CV1795

TYPE 723A/B

THIS SHEET OF TEST LIMITS IS TO BE USED WITH SPECIFICATION JAN-1A

Description: Velocity Variation Tube

Ratings	Ef	Ers	Er	F
Absolute	V	Vdc	Vdc	Mc
Maximum	6.3 ±8%	330	-400	—
Test Cond:	6.3	300	-130 to -185	9369 ±0.3% Note 2

Dimensions: As per outline Re 38AA 182 (latest issue)
** Cathods: Coated Unipotential

Ref.		Test	Conditions	Min.	Max.
F-6a(2)	*	Drop:			
F-6b(2)	*	Vibration: Note 1	No voltage; F = 30; G = 10; t = 120		
---		Bump	Ef = 6.0V; Notes 2 & 3	△ Po/Po --	0.10
F-2	*	Electrode Insulation:	300Vdc; tube cold		
			Cathode-Resonator:	2.0 --- Meg	
			Filament-Resonator:	2.0 --- Meg	
F-6i	*	Heater Current:		If: 410	470 mA
F-6q	*	Insulation:	Ehk ±45Vdc	Ihk: 0	50 uAdc
F-6f		Repeller Current Due to Gas:	Note 4	Ir: ---	2.0 uAdc
F-6f		Repeller Current Due to Electrical Leak:	Note 4	Ir: ---	5.0 uAdc
F-6f(6)		Cathode Current:	Note 5	Ik: ---	32mAdc
F-6f(6)		Cathode Current:	Ef = 5.8V; Note 5	△ Ik/Ik: ---	0.15
---		Repeller Voltage:	Ef = 6.0V; Note 5	Er: -130	-185 Vdc
---		Power Output:	Ef = 6.0V; Note 5		
			Er = -130 to -185Vdc	Po: 20 ---	mW
			Er = 75 to -120Vdc	Po: 15 ---	mW
---		Mechanical Tuning Range:			
		Max. Frequency:	Er = -140 to -200Vdc	△ F: 9548 ---	Mc
---		Min. Frequency:	Er = -90 to -150Vdc	F: ---	8702 Mc
---	*	Electrical Tuning Range:	Notes 5 & 6		
			Er/Po = 50% Po (max)	△ F: 35 ---	Mc

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---	* Full Range Oscillation:			To be specified
---	** Temperature Compensation:	Note 7 Coefficient:		-.05 -.25 Mc/°C
F-4	Life Test:	Group B	t:	500 --- hrs
F-4b	Life Test End Point:		Po:	10 --- mW

Note 1. On evidence of satisfactory quality, the Service Inspector may limit this test to ten (10) tubes per month when in continuous production.

Note 2. The tube shall be mounted in a suitable socket and shall be fixed firmly in place by clamps which make contact with the tube only at the flange adjacent to the base. The measurements on the tube in an oscillating state shall be made in a waveguide assembly per drawing RE 38AA 183 (latest issue) or its equivalent.

Note 3. This test shall be made with a pendulum described herewith or its equivalent. The pendulum consists of a steel ball $\frac{5}{8}$ inch in diameter suspended by a wire .020 inch in diameter with the distance between the point of suspension and the centre of the ball equal to $4\frac{1}{4}$ inches. The ball shall be suspended so that when at rest it touches the tube $\frac{1}{2}$ inch below the diaphragm, and in this position the point of suspension is directly above the center of the ball. The ball shall be permitted to swing freely in a plane through the axis of the tube and in a plane approximately perpendicular to that through the bow and the axis of the tube. With the frequency of the tube adjusted to 9369 Mc $\pm$0.3% and Er and the load adjusted for maximum power output, the ball shall be permitted to swing through a 60° arc and strike the tube. The tube shall be considered to meet the test satisfactorily if, after the ball has struck the tube three times, the power output has not changed by more than $\pm$10% after readjusting only the load to the maximum power output.

Note 4. Electrical leaks and gas currents may be separated by opening the cathode connection and holding the potentials between the repeller and resonator unchanged.

Note 5. The wattmeter section of RE 38AA 109 (latest issue) shall be adjusted and controlled so that it presents an i[illegible]edance match to the waveguide for any expected power input over the frequency range of this test and that the voltage standing wave ratio shall never exceed 1.1. The bows shall be adjusted so that the frequency of oscillation lies within $\pm$0.3% of 9369 Mc. The repeller voltage shall then be adjusted within the limits specified so that, in cooperation with an adjustment of the load coupling plunger, the tube delivers maximum power output.

Note 6. The repeller voltage shall be adjusted above and below the value for maximum power to values such that the power output is reduced to 50% of the maximum. The repeller voltage shall be within the range of -110 to -205 Vdc. The frequency change between these values shall be as specified.

Note 7. The tube, which has been adjusted to oscillation in free air, shall be placed under a metallic cover which completely encloses it, with a $\frac{1}{2}$ " clearance at all points. The walls of the container shall be heated to an ambient temperature of 85° to 90°C and the wavelength of oscillation determined. The walls of

the cover shall then be cooled at a rate such that the fall of ambient temperature does not exceed 2° per minute. When the ambient temperature has been reduced to 25°C or lower, the wavelength shall again be recorded. This procedure shall be repeated three times with no readjustment of the wavelength on the second two runs. The average of the three runs shall be taken as the temperature coefficient with

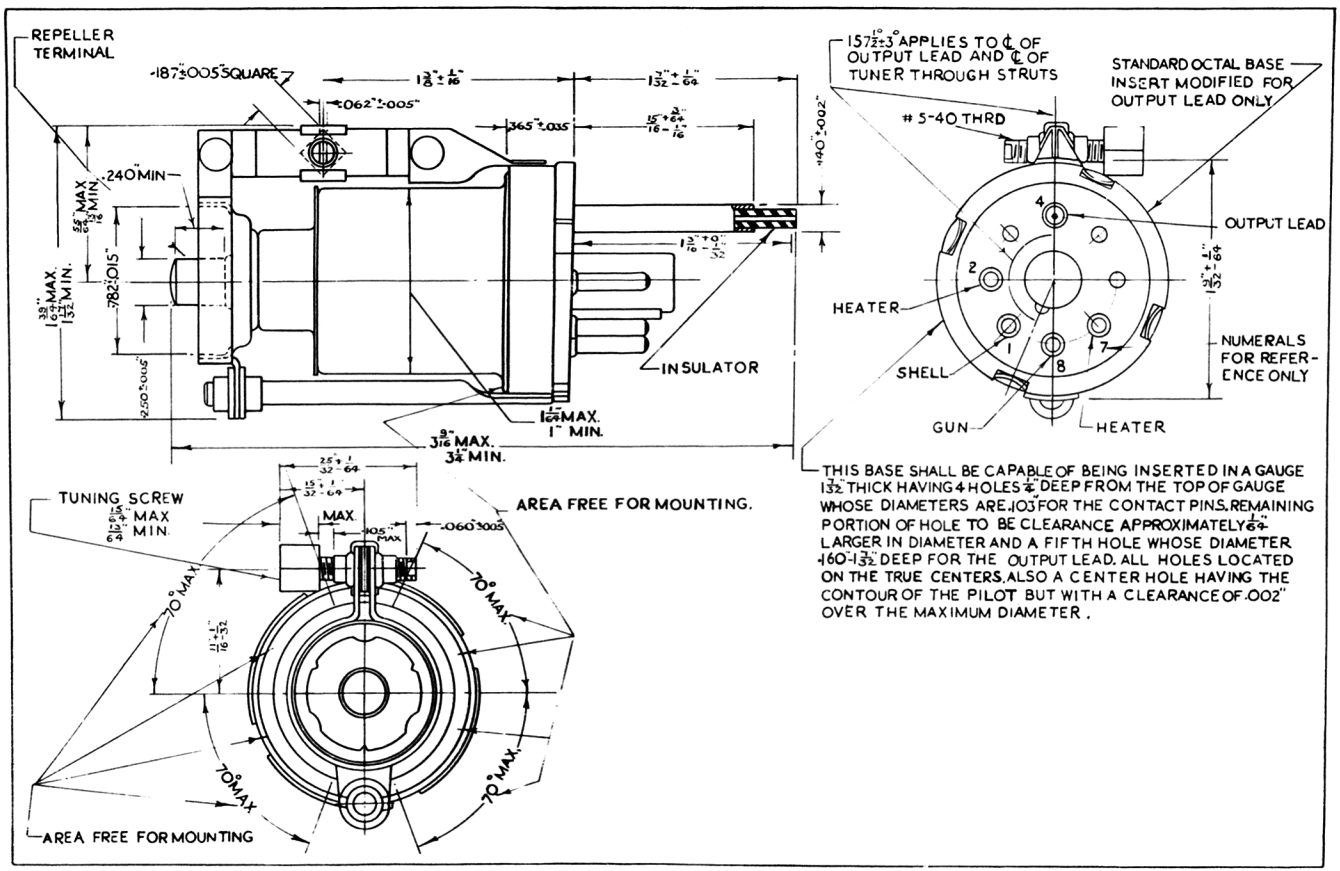
$$\text{Temperature Coefficient} = \left(\frac{-3 \times 10^{4} \, \Delta \lambda}{\lambda^{2} \, \Delta T} \right) \text{Mc per degree C}$$

where λ is the mean wavelength: $\Delta \lambda$ is the change in wavelength; and Δ T is the change in temperature.

Note 8. All tests required herein which are reference to JAN-1A shall be made in accordance with that specification. The general requirements of JAN-1A in effect on the date of this sheet shall form a part of this specification, except that paragraphs C-1a, E-4d, F-1d, and F-5f shall not apply. With reference to paragraph E-7, the letters "JAN" shall not be used in the type designation, either on the tube or on the carton.

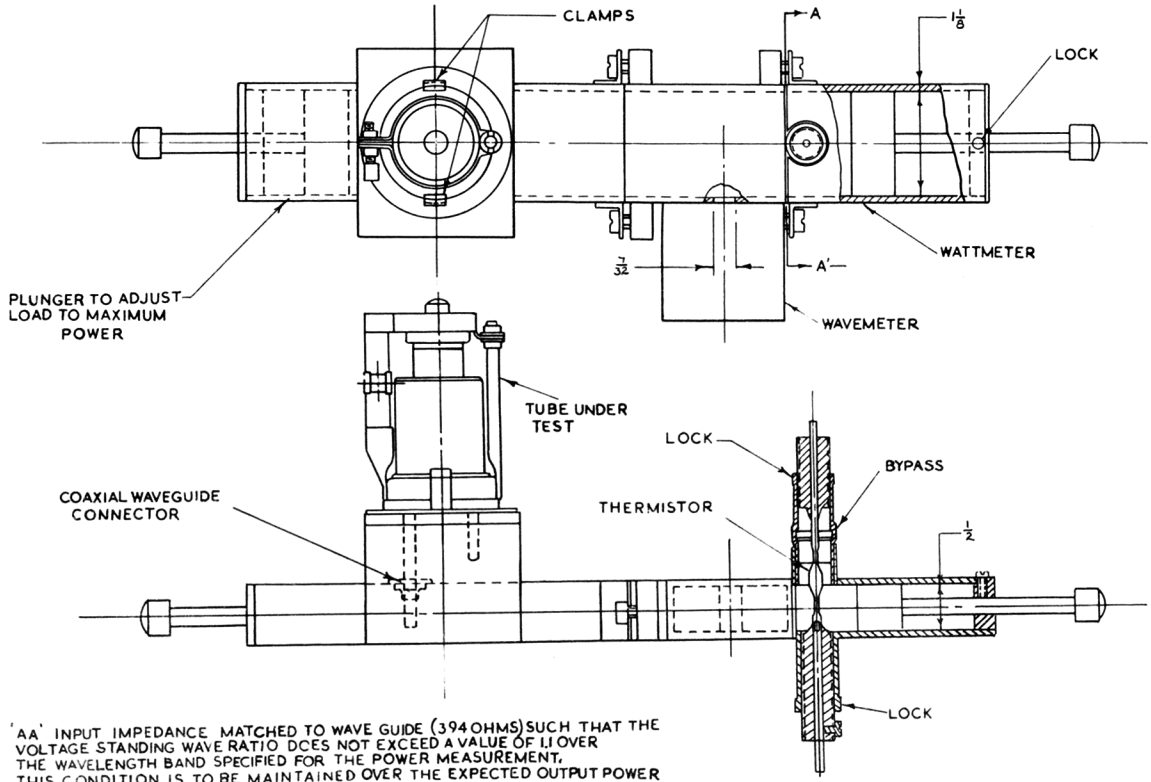
COPY OF BUREAU OF SHIPS SPECIFICATION
FOR RADIO ELECTRON TUBE TYPE 723A/B

12 June 1944 723A/B



THIS BASE SHALL BE CAPABLE OF BEING INSERTED IN A GAUGE 1/32" THICK HAVING 4 HOLES 1/4" DEEP FROM THE TOP OF GAUGE WHOSE DIAMETERS ARE .103" FOR THE CONTACT PINS, REMAINING PORTION OF HOLE TO BE CLEARANCE APPROXIMATELY 1/64" LARGER IN DIAMETER AND A FIFTH HOLE WHOSE DIAMETER .160"-13/32" DEEP FOR THE OUTPUT LEAD. ALL HOLES LOCATED ON THE TRUE CENTERS, ALSO A CENTER HOLE HAVING THE CONTOUR OF THE PILOT BUT WITH A CLEARANCE OF .002" OVER THE MAXIMUM DIAMETER.

RE 38AA 182E



'AA' INPUT IMPEDANCE MATCHED TO WAVE GUIDE (394 OHMS) SUCH THAT THE VOLTAGE STANDING WAVE RATIO DOES NOT EXCEED A VALUE OF 1.1 OVER THE WAVELENGTH BAND SPECIFIED FOR THE POWER MEASUREMENT. THIS CONDITION IS TO BE MAINTAINED OVER THE EXPECTED OUTPUT POWER RANGE OF THE TUBE. THIS MAY BE ACCOMPLISHED BY OPERATING THE THERMISTOR AS ONE ARM OF A WHEATSTONE BRIDGE THROUGH WHICH A CONTROLLED CURRENT MAY BE PASSED.