



**EITEL-McCULLOUGH, INC.**  
SAN BRUNO · CALIFORNIA

TENTATIVE DATA

**4KMP10,000LF**

**PULSE AMPLIFIER**

**L-BAND KLYSTRON**

The Eimac 4KMP10,000LF is a four-cavity, magnetically focused, pulse-amplifier klystron of ceramic and metal. It is designed for use at frequencies between 570 and 630 megacycles and will deliver a minimum pulse output power of 200 kilowatts at two percent duty, or 400 kilowatts at one percent duty, with an average power of four kilowatts. Nominal power gain is 57 db.

This klystron employs the Eimac Modulating Anode which provides an effective means of pulse modulating the output power without changing the beam voltage. A modulating anode voltage of approximately one half the beam voltage is sufficient to realize full rated pulse output power.

The resonant cavities for the 4KMP10,000LF are completed through tuning boxes which enclose the cylindrical ceramic windows of the klystron and all tuning is accomplished outside the vacuum envelope. This design permits a wide tuning range, and allows external cavity loading for broad-band operation. It also permits an unlimited number of tuning cycles without risk of damage to the vacuum seals.

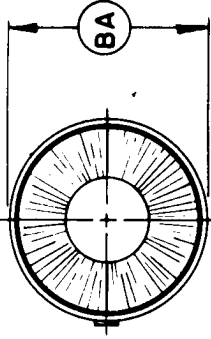
Eimac Klystron Amplifier Circuit Assembly H-127, for use with the 4KMP10,000LF, covers the frequency range of 570 to 630 megacycles. This assembly includes a klystron supporting structure, electromagnetic focusing coils, tuning boxes, adjustable output load coupler, and an Eimac SK-1200 socket.

#### CHARACTERISTICS

##### ELECTRICAL

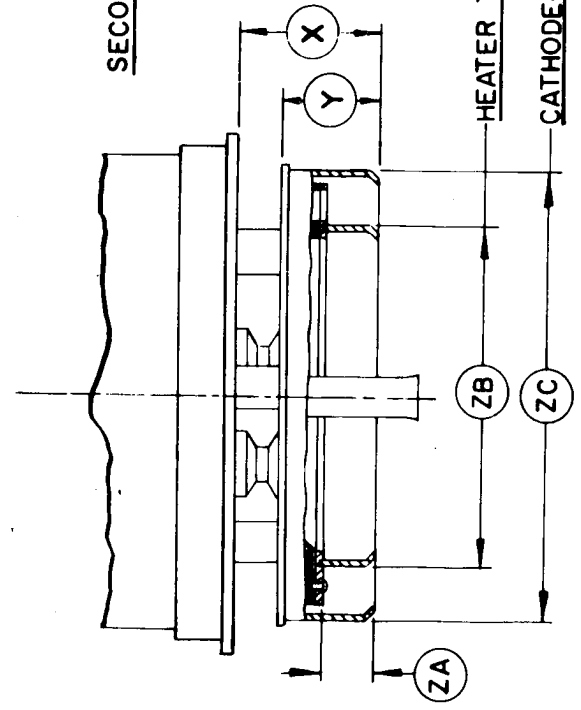
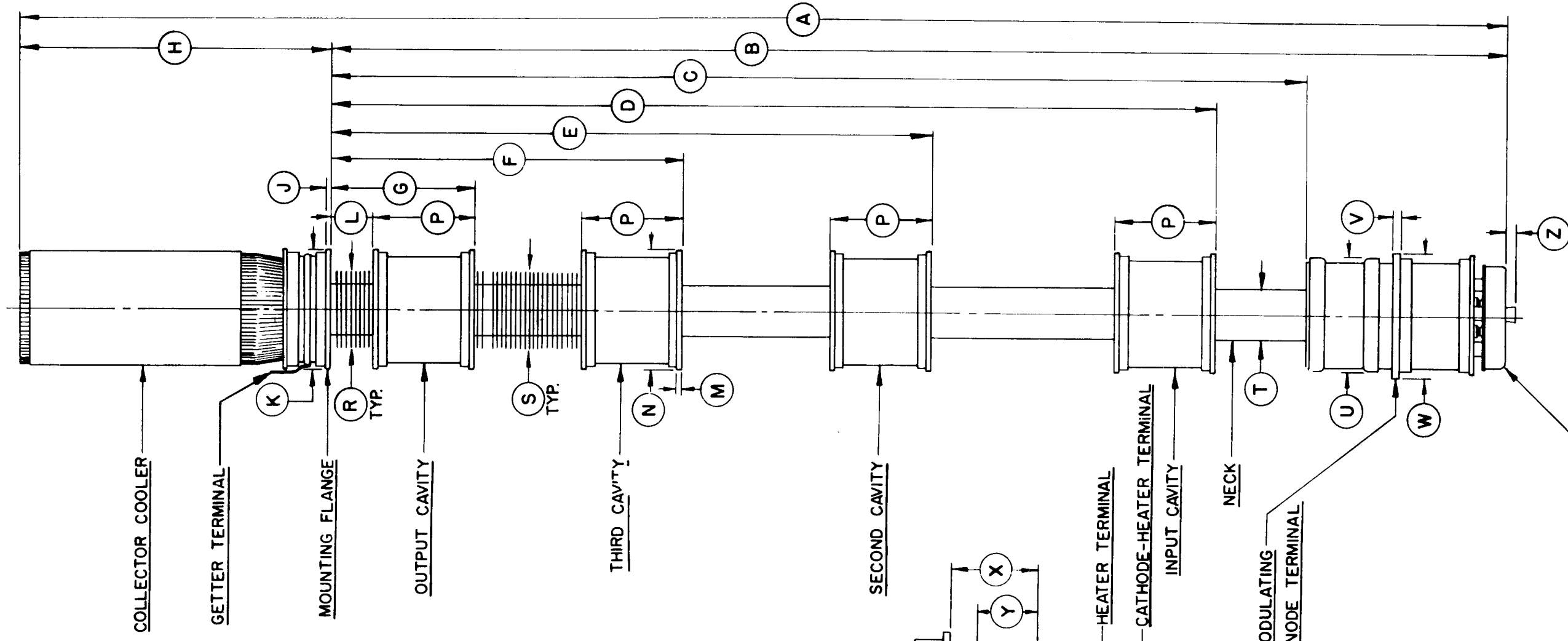
Heater:	Voltage ( $\pm 5\%$ )	-	-	-	11	volts
	Current (Normal)	-	-	-	22	amperes
	Maximum Starting Current	-	-	-	50	amperes
Cathode:	Unipotential, Oxide Coated					
	Heating Time	-	-	-	10	minutes
Getter (Operating):	Voltage (Nominal)	-	-	-	5.1	volts
	Current	-	-	-	36	amperes
	Maximum Starting Current	-	-	-	50	amperes
Power Gain: (Narrow Band)		-	-	-	57	decibels
Output Power:						
	2% Duty	-	-	-	200	kilowatts
	1% Duty	-	-	-	400	kilowatts
	Average	-	-	-	4	kilowatts
Frequency Range		-	-	-	570 to 630	megacycles
Capacitance between Modulating Anode and all other Tube Elements:						
	Maximum	-	-	-	60	micromicrofarads
	Typical	-	-	-	37	micromicrofarads





COLLECTOR COOLER  
END VIEW

DIMENSIONAL DATA	
REF.	NOM.
A	84
B	66 1/4
C	54 7/8
D	50 5/32
E	34 3/16
F	20 1/4
G	10 1/2
H	17 13/16
J	1/4
K	6 5/8
L	2 1/4
M	1/4
N	6 5/8
P	6 1/64
R	4 7/16
S	4
T	2 1/2
U	6 5/8
V	3/8
W	6 7/8
X	1 3/4
Y	1 9/32
Z	1
ZA	1/2
ZB	4 3/8
ZC	5 3/4
BA	6 11/32



DETAIL "A"

SEE DETAIL 'A'



MECHANICAL

Operating Position	-	-	-	-	-	Axis Vertical Cathode down (in oil)
R-F Input Coupling	-	-	-	-	-	Type N Coaxial Fitting
R-F Output Coupling	-	-	-	-	-	WR1500 Waveguide
Weight (Tube only)	-	-	-	-	-	140 pounds
Cooling: Forced Air and Oil						
Cathode (With SK-1200 socket) - oil						
						<u>Flow Rate</u> <u>Pressure Drop</u>
Body	-	-	-	-	-	*100 cfm air      1 inch H <sub>2</sub> O
Output Cavity	-	-	-	-	-	*50 cfm air      1 inch H <sub>2</sub> O
Collector	-	-	-	-	-	*400 cfm air      2.5 inches H <sub>2</sub> O

MAGNETIC-COIL POWER-SUPPLY REQUIREMENTS  
(Eimac H-127 Klystron Amplifier Circuit Assembly)

					Min.	Max.	
Prefocus Coil: Voltage (dc)	-	-	-	-	0	40	volts
Current (dc)	-	-	-	-	0	2.5	amperes
Each of Five Body Coils:							
Voltage (dc)	-	-	-	-	0	40	volts
Current (dc)	-	-	-	-	0	12.5	amperes

MAXIMUM RATINGS

D-C BEAM VOLTAGE	-	-	-	-	-	70	KILOVOLTS
PEAK D-C BEAM CURRENT	-	-	-	-	-	22.5	AMPERES
PEAK MODULATING ANODE VOLTAGE	-	-	-	-	-	44	KILOVOLTS
AVERAGE D-C BODY CURRENT	-	-	-	-	-	15	MILLIAMPERES
COLLECTOR DISSIPATION	-	-	-	-	-	10	KILOWATTS
PULSE LENGTH	-	-	-	-	-	60	MICROSECONDS
SEAL TEMPERATURES	-	-	-	-	-	175	DEGREES C
A-C GETTER CURRENT	-	-	-	-	-	50	AMPERES

TYPICAL OPERATION, NARROW BAND PULSE AMPLIFIER

Frequency	-	-	-	-	-	600	megacycles
Peak Output Power	-	-	-	-	-	466	kilowatts
Average Output Power	-	-	-	-	-	4.66	kilowatts
Peak Driving Power	-	-	-	-	-	0.8	watts
Power Gain	-	-	-	-	-	57.4	decibels
D-C Beam Voltage	-	-	-	-	-	65	kilovolts
Average D-C Beam Current	-	-	-	-	-	165	milliamperes
Peak D-C Beam Current	-	-	-	-	-	16.5	amperes
Peak Modulating Anode Voltage	-	-	-	-	-	32	kilovolts
D-C Body Current (Average)	-	-	-	-	-	9.5	milliamperes
D-C Collector Current (Average)	-	-	-	-	-	156	milliamperes
Beam Input Efficiency (Average)	-	-	-	-	-	43.4	percent

MAGNETIC-COIL CURRENTS (H-127 Circuit Assembly)

Prefocus Coil	-	-	-	-	-	1.9	amperes
First Body Coil	-	-	-	-	-	6.3	amperes
Second Body Coil	-	-	-	-	-	7.5	amperes
Third Body Coil	-	-	-	-	-	7.5	amperes
Fourth Body Coil	-	-	-	-	-	8.5	amperes
Fifth Body Coil	-	-	-	-	-	8.5	amperes

\*At Sea Level with 20° C inlet air temperature.

For additional information or information regarding any specific application, write to Eitel-McCullough, Inc., San Bruno, California. All such requests will be handled confidentially.