



Electronic
TUBES

ESSENTIAL CHARACTERISTICS

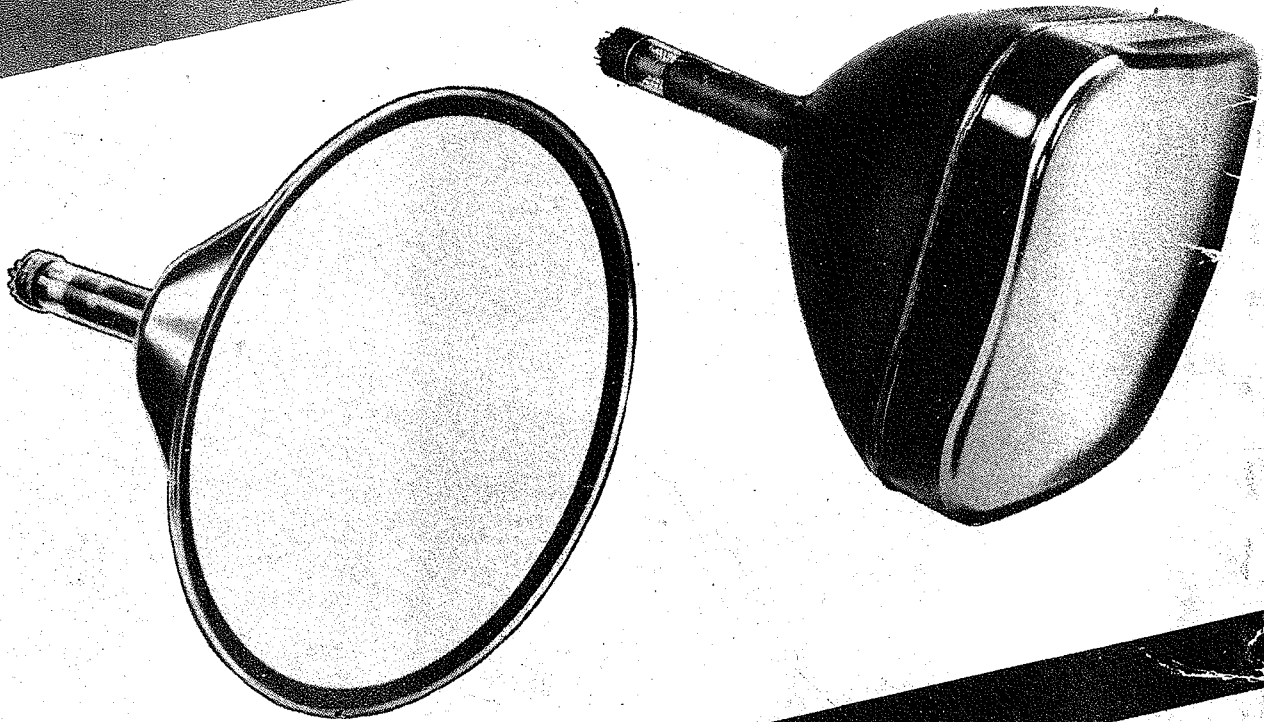
Receiving Types

metal—glass—miniature

subminiature—television picture

germanium diodes

GENERAL  ELECTRIC



TUBE DEPARTMENT

GENERAL  ELECTRIC

Schenectady 5, N. Y.

ESSENTIAL CHARACTERISTICS—RECEIVING TYPES is especially prepared to provide the Service Technician with a single source of reference containing data on every tube apt to be found in any home receiver—AM, FM, or Television.

Data presented include those characteristics and ratings essential to fast, efficient, trouble-shooting. Basing diagrams for each type are shown on the page with the data.

The electronics engineer, amateur, and experimenter will also find this a valuable quick-reference for tubes currently in use.

Included in the present edition of this handbook are the many new receiving tubes recently announced for use in Television applications; a comprehensive coverage of subminiature tubes; and a new section listing the essential physical and electrical characteristics of Television Picture Tubes.

To aid in the proper evaluation of the information presented in this handbook, a section entitled "Interpretation of Ratings and Technical Data" has been included. Following this section is a chart of "Recommended Types" which will provide the Service Technician with a valuable guide to tubes apt to be found in the late-model receivers.

Requests for additional data on specific uses of individual types will receive prompt attention if addressed to:

**TUBE SALES SECTION
TUBE DEPARTMENT
GENERAL ELECTRIC COMPANY
SCHENECTADY, NEW YORK**

INTERPRETATION OF TECHNICAL DATA

I. GENERAL

1. Reference Points

Unless otherwise noted, the various electrode voltages presented in this manual are measured with respect to a fixed reference point which is defined as follows:

- A.** For cathode types which are not rated with cathode bias, the reference point is the cathode terminal.
- B.** For cathode types which are rated with cathode bias, the reference point is the negative terminal of the cathode bias resistor. An exception to this statement occurs in multigrid tubes which have a separately connected suppressor grid. Unless otherwise noted, the characteristics of these tubes are presented with the suppressor grid connected directly to the cathode.
- C.** For filamentary any types operated on direct current, the reference point is the negative terminal of the filament.
- D.** For filamentary types operated on alternating current, the reference point is the electrical center of the filament.

2. Tube Type

- A.** Within each of the three major data sections of this manual (i.e. Receiving Tube, Television Picture Tube, and Germanium Diode), data are presented in numerical-alphabetical order by type designation.
- B.** Types having the same basic designation, but differing in suffix (e.g. 6L6, 6L6-G, and 6L6-GA), are grouped together when the types have equivalent electrical characteristics. In these cases, all of the information presented applies to each type in the group except for the information presented under the outline drawing and capacitance columns. The outline drawing numbers and capacitances are horizontally aligned with the type designations to which they apply.
- C.** The use of the suffix GT/G on small glass receiving tubes has been eliminated, and this suffix does not appear in this manual. Data on tubes which have been previously marked as GT/G types may be obtained by referring to the data under the GT listing (e.g., characteristics of the 6J5-GT/G will be found under the 6J5-GT listing).
- D.** The following suffix letters are in common use in tube designations and have the indicated significance:
 - a.** G signifies the use of a glass bulb and an octal base.
 - b.** GT signifies the use of a T-9, straight-sided glass bulb and an octal base.
 - c.** W signifies a military type. This suffix is assigned only on behalf of the armed forces.
 - d.** A, B, C, D, E, and F assigned in that order signify a later and modified version which can be substituted for any previous version but not vice-versa.
 - e.** X signifies the use of a base composed of special low-loss material.
 - f.** Y signifies the use of a base composed of special intermediate-loss material.

3. Classification by Construction

A. Under the column headed "Classification by Construction," a descriptive title for each tube is presented. When the tube represents an improved or modified version of an older type, this basic prototype is given in parenthesis following the descriptive title. The inclusion of the prototype in parenthesis is given as an aid in identifying the general characteristics of the tube under consideration and does not necessarily imply direct interchangeability between this version and the prototype. Whether or not the tubes can be used interchangeably depends on the particular characteristics and requirements of each individual application.

4. Base Connections

A. For convenience in usage, the basing diagrams are shown on the same page as the data of the type to which they refer. The basing diagrams presented in this manual are shown as bottom views. These diagrams are schematic representations of the terminal connections and do not necessarily indicate internal tube construction.

B. Pin number 1 on metal receiving tubes is usually connected to the outer shell of the tube. Certain glass tubes with octal bases have internal shields connected to this pin. In order to obtain correct operation of octal-based tubes, pin number 1 should never be used as a terminal for any voltage or portion of the electrical circuit, but should be connected to ground whenever possible.

C. In tubes having more than one grid, the grids are numbered consecutively in accordance with their location proceeding from the cathode to the plate. Thus, grid number 1 is the grid which is physically located nearest the cathode. In pentodes, grid number 2 is generally referred to as the screen grid, and grid number 3 is generally referred to as the suppressor grid.

D. In multisection tubes which contain two or more structurally similar sections, these similar sections are designated as section 1, section 2, etc., depending upon the connection of the plates to the terminal pins. The highest numbered section is defined as that section whose plate connects to the *lowest* number base pin; similarly, the second highest numbered section is that section whose plate connects to the second lowest number base pin, etc.

5. Filament Voltage

Unless otherwise specified under the column headed "Filament Volts," the heater or filament of any tube may be operated with either alternating or direct current.

6. Capacitances

A. Unless otherwise noted, all capacitance values indicated in this manual are average values.

B. Unless otherwise noted, all capacitance values indicated in this manual for glass tubes are measured with an external close-fitting metal shield connected to the cathode terminal.

C. In measuring capacitances, all metal parts except the input and output electrodes are connected to the cathode. These metal parts include internal and external shields, base sleeves, and unused pins. In multisection tubes, the electrodes of the sections not common to the section under test are connected to ground.

a. Input capacitance is measured from the input grid to all other electrodes except the plate which is connected to ground.

b. Output capacitance is measured from the plate to all other electrodes except the input grid which is connected to ground.

c. Grid-plate capacitance is measured from the input grid to the plate with all other electrodes connected to ground.

7. Typical Operating Conditions

A. Under the column headed "Service," the principal application of the type is indicated. The columns to the right of this column show average tube characteristics and typical operating conditions for the particular service indicated. These values are presented to show concisely some guiding information as to the use and characteristics of each type. They are not to be considered as maximum ratings because the tube can be used under any suitable conditions within its rating limitations.

B. The various classes of amplifier service indicated are defined as follows:

a. A Class A Amplifier is an amplifier in which the grid bias and applied alternating grid voltage are such that plate current in a specific tube flows at all times.

b. A Class AB Amplifier is an amplifier in which the grid bias and applied alternating grid voltage are such that plate current in a specific tube flows for appreciably more than half but less than the entire electrical cycle.

c. A Class B Amplifier is an amplifier in which the grid bias is approximately equal to the cutoff value so that the plate current is approximately zero when no exciting grid voltage is applied, and so that plate current in a specific tube flows for approximately one half of each cycle when an alternating grid voltage is applied.

d. A Class C Amplifier is an amplifier in which the grid bias is appreciably greater than the cutoff value so that the plate current in each tube is zero when no alternating grid voltage is applied, and so that plate current in a specific tube flows for appreciably less than one-half of each cycle when an alternating grid voltage is applied.

e. To denote that grid current does not flow during any part of the input cycle, the suffix 1 may be added to the letter or letters of the class identification. The suffix 2 may be used to denote that grid current flows during some part of the cycle.

C. The values of the tube characteristics presented in this manual are the average values based on large groups of tubes. It must be recognized that any individual tube may vary from these over-all averages.

D. Unless otherwise noted, all ratings and characteristics presented for rectifier tubes apply to operation with a capacitor-input filter. In general, operation with a choke-input filter allows the use of a slightly higher RMS supply voltage.

E. a. The plate resistance (R_p) of an electronic tube may be defined as the ratio of a small change in plate voltage to the corresponding change in plate current with all other electrode voltages maintained constant.

b. The transconductance (G_m) of an electronic tube may be defined as the ratio of a small change in plate current to the small change in grid voltage that produces it with all other electrode voltages maintained constant. Unless otherwise noted, all transconductance values in this manual are grid 1-to-plate transconductances.

c. The amplification factor (μ) of an electronic tube may be defined as the ratio of a small change in plate voltage to the small change in grid voltage when the plate current and all other electrode voltages are maintained constant.

d. The conversion transconductance of a converter or mixer tube may be defined as the ratio of a small change in the output intermediate-frequency current to the small change in input radio-frequency voltage producing it.

8. X-Ray Radiation from TV Picture Tubes

Cathode-ray tubes rated at anode voltages in excess of 16,000 volts may require x-ray radiation shielding to avert possible danger of personal injury from prolonged exposure at close range. The protective face-viewing window of apparatus using tubes of this type may provide such a safeguard. If the radiation measured in contact with this window is not in excess of 6.25 milliroentgens per hour, the window will normally provide adequate protection.

II. Maximum Ratings

Unless otherwise specified, the maximum tube ratings in this manual have been prepared in accordance with the RTMA system of Design Center Maximums and should be interpreted as defined in paragraphs 1 and 2 given below.

1. Cathode

The heater or filament voltage is given as a normal value unless stated otherwise. This means that transformers or resistances in the heater or filament circuit should be designed to operate the heater or filament at rated value for full-load operating conditions under average supply-voltage conditions. A reasonable amount of leeway is incorporated in the cathode design so that moderate fluctuations of heater or filament voltage downward will not cause marked falling off in response; also, moderate voltage fluctuations upward will not reduce the life of the cathode to an unsatisfactory degree.

A. 1.4-volt Battery Tube Types

The filament power supply may be obtained from dry-cell batteries, from storage batteries, or from a power line. With dry-cell battery supply the filament may be connected either directly across a battery rated at a terminal potential of 1.5 volts, or in series with the filaments of similar tubes across a power supply consisting of dry cells in series. In either case, the voltage across each 1.4-volt section of filament should not exceed 1.6 volts. With power-line or storage-battery supply, the filament may be operated in series with the filaments of similar tubes. For such operation, design adjustments should be made so that, with tubes of rated characteristics, operating with all electrode voltages applied and on a normal line voltage of 117 volts or on a normal storage-battery voltage of 2.0 volts per cell (without a charger) or 2.2 volts per cell (with a charger), the voltage drop across each 1.4-volt section of filament will be maintained within a range of 1.25 to 1.4 volts with a nominal center of 1.3 volts. In order to meet the recommended conditions for operating filaments in series from dry-battery, storage batteries, or power-line sources it may be necessary to use shunting resistors across the individual 1.4-volt sections of filament.

B. 2.0-volt Battery Tube Types

The 2.0-volt line of tubes is designed to be operated with 2.0 volts across the filament. In all cases the operating voltage range should be maintained within the limits of 1.8 volts to 2.2 volts.

2. Positive Potential Electrodes

The power sources for the operation of radio equipment are subject to variations in their terminal potential. Consequently, the maximum ratings given in this manual have been established for certain Design Center Voltages which experience has shown to be representative. The Design Center Voltages to be used for the various power supplies together with other rating considerations are as given below.

A. A-C or D-C Power-line Service in U.S.A.

The design center voltage for this type of power supply is 117 volts. The maximum ratings of plate voltages, screen-supply voltages, dissipations, and rectifier output currents are design maximums and should not be exceeded in equipment operated at a line voltage of 117 volts.

B. Storage-battery Service

When storage-battery equipment is operated without a charger, it should be so designed that the published maximum values of plate voltages, screen-supply voltages, dissipations, and rectifier output currents are never exceeded for a terminal potential at the battery source of 2.0 volts per cell. When storage-battery equipment is operated with a charger it should be so designed that 90 per cent of the same values are never exceeded for a terminal potential at the battery source of 2.2 volts per cell.

C. B-Battery Service

The design center voltage for B-batteries is the normal voltage rating of the battery block, such as 45 volts, 90 volts, etc. Equipment should be so designed that under no condition of battery voltage will the plate voltages, the screen-supply voltages, or dissipations ever exceed the recommended respective maximum values shown in the data for each tube type by more than 10 per cent.

D. Other Considerations

a. Class A Amplifiers

The maximum plate dissipation occurs at the Zero-signal condition. The maximum screen dissipation usually occurs at the condition where the peak-input signal voltage is equal to the bias voltage.

b. Class B Amplifiers

The maximum plate dissipation theoretically occurs at approximately 63 per cent of the Maximum-signal condition, but practically may occur at any signal-voltage value.

c. Converters

The maximum plate dissipation occurs at the Zero-signal condition and the frequency at which the oscillator-developed bias is a minimum. The screen dissipation for any reasonable variation in signal voltage must never exceed the rated value by more than 10 per cent.

d. Screen Ratings

The maximum screen voltage rating may be exceeded provided that all the following conditions are satisfied:

1. At any operating condition the screen voltage does not exceed the maximum plate voltage rating.
2. At any operating condition the average screen dissipation does not exceed the maximum rating.
3. At the operating condition which results in maximum screen current, the screen voltage does not exceed the value required for maximum screen dissipation. This condition, however, may not represent the maximum dissipation condition.

3. Absolute Maximum Ratings

In some instances, the maximum ratings are specified as Absolute Maximum Ratings. The absolute maximum ratings represent the limiting values above which the serviceability of the tube may be impaired from the viewpoint of life and satisfactory performance. Therefore in order not to exceed these absolute ratings, the equipment designer has the responsibility of determining an average design value for each rating below the absolute value of that rating by an amount such that the absolute values will never be exceeded under any usual condition of supply-voltage variation, manufacturing variations (including components) in the equipment itself, or adjustment of controls.

RECOMMENDED TYPES

Voltage Amplifiers

Filament	Triodes			Pentodes			
	Single	Twin	With Diodes	Sharp Cutoff	Remote Cutoff	With Diodes	With Triodes
	0 thru 2.8 volts				<i>IU4</i>	<i>IT4</i>	<i>IU5</i>
5.0 thru 6.3 volts	<i>6AB4</i> <i>6C4</i> <i>6AF4</i>	<i>6J6</i> <i>6SN7-GTA</i> <i>6BK7A</i>	<i>6AV6</i> <i>6SQ7</i> <i>6T8</i>	<i>6AU6</i> <i>6CB6</i>	<i>6BA6</i> <i>6SK7</i>		<i>6U8.</i>
12.6 volts and above		<i>12AT7</i> <i>12AU7</i> <i>12AX7</i> <i>12BH7</i>	<i>12AV6</i> <i>12SQ7</i> <i>19T8</i>		<i>12BA6</i> <i>12SK7</i>		

Filament	Diodes			Power Amplifiers			TV Picture Tubes
	Thermionic Diodes and Rectifiers	Germanium Diodes	Output Amplifiers	TV Deflection Amplifiers	Gated-beam Tubes	Pentagrid Converters	
	0 thru 2.8 volts	<i>1B3-GT</i>	<i>1N48</i> <i>1N51</i> <i>1N52</i> <i>1N64</i> <i>1N65</i>	<i>3S4</i> <i>3V4</i>			
5.0 thru 6.3 volts	<i>5U4-G</i> <i>6AL5</i> <i>6W4-GT</i> <i>6X4</i> <i>6X5-GT</i>		<i>6AQ5</i> <i>6K6-GT</i> <i>6V6-GT</i> <i>6BK5</i>	<i>6AV5-GT</i> <i>6BL7-GT</i> <i>6BQ6-GT</i> <i>6CD6-G</i> <i>6S4</i> <i>6W6-GT</i>	<i>6BN6</i>	<i>6BE6</i> <i>6SA7</i>	<i>17BP4-A</i> <i>17BP4-B</i> <i>17RP4/17HP4</i> <i>17VP4/17LP4</i> <i>21EP4-A</i> <i>21EP4-B</i> <i>21FP4-A</i>
12.6 volts and above	<i>25W4-GT</i> <i>35W4</i> <i>35Z5-GT</i>		<i>25L6-GT</i> <i>35C5</i> <i>50C5</i> <i>50L6-GT</i>	<i>25AV5-GT</i> <i>25BQ6-GT</i>		<i>12BE6</i> <i>12SA7</i>	

Type numbers of metal tubes are shown in bold-face type.
Type numbers of miniature tubes are shown in italics.

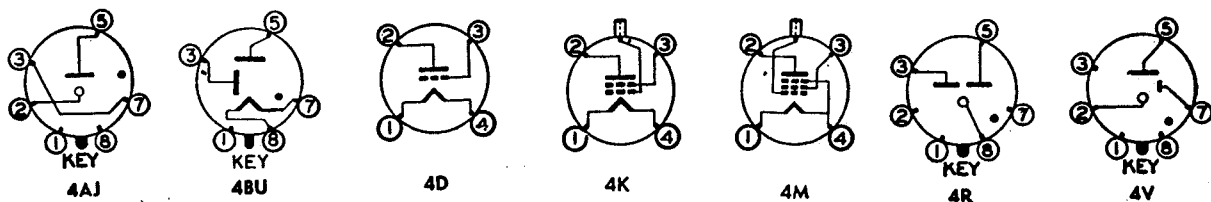
NOTE

The information presented in this handbook is industry-wide in scope. Consequently, the inclusion of a tube in this publication does not necessarily imply the availability of that type from the General Electric Company.

CHARACTERISTICS

Tube Type	Classification by Construction	Base Connections	Out-line Dwg	Type Cathode	Fila-ment Volts	Fila-ment Amp	Max Plate Volts	Max Screen Volts	Capacitance in Micromicrofarads		
									Input	Out-put	Grid-plate
OOA	Triode Detector	4D	14-1	Fil	5.0 D-C	0.25	45	—	3.2	2.0	8.5
O1-A	Low- μ Triode	4D	14-1	Fil	5.0 D-C	0.25	135	—	3.1	2.2	8.1
OA \sharp	Glow-Discharge Diode Voltage Regulator	5BO	5-3	Cold	—	—	Anode supply = 185 volts d-c min				
OA3/VR-75	Glow-Discharge Diode Voltage Regulator	4AJ	12-7	Cold	—	—	Anode supply = 105 volts d-c min				
OA4-G	Gas Triode	4V	12-7	Cold	—	—	—	—	—	—	—
OB \sharp	Glow-Discharge Diode Voltage Regulator	5BO	5-3	Cold	—	—	Anode supply = 133 volts d-c min				
OB3/VR-90	Glow-Discharge Diode Voltage Regulator	4AJ	12-7	Cold	—	—	Anode supply = 125 volts d-c min				
OC3/VR-105 OC3-W	Glow-Discharge Diode Voltage Regulator	4AJ	12-7	Cold	—	—	Anode supply = 133 volts d-c min				
OD3/VR-150 OD3-W	Glow-Discharge Diode Voltage Regulator	4AJ	12-7	Cold	—	—	Anode supply = 185 volts d-c min				
OY4 OY4-G	Half-Wave Gas Rectifier	4BU	8-1 T-X	Cold	—	—	Pins 7 and 8 must be connected;				
OZ4 OZ4-G	Full-Wave Gas Rectifier	4R	8-3 T-X	Cold	—	—	—	—	—	—	—
1A3	High-frequency Diode	5AP	5-2	Htr	1.4	0.15	—	—	—	—	—
1A4-p 1A4-t	Remote-Cutoff R-F Pentode	4M 4K	12-6	Fil	2.0 D-C	0.06	180	67.5	5.0 \blacktriangle	11.0 \blacktriangle	0.007
1A5-GT	Power Amplifier Pentode	6X	9-11	Fil	1.4 D-C	0.05	110	110	—	—	—
1A6	Pentagrid Converter	6L \blacklozenge	12-6	Fil	2.0 D-C	0.06	180	67.5	Osc $I_{g1} = 0.2$ ma $R_{g1} = 50,000$ ohms		
1A7-G 1A7-GT	Pentagrid Converter	7Z \blacklozenge	9-28 9-18	Fil	1.4 D-C	0.05	110	60	Osc $I_{g1} = 0.035$ ma $R_{g1} = 200,000$ ohms		
1AB5	Remote-Cutoff R-F Pentode	5BF	9-32	Fil	1.2 D-C	0.130	150	150	2.8	4.2	0.25 \clubsuit
1AB6	Pentagrid Converter	7DH	T-X	Fil	1.4 D-C	0.025	90	90	Osc $I_{g1} = 85 \mu$ a $R_{g1} = 27,000$ ohms		

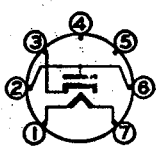
\blacktriangle Without external shield. \S Approximate. \dagger Zero signal. \clubsuit Maximum.
 \blacklozenge Grids 3 and 5 are screen. Grid 4 is signal-input grid.
 $\#$ Conversion transconductance.



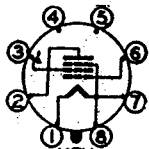
AND RATINGS

Service	Neg Grid Volts	Screen Volts	Screen Milli-amperes	Plate Volts	Plate Milli-amperes	R _p , Ohms	G _m , μmhos	μ Factor	Load for Rated Output, Ohms	Power Output, Watts	Tube Type
Detector	0.0	—	—	45	1.5	30,000	666	20	—	—	OOA
Class A Amplifier	9.0	—	—	135	3.0	10,000	800	8	—	—	O1-A
{ d-c operating current = 5 ma min } Ionization voltage = 155 volts d-c § { d-c operating current = 30 ma max } Operating voltage = 150 volts d-c § Regulation (5 to 30 milliamperes) = 2.0 volts											
{ d-c operating current = 5 ma min } Ionization voltage = 100 volts d-c § { d-c operating current = 40 ma max } Operating voltage = 75 volts d-c § Regulation (5 to 40 milliamperes) = 5.0 volts											
Peak cathode current = 100 ma max; d-c cathode current = 25 ma max; Starter anode drop = 55 volts §; anode drop = 70 volts §											
{ d-c operating current = 5 ma min } Ionization voltage = 115 volts d-c § { d-c operating current = 30 ma max } Operating voltage = 105 volts d-c § Regulation (5 to 30 milliamperes) = 1.0 volts											
{ d-c operating current = 5 ma min } Ionization voltage = 110 volts d-c § { d-c operating current = 40 ma max } Operating voltage = 90 volts d-c § Regulation (5 to 40 milliamperes) = 8.0 volts											
{ d-c operating current = 5 ma min } Ionization voltage = 115 volts d-c § { d-c operating current = 40 ma max } Operating voltage = 105 volts d-c § Regulation (5 to 40 milliamperes) = 2.0 volts											
{ d-c operating current = 5 ma min } Ionization voltage = 160 volts d-c § { d-c operating current = 40 ma max } Operating voltage = 150 volts d-c § Regulation (5 to 40 milliamperes) = 4.0 volts											
peak current = 500 ma max; d-c output current = 75 ma max, 40 ma min; max starting voltage = 95 volts d-c; peak inverse voltage = 300 volts max											
Starter supply voltage per plate = 300 peak volts min; max d-c output = 75 milliamperes; peak current per plate = 200 milliamperes											
Half-Wave Rectifier	Max d-c output current = 0.5 ma; max peak inverse voltage = 330 volts; rms supply voltage = 117 volts; max peak current = 5.0 ma										
Class A Amplifier	3	67.5	0.8	180	2.3	1,000,000	750	—	—	—	1A3
Class A Amplifier	4.5 4.5	90 85	0.8† 0.7†	90 85	4.0† 3.5†	300,000 300,000	850 800	— —	25,000 25,000	0.115 0.100	1A4-p 1A4-t
Converter	3.0	67.5	2.4	180	1.3	500,000§	300 #	E _{c2} (Osc Plate) = 180 thru 20,000 ohms I _{c2} = 2.3 ma			1A6
Converter	0.0	45	0.7	90	0.6	600,000§	250 #	E _{c2} (Osc Plate) = 90 I _{c2} = 1.2 ma			1A7-G 1A7-GT
Class A Amplifier	1.5 R _g = 1.0 Meg	150 90	2.0 0.8	150 90	6.8 3.5	125,000§ 275,000§	1350 1100	—	—	—	1AB5
Converter	0.0	64	0.16	64	0.6	900,000§	275 #	E _{c2} (Osc Plate) = 35 thru 18,000 ohms I _{c2} = 1.6 ma			1AB6

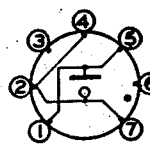
Type designations of metal tubes are shown in bold-face type.
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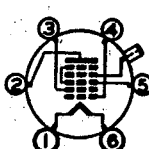
5AP



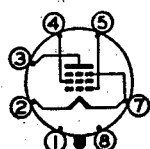
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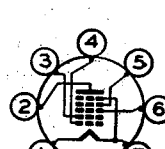
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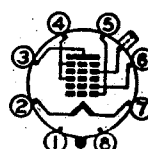
6L



6X



7D8

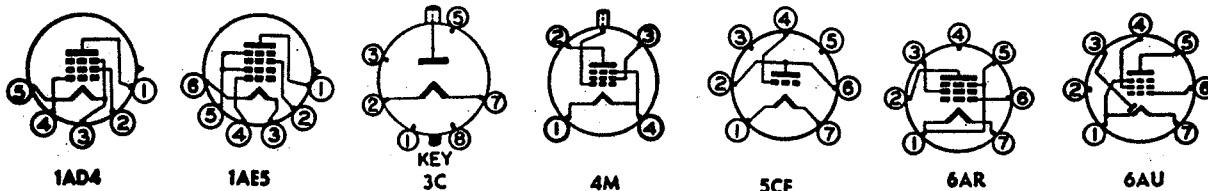


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CHARACTERISTICS

Tube Type	Classification by Construction	Base Connections	Out-line Dwg	Type Cathode	Fila-ment Volts	Fila-ment Amp	Max Plate Volts	Max Screen Volts	Capacitance in Micromicrofarads		
									Input	Out-put	Grid-plate
1AC5 ©	Power Amplifier Pentode	8CP	3-5	Fil	1.25 D-C	0.04	67.5	67.5	—	—	—
1AC6	Pentagrid Converter	7DH	5-2	Fil	1.4 D-C	0.05	90	90	Osc $I_{g1} = 0.13$ ma $R_{g1} = 27,000$ ohms		
1AD4 ©	Sharp-Cutoff R-F/A-F Pentode	1AD4	2-1	Fil	1.25 D-C	0.1	45	45	4.5	4.5	0.01 ♣
1AD5 ©	Sharp-Cutoff R-F Pentode	8CP	3-5	Fil	1.25 D-C	0.04	67.5	67.5	1.9	3.0	0.009 ♣
1AE4	Sharp-Cutoff R-F Pentode	6AR	5-2	Fil	1.25 D-C	0.1	90	90	3.6	4.4	0.008 ♣
1AE5 ©	Heptode Mixer	1AE5 ♥	T-X	Fil	1.25 D-C	0.06	45	45	I_{g1} (Injection) = 15 μ a $R_{g1} = 200,000$ ohms		
1AF4	Sharp-Cutoff Pentode	6AR	5-2	Fil	1.4 D-C	0.025	110	90	3.8	7.6	0.009 ♣
1AF5	Diode, Sharp-Cutoff Pentode	6AU	5-2	Fil	1.4 D-C	0.025	110	110	2.5	4.8	0.17
1AH4 ©	R-F Pentode	1AD4	2-1	Fil	1.25 D-C	0.04	90	90	3.5 ▲	4.5 ▲	0.01 ♣ ▲
1AH5	Diode Sharp-Cutoff A-F Pentode	6AU	T-X	Fil	1.4 D-C	0.025	90	90	—	—	—
1B3-GT	Half-Wave High-Voltage Rectifier	3C	9A-5	Fil	1.25	0.2	—	—	Tube Voltage Drop: 70 v at 4 ma d-c		
1B4-p	Sharp-Cutoff R-F Pentode	4M	12-6	Fil	2.0 D-C	0.06	180	67.5	5.0 ▲	11 ▲	0.007 ♣
1B5/25-S	Duplex-Diode Medium-Mu Triode	6M	12-5 or 9-26	Fil	2.0 D-C	0.06	135	—	1.6 ▲	1.9 ▲	3.6 ▲
1B7-G 1B7-GT	Pentagrid Converter	7Z♦	9-28 9-18	Fil	1.4 D-C	0.1	110	65	Osc $I_{g1} = 0.035$ ma $R_{g1} = 200,000$ ohms		
1B8-GT	Diode-Triode Power Amplifier Pentode	8AW	9-17	Fil	1.4 D-C	0.1	110	110	Pentode Section Triode Section		
1C3	Medium-Mu Triode	5CF	5-2	Fil	1.4 D-C	0.05	110	—	0.9	4.2	1.8
1C5-GT	Power Amplifier Pentode	6X	9-11	Fil	1.4 D-C	0.1	110	110	—	—	—
1C6	Pentagrid Converter	6L♦	12-6	Fil	2.0 D-C	0.12	180	67.5	Osc $I_{g1} = 0.2$ ma $R_{g1} = 50,000$ ohms		
1C7-G	Pentagrid Converter	7Z♦	12-8	Fil	2.0 D-C	0.12	180	67.5	Osc $I_{g1} = 0.2$ ma $R_{g1} = 50,000$ ohms		

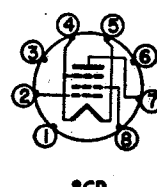
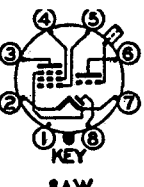
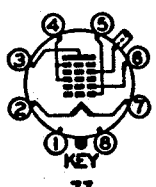
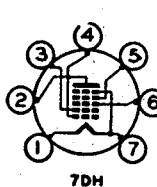
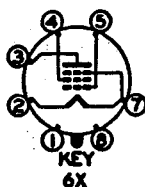
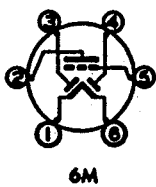
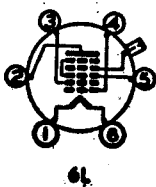
▲ Without external shield. § Approximate. † Zero signal. ♣ Maximum.
 ♥ Grids 2 and 4 are screen. Grid 3 is signal-input grid.
 ♦ Grids 3 and 5 are screen. Grid 4 is signal-input grid.
 # Conversion transconductance.



AND RATINGS

Service	Neg Grid Volts	Screen Volts	Screen Milli-amperes	Plate Volts	Plate Milli-amperes	R _p , Ohms	G _m , μmhos	μ Factor	Load for Rated Output, Ohms	Power Output, Watts	Tube Type
Class A Amplifier	4.5 3.0 2.0	67.5 45 30	0.4 0.2 0.1	67.5 45.0 30	2.0 1.0 0.5	150,000§ 170,000§ 200,000§	750 600 450	— — —	25,000 40,000 50,000	0.050 0.015 0.005	1AC5 ©
Converter	0.0	63.5	0.15	63.5	0.7	900,000§	300 #	E _{c2} (Osc Plate) = 30 thru 22,000 ohms I _{c2} = 1.55 ma			1AC6
Class A Amplifier	R _g = 2 meg	45	0.8	45	3.0	500,000§	2000	—	—	—	1AD4 ©
Class A Amplifier	0.0 0.0	67.5 30	0.75 0.16	67.5 30	1.85 0.45	700,000§ 700,000§	735 430	— —	— —	— —	1AD5 ©
Class A Amplifier	0.0	90	1.2	90	3.5	500,000	1550	—	—	—	1AE4
Mixer	0.0	45	2.0	45	0.9	200,000§	200 #	—	—	—	1AE5 ©
Class A Amplifier	0.0 0.0	90 67.5	0.55 0.32	90 67.5	1.8 1.2	1,800,000§ 2,200,000§	1050 925	— —	— —	— —	1AF4
Class A Amplifier	0.0 0.0	90 67.5	0.4 0.25	90 67.5	1.1 0.7	2,000,000§ 2,800,000§	600 550	— —	— —	— —	1AF5
Class A Amplifier	R _g = 5 meg	45	0.2	45	0.75	1,500,000	750	—	—	—	1AH4 ©
Class A Amplifier	R _{g1} = 10 meg	35§	0.015	85	0.05	Amplification = 62		—	1 meg	—	1AH5
Half-Wave Rectifier	Max d-c output current = 2.0 ma; max peak inverse voltage = 30,000 volts; max peak current = 17 ma (Pins 1, 8, 5, and 8 are internally connected. Do not use.)										1B3-GT
Class A Amplifier	3.0 3.0	67.5 67.5	0.6 0.7	180 90	1.7 1.6	1,500,000 1,000,000	650 600	— —	— —	— —	1B4-p
Class A Amplifier	3.0	—	—	135	0.8	35,000	575	20	—	—	1B5/25-S
Converter	0.0	45	1.3	90	1.5	350,000§	350 #	E _{c2} (Osc Plate) = 90 I _{c2} = 1.6 ma			1B7-G 1B7-GT
Class A Amplifier	6.0	90	1.4†	90	6.3†	—	1,150	—	14,000	0.210	1B8-GT
Class A Amplifier	0.0	—	—	90	0.15	240,000	275	—	—	—	
Class A Amplifier	3.0 0.0	— —	— —	90 90	1.4 4.5	19,000 11,200	760 1,300	14.5 14.5	— —	— —	1C3
Class A Amplifier	7.5 7.0	90 83	1.6† 1.6†	90 83	7.5† 7.0†	115,000 110,000	1,550 1,500	— —	8,000 9,000	0.240 0.200	1C5-GT
Converter	3.0	67.5	2.0	180	1.5	700,000§	325 #	E _{c2} (Osc Plate) = 180 thru 20,000 ohms I _{c2} = 4.0 ma			1C6
Converter	3.0	67.5	2.0	180	1.5	700,000§	325 #	E _{c2} (Osc Plate) = 180 thru 20,000 ohms I _{c2} = 4.0 ma			1C7-G

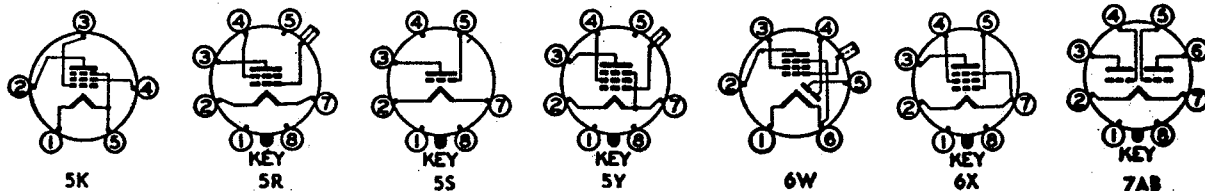
Type designations of miniature tubes are shown in italics.
© Designates subminiature types.



CHARACTERISTICS

Tube Type	Classification by Construction	Base Connections	Out-line Dwg	Type Cathode	Fila-ment Volts	Fila-ment Amp	Max Plate Volts	Max Screen Volts	Capacitance in Micromicrofarads		
									Input	Out-put	Grid-plate
1C8	Pentagrid Converter	8CN ▼	3-2	Fil	1.25 D-C	0.04	67.5	45	Osc $I_{g1} = 0.070$ ma $R_{g1} = 100,000$ ohms		
1D3	Low-Mu High-Frequency Triode	8DN	3-2	Fil	1.25 D-C	0.3	110	—	1.0	1.0	2.6
1D5-Gp	Remote-Cutoff R-F Pentode	5Y	12-8	Fil	2.0 D-C	0.06	180	67.5	5.0▲	11.0▲	0.007♣
1D5-Gt	Remote-Cutoff R-F Tetrode	5R	12-8	Fil	2.0 D-C	0.06	180	67.5	—	—	—
1D7-G	Pentagrid Converter	7Z	12-8	Fil	2.0 D-C	0.06	180	67.5	Osc $I_{g1} = 0.2$ ma $R_{g1} = 50,000$ ohms		
1D8-GT	Diode-Triode Power Amplifier Pentode	8AJ	9-17	Fil	1.4 D-C	0.1	110	110	Pentode Section		
							110	—	Triode Section		
1E3	High-Frequency Medium-Mu Triode	9BG	6-2	Fil	1.25 D-C	0.22	150	—	1.25▲	0.75▲	1.5▲
1E4-G	Medium-Mu Triode	5S	9-25	Fil	1.4 D-C	0.05	110	—	2.4	6.0	2.4
1E5-Gp	Sharp-Cutoff R-F Pentode	5Y	12-8	Fil	2.0 D-C	0.06	180	67.5	5.0▲	11.0▲	0.007♣
1E7-G 1E7-GT	Twin-Pentode Power Amplifier	8C	12-7 9-11 or 9-41	Fil	2.0 D-C	0.24	135	135	Each Section Both Sections in Push-pull		
1E8	Pentagrid Converter	8CN ▼	3-5	Fil	1.25 D-C	0.04	67.5	45	Osc $I_{g1} = 0.070$ ma $R_{g1} = 100,000$ ohms		
1F4	Power Amplifier Pentode	5K	14-1	Fil	2.0 D-C	0.12	180	180	—	—	—
1F5-G	Power Amplifier Pentode	6X	12-7	Fil	2.0 D-C	0.12	180	180	—	—	—
1F6	Duplex-Diode Sharp-Cutoff Pentode	6W	12-6	Fil	2.0 D-C	0.06	180	67.5	4.0▲	9.0▲	0.007♣
1F7-GH 1F7-GV	Duplex-Diode Sharp-Cutoff Pentode	7AD	12-8	Fil	2.0 D-C	0.06	180	67.5	3.8	9.5	0.01♣
1G4-GT	Medium-Mu Triode	5S	9-11	Fil	1.4 D-C	0.05	110	—	2.2▲	3.4▲	2.8▲
1G5-G	Power Amplifier Pentode	6X	12-7	Fil	2.0 D-C	0.12	135	135	—	—	—
1G6-GT	Twin-Triode Power Amplifier	7AB	9-11 or 9-41	Fil	1.4 D-C	0.1	110	—	—	—	—
1H4-G 1H4-GT	Medium-Mu Triode	5S	12-7 9-11 or 9-41	Fil	2.0 D-C	0.06	180	—	Single Tube 2 Tubes Push-pull		

▲ Without external shield. § Approximate. † Zero signal. ♣ Maximum.
 □ Absolute maximum rating. ⊕ For both sections. ♠ Per section. ‡ Plate-to-plate.
 ✖ Screen supply voltage. # Conversion transconductance.
 ▼ Grids 2 and 4 are screen. Grid 3 is signal-input grid.
 ◆ Grids 3 and 5 are screen. Grid 4 is signal-input grid.

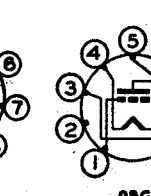
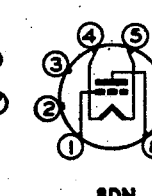
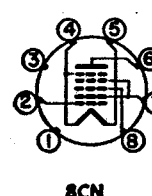
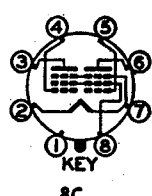
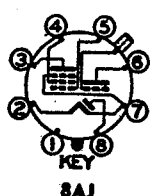
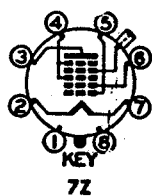
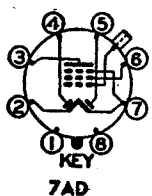


AND RATINGS

Service	Neg Grid Volts	Screen Volts	Screen Milli-amperes	Plate Volts	Plate Milli-amperes	R _p Ohms	G _m μmhos	μ Factor	Load for Rated Output, Ohms	Power Out-put, Watts	Tube Type
Converter	0.0	67.5 *	1.5	67.5	1.0	400,000§	150 #	R _{g2} = 20,000 ohms			1C8 ●
Class A Amplifier	5.0	—	—	90	12.5	—	3,400	8.7	—	—	1D3 ●
Class A Amplifier	3.0	67.5	0.8	180	2.3	1,000,000§	750	—	—	—	1D5-Gp
Class A Amplifier	3.0	67.5	0.7	180	2.2	600,000§	650	—	—	—	1D5-Gt
Converter	3.0	67.5	2.4	180	1.3	500,000§	300 #	E _{c2} (Osc Plate) = 180 thru 20,000 ohms I _{c2} = 2.3 ma			1D7-G
Class A Amplifier	9.0	90	1.0	90	5.0	200,000§	925	—	12,000	0.20	1D8-GT
Class A Amplifier	0.0	—	—	90	1.1	43,500§	575	25	—	—	
Class A Amplifier	3.5	—	—	150	20	—	3500	14	—	—	<i>1E3</i>
Class A Amplifier	0.0 3.0	— —	— —	90 90	4.5 1.4	11,200 19,000	1,300 760	14.5 14.5	— —	— —	1E4-G
Class A Amplifier	3.0 3.0	67.5 67.5	0.6 0.7	180 90	1.7 1.6	1,500,000 1,000,000	650 600	— —	— —	— —	1E5-Gp
Class A Amplifier	4.5 3.0	135 90	2.2† 1.1†	135 90	7.5† 3.8†	260,000§ 340,000§	1,425 1,150	— —	16,000 20,000	0.29 0.11	1E7-G 1E7-GT
Class A Amplifier	7.5	135	2.0†	135	7.0†	—	—	—	24,000 †	0.575	
Converter	0.0	67.5 *	1.5	67.5	1.0	400,000§	150 #	R _{g2} = 20,000 ohms			1E8 ●
Class A Amplifier	4.5 3.0	135 90	2.4† 1.1	135 90	8† 4	200,000§ 240,000§	1,700 1,400	— —	16,000 —	0.31 —	1F4
Class A Amplifier	4.5 3.0	135 90	2.4† 1.1	135 90	8† 4	200,000§ 240,000§	1,700 1,400	— —	16,000 —	0.31 —	1F5-G
Class A Amplifier	1.5	67.5	0.7	180	2.2	1,000,000	650	—	—	—	1F6
Class A Amplifier	1.5	67.5	0.7	180	2.2	1,000,000	650	—	—	—	1F7-GH 1F7-GV
Class A Amplifier	6	—	—	90	2.3	10,700	825	8.8	—	—	1G4-GT
Class A Amplifier	13.5 6.0	135 90	2.5† 2.5†	135 90	8.7† 8.5†	160,000 133,000	1,550 1,500	— —	9,000 8,500	0.55 0.25	1G5-G
Class A Amplifier	0.0	—	—	90	1.0	40,000§	825	33	—	—	1G6-GT
Class B Amplifier	0.0	—	—	90	2.0†	—	—	—	12,000 †	0.675	
Class A Amplifier	13.5 4.5	— —	— —	180 90	3.1 2.5	10,300 11,000	900 850	9.3 9.3	— —	— —	1H4-G 1H4-GT
Class B Amplifier	15.0	—	—	157.5	1.0†	Input Signal = .260 watt			8,000†	2.1	

● Designates subminiature type.

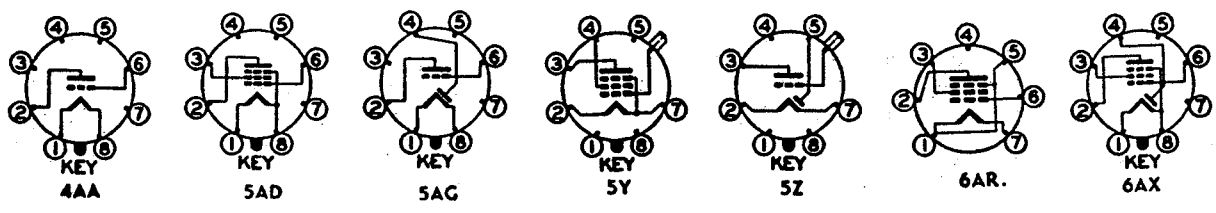
Type designations of miniature tubes are shown in italics.



CHARACTERISTICS

Tube Type	Classification by Construction	Base Connections	Out-line Dwg	Type Cathode	Filament Volts	Filament Amp	Max Plate Volts	Max Screen Volts	Capacitance in Micromicrofarads		
									Input	Output	Grid-plate
1H5-G 1H5-GT	Diode High-Mu Triode	5Z	9-28 9-18	Fil	1.4 D-C	0.05	110	—	1.1	4.6	1.0
1H6-G 1H6-GT	Duplex-Diode Medium-Mu Triode	7AA	12-7 9-11 or 9-41	Fil	2.0 D-C	0.06	135	—	—	—	—
1J5-G	Power Amplifier Pentode	6X	14-3	Fil	2.0 D-C	0.12	135	135	—	—	—
1J6-G 1J6-GT	Twin-Triode Power Amplifier	7AB	12-7 9-16	Fil	2.0 D-C	0.24	135	—	Both Sections in push-pull		
1L4	Sharp-Cutoff R-F Pentode	6AR	5-2	Fil	1.4 D-C	0.05	110	90	3.6▲	7.5▲	0.008▲ ♣
1L6	Pentagrid Converter	7DC♦	5-2	Fil	1.4 D-C	0.05	110	65	Osc $I_{g1} = 0.035$ ma $R_{g1} = 200,000$ ohms		
1LA4	Power Amplifier Pentode	5AD	9-30	Fil	1.4 D-C	0.05	110	110	—	—	—
1LA6	Pentagrid Converter	7AK♦	9-30	Fil	1.4 D-C	0.05	110	65	Osc $I_{g1} = 0.035$ ma $R_{g1} = 200,000$ ohms		
1LB4	Power Amplifier Pentode	5AD	9-30	Fil	1.4 D-C	0.05	110	110	—	—	—
1LB6	Pentagrid Mixer	8AX	9-30	Fil	1.4 D-C	0.05	90	67.5	E_{g3} (Injection) = 10 v peak*		
1LC5	Sharp-Cutoff R-F Pentode	7AO	9-30	Fil	1.4 D-C	0.05	110	45	3.2	7.0	0.007 ♣
1LC6	Pentagrid Converter	7AK♦	9-30	Fil	1.4 D-C	0.05	110	45	Osc $I_{g1} = 0.035$ ma $R_{g1} = 200,000$ ohms		
1LD5	Diode Sharp-Cutoff Pentode	6AX	9-30	Fil	1.4 D-C	0.05	90	45	3.2	6.0	0.18 ♣
1LE3	Medium-Mu Triode	4AA	9-30	Fil	1.4 D-C	0.05	110	—	1.7	3.0	1.7
1LF3	Medium-Mu Triode	4AA	9-30	Fil	1.4 D-C	0.05	110	—	1.7	3.0	1.7
1LG5	Semi-Remote Cutoff R-F Pentode	7AO	9-30	Fil	1.4 D-C	0.05	110	110	3.2	7.0	0.007 ♣
1LH4	Diode High-Mu Triode	5AG	9-30	Fil	1.4 D-C	0.05	110	—	2.0	2.4	1.2
1LN5	Sharp-Cutoff R-F Pentode	7AO	9-30	Fil	1.4 D-C	0.05	110	110	3.0	8.0	0.007 ♣
1N5-G 1N5-GT	Sharp-Cutoff R-F Pentode	5Y	9-28 9-18	Fil	1.4 D-C	0.05	110	110	3.0 2.8	10.0 9.0	0.007 ♣ 0.007 ♣

▲ Without external shield. § Approximate. † Zero signal. * Minimum ♣ Maximum. ♦ Per section.
 ♦ Grids 3 and 5 are screen. Grid 4 is signal-input grid. # Conversion transconductance.

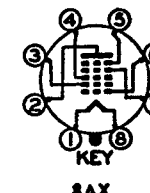
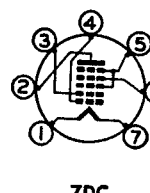
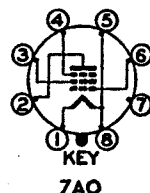
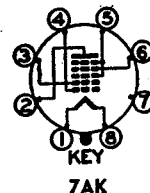
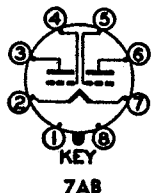
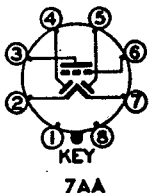
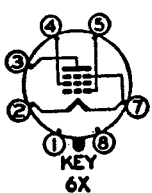


AND RATINGS

Service	Neg Grid Volts	Screen Volts	Screen Milli-amperes	Plate Volts	Plate Milli-amperes	R _p , Ohms	G _m , μmhos	μ Factor	Load for Rated Output, Ohms	Power Output, Watts	Tube Type
Class A Amplifier	0.0	—	—	90	0.15	240,000	275	65	—	—	1H5-G 1H5-GT
Class A Amplifier	3.0	—	—	135	0.8	35,000§	575	20	—	—	1H6-G 1H6-GT
Class A Amplifier	16.5	135	2.0	135	7.0	105,300§	950	—	135,000	0.45	1J5-G
Class B Amplifier	0.0	—	—	135	5.0† ▲	Input Signal = .170 watt§		—	10,000†	2.1§	1J6-G 1J6-GT
Class A Amplifier	0.0	90	2.0	90	4.5	350,000	1,025	—	—	—	<i>1L4</i>
Converter	0.0	45	0.6	90	0.5	650,000§	300 #	E _{c2} (Osc Plate) = 90 I _{c2} = 1.2 ma		—	<i>1L6</i>
Class A Amplifier {	4.5 4.5	90 85	0.8† 0.7†	90 85	4.0† 3.5†	300,000 300,000	850 800	—	25,000 25,000	0.115 0.100	1LA4
Converter	0.0	45	0.6	90	0.55	750,000§	250 #	E _{c2} (Osc Plate) = 90 I _{c2} = 1.2 ma		—	1LA6
Class A Amplifier	9.0	90	1.0†	90	5.0†	250,000§	925	—	12,000	0.20	1LB4
Mixer	0.0	67.5	2.2	90	0.4	2,000,000§	100 #	G ₂ & 4 are screen; G ₁ is signal grid		—	1LB6
Class A Amplifier	0.0	45	0.30	90	1.15	1,000,000*	775	—	—	—	1LC5
Converter	0.0	35	0.7	90	0.75	650,000§	275 #	E _{c2} (Osc Plate) = 45 I _{c2} = 1.4 ma		—	1LC6
Class A Amplifier	0.0	45	0.1	90	0.6	750,000	575	—	—	—	1LD5
Class A Amplifier {	0.0 3.0	— —	— —	90 90	4.5 1.4	11,200 19,000	1,300 760	14.5 14.5	— —	— —	1LE3
Class A Amplifier {	0.0 3.0	— —	— —	90 90	4.5 1.4	11,200 19,000	1,300 760	14.5 14.5	— —	— —	1LF3
Class A Amplifier {	0.0 1.5	45 90	0.4 0.9	90 90	1.7 3.7	1,000,000* 500,000§	800 1,150	—	—	—	1LG5
Class A Amplifier	0.0	—	—	90	0.15	240,000	275	65	—	—	1LH4
Class A Amplifier	0.0	90	0.35	90	1.6	1,100,000§	800	—	—	—	1LN5
Class A Amplifier	0.0	90	0.3	90	1.2	1,500,000§	750	—	—	—	1N5-G 1N5-GT

†Plate-to-plate.

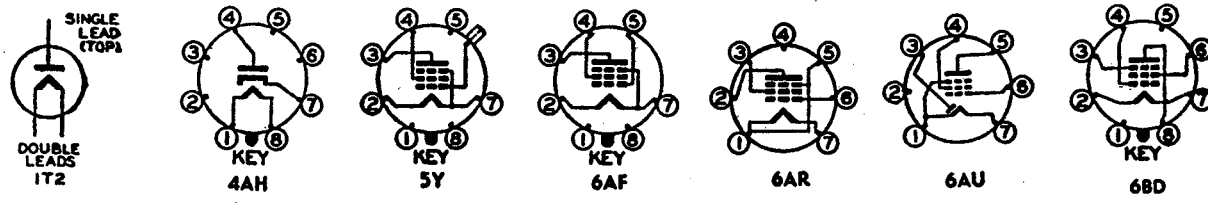
Type designations of miniature tubes are shown in italics.



CHARACTERISTICS

Tube Type	Classification by Construction	Base Connections	Out-line Dwg	Type Cathode	Fila-ment Volts	Fila-ment Amp	Max Plate Volts	Max Screen Volts	Capacitance in Micromicrofarads		
									Input	Out-put	Grid-plate
1N6-G 1N6-GT	Diode Power-Amplifier Pentode	7AM	9-27 9-11	Fil	1.4 D-C	0.05	110	110	—	—	—
1P5-G 1P5-GT	Remote-Cutoff R-F Pentode	5Y	9-28 9-18	Fil	1.4 D-C	0.05	110	110	3.0	10.0	0.007 ♣
1Q5-GT	Beam Power Amplifier	6AF	9-11 or 9-41	Fil	1.4 D-C	0.1	110	110	—	—	—
1Q6 ●	Diode Pentode	8CO	3-2	Fil	1.25 D-C	0.04	100	100	1.8	4.2	0.085
1R4	High-frequency Diode	4AH	9-30	Htr	1.4	0.15	Tube Voltage Drop: 8 v at 2 ma d-c				
1R5	Pentagrid Converter	7AT ♠	5-2	Fil	1.4 D-C	0.05	90	67.5	Osc $I_{g1} = 0.25$ ma $R_{g1} = 100,000$ ohms Osc $I_{g1} = 0.15$ ma $R_{g1} = 100,000$ ohms		
1S4	Power Amplifier Pentode	7AV	5-2	Fil	1.4 D-C	0.1	90	67.5	—	—	—
1S5	Diode Sharp-Cutoff Pentode	6AU	5-2	Fil	1.4 D-C	0.05	90	90	—	—	—
1S6 ●	Diode-Pentode	8DA	3-2	Fil	1.25 D-C	0.04	100	100	—	—	—
1SA6-GT	R-F Pentode	6BD	9-12	Fil	1.4 D-C	0.05	90	67.5	5.2	8.6	0.01 ♣
1SB6-GT	Diode Pentode	6BE	9-11	Fil	1.4 D-C	0.05	90	67.5	3.2	3.0	0.25
1T2 ●	Half-Wave High-Voltage Rectifier	1T2	T-X	Fil	1.4	0.14	Tube Voltage Drop: 46 volts at 4 ma d-c				
1T4	Remote-Cutoff R-F Pentode	6AR	5-2	Fil	1.4 D-C	0.05	90	90	3.6	7.5	0.01 ♣
1T5-GT	Beam Power Amplifier	6X	9-11	Fil	1.4 D-C	0.05	110	110	4.8	8.0	0.5
1T6 ●	Diode-Pentode	8DA	3-5	Fil	1.25 D-C	0.04	67.5	67.5	—	—	—
1U4	Sharp-Cutoff R-F Pentode	6AR	5-2	Fil	1.4 D-C	0.05	110	110	3.6	7.5	0.01 ♣

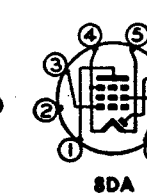
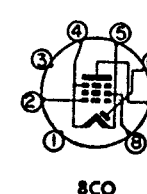
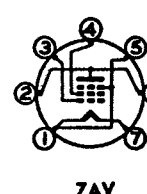
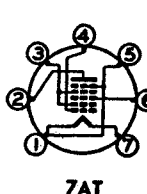
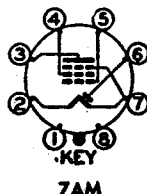
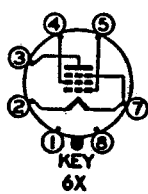
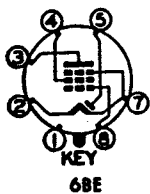
†Zero signal. §Approximate. ♣Maximum.
 ♠Grids 2 and 4 are screen. Grid 3 is signal-input grid.
 # Conversion transconductance.



AND RATINGS

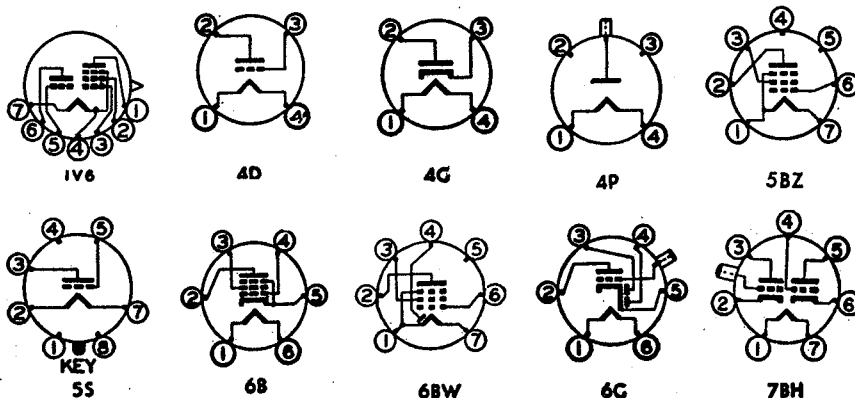
Service	Neg Grid Volts	Screen Volts	Screen Milli-amperes	Plate Volts	Plate Milli-amperes	R _p , Ohms	G _m , μ mhos	μ Factor	Load for Rated Output, Ohms	Power Output, Watts	Tube Type
Class A Amplifier	4.5	90	0.7†	90	3.4†	300,000§	800	—	25,000	0.100	1N6-G 1N6-GT
Class A Amplifier	0.0	90	0.7	90	2.3	800,000§	750	—	—	—	1P5-G 1P5-GT
Class A Amplifier	4.5	90	1.3†	90	9.5†	90,000§	2,200	—	8,000	0.27	1Q5-GT
	5.0	85	0.8†	85	7.0†	70,000§	1,950	—	9,000	0.25	
Class A Amplifier	0.0	67.5	0.40	67.5	1.6	400,000	600	—	—	—	1Q6 ©
	0.0	30	0.09	30	0.33	500,000	330	—	—	—	
Half-Wave Rectifier	Max d-c output current = 1.0 ma; max rms supply voltage = 117 volts										1R4
Converter	0.0	67.5	3.2	90	1.6	600,000§	300 #	—	—	—	1R5
Converter	0.0	45	1.9	90	0.8	800,000§	250 #	—	—	—	
Class A Amplifier	7.0	67.5	1.4†	90	7.4†	100,000§	1,575	—	8,000	0.270	1S4
	7.0	67.5	1.5†	67.5	7.2†	100,000§	1,550	—	5,000	0.180	
	4.5	45.0	0.8†	45	3.8†	100,000§	1,250	—	8,000	0.065	
Class A Amplifier	0.0	67.5	0.4	67.5	1.6	600,000§	625	—	—	—	1S5
Class A Amplifier	0.0	67.5	0.4	67.5	1.6	400,000§	600	—	—	—	1S6 ©
	0.0	30	0.10	30	0.33	500,000§	330	—	—	—	
Class A Amplifier	0.0	67.5	0.68	90	2.45	800,000	970	—	—	—	1SA6-GT
Class A Amplifier	0.0	67.5	0.38	90	1.45	700,000	665	—	—	—	1SB6-GT
Half-Wave Rectifier	Max d-c output current = 2 ma; max peak inverse voltage = 15,000 volts; max peak current = 12 ma										1T2 ©
Class A Amplifier	0.0	67.5	1.4	90	3.5	500,000§	900	—	—	—	1T4
	0.0	45	0.67	90	1.8	800,000§	750	—	—	—	
	0.0	67.5	1.5	67.5	3.4	250,000§	875	—	—	—	
	0.0	45	0.7	45	1.7	350,000§	700	—	—	—	
Class A Amplifier	6.0	90	0.8§†	90	6.5†	250,000§	1,150	—	14,000	0.170	1T5-GT
Class A Amplifier	0.0	67.5	0.4	67.5	1.6	400,000§	600	—	—	—	1T6 ©
	0.0	30	0.10	30	0.33	500,000§	330	—	—	—	
Class A Amplifier	0.0	90	0.5	90	1.6	1,000,000§	900	—	—	—	1U4

Type designations of miniature tubes are shown in italics.
© Designates subminiature type.



CHARACTERISTICS

Tube Type	Classification by Construction	Base Connections	Out-line Dwg	Type Cathode	Filament Volts	Filament Amp	Max Plate Volts	Max Screen Volts	Capacitance in Micromicrofarads		
									Input	Output	Grid-plate
1U5	Diode Sharp-Cutoff Pentode	6BW	5-2	Fil	1.4 D-C	0.05	90	90	—	—	—
1U6	Pentagrid Converter	7DC	5-2	Fil	1.4 D-C	0.025	110	65	Osc $I_{g1} = 0.028$ ma $R_{g1} = 200,000$ ohms		
1-V	Half-Wave High-Vacuum Rectifier	4G	12-5	Htr	6.3	0.3	Tube Voltage Drop: 20 v at 90 ma d-c				
1V2	Half-Wave, High-Voltage Rectifier	9U	6-2	Fil	0.625	0.3	Tube Voltage Drop: 36 v at 1.0 ma d-c				
1V5	Power Amplifier Pentode	8CP	3-2	Fil	1.25 D-C	0.04	100	100	—	—	—
1V6	Triode-Pentode Converter	1V6	2-3	Fil	1.25 D-C	0.04	90	90	Osc $I_{g1} = 12$ μ a $R_{g1} = 1$ meg		
1W4	Power Amplifier Pentode	5BZ	5-2	Fil	1.4 D-C	0.05	110	110	3.6	7.0	0.1
1W5	Sharp-Cutoff R-F Pentode	8CP	3-2	Fil	1.25 D-C	0.04	100	100	2.3	3.0	0.009 \clubsuit
1X2	Half-Wave, High-Voltage Rectifier	9Y	6A-2	Fil	1.25	0.2	Tube Voltage Drop: 100 v at 7 ma d-c				
1X2-A	Half-Wave, High-Voltage Rectifier	9Y	6A-2	Fil	1.25	0.2	Tube Voltage Drop: 100 v at 7 ma d-c				
1Y2	Half-Wave High-Voltage Rectifier	4P	T-X	Fil	1.5	0.29	Tube Voltage Drop: 100 v at 8 ma d-c				
1Z2	Half-Wave High-Voltage Rectifier	7CB	T-X	Fil	1.5	0.3	Tube Voltage Drop: 50 v at 5.0 ma d-c				
2A3	Power-Amplifier Triode	4D	16-1	Fil	2.5	2.5	300	—	7.5 \blacktriangle	5.5 \blacktriangle	16.5 \blacktriangle
									2 tubes, push-pull		
2A4-G	Gas Triode	5S	12-7	Fil	2.5	2.5	Anode Voltage Drop = 15 volts				
2A5	Power Amplifier Pentode	6B	14-1	Htr	2.5	1.75	375	285	Pentode Connection		
							350	—	Triode Connection (G2 & P tied)		
2A6	Duplex-Diode High-Mu Triode	6G	12-6	Htr	2.5	0.8	250	—	1.7	3.8	1.7
2A7	Pentagrid Converter	7C	12-6	Htr	2.5	0.8	300	100	Osc $I_{g1} = 0.4$ ma $R_{g1} = 50,000$ ohms		
2B7	Duplex-Diode Semi-Remote-Cutoff Pentode	7D	12-6	Htr	2.5	0.8	300	125	3.5 \blacktriangle	9.5 \blacktriangle	0.007 \clubsuit
2C21/1642	Medium-Mu Twin Triode	7BH	12-6	Htr	6.3	0.6	250	—	—	—	—

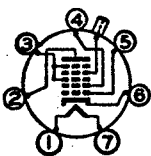


AND RATINGS

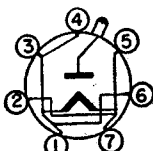
Service	Neg Grid Volts	Screen Volts	Screen Milli-am-peres	Plate Volts	Plate Milli-am-peres	R _p , Ohms	G _m , μmhos	μ Fac-tor	Load for Rated Out-put, Ohms	Power Out-put, Watts	Tube Type
Class A Amplifier	0.0	67.5	0.4	67.5	1.6	600,000§	625	—	—	—	<i>1U5</i>
Converter	0.0	45	0.6	90	0.6	500,000§	300 #	E _{c2} (Osc Plate) = 90 I _{c2} = 1.1 ma			<i>1U6</i>
Half-Wave Rectifier	Max d-c output current = 45 ma; max peak inverse voltage = 1000 volts; max rms supply voltage = 325 v; max peak current = 270 ma										1-V
Half-Wave Rectifier	Max d-c output current = 0.5 ma; max peak inverse voltage = 7500 volts; max peak current = 10 ma										<i>1V2</i>
Class A Amplifier	4.5 3.0 2.0	67.5 45 30	0.4 0.2 0.1	67.5 45 30	2.0 1.0 0.5	150,000 175,000 200,000	750 600 450	— — —	25,000 40,000 50,000	0.050 0.015 0.005	<i>1V5</i> ●
Converter	R _g = 5 meg	45	0.15	45	0.4	1,000,000§	200 #	E _b (Triode Osc) = 45 I _b (Triode)§ = 0.4 ma			<i>1V6</i> ●
Class A Amplifier	9.0 6.0 4.5	90 67.5 45	1.0† 0.8† 0.3†	90 67.5 45	5.0† 3.8† 1.6†	250,000 300,000 400,000	925 875 650	— — —	12,000 16,000 20,000	0.20 0.10 0.035	<i>1W4</i>
Class A Amplifier	0.0 0.0	67.5 30.0	0.75 0.16	67.5 30.0	1.85 0.45	700,000§ 700,000§	735 430	— —	— —	— —	<i>1W5</i> ●
Half-Wave Rectifier	Max d-c output current = 1.0 ma; max peak inverse voltage = 15,000 volts; max peak current = 10 ma										<i>1X2</i>
Half-Wave Rectifier	Max d-c output current □ = 1.1 ma; max peak inverse voltage □ = 20,000 volts; max peak current □ = 11 ma										<i>1X2-A</i>
Half-Wave Rectifier	Max d-c output current = 2 ma; max peak inverse voltage = 50,000 volts; max peak current = 10 ma										<i>1Y2</i>
Half-Wave Rectifier	Max d-c output current = 2.0 ma; max peak inverse voltage = 20,000 volts; max peak current = 10 ma										<i>1Z2</i>
Class A Amplifier Class AB ₁ Amplifier	45 62	— —	— —	250 300	60† 80†	800 —	5,250 —	4.2 —	2,500 3,000†	3.5 15	<i>2A3</i>
Relay Control	Max d-c anode current = 100 ma; max peak inverse voltage = 200 volts; max peak anode current = 1.25 amperes										<i>2A4-G</i>
Class A Amplifier Class A Amplifier	20.0 20.0	285 —	7.0† —	285 250	38† 31.0	78,000§ 2,600	2,500 2,600	— 6.8	7,000 4,000	4.8 0.85	<i>2A5</i>
Class A Amplifier	2.0	—	—	250	0.9	91,000	1,100	100	—	—	<i>2A6</i>
Converter	3.0	100	2.7	250	3.5	360,000§	550 #	E _{c2} (Osc Plate) = 250 thru 20,000 ohms I _{c2} = 4.0 ma			<i>2A7</i>
Class A Amplifier	3.0 3.0	125 100	2.3 1.5	250 250	9.0 6.0	600,000§ 800,000	1,125 1,000	— —	— —	— —	<i>2B7</i>
Class A Amplifier ♦	16.5	—	—	250	8.3	7,600	1,375	10.4	—	—	<i>2C21/1642</i>

†Zero signal. §Approximate. ♦ Per section.
 ▲ Without external shield. ♣ Maximum. †Plate-to-plate. □ Absolute maximum rating.
 ♦ Grids 3 and 5 are screen. Grid 4 is signal-input grid. # Conversion transconductance.

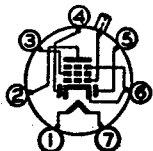
Type designations of miniature tubes are shown in italics.
 ● Designates subminiature types.



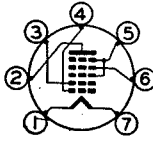
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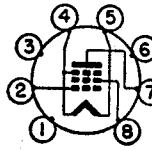
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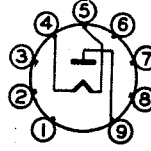
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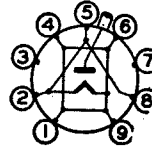
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8CP



9U



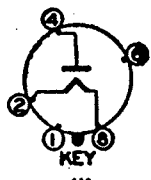
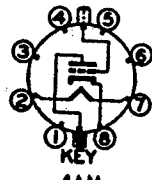
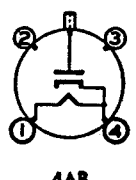
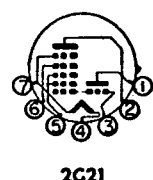
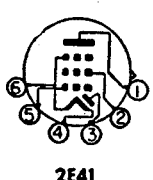
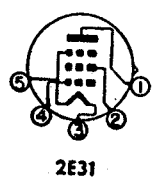
9Y

CHARACTERISTICS

Tube Type	Classification by Construction	Base Connections	Out-line Dwg	Type Cathode	Fila-ment Volts	Fila-ment Amp	Max Plate Volts	Max Screen Volts	Capacitance in Micromicrofarads		
									Input	Out-put	Grid-plate
2C22	Medium-Mu Triode	4AM	T-X	Htr	6.3	0.3	300	—	2.2	0.7	3.6
2C51	High-Frequency Twin Triode	8CJ	6-1	Htr	6.3	0.3	300	—	2.3	1.3	1.3
2C52	High-Mu Twin Triode	8BD	9-12	Htr	12.6	0.3	300	—	2.3	0.75	2.7
2D21	Thyratron	7BN	5-2	Htr	6.3	0.6	—	Anode voltage drop = 8 volts			
2E5	Electron-Ray Indicator	6R	9-26 or 12-5	Htr	2.5	0.8	250‡	Max target voltage = 250 Min target voltage = 125			
2E30	Beam Power Amplifier	7CQ	5-3	Fil	{6.0 3.0}	{0.65 1.30}	250	—	9.6	14	0.18 ♣
2E31 ●	Sharp-Cutoff R-F Pentode	2E31	T-X	Fil	1.25 D-C	0.05	45	45	4.2	4.0	0.018 ♣
2E32 ●	Sharp-Cutoff R-F Pentode	2E31	T-X	Fil	1.25 D-C	0.05	45	45	4.2	4.0	0.018 ♣
2E35 ●	Power Amplifier Pentode	2E31	T-X	Fil	1.25 D-C	0.03	45	45	2.7	5.7	0.2 ♣
2E36 ●	Power Amplifier Pentode	2E31	T-X	Fil	1.25 D-C	0.03	45	45	2.7	5.7	0.2 ♣
2E41 ●	Diode Pentode	2E41	T-X	Fil	1.25 D-C	0.03	45	45	2.7	4.3	0.10
2E42 ●	Diode Pentode	2E41	T-X	Fil	1.25 D-C	0.03	45	45	2.7	4.3	0.10
2G21 ●	Triode-Heptode Converter	2G21 ♥	T-X	Fil	1.25 D-C	0.05	45	45	Osc I _{g1} = 0.030 ma R _{g1} = 50,000 ohms		
2G22 ●	Triode-Heptode Converter	2G21 ♥	T-X	Fil	1.25 D-C	0.05	45	45	Osc I _{g1} = 0.030 ma R _{g1} = 50,000 ohms		
2V3-G	Half-Wave High-Voltage Rectifier	4Y	12-8	Fil	2.5	5	—	—	—	—	—
2W3 2W3-GT	Half-wave High-vacuum Rectifier	4X	8-6 9-12	Fil	2.5	1.5	—	—	—	—	—
2X2-A	Half-wave High-voltage Rectifier	4AB	12-6	Htr	2.5	1.75	—	—	—	—	—

†Zero signal. ♥Grids 2 and 4 are screen. Grid 3 is signal-input grid.
 □ Absolute maximum rating. ♣ Per section.
 # Conversion transconductance. § Plate supply voltage.

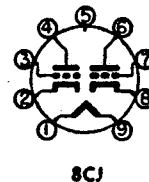
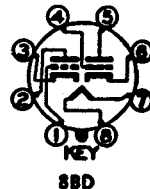
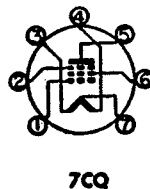
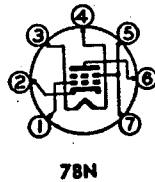
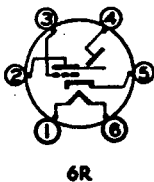
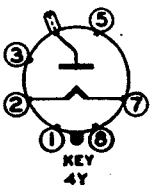
♣ Maximum.
 § Approximate.



Service	Neg Grid Volts	Screen Volts	Screen Milli-amperes	Plate Volts	Plate Milli-amperes	R _p Ohms	G _m μmhos	μ Factor	Load for Rated Output, Ohms	Power Output, Watts	Tube Type
Class A Amplifier	10.5	—	—	300	11.0	6,600	3,000	20	—	—	2C22
Class A Amplifier ♠	R _k = 240	—	—	150	8.2	6,500	5,500	35	—	—	2C51
Class A Amplifier ♠	2.0	—	—	250	1.3	—	1,900	100	—	—	2C52
Controlled Rectifier	Max d-c cathode current ☐ = 100 ma; max peak inverse voltage ☐ = 1,300 volts; max peak cathode current ☐ = 500 ma										2D21
Tuning Indicator	Plate voltage = 250 thru 1 meg, target voltage = 250 (E _g = -8 volts, shadow = 0°) (E _g = 0 volt, shadow = 90°, plate current = 0.24 ma, target current § = 4-ma)										2E5
Class A Amplifier	20.0	250	3.3†	250	40.0†	63,000	3,700	—	4,500	4.5	2E30
Class A Amplifier	R _g = 5 meg	22.5	0.3	22.5	0.4	350,000	500	—	—	—	2E31 ©
Class A Amplifier	R _g = 5 meg	22.5	0.3	22.5	0.4	350,000	500	—	—	—	2E32 ©
Class A Amplifier	1.25	45	0.11	45	0.45	250,000	500	—	100000	0.006	2E35 ©
Class A Amplifier	1.25	45	0.11	45	0.45	250,000	500	—	100000	0.006	2E36 ©
Class A Amplifier	R _g = 5 meg	22.5	0.12	22.5	0.35	250,000	375	—	—	—	2E41 ©
Class A Amplifier	R _g = 5 meg	22.5	0.12	22.5	0.35	250,000	375	—	—	—	2E42 ©
Converter	0.0	22.5	0.3	22.5	0.2	500,000 §	60 #	E _b (Triode Osc) = 22.5 I _b (Triode) = 1.0 ma			2G21 ©
Converter	0.0	22.5	0.3	22.5	0.2	500,000 §	60 #	E _b (Triode Osc) = 22.5 I _b (Triode) = 1.0 ma			2G22 ©
Half-Wave Rectifier	Max d-c output current = 2 ma; max peak inverse voltage = 16,500 volts; max peak current = 12 ma										2V3-G
Half-Wave Rectifier	Max d-c output current = 55 ma; max rms supply voltage = 350 volts										2W3 2W3-GT
Half-Wave Rectifier	Max d-c output current = 7.5 ma; max peak inverse voltage = 12,500 volts; rms supply voltage = 5,500 volts; max peak current = 60 ma										2X2-A

© Designates subminiature types.

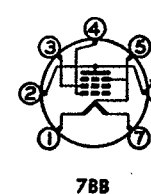
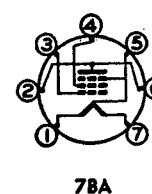
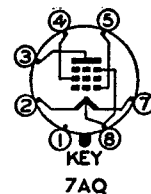
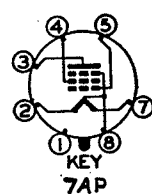
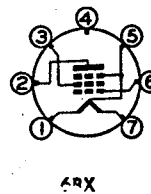
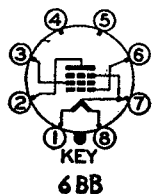
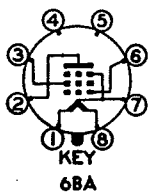
Type designations of metal tubes are shown in bold-face type. Type designations of miniature tubes are shown in italics.



CHARACTERISTICS

Tube Type	Classification by Construction	Base Connections	Out-line Dwg	Type Cathode	Filament Volts	Filament Amp	Max Plate Volts	Max Screen Volts	Capacitance in Micromicrofarads		
									Input	Out-put	Grid-plate
3A4	Power Amplifier Pentode	7BB	5-2	Fil	{ 2.8 1.4 D-C	{ 0.1 0.2	150	90	4.8	4.2	0.20 ♣
3A5	High-Frequency Twin Triode	7BC	5-2	Fil	{ 2.8 1.4 D-C	{ 0.11 0.22	135	—	0.9	1.0	3.2
3A8-GT	Diode-Triode Sharp-Cutoff R-F Pentode	8AS	9-17	Fil	{ 2.8 1.4 D-C	{ 0.05 0.1	110	—	Triode Section		
							110	110	Pentode Section		
3B4	Beam Power Amplifier	7CY	5-2	Fil	1.25 2.50 D-C	0.33 0.165	150 —	135 —	4.6▲	7.6▲	0.16▲ ♣
3B5-GT	Beam Power Amplifier	7AQ	9-12	Fil	1.4	0.1	67.5	67.5	Parallel Filaments		
					2.8 D-C	0.05	67.5	67.5	Series Filaments		
3B7	High-Frequency Twin Triode	7BE	9-30	Fil	1.4 2.8 D-C	0.22 0.11	180	—	Both Sections in Push-pull		
3C4	Power Amplifier Pentode	6BX	T-X	Fil	1.4 D-C	0.05	90	90	Parallel Filaments		
3C5-GT	Power Amplifier Pentode	7AQ	9-12	Fil	1.4	0.1	110	110	Parallel Filaments		
					2.8 D-C	0.05	110	110	Series Filaments		
3C6	Medium-Mu Twin Triode	7BW	9-30	Fil	1.4	0.1	110	—	Section 1 / Parallel Section 2 / Filaments Section 1 / Series Section 2 / Filaments		
					2.8 D-C	0.05	110	—			
3D6	Beam Power Amplifier	6BA	9-30	Fil	1.4 D-C	0.22	180	135	7.5	6.5	0.30
3E5	Beam Power Amplifier	6BX	5-2	Fil	1.4	0.05	135	90	Parallel Filaments		
					2.8 D-C	0.025	135	90	Series Filaments		
3E6	Sharp-Cutoff R-F Pentode	7CJ	9-30	Fil	2.8	0.05	110	110	Series Filaments		
					1.4 D-C	0.1	110	110	Parallel Filaments		
3LE4	Power Amplifier Pentode	6BA	9-30	Fil	1.4	0.1	110	110	Parallel Filaments		
					2.8 D-C	0.05	110	110	Series Filaments		
3LF4	Beam Power Amplifier	6BB	9-30	Fil	2.8	0.05	110	110	Series Filaments		
					1.4 D-C	0.1	110	110	Parallel Filaments		
3Q4	Power Amplifier Pentode	7BA	5-2	Fil	1.4	0.1	90	90	Parallel Filaments		
					2.8 D-C	0.05	90	90	Series Filaments		
3Q5-GT	Beam Power Amplifier	7AP	9-11 or 9-41	Fil	1.4	0.1	110	110	Parallel Filaments		
					2.8 D-C	0.05	110	110	Series Filaments		

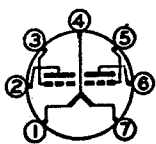
†Zero signal. ♣Maximum. ▲Without external shield. ◆Per section. ‡Plate-to-plate.



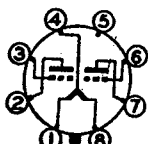
Service	Neg Grid Volts	Screen Volts	Screen Milli-amperes	Plate Volts	Plate Milli-amperes	R _p , Ohms	G _m , μmhos	μ Factor	Load for Rated Output, Ohms	Power Output, Watts	Tube Type
Class A Amplifier	8.4	90	2.2†	150	13.3†	100,000	1,900	—	8,000	0.7	<i>3A4</i>
Class A Amplifier ♠	2.5	—	—	90	3.7	8,300	1,800	15	—	—	<i>3A5</i>
Class A Amplifier	0.0	—	—	90	0.2	200,000	275	—	—	—	<i>3A8-GT</i>
Class A Amplifier	0.0	90	0.5	90	1.5	800,000	750	—	—	—	<i>3A8-GT</i>
Class C Amplifier	38	135	6.2	150	25	Input Signal = 0.07 watt		—	—	1.25	<i>3B4</i>
Class A Amplifier	7.0	67.5	0.6†	67.5	8.0†	100,000	1,650	—	5,000	0.2	<i>3B5-GT</i>
Class A Amplifier	7.0	67.5	0.5†	67.5	6.7†	100,000	1,500	—	5,000	0.18	<i>3B5-GT</i>
Class AB ₂ Amplifier	0.0	—	—	135	18.2†	—	1,900 ♠	20 ♠	16,000 ‡	1.5	<i>3B7</i>
Class A Amplifier	5.2	85	1.1	85	5.0	125,000	1350	—	13,000	0.2	<i>3C4</i>
Class A Amplifier	9.0	90	1.4†	90	6.0†	—	1,550	—	8,000	0.24	<i>3C5-GT</i>
Class A Amplifier	9.0	90	1.4†	90	6.0†	—	1,450	—	10,000	0.26	<i>3C5-GT</i>
Class A Amplifier	0.0	—	—	90	4.5	11,200	1,300	14.5	—	—	<i>3C6</i>
Class A Amplifier	0.0	—	—	90	4.5	11,200	1,300	14.5	—	—	<i>3C6</i>
Class A Amplifier	0.0	—	—	90	4.5	11,200	1,300	14.5	—	—	<i>3C6</i>
Class A Amplifier	0.0	—	—	90	3.2	12,800	1,100	14.1	—	—	<i>3C6</i>
Class A Amplifier	4.5	90	1.0†	150	9.8†	—	2,400	—	14,000	0.60	<i>3D6</i>
Class A Amplifier	7.0	90	1.6	90	8.0	100,000	1,550	—	8,000	0.250	<i>3E5</i>
Class A Amplifier	5.0	67.5	1.1	67.5	5.5	120,000	1,400	—	8,000	0.125	<i>3E5</i>
Class A Amplifier	7.0	90	1.4	90	6.8	120,000	1,450	—	9,000	0.225	<i>3E5</i>
Class A Amplifier	5.0	67.5	0.9	67.5	4.4	130,000	1,300	—	11,000	0.115	<i>3E5</i>
Class A Amplifier	R _g = 2 Meg	90	1.2	90	2.9	325,000§	1,700	—	—	—	<i>3E6</i>
Class A Amplifier	R _g = 2 Meg	90	1.7	90	4.2	250,000§	2,000	—	—	—	<i>3E6</i>
Class A Amplifier	9.0	90	2.0†	90	10.0†	100,000§	1,700	—	6,000	0.325	<i>3LE4</i>
Class A Amplifier	9.0	90	1.8†	90	8.8†	110,000§	1,600	—	6,000	0.300	<i>3LE4</i>
Class A Amplifier	6.6	110	1.1	110	8.5	110,000§	2,000	—	8,000	0.33	<i>3LF4</i>
Class A Amplifier	4.5	90	1.0	90	8.0	80,000§	2,000	—	8,000	0.23	<i>3LF4</i>
Class A Amplifier	6.6	110	1.4	110	10.0	100,000§	2,200	—	8,000	0.40	<i>3LF4</i>
Class A Amplifier	4.5	90	1.3	90	9.5	90,000§	2,200	—	8,000	0.27	<i>3LF4</i>
Class A Amplifier	4.5	90	2.1†	90	9.5†	100,000§	2,150	—	10,000	0.27	<i>3Q4</i>
Class A Amplifier	4.5	90	1.7†	90	7.7†	120,000§	2,000	—	10,000	0.24	<i>3Q4</i>
Class A Amplifier	6.6	110	1.4†	110	10.0†	100,000§	2,200	—	8,000	0.40	<i>3Q5-GT</i>
Class A Amplifier	4.5	90	1.3†	90	9.5†	90,000§	2,200	—	8,000	0.27	<i>3Q5-GT</i>
Class A Amplifier	6.6	110	1.1†	110	8.5†	110,000§	2,000	—	8,000	0.33	<i>3Q5-GT</i>
Class A Amplifier	4.5	90	1.0†	90	8.0†	80,000§	2,000	—	8,000	0.23	<i>3Q5-GT</i>

§Approximate.

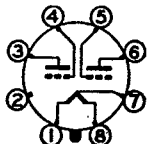
Type designations of miniature tubes are shown in italics.



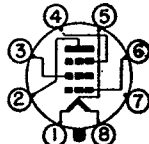
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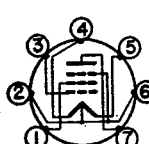
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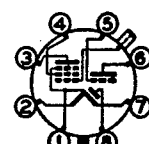
7BW



7CJ



7CY



8AS

CHARACTERISTICS

Tube Type	Classification by Construction	Base Connections	Outline Dwg	Type Cathode	Filament Volts	Filament Amp	Max Plate Volts	Max Screen Volts	Capacitance in Micromicrofarads		
									Input	Output	Grid-plate
3S4	Power Amplifier Pentode	7BA	5-2	Fil	1.4	0.1	90	67.5	Parallel Filaments		
					2.8 D-C	0.05	90	67.5	Series Filaments		
3V4	Power Amplifier Pentode	6BX	5-2	Fil	1.4	0.1	90	90	Parallel Filaments		
					2.8 D-C	0.05	90	90	Series Filaments		
4A6-G	Twin Triode Power Amplifier	8L	12-7	Fil	{4.0 2.0 D-C	{0.06 0.12	90	—	—		
5AX4-GT	Full-Wave, High-Vacuum Rectifier	5T	9-13	Fil	5.0	2.5	Tube Voltage Drop: ♣ 65 v at 175 ma d-c				
5AZ4	Full-Wave High-Vacuum Rectifier	5T	9-31	Fil	5.0	2.0	Tube Voltage Drop: ♣ 60 v at 125 ma d-c				
5R4-GY 5R4-WGY	Full-Wave High-Vacuum Rectifier	5T	16-3	Fil	5.0	2.0	Tube Voltage Drop: ♣ 67 v at 250 ma d-c				
5T4	Full-Wave High-Vacuum Rectifier	5T	10-1	Fil	5.0	2.0	Tube Voltage Drop: ♣ 45 v at 225 ma d-c				
5U4-G	Full-Wave High-Vacuum Rectifier	5T	16-3	Fil	5.0	3.0	Tube Voltage Drop: ♣ 50 v at 225 ma d-c				
5V4-G	Full-Wave High-Vacuum Rectifier	5L	14-3	Htr	5.0	2.0	Tube Voltage Drop: ♣ 25 v at 175 ma d-c				
5W4 5W4-GT	Full-Wave High-Vacuum Rectifier	5T	8-6 9-13	Fil	5.0	1.5	Tube Voltage Drop: ♣ 45 v at 100 ma d-c				
5X4-G	Full-Wave High-Vacuum Rectifier	5Q	16-3	Fil	5.0	3.0	Tube Voltage Drop: ♣ 58 v at 225 ma d-c				
5Y3-G	Full-Wave High-Vacuum Rectifier	5T	14-3	Fil	5.0	2.0	Tube Voltage Drop: ♣ 60 v at 125 ma d-c				
5Y3-GT	Full-Wave High-Vacuum Rectifier	5T	9-13 or 9-42	Fil	5.0	2.0	Tube Voltage Drop: ♣ 60 v at 125 ma d-c				
5Y4-G	Full-Wave High-Vacuum Rectifier	5Q	14-3	Fil	5.0	2.0	Tube Voltage Drop: ♣ 60 v at 125 ma d-c				
5Y4-GT	Full-Wave High-Vacuum Rectifier	5Q	9-13 or 9-42	Fil	5.0	2.0	Tube Voltage Drop: ♣ 60 v at 125 ma d-c				
5Z3	Full-Wave High-Vacuum Rectifier	4C	16-1	Fil	5.0	3.0	Tube Voltage Drop: ♣ 58 v at 225 ma d-c				
5Z4	Full-Wave High-Vacuum Rectifier	5L	8-6	Htr	5.0	2.0	Tube Voltage Drop: ♣ 20 v at 125 ma				
5Z4-GT	Full-Wave High-Vacuum Rectifier	5L	9-11	Htr	5.0	2.0					
6A3	Power Amplifier Triode	4D	16-1	Fil	6.3	1.0	325	Single tube			
								2 tubes, push-pull			
6A4/LA	Power Amplifier Pentode	5B	14-1	Fil	6.3	0.3	180	180	—	—	—

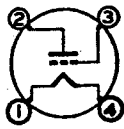
§Approximate.

‡Plate-to-plate.

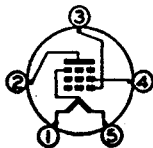
♣ Per section.



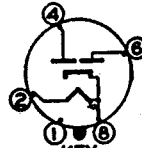
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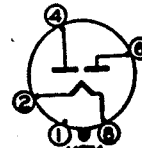
4D



5B



5L



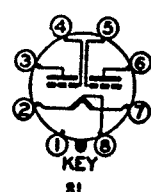
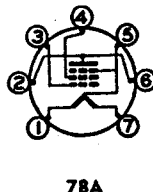
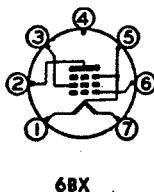
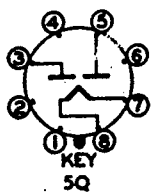
5T

AND RATINGS

Service	Neg Grid Volts	Screen Volts	Screen Milli-am-peres	Plate Volts	Plate Milli-am-peres	R _p , Ohms	G _m , μmhos	μ Fac-tor	Load for Rated Out-put, Ohms	Power Out-put, Watts	Tube Type
Class A Amplifier Class A Amplifier	7.0	67.5	1.4†	90	7.4†	100,000§	1,575	—	8,000	0.270	<i>3S4</i>
	7.0	67.5	1.5†	67.5	7.2†	100,000§	1,550	—	5,000	0.180	
	7.0	67.5	1.1†	90	6.1†	100,000§	1,425	—	8,000	0.235	
	7.0	67.5	1.2†	67.5	6.0†	100,000§	1,400	—	5,000	0.160	
Class A Amplifier Class A Amplifier ♠	4.5	90	2.1†	90	9.5†	100,000§	2,150	—	10,000	0.27	<i>3V4</i>
	5.0	85	1.5†	85	6.9†	120,000§	1,975	—	10,000	0.25	
	4.5	90	1.7†	90	7.7†	120,000§	2,000	—	10,000	0.24	
Class A Amplifier ♠	1.5	—	—	90	1.2	28,000	900	25	—	—	4A6-G
Full-Wave Rectifier	Max d-c output current = 175 ma; max peak inverse voltage = 1400 volts; max rms supply voltage per plate = 350 volts; max peak current per plate = 525 ma										<i>5AX4-GT</i>
Full-Wave Rectifier	Max d-c output current = 125 ma; max peak inverse voltage = 1400 volts; max rms supply voltage per plate = 350 volts; max peak current per plate = 375 ma										<i>5AZ4</i>
Full-Wave Rectifier	Max d-c output current = 250 ma; max peak inverse voltage = 2100 volts; max rms supply voltage per plate = 750 volts; max peak current per plate = 650 ma										<i>5R4-GY</i> <i>5R4-WGY</i>
Full-Wave Rectifier	Max d-c output current = 225 ma; max peak inverse voltage = 1550 volts; max rms supply voltage per plate = 450 volts; max peak current per plate = 675 ma										<i>5T4</i>
Full-Wave Rectifier	Max d-c output current = 225 ma; max peak inverse voltage = 1550 volts; rms supply voltage per plate = 450 volts; max peak current per plate = 675 ma										<i>5U4-G</i>
Full-Wave Rectifier	Max d-c output current = 175 ma; max peak inverse voltage = 1400 volts; max rms supply voltage per plate = 375 volts; max peak current per plate = 525 ma										<i>5V4-G</i>
Full-Wave Rectifier	Max d-c output current = 100 ma; max peak inverse voltage = 1400 volts; max rms supply voltage per plate = 350 volts; max peak current per plate = 300 ma										<i>5W4</i> <i>5W4-GT</i>
Full-Wave Rectifier	Max d-c output current = 225 ma; max peak inverse voltage = 1550 volts; max rms supply voltage per plate = 450 volts; max peak current per plate = 675 ma										<i>5X4-G</i>
Full-Wave Rectifier	Max d-c output current = 125 ma; max peak inverse voltage = 1400 volts; max rms supply voltage per plate = 350 volts; max peak current per plate = 375 ma										<i>5Y3-G</i>
Full-Wave Rectifier	Max d-c output current = 125 ma; max peak inverse voltage = 1400 volts; rms supply voltage per plate = 350 volts; max peak current per plate = 400 ma										<i>5Y3-GT</i>
Full-Wave Rectifier	Max d-c output current = 125 ma; max peak inverse voltage = 1400 volts; rms supply voltage per plate = 350 volts; max peak current per plate = 375 ma										<i>5Y4-G</i>
Full-Wave Rectifier	Max d-c output current = 125 ma; max peak inverse voltage = 1400 volts; rms supply voltage per plate = 350 volts; max peak current per plate = 400 ma										<i>5Y4-GT</i>
Full-Wave Rectifier	Max d-c output current = 225 ma; max peak inverse voltage = 1550 volts; max rms supply voltage per plate = 450 volts; max peak current per plate = 675 ma										<i>5Z3</i>
Full-Wave Rectifier	Max d-c output current = 125 ma; max peak inverse voltage = 1400 volts; max rms supply voltage per plate = 350 volts; max peak current per plate = 375 ma										<i>5Z4</i> <i>5Z4-GT</i>
Class A Amplifier Class AB ₁ Amplifier	45	—	—	250	60†	800	5,250	4.2	2,500	3.2	6A3
	68	—	—	325	80†	—	—	—	3,000†	15.0	
Class A Amplifier	12	180	3.9†	180	22.0†	45,400§	2,200	—	8,000	1.4	6A4/LA

†Zero signal.

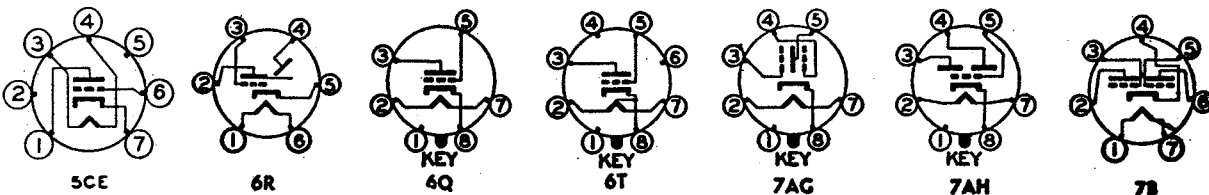
Type designations of metal tubes are shown in bold-face type.
Type designations of miniature tubes are shown in italics.



CHARACTERISTICS

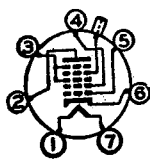
Tube Type	Classification by Construction	Base Connections	Out-line Dwg	Type Cathode	Fila-ment Volts	Fila-ment Amp	Max Plate Volts	Max Screen Volts	Capacitance in Micromicrofarads		
									Input	Out-put	Grid-plate
6A5-G	Power Amplifier Triode	6T	16-3	Htr	6.3	1.25	250	—	Single Tube 2 tubes, push-pull		
6A6	Twin Triode Power Amplifier	7B	14-1	Htr	6.3	0.8	300	—	Both Sections in Push-pull Both Sections in Parallel		
6A7	Pentagrid Converter	7C♠	12-6	Htr	6.3	0.3	300	100	Osc $I_{g1} = 0.4$ ma $R_{g1} = 50,000$ ohms		
6A8 6A8-G 6A8-GT	Pentagrid Converter	8A♠	8-4 12-8 9-18	Htr	6.3	0.3	300	100	Osc $I_{g1} = 0.4$ ma $R_{g1} = 50,000$ ohms		
<i>6AB4</i>	High-Frequency Triode	5CE	5-2	Htr	6.3	0.15	300	—	2.2	1.4	1.5
6AB5/6N5	Electron-ray Indicator	6R	9-26	Htr	6.3	0.15	180‡	Max target voltage = 180 Min target voltage = 125			
6AB7/1853	Remote-Cutoff R-F Pentode	8N	8-1	Htr	6.3	0.45	300	200	8.0	5.0	0.015♣
<i>6AB8</i>	Triode-Pentode	9AT	6-3	Htr	6.3	0.3	350 200	250 —	Pentode Section Triode Section		
6AC5-GT	Triode Power Amplifier	6Q	9-11	Htr	6.3	0.4	250	—	2 tubes, Push-pull		
6AC6-GT	Dynamic-Coupled Power Amplifier	7W	9-11	Htr	6.3	1.1	180	—	—	—	—
6AC7 6AC7-W	R-F Pentode	8N	8-1	Htr	6.3	0.45	300	150	11	5	0.015♣
6AD4⊙	High-Mu Triode	8DK	3-1	Htr	6.3	0.15	150	—	1.9	2.2	0.7
6AD6-G	Twin Electron-ray Indicator	7AG	9-3	Htr	6.3	0.15	Max target voltage = 150 Min target voltage = 100				
6AD7-G	Triode-Power Amplifier Pentode	8AY	14-3	Htr	6.3	0.85	285 375	— 285	Triode section Pentode section		
<i>6AD8</i>	Duplex-Diode R-F Pentode	9T	6-3	Htr	6.3	0.3	250	125	—	—	—
6AE5-GT	Low-Mu Triode	6Q	9-11	Htr	6.3	0.3	300	—	—	—	—
6AE6-G	Single-Grid Twin-Plate Control Tube	7AH	12-7	Htr	6.3	0.15	250	Remote-cut-off plate (Pin 3) Sharp-cut-off plate (Pin 4)			

§ Approximate. † Plate-to-plate. ♣ Maximum. ‡ Zero signal. || Input plate.
 ♠ Grids 3 and 5 are screen. Grid 4 is signal-input grid. ♣ Per section.
 ‡ Plate supply voltage. # Conversion transconductance.
Type designations of metal tubes are shown in bold-face type. ⊙ Designates subminiature type.
Type designations of miniature tubes are shown in italics.

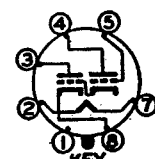


AND RATINGS

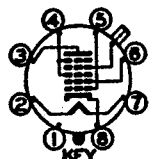
Service	Neg Grid Volts	Screen Volts	Screen Milli-amperes	Plate Volts	Plate Milli-amperes	R _p , Ohms	G _m , μ mhos	μ Factor	Load for Rated Out-put, Ohms	Power Out-put, Watts	Tube Type
Class A Amplifier	45.0	—	—	250	60†	800	5,250	4.2	2,500	3.75	6A5-G
Class A Amplifier	68.0	—	—	325	80†	—	—	—	3,000	15.0	
Class B Amplifier	0.0	—	—	300	35†	—	—	—	8,000	10‡	6A6
Class A Amplifier	6.0	—	—	294	7.0	11,000	3,200	35	—	—	
Converter	3.0	100	2.7	250	3.5	360,000‡	550 #	E _{o2} (Osc Plate) = 250 thru 20,000 ohms I _{o2} = 4.0 ma			6A7
Converter	3.0	100	2.7	250	3.5	360,000‡	550 #	E _{o2} (Osc Plate) = 250 thru 20,000 ohms I _{o2} = 4.0 ma			6A8 6A8-G 6A8-GT
Class A Amplifier	R _k = 200	—	—	250	10	10,900	5500	60	—	—	6AB4
	R _k = 270	—	—	160	3.7	15,000	4000	60	—	—	
Tuning Indicator	Plate voltage = 135 thru 0.25 meg; target voltage = 135 (E _g = -10, shadow = 0°) (E _g = 0 volt, shadow = 90°, plate current = 0.5 ma, target current ‡ = 2 ma)										6AB5/6N5
Class A Amplifier	3.0	200	3.2	300	12.5	700,000‡	5,000	—	—	—	6AB7/1853
Class A Amplifier	7.7	200	3.3	200	17.5	150,000	3400	—	11,000	1.4	6AB8
	2	—	—	100	4	—	1350	18	—	—	
Class B Amplifier	0.0	—	—	250	5.0†	Input signal = .950 watt			10,000 ‡	8.0‡	6AC5-GT
Class A Amplifier	0.0	180	7.0	180	45.0	18,000‡	3,000	—	3,500	3.6	6AC6-GT
Class A Amplifier	R _k = 160	150	2.5	300	10.0	1,000,000‡	9,000	—	—	—	6AC7 6AC7-W
Class A Amplifier	R _k = 820	—	—	100	1.4	35,000	2000	70	—	—	6AD4 ⊙
Tuning Indicator ♦	Target voltage = 150 (Ray control = +75 volts, shadow = 0°) (Ray control = +8 volts, shadow = 90°)										6AD6-G
Class A Amplifier	25.0	—	—	250	3.7	19,000‡	325	6.0	—	—	6AD7-G
	16.5	250	6.5†	250	34†	80,000‡	2,500	—	7,000	3.2	
Class A Amplifier	2.0	85	2.3	250	6.7	1,000,000	1,100	—	—	—	6AD8
Class A Amplifier	15.0	—	—	95	7.0	3,500	1,200	4.2	—	—	6AE5-GT
Class A Amplifier	1.5	—	—	250	6.5	25,000‡	1,000	25	—	—	6AE6-G
	1.5	—	—	250	4.5	35,000‡	950	33	—	—	



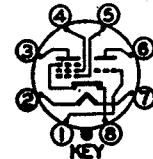
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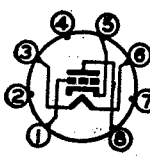
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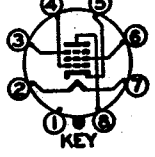
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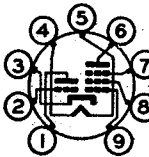
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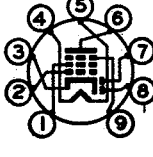
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8N



9AT



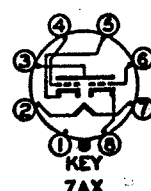
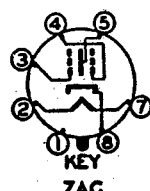
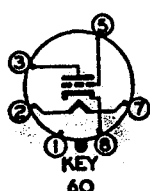
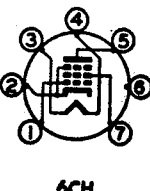
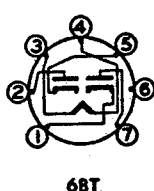
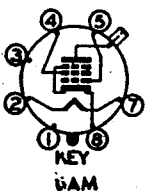
9T

CHARACTERISTICS

Tube Type	Classification by Construction	Base Connections	Out-line Dwg	Type Cathode	Fila-ment Volts	Fila-ment Amp	Max Plate Volts	Max Screen Volts	Capacitance in Micromicrofarads		
									Input	Out-put	Grid-plate
6AE7-GT	Twin-Input Triode	7AX	9-11	Htr	6.3	0.5	300	—			
<i>6AE8</i>	Triode-Hexode Converter	8DU	T-X	Htr	6.3	0.3	250	100	Osc $E_{g1} = 10$ peak $R_{g1} = 50,000$ ohms		
<i>6AF4</i>	UHF Triode-Oscillator	7DK	5-2	Htr	6.3	0.225	150	—	2.2▲	0.45▲	1.9▲
6AF5-G	Low-Mu Triode	6Q	12-7	Htr	6.3	0.3	180	—	—	—	—
6AF6-G	Twin Electron-Ray Indicator	7AG	9-1 or 9-36	Htr	6.3	0.15	—	Max target voltage = 250 Min target voltage = 125			
<i>6AG5</i>	Sharp-Cutoff R-F Pentode	7BD	5-2	Htr	6.3	0.3	300	150	Pentode Connection		
							300	—	Triode Connection (G ₂ & P tied)		
6AG7	Power Amplifier Pentode	8Y	8-6	Htr	6.3	0.65	300	300	13	7.5	0.06♣
<i>6AH6</i>	Sharp-Cutoff R-F Pentode	7BK	5-2	Htr	6.3	0.45	300	150	Pentode Connection		
									Triode Connection (G ₂ , G ₃ & P tied)		
6AH7-GT	Medium-Mu Twin-Triode	8BE	9-7	Htr	6.3	0.3	180	—	—	—	—
<i>6AJ5</i>	Sharp-Cutoff R-F Pentode	7BD	5-1	Htr	6.3	0.175	180	90	4.0	2.8	0.02♣
6AJ7	R-F Pentode	8N	8-1	Htr	6.3	0.45	300	150	11	5	0.015♣
<i>6AK5</i>	Sharp-Cutoff R-F Pentode	7BD	5-1	Htr	6.3	0.175	180	140	4.0	2.8	0.02♣
<i>6AK6</i>	Power Amplifier Pentode	7BK	5-2	Htr	6.3	0.15	300	250	3.6▲	4.2▲	0.12▲
6AK7	Power Amplifier Pentode	8Y	8-6	Htr	6.3	0.65	300	300	13	7.5	0.06♣
<i>6AL5</i>	Twin Diode	6BT	5-1	Htr	6.3	0.3	Tube Voltage Drop: ♣ 10 v at 60 ma d-c				
6AL6-G	Beam Power Amplifier	6AM	16-4	Htr	6.3	0.9	350	300	—	—	—
6AL7-GT	Electron-ray Indicator	8CH	9-7 or 9-39	Htr	6.3	0.15	—	Max target voltage = 365 Min target voltage = 220			
<i>6AM5</i>	Power Amplifier Pentode	6CH	5-2	Htr	6.3	0.2	250	250	Single Tube 2 tubes, push-pull		

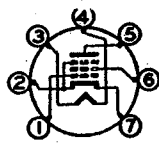
▲ Without external shield. †Zero signal. ‡Plate-to-plate.
♣ Per section. #Conversion transconductance.

§Approximate. Type designations of metal tubes are shown in bold-face type.
♣ Maximum. Type designations of miniature tubes are shown in italics.



AND RATINGS

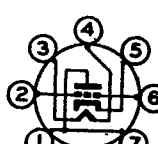
Service	Neg Grid Volts	Screen Volts	Screen Milli-amperes	Plate Volts	Plate Milli-amperes	R _p , Ohms	G _m , μmhos	μ Factor	Load for Rated Output, Ohms	Power Output, Watts	Tube Type
Class A \clubsuit Amplifier	13.5	—	—	250	5	9,300	1,500	14	—	—	6AE7-GT
Converter	0.0	75	3.4	250	4.5	700,000	780 #	E _b (Triode Osc) = 100 I _b (Triode) = 4.5 ma			6AE8
Class A Amplifier	R _k = 150	—	—	80	16	2,270	6,600	15	—	—	6AF4
Class A Amplifier	18.0	—	—	180	7.0	4,900	1,500	7.4	—	—	6AF5-G
Tuning Indicator \clubsuit	Target voltage = 250 (Ray control +155 volts, shadow = 0°) Ray control = 0 v, shadow = 100°, target current§ = 1.9 ma										6AF6-G
Class A Amplifier	R _k = 180	150	2.0	250	6.5	800,000§	5,000	—	—	—	6AG5
Class A Amplifier	R _k = 820	—	—	250	5.5	10,000	3,800	42	—	—	6AG5
Class A Amplifier	3.0	150	7.0†	300	30†	130,000§	11,000	—	10,000	3.0	6AG7
Class A Amplifier	R _k = 160	150	2.5	300	10.0	500,000§	9,000	—	—	—	6AH6
Class A Amplifier	R _k = 160	—	—	150	12.5	3,600§	11,000	40	—	—	6AH6
Class A Amplifier \clubsuit	6.5	—	—	180	7.6	8,400	1,900	16	—	—	6AH7-GT
Class A Amplifier	1.0	28	1.0	28	2.7	100,000§	2,500	—	—	—	6AJ5
Class A Amplifier	R _k = 160	150	2.5	300	10	1,000,000§	9,000	—	—	—	6AJ7
Class A Amplifier	R _k = 180	120	2.4	180	7.7	500,000§	5,100	—	—	—	6AK5
Class A Amplifier	R _k = 180	120	2.5	120	7.5	300,000§	5,000	—	—	—	6AK5
Class A Amplifier	9.0	180	2.5†	180	15†	200,000	2,300	—	10,000	1.1	6AK6
Class A Amplifier	3.0	150	7.0†	300	30†	130,000	11,000	—	10,000	3.0	6AK7
Half-Wave Rectifier	Max d-c output current per plate = 9 ma; max peak inverse voltage = 330 volts; max rms supply voltage per plate = 117 volts; max peak current per plate = 54 ma										6AL5
Class A Amplifier	14.0	250	5.0†	250	72.0†	22,500	6,000	—	2,500	6.5	6AL6-G
FM/AM Tuning Indicator	Target voltage = 315 volts; cathode resistor = 3,300 ohms; grid voltage = 0 volts; pin 6 electrode controls top left quarter of fluorescent area, pin 4 electrode controls top right quarter of fluorescent area, and pin 5 electrode controls bottom half of fluorescent area when the tube is mounted horizontally with a plane passing through pins 4 and 8 vertical and with pin 4 on top.										6AL7-GT
Class A Amplifier	13.5	250	2.4	250	16	130,000	2,600	—	16,000	1.4	6AM5
Class AB ₁ Amplifier	19.0	250	1.3†	250	10†	—	—	—	20,000†	4.8	6AM5



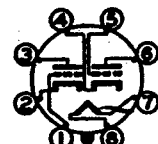
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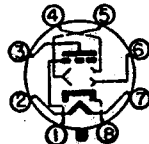
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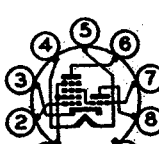
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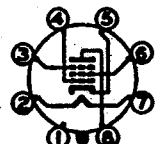
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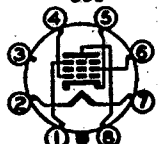
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8DU



8N



8Y

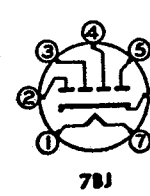
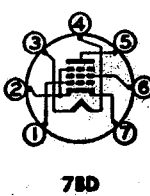
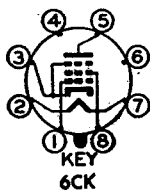
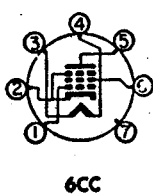
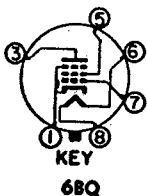
CHARACTERISTICS

Tube Type	Classification by Construction	Base Connections	Out-line Dwg	Type Cathode	Fila-ment Volts	Fila-ment Amp	Max Plate Volts	Max Screen Volts	Capacitance in Micromicrofarads		
									Input	Out-put	Grid-plate
<i>6AM6</i>	Sharp-Cutoff R-F Pentode	7DB	5-2	Htr	6.3	0.3	300	250	Pentode Connection Triode Connection (G ₂ & P tied)		
<i>6AN5</i>	Beam Power Amplifier	7BD	5-2	Htr	6.3	0.45	120	120	9.0	4.8	0.075 ♣
<i>6AN6</i>	Quadruple Diode	7BJ	5-2	Htr	6.3	0.2	—	Tube Voltage Drop: ♣ 9.0 v at 6.6 ma			
<i>6AN7</i>	Triode-Hexode Converter	9Q	6-3	Htr	6.3	0.23	250	125	Osc I _{g1} = 0.35 ma R _{g1} = 22,000 ohms		
<i>6AQ5</i>	Beam Power Amplifier	7BZ	5-3	Htr	6.3	0.45	250	250	7.6 ▲	6.0 ▲	0.35 ▲
<i>6AQ6</i>	Duplex-Diode High-Mu Triode	7BT	5-2	Htr	6.3	0.15	300	—	1.7	1.5	1.8
<i>6AQ7-GT</i>	Duplex-Diode High-Mu Triode	8CK	9-11 or 9-41	Htr	6.3	0.3	250	—	—	—	—
<i>6AR5</i>	Power Amplifier Pentode	6CC	5-3	Htr	6.3	0.4	250	250	—	—	—
<i>6AR6</i>	Beam Power Amplifier	6BQ	T-X	Htr	6.3	1.2	630	315	11.0 ▲	7.0 ▲	0.8 ▲ ♣
<i>6AR7-GT</i>	Twin-Diode, Remote-Cutoff Pentode	7DE	T-X	Htr	6.3	0.3	300	125	5.5 ▲	7.5 ▲	0.003 ▲ ♣
<i>6AS5</i>	Beam Power Amplifier	7CV	5-3	Htr	6.3	0.8	150	117	12 ▲	6.2 ▲	0.6 ▲
<i>6AS6</i> <i>6AS6-W</i>	Dual-Control R-F Pentode	7CM	5-1	Htr	6.3	0.175	180	140	4.0	3.0	0.02 ♣
<i>6AS7-G</i>	Low-Mu Twin Triode Power Amplifier	8BD	16-3	Htr	6.3	2.5	250	—	—	—	—
<i>6AT6</i>	Duplex-Diode High-Mu Triode	7BT	5-2	Htr	6.3	0.3	300	—	2.2 ▲	0.8 ▲	2.0 ▲
<i>6AU5-GT</i>	Beam Power Amplifier	6CK	9-41	Htr	6.3	1.25	450	200	11.3 ▲	7.0 ▲	0.5 ▲
<i>6AU6</i>	Sharp-Cutoff R-F Pentode	7BK	5-2	Htr	6.3	0.3	300	150	Pentode Connection Triode Connection (G ₂ , G ₃ , & P tied)		
<i>6AV5-GT</i>	Beam Power Amplifier	6CK	9-11 or 9-41	Htr	6.3	1.2	550 ‡	200	14 ▲	7.0 ▲	0.7 ▲
<i>6AV6</i>	Duplex-Diode High-Mu Triode	7BT	5-2	Htr	6.3	0.3	300	—	2.2	1.2	2.0

▲ Without external shield. †Zero signal. □ Absolute maximum rating. *Minimum.
 — The duration of the pulse voltage must not exceed 15 percent of one scanning cycle.

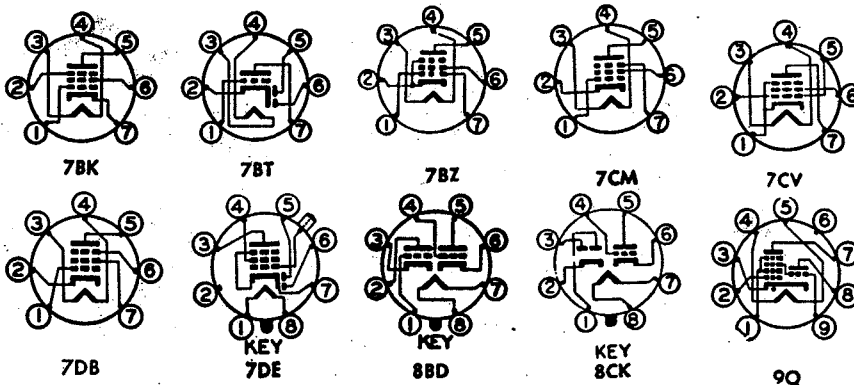
§ Approximate. ♣ Maximum.
 ‡ Plate supply voltage. ♠ Per section.

Type designations of miniature tubes are shown in italics.



AND RATINGS

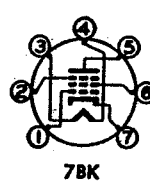
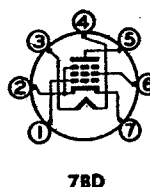
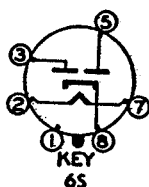
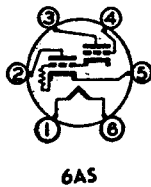
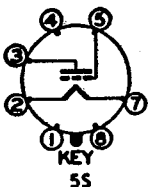
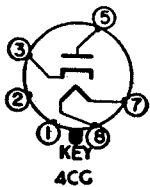
Service	Neg Grid Volts	Screen Volts	Screen Milli-amperes	Plate Volts	Plate Milli-amperes	R _p ' Ohms	G _m ' μmhos	μ Factor	Load for Rated Output, Ohms	Power Output, Watts	Tube Type
Class A Amplifier	2.0	250	2.5	250	10	1,000,000§	7,500	—	—	—	6AM6
Class A Amplifier	2.0	—	—	250	12.5	7,500§	9,300	70	—	—	
Class A Amplifier	R _k = 120	120	12	120	35	12,500§	8,000	—	2,500	1.3	6AN5
Half-Wave Rectifier	Max d-c output current per plate = 8.0 ma; max peak inverse voltage = 210 volts; rms supply voltage per plate = 75 volts; max peak current per plate = 45 ma										6AN6
Converter	2.0	85	3.0	250	3.0	1,000,000*	750 #	E _b (Triode Osc) = 250 thru 33,000 ohms I _b (Triode) = 5.1 ma			6AN7
Class A Amplifier	8.5 12.5	180 250	3.0† 4.5†	180 250	29.0† 45.0†	58,000§ 52,000§	3,700 4,100	— —	5,500 5,000	2.0 4.5	6AQ5
Class A Amplifier	3.0 1.0	— —	— —	250 100	1.0 0.8	58,000 61,000	1,200 1,150	70 70	— —	— —	6AQ6
Class A Amplifier	2.0 1.0	— —	— —	250 100	2.3 1.1	44,000§ 64,000§	1,600 1,250	70 79	— —	— —	6AQ7-GT
Class A Amplifier	18.0 16.5	250 250	5.5† 5.7†	250 250	32† 34†	68,000 65,000	2,300 2,400	— —	7,600 7,000	3.4 3.2	6AR5
Class A Amplifier	36.0	300	4.0	300	58.0	22,000	4,300	—	—	—	6AR6
Class A Amplifier	2.0	100	1.8	250	7.0	1,200,000	2,500	—	—	—	6AR7-GT
Class A Amplifier	8.5	110	2.0†	150	35†	—	5,600	—	4,500	2.2	6AS5
Class A Amplifier	2.0 2.0	120 120	3.5 4.8	120 120	5.2 3.6	110,000§ —	3,200 1,850	E _{cs} = 0 volts E _{cs} = -3 volts			6AS6 6AS6-W
D-C Amplifier ♣	R _k = 250	—	—	135	125	280	7,000	2.0	—	—	6AS7-G
Class A Amplifier	3.0 1.0	— —	— —	250 100	1.0 0.8	58,000 54,000	1,200 1,300	70 70	— —	— —	6AT6
Horizontal Deflection Amplifier	Max positive pulse plate voltage _s = 5,000 volts; max plate dissipation = 10 watts; max screen input = 2.5 watts; max d-c plate current = 100 ma										6AU5-GT
Class A Amplifier	R _k = 68	150	4.3	250	10.6	1,000,000§	5,200	—	—	—	6AU6
Class A Amplifier	R _k = 150	100	2.1	100	5.0	500,000§	3,900	—	—	—	
Class A Amplifier	R _k = 330	—	—	250	12.2	—	4,800	36	—	—	
Horizontal Deflection Amplifier	22.5	150	2.1	250	55	—	5,500	—	—	—	6AV5-GT
Max positive pulse plate voltage _s = 5,500 volts; max plate dissipation = 11 watts; max screen dissipation = 2.5 watts; max d-c plate current = 100 ma											
Class A Amplifier	2.0 1.0	— —	— —	250 100	1.2 0.5	62,500 80,000	1,600 1,250	100 100	— —	— —	6AV6



CHARACTERISTICS

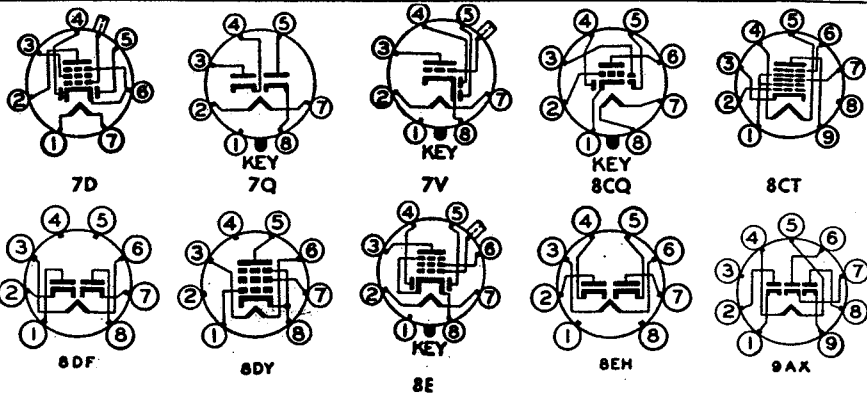
Tube Type	Classification by Construction	Base Connections	Out-line Dwg	Type Cathode	Fila-ment Volts	Fila-ment Amp	Max Plate Volts	Max Screen Volts	Capacitance in Micromicrofarads		
									Input	Out-put	Grid-plate
6AW7-GT	Duplex-Diode, High-Mu Triode	8CQ	9-16	Htr	6.3	0.3	300	—	—	—	—
6AX4-GT	Half-Wave High-Vacuum Rectifier	4CG	9-41	Htr	6.3	1.2	Tube Voltage Drop: 32 volts at 250 ma d-c				
6AX5-GT	Full-Wave, High-Vacuum Rectifier	6S	9-41	Htr	6.3	1.2	Tube Voltage Drop: \clubsuit 50 v at 125 ma d-c				
6AX6-G	Full-wave High-vacuum Rectifier	7Q	14-3	Htr	6.3	2.5	Tube Voltage Drop: \clubsuit 21 v at 250 ma d-c				
6AZ5 \circledast	Twin Diode	8DF	3-1	Htr	6.3	0.15	Tube Voltage Drop: \clubsuit 10 volts at 15 ma d-c				
6AZ6 \circledast	Twin Diode	8EH	T-X	Htr	6.3	0.15	Tube Voltage Drop: \clubsuit 3.5 volts at 8 ma d-c				
6B4-G	Power Amplifier Triode	5S	16-3	Fil	6.3	1.0	325	—	Single tube 2 tubes, Push-pull		
6B5	Direct-Coupled Power Amplifier Triode	6AS	14-1	Htr	6.3	0.8	300	300	—	—	—
6B6-G	Duplex Diode High-Mu Triode	7V	12-8	Htr	6.3	0.3	250	—	—	—	—
6B7	Duplex-Diode Remote-cutoff Pentode	7D	12-6	Htr	6.3	0.3	300	125	3.5 \blacktriangle	9.5 \blacktriangle	.007 \clubsuit
6B8 6B8-G 6B8-GT	Duplex Diode Remote-cutoff Pentode	8E	8-4 12-8 9-20	Htr	6.3	0.3	300	125	6.0 3.6 4.5	9.0 9.5 10.0	.005 \clubsuit .01 \clubsuit 0.005 \clubsuit
6BA5 \circledast	Sharp-Cutoff Pentode	8DY	3-1	Htr	6.3	0.15	150	140	3.4	3.6	0.065
6BA6	Remote-Cutoff R-F Pentode	7BK	5-2	Htr	6.3	0.3	300	150	5.5	5.5	0.0035 \clubsuit
6BA7	Pentagrid Converter	8CT \blacktriangledown	6-3	Htr	6.3	0.3	300	100	Osc $I_{g1} = 0.35$ ma $R_{g1} = 20,000$ ohms		
6BC5	Sharp-Cutoff R-F Pentode	7BD	5-2	Htr	6.3	0.3	300	150	Pentode Connection		
							300	—	Triode Connection (G2 & P tied)		
6BC7	Triple Diode	9AX	6-2	Htr	6.3	0.45	Avg Diode Current: (Diode 1 or 3) 35 ma @ +5 v d-c				

||Input plate \S Approximate. \dagger Zero signal. \blackspadesuit Per Section.
|Plate-to-plate. \clubsuit Maximum. #Conversion Transconductance.
 \blacktriangledown Grids 2 and 4 are screen. Grid 3 is signal-input grid.
 \circledast Designates subminiature type. Type designations of metal tubes are shown in bold-face type.
Type designations of miniature tubes are shown in italics.



AND RATINGS

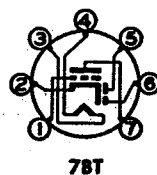
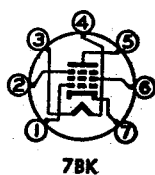
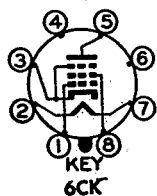
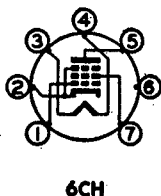
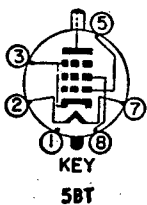
Service	Neg Grid Volts	Screen Volts	Screen Milli-amperes	Plate Volts	Plate Milli-amperes	R _p , Ohms	G _m , μmhos	μ Factor	Load for Rated Output, Ohms	Power Output, Watts	Tube Type
Class A Amplifier	0.0	—	—	100	1.4	—	1,200	80	—	—	6AW7-GT
T-V Damp-er Service	Max d-c output current = 125 ma; max peak inverse voltage _s = 4,000 volts; max peak current = 600 ma										6AX4-GT
Full-Wave Rectifier	Max d-c output current = 125 ma; max peak inverse voltage = 1,250 volts; rms supply voltage per plate = 350 volts; max peak current per plate = 375 ma										6AX5-GT
Full-Wave Rectifier T-V Damp-er Service	Max d-c output current = 250 ma; max peak inverse voltage = 1,250 volts; rms supply voltage per plate = 350 volts; max peak current per plate = 600 ma Max d-c output current per plate = 125 ma; max peak inverse voltage _s = 2,000 volts; max peak current per plate = 600 ma										6AX6-G
Half-Wave Rectifier	Max d-c output current per plate = 4 ma; max peak inverse voltage = 420 volts; max rms supply voltage per plate = 150 volts; max peak current per plate = 24 ma										6AZ5 ●
Full-Wave Rectifier	Max d-c output current = 20 ma; max peak inverse voltage = 450 volts; max rms supply voltage per plate = 200 volts; max peak current per plate = 50 ma										6AZ6 ●
Class A Amplifier Class AB ₁ Amplifier	45 68	— —	— —	250 325	60† 80†	800 —	5,250 —	4.2 —	2,500 3,000 ‡	3.2 15.0	6B4G
Class A Amplifier	0.0	300	8.0	300	45.0	24,000§	2,400	—	7,000	4.0	6B5
Class A Amplifier	2.0	—	—	250	0.9	91,000	1,100	100	—	—	6B6-G
Class A Amplifier	3.0	125	2.3	250	9.0	600,000§	1,125	—	—	—	6B7
Class A Amplifier	3.0	125	2.3	250	10.0	600,000§	1,325	—	—	—	6B8 6B8-G 6B8-GT
Class A Amplifier	R _k = 270	100	2.0	100	5.5	175,000	2,150	—	—	—	6BA5 ●
Class A Amplifier	R _k = 68	100	4.2	250	11.0	1,000,000§	4,400	—	—	—	6BA6
	R _k = 68	100	4.4	100	10.8	250,000§	4,300	—	—	—	
Converter	1.0	100	10.0	250	3.8	1,000,000§	950 #	—	—	—	6BA7
Class A Amplifier	R _k = 180	150	2.1	250	7.5	800,000§	5,700	—	—	—	6BC5
	R _k = 100	125	2.4	125	8.0	500,000§	6,100	—	—	—	
	R _k = 180	100	1.4	100	4.7	600,000§	4,900	—	—	—	
Class A Amplifier	R _k = 820	—	—	250	6.0	9,000§	4,400	40	—	—	6BC7
	R _k = 330	—	—	180	8.0	6,000§	6,000	42	—	—	
Half-Wave Rectifier	Max d-c output current per plate = 12 ma										6BC7



CHARACTERISTICS

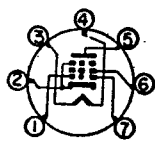
Tube Type	Classification by Construction	Base Connections	Out-line Dwg	Type Cathode	Fila-ment Volts	Fila-ment Amp	Max Plate Volts	Max Screen Volts	Capacitance in Micromicrofarads		
									Input	Out-put	Grid-plate
6BD5-GT	Beam Power Amplifier	6CK	T-X	Htr	6.3	0.9	325	325	—	—	—
6BD6	Remote-Cutoff R-F Pentode	7BK	5-2	Htr	6.3	0.3	300	125	4.3	5.0	0.005 ♣
6BD7	Duplex-Diode, High-Mu Triode	9Z	6-3	Htr	6.3	0.23	300	—	—	—	—
6BE6	Pentagrid Converter	7CH ♥	5-2	Htr	6.3	0.3	300	100	{ Osc $I_{g1} = 0.5$ ma $R_{g1} = 20,000$ ohms }		
6BE7	Seven-Grid Limiter-Discriminator	9AA	6-3	Htr	6.3	0.2	250	100	$E_{c3} = 12$ volts RMS $E_{c5} = 12$ volts RMS		
6BF5	Beam Power Amplifier	7BZ	5-3	Htr	6.3	1.2	250	250	Pentode Connection Triode Connection (G2 & P tied)		
6BF6	Duplex-Diode Medium-Mu Triode	7BT	5-2	Htr	6.3	0.3	300	—	1.8	1.4	2.0
6BF7	Medium-Mu Twin Triode	8DG	3-2	Htr	6.3	0.3	110	—	2.0	1.6 ₁ 2.0 ₂	1.5
6BG6-G	Beam Power Amplifier	5BT	16A-1	Htr	6.3	0.9	700	350	11 ▲	6.5 ▲	0.65 ▲ ♣
6BG7	Medium-Mu Twin Triode	8DG	3-5	Htr	6.3	0.3	110	—	2.0	1.6 ₁ 2.0 ₂	1.5
6BH5	Remote-Cutoff R-F Pentode	9AZ	6-3	Htr	6.3	0.2	300	125	—	—	—
6BH6	Sharp-Cutoff R-F Pentode	7CM	5-2	Htr	6.3	0.15	300	150	5.4	4.4	0.0035 ♣
6BJ5	Power Amplifier Pentode	6CH	T-X	Htr	6.3	0.64	350	275	—	—	—
6BJ6	Remote-Cutoff R-F Pentode	7CM	5-2	Htr	6.3	0.15	300	150	4.5	5.5	0.0035 ♣
6BK5	Beam Power Amplifier	9BQ	6-3	Htr	6.3	1.2	250	250	13 ▲	5.0 ▲	0.6 ▲
6BK6	Duplex-Diode High-Mu Triode	7BT	5-3	Htr	6.3	0.3	300	—	—	—	—
6BK7	High-Frequency Twin Triode	9AJ	6-2	Htr	6.3	0.45	300	—	3.0 ▲	1.1 ₁ ▲ 1.0 ₂ ▲	1.9 ▲
6BL7-GT	Medium-Mu Twin Triode	8BD	9-41	Htr	6.3	1.5	500	—	5.0	3.4 ₁ 3.2 ₂	4.2 ₁ 4.0 ₂

♥ Grids 2 and 4 are screen. Grid 3 is signal-input grid.
 # Conversion Transconductance.
 ♣ Each section. † Zero Signal.
 1—Section 1. § Absolute maximum rating. § Approximate.
 2—Section 2. ♣ Maximum. ▲ Without external shield. ⊕ For both sections. ⚡ Plate supply voltage.
 ⚡—The duration of the pulse voltage must not exceed 15 percent of one scanning cycle.
 © Designates subminiature types. *Type designations of miniature tubes are shown in italics.*

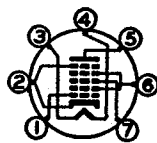


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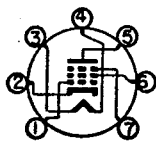
Service	Neg Grid Volts	Screen Volts	Screen Milli-amperes	Plate Volts	Plate Milli-amperes	R _p , Ohms	G _m , μmhos	μ Factor	Load for Rated Output, Ohms	Power Output, Watts	Tube Type
Horizontal Deflection Amplifier	Max positive pulse plate voltage ₃ = 4,000 volts; max plate dissipation = 10 watts; max screen dissipation = 3.0 watts; max d-c cathode current = 100 ma										6BD5-GT
Class A Amplifier	3.0 1.0	100 100	3 5	250 100	9 13	800,000 150,000	2,000 2,550	— —	— —	— —	6BD6
Class A Amplifier	3.0	—	—	250	1.0	58,000	1,200	70	—	—	6BD7
Converter	1.5 1.5	100 100	6.8 7.0	250 100	2.9 2.6	1,000,000 400,000	475 # 455 #	— —	— —	— —	6BE6
FM Limiter-Discriminator	4.4§	20§	1.5	250§	0.28	5,000,000	—	—	470000	—	6BE7
Class A Amplifier Vertical Deflection Amplifier	7.5	110	4†	110	49†	10,000	7,500	—	2,500	1.9	6BF5
Max positive pulse plate voltage ₃ = 700 volts; max plate dissipation = 5.0 watts; max screen dissipation = 1.25 watts											
Class A Amplifier	9.0	—	—	250	9.5	8,500	1,900	16	—	—	6BF6
Class A Amplifier ♠	R _k = 100	—	—	100	8.0	7,000	4,800	35	—	—	6BF7 ●
Horizontal Deflection Amplifier	Max positive pulse plate voltage ₃ = 6,000 volts; max plate dissipation = 20 watts; max screen dissipation = 3.2 watts; max d-c plate current = 100 ma										6BG6-G
Class A Amplifier ♠	R _k = 100	—	—	100	8.0	7,000	4,800	35	—	—	6BG7 ●
Class A Amplifier	2.5	100§	1.7	250	6.0	1,100,000	2,200	—	—	—	6BH5
Class A Amplifier	1.0 1.0	100 150	1.4 2.9	100 250	3.6 7.4	700,000 1,400,000	3,400 4,600	— —	— —	— —	6BH6
Class A Amplifier	5.0	250	5.5	250	35	40,000	10,500	—	7,000	4	6BJ5
Class A Amplifier	1.0 1.0	100 100	3.3 3.5	250 100	9.2 9.0	1,300,000 250,000	3,600 3,650	— —	— —	— —	6BJ6
Class A Amplifier	5.0	250	3.5†	250	35†	100,000	8,500	—	6,500	3.5	6BK5
Class A Amplifier	2.0 1.0	— —	— —	250 100	1.2 0.5	62,500 80,000	1,600 1,250	100 100	— —	— —	6BK6
Class A Amplifier ♠	R _k = 56 R _k = 120	— —	— —	150 100	18 9.0	4,700 6,100	8,500 6,100	40 37	— —	— —	6BK7
Vertical Deflection Amplifier ♠	9.0	—	—	250	40	2,150	7,000	15	—	—	6BL7-GT
Max positive pulse plate voltage ₃ = 2000 volts; max plate dissipation = 10 watts; max plate dissipation ⊕ = 12 watts; max d-c cathode current = 60 ma											



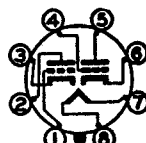
7BZ



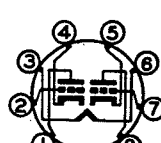
7CH



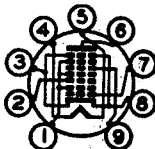
7CM



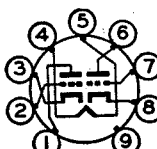
8BD



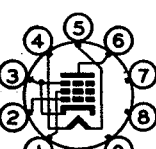
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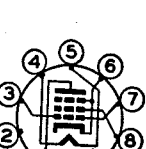
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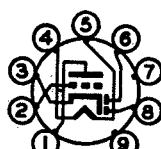
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9AZ



9BQ



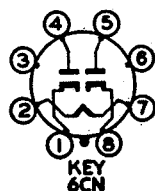
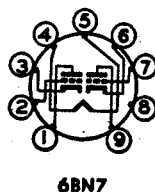
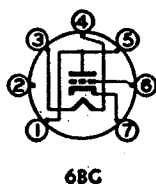
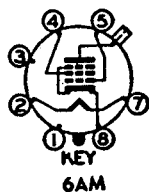
9Z

CHARACTERISTICS

Tube Type	Classification by Construction	Base Connections	Out-line Dwg	Type Cathode	Filament Volts	Filament Amp	Max Plate Volts	Max Screen Volts	Capacitance in Micromicrofarads		
									Input	Output	Grid-plate
<i>6BN6</i>	Gated-Beam Discriminator	7DF	5-3	Htr	6.3	0.3	300‡	100	E _{c1} = 1.25 volts RMS*		
<i>6BN7</i>	Double Triode	6BN7	6-3	Htr	6.3	0.75	400	—	Section 1 (Pins 6, 7, 9)		
							400		Section 2 (Pins 1, 2, 3)		
<i>6BQ6-GT</i>	Beam Power Amplifier	6AM	9-50	Htr	6.3	1.2	550‡	200	14▲	9.5▲	0.95▲
<i>6BR7</i>	Sharp-Cutoff R-F Pentode	9BC	6-2	Htr	6.3	0.15	300	125	4.25▲	4.0▲	0.01♣
<i>6BQ7</i>	High-Frequency Twin Triode	9AJ	6-2	Htr	6.3	0.4	250	—	2.55 ₁	1.30 ₁	1.15
<i>6BT6</i>	Duplex-Diode, High-Mu Triode	7BT	5-3	Htr	6.3	0.3	300	—	—	—	—
<i>6BU6</i>	Duplex-Diode Medium-Mu Triode	7BT	5-3	Htr	6.3	0.3	300	—	—	—	—
<i>6BV7</i>	Duplex-Diode Power Amplifier Pentode	9BU	6-3	Htr	6.3	0.8	250	250	11.5▲	9.5▲	0.5▲
<i>6BW6</i>	Beam Power Amplifier	9AM	6-3	Htr	6.3	0.45	315	285	—	—	—
<i>6BX6</i>	R-F Pentode	9AQ	6-3	Htr	6.3	0.3	250	250	—	—	—
<i>6BX7-GT</i>	Medium-Mu Twin Triode	8DB	9-41	Htr	6.3	1.5	500	—	4.4 ₁ ▲ 4.8 ₂ ▲	1.1 ₁ ▲ 1.2 ₂ ▲	4.2 ₁ ▲ 4.0 ₂ ▲
<i>6BY5-G</i>	Full-wave High-vacuum Rectifier	6CN	14-3	Htr	6.3	1.6	Tube Voltage Drop: † 32 v at 175 ma d-c				
<i>6C4</i>	Medium Mu Triode	6BG	5-2	Htr	6.3	0.15	300	—	1.8▲	1.3▲	1.6▲
							300	—			
<i>6C5</i> <i>6C5-GT</i>	Medium Mu Triode	6Q	8-1 9-12	Htr	6.3	0.3	300	—	3.0 4.4	11.0 12.0	2.0 2.2
<i>6C6</i>	Sharp-Cutoff Pentode	6F	12-2	Htr	6.3	0.3	300	125	5.0▲	6.5▲	0.007♣

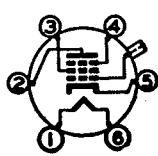
¹—Section 1. □ Absolute maximum rating. § Approximate. † Zero signal. * Minimum.
²—Section 2. ♣ Maximum. ▲ Without external shield. ⊕ For both sections. ‡ Plate supply voltage
 — The duration of the pulse voltage must not exceed 15 percent of one scanning cycle. ♠ Per section.

Type designations of metal tubes are shown in bold-face type.
 Type designations of miniature tubes are shown in italics.

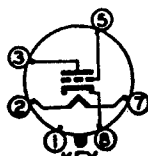


AND RATINGS

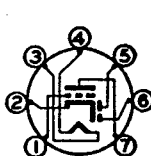
Service	Neg Grid Volts	Screen Volts	Screen Milli-amperes	Plate Volts	Plate Milli-amperes	R _p Ohms	G _m μmhos	μ Factor	Load for Rated Output, Ohms	Power Output, Watts	Tube Type
FM Limiter-Discriminator	R _k = 200 to 400	100	9.8	285§	0.49	—	—	—	330000	—	6BN6
Vertical Deflection Amplifier Class A Amplifier	15.0 1.0	— —	— —	250 120	24 5	2,200 14,000	5,500 2,000	12 28	— —	— —	6BN7
Horizontal Deflection Amplifier	22.5	150	2.1	250	55	—	5,500	—	—	—	6BQ6-GT
Class A Amplifier	3.0	100	0.6	250	2.1	2,500,000	1,250	—	—	—	6BR7
Class A Amplifier ♣	R _k = 220	—	—	150	9	5,800	6,000	35	—	—	6BQ7
Class A Amplifier	3.0 1.0	— —	— —	250 100	1.0 0.8	58,000 54,000	1,200 1,300	70 70	— —	— —	6BT6
Class A Amplifier	9.0	—	—	250	9.5	8,500	1,900	16	10,000	0.30	6BU6
Class A Amplifier	5.0	250	6.0†	250	38†	100,000§	10,000	—	8,000	4.0	6BV7
Class A Amplifier	13.0 12.5 8.5	225 250 180	2.2† 4.5† 3†	315 250 180	34† 45† 29†	77,000§ 52,000§ 58,000§	3,750 4,100 3,700	— — —	8,500 5,000 5,500	5.5 4.5 2.0	6BW6
Class A Amplifier	2.0	170	2.5	170	10	400,000	7,200	—	—	—	6BX6
Vertical Deflection Amplifier ♣	R _k = 390 0	— —	— —	250 100	42 80	1,300 —	7,600 —	10 —	— —	— —	6BX7-GT
Full-Wave Rectifier T-V Damp-er Service	Max d-c output current = 175 ma; max peak inverse voltage = 1400 volts; rms supply voltage per plate = 375 volts; max peak current per plate = 525 ma; Max d-c output current = 175 ma; max peak inverse voltage = 3,000 volts; max peak current per plate = 525 ma										6BY5-G
Class A Amplifier Class C Amplifier	8.5 0.0 27	— — —	— — —	250 100 300	10.5 11.8 25	7,700 6,250	2,200 3,100	17 19.5	— —	— 5.5§	6C4
Class A Amplifier	8.0	—	—	250	8.0	10,000	2,000	20	—	—	6C5 6C5-GT
Class A Amplifier	3.0	100	0.5	250	2.0	1,000,000*	1,225	—	—	—	6C6



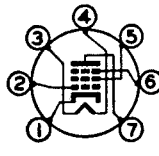
6F



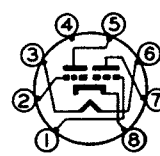
6Q



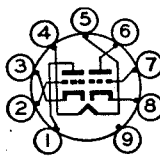
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7DF



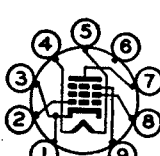
8DB



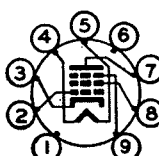
9AJ



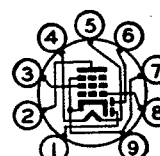
9AM



9AQ



9BC

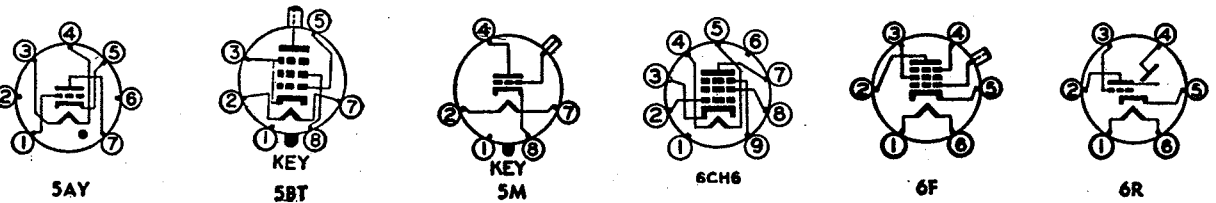


9BU

CHARACTERISTICS

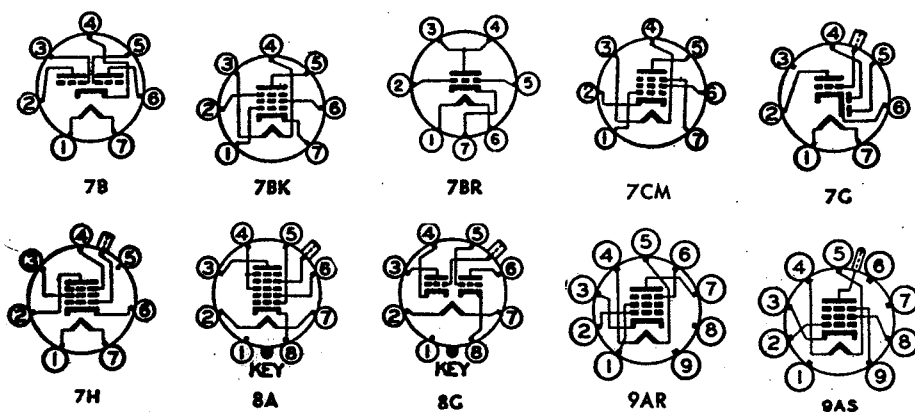
Tube Type	Classification by Construction	Base Connections	Out-line Dwg	Type Cathode	Fila-ment Volts	Fila-ment Amp	Max Plate Volts	Max Screen Volts	Capacitance in Micromicrofarads		
									Input	Out-put	Grid-plate
6C7	Duplex-Diode Medium-Mu Triode	7G	12-2	Htr	6.3	0.3	250	—	—	—	—
6C8-G	Medium-Mu Twin Triode	8G	12-8	Htr	6.3	0.3	250	—	—	—	—
6CB6	Sharp-Cutoff R-F Pentode	7CM	5-2	Htr	6.3	0.3	300	150	6.3▲	1.9▲	0.020▲♣
6CD6-G	Beam Power Amplifier	5BT	16A-1	Htr	6.3	2.5	700	175	26▲	10▲	1.0▲♣
6CG6	Remote-Cutoff Pentode	7BK	5-2	Htr	6.3	0.3	300	150	5.0	5.0	0.008♣
6CH6	R-F Pentode	6CH6	6-3	Htr	6.3	0.75	275	275	14▲	5.0▲	0.25▲♣
6CJ6	Power Amplifier Pentode	9AS	T-X	Htr	6.3	1.05	300	300	—	—	—
6CK6	Power Amplifier Pentode	9AR	6A-1	Htr	6.3	0.71	300	300	11.2▲	6.6▲	0.1♣▲
6D4	Gas Triode	5AY	5-2	Htr	6.3	0.25	Tube Voltage Drop:§ 16 v at 25 ma d-c				
6D6	Remote-Cutoff R-F Pentode	6F	12-2	Htr	6.3	0.3	300	100	4.7▲	6.5▲	0.007♣
6D7	Sharp-Cutoff Pentode	7H	12-2	Htr	6.3	0.3	300	125	5.2▲	6.8▲	0.01▲♣
6D8-G	Pentagrid Converter	8A♠	12-8	Htr	6.3	0.15	300	100	Osc I _{g1} = 0.4 ma R _{g1} = 50,000 ohms		
6E5	Electron-Ray Indicator	6R	9-26	Htr	6.3	0.3	250§	Max target voltage = 250 Min target voltage = 125			
6E6	Twin-Triode Power Amplifier	7B	14-1	Htr	6.3	0.6	250	—	Both Sections in Push-pull		
6E7	Remote-Cutoff R-F Pentode	7H	12-2	Htr	6.3	0.3	300	100	5.2▲	6.8▲	0.01▲
6F4	High-Frequency Triode (Acorn)	7BR	4-2	Htr	6.3	0.225	150	—	1.9▲	0.6▲	1.8▲
6F5 6F5-G 6F5-GT	High-Mu Triode	5M	8-4 12-8 9-17 or 9-47	Htr	6.3	0.3	300	—	—	—	—

*Minimum. §Approximate. ▲Without external shield. ♣Maximum. ♠Per section
 —The duration of the pulse voltage must not exceed 15 percent of one scanning cycle.
 Conversion transconductance. ‡Plate voltage supply †Zero signal.
 †Grids 3 and 5 are screen. Grid 4 is signal-input grid. ‡Plate-to-plate.



Service	Neg Grid Volts	Screen Volts	Screen Milli-am-peres	Plate Volts	Plate Milli-am-peres	R _p , Ohms	G _m , μ mhos	μ Factor	Load for Rated Output, Ohms	Power Output, Watts	Tube Type
Class A Amplifier	9.0	—	—	250	5.5	16,000	1,250	20	—	—	6C7
Class A Amplifier \clubsuit	4.5	—	—	250	3.2	22,500	1,600	36	—	—	6C8-G
Class A Amplifier	R _k = 180	150	2.8	200	9.5	600,000 \S	6,200	—	—	—	6CB8
Horizontal Deflection Amplifier	Max positive pulse plate voltage = 6,000 volts; max plate dissipation = 15 watts; max screen input = 3 watts; max d-c plate current = 170 ma										6CD6-G
Class A Amplifier	8.0	150	2.3	250	9.0	720,000	2,000	—	—	—	6CG6
Class A Amplifier	4.5	250	6.0	250	40	50,000	11,000	—	—	—	6CH6
Horizontal Deflection Amplifier	38.5	250	2.4	250	32	15,000	4,600	—	—	—	6CJ6
	Max positive pulse plate voltage = 7,000 volts; max plate dissipation = 8 watts; max screen dissipation = 4.5 watts; max plate plus screen dissipation = 10 watts; max d-c cathode current = 180 ma.										
Class A Amplifier	5.5	250	5	250	36	130,000	10,000	—	—	—	6CK6
Relay Control	Max d-c cathode current = 25 ma; max voltage between elements = 450 volts; max peak cathode current = 100 ma										6D4
Class A Amplifier	3.0	100	2.0	250	8.2	800,000 \S	1,600	—	—	—	6D6
Class A Amplifier	3.0	100	0.5	250	2.0	1,000,000*	1,225	—	—	—	6D7
Converter	3.0	100	2.6	250	3.5	400,000 \S	550 #	E _{c2} (Osc Plate) = 250 thru 20,000 ohms I _{c2} = 4.3 ma		—	6D8-G
Tuning Indicator	Plate voltage = 250 thru 1 meg, Target voltage = 250 (E _g = -8 v, Shadow = 0°) (E _g = 0 v, Shadow = 90°, Plate current = 0.24 ma, Target current \S = 4 ma)										6E5
Class A Amplifier	27.5	—	—	250	18.0 \dagger	3,500	1,700	6.0	14,000	1.6	6E6
Class A Amplifier	3.0	100	2.0	250	8.2	800,000	1,600	—	—	—	6E7
Class A Amplifier	R _k = 105	—	—	80	13.0	2,900	5,800	17	—	—	6F4
Class A Amplifier	2.0 1.0	— —	— —	250 100	0.9 0.4	66,000 \S 85,000 \S	1,500 1,150	100 100	— —	— —	6F5 6F5-G 6F5-GT

Type designations of metal tubes are shown in bold-face type. Type designations of miniature tubes are shown in italics.



CHARACTERISTICS

Tube Type	Classification by Construction	Base Connections	Out-line Dwg	Type Cathode	Filament Volts	Filament Amp	Max Plate Volts	Max Screen Volts	Capacitance in Micromicrofarads		
									Input	Output	Grid-plate
6F6 6F6-G 6F6-GT	Power Amplifier Pentode	7S	8-6 14-3 9-15	Htr	6.3	0.7	375	285	Single Tube 2 Tubes, Push-pull		
6F7	Triode-Remote-Cutoff Pentode	7E	12-6	Htr	6.3	0.3	250 100	100 —	Pentode section Triode section		
6F8-G	Medium-Mu Twin Triode	8G	12-8	Htr	6.3	0.6	300	—	—	—	—
6G6-G 6G6-GT	Power Amplifier Pentode	7S	12-7 9-11 or 9-41	Htr	6.3	0.15	300 300	300 —	Pentode connection Triode connection (G ₂ & P tied)		
6H4-GT	Diode	5AF	9-11	Htr	6.3	0.15	—	—	—	—	—
6H6 6H6-GT	Twin Diode	7Q	8-5 9-11	Htr	6.3	0.3	Tube Voltage Drop: ♦ 11 v at 16 ma d-c				
6J4	High-Frequency Triode	7BQ	5-2	Htr	6.3	0.4	150	—	—	—	—
6J5 6J5-GT 6J5-WGT	Medium-Mu Triode	6Q	8-1 9-12	Htr	6.3	0.3	300	—	3.4 4.2	3.6 5.0	3.4 3.8
6J6 6J6-W	Medium-Mu Twin Triode	7BF	5-2	Htr	6.3	0.45	300 300	— —	2.6	1.6 ₁ 1.0 ₂	1.5
6J7 6J7-G 6J7-GT	Sharp-Cutoff Pentode	7R	8-4 12-8 9-18	Htr	6.3	0.3	300 250	125 —	Pentode connection Triode connection (G ₂ , G ₃ & P tied)		
6J8-G	Triode-Heptode Converter	8H	12-8	Htr	6.3	0.3	300	100	Osc I _{g1} = 0.4 ma R _{g1} = 50,000 ohms		
6K4 ⊙	Medium-Mu Triode	6K4	3-2	Htr	6.3	0.15	250	—	2.4 ▲	0.8 ▲	2.4 ▲
6K5-G 6K5-GT	High-Mu Triode	5U	12-8 9-17	Htr	6.3	0.3	250	—	2.4 ▲	3.6 ▲	2.0 ▲
6K6-GT	Power Amplifier Pentode	7S	9-11 or 9-41	Htr	6.3	0.4	315 315	285 285	Single Tube 2 Tubes, Push-pull		

†Zero signal.
—Section 1.

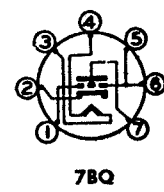
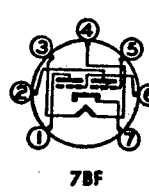
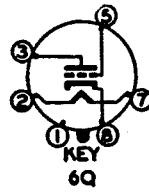
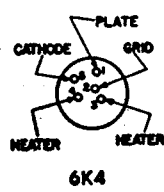
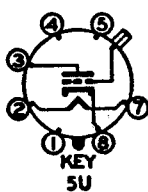
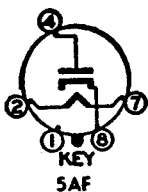
⊕Both sections.
—Section 2.

*Minimum.
‡Plate-to-plate.

§Approximate.

Conversion Transconductance

♦ Per section.

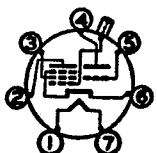


AND RATINGS

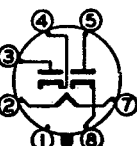
Service	Neg Grid Volts	Screen Volts	Screen Milli-amperes	Plate Volts	Plate Milli-amperes	R _p , Ohms	G _m , μmhos	μ Factor	Load for Rated Output, Ohms	Power Output, Watts	Tube Type
Class A Amplifier Class A Amplifier	20.0	285	7.0†	285	38.0†	78,000§	2,550	—	7,000	4.8	6F6 6F6-G 6F6-GT
	16.5	250	6.5†	250	34†	80,000§	2,500	—	7,000	3.2	
	24	285	12†	315	62†	—	—	—	10,000	11	
Class A Amplifier Class A Amplifier	3.0	100	1.5	250	6.5	850,000	1,100	—	—	—	6F7
	3.0	—	—	100	3.5	16,000	500	8.0	—	—	
Class A Amplifier ▲	8.0	—	—	250	9.0	7,700§	2,600	20	—	—	6F8-G
Class A Amplifier Class A Amplifier	9.0	180	2.5†	180	15.0†	175,000	2,300	—	10,000	1.1	6G6-G 6G6-GT
	12.0	—	—	180	11.0†	4,750	2,000	9.5	12,000	0.25	
Half-Wave Rectifier	Max d-c output current = 4 ma; max rms supply voltage = 100 volts; max peak current = 18 ma										6H4-GT
Half-Wave Rectifier	Max d-c output current per plate = 8 ma; max peak inverse voltage = 420 volts; max rms supply voltage per plate = 150 volts; max peak current per plate = 48 ma										6H6 6H6-GT
Class A Amplifier	R _k = 100	—	—	150	15	4,500	12,000	55	—	—	6J4
Class A Amplifier	8.0	—	—	250	9.0	7,700§	2,600	20	—	—	6J5 6J5-GT 6J5-WGT
	0.0	—	—	90	10	6,700§	3,000	20	—	—	
Class A Amplifier ▲ Class C Amplifier	R _k = 50 ⊕	—	—	100	8.5	7,100	5300	38	—	—	<i>6J6</i> 6J6-W
	10.0	—	—	150	30	Input Signal = 0.35 watt§				3.5§	
Class A Amplifier Class A Amplifier	3.0	100	0.5	250	2.0	1,000,000*	1,225	—	—	—	6J7 6J7-G 6J7-GT
	3.0	100	0.5	100	2.0	1,000,000	1,135	—	—	—	
	8.0	—	—	250	6.5	10,500	1,900	20	—	—	
Converter	3.0	100	3.5	250	1.3	2,500,000§	290 #	E _b (Triode Osc) = 250 thru 20,000 ohms I _b (Triode) = 5.8 ma			6J8-G
Class A Amplifier	R _k = 680	—	—	200	11.5	4,650	3,450	16	—	—	6K4 ⊙
Class A Amplifier	3.0	—	—	250	1.1	50,000§	1,400	70§	—	—	6K5-G 6K5-GT
Class A Amplifier Class A Amplifier	21	250	4.0†	315	25.5†	110,000§	2,100	—	9,000	4.5	6K6-GT
	18	250	5.5†	250	32†	90,000§	2,300	—	7,600	3.4	
	7	100	1.6†	100	9†	104,000§	1,500	—	12,000	0.35	
	25.5	285	9†	285	55†	—	—	—	12,000	10.5	

▲ Without external shield.

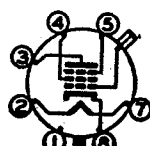
⊙ Designates sub-miniature types.
Type designations of metal tubes are shown in bold-face type.
Type designations of miniature tubes are shown in italics.



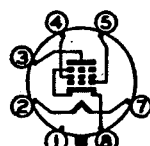
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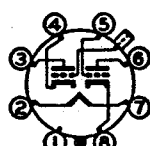
7Q



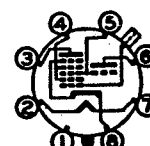
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7S



8C

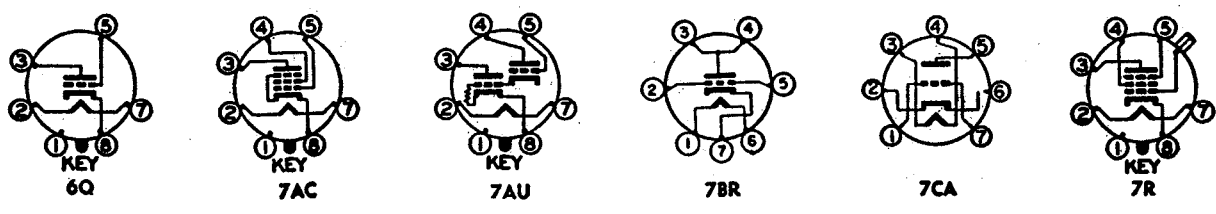


8H

CHARACTERISTICS

Tube Type	Classification by Construction	Base Connections	Out-line Dwg	Type Cathode	Filament Volts	Filament Amp	Max Plate Volts	Max Screen Volts	Capacitance in Micromicrofarads		
									Input	Output	Grid-plate
6K7 6K7-G 6K7-GT	Remote-Cutoff R-F Pentode	7R	8-4 12-8 9-18	Htr	6.3	0.3	300	125	7.0 5.0 4.6	12.0 12.0 12.0	0.005 ♣ 0.007 ♣ 0.005 ♣
6K8 6K8-G 6K8-GT	Triode-Hexode Converter	8K♥	8-2 12-8 9-24	Htr	6.3	0.3	300	150	Osc $I_{g1} = 0.15$ ma $R_{g1} = 50,000$ ohms		
6L4	Medium-Mu Triode (Acorn)	7BR	4-2	Htr	6.3	0.225	500		0.5▲	1.8▲	1.6▲
6L5-G	Medium-Mu Triode	6Q	12-7	Htr	6.3	0.15	250	—	3.0	5.0	2.7
6L6 6L6-G 6L6-GA	Beam Power Amplifier	7AC	10-1 16-3 14-3	Htr	6.3	0.9	360	270 250	Single Tube Single Tube 2 Tubes, Push-pull 2 Tubes, Push-pull 2 Tubes, Push-pull Triode Connection (G2 & P Tied)		
6L7 6L7-G	Pentagrid Mixer	7T	8-4 12-8	Htr	6.3	0.3	300 300	100 150	— — — E_{g3} (Injection) = 18 v peak*		
6M5	Power Amplifier Pentode	9N	6A-1	Htr	6.3	0.71	300	100	Single Tube 2 Tubes, Push-pull		
6N4	Medium—Mu Triode	7CA	5-1	Htr	6.3	0.2	180	—	3.0	1.6	1.1
6N6-G	Direct-Coupled Power Amplifier Triode	7AU	14-3	Htr	6.3	0.8	300	300	— — —		
6N7 6N7-G 6N7-GT	Twin Triode Power Amplifier	8B	8-6 14-3 9-11	Htr	6.3	0.8	300	— —	Both Sections in Push-pull Both Sections in Parallel		
6N8	Duplex-Diode Pentode	9T	6-3	Htr	6.3	0.3	250	250	— — —		
6P5-GT	Medium-Mu Triode	6Q	9-11	Htr	6.3	0.3	250	—	3.4	5.5	2.6

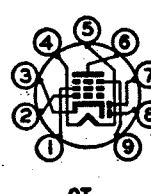
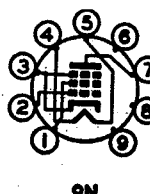
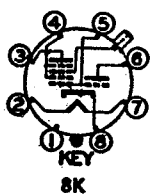
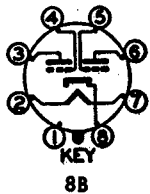
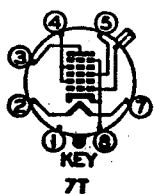
†Zero signal. ||Input plate. *Minimum. §Approximate.
 ♣Maximum. ♥Grids 2 and 4 are screen. Grid 3 is signal-input grid.
 ▲Without external shield. ‡Plate-to-plate.
 #Conversion transconductance



AND RATINGS

Service	Neg Grid Volts	Screen Volts	Screen Milli-amperes	Plate Volts	Plate Milli-amperes	R _p , Ohms	G _m , μmhos	μ Factor	Load for Rated Output, Ohms	Power Output, Watts	Tube Type
Class A Amplifier	3.0	125	2.6	250	10.5	600,000§	1,650	—	—	—	6K7 6K7-G 6K7-GT
	3.0	100	1.7	250	7.0	800,000§	1,450	—	—	—	
	1.0	100	2.7	100	9.5	150,000§	1,650	—	—	—	
Converter	3.0	100	6.0	250	2.5	600,000§	350 #	E _b (Triode Osc) = 100 I _b (Triode) = 3.8 ma			6K8 6K8-G 6K8-GT
Class A Amplifier	R _k = 150	—	—	80	9.5	4,400	6400	28	—	—	6L4
Class A Amplifier	9.0	—	—	250	8.0	9,000	1,900	17	—	—	6L5-G
Class A Amplifier	14.0	250	5.0†	250	72.0†	22,500	6,000	—	2,500	6.5	6L6 6L6-G 6L6-GA
Class A Amplifier	18.0	250	2.5†	350	54.0†	33,000	5,200	—	4,200	10.8	
Class A Amplifier	17.5	270	11.0†	270	134.0†	23,500	5,700	—	5,000	17.5	
Class AB ₁ Amplifier	22.5	270	5.0†	360	88.0†	—	—	—	3,800	18.0	
Class AB ₂ Amplifier	22.5	270	5.0†	360	88.0†	—	—	—	3,800	47.0	
Class A Amplifier	20	—	—	250	40†	1,700	4,700	8.0	5,000	1.4	
Class A Amplifier Mixer	3.0	100	6.5	250	5.3	600,000§	1,100	E _{cs} = -3.0 volts			6L7 6L7-G
	6.0*	150	9.2	250	3.3	1,000,000*	350 #	E _{cs} = -15 volts			
Class A Amplifier	R _k = 170	250	5.2	250	36	40,000	10,000	—	7,000	3.9	6M5
Class AB ₁ Amplifier	R _k = 85	250	16.0	250	79	—	—	—	7,000†	9.4	
Class A Amplifier	3.5	—	—	180	12.0	5,400§	6,000	32	—	—	6N4
Class A Amplifier	0.0	300	8.0	300	45	24,000§	2,400	—	7,000	4.0	6N6-G
Class B Amplifier	0.0	—	—	300	35†	—	—	—	8,000†	10.0§	6N7 6N7-G 6N7-GT
Class A Amplifier	6.0	—	—	294	7.0	11,000	3,200	35	—	—	
Class A Amplifier	R _k = 295	85	1.75	250	5.0	1,600,000	2,200	35	—	—	6N8
Class A Amplifier	13.5	—	—	250	5.0	9,500	1,450	13.8	—	—	6P5-GT

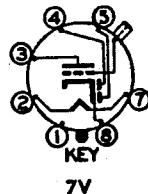
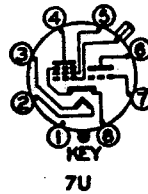
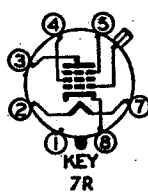
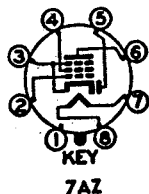
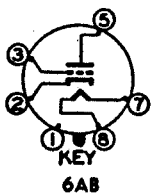
Type designations of metal tubes are shown in bold-face type.
Type designations of miniature tubes are shown in italics.



CHARACTERISTICS

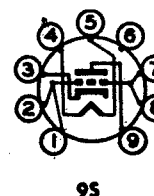
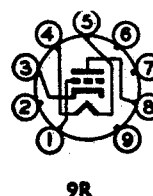
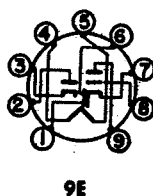
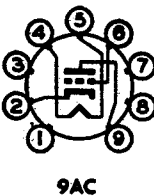
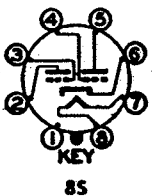
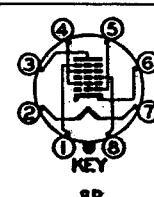
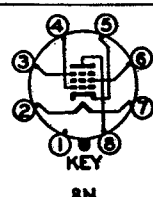
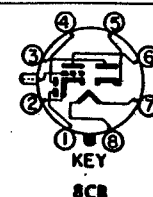
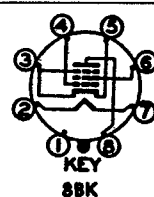
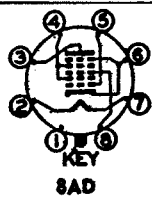
Tube Type	Classification by Construction	Base Connections	Out-line Dwg	Type Cathode	Fila-ment Volts	Fila-ment Amp	Max Plate Volts	Max Screen Volts	Capacitance in Micromicrofarads		
									Input	Out-put	Grid-plate
6P7-G	Triode-Pentode	7U	12-8	Htr	6.3	0.3	250 100	100 —	Pentode Section Triode Section		
6Q4	High-Frequency Triode	9S	6-2	Htr	6.3	0.48	300	—	5.4	0.06 ♣	3.4
6Q7 <i>6Q7-G</i> <i>6Q7-GT</i>	Duplex Diode High-Mu Triode	7V	8-4 12-8 9-18	Htr	6.3	0.3	300	—	—	—	—
6R4	High-Frequency Triode	9R	6-2	Htr	6.3 ₄	0.2	275	—	1.7	0.5	1.5
6R7 <i>6R7-G</i> <i>6R7-GT</i>	Duplex Diode Medium-Mu Triode	7V	8-4 12-8 9-17	Htr	6.3	0.3	250	—	4.8	3.8	2.4
6R8	Triple-Diode, Low-Mu Triode	9E	6-2	Htr	6.3	0.45	250	—	—	—	—
6S4	Medium-Mu Triode	9AC	6-3	Htr	6.3	0.6	500	—	—	—	—
6S7 <i>6S7-G</i>	Remote-Cutoff R-F Pentode	7R	8-2 12-8	Htr	6.3	0.15	300	100	6.5 4.4	10.5 8.0	0.005 ♣ 0.008 ♣
6S8-GT	Triple-Diode High-Mu Triode	8CB	9-23 or 9-48	Htr	6.3	0.3	300	—	—	—	—
6SA7 <i>6SA7-GT</i>	Pentagrid Converter	8R ♡ 8AD ♡	8-1 9-11 or 9-41	Htr	6.3	0.3	300	100	{ Osc $I_{g1} = 0.5$ ma $R_{g1} = 20,000$ ohms }		
6SB7-Y	Pentagrid Converter	8R ♡	8-1	Htr	6.3	0.3	300	100	Osc $I_{g1} = 0.35$ ma $R_{g1} = 20,000$ ohms		
6SC7 <i>6SC7-GT</i>	High-Mu Twin-Triode	8S	8-1 9-11	Htr	6.3	0.3	250	—	—	—	—
6SD7-GT	Semi-Remote-Cutoff Pentode	8N	9-12	Htr	6.3	0.3	300	125	9.0	7.5	0.0035 ♣
6SE7-GT	Sharp-Cutoff Pentode	8N	9-12	Htr	6.3	0.3	300	125	8.0	7.5	0.005 ♣
6SF5 <i>6SF5-GT</i>	High-Mu Triode	6AB	8-1 9-11	Htr	6.3	0.3	300	—	—	—	—
6SF7	Diode Remote-Cutoff Pentode	7AZ	8-1	Htr	6.3	0.3	300	100	5.5	6.0	0.004 ♣
6SG7 <i>6SG7-GT</i>	Semi-Remote-Cutoff R-F Pentode	8BK	8-1 9-12	Htr	6.3	0.3	300	150	8.5 8.5	7.0 7.0	0.003 ♣ 0.0035 ♣

§ Approximate. ♣ Maximum # Conversion Transconductance
 1—The duration of the pulse voltage must not exceed 15 percent of one scanning cycle.
 4—A resistor of 3 ohms must be put in series with heater. *Minimum. ♣ Per section.
 ♡ Grids 2 and 4 are screen. Grid 3 is signal-input grid.
Type designations of metal tubes are shown in bold-face type.
Type designations of miniature tubes are shown in italics.



AND RATINGS

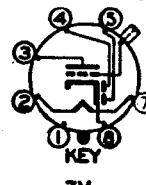
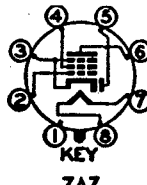
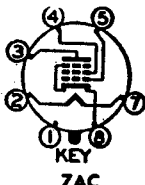
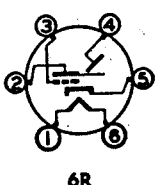
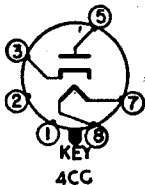
Service	Neg Grid Volts	Screen Volts	Screen Milli-am-peres	Plate Volts	Plate Milli-am-peres	R _p ' Ohms	G _m ' μmhos	μ Fac-tor	Load for Rated Out-put, Ohms	Power Out-put, Watts	Tube Type
Class A Amplifier	3.0	100	1.5	250	6.5	850,000	1,100	—	—	—	6P7-G
Class A Amplifier	3.0	—	—	100	3.5	16,000	500	8.0	—	—	
Class A Amplifier	1.5	—	—	250	15	—	12,000	80	—	—	6Q4
Class A Amplifier	3.0	—	—	250	1.0	58,000	1,200	70	—	—	6Q7 6Q7-G 6Q7-GT
	1.0	—	—	100	0.8	58,000	1,200	70	—	—	
Class A Amplifier	2.0	—	—	150	30	—	5,500	16	—	—	6R4
	2.0	—	—	120	20	—	4,000	16	—	—	
Class A Amplifier	9.0	—	—	250	9.5	8,500	1,900	16	—	—	6R7 6R7-G 6R7-GT
Class A Amplifier	9.0	—	—	250	9.5	8,500	1,900	16	10,000	0.30	6R8
Vertical Deflection Amplifier	8.0	—	—	250	26	3,600	4,500	16	—	—	6S4
Max positive pulse plate voltage _s = 2,000 volts; max plate dissipation = 7.5 watts; max d-c cathode current = 30 ma											
Class A Amplifier	3.0	100	2.0	250	8.5	1,000,000§	1,750	—	—	—	6S7 6S7-G
Class A Amplifier	2.0	—	—	250	0.9	91,000§	1,100	100	—	—	6S8-GT
Converter	2.0	100	8.5	250	3.5	1,000,000§	450#	—	—	—	6SA7
	2.0	100	8.5	100	3.3	500,000§	425#	—	—	—	6SA7-GT
Converter	1.0	100	10	250	3.8	1,000,000§	950#	—	—	—	6SB7-Y
Class A Amplifier ♣	2.0	—	—	250	2.0	53,000§	1,325§	70	—	—	6SC7 6SC7-GT
Class A Amplifier	2.0	125	3.0	250	9.5	700,000	4,250	—	—	—	6SD7-GT
Class A Amplifier	1.5	100	1.5	250	4.5	1,000,000	3,400	—	—	—	6SE7-GT
Class A Amplifier	2.0	—	—	250	0.9	66,000	1,500	100	—	—	6SF5 6SF5-GT
	1.0	—	—	100	0.4	85,000	1,150	100	—	—	
Class A Amplifier	1.0	100	3.3	250	12.4	700,000§	2,050	—	—	—	6SF7
Class A Amplifier	2.5	150	3.4	250	9.2	1,000,000*	4,000	—	—	—	6SG7 6SG7-GT
	1.0	125	4.4	250	11.8	900,000	4,700	—	—	—	
	1.0	100	3.2	100	8.2	250,000	4,100	—	—	—	



CHARACTERISTICS

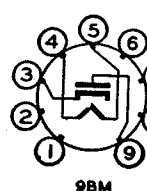
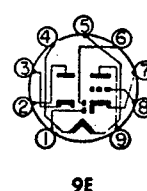
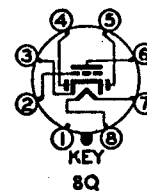
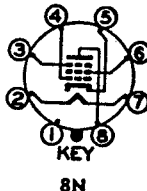
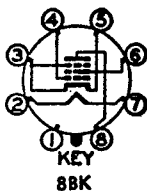
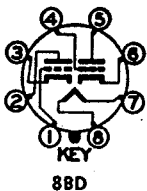
Tube Type	Classification by Construction	Base Connections	Out-line Dwg	Type Cathode	Filament Volts	Filament Amp	Max Plate Volts	Max Screen Volts	Capacitance in Micromicrofarads		
									Input	Output	Grid-plate
6SH7 6SH7-GT	Sharp-Cutoff R-F Pentode	8BK	8-1 9-12	Htr	6.3	0.3	300	150	8.5	7.0	0.003 ♣
6SJ7 6SJ7-GT	Sharp-Cutoff Pentode	8N	8-1 9-12	Htr	6.3	0.3	300 250	125 —	Pentode Connection Triode Connection (G2, G3 & P tied)		
6SK7 6SK7-W 6SK7-GT	Remote-Cutoff R-F Pentode	8N	8-1 8-1 9-12	Htr	6.3	0.3	300	125	6.0 6.5	7.0 7.5	0.003 ♣ 0.005 ♣
6SL7-GT 6SL7- WGT	High-Mu Twin-Triode	8BD	9-11 or 9-41	Htr	6.3	0.3	300	—	—	—	—
6SN7-GT 6SN7- WGT	Medium-Mu Twin Triode	8BD	9-11 or 9-41	Htr	6.3	0.6	300	—	2.8 ₁ ▲ 3.0 ₂ ▲	0.8 ₁ ▲ 1.2 ₂ ▲	3.8 ₁ ▲ 4.0 ₂ ▲
6SN7-GTA	Medium-Mu Twin Triode	8BD	9-11 or 9-41	Htr	6.3	0.6	500	—	2.8 ₁ ▲ 3.0 ₂ ▲	0.8 ₁ ▲ 1.2 ₂ ▲	3.8 ₁ ▲ 4.0 ₂ ▲
6SQ7 6SQ7-GT	Duplex-Diode, High-Mu Triode	8Q	8-1 9-12	Htr	6.3	0.3	300	—	3.2 4.2▲	3.0 3.4▲	1.6 1.8▲
6SR7 6SR7-GT	Duplex-Diode Medium-Mu Triode	8Q	8-1 9-11	Htr	6.3	0.3	250	—	3.6 —	2.8 —	2.4 —
6SS7	Remote-Cutoff R-F Pentode	8N	8-1	Htr	6.3	0.15	300	100	5.5	7.0	0.004 ♣
6ST7	Duplex Diode Medium-Mu Triode	8Q	8-1	Htr	6.3	0.15	250	—	2.8	3.0	1.5
6SU7- GTY	High-Mu Twin-Triode	8BD	9-11	Htr	6.3	0.3	250	—	—	—	—
6SV7	Diode Sharp-Cutoff R-F Pentode	7AZ	8-1	Htr	6.3	0.3	300	150	6.5	6.0	0.004 ♣
6SZ7	Duplex-Diode High-Mu Triode	8Q	8-1	Htr	6.3	0.15	300	—	2.6	2.8	1.1
6T5	Electron-Ray Indicator	6R	9-26	Htr	6.3	0.3	250‡	—	—	—	—
6T7-G	Duplex-Diode High-Mu Triode	7V	12-8	Htr	6.3	0.15	250	—	1.8	3.1	1.7
6T8	Triple Diode High-Mu Triode	9E	6-2	Htr	6.3	0.45	300	—	1.6▲	1.0▲	2.2▲
6U3	Half-Wave High-Vacuum Rectifier	9BM	6A-1	Htr	6.3	0.9	Tube Voltage Drop: 16 volts at 180 ma d-c				
6U4-GT	Half-wave High-vacuum Rectifier	4CG	9-13	Htr	6.3	1.2	Tube Voltage Drop: 21 v at 250 ma d-c				
6U5	Electron-Ray Indicator	6R	9-26	Htr	6.3	0.3	285‡	Max target voltage = 285 Min target voltage = 125			
6U6-GT	Beam Power Amplifier	7AC	9-11	Htr	6.3	0.75	200	135	—	—	—

†Zero signal. ‡Approximate. ▲Without external shield. *Minimum. 1—Section 1. ‡Plate supply voltage.
 2—Section 2. §—The duration of the pulse voltage must not exceed 15 percent of one scanning cycle.



Service	Neg Grid Volts	Screen Volts	Screen Milli-amperes	Plate Volts	Plate Milli-amperes	R _p Ohms	G _m μmhos	μ Factor	Load for Rated Output, Ohms	Power Output, Watts	Tube Type
Class A Amplifier	1.0	150	4.1	250	10.8	900,000	4,900	—	—	—	6SH7 6SH7-GT
Class A Amplifier	3.0	100	0.8	250	3.0	1,000,000*	1,650	—	—	—	6SJ7
Class A Amplifier	3.0	100	0.9	100	2.9	700,000	1,575	—	—	—	6SJ7-GT
Class A Amplifier	8.5	—	—	250	9.2	7,600	2,500	19	—	—	
Class A Amplifier	6.0	—	—	180	6.0	8,200	2,300	19	—	—	
Class A Amplifier	3.0	100	2.6	250	9.2	800,000	2,000	—	—	—	6SK7
Class A Amplifier	1.0	100	4.0	100	13	120,000	2,350	—	—	—	6SK7-W 6SK7-GT
Class A Amplifier ♠	2.0	—	—	250	2.3	44,000	1,600	70	—	—	6SL7-GT 6SL7-WGT
Class A Amplifier ♠	8.0	—	—	250	9.0	7,700	2600	20	—	—	6SN7-GT
Class A Amplifier ♠	0.0	—	—	90	10	6,700	3000	20	—	—	6SN7-WGT
Class A Amplifier ♠	8.0	—	—	250	9.0	7,700	2600	20	—	—	6SN7-GTA
Class A Amplifier ♠	0.0	—	—	90	10	6,700	3000	20	—	—	
Max positive pulse plate voltage ₃ = 1250; max plate dissipation = 5.0 watts; max plate dissipation ⊕ = 7.5 watts											
Class A Amplifier	2.0	—	—	250	1.1	85,000	1175	100	—	—	6SQ7
Class A Amplifier	1.0	—	—	100	0.5	110,000	925	100	—	—	6SQ7-GT
Class A Amplifier	9.0	—	—	250	9.5	85,000	1,900	16	—	—	6SR7 6SR7-GT
Class A Amplifier	3.0	100	2.0	250	9.0	1,000,000	1,850	—	—	—	6SS7
Class A Amplifier	9.0	—	—	250	9.5	8,500	1,900	16	—	—	6ST7
Class A Amplifier ♠	2.0	—	—	250	2.3	44,000	1,600	70	—	—	6SU7-GTY
Class A Amplifier	1.0	150	2.8	250	7.5	1,500,000	3,600	—	—	—	6SV7
Class A Amplifier	1.0	100	1.4	100	3.7	700,000	2,600	—	—	—	
Class A Amplifier	3.0	—	—	250	1.0	58,000	1,200	70	—	—	6SZ7
Tuning Indicator	Plate voltage = 250 thru 1 meg, target voltage = 250 (E _g = -22 volts for max illumination) (E _g = 0 volts for min illumination)										6T5
Class A Amplifier	3.0	—	—	250	1.2	62,000	1,050	65	—	—	6T7-G
Class A Amplifier	3.0	—	—	250	1.0	58,000	1,200	70	—	—	6T8
Class A Amplifier	1.0	—	—	100	0.8	54,000	1,300	70	—	—	
T-V Damp-er Service	Max d-c output current = 180 ma; max peak inverse voltage ₃ = 4,000 volts; max peak current = 400 ma										6U3
Half-Wave Rectifier	Max d-c output current = 125 ma; max peak inverse voltage = 1250 volts, rms supply voltage = 350 volts; max peak current = 600 ma										6U4-GT
T-V Damp-er Service	Max d-c output current = 125 ma; max peak inverse voltage ₃ ⊠ = 3850 volts; max peak current = 600 ma										
Tuning Indicator	Plate voltage = 250 thru 1 meg, target voltage = 250 (E _g = -22 volts, shadow = 0°) (E _g = 0 volt, shadow = 90°, plate current = 0.24 ma, target current _§ = 4 ma)										6U5
Class A Amplifier	14.0	135	3.0†	200	55.0†	20,000	6,200	—	3,000	5.5	6U6-GT

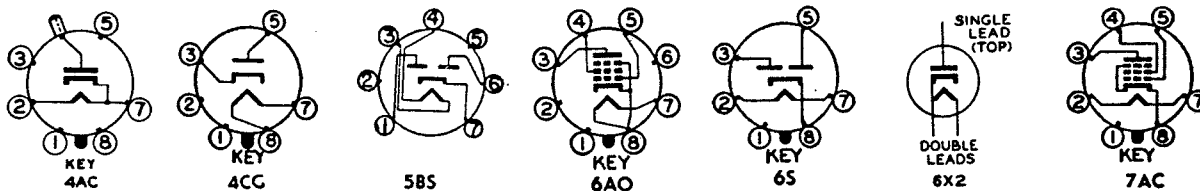
♣ Maximum. ♠ Per section. Type designations of metal tubes are shown in bold-face type. ⊕ For both sections. ⊠ Absolute maximum rating. Type designations of miniature tubes are shown in italics.



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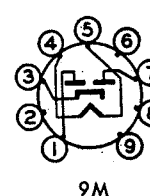
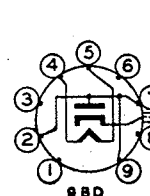
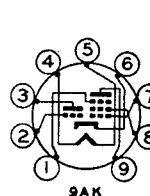
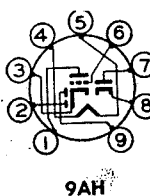
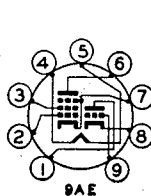
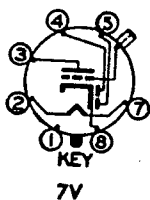
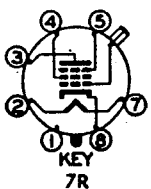
Tube Type	Classification by Construction	Base Connections	Out-line Dwg	Type Cathode	Fila-ment Volts	Fila-ment Amp	Max Plate Volts	Max Screen Volts	Capacitance in Micromicrofarads		
									Input	Out-put	Grid-plate
6U7-G	Remote-Cutoff R-F Pentode	7R	12-4	Htr	6.3	0.3	300	100	5.0	9.0	0.007 ♣
6U8	Triode-Pentode	9AE	6-2	Htr	6.3	0.45	300 300	150 —	Pentode Section Triode Section		
6V3	Half-Wave High-Vacuum Rectifier	9BD	6A-2	Htr	6.3	1.75	Tube Voltage Drop: 14 volts at 150 ma d-c				
6V4	Full-Wave, High-Vacuum Rectifier	9M	6A-1	Htr	6.3	0.6	Tube Voltage Drop: ♣ 20 v at 45 ma d-c				
6V5-GT	Beam Power Amplifier	6AO	9-11	Htr	6.3	0.45	315	285	—	—	—
6V6 6V6-GT	Beam Power Amplifier	7AC	8-6 9-11 or 9-41	Htr	6.3	0.45	315	285	Single Tube 2 Tubes, Push-pull		
6V7-G	Duplex-Diode Medium-Mu Triode	7V	12-8	Htr	6.3	0.3	250	—	2.0	3.5	1.7
6V8	Triple-Diode, High-Mu Triode	9AH	6-2	Htr	6.3	0.45	300	—	—	—	—
6W4-GT	Half-wave High-vacuum Rectifier	4CG	9-11 or 9-41	Htr	6.3	1.2	Tube Voltage Drop: 21 v at 250 ma d-c				
6W5-G	Full-Wave High-Vacuum Rectifier	6S	12-7	Htr	6.3	0.9	Tube Voltage Drop: ♣ 24 v at 90 ma d-c				
6W6-GT	Beam Power Amplifier	7AC	9-11 or 9-41	Htr	6.3	1.2	300 300	150	Pentode Connection Triode Connection (G ₂ & P tied)		
6W7-G	Sharp-Cutoff Pentode	7R	12-8	Htr	6.3	0.15	300	300	5.0	8.5	0.007 ♣
6X2	Half-Wave High-Vacuum Rectifier	6X2	T-X	Htr	6.3	0.09	—	—	—	—	—
6X4	Full-Wave High-Vacuum Rectifier	5BS	5-3	Htr	6.3	0.6	Tube Voltage Drop: ♣ 22 v at 70 ma d-c				
6X5 6X5-GT	Full-Wave High-Vacuum Rectifier	6S	8-6 9-11	Htr	6.3	0.6	Tube Voltage Drop: ♣ 22 v at 70 ma d-c				
6X8	Triode-Pentode Converter	9AK	6-2	Htr	6.3	0.45	250 250	250 ✱ —	Pentode Section Triode Section		
6Y3-G	Half-Wave High-Voltage Rectifier	4AC	12-8	Htr	6.3	0.7	—	—	—	—	—

§Approximate. †Zero signal. ‡Plate-to-plate. ♣Maximum. ✱Screen supply voltage.
 □ Absolute maximum rating. ♠ Per section
 — The duration of the pulse voltage must not exceed 15 percent of one scanning cycle.



Service	Neg Grid Volts	Screen Volts	Screen Milli-amperes	Plate Volts	Plate Milli-amperes	R _p , Ohms	G _m , μmhos	μ Factor	Load for Rated Output, Ohms	Power Output, Watts	Tube Type
Class A Amplifier	3.0	100	2.0	250	8.2	800,000§	1,600	—	—	—	6U7-G
Class A Amplifier	R _k = 68	110	3.5	250	10	400,000§	5,200	—	—	—	<i>6U8</i>
Class A Amplifier	R _k = 56	—	—	150	18	5,000§	8,500	40	—	—	<i>6U8</i>
Half-Wave Rectifier T-V Damp-er Service	Max d-c output current = 125 ma; max rms supply voltage = 350 volts; Max d-c output current □ = 135 ma; max peak inverse voltage, □ = 6,000 volts; max peak current □ = 600 ma										6V3
Full-Wave Rectifier	Max d-c output current = 90 ma; rms supply voltage per plate = 350 volts										6V4
Class A Amplifier	13.0 12.5	225 250	2.2† 4.5†	315 250	34† 45†	77,000§ 52,000§	3,750 4,100	— —	8,500 5,000	5.5 4.5	6V5-GT
Class A Amplifier	13 12.5	225 250	2.2† 4.5†	315 250	34† 45†	80,000§ 50,000§	3,750 4,100	— —	8,500 5,000	5.5 4.5	6V6 6V6-GT
Class AB ₁ Amplifier	8.5 19 15	180 285 250	3† 4† 5†	180 285 250	29† 70† 70†	50,000§ 70,000§ 60,000§	3,700 3,600 3,750	— — —	5,500 8000† 10000†	2.0 14 10	6V6-GT
Class A Amplifier	20.0	—	—	250	8.0	7,500	1,100	8.3	20,000	0.350	6V7-G
Class A Amplifier	3.0 1.0	— —	— —	250 100	1.0 0.8	58,000§ 54,000§	1,200 1,300	70 70	— —	— —	6V8
Half-Wave Rectifier T-V Damp-er Service	Max d-c output current = 125 ma; max peak inverse voltage = 1250 volts; rms supply voltage = 350 volts; max peak current = 600 ma Max d-c output current = 125 ma; max peak inverse voltage, □ = 3850 volts; max peak current = 600 ma										6W4-GT
Full-Wave Rectifier	Max d-c output current = 90 ma; max peak inverse voltage = 1250 volts; max rms supply voltage per plate = 325 volts; max peak current per plate = 270 ma										6W5-G
Class A Amplifier	R _k = 180 7.5	125 110	2.2† 4.0†	200 110	46† 49†	28,000§ 13,000§	8,000 8,000	— —	5,000 2,000	3.8 2.1	6W6-GT
Vertical Deflection Amplifier	Max positive pulse plate voltage, □ = 1,000 volts; max plate dissipation = 10 watts; max screen dissipation = 1.25 watts										6W6-GT
Class A Amplifier	3.0	100	0.5	250	2.0	1,500,000§	1,225	—	—	—	6W7-G
Half-Wave Rectifier	Max d-c output current = 3 ma; max peak inverse voltage = 14,000 volts										6X2
Full-Wave Rectifier	Max d-c output current = 70 ma; max peak inverse voltage = 1250 volts; rms supply voltage per plate = 325 volts; max peak current per plate = 210 ma										6X4
Full-Wave Rectifier	Max d-c output current = 70 ma; max peak inverse voltage = 1250 volts; rms supply voltage per plate = 325 volts; max peak current per plate = 210 ma										6X5 6X5-GT
Class A Amplifier	R _k = 200	150	1.6	250	7.7	750,000§	4,600	—	—	—	6X8
Class A Amplifier	R _k = 100	—	—	100	8.5	6,900§	5,800	40	—	—	6X8
Half-Wave Rectifier	Max d-c output current = 7.5 ma; max peak inverse voltage = 14,000 volts; max rms supply voltage = 5,000 volts; max peak current = 100 ma										6Y3-G

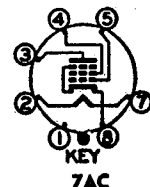
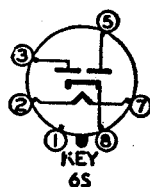
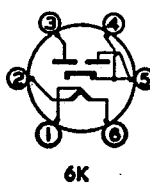
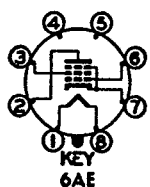
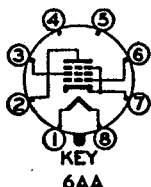
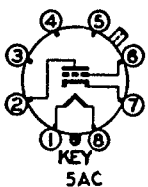
Type designations of metal tubes are shown in bold-face type. Type designations of miniature tubes are shown in italics.



CHARACTERISTICS

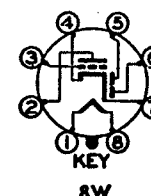
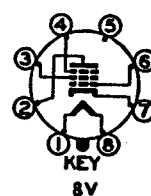
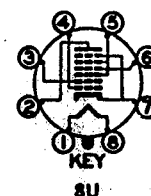
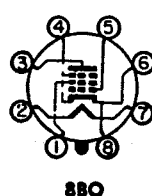
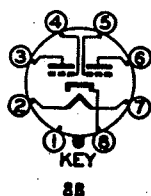
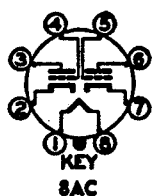
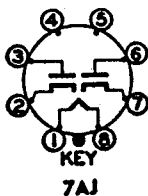
Tube Type	Classification by Construction	Base Connections	Out-line Dwg	Type Cathode	Fila-ment Volts	Fila-ment Amp	Max Plate Volts	Max Screen Volts	Capacitance in Micromicrofarads		
									Input	Out-put	Grid-plate
6Y6-G 6Y6-GT	Beam Power Amplifier	7AC	14-3 9-11	Htr	6.3	1.25	200	135	15.0▲	11.0▲	0.7▲
6Y7-G	Twin-Triode Power Amplifier	8B	12-7	Htr	6.3	0.6	250	—	Both Sections in Push-pull		
6Z5	Full-Wave High-Vacuum Rectifier	6K	12-5	Htr	6.3 12.6	0.8 0.4	—	—	—	—	—
6Z7-G	Twin-Triode Power Amplifier	8B	12-7	Htr	6.3	0.3	180	—	Both Sections in Push-pull		
6ZY5-G	Full-Wave High-Vacuum Rectifier	6S	12-7	Htr	6.3	0.3	Tube Voltage Drop: ♣ 18 v at 40 ma d-c				
7A4	Medium-Mu Triode	5AC	9-30	Htr	6.3	0.3	300	—	3.4	3.0	4.0
7A5	Beam Power Amplifier	6AA	9-31	Htr	6.3	0.75	125	125	—	—	—
7A6	Twin Diode	7AJ	9-30	Htr	6.3	0.15	Tube Voltage Drop: ♣ 11 v at 16 ma d-c				
7A7	Remote-Cutoff R-F Pentode	8V	9-30	Htr	6.3	0.3	250	100	6.0	7.0	0.005♣
7A8	Octode Converter	8U♠	9-30	Htr	6.3	0.15	300	100	Osc I _{g1} = 0.4 ma R _{g1} = 50,000 ohms		
7AB7	Sharp-Cutoff R-F Pentode	8BO	9-32	Htr	6.3	0.15	300	150	3.5	4.0	0.06♣
7AD7	Power Amplifier Pentode	8V	9-31	Htr	6.3	0.6	300	150	11.5	7.5	0.03♣
7AF7	Medium-Mu Twin Triode	8AC	9-30	Htr	6.3	0.3	300	—	2.2	1.6	2.3♣
7AG7	Sharp-Cutoff R-F Pentode	8V	9-30	Htr	6.3	0.15	300	300	7.0	6.0	0.005♣
7AH7	Remote-Cutoff R-F Pentode	8V	9-30	Htr	6.3	0.15	300	300	7.0	6.5	0.005♣
7AJ7	Sharp-Cutoff R-F Pentode	8V	9-30	Htr	6.3	0.3	300	100	6.0	6.5	0.007♣
7AK7	Sharp-Cutoff Dual-Control Pentode	8V	9-31	Htr	6.3	0.8	200	100	12.0	9.5	0.7
7B4	High-Mu Triode	5AC	9-30	Htr	6.3	0.3	300	—	3.6	3.4	1.6
7B5	Power Amplifier Pentode	6AE	9-31	Htr	6.3	0.4	315	285	—	—	—
7B6	Duplex Diode High-Mu Triode	8W	9-30	Htr	6.3	0.3	300	—	—	—	—
7B7	Remote-Cutoff R-F Pentode	8V	9-30	Htr	6.3	0.15	300	100	5.0	6.0	0.004♣

§ Approximate. † Zero signal. * Minimum. ♣ Per section. ♣ Maximum.
 ♠ Grids 3 and 5 are screen. Grid 4 is signal-input grid. ‡ Plate-to-plate.
 ▲ Without external shield.



AND RATINGS

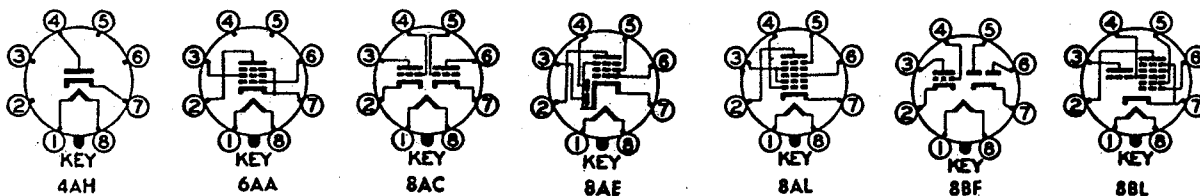
Service	Neg Grid Volts	Screen Volts	Screen Milli-amperes	Plate Volts	Plate Milli-amperes	R _p , Ohms	G _m , μmhos	μ Factor	Load for Rated Output, Ohms	Power Output, Watts	Tube Type
Class A Amplifier	14.0	135	2.2§†	200	61.0†	18,300§	7,100	—	2,600	6.0	6Y6-G 6Y6-GT
Class B Amplifier	0.0	—	—	250	5.3†	—	—	—	14000‡	8.0§	6Y7-G
Full-Wave Rectifier	Max d-c output current = 60 ma; max peak inverse voltage = 1500 volts;										6Z5
Class B Amplifier	0.0	—	—	180	4.2†	Input signal = 0.320 watts		—	12000‡	4.2	6Z7-G
Full-Wave Rectifier	Max d-c output current = 40 ma; max peak inverse voltage = 1250 volts; max rms supply voltage per plate = 325 volts; max peak current per plate = 120 ma										6ZY5-G
Class A Amplifier	8.0 0.0	—	—	250 90	9.0 10	7,700 6,700	2,600§ 3,000§	20 20	—	—	7A4
Class A Amplifier	7.5	110	3.0†	110	40.0†	16,000§	5,800	—	2,500	1.5	7A5
Half-Wave Rectifier	Max d-c output current per plate = 8 ma; max rms supply voltage per plate = 150 volts; max peak current per plate = 45 ma										7A6
Class A Amplifier	3.0	100	2.6	250	9.2	800,000	2,000	—	—	—	7A7
Converter	3.0	100	3.2	250	3.0	700,000§	550 #	E _{c2} (Osc Plate) = 250 thru 20,000 ohms I _{c2} = 4.2 ma			7A8
Class A Amplifier	2.0	100	1.3	250	4.0	500,000§	1,800	—	—	—	7AB7
Class A Amplifier	R _k = 68	150	7.0	300	28	300,000§	9,500	—	—	—	7AD7
Class A Amplifier †	10.0	—	—	250	9.0	7,600	2,100	16	—	—	7AF7
Class A Amplifier	R _k = 250	250	2.0	250	6.0	1,000,000*	4,200	—	—	—	7AG7
Class A Amplifier	R _k = 250	250	1.9	250	6.8	1,000,000§	3,300	—	—	—	7AH7
Class A Amplifier	1.0 3.0	100 100	1.8 0.7	100 250	5.7 2.2	400,000§ 1,000,000§	2,275 1,575	—	—	—	7AJ7
Class A Amplifier	0 11.0 0	90 90 90	21 0.45 60 †	150 150 150	40 2.5 2.0 †	11,500§ — —	6,000 — —	E _{c3} = 0 volts E _{c3} = 0 volts E _{c3} = 9.5 volts			7AK7
Class A Amplifier	2.0	—	—	250	0.9	66,000	1,500	100	—	—	7B4
Class A Amplifier	21.0 18.0	250 250	4.0† 5.5†	315 250	25.5† 32.0†	75,000 68,000	2,100 2,300	—	9,000 7,600	4.5 3.4	7B5
Class A Amplifier	2.0 1.0	—	—	250 100	0.9 0.4	91,000§ 110,000§	1,100 900	100 100	—	—	7B6
Class A Amplifier	3.0 3.0	100 100	1.7 1.8	250 100	8.5 8.2	750,000 300,000	1,750 1,675	—	—	—	7B7



CHARACTERISTICS

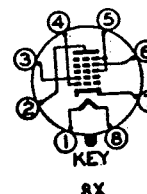
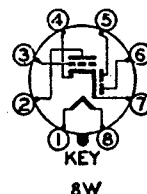
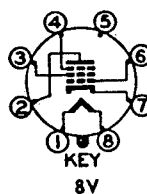
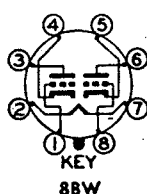
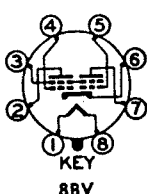
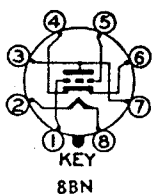
Tube Type	Classification by Construction	Base Connections	Out-line Dwg	Type Cathode	Filament Volts	Filament Amp	Max Plate Volts	Max Screen Volts	Capacitance in Micromicrofarads		
									Input	Output	Grid-plate
7B8	Pentagrid Converter	8X \uparrow	9-30	Htr	6.3	0.3	300	100	Osc $I_{g1} = 0.4$ ma $R_{g1} = 50,000$ ohms		
7C4	High-frequency Diode	4AH	9-30	Htr	6.3	0.15	Tube Voltage Drop: 11 v at 10 ma d-c				
7C5	Beam Power Amplifier	6AA	9-31	Htr	6.3	0.45	315	285	—	—	—
7C6	Duplex-Diode High-Mu Triode	8W	9-30	Htr	6.3	0.15	300	—	—	—	—
7C7	Sharp-Cutoff Pentode	8V	9-30	Htr	6.3	0.15	300	100	5.5	6.5	0.007 \clubsuit
7E5	High-Frequency Triode	8BN	9-30	Htr	6.3	0.15	250	—	3.6	2.8	1.5
7E6	Duplex-Diode Medium-Mu Triode	8W	9-30	Htr	6.3	0.3	250	—	—	—	—
7E7	Duplex-Diode Remote-Cutoff Pentode	8AE	9-30	Htr	6.3	0.3	250	100	4.6	4.6	0.005 \clubsuit
7F7	High-Mu Twin Triode	8AC	9-30	Htr	6.3	0.3	250	—	—	—	—
7F8	High-Frequency Twin Triode	8BW	9-32	Htr	6.3	0.3	300	—	2.8	1.4	1.2
7G7	Sharp-Cutoff Pentode	8V	9-30	Htr	6.3	0.45	250	100	9.0	7.0	0.007 \clubsuit
7G8	Sharp-Cutoff Twin Tetrode	8BV	9-32	Htr	6.3	0.3	300	150	3.4	2.6	0.15 \clubsuit
7H7	Semi-Remote-Cutoff R-F Pentode	8V	9-30	Htr	6.3	0.3	300	150	8.0	7.0	0.004 \clubsuit
7J7	Triode Heptode Converter	8BL	9-30	Htr	6.3	0.3	300	100	Osc $I_{g1} = 0.4$ ma $R_{g1} = 50,000$ ohms		
7K7	Duplex-Diode High-Mu Triode	8BF	9-30	Htr	6.3	0.3	250	—	—	—	—
7L7	Sharp-Cutoff Pentode	8V	9-30	Htr	6.3	0.3	300	125	8.0	6.5	0.01 \clubsuit
7N7	Medium-Mu Twin Triode	8AC	9-31	Htr	6.3	0.6	300	—	—	—	—
7Q7	Pentagrid Converter	8AL \downarrow	9-30	Htr	6.3	0.3	300	100	Osc $I_{g1} = 0.5$ ma $R_{g1} = 20,000$ ohms		
7R7	Duplex-Diode Remote-Cutoff Pentode	8AE	9-30	Htr	6.3	0.3	250	125	5.6	5.3	0.004 \clubsuit
7S7	Triode-Heptode Converter	8BL	9-30	Htr	6.3	0.3	300	100	Osc. $I_{g1} = 0.4$ ma $R_{g1} = 50,000$ ohms		

§ Approximate. \clubsuit Maximum. \spadesuit Per section. \dagger Zero signal.
 \heartsuit Grids 2 and 4 are screen. Grid 3 is signal-input grid.
 \blacklozenge Grids 3 and 5 are screen. Grid 4 is signal-input grid.



Service	Neg Grid Volts	Screen Volts	Screen Milli-amperes	Plate Volts	Plate Milli-amperes	R _p Ohms	G _m μmhos	μ Factor	Load for Rated Output, Ohms	Power Output, Watts	Tube Type
Converter	3.0	100	2.7	250	3.5	360,000§	550 #	E _{c2} (Osc Plate) = 250 thru 20,000 ohms I _{c2} = 4.0 ma			7B8
Half-Wave Rectifier	Max d-c output current = 5.0 ma; max rms supply voltage = 117 volts										7C4
Class A Amplifier {	13.0 12.5	225 250	2.2† 4.5†	315 250	34.0† 45.0†	77,000§ 52,000§	3,750 4,100	— —	8,500 5,000	5.5 4.5	7C5
Class A Amplifier {	1.0 0.0	— —	— —	250 100	1.3 1.0	100,000§ 100,000§	1,000 850	100 85	— —	— —	7C6
Class A Amplifier	3.0	100	0.5	250	2.0	2,000,000§	1,300	—	—	—	7C7
Class A Amplifier	3.0	—	—	180	5.5	12,000	3,000	36	—	—	7E5
Class A Amplifier	9.0	—	—	250	9.5	8,500	1,900	16	—	—	7E6
Class A Amplifier	3.0	100	1.6	250	7.5	700,000§	1,300	—	—	—	7E7
Class A Amplifier ♠	2.0	—	—	250	2.3	44,000§	1,600	70	—	—	7F7
Class A Amplifier ♠	R _k = 500	—	—	250	6.0	—	3,300	48	—	—	7F8
Class A Amplifier	2.0	100	2.0	250	6.0	800,000§	4,500	—	—	—	7G7
Class A Amplifier ♠	2.5	100	0.8	250	4.5	225,000§	2,100	—	—	—	7G8
Class A Amplifier {	R _k = 180 1.5	150 100	3.2 2.6	250 100	10.0 7.5	800,000§ 350,000§	4,000 4,000	— —	— —	— —	7H7
Converter	3.0	100	2.8	250	1.4	1,500,000§	290 #	E _b (Triode Osc) = 250 thru 20,000 ohms I _b (Triode) = 5.0 ma			7J7
Class A Amplifier	2.0	—	—	250	2.3	44,000	1,600	70	—	—	7K7
Class A Amplifier	1.5	100	1.5	250	4.5	1,000,000§	3,100	—	—	—	7L7
Class A Amplifier ♠	8.0	—	—	250	9.0	7,700	2,600	20	—	—	7N7
Converter	2.0	100	8.5	250	3.5	1,000,000§	550 #	—	—	—	7Q7
Class A Amplifier {	1.0 1.0	100 100	2.1 2.2	250 100	5.7 5.5	1,000,000§ 350,000§	3,200 3,000	— —	— —	— —	7R7
Converter	2.0	100	3.0	250	1.8	1,250,000§	525 #	E _b (Triode Osc) = 250 thru 20,000 ohms I _b (Triode) = 5.0 ma			7S7

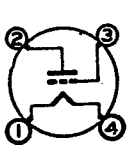
Conversion transconductance.



CHARACTERISTICS

Tube Type	Classification by Construction	Base Connections	Out-line Dwg	Type Cathode	Filament Volts	Filament Amp	Max Plate Volts	Max Screen Volts	Capacitance in Micromicrofarads		
									Input	Output	Grid-plate
7T7	Sharp-Cutoff R-F Pentode	8V	9-30	Htr	6.3	0.3	300	150	7.5	5.5	0.005
7V7	Sharp-Cutoff R-F Pentode	8V	9-30	Htr	6.3	0.45	300	150	—	—	—
7W7	Sharp-Cutoff R-F Pentode	8BJ	9-30	Htr	6.3	0.45	300	150	—	—	—
7X6	High-vacuum Rectifier-doubler	7AJ	9-31	Htr	6.3	1.2	Tube Voltage Drop: \blacklozenge 22 v at 150 ma d-c				
7X7	Duplex-Diode High-Mu Triode	8BZ	9-31	Htr	6.3	0.3	300	—	—	—	—
7Y4	Full-Wave High-Vacuum Rectifier	5AB	9-30	Htr	6.3	0.5	Tube Voltage Drop: \blacklozenge 22 v at 70 ma d-c				
7Z4	Full-Wave High-Vacuum Rectifier	5AB	9-31	Htr	6.3	0.9	Tube Voltage Drop: \blacklozenge 40 v at 100 ma				
9BW6	Beam Power Amplifier	9AM	6-3	Htr	9.45	0.3	315	285	—	—	—
10	Power Amplifier Triode	4D	19A-1	Fil	7.5	1.25	425	—	4.0	3.0	7.0
12A	Detector Amplifier Triode	4D	14-1	Fil	5.0 D-C	0.25	180	—	4.0 \blacktriangle	2.0 \blacktriangle	8.5 \blacktriangle
12A4	Medium-Mu Triode	9AG	6-3	Htr	{ 6.3 12.6 }	{ 0.6 0.3 }	450 450 \square	—	6.7	3.8	4.9
12A5	Power Amplifier Pentode	7F	12-5	Htr	{ 12.6 6.3 }	{ 0.3 0.6 }	180	180	—	—	—
12A6 12A6-GT	Beam Power Amplifier	7AC	8-6 9-9	Htr	12.6	0.15	250	250	—	—	—
12A7	Half-wave Rectifier; Power Amplifier Pentode	7K	12-6	Htr	12.6	0.3	135	135	—	—	—
12A8-G 12A8-GT	Pentagrid Converter	8A \blacklozenge	12-8 9-18	Htr	12.6	0.15	300	100	Osc $I_{g1} = 0.4$ ma $R_{g1} = 50,000$ ohms		
12AH7-GT	Medium-Mu Twin Triode	8BE	9-7	Htr	12.6	0.15	180	—	—	—	—
12AH8	Triode-Heptode Converter	9BP	6-3	Htr	{ 12.6 6.3 }	{ 0.15 0.3 }	300	125	Osc $I_{g1} = 0.2$ ma $R_{g1} = 47,000$ ohms		

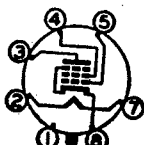
\blacktriangle Without external shield. \S Approximate.
 \dagger Zero signal. \blacklozenge Per section. \square Absolute maximum rating.
 \blacklozenge Grids 3 and 5 are screen. Grid 4 is signal-input grid.
 $\#$ Conversion transconductance.
 — The duration of the pulse voltage must not exceed 15 percent of one scanning cycle.



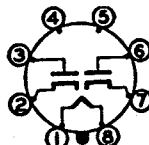
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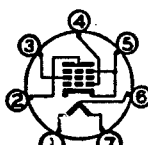
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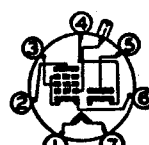
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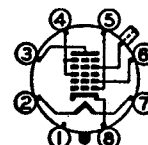
7AJ



7F



7K

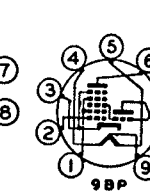
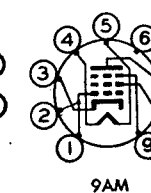
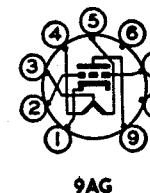
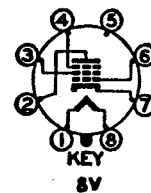
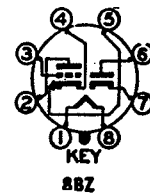
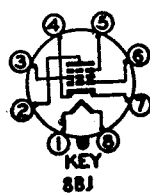
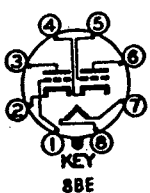


8A

AND RATINGS

Service	Neg Grid Volts	Screen Volts	Screen Milli-amperes	Plate Volts	Plate Milli-amperes	R _p , Ohms	G _m , μmhos	μ Factor	Load for Rated Output, Ohms	Power Output, Watts	Tube Type
Class A Amplifier	1.0	150	4.1	250	10.8	900,000	4,900	—	—	—	7T7
Class A Amplifier	R _k = 160	150	3.9	300	10	300,000§	5,800	—	—	—	7V7
Class A Amplifier	R _k = 160	150	3.9	300	10	300,000	5,800	—	—	—	7W7
Rectifier or Doubler	Max d-c output current per plate = 75 ma; max peak inverse voltage = 700 volts; rms supply voltage per plate = 235 volts; max peak current per plate = 450 ma										7X6
Class A Amplifier	1.0	—	—	250	1.9	67,000	1,500	100	—	—	7X7
Full-Wave Rectifier	Max d-c output current = 70 ma; max peak inverse voltage = 1250-volts; max rms supply voltage per plate = 325 volts; max peak current per plate = 210 ma										7Y4
Full-Wave Rectifier	Max d-c output current = 100 ma; max peak inverse voltage = 1,250 volts; max rms supply voltage per plate = 325 volts; max peak current per plate = 300 ma										7Z4
Class A Amplifier	12.5	250	4.5†	250	45†	52,000§	4,100	—	5,000	4.5	<i>9BW6</i>
Class A Amplifier	40.0	—	—	425	18.0†	5,000	1,600	8.0	10,200	1.6	10
Class A Amplifier	13.5	—	—	180	7.7†	4,700	1,800	8.5	10,650	0.285	12A
Class A Amplifier	9.0	—	—	250	21	—	7,800	20	—	—	<i>12A4</i>
Vertical Deflection Amplifier	Max positive pulse plate voltage $\square = 1,000$ volts; max plate dissipation $\square = 6.5$ watts; max d-c cathode current = 30 ma										
Class A Amplifier	25.0 15.0	180 100	8† 3†	180 100	45† 17†	35,000§ 50,000§	2,400 1,700	— —	3,300 4,500	3.4 0.8	12A5
Class A Amplifier	12.5	250	3.5†	250	30.0†	70,000§	3,000	—	7,500	3.4	12A6 12A6-GT
Class A Amplifier Half-Wave Rectifier	13.5	135	2.5†	135	9.0†	102,000	975	—	13,500	0.55	12A7
Converter	Max d-c output current = 30 ma; max rms supply voltage = 125 v										
Converter	3.0	100	2.7	250	3.5	360,000§	550 #	E _{o2} ; (Osc Plate) = 250 thru 20,000 ohms I _{e2} = 4.0 ma			12A8-G 12A8-GT
Class A Amplifier ♠	6.5	—	—	180	7.6	8,400	1,900	16.0	—	—	12AH7-GT
Converter	3.0	100	4.4	250	2.6	1,500,000	550 #	E _b (Triode Osc) = 100 I _b (Triode) = 5.3 ma§			<i>12AH8</i>

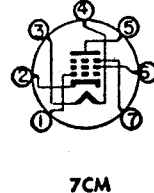
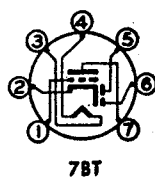
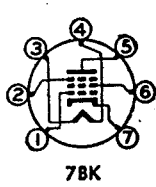
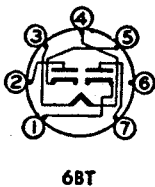
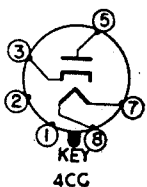
Type designations of metal tubes are shown in bold-face type.
Type designations of miniature tubes are shown in italics.



CHARACTERISTICS

Tube Type	Classification by Construction	Base Connections	Out-line Dwg	Type Cathode	Filament Volts	Filament Amp	Max Plate Volts	Max Screen Volts	Capacitance in Micromicrofarads		
									Input	Output	Grid-plate
12AL5	Twin Diode	6BT	5-1	Htr	12.6	0.15	Tube Voltage Drop: ♣ 10 v at 60 ma d-c				
12AT6	Duplex-Diode High-Mu Triode	7BT	5-2	Htr	12.6	0.15	300	—	2.2	1.2	2.0
12AT7	High-Frequency Twin Triode	9A	6-2	Htr	{ 12.6 6.3 }	{ 0.15 0.3 }	300	—	2.2	1.2 ₁ 1.5 ₂	1.5
12AU6	Sharp-Cutoff R-F Pentode	7BK	5-2	Htr	12.6	0.15	300	150	Pentode Connection		
							250	—	Triode Connection (G ₂ , G ₃ , & P tied)		
12AU7	Medium-Mu Twin Triode	9A	6-2	Htr	{ 12.6 6.3 }	{ 0.15 0.3 }	300	—	1.8	2.0	1.5
12AV6	Duplex-Diode High-Mu Triode	7BT	5-2	Htr	12.6	0.15	300	—	2.2	1.2	2.0
12AV7	Twin Triode	9A	6-2	Htr	{ 6.3 12.6 }	{ 0.45 0.225 }	300	—	3.2	1.3 ₁ 1.6 ₂	1.9
12AW6	Sharp-Cutoff R-F Pentode	7CM	5-2	Htr	12.6	0.15	300	150	Pentode Connection		
							300	—	Triode Connection (G ₂ & P tied)		
12AX4-GT	Half-Wave High-Vacuum Rectifier	4CG	9-41	Htr	12.6	0.6	Tube Voltage Drop: 32 volts at 250 ma d-c				
12AX7	High-Mu Twin Triode	9A	6-2	Htr	{ 12.6 6.3 }	{ 0.15 0.3 }	300	—	1.8	1.9	1.7
12AY7	Twin Triode	9A	6-2	Htr	{ 6.3 12.6 }	{ 0.3 0.15 }	300	—	1.3▲	0.6▲	1.3▲
12AZ7	Twin Triode	9A	6-2	Htr	{ 12.6 6.3 }	{ 0.225 0.45 }	300	—	3.2	1.3 ₁ 1.6 ₂	1.9
12B4	Low-Mu Triode	9AG	6-3	Htr	{ 12.6 6.3 }	{ 0.3 0.6 }	450	—	6.4	7.0	4.3
							550◻	—	—	—	—
12B8-GT	Remote-Cutoff Pentode Triode	8T	9-24	Htr	12.6	0.3	90	90	Pentode Section Triode Section		
12BA6	Remote-Cutoff R-F Pentode	7BK	5-2	Htr	12.6	0.15	300	150	5.5	5.0	0.0035♣
12BA7	Pentagrid Converter	8CT	6-3	Htr	12.6	0.15	300	100	Osc I _{g1} = 0.35 ma R _{g1} = 20,000 ohms		

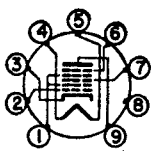
▲ Without external shield. ◻ Absolute maximum rating. # Conversion transconductance
 § Approximate. ♣ Per section. ♣ Maximum.
 1— Section 1.
 2— Section 2.
 3— The duration of the pulse voltage must not exceed 15 percent of one scanning cycle.



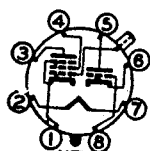
AND RATINGS

Service	Neg Grid Volts	Screen Volts	Screen Milli-amperes	Plate Volts	Plate Milli-amperes	R _p , Ohms	G _m , μmhos	μ Factor	Load for Rated Output, Ohms	Power Output, Watts	Tube Type
Half-Wave Rectifier	Max d-c output current per plate = 9 ma; max peak inverse voltage = 330 volts; max rms supply voltage per plate = 117 volts; max peak current per plate = 54 ma										<i>12AL5</i>
Class A Amplifier	3.0	—	—	250	1.0	58,000	1,200	70	—	—	<i>12AT6</i>
	1.0	—	—	100	0.8	54,000	1,300	70	—	—	
Class A Amplifier ♠	R _k = 200	—	—	250	10.0	10,900	5,500	60	—	—	<i>12AT7</i>
	R _k = 270	—	—	100	3.7	15,000	4,000	60	—	—	
Class A Amplifier	R _k = 68	150	4.3	250	10.6	1,000,000§	5,200	—	—	—	<i>12AU6</i>
	R _k = 150	100	2.1	100	5.0	500,000§	3,900	—	—	—	
Class A Amplifier	R _k = 330	—	—	250	12.2	—	4,800	36	—	—	
Class A Amplifier ♠	8.5	—	—	250	10.5	7,700	2,200	17	—	—	<i>12AU7</i>
	0.0	—	—	100	11.8	6,500	3,100	20	—	—	
Class A Amplifier	2.0	—	—	250	1.2	62,500	1,600	100	—	—	<i>12AV6</i>
	1.0	—	—	100	0.5	80,000	1,250	100	—	—	
Class A Amplifier ♠	R _k = 56	—	—	150	18	4,800	8,500	41	—	—	<i>12AV7</i>
	R _k = 120	—	—	100	9.0	6,100	6,100	37	—	—	
Class A Amplifier Class A Amplifier	R _k = 200	150	2.0	250	7.0	800,000§	5,000	—	—	—	<i>12AW6</i>
	R _k = 825	—	—	250	5.5	11,000	3,800	42	—	—	
T-V Damp-er Service	Max d-c output current = 125 ma; max peak inverse voltage ₃ = 4,000 volts; max peak current = 600 ma										<i>12AX4-GT</i>
Class A Amplifier ♠	1.0	—	—	100	0.5	80,000	1,250	100	—	—	<i>12AX7</i>
	2.0	—	—	250	1.2	62,500	1,600	100	—	—	
Class A Amplifier ♠	4.0	—	—	250	3.0	—	1,750	40	—	—	<i>12AY7</i>
Class A Amplifier	R _k = 200	—	—	250	10	10,900	5,500	60	—	—	<i>12AZ7</i>
	R _k = 270	—	—	100	3.7	15,000	4,000	60	—	—	
Class A Amplifier Vertical Deflection Amplifier	17.5	—	—	150	35	—	6,500	6.5	—	—	<i>12B4</i>
	Max positive pulse plate voltage ₃ □ = 1,000 volts; max plate dissipation □ = 6 watts										
Class A Amplifier Class A Amplifier	3.0	90	2.0	90	7.0	200,000	1,800	—	—	—	<i>12B8-GT</i>
	0.0	—	—	90	2.8	37,000	2,400	90	—	—	
Class A Amplifier	R _k = 68	100	4.2	250	11.0	1,000,000§	4,400	—	—	—	<i>12BA6</i>
	R _k = 68	100	4.4	100	10.8	250,000§	4,300	—	—	—	
Converter	1.0	100	10	250	3.8	1,000,000§	950 #	—	—	—	<i>12BA7</i>

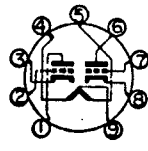
Type designations of miniature tubes are shown in italics.



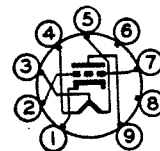
8CT



8T



9A

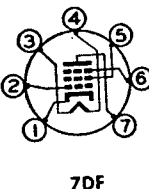
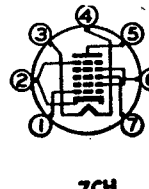
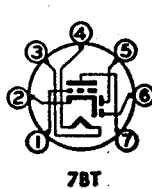
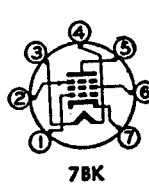
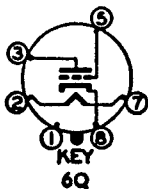
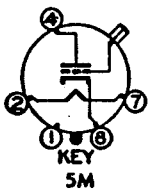


9AG

CHARACTERISTICS

Tube Type	Classification by Construction	Base Connections	Out-line Dwg	Type Cathode	Fila-ment Volts	Fila-ment Amp	Max Plate Volts	Max Screen Volts	Capacitance in Micromicrofarads		
									Input	Out-put	Grid-plate
12BD6	Remote-Cutoff R-F Pentode	7BK	5-2	Htr	12.6	0.15	300	125	4.3▲	5.0▲	0.005♣▲
12BE6	Pentagrid Converter	7CH ▼	5-2	Htr	12.6	0.15	300	100	Osc $I_{g1} = 0.5$ ma $R_{g1} = 20,000$ ohms		
12BF6	Duplex-Diode Medium-Mu Triode	7BT	5-2	Htr	12.6	0.15	300	—	1.8▲	1.1▲	2.0▲
12BH7	Medium-Mu Twin Triode	9A	6-3	Htr	{ 6.3 12.6 }	{ 0.6 0.3 }	300	—	3.3	2.0	2.4
							500				
12BK6	Duplex-Diode, High-Mu Triode	7BT	5-3	Htr	12.6	0.15	300	—	—	—	—
12BN6	Gated-Beam Discriminator	7DF	5-3	Htr	12.6	0.15	300‡	100	$E_{c1} = 1.25$ volts R_{ms}^*		
12BT6	Duplex-Diode High-Mu Triode	7BT	5-3	Htr	12.6	0.15	300	—	—	—	—
12BU6	Duplex-Diode Medium-Mu Triode	7BT	5-3	Htr	12.6	0.15	300	—	—	—	—
12BY7	Sharp-Cutoff Pentode	9BF	6-3	Htr	{ 12.6 6.3 }	{ 0.3 0.6 }	300‡	175	11.1▲	3.0▲	0.055▲
12BZ7	High-Mu Twin Triode	9A	6-3	Htr	{ 12.6 6.3 }	{ 0.3 0.6 }	300	—	6.5▲	0.71▲ 0.552▲	0.45▲
12C8	Duplex-Diode Semi-Remote-Cutoff Pentode	8E	8-4	Htr	12.6	0.15	300	125	6.0	9.0	0.005♣
12E5-GT	Medium-Mu Triode	6Q	9-11	Htr	12.6	0.15	250	—	3.4	5.5	2.6
12F5-GT	High-Mu Triode	5M	9-17	Htr	12.6	0.15	300	—	1.9	3.4	2.4
12H6	Twin Diode	7Q	8-5	Htr	12.6	0.15	Tube Voltage Drop: ♣ 11 v at 16 ma d-c				
12J5 12J5-GT 12J5-WGT	Medium-Mu Triode	6Q	8-1 9-11	Htr	12.6	0.15	300	—	3.4	3.6	3.4
12J7-GT	Sharp-Cutoff Pentode	7R	9-18	Htr	12.6	0.15	300	125	Pentode Connected		
							250	—	Triode Connected (G_2, G_3 & P Tied)		
12K7-GT	Remote-Cutoff R-F Pentode	7R	9-18	Htr	12.6	0.15	300	125	4.6	12.0	0.005♣
12K8 12K8-GT	Triode Hexode Converter	8K♥	8-2 9-24	Htr	12.6	0.15	300	150	Osc $I_{g1} = 0.15$ ma $R_{g1} = 50,000$ ohms		

*Minimum. § Approximate. ▲ Without external shield. ♣ Maximum.
 ♥ Grids 2 and 4 are screen. Grid 3 is signal-input grid. ‡ Plate supply voltage.
 1—Section 1.
 2—Section 2. 3—The duration of the pulse voltage must not exceed 15 percent of one scanning cycle.

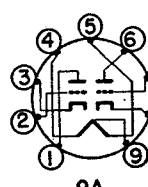
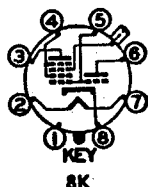
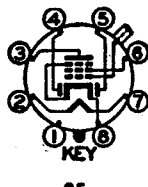
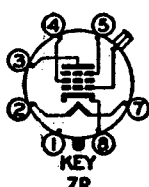
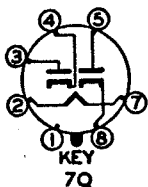


Service	Neg Grid Volts	Screen Volts	Screen Milli-amperes	Plate Volts	Plate Milli-amperes	R _p , Ohms	G _m , μmhos	μ Factor	Load for Rated Output, Ohms	Power Output, Watts	Tube Type
Class A Amplifier	3.0	100	3.5	250	9.0	700,000	2,000	—	—	—	12BD6
Converter	1.5 1.5	100 100	6.8 7.0	250 100	2.9 2.6	1,000,000\$ 400,000\$	475 # 455 #	—	—	—	12BE6
Class A Amplifier	9.0	—	—	250	9.5	8,500	1,900	16	—	—	12BF6
Class A Amplifier ♠ Vertical Deflection Amplifier ♠	10.5	—	—	250	11.5	—	3,100	17	—	—	12BH7
Max positive pulse plate voltage $E_p = 1,350$ volts; max plate dissipation = 3.5 watts; max d-c cathode current = 20 ma											
Class A Amplifier {	2.0 1.0	—	—	250 100	1.2 0.5	62,500 80,000	1,600 1,250	100 100	—	—	12BK6
FM Limiter-Discriminator	R _k = 200 to 400	100	9.8	285#	0.49	—	—	—	330000	—	12BN6
Class A Amplifier {	3.0 1.0	—	—	250 100	1.0 0.8	58,000 54,000	1,200 1,300	70 70	—	—	12BT6
Class A Amplifier	9.0	—	—	250	9.5	8,500	1,900	16	10,000	0.30	12BU6
Class A Amplifier	R _b = 68	150	6.0	250	25	110,000	12,000	—	—	—	12BY7
Class A Amplifier ♠	2	—	—	250	2.5	31,800	3,200	100	—	—	12BZ7
Class A Amplifier	3.0	125	2.3	250	10.0	600,000\$	1,325	—	—	—	12C8
Class A Amplifier	13.0	—	—	250	5.0	9,500	1,450	13.8	—	—	12E5-GT
Class A Amplifier	2.0	—	—	250	0.9	66,000	1,500	100	—	—	12F5-GT
Half-Wave Rectifier	Max d-c output current per plate = 8 ma; max peak inverse voltage = 420 volts; max rms supply voltage per plate = 150 volts; max peak current per plate = 48 ma										12H6
Class A Amplifier {	0.0 8.0	—	—	90 250	10 9.0	6,700 7,700	3,000 2,600	20 20	—	—	12J5 12J5-GT 12J5-WGT
Class A Amplifier Class A Amplifier	3.0 8.0	100 —	0.5 —	250 250	2.0 6.5	1,000,000* 10,500	1,225 1,900	— 20	— —	— —	12J7-GT
Class A Amplifier	3.0	125	2.6	250	10.5	600,000\$	1,650	—	—	—	12K7-GT
Converter	3.0	100	6.0	250	2.5	600,000\$	350 #	E _b (Triode Osc) = 100 I _b (Triode) = 3.8 ma		12K8 12K8-GT	

♠ Per section.

Conversion transconductance.

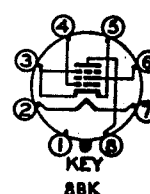
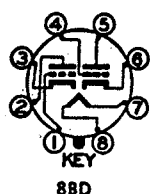
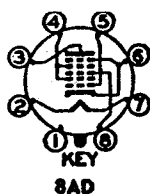
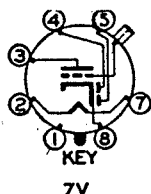
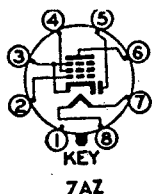
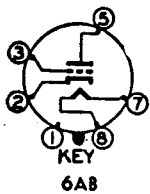
Type designations of metal tubes are shown in bold-face type.
Type designations of miniature tubes are shown in italics.



CHARACTERISTICS

Tube Type	Classification by Construction	Base Connections	Outline Dwg	Type Cathode	Filament Volts	Filament Amp	Max Plate Volts	Max Screen Volts	Capacitance in Micromicrofarads		
									Input	Output	Grid-plate
12L8-GT	Twin-Pentode Power Amplifier	8BU	9-11	Htr	12.6	0.15	180	180	5.0▲	6.0▲	0.7▲
12Q7-GT	Duplex-Diode High-Mu Triode	7V	9-18	Htr	12.6	0.15	300	—	2.2	5.0	1.6
12S8-GT	Triple-Diode High-Mu Triode	8CB	9-23	Htr	12.6	0.15	300	—	1.2	5.0	2.0
12SA7 12SA7-GT	Pentagrid Converter	8R♥ 8AD♥	8-1 9-11 or 9-41	Htr	12.6	0.15	300	100	Osc $I_{g1} = 0.5$ ma $R_{g1} = 20,000$ ohms		
12SC7	High-Mu Twin Triode	8S	8-1	Htr	12.6	0.15	250	—	—	—	—
12SF5 12SF5-GT	High-Mu Triode	6AB	8-1 9-11	Htr	12.6	0.15	300	—	4.0	3.6	2.4
12SF7 12SF7-GT	Diode Remote-Cutoff Pentode	7AZ	8-1 9-18	Htr	12.6	0.15	300	150	5.5 5.5	6.0 6.0	0.004♣ 0.004♣
12SG7	Semi-Remote-Cutoff R-F Pentode	8BK	8-1	Htr	12.6	0.15	300	150	8.5	7.0	0.003♣
12SH7	Sharp-Cutoff R-F Pentode	8BK	8-1	Htr	12.6	0.15	300	150	8.5	7.0	0.003♣
12SJ7 12SJ7-GT	Sharp-Cutoff Pentode	8N	8-1 9-12	Htr	12.6	0.15	300	125 250	Pentode Connection Triode Connection (G_2 , G_3 & P tied)		
12SK7 12SK7-GT	Remote-Cutoff R-F Pentode	8N	8-1 9-12	Htr	12.6	0.15	300	125	6.0 6.5	7.0 7.5	0.003♣ 0.005♣
12SL7-GT	High-Mu Twin Triode	8BD	9-11	Htr	12.6	0.15	300	—	—	—	—
12SN7-GT	Medium-Mu Twin Triode	8BD	9-11 or 9-41	Htr	12.6	0.3	300	—	2.8 ₁ ▲ 3.0 ₂ ▲	0.8 ₁ ▲ 1.2 ₂ ▲	3.8 ₁ ▲ 4.0 ₂ ▲
12SQ7 12SQ7-GT	Duplex-Diode High-Mu Triode	8Q	8-1 9-12	Htr	12.6	0.15	300	—	3.2 4.2▲	3.0 3.4▲	1.6 1.8▲
12SR7 12SR7-GT	Duplex-Diode Medium-Mu Triode	8Q	8-1 9-11	Htr	12.6	0.15	250	—	3.6 3.5	2.8 3.8	2.4 2.3
12SW7	Duplex-Diode Medium-Mu Triode	8Q	8-1	Htr	12.6	0.15	250	—	3.0	2.8	2.4
12SX7-GT	Medium-Mu Twin Triode	8BD	9-11	Htr	12.6	0.3	300	—	3.0 ₁ 2.8 ₂	0.8 ₁ 1.2 ₂	3.6
12SY7 12SY7-GT	Pentagrid Converter	8R♥ 8AD♥	8-1 9-12	Htr	12.6	0.15	300	100	Osc $I_{g1} = 0.5$ ma $R_{g1} = 20,000$ ohms Osc $I_{g1} = 0.1$ ma $R_{g1} = 20,000$ ohms		

◆ Per section. § Approximate. * Minimum. † Zero signal. 1—Section 1. ♣ Maximum.
 ♥ Grids 2 and 4 are screen. Grid 3 is signal-input grid. 2—Section 2.
 ▲ Without external shield.

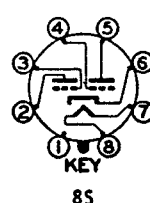
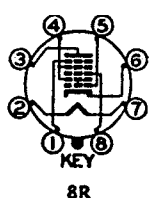
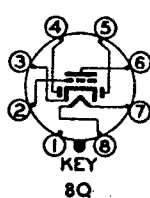
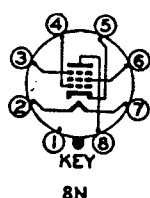
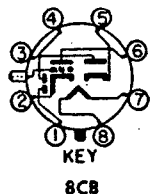
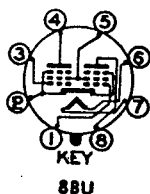


AND RATINGS

Service	Neg Grid Volts	Screen Volts	Screen Milli-amperes	Plate Volts	Plate Milli-amperes	R _p , Ohms	G _m , μ mhos	μ Factor	Load for Rated Output, Ohms	Power Output, Watts	Tube Type
Class A Amplifier \clubsuit	9.0	180	2.8†	180	13.0†	160,000	2,150	—	10,000	1.0	12L8-GT
Class A Amplifier	3.0	—	—	250	1.0	58,000	1,200	70	—	—	12Q7-GT
Class A Amplifier	2.0	—	—	250	0.9	91,000	1,100	100	—	—	12S8-GT
Converter	2.0	100	8.5	250	3.5	1,000,000§	450 #	—	—	—	12SA7
	2.0	100	8.5	100	3.3	500,000§	425 #	—	—	—	12SA7-GT
Class A Amplifier \clubsuit	2.0	—	—	250	2.0	53,000§	1,325	70	—	—	12SC7
Class A Amplifier	2.0	—	—	250	0.9	66,000	1,500	100	—	—	12SF5 12SF5-GT
Class A Amplifier {	1.0	100	3.3	250	12.4	700,000§	2,050	—	—	—	12SF7
	1.0	100	3.4	100	12	200,000§	1,975	—	—	—	12SF7-GT
Class A Amplifier {	2.5	150	3.4	250	9.2	1,000,000*	4,000	—	—	—	12SG7
	1.0	125	4.4	250	11.8	900,000	4,700	—	—	—	
	1.0	100	3.2	100	8.2	250,000	4,100	—	—	—	
Class A Amplifier	1.0	150	4.1	250	10.8	900,000§	4,900	—	—	—	12SH7
Class A Amplifier Class A Amplifier	3.0	100	0.8	250	3.0	1,000,000*	1,650	—	—	—	12SJ7
	8.5	—	—	250	9.2	7,600	2,500	19	—	—	12SJ7-GT
Class A Amplifier {	3.0	100	2.6	250	9.2	800,000§	2,000	—	—	—	12SK7
	1.0	100	4.0	100	13	120,000§	2,350	—	—	—	12SK7-GT
Class A Amplifier \clubsuit	2.0	—	—	250	2.3	44,000	1,600	70	—	—	12SL7-GT
Class A Amplifier \clubsuit {	8.0	—	—	250	9.0	7,700	2,600	20	—	—	12SN7-GT
	0.0	—	—	90	10	6,700	3,000	20	—	—	
Class A Amplifier {	2.0	—	—	250	1.1	85,000§	1,175	100	—	—	12SQ7
	1.0	—	—	100	0.5	110,000§	925	100	—	—	12SQ7-GT
Class A Amplifier	9.0	—	—	250	9.5†	8,500	1,900	16	10,000	0.3	12SR7 12SR7-GT
Class A Amplifier {	9.0	—	—	250	9.5	8,500	1,900	16	—	—	12SW7
	R _g = 2 meg	—	—	26.5	1.1	15,500	1,100	17	—	—	
Class A Amplifier \clubsuit {	8.0	—	—	250	9.0	7,700	2,600	20	—	—	12SX7-GT
	R _g = 05 meg	—	—	26.5	1.8	11,500	1,800	21	—	—	
Converter	2.0	100	8.5	250	3.5	1,000,000§	450 #	—	—	—	12SY7
Converter	1.0	28	1.8	28	0.5	—	250 #	—	—	—	12SY7-GT

† Conversion transconductance.

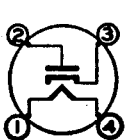
Type designations of metal tubes are shown in bold-face type.



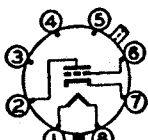
CHARACTERISTICS

Tube Type	Classification by Construction	Base Connections	Out-line Dwg	Type Cathode	Fila-ment Volts	Fila-ment Amp	Max Plate Volts	Max Screen Volts	Capacitance in Micromicrofarads		
									Input	Out-put	Grid-plate
12Z3	Half-Wave High-Vacuum Rectifier	4G	12-5	Htr	12.6	0.3	Tube Voltage Drop: 17 v at 110 ma d-c				
14A4	Medium-Mu Triode	5AC	9-30	Htr	12.6	0.15	300	—	3.4	3.0	4.0
14A5	Beam Power Amplifier	5AA	9-30	Htr	12.6	0.15	250	250	—	—	—
14A7/12B7	Remote-Cutoff Pentode	8V	9-30	Htr	12.6	0.15	300	125	6.0	7.0	0.005 ♣
14AF7	Medium-Mu Twin Triode	8AC	9-30	Htr	12.6	0.15	300	—	2.2	1.6	2.3
14B6	Duplex-Diode High-Mu Triode	8W	9-30	Htr	12.6	0.15	300	—	—	—	—
14B8	Pentagrid Converter	8X♦	9-30	Htr	12.6	0.15	300	100	Osc $I_{g1} = 0.4$ ma $R_{g1} = 50,000$ ohms		
14C5	Beam Power Amplifier	6AA	9-31	Htr	12.6	0.225	315	285	—	—	—
14C7	Sharp-Cutoff Pentode	8V	9-30	Htr	12.6	0.15	300	100	6.0	6.5	0.007 ♣
14E6	Duplex-Diode High-Mu Triode	8W	9-30	Htr	12.6	0.15	250	—	—	—	—
14E7	Duplex-Diode Remote-Cutoff Pentode	8AE	9-30	Htr	12.6	0.15	250	100	4.6	5.3	0.005 ♣
14F7	High-Mu Twin Triode	8AC	9-30	Htr	12.6	0.15	250	—	—	—	—
14F8	High-Frequency Twin Triode	8BW	9-32	Htr	12.6	0.15	300	—	2.8	1.4	1.2
14H7	Semi-Remote-Cutoff R-F Pentode	8V	9-30	Htr	12.6	0.15	300	150	8.0	7.0	0.004 ♣
14J7	Triode-Heptode Converter	8BL	9-30	Htr	12.6	0.15	300	100	Osc $I_{g1} = 0.4$ ma $R_{g1} = 50,000$ ohms		
14N7	Medium-Mu Twin Triode	8AC	9-31	Htr	12.6	0.3	300	—	—	—	—
14Q7	Pentagrid Converter	8AL♥	9-30	Htr	12.6	0.15	300	100	Osc $I_{g1} = 0.5$ ma $R_{g1} = 20,000$ ohms		
14R7	Duplex-Diode Remote-Cutoff Pentode	8AE	9-30	Htr	12.6	0.15	250	125	5.6	5.3	0.004 ♣
14S7	Triode-Heptode Converter	8BL	9-30	Htr	12.6	0.15	300	100	Osc $I_{g1} = 0.4$ ma $R_{g1} = 50,000$ ohms		
14W7	Sharp-Cutoff R-F Pentode	8BJ	9-30	Htr	12.6	0.225	300	150	—	—	—

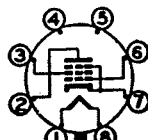
†Zero signal. §Approximate. ♣Per section. ♠Maximum. ⊕Both sections.
 ♦ Grids 3 and 5 are screen. Grid 4 is signal-input grid. ♥ Grids 2 and 4 are screen. Grid 3 is signal-input grid. # Conversion transconductance.



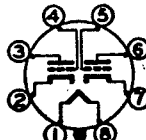
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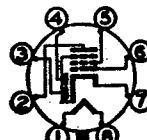
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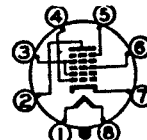
6AA



8AC



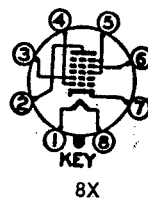
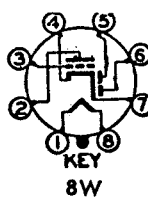
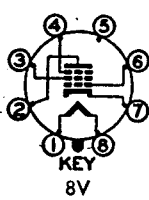
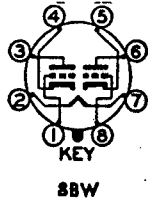
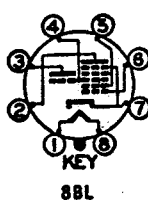
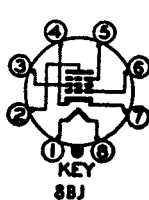
8AE



8AL

AND RATINGS

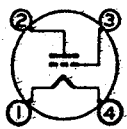
Service	Neg Grid Volts	Screen Volts	Screen Milli-amperes	Plate Volts	Plate Milli-amperes	R _p ' Ohms	G _m ' μmhos	μ Factor	Load for Rated Output, Ohms	Power Output, Watts	Tube Type
Half-Wave Rectifier	Max d-c output current = 55 ma; max peak inverse voltage = 700 volts; max rms supply voltage = 235 volts; max peak current = 330 ma										12Z3
Class A Amplifier	8.0 0.0	—	—	250 90	9.0 10	7,700§ 6,700§	2,600 3,000	20 20	—	—	14A4
Class A Amplifier	12.5	250	3.5†	250	30.0†	70,000§	3,000	—	7,500	2.8	14A5
Class A Amplifier	3.0	100	2.6	250	9.2	800,000§	2,000	—	—	—	14A7/12B7
Class A Amplifier ♠	10.0	—	—	250	9.0	7,600	2,100	16	—	—	14AF7
Class A Amplifier	2.0 1.0	—	—	250 100	0.9 0.4	91,000§ 110,000§	1,100 900	100 100	—	—	14B6
Converter	3.0	100	2.7	250	3.5	360,000§	550 #	E _{c2} (Osc Plate) = 250 thru 20,000 ohms I _{c2} = 4.0 ma			14B8
Class A Amplifier	13.0	225	2.2†	315	34.0†	77,000§	3,750	—	8,500	5.5	14C5
Class A Amplifier	3.0	100	0.7	250	2.2	1,000,000§	1,575	—	—	—	14C7
Class A Amplifier	9.0	—	—	250	9.5	8,500	1,900	16	—	—	14E6
Class A Amplifier	3.0	100	1.6	250	7.5	700,000§	1,300	—	—	—	14E7
Class A Amplifier ♠	2.0	—	—	250	2.3	44,000§	1,600	70	—	—	14F7
Class A Amplifier ♠	Rk = 500	—	—	250	6.0	—	3,300	48	—	—	14F8
Class A Amplifier	Rk = 180 1.5	150 100	3.2 2.6	250 100	10. 7.5	800,000§ 350,000§	4,000 4,000	— —	— —	— —	14H7
Converter	3.0	100	2.8	250	1.4	1,500,000§	290 #	E _b (Triode Osc) = 250 thru 20,000 ohms I _b (Triode) = 5.0 ma			14J7
Class A Amplifier ♠	8.0	—	—	250	9.0	7,700	2,600	20	—	—	14N7
Converter	2.0	100	8.5	250	3.5	1,000,000§	550 #	—	—	—	14Q7
Class A Amplifier	1.0 1.0	100 100	2.1 2.2	250 100	5.7 5.5	1,000,000§ 350,000§	3,200 3,000	— —	— —	— —	14R7
Converter	2.0	100	3.0	250	1.8	1,250,000§	525 #	(E _b Triode Osc) = 250 thru 20,000 ohms I _b (Triode) = 5.0 ma			14S7
Class A Amplifier	Rk = 160	150	3.9	300	10.0	300,000	5,800	—	—	—	14W7



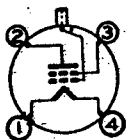
CHARACTERISTICS

Tube Type	Classification by Construction	Base Connections	Out-line Dwg	Type Cathode	Fila-ment Volts	Fila-ment Amp	Max Plate Volts	Max Screen Volts	Capacitance in Micromicrofarads		
									Input	Out-put	Grid-plate
14X7	Duplex-Diode High-Mu Triode	8BZ	9-31	Htr	12.6	0.15	300	—	—	—	—
14Y4	Full-Wave High-Vacuum Rectifier	5AB	9-30	Htr	12.6	0.3	Tube Voltage Drop: ♦ 22 v at 70 ma d-c				
15	Sharp-Cutoff R-F Pentode	5F	12-6	Htr	2.0 D-C	0.22	135	67.5	2.35 ▲	7.80 ▲	0.01
15A6	Sharp-Cutoff Pentode	9AR	6A-1	Htr	15.0	0.3	250	250	—	—	—
16A5	Power Amplifier Pentode	9BL	6A-1	Htr	16.5	0.3	250	250	11 ▲	5.9 ▲	1.0 ♣
19	Twin-Triode Power Amplifier	6C	12-5	Fil	2.0 D-C	0.26	135	—	Both Sections in Push-pull		
19AQ5	Beam Power Amplifier	7BZ	5-3	Htr	18.9	0.15	250	250	—	—	—
19BG6-G	Beam Power Amplifier	5BT	16A-1	Htr	18.9	0.3	700	350	11 ▲	6.5 ▲	0.65 ♣
19C8	Triple-Diode, High-Mu Triode	9E	6-2	Htr	18.9	0.15	250	—	—	—	—
19J6	Medium-Mu Twin Triode	7BF	5-2	Htr	18.9	0.15	300	—	2.0 ▲	0.4 ▲	1.5 ▲
19T8	Triple-Diode High-Mu Triode	9E	6-2	Htr	18.9	0.15	300	—	1.6 ▲	1.0 ▲	2.2 ▲
19V8	Triple-Diode, High-Mu Triode	9AH	6-2	Htr	18.9	0.15	300	—	—	—	—
19X3	Half-Wave High-Vacuum Rectifier	9BM	6A-1	Htr	19	0.3	Tube Voltage Drop: 16 volts at 180 ma d-c				
19Y3	Half-Wave High-Vacuum Rectifier	9BM	6A-1	Htr	19	0.3	Tube Voltage Drop: 15 volts at 180 ma d-c				
20	Power Amplifier Triode	4D	9-25	Fil	3.3 D-C	0.132	135	—	2.0	2.3	4.1
21A6	Beam Power Amplifier	9AS	T-X	Htr	21.5	0.3	250	250	—	—	—
22	R-F Sharp-Cutoff Tetrode	4K	14-2	Fil	3.3 D-C	0.132	135	67.5	3.5	10.0	0.02 ♣
24A	Sharp-Cutoff R-F Tetrode	5E	14-2	Htr	2.5	1.75	250	90	5.3 ▲	10.5 ▲	0.007 ♣
25A6 25A6-GT	Power Amplifier Pentode	7S	8-6 9-11	Htr	25.0	0.3	160	135	8.5	12.5	0.2

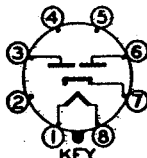
‡Zero signal. §Approximate. ♦ Per section. ♣ Maximum. †Plate-to-plate.
 ▲ Without external shield. ⊕ Both sections.
 — The duration of the pulse voltage must not exceed 15 percent of one scanning cycle.



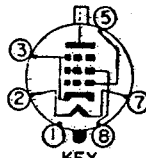
4D



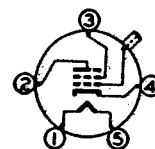
4K



5AB



5BT

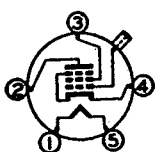


5E

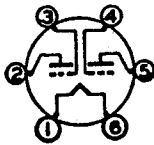
AND RATINGS

Service	Neg Grid Volts	Screen Volts	Screen Milli-amperes	Plate Volts	Plate Milli-amperes	R _p Ohms	G _m μmhos	μ Factor	Load for Rated Output, Ohms	Power Output, Watts	Tube Type
Class A Amplifier	1.0	—	—	250	1.9	67,000	1,500	100	—	—	14X7
Full-Wave Rectifier	Max d-c output current = 70 ma; max peak inverse voltage = 1250 volts; max rms supply voltage per plate = 325 volts; max peak current per plate = 210 ma										14Y4
Class A Amplifier	1.5	67.5	0.3	135	1.85	800,000	750	—	—	—	15
Class A Amplifier	2.9	180	4.6	180	36	100,000	10,000	—	—	—	15A6
Class A Amplifier	10.4	170	10	170	53	20,000	9,000	—	3,000	4.0	16A5
Class B Amplifier	0.0	—	—	135	5.0† ♣	Input Signal = 0.170 watt§			10,000†	2.1§	19
Class A Amplifier	12.5 8.5	250 180	4.5† 3.0†	250 180	45† 29†	52,000§ 58,000§	4,100 3,700	— —	5,000 5,500	4.5 2.0	19AQ5
Horizontal Deflection Amplifier	Max positive pulse plate voltage ₃ = 6,000 volts; max plate dissipation = 20 watts, max screen input = 3.2 watts; max d-c plate current = 100 ma										19BG6-G
Class A Amplifier	1.0	—	—	100	0.5	80,000	1,250	100	—	—	19C8
Class A ♣ Amplifier	Rk = 150 ⊕	—	—	100	8.5	7,100	5,300	38	—	—	19J6
Class A Amplifier	3.0 1.0	— —	— —	250 100	1.0 0.8	58,000§ 54,000§	1,200 1,300	70 70	— —	— —	19T8
Class A Amplifier	3.0 1.0	— —	— —	250 100	1.0 0.8	58,000§ 54,000§	1,200 1,300	70 70	— —	— —	19V8
T-V Damp-er Service	Max d-c output current = 180 ma; max peak inverse voltage ₃ = 4,000 volts; max peak current = 400 ma										19X3
Half-Wave Rectifier	Max d-c output current = 180 ma; max peak inverse voltage = 700 volts; max rms supply voltage = 250 volts										19Y3
Class A Amplifier	22.5	—	—	135	6.5†	6,300	525	3.3	6,500	0.110	20
Horizontal Deflection Amplifier	23	180	3	180	45	—	6,500	—	—	—	21A6
Max positive pulse plate voltage ₃ = 7,000 volts; max plate dissipation = 8 watts; max screen dissipation = 4.5 watts; max d-c cathode current = 150 ma											
Class A Amplifier	1.5	67.5	1.3	135	3.7	325,000	500	—	—	—	22
Class A Amplifier	3.0	90	1.7 ♣	250	4.0	600,000	1,050	—	—	—	24A
Class A Amplifier	18.0	120	6.5†	160	33.0†	42,000	2,375	—	5,000	2.2	25A6 25A6-GT

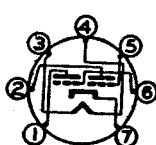
Type designations of metal tubes are shown in bold-face type.
Type designations of miniature tubes are shown in italics.



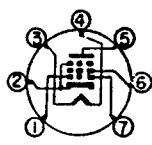
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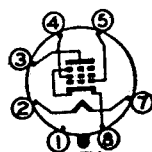
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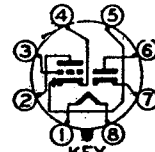
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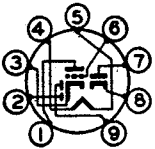
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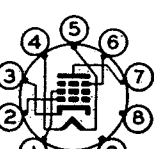
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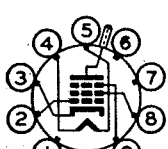
8BZ



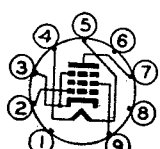
9AH



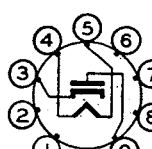
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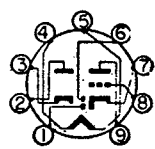
9AS



9BL



9BM

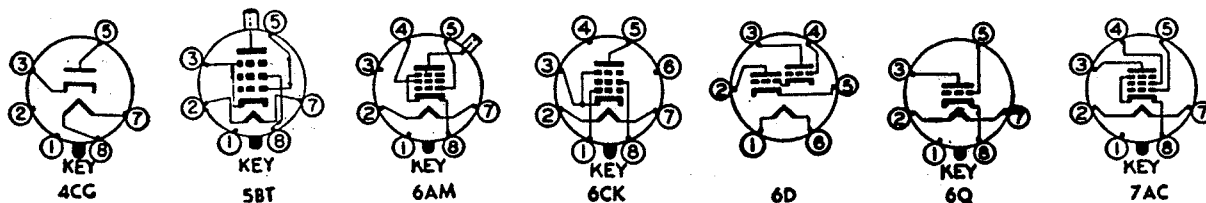


9E

CHARACTERISTICS

Tube Type	Classification by Construction	Base Connections	Out-line Dwg	Type Cathode	Fila-ment Volts	Fila-ment Amp	Max Plate Volts	Max Screen Volts	Capacitance in Micromicrofarads		
									Input	Out-put	Grid-plate
25A7-GT	Half-wave Rectifier; Power Amplifier Pentode	8F	9-11	Htr	25.0	0.3	117	—	—	—	—
									Tube Voltage Drop: 23 v at 150 ma d-c		
25AC5-GT	Triode Power Amplifier	6Q	9-11	Htr	25.0	0.3	180	2 tubes, Push-pull			
25AV5-GT	Beam Power Amplifier	6CK	9-11 or 9-41	Htr	25.0	0.3	550‡	200	14▲	20▲	0.7▲
25B5	Direct-Coupled Power Amplifier	6D	12-1	Htr	25.0	0.3	180	—	—	—	—
25B6-G	Power Amplifier Pentode	7S	14-3	Htr	25.0	0.3	200	135	—	—	—
25B8-GT	Triode Remote-Cutoff Pentode	8T	9-24	Htr	25.0	0.15	100	100	Pentode Section Triode Section		
25BK5	Beam Power Amplifier	9BQ	6-3	Htr	25.0	0.3	250	250	13▲	5.0▲	0.6▲
25BQ6-GT	Beam Power Amplifier	6AM	9-50	Htr	25.0	0.3	550‡	200	14▲	9.5▲	0.95▲
25C6-G	Beam Power Amplifier	7AC	14-3	Htr	25.0	0.3	200	135	—	—	—
25CD6-G	Beam Power Amplifier	5BT	16A-1	Htr	25.0	0.6	700	175	26▲	10▲	1.0♣
25D8-GT	Diode-Triode-Pentode	8AF	9-23	Htr	25.0	0.15	100	100	Pentode Section Triode Section		
25L6	Beam Power Amplifier	7AC	8-6	Htr	25.0	0.3	200	117	16.0	13.5	0.3
25L6-GT	Beam Power Amplifier	7AC	9-11 or 9-41	Htr	25.0	0.3	200	125	15▲	10▲	0.8▲
25N6-G	Direct-Coupled Power Amplifier	7W	12-3	Htr	25.0	0.3	180	—	—	—	—
25U4-GT	Half-Wave High-Vacuum Rectifier	4CG	9-13	Htr	25.0	0.3	Tube Voltage Drop: 21 volts at 250 ma d-c				
25W4-GT	Half-wave High-vacuum Rectifier	4CG	9-11	Htr	25.0	0.3	Tube Voltage Drop: 21 v at 250 ma d-c				

†Zero signal. §Approximate. ▲Without external shield. ⓂPlate supply voltage.
 §—The duration of the pulse voltage must not exceed 15 percent of one scanning cycle.
 ‡Plate-to-plate. ♣Maximum.



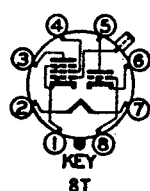
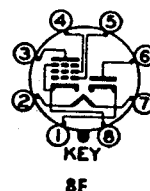
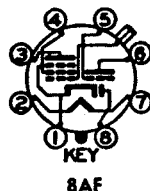
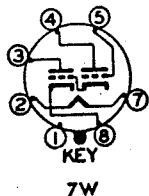
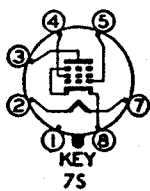
AND RATINGS

Service	Neg Grid Volts	Screen Volts	Screen Milli-amperes	Plate Volts	Plate Milli-amperes	R _p , Ohms	G _m , μmhos	μ Factor	Load for Rated Output, Ohms	Power Output, Watts	Tube Type
Class A Amplifier Half-Wave Rectifier	15.0	100	4.0†	100	20.5†	50,000	1,800	—	4,500	0.77	25A7-GT
Max d-c output current = 75 ma; max peak inverse voltage = 350 v; max rms supply voltage = 117 v; max peak current = 450 ma											
Class B Amplifier	0.0	—	—	180	4.0†	Peak Input Signal = 0.810 watt		—	4,800 †	6.0	25AC5-GT
Horizontal Deflection Amplifier	22.5	150	2.1	250	55	—	5,500	—	—	—	25AV5-GT
Max positive pulse plate voltage ₃ □ = 5,500 volts; max plate dissipation = 11 watts; max screen dissipation = 2.5 watts; max d-c plate current = 100 ma											
Class A Amplifier	0.0	100	5.8	180	46.0	15,000	2,300	—	4,000	3.8	25B5
Class A Amplifier	23.0	135	1.8†	200	62.0†	18,000	5,000	—	2,500	7.1	25B6-G
Class A Amplifier	3.0	100	2.0	100	7.6	185,000	2,000	—	—	—	25B8-GT
Class A Amplifier	1.0	—	—	100	0.6	75,000	1,500	112	—	—	25B8-GT
Class A Amplifier	5.0	250	3.5†	250	35†	100,000§	8,500	—	6,500	3.5	<i>25BK5</i>
Horizontal Deflection Amplifier	22.5	150	2.1	250	55	—	5,500	—	—	—	25BQ6-GT
Max positive pulse plate voltage ₃ □ = 5,500 volts; max plate dissipation = 11 watts; max screen input = 2.5 watts; max d-c plate current = 100 ma											
Class A Amplifier	14.0	135	2.2†	200	61.0†	18,300†	7,100	—	2,600	6.0	25C6-G
Horizontal Deflection Amplifier	Max positive pulse plate voltage ₃ = 6,000 volts; max plate dissipation = 15 watts; max screen input = 3 watts; max d-c plate current = 170 ma										25CD6-G
Class A Amplifier	3.0	100	2.7	100	8.5	200,000	1,900	—	—	—	25D8-GT
Class A Amplifier	1.0	—	—	100	0.5	91,000	1,100	—	—	—	25D8-GT
Class A Amplifier	8.0	110	2.0†	200	50.0†	30,000§	9,500	—	3,000	4.3	25L6
Class A Amplifier	7.5	110	4.0†	110	49.0†	13,000§	9,000	—	2,000	2.1	
Class A Amplifier	Rk = 180	125	2.2†	200	46†	28,000§	8,000	—	4,000	3.8	25L6-GT
Class A Amplifier	7.5	110	4.0†	110	49†	13,000§	8,000	—	2,000	2.1	25L6-GT
Class A Amplifier	0.0	100	5.8	180	46.0	15,000	2,300	—	4,000	3.8	25N6-G
Half-Wave Rectifier T-V Damp-er Service	Max d-c output current = 125 ma; max peak inverse voltage = 1,250 volts; max rms supply voltage = 375 volts; max peak current = 600 ma										25U4-GT
Half-Wave Rectifier T-V Damp-er Service	Max d-c output current = 125 ma; max peak inverse voltage ₃ □ = 3,850 volts; max peak current = 600 ma										25U4-GT
Half-Wave Rectifier T-V Damp-er Service	Max d-c output current = 125 ma; max peak inverse voltage = 1250 volts; rms supply voltage = 350 volts; max peak current = 600 ma										25W4-GT
Half-Wave Rectifier T-V Damp-er Service	Max d-c output current = 125 ma; max peak inverse voltage ₃ = 2,000 volts; max peak current = 600 ma										25W4-GT

||Input plate.

□ Absolute maximum rating.

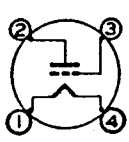
Type designations of metal tubes are shown in bold-face type.
Type designations of miniature tubes are shown in italics.



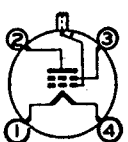
CHARACTERISTICS

Tube Type	Classification by Construction	Base Connections	Out-line Dwg	Type Cathode	Fila-ment Volts	Fila-ment Amp	Max Plate Volts	Max Screen Volts	Capacitance in Micromicrofarads		
									Input	Out-put	Grid-plate
25X6-GT	High-Vacuum Rectifier Doubler	7Q	9-11	Htr	25.0	0.15	Tube Voltage Drop: ♣ 25 v at 120 ma d-c				
25Y5	High-Vacuum Rectifier Doubler	6E	12-5	Htr	25.0	0.3	—	—	—	—	—
25Z4	Half-Wave High-Vacuum Rectifier	5AA	8-1	Htr	25.0	0.3	Tube Voltage Drop: 20.5 v at 250 ma d-c				
25Z5	High-Vacuum Rectifier Doubler	6E	12-5	Htr	25.0	0.3	Tube Voltage Drop: ♣ 22 v at 150 ma d-c				
25Z6 25Z6-GT 25Z6-WGT	High-Vacuum Rectifier Doubler	7Q	8-6 9-11	Htr	25.0	0.3	Tube Voltage Drop: ♣ 22 v at 150 ma d-c				
26	Medium-Mu Triode	4D	14-1	Fil	1.5	1.05	180	—	2.8	2.5	8.1
26A6	Remote-Cutoff R-F Pentode	7BK	5-2	Htr	26.5	0.07	250	100	6.0	5.0	0.0035
26A7-GT	Twin-Pentode Power Amplifier	8BU	9-33	Htr	26.5	0.6	50	50	16.0▲	13.0▲	1.2▲
26C6	Duplex Diode Medium-Mu Triode	7BT	5-2	Htr	26.5	0.07	250	—	1.8	1.4	2.0
26CG6	Remote-Cutoff Pentode	7BK	5-2	Htr	26.5	0.07	300	150	5.0	5.0	0.008♣
26D6	Pentagrid Converter	7CH♥	5-2	Htr	26.5	0.07	300	100	Osc I_{g1} = 0.5 ma R_{g1} = 20,000 ohms		
26Z5-W	Full-Wave High-Vacuum Rectifier	26Z5-W	6-2	Htr	26.5	0.2	Tube Voltage Drop: ♣ 22 volts at 100 ma d-c				
27	Medium-Mu Triode	5A	12-5	Htr	2.5	1.75	275	—	3.1	2.3	3.3
28D7	Double Beam Power Amplifier	8BS	9-31	Htr	28.0	0.4	100	67.5	—	—	—
28Z5	Full-Wave High-Vacuum Rectifier	5AB	9-31	Htr	28.0	0.24	Tube Voltage Drop: ♣ 40 v at 100 ma d-c				
30	Medium-Mu Triode	4D	12-5 or 9-26	Fil	2.0 D-C	0.06	180	—	3.0▲	2.2▲	6.0▲
31	Power Amplifier Triode	4D	12-5	Fil	2.0 D-C	0.13	180	—	3.5	2.7	5.7
32	Sharp-Cutoff R-F Tetrode	4K	14-2	Fil	2.0 D-C	0.06	180	67.5	5.3▲	10.5▲	0.015
32L7-GT	Half-wave Rectifier; Beam Power Amplifier	8Z	9-11	Htr	32.5	0.3	90	90	—	—	—

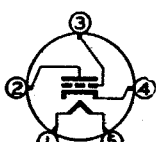
†Zero signal. ♣Maximum. §Approximate.
 ▲Without external shield. ♥Grids 2 and 4 are screen. Grid 3 is signal-input grid.
 ♠Per section. # Conversion transconductance.



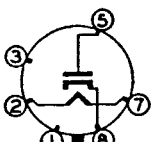
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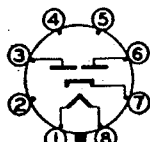
4K



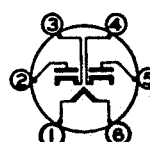
5A



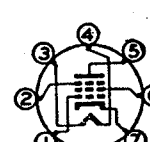
5AA



5AB



6E

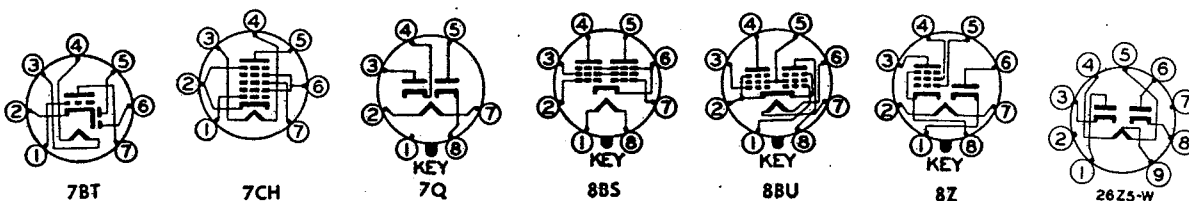


7BK

AND RATINGS

Service	Neg Grid Volts	Screen Volts	Screen Milli-amperes	Plate Volts	Plate Milli-amperes	R _p , Ohms	G _m , μmhos	μ Factor	Load for Rated Output, Ohms	Power Output, Watts	Tube Type
Rectifier or Doubler	Max d-c output current per plate = 60 ma; rms supply voltage per plate = 125 volts										25X6-GT
Rectifier or Doubler	Max d-c output current per plate = 42 ma; max peak inverse voltage = 700 volts; max rms supply voltage per plate = 250 volts										25Y5
Half-Wave Rectifier	Max d-c output current = 125 ma; max peak inverse voltage = 700 volts, max rms supply voltage = 235 volts; max peak current = 750 ma										25Z4
Rectifier or Doubler	Max d-c output current per plate = 75 ma; max peak inverse voltage = 700 volts; max rms supply voltage per plate = 235 volts; max peak current per plate = 450 ma										25Z5
Rectifier or doubler	Max d-c output current per plate = 75 ma; max peak inverse voltage = 700 volts; max rms supply voltage per plate = 235 volts; max peak current per plate = 450 ma										25Z6 25Z6-GT 25Z6-WGT
Class A Amplifier	14.5	—	—	180	6.2	7,300	1,150	8.3	—	—	26
Class A Amplifier	R _k = 125 R _g = 2 meg	100	4.0	250	10.5	1,000,000	4,000	—	—	—	26A6
		26.5	0.7	26.5	1.7	250,000	2,000	—	—	—	
Class A Amplifier ♠	4.5	26.5	1.6†	26.5	20.0†	2,500§	6,000	—	1,500	0.18	26A7-GT
Class A Amplifier	R _g = 2 meg	—	—	250	9.5	8,500	1,900	16	—	—	26C6
		—	—	26.5	1.1	15,500	1,100	17	—	—	
Class A Amplifier	8.0	150	2.3	250	9.0	720,000	2,000	—	—	—	26CG6
Converter	1.5	100	7.8	250	3.0	1,000,000§	475 #	—	—	—	26D6
Full-Wave Rectifier	Max d-c output current per plate = 50 ma; max peak inverse voltage = 1,250 volts; rms supply voltage per plate = 325 v; max peak current per plate = 300 ma										26Z5-W
Class A Amplifier	21.0	—	—	250	5.2	9,250	975	9.0	—	—	27
Class A Amplifier ♠	3.5	28.0	1.0†	28.0	12.5†	4,200	3,400	—	4,000	0.100	28D7
Full-Wave Rectifier	Max d-c output current = 100 ma; max peak inverse voltage = 1,250 volts; max rms supply voltage per plate = 325 volts; max peak current per plate = 300 ma										28Z5
Class A Amplifier	13.5	—	—	180	3.1	10,300§	900	9.3	—	—	30
Class A Amplifier	30.0	—	—	180	12.3†	3,600	1,050	3.8	5,700	0.375	31
Class A Amplifier	3.0	67.5	0.4	180	1.7	1,200,000	650	—	—	—	32
Class A Amplifier Half-Wave Rectifier	7.0	90	2.0†	90	27.0†	17,000	4,800	—	2,600	1.0	32L7-GT
	5.0	90	3.0†	90	38.0†	15,000	6,000	—	2,600	0.8	
Max d-c output current = 60 ma; max rms supply voltage = 125 v.											

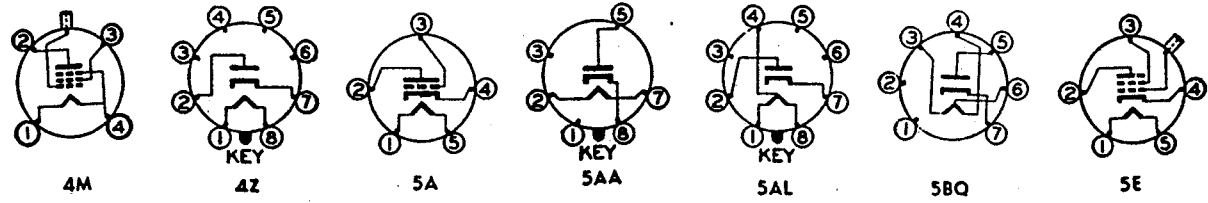
Type designations of metal tubes are shown in bold-face type.
Type designations of miniature tubes are shown in italics.



CHARACTERISTICS

Tube Type	Classification by Construction	Base Connections	Out-line Dwg	Type Cathode	Filament Volts	Filament Amp	Max Plate Volts	Max Screen Volts	Capacitance in Micromicrofarads		
									Input	Output	Grid-plate
33	Power Amplifier Pentode	5K	14-1	Fil	2.0 D-C	0.26	180	180	8.0	12.0	1.0
34	Remote-Cutoff R-F Pentode	4M	14-2	Fil	2.0 D-C	0.06	180	67.5	6.0▲	11.0▲	0.015♣
35/51	Remote-Cutoff R-F Tetrode	5E	14-2	Htr	2.5	1.75	275	90	5.3▲	10.5▲	0.007♣
35A5	Beam Power Amplifier	6AA	9-31	Htr	35.0	0.15	200	125	—	—	—
35B5	Beam Power Amplifier	7BZ	5-3	Htr	35.0	0.15	117	117	11▲	6.5▲	0.4▲
35C5	Beam Power Amplifier	7CV	5-3	Htr	35.0	0.15	117	117	11▲	6.5▲	0.4▲
35L6-GT	Beam Power Amplifier	7AC	9-11 or 9-41	Htr	35.0	0.15	200	125	—	—	—
35W4	Half-Wave High-Vacuum Rectifier	5BQ	5-3	Htr	35.0	0.15	Tube Voltage Drop: 18 v at 200 ma d-c				
35Y4	Half-Wave High-Vacuum Rectifier	5AL	9-31	Htr	35.0	0.15	Tube Voltage Drop: 18 v at 200 ma d-c				
35Z3	Half-Wave High-Vacuum Rectifier	4Z	9-31	Htr	35.0	0.15	Tube Voltage Drop: 18 v at 200 ma d-c				
35Z4-GT	Half-Wave High-Vacuum Rectifier	5AA	9-11	Htr	35.0	0.15	Tube Voltage Drop: 18 v at 200 ma d-c				
35Z5-GT	Half-Wave High-Vacuum Rectifier	6AD	9-11 or 9-41	Htr	35.0	0.15	Tube Voltage Drop: 18 v at 200 ma d-c				
35Z6-G	High-Vacuum Rectifier Doubler	7Q	14-3	Htr	35.0	0.3	Tube Voltage Drop: ♠ 20 v at 220 ma d-c				
36	Sharp-Cutoff R-F Tetrode	5E	12-6	Htr	6.3	0.3	250	90.0	3.8▲	9.0▲	0.007♣
37	Medium-Mu Triode	5A	12-5	Htr	6.3	0.3	250	—	3.5	2.9	2.0

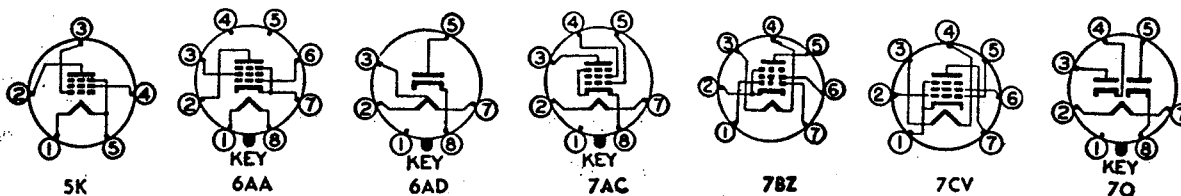
§ Approximate. ▲ Without external shield. ♣ Maximum. † Zero signal.
 ♠ Per section.



AND RATINGS

Service	Neg Grid Volts	Screen Volts	Screen Milli-amperes	Plate Volts	Plate Milli-amperes	R _p , Ohms	G _m , μ mhos	μ Factor	Load for Rated Output, Ohms	Power Output, Watts	Tube Type
Class A Amplifier	18.0	180	5.0†	180	22.0†	55,000§	1,700	—	6,000	1.4	33
Class A Amplifier	3.0	67.5	1.0	180	2.8	1,000,000	620	—	—	—	34
Class A Amplifier	3.0	90	2.5♣	250	6.5	400,000	1,050	—	—	—	35/51
Class A Amplifier	R _k = 180 7.5	125	2.0†	200	43†	34,000§	6,100	—	5,000	3.0	35A5
		110	3.0†	110	40†	14,000§	5,800	—	2,500	1.5	
Class A Amplifier	7.5	110	3.0†	110	40†	—	5,800	—	2,500	1.5	<i>35B5</i>
Class A Amplifier	7.5	110	3.0†	110	40†	—	5,800	—	2,500	1.5	<i>35C5</i>
Class A Amplifier	R _k = 180 7.5	125	2.0†	200	43†	34,000§	6,100	—	5,000	3.0	35L6-GT
		110	3.0†	110	40†	14,000§	5,800	—	2,500	1.5	
Half-Wave Rectifier	Max d-c output current = 100 ma; max peak inverse voltage = 330 volts; rms supply voltage = 117 volts; max peak current = 600 ma. With panel lamp # 40 or # 47 between pins 4 and 6 and no shunting resistor, max d-c output current = 60 ma. With panel lamp and 250 ohm shunting resistor (max), max d-c output = 90 ma										<i>35W4</i>
Half-Wave Rectifier	Max d-c output current = 100 ma; max peak inverse voltage = 700 volts; max rms supply voltage = 235 volts; max peak current = 600 ma. With panel lamp # 40 or # 47 between pins 1 and 4 and no shunting resistor, max d-c output current = 60 ma. With panel lamp and 250 ohm shunting resistor (max), max d-c output = 90 ma										35Y4
Half-Wave Rectifier	Max d-c output current = 100 ma; max peak inverse voltage = 700 volts; rms supply voltage = 235 volts, max peak current = 600 ma										35Z3
Half-Wave Rectifier	Max d-c output current = 100 ma; max peak inverse voltage = 700 volts; max rms supply voltage = 235 volts; max peak current = 600 ma										35Z4-GT
Half-Wave Rectifier	Max d-c output current = 100 ma; max peak inverse voltage = 700 volts; max rms supply voltage = 235 volts; max peak current = 600 ma. With panel lamp # 40 or # 47 between pins 2 and 3 and no shunting resistor, max d-c output current = 60 ma. With panel lamp and 250 ohm shunting resistor (max), max d-c output = 90 ma										35Z5-GT
Rectifier or Doubler	Max d-c output current per plate = 110 ma; max peak inverse voltage = 700 volts; max rms supply voltage per plate = 235 volts; max peak current per plate = 660 ma										35Z6-G
Class A Amplifier	3.0	90	1.7♣	250	3.2	550,000	1,080	—	—	—	36
Class A Amplifier	18.0	—	—	250	7.5	8,400	1,100	9.2	—	—	37

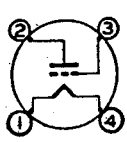
Tube designations of miniature tubes are shown in italics.



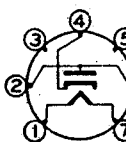
CHARACTERISTICS

Tube Type	Classification by Construction	Base Connections	Out-line Dwg	Type Cathode	Filament Volts	Filament Amp	Max Plate Volts	Max Screen Volts	Capacitance in Micromicrofarads		
									Input	Output	Grid-plate
38	Power Amplifier Pentode	5F	12-6	Htr	6.3	0.3	250	250	3.5	7.5	0.30
39/44	Remote-Cutoff R-F Pentode	5F	12-6	Htr	6.3	0.3	250	90	3.8▲	10.0▲	0.007♣
40	Medium-Mu Triode	4D	14-1	Fil	5.0 D-C	0.25	180	—	2.8	2.2	2.0
41	Power Amplifier Pentode	6B	12-5	Htr	6.3	0.4	315	285	—	—	—
42	Power Amplifier Pentode	6B	14-1	Htr	6.3	0.7	375	285	—	—	—
43	Power Amplifier Pentode	6B	14-1	Htr	25.0	0.3	160	135	8.5	12.5	0.2
45	Power Amplifier Triode	4D	14-1	Fil	2.5	1.5	275	—	4.0	3.0	7.0
45Z3	Half-Wave High-Vacuum Rectifier	5AM	5-2	Htr	45.0	0.075	Tube Voltage Drop: 23 v at 130 ma d-c				
45Z5-GT	Half-Wave High-Vacuum Rectifier	6AD	9-11	Htr	45.0	0.15	Tube Voltage Drop: 16 v at 200 ma d-c				
46	Dual-Grid Power Amplifier	5C	16-1	Fil	2.5	1.75	400	—	{Single tube G ₂ & P tied }		
47	Power Amplifier Pentode	5B	16-1	Fil	2.5	1.75	250	250	8.6	13.0	1.2
48	Power Amplifier Tetrode	6A	16-1	Htr	30.0 D-C	0.4	125	100	—	—	—
49	Dual-Grid Power Amplifier	5C	14-1	Fil	2.0 D-C	0.12	135	—	{Single tube G ₂ & P tied }		
50	Power Amplifier Triode	4D	19A-1	Fil	7.5	1.25	450	—	4.2	3.4	7.1
50A5	Beam Power Amplifier	6AA	9-31	Htr	50.0	0.15	200	125	—	—	—
50AX6-G	Full-wave High-vacuum Rectifier	7Q	14-3	Htr	50.0	0.3	Tube Voltage Drop: ♠ 21 v at 250 ma d-c				
60B5	Beam Power Amplifier	7BZ	5-3	Htr	50.0	0.15	135	117	13.0▲	6.5▲	0.50▲
60C5	Beam Power Amplifier	7CV	5-3	Htr	50.0	0.15	135	117	13.0▲	6.1▲	0.64▲
50C6-G	Beam Power Amplifier	7AC	14-3	Htr	50.0	0.15	200	135	—	—	—

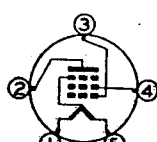
§ Approximate. ▲ Without external shield. ♣ Maximum. † Zero signal.
 * Minimum. ♠ Per section.
 ‡ — The duration of the pulse voltage must not exceed 15 percent of one scanning cycle.



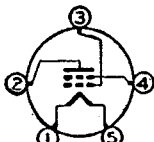
4D



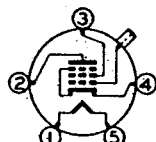
5AM



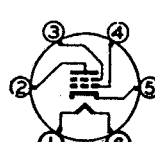
5B



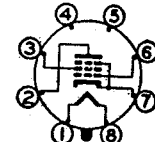
5C



5F



6A

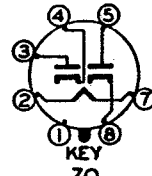
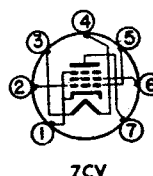
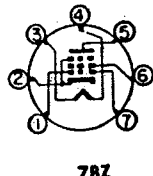
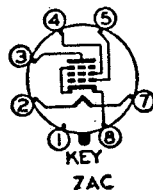
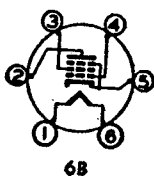
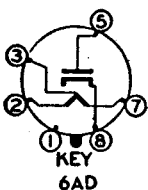


6AA

AND RATINGS

Service	Neg Grid Volts	Screen Volts	Screen Milli-amperes	Plate Volts	Plate Milli-amperes	R _p , Ohms	G _m , μmhos	μ Factor	Load for Rated Output, Ohms	Power Output, Watts	Tube Type
Class A Amplifier	25.0	250	3.8	250	22.0	100,000	1,200	—	10,000	2.5	38
Class A Amplifier	3.0*	90	1.4	250	5.8	1,000,000	1,050	—	—	—	39/44
Class A Amplifier	3.0	—	—	180	0.2	150,000	200	30	250,000	—	40
Class A Amplifier	18	250	5.5†	250	32†	90,000§	2,300	—	7,600	3.4	41
Class A Amplifier	20.0	285	7.0†	285	38.0†	78,000§	2,550	—	7,000	4.8	42
Class A Amplifier	18.0	120	6.5†	160	33.0†	42,000	2,375	—	5,000	2.2	43
Class A Amplifier	56.0	—	—	275	36.0†	1,700	2,050	3.5	4,600	2.0	45
Half-Wave Rectifier	Max d-c output current = 65 ma; max peak inverse voltage = 350 v; max rms supply voltage = 117 volts; max peak current = 390 ma										45Z3
Half-Wave Rectifier	Max d-c output current = 100 ma; max peak inverse voltage = 700 volts; max rms supply voltage = 235 volts; max peak current = 600 ma. With panel lamp # 40 or # 47 between pins 2 and 3 and no shunting resistor, max d-c output current = 60 ma. With panel lamp and 250 ohm shunting resistor (max), max d-c output = 90 ma										45Z5-GT
Class A Amplifier	33.0	—	—	250	22.0†	2,380	2,350	5.6	6,400	1.25	46
Class A Amplifier	16.5	250	6.0†	250	31.0†	60,000	2,500	—	7,000	2.7	47
Class A Amplifier	20.0	100	9.5	125	56.0	—	3,900	—	1,500	2.5	48
Class A Amplifier	20.0	—	—	135	6.0	4,175	1,125	4.7	11,000	0.170 §	49
Class A Amplifier	84.0	—	—	450	55.0	1,800	2,100	3.8	4,350	4.6	50
Class A Amplifier	R _k = 180 7.5	125	2.2†	200	46.0†	28,000§	8,000	—	4,000	3.8	50A5
Class A Amplifier		110	4.0†	110	49.0†	13,000§	8,000	—	2,000	2.1	
Full-Wave Rectifier T-V Damp- er Service	Max d-c output current = 250 ma; max peak inverse voltage = 1,250 volts; rms supply voltage per plate = 350 volts; max peak current per plate = 600 ma Max d-c output current per plate = 125 ma; max peak inverse voltage = 2,000 volts; max peak current per plate = 600 ma										50AX6-G
Class A Amplifier	7.5	110	4.0†	110	49†	10,000§	7,500	—	2,500	1.9	50B5
Class A Amplifier	7.5	110	4.0†	110	49†	10,000§	7,500	—	2,500	1.9	50C5
Class A Amplifier	13.5	135	3.5†	135	58†	9,300	7,000	—	2,000	3.6	50C6-G
Class A Amplifier	13.5	135	11.5†	135	60†	9,300	7,000	—	2,000	3.6	

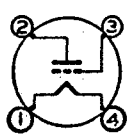
Type designations of miniature tubes are shown in italics.



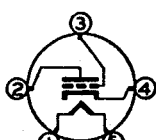
CHARACTERISTICS

Tube Type	Classification by Construction	Base Connections	Outline Dwg	Type Cathode	Filament Volts	Filament Amp	Max Plate Volts	Max Screen Volts	Capacitance in Micromicrofarads		
									Input	Output	Grid-plate
50CD6-G	Beam Power Amplifier	5BT	16A-1	Htr	50.0	0.3	700	175	26 ▲	10 ▲	1.0 ♣
50L6-GT	Beam Power Amplifier	7AC	9-11 or 9-41	Htr	50.0	0.15	200	125	—	—	—
50X6	High-Vacuum Rectifier-Doubler	7AJ	9-31	Htr	50.0	0.15	Tube Voltage Drop: ♣ 22 v at 150 ma d-c				
50Y6-GT	High-Vacuum Rectifier-Doubler	7Q	9-11	Htr	50.0	0.15	Tube Voltage Drop: ♣ 22 v at 150 ma d-c				
50Y7-GT	High-Vacuum Rectifier-Doubler	8AN	9-11 or 9-41	Htr	50.0	0.15	Tube Voltage Drop: ♣ 22 v at 150 ma d-c				
50Z6-G	High-vacuum Rectifier-Doubler	7Q	14-3	Htr	50.0	0.3	—	—	—	—	—
50Z7-G	High-Vacuum Rectifier Doubler	8AN	12-7	Htr	50.0	0.15	Tube Voltage Drop: ♣ 21 v at 130 ma d-c				
53	Twin Triode Power Amplifier	7B	14-1	Htr	2.5	2.0	300	—	Both Sections in Push-pull Both Sections in Parallel		
55	Duplex-Diode Medium-Mu Triode	6G	12-6	Htr	2.5	1.0	250	—	—	—	—
56	Medium-Mu Triode	5A	12-5	Htr	2.5	1.0	250	—	—	—	—
57	Sharp-Cutoff Pentode	6F	12-2	Htr	2.5	1.0	300	125	Pentode Connection Triode Connection (G ₂ , G ₃ , & P Tied)		
58	Remote-Cutoff R-F Pentode	6F	12-2	Htr	2.5	1.0	300	100	—	—	—
59	Power Amplifier Pentode	7A	16-1	Htr	2.5	2.0	250	250	—	—	—
70A7-GT	Half-Wave Rectifier; Beam Power Amplifier	8AB	9-11	Htr	70.0	0.15	110	110	Tube Voltage Drop: 14 v at 120 ma d-c		
70L7-GT	Half-Wave Rectifier; Beam Power Amplifier	8AA	9-15	Htr	70.0	0.15	117	117	Tube Voltage Drop: 20 v at 140 ma d-c		
71-A	Power Amplifier Triode	4D	14-1	Fil	5.0	0.25	180	—	3.2	2.9	7.5
75	Duplex-Diode High-Mu Triode	6G	12-6	Htr	6.3	0.3	250	—	—	—	—

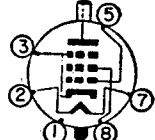
†Zero signal. ‡Plate-to-plate. ♣Maximum. ♠Per section.
 ▲Without external shield. §Approximate. *Minimum.
 3—The duration of the pulse voltage must not exceed 15 percent of one scanning cycle.



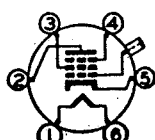
4D



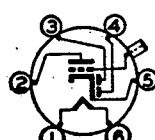
5A



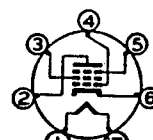
5BT



6F



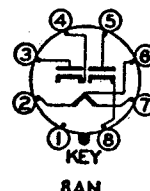
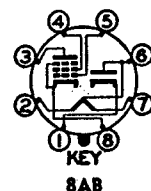
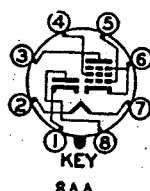
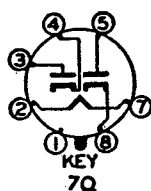
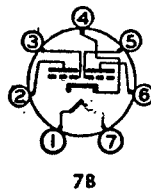
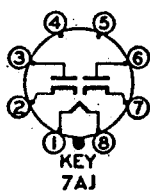
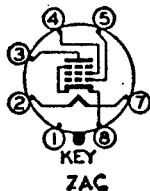
6G



7A

AND RATINGS

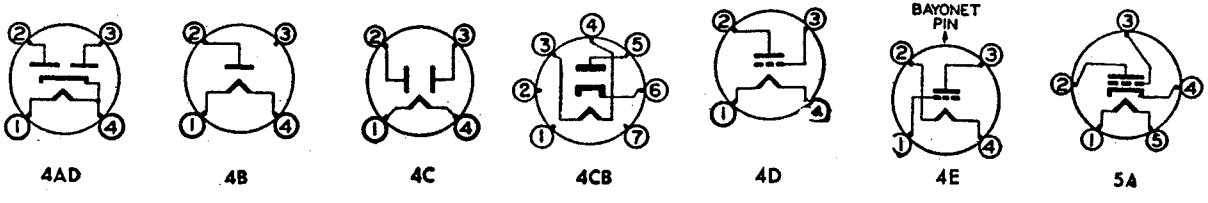
Service	Neg Grid Volts	Screen Volts	Screen Milli-amperes	Plate Volts	Plate Milli-amperes	R _p , Ohms	G _m , μmhos	μ Factor	Load for Rated Output, Ohms	Power Output, Watts	Tube Type
Horizontal Deflection Amplifier	Max positive pulse plate voltage ₃ = 6,000 volts; max plate dissipation = 15 watts; max screen input = 3 watts; max d-c plate current = 170 ma										50CD6-G
Class A Amplifier	R _k = 125	2.2†	200	46†	28,000§	8,000	—	4,000	3.8	50L6-GT	
	180 7.5	110	4.0†	110	49†	13,000§	8,000	—	2,000		2.1
Rectifier or Doubler	Max d-c output current per plate = 75 ma; max peak inverse voltage = 700 volts; rms supply voltage per plate = 235 volts; max peak current per plate = 450 ma										50X6
Rectifier or Doubler	Max d-c output current per plate = 75 ma; max peak inverse voltage = 700 volts; max rms supply voltage per plate = 235 volts; max peak current per plate = 450 ma										50Y6-GT
Rectifier or Doubler	Max d-c output current per plate = 75 ma; max peak inverse voltage = 700 volts; max rms supply voltage per plate = 235 volts; max peak current per plate = 450 ma With panel lamp #40 or #47 between pins 6 and 7 and no shunting resistor, max d-c output current per plate = 60 ma. With panel lamp and 250 ohm shunting resistor (max), max d-c output per plate = 65 ma.										50Y7-GT
Rectifier or Doubler	Max d-c output current per plate = 125 ma; max peak inverse voltage = 700 volts; max rms supply voltage per plate = 235 volts; max peak current per plate = 750 ma										50Z6-G
Rectifier or Doubler	Max d-c output current per plate = 65 ma; max peak inverse voltage = 700 volts; max rms supply voltage per plate = 235 volts; max peak current per plate = 400 ma. Ratings also apply with panel lamp 292 or 292A between pins 6 and 7.										50Z7-G
Class B Amplifier	0.0	—	—	300	17.5†	—	—	—	8,000	10.0§	53
Class A Amplifier	6.0	—	—	294	7.0	11,000	3,200	35	—	—	
Class A Amplifier	20.0	—	—	250	8.0†	7,500	1,100	8.3	20,000	0.350	55
Class A Amplifier	13.5	—	—	250	5.0	9,500	1,450	13.8	—	—	56
Class A Amplifier Class A Amplifier	3.0	100	0.5	250	2.0	1,000,000*	1,225	—	—	—	57
	8.0	—	—	250	6.5	10,500	1,900	20	—	—	
Class A Amplifier	3.0	100	2.0	250	8.2	800,000§	1,600	—	—	—	58
Class A Amplifier	18.0	250	9.0	250	35.0	40,000	2,500	—	6,000	3.0	59
Class A Amplifier Half-Wave Rectifier	7.5	110	3.0†	110	40†	—	5,800	—	2,500	1.5	70A7-GT
Max d-c output current = 60 ma; max rms supply voltage = 125 volts. A panel lamp must be connected between pins 6 and 7.											
Class A Amplifier Half-Wave Rectifier	7.5	110	3.0†	110	40†	15,000	7,500	—	2,000	1.8	70L7-GT
Max d-c output current = 70 ma; max peak inverse voltage = 350 volts; max rms supply voltage = 117 volts; max peak current = 420 ma											
Class A Amplifier	40.5	—	—	180	20.0†	1,750	1,700	3.0	4,800	0.790	71-A *
Class A Amplifier	2.0	—	—	250	0.9	91,000§	1,100	100	—	—	75



CHARACTERISTICS

Tube Type	Classification by Construction	Base Connections	Out-line Dwg	Type Cathode	Filament Volts	Filament Amp	Max Plate Volts	Max Screen Volts	Capacitance in Micromicrofarads		
									Input	Output	Grid-plate
76	Medium-Mu Triode	5A	12-5	Htr	6.3	0.3	250	—	3.5	2.5	2.8
77	Sharp-Cutoff Pentode	6F	12-6	Htr	6.3	0.3	300	100	4.7 ▲	11.0 ▲	0.007 ♣
78	Remote-Cutoff R-F Pentode	6F	12-6	Htr	6.3	0.3	300	125	4.5	11.0	0.007 ♣
79	Twin Triode Power Amplifier	6H	12-6	Htr	6.3	0.6	250	—	Both Sections in Push-pull		
80	Full-Wave High-Vacuum Rectifier	4C	14-1	Fil	5.0	2.0	Tube Voltage Drop: ♠ 60 v at 125 ma d-c				
81	Half-Wave High-Vacuum Rectifier	4B	19A-1 or 16-1	Fil	7.5	1.25	Tube Voltage Drop: 91 v at 170 ma d-c				
82	Full-Wave Mercury-Vapor Rectifier	4C	14-1	Fil	2.5	3.0	Tube Voltage Drop: § 15 v				
83	Full-Wave Mercury-Vapor Rectifier	4C	16-1	Fil	5.0	3.0	Tube Voltage Drop: § 15 v				
83-V	Full-Wave High-Vacuum Rectifier	4AD	14-1	Htr	5.0	2.0	Tube Voltage Drop: ♠ 25 v at 175 ma d-c				
84/6Z4	Full-Wave High-Vacuum Rectifier	5D	12-5	Htr	6.3	0.5	Tube Voltage Drop: ♠ 20 v at 60 ma d-c				
85	Duplex Diode Medium-Mu Triode	6G	12-6	Htr	6.3	0.3	250	—	1.5	4.3	1.5
89	Power Amplifier Pentode	6F	12-6	Htr	6.3	0.4	250 250	— 250	{ Triode connection G ₂ , G ₃ & P tied Pentode connection		
V99 X99	Low-Mu Triode	4E 4D	T-X 9-25	Fil	3.3 D-C	0.063	90	—	2.5	2.5	3.3
117L7/ M7-GT	Half-wave Rectifier; Beam Power Amplifier	8AO	9-15	Htr	117	0.09	117	117	—	—	—
									Tube Voltage Drop: 16 v at 150 ma d-c		
117N7-GT	Half-wave Rectifier; Beam Power Amplifier	8AV	9-15	Htr	117	0.09	117	117	—	—	—
									Tube Voltage Drop: 16 v at 150 ma d-c		
117P7-GT	Half-wave Rectifier; Beam Power Amplifier	8AV	9-15	Htr	117	0.09	117	117	—	—	—
									Tube Voltage Drop: 16 v at 150 ma d-c		
117Z3	Half-wave High-vacuum Rectifier	4CB	5-3	Htr	117	0.04	Tube Voltage Drop: 22.5 v at 180 ma d-c				
117Z4-GT	Half-wave High-vacuum Rectifier	5AA	9-5	Htr	117	0.04	Tube Voltage Drop: 22.5 v at 180 ma d-c				

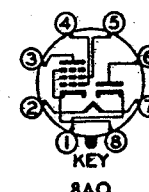
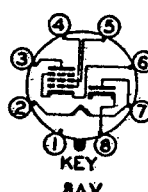
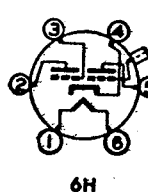
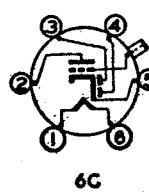
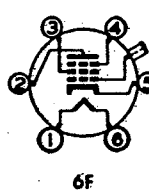
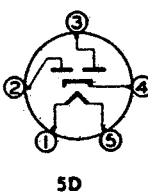
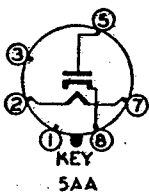
§ Approximate. † Zero signal. ♠ Per section ‡ Plate-to-plate.
▲ Without external shield. ♣ Maximum.



AND RATINGS

Service	Neg Grid Volts	Screen Volts	Screen Milli-amperes	Plate Volts	Plate Milli-amperes	R _p , Ohms	G _m , μmhos	μ Factor	Load for Rated Output, Ohms	Power Output, Watts	Tube Type
Class A Amplifier	13.5	—	—	250	5.0	9,500	1,450	13.8	—	—	76
Class A Amplifier	3.0	100	0.5	250	2.3	1,000,000*	1,250	—	—	—	77
Class A Amplifier	3.0	125	2.6	250	10.5	600,000§	1,650	—	—	—	78
Class B Amplifier	0.0	—	—	250	10.5†	Input signal = .380 watt			14,000 ‡	8.0§	79
Full-Wave Rectifier	Max d-c output current = 125 ma; max peak inverse voltage = 1400 volts; rms supply voltage per plate = 350 volts; max peak current per plate = 375 ma										80
Half-Wave Rectifier	Max d-c output current = 85 ma; max peak inverse voltage = 2000 volts; max rms supply voltage = 700 volts; max peak current = 500 ma										81
Full-Wave Rectifier	Max d-c output current = 115 ma; max peak inverse voltage = 1550 volts; max rms supply voltage per plate = 450 volts; max peak current per plate = 600 ma										82
Full-Wave Rectifier	Max d-c output current = 225 ma; max peak inverse voltage = 1,550 volts; max rms supply voltage per plate = 450 volts; max peak current per plate = 1,000 ma										83
Full-Wave Rectifier	Max d-c output current = 175 ma; max peak inverse voltage = 1400 volts; max rms supply voltage per plate = 375 volts; max peak current per plate = 525 ma										83-V
Full-Wave Rectifier	Max d-c output current = 60 ma; max peak inverse voltage = 1,250 volts; max rms supply voltage per plate = 325 volts; max peak current per plate = 180 ma										84/6Z4
Class A Amplifier	20.0	—	—	250	8†	7,500	1,100	8.3	20,000	0.350	85
Class A Amplifier	31.0	—	—	250	32.0†	2,600	1,800	4.7	5,500	0.900	89
Class A Amplifier	25.0	250	5.5†	250	32.0†	70,000	1,800	—	6,750	3.4	
Class A Amplifier	4.5	—	—	90	2.5	15,500	425	6.6	—	—	V99 X99
Class A Amplifier Half-wave Rectifier	5.2	105	4†	105	43†	17,000§	5,300	—	4,000	0.85	117L7/ M7-GT
Class A Amplifier Half-wave Rectifier	6.0	100	5†	100	51†	16,000§	7,000	—	3,000	1.2	117N7-GT
Class A Amplifier Half-wave Rectifier	5.2	105	4†	105	43†	17,000§	5,300	—	4,000	0.85	117P7-GT
Half-Wave Rectifier	Max d-c output current = 90 ma; max peak inverse voltage = 330 volts; max rms supply voltage = 117 volts; max peak current = 540 ma										117Z3
Half-Wave Rectifier	Max d-c output current = 90 ma; max peak inverse voltage = 350 volts; max rms supply voltage = 117 volts; max peak current = 540 ma										117Z4-GT

Tube designations of miniature tubes are shown in italics.



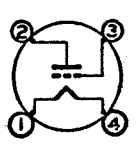
CHARACTERISTICS

Tube Type	Classification by Construction	Base Connections	Out-line Dwg	Type Cathode	Fila-ment Volts	Fila-ment Amp	Max Plate Volts	Max Screen Volts	Capacitance in Micromicrofarads		
									Input	Out-put	Grid-plate
117Z6-GT	High-Vacuum Rectifier Doubler	7Q	9-11	Htr	117	0.075	Tube Voltage Drop: ♠ 15.5 v at 120 ma d-c				
182-B/482B	Power Amplifier Triode	4D	14-1	Fil	5.0	1.25	250	—	—	—	—
183/483	Power Amplifier Triode	4D	14-1	Fil	5.0	1.25	250	—	—	—	—
485	Medium-Mu Triode	5A	12-5	Htr	3.0	1.25	180	—	—	—	—
502-A	Thyratron	6BS	8-1	Htr	6.3	0.6	Anode voltage drop = 8 volts				
512AX ©	A-F Pentode	512AX	2-2	Fil	0.625	0.02	45	45	2.0 ▲	1.5 ▲	0.045 ▲
807	Beam Power Amplifier	5AW	16-2	Htr	6.3	0.9	400	—	Triode Connection Two Tubes, Push-pull Pentode Connection Two Tubes, Push-pull		
						600	300				
950	Power Amplifier Pentode	5K	14-1	Fil	2.0 D-C	0.12	135	135	—	—	—
954	Detector Amplifier Pentode (Acorn)	5BB	4-3	Htr	6.3	0.15	250	100	3.4	3.0	0.007 ♣
955	Medium-Mu Triode (Acorn)	5BC	4-1	Htr	6.3	0.15	250	—	1.0 ▲	0.4 ▲	1.3 ▲
							180	—	—	—	—
956	Remote-Cutoff R-F Pentode (Acorn)	5BB	4-3	Htr	6.3	0.15	250	100	3.1	2.5	0.009 ♣
957	Medium-Mu Triode (Acorn)	5BD	4-1	Fil	1.25 D-C	0.05	135	—	0.25	0.5	1.1
958-A	Medium-Mu Triode (Acorn)	5BD	4-1	Fil	1.25 D-C	0.1	135	—	0.45	0.6	2.5
							135				
959	Sharp-Cutoff Pentode (Acorn)	5BE	4-3	Fil	1.25 D-C	0.05	145	67.5	1.8	2.5	0.015 ♣
1612	Pentagrid Mixer (Special 6L7)	7T	8-4	Htr	6.3	0.3	250	100	—	—	—
1620	Sharp-Cutoff Pentode (Special 6J7)	7R	8-4	Htr	6.3	0.3	250	100	7.0	12.0	0.005 ♣
1621	Power Amplifier Pentode (Special 6F6)	7S	8-6	Htr	6.3	0.7	300	300	2 tubes, Push-pull		
1622	Beam Power Amplifier (Special 6L6)	7AC	10-1	Htr	6.3	0.9	300	250	2 tubes, Push-pull		

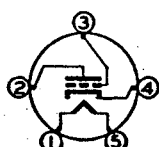
▲ Without external shield. ♠ Per section. *Minimum. ♣ Maximum. †Zero signal.

‡Plate-to-plate.
 □ Absolute maximum rating.
 § Approximate.

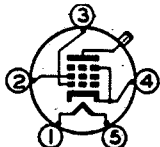
Type designations of metal tubes are shown in bold-face type.
 © Designates subminiature type.



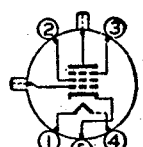
4D



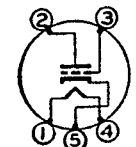
5A



5AW



5BB



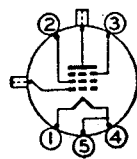
5BC

AND RATINGS

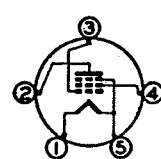
Service	Neg Grid Volts	Screen Volts	Screen Milli-amperes	Plate Volts	Plate Milli-amperes	R _p , Ohms	G _m , μ hos	μ Factor	Load for Rated Output, Ohms	Power Output, Watts	Tube Type
Rectifier or Doubler	Max d-c output current per plate = 60 ma; max peak inverse voltage = 700 volts; max rms supply voltage per plate = 235 volts; max peak current per plate = 360 ma										117Z6-GT
Class A Amplifier	35.0	—	—	250	18.0	—	1,500	5.0	—	—	182-B/482B
Class A Amplifier	60.0	—	—	250	30.0	1,750	1,700	3.0	—	—	183/483
Class A Amplifier	9.0	—	—	180	5.8	8,900	1,400	12.5	—	—	485
Controlled Rectifier	Max d-c cathode current \square = 100 ma; max peak inverse voltage \square = 1,300 volts; max peak cathode current \square = 1.0 ampere										502-A
Class A Amplifier	0.625	22.5	0.040	22.5	0.125	1,250,000	160	—	—	—	512AX \odot
Class AB ₁ Amplifier	45.0	—	—	400	60.0†	—	—	—	3,000†	30§	807
Class AB ₂ Amplifier	30.0	300	5.0†	600	60.0†	—	—	—	6,400†	80§	
Class A Amplifier	16.5	135	2.0†	135	7.0†	105,300	950	—	13,500	0.450	950
Class A Amplifier	3.0 3.0	100 90	0.7 0.5	250 90	2.0 1.2	1,000,000* 1,000,000	1,400 1,100	— —	— —	— —	954
Class A Amplifier	7.0 5.0	— —	— —	250 180	6.3 4.5†	11,400 12,500	2,200 2,000	25.0 25.0	— 20,000	— 0.135	955
Class C Amplifier	2.5 35§	— —	— —	90 180	2.5 7.0†	14,700 —	1,700 —	25.0 —	— —	— 0.5	
Class A Amplifier	3.0	100	2.7	250	6.7	700,000§	1,800	—	—	—	956
Class A Amplifier	5.0	—	—	135	2.0	20,800§	650	13.5	—	—	957
Class A Amplifier	7.5	—	—	135	3.0	10,000§	1,200	12	—	—	958-A
Class C Amplifier	20.0	—	—	135	7.0	Input signal = 0.035 watt		—	—	0.6	
Class A Amplifier	3.0	67.5	0.4	135	1.7	800,000§	600	—	—	—	959
Class A Amplifier	3.0	100	6.5	250	5.3	600,000	1,100	E _{cs} = -3.0 volts			1612
Class A Amplifier	3.0 3.0	100 100	0.5 0.5	250 100	2.0 2.0	1,000,000* 1,000,000	1,225 1,185	— —	— —	— —	1620
Class A Amplifier	30	300	6.5†	300	38†	—	—	—	4,000†	5	1621
Class A Amplifier	20	250	4†	300	86†	—	—	—	4,000†	10	1622



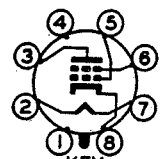
58D



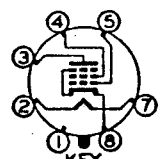
58E



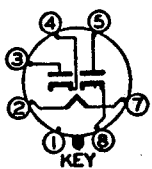
5K



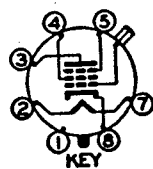
KEY
68S



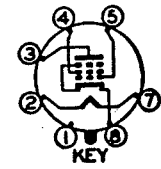
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ZAC



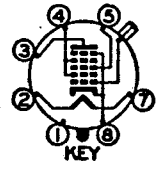
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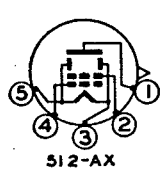
KEY
7R



KEY
7S



KEY
7T

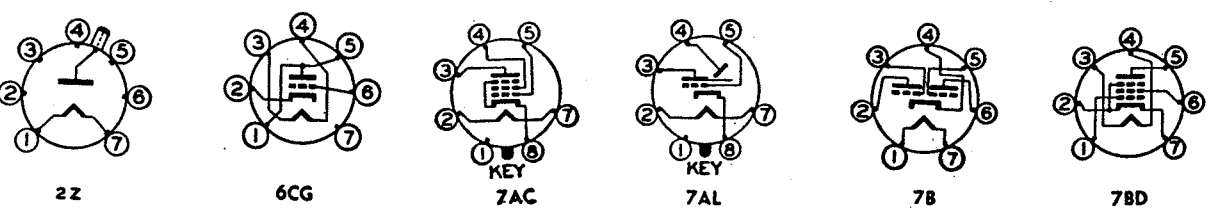


512-AX

CHARACTERISTICS

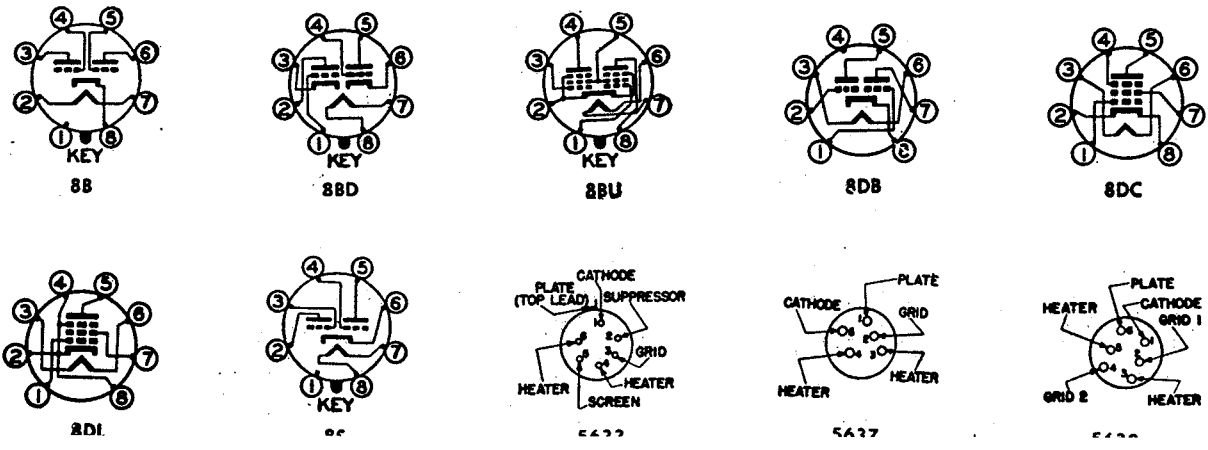
Tube Type	Classification by Construction	Base Connections	Out-line Dwg	Type Cathode	Filament Volts	Filament Amp	Max Plate Volts	Max Screen Volts	Capacitance in Micromicrofarads		
									Input	Output	Grid-plate
1629	Electron-Ray Indicator	7AL	9-27	Htr	12.6	0.15	250§	Max target voltage = 250 Min target voltage = 125			
1631	Beam Power Amplifier	7AC	10-1	Htr	12.6	0.45	360	270	2 tubes, Push-pull		
1632	Beam Power Amplifier	7AC	8-6	Htr	12.6	0.6	117	117	—	—	—
1633	Medium-Mu Twin Triode	8BD	9-11	Htr	25.0	0.15	300	—	—	—	—
1634	High-Mu Twin Triode (Special 12SC7)	8S	8-1	Htr	12.6	0.15	250	—	—	—	—
1635	Twin Triode Power Amplifier	8B	9-11	Htr	6.3	0.6	300	—	Both sections in push-pull		
1644	Twin Pentode Power Amplifier (Special 12L8-GT)	8BU	9-11	Htr	12.6	0.15	180	180	5.0▲	6.0▲	0.7▲
1654	Half-Wave High-Vacuum Rectifier	2Z	T-X	Fil	1.4	0.05	—	—	—	—	—
5590	R-F Pentode	7BD	5-1	Htr	6.3	0.15	180	140	3.40	2.90	0.01
5591	Sharp-Cutoff R-F Pentode (Special 6AK5)	7BD	5-1	Htr	6.3	0.15	180	140	4.0	2.8	0.02♣
5608-A	Medium-Mu Twin-Triode	7B	14-1	Htr	2.5	2.0	350	—	—	—	—
5610	Medium-Mu Triode	6CG	5-2	Htr	6.3	0.15	300	—	—	—	—
5633◎	Remote-Cutoff R-F Pentode	5633	T-X	Htr	6.3	0.15	150	140	4.0▲	2.2▲	0.015♣▲
5634◎	Remote-Cutoff R-F Pentode	5633	T-X	Htr	6.3	0.15	150	140	4.4▲	2.2▲	0.015♣▲
5635◎	Medium-Mu Twin Triode	8DB	3-1	Htr	6.3	0.45	150	—	2.6	1.6	1.2
5636◎	Dual-Control Pentode	8DC	3-2	Htr	6.3	0.15	150	100	—	—	—
5637◎	High-Mu Triode	5637	3-2	Htr	6.3	0.15	150	—	2.6▲	0.7▲	1.4▲
5638◎	Amplifier Pentode	5638	3-2	Htr	6.3	0.15	150	140	4.0	6.5	0.19
5639◎	Video Pentode	8DL	3-3	Htr	6.3	0.45	165▣	155▣	9.5	7.5	0.10♣

§ Approximate. ⊕ For both sections. ▣ Absolute maximum rating. # Conversion transconductance.
 † Zero signal. ▲ Without external shield. ♣ Per section. ♣ Maximum. ‡ Plate supply voltage.
 Type designations of metal tubes are shown in bold-face type. † Plate-to-plate.
 Type designations of miniature tubes are shown in italics.
 ◎ Designates subminiature types



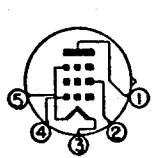
AND RATINGS

Service	Neg Grid Volts	Screen Volts	Screen Milli-amperes	Plate Volts	Plate Milli-amperes	R _p , Ohms	G _m , μmhos	μ Factor	Load for Rated Output, Ohms	Power Output, Watts	Tube Type
Tuning Indicator	Plate voltage = 250 thru 1 meg; Target voltage = 250 (E _g = -8 volts; Shadow = 0°) (E _g = 0 volts, Shadow = 90°, Plate current = 0.24 ma, Target current § = 4 ma)										1629
Class AB ₁ Amplifier	22.5	270	5†	360	88†	—	—	—	6,600†	26.5	1631
Class A Amplifier	7.5	110	4†	110	49†	13,000§	9,000	—	2,000	2.1	1632
Class A Amplifier ♠	8	—	—	250	11.5	6,900	2,600	18	—	—	1633
Class A Amplifier ♠	2	—	—	250	2.0	53,000§	1,325	70	—	—	1634
Class B Amplifier	0.0	—	—	300	6.6†	—	—	—	12,000 ‡	10.4	1635
Class A Amplifier ♠	9	180	2.8†	180	13†	160,000	2,150	—	10,000	1.0	1644
Half-Wave Rectifier	Max d-c output current = 1.0 ma; max peak inverse voltage = 4,300 volts; rms supply voltage = 1,500 volts; max peak current = 6 ma										1654
Class A Amplifier	R _k = 820	90	1.4	90	3.9	300,000	2,000	—	—	—	5590
Class A Amplifier	R _k = 180	120	2.4	180	7.7	500,000§	5,100	—	—	—	5591
	R _k = 180	120	2.5	120	7.5	300,000§	5,000	—	—	—	
Class A Amplifier ♠	6.0	—	—	300	6.0	13,000	2,450	32	—	—	5608-A
Class A Amplifier	1.5	—	—	90	17	3,500	4,000	14	—	—	5610
Class A Amplifier	R _k = 150	100	2.8	100	7.0	200,000	3,400	—	—	—	5633 ●
Class A Amplifier	R _k = 150	100	2.5	100	6.5	240,000§	3,500	—	—	—	5634 ●
Class A Amplifier ♠	R _k = 100 ⊕	—	—	100	4.8	10,000	3,800	38	—	—	5635 ●
Class A Amplifier Mixer	R _k = 150	100	3.8	100	3.8	60,000§	2,250	E _{cs} = 0 volts			5636 ●
		100	5.0	100	3.0	160,000§	1,000#	—	—	—	
Class A Amplifier	R _k = 820	—	—	100	1.4	26,000	2,700	70	—	—	5637 ●
Class A Amplifier	R _k = 270	100	1.25	100	4.8	150,000	3,300	—	—	—	5638 ●
Class A Amplifier	R _k = 100	100	4.0	150	21	50,000	9,000	—	—	—	5639 ●



CHARACTERISTICS

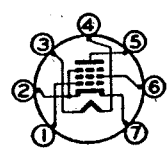
Tube Type	Classification by Construction	Base Connections	Out-line Dwg	Type Cathode	Fila-ment Volts	Fila-ment Amp	Max Plate Volts	Max Screen Volts	Capacitance in Micromicrofarads		
									Input	Out-put	Grid-plate
5640 ●	Beam Power Amplifier	5640	3-4	Htr	6.3	0.45	150	140	9.0	7.0	0.18
5641 ●	Half-Wave Rectifier	6CJ	3-3	Htr	6.3	0.45	Tube Voltage Drop: 23 v at 90 ma d-c				
5642 ●	Half-Wave High-Voltage Rectifier	5642	T-X	Fil	1.25	0.2	—	—	—	—	—
5645 ●	Medium-Mu Triode	5645	T-X	Htr	6.3	0.15	150	—	2.2	3.0	1.7
5646 ●	High-Mu Triode	5645	T-X	Htr	6.3	0.15	150	—	2.2▲	1.0▲	1.3▲
5647 ●	High-Frequency Diode	5647	T-X	Htr	6.3	0.15	Tube Voltage Drop: 2.8 v at 18 ma d-c				
5654	Sharp-Cutoff R-F Pentode (Special 6AK5)	7BD	5-1	Htr	6.3	0.175	180	140	4.0	2.9	0.02♣
5670	High-Frequency Twin Triode (Special 2C51)	8CJ	6-1	Htr	6.3	0.35	300	—	2.2▲	1.0▲	1.3▲
5672 ●	Power Amplifier Pentode	2E31	2-1	Fil	1.25 D-C	0.05	90	90	—	—	—
5675	Medium-Mu Triode (Pencil)	5675	T-X	Htr	6.3	0.135	150	—	2.3▲	0.09▲	1.3▲
5676 ●	Medium-Mu Triode	5676	T-X	Fil	1.25 D-C	0.12	135	—	1.3	4.0	2.0
5677 ●	Medium-Mu Triode	5676	T-X	Fil	1.25 D-C	0.06	135	—	1.3	3.8	2.0
5678 ●	Pentode Amplifier	5678	T-X	Fil	1.25 D-C	0.05	90	67.5	3.3	3.8	0.01♣
5679	Twin Diode (Special 7A6)	7CX	9-30	Htr	6.3	0.15	Tube Voltage Drop: ♣ 11 v at 16 ma d-c				
5686	Beam Power Amplifier	5686	6-2	Htr	6.3	0.35	250 250	250 250	6.5	8.5	0.08♣
5687	Medium-Mu Twin Triode	9H	6-2	Htr	{ 6.3 12.6 }	{ 0.9 0.45 }	300	—	4.0▲	0.45▲	3.1▲
5691	High-Mu Twin Triode (Special 6SL7-GT)	8BD	9-37	Htr	6.3	0.6	275■	—	—	—	—
5692	Medium-Mu Twin Triode (Special 6SN7-GT)	8BD	9-37	Htr	6.3	0.6	275■	—	—	—	—
5693	Sharp-Cutoff Pentode (Special 6SJ7)	8N	8-1	Htr	6.3	0.3	300■	125■	5.3	6.2	0.005♣
5694	Medium-Mu Twin Triode	8CS	14-3	Htr	6.3	0.8	300	—	Both Sections in Parallel		



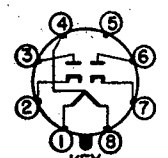
2E31



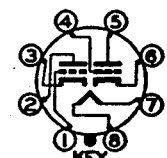
6CJ



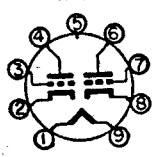
7BD



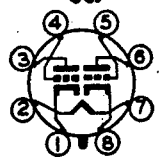
7CX



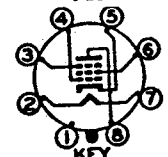
88D



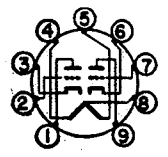
8CJ



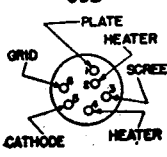
8CS



8N



9H

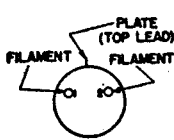


5640

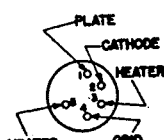
Service	Neg Grid Volts	Screen Volts	Screen Milli-am-peres	Plate Volts	Plate Milli-am-peres	R _p , Ohms	G _m , μmhos	μ Factor	Load for Rated Out-put, Ohms	Power Out-put, Watts	Tube Type
Class A Amplifier	9.0	100	2.2†	100	31.0†	15,000	5,000	—	3,000	1.25	5640 ©
Half-Wave Rectifier	Max d-c output current = 45 ma; max peak inverse voltage = 850 volts; max rms supply voltage = 250 volts; max peak current = 270 ma										5641 ©
Half-Wave Rectifier	Max d-c output current = 2.0 ma; max peak inverse voltage = 10,000 volts; max peak current = 12 ma										5642 ©
Class A Amplifier	R _k = 560	—	—	100	5.0	7,400	2,700	20			5645 ©
Class A Amplifier	R _k = 820	—	—	100	1.4	29,000	2,400	70			5646 ©
Half-Wave Rectifier	Max d-c output current □ = 10 ma; max peak inverse voltage □ = 460 volts; max rms supply voltage □ = 165 volts; max peak current □ = 60 ma										5647 ©
Class A Amplifier	R _k = 200	120	2.5	120	7.5	340,000§	5,000	—			5654
Class A Amplifier ♠	R _k = 240	—	—	150	8.2	—	5,500	35	—	—	5670
Class AB ₁ Amplifier	R _k = 800 ⊕	—	—	300	9.8†	—	—	—	27,000 ‡	1.0	
Class A Amplifier	6.5	67.5	1.1	67.5	3.25	—	650	—	20,000	0.065	5672 ©
Class A Amplifier	R _k = 68	—	—	135	24	3,225	6,200	20	—	—	5675
Class A Amplifier	5.0	—	—	135	4.0	—	1,600	15	—	—	5676 ©
Class A Amplifier	6.0	—	—	135	1.9	—	650	13.5	—	—	5677 ©
Class A Amplifier	0.0	67.5	0.48	67.5	1.8	1,000,000	1,100	—	—	—	5678 ©
Half-Wave Rectifier	Max d-c output current per plate = 8 ma; max rms supply voltage per plate = 150 volts; max peak current per plate = 45 ma										5679
Class A Amplifier	12.5	250	5.0	250	27	—	3,100	—	9,000	2.7	5686
Class C Amplifier	50.0	250	10.5	250	40	Input Signal = 0.15 watt		—	—	6.5	
Class A ♠ Amplifier	7.0	—	—	180	23.0	2,750	6,400	17.5	—	—	5687
	12.5	—	—	250	16.0	4,000	4,100	16.5	—	—	
Class A ♠ Amplifier	2.0	—	—	250	2.3	44,000	1,600	70	—	—	5691
Class A ♠ Amplifier	9.0	—	—	250	6.5	9,100	2,200	20	—	—	5692
Class A Amplifier	3.0	100	0.85	250	3.0	1,000,000 *	1,650	—	—	—	5693
Class A Amplifier	6.0	—	—	294	7.0	11,000	3,200	35	—	—	5694
	5.0	—	—	250	6.0	11,300	3,100	35	—	—	

□ Absolute maximum rating.
 ♠ Per section. * Minimum.
 ♣ Maximum.
 ⊕ For both sections.
 ▲ Without external shield.

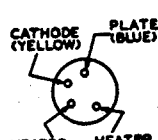
† Plate-to-plate. ‡ Zero signal. § Approximate.
Type designations of miniature tubes are shown in italics.
Type designations of metal tubes are shown in bold-face type.
 © Designates subminiature types.



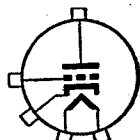
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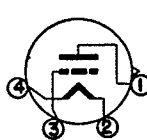
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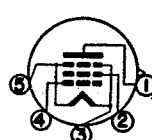
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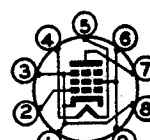
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5676



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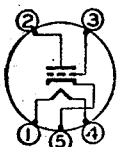


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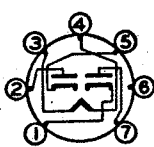
CHARACTERISTICS

Tube Type	Classification by Construction	Base Connections	Out-line Dwg	Type Cathode	Filament Volts	Filament Amp	Max Plate Volts	Max Screen Volts	Capacitance in Micromicrofarads		
									Input	Output	Grid-plate
5702 ●	R-F Pentrode	5702	3-7	Htr	6.3	0.2	180	140	4.4	3.5	0.03 ♣
5703 ●	Medium-Mu Triode	5703	3-6	Htr	6.3	0.2	250	—	2.6	0.7	1.2
5704 ●	Diode	5704	T-X	Htr	6.3	0.15	Tube Voltage Drop: 2 v at 9 ma d-c				
5718 ●	Medium-Mu Triode	8DK	3-1	Htr	6.3	0.15	165 □	—	—	—	—
5719 ●	High-Mu Triode	8DK	3-1	Htr	6.3	0.15	165 □	—	—	—	—
5725	Dual-Control R-F Pentode (Special 6AS6)	7CM	5-1	Htr	6.3	0.175	180	140	3.9	3.0	0.01
5726	Twin Diode (Special 6AL5)	6BT	5-1	Htr	6.3	0.30	Tube Voltage Drop: ♣ 10 v at 60 ma d-c				
5727	Thyratron (Special 2D21)	7BN	5-2	Htr	6.3	0.6	Anode voltage drop = 8 volts				
5731	Power Amplifier Triode (Acorn)	5BC	4-1	Htr	6.3	0.15	250	—	1.0	0.4	1.3
5732	Remote-Cutoff R-F Pentode (Special 6K7)	7R	8-4	Htr	6.3	0.3	300	125	7.0	12	0.005 ♣
5744 ●	High-Mu Triode	5744	3-6	Htr	6.3	0.2	250	—	—	—	—
5749	Remote-Cutoff R-F Pentode (Special 6BA6)	7BK	5-2	Htr	6.3	0.3	300	125	5.5	5.5	0.0035
5750	Pentagrid Converter (Special 6BE6)	7CH ♥	5-2	Htr	6.3	0.3	300	100	Osc $I_{g1} = 0.5$ ma $R_{g1} = 20,000$ ohms		
5751	High-Mu Twin Triode (Special 12AX7)	9A	6-2	Htr	{ 6.3 12.6 }	{ 0.35 0.175 }	300	—	—	—	—
5784 ●	Dual-Control R-F Pentode	5702	3-7	Htr	6.3	0.2	180	140	3.9	3.0	0.03 ♣
5785 ●	Half-wave High-Voltage Rectifier	5785	T-X	Fil	1.25 D-C	0.015	Tube Voltage Drop: § 17 v at 0.1 ma d-c				
5797 ●	Semi-Remote-Cutoff R-F Pentode	8CY	3-2	Htr	26.5	0.045	50	50	4.0	4.2	0.028 ♣
5798 ●	Medium-Mu Twin Triode	8CZ	3-2	Htr	26.5	0.09	50	—	1.9	1.7	1.7
5814	Medium-Mu Twin Triode (Special 12AU7)	9A	6-2	Htr	{ 6.3 12.6 }	{ 0.35 0.175 }	300	—	1.6 ▲	{ 0.50 ₁ ▲ 0.35 ₂ ▲ }	1.5 ▲

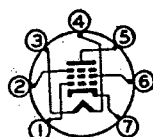
♥ Grids 2 and 4 are screen. Grid 3 is signal-input grid. # Conversion transconductance.
 ▲ Without external shield. ♣ Per section. ♣ Maximum. § Approximate.
 1—Section 1 2—Section 2 □ Absolute maximum rating.



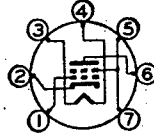
5BC



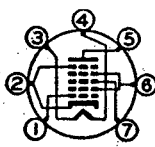
6BT



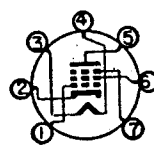
7BK



7BN



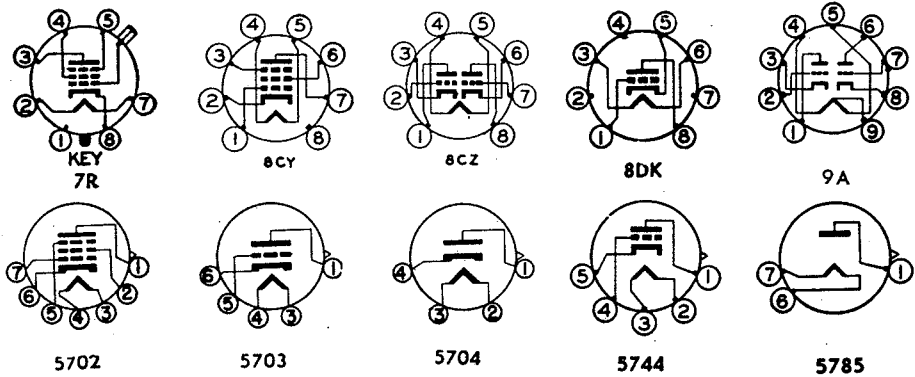
7CH



7CM

Service	Neg Grid Volts	Screen Volts	Screen Milli-amperes	Plate Volts	Plate Milli-amperes	R _p ' Ohms	G _m ' μmhos	μ Factor	Load for Rated Output, Ohms	Power Output, Watts	Tube Type
Class A Amplifier	R _k = 200	120	2.5	120	7.5	340,000	5,000	—			5702 ●
Class A Amplifier	R _k = 220	—	—	120	9.0	—	5,000	25			5703 ●
Half-Wave Rectifier	Max d-c output current = 9 ma; max peak inverse voltage = 420 volts; max rms supply voltage = 150 volts; max peak current = 54 ma										5704 ●
Class A Amplifier	R _k = 150	—	—	100	12.0	3,650	5,500	20	—	—	5718 ●
Class A Amplifier	R _k = 820	—	—	100	1.4	26,000	2,700	70	—	—	5719 ●
Class A Amplifier	2.0	120	3.5	120	5.2	—	3,200	E _{cs} = 0.0 volts			5725
Half-Wave Rectifier	Max d-c output current per plate = 9 ma; max peak inverse voltage = 330 volts; rms supply voltage per plate = 117 volts; max peak current per plate = 54 ma										5726
Controlled Rectifier	Max d-c cathode current □ = 100 ma; max peak inverse voltage □ = 1,300 volts; max peak cathode current □ = 500 ma										5727
Class A Amplifier	7.0	—	—	250	6.3	11,400	2,200	25	—	—	5731
Class A Amplifier	3	100	1.7	250	7.0	800,000§	1,450	—	—	—	5732
Class A Amplifier	R _k = 500	—	—	250	4.0	—	4,000	70	—	—	5744 ●
Class A Amplifier	R _k = 68	100	4.2	250	11.0	1,000,000§	4,400	—	—	—	5749
	R _k = 68	100	4.4	100	10.8	250,000§	4,300	—	—	—	
Converter	1.5	100	7.5	250	2.6	1,000,000§	475#	—	—	—	5750
Class A Amplifier ♠	3.0	—	—	250	1.0	58,000	1,200	70	—	—	5751
	1.0	—	—	100	0.8	58,000	1,200	70	—	—	
Class A Amplifier	2.0	120	3.5	120	5.2	—	3,200E _{cs} = 0.0 volts				5784 ●
	2.0	120	4.8	120	3.6	—	1,850E _{cs} = -3.0 volts				
Half-Wave Rectifier	Max d-c output current = 0.1 ma; max peak current = 0.45 ma; max peak inverse voltage = 3,500 volts with supply impedance = 1 meg. min.										5785 ●
Class A Amplifier	0.0	26.5	0.9	23.5	2.75	70,000§	3,450	—	—	—	5797 ●
Class A Amplifier ♠	0.0	—	—	26.5	2.3	6,700§	3,150	21	—	—	5798 ●
Class A Amplifier ♠	8.5	—	—	250	10.5	7,700	2,200	17			5814
	0.0	—	—	100	11.8	6,250	3,100	19.5			

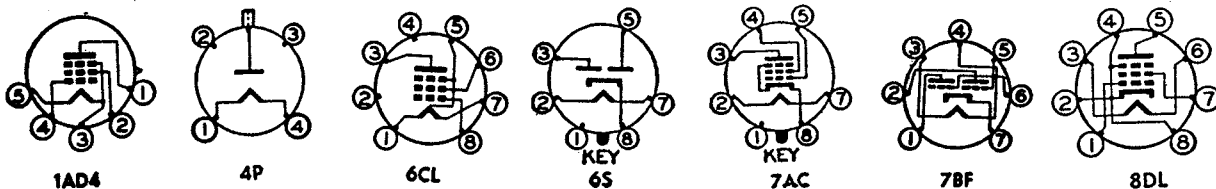
● Designates subminiature tubes.
 Type designations of metal tubes are shown in bold-face type.
 Type designations of miniature tubes are shown in italics.



CHARACTERISTICS

Tube Type	Classification by Construction	Base Connections	Out-line Dwg	Type Cathode	Filament Volts	Filament Amp	Max Plate Volts	Max Screen Volts	Capacitance in Micromicrofarads		
									Input	Output	Grid-plate
5824	Beam Power Amplifier (Special 25B6-G)	7AC	14-3	Htr	25.0	0.3	200	135	—	—	—
5825	Half-Wave High-Voltage Rectifier	4P	T-X	Fil	1.6	1.25	Tube Voltage Drop: 1,750 v at 40 ma d-c				
5829	Twin Diode	5829	2-3	Htr	6.3	0.15	Tube Voltage Drop: 5 v at 15 ma d-c				
5838	Full-Wave High-Vacuum Rectifier	6S	T-X	Htr	12.0	0.6	—	—	—	—	—
5839	Full-Wave High-Vacuum Rectifier	6S	T-X	Htr	26.5	0.285	—	—	—	—	—
5840	Sharp-Cutoff R-F Pentode	8DL	3-1	Htr	6.3	0.15	165	155	4.2	3.4	0.015
5842	High-Mu Triode	9V	6-1	Htr	6.3	0.3	180	—	—	—	—
5844	Medium-Mu Twin Triode	7BF	5-2	Htr	6.3	0.3	175	—	2.4	0.5 ₁ 0.4 ₂	2.7
5847	Sharp-Cutoff R-F Pentode	9X	6-1	Htr	6.3	0.3	180	150	7.1	2.9	0.04
5851	Beam Power Amplifier	6CL	T-X	Fil	{1.25 2.50 D-C}	{0.11 0.055}	180	135	2.5	3.0	0.055
5852	Full-Wave High-Vacuum Rectifier	6S	T-X	Htr	6.3	1.2	—	—	—	—	—
5871	Beam Power Amplifier (Special 6V6-GT)	7AC	9-11	Htr	6.3	0.45	315	285	9.5	7.5	0.7
5873	Medium-Mu Twin Triode	5873	3-2	Htr	6.3	0.3	300	—	—	—	—
5875	Sharp-Cutoff Pentode	1AD4	2-1	Fil	1.25 D-C	0.1	90	90	4.0	4.0	0.03
5876	High-Mu Triode (Pencil)	5675	T-X	Htr	6.3	0.135	300	—	2.5	0.035	1.4
5879	Sharp-Cutoff A-F Pentode	9AD	6-2	Htr	6.3	0.15	300	150	Pentode Connection		
5881	Beam Power Amplifier (Special 6L6-G)	7AC	T-X	Htr	6.3	0.9	360	270	Triode Connection (G ₂ , G ₃ & P Tied)		
									Single Tube		
5890	Remote-Cutoff Pentode Regulator	12J	T-X	Htr	6.3	0.6	30,000	450	Two tubes, Push-pull		
									E _{c3} = 5,500 volts E _{c3} = 5,500 volts E _{c3} = 5,500 volts		

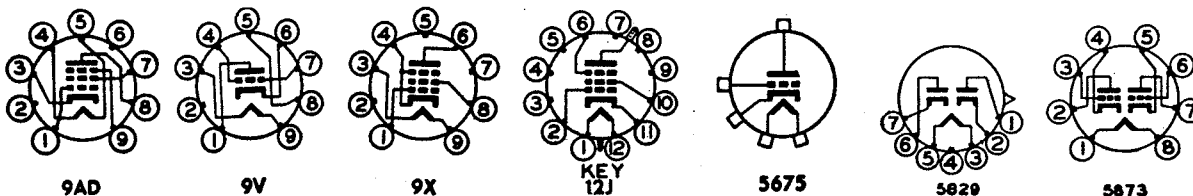
▲ Without external shield. † Zero signal. ♣ Maximum. ◻ Absolute maximum rating.
♠ Per section. § Approximate. 1—Section 1. 2—Section 2.



AND RATINGS

Service	Neg Grid Volts	Screen Volts	Screen Milli-amperes	Plate Volts	Plate Milli-amperes	R _p , Ohms	G _m , μmhos	μ Factor	Load for Rated Output Ohms	Power Output, Watts	Tube Type
Class A Amplifier	22.0	135	2.5†	135	61.0†	15,000§	5,000	—	1,700	4.3	5824
Half-Wave Rectifier	Max d-c output current □ = 2 ma; max peak inverse voltage □ = 60,000 volts, rms supply voltage = 21,200 volts; max peak current □ = 40 ma										5825
Half-Wave Rectifier	Max d-c output current per plate = 5 ma; max peak inverse voltage = 330 volts; rms supply voltage per plate = 117 volts; max peak current per plate = 30 ma										5829 ●
Full-Wave Rectifier	Max d-c output current = 65 ma; max peak inverse voltage = 1,375 volts; rms supply voltage per plate = 300 volts; max peak current per plate = 270 ma										5838
Full-Wave Rectifier	Max d-c output current = 65 ma; max peak inverse voltage = 1,375 volts; rms supply voltage per plate = 300 volts; max peak current per plate = 270 ma										5839
Class A Amplifier	R _k = 150	100	2.4	100	7.5	230,000	5,000	—	—	—	5840 ●
Class A Amplifier	R _k = 62	—	—	150	26.0	1,800	24,000	43	—	—	5842
Class A Amplifier ♠	R _k = 470	—	—	100	4.8	7,950§	3,400	27	—	—	5844
Frequency Halfer ♠	0	—	—	150‡	4.8*	R _{g1} = 47,000 ohms R _{g1} = 47,000 ohms			20,000	—	
	10	—	—	150‡	0.1♣				20,000	—	
Class A Amplifier	R _k = 110	150	4.5	150	13	—	12,500	—	—	—	5847
Class A Amplifier	7.5	125	0.9	125	5.5	175,000	1,600	—	—	—	5851 ●
Full-Wave Rectifier	Max d-c output current = 65 ma; max peak inverse voltage = 1,375 volts; rms supply voltage per plate = 300 volts; max peak current per plate = 270 ma										5852
Class A Amplifier	13.0	225	2.2	315	34.0	77,000	3,750	—	8,500	5.5	5871
Class A Amplifier ♠	3.0	—	—	150	9.0	—	2,900	22	—	—	5873 ●
Class A Amplifier	0.0	90	1.0	90	3.5	—	2,500	—	—	—	5875 ●
Class A Amplifier	R _k = 75	—	—	250	18.0	8,625	6,500	56	—	—	5876
Class A Amplifier	3.0	100	0.4	250	1.8	2,000,000	1,000	—	—	—	5879
Class A Amplifier	8.0	—	—	250	5.5	13,700	1,530	21	—	—	
Class A Amplifier	18.0	250	2.5†	350	53.0†	48,000	5,200	—	4,200	11.3	5881
Class A Amplifier	14.0	250	4.3†	250	75.0†	30,000	6,100	—	2,500	6.7	
Class AB ₁ Amplifier	22.5	270	5.0†	360	88.0†	—	—	—	3,800	18.0	
Class AB ₁ Amplifier	22.5	270	5.0†	360	88.0†	—	—	—	6,600	26.5	
Shunt Regulator	60	200	0.0	30,000	0.0	—	Peak G ₁ signal = 0.0 volts			5890	
	60	200	0.0	30,000	0.06	—	Peak G ₁ signal = 20 volts				
	60	200	0.0	30,000	0.50	—	Peak G ₁ signal = 45 volts				

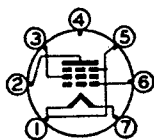
Type designations of miniature tubes are shown in italics.
 ● Designates subminiature types.



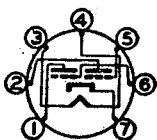
CHARACTERISTICS

Tube Type	Classification by Construction	Base Connections	Out-line Dwg	Type Cathode	Fila-ment Volts	Fila-ment Amp	Max Plate Volts	Max Screen Volts	Capacitance in Micromicrofarads		
									Input	Out-put	Grid-plate
5896 ●	High-Frequency Twin Diode	8DJ	3-1	Htr	6.3	0.3	Tube Voltage Drop: ♠ 10 v at 50 ma d-c				
5897 ●	Medium-Mu Triode	8DK	3-1	Htr	6.3	0.15	165 □	—	2.2	0.7	1.40
5898 ●	High-Mu Triode	8DK	3-1	Htr	6.3	0.15	165 □	—	2.40	0.60	0.70
5899 ●	Semi-Remote-Cutoff R-F Pentode	8DL	3-1	Htr	6.3	0.15	165 □	155 □	4.4	3.4	0.015 ♣
5900 ●	Semi-Remote-Cutoff R-F Pentode	8DL	3-1	Htr	6.3	0.15	165 □	155 □	4.4	3.4	0.015 ♣
5901 ●	Sharp-Cutoff R-F Pentode	8DL	3-1	Htr	6.3	0.15	165 □	155 □	4.2	3.4	0.015
5902 ●	Beam Power Amplifier	8DL	3-3	Htr	6.3	0.45	165 □	120 □	6.5	7.5	0.11
5903 ●	High-Frequency Twin Diode	8DJ	3-1	Htr	26.5	0.075	Tube Voltage Drop: ♠ 4.5 v at 18 ma d-c				
5904 ●	Medium-Mu Triode	8DK	3-1	Htr	26.5	0.045	55 □	—	2.2 ▲	0.8 ▲	1.80 ▲
5905 ●	Sharp-Cutoff R-F Pentode	8DL	3-1	Htr	26.5	0.045	55 □	55 □	4.4	3.4	0.015 ♣
5906 ●	Sharp-Cutoff R-F Pentode	8DL	3-1	Htr	26.5	0.045	165 □	155 □	4.2	4.0	0.015 ♣
5907 ●	Remote-Cutoff R-F Pentode	8DL	3-1	Htr	26.5	0.045	55 □	55 □	4.4	3.4	0.015 ♣
5908 ●	Dual-Control R-F Pentode	8DC	3-1	Htr	26.5	0.045	55 □	55 □	E _{c3} = 0 volts		
5910	Sharp-Cutoff Pentode	6AR	5-2	Fil	1.4 D-C	0.05	90	90	3.6	7.5	0.008 ♣
5915	Pentagrid Amplifier	7CH	5-2	Htr	6.3	0.3	250 □	125 □	E _{c3} = 0.0 volts E _{c3} = -10 volts E _{c3} = 0.0 volts		
5916 ●	Mixer Pentode	8DC	3-1	Htr	26.5	0.045	165 □	155 □	E _{c3} = 0 volts E _{c3} = -3 volts		
5920	Medium-Mu Twin Triode	7BF	5-3	Htr	6.3	0.4	150	—	—	—	—

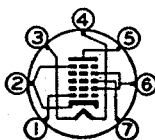
▲ Without external shield. *Minimum. ♣ Maximum. □ Absolute maximum rating.
 § Plate supply voltage. ♠ Per section. § Approximate.



6AR



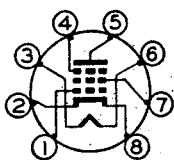
7BF



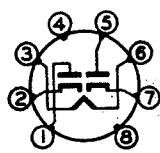
7CH

Service	Neg Grid Volts	Screen Volts	Screen Milli-amperes	Plate Volts	Plate Milli-amperes	R _p ' Ohms	G _m ' μmhos	μ Factor	Load for Rated Output, Ohms	Power Output, Watts	Tube Type
Full-Wave Rectifier	Max d-c output current per plate □ = 10 ma; max peak inverse voltages □ = 460 volts; rms supply voltage per plate = 150 volts; max peak current per plate □ = 60 ma										5896 ●
Class A Amplifier RF Oscillator	R _k = 150	—	—	100	8.5	—	5,800	27	—	—	5897 ●
	—	—	—	150	20.0	Frequency = 500 mc			—	0.9	
Class A Amplifier	R _k = 680	—	—	150	1.7	—	2,700	70	—	—	5898 ●
Class A Amplifier	R _k = 120	100	2.2	100	7.2	260,000	4,500	—	—	—	5899 ●
Class A Amplifier	R _k = 120	100	2.2	100	7.2	260,000	4,500	—	—	—	5900 ●
Class A Amplifier	R _k = 150	100	2.4	100	7.5	230,000	5,000	—	—	—	5901 ●
Class A Amplifier	R _k = 270	110	2.2	110	30.0	15,000	4,200	—	3,000	1.0	5902 ●
Full-Wave Rectifier	Max d-c output current per plate □ = 10 ma; max peak inverse voltage □ = 460 volts; rms supply voltage per plate = 150 volts; max peak current per plate □ = 60 ma										5903 ●
Class A Amplifier	R _g = 2.2 Meg	—	—	26.5	3.0	—	5,000	19	—	—	5904 ●
Class A Amplifier	R _g = 2.2 Meg	26.5	0.9	26.5	2.3	110,000	2,850	—	—	—	5905 ●
Class A Amplifier	R _k = 150	100	2.4	100	7.5	230,000	5,000	—	—	—	5906 ●
Class A Amplifier	R _g = 2.2 Meg	26.5	1.1	26.5	2.7	125,000	3,000	—	—	—	5907 ●
Class A Amplifier	R _g = 2.2 Meg	26.5	1.6	26.5	2.3	30,000	1,750	—	—	—	5908 ●
Class A Amplifier	0.0	90	0.45	90	1.6	1,500,000	§900	—	—	—	5910
Gated Amplifier	10.0	75	0.0	150	0.0	R _{g1} = R _{g3} = 47,000		—	20,000	—	5915
	0.0	69§	14.0	150	0.0	R _{g1} = R _{g3} = 47,000			20,000	—	
	0.0	71§	9.0	150	5.8	R _{g1} = R _{g3} = 47,000			20,000	—	
Class A Amplifier	R _k = 150	100	3.4	100	4.4	130,000	3,000	—	—	—	5916 ●
	R _k = 150	100	4.5	100	2.6	50,000	1,600	—	—	—	
Class A Amplifier Frequency Halfer	1.8	—	—	100	8.5	—	5,500	25	—	—	5920
	0	—	—	150	4.5*	R _{g1} = 47,000 ohms			20,000	—	
	10	—	—	150	0.2♣	R _{g1} = 47,000 ohms			20,000	—	

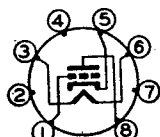
Type designations of miniature tubes are shown in italics.
 ● Designates subminiature tubes.



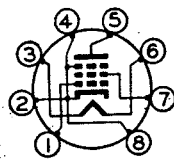
8DC



8DJ



8DK



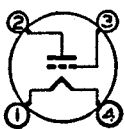
8DL

CHARACTERISTICS

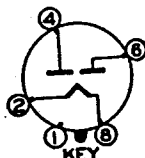
Tube Type	Classification by Construction	Base Connections	Outline Dwg	Type Cathode	Filament Volts	Filament Amp	Max Plate Volts	Max Screen Volts	Capacitance in Micromicrofarads		
									Input	Output	Grid-plate
5930	Low-Mu Power-Amplifier Triode (Special 2A3)	4D	T-X	Fil	2.5	2.5	360 □	—	—	—	—
5931	Full-Wave High-Vacuum Rectifier (Special 5U4-G)	5T	T-X	Fil	5.0	3.0	Tube Voltage Drop: † 58 volts at 225 ma d-c			—	
5932	Beam Power Amplifier (Special 6L6-G)	7AC	T-X	Htr	6.3	0.9	400 □	300 □	—	—	—
5961	Pentagrid Converter (Special 6SA7)	8R ♥	8-1	Htr	6.3	0.3	300	100	Osc $I_{g1} = 0.5$ ma $R_{g1} = 20,000$ ohms		
5963	Medium-Mu Twin Triode	9A	6-2	Htr	{ 12.6 6.3 }	{ 0.15 0.3 }	250 □	—	1.9 ▲	0.5 ₁ ▲ 0.35 ₂ ▲	1.5 ▲
5964	High-Mu Twin Triode	7BF	5-2	Htr	6.3	0.45	250 □	—	2.1 ▲	0.4 ▲	1.3 ▲
5971 ●	Medium-Mu Triode	5971	2-1	Fil	1.25 D-C	0.08	135	—	1.6 ▲	1.7 ▲	2.3 ▲
5975 ●	Medium-Mu Triode	5975	3-6	Htr	6.3	0.175	250	—	—	—	—
5977 ●	Medium-Mu Triode	8DK	3-1	Htr	6.3	0.15	180 □	—	2.0	0.8	1.3
5987 ●	Low-Mu Triode	8DM	3-4	Htr	6.3	0.45	165 □	—	3.2	5.0	3.2
5992	Beam Power Amplifier (Special 6V6-GT)	7AC	9-9	Htr	6.3	0.6	300	275	—	—	—
5993	Full-Wave High-Vacuum Rectifier	5993	6-3	Htr	6.3	0.8	—	—	—	—	—
5995 ●	Half-Wave High-Vacuum Rectifier	5995	T-X	Htr	6.3	0.3	Tube Voltage Drop: 25 volts at 100 ma d-c			—	
5998	Low-Mu Twin Triode	8BD	16-3	Htr	6.3	2.4	250	—	—	—	—
6004	Full-Wave High-Vacuum Rectifier	6004	T-X	Fil	5.0	2.0	Tube Voltage Drop: † 60 volts at 145 ma d-c			—	
6005	Beam Power Amplifier (Special 6AQ5-W)	7BZ	5-3	Htr	6.3	0.45	250	250	Single Tube 2 Tubes, Push-pull		

♥ Grids 2 and 4 are screen. Grid 3 is signal-input grid.
 ▲ Per section.
 † Plate-to-plate.
 1—Section 1
 2—Section 2

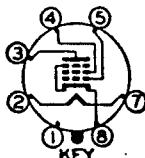
§ Approximate. ‡ Plate supply voltage.
 † Zero signal. # Conversion transconductance.
 □ Absolute maximum rating. ▲ Without external shield.



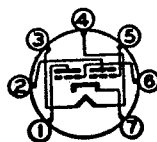
4D



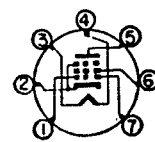
5T



7AC



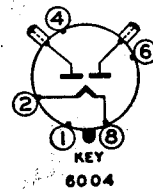
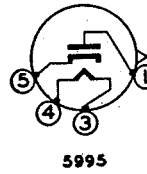
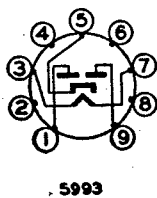
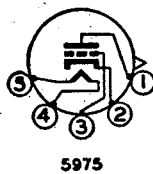
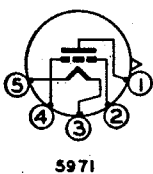
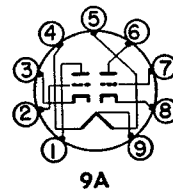
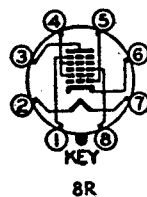
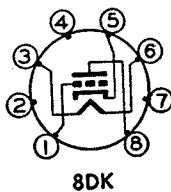
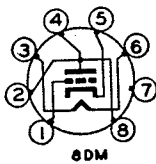
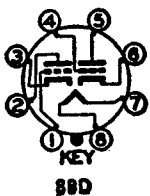
7BF



7BZ

Service	Neg Grid Volts	Screen Volts	Screen Milli-amperes	Plate Volts	Plate Milli-amperes	R _p , Ohms	G _m , μmhos	u Factor	Load for Rated Output, Ohms	Power Output, Watts	Tube Type
Class A Amplifier	45	—	—	250	60†	800	5,250	4.2	2,500	3.5	5930
Full-Wave Rectifier	Max d-c output current □ = 250 ma; max peak inverse voltage □ = 1,700 volts; max rms supply voltage per plate □ = 500 volts; max peak current per plate □ = 750 ma										5931
Class A Amplifier	14	250	5.0†	250	72†	22,500	6,000	—	2,500	6.5	5932
Converter	2.0	100	8.5	250	3.5	1,000,000§	450#	—	—	—	5961
Class A Amplifier ♣	0.0	—	—	67.5	7	7,850	2,800	22	—	—	<i>5963</i>
Frequency Halfer ♣	15.0	—	—	150‡	0.0	R _{g1} = 47,000	—	—	20,000	—	
	0.0	—	—	150‡	5.1	R _{g1} = 47,000	—	—	20,000	—	
Class A Amplifier ♣	R _k = 50	—	—	100	9.5	6,500 / 6,000	—	39	—	—	<i>5964</i>
Frequency Halfer ♣	10.0	—	—	150‡	0.0	R _{g1} = 47,000	—	—	20,000	—	
	0.0	—	—	150‡	5.0	R _{g1} = 47,000	—	—	20,000	—	
Class A Amplifier	2.5	—	—	135	4.0	—	2,150	23	—	—	5971 ©
Class A Amplifier	R _k = 680	—	—	200	12.0	4,000	4,000	16	—	—	5975 ©
Class A Amplifier	R _k = 270	—	—	100	10.0	—	4,500	16	—	—	5977 ©
Class A Amplifier	18	—	—	100	9.0	—	1,850	4.1	—	—	5987 ©
Class A Amplifier	12.5	250	4.5†	250	45†	45,000	4,000	—	5,000	4.0	5992
Full-Wave Rectifier	Max d-c output current = 60 ma; max peak inverse voltage = 1,250 volts; rms supply voltage per plate = 260 volts; max peak current per plate = 230 ma										<i>5993</i>
Half-Wave Rectifier	Max d-c output current = 45 ma; max peak inverse voltage = 850 volts; max rms supply voltage = 300 volts; max peak current = 275 ma										5995 ©
Class A Amplifier ♣	R _k = 105	—	—	110	100	350	15,500	5.4	—	—	5998
Full-Wave Rectifier	Max d-c output current = 120 ma; max peak inverse voltage = 1400 volts; rms supply voltage per plate = 375 volts; max peak current per plate = 375 ma										6004
Class A Amplifier	12.5	250	4.5†	250	45†	52,000§	4,100	—	5,000	4.5	<i>6005</i>
Class AB ₁ Amplifier	8.5	180	3.0†	180	29†	58,000§	3,700	—	5,500	2.0	
Class AB ₁ Amplifier	15	250	5†	250	70†	—	—	—	10,000	10	

Type designations of metal tubes are shown in bold-face type.
 Type designations of miniature tubes are shown in italics.
 © Designates subminiature types.



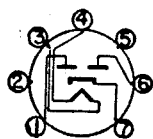
CHARACTERISTICS

Tube Type	Classification by Construction	Base Connections	Out-line Dwg	Type Cathode	Fila-ment Volts	Fila-ment Amp	Max Plate Volts	Max Screen Volts	Capacitance in Micromicrofarads		
									Input	Out-put	Grid-plate
6006	Semi-Remote-Cutoff R-F Pentode (Special 6SG7)	8BK	8-1	Htr	6.3	0.3	300	200	8.5	7.0	0.004 ♣
6028	Sharp-Cutoff R-F Pentode	7BD	5-1	Htr	20.0	0.05	180	140	4.0	2.8	0.02 ♣
6042	Medium-Mu Twin Triode	8BD	9-3	Htr	25.0	0.15	250	—	—	—	—
6046	Beam Power Amplifier (Special 25L6-GT)	7AC	9-11	Htr	25.0	0.3	200	125	—	—	—
6050 ©	High-Frequency Medium-Mu Triode	5676	2-1	Fil	1.25 D-C	0.12	135	—	1.3	3.4	1.4
6057	High-Mu Twin Triode (Special 12AX7)	9A	6-2	Htr	{ 12.6 6.3 }	{ 0.15 0.3 }	300	—	1.6 ▲	{ 0.46 ₁ ▲ 0.34 ₂ ▲ }	1.7 ▲
6058	Twin Diode (Special 6AL5)	6BT	5-2	Htr	6.3	0.3	—	—	—	—	—
6059	Sharp-Cutoff R-F Pentode	9BC	6-2	Htr	6.3	0.15	300	125	4.25 ▲	4.0 ▲	0.01 ♣ ▲
6060	High-Frequency Twin Triode (Special 12AT7)	9A	6-2	Htr	{ 12.6 6.3 }	{ 0.15 0.3 }	350	—	2.25 ▲	0.4 ▲	1.6 ▲
6061	Beam Power Amplifier	9AM	6-3	Htr	6.3	0.45	315	285	—	—	—
6063	Full-Wave High-Vacuum Rectifier (Special 6X4)	5BS	5-3	Htr	6.3	0.6	—	—	—	—	—
6064	R-F Pentode	7DB	5-2	Htr	6.3	0.3	250	250	7.8	3.9	0.01 ♣
6065	Remote-Cutoff R-F Pentode	7DB	5-2	Htr	6.3	0.2	250	250	4.5	7.0	0.007 ♣
6066	Duplex-Diode High-Mu Triode (Special 6AT6)	7BT	5-2	Htr	6.3	0.3	300	—	—	—	—
6067	Medium-Mu Twin Triode (Special 12AU7)	9A	6-2	Htr	{ 12.6 6.3 }	{ 0.15 0.3 }	300	—	1.6 ▲	{ 0.5 ₁ ▲ 0.35 ₂ ▲ }	1.5 ▲
6072	Twin Triode (Special 12AY7)	9A	6-2	Htr	{ 12.6 6.3 }	{ 0.175 0.35 }	300	—	1.4 ▲	{ 0.5 ₁ ▲ 0.4 ₂ ▲ }	1.4 ▲

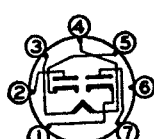
▲ Without external shield.
 ▲ Per section. *Minimum
 ♣ Plate supply voltage.

† Zero signal. § Approximate.
 ✖ Screen supply voltage.

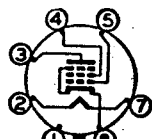
1—Section 1
 2—Section 2



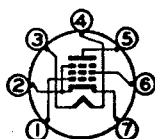
58S



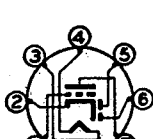
68T



7AC



7BD



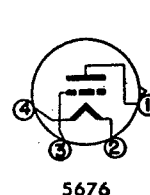
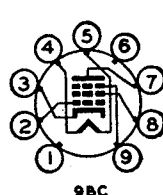
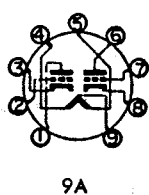
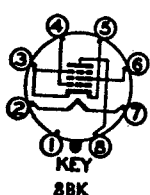
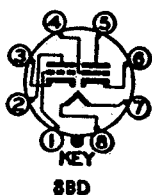
7BT



7DB

Service	Neg Grid Volts	Screen Volts	Screen Milli-amperes	Plate Volts	Plate Milli-amperes	R _p ' Ohms	G _m ' μmhos	μ Factor	Load for Rated Output, Ohms	Power Output, Watts	Tube Type
Class A Amplifier	2.5	150	3.4	250	9.2	1,000,000*	4,000	—	—	—	6006
Class A Amplifier	R _k = 180	120	2.5	120	7.5	300,000§	5,000	—	—	—	<i>6028</i>
Class A Amplifier ♣	9	—	—	250	6.5	9,100	2,200	20	—	—	<i>6042</i>
Class A Amplifier	R _k = 180 7.5 0.0	125	2.2†	200	46†	28,000§	8,000	—	4,000	3.8	<i>6046</i>
Relay Energizer		110	4.0†	110	49†	13,000§	8,000	—	2,000	2.1	
		115✱ 115✱	12.8 —	115§ 115§	105 0.1§	R _g ¹ = 2 meg R _g ² = 1000 ohms	— —	— —	500 500	— —	
Class A Amplifier	5	—	—	135	4.0	—	1,600	16	—	—	6050 ©
Class A Amplifier ♣	2	—	—	250	1.2	62,500	1,600	100	—	—	<i>6067</i>
Half-Wave Rectifier	Max d-c output current per plate = 9 ma; max peak inverse voltage = 420 volts; max rms supply voltage per plate = 150 volts; max peak current per plate = 54 ma										<i>6068</i>
Class A Amplifier	3	100	0.6	250	2.1	2,500,000	1,250	—	—	—	<i>6069</i>
Class A Amplifier ♣	2	—	—	250	10.0	10,000	5,500	55	—	—	<i>6060</i>
Class A Amplifier	12.5 13	250	4.5†	250	45†	52,000§	4,100	—	5,000	4.5	<i>6061</i>
		225	2.2†	315	34†	77,000§	3,750	—	8,500	5.5	
Full-Wave Rectifier	Max d-c output current = 70 ma; max peak inverse voltage = 1,250 volts; max rms supply voltage per plate = 325 volts; max peak current per plate = 210 ma										<i>6063</i>
Class A Amplifier	2.0	250	2.5	250	10	1,000,000§	7,500	—	—	—	<i>6064</i>
Class A Amplifier	2.5	200	2.1	250	8.0	1,000,000§	2,500	—	—	—	<i>6065</i>
Class A Amplifier	3.0	—	—	250	1.0	58,000	1,200	70	—	—	<i>6066</i>
Class A Amplifier ♣	8.5	—	—	250	10.5	7,700	2,200	17	—	—	<i>6067</i>
Class A Amplifier ♣	4.0	—	—	250	3.0	25,000§	1,750	44	—	—	<i>6072</i>

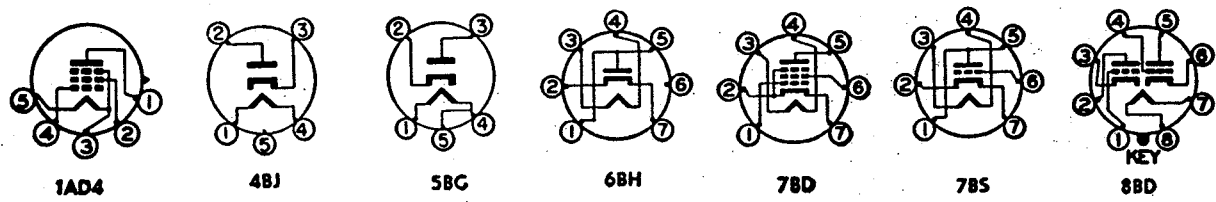
© Designates subminiature types.
Type designations of metal tubes are shown in bold-face type.
Type designations of miniature tubes are shown in italics.



CHARACTERISTICS

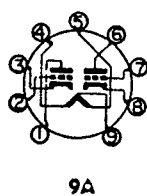
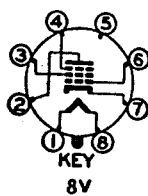
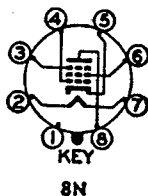
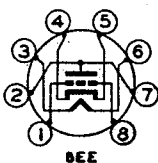
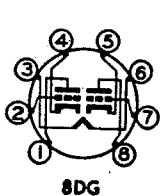
Tube Type	Classification by Construction	Base Connections	Out-line Dwg	Type Cathode	Fila-ment Volts	Fila-ment Amp	Max Plate Volts	Max Screen Volts	Capacitance in Micromicrofarads		
									Input	Out-put	Grid-plate
6080	Low-Mu Twin Triode Power Amplifier (Special 6AS7-G)	8BD	T-X	Htr	6.3	2.5	250 \square	—	6.2 \blacktriangle	2.2 \blacktriangle	8.4 \blacktriangle
6082	Low-Mu Twin Triode Power Amplifier	8BD	T-X	Htr	26.5	0.6	250 \square	—	6.4 \blacktriangle	2.2 \blacktriangle	8.4 \blacktriangle
6084	A-F Pentode	9BJ	6-3	Htr	6.3	0.3	300	200	5.1	7.1	0.025 \clubsuit
6085	Medium-Mu Twin Triode	9A	6-3	Htr	{ 12.6 6.3 }	{ 0.3 0.6 }	300	—	2.8 ₁ 2.7 ₂	1.2 ₁ 1.3 ₂	2.6 ₁ 2.75 ₂
6086	Pentode	9BK	6-3	Htr	18.0	0.1	210	210	8.8	3.6	0.015 \clubsuit
6088 \odot	Power Amplifier Pentode	1AD4	2-1	Fil	1.25 D-C	0.02	67.5 \square	67.5 \square	—	—	—
6111 \odot	Medium-Mu Twin Triode	8DG	3-1	Htr	6.3	0.3	165 \square	—	2.1	1.3 ₁ 1.4 ₂	1.4
6112 \odot	High-Mu Twin Triode	8DG	3-1	Htr	6.3	0.3	165 \square	—	2.0	1.5	1.0
6113	High-Mu Twin Triode (Special 6SL7-GT)	8BD	9-11	Htr	6.3	0.3	250	—	3.0	3.8	2.8
6137	Remote-Cutoff R-F Pentode (Special 6SK7)	8N	8-1	Htr	6.3	0.3	300	125	5.0	6.5	0.003 \clubsuit
6145	Sharp-Cutoff Pentode	8V	9-31	Htr	6.3	0.6	300	300 \times	11.5	7.5	0.03 \clubsuit
6169 \odot	High-Frequency Triode	8EE	3-1	Htr	6.3	0.15	250	—	2.5	2.6	1.6
9001	Detector Amplifier Pentode	7BD	5-1	Htr	6.3	0.15	250	100	3.6	3.0	0.01 \clubsuit
9002	Medium-Mu Triode	7BS	5-1	Htr	6.3	0.15	250	—	1.2	1.1	1.4
9003	Remote-Cutoff Pentode	7BD	5-1	Htr	6.3	0.15	250	100	3.6	3.0	0.01 \clubsuit
9004	High-frequency Diode (Acorn)	4BJ	4-1	Htr	6.3	0.15	—	—	—	—	—
9005	High-frequency Diode (Acorn)	5BG	4-1	Htr	3.6	0.165	—	—	—	—	—
9006	High-frequency Diode	6BH	5-1	Htr	6.3	0.15	—	—	—	—	—

\odot Each section. \S Approximate. \blacktriangle Without external shield. \clubsuit Maximum.
 \dagger Zero signal. * Minimum. \square Absolute maximum rating. \times Screen supply voltage.
 1—Section 1.
 2—Section 2.



Service	Neg Grid Volts	Screen Volts	Screen Milli-amperes	Plate Volts	Plate Milli-amperes	R_p , Ohms	G_m , μ mhos	μ Factor	Load for Rated Output, Ohms	Power Out-put, Watts	Tube Type
D-C Amplifier ♠	$R_k = 250$	—	—	135	125	280	7,000	2	—	—	6080
D-C Amplifier ♠	$R_k = 250$	—	—	135	125	280	7,000	2	—	—	6082
Class A Amplifier	2.0	100	0.55	250	3.0	1,800,000	1,850	—	—	—	<i>6084</i>
Class A Amplifier ♠	5.5	—	—	250	6	—	2,700	30	—	—	<i>6085</i>
Class A Amplifier	$R_k = 165$	120	2.1	210	10	500,000	9,000	—	—	—	6086
Class A Amplifier	1.25	45	0.135†	45	0.55†	850,000§	550	—	200,000	0.0095	6088 ©
Class A Amplifier ♠	$R_k = 220$	—	—	100	8.5	—	5,000	20	—	—	6111 ©
Class A Amplifier ♠	$R_k = 820$ $R_k = 1,500$	—	—	150	1.75	—	2,500	70	—	—	6112 ©
		—	—	100	0.8	—	1,800	70	—	—	
Class A Amplifier ♠	2.0	—	—	250	2.3	44,000	1,600	70	—	—	6113
Class A Amplifier	3 1	100	2.6	250	9.2	800,000§	2,000	—	—	—	6137
		100	4.0	100	13	120,000§	2,350	—	—	—	
Pulse Amplifier	0.0	100	8	150	34	100,000	10,000	—	—	—	6145
	5.3	100	—	150	2.0 ♣	—	—	—	—	—	
	0.0	100	12 ♣	60	—	—	—	—	—	—	
Class A Amplifier	1.0	—	—	180	11.5	8,500	6,500	55	—	—	6169 ©
Class A Amplifier	3.0	100	0.7	250	2.0	1,000,000*	1,400	—	—	—	<i>9001</i>
Class A Amplifier	7.0	—	—	250	6.3	11,400	2,200	25	—	—	<i>9002</i>
Class A Amplifier	3.0	100	2.7	250	6.7	700,000	1,800	—	—	—	<i>9003</i>
Half-Wave Rectifier	Max d-c output current = 5 ma; max rms supply voltage = 117 volts										9004
Half-Wave Rectifier	Max d-c output current = 1.0 ma; max rms supply voltage = 117 volts										9005
Half-Wave Rectifier	Max d-c output current = 5 ma; max peak inverse voltage = 750 volts; rms supply voltage = 270 volts; max peak current = 15 ma										9006

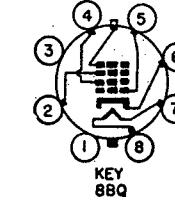
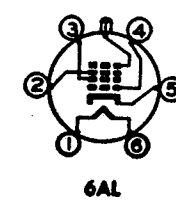
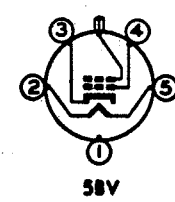
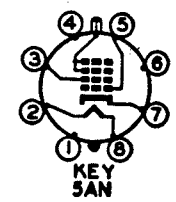
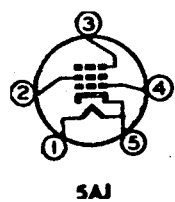
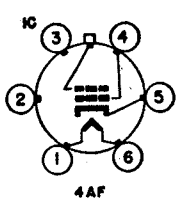
Type designations of metal tubes are shown in bold-face type.
 Type designations of miniature tubes are shown in italics.
 © Designates subminiature types.



TELEVISION PICTURE TUBES

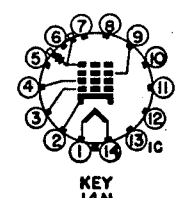
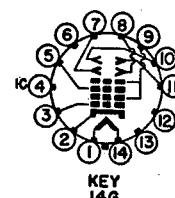
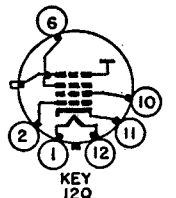
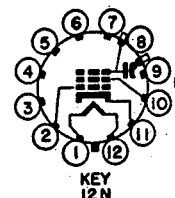
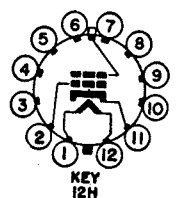
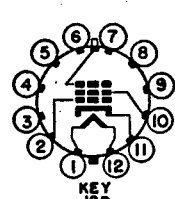
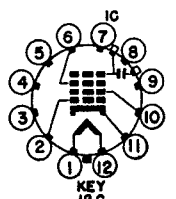
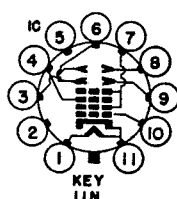
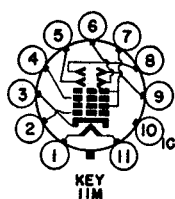
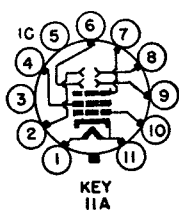
Type	Base Connections	Construction	Faceplate Shape	Faceplate Finish	Ext'l Conductive Coating	Anode Contact	Focus Method	Defl Method	Defl Angle Degrees †	Nom Over-all Length Inches	Nom Bulb Diam Inches ‡
3KP4	11M	Glass	Round	C	No	Base	Elec	Elec	—	11½	3
3NP4 ●	5BV	Glass	Round	C; A	No	Cavity	Mag	Mag	42	10	2½
5BP4	11A	Glass	Round	C	No	Base	Elec	Elec	—	16¾	5¼
5FP4-A	5AN	Glass	Round	C	No	Ball	Mag	Mag	53	11½	4½
5QP4	5AN	Glass	Round	C; A	No	Ball	Mag	Mag	53	11½	4½
5TP4 ●	12C	Glass	Round	C; A	Yes	Cavity	Elec	Mag	50	11¼	5
7AP4	5AJ	Glass	Round	C	No	Base	Elec	Mag	55	7½	7
7CP4	8BQ	Glass	Round	C	No	Ball	Elec	Mag	57	13⅞	7
7DP4	12C	Glass	Round	C	Yes	Cavity	Elec	Mag	50	14⅞	7⅞
7EP4	11N	Glass	Round	C	No	Base	Elec	Elec	—	15½	7
7GP4	14G	Glass	Round	C	No	Base	Elec	Elec	—	14½	7
7HP4	12N	Glass	Round	C	Yes	Ball	Mag	Mag	50	13	7⅞
7JP4	14G	Glass	Round	C	No	Base	Elec	Elec	—	14½	7
7NP4 ●	14N	Glass	Round	C; A	Yes	Cap	Elec	Mag	35	19½	7
7QP4	12D	Glass	Round	C	No	Cavity	Mag	Mag	52	12¾	7⅞
7RP4	12N	Glass	Round	C; A	Yes	Cavity	Mag	Mag	50	14⅞	7⅞
7TP4	12Q	Glass	Round	C; A	No	Cavity	Elec	Mag	50	13½	7⅞
8AP4	12H	Metal	Round	C	Metal	Cone	Mag	Mag	54	14¼	8½
8AP4-A	12H	Metal	Round	G	Metal	Cone	Mag	Mag	54	14¼	8½
8BP4	14G	Glass	Round	C	No	Base	Elec	Elec	—	16½	8¾
9AP4	6AL	Glass	Round	C	No	Cap	Elec	Mag	40	21	9
9CP4	4AF	Glass	Round	C	No	Cap	Mag	Mag	—	15¾	9⅞
10BP4	12N	Glass	Round	C	Yes	Cavity	Mag	Mag	50	17½	10½
10BP4-A	12N	Glass	Round	G	Yes	Cavity	Mag	Mag	50	17½	10½
10CP4	12N	Glass	Round	C	Yes	Ball	Mag	Mag	50	16¾	10½

■ For visual extinction of undeflected focused spot. Δ Accelerator anode and collector.
 ● Anode No. 1 (Focus); under typical operating conditions center value of voltage for focus is shown. Voltage should be adjustable about this value. ◆ Deflection factor. ● Designates projection type.
 † Distance between yoke reference line and center of focus-coil air gap; in inches.
 ‡ Diagonal measurement for rectangular tubes.
 C—Clear (untinted) faceplate.
 A—Aluminized screen to increase light output.
 G—Grey (filter) faceplate.



CHARACTERISTICS AND RATINGS

Heater Volts/Amps	Max Anode Volts	Max Grid 2 Volts	Typical Operating Conditions							Type
			Anode Volts	Grid 2 Volts	Neg Grid 1 Cutoff Volts	RTMA Focus Coil No.	Focus Coil Dist†	Focus Current in ma	Ion Trap	
6.3/0.6	2500 Δ 1000 \bullet	—	2000 Δ 460 \bullet	—	38 to 90	D1-D2 \blacklozenge = 100 to 136 volts/inch D3-D4 \blacklozenge = 76 to 104 volts/inch				3KP4
6.3/0.6	25000	—	24000	—	36 to 84	—	2.78	120	None	3NP4 \bullet
6.3/0.6	2000 Δ 1000 \bullet	—	2000 Δ 425 \bullet	—	40	D1-D2 \blacklozenge = 85 volts/inch D3-D4 \blacklozenge = 76 volts/inch				5BP4
6.3/0.6	8000	410	6000	250	25 to 70	106	3 $\frac{1}{4}$	120	None	5FP4-A
6.3/0.6	12000	410	10000	300	28 to 72	106	2 $\frac{3}{4}$	137	None	5QP4
6.3/0.6	27000 Δ 6000 \bullet	350	27000 Δ 4900 \bullet	200	42 to 98	—	—	—	None	5TP4 \bullet
2.5/2.1	3500	1000	3500	675	67.5	—	—	—	None	7AP4
6.3/0.6	8000 Δ 2400 \bullet	300	6000 Δ 1140 \bullet	250	22 to 68	—	—	—	None	7CP4
6.3/0.6	8000 Δ 2400 \bullet	410	6000 Δ 1430 \bullet	250	27 to 63	—	—	—	Double	7DP4
6.3/0.6	3300 Δ 1500 \bullet	—	2500 Δ 650 \bullet	—	36 to 84	D1-D2 \blacklozenge = 88 to 132 volts/inch D3-D4 \blacklozenge = 76 to 114 volts/inch				7EP4
6.3/0.6	4000 Δ 1500 \bullet	—	3000 Δ 1000 \bullet	—	36 to 84	D1-D2 \blacklozenge = 93 to 123 volts/inch D3-D4 \blacklozenge = 75 to 102 volts/inch				7GP4
6.3/0.6	8000	410	6000	250	33 to 77	106	3.5	135	None	7HP4
6.3/0.6	6000 Δ 2800 \bullet	—	6000 Δ 2010 \bullet	—	72 to 168	D1-D2 \blacklozenge = 186 to 246 volts/inch D3-D4 \blacklozenge = 150 to 204 volts/inch				7JP4
6.6/0.62	80000 Δ 20000 \bullet	600	75000 Δ 17000 \bullet	500	155	—	—	—	None	7NP4 \bullet
6.3/0.6	10000	410	8000	300	33 to 77	109	3.0	80	Single	7QP4
6.3/0.6	12000	410	9000	250	27 to 63	106	3 $\frac{1}{4}$	120	None	7RP4
6.3/0.6	12000 Δ 2000 \bullet	410	10000 Δ 1220 \bullet	200	22 to 52	—	—	—	None	7TP4
6.3/0.6	9000	—	7000	—	27 to 63	106	3 $\frac{1}{4}$	115	Single	8AP4
6.3/0.6	9000	—	7000	—	27 to 63	106	3 $\frac{1}{4}$	115	Single	8AP4-A
6.3/0.6	6600 Δ 3100 \bullet	—	6000 Δ 2010 \bullet	—	72 to 168	D1-D2 \blacklozenge = 146 to 198 volts/inch D3-D4 \blacklozenge = 124 to 168 volts/inch				8BP4
2.5/2.1	7000 Δ 2000 \bullet	250	7000 Δ 1425 \bullet	250	75	—	—	—	None	9AP4
2.5/2.1	7000	—	6000	—	90	—	—	—	None	9CP4
6.3/0.6	12000	410	11000	300	33 to 77	109	4 $\frac{1}{2}$	100	Double	10BP4
6.3/0.6	12000	410	11000	300	33 to 77	109	4 $\frac{1}{2}$	100	Double	10BP4-A
6.3/0.6	12000	450	9000	250	30 to 66	—	—	—	None	10CP4



TELEVISION PICTURE TUBES

Type	Base Connections	Construction	Faceplate Shape	Faceplate Finish	Ext'l Conductive Coating	Anode Contact	Focus Method	Defl Method	Defl Angle Degrees †	Nom Over-all Length Inches	Nom Bulb Diam Inches ††
10DP4	12M	Glass	Round	C; A	No	Cavity	Elec	Mag	50	17 5/8	10 1/2
10FP4	12N	Glass	Round	C; A	Yes	Cavity	Mag	Mag	50	17 5/8	10 1/2
10FP4-A	12N	Glass	Round	G; A	Yes	Cavity	Mag	Mag	50	17 5/8	10 1/2
10GP4	14G	Glass	Round	C	No	Base	Elec	Elec	—	18 1/2	10
10HP4	14G	Glass	Round	C	No	Base	Elec	Elec	—	19 1/4	10
10MP4	12G	Glass	Round	C	Yes	Cavity	Mag	Mag	52	17	10 1/2
10MP4-A	12G	Glass	Round	F	Yes	Cavity	Mag	Mag	52	17	10 1/2
12AP4	6AL	Glass	Round	C	No	Cap	Elec	Mag	35	25	12
12CP4	4AF	Glass	Round	C	No	Cap	Mag	Mag	—	18 5/8	12 1/4
12JP4	12D	Glass	Round	C	No	Ball	Mag	Mag	56	17 1/2	12
12KP4	12N	Glass	Round	C; A	Yes	Cavity	Mag	Mag	54	17 5/8	12 7/8
12KP4-A	12N	Glass	Round	G; A	Yes	Cavity	Mag	Mag	54	17 5/8	12 7/8
12LP4	12N	Glass	Round	C	Yes	Cavity	Mag	Mag	54	18 3/4	12 7/8
12LP4-A	12N	Glass	Round	G	Yes	Cavity	Mag	Mag	54	18 3/4	12 7/8
12QP4	12D	Glass	Round	C	No	Ball	Mag	Mag	55	17 1/2	12 7/8
12RP4	12D	Glass	Round	C	No	Ball	Mag	Mag	56	17 1/2	12
12TP4	12D	Glass	Round	C	No	Cavity	Mag	Mag	54	18 3/4	12 7/8
12UP4	12D	Metal	Round	C	Metal	Cone	Mag	Mag	54	18 5/8	12 7/8
12UP4-A	12D	Metal	Round	G	Metal	Cone	Mag	Mag	54	18 5/8	12 7/8
12UP4-B	12D	Metal	Round	G; F	Metal	Cone	Mag	Mag	54	18 5/8	12 7/8
12VP4	12G	Glass	Round	C	Yes	Cavity	Mag	Mag	55	18	12 7/8
12VP4-A	12G	Glass	Round	G	Yes	Cavity	Mag	Mag	55	18	12 7/8
12WP4	12WP4	Glass	Round	G	Yes	Special	Mag	Mag	55	17 3/4	12 7/8
12YP4	12N	Glass	Round	C	Yes	Cavity	Elec □	Mag	54	18 3/4	12 7/8
14AP4	12A	Glass	Round	C	No	Base	Elec	Elec	—	24 1/4	13 3/8
14BP4	12N	Glass	Rect	F	Yes	Cavity	Mag	Mag	70	16 11/16	13 11/16
14CP4	12N	Glass	Rect	F	Yes	Cavity	Mag	Mag	70	16 3/4	13 11/16
14DP4	12D	Glass	Rect	F	No	Cavity	Mag	Mag	70	16 3/4	13 11/16
14EP4	12N	Glass	Rect	F	Yes	Cavity	Mag	Mag	70	16 1/2	13 11/16
14GP4	12L	Glass	Rect	G	Yes	Cavity	Elec	Mag	70	16 1/4	13 11/16
15AP4	12D	Glass	Round	C	No	Ball	Mag	Mag	57	20 1/2	15 1/2

†† Diagonal measurement for rectangular tubes.

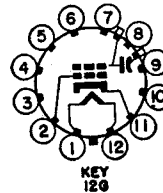
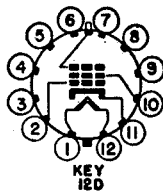
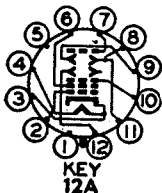
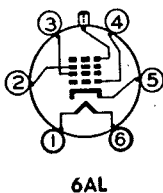
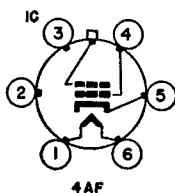
□ Automatic electrostatic focus. No external focus connection required.

A—Aluminized screen to increase light output.

C—Clear (untinted) faceplate.

F—Frosted faceplate surface to reduce reflection.

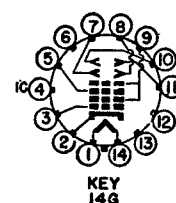
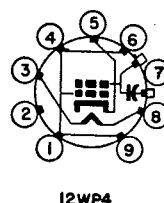
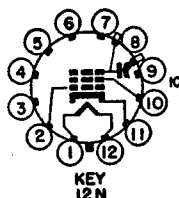
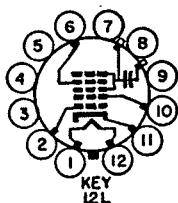
G—Grey (filter) faceplate.



CHARACTERISTICS AND RATINGS

Heater Volts/ Amps	Max Anode Volts	Max Grid 2 Volts	Typical Operating Conditions							Type
			Anode Volts	Grid 2 Volts	Neg Grid 1 Cutoff Volts ■	RTMA Focus Coil No.	Focus Coil Dist†	Focus Current in ma	Ion Trap	
6.3/0.6	10000 ▲ 3600 ●	410	9000 ▲ 2900 ●	250	36 to 84	—	—	—	None	10DP4
6.3/0.6	12000	410	11000	300	33 to 77	106	3¼	110	None	10FP4
6.3/0.6	12000	410	11000	300	33 to 77	106	3¼	110	None	10FP4-A
6.3/0.6	5000 ▲ 2000 ●	—	5000 ▲ 1550 ●	—	60 to 140	D1-D2 ◆ =125 to 165 volts/inch D3-D4 ◆ =100 to 135 volts/inch				10GP4
6.3/0.6	5000 ▲ 2000 ●	—	5000 ▲ 1500 ●	—	60 to 140	D1-D2 ◆ =110 to 150 volts/inch D3-D4 ◆ =85 to 115 volts/inch				10HP4
6.3/0.6	10000	—	9000	—	27 to 63	—	—	—	Double	10MP4
6.3/0.6	10000	—	9000	—	27 to 63	—	—	—	Double	10MP4-A
2.5/2.1	7000 ▲ 1900 ●	250	7000 ▲ 1460 ●	250	75	—	—	—	None	12AP4
2.5/2.1	7000	—	7000	—	110	—	—	—	None	12CP4
6.3/0.6	12000	410	10000	250	27 to 63	106	3.0	146	None	12JP4
6.3/0.6	12000	410	11000	300	33 to 77	106	3¼	135	None	12KP4
6.3/0.6	12000	410	11000	300	33 to 77	106	3¼	135	None	12KP4-A
6.3/0.6	12000	410	11000	300	33 to 77	109	4½	96	Double	12LP4
6.3/0.6	12000	410	11000	300	33 to 77	109	4½	96	Double	12LP4-A
6.3/0.6	12000	410	10000	250	27 to 63	106	3.0	135	Single	12QP4
6.3/0.6	10000	410	10000	250	27 to 63	106	3.0	135	Single	12RP4
6.3/0.6	12000	410	11000	250	27 to 63	106	3¼	110	Double	12TP4
6.3/0.6	12000	410	11000	250	27 to 63	106	3¼	110	Double	12UP4
6.3/0.6	12000	410	11900	250	27 to 63	106	3¼	110	Double	12UP4-A
6.3/0.6	12000	410	11000	250	27 to 63	106	3¼	130	Double	12UP4-B
6.3/0.6	12000	—	11000	—	33 to 77	—	—	—	Double	12VP4
6.3/0.6	12000	—	11000	—	33 to 77	—	—	—	Double	12VP4-A
6.3/0.6	12000	—	10000	—	27 to 63	Special PM Unit			Single	12WP4
6.3/0.6	12000	410	11000	250	33 to 73	—	—	—	Single	12YP4
2.5/2.1	8000 ▲ 4000 §	1800 ●	8000 ▲ 4000 §	1000 ●	40 to 120	D1-D2 ◆ =104 to 156 volts/inch D3-D4 ◆ =104 to 156 volts/inch				14AP4
6.3/0.6	12000	410	11000	250	27 to 63	106	3¼	110	Double	14BP4
6.3/0.6	14000	410	12000	300	33 to 77	109	3¼	105	Single	14CP4
6.3/0.6	14000	410	11000	250	27 to 63	109	3.0	100	Double	14DP4
6.3/0.6	14000	410	12000	300	33 to 77	109	3.0	110	Single	14EP4
6.3/0.6	14000 ▲ 5000 ●	500	12000 ▲ 2550 ●	300	33 to 77	—	—	—	Single	14GP4
6.3/0.6	15000	410	12000	250	27 to 63	106	3.0	159	None	15AP4

■ For visual extinction of undeflected focused spot. ▲ Intensifier No. 3 anode.
 ● Anode No. 1 (Focus); under typical operating conditions center value of voltage for focus is shown. Volt-
 age should be adjustable about this value. § Accelerator No. 2 anode. ◆ Deflection factor.
 † Distance between yoke reference line and center of focus-coil air gap; in inches.
 ▲ Accelerator anode and collector.



TELEVISION PICTURE TUBES

Type	Base Con- nections	Con- struc- tion	Face- plate Shape	Face- plate Finish	Ext'l Con- duc- tive Coating	Anode Con- tact	Focus Meth- od	Defl Meth- od	Defl Angle De- grees¶	Nom Over-all Length Inches	Nom Bulb Diam Inches¶
15CP4	12D	Glass	Round	C	No	Cavity	Mag	Mag	57	20½	15½
15DP4	12D	Glass	Round	C	No	Ball	Mag	Mag	57	20½	15½
16AP4	12D	Metal	Round	C	Metal	Cone	Mag	Mag	53	22¼	15⅞
16AP4-A	12D	Metal	Round	G	Metal	Cone	Mag	Mag	53	21⅞	15⅞
16ACP4	12N	Glass	Round	C	Yes	Cavity	Elec □	Mag	60	20⅞	15⅞
16CP4	12D	Glass	Round	C	No	Cavity	Mag	Mag	52	21½	15⅞
16DP4	12D	Glass	Round	C	No	Cavity	Mag	Mag	60	20¾	15⅞
16DP4-A	12D	Glass	Round	G	No	Cavity	Mag	Mag	60	20¾	15⅞
16EP4	12D	Metal	Round	C	Metal	Cone	Mag	Mag	60	19⅞	15⅞
16EP4-A	12D	Metal	Round	G	Metal	Cone	Mag	Mag	60	19⅞	15⅞
16EP4-B	12D	Metal	Round	G; F	Metal	Cone	Mag	Mag	60	19⅞	15⅞
16FP4	12D	Glass	Round	C	No	Ball	Mag	Mag	62	20¼	16⅞
16GP4	12D	Metal	Round	G	Metal	Cone	Mag	Mag	70	17¼	15⅞
16GP4-A	12D	Metal	Round	C	Metal	Cone	Mag	Mag	70	17¼	15⅞
16GP4-B	12D	Metal	Round	G; F	Metal	Cone	Mag	Mag	70	17¼	15⅞
16GP4-C	12D	Metal	Round	C; F	Metal	Cone	Mag	Mag	70	17¼ ₁₆	15⅞
16HP4	12N	Glass	Round	C	Yes	Cavity	Mag	Mag	60	21¼	15⅞
16HP4-A	12N	Glass	Round	G	Yes	Cavity	Mag	Mag	60	21¼	15⅞
16JP4	12N	Glass	Round	C	Yes	Cavity	Mag	Mag	60	20¾	16⅞
16JP4-A	12N	Glass	Round	G	Yes	Cavity	Mag	Mag	60	20¾	16⅞
16KP4	12N	Glass	Rect	G	Yes	Cavity	Mag	Mag	70	18¾	16⅞
16KP4-A	12N	Glass	Rect	G; A	Yes	Cavity	Mag	Mag	70	18¾	16⅞
16LP4	12N	Glass	Round	C	Yes	Cavity	Mag	Mag	52	22¼	15⅞
16LP4-A	12N	Glass	Round	G	Yes	Cavity	Mag	Mag	52	22¼	15⅞
16MP4	12N	Glass	Round	C	Yes	Cavity	Mag	Mag	60	21¾	16⅞
16MP4-A	12N	Glass	Round	G	Yes	Cavity	Mag	Mag	60	21¾	16⅞
16QP4	12D	Glass	Rect	G	No	Cavity	Mag	Mag	70	19⅞	16
16RP4	12N	Glass	Rect	G	Yes	Cavity	Mag	Mag	70	18¾	16⅞
16SP4	12N	Glass	Round	C	Yes	Cavity	Mag	Mag	70	17 ⁵ / ₁₆	15⅞
16SP4-A	12N	Glass	Round	G	Yes	Cavity	Mag	Mag	70	17 ⁵ / ₁₆	15⅞
16TP4	12N	Glass	Rect	G	Yes	Cavity	Mag	Mag	70	18⅞	16⅞
16UP4	12D	Glass	Rect	G	No	Cavity	Mag	Mag	70	18⅞	16⅞
16VP4	12D	Glass	Round	G	No	Cavity	Mag	Mag	70	17 ³ / ₁₆	15⅞
16WP4	12D	Glass	Round	G	No	Cavity	Mag	Mag	70	17¾	15⅞
16WP4-A	12N	Glass	Round	G	Yes	Cavity	Mag	Mag	70	17¾	15⅞

¶Diagonal measurement for rectangular tubes.

‡Distance between yoke reference line and center of focus-coil air gap; in inches.

□Automatic electrostatic focus; no external focus connection required.

A—Aluminized screen to increase light output.

C—Clear (untinted) faceplate.

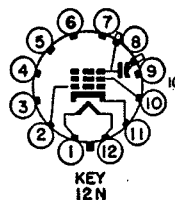
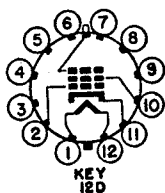
F—Frosted faceplate surface to reduce reflection.

G—Grey (filter) faceplate.

CHARACTERISTICS AND RATINGS

Heater Volts/Amps	Max Anode Volts	Max Grid 2 Volts	Typical Operation Conditions							Type
			Anode Volts	Grid 2 Volts	Neg Grid 1 Cutoff Volts ■	RTMA Focus Coil No.	Focus Coil Dist†	Focus Current in ma	Ion Trap	
6.3/0.6	15000	410	12000	250	27 to 63	106	3.0	115	Double	15CP4
6.3/0.6	15000	410	12000	250	27 to 63	106	3.0	140	Single	15DP4
6.3/0.6	14000	410	12000	300	33 to 77	109	3.0	80	Double	16AP4
6.3/0.6	14000	410	13000	300	33 to 77	109	3 ¹⁵ / ₁₆	107	Double	16AP4-A
6.3/0.6	14000	410	13000	250	33 to 68	—	—	—	Double	16ACP4
6.3/0.6	15000	410	12000	250	27 to 63	106	3 ¹ / ₄	110	Double	16CP4
6.3/0.6	15000	410	12000	250	27 to 63	106	3 ¹ / ₄	115	Double	16DP4
6.3/0.6	15000	410	12000	250	27 to 63	109	3 ¹ / ₄	115	Double	16DP4-A
6.3/0.6	14000	410	12000	300	33 to 77	109	2 ³ / ₄	105	Double	16EP4
6.3/0.6	14000	410	12000	300	33 to 77	109	2 ³ / ₄	105	Double	16EP4-A
6.3/0.6	14000	410	12000	300	33 to 77	109	3.0	105	Single	16EP4-B
6.3/0.6	16000	410	13000	250	27 to 63	106	3.0	146	Single	16FP4
6.3/0.6	14000	410	13000	300	33 to 77	109	3 ¹ / ₈	108	Single	16GP4
6.3/0.6	14000	410	13000	250	27 to 63	109	3 ¹ / ₈	108	Single	16GP4-A
3.6/0.6	14000	410	13000	250	27 to 63	109	3 ¹ / ₈	108	Single	16GP4-B
6.3/0.6	14000	410	12000	300	33 to 77	109	3.0	100	Single	16GP4-C
6.3/0.6	14000	410	12000	300	33 to 77	106	3 ¹ / ₄	110	Double	16HP4
6.3/0.6	14000	410	12000	300	33 to 77	106	3 ¹ / ₄	110	Double	16HP4-A
6.3/0.6	14000	410	11000	250	27 to 63	106	—	115	Double	16JP4
6.3/0.6	14000	410	11000	250	27 to 63	106	—	115	Double	16JP4-A
6.3/0.6	16000	410	14000	300	33 to 77	109	3 ³ / ₄	108	Single	16KP4
6.3/0.6	16000	410	14000	300	33 to 77	109	3 ³ / ₄	108	Single	16KP4-A
6.3/0.6	14000	410	12000	300	33 to 77	106	3 ¹ / ₄	110	Double	16LP4
6.3/0.6	14000	410	12000	300	33 to 77	106	3 ¹ / ₄	110	Double	16LP4-A
6.3/0.6	14000	410	12000	300	33 to 77	106	3 ¹ / ₄	110	Double	16MP4
6.3/0.6	14000	410	12000	300	33 to 77	106	3 ¹ / ₄	110	Double	16MP4-A
6.3/0.6	16000	410	14000	250	27 to 63	106	—	150	Double	16QP4
6.3/0.6	16000	410	12000	300	33 to 77	109	3 ¹ / ₂	100	Single	16RP4
6.3/0.6	14000	410	12000	300	33 to 77	109	3 ¹ / ₄	110	Double	16SP4
6.3/0.6	14000	410	12000	300	33 to 77	106	3 ¹ / ₄	110	Double	16SP4-A
6.3/0.6	14000	410	12000	300	33 to 77	109	3 ¹ / ₈	102	Single	16TP4
6.3/0.6	15000	410	12000	300	27 to 63	109	3.0	100	Single	16UP4
6.3/0.6	15000	410	12000	250	27 to 63	109	3.0	110	Single	16VP4
6.3/0.6	15000	410	12000	250	27 to 63	109	3.0	110	Double	16WP4
6.3/0.6	16000	410	12000	250	27 to 63	109	3 ¹ / ₄	110	Double	16WP4-A

■ For visual extinction of undeflected focused spot.



TELEVISION PICTURE TUBES

Type	Base Connections	Construction	Faceplate Shape	Faceplate Finish	Ext'l Conductive Coating	Anode Contact	Focus Method	Defl Method	Defl Angle Degrees†	Nom Over-all Length Inches	Nom Bulb Diam Inches
16XP4	12D	Glass	Rect	G	No	Cavity	Mag	Mag	70	18¼	16⅞
16YP4	12N	Glass	Round	G	Yes	Cavity	Mag	Mag	70	17 5/16	15⅞
16ZP4	12N	Glass	Round	G	Yes	Cavity	Mag	Mag	52	22¼	15⅞
17AP4	12N	Glass	Rect	G	Yes	Cavity	Mag	Mag	70	18⅞	16⅞
17BP4	12D	Glass	Rect	G	No	Cavity	Mag	Mag	70	19¼	16⅞
17BP4-A	12N	Glass	Rect	G	Yes	Cavity	Mag	Mag	70	19¼	16⅞
17BP4-B	12N	Glass	Rect	G; A	Yes	Cavity	Mag	Mag	70	19¼	16⅞
17CP4	12D	Metal	Rect	G; F	Metal	Cone	Mag	Mag	70	19	16 1/8
17CP4-A	12D	Metal	Rect	C	Metal	Cone	Mag	Mag	70	19	16 1/8
17FP4	12L	Glass	Rect	G	Yes	Cavity	Elec	Mag	70	19¼	16⅞
17FP4-A	12L	Glass	Rect	G	Yes	Cavity	Elec	Mag	70	19¼	16⅞
17GP4	12M	Metal	Rect	G; F	Metal	Cone	Elec	Mag	70	18⅞	16 1/8
17HP4	12L	Glass	Rect	G	Yes	Cavity	Elec	Mag	70	19 3/16	16⅞
17JP4	12N	Glass	Rect	G	Yes	Cavity	Mag	Mag	70	19¼	16⅞
17KP4	12P	Glass	Rect	G	Yes	Cavity	Elec □	Mag	70	19¼	16⅞
17LP4	12L	Glass	Rect ⚡	G	Yes	Cavity	Elec	Mag	70	19¼	16⅞
17QP4	12N	Glass	Rect	G	Yes	Cavity	Mag	Mag	70	19 3/16	16⅞
17RP4	12L	Glass	Rect	G	Yes	Cavity	Elec	Mag	70	19¼	16⅞
17SP4	12D	Glass	Rect ⚡	G	Yes	Cavity	Elec □	Mag	70	19 3/16	16⅞
17TP4	12M	Metal	Rect	G; F	Metal	Cone	Elec	Mag	70	19 3/16	16 1/8
17UP4	12N	Glass	Rect ⚡	G	Yes	Cavity	Mag	Mag	70	19 3/16	16⅞
17VP4	12L	Glass	Rect ⚡	G	Yes	Cavity	Elec	Mag	70	19 3/16	16⅞
19AP4	12D	Metal	Round	C	Metal	Cone	Mag	Mag	66	21½	18⅞
19AP4-A	12D	Metal	Round	G	Metal	Cone	Mag	Mag	66	21½	18⅞
19AP4-B	12D	Metal	Round	G; F	Metal	Cone	Mag	Mag	66	21½	18⅞
19AP4-D	12D	Metal	Round	C; F	Metal	Cone	Mag	Mag	66	21½	18⅞
19DP4	12N	Glass	Round	C	Yes	Cavity	Mag	Mag	66	21½	18⅞
19DP4-A	12N	Glass	Round	G	Yes	Cavity	Mag	Mag	66	21½	18⅞

† Diagonal measurement for rectangular tubes.

■ For visual extinction of undeflected focused spot.

‡ Distance between yoke reference line and center of focus-coil air gap; in inches.

● Anode No. 1 (Focus); under typical operating conditions center value of voltage for focus is shown. Voltage should be adjustable about this value.

△ Accelerator anode and collector. ⚡ With cylindrical contour.

◻ Modulation may be applied to improve over-all focus. ▲ Intensifier (3) anode.

□ Automatic electrostatic focus; no external focus connection required.

A—Aluminized screen to increase light output.

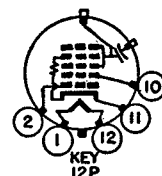
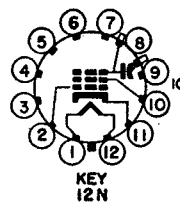
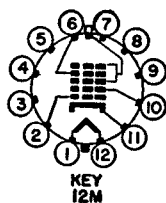
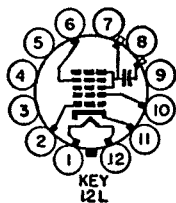
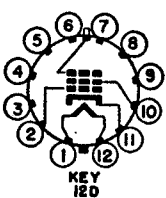
C—Clear (untinted) faceplate.

F—Frosted faceplate surface to reduce reflection.

G—Grey (filter) faceplate.

CHARACTERISTICS AND RATINGS

Heater Volts/Amps	Max Anode Volts	Max Grid 2 Volts	Typical Operating Conditions							Type
			Anode Volts	Grid 2 Volts	Neg Grid 1 Cutoff Volts ■	RTMA Focus Coil No.	Focus Coil Dist†	Focus Current in ma	Ion Trap	
6.3/0.6	15000	410	12000	250	27 to 63	109	3.0	100	Double	16XP4
6.3/0.6	14000	410	12000	300	33 to 77	109	3¼	100	Single	16YP4
6.3/0.6	16000	410	12000	300	33 to 77	109	3¼	110	Double	16ZP4
6.3/0.6	16000	410	12000	300	33 to 77	109	3.0	100	Single	17AP4
6.3/0.6	16000	410	12000	300	33 to 77	109	3.0	100	Single	17BP4
6.3/0.6	16000	410	14000	300	33 to 77	109	3¼	115	Single	17BP4-A
6.3/0.6	16000	410	14000	300	33 to 77	109	3¼	115	Single	17BP4-B
6.3/0.6	16000	410	14000	300	33 to 77	109	3.0	104	Single	17CP4
6.3/0.6	16000	410	14000	300	33 to 77	109	3.0	104	Single	17CP4-A
6.3/0.6	18000 Δ 5000 ●	410	12000 Δ 2600 ●	300	33 to 77	—	—	—	Single	17FP4
6.3/0.6	18000 Δ 5000 ●	500	12000 Δ 2600 ●	300	33 to 77	—	—	—	Single	17FP4-A
6.3/0.6	16000 Δ 5000 ●	500	14000 Δ 2800 ●	300	33 to 77	—	—	—	Single	17GP4
6.3/0.6	16000 +1000, -500 ●	500	14000 180 ● □	300	33 to 77	—	—	—	Single	17HP4
6.3/0.6	18000	410	16000	300	33 to 77	109	—	100	Single	17JP4
6.3/0.6	16000	500	12000	300	33 to 77	—	—	—	Single	17KP4
6.3/0.6	16000 Δ +1000, -500 ●	500	12000 Δ 154 ● □	300	33 to 77	—	—	—	Single	17LP4
6.3/0.6	16000	500	14000	300	33 to 77	109	3¼	115	Single	17QP4
6.3/0.6	16000 Δ +2000, -1000 ●	500	14000 Δ 0 ● □	300	33 to 77	—	—	—	Single	17RP4
6.3/0.6	14000	410	12000	250	33 to 66	—	—	—	Single	17SP4
6.3/0.6	16000 Δ 500 ●	500	14000 Δ 175 ●	300	33 to 77	—	—	—	Single	17TP4
6.3/0.6	14000	410	12000	250	33 to 66	109	3.25	110	Single	17UP4
6.3/0.6	16000 Δ +1000, -500 ●	500	14000 Δ 0 ● □	300	33 to 77	—	—	—	Single	17VP4
6.3/0.6	19000	410	15000	300	33 to 77	109	3⅝	115	Single	19AP4
6.3/0.6	19000	410	15000	300	33 to 77	109	3⅝	115	Single	19AP4-A
6.3/0.6	19000	410	15000	300	33 to 77	109	3⅝	115	Single	19AP4-B
6.3/0.6	19000	410	14000	300	33 to 77	106	3.0	145	Single	19AP4-D
6.3/0.6	17000	410	13000	250	26 to 63	106	3¼	146	Single	19DP4
6.3/0.6	17000	410	13000	250	26 to 63	106	3¼	146	Single	19DP4-A



TELEVISION PICTURE TUBES

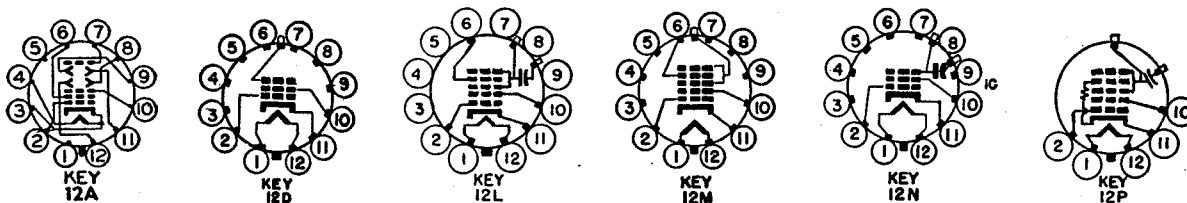
Type	Base Connections	Construction	Face-plate Shape	Face-plate Finish	Ext'l Conductive Coating	Anode Contact	Focus Method	Defl Method	Defl Angle Degrees †	Nom Over-all Length Inches	Nom Bulb Diam Inches ‡
19EP4	12D	Glass	Rect	G	Yes	Cavity	Mag	Mag	70	21 1/8	18 5/8
19FP4	12D	Glass	Round	G	No	Cavity	Mag	Mag	66	22	18 7/8
19GP4	12D	Glass	Round	G	No	Cavity	Mag	Mag	66	21 1/4	18 7/8
19JP4	12D	Glass	Rect	G	No	Cavity	Mag	Mag	70	21 11/16	18 1/8
19QP4	12L	Glass	Rect	G	Yes	Cavity	Elec	Mag	70	21 1/8	18 5/8
20AP4	12A	Glass	Round	C	No	Base	Elec	Elec	—	27 7/8	20
20BP4	12D	Glass	Round	C	No	Cap	Mag	Mag	54	28	20
20CP4	12D	Glass	Rect	G	No	Cavity	Mag	Mag	70	21 1/16	20 3/32
20CP4-A	12N	Glass	Rect	G	Yes	Cavity	Mag	Mag	70	21 1/16	20 3/32
20DP4	12D	Glass	Rect	G	No	Cavity	Mag	Mag	70	21 3/4	20 3/32
20DP4-A	12N	Glass	Rect	G	Yes	Cavity	Mag	Mag	70	21 3/4	20 3/32
20FP4	12M	Glass	Rect	G	No	Cavity	Elec	Mag	70	21 3/4	20 3/32
20GP4	12L	Glass	Rect	G	Yes	Cavity	Elec	Mag	70	21 3/4	20 3/32
20HP4	12M	Glass	Rect	G	No	Cavity	Elec	Mag	70	21 3/4	20 3/32
20HP4-A	12L	Glass	Rect	G	Yes	Cavity	Elec	Mag	70	21 3/4	20 3/32
20JP4	12P	Glass	Rect	G	Yes	Cavity	Elec □	Mag	70	21 3/4	20 3/32
20MP4	12L	Glass	Rect	G	Yes	Cavity	Elec	Mag	70	21 3/4	20 3/32
21AP4	12D	Metal	Rect	C; F	Metal	Cone	Mag	Mag	70	22 5/8	20 3/4
21DP4	12M	Metal	Rect	G; F	Metal	Cone	Elec	Mag	70	22 5/8	20 3/4
21EP4	12D	Glass	Rect ☠	G	No	Cavity	Mag	Mag	70	23	21 1/32
21EP4-A	12N	Glass	Rect ☠	G	Yes	Cavity	Mag	Mag	70	23	21 1/32
21EP4-B	12N	Glass	Rect ☠	G; A	Yes	Cavity	Mag	Mag	70	23	21 1/32
21FP4	12M	Glass	Rect ☠	G	No	Cavity	Elec	Mag	70	23	21 1/32
21FP4-A	12L	Glass	Rect ☠	G	Yes	Cavity	Elec	Mag	70	23	21 1/32
21KP4	12D	Glass	Rect ☠	G	No	Cavity	Elec □	Mag	70	22 7/8	21 5/8
21KP4-A	12P	Glass	Rect ☠	G	Yes	Cavity	Elec □	Mag	70	23 3/8	21 1/32
21MP4	12M	Metal	Rect	G; F	Metal	Cone	Elec	Mag	70	22 5/8	20 3/4

† Diagonal measurement for rectangular tubes. ■ For visual extinction of undeflected focused spot.
 ‡ Distance between yoke reference line and center of focus-coil air gap; in inches.
 △ Accelerator anode and collector.
 ● Anode No. 1 (Focus); under typical operating conditions center value of voltage for focus is shown. Voltage should be adjustable about this value.
 □ Modulation may be applied to improve over-all focus. ◆ Deflection factor.
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CHARACTERISTICS AND RATINGS

Heater Volts/ Amps	Max Anode Volts	Max Grid 2 Volts	Typical Operating Conditions							Type
			Anode Volts	Grid 2 Volts	Neg Grid 1 Cutoff Volts ■	RTMA Focus Coil No.	Focus Coil Dist‡	Focus Current in ma	Ion Trap	
6.3/0.6	19000	410	13000	250	26 to 63	109	3¼	146	Double	19EP4
6.3/0.6	19000	410	13000	250	27 to 63	109	3.0	115	Double	19FP4
6.3/0.6	19000	410	13000	250	27 to 63	109	3.0	120	Single	19GP4
6.3/0.6	18000	410	12000	300	33 to 77	109	3.0	95	Single	19JP4
6.3/0.6	18000△ 500●	410	12000△ 200●	300	33 to 77	—	—	—	Single	19QP4
2.5/2.1	8000▲ 4000♣	1800●	8000▲ 4000♣	1000●	40 to 120	D1-D2◆ = 88 to 132 volts/inch D3-D4◆ = 88 to 132 volts/inch				20AP4
6.3/0.6	20000	410	15000	250	27 to 63	106	3.0	135	None	20BP4
6.3/0.6	18000	410	15000	300	33 to 77	109	3½	106	Single	20CP4
6.3/0.6	18000	410	15000	300	33 to 77	109	3½	106	Single	20CP4-A
6.3/0.6	18000	410	12000	300	33 to 77	109	3.0	95	Single	20DP4
6.3/0.6	18000	410	12000	300	33 to 77	109	3.0	95	Single	20DP4-A
6.3/0.6	18000△ 5000●	410	12000△ 2750●	300	33 to 77	—	—	—	Single	20FP4
6.3/0.6	18000△ 5000●	500	16000△ 3750●	300	33 to 77	—	—	—	Single	20GP4
6.3/0.6	16000△ +1000, -500●	500	14000△ 180●□	300	33 to 77	—	—	—	Single	20HP4
6.3/0.6	16000△ +1000, -500●	500	14000△ 180●□	300	33 to 77	—	—	—	Single	20HP4-A
6.3/0.6	18000	500	12000	300	33 to 77	—	—	—	Single	20JP4
6.3/0.6	16000△ +1000, -500●	500	16000△ 207●□	300	33 to 77	—	—	—	Single	20MP4
6.3/0.6	10000	500	16000	300	33 to 77	109	3.0	110	Single	21AP4
6.3/0.6	18000△ 5000●	500	16000△ 3650●	300	33 to 77	—	—	—	Single	21DP4
6.3/0.6	18000	500	12000	300	33 to 77	109	3.0	95	Single	21EP4
6.3/0.6	18000	500	16000	300	33 to 77	109	3¼	116	Single	21EP4-A
6.3/0.6	18000	500	16000	300	33 to 77	109	3¼	116	Single	21EP4-B
6.3/0.6	18000△ +1000, -500●	500	14000△ 180●□	300	33 to 77	—	—	—	Single	21FP4
6.3/0.6	18000△ +1000, -500●	500	14000△ 180●□	300	33 to 77	—	—	—	Single	21FP4-A
6.3/0.6	18000	410	12000	300	38 to 77	—	—	—	Single	21KP4
6.3/0.6	18000	500	12000	300	33 to 77	—	—	—	Single	21KP4-A
6.3/0.6	16000△ +1000, -500●	500	16000△ 207●□	300	33 to 77	—	—	—	Single	21MP4

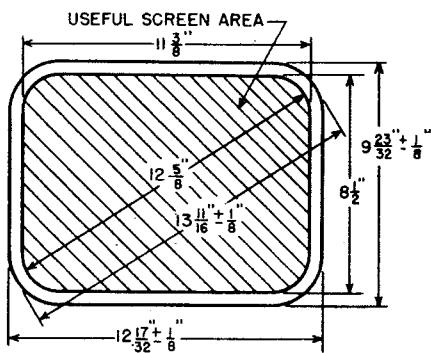
♣Accelerator No. 2 Anode.



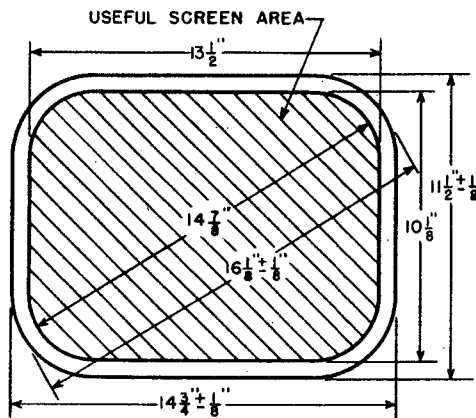
TELEVISION PICTURE TUBES

Tube	Base Connections	Construction	Faceplate Shape	Faceplate Finish	Ext'l Conductive Coating	Anode Contact	Focus Method	Defl Method	Defl Angle Degrees †	Nom Over-all Length Inches	Nom Bulb Diam Inches †
22AP4	12D	Metal	Round	C	Metal	Cone	Mag	Mag	70	22 7/8	21 1/8
22AP4-A	12D	Metal	Round	G	Metal	Cone	Mag	Mag	70	22 7/8	21 1/8
24AP4	12D	Metal	Round	G	Metal	Cone	Mag	Mag	70	23 1/8	24
24BP4	12M	Metal	Round	G	Metal	Cone	Elec	Mag	70	24 1/4	24
27AP4	12M	Metal	Rect	G; F	Metal	Cone	Elec	Mag	90	21 3/8	27 1/8
27EP4	12D	Glass	Rect	G; A	No	Cavity	Mag	Mag	90	23 1/8	27
30BP4	12D	Metal	Round	G	Metal	Cone	Mag	Mag	90	23 5/8	30 1/8
MW22-2	5A	Glass	Round	C	No	Base	Mag	Mag	50	15 3/8	9 3/8
MW31-3	5A	Glass	Round	C	No	Base	Mag	Mag	50	18 7/8	12 1/8
TP400-A ●	TP400-A	Glass	Round	C	Yes	—	Mag	Mag	50	12 5/8	4

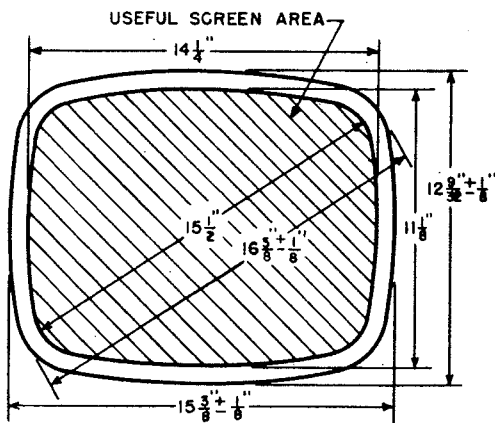
† Diagonal measurement for rectangular tubes. ■ For visual extinction of undeflected focused spot.
 ‡ Distance between yoke reference line and center of focus-coil air gap; in inches.
 △ Accelerator anode and collector.
 ● Anode No. 1 (Focus); under typical operating conditions center value of voltage for focus is shown. Voltage should be adjustable about this value.
 ■ Modulation may be applied to improve over-all focus.
 ● Designates projection type.



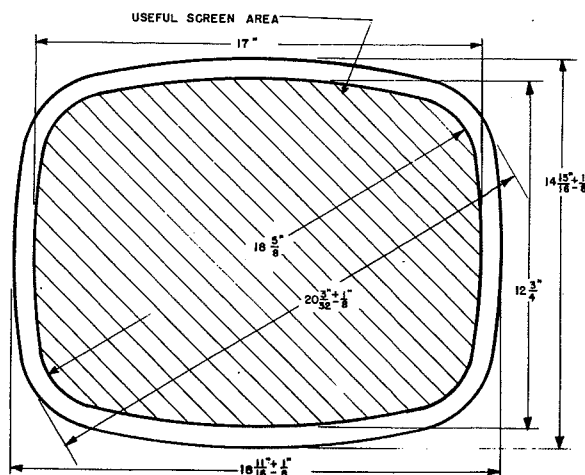
14CP4 Faceplate



16KP4 and 16KP4-A Faceplate



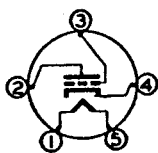
17BP4-A and 17BP4-B Faceplate



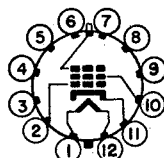
20CP4 and 20CP4-A Faceplate

CHARACTERISTICS AND RATINGS

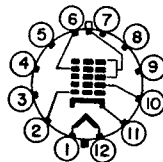
Heater Volts/Amps	Max Anode Volts	Max Grid 2 Volts	Typical Operating Conditions						Type	
			Anode Volts	Grid 2 Volts	Neg Grid 1 Cutoff Volts ■	RTMA Focus Coil No.	Focus Coil Dist†	Focus Current in ma		Current Trap
6.3/0.6	19000	410	14000	300	33 to 77	109	3.0	117	Single	22AP4
6.3/0.6	19000	410	14000	300	33 to 77	109	3.0	117	Single	22AP4-A
6.3/0.6	16000	410	15000	300	33 to 77	109	3½	114	Single	24AP4
6.3/0.6	16000 Δ +1000, -500 ●	500	14000 Δ 180 ● □	300	33 to 77	—	—	—	Single	24BP4
6.3/0.6	18000 Δ +1000, -500 ●	500	15000 Δ +120 ● □	300	33 to 77	—	—	—	Single	27AP4
6.3/0.6	20000	500	16000	300	33 to 77	109	3⅞	117	Single	27EP4
6.3/0.6	30000	410	22000	300	33 to 77	109	3.0	128	Single	30BP4
6.3/0.6	6000	330	5000	250	100	—	—	—	None	MW22-2
6.3/0.6	6000	330	5000	250	100	—	—	—	None	MW31-3
6.3/0.6	22000		20000		70 to 140	—	—	144	None	TP400-A



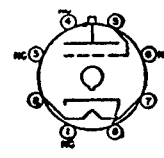
5A



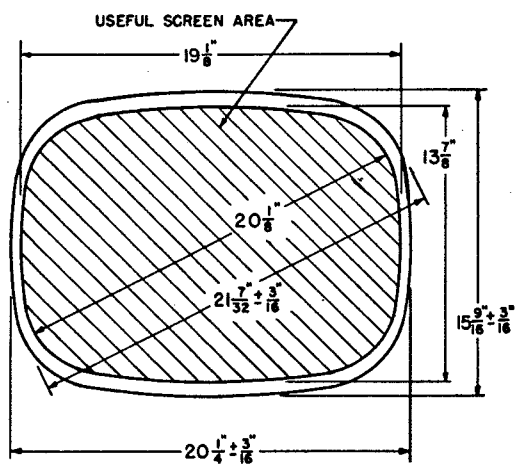
KEY 12D



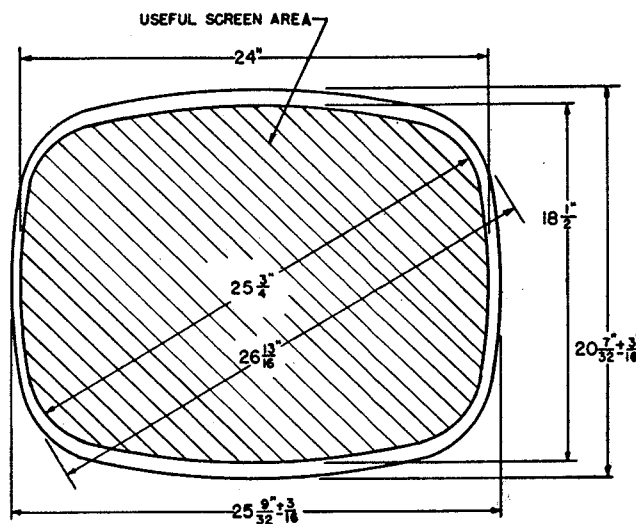
KEY 12M



TP-400A



21EP4 and 21EP4-A Faceplate

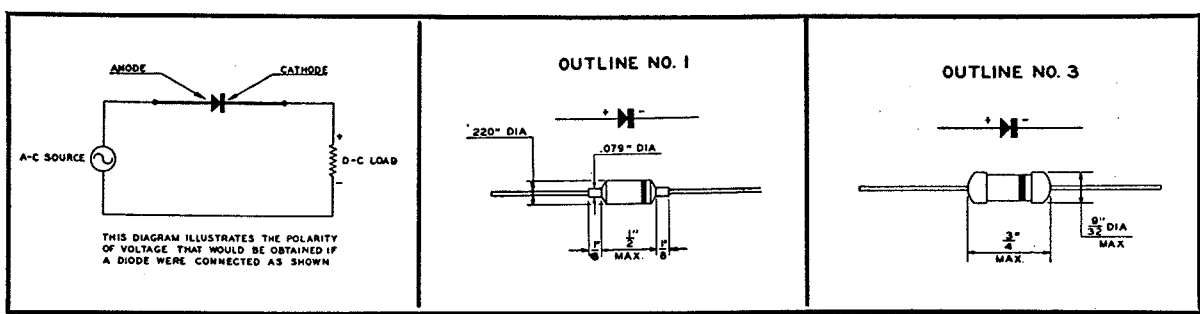


27EP4 Faceplate

GERMANIUM DIODE

Type	Mfr Code	Out-line	Description	Maximum Ratings					Characteristics		Type
				Average Rectified Current Ma D-C	Continuous Peak Rectified Current Ma D-C	Surge Current for 1-second Ma D-C	Peak Inverse Voltage for Break-down Peak Volts	Continuous Peak Inverse Voltage Peak Volts	Minimum Forward Current at 1-volt Ma D-C	Maximum Inverse Current μ a D-C	
1N34	—	3	General purpose	40	150	500	75	60	5.0	50 @ 10 v 800 @ 50 v	1N34
1N34-A	—	4	Glass-sealed 1N34	40	150	500	75	60	5.0	50 @ 10 v 800 @ 50 v	1N34-A
1N35	—	3	Matched pair mounted in fiber holder (Data for each diode)	22.5	60	100	75	50	7.5	10 @ 10 v	1N35
1N38	—	3	100-volt diode	40	150	500	120	100	3.0	10 @ 10 v	1N38
1N38-A	—	4	Glass-sealed 1N38	40	150	500	120	100	3.0	6 @ 3 v 625 @ 100 v	1N38-A
1N39	—	3	200-volt diode	40	150	500	—	200	3.0	200 @ 100 v 800 @ 200 v	1N39
1N43	WE-400-A	7	—	40	125	500	60	—	5	20 @ 5 v 900 @ 50 v	1N43
1N44	WE-400-B	7	—	35	100	400	115	—	3	1000 @ 50 v	1N44
1N45	WE-400-C	7	—	35	100	400	75	—	3	410 @ 50 v	1N45
1N46	WE-400-D	7	—	40	125	500	60	—	3	1500 @ 50 v	1N46
1N47	—	7	Video detector	30	90	350	115	—	3	4 @ 3 v 410 @ 50 v	1N47
1N48	G5	1	General purpose	50	150	400	85	70	4.0	833 @ 50 v	1N48
1N49	—	Note 1	Obsolete	—	50	—	—	—	4.0	200 @ 20 v	1N49
1N50	—	Note 1	Obsolete	25	100	300	—	—	4.0	80 @ 20 v	1N50
1N51	G5C	1	General purpose	25	100	300	50	40	2.5	1667 @ 50 v	1N51
1N52	G5D	1	General purpose	50	150	400	85	70	4.0	150 @ 50 v	1N52
1N54	—	3	High back-resistance diode	40	150	500	—	35	5.0	10 @ 10 v	1N54
1N54-A	—	4	Glass-sealed 1N54	40	150	500	—	35	5.0	10 @ 10 v	1N54-A
1N55	—	3	150-volt diode	40	150	500	—	150	3.0	300 @ 100 v 500 @ 150 v	1N55
1N55-A	—	4	Glass-sealed 1N55	40	150	500	—	150	3.0	300 @ 100 v 500 @ 150 v	1N55-A
1N56	—	3	High-conduction diode	50	200	1000	—	40	15	300 @ 30 v	1N56
1N56-A	—	4	Glass-sealed 1N56	50	200	1000	—	40	15	300 @ 30 v	1N56-A

Note 1: The case of this diode has one conical-shaped end, which is the anode terminal.

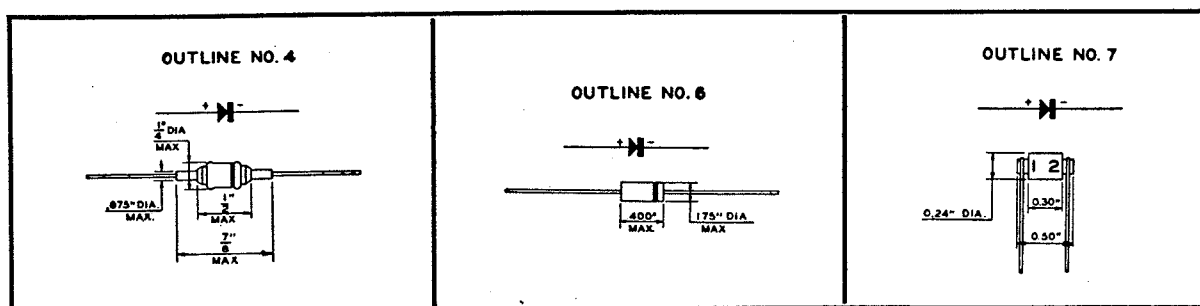


CHARACTERISTICS AND RATINGS

111

Type	Mfr Code	Outline	Description	Maximum Ratings					Characteristics		Type
				Average Rectified Current Ma D-C	Continuous Peak Rectified Current Ma D-C	Surge Current for 1-second Ma D-C	Peak Inverse Voltage for Break-down Peak Volts	Continuous Peak Inverse Voltage Peak Volts	Minimum Forward Current at 1-volt Ma D-C	Maximum Inverse Current μ a D-C	
1N57	—	3	General purpose	40	150	500	—	80	4.0	500 @ 75 v	1N57
1N58	—	3	100-volt diode	40	150	500	—	100	4.0	800 @ 100 v	1N58
1N58-A	—	4	Glass-sealed 1N58	40	150	500	—	100	4.0	800 @ 100 v	1N58-A
1N59	—	3	250-volt diode	40	150	500	275	250	3.0	800 @ 250 v	1N59
1N60	—	3	Video detector	40	150	500	—	50	—	—	1N60
1N61	—	3	130-volt diode	40	150	500	140	130	5.0	300 @ 100 v	1N61
1N62	—	3	110-volt diode	40	150	500	120	110	5.0	700 @ 100 v	1N62
1N63	G5E	1	General purpose	50	150	400	125	100	4.0	50 @ 50 v	1N63
1N64	G5F	1	Second-detector diode	—	—	—	—	25	—	—	1N64
1N65	G5G	1	D-C restorer	50	150	400	85	70	2.5	200 @ 50 v	1N65
1N66	—	6	General purpose	35	100	—	70	50	5.0	50 @ 10 v 800 @ 50 v	1N66
1N67	—	6	D-C restorer	35	100	—	100	80	4.0	5 @ 5 v 50 @ 50 v	1N67
1N68	—	6	D-C restorer	35	100	—	120	100	3.0	150 @ 50 v	1N68
1N69	G5K	1	General purpose	40	125	400	75	60	5.0	50 @ 10 v 850 @ 50 v	1N69
1N70	G5L	1	General purpose	30	90	350	125	100	3.0	10 @ 10 v 410 @ 50 v	1N70
1N72	G7	1	UHF mixer	25	75	—	—	2.0	—	—	1N72
1N75	G5-M	1	100-volt diode	50	150	400	125	100	2.5	50 @ 50 v	1N75
1N81	—	1	General purpose	30	90	300	50	40	3.0	10 @ 10 v	1N81
CK705	—	6	General purpose	50	150	—	70	60	5.0	50 @ 10 v 800 @ 50 v	CK705
CK706	—	6	Video detector	R-F efficiency 50% @ 60MC/s			50	—	—	200 @ 10 v	CK706
CK707	—	6	D-C restorer	35	100	—	100	80	3.5	8 @ 5 v 100 @ 50 v	CK707
CK708	—	6	D-C restorer	35	100	—	120	100	3.0	625 @ 100 v	CK708
CK710	—	6	UHF mixer	50	150	—	10	5	3.0 @ 0.5 v	200 @ 0.6 v	CK710
CK712	—	6	200-volt diode	22.5	70	—	225	200	1.0	800 @ 200 v	CK712
CK713	—	6	Computer diode	50	150	—	—	75	21 @ 2 v	250 @ 40 v	CK713

Note 1: The case of this diode has one conical-shaped end, which is the anode terminal.

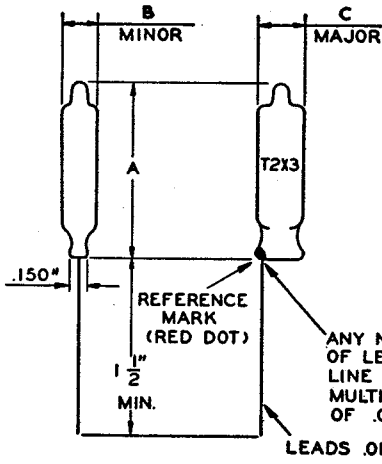


T-X – Physical Characteristics of Types Not Conforming

Tube Type	Max. Dimensions in Inches			Type Socket Used
	Diameter	Over-all Length	Seated Height	
0Y4-G	$1\frac{1}{16}$	$2\frac{5}{8}$	$2\frac{1}{16}$	Octal
0Z4-G	$1\frac{1}{16}$	$2\frac{5}{8}$	$2\frac{1}{16}$	Octal
1AB6	$\frac{3}{4}$	2.205	1.955	7-Pin Min
1AE5	0.400 × 0.300	—	1.5	Flexible Leads (Inline Subm)
1AH5	$\frac{3}{4}$	2.205	1.955	7-Pin Min
1T2	$1\frac{7}{32}$	—	$1\frac{29}{32}$	Flexible Leads
1Y2	$1\frac{9}{16}$	$4\frac{19}{32}$	$3\frac{31}{32}$	4-Pin
1Z2	$\frac{3}{4}$	2.70	2.45	7-Pin Min
2C22	$1\frac{5}{16}$	$3\frac{1}{4}$	$2\frac{1}{16}$	Octal
2E31	0.400 × 0.300	—	$1\frac{9}{16}$	Flexible Leads (Inline Subm)
2E32	0.400 × 0.300	—	$1\frac{9}{16}$	Inline Subm
2E35	0.390 × 0.290	—	$1\frac{9}{16}$	Flexible Leads (Inline Subm)
2E36	0.390 × 0.290	—	$1\frac{9}{16}$	Inline Subm
2E41	0.390 × 0.290	—	$1\frac{9}{16}$	Flexible Leads (Inline Subm)
2E42	0.390 × 0.290	—	$1\frac{9}{16}$	Inline Subm
2G21	0.400 × 0.300	—	$1\frac{9}{16}$	Flexible Leads (Inline Subm)
2G22	0.400 × 0.300	—	$1\frac{9}{16}$	Inline Subm
3C4	$\frac{3}{4}$	2.205	1.955	7-Pin Min
6AE8	$\frac{7}{8}$	$2\frac{1}{4}$	—	9-Pin Min
6AR6	$1\frac{7}{16}$	$3\frac{15}{32}$	$2\frac{29}{32}$	Octal
6AR7-GT	$1\frac{5}{16}$	$3\frac{5}{8}$	$3\frac{1}{16}$	Octal
6AZ6	0.400	—	1.25	Flexible Leads (8-Pin Subm)
6BD5-GT	$1\frac{9}{32}$	$3\frac{7}{8}$	$3\frac{5}{16}$	Octal
6BJ5	$\frac{3}{4}$	$2\frac{3}{4}$	—	7-Pin Min
6CJ6	$\frac{7}{8}$	$3\frac{3}{16}$	$2\frac{15}{16}$	9-Pin Min
6X2	0.571	—	2.087	Flexible Leads
21A6	$\frac{7}{8}$	$3\frac{3}{16}$	$2\frac{15}{16}$	9-Pin Min
V-99	$1\frac{1}{16}$	$3\frac{1}{2}$	—	Special

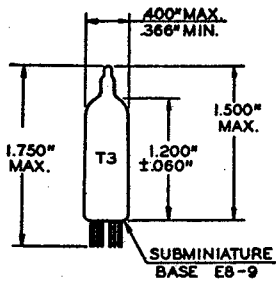
to Standard or Commonly Used Outline Drawings

Tube Type	Max. Dimensions in Inches			Type Socket Used
	Diameter	Over-all Length	Seated Height	
1654	$\frac{3}{4}$	$2\frac{7}{16}$	$2\frac{3}{16}$	7-Pin Min
5633	0.400	—	1.660	Flexible Leads
5634	0.400	—	1.660	Flexible Leads
5642	0.400	—	2.160	Flexible Leads
5645	0.310	—	1.300	Flexible Leads
5646	0.310	—	1.300	Flexible Leads
5647	0.215	—	1.250	Flexible Leads
5675	(Pencil Type)		2.108	Special
5676	0.400 × 0.300	—	1.5	Flexible Leads (Inline Subm)
5677	0.400 × 0.300	—	1.5	Flexible Leads (Inline Subm)
5678	0.400 × 0.300	—	1.515	Flexible Leads (Inline Subm)
5704	0.315	—	$1\frac{1}{2}$	Flexible Leads (Inline Subm)
5785	0.400 × 0.300	—	1.5	Flexible Leads (Inline Subm)
5825	$2\frac{1}{16}$	$5\frac{27}{32}$	$5\frac{7}{32}$	4-Pin
5838	$1\frac{5}{16}$	$3\frac{3}{8}$	$2\frac{7}{8}$	Octal
5839	$1\frac{5}{16}$	$3\frac{3}{8}$	$2\frac{7}{8}$	Octal
5851	0.400	—	1.600	Flexible Leads (8-Pin Subm)
5852	$1\frac{5}{16}$	$3\frac{3}{8}$	$2\frac{7}{8}$	Octal
5876	(Pencil Type)		2.108	Special
5881	$1\frac{7}{16}$	$3\frac{15}{32}$	$2\frac{29}{32}$	Octal
5890	$1\frac{1}{2}$	$6\frac{3}{4}$	$6\frac{1}{4}$	Duodecal
5930	1.70	$4\frac{1}{2}$	$3\frac{7}{8}$	4-Pin
5931	1.70	$4\frac{29}{32}$	$4\frac{11}{32}$	Octal
5932	1.70	$3\frac{27}{32}$	$3\frac{9}{32}$	Octal
5995	0.400	—	1.75	Flexible Leads (Inline Subm)
6004	$1\frac{5}{16}$	$4\frac{1}{16}$	—	Octal
6080	$1\frac{23}{32}$	$4\frac{1}{4}$	$3\frac{11}{16}$	Octal
6082	$1\frac{23}{32}$	$4\frac{1}{4}$	$3\frac{11}{16}$	Octal

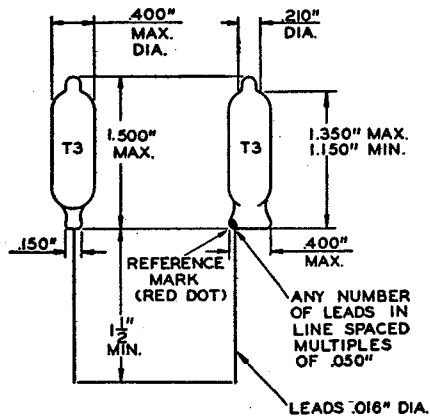


OUTLINE DRAWING NUMBER	DIMENSIONS		
	A MAX.	B MAX.	C MAX.
2-1	1.50"	0.285"	0.385"
2-2	1.25"	0.285"	0.385"
2-3	1.50"	0.285"	0.410"
2-4	1.25"	0.285"	0.410"

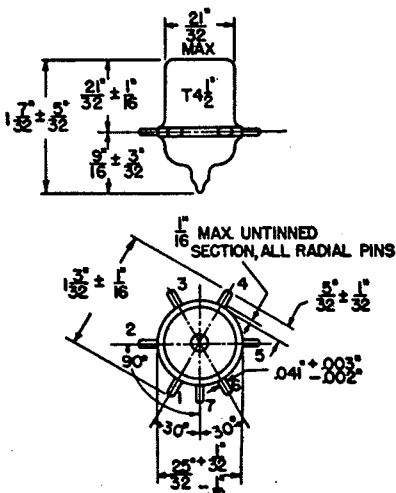
2-1 TO 2-4



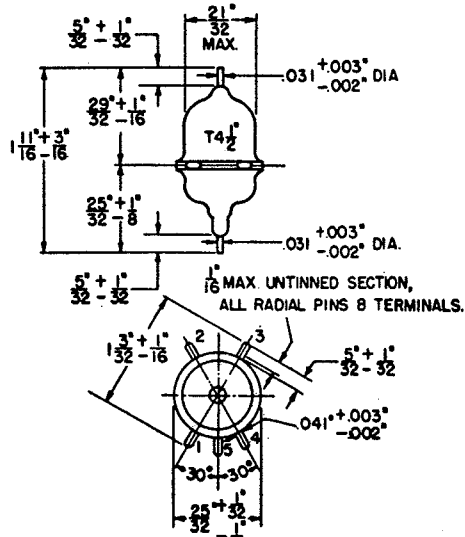
3-5



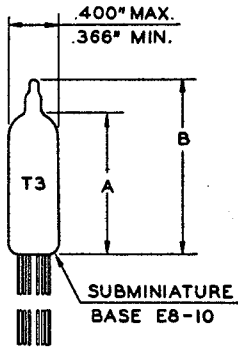
3-6



4-2

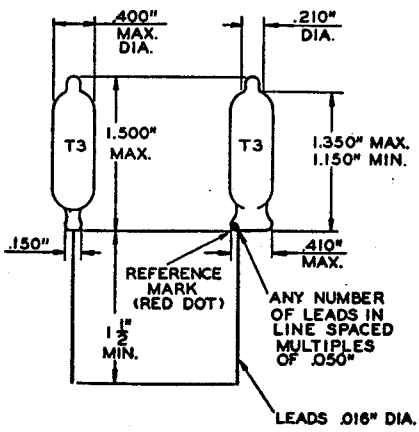


4-3

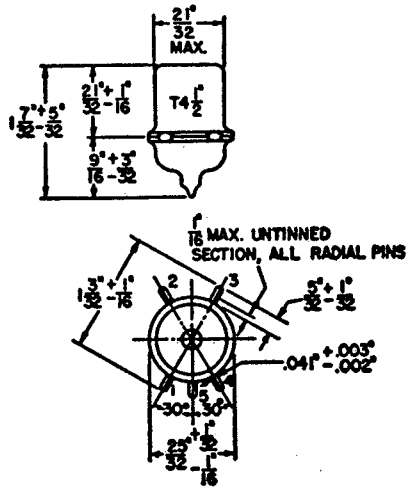


OUTLINE DRAWING NUMBER	DIMENSIONS	
	A ±0.060"	B MAX.
3-1	1.075"	1.375"
3-2	1.200"	1.500"
3-3	1.450"	1.750"
3-4	1.700"	2.000"
3-8	1.325"	1.625"

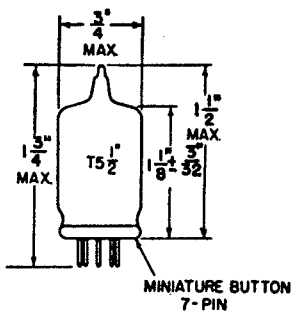
3-1 TO 3-4, 3-8



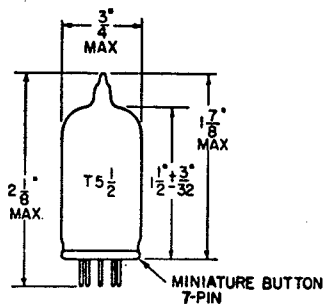
3-7



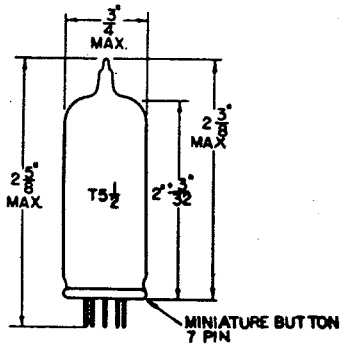
4-1



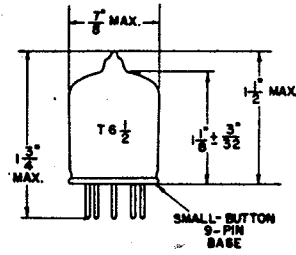
5-1



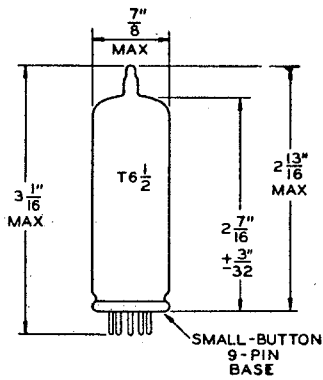
5-2



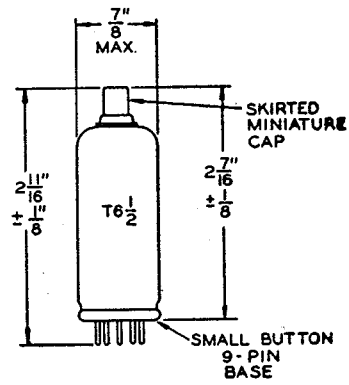
5-3



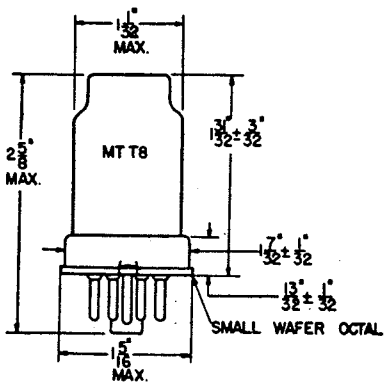
6-1



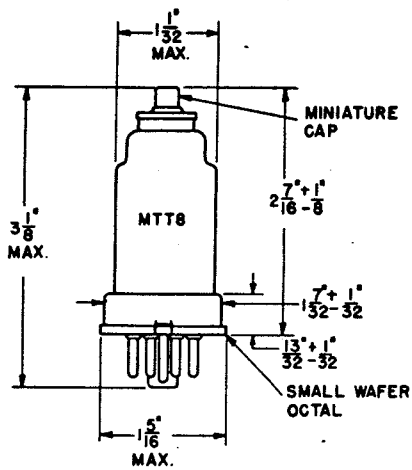
6A-1



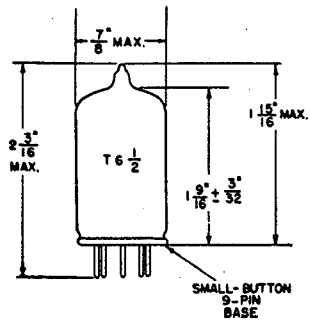
6A-2



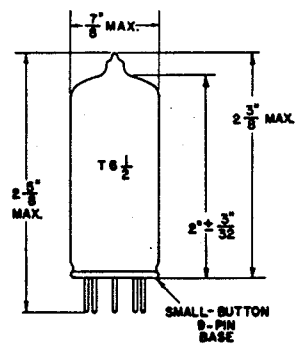
8-3



8-4

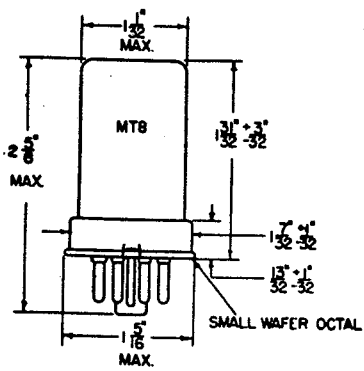


6-2

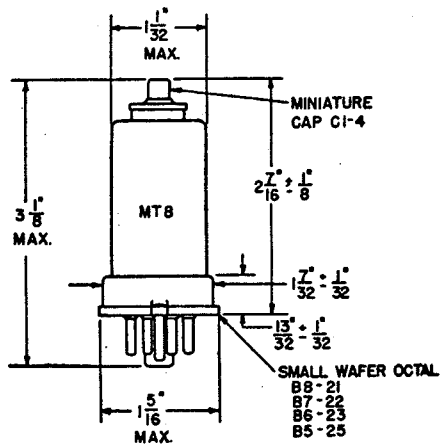


6-3

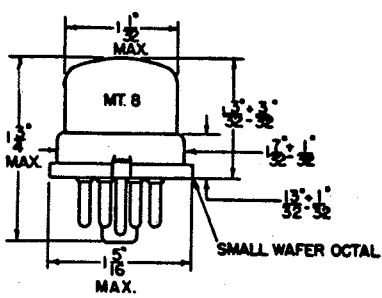
6-3



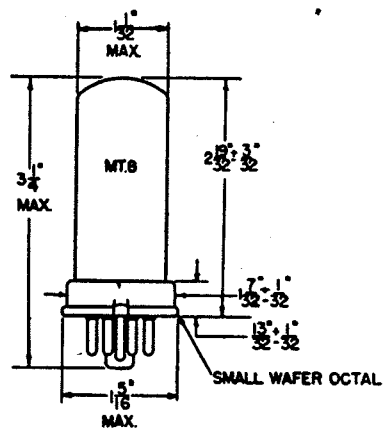
8-1



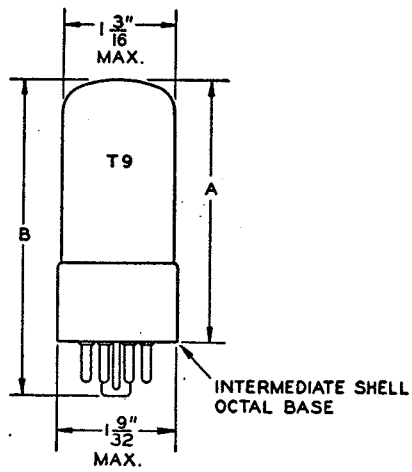
8-2



8-5

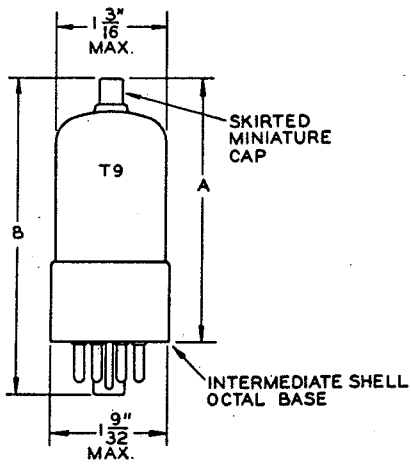


8-6



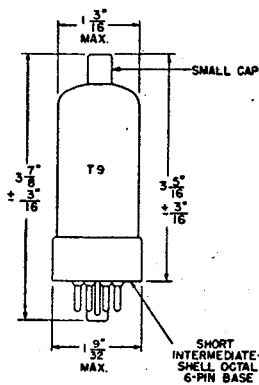
OUTLINE DRAWING NUMBER	DIMENSIONS	
	A MAX.	B MAX.
9-1	1 $\frac{3}{4}$ "	2 $\frac{5}{16}$ "
9-3	2 $\frac{5}{16}$ "	2 $\frac{7}{8}$ "
9-5	2 $\frac{7}{16}$ "	3"
9-7	2 $\frac{1}{2}$ "	3 $\frac{1}{16}$ "
9-9	2 $\frac{11}{16}$ "	3 $\frac{1}{4}$ "
9-11	2 $\frac{3}{4}$ "	3 $\frac{5}{16}$ "
9-13	2 $\frac{13}{16}$ "	3 $\frac{3}{8}$ "
9-15	2 $\frac{7}{8}$ "	3 $\frac{7}{16}$ "
9-33	3 $\frac{1}{4}$ "	3 $\frac{13}{16}$ "

9-1 TO 9-15 (ODD), 9-33

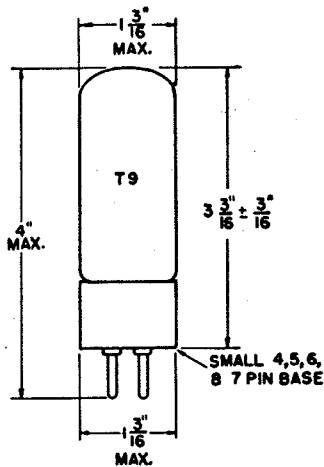


OUTLINE DRAWING NUMBER	DIMENSIONS		
	MIN.	MAX.	MAX.
9-17	2 $\frac{5}{16}$ "	2 $\frac{3}{4}$ "	3 $\frac{5}{16}$ "
9-19	2 $\frac{5}{16}$ "	2 $\frac{7}{8}$ "	3 $\frac{7}{16}$ "
9-21	2 $\frac{5}{16}$ "	2 $\frac{15}{16}$ "	3 $\frac{1}{2}$ "
9-23	2 $\frac{5}{16}$ "	3"	3 $\frac{9}{16}$ "
9-50	2 $\frac{7}{8}$ "	3 $\frac{5}{16}$ "	3 $\frac{7}{8}$ "

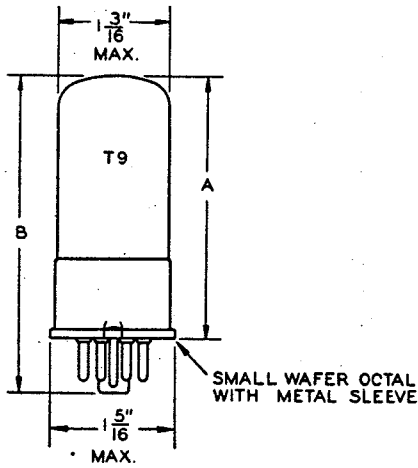
9-17 TO 9-23 (ODD), 9-50



9A-5

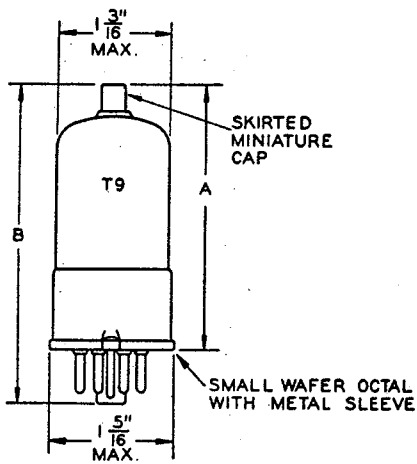


9-25



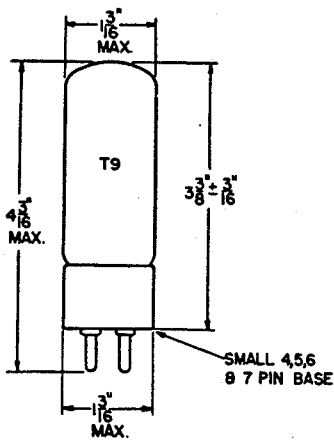
OUTLINE DRAWING NUMBER	DIMENSIONS	
	A MAX.	B MAX.
9-2	1 $\frac{3}{4}$	2 $\frac{5}{16}$
9-4	2 $\frac{5}{16}$	2 $\frac{7}{8}$
9-6	2 $\frac{7}{16}$	3"
9-8	2 $\frac{1}{2}$	3 $\frac{1}{16}$
9-10	2 $\frac{11}{16}$	3 $\frac{1}{4}$
9-12	2 $\frac{3}{4}$	3 $\frac{5}{16}$
9-14	2 $\frac{13}{16}$	3 $\frac{3}{8}$
9-16	2 $\frac{7}{8}$	3 $\frac{7}{16}$

9-2 TO 9-16 (EVEN)

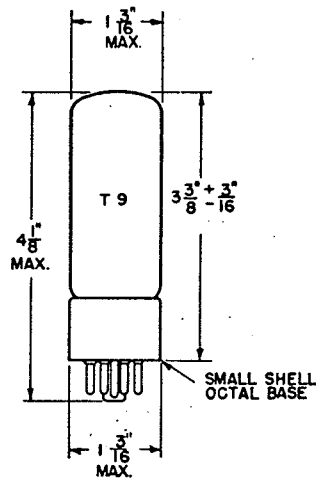


OUTLINE DRAWING NUMBER	DIMENSIONS		
	MIN.	A MAX.	B MAX.
9-18	2 $\frac{5}{16}$	2 $\frac{3}{4}$	3 $\frac{5}{16}$
9-20	2 $\frac{5}{16}$	2 $\frac{7}{8}$	3 $\frac{7}{16}$
9-22	2 $\frac{5}{16}$	2 $\frac{15}{16}$	3 $\frac{1}{2}$
9-24	2 $\frac{5}{16}$	3"	3 $\frac{9}{16}$

9-18 TO 9-24 (EVEN)

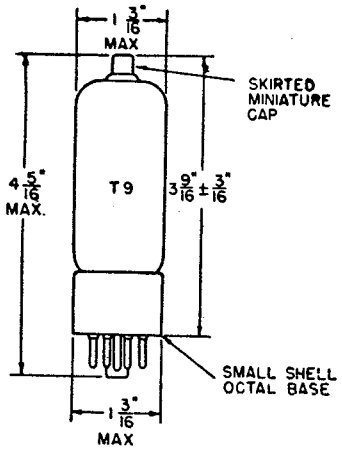


9-26

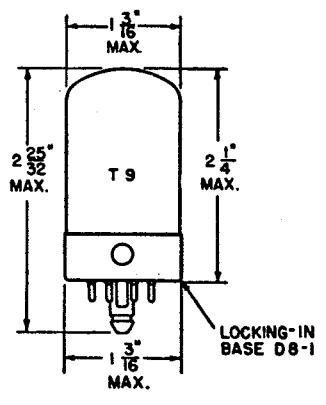


9-27

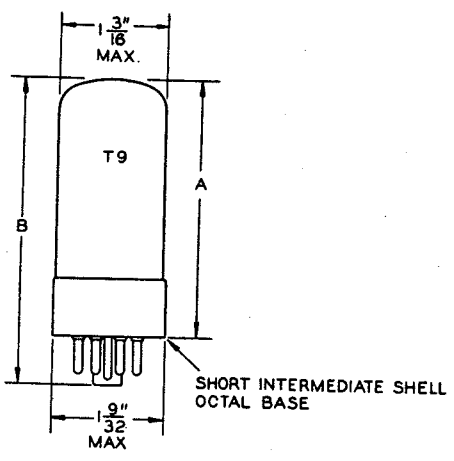
OUTLINE



9-28

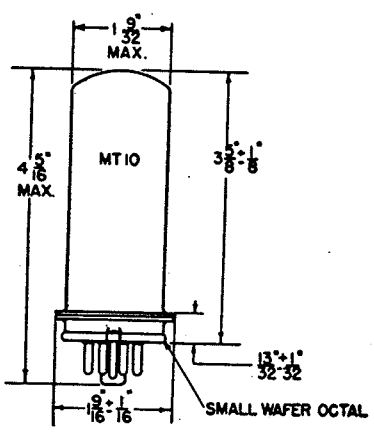


9-30

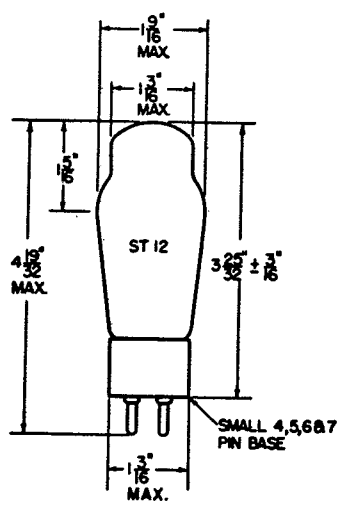


OUTLINE DRAWING NUMBER	DIMENSIONS	
	A MAX.	B MAX.
9-36	1 3/4	2 5/16
9-37	2 5/16	2 7/8
9-38	2 7/16	3
9-39	2 1/2	3 1/16
9-40	2 11/16	3 1/4
9-41	2 3/4	3 5/16
9-42	2 13/16	3 3/8
9-43	2 7/8	3 7/16
9-44	3 1/4	3 13/16

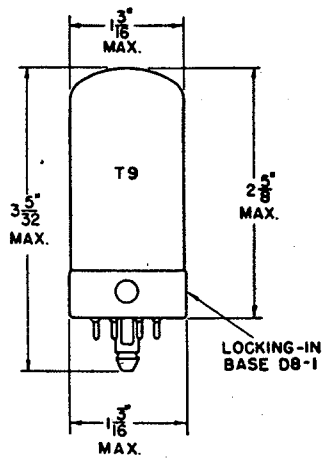
9-36 TO 9-44



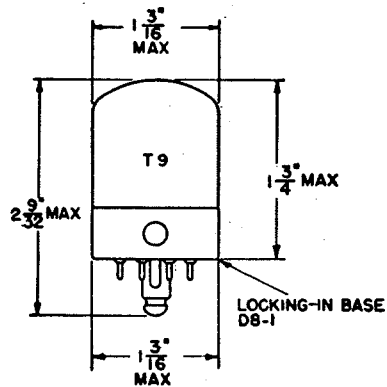
10-1



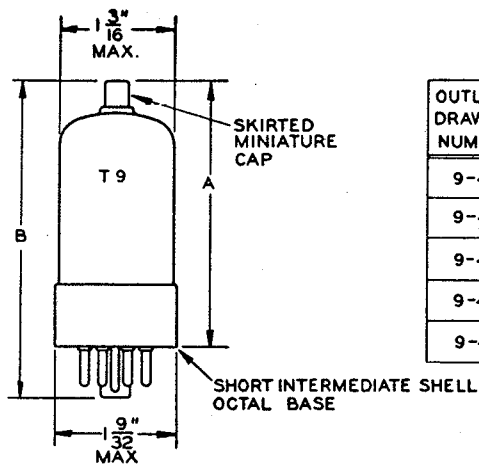
12-1



9-31

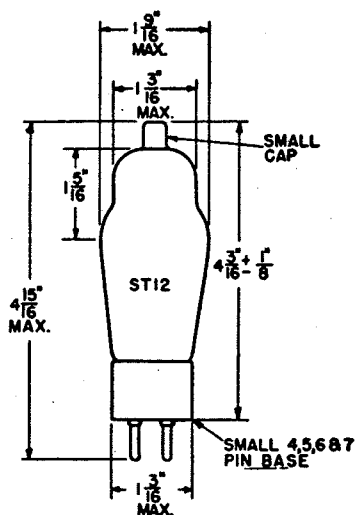


9-32

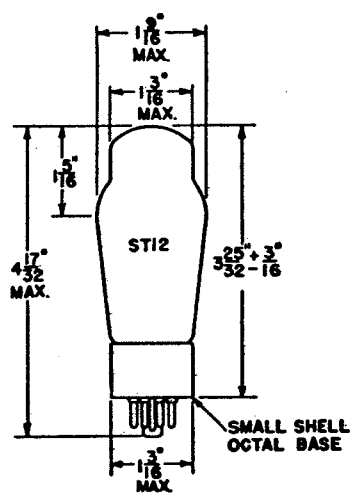


OUTLINE DRAWING NUMBER	DIMENSIONS		
	A		B
	MIN.	MAX.	MAX.
9-45	2 5/16	2 3/4	3 5/16
9-46	2 5/16	2 7/8	3 7/16
9-47	2 5/16	2 15/16	3 1/2
9-48	2 5/16	3"	3 9/16
9-49	2 7/8	3 5/16	3 7/8

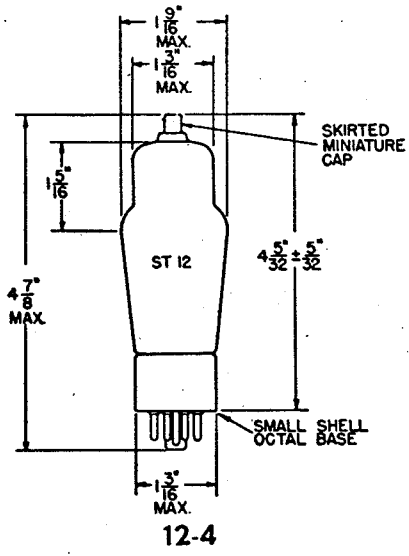
9-45 TO 9-49



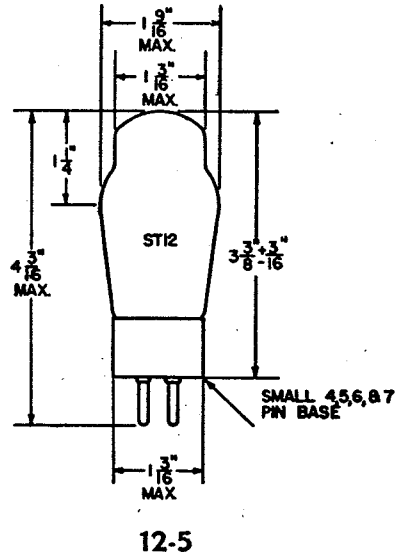
12-2



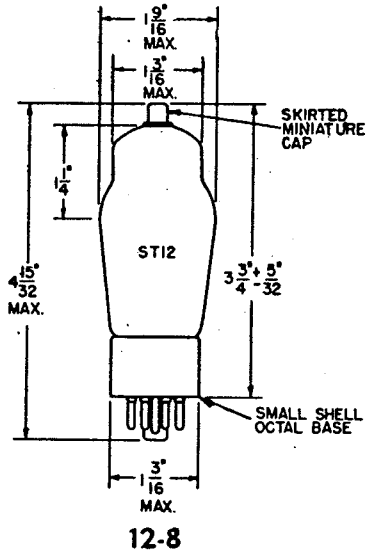
12-3



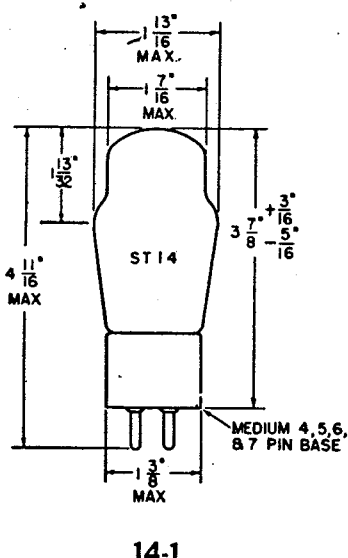
12-4



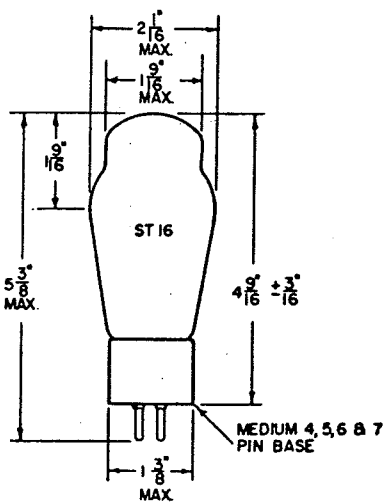
12-5



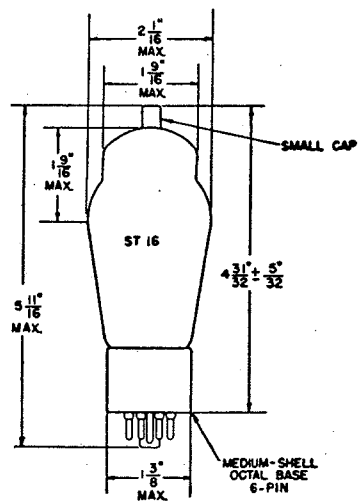
12-8



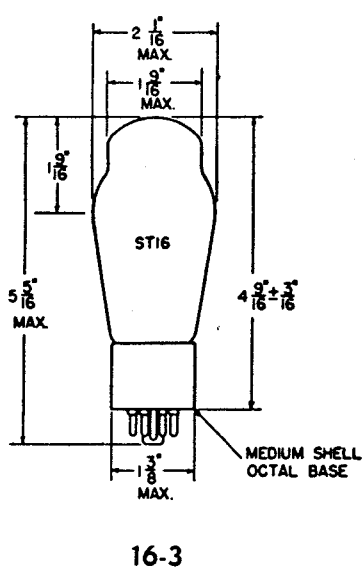
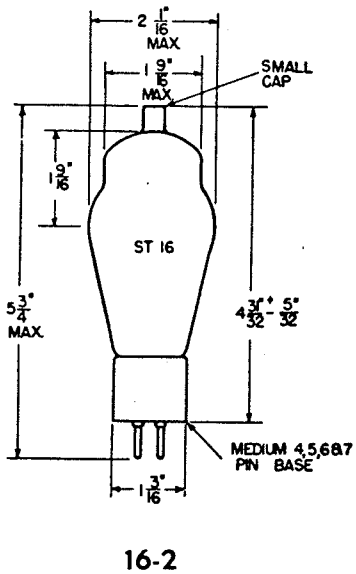
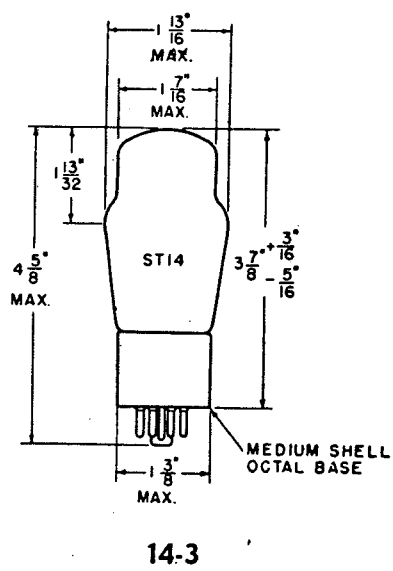
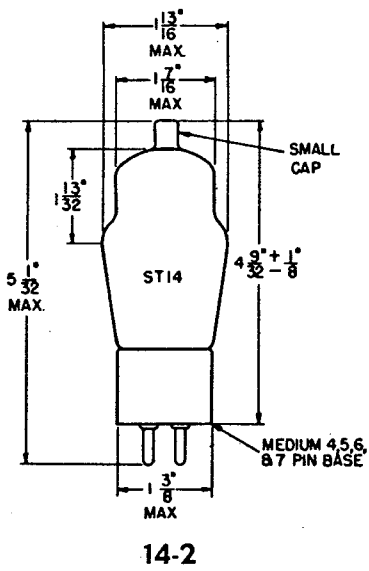
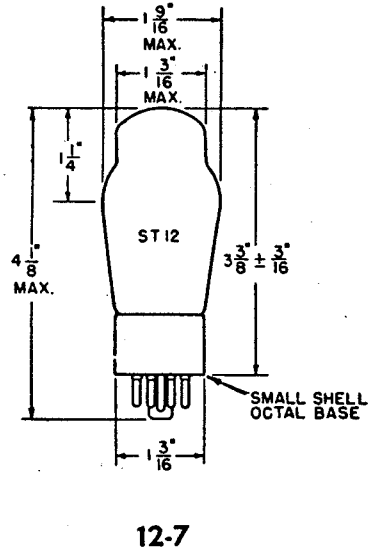
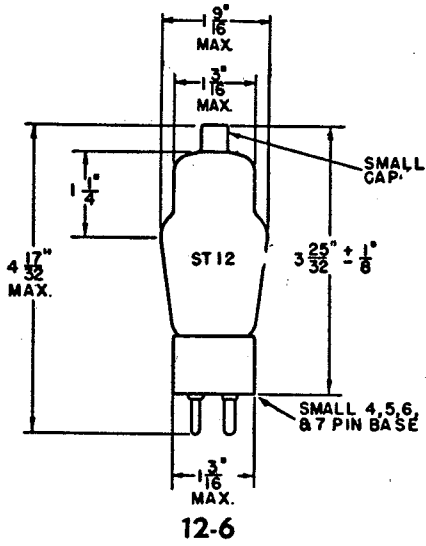
14-1



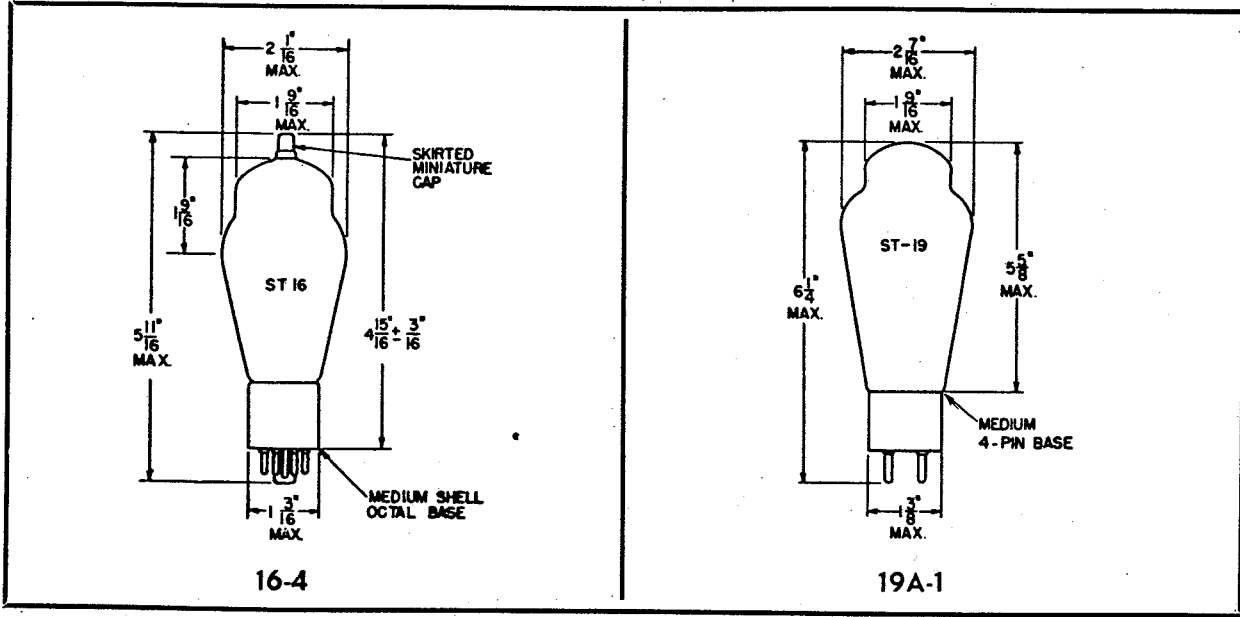
16-1



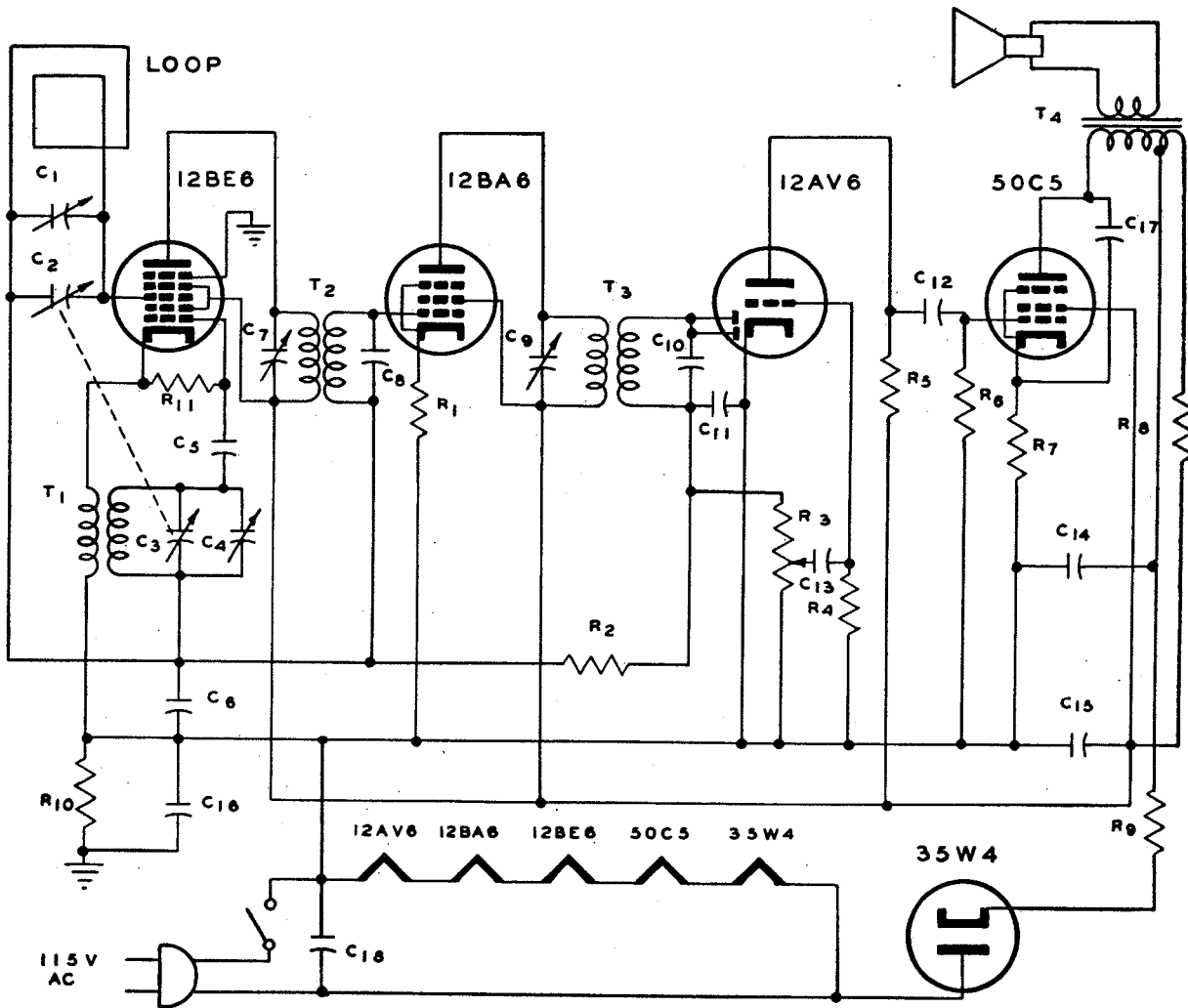
16A-1



OUTLINE DRAWINGS



AC-DC RECEIVER

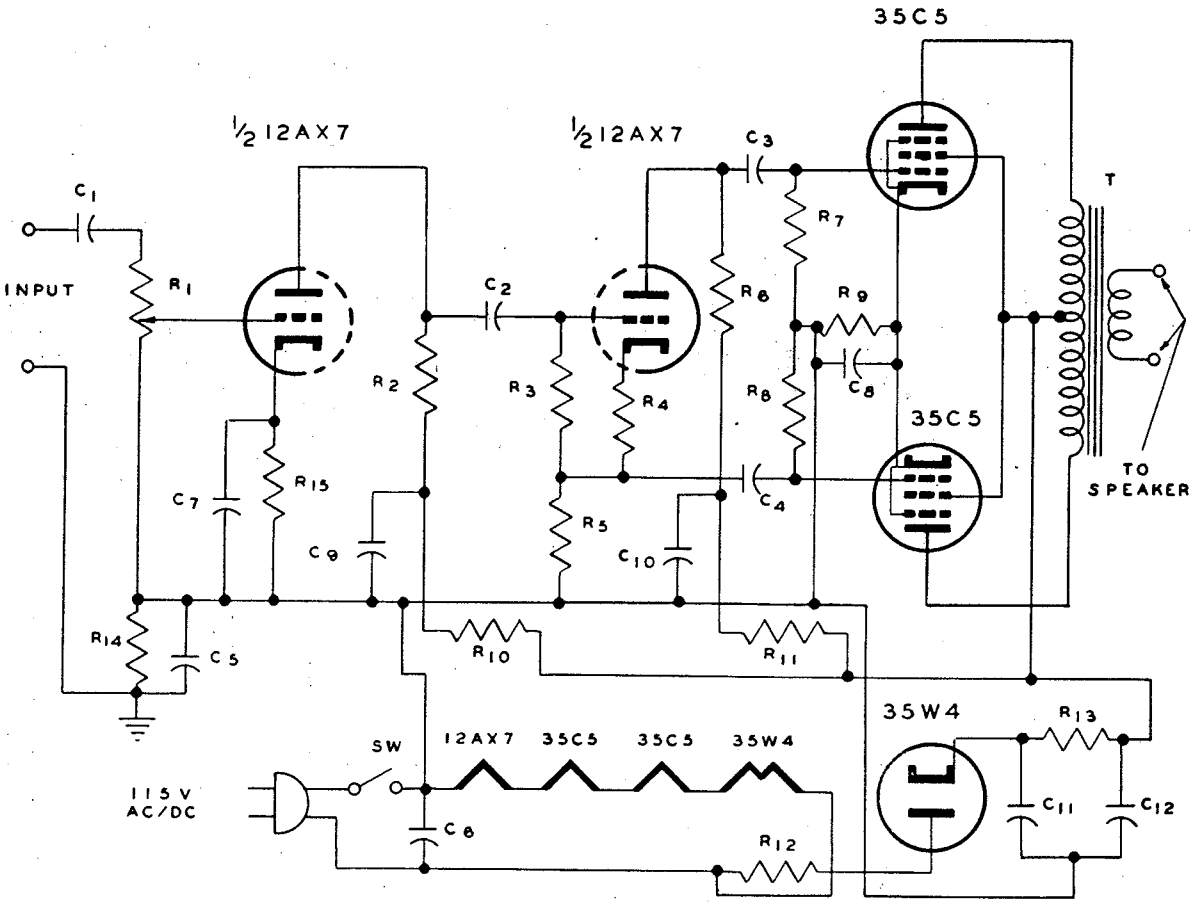


C_1	= 0-15 μ f TRIMMER	R_1	= 47 Ω
C_2C_3	= GANGED 14-434 μ f & 9-135 μ f	R_2	= 2.2 MEG.
C_4	= 1.5-15 μ f TRIMMER	R_3	= .5 MEG. POT.
C_5	= 47 μ f	R_4	= 6.8 MEG.
C_6C_{16}	= .05 μ f	$R_5R_6R_{10}$	= .47 MEG.
$C_7C_8C_9C_{10}$	= 60-140 μ f	R_7	= 150 Ω 1WATT
C_{11}	= 220 μ f	R_8	= 1000 Ω 2WATT
$C_{12}C_{13}C_{16}$	= .01 μ f	R_9	= 22 Ω 1WATT
$C_{14}C_{15}$	= 50 μ f 150V	R_{11}	= 22 K
C_{17}	= .005 μ f		
T_1	= OSCILLATOR TRANSFORMER		
T_2T_3	= IF TRANSFORMER 455 KC		
T_4	= 2500 Ω TO 3.4 Ω OUTPUT TRANSFORMER		

ALL RESISTORS 1/2 WATT
UNLESS OTHERWISE SPECIFIED

Circuits shown in this publication are examples of possible tube applications and the description and illustration of them does not convey to the purchaser of tubes any license under patent rights of General Electric Company.

AC/DC AMPLIFIER



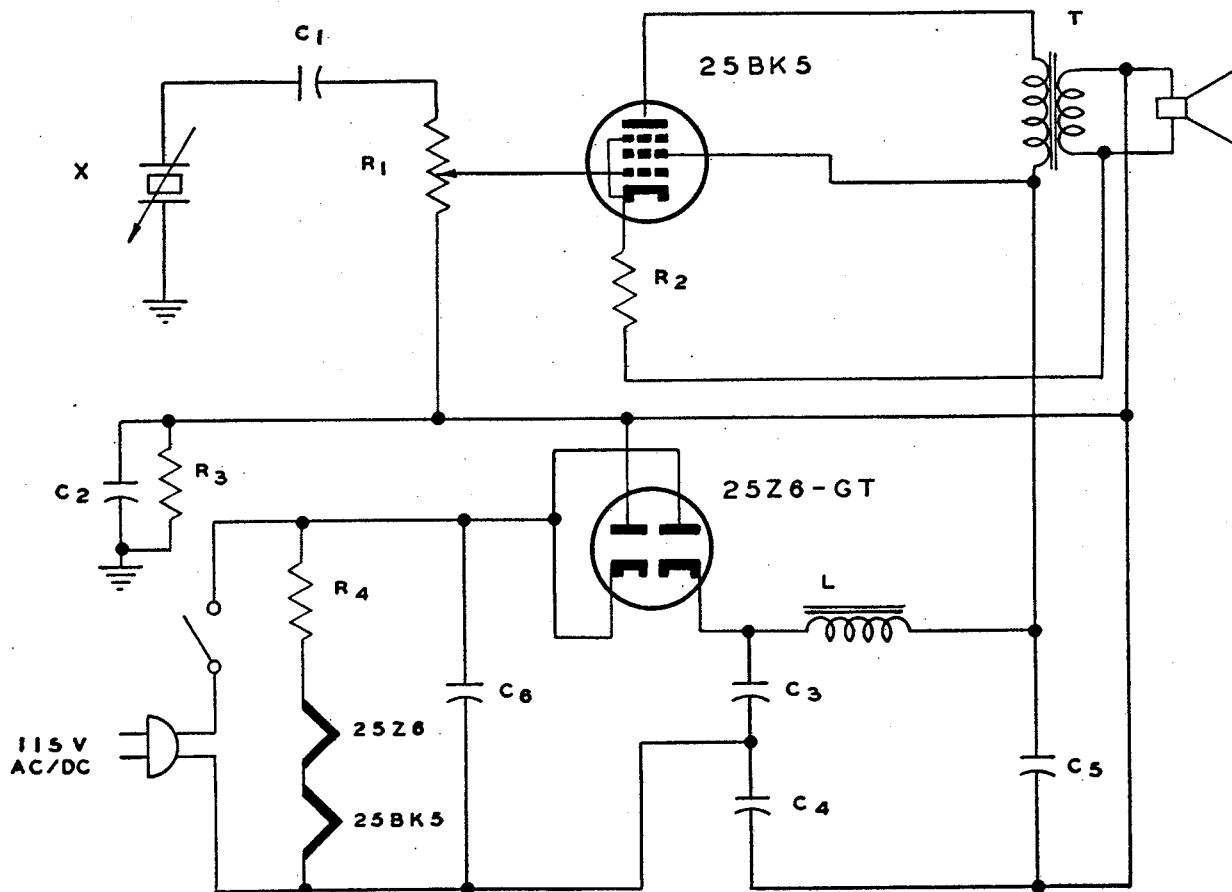
ALL RESISTORS 1/2 WATT UNLESS OTHERWISE SPECIFIED

- | | | | |
|---|---------------------|--|----------------------|
| R ₁ | - .5 MEG. POT. | C ₁ C ₂ C ₃ C ₄ C ₆ | - 0.5 μf 400V |
| R ₂ | - .24 MEG. | C ₅ | - 0.1 μf 600V |
| R ₃ | - .24 MEG. 1/2 WATT | C ₇ | - 25 μf 25V |
| R ₄ | - 1200 Ω | C ₈ | - 50 μf 25V |
| R ₅ R ₆ | - 47K | C ₉ | - 8 μf 150V |
| R ₇ R ₈ R ₁₄ | - .47 MEG. 1/2 WATT | C ₁₀ | - 8 μf 150V |
| R ₉ | - 100 Ω 5WATT | C ₁₁ | - 20 μf 150V |
| R ₁₀ R ₁₁ | - 33K | C ₁₂ | - 80 μf 150V |
| R ₁₂ R ₁₃ | - 47 Ω | T | - OUTPUT TRANSFORMER |
| R ₁₅ | - 2700 Ω | | 5000 Ω TO VOICE COIL |
| | | SW | - SPST TOGGLE SWITCH |

NOTE :-

SW SHOULD NOT BE MOUNTED ON THE BACK OF R₁. THIS PRECAUTION IS TO REDUCE HUM.

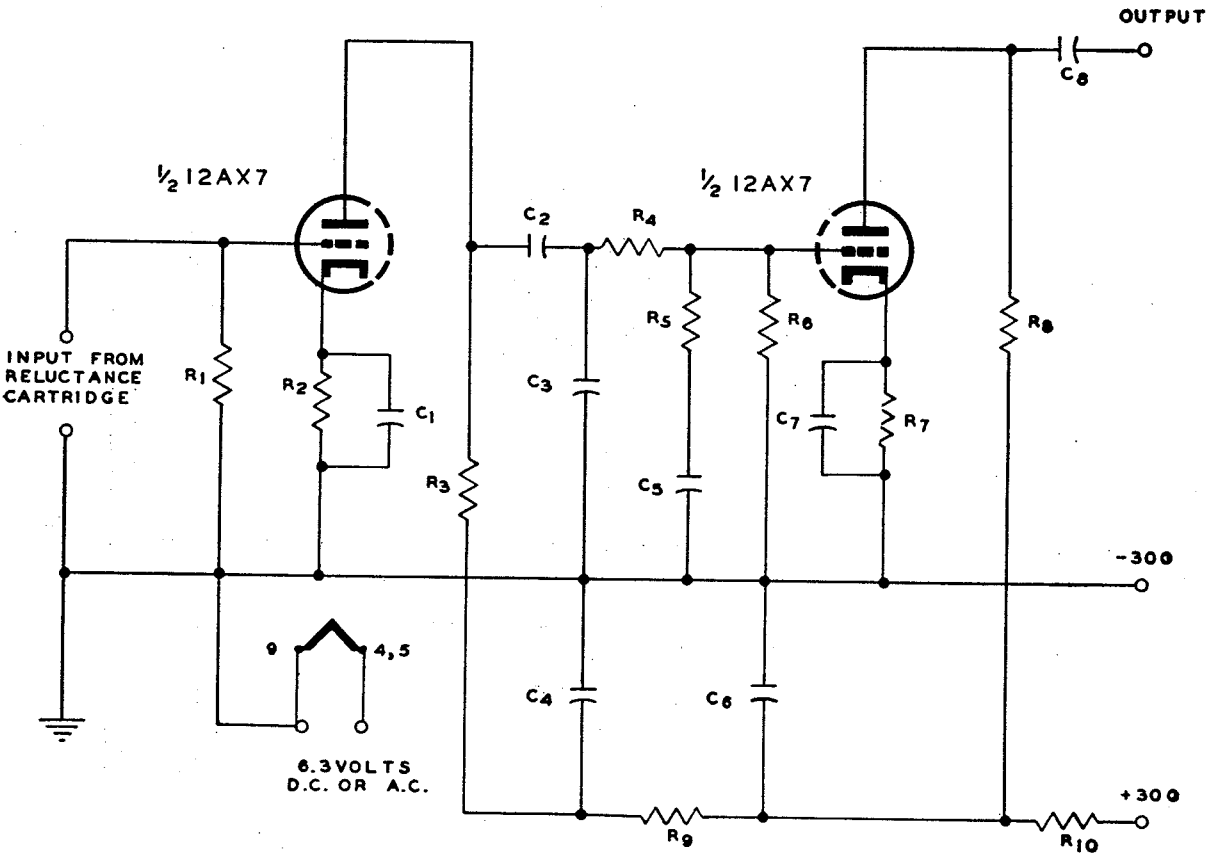
TWO TUBE PHONO-AMPLIFIER



C₁ - .01 μf 400V
 C₂ - .01 μf 400V
 C₃ C₄ - 10 μf 250V
 C₅ - 20 μf 450V
 C₆ - .01 μf 600V

R₁ - .5 MEG. POT.
 R₂ - 150 Ω 1 WATT
 R₃ - 500 K 1/2 WATT
 R₄ - 220 Ω 10 WATT
 T - OUTPUT TRANSFORMER
 6500 Ω TO VOICE COIL
 L - 3.5 HENRYS
 X - HIGH OUTPUT CRYSTAL
 CARTRIDGE

EQUALIZER PREAMPLIFIER FOR VARIABLE RELUCTANCE PHONOGRAPH CARTRIDGE



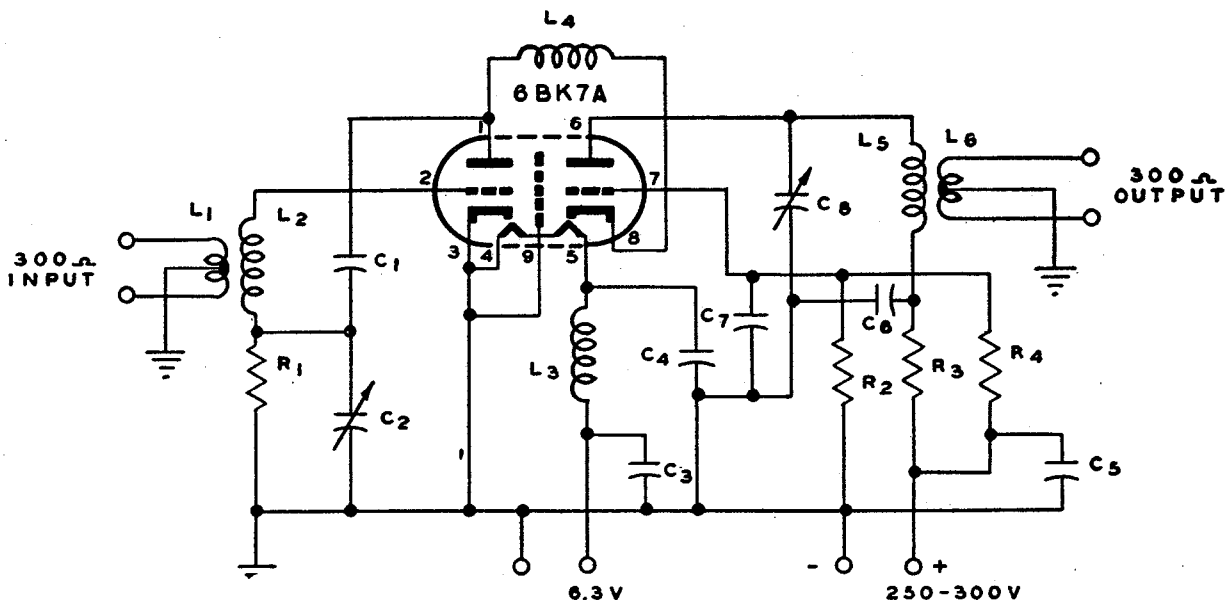
- C₁ C₇ - 25 μf 25 VOLTS
- C₂ C₈ - .05 μf 400 VOLTS
- C₃ - .001 μf 400 VOLTS
- C₄ C₆ - 20 μf 450 VOLTS
- C₅ - .02 μf 400 VOLTS

- R₁ - SEE NOTE
- R₂ R₇ - 2200 OHMS
- R₃ R₄ R₈ - .24 MEG.
- R₅ - 12 K
- R₆ - 1 MEG.
- R₉ - 6800 OHMS
- R₁₀ - 3300 OHMS

NOTE:—

THE VALUE OF R₁ IS SPECIFIED BY THE MANUFACTURER OF THE PARTICULAR PHONOGRAPH CARTRIDGE USED. FOR THE GENERAL ELECTRIC CARTRIDGE, A VALUE OF 15K IS RECOMMENDED.

6BK7A CASCODE TELEVISION BOOSTER



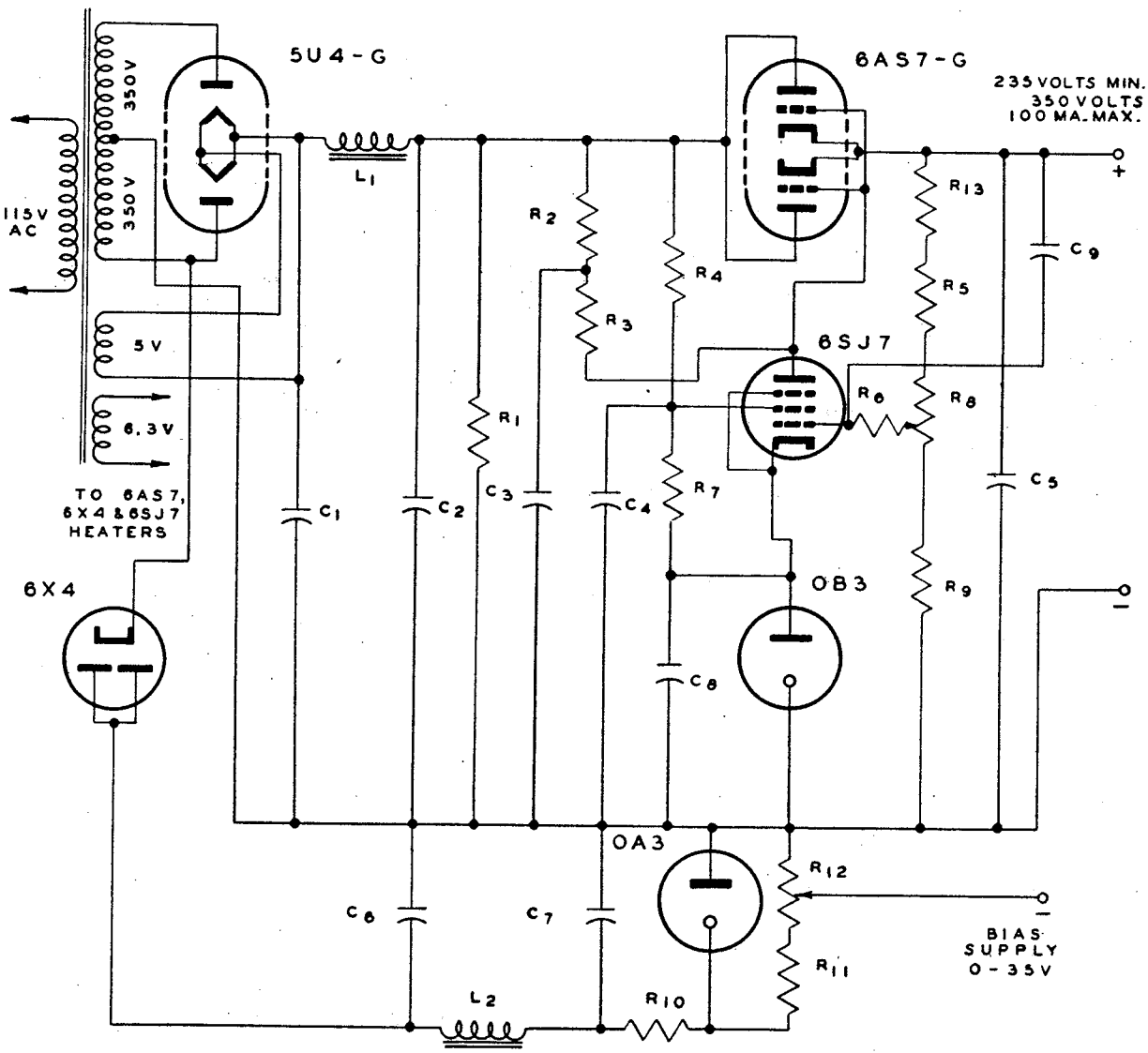
C ₁	- 4.7 μ f
C ₂	- 3-13 μ f
C ₃ C ₄ C ₅ C ₆	- 1000 μ f
C ₇	- 1000 μ f BUTTON TYPE
C ₈	- 1.5-7 μ f
R ₁	- 47K
R ₂	- 270K
R ₃	- 680 Ω
R ₄	- 100K

TYPICAL VALUES FOR CHANNEL N^o 4

L ₁	- 5T N ^o 18 WOUND OVER L ₂
L ₂	- 16T N ^o 28 1/4" FORM CLOSE WOUND
L ₃	- 12T N ^o 18 1/4" FORM CLOSE WOUND
L ₄	- 3T N ^o 18 1/4" FORM CLOSE WOUND
L ₅	- 6T N ^o 28 1/4" FORM CLOSE WOUND
L ₆	- 5T N ^o 18 WOUND OVER L ₅
L ₁ & L ₆ ARE CENTER-TAPPED	

ALL RESISTORS 1/2 WATT

REGULATED POWER SUPPLY



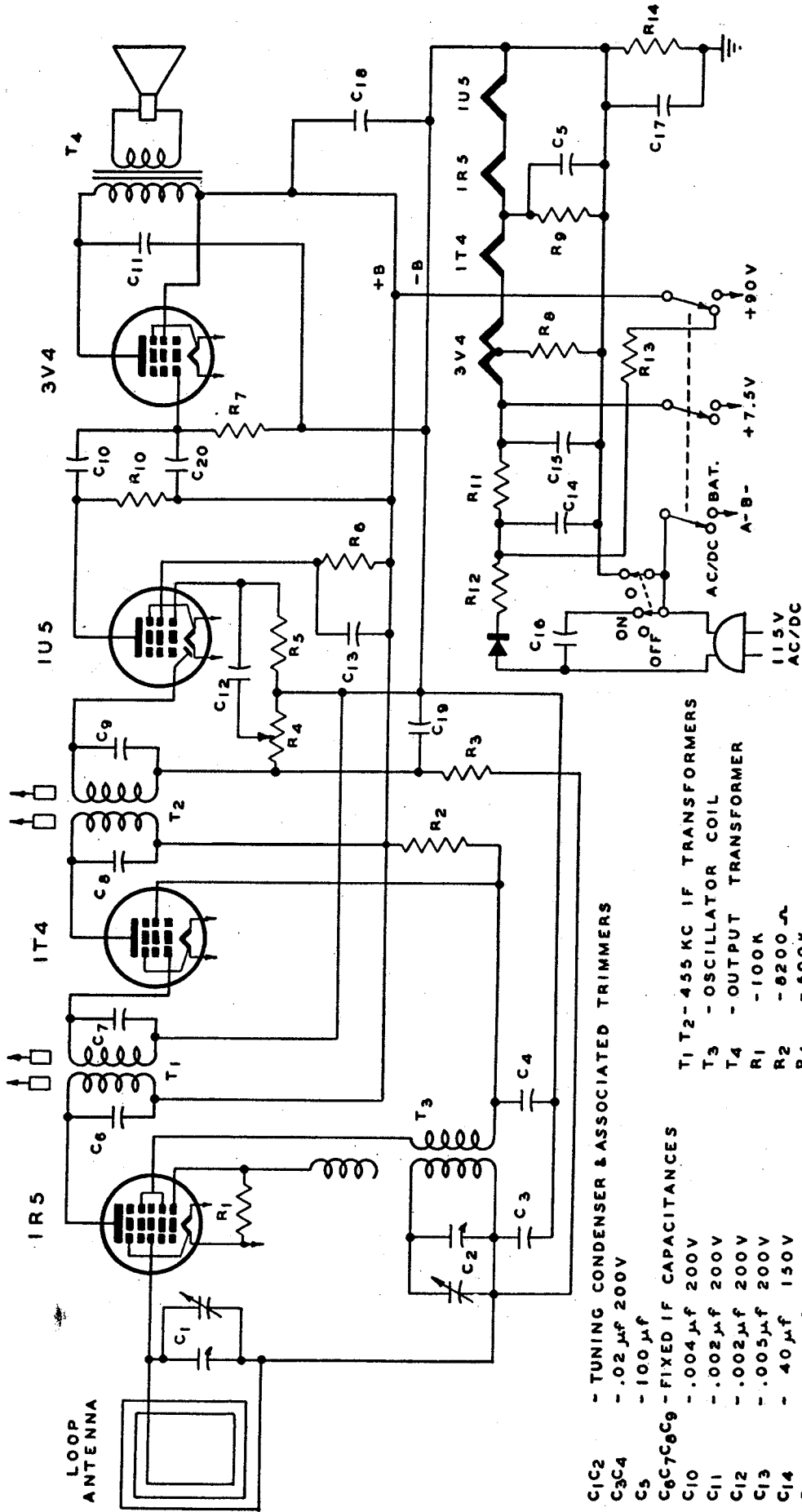
235 VOLTS MIN.
350 VOLTS
100 MA. MAX.

BIAS
SUPPLY
0 - 35V

ALL RESISTORS 1WATT UNLESS OTHERWISE SPECIFIED

- | | | |
|--|--|-----------------------------------|
| C ₁ C ₂ - 16 μf 600V | R ₁ - .47 MEG. | R ₁₂ - 5K POT. (5WATT) |
| C ₃ C ₈ - 1 μf 600V | R ₂ R ₉ R ₁₃ - .33 MEG. | L ₁ - 200 MA 15 HY |
| C ₄ - 8 μf 450V | R ₃ - .1 MEG. | L ₂ - 80 MA 15 HY |
| C ₅ - 4 μf 600V | R ₄ - 20K 10 WATT | |
| C ₆ C ₇ - 40 μf 450V | R ₅ R ₆ - 1 MEG. | |
| C ₉ - .1 μf 600V | R ₇ - 10K 10 WATT | |
| | R ₈ - .5 MEG. POT. | |
| | R ₁₀ - 20K 5 WATT | |
| | R ₁₁ - 5K 5 WATT | |

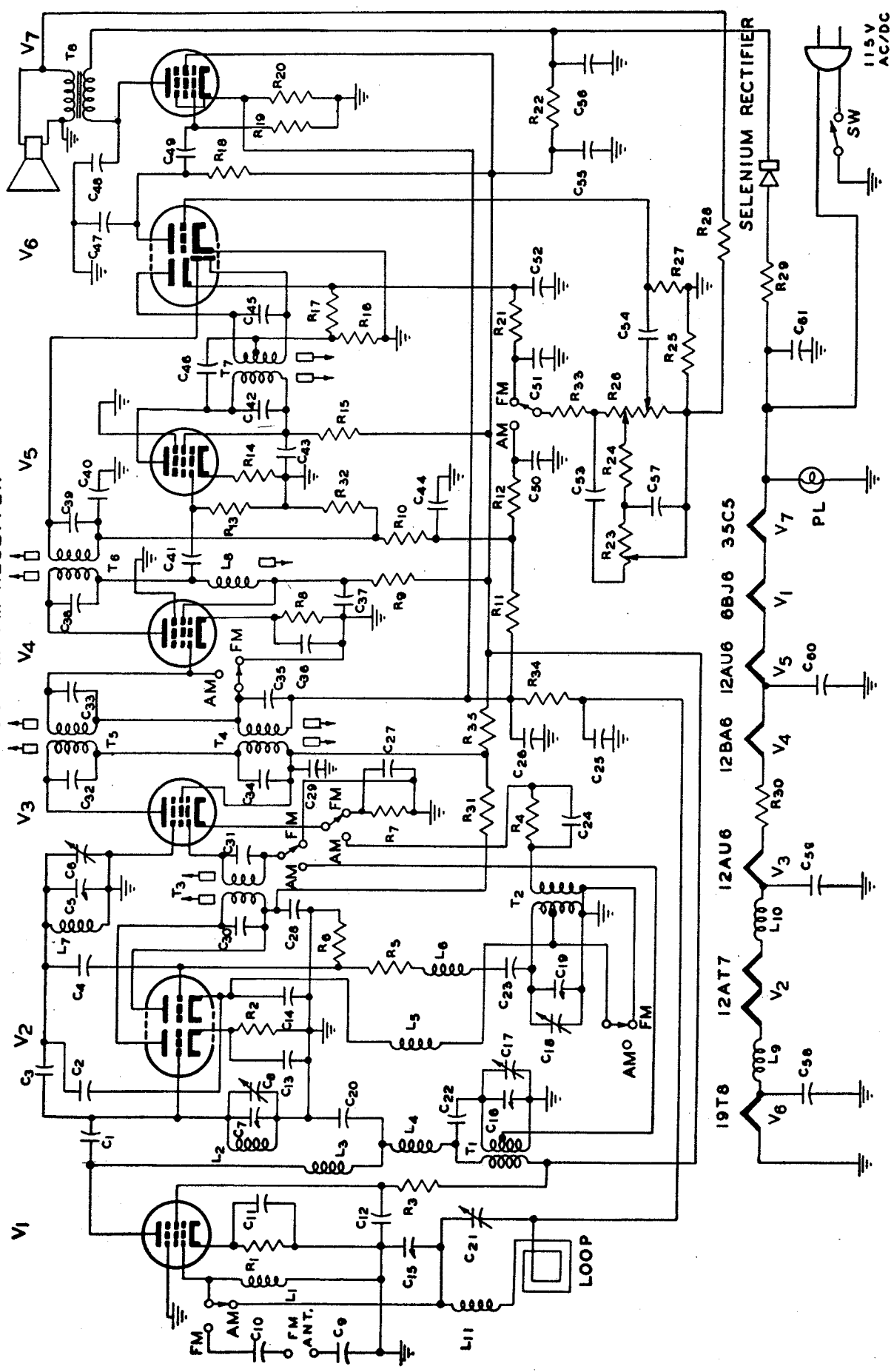
THREE-WAY BATTERY PORTABLE



- C1-C2** - TUNING CONDENSER & ASSOCIATED TRIMMERS
C3-C4 - .02 μ f 200V
C5 - 100 μ f
C6-C7-C8-C9 - FIXED IF CAPACITANCES
C10 - .004 μ f 200V
C11 - .002 μ f 200V
C12 - .002 μ f 200V
C13 - .005 μ f 200V
C14 - 40 μ f 150V
C15 - 200 μ f 20V
C16-C17 - .05 μ f 400V
C18 - 40 μ f 250V
C19 - 330 μ f
C20 - 220 μ f
- R1** - 100K
R2 - 6200 Ω
R3 - 500K
R4 - 500K
R5 - 10 MEG.
R6-R7-R8 - 3.3 MEG.
R9 - 1500 Ω
R10 - 660 Ω
R11 - 2300 Ω
R12 - 68 Ω 1WATT
R13 - 2200 Ω 1WATT
R14 - 470K
- T1** - T2 - 455 KC IF TRANSFORMERS
T3 - OSCILLATOR COIL
T4 - OUTPUT TRANSFORMER

ALL RESISTORS 1/2 WATT UNLESS OTHERWISE SPECIFIED.

TYPICAL AC/DC AM-FM RECEIVER



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PARTS LIST FOR AC/DC AM-FM RECEIVER

<p> C₁—10 μf C₂—22 μf C₃—1.5 μf C₄—20 μf C₅—FM Tuning Condenser and Trimmers C₆—470 μf C₇—6 μf C₈—0.0015 μf C₉—18 μf C₁₀—18 μf C₁₁—AM Tuning Condensers and Trimmers C₁₂—82 μf C₁₃—2-20 μf Trimmer C₁₄—0.1 μf C₁₅—0.05 μf C₁₆—40 μf C₁₇—17 μf C₁₈—107 μf C₁₉—73 μf C₂₀—106 μf C₂₁—131 μf </p>	<p> C₂₂—100 μf C₂₃—33 μf C₂₄—50 μf C₂₅—47 μf C₂₆—0.001 μf C₂₇—0.002 μf C₂₈—40 μf C₂₉—80 μf C₃₀—0.003 μf C₃₁—110 Volt Pilot Lamp C₃₂—R₁R₆R₇R₈R₂₅—100Ω C₃₃—1500Ω C₃₄—R₃R₃₁R₃₅—220Ω C₃₅—2.2K C₃₆—27K C₃₇—R₉R₂₈—470Ω C₃₈—R₁₀R₁₂R₃₃—47K C₃₉—2.2 Meg. C₄₀—R₁₃R₂₁R₂₄—100K C₄₁—180Ω C₄₂—22K C₄₃—R₁₆R₁₇—120K C₄₄—100 μf C₄₅—33 μf C₄₆—50 μf C₄₇—47 μf C₄₈—FM Tuning Condenser and Trimmers C₄₉—470 μf C₅₀—6 μf C₅₁—0.0015 μf C₅₂—18 μf C₅₃—18 μf C₅₄—82 μf C₅₅—2-20 μf Trimmer C₅₆—0.1 μf C₅₇—0.05 μf C₅₈—40 μf C₅₉—17 μf C₆₀—107 μf C₆₁—73 μf C₆₂—106 μf C₆₃—131 μf </p>
<p> R₁—100K R₂—150Ω R₃—1000Ω 2-Watt W.W. R₄—4 Meg. Tone Control R₅—2 Meg. Volume Control tapped at 1 meg. R₆—6.8 Meg. R₇—22Ω 1-Watt R₈—33Ω 2-Watt W.W. R₉—220K R₁₀—Broadcast RF Coil R₁₁—Broadcast Oscillator Coil R₁₂—10.7MC FM IF Transformer R₁₃—455KC IF Transformer R₁₄—10.7MC Discriminator Trans. R₁₅—Output Transformer R₁₆—FM Antenna Choke R₁₇—FM RF Coil R₁₈—RF Plate Choke R₁₉—L₆L₁₁—RF Choke 2.2 μh R₂₀—FM Oscillator Coil R₂₁—10.7MC 3rd FM IF Coil R₂₂—RF Choke </p>	<p> R₂₃—470K R₂₄—150Ω R₂₅—1000Ω 2-Watt W.W. R₂₆—4 Meg. Tone Control R₂₇—2 Meg. Volume Control tapped at 1 meg. R₂₈—6.8 Meg. R₂₉—22Ω 1-Watt R₃₀—33Ω 2-Watt W.W. R₃₁—220K R₃₂—Broadcast RF Coil R₃₃—Broadcast Oscillator Coil R₃₄—10.7MC FM IF Transformer R₃₅—455KC IF Transformer R₃₆—10.7MC Discriminator Trans. R₃₇—Output Transformer R₃₈—FM Antenna Choke R₃₉—FM RF Coil R₄₀—RF Plate Choke R₄₁—L₆L₁₁—RF Choke 2.2 μh R₄₂—FM Oscillator Coil R₄₃—10.7MC 3rd FM IF Coil R₄₄—RF Choke </p>

NOTES

