

TRIPLETT MODEL 2400
VOLT-OHM-MILLIAMMETER
OPERATING INSTRUCTIONS



THE TRIPLET ELECTRICAL INSTRUMENT Co.
MANUFACTURERS OF
PRECISION MEASURING INSTRUMENTS
BLUFFTON, OHIO

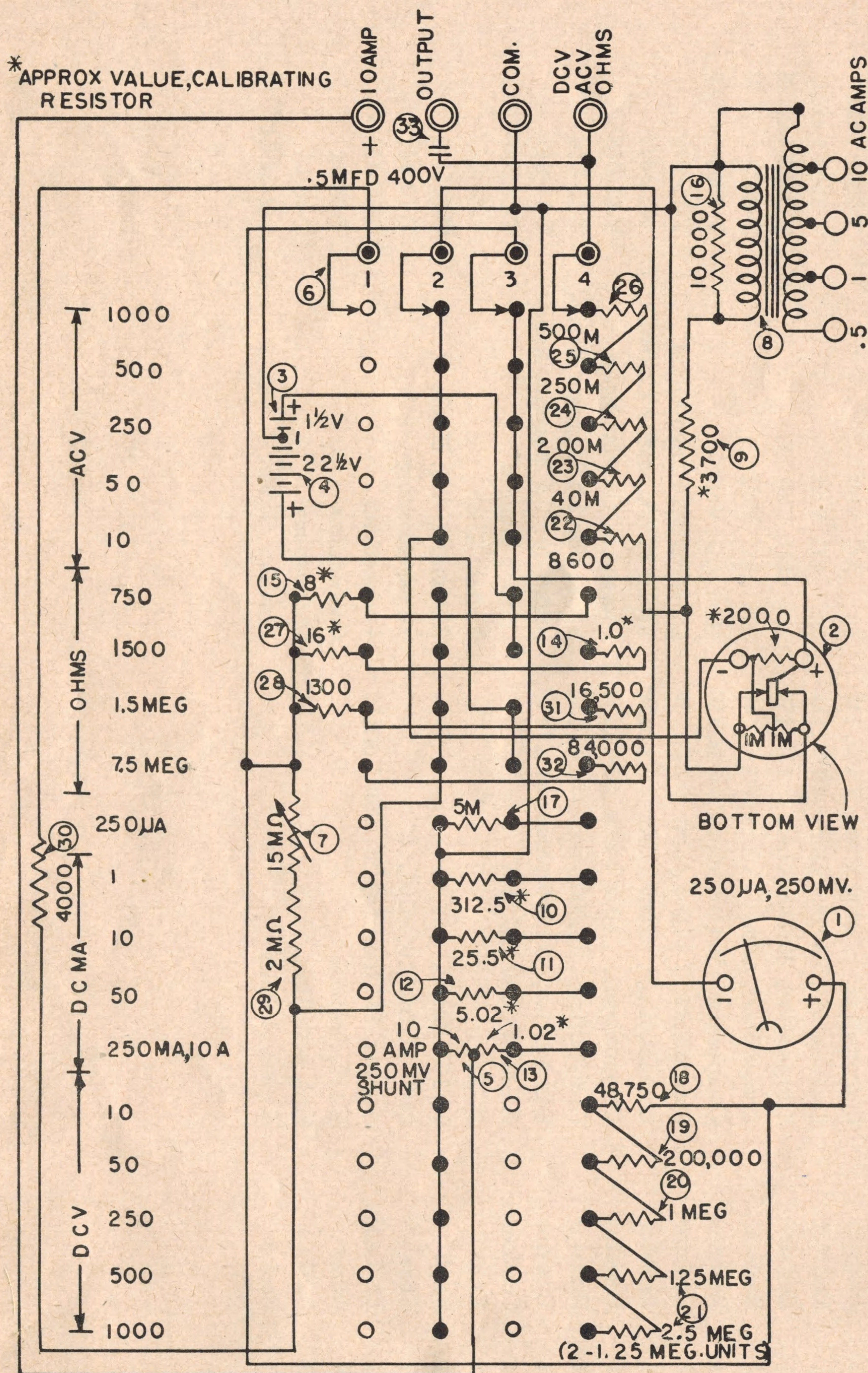
SAFETY NOTICE

EXTREME CARE MUST BE OBSERVED WHEN USING THIS INSTRUMENT IN CIRCUITS HAVING HIGH VOLTAGES WHICH ARE DANGEROUS TO LIFE. PERSONS NOT FAMILIAR WITH THE SERVICING OF HIGH VOLTAGE CIRCUITS SHOULD NEVER MAKE TESTS IN SUCH CIRCUITS.

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THE TRIPLETT ELECTRICAL INSTRUMENT CO.

BLUFFTON, OHIO



[10]

(5,000 OHMS PER VOLT D. C.)

The instrument sensitivity is 200 Microamperes at 250 Millivolts, full scale. This provides for 5,000 ohm per volt sensitivity on the D.C. Volt ranges and a temperature compensated circuit for the Milliampere and Ampere ranges.

The rectified A. C. section is calibrated to 1 Milliampere at 250 Millivolts full scale making the sensitivity for the A. C. Volt ranges 1000 ohms per volt.

The Triplett Model 2400 Volt-Ohm-Milliammeter is completely self-contained with the following ranges:

D. C. VOLTS:

0-10-50-250-500-1000, at 5,000 ohms per volt

A. C. VOLTS:

0-10-50-250-500-1000, at 1,000 ohms per volt

D. C. MICROAMPERES:

0-250, at 250 M. V.

D. C. MILLIAMPERES:

0-1-10-50-250, at 250 M. V.

D. C. AMPERES:

0-10, at 250 M. V.

A. C. AMPERES:

0-0.5-1-5-10

OHMS-MEGOHMS:

0-750-1500 ohms 0-1.5-7.5 megohms

OUTPUT VOLTS:

0-10-50-250-500-1000 A. C., at 1,000 ohms per volt

DECIBELS:

—10 to +15, +29, +43, +55, with "0" DB at 1.73 V on 500 ohm line.

In series with a .1MFD to 3 MFD. Condenser if on plate of power tube.

TESTER OPERATION

(Operation Chart on Page 6)

SWITCH AND JACKS: Set switch, connect to jacks and read on scale called for in the Operation Chart.

The control on the left side of the panel is used to adjust for variations in battery voltage on the ohms ranges.

RANGES: In choosing ranges for measurements always endeavor to have the readings fall in the upper (or right hand) half of the scale for greatest accuracy. A slight error in noting the exact division on the scale will then be a smaller per cent of the true reading than if the same degree of error were made in the lower portion of the scale.

CAUTION

FOR MAXIMUM SAFETY DO NOT HANDLE TESTER OR LEADS WHEN CONNECTED TO HIGH VOLTAGES.

SWITCHING: Always start with the highest range first when an unknown value of voltage or current is to be measured. Do not connect the instrument to a condenser which may be charged to an abnormally high voltage unless the switch is on a sufficiently high voltage range. Do not change the selector switch while the instrument is connected to a voltage or current circuit as the resulting arc may burn out a portion of the switch, requiring replacement of the entire unit.

HANDLING: Do not drop or severely jar the tester, as the pivots, jewels or moving element may be damaged.

POINTER SETTING: Be sure instrument pointer is on zero before taking any readings.

TESTER POSITION: Operate in a horizontal position for greatest accuracy.

ACCESSORIES

BATTERIES

Two batteries, one 22.5 Volt and one 1.5 Volt are provided for the Ohmmeter circuits.

BATTERY REPLACEMENT

Access to the batteries may be easily had by removing the four screws from the corners of the panel. The 22.5 volt battery is held in place by a bracket and two screws. The 1.5 Volt battery is held in place by a small clip directly below the 22.5 Volt battery panel. When the Ohmmeter circuit can no longer be adjusted by the variable resistance on the panel, replace the 22.5 Volt battery with a Burgess No. 4156 "B" battery, or its equivalent and the 1.5 battery with a Burgess "Uni-cel No. 2" or its equivalent.

LEADS

Two leads each 4 ft. long are provided for connecting to the jacks of the tester. For utmost safety, do not touch these leads when they are connected to a high voltage supply.

Two alligator clips are provided for fastening with a press friction fit to the ends of the test prods to make clip-on connections.

MAINTENANCE

The panel of the Model 2400 Volt-Ohm-Milliammeter is removed for the replacement of batteries and other components. A list of replacement parts and their part number is given in this booklet.

18	1	Resistor	Composition, 48,750 ohms $\pm 1\%$, 1W	10	DC Volt	T-15-649
19	1	Resistor	Composition, 200,000 ohms $\pm 1\%$, 1W	50	DC Volt	3872
20	1	Resistor	Composition, 1 Megohm $\pm 1\%$, 1W	250	DC Volt	3879
21	3	Resistors	Composition, 1.25 Megohm $\pm 1\%$, 1W	500, 1000	DC Volt	T-2602-1-1.25 Meg.
22	1	Resistor	Composition, 8600 ohms $\pm 1\%$, 1W	10	AC Volt	T-2602-1-8600
23	1	Resistor	Composition, 40,000 ohms $\pm 1\%$, 1W	50	AC Volt	T-2602-1-40M
24	1	Resistor	Composition, 200,000 ohms $\pm 1\%$, 1W	250	AC Volt	T-2602-1-200M
25	1	Resistor	Composition, 250,000 ohms $\pm 1\%$, 1W	500	AC Volt	T-2602-1-250M
26	1	Resistor	Composition, 500,000 ohms $\pm 1\%$, 1W	1000	AC Volt	T-2602-1-500M
28	1	Resistor	Composition, 1300 ohms $\pm 1\%$, 1W	1.5	Megohm Range Shunt	T-15-645
29	1	Resistor	Composition, 2000 ohms $\pm 1\%$, 1W	Series of	Ohmmeter Control	T-15-644
30	1	Resistor	Composition, 4000 ohms $\pm 1\%$, 1W	Ohmmeter	Circuit Series	T-15-643
31	1	Resistor	Composition, 16,500 ohms $\pm 1\%$, 1W	Series for	1.5 Megohm Series	T-15-646
32	1	Resistor	Composition, 84,000 ohms $\pm 1\%$, 1W	Series for	7.5 Megohm Range	T-15-647
33	1	Condenser	0.5 MFD, 400 DC W.V.	Output	Ranges	T-2631-P13
	1	Knob	2" Bar	Switch	Knob	T-34-6
	1	Knob	15/16" Round	Ohmmeter	Adj. Knob	T-2558-3
	1	Case	2400 Metal, 10"X10"X4"	Tester	Housing	T-10-307
	1	Pr. Leads	Approx. 50" long (up to 1000 Volts)	Connections		T-79-15
	6	Jacks	Black, bakelite	Connections		T-33-12
	2	Jacks	Red, bakelite	Connections		T-33-13
	1	Socket	Wafer, 4 holes	Rectifier	Socket	T-2455-14

REPLACEMENT PARTS

REF. QUAN. No.	PART NAME	DESCRIPTION	FUNCTION	TRIPLET PART No.
1	Instrument	200 Microamp., 250 MV DC Model 626	Indication	T-38-405
2	Rectifier	Plug-in, B-2, 3-lead	AC Rectifier	T-2250-12
3	Battery	1.5V. Burgess No. 2 Uni-cel	Ohmmeter Batt.	T-2426-1
4	Battery	22.5V. Burgess No. 4156 "B"	Ohmmeter Batt.	T-2426-24
5	Shunt	250 M.V. strip type	10 DC Amp. range	T-90-120
6	Switch	20 Pos., 4 Deck	Range Selector	T-22-44
7	Resistor	Variable, 15,000 ohms	Ohmmeter Zero Adj.	T-16-1
8	Transformer	Multi-range current transformer	AC Amp. ranges	T-23-15
9	Resistor	Wire-wound, 3700 ohms $\pm 1\%$	Calibration for AC Amp. ranges	T-2603-1-3700
10	Resistor	Wire-wound, 312.5 ohms $\pm 1\%$	Shunt, 1 DC Ma.	T-2603-1-312.5
11	Resistor	Wire-wound, 25.5 ohms $\pm 1\%$	Shunt, 10 DC Ma.	T-2603-1-25.5
12	Resistor	Wire-wound, 5.02 ohms $\pm 1\%$	Shunt, 50 DC Ma.	T-2603-1-5.02
13	Resistor	Wire-wound, 1.02 ohms $\pm 1\%$	Shunt, 250 DC Ma.	T-2603-1-1.02
14	Resistor	Wire-wound, 1.00 ohms $\pm 1\%$	Series for 1500 Ohm range	T-2603-1-1.0
15	Resistor	Wire-wound, 8.0 ohms $\pm 1\%$	Shunt for 750 ohm range	T-2603-1-8.0
27	Resistor	Wire-wound, 16.0 ohms $\pm 1\%$	Shunt for 1500 Ohm range	T-2603-1-16
16	Resistor	Composition, 10,000 ohms $\pm 1\%$, 1W	AC Amp. shunt	T-2602-1-10M
17	Resistor	Composition, 5,000 ohms $\pm 1\%$, 1W	Shunt, 250 UA.	T-15-522

CAPACITY

FOR MICROFARAD READINGS: Connect a 0.5 MFD condenser across the "Common" and "AC-DC Volts DC Ma-Ohms" jack. Connect this combination in series with the unknown condenser and a 110 volt, 60 cycle A.C. line. Read capacitance as noted below on 0-10 red A.C. scale.

CAUTION: This test is for paper condensers only!

TO MEASURE MFD.	SET SWITCH To	DEFLECTION ON RED 0-10 A. C. SCALE
.004 } .006 } .008 } .01 } .02 } .04 }	10V	{ 1.10 1.40 1.70 2.00 4.20 7.50
.06 } .08 } .10 } .20 } .40 }	50V	{ 2.42 3:00 3.40 6.50 10.00
.60 } .80 } 1.00 } 2.00 } 4.00 } 6.00 } 8.00 } 10.00 }	250V	{ 2.50 2.78 3.00 3.60 4.08 4.21 4.30 4.40

MISCELLANEOUS MEASUREMENTS

EXTERNAL SHUNTS for higher D.C. current ranges may be obtained for plugging into the jacks. These shunts are designed for use with the switch on the "1 D.C. Ma." position.

EXTERNAL MULTIPLIER may be obtained to extend the D.C. Volt range to 5000 Volts. This multiplier is designed for use with the switch on the "1000 D.C. Volts" position. Triplet part No. for the complete assembly is T-79-22.

CONDENSERS may be checked for SHORTS or LEAKAGE RESISTANCE with the Ohmmeter ranges. DISCHARGE CONDENSER BEFORE MAKING TEST. The tests are made at 22.5 Volts when using the 1.5 or 7.5 Megohm range and 1.5 Volts on the 750 or 1500 ohm range.

OPERATION CHART

(See Operation and Caution Notes on Page 4)

To MEASURE	SET SWITCH TO	USE JACK	USE JACK	READ ON	EACH DIV. EQUALS
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D. C. VOLTS

0-10	10	} DC Volts	Common	AC-DC Volts, DC Ma-Ohms	BLACK SCALE	
0-50	50				0-10 Direct	0.20 Volt
0-250	250				0-50 Direct	1.0 Volt
0-500	500				0-250 Direct	5.0 Volt
0-1000	1000				0-50 $\times$ 10	10.0 Volt
					0-10 $\times$ 100	20.0 Volt

A. C. VOLTS

0-10	10	} AC Volts	Common	AC-DC Volts, DC Ma-Ohms	RED SCALE	
0-50	50				0-10 Direct	0.20 Volt
0-250	250				0-50 Direct	1.0 Volt
0-500	500				0-250 Direct	5.0 Volt
0-1000	1000				0-50 $\times$ 10	10.0 Volt
					0-10 $\times$ 100	20.0 Volt

CAUTION: HIGH VOLTAGE MEASUREMENTS: Exercise extreme caution. Make connections only with apparatus turned off. Make certain that no condensers are charged to a high voltage, such as filter condensers or power packs. Be sure switch is on 1000 volt position.

D. C. MICROAMPERES

0-250	250 DC μ a.	Common	AC-DC Volts, DC Ma-Ohms	BLACK SCALE	0-250 Direct	5.00 μ a
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D. C. MILLIAMPERES

0-1	1	} DC Ma.	Common	AC-DC Volts, DC Ma-Ohms	BLACK SCALE	
0-10	10				0-10 $\div$ 10	0.02 Ma.
0-50	50				0-10 Direct	0.20 Ma.
0-250	250				0-50 Direct	1.0 Ma.
					0-250 Direct	5.0 Ma.

D. C. AMPERES

0-10	DC Amps	Common	+10 DC Amps	BLACK SCALE	0-10 Direct	0.2 Amp.
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A. C. AMPERES

0-0.5	} AC Amps	Common	.5 Amp.	RED SCALE	
0-1.0			1 Amp.	0-50 $\div$ 100	0.01 Amp.
0-5.0			5 Amp.	0-10 $\div$ 10	0.02 Amp.
0-10.0			10 Amp.	0-50 $\div$ 10	0.10 Amp.
				0-10 Direct	0.20 Amp.

CAUTION: CURRENT MEASUREMENTS: Do not test directly across any potential circuits when on micro-ampere, milliampere or ampere ranges as this may burn out the instrument, shunt or transformer.

OHMS

0-750	750	Common	AC-DC Volts, DC Ma-Ohms	BLACK SCALE	0-750 Direct
0-1500	1500	Common	AC-DC Volts, DC Ma-Ohms	0-1500 Direct	

MEGOHMS

0-1.5	1.5 Meg	Common	AC-DC Volts, DC Ma-Ohms	BLACK SCALE	1500 $\times$ 1000
0-7.5	7.5 Meg	Common	AC-DC Volts, DC Ma-Ohms	7.5 Meg Direct	

CAUTION: RESISTANCE MEASUREMENTS: Under no condition apply voltage between leads when on ohms position as the instrument may thereby be overloaded and damaged.

DECIBELS

-10 to +15	10	} AC Volts	Common	Output	RED SCALE	
+ 4 to +29	50				-10 to +15 plus 0	
+18 to +43	250				-10 to +15 plus 14	
+24 to +49	500				-10 to +15 plus 28	
+30 to +55	1000				-10 to +15 plus 34	
					-10 to +15 plus 40	

REPLACEMENT PARTS

REF. No.	QUAN.	PART NAME	DESCRIPTION	FUNCTION	TRIPLETT PART No.
1	1	Instrument	200 Microamp., 250 MV DC Model 626	Indication	T-38-405
2	1	Rectifier	Plug-in, B-2, 3-lead	AC Rectifier	T-2250-12
3	1	Battery	1.5V. Burgess No. 2 Uni-cel	Ohmmeter Batt.	T-2426-1
4	1	Battery	22.5V. Burgess No. 4156 "B"	Ohmmeter Batt.	T-2426-24
5	1	Shunt	250 M. V. strip type	10 DC Amp. range	T-90-120
6	1	Switch	20 Pos., 4 Deck	Range Selector	T-22-44
7	1	Resistor	Variable, 15,000 ohms	Ohmmeter Zero Adj.	T-16-1
8	1	Transformer	Multi-range current transformer	AC Amp. ranges	T-23-15
9	1	Resistor	Wire-wound, 3700 ohms $\pm 1\%$	Calibration for AC Amp. ranges	T-2603-1-3700
10	1	Resistor	Wire-wound, 312.5 ohms $\pm 1\%$	Shunt, 1 DC Ma.	T-2603-1-312.5
11	1	Resistor	Wire-wound, 25.5 ohms $\pm 1\%$	Shunt, 10 DC Ma.	T-2603-1-25.5
12	1	Resistor	Wire-wound, 5.02 ohms $\pm 1\%$	Shunt, 50 DC Ma.	T-2603-1-5.02
13	1	Resistor	Wire-wound, 1.02 ohms $\pm 1\%$	Shunt, 250 DC Ma.	T-2603-1-1.02
14	1	Resistor	Wire-wound, 1.00 ohms $\pm 1\%$	Series for 1500 Ohm range	T-2603-1-1.0
15	1	Resistor	Wire-wound, 8.0 ohms $\pm 1\%$	Shunt for 750 ohm range	T-2603-1-8.0
27	1	Resistor	Wire-wound, 16.0 ohms $\pm 1\%$	Shunt for 1500 Ohm range	T-2603-1-16
16	1	Resistor	Composition, 10,000 ohms $\pm 1\%$, 1W	AC Amp. shunt	T-2602-1-10M
17	1	Resistor	Composition, 5,000 ohms $\pm 1\%$, 1W	Shunt, 250 UA.	T-15-522

18	1	Resistor	Composition, 48,750 ohms $\pm 1\%$, 1W	10 DC Volt	T-15-649
19	1	Resistor	Composition, 200,000 ohms $\pm 1\%$, 1W	50 DC Volt	3872
20	1	Resistor	Composition, 1 Megohm $\pm 1\%$, 1W	250 DC Volt	3879
21	3	Resistors	Composition, 1.25 Megohm $\pm 1\%$, 1W	500, 1000 DC Volt	T-2602-1-1.25 Meg.
22	1	Resistor	Composition, 8600 ohms $\pm 1\%$, 1W	10 AC Volt	T-2602-1-8600
23	1	Resistor	Composition, 40,000 ohms $\pm 1\%$, 1W	50 AC Volt	T-2602-1-40M
24	1	Resistor	Composition, 200,000 ohms $\pm 1\%$, 1W	250 AC Volt	T-2602-1-200M
25	1	Resistor	Composition, 250,000 ohms $\pm 1\%$, 1W	500 AC Volt	T-2602-1-250M
26	1	Resistor	Composition, 500,000 ohms $\pm 1\%$, 1W	1000 AC Volt	T-2602-1-500M
28	1	Resistor	Composition, 1300 ohms $\pm 1\%$, 1W	1.5 Megohm Range Shunt	T-15-645
29	1	Resistor	Composition, 2000 ohms $\pm 1\%$, 1W	Series of Ohmmeter Control	T-15-644
30	1	Resistor	Composition, 4000 ohms $\pm 1\%$, 1W	Ohmmeter Circuit Series	T-15-643
31	1	Resistor	Composition, 16,500 ohms $\pm 1\%$, 1W	Series for 1.5 Megohm Series	T-15-646
32	1	Resistor	Composition, 84,000 ohms $\pm 1\%$, 1W	Series for 7.5 Megohm Range	T-15-647
33	1	Condenser	0.5 MFD, 400 DC W.V.	Output Ranges	T-2631-P13
	1	Knob	2" Bar	Switch Knob	T-34-6
	1	Knob	15/16" Round	Ohmmeter Adj. Knob	T-2558-3
	1	Case	2400 Metal, 10" $\times$ 10" $\times$ 4"	Tester Housing	T-10-307
	1	Pr. Leads	Approx. 50" long (up to 1000 Volts)	Connections	T-79-15
	6	Jacks	Black, bakelite	Connections	T-33-12
	2	Jacks	Red, bakelite	Connections	T-33-13
	1	Socket	Wafer, 4 holes	Rectifier Socket	T-2455-14



MODEL 2400 VOLT-OHM-MILLIAMMETER

(5,000 OHMS PER VOLT D. C.)

The Model 2400 Volt-Ohm-Milliammeter is a long scale multi-range instrument in a compact portable case. It provides the ranges commonly used in servicing radio receivers as well as those used in the experimental laboratory or at radio transmitting stations.

The instrument sensitivity is 200 Microamperes at 250 Millivolts, full scale. This provides for 5,000 ohm per volt sensitivity on the D. C. Volt ranges and a temperature compensated circuit for the Milliampere and Ampere ranges.

The rectified A. C. section is calibrated to 1 Milliampere at 250 Millivolts full scale making the sensitivity for the A. C. Volt ranges 1000 ohms per volt.

The Triplet Model 2400 Volt-Ohm-Milliammeter is completely self-contained with the following ranges:

D. C. VOLTS:

0-10-50-250-500-1000, at 5,000 ohms per volt

A. C. VOLTS:

0-10-50-250-500-1000, at 1,000 ohms per volt

D. C. MICROAMPERES:

0-250, at 250 M. V.

D. C. MILLIAMPERES:

0-1-10-50-250, at 250 M. V.

D. C. AMPERES:

0-10, at 250 M. V.

A. C. AMPERES:

0-0.5-1-5-10

OHMS-MEGOHMS:

0-750-1500 ohms 0-1.5-7.5 megohms

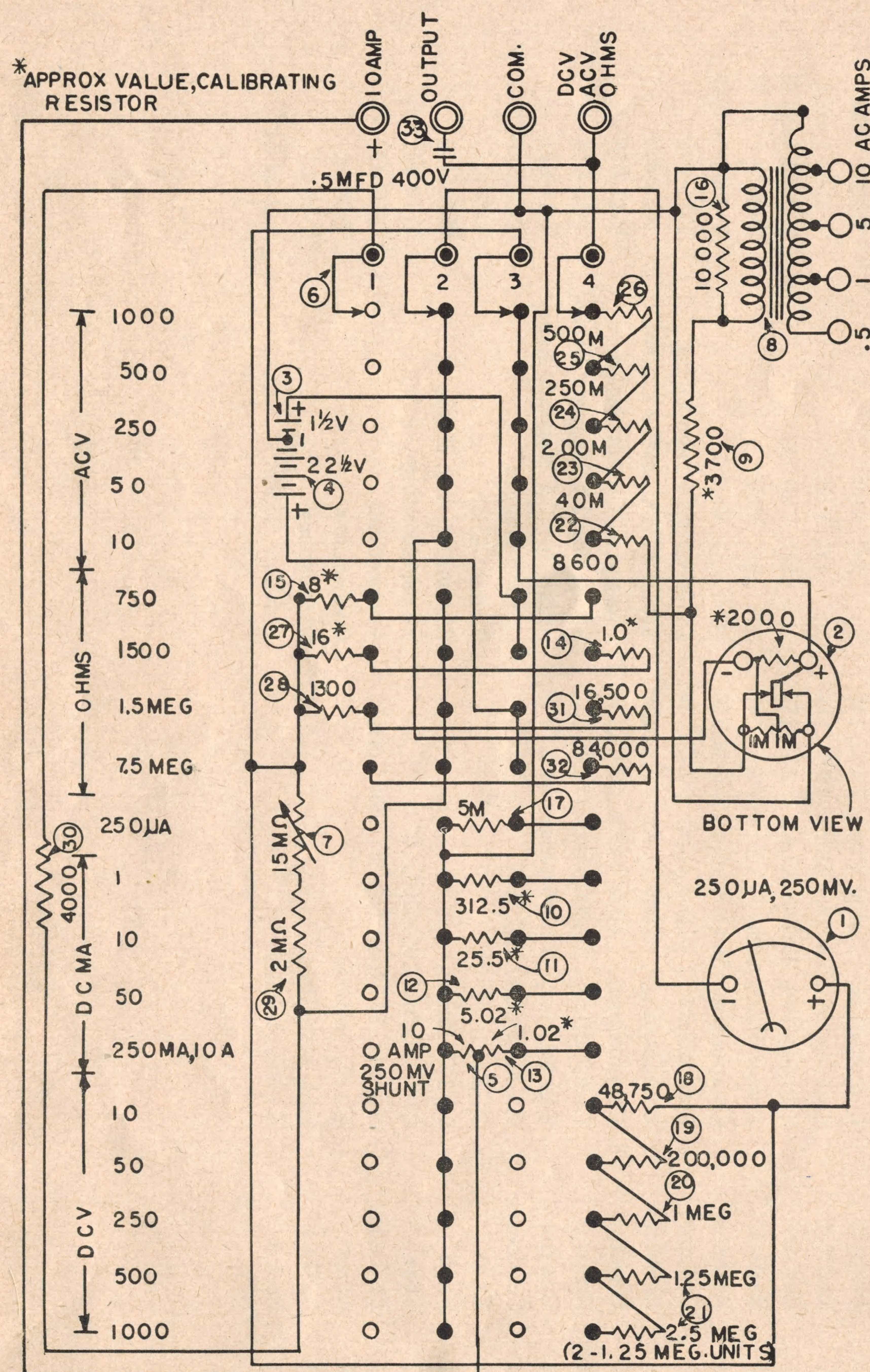
OUTPUT VOLTS:

0-10-50-250-500-1000 A. C., at 1,000 ohms per volt

DECIBELS:

-10 to +15, +29, +43, +55, with "0" DB at 1.73 V on 500 ohm line.

In series with a .1 MFD to 2 MFD. condenser if on plate of power tube.



MODEL 2400 WIRING DIAGRAM