

February 15, 1960

## POWER AMPLIFIER TRIODE TYPE WL-5736

The WL-5736 is a three-electrode tube designed for use as an oscillator, amplifier, and modulator. The forced-air-cooled anode is capable of dissipating 2.5 kilowatts. An efficient thoriated-tungsten filament is employed. Maximum ratings apply up to 60 megacycles. A low back-pressure radiator is provided as an integral part of the tube.

### GENERAL DATA

Electrical	Minimum	Bogey	Maximum	
Filament Voltage.....	5.7	6.0	6.3	volts
Filament Current at Bogey Voltage.....	57	60	63	amp
Filament Starting Current.....	—	—	300	amp
Filament Cold Resistance.....	—	0.016	—	ohms
Amplification Factor.....	18	22	26	
Interelectrode Capacitances				
Grid to Plate.....	12	16	21	$\mu\text{mf}$
Grid to Filament.....	15	19	22	$\mu\text{mf}$
Plate to Filament.....	0.2	0.80	1.0	$\mu\text{mf}$
Mechanical				
Mounting Position.....	Vertical, anode up or down			
Type of Cooling.....	Forced air			
Maximum Incoming Air Temperature.....	45			$^{\circ}\text{C}$
Minimum Required Air Flow on Anode (Except television ratings)				
Plate Dissipation, percent rating.....	100 <sup>1</sup>	80	60	percent
Air Flow in Cubic Feet Per Minute.....	150	100	70	cfm
Pressure in Inches of Water, static.....	2.7	1.3	0.9	in.
Required Air Flow on Filament and Grid Seals				
Air flow through radiator normally is sufficient				
Maximum Glass Temperature.....	160			$^{\circ}\text{C}$
Net Weight, approximate.....	3.75			lbs
Shipping Weight, approximate.....	9			lbs

### MAXIMUM RATINGS AND TYPICAL OPERATING CONDITIONS

#### AUDIO-FREQUENCY POWER AMPLIFIER AND MODULATOR, CLASS B

Maximum Ratings, Absolute Values	ccs <sup>2</sup>	
Maximum DC Plate Voltage.....	3000	volts
Maximum DC Plate Current at Maximum Signal <sup>3</sup> .....	1.75	amp
Maximum Plate Input at Maximum Signal <sup>3</sup> .....	4200	watts
Maximum Plate Dissipation <sup>3</sup> .....	2500	watts

## AUDIO-FREQUENCY POWER AMPLIFIER AND MODULATOR, CLASS B (cont.)

## Typical Operation

Unless otherwise specified, values are for two tubes

	CCS <sup>2</sup>	
DC Plate Voltage.....	3000	volts
DC Grid Voltage.....	-160	volts
Peak Audio-Frequency Voltage, grid to grid.....	820	volts
DC Plate Current at Zero Signal.....	0.66	amp
DC Plate Current at Maximum Signal.....	2.80	amp
Effective Load Resistance, plate to plate.....	3060	ohms
Maximum Signal Driving Power, approximate.....	140	watts
Maximum Signal Power Output.....	4350	watts
Load Resistance, per tube.....	765	ohms

## 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 <sup>2</sup>	
DC Plate Voltage, maximum.....	3500	volts
DC Plate Current, maximum.....	1.75	amp
Plate Input, maximum.....	3500	watts
Plate Dissipation, maximum.....	2500	watts

## Typical Operation

	CCS <sup>2</sup>	
DC Plate Voltage.....	3000	volts
DC Grid Voltage.....	-160	volts
Peak Radio-Frequency Grid Voltage.....	280	volts
DC Plate Current.....	1.1	amp
DC Grid Current, approximate.....	0.050	amp
Driving Power, approximate <sup>4</sup> .....	15	watts
Power Output, approximate.....	800	watts

## RADIO-FREQUENCY POWER AMPLIFIER, CLASS B

Grounded-grid, wide-band television service, maximum frequency 88 megacycles

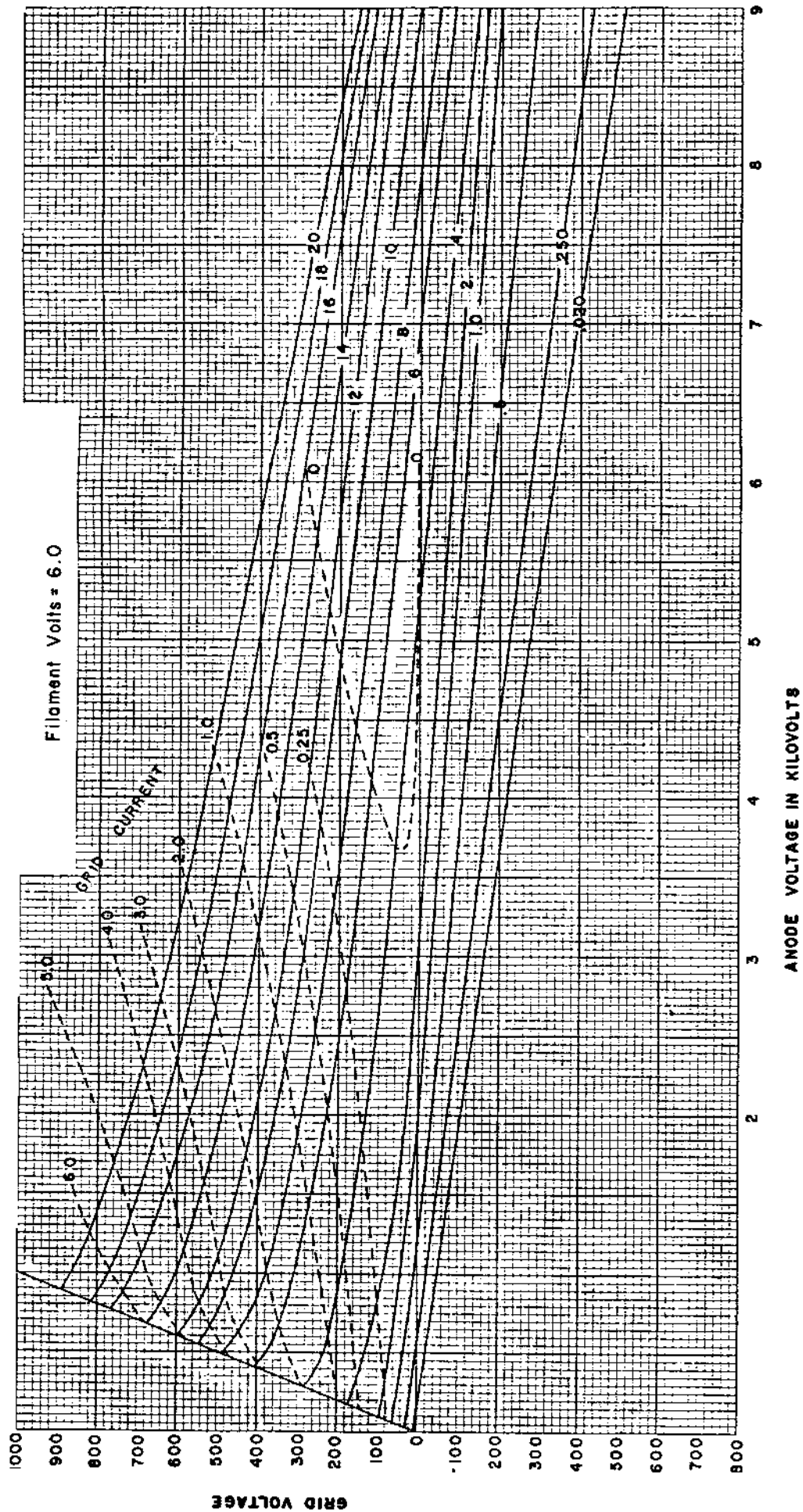
## Maximum Ratings, Absolute Values

	CCS <sup>2</sup>	
DC Plate Voltage, maximum.....	3500	volts
DC Plate Current, maximum.....	1.75	amp
Plate Input, maximum.....	4000	watts
Plate Dissipation, maximum <sup>5</sup> .....	2800	watts

## Typical Operation

	CCS <sup>2</sup>	
DC Plate Voltage.....	2600	volts
DC Plate Current		
Synchronizing Level.....	2.32	amp
Black Level.....	1.47	amp
DC Grid Voltage.....	-160	volts

# AVERAGE CONSTANT-CURRENT-CHARACTERISTICS



**RADIO-FREQUENCY POWER AMPLIFIER, CLASS B (television service continued)**

Typical Operation (cont.)	CCS <sup>2</sup>
Peak Radio-Frequency Grid Voltage.....	838 volts
Synchronizing Level.....	800 volts
Black Level.....	800 volts
DC Grid Current.....	0.430 amp
Synchronizing Level.....	0.136 amp
Driving Power, approximate.....	1100 watts
Synchronizing Level.....	838 watts
Power Output, approximate.....	3480 watts
Synchronizing Level.....	1690 watts
Black Level.....	1690 watts

**RADIO-FREQUENCY POWER AMPLIFIER AND OSCILLATOR, CLASS C TELEGRAPHY**  
Key-down conditions per tube without amplitude modulation

Maximum Ratings, Absolute Values	CCS <sup>2</sup>
	At 80 mc At 110 mc
Plate Voltage, maximum.....	3000 3800 volts
Plate Current, maximum.....	1.8 1.8 amp
Plate Input, maximum.....	5000 3500 watts
Plate Dissipation, maximum.....	2500 2500 watts
DC Grid Voltage, maximum.....	-1000 -700 volts
DC Grid Current, maximum.....	0.8 0.8 amp

Typical Operation	CCS <sup>2</sup>
	At 80 mc At 110 mc
DC Plate Voltage.....	3000 3800 volts
DC Grid Voltage.....	-850 -500 volts
Peak Radio-Frequency Grid Voltage.....	1200 940 volts
DC Plate Current.....	1.0 1.0 amp
DC Grid Current.....	0.210 0.195 amp
Driving Power, approximate.....	250 235 watts
Power Output, approximate.....	4100 2550 watts

**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 <sup>2</sup>
DC Plate Voltage, maximum.....	3500 volts
DC Grid Voltage, maximum.....	-1000 volts
DC Plate Current, maximum.....	1.4 amp
DC Grid Current, maximum.....	0.6 amp
Plate Input, maximum.....	4000 watts
Plate Dissipation, maximum.....	1650 watts

**PLATE-MODULATED RADIO-FREQUENCY POWER AMPLIFIER, CLASS C TELEPHONY (cont.)**

Typical Operation	CCS <sup>2</sup>
DC Plate Voltage.....	3500 volts
DC Grid Voltage.....	-800 volts
Peak Radio-Frequency Grid Voltage.....	950 volts
DC Plate Current.....	1.18 amp
DC Grid Current, approximate.....	0.26 amp
Driving Power, approximate.....	270 watts
Power Output, approximate.....	3200 watts

**HIGH FREQUENCY RATINGS**

Maximum ratings apply up to 40 megacycles. The tube may be operated at higher frequencies provided the maximum values of the plate voltage and power input are reduced according to the tabulation below. All other maximum ratings remain as shown above. Special attention should be given to adequate ventilation of the bulb at these frequencies. See special television service ratings.

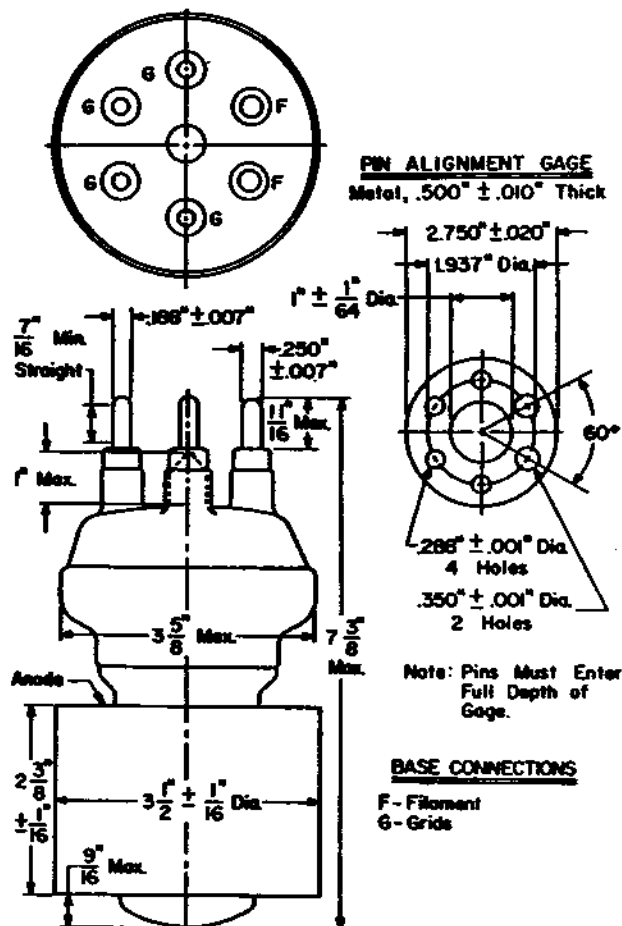
FREQUENCY	CLASS B			CLASS C UNMODULATED		
	Percent of Maximum	Plate Voltage	Input Watts	Percent of Maximum	Plate Voltage	Input Watts
Megacycles						
40	100	100	100	100	100	100
100	85	80	80	80	80	80
200	60	60	50	50	50	50

**ELECTRICAL DATA AND LIMITS**

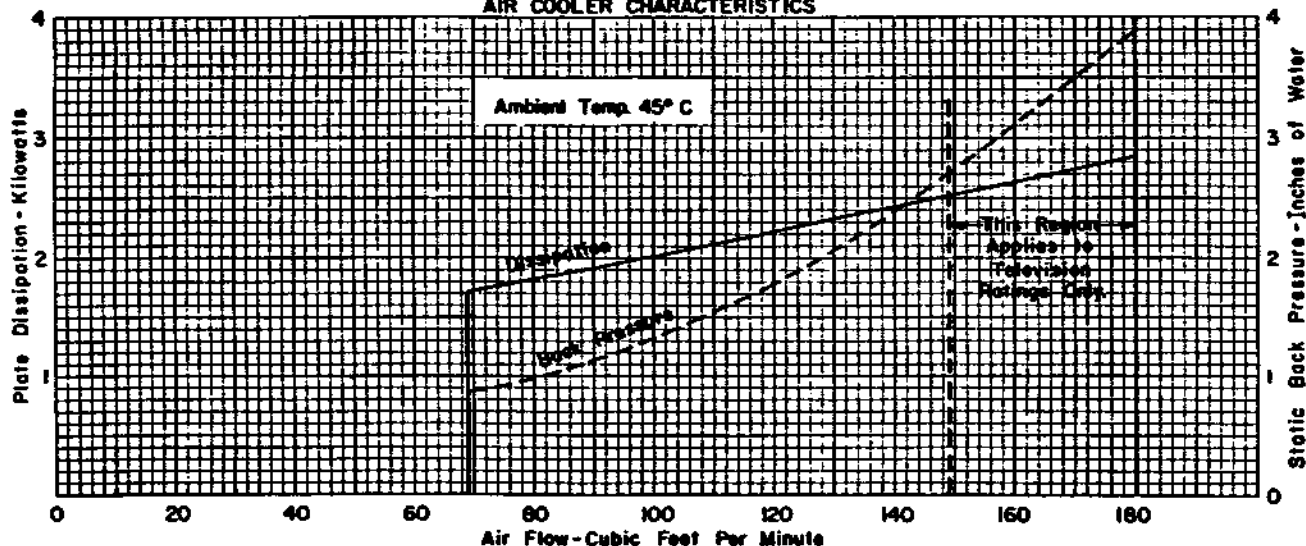
Characteristic	Conditions	LIMITS	
		Minimum	Maximum
Grid Voltage	$I_b = 6$ amperes $I_p = 1000$ volts	-	340 volts
Grid Current	$I_b = 6$ amperes $I_p = 1000$ volts		2.2 amp
Plate Voltage	$I_b = 0.40$ amperes $I_c = -20$ volts	1350	1650 volts
Plate Voltage	$I_b = 0.40$ amperes $I_c = -50$ volts (Symbol $I_{p1}$ )	2370	1870 volts
Peak Cathode Current <sup>a</sup>	$I_b = 3000$ volts $I_c = -350$ volts $I_p = 1.0$ amperes $I_g = 0.3$ amperes Freq. = 60 megacycles (Symbol $P_0$ )	10	amp
Power Output		3800	watts

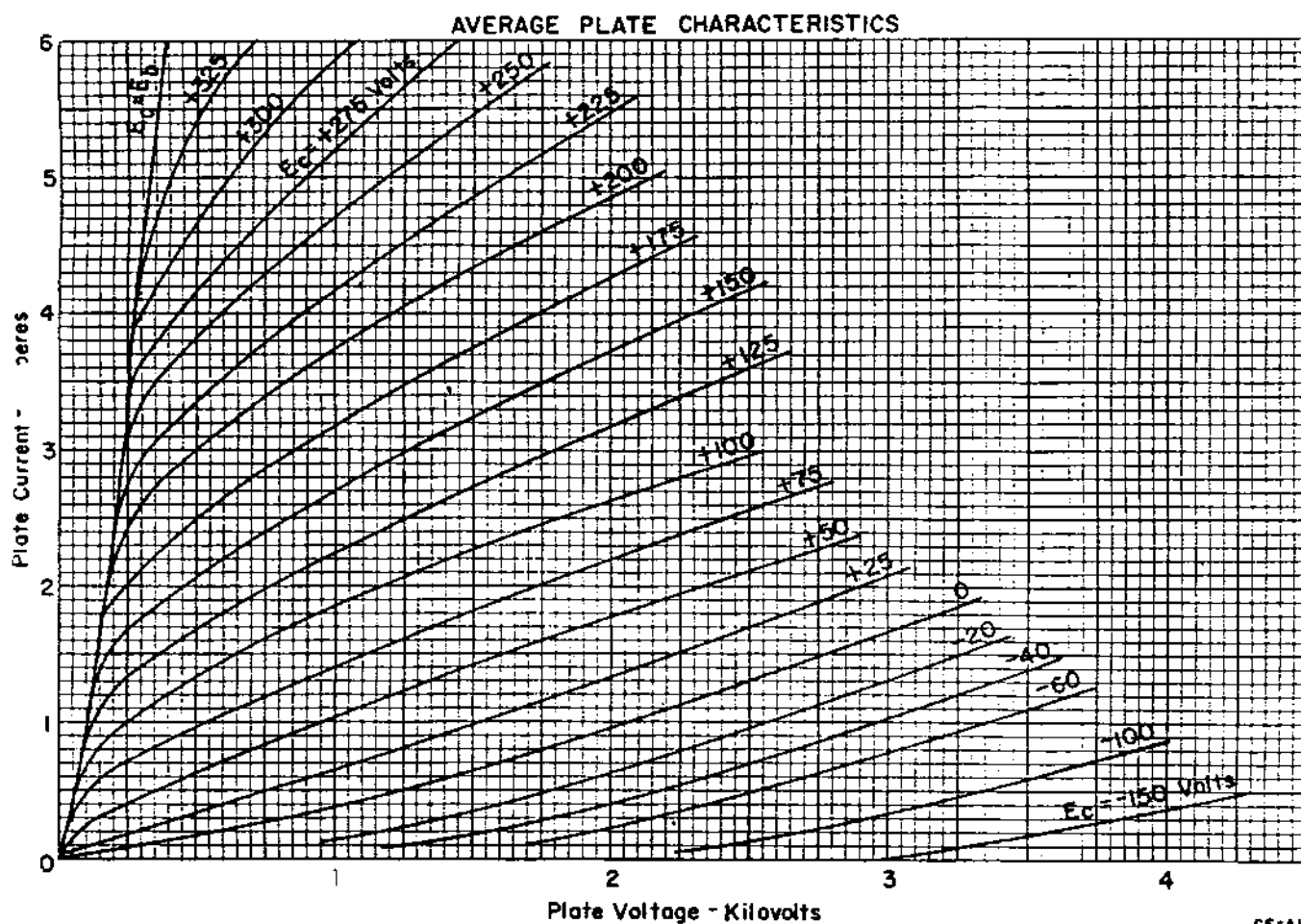
## FOOTNOTES

1. Except as otherwise noted.
2. Continuous commercial service.
3. Averaged over any audio-frequency cycle of sine-wave form.
4. At crest of audio-frequency cycle with modulation factor of 1.0.
5. Requires 180 cubic feet per minute of cooling air at 4 inches of water static pressure.
6. Includes power transferred from the driver stage.
7. Modulation, essentially negative, may be used if the positive peak of the carrier envelope does not exceed 115 percent of the carrier conditions.
8. Represents maximum usable cathode current for the tube as plate current plus grid current for any condition of operation.



AIR COOLER CHARACTERISTICS





CE-A1107