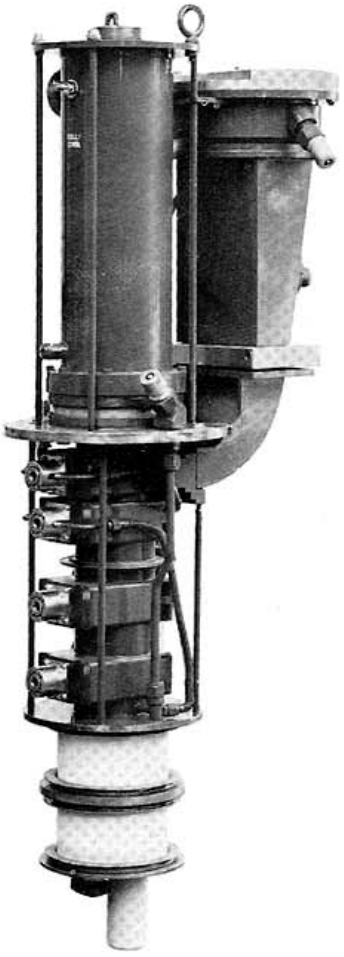
EITEL-McCULLOUGH, INC.
SAN CARLOS, CALIFORNIA

TENTATIVE DATA

4KM50SK

POWER AMPLIFIER S-BAND KLYSTRON



The Eimac 4KM50SK is a power-amplifier klystron designed to operate at frequencies from 2550 to 2700 megacycles with a rated output power of 10 kilowatts and a minimum gain of 40 decibels. This tube is a member of Eimac's new family of S-band klystrons which also includes the 4KM70SJ, 4KM70SK, 5KM70SF, 5KM70SJ, 5KM50SJ and 4KM50SJ. The design of each of these tubes is completely new, incorporating many recent advances in klystron technology.

A large Eimac Matrix Type A cathode is used in the 4KM50SK with cathode current loading of less than 200 milliamperes per square centimeter. This light cathode loading, for an S-band klystron, assures long life. The electron gun has a confined flow configuration which minimizes focusing adjustments and produces a very stable beam. The current of the focusing electromagnet can be varied over a wide range without appreciably affecting rf output or body current. Only one electromagnet power supply is required.

Four integral cavities are used in the 4KM50SK. Both input and output couplings are fixed. The output window is a thick beryllium oxide disc which will withstand severe abuse. This window is protected by a photo cell arc detector which must be connected so that a wave guide arc will remove beam voltage or drive power.

The 4KM50SK incorporates a built-in vacuum pump in the form of a titanium getter which should be energized whenever heater power is applied. Effective protection against internal arcs is provided by the Eimac Modulating Anode.

A focusing electromagnet and klystron supporting structure, Catalog Number H-161, has been designed for use with the 4KM50SK.

Eimac Water Load WL-202 is recommended for use with the 4KM50SK.

CHARACTERISTICS

ELECTRICAL

Heater:	Voltage	7.5	volts
	Current	12	amperes
	Maximum Starting Current	24	amperes
Cathode:	EMA, Unipotential		
	Heating time	5	minutes
Getter	(Operating):		
	Voltage (±5%)	4	volts ac
	Current	20	amperes ac
Power Gain		40	decibels
Output Power		10	kilowatts
Frequency Range		2550 to 2700	megacycles

(Effective 5-2-63)

MECHANICAL

Operating Position	-	-	-		Any
Coupling (rf)	-				
Input	-	-	-		Type N coaxial fitting
Output	-	-	-		UG435A/U flange
Maximum Dimensions (4KM50SK and H-161 Electromagnet)					
Diameter	-	-	-	18	inches
Length	-	-	-	35	inches
Weight:					
Klystron Only	-	-	-	90	lbs
H-161 Electromagnet	-	-	-	170	lbs
Cooling:					
Water and Forced Air					
				Flow Rate	Pressure Drop
Cathode	-	-	-	5 cfm	free
Klystron Body (water)	-	-	-	1.2 gpm	30 psi
Collector (water)	-	-	-	18 gpm	30 psi
Electromagnet (water)	-	-	-	1.5 gpm	15 psi
Klystron Body (Ethylene Glycol solution)*	-	-	-	1.2 gpm	38 psi
Collector (Ethylene Glycol solution)*	-	-	-	23 gpm	38 psi
Electromagnet (Ethylene Glycol solution)*	-	-	-	2 gpm	30 psi

*60% Ethylene Glycol, 40% water

ELECTRO MAGNET POWER-SUPPLY REQUIREMENTS

Voltage	-	-	-	0 to 150	volts
Current	-	-	-	0 to 15	amperes

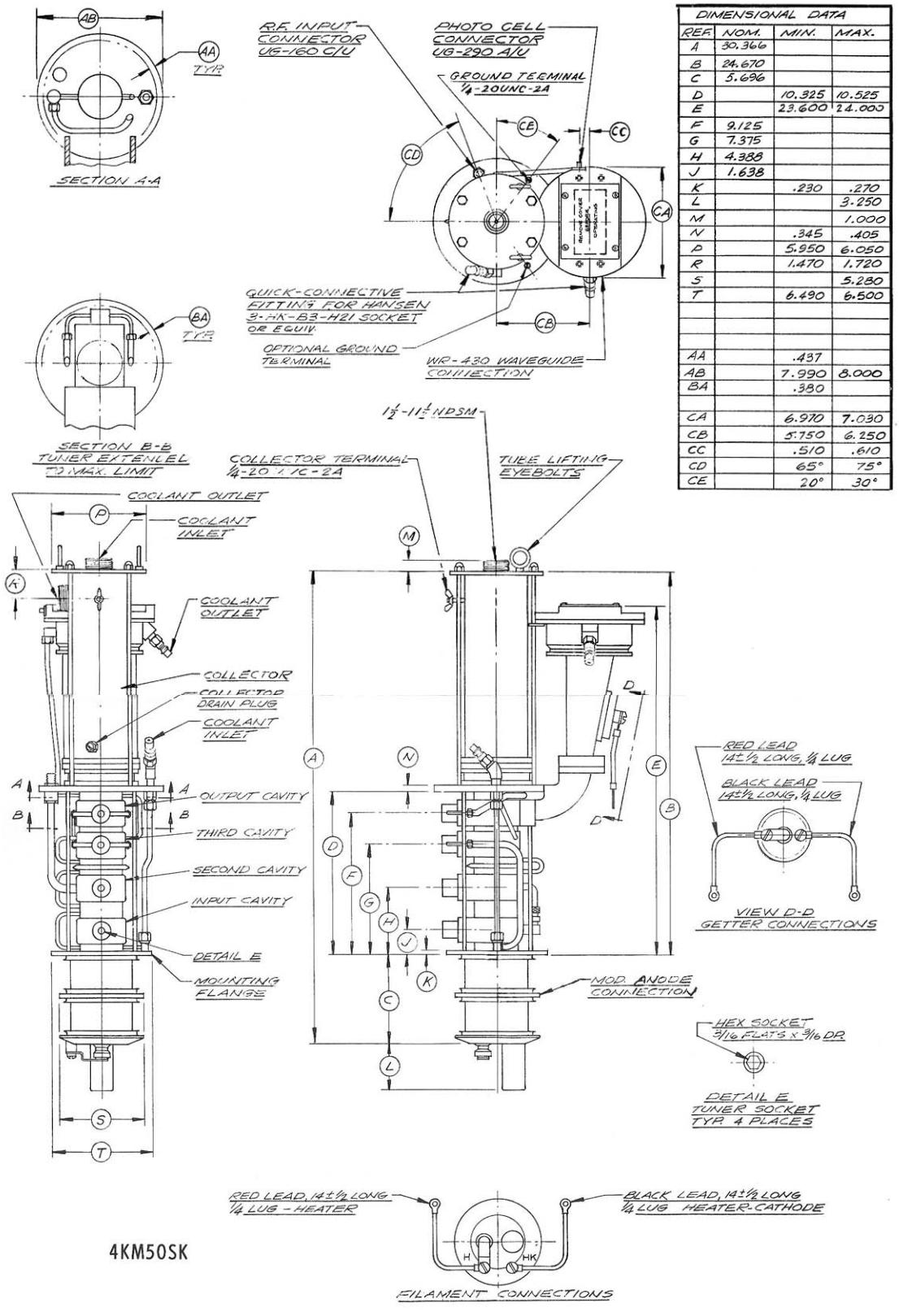
MAXIMUM RATINGS

BEAM VOLTAGE	-	-	-	20	kilovolts dc
BEAM CURRENT	-	-	-	3	amperes dc
BEAM INPUT POWER	-	-	-	50	kilowatts dc
BODY CURRENT	-	-	-	100	milliamperes dc
COLLECTOR DISSIPATION	-	-	-	50	kilowatts
INLET WATER PRESSURE	-	-	-	80	psi
COOLANT OUTLET TEMPERATURE	-	-	-	70	degrees C

TYPICAL OPERATION

	Tuned For Maximum Efficiency		Stagger Tuned For Greater Bandwidth		
Frequency	2550	2700	2550	2700	megacycles
Output Power	13.2	12.1	10.2	10.1	kilowatts
Driving Power	1	1	1	1	watt
Power Gain	41.2	40.7	40.1	40	decibels
Beam Voltage	18	18	18	18	kilovolts
Beam Current	1.8	1.8	1.8	1.8	amperes
Modulating Anode Voltage	10.4	10.4	10.4	10.4	kilovolts
Beam Power Efficiency	40.8	37.5	31.7	31.2	percent
Body Current	45	45	55	55	milliamperes
3db Bandwidth	11	11	14	14	megacycles
Electromagnet Current	12.5	12.5	12.5	12.5	amperes

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



DIMENSIONAL DATA			
REF.	NOM.	MIN.	MAX.
A	30.366		
B	24.670		
C	5.696		
D		10.325	10.525
E		23.600	24.000
F	9.125		
G	7.375		
H	4.388		
J	1.638		
K		.230	.270
L			3.250
M			1.000
N		.345	.405
P		5.950	6.050
R		1.470	1.720
S			5.280
T		6.490	6.500
AA		.437	
AB		7.990	8.000
BA		.380	
CA		6.970	7.030
CB		5.750	6.250
CC		.510	.610
CD		65°	75°
CE		20°	30°

4KM50SK

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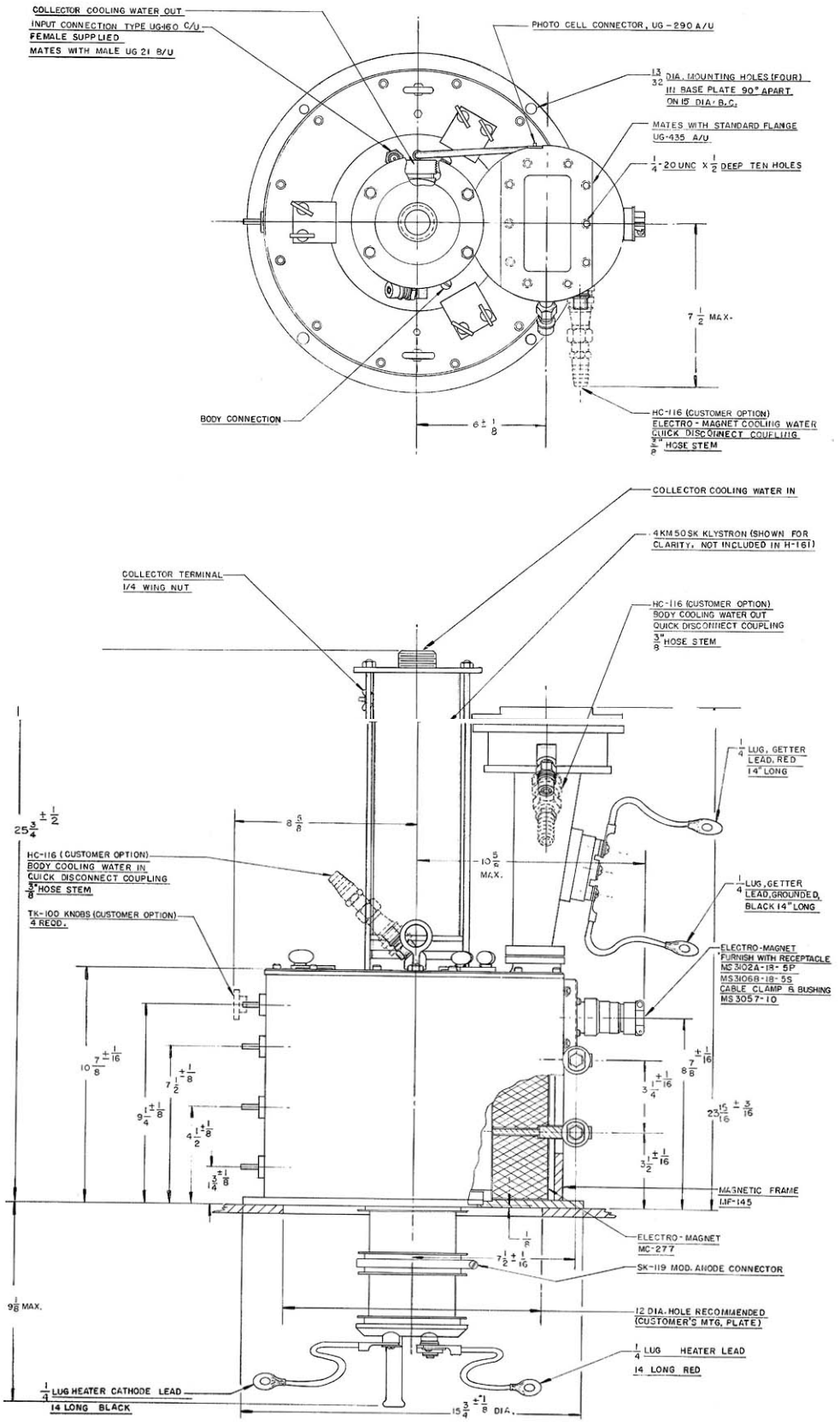

H-161 CIRCUIT ASSEMBLY