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essential characteristics



- RECEIVING TUBES
- TELEVISION PICTURE TUBES
- SPECIAL PURPOSE TUBES
- GERMANIUM DIODES

Progress Is Our Most Important Product

GENERAL  ELECTRIC

ESSENTIAL CHARACTERISTICS is especially prepared to provide the Service Technician with a single source of reference containing data on every tube likely to be found in any home receiver—AM, FM, or television—as well as on some other special-purpose and industrial tubes.

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 and a section listing the essential physical and electrical characteristics of television picture tubes. For reference purposes and for the convenience of the user this handbook also contains a section devoted to special-purpose tubes and germanium diodes.

A section entitled "Interpretation of Technical Data" is included to aid in the proper evaluation of the information presented in this handbook. Following this section are "Recommended Types" charts and tube selection charts arranged to provide a quick and convenient reference to the tubes that are available for specific classes of service in which the reader may be interested.

Requests for additional information will receive prompt attention if addressed to:

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

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Since the information presented in this handbook is industry-wide in scope, the inclusion of a tube in this publication does not necessarily imply its availability from the General Electric Co.

INTERPRETATION OF TECHNICAL DATA

GENERAL

1. All electrode voltages indicated as "Maximum Ratings" are measured with respect to a fixed reference point defined as follows:

- For cathode types, the reference point is the cathode terminal.
- For filamentary types operated on direct current, the reference point is the negative terminal of the filament.
- For filamentary types operated on alternating current, the reference point is the electrical center of the filament.

2. All other electrode voltages indicated are measured with respect to a fixed reference point defined as follows:

- For cathode types not rated with cathode bias, the reference point is the cathode terminal.
- For cathode types rated with cathode bias, the reference point is the negative terminal of the cathode-bias resistor.
- For filamentary types operated on direct current, the reference point is the negative terminal of the filament.
- For filamentary types operated on alternating current, the reference point is the electrical center of the filament.

3. Unless otherwise specified, all values of voltage and current are d-c and positive.

TUBE TYPE

1. Within each of the data sections of this handbook, data are presented by tube designation.

2. Within the receiving tube section, types having the same basic designation, but differing in suffix (e.g., 6BQ6-G and 6BQ6-GA) are grouped together when the types have equivalent electrical characteristics. All of the information presented applies to each type in the group with the possible exception of the information under the outline drawing, capacitance, or heater voltage and current columns. When this information differs, the values are horizontally aligned with the type designations to which they apply.

3. The use of the suffix GT/G on small glass receiving tubes has been eliminated, and this suffix does not appear in this handbook. Data on GT/G types may be obtained by referring to the data under the GT listing (e.g., characteristics of the 6JS-GT/G will be found under the 6JS-GT listing).

4. The following suffix letters are in common use in tube designations and have the indicated significance:

- G signifies a glass bulb and an octal base.
- GT signifies a T-9, straight-sided glass bulb and an octal base.
- W signifies a military type. This suffix is assigned only on behalf of the armed forces.
- 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. The assignment of a suffix in this series does not convey any information as to the nature of the modification incorporated.
- X signifies a base composed of special low-loss material.
- Y signifies a base composed of special intermediate-loss material.

CLASSIFICATION BY CONSTRUCTION

The column "Classification by Construction" presents a descriptive title for each tube. 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.

BASE CONNECTIONS

1. The basing diagrams are shown on the same page as the data of the type to which they refer and are shown as bottom views. These diagrams are schematic representations of the terminal connections and do not necessarily indicate internal tube construction.

2. 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. For 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.

3. 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.

4. In multisection tubes which contain two or more structurally similar sections, the 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.

OUTLINE DRAWINGS

This column presents information on the physical characteristics of each tube. When the physical characteristics of a tube conform to standard or commonly used configurations, an outline drawing number is shown which refers to tube drawings presented in the section "Outline Drawings." If the physical characteristics of a tube do not conform to any of the standard outline drawings, the designation "T-X" is shown. In this case, reference should be made to the T-X Table in the Outline Drawings Section which presents data relative to the physical characteristics of these special tubes.

FILAMENT VOLTAGE

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

CAPACITANCES

1. Unless otherwise noted, all capacitance values in this publication are average values and those for glass tubes are measured with an external close-fitting metal shield connected to the cathode terminal.

2. All capacitance values indicated herein are measured with the filament or heater cold and with no direct voltages applied.

3. In measuring the capacitances listed below, 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.

4. The capacitance values for twin-section tubes refer to each section unless otherwise specified.

TYPICAL OPERATING CONDITIONS

1. The column headed "Service," indicates the principal application of the type. The columns to the right of this show average tube characteristics and typical operating conditions for the 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.

2. The 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.

3. The values of the tube characteristics presented are the average values based on large groups of tubes. Any individual tube may vary from these over-all averages.

4. Unless otherwise noted, all ratings and characteristics 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.

5. For power output tubes, the value under the column "Power Outout, Watts" refers to the average tube power output (plate input power minus plate dissipation) for the indicated operating conditions. To determine the useful power output, subtract the circuit losses from the tube output. In Class A operation, the rated tube power output is measured with an AF sinusoidal input signal whose peak value is equal to the d-c grid-number one bias voltage applied to the tube.

6. A. The plate resistance (R_p) of an electronic tube is 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 is 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 handbook are grid 1-to-plate transconductances.

C. The amplification factor (μ) of an electronic tube is 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 is the ratio of a small change in the output intermediate-frequency current to the small change in input radio-frequency voltage producing it.

MAXIMUM RATINGS

Unless otherwise specified, the maximum tube ratings have been prepared in accordance with the RETMA 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 batteries, storage batteries, or power-line sources it may be necessary to use shunting resistors across the individual 1.4-volt sections of filament.

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 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 follow.

A. AC or DC 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 percent 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 percent.

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

percent 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 percent.

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. In this case, the combined effect of supply-voltage variation, manufacturing variation including components in the equipment, and adjustment of equipment controls should not cause the rated value to be exceeded.

CLASSIFICATION CHART

Receiving Types

Type designations of miniature tubes are shown in *italics*.
Type designations of metal tubes are shown in **boldface type**.

DIODES

Service	Max. Output Current in Ma.	Single		Twin		Triple
		Fil	Cath	Fil	Cath	Cath
TV High-Voltage Rectifiers	0.5	<i>1AX2</i> <i>1B3-GT</i> <i>1V2</i> <i>1X2-A</i>				
	1.0	<i>2V2</i>				
Low-Current Rectifiers	1.0 per plate					<i>6BJ7</i>
	8.0 to 10 per plate			<i>9AL6</i> <i>9AL6</i> <i>6H6</i>	<i>7A6</i> <i>12AL6</i> <i>12H6</i>	
	12 per plate					<i>8BC7</i>
	40 to 49		1-V			
Power Rectifiers	50 to 99	<i>12Z3</i> <i>11Z3</i>		<i>OZ4</i> <i>OZ4-G</i> <i>6X4</i> <i>6X5-GT</i>	<i>7Y4</i> <i>12X4</i> <i>84/8Z4</i>	
	100 to 149	<i>56W4</i> <i>35V4</i> <i>35Z3</i> <i>35Z5-GT</i>		<i>5A24</i> <i>5Y3-GT</i> <i>5Y4-G</i> <i>80</i> <i>82</i>	<i>6AX5-GT</i> <i>7Z4</i>	
	150 to 199			<i>5V4-G</i> <i>6BY5-G</i>		
	200 to 249			<i>5U4-G</i> <i>5X4-G</i> <i>5Z3</i> <i>83</i>		
	250 to 299			<i>5U4-GA</i>		
	300 to 349			<i>5AU4</i>		
	60 to 75 per plate			<i>25Z5</i> <i>25Z6-GT</i> <i>50X6</i>	<i>50Y6-GT</i> <i>50Y7-GT</i> <i>117Z6-GT</i>	
			<i>6AX4-GT</i> <i>6W4-GT</i> <i>12AX4-GTA</i> <i>25W4-GT</i>			
Power-Rectifier Doublers			<i>6V3-A</i>			
			<i>6AU4-GT</i>		<i>6BY5-G</i>	
TV Damping Diodes	125					
	135					
	175					

TRIODES

Amplification Factor	Single				Twin			
	Heater Current in Milliampères				Heater Current in Milliampères			
	600	300	150	Other	600	300	150	Other
2.0 to 9.0	<i>12B4-A</i>	<i>12B4-A</i>		<i>1G4-GT</i> <i>2A3</i> <i>6A3</i> <i>6AH4-GT</i> <i>6B4-G</i> <i>26</i> <i>27</i> <i>45</i>				<i>6AS7-G</i>
10 to 19	<i>6S4</i> <i>6S4-A</i>	<i>6P5-GT</i>	<i>6C4</i>	<i>11E3</i> <i>6AF4</i> <i>6AF4-A</i> <i>6T4</i>	<i>7AU7</i> <i>12BH7</i>	<i>7AF7</i> <i>7AU7</i> <i>12AU7</i> <i>12BH7</i>	<i>12AU7</i> <i>14AF7</i>	<i>6BL7-GT</i> <i>6BX7-GT</i>

TRIODES (Cont'd)

Amplifica- tion Factor	Single				Twin			
	Heater Current in Milliamperes				Heater Current in Milliamperes			
	600	300	150	Other	600	300	150	Other
20 to 29	12A4 6C5 6J5 6J5-GT 7A4 12A4	12J5			6F8-G 6SN7-GT 6SN7-GTA 6SN7-GTB 7N7	12SN7-GT 12SN7-GTA		
30 to 39					12B7-A 12Z7 5J6	6C8-G 19J6	6BQ7-A 6BZ7 6J6 6N7	
40 to 49			6AJ4		5BK7-A	7F8	14F8	6BK7-A 12AV7
60 to 69		6AB4				12AT7	12AT7	12AZ7
70 to 79					6SC7 6SL7-GT 7F7	12SC7 12SL7-GT 14F7		
80 to 89			6AM4					
100 to 125	6F5 6SF5 7B4	12F5-GT 12SF5	6AC5-GT		12BZ7	12AX7 12BZ7	12AX7	

TRIODES WITH DIODES

Amplification Factor		Heater Current in Milliamperes			
		600	300	150	Other
16	With 2 Diodes		6BF6 6R7 6SR7 7E6	12BB6 12SR7	
65	With 1 Diode				1H5-GT 1LH4
70	With 2 Diodes		6AQ7-GT 6AT6 6Q7 6Q7-GT 7K7	6AQ6 12AT6 12Q7-GT	
	With 3 Diodes	6T8		19T8	6T8
100	With 2 Diodes	6AV6	6AV6 6SQ7 7B6 7X7 75	7C6 12AV6 12SQ7 14B6	2A6
	With 3 Diodes		6S8-GT		

PENTODES WITH DIODES

Classification		Heater Current in Milliamperes			
		600	300	150	Other
Sharp-Cutoff Pen- todes	With 1 Diode		6SV7		1LD5 1S6 1U6 6AM8
Remote-Cutoff Pentodes	With 1 Diode		6SF7	12SF7	
	With 2 Diodes		6B8 7R7	12C8 14R7	
Pentode Power Amplifiers with Half- Wave Rectifier			32L7-GT	70L7-GT	117L7-GT 117N7-GT 117P7-GT

PENTODE VOLTAGE AMPLIFIERS

Trans- conductance in Micromhos	Sharp-Cutoff				Remote-Cutoff			
	Heater Current in Milliamperes				Heater Current in Milliamperes			
	600	300	150	Other	600	300	150	Other
500 to 900				1LC6 1LN5 1N5-GT 1U4				1P5-GT 1T4
1000 to 1900	6C6 6J7 6SJ7	7C7 12J7-GT 12S7 14C7	1L4 5T		6D6 6E7 6K7-G 6U7-G 39/44 76	6SS7 7B7 12K7-GT		58
2000 to 2900					6BD6 6SK7 7A7	12BD6 12SK7 14A7		
3000 to 3900						6BJ6		
4000 to 4900		6SH7	6BH6 7AG7 12SH7	7G7	8BA6	6BA6 6SG7 7H7	12BA6 12SG7 14H7	
5000 to 5900	6AU6 6BC6	6AG5 6AU6 6BC6	12AU6 12AW6	6AK5 7V7 7W7				
6000 to 6900	6CB6	6CB6 6CF6						
9000 to 12000	12BY7 12BY7-A	12BY7 12BY7-A		6AC7 6AH6				

PENTODE POWER AMPLIFIERS

Service	Power Output in Watts	Heater Current in Milliamperes			
		600	300	150	Other
Output Amplifiers	0.1 to 0.4				1A5-GT 1C5-GT 1LA4 1LB4 1Q5-GT 1S4
	1.0 to 1.9	12CA6	26CA6	6AK6 6G6-G 6B6 6C6 6D6 6E6	6BF6 6CA6 7A5 33
	2.0 to 2.9		38 43		6AS6 6CL6
	3.0 to 3.9	12BK6 12L6-GT 12W6-GT	26BK6 25L6-GT 25W6-GT	12A6 35A5 35L6-GT 35A5 50L6-GT	6AG7 6AR6 6BK6 6K6-GT 6W6-GT
	4.0 to 6.0	5A6 5V6-GT			2A5 6AQ6 6C46 6F6 6P6-G 6R6-GT
	10.0 to 11.0				6V6 6V6-GT 6Y6-G 7C5 12AQ6 12V6-GT
Horizontal-Deflection Amplifiers		12BQ6-GA 25CD6-GA	19BG6-G 25AV5-GT 25BQ6-GA 25BQ6-GT		6AU5-GT 6AV5-GT 6BC6-G 6BQ6-GA 6BQ6-GT 6CD6-G
High-Voltage Shunt Regulators				6RU5	

HEPTODES

Service	Conversion Transconductance in Micromhos	Heater Current in Milliamperes			
		600	300	150	Other
Converters	250 to 300				1A7-GT 1L6 1LA6 1LC6 1R6
	450 to 550	3BE6	6A7 6A8 6BE6 6SA7 7B8 7Q7	6D8-G 12AR-GT 12BE6 12SA7 14Q7	
	900 to 1000		6BA7	12BA7	
Dual-Control Amplifiers		3BY6 3CS6	6CS6 6L7-G		

MULTISECTION AND MISCELLANEOUS TYPES

Classification	Heater Current in Milliamperes			
	600	300	150	Other
Triode-Pentodes	6U8 6X8 6AU8	6F7		6AD7-G 6AN8 6U8 6X8
Diode-Triode-Pentodes				1D8-GT 3A8-GT
Triode-Hexodes		6K8	12K8	
Triode-Heptodes		717 7S7	14J7	
Twin Pentodes				28D7
Tetrodes				24-A 32 35/51
Octodes			7A8	
Electron-Ray Indicators		6E5 6U5	6AP6-G 6AL7-GT	
Gated-Beam Tubes	3BN6	6BN6	12BN6	
Sheet-Beam Tubes		6AR8		

RECOMMENDED TYPES

For Radio and Television Receivers

Classification			Heater Current in Milliamperes					
			600	300	150	50	Other	
DIODES	TV High-Voltage Rectifiers						1B3-GT	
	Low-Current Rectifiers		3AL6*	6AL6				
	Power Rectifiers	Half-Wave			36W4			
		Full-Wave	6X4 6X5-GT				5U4-GA	
	TV Damping Diodes		12AX4-GTA*				6AX4-GT 6W4-GT	
TRIODES	Single	$\mu < 40$	6AF4-A* 6S4-A* 12B4-A**	12B4-A*	6C4		6AF4-A 6AH4-GT*	
		$\mu > 40$			6AB4			
	Twin	$\mu < 40$	4BQ7-A* 4BZ7* 6SN7-GTB* 7AU7* 12BH7-A**	7AU7* 12AU7* 12BH7-A*	12AU7*		6J6	
		$\mu > 40$	6BK7-A*	12AT7 12AX7	12AT7 12AX7		6BK7-A	
		With Diodes	2 Diodes		6AV6	12AV6		
	3 Diodes		6T8*		19T8		6T8	
	PENTODES	Voltage Amplifiers	Sharp-Cutoff	6AU6* 3BC6* 6CB6*	6AU6 6BC6 6CB6		1U4	
			Remote-Cutoff		6BA6	12BA6	1T4	
With 1 Diode						1U6		
With Triode			6U8* 6AU8*				6U8	
Power Amplifiers		Output Amplifiers	12BY7-A* 12CA6* 12L6-GT* 12W6-GT*†	12BY7-A 25L6-GT	36C6 60C6	3S4 3V4	6AO5* 6V6-GT* 6W6-GT* 12V6-GT	
		Horizontal-Deflection Amplifiers	12AV5-GA* 12BQ6-GA* 25CD6-GB*†				6AV5-GA* 6BQ6-GA* 6CD6-GA*	
		HEPTODES		6CS6*	6BE6 6CS6	12BE6	1R6	
GATED-BEAM TUBES		6BN6*	6BN6					

Type designations of miniature tubes are shown in italics.

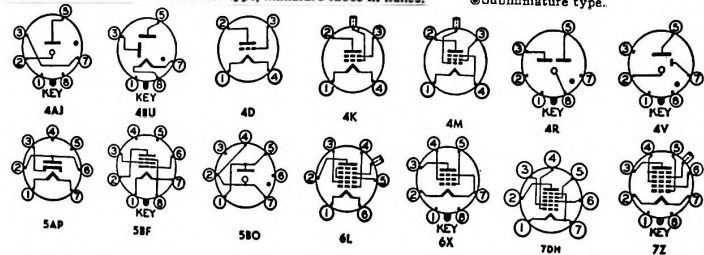
* Rated for TV sweep applications.

† Heater warm-up time controlled for series-string service.

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
00A	Triode Detector	4D	14-1	Fil	5.0 DC	0.25	45	—	3.2	2.0	8.5
01-A	Low-Mu Triode	4D	14-1	Fil	5.0 DC	0.25	135	—	3.1	2.2	8.1
0A8	Glow-Discharge Diode Voltage Regulator	5B0	5-3	Cold	—	—	Anode supply = 185 volts d-c min				
0A3/VR-75	Glow-Discharge Diode Voltage Regulator	4AJ	12-7	Cold	—	—	Anode supply = 105 volts d-c min				
0A4-G	Gas Triode	4V	12-7	Cold	—	—	—	—	—	—	—
0B8	Glow-Discharge Diode Voltage Regulator	5B0	5-3	Cold	—	—	Anode supply = 133 volts d-c min				
0B3/VR-90	Glow-Discharge Diode Voltage Regulator	4AJ	12-7	Cold	—	—	Anode supply = 125 volts d-c min				
0C3/VR-105 0C3-W	Glow-Discharge Diode Voltage Regulator	4AJ	12-7	Cold	—	—	Anode supply = 133 volts d-c min				
0D3/VR-150 0D3-W	Glow-Discharge Diode Voltage Regulator	4AJ	12-7	Cold	—	—	Anode supply = 185 volts d-c min				
0Y4 0Y4-G	Half-Wave Gas Rectifier	4BU	8-1 T-X	Cold	—	—	Pins 7 and 8 must be connected;				
0Z4 0Z4-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 RF Pentode	4M 4K	12-6	Fil	2.0 DC	0.08	180	67.5	5.0 ▲	11.0 ▲	0.007
1A5-GT	Power Amplifier Pentode	6X	9-11	Fil	1.4 DC	0.05	110	110	—	—	—
1A6	Pentagrid Converter	6L	12-6	Fil	2.0 DC	0.06	180	67.5	Osc $I_{g1} = 0.2$ ma $R_{g1} = 50,000$ ohms		
1A7-G 1A7-GT	Pentagrid Converter	7Z	9-28 9-18	Fil	1.4 DC	0.05	110	60	Osc $I_{g1} = 0.035$ ma $R_{g1} = 200,000$ ohms		
1AB5	Remote-Cutoff RF Pentode	5BF	9-32	Fil	1.2 DC	0.130	150	150	2.8	4.2	0.25
1AB6	Pentagrid Converter	7DH	T-X	Fil	1.4 DC	0.025	90	90	Osc $I_{g1} = 85 \mu$ a $R_{g1} = 27,000$ ohm		

Metal tubes are shown in bold-face type, miniature tubes in *italics*.

③ Subminiature type.



Service	Plate Volts	Screen Volts	Neg Grid Volts	Plate Milli-amperes	Screen Milli-amperes	R _p Ohms	G _m μmhos	# Factor	Load for Rated Out-put, Ohms	Power Out-put, Watts	Tube Type
Detector	45	—	0	1.5	—	30,000	666	20	—	—	00A
Class A Amplifier	135	—	9.0	3.0	—	10,000	800	8	—	—	01-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	180	67.5	3	2.3	0.8	1,000,000	750	—	—	—	1A4-p 1A4-t
Class A Amplifier	90 85	90 85	4.5 4.5	4.0† 3.5†	0.8† 0.7†	300,000 300,000	850 800	—	25,000 25,000	0.115 0.100	1A5-GT
Converter	180	67.5	3.0	1.3	2.4	500,000§	300 #	E _c (Osc Plate) = 180 thru 20,000 ohms I _{a2} = 2.3 ma			1A6
Converter	90	45	0	0.6	0.7	600,000§	250 #	E _c (Osc Plate) = 90 I _{a2} = 1.2 ma			1A7-G 1A7-GT
Class A Amplifier	150 90	150 90	1.5 R _g = 1.0 Meg	6.8 3.5	2.0 0.8	125,000§ 275,000§	1350 1100	—	—	—	1AB5
Converter	64	64	0	0.6	0.16	900,000§	275 #	E _c (Osc Plate) = 35 thru 18,000 ohms I _{a2} = 1.6 ma			1AB6

§ Approximate.

† Without external shield.

‡ Zero signal.

▲ Grids 3 and 5 are screen. Grid 4 is signal-

input grid.

Conversion transconductance.

* Maximum.

▼ Grids 2 and 4 are screen. Grid 3 is signal-

input grid.

* Screen supply voltage.

⑥ Absolute maximum rating.

‡ Plate-to-plate.

▲ Per section.

⑦ For both sections.

* Minimum.

‡ Heater warm-up time controlled for series-string service.

§ Plate supply voltage.

|| Input plate.

— The duration of the pulse voltage must not exceed 15 percent of one scanning cycle.

— Section 1.

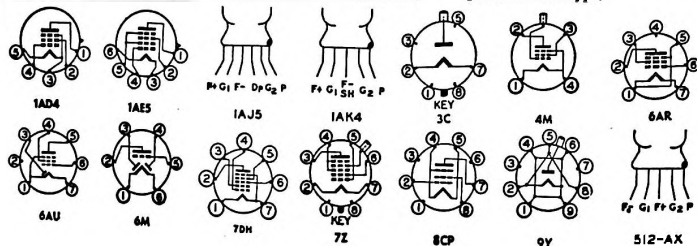
— Section 2.

— A resistor of 3 ohms must be put in series with heater.

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
1AC5 ●	Power Amplifier Pentode	8CP	3-5	Fil	1.25 DC	0.04	67.5	67.5	—	—	—
1AC8	Pentagrid Converter	7DH	5-2	Fil	1.4 DC	0.05	90	90	Osc $I_{g1} = 0.13$ ma $R_{g1} = 27,000$ ohms		
1AD4 ●	Sharp-Cutoff RF/AF Pentode	1AD4	2-1	Fil	1.25 DC	0.1	45	45	4.5	4.5	0.01 ♣
1AD5 ●	Sharp-Cutoff RF Pentode	8CP	3-5	Fil	1.25 DC	0.04	67.5	67.5	1.9	3.0	0.009 ♣
1AE4	Sharp-Cutoff RF Pentode	6AR	5-2	Fil	1.25 DC	0.1	90	90	3.6	4.4	0.008 ♣
1AE5 ●	Heptode Mixer	1AE5	T-X	Fil	1.25 DC	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 DC	0.025	110	90	3.8	7.6	0.009 ♣
1AF6	Diode, Sharp-Cutoff Pentode	6AU	5-2	Fil	1.4 DC	0.025	110	110	2.5	4.8	0.17
1AG4 ●	Power Amplifier Pentode	512AX	2-1	Fil	1.25 DC	0.4	90	90	—	—	—
1AH4 ●	RF Pentode	1AD4	2-1	Fil	1.25 DC	0.04	90	90	3.5 ▲	4.5 ▲	0.01 ♣ ▲
1AH6	Diode Sharp-Cutoff AF Pentode	6AU	T-X	Fil	1.4 DC	0.025	90	90	—	—	—
1AJ4	Remote-Cutoff RF Pentode	6AR	T-X	Fil	1.4 DC	0.025	90	90	3.3	7.8	0.01 ♣
1AJ5 ●	Diode Sharp-Cutoff Pentode	1AJ5	2-1	Fil	1.25 DC	0.4	90	90	1.7	2.4	0.10
1AK4 ●	Sharp-Cutoff RF Pentode	1AK4	2-1	Fil	1.25 DC	0.2	90	90	3.5 ▲	4.5 ▲	0.01 ♣ ▲
1AK5 ●	Diode Sharp-Cutoff Pentode	1AJ5	2-1	Fil	1.25 DC	0.2	90	90	2.0	2.7	0.10 ♣
1AX#	Half-Wave High-Voltage Rectifier	9Y	6-7	Fil	1.4	0.65	Tube Voltage Drop: $\frac{1}{2}$ 200 v at 7 ma d-c				
1B3-GT	Half-Wave High-Voltage Rectifier	3C	T-X	Fil	1.25	0.2	Tube Voltage Drop: $\frac{1}{2}$ 100 v at 7 ma d-c				
1B4-p	Sharp-Cutoff RF Pentode	4M	12-6	Fil	2.0 DC	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 DC	0.06	135	—	1.6 ▲	1.9 ▲	3.6 ▲
1B7-G 1B7-GT	Pentagrid Converter	7Z†	9-28 9-18	Fil	1.4 DC	0.1	110	65	Osc $I_{g1} = 0.035$ ma $R_{g1} = 200,000$ ohms		

Metal tubes are shown in bold-face type, miniature tubes in *italics*.

● Subminiature type.



Service	Plate Volts	Screen Volts	Neg Grid Volts	Plate Milli-amperes	Screen Milli-amperes	R_p , Ohms	G_m , μ mhos	μ Factor	Load for Rated Output, Ohms	Power Output, Watts	Tube Type
Class A Amplifier	67.5 45 30	67.5 45 30	4.5 3.0 2.0	2.0 1.0 0.5	0.4 0.2 0.1	150,000 170,000 200,000	750 600 450	—	25,000 40,000 50,000	0.050 0.015 0.005	1AC5 ●
Converter	63.5	63.5	0	0.7	0.15	900,000	300 #	—	E_{c1} (Osc Plate) = 30 thru 22,000 ohms $I_{c1} = 1.55$ ma		1AC8
Class A Amplifier	45	45	$R_{g1} = 2$ meg	3.0	0.8	500,000	2000	—	—	—	1AD4 ●
Class A Amplifier	67.5 30	67.5 30	0	1.85 0.45	0.75 0.16	700,000 700,000	735 430	—	—	—	1AD5 ●
Class A Amplifier	90	90	0	3.5	1.2	500,000	1550	—	—	—	1AE4
Mixer	45	45	0	0.9	2.0	200,000	200 #	—	—	—	1AE5 ●
Class A Amplifier	90 67.5	90 67.5	0	1.8 1.2	0.55 0.32	1,800,000 2,200,000	1050 925	—	—	—	1AF4
Class A Amplifier	90 67.5	90 67.5	0	1.1 0.7	0.25 0.2	2,000,000 2,300,000	600 550	—	—	—	1AF6
Class A Amplifier	41.4	41.4	3.6	2.4†	0.6†	180,000	1,000	—	12,000	0.035	1AG4 ●
Class A Amplifier	45	45	$R_{g1} = 5$ meg	0.75	0.2	1,500,000	750	—	—	—	1AH4 ●
Class A Amplifier	85	35‡	$R_{g1} = 10$ meg	0.05	0.015	Amplification = 62		1 meg	—	—	1AH6
Class A Amplifier	64	64	0	1.65	0.55	1,000,000	750	—	—	—	1AJ4
Class A Amplifier	45	45	$R_{g1} = 5$ meg	1.0	0.3	300,000	425	—	—	—	1AJ5 ●
Class A Amplifier	45	45	$R_{g1} = 5$ meg	0.75	0.2	1,500,000	750	—	—	—	1AK4 ●
Class A Amplifier	45	45	$R_{g1} = 5$ meg	0.5	0.2	400,000	280	—	—	—	1AK5 ●
TV Flyback Rectifiers	Max d-c output current = 0.5 ma; max inverse voltage (d-c component) = 20,000 volts; max peak current = 45 ma										1AX#
TV Flyback Rectifiers	Max d-c output current = 0.5 ma; max inverse voltage (d-c component) = 21,000 volts; max peak current = 50 ma Socket terminals 1, 3, 4, 5, 6, and 8 should not be used as tie points.										1B3-GT
Class A Amplifier	180 80	67.5 67.5	3.0 3.0	1.7 0.6	0.6 0.7	1,500,000 1,000,000	650 600	—	—	—	1B4-p
Class A Amplifier	135	—	3.0	0.8	—	35,000	575	20	—	—	1B5/25-S
Converter	90	45	0	1.5	1.3	350,000	350 #	—	E_{c1} (Osc Plate) = 90 $I_{c1} = 1.6$ ma		1B7-G 1B7-GT

‡ Approximate.

▲ Without external shield.

† Zero signal.

‡ Grids 3 and 5 are screen. Grid 4 is signal.

Conversion transconductance.

♣ Maximum.

♥ Grids 2 and 4 are screen. Grid 3 is signal.

†† Input plate.

‡ Screen supply voltage.

§ Absolute maximum rating.

‡ Plate-to-plate.

♣ Per section.

● For both sections.

* Minimum.

† Heater warm-up time controlled for series-string service.

‡ Plate supply voltage.

‡ Input plate.

‡ The duration of the pulse voltage must not exceed 15 percent of one scanning cycle.

‡ Section 1.

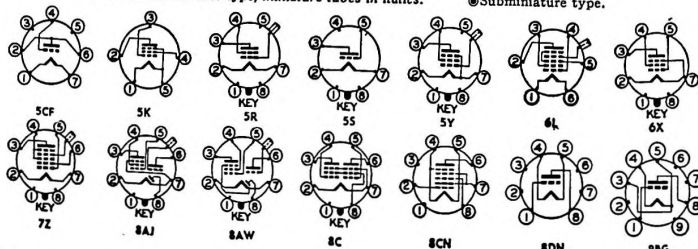
‡ Section 2.

‡ A resistor of 3 ohms must be put in series with heater.

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	Out-put	Grid-plate
1B8-GT	Diode-Triode Power Amplifier Pentode	8AW	9-17	Fil	1.4 DC	0.1	110	110	Pentode Section		
							110	—	Triode Section		
1C3	Medium-Mu Triode	5CF	5-2	Fil	1.4 DC	0.05	110	—	0.9	4.2	1.8
1C5-GT	Power Amplifier Pentode	6X	9-11	Fil	1.4 DC	0.1	110	110	—	—	—
1C8	Pentagrid Converter	6L	12-6	Fil	2.0 DC	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 DC	0.12	180	67.5	Osc $I_{g1} = 0.2$ ma $R_{g1} = 50,000$ ohms		
1C8	Pentagrid Converter	8CN	3-2	Fil	1.25 DC	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 DC	0.3	110	—	1.0	1.0	2.6
1D5-Gp	Remote-Cutoff RF Pentode	5Y	12-8	Fil	2.0 DC	0.06	180	67.5	5.0	11.0	0.007
1D5-Gt	Remote-Cutoff RF Tetrode	6R	12-8	Fil	2.0 DC	0.06	180	67.5	—	—	—
1D7-G	Pentagrid Converter	7Z	12-8	Fil	2.0 DC	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 DC	0.1	110	110	Pentode Section		
							110	—	Triode Section		
1E3	High-Frequency Medium-Mu Triode	9BG	6-2	Fil	1.25 DC	0.22	150	—	1.25	0.75	1.5
1E4-G	Medium-Mu Triode	5S	9-25	Fil	1.4 DC	0.05	110	—	2.4	6.0	2.4
1E5-Gp	Sharp-Cutoff RF Pentode	5Y	12-8	Fil	2.0 DC	0.06	180	67.5	5.0	11.0	0.007
1E7-G	Twin-Pentode Power Amplifier	8C	12-7 9-11 or 9-41	Fil	2.0 DC	0.24	135	135	Each Section		
1E7-GT									Both Sections in Push-pull		
1E8	Pentagrid Converter	8CN	3-5	Fil	1.25 DC	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 DC	0.12	180	180	—	—	—
1F5-G	Power Amplifier Pentode	6X	12-7	Fil	2.0 DC	0.12	180	180	—	—	—

Metal tubes are shown in bold-face type, miniature tubes in italics.

③ Subminiature type.



Service	Plate Volts	Screen Volts	Neg Grid Volts	Plate Milli-amperes	Screen Milli-amperes	R_p Ohms	G_m umhos	# Factor	Load for Rated Out-put, Ohms	Power Out-put, Watts	Tube Type
Class A Amplifier	90	90	6.0	6.3†	1.4†	—	1,150	—	14,000	0.210	1B8-GT
Class A Amplifier	90	—	0	0.15	—	240,000	275	—	—	—	
Class A Amplifier	90 90	—	3.0 0	1.4 4.5	—	19,000 11,200	760 1,300	14.5 14.5	—	—	1C3
Class A Amplifier	90 83	90 83	7.5† 7.0	1.6† 7.0†	1.6†	115,000 110,000	1,550 1,600	—	8,000 9,000	0.240 0.200	1C5-GT
Converter	180	67.5	3.0	1.5	2.0	700,000	325 #	E_{c1} (Osc Plate) = 180 thru 20,000 ohms $I_{c1} = 4.0$ ma		—	1C8
Converter	180	67.5	3.0	1.5	2.0	700,000	325 #	E_{c1} (Osc Plate) = 180 thru 20,000 ohms $I_{c1} = 4.0$ ma		—	1C7-G
Converter	67.5	67.5	0	1.0	1.5	400,000	150 #	$R_{g1} = 20,000$ ohms		—	1C8
Class A Amplifier	90	—	5.0	12.5	—	—	3,400	8.7	—	—	1D3
Class A Amplifier	180	67.5	3.0	2.3	0.8	1,000,000	750	—	—	—	1D5-Gp
Class A Amplifier	180	67.5	3.0	2.2	0.7	600,000	650	—	—	—	1D5-Gt
Converter	180	67.5	3.0	1.3	2.4	500,000	300 #	E_{c1} (Osc Plate) = 180 thru 20,000 ohms $I_{c1} = 2.3$ ma		—	1D7-G
Class A Amplifier	90	90	9.0	5.0	1.0	200,000	925	—	12,000	0.20	1D8-GT
Class A Amplifier	90	—	0	1.1	—	43,500	575	25	—	—	
Class A Amplifier	150	—	3.5	20	—	—	3500	14	—	—	1E3
Class A Amplifier	90 90	—	0 3.0	4.5 1.4	—	11,200 19,000	1,300 760	14.5 14.5	—	—	1E4-G
Class A Amplifier	180 90	67.5 67.5	3.0 3.0	1.7 1.6	0.6 0.7	1,500,000 1,000,000	650 600	—	—	—	1E5-Gp
Class A Amplifier	135 90	135 90	4.5 3.0	7.5† 3.8†	2.2† 2.1†	280,000 340,000	1,425 1,150	—	16,000 20,000	0.29 0.11	1E7-G 1E7-GT
Class A Amplifier	135	135	7.5	7.0†	2.0†	—	—	—	24,000	0.575	
Converter	67.5	67.5	0	1.0	1.5	400,000	150 #	$R_{g1} = 20,000$ ohms		—	1E8
Class A Amplifier	135 90	135 90	4.5 3.0	8† 4	2.4† 1.1	200,000 240,000	1,700 1,400	—	16,000	0.31	1F4
Class A Amplifier	135 90	135 90	4.5 3.0	8† 4	2.4† 1.1	200,000 240,000	1,700 1,400	—	16,000	0.31	1F5-G

‡ Approximate.

▲ Without external shield.

† Zero signal.

‡ Grids 3 and 5 are screen. Grid 4 is signal-

input grid.

Conversion transconductance.

* Maximum.

♥ Grids 2 and 4 are screen. Grid 3 is signal-

input grid.

* Screen supply voltage.

† Absolute maximum rating.

‡ Plate-to-plate.

♣ Per section.

③ For both sections.

* Minimum.

♥ Heater warm-up time controlled for

series-string service.

‡ Plate supply voltage.

|| Input plate.

— The duration of the pulse voltage must

not exceed 15 percent of one scanning

cycle.

1— Section 1.

2— Section 2.

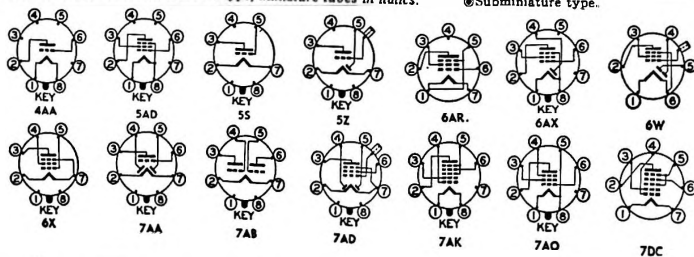
♣ A resistor of 3 ohms must be put in series

with heater.

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
1F6	Duplex-Diode Sharp-Cutoff Pentode	6W	12-8	Fil	2.0 DC	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 DC	0.06	180	67.5	3.8	9.5	0.01
1G4-GT	Medium-Mu Triode	5S	9-11	Fil	1.4 DC	0.05	110	—	2.2▲	3.4▲	2.8▲
1G5-G	Power Amplifier Pentode	6X	12-7	Fil	2.0 DC	0.12	135	135	—	—	—
1G6-GT	Twin-Triode Power Amplifier	7AB	9-11 or 9-41	Fil	1.4 DC	0.1	110	—	—	—	—
1H4-G 1H4-GT	Medium-Mu Triode	5S	12-7 or 9-41	Fil	2.0 DC	0.06	180	—	Single Tube 2 Tubes Push-pull		
1H5-G 1H5-GT	Diode High-Mu Triode	5Z	9-28 or 9-16	Fil	1.4 DC	0.05	110	—	0.75	4.6	1.1
1H6-G 1H6-GT	Duplex-Diode Medium-Mu Triode	7AA	12-7 or 9-41	Fil	2.0 DC	0.06	135	—	—	—	—
1J5-G	Power Amplifier Pentode	6X	14-3	Fil	2.0 DC	0.12	135	135	—	—	—
1J6-G 1J6-GT	Twin-Triode Power Amplifier	7AB	12-7 or 9-16	Fil	2.0 DC	0.24	135	—	Both Sections in push-pull		
1L4	Sharp-Cutoff RF Pentode	6AR	5-2	Fil	1.4 DC	0.05	110	90	3.6▲	7.5▲	0.008▲
1L6	Pentagrid Converter	7DC	5-2	Fil	1.4 DC	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 DC	0.05	110	110	—	—	—
1LA6	Pentagrid Converter	7AK	9-30	Fil	1.4 DC	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 DC	0.05	110	110	—	—	—
1LB6	Pentagrid Mixer	8AX	9-30	Fil	1.4 DC	0.05	90	67.5	E_{g2} (Injection) = 10 v peak*		
1LC5	Sharp-Cutoff RF Pentode	7AO	9-30	Fil	1.4 DC	0.05	110	45	3.2	7.0	0.007
1LC6	Pentagrid Converter	7AK	9-30	Fil	1.4 DC	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 DC	0.05	90	45	3.2	6.0	0.18
1LE3	Medium-Mu Triode	4AA	9-30	Fil	1.4 DC	0.05	110	—	1.7	3.0	1.7

Metal tubes are shown in bold-face type, miniature tubes in italics.

③ Subminiature type.



Service	Plate Volts	Screen Volts	Neg Grid Volts	Plate Milli-amperes	Screen Milli-amperes	R_p , Ohms	G_m , umhos	# Factor	Load Rated Out-put, Ohms	Power Out-put, Watts	Tube Type
Class A Amplifier	180	67.5	1.5	2.2	0.7	1,000,000	650	—	—	—	1F6
Class A Amplifier	180	67.5	1.5	2.2	0.7	1,000,000	650	—	—	—	1F7-GH 1F7-GV
Class A Amplifier	90	—	6	2.3	—	10,700	825	8.8	—	—	1G4-GT
Class A Amplifier	135	135	13.5	8.7†	2.5†	160,000	1,550	—	9,000	0.55	1G5-G
Class A Amplifier	90	90	6.0	8.5†	2.5†	133,000	1,500	—	8,500	0.25	1G5-G
Class A Amplifier	90	—	0	1.0	—	40,000	825	33	—	—	1G6-GT
Class B Amplifier	90	—	0	2.0†	—	—	—	—	12,000	0.675	1G6-GT
Class A Amplifier	180	90	—	13.5	3.1	10,300	900	9.3	—	—	1H4-G
Class B Amplifier	157.5	—	15.0	4.5	1.0†	11,000	850	9.3	—	—	1H4-GT
Class A Amplifier	90	—	0	0.15	—	240,000	275	65	—	—	1H5-G
Class A Amplifier	135	—	3.0	0.8	—	35,000	575	20	—	—	1H5-GT
Class A Amplifier	135	135	16.5	7.0	2.0	105,300	950	—	135,000	0.45	1H6-G
Class B Amplifier	135	—	0	5.0†	—	—	—	—	10,000	2.1	1H6-GT
Class A Amplifier	90	90	0	4.5	2.0	350,000	1,025	—	—	—	1J5-G
Converter	90	45	0	0.5	0.6	650,000	300 #	—	—	—	1J6-G
Class A Amplifier	90	90	4.5	4.0†	0.8†	300,000	850	—	—	—	1J6-GT
Class A Amplifier	85	85	4.5	3.5†	0.7†	300,000	800	—	—	—	1J6-GT
Converter	90	45	0	0.55	0.6	750,000	250 #	—	—	—	1L4
Class A Amplifier	90	90	9.0	5.0†	1.0†	250,000	925	—	12,000	0.20	1L6
Mixer	90	67.5	0	0.4	2.2	2,000,000	100 #	—	—	—	1LA4
Class A Amplifier	90	45	0	1.15	0.30	1,000,000*	775	—	—	—	1LA6
Converter	90	35	0	0.75	0.7	650,000	275 #	—	—	—	1LB4
Class A Amplifier	90	45	0	0.6	0.1	750,000	575	—	—	—	1LB6
Class A Amplifier	90	—	0	3.0	—	11,200	1,300	14.5	—	—	1LC5
Class A Amplifier	90	—	0	1.4	—	19,000	760	14.5	—	—	1LC6

* Approximate.

▲ Without external shield.

† Zero signal.

‡ Grids 3 and 5 are screen. Grid 4 is signal-input grid.

§ Conversion transconductance.

Maximum.

▼ Grids 2 and 4 are screen. Grid 3 is signal-input grid.

◆ Screen supply voltage.

† Absolute maximum rating.

‡ Plate-to-plate.

◆ Per section.

⑥ For both sections.

⑦ Minimum.

⑧ Heater warm-up time controlled for series-string service.

⑨ Plate supply voltage.

⑩ Input plate.

⑪ The duration of the pulse voltage must not exceed 15 percent of one scanning cycle.

⑫ Section 1.

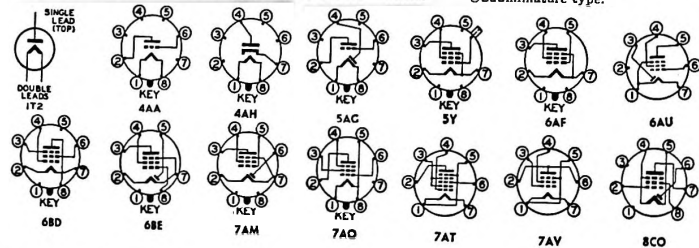
⑬ Section 2.

⑭ A resistor of 3 ohms must be put in series with heater.

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
1LF3	Medium-Mu Triode	4AA	9-30	Fil	1.4 DC	0.05	110	—	1.7	3.0	1.7
1LG5	Semi-Remote Cutoff RF Pentode	7AO	9-30	Fil	1.4 DC	0.05	110	110	3.2	7.0	0.007
1LH4	Diode High-Mu Triode	5AG	9-30	Fil	1.4 DC	0.05	110	—	2.0	2.4	1.2
1LN5	Sharp-Cutoff RF Pentode	7AO	9-30	Fil	1.4 DC	0.05	110	110	3.0	8.0	0.007
1M3	Electron-Ray Indicator	8DN	3-2	Fil	1.4	0.025	300	—	Max plate voltage = 90 v Min plate voltage = 45 v		
1N5-G 1N5-GT	Sharp-Cutoff RF Pentode	5Y	9-28 9-18	Fil	1.4 DC	0.05	110	110	3.0 2.8	10.0 9.0	0.007 0.007
1N6-G 1N6-GT	Diode Power-Amplifier Pentode	7AM	T-X 9-11	Fil	1.4 DC	0.05	110	110	—	—	—
1P5-G 1P5-GT	Remote-Cutoff RF Pentode	5Y	9-28 9-18	Fil	1.4 DC	0.05	110	110	3.0	10.0	0.007
1Q5-GT	Beam Power Amplifier	6AF	9-11 9-41	Fil	1.4 DC	0.1	110	110	—	—	—
1Q8	Diode Pentode	8CO	3-2	Fil	1.25 DC	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				
1R6	Pentagrid Converter	7AT	5-2	Fil	1.4 DC	0.05	90	67.5	$O_{ac} I_{e1} = 0.25$ ma $R_{e1} = 100,000$ ohms $O_{ac} I_{e1} = 0.15$ ma $R_{e1} = 100,000$ ohms		
1S4	Power Amplifier Pentode	7AV	5-2	Fil	1.4 DC	0.1	90	67.5	—	—	—
1S6	Diode Sharp-Cutoff Pentode	6AU	5-2	Fil	1.4 DC	0.05	90	90	—	—	—
1S6	Diode-Pentode	8DA	3-2	Fil	1.25 DC	0.04	100	100	—	—	—
1SA6-GT	RF Pentode	6BD	9-12	Fil	1.4 DC	0.05	90	67.5	5.2	8.6	0.01
1SB8-GT	Diode Pentode	6BE	9-11	Fil	1.4 DC	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				

Metal tubes are shown in bold-face type, miniature tubes in italics.

Subminiature type.



Service	Plate Volts	Screen Volts	Neg Grid Volts	Plate Multi-ampers	Screen Multi-ampers	R _p Ohms	G _m μmhos	μ Fac-tor	Load for Rated Out-put, Ohms	Power Out-put, Watts	Tube Type
Class A Amplifier	90 90	— —	0 3.0	4.5 1.4	— —	11,200 19,000	1,300 760	14.5 14.5	— —	— —	1LF3
Class A Amplifier	90 90	45 0	0 1.5	1.7 3.7	0.4 0.9	1,000,000* 500,000	800 1,500	— —	— —	— —	1LG5
Class A Amplifier	90	—	0	0.15	—	240,000	275	65	—	—	1LH4
Class A Amplifier	90	90	0	1.6	0.35	1,100,000	800	—	—	—	1LN5
Tuning Indicator	Plate voltage = 250 v thru 1.8 meg. (E _g = -34 v, illuminated length = 0") (E _g = 0 v, I _k = 105 μa, illuminated length = 3/8")									—	1M3
Class A Amplifier	90	90	0	1.2	0.3	1,500,000	750	—	—	—	1N5-G 1N5-GT
Class A Amplifier	90	90	4.5	3.4†	0.7†	300,000	800	—	25,000	0.100	1N6-G 1N6-GT
Class A Amplifier	90	90	0	2.3	0.7	800,000	750	—	—	—	1P5-G 1P5-GT
Class A Amplifier	90 85	90 85	4.5 5.0	9.5† 7.0†	1.3† 0.8†	90,000 70,000	2,200 1,650	— —	8,000 9,000	0.27 0.25	1Q5-GT
Class A Amplifier	67.5 30	67.5 30	0 0	1.6 0.33	0.40 0.09	400,000 500,000	600 330	— —	— —	— —	1Q8
Half-Wave Rectifier	Max d-c output current = 1.0 ma; max rms supply voltage = 117 volts										1R4
Converter	90	67.5	0	1.5	3.5	400,000	280 #	—	—	—	1R6
Converter	45	45	0	0.7	2.1	500,000	210 #	—	—	—	—
Class A Amplifier	90 67.5 45	67.5 67.5 45.0	7.0 7.0 4.5	7.4† 7.2† 3.8†	1.4† 1.5† 0.8†	100,000 100,000 100,000	1,575 1,550 1,250	— — —	8,000 5,000 8,000	0.270 0.180 0.065	1S4
Class A Amplifier	67.5	67.5	0	1.6	0.4	600,000	625	—	—	—	1S6
Class A Amplifier	67.5 30	67.5 30	0 0	1.6 0.33	0.4 0.10	400,000 500,000	600 330	— —	— —	— —	1S6
Class A Amplifier	90	67.5	0	2.45	0.68	800,000	970	—	—	—	1SA6-GT
Class A Amplifier	90	67.5	0	1.45	0.38	700,000	665	—	—	—	1SB6-GT
TV Flyback Rectifier	Max d-c output current = 2 ma; max peak inverse voltage = 15,000 volts; max peak current = 12 ma										1T2

§ Approximate.

▲ Without external shield.

† Zero signal.

‡ Grids 3 and 5 are screen. Grid 4 is signal.

§ Conversion transconductance.

▲ Maximum.

♥ Grids 2 and 4 are screen. Grid 3 is signal.

§ Screen supply voltage.

‡ Absolute maximum rating.

‡ Plate-to-plate.

▲ Per section.

§ For both sections.

▲ Minimum.

♥ Heater warm-up time controlled for series-string service.

‡ Plate supply voltage.

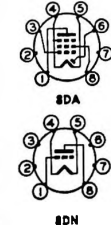
‡ Input plate.

‡ The duration of the pulse voltage must not exceed 15 percent of one scanning cycle.

‡ Section 1.

‡ Section 2.

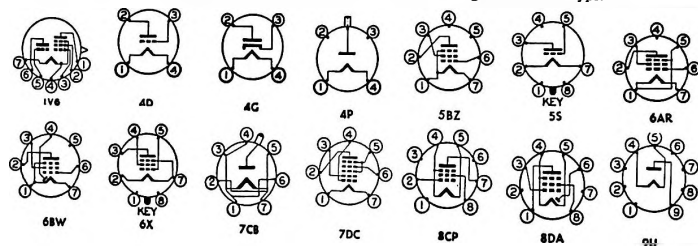
‡ A resistor of 3 ohms must be put in series with heater.



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
1T4	Remote-Cutoff RF Pentode	6AR	5-2	Fil	1.4 DC	0.05	90	90	3.6	7.5	0.01 $\clubsuit$
1T5-GT	Beam Power Amplifier	6X	9-11	Fil	1.4 DC	0.05	110	110	4.8	8.0	0.5
1T6 $\odot$	Diode-Pentode	8DA	3-5	Fil	1.25 DC	0.04	67.5	67.5	—	—	—
1U4	Sharp-Cutoff RF Pentode	6AR	5-2	Fil	1.4 DC	0.05	110	110	3.6	7.5	0.01 $\clubsuit$
1U5	Diode Sharp-Cutoff Pentode	6BW	5-2	Fil	1.4 DC	0.05	90	90	—	—	—
1U6	Pentagrid Converter	7DC4	5-2	Fil	1.4 DC	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: 135 v at 7 ma d-c				
1V5 $\odot$	Power Amplifier Pentode	8CP	3-2	Fil	1.25 DC	0.04	100	100	—	—	—
1V6 $\odot$	Triode-Pentode Converter	1V6	2-3	Fil	1.25 DC	0.04	90	90	Osc I_{g1} = 12 μ a R_{g1} = 1 meg		
1W4	Power Amplifier Pentode	5BZ	5-2	Fil	1.4 DC	0.05	110	110	3.6	7.0	0.1
1W5 $\odot$	Sharp Cutoff RF Pentode	8CP	3-2	Fil	1.25 DC	0.04	100	100	2.3	3.0	0.009 $\clubsuit$
1X2	Half-Wave, High-Voltage Rectifier	9Y	6-7	Fil	1.25	0.2	Tube Voltage Drop: 100 v at 7 ma d-c				
1X2-A	Half-Wave High-Voltage Rectifier	9Y	6-7	Fil	1.25	0.2	Tube Voltage Drop: 100 v at 7 ma d-c				
1X2-B	Half-Wave High-Voltage Rectifier	9Y	6-7	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 Δ	5.5 Δ	16.5 Δ
									2 tubes, push-pull		
2A4-G	Gas Triode	5S	12-7	Fil	2.5	2.5	Anode Voltage Drop = 15 volts				

Metal tubes are shown in bold-face type, miniature tubes in italics.

③ Subminiature type.



Service	Plate Volts	Screen Volts	Neg Grid Volts	Plate Milli-amperes	Screen Milli-amperes	R _p , Ohms	G _m , μmhos	μ Factor	Load for Rated Out-put, Ohms	Power Out-put, Watts	Tube Type	
Class A Amplifier	80 90 67.5 45	67.5 45 67.5 0	0 0 0 0	3.5 1.8 3.4 1.7	1.4 0.67 1.5 0.7	800,000 800,000 250,000 350,000	900 750 875 700	— — — —	— — — —	— — — —	1T4	
Class A Amplifier	90	90	6.0	6.5†	0.85†	250,000	1,150	—	14,000	0.170	1T5-GT	
Class A Amplifier	67.5 30	67.5 30	0 0	1.6 0.33	0.4 0.10	400,000 500,000	600 330	— —	— —	— —	1T6 ●	
Class A Amplifier	90	90	0	1.6	0.5	1,000,000	900	—	—	—	1U4	
Class A Amplifier	67.5	67.5	0	1.6	0.4	600,000	625	—	—	—	1U5	
Converter	90	45	0	0.6	0.6	500,000	300 #	E _{c1} (Osc Plate) = 90 I _{c1} = 1.1 ma			1U6	
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	
TV Flyback Rectifier	Max d-c output current = 0.5 ma; max inverse voltage (d-c component) = 6,600 volts; max peak current = 10 ma										1V2	
Class A Amplifier	67.5 45 30	67.5 45 30	4.5 3.0 2.0	2.0 1.0 0.5	0.2 0.2 0.1	150,000 175,000 200,000	750 600 450	— — —	25,000 40,000 50,000	0.050 0.015 0.005	1V5 ●	
Converter	45	45	R _g = 5 meg		0.4	0.15	1,000,000	200 #	E _b (Triode Osc) = 45 I _b (Triode) = 0.4 ma			1V6 ●
Class A Amplifier	90 67.5 45	90 67.5 45	9.0 6.0 4.5	5.0† 3.8† 1.6†	1.0† 0.8† 0.3†	250,000 300,000 400,000	925 875 650	— — —	12,000 16,000 20,000	0.20 0.10 0.035	1W4	
Class A Amplifier	67.5 30.0	67.5 30.0	0 0	1.85 0.45	0.75 0.16	700,000 700,000	735 430	— —	— —	— —	1W5 ●	
TV Flyback Rectifier	Max d-c output current = 1.0 ma; max peak inverse voltage = 15,000 volts; max peak current = 10 ma										1X2	
TV Flyback Rectifier	Max d-c output current = 0.5 ma; max inverse voltage (d-c component) = 16,000 volts; max peak current = 45 ma										1X2-A	
TV Flyback Rectifier	Max d-c output current = 0.5 ma; max inverse voltage (d-c component) = 18,000 volts; max peak current = 45 ma										1X2-B	
Half-Wave Rectifier	Max d-c output current = 2 ma; max peak inverse voltage = 50,000 volts; max peak current = 10 ma										1Y2	
Half-Wave Rectifier	Max d-c output current = 2.0 ma; max peak inverse voltage = 20,000 volts; max peak current = 10 ma										1Z2	
Class A Amplifier	250	—	45	60†	—	800	5,250	4.2	2,500	3.5	2A3	
Class A Amplifier	300	—	62	80†	—	—	—	—	3,000†	15		
Relay Control	Max d-c anode current = 100 ma; max peak inverse voltage = 200 volts; max peak anode current = 1.25 amperes										2A4-G	



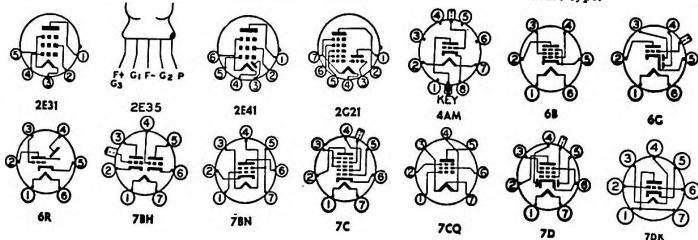
- § Approximate.
 Δ Without external shield.
 † Zero signal.
 ‡ Grids 3 and 5 are screen. Grid 4 is signal-input grid.
 # Conversion transconductance.
 * Maximum.
 * Grids 2 and 4 are screen. Grid 3 is signal-input grid.
 * Screen supply voltage.
 * Absolute maximum rating.
 † Plate-to-plate.
 ‡ Per section.

- ③ For both sections.
 * Minimum.
 ‡ Heater warm-up time controlled for series string service.
 ‡ Plate supply voltage.
 ‡ Input plate.
 * The duration of the pulse voltage must not exceed 15 percent of one scanning cycle.
 ‡ Section 1.
 ‡ Section 2.
 ‡ A resistor of 3 ohms must be put in series with heater.

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
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 $I_{b1} = 0.4$ ma $R_{g1} = 50,000$ ohms		
2AF4	UHF Triode Oscillator	7DK	5-2	Htr	2.35	0.6	150	—	2.2	0.45	1.8
2B7	Duplex-Diode Semi-Remote-Cutoff Pentode	7D	12-6	Htr	2.5	0.8	300	125	3.5	9.5	0.007
2C21/1642	Medium-Mu Twin Triode	7BH	12-6	Htr	6.3	0.6	250	—	—	—	—
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
2D81	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			
2E50	Beam Power Amplifier	7CQ	5-3	Fil	(6.0 3.0)	(0.65 1.30)	250	—	9.6	14	0.18
2E31	Sharp-Cutoff RF Pentode	2E31	T-X	Fil	1.25 DC	0.05	45	45	4.2	4.0	0.018
2E32	Sharp-Cutoff RF Pentode	2E31	T-X	Fil	1.25 DC	0.05	45	45	4.2	4.0	0.018
2E35	Power Amplifier Pentode	2E35	T-X	Fil	1.25 DC	0.03	45	45	2.7	5.7	0.2
2E36	Power Amplifier Pentode	2E35	T-X	Fil	1.25 DC	0.03	45	45	2.7	5.7	0.2
2E41	Diode Pentode	2E41	T-X	Fil	1.25 DC	0.03	45	45	2.7	4.3	0.10
2E42	Diode Pentode	2E41	T-X	Fil	1.25 DC	0.03	45	45	2.7	4.3	0.10
2G21	Triode-Heptode Converter	2G21	T-X	Fil	1.25 DC	0.05	45	45	Osc $I_{b1} = 0.030$ ma $R_{g1} = 50,000$ ohms		
2G22	Triode-Heptode Converter	2G21	T-X	Fil	1.25 DC	0.05	45	45	Osc $I_{b1} = 0.030$ ma $R_{g1} = 50,000$ ohms		

Metal tubes are shown in bold-face type, miniature tubes in italics.

③ Subminiature type.



Service	Plate Volts	Screen Volts	Neg Grid Volts	Plate Mu-amp-ers	Screen Mu-amp-ers	R_p , Ohms	G_m , μ mhos	μ Factor	Load for Rated Output, Ohms	Power Output, Watts	Tube Type
Class A Amplifier	285	285	20.0	38†	7.0†	78,000‡	2,500	—	7,000	4.8	2A5
Class A Amplifier	250	—	20.0	31	—	2,600	2,600	6.8	4,000	0.85	
Class A Amplifier	250	—	2.0	0.9	—	91,000	1,100	100	—	—	2A6
Converter	250	100	3.0	3.5	2.7	360,000‡	550 #	E_{b1} (Osc Plate) = 250 thru 20,000 ohms $I_{b1} = 4.0$ ma		—	2A7
Class A Amplifier	80	—	$R_k = 150$	16	—	2,270‡	6,600	15	—	—	2AF4
Class A Amplifier	250	125	3.0	9.0	2.3	600,000‡	1,125	—	—	—	2B7
Class A Amplifier	250	100	3.0	6.0	1.5	800,000	1,000	—	—	—	
Class A Amplifier	250	—	16.5	8.3	—	7,600	1,375	10.4	—	—	2C21/1642
Class A Amplifier	300	—	10.5	11	—	6,600	3,000	20	—	—	2C22
Class A Amplifier	150	—	$R_k = 240$	8.2	—	6,500	5,500	35	—	—	2C51
Class A Amplifier	250	—	2.0	1.3	—	—	1,900	100	—	—	2C52
Controlled Rectifier	Max d-c cathode current $I_{b1} = 100$ ma; max peak inverse voltage $E_{b1} = 1,300$ volts; max peak cathode current $I_{b1} = 500$ ma										2D81
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 $I_{b1} = 4$ ma)										2E5
Class A Amplifier	250	250	20	40†	3.3†	63,000	3,700	—	4,500	4.5	2E50
Class A Amplifier	22.5	22.5	$R_k = 5$ meg	0.4	0.3	350,000	500	—	—	—	2E31
Class A Amplifier	22.5	22.5	$R_k = 5$ meg	0.4	0.3	350,000	500	—	—	—	2E32
Class A Amplifier	45	45	1.25	0.45	0.11	250,000	500	—	100,000	0.006	2E35
Class A Amplifier	45	45	1.25	0.45	0.11	250,000	500	—	100,000	0.006	2E36
Class A Amplifier	22.5	22.5	$R_k = 5$ meg	0.35	0.12	250,000	375	—	—	—	2E41
Class A Amplifier	22.5	22.5	$R_k = 5$ meg	0.35	0.12	250,000	375	—	—	—	2E42
Converter	22.5	22.5	0	0.2	0.3	500,000‡	60 #	E_{b1} (Triode Osc) = 22.5 I_{b1} (Triode) = 1.0 ma		—	2G21
Converter	22.5	22.5	0	0.2	0.3	500,000‡	60 #	E_{b1} (Triode Osc) = 22.5 I_{b1} (Triode) = 1.0 ma		—	2G22

‡ Approximate.

▲ Without external shield.

† Zero signal.

‡ Grids 3 and 5 are screen. Grid 4 is signal-

input grid.

Conversion transconductance.

* Maximum.

† Grids 2 and 4 are screen. Grid 3 is signal-

input grid.

* Screen supply voltage.

‡ Absolute maximum rating.

† Plate-to-plate.

* Per section.

③ For both sections.

* Minimum.

† Heater warm-up time controlled for

series-string service.

‡ Plate supply voltage.

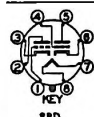
Input plate.

† The duration of the pulse voltage must not exceed 15 percent of one scanning cycle.

1—Section 1.

2—Section 2.

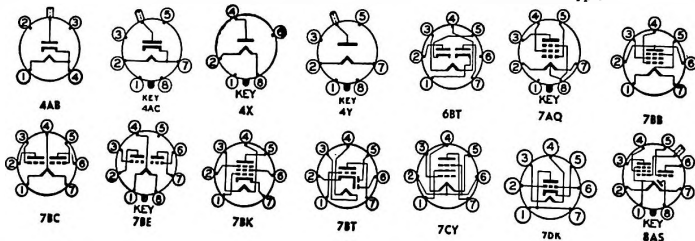
† A resistor of 3 ohms must be put in series with heater.



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
8T4	UHF Triode Oscillator	7DK	5-1	Htr	2.35%	0.6%	200	—	2.6▲	0.4▲	1.7▲
2V2	Half-Wave High-Voltage Rectifier	8FV	T-X	Fil	2.5 1.25	0.21 0.4	Tube Voltage Drop: 150 v at 7.0 ma d-c				
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	—	—	—	—	—
3A2	Half-Wave High-Voltage Rectifier	9DT	6-7	Htr	3.15	0.22	—	—	—	—	—
3A3	Half-Wave High-Voltage Rectifier	4AC	T-X	Htr	3.15	0.22	—	—	—	—	—
3A4	Power Amplifier Pentode	7BB	5-2	Fil	2.8 1.4 DC	0.1 0.2	150	90	4.8	4.2	0.20 ♣
3A6	High-Frequency Twin Triode	7BC	5-2	Fil	2.8 1.4 DC	0.11 0.22	135	—	0.9	1.0	3.2
3AB-GT	Diode-Triode Sharp-Cutoff RF Pentode	8AS	9-17	Fil	2.8 1.4 DC	0.05 0.1	110 110	— 110	Triode Section Pentode Section		
3AL6	Twin Diode	8BT	5-1	Htr	3.15%	0.6%	Tube Voltage Drop: ♣ 10 v at 60 ma d-c				
3AU6	Sharp-Cutoff RF Pentode	7BK	5-2	Htr	3.15%	0.6%	300 250	150 —	Pentode Connection Triode Connection (G2, G3, & P tied)		
3AV6	Duplex-Diode High-Mu Triode	7BT	5-2	Htr	3.15%	0.6%	300	—	2.2	1.2	2.0
3B4	Beam Power Amplifier	7CY	5-2	Fil	1.25 2.50 DC	0.33 0.165	150 —	135 —	4.6▲	7.6▲	0.16▲ ♣
3B5-GT	Beam Power Amplifier	7AQ	9-12	Fil	1.4 2.8 DC	0.1 0.05	67.5 67.5	67.5 67.5	Parallel Filaments Series Filaments		
3B7	High-Frequency Twin Triode	7BE	9-30	Fil	1.4 2.8 DC	0.22 0.11	180	—	Both Sections in Push-pull		
3BA6	Remote-Cutoff RF Pentode	7BK	5-2	Htr	3.15%	0.6%	300	150	5.5	5.5	0.0035 ♣

Metal tubes are shown in bold-face type, miniature tubes in *italics*.

♣Subminiature type.



Service	Plate Volts	Screen Volts	Neg Grid Volts	Plate Milli-amperes	Screen Milli-amperes	R _p Ohms	G _m μmhos	μ Fac-tor	Load for Rated Out-put, Ohms	Power Out-put, Watts	Tube Type
Class A Amplifier	80	—	R _k = 150	18	—	1,800	7,000	13	—	—	<i>8T4</i>
TV Flyback Rectifier	Max d-c output current = 1.0 ma; max inverse voltage (d-c component) = 21,000 volts; max peak current = 80 ma										2V2
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
TV Flyback Rectifier	Max d-c output current = 1.5 ma; max peak inverse voltage = 18,000 volts; max peak current = 80 ma										3A2
TV Flyback Rectifier	Max d-c output current = 1.5 ma; max peak inverse voltage = 30,000 volts; max peak current = 80 ma										3A3
Class A Amplifier	150	90	8.4	13.3†	2.2†	100,000	1,900	—	8,000	0.7	3A4
Class A Amplifier ♣	90	—	2.5	3.7	—	8,300	1,800	15	—	—	3A6
Class A Amplifier	90	—	0	0.2	—	200,000	275	—	—	—	3AB-GT
Class A Amplifier	90	90	0	1.5	0.5	800,000	750	—	—	—	3AL6
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										3AU6
Class A Amplifier	250	150	R _k = 68 R _k = 150	10.6	4.3	1,000,000	5,200	—	—	—	3AV6
Class A Amplifier	100	100	5.0	2.1	—	500,000	3,900	—	—	—	3B4
Class A Amplifier	250	—	R _k = 330	12.2	—	—	4,800	36	—	—	3B5-GT
Class A Amplifier	250	—	2.0	1.2	—	62,500	1,600	100	—	—	3B7
Class A Amplifier	100	—	1.0	0.5	—	80,000	1,250	100	—	—	3BA6
Class C Amplifier	150	135	38	25	6.2	Input Signal = 0.07 watt					1.25
Class A Amplifier	67.5	67.5	7.0	8.0†	0.6†	100,000	1,650	—	5,000	0.2	3B5-GT
Class A Amplifier	67.5	67.5	7.0	6.7†	0.5†	100,000	1,500	—	5,000	0.18	3B7
Class A Amplifier	135	—	0	18.2†	—	—	1,900 ♣	20♣	16,000 ‡	1.5	3BA6
Class A Amplifier	250	100	R _k = 11 68 R _k = 68	4.2	4.4	1,000,000	4,400	—	—	—	3BA6
Class A Amplifier	100	100	10.8	4.4	—	250,000	4,300	—	—	—	3BA6

‡ Approximate.

▲ Without external shield.

† Zero signal.

‡ Grids 3 and 5 are screen. Grid 4 is signal.

‡ Conversion transconductance.

‡ Maximum.

‡ Grids 2 and 4 are screen. Grid 3 is signal.

‡ Input grid.

‡ Screen supply voltage.

‡ Absolute maximum rating.

‡ Plate-to-plate.

‡ Per section.

‡ For both sections.

‡ Minimum.

‡ Heater warm-up time controlled for series-string service.

‡ Plate supply voltage.

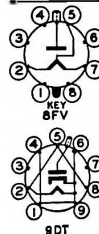
‡ Input plate.

‡ The duration of the pulse voltage must not exceed 15 percent of one scanning cycle.

‡ Section 1.

‡ Section 2.

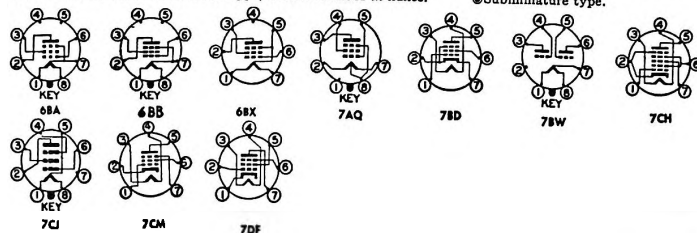
‡ A resistor of 3 ohms must be put in series with heater.



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
5BC5	Sharp-Cutoff RF Pentode	7BD	5-2	Htr	3.15%	0.6%	300	150	Pentode Connection		
							300	—	Triode Connection (G ₂ & P tied)		
5BE6	Pentagrid Converter	7CH	5-2	Htr	3.15%	0.6%	300	100	Osc I _{g1} = 0.5 ma R _{e1} = 20,000 ohms		
5BN6	Gated-Beam Discriminator	7DF	5-3	Htr	3.15%	0.6%	300	100	E _{c1} = 1.25 volts RMS*		
5BY6	Dual-Control Heptode	7CH	5-2	Htr	3.15%	0.6%	300	150	—	—	—
5BZ6	Semi-Remote Cutoff RF Pentode	7CM	5-2	Htr	3.15%	0.6%	300	150	7.5	2.8	0.015
5C4	Power Amplifier Pentode	6BX	T-X	Fil	1.4 DC	0.05	90	90	Parallel Filaments		
5C5-GT	Power Amplifier Pentode	7AQ	9-12	Fil	1.4 DC	0.1	110	110	Parallel Filaments		
					2.8 DC	0.05	110	110	Series Filaments		
5C6	Medium-Mu Twin Triode	7BW	9-30	Fil	1.4 DC	0.1	110	—	Section 1 (Parallel) Section 2 (Filaments) Section 1 (Series) Section 2 (Filaments)		
5CB6	Sharp-Cutoff RF Pentode	7CM	5-2	Htr	3.15%	0.6%	300	150	6.5	2.0	0.020
5CS6	Dual-Control Heptode	7CH	5-2	Htr	3.15%	0.6%	300	100	—	—	—
5D6	Beam Power Amplifier	6BA	9-30	Fil	1.4 DC	0.22	180	135	7.5	6.5	0.30
5E6	Beam Power Amplifier	6BX	5-2	Fil	1.4 DC	0.05	135	90	Parallel Filaments		
					2.8 DC	0.025	135	90	Series Filaments		
5E6	Sharp-Cutoff RF Pentode	7CJ	9-30	Fil	2.8 DC	0.05	110	110	Series Filaments		
					1.4 DC	0.1	110	110	Parallel Filaments		
3LE4	Power Amplifier Pentode	6BA	9-30	Fil	1.4 DC	0.1	110	110	Parallel Filaments		
					2.8 DC	0.05	110	110	Series Filaments		
3LP4	Beam Power Amplifier	6BB	9-30	Fil	2.8 DC	0.05	110	110	Series Filaments		
					1.4 DC	0.1	110	110	Parallel Filaments		

Metal tubes are shown in bold-face type, miniature tubes in *italics*.

Ⓢ Subminiature type.



Service	Plate Volts	Screen Volts	Reg Grid Volts	Plate Milli-amperes	Screen Milli-amperes	R _p Ohms	G _m μmhos	μ Factor	Load for Rated Output, Ohms	Power Output, Watts	Tube Type
Class A Amplifier	250	150	R _g = 180	7.5	2.1	800,000	5,700	—	—	—	5BC5
	125	125	R _g = 100	8.0	2.4	600,000	6,100	—	—	—	
	100	100	R _g = 180	4.7	1.4	600,000	4,900	—	—	—	
Class A Amplifier	250	—	R _g = 820	—	—	9,000	4,400	40	—	—	5BE6
	180	—	R _g = 330	8.0	—	6,000	6,000	42	—	—	
Converter	250	100	1.5	2.9	6.8	1,000,000	475 #	—	—	—	5BE6
	100	100	1.5	2.6	7.0	400,000	455 #	—	—	—	
FM Limiter-Discriminator	285	100	R _g = 200 to 400	0.49	9.8	—	—	—	330,000	—	5BN6
Gated Amplifier	250	100	2.5	6.5	9	—	1,900	E _{c1} = -2.5 volts		—	5BY6
	10	25	0	1.4	3.5	—	—	E _{c1} = 0 volts		—	
Class A Amplifier	200	150	R _g = 180	11	2.6	600,000	6,100	—	—	—	5BZ6
Class A Amplifier	85	85	5.2	5.0	1.1	125,000	1,350	—	13,000	0.2	5C4
Class A Amplifier	90	90	9.0	6.0†	1.4†	—	1,550	—	8,000	0.24	5C5-GT
Class A Amplifier	90	90	9.0	6.0†	1.4†	—	1,450	—	10,000	0.26	
Class A Amplifier	90	—	0	4.5	—	11,200	1,300	14.5	—	—	5C6
Class A Amplifier	90	—	0	4.5	—	11,200	1,300	14.5	—	—	
Class A Amplifier	90	—	0	4.5	—	11,200	1,300	14.5	—	—	
Class A Amplifier	200	150	R _g = 180	9.5	2.8	600,000	6,200	—	—	—	5CB6
Gated Amplifier	100	30	1.0	1.0	1.3	1,000,000	1,100	E _{c1} = 0 volts		—	5CS6
	100	30	0	0.8	5.5	700,000	—	E _{c1} = -1.0 volts		—	
	10	30	0	2.0	4.5	—	—	E _{c1} = 0 volts		—	
Class A Amplifier	150	90	4.5	9.8†	1.0†	—	2,400	—	14,000	0.60	5D6
Class A Amplifier	90	90	7.0	8.0	1.6	100,000	1,550	—	8,000	0.250	5E6
Class A Amplifier	67.5	67.5	5.0	5.5	1.1	120,000	1,400	—	8,000	0.125	
Class A Amplifier	90	90	7.0	6.8	1.4	120,000	1,450	—	9,000	0.225	
Class A Amplifier	67.5	67.5	5.0	4.4	0.9	130,000	1,300	—	11,000	0.115	
Class A Amplifier	90	90	R _g = 2 meg	2.9	1.2	325,000	1,700	—	—	—	5E6
Class A Amplifier	90	90	R _e = 2 meg	4.2	1.7	250,000	2,000	—	—	—	
Class A Amplifier	90	90	9.0	10†	2.0†	100,000	1,700	—	6,000	0.325	3LE4
Class A Amplifier	90	90	9.0	8.8†	1.8†	110,000	1,600	—	6,000	0.300	
Class A Amplifier	110	110	6.6	8.5	1.1	110,000	2,000	—	8,000	0.33	3LP4
Class A Amplifier	90	90	4.5	8.0	1.0	80,000	2,000	—	8,000	0.23	
Class A Amplifier	110	110	6.6	10	1.4	100,000	2,200	—	8,000	0.40	
Class A Amplifier	90	90	4.5	9.5	1.3	90,000	2,200	—	8,000	0.27	

‡ Approximate.

▲ Without external shield.

† Zero signal.

‡ Grids 3 and 5 are screen. Grid 4 is signal-input grid.

Conversion transconductance.

▲ Maximum.

▼ Grids 2 and 4 are screen. Grid 3 is signal-input grid.

‡ Screen supply voltage.

‡ Absolute maximum rating.

† Plate-to-plate.

◆ Per section.

Ⓢ For both sections.

* Minimum.

‡ Heater warm-up time controlled for series-string service.

‡ Plate supply voltage.

‡ Input plate.

— The duration of the pulse voltage must not exceed 15 percent of one scanning cycle.

‡ Section 1.

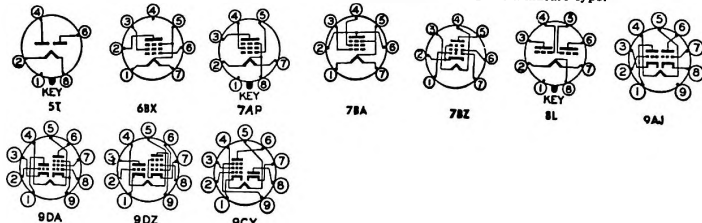
‡ Section 2.

— A resistor of 3 ohms must be put in series with heater.

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	Out-put	Grid-plate
3Q4	Power Amplifier Pentode	7BA	5-2	Fil	1.4	0.1	90	90	Parallel Filaments		
					2.8 DC	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 DC	0.05	110	110	Series Filaments		
3S4	Power Amplifier Pentode	7BA	5-2	Fil	1.4	0.1	90	67.5	Parallel Filaments		
					2.8 DC	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 DC	0.05	90	90	Series Filaments		
4A6-G	Twin Triode Power Amplifier	8L	12-7	Fil	4.0 (2.0 DC)	0.06 (0.12)	90	—	—		
4BQ7-A	High-Frequency Twin Triode	9AJ	6-2	Htr	4.2V	0.6V	250	—	2.85i	1.35i	1.15
4BZ7	High-Frequency Twin Triode	9AJ	6-2	Htr	4.2V	0.6V	250	—	2.5i	1.35i	1.15
6AM8	Diode Sharp-Cutoff RF Pentode	9CY	6-2	Htr	4.7V	0.6V	300	150	6.0	3.4	0.015
									Diode Section		
6AN8	Triode-Pentode	9DA	6-2	Htr	4.7V	0.6V	300	150	Pentode Section		
							300	—	Triode Section		
6AQ6	Beam Power Amplifier	7BZ	5-3	Htr	4.7V	0.6V	250	250	Pentode Connection		
							250	—	Triode Connection (G ₁ & P tied)		
5AU4	Full-Wave High-Vacuum Rectifier	5T	T-X	Fil	5.0	4.5	Tube Voltage Drop: ♦ 5 v at 350 ma d-c				
5AV8	Triode-Pentode	9DZ	6-2	Htr	4.7V	0.6V	300	150	Pentode Section		
							300	—	Triode Section		
5AW4	Full-Wave High-Vacuum Rectifier	5T	T-X	Fil	5.0	4.0	Tube Voltage Drop: ♦ 46 v at 250 ma d-c				
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: ♦ 80 v at 125 ma d-c				
6BK7-A	High-Frequency Twin Triode	9AJ	6-2	Htr	4.7V	0.6V	300	—	3.0▲	1.0i 0.9,▲	1.8▲

Metal tubes are shown in bold-face type, miniature tubes in italics.

③ Subminiature type.



Service	Plate Volts	Screen Volts	Neg Grid Volts	Plate Milli-amperes	Screen Milli-amperes	R _p Ohms	G _m μmhos	# Factor	Load for Rated Out-put, Ohms	Power Out-put, Watts	Tube Type
Class A Amplifier	90	90	4.5	9.5†	2.1†	100,000§	2,150	—	10,000	0.27	3Q4
Class A Amplifier	90	90	4.5	7.7†	1.7†	120,000§	2,000	—	10,000	0.24	
Class A Amplifier	110	110	6.6	10†	1.4†	100,000§	2,200	—	8,000	0.40	3Q5-GT
Class A Amplifier	90	90	4.5	9.5†	1.3†	90,000§	2,200	—	8,000	0.27	
Class A Amplifier	110	110	6.6	8.5†	1.1†	110,000§	2,000	—	8,000	0.33	
Class A Amplifier	90	90	4.5	8.0†	1.0†	80,000§	2,000	—	8,000	0.23	
Class A Amplifier	90	67.5	7.0	7.4†	1.4†	100,000§	1,575	—	8,000	0.270	3S4
Class A Amplifier	67.5	67.5	7.0	7.2†	1.5†	100,000§	1,550	—	5,000	0.180	
Class A Amplifier	90	67.5	7.0	6.1†	1.1†	100,000§	1,425	—	8,000	0.235	
Class A Amplifier	67.5	67.5	7.0	6.0†	1.2†	100,000§	1,400	—	5,000	0.180	
Class A Amplifier	90	90	4.5	9.5†	2.1†	100,000§	2,150	—	10,000	0.27	3V4
Class A Amplifier	85	85	5.0	6.9†	1.5†	120,000§	1,975	—	10,000	0.25	
Class A Amplifier	90	90	4.5	7.7†	1.7†	120,000§	2,000	—	10,000	0.24	
Class A Amplifier ♦	90	—	1.5	1.2	—	28,000	900	25	—	—	4A6-G
Class A Amplifier ♦	150	—	R _k = 220	9.0	—	6,100§	6,400	39	—	—	4BQ7-A
Class A Amplifier ♦	150	—	R _k = 220	10	—	5,600§	6,800	38	—	—	4BZ7
Class A Amplifier Video Detector	200	150	R _k = 120	11.5	2.7	600,000§	7,000	—	—	—	6AM8
Max d-c output current = 5 ma; volt drop: 10 v at 50 ma d-c											
Class A Amplifier	200	150	R _k = 180	9.5	2.8	300,000§	6,200	—	—	—	6AN8
Class A Amplifier	200	—	6.0	13	—	5,750§	3,300	19	—	—	
Class A Amplifier	180	180	8.5	28†	3.0†	58,000§	3,700	—	5,500	2.0	6AQ6
Class A Amplifier	250	250	12.5	45†	4.5†	52,000§	4,100	—	5,000	2.5	
Class A Amplifier Vertical Deflection Amplifier	250	—	12.5	49.5	—	1,970§	4,800	9.5	—	—	
Max positive pulse plate voltage, E = 1,100 v; max plate dissipation = 9 watts; max d-c cathode current = 35 ma											
Full-Wave Rectifier	Max d-c output current = 325 ma; max peak inverse voltage = 1400 volts; rms supply voltage per plate = 400 volts; max peak current per plate = 1075 ma										
Class A Amplifier	200	150	R _k = 180	9.5	2.8	300,000§	6,200	—	—	—	5AU4
Class A Amplifier	200	—	6.0	13	—	5,750§	3,300	19	—	—	5AV8
Full-Wave Rectifier	Max d-c output current = 250 ma; max peak inverse voltage = 1550 volts; rms supply voltage per plate = 450 volts; max peak current per plate = 750 ma										
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										5AX4-GT
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										5AZ4
Class A Amplifier ♦	150	—	R _k = 56	18	—	4,600§	9,300	43	—	—	6BK7-A

§ Approximate.

▲ Without external shield.

† Zero signal.

‡ Grids 3 and 5 are screen. Grid 4 is signal-input grid.

§ Conversion transconductance.

♦ Maximum.

♥ Grids 2 and 4 are screen. Grid 3 is signal-input grid.

⊗ Screen supply voltage.

⊕ Absolute maximum rating.

‡ Plate-to-plate.

♦ Per section.

Ⓢ For both sections.

▲ Minimum.

Ⓢ Heater warm-up time controlled for series-string service.

‡ Plate supply voltage.

Ⓢ Input plate.

† The duration of the pulse voltage must not exceed 15 percent of one scanning cycle.

Ⓢ Section 1.

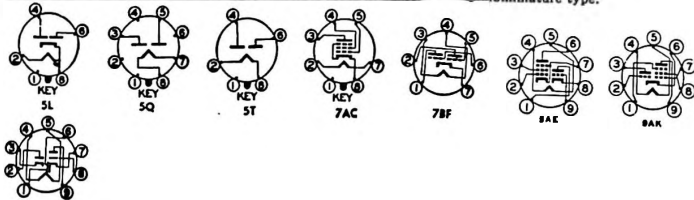
Ⓢ Section 2.

Ⓢ A resistor of 3 ohms must be put in series with heater.

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
6J8	Medium-Mu Twin Triode	7BF	5-2	Htr	4.7V	0.6V	300 300	— —	2.6 (Both Sections in Push-Pull)	1.6 1.0	1.5
5R4-G 5R4-GY 5R4-WGY	Full-Wave High-Vacuum Rectifier	5T	16-3 16-3 —	Fil	5.0	2.0	Tube Voltage Drop: ♦ 67 v at 250 ma d-c				
6T4	Full-Wave High-Vacuum Rectifier	5T	10-1	Fil	5.0	2.0	Tube Voltage Drop: ♦ 45 v at 225 ma d-c				
6T8	Triple Diode High-Mu Triode	9E	6-2	Htr	4.7V	0.6V	300	—	1.6 ▲	1.0 ▲	2.2 ▲
5U4-G	Full-Wave High-Vacuum Rectifier	5T	16-3	Fil	5.0	3.0	Tube Voltage Drop: ♦ 44 v at 225 ma d-c				
5U4-GA	Full-Wave High-Vacuum Rectifier	5T	T-X	Fil	5.0	3.0	Tube Voltage Drop: ♦ 44 v at 225 ma d-c				
5U4-GB	Full-Wave High-Vacuum Rectifier	5T	T-X	Fil	5.0	3.0	Tube Voltage Drop: ♦ 50 v at 275 ma d-c				
6U8	Triode-Pentode	9AE	6-2	Htr	4.7V	0.6V	300 300	150 —	Pentode Section Triode Section		
5V4-G 5V4-GA	Full-Wave High-Vacuum Rectifier	5L	14-3 T-X	Htr	5.0	2.0	Tube Voltage Drop: ♦ 25 v at 175 ma d-c				
5V6-GT	Beam Power Amplifier	7AC	9-11 or 9-41	Htr	4.7V	0.6V	315 — 315	285 — —	Single Tube 2 Tubes, Push-Pull Triode Connection (G2 & P tied)		
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				
5X4-GA	Full-Wave High-Vacuum Rectifier	5Q	T-X	Fil	5.0	3.0	Tube Voltage Drop: ♦ 47 v at 250 ma d-c				
6X8	Triode-Pentode Converter	9AK	6-2	Htr	4.7V	0.6V	250 250	250 —	Pentode Section Triode Section		
5Y3-G	Full-Wave High-Vacuum Rectifier	5T	14-3	Fil	5.0	2.0	Tube Voltage Drop: ♦ 30 v at 125 ma d-c				
5Y3-GA 5Y3-GT	Full-Wave High-Vacuum Rectifier	5T	T-X 9-13 or 9-42	Fil	5.0	2.0	Tube Voltage Drop: ♦ 30 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				

Metal tubes are shown in bold-face type, miniature tubes in italics.

Subminiature type.



Service	Plate Volts	Screen Volts	Neg Grid Volts	Plate Milliamperes	Screen Milliamperes	R _p Ohms	G _m μ mhos	# Factor	Load for Rated Output, Ohms	Power Output, Watts	Tube Type
Class A Amplifier Φ Class C Amplifier	100 150	— —	R _k = 50 Ω 10.0	8.5 30	— —	7,100 Ω [input Signal = 0.35 watt] [μ = 16 ma d-c]	5,300 —	38 —	— —	— 3.5 $\frac{1}{2}$	6J8
Full-Wave Rectifier	Max d-c output current = 250 ma; max peak inverse voltage = 2800 volts; rms supply voltage per plate = 750 volts; max peak current per plate = 650 ma										5R4-G 5R4-GY 5R4-WGY
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 = 875 ma										6T4
Class A Amplifier	250 100	— —	3.0 1.0	1.0 0.8	— —	58,000 Ω 54,000 Ω	1,200 1,300	70 70	— —	— —	6T8
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 = 800 ma										5U4-G
Full-Wave Rectifier	Max d-c output current = 250 ma; max peak inverse voltage = 1550 volts; rms supply voltage per plate = 450 volts; max peak current per plate = 900 ma										5U4-GA
Full-Wave Rectifier	Max d-c output current = 275 ma; max peak inverse voltage = 1550 volts; rms supply voltage per plate = 450 volts; max peak current per plate = 1000 ma										5U4-GB
Class A Amplifier Class A Amplifier	250 150	110 —	R _k = 68 Ω R _k = 56	10 18	3.5 —	400,000 Ω 5,000 Ω	5,200 8,500	— 40	— —	— —	6U8
Full-Wave Rectifier	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										5V4-G 5V4-GA
Class A Amplifier Class A Amplifier Class AB₁ Amplifier Vertical Deflection Amplifier	315 250 180 285 250 250	225 125 180 285 250 250	13 12.5 8.5 19 15 12.5	34 $\frac{1}{2}$ 45 $\frac{1}{2}$ 29 $\frac{1}{2}$ 70 $\frac{1}{2}$ 70 $\frac{1}{2}$ 49.5	2.2 $\frac{1}{2}$ 4.5 $\frac{1}{2}$ 3.0 $\frac{1}{2}$ 4.0 $\frac{1}{2}$ 5.0 $\frac{1}{2}$ —	80,000 Ω 50,000 Ω 50,000 Ω — — 1,980 Ω	3,750 4,100 3,700 — — 5,000	— — — — — 9.8	8,500 5,000 5,500 8,000 $\frac{1}{4}$ 10,000 $\frac{1}{10}$ —	5.5 4.5 2.0 14 10 —	5V6-GT
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										5W4 5W4-GT
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 = 875 ma										5X4-G
Full-Wave Rectifier	Max d-c output current = 250 ma; max peak inverse voltage = 1550 volts; rms supply voltage per plate = 450 volts; max peak current per plate = 900 ma										5X4-GA
Class A Amplifier Class A Amplifier	250 100	150 —	R _k = 200 Ω R _k = 100	7.7 8.5	1.6 —	750,000 Ω 6,900 Ω	4,600 5,800	— 40	— —	— —	5X8
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										5Y3-G
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										5Y3-GA 5Y3-GT
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										5Y4-G

§ Approximate.

▲ Without external shield.

† Zero signal.

‡ Grids 3 and 5 are screen. Grid 4 is signal.

§ Conversion transconductance.

¶ Maximum.

♥ Grids 2 and 4 are screen. Grid 3 is signal.

♦ Screen supply voltage.

§ Absolute maximum rating.

† Plate-to-plate.

¶ Per section.

§ For both sections.

* Minimum.

† Heater warm-up time controlled for series-string service.

‡ Plate supply voltage.

§ Input plate.

¶ The duration of the pulse voltage must not exceed 15 percent of one scanning cycle.

♦ Section 1.

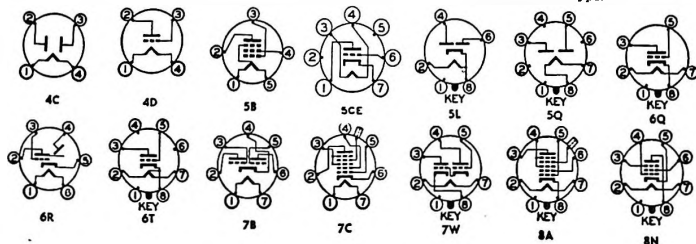
§ Section 2.

† A resistor of 3 ohms must be put in series with heater.

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
5Y4-GA 5Y4-GT	Full-Wave High-Vacuum Rectifier	5Q	T-X 9-13 or 9-42	Fil	5.0	2.0	Tube Voltage Drop: Φ 60 v at 125 ma d-c				
5Z3	Full-Wave High-Vacuum Rectifier	4C	16-1	Fil	5.0	3.0	Tube Voltage Drop: Φ 58 v at 225 ma d-c				
5Z4	Full-Wave High-Vacuum Rectifier	5L	8-6	Htr	5.0	2.0	Tube Voltage Drop: Φ 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	—	—	—
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	7C4	12-6	Htr	6.3	0.3	300	100	Osc $I_{a1} = 0.4$ ma $R_{a1} = 50,000$ ohms		
6A8 6A8-G 6A8-GT	Pentagrid Converter	8A4	8-4 12-8 9-18	Htr	6.3	0.3	300	100	Osc $I_{a1} = 0.4$ ma $R_{a1} = 50,000$ ohms		
6AB4	High-Frequency Triode	5CE	5-2	Htr	6.3	0.15	300	—	2.2	1.4	1.5
6AB5/6N5	Electron-Ray Indicator	8R	9-26	Htr	6.3	0.15	180	Max target voltage = 180 Min target voltage = 125			
6AB7/1853	Remote-Cutoff RF Pentode	8N	8-1	Htr	6.3	0.45	300	200	8.0	5.0	0.015 Φ
6AB8	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	RF Pentode	8N	8-1	Htr	6.3	0.45	300	150	11	5	0.015 Φ

Metal tubes are shown in bold-face type, miniature tubes in italics.

③ Subminiature type.



Service	Plate Volts	Screen Volts	Neg Grid Volts	Plate Milli-amperes	Screen Milli-amperes	R _p Ohms	G _m μ mhos	# Factor	Load for Rated Output, Watts	Power Output, Watts	Tube Type
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										5Y4-GA 5Y4-GT
Full-Wave Rectifier	Max d-c output current = 225 ma; max peak inverse voltage = 1550 volts; max rms supply voltage per plate = 430 volts; max peak current per plate = 675 ma										5Z3
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										5Z4 5Z4-GT
Class A Amplifier Class A ₁ Amplifier	250 325	— —	45 68	60† 80†	— —	800 —	5,250 —	4.2 —	2,500 3,000†	3.2 15	6A3
Class A Amplifier	180	180	12	22†	3.9†	45,400	2,200	—	8,000	1.4	6A4/LA
Class A Amplifier Class A Amplifier	250 325	— —	45 68	60† 80†	— —	800 —	5,250 —	4.2 —	2,500 3,000	3.75 15	6A5-G
Class B Amplifier Class A Amplifier	300 294	— —	0 6.0	35† 7.0	— —	— 11,000	— 3,200	— 35	8,000 —	10† —	6A6
Converter	250	100	3.0	3.5	2.7	360,000	550	E _{c1} (Osc Plate) = 250 thru 20,000 ohms I _{a1} = 4.0 ma			6A7
Converter	250	100	3.0	3.5	2.7	360,000	550	E _{c1} (Osc Plate) = 250 thru 20,000 ohms I _{a1} = 4.0 ma			6A8 6A8-G 6A8-GT
Class A Amplifier	250 100	— —	R _k = 200 R _k = 270	10 3.7	— —	10,900 15,000	5500 4000	60 60	— —	— —	6AB4
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 $\frac{1}{2}$ = 2 ma)										6AB5/6N5
Class A Amplifier	300	200	3.0	12.5	3.2	700,000	5000	—	—	—	6AB7/1853
Class A Amplifier Class A Amplifier	200 100	200 —	7.7 2	17.5 4	3.3 —	150,000 —	3400 1350	— 18	11,000 —	1.4 —	6AB8
Class B Amplifier	250	—	0	5.0†	—	Input signal = .950 watt			10,000 †	8.0†	6AC5-GT
Class A Amplifier	180	180	0	45.0	7.0	18,000	3,000	—	3,500	3.6	6AC6-GT
Class A Amplifier	300	150	R _k = 160	10	2.5	1,000,000	9,000	—	—	—	6AC7 6AC7-W

† Approximate.

▲ Without external shield.

‡ Zero signal.

§ Grids 3 and 5 are screen. Grid 4 is signal-input grid.

¶ Conversion transconductance.

◆ Maximum.

▼ Grids 2 and 4 are screen. Grid 3 is signal-input grid.

* Screen supply voltage.

† Absolute maximum rating.

‡ Plate-to-plate.

◆ Per section.

③ For both sections.

▲ Minimum.

¶ Heater warm-up time controlled for series-string service.

‡ Plate supply voltage.

§ Input plate.

¶ The duration of the pulse voltage must not exceed 15 percent of one scanning cycle.

† Section 1.

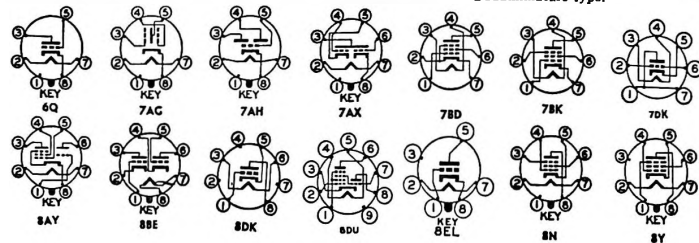
‡ Section 2.

◆ A resistor of 3 ohms must be put in series with heater.

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
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	—	Triode section Pentode section		
6AD8	Duplex-Diode RF 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)			
6AE7-GT	Twin-Input Triode	7AX	9-11	Htr	6.3	0.5	300	—	—	—	—
6AE8	Triode-Hexode Converter	8DU	T-X	Htr	6.3	0.3	250	100	Osc E_{g1} = 10 peak R_{g1} = 50,000 ohms		
6AF4 6AF4-A	UHF Triode Oscillator	7DK	5-2 5-1	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			
6AG5	Sharp-Cutoff RF Pentode	7BD	5-2	Htr	6.3	0.3	300	150	Pentode Connection Triode Connection (G_1 & P tied)		
6AG7	Power Amplifier Pentode	8Y	8-6	Htr	6.3	0.65	300	300	13	7.5	0.06
6AH4-GT	Low-Mu Triode	8EL	9-41	Htr	6.3	0.75	500	—	7.0	1.7	4.4
6AH6	Sharp-Cutoff RF Pentode	7BK	5-2	Htr	6.3	0.45	300	150	Pentode Connection Triode Connection (G_1 , G_2 & P tied)		
6AH7-GT	Medium-Mu Twin-Triode	8BE	9-7	Htr	6.3	0.3	180	—	—	—	—
6AJ4	UHF High-Mu Triode	9BX	6-1	Htr	6.3	0.225	150	—	—	—	—
6AJ6	Sharp-Cutoff RF Pentode	7BD	5-1	Htr	6.3	0.175	180	90	4.0	2.8	0.02
6AJ7	RF Pentode	8N	8-1	Htr	6.3	0.45	300	150	11	5	0.015

Metal tubes are shown in bold-face type, miniature tubes in *italics*.

Ⓢ Subminiature type.



Service	Plate Volts	Screen Volts	Neg Grid Volts	Plate Milli-amperes	Screen Milli-amperes	R_p , Ohms	G_m , μ hos	# Fac-tor	Load for Rated Out-put, Ohms	Power Out-put, Watts	Tube Type
Class A Amplifier	100	—	$R_k = 820$	1.4	—	35,000	2000	70	—	—	6AD4
Tuning Indicator	Target voltage = 150 (Ray control = +75 volts, shadow = 0°) (Ray control = +5 volts, shadow = 80°)										6AD6-G
Class A Amplifier	250	—	25	3.7	—	19,000	325	6.0	—	—	6AD7-G
Class A Amplifier	250	250	16.5	34†	6.5†	80,000	2,500	—	7,000	3.2	6AD8
Class A Amplifier	250	85	2.0	6.7	2.3	1,000,000	1,100	—	—	—	6AE5-GT
Class A Amplifier	95	—	15	7.0	—	3,500	1,200	4.2	—	—	6AE6-G
Class A Amplifier	250	—	1.5	6.5	—	25,000	1,000	25	—	—	6AE7-GT
Class A Amplifier	250	—	1.5	4.5	—	35,000	950	33	—	—	6AE8
Class A Amplifier	250	—	13.5	5	—	9,300	1,500	14	—	—	6AF4 6AF4-A
Converter	250	75	0	4.5	3.4	700,000	780	#	E_b (Triode Osc) = 100 I_b (Triode) = 4.5 ma		6AF5-G
Class A Amplifier	80	—	$R_k = 150$	16	—	2,270	6,800	15	—	—	6AF6-G
Class A Amplifier	180	—	18	7.0	—	4,900	1,500	7.4	—	—	6AG5
Tuning Indicator	Target voltage = 250 (Ray control = +155 volts, shadow = 0°) (Ray control = 0 v, shadow = 100°, target current = 3.75 ma)										6AG7
Class A Amplifier	250	150	$R_k = 180$	6.5	2.0	800,000	5,000	—	—	—	6AH4-GT
Class A Amplifier	250	—	$R_k = 820$	5.5	—	10,000	3,800	42	—	—	6AH6
Class A Amplifier	300	150	3.0	30†	7.0†	130,000	11,000	—	10,000	3.0	6AH7-GT
Vertical Deflection Amplifier	250	—	23	30	—	1,780	4,500	8.0	—	—	6AJ4
Class A Amplifier	Max positive pulse plate voltage; $E = 2000$ v; max plate dissipation = 7.5 watts; max d-c cathode current = 60 ma										6AJ6
Class A Amplifier	300	150	$R_k = 160$	10	2.5	500,000	9,000	—	—	—	6AJ7
Class A Amplifier	150	—	$R_k = 160$	12.5	—	3,600	11,000	40	—	—	9BX
Class A Amplifier	180	—	6.5	7.6	—	8,400	1,900	16	—	—	9T
Class A Amplifier	125	—	$R_k = 68$	16	—	4,200	10,000	42	—	—	
Class A Amplifier	28	28	1.0	2.7	1.0	100,000	2,500	—	—	—	
Class A Amplifier	300	150	$R_k = 160$	10	2.5	1,000,000	9,000	—	—	—	

Ⓢ Approximate.

▲ Without external shield.

† Zero signal.

‡ Grids 3 and 5 are screen. Grid 4 is signal.

§ Input grid.

Conversion transconductance.

* Maximum.

♥ Grids 2 and 4 are screen. Grid 3 is signal.

♦ Input grid.

✱ Screen supply voltage.

✱ Absolute maximum rating.

† Plate-to-plate.

♣ Per section.

Ⓢ For both sections.

* Minimum.

♥ Heater warm-up time controlled for series-string service.

♣ Plate supply voltage.

‡ Input plate.

* The duration of the pulse voltage must not exceed 15 percent of one scanning cycle.

† Section 1.

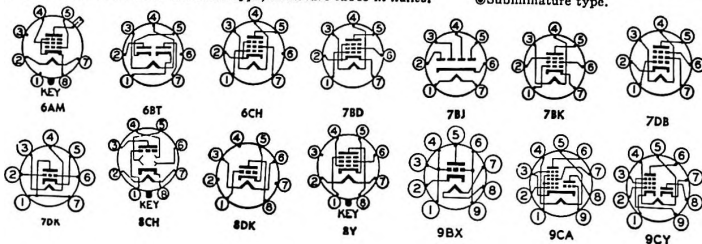
‡ Section 2.

♦ A resistor of 3 ohms must be put in series with heater.

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
6AJ8	Triode-Heptode	9CA	6-3	Htr	6.3	0.3	300	125	Heptode Section		
							250	—	Triode Section		
6AK4 Ⓢ	Medium-Mu Triode	8DK	3-1	Htr	6.3	0.15	250	—	2.2	2.2	1.3
6AK6	Sharp-Cutoff RF Pentode	7BD	5-1	Htr	6.3	0.175	180	140	4.0	2.8	0.02 ♣
6AK6	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 ♣
6AK8	Triple-Diode High-Mu Triode	9E	6-3	Htr	6.3	0.45	300	—	1.9▲	1.6▲	2.2▲
6AL6	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	T-X	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			
6AM4	UHF High-Mu Triode	9BX	6-1	Htr	6.3	0.225	200	—	—	—	—
6AM6	Power Amplifier Pentode	6CH	5-2	Htr	6.3	0.2	250	250	Single Tube 2 tubes, push-pull		
6AM6	Sharp-Cutoff RF Pentode	7DB	5-2	Htr	6.3	0.3	300	250	Pentode Connection Triode Connection (G ₁ & P tied)		
6AM8	Diode Sharp-Cutoff RF Pentode	9CY	6-2	Htr	6.3	0.45	300	150	6.0	3.4	0.015 ♣
6AN4	UHF High-Mu Triode	7DK	5-1	Htr	6.3	0.225	300	—	—	—	—
6AN6	Beam Power Amplifier	7BD	5-2	Htr	6.3	0.45	120	120	9.0	4.8	0.075 ♣
6AN6	Quadruple Diode	7BJ	5-2	Htr	6.3	0.2	—	Tube Voltage Drop: ♣ 9.0 v at 6.6 ma			
6AN7	Triode-Hexode Converter	9Q	6-3	Htr	6.3	0.23	250	125	Osc I _{g1} = 0.35 ma R _{g1} = 22,000 ohms		

Metal tubes are shown in bold-face type, miniature tubes in *italics*.

♣ Subminiature type.



Service	Plate Volts	Screen Volts	Neg Grid Volts	Plate Milli-amperes	Screen Milli-amperes	R _p , Ohms	G _m , μmhos	# Factor	Load for Rated Out-put, Ohms	Power Out-put, Watts	Tube Type
Class A Amplifier	250	102	2.0	6.5	3.8	700,000	2,400	—	E _{cd} = 0 v	—	6AJ8
Class A Amplifier	100	—	0	13.5	—	5,900	3,700	22	—	—	
Class A Amplifier	200	—	R _g = 680	9.5	—	5,300	3,800	20	—	—	6AK4 Ⓢ
Class A Amplifier	180	120	R _g = 180	7.7	2.4	500,000	5,100	—	—	—	6AK6
	120	120	R _g = 180	7.5	2.5	300,000	5,000	—	—	—	
Class A Amplifier	180	180	9.0	15†	2.5†	200,000	2,300	—	10,000	1.1	6AK6
Class A Amplifier	300	150	3.0	30†	7.0†	130,000	11,000	—	10,000	3.0	6AK7
Class A Amplifier	250	100	3.0	1.0	0.8	58,000	1,200	70	—	—	6AK8
	100	—	1.0	0.8	—	54,000	1,300	70	—	—	
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										
Class A Amplifier	250	250	14	72†	5.0†	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.										
Class A Amplifier	200	—	R _g = 100	10	—	8,700	9,800	85	—	—	6AM4
Class A Amplifier	250	250	13.5	16	2.4	130,000	2,600	—	16,000	1.4	6AM6
Class AB ₁ Amplifier	250	250	19	10†	1.3†	—	—	—	20,000†	4.8	
Class A Amplifier	250	250	2.0	10	2.5	1,000,000	7,500	—	—	—	6AM6
Class A Amplifier	250	—	2.0	12.5	—	7,500	9,300	70	—	—	
Class A Amplifier Video Detector	200	150	R _g = 120	11.5	2.7	600,000	7,000	—	—	—	6AM8
	Max d-c output current = 5 ma; voltage drop: 10 v at 50 ma d-c										
Class A Amplifier	200	—	R _g = 100	13	—	7,000	10,000	70	—	—	6AN4
Class A Amplifier	120	120	R _g = 120	35	12	12,500	8,000	—	2,500	1.3	6AN6
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										
Converter	250	85	2.0	3.0	3.0	1,000,000	750 #	E _b (Triode Osc) = 250 thru 33,000 ohms I _b (Triode) = 5.1 ma	—	—	6AN7

‡ Approximate.

▲ Without external shield.

† Zero signal.

‡ Grids 3 and 5 are screen. Grid 4 is signal-input grid.

§ Conversion transconductance.

♣ Maximum.

▼ Grids 2 and 4 are screen. Grid 3 is signal-input grid.

* Screen supply voltage.

§ Absolute maximum rating.

† Plate-to-plate.

♣ Per section.

Ⓢ For both sections.

‡ Minimum.

† Heater warm-up time controlled for series-acting service.

‡ Plate supply voltage.

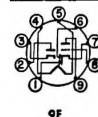
§ Input plate.

‡ The duration of the pulse voltage must not exceed 15 percent of one scanning cycle.

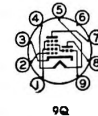
1—Section 1.

2—Section 2.

♣ A resistor of 3 ohms must be put in series with heater.



9E

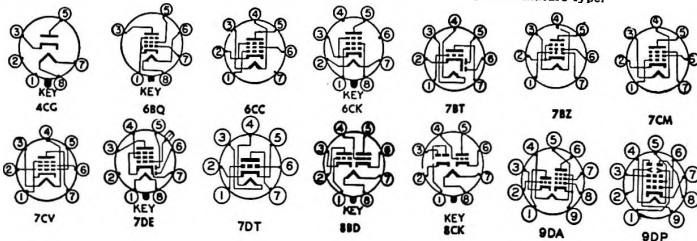


9Q

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
6AN8	Triode-Pentode	9DA	6-2	Htr	6.3	0.45	300 300	150 —	Pentode Section Triode Section		
6AQ4	High-Mu Triode	7DT	5-2	Htr	6.3	0.3	250	—	8.5	0.2	2.5
6AQ5	Beam Power Amplifier	7BZ	5-3	Htr	6.3	0.45	250 250	250 —	Pentode Connection Triode Connection (G ₂ & P tied)		
6AQ6	Duplex-Diode High-Mu Triode	7BT	5-2	Htr	6.3	0.15	300	—	1.7	1.5	1.8
6AQ7-GT	Duplex-Diode High-Mu Triode	8CK	9-11 or 9-41	Htr	6.3	0.3	250	—	—	—	—
6AR5	Power Amplifier Pentode	6CC	5-3	Htr	6.3	0.4	250	250	—	—	—
6AR6	Beam Power Amplifier	6BQ	T-X	Htr	6.3	1.2	630	315	11.0▲	7.0▲	0.8▲
6AR7-GT	Twin-Diode, Remote-Cutoff Pentode	7DE	T-X	Htr	6.3	0.3	300	125	5.5▲	7.5▲	0.003▲
6AR8	Double Plate Sheet-Beam Tube	9DP	6-3	Htr	6.3	0.3	300	300	—	—	—
6AS6	Beam Power Amplifier	7CV	5-3	Htr	6.3	0.8	150	117	12▲	6.2▲	0.6▲
6AS6 6AS6-W	Dual-Control RF Pentode	7CM	5-1	Htr	6.3	0.175	180	140	4.0	3.0	0.02▲
6AS7-G	Low-Mu Twin Triode Power Amplifier	8BD	16-3	Htr	6.3	2.5	250	—	—	—	—
6AS8	Diode Sharp-Cutoff RF Pentode	9DS	6-2	Htr	6.3	0.45	300	150	Pentode Section Diode Section		
6AT6	Duplex-Diode High-Mu Triode	7BT	5-2	Htr	6.3	0.3	300	—	2.2▲	0.8▲	2.0▲
6AT8	Triode-Pentode Converter	9DW	6-2	Htr	6.3	0.45	250 250	250* —	Pentode Section Triode Section		
6AU4-GT	Half-Wave High-Vacuum Rectifier	4CG	9-44	Htr	6.3	1.8	Tube Voltage Drop: 25 v at 350 ma d-c				
6AU5-GT	Beam Power Amplifier	6CK	9-11 or 9-41	Htr	6.3	1.25	550	200	11.3▲	7.0▲	0.5▲

Metal tubes are shown in bold-face type, miniature tubes in italics.

③ Subminiature type.



Service	Plate Volts	Screen Volts	Neg Grid Volts	Plate Milli-amperes	Screen Milli-amperes	R _p , Ohms	G _m , umhos	# Factor	Load for Rated Out-put, Ohms	Power Out-put, Watts	Tube Type
Class A Amplifier	200	150	R _k = 180	9.5	2.8	300,000	6,200	—	—	—	6AN8
Class A Amplifier	200	—	6.0	13	—	5,750	3,300	19	—	—	
Class A Amplifier	250	—	1.5	10	—	12,000	8,500	100	—	—	6AQ4
Class A Amplifier	180	180	8.5	29†	3.0†	58,000	3,700	—	5,500	2.0	6AQ6
Class A Amplifier	250	250	12.5	45†	4.5†	52,000	1,100	—	5,000	4.5	
Class A Amplifier	250	—	12.5	49.5	—	1,970	4,800	9.5	—	—	
Class A Amplifier	Max positive pulse plate voltage: 1100 v; max plate dissipation = 9 watts; max d-c cathode current = 35 ma										
Class A Amplifier	250	100	3.0	1.0	—	58,000	1,200	70	—	—	6AQ6
Class A Amplifier	250	—	1.0	0.8	—	61,000	1,150	70	—	—	
Class A Amplifier	250	100	2.0	2.3	—	44,000	1,600	79	—	—	6AQ7-GT
Class A Amplifier	250	—	2.0	1.1	—	64,000	1,250	—	—	—	
Class A Amplifier	250	250	18	32†	5.5†	68,000	2,300	—	7,600	3.4	6AR6
Class A Amplifier	250	250	16.5	34†	5.7†	65,000	2,400	—	7,000	3.2	
Class A Amplifier	300	300	36.0	58	4.0	22,000	4,300	—	—	—	6AR6
Class A Amplifier	250	100	2.0	7.0	1.8	1,200,000	2,500	—	—	—	6AR7-GT
Class A Amplifier	250	250	R _k = 390	10	0.4	—	4,000	—	—	—	6AR8
Color TV Synchronous Detector	(With plates tied together and deflectors (pins 1 and 2) grounded) Total voltage change on either deflector with an equal and opposite change on the other deflector required to switch the plate current from one plate to the other = 20 volts maximum.										
Class A Amplifier	150	110	8.5	35†	2.0†	—	5,600	—	4,500	2.2	6AS6
Class A Amplifier	120	120	2.0	5.2	3.5	110,000	3,200	E _{c3} = 0 volts	—	—	6AS6
Class A Amplifier	120	120	2.0	3.6	4.8	1,850	E _{c3} = -3 volts	—	—	—	6AS6-W
DC Amplifier	135	—	R _k = 250	125	—	280	7,000	2.0	—	—	6AS7-G
Class A Amplifier	200	150	R _k = 180	9.5	3.0	300,000	6,200	—	—	—	6AS8
Class A Amplifier	Max d-c output current = 5 ma; max peak inverse voltage = 330 volts; max peak current = 50 ma										
Class A Amplifier	250	100	3.0	1.0	—	58,000	1,200	70	—	—	6AT6
Class A Amplifier	250	—	1.0	0.8	—	54,000	1,300	70	—	—	
Class A Amplifier	250	150	R _k = 200	7.7	1.6	750,000	4,600	—	—	—	6AT8
Class A Amplifier	100	—	R _k = 100	8.5	—	6,900	5,800	40	—	—	
TV Damp-er Service	Max d-c output current = 175 ma; max peak inverse voltage = 4,500 volts; max peak current = 1050 ma.										
Horizontal Deflection Amplifier	115	175	20	60	6.8	6,000	5,600	—	—	—	6AU5-GT
	60	175	0	210	25	—	—	—	—	—	
	Max positive pulse plate voltage: 5500 v; max plate dissipation = 1.0 watts; max screen dissipation = 2.5 watts; max d-c cathode current = 110 ma										

§ Approximate.

▲ Without external shield.

† Zero signal.

‡ Grids 3 and 5 are screen. Grid 4 is signal.

§ Conversion transconductance.

¶ Maximum.

▼ Grids 2 and 4 are screen. Grid 3 is signal.

⬆ Screen supply voltage.

⬇ Absolute maximum rating.

‡ Plate-to-plate.

◆ Per section.

③ For both sections.

* Minimum.

† Heater warm-up time controlled for series-string service.

‡ Plate supply voltage.

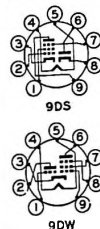
§ Input plate.

¶ The duration of the pulse voltage must not exceed 15 percent of one scanning cycle.

⬆ Section 1.

⬇ Section 2.

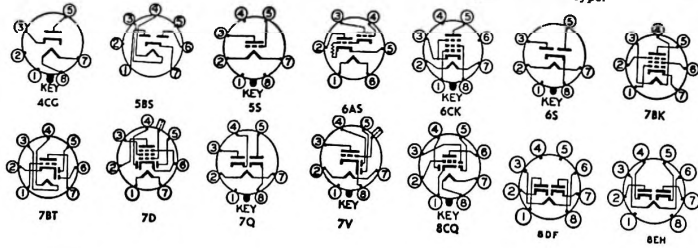
◆ A resistor of 3 ohms must be put in series with heater.



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
6AU6	Sharp-Cutoff RF Pentode	7BK	5-2	Htr	6.3	0.3	300	150	Pentode Connection		
							250	—	Triode Connection (G ₂ , G ₁ , & P tied)		
6AU8	Triode-Pentode	9DX	6-3	Htr	6.3	0.6	300	150	Pentode Section		
							300	—	Triode Section		
6AV4	Full-Wave High-Vacuum Rectifier	5BS	5-3	Htr	6.3	0.95	—	—	—	—	—
6AV5-GT	Beam Power Amplifier	6CK	9-11 or 9-41	Htr	6.3	1.2	550	175	14▲	7.0▲	0.7▲
6AV6	Duplex-Diode High-Mu Triode	7BT	5-2	Htr	6.3	0.3	300	—	2.2	1.2	2.0
6AW7-GT	Duplex-Diode, High-Mu Triode	8CQ	9-16	Htr	6.3	0.3	300	—	—	—	—
6AW8	Triode-Pentode	9DX	6-3	Htr	6.3	0.6	300	150	Pentode Section		
							300	—	Triode Section		
6AX4-GT	Half-Wave High-Vacuum Rectifier	4CG	9-11 or 9-41	Htr	6.3	1.2	Tube Voltage Drop: 32 v at 250 ma d-c				
6AX5-GT	Full-Wave High-Vacuum Rectifier	6S	9-41	Htr	6.3	1.2	Tube Voltage Drop: 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: 21 v at 250 ma d-c				
6AX7	High-Mu Twin Triode	9A	6-2	Htr	6.3	0.3	300	—	1.8	1.9	1.7
					3.15	0.6					
6AZ5	Twin Diode	8DF	3-1	Htr	6.3	0.15	Tube Voltage Drop: 10 v at 15 ma d-c				
6AZ6	Twin Diode	8EH	T-X	Htr	6.3	0.15	Tube Voltage Drop: 3.5 v at 8 ma d-c				
6B4-G	Power Amplifier Triode	6S	16-3	Fil	6.3	1.0	325	—	Single tube		
							300	300	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▲	9.5▲	.007▲

Metal tubes are shown in bold-face type, miniature tubes in italics.

▲Subminiature type.



Service	Plate Volts	Screen Volts	Neg Grid Volts	Plate Milli-am-peres	Screen Milli-am-peres	R _p , Ohms	G _m , μmhos	# Factor	Load for Rated Out-put, Ohms	Power Out-put, Watts	Tube Type
Class A Amplifier	250	150	R _g = 68	10.6	4.3	1,000,000	5,200	—	—	—	6AU8
	100	100	R _g = 150	5.0	2.1	500,000	3,900	—	—	—	
Class A Amplifier	250	—	R _g = 330	12.2	—	—	4,800	36	—	—	
Class A Amplifier	200	125	R _g = 80	15	3.4	150,000	7,000	—	—	—	6AU8
Class A Amplifier	150	—	R _g = 150	8.5	—	8,200	4,900	40	—	—	
Full-Wave Rectifier	Max d-c output current = 90 ma; max peak inverse voltage = 1,250 volts; max peak current per plate = 250 ma										
Horizontal Deflection Amplifier	250	150	22.5	55	2.1	20,000	5,500	—	—	—	6AV5-GT
	60	150	0	225	125	—	—	—	—	—	
	Max positive pulse plate voltage = 5,500 v; max plate dissipation = 11 watts; max screen dissipation = 2.5 watts; max d-c cathode current = 110 ma										
Class A Amplifier	250	—	2.0	1.2	—	62,500	1,600	100	—	—	6AV6
	100	—	1.0	0.5	—	80,000	1,250	100	—	—	
Class A Amplifier	100	—	0	1.4	—	—	1,200	80	—	—	6AW7-GT
Class A Amplifier	200	150	R _g = 180	13	3.5	400,000	9,000	—	—	—	6AW8
Class A Amplifier	200	—	2.0	4.0	—	17,500	4,000	70	—	—	
TV Damper Service	Max d-c output current = 125 ma; max peak inverse voltage = 4400 volts; max peak current = 760 ma										
Full-Wave Rectifier	Max d-c output current = 125 ma; max peak inverse voltage = 1250 volts; rms supply voltage per plate = 350 volts; max peak current per plate = 375 ma										
Full-Wave Rectifier	Max d-c output current = 250 ma; max peak inverse voltage = 1250 volts; rms supply voltage per plate = 350 volts; max peak current per plate = 600 ma										
TV Damper Service	Max d-c output current per plate = 125 ma; max peak inverse voltage = 2000 volts; max peak current per plate = 600 ma										
Class A Amplifier	100	—	1.0	0.5	—	80,000	1,250	100	—	—	6AX7
	250	—	2.0	1.2	—	62,500	1,600	100	—	—	
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										
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										
Class A Amplifier	250	—	45	60	—	800	5,250	4.2	2,500	3.2	6B4G
	325	—	68	80	—	—	—	—	3,000	15.0	
Class A Amplifier	300	300	0	45	8.0	24,000	2,400	—	7,000	4.0	6B5
Class A Amplifier	250	—	2.0	0.8	—	91,000	1,100	100	—	—	6B6-G
Class A Amplifier	250	125	3.0	9.0	2.3	600,000	1,125	—	—	—	6B7

§ Approximate.

▲ Without external shield.

† Zero signal.

‡ Grids 3 and 5 are screen. Grid 4 is signal-input grid.

§ Conversion transconductance.

¶ Maximum.

◆ Grids 2 and 4 are screen. Grid 3 is signal-input grid.

✱ Screen supply voltage.

✱ Absolute maximum rating.

✱ Plate-to-plate.

✱ Per section.

§ For both sections.

¶ Minimum.

✱ Heater warm-up time controlled for series-string service.

✱ Plate supply voltage.

✱ Input plate.

✱ The duration of the pulse voltage must not exceed 15 percent of one scanning cycle.

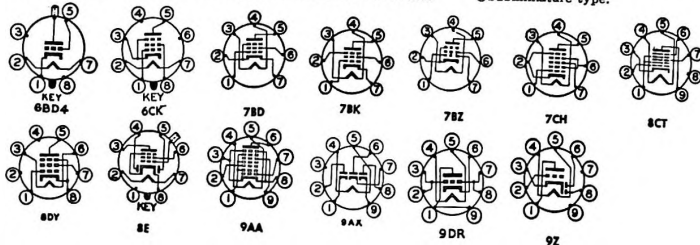
1.—Section 1.

2.—Section 2.

✱ A resistor of 3 ohms must be put in series with heater.

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
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 $\uparrow$.01 $\uparrow$ 0.005 $\downarrow$
6BA4	High-Mu Planar Triode	—	T-X	Htr	6.3	0.4	200	—	—	—	—
6BA5 $\odot$	Sharp-Cutoff Pentode	8DY	3-1	Htr	6.3	0.15	150	140	3.4	3.6	0.065
6BA6	Remote-Cutoff RF Pentode	7BK	5-2	Htr	6.3	0.3	300	150	5.5	5.5	0.0035 $\downarrow$
6BA7	Pentagrid Converter	8CT ∇	6-3	Htr	6.3	0.3	300	100	Osc $I_{g1} = 0.35$ ma $R_{g1} = 20,000$ ohms		
6BC4	UHF Triode	9DR	6-1	Htr	6.3	0.225	250	—	2.9 Δ	0.26 Δ	1.6 Δ
6BC6	Sharp-Cutoff RF Pentode	7BD	5-2	Htr	6.3	0.3	300	150	Pentode Connection		
							300	—	Triode Connection (G_2 & 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				
6BD4	Sharp-Cutoff Beam Triode	6BD4	T-X	Htr	6.3	0.6	20,000	—	3.8 Δ	0.04 Δ	1.0 Δ
6BD4-A	Sharp-Cutoff Beam Triode	6BD4	T-X	Htr	6.3	0.6	27,000	—	3.8 Δ	0.04 Δ	1.0 Δ
6BD5-GT	Beam Power Amplifier	6CK	T-X	Htr	6.3	0.9	325	325	—	—	—
6BD6	Remote-Cutoff RF Pentode	7BK	5-2	Htr	6.3	0.3	300	125	4.3	5.0	0.005 $\downarrow$
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	$E_{c1} = 12$ volts RMS $E_{c2} = 12$ volts RMS		
6BF6	Beam Power Amplifier	7BZ	5-3	Htr	6.3	1.2	250	117	Pentode Connection		
							250	—	Triode Connection (G_2 & P tied)		

Metal tubes are shown in bold-face type, miniature tubes in italics.

 $\odot$ Subminiature type.

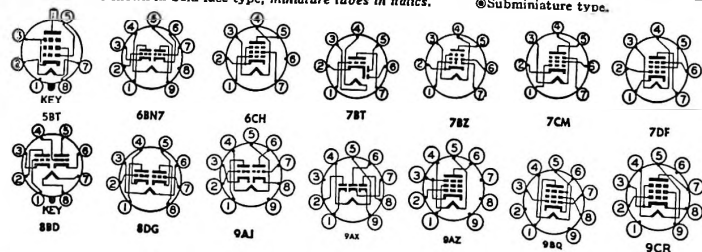
Service	Plate Volts	Screen Volts	Neg Grid Volts	Plate Milliamperes	Screen Milliamperes	R_p , Ohms	G_m , μ mhos	μ Factor	Load for Rated Out-put, Ohms	Power Out-put, Watts	Tube Type
Class A Amplifier	250	125	3.0	10	2.3	600,000 Ω	1,325	—	—	—	6B8 <i>6B8-G</i> <i>6B8-GT</i>
Class A Amplifier	150	—	$R_k = 100$	10	—	8,700 Ω	8,000	70	—	—	6BA4
Class A Amplifier	100	100	$R_k = 270$	5.5	2.0	175,000 Ω	2,150	—	—	—	6BA5 $\odot$
Class A Amplifier	250	100	$R_k = 68$ $R_g = 68$	11	4.2	1,000,000 Ω	4,400	—	—	—	<i>6BA6</i>
Converter	250	100	1.0	3.8	10.0	1,000,000 Ω	950 $\#$	—	—	—	<i>6BA7</i>
Class A Amplifier	150	—	$R_k = 100$	14.5	—	4,800 Ω	10,000	48	—	—	<i>6BC4</i>
Class A Amplifier	250	150	$R_k = 180$ $R_g = 100$ $R_{g2} = 180$ $R_{g3} = 330$	7.5	2.1	800,000 Ω	5,700	—	—	—	<i>6BC6</i>
	125	125	$R_k = 8.0$ $R_g = 100$ $R_{g2} = 4.7$ $R_{g3} = 8.0$	8.0	2.4	500,000 Ω	6,100	—	—	—	
	100	100	$R_k = 6.0$ $R_g = 820$ $R_{g2} = 8.0$	1.4	1.4	600,000 Ω	4,900	—	—	—	
	180	—	$R_k = 6.0$ $R_g = 8.0$	—	—	9,000 Ω	4,400	40	—	—	
	250	—	$R_k = 6.0$ $R_g = 330$	—	—	6,000 Ω	6,000	42	—	—	
Half-Wave Rectifier	Max d-c output current per plate = 12 ma										<i>6BC7</i>
High-Voltage Shunt Regulator	Max unregulated d-c supply voltage = 40,000 v; max d-c plate current = 1.5 ma; max plate dissipation = 20 watts										<i>6BD4</i>
High-Voltage Shunt Regulator	Max unregulated d-c supply voltage = 55,000 volts; max d-c plate current = 1.5 ma; max plate dissipation = 25 watts										<i>6BD4-A</i>
Horizontal Deflection Amplifier	Max positive pulse plate voltage = 4,000 volts; max plate dissipation = 10 watts; max screen dissipation = 3.0 watts; max d-c cathode current = 100 ma										<i>6BD5-GT</i>
Class A Amplifier	250	100	3.0	9	3	800,000 Ω	2,000	—	—	—	<i>6BD6</i>
	100	100	1.0	13	5	150,000 Ω	2,550	—	—	—	
Class A Amplifier	250	—	3.0	1.0	—	58,000 Ω	1,200	70	—	—	<i>6BD7</i>
Converter	250	100	1.5	2.9	6.8	1,000,000 Ω	475 $\#$	—	—	—	<i>6BE6</i>
	100	100	1.5	2.6	7.0	400,000 Ω	455 $\#$	—	—	—	
FM Limiter-Discriminator	250 Ω	20 Ω	4.4 Ω	0.28	1.5	5,000,000 Ω	—	—	470,000	—	<i>6BE7</i>
Class A Amplifier	110	110	7.5	36 $\uparrow$	4 $\uparrow$	12,000 Ω	7,500	—	2,500	1.9	<i>6BF6</i>
Vertical Deflection Amplifier	225	—	30	10	—	2,500 Ω	2,700	6.7	—	—	
	Max positive pulse plate voltage; $E_c = 90$ volts; max plate dissipation = 5.0 watts; max d-c cathode current = 40 ma										

 Ω Approximate. Δ Without external shield. $\uparrow$ Zero signal. ∇ Grids 3 and 5 are screen. Grid 4 is signal-input grid. $\#$ Conversion transconductance. Δ Maximum. ∇ Grids 2 and 4 are screen. Grid 3 is signal-input grid. $\#$ Screen supply voltage. Δ Absolute maximum rating. $\uparrow$ Plate-to-plate. Δ Per section. $\odot$ For both sections. $\#$ Minimum. ∇ Heater warm-up time controlled for series-string service. $\uparrow$ Plate supply voltage. ∇ Input plate. ∇ The duration of the pulse voltage must not exceed 15 percent of one scanning cycle. ∇ Section 1. ∇ Section 2. ∇ A resistor of 3 ohms must be put in series with heater.

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
6BF8	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
6BF7-A Ⓢ	Medium-Mu Twin Triode	8DG	3-2	Htr	6.3	0.3	120	—	2.0	1.6 ₁ 2.0 ₂	1.5
6BG6-G	Beam Power Amplifier	5BT	16-5	Htr	6.3	0.9	700	350	12▲	6.5▲	0.34▲
6BG7 Ⓢ	Medium-Mu Twin Triode	8DG	3-5	Htr	6.3	0.3	110	—	2.0	1.6 ₁ 2.0 ₂	1.5
6BH6	Remote-Cutoff RF Pentode	9AZ	6-3	Htr	6.3	0.2	300	125	—	—	—
6BH6	Sharp-Cutoff RF Pentode	7CM	5-2	Htr	6.3	0.15	300	150	5.4	4.4	0.0035♣
6BJ6	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♣
6BJ7	Triple Diode	9AX	6-2	Htr	6.3	0.45	Tube Voltage Drop: ♠ 2.7 v at 10 ma d-c				
6BK6	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▲
6BK7-A	High-Frequency Twin Triode	9AJ	6-2	Htr	6.3	0.45	300	—	3.0▲	1.0 ₁ ▲ 0.9 ₂ ▲	1.8▲
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
6BM6	Power Amplifier Pentode	7BZ	5-3	Htr	6.3	0.45	250	250	8.0▲	5.5▲	0.5♣
6BN6	Power Amplifier Pentode	9CR	6-3	Htr	6.3	0.2	300	300	4.3▲	5.1▲	0.2♣
6BN6	Gated-Beam Discriminator	7DF	5-3	Htr	6.3	0.3	300	100	E _c 1 = 1.25 volts RMS*		
6BN7	Double Triode	6BN7	6-3	Htr	6.3	0.75	400	—	Section 1 (Fins 6, 7, 9)		
							400	—	Section 2		

Metal tubes are shown in bold-face type, *miniature tubes in italics.*

©Subminiature type.



Service	Plate Volts	Screen Volts	Reg. Grid Volts	Plate Milli- amperes	Screen Milli- amperes	R _p , Ohms	G _m , μmhos	# Fac- tor	Load for Retd. Out- put, Ohms	Power Out- put, Watts	Tube Type
Class A Amplifier	250	—	9.0	9.5	—	8,500	1,900	16	—	—	6BF6
Class A Amplifier ♦	100	—	R _k = 100	8.0	—	7,000	4,800	35	—	—	6BF7 Ⓢ
Class A Amplifier ♦	100	—	R _k = 100	8.0	—	7,300	4,800	35	—	—	6BF7-A Ⓢ
Horizontal Deflection Amplifier	250 60	250 250	15 0	75 180	4 18	25,000	6,000	—	—	—	6BG6-G
	Max positive pulse plate voltage = 6600 volts; max plate dissipation = 20 watts; max screen dissipation = 3.2 watts; max d-c cathode current = 110 ma										
Class A Amplifier ♦	100	—	R _k = 100	8.0	—	7,000	4,800	35	—	—	6BG7 Ⓢ
Class A Amplifier	250	100	2.5	6.0	1.7	1,100,000	2,200	—	—	—	6BH5
Class A Amplifier	100 250	100 150	1.0 1.0	3.6 7.4	1.4 2.9	700,000 1,400,000	3,400 4,600	—	—	—	6BH6
Class A Amplifier	250	250	5.0	35	5.5	40,000	10,500	—	7,000	4	6BJ5
Class A Amplifier	250 100	100 100	1.0 1.0	9.2 9.3	3.3 3.5	1,300,000 250,000	3,600 3,650	—	—	—	6BJ8
Class A Amplifier	250	100	1.0	9.2	3.3	1,300,000	3,600	—	—	—	6BJ8
Class A Amplifier	100	100	1.0	9.2	3.5	250,000	3,650	—	—	—	6BJ8
Class A Amplifier	250	250	5.0	35	5.5	40,000	10,500	—	7,000	4	6BJ5
Class A Amplifier	250	100	1.0	9.2	3.3	1,300,000	3,600	—	—	—	6BJ8
Class A Amplifier	100	100	1.0	9.2	3.5	250,000	3,650	—	—	—	6BJ8
Class A Amplifier	250	250	5.0	35	5.5	40,000	10,500	—	7,000	4	6BJ5
Class A Amplifier	250	100	1.0	9.2	3.3	1,300,000	3,600	—	—	—	6BJ8
Class A Amplifier	100	100	1.0	9.2	3.5	250,000	3,650	—	—	—	6BJ8
Class A Amplifier	250	250	5.0	35	5.5	40,000	10,500	—	7,000	4	6BJ5
Class A Amplifier	250	100	1.0	9.2	3.3	1,300,000	3,600	—	—	—	6BJ8
Class A Amplifier	100	100	1.0	9.2	3.5	250,000	3,650	—	—	—	6BJ8
Class A Amplifier	250	250	5.0	35	5.5	40,000	10,500	—	7,000	4	6BJ5
Class A Amplifier	250	100	1.0	9.2	3.3	1,300,000	3,600	—	—	—	6BJ8
Class A Amplifier	100	100	1.0	9.2	3.5	250,000	3,650	—	—	—	6BJ8
Class A Amplifier	250	250	5.0	35	5.5	40,000	10,500	—	7,000	4	6BJ5
Class A Amplifier	250	100	1.0	9.2	3.3	1,300,000	3,600	—	—	—	6BJ8
Class A Amplifier	100	100	1.0	9.2	3.5	250,000	3,650	—	—	—	6BJ8
Class A Amplifier	250	250	5.0	35	5.5	40,000	10,500	—	7,000	4	6BJ5
Class A Amplifier	250	100	1.0	9.2	3.3	1,300,000	3,600	—	—	—	6BJ8
Class A Amplifier	100	100	1.0	9.2	3.5	250,000	3,650	—	—	—	6BJ8
Class A Amplifier	250	250	5.0	35	5.5	40,000	10,500	—	7,000	4	6BJ5
Class A Amplifier	250	100	1.0	9.2	3.3	1,300,000	3,600	—	—	—	6BJ8
Class A Amplifier	100	100	1.0	9.2	3.5	250,000	3,650	—	—	—	6BJ8
Class A Amplifier	250	250	5.0	35	5.5	40,000	10,500	—	7,000	4	6BJ5
Class A Amplifier	250	100	1.0	9.2	3.3	1,300,000	3,600	—	—	—	6BJ8
Class A Amplifier	100	100	1.0	9.2	3.5	250,000	3,650	—	—	—	6BJ8
Class A Amplifier	250	250	5.0	35	5.5	40,000	10,500	—	7,000	4	6BJ5
Class A Amplifier	250	100	1.0	9.2	3.3	1,300,000	3,600	—	—	—	6BJ8
Class A Amplifier	100	100	1.0	9.2	3.5	250,000	3,650	—	—	—	6BJ8
Class A Amplifier	250	250	5.0	35	5.5	40,000	10,500	—	7,000	4	6BJ5
Class A Amplifier	250	100	1.0	9.2	3.3	1,300,000	3,600	—	—	—	6BJ8
Class A Amplifier	100	100	1.0	9.2	3.5	250,000	3,650	—	—	—	6BJ8
Class A Amplifier	250	250	5.0	35	5.5	40,000	10,500	—	7,000	4	6BJ5
Class A Amplifier	250	100	1.0	9.2	3.3	1,300,000	3,600	—	—	—	6BJ8
Class A Amplifier	100	100	1.0	9.2	3.5	250,000	3,650	—	—	—	6BJ8
Class A Amplifier	250	250	5.0	35	5.5	40,000	10,500	—	7,000	4	6BJ5
Class A Amplifier	250	100	1.0	9.2	3.3	1,300,000	3,600	—	—	—	6BJ8
Class A Amplifier	100	100	1.0	9.2	3.5	250,000	3,650	—	—	—	6BJ8
Class A Amplifier	250	250	5.0	35	5.5	40,000	10,500	—	7,000	4	6BJ5
Class A Amplifier	250	100	1.0	9.2	3.3	1,300,000	3,600	—	—	—	6BJ8
Class A Amplifier	100	100	1.0	9.2	3.5	250,000	3,650	—	—	—	6BJ8
Class A Amplifier	250	250	5.0	35	5.5	40,000	10,500	—	7,000	4	6BJ5
Class A Amplifier	250	100	1.0	9.2	3.3	1,300,000	3,600	—	—	—	6BJ8
Class A Amplifier	100	100	1.0	9.2	3.5	250,000	3,650	—	—	—	6BJ8
Class A Amplifier	250	250	5.0	35	5.5	40,000	10,500	—	7,000	4	6BJ5
Class A Amplifier	250	100	1.0	9.2	3.3	1,300,000	3,600	—	—	—	6BJ8
Class A Amplifier	100	100	1.0	9.2	3.5	250,000	3,650	—	—	—	6BJ8
Class A Amplifier	250	250	5.0	35	5.5	40,000	10,500	—	7,000	4	6BJ5
Class A Amplifier	250	100	1.0	9.2	3.3	1,300,000	3,600	—	—	—	6BJ8
Class A Amplifier	100	100	1.0	9.2	3.5	250,000	3,650	—	—	—	6BJ8
Class A Amplifier	250	250	5.0	35	5.5	40,000	10,500	—	7,000	4	6BJ5
Class A Amplifier	250	100	1.0	9.2	3.3	1,300,000	3,600	—	—	—	6BJ8
Class A Amplifier	100	100	1.0	9.2	3.5	250,000	3,650	—	—	—	6BJ8
Class A Amplifier	250	250	5.0	35	5.5	40,000	10,500	—	7,000	4	6BJ5
Class A Amplifier	250	100	1.0	9.2	3.3	1,300,000	3,600	—	—	—	6BJ8
Class A Amplifier	100	100	1.0	9.2	3.5	250,000	3,650	—	—	—	6BJ8
Class A Amplifier	250	250	5.0	35	5.5	40,000	10,500	—	7,000	4	6BJ5
Class A Amplifier	250	100	1.0	9.2	3.3	1,300,000	3,600	—	—	—	6BJ8
Class A Amplifier	100	100	1.0	9.2	3.5	250,000	3,650	—	—	—	6BJ8
Class A Amplifier	250	250	5.0	35	5.5	40,000	10,500	—	7,000	4	6BJ5
Class A Amplifier	250	100	1.0	9.2	3.3	1,300,000	3,600	—	—	—	6BJ8
Class A Amplifier	100	100	1.0	9.2	3.5	250,000	3,650	—	—	—	6BJ8
Class A Amplifier	250	250	5.0	35	5.5	40,000	10,500	—	7,000	4	6BJ5
Class A Amplifier	250	100	1.0	9.2	3.3	1,300,000	3,600	—	—	—	6BJ8
Class A Amplifier	100	100	1.0	9.2	3.5	250,000	3,650	—	—	—	6BJ8
Class A Amplifier	250	250	5.0	35	5.5	40,000	10,500	—	7,000	4	6BJ5
Class A Amplifier	250	100	1.0	9.2	3.3	1,300,000	3,600	—	—	—	6BJ8
Class A Amplifier	100	100	1.0	9.2	3.5	250,000	3,650	—	—	—	6BJ8
Class A Amplifier	250	250	5.0	35	5.5	40,000	10,500	—	7,000	4	6BJ5
Class A Amplifier	250	100	1.0	9.2	3.3	1,300,000	3,600	—	—	—	6BJ8
Class A Amplifier	100	100	1.0	9.2	3.5	250,000	3,650	—	—	—	6BJ8
Class A Amplifier	250	250	5.0	35	5.5	40,000	10,500	—	7,000	4	6BJ5
Class A Amplifier	250	100	1.0	9.2	3.3	1,300,000	3,600	—	—	—	6BJ8
Class A Amplifier	100	100	1.0	9.2	3.5	250,000	3,650	—	—	—	6BJ8
Class A Amplifier	250	250	5.0	35	5.5	40,000	10,500	—	7,000	4	6BJ5
Class A Amplifier	250	100	1.0	9.2	3.3	1,300,000	3,600	—	—	—	6BJ8
Class A Amplifier	100	100	1.0	9.2	3.5	250,000	3,650	—	—	—	6BJ8
Class A Amplifier	250	250	5.0	35	5.5	40,000	10,500	—	7,000	4	6BJ5
Class A Amplifier	250	100	1.0	9.2	3.3	1,300,000	3,600	—	—	—	6BJ8
Class A Amplifier	100	100	1.0	9.2	3.5	250,000	3,650	—	—	—	6BJ8
Class A Amplifier	250	250	5.0	35	5.5	40,000	10,500	—	7,000	4	6BJ5
Class A Amplifier	250	100	1.0	9.2	3.3	1,300,000	3,600	—	—	—	6BJ8
Class A Amplifier	100	100	1.0	9.2	3.5	250,000	3,650	—	—	—	6BJ8
Class A Amplifier	250	250	5.0	35	5.5	40,000	10,500	—	7,000	4	6BJ5
Class A Amplifier	250	100	1.0	9.2	3.3	1,300,000	3,600	—	—	—	6BJ8
Class A Amplifier	100	100	1.0	9.2	3.5	250,000	3,650	—	—	—	6BJ8
Class A Amplifier	250	250	5.0	35	5.5	40,000	10,500	—	7,000	4	6BJ5
Class A Amplifier	250	100	1.0	9.2	3.3	1,300,000	3,600	—	—	—	6BJ8
Class A Amplifier	100	100	1.0	9.2	3.5	250,000	3,650	—	—	—	6BJ8
Class A Amplifier	250	250	5.0	35	5.5	40,000	10,500	—	7,000	4	6BJ5
Class A Amplifier	250	100	1.0	9.2	3.3	1,300,000	3,600	—	—	—	6BJ8
Class A Amplifier	100	100	1.0	9.2	3.5	250,000	3,650	—	—	—	6BJ8
Class A Amplifier	250	250	5.0	35	5.5	40,000	10,500	—	7,000	4	6BJ5
Class A Amplifier	250	100	1.0	9.2	3.3	1,300,000	3,600	—	—	—	6BJ8
Class A Amplifier	100	100	1.0	9.2	3.5	250,000	3,650	—	—	—	6BJ8
Class A Amplifier	250	250	5.0	35	5.5	40,000	10,500	—	7,000	4	6BJ5
Class A Amplifier	250	100	1.0	9.2	3.3	1,300,000	3,600	—	—	—	6BJ8
Class A Amplifier	100	100	1.0	9.2	3.5	250,000	3,650	—	—	—	6BJ8
Class A Amplifier	250	250	5.0	35	5.5	40,000	10,500	—	7,000	4	6BJ5
Class A Amplifier	250	100	1.0	9.2	3.3	1,300,000	3,600	—	—	—	6BJ8
Class A Amplifier	100	100	1.0	9.2	3.5	250,000	3,650	—	—	—	6BJ8
Class A Amplifier	250	250	5.0	35	5.5	40,000	10,500	—	7,000	4	6BJ5
Class A Amplifier	250	100	1.0	9.2	3.3	1,300,000	3,600	—	—	—	6BJ8
Class A Amplifier	100	100	1.0	9.2	3.5	250,000	3,650	—	—	—	6BJ8
Class A Amplifier	250	250	5.0	35	5.5	40,000	10,500	—	7,000	4	6BJ5
Class A Amplifier	250	100	1.0	9.2	3.3	1,300,000	3,600	—	—	—	6BJ8
Class A Amplifier	100	100	1.0	9.2	3.5	250,000	3,650	—	—	—	6BJ8
Class A Amplifier	250	250	5.0	35	5.5	40,000	10,500	—	7,000	4	6BJ5
Class A Amplifier	250										

‡ Approximate.

▲ Without external shield.

† Zero signal

♦ Grids 3 and 5 are screen. Grid 4 is signal-input grid.

Conversion transconductance.

♣ Maximum.

♥Grids 2 and 4 are screen. Grid 3 is signal-

input grid.

✦ Screen supply voltage.

■ Absolute maxi
+ Plate-to-plate

♠ Per section.

⊕ For both sections,

* Minimum.

4 Heater warm-up time controlled for series-string service

● Plate supply voltage.

Input plate

3--The duration of the pulse voltage must not exceed 15 percent of one scanning

cycle.
Section 1

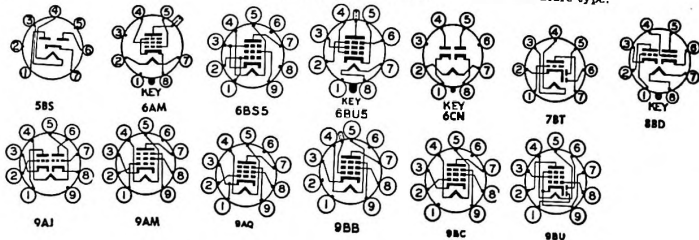
1—Section 1.
2—Section 2.

4—A resistor of 3 ohms must be put in series with heater.

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
6BQ6-G 6BQ6-GA 6BQ6-GTA	Beam Power Amplifier	6AM	12-8 T-X 9-49 or 9-50	Htr	6.3	1.2	600	175	—	—	—
6BQ6-GT	Beam Power Amplifier	6AM	9-49 or 9-50	Htr	6.3	1.2	550	175	15▲	7.5▲	0.6▲
6BQ7 6BQ7-A	High-Frequency Twin Triode	9AJ	6-2	Htr	6.3	0.4	250	—	2.85	1.35	1.15
6BR7	Sharp-Cutoff RF Pentode	9BC	6-2	Htr	6.3	0.15	300	125	4.25▲	4.0▲	0.01▲
6BS6	Beam Power Amplifier	6BS5	6-3	Htr	6.3	0.75	250	250	9.5▲	4.5▲	0.3▲
6BS7	Sharp-Cutoff RF Pentode	9BB	6-6	Htr	6.3	0.15	300	125	4.0▲	4.0▲	0.01▲
6BT8	Duplex-Diode, High-Mu Triode	7BT	5-3	Htr	6.3	0.3	300	—	—	—	—
6BU5	Sharp-Cutoff Beam Pentode	6BU6	T-X	Htr	6.3	0.15	20,000	100	3.0▲	0.9▲	0.024▲
6BU8	Duplex-Diode Medium-Mu Triode	7BT	5-3	Htr	6.3	0.3	300	—	—	—	—
6BV7	Duplex-Diode Power Amplifier Pentode	9BU	6-3	Htr	6.3	0.6	250	250	11.5▲	9.5▲	0.5▲
6BW8	Beam Power Amplifier	9AM	6-3	Htr	6.3	0.45	315	285	—	—	—
6BW7	Sharp-Cutoff RF Pentode	9AQ	6-2	Htr	6.3	0.3	275	275	10▲	3.5▲	0.01▲
6BX4	Full-Wave High-Vacuum Rectifier	5BS	5-3	Htr	6.3	0.6	—	—	—	—	—
6BX6	RF Pentode	9AQ	6-3	Htr	6.3	0.3	250	250	—	—	—
6BX7-GT	Medium-Mu Twin Triode	8BD	9-41	Htr	6.3	1.5	500	—	1.4▲ 1.8▲	1.1▲ 1.2▲	4.2▲ 4.0▲
6BY5-G	Full-Wave High-Vacuum Rectifier	6CN	14-3	Htr	6.3	1.6	Tube Voltage Drop: ▲ 32 v at 175 ma d-c				
6BY5-GA	Full-Wave High-Vacuum Rectifier	6CN	T-X	Htr	6.3	1.6	Tube Voltage Drop: ▲ 32 v at 175 ma d-c				

Metal tubes are shown in bold-face type; miniature tubes in italics.

▲ Subminiature type.



Service	Plate Volts	Screen Volts	Neg Grid Volts	Plate Milli-amperes	Screen Milli-amperes	R _p Ohms	G _m μmhos	# Factor	Load for Rated Output, Ohms	Power Output, Watts	Tube Type
Horizontal Deflection Amplifier	250 60	150 150	22.5 0	55 225	2.1 25	20,000	5,500	—	—	—	6BQ6-G 6BQ6-GA 6BQ6-GTA
	Max positive pulse plate voltage; ⊕ = 9000 volts; max plate dissipation = 11 watts; max screen dissipation = 2.5 watts; max d-c cathode current = 110 ma										
Horizontal Deflection Amplifier	250 60	150 150	22.5 0	55 225	2.1 25	20,000	5,550	—	—	—	6BQ6-GT
	Max positive pulse plate voltage; ⊕ = 5500 volts; max plate dissipation = 11 watts; max screen dissipation = 2.5 watts; max d-c cathode current = 110 ma										
Class A Amplifier	150	—	R _k = 220	9	—	5,800	6,000	35	—	—	6BQ7 6BQ7-A
						6,100	6,400	39	—	—	6BR7
Class A Amplifier	250	100	3.0	2.1	0.6	2,500,000	1,250	—	—	—	6BS6
Class A Amplifier	250	250	7.5	50†	6.0†	17,000	7,000	—	5,000	4.5	6BS7
Class A Amplifier	250	100	3.0	2.1	0.6	2,400,000	1,250	—	—	—	6BT8
Class A Amplifier	250 100	—	3.0 1.0	1.0 0.8	—	58,000 54,000	1,200 1,300	70 70	—	—	6BU5
High-Voltage Shunt Regulator	20,000	70	2.4	1.0	0.5	—	—	—	—	—	6BU8
	Max plate dissipation = 20 watts; max screen dissipation = 0.1 watt; max d-c cathode current = 2.5 ma										
Class A Amplifier	250	—	9.0	9.5	—	8,500	1,900	16	10,000	0.30	6BV7
Class A Amplifier	250	250	5.0	38†	6.0†	100,000	10,000	—	8,000	4.0	6BW8
Class A Amplifier	315 250 180	225 150 180	13.0 12.5 8.5	34† 45† 29†	2.2† 4.5† 3†	77,000 52,000 58,000	3,750 4,100 3,700	— 8,500 5,000	5.5 4.5 2.0	—	6BW7
Class A Amplifier	250	250	R _k = 180	10	3†	750,000	8,200	—	—	—	6BX4
Full-Wave Rectifier	Max d-c output current = 90 ma; max peak inverse voltage = 1350 volts; rms supply voltage per plate = 350 volts; max peak current per plate = 270 ma.										
Class A Amplifier	170	170	2.0	10	2.5	400,000	7,200	—	—	—	6BX6
Vertical Deflection Amplifier	250 100	— —	R _k = 390 0	42 80	—	1,300	7,600	10	—	—	6BX7-GT
	Max positive pulse plate voltage; ⊕ = 2000 volts; max plate dissipation = 10 watts; max plate dissipation ⊕ = 12 watts; max d-c cathode current = 60 ma										
Full-Wave Rectifier TV Damp-er Services	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 = 3000 volts; max peak current per plate = 525 ma										6BY5-G
Full-Wave Rectifier TV Damp-er Services	Max d-c output current = 175 ma; max peak inverse voltage ⊕ = 1400 volts; max peak current per plate = 525 ma; Max d-c output current = 175 ma; max peak inverse voltage ⊕ = 3000 volts; max peak current per plate = 525 ma										6BY5-GA

† Approximate.

▲ Without external shield.

‡ Zero signal.

§ Grids 3 and 5 are screen. Grid 4 is signal.

¶ Input grid.

Conversion transconductance.

* Maximum.

♥ Grids 2 and 4 are screen. Grid 3 is signal.

♦ Screen supply voltage.

⊕ Absolute maximum rating.

‡ Plate-to-plate.

◆ Per section.

Ⓢ For both sections.

* Minimum.

¶ Heater warm-up time controlled for series-string service.

§ Plate supply voltage.

|| Input plate.

‡ The duration of the pulse voltage must not exceed 15 percent of one scanning cycle.

1-Section 1.

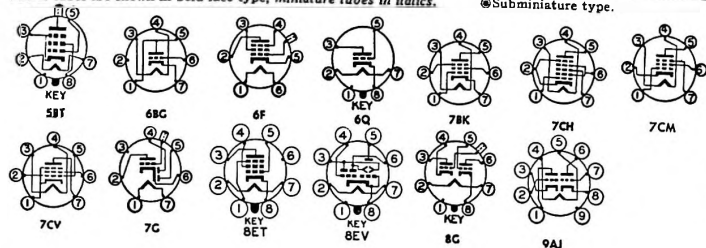
2-Section 2.

—A resistor of 3 ohms must be put in series with heater.

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
6BY6	Dual-Control Heptode	7CH	5-2	Htr	6.3	0.3	300	150	—	—	—
6BY7	Remote-Cutoff RF Pentode	9AQ	6-3	Htr	6.3	0.3	250	250	7.2▲	3.7▲	0.007▲
6BZ6	Semi-Remote-Cutoff RF Pentode	7CM	5-2	Htr	6.3	0.3	300	150	7.5	2.8	0.015
6BZ7	High-Frequency Twin Triode	9AJ	6-2	Htr	6.3	0.4	250	—	2.5 ₁	1.35 ₁	1.15
6C4	Medium-Mu Triode	6BG	5-2	Htr	6.3	0.15	300	—	1.8▲	1.3▲	1.6▲
6C5 6C5-GT	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
6C6	Sharp-Cutoff Pentode	6F	12-2	Htr	6.3	0.3	300	125	5.0▲	6.5▲	0.007▲
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	—	—	—	—
6CA6	Beam Power Amplifier	7CV	5-3	Htr	6.3	1.2	130	130	15▲	9▲	0.5▲
6CA7	Power Amplifier Pentode	8ET	T-X	Htr	6.3	1.5	800	425	—	—	—
6CB6	Sharp-Cutoff RF Pentode	7CM	5-2	Htr	6.3	0.3	300	150	6.5▲	2.0▲	0.020▲
6CD6-G	Beam Power Amplifier	5BT	16-5	Htr	6.3	2.5	700	175	25▲	9.5▲	0.6▲
6CD7	Electron-Ray Indicator	8EV	T-X	Htr	6.3	0.2	300	—	Max target voltage = 300 v		
6CF6	Sharp-Cutoff RF Pentode	7CM	5-2	Htr	6.3	0.3	300	150	6.5▲	2.0▲	0.02▲
6CG6	Remote-Cutoff Pentode	7BK	5-2	Htr	6.3	0.3	300	150	5.0	5.0	0.008
6CH6	RF Pentode	9BA	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	6-4	Htr	6.3	0.71	300	300	11.2▲	6.0▲	0.1▲
6CL6	Power Amplifier Pentode	9BV	6-3	Htr	6.3	0.65	300	150	11▲	5.5▲	0.12▲

Model tubes are shown in bold-face type, miniature tubes in *italics*.

③ Subminiature type.



Service	Plate Volts	Screen Volts	Neg Grid Volts	Plate Milliamps	Screen Milliamps	R _p Ohms	G _m μmhos	μ Factor	Load for Rated Output, Ohms	Power Output, Watts	Tube Type
Gated Amplifier	250 10	100 25	2.5 0	6.5 1.4	9 3.5	—	1,900	—	E ₂ = -2.5 volts E ₃ = 0 volts	—	6BY6
Class A Amplifier	250	100	2.0	10	2.5	500,000	6,000	—	—	—	6BY7
Class A Amplifier	200	150	R _k = 180	11	2.6	600,000	6,100	—	—	—	6BZ6
Class A Amplifier	150	—	R _k = 220	10	—	5,600	6,800	38	—	—	6BZ7
Class A Amplifier Class C Amplifier	250 100 300	— — —	8.5 0 27	10.5 11.8 25	— — —	7,700 6,250 —	2,200 3,100 —	17 19.5	— — —	— 5.5	6C4
Class A Amplifier	250	—	8.0	8.0	—	10,000	2,000	20	—	—	6C5 6C5-GT
Class A Amplifier	250	100	3.0	2.0	0.5	1,000,000	1,225	—	—	—	6C6
Class A Amplifier	250	—	9.0	5.5	—	16,000	1,250	20	—	—	6C7
Class A Amplifier	250	—	4.5	3.2	—	22,500	1,600	36	—	—	6C8-G
Class A Amplifier	125 110	125 110	4.5 4.0	37† 32†	4.0† 3.5†	15,000 16,000	9,200 8,100	—	4,500 3,500	1.5 1.1	6CA6
Class A Amplifier	250	250	13.5	100	15	15,000	11,000	—	2,000	11	6CA7
Class A Amplifier	200	150	R _k = 180	9.5	2.8	600,000	6,200	—	—	—	6CB6
Horizontal Deflection Amplifier	175 60 100	175 100 0	30 0 230	75 230 21	5.5 — —	7,200	7,700	—	—	—	6CD6-G
Tuning Indicator	Plate voltage = 250 v thru 1 meg to each plate; target voltage = 250 v (E ₂ = -16, shadow angle of sector 2 minimum) (E ₃ = -5, shadow angle of sector 1 minimum) (E ₄ = 0, shadow angle of both sectors = 180°)										6CD7
Class A Amplifier	200	150	R _k = 180	9.5	2.8	600,000	6,200	—	—	—	6CF6
Class A Amplifier	250	150	8.0	9.0	2.3	720,000	2,000	—	—	—	6CG6
Class A Amplifier	250	250	4.5	40	6.0	50,000	11,000	—	—	—	6CH6
Horizontal Deflection Amplifier	250 250	250 250	38.5 32	32 2.4	15,000 4,600	—	—	—	—	—	6CJ6
Class A Amplifier	250	250	5.5	36	5	130,000	10,000	—	—	—	6CK6
Class A Amplifier	250	150	3.0	30†	7.0†	150,000	11,000	—	7,500	2.8	6CL6

▲ Without external shield.

⬆ Maximum.

‡ Approximate.

§ Section 1.

◆ Per section.

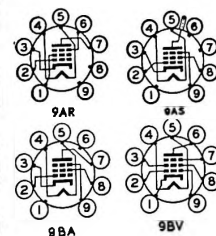
• Minimum.

† Zero signal.

‡ Plate supply voltage.

— The duration of the pulse voltage must not exceed 15 percent of one scanning cycle.

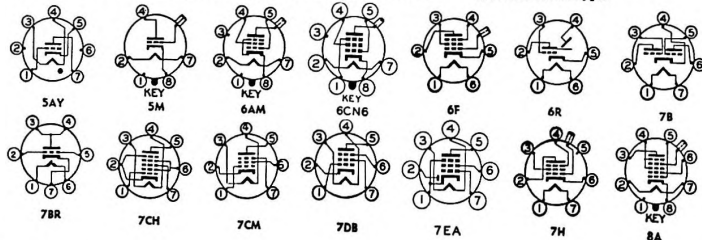
③ Absolute maximum rating.



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	Out-put	Grid-plate
6CM6	Beam Power Amplifier	9CK	6-3	Htr	6.3	0.45	315	285	Pentode Connection		
							315	—	Triode (G ₂ & P tied) or Pentode Connection		
							315	285			
6CN6	Beam Power Amplifier	6CN6	T-X	Htr	6.3	1.4	800	400	18▲	6.5▲	1.2▲
6CQ6	Remote-Cutoff RF Pentode	7DB	5-2	Htr	6.3	0.2	300	300	7.0▲	4.5▲	0.01▲
6CR6	Diode Remote-Cutoff Pentode	7EA	5-2	Htr	6.3	0.3	300	150	—	—	—
6CS6	Dual-Control Heptode	7CH	5-2	Htr	6.3	0.3	300	100	—	—	—
6CU6	Beam Power Amplifier	6AM	T-X	Htr	6.3	1.2	550	175	15▲	7.0▲	0.55▲
6D4	Gas Triode	5AY	5-2	Htr	6.3	0.25	Tube Voltage Drop: 16 v at 25 ma d-c				
6D6	Remote-Cutoff RF Pentode	6F	12-2	Htr	6.3	0.3	300	150	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		
6DA6	Remote-Cutoff RF Pentode	9BA	T-X	Htr	6.3	0.2	300	300	5.5▲	5.1▲	0.002▲
6DB6	Dual-Control Pentode	7CM	5-2	Htr	6.3	0.3	300	150	6.0▲	5.0▲	0.0035▲
6DC6	Semi-Remote-Cutoff Pentode	7CM	5-2	Htr	6.3	0.3	300	150	6.5▲	2.0▲	0.02▲
6DE6	Sharp-Cutoff RF Pentode	7CM	5-2	Htr	6.3	0.3	300	150	6.5▲	1.9▲	0.02▲
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 RF 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-G 6F5-GT	High-Mu Triode	5M	8-4 12-8 9-17 or 9-47	Htr	6.3	0.3	300	—	—	—	—

Metal tubes are shown in bold-face type, miniature tubes in italics.

● Subminiature type.



Service	Plate Volts	Screen Volts	Neg Grid Volts	Plate Milli-am-peres	Screen Milli-am-peres	R _p Ohms	G _m amhos	# Fac-tor	Load for Rated Out-put, Ohms	Power Out-put, Watts	Tube Type
Class A Amplifier Vertical Deflection Amplifier	250	250	12.5	45†	4.5†	50,000	4,100	—	5,000	4.5	6CM6
	Max positive pulse plate voltage = 500 volts; max plate dissipation = 3.0 watts; max screen dissipation (pentode connection only) = 1.75 watts; max d-c cathode current = 40 ma										
Horizontal Deflection Amplifier	275	275	9.0	91	11	20,000	14,000	—	—	—	6CN6
	Max positive pulse plate voltage = 800 volts; max plate dissipation = 2.5 watts; max screen dissipation = 8.0 watts; max d-c cathode current = 200 ma										
Class A Amplifier	250	200	2.5	7.8	2.0	—	2,500	—	—	—	6CQ6
Class A Amplifier	250	100	2.0	9.5	3.0	200,000	1,950	—	—	—	6CR6
Gated Amplifier	100	30	1.0	1.0	1.3	1,000,000	1,100	E _{g2} = 0 volts E _{g3} = -1.0 volts E _{g3} = 0 volts	—	—	6CS6
	100	30	0	0.8	5.5	700,000	—	—	—	—	
	10	30	0	2.0	4.5	—	—	—	—	—	
Horizontal Deflection Amplifier	250	150	22.5	55	2.1	20,000	5,500	—	—	—	6CU6
	60	150	0	225	25	—	—	—	—	—	
	Max positive pulse plate voltage = 600 volts; max plate dissipation = 11 watts; max screen dissipation = 2.5 watts; max d-c cathode current = 110 ma										
Relay Control	Max d-c cathode current = 25 ma; max voltage between elements = 450 volts; max peak cathode current = 100 ma										
Class A Amplifier	250	100	3.0	8.2	2.0	800,000	1,600	—	—	—	6D4
Class A Amplifier	250	100	3.0	2.0	0.5	1,000,000*	1,225	—	—	—	6D6
Converter	250	100	3.0	3.5	2.6	400,000	550	E _{g1} (Osc Plate) = 250 thru 20,000 ohms I _{g2} = 4.3 ma	—	—	6D7
Class A Amplifier	250	100	2.0	9.0	3.0	1,000,000*	3,600	—	—	—	6D8-G
Class A Amplifier	150	150	1.0	5.8	6.6	50,000	2,050	E _{g2} = -3.0 volts	—	—	6DA6
Class A Amplifier	200	150	R _k = 180	9.0	3.0	500,000	5,500	—	—	—	6DB6
Class A Amplifier	200	150	R _k = 180	9.5	2.8	600,000	6,200	—	—	—	6DC6
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 = 4 ma)										
Class A Amplifier	250	—	27.5	18†	—	3,500	1,700	6.0	14,000	1.6	6E5
	—	—	—	—	—	—	—	—	—	—	
Class A Amplifier	250	100	3.0	8.2	2.0	800,000	1,600	—	—	—	6E6
Class A Amplifier	80	—	R _k = 105	13	—	2,900	5,800	17	—	—	6E7
Class A Amplifier	250	—	2.0	0.9	—	66,000	1,500	100	—	—	6F4
	100	—	1.0	0.4	—	85,000	1,150	100	—	—	
	Screen supply voltage. Absolute maximum rating. Plate-to-plate. Per section.										

§ Approximate.

▲ Without external shield.

† Zero signal.

♦ Grids 3 and 5 are screen. Grid 4 is signal-input grid.

Conversion transconductance.

▲ Maximum.

♦ Grids 2 and 4 are screen. Grid 3 is signal-input grid.

Screen supply voltage.

Absolute maximum rating.

† Plate-to-plate.

▲ Per section.

* For both sections.

* Minimum.

† Heater warm-up time controlled for series-string service.

Plate supply voltage.

| Input plate.

— The duration of the pulse voltage must not exceed 15 percent of one scanning cycle.

1 Section 1.

2 Section 2.

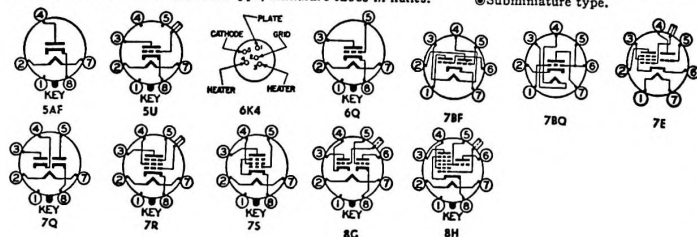
— A resistor of 3 ohms must be put in series with heater.



Tube Type	Classification by Construction	Base Connections	Outline Dwg	Type Cathode	Fila-ment Volts	Fila-ment Amp	Max Plate Volts	Max Screen Volts	Capacitance in Micromicrofarads		
									Input	Out-put	Grid-plate
6F6 6F6-G 6F6-GT	Power Amplifier Pentode	7S	8-6 14-3 9-11	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	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	Pentode connection Triode connection (G ₁ & 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: Δ 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
6J8 6J8-W	Medium-Mu Twin Triode	7BF	5-2	Htr	6.3	0.45	300	—	2.6 1.6 1.0	1.6 5.0	1.5
6J7 6J7-G 6J7-GT	Sharp-Cutoff Pentode	7R	8-4 12-8 9-18	Htr	6.3	0.3	300	150	Pentode connection Triode connection (G ₁ , G ₂ & P tied)		
6J8-G	Triode-Heptode Converter	8H	12-8	Htr	6.3	0.3	300	100	Dsc 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 Δ	0.8 Δ	2.4 Δ
6K5-G 6K5-GT	High-Mu Triode	5U	12-8 9-17	Htr	6.3	0.3	250	—	2.4 Δ	3.6 Δ	2.0 Δ
6K6-GT	Power Amplifier Pentode	7S	9-11 or 9-41	Htr	6.3	0.4	315	285	Single Tube 2 Tubes, Push-Pull Triode Connection (G ₂ & P tied)		

Metal tubes are shown in bold-face type, miniature tubes in *italics*.

⑥ Subminiature type.



Service	Plate Volts	Screen Volts	Neg Grid Volts	Plate Milli-am-peres	Screen Milli-am-peres	R _p Ohms	G _m μ mhos	μ Fac-tor	Load for Rated Out-put, Ohms	Power Out-put, Watts	Tube Type
Class A Amplifier Class A Amplifier	285 250 315	285 250 285	20 16.5 24	38† 34† 62†	7.0† 6.5† 12†	78,000‡ 80,000‡ —	2,550 2,500 —	— — —	7,000 7,000 10,000	4.8 3.2 11	6F6 6F6-G 6F6-GT
Class A Amplifier Class A Amplifier	250 100	100 —	3.0 3.0	6.5 3.5	1.5 —	850,000 16,000	1,100 500	— 8.0	— —	— —	6F7
Class A Amplifier Δ	250	—	8.0	9.0	—	7,700‡	2,600‡	20	—	—	6F8-G
Class A Amplifier Class A Amplifier	180 180	180 —	8.0 12	15† 11†	2.5† —	175,000 4,750	2,300 2,000	— 9.5	10,000 12,000	1.1 0.25	6G6-G 6G6-GT
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	150	—	R _k = 100	15	—	4,500‡	12,000	55	—	—	6J4
Class A Amplifier	250 90	—	8.0 0	9.0 10	—	7,700‡ 6,700‡	2,800 3,000	20 20	— —	— —	6J8 6J8-GT 6J8-WGT
Class A Amplifier Class C Amplifier	100 150	—	R _k = 50 @ 10	8.5 30	—	7,100‡	5300	38	—	—	6J8 6J8-W
Class A Amplifier Class A Amplifier	250 100 250	100 100 —	3.0 3.0 8.0	2.0 2.0 6.5	0.5 0.5 —	1,000,000* 1,000,000 10,500	1,225 1,185 1,900	— 20 —	— — —	— — —	6J7 6J7-G 6J7-GT
Converter	250	100	3.0	1.3	3.5	2,500,000‡	290‡	E _b (Triode Osc) = 250 thru 20,000 ohms I _b (Triode) = 5.8 ma			6J8-G
Class A Amplifier	200	—	R _k = 680	11.5	—	4,650	3,450	16	—	—	6K4
Class A Amplifier	250	—	3.0	1.1	—	50,000‡	1,400	70‡	—	—	6K5-G 6K5-GT
Class A Amplifier Class A Amplifier	315 250 100 285	250 250 100 285	21 18 7.0 R _k = 55†	25.5† 32† 9.0† 55†	4.0† 5.5† 1.0† 9.0†	110,000‡ 90,000‡ 104,000‡ —	2,100 2,300 1,500 —	— — — —	9,000 7,600 12,000 12,000	4.5 3.4 0.35 9.8	6K6-GT
Vertical Deflection Amplifier	250	—	18	37.5	—	2,500‡	2,700	6.8	—	—	—

‡ Approximate.

* Without external shield.

† Zero signal.

‡ Grids 3 and 5 are screen. Grid 4 is signal-input grid.

§ Conversion transconductance.

¶ Maximum.

♥ Grids 2 and 4 are screen. Grid 3 is signal-input grid.

✱ Screen supply voltage.

⑥ Absolute maximum rating.

† Plate-to-plate.

‡ Per section.

⑥ For both sections.

* Minimum.

¶ Heater warm-up time controlled for series-string service.

‡ Plate supply voltage.

§ Input plate.

♥ The duration of the pulse voltage must not exceed 15 percent of one scanning cycle.

† Section 1.

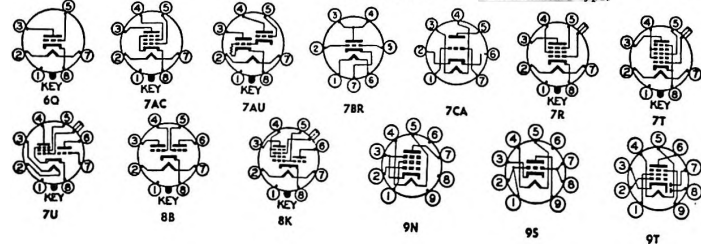
‡ Section 2.

⑥ A resistor of 3 ohms must be put in series with heater.

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
6K7 6K7-G 6K7-GT	Remote-Cutoff RF Pentode	7R	8-4 12-8 9-18	Htr	6.3	0.3	300	150	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 6L6-GB	Beam Power Amplifier	7AC	10-1 16-3 14-3 T-X	Htr	6.3	0.9	360	270	Single Tube Single Tube 2 Tubes, Push-pull 2 Tubes, Push-pull 2 Tubes, Push-pull Triode Connection (G ₁ & P Tied)		
6L7 6L7-G	Pentagrid Mixer	7T	8-4 12-8	Htr	6.3	0.3	300	100	—	—	—
6M6	Power Amplifier Pentode	9N	6-4	Htr	6.3	0.71	300	100	Single Tube 2 Tubes, Push-pull E_{as} (Injection) = 18 v peak*		
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
6P7-G	Triode-Pentode	7U	12-8	Htr	6.3	0.3	250	100	Pentode Section Triode Section		
6Q4	High-Frequency Triode	9S	6-2	Htr	6.3	0.48	300	—	5.4	0.06	3.4

Metal tubes are shown in bold-face type, miniature tubes in italics.

*Subminiature type.



Service	Plate Volts	Screen Volts	Neg Grid Volts	Plate Milli-amperes	Screen Milli-amperes	R _p Ohms	G _m umhos	# Fac-tor	Load for Rated Out-put, Ohms	Power Out-put, Watts	Tube Type
Class A Amplifier	250 250 100	125 100 100	3.0 3.0 1.0	10.5 7.0 9.5	2.6 1.7 2.7	600,000 800,000 150,000	1,650 1,450 1,650	— — —	— — —	— — —	6K7 6K7-G 6K7-GT
Converter	250	100	3.0	2.5	6.0	600,000	350 #	—	E_{as} (Triode Osc) = 100 I_{as} (Triode) = 3.8 ma		6K8 6K8-G 6K8-GT
Class A Amplifier	80	—	$R_{g1} = 150$	9.5	—	4,400	6400	28	—	—	6L4
Class A Amplifier	250	—	9.0	8.0	—	9,000	1,900	17	—	—	6L5-G
Class A Amplifier	250	250	14	72†	5.0†	22,500	6,000	—	2,500	6.5	6L6 6L6-G 6L6-GA 6L6-GB
Class A Amplifier	350	250	18	54†	2.5†	33,000	5,200	—	4,200	10.8	
Class A Amplifier	270	270	17.5	134†	11†	23,500	5,700	—	5,000	17.5	
Class A Amplifier	360	270	22.5	88†	5.0†	—	—	—	3,800	18	
Class A Amplifier	360	270	22.5	88†	5.0†	—	—	—	3,800	47	
Class A Amplifier	250	—	20	40†	—	1,700	4,700	8.0	5,000	1.4	
Class A Amplifier Mixer	250 250 150	100 150	3.0 6.0*	5.3 3.3	6.5 9.2	600,000 1,000,000*	1,100 350 #	$E_{as} = -3.0$ volts $E_{c3} = -15$ volts		—	6L7 6L7-G
Class A Amplifier	250 250	250 250	$R_{g1} = 170$ $R_{g2} = 85$	36 79	5.2 16	40,000 —	10,000 —	— —	7,000 7,000†	3.9 9.4	6M6
Class A Amplifier	180	—	3.5	12	—	5,400	6,000	32	—	—	6N4
Class A Amplifier	300	300	0	45	8.0	24,000	2,400	—	7,000	4.0	6N6-G
Class B Amplifier	300	—	0	35†	—	—	—	—	8,000	10‡	6N7 6N7-G 6N7-GT
Class A Amplifier	294	—	6.0	7.0	—	11,000	3,200	35	—	—	
Class A Amplifier	250	85	$R_{g1} = 295$	5.0	1.75	1,600,000	2,200	35	—	—	6N8
Class A Amplifier	250	—	13.5	5.0	—	9,500	1,450	13.8	—	—	6P5-GT
Class A Amplifier	250 100	100 —	3.0 3.0	6.5 3.5	1.5 —	850,000 16,000	1,100 500	— 8.0	— —	— —	6P7-G
Class A Amplifier	250	—	1.5	15	—	—	12,000	80	—	—	6Q4

‡ Approximate.

† Without external shield.

‡ Zero signal.

‡ Grids 3 and 5 are screen. Grid 4 is signal-

input grid.

Conversion transconductance.

‡ Maximum.

‡ Grids 2 and 4 are screen. Grid 3 is signal-

input grid.

‡ Screen supply voltage.

‡ Absolute maximum rating.

‡ Plate-to-plate.

‡ Per section.

‡ For both sections.

‡ Minimum.

‡ Heater warm-up time controlled for

series-string service.

‡ Plate supply voltage.

‡ Input plate.

‡ The duration of the pulse voltage must

not exceed 15 percent of one scanning

cycle.

‡ Section 1.

‡ Section 2.

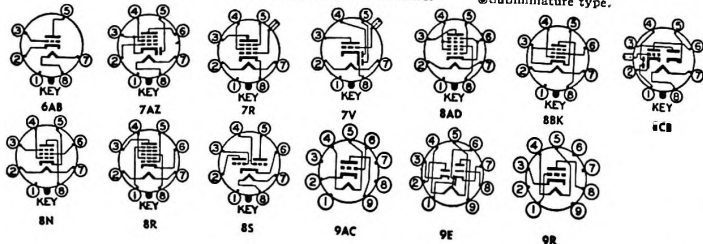
‡ A resistor of 3 ohms must be put in series

with heater.

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
607 607-G 607-GT	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 6R7-G 6R7-GT	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 6S4-A	Medium-Mu Triode	9AC	6-3	Htr	6.3 6.3 $\frac{1}{4}$	0.6 0.6 $\frac{1}{4}$	500	—	4.2	0.9	2.6
6S7 6S7-G	Remote-Cutoff RF Pentode	7R	8-2 12-8	Htr	6.3	0.15	300	150	6.5 4.4	10.5 8.0	0.005 0.008 $\frac{1}{2}$
6S8-GT	Triple-Diode High-Mu Triode	8CB	9-23 or 9-48	Htr	6.3	0.3	300	—	—	—	—
6SA7 6SA7-GT	Pentagrid Converter	8R $\heartsuit$ 8AD $\heartsuit$	8-1 9-11 or 9-41	Htr	6.3	0.3	300	100	Use $I_{B1} = 0.5$ ma $R_{B1} = 20,000$ ohms		
6SB7-Y	Pentagrid Converter	8R $\heartsuit$	8-1	Htr	6.3	0.3	300	100	Use $I_{B1} = 0.35$ ma $R_{B1} = 20,000$ ohms		
6SC7 6SC7-GT	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 $\frac{1}{2}$
6SE7-GT	Sharp-Cutoff Pentode	8N	9-12	Htr	6.3	0.3	300	125	8.0	7.5	0.005 $\frac{1}{2}$
6SF6 6SF6-GT	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 $\frac{1}{2}$
6SG7 6SG7-GT	Semi-Remote-Cutoff RF Pentode	8BK	8-1 9-12	Htr	6.3	0.3	300	150	8.5 8.5	7.0 7.0	0.003 $\frac{1}{2}$ 0.0035 $\frac{1}{2}$
6SH7 6SH7-GT	Sharp-Cutoff RF Pentode	8BK	8-1 9-12	Htr	6.3	0.3	300	150	8.5	7.0	0.003 $\frac{1}{2}$
6SJ7 6SJ7-GT	Sharp-Cutoff Pentode	8N	8-1 9-12	Htr	6.3	0.3	300	150	Pentode Connection Triode Connection (G_2 , G_3 & P tied)		
6SK7 6SK7-W 6SK7-GT	Remote-Cutoff RF Pentode	8N	8-1 9-12	Htr	6.3	0.3	300	150	6.0 6.5	7.0 7.5	0.003 $\frac{1}{2}$ 0.006 $\frac{1}{2}$

Metal tubes are shown in bold-face type, miniature tubes in italics.

③ Subminiature type.



Service	Plate Volts	Screen Volts	Neg Grid Volts	Plate Milli-am-peres	Screen Milli-am-peres	R_p , Ohms	G_m , umhos	μ Factor	Load for Rated Out-put, Ohms	Power Out-put, Watts	Tube Type
Class A Amplifier	250 100	—	3.0 1.0	1.0 0.8	—	58,000 58,000	1,200 1,200	70 70	—	—	607 607-G 607-GT
Class A Amplifier	150 120	—	2.0 2.0	30 20	—	—	5,500 4,000	16 16	—	—	6R4
Class A Amplifier	250	—	9.0	9.5	—	8,500	1,900	16	—	—	6R7 6R7-G 6R7-GT
Class A Amplifier	250	—	9.0	9.5	—	8,500	1,900	16	10,000	0.30	6R8
Vertical Deflection Amplifier	250	—	8.0	26	—	3,600 $\frac{1}{2}$	4,500	16	—	—	6S4 6S4-A
Max positive pulse plate voltage $\frac{1}{2}$ = 2,200 volts; max plate dissipation = 7.5 watts; max d-c cathode current = 30 ma											
Class A Amplifier	250	100	3.0	8.5	2.0	1,000,000 $\frac{1}{2}$	1,750	—	—	—	6S7 6S7-G
Class A Amplifier	250	—	2.0	0.9	—	91,000 $\frac{1}{2}$	1,100	100	—	—	6S8-GT
Converter	250 100	100 100	2.0 2.0	3.5 3.3	8.5	1,000,000 $\frac{1}{2}$ 500,000 $\frac{1}{2}$	450 $\frac{1}{2}$ 425 $\frac{1}{2}$	—	—	—	6SA7 6SA7-GT
Converter	250	100	1.0	3.8	10	1,000,000 $\frac{1}{2}$	950 $\frac{1}{2}$	—	—	—	6SB7-Y
Class A Amplifier $\frac{1}{2}$	250	—	2.0	2.0	—	53,000 $\frac{1}{2}$	1,325 $\frac{1}{2}$	70	—	—	6SC7 6SC7-GT
Class A Amplifier	250	125	2.0	9.5	3.0	700,000	4,250	—	—	—	6SD7-GT
Class A Amplifier	250	100	1.5	4.5	1.5	1,000,000	3,400	—	—	—	6SE7-GT
Class A Amplifier	250 100	—	2.0 1.0	0.9 0.4	—	60,000 85,000	1,500 1,150	100 100	—	—	6SF6 6SF6-GT
Class A Amplifier	250	100	1.0	12.4	3.3	700,000 $\frac{1}{2}$	2,050	—	—	—	6SF7
Class A Amplifier	250 250 100	150 125 100	2.5 1.0 1.0	9.2 11.8 8.2	3.4 4.4 3.2	1,000,000 $\frac{1}{2}$ 900,000 250,000	4,000 4,700 4,100	—	—	—	6SG7 6SG7-GT
Class A Amplifier	250	150	1.0	10.8	4.1	900,000 $\frac{1}{2}$	4,900	—	—	—	6SH7 6SH7-GT
Class A Amplifier	250 100 250 180	100 100 —	3.0 3.0 8.5 6.0	3.0 2.9 9.2 6.0	0.8 0.9 —	1,000,000 $\frac{1}{2}$ 700,000 7,600 8,200	1,650 1,575 2,500 2,300	— — 19 19	— — —	—	6SJ7 6SJ7-GT
Class A Amplifier	250 100	100 100	3.0 1.0	9.2 13	2.6 4.0	800,000 120,000	2,000 2,350	—	—	—	6SK7 6SK7-W 6SK7-GT

§ Approximate.

▲ Without external shield.

† Zero signal.

‡ Grids 3 and 5 are screen. Grid 4 is signal-input grid.

* Conversion transconductance.

▲ Maximum.

♥ Grids 2 and 4 are screen. Grid 3 is signal-input grid.

✱ Screen supply voltage.

⊕ Absolute maximum rating.

⬇ Plate-to-plate.

♣ Per section.

Ⓔ For both sections.

Ⓜ Minimum.

Ⓢ Heater warm-up time controlled for series-string service.

Ⓣ Plate supply voltage.

Ⓤ Input plate.

Ⓡ The duration of the pulse voltage must not exceed 15 percent of one scanning cycle.

Ⓢ Section 1.

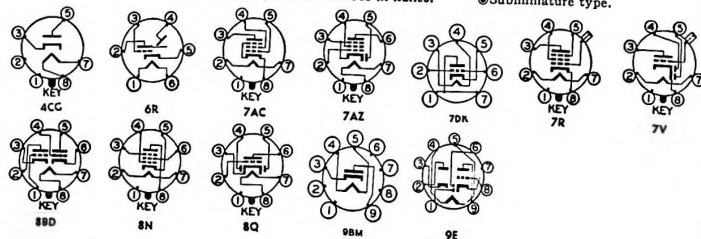
Ⓣ Section 2.

Ⓤ A resistor of 3 ohms must be put in series with heater.

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
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, Δ 3.0, Δ	0.8, Δ 1.2, Δ	3.8, Δ 4.0, Δ
6SN7-GTA 6SN7-GTB	Medium-Mu Twin Triode	8BD	9-11 or 9-41	Htr	6.3	0.6	450	—	2.2, Δ 2.6, Δ	0.7, Δ 3.8, Δ	4.0, Δ
6SQ7 6SQ7-GT	Duplex-Diode, High-Mu Triode	8Q	8-1 or 9-12	Htr	6.3	0.3	300	—	3.2, Δ 4.2, Δ	3.0, Δ 3.4, Δ	1.6, Δ 1.8, Δ
6SR7 6SR7-GT	Duplex-Diode Medium-Mu Triode	8Q	8-1 or 9-11	Htr	6.3	0.3	250	—	3.6, Δ	2.8, Δ	2.4, Δ
6SS7	Remote-Cutoff RF Pentode	8N	8-1	Htr	6.3	0.15	300	100	5.5	7.0	0.004 Δ
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 RF Pentode	7AZ	8-1	Htr	6.3	0.3	300	150	6.5	6.0	0.004 Δ
6SZ7	Duplex-Diode High-Mu Triode	8Q	8-1	Htr	6.3	0.15	300	—	2.6	2.8	1.1
6T4	UHF Triode Oscillator	7DK	5-1	Htr	6.3	0.225	200	—	2.6 Δ	0.4 Δ	1.7 Δ
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 Δ	1.0 Δ	2.2 Δ
6U3	Half-Wave High-Vacuum Rectifier	9BM	6-4	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 Δ	Max target voltage = 285 Min target voltage = 125			
6U6-GT	Beam Power Amplifier	7AC	9-11	Htr	6.3	0.75	200	135	—	—	—
6U7-G	Remote-Cutoff RF Pentode	7R	12-4	Htr	6.3	0.3	300	100	5.0	9.0	0.007 Δ

Metal tubes are shown in bold-face type, miniature tubes in italics.

③ Subminiature type.



Service	Plate Volts	Screen Volts	Neg Grid Volts	Plate Milli-amperes	Screen Milli-amperes	R _p Ohms	G _m μ mhos	# Factor	Load for Rated Output, Ohms	Power Output, Watts	Tube Type
Class A Amplifier Δ	250	—	2.0	2.3	—	44,000	1600	70	—	—	6SL7-GT 6SL7-WGT
Class A Amplifier Δ	250	—	8.0	9.0	—	7,700	2600	20	—	—	6SN7-GT 6SN7-WGT
Class A Amplifier Δ	250	—	8.0	9.0	—	7,700	2,600	20	—	—	6SN7-GTA 6SN7-GTB
Vertical Deflection Amplifier Δ	250	—	8.0	9.0	—	7,700	2,600	20	—	—	
Max positive pulse plate voltage = 1500 volts; max plate dissipation = 5.0 watts; max pulse dissipation = 7.5 watts; max d-c cathode current = 20 ma											
Class A Amplifier	250	—	2.0	1.1	—	85,000	1175	100	—	—	6SQ7 6SQ7-GT
Class A Amplifier	250	—	9.0	9.5	—	8,500	1,900	16	—	—	6SR7 6SR7-GT
Class A Amplifier	250	100	3.0	9.0	2.0	1,000,000	1,850	—	—	—	6SS7
Class A Amplifier	250	—	9.0	9.5	—	8,500	1,900	16	—	—	6ST7
Class A Amplifier Δ	250	—	2.0	2.3	—	44,000	1,600	70	—	—	6SU7-GTY
Class A Amplifier	250	150	1.0	7.5	2.8	1,500,000	3,600	—	—	—	6SV7
Class A Amplifier	250	—	3.0	1.0	—	58,000	1,200	70	—	—	6SZ7
Class A Amplifier	80	—	R _k = 150	18	—	1,860	7,000	13	—	—	6T4
Tuning Indicator	Plate voltage = 250 thru 1 meg. target voltage = 250 (E _k = -22 volts for max illumination) (E _k = 0 volts for min illumination)										
Class A Amplifier	250	—	3.0	1.2	—	62,000	1,050	65	—	—	6T7-G
Class A Amplifier	250	—	3.0	1.0	—	58,000	1,200	70	—	—	6T8
Class A Amplifier	100	—	1.0	0.8	—	54,000	1,300	70	—	—	6U3
TV Dampener Service	Max d-c output current = 180 ma; max peak inverse voltage = 4,000 volts; max peak current = 400 ma										
Half-Wave Rectifier TV Dampener 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										6U4-GT
Tuning Indicator	Plate voltage = 250 thru 1 meg. target voltage = 250 (E _k = -22 volts, shadow = 0°) (E _k = 0 volt, shadow = 90°, plate current = 0.24 ma, target current = 4 ma)										6U5
Class A Amplifier	200	135	14.0	65†	3.0†	20,000	6,200	—	3,000	5.5	6U6-GT
Class A Amplifier	250	100	3.0	8.2	2.0	800,000	1,600	—	—	—	6U7-G

‡ Approximate.

† Without external shield.

‡ Grids 3 and 5 are screen. Grid 4 is signal-input grid.

§ Conversion transconductance.

¶ Maximum.

‡ Grids 2 and 4 are screen. Grid 3 is signal-input grid.

§ Screen supply voltage.

¶ Absolute maximum rating.

‡ Plate-to-plate.

† Per section.

③ For both sections.

* Minimum.

† Heater warm-up time controlled for series-string service.

‡ Plate supply voltage.

§ Input plate.

¶ The duration of the pulse voltage must not exceed 15 percent of one scanning cycle.

‡ Section 1.

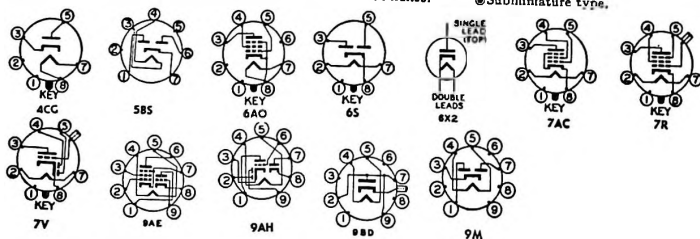
§ Section 2.

¶ A resistor of 3 ohms must be put in series with heater.

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
6U8	Triode-Pentode	9AE	6-2	Htr	6.3	0.45	300	150	Pentode Section		
							300	—	Triode Section		
6V5 6V5-A	Half-Wave High-Vacuum Rectifier	9BD	6-7 T-X	Htr	6.3	1.75	Tube Voltage Drop: 19 v at 250 ma d-c				
6V4	Full-Wave High-Vacuum Rectifier	9M	6-4	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	Beam Power Amplifier	7AC	8-6	Htr	6.3	0.45	315	285	Single Tube		
									2 Tubes, Push-pull		
6V6-GT	Beam Power Amplifier	7AC	9-11 or 9-41	Htr	6.3	0.45	315	285	Single Tube		
							—	—	2 Tubes, Push-Pull		
							315	—	Triode Connection (G ₁ & P tied)		
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	—	—	—	—
6W2	Half-Wave High-Voltage Rectifier	6X2	T-X	Htr	6.3	0.08	—	—	—	—	—
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	150	Pentode Connection		
							300	—	Triode Connection (G ₁ & 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-Voltage 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				

Metal tubes are shown in bold-face type, miniature tubes in italics.

©Subminiature type.

[illegible]

1. Approximate

▲ Without external shield.

† Zero signal.

Grids 3 and 5 are screen. Grid 4 is signal input grid.

Conversion transconductance.

♥ Grids 2 and 4 are screen. Grid 3 is signal input grid.

✱Screen supply voltage.

Ⓢ Absolute maximum rating

† Plate-to-plate

♠ Per section

⊕For both sections.

* Minimum.

9 Heater warm-up time controlled for series-string service.

⊗ Plate supply voltage

Input plate.

4—The duration of the pulse voltage must not exceed 15 percent of one scanning cycle.

1—Section 1.

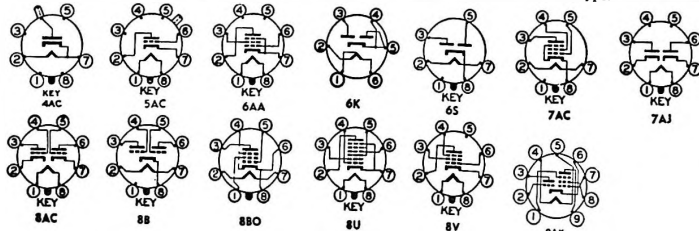
Section 2.

4—A resistor of 3 ohms must be put in series with heater.

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
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	—	—	—	—	—
6V6-G 6V6-GA 6V6-GT	Beam Power Amplifier	7AC	14-3 T-X 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 RF 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 RF 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 RF Pentode	8V	9-30	Htr	6.3	0.15	300	300	7.0	6.0	0.005 ♦
7AH7	Remote-Cutoff RF Pentode	8V	9-30	Htr	6.3	0.15	300	300	7.0	6.5	0.005 ♦
7AJ7	Sharp-Cutoff RF 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

Metal tubes are shown in bold-face type, miniature tubes in italics.

♦ Subminiature type.



Service	Plate Volts	Screen Volts	Neg Grid Volts	Plate Milli-amperes	Screen Milli-amperes	R _p , Ohms	G _m , μmhos	# Factor	Load for Rated Output, Ohms	Power Output, Watts	Tube Type
Class A Amplifier	250	150	R _k = 200	7.7	1.6	750,000	4,600	—	—	—	6X8
Class A Amplifier	100	—	R _k = 100	8.5	—	6,900	5,800	40	—	—	
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
Class A Amplifier	200	135	14	6.1†	2.2†	18,300	7,100	—	2,600	6.0	6V6-G 6V6-GA 6V6-GT
Class B Amplifier	250	—	0	5.3† ⬆	—	—	—	—	14,000	8.0	6Y7-G
Full-Wave Rectifier	Max d-c output current = 60 ma; max peak inverse voltage = 1500 volts										6Z5
Class B Amplifier	180	—	0	4.2† ⬆	—	Input signal = 0.320 watts		12,000	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	250 90	— 0	8.0 0	9.0 10	— —	7,700 6,700	2,600 3,000	20 20	— —	— —	7A4
Class A Amplifier	110	110	7.5	40†	3.0†	16,000	5,800	—	2,600	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	250	100	3.0	9.2	2.6	800,000	2,000	—	—	—	7A7
Converter	250	100	3.0	3.0	3.2	700,000	550 #	E _{c3} (Osc Plate) = 250 thru 20,000 ohms I _{c3} = 4.2 ma		—	7A8
Class A Amplifier	250	100	2.0	4.0	1.3	500,000	1,800	—	—	—	7AB7
Class A Amplifier	300	150	R _k = 68	28	7.0	300,000	9,500	—	—	—	7AD7
Class A Amplifier ⬆	250	—	10	9.0	—	7,600	2,100	16	—	—	7AF7
Class A Amplifier	250	250	R _k = 250	6.0	2.0	1,000,000	4,200	—	—	—	7AG7
Class A Amplifier	250	250	R _k = 250	6.8	1.9	1,000,000	3,300	—	—	—	7AH7
Class A Amplifier	100 250	100 100	1.0 3.0	5.7 2.2	1.8 0.7	400,000 1,000,000	2,275 1,575	— —	— —	— —	7AJ7
Class A Amplifier	150 150 150	90 90 90	0 0 1	40 2.5 2.0	21 0.45 80	11,500 — —	6,000 — —	E _{c3} = 0 volts E _{c2} = 0 volts E _{c3} = 9.5 volts		—	7AK7

† Approximate.

▲ Without external shield.

† Zero signal.

♦ Grids 3 and 5 are screen. Grid 4 is signal-input grid.

Conversion transconductance.

▲ Maximum.

♦ Grids 2 and 4 are screen. Grid 3 is signal-input grid.

Screen supply voltage.

† Absolute maximum rating.

‡ Plate-to-plate.

♦ Per section.

Ⓢ For both sections.

* Minimum.

Ⓢ Heater warm-up time controlled for series-acting service.

‡ Plate supply voltage.

|| Input plate.

— The duration of the pulse voltage must not exceed 15 percent of one scanning cycle.

1— Section 1.

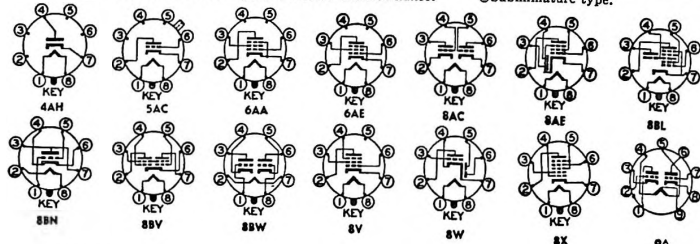
2— Section 2.

— A resistor of 3 ohms must be put in series with heater.

Tube Type	Classification by Construction	Base Connections	Out-line Dwg	Type Cath. code	Fila-ment Volts	Fila-ment Amp	Max Plate Volts	Max Screen Volts	Capacitance in Micromicrofarads		
									Input	Out-put	Grid-plate
7A U7	Medium-Mu Twin Triode	9A	6-2	Htr	7.0 [3.5]	0.3 0.6	300	—	1.8	2.0	1.5
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 RF Pentode	8V	9-30	Htr	6.3	0.15	300	100	5.0	6.0	0.004
7B8	Pentagrid Converter	8X	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
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
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	1.6
7G7	Sharp-Cutoff Pentode	8V	9-30	Htr	6.3	0.45	250	100	9.0	7.0	0.007
7G8	Sharp-Cutoff Twin Tetrode	8BV	9-32	Htr	6.3	0.3	300	150	3.4	2.6	0.15
7H7	Semi-Remote-Cutoff RF Pentode	8V	9-30	Htr	6.3	0.3	300	150	8.0	7.0	0.004
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	—	—

Metal tubes are shown in bold-face type, miniature tubes in italics.

③ Subminiature type.



Service	Plate Volts	Screen Volts	Neg Grid Volts	Plate Milli-amperes	Screen Milli-amperes	R_p Ohms	G_m μ mhos	μ Fac-tor	Load for Rated Out-put, Ohms	Power Out-put, Watts	Tube Type
Class A Amplifier	250 100	—	8.5 0	10.5 11.8	—	7,700 6,500	2,200 3,100	17 20	—	—	7A U7
Vertical Deflection Amplifier	Max positive pulse plate voltage; $\square = 1,200$ volts; max plate dissipation = 2.75 watts; max a-c cathode current = 20 ma										
Class A Amplifier	250	—	2.0	0.9	—	66,000	1,500	100	—	—	7B4
Class A Amplifier	315 250	250 250	21 18	25.5 32	4.0 5.5	75,000 68,000	2,100 2,300	—	9,000 7,600	4.5 3.4	7B5
Class A Amplifier	250 100	—	2.0 1.0	0.9 0.4	—	91,000 110,000	1,100 900	100 100	—	—	7B6
Class A Amplifier	250 100	100 100	3.0 3.0	8.5 8.2	1.7 1.8	750,000 800,000	1,750 1,675	—	—	—	7B7
Converter	250	100	3.0	3.5	2.7	360,000	550 #	—	E_{g2} (Osc Plate) = 250 thru 20,000 ohms $I_{g2} = 4.0$ ma	—	7B8
Half-Wave Rectifier	Max d-c output current = 5.0 ma; max rms supply voltage = 117 volts										
Class A Amplifier	315 250	225 250	13.0 12.5	34 41	2.2 4.5	77,000 52,000	3,750 4,100	—	8,500 5,000	5.5 4.5	7C5
Class A Amplifier	250 100	—	1.0 0	1.3 1.0	—	100,000 100,000	1,000 850	100 85	—	—	7C6
Class A Amplifier	250	100	3.0	2.0	0.5	2,000,000	1,300	—	—	—	7C7
Class A Amplifier	180	—	3.0	5.5	—	12,000	3,000	36	—	—	7E5
Class A Amplifier	250	—	9.0	9.5	—	8,500	1,900	16	—	—	7E6
Class A Amplifier	250	100	3.0	7.5	1.6	700,000	1,300	—	—	—	7E7
Class A Amplifier	250	—	2.0	2.3	—	44,000	1,600	70	—	—	7F7
Class A Amplifier	250	—	$R_{g1} = 500$	6.0	—	—	3,300	48	—	—	7F8
Class A Amplifier	250	100	2.0	6.0	2.0	800,000	4,500	—	—	—	7G7
Class A Amplifier	250	100	2.5	4.5	0.8	225,000	2,100	—	—	—	7G8
Class A Amplifier	250 100	150 100	$R_{g1} = 180$ 1.5	10 7.5	3.2 2.6	800,000 350,000	4,000 4,000	—	—	—	7H7
Converter	250	100	3.0	1.4	2.8	1,500,000	290 #	—	E_{g3} (Triode Osc) = 250 thru 50,000 ohms I_{g3} (Triode) = 5.0 ma	—	7J7

‡ Approximate.

* Without external shield.

† Zero signal.

‡ Grids 3 and 5 are screen. Grid 4 is signal-input grid.

Conversion transconductance.

* Maximum.

† Grids 2 and 4 are screen. Grid 3 is signal-input grid.

‡ Screen supply voltage.

† Absolute maximum rating.

‡ Plate-to-plate.

* Per section.

③ For both sections.

* Minimum.

‡ Heater warm-up time controlled for series-acting service.

Filament supply voltage.

|| Input plate.

— The duration of the pulse voltage must not exceed 15 percent of one scanning cycle.

— Section 1.

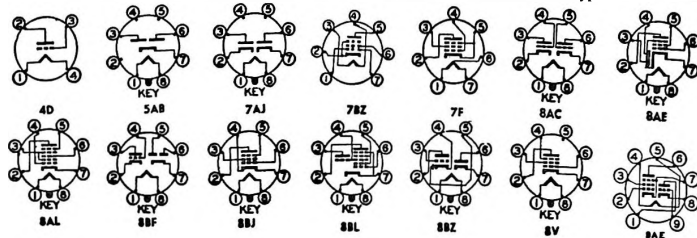
— Section 2.

— A resistor of 3 ohms must be put in series with heater.

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
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
7N7	Medium-Mu Twin Triode	8AC	9-31	Htr	6.3	0.6	300	—	—	—	—
7Q7	Pentagrid Converter	8AL	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
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	—	—
7T7	Sharp-Cutoff RF Pentode	8V	9-30	Htr	6.3	0.3	300	150	7.5	5.5	0.005
7V7	Sharp-Cutoff RF Pentode	8V	9-30	Htr	6.3	0.45	300	150	—	—	—
7W7	Sharp-Cutoff RF 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: Δ 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: Δ 22 v at 70 ma d-c				
7Z4	Full-Wave High-Vacuum Rectifier	5AB	9-31	Htr	6.3	0.9	Tube Voltage Drop: Δ 40 v at 100 ma				
9BM6	Power Amplifier Pentode	7BZ	5-3	Htr	9.5	0.3	250	250	8.0	5.5	0.5
9BW6	Beam Power Amplifier	9AM	6-3	Htr	9.45	0.3	315	285	—	—	—
9U8	Triode-Pentode	9AE	6-2	Htr	9.45	0.3	300	150	Pentode Section		
							300	—	Triode Section		
10	Power Amplifier Triode	4D	T-X	Fil	7.5	1.25	425	—	4.0	3.0	7.0
12A	Detector Amplifier Triode	4D	14-1	Fil	5.0 DC	0.25	180	—	4.0	2.0	8.5
12A4	Medium-Mu Triode	9AG	6-3	Htr	12.6 6.3	0.3 0.6	450	—	4.9	0.9	5.6
12A5	Power Amplifier Pentode	7F	12-5	Htr	12.6 6.3	0.3 0.6	180	180	—	—	—

Metal tubes are shown in bold-face type, miniature tubes in italics.

③ Subminiature type.



Service	Plate Volts	Screen Volts	Neg Grid Volts	Plate Milliamperes	Screen Milliamperes	R_p Ohms	G_m μ mhos	# Factor	Load for Rated Out-put, Ohms	Power Out-put, Watts	Tube Type
Class A Amplifier	250	—	2.0	2.3	—	44,000	1,600	70	—	—	7K7
Class A Amplifier	250	100	1.5	4.5	1.5	1,000,000	3,100	—	—	—	7L7
Class A Amplifier	250	—	8.0	9.0	—	7,700	2,600	20	—	—	7N7
Converter	250	100	2.0	3.5	8.5	1,000,000	550 #	—	—	—	7Q7
Class A Amplifier	250 100	100 100	1.0 1.0	5.7 5.5	2.1 2.2	1,000,000 350,000	3,200 3,000	—	—	—	7R7
Converter	250	100	2.0	1.8	3.0	1,250,000	525 #	—	—	—	7S7
Class A Amplifier	250	150	1.0	10.8	4.1	900,000	4,900	—	—	—	7T7
Class A Amplifier	300	150	$R_b = 180$	10	3.9	300,000	5,800	—	—	—	7V7
Class A Amplifier	300	150	$R_b = 160$	10	3.9	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	250	—	1.0	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	250	250	6.0	30†	3.0†	60,000	7,000	—	7,000	3.5	9BM6
Class A Amplifier	250	250	12.5	45†	4.5†	52,000	4,100	—	5,000	4.5	9BW6
Class A Amplifier	250	110	$R_b = 68$	10	3.5	400,000	5,200	—	—	—	9U8
Class A Amplifier	150	—	$R_b = 56$	18	—	5,000	8,500	40	—	—	
Class A Amplifier	425	—	40	18†	—	5,000	1,600	8.0	10,200	1.6	10
Class A Amplifier	180	—	13.5	7.7†	—	4,700	1,800	8.5	10,650	0.285	12A
Vertical Deflection Amplifier	250	—	9.0	23	—	2,500	8,000	20	—	—	12A4
	Max positive pulse plate voltage; $\Delta = 1,000$ volts; max plate dissipation = 5.9 watts; max d-c cathode current = 30 ma										
Class A Amplifier	180	180	25	45†	8†	35,000	2,400	—	3,300	3.4	12A5
	100	100	15	17†	3†	50,000	1,700	—	4,600	0.8	

§ Approximate.

† Without external shield.

‡ Zero signal.
§ Grids 3 and 5 are screen. Grid 4 is signal-input grid.

¶ Conversion transconductance.

* Maximum.

♥ Grids 2 and 4 are screen. Grid 3 is signal-input grid.

✱ Screen supply voltage.

① Absolute maximum rating.

1. Plate-to-plate.

Δ Per section.

② For both sections.

* Minimum.

¶ Heater warm-up time controlled for series-string service.

§ Plate supply voltage.

|| Input plate.

— The duration of the pulse voltage must not exceed 15 percent of one scanning cycle.

1. Section 1.

2. Section 2.

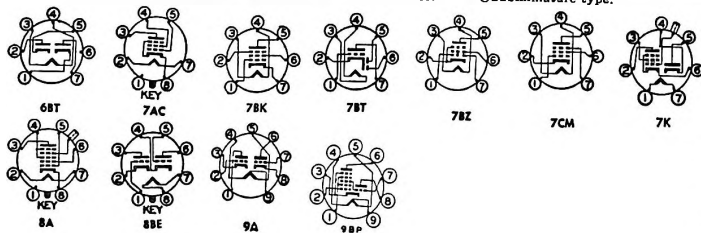
4. A resistor of 3 ohms must be put in series with heater.



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
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†	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		
12AL6	Twin Diode	6BT	5-1	Htr	12.6	0.15	Tube Voltage Drop: ♦ 10 v at 60 ma d-c				
12AO6	Beam Power Amplifier	7BZ	5-3	Htr	12.6	0.225	250	250	8.3▲	8.2▲	0.35▲
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 1.5	1.5
12AU6	Sharp-Cutoff RF 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
12AU7-A	Medium-Mu Twin Triode	9A	6-2	Htr	12.6 6.3	0.15 0.3	300	—	1.6▲	0.5 0.35▲	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 1.6	1.9
12AW6	Sharp-Cutoff RF Pentode	7CM	5-2	Htr	12.6	0.15	300	150	Pentode Connection		
							300	—	Triode Connection (G_1 & P tied)		

Metal tubes are shown in bold-face type, miniature tubes in italics.

♦ Subminiature type.



Service	Plate Volts	Screen Volts	Neg Grid Volts	Plate Milli-am-peres	Screen Milli-am-peres	R_p Ohms	G_m μ mhos	# Factor	Load for Rated Out-put, Ohms	Power, Out-put, Watts	Tube Type	
Class A Amplifier	250	250	12.5	30†	3.5†	70,000‡	3,000	—	7,500	3.4	12A6 12A6-GT	
Class A Amplifier Half-Wave Rectifier	135	135	13.5	9.0†	2.5†	102,000	975	—	13,500	0.55	12A7	
Max d-c output current = 30 ma; max rms supply voltage = 125 v												
Converter	250	100	3.0	3.5	2.7	360,000§	550 #	E_{c1} (Osc Plate) = 250 I_{g1} 20,000 ohms I_{g2} = 4.0 ma		—	12A8-G 12A8-GT	
Class A Amplifier ♦	180	—	6.5	7.6	—	8,400	1,900	16	—	—	12AH7-GT	
Converter	250	100	3.0	2.6	4.4	1,500,000	550 #	E_c (Triode Osc) = 100 I_b (Triode) = 5.3 ma		—	12AH8	
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										—	12AL6
Class A Amplifier	180 250	180 250	12.5 12.5	29† 45†	3.0† 4.5†	58,000‡ 52,000‡	3,700 4,100	—	5,500 5,000	2.0 4.5	12AO6	
Class A Amplifier	250 100	—	3.0 1.0	1.0 0.8	—	58,000 54,000	1,200 1,300	70 70	—	—	12AT6	
Class A Amplifier ♦	250 100	—	$R_k = 200$ $R_k = 270$	10 3.7	—	10,900 15,000	5,500 4,000	60 60	—	—	12AT7	
Class A Amplifier	250 100	150 100	$R_k = 68$ $R_k = 150$ $R_k = 330$	10.6 5.0 12.2	4.3 2.1 —	1,000,000§ 500,000§ —	5,200 3,900 4,800	— — 36	— — —	—	12AU6	
Class A Amplifier ♦	250 100	—	8.5 0	10.5 11.8	—	7,700§ 6,500§	2,200 3,100	17 20	—	—	12AU7	
Vertical Deflection Amplifier ♦	Max positive pulse plate voltage; $E = 1,200$ volts; max plate dissipation = 2.75 watts; max d-c cathode current = 20 ma										—	
Class A Amplifier ♦	250 100	—	8.5 0	10.5 11.8	—	7,700§ 6,250§	2,200 3,100	17 19.5	—	—	12AU7-A	
Class A Amplifier	250 100	—	2.0 1.0	1.2 0.5	—	62,500 80,000	1,600 1,250	100 100	—	—	12AV6	
Class A Amplifier ♦	150 100	—	$R_k = 56$ $R_k = 120$	18 9.0	—	4,800 6,100	8,500 6,100	41 37	—	—	12AV7	
Class A Amplifier	250 250	150 —	$R_k = 200$ $R_k = 825$	7.0 5.5	2.0 —	800,000§ 11,000	5,000 3,800	— 4?	—	—	12AW6	

‡ Approximate.

▲ Without external shield.

† Zero signal.

♦ Grids 3 and 5 are screen. Grid 4 is signal-

input grid.

‡ Conversion transconductance.

▲ Maximum.

♦ Grids 2 and 4 are screen. Grid 3 is signal-

input grid.

§ Screen supply voltage.

‡ Absolute maximum rating.

† Plate-to-plate.

♦ Per section.

§ For both sections.

♦ Minimum.

‡ Heater warm-up time controlled for

series-string service.

‡ Plate supply voltage.

‡ Input plate.

— The duration of the pulse voltage must

not exceed 15 percent of one scanning

cycle.

1—Section 1.

2—Section 2.

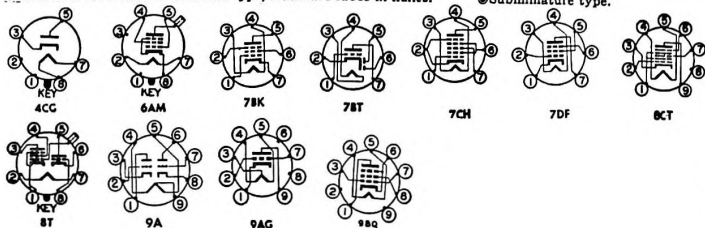
— A resistor of 3 ohms must be put in series

with heater.

Tube Type	Classification by Construction	Base Connections	Out-line Dwg	Type Cath-ode	Filament Volts	Filament Amp	Max Plate Volts	Max Screen Volts	Capacitance in Micromicrofarads		
									Input	Out-put	Grid-plate
12AX4-GT 12AX4-GTA	Half-Wave High-Vacuum Rectifier	4CG	9-11 or 9-41	Htr	12.6 12.6%	0.6 0.6%	Tube Voltage Drop: 32 v at 250 ma d-c				
18AX7	High-Mu Twin Triode	9A	6-2	Htr	12.6 6.3	0.15 0.3	300	—	1.8	1.9	1.7
18AY7	Twin Triode	9A	6-2	Htr	12.6 6.3	0.3 0.15	300	—	1.3▲	0.6▲	1.3▲
18AZ7	Twin Triode	9A	6-2	Htr	12.6 6.3	0.225 0.45	330	—	3.2	1.3 1.6	1.9
12B4 12B4-A	Low-Mu Triode	9AG	6-3	Htr	12.6 6.3	0.3 0.6	550	—	5.0▲	1.5▲	4.8▲
12B8-GT	Remote-Cutoff Pentode Triode	8T	9-24	Htr	12.6	0.3	90	90	Pentode Section Triode Section		
12BA6	Remote-Cutoff RF 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		
12BD6	Remote-Cutoff RF 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	12.6 6.3	0.3 0.6	300 450	—	3.2▲	0.5 0.42	2.6▲
12BK6	Beam Power Amplifier	9BQ	6-3	Htr	12.6%	0.6%	250	250	13▲	5.0▲	0.6▲
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 rms*		
12BQ6-GA 12BQ6-GTA	Beam Power Amplifier	6AM	T-X 9-49 or 9-50	Htr	12.6%	0.6%	600%	175	—	—	—

Metal tubes are shown in bold-face type, miniature tubes in italics.

*Subminiature type.



Service	Plate Volts	Screen Volts	Neg Grid Volts	Plate Milli-am-peres	Screen Milli-am-peres	R_p Ohms	$G_{m'}$ μ mhos	μ Fac-tor	Load for Rated Out-put, Ohms	Power Out-put, Watts	Tube Type
TV Damp-er Service	Max d-c output current = 125 ma; max peak inverse voltage = 4400 volts; max peak current = 750 ma										12AX4-GT 12AX4-GTA
Class A Amplifier♦	100 250	— —	1.0 2.0	0.5 1.2	— —	80,000 82,500	1,250 1,600	100 100	— —	— —	18AX7
Class A Amplifier♦	250 250	— —	4.0 3.0	3.0 —	— —	25,000	1,750	44	— —	— —	18AY7
Class A Amplifier	250 100	— —	R_k = 200 R_k = 270	10 3.7	— —	10,900 15,000	5,500 4,000	60 60	— —	— —	18AZ7
Vertical Deflection Amplifier	150	—	17.5	34	—	1,030	6,300	6.5	—	—	12B4 12B4-A
	Max positive pulse plate voltage, Φ = 1000 volts; max plate dissipation = 5.5 watts; max d-c cathode current = 30 ma										
Class A Amplifier	90	90	3.0	7.0	2.0	200,000	1,800	—	—	—	12B8-GT
Class A Amplifier	90	—	0	2.8	—	37,000	2,400	90	—	—	
Class A Amplifier	250 100	100 100	R_k = 68 R_k = 68	11 10.8	4.2 4.4	1,000,000 250,000	4,400 4,300	— —	— —	— —	12BA6
Converter	250	100	1.0	3.8	10	1,000,000	950 #	—	—	—	12BA7
Class A Amplifier	250	100	3.0	9.0	3.5	700,000	2,000	—	—	—	12BD6
Converter	250 100	100 100	1.5 1.5	2.9 2.6	6.8 7.0	1,000,000 400,000	475 # 455 #	— —	— —	— —	12BE6
Class A Amplifier	250	—	9.0	9.5	—	8,500	1,900	16	—	—	12BF6
Class A Amplifier♦	250	—	10.5	11.5	—	5,300	3,100	16.5	—	—	12BH7
Vertical Deflection Amplifier♦	Max positive pulse plate voltage, Φ = 1500 volts; max plate dissipation = 3.5 watts; max c-c cathode current = 20 ma										
Class A Amplifier	250	250	5.0	35†	3.5†	100,000	8,500	—	6,500	3.5	12BK6
Class A Amplifier	250 100	— —	2.0 1.0	1.2 0.5	—	62,500 80,000	1,600 1,250	100 100	— —	— —	12BK6
FM Limiter-Discriminator	285‡	100	R_k = 200 to 400	0.49	9.8	—	—	—	330000	—	12BN6
Horizontal Deflection Amplifier	250 80 150	150 0 150	22.5 0 225	55 225 125	2.1 — —	20,000	5,500	—	—	—	12BQ6-GA 12BQ6-GTA
	Max positive pulse plate voltage, Φ = 6000 volts; max plate dissipation = 11 watts; max screen dissipation = 2.5 watts; max d-c cathode current = 110 ma										

§ Approximate.

† Without external shield.

‡ Zero signal.

♦ Grids 3 and 5 are screen. Grid 4 is signal-input grid.

Conversion transconductance.

▲ Maximum.

▼ Grids 2 and 4 are screen. Grid 3 is signal-input grid.

✱ Screen supply voltage.

†† Absolute maximum rating.

‡ Plate-to-plate.

♦♦ Per section.

©For both sections.

♦ Minimum.

† Heater warm-up time controlled for series-string service.

‡ Plate supply voltage.

|| Input plate.

|| The duration of the pulse voltage must not exceed 15 percent of one scanning cycle.

— Section 1.

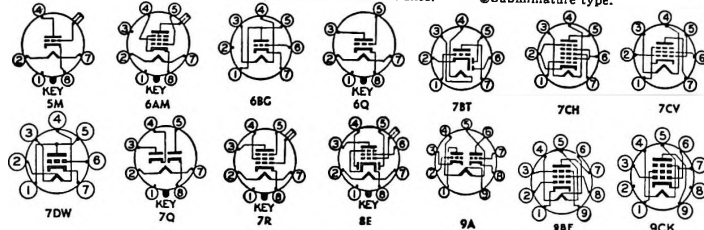
— Section 2.

— A resistor of 3 ohms must be put in series with heater.

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
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	180	10.7▲	4.0▲	0.083▲
12BY7-A					12.6 6.3	0.3 0.6					
12BZ7	High-Mu Twin Triode	9A	6-3	Htr	12.6 6.3	0.3 0.6	300	—	6.5▲	0.7▲ 0.55▲	2.5▲
12C8	Duplex-Diode Semi-Remote-Cutoff Pentode	8E	8-4	Htr	12.6	0.15	300	125	6.0	9.0	0.005
12CA5	Beam Power Amplifier	7CV	5-3	Htr	12.6	0.6	130	130	15▲	9▲	0.5▲
12CM6	Beam Power Amplifier	9CK	6-3	Htr	12.6	0.225	315	285	Pentode Connection Triode (G_2 & P tied) or Pentode Connection		
12CS8	Dual-Control Heptode	7CH	5-2	Htr	12.6	0.15	300	100	—	—	—
12CU6	Beam Power Amplifier	6AM	T-X	Htr	12.6	0.6	550	175	15▲	7.0▲	0.55▲
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
12G4	Medium-Mu Triode	6BG	5-3	Htr	12.6	0.15	300	—	2.6	3.2	3.4
12H4	Medium-Mu Triode	7DW	5-3	Htr	12.6 6.3	0.15 0.3	300	—	2.6	3.2	3.4
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 or 9-41	Htr	12.6	0.15	300	—	3.4 4.2	3.6 5.0	3.4 3.8
12J7-GT	Sharp-Cutoff Pentode	7R	9-18	Htr	12.6	0.15	300	125	Pentode Connected Triode Connected (G_2 , G_3 & P Tied)		
12K7-GT	Remote-Cutoff RF Pentode	7R	9-18	Htr	12.6	0.15	300	150	4.6	12.0	0.005

Metal tubes are shown in bold-face type, miniature tubes in *italics*.

③ Subminiature type.



Service	Plate Volts	Screen Volts	Neg Grid Volts	Plate Milli-amperes	Screen Milli-amperes	R_p Ohms	G_m μ mhos	# Factor	Load for Rated Output, Ohms	Power Output, Watts	Tube Type
Class A Amplifier	250 100	— —	3.0 1.0	1.0 0.8	— —	58,000 54,000	1,200 1,300	70 70	— —	— —	12BT6
Class A Amplifier	250	—	9.0	9.5	—	8,500	1,900	16	10,000	0.30	12BU6
Class A Amplifier	250	180	$R_k = 100$	24	5.0	110,000	12,000	—	—	—	12BY7 12BY7-A
Class A Amplifier	250	—	2	2.5	—	31,800	3,200	100	—	—	12BZ7
Class A Amplifier	250	125	3.0	10	2.3	600,000	1,325	—	—	—	12C8
Class A Amplifier	125 110	125 110	4.5 4.0	37 32	4.0 3.5	15,000 16,000	9,200 8,100	— —	4,500 3,500	1.5 1.1	12CA5
Class A Amplifier Vertical Deflection Amplifier	250	250	12.5	45	4.5	50,000	4,100	—	5,000	4.5	12CM6
Max positive pulse plate voltage = 2000 volts; max plate dissipation = 8.0 watts; max screen dissipation (pentode connection only) = 1.75 watts; max d-c cathode current = 40 ma											
Gated Amplifier	100 100 10	30 30 30	1.0 0 0	1.0 0.8 2.0	1.3 5.5 4.5	1,000,000 700,000	1,100 — —	$E_{c1} = 0$ volts $E_{c2} = -10$ volts $E_{c3} = 0$ volts	— — —	— — —	12CS8
Horizontal Deflection Amplifier	250	150	22.5	55	2.1	20,000	5,500	—	—	—	12CU6
Max positive pulse plate voltage = 6000 volts; max plate dissipation = 11 watts; max screen dissipation = 2.5 watts; max d-c cathode current = 110 ma											
Class A Amplifier	250	—	13	5.0	—	9,500	1,450	13.8	—	—	12E5-GT
Class A Amplifier	250	—	2.0	0.9	—	66,000	1,500	100	—	—	12F5-GT
Class A Amplifier	90 250	— —	0 8.0	10 9.0	— —	6,700 7,700	3,000 2,600	20 20	— —	— —	12G4
Class A Amplifier	90 250	— —	0 8.0	10 9.0	— —	6,700 7,700	3,000 2,600	20 20	— —	— —	12H4
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	90 250	— —	0 8.0	10 9.0	— —	6,700 7,700	3,000 2,600	20 20	— —	— —	12J5 12J5-GT 12J5-WGT
Class A Amplifier	250	100	3.0	2.0	0.5	1,000,000	1,225	—	—	—	12J7-GT
Class A Amplifier	250	—	8.0	6.5	—	10,500	1,900	20	—	—	
Class A Amplifier	250	125	3.0	10.5	2.6	600,000	1,650	—	—	—	12K7-GT

§ Approximate.

▲ Without external shield.

† Zero signal.

④ Grids 3 and 5 are screen. Grid 4 is signal-input grid.

Conversion transconductance.

♣ Maximum.

▼ Grids 2 and 4 are screen. Grid 3 is signal-input grid.

⑥ Screen supply voltage.

* Absolute maximum rating.

‡ Plate-to-plate.

♠ Per section.

③ For both sections.

* Minimum.

† Heater warm-up time controlled for series-string service.

‡ Plate supply voltage.

⑥ Input plate.

— The duration of the pulse voltage must not exceed 15 percent of one scanning cycle.

1—Section 1.

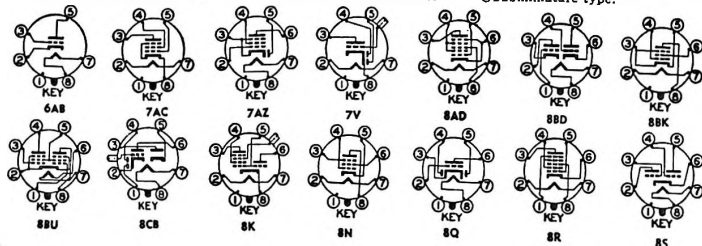
2—Section 2.

— A resistor of 3 ohms must be put in series with heater.

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
12K8 12K8-GT	Triode Hexode Converter	8K	8-2 9-24	Htr	12.6	0.15	300	150	Osc $I_{g1} = 0.15$ ma $R_{g1} = 20,000$ ohms		
12L6-GT	Beam Power Amplifier	7AC	9-11 or 9-41	Htr	12.6	0.6	200	125	15	10	0.8
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	Triode-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	8AB	8-1 9-11	Htr	12.6	0.15	300	—	4.0	3.8	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 RF Pentode	8BK	8-1	Htr	12.6	0.15	300	150	8.5	7.0	0.003
12SH7	Sharp-Cutoff RF 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	150	Pentode Connection		
12SK7 12SK7-GT	Remote-Cutoff RF Pentode	8N	8-1 9-12	Htr	12.6	0.15	300	150	6.0 6.5	7.0 7.5	0.003 0.003
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 3.0	0.8 1.2	3.8 4.0
12SN7-GTA	Medium-Mu Twin Triode	8BD	9-11 or 9-41	Htr	12.6	0.3	450	—	2.2 2.6	0.7 1.2	4.0 3.8
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

Metal tubes are shown in bold-face type, miniature tubes in italics.

③ Subminiature type.



Service	Plate Volts	Screen Volts	Neg Grid Volts	Plate Milli-amperes	Screen Milli-amperes	R_p , Ohms	G_m , μ mhos	# Factor	Load for Rated Out-put, Ohms	Power Out-put, Watts	Tube Type
Converter	250	100	3.0	2.5	6.0	600,000	350 #	E_b (Triode Osc) = 100 I_b (Triode) = 3.8 ma			12K8 12K8-GT
Class A Amplifier	200	125	$R_s = 180$ 7.5	46† 49†	2.2† 4.0†	28,000	8,000	—	4,000	3.8	12L6-GT
Class A Amplifier	180	180	9.0	13†	2.8†	160,000	2,150	—	10,000	1.0	12L8-GT
Class A Amplifier	250	—	3.0	1.0	—	58,000	1,200	70	—	—	12Q7-GT
Class A Amplifier	250	—	2.0	0.9	—	91,000	1,100	100	—	—	12S8-GT
Converter	250	100	2.0	3.5	8.5	1,000,000	450 #	—	—	—	12SA7 12SA7-GT
Class A Amplifier	250	—	2.0	2.0	—	53,000	1,325	70	—	—	12SC7
Class A Amplifier	250	—	2.0	0.9	—	66,000	1,600	100	—	—	12SF5 12SF5-GT
Class A Amplifier	250	100	1.0	12.4	3.3	700,000	2,050	—	—	—	12SF7 12SF7-GT
Class A Amplifier	250	150	2.5	9.2	3.4	1,000,000	4,000	—	—	—	12SG7
Class A Amplifier	250	125	1.0	11.8	4.4	900,000	4,700	—	—	—	
Class A Amplifier	250	100	1.0	8.2	3.2	250,000	4,100	—	—	—	
Class A Amplifier	250	150	1.0	10.8	4.1	900,000	4,900	—	—	—	12SH7
Class A Amplifier	250	100	3.0	3.0	0.8	1,000,000	1,650	—	—	—	12SJ7
Class A Amplifier	250	—	8.5	9.2	—	7,600	2,500	19	—	—	12SJ7-GT
Class A Amplifier	250	100	3.0	9.2	2.6	800,000	2,000	—	—	—	12SK7 12SK7-GT
Class A Amplifier	250	100	1.0	13	4.0	120,000	2,350	—	—	—	
Class A Amplifier	250	—	2.0	2.3	—	44,000	1,600	70	—	—	12SL7-GT
Class A Amplifier	250	—	8.0	9.0	—	7,700	2,600	20	—	—	12SN7-GT
Class A Amplifier	90	—	0	10	—	6,700	3,000	20	—	—	
Class A Amplifier	250	—	8.0	9.0	—	7,700	2,600	20	—	—	12SN7-GTA
Class A Amplifier	90	—	0	10	—	6,700	3,000	20	—	—	
Vertical Deflection Amplifier											
Max positive pulse plate voltage = 1,500 volts; max plate dissipation = 5.0 watts; max plate dissipation @ = 7.5 watts; max d-c cathode current = 20 ma											
Class A Amplifier	250	—	2.0	1.1	—	85,000	1,175	100	—	—	12SQ7 12SQ7-GT
Class A Amplifier	100	—	1.0	0.5	—	110,000	925	100	—	—	
Class A Amplifier	250	—	9.0	9.5†	—	8,500	1,900	16	10,000	0.3	12SR7 12SR7-GT

‡ Approximate.

▲ Without external shield.

† Zero signal.

‡ Grids 3 and 5 are screen. Grid 4 is signal.

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③ For both sections.

‡ Minimum.

‡ Heater warm-up time controlled for series-string service.

‡ Plate supply voltage.

‡ Input plate.

‡ The duration of the pulse voltage must not exceed 15 percent of one scanning cycle.

‡ Section 1.

‡ Section 2.

‡ A resistor of 3 ohms must be put in series with heater.

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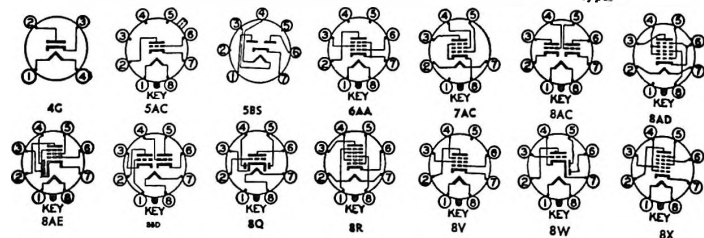
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Tube Type	Classification by Construction	Base Connections	Outline Dwg	Type Cathode	Filament Volts	Filament Amp	Max Plate Volts	Max Screen Volts	Capacitance in Micromicrofarads		
									Input	Output	Grid-plate
13SW7	Duplex-Diode Medium-Mu Triode	8Q	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, 2.8	0.8, 1.2	3.6
12SY7 12SY7-GT	Pentagrid Converter	8R ♥ 8AD ♥	8-1 9-12	Htr	12.6	0.15	300	100	Osc $I_{a1} = 0.5$ ma $R_{a1} = 20,000$ ohms Osc $I_{a2} = 0.1$ ma $R_{a2} = 20,000$ ohms		
12V6-GT	Beam Power Amplifier	7AC	9-11 or 9-41	Htr	12.6	0.225	315	285	Single Tube 2 Tubes, Push-Pull		
12W6-GT	Beam Power Amplifier	7AC	9-11 or 9-41	Htr	12.6	0.6	300	150	Pentode Connection Triode Connection (G ₁ & P tied)		
12X4	Full-Wave High-Vacuum Rectifier	5BS	5-3	Htr	12.6	0.3	Tube Voltage Drop: ♦ 22 v at 70 ma d-c				
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	6AA	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 $I_{a1} = 0.4$ ma $R_{a1} = 50,000$ 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	—	—	—	—

Metal tubes are shown in bold-face type, miniature tubes in italics.

♣ Subminiature type.



Service	Plate Volts	Screen Volts	Neg Grid Volts	Plate Milli-amperes	Screen Milli-amperes	R _p , Ohms	G _m , μ mhos	# Factor	Load for Rated Out-put, Ohms	Power Out-put, Watts	Tube Type
Class A Amplifier	250 26.5	—	9.0 $R_g = 2$ meg	9.5 1.1	—	8,500 15,500	1,900 1,100	16 17	—	—	13SW7
Class A Amplifier $\clubsuit$	250 26.5	—	8.0 $R_g = 0.5$ meg	9.0 1.8	—	7,700 11,500	2,600 1,800	20 21	—	—	12SX7-GT
Converter Converter	250 28	100 28	2.0 1.0	3.5 0.5	8.5 1.8	1,000,000 —	450 # 250 #	—	—	—	12SY7 12SY7-GT
Class A Amplifier	315 250 180	225 250 180	13 12.5 8.5	34 $\dagger$ 45 $\dagger$ 29 $\dagger$	2.2 $\dagger$ 4.5 $\dagger$ 3.0 $\dagger$	80,000 50,000 50,000	3,750 4,100 3,700	— — —	8,500 5,000 5,500	5.5 4.5 4.0	12V6-GT
Class AB₁ Amplifier	285 250	285 15	19 70 $\dagger$	4.0 $\dagger$ 5.0 $\dagger$	—	70,000 60,000	3,600 3,750	— 10,000 $\dagger$	8,000 10,000	14 14	12W6-GT
Class A Amplifier	200 110 225	125 110 225	$R_g = 180$ 7.5 22	46 $\dagger$ 48 $\dagger$ 30	2.2 $\dagger$ 4.0 $\dagger$ —	28,000 13,000 1,600	8,000 8,000 3,800	— — 6.2	4,000 2,000 —	3.8 2.1 —	12W6-GT
Vertical Deflection Amplifier	Max positive pulse plate voltage: $\text{②} = 1,200$ volts; max plate dissipation = 7.5 watts; max d-c cathode current = 40 ma										
Full-Wave Rectifier	Max d-c output current = 70 ma; max peak inverse voltage = 1,250 volts; rms supply voltage per plate = 325 volts; max peak current per plate = 210 ma										
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										
Class A Amplifier	250 90	—	8.0 0	9.0 10	—	7,700 6,700	2,600 3,000	20 20	—	—	14A4
Class A Amplifier	250	250	12.5	30 $\dagger$	3.5 $\dagger$	70,000	3,000	—	7,500	2.8	14A5
Class A Amplifier	250	100	3.0	9.2	2.6	800,000	2,000	—	—	—	14A7/12B7
Class A Amplifier $\clubsuit$	250	—	10	9.0	—	7,600	2,100	16	—	—	14AF7
Class A Amplifier	250 100	—	2.0 1.0	0.9 0.4	—	91,000 110,000	1,100 900	100 100	—	—	14B6
Converter	250	100	3.0	3.5	2.7	360,000	560 #	—	E_{c2} (Osc Plate) = 250 thru 20,000 ohms $I_{c2} = 4.0$ ma	—	14B8
Class A Amplifier	315	225	13	34 $\dagger$	2.2 $\dagger$	77,000	3,750	—	8,500	5.5	14C5
Class A Amplifier	250	100	3.0	2.2	0.7	1,000,000	1,675	—	—	—	14C7
Class A Amplifier	250	—	9.0	9.5	—	8,600	1,900	16	—	—	14E6
Class A Amplifier	250	100	3.0	7.5	1.6	700,000	1,300	—	—	—	14E7
Class A Amplifier $\clubsuit$	250	—	2.0	2.3	—	44,000	1,600	70	—	—	14F7

♣ Approximate.
♠ Without external shield.

† Zero signal.

‡ Grids 3 and 5 are screen. Grid 4 is signal-input grid.

Conversion transconductance.

♣ Maximum.

♥ Grids 2 and 4 are screen. Grid 3 is signal-input grid.

♣ Screen supply voltage.

♣ Absolute maximum rating.

‡ Plate-to-plate.

♣ Per section.

♣ For both sections.

♠ Minimum.

♥ Heater warm-up time controlled for series-string service.

‡ Plate supply voltage.

|| Input plate.

— The duration of the pulse voltage must not exceed 15 percent of one scanning cycle.

— Section 1.

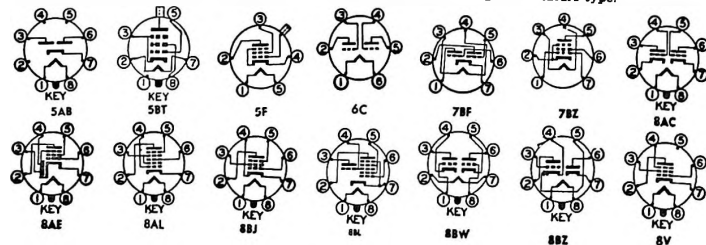
— Section 2.

— A resistor of 3 ohms must be put in series with heater.

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
14F8	High-Frequency Twin Triode	8BW	9-32	Htr	12.6	0.15	300	—	2.8	1.4	1.6
14H7	Semi-Remote-Cutoff RF 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 RF Pentode	8BJ	9-30	Htr	12.6	0.225	300	150	—	—	—
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: Φ 22 v at 70 ma d-c				
15	Sharp-Cutoff RF Pentode	5F	12-6	Htr	2.0 DC	0.22	135	67.5	2.35	7.80	0.01
16A6	Sharp-Cutoff Pentode	9AR	6-4	Htr	16.0	0.3	250	250	—	—	—
16A6	Power Amplifier Pentode	9BL	6-4	Htr	16.5	0.3	250	250	11	5.9	1.0
17Z3	Half-Wave High-Vacuum Rectifier	9CB	T-X	Htr	17	0.3	—	—	—	—	—
18	Twin-Triode Power Amplifier	6C	12-5	Fil	2.0 DC	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	16-5	Htr	18.9	0.3	700	350	12	6.5	0.34
19C8	Triode-Diode, High-Mu Triode	9E	6-2	Htr	18.9	0.15	250	—	—	—	—
19J8	Medium-Mu Twin Triode	7BF	5-2	Htr	18.9	0.15	300	—	2.0	0.4	1.5
19T8	Triode-Diode High-Mu Triode	9E	6-2	Htr	18.9	0.15	300	—	1.6	1.0	2.2

Metal tubes are shown in bold-face type, miniature tubes in italics.

@Subminiature type.



Service	Plate Volts	Screen Volts	Neg Grid Volts	Plate Milli-amperes	Screen Milli-amperes	R_p Ohms	G_m μ mhos	# Factor	Load for Rated Out-put, Ohms	Power Out-put, Watts	Tube Type
Class A Amplifier Φ	250	—	$R_k = 500$	6.0	—	—	3,300	48	—	—	14F8
Class A Amplifier	250	150	$R_k = 180$	10	3.2	800,000	4,000	—	—	—	14H7
Converter	100	100	1.5	7.5	2.6	350,000	4,000	—	—	—	14J7
Class A Amplifier Φ	250	100	3.0	1.4	2.8	1,500,000	290	20	R_k (Triode Osc) = 250 thru 20,000 ohms I_b (Triode) = 5.0 ma		14N7
Converter	250	100	2.0	3.5	8.5	1,000,000	550	—	—	—	14Q7
Class A Amplifier	250	100	1.0	5.7	2.1	1,000,000	3,200	—	—	—	14R7
Converter	100	100	1.0	5.5	2.2	350,000	3,000	—	—	—	14S7
Class A Amplifier	250	100	2.0	1.8	3.0	1,250,000	525	20	R_k (Triode Osc) = 250 thru 20,000 ohms I_b (Triode) = 5.0 ma		14W7
Class A Amplifier	300	150	$R_k = 160$	10	3.9	300,000	5,800	—	—	—	14X7
Full-Wave Rectifier	250	—	1.0	1.9	—	67,000	1,500	100	—	—	14Y4
Class A Amplifier	135	67.5	1.5	1.85	0.3	800,000	750	—	—	—	15
Class A Amplifier	180	180	2.9	36	4.6	100,000	10,000	—	—	—	16A6
Class A Amplifier	170	170	10.4	63	10	20,000	9,000	—	3,000	4.0	16A6
TV Dampers Services	135	—	0	5.0	—	Input Signal = 0.170 watt	10,000	2.1	—	—	17Z3
Class A Amplifier	250	250	12.5	45	4.5	52,000	4,100	—	5,000	4.5	19AQ5
Horizontal Deflection Amplifier	180	180	8.5	29	3.0	58,000	3,700	—	5,500	2.0	19BG6-G
Class A Amplifier	100	—	1.0	0.6	—	80,000	1,250	100	—	—	19C8
Class A Amplifier Φ	100	—	$R_k = 150$	8.5	—	7,100	5,300	38	—	—	19J8
Class A Amplifier	250	—	3.0	1.0	—	58,000	1,200	70	—	—	19T8
Class A Amplifier	100	—	1.0	0.8	—	54,000	1,300	70	—	—	19T8

 Φ Per section. Φ Maximum.

* Approximate.

Conversion transconductance.

* Grids 2 and 4 are screen. Grid 3 is signal-input grid.

▲ Without external shield.

— The duration of the pulse voltage must not exceed 15 percent of one scanning cycle.

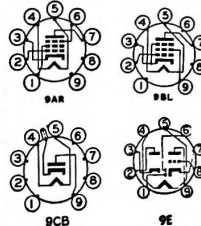
† Zero signal.

‡ Plate-to-plate.

§ Plate supply voltage.

Ⓜ Absolute maximum rating.

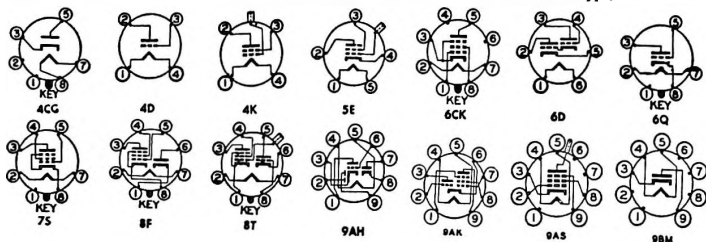
Ⓜ For both sections.



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
19V8	Triode-Diode, High-Mu Triode	9AH	6-2	Htr	18.9	0.15	300	—	—	—	—
19X3	Half-Wave High-Vacuum Rectifier	9BM	6-4	Htr	19	0.3	Tube Voltage Drop: 16 volts at 180 ma d-c				
19X8	Triode-Pentode Converter	9AK	6-2	Htr	18.9	0.15	250	250 *	Pentode Section		
							250	—	Triode Section		
19Y3	Half-Wave High-Vacuum Rectifier	9BM	6-4	Htr	19	0.3	Tube Voltage Drop: 15 volts at 180 ma d-c				
20	Power Amplifier Triode	4D	9-26	Fil	3.3 DC	0.132	135	—	2.0	2.3	4.1
21A6	Beam Power Amplifier	9AS	T-X	Htr	21.5	0.3	250	250	—	—	—
22	Sharp-Cutoff RF Tetrode	4K	14-2	Fil	3.3 DC	0.132	135	67.5	3.5	10.0	0.02 +
24A	Sharp-Cutoff RF 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
25A7-GT	Half-Wave Rectifier Power Amplifier Pentode	8P	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	175	14	7.0	0.7
25AX4-GT	Half-Wave High-Vacuum Rectifier	4CG	9-11 or 9-41	Htr	25.0	0.3	Tube Voltage Drop: 32 v at 250 ma d-c				
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		
25BK6	Beam Power Amplifier	9BQ	6-3	Htr	25.0	0.3	250	250	13	5.0	0.6

Metal tubes are shown in bold-face type, miniature tubes in italics.

©Subminiature type.



Service	Plate Volts	Screen Volts	Neg Grid Volts	Plate Milli-am-peres	Screen Milli-am-peres	R _p Ohms	G _m μmhos	# Fac-tor	Load for Rated Out-put, Ohms	Power Out-put, Watts	Tube Type
Class A Amplifier	250 100	— —	3.0 1.0	1.0 0.8	— —	58,000 54,000	1,200 1,300	70 70	— —	— —	19V8
TV Damp-er Service	Max d-c output current = 180 ma; max peak inverse voltage = 4,000 volts; max peak current = 400 ma										19X3
Class A Amplifier	250	150	R _k = 200	7.7	1.6	750,000	4,600	—	—	—	19X8
Class A Amplifier	100	—	R _k = 100	8.5	—	690,000	5,800	40	—	—	
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	135	—	22.5	6.5†	—	6,300	525	3.3	6,500	0.110	20
Horizontal Deflection Amplifier	180 180	180 180	2 0	45 430	3.0 29	—	6,500	—	—	—	21A6
	Max positive pulse plate voltage = 7,000 volts; max plate dissipation = 8 watts; max screen dissipation = 4.5 watts; max d-c cathode current = 150 ma										
Class A Amplifier	135	67.5	1.5	3.7	1.3	325,000	500	—	—	—	22
Class A Amplifier	250	90	3.0	4.0	1.7	600,000	1,050	—	—	—	24A
Class A Amplifier	160	120	18	33†	6.5†	42,000	2,375	—	5,000	2.2	25A6 25A6-GT
Class A Amplifier	100	100	15	20.5†	4.0†	50,000	1,800	—	4,500	0.77	25A7-GT
Class A Amplifier	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	180	—	0	4.0†	—	Peak Input Signal = 0.810 watt		4.800	6.0	—	25AC5-GT
Horizontal Deflection Amplifier	250 60 150	150 150 150	22.5 0 225	55 225 25	2.1 25	20,000	5,500	—	—	—	25AV5-GT
	Max positive pulse plate voltage = 5,500 volts; max plate dissipation = 11 watts; max screen dissipation = 2.5 watts; max d-c cathode current = 110 ma										
TV Damp-er Service	Max d-c output current = 125 ma; max peak inverse voltage = 4,400 volts max peak current = 750 ma										25AX4-GT
Class A Amplifier	180	100	0	46	5.8	15,000	2,300	—	4,000	3.8	25B5
Class A Amplifier	200	135	23	62†	1.8†	18,000	5,000	—	2,500	7.1	25B6-G
Class A Amplifier	100	100	3.0	7.6	2.0	185,000	2,000	—	—	—	25B8-GT
Class A Amplifier	100	—	1.0	0.6	—	75,000	1,500	112	—	—	
Class A Amplifier	250	250	5.0	35†	3.5†	100,000	8,500	—	6,500	3.5	25BK6

‡ Approximate.

† Without external shield.

‡ Zero signal.

‡ Grids 3 and 5 are screen. Grid 4 is signal-input grid.

‡ Conversion transconductance.

‡ Maximum.

‡ Grids 2 and 4 are screen. Grid 3 is signal-input grid.

‡ Screen supply voltage.

‡ Absolute maximum rating.

‡ Plate-to-plate.

‡ Per section.

©For both sections.

‡ Minimum.

‡ Heater warm-up time controlled for series-string service.

‡ Plate supply voltage.

‡ Input plate.

‡ The duration of the pulse voltage must not exceed 15 percent of one scanning cycle.

‡ Section 1.

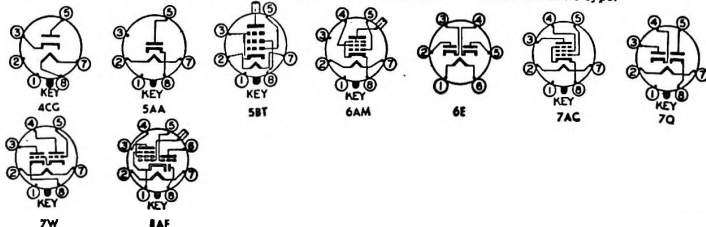
‡ Section 2.

‡ A resistor of 3 ohms must be put in series with heater.

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
25BQ6-GA	Beam Power Amplifier	6AM	T-X	Htr	25.0	0.3	600†	175	14▲	6.5▲	0.8▲
25BQ6-GT	Beam Power Amplifier	6AM	9-49 or 9-50	Htr	25.0	0.3	550†	175	15▲	7.5▲	0.8▲
25C6-G	Beam Power Amplifier	7AC	14-3	Htr	25.0	0.3	200	135	—	—	—
25CD6-G 25CD6-GA	Beam Power Amplifier	5BT	18-5	Htr	25.0 25.0†	0.6 0.6†	700†	175	25▲	9.5▲	0.6▲
25CU6	Beam Power Amplifier	6AM	T-X	Htr	25.0	0.3	550†	175	15▲	7.0▲	0.55▲
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 v at 250 ma d-c				
25W4-GT	Half-Wave High-Vacuum Rectifier	4CG	9-11 or 9-41	Htr	25.0	0.3	Tube Voltage Drop: 21 v at 350 ma d-c				
25W6-GT	Beam Power Amplifier	7AC	9-11 or 9-41	Htr	25.0	0.3	300	150	Pentode Connection		
							300	—	Triode Connection (G ₂ & P tied)		
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				

Metal tubes are shown in bold-face type, miniature tubes in italics.

③Subminiature type.



Service	Plate Volts	Screen Volts	Neg. Grid Volts	Plate Milli-amperes	Screen Milli-amperes	R _p Ohms	G _m μmhos	# Fac-tor	Load for Rated Out-put, Ohms	Power Out-put, Watts	Tube Type
Horizontal Deflection Amplifier	250 60	150 150	22.5 0	55 225	2.1 25	20,000†	5,500	—	—	—	25BQ6-GA
	Max positive pulse plate voltage = 6000 volts; max plate dissipation = 11 watts; max screen dissipation = 2.5 watts; max d-c cathode current = 110 ma										
Horizontal Deflection Amplifier	250 60	150 150	22.5 0	55 225	2.1 25	20,000†	5,500	—	—	—	25BQ6-GT
	Max positive pulse plate voltage = 5500 volts; max plate dissipation = 11 watts; max screen dissipation = 2.5 watts; max d-c cathode current = 110 ma										
Class A Amplifier	200	135	14	61†	2.2†	18,300†	7,100	—	2,600	6.0	25C6-G
Horizontal Deflection Amplifier	175 60	175 100	30 0	75 230	5.5 21	7,200†	7,700	—	—	—	25CD6-G 25CD6-GA
	Max positive pulse plate voltage = 6600 volts; max plate dissipation = 15 watts; max screen dissipation = 3.0 watts; max d-c cathode current = 200 ma										
Horizontal Deflection Amplifier	250 60	150 150	22.5 0	55 225	2.1 25	20,000†	5,500	—	—	—	25CU6
	Max positive pulse plate voltage = 6000 volts; max plate dissipation = 11 watts; max screen dissipation = 2.5 watts; max d-c cathode current = 110 ma										
Class A Amplifier	100	100	3.0	8.5	2.7	200,000	1,900	—	—	—	25D8-GT
Class A Amplifier	100	—	1.0	0.5	—	91,000	1,100	—	—	—	
Class A Amplifier	200 110	110 110	8.0 7.5	50† 49†	2.0† 4.0†	30,000† 9,000	8,500	—	3,000 2,000	4.3 2.1	25L6
Class A Amplifier	200 110	125 110	R _k = 180 7.5	46† 49†	2.2† 4.0†	28,000† 13,000†	8,000	—	4,000 2,000	3.8 2.1	25L6-GT
Class A Amplifier	180	100†	0	46	5.8	15,000	2,300	—	4,000	3.8	25N6-G
Half-Wave Rectifier TV 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										
TV Damp-er Service	Max d-c output current = 125 ma; max peak inverse voltage = 3850 volts; max peak current = 750 ma										25U4-GT
Class A Amplifier	200 110	125 110	R _k = 180 7.5	46† 49†	2.2† 4.0†	28,000† 13,000†	8,000	—	4,000 2,000	3.8 2.1	25W6-GT
Vertical Deflection Amplifier	225	—	30	22	—	1,600†	3,800	6.2	—	—	
	Max positive pulse plate voltage = 1200 volts; max plate dissipation = 7.5 watts; max d-c cathode current = 40 ma										
Rectifier or Doubler	Max d-c output current per plate = 80 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

‡ Approximate.

† Without external shield.

‡ Zero signal.

† Grids 3 and 5 are screen. Grid 4 is signal-

input grid.

Conversion transconductance.

▲ Maximum.

† Grids 2 and 4 are screen. Grid 3 is signal-

input grid.

▼ Screen supply voltage.

† Absolute maximum rating.

‡ Plate-to-plate.

▲ Per section.

③ For both sections.

† Minimum.

‡ Heater warm-up time controlled for series-string service.

† Plate supply voltage.

‡ Input plate.

† The duration of the pulse voltage must not exceed 15 percent of one scanning cycle.

— Section 1.

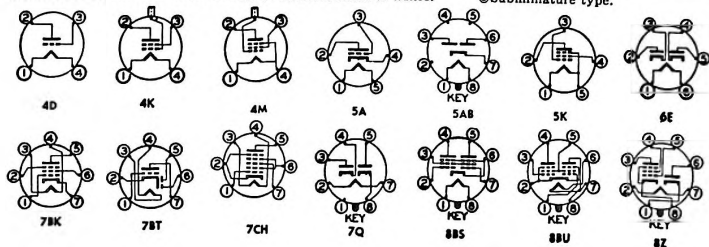
— Section 2.

† A resistor of 3 ohms must be put in series with heater.

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
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 RF 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 or 9-44	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		
26Z6-W	Full-Wave High-Vacuum Rectifier	9BS	6-2	Htr	26.5	0.2	Tube Voltage Drop: ♦ 22 v 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 DC	0.06	180	—	3.0▲	2.2▲	6.0▲
31	Power-Amplifier Triode	4D	12-5	Fil	2.0 DC	0.13	180	—	3.5	2.7	5.7
32	Sharp-Cutoff RF Tetrode	4K	14-2	Fil	2.0 DC	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	—	—	—
33	Power Amplifier Pentode	5K	14-1	Fil	2.0 DC	0.26	180	180	8.0	12.0	1.0
34	Remote-Cutoff RF Pentode	4M	14-2	Fil	2.0 DC	0.06	180	67.5	6.0▲	11.0▲	0.015♦

Metal tubes are shown in bold-face type, miniature tubes in italics.

③ Subminiature type.



Service	Plate Volts	Screen Volts	Neg Grid Volts	Plate Milli-am-peres	Screen Milli-am-peres	R _p Ohms	G _m μ mhos	μ Factor	Load for Rated Output, Ohms	Power Output, Watts	Tube Type
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 <i>25Z6-GT</i> <i>25Z6-WGT</i>
Class A Amplifier	180	—	14.5	6.2	—	7,300	1,150	8.3	—	—	26
Class A Amplifier	250	100	R _g = 125 R _e = 2 meg	10.5	4.0	1,000,000	4,000	—	—	—	26A6
Class A Amplifier $\blacklozenge$	26.5	26.5	4.5	20 $\dagger$	1.9 $\dagger$	—	5,700	—	1,500	0.18	26A7-GT
Class A Amplifier	250	26.5	9.0 R _e = 2 meg	8.5	1.1	—	8,500 15,500	1,900 1,100	16 17	—	26C6
Class A Amplifier	250	150	8.0	9.0	2.3	720,000	2,000	—	—	—	26CG8
Converter	250	100	1.5	3.0	7.8	1,000,000 $\S$	475 $\#$	—	—	—	26D6
Full-Wave Rectifier	Max d-c output current per plate = 50 ma; max peak inverse voltage = 1250 volts; rms supply voltage per plate = 325 v; max peak current per plate = 300 ma										26Z6-W
Class A Amplifier	250	—	21	5.2	—	9,250	975	9.0	—	—	27
Class A Amplifier $\blacklozenge$	28	28	3.5	12.5 $\dagger$	1.0 $\dagger$	4,200	3,400	—	4,000	0.100	28D7
Full-Wave Rectifier	Max d-c output current = 100 ma; max peak inverse voltage = 1250 volts; max rms supply voltage per plate = 325 volts; max peak current per plate = 300 ma										28Z5
Class A Amplifier	180	—	13.5	3.1	—	10,300 $\S$	900	9.3	—	—	30
Class A Amplifier	180	—	30	12.3 $\dagger$	—	3,600	1,050	3.8	5,700	0.375	31
Class A Amplifier	180	67.5	3.0	1.7	0.4	1,200,000	650	—	—	—	32
Class A Amplifier	90	90	7.0 5.0	27 $\dagger$ 38 $\dagger$	2.0 $\dagger$ 3.0 $\dagger$	17,000 15,000	4,800 6,000	—	2,600 2,600	1.0 0.8	32L7-GT
Half-Wave Rectifier	Max. d-c output current = 60 ma; max rms supply voltage = 125 v										
Class A Amplifier	180	180	18	22 $\dagger$	5.0 $\dagger$	55,000 $\S$	1,700	—	6,000	1.4	33
Class A Amplifier	180	67.5	3.0	2.8	1.0	1,000,000	620	—	—	—	34

§ Approximate.

▲ Without external shield.

* Minimum.

① Zero signal.

② Grids 3 and 5 are screen. Grid 4 is signal.

③ Input grid.

④ Conversion transconductance.

⑤ Maximum.

⑥ Grids 2 and 4 are screen. Grid 3 is signal.

⑦ Input grid.

⑧ Screen supply voltage.

⑨ Absolute maximum rating.

⑩ Plate-to-plate.

⑪ Per section.

⑫ For both sections.

⑬ Minimum.

⑭ Heater warm-up time controlled for series-string service.

⑮ Plate supply voltage.

⑯ Input plate.

⑰ The duration of the pulse voltage must not exceed 15 percent of one scanning cycle.

⑱ Section 1.

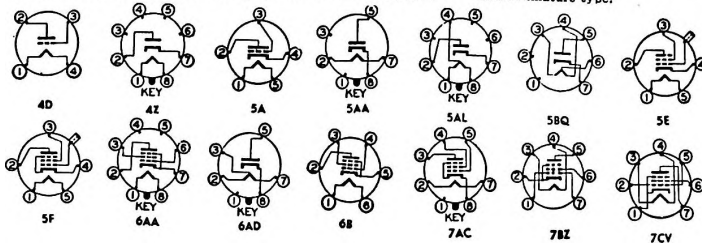
⑲ Section 2.

⑳ A resistor of 3 ohms must be put in series with heater.

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
35/51	Remote-Cutoff RF 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	—	—	—
35B6	Beam Power Amplifier	7BZ	5-3	Htr	35.0	0.15	117	117	11▲	6.5▲	0.4▲
35C6	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	58Q	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 RF 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
38	Power Amplifier Pentode	5F	12-6	Htr	6.3	0.3	250	250	3.5	7.5	0.30
39/44	Remote-Cutoff RF 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 DC	0.25	180	—	2.8	2.2	2.0
41	Power Amplifier Pentode	6B	12-5	Htr	6.3	0.4	315	285	—	—	—

Metal tubes are shown in bold-face type, miniature tubes in italics.

③ Subminiature type.



Service	Plate Volts	Screen Volts	Neg Grid Volts	Plate Milli-amperes	Screen Milli-amperes	R _p , Ohms	G _m , μ mhos	# Factor	Load for Rated Output, Ohms	Power Output, Watts	Tube Type
Class A Amplifier	250	90	3.0	6.5	2.5 $\clubsuit$	400,000	1,050	—	—	—	35/51
Class A Amplifier	200	125	R _g = 180	43†	2.0†	34,000‡	6,100	—	5,000	3.0	35A5
Class A Amplifier	110	110	7.5	40†	3.0†	14,000‡	5,800	—	2,500	1.5	35B6
Class A Amplifier	110	110	7.5	40†	3.0†	—	5,800	—	2,500	1.5	35C6
Class A Amplifier	110	110	7.5	40†	3.0†	—	5,800	—	2,500	1.5	35C6
Class A Amplifier	200	125	R _g = 180	43†	2.0†	34,000‡	6,100	—	5,000	3.0	35L6-GT
Class A Amplifier	110	110	7.5	40†	3.0†	14,000‡	5,800	—	2,500	1.5	35L6-GT
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										35W4
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	250	90	3.0	3.2	1.7 $\clubsuit$	550,000	1,080	—	—	—	36
Class A Amplifier	250	—	18	7.5	—	8,400	1,100	9.2	—	—	37
Class A Amplifier	250	250	25	22	3.8	100,000	1,200	—	10,000	2.5	38
Class A Amplifier	250	90	3.0*	5.8	1.4	1,000,000	1,050	—	—	—	39/44
Class A Amplifier	180	—	3.0	0.2	—	150,000	200	30	250,000	—	40
Class A Amplifier	250	250	18	32†	5.5†	90,000‡	2,300	—	7,600	3.4	41



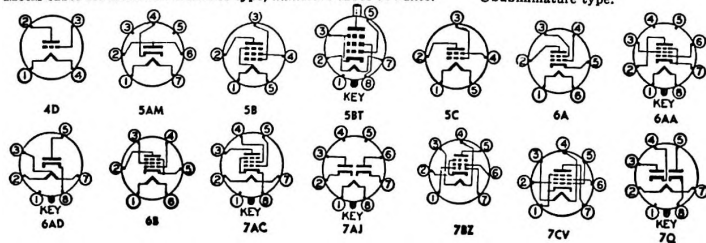
‡ Approximate.
 ▲ Without external shield.
 † Zero signal.
 ‡ Grids 3 and 5 are screen. Grid 4 is signal-input grid.
 # Conversion transconductance.
 * Maximum.
 † Grids 2 and 4 are screen. Grid 3 is signal-input grid.
 ‡ Screen supply voltage.
 ‡ Absolute maximum rating.
 ‡ Plate-to-plate.
 ‡ Per section.

③ For both sections.
 * Minimum.
 ‡ Heater warm-up time controlled for series-string service.
 ‡ Plate supply voltage.
 ‡ Input plate.
 ‡ The duration of the pulse voltage must not exceed 15 percent of one scanning cycle.
 ‡ Section 1.
 ‡ Section 2.
 ‡ A resistor of 3 ohms must be put in series with heater.

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
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
46Z3	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 ₁ & 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 DC	0.4	125	100	—	—	—
49	Dual-Grid Power Amplifier	5C	14-1	Fil	2.0 DC	0.12	135	—	Single tube (G ₁ & P tied)		
50	Power Amplifier Triode	4D	T-X	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				
60B6	Beam Power Amplifier	7BZ	5-3	Htr	50.0	0.15	135	117	13.0▲	6.5▲	0.50▲
60C6	Beam Power Amplifier	7CV	5-3	Htr	50.0	0.15	135	117	13.0▲	6.1▲	0.64▲
50C6-G 50C6-GA	Beam Power Amplifier	7AC	14-3 T-X	Htr	50	0.15	200	200*	—	—	—
50CD6-G	Beam Power Amplifier	5BT	16-5	Htr	50.0	0.3	700‡	175	25▲	9.5▲	0.6▲
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				

Metal tubes are shown in bold-face type, miniature tubes in italics.

③ Subminiature type.



Service	Plate Volts	Screen Volts	Neg Grid Volts	Plate Milli-am-peres	Screen 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	285	285	20	38‡	7.0‡	78,000‡	2,550	—	7,000	4.8	42
Class A Amplifier	160	120	18	33‡	6.5‡	42,000	2,375	—	5,000	2.2	43
Class A Amplifier	275	—	56	36‡	—	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 = 350 ma										46Z3
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	250	—	33	32‡	—	2,380	2,350	5.6	6,400	1.25	46
Class A Amplifier	250	250	16.5	31‡	6.0‡	60,000	2,500	—	7,000	2.7	47
Class A Amplifier	125	100	20	56	9.5	—	3,900	—	1,500	2.5	48
Class A Amplifier	135	—	20	6.0	—	4,175	1,125	4.7	11,000	0.170 \$	49
Class A Amplifier	450	—	84	55	—	1,800	2,100	3.8	4,350	4.6	50
Class A Amplifier	200	125	R _k = 180	46‡	2.2‡	28,000‡	8,000	—	4,000	3.8	50A5
Class A Amplifier	110	110	7.5	49‡	4.0‡	13,000‡	8,000	—	2,000	2.1	50AX6-G
Full-Wave Rectifier	Max d-c output current = 250 ma; max peak inverse voltage = 1250 volts; rms supply voltage per plate = 350 volts; max peak current per plate = 600 ma										50AX6-G
TV Damp-er Service	Max d-c output current per plate = 125 ma; max peak inverse voltage = 2000 volts; max peak current per plate = 600 ma										50B6
Class A Amplifier	110	110	7.5	49‡	4.0‡	10,000‡	7,500	—	2,500	1.9	50B6
Class A Amplifier	110	110	7.5	49‡	4.0‡	10,000‡	7,500	—	2,500	1.9	60C6
Class A Amplifier	135	135	13.6	56‡	3.5‡	9,300‡	7,000	—	2,000	3.6	50C6-G
Class A Amplifier	200	135	14	61‡	3.5‡	18,300‡	7,100	—	2,600	6.0	50C6-GA
Horizontal Deflection Amplifier	175	175	30	75	5.5	7,200‡	7,700	—	—	—	50CD6-G
	60	100	0	230	2‡	—	—	—	—	—	
	Max positive pulse plate voltage: E _b = 6600 volts; max plate dissipation = 15 watts; max screen dissipation = 3.0 watts; max d-c cathode current = 200 ma										
Class A Amplifier	200	125	R _k = 180	46‡	2.2‡	28,000‡	8,000	—	4,000	3.8	50L6-GT
Class A Amplifier	110	110	7.5	49‡	4.0‡	13,000‡	8,000	—	2,000	2.1	50X6
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

‡ Approximate.

▲ Without external shield.

† Zero signal.

‡ Grids 3 and 5 are screen. Grid 4 is signal.

‡ Input grid.

‡ Conversion transconductance.

‡ Maximum.

‡ Grids 2 and 4 are screen. Grid 3 is signal.

‡ Input grid.

‡ Screen supply voltage.

‡ Absolute maximum rating.

‡ Plate-to-plate.

‡ Per section.

③ For both sections.

* Minimum.

‡ Heater warm-up time controlled for series-string service.

‡ Plate supply voltage.

‡ Input plate.

‡ The duration of the pulse voltage must not exceed 15 percent of one scanning cycle.

‡ Section 1.

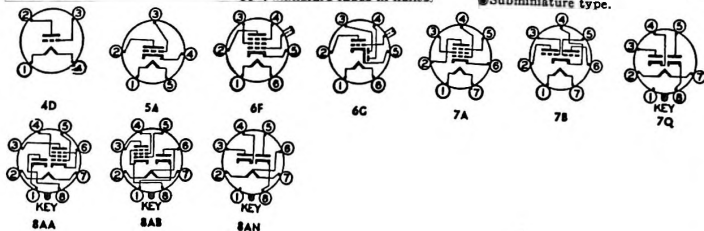
‡ Section 2.

‡ A resistor of 3 ohms must be put in series with heater.

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
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 ₁ , G ₂ & P Tied)		
58	Remote-Cutoff RF 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	—	—	—	—
76	Medium-Mu Triode	5A	12-5	Htr	6.3	0.3	250	—	3.5	2.5	2.8
77	Sharp-Cutoff Pentode	8F	12-6	Htr	6.3	0.3	300	100	4.7▲	11.0▲	0.007
78	Remote-Cutoff RF Pentode	3P	12-6	Htr	6.3	0.3	300	150	4.5	11.0	0.007

Metal tubes are shown in bold-face type, miniature tubes in italics.

● Subminiature type.



Service	Plate Volts	Screen Volts	Neg Grid Volts	Plate Milli-am-peres	Screen Milli-am-peres	R _p Ohms	G _m μmhos	# Factor	Load for Rated Out-put, Ohms	Power Out-put, Watts	Tube Type
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 Class A Amplifier	300	—	0.0	17.5† 7.0	—	—	—	—	8,000 ‡	10‡	53
Class A Amplifier	294	—	6.0	—	—	11,000	3,200	35	—	—	55
Class A Amplifier	250	—	20	8.0†	—	7,500	1,100	8.3	20,000	0.350	56
Class A Amplifier	250	—	13.5	5.0	—	9,500	1,450	13.8	—	—	56
Class A Amplifier	250	100	3.0	2.0	0.5	1,000,000*	1,225	—	—	—	57
Class A Amplifier	250	—	8.0	6.5	—	10,500	1,900	20	—	—	57
Class A Amplifier	250	100	3.0	8.2	2.0	800,000‡	1,600	—	—	—	58
Class A Amplifier	250	250	18	35	9.0	40,000	2,500	—	6,000	3.0	59
Class A Amplifier	110	110	7.5	40†	3.0†	—	5,800	—	2,500	1.5	70A7-GT
Class A Amplifier Half-Wave Rectifier	Max d-c output current = 60 ma; max rms supply voltage = 125 volts. A panel lamp must be connected between pins 6 and 7.										70L7-GT
Class A Amplifier Half-Wave Rectifier	110	110	7.5	40†	3.0†	15,000	7,500	—	2,000	1.8	
Class A Amplifier	180	—	40.5	20†	—	1,750	1,700	3.0	4,800	0.790	71-A
Class A Amplifier	250	—	2.0	0.9	—	91,000‡	1,100	100	—	—	75
Class A Amplifier	250	—	13.5	5.0	—	9,500	1,450	13.8	—	—	76
Class A Amplifier	250	100	3.0	2.3	0.5	1,000,000*	1,250	—	—	—	77
Class A Amplifier	250	125	3.0	10.5	2.6	600,000‡	1,850	—	—	—	78

‡ Approximate.

▲ Without external shield.

† Zero signal.
‡ Grids 3 and 5 are screen. Grid 4 is signal-input grid.

‡ Conversion transconductance.

▲ Maximum.

♥ Grids 2 and 4 are screen. Grid 3 is signal-input grid.

* Screen supply voltage.

‡ Absolute maximum rating.

† Plate-to-plate.

♦ Per section.

‡ For both sections.

* Minimum.

‡ Heater warm-up time controlled for series-string service.

‡ Plate supply voltage.

‡ Input plate.

‡ The duration of the pulse voltage must not exceed 15 percent of one scanning cycle.

‡ Section 1.

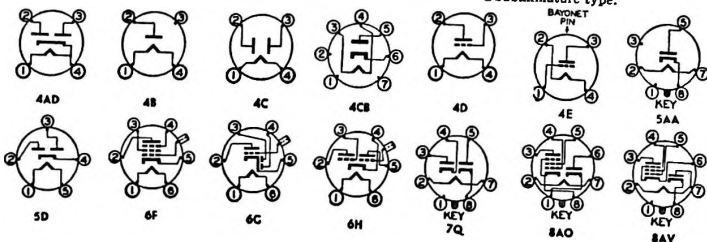
‡ Section 2.

‡ A resistor of 3 ohms must be put in series with heater.

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
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: Φ 60 v at 125 ma d-c				
81	Half-Wave High-Vacuum Rectifier	4B	T-X or 16-1	Fil	7.5	1.25	Tube Voltage Drop: Φ 91 v at 170 ma d-c				
82	Full-Wave Mercury-Vapor Rectifier	4C	14-1	Fil	2.5	3.0	Tube Voltage Drop: Φ 15 v				
83	Full-Wave Mercury-Vapor Rectifier	4C	16-1	Fil	5.0	3.0	Tube Voltage Drop: Φ 15 v				
83-V	Full-Wave High-Vacuum Rectifier	4AD	14-1	Htr	5.0	2.0	Tube Voltage Drop: Φ 25 v at 175 ma d-c				
84/624	Full-Wave High-Vacuum Rectifier	5D	12-5	Htr	6.3	0.6	Tube Voltage Drop: Φ 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	—	Triode connection (G ₁ , G ₂ , & P tied)		
							250	250	Pentode connection		
V99 X99	Low-Mu Triode	4E 4D	T-X 9-25	Fil	3.3 DC	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: Φ 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: Φ 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: Φ 10 v at 150 ma d-c				
117Z3	Half-Wave High-Vacuum Rectifier	4CB	5-3	Htr	117	0.04	Tube Voltage Drop: Φ 22.5 v at 180 ma d-c				
11724-GT	Half-Wave High-Vacuum Rectifier	5AA	9-5	Htr	117	0.04	Tube Voltage Drop: Φ 22.5 v at 180 ma d-c				
11726-GT	High-Vacuum Rectifier Doubler	7Q	9-11	Htr	117	0.075	Tube Voltage Drop: Φ 15.5 v at 120 ma d-c				
182-B/ 482B	Power Amplifier Triode	4D	14-1	Fil	5.0	1.25	250	—	—	—	—

Metal tubes are shown in bold-face type, miniature tubes in italics.

③ Subminiature type.



Service	Plate Volts	Screen Volts	Neg Grid Volts	Plate Milli-amperes	Screen Milli-amperes	R _p , Ohms	G _m , μ mhos	P _h Factor	Load for Rated Out-put, Ohms	Power Out-put, Watts	Tube Type
Class B Amplifier	250	—	0	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 = 400 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 = 1,550 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										84/62A
Class A Amplifier	250	—	20	8†	—	7,500	1,100	8.3	20,000	0.350	85
Class A Amplifier	250	—	31	32†	—	2,600	1,800	4.7	5,500	0.900	89
Class A Amplifier	250	250	25	32†	5.5†	70,000	1,800	—	6,750	3.4	
Class A Amplifier	90	—	4.5	2.5	—	15,500	425	6.6	—	—	V99 X99
Class A Amplifier	105	105	5.2	43†	4†	17,000‡	5,300	—	4,000	0.85	117L7/ M7-GT
Class A Amplifier Half-Wave Rectifier	Max d-c output current = 75 ma; max peak inverse voltage = 350 volts; max rms supply voltage = 117 volts; max peak current = 450 ma										117N7-GT
Class A Amplifier Half-Wave Rectifier	100	100	6.0	51†	5†	16,000‡	7,000	—	3,000	1.2	117P7-GT
Class A Amplifier Half-Wave Rectifier	Max d-c output current = 75 ma; max peak inverse voltage = 350 volts; max rms supply voltage = 117 volts; max peak current = 450 ma										117Z3
Half-Wave Rectifier	105	105	5.2	43†	4†	17,000‡	5,300	—	4,000	0.85	11724-GT
Half-Wave Rectifier	Max d-c output current = 75 ma; max peak inverse voltage = 350 volts; max rms supply voltage = 117 volts; max peak current = 540 ma										11726-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										11726-GT
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 = 300 ma										182-B/482B
Class A Amplifier	250	—	35	18	—	—	1,500	5.0	—	—	

‡ Approximate.

† Without external shield.

‡ Zero signal.

† Grids 3 and 5 are screen. Grid 4 is signal-

input grid.

‡ Conversion transconductance.

‡ Maximum.

† Grids 2 and 4 are screen. Grid 3 is signal-

input grid.

‡ Screen supply voltage.

‡ Absolute maximum rating.

† Plate-to-plate.

‡ Per section.

③ For both sections.

‡ Minimum.

‡ Heater warm-up time controlled for series-string service.

‡ Plate supply voltage.

‡ Input plate.

— The duration of the pulse voltage must not exceed 15 percent of one scanning cycle.

— Section 1.

— Section 2.

— A resistor of 3 ohms must be put in series with heater.

CLASSIFICATION CHART—FIVE-STAR TYPES

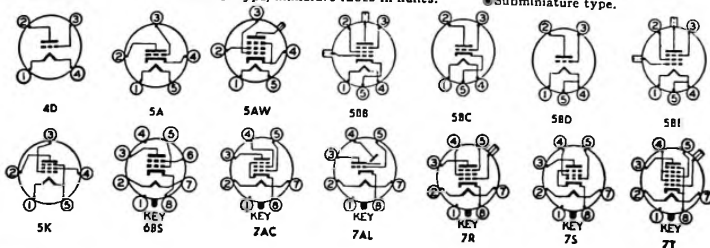
Special-Quality Tubes for Critical Applications

Classification			Sub-Miniature	7-Pin Miniature	9-Pin Miniature	Metal	Octal	
DIODES	Low-Current Rectifiers		5896	5726				
	Full-Wave Power Rectifiers			6202	6203		6087	
TRIODES	Single	$\mu < 40$	5718	6135				
		$\mu > 40$	5719					
	Twin	$\mu < 40$	5798 6021 6111		5670 5814-A 6386			
		$\mu > 40$	6112		5751 6072 6201			
		PENTODES	Voltage Amplifiers	Sharp-Cutoff	5840	5654 6136 6265		6134
				Remote-Cutoff	5797 5899	5749		6137
Dual-Control	5636			5725				
Power Amplifiers			5902	6005	5686			
HEPTODES				5750				
THYRATRONS				5727				

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
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	AF Pentode	512AX	2-2	Fil	0.625	0.02	45	45	2.0▲	1.5▲	
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 DC	0.12	135	135	—	—	
954	Detector Amplifier Pentode (Acorn)	5BB	4-3	Htr	6.3	0.15	250	100	3.4	3.0	
955	Medium-Mu Triode (Acorn)	5BC	4-1	Htr	6.3	0.15	250	—	1.0▲	0.4▲	
							180	—	—	1.3▲	
956	Remote-Cutoff RF Pentode (Acorn)	5BB	4-3	Htr	6.3	0.15	250	100	3.1	2.5	
957	Medium-Mu Triode (Acorn)	5BD	4-1	Fil	1.25 DC	0.05	135	—	0.25	0.5	
958-A	Medium-Mu Triode (Acorn)	5BD	4-1	Fil	1.25 DC	0.1	135	—	0.45	0.6	
							135	—	—	2.5	
959	Sharp-Cutoff Pentode (Acorn)	5BE	4-3	Fil	1.25 DC	0.05	145	67.5	1.8	2.5	
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	
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		
1629	Electron-Ray Indicator	7AL	T-X	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	—	—	

Metal tubes are shown in bold-face type, miniature tubes in *italics*.

Subminiature type.



Service	Plate Volts	Screen Volts	Neg Grid Volts	Plate Multi-amperes	Screen Multi-amperes	R _p Ohms	G _m μmhos	# Factor	Load for Rated Out-put, Ohms	Power Out-put, Watts	Tube Type
Class A Amplifier	250	—	60	30	—	1,750	1,700	3.0	—	—	183/483
Class A Amplifier	180	—	9.0	5.8	—	8,900	1,400	12.5	—	—	485
Controlled Rectifier	Max d-c cathode current @ = 100 ma; max peak inverse voltage @ = 1,300 volts; max peak cathode current @ = 1.0 ampere										502-A
Class A Amplifier	22.5	22.5	0.625	0.125	0.040	1,250,000	160	—	—	—	512AX
Class AB ₁ Amplifier	400	—	45	30†	—	—	—	—	3,000‡	30‡	807
Class AB ₂ Amplifier	600	300	30	30†	5.0†	—	—	—	6,400‡	30‡	
Class A Amplifier	135	135	16.5	7.0†	2.0†	105,300	950	—	13,500	0.450	950
Class A Amplifier	250	100	3.0	2.0	0.7	1,000,000*	1,400	—	—	—	954
	90	90	3.0	1.2	0.5	1,000,000	1,100	—	—	—	
Class A Amplifier	250	—	7.0	6.3	—	11,400	2,200	—	—	—	955
	180	—	5.0	4.5‡	—	12,500	25	—	—	—	
Class C Amplifier	180	—	35‡	7.0†	—	14,700	1,700	—	—	0.135	
Class A Amplifier	250	100	3.0	6.7	2.7	700,000‡	1,800	—	—	—	956
Class A Amplifier	135	—	5.0	2.0	—	20,800‡	650	—	13.5	—	957
Class A Amplifier	135	—	7.5	3.0	—	10,000‡	1,200	—	12	—	958-A
Class C Amplifier	135	—	20	7.0	—	Input signal = 0.035 watt		—	—	0.6	
Class A Amplifier	135	67.5	3.0	1.7	0.4	800,000‡	600	—	—	—	959
Class A Amplifier	250	100	3.0	5.3	6.5	600,000	1,100	E _{as} = -3.0 volts		—	1612
Class A Amplifier	250	100	3.0	2.0	0.5	1,000,000*	1,225	—	—	—	1620
	100	100	3.0	2.0	0.5	1,000,000	1,185	—	—	—	
Class A Amplifier	300	300	30	38†	6.5†	—	—	—	4,000‡	5	1621
Class A Amplifier	300	250	20	88†	4†	—	—	—	4,000‡	10	1622
Tuning Indicator	Plate voltage = 250 thru 1 meg; Target voltage = 250 (E _p = -8 volts; Shadow = 0°) (E _p = 0 volts, Shadow = 90°. Plate current = 0.24 ma, Target current = 4 ms)										1629
Class AB ₁ Amplifier	300	270	22.5	88†	5†	—	—	—	6,800‡	26.5	1631
Class A Amplifier	110	110	7.5	49†	4†	13,000‡	9,000	—	2,000	2.1	1632

‡ Approximate.

* Without external shield.

† Zero signal.

‡ Grids 3 and 5 are screen. Grid 4 is signal-input grid.

Conversion transconductance.

◆ Maximum.

▽ Grids 2 and 4 are screen. Grid 3 is signal-input grid.

✱ Screen supply voltage.

✱ Absolute maximum rating.

† Plate-to-plate.

◆ Per section.

② For both sections.

* Minimum.

‡ Heater warm-up time controlled for series-string service.

Plate supply voltage.

◆ Input plate.

▽ The duration of the pulse voltage must not exceed 15 percent of one scanning cycle.

✱ Section 1.

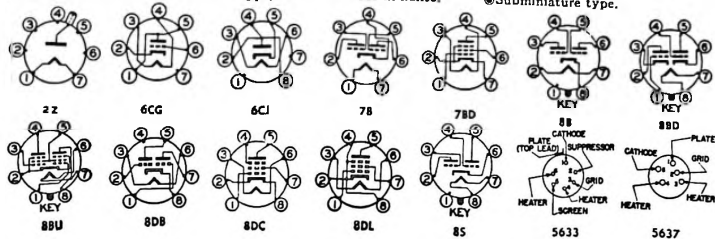
✱ Section 2.

◆ A resistor of 3 ohms must be put in series with heater.

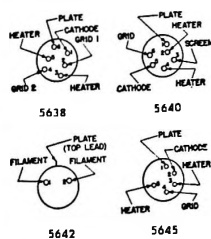
Tube Type	Classification by Construction	Base Connections	Out-line Dwg	Type Cathode	Filament Volts	Filament Amp	Max Plate Volts	Max Screen Volts	Capacitance in Micromicrofarads		
									Input	Out-put	Grid-plate
1633	Medium-Mu Twin Triode	8BD	9-11	Htr	25.0	0.15	300	—	—	—	—
1634	High-Mu Twin Triode (Special 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▲
1664	Half-Wave High-Vacuum Rectifier	2Z	T-X	Fil	1.4	0.05	—	—	—	—	—
6690	RP Pentode	7BD	5-1	Htr	6.3	0.15	180	140	3.40	2.90	0.01
6691	Sharp-Cutoff RF 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	—	—	—	—
6610	Medium-Mu Triode	6CG	5-2	Htr	6.3	0.15	300	—	—	—	—
5633⊙	Remote-Cutoff RP Pentode	5633	T-X	Htr	6.3	0.15	150	140	4.0▲	2.2▲	0.015▲♣
5634⊙	Remote-Cutoff RP 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	3-1	Htr	6.3	0.15	165⊞	155⊞	—	—	—
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	0.5	0.19
5639⊙	Video Pentode	8DL	3-3	Htr	6.3	0.45	165⊞	155⊞	9.5	7.5	0.10♣
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	Tube Voltage Drop: 30 v at 4.0 ma d-c				
5645⊙	Medium-Mu Triode	5645	T-X	Htr	6.3	0.15	150	—	2.2	3.0	1.7

Metal tubes are shown in bold-face type, miniature tubes in italics.

⊙Subminiature type.



Service	Plate Volts	Screen Volts	Neg Grid Volts	Plate Milli-amperes	Screen Milli-amperes	R _p ' Ohms	G _m ' μmhos	μ Factor	Load for Rated Out-put, Ohms	Power Out-put, Watts	Tube Type
Class A Amplifier ♦	250	—	8	11.5	—	6,900	2,600	18	—	—	1633
Class A Amplifier ♦	250	—	2	2.0	—	53,000§	1,325	70	—	—	1634
Class B Amplifier	300	—	0	6.6†	—	—	—	—	12,000†	10.4	1635
Class A Amplifier ♦	180	180	9	13†	2.8†	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										1664
Class A Amplifier	90	90	R _k = 820	3.9	1.4	300,000	2,000	—	—	—	6690
Class A Amplifier	180	120	R _k = 180	7.7	2.4	500,000§	5,100	—	—	—	6691
	120	120	R _k = 180	7.5	2.5	300,000§	5,000	—	—	—	
Class A Amplifier ♦	300	—	6.0	6.0	—	13,000	2,450	32	—	—	5608-A
Class A Amplifier	90	—	1.5	17	—	3,500	4,000	14	—	—	6610
Class A Amplifier	100	100	R _k = 150	7.0	2.8	200,000	3,400	—	—	—	5633 ⊙
Class A Amplifier	100	100	R _k = 150	6.5	2.5	240,000§	3,500	—	—	—	5634 ⊙
Class A Amplifier ♦	100	—	R _k = 100 ⊞	4.8	—	10,000	3,800	38	—	—	5635 ⊙
Gated Amplifier	100	100	R _k = 150	5.3	3.6	110,000§	3,200	G ₂ tied to cathode		E _{cc} = -1.0 volts	5636 ⊙
	100	100	R _k = 150	4.0	5.8	50,000§	1,950				
Class A Amplifier	100	—	R _k = 820	1.4	—	26,000	2,700	70	—	—	5637 ⊙
Class A Amplifier	100	100	R _k = 270	4.8	1.25	150,000	3,300	—	—	—	5638 ⊙
Class A Amplifier	150	100	R _k = 100	21	4.0	50,000	9,000	—	—	—	5639 ⊙
Class A Amplifier	100	100	9.0	31†	2.2†	15,000	5,000	—	3,000	1.25	5640 ⊙
Half-Wave Rectifier	Max d-c output current ⊞ = 50 ma; max peak inverse voltage ⊞ = 930 volts; rms supply voltage per plate = 275 volts; max peak current ⊞ = 300 ma										5641 ⊙
TV Flyback Rectifiers	Max d-c output current = 0.25 ma; max peak inverse voltage = 10,000 volts; max peak current = 5.0 ma										5642 ⊙
Class A Amplifier	100	—	R _k = 560	5.0	—	7,400	2,700	20	—	—	5645 ⊙

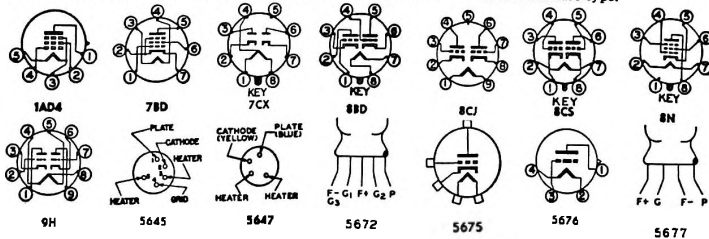


♠ Per section.
 § Approximate.
 † Zero Signal.
 ‡ Plate-to-plate.
 ▲ Without external shield.
 ♣ Maximum.
 ⊞ For both sections.
 ⊞ Absolute maximum rating.
 ⊞ The duration of the pulse voltage must not exceed 15 percent of one scanning cycle.

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
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 RF Pentode (Special 6AK5)	7BD	5-1	Htr	6.3	0.175	180	125	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 ▲	1.1 ▲
5672 Ⓢ	Power Amplifier Pentode	5672	2-1	Fil	1.25 DC	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 DC	0.12	135	—	1.3	4.0	2.0
5677 Ⓢ	Medium-Mu Triode	5677	T-X	Fil	1.25 DC	0.06	135	—	1.3	3.8	2.0
5678 Ⓢ	Pentode Amplifier	1AD4	T-X	Fil	1.25 DC	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	6.5	8.5	0.08 ♣
5687	Medium-Mu Twin Triode	9H	6-2	Htr	6.3 (12.6 0.45)	0.9 (1.2 2.4)	300	—	4.0 ▲	0.6 0.5; ▲	4.0 ▲
5690	Full-Wave High-Vacuum Rectifier	5690	T-X	Htr	12.6 6.3	1.2 2.4	Tube Voltage Drop: 17 v at 150 ma d-c				
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		
5702 Ⓢ	RF Pentode	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				

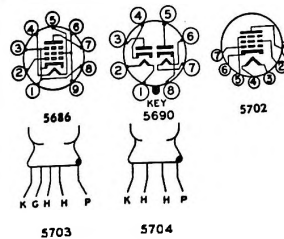
Metal tubes are shown in bold-face type, miniature tubes in *italics*.

Ⓢ Subminiature type.



Service	Plate Volts	Screen Volts	Neg Grid Volts	Plate Milliamperes	Screen Milliamperes	R _p , Ohms	G _m , μmhos	μ Factor	Load for Rated Output, Ohms	Power Output, Watts	Tube Type
Class A Amplifier	100	—	R _k = 820	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	120	120	R _k = 200	7.5	2.5	340,000	5,000	—	—	—	5654
Class A Amplifier ♣ Class AB ₁ Amplifier	150 300	—	R _k = 240 R _k = 800 Ⓢ	8.2 9.8†	—	6,400‡	5,500	35	—	27,000 1.0	5670
Class A Amplifier	67.5	67.5	6.5	3.25	1.1	—	650	—	20,000	0.085	5672 Ⓢ
Class A Amplifier	135	—	R _k = 68	24	—	3,225	6,200	20	—	—	5675
Class A Amplifier	135	—	5.0	4.0	—	—	1,600	15	—	—	5676 Ⓢ
Class A Amplifier	135	—	6.0	1.9	—	—	650	13.5	—	—	5677 Ⓢ
Class A Amplifier	67.5	67.5	0	1.8	0.48	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 ♣ Class C Amplifier	250	250	12.5	27†	3.0†	45,000‡	3,100	—	9,000	2.7	5686
Class A Amplifier ♣	180	250	7.0	21	—	2,100	8,250	17.5	—	—	5687
Full-Wave Rectifier	Max d-c output current = 125 ma; max peak inverse voltage = 1,120 volts; rms supply voltage per plate = 350 volts; max peak current per plate = 375 ma										5690
Class A Amplifier ♣	250	—	2.0	2.3	—	44,000	1,600	70	—	—	5691
Class A Amplifier ♣	250	—	9.0	6.5	—	9,100	2,200	20	—	—	5692
Class A Amplifier	250	100	3.0	3.0	0.85	1,000,000	1,650	—	—	—	5693
Class A Amplifier	294 250	—	6.0 5.0	7.0 6.0	—	11,000 11,300	3,200 3,100	35 35	—	—	5694
Class A Amplifier	120	120	R _k = 200	7.5	2.5	340,000	5,000	—	—	—	5702 Ⓢ
Class A Amplifier	120	—	R _k = 220	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 Ⓢ

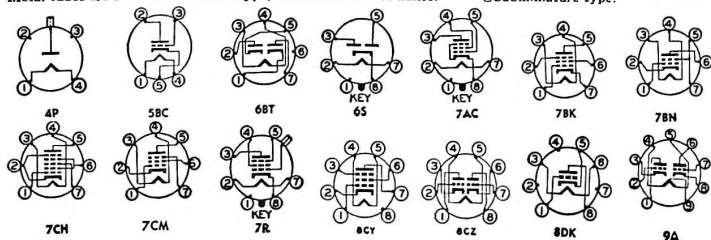
▲ Without external shield.
 ♣ Absolute maximum rating.
 ♣ Maximum.
 ♣ Per Section.
 † Section 1.
 ‡ For both sections.
 † Zero signal.
 ‡ Approximate.
 ‡ Plate-to-plate.
 † Section 2.
 * Minimum.



Tube Type	Classification by Construction	Base Connections	Out-line Dwg	Type Cathode	Filament Volts	Filament Amp	Capacitance in Micromicrofarads				
							Max Plate Volts	Max Screen Volts	Input	Output	Grid-plate
5718	Medium-Mu Triode	8DK	3-1	Htr	6.3	0.15	165	—	2.4	2.4	1.3
5719	High-Mu Triode	8DK	3-1	Htr	6.3	0.15	165	—	1.9	2.2	0.8
6725	Dual-Control RF Pentode (Special 6AS6)	7CM	5-1	Htr	6.3	0.175	180	140	4.0	3.0	0.01
6726	Twin Diode (Special 6AL5)	6BT	5-1	Htr	6.3	0.30	Tube Voltage Drop: ∇ 10 v at 60 ma d-c				
6727	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 RF 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	—	—	—	—
6749	Remote Cutoff RF Pentode (Special 6BA6)	7BK	5-2	Htr	6.3	0.3	300	150	5.5	5.5	0.0035 ∇
6760	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		
6761	High-Mu Twin Triode (Special 12AX7)	9A	6-2	Htr	6.3 (12.6)	0.35 (0.175)	300	—	1.4 $\blacktriangle$ 0.46 $\blacktriangle$ 0.36 $\blacktriangle$	1.4 $\blacktriangle$	1.4 $\blacktriangle$
5784	Dual-Control RF 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 DC	0.015	Tube Voltage Drop: ∇ 17 v at 0.1 ma d-c				
5797	Semi-Remote-Cutoff RF Pentode	8CY	3-2	Htr	26.5	0.045	50	50	4.2	3.2	0.024 ∇
5798	Medium-Mu Twin Triode	8CZ	3-2	Htr	26.5	0.09	50	—	1.9	1.7	1.7
6814 6814-A	Medium-Mu Twin Triode (Special 12AU7)	9A	6-2	Htr	6.3 (12.6)	0.35 (0.175)	300	—	1.6 $\blacktriangle$	0.5 $\blacktriangle$ 0.4 $\blacktriangle$	1.5 $\blacktriangle$
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	—	—	—	—	—

Metal tubes are shown in bold-face type, miniature tubes in *italics*.

③ Subminiature type.



Service	Plate Volts	Screen Volts	Neg Grid Volts	Plate Milli-amperes	Screen Milli-amperes	R_p Ohms	G_m μ mbos	# Factor	Load for Rated Output, Ohms	Power Output, Watts	Tube Type
Class A Amplifier	100	—	$R_g = 150$	8.5	—	4,650 Ω	5,800	27	—	—	5718 $\oplus$
Class A Amplifier	100	—	$R_g = 1,500$	0.73	—	41,000 Ω	1,700	70	—	—	5719 $\oplus$
Class A Amplifier	120	120	2.0	5.2	3.5	—	3,200	$E_{c3} = 0$ volts			6726
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										6726
Controlled Rectifier	Max d-c cathode current $\nabla = 100$ ma; max peak inverse voltage $\nabla = 1,300$ volts; max peak cathode current $\nabla = 500$ ma										6727
Class A Amplifier	250	—	7.0	6.3	—	11,400	2,200	25	—	—	5731
Class A Amplifier	250	100	3	7.0	1.7	800,000 Ω	1,450	—	—	—	5732
Class A Amplifier	250	—	$R_g = 500$	4.0	—	—	4,000	70	—	—	5744 $\oplus$
Class A Amplifier	250	100	$R_g = 68$	11	4.2	1,000,000 Ω	4,400	—	—	—	6749
Class A Amplifier	100	100	$R_g = 68$	10.8	4.4	250,000 Ω	4,300	—	—	—	
Converter	250	100	1.5	2.6	7.5	1,000,000 Ω	475 Ω	—	—	—	6760
Class A Amplifier $\blacklozenge$	250	—	3.0	1.0	—	58,000	1,200	70	—	—	6761
Class A Amplifier	120	120	2.0	5.2	3.5	—	$3,200 E_{c3} = 0$ volts $1,850 E_{c2} = -3.0$ volts			5784 $\oplus$	
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 $\oplus$
Class A Amplifier	26.5	26.5	0	2.8	0.9	70,000 Ω	3,450	—	—	—	5797 $\oplus$
Class A Amplifier $\blacklozenge$	26.5	—	0	2.0	—	7,100 Ω	3,400	24	—	—	5798 $\oplus$
Class A Amplifier $\blacklozenge$	250	—	8.5	10.5	—	7,700	2,200	17	—	—	6814 6814-A
Class A Amplifier $\blacklozenge$	100	—	0	11.8	—	6,250 Ω	3,100	19.5	—	—	
Class A Amplifier	135	135	22	61 μ	2.5 μ	15,000 Ω	5,000	—	1,700	4.3	5824
Half-Wave Rectifier	Max d-c output current $\nabla = 2$ ma; max peak inverse voltage $\nabla = 60,000$ volts; rms supply voltage = 21,200 volts; max peak current $\nabla = 40$ 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 $\oplus$
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

③ Absolute maximum rating.

 ∇ Approximate. $\blacktriangle$ Per section. $\blacklozenge$ Maximum. $\blacktriangledown$ Grids 2 and 4 are screen. Grid 3 is signal input grid.

Conversion transconductance.

 $\blacktriangle$ Without external shield.

1- Section 1.

2- Section 2.

 ∇ Zero signal.

5702



5744



5785

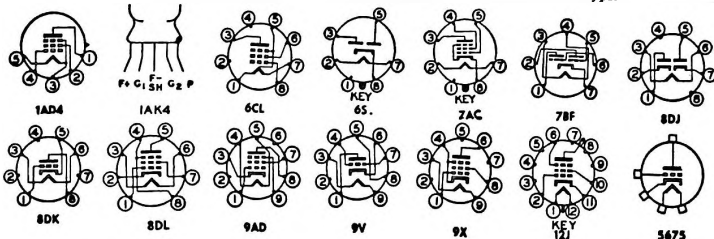


5829

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
5839	Full-Wave High-Vacuum Rectifier	6S	T-X	Htr	26.5	0.285	—	—	—	—	—
5840	Sharp-Cutoff RF 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, 0.4	2.7
5847	Sharp-Cutoff RF 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 DC	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	—	—	—	—	—
5854	Power Amplifier Pentode	1AK4	2-1	Fil	1.25	0.03	50	50	—	—	—
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 DC	0.1	90	90	4.0	4.0	0.03
5876	High-Mu Triode (Pencil)	5875	T-X	Htr	6.3	0.135	300	—	2.5	0.035	1.4
5879	Sharp-Cutoff AF 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 ₁ , G ₂ & P Tied)		
5890	Remote-Cutoff Pentode Regulator	12J	T-X	Htr	6.3	0.6	30,000	450	Single Tube Two tubes, Push-pull		
5896	High-Frequency Twin Diode	8DJ	3-1	Htr	6.3	0.3	E _b = 5,500 volts E _c = 5,500 volts E _d = 5,500 volts				
5897	Medium-Mu Triode	8DK	3-1	Htr	6.3	0.15	Tube Voltage Drop: 4.5 v at 18 ma d-c				
5898	High-Mu Triode	8DK	3-1	Htr	6.3	0.15	165	—	2.2	0.7	1.40
5899	Semi-Remote-Cutoff RF Pentode	8DL	3-1	Htr	6.3	0.15	165	155	4.2	3.4	0.015

Metal tubes are shown in bold-face type, miniature tubes in italics.

Subminiature type.



Service	Plate Volts	Screen Volts	Neg Grid Volts	Plate Milli-am-peres	Screen Milli-am-peres	R _p Ohms	G _m μmhos	# Fac-tor	Load for Rated Out-put, Ohms	Power Out-put, Watts	Tube Type
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	100	100	R _k = 150	7.5	2.4	260,000	5,000	—	—	—	5840
Class A Amplifier	150	—	R _k = 62	26	—	1,800	24,000	43	—	—	5842
Class A Amplifier	100	—	R _k = 470	4.8	—	7,950	3,400	27	—	—	5844
Class A Amplifier	150	—	0	4.8	—	R _p = 47,000 ohms	30,000	—	—	—	5847
Class A Amplifier	150	150	R _k = 110	13	4.5	—	12,500	—	—	—	5847
Class A Amplifier	125	125	7.5	5.5	0.9	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	45	45	2.0	0.8	0.25	350,000	550	—	50,000	0.0095	5854
Class A Amplifier	315	225	13	34	2.2	77,000	3,750	—	8,500	5.5	5871
Class A Amplifier	150	—	3.0	9.0	—	—	2,900	22	—	—	5873
Class A Amplifier	90	90	0	3.5	1.0	—	2,500	—	—	—	5875
Class A Amplifier	250	—	R _k = 75	18	—	8,625	6,500	56	—	—	5876
Class A Amplifier	250	100	3.0	1.8	0.4	2,000,000	1,000	—	—	—	5879
Class A Amplifier	250	—	8.0	5.5	—	13,700	1,530	21	—	—	5881
Class A Amplifier	350	250	18	53	2.5	48,000	5,200	—	4,200	11.3	5881
Class A Amplifier	250	250	14	75	4.3	30,000	6,100	—	2,500	6.7	5881
Class A Amplifier	360	270	22.5	88	5.0	—	—	—	3,300	18	5881
Class A Amplifier	360	270	22.5	88	5.0	—	—	—	6,600	26.5	5881
Shunt Regulator	30,000	200	60	0	0	—	—	—	Peak G ₁ signal = 0 volts	—	5890
	30,000	200	60	0.06	0	—	—	—	Peak G ₁ signal = 20 volts	—	5890
	30,000	200	60	0.50	0	—	—	—	Peak G ₁ signal = 45 volts	—	5890
Full-Wave Rectifier	Max d-c output current per plate = 10 ma; max peak inverse voltage = 400 volts; rms supply voltage per plate = 150 volts; max peak current per plate = 60 ma										5896
Class A Amplifier	100	—	R _k = 150	8.5	—	—	5,800	27	—	—	5897
Class A Amplifier	150	—	—	20	—	—	Frequency = 500 mc	—	—	—	5897
Class A Amplifier	160	—	R _k = 680	1.7	—	—	2,700	70	—	—	5898
Class A Amplifier	100	100	R _k = 120	7.2	2.0	260,000	4,500	—	—	—	5899

† Approximate.

* Without external shield.

† Zero signal.

‡ Grids 3 and 5 are screen. Grid 4 is signal-input grid.

Conversion transconductance.

Δ Maximum.

▽ Grids 2 and 4 are screen. Grid 3 is signal-input grid.

* Screen supply voltage.

† Absolute maximum rating.

‡ Plate-to-plate.

Δ Per section.

@ For both sections.

* Minimum.

† Heater warm-up time controlled for series string service.

‡ Plate supply voltage.

§ Input plate.

|| The duration of the pulse voltage must not exceed 15 percent of one scanning cycle.

— Section 1.

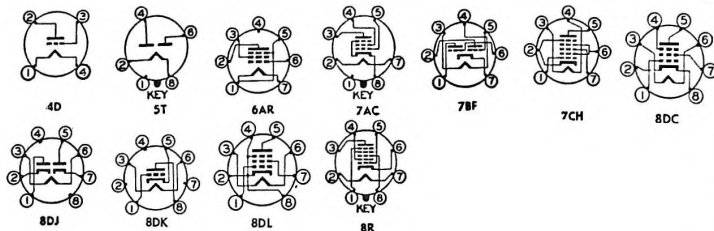
— Section 2.

— A resistor of 3 ohms must be put in series with heater.

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
5900 Ⓢ	Semi-Remote-Cutoff RF Pentode	8DL	3-1	Htr	6.3	0.15	165 Ⓢ	155 Ⓢ	4.4	3.4	0.015 Ⓢ
5901 Ⓢ	Sharp-Cutoff RF 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 Ⓢ	155 Ⓢ	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 Ⓢ	—	2.4	2.2	1.8
5905 Ⓢ	Sharp-Cutoff RF Pentode	8DL	3-1	Htr	26.5	0.045	55 Ⓢ	55 Ⓢ	4.4	3.4	0.015 Ⓢ
5906 Ⓢ	Sharp-Cutoff RF Pentode	8DL	3-1	Htr	26.5	0.045	165 Ⓢ	155 Ⓢ	4.2	3.4	0.015 Ⓢ
5907 Ⓢ	Remote-Cutoff RF Pentode	8DL	3-1	Htr	26.5	0.045	55 Ⓢ	55 Ⓢ	4.0	3.4	0.015 Ⓢ
5908 Ⓢ	Dual-Control RF Pentode	8DC	3-1	Htr	26.5	0.045	55 Ⓢ	55 Ⓢ	Ec ₁ = 0 volts		
5910	Sharp-Cutoff Pentode	6AR	5-2	Fil	1.4 DC	0.05	90	90	3.6	7.5	0.008 Ⓢ
5916	Pentagrid Amplifier	7CH	5-2	Htr	6.3	0.3	250 Ⓢ	125 Ⓢ	E _{c2} = 0.0 volts E _{c3} = -10 volts E _{c4} = 0.0 volts		
5916 Ⓢ	Dual-Control Pentode	8DC	3-1	Htr	26.5	0.045	165 Ⓢ	155 Ⓢ	G ₂ tied to cathode Ec ₁ = -1 volt		
5920	Medium-Mu Twin Triode	7BF	5-3	Htr	6.3	0.4	150	—	—	—	—
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 1-c				
5932	Beam Power Amplifier (Special 6L6-G)	7AC	T-X	Htr	6.3	0.9	400 Ⓢ	300 Ⓢ	—	—	—
5961	Pentacrid Converter (Special 6SA7)	8R	8-1	Htr	6.3	0.3	300	100	Osc I _{g1} = 0.5 ma R _{g1} = 20,000 ohms		

Metal tubes are shown in bold-face type, miniature tubes in *italics*.

Ⓢ Subminiature type.



Service	Plate Volts	Screen Volts	Neg Grid Volts	Plate Milli-am-peres	Screen Milli-am-peres	R _p ' Ohms	G _m ' umhos	μ Factor	Load for Rated Out-put, Ohms	Power Out-put, Watts	Tube Type
Class A Amplifier	100	100	R _g = 120	7.2	2.2	260,000	4,500	—	—	—	5900 ●
Class A Amplifier	100	100	R _g = 150	7.5	2.4	230,000	5,000	—	—	—	5901 ●
Class A Amplifier	110	110	R _g = 270	30	2.2	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	26.5	—	R _g = 2.2 meg	2.75	—	4,250§	4,700	20	—	—	5904 ●
Class A Amplifier	26.5	26.5	R _g = 2.2 meg	2.3	0.9	110,000	2,850	—	—	—	5905 ●
Class A Amplifier	100	100	R _g = 150	7.5	2.4	260,000	5,000	—	—	—	5906 ●
Class A Amplifier	26.5	26.5	R _g = 2.2 meg	2.7	1.1	100,000	3,000	—	—	—	5907 ●
Class A Amplifier	26.5	26.5	R _g = 2.2 meg	3.3	2.0	31,000§	2,200	—	—	—	5908 ●
Class A Amplifier	90	90	0	1.6	0.45	1,500,000	900§	—	—	—	5910
Gated Amplifier	150‡ 150‡ 150‡	75 09§ 71§	10 0 0	0 0 5.8	0 14 9.0	R _{g1} = R _{g2} = 47,000 R _{g1} = R _{g2} = 47,000 R _{g1} = R _{g2} = 47,000	—	20,000 20,000 20,000	—	—	5916
Class A Amplifier	100	100	R _g = 150	5.6	4.0	110,000§	3,200	—	—	—	5916 ●
	100	100	R _g = 150	4.0	5.8	50,000§	1,950	—	—	—	
Class A Amplifier ♦	100	—	1.8	8.5	—	—	5,500	25	—	—	5920
Frequency Halfer ♦	150‡ 150‡	— —	0 10	4.5* 0.2 ♦	—	R _{g1} = 47,000 ohms R _{g1} = 47,000 ohms	—	20,000 20,000	—	—	
Class A Amplifier	250	—	45	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	250	250	14	72†	5.0†	22,500	6,000	—	2,500	6.5	5932
Converter	250	100	2.0	3.5	8.5	1,000,000§	450‡	—	—	—	5961

Ⓢ Approximate.

† Without external shield.

‡ Zero signal.
§ Grids 3 and 5 are screen. Grid 4 is signal-input grid.

* Conversion transconductance.

† Maximum.

‡ Grids 2 and 4 are screen. Grid 3 is signal-input grid.

§ Screen supply voltage.

¶ Absolute maximum rating.

‡ Plate-to-plate.

¶ Per section.

Ⓢ For both sections.

* Minimum.

† Heater warm-up time controlled for series-string service.

‡ Plate supply voltage.

§ Input plate.

¶ The duration of the pulse voltage must not exceed 15 percent of one scanning cycle.

† Section 1.

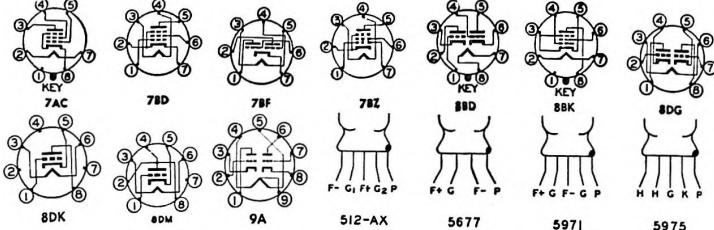
‡ Section 2.

§ A resistor of 3 ohms must be put in series with heater.

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
6965	Medium-Mu Twin Triode	9A	6-2	Htr	112.6 6.3	0.151 0.3	250	—	1.9▲	0.5▲ 0.35▲	1.5▲
6964	High-Mu Twin Triode	7BF	5-2	Htr	6.3	0.45	250	—	2.1▲	0.4▲	1.3▲
6966	Twin Triode	9A	6-2	Htr	112.6 6.3	0.225 0.45	300	—	3.8▲	0.5▲ 0.38▲	3.0▲
5971 Ⓢ	Medium-Mu Triode	5971	2-1	Fil	1.25 DC	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	2.2	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	—	—	—
6963	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				
6006	Beam Power Amplifier (Special 6AQ5-W)	7BZ	5-3	Htr	6.3	0.45	250	250	Single Tube 2 Tubes, Push-pull		
6006	Semi-Remote-Cutoff RF Pentode (Special 6SG7)	8BK	8-1	Htr	6.3	0.3	300	200	8.5	7.0	0.004▲
6007 Ⓢ	Power Amplifier Pentode	512-AX	T-X	Fil	1.25 DC	0.0133	45	45	2.5▲	2.2▲	0.2▲
6008 Ⓢ	Sharp-Cutoff Pentode	512-AX	T-X	Fil	0.025 DC	0.0133	45	45	1.5▲	1.5▲	0.2▲
6021 Ⓢ	Medium-Mu Twin Triode	8DG	3-1	Htr	6.3	0.3	165	—	2.4▲	0.24▲ 0.32▲	1.5▲
6028	Sharp-Cutoff RF Pentode	7BD	5-1	Htr	20.0	0.05	160	140	4.0	2.8	0.02▲
6029 Ⓢ	Medium-Mu Triode	5677	2-1	Fil	1.25 DC	0.2	135	—	1.3▲	1.4▲	1.6▲

Metal tubes are shown in bold-face type, miniature tubes in italics.

Ⓢ Subminiature type.



Service	Plate Volts	Screen Volts	Neg Grid Volts	Plate Milli-am-peres	Screen Milli-am-peres	R _p , Ohms	G _m , μmhos	# Factor	Load for Rated Out-put, Ohms	Power Out-put, Watts	Tube Type
Class A Amplifier Frequency Haller	67.5 150	— 15	0 5.1	7 —	— —	7,850 R _{st} = 47,000	2,800	22 —	— 20,000	— 20,000	5965
Class A Amplifier Frequency Haller	100 150	— 50	R _k = 10	9.5 0	— 5.0	6,500 R _{st} = 47,000	6,000	39 —	— 20,000	— 20,000	5964
Class A Amplifier Frequency Haller	150 150	— —	R _k = 5.5	8.2 10.5	— 0.15	7,250 —	6,500	47 —	— 7,200	— 7,200	5966
Class A Amplifier	135	—	2.5	4.0	—	—	2,150	23	—	—	5971 Ⓢ
Class A Amplifier	200	—	R _k = 680	12	—	4,000	4,000	16	—	—	5975 Ⓢ
Class A Amplifier	100	—	R _k = 270	10	—	—	4,500	16	—	—	5977 Ⓢ
Class A Amplifier	100	—	18	9.0	—	—	1,850	4.1	—	—	5987 Ⓢ
Class A Amplifier	250	250	12.5	45†	4.5†	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										5993
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	110	—	R _k = 105	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 Class AB ₁ Amplifier	250 180 250	250 180 250	12.5 8.5 15	45† 29† 70†	4.5† 3.0† 5†	52,000† 58,000† —	4,100 3,700 —	— — —	5,000 5,500 10,000	4.5 2.0 10	6006
Class A Amplifier	250	150	2.5	9.2	3.4	1,000,000*	4,000	—	—	—	6006
Class A Amplifier	22.5	22.5	0.2	0.475	0.1	400,000	420	—	—	—	6007 Ⓢ
Class A Amplifier	22.5	18	1.16	0.05	0.01	4,000,000	106	—	—	—	6008 Ⓢ
Class A Amplifier	100	—	R _k = 150	6.5	—	6,500	5,400	35	—	—	6021 Ⓢ
Class A Amplifier	120	120	R _k = 180	7.5	2.5	300,000	5,000	—	—	—	6028
Class A Amplifier	90	—	4.0	11	—	4,250	2,000	8.5	—	—	6029 Ⓢ

Ⓢ Absolute maximum rating.

▲ Without external shield.

1. Section 1.

2. Section 2.

♦ Per section.

‡ Plate supply voltage.

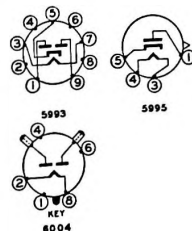
‡ Approximate.

‡ Zero signal.

‡ Plate-to-plate.

▲ Maximum.

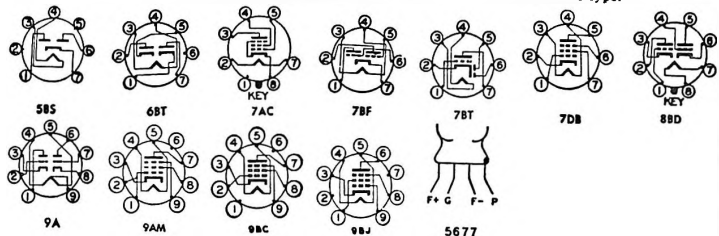
* Minimum.



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
6042	Medium-Mu Twin Triode	8BD	9-3	Htr	25.0	0.15	250	—	—	—	—
6045	Medium-Mu Twin Triode	7BF	5-2	Htr	6.3	0.35	330	—	2.0 ▲	0.45 ▲ 0.34 ▲	1.3 ▲
6046	Beam Power Amplifier (Special 25L6-GT)	7AC	9-11	Htr	25.0	0.3	200	125	—	—	—
6050	High-Frequency Medium-Mu Triode	5677	2-1	Pil	1.25 DC	0.12	135	—	1.3	3.4	1.4
6067	High-Mu Twin Triode (Special 12AX7)	9A	6-2	Htr	12.6 6.3	0.15 0.3	300	—	1.6 ▲	0.46 ▲ 0.34 ▲	1.7 ▲
6068	Twin Diode (Special 6AL5)	6BT	5-2	Htr	6.3	0.3	—	—	—	—	—
6069	Sharp-Cutoff RF 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	RF Pentode	7DB	5-2	Htr	6.3	0.3	250	250	7.8	3.9	0.01 ▲
6065	Remote-Cutoff RF 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	—	1.0 ▲	0.51 ▲ 0.35 ▲	1.5 ▲
6072	Twin Triode (Special 12AY7)	9A	6-2	Htr	12.6 6.3	0.175 0.35	300	—	1.4 ▲	0.51 ▲ 0.42 ▲	1.5 ▲
6080	Low-Mu Twin Triode Power Amplifier (Special 6AS7-G)	8BD	T-X	Htr	6.3	2.5	250	—	6.0 ▲	2.2 ▲	8.0 ▲
6082	Low-Mu Twin Triode Power Amplifier	8BD	T-X	Htr	26.5	0.6	250	—	6.0 ▲	2.2 ▲	8.0 ▲
6084	AF Pentode	9BJ	6-3	Htr	6.3	0.3	300	200	5.1	7.1	0.025 ▲
6085	Medium-Mu Twin Triode	9A	6-3	Htr	12.6 6.3	0.3 0.6	300	—	2.81 2.71	1.21 1.31	2.61 2.75

Metal tubes are shown in bold-face type, miniature tubes in italics.

③ Subminiature type.



Service	Plate Volts	Screen Volts	Ng Grid Volts	Plate Milli-amperes	Screen Milli-amperes	R _p Ohms	G _m μmhos	Factor	Load for Rated Output, Ohms	Power Output, Watts	Tube Type
Class A Amplifier	250	—	9	6.5	—	9,100	2,200	20	—	—	6042
Class A Amplifier	100	—	R _k = 50 Ω	9.0	—	5,900	5,400	38	—	—	6045
Class A Amplifier	200	125	R _k = 180 Ω	46†	2.2†	28,000	8,000	—	1,000	3.8	6046
Relay Energizer	110 115	110 115	7.5 25	49† 105	4.0† 0.1‡	13,000	8,000	—	2,000 500	2.1 —	—
Class A Amplifier	135	—	5	4.0	—	—	1,600	16	—	—	6050
Class A Amplifier	250	—	2	1.2	—	62,500	1,600	100	—	—	6067
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 = 64 ma										6068
Class A Amplifier	250	100	3	2.1	0.6	2,500,000	1,250	—	—	—	6069
Class A Amplifier	250	—	2	10	—	10,000	5,500	55	—	—	6060
Class A Amplifier	250 315	250 225	12.5 13	45† 34†	4.5† 2.2†	52,000 77,000	4,100 3,750	—	5,000 8,500	4.5 5.5	6061
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										6063
Class A Amplifier	250	250	2.0	10	2.5	1,000,000	7,500	—	—	—	6064
Class A Amplifier	250	200	2.5	8.0	2.1	1,000,000	2,500	—	—	—	6065
Class A Amplifier	250	—	3.0	1.0	—	58,000	1,200	70	—	—	6066
Class A Amplifier	250	—	8.5	10.5	—	7,700	2,200	17	—	—	6067
Class A Amplifier	250	—	4.0	3.0	—	25,000	1,750	44	—	—	6072
DC Amplifier	135	—	R _k = 250	125	—	280	7,000	2	—	—	6080
DC Amplifier	135	—	R _k = 250	125	—	280	7,000	2	—	—	6082
Class A Amplifier	250	100	2.0	3.0	0.5‡	1,800,000	1,850	—	—	—	6084
Class A Amplifier	250	—	5.5	6	—	—	2,700	30	—	—	6085

‡ Approximate.

▲ Without external shield.

† Zero signal.

‡ Grids 3 and 5 are screen. Grid 4 is signal-

input grid.

Conversion transconductance.

▲ Maximum.

▼ Grids 2 and 4 are screen. Grid 3 is signal-

input grid.

* Screen supply voltage.

③ Absolute maximum rating.

‡ Plate-to-plate.

◆ Per section.

④ For both sections.

* Minimum.

† Heater warm-up time controlled for

series string service.

‡ Plate supply voltage.

|| Input plate.

‡ The duration of the pulse voltage must

not exceed 15 percent of one scanning

cycle.

1—Section 1.

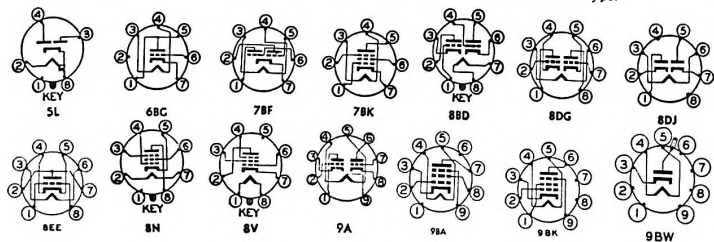
2—Section 2.

④ A resistor of 3 ohms must be put in series

with heater.

Tube Type	Classification by Construction	Base Connections	Out-line Dwg	Type Cath-ode	Filament Volts	Filament Amp	Max Plate Volts	Max Screen Volts	Capacitance in Micromicrofarads		
									Input	Out-put	Grid-plate
6086	Pentode	9BK	6-3	Htr	18.0	0.1	210	210	8.8	3.6	0.015
6087	Full-Wave High-Vacuum Rectifier	5L	9-41	Htr	5.0	2.0	Tube Voltage Drop: $\blacklozenge$ 50 v at 125 ma d-c				
6088 $\oplus$	Power Amplifier Pentode	512-AX	2-1	Fil	1.25 DC	0.02	67.5 $\boxplus$	67.5 $\boxplus$	—	—	—
6101	Medium-Mu Twin Triode (Special 6J6)	7BF	5-2	Htr	6.3	0.45	330 $\boxplus$	—	2.0 $\blacktriangle$	0.4 $\blacktriangle$	1.5 $\blacktriangle$
6110 $\oplus$	Twin Diode	8DJ	3-1	Htr	6.3	0.15	Tube Voltage Drop: $\blacklozenge$ 10 v at 15 ma d-c				
6111 $\oplus$	Medium-Mu Twin Triode	8DG	3-1	Htr	6.3	0.3	165 $\boxplus$	—	2.1	1.3 $\blacktriangle$ 1.4 $\blacktriangle$	1.4
6112 $\oplus$	High-Mu Twin Triode	8DG	3-1	Htr	6.3	0.3	165 $\boxplus$	—	1.9	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
6132	RF Pentode (Special 6CH6)	9BA	6-3	Htr	6.3	0.75	275	275	14 $\blacktriangle$	5.0 $\blacktriangle$	0.25 $\blacklozenge$
6134	Sharp-Cutoff RF Pentode (Special 6AC7)	8N	8-1	Htr	6.3	0.45	300	150	11	5.0	0.015 $\blacklozenge$
6135	Medium-Mu Triode (Special 6C4)	6BG	5-2	Htr	6.3	0.175	300	—	1.5 $\blacktriangle$	0.7 $\blacktriangle$	1.4 $\blacktriangle$
6136	Sharp-Cutoff RF Pentode (Special 6AU6)	7BK	5-2	Htr	6.3	0.3	300	150	6.0 $\blacktriangle$	5.0 $\blacktriangle$	0.0075 $\blacklozenge$
6137	Remote-Cutoff RF Pentode (Special 6SK7)	8N	8-1	Htr	6.3	0.3	300	150	5.0	7.0	0.003 $\blacklozenge$
6145	Sharp-Cutoff Pentode	8V	9-31	Htr	6.3	0.6	300	150	14	7.5	0.06 $\blacklozenge$
6167	Half-Wave High-Vacuum Rectifier	9BW	6-7	Htr	6.3	0.8	—	—	—	—	—
6168	Medium-Mu Twin Triode	9A	6-2	Htr	12.6 (6.3)	0.31 (0.6)	300	—	2.3 $\blacktriangle$	0.95 $\blacktriangle$ 0.85 $\blacktriangle$	2.1 $\blacktriangle$
6169 $\oplus$	High-Frequency Triode	8EE	3-1	Htr	6.3	0.15	250	—	2.5	2.6	1.0
6173	UHF Diode (Pencil)	6173	T-X	Htr	6.3	0.135	—	—	—	—	—
6180	Medium-Mu Twin Triode (Special 6SN7-GT)	8BD	9-3	Htr	6.3	0.6	300	—	2.3 $\blacktriangle$ 2.0 $\blacktriangle$	2.5 $\blacktriangle$ 2.2 $\blacktriangle$	3.5 $\blacktriangle$ 3.2 $\blacktriangle$

Metal tubes are shown in bold-face type, miniature tubes in italics.

 $\oplus$ Subminiature type.

Service	Plate Volts	Screen Volts	Neg Grid Volts	Plate Milli-amperes	Screen Milli-amperes	R _p Ohms	G _m μ mhos	μ Fac-tor	Load for Rated Out-put, Ohms	Power Out-put, Watts	Tube Type
Class A Amplifier	210	120	R _k = 165	10	2.1	500,000	9,000	—	—	—	6086
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										6087
Class A Amplifier	45	45	1.25	0.65 $\dagger$	0.15 $\dagger$	700,000	625	—	80,000	0.0105	6088 $\oplus$
Class A Amplifier $\blacklozenge$	100	—	R _k = 30 $\boxplus$	8.5	—	6,300	6,000	38	—	—	6101
Full-Wave Rectifier	Max d-c output current per plate = 4.4 ma; max peak inverse voltage = 460 volts; max rms supply voltage per plate = 165 volts; max peak current per plate = 26.5 ma										6110 $\oplus$
Class A Amplifier $\blacklozenge$	100	—	R _k = 220	8.5	—	4,000	5,000	20	—	—	6111 $\oplus$
Class A Amplifier $\blacklozenge$	150	—	R _k = 420	1.75	—	28,000	2,500	70	—	—	6112 $\oplus$
	100	—	R _k = 1,500	0.8	—	39,000	1,800	70	—	—	
Class A Amplifier $\blacklozenge$	250	—	2.0	2.3	—	44,000	1,600	70	—	—	6113
Class A Amplifier	250	250	4.5	40	6.0	50,000	11,000	—	—	—	6132
Class A Amplifier	300	150	R _k = 160	10	2.5	1,000,000	9,000	—	—	—	6134
Class A Amplifier	250	100	8.5	10.5	—	7,700 (6,250)	2,200 3,100	17 19.5	—	—	6135
Class A Amplifier	250	150	R _k = 68 R _k = 150	10.6 5.0	4.3 2.1	1,000,000 500,000	5,200 3,900	—	—	—	6136
Class A Amplifier	250	100	3 1	9.2 13	2.6 4.0	800,000 120,000	2,000 2,350	—	—	—	6137
Pulse Amplifier	150 150 60	100 100 100	0 5.3 0	34 2.0 $\blacklozenge$ —	8 — 12 $\blacklozenge$	100,000 — —	— — —	— — —	— — —	— — —	6145
Half-Wave Rectifier	Max d-c output current = 125 ma; max peak inverse voltage = 1000 volts; rms supply voltage = 350 volts; max peak current = 450 ma										6167
Class A Amplifier $\blacklozenge$	250	—	4.6	6.0	—	14,000	2,300	32	—	—	6168
Class A Amplifier	180	—	1.0	11.5	—	8,500	6,500	55	—	—	6169 $\oplus$
Half-Wave Rectifier	Max d-c output current = 5.5 ma; max peak inverse voltage = 375 volts; max peak current = 50 ma										6173
Class A Amplifier $\blacklozenge$	250	100	9.0 0	6.5 10.6	—	9,100 8,000	2,200 2,500	20 20	— —	— —	6180



512-AX



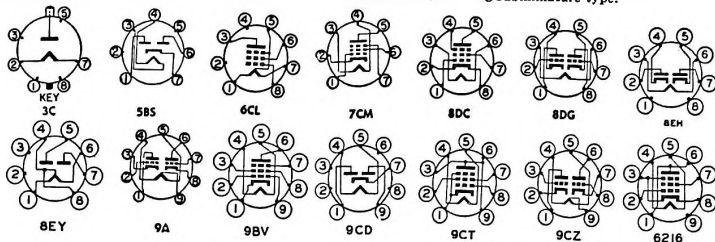
6173

- $\boxplus$ Approximate.
 $\blacklozenge$ Without external shield.
 $\dagger$ Zero signal.
 $\blacklozenge$ Grids 3 and 5 are screen. Grid 4 is signal-input grid.
 $\#$ Conversion transconductance.
 $\blacklozenge$ Maximum.
 $\blacklozenge$ Grids 2 and 4 are screen. Grid 3 is signal-input grid.
 $\blacklozenge$ Screen supply voltage.
 $\oplus$ Absolute maximum rating.
 $\blacklozenge$ Plate-to-plate.
 $\blacklozenge$ Per section.

- $\oplus$ For both sections.
 $\ast$ Minimum.
 $\boxplus$ Heater warm-up time controlled for series-stringing service.
 $\boxplus$ Plate supply voltage.
 $\boxplus$ Input plate.
 $\blacklozenge$ The duration of the pulse voltage must not exceed 15 percent of one scanning cycle.
 $\boxplus$ Section 1.
 $\boxplus$ Section 2.
 $\blacklozenge$ A resistor of 3 ohms must be put in series with heater.

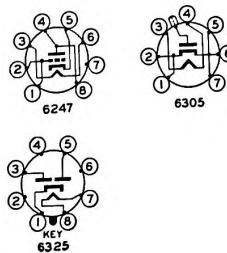
Tube Type	Classification by Construction	Base Connections	Outline Dwg	Type Cathode	Filament Volts	Filament Amp	Max Plate Volts	Max Screen Volts	Capacitance in Micromicrofarads		
									Input	Out-put	Grid-plate
6184	UHF Twin Diode	8EH	T-X	Htr	6.3	0.15	Tube Voltage Drop: Φ 5.0 v at 8.0 ma				
6193	High-Frequency Twin Triode	8DG	3-3	Htr	6.3	0.3	250	—	2.75	2.20	1.46
6195	Beam Power Amplifier	6CL	T-X	Fil	$\left\{ \begin{array}{l} 1.25 \\ 2.5 \text{ DC} \end{array} \right\}$	$\left\{ \begin{array}{l} 0.22 \\ 0.11 \end{array} \right\}$	180	150	2.4	1.3	0.045
6197	Sharp-Cutoff Power Amplifier Pentode	9BV	6-3	Htr	6.3	0.65	300	250	—	—	—
6201	High-Frequency Twin Triode (Special 12AT7)	9A	6-2	Htr	$\left\{ \begin{array}{l} 12.6 \\ 6.3 \end{array} \right\}$	$\left\{ \begin{array}{l} 0.15 \\ 0.3 \end{array} \right\}$	300	—	2.5 Δ	$\left\{ \begin{array}{l} 0.45 \\ 0.38 \end{array} \right\} \Delta$	1.6 Δ
6202	Full-Wave High-Vacuum Rectifier	5BS	5-3	Htr	6.3	0.6	Tube Voltage Drop: Φ 22 v at 50 ma d-c				
6203	Full-Wave High-Vacuum Rectifier	9CD	6-3	Htr	6.3	0.9	Tube Voltage Drop: Φ 22 v at 70 ma d-c				
6205	Sharp-Cutoff RF Pentode	8DC	3-1	Htr	6.3	0.15	165	155	4.2	3.4	0.015 Φ
6206	Semi-Remote-Cutoff RF Pentode	8DC	3-1	Htr	6.3	0.15	165	155	4.2	3.4	0.015 Φ
6211	Medium-Mu Twin Triode	9A	6-2	Htr	$\left\{ \begin{array}{l} 12.6 \\ 6.3 \end{array} \right\}$	$\left\{ \begin{array}{l} 0.15 \\ 0.3 \end{array} \right\}$	200	—	2.9 Δ	$\left\{ \begin{array}{l} 0.54 \\ 0.46 \end{array} \right\} \Delta$	2.22 Δ
6215	Half-Wave High-Voltage Rectifier	3C	T-X	Fil	1.25	0.2	Tube Voltage Drop: 56 v at 2.0 ma d-c				
6216	Beam Power Amplifier	6216	6-3	Htr	6.3	1.2	300	200	12.3 Δ	6.7 Δ	0.37 Φ Δ
6247	High-Mu Triode	6247	3-2	Htr	6.3	0.2	275	—	—	—	—
6266	Sharp-Cutoff RF Pentode (Special 6BH6)	7CM	5-2	Htr	6.3	0.175	300	150	5.2 Δ	4.4 Δ	0.004 Φ Δ
6287	Beam Power Amplifier	9CT	T-X	Htr	6.3	0.6	275	275	8.0 Δ	9.0 Δ	1.1 Φ Δ
6305	Half-Wave High-Voltage Rectifier	6305	T-X	Htr	4.0	0.5	—	—	—	—	—
6325	Full-Wave High-Vacuum Rectifier	6325	T-X	Htr	6.3	2.7	—	—	—	—	—
6360	Medium-Mu Twin Triode	9CZ	6-3	Htr	$\left\{ \begin{array}{l} 6.3 \\ 12.6 \end{array} \right\}$	$\left\{ \begin{array}{l} 0.61 \\ 0.3 \end{array} \right\}$	300	—	3.6 Δ	0.6 Δ	3.2 Δ
6352	Temperature-Limited Twin Diode	8EY	3-2	Fil	3.0 AC	0.36	Max filament voltage $\square$ = 4.0 a-c Max plate voltage $\square$ = 250 d-c Max plate current $\square$ = 1.1 ma Φ				

Metal tubes are shown in bold-face type, miniature tubes in italics.

 Φ Subminiature type.

Service	Plate Volts	Screen Volts	Neg Grid Volts	Plate Milli-ampers	Screen Milli-ampers	R _p , Ohms	G _m , μ hos	μ Factor	Load for Rated Output, Ohms	Power Output, Watts	Tube Type
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										6184 @
Class A Amplifier Φ	180 90	—	1.0 0.50	11.5 4.5	—	8,500 9,000	6,500 5,800	55 50	—	—	6193 @
Class A Amplifier	125	125	7.5	9.0	1.5	120,000	2,100	—	—	—	6195 @
Class A Amplifier	250	150	3.0	30	7.0	90,000	11,000	—	—	—	6197
Class A Amplifier Φ	250 100	—	R _k = 200 R _k = 270	10 3.3	—	10,900 14,300	5,500 4,000	60 57	—	—	6201
Full-Wave Rectifier	Max d-c output current = 50 ma; max peak inverse voltage = 1250 volts; rms supply voltage per plate = 325 volts; max peak current per plate = 200 ma										6202
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 = 270 ma										6203
Class A Amplifier	100	100	R _k = 150	7.5	2.4	260,000	5,000	—	—	—	6205 @
Class A Amplifier	100	100	R _k = 120	7.2	2.2	260,000	4,500	—	—	—	6206 @
Class A Amplifier Φ (Frequency Halter)	100 150 150	— — —	R _k = 470 0 10 Φ	4.6 4.8* 0.1	—	7,500 R _{k1} = 47,000 ohms R _{k1} = 47,000 ohms	3,600	27	—	—	6211
Half-Wave Rectifier	Max d-c output current = 1.0 ma; max peak inverse voltage = 18,000 volts; max peak current = 8.0 ma										6215
Class A Amplifier Filter Reactor	200 100	100 100	6.0 3.0	47 $\uparrow$ 72	2.0 $\uparrow$ 3.0	38,000 18,500	8,800 12,800	— R _{k1} = 0.1 meg	4,500	3.8	6216
Class A Amplifier	250	—	R _k = 500	4.2	—	22,600	2,650	60	—	—	6247 @
Class A Amplifier	250	150	R _k = 100	7.4	2.9	1,000,000	4,600	—	—	—	6266
Class A Amplifier	250	250	12.5	46 $\uparrow$	5.0 $\uparrow$	55,000	4,100	—	6,000	4.5	6287
Half-Wave Rectifier	Max d-c output current = 5 ma; max peak inverse voltage = 12,500 volts; max rms supply voltage = 5500 volts; max peak current = 40 ma										6305
Full-Wave Rectifier	Max d-c output current $\square$ = 250 ma; max peak inverse voltage $\square$ = 2200 volts; rms supply voltage per plate $\square$ = 780 volts; max peak current per plate $\square$ = 550 ma										6325
Class A Amplifier Φ	150	—	5.0	11	—	3,900	4,600	18	—	—	6360
Control Service	Plate voltage = 250 d-c thru 1 meg; plate current = 50 μ A Φ										6352 @

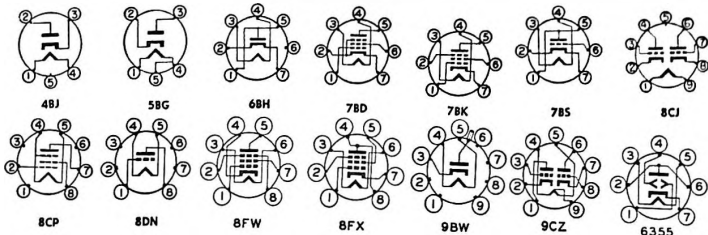
Φ Per section.
 $\square$ Absolute maximum rating.
 Δ Without external shield.
 $\uparrow$ Section 1.
 $\downarrow$ Section 2.
 $\dagger$ Approximate.
 $\dagger$ Maximum.
 $\dagger$ Plate supply voltage.
 $\dagger$ Minimum.
 $\dagger$ Zero Signal.
 Φ For both sections.



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	Out-put	Grid-plate
6355	Twin Electron-Ray Indicator	6355	T-X	Htr	6.3	0.14	Max target voltage = 275 v				
6373	RF Pentode	8CP	3-3	Fil	1.25	0.11	150	150	3.0	7.0	0.1
6374	Half-Wave High-Vacuum Rectifier	9BW	T-X	Htr	6.3	1.0	Tube Voltage Drop: 22 v at 150 ma d-c				
6375	Medium-Mu Triode	8DN	3-3	Fil	1.25	0.2	150	—	1.3	1.9	1.4
6386	Medium-Mu Remote-Cutoff Twin Triode	8CJ	6-1	Htr	6.3	0.35	300	—	2.0▲	1.1▲	1.2▲
6391	Sharp-Cutoff Pentode	6391	T-X	Htr	6.3	0.2	175	175	4.0	5.0	0.15♣
6443	Half-Wave High-Vacuum Rectifier	9BW	T-X	Htr	6.3	1.1	Tube Voltage Drop: 25 v at 150 ma d-c				
6463	Medium-Mu Twin Triode	9CZ	6-3	Htr	12.6 6.3	0.3 0.6	300	—	3.0▲ 0.5▲	0.6▲ 0.5▲	5.0▲
6485	Sharp-Cutoff RF Pentode	7BK	5-2	Htr	6.3	0.45	300	150	10	3.6	0.02♣
6487	Diode-RF Pentode	8FW	3-2	Htr	6.3	0.2	190	190	4.5	4.7	0.02♣
6488	Remote-Cutoff RF Pentode	8PX	3-2	Htr	6.3	0.2	190	190	4.5	5.0	0.15♣
6489	Diode	6489	T-X	Htr	6.3	0.15	Tube Voltage Drop: 3.1 v at 18 ma d-c				
9001	Detector Amplifier Pentode	7BD	5-1	Htr	6.3	0.15	250	100	3.6	3.0	0.01♣
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♣
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	—	—	—	—	—

Metal tubes are shown in bold-face type, miniature tubes in *italics*.

▲ Subminiature type.



Service	Plate Volts	Screen Volts	Neg Grid Volts	Plate Milli-amperes	Screen Milli-amperes	R _p , Ohms	G _m , μmbos	μ Factor	Load for Rated Out-put, Ohms	Power Out-put, Watts	Tube Type
Tuning Indicator	Target voltage = 250 v; Focus-electrode-1 voltage = 120 to 190 v; Focus-electrode-2 voltage = 120 to 190 v										6355
Class A Amplifier	150	90	7.5	6.5	1.4	—	1,500	—	—	—	6373 ⊕
Half-Wave Rectifier	Max d-c output current = 125 ma; max peak inverse voltage = 2000 volts; rms supply voltage = 625 volts; max peak current = 900 ma										6374
Class A Amplifier	150	—	4.5	12	—	4,100	3,400	14	—	—	6375 ⊕
Class A Amplifier ♦	100	—	R _k = 200	9.6	—	4,250	4,000	17	—	—	6386
Class A Amplifier	100	100	1.4	7.0	2.2	180,000	3,000	—	—	—	6391 ⊕
Half-Wave Rectifier	Max d-c output current = 150 ma, max peak inverse voltage = 1,800 volts; max rms supply voltage = 625 volts; max peak current = 800 ma										6443
Class A Amplifier ♦ Frequency Halter ♦	250 100 200	— — —	R _k = 620 11	14.5 29 1.0	— — —	3,850 — —	5,200 I _c = 200 μa	20 — —	— — —	— — —	6463
Class A Amplifier	300	150	R _k = 160	10	2.5	500,000	9,000	—	—	—	6485
Class A Amplifier	100	100	2.0	3.0	2.45	100,000	2,500	—	—	—	6487 ⊕
Class A Amplifier	100	100	2.0	7.5	2.5	250,000	5,250	—	—	—	6488 ⊕
Half-Wave Rectifier	Max d-c output current ⊕ = 10 ma; max peak inverse voltage ⊕ = 460 volts; max peak current ⊕ = 60 ma										6489 ⊕
Class A Amplifier	250	100	3.0	2.0	0.7	1,000,000*	1,400	—	—	—	9001
Class A Amplifier	250	—	7.0	6.3	—	11,400	2,200	25	—	—	9002
Class A Amplifier	250	100	3.0	6.7	2.7	700,000	1,800	—	—	—	9003
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

* Approximate.

* Without external shield.

† Zero signal.

‡ Grids 3 and 5 are screen. Grid 4 is signal.

§ Conversion transconductance.

▲ Maximum.

¶ Grids 2 and 4 are screen. Grid 3 is signal.

Ⓢ Screen supply voltage.

Ⓢ Absolute maximum rating.

†† Plate-to-plate.

‡ Per section.

Ⓢ For both sections.

* Minimum.

† Heater warm-up time controlled for series string service.

‡ Plate supply voltage.

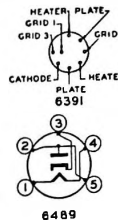
§ Input plate.

¶ The duration of the pulse voltage must not exceed 15 percent of one scanning cycle.

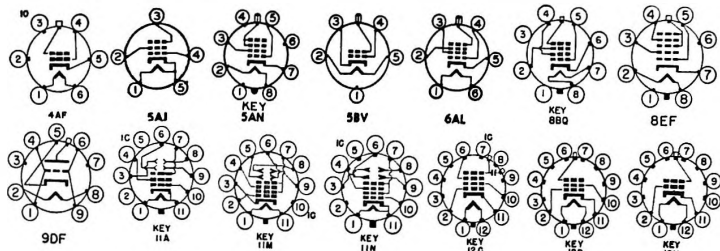
Ⓢ Section 1.

Ⓢ Section 2.

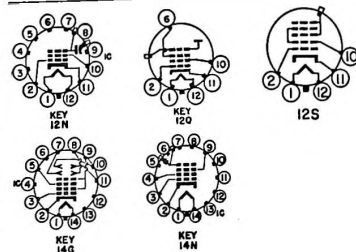
† A resistor of 3 ohms must be put in series with heater.



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 Degrees †	Nom Over-all Length Inches	Nom Bob Diam Inches†
3KP4	11M	Glass	Round	C	No	Base	Elec	Elec	—	11½	3
3NP4●	5BV	Glass	Round	C; A	Yes	Cavity	Mag	Mag	42	10	2½
5AHP4-A	8EF	Glass	Round	C; A	No	Ball	Elec	Mag	53	11½	4½
5ALP4	9DF	Glass	Round	C	No	Ball	Mag	Mag	—	7½	4¾
5AXP4	12S	Glass	Round	C	No	Cavity	Elec	Mag	53	10¾	4½
5BP4	11A	Glass	Round	C	No	Base	Elec	Elec	—	16¾	5½
5FP4-A	5AN	Glass	Round	C	No	Ball	Mag	Mag	53	11¾	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	11¾	5
7AP4	5AJ	Glass	Round	C	No	Base	Elec	Mag	55	7¾	7
7CP4	8BQ	Glass	Round	C	No	Ball	Elec	Mag	57	13¾	7
7DP4	12C	Glass	Round	C	Yes	Cavity	Elec	Mag	50	14¾	7½
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	7½
7JP4	14G	Glass	Round	C	No	Base	Elec	Elec	—	14½	7
7NP4●	14N	Glass	Round	C; A	No	Cap	Elec	Mag	35	19½	7
7OP4	12D	Glass	Round	C	No	Cavity	Mag	Mag	52	12¾	7½
7RP4	12N	Glass	Round	C; A	Yes	Cavity	Mag	Mag	50	14¾	7½
7TP4	12Q	Glass	Round	C; A	No	Cavity	Elec	Mag	50	13¾	7½
8AP4	12H	Metal	Round	C	Metal	Cone	Mag	Mag	54	14¾	8½
8AP4-A	12H	Metal	Round	G	Metal	Cone	Mag	Mag	54	14¾	8½
8BP4	14G	Glass	Round	C	No	Base	Elec	Elec	—	16¾	8½
9AP4	6AL	Glass	Round	C	No	Cap	Elec	Mag	40	21	9
9CP4	4AF	Glass	Round	C	No	Cap	Mag	Mag	—	15¾	9½
10BP4	12N	Glass	Round	C	Yes	Cavity	Mag	Mag	50	17¾	10½
10BP4-A	12N	Glass	Round	G	Yes	Cavity	Mag	Mag	50	17¾	10½



Heater Voltage/Amp	Max Anode Volts	Max Grid 2 Volts	Typical Operating Conditions							Type
			Anode Volts	Grid 2 Volts	Neg. Grid 1 Cut-off Volts	RETMA Focus Coil No.	Focus Coil Dist.	Focus Current in ma	Ion Trap Magnet	
6.3/0.6	2500 Δ 1000 ∇	—	2000 Δ 460 ∇	—	38 to 90†	D1-D2 Φ = 100 to 136 volts/inch D3-D4 Φ = 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	10000 Δ +1000, -500 ∇	700	7000 Δ 125 ∇ $\oplus$	300	28 to 72*	—	—	—	—	5AHP4-A
6.3/0.2	10000	—	8000	—	50†	—	—	—	—	5ALP4
6.3/0.6	18000	500	14000	300	28 to 72*	—	—	—	—	5AXP4
6.3/0.6	2000 Δ 1000 ∇	—	2000 Δ 425 ∇	—	40†	D1-D2 Φ = 85 volts/inch D3-D4 Φ = 76 volts/inch	—	—	—	5BP4
6.3/0.6	8000	410	6000	250	25 to 70†	106	3 $\frac{3}{4}$	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 ∇	350	27000 Δ 4900 ∇	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 ∇	300	6000 Δ 1140 ∇	250	22 to 68†	—	—	—	None	7CP4
6.3/0.6	8000 Δ 2400 ∇	410	8000 Δ 1430 ∇	250	24 to 62*	—	—	—	Double	7DP4
6.3/0.6	3300 Δ 1500 ∇	—	2500 Δ 650 ∇	—	36 to 84†	D1-D2 Φ = 88 to 132 volts/inch D3-D4 Φ = 76 to 114 volts/inch	—	—	—	7EP4
6.3/0.6	4000 Δ 1500 ∇	—	3000 Δ 1000 ∇	—	36 to 84†	D1-D2 Φ = 93 to 123 volts/inch D3-D4 Φ = 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 ∇	—	6000 Δ 2010 ∇	—	72 to 168†	D1-D2 Φ = 186 to 246 volts/inch D3-D4 Φ = 150 to 204 volts/inch	—	—	—	7JP4
6.6/0.62	80000 Δ 20000 ∇	600	75000 Δ 17000 ∇	500	155†	—	—	—	None	7NP4 $\bullet$
6.3/0.6	10000	410	8000	300	28 to 72*	109	3.0	80	Single	7QP4
6.3/0.6	12000	410	9000	250	24 to 62*	106	3 $\frac{3}{4}$	120	None	7RP4
6.3/0.6	12000 Δ 2000 ∇	410	10000 Δ 1370 ∇	200	22 to 52†	—	—	—	None	7TP4
6.3/0.6	9000	—	7000	—	24 to 62*	106	3 $\frac{3}{4}$	115	Single	8AP4
6.3/0.6	9000	—	7000	—	24 to 62*	106	3 $\frac{3}{4}$	115	Single	8AP4-A
6.3/0.6	6000 Δ 3100 ∇	—	6000 Δ 2010 ∇	—	72 to 168†	D1-D2 Φ = 146 to 198 volts/inch D3-D4 Φ = 124 to 168 volts/inch	—	—	—	8BP4
2.5/2.1	7000 Δ 2000 ∇	250	7000 Δ 1425 ∇	250	75†	—	—	—	None	9AP4
2.5/2.1	7000	—	6000	—	90†	—	—	—	None	9CP4
6.3/0.6	12000	410	11000	300	28 to 72*	109	4 $\frac{1}{2}$	100	Double	10BP4
6.3/0.6	12000	410	11000	300	28 to 72*	109	4 $\frac{1}{2}$	100	Double	10BP4-A



¶ Diagonal measurement for rectangular tubes.

† 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 volt-

operating conditions center value of voltage for focus is shown. Voltage should be adjustable about this value.

† For visual extinction of undeflected focused spot.

● Designates projection type.

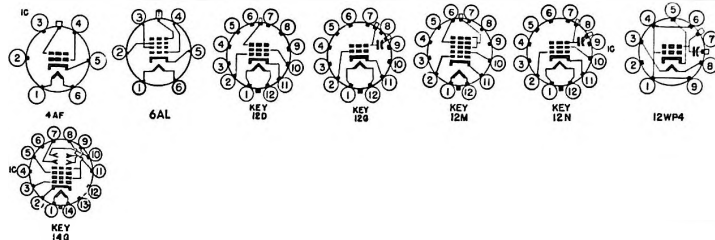
A—Aluminized screen to increase light output.

④ Modulation may be applied to improve over-all focus.

* For visual extinction of focused raster.
G—Grey (filter) faceplate.

G—Grey (inter) laceplate,

Type	Base Connections	Construction	Faceplate Shape	Faceplate Finish	Ext'l Condu-tive Coating	Anode Contact	Focus Method	Defl Method	Defl Angle Degrees	Nom Over-all Length Inches	Nom Bulb Diam Inches [¶]
10BP4-C	12N	Glass	Round	C; A	Yes	Cavity	Mag	Mag	50	17 1/2	10 1/2
10BP4-D	12N	Glass	Round	G; A	Yes	Cavity	Mag	Mag	50	17 1/2	10 1/2
10CP4	12N	Glass	Round	C	Yes	Ball	Mag	Mag	50	16 1/2	10 1/2
10DP4	12M	Glass	Round	C; A	No	Cavity	Elec	Mag	50	17 1/2	10 1/2
10FP4	12N	Glass	Round	C; A	Yes	Cavity	Mag	Mag	50	17 1/2	10 1/2
10FP4-A	12N	Glass	Round	G; A	Yes	Cavity	Mag	Mag	50	17 1/2	10 1/2
10GP4	14G	Glass	Round	C	No	Base	Elec	Elec	—	18 1/2	10 1/2
10HP4	14G	Glass	Round	C	No	Base	Elec	Elec	—	19 1/2	10
10MP4	12G	Glass	Round	C	Yes	Cavity	Mag	Mag	52	17	10 1/2
10MP4-A	12G	Glass	Round	G	Yes	Cavity	Mag	Mag	50	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 1/2	12
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 1/2	12 1/2
12KP4-A	12N	Glass	Round	G; A	Yes	Cavity	Mag	Mag	54	17 1/2	12 1/2
12LP4	12N	Glass	Round	C	Yes	Cavity	Mag	Mag	54	18 1/2	12 1/2
12LP4-A	12N	Glass	Round	G	Yes	Cavity	Mag	Mag	54	18 1/2	12 1/2
12LP4-C	12N	Glass	Round	G; A	Yes	Cavity	Mag	Mag	54	18 1/2	12 1/2
12QP4	12D	Glass	Round	C	No	Ball	Mag	Mag	55	17 1/2	12
12QP4-A	12D	Glass	Round	G	No	Ball	Mag	Mag	54	17 1/2	12
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 1/2	12
12UP4	12D	Metal	Round	C	Metal	Cone	Mag	Mag	54	18 1/2	12 1/2
12UP4-A	12D	Metal	Round	G	Metal	Cone	Mag	Mag	54	18 1/2	12 1/2
12UP4-B	12D	Metal	Round	G; F	Metal	Cone	Mag	Mag	54	18 1/2	12 1/2
12VP4	12G	Glass	Round	C	Yes	Cavity	Mag	Mag	55	18	12 1/2
12VP4-A	12G	Glass	Round	G	Yes	Cavity	Mag	Mag	55	18	12 1/2
12WP4	12WP4	Glass	Round	G	Yes	Special	Mag	Mag	55	17 1/2	12 1/2
12XP4	12N	Glass	Round	C	Yes	Cavity	Mag	Mag	60	18 1/2	12
12YP4	12N	Glass	Round	G	Yes	Cavity	Elec	Mag	54	18 1/2	12 1/2
12ZP4	12N	Glass	Round	C; A	Yes	Cavity	Mag	Mag	54	17 1/2	12 1/2
12ZP4-A	12N	Glass	Round	G; A	Yes	Cavity	Mag	Mag	54	17 1/2	12 1/2



Heater Volts/ Amp	Max Anode Volts	Max Grid 2 Volts	Typical Operating Conditions							Type
			Anode Volts	Grid 2 Volts	Neg Grid 1 Cutoff Volts	RETMA Focus Coil No.	Focus Coil Dist [†]	Focus Current in mA	Ion Trap Magnet	
6.3/0.6	10000	410	9000	300	28 to 72*	106	3 1/2	110	Single	10BP4-C
6.3/0.6	10000	410	9000	300	28 to 72*	106	3 1/2	110	Single	10BP4-D
6.3/0.6	12000	450	9000	250	30 to 66†	—	—	—	None	10CP4
6.3/0.6	10000 Δ 2800 ●	410	9000 Δ 2800 ●	250	36 to 84†	—	—	—	None	10DP4
6.3/0.6	12000	410	11000	300	28 to 72*	106	3 1/2	110	None	10FP4
6.3/0.6	12000	410	11000	300	28 to 72*	106	3 1/2	110	None	10FP4-A
6.3/0.6	5000 Δ 2000 ●	—	5000 Δ 1550 ●	—	60 to 140 †	D1-D2 Δ = 125 to 165 volts/inch D3-D4 Δ = 100 to 135 volts/inch				10GP4
6.3/0.6	5000 Δ 2000 ●	—	5000 Δ 1500 ●	—	60 to 140 †	D1-D2 Δ = 110 to 150 volts/inch D3-D4 Δ = 85 to 115 volts/inch				10HP4
6.3/0.6	10000	—	9000	—	24 to 62*	—	—	—	Double	10MP4
6.3/0.6	10000	—	9000	—	24 to 62*	—	—	—	Double	10MP4-A
2.5/2.1	7000 Δ 1800 ●	250	7000 Δ 1460 ●	250	75†	—	—	—	None	12AP4
2.5/2.1	7000	—	7000	—	110†	—	—	—	None	12CP4
6.3/0.6	12000	410	10000	250	24 to 62*	106	3.0	146	None	12JP4
6.3/0.6	12000	410	11000	300	28 to 72*	106	3 1/2	135	None	12KP4
6.3/0.6	12000	410	11000	300	28 to 72*	106	3 1/2	135	None	12KP4-A
6.3/0.6	12000	410	11000	300	28 to 72*	106	3 1/2	110	Double	12LP4
6.3/0.6	12000	410	11000	300	28 to 72*	106	3 1/2	110	Double	12LP4-A
6.3/0.6	12000	410	11000	300	28 to 72*	106	3 1/2	110	Double	12LP4-C
6.3/0.6	12000	410	10000	250	24 to 62*	106	3.0	135	Single	12QP4
6.3/0.6	12000	410	10000	250	24 to 62*	106	3	135	Single	12QP4-A
6.3/0.6	10000	410	10000	250	24 to 62*	106	3.0	135	Single	12RP4
6.3/0.6	12000	410	11000	250	24 to 62*	106	3 1/2	110	Double	12TP4
6.3/0.6	12000	410	11000	250	24 to 62*	106	3 1/2	110	Single	12UP4
6.3/0.6	12000	410	11000	250	24 to 62*	106	3 1/2	110	Single	12UP4-A
6.3/0.6	12000	410	11000	250	24 to 62*	106	3 1/2	130	Single	12UP4-B
0.3/0.6	12000	—	11000	—	28 to 72*	—	—	—	Double	12VP4
6.3/0.6	12000	—	11000	—	28 to 72*	—	—	—	Double	12VP4-A
0.3/0.6	12000	—	10000	—	24 to 62*	Special PM Unit			Single	12WP4
6.3/0.6	9000	380	8000	250	24 to 62*	—	—	—	Single	12XP4
6.3/0.6	12000	410	11000	250	33 to 73†	—	—	—	Single	12YP4
0.3/0.6	12000	410	11000	300	28 to 72*	106	3 1/2	135	Single	12ZP4
6.3/0.6	12000	410	11000	300	28 to 72*	106	3 1/2	135	Single	12ZP4-A

Δ Diagonal measurement for rectangular tubes.

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

C—Clear (untinted) faceplate.

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.

† For visual extinction of undeflected focused spot.

Δ Deflection factor.

● Designates projection type.

A—Aluminized screen to increase light output.

● Modulation may be applied to improve over-all focus.

* For visual extinction of focused raster.

G—Grey (filter) faceplate.

F—Frosted faceplate surface to reduce reflection.

□ Automatic electrostatic focus. No external focus connection required.

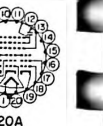
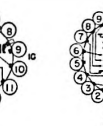
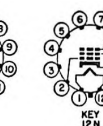
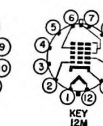
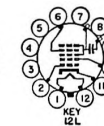
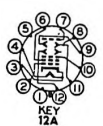
1 Intensifier No. 3 Anode.

2 Accelerator No. 2 Anode.

● Center value of voltage for convergence is shown. Modulation should be applied to improve over-all convergence.

W With cylindrical contour.

Type	Base Connections	Construction	Face-plate Shape	Face-plate Finish	Ext'l Conduc-tive Coating	Anode Contact	Focus Method	Defl Method	Defl Angle Degrees	Nom Over-all Length Inches	Nom Bulb Diam Inches
14AP4	12A	Glass	Round	C	No	Base	Elec	Elec	—	24 1/4	13 1/4
14BP4	12N	Glass	Rect	G	Yes	Cavity	Mag	Mag	70	16 1/2	13 1/2
14BP4-A	12N	Glass	Rect	G	Yes	Cavity	Mag	Mag	70	16 1/4	13 1/2
14CP4	12N	Glass	Rect	G	Yes	Cavity	Mag	Mag	70	16 1/4	13 1/2
14DP4	12D	Glass	Rect	G	No	Cavity	Mag	Mag	70	16 1/4	13 1/2
14EP4	12N	Glass	Rect	G	Yes	Cavity	Mag	Mag	70	16 1/4	13 1/2
14GP4	12L	Glass	Rect	G	Yes	Cavity	Elec	Mag	70	16 1/2	13 1/2
14HP4	12L	Glass	Rect	G	Yes	Cavity	Elec	Mag	70	16 1/2	13 1/2
14KP4	12N	Glass	Rect	C	Yes	Small Cap	Mag	Mag	70	16 1/4	13 1/2
14KP4-A	12N	Glass	Rect	G	Yes	Small Cap	Mag	Mag	70	16 1/4	13 1/2
15AP4	12D	Glass	Round	C	No	Ball	Mag	Mag	57	20 1/4	15 1/4
15CP4	12D	Glass	Round	C	No	Cavity	Mag	Mag	57	20 1/4	15 1/4
15DP4	12D	Glass	Round	C	No	Ball	Mag	Mag	57	20 1/4	15 1/4
15EP4	12D	Glass	Round	C	No	Small Cap	Mag	Mag	52	22 1/4	15 1/4
15GP22	20A	Tricolor Tube (3-gun shadow-mask type; phosphor-dots on glass plate mounted inside tube)			Yes	Flange	Elec	Mag	45	25 1/2	14 1/4
15HP22	20A	Tricolor Tube (3-gun shadow-mask type; phosphor-dots on face-plate)			Yes	Flange	Elec	Mag	45	25 1/2	14 1/4
16AP4	12D	Metal	Round	C	Metal	Cone	Mag	Mag	53	22 1/4	15 1/4
16AP4-A	12D	Metal	Round	G	Metal	Cone	Mag	Mag	53	21 1/2	15 1/4
16ABP4	12N	Glass	Rect	G	Yes	Cavity	Elec	Mag	70	18 1/4	16 1/4
16ACP4	12N	Glass	Round	G	Yes	Cavity	Elec	Mag	60	20 1/4	16 1/4
16AEP4	12M	Glass	Rect	G	Yes	Cavity	Elec	Mag	70	18 1/4	16 1/4
16APP4	12L	Glass	Rect	G; A	No	Cavity	Elec	Mag	70	19 1/4	16 1/4
16CP4	12D	Glass	Round	C	No	Cavity	Mag	Mag	52	21 1/4	15 1/4
16DP4	12D	Glass	Round	C	No	Cavity	Mag	Mag	60	20 1/4	15 1/4



Heater Volts/ Amp	Max Anode Volts	Max Grid 2 Volts	Typical Operating Conditions								Type
			Anode Volts	Grid 2 Volts	Neg Grid 1 Cutoff Volts	RETMA Focus Coil No.	Focus Coil Dist	Focus Current in ma	Ion Trap Magnet		
2.5/2.1	8000 ▲ 4000 ●	1800 ●	8000 ▲ 4000 ●	1000 ●	40 to 120 †	D1-D2 ϕ = 104 to 156 volts/inch D3-D4 ϕ = 104 to 156 volts/inch				14AP4	
6.3/0.6	12000	410	11000	250	24 to 62*	106	3¼	110	Double	14BP4	
6.3/0.6	12000	410	11000	250	24 to 62*	106	3¼	95	Double	14BP4-A	
6.3/0.6	14000	410	12000	300	28 to 72*	109	3	92	Single	14CP4	
6.3/0.6	14000	410	11000	250	24 to 62*	109	3.0	100	Double	14DP4	
6.3/0.6	14000	410	12000	300	28 to 72*	109	3.0	110	Single	14EP4	
6.3/0.6	14000 ▲ 5000 ●	500	12000 ▲ 2550 ●	300	28 to 72*	—	—	—	Single	14GP4	
6.3/0.6	14000 +1000, -500 ●	410	12000 ▲ 108 ●	300	28 to 72*	—	—	—	Single	14HP4	
6.3/0.6	10000	380	9000	250	24 to 62*	—	—	—	Single	14KP4	
6.3/0.6	14000	410	10000	250	24 to 62*	—	—	—	Single	14KP4-A	
6.3/0.6	15000	410	12000	250	24 to 62*	106	3¼	159	None	15AP4	
6.3/0.6	15000	410	12000	250	24 to 62*	106	3.0	115	Double	15CP4	
6.3/0.6	15000	410	12000	250	24 to 62*	106	3.0	140	Single	15DP4	
6.3/0.6	10000	380	10000	250	24 to 62*	—	—	—	Single	15EP4	
6.3/1.8	20000 ▲ 5000 ●	500	20000 ▲ 3100 ●	200	45 to 100 *	Convergence method—Electro- static. Max convergence voltage 11000. Typical convergence vol- tage 9350 @.				15GP22	
6.3/1.8	20000 ▲ 5000 ●	500	20000 ▲ 3100 ●	240	45 to 100 *	Convergence method—Electro- static. Max convergence voltage 11000. Typical convergence vol- tage 9300 @.				15HP22	
6.3/0.6	14000	410	12000	300	28 to 72*	109	3.0	80	Double	16AP4	
6.3/0.6	14000	410	13000	300	28 to 72*	109	3⅜	107	Double	16AP4-A	
6.3/0.6	16000	500	14000	300	28 to 72*	—	—	—	Single	16ABP4	
6.3/0.6	14000	410	13000	250	33 to 68†	—	—	—	Double	16ACP4	
6.3/0.6	16000 +1000, -500 ●	410	14000 ▲ 126 ●	300	28 to 72*	—	—	—	Single	16AEP4	
6.3/0.6	16000 +1000, -500 ●	410	12000 ▲ 108 ●	250	24 to 62*	—	—	—	—	16APP4	
6.3/0.6	15000	410	12000	250	24 to 62†	106	3¼	110	Double	16CP4	
6.3/0.6	15000	410	12000	250	24 to 62†	106	3¼	115	Double	16DP4	

▲ Diagonal measurement for rectangular tubes.

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

G—Grey (filter) faceplate.

C—Clear (untinted) faceplate.

▲ 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.

† For visual extinction of undeflected focused spot.

● Deflection factor.

● Designates projection type.

A—Aluminized screen to increase light output.

● Modulation may be applied to improve over-all focus.

* For visual extinction of focused raster.

G—Grey (filter) faceplate.

F—Frosted faceplate surface to reduce reflection.

□ Automatic electrostatic focus. No external focus connection required.

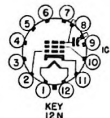
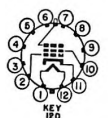
▲ Intensifier No. 3 Anode.

† Accelerator No. 2 Anode.

● Center value of voltage for convergence is shown. Modulation should be applied to improve over-all convergence.

● With cylindrical contour.

Type	Base Con- nections	Con- struc- tion	Face- plate Shape	Face- plate Finish	Ext'l Conduc- tive Coating	Anode Con- tact	Focus Meth- od	Defl Meth- od	Defl Angle De- grees†	Nom Over-all Length Inches	Nom Bulb Diam Inches‡
16DP4-A	12D	Glass	Round	G	No	Cavity	Mag	Mag	60	20 3/4	15 3/8
16EP4	12D	Metal	Round	C	Metal	Cone	Mag	Mag	60	19 1/16	15 3/8
16EP4-A	12D	Metal	Round	G	Metal	Cone	Mag	Mag	60	19 1/16	15 3/8
16EP4-B	12D	Metal	Round	G; F	Metal	Cone	Mag	Mag	60	19 1/16	15 3/8
16FP4	12D	Glass	Round	C	No	Ball	Mag	Mag	62	20 3/4	16 3/8
16GP4	12D	Metal	Round	G	Metal	Cone	Mag	Mag	70	17 1/4	15 3/8
16GP4-A	12D	Metal	Round	C	Metal	Cone	Mag	Mag	70	17 1/4	15 3/8
16GP4-B	12D	Metal	Round	G; F	Metal	Cone	Mag	Mag	70	17 1/4	15 3/8
16GP4-C	12D	Metal	Round	C; F	Metal	Cone	Mag	Mag	70	17 1/16	15 3/8
16HP4	12N	Glass	Round	C	Yes	Cavity	Mag	Mag	60	21 1/4	15 3/8
16HP4-A	12N	Glass	Round	G	Yes	Cavity	Mag	Mag	60	21 1/4	15 3/8
16JP4	12N	Glass	Round	C	Yes	Cavity	Mag	Mag	60	20 3/4	16 1/8
16JP4-A	12N	Glass	Round	G	Yes	Cavity	Mag	Mag	60	20 3/4	16 1/8
16KP4	12N	Glass	Rect	G	Yes	Cavity	Mag	Mag	70	18 1/4	16 1/8
16KP4-A	12N	Glass	Rect	G; A	Yes	Cavity	Mag	Mag	70	18 1/4	16 1/8
16LP4	12N	Glass	Round	C	Yes	Cavity	Mag	Mag	52	22 1/4	15 3/8
16LP4-A	12N	Glass	Round	G	Yes	Cavity	Mag	Mag	52	22 1/4	15 3/8
16MP4	12N	Glass	Round	C	Yes	Cavity	Mag	Mag	60	21 1/4	15 3/8
16MP4-A	12N	Glass	Round	G	Yes	Cavity	Mag	Mag	60	21 1/4	15 3/8
16QP4	12D	Glass	Rect	G	No	Cavity	Mag	Mag	70	19 1/4	16
16RP4	12N	Glass	Rect	G	Yes	Cavity	Mag	Mag	70	18 1/4	16 1/8
16SP4	12N	Glass	Round	C	Yes	Cavity	Mag	Mag	70	17 1/16	15 3/8
16SP4-A	12N	Glass	Round	G	Yes	Cavity	Mag	Mag	70	17 1/16	15 3/8
16TP4	12N	Glass	Rect	G	Yes	Cavity	Mag	Mag	70	18 1/4	16 1/8
16UP4	12D	Glass	Rect	G	No	Cavity	Mag	Mag	70	18 1/4	16 1/8
16VP4	12D	Glass	Round	G	No	Cavity	Mag	Mag	70	17 3/16	15 3/8
16WP4	12D	Glass	Round	G	No	Cavity	Mag	Mag	70	17 1/4	15 3/8
16WP4-A	12N	Glass	Round	G	Yes	Cavity	Mag	Mag	70	17 1/4	15 3/8
16XP4	12D	Glass	Rect	G	No	Cavity	Mag	Mag	70	18 1/4	16 1/8
16YP4	12N	Glass	Round	G	Yes	Cavity	Mag	Mag	70	17 1/16	15 3/8
16ZP4	12N	Glass	Round	G	Yes	Cavity	Mag	Mag	52	22 1/4	15 3/8
17AP4	12N	Glass	Rect	G	Yes	Cavity	Mag	Mag	70	18 1/4	16 1/8
17ASP4	12N	Glass	Rect	C	Yes	Small Cap	Mag	Mag	70	19 1/4	16 1/8



Heater Volts/ Amp	Max Anode Volts	Max Grid 2 Volts	Typical Operating Conditions							Type
			Anode Volts	Grid 2 Volts	Neg Grid 1 Cutoff Volts	RETMA Focus Coil No.	Focus Coil Dist†	Focus Current in ma	Ion Trap Magnet†	
6.3/0.6	15000	410	12000	250	24 to 62*	109	3¼	115	Double	16DP4-A
6.3/0.6	14000	410	12000	300	28 to 72*	109	2¼	105	Double	16EP4
6.3/0.6	14000	410	12000	300	28 to 72*	109	2¾	105	Double	16EP4-A
6.3/0.6	14000	410	12000	300	28 to 72*	109	3.0	105	Single	16EP4-B
6.3/0.6	16000	410	13000	250	24 to 62*	106	3.0	146	Single	16FP4
6.3/0.6	14000	410	13000	300	28 to 72*	109	3½	108	Single	16GP4
6.3/0.6	14000	410	13000	250	24 to 62*	109	3½	108	Single	16GP4-A
3.6/0.6	14000	410	13000	250	24 to 62*	109	3½	108	Single	16GP4-B
6.3/0.6	14000	410	12000	300	28 to 72*	109	3.0	100	Single	16GP4-C
6.3/0.6	14000	410	12000	300	28 to 72*	106	3¼	110	Double	16HP4
6.3/0.6	14000	410	12000	300	28 to 72*	106	3¼	110	Double	16HP4-A
6.3/0.6	14000	410	11000	250	24 to 62*	106	—	115	Double	16JP4
6.3/0.6	14000	410	11000	250	24 to 62*	106	—	115	Double	16JP4-A
6.3/0.6	16000	410	14000	300	28 to 72*	109	3¾	108	Single	16KP4
6.3/0.6	16000	410	14000	300	28 to 72*	109	3¾	108	Single	16KP4-A
6.3/0.6	14000	410	12000	300	28 to 72*	106	3¼	110	Double	16LP4
6.3/0.6	14000	410	12000	300	28 to 72*	106	3¼	110	Double	16LP4-A
6.3/0.6	14000	410	12000	300	28 to 72*	106	3¼	110	Double	16MP4
6.3/0.6	14000	410	12000	300	28 to 72*	106	3¼	110	Double	16MP4-A
6.3/0.6	16000	410	14000	250	24 to 62*	106	—	150	Double	16QP4
6.3/0.6	16000	410	12000	300	28 to 72*	109	3¾	100	Single	16RP4
6.3/0.6	14000	410	12000	300	28 to 72*	106	3¼	110	Double	16SP4
6.3/0.6	14000	410	12000	300	28 to 72*	106	3¼	110	Double	16SP4-A
6.3/0.6	14000	410	12000	300	28 to 72*	109	3½	99	Single	16TP4
6.3/0.6	15000	410	12000	300	28 to 72*	109	3.0	100	Single	16UP4
6.3/0.6	15000	410	12000	250	24 to 62*	109	3.0	110	Single	16VP4
6.3/0.6	15000	410	12000	250	24 to 62*	109	3.0	110	Double	16WP4
6.3/0.6	16000	410	12000	250	24 to 62*	109	3¼	110	Double	16WP4-A
6.3/0.6	15000	410	12000	250	24 to 62*	109	3.0	100	Double	16XP4
6.3/0.6	14000	410	12000	300	28 to 72*	109	3¾	100	Single	16YP4
6.3/0.6	16000	410	12000	300	28 to 72*	109	3¾	110	Double	16ZP4
6.3/0.6	16000	410	12000	300	28 to 72*	109	3.0	100	Single	17AP4
6.3/0.6	14000	410	12000	250	24 to 62*	—	—	—	Single	17ASP4

‡ Diagonal measurement for rectangular tubes.

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

C—Clear (untinted) faceplate.

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.

† For visual extinction of undeflected focused spot.

Δ Deflection factor.

• Designates projection type.

A—Aluminized screen to increase light output.

Ⓜ Modulation may be applied to improve over-all focus.

* For visual extinction of focused raster.

G—Grey (filter) faceplate.

F—Frosted faceplate surface to reduce re-
flection.

□ Automatic electrostatic focus. No ex-
ternal focus connection required.

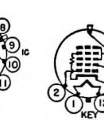
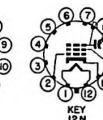
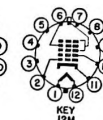
▲ Intensifier No. 3 Anode.

† Accelerator No. 2 Anode.

Ⓜ Center value of voltage for convergence
is shown. Modulation should be applied
to improve over-all convergence.

Ⓜ With cylindrical contour.

Type	Base Con- nections	Con- struction	Face- plate Shape	Face- plate Finish	Ext'l Con- ductive Coating	Anode Con- tact	Focus Meth- od	Defl Meth- od	Defl Angle Degrees †	Nom Over-all Length Inches	Nom Bulb Diam Inches‡
17ATP4	12L	Glass	Rect	G	Yes	Cavity	Elec	Mag	90	16	16½
17ATP4-A	12L	Glass	Rect	G; A	Yes	Cavity	Elec	Mag	90	16	16½
17AVP4	12L	Glass	Rect	G	Yes	Cavity	Elec	Mag	90	15½	16½
17BP4	12D	Glass	Rect	G	No	Cavity	Mag	Mag	70	19¼	16½
17BP4-A	12N	Glass	Rect	G	Yes	Cavity	Mag	Mag	70	19¼	16½
17BP4-B	12N	Glass	Rect	G; A	Yes	Cavity	Mag	Mag	70	19¼	16½
17BP4-C	12N	Glass	Rect	G; F	Yes	Cavity	Mag	Mag	70	19¼	16½
17CP4	12D	Metal	Rect	G; F	Metal	Cone	Mag	Mag	70	18½	16½
17CP4-A	12D	Metal	Rect	C	Metal	Cone	Mag	Mag	70	18½	16½
17FP4	12L	Glass	Rect	G	Yes	Cavity	Elec	Mag	70	19¼	16½
17FP4-A	12L	Glass	Rect	G	Yes	Cavity	Elec	Mag	70	19¼	16½
17GP4	12M	Metal	Rect	G; F	Metal	Cone	Elec	Mag	70	18½	10½
17HP4	12L	Glass	Rect	G	Yes	Cavity	Elec	Mag	70	19¼	16½
17HP4-A	12L	Glass	Rect	G; F	Yes	Cavity	Elec	Mag	70	19¼	16½
17HP4-B	12L	Glass	Rect	G; A	Yes	Cavity	Elec	Mag	70	19¼	16½
17JP4	12N	Glass	Rect	G	Yes	Cavity	Mag	Mag	70	19¼	16½
17KP4	12P	Glass	Rect	G	Yes	Cavity	Elec □	Mag	70	19¼	16½
17LP4	12L	Glass	Rect	G	Yes	Cavity	Elec	Mag	70	19¼	16½
17LP4-A	12L	Glass	Rect	G; A	Yes	Cavity	Elec	Mag	70	19¼	16½
17QP4	12N	Glass	Rect	G	Yes	Cavity	Mag	Mag	70	19¼	10½
17QP4-A	12N	Glass	Rect	G; A	Yes	Cavity	Mag	Mag	70	19¼	10½
17RP4	12L	Glass	Rect	G	Yes	Cavity	Elec	Mag	70	19¼	10½
17SP4	12N	Glass	Rect	G	Yes	Cavity	Elec □	Mag	70	19¼	16½



Heater Volts/ Amp	Max Anode Volts	Max Grid 2 Volts	Typical Operating Conditions							Type
			Anode Volts	Grid 2 Volts	Neg Grid 1 Cutoff Volts	RETMA Focus Coil No.	Focus Coil Dist†	Focus Current in ma	Ion Trap Magnet	
6.3/0.6	16000 Δ +1000, -500	500	14000 Δ 126	300	28 to 72*	—	—	—	Single	17ATP4
6.3/0.6	16000 Δ +1000, -500	500	14000 Δ 126	300	28 to 72*	—	—	—	Single	17ATP4-A
6.3/0.6	16000 Δ +1000, -500	500	12000 Δ 108	300	28 to 72*	—	—	—	Single	17AVP4
6.3/0.6	16000	410	12000	300	28 to 72*	109	3.0	100	Single	17BP4
6.3/0.6	16000	410	14000	300	28 to 72*	109	3¼	115	Single	17BP4-A
6.3/0.6	16000	410	14000	300	28 to 72*	109	3¼	115	Single	17BP4-B
6.3/0.6	16000	410	14000	250	24 to 62*	109	3¼	115	Single	17BP4-C
6.3/0.6	16000	410	14000	300	28 to 72*	109	3.0	104	Single	17CP4
6.3/0.6	16000	410	14000	300	28 to 72*	109	3.0	104	Single	17CP4-A
6.3/0.6	16000 Δ 5000	410	16000 Δ 3150	300	28 to 72*	—	—	—	Single	17FP4
6.3/0.6	18000 Δ 5000	500	16000 Δ 3150	300	28 to 72*	—	—	—	Single	17FP4-A
6.3/0.6	16000 Δ 5000	500	14000 Δ 2800	300	28 to 72*	—	—	—	Single	17GP4
6.3/0.6	16000 +1000, -500	500	14000 126	300	28 to 72*	—	—	—	Single	17HP4
6.3/0.6	16000 +1000, -500	500	14000 Δ 126	300	28 to 72*	—	—	—	Single	17HP4-A
6.3/0.6	16000 Δ +1000, -500	500	14000 Δ 126	300	28 to 72*	—	—	—	Single	17HP4-B
6.3/0.6	18000	410	16000	300	28 to 72*	109	—	100	Single	17JP4
6.3/0.6	16000	500	12000	300	28 to 72*	—	—	—	Single	17KP4
6.3/0.6	16000 Δ +1000, -500	500	14000 Δ 126	300	28 to 72*	—	—	—	Single	17LP4
6.3/0.6	16000 Δ +1000, -500	500	14000 Δ 126	300	28 to 72*	—	—	—	Single	17LP4-A
6.3/0.6	16000	500	14000	300	28 to 72*	109	3¼	115	Single	17QP4
6.3/0.6	18000	500	14000	300	28 to 72*	109	3	95	Single	17QP4-A
6.3/0.6	16000 Δ +1000, -500	500	14000 Δ 126	300	28 to 72*	—	—	—	Single	17RP4
6.3/0.6	14000	410	12000	250	33 to 66†	—	—	—	Single	17SP4

Δ Diagonal measurement for rectangular tubes.

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

C—Clear (unintented) faceplate.

□ Accelerator anode and collector.

● operating conditions center value of voltage for focus is shown. Voltage should be adjustable about this value.

† For visual extinction of undeflected focused spot.

Δ Deflection factor.

● Designates projection type.

A—Aluminized screen to increase light output.

● Modulation may be applied to improve over-all focus.

* For visual extinction of focused raster.

G—Grey (filter) faceplate.

F—Frosted faceplate surface to reduce reflection.

□ Automatic electrostatic focus. No external focus connection required.

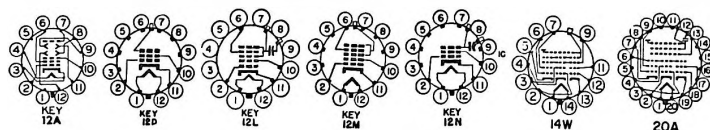
▲ Intensifier No. 3 Anode.

† Accelerator No. 2 Anode.

● Center value of voltage for convergence is shown. Modulation should be applied to improve over-all convergence.

■ With cylindrical contour.

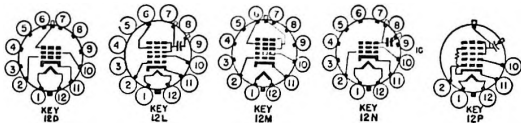
Type	Base Connections	Construction	Face-plate Shape	Face-plate Finish	Ext'l Conductive Coating	Anode Contact	Focus Method	Defl Method	Defl Angle Degrees	Nom Over-all Length Inches	Nom Bulb Diam Inches
17TP4	12M	Metal	Rect	G; F	Metal	Cone	Elec	Mag	70	18½	16½
17UP4	12N	Glass	Rect	G	Yes	Cavity	Mag	Mag	70	19½	16½
17VP4	12L	Glass	Rect	G	Yes	Cavity	Elec	Mag	70	19½	16½
17YP4	12N	Glass	Rect	G	Yes	Cavity	Mag	Mag	70	19½	16½
19AP4	12D	Metal	Round	C	Metal	Cone	Mag	Mag	66	21½	18½
19AP4-A	12D	Metal	Round	G	Metal	Cone	Mag	Mag	66	21½	18½
19AP4-B	12D	Metal	Round	G; F	Metal	Cone	Mag	Mag	66	21½	18½
19AP4-C	12D	Metal	Round	G; A	No	Cone	Mag	Mag	66	21½	18½
19AP4-D	12D	Metal	Round	C; F	Metal	Cone	Mag	Mag	66	21½	18½
19DP4	12N	Glass	Round	C	Yes	Cavity	Mag	Mag	66	21½	18½
19DP4-A	12N	Glass	Round	C	Yes	Cavity	Mag	Mag	66	21½	18½
19EP4	12D	Glass	Rect	G	Yes	Cavity	Mag	Mag	70	21½	18½
19FP4	12D	Glass	Round	G	No	Cavity	Mag	Mag	66	22	18½
19CP4	12D	Glass	Round	G	No	Cavity	Mag	Mag	66	21½	18½
19JP4	12D	Glass	Rect	G	No	Cavity	Mag	Mag	70	20½	18½
19QP4	12L	Glass	Rect	G	Yes	Cavity	Elec	Mag	70	21½	18½
19TP22	20A	Tricolor Tube (3-gun shadow-mask type; phosphor-dots on faceplate)			Yes	Flange	Elec	Mag	60	24½	19½
19VP22	14W	Tricolor Tube (3-gun shadow-mask type; phosphor-dots on faceplate)			Yes	Flange	Elec	Mag	62	26½	19½
20AP4	12A	Glass	Round	C	No	Base	Elec	Elec	—	27½	20
20BP4	12D	Glass	Round	C	No	Cap	Mag	Mag	54	28	20
20CP4	12D	Glass	Rect	G	No	Cavity	Mag	Mag	70	21½	20½
20CP4-A	12N	Glass	Rect	G	Yes	Cavity	Mag	Mag	70	21½	20½
20CP4-B	12D	Glass	Rect	G; A	No	Cavity	Mag	Mag	70	21½	20½
20CP4-C	12D	Glass	Rect	G; F	No	Cavity	Mag	Mag	70	21½	20½
20CP4-D	12N	Glass	Rect	G; A	Yes	Cavity	Mag	Mag	70	21½	20½
20DP4	12D	Glass	Rect	G	No	Cavity	Mag	Mag	70	21½	20½
20DP4-A	12N	Glass	Rect	G	Yes	Cavity	Mag	Mag	70	21½	20½
20DP4-B	12D	Glass	Rect	G; A	No	Cavity	Mag	Mag	70	21½	20½



Typical Operating Conditions												Type
Heater Volts/ Amp	Max Anode Volts	Max Grid 2 Volts	Anode Volts	Grid 2 Volts	Neg Grid 1 Cutoff Volts	RETMA Focus Coil No.	Focus Coil Dist†	Focus Current in ma	Ion Trap Magnet			
6.3/0.6	16000 Δ 500	500	14000 Δ 126	300	28 to 72*	—	—	—	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 126	300	28 to 72*	—	—	—	Single	17VP4		
6.3/0.6	18000	500	16000	300	28 to 72*	109	—	100	Single	17YP4		
6.3/0.6	19000	410	15000	300	28 to 72*	109	3½	115	Single	19AP4		
6.3/0.6	19000	410	15000	300	28 to 72*	109	3½	115	Single	19AP4-A		
6.3/0.6	19000	410	15000	300	28 to 72*	109	3½	115	Single	19AP4-B		
6.3/0.6	19000	410	15000	300	28 to 72*	106	3	115	Single	19AP4-C		
6.3/0.6	19000	410	14000	300	28 to 72*	106	3.0	145	Single	19AP4-D		
6.3/0.6	17000	410	13000	250	26 to 63†	106	3½	146	Single	19DP4		
6.3/0.6	17000	410	13000	250	26 to 63†	106	3½	146	Single	19DP4-A		
6.3/0.6	19000	410	13000	250	26 to 63†	109	3½	146	Double	19EP4		
6.3/0.6	19000	410	13000	250	24 to 62*	109	3.0	115	Double	19FP4		
6.3/0.6	19000	410	13000	250	24 to 62*	109	3.0	120	Single	19GP4		
6.3/0.6	18000	410	12000	300	28 to 72*	109	3.0	95	Single	19JP4		
6.3/0.6	18000 Δ 500	410	12000 Δ 150	300	28 to 72*	—	—	—	Single	19QP4		
6.3/1.8	22000 Δ 4000	500	20000 Δ 2600	200	42 to 78*	Convergence method—Electrostatic. Max convergence voltage 1200V. Typical convergence voltage 9350 V.				19TP22		
6.3/1.8	27000 Δ 9000	500	25000 Δ 7250	200	45 to 100†	Convergence method—Magnetic.				19VP22		
2.5/2.1	8000 Δ 4000	1800	8000 Δ 4000	1000	40 to 120†	D1-D2 Φ = 88 to 132 volts/inch D3-D4 Φ = 88 to 132 volts/inch				20AP4		
6.3/0.6	16500	750	15000	250	24 to 62*	106	3.0	135	None	20BP4		
6.3/0.6	18000	410	15000	300	28 to 72*	109	3½	106	Single	20CP4		
6.3/0.6	18000	410	15000	300	28 to 72*	109	3½	106	Single	20CP4-A		
6.3/0.6	18000	410	16000	300	28 to 72*	109	3	110	Single	20CP4-B		
6.3/0.6	18000	410	15000	300	28 to 72*	109	3½	106	Single	20CP4-C		
6.3/0.6	18000	410	16000	300	28 to 72*	109	3	110	Single	20CP4-D		
6.3/0.6	18000	410	12000	300	28 to 72*	109	3.0	95	Single	20DP4		
6.3/0.6	18000	410	12000	300	28 to 72*	109	3.0	95	Single	20DP4-A		
6.3/0.6	18000	410	16000	300	28 to 72*	109	3	95	Single	20DP4-B		

- Δ Diagonal measurement for rectangular tubes.
† Distance between yoke reference line and center of focus-coil air gap; in inches.
C—Clear (unintended) faceplate.
▲ Accelerator anode and collector.
① Anode No. 1 (Focus); under typical operating conditions center value of voltage for focus is shown. Voltage should be adjustable about this value.
† For visual extinction of undeflected focused spot.
② Deflection factor.
● Designates projection type.
A—Aluminized screen to increase light output.
- Modulation may be applied to improve over-all focus.
* For visual extinction of focused raster.
G—Grey (filter) faceplate.
F—Frosted faceplate surface to reduce reflection.
□ Automatic electrostatic focus. No external focus connection required.
▲ Intensifier No. 3 Anode.
③ Accelerator No. 2 Anode.
④ Center value of voltage for convergence is shown. Modulation should be applied to improve over-all convergence.
■ With cylindrical contour.

Type	Base Connections	Construction	Faceplate Shape	Faceplate Finish	Ext'l Condu-ctive Coating	Anode Contact	Focus Method	Defl Method	Defl Angle Degrees	Nom Over-all Length Inches	Nom Bulb Diam Inches
20DP4-C	12N	Glass	Rect	G, A	Yes	Cavity	Mag	Mag	70	21 3/4	20 1/2
20FP4	12M	Glass	Rect	G	No	Cavity	Elec	Mag	70	21 3/4	20 1/2
20GP4	12L	Glass	Rect	G	Yes	Cavity	Elec	Mag	70	21 3/4	20 1/2
20HP4	12M	Glass	Rect	G	No	Cavity	Elec	Mag	70	21 3/4	20 1/2
20HP4-A	12L	Glass	Rect	G	Yes	Cavity	Elec	Mag	70	21 3/4	20 1/2
20HP4-B	12L	Glass	Rect	G; F	No	Cavity	Elec	Mag	70	21 3/4	20 1/2
20HP4-C	12M	Glass	Rect	G; A	No	Cavity	Elec	Mag	70	21 3/4	20 1/2
20HP4-D	12L	Glass	Rect	G; A	Yes	Cavity	Elec	Mag	70	21 3/4	20 1/2
20JP4	12P	Glass	Rect	G	Yes	Cavity	Elec	Mag	70	21 3/4	20 1/2
20LP4	12L	Glass	Rect	G	Yes	Cavity	Elec	Mag	70	21 3/4	20 1/2
20MP4	12L	Glass	Rect	G	Yes	Cavity	Elec	Mag	70	21 3/4	20 1/2
21AP4	12D	Metal	Rect	G; P	Metal	Cone	Mag	Mag	70	22 3/4	20 3/4
21ACP4	12N	Glass	Rect	G	Yes	Cavity	Mag	Mag	90	20	21 3/4
21ACP4-A	12N	Glass	Rect	G; A	Yes	Cavity	Mag	Mag	90	20	21 3/4
21ALP4	12L	Glass	Rect	G	Yes	Cavity	Elec	Mag	90	20	21 3/4
21ALP4-A	12L	Glass	Rect	G; A	Yes	Cavity	Elec	Mag	90	20	21 3/4
21AMP4	12N	Glass	Rect	G	Yes	Cavity	Mag	Mag	90	20	21 3/4
21AMP4-A	12N	Glass	Rect	G; A	Yes	Cavity	Mag	Mag	90	20	21 3/4
21AMP23-A	12N	Glass	Rect	G; A	Yes	Cavity	Mag	Mag	90	20	21 3/4
21ANP4	12M	Glass	Rect	G	Yes	Cavity	Elec	Mag	90	20	21 3/4
21ANP4-A	12M	Glass	Rect	G; A	No	Cavity	Elec	Mag	90	20	21 3/4



Heater Volts/Amp	Max Anode Volts	Max Grid 2 Volts	Typical Operating Conditions							Type
			Anode Volts	Grid 2 Volts	Neg Grid 1 Cutoff Volts	RETMA Focus Coil No.	Focus Coil Dist†	Focus Current in ma	Ion Trap Magnet	
6.3/0.6	18000	410	16000	300	28 to 72*	109	3	95	Single	20DP4-C
6.3/0.6	18000 Δ 5000	410	12000 Δ 2750	300	28 to 72*	—	—	—	Single	20FP4
6.3/0.6	18000 Δ 5000	500	16000 Δ 3750	300	28 to 72*	—	—	—	Single	20GP4
6.3/0.6	16000 Δ +1000 -500	500	14000 Δ 126	300	28 to 72*	—	—	—	Single	20HP4
6.3/0.6	16000 Δ +1000 -500	500	14000 Δ 126	300	28 to 72*	—	—	—	Single	20HP4-A
6.3/0.6	16000 Δ +1000 -500	500	14000 Δ 126	300	28 to 72*	—	—	—	Single	20HP4-B
6.3/0.6	16000 Δ +1000 -500	500	14000 Δ 126	300	28 to 72*	—	—	—	Single	20HP4-C
6.3/0.6	16000 Δ +1000 -500	500	14000 Δ 126	300	28 to 72*	—	—	—	Single	20HP4-D
6.3/0.6	18000	500	12000	300	28 to 72*	—	—	—	Single	20JP4
6.3/0.6	16000 Δ +1000 -500	500	14000 Δ 126	300	28 to 72*	—	—	—	Single	20LP4
6.3/0.6	16000 Δ +1000 -500	500	16000 Δ 162	300	28 to 72*	—	—	—	Single	20MP4
6.3/0.6	18000	500	16000	300	28 to 72*	109	3.0	110	Single	21AP4
6.3/0.6	20000	500	16000	300	28 to 72*	109	3 1/4	117	Single	21ACP4
6.3/0.6	20000	500	16000	300	28 to 72*	109	3 1/4	117	Single	21ACP4-A
6.3/0.6	18000 +1000 -500	500	16000 Δ 144	300	28 to 72*	—	—	—	Single	21ALP4
6.3/0.6	18000 +1000 -500	500	16000 Δ 144	300	28 to 72*	—	—	—	Single	21ALP4-A
6.3/0.6	18000	500	16000	300	28 to 72*	109	3	102	Single	21AMP4
6.3/0.6	18000	500	16000	300	28 to 72*	109	3	102	Single	21AMP4-A
6.3/0.6	18000	500	16000	300	28 to 72*	109	3	102	Single	21AMP23-A
6.3/0.6	18000 +1000 -500	500	16000 Δ 144	300	28 to 72*	—	—	—	Single	21ANP4
6.3/0.6	18000 +1000 -500	500	16000 Δ 144	300	28 to 72*	—	—	—	Single	21ANP4-A

Δ Diagonal measurement for rectangular tubes.

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

C—Clear (untinted) faceplate.

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.

† For visual extinction of undeflected focused spot.

Δ Deflection factor.

• Designates projection type.

A—Aluminized screen to increase light output.

⊗ Modulation may be applied to improve over-all focus.

* For visual extinction of focused raster.

G—Grey (filter) faceplate.

F—Frosted faceplate surface to reduce reflection.

⊗ Automatic electrostatic focus. No external focus connection required.

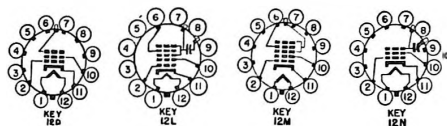
▲ Intensifier No. 3 Anode.

† Accelerator No. 2 Anode.

⊗ Center value of voltage for convergence is shown. Modulation should be applied to improve over-all convergence.

⊗ With cylindrical contour.

Type	Base Con- nections	Con- struction	Face- plate Shape	Face- plate Finish	Ext'l Con- duc- tive Coating	Anode Con- tact	Focus Meth- od	Defl Meth- od	Defl Angle Degrees °	Nom Over-all Length Inches	Nom Bulb Diam Inches [†]
21AQP4	12D	Glass	Rect	G	No	Cavity	Mag	Mag	90	20	21 $\frac{3}{8}$
21AQP4-A	12D	Glass	Rect	G; A	No	Cavity	Mag	Mag	90	20	21 $\frac{3}{8}$
21ARP4	12N	Glass	Rect	G	Yes	Cavity	Internal Mag	Mag	70	23 $\frac{1}{4}$	21 $\frac{1}{4}$
21ARP4-A	12N	Glass	Rect	G; A	Yes	Cavity	Internal Mag	Mag	70	23 $\frac{1}{4}$	21 $\frac{1}{4}$
21ASP4	12M	Glass	Rect	G	No	Cavity	Elec	Mag	70	22 $\frac{1}{4}$	20 $\frac{3}{4}$
21ATP4	12L	Glass	Rect	G; A	Yes	Cavity	Elec	Mag	90	20	21 $\frac{3}{8}$
21AUP4	12L	Glass	Rect	G	Yes	Cavity	Elec	Mag	72	23 $\frac{1}{4}$	21 $\frac{3}{8}$
21AUP4-A	12L	Glass	Rect	G; A	Yes	Cavity	Elec	Mag	72	23 $\frac{1}{4}$	21 $\frac{3}{8}$
21AVP4	12L	Glass	Rect	G	Yes	Cavity	Elec	Mag	72	23 $\frac{1}{4}$	21 $\frac{3}{8}$
21AVP4-A	12L	Glass	Rect	G; A	Yes	Cavity	Elec	Mag	72	23 $\frac{1}{4}$	21 $\frac{3}{8}$
21AWP4	12N	Glass	Rect	G; A	Yes	Cavity	Mag	Mag	72	23 $\frac{1}{4}$	21 $\frac{3}{8}$
21AYP4	12L	Glass	Rect	G	Yes	Cavity	Elec	Mag	70	22 $\frac{1}{4}$	20 $\frac{3}{4}$
21DP4	12M	Metal	Rect	G; F	Metal	Cone	Elec	Mag	70	22 $\frac{3}{4}$	20 $\frac{3}{4}$
21EP4	12D	Glass	Rect	G	No	Cavity	Mag	Mag	70	23	21 $\frac{1}{2}$
21EP4-A	12N	Glass	Rect	G	Yes	Cavity	Mag	Mag	70	23	21 $\frac{1}{2}$
21EP4-B	12N	Glass	Rect	G; A	Yes	Cavity	Mag	Mag	70	23	21 $\frac{1}{2}$
21FP4	12M	Glass	Rect	G	No	Cavity	Elec	Mag	70	23	21 $\frac{1}{2}$
21FP4-A	12L	Glass	Rect	G	Yes	Cavity	Elec	Mag	70	23	21 $\frac{1}{2}$
21FP4-C	12L	Glass	Rect	G; A	Yes	Cavity	Elec	Mag	70	23 $\frac{1}{2}$	21 $\frac{1}{2}$
21JP4	12N	Glass	Rect	G	Yes	Cavity	Inter- nal Mag	Mag	70	23 $\frac{1}{4}$	21 $\frac{1}{4}$



Heater Volts/ Amp	Max Anode Volts	Max Grid 2 Volts	Typical Operating Conditions							Type
			Anode Volts	Grid 2 Volts	Neg Grid 1 Cutoff Volts	RETMA Focus Coil No.	Focus Coil Dist†	Focus Current in ma	Ion Trap Magnet	
6.3/0.6	18000	500	16000	300	28 to 72*	109	3	102	Single	21AQP4
6.3/0.6	18000	500	16000	300	28 to 72*	109	3	102	Single	21AQP4-A
6.3/0.6	20000	500	13000 to 19000	300	28 to 72*	—	—	—	Internal	21ARP4
6.3/0.6	20000	500	13000 to 19000	300	28 to 72*	—	—	—	Internal	21ARP4-A
6.3/0.6	18000 Δ +1000, -500	500	16000 Δ 144	300	28 to 72*	—	—	—	Single	21ASP4
6.3/0.6	18000 Δ +1000, -500	500	16000 Δ 144	300	28 to 72*	—	—	—	Single	21ATP4
6.3/0.6	18000 Δ +1000, -500	500	14000 Δ 126	300	28 to 72*	—	—	—	Single	21AUP4
6.3/0.6	18000 Δ +1000, -500	500	14000 Δ 126	300	28 to 72*	—	—	—	Single	21AUP4-A
6.3/0.6	18000 Δ +1000, -500	500	14000 Δ 126	300	28 to 72*	—	—	—	Single	21AVP4
6.3/0.6	18000 Δ +1000, -500	500	14000 Δ 126	300	28 to 72*	—	—	—	Single	21AVP4-A
6.3/0.6	18000	500	16000	300	28 to 72*	109	3	95	Single	21AWP4
6.3/0.6	18000 Δ +1000, -500	500	16000 Δ 144	300	28 to 72*	—	—	—	Single	21AYP4
6.3/0.6	18000 Δ 5000	500	16000 Δ 3650	300	28 to 72*	—	—	—	Single	21DP4
6.3/0.6	18000	500	12000	300	28 to 72*	109	3.0	95	Single	21EP4
6.3/0.6	18000	500	16000	300	28 to 72*	109	3¼	116	Single	21EP4-A
6.3/0.6	18000	500	16000	300	28 to 72*	109	3¼	116	Single	21EP4-B
6.3/0.6	18000 Δ +1000, -500	500	14000 Δ 126	300	28 to 72*	—	—	—	Single	21FP4
6.3/0.6	18000 Δ +1000, -500	500	14000 Δ 126	300	28 to 72*	—	—	—	Single	21FP4-A
6.3/0.6	18000 +1000, -500	500	14000 Δ 126	300	28 to 72*	—	—	—	Single	21FP4-C
6.3/0.6	20000	500	13000 to 19000	300	28 to 72*	—	—	—	Internal	21JP4

† Diagonal measurement for rectangular tubes.

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

C—Clear (untinted) faceplate.

Ⓢ 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.

† For visual extinction of undeflected focused spot.

Ⓢ Deflection factor.

Ⓢ Designates projection type.

A—Aluminized screen to increase light output.

Ⓢ Modulation may be applied to improve over-all focus.

* For visual extinction of focused raster.

G—Grey (filter) faceplate.

F—Frosted faceplate surface to reduce reflection.

Ⓢ Automatic electrostatic focus. No external focus connection required.

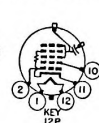
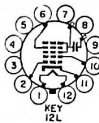
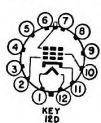
Ⓢ Intensifier No. 3 Anode.

Ⓢ Accelerator No. 2 Anode.

Ⓢ Center value of voltage for convergence is shown. Modulation should be applied to improve over-all convergence.

Ⓢ With cylindrical contour.

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 Degrees	Nom Over-all Length Inches	Nom Bulb Diam Inches
21KP4	12D	Glass	Rect	G	No	Cavity	Elec	Mag	70	22 3/4	21 1/4
21KP4-A	12P	Glass	Rect	G	Yes	Cavity	Elec	Mag	70	23	21 1/4
21MP4	12M	Metal	Rect	G; F	Metal	Cone	Elec	Mag	70	22 1/4	20 3/4
21WP4	12N	Glass	Rect	G	Yes	Cavity	Mag	Mag	70	22 1/4	20 3/4
21WP4-A	12N	Glass	Rect	G; A	Yes	Cavity	Mag	Mag	70	22 1/4	20 3/4
21XP4	12L	Glass	Rect	G	Yes	Cavity	Elec	Mag	70	22 1/4	20 3/4
21XP4-A	12L	Glass	Rect	G; A	Yes	Cavity	Elec	Mag	70	22 1/4	20 3/4
21YP4	12L	Glass	Rect	G	Yes	Cavity	Elec	Mag	70	23 1/4	21 1/4
21YP4-A	12L	Glass	Rect	G; A	Yes	Cavity	Elec	Mag	70	23 1/4	21 1/4
21ZP4	12D	Glass	Rect	G	No	Cavity	Mag	Mag	70	23 1/4	21 1/4
21ZP4-A	12N	Glass	Rect	G	Yes	Cavity	Mag	Mag	70	23 1/4	21 1/4
21ZP4-B	12N	Glass	Rect	G; A	Yes	Cavity	Mag	Mag	70	23 1/4	21 1/4
22AP4	12D	Metal	Round	C	Metal	Cone	Mag	Mag	70	22 3/4	21 1/4
22AP4-A	12D	Metal	Round	G	Metal	Cone	Mag	Mag	70	22 3/4	21 1/4
24AP4	12D	Metal	Round	G	Metal	Cone	Mag	Mag	70	23 1/4	24
24AP4-B	12D	Metal	Round	G; F	Metal	Cone	Mag	Mag	70	23 1/4	24
24BP4	12M	Metal	Round	G	Metal	Cone	Elec	Mag	70	24 3/4	24
24CP4	12N	Glass	Rect	G	Yes	Cavity	Mag	Mag	90	21 1/4	24
24CP4-A	12N	Glass	Rect	G; A	Yes	Cavity	Mag	Mag	90	21 1/4	24
24DP4	12L	Glass	Rect	G	Yes	Cavity	Elec	Mag	90	21 1/4	24
24DP4-A	12L	Glass	Rect	G; A	Yes	Cavity	Elec	Mag	90	21 1/4	24
24QP4	12N	Glass	Rect	G	Yes	Cavity	Mag	Mag	90	21 1/4	24
24TP4	12N	Glass	Rect	G; A	Yes	Cavity	Mag	Mag	90	21 1/4	24
24VP4	12N	Glass	Rect	G	Yes	Cavity	Mag	Mag	90	21 1/4	24
24VP4-A	12N	Glass	Rect	G; A	Yes	Cavity	Mag	Mag	90	21 1/4	24



Heater Volts/ Amp	Max Anode Volts	Max Grid 2 Volts	Typical Operating Conditions							Type
			Anode Volts	Grid 2 Volts	Neg Grid 1 Cutoff Volts	RETMA Focus Coil No.	Focus Coil Dist [†]	Focus Current in ma	Ion Trap Magnet	
6.3/0.6	18000	410	12000	300	38 to 77*	—	—	—	Single	21KP4
6.3/0.6	18000	500	12000	300	28 to 72*	—	—	—	Single	21KP4-A
6.3/0.6	16000 Δ +1000, -500	500	16000 Δ 144	300	28 to 72*	—	—	—	Single	21MP4
6.3/0.6	18000	500	16000	300	28 to 72*	109	3 1/4	100	Single	21WP4
6.3/0.6	18000	500	16000	300	28 to 72*	109	3 1/4	100	Single	21WP4-A
6.3/0.6	16000 Δ +1000, -500	500	16000 Δ 144	300	28 to 72*	—	—	—	Single	21XP4
6.3/0.6	18000 +1000, -500	500	16000 Δ 144	300	28 to 72*	—	—	—	Single	21XP4-A
6.3/0.6	18000 +1000, -500	500	16000 Δ 144	300	28 to 72*	—	—	—	Single	21YP4
6.3/0.6	18000 +1000, -500	500	16000 Δ 144	300	28 to 72*	—	—	—	Single	21YP4-A
6.3/0.6	18000	500	16000	300	28 to 72*	109	3 1/4	118	Single	21ZP4
6.3/0.6	18000	500	16000	300	28 to 72*	109	3 1/4	118	Single	21ZP4-A
6.3/0.6	18000	500	16000	300	28 to 72*	109	3 1/4	118	Single	21ZP4-B
6.3/0.6	19000	410	14000	300	28 to 72*	109	3.0	117	Single	22AP4
6.3/0.6	19000	410	14000	300	28 to 72*	109	3.0	117	Single	22AP4-A
6.3/0.6	16000	410	15000	300	28 to 72*	109	3 1/2	114	Single	24AP4
6.3/0.6	16000	410	15000	300	28 to 72*	109	3	114	Single	24AP4-B
6.3/0.6	16000 Δ +1000, -500	500	14000 Δ 126	300	28 to 72*	—	—	—	Single	24BP4
6.3/0.6	20000	500	18000	300	28 to 72*	109	3	115	Single	24CP4
6.3/0.6	20000	500	18000	300	28 to 72*	109	3	115	Single	24CP4-A
6.3/0.6	20000 +1000, -500	500	18000 Δ 162	300	28 to 72*	—	—	—	Single	24DP4
6.3/0.6	20000 +1000, -500	500	18000 Δ 162	300	28 to 72*	—	—	—	Single	24DP4-A
6.3/0.6	18000	500	16000	300	28 to 72*	109	3 1/4	100	Single	24QP4
6.3/0.6	20000	500	18000	300	28 to 72*	109	—	125	Single	24TP4
6.3/0.6	22000	600	20000	300	28 to 72*	109	3	125	Single	24VP4
6.3/0.6	22000	600	20000	300	28 to 72*	109	3	125	Single	24VP4-A

Δ Diagonal measurement for rectangular tubes.

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

C—Clear (untinted) faceplate.

Δ Accelerator anode and collector.

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

† For visual extinction of undeflected focused spot.

Δ Deflection factor.

● Designates projection type.

A—Aluminized screen to increase light output.

● Modulation may be applied to improve over-all focus.

* For visual extinction of focused raster.

G—Grey (filter) faceplate.

F—Frosted faceplate surface to reduce reflection.

□ Automatic electrostatic focus. No external focus connection required.

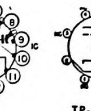
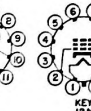
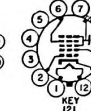
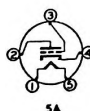
Δ Intensifier No. 3 Anode.

Δ Accelerator No. 2 Anode.

● Center value of voltage for convergence is shown. Modulation should be applied to improve over-all convergence.

Δ With cylindrical contour.

Type	Base Connections	Construction	Face-plate Shape	Face-plate Finish	Ext'l Conduc-tive Coating	Anode Contact	Focus Method	Defl Method	Defl Angle Degrees	Nom Over-all Length Inches	Nom Bulb Diam Inches
27AP4	12M	Metal	Rect	G; F	Metal	Cone	Elec	Mag	90	21 3/4	26 3/4
27EP4	12D	Glass	Rect	G; A	No	Cavity	Mag	Mag	90	23 1/4	26 1/2
27GP4	12D	Glass	Rect	G	No	Cavity	Mag	Mag	90	23 1/4	26 1/2
27LP4	12N	Glass	Rect	G; A	Yes	Cavity	Mag	Mag	90	23 1/4	26 1/2
27MP4	12D	Glass	Rect	G; F; A	No	Cavity	Mag	Mag	90	23 1/4	26 1/2
27NP4	12N	Glass	Rect	G	Yes	Cavity	Mag	Mag	90	23 1/4	26 1/2
27RP4	12N	Glass	Rect	G; A	Yes	Cavity	Mag	Mag	90	23 1/4	26 1/2
27SP4	12L	Glass	Rect	G; A	Yes	Cavity	Elec	Mag	90	23 1/2	26 1/2
30BP4	12D	Metal	Round	G	Metal	Cone	Mag	Mag	90	23 1/2	30 1/4
MW22-2	5A	Glass	Round	C	No	Base	Mag	Mag	50	15 3/4	9 1/2
MW31-3	5A	Glass	Round	C	No	Base	Mag	Mag	50	18 3/4	12 1/2
TP400-A ●	TP400-A	Glass	Round	C	Yes	—	Mag	Mag	50	12 1/2	4



TP-400A

Heater Volts/ Amp	Max Anode Volts	Max Grid 2 Volts	Typical Operating Conditions							Type
			Anode Volts	Grid 2 Volts	Neg Grid 1 Cutoff Volts	RETMA Focus Coil No.	Focus Coil Dist†	Focus Current in ma	Ion Trap Magnet	
6.3/0.6	18000 Δ +1000, -500 ●	500	15000 Δ 135 ● E	300	28 to 72*	—	—	—	Single	27AP4
6.3/0.6	20000	500	16000	300	28 to 72*	109	3¾	117	Single	27EP4
6.3/0.6	22500	500	16000	300	28 to 72*	109	—	95	Single	27GP4
6.3/0.6	22000	600	20000	300	28 to 72*	109	—	148	Single	27LP4
6.3/0.6	18000	500	16000	300	28 to 72*	109	3	110	Single	27MP4
6.3/0.6	18000	500	16000	300	28 to 72*	109	3¾	95	Single	27NP4
6.3/0.6	20000	500	16000	300	28 to 72*	109	3	105	Single	27RP4
6.3/0.6	20000 Δ +1000, -500 ●	500	18000 Δ 162 ● F	300	28 to 72*	—	—	—	Single	27SP4
6.3/0.6	30000	410	22000	300	28 to 72*	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

† Diagonal measurement for rectangular tubes.

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

C—Clear (uninted) faceplate.

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.

† For visual extinction of undeflected focused spot.

Δ—Deflection factor.

● Designates projection type.

A—Aluminized screen to increase light output.

■ Modulation may be applied to improve over-all focus.

* For visual extinction of focused raster.

G—Grey (filter) faceplate.

F—Frosted faceplate surface to reduce reflection.

□ Automatic electrostatic focus. No external focus connection required.

▲ Intensifier No. 3 Anode.

† Accelerator No. 2 Anode.

③ Center value of voltage for convergence is shown. Modulation should be applied to improve over-all convergence.

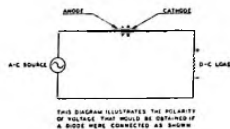
■ With cylindrical contour.

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.

Type	Description	Maximum Ratings					Characteristics		Type
		Max. Rectified Current Ma. DC	Peak Rectified Current Ma. DC	Surge Current for 1 Second Ma. DC	Peak Inverse Voltage Volts	Continuous Reverse Voltage Volts	Minimum Forward Current @ 1 Volt Ma. DC	Maximum Inverse Current μ a DC	
1N34	General Purpose Diode	40	150	500	75	60	5.0	50@ 10V 800@ 50V	1N34
1N34-A	Glass-Sealed 1N34	40	150	500	75	60	5.0	30@ 10V 500@ 50V	1N34-A
1N35*	Matched Pair Mounted in Fiber Holder	22.5	60	100	75	50	7.5	10@ 10V	1N35*
1N38	100-Volt Diode	40	150	500	120	100	3.0	6@ 3V 625@ 100V	1N38
1N38-A	Glass-Sealed 1N38	40	150	500	—	100	4.0	6@ 3V 500@ 100V	1N38-A
1N39	200-Volt Diode	40	150	500	225	200	1.5	200@ 100V 800@ 200V	1N39
1N39-A	200-Volt Diode	50	150	500	225	200	3.0	200@ 100V 800@ 200V	1N39-A
1N40*	Plug-in Quad	22.5	60	100	75	25	12.75@ 1.5V	40@ 10V	1N40*
1N41*	Lug-Type Quad	22.5	60	100	75	25	12.75@ 1.5V	40@ 10V	1N41*
1N42*	Quad	22.5	60	100	120	50	12.75@ 1.5V	6@ 3V 625@ 100V	1N42*
1N43	—	40	125	500	60	—	5.0	20@ 5V 850@ 50V	1N43
1N44	—	35	100	400	115	—	3.0	1000@ 50V	1N44
1N45	—	35	100	400	75	—	3.0	410@ 50V	1N45
1N46	—	40	125	500	60	—	3.0	1500@ 50V	1N46
1N47	Video Detector	30	90	350	115	—	3.0	410@ 50V	1N47
1N48	General Purpose Diode	50	150	400	85	70	4.0	833@ 50V	1N48
1N51	General Purpose Diode	25	100	300	50	40	2.5	1667@ 50V	1N51
1N52	General Purpose Diode	50	150	400	85	70	4.0	150@ 50V	1N52
1N54	High Back Resistance	40	150	500	75	35	5.0	10@ 10V 7@ 10V	1N54
1N54-A	Glass-Sealed 1N54	40	150	500	75	50	5.0	100@ 50V	1N54-A
1N55	150-Volt Diode	40	150	500	170	150	3.0	300@ 100V 900@ 150V	1N55
1N55-A	Glass-Sealed 1N55	40	150	500	170	150	4.0	500@ 150V	1N55-A
1N55-B	High Peak Inverse Voltage	—	—	—	190	150	5.0	500@ 150V	1N55-B
1N56	High-Conduction Diode	50	200	1000	50	40	15.0	300@ 30V	1N56
1N56-A	Glass-Sealed 1N56	50	200	1000	50	40	15.0	300@ 30V	1N56-A
1N57	General Purpose Diode	40	150	500	90	80	4.0	500@ 75V	1N57
1N58	100-Volt Diode	40	150	500	120	100	4.0	800@ 100V	1N58
1N58-A	Glass-Sealed 1N58	40	150	500	120	100	4.0	600@ 100V	1N58-A
1N60	Video Detector	40	150	500	30	25	—	—	1N60

* Ratings given for each diode.

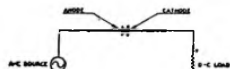


Type	Description	Maximum Ratings					Characteristics		Type
		Max. Rectified Current Ma. DC	Peak Rectified Current Ma. DC	Surge Current for 1 Second Ma. DC	Peak Inverse Voltage Volts	Continuous Reverse Voltage Volts	Minimum Forward Current @ 1 Volt Ma. DC	Maximum Inverse Current μ a DC	
1N61	130-Volt Diode	40	150	500	140	130	5.0	300@ 100V 700@ 125V	1N61
1N63	High PIV and Back Resistance	50	150	400	125	100	4.0	50@ 50V	1N63
1N64	Video Detector	—	—	—	20	—	.05@ 0.25V	25@ 1.3V	1N64
1N65	DC Restorer	50	150	400	85	70	2.5	200@ 50V	1N65
1N66	General-Purpose Diode	35	100	—	70	60	5.0	50@ 10V 800@ 50V	1N66
1N67	DC Restorer	35	100	—	100	80	4.0	5@ 5V 50@ 50V	1N67
1N67-A	High Back Resistance	—	—	—	100	80	4.0	5@ 5V 50@ 50V	1N67-A
1N67-P	Plug-in 1N67	35	100	—	100	80	4.0	5@ 5V 50@ 50V	1N67-P
1N68	DC Restorer	35	100	—	120	100	3.0	625@ 100V 625@ 100V	1N68
1N68-A	High Peak Inverse Voltage	—	—	—	130	100	3.0	625@ 100V	1N68-A
1N69	General-Purpose Diode	40	125	400	75	60	5.0	50@ 10V 850@ 50V	1N69
1N70	—	30	90	350	125	100	3.0	25@ 10V 300@ 50V	1N70
1N71*	Low-Impedance Quad	60	200	1000	50	40	15.0	300@ 30V	1N71*
1N72	UHF Mixer	25	75	—	5	—	0.8@ 0.5V	800@ 0.5V	1N72
1N73*	Quad	—	—	—	75	—	15.0@ 1.8V	50@ 10V	1N73*
1N74*	Quad	—	—	—	75	—	15.0@ 1.8V	50@ 10V	1N74*
1N75	—	—	—	—	125	100	2.5	50@ 50V	1N75
1N81	—	30	90	300	50	40	3.0	10@ 10V	1N81
1N82	UHF Mixer Silicon	—	—	—	5	—	—	—	1N82
1N82-A	UHF Mixer Silicon	—	—	—	—	—	—	—	1N82-A
1N86	General-Purpose Diode	50	150	400	85	70	4.0	50@ 10V 833@ 50V	1N86
1N87	Video Detector	5	—	—	30	25	—	—	1N87
1N88	DC Restorer	5	15	500	100	85	2.5	100@ 50V	1N88
1N89	—	—	—	—	100	80	3.5	8@ 5V 100@ 50V	1N89
1N90	General-Purpose Diode	—	—	—	75	60	5.0	800@ 50V	1N90
1N91	Junction Rectifier	150	—	25,000	100	30	470@ 0.5V	2700@ 100V	1N91
1N92	Junction Rectifier	100	—	25,000	200	65	310@ 0.5V	1900@ 200V	1N92

* Ratings given for each diode.

Type	Description	Maximum Ratings					Characteristics		Type
		Max. Rectified Current Ma. DC	Peak Rectified Current Ma. DC	Surge Current for 1 Sec. Ma. DC	Peak Inverse Voltage Volts	Continuous Inverse Voltage Volts	Minimum Forward Current @ 1 Volt Ma. DC	Maximum Inverse Current μ DC	
1N93	Junction Rectifier	75	—	25,000	300	100	250@0.5V	1200@300V	1N93
1N95	High-Conductance Diode	—	—	—	75	60	10.0	800@ 50V	1N95
1N96	High-Conductance Diode	—	—	—	75	60	20.0	800@ 50V	1N96
1N97	—	—	—	—	100	80	10.0	8@ 5V 100@ 50V	1N97
1N98	—	—	—	—	100	80	20.0	8@ 5V 100@ 50V	1N98
1N99	High-Conductance Diode	—	—	—	100	80	10.0	5@ 5V 50@ 50V	1N99
1N100	High-Conductance Diode	—	—	—	100	80	20.0	5@ 5V 50@ 50V	1N100
1N106	Gold-Bonded Diode	—	—	—	—	300	20.0	70@ 100V	1N106
1N107	Gold-Bonded Diode	—	—	—	—	10	150.0	200@ 10V	1N107
1N108	Gold-Bonded Diode	—	—	—	—	50	50.0	200@ 50V	1N108
1N109	Harmonic Generator	50	150	500	20	15	0.26@0.25V	350@ 10V	1N109
1N111	Computer Diode	25	150	500	75	60	5.0	25@ 10V 125@ 50V	1N111
1N112	Computer Diode	25	150	500	75	60	5.0	50@ 10V 250@ 50V	1N112
1N113	Computer Diode	25	150	500	75	60	2.5	25@ 10V 125@ 50V	1N113
1N114	Computer Diode	25	150	500	75	60	2.5	50@ 10V 250@ 50V	1N114
1N115	Computer Diode	25	150	500	75	60	2.5	100@ 10V 500@ 50V	1N115
1N116	—	—	—	—	75	60	5.0	100@ 50V	1N116
1N117	High-Conductance Diode	—	—	—	75	60	10.0	100@ 50V	1N117
1N118	High-Conductance Diode	—	—	—	75	60	20.0	100@ 50V	1N118
1N124 1N124-A	UHF Mixer	25 25	55 55	— —	2 2	— —	10.0@0.75V 10.0@0.75V	— —	1N124 1N124-A
1N125	VHF Pulse Diode	40	125	400	30	—	.05@0.25V	25@ 1.3V	1N125
1N126	—	30	90	350	75	60	5.0	50@ 10V 150@ 50V	1N126
1N127	—	30	90	300	125	100	3.0	25@ 10V 300@ 50V	1N127

* Ratings given for each diode.



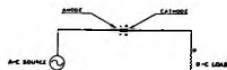
THIS DIAGRAM ILLUSTRATES THE POLARITY OF VOLTAGE THAT WOULD BE DEVELOPED IF A DIODE WERE CONNECTED AS SHOWN.

Type	Description	Maximum Ratings					Characteristics		Type
		Max. Rectified Current Ma. DC	Peak Rectified Current Ma. DC	Surge Current for 1 Sec. Ma. DC	Peak Inverse Voltage Volts	Continuous Inverse Voltage Volts	Minimum Forward Current @ 1 Volt Ma. DC	Maximum Inverse Current μ DC	
1N128	—	30	90	300	50	40	3.0	10@ 10V	1N128
1N133	UHF Mixer	50	150	500	6	5	3.0@0.5V	300@0.6V	1N133
1N135	General-Purpose Diode	—	—	—	75	—	5.0	50@ 10V 850@ 50V	1N135
1N137-A	Silicon Junction	—	—	—	40	36	3.0	.06@ 20V	1N137-A
1N138-A	Silicon Junction	—	—	—	20	18	5.0	.01@ 10V	1N138-A
1N139	Gold-Bonded Diode	70	250	500	50	40	20.0	1500@ 50V	1N139
1N140	Gold-Bonded Diode	85	350	750	85	70	40.0	300@ 50V	1N140
1N141	Gold-Bonded Diode	70	250	500	85	70	20.0	50@ 50V	1N141
1N142	Gold-Bonded Diode	60	200	400	125	100	5.0	100@100V	1N142
1N143	Gold-Bonded Diode	85	350	750	125	100	40.0	100@100V	1N143
1N147	UHF Mixer	25	55	—	2	—	10.0@0.75V	—	1N147
1N148	Harmonic Generator	—	150	500	20	15	0.26@0.25V	350@ 10V	1N148
1N151	—	500	1570	25,000	100	30	1570@0.7V	2400@100V	1N151
1N152	—	500	1570	25,000	200	65	1570@0.7V	1900@200V	1N152
1N153	—	500	1570	25,000	300	100	1570@0.7V	1200@300V	1N153
1N158	—	500	1570	25,000	380	185	1570@1.4V	800@380V	1N158
1N175	—	—	—	—	—	200	20.0	50@ 50V 200@ 200V	1N175
1N191	Computer Diode	30	90	300	—	90	5.0	25@ 10V 125@ 50V	1N191
1N192	Computer Diode	30	90	300	—	70	5.0	50@ 10V 250@ 50V	1N192
1N193	Silicon Diode	30	50	100	—	40	1.0@2.0V	50@ 40V	1N193
1N194	Silicon Diode	30	50	100	—	40	1.5@2.0V	60@ 40V	1N194
1N195	Silicon Diode	30	50	100	—	40	2.0@2.0V	80@ 40V	1N195
1N196	Silicon Diode	30	50	100	—	40	1.0@2.0V	40@ 40V	1N196
CK705	General-Purpose Diode	50	150	500	70	60	5.0	50@ 10V 800@ 50V	CK705
CK705-A	General-Purpose Diode	50	150	500	70	60	5.0	10@ 10V 800@ 50V	CK705-A
CK706-P	Plug-in	50	150	500	70	60	5.0	50@ 10V 800@ 50V	CK706-P
CK700 CK706-P	Video Detector Plug-in	35 35	125 125	300 300	50 50	40 40	— —	200@ 10V 200@ 10V	CK706 CK706-P

* Ratings given for each diode.

Type	Description	Maximum Ratings					Characteristics		Type
		Max. Rectified Current Ma. DC	Peak Rectified Current Ma. DC	Surge Current for 1 Second Ma. DC	Peak Inverse Voltage Volts	Continuous Reverse Voltage Volts	Minimum Forward Current @ 1 Volt Ma. DC	Maximum Inverse Current μ A DC	
CK707	DC Restorer	35	100	500	100	80	3.5	10@.5V 100@.50V	CK707
CK707-P	Plug-in	35	100	500	100	80	3.5	10@.5V 100@.50V	CK707-P
CK708	DC Restorer	35	100	500	120	100	3.0	625@100V 625@100V	CK708
CK708-P	Plug-in	35	100	500	120	100	3.0	625@100V 625@100V	CK708-P
CK709*	Quad	50	150	500	75	—	15.0@1.7V	50@10V	CK709*
CK710	UHF Mixer	50	150	—	10	5	3.0@0.5V	200@0.6V	CK710
CK711*	Quad	35	100	500	—	80	—	30@.50V	CK711*
CK712	200-Volt Diode	22.5	70	—	225	200	2.0	800@200V	CK712

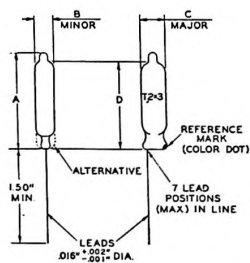
* Ratings given for each diode.



THIS DIAGRAM ILLUSTRATES THE POLARITY OF VOLTS, THAT SHOULD BE OBTAINED IF A SHORT WIRE, CONNECTED AS SHOWN

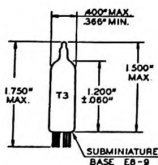
Type	Description	Maximum Ratings					Characteristics		Type
		Max. Rectified Current Ma. DC	Peak Rectified Current Ma. DC	Surge Current for 1 Second Ma. DC	Peak Inverse Voltage Volts	Continuous Reverse Voltage Volts	Minimum Forward Current @ 1 Volt Ma. DC	Maximum Inverse Current μ A DC	
CK713	Computer Diode	50	150	500	75	75	21.0@2.0V	250@.40V	CK713
CK713-A	—	50	150	500	85	70	21.0@2.0V	250@.40V	CK713-A
CK713A-P	Plug-in	50	150	500	85	70	21.0@2.0V	250@.40V	CK713A-P
CK715	Frequency Multiplier	35	125	300	—	40	—	—	CK715
CK715-P	Plug-in	35	125	300	—	40	—	—	CK715-P
CK731	—	—	—	—	5	—	0.8@0.5V	800@0.5V	CK731
CK739	Gold-Bonded Diode	100	300	500	60	50	100@0.8V	2@10V 20@50V	CK739
CK742	Gold-Bonded Diode	50	300	500	125	100	100	5@10V 20@100V	CK742

* Ratings given for each diode.

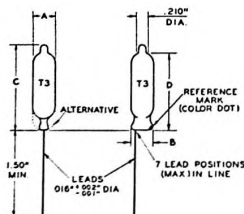


OUTLINE DRAWING NUMBER	DIMENSIONS				
	A	B	C	D	E
2-1	1.50"	.285"	.385"	1.20"	1.40"
2-2	1.25"	.285"	.385"	0.97"	1.17"
2-3	1.50"	.285"	.410"	1.20"	1.40"
2-4	1.25"	.285"	.410"	0.97"	1.17"
2-5	1.50"	.285"	.400"	1.20"	1.40"
2-6	1.25"	.285"	.400"	0.97"	1.17"

2-1 TO 2-6

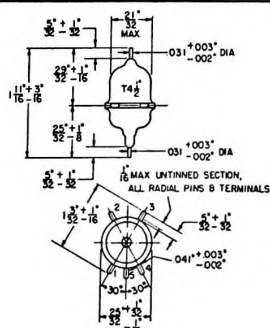


3-5

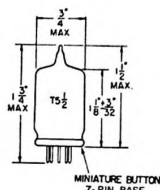


OUTLINE DRAWING NUMBER	DIMENSIONS				
	A	B	C	D	E
3-6	4.00"	.400"	1.50"	1.15"	1.35"
3-7	4.00"	.410"	1.50"	1.15"	1.35"

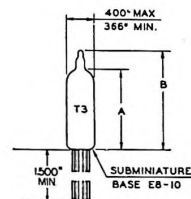
3-6, 3-7



4-3

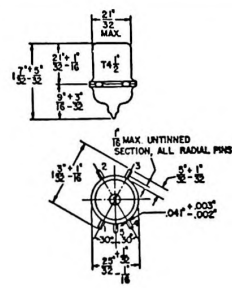


5-1

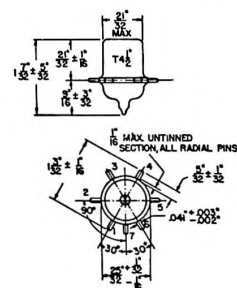


OUTLINE DRAWING NUMBER	DIMENSIONS	
	A	B
3-1	1.075"	1.375"
3-2	1.200"	1.500"
3-3	1.450"	1.750"
3-4	1.700"	2.000"
3-8	1.325"	1.625"

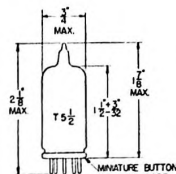
3-1 to 3-4, 3-8



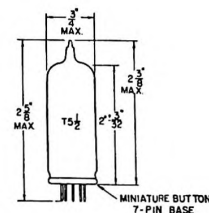
4-1



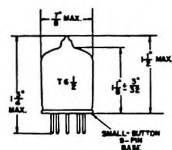
4-2



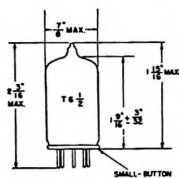
5-2



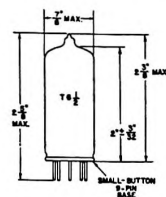
5-3



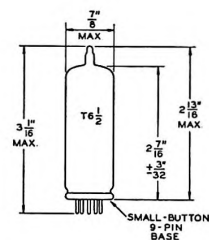
6-1



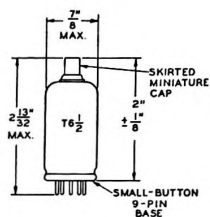
6-2



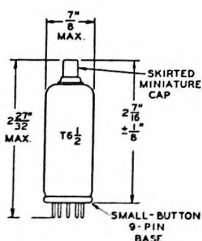
6-3



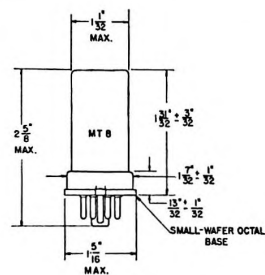
6-4



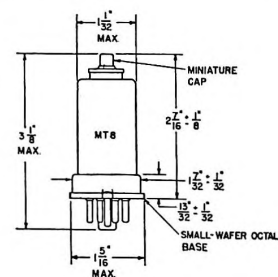
6-6



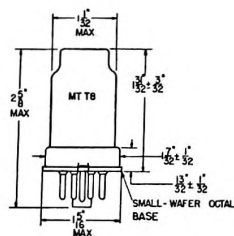
6-7



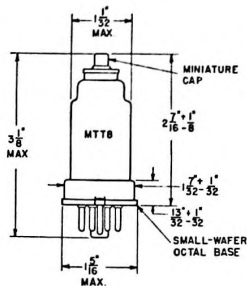
8-1



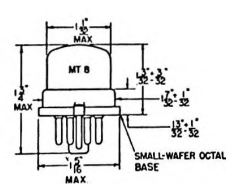
8-2



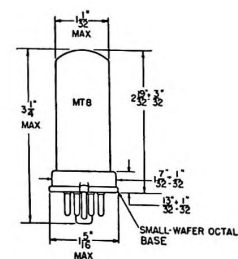
8-3



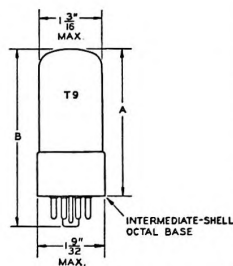
8-4



8-5

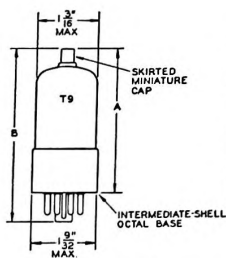


8-6



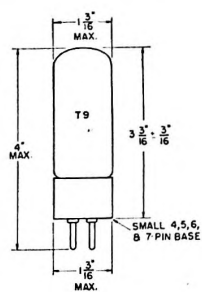
OUTLINE DRAWING NUMBER	DIMENSIONS	
	A	B
9-1	1 3/4	2 5/16
9-3	2 5/16	2 7/8
9-5	2 7/16	3"
9-7	2 1 1/2	3 1/16
9-9	2 11/16	3 1/4
9-11	2 3/4	3 5/16
9-13	2 13/16	3 3/8
9-15	2 7/8	3 7/16
9-33	3 1/2	3 13/16

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

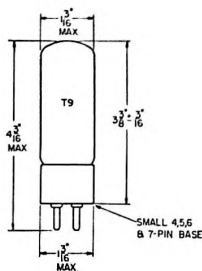


OUTLINE DRAWING NUMBER	DIMENSIONS		
	MIN	MAX	B
9-17	2 5/16	2 3/4	3 5/16
9-19	2 5/16	2 7/8	3 7/16
9-21	2 5/16	2 15/16	3 1/2
9-23	2 5/16	3"	3 9/16
9-50	2 7/8	3 5/16	3 7/8

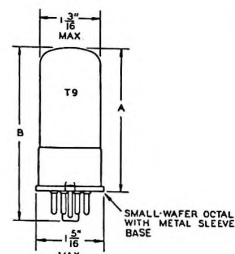
9-17 TO 9-23 (ODD), 9-50



9-25

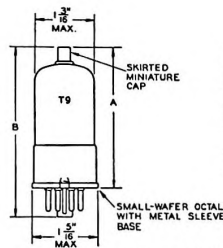


9-26



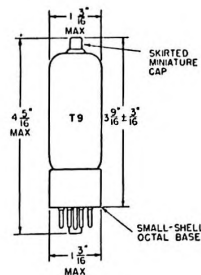
9-2 TO 9-16 (EVEN)

OUTLINE DRAWING NUMBER	DIMENSIONS	
	A	B
9-2	1 3/4	2 5/16
9-4	2 5/16	2 7/8
9-6	2 7/16	3"
9-8	2 1 1/2	3 1/16
9-10	2 11/16	3 1/4
9-12	2 3/4	3 5/16
9-14	2 13/16	3 3/8
9-16	2 7/8	3 7/16

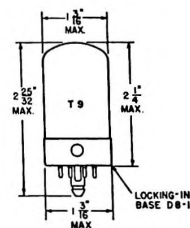


9-18 TO 9-24 (EVEN)

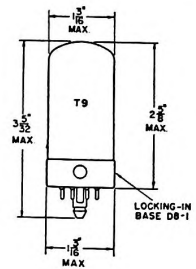
OUTLINE DRAWING NUMBER	DIMENSIONS		
	MIN	MAX	B
9-18	2 5/16	2 3/4	3 5/16
9-20	2 5/16	2 7/8	3 7/16
9-22	2 5/16	2 15/16	3 1/2
9-24	2 5/16	3"	3 9/16



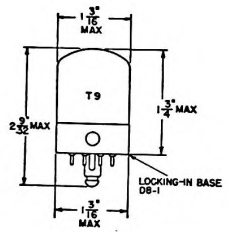
9-28



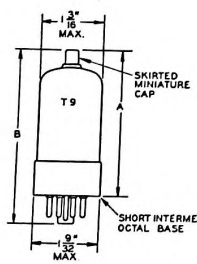
9-30



9-31

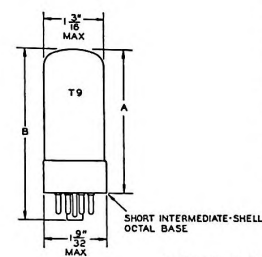


9-32



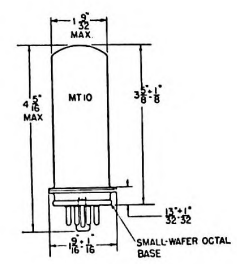
OUTLINE DRAWING NUMBER	DIMENSIONS		
	A	B	C
9-45	2 2 1/16	2 3 1/4	3 5 1/16
9-46	2 5 1/16	2 7 1/16	3 7 1/16
9-47	2 5 1/16	2 15 1/16	3 1 1/2
9-48	2 5 1/16	3 1/2	3 8 1/16
9-49	2 7 1/16	3 5 1/16	3 2 1/8

9-45 TO 9-49

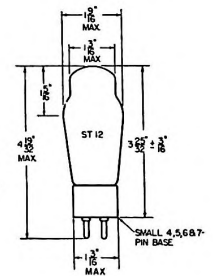


OUTLINE DRAWING NUMBER	DIMENSIONS		
	A	B	C
9-36	1 3 1/4	2 5 1/16	3 1/8
9-37	2 5 1/16	2 7 1/8	3 1/8
9-38	2 7 1/16	3 1/8	3 1/8
9-39	2 1 1/2	3 10 1/16	3 1/8
9-40	2 11 1/16	3 1/4	3 1/8
9-41	2 3 1/4	3 5 1/16	3 1/8
9-42	2 13 1/16	3 1/8	3 1/8
9-43	2 8 1/16	3 7 1/16	3 1/8
9-44	3 1 1/4	3 13 1/16	3 1/8

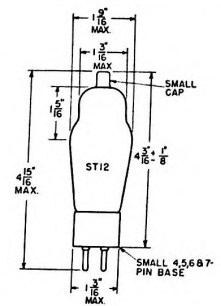
9-36 TO 9-44



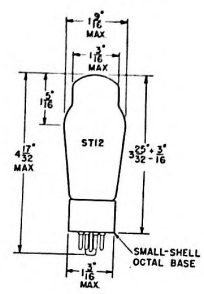
10-1



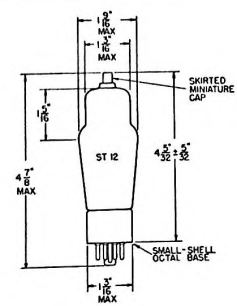
12-1



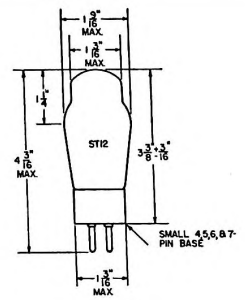
12-2



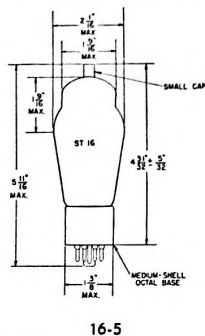
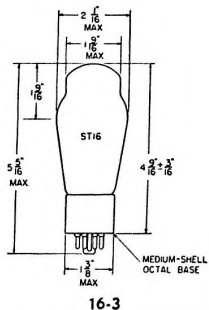
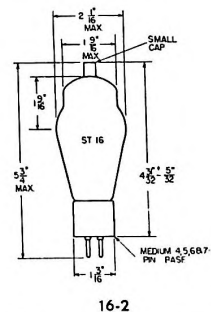
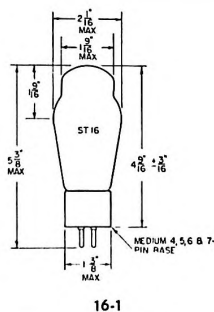
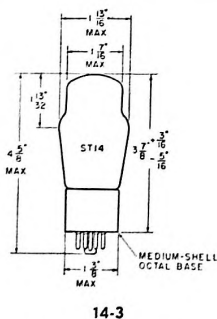
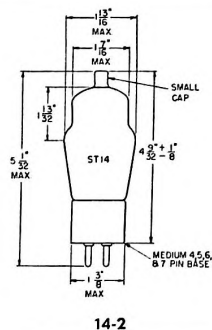
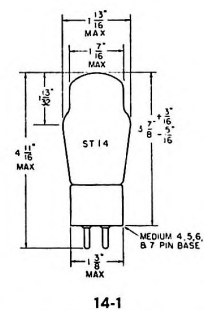
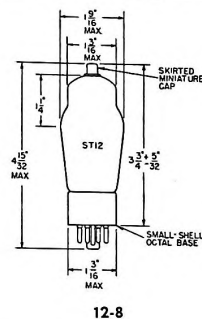
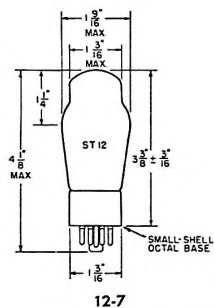
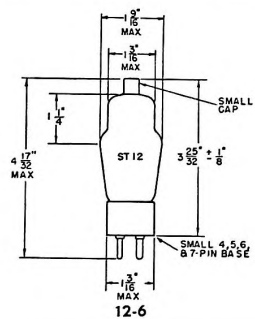
12-3



12-4



12-5



T-X TABLE – Physical Characteristics of Types

Tube Type	Envelope	Style	Max Dimensions in Inches		
			Diameter	Over-all Length	Seated Height
0V4-G	T-7	Octal	1 ⁵ / ₁₆	2 ³ / ₈	2 ¹ / ₁₆
0Z4-G	T-7	Octal	1 ¹ / ₁₆	2 ³ / ₈	2 ¹ / ₁₆
1AB6	T-5 ¹ / ₂	7-Pin Miniature	³ / ₄	2.205	1.955
1AE5	T-2X3	Inline Subm-FL*	0.400X0.300	—	1.5
1AH5	T-5 ¹ / ₂	7-Pin Miniature	³ / ₄	2.205	1.955
1AJ4	T-5 ¹ / ₂	7-Pin Miniature	³ / ₄	2.205	1.955
1B3-GT	T-9	Octal	1 ⁹ / ₃₂	4 ¹ / ₁₆	3 ³ / ₈
1N6-G	T-9	Octal	1 ¹ / ₁₆	4	3 ⁷ / ₁₆
1T2	—	Special-FL*	1 ¹ / ₃₂	1 ²⁹ / ₃₂	—
1Y2	ST-12	4-Pin	1 ⁹ / ₁₆	4 ¹³ / ₃₂	3 ³ / ₃₂
1Z2	T-5 ¹ / ₂	7-Pin Miniature	³ / ₄	2.70	2.45
2C22	T-9	Octal	1 ¹ / ₁₆	3 ⁷ / ₈	2 ¹ / ₁₆
2E31	T-2X3	Inline Subm-FL*	0.400X0.300	—	1 ⁹ / ₁₆
2E32	T-2X3	Inline Subm-SL*	0.400X0.300	—	1 ⁹ / ₁₆
2E35	T-2X3	Inline Subm-FL*	0.390X0.290	—	1 ⁹ / ₁₆
2E36	T-2X3	Inline Subm-SL*	0.390X0.290	—	1 ⁹ / ₁₆
2E41	T-2X3	Inline Subm-FL*	0.390X0.290	—	1 ⁹ / ₁₆
2E42	T-2X3	Inline Subm-SL*	0.390X0.290	—	1 ⁹ / ₁₆
2G21	T-2X3	Inline Subm-FL*	0.400X0.300	—	1 ⁹ / ₁₆
2G22	T-2X3	Inline Subm-SL*	0.400X0.300	—	1 ⁹ / ₁₆
2V2	T-11	Octal	1 ¹ / ₁₆	4 ¹ / ₂	3 ¹ / ₁₆
3A3	T-9	Octal	1 ¹ / ₃₂	4 ¹ / ₁₆	3 ¹ / ₂
3C4	T-5 ¹ / ₂	7-Pin Miniature	³ / ₄	2.205	1.955
5AU4	T-12	Octal	1 ¹ / ₁₆	4 ¹ / ₂	4 ³ / ₁₆
5AW4	T-12	Octal	1 ¹ / ₂	5 ³ / ₁₆	4 ³ / ₈
5U4-GA	T-11	Octal	1 ¹ / ₁₆	4 ¹ / ₂	4 ³ / ₁₆
5U4-GB	T-12	Octal	1 ¹ / ₁₆	4 ¹ / ₂	4 ³ / ₁₆
5V4-GA	T-12	Octal	1 ¹ / ₁₆	3 ³ / ₈	3 ¹ / ₁₆
5X4-GA	T-12	Octal	1 ¹ / ₁₆	4 ¹ / ₂	4 ³ / ₁₆
5Y3-GA	T-12	Octal	1 ¹ / ₁₆	4 ¹ / ₂	4 ¹ / ₁₆
5Y4-GA	T-12	Octal	1 ¹ / ₁₆	4 ¹ / ₂	4 ¹ / ₁₆
6AE8	T-6 ¹ / ₂	9-Pin Miniature	³ / ₄	2 ¹ / ₂	—
6AL6-G	ST-16	Octal	2 ¹ / ₁₆	5 ¹ / ₁₆	5 ¹ / ₂

Not Conforming to Standard Outline Drawings

Tube Type	Envelope	Style	Max Dimensions in Inches		
			Diameter	Over-all Length	Seated Height
6AR6	T-11	Octal	1 ¹ / ₁₆	3 ¹ / ₃₂	2 ²⁹ / ₃₂
6AR7-GT	T-9	Octal	1 ¹ / ₁₆	3 ³ / ₈	3 ¹ / ₁₆
6AZ6	T-3	Button Subm-FL*	0.400	—	1.25
6BA4	—	Rocket Type	1.005	2 ¹ / ₁₆	—
6BD4	T-12	Octal	1 ²³ / ₃₂	5 ¹ / ₂	4 ³ / ₈
6BD4-A	T-12	Octal	1 ²³ / ₃₂	5 ¹ / ₂	4 ³ / ₈
6BD5-GT	T-9	Octal	1 ⁹ / ₃₂	3 ¹ / ₂	3 ⁵ / ₁₆
6BJ5	T-5 ¹ / ₂	7-Pin Miniature	³ / ₄	2 ¹ / ₂	—
6BQ6-GA	T-11	Octal	1 ¹ / ₁₆	4 ¹ / ₁₆	3 ³ / ₈
6BU5	T-11	Octal	1 ¹ / ₁₆	5	4 ¹ / ₁₆
6BY5-GA	T-12	Octal	1 ⁹ / ₁₆	3 ¹ / ₂	3 ¹ / ₁₆
6CA7	T-10	Octal	1 ¹ / ₂	4 ¹ / ₁₆	3 ¹ / ₂
6CD7	—	Octal	1 ¹ / ₃₂	3 ¹ / ₃₂	3 ¹ / ₃₂
6CJ6	T-6 ¹ / ₂	9-Pin Miniature	³ / ₄	3 ¹ / ₁₆	2 ¹ / ₁₆
6CN6	—	Octal	1 ²³ / ₃₂	5 ¹ / ₃₂	5
6CU6	T-11	Octal	1 ¹ / ₂	4 ¹ / ₂	3 ¹ / ₁₆
6DA6	T-6 ¹ / ₂	9-Pin Miniature	³ / ₄	2 ¹ / ₃₂	2 ¹ / ₃₂
6L6-GB	T-12	Octal	1 ⁹ / ₁₆	4 ¹ / ₂	3 ¹ / ₁₆
6V3-A	T-6 ¹ / ₂	9-Pin Miniature	³ / ₄	3 ¹ / ₁₆	2 ¹ / ₂
6W2	T-5 ¹ / ₂	Special-FL*	³ / ₄	2 ⁹ / ₁₆	—
6X2	—	Special-FL*	0.571	2.087	—
6Y6-GA	T-12	Octal	1 ¹ / ₁₆	3 ¹ / ₂	3 ¹ / ₁₆
10	ST-16	4-Pin	2 ¹ / ₁₆	5 ¹ / ₂	4 ³ / ₈
12BQ6-GA	T-11	Octal	1 ¹ / ₁₆	4 ¹ / ₁₆	4 ³ / ₈
12CU6	T-12	Octal	1 ¹ / ₁₆	4 ¹ / ₂	3 ¹ / ₁₆
17Z3	T-6 ¹ / ₂	9-Pin Miniature	³ / ₄	3 ¹ / ₁₆	2 ¹ / ₁₆
21A6	T-6 ¹ / ₂	9-Pin Miniature	³ / ₄	3 ¹ / ₁₆	2 ¹ / ₁₆
26BQ6-GA	T-11	Octal	1 ¹ / ₁₆	4 ¹ / ₁₆	3 ³ / ₈
25CD6-GA	T-12	Octal	1 ¹ / ₁₆	5	4 ¹ / ₁₆
25CU6	T-12	Octal	1 ¹ / ₁₆	4 ¹ / ₂	3 ¹ / ₁₆
50	ST-19	4-Pin	2 ¹ / ₁₆	6 ¹ / ₂	5 ¹ / ₂
50C6-GA	T-12	Octal	1 ¹ / ₁₆	4 ¹ / ₂	4 ¹ / ₁₆
81	ST-19	4-Pin	2 ¹ / ₁₆	6 ¹ / ₂	5 ¹ / ₂

T-X TABLE — Physical Characteristics of Types

Tube Type	Envelope	Style	Max Dimensions in Inches		
			Diameter	Over-all Length	Seated Height
V-99	T-8	Special	1 1/16	3 1/2	—
1629	T-9	Octal	1 3/16	4 3/8	3 7/16
1654	T-5 1/2	7-Pin Miniature	3/4	2 7/16	2 3/16
5633	T-3	Special Subm-FL*	0.400	—	1.660
5634	T-3	Special Subm-FL*	0.400	—	1.660
5642	T-3	Special Subm-FL*	0.400	—	2.380
5645	T-2	Special Subm-FL*	0.310	—	1.300
5646	T-2	Special Subm-FL*	0.310	—	1.300
5647	T-1	Special Subm-FL*	0.215	—	1.250
5675	—	Pencil Type	—	2.108	—
5676	T-2X3	Inline Subm-FL*	0.400X0.300	—	1.5
5677	T-2X3	Inline Subm-FL*	0.400X0.300	—	1.5
5678	T-2X3	Inline Subm-FL*	0.400X0.300	—	1.515
5690	T-12	Octal	1 23/32	4 3/4	3 11/16
5704	T-2	Inline Subm-FL*	0.315	—	1 1/2
5785	T-2X3	Inline Subm-FL*	0.400X0.300	—	1.5
5825	ST-16	4-Pin	2 1/16	5 23/32	5 7/32
5838	T-9	Octal	1 5/16	3 3/8	2 3/8
5839	T-9	Octal	1 5/16	3 3/8	2 3/8
5851	T-3	Button Subm-FL*	0.400	—	1.600
5852	T-9	Octal	1 5/16	3 3/8	2 3/8
5876	—	Pencil Type	—	2.108	—
5881	T-11	Octal	1 7/16	3 13/16	2 29/32

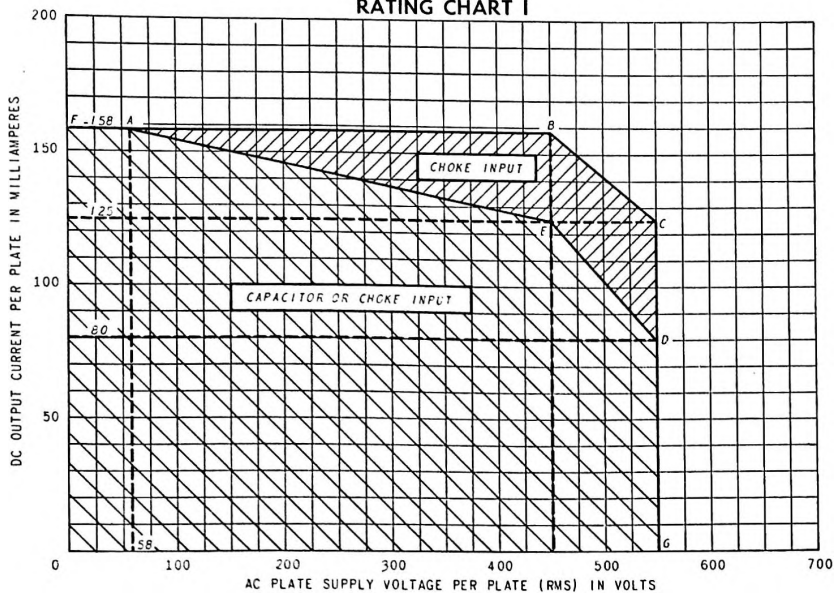
DRAWINGS

Not Conforming to Standard Outline Drawings

Tube Type	Envelope	Style	Max Dimensions in Inches		
			Diameter	Over-all Length	Seated Height
5890	T-11	Duodecal	1 1/2	6 3/4	6 1/4
5930	T-12	4-Pin	1.70	4 1/2	3 3/4
5931	T-12	Octal	1.70	4 29/32	4 11/32
5932	T-12	Octal	1.70	3 27/32	3 9/32
5995	T-3	Inline Subm-FL*	0.400	—	1.75
6004	T-9	Octal	1 5/16	4 1/16	—
6007	T-2	Special Subm-FL*	0.322	—	1.417
6008	T-2	Special Subm-FL*	0.322	—	1.102
6080	T-12	Octal	1 23/32	4 1/16	3 1/2
6082	T-12	Octal	1 23/32	4 1/16	3 1/2
6173	—	Pencil Type	—	1.987	—
6184	T-3	Button Subm-FL*	0.400	—	1.25
6195	T-3	Button Subm-FL*	0.400	—	1.60
6215	T-9	Octal	1 9/32	4 1/16	3 1/2
6287	T-6 1/2	9-Pin Miniature	3/4	2.47	—
6305	T-5 1/2	7-Pin Miniature	3/4	2 9/32	2 1/32
6325	T-9	Octal	1 9/32	—	2 3/8
6355	T-5 1/2	7-Pin Miniature	0.750	1.531	1.250
6374	T-6 1/2	9-Pin Miniature	3/4	3 3/16	2 11/16
6391	T-3	Special Subm-FL*	0.4	—	1 1/2
6443	T-6 1/2	9-Pin Miniature	3/4	3 9/32	3
6489	—	Special Subm-FL*	1/32	—	1.12

*FL Flying Leads
SL Short Leads

RATING CHART I



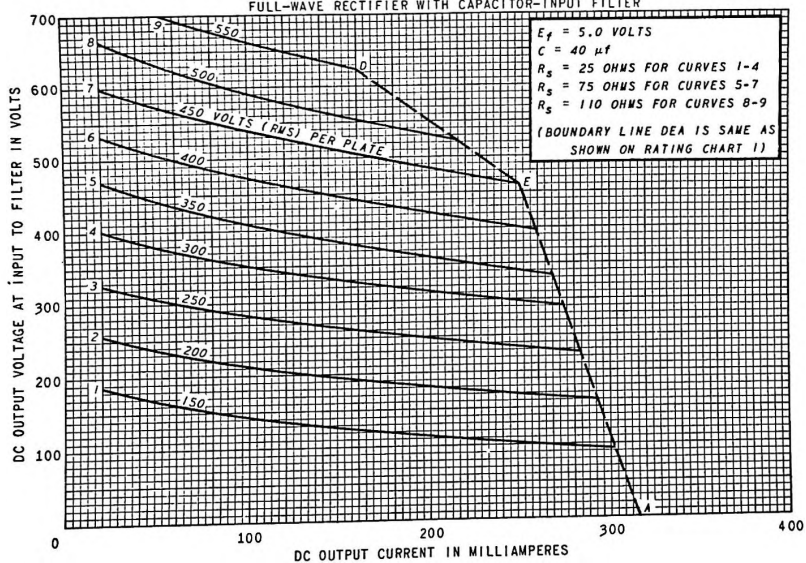
With a capacitor-input filter, the operating point of d-c output current and a-c supply voltage must fall within the curve FAEDG. With a choke-input filter, the operating point must fall within the curve FABCDG.



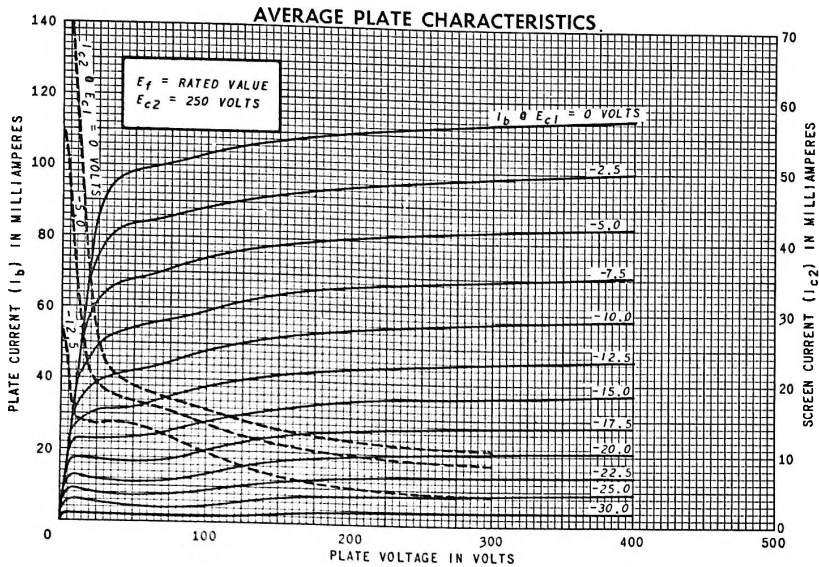
5U4-GA

OPERATION CHARACTERISTICS

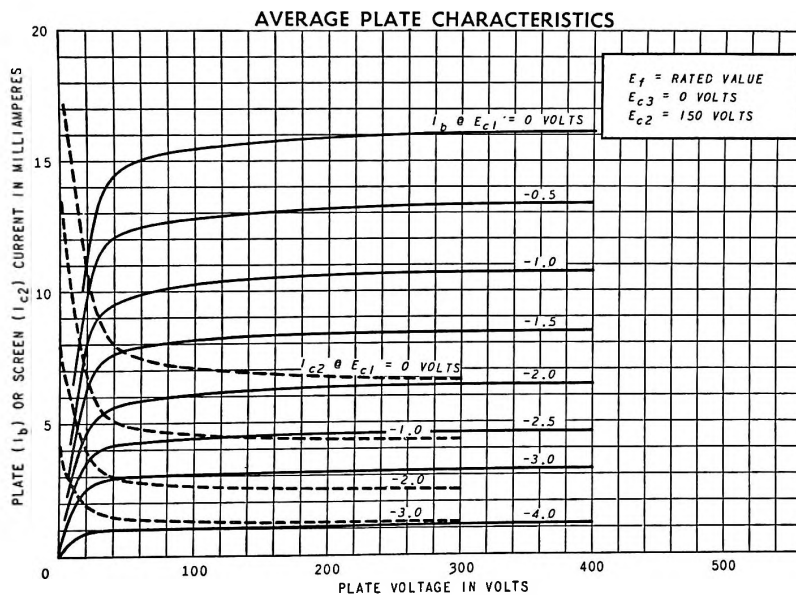
FULL-WAVE RECTIFIER WITH CAPACITOR-INPUT FILTER



6AQ5, 5AQ5, 12AQ5

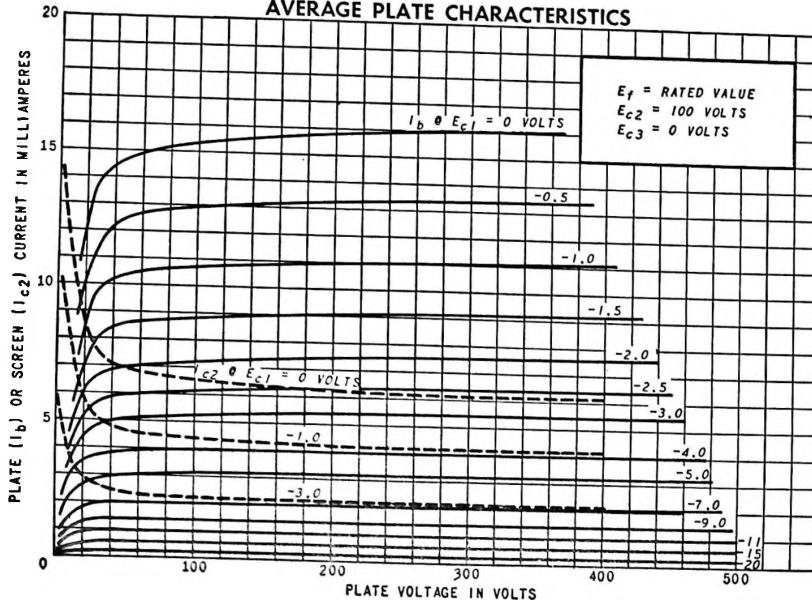


6AU6, 3AU6, 12AU6



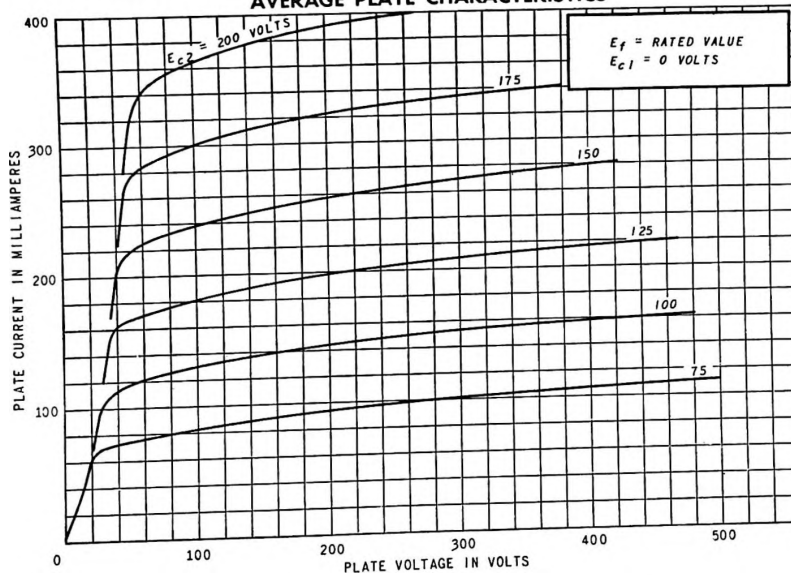
6BA6, 3BA6, 12BA6

AVERAGE PLATE CHARACTERISTICS



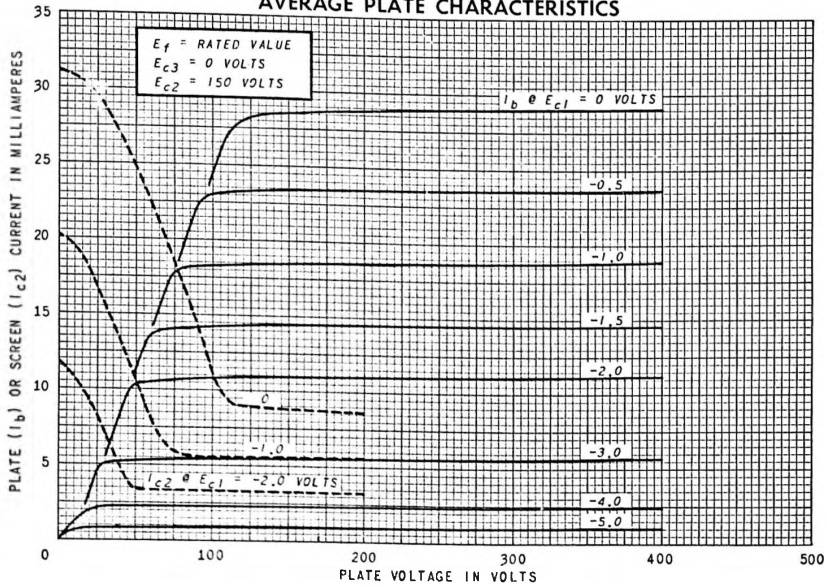
6BQ6-GA, 12BQ6-GA, 25BQ6-GA, 6BQ6-GT, 25BQ6-GT, 6AV5-GA, 12AV5-GA, 6AV5-GT, 25AV5-GT

AVERAGE PLATE CHARACTERISTICS



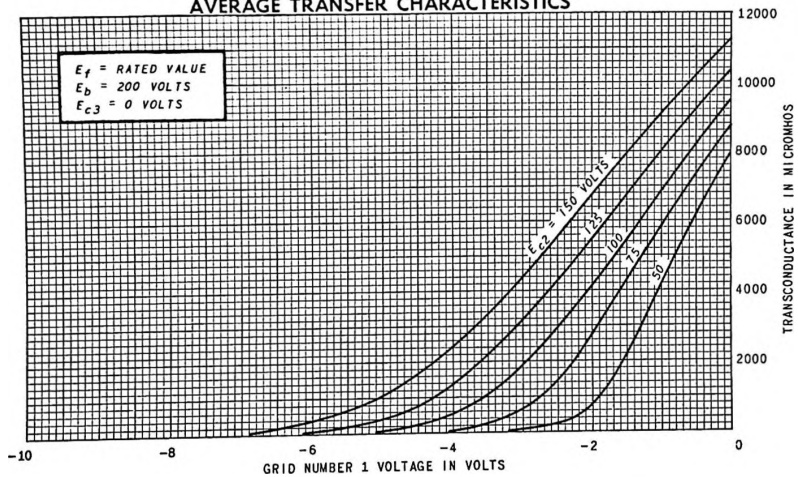
6CB6, 3CB6

AVERAGE PLATE CHARACTERISTICS



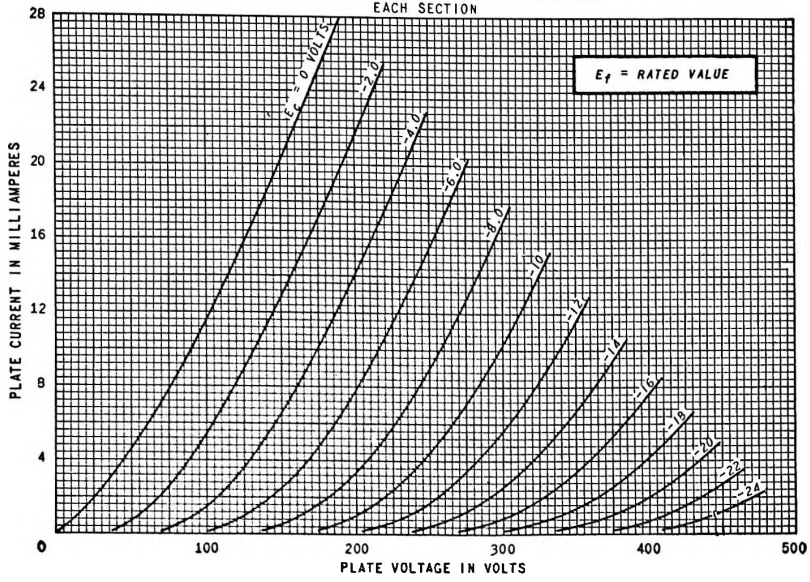
6CB6, 3CB6

AVERAGE TRANSFER CHARACTERISTICS



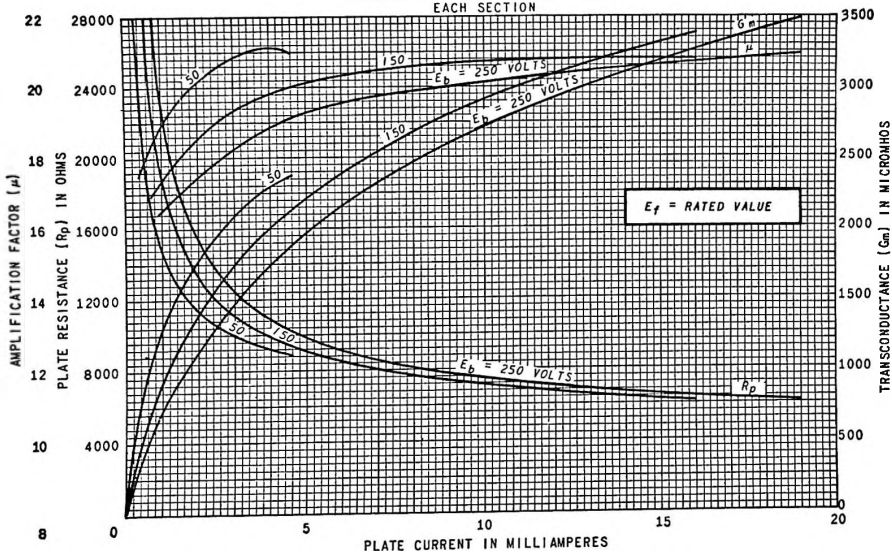
6SN7-GTB, 6SN7-GTA, 12SN7-GTA, 6SN7-GT, 12SN7-GT

AVERAGE PLATE CHARACTERISTICS



6SN7-GTB, 6SN7-GTA, 12SN7-GTA, 6SN7-GT, 12SN7-GT

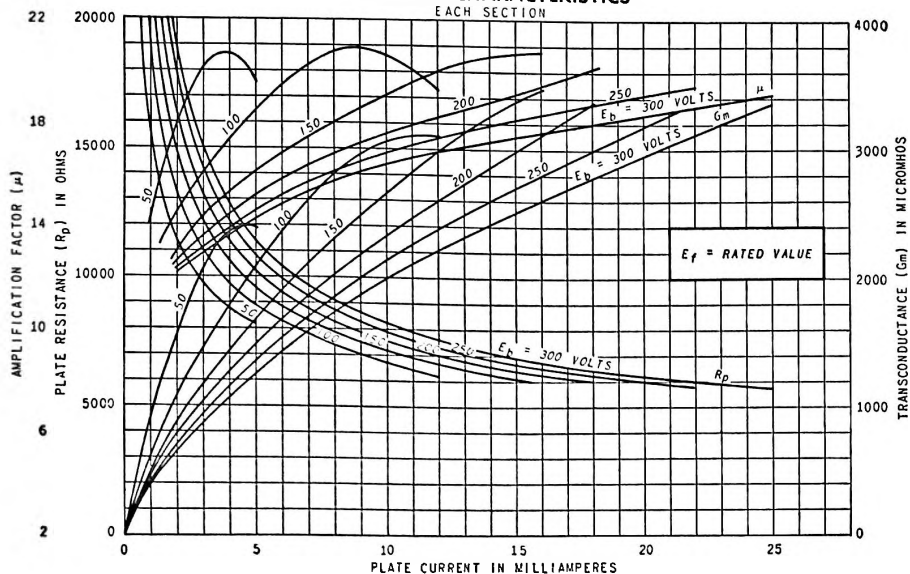
AVERAGE CHARACTERISTICS



12AU7, 7AU7

AVERAGE CHARACTERISTICS

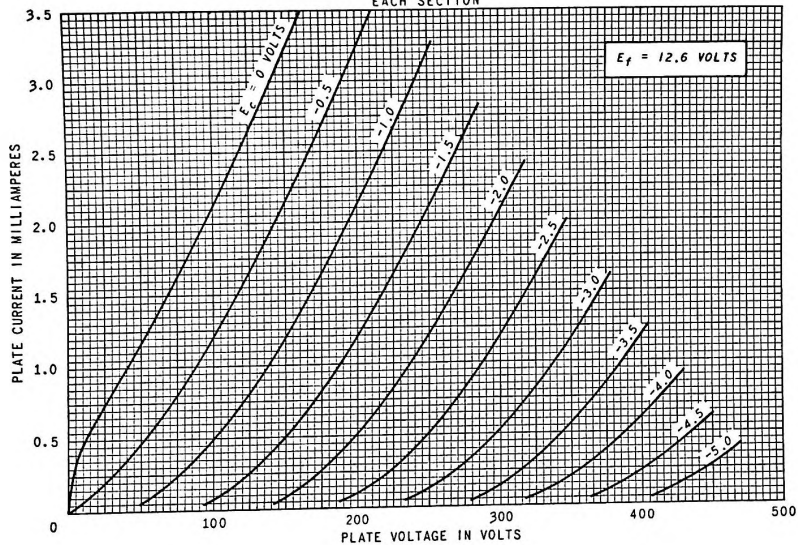
EACH SECTION



12AX7

AVERAGE PLATE CHARACTERISTICS

EACH SECTION

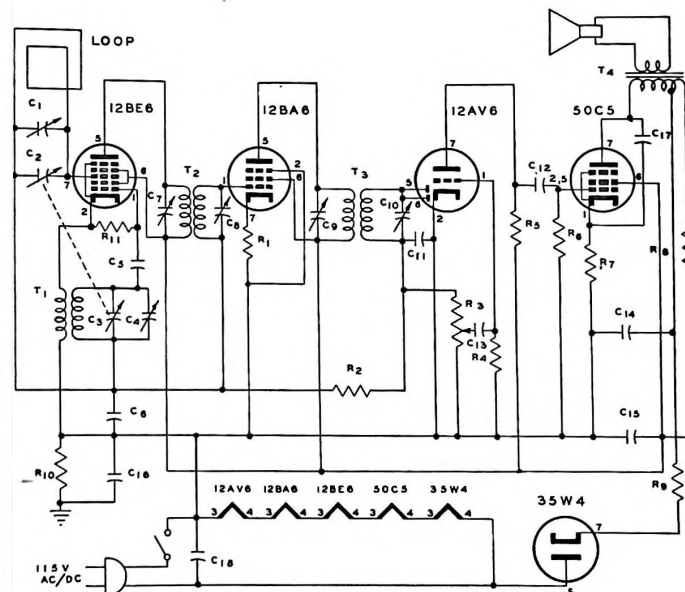


AC/DC RECEIVER

CIRCUIT DIAGRAMS

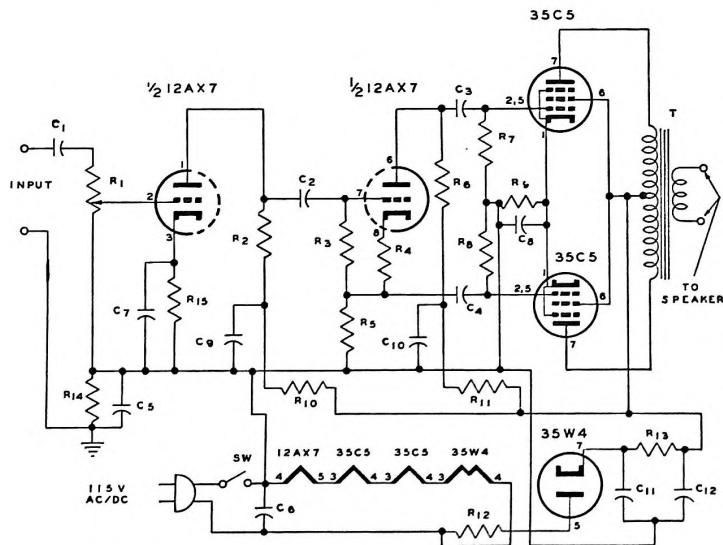
These circuit diagrams are included for illustration of typical tube applications and are not intended as constructional information. For this reason, wattage ratings of resistors and voltage ratings of capacitors are not necessarily given. Similarly, shielding techniques and alignment methods which may be necessary in some circuit layouts are not indicated.

The description and illustration of the circuits contained herein does not convey to the purchaser of tubes any license under patent rights of General Electric Company. Although reasonable care has been taken in their preparation to insure their technical correctness, no responsibility is assumed by General Electric Company for any consequences of their use.



C ₁	= 0-15 μ f TRIMMER	R ₁	= 47 Ω
C ₂ C ₃	= GANGED 14-43 μ f & 0-135 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	= 0.5 MEG.
C ₆ C ₁₈	= .05 μ f	R ₅ R ₆ R ₁₀	= .47 MEG.
C ₇ C ₉ C ₁₀	= 80-140 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	= 22K
C ₁₇	= .005 μ f		
T ₁	= OSCILLATOR TRANSFORMER		ALL RESISTORS $\frac{1}{2}$ WATT
T ₂ T ₃	= IF TRANSFORMER 455 KC		UNLESS OTHERWISE SPECIFIED
T ₄	= 2500 Ω TO 3.4 Ω OUTPUT TRANSFORMER		
	(WITH HUM-BUCKING TAP)		

AC/DC AMPLIFIER



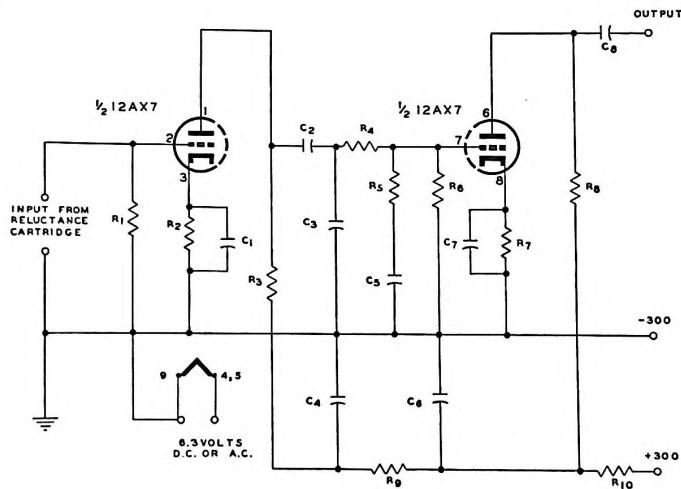
ALL RESISTORS 1WATT UNLESS OTHERWISE SPECIFIED

R_1 - .5 MEG. POT.
 R_2 - .24MEG.
 R_3 - .24MEG. $\frac{1}{2}$ WATT
 R_4 - 1200 Ω
 R_5 R_6 - 47K
 R_7 R_8 R_{14} - .47 MEG. $\frac{1}{2}$ WATT
 R_9 - 100 Ω 5WATT
 R_{10} R_{11} - 33K
 R_{12} R_{13} - 47 Ω
 R_{15} - 2700 Ω

C_1 C_2 C_3 C_4 C_6 - .05 μ f 400V
 C_5 - .01 μ f 600V
 C_7 - 25 μ f 25V
 C_8 - 50 μ f 25V
 C_9 - 8 μ f 150V
 C_{10} - 8 μ f 150V
 C_{11} - 20 μ f 150V
 C_{12} - 80 μ f 150V
 T - OUTPUT TRANSFORMER
 5000 Ω TO VOICE COIL
 SW - SPST TOGGLE SWITCH

NOTE:—

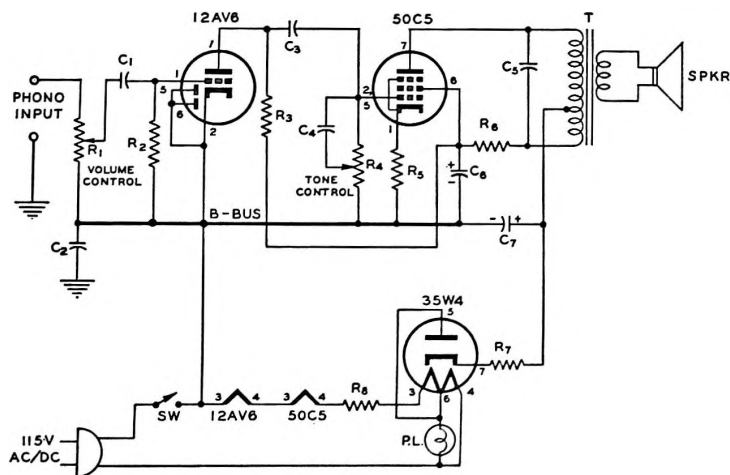
SW SHOULD NOT BE MOUNTED ON THE BACK OF R_1 .
 THIS PRECAUTION IS TO REDUCE HUM.

EQUALIZER PRE-AMPLIFIER
FOR VARIABLE RELUCTANCE PHONOGRAPH CARTRIDGE

C_1 C_7 - 25 μ f 25 VOLTS
 C_2 C_8 - .05 μ f 400 VOLTS
 C_3 - .001 μ f 400 VOLTS
 C_4 C_6 - 20 μ f 450 VOLTS
 C_5 - .02 μ f 400 VOLTS

R_1 - 62K
 R_2 R_7 - 2200 OHMS
 R_3 R_4 R_8 - .24 MEG.
 R_5 - 12 K
 R_6 - 1 MEG.
 R_9 - 6800 OHMS
 R_{10} - 3300 OHMS

THREE-TUBE PHONO AMPLIFIER

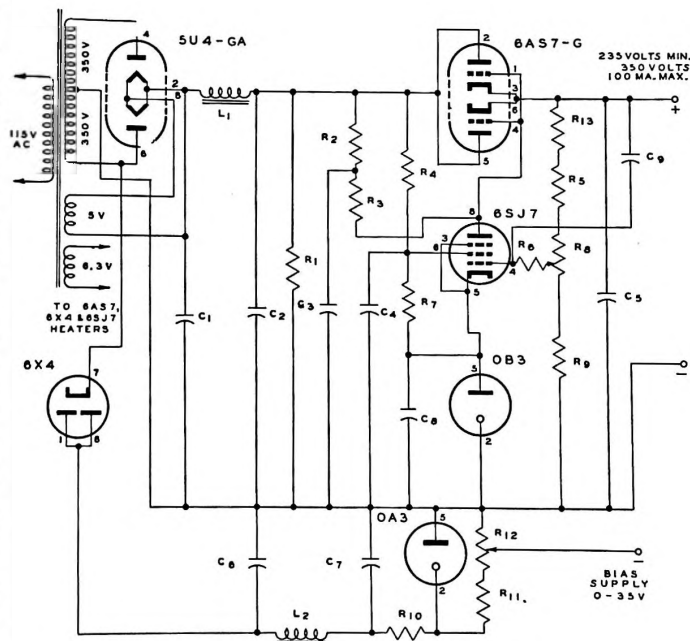


C_1 - .002 μ f 400V
 C_2 - .05 μ f 400V
 C_3 - .01 μ f 400V
 C_4 - .005 μ f 400V
 C_5 - .022 μ f 400V
 C_6 - .50 μ f 150V
 R_1 - .5 MEG. POT.
 R_2 - .8 MEG.
 R_3 - 470K
 R_4 - .5 MEG. POT.
 R_5 - 150 Ω 1WATT
 R_6 - .8K
 R_7 - 33 Ω
 R_8 - 120 Ω 5WATT

T - OUTPUT TRANSFORMER
 2500 Ω TO VOICE COIL
 (WITH HUM-BUCKING TAP)
 P.L. - NO. 47 PILOT LAMP
 SW - ON-OFF SWITCH

ALL RESISTORS $\frac{1}{2}$ WATT UNLESS
 OTHERWISE SPECIFIED

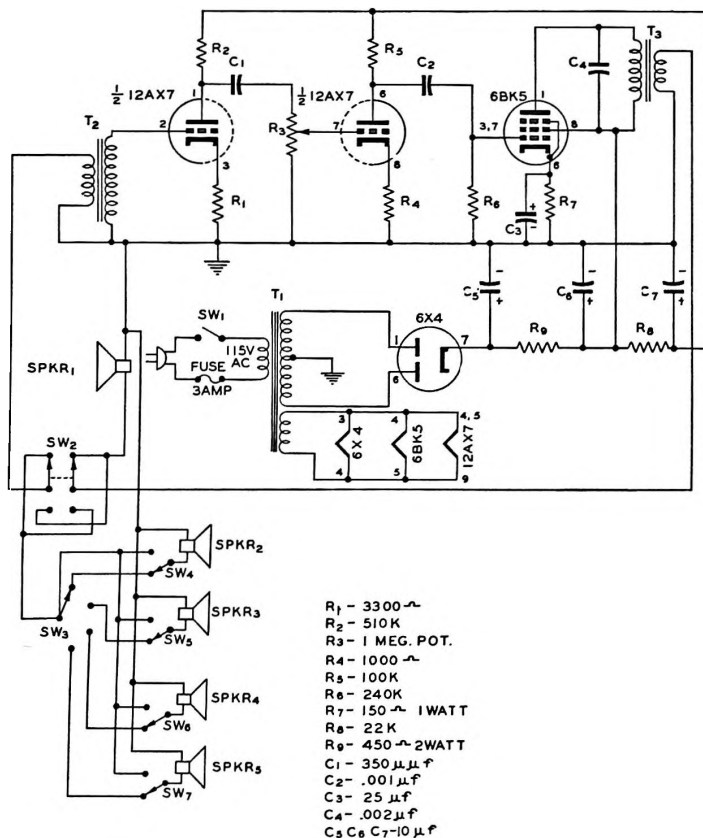
REGULATED POWER SUPPLY



ALL RESISTORS 1WATT UNLESS OTHERWISE SPECIFIED

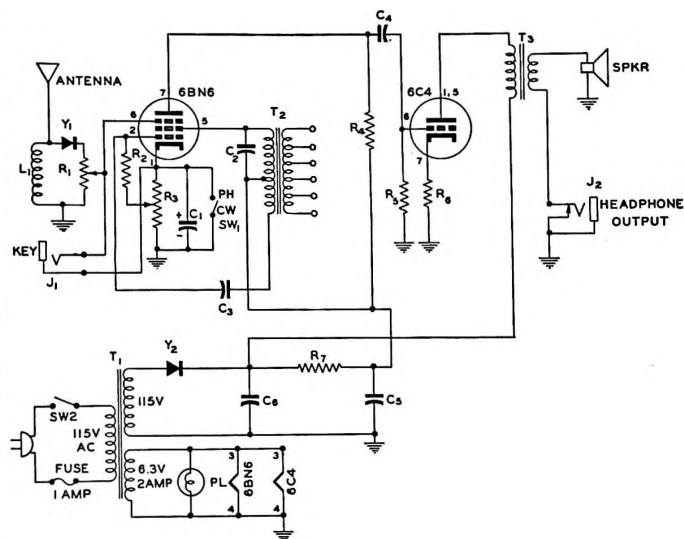
C_1 - .1 μ f 600V	R_1 - .47 MEG.	R_{12} - 5K POT. (5WATT)
C_3 - .1 μ f 600V	R_2 - .33 MEG.	L_1 - 200 MA 15 HY
C_4 - .05 μ f 450V	R_3 - .1 MEG.	L_2 - 60 MA 15 HY
C_5 - .4 μ f 600V	R_4 - 20K 10WATT	
C_6 - .40 μ f 450V	R_5 - 1 MEG.	
C_9 - .1 μ f 600V	R_7 - 10K 10WATT	
	R_8 - .5 MEG. POT.	
	R_{10} - 20K 3WATT	
	R_{11} - 5K 5WATT	

INTERCOMMUNICATION AMPLIFIER



R_1 - 3300 Ω
 R_2 - 510K
 R_3 - 1 MEG. POT.
 R_4 - 1000 Ω
 R_5 - 100K
 R_6 - 240K
 R_7 - 150 Ω 1WATT
 R_8 - 22K
 R_9 - 450 Ω 2WATT
 C_1 - 350 μ f
 C_2 - .001 μ f
 C_3 - 25 μ f
 C_4 - .002 μ f
 C_5 - .001 μ f
 C_6 - 10 μ f
 C_7 - 10 μ f
 C_8 - 10 μ f

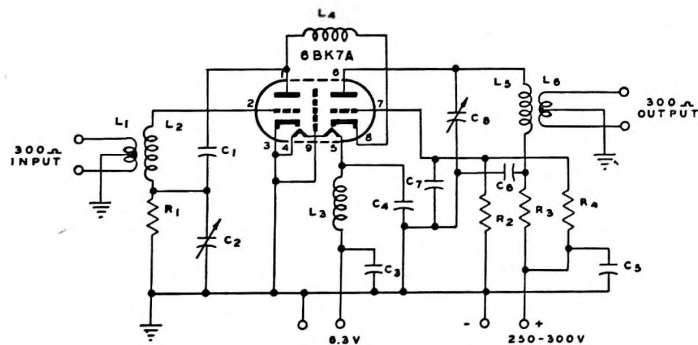
T_1 - POWER TRANSFORMER: 250-0-250V @ 40MA 6.3V @ 2.5A
 T_2 - INPUT TRANSFORMER: 1 TO 30 TURNS RATIO
 T_3 - OUTPUT TRANSFORMER: 6000 Ω TO VOICE COIL
 SW_1 - SPST ON-OFF TOGGLE SWITCH
 SW_2 - DPDT MASTER STATION PUSH-TO-TALK SWITCH
 SW_3 - STATION SELECTOR SWITCH
 SW_4 - SPST REMOTE SPEAKER PUSH-TO-TALK SWITCH
 SW_5 - MASTER STATION PM SPEAKER
 SW_6 - REMOTE STATION PM SPEAKER
 SW_7 - REMOTE STATION PM SPEAKER
 ALL RESISTORS: $\frac{1}{2}$ WATT UNLESS OTHERWISE SPECIFIED

PHONE - CW MONITOR
AND CODE PRACTICE OSCILLATOR

R_1 - 200K POT.
 R_2 - 500K
 R_3 - 500 Ω POT.
 R_4 - 100K
 R_5 - 1500 Ω 1WATT
 R_6 - 5000 Ω 2WATT
 R_7 - 5000 Ω 2WATT
 R_8 - 8M Ω RF CHOKE
 R_9 - IN52 DIODE
 R_{10} - SELENIUM RECTIFIER 100 MA DC
 R_{11} - POWER TRANSFORMER SEC. - 115V-50MA-6.3V-2A
 T_1 - UNIVERSAL OUTPUT TRANSFORMER PRI - 4000 TO 14,000 OHMS WITH CENTER TAP
 T_2 - OUTPUT TRANSFORMER 10,000 OHMS TO VOICE COIL
 T_3 - 6.3-VOLT PILOT LAMP
 PL - 6.3-VOLT PILOT LAMP
 J_1 - OPEN-CIRCUIT PHONE JACK
 J_2 - SHORT-CIRCUIT PHONE JACK
 SW_1 - SPST PHONE - CW TOGGLE SWITCH
 SW_2 - SPST ON-OFF TOGGLE SWITCH

ALL RESISTORS: $\frac{1}{2}$ WATT UNLESS OTHERWISE SPECIFIED

6BK7A CASCODE TELEVISION BOOSTER



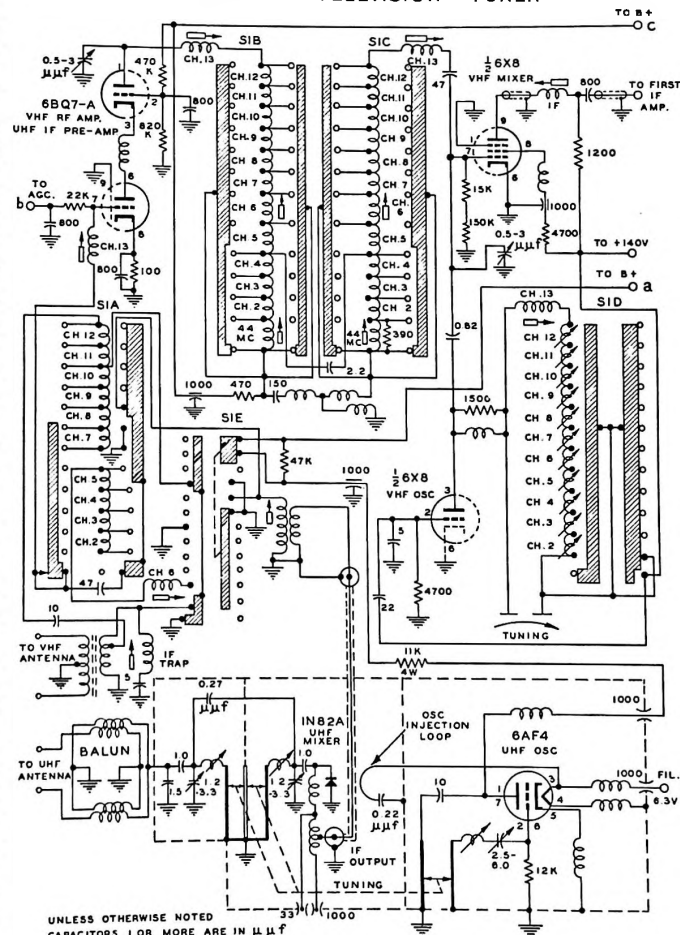
- C_1 - 4.7 μ f
 C_2 - 3-13 μ f
 C_3, C_4, C_5, C_6 - 1000 μ f
 C_7 - 1000 μ f BUTTON TYPE
 C_8 - 1.5-7 μ f
 R_1 - 47K
 R_2 - 270K
 R_3 - 680 Ω
 R_4 - 100K

TYPICAL VALUES FOR CHANNEL NR 4

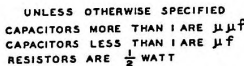
- L_1 - 5T NR18 WOUND OVER L_2
 L_2 - 18T NR 28 $\frac{1}{4}$ " FORM CLOSE WOUND
 L_3 - 12T NR18 $\frac{1}{4}$ " FORM CLOSE WOUND
 L_4 - 3T NR18 $\frac{1}{4}$ " FORM CLOSE WOUND
 L_5 - 6T NR28 $\frac{1}{4}$ " FORM CLOSE WOUND
 L_6 - 5T NR18 WOUND OVER L_5
 L_1 & L_6 ARE CENTER-TAPPED

ALL RESISTORS $\frac{1}{2}$ WATT

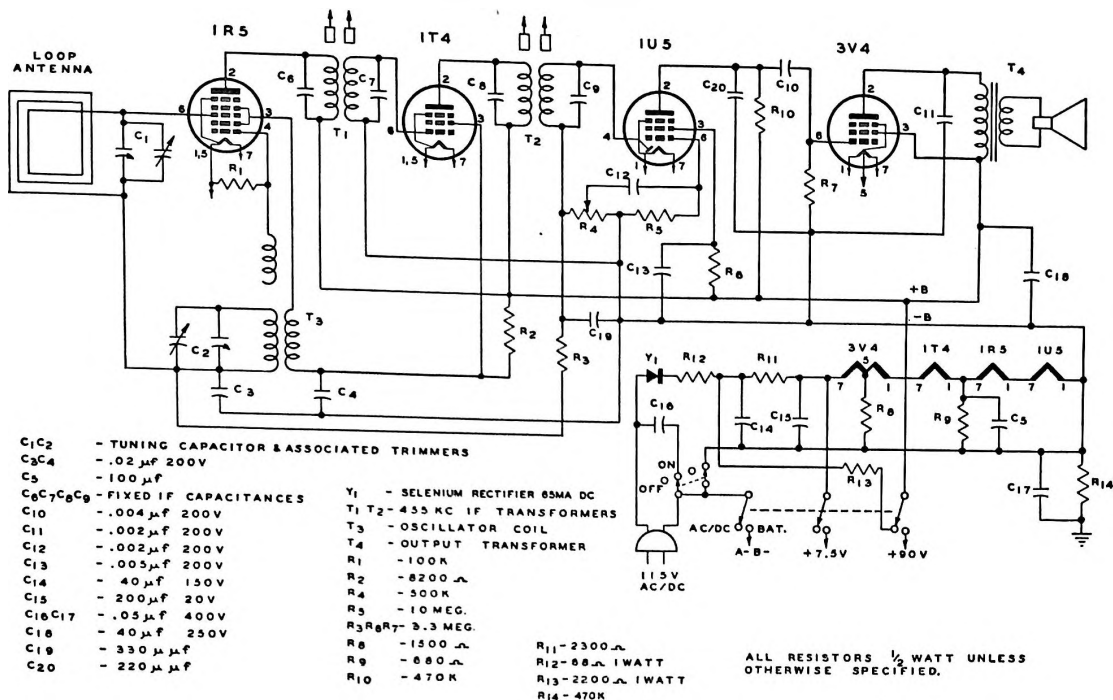
UHF-VHF TELEVISION TUNER



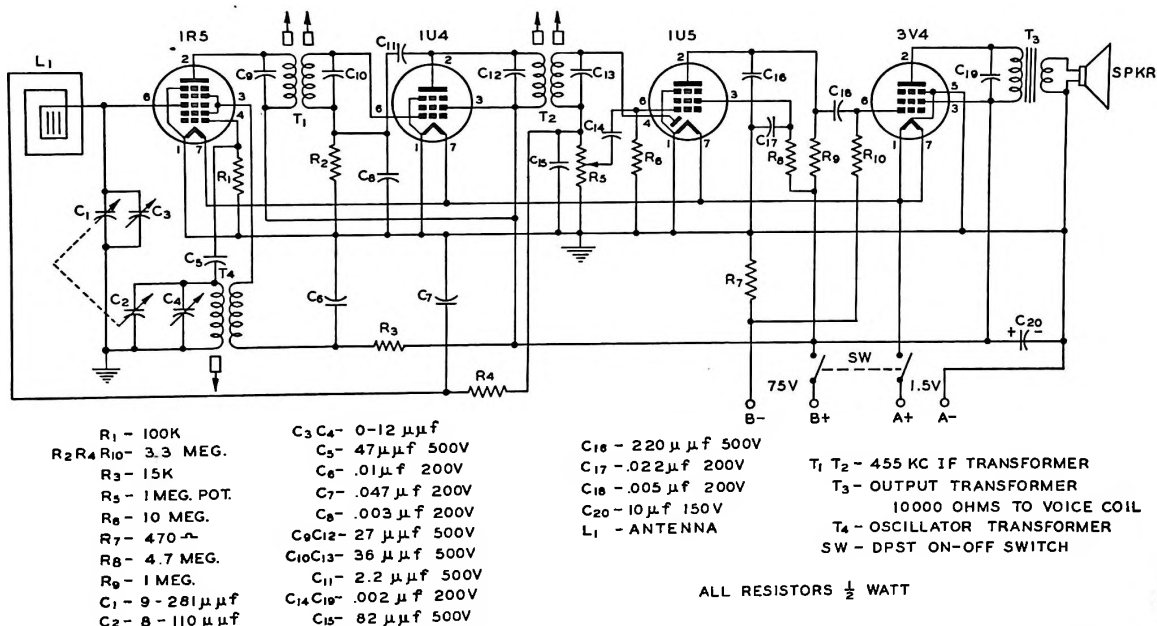
UNLESS OTHERWISE NOTED
 CAPACITORS 1 OR MORE ARE IN μ f
 CAPACITORS LESS THAN 1 ARE IN μ f
 RESISTORS ARE $\frac{1}{2}$ WATT
 (SWITCH S1 SHOWN IN UHF POSITION)



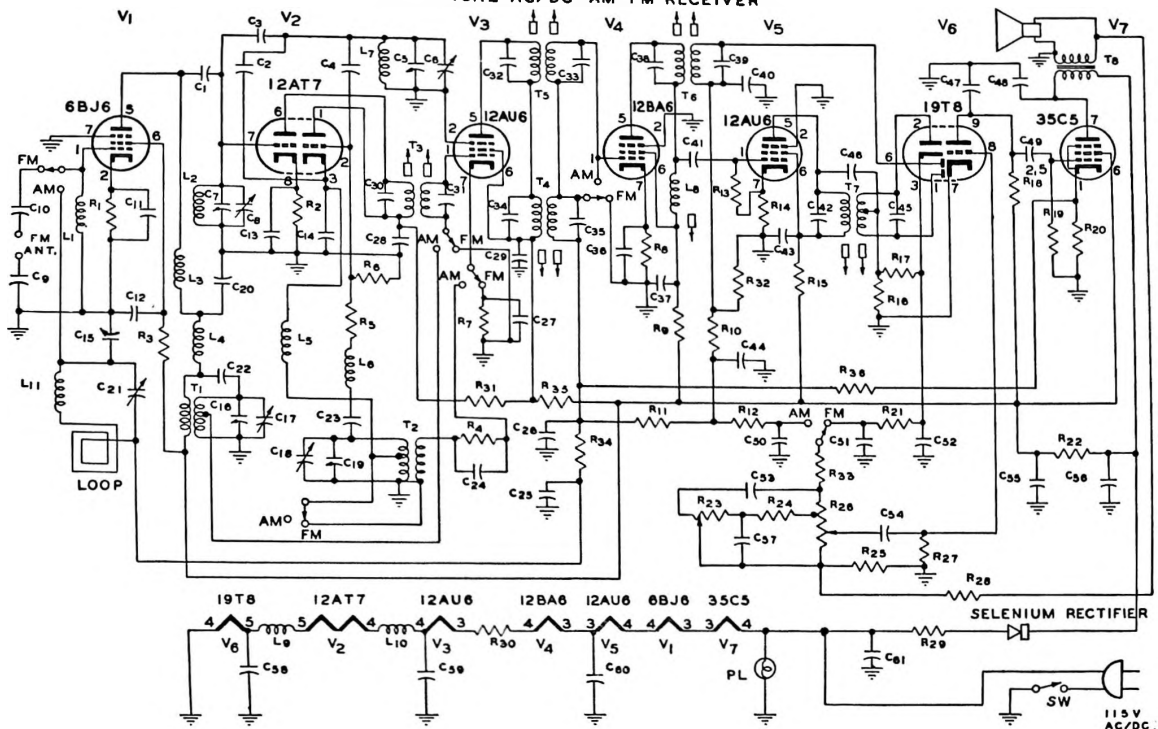
THREE-WAY BATTERY PORTABLE



BATTERY-OPERATED PORTABLE



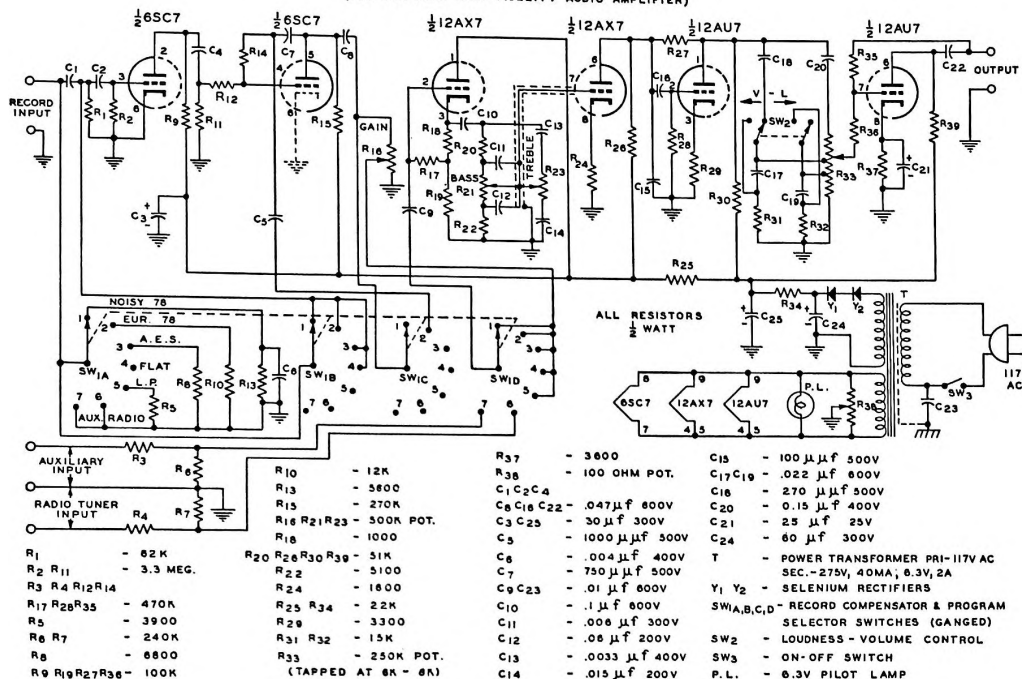
TYPICAL AC/DC AM-FM RECEIVER



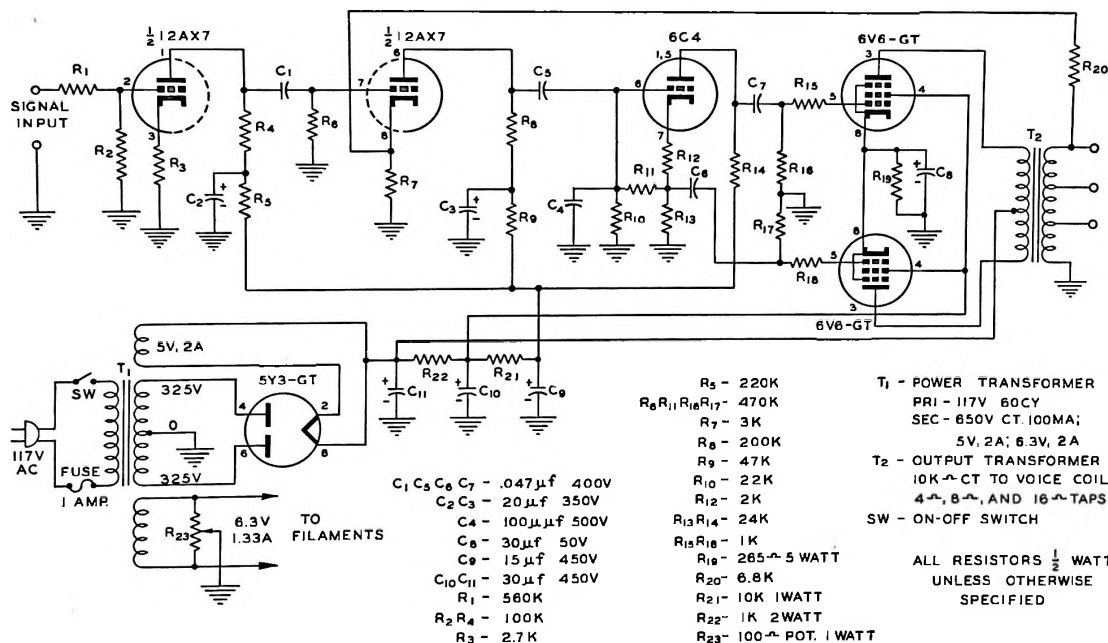
PARTS LIST FOR AC/DC AM-FM RECEIVER

- | | | |
|---|---|---|
| C ₁ —10 μ f | C ₂₈ —131 μ f | R ₁₈ R ₁₉ —470 K |
| C ₂ —22 μ f | C ₄₇ C ₄₈ —100 μ f | R ₂₀ —150 Ω |
| C ₃ C ₂₃ —1.5 μ f | C ₄₁ C ₄₅ C ₄₆ —33 μ f | R ₂₂ —1000 Ω 2 Watt WW |
| C ₄ C ₂₈ —20 μ f | C ₄₉ —50 μ f | R ₂₃ —4 Meg Tone Control |
| C ₅ C ₆ C ₇ C ₈ —FM Tuning Capacitor and Trimmers | C ₄₇ C ₅₀ —47 μ f | R ₂₄ —2 Meg Vol Control (1 Meg Tap) |
| C ₉ C ₁₁ C ₁₂ C ₁₃ —470 μ f | C ₅₁ —,001 μ f | R ₂₇ —6.8 Meg |
| C ₁₀ —6 μ f | C ₅₃ —,002 μ f | R ₂₉ —22 Ω 1 Watt |
| C ₁₅ —,0015 μ f | C ₅₅ —40 μ f | R ₃₃ —33 Ω 2 Watt WW |
| C ₁₆ —18 μ f | C ₅₆ —80 μ f | R ₃₇ —R ₃₈ —220 K |
| C ₁₈ C ₁₉ C ₁₇ C ₁₅ —AM Tuning Capacitors and Trimmers | C ₅₇ —,003 μ f | R ₃₉ —10 Meg |
| C ₂₀ —82 μ f | PL—110 Volt Pilot Lamp | T ₁ —Broadcast RF Coil |
| C ₂₁ —2—20 μ f Trimmer | R ₁ R ₅ R ₇ R ₈ R ₂₃ —100 Ω | T ₂ —Broadcast Oscillator Coil |
| C ₂₄ C ₄₉ C ₅₄ —,01 μ f | R ₂ —1500 Ω | T ₃ T ₄ —10.7 Mc FM IF Transformer |
| C ₂₅ C ₂₆ C ₆₁ —,05 μ f | R ₃ R ₃₁ R ₃₅ —220 Ω | T ₄ T ₆ —455 KC IF Transformer |
| C ₂₇ C ₂₈ C ₂₉ C ₃₆ C ₃₇ C ₄₃ C ₄₈ C ₅₈ C ₅₉ —,005 μ f | R ₄ —2.2 K | T ₇ —10.7 Mc Discriminator Transformer |
| C ₃₃ C ₃₁ —40 μ f | R ₆ —27 K | T ₈ —Output Transformer |
| C ₃₈ C ₃₅ —17 μ f | R ₉ R ₂₈ —470 Ω | L ₁ —FM Antenna Choke |
| C ₃₄ —107 μ f | R ₁₀ R ₁₂ R ₃₃ —47 K | L ₂ —FM RF Coil |
| C ₃₅ —73 μ f | R ₁₁ —2.2 Meg | L ₃ —RF Plate Choke |
| C ₃₈ —106 μ f | R ₁₃ R ₂₁ R ₂₄ —100 K | L ₄ L ₅ L ₁₁ —RF Choke 2.2 μ H |
| | R ₁₄ —180 Ω | L ₇ —FM Oscillator Coil |
| | R ₁₅ —22 K | L ₈ —10.7 Mc 3rd FM IF Coil |
| | R ₁₆ R ₁₇ —120 K | L ₉ L ₁₀ —RF Choke |

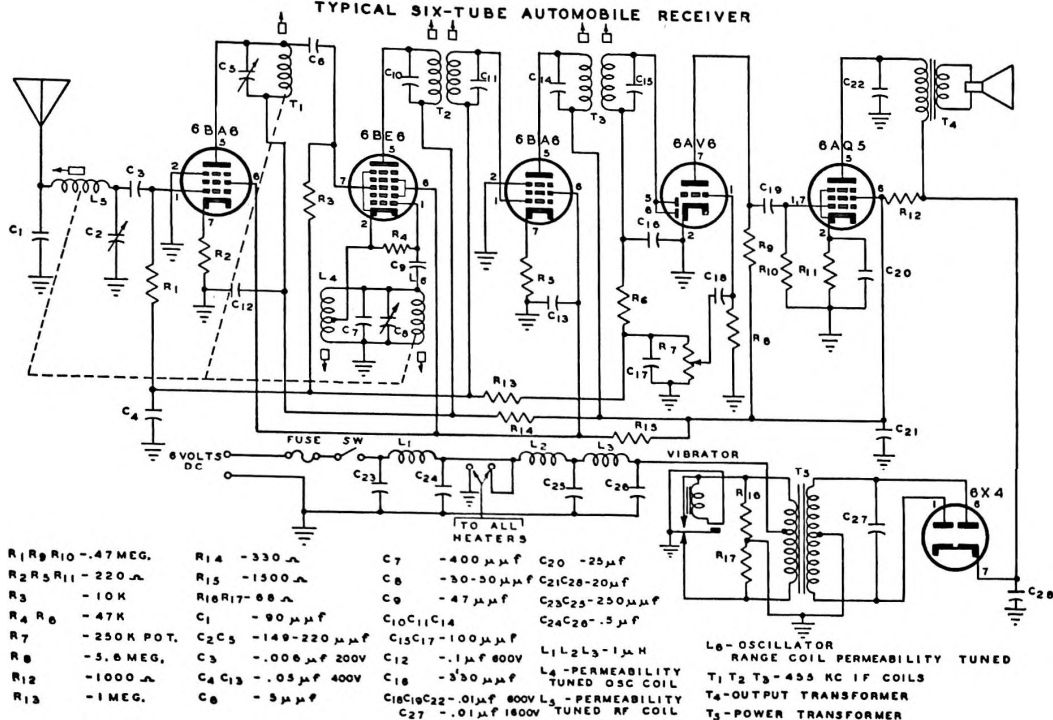
PRE-AMPLIFIER AND CONTROL UNIT (FOR USE WITH HIGH-FIDELITY AUDIO AMPLIFIER)



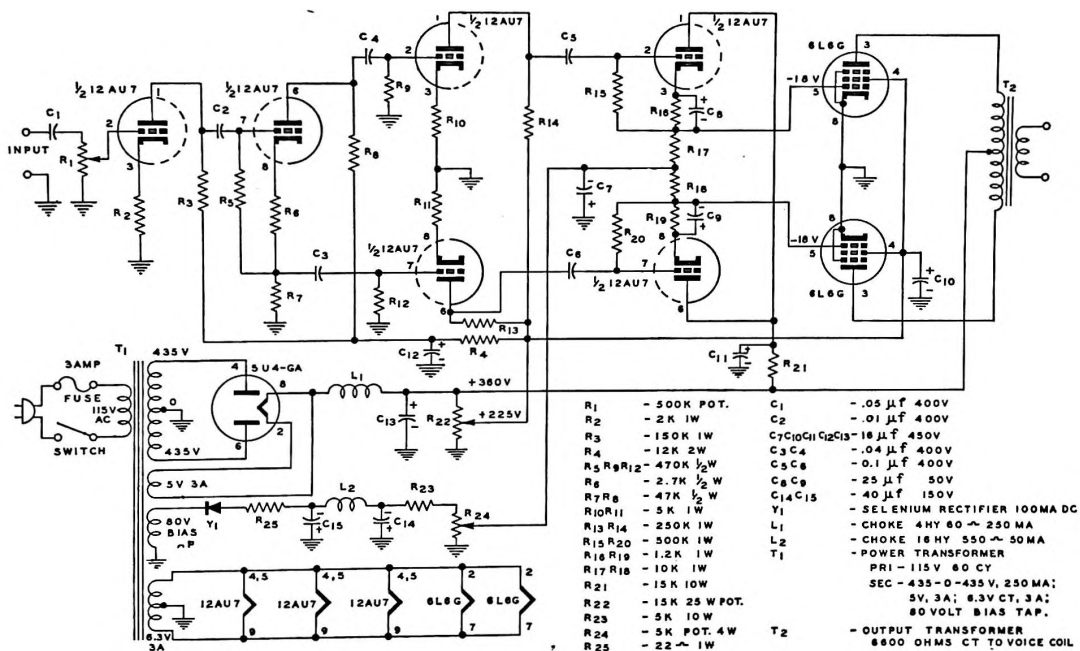
10-WATT HIGH-FIDELITY AUDIO AMPLIFIER



TYPICAL SIX-TUBE AUTOMOBILE RECEIVER



30-WATT CLASS AB₂ AUDIO AMPLIFIER



NOTES



TUBE DEPARTMENT

GENERAL  ELECTRIC

Schenectady 5, N. Y.