

HICKOK

Hickok

SG 4700

Radio Set Tester

Made by

THE HICKOK ELECTRICAL
INSTRUMENT COMPANY

CLEVELAND, OHIO

DESCRIPTION
AND PRICES



Bulletin Number Thirty



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Fig. 1

DE LUX MODEL Catalogue No. SG 4700

Self contained direct reading Ohm meter and capacity meter.
Ohm meter range 10 ohms to 20,000 ohms. Direct reading on plate milliammeter.

Capacity meter $\frac{1}{4}$ to 15 micro-farads, direct reading on A C voltmeter.

Plate voltmeter double scale, 300 and 600 volts, resistance 400,000 and 800,000 ohms.

A C Voltmeter triple scale 8, 160 and 800 volts, all ranges self contained.

D C Filament and grid voltmeter, scale 0-30 volts. Resistance 40,000 ohms.

Grid voltmeter double scale 30-0-30 and 150-0-50 volts. Resistance 80,000 and 400,000 ohms.

Plate milliammeter double scale 20 and 200 milliamperes.

LIST PRICE	\$160.00
LIST PRICE west of the Rockies	\$164.50
Carrying Case as shown containing compartment for tools and leads.....	\$ 10.00
Extra deep Carrying Case, inside dimensions 12.5" x 7" x 10".....	\$ 15.00

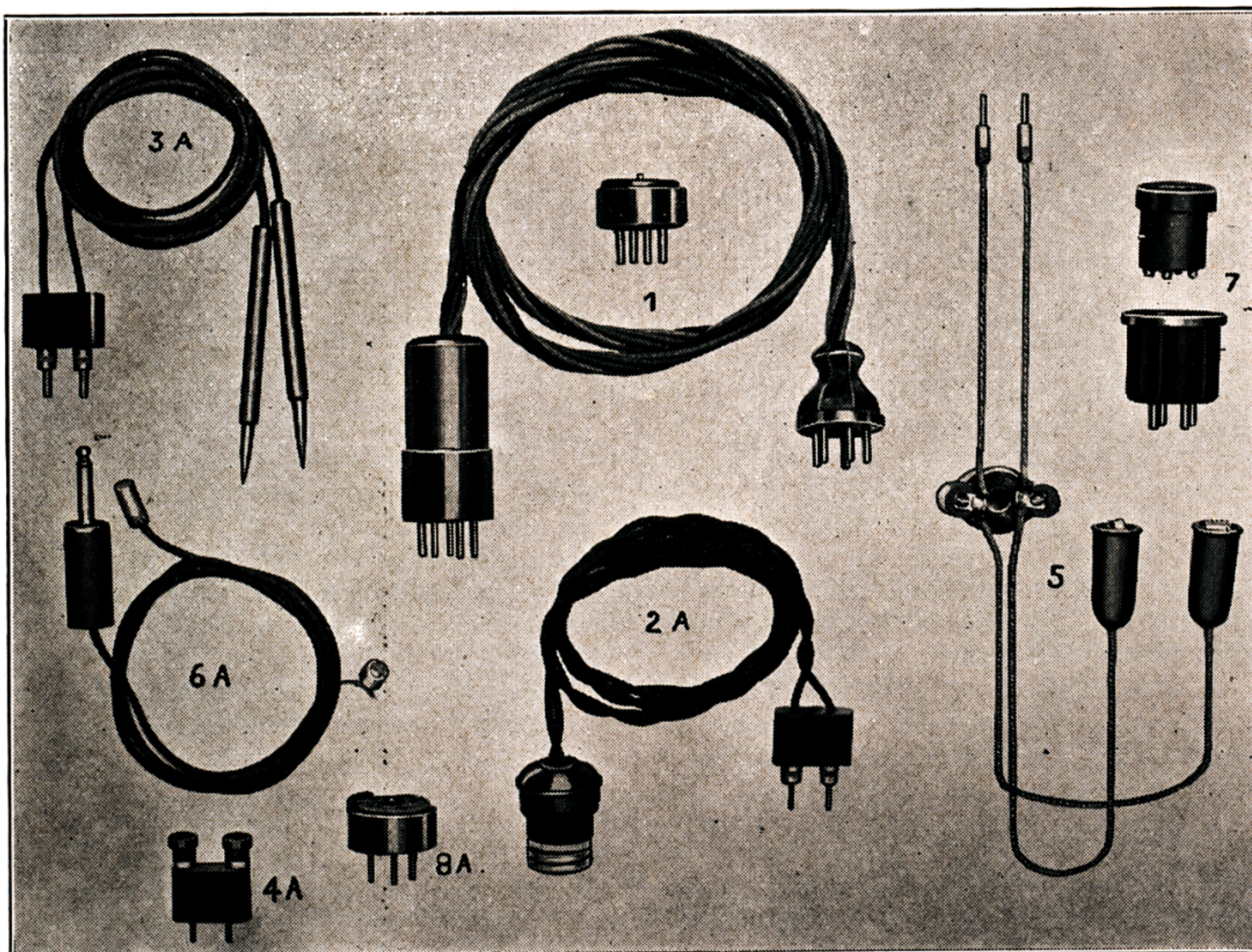


Fig. 2

Standard lead equipment supplied as follows:

No. 1 cable containing 5 leads for connecting receiver to tester suitable for all types of receiving tubes.

No. 2-A. Two conductor cable for connecting AC line to receiver.

No. 3-A. Red and Black two conductor cable with insulated prods and special plug for connection to tester. Used for individual meter readings, also resistance and capacity measurements.

No. 4-A. Binding post adaptor for changing pin jacks to binding posts.

No. 6-A. Cable with clips for testing all screen grid tubes.

Special adaptors supplied at extra cost.

No. 5. Double cable with clips and bakelite connector cap for testing Kellogg or McCullough type tubes.

No. 7. Set of two adaptors for testing UV 199 tubes.

No. 968. Set of two adaptors for testing WD 11 tubes. (Not illustrated.)

Above equipment priced separately as follows:

No. 1	.....	List price \$3.00
No. 2-A	.....	List price \$1.50
No. 3-A	.....	List price \$2.50
No. 4-A	.....	List price \$1.50
No. 5	.....	List price \$2.50
No. 6-A	.....	List price \$2.50
No. 7	.....	List price \$2.50
No. 968	.....	\$2.50
Record of service call blanks, pads of 100	.....	\$ .75

DESCRIPTION

Advanced Features of the De Lux Model:

The DE LUX MODEL, Cat. No. SG 4700 embodies the most advanced ideas in radio service equipment. The modern receiver contains a net work of resistances of a wide range in ohms, also filter condensers in values from a fraction of one M.F. to several Micro-Farads. The DE LUX MODEL is designed to measure these units as easily as measuring the voltages encountered in a receiver as the ohm meter and capacity meter incorporated in the DE LUX MODEL are entirely self contained and ready for use at all times.

Direct Reading Self Contained Ohm Meter and Capacity Meter:

The DE LUX MODEL indicates directly on scale of A C Voltmeter, capacity in Micro-Farads values from $\frac{1}{4}$ to 15 M.F. The regular 110 volt AC line being used as source of power. Connection to tester being made by set of leads supplied as standard equipment. The value of all fixed condensers in receiver under test can be found by making connections with the No. 3-A insulated prods without removing condensers from receiver.

The self contained ohm meter feature is obtained by the use of a small internal battery operating in conjunction with adjustable rheostat, and indicates directly on ohm scale of the milliammeter, all values from 10 ohms to 20,000 ohms.

Continuity Test:

The ohm meter constitutes a continuity test with the added advantage of indicating not only the continuity of any circuit, but at the same time its VALUE IN OHMS.

Grid Change Test:

The DE LUX MODEL contains internal 4.5 volt "C" battery, which is introduced in the grid circuit of the tube under test by pressing a button. This definite change in the grid bias results in a correspondingly definite change in the plate current by which the mutual conductance of the tube is easily found. A table for correct plate current change for all standard tube types is included in the instruction book furnished with each tester.

Advantage in Use of Five Meters:

HICKOK Radio Set Testers have since their announcement over four years ago, employed a meter for each of the circuits entering a radio tube. This feature greatly simplifies the internal circuit, eliminates complicated switching arrangements, eliminates the liability of burning out the meters by operating them on an incorrect scale and greatly speeds up the actual testing operations as all the values to be found are indicated SIMULTANEOUSLY.

All Meters Ranges Self Contained:

No auxiliary apparatus required in the use of any of the meters in the DE LUX MODEL. The A C Voltmeter ranges of 8—160 and 800 volts including the capacity scale are self contained.

Handy Connection Scheme:

Pin jacks are provided for each individual meter for the use of all meters as separate instruments. The No. 3-A insulated prods are equipped with special plug which is inserted in the pin jacks, making the operation of connection to meter desired, the matter of a few seconds. The No. 4-A binding post adaptor supplies as standard equipment instantly changes the pin jacks to BINDING POSTS, thus giving the user of the DE LUX MODEL a choice of either pin jacks or binding posts for connection to each meter.

Removable Testing Cable:

The No. 1 cable is not connected permanently to the tester, connection being made by means of a special plug which is inserted in socket marked "Connector," thus eliminating the cable from tester when the meters are used individually. The 5 to 4 prong adaptor for insertion in the receiver is provided with a locking device.

Simultaneous Reading of All Voltages Entering Screen Grid Tubes:

All voltages entering screen grid tubes are indicated simultaneously in the DE LUX MODEL. See cut on last page for complete description of this feature.

High Meter Sensitivity:

The Hickok Electrical Instrument Co. have been manufacturers of precision electrical instruments for the past eighteen years. The meters used in the DE LUX MODEL were designed with special reference to the conditions of radio testing. The D C Voltmeters are of a special high sensitivity of 1333 ohms per volt or $\frac{3}{4}$ of one milliamper full scale deflection. This high sensitivity gives readings of greater accuracy than could be secured with a lower sensitivity.

High Over Load Capacity:

All the meters in the DE LUX MODEL are designed to withstand over loads without injury. A voltage of 10 times the scale value may be applied to all the D C Voltmeters without injury, provided the excess voltage is applied for short periods only. The D C Milliammeter will carry 200 mills on the 20 mill scale for at least one minute without injury. The A C Voltmeter will also carry 50 volts on the low scale for one minute without injury. The 160 volt cannot be damaged even if 800 volts were accidentally applied.

Removable Tube Sockets:

The 4 and 5 prong tube sockets including the connector socket are of the removable type. Should any of the sockets become worn from long use, they may be replaced by removing the center holding screw and new sockets installed without unsoldering any connections.

Special A C Voltmeter:

The A C Voltmeter in the DE LUX MODEL is designed for the special requirements of radio testing, and is the first dynamic type having a practically UNIFORM SCALE. The low range scale of 8 volts contains 80 graduations, by which all values from 1 to 8 volts may be read in $\frac{1}{10}$ volt values. The next range of 160 gives accurate indications of line voltages. The high range of 800 volts enables the users of the DE LUX MODEL to measure the A C voltages in power transformer supplied to plates of rectifier tubes. The 160 and 800 volt coils are high resistance, thus giving accurate indications under all conditions. The A C Voltmeter also contains DIRECT READING CAPACITY SCALE indicating from $\frac{1}{4}$ to 15 M.F.

Special Plate Milliammeter:

The Plate Milliammeter is equipped with scales of 20 and 200 milliamperes, which is of sufficient range to accurately measure the milliamperes consumed by individual tubes as well as the entire plate current consumed by any receivers. The plate milliammeter is also equipped with DIRECT READING OHM METER SCALE, operating as an ohm meter from self contained battery.

Plate Voltmeter:

The Plate Voltmeter incorporated in this device is a special high resistance type, having a sensitivity of 1,333 ohms per volt, which gives a resistance for the 300 volt scale of 400,000 ohms and for the 600 volt scale of 800,000 ohms. This instrument is so connected that it can be used either separately or in conjunction with the other instruments in making tests of circuits in radio receiving sets.

D C Filament Voltmeter:

This meter is of the same type as the plate voltmeter, and has a scale range of 30 volts. The resistance being 40,000 ohms. When testing receivers using screen grid tubes, this meter indicates CONTROL GRID VOLTS.

Grid Voltmeter:

This meter is of the same type as the plate and filament voltmeters, and is equipped with double scales of 30-0-30 and 150-0-150 volts. The resistances are 80,000 and 400,000 ohms respectively. This meter is equipped with push button for removing it entirely from the grid circuit. This is useful in testing receivers in which the audio stages are resistance or impedance coupled. The cathode to filament voltage is also indicated on this meter by pressing the cathode button.

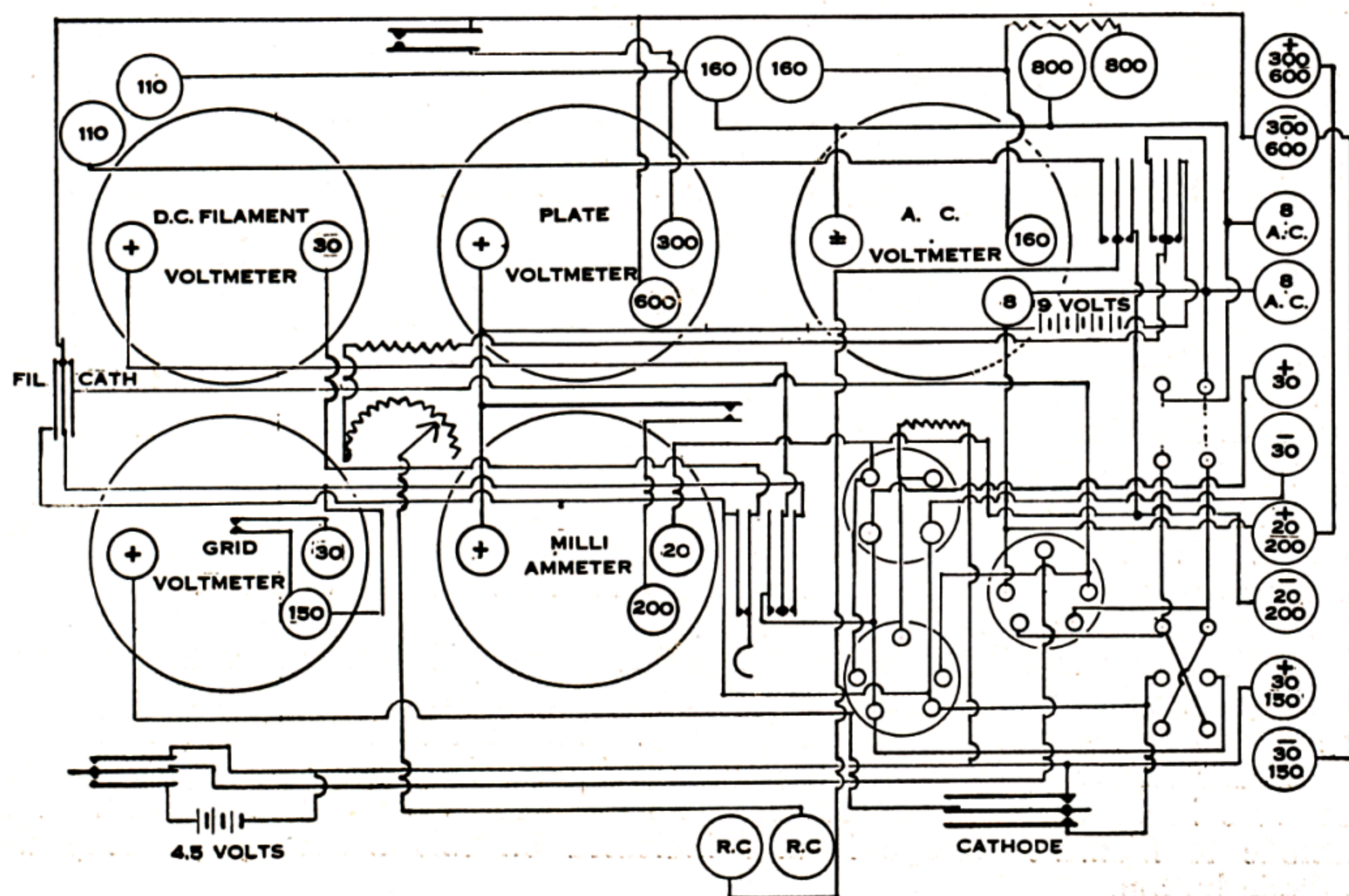
RECORD OF SERVICE CALL NO.									
OWNER					DATE				
ADDRESS									
MAKE AND TYPE OF SET APEX MODEL 31 U S RADIO & TELEVISION									
TUBE NO.	TYPE OF TUBE	POSITION OF TUBE IN SET 1ST.R.F. 1ST.AUD. ETC.	TUBE READINGS WITH TUBE IN TESTER AND PLUG IN TUBE SOCKET					SPECIAL TESTS	
			A VOLTS	B VOLTS	C VOLTS	PLATE M.A.	PLATE M.A. WITH EXT. +4.5C BAT.	CATHODE VOLTS	SCREEN GRID VOLTS
1	224	1st R.F.	2.25	178	3	3.4	3.9	3	86
2	224	2nd "	2.25	178	3	3.4	3.9	3	86
3	224	3rd "	2.25	178	3	3.4	3.9	3	86
4	227	Det.	2.25	60	9	.25	.5	9	
5	227	1st A.F.	2.25	160	12	4.5	7	12	
6	245	Push Pull	2.35	246	40	25	28		
7									
8									
9									
10									
LINE VOLTS 115 A.C. VOLTAGE ADJUSTMENT HIGH LOW OR MED									
REPAIRS OR REPLACEMENTS MADE The values in column for 4.5 pos "C" Battery for the 224 tube is for 4.5 volts added screen grid volts.									
SUGGESTIONS									
BY									
THE HICKOK ELECTRICAL INSTRUMENT CO., CLEVELAND OHIO. FITS I-P NO. 535 POST BINDER									

Service Blanks:

The record of Service Call blanks, illustrated above, have proven of great assistance to the dealer in keeping an accurate record of service calls made by his repair men. They are designed for filing in standard I-P No. 535 post binder. These blanks filled out with correct reading of all popular makes of receivers, supplied free to all users of Hickok Test equipment.

Circuits of the Tester:

The internal circuits as shown below indicate its extreme simplicity. When the tester is connected to the radio set under test by means of the cable provided with each tester, it is impossible to injure the tester, the radio set or the tube under test by improper manipulation of the switches. The switches are used for the purpose of changing the scale ranges of the meters only, and not for reading different circuits.



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Fig. 3

CATALOGUE NO. AC-47 RADIO TUBE TESTER

Applies D. C. to plate and grid.

Indicates directly on meters, DYNAMIC MUTUAL CONDUCT-
ENCE and PLATE CURRENT.

Operates from 110 volt AC line.

Indication independent of line voltage fluctuations.

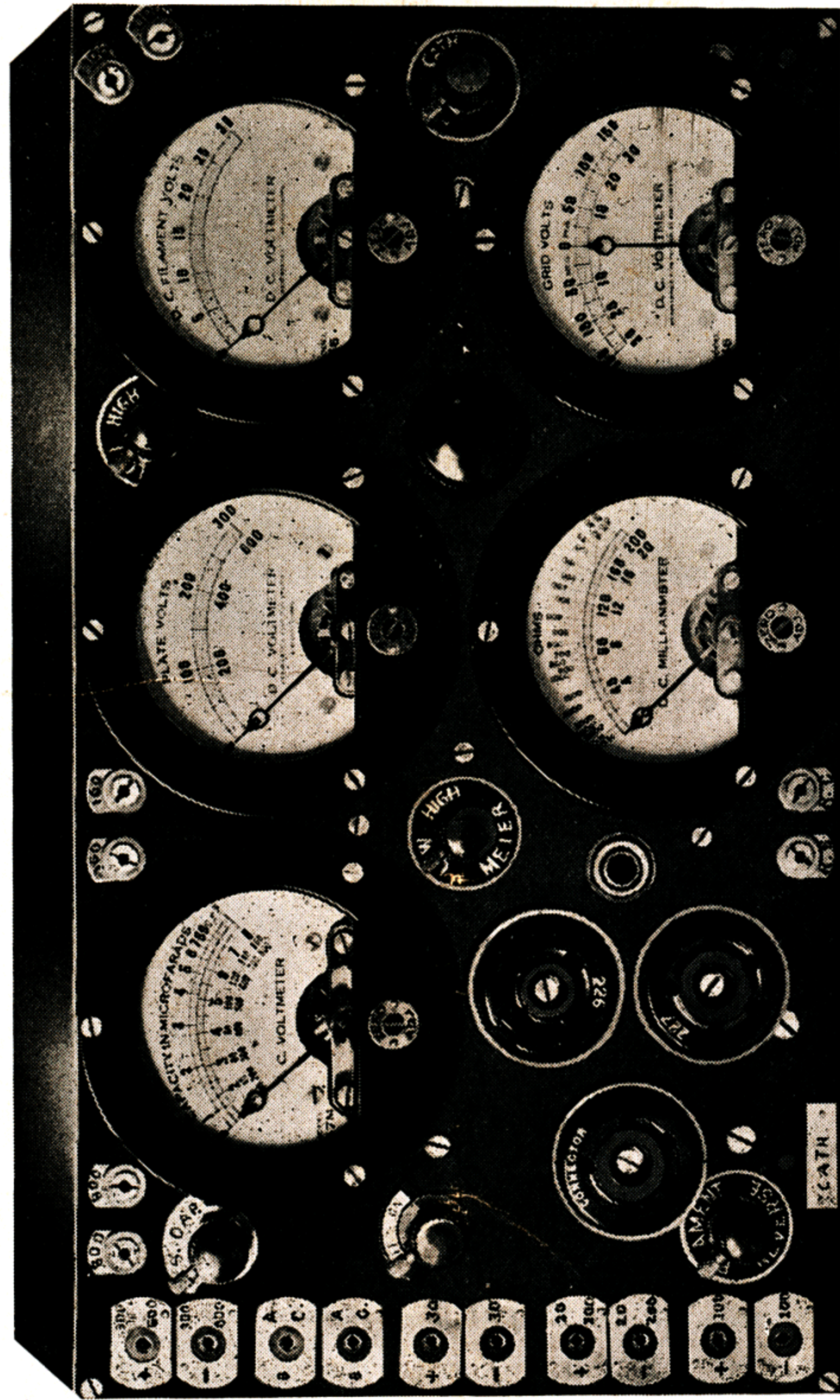
Indicates all shorts between tube elements.

With this tester you use same test methods as employed by tube
manufacturer.

Recommended by leading tube manufacturers.

Write for bulletin No. 27 for full information and prices.

READS FILAMENT READS PLATE READS CONTROL
VOLTS HERE VOLTS HERE GRID HERE



Indicates simultaneously the four voltages and plate current of 224 screen grid tubes without the use of push button or switch, as follows:

- Heater Voltage on A.C. Voltmeter.
- Plate Voltage on Plate Voltmeter.
- Control grid bias on D.C. Filament Voltmeter.
- Screen grid voltage on Grid Voltmeter.
- Plate current on Plate Milliammeter.
- Makes the testing of screen grid tubes as easy as other types.

READS PLATE READS SCREEN
CURRENT HERE GRID VOLTS HERE

INDICATES SIMULTANEOUSLY ALL THE ABOVE VALUES

HICKOK