



EITEL-McCULLOUGH, INC.
SAN CARLOS, CALIFORNIA

TENTATIVE DATA

4KM50,000LA3

**POWER-AMPLIFIER
L-BAND KLYSTRON**

The Eimac 4KM50,000LA3 is a four-cavity, magnetically focused, power-amplifier klystron designed for use at frequencies from 400 to 610 megacycles. It is suitable for use in UHF television visual service and may also be used for FM, for aural TV, or for tropospheric-scatter communications service.

When adjusted for narrow-band CW operation this klystron will deliver a minimum output power of 10 kilowatts with a power gain of 50 decibels. In television visual service it will provide more than 10 kilowatts of peak synchronizing power with a power gain of 30 decibels. The random AM noise is more than 50 decibels below black level.

The 4KM50,000LA3 employs the Eimac Modulating Anode which provides an effective means of protecting the tube from internal arcs when connected to the beam supply through a resistor.

All tuning is accomplished outside of the vacuum envelope by means of external resonant cavities which enclose the cylindrical ceramic windows of the klystron. This design affords a wide tuning range and permits external cavity loading for broadband applications. For spares or replacements, only the basic vacuum tube, without cavities, need be purchased.

Eimac Klystron Amplifier Circuit Assembly H-143 has been designed for use with the 4KM50,000LA3 to cover the specific frequency range. This assembly includes a klystron supporting structure, magnetic focusing coils, tuning cavities, 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-143 Assembly)	-	-	-	-	-	400 to 610	megacycles

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





MECHANICAL (cont'd)

Weights:

4KM50,000LA3 Klystron only	-	-	-	-	64 lbs (Net)
	-	-	-	-	155 lbs (Gross)
H-143 RF Circuit Assembly	-	-	-	-	767 lbs (Net)
	-	-	-	-	1084 lbs (Gross)

Cooling: Water and Forced Air

					<u>Flow Rate</u>	<u>Pressure Drop</u>
Cathode (with SK-110 Air-System Socket)					*25 cfm	1 inch H ₂ O
Output Cavity	-	-	-	-	*50 cfm	1.5 inches H ₂ O
Klystron Body (5 drift-tube sections, in series)	-	-	-	-	1 gpm	28 psi
Klystron Collector	-	-	-	-	25 gpm	28 psi

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
INLET WATER PRESSURE	-	-	-	-	-	50	PSI

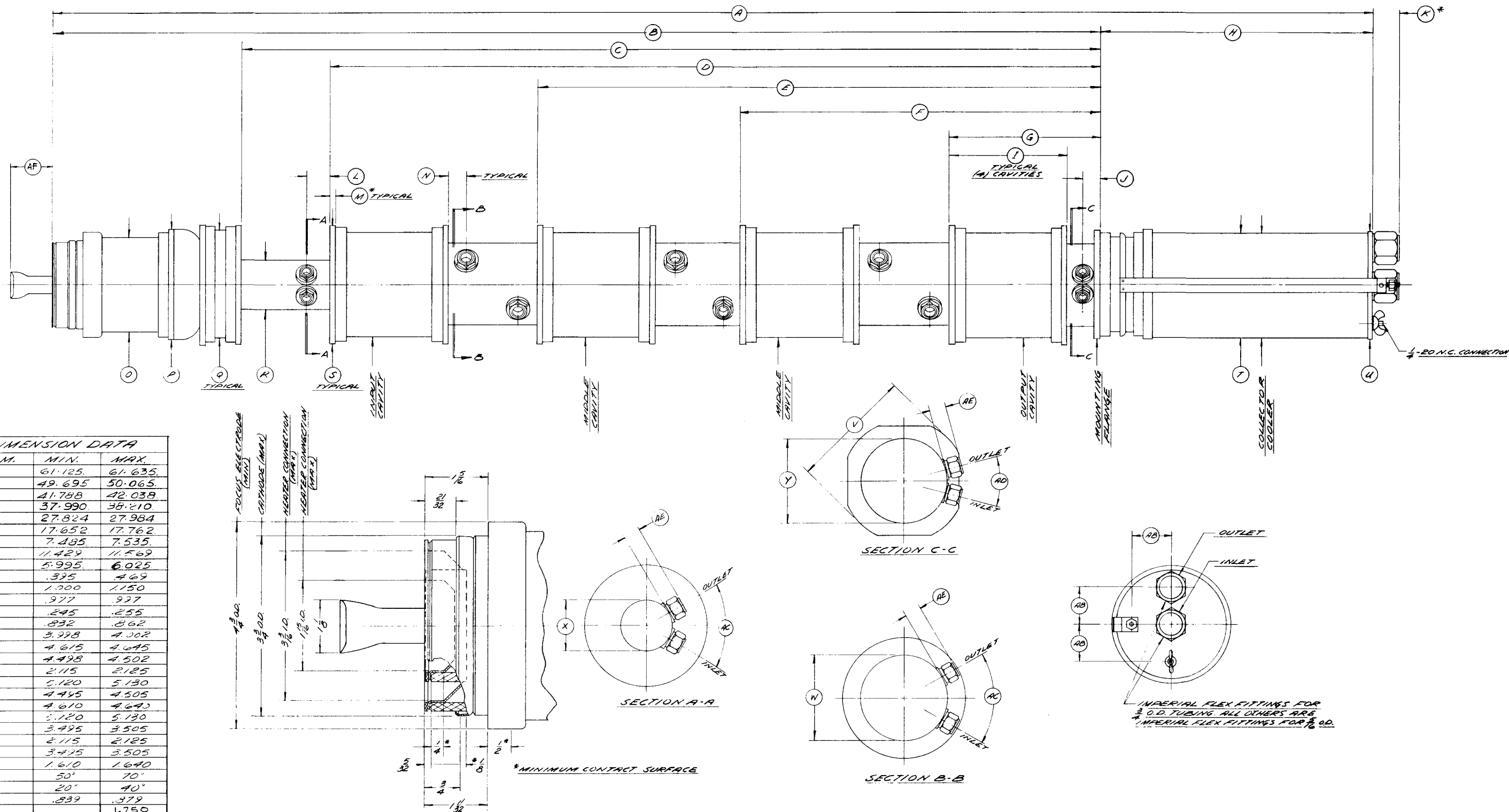
TYPICAL OPERATION, NARROW BAND, CW AMPLIFIER

Frequency	-	-	-	-	400	610	megacycles
Output Power	-	-	-	-	13.1	12.0	kilowatts
Driving Power	-	-	-	-	.050	.050	watt
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-143 Components):							
Prefocus Coil	-	-	-	-	1.0	0.97	ampere
Three Body Coils and Collector Coil in Series					2.0	2.0	amperes

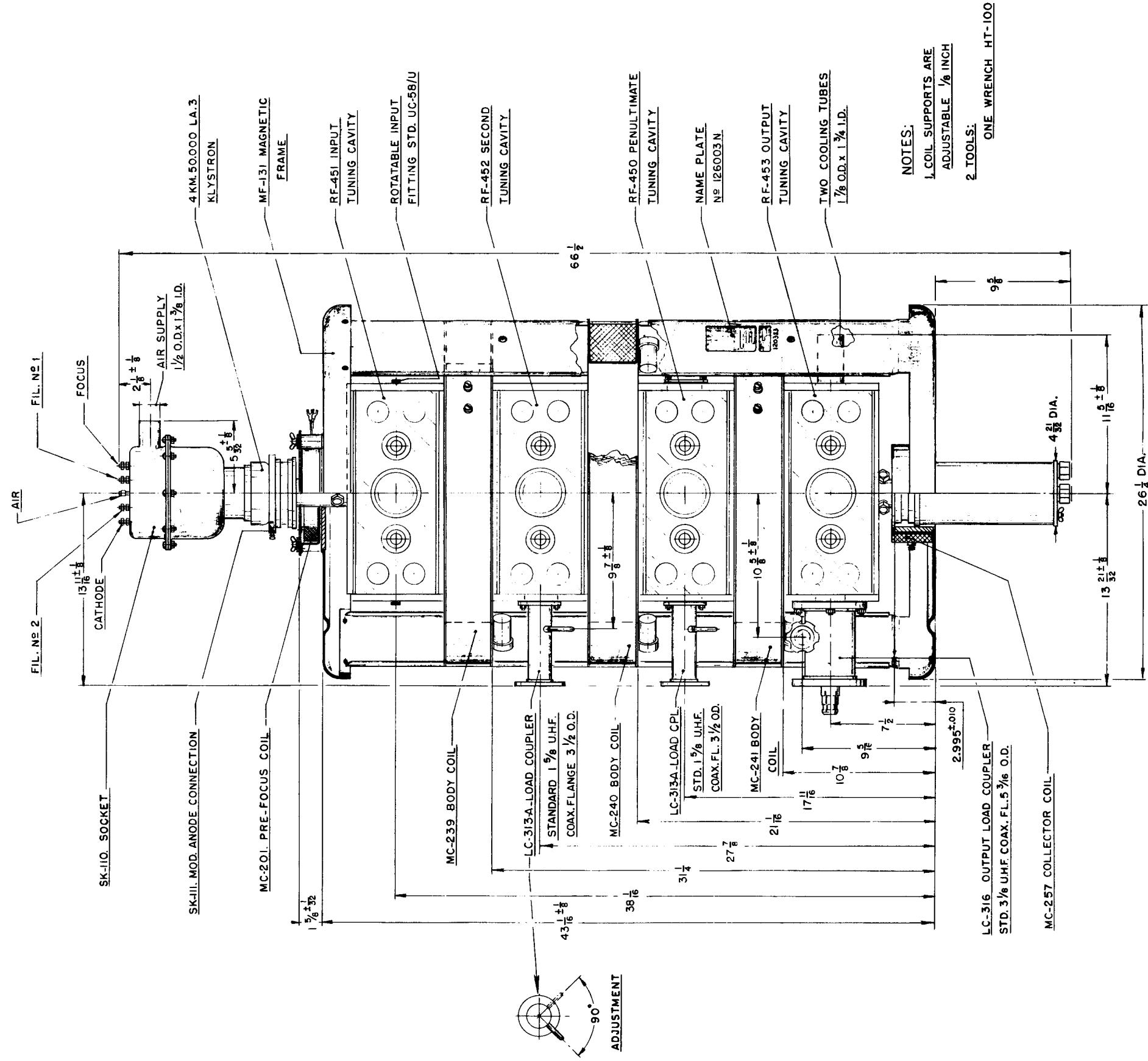
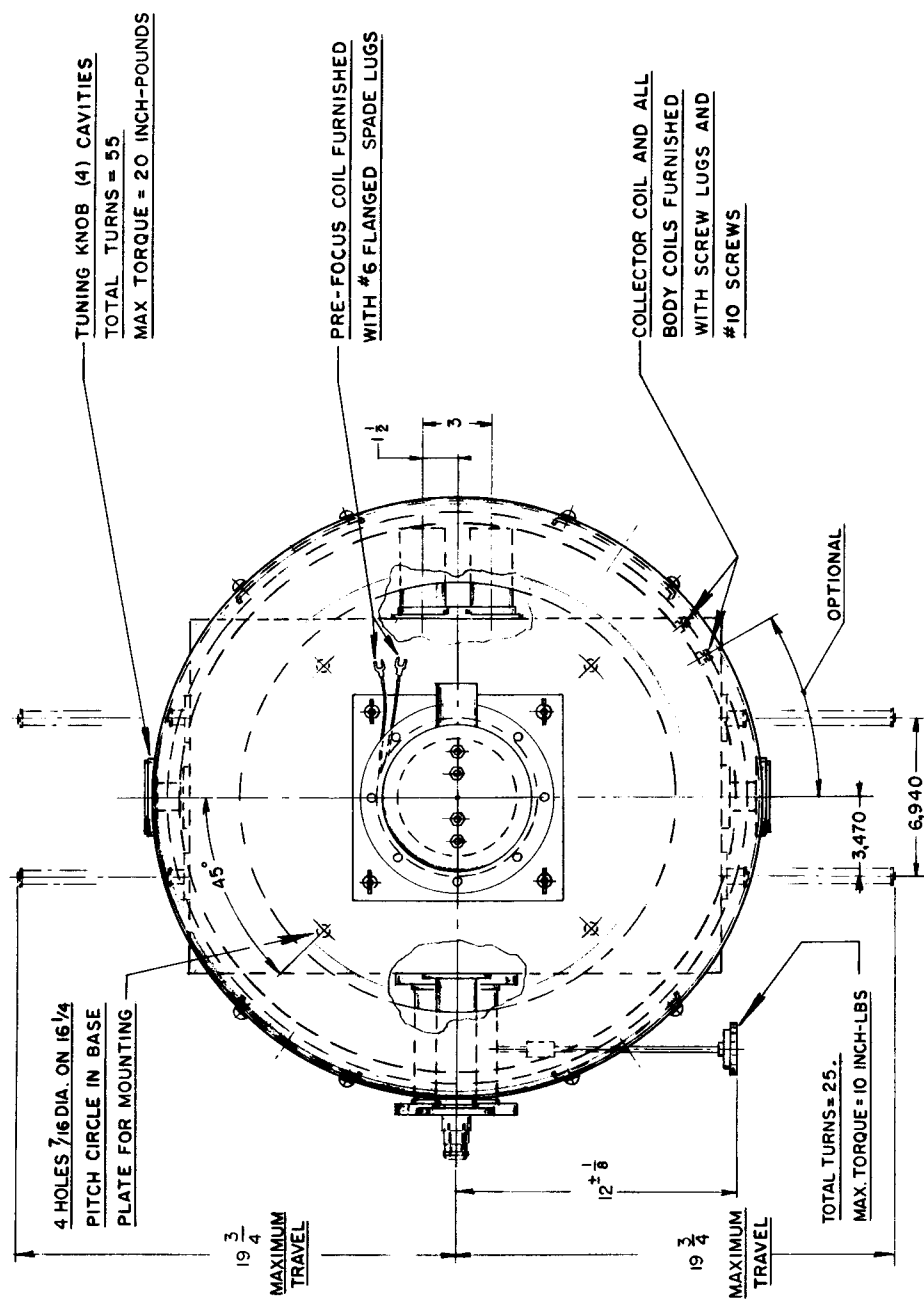
* At Sea level with 20° C inlet air temperature.

For additional information or information regarding a specific application, write to
Eitel-McCullough, Inc., San Carlos, California

DIMENSION DATA			
NO	NOM.	MIN.	MAX.
A		61.125	61.635
B		49.695	50.065
C		41.788	42.038
D		37.990	38.210
E		27.824	27.984
F		17.652	17.762
G		7.485	7.535
H		11.429	11.569
I		5.995	6.025
J		.335	.469
K		1.200	1.150
L		.977	.927
M		.245	.255
N		.832	.862
O		3.998	4.002
P		4.615	4.645
Q		4.498	4.502
R		2.115	2.125
S		5.120	5.130
T		4.445	4.505
U		4.610	4.640
V		5.120	5.130
W		3.495	3.505
X		2.115	2.125
Y		3.425	3.505
AB		1.610	1.640
AC		50°	70°
AD		20°	40°
AE		.839	.379
AF			1.750



4KM50.000LA3 KLYSTRON



- NOTES:
1. COIL SUPPORTS ARE ADJUSTABLE $\frac{1}{8}$ INCH
 2. TOOLS: ONE WRENCH HT-100

H-143 KLYSTRON AMPLIFIER CIRCUIT ASSEMBLY