Westinghouse

WL-5736

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	μμf
Grid to Filament	15	19	22	μμf
Plate to Filament	0.2	0.80	1.0	μμf
Mechanical				
Mounting Position	Vertical, anode up or down			
Type of Cooling	Forced air			
Maximum Incoming Air Temperature	45			°C
Minimum Required Air Flow on Anode (Except television ratings)				
Plate Dissipation, percent rating	100[1]	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			°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[2]	
Maximum DC Plate Voltage	3000	volts
Maximum DC Plate Current at Maximum Signal[3]	1.75	amp
Maximum Plate Input at Maximum Signal[3]	4200	watts
Maximum Plate Dissipation[3]	2500	watts

Supersedes WL-5736 Data Sheet Dated June , 1949 High Vacuum Amplifier Section

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

Typical Operation Unless otherwise specified, values are for two tubes	CCS[2]	
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[2]	
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[2]	
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[4]	15	watts
Power Output, approximate	800	watts

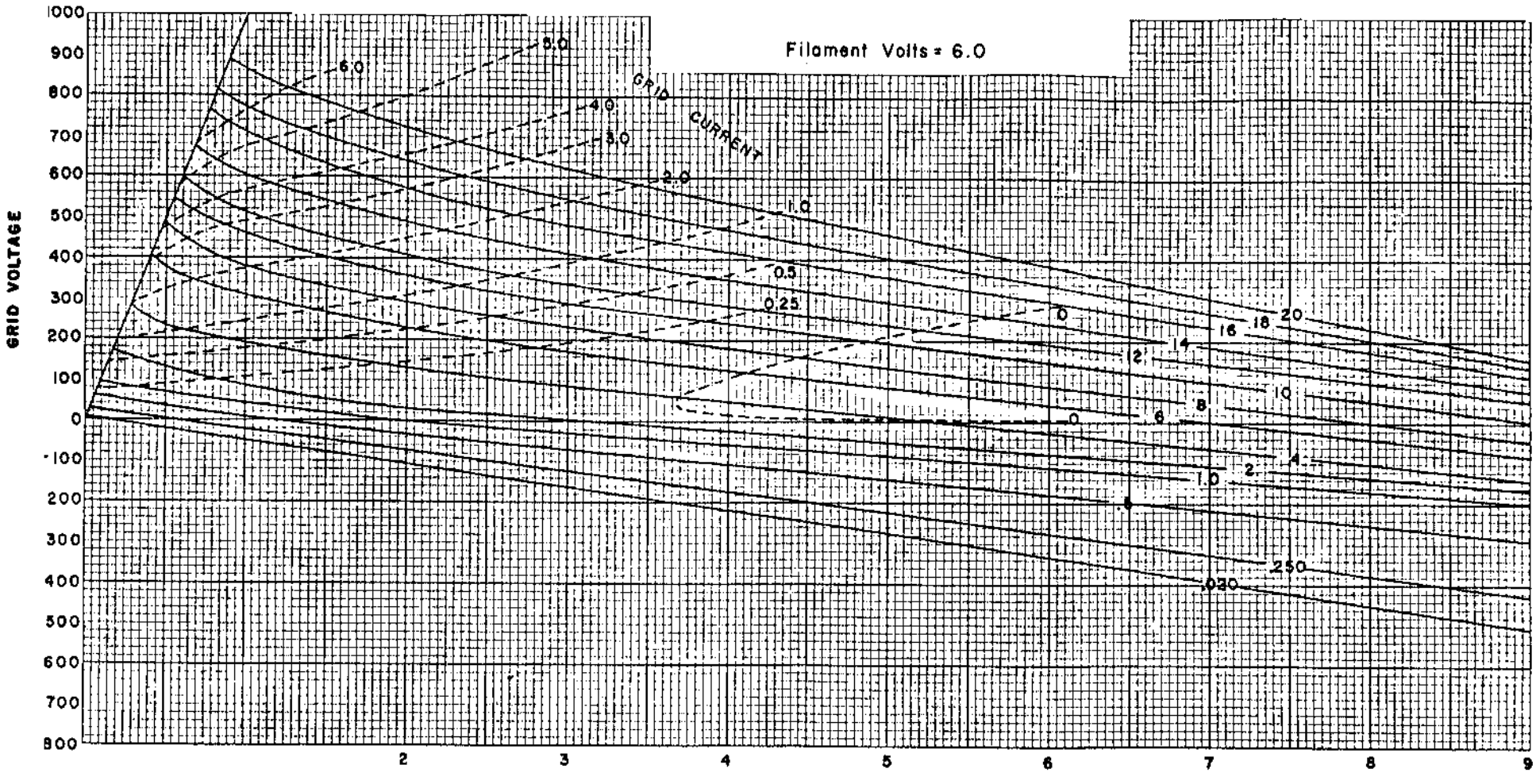
RADIO-FREQUENCY POWER AMPLIFIER, CLASS B

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

Maximum Ratings, Absolute Values	CCS[2]	
DC Plate Voltage, maximum	3500	volts
DC Plate Current, maximum	1.75	amp
Plate Input, maximum	4000	watts
Plate Dissipation, maximum[5]	2800	watts

Typical Operation	CCS[2]	
DC Plate Voltage	2600	volts
DC Plate Current		
Synchronizing Level	2.32	amp
Black Level	1.87	amp
DC Grid Voltage	−160	volts

AVERAGE CONSTANT-CURRENT-CHARACTERISTICS



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

Typical Operation (cont.)	CCS[2]	
Peak Radio-Frequency Grid Voltage		
Synchronizing Level	535	volts
Black Level	480	volts
DC Grid Current		
Synchronizing Level	0.830	amp
Black Level	0.134	amp
Driving Power, approximate		
Synchronizing Level	1160	watts
Black Level	835	watts
Power Output, approximate[6]		
Synchronizing Level	3680	watts
Black Level	1690	watts

RADIO-FREQUENCY POWER AMPLIFIER AND OSCILLATOR, CLASS C TELEGRAPHY

Key-down conditions per tube without amplitude modulation[7]

Maximum Ratings, Absolute Values	CCS[2] At 60 mc	CCS[2] At 110 mc	
Plate Voltage, maximum	5000	3500	volts
Plate Current, maximum	1.5	1.5	amp
Plate Input, maximum	5000	3500	watts
Plate Dissipation, maximum	2500	2500	watts
DC Grid Voltage, maximum	-1000	-700	volts
DC Grid Current, maximum	0.5	0.5	amp

Typical Operation	CCS[2] At 60 mc	CCS[2] At 110 mc		
DC Plate Voltage	5000	3500	3500	volts
DC Grid Voltage	-850	-600	-300	volts
Peak Radio-Frequency Grid Voltage	1200	940	555	volts
DC Plate Current	1.0	1.0	1.0	amp
DC Grid Current	0.210	0.250	0.155	amp
Driving Power, approximate	250	295	85	watts
Power Output, approximate	4100	2800	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[2]	
DC Plate Voltage, maximum	3500	volts
DC Grid Voltage, maximum	-1000	volts
DC Plate Current, maximum	1.5	amp
DC Grid Current, maximum	0.5	amp
Plate Input, maximum	5000	watts
Plate Dissipation, maximum	1650	watts

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

Typical Operation	CCS[2]	
DC Plate Voltage	3500	volts
DC Grid Voltage	-600	volts
Peak Radio-Frequency Grid Voltage	950	volts
DC Plate Current	1.15	amp
DC Grid Current, approximate	0.20	amp
Driving Power, approximate	270	watts
Power Output, approximate	3200	watts

HIGH FREQUENCY RATINGS

Maximum ratings apply up to 60 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.

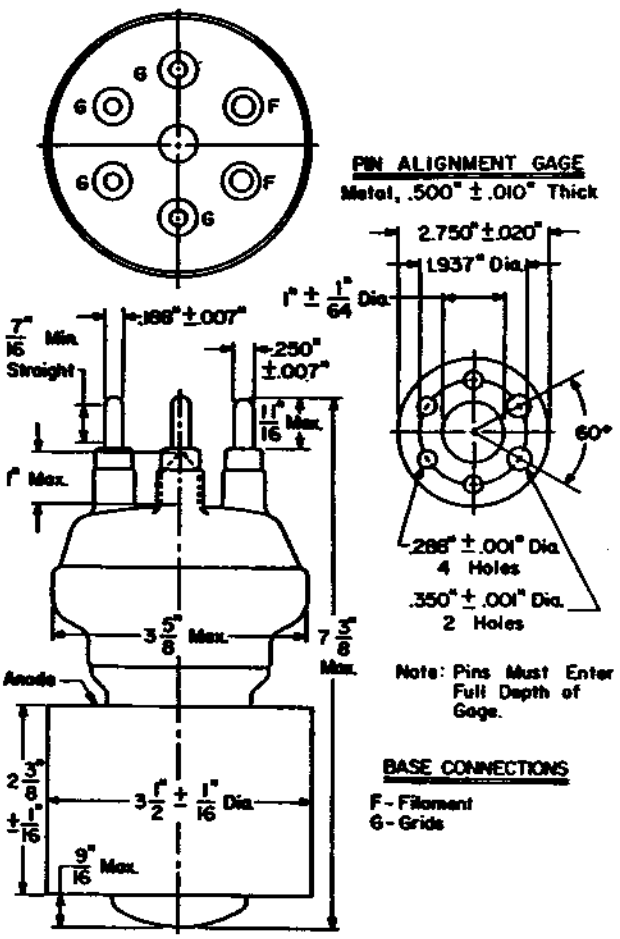
FREQUENCY	CLASS B		CLASS C PLATE MODULATED		CLASS C UNMODULATED	
	Percent of Maximum		*Percent of Maximum*		*Percent of Maximum*	
Megacycles	Plate Volts	Input Watts	Plate Volts	Input Watts	Plate Volts	Input Watts
60	100	100	100	100	100	100
100	85	85	80	80	80	80
200	60	60	50	50	50	50

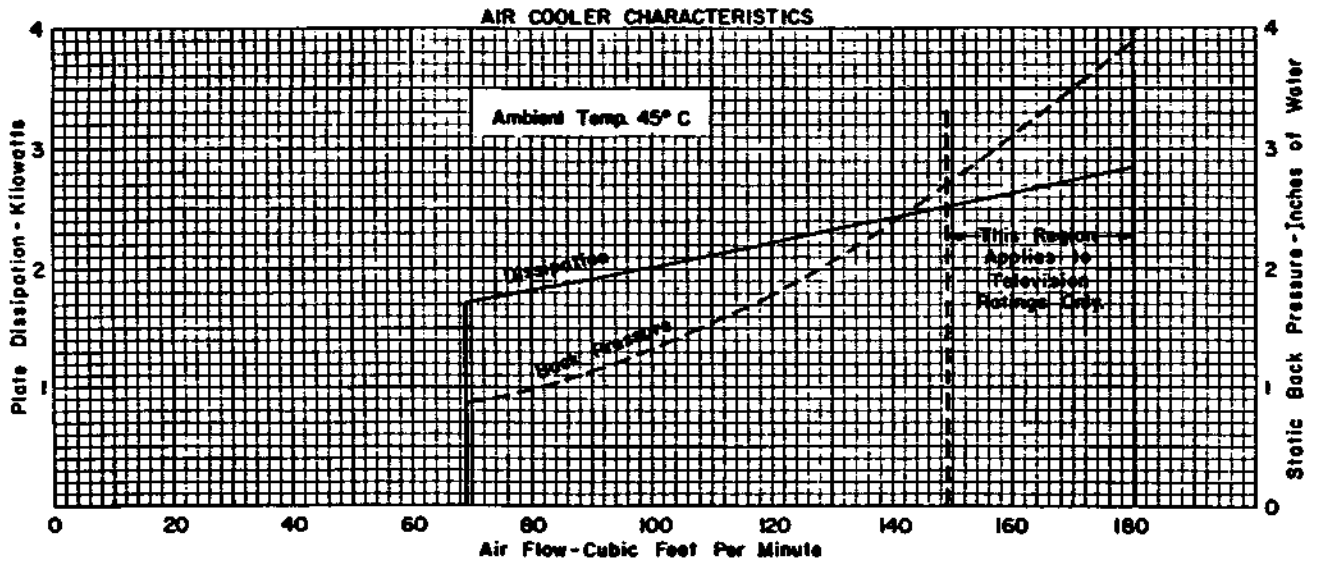
ELECTRICAL DATA AND LIMITS

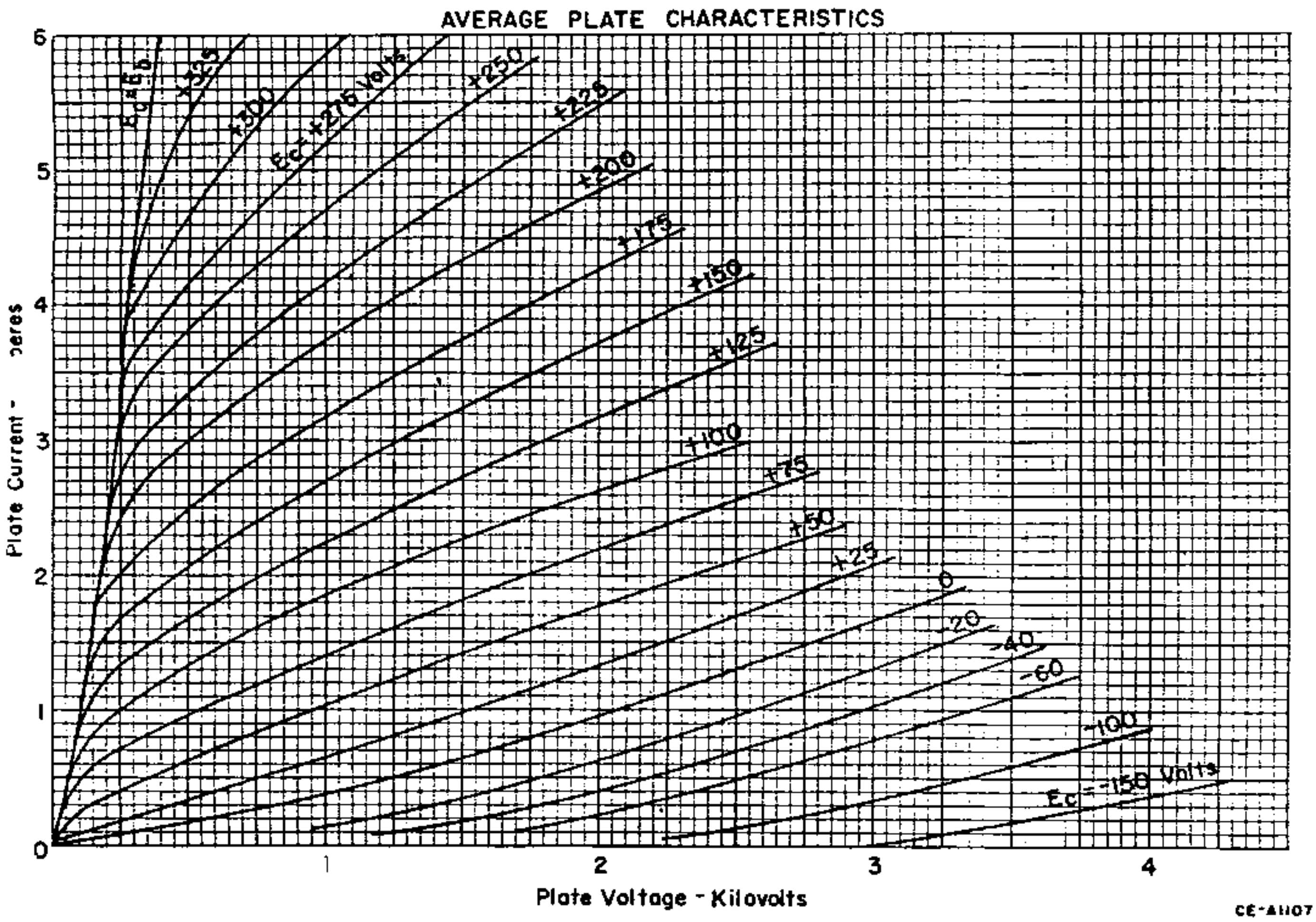
Characteristic	Conditions	LIMITS Minimum	LIMITS Bogey	LIMITS Maximum	
Grid Voltage	I_b = 6 amperes e_b = 1000 volts	-	-	360	volts
Grid Current	I_b = 6 amperes e_b = 1000 volts			2.2	amp
Plate Voltage	I_b = 0.40 amperes E_c = -20 volts	1350	1400	1450	volts
Plate Voltage	I_b = 0.40 amperes E_c = -90 volts	1570	1620	1670	volts
Peak Cathode Current[8]	(Symbol I_k)	10			amp
Power Output	E_b = 3000 volts E_c = -850 volts I_b = 1.0 amperes I_g = 0.3 amperes Freq. = 60 megacycles (Symbol P_o)	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.






AVERAGE PLATE CHARACTERISTICS
Ec=350
+325
+300
Ec=+275 Volts
+250
+225
+200
+175
+150
+125
+100
+75
+50
+25
0
-20
-40
-60
-100
Ec=-150 Volts
Plate Current - Amperes
Plate Voltage - Kilovolts
0
1
2
3
4
5
6
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