

**RCA**

---

**NOVAR  
TUBES**

For —

- Color and Black-and-White TV Receivers
- High-Fidelity Monophonic  
and Stereophonic Equipment
- Electronic Organs
- Broadcast & Communications Receivers
- Other Entertainment & Commercial Equipment



**RADIO CORPORATION OF AMERICA**  
ELECTRONIC COMPONENTS AND DEVICES, HARRISON, N.J.

Trademark(s) ® Registered  
Marca(s) Registrada(s)

1CE-311

## RCA NOVAR TUBES

*For Color and Black-and-White TV Receivers, High-Fidelity Monophonic & Stereophonic Equipment, Electronic Organs, Broadcast & Communications Radio Receivers, and other Entertainment & Commercial Equipment*

RCA's novar concept of tube design represents a logical and realistic approach to the design of quantity-produced, large-size, entertainment-type (receiving) electron tubes. This concept grew out of the need for a tube which would offer the following advantages: (1) be highly reliable and efficient, have high dissipation capability, be economical and of simple construction, and (2) utilize RCA's high-reliability glass-handling and processing techniques. A 9-pin basing arrangement for this family of tubes was considered by RCA to be the optimum basing arrangement from the standpoints of cost, reliability, circuit design capability, interelectrode leakage, and resistance to voltage breakdown.

The novar design--incorporating an all-glass envelope with an integral, nine-pin all-glass base--has been applied to a wide variety of tubes including TV vertical and horizontal-deflection tubes, damper tubes, low-voltage rectifier tubes, and audio output tubes.

This new family of tubes was first announced by RCA for commercial sale in November 1960. It now includes a comprehensive group of 34 types which many leading electronic equipment manufacturers have already designed into a wide variety of consumer entertainment-type equipment--color and black-and-white TV receivers, high-fidelity monophonic and stereophonic equipment, electronic organs, broadcast and communications radio receivers, etc.

RCA novar tubes offer equipment designers the following advantages:

- low cost--no need for a separate molded base.
- 9 pins--to provide great flexibility of circuit design, better dissipation capability, and reduced lead inductance.
- large pin-circle diameter--permits use of large glass envelopes (T9 and T12 types).  
--provides for firm retention of tube in socket.

- wide spacing between pins--minimizes interelectrode leakage, and minimizes the possibility of breakdown under high electrode voltage conditions, hence contributes to greater reliability.
- short, large-diameter internal leads--provide strong cage support; high thermal conductivity for very effective heat dissipation.
- RCA Dark Heater (in heater-cathode types)--for long and dependable performance.

Most of the original RCA novar types are now being made with the exhaust tip in the base. This feature provides for a reduction in the overall length of the tube. Programs have now been established to manufacture all the novar tubes with the exhaust tip in the base. All novar tubes with bottom exhaust tips are completely interchangeable with their novar prototypes having exhaust tips on the top of the bulb. The new novar tube with bottom exhaust is especially useful for compact new equipment designs where the smaller overall dimensions of the new tube are a primary design requirement.

All novar types except the filamentary-type 5BC3 full-wave vacuum rectifier utilize the RCA Dark Heater for long life and dependable performance. All novar types for TV damper service and for horizontal-deflection service feature the RCA Bonded Cathode. The Bonded Cathode is so designed that the emissive oxide coating permanently adheres to the cathode base sleeve even after extended service under high-voltage, high-temperature conditions. This feature contributes to the top performance and high reliability of novar tubes in equipment operating under severe conditions.

All novar types use the novar 9-contact socket which is commercially available. Information on these sockets and on the variations in casting materials, contact materials, and finishes available can be obtained from socket manufacturers.

## INDEX

	Page
HALF-WAVE VACUUM RECTIFIERS-- For TV Damper Service . . . . .	3
FULL-WAVE VACUUM RECTIFIER-- For Power Supplies having High DC Output. . . . .	3
BEAM POWER TUBES-- For TV Horizontal-Deflection Amplifier Service. . . . .	4
DUAL TRIODES-- For TV Vertical-Deflection Oscillator and Amplifier Service . . . . .	6
HIGH-MU TRIODE-BEAM POWER TUBES-- For TV Vertical-Deflection Oscillator and Amplifier Service. . . . .	6
POWER PENTODE-- For High-Fidelity Audio Applications . . . . .	6
DIMENSIONAL OUTLINES. . . . .	8
CURVES OF AVERAGE CHARACTERISTICS . . . . .	9-12
BASE DRAWINGS, JEDEC Nos. E9-88 and E9-89 (BOTTOM EXHAUST). . . . .	12

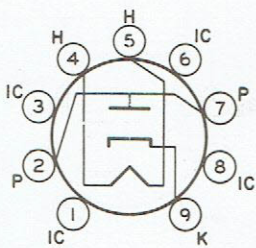
Type	Page	Type	Page	Type	Page
5BC3A	3	6JT6A	4	17BH3A	3
6AY3B	3	6KY8A	6	17BS3A	3
6BA3	3	10GF7A	6	17GJ5A	4
6BH3A	3	12AY3A	3	17GT5A	4
6BS3A	3	12BS3A	3	17JB6A	4
6DW4B	3	12GT5A	4	17JG6A	4
6GF7A	6	12JB6A	4	17JT6A	4
6GJ5A	4	12JT6A	4	22BH3A	3
6GT5A	4	13GF7A	6	22JG6A	4
6JB6A	4	15KY8A	6	22JU6	4
6JE6A	4	17AY3A	3	7868	6
6JG6A	4				

HALF-WAVE VACUUM RECTIFIERS -- For TV Damper Service

RCA Type	RCA DARK HEATER			MAXIMUM RATINGS-- DAMPER SERVICE <sup>a</sup> Design-Maximum Values					CHARACTERISTICS Instantaneous Value		Terminal Diagram (JEDEC No.)	Dimen- sional Outline (page 8)
	Volts	Amp	Warm- up Time Sec.	Peak Inverse Plate Volts <sup>b</sup>	Peak Plate ma.	DC Plate ma.	Plate Dissipa- tion Watts	Peak Heater- Cathode Volts - +		Tube Voltage Drop Volts		
6AY3B	6.3	1.2	-	5000	1100	175	6.5	5000 <sup>c</sup>	300 <sup>d</sup>	32 for plate ma. = 350	9HP <sup>e</sup>	1-2
12AY3A	12.6	0.6	11	<i>For series-string circuits. For other data, see type 6AY3B.</i>								
17AY3A	16.8	0.45	11	<i>For series-string circuits. For other data, see type 6AY3B.</i>								
6BA3	6.3	1.2	-	5000	1000	165	5.3	5000 <sup>c</sup>	300 <sup>d</sup>	32 for plate ma. = 250	9HP	2-1
6BH3A	6.3	1.6	-	5500	1100	180	6.5	5500 <sup>c</sup>	300 <sup>d</sup>	32 for plate ma. = 350	9HP <sup>e</sup>	1-2
17BH3A	17.0	0.6	11	<i>For series-string circuits. For other data, see type 6BH3A.</i>								
22BH3A	22.4	0.45	11	<i>For series-string circuits. For other data, see type 6BH3A.</i>								
6BS3A	6.3	1.2	-	5000	1100	200	6	5000 <sup>c</sup>	300 <sup>d</sup>	12 for plate ma. = 140	9HP <sup>e</sup>	1-2
12BS3A	12.6	0.6	11	<i>For series-string circuits. For other data, see type 6BS3A.</i>								
17BS3A	16.8	0.45	11	<i>For series-string circuits. For other data, see type 6BS3A.</i>								
6DW4B	6.3	1.2	-	5500	1300	250	8.5	5000 <sup>c</sup>	300 <sup>d</sup>	25 for plate ma. = 350	9HP <sup>e</sup>	1-2

FULL-WAVE VACUUM RECTIFIER -- For Power Supplies having High DC Output

RCA Type	FILAMENT		MAXIMUM RATINGS-- RECTIFIER SERVICE Design-Maximum Values			TYPICAL OPERATION as Full-Wave Rectifier		Terminal Diagram (JEDEC No.)	Dimen- sional Outline (page 8)
	Volts	Amp	Peak Inverse Plate Volts	Peak Plate Amp per Plate	Hot-Switching Transient Plate Amp per Plate	With Capacitor- Input Filter 40 $\mu$ f	With Choke- Input Filter 10 henries		
5BC3A	5.0 AC	3.0	1700	1	5	AC supply volts per plate (RMS) = 450 for load ma. = 275 and DC output volts at input to filter = 460 (Approx.).	AC supply volts per plate (RMS) = 550 for load ma. = 275 and DC output volts at input to filter = 440 (Approx.).	9QJ	3-3



JEDEC 9HP

- Pin 1 - Do Not Use
- Pin 2 - Plate
- Pin 3 - Do Not Use
- Pin 4 - Heater
- Pin 5 - Heater
- Pin 6 - Do Not Use
- Pin 7 - Plate
- Pin 8 - Do Not Use
- Pin 9 - Cathode

<sup>a</sup> For operation in a 525-line, 30-frame system, as described in "Standards of Good Engineering Practice Concerning Television Broadcast Stations," Federal Communications Commission.

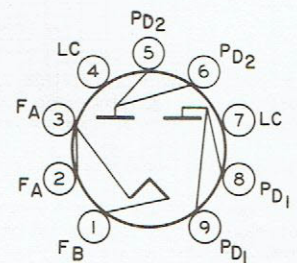
<sup>b</sup> This rating is applicable where the duration of the voltage pulse does not exceed 15 per cent of one horizontal scanning cycle. In a 525-line, 30-frame system, 15 per cent of one horizontal scanning cycle is 10 microseconds.

<sup>c</sup> The dc component must not exceed 900 volts.

<sup>d</sup> The dc component must not exceed 100 volts.

<sup>e</sup> Socket terminals 1, 3, 6, and 8 should not be used as tie points. It is recommended that the socket clips for these pins be removed to reduce the possibility of arc-over and to minimize leakage.

<sup>f</sup> Higher values of capacitance may be used, provided the effective plate supply impedance is increased to prevent exceeding the maximum peak plate current rating.



JEDEC 9QJ

- Pin 1 - Filament End B
- Pin 2 - Filament End A
- Pin 3 - Filament End A
- Pin 4 - See Note
- Pin 5 - Plate No.2
- Pin 6 - Plate No.2
- Pin 7 - See Note
- Pin 8 - Plate No.1
- Pin 9 - Plate No.1

**NOTE:** May be used as tie point for ac line providing the peak value of the ac voltage does not exceed 200 volts.

BEAM POWER TUBES -- For TV Horizontal-Deflection Amplifier Service

RCA Type	RCA DARK HEATER			MAXIMUM RATINGS -- HORIZONTAL-DEFLECTION AMPLIFIER <sup>a</sup> Design-Maximum Values												Maximum Grid-No.1- Circuit Resis- tance <sup>b</sup> Megohms
	Volts	Amp	Warm- up Time Sec.	DC Plate Supply Volts	Peak Posi- tive-Pulse Plate Volts <sup>c</sup>	Peak Nega- tive-Pulse Plate Volts	DC Grid- No.3 Volts	DC Grid- No.2 Volts	DC Grid- No.1 (Nega- tive-bias) Volts	Peak Nega- tive-Pulse Grid-No.1 Volts	Peak Cathode ma	Average Cathode ma	Grid- No.2 Input Watts	Plate Dissipa- tion <sup>d</sup> Watts	Bulb Tempera- ture <sup>h</sup> °C	
6GJ5A	6.3	1.2	—	770	6500	1500	—	220	55	330	550	175	3.5	17.5	240	1
17GJ5A	16.8	0.45	11	For series-string circuits. For other data, see type 6GJ5A.												
6GT5A	6.3	1.2	—	770	6500	1500	—	220	55	330	550	175	3.5	17.5	240	1
12GT5A	12.6	0.6	11	For series-string circuits. For other data, see type 6GT5A.												
17GT5A	16.8	0.45	11	For series-string circuits. For other data, see type 6GT5A.												
6JB6A	6.3	1.2	—	770	6500	1500	70 <sup>e</sup>	220	55	330	550	175	3.5	17.5	240	1
12JB6A	12.6	0.6	11	For series-string circuits. For other data, see type 6JB6A.												
17JB6A	16.8	0.45	11	For series-string circuits. For other data, see type 6JB6A.												
6JE6A	6.3	2.5	—	990	7000	1100	75 <sup>e</sup>	190	—	250	1100	315	3.2	24	240	0.47 <sup>f</sup>
6JG6A	6.3	1.6	—	770	6500	1500	75 <sup>e</sup>	220	55	330	950	275	3.5	17	220	2.2
17JG6A	16.8	0.6	11	For series-string circuits. For other data, see type 6JG6A.												
22JG6A	22.0	0.45	11	For series-string circuits. For other data, see type 6JG6A.												
6JT6A	6.3	1.2	—	770	6500	1500	70 <sup>e</sup>	220	55	330	550	175	3.5	17.5	240	1
12JT6A	12.6	0.6	11	For series-string circuits. For other data, see type 6JT6A.												
17JT6A	16.8	0.45	11	For series-string circuits. For other data, see type 6JT6A.												
22JU6	22.0	0.45	11	770	6500	1500	75 <sup>e</sup>	220	55	330	950	275	3.5	17	220	0.47 <sup>f</sup>

<sup>a</sup> For operation in a 525-line, 30-frame system, as described in "Standards of Good Engineering Practice Concerning Television Broadcast Stations," Federal Communications Commission.

<sup>b</sup> For grid-No.1-resistor-bias operation.

<sup>c</sup> This rating is applicable where the duration of the voltage pulse does not exceed 15 per cent of one horizontal scanning cycle. In a 525-line, 30-frame system, 15 per cent of one horizontal scanning cycle is 10 microseconds.

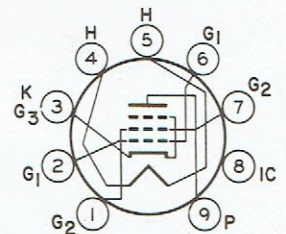
<sup>d</sup> An adequate bias resistor or other means is required to protect the tube in the absence of excitation.

<sup>e</sup> A positive voltage may be applied to grid No.3 to reduce interference from "snivets" which may occur in television receivers. A typical value for this voltage is 30 volts.

<sup>f</sup> 10 max. megohms for plate-pulsed operation (horizontal-deflection circuits only).

<sup>g</sup> This value can be measured by a method involving a recurrent wave form such that the maximum ratings of the tube will not be exceeded.

<sup>h</sup> At hottest point on bulb surface.

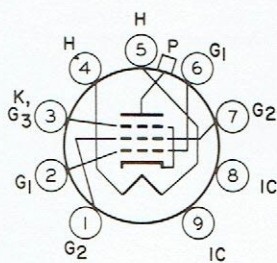


JEDEC 9NZ

- Pin 1 - Grid No.2
- Pin 2 - Grid No.1
- Pin 3 - Cathode,  
Grid No.3
- Pin 4 - Heater
- Pin 5 - Heater
- Pin 6 - Grid No.1
- Pin 7 - Grid No.2
- Pin 8 - Do Not Use
- Pin 9 - Plate

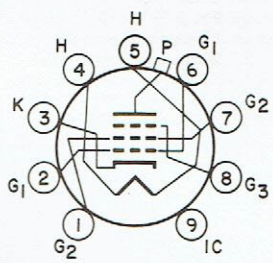


CHARACTERISTICS, CLASS A <sub>1</sub> AMPLIFIER									Terminal Diagram (JEDEC No.)	Dimensional Outline (page 8)	Curves of Average Characteristics	Remarks	Type
Plate Volts	Grid-No.3 Volts	Grid-No.2 Volts	Grid-No.1 Volts	Plate Resistance (Approx.) Ohms	Trans-conductance $\mu$ mhos	Plate ma.	Grid-No. 2 ma.	Cutoff Grid Volts for plate ma. = 1					
60 250	- -	150 150	0 -22.5	- 15000	- 7100	390 <sup>G</sup> 70	32 <sup>G</sup> 2.1	- -42	9QK	4-1	page 9	Double-ended type. For black-and-white TV.	6GJ5A 17GJ5A
60 250	- -	150 150	0 -22.5	- 15000	- 7100	390 <sup>G</sup> 70	32 <sup>G</sup> 2.1	- -42	9NZ	3-1	page 9	Single-ended type. For black-and-white TV.	6GT5A 12GT5A 17GT5A
60 250	0 0	150 150	0 -22.5	- 15000	- 7100	390 <sup>G</sup> 70	32 <sup>G</sup> 2.1	- -42	9QL	4-1	page 9	Double-ended type with separate base-pin connection to grid No.3. For black-and-white TV.	6JB6A 12JB6A 17JB6A
70 175	0 0	125 125	0 -25	- 5500	- 10500	580 <sup>G</sup> 115	40 <sup>G</sup> 5	- -55	9QL	5-1	page 10	Double-ended type with separate base-pin connection to grid No.3. For color TV.	6JE6A
50 130	0 0	125 125	0 -20	- 12000	- 10000	525 <sup>G</sup> 80	32 <sup>G</sup> 2.5	- -40	9QU	3-2	page 10	Single-ended type with separate base-pin connection to grid No.3. For low B+ black-and-white TV.	6JG6A 17JG6A 22JG6A
60 250	0 0	150 150	0 -22.5	- 15000	- 7100	390 <sup>G</sup> 70	32 <sup>G</sup> 2.1	- -42	9QU	3-1	page 11	Single-ended type with separate base-pin connection to grid No.3. For black-and-white TV.	6JT6A 12JT6A 17JT6A
50 130	0 0	125 125	0 -20	- 18000	- 7000	470 <sup>G</sup> 45	32 <sup>G</sup> 1.5	- -32	9QL	6-1	page 12	Double-ended type with separate base-pin connection to grid No.3. For low B+ black-and-white TV.	22JU6



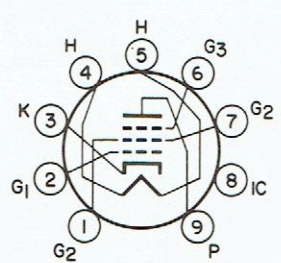
JEDEC 9QK

- Pin 1 - Grid No.2
- Pin 2 - Grid No.1
- Pin 3 - Cathode, Grid No.3
- Pin 4 - Heater
- Pin 5 - Heater
- Pin 6 - Grid No.1
- Pin 7 - Grid No.2
- Pin 8 - No Internal Connection
- Pin 9 - Do Not Use
- Cap - Plate



JEDEC 9QL

- Pin 1 - Grid No.2
- Pin 2 - Grid No.1
- Pin 3 - Cathode
- Pin 4 - Heater
- Pin 5 - Heater
- Pin 6 - Grid No.1
- Pin 7 - Grid No.2
- Pin 8 - Grid No.3
- Pin 9 - Do Not Use
- Cap - Plate



JEDEC 9QU

- Pin 1 - Grid No.2
- Pin 2 - Grid No.1
- Pin 3 - Cathode
- Pin 4 - Heater
- Pin 5 - Heater
- Pin 6 - Grid No.3
- Pin 7 - Grid No.2
- Pin 8 - Do Not Use
- Pin 9 - Plate

**DUAL TRIODES -- For Vertical-Deflection Oscillator and Amplifier Service**

RCA Type	RCA DARK HEATER			MAXIMUM RATINGS-- VERTICAL-DEFLECTION OSCILLATOR AND AMPLIFIER <sup>a</sup> Design-Maximum Values												Maximum Grid-Circuit Resistance	
	Volts	Amp	Warm-up Time Sec.	Oscillator (Unit No.1)					Amplifier (Unit No.2)					Each Unit			
				DC Plate Volts	Peak Negative-Pulse Grid Volts	Peak Cathode ma.	Average Cathode ma.	Plate Dissipation Watts	DC Plate Volts	Peak Positive-Pulse Plate Volts	Peak Negative-Pulse Grid Volts	Peak Cathode ma.	Average Cathode ma.	Plate Dissipation Watts	Peak Heater-Cathode Volts -	+	For Cathode- or Grid-Resistor-Bias Operation Megohms
6GF7A	6.3	0.985	-	330	400	77	22	1.5	330	1500 <sup>b</sup>	250	175	50	11	200	200 <sup>c</sup>	2.2
10GF7A	9.7	0.6	11	For series-string circuits. For other data, see type 6GF7A.													
13GF7A	13.0	0.45	11	For series-string circuits. For other data, see type 6GF7A.													

**HIGH-MU TRIODE--BEAM POWER TUBES -- For Vertical-Deflection Oscillator and Amplifier Service**

RCA Type	RCA DARK HEATER			MAXIMUM RATINGS-- VERTICAL-DEFLECTION OSCILLATOR AND AMPLIFIER <sup>a</sup> Design-Maximum Values												Maximum Grid-No. 1-Circuit Resistance	
	Volts	Amp	Warm-up Time Sec.	Oscillator (Triode Unit)					Amplifier (Beam Power Unit)					Each Unit			
				DC Plate Volts	Peak Negative-Pulse Grid Volts	Peak Cathode ma.	Average Cathode ma.	Plate Dissipation Watts	DC Plate Volts	Peak Positive-Pulse Plate Volts	DC Grid-No. 2 Volts	Peak Negative-Pulse Grid No.1 Volts	Peak Cathode ma.	Average Cathode ma.	Plate Dissipation Watts	Grid-No. 2 Input Watts	For Grid-No. 1-Resistor-Bias Operation Megohms
6KY8A	6.3	1.1	-	330	400	77	22	1.5	300	2000 <sup>b</sup>	150	250	200	70	12	1.9	2.2
15KY8A	15.0	0.45	11	For series-string circuits. For other data, see type 6KY8A.													

**POWER PENTODE -- For High-Fidelity Audio Applications**

RCA Type	RCA DARK HEATER		MAXIMUM RATINGS, Design-Maximum Values SINGLE-TUBE AF POWER AMPLIFIER -- Class A <sub>1</sub> & PUSH-PULL AF POWER AMPLIFIER -- Class AB <sub>1</sub>							Maximum Grid-No. 1-Circuit Resistance		
	Volts	Amp	Plate Volts	Grid-No. 2 Volts	Plate Dissipation Watts	Grid-No. 2 Input Watts	DC Cathode ma.	Peak Heater-Cathode Volts -	+	Bulb Temperature <sup>d</sup> °C	For Fixed-Bias Operation Megohm	For Cathode-Bias Operation Megohm
7868	6.3	0.8	550	440	19	3.3 <sup>e</sup>	90	200	200 <sup>c</sup>	240	0.3	1

<sup>a</sup> For operation in a 525-line, 30-frame system, as described in "Standards of Good Engineering Practice Concerning Television Broadcast Stations," Federal Communications Commission.

<sup>b</sup> Absolute value. This rating is applicable where the duration of the voltage pulse does not exceed 15 per cent of one vertical scanning cycle. In a 525-line, 30-frame system, 15 per cent of one vertical scanning cycle is 2.5 milliseconds.

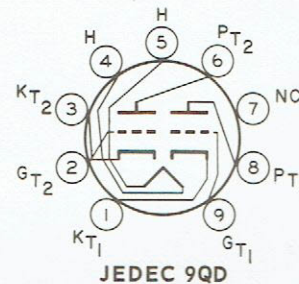
<sup>c</sup> The dc component must not exceed 100 volts.

<sup>d</sup> At hottest point on bulb surface.

<sup>e</sup> Grid-No.2 input may reach 6 watts during peak levels of speech and music signals.

<sup>f</sup> This value can be measured by a method involving a recurrent wave form such that the maximum ratings of the tube will not be exceeded.

<sup>g</sup> Plate to plate.



- Pin 1 - Cathode of Triode Unit No.1
- Pin 2 - Grid of Triode Unit No.2
- Pin 3 - Cathode of Triode Unit No.2
- Pin 4 - Heater
- Pin 5 - Heater
- Pin 6 - Plate of Triode Unit No.2
- Pin 7 - No Internal Connection
- Pin 8 - Plate of Triode Unit No.1
- Pin 9 - Grid of Triode Unit No.1

CHARACTERISTICS, CLASS A<sub>1</sub> AMPLIFIER

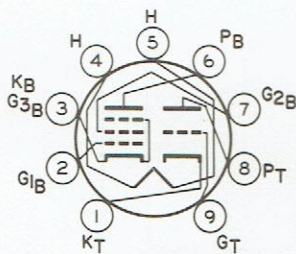
Unit No.1														Unit No.2				Terminal Diagram (JEDEC No.)	Dimensional Outline (page 8)	Curves of Avg. Characteristics (page 9)	Type
Plate Volts	Grid Volts	Amplification Factor	Plate Resistance (Approx.) Ohms	Trans-conductance $\mu$ mhos	Plate ma.	Cutoff Grid Volts for $\mu_a = 10$	Plate Volts	Grid Volts	Amplification Factor	Plate Resistance (Approx.) Ohms	Trans-conductance $\mu$ mhos	Plate ma.	Cutoff Grid Volts for $\mu_a = 100$								
250	-3	64	40000	1600	1.4	-5.5	150	-20	5.4	750	7200	50	-45	9QD	1-1	page 9	6GF7A 10GF7A 13GF7A				

CHARACTERISTICS, CLASS A<sub>1</sub> AMPLIFIER

Triode Unit							Beam Power Unit							Terminal Diagram (JEDEC No.)	Dimensional Outline (page 8)	Curves of Avg. Characteristics (page 11)	Type
Plate Volts	Grid Volts	Amplification Factor	Plate Resistance (Approx.) Ohms	Trans-conductance $\mu$ mhos	Plate ma.	Grid-No. 2 Volts	Grid-No. 1 Volts	Plate Resistance (Approx.) Ohms	Trans-conductance $\mu$ mhos	Plate ma.	Grid-No. 2 Volts	Cutoff Grid Volts for $\mu_a = 1$					
250	-3	64	40000	1600	1.4	50 135	120 120	0 -10	18000	8400	170 <sup>f</sup> 39	20 <sup>f</sup> 3	-24	9QT	1-1	page 11	6KY8A 15KY8A

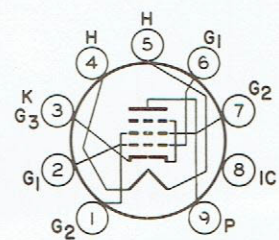
TYPICAL OPERATION -- PUSH-PULL AF POWER AMPLIFIER -- CLASS AB<sub>1</sub>  
(Values are for two tubes)

Plate Volts	Grid-No. 2 Volts	Grid-No. 1 Volts	Peak AF Grid-No.1 to-Grid-No.1 Volts	Zero-Signal Plate ma.	Max.-Signal Plate ma.	Zero-Signal Grid-No.2 ma.	Max.-Signal Grid-No.2 ma.	Effective Load Resistance <sup>9</sup> Ohms	Total Harmonic Distortion %	Max.-Signal Power Output Watts	Terminal Diagram (JEDEC No.)	Dimensional Outline (page 8)	Curves of Average Characteristics (page 12)	Type
350 450	350 400	-15.5 -21	31 42	72 40	130 145	9.5 5	32 30	6600 6600	2.5 5	30 44	9NZ	2-2	page 12	7868



JEDEC 9QT

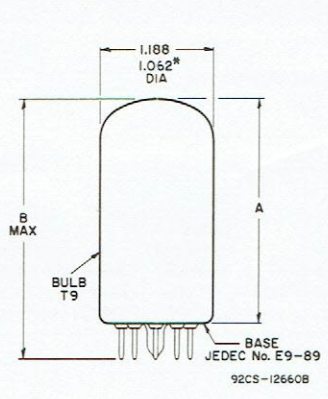
- Pin 1 - Triode Cathode
- Pin 2 - Beam Power Grid No.1
- Pin 3 - Beam Power Cathode & Grid No.3
- Pin 4 - Heater
- Pin 5 - Heater
- Pin 6 - Beam Power Plate
- Pin 7 - Beam Power Grid No.2
- Pin 8 - Triode Plate
- Pin 9 - Triode Grid



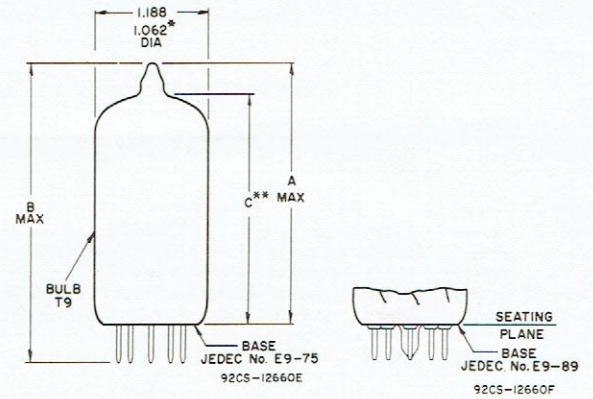
JEDEC 9NZ

- Pin 1 - Grid No.2
- Pin 2 - Grid No.1
- Pin 3 - Cathode, Grid No.3
- Pin 4 - Heater
- Pin 5 - Heater
- Pin 6 - Grid No.1
- Pin 7 - Grid No.2
- Pin 8 - Do Not Use
- Pin 9 - Plate

**DIMENSIONAL OUTLINES**  
Dimensions in Inches

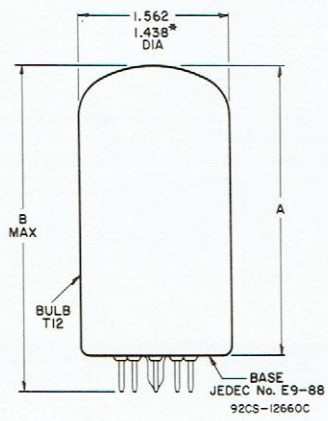


Outline	A	B	JEDEC No.
1-1	1.750 to 2.000	2.380	9-107
1-2	2.375 to 2.625	3.005	-

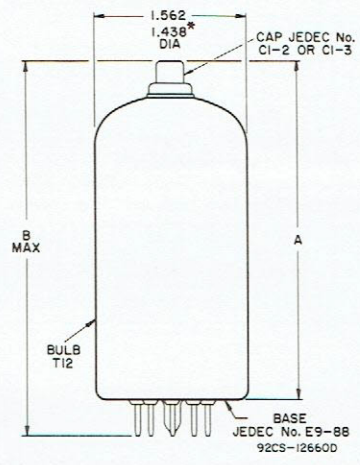


*Bottom-exhaust type has the same A & B dimensions as top-exhaust type shown*

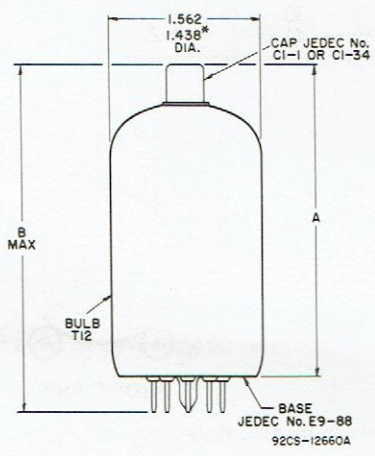
Outline	A	B	C	JEDEC No.
2-1	2.700	3.080	2.050 to 2.230	-
2-2	2.730	3.110	2.405 to 2.585	-



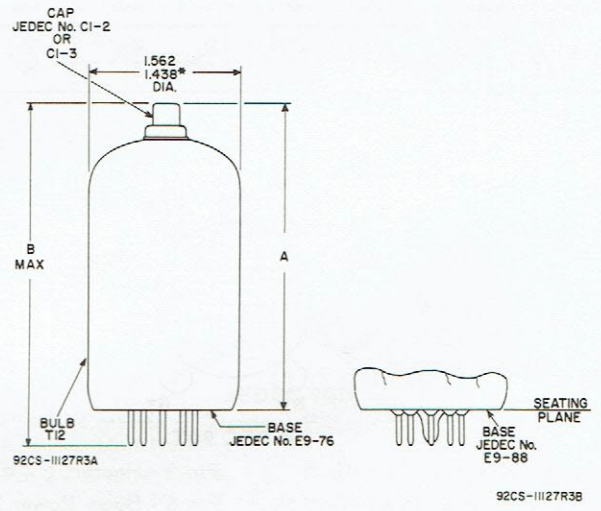
Outline	A	B	JEDEC No.
3-1	2.250 to 2.500	2.880	12-95
3-2	2.500 to 2.750	3.130	12-96
3-3	3.250 to 3.500	3.880	12-99



Outline	A	B	JEDEC No.
4-1	2.875 to 3.125	3.505	-



Outline	A	B	JEDEC No.
5-1	3.500 to 3.750	4.130	12-116



Outline	A	B	JEDEC No.
6-1	2.910 to 3.170	3.550	12-70 for E9-76 base

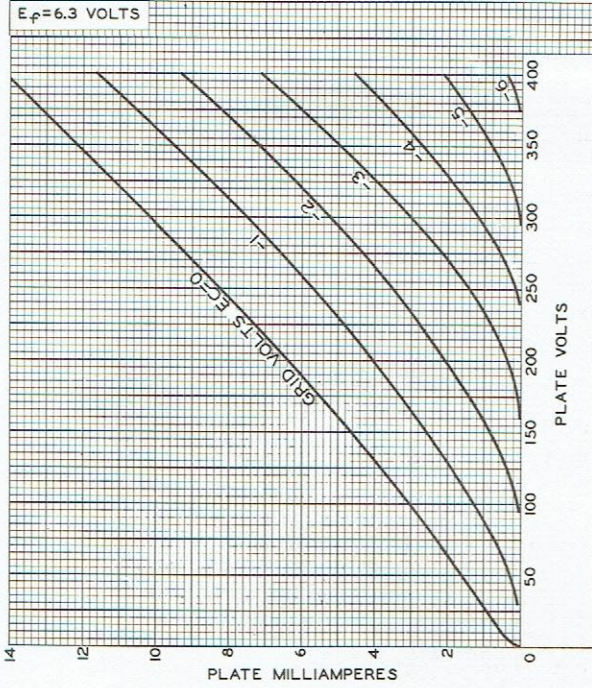
\* Applies to the minimum diameter except in the area of the seal.  
\*\* Measured from the base seat to bulb-top line as determined by a ring gauge of 0.600" I.D.



AVERAGE CHARACTERISTICS

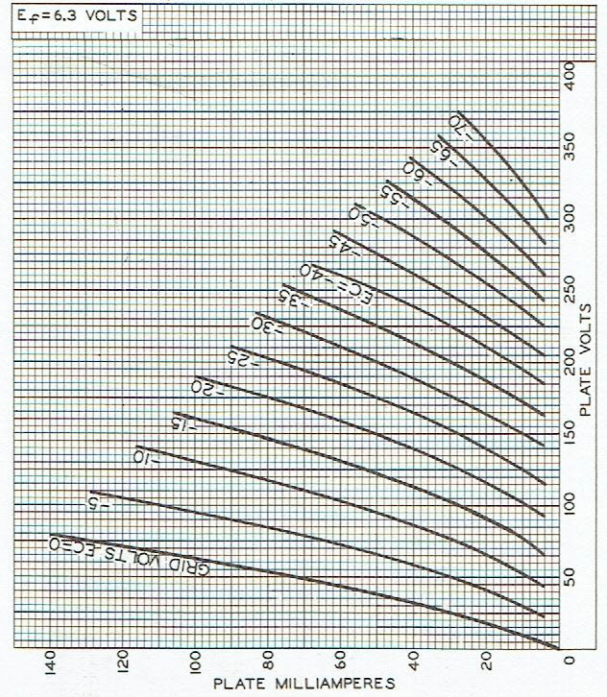
Except for differences in heater voltage, the curves shown apply to the types listed above each curve.

6GF7A, 10GF7A, 13GF7A - Unit No.1



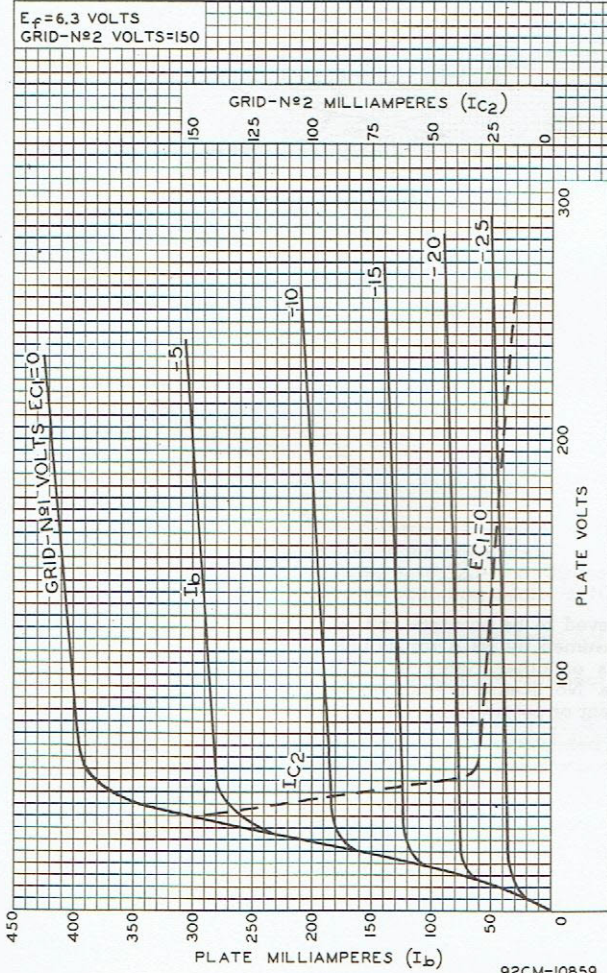
92CM-9912

6GF7A, 10GF7A, 13GF7A - Unit No.2



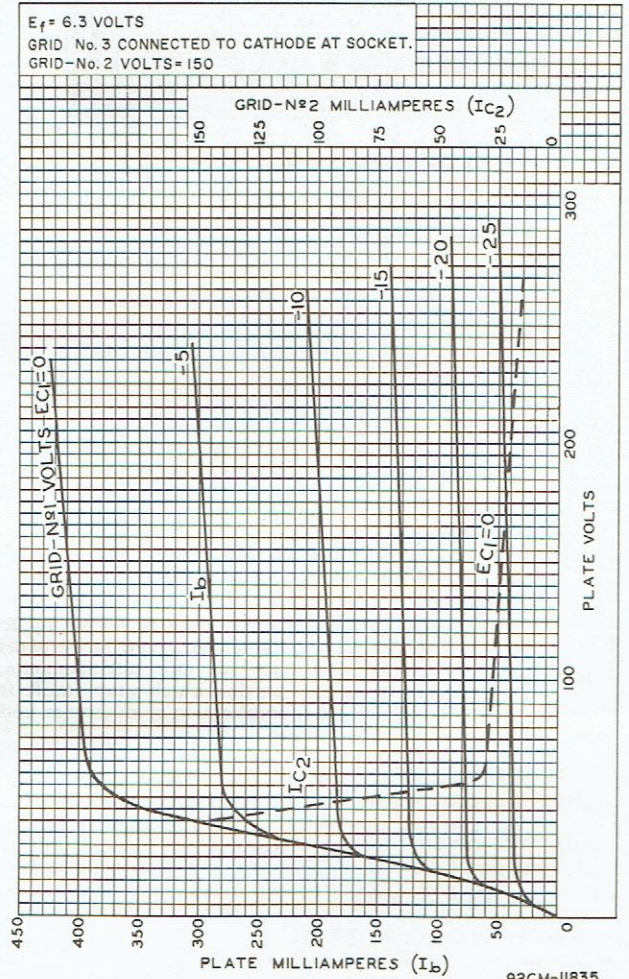
92CM-10466

6GJ5A, 17GJ5A, 6GT5A, 12GT5A, 17GT5A



92CM-10859

6JB6A, 12JB6A, 17JB6A

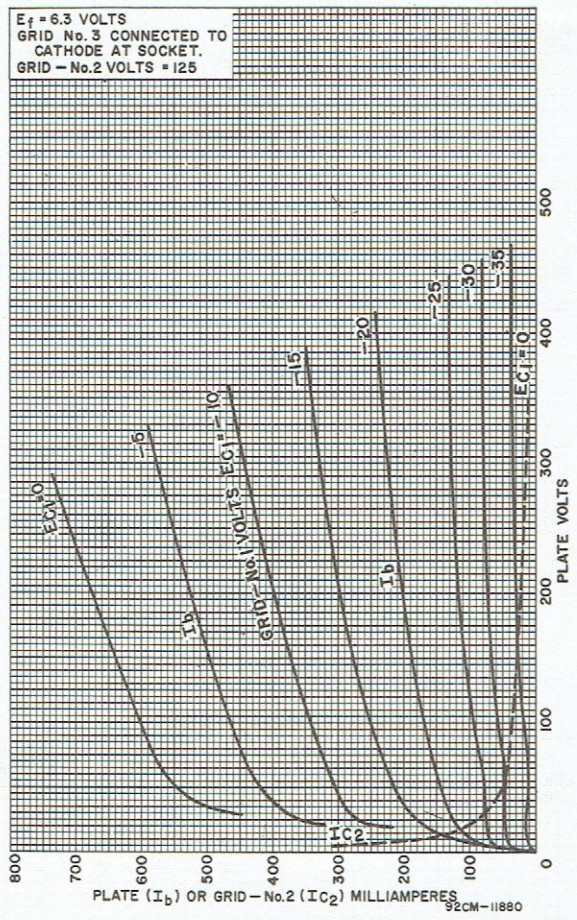


92CM-11835

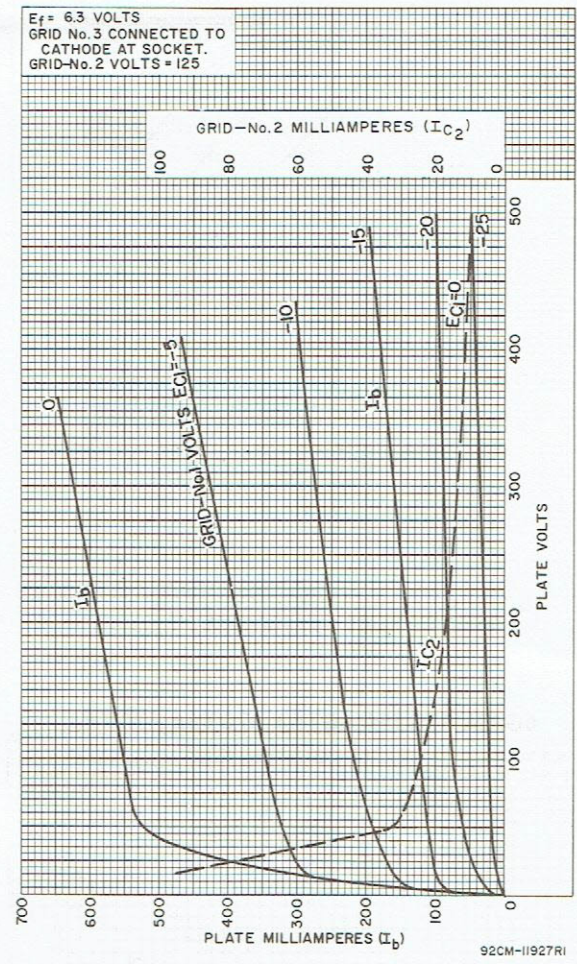
### AVERAGE CHARACTERISTICS

Except for differences in heater voltage, the curves shown apply to the types listed above each curve.

6JE6A



6JG6A, 17JG6A, 22JG6A

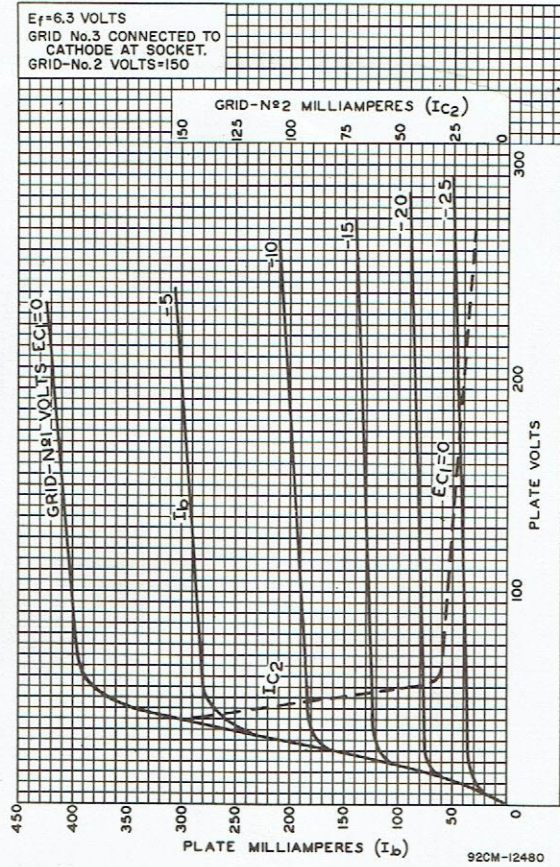


Information furnished by RCA is believed to be accurate and reliable. However, no responsibility is assumed by RCA for its use; nor for any infringements of patents or other rights of third parties which may result from its use. No license is granted by implication or otherwise under any patent or patent rights of RCA.

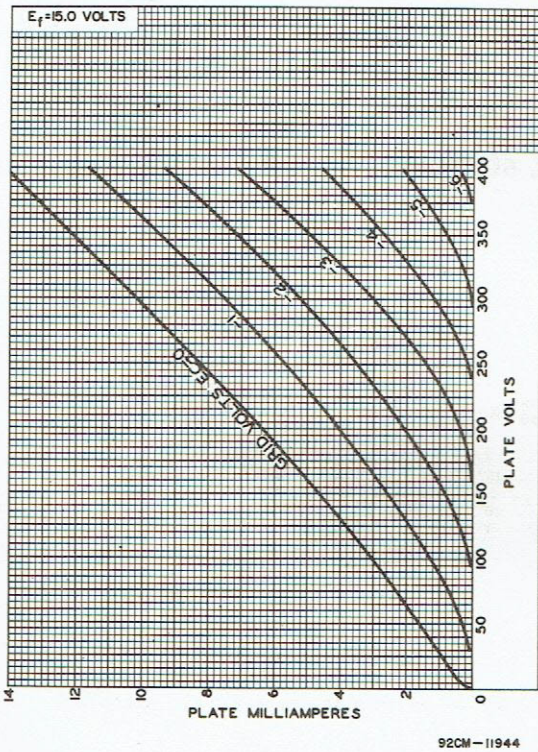
**AVERAGE CHARACTERISTICS**

Except for differences in heater voltage, the curves shown apply to the types listed above each curve.

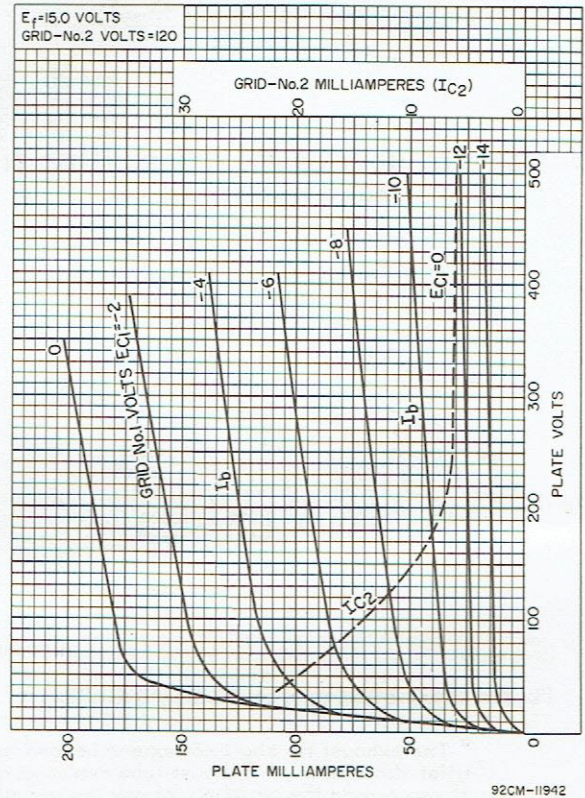
**6JT6A, 12JT6A, 17JT6A**



**6KY8A, 15KY8A - TRIODE UNIT**



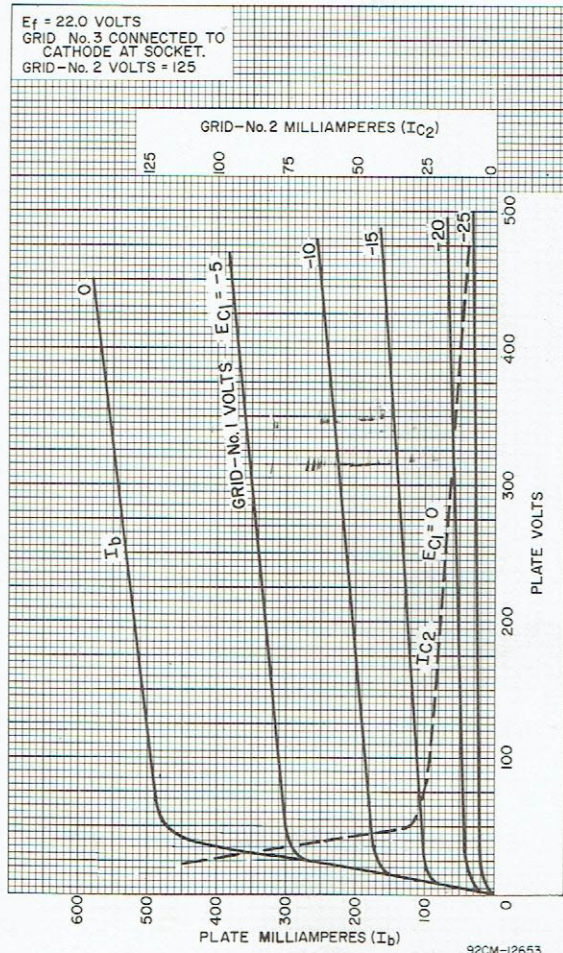
**6KY8A, 15KY8A - BEAM POWER UNIT**



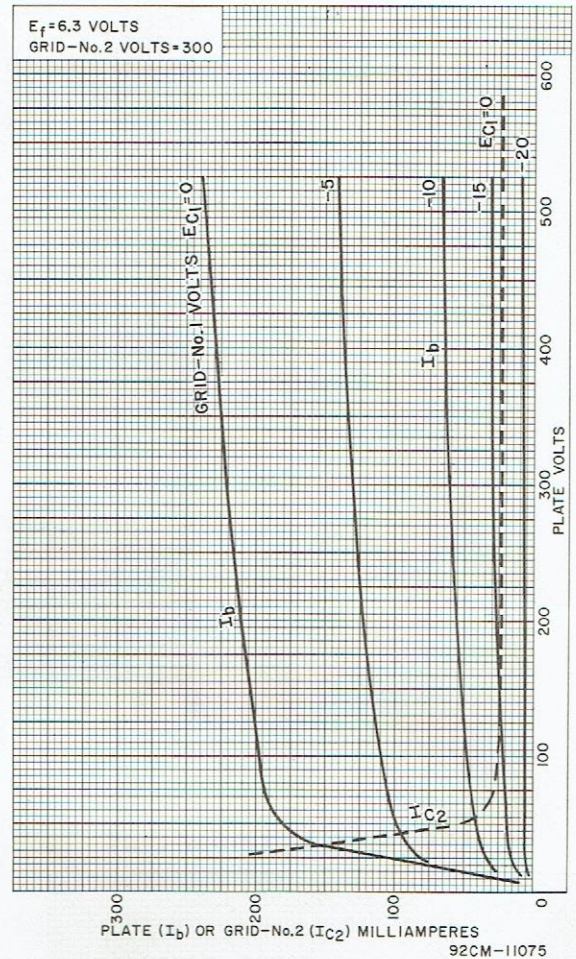
# RCA NOVAR TUBES

## AVERAGE CHARACTERISTICS

22JU6

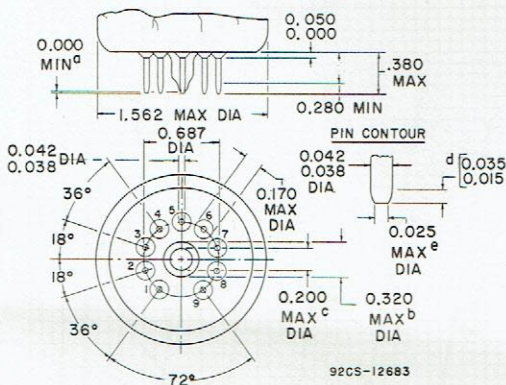


7868

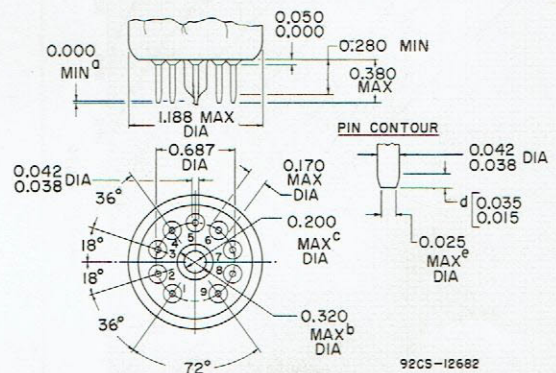


## BASES

LARGE-BUTTON NOVAR 9-PIN WITH EXHAUST TIP  
JEDEC No. E9-88



SMALL-BUTTON NOVAR 9-PIN WITH EXHAUST TIP  
JEDEC No. E9-89



Dimensions in Inches

For pin alignment use gauge JEDEC No. GE9-6.

For pin alignment use gauge JEDEC No. GE9-5.

<sup>a</sup> The exhaust tip shall not extend beyond the plane of the base pin ends. <sup>b</sup> Limit of exhaust tube fillet diameter. <sup>c</sup> Exhaust tube maximum diameter. <sup>d</sup> This dimension may vary within the limits shown around the periphery of any individual pin. This surface of the pin shall be convex or conical in shape and shall not be brought to a sharp point. <sup>e</sup> The surface shall be flat.