

JA

Note 1

P.G. Durham
Type 1B24A

B return

Dimensions: Per attached Outlined dated, 5-13-64

Ratings:	Min.	Max.
Open Circuit Ignitor Voltage	-750	-1000 Vdc
Ignitor Current	100	200 μ Adc
Altitude	---	10,000 ft.

Recommended Ignitor Operating Current 150 μ Adc (Note 2)

Pack in sealed water-vapor-proof bag. If opaque bag is used the tube type number shall be stamped thereon.

Ref.	Test	Conditions	Min.	Max.
3.1	Qualification Approval:	Required for JAN Marking.		
4.9.18.1.8	Carton Drop:	(d) Package Group 1; Carton Size J		
4.5	Holding Period:	t=168 hours		
4.9.6	*Glass Strain:			
-----	*Vibration(1):	Note 3		
-----	*Vibration(2):	Note 4		
4.18.1	Ignitor Ignition Time:	Ebb=-800Vdc; R =2.3 $\pm$ 1%Meg	t : ---	5.0sec.
4.18.4.1	Insertion Loss(1):	F1 = 8490 $\pm$ 0.1%Mc	Li : ---	2.0 db
4.18.4.1	*Insertion Loss(2):	F= 9000 $\pm$ 0.1%Mc. F2=9375 $\pm$ 0.1% F3=9600 $\pm$ 0.1%Mc.	Li : --- Li : --- Li : ---	2.0 db 2.0 db 2.0 db
4.18.4.1	**Insertion Loss(3):	F=8600 $\pm$ 0.1Mc. to F= 9500 $\pm$ 0.1%Mc. Note 5	Li : ---	2.0 db
4.18.5.1	Ignitor Interaction:	Iz=100 μ Adc	Δ Li : ---	0.2 db

SPECIFICATION SHEET

Type 1B24A
Gas Switching, TR TubeBOMAC LABORATORIES INC
SALEM ROAD
BEVERLY, MASSACHUSETTS

Page 1 of 5

5-13-64

Including drawing of Tube Outline.

<u>Ref.</u>	<u>Test</u>	<u>Conditions</u>	<u>Min.</u>	<u>Max.</u>
4.18.6	Tuning Range:	Note 6	F: 8490	9600Mc.
4.18.2	Ignitor Voltage Drop:	Iz=100 μ Adc	Ez : 325	450Vdc
4.18.3	*Ignitor Oscillation:	-----	Iz : ---	60 μ Adc
4.18.8	*Ignitor Current Temperature Drift:	Iz=80 μ Adc	Δ Iz : ---	30%
4.18.9	Leakage Power:	po=10kw; tp=0.5 μ s; pr=1000; F= 9375 $\pm$ 0.5%Mc; Iz=100 μ Adc	p : ---	30 mw
4.18.13.1	*Loaded Q:	F1; F3	QL: 160	350
4.18.13.1	**Loaded Q:	F= 8600 $\pm$ 0.1%Mc. to F= 9500 $\pm$ 0.1%Mc.; Note 8	QL: 160	350
4.18, 14.1	**Frequency Temperature Effect:	F=F2; Note 7	Δ F : ---	-20Mc
4.18.15.1	*Recovery Time:	po=10kw; tp=0.5 μ s; Iz=100 μ Adc; F2=9375 $\pm$ 0.1%Mc	t : ---	4.0 μ s
4.18.16	*Pressure Operation:	45lbs. p. s. i. abs.	---	---
4.18.17.1	Temperature Cycle:			
4.18.17.2	Temperature Cycle Life:	Group B	Cycles: 10	---
4.11	Life Test:	po=30 kw(Min.) tp=1.0 μ s; pr=1000; Notes 9, 10	t : 500	---hrs.

Page 2 of 5	SPECIFICATION SHEET		BOMAC LABORATORIES INC.
	Type 1B24A		SALEM ROAD
	Gas Switching, TR Tube		BEVERLY, MASSACHUSETTS
			5-13-64

<u>Ref.</u>	<u>Test</u>	<u>Conditions</u>	<u>Min.</u>	<u>Max.</u>
4.11.4	Life Test End Point:	Leakage Power; Insertion Loss; Ignitor Inter- action; Ignitor Voltage Drop; Vibration (2)	p : --- Li : --- ΔLi : --- Ez : ---	30 mw 2.0 db 0.5 db 650Vdc

Note 1: References and notations are from Military Specifications, Electron Tubes, MIL-E-1C, 3 October 1955.

Note 2: The recommended ignitor operating current is for a tube with an average ignitor voltage drop. The following formula should be used to determine the value of the required series resistance.

$$\text{Series Resistance}(R_i) = \frac{E_{bb} - E_i}{150} \text{ (megohms)}$$

where R_i = Total series resistance

E_{bb} = Open circuit supply voltage

E_i = Average (center) ignitor voltage drop

At least 0.5 megohms of the total should be located as close, as possible to the ignitor top cap to prevent oscillation.

Note 3: Tune to $9375 \pm 1\%$ then vibrate in direction of ignitor axis per paragraph 4.9.19.2 for 12 hours at 2.0 G with an amplitude of motion of 0.040 inches. After this, the tuning shall not have changed more than 3 Mc. from its initial value and the tube shall satisfy all other electrical tests of this specification.

Note 4: Tube shall be vibrated in a plane perpendicular to the ignitor axis and there shall be no evidence of shorting between the ignitor and adjacent cone.

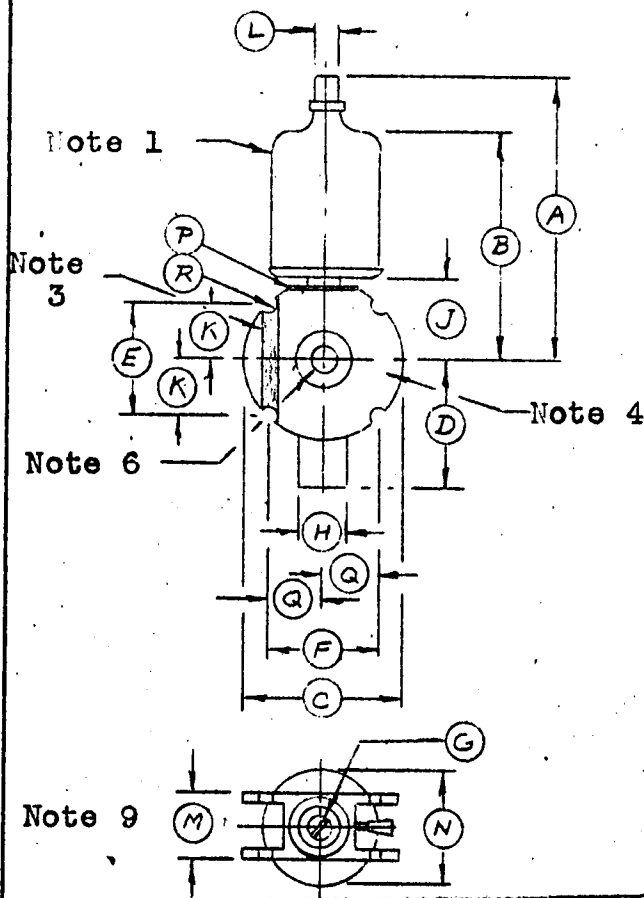
Note 5: The insertion loss shall be measured at intervals of 100Mc from $8600 \pm 0.1\text{Mc.}$ to $9500 \pm 0.1\% \text{Mc.}$ At these intervals the loss shall be within the limits specified.

Note 6: The tube shall cover a minimum tuning range of from less than 8490Mc to more than 9600Mc. No tube shall require less than 5 complete turns of the tuning screw to cover this range. The tuning screw shall be cycled from stop to stop before electrical tests are performed.

Page 3 of 5	SPECIFICATION SHEET	
	Type 1B24A Gas Switching, TR Tube	BOMAC LABORATORIES INC. SALEM ROAD BEVERLY, MASSACHUSETTS 5-13-64

- Note 7:** The frequency drift shall be measured with no adjustment of the tuning mechanism.
- Note 8:** The loaded Q shall be measured at intervals of 100Mc from $8600 \pm 0.1\%$ Mc. to $9500 \pm 0.1\%$ Mc. At these frequencies the loaded Q shall be within the limits specified.
- Note 9:** The magnetron shall be operated at a frequency $9375 \pm 1\%$ megacycles, and the tube under test shall be tuned to resonance at $9375 \pm 0.2\%$ megacycles. Open circuit ignitor voltage -800 Vdc, series resistor 2.3 megohms $\pm 1\%$.
- Note 10:** The ignitor current shall not be adjusted during life test. Life test end point shall be measured using a fixed voltage and resistor.

	SPECIFICATION SHEET	BOMAC LABORATORIES INC. SALEM ROAD BEVERLY, MASSACHUSETTS
	Type 1B24A	
Page 4 of 5	Gas Switching, TR tube	5-13-64



Ref.	Dimension
A*	3 1/4 Max.
B**	2 7/8 Max.
C*	1.760 Max. Dia.
D*	1 27/64 Max.
E**	1.280±.005
F**	1.220±.005
G	3/64±1/64 Slot
H*	.530±.003
J*	15/16 Min.
K	.640±.003
L*	.250±.005
M	.612±.003
N*	1 3/16 Max.
P	9/16 Flat
Q	.610±.003
R	.090±.004 Rad.
	(4) Slots

Note 1:- Reservoir shall be glass or approved equivalent.
 2:- Maximum projection of reservoir lies within a cylinder of 1-1/4 dia. with axis co-linear with tube axis.

3:- A force of 200 lbs. shall be applied to the face of the tube within the area indicated by shading. Dimension M shall not permanently change by more than .001.

4:- Body face to be cadmium plated .0003 minimum or made entirely of monel or equivalent.

5:- Solder fillets permissible on peripheral surface near seal-off tip and electrode terminal. Slots must be free of solder.

6:- No part of iris assembly shall extend beyond the body surface.

7:- Net weight 4-1/2 oz.

8:- Exhaust tubulation not to extend beyond periphery.

9:- Applies for area between periphery of this section of tube and concentric circle of 5/16 radius.

10:- Dimensions without tolerances are for information and are not required for inspection purposes.

SPECIFICATION SHEET

OUTLINE

1B24A, BL-51

BOMAC LABORATORIES INC.
 SALEM ROAD
 BEVERLY, MASSACHUSETTS

5-13-64

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