

(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	22
D.C. Plate Voltage	20000	15000	12000
D.C. Grid Voltage	—	-350	-300
Plate Load Resistance (ohms)	—	2750	2500
Peak R.F. Grid Voltage	—	700	625
D.C. Plate Current (amps.)	1.5	1.5	1.3
Plate Input (kw.)	30	22.5	15.6
Plate Dissipation (kw.)	20	15.0	10.2
D.C. Grid Current (Approx.) (ma.)	—	0	10
Driving Power (Approx.) (watts)***	—	400	350
Power Output (kw.)	—	7.5	5.0
Frequency Limit for Above Operation (mc.)	1.6	20	30

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	22
D.C. Plate Voltage	12000	10000	7000
D.C. Grid Voltage	-3000	-1000	-720
Obtained by Grid Leak Resistor of (ohms)	—	4000	2400
Plate Load Resistance (ohms)	—	3800	2200
Peak R.F. Grid Voltage	—	1800	1600
D.C. Plate Current (amps.)	1.5	1.3	1.5
Plate Input (kw.)	18.0	13	10.5
Plate Dissipation (kw.)	12.0	2.5	2.5
D.C. Grid Current (Approx.) (ma.)	400	250	300

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	450
Power Output (kw.)	—	10.5	8
Frequency Limit for Above Operation (mc.)	1.6	20	30

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

	Maximum Rating per Tube	Typical Operation One Tube	
Filament Voltage*	—	22	22
D.C. Plate Voltage	20000	15000	8000
D.C. Grid Voltage	-3000	-1100	-600
Plate Load Resistance (ohms)	—	2600	1600
Peak R.F. Grid Voltage	—	2400	1600
D.C. Plate Current (amps.)	3.0	2.9	2.2
Plate Input (kw.)	50	43.5	17.6
Plate Dissipation (kw.)	20	11.0	6.6
D.C. Grid Current (Approx.) (ma.)	400	300	280
Driving Power (Approx) (watts)	—	700	450
Plate Power Output (kw.)	—	32.5	11
Frequency Limit for Above Operation (mc.)	1.5	15	50

*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.

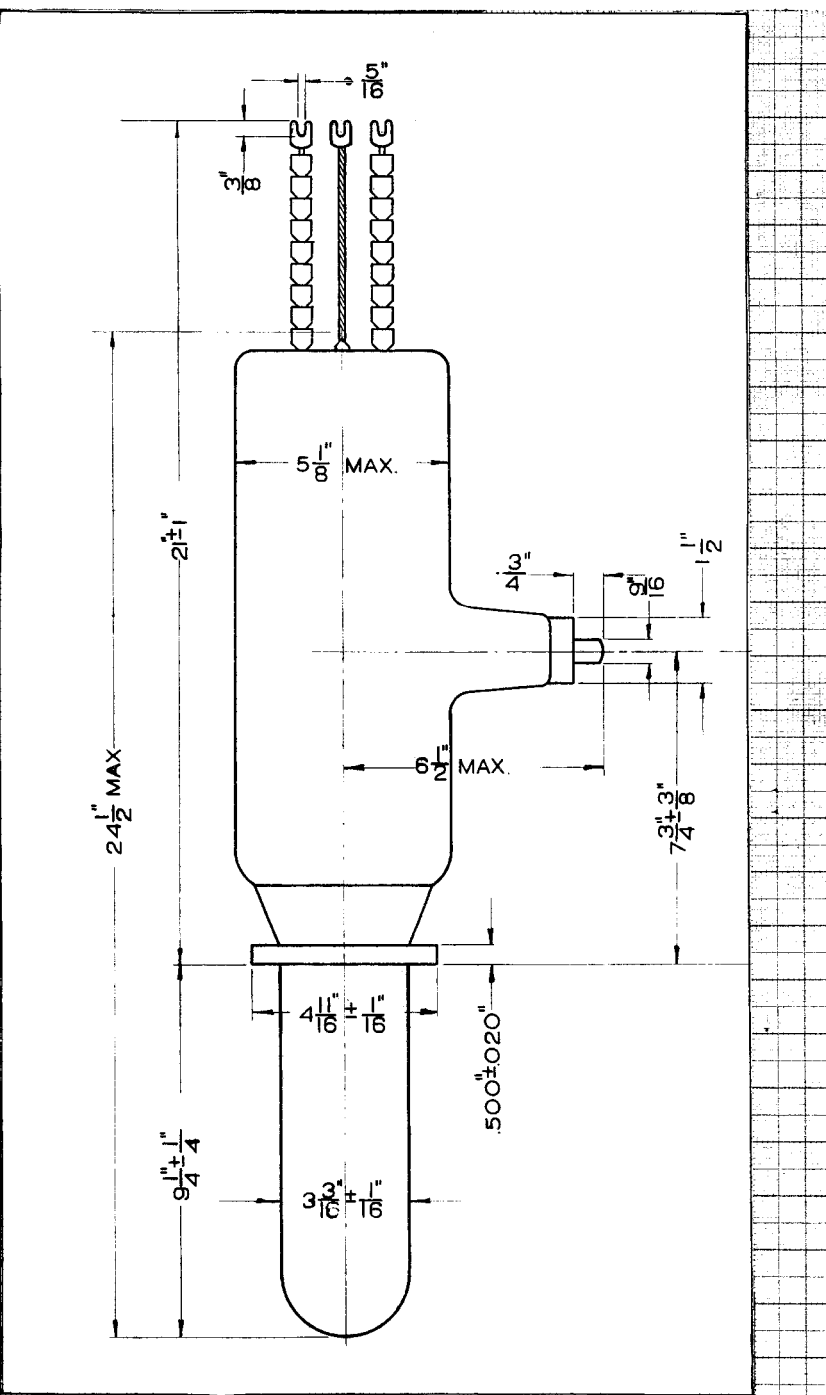
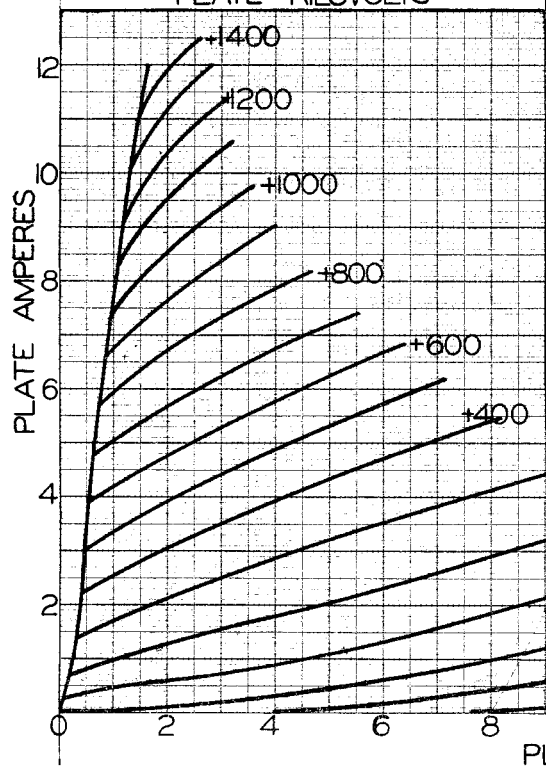
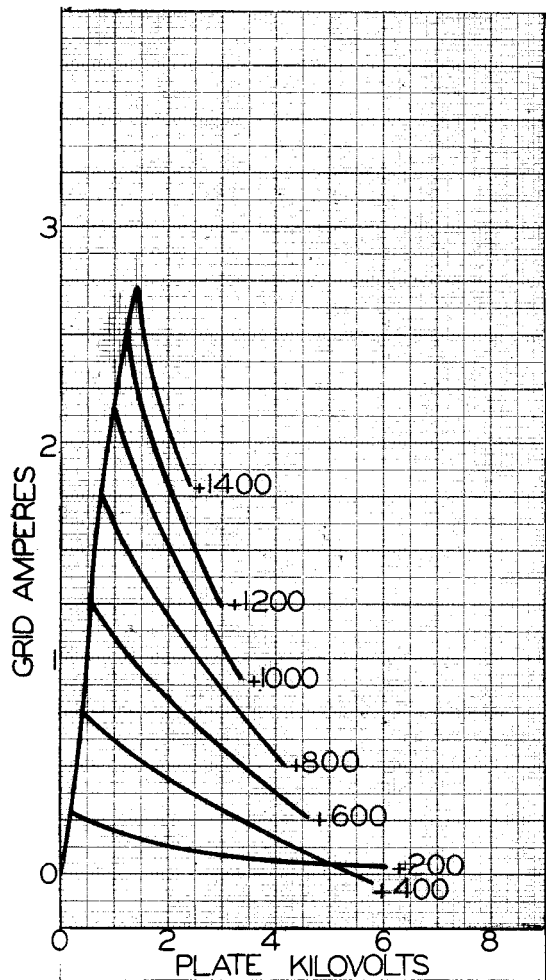
Cooling: A water flow of 8 to 15 gallons per minute must start before the application of any voltages and should be continued for at least 2 minutes after removal of voltages. The water temperature at the outlet must not exceed 70° C.



AMPEREX

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859 - AMPEREX TRANSMITTING TUBE



$E_f = 22$ VOLTS A.C.

0 GRID VOLTS

-200

-400