

SUPREME MODEL 599-A

ELECTRICAL SPECIFICATIONS

POWER SUPPLY REQUIREMENTS: (UNLESS OTHERWISE SPECIFIED ON PLATE ATTACHED TO INSTRUMENT.)

Voltage.....100/133 volts A-C
Frequency..... 50/60 cycles
Power Consumption.....25 watts maximum

MECHANICAL SPECIFICATIONS

OVER-ALL DIMENSIONS:

PANEL CASE
Length.....10-3/8".....11"
Width..... 8-3/8"..... 8-3/4"
Depth..... 5-3/8"

WEIGHT:

Net.....10-1/2 pounds
Shipping.....12 pounds

STANDARD EQUIPMENT SUPPLIED WITH THE SUPREME MODEL 599-A

Table with 4 columns: QUANTITY INCLUDED, STOCK NUMBER, DESCRIPTION, PACKER'S CHECK. Contains 2 rows of equipment details.

The above list has been checked by the undersigned who is responsible for the completion of this package.

MODEL 599-A, SERIAL NUMBER 6125 (Signed) [Signature] Shipping Department

MENTION ABOVE NUMBERS IN ALL CORRESPONDENCE.

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.



## INSTRUCTION MANUAL

FOR

## SUPREME MODEL 599-A TUBE TESTER

## GENERAL DESCRIPTION

The SUPREME Model 599-A is a complete tube tester designed to classify receiving type tubes by the emission principle. This type of tester has long been recognized to be the most accurate for making a *simplified* test of tubes. By checking the cathode or filament, as the case may be, for its ability to emit electrons or current to the other elements of the tube, the quality of a tube may be accurately classified. In setting the limits on tubes as shown by the roll chart, SUPREME engineers worked closely with the tube manufacturers. Recommended anode loads and voltages are used throughout the tester.

The battery testing circuit provides a load on the battery under test which represents the average receiver drain on the particular type battery. Discard points used are those recommended by the battery manufacturers.

The multimeter ranges are all individually calibrated.

## POWER SUPPLY REQUIREMENTS

Unless otherwise specified, the instrument is designed to operate from 100 to 133 volts at 50/60 cycles. Power consumption is 25 watts. The rectifier tube is a 6X5GT.

This instrument is protected from damage in case an overload is applied to it by a fuse having a rating of 1 Ampere. If your instrument fails to operate remove the fuse from its fuseholder and 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. 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 higher rating!!*

## PANEL MARKINGS AND COMPONENTS

## METER

Has 0-200 ohm scale, "Good-?-Bad" tube testing scale 0/6/150 scale for volts and MA., and "Replace-Good" battery testing scale.

## FUSEHOLDER

Directly under meter. Holds one ampere for protection of instrument.



## SOCKETS

4, 5, 6, loctal, and bentam 5 to left of meter. Combination 7 with pilot lamp socket, octal, and miniature to right of meter.

## PIN JACKS, (NOISE TEST)

(Upper right side of panel) Allows phones to be placed in series with shorts test circuit for checking noise, when switch is moved to momentary position.

## SLIDE SWITCH, (117N7)

Directly under meter. For special test on 117N7 tubes. Leave in DOWN (N) position for tests on all other tubes.

## ROTARY SWITCH (FILAMENT RETURN SELECTOR)

(Left center panel with 1-9 markings). Assures non-obsolescence of tester due to filament termination changes.

## POTENTIOMETER (QUALITY CONTROL)

(Center panel with 0-100 calibration) Adjusts proper meter circuits.

## SWITCH, ROTARY

(Right center panel) Connects meter for "Line Adjust". Selects proper anode voltages and loads. Circuit selector for multimeter.

## PIN JACKS, (BATTERY TEST)

(Upper right side of panel) Connects all batteries for testing.

## POTENTIOMETER (OFF-LINE ADJ.)

Adjusts primary of transformer for proper line voltage.

## BULB, NEON (SHORT)

For visual indication of shorts and leakages in tubes.

## ROLLER CHART

Numerical listing of tubes. "Arrow-ways" running from each setting to proper control. Tubes not listed on this chart will be found in Supplement to this Instruction Manual.

## MODEL NUMBER

Model 599-A. Use this number in all correspondence.



## SERIAL NUMBER

Directly above roller chart. Use this number in all correspondence.

## SLIDE SWITCHES

(Across bottom of panel) Number 1 through 9 used in making leakage, short, open, etc. tests. "QUAL-LEAK" connects tube under test for quality or leakage tests.

## CONNECTOR, TOP CAP

(Insulated dual connector for metal and glass tubes). Connects top cap in circuit. Is used on all tubes which have top cap and is connected for quality and leakage tests.

## 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 REQUIREMENT).
2. Set "QUAL-LEAK" slide switch (lower right hand corner panel) in "LEAK" position.
3. Set right hand rotary switch in "LINE ADJ" position.
4. On the chart locate the tube type to be tested and set the controls as indicated by the red "arrow ways", with the exception of the right hand rotary switch which is left in the "LINE ADJ" position for the time being. The right hand column on the tube chart indicates the slide switches to be pushed up. Slide these switches to the UP position.
5. Place the tube in socket and allow approximately 30 seconds to heat. Then set "LINE ADJ" potentiometer so that the meter reads center scale of "75" on 0-150 scale. Remember, the right hand rotary switch must be in "LINE ADJ" position and the "QUAL-LEAK" switch must be in "LEAK" or DOWN position. If the "QUAL-LEAK" switch is in "QUAL" position, the reading will be false, reading less than center scale.
6. FILAMENT CONTINUITY TEST: Slide all switches DOWN. If the neon lamp does not glow, the filament is open.
7. SHORT AND LEAKAGE TEST: Return slide switches to the positions called for on the test data chart. Push slide switches, one at a time, to the opposite position and return to the previous setting, tapping simultaneously to locate intermittent shorts. If the lamp glows while a switch that was UP is in the DOWN position or vice



versa, the tube element corresponding to the number of the switch is shorted. It is normal for the lamp to glow with one of the switches DOWN, showing filament continuity, but when more than one switch causes the lamp to glow, some element other than the filament is shorted. In all cases where this is normal a letter follows the tube number and refers to the proper footnote which indicates the switches on which shorts will be shown.

6. QUALITY TEST: Check to see that the correct slide switches are in the UP position as indicated on the chart. Set right hand rotary switch in position indicated by letter on chart, (A, B, C, etc.). Slide "QUAL-LEAK" to "QUAL" position and meter will read condition of tube on "Good-?-Bad" three color scale. DO NOT HOLD SWITCH IN "QUAL" POSITION LONGER THAN JUST NECESSARY TO OBSERVE TUBE CONDITION. OTHERWISE THE INSTRUMENT MAY BE DAMAGED WHEN TESTING SOME TYPES OF TUBES.

#### MULTIPURPOSE TUBES

Some tubes require more than one test as indicated on the roller chart. The separate sections are checked as outlined above for a single tube as listed on chart.

#### CHART FOOTNOTES

Exception to rules of operation are sometimes necessary and in these cases a letter follows the listing of the tubes on the chart. Example: 35Z5(F). Explanation is found at the end of the chart. Tubes not listed on the chart will be found in the Supplement to this Instruction Manual.

#### CAUTION

*Be sure proper settings are made as outlined before tube is inserted into socket. At the end of tests, turn "OFF-LINE ADJ" to "OFF" and leave until next test is to be made.*

#### BALLAST TUBES

Ballast tubes are checked for opens, loose connections, and bad welds. Set "QUAL-LEAK" slide switch to "LEAK" position. The slide switches are operated as in testing tubes for shorts. Listing of ballast tubes are included in Supplement to this Instruction Manual. The neon lamp should glow only when the switches as listed opposite the corresponding ballast types are pushed UP. Any flickering of the neon lamp when the tube is tapped indicates a poorly welded joint.



## PILOT LAMPS

To check pilot lamp, set left hand rotary switch to #1 position and push #7 slide switch UP. Set second from left rotary switch as indicated below to select proper voltage. Insert lamp in special base of seven hole socket. It should light with normal brilliance.

### PILOT LAMP VOLTAGE

### SET ROTARY SWITCH

1.5	1
2.0	2
2.5	3
3.3	4
5.0	5
6.3	6
7.5	7
12.6	8
25.0	9
30.0	10

## OPEN ELEMENT TEST

With the exception of filaments, tube elements are very unlikely to open circuit, so unlikely that the average tube checker has no provision for making a special, separate element, open element test. There is not one open element tube in ten thousand, and thus, the need for an open element test is exaggerated. However, the SUPREME Model 599-A has a *specific open element test* which will find any and every open element in a tube if such exists.

Set controls for making leakage test. Make leakage test. Make quality test. If tube checks good and an open element is suspected, do the following:

1. Set "QUAL-LEAK" switch in "QUAL" position. Push all switches UP except switch whose number corresponds to number indicated on FILAMENT RETURN SELECTOR switch setting.
2. Obtain tube base connection finder or tube data book as available from tube manufacturers and look up tube base connections.
3. Push DOWN slide switch corresponding to tube's control grid. Meter should read up possibly half-scale. If it does not read up-scale, this element is open.
4. Then push DOWN the numbered switch corresponding to element next nearest to cathode or filament. This is usually the screen grid. Meter needle should advance above previous point. If needle does not move up past previous mark, this element is open.
5. Consecutively push DOWN balance of switches corresponding to tube elements EXCEPT CATHODE OR FILAMENT TERMINATIONS. There should be a corresponding further upswing of meter as each element switch is moved DOWN. The amount of movement in each case will be small but discernible. If no upswing is noted at any time, over previous test, that element is open.



## BATTERY TESTS

Use a pair of regular test leads (pin point to pin probe type). Observing polarity insert pin points in "BATTERY-TEST" pin jacks. Set right hand rotary switch to voltage of the battery to be tested. Example: For 1.5 volt battery set switch to 1.5 v. Connect probes to battery to be tested and note the reading of meter on two color "Replace-Good" scale.

### OPERATION BATTERY TESTING CIRCUIT

RANGES: 1.5B, 4.5B, 6.0B, 45B, 90B.

Insert test leads in pin jacks marked "Batt." and "†Batt." Observe Polarity. Set right hand rotary switch to "Batt." position. Set left hand rotary switch to same voltage as battery to be tested. (Example: If checking 1.5 volt battery, set left hand rotary switch at "1.5B").

### OHMMETER OPERATION

RANGES: 0/200/20M/2 meg/20 meg.

Place pin points of test leads in pin jacks marked "Ohms" and "Ohms", (lower right hand corner). Set right hand rotary switch to "Ohms" position. Set left hand rotary switch to proper range for resistance to be measured - either 200 ohms, 20 M, 2 meg, 20 meg. For 2 meg. and 20 meg., instrument must be plugged in power socket. When using the ohms and megohms ranges, first adjust the potentiometer controlling the line adjustment as explained in paragraph 5 under "OPERATION". Then short circuit probes and adjust the QUALITY CONTROL POTENTIOMETER until the meter "zeros" at full scale ("0" ohms). The meter should be readjusted for "0" ohms each time the operator changes the resistance range. When the test leads are touched, a "tingling" will be noted which is caused by the voltage used to operate the megohm ranges. This will not cause injury and does not indicate a defect in the instrument. It is suggested that for the greatest degree of accuracy when using the 200 ohm range, the pin jacks be shorted with as short a lead as possible. After the meter has been adjusted to "zero" release the shorted test probes and place across the resistor to be measured. Read scale as follows:

RANGE	READING
200 ohms	Read on 0/2000 scale. Divide by 10.
20 M	Read on 0/2000 and multiply by 10.
2 meg	Read on 0-2000 and multiply by 1000.
20 meg	Read on 0/2000 and multiply by 10,000.



## DIRECT CURRENT

RANGES: 0/6/60/600 M.A.

Place pin points of leads in pin jacks marked "-DCMA" (lower left hand corner panel) and "+DCMA" (lower right hand corner panel). Observe polarity. Set right hand rotary switch to "M.A." Set left hand rotary switch to proper range for reading to be taken. As an added protection for the meter, set meter on highest range, 600 M.A., before connecting test probes into circuit. Then adjust range selector for proper range of current to be measured. Read scale as follows:

RANGE	READING
6 M.A.	Directly on 0/6 scale.
60 M.A.	Read on 0/6 scale and multiply by 10
600 M.A.	Read on 0/6 scale and multiply by 100

## D-C VOLTS OPERATION

RANGES: 0/6/15/150/600/1500 volts.

Place pin points of test leads in pin jacks marked "-D.C.V." (located left hand corner panel) and "+D.C.V" (located lower right hand corner panel). Observe polarity. Set right hand rotary switch to "D.C.V." position. Set left hand rotary switch to range which accommodates voltage to be measured. As a meter protection, set this switch to highest range, 600 V., and then reset it to proper range after connection has been made to source of voltage to be measured. Read scale as follows:

RANGE	READING
6.0 V.	Read directly on 0/6 scale.
15 V.	Directly on 0/150 scale; divide by 10
150 V.	Read directly on 0/150 scale
600 V.	Read on 0/6 scale; multiply by 100

## 1500 V. D-C RANGE

Set right hand rotary switch in "D.C.V" position. Set left hand rotary switch in 600 V. position. Place test leads in "-D.C.V" and "1500 V. D-C" pin jacks (located lower left portion panel). Read on 0/150 scale and multiply by 10.



RANGES: 0/15/150/600

Set right hand rotary switch in "Out. V. - A.C.V." position. Set left hand rotary switch to either of 15 V., 150 V., or 600 V. position to accommodate voltage being measured. Place test leads in jacks marked "Ohms-Megohms -- A.C.V." and "A.C. Volts". As a meter protection, set this switch to highest range, 600 V., and then reset it to proper range after connection has been made to source of voltage to be measured. Read on following scale:

RANGE	READING
15 Volt	Read on 0/150 scale and divide by 10
150 Volt	Read on 0/150 scale directly
600 Volt	Read on 0/6 scale and multiply by 100

#### OUTPUT VOLT OPERATION

RANGES: 0/15/150/600

Set-up is exactly same as A-C volts except move the test lead from "A.C. Volt" jack to "Output V." jack (located just to left of "A.C. Volt" jack).

#### CHECKING CAPACITORS

In checking electrolytic capacitors, set instrument up for ohmmeter test. Read leakage directly in ohms. When the test leads are first connected to an electrolytic capacitor the pointer of the meter will indicate a low resistance of a few thousand ohms. If the proper polarity has been observed in connecting the leads, however, the leakage will decrease until its resistance will be several hundred thousand ohms. If the proper polarity has not been observed, however, the resistance will probably be less than one hundred thousand ohms. It is very important that the proper polarity be observed in order that the electrolytic film in the capacitor can be properly "formed", at which time the maximum resistance will be found.

In checking paper capacitors the leakage will be read directly in ohms. A low resistance of several thousand ohms will be read when the leads are first connected but as soon as the capacitor is charged the meter should indicate not less than 20 megohms.



## SERVICE AND MAINTENANCE

All functions and ranges of the SUPREME Model 599-A 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

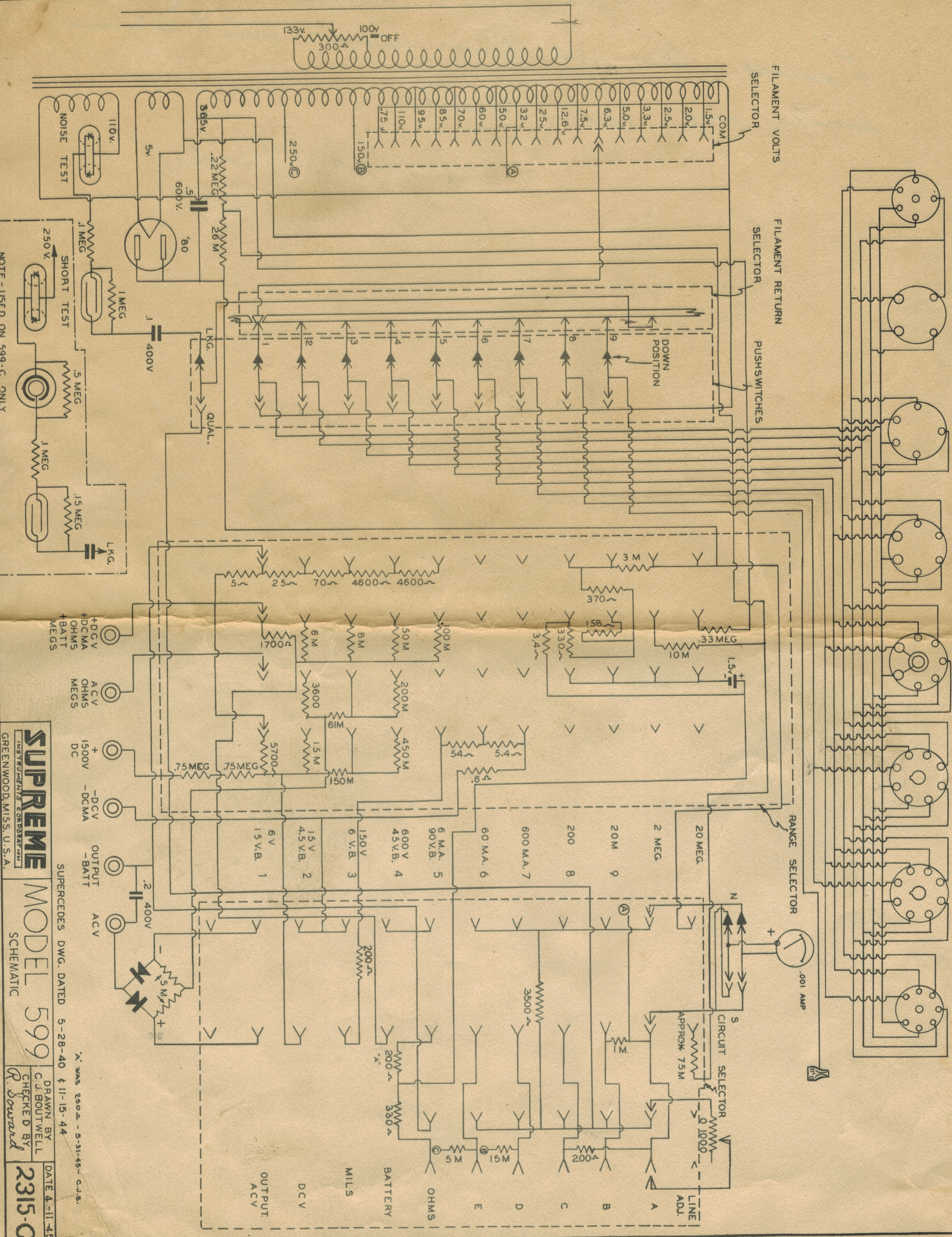
The parts used in the SUPREME Model 599-A were carefully inspected for mechanical and electrical defects at the factory. Under normal conditions and average use the life of the tubes will be equal to those in radio receivers (approximately 1500 hours). Any special parts which are not available from regular dealers 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.





NOTE USED ON 599-C ONLY.

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

**MODEL 599**  
 SCHEMATIC

DATE 4-11-45

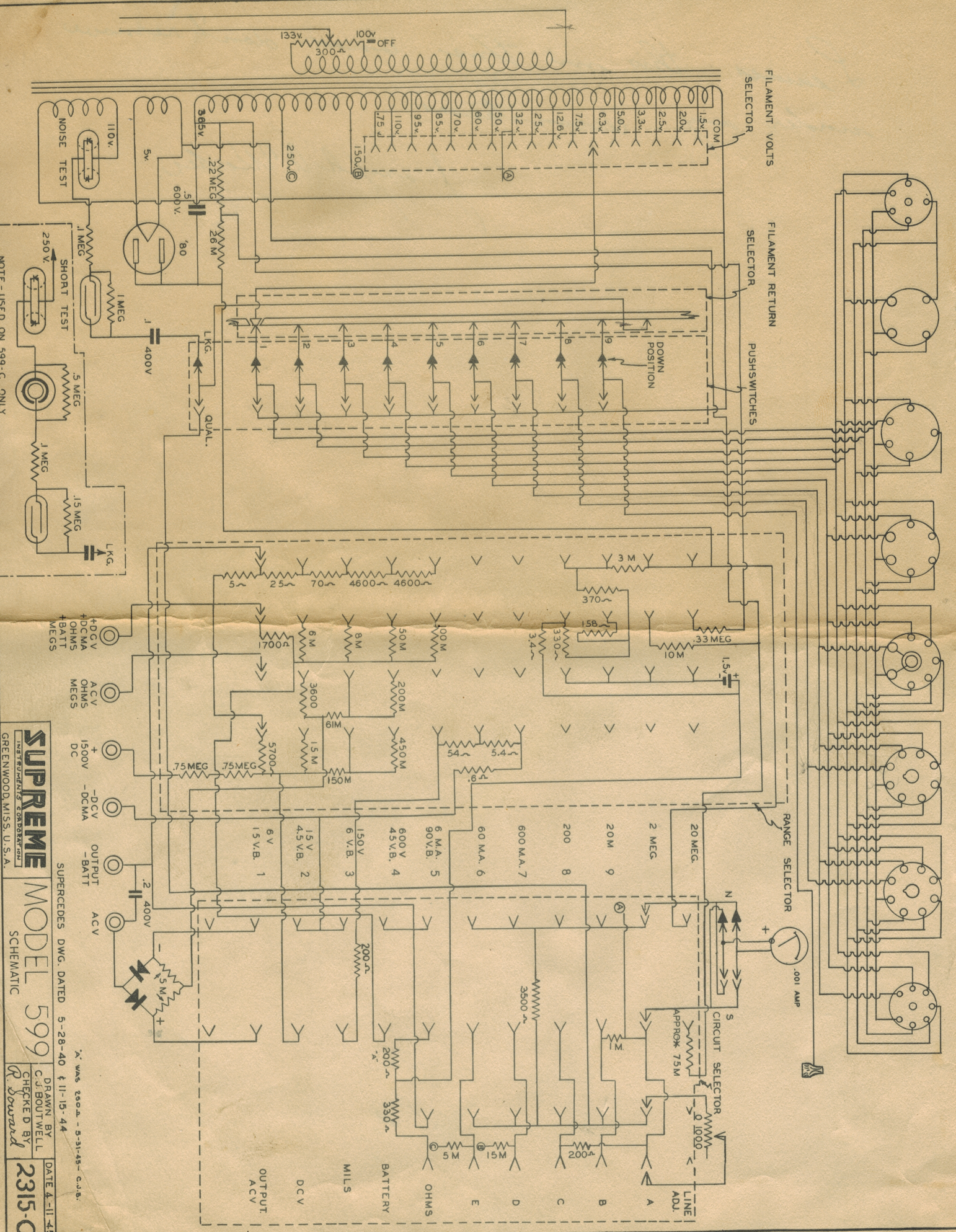
DRAWN BY C.J. BOUTWELL  
 CHECKED BY R. DeWard

2315-C

SUPERCEDES DWG. DATED 5-28-40 & 11-15-44

\* WAS 250V - 5-31-43 - C.U.B.





NOTE USED ON 599-C ONLY.

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

**MODEL 599**  
 SCHEMATIC

SUPRECEDES DWG. DATED 5-28-40 & 11-15-44

DATE 4-11-45

DRAWN BY C. J. BOUTWELL  
 CHECKED BY R. DOWD

2315-C