

AMPEREX TUBE TYPE 502

Power Amplifier and Oscillator

GENERAL CHARACTERISTICS

WATER COOLED TRIODE

ELECTRICAL

Filament	Thoriated Tungsten
Starting current must never exceed 36 amps.	
Voltage	7.5 volts
Current	24 amperes
Amplification Factor	24
Transconductance (Grid to Plate) $I_p = 1.0$ amp.	17,500 micromhos
Direct Interelectrode Capacitances	
Grid to Plate	10 $\mu\mu\text{f}$
Grid to Filament	14 $\mu\mu\text{f}$
Plate to Filament	1.3 $\mu\mu\text{f}$
Frequency for Maximum Ratings	150 megacycles

MECHANICAL

Maximum Overall Dimensions	
Length	8 $\frac{7}{8}$ inches
Diameter	2 $\frac{1}{8}$ inches
Mounting Position—Vertical	Anode Down
Type of Cooling	Water
Water Jacket	Amperex Type #DW-2200
Water Flow	1 gal. per min.
Pressure Drop ¹ (approx.)	1 lb. per sq. in.
Maximum Outlet Water Temperature	70°C
Maximum Glass Temperature	180°C
Net Weight (approx.)	5 $\frac{1}{2}$ pounds
Shipping Weight (approx.) (one tube)	7 pounds

¹The approximate water pressure is measured directly across the jacket alone and does not include connecting piping.

MAXIMUM RATINGS AND TYPICAL OPERATING CONDITIONS

A.F. Power Amplifier and Modulator—Class B

	Maximum Rating per Tube	Typical Operation Two Tubes
D.C. Plate Voltage	3500	3500
D.C. Grid Voltage	.....	200
Effective Load Resistance (plate to plate) (ohms)	.....	3820
Zero Signal D.C. Plate Current (amps)		0.100
Peak A.F. Grid to Grid Voltage	.....	1200
Max. Signal D.C. Plate Current (amps) ¹	1.0	1.9
Max. Signal Plate Input (kw) ¹	4.0	.....
Plate Dissipation (kw) ¹	1.5	.....
Max. Signal Driving Power (approx.) (watts)	.....	380
Max. Signal Power Output (kw)	.....	4.7

R.F. Power Amplifier—Class B—Telephony

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

	Maximum Rating per Tube	Typical Operation One Tube
D.C. Plate Voltage	3500	3500
D.C. Grid Voltage	.....	—200
Peak R.F. Grid Voltage	.....	295
D.C. Plate Current (amps)	0.8	0.5
Plate Input (kw)	2.25	.....
Plate Dissipation (kw)	1.5	1.2
D.C. Grid Current	.....	0
Driving Power (approx.) (watts) ²	.....	82
Power Output (kw)	.....	.610

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

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

	Maximum Rating per Tube	Typical Operation One Tube
D.C. Plate Voltage	2750	2500
D.C. Grid Voltage	600	600
Grid Resistor (ohms)	.....	2900
Cathode Resistor (ohms)	.....	45
Peak R.F. Grid Voltage	.....	950
D.C. Plate Current (amps)	.800	.570
Plate Input (kw)	2.0	.....
Plate Dissipation (kw)	1.0	.....
D.C. Grid Current (approx.) (ma)	150	100
Driving Power (approx.) (watts)	.....	90
Power Output (kw)	.....	1.0

Power Amplifier and Oscillator—Class C Telegraphy

(Key-down conditions per tube without amplitude modulation³)

	Maximum Rating per Tube	Typical Operation One Tube
D.C. Plate Voltage	3500	3500
D.C. Grid Voltage	—600	—450
Peak R.F. Grid Voltage	.....	880
D.C. Plate Current (amps)	1.0	860
Plate Input (kw)	3.0	.....
Plate Dissipation (kw)	1.5	.....
D.C. Grid Current (approx.) (ma)	150	150
Driving Power (approx.) (watts)	.....	120
Plate Power Output (kw)	.....	2.175

NOTES:

1. Averaged over any audio-frequency cycle of sine-wave form.

2. At crest of audio-frequency cycle with modulation factor of 1.0.

3. Modulation essentially negative may be used if the positive peak of the envelope does not exceed 115% of the carrier conditions.



