8501

Beam Power Tube

CERMOLOX® **THORIATED-TUNGSTEN MESH FILAMENT**
INTEGRAL LOUVERED-FIN RADIATOR **FORCED-AIR COOLED**

5500 WATTS UHF TV OUTPUT AT 890 Mc
5500 WATTS CW OUTPUT AT 900 Mc

Also Useful in Applications Intended for UHF TV Service in Stationary and Portable Equipment, such as AF Power Amplifiers or Modulators, Plate-Modulated RF Power Amplifiers in Class-C Telephony Service, AM or Single-Sideband Linear RF Power Amplifiers, Hard-Tube Modulators, Pulsed-RF Amplifiers, Requlators, or other Special Services

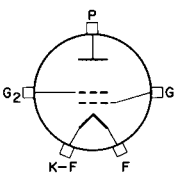
Electrical:

Filamentary Cathode, Thoriated Tungsten Mesh Type:[c]		
Voltage (AC or DC)	4.5 typ. / 5.0 max.	volts
Current:		
At 4.5 volts	125 typ.	amp
For starting, even momentarily	300 max.	amp
Cold resistance	0.005	ohm
Minimum heating time	15	sec
Mu-Factor, Grid No.2 to Grid No.1 for plate volts = 1200, grid-No.2 volts = 900, and plate amperes = 8	16	
Direct Interelectrode Capacitances:		
Grid No.1 to plate[a]	0.32 max.	pf
Grid No.1 to filament	65	pf
Plate to filament[a,b]	0.040 max.	pf
Grid No.1 to grid No.2	70	pf
Grid No.2 to plate	13	pf
Grid No.2 to filament[b]	2.0 max.	pf

Mechanical:

Operating Position	Vertical, either end up
Maximum Overall Length	5.65"
Maximum Diameter (See *Dimensional Outline*)	6.17"
Weight (Approx.)	.10 lbs
Radiator	Integral part of tube
Terminal Connections (See *Dimensional Outline*):	

G_1 – Grid-No.1–Terminal Contact Surface
G_2 – Grid-No.2–Terminal Contact Surface
F – Filament–Terminal Contact Surface
K-F – Cathode–Filament Terminal Contact Surface
P – Plate–Terminal Contact Surface



Thermal:

Terminal Temperature (Plate, grid No.2, grid No.1, cathode-filament and filament)	250 max.	°C
Plate-Core Temperature	250 max.	°C

Air Flow:[d]

Through radiator — Adequate air flow to limit the plate-core temperature to 250° C should be delivered by a blower through the radiator before and during the application of filament, plate, grid-No.2, and grid-No.1 voltages.

To Plate, Grid-No.2, Grid-No.1, Cathode-Filament, and Filament Terminals — A sufficient quantity of air should be allowed to flow past each of these terminals so that their temperature does not exceed the specified maximum value of 250° C.

During Standby Operation — Cooling air is required when only filament voltage is applied to the tube.

During Shutdown Operation — Air flow should continue for a few minutes after all electrode power is removed.

RF POWER AMPLIFIER — Class B Television Service[c]

Synchronizing-level conditions per tube unless otherwise specified

Maximum CCS Ratings, *Absolute-Maximum Values:*

DC Plate Voltage	7000	volts
DC Grid-No.2 Voltage	1500	volts
DC Plate Current	4	amp
Plate Dissipation	10000	watts
Grid-No.2 Input	150	watts
Grid-No.1 Input	100	watts

Typical CCS Operation:

In a cathode-drive circuit at 890 Mc and bandwidth of 8.5 Mc

DC Plate Voltage	5700	volts
DC Grid-No.2 Voltage	1000	volts
DC Grid-No.1 Voltage	-40	volts
DC Plate Current:		
Synchronizing level	2.9	amp
Pedestal level	2.2	amp
DC Grid-No.2 Current:		
Synchronizing level	0.015	amp
Pedestal level	0.011	amp
DC Grid-No.1 Current:		
Synchronizing level	0.375	amp
Pedestal level	0.275	amp
Driver Power Output:		
Synchronizing level	600	watts
Pedestal level	335	watts
Output Circuit Efficiency	80	%

Useful Power Output:		
Synchronizing level	5500	watts
Pedestal level	3100	watts

RF POWER AMPLIFIER & OSCILLATOR — Class C Telegraphy[e]
and
RF POWER AMPLIFIER — Class C FM Telephony[e]

Maximum CCS Ratings, *Absolute-Maximum Values:*

DC Plate Voltage	7000	volts
DC Grid-No.2 Voltage	1500	volts
DC Grid-No.1 Voltage	-100	volts
DC Plate Current	3	amp
DC Grid-No.1 Current	0.65	amp
Grid-No.1 Input[f]	100	watts
Grid-No.2 Input[g]	150	watts
Plate Dissipation	10000	watts

Maximum Circuit Values:

Grid-No.1-Circuit Resistance	5000	ohms
Grid-No.2-Circuit Impedance	See Note	g
Plate-Circuit Impedance	See Note	h

Typical CCS Operation:

In Cathode-Drive Circuit at 900 Mc

DC Plate Voltage	5700	volts
DC Grid-No.2 Voltage	1000	volts
DC Grid-No.1 Voltage	-85	volts
DC Plate Current	2.7	amp
DC Grid-No.2 Current	0.025	amp
DC Grid-No.1 Current	0.200	amp
Driver Power Output	900	watts
Output-Circuit Efficiency	72	%
Useful Power Output	5500	watts

[a] With external flat metal shield 8" in diameter having a center hole 3" in diameter. Shield is located in plane of the grid-No.2 terminal, perpendicular to the tube axis, and is connected to grid No.2.

[b] With external flat metal shield 8" in diameter having a center hole 2-3/8" in diameter. Shield is located in plate of the grid-No.1 terminal, perpendicular to the tube axis, and is connected to grid No.1.

The following footnotes apply to the *RCA Transmitting Tube Operating Considerations* given at front of this section.

[c] See *Electrical Considerations* — Filament or Heater.

[d] See *Cooling Considerations* — Forced-Air Cooling.

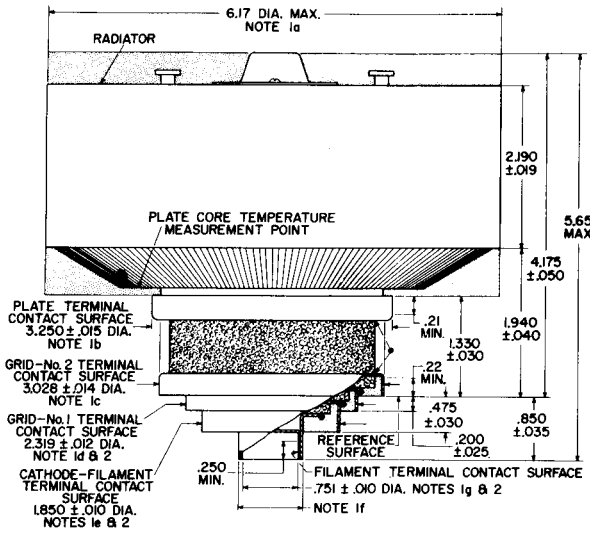
[e] See *Classes of Service.*

[f] See *Electrical Considerations* — Grid-No.1 Voltage Supply.

[g] See *Electrical Considerations* — Grid-No.2 Voltage Supply.

[h] See *Electrical Considerations* — Plate Voltage Supply.

DIMENSIONAL OUTLINE



DIMENSIONS IN INCHES

Note 1: Concentricity between the various diameters is such that the tube will enter a gauge having suitably spaced concentric apertures and posts of the following diameters:

a. Radiator - 6.240
b. Plate Terminal - 3.288
c. Grid-No.2 Terminal - 3.061
d. Grid-No.1 Terminal - 2.338
e. Cathode-Filament Terminal - 1.878
f. Filament Terminal (OD) - 0.908
g. Filament Terminal (ID) - 0.722

Note 2: The diameter of the terminal is held to the indicated value only over the contact surface length. The contact surface length of the filament, cathode-filament, and grid-No.1 terminals extends from the edge of its terminal to the plane coincident with the edge of the adjacent larger terminal.

Note 3: Keep all stippled regions clear. Do not allow contacts or circuit components to protrude into these annular regions.

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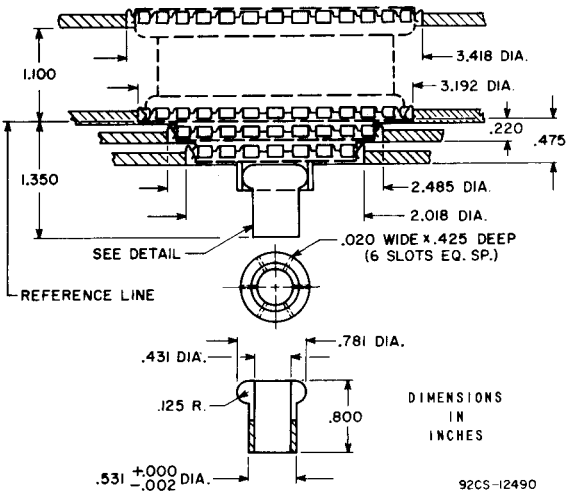
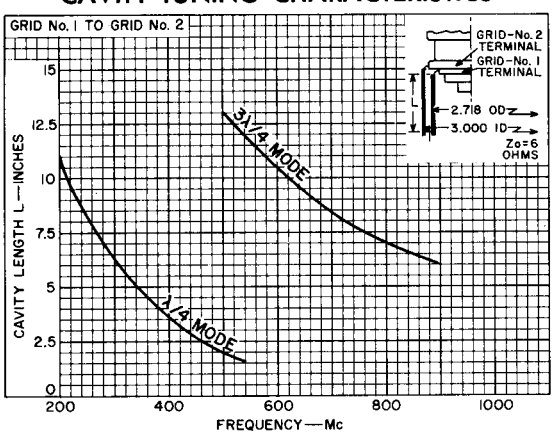
PREFERRED MOUNTING ARRANGEMENT



Note: All finger stock No.97-380, made by Instrument Specialties Co., Little Falls, N.J.

CAVITY TUNING CHARACTERISTICS



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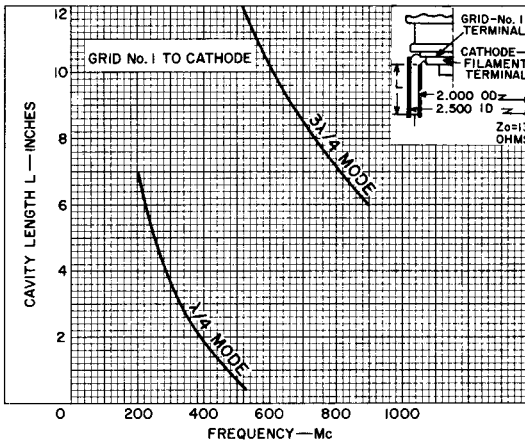

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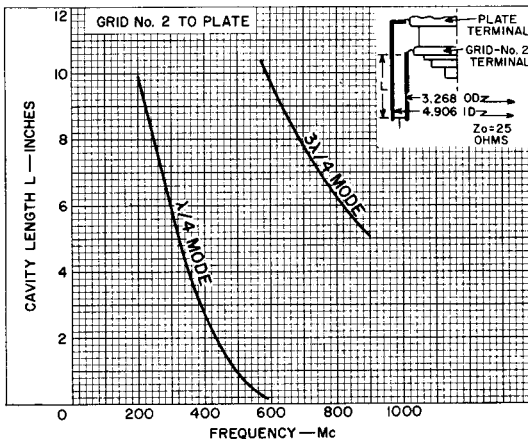

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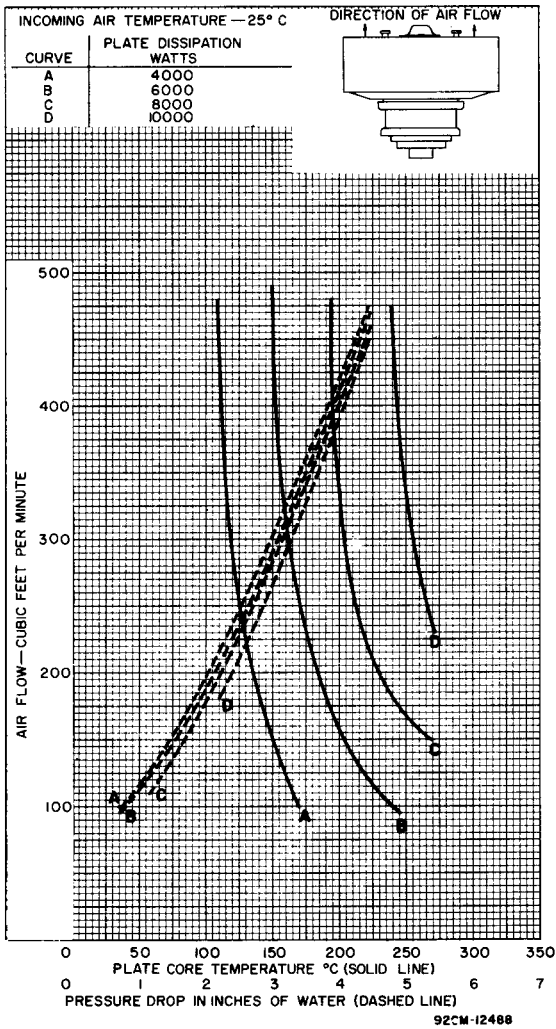
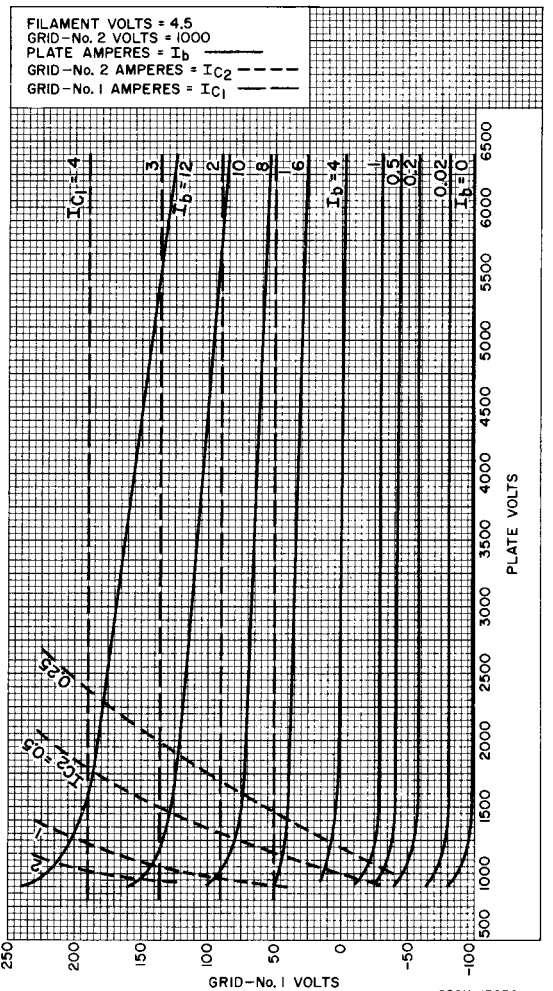
TYPICAL COOLING CHARACTERISTICS



TYPICAL CONSTANT-CURRENT CHARACTERISTICS



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