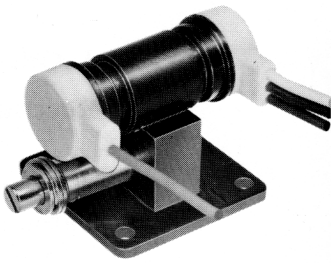
EITEL-McCULLOUGH, INC.
SAN CARLOS, CALIFORNIA

TENTATIVE DATA

1K20XD-A

X-BAND REFLEX KLYSTRON



The Eimac 1K20XD-A is a ceramic and metal, conduction-cooled reflex klystron designed for local oscillator service in applications encountering severe vibration, shock or temperature extremes. This tube will deliver a typical output power of 75 milliwatts over the frequency range of 10,000 to 10,700 megacycles.

The stacked-ceramic construction results in an extremely rugged design and low sensitivity to vibration.

Leads to the tube are permanently attached and protected by molded silastic rubber caps which permit operation at any altitude without flashover.

GENERAL CHARACTERISTICS

ELECTRICAL

Cathode:	Unipotential, oxide coated		
	Warm-up time	30	seconds
Heater:	Voltage	6.3	volts
	Current	0.8	ampere
Typical Output Power (Load VSWR = 1.15:1)		75	milliwatts
Frequency Range		10,000 to 10,700	megacycles

MECHANICAL

Operating Position	Any	
Mounting	UG-39/U waveguide flange	
Cooling	Conduction	
Electrical Connections	Flexible leads	
RF Output Coupling	RG-52/U waveguide	
Net Weight	4	ounces
Shipping Weight (approximate)	2	pounds
Maximum Overall Dimensions:		
Height	1.50	inches
Width	1.63	inches
Length	2.50	inches

ENVIRONMENTAL

Maximum Ambient Temperature	150°	C
Maximum Altitude	No limit	
Maximum Non-Operating Shock* (11 ms Duration)	40	g
Maximum Operating Vibration** (20 to 2,000 cps)	10	g

*Based on a permanent frequency shift after drop of 2 megacycles.

**Based on a maximum peak-to-peak frequency deviation of 200 kilocycles.

(Effective 12-27-62)

MAXIMUM RATINGS

DC RESONATOR VOLTAGE*	350 MAX.	VOLTS
DC CATHODE CURRENT	55 MAX.	MA
RESONATOR DISSIPATION	20 MAX.	WATTS
PEAK REPELLER VOLTAGE*		
POSITIVE WITH RESPECT TO CATHODE	0 MAX.	VOLTS
NEGATIVE WITH RESPECT TO CATHODE	500 MAX.	VOLTS

TYPICAL OPERATION (Load VSWR less than 1.15 to 1)

DC Resonator Voltage*	300	350	volts
Mode	5-3/4	5-3/4	
Frequency	10,350	10,350	megacycles
DC Cathode Current	26	35	milliamperes
DC Repeller Voltage*	-165	-150	volts
DC Repeller Current	1	1	microampere
Power Output	50	75	milliwatts
Electronic Tuning (3db bandwidth)	30	30	megacycles
Modulation Sensitivity ($\Delta E_r = \pm 3$ volts)	2.0	2.0	Mc/volt
Peak-to-Peak FM Deviation (10g, 20-2000 cps)	200	200	kilocycles
Residual FM	50	50	kilocycles

*All voltages referred to cathode.

APPLICATION

Cooling: At sea level this tube will not require forced air cooling when operated at its maximum rated dissipation with an ambient temperature less than 150° Centigrade. The waveguide flange connection will normally provide the required heat sink for conduction cooling. If an insulator is used between the tube and waveguide for DC isolation, forced air cooling may be required to maintain the body temperature below the maximum rating of 175° Centigrade.

Resonator: The resonator of the 1K20XD-A is integral with the body of the klystron. For this reason it is often convenient to operate the resonator at chassis potential, with the repeller and cathode at appropriate negative potentials.

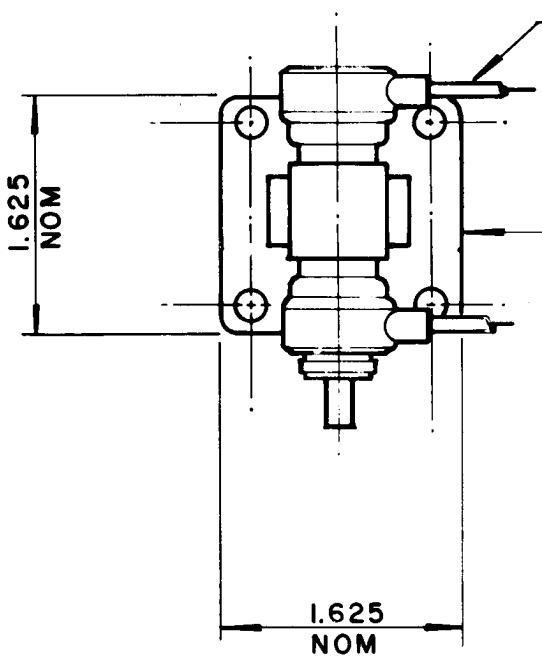
Cathode: The heater voltage should be maintained within ±5% of the rated value of 6.3 volts if variations in performance are to be minimized and the best tube life obtained.

The heater and cathode of the 1K20XD-A are internally connected. When the resonator of this tube is operated at chassis potential, the heater transformer must be insulated for the cathode-to-resonator voltage.

Mechanical Tuning: In the 1K20XD-A a fixed-tuned inner cavity is closely coupled through a ceramic window to a secondary cavity outside the vacuum. Mechanical tuning is accomplished by a capacitive slug in the secondary cavity with a tuning rate of approximately 150 megacycles per turn. This design allows repeated tuner cycling without damaging the vacuum seals. The maximum tuner torque is 40 inch-ounces.

A clockwise rotation of the tuner will produce a decrease in frequency.

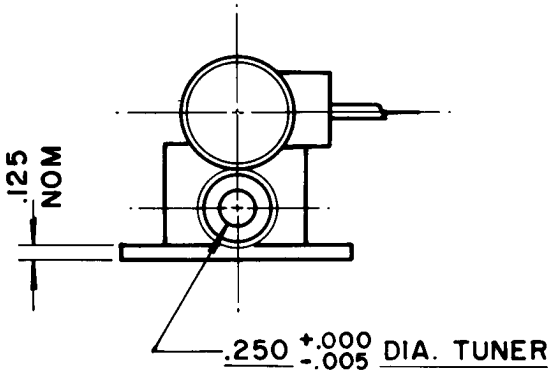
1K20XD-A

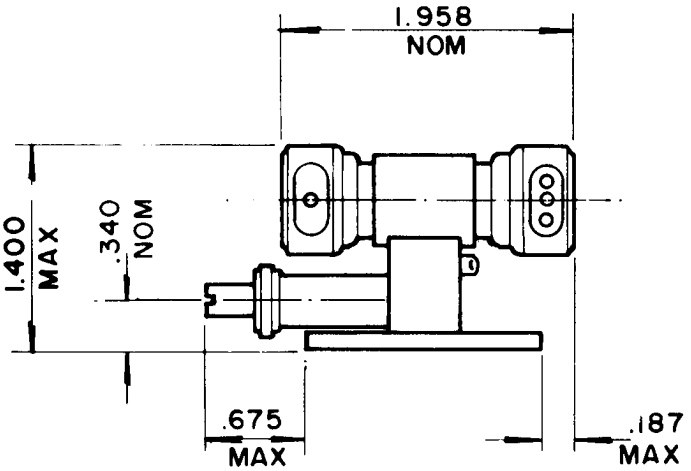


CONNECTIONS

HEATER	WHITE
* CATHODE	BLACK
* HEATER	BLACK
REPELLER	RED

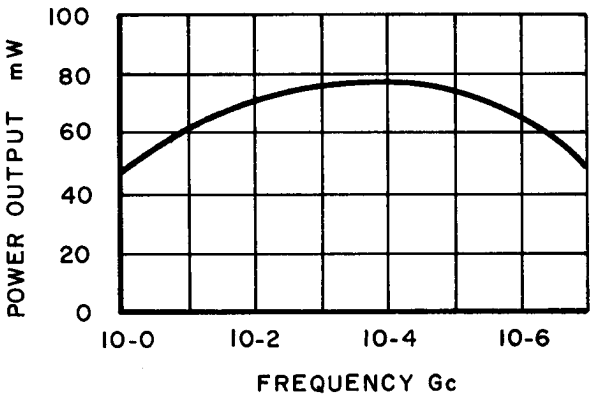
* INTERNALLY CONNECTED

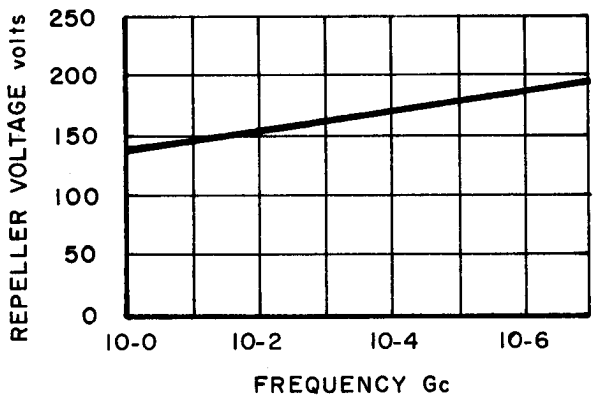




1K20XD-A TYPICAL OPERATING CHARACTERISTICS

Ers = 300 Vdc
Ik = 26 mAdc
$5\frac{3}{4}$ MODE





Ers = 350 Vdc
Ik = 35 mAdc
$5\frac{3}{4}$ MODE