

# Federal Telephone and Radio Corporation



100 KINGSLAND ROAD • CLIFTON, NEW JERSEY



## TYPE 5737

The 5737 is a three electrode tube designed for use as a modulator, amplifier, and oscillator. The anode is water cooled and capable of dissipating 150 kilowatts. The cathode is a pure tungsten filament. Maximum ratings apply up to 20 megacycles.

### GENERAL

#### Electrical Data

Filament Voltage	25.0	Volts
Filament Current	650	Amperes
Filament Starting Current Max.	1000	Amperes
Filament Cold Resistance	.0022	Ohms
Amplification Factor at $E_c = -200$ ; $I_b = 5$ A	21	
Interelectrode Capacitances		
Grid-Plate	105	$\mu\text{f}$
Grid-Filament	140	$\mu\text{f}$
Plate-Filament	4	$\mu\text{f}$

#### Mechanical Data

Mounting Position - Vertical, anode down		
Type of Cooling - Water and forced air		
Water Flow on Anode	40	GPM
Maximum Outgoing Water Temperature	70°	C
Air Flow (to stem) <sup>1</sup>	75	CFM
Maximum Glass Temperature	150°	C
Net Weight, approximate	80	Pounds

Note: Air to be directed to filament stem through 3/8" diameter nozzle and to perforated air ring mounted on grid ring.

### MAXIMUM RATINGS AND TYPICAL OPERATING CONDITIONS

#### Audio-Frequency Power Amplifier and Modulator - Class B

Maximum Ratings, Absolute Values	CCS*		
D-C Plate Voltage	20,000	Volts	max.
Maximum Signal D-C Plate Current $\neq$	15	Amperes	max.
Maximum Signal Plate Input $\neq$	200	KW	max.
Plate Dissipation $\neq$	150	KW	max.



Typical Operation	CCS*		
Unless otherwise specified, values are for two tubes			
D-C Plate Voltage	12,000	14,000	Volts
D-C Grid Voltage	-500	-600	Volts
Peak A-F Grid-to-Grid Voltage	1,920	1,960	Volts
Zero Signal D-C Plate Current	2.0	2.0	Amperes
Maximum Signal D-C Plate Current	22	17.2	Amperes
Effective Load Resistance, plate to plate	2,600	4,300	Ohms
Maximum Signal Driving Power, approximate	540	500	Watts
Maximum Signal Power Output, approximate	155	155	KW

≠ Averaged over any audio frequency cycle of sine-wave form.

#### Radio-Frequency Power Amplifier - Class B

Carrier Conditions per tube for use with a maximum modulation factor of 1.0

Maximum Ratings, Absolute Values	CCS*		
D-C Plate Voltage	20,000	Volts	max.
D-C Plate Current	12	Amperes	max.
Plate Input	200	KW	max.
Plate Dissipation	150	KW	max.

Typical Operation	CCS*		
D-C Plate Voltage	18,000	Volts	
D-C Grid Voltage	-600	Volts	
Peak R-F Grid Voltage	1,370	Volts	
D-C Plate Current	9.6	Amperes	
D-C Grid Current, approximate	0.0	Amperes	
Driving Power, approximate //	1.2	KW	
Power Output, approximate	54	KW	

// At crest of audio-frequency cycle with modulation factor of 1.0

#### Plate-Modulated Radio-Frequency Power Amplifier - Class C Telephony

Carrier conditions per tube for use with a maximum modulation factor of 1.0

Maximum Ratings, Absolute Values	CCS*		
D-C Plate Voltage	14,000	Volts	max.
D-C Grid Voltage	-4,000	Volts	max.
D-C Plate Current	12	Amperes	max.
D-C Grid Current	2.0	Amperes	max.
Plate Input	165	KW	max.
Plate Dissipation	100	KW	max.

Typical Operation	CCS*		
D-C Plate Voltage	14,000	Volts	
D-C Grid Voltage	-1,600	Volts	
Peak R-F Grid Voltage	2,340	Volts	
D-C Plate Current	9.8	Amperes	
D-C Grid Current, approximate	0.6	Amperes	
Driving Power, approximate	1.4	KW	
Power Output, approximate	108	KW	



## Typical Operation, Grounded Grid Circuit

	CCS*	
D-C Plate Voltage	12,000	Volts
D-C Grid Voltage	-1,400	Volts
D-C Plate Current	10	Amperes
D-C Grid Current, approximate	1.0	Amperes
Driving Power, approximate $\phi$	35	KW
Power Output $\wedge$	105	KW

$\phi$  The carrier of the driver modulated 100 per cent.

$\wedge$  Includes power transferred from driver stage.

Radio-Frequency Power Amplifier and Oscillator - Class C Telegraphy  
 Key-down conditions per tube without amplitude modulation  $\mathcal{A}$

## Maximum Ratings, Absolute Values

	CCS*		
D-C Plate Voltage	20,000	Volts	max.
D-C Grid Voltage	-4,000	Volts	max.
D-C Plate Current	24	Amperes	max.
D-C Grid Current	2.0	Amperes	max.
Plate Input	450	KW	max.
Plate Dissipation	150	KW	max.

## Typical Operation

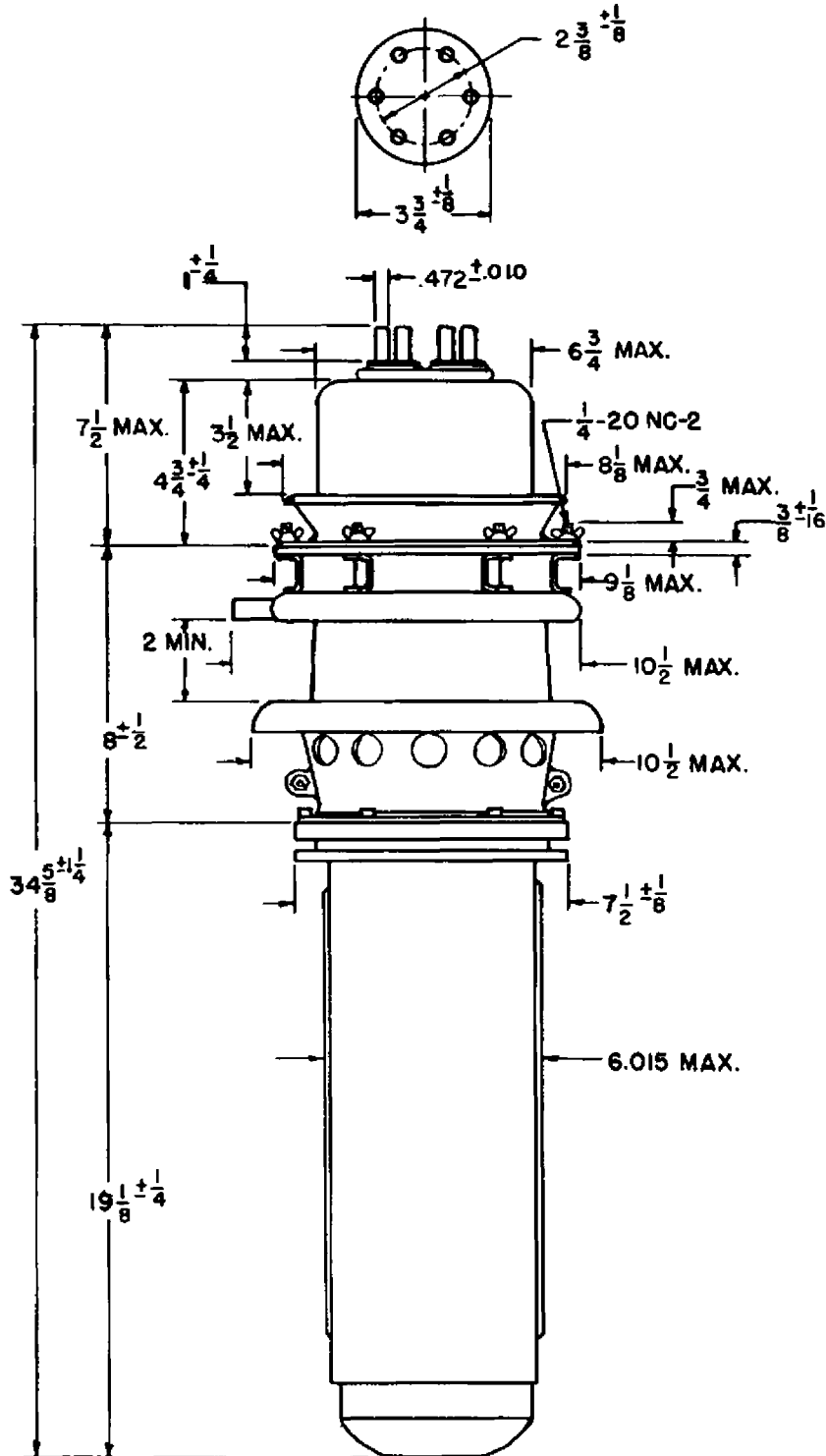
		CCS*		
D-C Plate Voltage	18,000	19,000	19,000	Volts
D-C Grid Voltage	-2,000	-2,200	-2,200	Volts
Peak R-F Grid Voltage	3,000	3,400	3,600	Volts
D-C Plate Current	14.5	17.8	20.1	Amperes
D-C Grid Current, approximate	1.0	1.1	1.8	Amperes
Driving Power, approximate	3	3.8	6	KW
Power Output, approximate	200	250	300	KW

$\mathcal{A}$  Modulation essentially negative may be used if the positive peak of the envelope does not exceed 115 per cent of the carrier conditions.

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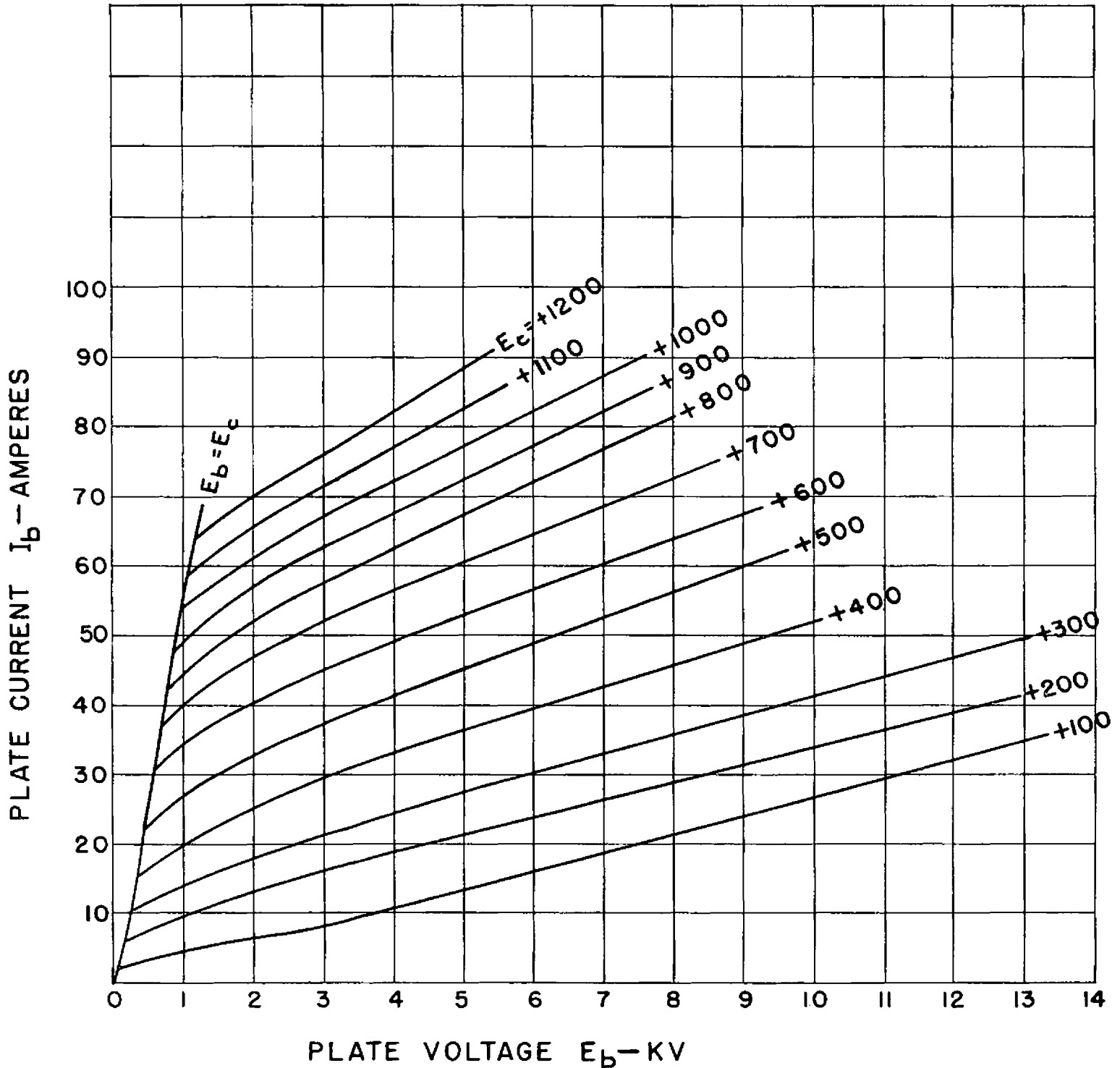
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## DATA—TYPE 5737 PLATE CHARACTERISTICS



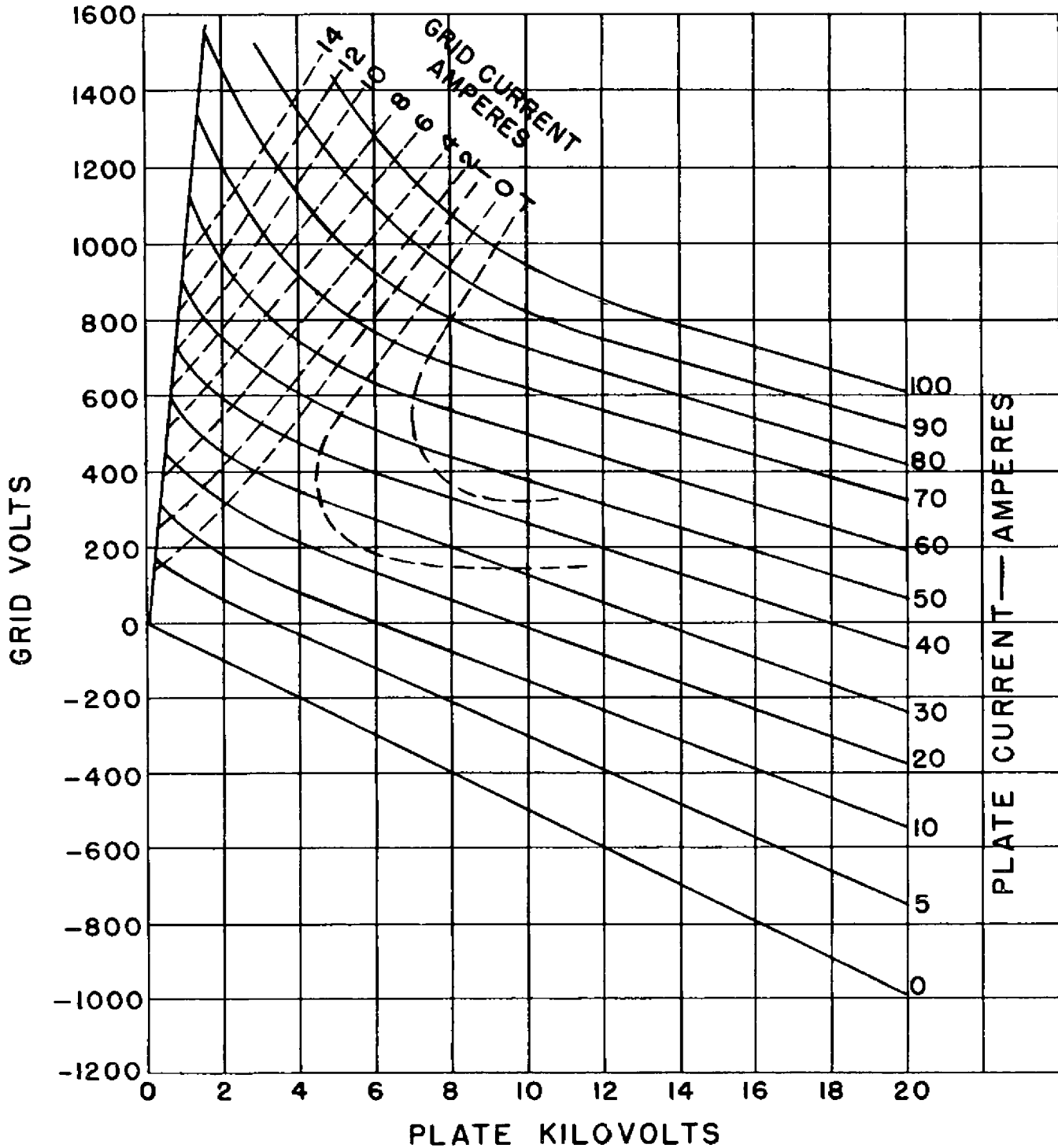
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## DATA-TYPE 5737 CONSTANT CURRENT CHARACTERISTICS





## DATA—TYPE 5737 GRID CHARACTERISTICS

