



EITEL-McCULLOUGH, INC.
SAN CARLOS, CALIFORNIA

3CX15,000A3

MEDIUM-MU

AIR-COOLED
POWER TRIODE

The Eimac 3CX15,000 A3 is an air-cooled, ceramic-metal power triode designed primarily for use in industrial radio-frequency heating services. Its air-cooled anode is rated at 15 kilowatts of plate dissipation.

Full ratings apply up to 100 megacycles. Plentiful reserve emission is available from its one kilowatt filament. The grid structure is rated at 500 watts making this tube an excellent choice for severe application.

It is also recommended as a grounded grid FM amplifier, a conventional plate-modulated amplifier or as a linear amplifier in new equipment designs.



GENERAL CHARACTERISTICS

ELECTRICAL

	Min.	Nom.	Max.
Filament: Thoriated-Tungsten			
Voltage - - - - -		6.3	volts
Current - - - - -	152		172 amperes
Amplification Factor - - - - -		20	
Interelectrode capacitances, Grounded Cathode:			
Grid-Filament - - - - -	48		58 uuf
Plate-Filament - - - - -	1.2		1.5 uuf
Grid-Plate - - - - -	30		38 uuf
Frequency for Maximum Ratings - - - - -			100 Mc

MECHANICAL

Base - - - - -	Coaxial
Recommended Socket - - - - -	Eimac SK-1300
Recommended Chimney - - - - -	Eimac SK-1306
Operating Position - - - - -	Vertical, base up or down
Cooling - - - - -	Forced air
Maximum Operating Temperatures:	
Ceramic-to-Metal Seals and Anode Core - - - - -	250° C
Maximum Dimensions:	
Height - - - - -	8.5 inches
Diameter - - - - -	7.0 inches
Net Weight - - - - -	12 pounds

RADIO-FREQUENCY POWER AMPLIFIER OR OSCILLATOR

Industrial
Class-C Telegraphy or FM Telephony (Key-down conditions)

MAXIMUM RATINGS

DC PLATE VOLTAGE - - -	8,000 VOLTS
DC PLATE CURRENT - - -	6.0 AMPS
GRID DISSIPATION - - -	500 WATTS
PLATE DISSIPATION - - -	15 KW

TYPICAL OPERATION

DC Plate Voltage - - - - -	7000 volts
DC Plate Current - - - - -	6.0 amps
DC Grid Voltage - - - - -	-600 volts
DC Grid Current - - - - -	660 mA
Peak RF Grid Voltage - - - - -	1040 volts
Driving Power - - - - -	660 watts
Plate Input Power - - - - -	42 kW
Plate Dissipation - - - - -	12 kW
Plate Output Power - - - - -	30 kW
Approximate Load Impedance - - - - -	-600 ohms



3CX15,000A3

RADIO-FREQUENCY POWER AMPLIFIER PLATE-MODULATED

Class-C

MAXIMUM RATINGS

DC PLATE VOLTAGE -	- 6,500 MAX. VOLTS
DC PLATE CURRENT -	- 5.0 MAX. AMPS
PLATE DISSIPATION -	- 10 MAX. KW
GRID DISSIPATION -	- 500 MAX. WATTS

TYPICAL OPERATION

DC Plate Voltage -	- - - 5000	6000 volts
DC Grid Voltage -	- - - 550	600 volts
DC Plate Current -	- - - 2.9	3.9 amps
DC Grid Current -	- - - 450	520 mA
Driving Power -	- - - 375	490 watts
Plate Output Power -	- - 13.0	18.0 kW

RADIO-FREQUENCY

LINEAR AMPLIFIER Class-AB or B

MAXIMUM RATINGS

DC PLATE VOLTAGE -	8,000 MAX. VOLTS
DC PLATE CURRENT -	6.0 MAX. AMPS
PLATE DISSIPATION -	15 MAX. KW
GRID DISSIPATION -	500 MAX. WATTS

*Adjust to give specified zero-signal dc plate current.

TYPICAL OPERATION, Class AB₂

DC Plate Voltage -	- - - - - 7000 volts
DC Grid Voltage* -	- - - - - -270 volts
Zero-Sig Plate Current -	- - - - - 1.5 amps
Max-Sig DC Plate Current -	- - - - - 4.8 amps
Max-Sig DC Grid Current -	- - - - - 400 mA
Peak RF Grid Voltage -	- - - - - 540 volts
Driving Power -	- - - - - 215 watts
Plate Output Power -	- - - - - 23 kW

Note: "TYPICAL OPERATION" data are obtained by calculation from published characteristic curves. No allowance for circuit losses has been made.

APPLICATION

ELECTRICAL

FILAMENT—The rated filament voltage for the 3CX15,000A3 is 6.3 volts. Filament voltage, as measured at the socket, should be maintained at 6.3 volts plus or minus five percent for long tube life and consistent performance. Maximum life will be obtained by operation at minus 5 percent.

CONTROL GRID OPERATION—The grid current rating is one ampere dc. This value should not be exceeded for more than very short periods such as during tuning and over-current protection in the grid circuit should be provided. Ordinarily it will not be necessary to operate with more than 0.4 to 0.6 amperes grid current to obtain reasonable efficiency. In industrial heating service with varying loads, grid current should be monitored continuously with a dc current meter. The maximum grid dissipation rating is 500 watts.

PLATE OPERATION—Maximum plate voltage rating of 8000 volts and maximum plate current of 6.0 amps should not be applied simultaneously as rated plate dissipation may be exceeded. When used as a plate modulated rf amplifier, input is reduced to 6500 volts at 5.0 amperes dc.

Plate over-current protection should be provided to remove plate voltage quickly in the event of an over-load or an arc-over at the load. In addition current limiting power supply resistors should be used. These precautions are especially important in industrial service with its wide variations in loading.

Spark gaps from plate to ground should be used to prevent transient voltages from flashing across the tube envelope during any fault conditions.

HIGH FREQUENCY OPERATION--The 3CX15,000A3 is usable to 140 Mc. At this frequency, plate voltage must be reduced to 7000 volts in class A, B or C service. For plate-modulated applications at 140 Mc, plate voltage is reduced to 5500 volts.

MOUNTING--The 3CX15,000A3 must be mounted vertically, either base up or down.

SOCKET--The Eimac SK-1300 socket is used with the 3CX15,000A3 for making connections to the filament and grid.

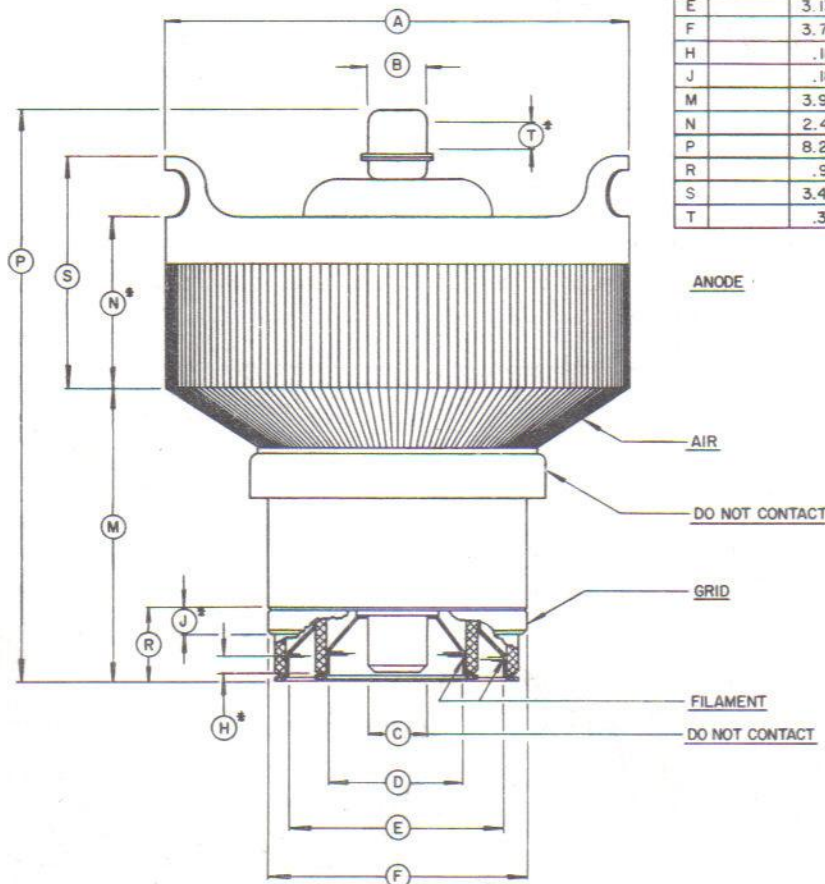
COOLING--Forced-air cooling is required to adequately maintain the rated ceramic-metal seal and anode core temperature of 250°C or below. The table below lists minimum air-flow requirements to maintain tube temperatures at 225°C in 40°C ambient air using the Eimac SK-1300 socket and SK-1306 chimney. Air flow in the base-to-anode direction is recommended; reverse air-flow may be used, but users should contact Eitel-McCullough, Inc. for specific recommendations.

MINIMUM AIR-FLOW REQUIREMENTS (Base-to-Anode Air-Flow)		
*Plate Dissipation (kW)	Air-Flow (CFM)	Pressure Drop (Inches water)
5.0	35	0.2
7.5	195	0.7
10.0	360	2.0
12.5	590	4.9
15.0	970	10.5

SPECIAL APPLICATION--If it is desired to operate this tube under conditions widely different from those given here, write to Power Grid Marketing, Eitel-McCullough, Inc., 301 Industrial Way, San Carlos, California for information and recommendations.

*An additional 1500 watts has been included in preparing this tabulation to compensate for grid and filament power.

DIMENSION DATA			
REF.	NOM.	MIN.	MAX.
A	6.928	7.050	
B	.855	.895	
C	.720	.760	
D	1.896	1.936	
E	3.133	3.173	
F	3.792	3.832	
H	.188		
J	.188		
M	3.950	4.300	
N	2.412	2.788	
P	8.250	8.750	
R	.986	1.050	
S	3.412	3.788	
T	.375		



*CONTACT SURFACE
ALL DIMENSIONS IN INCHES



3CX15,000A3

**EIMAC 3CX15,000A3
TYPICAL
CONSTANT CURRENT
CHARACTERISTICS**

— PLATE CURRENT — AMPERES
- - - GRID CURRENT — AMPERES

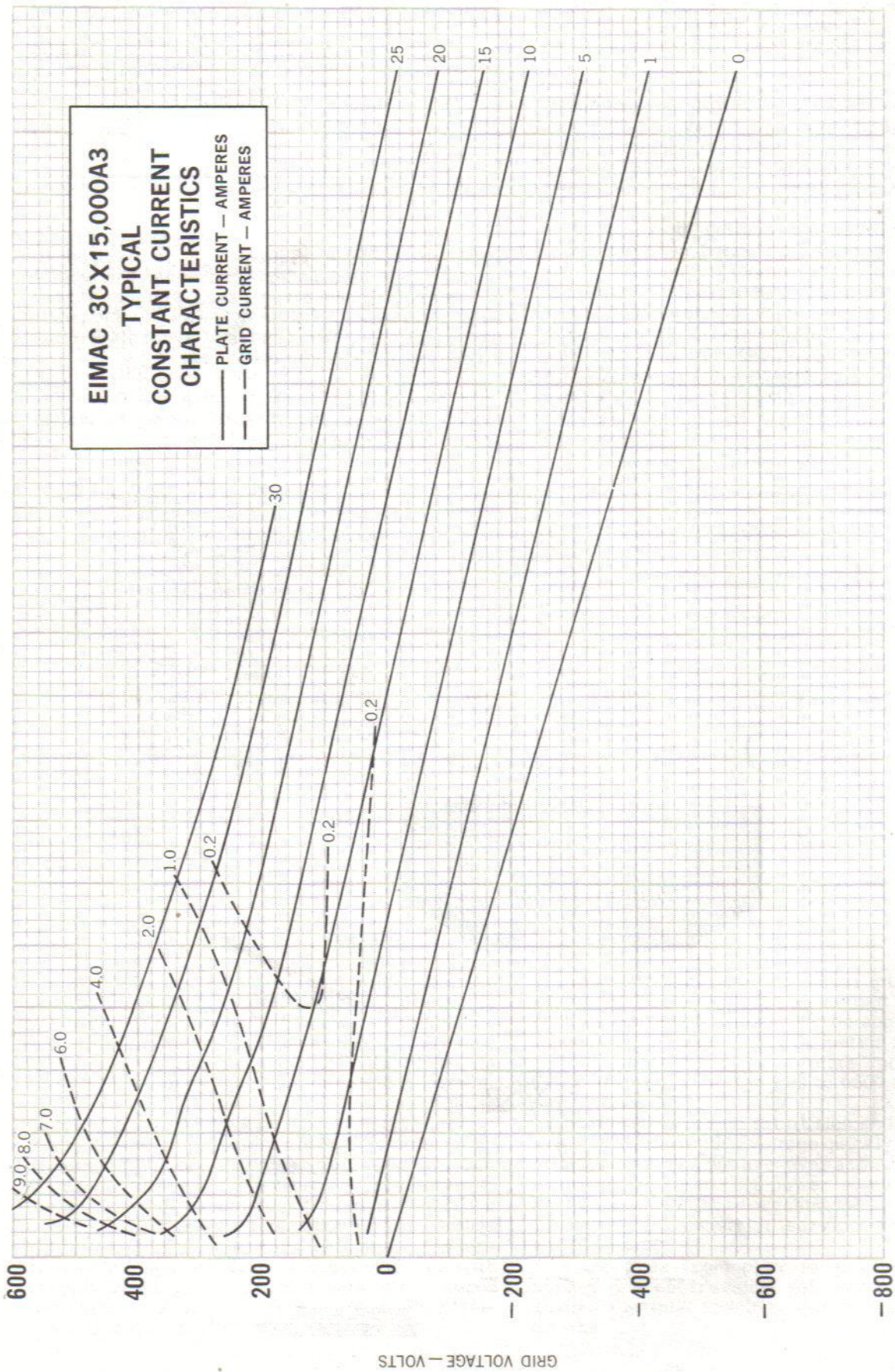


PLATE VOLTAGE — KILOVOLTS

GRID VOLTAGE — VOLTS