F-4600A

RADIAL BEAM POWER TETRODE

DESCRIPTION

The F-4600A is a metal and ceramic forced-air-cooled tetrode designed for use in voltage regulator service under severe environmental conditions. It's uses include operation in airborne as well as fixed-station equipment. The controlled plate characteristics provide the high transconductance required in series regulator service over a wide range of voltage and/or current fluctuations in the load or line supply. The unipotential cathode is of the oxide-coated matrix type and the anode radiator assembly features integral brazed construction. Internal processing is especially rigorous and includes a double vacuum exhaust procedure that permits higher temperature degassing of internal elements.

Electrical Characteristics	**Min.**	**Nom.**	**Max.**
Heater Voltage		5.5	6.0 Volts
Heater Current at 5.5 Volts	16.3		18.2 Amp
Heater Starting Current			55 Amp
Cathode Warm Up Time	5		Minutes
Grid Voltage			
Ib=.25A Eb=3500V Ec2=400V Rg1=30,000 ohms	5		30 Volts
Ib=.5A Eb=600V Ec2=400V Rg1=30,000 ohms	5		30 Volts
Screen Current			
Ib=.25A Eb=3500V Ec2=400V Rg1=30,000 ohms	—15		0 ma
Ib=.5A Eb=600V Ec2=400V Rg1=30,000 ohms	—30		0 ma
Pulse Emission Sinusoid			
eb=ec2=ec1 etd/ik=90a			
tp=2—10us (baseline) prr=60 t=120			650 Volts
Amplification Factor (Grid Screen)		17	
Ib=.60A Eb=2500V Ec2=600V			
Direct Interelectrode Capacitances			
Grid to Plate (1)			.17 pf
Grid to Cathode-Heater	37		46 pf
Plate to Cathode-Heater (1 & 2)			.017 pf
Grid to Screen	46		62 pf
Screen to Plate	14.6		17.8 pf
Screen to Cathode-Heater (2)			1.4 pf

Mechanical Characteristics

Mounting Position	Any
Type of Cooling	Forced Air
Maximum Plate Core and Seal Temperature (3)	250 C
Net Weight (approx.)	2 lbs.

Vibration: Ef=5.5V Ebb=450V Ecc2=300V Eccl/Ib=10ma
Rp=2000 ohms Rg2=1000 ohms Rg1=30 ohms
Sweep Cycle=6 minutes in each of three planes X, Y & Z
(a) 5-22 cps with a fixed double amplitude of .240 inch ± 10%
(b) 22-200 cps at fixed acceleration of 10g ± 10%
(c) 200-400 cps at fixed acceleration of 3g ± 10%
Vibration test end points
If, Grid Voltage (1) (2), Screen Current (1) (2) and Pulse emission as per Electrical Characteristics

Voltage Regulator Service — Maximum CCS Ratings (4)

D-C Plate Voltage	3500 Volts
D-C Screen Voltage	1000 Volts
D-C Plate Current	1 Amp
Screen Dissipation	50 Watts
Plate Dissipation	1750 Watts

Note 1. Measured with an 8" OD, 3" ID flat metal shield, located in the plane of and connected to the screen terminal.

Note 2. Measured with an 8" OD, 2⅜" ID flat metal shield located in the plane of and connected to the grid terminal.

Note 3. A temperature sensitive lacquer is convenient for this measurement.

Note 4. Maximum ratings are limiting values above which the serviceability of the tube may be impaired with respect to life and satisfactory performance and should not be exceeded under the worst probable condition.

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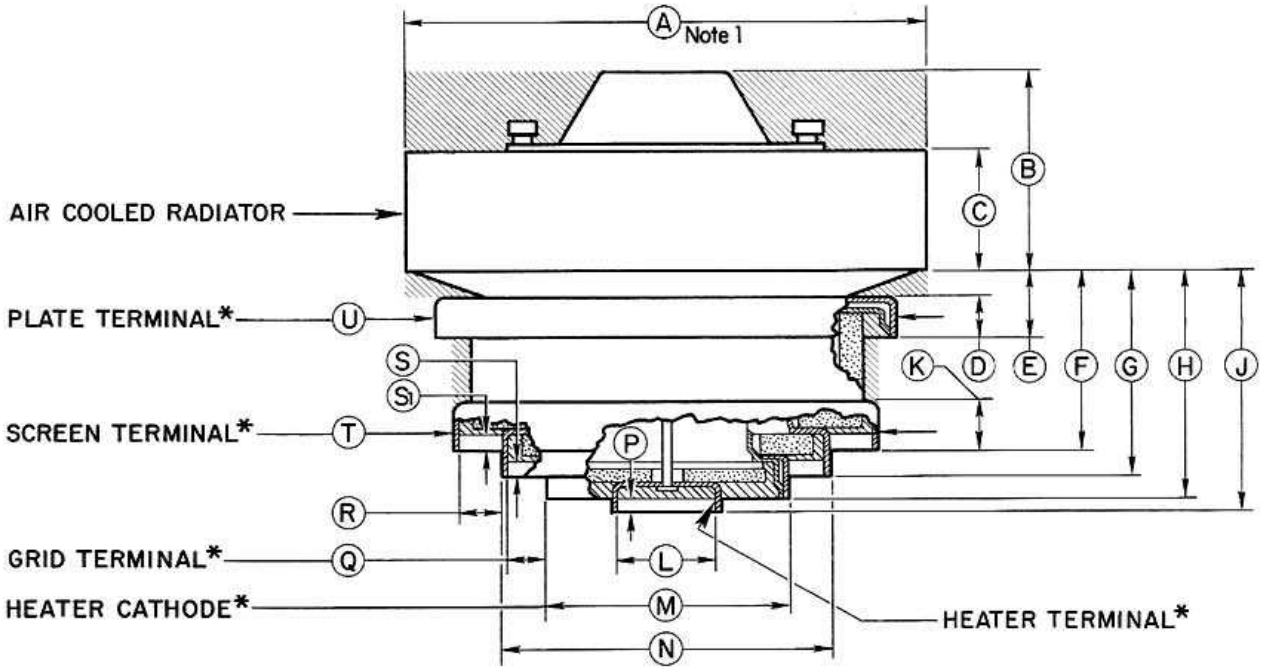


*CONTACT SURFACE, Note 1

Accessories	
Socket	57282

DIMENSIONAL DATA (IN INCHES)								
DIM.	MIN.	MAX.	DIM.	MIN.	MAX.	DIM.	MIN.	MAX.
A	3.690 Dia.	3.750 Dia.	H	1.600	1.770	Q	.200	
B	1.405	1.545	J	1.690	1.860	R	.250	
C	.865	.925	K	.22		S	.105	
D	.22		L	.695 Dia.	.725 Dia.	S_1	.105	
E	.410	.580	M	1.712 Dia.	1.748 Dia.	T	3.010 Dia.	3.050 Dia.
F	1.260	1.370	N	2.305 Dia.	2.335 Dia.	U	3.216 Dia.	3.264 Dia.
G	1.435	1.595	P	.135				

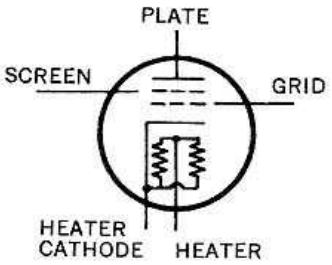
HATCHED REGION NOTE 2

CERAMIC INSULATOR

Note 1. Concentricity between the various diameters is such that the tube will enter a gauge having suitably spaced concentric apertures and posts of the following diameters:

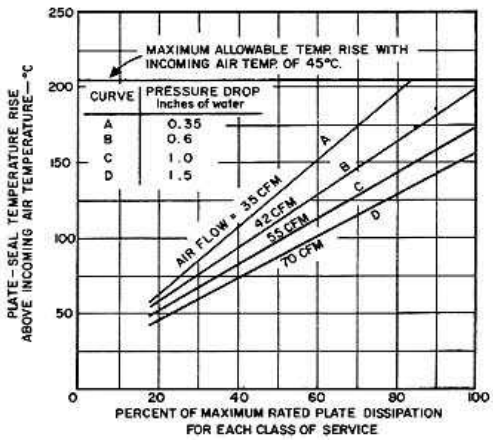
A. Radiator Band	3.7805
B. Plate Terminal	3.2605
C. Screen Terminal	3.0605
D. Grid Terminal	2.3375
E. Heater-Cathode Terminal	1.7445
F. Heater Terminal	0.6945

Note 2. Keep all hatched regions clear. Do not allow contacts or circuit components to protrude into these annular volumes. Diameters of hatched areas above Air-Cooled Radiator, Plate Terminal Contact Surface, and Screen Terminal Contact Surface shall not be greater than its associated diameter.



TYPICAL COOLING CHARACTERISTICS

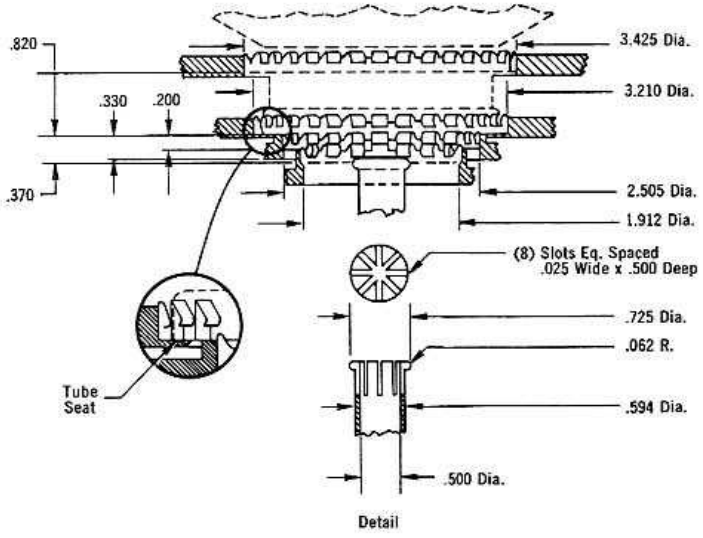
AIR FLOW THROUGH RADIATOR IN EITHER DIRECTION
MAXIMUM PLATE-SEAL TEMPERATURE=250°C.



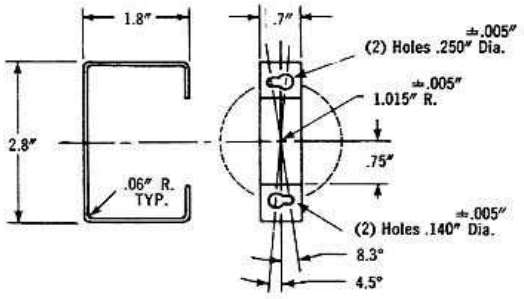
Standby Operation: Cooling Air is required when only heater voltage is applied to the tube.

Shutdown Operation: Air flow should continue for several minutes after all power to the tube is removed.

PREFERRED MOUNTING ARRANGEMENT



TUBE EXTRACTOR



NOTES:
1. Material — 1/16" thk. Cold Rolled Steel
2. Slot Between Holes
3. Round All Edges

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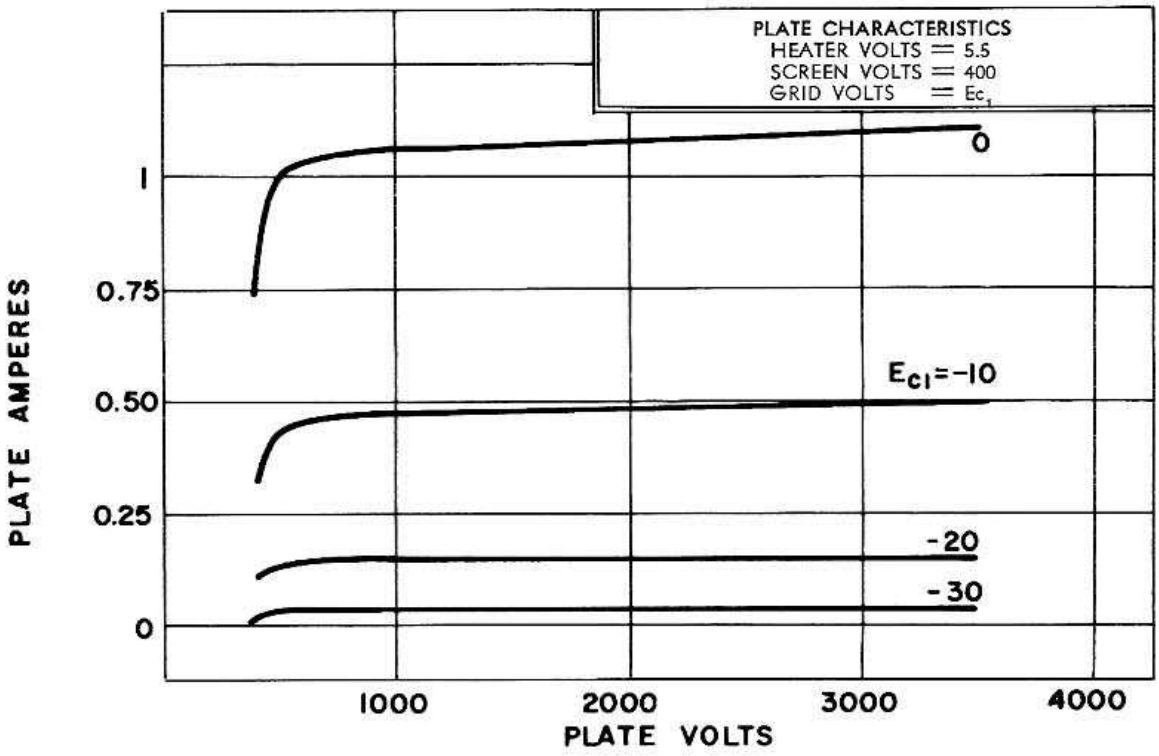

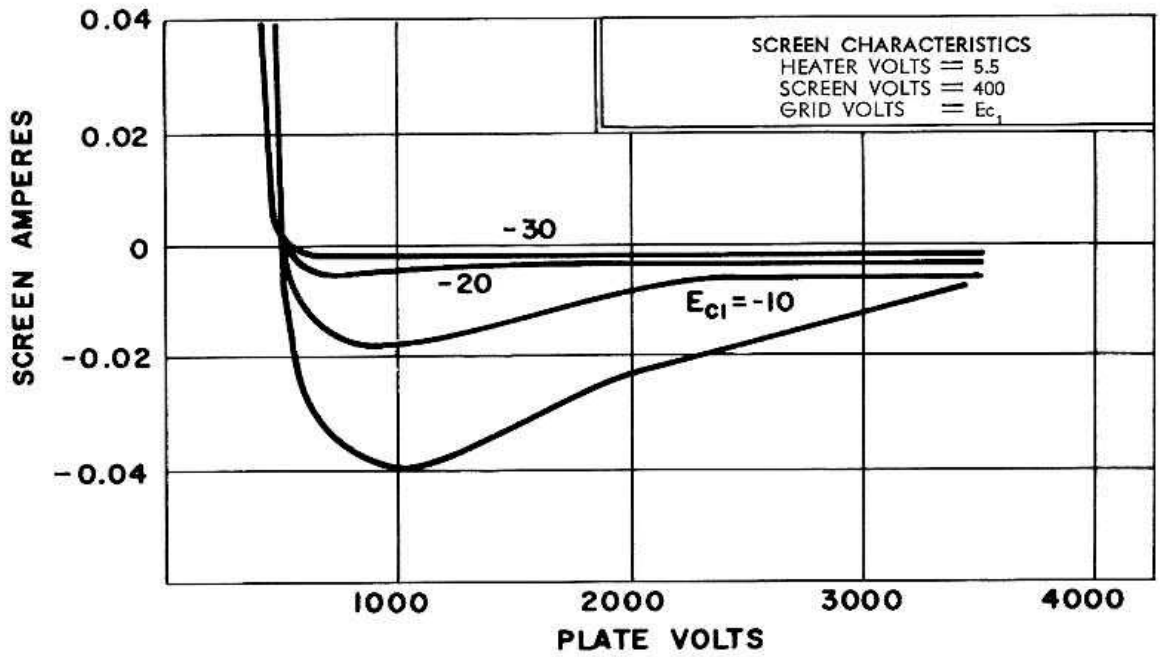

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