm(1.5\% \text{ rdg} + 5 \text{ LSD})$
1000A	1A	$\pm(2.0\% \text{ rdg} + 10 \text{ LSD})$



Overload Protection: 1000A max for less than 60 secs

TRMS AC Voltage

Range	Resolution	Accuracy
40mV	0.01mV	$\pm(1.5\% \text{ rdg} + 3 \text{ LSD})$
400mV	0.1mV	
4V	1mV	
40V	10mV	$\pm(1.0\% \text{ rdg} + 2 \text{ LSD})$
400V	100mV	
600V	1V	$\pm(1.5\% \text{ rdg} + 3 \text{ LSD})$



Overload Protection (CAT III): 600V AC/DC rms
Input Impedance: all ranges 10M Ω , except 40mV / 400mV ranges
 are greater than 100M Ω
Frequency: 40Hz to 1KHz
Display: AC True RMS

DC Voltage

Range	Resolution	Accuracy
40mV	0.01mV	$\pm(0.5\% \text{ rdg} + 2 \text{ LSD})$
400mV	0.1mV	
4V	1mV	
40V	10mV	
400V	100mV	
600V	1V	$\pm(0.8\% \text{ rdg} + 3 \text{ LSD})$



Input Impedance: all ranges 10M Ω , except 40mV / 400mV ranges
 are greater than 100M Ω
Overload Protection (CAT III): 600V AC/DC rms


Resistance

Range	Resolution	Accuracy
400 Ω	0.1 Ω	$\pm(1.0\% \text{ rdg} + 3 \text{ LSD})$
4K Ω	1 Ω	$\pm(1.0\% \text{ rdg} + 2 \text{ LSD})$
40K Ω	10 Ω	
400K Ω	100 Ω	
4M Ω	1K Ω	
40M Ω	10K Ω	$\pm(2.0\% \text{ rdg} + 3 \text{ LSD})$



Overload Protection: 600V DC or AC RMS for 30 sec. max

Diode and Continuity Test

Range	Notes
	Displays approx. diode voltage in V up to approx. 1.999V. Test current about 0.4mA. Open circuit voltage about 2.8V.
•))	Displays approx. resistance up to approx. 400 Ohms. Open circuit voltage about 0.5V. Beeper sounds when resistance is less than 30 to 150 Ohms.



Overload Protection: 600V DC or AC RMS for 30 sec. max

Capacitance

Range	Resolution	Accuracy
40nF	10pF	±(3.0% rdg + 10 LSD) for values greater than 10nF
400nF	100pF	
4µF	1nF	±(2.5% rdg + 5 LSD)
40µF	10nF	
400µF	100nF	±(5.0% rdg + 10 LSD)
4000µF	1µF	±(20.0% rdg + 20 LSD)



Overload Protection: 600V DC or AC RMS for 30 sec. max
REL residual zero reading
* Not accurate below 10nF.

Frequency (through Test Leads)

Range	Resolution	Accuracy
10Hz	0.01Hz	±(0.1% rdg + 5 LSD)
100Hz	0.1Hz	
1000Hz	1Hz	
10KHz	10Hz	
100KHz	100Hz	
1000KHz	1KHz	
10MHz	10KHz	



Overload Protection: 600V DC or AC RMS for 30 sec. max
Sensitivity: sine wave 0.6V rms (10MHz: 1.5V rms)

Frequency (through Clamp-On)

Range	Resolution	Accuracy
25 to 400Hz	0.1A	±(0.1% rdg + 5 LSD)



Overload Protection: 1000A max for less than 60 sec.
Sensitivity: 3 Amps minimum

Temperature

Range	Resolution	Accuracy
-4 to 302 F (-20 to 150 C)	1 degree F 1 degree C	±7 degrees F (±4 degrees C)
303 to 1472F (150 to 800 C)		±(3.0% rdg + 2 LSD) F ±(3.0% rdg + 1 LSD) C



Overload Protection: 600V DC or AC RMS for 30 sec. max
Sensor: K-Type Thermocouple

Duty Cycle

Range	Resolution	Accuracy
0 to 99%	0.1%	±(2.0% rdg + 2 LSD)



Overload Protection: 600V DC or AC RMS for 30 sec. max
Sensitivity: square wave 2Vpp bipolar to 1KHz max

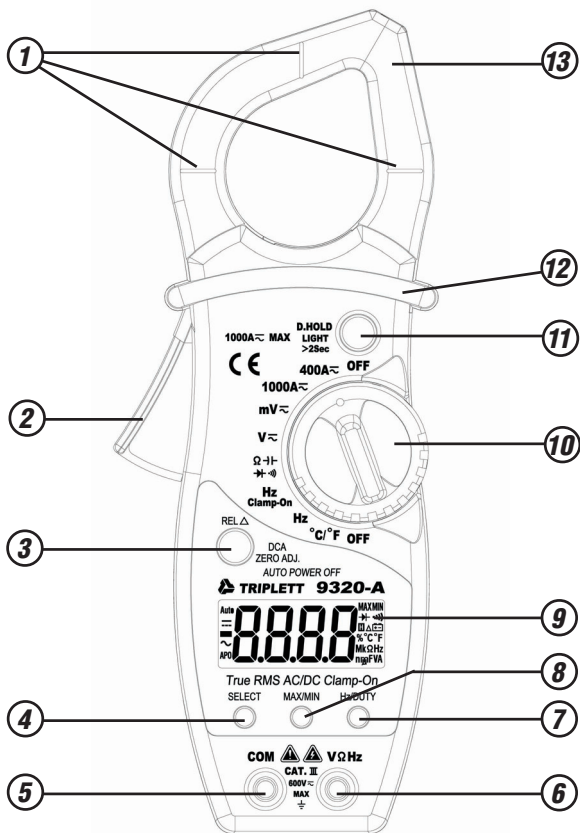



FIGURE 1
FRONT PANEL OF 9320-A

6: 9320-A FRONT & REAR PANEL, DISPLAY DETAILS

- 1) **Centering Marks** – Position the conductor within the jaws at the intersection of the indicated marks in order to meet the specified accuracy. An additional error of several percent may result if conductor is not properly positioned.
- 2) **Lever** – Opens and closes the clamp jaws.
- 3) **REL Δ and DCA ZERO ADJ** – Press this button to REL (make subsequent readings RELative to the current reading) or to “zero out” any zero error. The button is usually used to zero out errors on the **400 Ω** range, the **A \equiv** range, or the 40nF Capacitance **\leftarrow** range.
- 4) **SELECT** – Press this button to access alternate measurement modes. For example, on the **V \sim** range, pressing the button selects between AC and DC measurement modes.
- 5) **COM Jack** – The black test lead is plugged into this jack for all measurements except current (amps). To avoid electrical shock or instrument damage, do not connect this jack to any source that is more than 600V with respect to earth ground.
- 6) **V Ω Hz Jack** – The red lead is plugged into this jack for all measurements except current (amps).
- 7) **Hz/DUTY** – When the FUNCTION switch is set to **Hz** or **V \sim** , pressing this button allows selection of the Frequency Measurement (Hz) mode or the Duty Cycle Measurement (DUTY) mode.
- 8) **MIN/MAX** – Pressing this button makes LCD display the Maximum or Minimum value that the meter has measured. This feature does not work on all ranges. For example, it does not work on any of the Frequency ranges or Capacitance ranges.
- 9) **Display** – The LCD display provides the measurement indication and other instrument status. See Figure 2 for a more detailed view.
- 10) **FUNCTION Switch** – Used to select the function and range to measure

- 11) **D. HOLD / LIGHT Button** – Holds the reading in the display when the D-HOLD button is pressed and released.  appears in the display to indicate that the D.HOLD is activated. To release, press the D.HOLD Button again. To turn on the LCD backlight, press and hold the button for 2 seconds or longer. To turn the backlight off, again press and hold the button for 2 seconds or longer.
- 12) **Hand Guard** – Grasp meter below this guard. Do not touch any bare conductors that the jaws may be clamped around.
- 13) **Clamp (Jaws)** – Opens 1.25" (32MM) to enclose conductor(s).

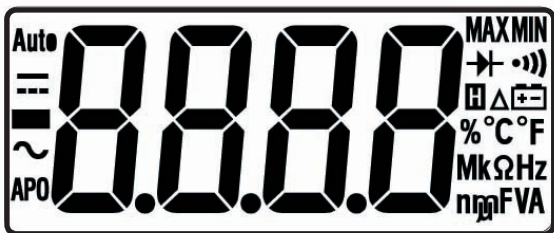





FIGURE 2
DISPLAY DETAILS

Refer to Figure 2 to identify the various display annunciators.

AUTO The **Auto (ranging)** annunciator is on when the meter is set to a function that has multiple ranges available. The meter is completely automatic and does not require the user to select a range.

 The **AC ~** annunciator is on when the meter is set to measure AC voltage or current.

 **Negative Sign Annunciator** – This annunciator is displayed when DC voltage is measured by the **V Ω Hz** jack is negative with respect to the COM jack. It can also be displayed in the **A**  mode, when the measured current is reversed to the direction of the polarity arrow. Note: Polarity arrow indicates current flow from positive to negative.

 **Low Battery Annunciator** – This annunciator is displayed when the battery needs to be replaced.



Hold Annunciator – This annunciator is displayed any time the hold mode is active.



REL Annunciator – This annunciator is displayed whenever the REL mode or the DCA ZERO-ADJ mode is active.



Continuity Annunciator – This annunciator is displayed whenever the Continuity (Beeper) mode is selected.



Diode Test Annunciator – This annunciator is displayed whenever the Diode Test mode is selected



Percent Annunciator – This annunciator is displayed whenever the Duty Cycle mode is selected.



Fahrenheit Annunciator – This annunciator is displayed whenever the Temperature measurement mode is selected for Fahrenheit display.



Centigrade Annunciator – This annunciator is displayed whenever the Temperature measurement mode is selected for Centigrade display.



Resistance (Ohms) Annunciators – These annunciators are displayed whenever Resistance is being measured. The displayed annunciator indicates the range of resistance that is being measured.



Voltage Annunciators – These annunciators are displayed whenever Voltage is being measured. The displayed annunciator indicates the range of voltage that is being measured.



Current (Amperes) Annunciator – This annunciator is displayed whenever the Current (Amps) measurement mode is active.

nF, mF

Capacitance (Farads) Annunciators – These annunciators are displayed whenever Capacitance is being measured. The displayed annunciator indicates the range of capacitance that is being measured.

Hz, kHz, MHz

Frequency (Hertz) Annunciators – These annunciators are displayed whenever Frequency is being measured. The displayed annunciator indicates the range of frequency that is being measured.

APO

Auto Power Off Annunciator – This annunciator is displayed when the Auto Power Off mode is active. APO comes on automatically when the meter is turned on. To defeat the APO, hold the SELECT button down when turning on the power.

MAX, MIN

MAX and MIN Annunciators – These annunciators are displayed when either MAX or MIN display has been selected (by pressing the MAX / MIN button). To exit this mode, press and hold the MAX / MIN button until the meter returns to the normal operating mode (takes about 2 seconds).



FIGURE 3
OVERLOAD INDICATION

Overload Indication – Figure 3 shows the Overload Indication. This is the display when the input exceeds the display capability of the Meter. If measuring voltage or current, remove the input immediately. Depending on the meter setting, the decimal points may or may not be present.

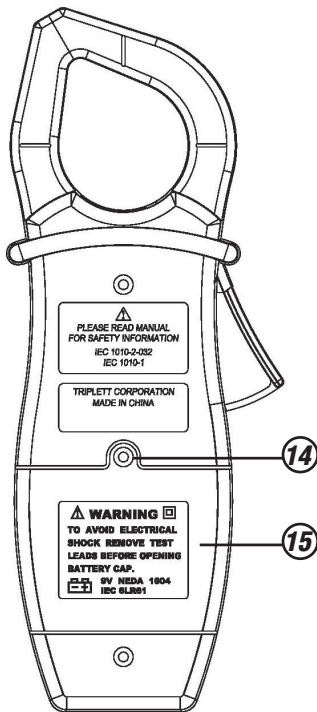


FIGURE 4
BATTERY COVER

Refer to Figure 4 for a view of the rear of the Meter.

14) Battery Cover Screw – This screw secures the battery cover.

15) Battery Cover – After the Battery Cover Screw has been removed, the Battery Cover may be lifted to gain access to the battery. Install battery paying attention to battery wires. The wires must be correctly positioned for the cover to fit tightly on the meter.


7: PREPARATION FOR USE

- 7.1** Before using the Meter, familiarize yourself with the instrument and this manual. **READ AND REVIEW THIS MANUAL FREQUENTLY.**
- 7.2** Each time the Meter is used, inspect it for mechanical defects as described in Section 7.4. Also, inspect the test leads as described in Section 7.5. Finally, perform the Battery Test as described in this section.
- 7.3** Only after all the tests have passed should the Meter be used. **DO NOT USE THE METER IF ANY OF THESE TESTS FAIL.**
- 7.4 Visual Inspection of the Meter** – Before use, inspect the Meter for any conditions which would make it unsafe. Check for missing or loose parts (knobs, screw, or insulators). Check also for damage, such as cracks, chips and burn marks. Make certain that the Meter is free from oils, grease, dirt and excessive moisture. **IF ANY OF THESE CONDITIONS ARE FOUND, DO NOT USE THE METER.**
- 7.5 Visual Inspection of the Test Leads** – Before use, inspect the test leads for worn or cut insulation. Check also for deterioration of the insulation. Make certain that no wire is exposed and that the jack insulators and alligator boots are not cracked, broken, torn, or otherwise damaged.

WARNING!!!

IF THE TEST LEADS ARE IN ANY WAY DAMAGED OR DEGRADED, DO NOT USE THEM. THEY MUST BE REPLACED. DO NOT USE TEST LEADS THAT HAVE BEEN ALTERED OR ARE NOT A FACTORY APPROVED REPLACEMENT.

7.6 Battery Test

Before using the Meter, rotate the Function Switch to one of the **A** positions (these positions use the most power) and observe the display for the Low Battery  annunciator. **IF IT IS VISIBLE, REPLACE THE BATTERY.** Refer to Section 7.7 for instructions on installing and/or replacing the batteries.

7.7 Battery Replacement

7.7.1 Battery Cover Removal

Disconnect any test leads connected to the Meter and place the Function Switch in the OFF position. Referring to Figure 4, locate and remove the Battery Cover by removing the Battery Cover Screw. The Battery Cover is a tight fit and a small straight blade or Philips screw driver can be helpful in removing it.


7.7.2 Battery Replacement

Remove the 9V battery and replace it with a fresh one.

7.7.3 Battery Cover Installation

Re-install the battery being careful not to pinch any wires. Snap the Battery Cover back into place and reinstall the Battery Cover Screw.

 **WARNING!!!**

Do not use the meter when the low battery annunciator  is displayed. This may cause the meter to produce inaccurate readings, and lead the user to believe that no hazard exists, when, in fact, dangerous voltages or currents are present.

 **WARNING!!!**

The meter may not show the presence of dangerous potentials when D-HOLD is activated. For example, if D-HOLD is applied when the meter is reading zero, and 120VAC is subsequently applied, the meter will continue to read zero. Failure to observe this precaution may result in damage to the meter or injury to the user.

8: GENERAL MEASUREMENT PROCEDURES

8.1 This section describes general operation of the Meter. When making measurements of any type, refer to this section. Always prepare the Meter for use by reading and following the Preparation for Use section of this manual (Section 7.0).

 **WARNING!!!**

THE MODEL 9320-A IS INTENDED FOR USE ONLY BY PERSONNEL TRAINED IN THE PROPER SAFETY PROCEDURES AND WHO CAN RECOGNIZE SHOCK AND SAFETY HAZARDS.

8.2 High Voltage Measurements

CAUTION: Always observe the following rules and procedures when making measurements in high voltage circuits. Voltage greater than 40VDC or 25VAC may create a serious shock hazard. Never use this Meter on circuits with CAT III voltages higher than 600VRMS. Treat any unknown voltages as though they were high voltage.

 **WARNING!!!**

IF IT IS NOT POSSIBLE TO TURN POWER OFF TO THE EQUIPMENT, THEN THE USE OF A LINEMAN'S GLOVE CONFORMING TO ASTM D120 IS REQUIRED.

For maximum safety, turn the equipment or voltage source off before connecting the test leads. Make certain that no capacitors in the circuit being tested remain charged to a high voltage.

Set the Meter to the appropriate AC or DC Voltage range.
NEVER CHANGE RANGES WITH POWER APPLIED TO THE CIRCUIT.

8.2.1 To connect the leads and take the measurement proceed as follows.

If you ARE NOT using a Lineman's Glove

While holding the insulated test lead probe body, touch the test prod tips to the circuit being tested. If no voltage is present, it is safe to use the supplied alligator clips to connect to the points to be measured. If a voltage is found, check the equipment to make certain that all power is off and all capacitors are discharged.

Turn the equipment or voltage source on and take the required reading. **DO NOT HANDLE OR TOUCH THE METER, TEST LEADS, OR ALLIGATOR CLIPS WHILE THE EQUIPMENT IS TURNED ON.**

8.2.2 If you ARE using a Lineman's Glove

Touch the test prod tips to the circuit being measured and take the required reading. The supplied alligator clips may also be used to attach the leads to the circuit.

8.2.3 If the voltage is such that a different range on the Meter would be appropriate, then:

If you ARE NOT using a Lineman's Glove

Turn the power to the equipment off and allow the reading to return to zero. Disconnect the leads from the equipment.

8.2.4 If you ARE using a Lineman's Glove

Disconnect the leads from the equipment.

Only after the leads are disconnected from the equipment should the range be changed. After the new range is selected, reconnect the leads as described above.

8.3 High Current Measurements

CAUTION: Always observe the following rules and procedures when making measurements in high current circuits. Never use the Meter on circuits with voltages higher than 600VRMS.

Read and follow the rules for high voltage in Section 8.2.

Disconnect all test leads from the Meter.

Always use the Lever to open and close the Clamp Jaws. Never place any part of your body beyond the Hand Guard.

Be careful when trying to clamp the meter around the conductor. To properly place the Meter may require the hand holding the meter to come close to other circuitry which could prove a serious shock hazard.

WARNING!!!

WHENEVER TOUCHING THE METER IN AN ENERGIZED CIRCUIT, THE USE OF A LINEMAN'S GLOVE CONFORMING TO ASTM D120 IS REQUIRED.

9: SPECIFIC MEASUREMENT PROCEDURES

9.1 AC and DC Voltage Measurement




 **WARNING!!!**

If the input voltage is higher than 1000VDC (CAT II), 750VAC (CAT II) or 600V AC or DC (CAT III), do not attempt to measure!

Use Caution when measuring voltages above 25 volts.



Refer to Section 7.0, Preparation For Use, and Section 8.0, General Measurement Procedures, before attempting any measurements.

*Select the desired AC or DC voltage range by rotating the FUNCTION Switch to the **mV**  or **V**  position and using the SELECT pushbutton to set the mode to AC or DC. AC mode is indicated by the presence of the  annunciator. When **Auto** is displayed, the meter will select its own measurement range.*

Make certain that the D-HOLD annunciator on the display is not visible. If it is, press the D-HOLD button to turn it off.

*Attach the test leads to the Tester. The red lead is connected to the **V Ω Hz** Jack, and the black lead is connected to the **COM** Jack.*

Connect the test leads across the circuit to be measured. See Figure 5.

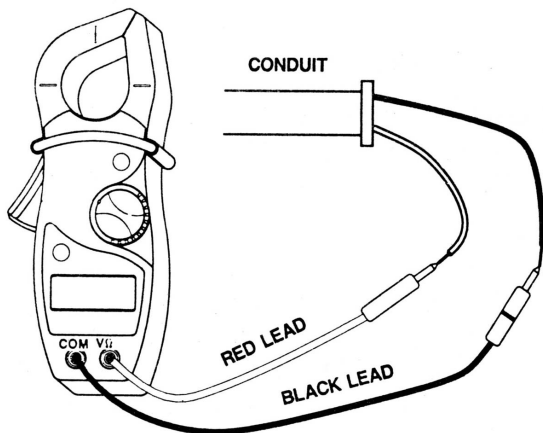


FIGURE 5
MEASURING VOLTAGE

Read the voltage on the display.

*If the meter is set to **Auto**, it may display overrange **OL** momentarily while it is selecting the proper measurement range. If the meter display indicates overrange **OL** for longer than 2 seconds, disconnect the test probes from the circuit immediately. An overrange condition exists. Do not attempt to measure this voltage. It exceeds the capability of the meter.*

*For DC voltage measurements, the Negative Sign (-) annunciator indicates that the **VΩ Hz** jack is negative with respect to the **COM** jack.*

*To hold the reading, press the D-HOLD button so that the **H** annunciator is visible on the display.*





Disconnect the test leads from the circuit under test and return the FUNCTION Switch to the OFF position.

9.2 Measuring AC or DC Current





Refer to Section 7.0, Preparation For Use, and Section 8.0, General Measurement Procedures, before attempting any measurements.




Remove test leads from meter before using it to measure Current.

Select the AC or DC Current measurement mode by rotating the FUNCTION Switch to the **400A**  or **1000A**  position. The meter will default to the DC current measurement mode when a current range is selected. AC mode is selected by pressing the SELECT button (the annunciator in the LCD will change from  to .

Make certain that the D-Hold annunciator  on the display is not visible. If it is visible, press the D-HOLD button to turn it off.

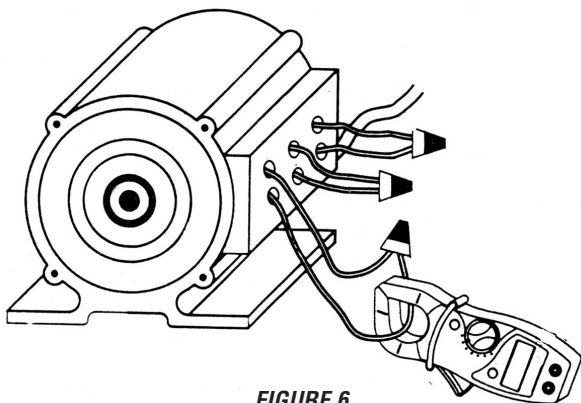
If measuring DC Current, after setting the FUNCTION to **400A**  or **1000A**  , press the **REL**  and **DCA ZERO ADJ** button to zero out any offset error. The displayed reading should change to 000.X (where X can be any number), and the **REL**  annunciator should appear in the display. Do this before clamping the Jaws around the conductor.

Note:


Due to the high sensitivity of the meter in the **A**  mode, the last digit may change by several digits during use. It may be helpful to REL the meter after every several minutes of use, if the most accurate low current DC measurements are desired. Nearby magnets can affect the accuracy of the meter in this mode.

Clamp the Jaws around the one conductor to be measured. Center the conductor within the Jaw using the Centering Marks as guides. See Figure 6.

Read the current on the display.



**FIGURE 6
MEASURING AC AMPS**

If it is desired to hold the reading, press the D-HOLD button so that the  annunciator is visible on the display.

 **WARNING!!!**

WHENEVER TOUCHING THE METER IN AN ENERGIZED CIRCUIT, THE USE OF A LINEMAN'S GLOVE CONFORMING TO ASTM D120, IS REQUIRED.

Remove the Meter from the circuit by opening the Jaws and carefully withdrawing it.

Notes:



- 1) Although the **Auto** annunciator displays on the **400A \sim** range, there is only one range on this setting, i.e. 400A.
- 2) Although the **Hz/Duty** button appears to function in the **400A \sim** and **1000A \sim** ranges, this feature is not available.

Read the resistance on the display. Note the range annunciator (Ω , $k\Omega$, or $M\Omega$).

If it is desired to hold the reading, press the D-HOLD button so that the  annunciator is visible on the display.

Disconnect the test leads from the circuit under test and return the FUNCTION Switch to the OFF position.

Note:



The **REL**  button can be used to zero or “null” a reading in the resistance mode. For example, the meter can be used to compare the resistance of many different resistors, if one resistor is used as a “reference” resistor. If a resistor whose value is exactly 100 Ohms is connected to the meter, it will read “100.0”. If the **REL**  button is pressed, the meter will “null” the “100.0” reading to “000.0”. If the reference resistor is removed and other resistors connected, the difference in value between the reference resistor and the resistor being tested will be displayed. For example, if a 113 Ohm resistor is connected, the meter will display “013.0”..... the difference between the 100 Ohm resistor and the 113 Ohm resistor. Similarly, if a 92 Ohm resistor is connected, the meter will display “-008.0”.


9.4 Diode Test



Do not apply voltage or current to the meter when it is set to 

Refer to Section 7.0, Preparation For Use, and Section 8.0, General Measurement Procedures, before attempting any measurements.

Select Diode Test by rotating the FUNCTION switch to the  position and then pressing the SELECT button until the  annunciator appears in the display.

Make certain that the  annunciator on the display is not visible. If it is visible, press the D-HOLD button to turn it off.

Attach the test leads to the Tester. The red lead is connected to the **V Ω Hz** Jack, and the black lead is connected to the **COM** Jack. With the leads open, the display should display the Overrange **OL** indication. Short the leads together. The display should indicate about "0.000" Volts.

Referring to Figure 7, connect the test probes to the diode or circuit to be tested. Observe the proper polarity. To measure the diode's forward voltage, the red test lead is connected to the diode's anode and the black test lead is connected to the diode's cathode (banded end). A good silicon diode or rectifier usually measures from 0.500v to 0.700v. A shorted diode will measure about 0.000v. When a good diode is tested in reverse, i.e. red lead to cathode and black lead to anode, it should measure **OL**.

9.5 Continuity Test



Do not apply voltage or current to the meter when it is set to 

Refer to Section 7.0, Preparation For Use, and Section 8.0, General Measurement Procedures, before attempting any measurements.

Select Continuity Test by rotating the FUNCTION switch to the  position and

then pressing the **SELECT** button until the  annunciator appears in the display.

Make certain that the  annunciator on the display is not visible. If it is visible, press the **D-HOLD** button to turn it off.

Attach the test leads to the Tester. The red lead is connected to the **V Ω Hz** Jack, and the black lead is connected to the **COM** Jack. With the leads open, the display should display the Overrange **OL** indication. Short the leads together. The Continuity beeper should sound and display should indicate about “000.0” Ohms.

Connect the test probes to the device or circuit to be tested. If the resistance is less than 50 to 150 Ohms, the continuity beeper will sound.


The reading displayed on the LCD is an approximate indication, in Ohms, of the resistance of the device or circuit being measured.


9.6 Capacitance Test



 **WARNING!!!**

Do not apply voltage or current to the meter when it is set to 

Refer to Section 7.0, Preparation For Use, and Section 8.0, General Measurement Procedures, before attempting any measurements.

Select Diode Test by rotating the **FUNCTION** switch to the  position and then pressing the **SELECT** button until the **nF** annunciator appears in the display.

Make certain that the  annunciator on the display is not visible. If it is visible, press the **D-HOLD** button to turn it off.

Attach the test leads to the Tester. The red lead is connected to the **V Ω Hz** Jack, and the black lead is connected to the **COM** Jack. With the leads open, the display usually displays from “01.XX” to “03.XX” nF (where the X’s indicate that any number can be displayed). This is the residual capacitance error. To “zero out” this error, press the **REL ** and **DCA ZERO ADJ** button. The displayed reading should change to 00.00nF, and the **REL ** annunciator should appear in the display.

Before testing a capacitor, make sure it is discharged. Use an approved method for discharging the capacitor. Improperly discharging a capacitor can be dangerous and may cause user injury.

Referring to Figure 7, connect the test probes to the capacitor to be tested. If appropriate, observe the proper polarity. Read the capacitance on the display.

Note:

Larger value capacitors take longer to test. A 1000uF capacitor may take as long as 30 seconds to test.


9.7 Frequency and Duty Cycle Measurement

*Frequency and Duty Cycle can be measured in the **V** \approx **Hz Clamp-on** or **Hz** modes.*

Refer to Section 7.0, Preparation For Use, and Section 8.0, General Measurement Procedures, before attempting any measurements.

9.7.1 Measuring Frequency and Duty Cycle with Test Leads


*Attach the test leads to the meter. The red lead is connected to the **V** Ω **Hz** Jack, and the black lead is connected to the **COM** Jack. Rotate the FUNCTION switch to the **Hz** position or the **V** \approx position.*

Make certain that the  annunciator on the display is not visible. If it is visible, press the D-HOLD button to turn it off.

*The **Hz** position is very sensitive and is intended to measure low level signals in electronic circuitry. If it is used to measure the frequency of an AC power line, small amounts of noise or distortion on the line may cause erratic readings.*

*The **V** \approx position is preferred for making measurements on an AC power line. This mode is less sensitive to the effects of power line noise, and will usually produce a more stable reading than the **Hz** mode.*

*If the **Hz** position is selected, the meter is ready to measure Frequency immediately. Connect the test leads to be measured and read the frequency on the LCD. To measure the Duty Cycle, press the **Hz/DUTY** button. The % annunciator will display on the LCD.*

If the **V**  position is selected, set the meter to AC volts by pressing the **SELECT** button, then connect the test leads to the signal to be measured. Allow the meter to autorange and measure the voltage of the input signal, and then press the **Hz/DUTY** button to select Frequency measurement or Duty Cycle measurement. The **Hz** annunciator will display on the LCD in the Frequency measurement mode, or the **%** annunciator will display in the Duty Cycle mode.

In the Frequency mode, with the leads open, the display usually displays “0.000Hz”. In the Duty Cycle mode, the meter usually displays “000.0%”.

Notes:

Due to the high sensitivity of the Frequency and Duty Cycle measurement mode, signals containing “noise” may produce erroneous readings on the meter. For example, while a “clean” 120VAC power line will typically measure 59.99 or 60.00Hz, and 50.0% Duty Cycle, a “noisy” 120VAC power line may produce erratic readings as high as several kHz.

9.7.2 Measuring Frequency and Duty Cycle with the Clamp-On

Remove test leads from the meter. Make certain that the  annunciator on the display is not visible. If it is visible, press the **D-HOLD** button to turn it off.

Set the **FUNCTION** switch to the **Hz Clamp-On** position. The **Hz** annunciator will be displayed on the LCD, indicating that the meter is in the Frequency measurement mode. Following the proper precautions, clamp the jaws of the 9320-A around the current carrying conductor whose frequency is to be measured. The current to be measured must be at least 3 Amps (lower currents will not be measured). Read the Frequency on the LCD. To measure the Duty Cycle, press the **Hz/DUTY** button. The **%** annunciator will display on the LCD.

9.8 Measuring Temperature



Do not apply voltage or current to the meter when it is set to °C / °F

Do not attempt to measure the temperature of electrically “live” surfaces. Doing so may result in damage to the meter or injury to the user.

Set the **FUNCTION** switch to °C / °F. Make certain that the  annunciator on the display is not visible. If it is visible, press the **D-HOLD** button to turn it off.

Plug the provided temperature probe into the **COM** and **VΩHz** jacks, observing proper polarity. Apply the tip of the probe to the surface whose temperature is to be measured. Read the temperature on the display. Press the **SELECT** button to choose **°C** or **°F** readout.

Notes:

While the meter is capable of measuring temperatures to approximately 1400 degrees Fahrenheit, the probe provided with the meter is only usable to about 300 degrees, before the insulation on the lead wire begins to degrade. The probe can be used briefly at higher temperatures, and, if a charred lead wire is not objectionable, can be used up to the 1400 degree limit.

Special high temperature bead style probes are available from a number of sources. The probe is a standard "K" type thermocouple.

To make non-contact measurements of surfaces, including electrically "live" surfaces, the user may wish to consider obtaining an Infrared Pyrometer, such as the Triplett ProTemp 6 or ProTemp 10.

9.9 Using the MAX / MIN Mode

The 9320-A contains a convenient memory that remembers the Maximum and Minimum values measured by the meter. The feature can be used for a few minutes or several hours to memorize the Maximum and Minimum values measured by the meter.

This feature does not work in all measurement modes. For example, it does not work in the Frequency, Continuity, Diode Test, and Capacitance modes.


9.9.1 Measuring Maximum and Minimum Current

To use the MAX / MIN feature while using the Clamp-On, simply set the **FUNCTION** switch to the **400A** or **1000A** position. Make certain that the **H** annunciator on the display is not visible. If it is visible, press the **D-HOLD** button to turn it off. **SELECT AC** or **DC** mode as desired, and then press the **MAX / MIN** button. The meter will memorize the **MAXimum** and **MINimum** values read by the meter. When the **MAX** annunciator is visible in the LCD, the **MAXimum** value is being displayed. When the **MIN** annunciator is visible in the LCD, the **MINimum** value is being displayed. When viewing the **MAX** value, the meter continues measuring and recording the **MIN** value, and when viewing the **MIN** value, the meter continues to measure and record the **MAX** value. The user can press the **SELECT** button to view one or the other.

To exit this mode, press and hold the MAX / MIN button until the meter beeps and the MAX and MIN annunciators disappear. **All memorized readings will be lost.** The meter will return to the normal measurement mode.

9.9.2 Measuring Maximum and Minimum Voltage

Attach the test leads to the meter. The red lead is connected to the **V Ω Hz** Jack, and the black lead is connected to the **COM** Jack. Rotate the FUNCTION switch to the **mV**  or **V**  position.

Make certain that the  annunciator on the display is not visible. If it is visible, press the D-HOLD button to turn it off.

SELECT AC or DC as desired, and then apply the signal to be measured to the meter, following the appropriate safety precautions.

Press the MAX / MIN button. The meter will memorize the MAXimum and MINimum values read by the meter. When the MAX annunciator is visible in the LCD, the MAXimum value is being displayed. When the MIN annunciator is visible in the LCD, the MINimum value is being displayed. When viewing the MAX value, the meter continues measuring and recording the MIN value, and when viewing the MIN value, the meter continues to measure and record the MAX value. The user can press the SELECT button to view one or the other.

To exit this mode, press and hold the MAX / MIN button until the meter beeps and the MAX and MIN annunciators disappear. **All memorized readings will be lost.** The meter will return to the normal measurement mode. The meter will be set to the range it was in when the MAX / MIN mode was selected. **It will not be in Autoranging mode (the Auto annunciator will be off).** To place the meter back into Autoranging mode, press the SELECT button. Notice that this also changes the AC/DC setting, so press the button repeatedly if needed to obtain the desired setting.

9.9.3 Measuring Maximum and Minimum Resistance

Attach the test leads to the meter. The red lead is connected to the **V Ω Hz** Jack, and the black lead is connected to the **COM** Jack. Rotate the FUNCTION switch to the **M Ω** position. The meter will enter the Resistance mode (the **M Ω** annunciator will be displayed).

Make certain that the  annunciator on the display is not visible. If it is visible, press the D-HOLD button to turn it off.

Connect the test leads to the resistance to be measured.

Press the MAX / MIN button. The meter will memorize the MAXimum and MINimum values read by the meter. When the MAX annunciator is visible in the LCD, the MAXimum value is being displayed. When the MIN annunciator is visible in the LCD, the MINimum value is being displayed. When viewing the MAX value, the meter continues measuring and recording the MIN value, and when viewing the MIN value, the meter continues to measure and record the MAX value. The user can press the SELECT button to view one or the other.

To exit this mode, press and hold the MAX / MIN button until the meter beeps and the MAX and MIN annunciators disappear. **All memorized readings will be lost.** The meter will return to the normal measurement mode. The meter will be set to the range it was in when the MAX / MIN mode was selected. **It will not be in Autoranging mode (the Auto annunciator will be off).** To place the meter back into Autoranging mode, press the SELECT button. Notice that this also changes the mode setting (Ohms, Continuity, etc), so press the button repeatedly if needed to obtain the desired setting.

9.9.4 Measuring Maximum and Minimum Temperature.

Attach the temperature probe and adaptor to the meter, paying attention to the proper polarity. Rotate the FUNCTION switch to the °C / °F position. SELECT F or C display as desired.

Make certain that the **H** annunciator on the display is not visible. If it is visible, press the D-HOLD button to turn it off.

Press the MAX / MIN button. The meter will memorize the MAXimum and MINimum values read by the meter. When the MAX annunciator is visible in the LCD, the MAXimum value is being displayed. When the MIN annunciator is visible in the LCD, the MINimum value is being displayed. When viewing the MAX value, the meter continues measuring and recording the MIN value, and when viewing the MIN value, the meter continues to measure and record the MAX value. The user can press the SELECT button to view one or the other.

To exit this mode, press and hold the MAX / MIN button until the meter beeps and the MAX and MIN annunciators disappear. **All memorized readings will be lost.** The meter will return to the normal measurement mode.

10: MAINTENANCE

Your Triplet Model 9320-A Digital Clamp Meter is a precision measuring instrument and, when used as described in this manual, should not require maintenance. There are no internal user serviceable parts (fuses, etc).

However, periodic calibration of the meter will insure that it is accurate and performing in accordance with its design specifications. A one year calibration interval is suggested.

To clean the outside of the meter, use a cloth dampened with a mild detergent solution. Do not use any abrasive cleansers, or chemical solvents that may damage the case of the meter.

TRIPLETT PRODUCT RETURN INSTRUCTIONS

In the unlikely event that you must return your Triplet equipment for repair, the following steps must be taken.

- 1) Call 1-800-TRIPLETT to obtain a Return Material Authorization (RMA) number from Customer Service.**
- 2) Enclose a copy of the original sales receipt showing date of purchase.**
- 3) Clearly print the RMA number on the outside of the shipping container.**
- 4) Return to:**
Triplet Corporation
One Triplet Drive
Bluffton, OH 45817
ATTN: Repair Dept.

Be sure to include a full description of the problem, and a telephone number, street address, or email address, where you can be contacted, and a return address where the meter can be shipped to upon repair.

11: ACCESSORIES

11.1 The Triplet Model 9320-A package contains the following items:

*Model 9320-A Clamp-On Meter
Test leads w/ Screw-On Alligator Clips (Triplet PN: 79-760)
9 Volt Battery (Triplet PN: 37-48)
Instruction Manual (Triplet PN: 84-858)
Carrying Case (Triplet PN: 10-4289)
Bead Type Temperature Probe (Triplet PN: 79-761)
Thermocouple Adaptor (Triplet PN: 79-799)*

11.2 Model 101-G Line Separator (Triplett PN: 3264)

Allows easy measurement of current in standard AC line cords.

- For use with Clamp-On Amp Meters
- Separates the line & neutral conductors of power cords
- 2 clamp positions: x1 for direct readings and x10 for readings multiplied by 10
- 15 Amp maximum current
- Polarized plug
- Voltage testing function



12: Triplett Three Year Limited Warranty

The Triplett Corporation warrants instruments and test equipment manufactured by it to be free from defective material or workmanship and agrees to repair or replace such products which, under normal use and service, disclose the defect to be the fault of our manufacturing, with no charge within three years (one year on calibration) of the date of original purchase for parts and labor. If we are unable to repair or replace the product, we will make a refund of the purchase price. Consult the Instruction Manual for instructions regarding the proper use and servicing of instruments and test equipment. Our obligation under this warranty is limited to repairing, replacing, or making refund on any instrument or test equipment which proves to be defective within three years from the date of original purchase.

This warranty does not apply to any of our products which have been repaired or altered by unauthorized persons in any way so as, in our sole judgment, to injure their stability or reliability, or which have been subject to misuse, abuse, misapplication, negligence, accident or which have had the serial numbers altered, defaced, or removed. Accessories, including batteries and fuses, not of our manufacture used with this product are not covered by this warranty.

To register a claim under the provisions of this warranty, contact Triplett Corporation's Customer Service Department for a Return Authorization Number (RMA) and return instructions. **No returned product will be accepted without an RMA number.** Upon our inspection of the product, we will advise you as to the disposition of your claim.

ALL WARRANTIES IMPLIED BY LAW ARE HEREBY LIMITED TO A PERIOD OF THREE YEARS (ONE YEAR ON CALIBRATION) FROM DATE OF PURCHASE, AND THE PROVISIONS OF THE WARRANTY ARE EXPRESSLY IN LIEU OF ANY OTHER WARRANTIES EXPRESSED OR IMPLIED.

The purchaser agrees to assume all liability for any damages and bodily injury which may result from the use or misuse of the product by the purchaser, his employees, or others, and the remedies provided for in this warranty are expressly in lieu of any other liability Triplett Corporation may have, including incidental or consequential damages.

Some states (USA ONLY) do not allow the exclusion or limitation of incidental or consequential damages, so the above limitation or exclusion may not apply to you. No representative of Triplett Corporation or any other person is authorized to extend the liability of Triplett Corporation in connection with the sale of its products beyond the terms hereof.

Triplett Corporation reserves the right to discontinue models at any time, or change specifications, price or design, without notice and without incurring any obligation.

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