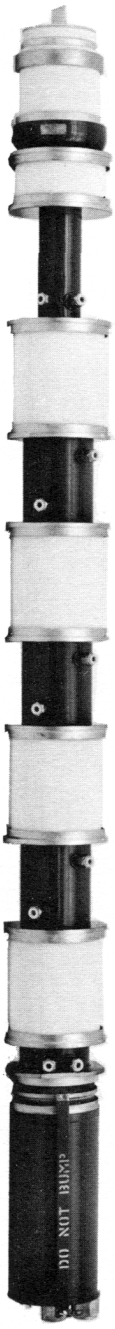
EITEL-McCULLOUGH, INC.
SAN CARLOS, CALIFORNIA

TENTATIVE DATA

4KM50,000LA

POWER-AMPLIFIER

L-BAND KLYSTRON



The Eimac 4KM50,000LA is a four-cavity, magnetically focused, power-amplifier klystron of ceramic and metal. It is designed for use at frequencies between 400 and 610 megacycles and will deliver a minimum CW output power of 10 kilowatts with a minimum power gain of 50 decibels.

This klystron employs the Eimac Modulating Anode which provides an effective means of amplitude or pulse modulating the output power without changing the beam voltage. It is also useful as a protective device, either in conjunction with external circuits or when grounded through a resistor.

The resonant cavities for the 4KM50,000LA are completed by 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 applications. It also permits an unlimited number of tuning cycles without risk of damage to the vacuum seals.

Eimac Klystron Amplifier Circuit Assembly H-121, for use with the 4KM50,000LA, covers the frequency range of 400 to 610 megacycles. This assembly includes a klystron supporting structure, electro-magnetic focusing coils, tuning boxes, adjustable load couplers for the second, third and output cavities, and an Eimac SK-110 Air-System Socket.

CHARACTERISTICS

ELECTRICAL

Heater:	Voltage	7.5	volts
	Current	40.0	amperes
	Maximum Starting Current	80.0	amperes
Cathode:	EMA, Unipotential		
	Heating Time	5	minutes
Getter (Operating):			
	Voltage	2.0	volts
	Current	36.0	amperes
Power Gain: (Narrow Band)		50	decibels
Output Power		10	kilowatts
Frequency Range (H-121 Assembly)		400 to 610	megacycles

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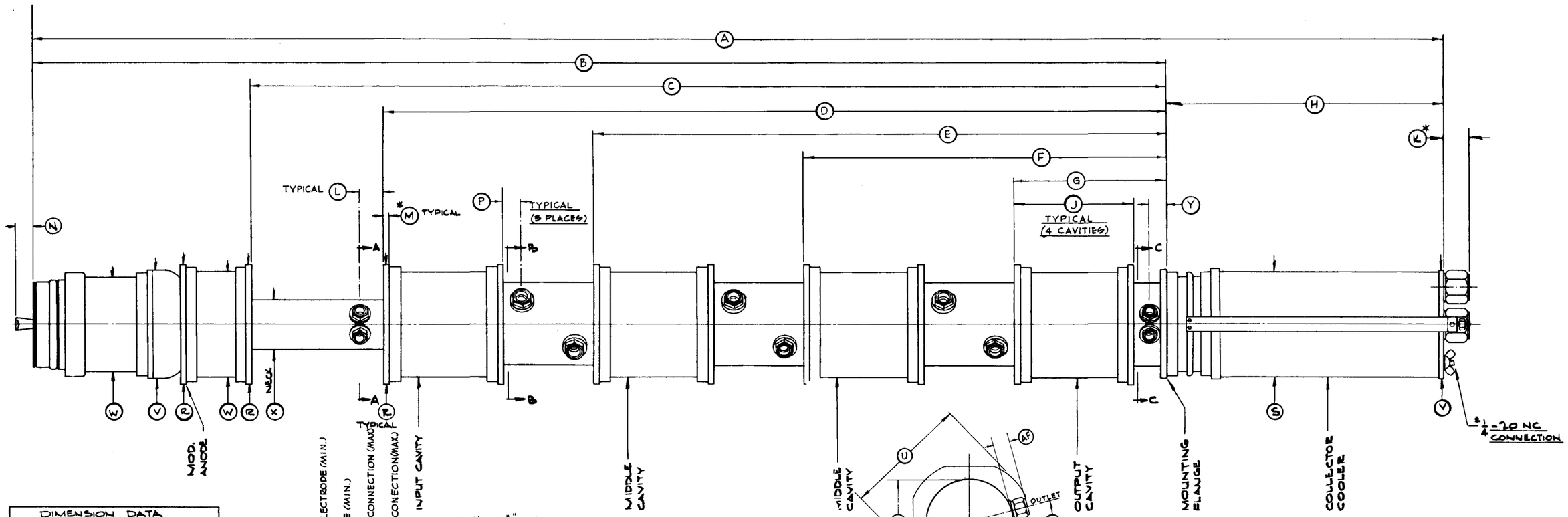
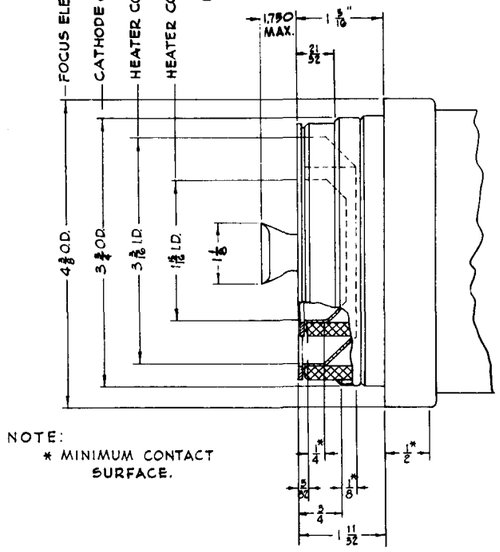
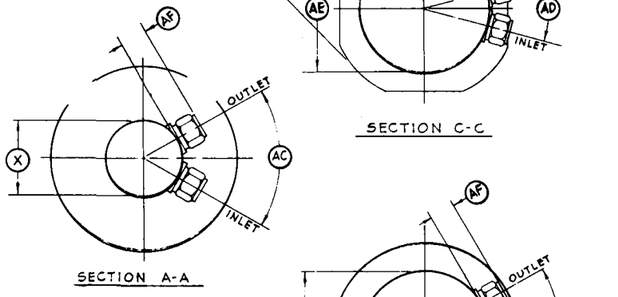
4KM50,000LA



DIMENSION DATA			
REF.	NOM.	MIN.	MAX.
A		63.901	64.409
B		52.447	52.865
C		43.251	43.597
D		37.798	38.104
E		27.679	27.817
F		17.561	17.731
G		7.444	7.544
H		11.429	11.569
J		5.957	6.045
K		1.000	1.150
L		.977	.997
M		.246	.255
N			1.780
P		.832	.862
R		5.120	5.130
S		4.495	4.505
U		5.120	5.130
V		4.610	4.640
W		3.998	4.002
X		2.115	2.125
Y		.395	.469
AB		1.610	1.640
AC		50°	70°
AD		20°	40°
AE		3.495	3.505
AF		.830	.870

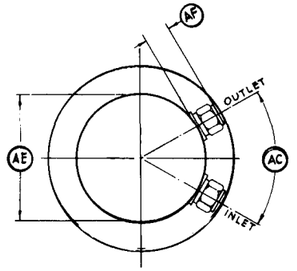


NOTE:
* MINIMUM CONTACT SURFACE.

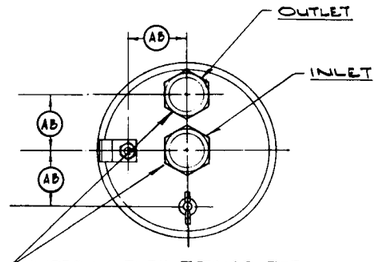


SECTION A-A

SECTION C-C



SECTION B-B



IMPERIAL FLEX FITTINGS FOR 3/4 O.D. TUBING. ALL OTHERS ARE IMPERIAL FLEX FITTINGS FOR 5/16 O.D. TUBING.

4KM50,000LA OUTLINE DRAWING

MECHANICAL

Operating Position	Axis vertical, cathode up
R-F Coupling:	
Input	Type "N" coaxial fitting
Output	3 1/8 inch 50 ohm line
Input Cavity Loading	Type "N" coaxial fitting
2nd and 3rd Cavity Loading	1 5/8 inch 50 ohm line
Shipping Weights:	
4KM50, 000LA Klystron Only	64 lbs (Net) 155 lbs (Gross)
H-121 R-F Circuit Assembly	767 lbs (Net) 1084 lbs (Gross)

Cooling: Water and Forced Air

	Flow Rate	Pressure Drop
Cathode (with SK-110 Air-System Socket)	*25 cfm	1 inch H_2O
Output Cavity	*50 cfm	1.5 inches H_2O
Klystron Body (5 drift-tube sections, in series)	1 gpm	28 psia
Klystron Collector	25 gpm	28 psia

MAGNETIC-COIL POWER-SUPPLY REQUIREMENTS

Prefocus-Coil: Voltage	0 to 50	volts
Current	0 to 1.5	amperes
Three Body Coils and Collector Coil in Series:		
Voltage	0 to 500	volts
Current	0 to 2.5	amperes

MAXIMUM RATINGS

D-C BEAM VOLTAGE	20	KILOVOLTS
D-C Beam Current	2.5	AMPERES
D-C BODY CURRENT (CONTINUOUS)	100	MILLIAMPERES
D-C BODY CURRENT (TUNING ONLY)	150	MILLIAMPERES
A-C GETTER CURRENT	50	AMPERES
FOCUS ELECTRODE VOLTAGE	-500	VOLTS
COLLECTOR DISSIPATION	50	KILOWATTS

TYPICAL OPERATION, NARROW BAND, CW AMPLIFIER

Frequency	400	610	megacycles
Output Power	13.1	12.0	kilowatts
Driving Power	.050	.050	watts
Power Gain	54	53.8	decibels
D-C Beam Voltage	17	17	kilovolts
D-C Beam Current	1.8	1.8	amperes
Beam Power Efficiency	42.8	39.2	percent
D-C Body Current	90	80	milliamperes
D-C Collector Current	1.71	1.72	amperes
Focus-Electrode Voltage	-201	-211	volts
Magnetic-Coil Currents (H-121 Components):			
Prefocus Coil	1.0	0.97	ampere
Three Body Coils and Collector Coil in Series	2.0	2.0	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 Carlos, California. All such requests will be handled confidentially.