

(Water Cooled)

This Amperex 859 water cooled tube embodies elements of design which minimize inter-electrode capacitances while maintaining a high order of grid to plate transconductance and r.f. voltage tolerance. It is therefore suitable for use at radio frequencies up to 50 Megacycles where high powers are required.

MAXIMUM RATINGS AND TYPICAL OPERATING CONDITIONS

A.F. Power Amplifier and Modulator—Class B

	Maximum Rating per Tube	Typical Operation Two Tubes
A.C. Filament Voltage*	—	22
D.C. Plate Voltage	20000	12000
D.C. Grid Voltage	—	-225
Load Resistance (ohms per tube)	—	1250
Effective Load Resistance (Plate to Plate) (ohms)	—	5000
Zero Signal Plate Current (amps.)	—	0.6
Peak A.F. Grid to Grid Voltage	—	2350
Max. Signal Plate Current (amps.)**	3.0	5.1
Max. Signal Plate Input (kw.)**	50	61
Plate Dissipation (kw.)**	20	—
Minimum Grid Input Resistance (Approx.) (ohms)	—	300
Max. Signal Driving Power (Approx.) (watts)	—	800
Max. Signal Power Output (kw.)	—	40

R.F. Power Amplifier—Class B—Telephony

(Carrier conditions for use with a maximum modulation factor of 1.0)

	Maximum Rating per Tube	Typical Operation One Tube
Filament Voltage*	—	22
D.C. Plate Voltage	20000	15000
D.C. Grid Voltage	—	-350
Plate Load Resistance (ohms)	—	2750
Peak R.F. Grid Voltage	—	700
D.C. Plate Current (amps.)	1.5	1.5
Plate Input (kw.)	30	22.5
Plate Dissipation (kw.)	20	15.0
D.C. Grid Current (Approx.) (ma.)	—	0
Driving Power (Approx.) (watts)***	—	400
Power Output (kw.)	—	7.5
Frequency Limit for Above Operation (mc.)	1.6	20

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

(Carrier conditions for use with modulation factors up to 1.0)

	Maximum Rating per Tube	Typical Operation One Tube
Filament Voltage*	—	22
D.C. Plate Voltage	12000	10000
D.C. Grid Voltage	-3000	-1000
Obtained by Grid Leak Resistor of (ohms)	—	4000
Plate Load Resistance (ohms)	—	3800
Peak R.F. Grid Voltage	—	1800
D.C. Plate Current (amps.)	1.5	1.3
Plate Input (kw.)	18.0	13
Plate Dissipation (kw.)	12.0	2.5
D.C. Grid Current (Approx.) (ma.)	400	250

GENERAL CHARACTERISTICS

Filament: Tungsten, Two-unit type for 1 Ø A.C., 2 Ø A.C. or D.C. Excitation.	
Filament Voltage per unit	11
Filament Current per unit	71
Filament Emission	15
Average characteristics at plate current of 1 ampere.	
Amplification Constant	36
Grid to Plate Transconductance	8000 micromhos
Direct Interelectrode Capacitances:	
Grid to Plate	15 µµi
Grid to Filament	20 µµi
Plate to Filament	2 µµi
Dimensions:	
Maximum Overall Length	24½"
Maximum Radius	7½"
Maximum Anode Diameter	3¼"
Maximum Anode Length	9½"

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

(Carrier conditions for use with modulation factors up to 1.0)

(Continued)

	Maximum Rating per Tube	Typical Operation One Tube
Driving Power (Approx.) (watts)	—	450
Power Output (kw.)	—	10.5
Frequency Limit for Above Operation (mc.)	1.6	20

R.F. Power Amplifier and Oscillator—Class C Telegraphy or Frequency Modulated

	Maximum Rating per Tube	Typical Operation One Tube
Filament Voltage*	—	22
D.C. Plate Voltage	20000	15000
D.C. Grid Voltage	-3000	-1100
Plate Load Resistance (ohms)	—	2600
Peak R.F. Grid Voltage	—	2400
D.C. Plate Current (amps.)	3.0	2.9
Plate Input (kw.)	50	43.5
Plate Dissipation (kw.)	20	11.0
D.C. Grid Current (Approx.) (ma.)	400	300
Driving Power (Approx.) (watts)	—	700
Plate Power Output (kw.)	—	32.5
Frequency Limit for Above Operation (mc.)	1.5	15

*Two filament units in series

**Averaged over any audio-frequency cycle of sine-wave form

***At crest of audio frequency cycle with modulation factor of 1.0.

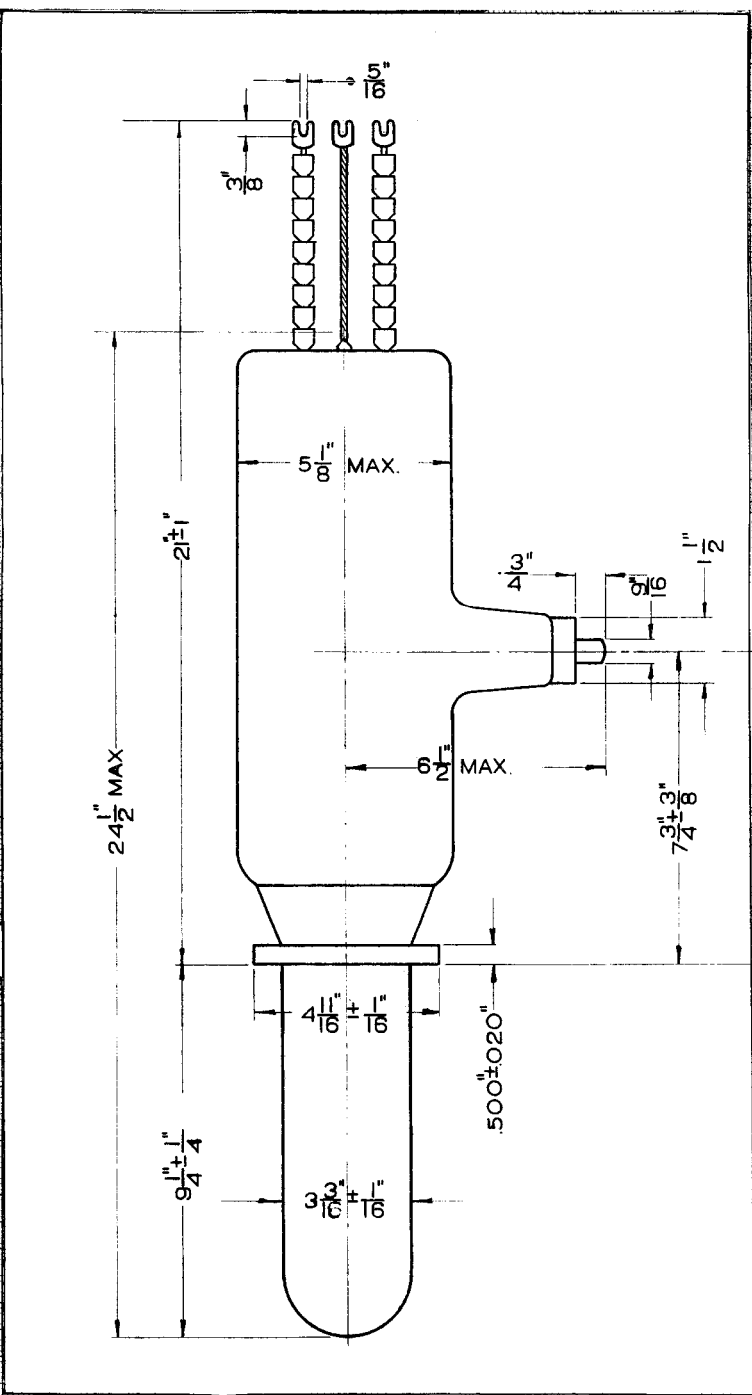
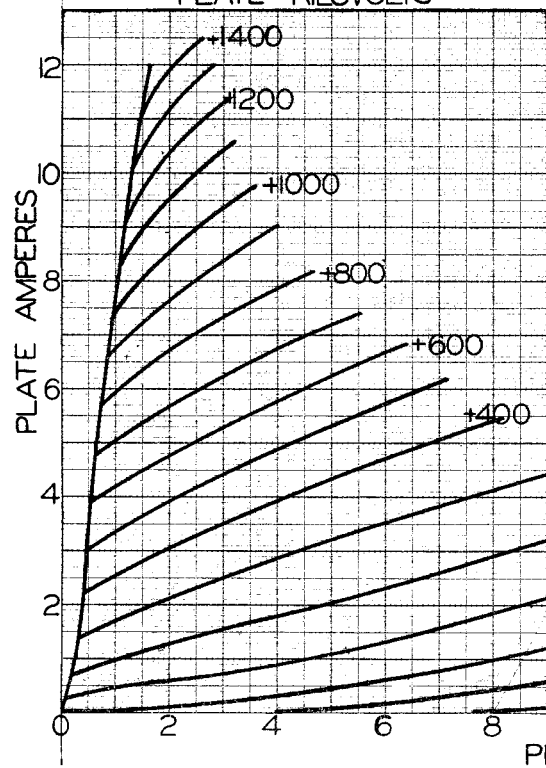
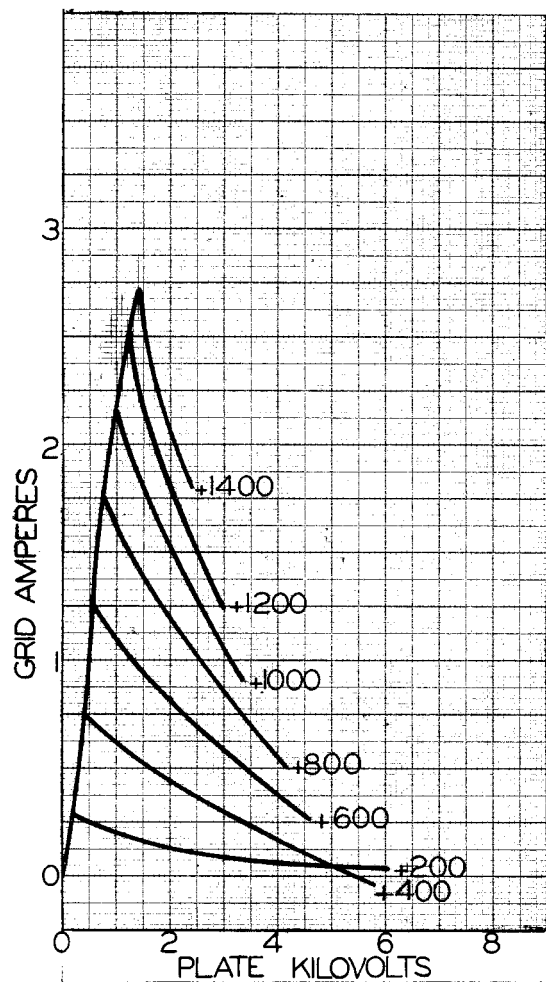
Cooling: A water flow of 8 to 15 gallons per minute must start before the application of any voltages and should be continued for at least 2 minutes after removal of voltages. The water temperature at the outlet must not exceed 70° C.



AMPEREX

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859 - AMPEREX TRANSMITTING TUBE



$E_f = 22$ VOLTS A.C.

0 GRID VOLTS

-200

-400

PLATE KILOVOLTS