

SUPREME

Testing Instruments
SUPREME BY COMPARISON

OPERATING INSTRUCTIONS For MODEL 542 POCKET MULTIMETER

ELECTRICAL SPECIFICATIONS

Power Supply Requirements: Self-contained unit (no external power required)

Ranges:

DC Mils	_____	0/0.3/30/150
DC Volts	_____	0/6/150/300/1500
Ohms	_____	0/2000/20,00/200,000/2 meg
Output Volts	_____	0/6/30/150/600
AC Volts	_____	0/630/150/600
Decibel	_____	-6/+10, +8/+24, +22/+38, +34/+50

MECHANICAL SPECIFICATIONS

Over-all Dimensions:

		10	
	Panel	Bakelite Case	Metal Case
Height	5-10/16"	5-7/8"	6-1/4"
Width	2-5/16"	3-1/16"	3-9/16"
Depth	_____	2-1/8"	2-1/4"

Weight:

		Bakelite Case	Metal Case
Net	_____	1-1/2 pounds	2 pounds
Shipping (Domestic Packing)	_____	2 pounds	2-1/2 pounds
Shipping (Export Packing)	_____	7-1/2 pounds	8 pounds

This instrument has been checked by the undersigned who is responsible for the completion of the package.

Model 542, Serial Number 45643

(Signed) _____

Shipping Dept.

SUPREME INSTRUMENTS CORPORATION

GREENWOOD, MISSISSIPPI

U.S.A.

The SUPREME Model 542 is a completely self-contained pocket type multimeter with functions for The measurement of Direct Current, D-C Voltage, Resistance, A-C Voltage and Decibels. This Instrument is designed to meet the exacting requirements of the radio and electrical technician by the Inclusion of a choice selection of ranges combined with simple operation.

GENERAL OPERATING INSTRUCTIONS

METER: All functions are designed around a SUPREME three inch full vision d'Arsonval type movement having a basic sensitivity of 200 micro-amperes.

DIRECT CURRENT: The direct current functions use a universal ring-type shunt circuit which has been standard on SUPREME instruments for over ten years. Current measurements from 10 micro-amperes to .015 ampere are made in four ranges, 0/0.3/6//30/150. The pin jack located in the lower left corner of the panel, marked COM is the negative return for all current ranges. Four additional pin jacks for current measurement marked and corresponding to the above mentioned ranges are located in the lower edge of the panel. The zero ohms adjuster should be placed in the extreme clockwise position for DC current measurements as marked on the panel.

DIRECT CURRENT VOLTS: The DC voltage function has provisions for making measurements at 3,840 ohms per volt. This function uses an individual set of selected multipliers. Voltage measurements from 0.1 to 1500 volts are made in four Ranges, 0/6/150/300/1500. The pin jack marked COM. located in the lower left corner of the panel is the negative return for all DC voltage measurements. Four additional pin jacks for DC Voltage measurements marked and corresponding to the mentioned ranges are located on the left edge of the panel.

OHMS: The ohmmeter uses the ring-type series adjustment circuit and is powered by four self contained batteries. Measurements of resistance from 1 ohm to 2 megohm are made in four ranges. The ohmmeter has a center scale reading of 24 ohms on the first range and decade multiples there of on the remaining three ranges. The pin jack marked OHMS located in the lower right hand corner of the panel is common for all ohmmeter ranges. The ranges are as follows 0 /2,000/20,000/200,00/2 megohm. Four pin jacks marked and corresponding to these ranges are

located on the right edge of the panel. When using this instrument for resistance measurements or continuity insert one test lead in the pin jack marked OHMS and the other test lead in one of the four pin jacks on the right edge of the panel, depending on the value of the resistance being measured. Then touch together the two test leads and adjust the rotary control located in the center of the panel until the meter reads full scale (Zero Ohms). This adjustment must be repeated each time the operator changes the resistance range of the instrument.

AC VOLTAGE: The AC Voltage circuit is the double half-wave bridge using a rugged copper oxide rectifier AC Voltage measurements can be made from .2 volts to 600 volts using the four ranges provided, 0/6/30/150/600. The 0/6 range is non-linear and read on the scale marked AC-0/6. The 0/30/150/600 are read on the DC scale. The pin jack marked COM. located in the lower left corner of the panel must be used for all AC measurements. Four pin jacks marked and corresponding to the above ranges are located in the upper edge of the panel and must be used for AC measurements. The rotary control located in the center of the panel should be in the extreme counter-clockwise position as marked for AC measurements.

OUTPUT VOLTAGE; By placing an isolation capacitor (0.5 mfd) in series with one of the two test leads, the AC voltmeter circuit provides an ideal audio output voltage indicator. After adding the capacitor, follow directions as given for AC Voltage.

DECIBELS: Four decibel ranges -6/+10, +8/+24, +22/+38, +34/+50, are provided and use the same multipliers as the AC Volts. The same instructions as given for AC Volts should be followed. The decibel scale of this instrument is based on a zero level of 6 milliwatts in a 500 ohm line. When using this function of the instrument, add the meter readings to the number of DB marked below the pin jack, of the range being used, algebraically taking

into account the plus or minus sign of the two figures (Meter reading and pin jack reading). For example, if the meter reads -2 and the test lead is connected to the pin jack marked +18 DB, the actual level is +16 DB.

SERVICE AND MAINTENANCE

The parts used in the production of the Model 542 were carefully inspected for mechanical and electrical defects before shipment from the factory. Under normal operating conditions, the cells are the only parts which will require replacement. The lives of these cells depend upon the climate, humidity and use of the same factors which affect a standard flashlight battery. The following list includes parts which are easily replaced by the operator should the necessity arise. All orders should be directed to the Service Department of the company.

METER ZERO ADJUSTMENT: The meter needle should point to zero on the DC linear scale before making any measurements with his instrument. If the needle is not indicating zero when test leads are removed, it may be adjusted by turning the screw on the meter case directly below the glass.

BATTERY INSTALLATION: To install the four 1-½ -volt cells used as a source of the Model 542, first loosen the four screws located in the corners of the panel and remove the instrument from the case. The cells should be snapped in place, observing the proper polarity as shown on the accompanying diagram. A few 542's have batteries soldered in place. Care should be taken when soldering in this type that the small hole in the positive contact is not obstructed.

BATTERY REPLACEMENT: When the first three ohmmeter ranges will no longer adjust to zero ohms (full scale deflection), replace the 1-½ volt cell nearest the meter terminals. When the last range will not adjust to zero replace the other three cells. Directions for the installation of these cells are given in the preceding paragraph.

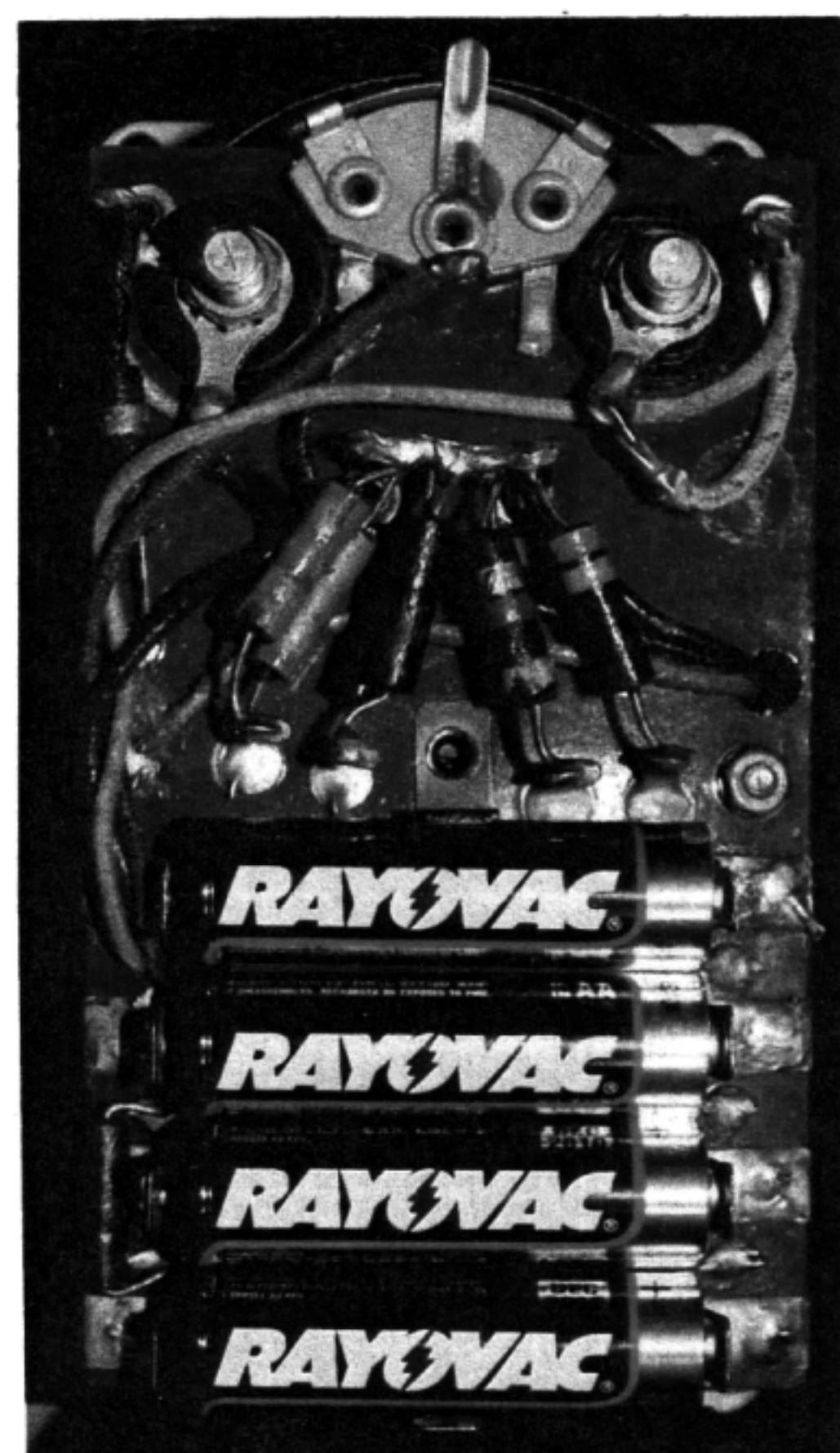
SCHEMATIC DIAGRAM: The attached circuit diagram is included for the convenience of the operator. If for any reason the operator should require additional service data, write the "SERVICE ENGINEER" at the factory. Be sure to mention the model and serial number when requesting information.

All functions and ranges of this instrument were carefully inspected and calibrated before shipment from the factory. If for any reason this instrument does not operate properly, first check to be sure that all applicable instructions in this manual have been followed.

ACCESSORIES - PARTS

STOCK NO.	DESCRIPTION
5885	Case, bakelite
4693	Case, metal with handle
5905	Cell, standard pen-light
4580	Meter, 200 microamperes
5886	Potentiometer
5890	Jack, pin
6786-87	Test leads, pin plug to alligator clip
6744-45	Test leads, pin plug to pin probe

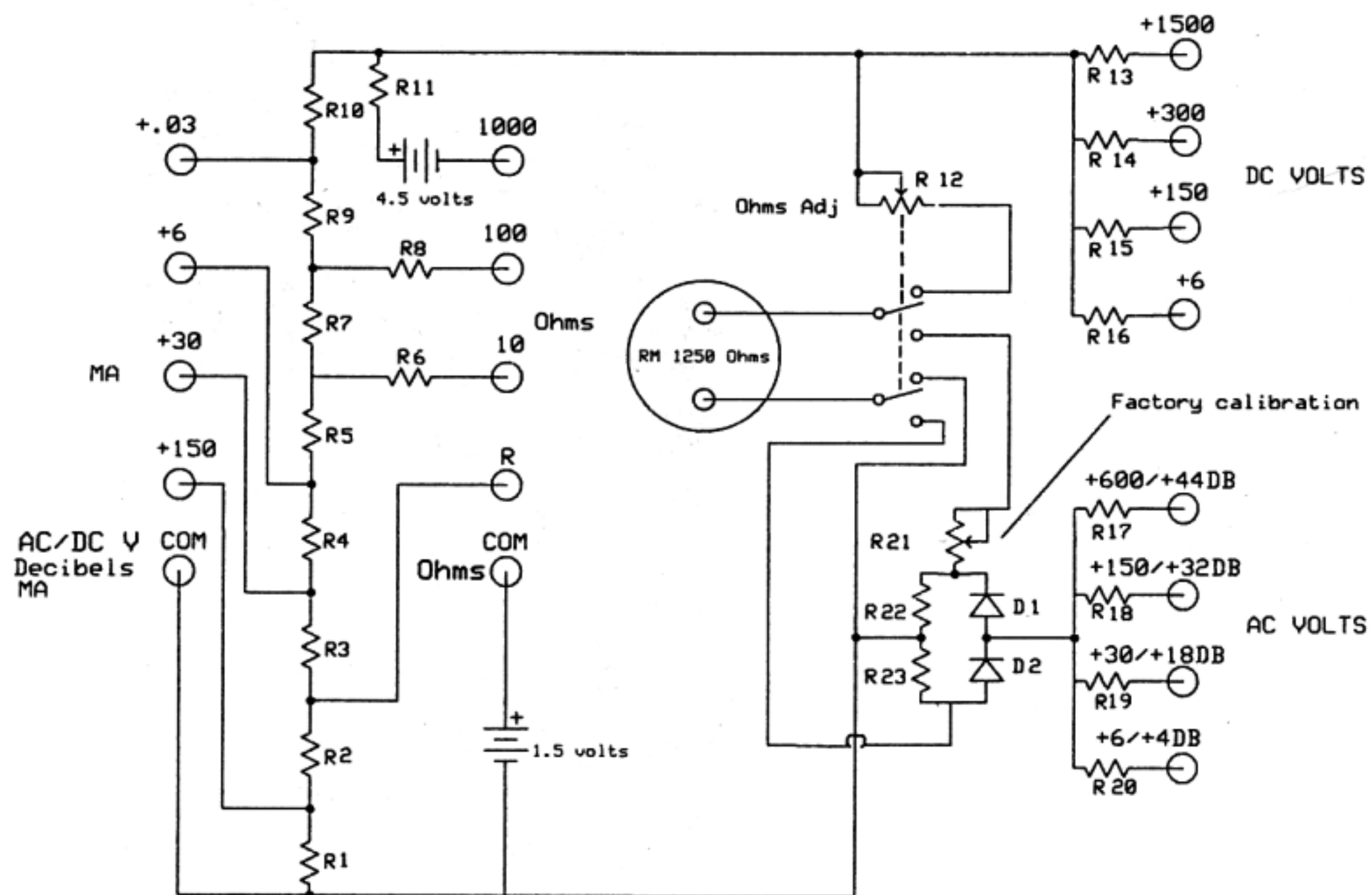
Resistors Order by value show on diagram.



APPLICATION CHART

TYPE MEASUREMENT	RANGE OF MEASUREMENT	ROTARY CONTROL	PIN JACKS USED	READ ON METER SCALE	TO INTERPRET READING
RESISTANCE	0 to 100 ohms 100 to 1000 ohms 1000 to 10,000 ohms 1 0,000 ohms to 2 megohms	Adjust for zero ohms with leads shorted	OHMS R OHMS 10R OHMS 100R OHMS 1000R	2M-0 2M-0 2M-0 2M-0	Read Direct Multiply by 10 Multiply by 100 Multiply by 1000
D-C. MILLIAMPERES	0 to 0.3 MA. 0.3 to 6 MA. 6 to 30 MA. 30 to 150 MA..	D.C. V.-MA.	COM. +0.3MA. COM. +6MA. COM. +30MA. COM. +150MA.	DC 0-30 DC 0-6 DC 0-30 DC 0-150	Divide by 100 Read Direct Read Direct Read Direct
D-C VOLTS	0 to 6 volts 6 to 150 volts 150 to 300 volts 300 to 1500 volts	D.C. V.-MA.	COM. +6V COM. +150V COM. +300V COM. +1500V	DC 0-6 DC 0-150 DC 0-30 DC 0-150	Read Direct Read Direct Multiply by 10 Multiply by 10
A-C VOLTS	0 to 6 volts 6 to 30 volts 30 to 150 volts 150 to 600 volts	A.C. V.-DB.	COM. +6V COM. +30V COM. +150V COM. +600V	AC 0-6 DC 0-30 DC 0-150 DC 0-6	Read Direct Read Direct Read Direct Multiply by 100
DECIBELS	-6 to +10DB +8 to +4DB +22 to +38DB +32 to +50DB	A.C. V.-DB.	COM. +4DB COM. +18DB COM. +32DB COM. +44DB	DB --10 to+6 DB -10 to+6 DB -10 to+6 DB -10 to+6	Add+4 to reading Add+18 to reading Add+32 to reading Add+44 to reading

SCHEMATIC WIRING DIAGRAM



RESISTORS

R1 8.6	R7 2M	R13 6.4M	R19 28,000
R2 14	R8 910	R14 1.2M	R20 5400
R3 20	R9 2100	R15 0.6M	R21 500
R4 170	R10 880	R16 23M	R22 610
R5 7.2	R11 22M	R17 .585	R23 610
R6 21	R12 2500	R18 .143	

SUPREME

MODEL 542 MULTIMETER

Rev 1.0
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DISCLOSURE

This manual is a typed, edited and reproduced copy of an original which was found in a decomposing condition. Effort retains valuable technical information for the operation/maintenance of the SUPREME Model 542 Multimeter

Thank you to J. Brendage for reproducing this Supreme 542 manual and providing it to be listed her for free download by collectors.