

# SUPREME

*Testing Instruments*

MODEL  
565  
VACUUM TUBE  
VOLTMETER

## INSTRUCTION MANUAL

SUPREME INSTRUMENTS CORPORATION

GREENWOOD, MISSISSIPPI

U. S. A.



SUPREME MODEL 565

ELECTRICAL SPECIFICATIONS

Power Supply Requirements: (unless otherwise specified on plate attached to instrument)

Voltage.....110/125 volts A-C  
Frequency.....50/60 cycles  
Power Consumption.....15 watts maximum

MECHANICAL SPECIFICATIONS

Over-all Dimensions:

	Panel	Case
Height	9 1/8"	9 5/8"
Width	6"	9 5/8"
Depth		4 3/4"

Weight:

Net.....9 pounds  
Shipping.....11 pounds

IMPORTANT

SEE ENCLOSED COLORED PAGE FOR INFORMATION CONCERNING REGISTRATION, TRANSPORTATION DAMAGES, WARRANTY, REPLACEMENT PARTS, ETC.

The instructions listed on this colored sheet must be complied with before the warranty policy is applicable. The Model and Serial numbers should be mentioned in all correspondence regarding this tester.

SUPREME INSTRUMENTS CORPORATION  
GREENWOOD, MISSISSIPPI  
U. S. A.

STANDARD EQUIPMENT SUPPLIED WITH  
THE SUPREME MODEL 565

QUANTITY INCLUDED	STOCK NUMBER	DESCRIPTION	PACKER'S CHECK
1	4691	Booklet, Operating Data	<input checked="" type="checkbox"/>
1	6725	Card, Return Registration	<input checked="" type="checkbox"/>
1	4722	Connector, Shielded, Positive	<input checked="" type="checkbox"/>
1	4724	Connector, Shielded, Negative	<input checked="" type="checkbox"/>
1	4759	Probe Assembly	<input checked="" type="checkbox"/>
1	6495	Prod, with gnd lead	<input checked="" type="checkbox"/>
1	6249	Prod, without gnd lead	<input checked="" type="checkbox"/>

The foregoing list has been checked by the under-  
signed who is responsible for the completion of  
this package.

MODEL 565, Serial No. 565

MENTION ABOVE NUMBERS IN ALL CORRESPONDENCE.

(Signed) Dr. R. C.  
Shipping Department

SUPREME INSTRUMENTS CORPORATION



#4691

INSTRUCTION MANUAL  
FOR  
SUPREME MODEL 565 VACUUM TUBE VOLTMETER

GENERAL DESCRIPTION

The SUPREME Model 565 is a Vacuum Tube Voltmeter of the bridge type using degenerative feedback to minimize errors due to grid current in the tube which operates the meter. Its very high input impedance is obtained by including a part of the multiplier resistance in the special shielded leads. In operation the D-C voltage to be measured is applied to the grids of a type 6SN7 tube - the positive side of the voltage to one grid and the negative side of the voltage to the other grid. This results in a "push-pull" action which greatly improves the linearity of readings over the wide voltage range covered. As a result of the change in grid voltages there is a corresponding shift in the cathode voltages and since the meter is connected between the two cathodes there is a corresponding voltage indication on the meter. The first three ranges are obtained by varying the resistance in series with the meter and the last three ranges by varying a shunt across the grids of the 6SN7 tube.

All ranges are selected by means of push-buttons. Ranges covered on D-C are 0-1, 2.5, 10, 50, 250, and 500 volts. Ranges covered on A-C are 0-1, 2.5, 10, 50, and 250 volts. Either A-C or D-C is selected by means of push-buttons. A control is provided for adjusting the meter to "zero"

POWER SUPPLY REQUIREMENTS

Unless otherwise specified, the instrument is designed to operate from 110 to 125 volts at 50/60



cycles. Power consumption is 15 watts maximum. The tubes used are 6X5GT rectifier for the D-C power supply, 6SN7 meter operating tube, and 9006 diode rectifier in probe for making all A-C voltage measurements.

This instrument is protected from damage in case of an overload by a fuse having a rating of 1 AMPERE. If your instrument fails to operate remove the fuse from its fuseholder by turning, in a counter-clockwise direction, the red colored cap marked "FUSE", with a small screwdriver. Check it with an ohmmeter to see if it is burned out. If it is, replace it with a fuse of the same length having a rating of 1 AMPERE. If the second fuse burns out the instructions listed under SERVICE AND MAINTENANCE should be followed. The fuse holder in this instrument will be found in the lower left hand corner of the panel. CAUTION: THE 90-DAY WARRANTY ON THE INSTRUMENT IS VALID ONLY IF IT IS PROTECTED BY A FUSE HAVING THE SPECIFIED RATING! Do not substitute one of a higher rating.

#### PANEL MARKINGS AND COMPONENTS

##### METER:

Four-inch, SUPREME full-vision type. Scales DCV, 0/10/25/50 basic linear scale for all voltage measurements except 0-1 v. A-C and 0-2.5 v. A-C. ACV (Red) 0/1/2.5 non-linear for 0-1 v. A-C and 0-2.5 v. A-C.

##### PUSH-BUTTONS:

Directly below meter. Six buttons marked 1 v., 2.5 v., 10 v., 50 v., 250 v., and 500 v.

##### FUSEHOLDER:

In lower left hand corner of panel--holds 1

ampere fuse for protection of instrument.

**POTENTIOMETER (ZERO ADJUST):**

In lower right hand corner of panel--for adjusting meter to "zero".

**PUSH-BUTTONS:**

Directly above fuseholder. Marked D-C and A-C for selection of D-C or A-C voltage measurement functions.

**JACKS ("PIN" OR "TIP" TYPE):**

Directly above potentiometer marked "Zero Adjust". Marked "A-C Audio". Pin jack next to knob connected to chassis of Model 565. Used for the measurement of audio frequency voltages up to a frequency of 20,000 cycles per second.

**JACK ("PIN" OR "TIP" TYPE):**

On vertical subpanel inside test lead compartment. For connection of probe tip to pin jack marked "A-C Audio".

**JACKS (SPECIAL H. V. TYPE):**

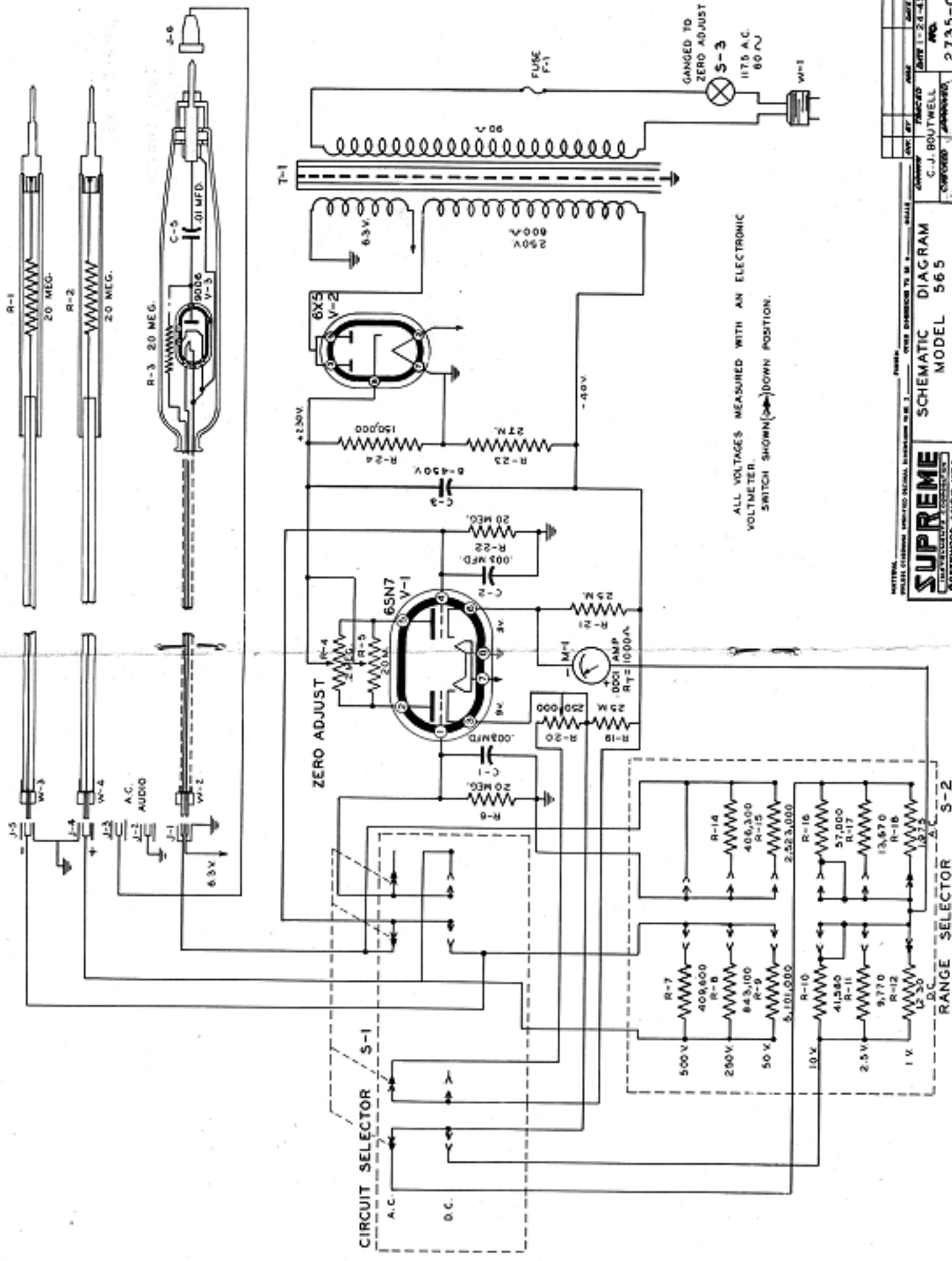
At lower edge of panel with porcelain center lining. Of shielded type for connection of special shielded test leads to instrument.

**MODEL NUMBER:**

Model 565--indicated in lower center of panel.

**SERIAL NUMBER:**

Stamped in panel directly below Model number.



ALL VOLTAGES MEASURED WITH AN ELECTRONIC VOLTMETER. SWITCH SHOWN (UP) DOWN POSITION.

NATIONAL INSTRUMENT COMPANY, GREENWOOD, MISSOURI, U.S.A.  
 MODEL 565  
 SCHEMATIC DIAGRAM  
 C. J. BOUTWELL  
 2735-C  
 MADE IN U.S.A.



## OPERATION

1. Connect power supply cable to a convenient A-C supply socket after you have made certain that it is the proper voltage and frequency. (See POWER SUPPLY REQUIREMENTS).

2. Turn instrument "ON" by rotating knob marked "Zero Adjust" clockwise. Allow sufficient time for instrument to warm-up and reach the proper operating temperature. NOTE: In order to secure the MAXIMUM accuracy and stability the instrument must be allowed to warm-up for 15 to 20 minutes.

3. A. To make D-C Voltage Measurements:

Attach special shielded leads to the jacks at the lower edge of the panel, connecting the lead with the red probe handle to the jack marked "D-C +" and the lead with the black probe handle to the jack marked "D-C -". Press push-button marked "D-C" and push-button marked "10 v.". Touch tips of test probes together and adjust knob marked "Zero Adjust" until the meter "zeros". Touch tips of test probes to source of voltage to be measured, observing polarity, and read voltage on the 0-10 v. scale. For checking higher or lower voltages the appropriate push-button should be pressed. As each range is selected check the "zero" adjustment and readjust if necessary.

B. To make Audio Frequency Voltage Measurements  
(up to 20,000 cycles):

When making audio frequency voltage measurements a pair of ordinary test leads (standard pin or tip type) are used instead of the special shielded test leads. The pin points of these test leads are inserted in the two pin jacks marked "A-C Audio". Press push-button marked "A-C" and push-button marked "10 v.". Touch tips of test leads together and adjust knob marked "Zero Adjust", until the meter "zeros". The lead which is inserted in the pin jack next to the knob

marked "Zero Adjust" should be connected to the chassis or the ground side of the source of A-C voltage being measured. The lead in the other pin jacks should be connected to the other side of the A-C voltage source. For checking higher or lower voltages the appropriate push-button should be pressed. As each range is selected check the "zero" adjustment and readjust if necessary.

When it is desired to make a measurement on the 0-1 or 0-2.5 volts ranges the push-button marked "10 v." should be depressed until connection is made to the voltage source, then the desired range may be selected. This will prevent the momentary surge through the meter during the time the 0.04 mfd isolating capacitor is being charged. The isolating capacitor in the probe assembly has a D-C working voltage of 600 volts. In no case should connection be made to a source where the combined D-C and peak A-C voltages exceed this value.

C. To Make Radio Frequency Measurements (above 20,000 cycles):

When it is desired to make radio frequency voltage measurements, the large special probe in the accessory compartment should be removed from its mounting. NOTE: WHEN REMOVING THE PROBE FROM COMPARTMENT GREAT CARE SHOULD BE EXERCISED TO PREVENT DAMAGE TO IT. THE PROBE CASE SHOULD BE GRASPED WITH THE HAND AND SLID IN ITS HOLDING CLIP UNTIL THE PROD DISENGAGES ITSELF FROM THE PIN JACK, THEN BY PULLING UP ON THE PROBE CASE IT CAN BE FREED FROM THE CLIP. The metal tip of the probe should then be touched directly to the source of R-F voltage to be measured. Care should also be exercised in touching the prod to a point upon which a D-C voltage is present with the R-F voltage to prevent placing a short circuit on the voltages.

In order to obtain the highest accuracy and to prevent an error occurring because of the length of the return ground lead, the prod point having a ground lead and clip attached should be attached to the probe and thence to the source of R-F voltage and ground--the prod to the source and the clip to the chassis.

When it is desired to make a measurement on the 0-1 or 0-2.5 volts ranges the push-button marked "10 v." should be depressed until connection is made to the voltage source, then the desired range may be selected. This will prevent the momentary surge through the meter during the time the 0.01 mfd isolating capacitor is being charged. The isolating capacitor in the probe assembly has a D-C working voltage rating of 600 volts. In no case should connection be made to a source when the combined D-C and peak A-C voltages exceed this value.

4. Special note should be made of the chart at RIGHT showing that when making the D-C voltage measurements all readings are made on the upper "black" scales, and that when making A-C voltage measurements the lower "red" scales are used on the 0-1 and 0-2.5 volts and the upper "black" scales on the 0-10, 0-50 and 0-250 volts. NOTE: THERE IS NO 500 VOLTS A-C RANGE!



TYPE OF MEASURE-MEASUREMENT	RANGE OF MEASURE-MEASUREMENT	BUTTONS PRESSED		READ ON METER SCALE	TO INTERPRET READING
		UPPER ROW	LEFT ROW		
D-C Voltage	0-1 v.	1 v.	D-C	DCV 0-10	Divide by 10
	.5-2.5 v.	2.5 v.	D-C	DCV 0-25	Divide by 10
	2-10 v.	10 v.	D-C	DCV 0-40	Read Direct
	10-50 v.	50 v.	D-C	DCV 0-50	Read Direct
	50-250 v.	250 v.	D-C	DCV 0-25	Multiply by 10
	100-500 v.	500 v.	D-C	DCV 0-50	Multiply by 10
A-C Voltage	0-1 v.	1 v.	A-C	ACV 0-1	Read Direct
	.5-2.5 v.	2.5 v.	A-C	ACV 0-2.5	Read Direct
	2-10 v.	10 v.	A-C	DCV 0-10	Read Direct
	10-50 v.	50 v.	A-C	DCV 0-50	Read Direct
	50-250 v.	250 v.	A-C	DCV 0-25	Multiply by 10

**NOTE: THERE IS NO 500 VOLT A-C RANGE ON THIS INSTRUMENT!**

## SERVICE AND MAINTENANCE

All functions and ranges of the SUPREME Model 565 were carefully tested and calibrated before shipment from the factory. Under normal operating conditions this instrument should give a long and trouble-free service. However, if for any reason this instrument should fail to operate properly, write the Service Engineer at the factory. Submit complete information regarding the difficulty and full instructions will be forwarded in detail. The model and serial numbers, position of controls, inoperative section, and any other information should be given in your first letter.

## REPLACEMENT PARTS

The parts used in the SUPREME Model 565 were carefully inspected for mechanical and electrical defects at the factory. Under normal conditions and average use the life of the tubes will be equal to those in radio receivers (approximately 1500 hours). Any special parts which are not available from regular dealer stocks may be ordered from your nearest SUPREME distributor by describing the item and giving the model and serial numbers of your unit.

**SUPREME INSTRUMENTS CORPORATION  
GREENWOOD, MISSISSIPPI  
U.S.A.**



THE  
HEART OF **SUPREME**  
TESTERS AND PANEL METERS

*Panel Meters!*  
NOW  
AVAILABLE  
AT YOUR!  
**SUPREME** DISTRIBUTOR



# 19 YEARS EXPERIENCE

## MANUFACTURING

- TUBE TESTERS
- MULTIMETERS
- CAPACITOR ANALYZERS
- A. F. SIGNAL GENERATORS
- VACUUM TUBE VOLTMETERS
- A. M. SIGNAL GENERATORS
- F. M. SIGNAL GENERATORS
- SIGNAL TRACERS
- OSCILLOSCOPES



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