



EITEL-McCULLOUGH, INC.
SAN CARLOS, CALIFORNIA

TENTATIVE DATA

4KM50,000LR

**POWER-AMPLIFIER
L-BAND KLYSTRON**

The Eimac 4KM50,000LR is a four-cavity, magnetically focused, power-amplifier klystron designed for use at frequencies between 755 and 985 megacycles. This klystron will deliver a narrow-band CW output power of 10 kilowatts with a minimum power gain of 50 decibels. When adjusted for wide-band operation the 4KM50,000LR will deliver an output power of 10 kilowatts with a half-power bandwidth of 7 megacycles and a power gain of 30 decibels.

This klystron employs the Eimac Modulating Anode which provides an effective means for protecting the tube against 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-141 has been designed for use with the 4KM50,000LR to cover the specified frequency range. This assembly includes a klystron supporting structure, magnetic focusing coils, tuning cavities, adjustable load couplers for each cavity, and an Eimac SK-110 Air-System Socket.

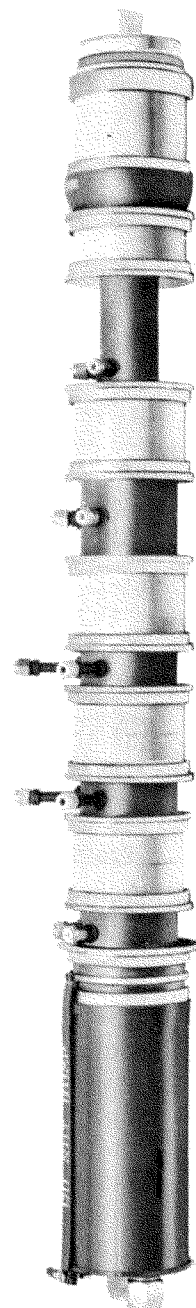
CHARACTERISTICS

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-141 Assembly)	-	-	-	-	755 to 985	megacycles

MECHANICAL

Operating Position	-	-	-	-	-	Axis vertical, cathode up
RF 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	-	-	-	-	-	Type "N" coaxial fitting





MECHANICAL (cont'd)

Weights:

4KM50,000LR Klystron only	-	-	-	55 lbs (Net), 140 lbs (Gross)
H-141 RF Circuit Assembly	-	-	-	349 lbs (Net), 601 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 25	volts
	Current	-	-	-	-	0 to 1.25	amperes
Three Body Coils and Collector Coil in Series:							
	Voltage	-	-	-	-	0 to 400	volts
	Current	-	-	-	-	0 to 4.0	amperes

MAXIMUM RATINGS

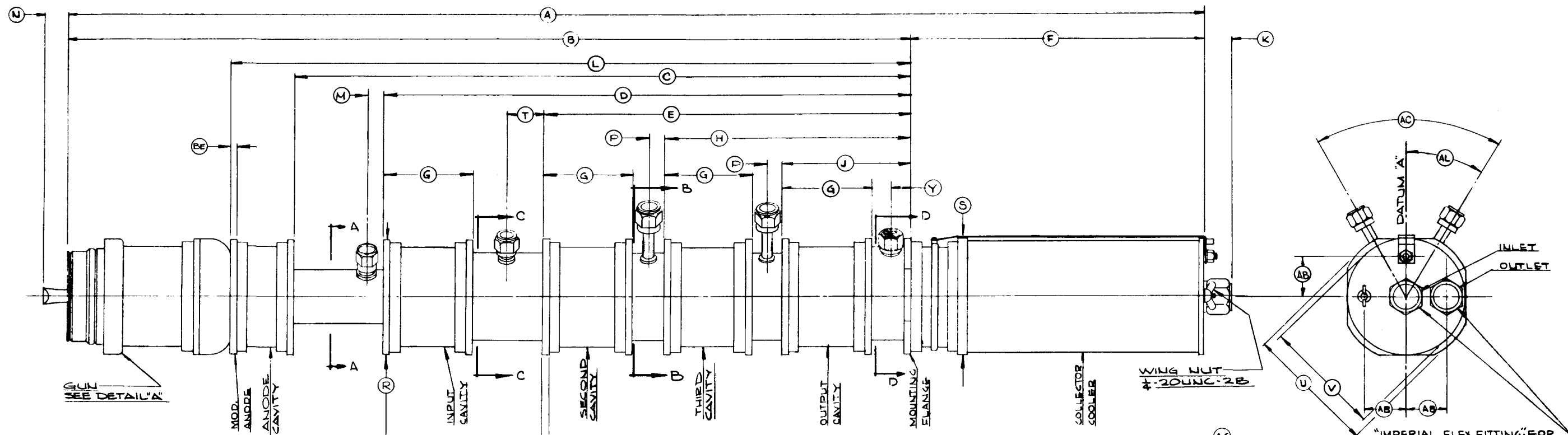
D-C BEAM VOLTAGE	-	-	-	-	-	20	KILOVOLTS
D-C BEAM CURRENT	-	-	-	-	-	2.5	AMPERES
D-C BODY CURRENT (CONTINUOUS)	-	-	-	-	-	100	MILLIAMPERES
D-C BODY CURRENT (TUNING ONLY)	-	-	-	-	-	150	MILLIAMPERES
A-C GETTER CURRENT	-	-	-	-	-	50	AMPERES
FOCUS-ELECTRODE VOLTAGE	-	-	-	-	-	-500	VOLTS
COLLECTOR DISSIPATION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

TYPICAL OPERATION

	<u>Narrow Band</u>		<u>Wide Band</u>	
Frequency	755	985	762	megacycles
Output Power	12.1	11.5	10	kilowatts
Driving Power	0.05	0.05	10	watts
Power Gain	53.8	53.6	30	decibels
D-C Beam Voltage	17	17	17	kilovolts
D-C Beam Current	1.76	1.76	1.9	amperes
Beam Power Efficiency	45.7	43.7	31	percent
D-C Body Current	30	40	90	milliamperes
Focus-Electrode Voltage	-245	-245	-175	volts
Half Power Bandwidth	- -	- -	7	megacycles
Cavity Loading:				
1st Cavity	- -	- -	8	watts
2nd Cavity	- -	- -	70	watts
3rd Cavity	- -	- -	400	watts
Magnetic-Coil Currents:				
Prefocus Coil	1.06	1.03	1.1	amperes
Three Body Coils and Collector				
Coil in Series	3.0	3.0	3.0	amperes

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

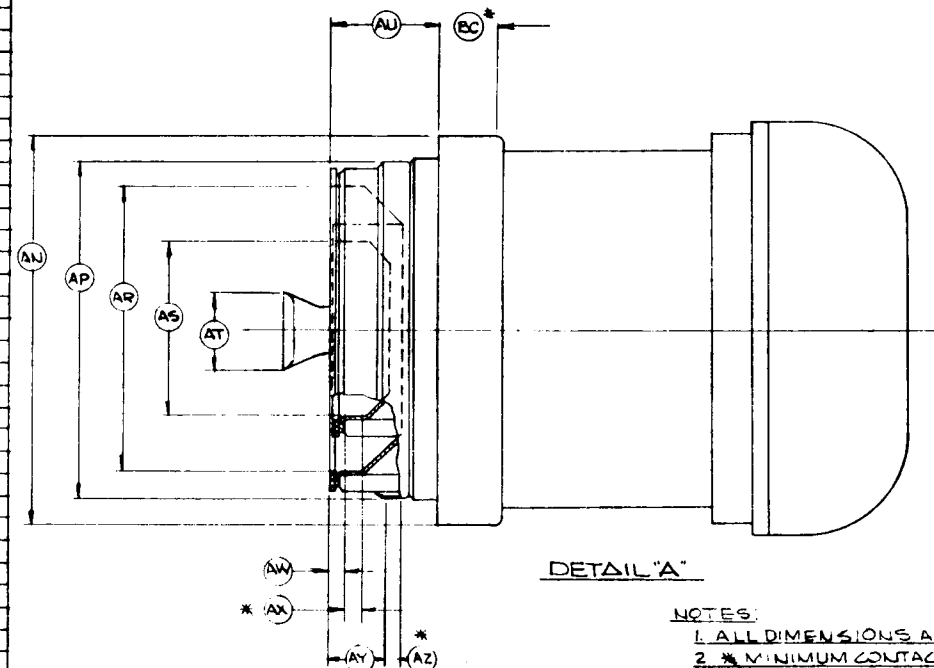
For additional information or information regarding a specific application write to
Eitel-McCullough, Inc., San Carlos, California.



TYPE EXCEPT FOR MOUNTING FLANGE

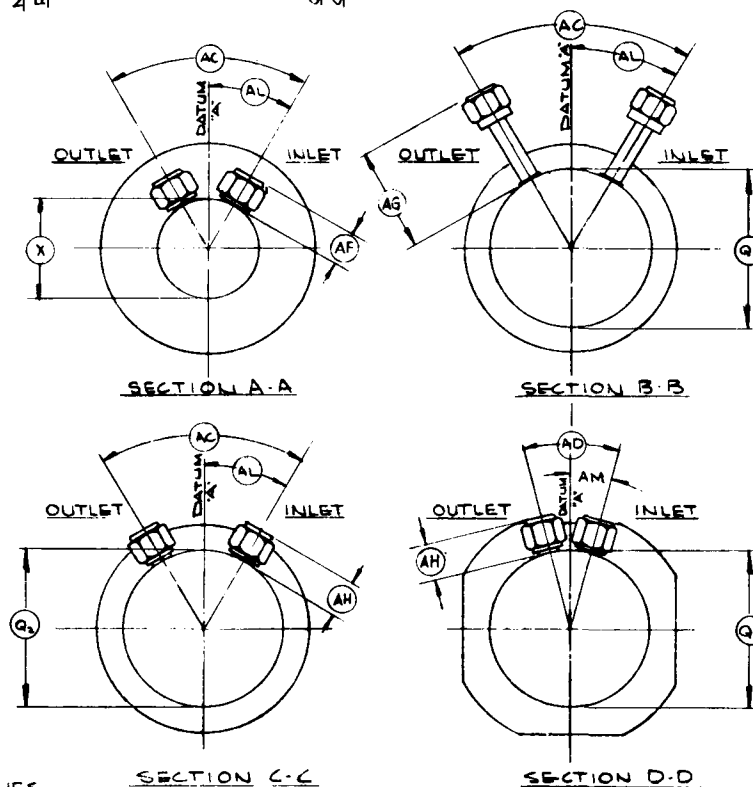
BE TYP (9 PLACES) ON ALL CAVITIES EXCEPT ANODE CAVITY AS SHOWN.

DIMENSIONAL DATA					
NO	NOM	MIN.	MAX.		
A	44.640			AS	1.865 1.950
B	33.127			AT	
C	24.392			AU	1.000 1.500
D	20.642			AV	
E	14.388			AW	.125 .175
F	11.818			AX	.100
G	3.504			AY	.670 .775
H	2.696			AZ	.100
J	5.004			BA	
K	1.062			BC	.100
L	26.875			BD	0.250
M	.562				
N		1.750			
P	.593				
Q	3.500				
R	4.625	4.610	4.640		
S	4.720				
T	1.375				
U	5.122				
V	4.625				
W					
X	2.120				
Y	0.656				
AB	15°				
AC	60°				
AD	30°				
AE					
AF	.850				
AG	2.250				
AH	0.850				
AJ					
AK					
AL	30°				
AM	18°				
AN		4.300	4.450		
AP		3.750	3.835		
AQ					
AR		3.100	3.200		



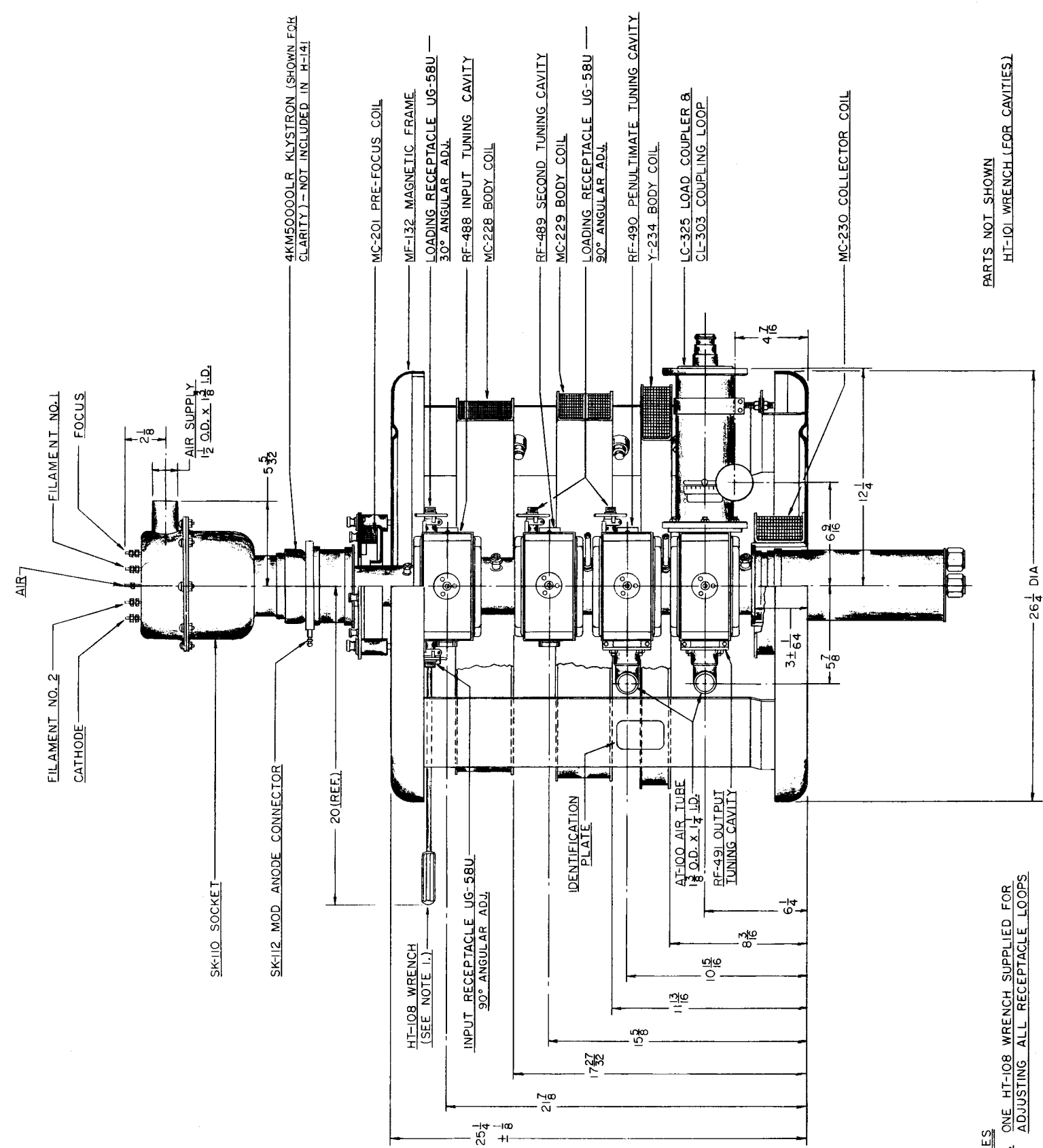
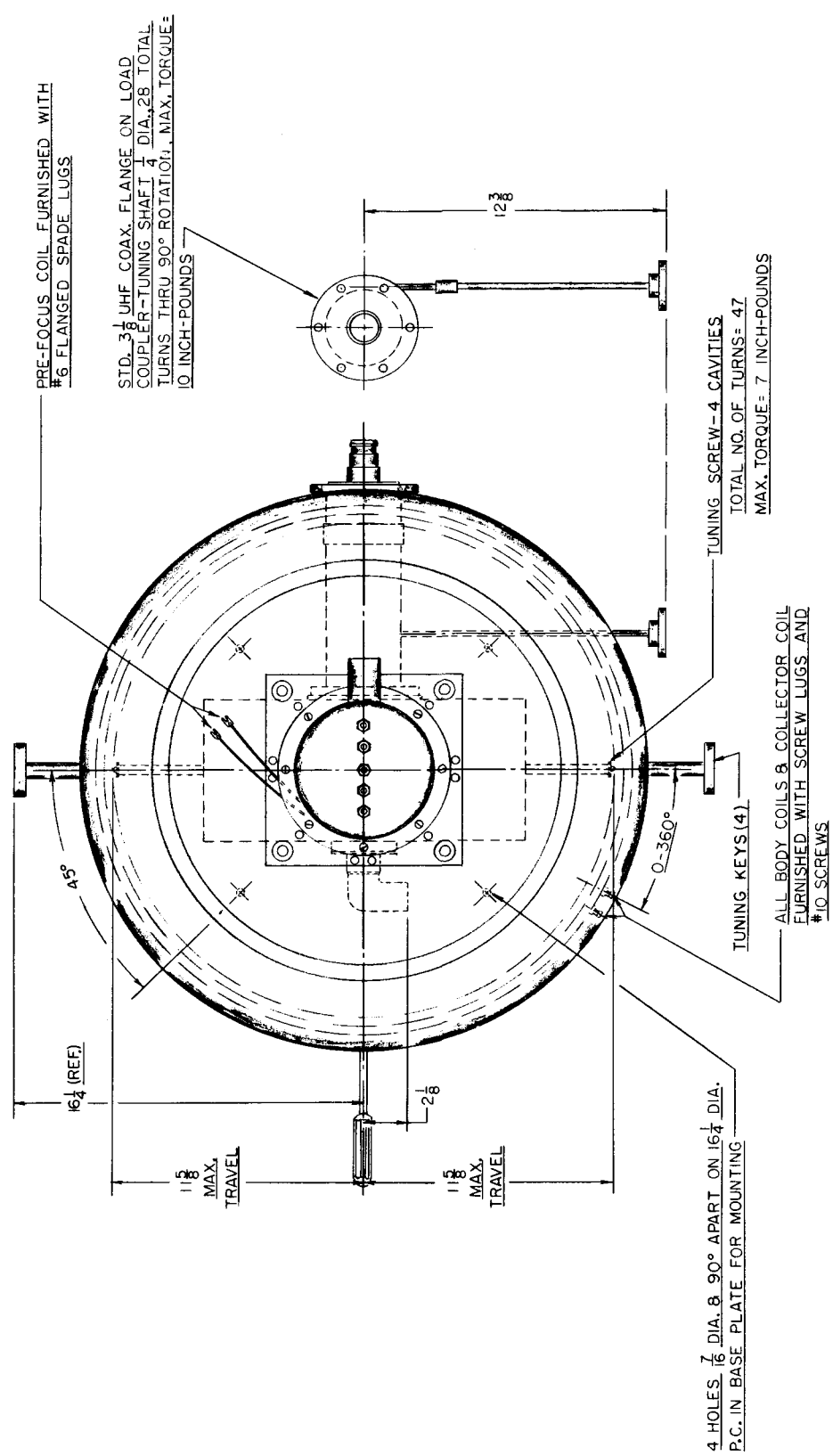
DETAIL "A"

NOTES:
1. ALL DIMENSIONS ARE IN INCHES
2. MINIMUM CONTACT SURFACE



"IMPERIAL FLEX FITTING" FOR 3/4 OD TUBING. ALL OTHERS ARE "IMPERIAL FLEX FITTING" FOR 5/8 OD TUBING.

4KM50,000LR KLYSTRON



NOTES

1. ONE HT-108 WRENCH SUPPLIED FOR ADJUSTING ALL RECEPTACLE LOOPS

PARTS NOT SHOWN

HT-101 WRENCH (FOR CAVITIES)

H-141 KLYSTRON AMPLIFIER CIRCUIT ASSEMBLY