4632

Beam Power Tube

CERMOLOX **FORCED-AIR COOLED**
MATRIX-TYPE CATHODE **HIGH GAIN-BANDWIDTH PRODUCTS**

2300 Watts CW Output at 890 MHz Useful to 900 MHz

For Use as an RF Power Amplifier and Oscillator in Class B or Class C Telegraphy or Class C FM Telephony Service

ELECTRICAL

Heater, for Matrix-Type Oxide-Coated Unipotential Cathode		
Voltage[a] (AC or DC)	5.5 typical	V
Current:		
Typical value at 5.5 volts	31	A
Minimum heating time	3	minutes
Mu-Factor, Grid No.2 to Grid No.1	14	
For plate volts = 5000 grid-No.2 volts = 900 and plate amperes = 1.0		
Direct Interelectrode Capacitances		
Grid No.1 to plate[b]	15 max	pF
Grid No.1 to heater	60	pF
Plate to heater[b,c]	0.024 max	pF
Grid No.1 to grid No.2	60	pF
Grid No.2 to plate	12	pF
Grid No.2 to heater[c]	1.2 max	pF

MECHANICAL

Operating Position	Any
Maximum Overall Length	4.7 in
Maximum Diameter	4.57 in
Terminal Connections	See *Dimensional Outline*
Radiator	Integral part of tube
Weight (Approx.)	6 lb

THERMAL

Terminal Temperature	250 max	°C
Plate, grid No.2, grid No.1, cathode-heater and heater		
Plate-Core Temperature	250 max	°C
See *Dimensional Outline* for temperature-measurement points		

Forced-Air Cooling[e]

Air Flow

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 heater, plate, grid-No.2, and grid-No.1 voltages.

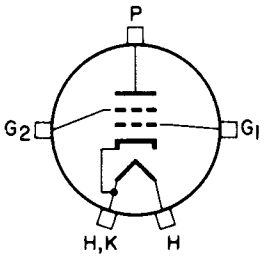
To Plate, Grid-No.2, Grid-No.1, Heater-Cathode and Heater Terminals - A sufficient quantity of air should be allowed to flow past each of these terminals so that their temperature does not exceed the specified maximum value of 250°C.

During Standby Operation - Cooling air is required when only heater voltage is applied to the tube.

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

TERMINAL DIAGRAM (Bottom View)

G_1 - Grid-No.1-Terminal Contact Surface
G_2 - Grid-No.2-Terminal Contact Surface
F - Filament-Terminal Contact Surface
H,F - Heater-Filament-Terminal Contact Surface
P - Plate-Terminal Contact Surface



RF POWER AMPLIFIER & OSCILLATOR - Class C Telegraphy[f]
and
RF POWER AMPLIFIER - Class C FM Telephony[f]

Maximum CCS Ratings, Absolute-Maximum Values

DC Plate Voltage[g]	7000 max	V
DC Grid-No.2 Voltage[h]	1500 max	V
DC Grid-No.1 Voltage	-250 max	V
DC Plate Current	3 max	A
DC Grid-No.1 Current	0.5 max	A
Grid-No.1 Input[j]	50 max	W
Grid-No.2 Input[h]	75 max	W
Plate Dissipation	5000 max	Ω

Maximum Circuit Values

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

Typical CCS Operation

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

DC Plate Voltage	3700	V
DC Grid-No.2 Voltage	800	V
DC Grid-No.1 Voltage	-55	V
DC Plate Current	2.0	A
DC Grid-No.2 Current	-0.02	A
DC Grid-No.1 Current	0	A
Driver Power Output[d]	200	W
Output-Circuit Efficiency (Approx.)	80	%
Useful Power Output	2300	W

[a] Measured at tube terminals. The cathode may be subjected to RF heating as the frequency of operation is increased. It is recommended that the heater voltage be operated at the lowest voltage that will give stable performance.

[b] With external flat metal shield 8 inches in diameter having a center hole 3 inches 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.

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

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[d] Driver power output includes circuit losses and is the actual power measured at input to grid-No.1 circuit. The actual power required depends on the operating frequency and the circuit used.

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

[e] See *Cooling Considerations-Forced-Air Cooling.*

[f] See *Classes of Service.*

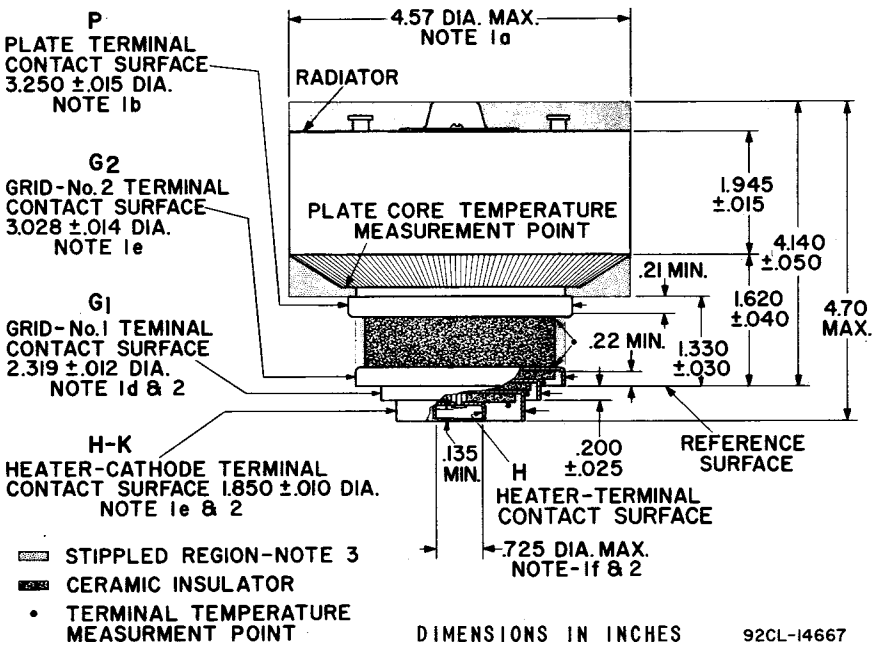
[g] See *Electrical Considerations* - Plate Voltage Supply. A series impedance of 100 ohms is required in the plate lead to limit momentary fault currents.

[h] See *Electrical Considerations* - Grid-No.2 Voltage Supply. A spark gap must be used to prevent the build-up of excessive grid-No.2 voltage transients and a minimum series impedance of 100 ohms must be used in the grid-No.2 lead to limit momentary fault currents. A bleeder current of at least 1/10 the required plate current is also required.

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

[k] Driver power output includes circuit losses and is the actual power measured at input to grid-No.1 circuit. The actual power required depends on the operating frequency and the circuit used.

DIMENSIONAL OUTLINE



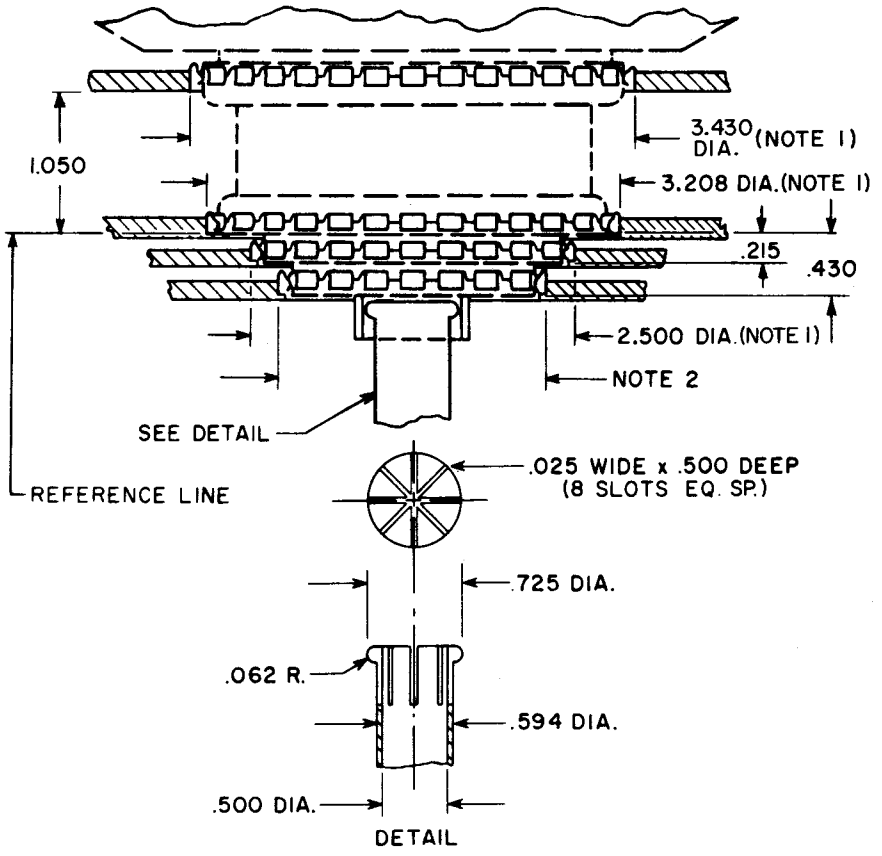
Note 1: Concentricity between the various diameters is such that the tube will enter a gauge having suitably spaced concentric apertures and posts of the following diameters:

a. Radiator - 4.67
b. Plate Terminal - 3.288
c. Grid-No.2 Terminal - 3.061
d. Grid-No.1 Terminal - 2.338
e. Heater-Cathode Terminal - 1.878
f. Heater-Terminal (ID) - 0.6950

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 Heater-Cathode 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.

PREFERRED MOUNTING ARRANGEMENT



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DIMENSIONS IN INCHES

Note 1: Finger Stock is No.97-360 made by Instrument Specialties Co., Little Falls, N.J.

Note 2: Cathode Ring Dia. is 2.030 inches when using No.97-360 Finger Stock or 2.080 inches when using No.97-135 Finger Stock. Made by Instrument Specialties Co., Little Falls, N.J.

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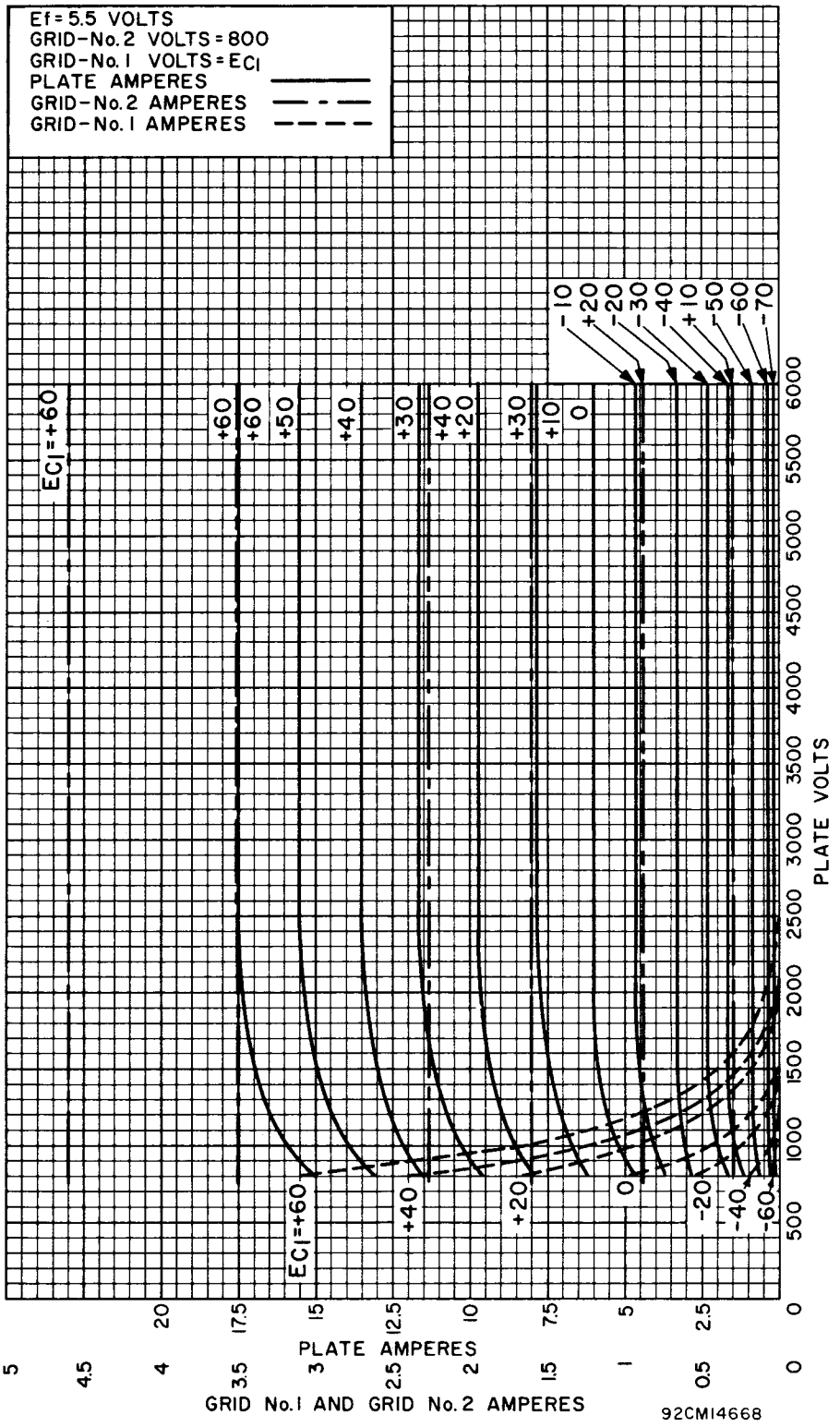
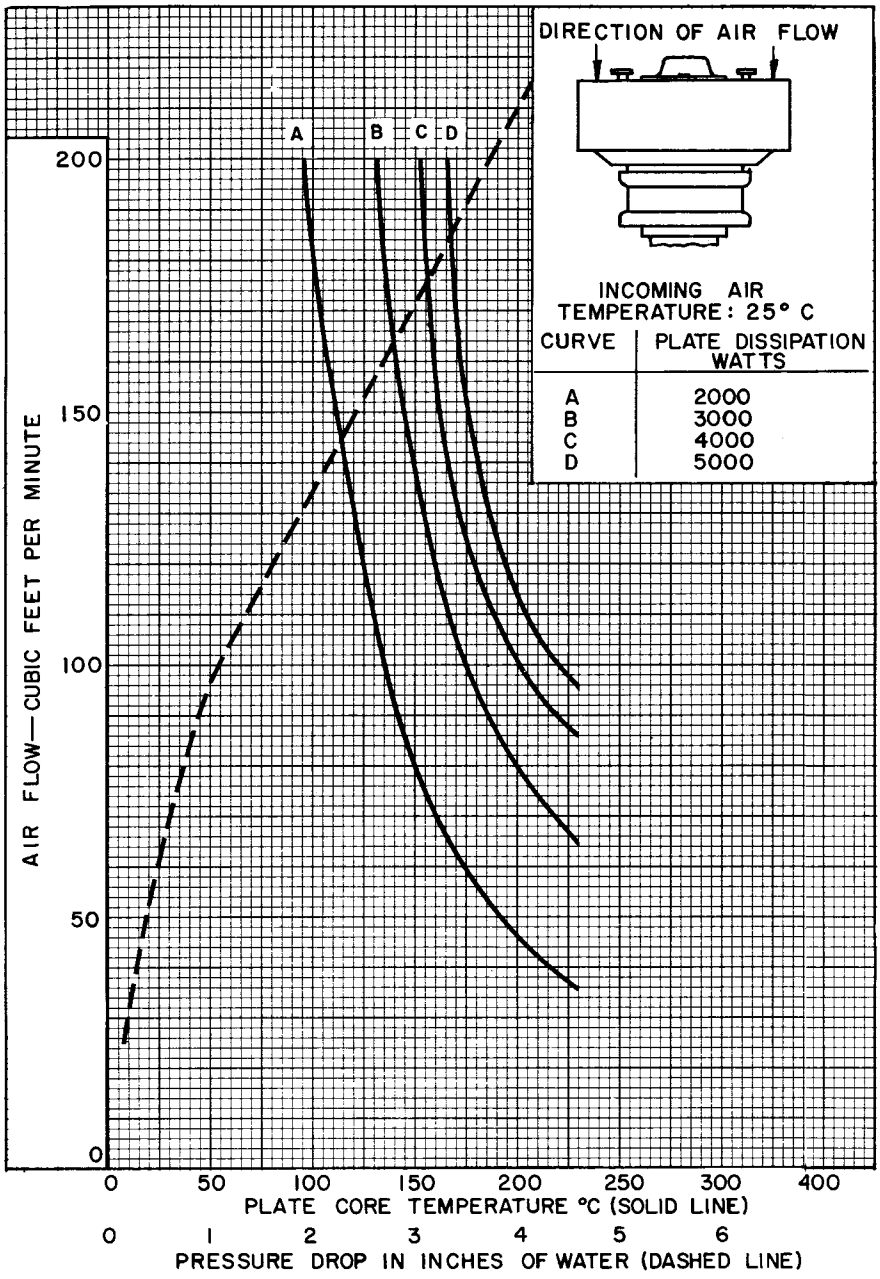
Typical Characteristics



Typical Cooling Characteristics



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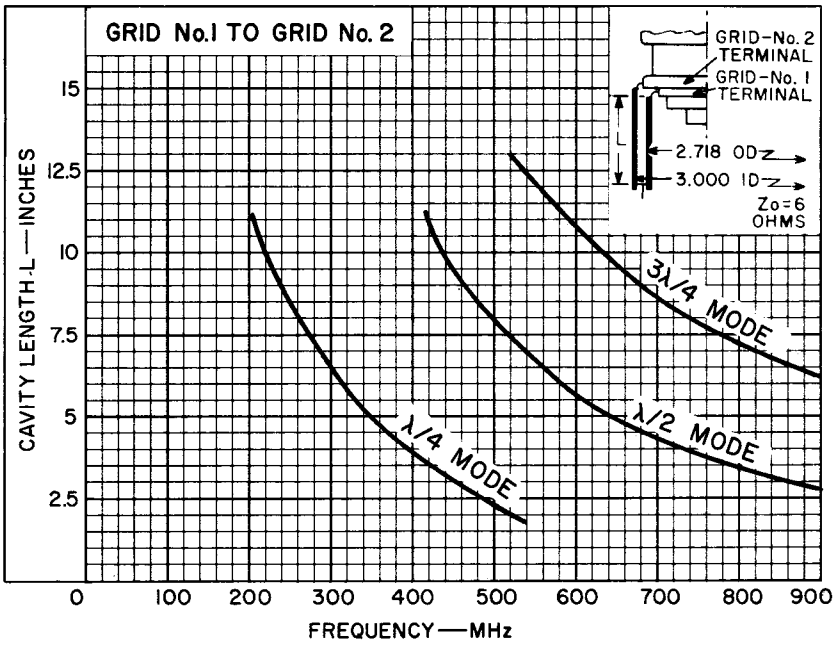
Cavity Tuning Characteristics



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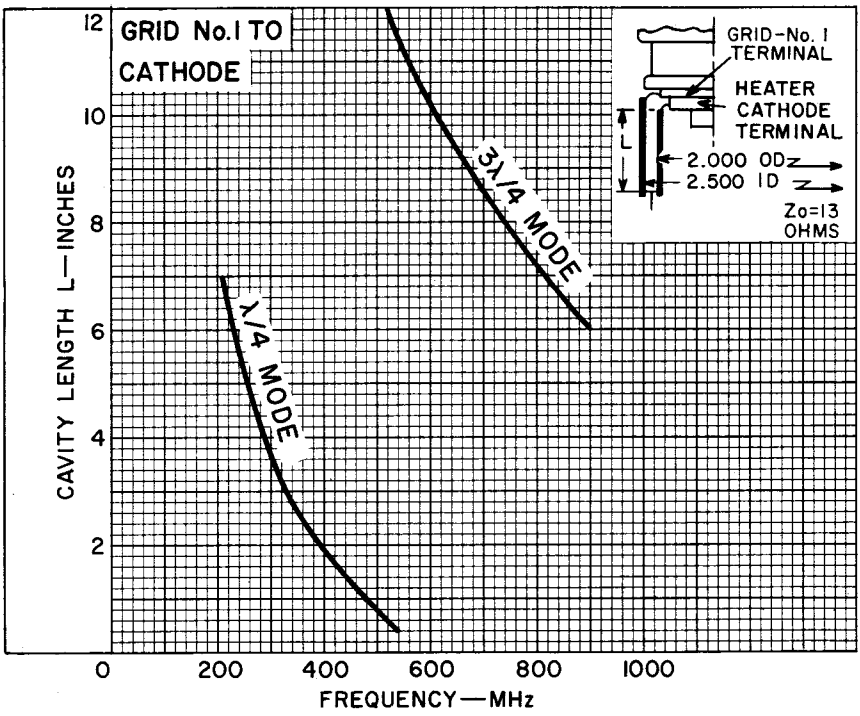

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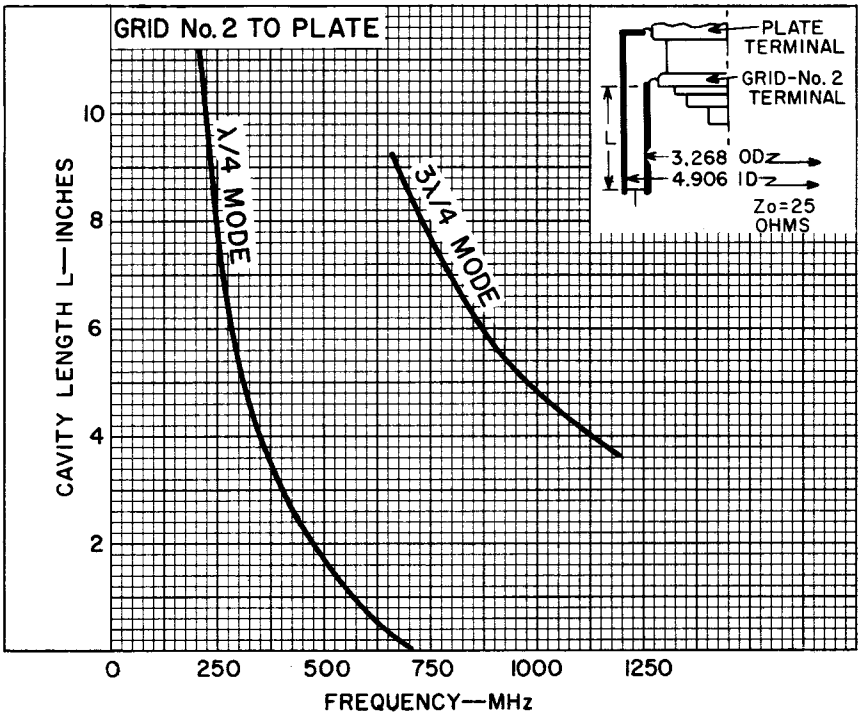
Cavity Tuning Characteristics



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