

EITEL-McCULLOUGH, INC.
SAN CARLOS, CALIFORNIA

Tentative Data

X841D

PULSE AMPLIFIER

UHF KLYSTRON

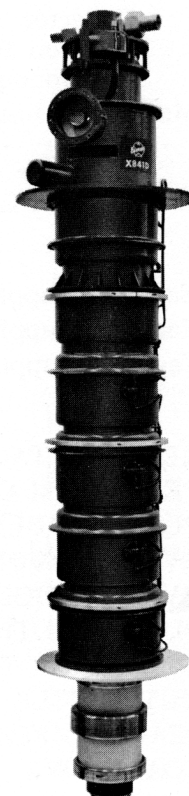
The EIMAC X841D is a pulse amplifier klystron designed for broadband high average power pulse service at frequencies from 400-450 megacycles. This klystron will have a 5% , fixed-tuned band-width anywhere within this frequency range and will deliver a minimum peak output power of 2.5 megawatts, at 150 kilowatts average power, with a minimum power gain of 33 decibels.

Six integral cavities are used in the klystron. The output circuit mates to a 6 $\frac{1}{8}$ inch transmission line.

This klystron employs the EIMAC Modulating Anode which provides a convenient means for pulse modulating the output power without changing the beam voltage. The electron-gun geometry is such that a typical switching voltage of 75 kilovolts is required for the modulating anode to provide the specified beam current, at the rated beam voltage of 115 kilovolts. The equivalent modulating anode impedance is approximately one megohm.

The tube incorporates a built-in ion pump and gauge which maintains a low gas pressure, and also provides a means for continuously monitoring this pressure.

Catalog Number H-150 has been assigned to the magnetic circuitry for this tube.



CHARACTERISTICS

ELECTRICAL

Cathode: Unipotential, oxide coated										
Minimum Heating Time	-	-	-	-	-	-	-	-	-	15 minutes
Heater: Voltage (maximum)	-	-	-	-	-	-	-	-	-	30 volts
Current (maximum)	-	-	-	-	-	-	-	-	-	35 amperes
Power Gain (minimum)	-	-	-	-	-	-	-	-	-	33 decibels
Peak Power Output	-	-	-	-	-	-	-	-	-	2.5 megawatts
Average Power Output	-	-	-	-	-	-	-	-	-	150 kilowatts
Phase shift as a function of beam voltage	-	-	-	-	-	-	-	-	-	0.006 degree/volt
Ion Pump: Voltage	-	-	-	-	-	-	-	-	-	3,000-4,000 volts dc
Current (0.1 megohm limiting resistor)	-	-	-	-	-	-	-	-	-	10 milliamperes
Beam Microperveance	-	-	-	-	-	-	-	-	-	1.6
Electron Gun Microperveance	-	-	-	-	-	-	-	-	-	3.0

MECHANICAL

Operating Position	- - - - -	Vertical, Cathode End Down
Input Coupling (rf)	- - - - -	- - - UG 22/U, Type N
Output Coupling (rf)	- - - - -	- - - 6 1/8" Coax
Approximate Weight (tube only)	- - - - -	- - - 1,000 Pounds
Approximate Weight (H-150 Magnetic Circuit)	- - - - -	- - - 1,200 Pounds
Cooling: Oil and Water (Max Water Inlet Temp of 45°C)		
Cathode — Immersed in Oil		
Collector -	- - - - -	Flow Rate 120 gpm Pressure Drop 65 psi
Klystron Body	- - - - -	10 gpm 65 psi
Electromagnet	- - - - -	5 gpm 65 psi
Maximum Overall Dimensions (Klystron and Electromagnet):		
Length	- - - - -	130 inches
Diameter	- - - - -	26 inches
Greatest Extending Radius	- - - - -	16-5/16 inches

ELECTROMAGNET POWER SUPPLY REQUIREMENTS

Each of 3 supplies -	- - - - -	75 volts at 10 amperes
Each of 2 supplies -	- - - - -	150 volts at 10 amperes
Each of 3 supplies -	- - - - -	300 volts at 10 amperes

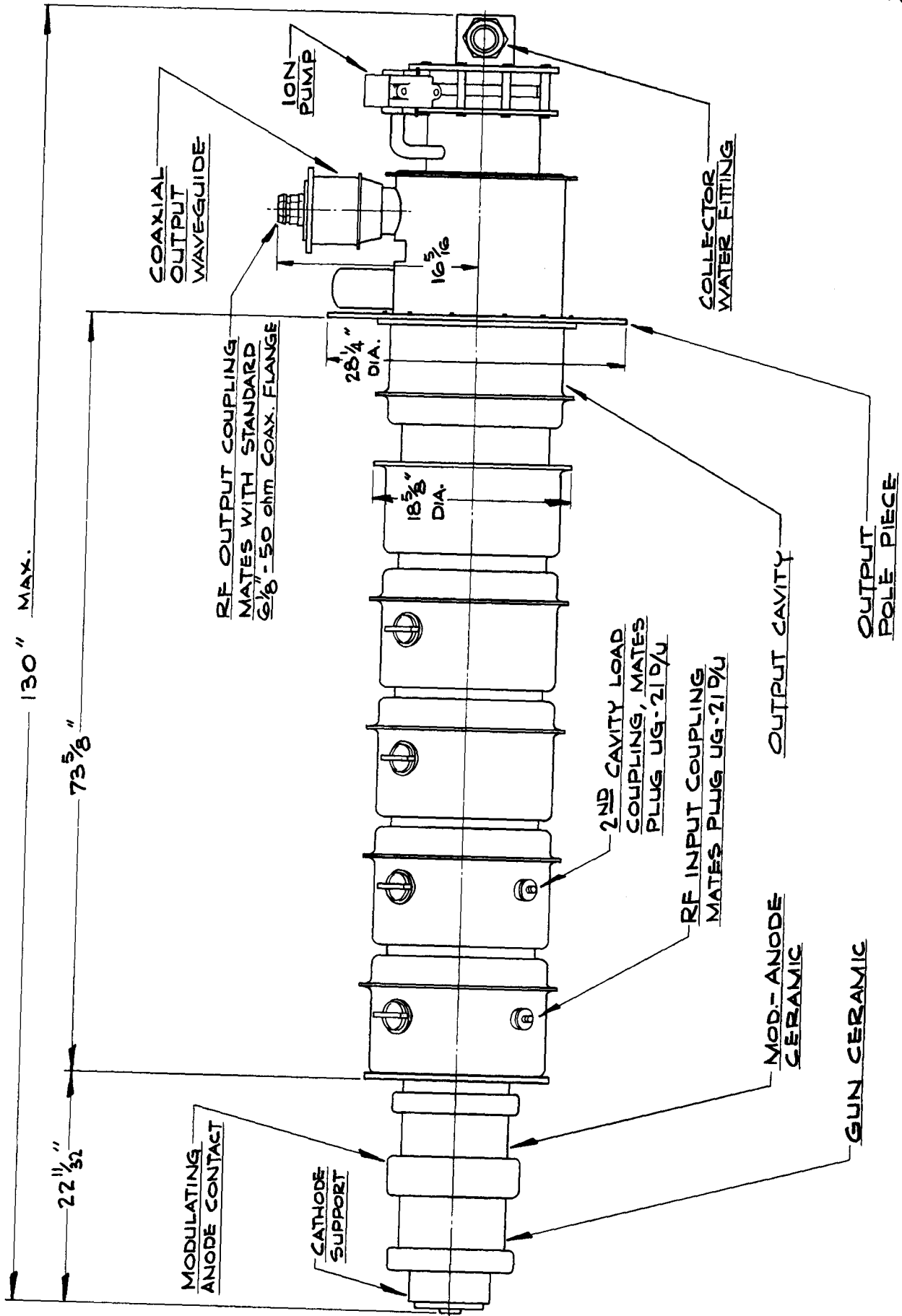
MAXIMUM RATINGS

BEAM VOLTAGE (dc)	- - - - -	115 Kilovolts
PEAK BEAM CURRENT	- - - - -	66 Amperes
PEAK MODULATING ANODE VOLTAGE	- - - - -	78 Kilovolts
AVERAGE MODULATING ANODE CURRENT	- - - - -	20 Milliampers
AVERAGE BODY CURRENT	- - - - -	200 Milliampers
PULSE WIDTH	- - - - -	2000 Microseconds
COLLECTOR DISSIPATION	- - - - -	450 Kilowatts
DUTY CYCLE	- - - - -	.06
SEAL TEMPERATURES	- - - - -	150 Degrees C
LOAD VSWR	- - - - -	1.5:1
INLET WATER PRESSURE	- - - - -	100 PSIG

TYPICAL OPERATION, BROAD-BAND PULSE AMPLIFIER

Center Frequency -	- - - - -	425 Megacycles
Beam Voltage -	- - - - -	112 Kilovolts dc
Peak Modulating-Anode Voltage	- - - - -	74 Kilovolts
Peak Beam Current	- - - - -	60 Amperes
Average Body Current	- - - - -	60 Milliampers dc
Peak Output Power	- - - - -	2.5 Megawatts
Average Output Power	- - - - -	150 Kilowatts
Peak Drive Power	- - - - -	500 Watts
Power Gain	- - - - -	37 Decibels
Peak Beam Power Efficiency	- - - - -	40 Percent
Pulse Width	- - - - -	2000 Microseconds
Pulse Repetition Rate	- - - - -	30 Pulses per second
Duty	- - - - -	.06
Bandwidth (1 db)	- - - - -	25 Megacycles
Load VSWR	- - - - -	1.2:1

For additional information or information regarding a specific application, write to Eitel-McCullough, Inc., 301 Industrial Way, San Carlos, California.



X841D OUTLINE



X841D
