JINGGUANG 4CX5000A
Radial-Beam Power Triode

The JingGuang 4CX5000A is a forced-air cooled, 5000-watt plate dissipation, ceramic and metal tetrode. When a pair of these tubes is employed, they will provide 17.5 kilowatts of AF of RF power with zero driving power. The JG4CX5000A is especially well suited for use as an oscillator, amplifier, or modulator at frequencies up to and including 110 megahertz. The excellent characteristics of theJG4CX5000A provide outstanding performance in a linear single-sideband amplified Class AB_1 AF amplifier, or as a screen-modulated radio frequency amplifier. The JingGuang 4CX5000A is manufactured in the JingGuang Electrical Manufactory. JingGuang has achieved the improved performance described above with exact Replacement compatibility with the 4CX5000A manufactured in the United States.

JINGGUANG 4CX5000A

General Characteristics

Electrical

Filament Thoriated-tungsten mesh	
Voltage	7.50 ±0.37 V
Current @7.50V	75 A
Amplification factor	4.5
Direct interelectrode capacitances (grounded cathode):*	
Input	120.0 pF
Output	20.5 pF
Feedthrough	0.7 pF
Direct interelectrode capacitances (grounded Grid):*	
Input	56.0 pF
Output	21.5 pF
Feedthrough	0.1 pF
Maximum frequency for full ratings (CW)	220 MHz

Mechanical

Cooling	Forced air
Base	Special Coaxial
Air socket	SK-300A/SK-360
Air Chimney	SK-306/SK-356
Operating position	Vertical, Base up or down
Maximum operating temperature	250°C
Maximum dimensions:	
Length	231.8 mm (9.13 in.)
Diameter	125.4mm (4.94 in.)
Net weight	4.3 kg (9.5 lb)

* Capacitance values are for a cold tube measured in a shielded fixture

AF Power Amplifier or Oscillator- Class C Telegraphy

	Under 30 MHz	30 to 60 MHz	60 to 110 MHz	110 to 220 MHz
Maximum Ratings				
DC plate voltage	7,500 V	7,000V	6,500V	5,800V
DC screen voltage	1,500V	1,500V	1,500V	1,500V
DC plate current	3.0 A	2.8A	2.6A	2.6A
Plate dissipation	5,000 W	5,000 W	5,000 W	5,000 W
Grid dissipation	75 W	75 W	75 W	75 W
Screen dissipation	250W	250W	250W	250W

Typical Operation

	Under 30 MHz		108 MHz	220 MHz
DC plate voltage	7,500 V		6,500V	5,500V
DC screen voltage	500V		750V	680V
DC grid voltage	-350V		-350V	-140V
DC plate current	2.8 A		2.3A	1.6A
DC screen current	0.5A		0.2A	0.034A
DC grid current	0.25A		0.05A	0.030A
Peak RF grid voltage	590V		------	------
Driving Power	150W		100W	------
Plate dissipation	5,000W		------	------
Plate output power	16,000W	Useful output Power	10,000W	5,500W

JINGGUANG 4CX5000A

Plate Modulated RF Power Amplifier- Class C Telephony	
Maximum Ratings	
DC plate voltage	5,500V
DC screen voltage	1,000V
DC plate current	2.5A
Plate dissipation	3,500W
Grid dissipation	75W
Screen dissipation	250W
Typical Operation	
(Frequencies below 30MHz)	
DC plate voltage	5,000V
DC screen voltage	500V
Peak AF screen voltage(100% modulation)	450V
DC grid voltage	-400V
DC plate current	1.4A
DC screen current	0.26A
DC grid current	0.05A
Peak RF grid voltage	520V
Driving Power	25W
Plate dissipation	1,100W
Plate output power	5,800W

Screen Modulated RF Power Amplifier- Class C Telephony		
Maximum Ratings		
DC plate voltage		7,500V
DC screen voltage		750V
DC plate current		3.0A
Plate dissipation		5,000W
Grid dissipation		75W
Screen dissipation		250W
Typical Operation		
(Frequencies below 30MHz)		
DC plate voltage	7,500V	7,500V
DC screen voltage	350V	350V
Peak AF screen voltage(100% modulation)	550V	550V
DC grid voltage	-300V	-300V
DC plate current	0.9A	1.4A
DC screen current	-0.01A	-0.01A
DC grid current	0.015A	0.03A
Peak RF grid voltage	350V	375V
Grid driving Power	7W	11W
RF load impedance	2,000Ω	1,600Ω
Plate dissipation	4,000W	5,000W
Useful output power	2,750W	3,550W

JINGGUANG 4CX5000A

AF Amplifier or Modulator - Class AB_1				
Maximum Ratings(per tube)				
DC plate voltage				7,500V
DC screen voltage				1,500V
DC plate current				4.0A
Plate dissipation				6,000W
Grid dissipation				75W
Screen dissipation				250W
Typical Operation (two tubes)				
DC plate voltage	4,000V	5,000V	6,000V	7,000V
DC screen voltage	1,250V	1,250V	1,250V	1,250V
DC grid voltage	-270V	-280V	-310V	-325V
Maximum signal plate current	5.1A	4.4A	4.25A	3.65A
Zero signal plate current	1.25A	1.00A	0.83A	0.70A
Maximum signal screen current	0.35A	0.33A	0.30A	0.24A
Zero signal screen current	0A	0A	0A	0A
Peak AF driving voltage	250V	240V	270V	235V
Driving power	0V	0V	0V	0V
Load resistance, plate-to-plate	1500Ω	2370Ω	2940Ω	4100Ω
Maximum signal plate dissipation	-270V	-280V	-310V	-325V
Maximum signal plate output power	-270V	-280V	-310V	-325V
RF Linear Amplifier – Class AB_1				
Maximum Ratings				
DC plate voltage				7,500V
DC screen voltage				1,500V
DC plate current				4.0A
Plate dissipation				6,000W
Grid dissipation				75W
Screen dissipation				250W
Typical Operation				
(Frequencies below 30MHz)				
DC plate voltage				7,500V
DC screen voltage				1,250V
DC grid voltage				-300V
Maximum signal plate current				1.9A
Zero signal plate current				0.5A
Maximum signal screen current				0.2A
Peak RF driving voltage				300V
Driving power				0W
Plate dissipation				4,200W
Plate output power				10,000W

JINGGUANG 4CX5000A

Filament Voltage

The JG4CX5000A is designed to operate with 7.50 Volts applied to the filament. Under no circumstances should filament voltage be allowed to deviate from this value by more than 5%. The useful life of the tube can be extended by adhering to this value as closely as possible.

Control Grid Operation

The JG4CX5000A has a maximum control grid dissipation rating of 75 watts; failure to respect this maximum will result in damage to the tube. Tube life can be must be extended by maintaining grid bias and driving power at or near the recommended values whenever possible.

Screen-Grid Operation

Under no conditions should the screen dissipation be allowed to exceed 250 watts. In that excessive screen dissipation is likely to result where plate voltage, plate load, or bias voltage are removed, suitable precautions should be taken to avoid these conditions while filament and screen voltages are applied.

Plate Dissipation

Under most classes of operation the maximum plate dissipation allowable for the JG4CX5000A is 5000 watts; however, in SSB and audio amplifier applications, this maximum may be exceeded by 20% thus allowing an effective 6000 watts of plate dissipation. During tuning, plate dissipation may be permitted to rise above the stated maximums for brief periods of time.

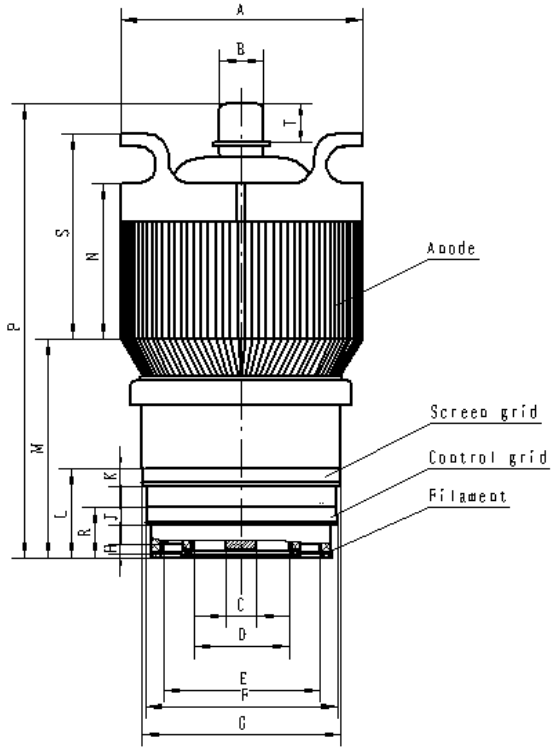
Cooling

Forced air cooling of the base, base seals, and other external tube surfaces is required for all classes of operation. The use of the SK-300A socket and the SK-306 chimney, in conjunction with a blower capable of sustaining the required air flow is highly recommended. It should be noted that maintaining surface temperatures below the maximum values will substantially prolong the useful life of the tube.

The air flow required to sustain the tube surface temperature at 200℃(at sea level and for operation below 30 megahertz)have been tabulated below. It is necessary to keep in mind that high altitude operation, operation at frequencies exceeding 30 megahertz, or operation where ambient air temperatures exceed 50℃ will require addition air flow to maintain the desired tube surface temperature.

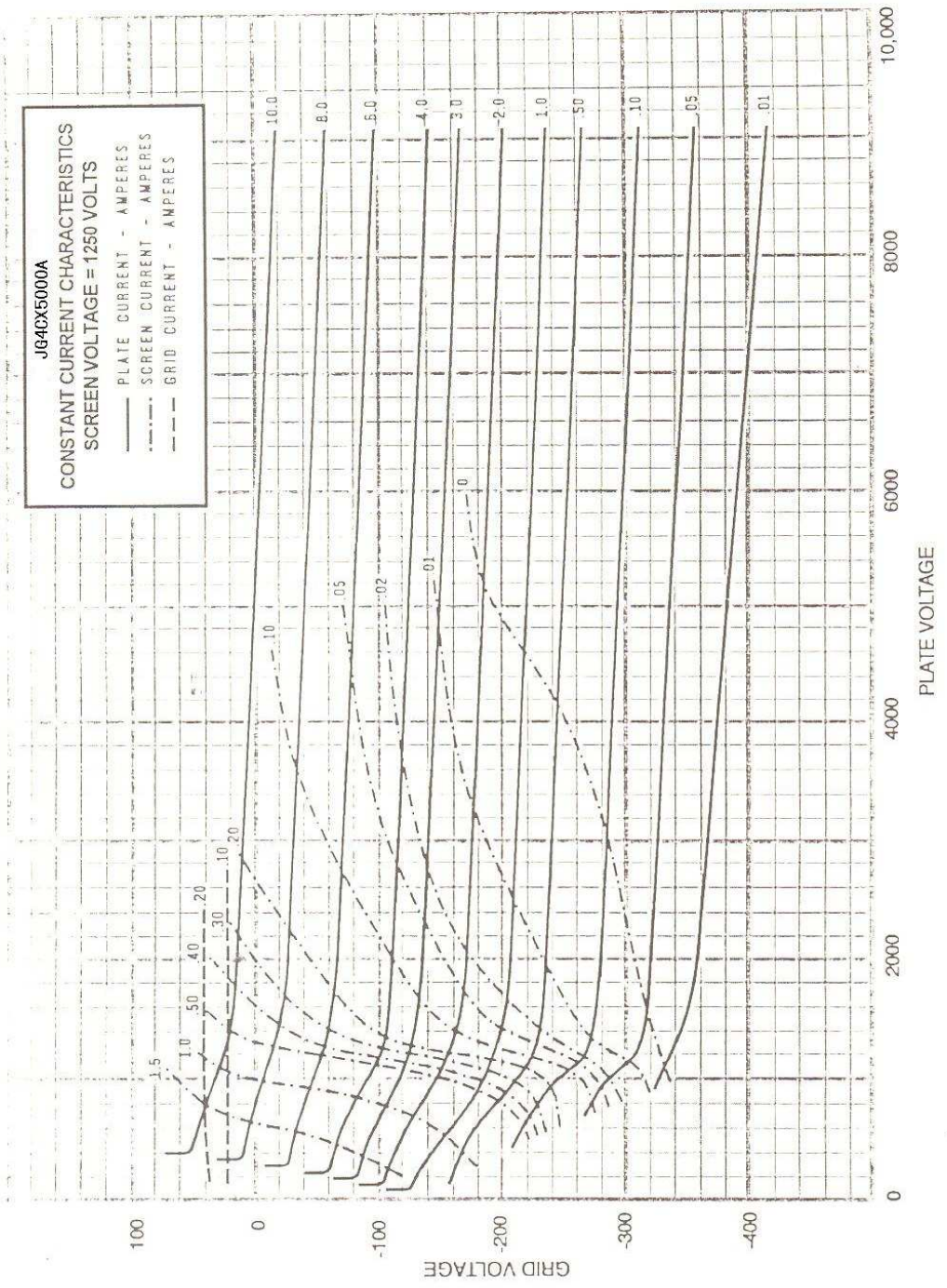
Recommended cooling conditions		
Dissipation (W)	Air flow(CFM)	Pressure drop(Inches of H_2O)
2000	74	0.4
3000	105	0.7
4000	145	1.1
5000	190	1.5
6000	230	2.0

JG 4CX5000A Outline drawing



Dimensional Data				
	Millimeters		Inches	
	Min	Max	Min	Max
C	15.24	19.30	0.60	0.76
D	48.16	49.17	1.896	1.936
E	79.58	80.59	3.133	3.173
F	96.32	97.33	3.792	3.832
G	101.09	102.11	3.980	4.020
H	4.780		0.188	
J	4.780		0.188	
K	4.780		0.188	
L	44.81	46.38	1.764	1.826
P	223.82	230.17	8.812	9.062
R	25.04	26.67	0.986	1.050
T	9.530		0.375	
A	122.22	125.43	4.812	4.938
B	21.72	22.73	0.855	0.895
M	106.38	115.90	4.186	4.568
N	73.03	82.55	2.875	3.250
S	98.43	107.95	3.875	4.250

JINGGUANG 4CX5000A



JINGGUANG 4CX5000A