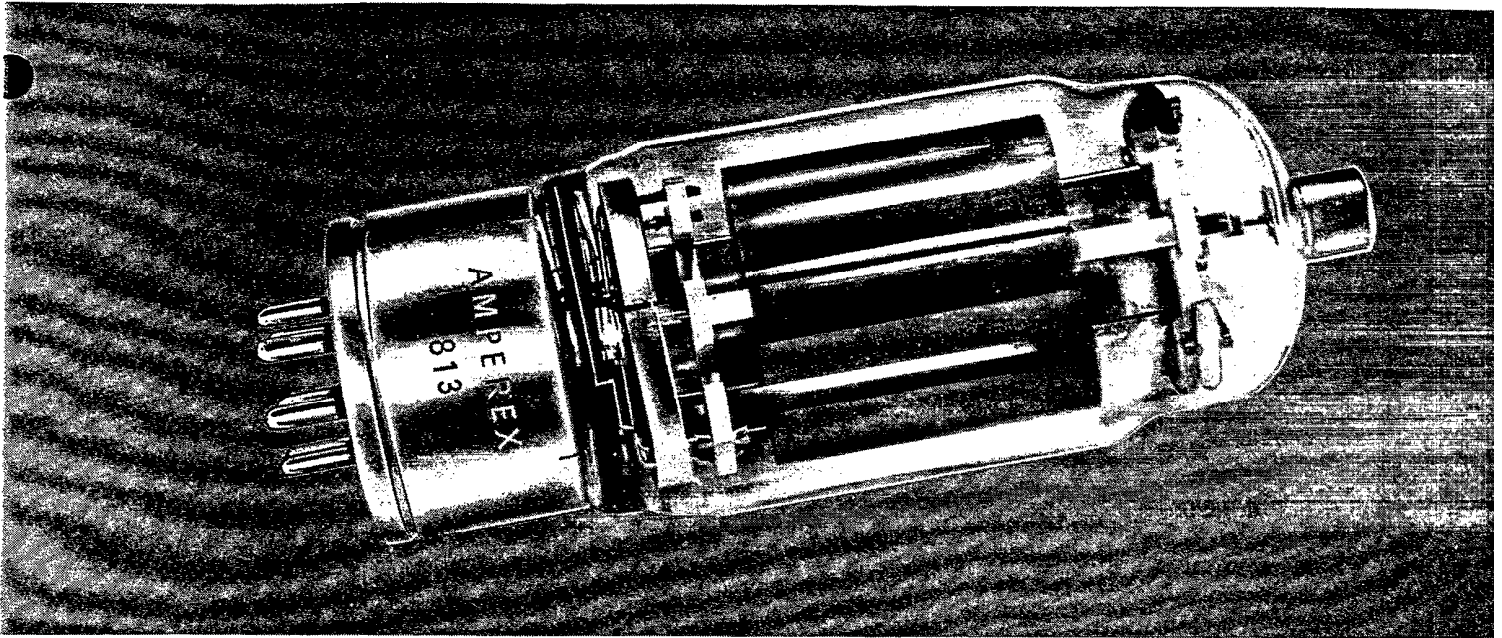


# AMPEREX TRANSMITTING TUBE 813



## Modulator, Power Amplifier, and Oscillator

### GENERAL CHARACTERISTICS

RADIATION COOLED TETRODE

#### ELECTRICAL

Filament . . . . .	Thoriated Tungsten
Voltage . . . . .	10.0 volts (ac or dc)
Current . . . . .	5 amperes
Transconductance, $I_p=50$ ma . . . . .	3750 micromhos

#### Direct Interelectrode Capacitances

Grid to Plate (with external shielding) max. . . . .	0.2 $\mu\mu\text{f}$
Input . . . . .	16.3 $\mu\mu\text{f}$
Output . . . . .	14 $\mu\mu\text{f}$

#### MECHANICAL

##### Maximum Overall Dimensions

Length . . . . .	7½ inches
Diameter . . . . .	2 <sup>9</sup> / <sub>16</sub> inches

##### Mounting Position

Vertical—Base Up or Down

Horizontal—Plane of Electrodes Vertical

Net Weight (approx.) . . . . .	8 ounces
Shipping Weight (approx.) . . . . .	5½ pounds

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# 813 — AMPEREX TRANSMITTING TUBE

## MAXIMUM RATINGS AND TYPICAL OPERATING CONDITIONS

### R.F. Power Amplifier—Class B—Telephony

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

Plate Volts and Input max. % for Frequencies Indicated (mc)	100 30	93 45	88 60	76 120
				Maximum Rating Per Tube
D-C Plate Voltage	1500	2000	2000	
D-C Screen Voltage	400	400	400	
D-C Grid Voltage <sup>1</sup>	-60	-75		
Peak R-F Grid Voltage	70	80		
D-C Suppressor Voltage <sup>2</sup>	0	0		
D-C Plate Current (ma)	100	75	100	
D-C Screen Current (ma)	4	3		
D.C. Grid Current (ma) (approx.)*				
Screen Input (watts)			15	
Plate Input (watts)			150	
Driving Power (watts) (approx.) <sup>3**</sup>				
Plate Dissipation (watts)			100	
Power Output (watts) (approx.)	50	50		

\*Usually negligible. Fixed supply or by-passed cathode-resistor bias recommended.  
\*\*Usually negligible. Never more than 2 watts.

### Grid-Modulated R.F. Power Amplifier—Class C—Telephony

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

Plate Volts and Input max. % for Frequencies Indicated (mc)	100 30	93 45	88 60	76 120
				Maximum Rating Per Tube
D-C Plate Voltage	1500	2000	2000	
D-C Screen Voltage	400	400	400	
D-C Grid Voltage <sup>1</sup>	-140	-120	-200	
Peak R-F Grid Voltage	145	120		
Peak A-F Grid Voltage	60	60		
D-C Suppressor Voltage <sup>2</sup>	0	0		
D-C Plate Current (ma)	70	75	100	
D-C Screen Current (ma)	3	3		
D-C Grid Current (ma) (approx.)*				
Screen Input (watts)			15	
Plate Input (watts)			150	
Driving Power (watts) (approx.) <sup>3**</sup>				
Plate Dissipation (watts)			100	
Power Output (watts) (approx.)	40	50		

\*Usually negligible. Fixed supply or unby-passed cathode resistor bias recommended.  
\*\*Usually negligible. R-F driving power never more than 2 watts; A-F power usually never more than 1 watt.

### Plate Modulated R.F. Power Amplifier—Class C—Telephony

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

Plate Volts and Input max. % for Frequencies Indicated (mc)	100 30	87 45	75 60	50 120
				Maximum Rating Per Tube
D-C Plate Voltage	1250	1600	1600	
D-C Screen Voltage*	400	400	400	
D-C Grid Voltage <sup>1**</sup>	-120	-130	-300	
From Grid Resistor (ohms)**	30000	21600		
Peak R-F Grid Voltage	195	210		
D-C Suppressor Voltage <sup>2</sup>	0	0		
D-C Plate Current (ma)	150	150	150	
D-C Screen Current (ma)	16	20		
D-C Grid Current (ma) (approx.)	4	6	25	
Screen Input (watts)			15	
Plate Input (watts)			240	
Driving Power (watts) (approx.)	0.7	1.2		
Plate Dissipation (watts)			67	
Power Output (watts) (approx.)	135	175		

\*Obtained from fixed supply modulated simultaneously with plate voltage.  
\*\*Obtained by grid resistor of value shown or by combination of grid resistor with either fixed supply or cathode resistor. Total effective grid-circuit resistance should not exceed 30,000 ohms.

### NOTES

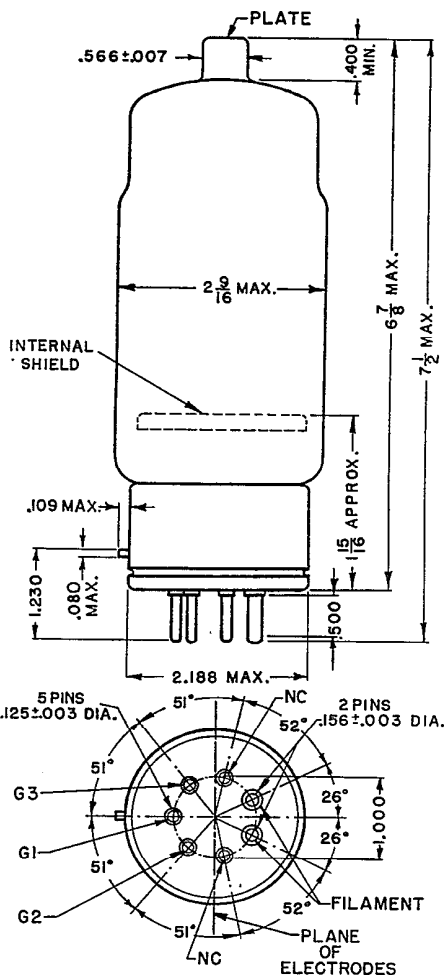
<sup>1</sup> Grid voltages are given with respect to the mid-point of filament circuit operated on a.c. If d.c. is used, the grid voltage should be decreased by 5 volts and the circuit returns made to the negative end of the filament.

<sup>2</sup> Suppressor should be connected to the mid-point of filament circuit operated on a.c., or to the negative end of the filament when a d.c. filament supply is used.

<sup>3</sup> At crest of audio-frequency cycle with modulation factor of 1.0.

<sup>4</sup> Series screen resistor should not be used except where 813 is employed as a buffer amplifier and is not keyed. The screen voltage must not exceed 800 volts under key-up conditions.

<sup>5</sup> Modulations essentially negative may be used if the positive peak of the audio-frequency envelope does not exceed 115% of the carrier conditions.



### R.F. Power Amplifier and Oscillator—Class C—Telegraphy

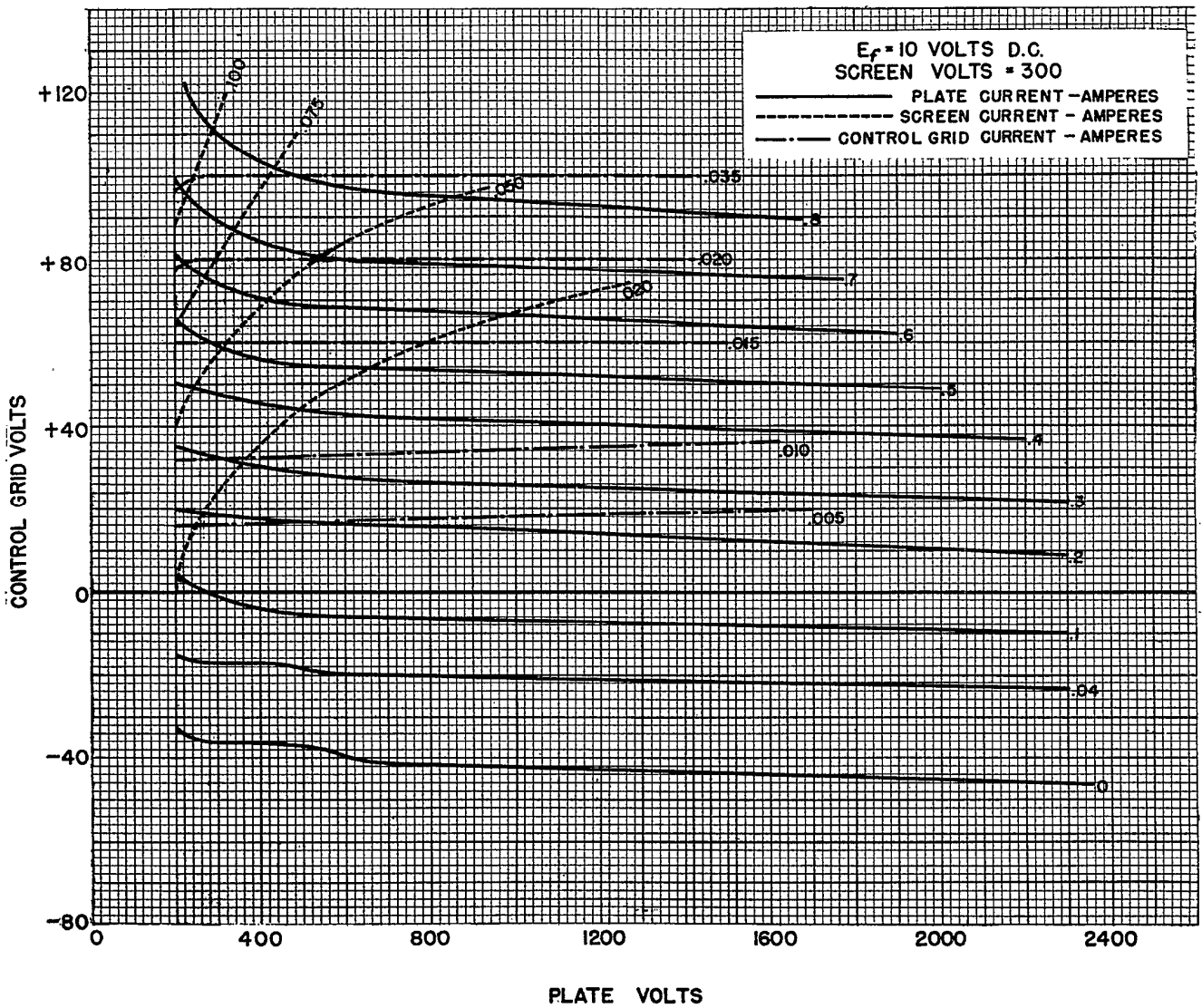
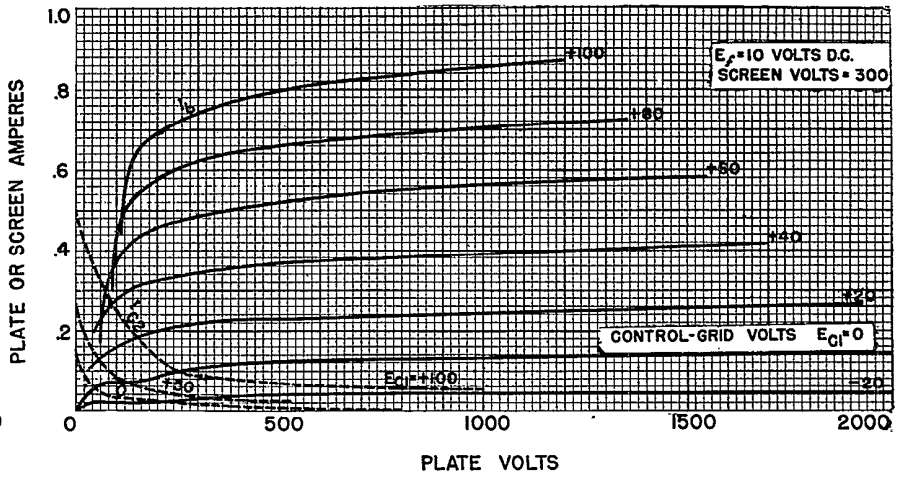
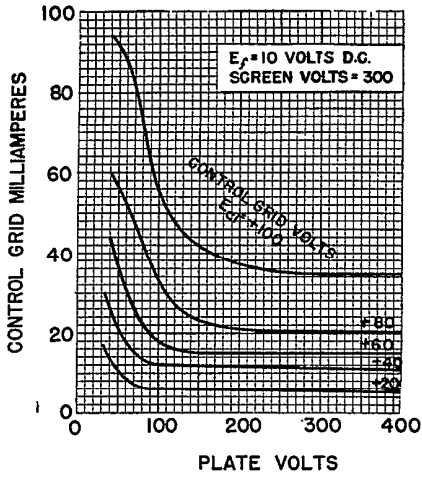
Key-down conditions per tube without modulation.<sup>5</sup>

Plate Volts and Input max. % for Frequencies Indicated (mc)	100 30	87 45	75 60	50 120
				Max. Rating Per Tube
D-C Plate Voltage	1250	1500	2000	2000
D-C Screen Voltage <sup>1</sup>	300	300	400	400
From Series Resistor (ohms) <sup>4</sup>	42000	60000	107000	
D-C Grid Voltage <sup>1</sup>	-60	-70	-90	-300
From Grid Resistor (ohms)	8500	11700	30000	
or from Cathode Resistor (ohms)	285	340	455	
Peak R-F Grid Voltage	145	150	160	
D-C Suppressor Voltage <sup>2</sup>	0	0	0	
D-C Plate Current (ma)	180	180	180	180
D-C Screen Current (ma)	23	20	15	
D-C Grid Current (ma) (approx.)	7	6	3	25
Screen Input (watts)				22
Plate Input (watts)				360
Driving Power (watts) (approx.)	1	0.8	0.5	
Plate Dissipation (watts)				100
Power Output (watts) (approx.)	155	190	206	

### Typical Operation:

D-C Plate Voltage	1250	1500	2000	2000
D-C Screen Voltage <sup>1</sup>	300	300	400	400
From Series Resistor (ohms) <sup>4</sup>	42000	60000	107000	
D-C Grid Voltage <sup>1</sup>	-60	-70	-90	-300
From Grid Resistor (ohms)	8500	11700	30000	
or from Cathode Resistor (ohms)	285	340	455	
Peak R-F Grid Voltage	145	150	160	
D-C Suppressor Voltage <sup>2</sup>	0	0	0	
D-C Plate Current (ma)	180	180	180	180
D-C Screen Current (ma)	23	20	15	
D-C Grid Current (ma) (approx.)	7	6	3	25
Screen Input (watts)				22
Plate Input (watts)				360
Driving Power (watts) (approx.)	1	0.8	0.5	
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# 813-AMPEREX TRANSMITTING TUBE

