

# MODEL 630-NS

## VOLT-OHM-MILLIAMMETER



**TRIPLETT  
CORPORATION**

*One Triplet Drive  
Bluffton, Ohio 45817*

## **SAFETY RULES**

### **Warning**

This tester has been designed with your safety in mind. However, no design can completely protect against incorrect use. Electrical circuits can be dangerous and/or lethal when lack of caution or poor safety practices are used.

### **Read The Manual**

Read this Instruction Manual carefully and completely.

Voltages and currents within the capability of this test equipment can be hazardous. Follow the instructions in this manual for every measurement. Read and understand the general instructions before attempting to use this tester. Do not exceed the limits of the tester.

### **Safety Check**

Double check the switch setting and lead connections before making measurements. Are you following all of the instructions?

Disconnect the tester or turn off the power before changing switch positions.

Do not connect to circuits with voltage present when switch is in any ohms or current position.

When replacing fuses use only specified type fuses and insert in correct fuse holder.

### **Don't Touch**

Don't touch exposed wiring, connections or other "live" parts of an electrical circuit. If in doubt, check the circuit first for voltage before touching it.

Turn off the power to a circuit before connecting test probes to it. Be sure there is no voltage present before you touch the circuit.

Do not use cracked or broken test leads.

### **High Voltage Is Dangerous**

Always start with the power off. Be sure there is no voltage present before making connections to the circuit.

Don't touch the tester, its test leads, or any part of the circuit while it is on.

Before disconnecting the tester, turn the circuit off and wait for the meter to return to "zero."

### **Distribution Circuits Pack A Punch**

In high energy circuits such as distribution transformers and bus bars, dangerous arcs of explosive nature can occur if the circuit is shorted. If the tester is connected across a high energy circuit when set to a low resistance range, a current range, or any other low impedance range, the circuit is virtually shorted.

Special equipment designed for use with these circuits is available. Contact a qualified person for assistance before attempting to make measurements on any high energy circuit.

### **Safety Is No Accident**

## TABLE OF CONTENTS

Safety Rules .....	2
Specifications .....	4
Introduction.....	7
General Instructions.....	8
Operations Chart.....	10
Measuring DC Volts.....	12
Measuring AC Volts.....	13
Measuring DC Current .....	14
Measuring Resistance .....	15
Measuring Output Voltage.....	16
Measuring Decibels (dB).....	18
Accessories .....	20
Maintenance .....	26
Replaceable Parts .....	28
Schematic .....	30
Parts Location.....	31
Limited Warranty.....	32

Printed in U.S.A.

Part No. 84-333 REV.F

## SPECIFICATIONS

### DC Volts

Ranges

0-150, 300 mV  
0-0.3, 0.6, 1.5, 3, 6, 12, 30, 60,  
150, 300, 600, 1200 V

Accuracy

$\pm 1 \frac{1}{2}\%$  of full scale reading  
Calibrated at 77°F (25°C)

Sensitivity

200,000 ohms per volt on  
0-0.3, 1.5, 6, 30, 150 and  
600 V ranges  
100,000 ohms per volt on 0-0.6,  
3, 12, 60, 300 and 1200 V ranges  
60  $\mu$ A full scale on 150 mV range  
120  $\mu$ A full scale on 300 mV range

Maximum Input Voltage

1200 Volts

### AC Volts

Ranges

0-1.5, 3, 6, 12, 30, 60, 150, 300,  
600, 1200 V

Accuracy

$\pm 3\%$  of full scale reading  
Calibrated at 77°F (25°C)

Sensitivity

20,000 ohms per volt on 1.5, 6,  
30, 150 and 600 V ranges  
10,000 ohms per volt on 3, 12, 60,  
300 and 1200 V ranges

Frequency Response

20 Hz to 10 kHz: within  $\pm 3\%$  of  
full scale value for 1.5 V thru  
300 V

10 kHz to 20 kHz: within  $\pm 5\%$   
of full scale value for 1.5 V thru  
300 V

Rectifier

Average responding circuit  
calibrated to indicate RMS value  
of a pure sine wave.

Maximum Input Voltage

1200 VAC RMS, 1700 V peak



<b>DC Current Ranges</b>	0-0.06, 0.12, 0.6, 1.2, 6, 12, 60, 120, 600, 1200 mA					
	0-6, 12 A					
<b>Accuracy</b>	± 1 1/2% of full scale reading Calibrated at 77°F (25°C)					
<b>Voltage Burden</b>	Approximately 150 mV on 0.06, 0.6, 6, and 60 mA ranges					
	Approximately 230 mV on 600 mA range					
	Approximately 200 mV on 6 A range					
	Approximately 300 mV on 0.12, 1.2, 12, and 120 mA ranges					
	Approximately 550 mV on 1200 mA range					
	Approximately 400 mV on 12 A range					
<b>Maximum Input Current Resistance Ranges</b>	12A					
	0-1 kΩ, 10 kΩ, 100 kΩ, 1 MΩ, 10 MΩ, 100 MΩ					
	(4.4 Ω, 44 Ω, 440 Ω, 4.4 kΩ, 44 kΩ, and 440 kΩ at center scale)					
<b>Accuracy</b>	± 1 1/2% of scale length					
	X1	X10	X100	X1K	X10K	X100K
Maximum Voltage - V	1.6	1.6	1.6	1.6	1.6	3.2
Maximum Current - mA	364	36.4	3.64	.364	.0364	.0073
Maximum Power Transfer to Load - mW	150	15	1.5	0.15	0.015	0.006
<b>Output Voltage Ranges</b>	0-1.5, 3, 6, 12, 30, 60, 150, 300 V					

## **SPECIFICATIONS (Continued)**

### **Decibels**

Ranges	—26 to +51 dBm
Reference Level	0 dBm at 1 mW on a 600 $\Omega$ line (0.775 VAC)

### **General**

Scale	4 1/2 inch mirrored scale
Batteries	One 1 1/2 V "D" cell and one 1 1/2 V "AA" cell. Batteries are packed separately.
Test Leads	One red and one black lead supplied, each 48 inches long. Two insulated screw-on alligator clips included.
Rubber Feet	Four rubber feet are supplied to fit into four holes in the rear of the VOM case.
Overload Protection	Meter movement protected against damage from overloads by a semi-conductor network. 12 Amp range protected by 12A/250V fuse. All other ranges protected by 1 1/4A/250V fuse.
Spare Fuses	Located inside VOM beside AA battery.
Size	3 11/32" x 5 1/2" x 7 1/2"
Weight	Approximately 4 pounds

## INTRODUCTION

The Triplet Model 630-NS VOM is a multi-range portable analog electrical instrument that measures AC voltage, DC voltage, DC current, resistance and decibels. It features a very sensitive meter movement not available in general purpose VOMs. The function and basic range of the 630-NS are selected by a single range switch which reduces the chance of error in setting the controls. A separate divide switch doubles the number of AC voltage, DC voltage and DC current ranges available. The low resistance range allows trouble shooting of low resistance control circuits and motors. The self-shielded suspension meter movement allows accurate repeatable measurements by eliminating friction and preventing external magnetic fields from influencing the measurement.

The Triplet Model 630-NS VOM can provide more accurate measurements than most general purpose VOMs. The sensitive meter movement does not load the measured circuit as much as general purpose VOMs and thus it will not disturb the circuit as much when it is connected. The AC voltage ranges are compensated to allow accurate measurements throughout the audio frequency range. The DC voltage and DC current ranges are compensated to reduce the effect of temperature on the accuracy of the instrument. The accuracy of the DC voltage and current ranges is also improved by the use of more accurate resistors.

All ranges on the Model 630-NS are fused to reduce the likelihood of damage. The 12 Amp range is fused with a 12 Amp fuse and all other ranges are fused with a 1 ¼ Amp fuse. The meter movement is protected from accidental damage by a silicon diode network that bypasses potentially damaging overloads.



## GENERAL INSTRUCTIONS

The following section should be read carefully; it contains instructions and precautions to be observed in making measurements with the VOM.

- Measurements are generally made with the test leads plugged into the COM -and V- $\Omega$ -A jacks. Output voltage measurements require the test leads to be plugged into the COM-and OUTPUT jacks. Measurements on the 12 Amp range require the test leads to be plugged into the COM-and 12A jacks.
- The insulated alligator clips provided with the VOM fit over the end of the test probes. When measuring high voltages, the use of these alligator clips will allow measurement without handling the test probes. As a safety measure, always shut off power source before attempting to connect alligator clips.
- When the approximate value of the quantity being measured is not known, always start on the highest range. For greatest accuracy, choose the range which will allow readings to be taken in the upper (right hand) portion of the scale.
- Readings are taken on the scale having the appropriate significant figures (3, 30 and 300 volts are read on the 0-300 scale) by multiplying or dividing by a factor of 10 or 100 as indicated by the range scale ratio (i.e.; on the 3 volt range divide the scale readings by 100).
- The polarity reversing switch reverses the polarity of the entire VOM at the input jacks. This allows fast switching in case of wrong polarity; and also provides a convenient polarity reversal for ohms ranges, a very useful tool in semiconductor checking. The V- $\Omega$ -A jack is positive when the polarity switch is in the DC+ - $\Omega$ -ACV position. The polarity switch does not operate on the 12 A range.
- The test probes should be disconnected from the voltage source (or the source shut off) before the range switch or polarity switch positions are changed. This practice will result in increased life and reliability for the VOM and increased safety for the user of the VOM.



- The Meter Zero Adjust Screw is located on the lower center of the meter window. It should be periodically adjusted so the meter pointer is on zero with no input into the VOM.
- Readings on the sensitive voltage, current and resistance ranges may sometimes be different than calculated values. Thermo-electric or electro-chemical reaction can sometimes generate voltage (or current) in a circuit due to elevated temperatures from soldering, contact of dissimilar metals, chemical fumes or moisture. Also, fingers should never touch the metal parts of the test probes since body resistance can cause erroneous readings—particularly on the high ohmmeter ranges.
- Check the test leads periodically. Leads that are worn, have damaged insulation, damaged plugs, damaged probes, or loose parts should be replaced.

**CAUTION:** Always observe the following rules and procedures when making measurements in high voltage circuits:

1. Turn off equipment or other source of voltage, before connecting test probes. Make sure no capacitors in the circuit being tested remain charged to a high voltage.
2. Install alligator clips on test probes. While holding the insulated section of the test probe, check circuit to see if any voltage (or current) is present. If no voltage is present, connect the alligator clips to the circuit to be measured.
3. Turn on equipment, or voltage source, and take required readings. **DO NOT** handle or touch the VOM, test leads or test probes with power source turned on.

Observing the above rules and precautions will result in continued accurate measurements with your VOM or increased safety to equipment and personnel.

## OPERATION CHART

Range	Set Range Switch to:	Set Divide Switch to:	Read on Scale:	Multiply or Divide by:
<b>DC Volts</b>				
150 mV	0.12 DCMA	V-A/2	150 AC-DC	x 1
300 mV*	0.12 DCMA	V-Ω-A	300 AC-DC	x 1
0.3 V*	0.6 DCV	V-A/2	300 AC-DC	÷ 1000
0.6 V	0.6 DCV	V-Ω-A	60 AC-DC	÷ 100
1.5 V	3 DCV	V-A/2	150 AC-DC	÷ 100
3 V	3 DCV	V-Ω-A	300 AC-DC	÷ 100
6 V	12 DCV	V-A/2	60 AC-DC	÷ 10
12 V	12 DCV	V-Ω-A	12 AC-DC	x 1
30 V	60 DCV	V-A/2	300 AC-DC	÷ 10
60 V	60 DCV	V-Ω-A	60 AC-DC	x 1
150 V	300 DCV	V-A/2	150 AC-DC	x 1
300 V	300 DCV	V-Ω-A	300 AC-DC	x 1
600 V	1200 DCV	V-A/2	60 AC-DC	x 10
1200 V	1200 DCV	V-Ω-A	12 AC-DC	x 100
<b>AC VOLTS</b>				
1.5 V	3 ACV	V-A/2	1.5 AC	x 1
3 V	3 ACV	V-Ω-A	3 AC	x 1
6 V	12 ACV	V-A/2	6 AC	x 1
12 V	12 ACV	V-Ω-A	12 AC-DC	x 1
30 V	60 ACV	V-A/2	300 AC-DC	÷ 10
60 V	60 ACV	V-Ω-A	60 AC-DC	x 1
150 V	300 ACV	V-A/2	150 AC-DC	x 1
300 V	300 ACV	V-Ω-A	300 AC-DC	x 1
600 V	1200 ACV	V-A/2	60 AC-DC	x 10
1200 V	1200 ACV	V-Ω-A	12 AC-DC	x 100
<b>OHMS</b>				
0 to 1,000	X 1 Ohms	V-Ω-A	Ω	x 1
0 to 10,000	X 10 Ohms	V-Ω-A	Ω	x 10
0 to 100,000	X 100 Ohms	V-Ω-A	Ω	x 100
0 to 1,000,000	X 1000 Ohms	V-Ω-A	Ω	x 1000
0 to 10 Meg.	X 10K Ohms	V-Ω-A	Ω	x 10,000
0 to 100 Meg.	X 100K Ohms	V-Ω-A	Ω	x 100,000

\*See note on page 12.

Range	Set Range Switch to:	Set Divide Switch to:	Read on Scale:	Multiply or Divide by:
<b>DC CURRENT</b>				
5 $\mu$ A	0.6 DCV	V-A/2	5 DCUA	x 1
10 $\mu$ A	0.6 DCV	V- $\Omega$ -A	5 DCUA	x 2
.06 mA	.12 DCMA	V-A/2	60 AC-DC	$\div$ 1000
.12 mA	.12 DCMA	V- $\Omega$ -A	12 AC-DC	$\div$ 100
.6 mA	1.2 DCMA	V-A/2	60 AC-DC	$\div$ 10
1.2 mA	1.2 DCMA	V- $\Omega$ -A	12 AC-DC	$\div$ 10
6 mA	12 DCMA	V-A/2	60 AC-DC	$\div$ 10
12 mA	12 DCMA	V- $\Omega$ -A	12 AC-DC	x 1
60 mA	120 DCMA	V-A/2	60 AC-DC	x 1
120 mA	120 DCMA	V- $\Omega$ -A	12 AC-DC	x 10
600 mA	1200 DCMA	V-A/2	60 AC-DC	x 10
1200 mA	1200 DCMA	V- $\Omega$ -A	12 AC-DC	x 100
6 Amp. *	12 A*	V-A/2	60 AC-DC	$\div$ 10
12 Amp.*	12 A*	V- $\Omega$ -A	12 AC-DC	

#### DECIBELS (dBm)

-26 to +5	3 ACV	V-A/2	dBm	subtract 6 dBm
-20 to +11	3 ACV	V- $\Omega$ -A	dBm	read direct
-14 to +17	12 ACV	V-A/2	dBm	add 6 dBm
-2 to +23	12 ACV	V- $\Omega$ -A	dBm	add 12 dBm
6 to 31	60 ACV	V-A/2	dBm	add 20 dBm
12 to 37	60 ACV	V- $\Omega$ -A	dBm	add 26 dBm
20 to 45	300 ACV	V-A/2	dBm	add 34 dBm
26 to 51	300 ACV	V- $\Omega$ -A	dBm	add 40 dBm

\* POLARITY SWITCH DOES NOT CHANGE POLARITY on the 6 Amp or 12 Amp range. The 12A jack is always positive on these two ranges and the COM-jack is always negative.



## MEASURING DC VOLTS

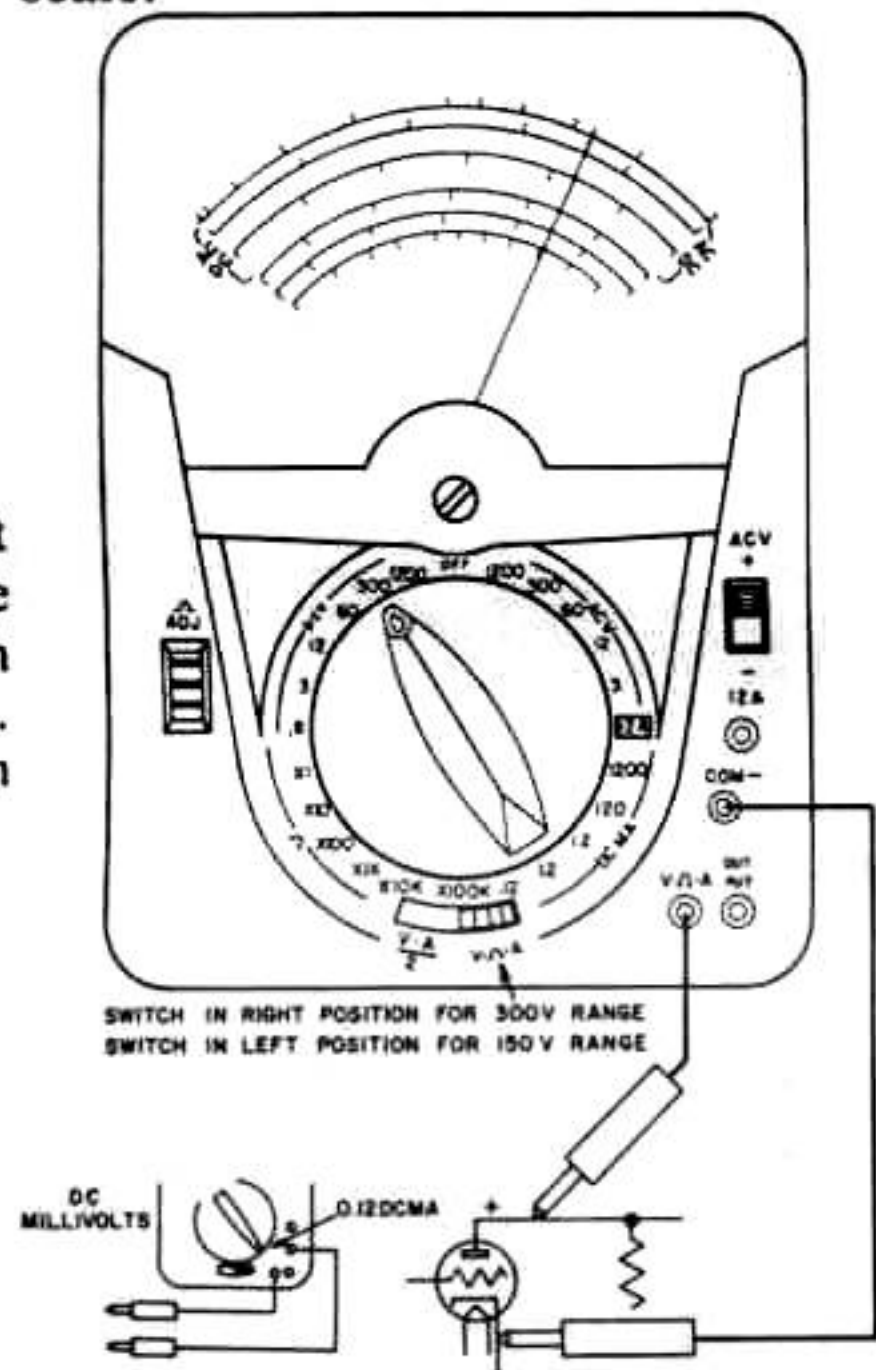
### 0-150 and 0-300 DC Millivolts:

1. Insert test leads in V- $\Omega$ -A and COM - jacks.
2. Place selector switch in 0.12 DCMA position.
3. Set the divide switch to the appropriate position.
4. Connect the test probes across the voltage to be measured.
5. Read DC millivolts on "AC-DC" scale.

### 0-0.3 thru 0-1200 DC Volts:

1. Insert test leads in V- $\Omega$ -A and COM - jacks.
2. Place selector switch in appropriate DCV position.
3. Set the divide switch to the appropriate position.
4. Connect the test probes across the voltage to be measured.
5. Read voltage on "AC-DC" scale.

NOTE: There are two ways to set this VOM for a 300 mV (0.3V) full scale range. The method in the top paragraph draws 120  $\mu$ A at full scale indication. The method in the bottom paragraph draws 5  $\mu$ A at full scale indication.



Measuring DC Volts



## MEASURING AC VOLTS

### 0-1.5 thru 0-6 AC Volts:

1. Insert test leads in V- $\Omega$ -A and COM - jacks.
2. Place selector switch in appropriate 3 ACV position.
3. Set the divide switch to the appropriate position.
4. Set the polarity switch to ACV +.\*
5. Connect the test probes across the voltage to be measured.
6. Read voltage on the red 0-1.5, 0-3 or 0-6 "AC" scale.

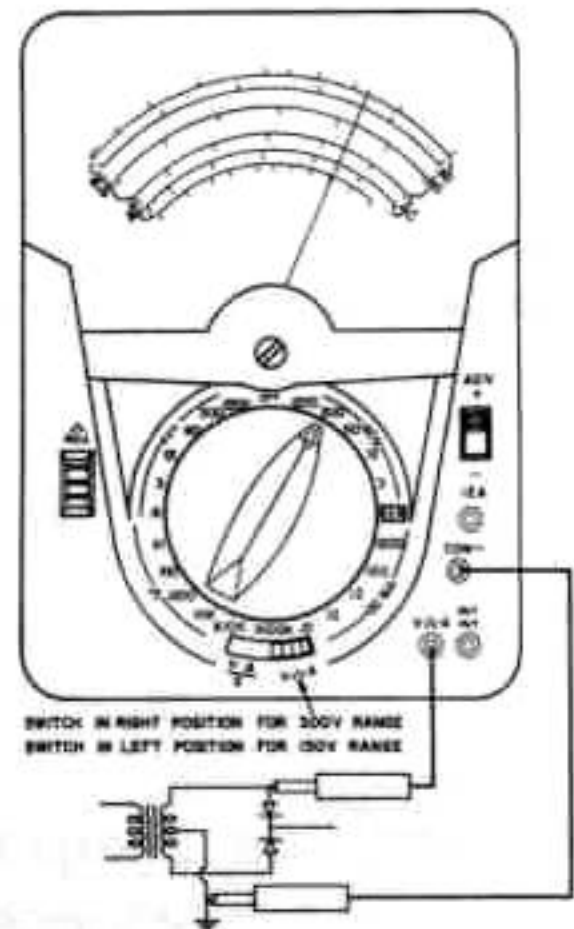
### 0-12 thru 0-1200 AC Volts:

1. Insert test leads in V- $\Omega$ -A and COM - jacks.
2. Place selector switch in appropriate ACV position.
3. Set the divide switch to the appropriate position.
4. Set the polarity switch to ACV +.\*
5. Connect the test probes across the voltage to be measured.
6. Read voltage on "AC-DC" scale.

### FREQUENCY RESPONSE:

AC voltage ranges up to and including 300 volts compensated from 20 Hz to 20 kHz.

\* The polarity switch must be set to "ACV +" for proper frequency response.



## Measuring AC Volts

## MEASURING DC CURRENT

### 0-.06 mA thru 0-1200 mA:

1. Insert test leads in V- $\Omega$ -A and COM - jacks.
2. Place selector switch in appropriate position.
3. Set the divide switch to the appropriate position.
4. Connect the test probes in series with the circuit (use alligator clips).
5. Read current on "AC-DC" scale.

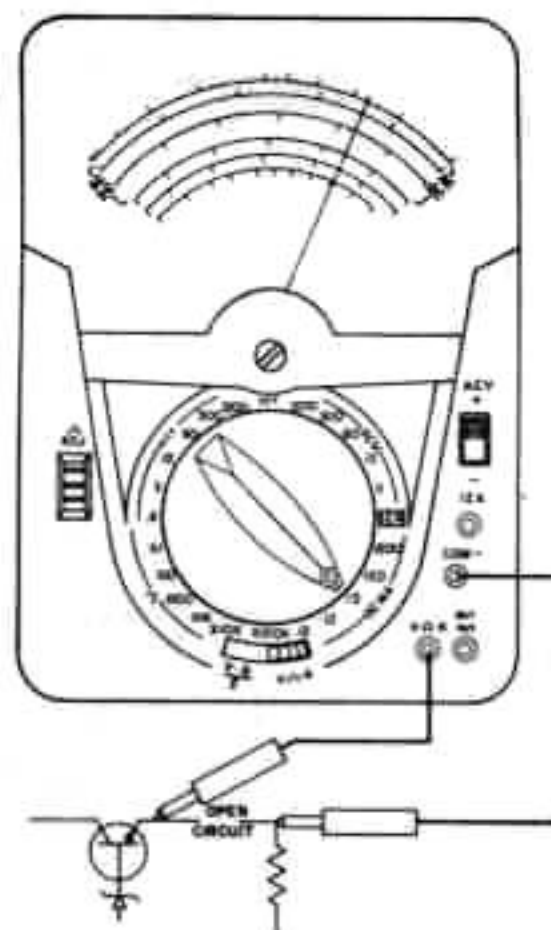
### 0-5 $\mu$ A and 0-10 $\mu$ A:

1. Insert test leads in V- $\Omega$ -A and COM - jacks.
2. Place selector switch in .6 DCV position.
3. Set the divide switch to the appropriate position.
4. Connect the test probes in series with the circuit (use alligator clips).
5. Read current on 0-5 DCUA scale.

### 0-6 Amps and 0-12 Amps:\*

1. Insert test leads in COM - and 12A jacks.
2. Place selector switch in 12A position.
3. Set the divide switch to the appropriate position.
4. Connect the test probes in series with the circuit (use alligator clips).
5. Read current on "AC-DC" scale.

\* POLARITY SWITCH DOES NOT CHANGE POLARITY on the 6 Amp or 12 Amp range. The 12A jack is always positive on these two ranges and the COM - jack is always negative.



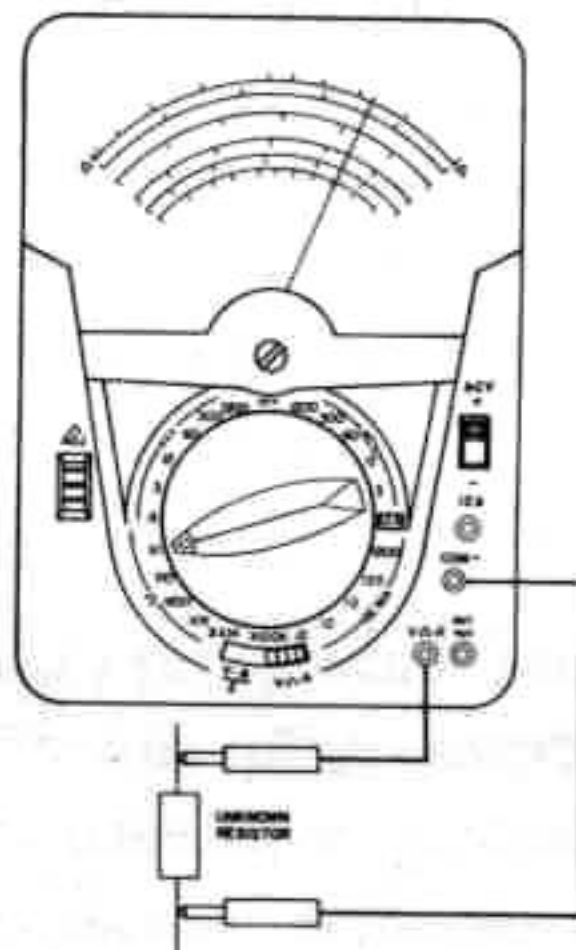
## MEASURING RESISTANCE

### X1 thru X100K Ohms Ranges:

1. Place selector switch in appropriate ohms range.
2. Set the divide switch to the V- $\Omega$ -A position.
3. Short test probes together.
4. Adjust " $\Omega$ ADJ" control until meter reads zero ohms.
5. Connect test probes to component being measured.
6. Read ohms on " $\Omega$ " scale (multiply value read times range switch factor).

The component being measured should be disconnected from the circuit before its resistance is measured since any added circuit path can cause an error in measurement. Also, any voltage or current present in the circuit during measurement can cause an error in resistance measurement.

When using the ohmmeter for general continuity and circuit tracing it is recommended the X1K resistance range be used. The lower battery drain on this range (compared to the X1 range) will result in increased battery life.



Measuring Resistance

## MEASURING OUTPUT VOLTAGE

Output voltage is the AC part of a combined AC and DC voltage. Such a voltage is usually found in amplifier circuits, but it may also be found in other circuits. To measure output voltage, the DC part of the combined voltage must be removed or "blocked." This is done by inserting a capacitor in series with the AC voltage section of the VOM. The VOM has a .1  $\mu$ F 400 VDC capacitor between the OUPUT and V- $\Omega$ -A jacks to do this.

### 0-1.5 thru 0-6 AC Volts:

1. Insert test leads into the OUPUT and COM - jacks.
2. Set the selector switch to appropriate ACV position.
3. Set the divide switch to the appropriate position.
4. Set the polarity switch to ACV +.\*
5. Connect test probes across the voltage to be measured.
6. Read voltage on the red 0-1.5, or 0-3 or 0-6 "AC" scale.

### 0-12 thru 0-300 AC Volts:

1. Insert test leads into the OUTPUT and COM - jacks.
2. Set selector switch to appropriate ACV range.
3. Set the divide switch to the appropriate position.
4. Set the polarity switch to ACV +.\*
5. Connect test probes across the voltage to be measured.
6. Read voltage on "AC-DC" scale.

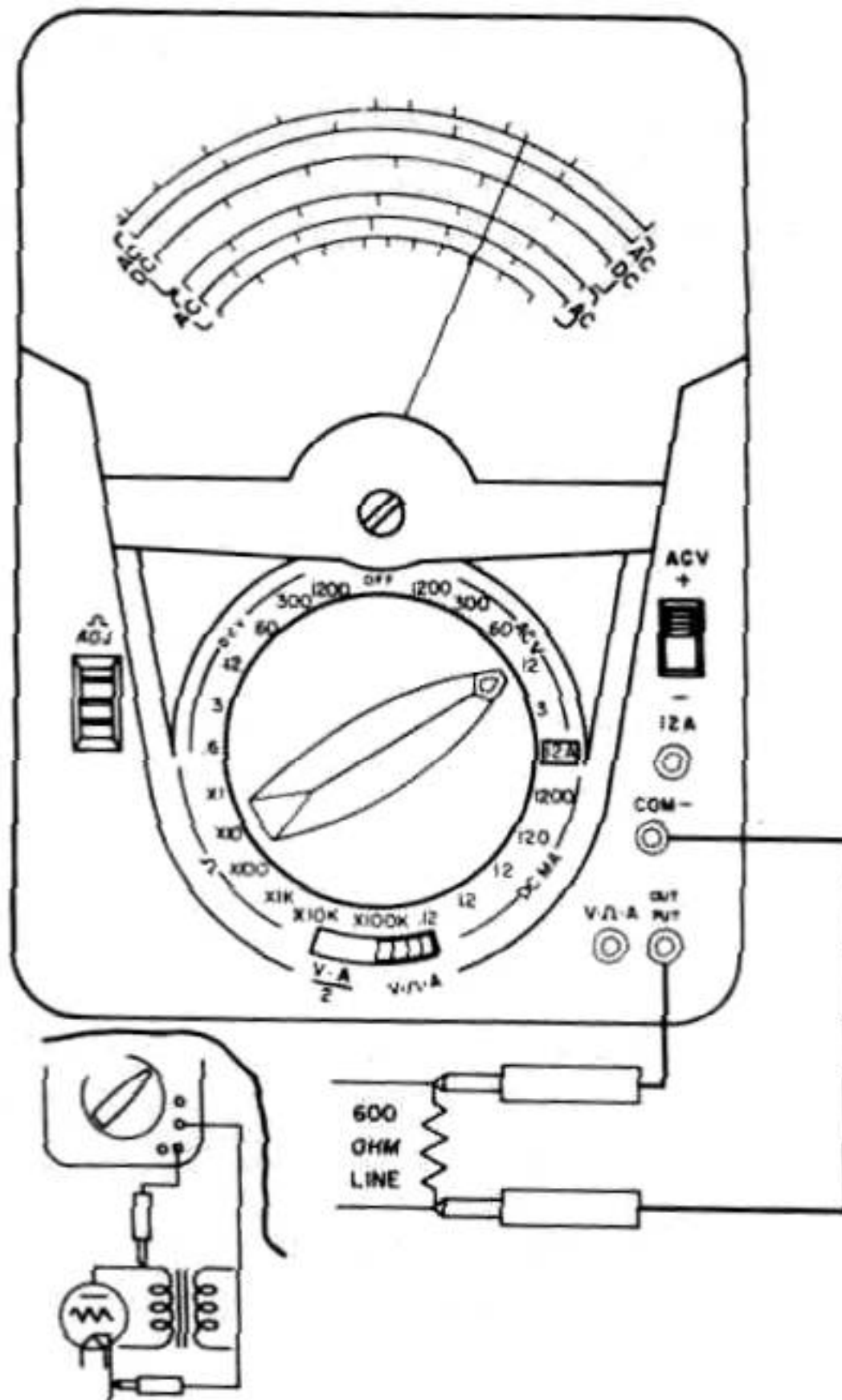
DO NOT USE THE OUTPUT range in circuits where the sum of the DC voltage and the peak AC voltage is greater than 400 volts.

\* The VOM will operate with the polarity switch in either position. However, the switch must be set to "ACV +" for proper frequency response. The VOM may not indicate accurately above 1 kHz with the polarity switch set to "-".



The impedance of the capacitor is generally insignificant at audio frequencies. However, it may cause the meter to read low at low frequencies. Its effect should be considered in critical low frequency measurements.

**WHEN THE VOLTAGE BEING MEASURED** is AC with no DC present, the standard AC voltage measurement procedure should be used.



Measuring Output Voltage

## MEASURING DECIBELS (dB)

The decibel is a unit that expresses the ratio of power levels. It is mathematically derived to reduce multiplication and division to addition and subtraction, respectively, (e.g. — 10 dB represents multiplication by 10, 20 dB — 100, 30 dB — 1000). The decibel roughly approximates human hearing ratios. For this reason, it is commonly used in audio and telephone measurements.

Because the decibel represents a ratio, there is a reference level. The reference level for 0 dBm is 1 milliwatt into a 600 ohm load (.775 ACV across 600 ohms). Measurements made across loads other than 600 ohms are relative measurements.

To measure decibels, connect the VOM the same as for measuring AC voltage (or OUTPUT voltage, if there is DC voltage present). But, read the dB scale instead of the voltage scales. A chart below and on the dial shows the dB values to be added to the reading for the different voltage ranges. (e.g. — When the switches are set for the 60 ACV range, add 26 dB to the indicated value.) As explained above, addition of dB represents multiplication of power (or voltage).

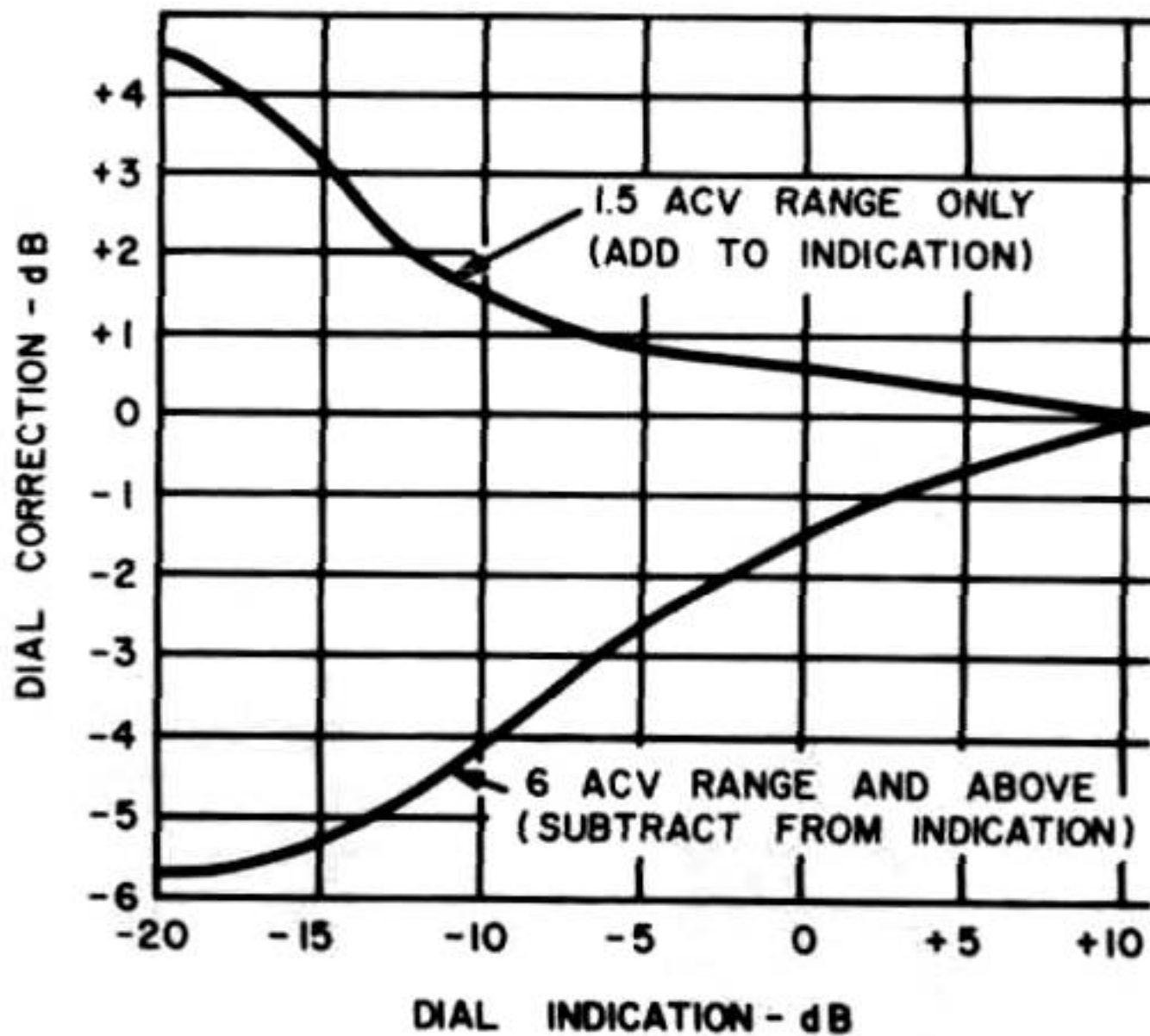
Voltage Range	Range Switch Position	Divide Switch Position	Decibel Range	Add or Subtract
1.5 ACV	3 ACV	V-A/2	-26 to +5	subtract 6 dB
3 ACV	3 ACV	V-Ω-A	-20 to +11	read direct
6 ACV	12 ACV	V-A/2	-14 to +17	add 6 dB
12 ACV	12 ACV	V-Ω-A	-2 to +23	add 12 dB
30 ACV	60 ACV	V-A/2	6 to 31	add 20 dB
60 ACV	60 ACV	V-Ω-A	12 to 37	add 26 dB
150 ACV	300 ACV	V-A/2	20 to 45	add 34 dB
300 ACV	300 ACV	V-Ω-A	26 to 51	add 40 dB

For accurate decibel measurements on the 1.5 ACV range and the 12 ACV and higher ranges, a correction factor may be needed. The decibel scale is made to track the 3 and 6 ACV ranges. Because of the nonlinear rectifier circuit, the response on the 3 and 6 ACV ranges does not match the other ranges.

The correction factor to use is shown on the graph below. To apply the correction factor, proceed as follows:

1. Make the measurement as instructed.
2. Read the number of decibels indicated on the dial. (Don't add anything yet).
3. From the graph, find the correction factor for the number of decibels indicated on the dial.
4. Add or subtract the correction factor.
5. Add or subtract the number of decibels for the range selected.

It may not be necessary to use this correction if the value is in the upper 2/3 of the scale because the error is less than 1 dB. **DO NOT USE THIS CORRECTION ON THE 3 AC VOLTS RANGE.** The VOM indicates the correct value on the 3 AC VOLTS range.



Decibel Correction Factor



## ACCESSORIES

### Carrying Cases



Model 639-N

639-N black manmade leather carrying case. For use with 630 series testers. Stand included at no extra cost. Leather strap handle. Model 639 quality carrying case has adequate space for Triplet 630 series tester, instructions, and accessories. Black manmade leather, provided with strong quality strap handle.

Model 639-P is a quality carrying case padded with 3/8" sponge rubber which gives the instrument maximum protection. Has adequate space for any 630 series tester, instructions, and leads. Black manmade leather with strap handle.



Rear view shows large accessory compartment permitting free access to tester stand, leads and instructions.

Model 639/639-P







Carrying  
Case

Model 639-OS

#### Case 639-OS

Black quality case, has built-in stand on back. Flaps open to permit use of tester in case. Compartment for accessories. For use with 630 series testers. Felt lined, leather strap handle.

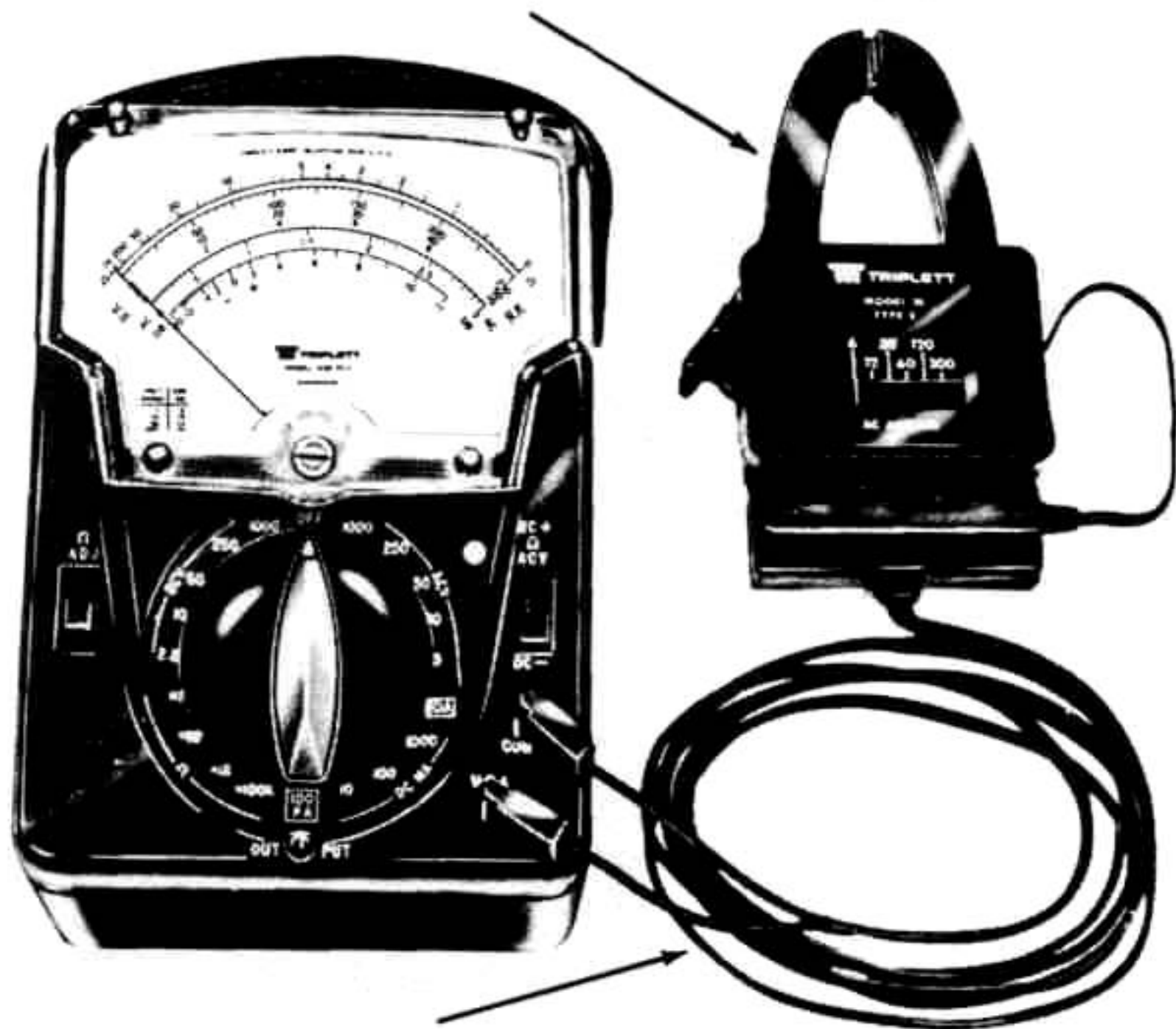


## ACCESSORIES (Continued)

### AC Current Measuring Adapter

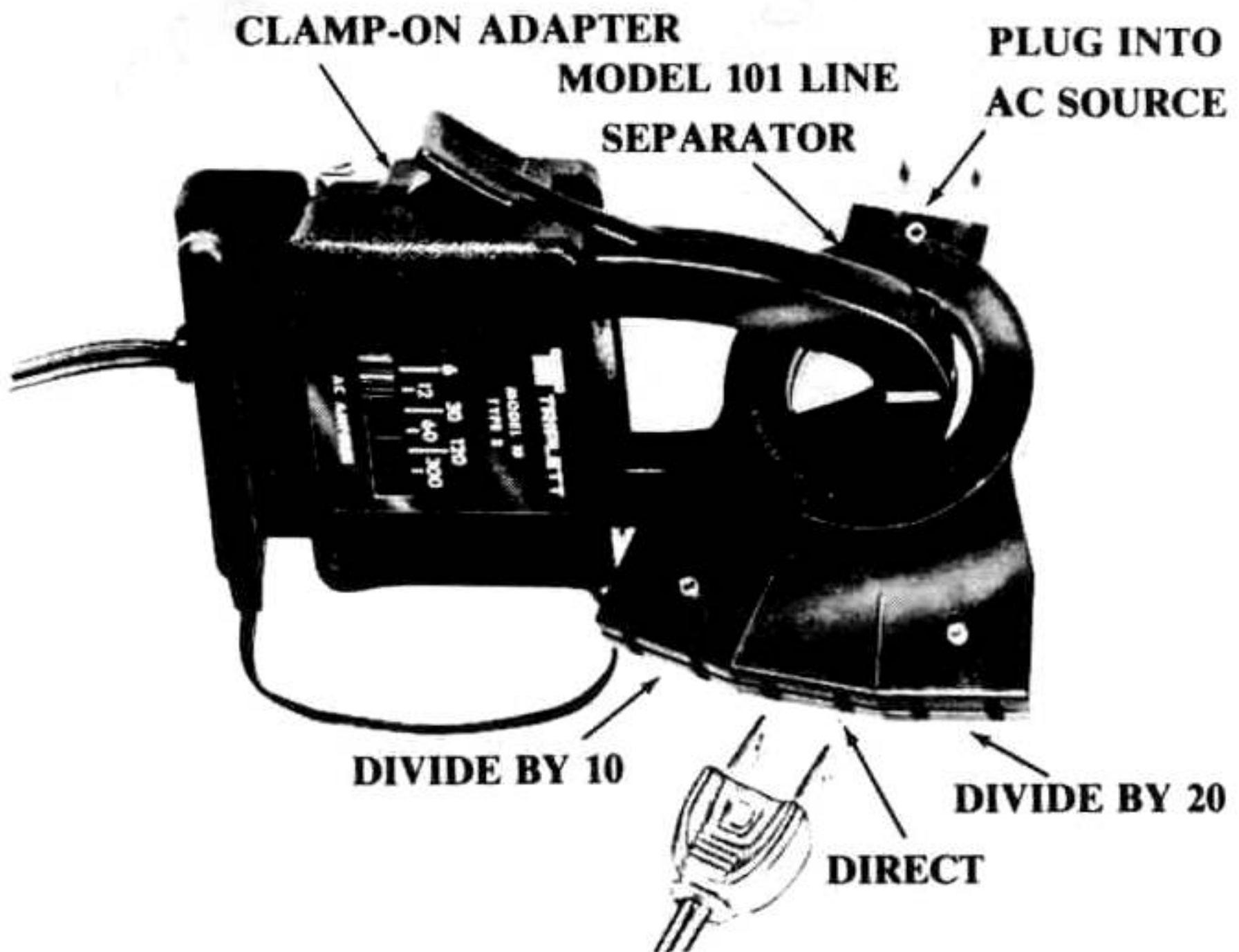
AC line loads can be checked easily, without breaking the conductors or insulation of the circuit under test, when the Model 10-C CLAMP-ON AMMETER ADAPTER (Cat. No. 60-335) is used. The Adapter is connected with a No. 611 LEAD ASSEMBLY (Part No. 79-415). The lever on the side of the Model 10-C Adapter is pressed to open the split yoke of the adapter so it can be placed over and closed around the lead or bus bar carrying the current being measured. Readings up to 300 AC amperes can be made.

#### MODEL 10 CLAMP-ON ADAPTER



#### NO. 611 LEAD ASSEMBLY

THE MODEL 101 LINE SEPARATOR (Cat. No. 60-218) is used to divide a circuit using two-conductor cable so one conductor can be encircled by the adapter yoke. The Model 101 is plugged into the AC outlet and the AC cord of the equipment to be measured is plugged into the appropriate socket on the Model 101. The split yoke of the Model 10-C Adapter is clipped through the loop in the Model 101 to make the current measurement. Use of the "Divide by 10" and "Divide by 20" sockets on the Model 101 Line Separator makes a convenient and fast method of measuring extremely low AC current.



## ACCESSORIES

### High Voltage Measurements

Accessory probes are available for measuring high voltages such as found in television receivers and other equipment. To use these probes, plug the probe into the V- $\Omega$ -A jack, connect the black ground lead into the COM - jack, and set the selector switch to the position indicated below.

Use extreme caution in measuring high voltages—observe all the rules and precautions listed in the “General Instructions” regarding high voltage measurements.

Probe Part No.	Voltage Range	Set Range Switch To:	Read on Scale:	Multiply By:
79-460	0-6 kV AC	3 ACV	0-60 AC-DC	100
79-461	0-6 kV DC	0.12 DCMA	0-60 AC-DC	100
79-152	0-30 kV AC	3 ACV	0-300 AC-DC	100





## NOTES

## MAINTENANCE

### Battery Replacement

Two batteries are used in the ohmmeter circuits.

A 1.5 volt battery, (size D NEDA 13F), is used in the X1, X10, X100, X1K and X10K ranges. If the pointer cannot be adjusted to zero when the selector switch is on one of these ranges and the test prods are touched together, this battery should be replaced.

A 1.5 volt size AA alkaline battery (NEDA 15A) is used in the X100K range. This battery should be replaced if the pointer cannot be adjusted to zero when the selector switch is on the X100K range and the test prods are touched together.

To replace the batteries, remove the four screws in the bottom of the case and lift the back up and off. Remove the old batteries and replace with new ones. Be careful to observe polarity as indicated on the battery compartment.

### Fuse Replacement

Spare 1 1/4 amp and 12 amp fuses are supplied with this instrument and are stored in the bottom of the battery compartment. CAUTION: Use only the fuses supplied or identical fuses as listed in the parts list. The substitution of fuses of other types and values may not afford proper protection and may also disturb the accuracy of the meter.

### Calibration

With normal use, readjustment of this VOM should not be necessary. Replacement parts are designed to be installed without any need for recalibration of the VOM. An occasional check of the VOM against a known reference voltage or another VOM is good practice. If there is a question about the accuracy of the VOM, it should be returned to the factory or an authorized service center for a calibration check.

### Cleaning The Plastic Window

The plastic window has been treated at the factory to dissipate static charges that otherwise would attract the meter pointer and make it cling to the window.

If cleaning is required use cotton dipped in a solution of household detergent and water. After cleaning allow the solution to dry without rubbing or polishing.

## **Care**

- Although this instrument is portable and rugged it should be treated with care. Do not drop or handle it roughly.
- Avoid placing it on a bench where machine tools are used or severe vibration is encountered.
- When possible keep it in a place of moderate temperature. Avoid subjecting it to extreme temperatures and severe temperature changes.
- If the VOM has not been used for a long period of time, rotate the selector switch and divide switch in both directions several times to wipe the switch contacts for good contact.
- Turn the selector switch to OFF when the VOM is to be carried. The meter is damped in the OFF position to prevent wild swinging of the pointer.

## **Parts Replacement**

Parts available for replacement are listed in the parts list. When replacing any parts, be careful to not disturb or damage any others. Do not overheat resistors or diodes, but be sure to make a good solder connection.

In some cases, it is wise to leave part of the lead from the old component and solder the new component to the old lead to prevent damage to surrounding components.

If the VOM is damaged by an overload and there is evidence of smoke or an electrical arc inside, return it to the factory or an authorized service center for inspection and repair. There could be some hidden damage that would cause a future failure of the VOM.

## **Repair or Service**

For repair of the VOM, return it to the factory or an authorized service center. To help in repairing the VOM, give a detailed description of the problem and any other data that might be helpful such as what kind of circuit was being measured when the problem was discovered.

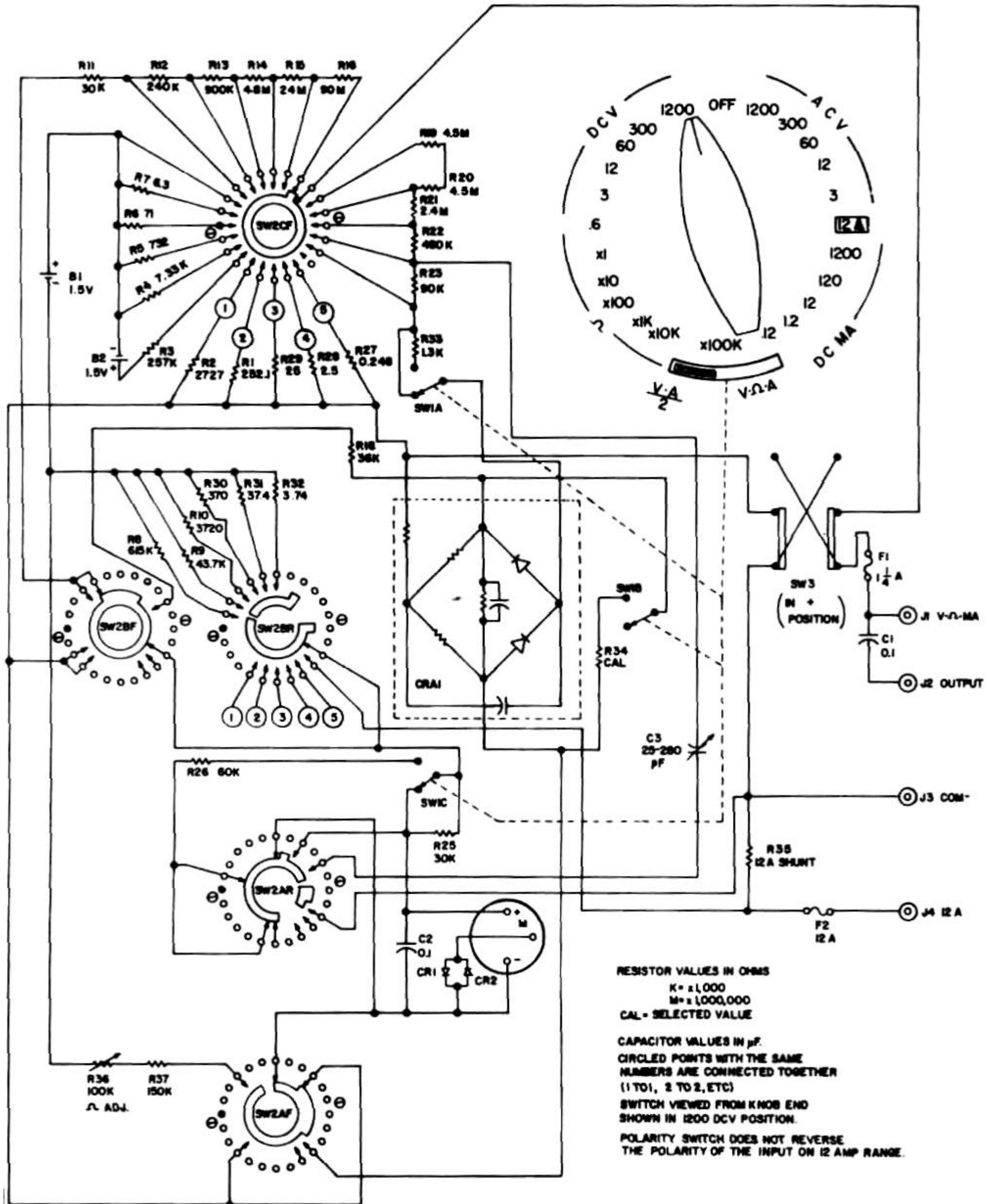
## REPLACEABLE PARTS

Circuit Symbol	Description	Part Number
B1	Battery 1.5V (NEDA 13F)	2426-1
B2	Battery 1.5V (NEDA 15A)	37-39
C1	Capacitor .1 $\mu$ F 400V	43-69
C2	Capacitor .1 $\mu$ F 400V	43-69
C3	Capacitor 25-280 $\mu$ F	43-250
CR1, 2	Diode, Meter Protection	127-114
CRA1	Rectifier Assembly	2250-54
F1	Fuse 1 1/4 Amp 250V	3207-67
F2	Fuse 12 Amp 250V	3207-69
M1	Meter with VOM Front	52-7482
R1	Resistor 252.1 $\Omega$	15-3994
R2	Resistor 2727 $\Omega$	15-3995
R3	Resistor 257k	15K-2573UC5
R4	Resistor 7330 $\Omega$	15K-7331UC5
R5	Resistor 732 $\Omega$	15K-7320TC5
R6	Resistor 71 $\Omega$	15K-710FTC5
R7	Resistor 6.3 $\Omega$	<del>15-3970</del> 15-5618
R8	Resistor 615k	15K-6153UC5
R9	Resistor 43.7k	15K-4372UC5
R10	Resistor 3720 $\Omega$	15K-3721UC5
R11	Resistor 30k	15K-3002UC5
R12	Resistor 240k	15K-2403UC5
R13	Resistor 900k	15K-9003UC5
R14	Resistor 4.8M	15-1542
R15	Resistor 24M	15-4238
R16	Resistor 90M	15-4237
R17	Not Used	
R18	Resistor 36k	15K-3602UC5
R19	Resistor 4.5M	15-1554
R20	Resistor 4.5M	15-1554

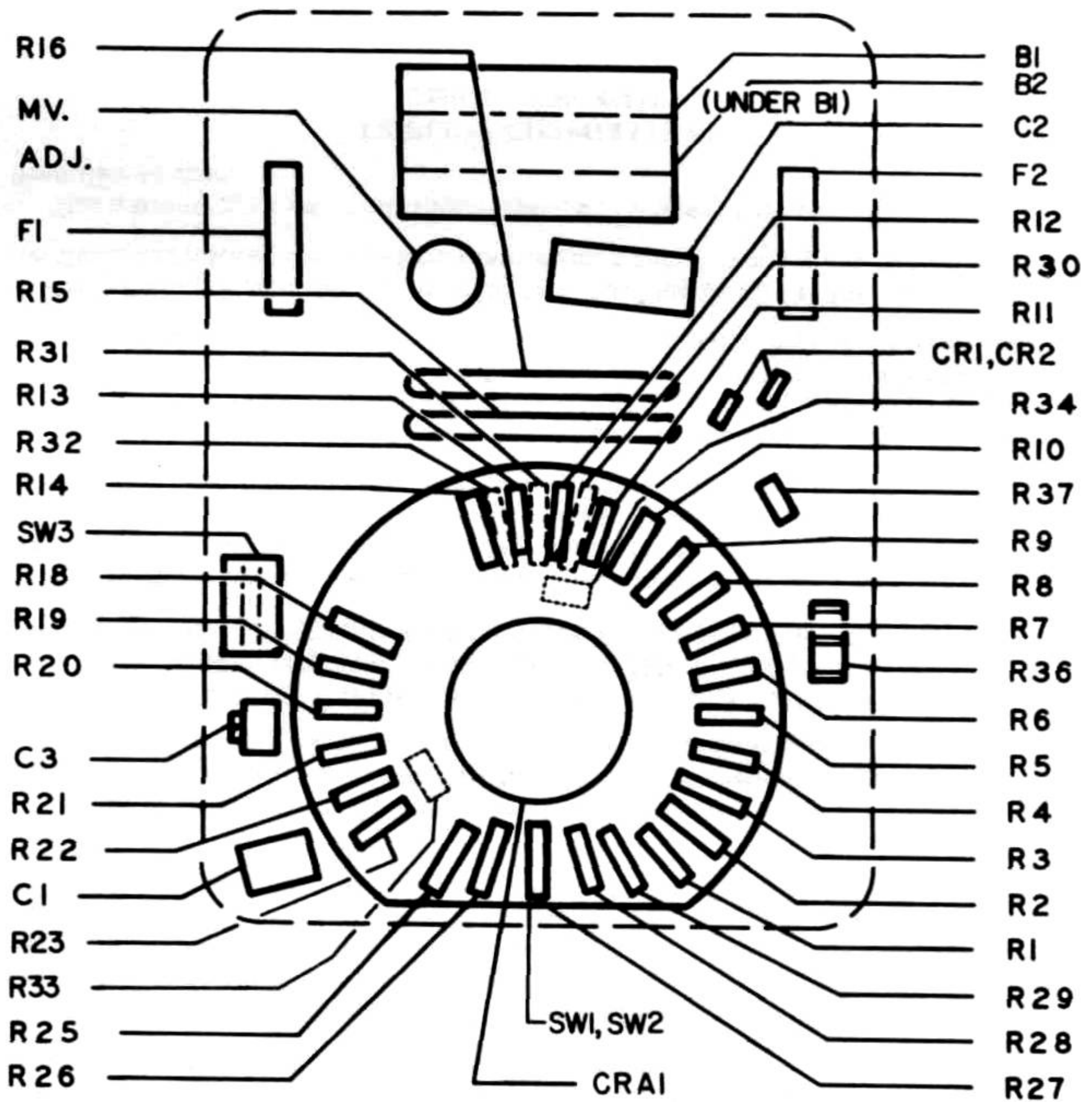


Circuit Symbol	Description	Part Number
R21	Resistor 2.4M	15K-2404UC5
R22	Resistor 480k	15K-4803UC5
R23	Resistor 90k	15K-9002UC5
R24	Not Used	
R25	Resistor 30k	15K-3002UC5
R26	Resistor 60k	15K-6002UC5
R27	Resistor 0.248 $\Omega$	15-3993
R28	Resistor 2.5 $\Omega$	15-2869
R29	Resistor 25 $\Omega$	15-2904
R30	Resistor 370 $\Omega$	15K-3700UC5
R31	Resistor 37.4 $\Omega$	15-3971
R32	Resistor 3.74 $\Omega$	15-3969
R33	Resistor 1.3k	15R-132JC
R34	Resistor (Value may vary from 820k to 3.9M).	
R35	Shunt Assembly 12 Amp	90-713
R36	$\Omega$ ADJ Control 100k	16-158
R37	Resistor 150k	15R-154JC
SW1, SW2	Switch	22-456
	Switch, with Components	22-733
SW3	Switch, Slide	22-536
	Knob Range Switch	34-62
	Knob Divide	34-47
	Ball Divide Switch Index	10779
	Spring Divide Switch Index	42-148
	Plate Divide Switch Index	10756
	Case with Handle	10-784
	Front Assembly, Clear Plastic	10-2148
	Test Leads	79-127
	Rubber Feet for Case	3236-10

# SCHEMATIC



# PARTS LOCATION





## **LIMITED WARRANTY**

The Triplett Corporation warrants instruments and test equipment manufactured by it to be free from defective material or factory 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 for parts and service. 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 (one year guaranteed calibration) 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 or 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, return the instrument or test equipment to Triplett Corporation, Bluffton, Ohio 45817, transportation prepaid. 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, 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.

**TRIPLETT CORPORATION**  
**Bluffton, Ohio 45817**





**TRIPLETT CORPORATION**

*Quality and Technology for Tomorrow*

**ONE TRIPLETT DRIVE, BLUFFTON, OH 45817**

**(419) 358-5015 1-800-874-7538**

**FAX (419) 358-7956**