NAVSHIPS 93069 (Non-Registered)

112

TECHNICAL MANUAL

for

ELECTRON TUBE TEST SET TV-10A/U

THE HICKOK ELECTRICAL INSTRUMENT CO.
10614 DuPont Avenue Cleveland 8, Ohio

DEPARTMENT OF THE NAVY
BUREAU OF SHIPS

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LIST OF EFFECTIVE PAGES

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From: Chief, Bureau of Ships
To: All Activities concerned with the Installation, Operation, and Maintenance of the Subject Equipment

Subj: Technical Manual for Electron Tube Test Set TV-10A/U, NAVSHIPS 93069

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A. G. MUMMA
Chief of Bureau

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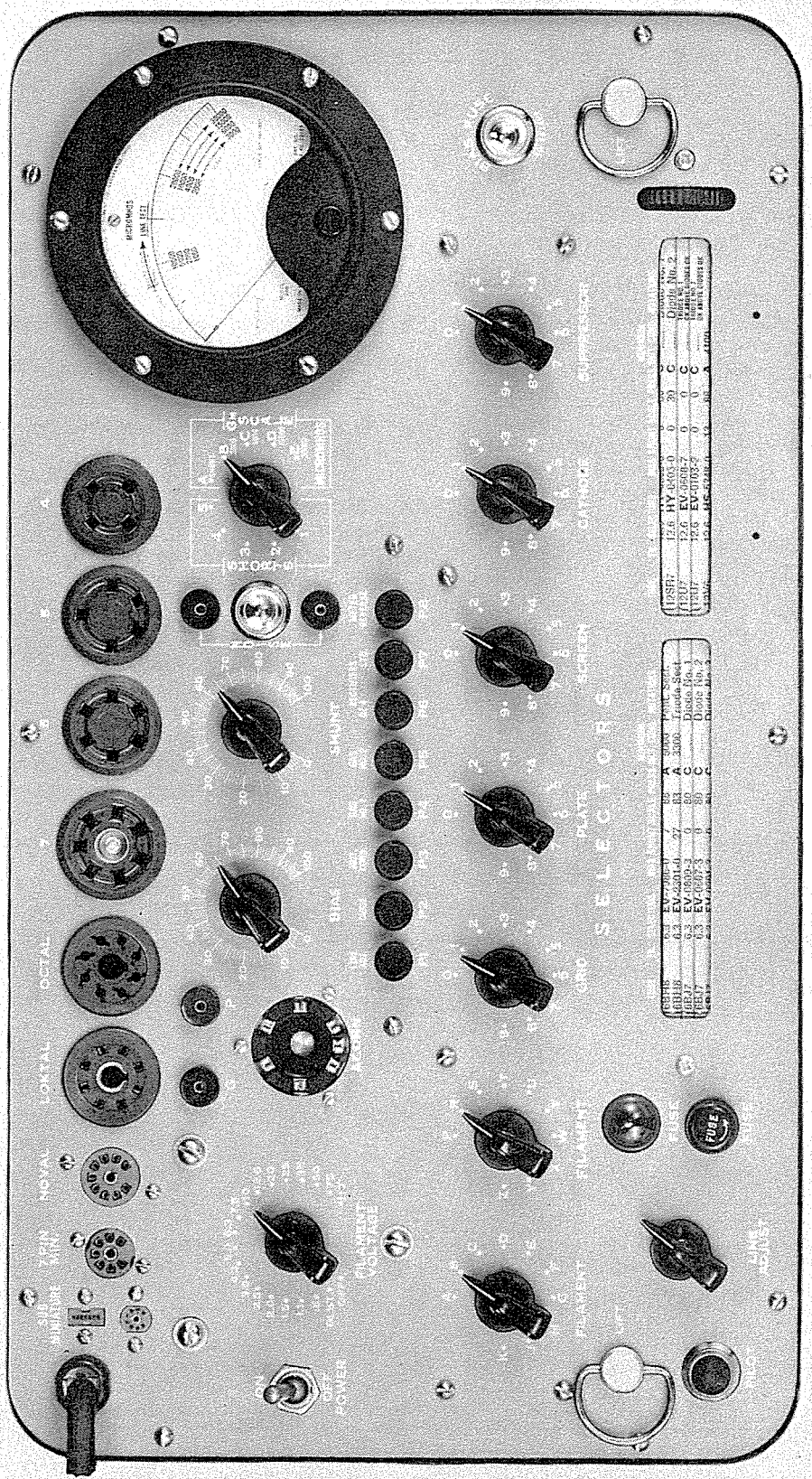

Figure 1-1. Electron Tube Tester TV-10A/U Cover Removed

SECTION 1
GENERAL DESCRIPTION

. PURPOSE.

This handbook, intended for use with Electron ube Test Set TV-10A/U (see Figure 1-1) described n the following paragraphs, contains information ssential to the operation and maintenance of the quipment.

a. GENERAL. Electron Tube Test Set TV-10A/U s a portable Tube Tester of the dynamic mutual conuctance type designed to test and measure the mutual onductance values of electron tubes of the receiving ypes and many of the smaller transmitting types. Noise test jacks are included for checking of noisy ubes. The equipment is enclosed in an aluminum arrying case with storage space in the cover for ccessories and operating or running spare parts. The over of the case is secured by means of two pull-lown catches. Two slip hinges permit the removal of he cover if desired. A suitable carrying handle is rovided.

. REFERENCE DATA.

a. Nomenclature: Test Set, Electron Tube TV-10A/U

b. Contract Numbers: NObsr-71284 and NObsr 71374

c. Contractor: The Hickok Electrical Instrument Co.

d. Cognizant Naval Inspector: Inspector of Naval Material, Cleveland, Ohio.

e. Number of Packages Involved per Complete Shipment of One Equipment Including Equipment Spare Parts: One.

f. Total Cubical Contents Including Equipment Spares:

Crated: 2.17 Cu. Ft.
Uncrated: 2.11 Cu. Ft.

g. Total Weight Including Equipment Spares:

Crated: 60 lbs.
Uncrated: 35 lbs.

h. Characteristics of Power Supply Required for Operation: 105 to 125 Volts ac at 50 to 1000 cycles, Single Phase, 100 Watts at 60 Cycles.

i. Current Drain: 0.75 Amps.

j. Meter Ranges:

(1) Micromhos:
0 to 3000,
0 to 6000,
0 to 15,000,
0 to 30,000

. EQUIPMENT LISTS

TABLE 1-1. EQUIPMENT SUPPLIED

QUANTITY	DESCRIPTION	ARMY NAVY TYPE DESIG.	SYMBOL DESIGNATION	OVERALL DIMENSIONS			VOLUME	WEIGHT
				H	W	D		
1	Test Set Electron Tube	TV-10A/U		7 in.	18⅜ in.	10⅜ in.	.77 cu. ft.	23 lbs.
2	INSTRUC. BOOK, NAVSHIPS 93069							
1	LEAD; Grid & Plate, for Lighthouse Tubes		W101					
1	LEAD; Plate Connector		W102					
1	LEAD: Grid Connector		W103					
1	ADAPTER FOR 829A TUBES		E101					
1	ADAPTER FOR 2C39 TUBES		E102					
1	* PILOT LAMP		DS102					
1	* FUSE LAMP		RT101					
1	* NEON LAMP		DS101					
1	* FUSE		F101					
1	* FUSE LAMP		RT101					

NOTE: *Equipment spares stored in cover.

TABLE 1-2. EQUIPMENT REQUIRED BUT NOT SUPPLIED

QUANTITY	NAME OF UNIT	REQUIRED CHARACTERISTICS
1	AC Power Source	Capable of supplying 50 to 1000 cycles, 115 Volts p/m 10% AC, single phase, sine wave. Minimum capacity 75 Watts.

4. ELECTRON TUBE COMPLEMENT.

The Tube Tester TV-10A/U includes one each of the following type electron tubes for operation:

ELECTRON TUBE TYPE	QUANTITY
MIL-5Y3WGTA	1
MIL-83	1

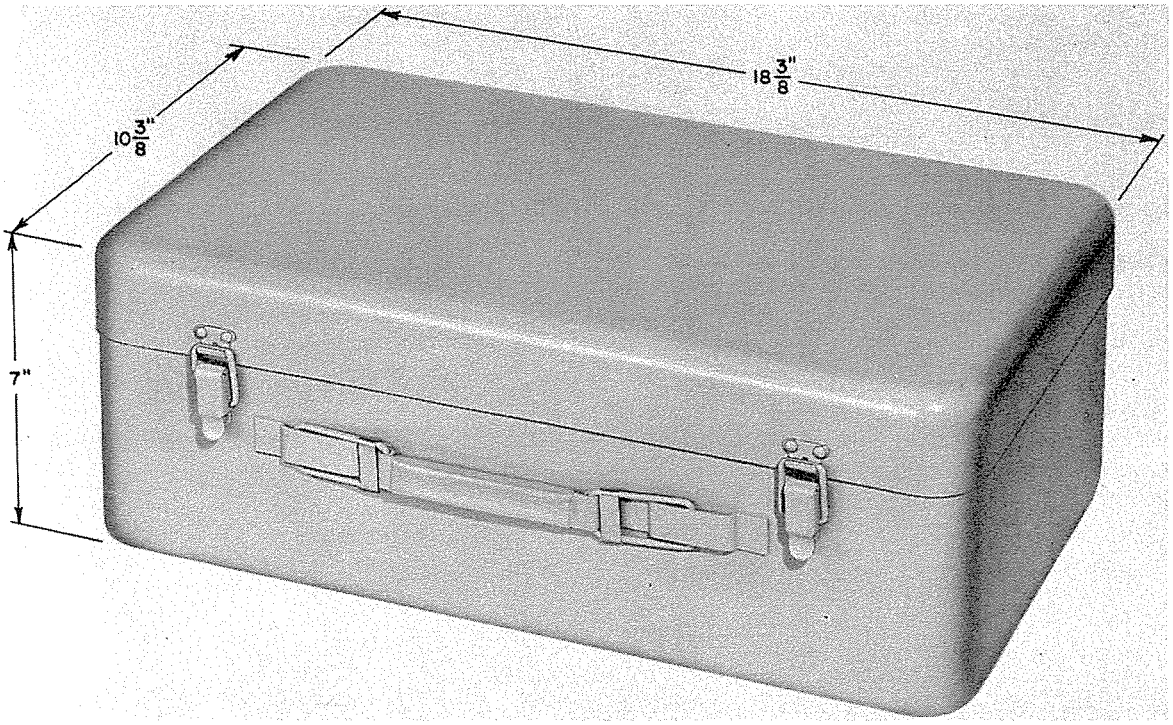

Figure 1-2. Electron Tube Test TV-10A/U With Cover Closed

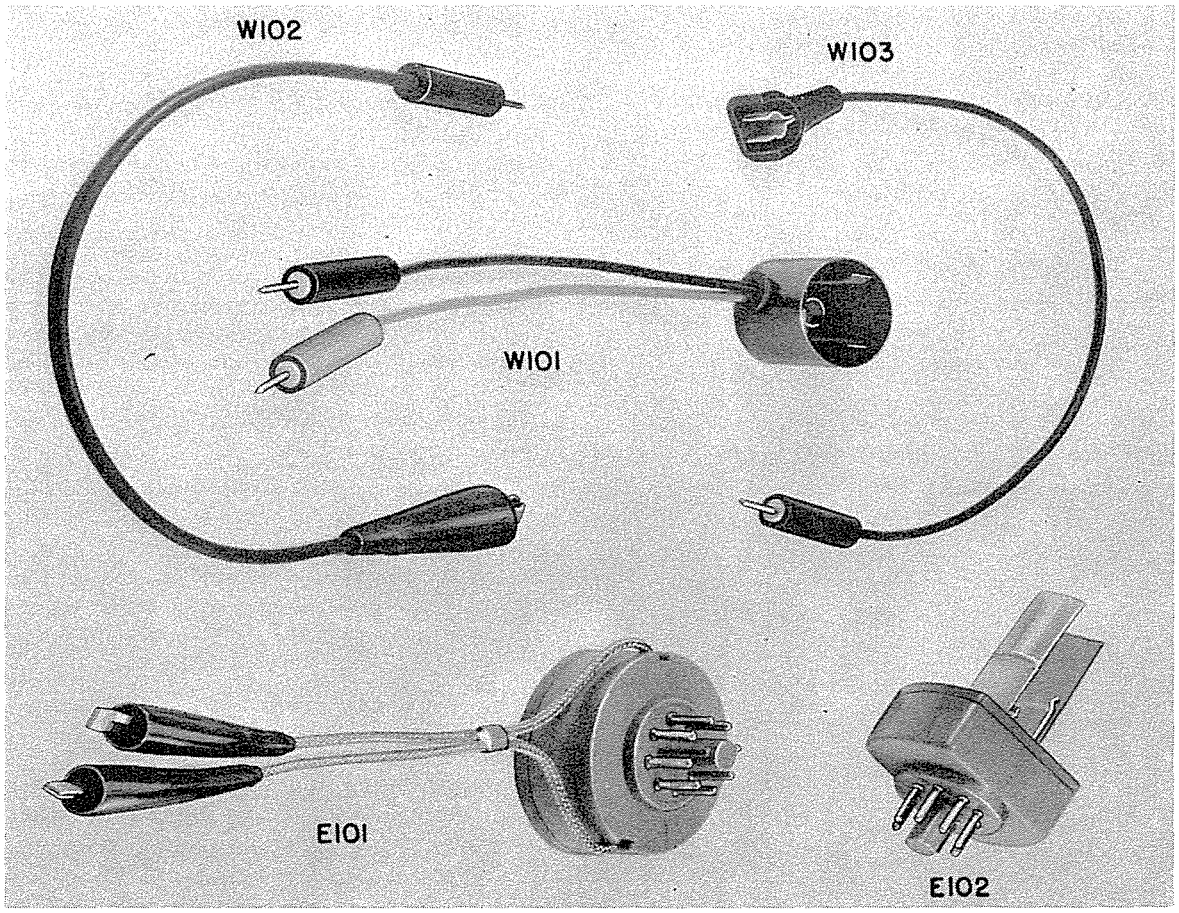

Figure 1-3. Electron Tube Test Set TV-10A/U Test Leads And Adapters

SECTION 2
THEORY OF OPERATION

1. TUBE TESTER REQUIREMENTS.

a. Electron tubes supplied to the Armed Forces are in nearly all cases procured under military specifications, which impose rigid controls on the processes of manufacturing, handling, and transportation to insure delivery of the highest possible quality tubes.

b. It is necessary however to provide some means of determining the condition of new replacement tubes and also the condition of tubes which have been in service for some time.

c. Electron Tube Test Set TV-10A/U employs the Dynamic Mutual Conductance test method. The mutual conductance of the tube under test is indicated on the meter scale directly in micromhos.

NOTE

The terms mutual conductance and transconductance are used interchangeably. Either term may be defined as the ratio of a small change in plate current to the corresponding change in control grid voltage which produced it. Values of mutual conductance are expressed in Micromhos. The symbol Gm is used to represent mutual conductance or transconductance in various mathematical representations of tube characteristics and their relationships.

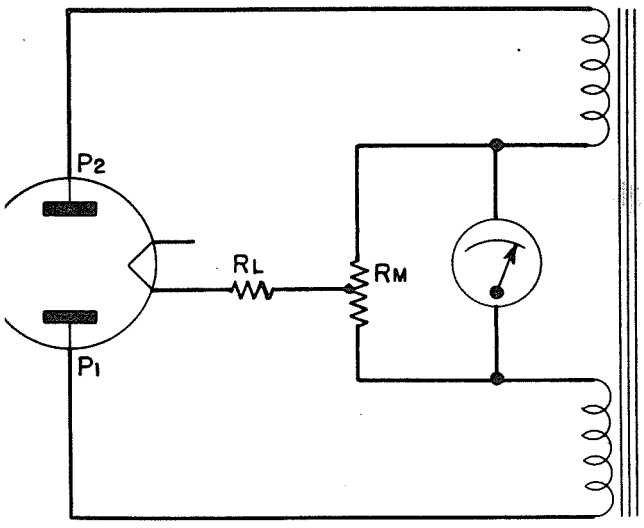

Figure 2-1. Rectifier Diagram Illustrating Theory

d. In addition to the mutual conductance test it is essential that the tube tester provide adequate means of testing for shorted elements and excessive gas content.

e. In the case of tubes of the diode type, tubes having no grid, a straight emission test must be employed rather than the mutual conductance test.

f. Some means of adjusting the voltage input to the tube tester must be provided to maintain the proper test potentials at all elements under varying conditions of line voltage.

2. THEORY OF OPERATION (See figures 2-1 and 2-2)

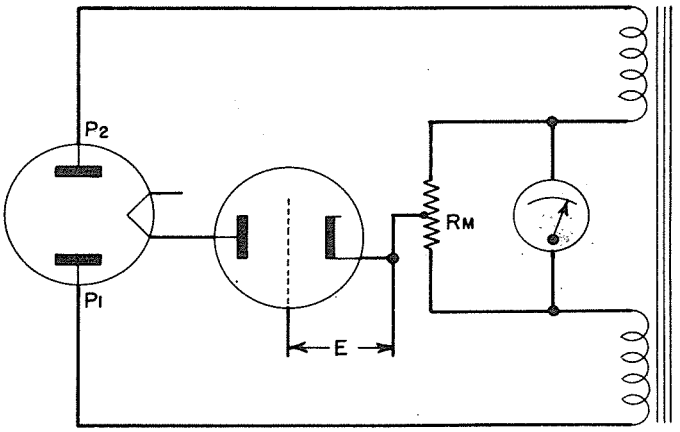

Figure 2-2. Basic Mutual Conductance Circuit Illustrating Theory

a. Examine first the simple full-wave rectifier circuit shown in figure 2-1. The two power transformer secondary windings have their inner ends connected to a direct-current milliammeter. Across the milliammeter is a center-tapped resistor R_M. The load is shown as a resistance R_L, connected between the center tap and the rectifier filament as in any full-wave rectifier circuit. When rectifier plate P_2 is positive, electron flow is through the upper half of R_M, and the meter tends to deflect in one direction. When P_1 is positive, electron flow is through the lower half of R_M, and the meter tends to deflect in the other direction. With the load resistance fixed and equal forces acting on the meter in both cases, the meter stays at zero because it cannot follow variations at the power line frequency.

b. If the electron tube to be tested is substituted for the fixed load resistance, and a fixed bias E is applied to the tube as in figure 2-2, the meter will still read zero because an electron tube under steady-state conditions acts like a fixed resistance.

c. If an ac potential is applied to the grid of the tube under test in addition to the dc bias, the circuit becomes equivalent to that employed for quality and mutual conductance tests in Electron Tube Test Set

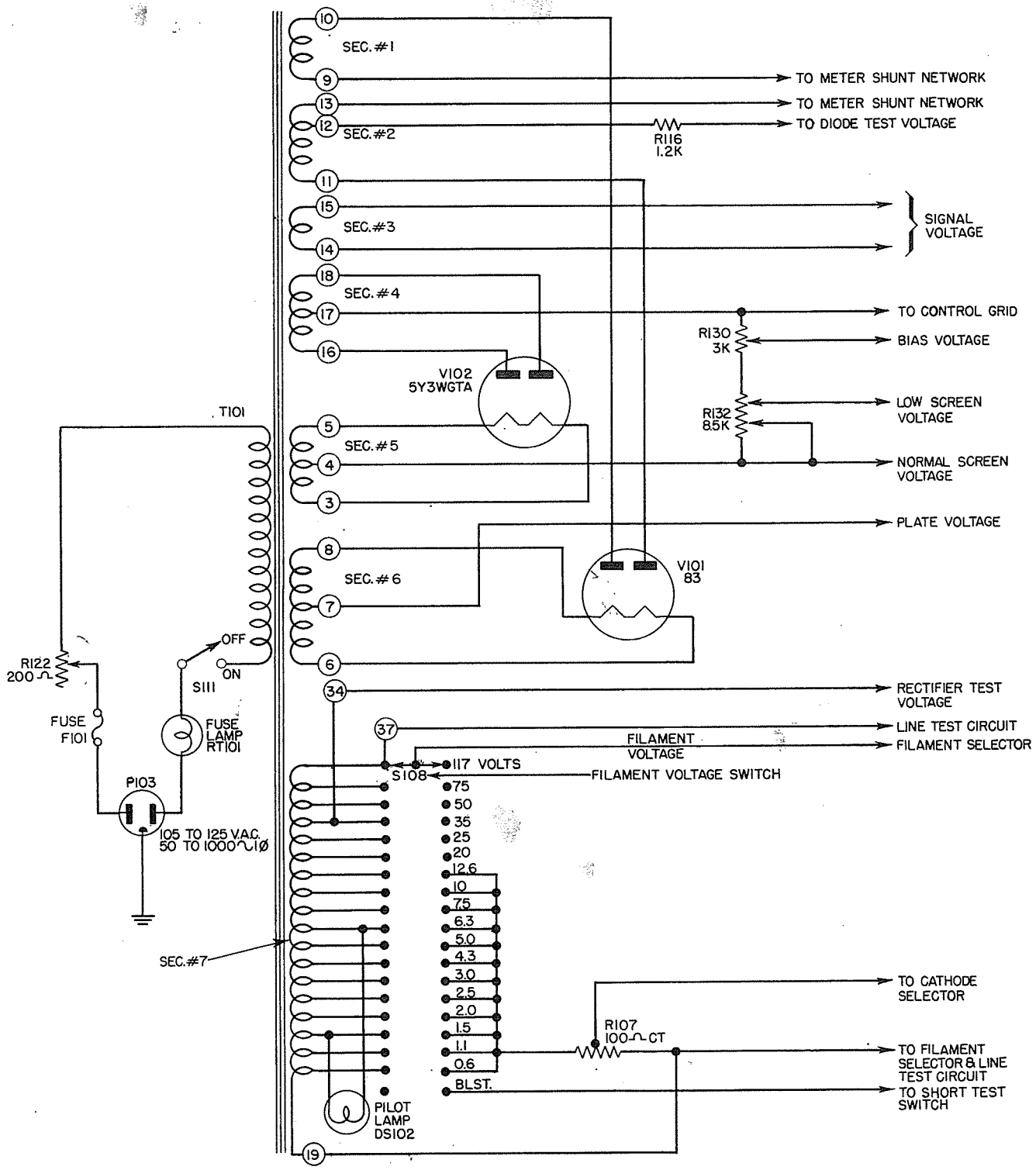

Figure 2-3. Simplified Power Supply Circuit

TV-10A/U. When this ac potential swings the grid positive, the plate current of the tube is increased, and when the plate-cathode resistance is correspondingly lowered, more current flows through R_M and the deflecting force on the meter is greater than before. When the grid swings negative on the other half-cycle, the resistance of the tube under test is increased and the deflecting force on the meter is less. With unbalanced currents on adjacent half-cycles and consequent unequal forces on the meter, the meter reading becomes proportional to the difference in currents. Since this difference is created by the ac grid potential, the meter indicates the plate-current changes produced by the applied grid voltage change, or in other words, the meter indicates mutual conductance.

3. POWER SUPPLY. (See figure 2-3)

a. The power transformer, T101, is supplied with primary voltage from a 105 to 125 volt 50 to 1000 cycle line through power ON - OFF switch S111, FUSE F101, LINE ADJUST control R122, and FUSE lamp RT101. The LINE ADJUST control, when operated in conjunction with the line test switching circuit, standardizes the voltage across the primary of T101 at 93 volts.

b. Secondary #7 of power transformer T101 consists of a multi-tapped winding designed to supply the various filament or heater voltages for the tubes under test. Voltages shown on figure 2-3 are nominal and may vary slightly under load depending on the type of tube under test. Secondary #7 also supplies voltage for rectifier emission tests.

c. Secondarys #1 and #2 supply approximately 170 volts ac to the plates of the type 83 tube V101, which supplies plate voltage to the tube under test. Secondary #2 is also tapped at 20 volts to supply voltage for diode emission tests.

WARNING
HIGH VOLTAGE

Dangerous voltages are present within this equipment and at the top cap connections of certain tubes when under test.

d. Secondary #6, a center tapped 5 volt winding, supplies filament voltage for the type 83 rectifier tube V101.

e. Secondary #3 supplies the signal voltage for mutual conductance tests, 5 volts ac. A voltage divider network across this winding also provides signal voltages of 1 volt and 0.5 volt.

f. Secondary #4, 320 volts center tapped, supplies the plates of the 5Y3WGTA screen voltage rectifier V102, a voltage divider system consisting of BIAS control R130, and adjustable resistor R132 across the output of V102 provide the bias voltage for mutual conductance tests.

g. Secondary #5, 5 volts center tapped, supplies the filament of V102.

4. LINE VOLTAGE TEST. (See figure 2-4)

a. Pressing the LINE ADJ. push button P-1 connects the meter M101 in the bridge circuit associated with rectifier CR101 and through series, resistors R126 and R129 to points 19 and 37 of the power transformer.

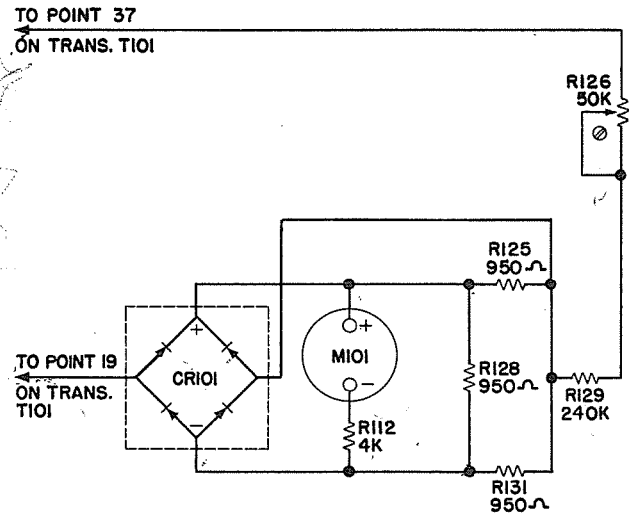

Figure 2-4. Simplified Line Voltage Test Circuit

b. The value of the screw driver operated internal calibration resistor R126 is adjusted so that 121 volts RMS across 19 and 37 of the power supply will cause the meter M101 to read at LINE TEST.

c. The design of the power transformer T101 is such that 93 volts applied to the primary winding will induce 121 volts across the total secondary #7 winding or across points 19 and 37.

d. Therefore, if with the LINE ADJ. push button P-1 pressed down, the LINE ADJUST CONTROL R122 is turned until the pointer of the meter, M101, is exactly over the LINE TEST mark a standard voltage of 93 volts RMS will be established across the primary winding of T101.

5. SHORT TEST. (See figure 2-5)

a. An ac potential of approximately 170 volts RMS from secondary #2 of T101 is applied to voltage divider resistors R103 and R105 developing a voltage of approximately 90 volts RMS across R103. This voltage is applied to the elements of the tube under test through the capacitor C102 and the neon short test lamp DS101 which is shunted by R106.

b. Turning the SHORTS test switch S109 through position 1, 2, 3, 4, and 5 connects the various elements of the tube under test between the neon lamp and capacitor C102. The SELECTORS must, of course, be set correctly for the particular tube. Any shorts between the elements will complete the circuit from capacitor C102 to the neon lamp causing it to glow.

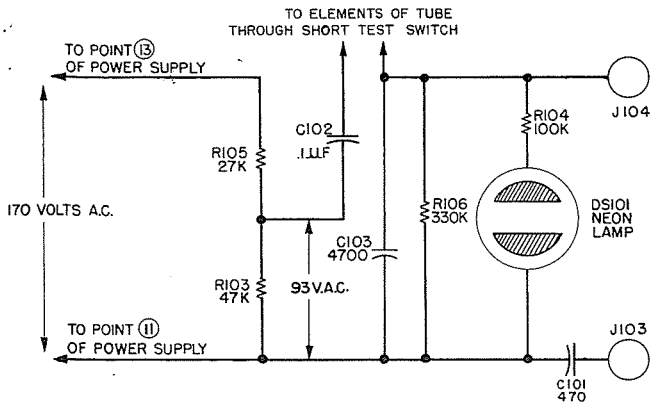

Figure 2-5. Simplified Short Test Circuit

6. NOISE TEST. (See figure 2-5)

a. The short test circuit may also be used for making a noise test of electron tubes.

b. Connect the NOISE TEST jacks, J103 and J104, to the antenna and ground posts of any radio receiver.

c. Turn the SHORTS test switch S109 through positions 1, 2, 3, 4, and 5, meanwhile tapping the tube under test with a finger, or the eraser on a pencil. Intermittent disturbances between the electrodes to brief to register on the neon lamp will cause a momentary short, permitting the alternating voltage from the power supply to be applied to the neon lamp causing a brief oscillation. This oscillation will be reproduced by the loud speaker or headphones as an audible signal similar to static.

7. RECTIFIER TEST. (See figure 2-6).

a. Rectifier tubes and diode detector tubes can only be tested for emission. The test circuit is therefore quite simple.

b. Pressing button P7 applies an ac potential of 35 volts between the cathode and plate of the tube under test through resistor R102, and the meter, M101, causing the tube to rectify. This test is used for power rectifiers such as the 5Y3 or 83 types.

c. The rectifying action of the tube under test will cause a direct current to flow through the meter. Since the current indicated by the meter is proportional to the electron emission of the tube, the meter reading may be taken as a measure of the tube's efficiency.

d. A line on the meter scale marked RECTIFIER OK indicates the point above which rectifier tubes are considered satisfactory. Tubes reading below this line should be rejected.

WARNING
HIGH VOLTAGE

Dangerous voltages are present within this equipment and at the top caps connections of certain tubes when under test.

e. Pressing the button P6 sets up a circuit similar to figure 2-6, but a higher voltage is applied, 330 volts ac, for testing rectifier of the cold cathode type such as the OZ4.

f. Pressing button P2 also establishes a circuit similar to figure 2-6, but a lower voltage, 20 volts ac, is used to protect the delicate cathodes of diode detector types such as the 6H6.

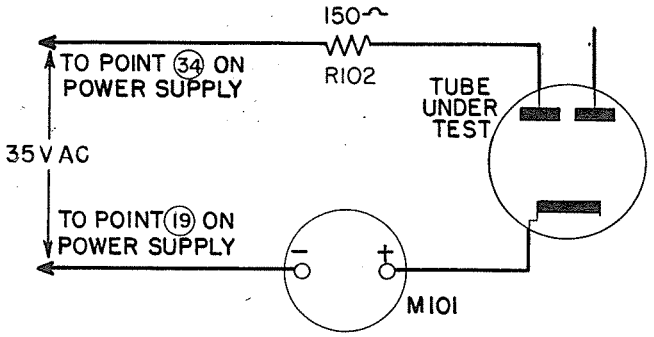

Figure 2-6. Simplified Rectifier Test Circuit

8. MUTUAL CONDUCTANCE. (See figure 2-7)

a. The mutual conductance (gm) of an amplifier-type vacuum tube, also called the grid-plate transconductance, is an expression representing the efficiency of performance of a tube as indicated by the *change in plate* current ($\triangle$Ip)) divided by the *change in grid voltage* ($\triangle$Eg). The relation is generally written Gm = ip/eg. The value is expressed in micromhos and is a performance indication because it shows how effective a tube is in converting a small change in grid voltage (grid signal) to a large change in plate current.

b. For the measurement of the mutual conductance value directly, the proper dc grid voltage for the tube under test is supplied by a full-wave rectifier circuit using a 5Y3WGTA tube, V102. Setting BIAS control potentiometer R130 at the value called for on the test data roll chart adjusts this negative bias voltage to the correct value for the particular tube under test.

c. Alternating signal voltage from a separate secondary winding (Sec. #3) on the power transformer, T101, acts in series with the grid bias as required for this type of test. This voltage alternately swings the grid in positive and negative directions from the dc bias value, thereby producing the grid-voltage ($\triangle$Eg) required for a dynamic test.

d. The plate voltage for the tube under test is supplied by another full-wave rectifier circuit, using a type 83 tube V101. The return lead contains the meter circuit which serves to measure the plate-current change ($\triangle$Ip).

e. The mutual conductance test circuit is actuated by push button P3.

f. The normal screen voltage of 130 volts is excessive for testing certain tubes such as type 1R5. In such cases it is necessary to press push button P2 before pressing the red push button P3. Pressing P2 operates switch S110-2 and reduces the screen voltage to approximately 56 volts as illustrated by Figure 2-7.

9. GAS TEST. (See figure 2-8)

a. Pressing GAS-1 push button P4 applies definite values of plate voltage and grid bias voltage to the tube under test, causing a definite value of plate current to flow. This current is indicated on the meter, M101.

b. Pressing GAS-2 push button P5 inserts a 180,000 ohm resistor, R127, in the grid circuit. If grid current is flowing from the bias voltage source through the grid circuit to the cathode due to gas in the tube, this current will develop a voltage drop across resistor R127. This voltage drop will reduce the negative bias on the grid, causing a corresponding increase in the plate current being measured by the meter.

c. If the tube contains gas the pointer of the meter will move up scale. This increase in meter reading should not exceed one scale division.

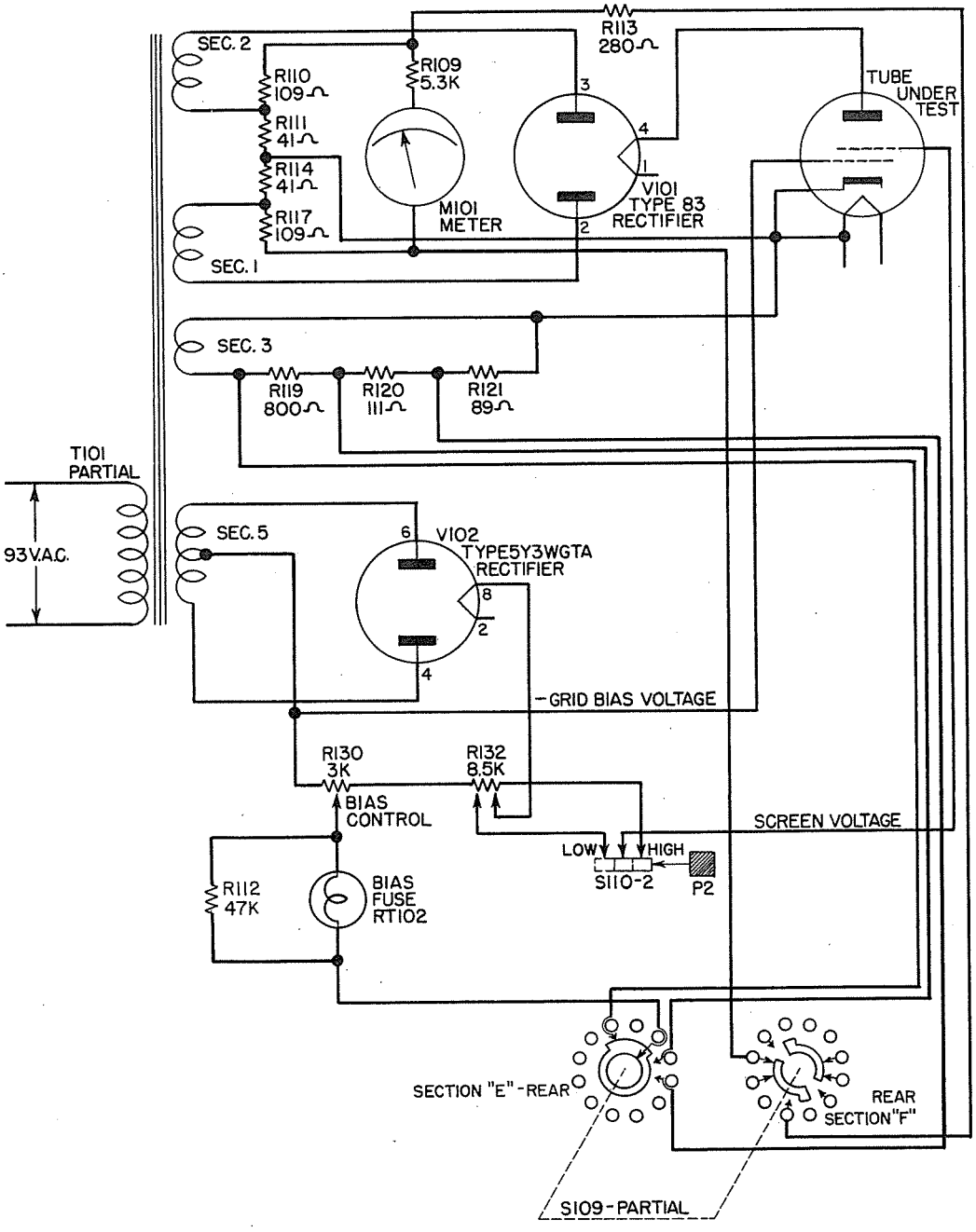

Figure 2-7. Simplified Mutual Conductance Test Circuit

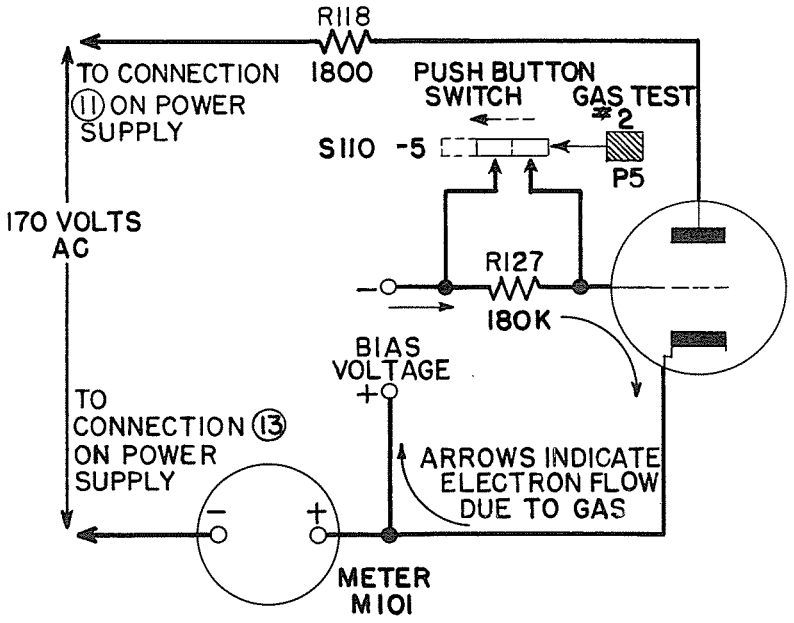

Figure 2-8. Simplified Gas Test Circuit

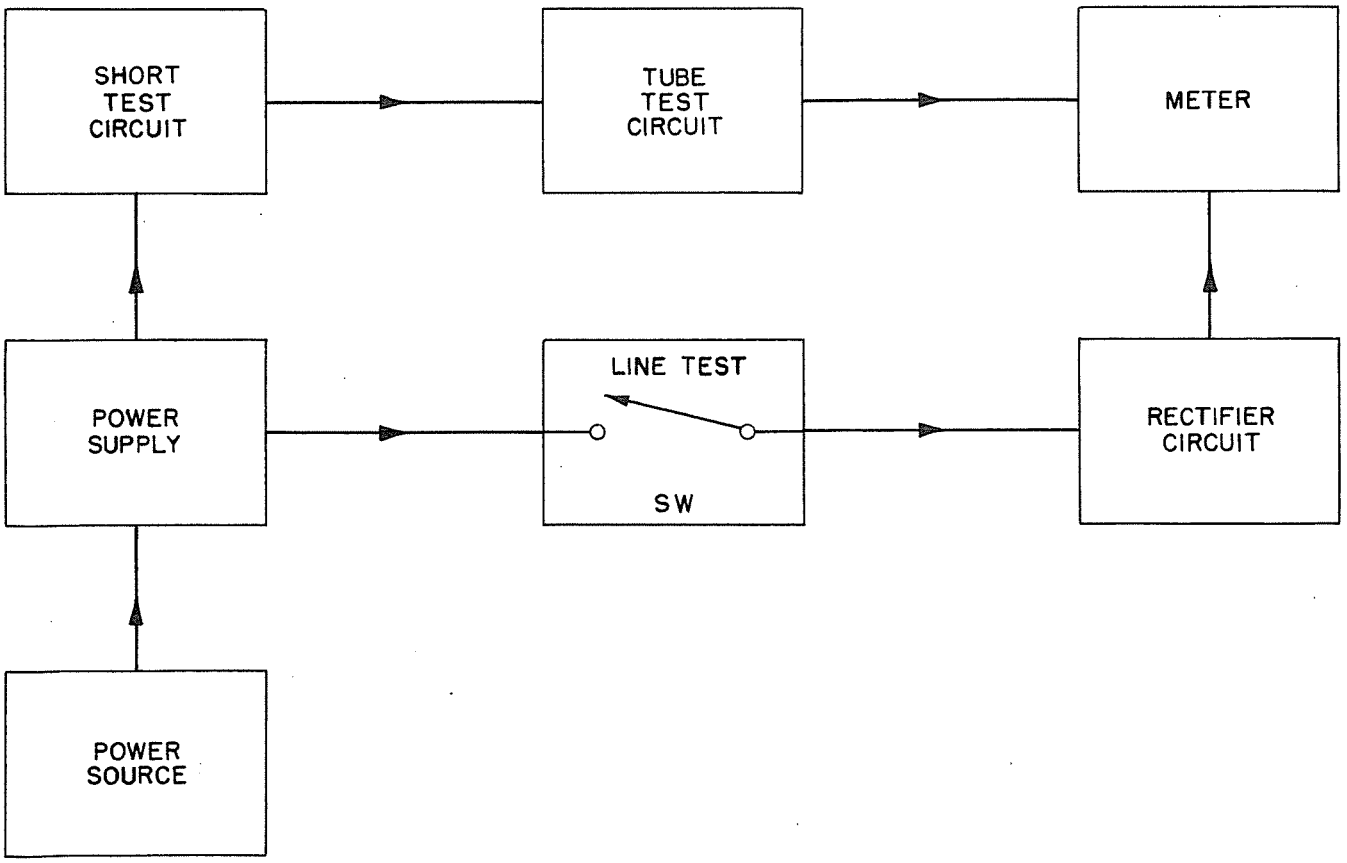

Figure 2-9. Basic Block Diagram of Electron Tube Test Set TV-10A/U

SECTION 3
INSTALLATION AND INITIAL ADJUSTMENTS

INSTALLATION AND INITIAL ADJUSTMENTS

1. After carefully removing the Electron Tube Test Set TV-10A/U from its shipping container, set it up near a 105 to 125 Volt 50-1000 cycle ac outlet.

2. Open the cover and uncoil the line cord. Check the FUSE lamp and the neon lamp to make sure they are properly seated in their sockets.

3. Check the accessories using Table 1-3 and Figure 1-3. In addition to the leads and adapters and line cord, a set of operating spares consisting of two fuse lamps, one neon lamp, and one pilot lamp and one fuse is also stowed in the cover of the case.

4. Plug the line cord into a 105 to 125 Volt 50-1000 cycle ac outlet, and throw the POWER switch S111 to the ON position. The PILOT indicator should light. If it does not, unscrew the red jewel cover of the PILOT indicator and make sure that the pilot lamp is properly seated in its socket. Should the indicator still fail to light, check PILOT lamps, the FUSE lamp and the line FUSE F101 for continuity and, if necessary, replace from operating spares which will be found in the cover of the case.

5. Press the LINE ADJ. button P1 and be sure that the pointer of meter M101 can be set to LINE TEST by turning the LINE ADJUST knob. If this adjustment can be accomplished, the equipment is ready for operation. If this adjustment cannot be accomplished, refer to section 5 paragraph 1c.

SECTION 4
OPERATION

IMPORTANT: READ THESE INSTRUCTION THOROUGHLY BEFORE ATTEMPTING TO OPERATE THE TEST SET.

1. GENERAL

a. Refer to the photograph of Electron Tube Test Set TV-10A/U, figure 4-1, or preferably *to the test set itself.*

(1) The tube sockets are grouped along the top edge and in the upper lefthand section of the panel as follows: Along the top edge reading from left to right are test sockets for SUBMINIATURE tubes, 7 PIN MINIATURE tubes, 9 pin NOVAL base miniature tubes, LOKTAL and OCTAL tubes, a combination large and small radius socket for standard 7 pin tubes which also provides a pilot lamp test receptacle, and sockets for standard 6, 5 and 4 pin tubes. An acorn tube socket designed to accommodate all tubes of this type now in use is located at the right of the FILAMENT voltage switch.

(2) For tubes having top grid connections, top plate connections, or both, use grid and plate leads, W102 and W103, figure 1-3. For lighthouse type tubes use W101, figure 1-3.

WARNING
HIGH VOLTAGE

Dangerous voltages are present at the top cap connections of certain tubes when test push buttons are depressed.

(3) All leads referred to in the preceding paragraphs are kept in the cover of the case, as are the two adapters E101 and E102.

(4) The FUSE lamp serves both as a protective fuse and an overload indicator. This lamp will flash brightly when an overload is placed on the tube tester or the tube under test. When this occurs turn off the equipment immediately. A continued or excessive overload will, of course, burn out the FUSE lamp, and a replacement will be necessary. A one ampere cartridge type fuse protects the other side of the ac line.

(5) The BIAS FUSE lamp protects the BIAS control R130. An accidental overload will cause the lamp to glow. If the lamp glows, turn the SHORTS-MICROMHOS switch S109 to position number 5 immediately. An overload due to a shorted tube is indicated. An excessive or prolonged overload will burn out the fuse lamp and replacement will be necessary.

2. THE CONTROLS

a. Power input to the test set is controlled by the POWER switch, S111. The PILOT lamp serves as an ON-OFF indicator for the equipment.

b. The LINE ADJUST, R-122, controls the input voltage to the power transformer, T101, for proper standardization of the tube test circuits.

c. THE ROLL CHART N101, located at the bottom of the panel, is operated by a phenolic gear which protrudes through the panel in the lower righthand corner. Appropriate column headings on the panel just above the index window provide easy reference to tube test data printed on the roll chart.

d. The FILAMENT VOLTAGE switch, S108, provides a selection of filament or heater voltages from 0.6 volts through 117 volts ac in eighteen steps. Another position on this switch, marked BLST., provides for testing ballast tubes. An OFF position is also provided.

e. SELECTORS; FILAMENT S107, FILAMENT S106, GRID S105, PLATE S104, SCREEN S103, CATHODE S102, and SUPPRESSOR S101 provide proper switching of the internal circuits to apply correct test voltages to the various pins of the tube under test.

f. BIAS control R130 is used to adjust the bias voltage applied to the tube under test to the proper value.

g. SHUNT control, a potentiometer R123, controls the sensitivity of the meter circuit to the proper level for testing rectifier and diode type tubes.

h. SHORTS—MICROMHOS Switch, S109, selects the proper range of mutual conductance in micromhos for the tube under test as indicated on the roll chart. When this switch is set in the "A" or SHUNT position, the SHUNT potentiometer is connected into the circuit and must be set as indicated by the chart. This position of the switch is used when testing rectifier or diode type tubes. The letters "A", "B", "C", "D", and "E" at the five positions of the MICROMHOS switch indicate the meter scale on which the reading is to be made. In positions "B", "C", "D", and "E" fixed shunt resistors are connected across the meter and proper signal voltages are selected for the various ranges of micromhos. This switch also has five short test positions which connect the

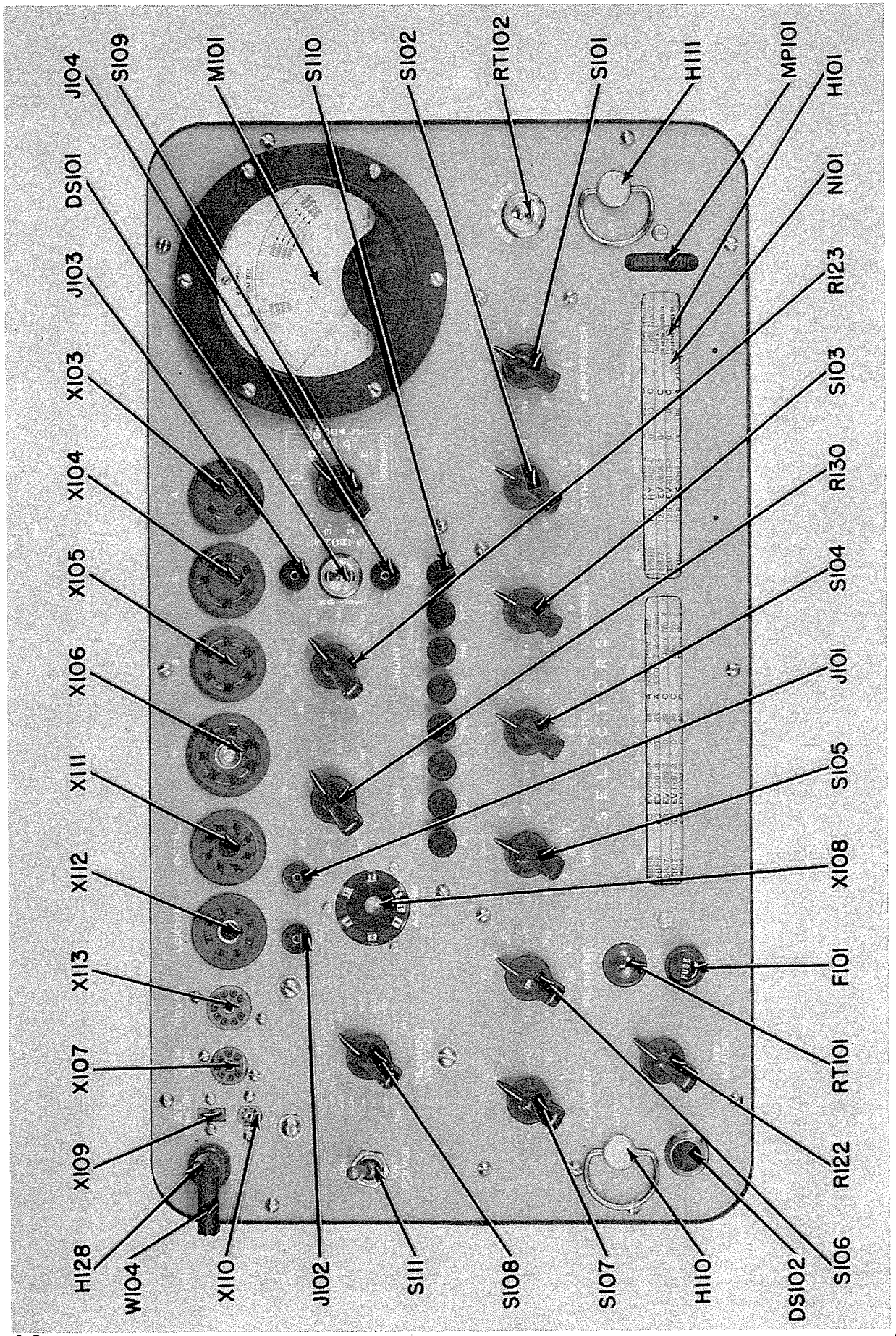

Figure 4-1. Front View of Electron Tube Test Set TV-10A/U Showing Controls By Symbol Designation

various elements of the tube under test to the short test circuit containing the neon indicator lamp.

i. Push button switches located in the center of the panel actuate the final circuit selector switches for the type of test to be made as follows:

(1) P1: LINE ADJUST test button.

(2) P2: Test button for detector type diodes such as type 6H6.

(3) P3: RED test button for mutual conductance test of amplifier tubes only. NEVER USE THIS BUTTON WHEN TESTING RECTIFIER TUBES.

(4) P4 and P5: Test buttons for gas test.

(5) P6: Test button for cold cathode rectifiers such as type OZ4.

(6) P7: Test button for rectifiers such as type 5Y3, 6X4, 83 etc.

(7) P8: Test button for reversing polarity of voltage applied to the meter when testing certain types of tubes.

j. METER M101.

(1) The mutual conductance, MICROMHOS, ranges are printed in black and are identified by the small letters "B", "C", "D", and "E" at the right hand end of the scale. These letters correspond with the SCALE letters at the positions of the MICROMHOS switch S109. Scale "B" 0 to 3000 micromhos, scale "C" 0 to 6000 micromhos, scale "D" 0 to 15,000 micromhos, and scale "E" 0 to 30,000 micromhos.

(2) The "A" scale is for checking rectifier and diodes, and is used when the MICROMHOS switch is in the SHUNT or "A" position.

3. TUBE TEST DATA.

a. All information necessary for properly setting the tube test controls for the various tube types is tabulated on the roll chart in nine columns under the following headings, reading from left to right:

(1) TUBE TYPE: All currently available type numbers which the TV-10A/U is designed to test are listed numerically in this column starting with type 00A and continuing through type XXL. Tubes having type letters only instead of numbers, such as XXB, are listed at the end of the numerical listings.

(2) FILAMENT: Correct filament or heater voltages for the tube types listed are shown in this column. FILAMENT VOLTAGE switch must be adjusted accordingly BEFORE inserting a tube in any of the test sockets.

(3) SELECTORS: In this column are listed the correct settings for the two FILAMENT selector switches, and the GRID, PLATE, SCREEN, CATHODE, AND SUPPRESSOR selector switches. The settings follow the same order in which the switches appear on the panel reading from left to right.

(4) BIAS: This column lists the proper settings for the BIAS control which adjusts the bias voltage applied to the tube under test.

(5) SHUNT: This column lists the settings for the SHUNT potentiometer, which controls the sensitivity of the meter circuit. Setting of this dial is only required when the MICROMHOS switch is set to the SCALE "A" SHUNT position.

(6) SCALE: In this column are listed the proper settings for the MICROMHOS switch. The letters "A", "B", "C", "D", and "E" also correspond with the meter scale on which readings are to be taken.

(7) PRESS: Under this heading are listed the correct test PUSH BUTTONS to be used for the various tube types and their individual sections in the case of multipurpose tubes.

(8) MUT. COND.: In this column are the MINIMUM, not average, mutual conductance values for amplifier tubes and amplifier sections of multipurpose tubes. A lower mutual conductance reading generally indicates an unsatisfactory tube. Classes of tubes, or sections of multipurpose tubes other than amplifier having no mutual conductance rating are indicated in this column by the following designations:

Rect. ..... Rectifier (power type)
Diode ..... Detector type diode rectifier
Thyr. ..... Thyratron
Eye ..... Tuning Eye

(9) NOTATIONS: Under this heading is listed special information pertaining to particular tube types.

b. The roll chart is divided into left and right-hand sections. The left-hand section covers the tube type numbers from OOA through 12AL5 and the right-hand section covers type numbers from 12AL8 through XXL.

c. All data shown on the roll chart originally accompanying the equipment is also contained in TABLE 4-2 of this section.

4. OPERATIONAL PROCEDURE.

a. Preliminary adjustments.

(1) Remove the line cord from the cover and plug it into an outlet supplying 105 to 125 volts ac at 50 to 1000 cycles. NEVER CONNECT THIS EQUIPMENT TO A DC POWER SOURCE.

CAUTION

DO NOT INSERT TUBE IN TEST SOCKET UNTIL CORRECT SETTINGS OF ALL CONTROLS HAVE BEEN MADE IN ACCORDANCE WITH THE FOLLOWING STEPS:

(2) Operate the phenolic gear which turns the roll chart mechanism until the type number of the tube to be tested appears in the window and just above the red index line.

(3) Turn the knob of FILAMENT VOLTAGE switch to the voltage indicated on the chart under FIL.

(4) Set the SELECTORS: The operation of setting these seven KNOBS is somewhat similar to dialing a telephone number. On the roll chart, below the word SELECTORS, are listed the dialing numbers. These numbers consist of two letters and five figures. It is necessary only to turn the knobs of the seven SELECTOR switches, (FILAMENT No. 1, FILAMENT No. 2, GRID, PLATE, SCREEN, CATHODE, and SUPPRESSOR) until the letters and numbers indicated by the pointer knobs are the same, reading from left to right, as those indicated on the roll chart.

EXAMPLE: The roll chart indicates JR 6-2375 under SELECTORS. Starting at the left, turn the knob of the first FILAMENT SELECTOR switch knob to the letter J. Turn the second FILAMENT SELECTOR switch knob to the letter R. Turn the GRID SELECTOR knob to the No. 6. The PLATE SELECTOR to No. 2, SCREEN to No. 3, CATHODE to No. 7 and SUPPRESSOR to No. 5. The sequence of letters and numbers thus selected by the pointer knobs, should now be identical with those indicated on the roll chart. JR 6-2375.

The seven SELECTORS are electrically interconnected in such a way that it is impossible to connect two different voltages to the same tube pin at the same time. Accidental shorts are thus avoided.

(5) Set the BIAS control to the point indicated on the roll chart under BIAS.

(6) Set the SHUNT control to the position indicated on the roll chart under SHUNT. If no setting is indicated disregard this operation and proceed with the following adjustments.

(7) Set the SHORTS-MICROMHOS switch to the No. 1 position.

(8) Insert the tube to be tested in the proper test socket and if necessary make top connections to the tube caps from grid jack "G" and plate jack "P" by means of test leads W101, W102, or W103 as required.

(9) Throw the POWER toggle switch to the ON position. The PILOT indicator should light.

NOTE

IF THE TUBE IS OF THE HEATER CATHODE TYPE, ALLOW ENOUGH TIME FOR THE CATHODE TO REACH OPERATING TEMPERATURE BEFORE PROCEEDING.

(10) Press the LINE ADJ. Push Button, P1, which will cause the pointer of the meter, M101, to move up scale to the right.

(11) While still holding down Push Button P1, turn the knob of LINE ADJUST control until the meter pointer rests exactly on the LINE TEST mark at the center of the meter scale. This establishes standard voltages for the tube test circuits.

(12) SHORT TEST.

Turn the SHORTS-MICROMHOS switch from position number 1 through position number 5, meanwhile tapping the tube lightly with a finger or the eraser on a pencil and watching the neon short indicator lamp DS101 on each switch position. Tubes having shorted elements will cause the lamp to glow. Tubes may be tested either hot or cold. A short is indicated by a steady glow on both plates of the neon lamp. A momentary glow when the switch is turned from one position to another should be disregarded, as this flashing is caused by the charging of a condenser in the short test circuit. Intermittent flashing as a result of tapping the tube indicates loose elements which might cause noisy or erratic operation. Tubes having more than one section such as the 6J6 should be tested for shorts on each section.

A shorted tube should be discarded without further test.

NOTE

Some tubes will show a shorted condition on certain positions of the switch even though they are good tubes. These positions are noted in the "NOTATIONS" column e.g. "SHORT on 1 and 2" means that a short indication on positions 1 and 2 is normal.

(13) LOCATING SHORTED ELEMENTS. In the following table "X" under any SHORT switch position indicates that the neon lamp glows in that position.

Table 4-1. Short Test Chart

KIND OF SHORT		SWITCH POSITION 1	2	3	4	5
SCREEN	TO SUPPRESSOR	X	X	X	X	X
GRID	TO CATHODE	X	X	X		X
FIL.	TO PLATE	X	X		X	X
FIL.	TO GRID	X	X			X
FIL.	TO SCREEN	X		X	X	X
PLATE	TO SUPPRESSOR	X			X	X
GRID	TO SUPPRESSOR	X				X
GRID	TO SCREEN		X	X	X	
PLATE	TO SCREEN		X	X		
FIL.	TO SUPPRESSOR		X			
FIL.	TO CATHODE			X		
GRID	TO PLATE				X	

NOTE

Multi section tubes must be tested for shorts by individual sections TABLE 4-1 applies to the elements of these sections.

(14) If the tube passes the short test OK, turn the SHORTS-MICROMHOS switch to the position indicated on the roll chart under the heading SCALE.

(15) Press the test push button indicated on the Roll Chart in the column headed PRESS.

P2 for DIODES.
P3 for mutual conductance test of AMPLIFIERS.
P6 for OZ4 rectifiers.
P7 for standard rectifiers.

NOTE

When testing Thyratrons, Tuning Eye tubes and other special types, the push button to be used may vary with the individual tube type number involved. Always refer to the data chart for the correct button.

(16) With the proper test push switch depressed, the meter will indicate the condition of the tube.

WARNING
HIGH VOLTAGE

Dangerous voltages are present at the top cap connections of certain tubes when test push buttons are depressed.

(17) RECTIFIER TUBE TEST: Rectifier tubes, including diode tubes and diode sections of multipurpose tubes, are tested for emission only since they have no mutual conductance characteristic.

CAUTION

NEVER PRESS THE RED MUTUAL CONDUCTANCE PUSH BUTTON P3 WHEN TESTING RECTIFIER TUBES.

(a) The push button P2 is used when testing detector DIODES. It applies a low voltage which will not injure the delicate cathode. Good diodes will cause the pointer of the meter to indicate on scale "A" above the point marked DIODES OK.

(b) The push button P6 is used when checking cold cathode rectifiers such as the OZ4. This applies a voltage sufficiently high to ionize the tube and start conduction. Good tubes will cause the pointer of meter to indicate to the right of the line on scale "A" marked RECTIFIERS OK.

(c) The push button P7 is used when testing regular power rectifiers such as the 5Y3GT. Depressing this button applies a medium voltage which is best suited to reveal defects in this type of tube. Good tubes will read above the line on scale "A" marked RECTIFIERS OK.

(d) For multi-section tubes having more than one diode section, or for full wave power rectifiers, each section must be tested separately as indicated on the roll chart.

(e) Push button P8 is used to reverse polarity of the meter when testing the rectifier section of certain tube types such as the 117N7. These types will cause the meter to deflect backwards (to the left) when the normal push button P7 is pressed. It is therefore necessary to hold down P8 and then push P7 to obtain a normal reading.

(18) MUTUAL CONDUCTANCE TEST: In the case of amplifier tubes an emission test is not sufficient, and a mutual conductance test must be employed. Be sure that the controls are properly set in accordance with the roll chart as outlined in paragraphs 4a (1) through 4a (11) of this section, and also that the tube has been checked for shorts in accordance with paragraphs 4a (12) and 4a (13). Then proceed as follows:

(a) Turn the SHORTS - MICROMHOS switch to the position indicated under the SCALE column heading of the roll chart. This selects the correct range in micromhos 0 to 3000, 0 to 6000, 0 to 15,000 or 0 to 30,000 for the tube under test.

(b) Check the line voltage adjustment as in paragraph 4a (10) and 4a (11) of this section and reset the LINE ADJUST control if necessary.

(c) Press the amplifier test button P3. The meter will indicate the mutual conductance of the tube directly in micromhos on the scale corresponding to the setting of the SHORTS-MICROMHOS switch.

(d) Compare the mutual conductance in micromhos as indicated on the meter with the value shown on the roll chart. Since the figures shown on the chart are the MINIMUM acceptable values of mutual conductance, a lower reading generally indicates an unsatisfactory tube.

(19) RESERVE LIFE TEST: After making the mutual conductance test in the usual manner, press P3 again and turn the FILAMENT VOLTAGE control switch to the next lower voltage position. If the mutual conductance indicated by the meter with this reduced filament voltage applied to the tube, remains within 20% of the original reading, the tube has a large reserve life or cathode emission power. A tube which passes this test will in all probability operate satisfactorily under adverse conditions due to low filament voltage, such as described in paragraph 4a (27) of this section.

(20) GAS TEST: The push switches P4 and P5 are used to test an amplifier tube for gas content.

(a) Turn the SHORTS - MICROMHOS switch to the position indicated under "SCALE" on the roll chart.

(b) Push button P4 and hold down while adjusting the BIAS control until the pointer of the meter indicates 100 micromhos on the 0 to 3000 scale.

(c) Hold down P4 and press P5.

(d) If the tube contains gas the pointer of the meter will move UP the scale. If the pointer movement is not more than one division of the scale, the gas content is satisfactory.

NOTE

With some tubes, such as the type 45, the micromhos reading cannot be brought down to 100 micromhos by turning the BIAS control. In such cases turn the BIAS control to 100 and test for gas by noting whether the pointer moves more than one division up scale when P4 is held down and P5 is pressed.

(e) Some tubes develop gas after being heated for a period of time. If a tube is suspected, allow it to heat for a few minutes.

(21) TOP CAPS. Two jacks in the upper left section of the control panel marked G (grid) and P (plate), are used when making connection to the top cap of the tube being tested. On the roll chart in the NOTATIONS column, opposite tube types having top caps, is the notation CAP-G or CAP-P to indicate the proper connection. Test leads W102 and W103 are used in making these connections.

(22) NOISE TEST. The short test circuit is also used in making noise tests on electron tubes. Connections are made from the noise test jacks J103 and J104 to the antenna and ground posts of any radio receiver. The tube under test is tapped with the finger as the SHORTS-MICROMHOS is turned through positions 1-2-3-4-5. Intermittent disturbances, which are too brief to register on the neon lamp, will be reproduced by the loud speaker as static.

(23) PILOT LAMP TEST. A small metal receptacle in the center of the large 7-pin test socket "7" is used to check pilot lamps. Set the filament selector switches on JR. Set the filament voltage switch to the proper voltage for the lamp being tested. Insert the lamp so that the center contact and shell of the lamp base are pressed against the contacts of the receptacle.

(24) SPECIAL TUBE TYPES.

(a) Thyratrons are tested in the following way: Set the controls as indicated by the roll chart, press the push button indicated and adjust the BIAS control dial until the tube strikes as indicated by a glow between the elements and a sharp rise of the meter pointer.

CAUTION

Do not rotate the bias control past the point at which the tube strikes as this may cause excessive grid current to flow and damage the tube.

The bias limits between which the tubes should strike are noted on the roll chart. After the tube strikes, its condition is read on the "A" scale of the meter as a rectifier.

(b) Tuning Eye tubes are tested by applying suitable standard test voltages to the control elements and noting the resulting effect on the eye. Refer to the roll chart for proper test button and control settings.

(25) TESTING SUB-MINIATURE TUBES.

(a) Sub-miniature tubes of the round type having wire leads instead of pins are tested in SUB-MINIATURE socker X110. (See figure 4-1). This socket has 8 contacts, numbers of which are shown by figure 4-2.

There are several basing arrangements used for these tubes as illustrated by figure 4-3.

The numbered leads of the tubes must be inserted in the corresponding contacts of the socket X110. Grasp each lead about 1/8" from the end with the tips of a pair of long nose pliers, and insert the lead in the proper socket contact opening.

Sub-miniature type tubes are identified on the roll chart and in Table 4-2 by a star beside the type number. The applicable basing for the various round types is indicated under the column headed NOTATIONS. The basing designation letter refers to the diagram shown in figure 4-3.

(b) Sub-miniature tubes of the flat or in-line contact type having either pins or leads are tested in the flat socket (X109 in figure 4-1) also illustrated by figure 4-2. The tube pins or leads must be inserted with the dot on the base of the tube directly in line with the small molded dot on the socket.

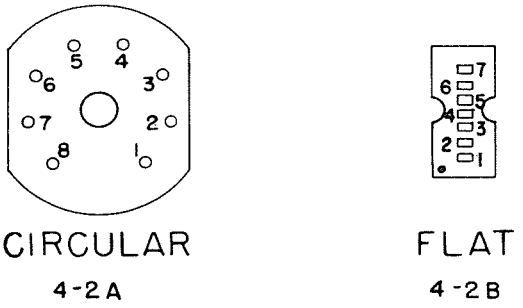

Figure 4-2. Top View of Socket X109 & X110

(26) ADAPTERS: Due to special bases or unusual contact arrangement tube types 3E29, 829A, 832A and 2C39 cannot be tested directly in the regular test sockets of the TV-10A/U equipment. Tube Socket Adapters E101 and E102 are provided for use in testing these tubes.

(27) SPECIAL NOTES. Power line voltage varies in different localities and may also vary somewhat aboard ship.

Occasionally there is the complaint that a used tube will test GOOD, but will not work in the equipment; but when a NEW tube is substituted, the equipment will operate correctly. In a case of this kind check the line voltage being supplied to the equipment. The used tube that would not perform may not have been receiving its specified filament voltage, due to low line voltage. The new tube performed because of its initial reserve capacity. The used tube might have performed if it had received its specified filament voltage.

Tube failure frequently occurs in ac-dc sets where several tubes are connected with their heaters or filaments in series. Sometimes, even though the power line voltage is normal, a series tube with abnormally high filament resistance will rob a companion tube of its normal filament voltage. The robbed tube apparently fails; but when tested under specified conditions, the tube will test GOOD.

(28) PRECAUTIONARY NOTES.

(a) DON'T connect the TV-10A/U test set into a dc power supply line. Be sure the power line to be used supplies 105 to 125 volts ac at a frequency between 50 and 1000 cycles.

(b) DON'T insert a tube in any of the test sockets without first properly adjusting the controls.

(c) DON'T attempt to test tubes for emission, or mutual conductance without first checking for shorted elements.

(d) DON'T press the RED mutual conductance push button P3 when testing rectifier tubes.

(e) DON'T fail to turn off the equipment and return all leads and adapters to the cover when tests are completed.

BASING DIAGRAMS FOR
SUB MINIATURE TUBES

TUBES HAVING LESS THAN 8 LEADS HAVE AN ARROW ON THE SIDE OF TUBE INDICATING NO. 1 LEAD

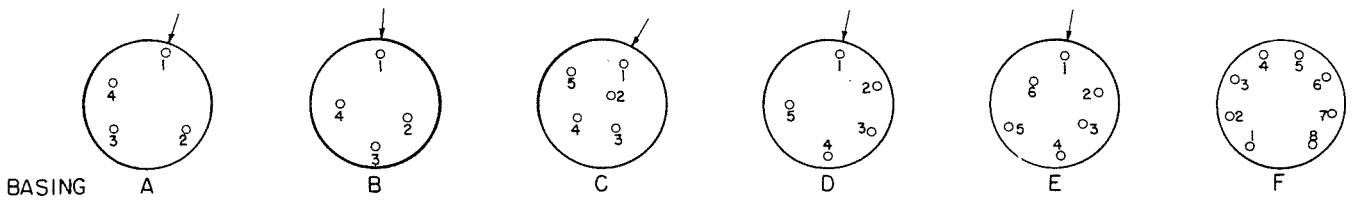

Figure 4-3. Basing Sub-Miniature Tubes (Bottom View)

NOTE: Mutual Conductance values are minimum. Discard tubes which read lower.

Wherever a crosshatch (#) or a double dagger (‡) appears refer to the notations.

★ For Subminiature tube basing diagrams see Fig. 4-3 of instructions.

Tube Type	Fil Volts	Selectors	Bias	Shunt	Scale	Press	Mut. Cond.	Notations
00A	5.0	JR3-2000	33	....	B	P3	420	
01A	5.0	JR3-2000	48	....	B	P3	460	
0A4G	.....	KS0-5810	100	87	A	P4	Thyr.	Read As Rectifier
0Y4	BLST	JX3-5020	0	50	A	P6	Rect.	Short on 1-2
0Z4	.....	JR0-5070	0	70	A	P6	Rect.	Hold Button Down For 5 Seconds. Plate No. 1
0Z4	.....	JR0-3070	0	70	A	P6	Rect.	Hold Button Down For 5 Seconds. Plate No. 2
0Z4A	.....	JR0-5070	0	70	A	P6	Rect.	Hold Button Down For 5 Seconds. Plate No. 1
0Z4A	.....	JR0-3070	0	70	A	P6	Rect.	Hold Button Down For 5 Seconds. Plate No. 2
1A3	1.5	HT0-2010	0	0	A	P2	Diode	
1A4	2.0	JR0-2300	18	....	B	#	470	Cap=G #Hold Down P2 And Press P3
1A5	1.5	JR5-3400	43	....	B	P3	500	
1A6	2.0	JR0-2504	24	....	B	#	315	Pent. Sect. #Cap=G. Hold Down P2 And Press P3
1A6	2.0	JR4-3502	24	....	B	#	190	Osc. Sect. #Hold Down P2 And Press P3
1A7	1.5	JR0-3465	0	....	B	#	410	Pent. Sect. # Cap=G. Hold Down P2 And Press P3
1A7	1.5	JR5-6430	28	....	B	#	315	Osc. Sect. # Hold Down P2 And Press P3
1AB5	1.1	JR6-2300	0	....	B	P3	900	
1AC5★	1.1	EV2-7800	22	....	B	#	250	F Basing # Hold Down P2 And Press P3
1AD4	1.1	DV4-1200	28	....	B	P3	880	
1AD5★	1.1	EV2-7800	0	....	B	#	410	F Basing # Hold Down P2 And Press P3
1AE4	1.1	DX6-2100	22	....	B	P3	600	
1AF4	1.5	DX6-2100	21	....	B	P3	440	
1AF5	1.5	DX6-5800	0	....	B	#	380	Pent. Sect. # Hold Down P2 And Press P3
1AF5	1.5	HT0-1000	0	0	A	P2	Diode	Diode Sect. OK Over 250 On 3000 Scale
1AG4	1.1	DV4-1200	31	....	B	#	440	# Hold Down P2 and Press P3
1AG5	1.1	EW5-1203	40	0	A	P4	‡	Pent. Sect. ‡ OK Above 500 on 3000 Scale
1AG5	1.1	EW0-3000	0	0	A	P2	‡	Diode Sect. ‡ OK Above 500 on 3000 Scale
1AH4	1.1	FT4-1200	33	0	A	P4	‡	‡ OK Above Diodes OK
1AJ5	1.1	EW5-1203	16	....	B	#	270	Pent. Sect. # Hold Down P2 and Press P3
1AJ5	1.1	EW0-3000	0	18	A	P2	Diode	Diode Sect.
1AK4	1.1	FT4-1200	33	0	A	P4	‡	‡ OK Above Diodes OK
1AK5	1.1	EW5-1203	40	0	A	P4	‡	Pent. Sect. ‡ OK Above 500 on 3000 Scale
1AK5	1.1	EW0-3000	0	0	A	P2	‡	Diode Sect. ‡ OK Above 500 on 3000 Scale
1AX2	1.5	BS0-0000	0	25	A	P4	Rect.	Cap=P
1B3	1.1	JR0-0000	0	67	A	P4	Rect.	Cap=P Some 1B3 Tubes Show Short On 3
1B4	2.0	JR0-2300	18	....	B	#	410	Cap=G # Hold Down P2 And Press P3
1B5	2.0	JR5-2000	23	....	B	P3	360	Triode Sect.
1B5	2.0	BY5-4000	0	0	A	P2	Diode	Diode No. 1
1B5	2.0	JR5-3000	0	0	A	P2	Diode	Diode No. 2
1B7	1.5	JR0-3405	0	....	B	#	570	Pent. Sect. # Cap=G. Hold Down P2 And Press P3
1B7	1.5	JR5-6403	20	....	B	#	440	Osc. Sect. # Hold Down P2 and Press P 3
1C3	1.5	DX8-2000	37	....	B	P3	480	
1C5	1.5	JR5-3400	37	....	B	P3	480	
1C6	2.0	JR0-2534	0	....	B	#	410	Ampl. Sect. # Cap=G. Hold Down P2 And Press P3
1C6	2.0	JR4-3520	20	....	B	#	250	Osc. Sect. # Hold Down P2 And Press P3
1C7	2.0	JR0-3465	0	....	B	#	410	Pent. Sect. # Cap=G. Hold Down P2 And Press P3
1C7	2.0	JR5-6430	20	....	B	#	250	Osc. Sect. # Hold Down P2 And Press P3
1C8★	1.1	EV8-6702	45	....	B	P3	250	F Basing
1C21	BLST	JP8-5010	0	85	A	P4	Rect.	
1D5	2.0	JR0-3400	18	....	B	#	470	Cap=G. # Hold Down P2 And Press P3
1D7	2.0	JR0-3465	24	....	B	#	315	Pent. Sect. # Cap=G. Hold Down P2 And Press P3
1D7	2.0	JR5-6430	24	....	B	#	190	Osc. Sect. # Hold Down P2 And Press P3
1D8	1.5	JR5-3460	50	....	B	P3	580	Pent. Sect.
1D8	1.5	JR5-6430	11	....	B	P3	360	Triode Sect. Cap=G
1D8	1.5	JR5-7430	0	0	A	P2	Diode	Diode Sect.

TABLE 4-2 (Cont.) TUBE TEST DATA CHART

Tube Type	Fil Volts	Selectors	Bias	Shunt	Scale	Press	Mut. Cond.	Notations
1DN5	1.5	**DX**6-2100	31	....	**B**	P3	400	Pent. Sect.
1DN5	1.5	**HT**0-8000	0	0	**A**	P2	Diode	Diode Sect.
	OK Above 500 on 3000 Scale.							
1E3	1.1	**EV**1-8000	20	....	**D**	P3	2200	
1E4	1.5	**JR**5-3000	37	....	**B**	P3	520	
1E5	2.0	**JR**0-3400	18	....	**B**	#	410	Cap=G
	# Hold Down P2 And Press P3							
1E7	2.0	**JR**5-6734	10	....	**D**	P3	900	Pent. No. 1
1E7	2.0	**JR**4-3765	10	....	**D**	P3	900	Pent. No. 2
1F4	2.0	**JR**3-2400	23	....	**B**	P3	880	
1F5	2.0	**JR**5-3400	23	....	**B**	P3	880	
1F6	2.0	**JR**0-2300	8	....	**B**	#	410	Pent. Sect.
	# Cap=G. Hold Down P2 And Press P3							
1F6	2.0	**JR**0-5300	0	0	**A**	P2	Diode	Diode No. 1
	OK Above 500 On 3000 Scale							
1F6	2.0	**JR**0-4300	0	0	**A**	P2	Diode	Diode No. 2
	OK Above 500 On 3000 Scale							
1F7	2.0	**JR**0-3600	8	....	**B**	#	410	Pent. Sect.
	# Cap=G. Hold Down P2 And Press P3							
1F7	2.0	**JR**0-4630	0	0	**A**	P2	Diode	Diode No. 1
	OK Above 500 On 3000 Scale							
1F7	2.0	**JR**0-5630	0	0	**A**	P2	Diode	Diode No. 2
	OK Above 500 On 3000 Scale							
1G3	1.1	**JR**0-0000	0	67	**A**	P4	Rect.	Cap=P
1G4	1.5	**JR**5-3000	49	....	**B**	P3	520	
1G5	2.0	**JR**5-3400	37	....	**B**	P3	950	
1G6	1.5	**JR**5-6000	16	....	**B**	P3	420	Triode No. 1
1G6	1.5	**JR**4-3000	16	....	**B**	P3	420	Triode No. 2
1H4	2.0	**JR**5-3000	40	....	**B**	P3	570	
1H5	1.5	**JR**0-3000	16	....	**B**	P3	175	Triode Sect. Cap=G
1H5	1.5	**JR**0-5000	0	0	**A**	P2	Diode	Diode Sect.
1H6	2.0	**JR**6-3000	23	....	**B**	P3	360	Triode Sect.
1H6	2.0	**BY**6-5000	0	0	**A**	P2	Diode	Diode No. 1
1H6	2.0	**JR**6-4000	0	0	**A**	P2	Diode	Diode No. 2
1J3	1.1	**JR**0-0000	0	0	**A**	P4	Rect.	Cap=P
1J5	2.0	**JR**5-3400	45	....	**B**	P3	600	
1J6	2.0	**JR**5-6000	15	....	**B**	P3	630	Triode No. 1
1J6	2.0	**JR**4-3000	15	....	**B**	P3	630	Triode No. 2
1L4	1.5	**HT**6-2100	19	....	**B**	P3	650	
1L6	1.5	**DX**6-2518	0	....	**B**	#	410	Pent. Sect.
	# Hold Down P2 And Press P3							
1L6	1.5	**DX**8-1526	28	....	**B**	#	190	Osc. Sect.
	# Hold Down P2 And Press P3							
1LA4	1.5	**JR**6-2300	43	....	**B**	P3	500	
1LA6	1.5	**JR**6-2534	0	....	**B**	#	380	Pent. Sect.
	# Hold Down P2 And Press P3							
1LA6	1.5	**JR**4-3526	32	....	**B**	#	190	Osc. Sect.
	# Hold Down P2 And Press P3							
1LB4	1.5	**JR**6-2300	51	....	**B**	P3	580	
1LB6	1.5	**JR**6-2437	0	....	**B**	P3	250	Heptode Sect.
1LB6	1.5	**JR**6-3574	20	....	**B**	P3	950	Osc. Sect.
1LC5	1.5	**JR**6-2340	0	....	**B**	#	470	# Hold Down
	P2 And Press P3							
1LC6	1.5	**JR**6-2534	30	....	**B**	P3	440	Pent. Sect.
1LC6	1.5	**JR**4-3526	30	....	**B**	P3	240	Osc. Sect.
1LD5	1.5	**JR**6-2300	0	....	**B**	#	380	Pent. Sect.
	# Hold Down P2 And Press P3							
1LD5	1.5	**JR**6-4300	0	0	**A**	P2	Diode	Diode Sect.
	OK Over 500 On 3000 Scale							
1LE3	1.5	**JR**6-2050	20	....	**B**	P3	760	
1LF3	1.5	**JR**6-2050	20	....	**B**	P3	760	
1LG5	1.5	**JR**6-2340	25	....	**B**	P3	660	
1LH4	1.5	**JR**6-2000	16	....	**B**	P3	175	Triode Sect.
1LH4	1.5	**JR**6-4000	0	0	**A**	P2	Diode	Diode Sect.
1LN5	1.5	**JR**6-2340	11	....	**B**	P3	480	
1N5	1.5	**JR**0-3400	11	....	**B**	P3	480	Cap=G
1N6	1.5	**JR**5-3400	43	....	**B**	P3	500	Pent. Sect.
1N6	1.5	**JR**0-6000	0	0	**A**	P2	Diode	Diode Sect.
	OK Over 250 On 3000 Scale							
1P5	1.5	**JR**0-3400	11	....	**B**	P3	500	Cap=G
1Q5	1.5	**JR**5-3400	37	....	**B**	P3	1320	
1Q6★	1.1	**EV**2-7800	0	....	**B**	#	190	F Basing
	# Pent. Sect. Hold Down P2 And Press P3							
1Q6★	1.1	**EV**0-6000	0	0	**A**	P2	Diode	F Basing
	Diode Sect. OK Over 250 On 3000 Scale							
1R4	1.5	**JR**0-4070	0	0	**A**	P2	Diode	
1R5	1.5	**DX**8-2160	0	....	**B**	#	250	No. 1 Grid
	# Hold Down P2 And Press P3							
1R5	1.5	**DX**6-2180	0	....	**B**	#	220	No. 3 Grid
	# Hold Down P2 And Press P3							
1S4	1.5	**DX**1-2800	31	....	**B**	#	950	# Hold Down
	P2 And Press P3							
1S5	1.5	**DX**6-5800	13	....	**B**	#	330	Pent. Sect.
	# Hold Down P2 And Press P3							
1S5	1.5	**DX**0-1800	0	0	**A**	P2	Diode	Diode Sect.
1S6★	1.1	**EV**3-1806	0	....	**B**	#	220	F Basing
	# Pent. Sect. Hold Down P2 And Press P3							
1S6★	1.1	**EV**0-6000	0	0	**A**	P2	Diode	F Basing
	Diode Sect. OK Over 250 On 3000 Scale							
1SA6	1.5	**JR**4-7630	0	....	**B**	#	500	# Hold Down
	P2 And Press P3							
1SB6	1.5	**JR**7-3400	0	....	**B**	#	410	Pent. Sect.
	# Hold Down P2 And Press P3							
1SB6	1.5	**JR**7-5000	0	0	**A**	P2	Diode	Diode Sect.
	OK Over 500 On 3000 Scale							
1T4	1.5	**DX**6-2100	0	....	**B**	#	470	# Hold Down
	P2 And Press P3							
1T5	1.5	**JR**5-3400	45	....	**B**	P3	725	
1T6★	1.1	**EV**3-1860	0	....	**B**	#	125	F Basing
	# Pent. Sect. Hold Down P2 And Press P3							
1T6★	1.1	**EV**0-6000	0	0	**A**	P2	Diode	F Basing
	Diode Sect. OK Over 250 On 3000 Scale							

Tube Type	Fil Volts	Selectors	Bias	Shunt	Scale	Press	Mut. Cond.	Notations
1U4	1.5	DX6-2100	14	....	B	P3	565	
1U5	1.5	DX6-2100	34	....	B	P3	330	Pent. Sect.
1U5	1.5	DX6-8100	0	0	A	P2	Diode	Diode Sect.
1U6	1.5	DX6-2581	23	....	B	P3	470	Heptode Sect.
1U6	1.5	DX8-1562	0	....	B	P3	315	Osc. Sect.
1V	6.3	JR0-2030	0	44	A	P7	Rect.	
1V2	0.6	EV0-9000	0	25	A	P4	Rect.	
1V5★	1.1	EV2-7800	24	....	B	#	440	F Basing
	# Hold Down P2 And Press P3							
1V6	1.1	EX3-1206	30	0	A	P4	‡	Pent. Sect.
	‡ OK Above 500 on 3000 Scale							
1V6	1.1	EX5-6001	50	0	A	P4	‡	Triode Sect.
	‡OK Above 500 on 3000 Scale							
1W4	1.5	DX6-2100	49	....	B	P3	580	
1W5★	1.1	EV2-7800	27	....	D	P3	410	F Basing
1X2	1.1	BS0-0000	0	65	A	P4	Rect.	Cap=P
1Z2	1.5	DS0-0000	0	72	A	P4	Rect.	Cap=P
2A3	2.5	JR3-2000	67	....	C	P3	1900	
2A4	2.5	JR5-3000	#	59	A	P7	Thyr.	
	# Should Strike Between 77 and 67. Read As Rectifier							
2A5	2.5	JR4-2350	29	....	B	P3	1260	
2A6	2.5	JR0-2050	11	....	B	P3	470	Triode Sect. Cap=G
2A6	2.5	JR0-4050	0	0	A	P2	Diode	Diode No. 1
2A6	2.5	JR0-3050	0	0	A	P2	Diode	Diode No. 2
2A7	2.5	JR0-2365	22	....	B	P3	630	Pent. Sect. Cap=G
2A7	2.5	JR5-4360	30	....	B	P3	250	Osc. Sect.
2AF4	2.5	JR2-3050	36	....	D	P3	2840	
2B3	1.5	JR0-0000	0	67	A	P4	Rect.	Cap=P. Short on 3
2B4	2.5	JR3-2040	#	92	A	P4	Thyr.	
	# Should Strike Between 77 And 67. Read As Rectifier.							
2B6	2.5	JR4-2360	15	....	B	P3	950	
2B7	2.5	JR0-2360	30	....	B	P3	630	Pent. Sect. Cap=G
2B7	2.5	JR0-5360	0	0	A	P2	Diode	Diode No. 1
2B7	2.5	JR0-4360	0	0	A	P2	Diode	Diode No. 2
2B22	6.3	JR0-0070	0	46	A	P7	Diode	Cap=P
2B23	6.3	JR0-3070	0	51	A	P6	Rect.	
2BN4	2.0	JR2-5030	15	....	D	P3	4300	
2C4	2.5	HT1-5080	#	92	A	P4	Thyr.	
	# Should Strike Between 75 and 65. Read As Rectifier.							
2C21	6.3	JR4-5060	38	....	B	P3	860	Triode No. 1
2C21	6.3	JR0-3020	38	....	B	P3	860	Triode No. 2 Cap=G
2C22	6.3	JR0-0070	13	....	C	P3	1900	Upper Cap=G Lower Cap=P
2C26	6.3	JR0-0070	18	....	B	P3	950	Upper Cap=P Lower Cap=G
2C39	6.3	JR6-5070	18	....	E	P3	12600	
	See Sect. 4 Par. 4a (26)							
2C40	6.3	JR0-0070	17	....	C	P3	1760	Cap=P. Ring=G
2C43	6.3	JR0-0070	5	....	D	P3	3800	Cap=P. Ring=G
2C45	7.5	JR3-2000	37	....	B	P3	1380	
2C50	12.6	JX2-1030	41	....	B	P3	1130	Triode No. 1
2C50	12.6	JX4-5060	41	....	B	P3	1130	Triode No. 2
2C51	6.3	KR3-4028	17	....	D	P3	3300	Triode No. 1
2C51	6.3	KR7-6082	17	....	D	P3	3300	Triode No. 2
2C52	12.6	JX4-5061	15	....	B	P3	630	Triode No. 1
2C52	12.6	JX2-1035	15	....	B	P3	630	Triode No. 2
2C53	6.3	JR5-0070	0	....	B	P3	250	Cap=P
2CY5	2.5	JR3-5620	11	....	D	#	3150	
	# Hold Down P2 And Press P3							
2D21	6.3	JR3-6025	#	92	A	P4	Thyr.	
	# Should Strike Between 35 and 25. Read As Rectifier.							
2E5	2.5	JR5-4030	0	100	A	P3	Eye	Eye Open
2E5	2.5	JR5-4230	0	100	A	P3	Eye	Eye Closed
2E22	6.3	JR3-0240	0	....	C	P3	2500	Cap=P
2E24	6.3	JR5-0300	35	....	C	P3	2000	Cap=P Short on 3
2E25	6.3	JR5-0470	0	....	C	P3	1900	Cap=P
2E26	6.3	JR5-0327	37	....	C	P3	2200	Cap=P
2E30	6.3	JR3-5602	20	....	C	P3	1900	
2E31	1.1	DV4-1200	0	....	B	#	250	# Hold Down P2 And Press P3
2E32	1.1	DV4-1200	0	....	B	#	250	# Hold Down P2 And Press P3
2E35	1.1	DV4-1200	18	....	B	#	380	# Hold Down P2 And Press P3
2E36	1.1	DV4-1200	18	....	B	#	380	# Hold Down P2 And Press P3
2E41	1.1	EW5-1200	20	....	B	#	250	Pent. Sect.
	# Hold Down P2 And Press P3							
2E41	1.1	EW0-3000	0	0	A	P2	Diode	Diode Sect.
	OK Over 150 On 3000 Scale							
2E42	1.1	EW5-1200	20	....	B	#	250	Pent. Sect.
	# Hold Down P2 And Press P3							
2E42	1.1	EW0-3000	0	0	A	P2	Diode	Diode Sect.
	OK Over 150 On 3000 Scale							
2G21	1.1	EX3-2651	46	0	A	P4	‡	Heptode Sect.
	‡ OK Above Diodes OK							
2G21	1.1	EX3-1000	48	0	A	P4	‡	Triode Sect.
	‡ OK Above Diodes OK							
2G22	1.1	EX3-2651	46	0	A	P4	‡	Heptode Sect.
	‡ OK Above Diodes OK							
2G22	1.1	EX3-1000	48	0	A	P4	‡	Triode Sect.
	‡OK Above Diodes OK							
2T4	2.5	JR2-3050	37	....	D	P3	3150	
2V2	2.5	JR0-0050	0	50	A	P4	Rect.	Cap=P. Short on 3
2V3	2.5	JR0-0000	0	70	A	P4	Rect.	Cap=P
2W3	2.5	HR0-4000	0	0	A	P7	Rect.	
2X2A	2.5	JR0-0000	0	80	A	P4	Rect.	Cap=P
2Z2	2.5	JR0-2000	0	0	A	P7	Rect.	
3A2	3.0	BS0-0000	0	75	A	P4	Rect.	Cap=P
3A3	3.0	JR0-0000	0	60	A	P4	Rect.	Cap=P

TABLE 4-2 (Cont.) TUBE TEST DATA CHART

Tube Type	Fil Volts	Selectors	Bias	Shunt	Scale	Press	Mut. Cond.	Notations
4CY5	4.3	JR3-5620	11	....	D	#	3150	
	# Hold Down P2 And Press P3							
4DT6	4.3	JR3-5627	22	....	B	P3	380	Grid No. 1
4DT6	4.3	JR7-5623	0	....	B	#	250	Grid No. 3
	# Hold Down P2 and Press P3							
5A6	5.0	EV7-1603	46	....	C	P3	1900	
5AM8	5.0	EV2-6319	7	....	D	P3	3150	Pent. Sect.
5AM8	5.0	EV0-8070	0	70	A	P2	Diode	Diode Sect.
5AN8	5.0	EV8-6791	7	....	D	P3	3900	Pent. Sect.
5AN8	5.0	EV2-1736	21	....	C	P3	2100	Triode Sect.
5AQ5	5.0	JR3-5620	21	....	C	P3	2320	
5AS4	5.0	HR0-6000	0	35	A	P7	Rect.	Plate No. 1
5AS4	5.0	HR0-4000	0	27	A	P7	Rect.	Plate No. 2
5AS8	5.0	EV2-9137	11	....	D	P3	3530	Pent. Sect.
5AS8	5.0	EV0-6087	0	70	A	P2	Diode	Diode Sect.
5AT8	5.0	EV9-6738	9	....	D	P3	2900	Pent. Sect.
5AT8	5.0	EV1-2038	15	....	D	P3	2840	Triode Sect.
5AU4	5.0	HR0-6000	0	60	A	P7	Rect.	Plate No. 1
5AU4	5.0	HR0-4000	0	55	A	P7	Rect.	Plate No. 2
5AV8	5.0	EV6-9870	7	....	D	P3	3900	Pent. Sect.
5AV8	5.0	EV2-3010	21	....	C	P3	2100	Triode Sect.
5AW4	5.0	HR0-6004	0	52	A	P7	Rect.	Plate No. 1
5AW4	5.0	HR0-4006	0	47	A	P7	Rect.	Plate No. 2
5AX4	5.0	HR0-6000	0	35	A	P7	Rect.	Plate No. 1
5AX4	5.0	HR0-4000	0	27	A	P7	Rect.	Plate No. 2
5AZ4	5.0	JS0-4006	0	0	A	P7	Rect.	Plate No. 1
5AZ4	5.0	JS0-6004	0	0	A	P7	Rect.	Plate No. 2
5B8	5.0	EV6-9871	7	....	D	P3	3900	
	Pent. Sect. Short on 2-3							
5B8	5.0	EV2-3019	24	....	C	P3	2100	Triode Sect.
5BE8	5.0	EV9-6783	15	....	B	P3	1420	
	Pent. Sect. Short on 2-3							
5BE8	5.0	EV1-2030	16	....	C	P3	2840	Triode Sect.
5BK7A	5.0	EV7-6089	8	....	D	P3	5350	Triode No. 1
5BK7A	5.0	EV2-1039	8	....	D	P3	5350	Triode No. 2
5BQ7A	5.0	EV7-6089	14	....	D	P3	4000	Triode No. 1
5BQ7A	5.0	EV2-1039	14	....	D	P3	4000	Triode No. 2
5BR8	5.0	EV9-6780	15	....	B	P3	1420	Pent. Sect.
5BR8	5.0	EV1-2030	16	....	C	P3	2840	Triode Sect.
5BS8	5.0	EV7-6089	17	....	D	P3	4500	Triode No. 1
5BS8	5.0	EV2-1039	17	....	D	P3	4500	Triode No. 2
5BT8	5.0	EV8-6790	11	....	D	P3	3500	Pent. Sect.
5BT8	5.0	EV0-1030	0	30	A	P2	Diode	Diode No. 1
5BT8	5.0	EV0-2030	0	30	A	P2	Diode	Diode No. 2
5BZ7	5.0	EV7-6089	17	....	D	P3	4300	Triode No. 1
5BZ7	5.0	EV2-1039	17	....	D	P3	4300	Triode No. 2
5CG8	5.0	EV9-6780	9	....	D	P3	2900	Pent. Sect.
5CG8	5.0	EV1-2030	15	....	D	P3	2840	Triode Sect.
5CL8	5.0	EV9-6780	8	....	D	P3	2500	Tetrode Sect.
5CL8	5.0	EV1-2030	12	....	D	P3	4400	Triode Sect.
5CM6	5.0	EV3-9170	21	....	C	P3	2320	
5CM8	5.0	EV2-6730	11	....	D	P3	3500	Pent. Sect.
5CM8	5.0	EV9-1080	18	....	B	P3	630	Triode Sect.
5CZ5	5.0	EV3-9170	15	....	C	P3	3000	
5DH8	5.0	EV9-6738	10	....	D	P3	3100	Pent. Sect.
5DH8	5.0	EV1-2030	26	....	B	P3	950	Triode Sect.
5J6	5.0	JR5-2070	15	....	D	P3	2800	Triode No. 1
5J6	5.0	JR6-3070	15	....	D	P3	2800	Triode No. 2
5R4	5.0	HR0-6000	0	17	A	P7	Rect.	Plate No. 1
5R4	5.0	HR0-4000	0	11	A	P7	Rect.	Plate No. 2
5T4	5.0	HR0-6000	0	43	A	P7	Rect.	Plate No. 1
5T4	5.0	HR0-4000	0	34	A	P7	Rect.	Plate No. 2
5T8	5.0	EV8-9076	11	....	B	P3	760	Triode Sect.
5T8	5.0	EV0-6071	0	67	A	P2	Diode	Diode No. 1
5T8	5.0	EV0-2037	0	67	A	P2	Diode	Diode No. 2
5T8	5.0	EV0-1078	0	67	A	P2	Diode	Diode No. 3
5U4	5.0	HR0-6000	0	35	A	P7	Rect.	Plate No. 1
5U4	5.0	HR0-4000	0	27	A	P7	Rect.	Plate No. 2
5U8	5.0	EV2-6370	15	....	B	P3	1420	Pent. Sect.
5U8	5.0	EV9-1080	16	....	C	P3	2840	Triode Sect.
5V3	5.0	HR0-6004	0	55	A	P7	Rect.	Plate No. 1
5V3	5.0	HR0-4006	0	50	A	P7	Rect.	Plate No. 2
5V4	5.0	HR0-6000	0	59	A	P7	Rect.	Plate No. 1
5V4	5.0	HR0-4000	0	59	A	P7	Rect.	Plate No. 2
5V6	5.0	JR5-3472	21	....	C	P3	2320	
5W4	5.0	HR0-6000	0	0	A	P7	Rect.	Plate No. 1
5W4	5.0	HR0-4000	0	0	A	P7	Rect.	Plate No. 2
5X3	5.0	JR0-3000	0	0	A	P7	Rect.	Plate No. 1
5X3	5.0	JR0-2000	0	0	A	P7	Rect.	Plate No. 2
5X4	5.0	JX0-5000	0	35	A	P7	Rect.	Plate No. 1
5X4	5.0	JX0-3000	0	27	A	P7	Rect.	Plate No. 2
5X8	5.0	EV7-9861	9	....	D	P3	2900	Pent. Sect.
5X8	5.0	EV2-3861	15	....	D	P3	2840	Triode Sect.
5Y3	5.0	HR0-6000	0	0	A	P7	Rect.	Plate No. 1
5Y3	5.0	HR0-4000	0	0	A	P7	Rect.	Plate No. 2
5Y4	5.0	JX0-5000	0	0	A	P7	Rect.	Plate No. 1
5Y4	5.0	JX0-3000	0	0	A	P7	Rect.	Plate No. 2
5Z3	5.0	JR0-3000	0	35	A	P7	Rect.	Plate No. 1
5Z3	5.0	JR0-2000	0	27	A	P7	Rect.	Plate No. 2
5Z4	5.0	HR0-6000	0	57	A	P7	Rect.	Plate No. 1
5Z4	5.0	HR0-4000	0	57	A	P7	Rect.	Plate No. 2
6A3	6.3	JR3-2000	67	....	C	P3	1900	
6A4	6.3	JR3-2400	28	....	B	P3	1260	
6A5	6.3	JR5-3000	67	....	C	P3	1900	
6A6	6.3	JR5-6040	12	....	B	P3	950	Triode No. 1
6A6	6.3	JR3-2040	12	....	B	P3	950	Triode No. 2
6A7	6.3	JR0-2365	22	....	B	P3	630	Pent. Sect. Cap=G
6A7	6.3	JR5-4362	30	....	B	P3	190	Osc. Sect.
6A8	6.3	JR0-3475	22	....	B	P3	630	Pent. Sect. Cap=G
6A8	6.3	JR5-6473	30	....	B	P3	190	Osc. Sect.

TABLE 4-2 (Cont.) TUBE TEST DATA CHART

Tube Type	Fil Volts	Selectors	Bias	Shunt	Scale	Press	Mut. Cond.	Notations
3A4	2.5	**DX**8-2100	33	....	**B**	P3	1260	
3A5	3.0	**DX**5-6000	32	....	**B**	P3	1260	Triode No. 1
3A5	3.0	**HT**1-2000	32	....	**B**	P3	1260	Triode No. 2
3A8	2.5	**JR**0-3400	12	....	**B**	P3	470	
	Pent. Sect. Cap=G Short on 3							
3A8	2.5	**JR**5-6400	12	....	**B**	P3	315	
	Triode Sect. Short on 3							
3A8	2.5	**JR**0-7400	0	0	**A**	P2	Diode	
	Diode Sect. Short on 3							
3AF4A	3.0	**JR**2-3050	36	....	**D**	P3	2840	
3AL5	3.0	**JR**0-7036	0	67	**A**	P2	Diode	Diode No. 1
3AL5	3.0	**JR**0-2056	0	67	**A**	P2	Diode	Diode No. 2
3AU6	3.0	**JR**3-5672	10	....	**D**	P3	2050	
3AV6	3.0	**JR**3-7025	12	....	**B**	P3	800	Triode Sect.
3AV6	3.0	**JR**3-6025	0	0	**A**	P2	Diode	Diode No. 1
3AV6	3.0	**JR**3-5027	0	0	**A**	P2	Diode	Diode No. 2
3B2	3.0	**JR**0-0000	0	55	**A**	P4	Rect.	Cap=P. Short on 3
3B4	2.5	**JV**1-7300	55	....	**B**	P3	1070	Short on 3
3B5	2.5	**JR**5-3400	60	....	**B**	P3	950	
3B7	2.5	**BY**6-7000	25	....	**B**	P3	950	Triode No. 1
3B7	2.5	**JR**3-2000	25	....	**B**	P3	950	Triode No. 2
3B24	2.5	**JR**0-0000	0	85	**A**	P4	Rect.	Cap=P Short on 3
3B24	2.5	**CR**0-0000	0	85	**A**	P4	Rect.	Cap=P
3B25	2.5	**JR**0-0000	0	90	**A**	P4	Rect.	Cap=P
3B28	2.5	**JR**0-0000	0	90	**A**	P4	Rect.	Cap=P
3B29	4.3	**JR**0-0000	0	89	**A**	P4	Rect.	Cap=P
3BA6	3.0	**JR**3-5672	9	....	**C**	P3	2070	
3BC5	3.0	**JR**3-5620	0	....	**C**	P3	2000	
3BE6	3.0	**JR**7-5623	11	....	**B**	P3	900	Ampl. Sect.
3BE6	3.0	**JR**3-5627	0	....	**B**	P3	1000	Osc. Sect.
3BN4	3.0	**JR**2-5030	15	....	**D**	P3	4300	
3BN6	3.0	**JR**2-7536	0	....	**B**	P3	440	Limiter Grid
3BN6	3.0	**JR**6-7532	0	....	**B**	P3	570	Quadrature Grid
3BU8	3.0	**EV**7-8219	0	....	**B**	P3	820	Pent. No. 1
3BU8	3.0	**EV**7-3216	0	....	**B**	P3	820	Pent. No. 2
3BY6	3.0	**JR**3-5627	21	....	**B**	P3	750	Grid No. 1
3BY6	3.0	**JR**7-5623	21	....	**B**	#	315	Grid No. 3
	# Hold Down P2 and Press P3							
3BZ6	3.0	**JR**3-5627	20	....	**C**	P3	1575	
3C2	3.0	**JR**0-0000	0	75	**A**	P4	Rect.	Cap=P
3C4	2.5	**DX**6-2100	44	....	**B**	P3	700	
3C6	2.5	**BY**5-6000	10	....	**B**	P3	700	Triode No. 1
3C6	2.5	**JR**4-3000	10	....	**B**	P3	700	Triode No. 2
3C22	6.3	**JR**0-0050	13	....	**D**	P3	3150	
	Radiating Fins=P Center Ring=G Short on 3							
3C24	6.3	**JR**0-0000	0	....	**B**	P3	630	Top Cap=P
	Side Cap=G							
3CB6	3.0	**JR**3-5627	11	....	**D**	P3	3500	
3CE5	3.0	**JR**3-5620	11	....	**D**	P3	3500	
3CS6	3.0	**JR**3-5627	20	....	**B**	#	190	Grid No. 1
	# Hold Down P2 and Press P3							
3CS6	3.0	**JR**7-5623	0	....	**B**	#	315	Grid No. 3
	# Hold Down P2 and Press P3							
3CY5	3.0	**JR**3-5620	11	....	**D**	#	3150	
	# Hold Down P2 and Press P3							
3D6	2.5	**JR**6-2300	37	....	**B**	P3	1320	
3DK6	3.0	**JR**3-5627	8	....	**D**	P3	4100	
3DT6	3.0	**JR**3-5627	22	....	**B**	P3	380	Grid No. 1
3DT6	3.0	**JR**7-5623	0	....	**B**	#	250	Grid No. 3
	# Hold Down P2 and Press P3							
3E5	2.5	**DX**6-2150	29	....	**B**	#	750	
	# Short On 3 Hold Down P2 And Press P3							
3E6	3.0	**JR**6-2340	15	....	**B**	P3	1000	
3E29	6.3	**JR**4-5620	0	....	**D**	P3	2500	Plate No. 1.
	See Sect. 4 Par. 4a (26)							
3E29	6.3	**JR**4-7620	0	....	**D**	P3	2500	Plate No. 2.
	See Sect. 4 Par. 4a (26)							
3LE4	2.5	**JR**6-2300	55	....	**B**	P3	700	
3LF4	2.5	**JR**6-2300	30	....	**B**	P3	1200	
3Q4	3.0	**HT**1-2800	24	....	**B**	P3	1340	
3Q5	2.5	**JR**5-3400	38	....	**B**	P3	1130	
3S4	2.5	**HT**1-2800	28	....	**B**	#	940	
	# Hold Down P2 And Press P3							
3V4	3.0	**DX**6-2100	31	....	**B**	P3	1250	
4A6	3.0	**JR**5-6000	16	....	**B**	P3	630	Triode No. 1
4A6	3.0	**BY**4-3000	16	....	**B**	P3	630	Triode No. 2
4AU6	4.3	**JR**3-5672	10	....	**D**	P3	2050	
4BA6	4.3	**JR**3-5672	9	....	**C**	P3	2070	
4BC5	4.3	**JR**3-5620	0	....	**C**	P3	2000	
4BC8	4.3	**EV**7-6089	15	....	**D**	P3	3900	Triode No. 1
4BC8	4.3	**EV**2-1039	15	....	**D**	P3	3900	Triode No. 2
4BE6	4.3	**JR**7-5623	11	....	**B**	P3	900	Ampl. Sect.
4BE6	4.3	**JR**3-5627	0	....	**B**	P3	1000	Osc. Sect.
4BN6	4.3	**JR**2-7536	0	....	**B**	P3	440	Limiter Grid
4BN6	4.3	**JR**6-7532	0	....	**B**	P3	570	Quadrature Grid
4BQ7A	4.3	**EV**7-6089	14	....	**D**	P3	4000	Triode No. 1
4BQ7A	4.3	**EV**2-1039	14	....	**D**	P3	4000	Triode No. 2
4BS8	4.3	**EV**7-6089	17	....	**D**	P3	4500	Triode No. 1
4BS8	4.3	**EV**2-1039	17	....	**D**	P3	4500	Triode No. 2
4BU8	4.3	**EV**7-8219	0	....	**B**	P3	820	Pent. No. 1
4BU8	4.3	**EV**7-3216	0	....	**B**	P3	820	Pent. No. 2
4BX8	4.3	**EV**7-6089	24	....	**D**	P3	3150	Triode No. 1
4BX8	4.3	**EV**2-1039	24	....	**D**	P3	3150	Triode No. 2
4BZ7	4.3	**EV**7-6089	17	....	**D**	P3	4300	Triode No. 1
4BZ7	4.3	**EV**2-1039	17	....	**D**	P3	4300	Triode No. 2
4BZ8	4.3	**EV**7-6089	14	....	**D**	P3	3800	Triode No. 1
4BZ8	4.3	**EV**2-1039	14	....	**D**	P3	3800	Triode No. 2
4CB6	4.3	**JR**3-5627	11	....	**D**	P3	3500	

TABLE 4-2 (Cont.) TUBE TEST DATA CHART

Tube Type	Fil Volts	Selectors	Bias	Shunt	Scale	Press	Mut. Cond.	Notations
6AB4	6.3	JR6-3070	14	....	D	P3	2500	
6AB5	6.3	JR5-4030	0	100	A	P3	Eye	Eye Open
6AB5	6.3	JR5-4230	0	100	A	P3	Eye	Eye Closed
6AB6	6.3	JR5-3470	0	....	B	P3	920	
6AB7	6.3	JR4-7653	0	....	C	P3	2200	
6AB8	6.3	EV9-6837	24	....	C	P3	1750	Pent. Sect.
6AB8	6.3	EV2-1030	35	....	B	P3	500	Triode Sect.
6AC5	6.3	JR5-3070	0	....	B	P3	530	
6AC6	6.3	JR5-3470	0	....	B	P3	1500	
6AC7	6.3	JR4-7653	0	....	D	#	3800	
	# Hold Down P2 and Press P3							
6AD4★	6.3	DW1-8050	28	....	B	P3	440	F Basing
6AD6	6.3	JR4-3570	0	100	A	P3	Eye	Eye 1 Open Eye 2 Closed
6AD6	6.3	JR3-4570	0	100	A	P3	Eye	Eye 2 Open Eye 1 Closed
6AD7	6.3	JR5-3476	29	....	B	P3	1260	Pent. Sect.
6AD7	6.3	JR2-6073	0	....	B	P3	380	Triode Sect.
6AE5	6.3	JR5-3070	68	....	B	P3	750	
6AE6	6.3	JR5-4073	0	....	B	P3	540	Triode No. 1
6AE6	6.3	JR5-3074	0	....	B	P3	470	Triode No. 2
6AE7	6.3	JR6-3074	33	....	B	P3	950	Triode No. 1
6AE7	6.3	JR4-3056	33	....	B	P3	950	Triode No. 2
6AF4	6.3	JR2-3050	36	....	D	P3	2840	
6AF5	6.3	JR5-3070	51	....	B	P3	950	
6AF6	6.3	JR4-3570	0	100	A	P3	Eye	Eye 1 Open Eye 2 Closed
6AF6	6.3	JR3-4570	0	100	A	P3	Eye	Eye 2 Open Eye 1 Closed
6AG5	6.3	JR3-5620	10	....	D	P3	2500	
6AG7	6.3	JR4-7652	10	....	D	P3	3800	
6AH4	6.3	JR2-5070	47	....	C	P3	2840	
6AH5	6.3	JR6-4270	23	....	D	P3	3150	
6AH6	6.3	JR3-5672	10	....	D	P3	3800	
6AH7	6.3	JX5-6040	20	....	D	P3	1510	Triode No. 1
6AH7	6.3	JX2-3010	20	....	D	P3	1510	Triode No. 2
6AJ4	6.3	JX1-5020	9	....	D	P3	6300	
6AJ5	6.3	JR3-5620	12	....	D	#	1730	
	# Hold Down P2 And Press P3							
6AJ7	6.3	JR4-7653	0	....	D	#	3800	
	# Hold Down P2 And Press P3							
6AK4★	6.3	DW1-8057	24	....	D	P3	2400	F Basing
6AK5	6.3	JR3-5620	10	....	D	P3	2780	
6AK6	6.3	JR3-5672	23	....	B	P3	1320	
6AK7	6.3	JR4-7652	10	....	D	P3	3800	
6AL5	6.3	JR0-7030	0	67	A	P2	Diode	Diode No. 1
6AL5	6.3	JR0-2050	0	67	A	P2	Diode	Diode No. 2
6AL6	6.3	JR5-0470	23	....	C	P3	3150	Cap=P
6AL7	6.3	JR6-3570	Vary	100	A	P3	Eye	Bias Controls Left Pattern
6AL7	6.3	JR5-3470	Vary	100	A	P3	Eye	Bias Controls Both Patterns
6AL7	6.3	JR4-3570	Vary	100	A	P3	Eye	Bias Controls Right Pattern
6AM4	6.3	JX1-5020	10	....	D	P3	4400	
6AM8	6.3	EV2-6319	7	....	D	P3	3150	Pent. Sect.
6AM8	6.3	EV0-8070	0	70	A	P2	Diode	Diode Sect.
6AN4	6.3	JR2-3050	6	....	D	P3	5000	
6AN5	6.3	JR3-5670	0	....	D	#	3800	
	# Hold Down P2 And Press P3							
6AN6	6.3	HT0-5060	0	25	A	P2	Diode	Diode No. 1
6AN6	6.3	HT0-8060	0	25	A	P2	Diode	Diode No. 2
6AN6	6.3	HT0-1060	0	25	A	P2	Diode	Diode No. 3
6AN6	6.3	HT0-2060	0	25	A	P2	Diode	Diode No. 4
6AN8	6.3	EV8-6791	7	....	D	P3	3900	Pent. Sect.
6AN8	6.3	EV2-1736	21	....	C	P3	2100	Triode Sect.
6AQ5	6.3	JR3-5620	21	....	C	P3	2320	
6AQ6	6.3	JR3-7020	6	....	B	P3	725	Triode Sect.
6AQ6	6.3	JR0-6020	0	0	A	P2	Diode	Diode No. 1
6AQ6	6.3	JR0-5020	0	0	A	P2	Diode	Diode No. 2
6AQ7	6.3	JX4-5016	13	....	B	P3	630	Triode Sect.
6AQ7	6.3	JX4-2016	0	35	A	P2	Diode	Diode No. 1
6AQ7	6.3	JX4-3016	0	35	A	P2	Diode	Diode No. 2
6AR5	6.3	JR3-5620	34	....	B	P3	1000	
6AR6	6.3	GX8-3520	34	....	C	P3	3400	
6AR8	6.3	EV6-9371	25	....	B	P3	880	Plate No. 1
6AR8	6.3	EV6-8371	25	....	B	P3	880	Plate No. 2
6AS5	6.3	JR2-7630	25	....	D	P3	3530	
6AS6	6.3	JR3-5627	10	....	D	P3	1540	
6AS7	6.3	JX4-5061	100	....	C	P3	1800	Triode No. 1
6AS7	6.3	JX2-1035	100	....	C	P3	1800	Triode No. 2
6AS8	6.3	EV2-9137	11	....	D	P3	3530	Pent. Sect.
6AS8	6.3	EV0-6087	0	70	A	P2	Diode	Diode Sect.
6AT6	6.3	JR3-7020	11	....	B	P3	750	Triode Sect.
6AT6	6.3	JR0-6020	0	0	A	P2	Diode	Diode No. 1
6AT6	6.3	JR0-5020	0	0	A	P2	Diode	Diode No. 2
6AT8	6.3	EV9-6738	9	....	D	P3	2900	Pent. Sect.
6AT8	6.3	EV1-2038	15	....	D	P3	2840	Triode Sect.
6AU4	6.3	JX0-5030	0	60	A	P7	Rect.	
6AU5	6.3	JR2-5730	41	....	C	P3	3275	
6AU6	6.3	JR3-5672	10	....	D	P3	2050	
6AU7	6.3	EV7-6080	24	....	B	P3	1400	Triode No. 1
6AU7	6.3	EV2-1030	24	....	B	P3	1400	Triode No. 2
6AU8	6.3	EV7-9860	10	....	D	P3	3800	Pent. Sect.
6AU8	6.3	EV2-3010	9	....	D	P3	3100	Triode Sect.
6AV5	6.3	JR2-5730	50	....	C	P3	2450	

Tube Type	Fil Volts	Selectors	Bias	Shunt	Scale	Press	Mut. Cond.	Notations
6AV6	6.3	JR3-7025	12	....	B	P3	800	Triode Sect.
6AV6	6.3	JR3-6025	0	0	A	P2	Diode	Diode No. 1
6AV6	6.3	JR3-5027	0	0	A	P2	Diode	Diode No. 2
6AW7	6.3	JX1-6020	8	....	B	P3	570	Triode Sect.
6AW7	6.3	JX1-3050	0	65	A	P2	Diode	Diode No. 1
6AW7	6.3	JX1-4020	0	65	A	P2	Diode	Diode No. 2
6AW8	6.3	EV7-9863	14	....	D	P3	4700	Pent. Sect.
6AW8	6.3	EV2-3019	9	....	D	P3	2500	Triode Sect.
6AX4	6.3	JX0-5030	0	46	A	P7	Rect.	
6AX5	6.3	JR0-5073	0	0	A	P7	Rect.	Plate No. 1
6AX5	6.3	JR0-3075	0	0	A	P7	Rect.	Plate No. 2
6AX6	6.3	JR0-5070	0	62	A	P7	Rect.	Plate No. 1
6AX6	6.3	JR0-3040	0	62	A	P7	Rect.	Plate No. 2
6AX7	6.3	EV7-6080	8	....	D	P3	950	Triode No. 1
6AX7	6.3	EV2-1030	8	....	D	P3	950	Triode No. 2
6AX8	6.3	EV2-6370	15	....	B	P3	1420	Pent. Sect.
6AX8	6.3	EV9-1080	16	....	C	P3	2840	Triode Sect.
6AZ5★	6.3	DW0-8070	0	60	A	P2	Diode	F Basing Diode No. 1
6AZ5★	6.3	DW0-1020	0	60	A	P2	Diode	F Basing Diode No. 2
6AZ6★	6.3	DW0-2048	0	70	A	P2	Diode	F Basing Diode No. 1
6AZ6★	6.3	DW0-7058	0	70	A	P2	Diode	F Basing Diode No. 2
6AZ8	6.3	EV6-1230	7	....	D	P3	3800	Pent. Sect.
6AZ8	6.3	EV9-8070	21	....	C	P3	2100	Triode Sect.
6B4	6.3	JR5-3000	67	....	C	P3	1900	
6B5	6.3	JR4-2350	0	....	B	P3	950	
6B6	6.3	JR0-3070	15	....	B	P3	470	Triode Sect. Cap=G
6B6	6.3	JR0-5070	0	0	A	P2	Diode	Diode No. 1
6B6	6.3	JR0-4070	0	0	A	P2	Diode	Diode No. 2
6B7	6.3	JR0-2360	30	....	B	P3	630	Pent. Sect. Cap=G
6B7	6.3	JR0-5360	0	0	A	P2	Diode	Diode No. 1
6B7	6.3	JR0-4360	0	0	A	P2	Diode	Diode No. 2
6B8	6.3	JR0-3672	24	....	B	P3	720	Pent. Sect. Cap=G
6B8	6.3	JR0-5672	0	0	A	P2	Diode	Diode No. 1
6B8	6.3	JR0-4672	0	0	A	P2	Diode	Diode No. 2
6BA5★	6.3	DW1-5780	16	....	B	P3	1350	F Basing
6BA6	6.3	JR3-5672	9	....	C	P3	2070	
6BA7	6.3	EV7-9132	17	....	B	P3	470	Ampl. Sect.
6BA7	6.3	EV2-9137	25	....	B	P3	470	Osc. Sect.
6BA8	6.3	EV7-9860	11	....	D	P3	3800	Pent. Sect.
6BA8	6.3	EV2-3010	29	....	C	P3	1700	Triode Sect.
6BC4	6.3	EV2-1060	10	....	D	P3	6300	
6BC5	6.3	JR3-5620	0	....	C	P3	2000	
6BC7	6.3	EV0-8090	0	67	A	P2	Diode	Diode No. 1
6BC7	6.3	EV0-6070	0	67	A	P2	Diode	Diode No. 2
6BC7	6.3	EV0-2010	0	67	A	P2	Diode	Diode No. 3
6BC8	6.3	EV7-6089	15	....	D	P3	3900	Triode No. 1
6BC8	6.3	EV2-1039	15	....	D	P3	3900	Triode No. 2
6BD5	6.3	JR2-5730	18	....	D	P3	3150	
6BD6	6.3	JR3-5672	13	....	D	P3	1260	
6BE6	6.3	JR7-5623	11	....	B	P3	900	Ampl. Sect.
6BE6	6.3	JR3-5627	0	....	B	P3	1000	Osc. Sect.
6BE7	6.3	EV7-1639	29	....	B	P3	630	
6BE8	6.3	EV9-6783 Short on 2-3	15	....	B	P3	1420	Pent. Sect.
6BE8	6.3	EV1-2030	16	....	C	P3	2840	Triode Sect.
6BF5	6.3	JR3-5620	49	....	C	P3	2140	
6BF6	6.3	JR3-7020	18	....	B	P3	1200	Triode Sect.
6BF6	6.3	JR3-6020	0	0	A	P2	Diode	Diode No. 1
6BF6	6.3	JR3-5020	0	0	A	P2	Diode	Diode No. 2
6BF7★	6.3	DW7-8050 Triode No. 1	22	....	C	P3	1575	F Basing
6BF7★	6.3	DW2-1040 Triode No. 2	22	....	C	P3	1575	F Basing
6BG6	6.3	JR5-0730	18	....	D	P3	3800	Cap=P
6BG7★	6.3	DW7-8050 Triode No. 1	22	....	C	P3	1575	F Basing
6BG7★	6.3	DW2-1040 Triode No. 2	22	....	C	P3	1575	F Basing
6BH6	6.3	JR3-5627	15	....	B	P3	1260	
6BH8	6.3	EV7-9860	8	....	D	P3	3800	Pent. Sect.
6BH8	6.3	EV2-3010	29	....	C	P3	2100	Triode Sect.
6BJ6	6.3	JR3-5627	0	....	C	P3	2400	
6BJ7	6.3	EV0-8093	0	70	A	P2	Diode	Diode No. 1
6BJ7	6.3	EV0-6073	0	70	A	P2	Diode	Diode No. 2
6BJ7	6.3	EV0-2013	0	70	A	P2	Diode	Diode No. 3
6BJ8	6.3	EV8-7090	24	....	C	P3	1750	Triode Sect.
6BJ8	6.3	EV0-6030	0	70	A	P2	Diode	Diode No. 1
6BJ8	6.3	EV0-1020	0	70	A	P2	Diode	Diode No. 2
6BK5	6.3	EV3-1860	0	....	D	P3	3450	
6BK6	6.3	JR3-7025	6	....	B	P3	790	Triode Sect.
6BK6	6.3	JR0-6025	0	0	A	P2	Diode	Diode No. 1
6BK6	6.3	JR0-5027	0	0	A	P2	Diode	Diode No. 2
6BK7	6.3	EV7-6089	8	....	D	P3	5350	Triode No. 1
6BK7	6.3	EV2-1039	8	....	D	P3	5350	Triode No. 2
6BL4	6.3	JX0-2030	0	65	A	P7	Rect.	
6BL7	6.3	JX2-1030	24	....	D	P3	3150	Triode No. 1
6BL7	6.3	JX4-5060	24	....	D	P3	3150	Triode No. 2
6BN4	6.3	JR2-5030	15	....	D	P3	4300	
6BN6	6.3	JR2-7536	0	....	B	P3	440	Limiter Grid
6BN6	6.3	JR6-7532	0	....	B	P3	570	Quadrature Grid
6BN8	6.3	EV8-7090	15	....	D	P3	1600	Triode Sect.
6BN8	6.3	EV0-6030	0	70	A	P2	Diode	Diode No. 1
6BN8	6.3	EV0-1020	0	70	A	P2	Diode	Diode No. 2
6BQ6	6.3	JR5-0470	50	....	C	P3	2800	Cap=P
6BQ7	6.3	EV7-6080	17	....	D	P3	3300	Triode No. 1
6BQ7	6.3	EV2-1030	17	....	D	P3	3300	Triode No. 2
6BQ7A	6.3	EV7-6089	14	....	D	P3	4000	Triode No. 1
6BQ7A	6.3	EV2-1039	14	....	D	P3	4000	Triode No. 2

TABLE 4-2 (Cont.) TUBE TEST DATA CHART

Tube Type	Fil Volts	Selectors	Bias	Shunt	Scale	Press	Mut. Cond.	Notations
6BR8	6.3	EV9-6780	15	....	B	P3	1420	Pent. Sect.
6BR8	6.3	EV1-2030	16	....	C	P3	2840	Triode Sect.
6BS8	6.3	EV7-6089	17	....	D	P3	4500	Triode No. 1
6BS8	6.3	EV2-1039	17	....	D	P3	4500	Triode No. 2
6BT6	6.3	JR3-7020	13	....	B	P3	820	Triode Sect.
6BT6	6.3	JR3-6020	0	35	A	P2	Diode	Diode No. 1
6BT6	6.3	JR3-5020	0	35	A	P2	Diode	Diode No. 2
6BT8	6.3	EV8-6790	11	....	D	P3	3500	Pent. Sect.
6BT8	6.3	EV0-1030	0	30	A	P2	Diode	Diode No. 1
6BT8	6.3	EV0-2030	0	30	A	P2	Diode	Diode No. 2
6BU6	6.3	JR3-7020	34	....	B	P3	940	Triode Sect.
6BU6	6.3	JR3-6020	0	25	A	P2	Diode	Diode No. 1
6BU6	6.3	JR3-5020	0	25	A	P2	Diode	Diode No. 2
6BU8	6.3	EV7-8219	0	....	B	P3	820	Pent. No. 1
6BU8	6.3	EV7-3216	0	....	B	P3	820	Pent. No. 2
6BV8	6.3	EV2-3010	18	....	D	P3	3500	Triode Sect.
6BV8	6.3	EV0-9070	0	67	A	P2	Diode	Diode No. 1
6BV8	6.3	EV0-6080	0	67	A	P2	Diode	Diode No. 2
6BW4	6.3	EV0-7091	0	0	A	P7	Rect.	Plate No. 1
6BW4	6.3	EV0-1097	0	0	A	P7	Rect.	Plate No. 2
6BW8	6.3	EV6-9870	15	....	B	P3	1420	Pent. Sect.
6BW8	6.3	EV0-3020	0	70	A	P2	Diode	Diode No. 1
6BW8	6.3	EV0-1020	0	70	A	P2	Diode	Diode No. 2
6BX6	6.3	EV2-7819	13	....	C	P3	1900	
6BX7	6.3	JX4-5061	33	....	D	P3	4800	Triode No. 1
6BX7	6.3	JX2-1035	33	....	D	P3	4800	Triode No. 2
6BX8	6.3	EV7-6089	24	....	D	P3	3150	Triode No. 1
6BX8	6.3	EV2-1039	24	....	D	P3	3150	Triode No. 2
6BY5	6.3	JR0-5070	0	38	A	P7	Rect.	Plate No. 1
6BY5	6.3	JR0-4020	0	38	A	P7	Rect.	Plate No. 2
6BY6	6.3	JR3-5627	21	....	B	P3	750	Grid No. 1
6BY6	6.3	JR7-5623	21	....	B	#	315	Grid No. 3
	# Hold Down P2 And Press P3							
6BY8	6.3	EV1-7892	10	....	D	P3	2050	Pent. Sect.
6BY8	6.3	EV0-6030	0	70	A	P2	Diode	Diode Sect.
6BZ6	6.3	JR3-5627	20	....	C	P3	1575	
6BZ7	6.3	EV7-6089	17	....	D	P3	4300	Triode No. 1
6BZ7	6.3	EV2-1039	17	....	D	P3	4300	Triode No. 2
6BZ8	6.3	EV7-6089	14	....	D	P3	3800	Triode No. 1
6BZ8	6.3	EV2-1039	14	....	D	P3	3800	Triode No. 2
6C4	6.3	JR6-3070	24	....	B	P3	1380	
6C5	6.3	JR5-3070	21	....	B	P3	1260	
6C6	6.3	JR0-2354	21	....	B	P3	770	Cap=G
6C7	6.3	JR0-2060	29	....	B	P3	780	Triode Sect. Cap=G
6C7	6.3	JR0-5060	0	0	A	P2	Diode	Diode No. 1
6C7	6.3	JR0-4060	0	0	A	P2	Diode	Diode No. 2
6C8	6.3	JR5-6070	17	....	B	P3	630	Triode No. 1
6C8	6.3	JR0-3040	17	....	B	P3	630	Triode No. 2 Cap=G
6CA5	6.3	JR2-7630	25	....	D	P3	3800	
6CA7	6.3	JR5-3472	25	....	D	P3	3800	
6CB5	7.5	JR4-0230	39	....	D	P3	4400	Cap=P
6CB6	6.3	JR3-5627	11	....	D	P3	3500	
6CD6	6.3	JR5-0730	42	....	D	P3	4100	Cap=P
6CE5	6.3	JR3-5620	11	....	D	P3	3500	
6CF6	6.3	JR3-5627	11	....	D	P3	3500	
6CG7	6.3	EV7-6089	22	....	D	P3	1650	Triode No. 1
6CG7	6.3	EV2-1039	22	....	D	P3	1650	Triode No. 2
6CG8	6.3	EV9-6780	9	....	D	P3	2900	Pent. Sect.
6CG8	6.3	EV1-2030	15	....	D	P3	2840	Triode Sect.
6CH7	6.3	EV7-6080	17	....	D	P3	4300	Triode No. 1
6CH7	6.3	EV2-1030	17	....	D	P3	4300	Triode No. 2
6CH8	6.3	EV7-2360	7	....	D	P3	3900	Pent. Sect.
6CH8	6.3	EV8-9010	21	....	C	P3	2100	Triode Sect.
6CJ6	6.3	EV2-0731	54	....	C	P3	2900	Cap=P
6CK6	6.3	EV2-7136	5	....	D	P3	6300	
6CL6	6.3	EV2-6317	10	....	D	P3	3800	
6CL8	6.3	EV9-6780	8	....	D	P3	2500	Tetrode Sect.
6CL8	6.3	EV1-2030	12	....	D	P3	4400	Triode Sect.
6CM6	6.3	EV3-9170	21	....	C	P3	2320	
6CM7	6.3	EV7-6030	24	....	B	P3	1260	Triode No. 1
6CM7	6.3	EV8-1090	22	....	D	P3	2800	Triode No. 2
6CM8	6.3	EV2-6730	11	....	D	P3	3500	Pentode Sect.
6CM8	6.3	EV9-1080	18	....	B	P3	630	Triode Sect.
6CN7	6.3	EV7-8060	11	....	B	P3	760	Triode Sect.
6CN7	6.3	EV0-2030	0	70	A	P2	Diode	Diode No. 1
6CN7	6.3	EV0-1030	0	70	A	P2	Diode	Diode No. 2
6CQ8	6.3	EV2-6370	16	....	C	P3	1900	Tetrode Sect.
6CQ8	6.3	EV9-1080	32	....	C	P3	2200	Triode Sect.
6CR6	6.3	JR7-5632	12	....	B	P3	1225	Pent. Sect.
6CR6	6.3	JR0-2030	0	0	A	P2	Diode	Diode Sect.
6CS6	6.3	JR3-5627	20	....	B	#	190	Grid No. 1
	# Hold Down P2 and Press P3							
6CS6	6.3	JR7-5623	0	....	B	#	315	Grid No. 3
	# Hold Down P2 and Press P3							
6CS7	6.3	EV7-6080	17	....	C	P3	1400	Triode No. 1
6CS7	6.3	EV3-1090	26	....	D	P3	2840	Triode No. 2
6CU5	6.3	JR2-7630	10	....	D	#	5650	
	# Hold Down P2 and Press P3							
6CU6	6.3	JR5-0470	50	....	C	P3	2800	Cap=P
6CU8	6.3	EV7-2361	7	....	D	P3	3900	Pent. Sect.
6CU8	6.3	EV8-9010	21	....	C	P3	2100	Triode Sect.
6CX8	6.3	EV7-9860	11	....	D	P3	3800	Pent. Sect.
6CX8	6.3	EV2-3010	24	....	B	P3	1260	Triode Sect.
6CY5	6.3	JR3-5620	11	....	D	#	3150	
	#Hold Down P2 and Press P3							
6CY7	6.3	EV7-6080	21	....	B	P3	440	Triode No. 1
6CY7	6.3	EV2-1090	63	....	C	P3	2500	Triode No. 2
6CZ5	6.3	EV3-9170	15	....	C	P3	3000	
6D4	6.3	JR3-7050	#	40	A	P7	Thyr.	
	# Should Strike Between 75 and 65. Read As Rectifier.							

Tube Type	Fil Volts	Selectors	Bias	Shunt	Scale	Press	Mut. Cond.	Notations
6D5	6.3	JR5-3070	57	....	B	P3	1260	
6D6	6.3	JR0-2354	21	....	B	P3	1000	Cap=G
6D7	6.3	JR0-2364	24	....	B	P3	770	Cap=G
6D8	6.3	JR0-3475	22	....	B	P3	630	Pent. Sect. Cap=G
6D8	6.3	JR5-6473	30	....	B	P3	190	Osc. Sect.
6DA6	6.3	EV2-7839	15	....	D	P3	1900	
6DB5	6.3	EV3-9120	10	....	D	#	5650	
	#Hold Down P2 and Press P3							
6DB6	6.3	JR3-5627	16	....	B	P3	950	Grid No. 1
6DB6	6.3	JR7-5623	14	....	B	#	380	Grid No. 3
	# Hold Down P2 and Press P3							
6DC6	6.3	JR3-5627	11	....	D	P3	2840	
6DE6	6.3	JR3-5627	11	....	D	P3	3500	
6DE7	6.3	EV7-6080	31	....	B	P3	1260	Triode No. 1
6DE7	6.3	EV2-1090	55	....	D	P3	4100	Triode No. 2
6DG6	6.3	JR5-3470	10	....	D	#	5000	
	# Hold Down P2 and Press P3							
6DK6	6.3	JR3-5627	8	....	D	P3	4100	
6DN6	6.3	JR5-0730	28	....	D	#	5650	Cap=P
	# Hold Down P2 and Press P3							
6DQ6	6.3	JR5-0470	36	....	D	P3	3800	Cap=P
6DS5	6.3	JR3-5620	16	....	D	P3	3800	
6DT6	6.3	JR3-5627	22	....	B	P3	380	Grid No. 1
6DT6	6.3	JR7-5623	0	....	B	#	250	Grid No. 3
	# Hold Down P2 and Press P3							
6E5	6.3	JR5-4030	0	100	A	P3	Eye	Eye Open
6E5	6.3	JR5-4230	0	100	A	P3	Eye	Eye Closed
6E6	6.3	JR5-6040	54	....	B	P3	880	Triode No. 1
6E6	6.3	JR3-2040	54	....	B	P3	880	Triode No. 2
6E7	6.3	JR0-2364	24	....	B	P3	950	Cap=G
6F4	6.3	JR2-3060	30	....	D	P3	3800	
6F5	6.3	JR0-4072	12	....	B	P3	630	Cap=G
6F6	6.3	JR5-3472	29	....	B	P3	1260	
6F7	6.3	JR0-2365	28	....	B	P3	700	Pent. Sect. Cap=G
6F7	6.3	JR5-4362	28	....	B	P3	315	Triode Sect.
6F8	6.3	JR5-6070	23	....	B	P3	1260	Triode No. 1
6F8	6.3	JR0-3040	23	....	B	P3	1260	Triode No. 2 Cap=G
6G5	6.3	JR5-4030	0	100	A	P3	Eye	Eye Open
6G5	6.3	JR5-4230	0	100	A	P3	Eye	Eye Closed
6G6	6.3	JR5-3470	12	....	D	P3	1450	
6G7S	6.3	JR0-2354	36	....	B	P3	940	Pent. Sect. Cap=G
6G7S	6.3	JR0-6030	0	62	A	P2	Diode	Diode No. 1
6G7S	6.3	JR0-4030	0	62	A	P2	Diode	Diode No. 2
6H4	6.3	JR0-4070	0	62	A	P2	Diode	
6H5	6.3	JR5-4030	0	100	A	P3	Eye	Eye Open
6H5	6.3	JR5-4230	0	100	A	P3	Eye	Eye Closed
6H6	6.3	JR0-5070	0	62	A	P2	Diode	Diode No. 1
6H6	6.3	JR0-3040	0	62	A	P2	Diode	Diode No. 2
6H7M	6.3	JR5-3476	29	....	B	P3	1260	Pent. Sect.
6H7M	6.3	JR0-6073	0	....	B	P3	100	Triode Sect. Cap=G
6J4	6.3	JR3-7020	15	....	D	P3	5700	
6J5	6.3	JR5-3070	22	....	D	P3	1640	
6J6	6.3	JR5-2070	15	....	D	P3	2800	Triode No. 1
6J6	6.3	JR6-3070	15	....	D	P3	2800	Triode No. 2
6J7	6.3	JR0-3475	22	....	B	P3	770	Cap=G
6J8	6.3	JR5-3476	18	....	B	P3	630	Heptode Sect Cap=G
6J8	6.3	JR5-6473	30	....	B	P3	315	Triode Sect.
6K4★	6.3	DU2-1050	31	....	D	P3	2000	C Basing
6K5	6.3	JR0-3070	21	....	B	P3	630	Cap=G
6K6	6.3	JR5-3470	34	....	B	P3	1000	
6K7	6.3	JR0-3475	19	....	B	P3	910	Cap=G
6K8	6.3	JR5-3476	11	....	B	P3	630	Hexode Sect. Cap=G
6K8	6.3	JR5-6473	0	....	C	P3	1500	Triode Sect.
6L4	6.3	JR2-3060	25	....	D	P3	3150	
6L5	6.3	JR5-3070	27	....	B	P3	950	
6L6	6.3	JR5-3472	23	....	D	P3	3150	
6L7	6.3	JR0-3475	23	....	B	P3	410	Cap Grid. Cap=G
6L7	6.3	JR5-3472	27	....	B	P3	410	Pin Grid
6M3	6.3	HR0-0030	0	64	A	#	Rect.	Cap=P Short on 3
	#Hold Down P8 and Press P7							
6N4	6.3	JR3-5020	18	....	D	P3	3800	
6N5	6.3	JR5-4030	0	100	A	P3	Eye	Eye Open
6N5	6.3	JR5-4230	0	100	A	P3	Eye	Eye Closed
6N6	6.3	JR5-3470	0	....	B	P3	950	
6N7	6.3	JR5-6073	12	....	B	P3	950	Triode No. 1
6N7	6.3	JR4-3076	12	....	B	P3	950	Triode No. 2
6N8	6.3	EV2-6139	17	....	B	P3	1380	Pent. Sect.
6N8	6.3	EV2-7139	0	0	A	P2	Diode	Diode No. 1
6N8	6.3	EV2-8139	0	0	A	P2	Diode	Diode No. 2
6P5	6.3	JR5-3070	29	....	B	P3	910	
6P7	6.3	BT0-4576	28	....	B	P3	700	Pent. Sect. Cap=G
6P7	6.3	BT8-6074	28	....	B	P3	315	Triode Sect.
6Q4	6.3	EV1-9030	0	....	D	P3	6300	Short on 1-2-3-5
6Q5	6.3	JR5-3070	#	92	A	P4	Thyr.	
	# Should Strike Between 60 and 50. Read As Rectifier.							
6Q6	6.3	JR0-3070	17	....	B	P3	630	Triode Sect. Cap=G
6Q6	6.3	JR0-5070	0	0	A	P2	Diode	Diode No. 1
6Q6	6.3	JR0-4070	0	0	A	P2	Diode	Diode No. 2
6Q7	6.3	JR0-3072	17	....	B	P3	500	Triode Sect. Cap=G
6Q7	6.3	JR0-5073	0	0	A	P2	Diode	Diode No. 1
6Q7	6.3	JR0-4073	0	0	A	P2	Diode	Diode No. 2
6R4	6.3	EV1-8030	23	....	C	P3	2500	
6R7	6.3	JR0-3072	18	....	B	P3	1200	Triode Sect. Cap=G
6R7	6.3	JR0-5073	0	0	A	P2	Diode	Diode No. 1
6R7	6.3	JR0-4073	0	0	A	P2	Diode	Diode No. 2
6R8	6.3	EV8-9072	13	....	B	P3	1200	Triode Sect.
6R8	6.3	EV0-1078	0	67	A	P2	Diode	Diode No. 1
6R8	6.3	EV0-6078	0	67	A	P2	Diode	Diode No. 2
6R8	6.3	EV0-2039	0	67	A	P2	Diode	Diode No. 3
6S4	6.3	EV6-9020	17	....	C	P3	2600	
6S7	6.3	JR0-3475	27	....	B	P3	1100	Cap=G

TABLE 4-2 (Cont.) TUBE TEST DATA CHART

Tube Type	Fil Volts	Selectors	Bias	Shunt	Scale	Press	Mut. Cond.	Notations
6S8	6.3	JX0-6010	10	....	B	P3	570	Triode Sect. Cap=G
6S8	6.3	JX0-4010	0	0	A	P2	Diode	Diode No. 1
6S8	6.3	JX0-2010	0	0	A	P2	Diode	Diode No. 2
6S8	6.3	JX0-3050	0	0	A	P2	Diode	Diode No. 3
6SA7	6.3	JR7-3465	21	....	B	P3	470	Ampl. Sect.
6SA7	6.3	JR5-3467	21	....	B	P3	470	Osc. Sect.
6SB7	6.3	JR7-3465	16	....	B	P3	470	Ampl. Sect.
6SB7	6.3	JR5-3467	40	....	B	P3	190	Osc. Sect.
6SC7	6.3	JX4-5061	10	....	D	P3	840	Triode No. 1
6SC7	6.3	JX3-1065	10	....	D	P3	840	Triode No. 2
6SD7	6.3	JR4-7653	10	....	D	P3	1900	
6SF5	6.3	JX3-5012	10	....	D	P3	940	
6SF7	6.3	JX1-6432	0	....	B	P3	1260	Pent. Sect.
6SF7	6.3	JX0-5436	0	0	A	P2	Diode	Diode Sect.
6SG7	6.3	JR4-7652	0	....	C	P3	2100	
6SH7	6.3	JR4-7652	0	....	C	P3	2150	
6SJ7	6.3	JR4-7653	20	....	D	P3	1040	
6SK7	6.3	JR4-7653	10	....	D	P3	1260	
6SL7	6.3	JX4-5061	7	....	D	P3	1000	Triode No. 1
6SL7	6.3	JX2-1035	7	....	D	P3	1000	Triode No. 2
6SN7	6.3	JX4-5061	22	....	D	P3	1650	Triode No. 1
6SN7	6.3	JX2-1035	22	....	D	P3	1650	Triode No. 2
6SQ7	6.3	JX1-6032	11	....	D	P3	700	Triode Sect.
6SQ7	6.3	JX0-5036	0	0	A	P2	Diode	Diode No. 1
6SQ7	6.3	JX0-4036	0	0	A	P2	Diode	Diode No. 2
6SR7	6.3	JX1-6032	18	....	B	P3	1200	Triode Sect.
6SR7	6.3	JX0-5036	0	0	A	P2	Diode	Diode No. 1
6SR7	6.3	JX0-4036	0	0	A	P2	Diode	Diode No. 2
6SS7	6.3	JR4-7653	19	....	B	P3	1160	
6ST7	6.3	JX1-6032	15	....	B	P3	1200	Triode Sect.
6ST7	6.3	JX0-5036	0	0	A	P2	Diode	Diode No. 1
	OK Above 500 On 3000 Scale							
6ST7	6.3	JX0-4036	0	0	A	P2	Diode	Diode No. 2
	OK Above 500 On 3000 Scale							
6SU7	6.3	JX4-5061	7	....	D	P3	1000	Triode No. 1
6SU7	6.3	JX2-1035	7	....	D	P3	1000	Triode No. 2
6SV7	6.3	JX1-6430	12	....	B	P3	1320	Pent. Sect.
6SV7	6.3	JX1-5430	0	62	A	P2	Diode	Diode Sect.
6SZ7	6.3	JX1-6032	10	....	B	P3	760	Triode Sect.
6SZ7	6.3	JX0-5032	0	0	A	P2	Diode	Diode No. 1
	OK Above 500 On 3000 Scale							
6SZ7	6.3	JX0-4032	0	0	A	P2	Diode	Diode No. 2
	OK Above 500 On 3000 Scale							
6T4	6.3	JR2-3050	37	....	D	P3	3150	
6T5	6.3	JR5-4030	0	100	A	P3	Eye	Eye Open
6T5	6.3	JR5-4230	0	100	A	P3	Eye	Eye Closed
6T7	6.3	JR0-3070	17	....	B	P3	630	Triode Sect. Cap=G
6T7	6.3	JR0-5070	0	0	A	P2	Diode	Diode No. 1
6T7	6.3	JR0-4070	0	0	A	P2	Diode	Diode No. 2
6T8	6.3	EV8-9076	11	....	B	P3	760	Triode Sect.
6T8	6.3	EV0-6071	0	67	A	P2	Diode	Diode No. 1
6T8	6.3	EV0-2037	0	67	A	P2	Diode	Diode No. 2
6T8	6.3	EV0-1078	0	67	A	P2	Diode	Diode No. 3
6U3	6.3	EV0-9030	0	58	A	P7	Rect.	
6U4	6.3	JX0-5030	0	56	A	P7	Rect.	
6U5	6.3	JR5-4030	0	100	A	P3	Eye	Eye Open
6U5	6.3	JR5-4230	0	100	A	P3	Eye	Eye Closed
6U6	6.3	JR5-3470	30	....	D	P3	3900	
6U7	6.3	JR0-3475	21	....	B	P3	1000	Cap=G
6U8	6.3	EV2-6370	15	....	B	P3	1420	Pent. Sect.
6U8	6.3	EV9-1080	16	....	C	P3	2840	Triode Sect.
6V3	6.3	EV0-0020	0	51	A	#	Rect.	Cap=P
	# Hold Down P8 And Press P7							
6V4	6.3	EV0-7031	0	0	A	P7	Rect.	Plate No. 1
6V4	6.3	EV0-1037	0	0	A	P7	Rect.	Plate No. 2
6V5	6.3	JX5-3400	31	....	C	P3	2600	
6V6	6.3	JR5-3472	21	....	C	P3	2320	
6V7	6.3	JR0-3070	39	....	B	P3	610	Triode Sect. Cap=G
6V7	6.3	JR0-5070	0	0	A	P2	Diode	Diode No. 1
6V7	6.3	JR0-4070	0	0	A	P2	Diode	Diode No. 2
6V8	6.3	EV6-1038	11	....	B	P3	760	Triode Sect.
6V8	6.3	EV0-9032	0	13	A	P2	Diode	Diode No. 1
6V8	6.3	EV0-7086	0	71	A	P2	Diode	Diode No. 2
6V8	6.3	EV0-2038	0	71	A	P2	Diode	Diode No. 3
6W4	6.3	JX0-5030	0	56	A	P7	Rect.	
6W5	6.3	JR0-5070	0	23	A	P7	Rect.	Plate No. 1
6W5	6.3	JR0-3070	0	23	A	P7	Rect.	Plate No. 2
6W6	6.3	JR5-3470	10	....	D	#	5650	
	# Hold Down P2 and Press P3							
6W7	6.3	JR0-3475	22	....	B	P3	770	Cap=G
6X4	6.3	JR0-6073	0	16	A	P7	Rect.	Plate No. 1
6X4	6.3	JR0-3076	0	16	A	P7	Rect.	Plate No. 2
6X5	6.3	JR0-5072	0	23	A	P7	Rect.	Plate No. 1
6X5	6.3	JR0-3072	0	23	A	P7	Rect.	Plate No. 2
6X8	6.3	EV7-9861	9	....	D	P3	2900	Pent. Sect.
6X8	6.3	EV2-3861	15	....	D	P3	2840	Triode Sect.
6Y5	6.3	JR0-5040	0	56	A	P7	Rect.	Plate No. 1
6Y5	6.3	JR0-3040	0	56	A	P7	Rect.	Plate No. 2
6Y6	6.3	JR5-3470	33	....	D	P3	3800	
6Y7	6.3	JR5-6073	15	....	B	P3	630	Triode No. 1
6Y7	6.3	JR4-3076	15	....	B	P3	630	Triode No. 2
6Z4	6.3	JR0-3040	0	35	A	P7	Rect.	Plate No. 1
6Z4	6.3	JR0-2040	0	35	A	P7	Rect.	Plate No. 2
6Z5	12.6	JS0-5040	0	20	A	P7	Rect.	Plate No. 1
6Z5	12.6	JS0-3040	0	20	A	P7	Rect.	Plate No. 2
6Z7	6.3	JR5-6070	0	....	B	P3	760	Triode No. 1
6Z7	6.3	JR4-3070	0	....	B	P3	760	Triode No. 2
6ZY5	6.3	JR0-5070	0	9	A	P7	Rect.	Plate No. 1
6ZY5	6.3	JR0-3070	0	9	A	P7	Rect.	Plate No. 2

Tube Type	Fil Volts	Selectors	Bias	Shunt	Scale	Press	Mut. Cond.	Notations
7A4	6.3	JR6-2070	22	....	D	P3	1640	
7A5	6.3	JR6-2370	25	....	D	P3	3800	
7A6	6.3	JR0-6075	0	62	A	P2	Diode	Diode No. 1
7A6	6.3	JR0-3025	0	62	A	P2	Diode	Diode No. 2
7A7	6.3	JR6-2374	27	....	B	P3	1100	
7A8	6.3	JR6-2574	24	....	B	P3	630	Ampl. Sect.
7A8	6.3	JR4-3576	26	....	B	P3	315	Osc. Sect.
7AB7	6.3	HS5-3140	10	....	B	P3	1140	
7AD7	6.3	JR6-2374	0	....	D	P3	3900	
7AF7	6.3	JR5-6070	21	....	C	P3	1640	Triode No. 1
7AF7	6.3	JR4-3020	21	....	C	P3	1640	Triode No. 2
7AG7	6.3	JR6-2374	0	....	C	P3	1900	
7AH7	6.3	JR6-2374	0	....	C	P3	2100	
7AJ7	6.3	JR6-2374	0	....	D	P3	1430	
7AK7	6.3	JR6-2374	0	....	C	P3	2500	
7AU7	6.3	EV7-6080	24	....	B	P3	1400	Triode No. 1
7AU7	6.3	EV2-1030	24	....	B	P3	1400	Triode No. 2
7B4	6.3	JR6-2070	10	....	D	P3	940	
7B5	6.3	JR6-2370	34	....	B	P3	1000	
7B6	6.3	JR3-2070	11	....	D	P3	700	Triode Sect.
7B6	6.3	JR0-6072	0	0	A	P2	Diode	Diode No. 1
7B6	6.3	JR0-5072	0	0	A	P2	Diode	Diode No. 2
7B7	6.3	JR6-2374	27	....	B	P3	1070	
7B8	6.3	JR6-2574	18	....	B	P3	950	Pent. Sect.
7B8	6.3	JR4-3576	18	....	B	P3	410	Osc. Sect.
7C4	6.3	JR0-4070	0	51	A	P2	Diode	
7C5	6.3	JR6-2370	30	....	C	P3	1900	
7C6	6.3	JR3-2070	10	....	B	P3	380	Triode Sect.
7C6	6.3	JR0-6072	0	0	A	P2	Diode	Diode No. 1
7C6	6.3	JR0-5072	0	0	A	P2	Diode	Diode No. 2
7C7	6.3	JR6-2374	22	....	B	P3	820	
7E5	6.3	JS1-3040	15	....	C	P3	1900	
7E6	6.3	JR3-2070	12	....	B	P3	1380	Triode Sect.
7E6	6.3	JR0-6072	0	0	A	P2	Diode	Diode No. 1
7E6	6.3	JR0-5072	0	0	A	P2	Diode	Diode No. 2
7E7	6.3	JR6-2570	22	....	B	P3	820	Pent. Sect.
7E7	6.3	JR0-4072	0	0	A	P2	Diode	Diode No. 1
7E7	6.3	JR0-3072	0	0	A	P2	Diode	Diode No. 2
7F7	6.3	JR5-6073	0	....	B	P3	820	Triode No. 1
7F7	6.3	JR4-3026	0	....	B	P3	820	Triode No. 2
7F8	6.3	HS8-6050	10	....	D	P3	3150	Triode No. 1
7F8	6.3	HS1-3040	10	....	D	P3	3150	Triode No. 2
7G7	6.3	JR6-2374	18	....	B	P3	1260	
7G8	6.3	JR5-7362	10	....	B	P3	1320	Tetrode No. 1
7G8	6.3	JR4-2367	10	....	B	P3	1320	Tetrode No. 2
7H7	6.3	JR6-2374	10	....	D	P3	2400	
7J7	6.3	JR6-2574	18	....	B	P3	500	Heptode Sect.
7J7	6.3	JR4-3576	18	....	B	P3	630	Triode Sect.
7K7	6.3	JR4-3020	10	....	D	P3	1000	Triode Sect.
7K7	6.3	JR0-5070	0	0	A	P2	Diode	Diode No. 1
7K7	6.3	JR0-6070	0	0	A	P2	Diode	Diode No. 2
7L7	6.3	JR6-2374	12	....	B	P3	1260	
7N7	6.3	JR5-6073	29	....	B	P3	1260	Triode No. 1
7N7	6.3	JR4-3026	29	....	B	P3	1260	Triode No. 2
7Q7	6.3	JR6-2374	21	....	B	P3	500	Ampl. Sect.
7Q7	6.3	JR4-2376	21	....	B	P3	500	Osc. Sect.
7R7	6.3	JR6-2570	10	....	C	P3	1900	Pent. Sect.
7R7	6.3	JR0-4072	0	0	A	P2	Diode	Diode No. 1
7R7	6.3	JR0-3072	0	0	A	P2	Diode	Diode No. 2
7S7	6.3	JR6-2574	18	....	B	P3	950	Heptode Sect.
7S7	6.3	JR4-3576	0	....	B	P3	950	Triode Sect.
7T7	6.3	JR6-2374	9	....	C	P3	1900	
7V7	6.3	JR6-2374	6	....	C	P3	2500	
7W7	6.3	JR6-2375	10	....	D	P3	2200	
7X6	6.3	JR0-6075	0	51	A	P7	Rect.	Plate No. 1
7X6	6.3	JR0-3025	0	51	A	P7	Rect.	Plate No. 2
7X7	6.3	JR3-2040	10	....	D	P3	630	Triode Sect.
7X7	6.3	JR0-5040	0	67	A	P2	Diode	Diode No. 1
7X7	6.3	JR0-6070	0	67	A	P2	Diode	Diode No. 2
7Y4	6.3	JR0-6070	0	28	A	P7	Rect.	Plate No. 1
7Y4	6.3	JR0-3070	0	28	A	P7	Rect.	Plate No. 2
7Z4	6.3	JR0-6070	0	0	A	P7	Rect.	Plate No. 1
7Z4	6.3	JR0-3070	0	0	A	P7	Rect.	Plate No. 2
8AU8	7.5	EV7-9860	10	....	D	P3	3800	Pent. Sect.
8AU8	7.5	EV2-3010	9	....	D	P3	3100	Triode Sect.
8AW8A	7.5	EV7-9860	14	....	D	P3	4700	Pent. Sect.
8AW8A	7.5	EV2-3010	9	....	D	P3	2500	Triode Sect.
8BA8A	7.5	EV7-9860	11	....	D	P3	3800	Pent. Sect.
8BA8A	7.5	EV2-3010	29	....	C	P3	1700	Triode Sect.
8BH8	7.5	EV7-9860	8	....	D	P3	3800	Pent. Sect.
8BH8	7.5	EV2-3010	29	....	C	P3	2100	Triode Sect.
8BN8	7.5	EV8-7090	15	....	D	P3	1600	Triode Sect.
8BN8	7.5	EV0-6030	0	70	A	P2	Diode	Diode No. 1
8BN8	7.5	EV0-1020	0	70	A	P2	Diode	Diode No. 2
8CG7	7.5	EV7-6089	22	....	D	P3	1650	Triode No. 1
8CG7	7.5	EV2-1039	22	....	D	P3	1650	Triode No. 2
8CM7	7.5	EV7-6030	24	....	B	P3	1260	Triode No. 1
8CM7	7.5	EV8-1090	22	....	D	P3	2800	Triode No. 2
8CN7	7.5	EV7-8060	11	....	B	P3	760	Triode Sect.
8CN7	7.5	EV0-2030	0	70	A	P2	Diode	Diode No. 1
8CN7	7.5	EV0-1030	0	70	A	P2	Diode	Diode No. 2
8CS7	7.5	EV7-6080	17	....	C	P3	1400	Triode No. 1
8CS7	7.5	EV3-1090	26	....	D	P3	2840	Triode No. 2
8CY7	7.5	EV7-6080	21	....	B	P3	440	Triode No. 1
8CY7	7.5	EV2-1090	63	....	C	P3	2500	Triode No. 2
8SN7	7.5	JX4-5061	22	....	D	P3	1650	Triode No. 1
8SN7	7.5	JX2-1035	22	....	D	P3	1650	Triode No. 2
9AU7	10.0	EV7-6080	24	....	B	P3	1400	Triode No. 1
9AU7	10.0	EV2-1030	24	....	B	P3	1400	Triode No. 2
9CL8	10.0	EV9-6780	8	....	D	P3	2500	Tetrode Sect.
9CL8	10.0	EV1-2030	12	....	D	P3	4400	Triode Sect.

TABLE 4-2 (Cont.) TUBE TEST DATA CHART

Tube Type	Fil Volts	Selectors	Bias	Shunt	Scale	Press	Mut. Cond.	Notations
9U8	10.0	EV2-6370	15	....	B	P3	1420	Pent. Sect.
9U8	10.0	EV9-1080	16	....	C	P3	2840	Triode Sect.
9X8	10.0	EV7-9861	9	....	D	P3	2900	Pent. Sect.
9X8	10.0	EV2-3861	15	....	D	P3	2840	Triode Sect.
10	7.5	JR3-2000	39	....	B	P3	790	
10C8	10.0	EV8-6790	8	....	D	P3	3800	Pent. Sect.
10C8	10.0	EV2-1030	13	....	D	P3	2800	Triode Sect.
10DA7	10.0	EV7-6080	22	....	C	P3	1650	Triode No. 1
10DA7	10.0	EV3-1090	55	....	C	P3	3000	Triode No. 2
10DE7	10.0	EV7-6080	31	....	B	P3	1260	Triode No. 1
10DE7	10.0	EV2-1090	55	....	D	P3	4100	Triode No. 2
10Y	7.5	JR3-2000	12	....	B	P3	950	
11C5	10.0	JR2-7630	32	....	D	P3	2830	
12A	5.0	JR3-2000	44	....	B	P3	1040	
12A4	12.6	EV2-9010	25	....	D	P3	4900	
12A5	12.6	JR4-2350	51	....	B	P3	1130	
12A6	12.6	JR5-3472	12	....	C	P3	1900	
12A7	12.6	JR0-2365	48	....	B	P3	610	Pent. Sect. Cap=G
12A7	12.6	JR0-5042	0	35	A	P7	Rect.	Rect. Sect.
12A8	12.6	JR0-3475	22	....	B	P3	630	Pent. Sect. Cap=G
12A8	12.6	JR5-6473	37	....	B	P3	190	Osc. Sect.
12AB5	12.6	EV3-9170	21	....	C	P3	2300	
12AC6	12.6	JR2-6573	35	....	A	P2	‡	Make no gas test
	‡ OK Above 400 on 3000 Scale							
12AD6	12.6	JR7-6523	30	0	A	P2	‡	Make no gas test
	‡ OK Above 700 on 3000 Scale							
12AD7	12.6	EV7-6080	8	....	D	P3	950	Triode No. 1
12AD7	12.6	EV2-1030	8	....	D	P3	950	Triode No. 2
12AE6	12.6	JR0-7023	0	0	A	P2	‡	Triode Sect.
	‡ OK Above 300 on 3000 Scale. Make no gas test.							
12AE6	12.6	JR0-6020	0	0	A	P2	Diode	Diode No. 1
12AE6	12.6	JR0-5020	0	0	A	P2	Diode	Diode No. 2
12AE7	12.6	EV0-6087	0	45	A	P2	‡	Triode No. 1
	‡Emission Test. Read as Diode. Make no gas test.							
12AE7	12.6	EV0-1032	0	58	A	P2	‡	Triode No. 2
	‡Emission Test. Read as Diode. Make no gas test.							
12AF6	12.6	JR3-5672	27	....	B	#	725	
	# Hold Down P2 and Press P4							
12AG6	12.6	JR7-6523	30	25	A	P2	‡	Make no gas test
	‡ OK Above Diodes OK							
12AH7	12.6	JX5-6043	20	....	B	P3	1260	Triode No. 1
12AH7	12.6	JX2-3016	20	....	B	P3	1260	Triode No. 2
12AJ6	12.6	JR0-7023	0	0	A	P2	‡	Triode Sect.
	‡ OK Above 200 on 3000 Scale. Make no gas test.							
12AJ6	12.6	JR0-6020	0	0	A	P2	Diode	Diode No. 1
12AJ6	12.6	JR0-5020	0	0	A	P2	Diode	Diode No. 2
12AL5	12.6	JR0-7030	0	67	A	P2	Diode	Diode No. 1
12AL5	12.6	JR0-2050	0	67	A	P2	Diode	Diode No. 2
12AL8	12.6	EV0-3672	0	68	A	P2	‡	Tetrode Sect.
	‡Emission test. Read as Diode. Make no gas test.							
12AL8	12.6	EV0-1098	0	0	A	P2	‡	Triode Sect.
	‡Emission Test. OK Above 250 on 3000 Scale. Make no gas test							
12AQ5	12.6	JR3-5620	21	....	C	P3	2320	
12AT6	12.6	JR3-7020	11	....	B	P3	750	Triode Sect.
12AT6	12.6	JR0-6020	0	0	A	P2	Diode	Diode No. 1
12AT6	12.6	JR0-5020	0	0	A	P2	Diode	Diode No. 2
12AT7	12.6	EV7-6080	14	....	D	P3	2500	Triode No. 1
12AT7	12.6	EV2-1030	14	....	D	P3	2500	Triode No. 2
12AU6	12.6	JR3-5672	10	....	D	P3	2050	
12AU7	12.6	EV7-6080	24	....	B	P3	1400	Triode No. 1
12AU7	12.6	EV2-1030	24	....	B	P3	1400	Triode No. 2
12AV5	12.6	JR2-5730	60	....	C	P3	2450	
12AV6	12.6	JR3-7025	12	....	B	P3	790	Triode Sect.
12AV6	12.6	JR-36025	0	0	A	P2	Diode	Diode No. 1
12AV6	12.6	JR3-5026	0	0	A	P2	Diode	Diode No. 2
12AV7	12.6	EV7-6082	18	....	D	P3	2580	Triode No. 1
12AV7	12.6	EV2-1037	18	....	D	P3	2580	Triode No. 2
12AW6	12.6	JR3-5627	10	....	D	P3	2500	
12AX4	12.6	JX0-5030	0	46	A	P7	Rect.	
12AX7	12.6	EV7-6080	8	....	D	P3	950	Triode No. 1
12AX7	12.6	EV2-1030	8	....	D	P3	950	Triode No. 2
12AY7	12.6	EV7-6080	15	....	D	P3	1100	Triode No. 1
12AY7	12.6	EV2-1030	15	....	D	P3	1100	Triode No. 2
12AZ7	12.6	EV7-6080	14	....	D	P3	2500	Triode No. 1
12AZ7	12.6	EV2-1030	14	....	D	P3	2500	Triode No. 2
12B4	12.6	EV2-9010	50	....	D	P3	4100	
12B7	12.6	JR6-2374	22	....	B	P3	1200	
12B8	12.6	JR0-3420	22	....	B	P3	1140	Pent. Sect. Cap=G
12B8	12.6	JR7-5060	0	....	B	P3	1260	Triode Sect.
12BA6	12.6	JR3-5672	9	....	C	P3	2070	
12BA7	12.6	EV7-9132	17	....	B	P3	470	Ampl. Sect.
12BA7	12.6	EV2-9137	25	....	B	P3	470	Osc. Sect.
12BD6	12.6	JR3-5672	13	....	D	P3	1260	
12BE6	12.6	JR7-5623	11	....	B	P3	900	Ampl. Sect.
12BE6	12.6	JR3-5627	0	....	B	P3	1000	Osc. Sect.
12BF6	12.6	JR3-7020	14	....	B	P3	1200	Triode Sect.
12BF6	12.6	JR3-6020	0	0	A	P2	Diode	Diode No. 1
12BF6	12.6	JR3-5020	0	0	A	P2	Diode	Diode No. 2
12BH7	12.6	EV7-6082	29	....	C	P3	1500	Triode No. 1
12BH7	12.6	EV2-1037	29	....	C	P3	1500	Triode No. 2
12BK5	12.6	EV3-1860	0	....	D	P3	3450	
12BK6	12.6	JR3-7025	6	....	B	P3	790	Triode Sect.
12BK6	12.6	JR0-6025	0	0	A	P2	Diode	Diode No. 1
12BK6	12.6	JR0-5027	0	0	A	P2	Diode	Diode No. 2
12BL6	12.6	JR2-6573	30	0	A	P2	‡	Make no gas test
	‡ OK Above Diodes OK							
12BN6	12.6	JR2-7536	0	....	B	P3	440	Limiter Grid
12BN6	12.6	JR6-7532	0	....	B	P3	570	Quadrature Grid

Tube Type	Fil Volts	Selectors	Bias	Shunt	Scale	Press	Mut. Cond.	Notations
12BQ6	12.6	JR5-0470	50	....	C	P3	2800	Cap=P
12BR7	12.6	EV2-1030	14	....	D	P3	2500	Triode Sect.
12BR7	12.6	EV0-7080	0	70	A	P2	Diode	Diode No. 1
12BR7	12.6	EV0-6080	0	70	A	P2	Diode	Diode No. 2
12BT6	12.6	JR3-7020	13	....	B	P3	820	Triode Sect.
12BT6	12.6	JR3-6020	0	35	A	P2	Diode	Diode No. 1
12BT6	12.6	JR3-5020	0	35	A	P2	Diode	Diode No. 2
12BU6	12.6	JR3-7020	34	....	B	P3	940	Triode Sect.
12BU6	12.6	JR3-6020	0	25	A	P2	Diode	Diode No. 1
12BU6	12.6	JR3-5020	0	25	A	P2	Diode	Diode No. 2
12BV7	12.6	EV2-7813	9	....	D	P3	5700	
12BW4	12.6	EV0-7091	0	0	A	P7	Rect.	Plate No. 1
12BW4	12.6	EV0-1097	0	0	A	P7	Rect.	Plate No. 2
12BY7	12.6	EV2-7813	9	....	D	P3	5700	
12BZ7	12.6	EV7-6080	8	....	D	P3	2200	Triode No. 1
12BZ7	12.6	EV2-1030	8	....	D	P3	2200	Triode No. 2
12C5	12.6	JR2-7630	10	....	D	#	5650	
	# Hold Down P2 And Press P3							
12C8	12.6	JR0-3672	24	....	B	P3	725	Pent. Sect. Cap=G
12C8	12.6	JR0-5073	0	0	A	P2	Diode	Diode No. 1
12C8	12.6	JR0-4073	0	0	A	P2	Diode	Diode No. 2
12CA5	12.6	JR2-7630	25	....	D	P3	3800	
12CM6	12.6	EV3-9170	21	....	C	P3	2320	
12CN5	12.6	JR0-6732	0	40	A	P2	‡	Make no gas test
	‡ OK Above Diodes OK							
12CR6	12.6	JR7-5632	18	....	B	P3	1400	Pent. Sect.
12CR6	12.6	JR0-2030	0	0	A	P2	Diode	Diode Sect.
12CS6	12.6	JR3-5627	20	....	B	#	190	Grid No. 1
	# Hold Down P2 and Press P3							
12CS6	12.6	JR7-5623	0	....	B	#	315	Grid No. 3
	# Hold Down P2 and Press P3							
12CT8	12.6	EV7-9860	10	....	D	P3	3800	Pent. Sect.
12CT8	12.6	EV2-3010	9	....	D	P3	3100	Triode Sect.
12CU5	12.6	JR2-7630	10	....	D	#	5650	
	# Hold Down P2 and Press P3							
12CU6	12.6	JR5-0470	50	....	C	P3	2800	Cap=P
12D4	12.6	JX0-5030	0	50	A	P7	Rect.	
12DB5	12.6	EV3-9120	10	....	D	#	5650	
	# Hold Down P2 and Press P3							
12DF5	12.6	EV0-6080	0	0	A	P7	Rect.	Plate No. 1
12DF5	12.6	EV0-1030	0	0	A	P7	Rect.	Plate No. 2
12DM5	12.6	JR2-7630	10	....	D	#	5650	
	#Hold Down P2 and Press P3							
12DQ6	12.6	JR5-0470	36	....	D	P3	3800	Cap=P
12F5	12.6	JR0-4070	10	....	D	P3	950	Cap=G
12F8	12.6	EV9-2378	30	0	A	P2	‡	Pent. Sect.
	‡ OK Above 300 on 3000 Scale. Make no gas test.							
12F8	12.6	EV0-6070	0	0	A	P2	‡	Diode No. 1
	‡ OK Above 500 on 3000 Scale							
12F8	12.6	EV0-1070	0	0	A	P2	‡	Diode No. 2
	‡ OK Above 500 on 3000 Scale							
12G4	12.6	JR6-3070	22	....	D	P3	1640	
12G8	12.6	EV0-6078	0	50	A	P2	‡	Triode No. 1
	‡ OK Above Diodes OK. Make no gas test.							
12G8	12.6	EV0-1023	0	0	A	P2	‡	Triode No. 2
	‡ OK Above 500 on 3000 Scale. Make no gas test.							
12H6	12.6	JR0-5072	0	62	A	P2	Diode	Diode No. 1
12H6	12.6	JR0-3042	0	62	A	P2	Diode	Diode No. 2
12J5	12.6	JR5-3072	22	....	D	P3	1640	
12J7	12.6	JR0-3475	22	....	B	P3	770	Cap=G
12J8	12.6	EV0-3621	0	45	A	P2	‡	Tetrode Sect.
	‡Emission Test. Read as Diode. Make no gas test.							
12J8	12.6	EV0-9070	0	56	A	P2	Diode	Diode No. 1
12J8	12.6	EV0-8070	0	56	A	P2	Diode	Diode No. 2
12K5	12.6	JR2-7530	10	....	C	#	1900	Make no gas test
	# Hold Down P2 and Press P3. Release P3 Before P2							
12K7	12.6	JR0-3475	19	....	B	P3	920	Cap=G
12K8	12.6	JR5-3476	11	....	B	P3	630	Heptode Sect. Cap=G
12K8	12.6	JR5-6473	0	....	C	P3	1500	Triode Sect.
12L6	12.6	JR5-3470	10	....	D	#	5650	
	# Hold Down P2 and Press P3							
12L8	12.6	JW2-7513	10	....	B	P3	1340	Pent. No. 1
12L8	12.6	JW3-4512	10	....	B	P3	1340	Pent. No. 2
12Q7	12.6	JR0-3070	17	....	B	P3	500	Triode Sect. Cap=G
12Q7	12.6	JR0-5070	0	0	A	P2	Diode	Diode No. 1
12Q7	12.6	JR0-4070	0	0	A	P2	Diode	Diode No. 2
12R5	12.6	JR2-7630	20	....	D	#	4400	
	# Hold Down P2 and Press P3							
12S8	12.6	JX0-6010	10	....	B	P3	570	Triode Sect. Cap=G
12S8	12.6	JX0-3050	0	0	A	P2	Diode	Diode No. 1
12S8	12.6	JX0-4010	0	0	A	P2	Diode	Diode No. 2
12S8	12.6	JX0-2010	0	0	A	P2	Diode	Diode No. 3
12SA7	12.6	JR7-3465	21	....	B	P3	470	Ampl. Sect.
12SA7	12.6	JR5-3467	21	....	B	P3	470	Osc. Sect.
12SC7	12.6	JX4-5061	10	....	D	P3	840	Triode No. 1
12SC7	12.6	JX3-1065	10	....	D	P3	840	Triode No. 2
12SF5	12.6	JX3-5010	10	....	D	P3	950	
12SF7	12.6	JX1-6432	0	....	B	P3	1260	Pent. Sect.
12SF7	12.6	JX0-5036	0	0	A	P2	Diode	Diode Sect.
12SG7	12.6	JR4-7652	0	....	C	P3	2100	
12SH7	12.6	JR4-7652	0	....	C	P3	2150	
12SJ7	12.6	JR4-7653	20	....	D	P3	1050	
12SK7	12.6	JR4-7653	10	....	D	P3	1260	
12SL7	12.6	JX4-5061	7	....	D	P3	1000	Triode No. 1
12SL7	12.6	JX2-1035	7	....	D	P3	1000	Triode No. 2
12SN7	12.6	JX4-5061	22	....	D	P3	1650	Triode No. 1
12SN7	12.6	JX2-1035	22	....	D	P3	1650	Triode No. 2
12SQ7	12.6	JX1-6032	11	....	D	P3	700	Triode Sect.
12SQ7	12.6	JX0-5036	0	0	A	P2	Diode	Diode No. 1
12SQ7	12.6	JX0-4036	0	0	A	P2	Diode	Diode No. 2

TABLE 4-2 (Cont.) TUBE TEST DATA CHART

Tube Type	Fil Volts	Selectors	Bias	Shunt	Scale	Press	Mut. Cond.	Notations
12SR7	12.6	JX1-6032	18	....	B	P3	1200	Triode Sect.
12SR7	12.6	JX0-5036	0	0	A	P2	Diode	Diode No. 1
12SR7	12.6	JX0-4036	0	0	A	P2	Diode	Diode No. 2
12SW7	12.6	JX1-6032	14	....	B	P3	1200	Triode Sect.
12SW7	12.6	JX0-5036	0	0	A	P2	Diode	Diode No. 1
12SW7	12.6	JX0-4036	0	0	A	P2	Diode	Diode No. 2
12SX7	12.6	JX4-5061	21	....	D	P3	1640	Triode No. 1
12SX7	12.6	JX2-1035	21	....	D	P3	1640	Triode No. 2
12SY7	12.6	JR7-3465	21	....	B	P3	470	Ampl. Sect.
12SY7	12.6	JR5-3467	21	....	B	P3	470	Osc. Sect.
12U7	12.6	EV0-6087	0	0	A	P2	‡	Triode No. 1
	‡ OK Above 300 on 3000 Scale. Make no gas test.							
12U7	12.6	EV0-1032	0	0	A	P2	‡	Triode No. 2
	‡ OK Above 300 on 3000 Scale. Make no gas test.							
12V6	12.6	JR5-3472	21	....	C	P3	2320	
12W6	12.6	JR5-3470	10	....	D	#	5650	
	# Hold Down P2 and Press P3							
12X4	12.6	JR0-6073	0	16	A	P7	Rect.	Plate No. 1
12X4	12.6	JR0-3076	0	16	A	P7	Rect.	Plate No. 2
12Z3	12.6	JR0-2030	0	46	A	P7	Rect.	
12Z5	12.6	JR0-6050	0	25	A	P7	Rect.	Plate No. 1
12Z5	12.6	JR0-2030	0	25	A	P7	Rect.	Plate No. 2
14A4	12.6	JR6-2070	17	....	C	P3	1650	
14A5	12.6	JR6-2370	12	....	C	P3	1900	
14A7	12.6	JR6-2374	22	....	B	P3	1200	
14AF7	12.6	JR5-6070	21	....	C	P3	1640	Triode No. 1
14AF7	12.6	JR4-3020	21	....	C	P3	1640	Triode No. 2
14B6	12.6	JR3-2070	11	....	D	P3	700	Triode Sect.
14B6	12.6	JR0-6072	0	0	A	P2	Diode	Diode No. 1
14B6	12.6	JR0-5072	0	0	A	P2	Diode	Diode No. 2
14B8	12.6	JR6-2574	27	....	B	P3	630	Pent. Sect.
14B8	12.6	JR4-3576	18	....	B	P3	315	Osc. Sect.
14C5	12.6	JR6-2370	23	....	C	P3	2330	
14C7	12.6	JR6-2374	20	....	D	P3	990	
14E6	12.6	JR3-2070	12	....	B	P3	1380	Triode Sect.
14E6	12.6	JR0-6072	0	0	A	P2	Diode	Diode No. 1
14E6	12.6	JR0-5072	0	0	A	P2	Diode	Diode No. 2
14E7	12.6	JR6-2570	24	....	B	P3	820	Pent. Sect.
14E7	12.6	JR0-4072	0	0	A	P2	Diode	Diode No. 1
14E7	12.6	JR0-3072	0	0	A	P2	Diode	Diode No. 2
14F7	12.6	JR5-6073	0	....	B	P3	1000	Triode No. 1
14F7	12.6	JR4-3026	0	....	B	P3	1000	Triode No. 2
14F8	12.6	HS8-6050	10	....	D	P3	3150	Triode No. 1
14F8	12.6	HS1-3040	10	....	D	P3	3150	Triode No. 2
14H7	12.6	JR6-2374	10	....	D	P3	2400	
14J7	12.6	JR6-2574	18	....	B	P3	500	Heptode Sect.
14J7	12.6	JR4-3576	18	....	B	P3	630	Triode Sect.
14N7	12.6	JR5-6073	20	....	D	P3	1640	Triode No. 1
14N7	12.6	JR4-3026	20	....	D	P3	1640	Triode No. 2
14Q7	12.6	JR6-2374	21	....	B	P3	500	Pent. Sect.
14Q7	12.6	JR4-2376	21	....	B	P3	500	Osc. Sect.
14R7	12.6	JR6-2570	10	....	C	P3	1900	Pent. Sect.
14R7	12.6	JR0-4072	0	0	A	P2	Diode	Diode No. 1
14R7	12.6	JR0-3072	0	0	A	P2	Diode	Diode No. 2
14S7	12.6	JR6-2574	18	....	B	P3	950	Heptode Sect.
14S7	12.6	JR4-3576	0	....	B	P3	950	Triode Sect.
14V7	12.6	JR6-2374	6	....	C	P3	2500	
14W7	12.6	JR6-2375	10	....	D	P3	2200	
14X7	12.6	JR3-2040	10	....	D	P3	630	Triode Sect.
14X7	12.6	JR0-5040	0	67	A	P2	Diode	Diode No. 1
14X7	12.6	JR0-6070	0	67	A	P2	Diode	Diode No. 2
14Y4	12.6	JR0-6070	0	0	A	P7	Rect.	Plate No. 1
14Y4	12.6	JR0-3070	0	0	A	P7	Rect.	Plate No. 2
14Z3	12.6	JR0-2030	0	46	A	P7	Rect.	
15	2.0	JR0-2340	10	....	B	#	390	Cap=G
	# Hold Down P2 And Press P3							
15A6	12.6	EV2-7136	7	....	D	P3	6300	
17AV5	20.0	JR2-5730	35	....	D	P3	3450	Make "Line Test" at 1400 on 3000 Scale.
17AX4	20.0	JX0-5030	0	30	A	P7	Rect.	Make "Line Test" at 1400 on 3000 Scale.
17C5	20.0	JR2-7630	10	....	D	#	5000	# Hold down P2 and Press P3. Make "Line Test" at 1400 on 3000 Scale.
17CA5	20.0	JR2-7630	15	....	D	P3	3150	Make "Line Test" at 1400 on 3000 Scale
17DQ6	20.0	JR5-0470	36	....	D	P3	3800	Cap=P
17H3	20.0	EV0-3010	0	40	A	P7	Rect.	Make "Line Test" at 1400 on 3000 Scale.
17L6	20.0	JR5-3470	10	....	D	#	4700	# Hold down P2 and Press P3. Make "Line Test" at 1400 on 3000 Scale.
17R5	20.0	JR2-7630	20	....	D	#	3150	# Hold down P2 and Press P3. Make "Line Test" at 1400 on 3000 Scale.
18A5	20.0	JR2-5730	43	....	C	P3	3000	
19	2.0	JR4-5000	15	....	B	P3	630	Triode No. 1
19	2.0	JR3-2000	15	....	B	P3	630	Triode No. 2
19AU4	20.0	JX0-5030	0	60	A	P7	Rect.	
19BG6	20.0	JR5-0730	18	....	D	P3	3800	Cap=P
19C8	20.0	EV8-9070	12	....	D	P3	790	Triode Sect.
19C8	20.0	EV8-6070	0	67	A	P2	Diode	Diode No. 1
19C8	20.0	EV8-2030	0	67	A	P2	Diode	Diode No. 2
19C8	20.0	EV8-1070	0	67	A	P2	Diode	Diode No. 3
19J6	20.0	JR5-2076	17	....	D	P3	3350	Triode No. 1
19J6	20.0	JR6-3075	17	....	D	P3	3350	Triode No. 2
19T8	20.0	EV8-9076	11	....	B	P3	760	Triode Sect.
19T8	20.0	EV0-6071	0	67	A	P2	Diode	Diode No. 1
19T8	20.0	EV0-2037	0	67	A	P2	Diode	Diode No. 2
19T8	20.0	EV0-1078	0	67	A	P2	Diode	Diode No. 3
19V8	20.0	EV6-1038	11	....	B	P3	760	Triode Sect.
19V8	20.0	EV0-9032	0	13	A	P2	Diode	Diode No. 1
19V8	20.0	EV0-7086	0	71	A	P2	Diode	Diode No. 2
19V8	20.0	EV0-2038	0	71	A	P2	Diode	Diode No. 3
19X3	20.0	EV0-9030	0	58	A	P7	Rect.	

Tube Type	Fil Volts	Selectors	Bias	Shunt	Scale	Press	Mut. Cond.	Notations
19X8	20.0	EV7-9861	9	....	D	P3	2900	Pent. Sect.
19X8	20.0	EV2-3861	15	....	D	P3	2840	Triode Sect.
19Y3	20.0	EV0-9030	0	58	A	P7	Rect.	
20	3.0	JR3-2000	77	....	B	P3	330	
RK20A	7.5	JR3-0240	0	....	C	P3	1600	Cap=P
VX21	1.1	CX0-4000	0	0	A	P2	Diode	Pins: F-=2, F+=7, P=4. OK Above 250 On 3000 Scale
21A6	20.0	EV2-0839	45	....	D	P3	3800	Cap=P
22	3.0	JR0-2300	20	....	B	#	315	Cap=G
		# Hold Down P2 And Press P3						
24	2.5	JR0-2340	12	....	B	P3	630	Cap=G
24A	2.5	JR0-2340	12	....	B	P3	630	Cap=G
VT25A	7.5	JR3-2000	30	....	B	P3	1260	
25A6	25.0	JR5-3470	43	....	B	P3	1450	
25A7	25.0	JR5-3476	50	....	B	P3	1130	Pent. Sect.
25A7	25.0	JR0-6023	0	51	A	P7	Rect.	Rect. Sect.
25AC5	25.0	JR5-3070	0	....	B	P3	950	
25AV5	25.0	JR2-5730	50	....	C	P3	2450	
25AX4	25.0	JX0-5030	0	46	A	P7	Rect.	
25B5	25.0	JR4-2350	0	....	B	P3	1570	
25B6	25.0	JR5-3470	52	....	C	P3	2500	
25B8	25.0	JR0-3420	22	....	B	P3	1260	Pent. Sect. Cap=G
25B8	25.0	JR7-5060	10	....	B	P3	950	Triode Sect.
25BK5	25.0	EV3-1860	0	....	D	P3	3450	
25BQ6	25.0	JR5-0470	50	....	C	P3	2800	Cap=P
25C5	25.0	JR2-7630	10	....	D	#	5650	
		# Hold Down P2 and Press P3						
25C6	25.0	JR5-3470	33	....	D	P3	3800	
25CA5	25.0	JR2-7630	25	....	D	P3	3800	
25CD6	25.0	JR5-0730	42	....	D	P3	4100	Cap=P
25CU6	25.0	JR5-0470	50	....	C	P3	2800	Cap=P
25D8	25.0	JR0-3420	18	....	B	P3	1200	Pent. Sect. Cap=G
25D8	25.0	JR5-6020	0	....	B	P3	700	Triode Sect.
25D8	25.0	JR5-7020	0	25	A	P2	Diode	Diode Sect.
25DN6	25.0	JR5-0730	28	....	D	#	5650	Cap=P
		# Hold Down P2 and Press P3						
25DQ6	25.0	JR5-0470	36	....	D	P3	3800	Cap=P
25EC6	25.0	JR5-0730	50	....	D	P3	3800	Cap=P
25F5	25.0	JR2-7630	35	....	C	P3	2500	
25L6	25.0	JR5-3472	10	....	D	#	5650	
		# Hold Down P2 And Press P3						
25N6	25.0	JR5-3470	0	....	B	P3	1570	
25T	6.3	JR3-0000	0	....	B	P3	630	Cap=P
25W4	25.0	JX0-5030	0	56	A	P7	Rect.	
25W6	25.0	JR5-3470	10	....	D	#	5650	
		# Hold Down P2 and Press P3						
25Y5	25.0	JR0-5040	0	0	A	P7	Rect.	Plate No. 1
25Y5	25.0	JR0-2030	0	0	A	P7	Rect.	Plate No. 2
25Z5	25.0	JR0-5040	0	51	A	P7	Rect.	Plate No. 1
25Z5	25.0	JR0-2030	0	51	A	P7	Rect.	Plate No. 2
25Z5MG	25.0	JR0-5070	0	51	A	P7	Rect.	Plate No. 1
25Z5MG	25.0	JR0-3040	0	51	A	P7	Rect.	Plate No. 2
25Z6	25.0	JR0-5072	0	51	A	P7	Rect.	Plate No. 1
25Z6	25.0	JR0-3042	0	51	A	P7	Rect.	Plate No. 2
26	1.5	JR3-2000	43	....	B	P3	725	
26A6	25.0	JR3-5672	9	....	C	P3	2500	
26A7	25.0	JW2-7513	11	....	D	#	3450	Pent. No. 1
		# Hold Down P2 And Press P3						
26A7	25.0	JW3-4512	11	....	D	#	3450	Pent. No. 2
		# Hold Down P2 And Press P3						
26BK6	25.0	JR3-7025	6	....	B	P3	790	Triode Sect.
26BK6	25.0	JR0-6025	0	0	A	P2	Diode	Diode No. 1
26BK6	25.0	JR0-5027	0	0	A	P2	Diode	Diode No. 2
26C6	25.0	JR3-7020	18	....	B	P3	1200	Triode Sect.
26C6	25.0	JR3-6020	0	0	A	P2	Diode	Diode No. 1
26C6	25.0	JR3-5020	0	0	A	P2	Diode	Diode No. 2
26D6	25.0	JR7-5623	11	....	B	P3	900	Ampl. Sect.
26D6	25.0	JR3-5627	0	....	B	P3	1000	Osc. Sect.
26E6	25.0	JR5-3470	30	....	D	P3	3800	
26Z5W	25.0	EV0-6080	0	50	A	P7	Rect.	Plate No. 1
26Z5W	25.0	EV0-1030	0	50	A	P7	Rect.	Plate No. 2
27	2.5	JR3-2040	41	....	B	P3	630	
27S	2.5	JR3-2040	41	....	B	P3	630	
28D7	25.0	JR7-5362	20	....	D	#	2140	Pent. No. 1
		# Hold Down P2 And Press P3						
28D7	25.0	JR2-4367	20	....	D	#	2140	Pent. No. 2
		# Hold Down P2 And Press P3						
30	2.0	JR3-2000	40	....	B	P3	570	
31	2.0	JR3-2000	65	....	B	P3	580	
32	2.0	JR0-2300	19	....	B	#	400	Cap=G
		# Hold Down P2 And Press P3						
32L7	35.0	JR5-3470	34	....	C	P3	3000	Ampl. Sect.
32L7	35.0	JR0-6023	0	51	A	P7	Rect.	Rect. Sect.
33	2.0	JR3-2400	35	....	B	P3	900	
RK33	6.3	JR4-6050	38	....	B	P3	860	Triode No. 1
RK33	6.3	JR0-3020	38	....	B	P3	860	Triode No. 2 Cap=G
34	2.0	JR0-2300	17	....	B	#	380	Cap=G
		# Hold Down P2 And Press P3						
RK34	6.3	JR3-0040 Right Cap=P	18	....	B	P3	1670	Triode No. 1
RK34	6.3	JR5-0040 Left Cap=P	18	....	B	P3	1670	Triode No. 2
35	2.5	JR0-2340	24	....	B	P3	650	Cap=G
35A5	35.0	JR6-2370	33	....	D	P3	3700	
35B5	35.0	JR3-5620	32	....	D	P3	2830	
35C5	35.0	JR2-7630	32	....	D	P3	2830	
35CD6	35.0	JR5-0730	42	....	D	P3	4100	Cap=P
35L6	35.0	JR5-3470	33	....	D	P3	3700	

TABLE 4-2 (Cont.) TUBE TEST DATA CHART

Tube Type	Fil Volts	Selectors	Bias	Shunt	Scale	Press	Mut. Cond.	Notations
35W4	BLST	JR0-3670	....	....	....	....	.....	Short on 1-2-3-4-5
35W4	35.0	JR0-5070	0	56	A	P7	Rect.	Rect. Sect.
35Y4	BLST	JR0-2470	....	....	....	....	.....	Short on 1-2-3-4-5
35Y4	35.0	JR0-2070	0	56	A	P7	Rect.	Rect. Sect.
35Z3	35.0	JR0-2070	0	56	A	P7	Rect.	
35Z4	35.0	JR0-5070	0	56	A	P7	Rect.	
35Z5	BLST	JR0-5370	....	....	....	....	.....	Short on 1-2-3-4-5
35Z5	35.0	JR0-5070	0	56	A	P7	Rect.	Rect. Sect.
35Z6	35.0	JR0-5070	0	56	A	P7	Rect.	Plate No. 1
35Z6	35.0	JR0-3040	0	56	A	P7	Rect.	Plate No. 2
36	6.3	JR0-2340	24	....	B	P3	660	Cap=G
37	6.3	JR3-2040	41	....	B	P3	570	
38	6.3	JR0-2340	39	....	B	P3	660	Cap=G
39/44	6.3	JR0-2340	28	....	B	P3	630	Cap=G
T40	7.5	JR3-0000	0	....	B	P3	760	Cap=P
40	5.0	JR3-2000	32	....	B	P3	125	
40Z5	BLST	JR0-5370	....	....	....	....	.....	Short on 1-2-3-4-5
40Z5	50.0	JR0-5070	0	56	A	P7	Rect.	
41	6.3	JR4-2350	34	....	B	P3	1000	
42	6.3	JR4-2350	29	....	B	P3	1260	
43	25.0	JR4-2350	43	....	B	P3	1450	
45	2.5	JR3-2000	61	....	B	P3	1170	
45Z3	50.0	HT0-2080	0	51	A	P7	Rect.	
45Z5	BLST	JR0-5370	....	....	....	....	.....	Short on 1-2-3-4-5
45Z5	50.0	JR0-5070	0	56	A	P7	Rect.	Rect. Sect.
46	2.5	JR3-2400	30	....	B	P3	1260	
47	2.5	JR3-2400	22	....	B	P3	1260	
48	25.0	JR4-2350	58	....	B	P3	1260	
49	2.0	JR3-2400	49	....	B	P3	710	
50	7.5	JR3-2000	61	....	B	P3	950	
50A5	50.0	JR6-2370	10	....	D	#	5650	
		# Hold Down P2 And Press P3						
50B5	50.0	JR3-5620	10	....	D	#	5650	
		# Hold Down P2 And Press P3						
50BK5	50.0	EV3-1860	0	....	D	P3	3450	
50C5	50.0	JR2-7630	10	....	D	#	5650	
		# Hold Down P2 And Press P3						
50C6	50.0	JR5-3472	33	....	D	P3	3800	
50L6	50.0	JR5-3472	10	....	D	#	5650	
		# Hold Down P2 And Press P3						
50X6	50.0	JR0-6075	0	51	A	P7	Rect.	Plate No. 1
50X6	50.0	JR0-3025	0	51	A	P7	Rect.	Plate No. 2
50Y6	50.0	JR0-5070	0	51	A	P7	Rect.	Plate No. 1
50Y6	50.0	JR0-3040	0	51	A	P7	Rect.	Plate No. 2
50Y7	BLST	JR0-0600	....	....	....	....	.....	Short on 1-2-3-4-5
50Y7	50.0	JR0-5070	0	51	A	P7	Rect.	Plate No. 1
50Y7	50.0	JR0-3040	0	51	A	P7	Rect.	Plate No. 2
50Z7	BLST	JR0-0600	....	....	....	....	.....	Short on 1-2-3-4-5
50Z7	50.0	JR0-5070	0	51	A	P7	Rect.	Plate No. 1
50Z7	50.0	JR0-3040	0	51	A	P7	Rect.	Plate No. 2
51/51S	2.5	JR0-2340	24	....	B	P3	640	Cap=G
52	6.3	JR3-2400	33	....	C	P3	1500	
53	2.5	JR5-6042	12	....	B	P3	950	Triode No. 1
53	2.5	JR3-2046	12	....	B	P3	950	Triode No. 2
55	2.5	JR0-2050	39	....	B	P3	610	Triode Sect. Cap=G
55	2.5	JR0-4050	0	0	A	P2	Diode	Diode No. 1
55	2.5	JR0-3050	0	0	A	P2	Diode	Diode No. 2
56	2.5	JR3-2040	29	....	B	P3	920	
57	2.5	JR0-2354	21	....	B	P3	770	Cap=G
57A	6.3	JR0-2354	21	....	B	P3	770	Cap=G
58	2.5	JR0-2354	24	....	B	P3	900	Cap=G
58A/58AS	6.3	JR0-2354	24	....	B	P3	900	Cap=G
59	2.5	JR4-2365	22	....	B	P3	1260	
HY65	6.3	JR5-0407	0	....	C	P3	1900	Cap=P
KT66	6.3	JR5-3472	15	....	D	P3	4000	
VT67	2.0	JR3-2000	40	....	B	P3	570	
HY69	6.3	JR3-0240	0	....	C	P3	1900	Cap=P
70A7	75.0	JR5-3470	50	....	C	P3	1900	Pent. Sect.
70A7	75.0	JR0-2000	0	56	A	#	Rect.	Rect. Sect.
		# Hold Down P8 And Press P7						
70L7	75.0	JR5-3460	41	....	C	P3	3150	Pent. Sect.
70L7	75.0	JR0-7023	0	56	A	P7	Rect.	Rect. Sect.
71A	5.0	JR3-2000	73	....	B	P3	1040	
72	2.5	JR0-0000	0	86	A	P4	Rect.	Cap=P
75	6.3	JR0-2050	11	....	B	P3	470	Triode Sect. Cap=G
75	6.3	JR0-4052	0	0	A	P2	Diode	Diode No. 1
75	6.3	JR0-3052	0	0	A	P2	Diode	Diode No. 2
75MG	6.3	JR0-4070	11	....	B	P3	470	Triode Sect. Cap=G
75MG	6.3	JR0-5070	0	0	A	P2	Diode	Diode No. 1
75MG	6.3	JR0-6070	0	0	A	P2	Diode	Diode No. 2
76	6.3	JR3-2040	29	....	B	P3	900	
77	6.3	JR0-2354	21	....	D	P3	770	Cap=G
78	6.3	JR0-2354	24	....	B	P3	900	Cap=G
79	6.3	JR0-5040	15	....	B	P3	630	Triode No. 1 Cap=G
79	6.3	JR3-2040	15	....	B	P3	630	Triode No. 2
80	5.0	JR0-3000	0	0	A	P7	Rect.	Plate No. 1
80	5.0	JR0-2000	0	0	A	P7	Rect.	Plate No. 2
81	7.5	JR0-2000	0	35	A	P6	Rect.	
82	2.5	JR0-3000	0	46	A	P7	Rect.	Plate No. 1
82	2.5	JR0-2000	0	46	A	P7	Rect.	Plate No. 2
83	5.0	JR0-3000	0	64	A	P7	Rect.	Plate No. 1
83	5.0	JR0-2000	0	51	A	P7	Rect.	Plate No. 2
83V	5.0	JR0-3000	0	59	A	P7	Rect.	Plate No. 1
83V	5.0	JR0-2000	0	59	A	P7	Rect.	Plate No. 2
84	6.3	JR0-3040	0	35	A	P7	Rect.	Plate No. 1
84	6.3	JR0-2040	0	35	A	P7	Rect.	Plate No. 2
85	6.3	JR0-2050	39	....	B	P3	620	Triode Sect. Cap=G
85	6.3	JR0-4052	0	0	A	P2	Diode	Diode No. 1
85	6.3	JR0-3052	0	0	A	P2	Diode	Diode No. 2

Tube Type	Fil Volts	Selectors	Bias	Shunt	Scale	Press	Mut. Cond.	Notations
85AS	6.3	JR0-2050	28	....	B	P3	700	Triode Sect. Cap=G
85AS	6.3	JR0-4052	0	0	A	P2	Diode	Diode No. 1
85AS	6.3	JR0-3052	0	0	A	P2	Diode	Diode No. 2
89/89Y	6.3	JR0-2354	37	....	B	P3	980	Cap=G
99	3.0	JR3-2000	55	....	B	P3	270	
101D	4.3	JR3-2000	55	....	B	P3	700	
101F	4.3	JR3-2000	53	....	B	P3	700	
102D	2.0	JR3-2000	25	....	B	P3	315	
102F	2.0	JR3-2000	25	....	B	P3	365	
104D	4.3	JR3-2000	75	....	B	P3	700	
CK108	6.3	JR0-2354	21	....	D	P3	770	Cap=G
112A	5.0	JR3-2000	44	....	B	P3	1040	
CK113	50.0	JR5-3476	48	....	B	P3	1130	Pent. Sect.
CK113	50.0	JR0-6020	0	46	A	P7	Rect.	Rect. Sect.
HY114	1.5	JR0-0000	19	....	B	P3	700	Right Cap=P
		Left Cap=G						
117L7	117.0	JR4-3570	37	....	C	P3	2500	Pent. Sect.
117L7	117.0	JR0-6020	0	56	A	P7	Rect.	Rect. Sect.
117M7	117.0	JR4-3570	37	....	C	P3	2500	Pent. Sect.
117M7	117.0	JR0-6020	0	56	A	P7	Rect.	Rect. Sect.
117N7	117.0	JR4-3560	37	....	D	P3	3150	Pent. Sect.
117N7	117.0	JR0-7000	0	56	A	#	Rect.	Rect. Sect.
		# Hold Down P8 And Press P7						
117P7	117.0	JR4-3560	37	....	C	P3	2500	Pent. Sect.
117P7	117.0	JR0-7000	0	67	A	#	Rect.	Rect. Sect.
		# Hold Down P8 And Press P7						
117Z3	117.0	JR0-5060	0	56	A	P7	Rect.	
117Z4	117.0	JR0-5070	0	56	A	P7	Rect.	
117Z6	117.0	JR0-5070	0	56	A	P7	Rect.	Plate No. 1
117Z6	117.0	JR0-3040	0	56	A	P7	Rect.	Plate No. 2
C182	5.0	JR3-2000	83	....	B	P3	630	
C182A	5.0	JR3-2000	79	....	B	P3	950	
182B	5.0	JR3-2000	58	....	B	P3	950	
183	5.0	JR3-2000	79	....	B	P3	950	
205F	5.0	JR3-2000	34	....	B	P3	920	
231D	3.0	JR3-2000	49	....	B	P3	340	
244A	2.0	JR3-2040	42	....	B	P3	570	
245A	2.0	JR0-2340	55	....	B	P3	460	Cap=G
247A	2.0	JR3-2040	33	....	B	P3	580	
TS251	50.0	JR5-3476	50	....	B	P3	1130	Pent. Sect.
TS251	50.0	JR0-6023	0	51	A	P7	Rect.	Rect. Sect.
257A	3.0	JR0-2000	49	....	B	P3	340	Cap=G
259A	2.0	JR0-2340	33	....	B	P3	700	Cap=G
262B	10.0	JR0-2030	31	....	B	P3	630	Cap=G
264B	1.5	JR3-2000	49	....	B	P3	365	
264C	1.5	JR3-2000	54	....	B	P3	365	
271A	5.0	JR3-2040	32	....	C	P3	1830	
272A	10.0	JR3-2040	51	....	B	P3	600	
274A	5.0	JR0-2000	0	0	A	P7	Rect.	Plate No. 1
274A	5.0	JR0-3000	0	0	A	P7	Rect.	Plate No. 2
274B	5.0	HR0-6000	0	14	A	P7	Rect.	Plate No. 1
274B	5.0	HR0-4000	0	14	A	P7	Rect.	Plate No. 2
275A	5.0	JR3-2000	68	....	C	P3	1700	
283A	2.0	JR0-2340	28	....	B	P3	630	Cap=G
285A	2.0	JR0-2304	40	....	B	P3	570	Cap=G
286A	2.0	JR0-2354	31	....	B	P3	570	
290A	10.0	JR0-2354	31	....	B	P3	640	Cap=G
291A	10.0	JR0-2365	21	....	B	#	440	Ampl. Sect.
		# Cap=G. Hold Down P2 And Press P3						
291A	10.0	JR5-4362	47	....	B	P3	315	Osc. Sect.
292A	10.0	JR0-2050	36	....	B	P3	410	Triode Sect. Cap=G
292A	10.0	JR0-4052	0	0	A	P2	Diode	Diode No. 1
292A	10.0	JR0-3052	0	0	A	P2	Diode	Diode No. 2
293A	10.0	JR4-2350	43	....	B	P3	660	
294A	10.0	JR0-2340	43	....	B	P3	660	Cap=G
300B	5.0	JR3-2000	60	....	C	P3	2900	
303A	2.0	JR0-2050	36	....	B	P3	400	Triode Sect. Cap=G
303A	2.0	JR0-4052	0	0	A	P2	Diode	Diode No. 1
303A	2.0	JR0-3052	0	0	A	P2	Diode	Diode No. 2
307A	5.0	JR3-0204	32	....	B	P3	1600	Cap=P
309A	10.0	JR0-2340	31	....	B	P3	570	Cap=G
310A	10.0	JR0-2354	19	....	D	P3	1130	Cap=G
310B	10.0	JR0-2354	26	....	B	P3	750	Cap=G
311A	10.0	JR0-2340	38	....	B	P3	1500	Cap=G
313CA	.....	AP8-2010	0	72	A	P4	Rect.	
328A	7.5	JR0-2354	19	....	D	P3	1130	Cap=G
329A	7.5	JR0-2340	38	....	C	P3	1550	Cap=G
336A	10.0	JR4-2350	10	....	D	P3	1950	
337A	10.0	JR0-2354	21	....	D	P3	1070	Cap=G
339A	5.0	JR3-0240	0	....	C	P3	2000	Cap=P
347A	6.3	JR0-4070	30	....	B	P3	570	Cap=G
348A	6.3	JR0-3475	19	....	D	P3	1130	Cap=G
349A	6.3	JR5-3470	10	....	D	P3	2500	
350A	6.3	JR3-0240	21	....	D	P3	4000	Cap=P
350B	6.3	JR5-3470	25	....	D	P3	3900	
351A	6.3	JR0-5072	0	46	A	P7	Rect.	Plate No. 1
351A	6.3	JR0-3072	0	46	A	P7	Rect.	Plate No. 2
352A	10.0	JR0-2050	36	....	B	P3	410	Triode Sect. Cap=G
352A	10.0	JR0-4050	0	25	A	P2	Diode	Diode No. 1
352A	10.0	JR0-3050	0	25	A	P2	Diode	Diode No. 2
367A	6.3	JV6-1470	24	....	D	P3	3800	
373A	2.0	JR4-7603	17	....	D	P3	850	
374A	3.0	JR4-7602	40	....	D	P3	1700	
375A	20.0	JR5-3470	53	....	C	P3	2330	
381A	6.3	HR0-5020	0	67	A	P2	Diode	
383A	6.3	HR4-6020	25	....	D	P3	1770	
385A	6.3	HR5-0328	15	....	D	P3	1480	Cap=P
387A	6.3	HR5-0328	15	....	D	P3	2000	Cap=P

TABLE 4-2 (Cont.) TUBE TEST DATA CHART

Tube Type	Fil Volts	Selectors	Bias	Shunt	Scale	Press	Mut. Cond.	Notations
396A	6.3	KR3-4028	17	....	D	P3	3300	Triode No. 1
396A	6.3	KR7-6082	17	....	D	P3	3300	Triode No. 2
398A	6.3	JR4-7603	35	....	D	P3	3350	
399A	1.1	DX6-2100	9	....	B	#	440	
	# Hold Down P2 And Press P3							
400A	1.1	DX6-2185	35	....	B	P3	315	Pent. Sect.
400A	1.1	DX8-2165	35	....	B	P3	315	Osc. Sect.
401A	6.3	JR3-5670	12	....	B	#	1260	
	# Hold Down P2 And Press P3							
403A	6.3	JR3-5620	10	....	D	P3	2750	
409A	6.3	JR3-5627	10	....	D	P3	1540	
412A	6.3	EV0-9073	0	49	A	P7	Rect.	Plate No. 1
412A	6.3	EV0-1037	0	49	A	P7	Rect.	Plate No. 2
420	2.5	JR0-3000	0	56	A	P7	Rect.	Plate No. 1
420	2.5	JR0-2000	0	56	A	P7	Rect.	Plate No. 2
420A	12.6	EV6-8073	0	....	B	P3	630	Triode No. 1
420A	12.6	EV3-1026	0	....	B	P3	630	Triode No. 2
421A	6.3	JX4-5061	63	....	D	P3	5000	Triode No. 1
421A	6.3	JX2-1035	63	....	D	P3	5000	Triode No. 2
422A	5.0	HR0-6000	0	54	A	P7	Rect.	Plate No. 1
422A	5.0	HR0-4000	0	54	A	P7	Rect.	Plate No. 2
446A	6.3	JR0-0070	0	....	C	P3	1510	Cap=P Ring=G
482A	5.0	JR3-2000	79	....	B	P3	950	
482B	5.0	JR3-2000	57	....	B	P3	950	
483	5.0	JR3-2000	79	....	B	P3	850	
484	3.0	JR3-2040	37	....	B	P3	820	
484A	3.0	JR3-2040	37	....	B	P3	820	
485	3.0	JR3-2040	37	....	B	P3	820	
486	3.0	JR3-2040	43	....	B	P3	280	
GL502A	6.3	JR5-3076	#	90	A	P4	Thyr.	
	# Should Strike Between 43 and 33. Read as Rectifier							
CK502AX	1.1	DV4-1200	18	....	B	#	380	
	# Hold Down P2 And Press P3							
CK503AX	1.1	DV4-1200	30	....	B	#	150	
	# Hold Down P2 And Press P3							
CK505AX	0.6	DV4-1200	0	....	B	#	100	
	# Hold Down P2 And Press P3							
CK506AX	1.1	DV4-1200	33	....	B	#	315	
	# Hold Down P2 And Press P3							
CK510AX	0.6	EX1-2300	0	0	A	P4	‡	
	‡ Section No. 1 OK Above 100 On 3000 Scale							
CK510AX	0.6	EX6-5300	0	0	A	P4	‡	
	‡ Section No. 2 OK Above 100 On 3000 Scale							
CK512AX	0.6	DV4-1200	30	0	A	P4	‡	
	‡ OK Above 500 On 3000 Scale							
CK518AX	1.1	DV4-1200	43	0	A	P4	#	#OK over Diodes OK
CK522AX	1.1	DV4-1200	38	0	A	P4	#	#OK over Diodes OK
CK523AX	1.1	DV4-1200	46	0	A	P4	#	#OK over Diodes OK
CK524AX	1.1	DV4-1200	73	0	A	P4	#	#OK over Diodes OK
CK525AX	1.1	DV4-1200	48	0	A	P4	#	#OK over Diodes OK
CK526AX	1.1	DV4-1200	59	0	A	P4	#	#OK over Diodes OK
CK527AX	1.1	DV4-1200	32	0	A	P4	#	
	# OK Over 500 On 3000 Scale							
CK528AX	1.1	DV4-1200	37	0	A	P4	#	#OK over Diodes OK
CK529AX	1.1	DV4-1200	64	0	A	P4	#	#OK over Diodes OK
CK533AX	1.1	DV4-1200	40	0	A	P4	‡	‡OK above Diodes OK
CK541DX	1.1	DV4-1200	40	0	A	P4	‡	
	‡ OK Above 300 on 3000 Scale							
CK542DX	1.1	DV4-2100	0	0	A	P2	‡	
	‡ OK Above 300 on 3000 Scale							
CK543DX	0.6	DV4-2100	0	0	A	P2	‡	
	‡OK Over 275 On 3000 Scale.							
CK544DX	1.1	DV4-1200	30	0	A	P4	#	
	# OK Over 500 On 3000 Scale							
GL546	6.3	JR3-7520	#	46	A	P7	Thyr.	
	# Should Strike Between 70 and 60. Read As Rectifier.							
CK547DX	1.1	DV4-1200	37	0	A	P4	‡	
	‡OK Above 300 on 3000 Scale							
CK548DX	1.1	DV4-1200	52	0	A	P4	‡	
	‡ OK Above 300 on 3000 Scale							
CK551AX	1.1	EW5-1200	20	....	B	#	250	Pent. Sect.
	# Hold Down P2 And Press P3							
CK551AX	1.1	EW0-3000	0	0	A	P2	Diode	Diode Sect.
	OK Over 150 On 3000 Scale							
CK553AX	1.1	DV4-1200	0	....	B	#	250	
	# Hold Down P2 And Press P3							
CK556AX	1.1	ES3-1000	31	....	D	P3	1000	
559	6.3	JR0-0070	0	62	A	P2	Diode	Cap=P
CK568AX	1.1	ES3-1000	40	....	B	P3	280	
CK569AX	1.1	DV4-1200	18	....	D	P3	630	
CK571AX	1.1	DU7-1200	92	....	B	P3	100	
CK573AX	1.1	CU3-1000	34	....	B	P3	1260	
CK574AX	0.6	DV4-2100	0	0	A	P2	‡	
	‡ OK Over 275 On 3000 Scale							
CK605CX	6.3	DU7-1265	10	....	D	P3	2780	
CK606BX	6.3	CT0-1040	0	67	A	P2	Diode	
CK608CX	6.3	DU5-1060	21	....	D	P3	3150	
CK619CX	6.3	CT4-1050	8	....	D	P3	2500	
629	2.5	JR3-2040	#	92	A	P4	Thyr.	
	# Should Strike Between 35 and 25. Read As Rectifier.							
713A	6.3	JR4-7630	0	....	C	P3	2200	
717A	6.3	JR4-7630	0	....	C	P3	2200	
801A	7.5	JR3-2000	0	....	B	P3	950	
802	6.3	JR4-0365	22	....	B	P3	1260	Cap=P
807	6.3	JR3-0240	33	....	C	P3	2400	Cap=P
809	6.3	JR3-0000	0	....	B	P3	1050	Cap=P
811	6.3	JR3-0000	0	....	B	P3	900	Cap=P
812	6.3	JR3-0000	0	....	B	P3	1400	Cap=P
814	10.0	JR3-0240	0	....	C	P3	1900	Cap=P

Tube Type	Fil Volts	Selectors	Bias	Shunt	Scale	Press	Mut. Cond.	Notations
815	6.3	**HV**8-0431	31	....	**C**	P3	2500	Pent. No. 1
		Left Cap=P. Short on 3						
815	6.3	**CV**1-0438	31	....	**C**	P3	2500	Pent. No. 2
		Right Cap=P						
816	2.5	**JR**0-0000	0	62	**A**	P7	Rect.	Cap=P
SD828A★	6.3	**EW**3-1520	18	....	**D**	P3	2080	E Basing
SD828E★	6.3	**EW**3-0512	17	....	**D**	P3	1825	
		E Basing. Top Lead=P						
829	6.3	**JR**4-5620	0	....	**D**	P3	2500	Plate No. 1
		See Sect. 4 Par. 4a (26)						
829	6.3	**JR**4-7620	0	....	**D**	P3	2500	Plate No. 2
		See Sect. 4 Par. 4a (26)						
829A	6.3	**JR**4-5620	0	....	**D**	P3	2500	Plate No. 1
		See Sect. 4 Par. 4a (26)						
829A	6.3	**JR**4-7620	0	....	**D**	P3	2500	Plate No. 2
		See Sect. 4 Par. 4a (26)						
829B	6.3	**JR**4-5620	0	....	**D**	P3	2500	Plate No. 1
		See Sect. 4 Par. 4a (26)						
829B	6.3	**JR**4-7620	0	....	**D**	P3	2500	Plate No. 2
		See Sect. 4 Par. 4a (26)						
832	6.3	**JR**4-5620	0	....	**C**	P3	2200	Plate No. 1
		See Sect. 4 Par. 4a (26)						
832	6.3	**JR**4-7620	0	....	**C**	P3	2200	Plate No. 2
		See Sect. 4 Par. 4a (26)						
832A	6.3	**JR**4-5620	0	....	**C**	P3	2200	Plate No. 1
		See Sect. 4 Par. 4a (26)						
832A	6.3	**JR**4-7620	0	....	**C**	P3	2200	Plate No. 2
		See Sect. 4 Par. 4a (26)						
834	7.5	**JR**0-0000	0	....	**B**	P3	1140	Near Cap=G Far Cap=P
836	4.3	**JR**0-0000	0	40	**A**	P7	Rect.	Cap=P
837	12.6	**JR**4-0365	0	....	**C**	P3	2500	Cap=P
841	7.5	**JR**3-2000	0	....	**B**	P3	630	
842	7.5	**JR**3-2000	61	....	**D**	P3	750	
843	2.5	**JR**3-2040	12	....	**B**	P3	1050	
864	1.1	**JR**3-2000	45	....	**B**	P3	410	
865	7.5	**JR**3-0200	34	....	**B**	P3	390	Cap=P
866A	2.5	**JR**0-0000	0	51	**A**	P7	Rect.	Cap=P
871	2.5	**JR**0-0000	0	51	**A**	P7	Rect.	Cap=P
879	2.5	**JR**0-0000	0	80	**A**	P4	Rect.	Cap=P
884	6.3	**JR**5-3070	#	92	**A**	P4	Thyr.	
		# Should Strike Between 77 and 67. Read As Rectifier.						
885	2.5	**JR**3-2040	#	92	**A**	P4	Thyr.	
		# Should Strike Between 77 and 67. Read As Rectifier.						
SD917A★	6.3	**DU**2-1050	17	....	**D**	P3	950	C Basing
SN944 ★	6.3	**EW**3-0512	15	....	**D**	P3	1500	
		E Basing Top Lead=P						
SN946 ★	6.3	**CT**0-1040	0	67	**A**	P2	Diode	A Basing
SN947C★	6.3	**CU**6-1350	54	....	**C**	P3	1900	E Basing
SN947D★	6.3	**DW**1-5782	54	....	**C**	P3	1900	F Basing
SN948 ★	6.3	**FT**4-1020	16	....	**D**	P3	950	D Basing
SN949C★	6.3	**DW**7-1250	#	56	**A**	P7	Thyr.	F Basing
		# Should Strike Between 70 and 60. Read As Rectifier.						
950	2.0	**JR**3-2400	45	....	**B**	P3	600	
951	2.0	**JR**0-2300	18	....	**B**	#	410	Cap=G
		# Hold Down P2 And Press P3						
SN953D★	6.3	**DW**1-5720	25	....	**D**	P3	2650	F Basing
954	6.3	**JR**7-0364	21	....	**B**	P3	700	Cap=P
SN954★	6.3	**ES**0-1030	0	20	**A**	P7	Rect.	B Basing
SN954B★	6.3	**DW**0-2050	0	20	**A**	P7	Rect.	F Basing
955	6.3	**JR**4-3060	22	....	**B**	P3	1200	
SN955B★	6.3	**DW**1-7084	16	....	**D**	P3	2200	F Basing Triode No. 1
SN955B★	6.3	**DW**2-5084	16	....	**D**	P3	2200	F Basing Triode No. 2
956	6.3	**JR**7-0364	17	....	**B**	P3	950	Cap=P
SN956B	1.1	**BS**0-0000	0	0	**A**	P7	Rect.	Top Lead=P
		OK Over 100 On 3000 Scale						
957	1.5	**JR**4-3000	28	....	**B**	P3	400	
SN957A★	6.3	**FT**4-1020	29	....	**D**	P3	1380	D Basing
958	1.5	**JR**4-3000	41	....	**B**	P3	750	
959	1.5	**JR**7-0300	25	....	**B**	#	380	
		# Cap=P Hold Down P2 And Press P3						
SN972D★	6.3	**DW**1-5740	21	....	**B**	P3	1260	F Basing
SN973B★	6.3	**GT**1-5740	21	....	**D**	P3	1900	F Basing
SN976C★	6.3	**DW**1-5740	49	....	**C**	P3	2500	F Basing
SD993C★	6.3	**DW**1-8050	20	....	**D**	P3	3660	F Basing
SD995B★	6.3	**DW**1-5740	21	....	**B**	P3	1260	F Basing
FM1000	6.3	**JR**2-4536	12	....	**B**	P3	950	No. 1 Grid
FM1000	6.3	**JR**6-4532	12	....	**B**	P3	950	No. 2 Grid
1003	....	**JR**0-5070	0	70	**A**	P6	Rect.	Plate No. 1
		Hold Button Down For 5 Seconds						
1003	....	**JR**0-3070	0	70	**A**	P6	Rect.	Plate No. 2
		Hold Button Down For 5 Seconds						
CK1005	6.3	**GX**0-3050	0	92	**A**	P4	Rect.	Plate No. 1
CK1005	6.3	**GX**0-5030	0	92	**A**	P4	Rect.	Plate No. 2
SN1006★	6.3	**FT**4-1020	28	....	**B**	P3	300	D Basing
1007	1.1	**JX**0-3020	0	40	**A**	P6	Rect.	Plate No. 1
1007	1.1	**JX**0-5020	0	40	**A**	P6	Rect.	Plate No. 2
CK1027	....	**AP**0-8070	0	85	**A**	P4	Rect.	Cap=P
CK1042	....	**AP**0-1050	0	40	**A**	P6	Rect.	
E1148	6.3	**JR**0-0070	14	....	**B**	P3	1390	Upper Cap=P Lower Cap=G
1201	6.3	**JS**1-3040	18	....	**D**	P3	1900	
1203	6.3	**JR**0-4070	0	51	**A**	P2	Diode	
1204	6.3	**HS**5-3140	10	....	**D**	P3	1150	
1206	6.3	**JR**5-7362	10	....	**B**	P3	1320	Tetrode No. 1
1206	6.3	**JR**4-2367	10	....	**B**	P3	1320	Tetrode No. 2
1229	2.0	**JR**0-2300	19	....	**B**	#	400	
		# Cap=G Hold Down P2 And Press P3						
1230	2.0	**JR**3-2000	40	....	**B**	P3	570	
1231	6.3	**JR**6-2374	0	....	**C**	P3	1600	

TABLE 4-2 (Cont.) TUBE TEST DATA CHART

Tube Type	Fil Volts	Selectors	Bias	Shunt	Scale	Press	Mut. Cond.	Notations
1232	6.3	JR6-2374	18	....	B	P3	1250	
1237	2.5	JR0-3000	0	73	A	P7	Rect.	Plate No. 1
		Short On 1-2-4-5						
1237	2.5	JR0-6000	0	73	A	P7	Rect.	Plate No. 2
		Short On 1-2-4-5						
1247★	0.6	EV0-0000	0	0	A	P2	Diode	F Basing Top Lead = P
HY1269	12.6	JR3-0240	0	....	C	P3	2500	Cap = P
1273	6.3	JR6-2374	11	....	B	P3	1450	
1274	6.3	JR0-5073	0	33	A	P7	Rect.	Plate No. 1
1274	6.3	JR0-3075	0	33	A	P7	Rect.	Plate No. 2
1280	12.6	JR6-2374	11	....	B	P3	1450	
1282	6.3	JR6-2375	10	....	D	P3	2200	
1284	12.6	JR6-2374	28	....	B	P3	1250	
1285	25.0	JR5-3470	36	....	D	P3	3650	
1291	2.5	BY6-7000	25	....	B	P3	950	Triode No. 1
1291	2.5	JR3-2000	25	....	B	P3	950	Triode No. 2
1293	1.5	JR6-2000	30	....	B	P3	820	
1294	1.5	JR0-4070	0	0	A	P2	Diode	
1299	2.5	JR6-2300	37	....	B	P3	1300	
SR1553D	6.3	JR2-3050	0	....	D	P3	4700	
1602	7.5	JR3-2000	39	....	B	P3	790	
1603	6.3	JR0-2354	21	....	B	P3	770	Cap = G
1609	1.1	JR3-2400	0	....	B	#	440	
		# Hold Down P2 And Press P3						
1610	2.5	JR3-2400	22	....	B	P3	1260	
1611	6.3	JR5-3472	29	....	B	P3	1260	
1612	6.3	JR0-3475	23	....	B	P3	410	Cap Grid Cap = G
1612	6.3	JR5-3472	27	....	B	P3	410	Pin Grid
1613	6.3	JR5-3470	0	....	B	P3	1400	
1614	6.3	JR5-3472	23	....	D	P3	3150	
1616	4.3	JR0-0000	0	45	A	P6	Rect.	Cap = P
1619	2.5	JR5-3407	12	....	C	P3	2150	
1620	6.3	JR0-3475	22	....	B	P3	770	Cap = G
1621	6.3	JR5-3470	29	....	B	P3	1250	
1622	6.3	JR5-3470	23	....	D	P3	3150	
1623	6.3	JR3-0000	0	....	B	P3	1400	Cap = P
1624	2.5	JR3-0200	17	....	C	P3	2500	Cap = P
1625	12.6	JR4-0360	33	....	C	P3	2000	Cap = P
1626	12.6	JR5-3070	52	....	B	P3	1325	
1629	12.6	JR5-4070	0	100	A	P3	Eye	Eye Open
1629	12.6	JR5-4370	0	100	A	P3	Eye	Eye Closed
1631	12.6	JR5-3472	23	....	D	P3	3150	
1632	12.6	JR5-3470	10	....	D	#	5650	
		# Hold Down P2 And Press P3						
1633	25.0	JX4-5060	23	....	D	P3	1650	Triode No. 1
1633	25.0	JX2-1030	23	....	D	P3	1650	Triode No. 2
1634	12.6	JX4-5062	0	....	B	P3	650	Triode No. 1
1634	12.6	JX3-1062	0	....	B	P3	650	Triode No. 2
1635	6.3	JR4-3070	0	....	B	P3	540	Triode No. 1
1635	6.3	JR5-6070	0	....	B	P3	540	Triode No. 2
1642	6.3	JR4-5060	38	....	B	P3	875	Triode No. 1
1642	6.3	JR0-3020	38	....	B	P3	875	Triode No. 2 Cap = G
1644	12.6	JW2-7513	10	....	B	P3	1350	Pentode No. 1
1644	12.6	JW3-4512	10	....	B	P3	1350	Pentode No. 2
1650	6.3	JR4-3060	22	....	B	P3	1200	
1654	1.5	DX0-0000	0	56	A	P4	Rect.	Cap = P Short on 3
1655	6.3	JX4-5061	10	....	D	P3	840	Triode No. 1
1655	6.3	JX3-1065	10	....	D	P3	840	Triode No. 2
1657	6.3	JR5-3076	#	90	A	P4	Thyr.	
		# Should Strike Between 43 and 33. Read as Rectifier						
1658	2.0	JR3-2000	40	....	B	P3	570	
1659	2.5	JR0-2050	11	....	B	P3	470	Triode Sect. Cap = G
1659	2.5	JR0-4050	0	0	A	P2	Diode	Diode No. 1
1659	2.5	JR0-3050	0	0	A	P2	Diode	Diode No. 2
1662	2.5	DX8-2100	33	....	B	P3	1260	
1851	6.3	JR0-3475	10	....	D	P3	3150	Cap = G
1852	6.3	JR4-7653	0	....	D	#	3800	
		# Hold Down P2 and Press P3						
1853	6.3	JR4-7653	0	....	C	P3	2200	
2050	6.3	JR5-3076	#	90	A	P4	Thyr.	
		# Should Strike Between 43 and 33. Read as Rectifier.						
2051	6.3	JR5-3076	#	90	A	P4	Thyr.	
		# Should Strike Between 39 and 29. Read as Rectifier.						
5516	6.3	JR5-0320	20	....	C	P3	2500	Cap = P Short on 3
5517	BLST	AP0-8070	0	51	A	P6	Rect.	Cap = P
5556	4.3	JR3-2000	26	....	B	P3	625	
5590	6.3	JR3-5670	12	....	B	#	1260	
		# Hold Down P2 And Press P3						
5591	6.3	JR3-5620	10	....	D	P3	2650	
5603	6.3	JR4-7603	35	....	D	P3	3350	
5608A	2.5	JR5-6042	12	....	B	P3	950	Triode No. 1
5608A	2.5	JR3-2046	12	....	B	P3	950	Triode No. 2
5610	6.3	JR6-3020	27	....	C	P3	2500	
5618	6.3	DX6-2180	24	....	C	P3	1900	
5633★	6.3	EW3-0512	15	....	D	P3	1500	
		E Basing Top Lead = P						
5634★	6.3	EW3-0512	17	....	D	P3	1825	
		E Basing Top Lead = P						
5635★	6.3	DW1-7084	16	....	D	P3	2200	
		F Basing Triode No. 1						
5635★	6.3	DW2-5084	16	....	D	P3	2200	
		F Basing Triode No. 2						
5636★	6.3	DW1-5724	22	....	B	P3	820	Grid No. 1. F Basing
5636★	6.3	DW4-5721	22	....	B	#	315	Grid No. 3. F Basing
		# Hold Down P2 and Press P3						
5637★	6.3	DU2-1050	17	....	D	P3	950	C Basing
5638★	6.3	EW3-1520	18	....	D	P3	2080	E Basing
5639★	6.3	DW1-5720	25	....	D	P3	2650	F Basing

Tube Type	Fil Volts	Selectors	Bias	Shunt	Scale	Press	Mut. Cond.	Notations
5640★	6.3	**DW**1-5782	54	....	**C**	P3	1900	F Basing
5641★	6.3	**DW**0-2050	0	25	**A**	P7	Rect.	F Basing
5642	1.1	**BS**0-0000	0	0	**A**	P7	Rect.	Top Lead = P
	OK Over 100 On 3000 Scale							
5643★	6.3	**DW**7-1250	#	56	**A**	P7	Thyr.	F Basing.
	# Should Strike Between 70 and 60.						Read As Rectifier.	
5645★	6.3	**FT**4-1020	29	....	**D**	P3	1380	D Basing
5646★	6.3	**FT**4-1020	28	....	**B**	P3	300	D Basing
5647★	6.3	**CT**0-1040	0	67	**A**	P2	Diode	A Basing
5654	6.3	**JR**3-5620	10	....	**D**	P3	2700	
5659	12.6	**JR**5-3470	22	....	**C**	P3	1900	
5660	12.6	**JR**0-3670	8	....	**B**	P3	840	Pent. Sect. Cap = G
5660	12.6	**JR**0-5670	0	0	**A**	P2	Diode	Diode No. 1
5660	12.6	**JR**0-4670	0	0	**A**	P2	Diode	Diode No. 2
5661	12.6	**JR**4-7653	21	....	**B**	P3	1250	
5662	6.3	**JR**3-7050	#	92	**A**	P4	Thyr.	
	# Should Strike Between 35 and 25.						Read As Rectifier.	
5663	6.3	**JR**3-7520	#	56	**A**	P7	Thyr.	
	# Should Strike Between 70 and 60.						Read As Rectifier.	
5670	6.3	**KR**7-6080	17	....	**D**	P3	3300	Triode No. 1
5670	6.3	**KR**3-4020	17	....	**D**	P3	3300	Triode No. 2
5672	1.1	**DV**4-1200	55	....	**B**	P3	350	
5676	1.1	**ES**3-1000	31	....	**D**	P3	1000	
5677	1.1	**ES**3-1000	40	....	**B**	P3	280	
5678	1.1	**DV**4-1200	18	....	**D**	P3	630	
5679	6.3	**JR**0-6075	0	62	**A**	P2	Diode	Diode No. 1
5679	6.3	**JR**0-3025	0	62	**A**	P2	Diode	Diode No. 2
5686	6.3	**EV**2-7630	18	....	**C**	P3	1950	
5687	12.6	**EV**7-9061	23	....	**D**	P3	4800	Triode No. 1
5687	12.6	**EV**2-1039	23	....	**D**	P3	4800	Triode No. 2
5690	6.3	**JW**0-5073	0	63	**A**	P7	Rect.	Unit No. 1
5690	6.3	**BS**0-3045	0	63	**A**	P7	Rect.	Unit No. 2
5691	6.3	**JX**4-5061	7	....	**D**	P3	1000	Triode No. 1
5691	6.3	**JX**2-1035	7	....	**D**	P3	1000	Triode No. 2
5692	6.3	**JX**4-5061	22	....	**D**	P3	1650	Triode No. 1
5692	6.3	**JX**2-1035	22	....	**D**	P3	1650	Triode No. 2
5693	6.3	**JR**4-7653	20	....	**D**	P3	1040	
5694	6.3	**JR**4-3020	0	....	**D**	P3	1500	Triode No. 1
5694	6.3	**JR**5-6070	0	....	**D**	P3	1500	Triode No. 2
5696	6.3	**JR**3-6025	#	56	**A**	P7	Thyr.	
	# Should Strike Between 70 and 60.						Read As Rectifier.	
5702	6.3	**DU**7-1265	10	....	**D**	P3	2780	
5703	6.3	**DU**5-1060	21	....	**D**	P3	3150	
5704	6.3	**CT**0-1040	0	67	**A**	P2	Diode	
5718★	6.3	**DW**1-8057	22	....	**D**	P3	3460	F Basing
5719★	6.3	**DW**1-8057	23	....	**B**	P3	500	F Basing
5725	6.3	**JR**3-5627	10	....	**D**	P3	1540	
A5726	6.3	**JR**7-5623	20	....	**B**	P3	760	Ampl. Sect.
A5726	6.3	**JR**3-5627	10	....	**B**	P3	940	Osc. Sect.
5726	6.3	**JR**0-7030	0	67	**A**	P2	Diode	Diode No. 1
5726	6.3	**JR**0-2050	0	67	**A**	P2	Diode	Diode No. 2
5727	6.3	**JR**3-6025	#	90	**A**	P4	Thyr.	
	# Should Strike Between 40 and 30.						Read As Rectifier.	
5731	6.3	**JR**4-3060	20	....	**D**	P3	1400	
5732	6.3	**JR**0-3475	19	....	**B**	P3	910	Cap = G
5742	4.3	**JR**3-2000	10	....	**B**	P3	530	
5744	6.3	**CT**4-1050	8	....	**D**	P3	2500	
5749	6.3	**JR**3-5672	9	....	**C**	P3	2070	
5750	6.3	**JR**7-5623	11	....	**B**	P3	900	Ampl. Sect.
5750	6.3	**JR**3-5627	0	....	**B**	P3	1000	Osc. Sect.
5751	12.6	**EV**7-6080	8	....	**D**	P3	950	Triode No. 1
5751	12.6	**EV**2-1030	8	....	**D**	P3	950	Triode No. 2
5755	12.6	**EV**6-8073	0	....	**B**	P3	630	Triode No. 1
5755	12.6	**EV**3-1026	0	....	**B**	P3	630	Triode No. 2
5763	6.3	**EV**9-1673	8	....	**D**	P3	4400	
5784	6.3	**DU**7-1265	20	....	**B**	P3	1130	
5785	1.1	**GX**0-1000	0	0	**A**	P2	Rect.	
	OK Over 500 On 3000 Scale							
5812	6.3	**JR**3-5602	34	....	**C**	P3	2700	
5814	12.6	**EV**7-6080	24	....	**B**	P3	1400	Triode No. 1
5814	12.6	**EV**2-1030	24	....	**B**	P3	1400	Triode No. 2
5823	BLST	**AP**8-3010	100	87	**A**	P4	Thyr.	Read As Rectifier
5824	25.0	**JR**5-3470	52	....	**C**	P3	2500	
5825	1.5	**JR**0-0000	0	0	**A**	P4	Rect.	Cap = P
	OK Above 250 On 3000 Scale							
5829	6.3	**DV**0-6070	0	67	**A**	P2	Diode	Diode No. 1
5829	6.3	**DV**0-1020	0	67	**A**	P2	Diode	Diode No. 2
5839	25.0	**JR**0-5073	0	30	**A**	P7	Rect.	Plate No. 1
5839	25.0	**JR**0-3075	0	30	**A**	P7	Rect.	Plate No. 2
5840★	6.3	**DW**1-5740	22	....	**C**	P3	1575	F Basing
5844	6.3	**JR**5-2070	26	....	**C**	P3	1900	Triode No. 1
5844	6.3	**JR**6-3070	26	....	**C**	P3	1900	Triode No. 2
5851★	2.5	**HR**8-3600	30	....	**B**	P3	1000	F Basing
5852	6.3	**JR**0-5070	0	0	**A**	P7	Rect.	Plate No. 1
5852	6.3	**JR**0-3070	0	0	**A**	P7	Rect.	Plate No. 2
5879	6.3	**EV**1-8739	21	....	**B**	P3	630	
5881	6.3	**JR**5-3472	23	....	**D**	P3	3150	
5886	1.1	**DU**7-2100	34	0	**A**	P2	‡	
	‡ OK Above 250 on 3000 Scale							
5896★	6.3	**DW**0-5074	0	52	**A**	P7	Rect.	F Basing. Plate No. 1
5896★	6.3	**DW**0-1024	0	52	**A**	P7	Rect.	F Basing. Plate No. 2
5897★	6.3	**DW**1-8050	20	....	**D**	P3	3660	F Basing
5899★	6.3	**DW**1-5740	21	....	**B**	P3	1260	F Basing
5900★	6.3	**DW**1-5740	21	....	**B**	P3	1260	F Basing
5902★	6.3	**DW**1-5720	43	....	**C**	P3	2650	F Basing
5903★	25.0	**DW**0-5074	0	48	**A**	P7	Rect.	F Basing
	Plate No. 1							
5903★	25.0	**DW**0-1024	0	48	**A**	P7	Rect.	F Basing
	Plate No. 2							

TABLE 4-2 (Cont.) TUBE TEST DATA CHART

Tube Type	Fil Volts	Selectors	Bias	Shunt	Scale	Press	Mut. Cond.	Notations
5904★	25.0	DW1-8050	43	....	B	P3	630	F Basing
5905★	25.0	DW1-5720	13	....	D	#	1640	F Basing
	# Hold Down P2 and Press P3							
5906★	25.0	DW1-5720	6	....	D	P3	3150	F Basing
5907★	25.0	DW1-5720	12	....	D	#	1900	F Basing
	# Hold Down P2 And Press P3							
5908★	25.0	DW1-5724	18	....	D	#	1400	F Basing
	# Hold Down P2 and Press P3							
5910	1.5	DX6-2100	19	....	B	P3	440	
5915	6.3	JR7-5623	20	....	B	P3	760	Ampl. Sect.
5915	6.3	JR3-5627	10	....	B	P3	950	Osc. Sect.
5916★	25.0	DW1-5724	22	....	B	P3	820	F Basing
5930	2.5	JR3-2000	67	....	C	P3	1900	
5933	6.3	JR3-0240	33	....	C	P3	2400	Cap=P
5963	12.6	EV7-6080	30	....	B	P3	1260	Triode No. 1
5963	12.6	EV2-1030	30	....	B	P3	1260	Triode No. 2
5964	6.3	JR5-2076	16	....	D	P3	3150	Triode No. 1
5964	6.3	JR6-3075	16	....	D	P3	3150	Triode No. 2
5965	12.6	EV7-6081	13	....	D	P3	4100	Triode No. 1
5965	12.6	EV2-1036	13	....	D	P3	4100	Triode No. 2
5967★	1.1	ES6-8013	32	....	D	P3	1260	F Basing Triode No. 1
5967★	1.1	ES3-1086	32	....	D	P3	1260	F Basing Triode No. 2
5971	1.1	FT2-1000	18	....	D	P3	1130	
5975	6.3	EV3-1020	29	....	D	P3	2500	
5977★	6.3	DW1-8053	29	....	D	P3	2840	F Basing
5987★	6.3	DW1-2050	74	....	B	P3	1160	F Basing
5992	6.3	JR5-3470	21	....	C	P3	2200	
5993	6.3	DX0-9051	0	24	A	P7	Rect.	Plate No. 1
5993	6.3	DX0-1059	0	24	A	P7	Rect.	Plate No. 2
5995	6.3	ET0-1050	0	0	A	P7	Rect.	Leads=1-3-4-5
5998	6.3	JX4-5061	63	....	D	P3	5000	Triode No. 1
5998	6.3	JX2-1035	63	....	D	P3	5000	Triode No. 2
6005	6.3	JR3-5620	21	....	C	P3	2320	
6012	6.3	JR3-5027	#	93	A	P4	Thyr.	
	# Should Strike Between 40 and 30. Read as Rectifier							
6021★	6.3	DW7-8050	25	....	C	P3	1575	F Basing Triode No. 1
6021★	6.3	DW2-1040	25	....	C	P3	1575	F Basing Triode No. 2
6026★	6.3	EV7-8030	21	....	D	P3	3700	F Basing
6029	1.1	CU3-1000	34	0	B	P3	1260	
6052★	6.3	DW0-5074	0	52	A	P7	Rect.	F Basing Plate No. 1
6052★	6.3	DW0-1024	0	52	A	P7	Rect.	F Basing Plate No. 2
6055★	25.0	DW1-8050	43	....	B	P3	630	F Basing
6072	12.6	EV7-6080	15	....	D	P3	1100	Triode No. 1
6072	12.6	EV2-1030	15	....	D	P3	1100	Triode No. 2
6080	7.5	JX4-5061	100	....	C	P3	2150	Triode No. 1
6080	7.5	JX2-1035	100	....	C	P3	2150	Triode No. 2
6082	25.0	JX4-5061	100	....	C	P3	2150	Triode No. 1
6082	25.0	JX2-1035	100	....	C	P3	2150	Triode No. 2
6084	6.3	EV9-6138	20	....	B	P3	820	
6085	12.6	EV7-6080	11	....	C	P3	1575	Triode No. 1
6085	12.6	EV2-1030	11	....	C	P3	1575	Triode No. 2
6086	20.0	EV2-6139	20	....	C	P3	2840	
6087	5.0	HR0-6000	0	15	A	P7	Rect.	Plate No. 1
6087	5.0	HR0-4000	0	15	A	P7	Rect.	Plate No. 2
6088	1.1	DV4-1200	20	....	B	#	250	
	# Hold Down P2 and Press P3							
6094	6.3	DV1-4280	21	....	C	P3	2320	
6101	6.3	JR5-2076	16	....	D	P3	3150	Triode No. 1
6101	6.3	JR6-3075	16	....	D	P3	3150	Triode No. 2
6106	5.0	HR0-6000	0	25	A	P7	Rect.	Plate No. 1
6106	5.0	HR0-4000	0	25	A	P7	Rect.	Plate No. 2
6110★	6.3	DW0-5074	0	65	A	P2	Diode	F Basing. Diode No. 1
6110★	6.3	DW0-1024	0	65	A	P2	Diode	F Basing. Diode No. 2
6111★	6.3	DW7-8050	24	....	D	P3	3150	F Basing Triode No. 1
6111★	6.3	DW2-1040	24	....	D	P3	3150	F Basing Triode No. 2
6112★	6.3	DW7-8050	27	....	B	P3	500	F Basing Triode No. 1
6112★	6.3	DW2-1040	27	....	B	P3	500	F Basing Triode No. 2
6113	6.3	JX4-5061	7	....	D	P3	1000	Triode No. 1
6113	6.3	JX2-1035	7	....	D	P3	1000	Triode No. 2
6134	6.3	JR4-7653	0	....	D	#	3800	
	# Hold Down P2 and Press P3							
6135	6.3	JR6-3070	24	....	B	P3	1380	
6136	6.3	JR3-5672	10	....	D	P3	2050	
6137	6.3	JR4-7653	10	....	D	P3	1260	
6145	6.3	JR6-2374	0	....	D	P3	4100	
6146	6.3	JR5-0327	30	....	D	P3	4400	Cap=P
6152	6.3	EV3-1020	29	....	D	P3	2500	
6159	25.0	JR5-0327	30	....	D	P3	4400	Cap=P
6169★	6.3	DW1-2040	12	....	D	P3	3800	F Basing
6184★	6.3	DW0-2048	0	70	A	P2	Diode	F Basing Diode No. 1
6184★	6.3	DW0-7058	0	70	A	P2	Diode	F Basing Diode No. 2
6186	6.3	JR3-5620	10	....	D	P3	2500	
6197	6.3	EV2-6317	10	....	D	P3	3800	
6201	12.6	EV7-6080	14	....	D	P3	2500	Triode No. 1
6201	12.6	EV2-1030	14	....	D	P3	2500	Triode No. 2
6202	6.3	JR0-6073	0	14	A	P7	Rect.	Plate No. 1
6202	6.3	JR0-3076	0	14	A	P7	Rect.	Plate No. 2
6203	6.3	EV0-9071	0	40	A	P7	Rect.	Plate No. 1
6203	6.3	EV0-1079	0	40	A	P7	Rect.	Plate No. 2
6205★	6.3	DW1-5724	22	....	C	P3	1575	F Basing
6211	12.6	EV7-6082	22	....	D	P3	2270	Triode No. 1
6211	12.6	EV2-1037	22	....	D	P3	2270	Triode No. 2
6216	6.3	EV2-1730	23	....	D	P3	6300	
6247★	6.3	DW2-8050	7	....	D	P3	1675	F Basing
6265	6.3	JR3-5627	15	....	B	P3	1260	
6293	6.3	JR5-0320	25	....	D	P3	4600	Cap=P
6350	12.6	EV8-6073	25	....	D	P3	2900	Triode No. 1
6350	12.6	EV3-1028	25	....	D	P3	2900	Triode No. 2

Tube Type	Fil Volts	Selectors	Bias	Shunt	Scale	Press	Mut. Cond.	Notations
6355	6.3	FR3-8270	0	100	A	P3	Eye	Eye 1 Open / Eye 2 Closed
6355	6.3	FR8-3270	0	100	A	P3	Eye	Eye 2 Open / Eye 1 Closed
6386	6.3	KR7-6085	25	....	C	P3	2500	Triode No. 1
6386	6.3	KR3-4025	25	....	C	P3	2500	Triode No. 2
6397	2.5	HR8-3600	33	....	B	P3	1200	
6417	12.6	EV9-1673	8	....	D	P3	4400	
6463	12.6	EV8-6071	24	....	D	P3	3300	Triode No. 1
6463	12.6	EV3-1026	24	....	D	P3	3300	Triode No. 2
6485	6.3	JR3-5672	10	....	D	P3	3800	
6660	6.3	JR3-5672	9	....	C	P3	2070	
6661	6.3	JR3-5621	15	....	B	P3	1260	
6662	6.3	JR3-5627	0	....	C	P3	2400	
6663	6.3	JR0-7036	0	67	A	P2	Diode	Diode No. 1
6663	6.3	JR0-2056	0	67	A	P2	Diode	Diode No. 2
6669	6.3	JR3-5620	21	....	C	P3	2320	
6677	6.3	EV2-6317	10	....	D	P3	3800	
6678	6.3	EV2-6370	15	....	B	P3	1420	Pent. Sect.
6678	6.3	EV9-1080	16	....	C	P3	2840	Triode Sect.
6679	12.6	EV7-6080	14	....	D	P3	2500	Triode No. 1
6679	12.6	EV2-1030	14	....	D	P3	2500	Triode No. 2
6680	12.6	EV7-6080	24	....	B	P3	1400	Triode No. 1
6680	12.6	EV2-1030	24	....	B	P3	1400	Triode No. 2
6681	12.6	EV7-6080	8	....	D	P3	950	Triode No. 1
6681	12.6	EV2-1030	8	....	D	P3	950	Triode No. 2
6690★	6.3	DW7-5080	22	....	C	P3	1575	F Basing Triode No. 1
6690★	6.3	DW2-1040	22	....	C	P3	1575	F Basing Triode No. 2
6754	6.3	EV0-9070	0	53	A	P7	Rect.	Plate No. 1
6754	6.3	EV0-1030	0	53	A	P7	Rect.	Plate No. 2
6829	12.6	EV7-6080	13	....	D	P3	4200	Triode No. 1
6829	12.6	EV2-1030	13	....	D	P3	4200	Triode No. 2
7193	6.3	JR0-0070	13	....	C	P3	1900	Upper Cap=G / Lower Cap=P
8005	10.0	JR3-0000	22	....	B	P3	1260	Cap=P
8013A	3.0	JR0-0000	0	75	A	P4	Rect.	Cap=P
8016	1.1	JR0-0000	0	67	A	P4	Rect.	Cap=P
9001	6.3	JR3-5670	21	....	B	P3	700	
9002	6.3	JR6-3070	22	....	B	P3	1200	
9003	6.3	JR3-5620	17	....	B	P3	950	
9004	6.3	JR0-3040	0	67	A	P2	Diode	
9005	4.3	JR0-4030	0	51	A	P2	Diode	
9006	6.3	JR0-3070	0	51	A	P2	Diode	
38142	7.5	JR3-2000	37	....	B	P3	1400	
XXB	2.5	BY5-6000	10	....	B	P3	700	Triode No. 1
XXB	2.5	JR4-3000	10	....	B	P3	700	Triode No. 2
XXD	12.6	JR5-6070	21	....	C	P3	1640	Triode No. 1
XXD	12.6	JR4-3020	21	....	C	P3	1640	Triode No. 2
XXFM	6.3	JR3-2040	10	....	D	P3	630	Triode Sect.
XXFM	6.3	JR0-5040	0	67	A	P2	Diode	Diode No. 1
XXFM	6.3	JR0-6070	0	67	A	P2	Diode	Diode No. 2
XXL	6.3	JR6-2070	18	....	D	P3	1900	

Tube Type	Fil Volts	Selectors	Bias	Shunt	Scale	Press	Mut. Cond.	Notations

(29) TESTING BALLAST TUBES.

(a) Turn the tester ON.

(b) Set FILAMENT voltage switch S108 to BLST.

(c) Set SHORTS test switch on position 1.

(d) Refer to Table 4-3. Set first FILAMENT SELECTOR No. 1 switch S107 (lettered A to K) to letter in column headed "First Selector." Set all numbered SELECTORS to zero.

(e) Rotate second FILAMENT SELECTOR switch S106 (lettered P to Z) from P to Z. Neon lamp, E101, should light on positions noted in Table 4-3.

TABLE 4-3. TEST DATA FOR BALLAST TUBES

TUBE TYPE	First Selector	Neon lamp should light in these positions.						
1A1-1B1-1C1-1E1-1F1-1G1-1J1-1K1-1L1-1N1-1P1-1Q1-1R1G-1S1G-1T1G-1U1G-1V1-1Y1-1Z1-2	J	R						
2UR224	J			T				X
2LR212	H	R	S		U			
3	J	R						
O3G	J			T				
4-5	J	R						
6-133	J			T				
6-6AA	J	R						
7-8-9	J	R						
10A-10AG	J			T				

TABLE 4-3. TEST DATA FOR BALLAST TUBES (Cont'd)

TUBE TYPE	FIRST SELECTOR	NEON LAMP SHOULD LIGHT IN THESE POSITIONS						
10AB	J			T				X
K17B-M17C-BM17C	J			T				X
M17HG-M17H	J		S					X
	D	R						
M23B-K23C-KX23B-KX30C	J			T				X
M30H	J		S					X
	D	R						
30A-K30A	J			T				
K30D	J	R		T				X
33A-33AG	J			T				
K34B	J			T				X
36A	J			T				
K36B-BK36B-L36B-BM-L36C-KX36C	J			T				X
KX36A	J	R						
36D-L36D	J	R		T				X
L36DJ	J	R		T	U			X
K36H-M36H-M36HG	J		S					X
	D	R						
L40S1-L40S2	J	R		T		V		
42A	J			T				
42A1	H				U			
42A2-42B2	H		S		U			
K42B-L42B-M42B-KX42B-LY42B-L42BX-K42C-L42C-M42C	J			T				X
KB42D-K42D-L42D	J	R		T				X
LX42D-L42DX	J	R	S	T				
K42E-L42E	J			T				X
L42F	J							X
	D	R						
42HA-K42HJ-M42H-M42HG	J		S					X
	E	R		T				
KX42C	J			T				X

TABLE 4-3. TEST DATA FOR BALLAST TUBES (Cont'd)

TUBE TYPE	FIRST SELECTOR	NEON LAMP SHOULD LIGHT IN THESE POSITIONS						
L42S1	J	R		T		V		
49A-49AJ-K49AJ	J			T				
KX49A	J			T				X
49A1	H				U			
49A2-49B2	H		S		U			
K49B-L49B-M49B-BM49B-K49C-M49C-BM49C-BK49C-K49E-L49E	J			T				X
K49D-BK49D-L49D	J			T				X
L49F	J							X
	D	R						
M49H-M49HG	J		S					X
	D	R						
KZ49B-KZ49C	J	R				V		
K49BJ-L49BJ	J			T	U			X
L49S2	J	R		T		V		
49AJ-K49AJ	J			T				
KX49B-LX49B-LX49C	J			T				X
L49DJ	J	R		T	U			X
L49S3	J	R		T		V		
50A2	J	R		T				
50A2MG-50B2	J	R				V		
50X3	J	R						
K52H-M52H	J		S					X
	D	R						
K54B	J			T				X
55A-K55A	J			T				
55A1	H				U			
KX55A	J	R						
55B-K55B-M55B-BM55B-L55BG-LX55B	J			T				X
55A2-55B2	H		S		U			
K55C-L55C-KX55C	J			T				X
K55CP	J			T		V		X

TABLE 4-3. TEST DATA FOR BALLAST TUBES (Cont'd)

TUBE TYPE	FIRST SELECTOR	NEON LAMP SHOULD LIGHT IN THESE POSITIONS						
K55D-L55D	J	R		T				X
L55E-M55E	J			T				X
L55F-M55F-BL55F	J							X
	D	R						
K55H-M55H-M55HG	J		S					X
	D	R						
L55S1-L55S2	J	R		T		V		X
60R30G	J	R		T				
64.23	J			T				
67A	J			T				
K67B-L67B	J			T				X
L73B-K74B-L74B-CX74C	J			T				X
80A	J			T				
K79B-K80B-M80B-K80C-KX80B-L80B	J			T				X
K80F	J							X
	D	R						
KX87B-LX87B-L90B	J			T				X
K90F-M90F-K92F-M92F	J							X
	D	R						
92A	J			T				
L92B-95K2	J			T				X
L99D	J	R		T				X
100R8	J			T				X
120R	J	R						
120RS-135K1	J			T				X
135K1A	J			T	U			X
140L4-140L8-140R4-140R8	J	R		T				
140R	J	R						
140L44-140R44	J	R	S	T				
165L4-165R4-165R8	J	R		T				
165R	J	R						
165L44-165R44	J	R	S	T				
185L4-185L8-185R4-185R8	J	R		T				
185R	J	R						
185L44-185R44	J	R	S	T				
200R-250R	J	R						
250R8-290L4	J			T				X
300R4-320R4	J			T				X
340	J	R						
808-1	J			T	U			X
E14980-W43357-W4588-3613	J			T				X
3334-3334A	J	R		T				X
8593-8598-8601-8664	J			T				X
3ER248	J	R		T	U			X
3CR241	J	R		T				X

TABLE 4-3. TEST DATA FOR BALLAST TUBES (Cont'd)

TUBE TYPE	FIRST SELECTOR	NEON LAMP SHOULD LIGHT IN THESE POSITIONS							
B9M15822	B			T					
	E					V			
	G							X	Y
B9M16067	J	R		T		V	W	X	
B9M16275	B			T	U	V	W	X	Y
B9M16534	J	R		T		V	W	X	
B9M17571	H	R		T					
	J				U	V		X	
B9M18941	B		S	T					
	E					V			
	G							X	Y
17A470303	J	R	S			V			
	D				U				
	G							X	
17A485459	J	R	S				W		
	D				U				
TBR102D	B		S	T	U	V			
	G							X	Y
TBR103D	B		S		U	V			
	G							X	Y
TBR104D	B		S	T	U	V			
	G							X	Y
397021	B		S	T					
397022	E					V	W		
397023	J							X	
397036	C					V			
407100	J	R	S			V			
408100	J	R	S			V			
	D				U				
SW507300	J	R		T		V	W	X	
571606	B		S	T					
	E					V	W		
	J							X	

SECTION 5
OPERATOR'S MAINTENANCE

1. LINE CORD AND PLUG.

a. Inspect cord for cuts or breaks in the insulation. Minor damage to the outer jacket may be repaired with friction tape. If, however, the break or cut is deep enough to expose either of the conductors, the cord should be replaced.

b. If the PILOT indicator does not light when the test set is connected to a live 105-125 volt ac 50-1000 cycle outlet (See paragraph c below), check the FUSE lamp RT101 for possible burn out or loose socket connection, also check FUSE F101 for burn out. If fuses are OK unscrew the jewel of indicator XDS102 and check pilot lamp DS102 for loose socket connection, or burn out.

c. Check the ac voltage source using an ac voltmeter of suitable range. Low line voltage may render it impossible to adjust the meter to LINE TEST and impair the accuracy of the equipment.

2 TEST LEADS.

a. Inspect test leads for worn or broken insulation, also check all leads for continuity. If leads are badly damaged or open they should be replaced.

3. FUSES.

a. Check the one ampere line FUSE, F101, for burn out or breakage. This fuse can be removed from the front of the panel by turning the extractor top of fuse holder XF101 to the left. Replace fuse if necessary.

b. Check the type 81 FUSE lamp, RT101, which serves as an overload indicator and protective fuse in the other side of the power line. Replace if necessary.

c. Check the BIAS FUSE, RT102, a type 49 lamp which protects the BIAS control from overload. To remove this fuse lamp, unscrew the plastic dome or lens of the indicator light socket XRT102. Replace fuse if necessary.

d. One of each type protective fuse or lamp is included as part of the running spares supplied with each test set.

4. PILOT LAMP.

a. A number 47 lamp 6.3 volts at .15 amps, DS102, serves as a pilot lamp in indicator light socket XDS102. A spare lamp is supplied with the operating spares in the lead compartment.

5. NEON LAMP.

a. The neon lamp DS101 used as a short indicator should be checked as follows:

(1) Be sure lamp is firmly screwed into its socket.

(2) With the tester plugged in, and the power switch ON, but with no tube in test sockets, set SELECTORS to JR 1-1111.

(3) Turn the SHORTS test switch S109 through positions 1, 2, 3, 4, and 5. The neon lamp should glow in positions 2 and 3.

b. If the neon lamp is defective replace it from the operating spares.

NOTE: Do not deplete the supply of operating spares furnished with the tester without taking the necessary steps to secure replacements.

6. TUBES.

a. Two full wave rectifier tubes are used in the test set. One type 83, V101, used in the mutual conductance test circuit to supply dc plate voltage for the tube under test. The type 5Y3WGTA, V102, supplies screen and bias voltages.

b. Failure of the 83 tube V101 is indicated if, with no tube in the test sockets but the controls set for tube test, the pointer of the Meter M101 moves sharply off scale to the right when the RED push button P3 is pressed.

c. Failure of the type 5Y3WGTA tube would result in lack of voltage on the screen, the bias circuits of the tube under test. To check plate and screen voltages refer to Section 7 Paragraph 9.

d. To remove rectifier tubes V101 and V102 for test or replacement:

(1) Remove the ten mounting screws around the edge of the panel.

(2) Carefully lift the entire unit out of its case and turn face down on the test bench or other flat surface.

(3) Slide the spring clamps holding the tubes in place away from the top of the tube, and to one side.

NOTE

After tubes are replaced in their sockets, BE SURE THE TUBE CLAMPS ARE IN PLACE BEFORE THE EQUIPMENT IS RETURNED TO ITS CASE.

SECTION 6
PREVENTATIVE MAINTENANCE

1. GENERAL.

Preventive maintenance is the removing of possible trouble which might later cause the equipment to become inoperative. Primarily, this includes periodic inspection, checking, cleaning and tightening of contacts and components. Certain suggestions can be made for such a program, but local conditions will largely determine the exact details.

The guide to the program will be found in Table 6-1, ROUTINE MAINTENANCE CHART. By carefully following this chart, troubles can be detected and remedied before causing actual breakdown of the equipment.

Because of the nature and design of the TV-10A/U equipment, no special preventive maintenance procedures are required.

TABLE 6-1 ROUTINE MAINTENANCE CHART

ATTENTION OF MAINTENANCE PERSONNEL IS INVITED TO REQUIREMENTS OF CHAPTER 67 OF THE "BUREAU OF SHIPS MANUAL" OF THE LATEST ISSUE.

It is presumed that all maintenance operations will be scheduled by the Electronics Officer. The following table is given as a basis for such a schedule.

WARNING

BEFORE REMOVING THE CASE, DISCONNECT THE POWER CABLE.

Monthly

a. Remove fuses one at a time. Clean and burnish ends and clips as needed.

b. Check tube pins and socket contacts for corrosion. Clean as needed.

c. Check operation of all panel controls.

d. Blow out dust with dry compressed air.

CAUTION: Air from a compressed air system using a piston-type compressor may contain oil vapor. Care should be taken to prevent formation of an oil film on the equipment.

e. Check for rust and corrosion. Clean and touch up with paint as needed.

FAILURE REPORTS

"Report each failure of the equipment, whether caused by a defective part, wear, improper operation, or an external cause. Use ELECTRONIC FAILURE REPORT form DD 787. Each pad of the forms includes full instructions for filling out the forms and forwarding them to the Bureau of Ships. However, the importance of providing complete information cannot be emphasized too much. Be sure that you include the model designation and serial number of the equipment (from the equipment nameplate), the type number of the major unit (from the major unit nameplate), and the type number and reference designation of the particular defective part (from the instruction book). Describe the cause of the failure completely, continuing on the back of the form if necessary. Do not substitute brevity for clarity. And remember—there are two sides to the failure report - - -

"YOUR SIDE"

Every FAILURE REPORT is a boost for you:

1. It shows that you are doing your job.
2. It helps make your job easier.
3. It insures available replacements
4. It gives you a chance to pass your knowledge to every man on the team.

"BUREAU SIDE"

The Bureau of Ships uses the information to:

1. Evaluate present equipment.
2. Improve future equipment.
3. Order replacements for stock.
4. Prepare field changes.
5. Publish maintenance data.

Always keep a supply of failure report forms on board. You can get them from the nearest District Publications and Printing Office.

SECTION 7
CORRECTIVE MAINTENANCE

1. LINE VOLTAGE.

a. Check the line voltage from the power source using an ac voltmeter of suitable range.

b. The Test Set is designed to operate on line voltages from 105 to 125 volts ac at frequencies from 60 to 1000 cycles per second.

c. Low line voltage may make it impossible to adjust the meter to LINE TEST as required for proper voltage standardization within the equipment and impair the accuracy of the Test Set.

2. LINE FUSES.

a. One side of the primary circuit of the power transformer, T101, is protected by a combination FUSE lamp and overload indicator, RT101, a type 81 lamp. The other side of the primary circuit includes a cartridge type FUSE, F101.

b. If the pilot indicator XDS102 does not glow when the tester is connected and turned on, remove the FUSE lamp RT101 and cartridge FUSE F101 and check them for continuity using a low range ohmmeter.

c. If the fuses are burned out or broken, replace from the operating spares supplied with the equipment.

3. PILOT LAMP.

a. The type 47 PILOT lamp DS102 should light when the Test Set is energized.

b. If the lamp does not light but the line fuses check OK, unscrew the jewel cover of the PILOT indicator XDS102 and check the lamp for continuity and looseness in the socket.

c. Replace the lamp from the operating spares if necessary.

4. BIAS FUSE.

a. A type 49 lamp, RT102, serves as the BIAS FUSE and overload indicator to protect the BIAS control R130 from accidental damage.

b. If the BIAS FUSE is burned out, no bias voltage will be present and the test circuits will be inoperative.

c. To replace the BIAS FUSE lamp, unscrew the plastic dome of indicator socket assembly XRT102. A replacement is included in the operating spares.

5. NEON LAMP.

a. The neon lamp DS101 used as a short indicator should be checked as follows:

(1) Be sure lamp is firmly seated in its socket.

(2) With the tester plugged in and the power switch ON, but with no tube in test sockets, set the SELECTORS to JR-1-1111.

(3) Turn the SHORTS-MICROMHOS test switch S109 through positions 1, 2, 3, 4, and 5. The neon lamp should glow in positions 2 and 3.

b. If the neon lamp is defective replace it from the operating spares in the lead compartment.

NOTE: Do not deplete the supply of operating spares furnished with the equipment without taking the necessary steps to secure replacements.

6. TUBES.

a. Two full wave rectifier tubes are used in the Test Set. One type 83 V101 used in the mutual conductance test circuit to supply plate voltage. The 5Y3WGTA, V102 supplies dc screen and bias voltages for the tube under test.

b. Failure of the 83 tube V101 is indicated if, with no tube in the test sockets but the controls set for tube test, the pointer of the METER M101 moves sharply off scale to the right when the RED push button P3 is pressed.

c. Failure of the type 5Y3WGTA tube would result in lack of voltage on the screen and plate circuits of the tube under test. To check plate and screen voltages refer to paragraph 9 of this section.

d. To remove rectifier tubes V101 and V102 for test, or replacement:

(1) Disconnect the power cable.

(2) Remove the ten mounting screws around the edge of the panel.

(3) Carefully lift the entire unit out of its case, and turn face down on the test bench or other flat surface.

(4) Slide the spring clamps holding the tubes in place, away from the top of the tube and to one side.

NOTE

After the Tubes are replaced in their sockets BE SURE THE TUBE CLAMPS ARE IN PLACE BEFORE THE EQUIPMENT IS RETURNED TO ITS CASE.

7. TEST LEADS.

a. Inspect all test leads for defective insulation and test for continuity. Make any minor repairs necessary, but if leads are in poor condition, or beyond repair, requisition replacements immediately.

8. SCHEMATIC WIRING DIAGRAM.

a. Refer to schematic diagram figure 7-7 and internal views figure 7-2, 7-3 and 7-4 for correct wiring and location of parts in the Test Set.

9. VOLTAGE AND CALIBRATION CHECK.

a. The Test Set may be checked for proper voltages and for correct calibration of the SHUNT and BIAS controls as outlined in the following steps:

WARNING
HIGH VOLTAGE

Dangerous voltages are present within this equipment. Use caution when servicing or testing.

(1) SWITCH SETTINGS.

Set the SHORTS-MICROMHOS switch, S109, to TUBE TEST. Set the SELECTORS, S107, S106, S105, S104, S103, S102 and S101 to JR 5-3460. Turn POWER switch, S111, ON. Press LINE ADJ. push button P1 and turn LINE ADJUST control R122 until the meter pointer is set at LINE TEST.

NOTE

Voltage test must be made with a multimeter, or individual meters of 1000 ohms per volt sensitivity having suitable ranges of ac and dc connected as illustrated by figure 7-1. If the voltages are not in accordance with the following paragraphs 9a(2) through 9a(7), refer to paragraph 10 and Table 7-3 of this section for probable causes.

(2) PLATE VOLTAGE CHECK (150 vdc).

(a) Connect the positive (+) terminal of the voltmeter to contact No. 3 of the OCTAL test socket, X110, and the negative (-) terminal to contact No. 6 of the same socket. (See figure 7-1).

(b) Press RED push button P3. The voltmeter should read approximately 150 volts dc plus or minus 2 volts.

(3) SCREEN VOLTAGE CHECK (130 vdc).

(a) Connect the positive (+) terminal of the voltmeter to contact No. 4 of the OCTAL test socket X110, and the negative (-) terminal to contact No. 6. Set BIAS control to zero. (See figure 7-1).

(b) Press RED push button P3. The voltmeter should read approximately 130 volts dc plus or minus 2 volts.

(4) BIAS VOLTAGE CHECK (40 vdc).

(a) Set the pointer knob to BIAS control R130 at 100.

(b) Connect the positive (+) terminal of the voltmeter to contact No. 6 of the OCTAL test socket X110 and the negative (-) terminal to the No. 5 contact. (See figure 7-1).

(c) The voltmeter should read 40 volts dc plus or minus 1 volt.

(5) SIGNAL VOLTAGE CHECK (0.5, 1 and 5 vac).

(a) Set the BIAS control knob at zero.

(b) Connect the terminals of the ac voltmeter to contacts 5 and 6 of the OCTAL test socket X110. (See figure 7-1).

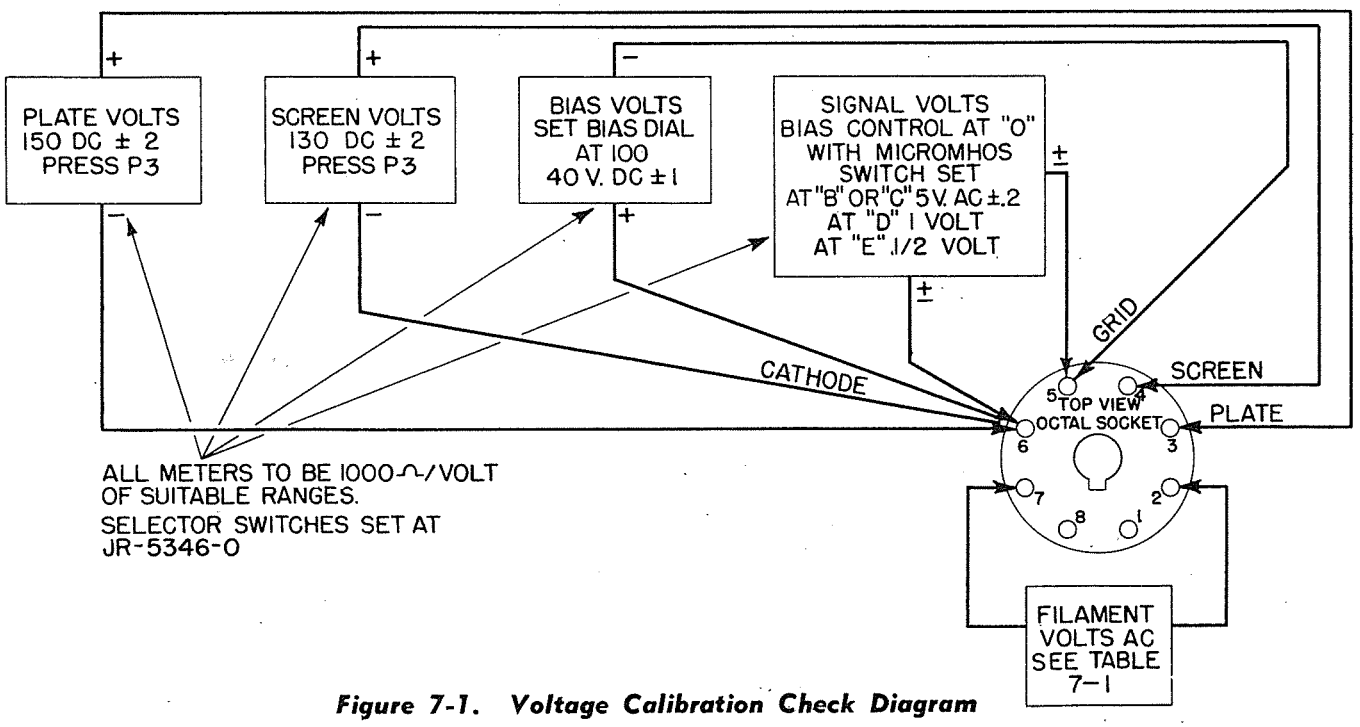

Figure 7-1. Voltage Calibration Check Diagram

(c) With the SHORTS - MICROMHOS switch S109 set at "B" or "C" the meter should read 5 volts ac plus or minus 0.2 volt.

(d) With the SHORTS - MICROMHOS switch set at "D" the meter should read approximately 1 volt ac.

(e) With the SHORTS - MICROMHOS switch set at "E" the meter should read approximately 0.5 volt.

(6) FILAMENT VOLTAGE CHECK (1.1 to 117 vac).

(a) Set FILAMENT VOLTAGE switch S108 to the desired voltage.

(b) Connect the terminals of the ac voltmeter or a multimeter of suitable range between contacts 2 and 7 of OCTAL test socket X110.

(c) The meter should read within the limits indicated in Table 7-2 for the various nominal settings of the FILAMENT VOLTAGE switch S108.

(7) BIAS control knob and SHUNT control knob should indicate zero when they are in full counter clockwise positions. If they do not, loosen the set screws and reset the knobs on the shafts.

TABLE 7-1. FILAMENT VOLTAGE CHART FOR TV-10A/U TEST SET

NOMINAL	MIN.	MAX.
1.1	1.1	1.2
1.5	1.5	1.7
2.0	2.0	2.2
2.5	2.7	2.9
3.0	3.3	3.5
4.3	4.4	4.7
5.0	5.4	5.6
6.3	6.4	6.7
7.5	7.6	8.0
10.0	10.1	11.0
12.6	12.5	13.2
20.0	19.0	21.0
25.0	26.0	28.0
35.0	34.0	39.0
50.0	50.0	56.0
75.0	73.0	83.0
117.0	118.0	128.0

10. SUGGESTIONS FOR LOCATING TROUBLE.

If proper voltages are not present in the test set the following suggestions are offered for locating and correcting the trouble.

a. If all voltages are found to be either high or low it is possible that the trouble is in the line test circuit. Check calibration of line test circuit (see paragraph 11 of this section). An excessively high or low resistance adjustment at R126 would result in improper adjustment of the line voltage causing high or low test voltages at the points covered in paragraph 9 of this section. Also check rectifier CR101 as outlined in paragraph 12 of this section. A faulty rectifier would cause an erroneous meter reading which would result in high secondary voltages from the transformer T101.

b. Incorrect Plate Voltage.

(1) High plate voltage can only result from the application of incorrect voltage to the primary of T101, see paragraph (a) above.

(2) Low plate voltage will result from a defective 83 tube V101.

c. Probable causes of incorrect voltages in the tube tester section are listed in Table 7-3.

d. Replacement of Resistor R132.

After replacement of this resistor it will be necessary to adjust the two sliding contacts "A" and "B" to establish proper voltage distribution.

(1) Turn on the equipment and set all controls in accordance with paragraph 9 of this section.

(2) Connect a voltmeter between pins 5 and 6 of OCTAL socket X111 as illustrated by figure 7-1.

(3) Set BIAS control knob at 100.

(4) Adjust slider "A" of R132 until the meter reads 40 volts dc.

(5) Connect a voltmeter between pins 4 and 6 of OCTAL socket as in figure 7-1.

(6) Press buttons P3 and P2 and adjust slider "B" of R132 until the meter reads 56 volts dc.

(7) Tighten the slider screws and recheck the voltages.

11. CALIBRATION OF LINE TEST CIRCUIT.

a. Remove the test set from its case.

b. Connect an ac voltmeter (range 150 V. Min.) across points 19 and 37 of the power supply transformer T101.

c. Connect the equipment to a 115 volt ac source and turn it on.

d. Operate the LINE ADJUST control R122 until an ac voltage of 121 volts is indicated on the voltmeter between points 19 and 37.

e. Press LINE ADJ. Push button P1 and hold down.

f. Using a screwdriver adjust the calibration control R126 until the meter M101 of the test set indicates exactly at the LINE TEST mark.

TABLE 7-2
VOLTAGE TROUBLE CHART

CONDITION	PROBABLE CAUSE	REMEDY
High Plate Voltage	See Paragraph 10a section 7.	
Low Plate Voltage	Defective 83 tube V101.	Replace
	Shorted capacitor C104.	Replace
	Open winding secondary #1 or #2.	Replace T101
Zero Plate Voltage	Defective 83 tube V101.	Replace
	Open winding secondary #1, #2 or #6 of T101.	Replace T101
High Screen Voltage	BIAS control R130 open at positive end.	Replace
	Resistor R132 open.	Replace
Low Screen Voltage	5Y3WGTA tube V102 weak.	Replace
	Open winding secondary #3 or #4.	Replace T101
Zero Screen Voltage	Defective 5Y3WGTA tube V102.	Replace
	BIAS control R130 open at negative end.	Replace
	Open winding secondary #3 and #4 or #5 of T101.	Replace T101
High Bias Voltage	BIAS control R130 open at negative end.	Replace
Low Bias Voltage	Weak 5Y3WGTA tube V102.	Replace
	Open winding secondary #3 or #4.	Replace T101
Zero Bias Voltage	BIAS control R130 open at positive end.	Replace
	Resistor R132 open.	Replace
	Defective 5Y3WGTA tube V102.	Replace
	Open winding secondary #3 and #4 or #5 of T101.	Replace T101
High Signal Voltage	BIAS control R132 not set at zero.	Re-adjust
	Defective resistor R121, R122, or R123.	Replace
Low Signal Voltage	Defective resistor R121, R122, or R123.	Replace
Zero Signal Voltage	Defective resistor R121, R122, or R123.	Replace
	Open winding secondary #3 or T101.	Replace T101

12. COPPER OXIDE RECTIFIER.

a. Failure of meter rectifiers of the type used in the TV-10A/U seldom occurs in normal use.

b. A defective rectifier CR101 will cause a considerable drop in sensitivity of the line test circuit.

CAUTION

DURING FUNGUS PROOFING OPERATIONS BE SURE THAT NONE OF THE COATING COMPOUND IS USED ON OR PERMITTED TO COME IN CONTACT WITH THE COPPER OXIDE RECTIFIER. CHEMICALS USED IN THESE COATING COMPOUNDS MAY CAUSE DAMAGE TO METALLIC RECTIFIER ELEMENTS.

c. The rectifier CR101, may be tested with an ohmmeter in the following way.

(1) Disconnect the rectifier leads at the ends farthest from the rectifier, taking care to note the original position of the lead connections.

(2) Measure the resistance between the red and yellow rectifier leads with the position ohmmeter lead in contact with the red rectifier lead. A high resistance reading in excess of 20,000 ohms should be obtained.

(3) Reserve the polarity of the ohmmeter leads and again measure the resistance between the red and yellow rectifier leads. A low resistance reading from approximately 50 ohms to 500 ohms should be obtained.

(4) If, when the polarity of the ohmmeter leads is reversed, both readings are low resistance or zero resistance, the rectifier is defective and should be replaced.

(5) Measure the resistance between the yellow and black leads in the same way as in paragraphs (2), (3) and (4) above. Similar readings should be obtained.

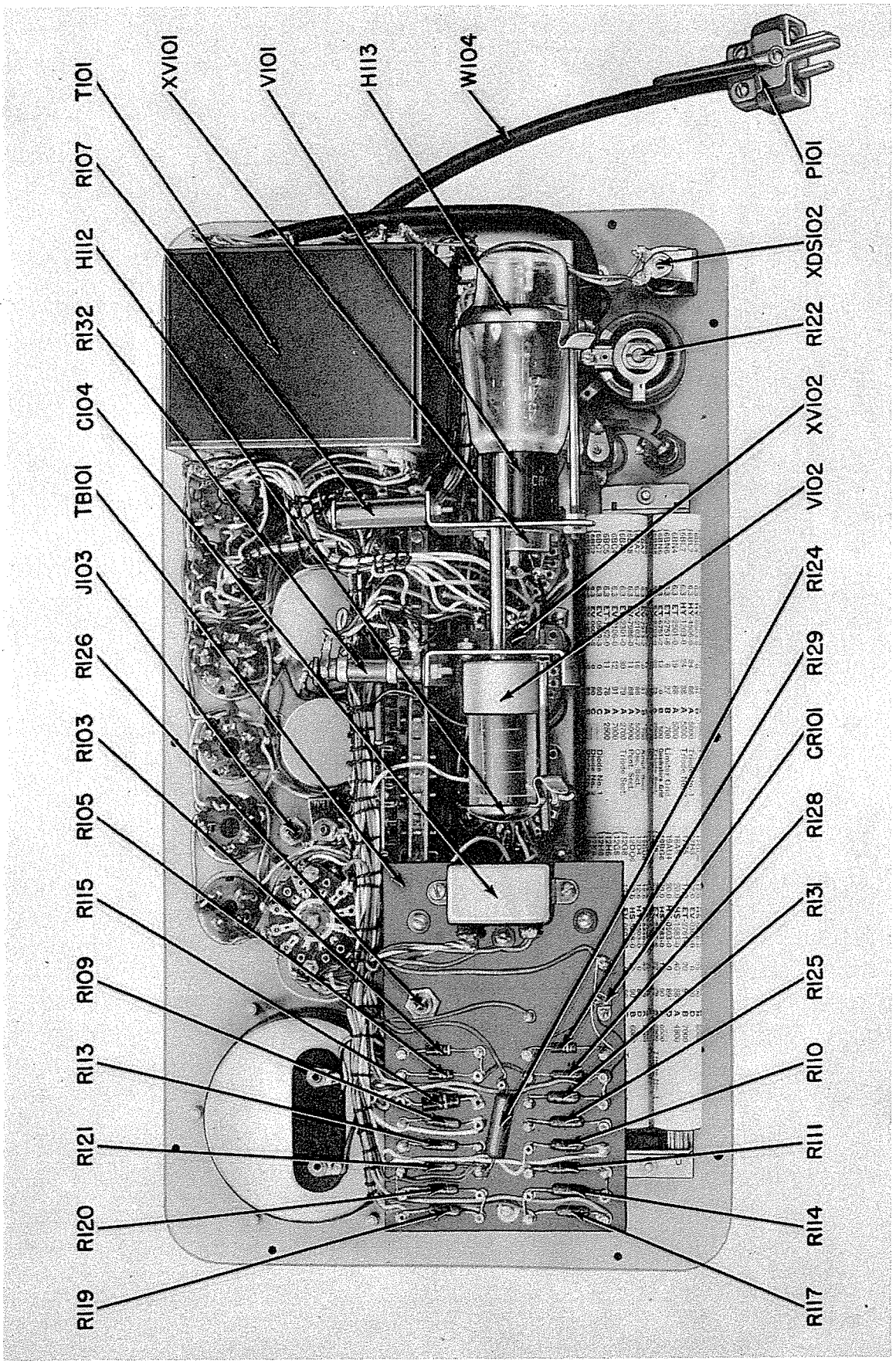

Figure 7-2. Rear View of Electron Tube Test Set, TV-10A U With Case Removed

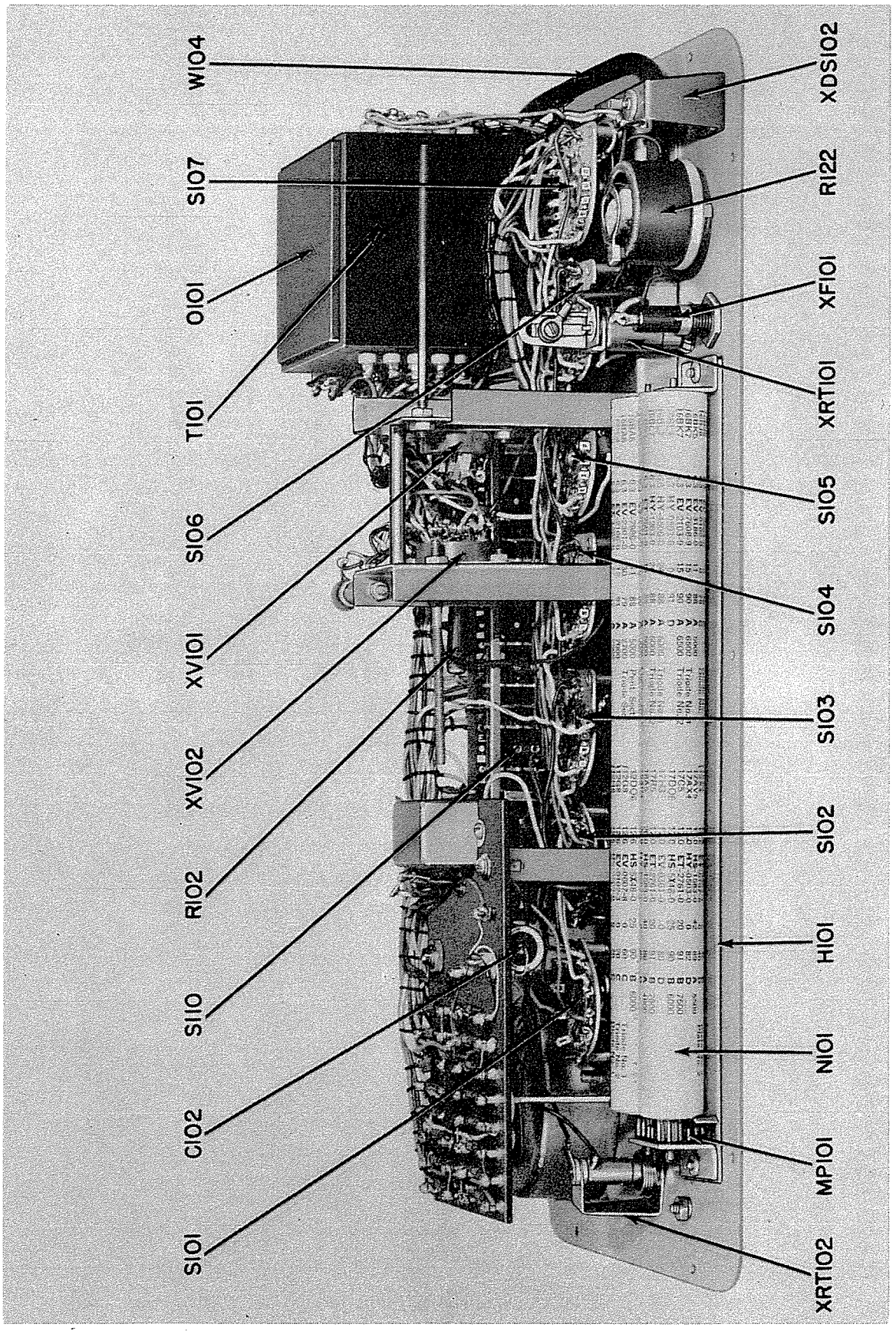

Figure 7-3. Rear View of Test Set, TV-10A/U From Bottom Edge of Panel

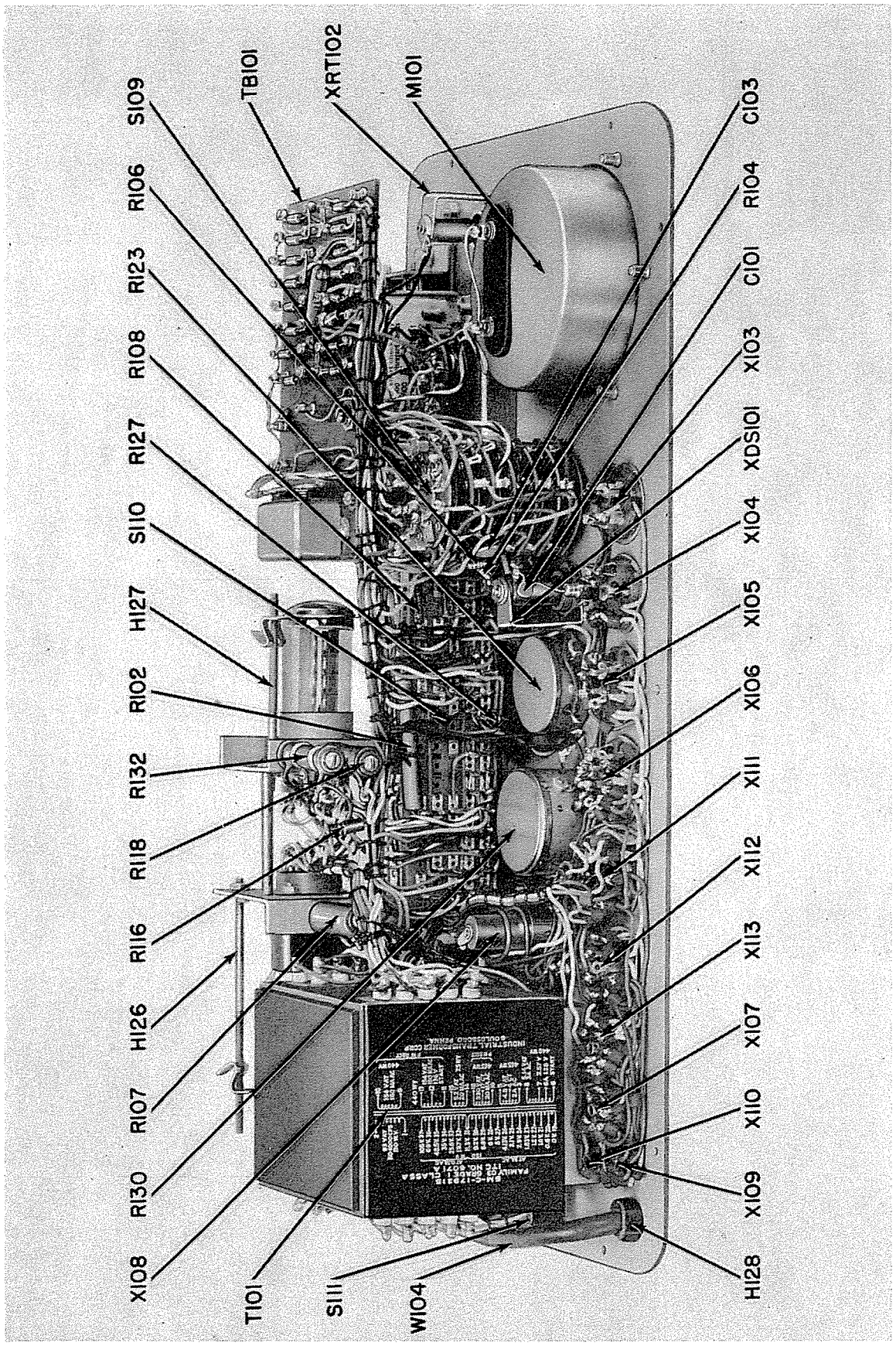

Figure 7-4. Rear View of Test Set, TV-10A/U From Top Edge of Panel

NOTES

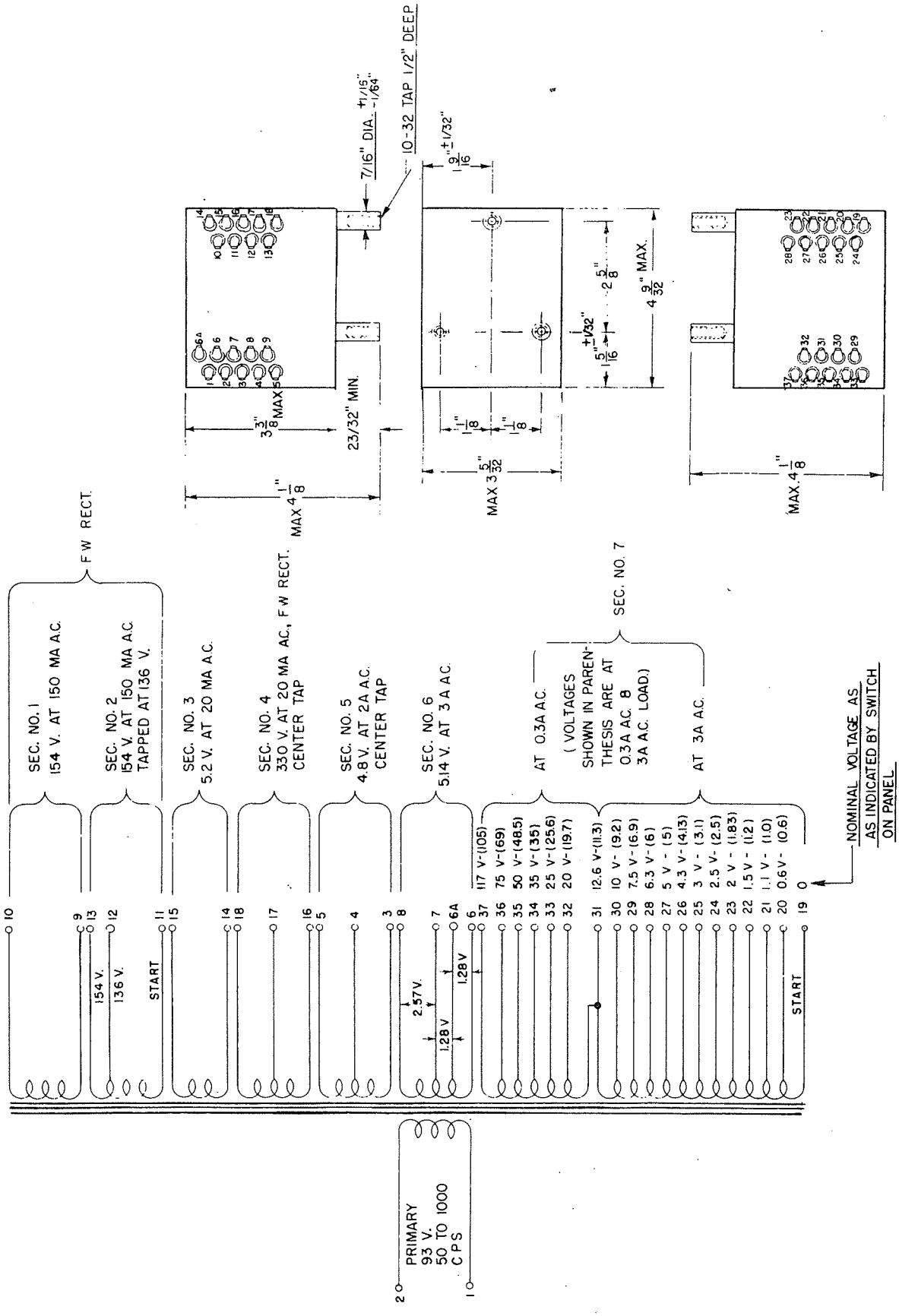

Figure 7-6. Transformer Diagram

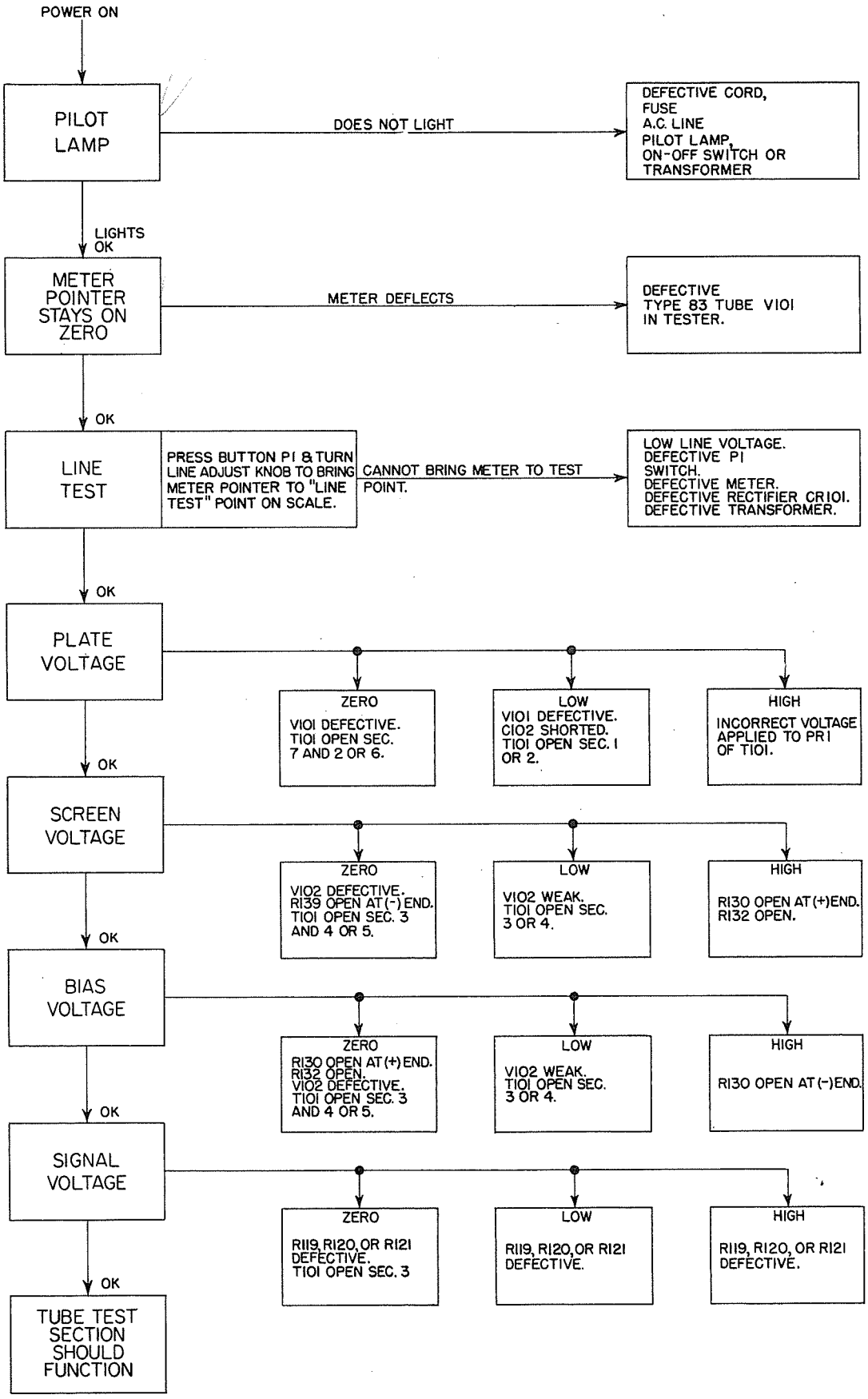

Figure 7-7. Trouble Shooting Chart

SECTION 8
PARTS LIST

1. INTRODUCTION.

Reference designations (previously referred to as circuit symbols, reference symbols, etc.) have been assigned to identify all maintenance parts of the equipment. They are used for marking the equipment (adjacent to the part they identify) and are included on drawings, diagrams and the parts list. The letters of a reference designation indicate the kind of part (generic group), such as resistor, amplifier, electron tubes, etc. The number differentiates between parts of the same generic group. Sockets associated with a particular plug-in device, such as an electron tube or a fuse, are identified by a reference designation which includes the reference designation of the plug-in device. For example, the socket for fuse F101 is designated XF101.

2. MAINTENANCE PARTS LIST.

Table 8-1 lists the maintenance parts for Electron Tube Test set TV-10A/U. Column 1 lists the reference designations of the various parts in alphabetical and numerical order. Column 2 refers to the explanatory notes that appear in paragraph 6 of this section. Column 3 gives the name and describes the various parts. Complete information is given for key parts (parts differing from any part previously listed in this table). The name and description are omitted for other parts. However, reference is made to the key part for the data. Column 4 indicates how the part is used and gives its functional location in the equipment. It also gives the figure number of the pictorial illustration on which the part is identified.

3. STOCK NUMBER IDENTIFICATION.

Table 8-2 is arranged by key designation. The "Stock Number" column gives stock numbers for the various key parts. Therefore, if you have a reference designation for a part, find its key designation from table 8-1 before using this table. Stock numbers preceded by an asterisk (*) apply to replacement parts which differ from items initially supplied in the equipment.

4. STOCK NUMBER CROSS REFERENCE.

Table 8-3 lists by stock numbers all key parts that have been assigned stock numbers. If the stock number of a part used in the equipment is known, this table can be used to locate the description of the part in table 3-1.

5. LIST OF MANUFACTURERS.

Table 8-4 lists manufacturers of parts used in the equipment. The first column includes the abbreviations used in table 8-1 to identify the manufacturers.

6. NOTES.

The following provide additional information about items listed in table 8-1.

a. Low failure item - if required requisition from ESO referencing NAVSHIPS 900, 180A.

b. Shop manufacture.

c. Assemble from component parts.

d. Fabricate locally from bulk material under FSN G 6145-299-6256.

e. Replacement part identified by stock number listed in table 8-2 differs from items initially supplied in the equipment.

TABLE 8-1 ELECTRON TUBE TEST SET TV-10A/U, MAINTENANCE PARTS LIST

REF. DESIGN	NOTES	ITEM NAME AND DESCRIPTION	LOCATING FUNCTION
		TEST SET, ELECTRON TUBE, TV-10A/U. Complete with Test Leads and Adapters. Hickok part no. 901-186.	
C101		CAPACITOR, FIXED CERAMIC: 470 uuf + 100 -20%, 500 vdcw, type no. CK60Y471Z; Spec. MIL-C-11015A.	Isolating capacitor noise test circuit. Figure 7-4.
C102		CAPACITOR, FIXED PAPER; .1 uf, ± 10%, 600 vdcw, type no. CP27A1EF104K; Spec. MIL-C-25A.	Isolating capacitor short test circuit. Figure 7-3.
C103		CAPACITOR, FIXED, CERAMIC: 4700 uuf + 100% -20%, 500 vdcw, type no. CK62Y472Z, Spec. MIL-C-11015A.	Neutralizing capacitor in mutual conductance test circuit. Figure 7-4.
C104		CAPACITOR, FIXED ELECTROLYTIC: 100 uf, 15 vdcw, type no. CE63C101E, Spec. JAN-C-62.	Filter capacitor across meter. Figure 7-2.
CR101		RECTIFIER, METALLIC: copper oxide; full wave bridge, single phase, 6 v rms max. input, 4 v dc @ 2 ma max. rated output; Bradley Laboratories Type CX5 part no. CX5AAF.	Meter rectifier to permit adjustment of ac line voltage to proper level. Figure 7-2.
DS101		LAMP, GLOW; neon gas; 1/25 W; 65 vac, 90 vdc striking voltage; GE type no. NE-51.	Short test indicator. Figure 4-1.
DS102		LAMP, INCANDESCENT: 6 to 8 volts @ .15 amps; GE type no. 47.	Pilot lamp. Figure 4-1.
E101		ADAPTER, TEST: for testing 3E29, 832A, 829B tubes in standard octal socket; Hickok part/dwg. no. 1050-33.	Provides means for testing special tubes. Figure 1-3.
E102	e	ADAPTER, TEST: for testing 2C39A type tubes in standard octal socket; Hickok part/dwg. no. 1050-50.	Provides means for testing special tubes. Figure 1-3.
E103		INSULATOR, CLIP: vinyl plastic; black; Mueller Elect. no. 37.	Part of test lead W102.
E104		CLIP, CONNECTOR: grid and plate for lighthouse tubes; Hickok part no. 3075-13.	Part of test lead W101.
E105		CLIP, ELECTRICAL: grid or plate type: accommodates caps 1/4 in. to 3/8 in. dia.; Amphenol no. 63-1 black.	Part of test lead W103.
E106	e	CLIP, ELECTRICAL: battery type; steel cad. plated; Mueller Electric Co. no. 45.	Replacement part for W102.
F101		FUSE CARTRIDGE: 1 amp rating: 250 V. max.; normal instantaneous; Littlefuse Products part no. 312001.	Protective fuse in primary circuit of T101. Figure 4-1.
H101	a	WINDOW CHART: cellulose acetate clear; 11 5/8 in. lg. x 1 1/2 in. wd. x .020 thick; Hickok part/dwg. no. 23800-19.	Protective cover with index line for roll chart. Figures 4-1 and 7-3.
H102		KNOB, PUSH BUTTON: round phenolic, black; Hickok part/dwg. no. 2920-7.	Operating button for S110 section No. 1.

TABLE 8-1 (Cont.) ELECTRON TUBE TEST SET TV-10A/U, MAINTENANCE PARTS LIST

REF. DESIGN	NOTES	ITEM NAME AND DESCRIPTION	LOCATING FUNCTION
H103		Same as H102.	Operating button for S110 section No. 2.
H104		Same as H102.	Operating button for S110 section No. 4.
H105		Same as H102.	Operating button for S110 section No. 5.
H106		Same as H102.	Operating button for S110 section No. 6.
H107		Same as H102.	Operating button for S110 section No. 7.
H108		Same as H102.	Operating button for S110 section No. 8.
H109		KNOB, PUSH BUTTON: round phenolic, red; push on type, Hickok part no. 2920-8, dwg. no. 2920-7.	Operating button for S110 section No. 3.
H110	b	RING "D": finger grip; assembly composed of "D" ring and bolt, 8-32 thread 3/8 in. lg. Hickok part/dwg. no. 18825-77.	Lift ring for removing equipment from case. Figure 4-1.
H111		Same as H110	Same as H110.
H112		RETAINER, ELECTRON TUBE: for tubes having T9 envelope; stainless steel; Times Facsimile Corp. part no. 2HAT.	Locks 5Y3GTWA rectifier in socket. Figure 7-2.
H113		RETAINER, ELECTRON TUBE: for tubes having T-16 and ST-16 envelope; stainless steel; Times Facsimile Corp. no. 5THAT.	Locks type 83 rectifier in socket. Figure 7-2.
H114		KNOB: pointer type, phenolic, black; for 1/4 in. dia. round shaft, 1 set screw; Kurz Kasch type no. S-292-3L.	Control knob for SHORT - MICROMHOS switch S109.
H115		Same as H114.	Control knob for Filament No. 1 SELECTOR switch S107.
H116		Same as H114.	Control knob for FILAMENT No. 2 SELECTOR switch S106.
H117		Same as H114.	Control knob for GRID SELECTOR switch S105.
H118		Same as H114.	Control knob for PLATE SELECTOR switch S104.

TABLE 8-1 (Cont.) ELECTRON TUBE TEST SET TV-10A/U, MAINTENANCE PARTS LIST

REF. DESIGN	NOTES	ITEM NAME AND DESCRIPTION	LOCATING FUNCTION
H119		Same as H114.	Control knob for SCREEN SELECTOR switch S103.
H120		Same as H114.	Control knob for CATHODE SELECTOR switch S102.
H121		Same as H114.	Control knob for SUPPRESSOR SELECTOR switch S101.
H122		KNOB: pointer type, phenolic, black; for 1/4 in. dia. round shaft; 2 set screws; Kurz Kasch no. S-292-3L-BB.	Control knob for FILAMENT VOLTAGE switch S108.
H123		Same as H122.	Control knob for BIAS potentiometer.
H124		Same as H122.	Control knob for SHUNT potentiometer.
H125		Same as H122.	Control knob for LINE ADJUST rheostat.
H126		STUD, THREADED: stainless steel; external thread, 8-32, 1/2 in. lg. one end; external thread 8-32, 2 in. lg. other end; unthreaded portion .140 in. dia., 1 3/4 in. lg.; 4 1/4 in. lg. o/a; furnished with nuts and lockwashers; Times Facsimile Corp. part no. 42.	Electron tube clamp mtg. Figure 7-4.
H127		STUD, THREADED: stainless steel; external thread; 8-32, 1/2 in. lg. one end; external thread 8-32, 2 in. lg. other end; unthreaded portion .140 in. dia., 3/4 in. lg.; 3 1/4 in. lg. o/a; furnished with nuts and lockwashers; Times Facsimile Corp. no. 32.	Electron tube clamp mtg. Figure 7-4.
H128		CLAMP, ELECTRICAL: nylon, 2 piece construction; Heyman Mfg. Co. type no. SR-6P.	Strain relief for power cable. Figures 4-1 and 7-4.
J101	e	JACK, TIP: single round female contact for .080 dia. tip plug, ins. red phenolic cap; Eby part no. 7417 Red.	Panel connection "P" for plate cap lead. Figure 4-1.
J102		JACK, TIP: single round female contact; for .080 dia. tip plug, insulated black phenolic cap; Eby part no. 7417 Black.	Panel connection "G" for grid cap lead. Figure 4-1.
J103		Same as J102.	Panel connection for NOISE test. Figures 4-1 and 7-2.
J104		Same as J102.	Panel connection for NOISE test. Figure 4-1.

TABLE 8-1 (Cont.) ELECTRON TUBE TEST SET TV-10A/U, MAINTENANCE PARTS LIST

REF. DESIGN	NOTES	ITEM NAME AND DESCRIPTION	LOCATING FUNCTION
M101		METER, ELECTRON TUBE TESTER: dc movement; calibrated in micromhos, ranges 0 to 3000/6000/15,-000/30,000; Hickok part no. 481-497.	Indicates tube condition. Figures 4-1 and 7-4.
MP101	a	DRIVE ASSEMBLY, ROLL CHART: c/o 2 plastic rollers, gear driven, mounted on welded metal panel plate assembly; Hickok part/dwg. no 9600-40.	Thumb operated roller mechanism for operating roll chart. Figures 4-1 and 7-3.
N101	a	CHART, ROLL: Tube Test Data; paper; black print on white background; 10 1/4 in. wd. x approx. 14 ft. lg. Hickok part/dwg. no. 3200-63.	Numerical listing of test data and control settings for various tube types. Figures 4-1 and 7-3.
N102	a	CHART, CONDENSED OPERATING INSTRUCTIONS: plastic; o/a dim. 17 in. lg. x 5 1/2 in. wd. Hickok part/dwg. no. 3122-75.	Provides brief, step by step operational procedure. Mounted in cover of case.
O101		CUSHION: sponge rubber, 4 in. lg. x 3 in. wd. x 1/8 in. thk.	Shock absorber pad cemented on transformer. Figure 7-3.
P101		CONNECTOR, PLUG, ELECTRICAL: (POWER, THREE WIRE, GROUNDING TYPE) Type UP 121M of Spec. MIL-C-3767.	Power connector plug P/O W104.
P102		CONNECTOR, PLUG: 1 male contact; .080 phone tip brass ni pl; black phenolic handle; Herman Smith type no. 203B.	Replacement part for W101.
P103		Same as P102.	Replacement part for W102.
P104		Same as P102.	Replacement part for W103.
P105		CONNECTOR, PLUG: 1 male contact; .080 phone tip brass ni pl; red phenolic handle; Herman Smith type no. 203R.	Replacement part for W101.
R101	e	RESISTOR, FIXED, COMPOSITION: 1 megohm p/m 10%, 1/2 Watt, type no. RC20GF105K, Spec. MIL-R-11.	Grid resistor for converter tubes. Mounted on S110.
R102		RESISTOR, FIXED, FILM: 200 ohms, p/m 1%, 2 Watt, type no. RN30X2000F, Spec. MIL-R-10509B.	Load resistor for rectifier tests. Figures 7-3 and 7-4.
R103		RESISTOR, FIXED, COMPOSITION: 47,000 ohms p/m 5%, 1/2 Watt, type no. RC20GF473J, Spec. Mil-R-11.	Part of voltage divider for short test circuit. Figure 7-2.
R104	e	RESISTOR, FIXED, COMPOSITION: 100,000 ohms, p/m 10%, 1/2 Watt, type no. RC20GF104K, Spec. MIL-R-11.	Limiting resistor in series with neon lamp. Figure 7-4.
R105		RESISTOR, FIXED, COMPOSITION: 27,000 ohms, p/m 5%, 1/2 Watt, type no. RC20GF273J, Spec. MIL-R-11.	Part of voltage divider for short test circuit. Figure 7-2.

TABLE 8-1 (Cont.) ELECTRON TUBE TEST SET TV-10A/U, MAINTENANCE PARTS LIST

REF. DESIGN	NOTES	ITEM NAME AND DESCRIPTION	LOCATING FUNCTION
R106	e	RESISTOR, FIXED, COMPOSITION: 330,000 ohms, p/m 10%, 1/2 Watt, type no. RC20GF334K, Spec. MIL-R-11.	Shunt resistor in neon lamp circuit. Figure 7-4.
R107		RESISTOR, FIXED, WIRE WOUND: 100 ohms, p/m 5%, 10 Watts, center tapped, Ohmite 29108A.	Provides center tap for cathode connection of filament type tubes. Figures 7-2 and 7-4.
R108	e	RESISTOR, FIXED, FILM: 27 ohms, p/m 1%, 1/2 Watt, type no. RN20X27ROF, Spec. MIL-R-10509B.	Meter shunt rectifier test circuit. Figure 7-4.
R109	e	RESISTOR, FIXED, FILM: 5300 ohms, p/m 1%, 1/2 Watt, type no. RN20X5301F, Spec. MIL-R-10509B.	Series resistor for meter when in tube test circuit. Figure 7-2.
R110	e	RESISTOR, FIXED, FILM: 109 ohms, p/m 1%, 1/2 Watt, type no. RN20X1090F, Spec. MIL-R-10509B.	Part of shunt network for micromho measurements. Figure 7-2.
R111	e	RESISTOR, FIXED, FILM: 41 ohms, p/m 1%, 1/2 Watt, type no. RN20X41ROF, Spec. MIL-R-10509B.	Part of shunt network for micromho measurements. Figure 7-2.
R112	e	RESISTOR, FIXED, COMPOSITION: 47,000 ohms, p/m 10%, 1/2 Watt, type no. RC20GF473K, Spec. MIL-R-11.	Shunt resistor across bias fuse lamp. Mounted on terminals of XRT102.
R113		RESISTOR, FIXED, FILM: 280 ohms, p/m 1%, 1/2 Watt, type no. RN20X2800F, Spec. MIL-R-10509B.	Meter shunt for 6000 micromho range. Figure 7-2.
R114		Same as R111.	Part of shunt network for micromho measurements. Figure 7-2.
R115	e	RESISTOR, FIXED COMPOSITION: 15,000 ohms, p/m 5%, 1 Watt, type no. RC30GF153J, Spec. MIL-R-11.	Limiting resistor, tube test plate circuit. Figure 7-2.
R116	e	RESISTOR, FIXED, COMPOSITION: 1200 ohms, p/m 10%, 1 Watt, type no. RC30GF122K, Spec. MIL-R-11.	Limiting resistor diode test circuit. Figure 7-4.
R117		Same as R110.	Part of shunt network for micromho measurements. Figure 7-2.
R118	e	RESISTOR, FIXED, WIRE WOUND: 1800 ohms, p/m 5%, 10 Watt, type no. RW31G182, Spec. MIL-R-26B.	Limiting resistor OZ4 test circuit. Figure 7-4.
R119	e	RESISTOR, FIXED, FILM: 800 ohms, p/m 1%, 1/2 Watt, type no. RN20X8000F, Spec. MIL-R-10509B.	Part of signal voltage divider network. Figure 7-2.
R120	e	RESISTOR, FIXED, FILM: 111 ohms, p/m 1%, 1/2 Watt, type no. RN20X1110F, Spec. MIL-R-10509B.	Part of signal voltage divider network. Figure 7-2.

TABLE 8-1 (Cont.) ELECTRON TUBE TEST SET TV-10A/U, MAINTENANCE PARTS LIST

REF. DESIGN	NOTES	ITEM NAME AND DESCRIPTION	LOCATING FUNCTION
R121	e	RESISTOR, FIXED, FILM: 89 ohms, p/m 1%, 1/2 Watt, type no. RN20X89ROF, Spec. MIL-R-10509B.	Part of signal voltage divider network. Figure 7-2.
R122	e	RESISTOR, VARIABLE, WIRE WOUND: 200 ohms, p/m 10%, 25 Watts, type no. RP101FD201KK. Spec. MIL-R-22.	Line voltage control. Figures 7-2 and 7-3.
R123	e	RESISTOR, VARIABLE, WIRE WOUND: 150 ohms, linear, type no. RA30AIRD151AK, Spec. JAN-R-19.	SHUNT resistor rectifier test. Figure 7-4 and 4-1.
R124	e	RESISTOR, FIXED, WIRE WOUND: 150 ohms, p/m 5%, 5 Watt, MIL type RW57G151, Spec. MIL-R-26C.	Fixed portion of meter shunt for rectifier and diode tests. Figure 7-2.
R125	e	RESISTOR, FIXED, FILM: 950 ohms, p/m 1%, 1/2 Watt, type no. RN20X9500F, Spec. MIL-R-10509B.	Part of rectifier bridge in line test circuit. Figure 7-2.
R126	e	RESISTOR, VARIABLE COMPOSITION: 50,000 ohms, p/m 20%, linear 1/2 Watt, Screw-driver adjust; 1/4" diam. slotted shaft, 3/8" lg., FMS; with locking nut; Centralab Model 2 #50K-C1, BA211-000.	Calibration control in line test circuit. Figure 7-2.
R127		RESISTOR, FIXED, COMPOSITION: 180,000 ohms, p/m 10%, 1/2 Watt, type no. RC20GF184K, Spec. MIL-R-11.	Series grid resistor for gas test. Figure 7-4.
R128		Same as R125.	Part of rectifier bridge in line test circuit. Figure 7-2.
R129		RESISTOR, FIXED, COMPOSITION: 240,000 ohms, p/m 5%, 1/2 Watt, type no. RC20GF244J, Spec. MIL-R-11.	
R130		RESISTOR, VARIABLE, WIRE WOUND: 3000 ohms, p/m 10%, 1 Watt; round metal shaft 1/4" diam. x 13/16" lg. FMS; special taper, Hickok part/dwg. no. 16927-132.	Bias potentiometer controls bias voltage. Figure 4-1 and 7-4.
R131		Same as R125.	Part of rectifier bridge in line test circuit. Figure 7-2.
R132	e	RESISTOR, ADJUSTABLE, WIRE WOUND: 8500 ohms, p/m 10%, 10 Watt; two fixed radial tab terminals, two sliding terminals; P.R. Mallory no. 1AV8500.	Voltage divider for obtaining proper screen potentials. Figures 7-2 and 7-4.
RT101		LAMP, INCANDESCENT: 6 to 8 V.; 6 cp; Tungsol no. 81.	Fuse and overload indicator in primary circuit of transformer T101. Figure 4-1.
RT102		LAMP, INCANDESCENT: 2 volts, .06 amps; G.E. 49.	Bias fuse and overload indicator. Figure 4-1.

TABLE 8-1 (Cont.) ELECTRON TUBE TEST SET TV-10A/U, MAINTENANCE PARTS LIST

REF. DESIGN	NOTES	ITEM NAME AND DESCRIPTION	LOCATING FUNCTION
S101		SWITCH, ROTARY: one section, 12 positions; Oak Mfg. Co. in accordance with Hickok part/dwg. no. 19912-356.	Connects SUPPRESSOR voltage to selected socket contact. Figures 4-1 and 7-3.
S102		Same as S101.	Connects CATHODE voltage to selected socket contact. Figures 4-1 and 7-3.
S103		SWITCH, ROTARY: one section 12 positions, Oak Mfg. Co. in accordance with Hickok part/dwg. no 19912-355.	Connects SCREEN voltage to selected socket contact. Figures 4-1 and 7-3.
S104		Same as S103.	Connects PLATE voltage to selected socket contact. Figures 4-1 and 7-3.
S105		Same as S103.	Connects GRID voltage to selected socket contact. Figures 4-1 and 7-3.
S106		Same as S103.	Connects one side of FILAMENT voltage to selected socket contact. Figures 4-1 and 7-3.
S107		Same as S103.	Connects one side of FILAMENT voltage to selected socket contact. Figures 4-1 and 7-3.
S108		SWITCH, ROTARY: one section, 20 positions; Oak Mfg. Co. in accordance with Hickok part/dwg. no. 19912-358.	Selects proper FILAMENT VOLTAGE for tube under test. Mounted under transformer T101. Figure 4-1.
S109		SWITCH, ROTARY: 6 sections, 10 positions; Oak Mfg. Co. in accordance with Hickok part/dwg. no. 19912-357.	SHORT test and MICROMHOS range switch. Figures 4-1 and 7-4.
S110		SWITCH, PUSH: (for contact arrangement refer to Hickok dwg. 19910-66); 8 sections each of which is operated by a separate push button independently of the other sections; Oak Mfg. Co. part no. 45535-130 in accordance with Hickok part/dwg. no. 19910-66.	Selects proper test voltage for various tube types. Figures 4-1, 7-3 and 7-4.
S111		SWITCH, TOGGLE: single pole, single throw; JAN type ST-17A per Spec. JAN-S-23.	Power on-off switch. Figures 4-1 and 7-4.

TABLE 8-1 (Cont.) ELECTRON TUBE TEST SET TV-10A/U, MAINTENANCE PARTS LIST

REF. DESIGN	NOTES	ITEM NAME AND DESCRIPTION	LOCATING FUNCTION
T101		TRANSFORMER, POWER, STEP-DOWN AND STEP-UP: input 93 volts ac, 50 to 1000 cycles single phase; output No. 1 secondary 154 V @ 150 ma.; No. 2 secondary 154 V. @ 150 ma. tapped at .36 V.; No. 3 secondary 5.2 V. @ 20 ma.; No. 4 secondary 330 V. @ 20 ma. center tapped; No. 5 secondary 4.8 @ 2 amps center tapped; No. 6 secondary 5.14 @ 3 amps center tapped; No. 7 secondary 117 volts, tapped at 0.6/1.1/1.5/2/2.5/3/4.3/5/6.3/7.5/10/12.6/20/25/35/50/75 volts, 3 amps from 0.6 volts through 12.6 volts, 0.3 amps from 20 volts through 117 volts; Hickok part/dwg. no. 20800-125.	Supplies AC voltage to filament and rectifier circuit. Figures 7-2, 7-3 and 7-4.
TB101	a	TERMINAL BOARD: plastic per Spec. MIL-P-3115B type PBE-P; 35 feed through solder stud terminals; board dim. 6 in. leg. x 4 in. wd. x 3/32 in. thick, Hickok part/dwg. no. 2420-346.	Support for resistors etc. Figures 7-2 and 7-4.
V101	e	ELECTRON TUBE: type 83, Spec. MIL-E-1C.	Rectifier, plate voltage supply. Figure 7-2.
V102		ELECTRON TUBE: type 5Y3WGTA, Spec. MIL-E-1C.	Rectifier, screen voltage. Figure 7-2.
W101	c	LEAD, GRID AND PLATE FOR LIGHTHOUSE TUBES: Hickok part/dwg. no. 12450-300.	Adapter for making contact to grid and plate of lighthouse tubes. Figure 1-3.
W102	c	LEAD, TEST: plate; Hickok part/dwg. no. 12450-301.	Connects top caps of tubes to plate jack. Figure 1-3.
W103	c	LEAD, TEST: grid; Hickok part/dwg. no. 12450-302.	Connects top caps of tubes to grid jack. Figure 1-3.
W104	c	CABLE, POWER, ELECTRICAL: 3 conductor 7 ft. lg., Class MG of Spec. MIL-C-3432 except ground conductor color coded green; one end terminated in connector plug U121M of Spec. MIL-C-3767 Hickok part no. 3030-98.	Power input cable. Figure 7-2.
W105		WIRE, ELECTRICAL: insulated .140 in. O.D.; 1 no. 18 AWG conductor, tinned copper, stranded; 65 strands no. 36 AWG cotton wrap, rubber insulation .043 in. thk, black; rated 5000 volts; Belden Mfg. Co. no. 8899 Black.	Replacement test lead wire for W101, W102 and W103.
W106		WIRE, ELECTRICAL: insulated .140 in. O.D.; 1 no. 18 AWG conductor tinned copper stranded; 65 strands no. 36 AWG; cotton wrap, rubber insulation .043 in. thk., red; rated 5000 volts; Belden Mfg. Co., no. 8899 Red.	Replacement test lead wire for W101.
W107	d	CABLE, FLEXIBLE: 3 no. 18 AWG conductors; class MG of Spec. MIL-C-3432A, except one conductor shall be color-coded green.	Replacement power cable material. P/O W104.

TABLE 8-1 (Cont.) ELECTRON TUBE TEST SET TV-10A/U, MAINTENANCE PARTS LIST

REF. DESIGN	NOTES	ITEM NAME AND DESCRIPTION	LOCATING FUNCTION
XV101		SOCKET, ELECTRON TUBE: 4 silver plated phosphor bronze contacts; Amphenol part no. 77M1P4TM.	Socket for type 83 rectifier tube, V101. Figures 7-2 and 7-3.
XV102		SOCKET, ELECTRON TUBE: 8 silver plated beryllium copper contacts; JAN type no. TS101P101, Spec. JAN-S-28A.	Socket for type 83 rectifier tube. V102. Figures 7-2 and 7-3.
X103		SOCKET, ELECTRON TUBE: 4 silver plated phosphor bronze contacts; Amphenol part no. 78S4TM.	Test socket for four pin tubes. Figures 4-1 and 7-4.
X104		SOCKET, ELECTRON TUBE: 5 silver plated phosphor bronze contacts; Amphenol part no. 78S5TM. Hickok part no. X19350-69.	Test socket for five pin tubes. Figures 4-1 and 7-4.
X105		SOCKET, ELECTRON TUBE: 6 silver plated phosphor bronze contacts; Amphenol part no. 78S6TM.	Test socket for six pin tubes. Figures 4-1 and 7-4.
X106		SOCKET, ELECTRON TUBE: 7 silver plated phosphor bronze contacts; has special pilot lamp test socket in center; Amphenol part no. 78-7CDTM.	Test socket for large and small radius seven pin tubes. Also provides test socket for min. bayonet and screw base pilot light bulbs. Figures 4-1 and 7-4.
X107	e	SOCKET, ELECTRON TUBE: 7 silver plated phosphor bronze contacts; Cinch part no. 53C20615.	Test socket for seven pin miniature tubes. Figures 4-1 and 7-4.
X108		SOCKET, ELECTRON TUBE: 7 silver plated phosphor bronze contacts; for acorn type tube with either 5 or 7 radial contacts; one round silver plated plunger type contact in base for end pin contact; Alden no. 457V-1.	Test socket for acorn tubes. Figures 4-1 and 7-4.
X109		SOCKET, ELECTRON TUBE: 7 silver plated beryllium copper contacts; sub-miniature inline type; Cinch part no. 54A14798.	Test socket for sub-miniature tubes with inline contacts or leads. Figures 4-1 and 7-4.
X110		SOCKET, ELECTRON TUBE: 8 silver plated phosphor bronze contacts; sub-miniature type; Cinch part no. 54A14513.	Test socket for sub-miniature tubes with round base. Figures 4-1 and 7-4.
X111		SOCKET, ELECTRON TUBE: 8 silver plated phos. bronze contacts; octal type; Amphenol part no. 78-S8TM.	Test socket for octal base tubes. Figures 4-1 and 7-4.
X112		SOCKET, ELECTRON TUBE: 8 silver plated phosphor bronze contacts; loktal type; Amphenol part no. 78-8LTM.	Test socket for loctal base tube. Figures 4-1 and 7-4.
X113		SOCKET, ELECTRON TUBE: 9 silver plated phosphor bronze contacts; noval type; Cinch part no. 44C20389.	Test socket for noval tubes. Figures 4-1 and 7-4.

TABLE 8-1 (Cont.) ELECTRON TUBE TEST SET TV-10A/U, MAINTENANCE PARTS LIST

REF. DESIGN	NOTES	ITEM NAME AND DESCRIPTION	LOCATING FUNCTION
XDS101		Same as XRT102.	Socket for NE51 lamp. Figure 7-4.
XDS102	e	LIGHT, INDICATOR: with lens; 1/2 in. dia. glass, frosted, red; threaded lens mtg.; Drake Mfg. Co. type no. 40 MIL.	On-off indicator and socket for no. 47 lamp DS102. Figures 7-2 and 7-3.
XF101		FUSEHOLDER: extractor post type; 15 amp at 250 V. max.; Bussman type HKP.	Holder for 1 amp line fuse F101. Figure 7-3.
XRT101	a	LAMPHOLDER: candelabra bayonet; 115 v., 75 w.; Drake no. 614L-CH-LT.	Socket for no. 81 fuse lamp RT101. Figure 7-3.
XRT102		LIGHT, INDICATOR: with lens; 1/2 in. dia. plastic, colorless, clear lens; threaded lens holder; Drake type no. 40MIL.	Socket for no. 49 lamp RT102. Figures 7-3 and 7-4.

TABLE 8-2 ELECTRON TUBE TEST SET TV-10A/U STOCK NUMBER IDENTIFICATION

REF. DESIG.	FEDERAL	STANDARD NAVY	SIGNAL CORPS	U S A F
C101	N5910-667-7180			
C102	N5910-192-9785			
C103	N5910-275-6434			
C104	N5910-112-8448			
CR101	N6130-604-7897			
DS101	G6240-223-9100			
DS102	G6240-155-8706			
E101	N5935-643-7096			
E102	* N5935-283-3400			
E103	N5970-340-5203			
E104	N5940-242-8516			
E105	N5940-242-8519			
E106	* N5940-220-9775			
F101	N5920-280-4465			
H102	N5355-644-1936			
H109	N5930-311-9612			
H112	N5960-273-2434			
H113	N5960-268-3200			
H114	N5355-284-5886			
H122	N5355-284-4575			
H126	N5307-208-3857			
H127	N5305-286-1738			
H128	N5975-296-6060			
J101	* N5935-197-4318			
J102	N5935-201-3456			
M101	N6625-604-6797			
P101	N5935-636-7145			
P102	N5935-504-3498			
P105	N5935-504-3497			
R101	* N5905-192-0390			
R102	N5905-557-2254			
R103	N5905-254-9201			
R104	* N5905-195-6761			
R105	N5905-195-9482			
R106	* N5905-192-0379			
R107	N5905-109-1098			
R108	* N5905-539-3490			
R109	* N5905-553-9830			
R110	* N5905-539-3509			
R111	* N5905-539-3503			
R112	* N5905-254-9201			
R113	* N5905-577-0747			
R115	* N5905-299-2028			
R116	* N5905-279-2553			
R118	* N5905-157-5662			
R119	* N5905-539-3511			
R120	* N5905-539-3509			
R121	* N5905-539-3510			
R122	* N5905-195-2312			
R123	* N5905-549-9865			
R124	* N5905-553-9774			
R125	* N5905-539-4208			
R126	N5905-556-7282			
R127	* N5905-192-0660			
R129	N5905-239-0560			
R130	N5905-604-6796			
R132	* N5905-279-9140			
RT101	G6240-014-2306			
RT102	N6210-299-4514			
S101	N5930-557-1903			

TABLE 8-2 ELECTRON TUBE TEST SET TV-10A/U STOCK NUMBER IDENTIFICATION

REF. DESIG.	STOCK NUMBERS			
	FEDERAL	STANDARD NAVY	SIGNAL CORPS	U S A F
S103	N5930-557-1906			
S108	N5930-557-1905			
S109	N5930-557-1904			
S110	N5930-665-4181			
S111	N5930-050-2627			
T101	N5950-647-7246			
V101	N5960-100-7323			
V102	* N5960-272-9178			
W105	N6145-229-9862			
W106	N6145-249-8781			
W107	G6145-299-6256			
XV101	N5935-129-3081			
XV102	N5935-259-3995			
X103	N5935-160-3874			
X104	N5935-227-7758			
X105	N5935-222-9891			
X106	N5935-222-9763			
X107	* N5935-222-9741			
X108	N5935-224-0838			
X109	N5935-258-3050			
X110	N5935-224-0846			
X111	N5935-243-0458			
X112	N5935-222-9968			
X113	N5935-259-3159			
XDS102	* N6210-299-4836			
XF101	N5920-156-9233			
XRT101	N6250-174-8939			

NOTE: Stock numbers preceded by an asterisk (*) apply to replacement items which differ from the items initially supplied in equipment.

TABLE 8-3 ELECTRON TUBE TEST SET TV-10A/U STOCK NUMBER CROSS REFERENCE

STOCK NUMBER FEDERAL	REF. DESIG.		STOCK NUMBER FEDERAL	REF. DESIG.
N5305-286-1738	H127		N5930-557-1906	S103
N5307-208-3857	H126		N5930-665-4181	S110
N5355-284-4575	H122		N5935-129-3081	XV101
N5355-284-5886	H114		N5935-160-3874	X103
N5355-644-1936	H102		*N5935-197-4318	J101
N5905-109-1098	R107		N5935-201-3456	J102
*N5905-157-5662	R118		*N5935-222-9741	X107
*N5905-192-0379	R106		N5935-222-9763	X106
*N5905-192-0390	R101		N5935-222-9891	X105
*N5905-192-0660	R127		N5935-222-9968	X112
*N5905-195-2312	R122		N5935-224-0838	X108
*N5905-195-6761	R104		N5935-224-0846	X110
N5905-195-9482	R105		N5935-227-7758	X104
N5905-239-0560	R129		N5935-243-0458	X111
N5905-254-9201	R103		N5935-258-3050	X109
*N5905-254-9201	R112		N5935-259-3159	X113
*N5905-279-2553	R116		N5935-259-3995	XV102
*N5905-279-9140	R132		*N5935-283-3400	E102
*N5905-299-2028	R115		N5935-504-3497	P105
*N5905-539-3490	R108		N5935-504-3498	P102
*N5905-539-3503	R111		N5935-636-7145	P101
*N5905-539-3509	R110		N5935-643-7096	E101
*N5905-539-3509	R120		*N5940-220-9775	E106
*N5905-539-3510	R121		N5940-242-8516	E104
*N5905-539-3511	R119		N5940-242-8519	E105
*N5905-539-4208	R125		N5950-647-7246	T101
*N5905-549-9865	R123		N5960-100-7323	V101
*N5905-553-9774	R124		N5960-268-3200	H113
*N5905-553-9830	R109		*N5960-272-9178	V102
N5905-556-7282	R126		N5960-273-2434	H112
N5905-557-2254	R102		N5970-340-5203	E103
*N5905-577-0747	R113		N5975-296-6060	H128
N5905-604-6796	R130		N6130-604-7897	CR101
N5910-112-8448	C104		N6145-229-9862	W105
N5910-192-9785	C102		N6145-249-8781	W106
N5910-275-6434	C103		G6145-299-6256	W107
N5910-667-7180	C101		N6210-299-4514	RT102
N5920-156-9233	XF101		*N6210-299-4836	XDS102
N5920-280-4465	F101		G6240-014-2306	RT101
N5930-050-2627	S111		G6240-155-8706	DS102
N5930-311-9612	H109		G6240-223-9100	DS101
N5930-557-1903	S101		N6250-174-8939	XRT101
N5930-557-1904	S109		N6625-604-6797	M101
N5930-557-1905	S108			

NOTE: Stock Numbers preceded by an asterisk (*) apply to replacement items which differ from the items initially supplied in the equipment.

TABLE 8-4 LIST OF MANUFACTURERS

ABBREVIATIONS	NAME	ADDRESS
Alden	Alden Products Co.	117 N. Main St. Brocton 64, Mass.
Amphenol	American Phenolic Corp.	1830 S. 54th Ave. Chicago 50, Ill.
Belden	Belden Mfg. Co.	P.O. Box, 5070A Chicago, Ill.
Bradley	Bradley Laboratories, Inc.	168 Columbus Ave. New Haven 11, Conn.
Bussman	Bussman Mfg. Co.	2538 W. University St. St. Louis, Mo.
Centralab	Central Radio Laboratory, Div. of Globe Union	900 E. Keefe Ave. Milwaukee, Wis.
Cinch	Cinch Mfg. Co.	2339 W. Van Buren Chicago 12, Ill.
Drake	Drake Mfg. Co.	1713 W. Hubbard St. Chicago 22, Ill.
Eby	Hugh H. Eby, Inc.	4701 Germantown Ave. Philadelphia 44, Penna.
G.E.	General Electric Co.	1 River Road Schenectady, N. Y.
Heyco	Heyman Mfg. Co.	Kenilworth, N. J.
Herman Smith	Herman H. Smith, Inc.	2326 Nostrand Ave. Brooklyn 10, N. Y.
Hickok	Hickok Electrical Instrument Co.	10514 DuPont Ave. Cleveland, Ohio
Kurz-Kasch	Kurz-Kasch, Inc.	1421 S. Broadway Dayton, Ohio
Littlefuse	Littlefuse, Inc.	1865 Miner St. Desplaines, Ill.
Mallory	P. R. Mallory and Co.	3029 E. Washington St. Indianapolis, Ind.
Mueller Elect.	Mueller Electric Co.	1597 E. 31st St. Cleveland, Ohio
Oak	Oak Mfg. Co.	1260 Claybourne Ave., Chicago 10, Ill.
Ohmite	Ohmite Mfg. Co.	4835 W. Flournoy St. Chicago, Ill.
Times Facsimile	Times Facsimile Corp.	540 W. 58th St. New York City, N. Y.
Tung-Sol	Tung-Sol Lamp Works, Inc.	100-8th Ave. Newark 4, N. J.

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Section 7

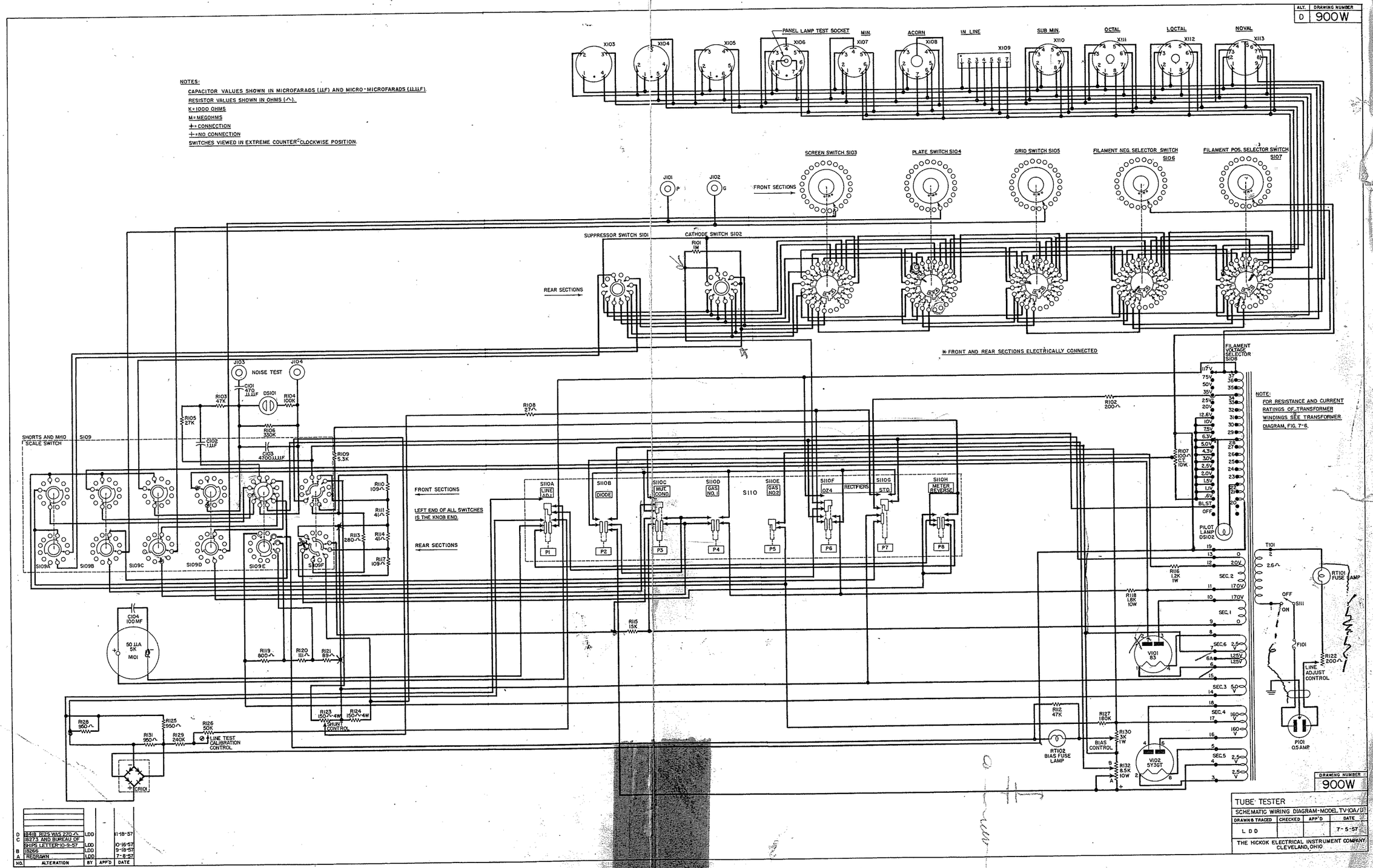

Figure 7-5. Schematic Diagram For Test Set, TV-10A/U