

EITEL-McCULLOUGH, INC.
SAN CARLOS, CALIFORNIA

PRELIMINARY DATA*

X2013-B

The Eimac X2013-B is a quick filament heating, metal-ceramic tetrode intended for use in portable and mobile transmitters. Power output 3 db down from normal is available within one second after the application of rated filament voltage. Tube operation in 100 milliseconds can be obtained utilizing a built-in control diode and a minimum amount of additional circuitry.

GENERAL CHARACTERISTICS

ELECTRICAL

Cathode:	Directly heated, oxide coated		
Voltage.		2.5	volts
Current.		8.0	amperes
Absolute maximum filament voltage			
for fast warm-up (Note 1)		15	volts
Heating time at rated filament voltage		1.0	second
Heating time at 15 volts		0.1	second
Amplification Factor (grid-screen)		13	
Transconductance ($I_b = 150$ mA; $E_{c2} = 400$ V;			
$E_b = 800$ V).		15,000	μ mhos
Frequency for maximum ratings.		250	mcs
Interelectrode capacitance (grounded cathode):			
Input (maximum)		28.0	μ μ F
Output (maximum).		6.0	μ μ F
Feed-through (maximum)		0.07	μ μ F
Control Diode:			
Maximum plate resistance			
($I_d = .010$ A)		1,200	ohms

*This information applies to a laboratory tube design and is subject to change. No obligations are assumed as to future manufacture unless otherwise arranged.



MECHANICAL

Base.	9	Pin, special
Maximum operating temperatures:		
Anode core	250° C	
Ceramic-to-metal seals	250° C	
Socket		Eimac, X-4011
Operating position		Any

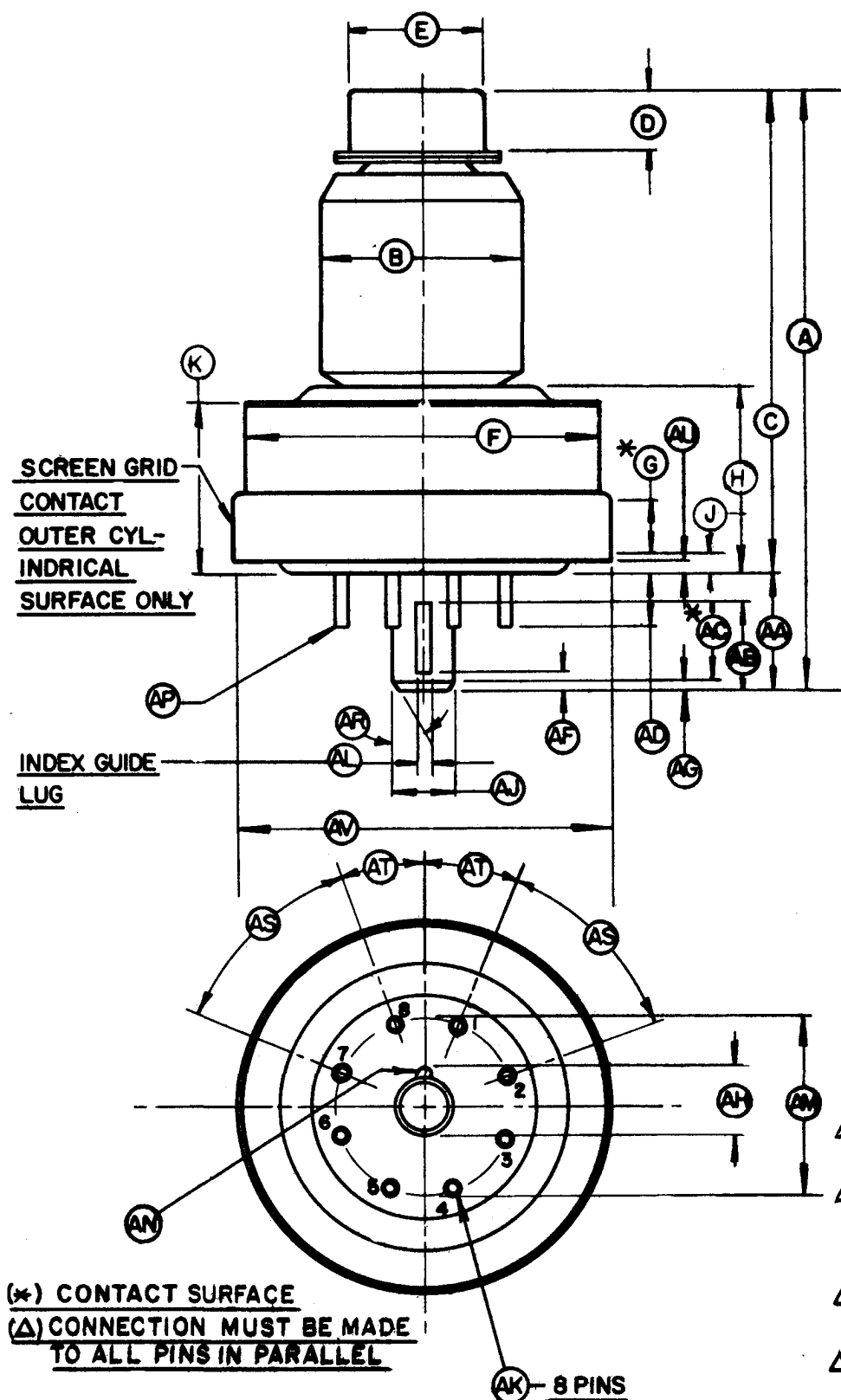
MAXIMUM RATINGS

DC Anode Voltage	2000	Max. volts
DC Screen Voltage	400	Max. volts
DC Grid Voltage	-250	Max. volts
DC Control Diode Voltage	±250	Max. volts
DC Anode Current	250	Max. mA
DC Control Diode Current	20	Max. mA
Anode Dissipation (radiation cooled)*	15	Max. watts
Screen Dissipation	8	Max. watts
Control Diode Anode Dissipation	0.5	Max. watts
Grid Current	2	Max. mA

*Also available with forced air cooled anode rated at 350 watts maximum dissipation.

Note 1: Extreme caution must be taken to insure that filament overvoltage is not applied beyond the time at which the cathode reaches operating temperature since the voltage used is sufficient to destroy the tube. Proper operation will be insured if overvoltage is removed when control diode anode current reaches 65% of its steady state operating value.

It is recommended that Application Engineering Department, Eitel-McCullough, Inc., San Carlos, California, be contacted for additional details and circuit approval prior to using the X2013-B in applications requiring the use of filament overvoltages.



DIMENSIONS IN INCHES			
DIMENSIONAL DATA			
REF	MIN	MAX	NOM
A	2.324	2.464	
B	.880	.894	
C	1.810	1.910	
D	.240	.280	
E	.559 DIA	.573 DIA	
F		1.406 DIA	
G	.187		
AA	.514	.554	
AB		.456	
AC	.360		
AD		.250	
AF	.068	.108	
AG			.031
AH	.298	.308	
AJ	.255 DIA	.265 DIA	
AK	.045 DIA	.053 DIA	
AL	.078	.086	
AM	.680 DIA	.694 DIA	
AN		.043 R	
AP	.005 R. MIN. OR .035 X 22.5°		
AR			30°
AS	44.0	46.0	45°
AT	21.5	23.5	22.5°
AU	.020	.050	
AV	1.417 DIA	1.433 DIA	
H	.700	.760	
J	.050	.090	
K	.600	.660	

CONNECTIONS

PIN NO. 1: SCREEN GRID

Δ PIN NO. 2: CATHODE-HEATER 1

PIN NO. 3: CONTROL GRID

Δ PIN NO. 4: CATHODE-HEATER 1

PIN NO. 5: ANODE OF CONTROL

DIODE

Δ PIN NO. 6: CATHODE-HEATER 1

PIN NO. 7: CONTROL GRID

Δ PIN NO. 8: CATHODE-HEATER 1

CENTER PIN: HEATER 2

OUTLINE

X2013