from JEDEC release #3879, Sept. 10, 1962

JEDEC TYPE 8123

SPONSOR Western Electric Co.

JEDEC TYPE DESIGNATION
REGISTRATION FOR PULSED MAGNETRON

GENERAL CHARACTERISTICS

The 8123 is a pulsed magnetron oscillator tube which operates over the tunable frequency range of 16000 to 17000 Mc. The peak power output is approximately 70 kilowatts and the tube is forced-air cooled. The tube uses an integral magnet. Special vibration resistant design features minimized vibration induced frequency modulation.

GENERAL ELECTRICAL DATA

Pre-heat Heater Voltage	12.6 ± 5% volts
Pre-heat Heater Current at 12.6 Volts	3.25 ± 0.25 amperes
Minimum Pre-heat Time	270 seconds
Heater Cold Resistance (approx.)	0.4 ohm
Anode-Cathode Capacitance (nominal)	14 μμf

RATINGS, ABSOLUTE SYSTEM

Heater Voltage (max.)	13.9 volts
Heater Current (max.)	3.5 amperes
Heater Surge Current (max.)	13.6 amperes
Peak Anode Current (max.)	14 amperes
Peak Anode Current (min.)	5 amperes
Peak Anode Voltage (max.)	16 kilovolts
Average Power Input (max.)	.225 watts
Duty Cycle (max.)	0.001
Pulse Duration (max.)	3.3 microseconds
Pulse Duration (min.)	0.20 microseconds
Rate of Rise of Anode Voltage	
Above 50% Point (max.)	.120 KV/μsec
Above 50% Point (min.)	40 KV/μsec
Output and Input Circuit	
Pressurization (max.)	45 psia
Pressurization (min.)	15 psia
Maximum Altitude without Pressurization:	
Output Circuit	sea level
Input Terminals	10,000 ft.
Body Temperature (max.)	100°C
Cathode Stem Temperature (max.)	275°C
VSWR (Magnetron Load) (max.)	1.5:1
Tuner Torque (max.)	50 in. oz.

TYPICAL OPERATING VALUES

Frequency	16000 to 17000 Mc
Peak Anode Voltage at 17.0 kmc	15.0 kv
Pulling Figure (VSWR 1.5:1)	6 Mc
Pushing Figure (VSWR 1.5:1)	0.06 Mc/AMP
Atmospheric Frequency Shift (sea level to 75,000 ft.)	3 Mc

TYPICAL OPERATING VALUES (CONT'D.)

Duty Factor	0.001	
Peak Anode Current	12	amperes
Stability (% Missing Pulses)	<0.001	%
Peak Power Output	70	kw
Heater Voltage	8.8 ± 5%	volts

Current Pulse Duration	Voltage Pulse Rate-of-Rise	RF Band Width at 1/4 po pts.	R.M.S. Jitter		
			F_j	V_j	T_j
μsec	KV per μsec (above 50% point)	σ'=1.5:1 worst phase Mc	kc	db	ns
0.25	60	4.0	-	-	1.5
2.0	60	.50	13	.02	-

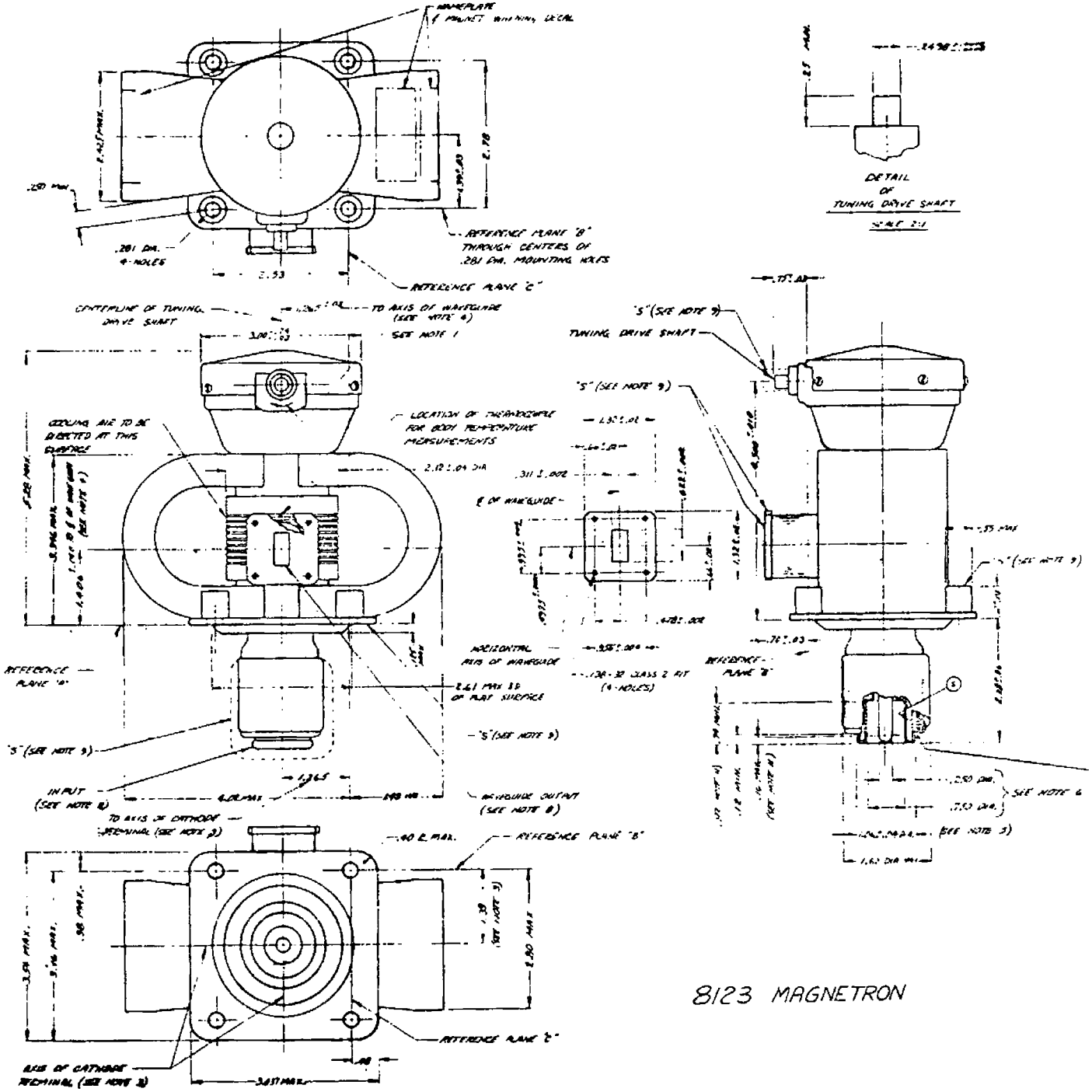
GENERAL MECHANICAL CHARACTERISTICS

Mounting Position	Any
Mounting Support	See 4 hole Mounting Plate in outline drawing
Weight	7.94 lbs. Max.

Coupling between Tube and Load:
RG 91/U waveguide mates with modified UG 541/U choke flange with clearance holes instead of 6-32 tapped holes.

Cooling Data
To limit rise in body temperature to 50°C for a dissipation of 115 watts - 10 cfm, min.

Pressurization of Output Circuit:
The need for pressurization depends on the particular components used in the output circuit and on the pulse width. In general, pressurization above 15 psia should not be necessary.



DETAIL OF TUNING DRIVE SHAFT

SCALE 2:1

NOTES:

1. THE FREQUENCY INCREASES WHEN DRIVE SHAFT IS DRIVEN IN THE DIRECTION INDICATED BY ARROW.
2. THE TUNING MECHANISM OPERATES SMOOTHLY OVER THE ENTIRE MECHANICAL RANGE WHEN SUBJECTED TO A DYNAMIC TORQUE OF 10 OZ. INCHES MAX. APPLIED AT THE DRIVE SHAFT. IN EQUIPMENT THE MAX. PEAK TORQUE SHALL NOT EXCEED 50 OZ. INCHES. THE AXIAL AND RADIAL FORCE APPLIED TO THE DRIVE SHAFT SHALL NOT EXCEED ONE POUND. THE VANES MUST BE FREE FROM CORROSION, PAINT, AND OTHER IMPERFECTIONS.
3. THE AXIS OF THE CATHODE TERMINAL IS WITHIN A RADIUS OF 3/64 OF SPECIFIED LOCATION. (NOTE 4 APPLIES)
4. THE LIMITS ON LOCATION OF WAVE GUIDE INPUT AND CATHODE TERMINAL WERE ANGULAR AS WELL AS LATERAL DEVIATIONS.
5. NO CLIMAX ON THIS DIAMETER.
6. THE HEATER TERMINAL IS CONCENTRIC WITH THE CATHODE TERMINAL WITHIN .010.
7. CAUTION: MAINTAIN MINIMUM CLEARANCE OF 2 INCHES BETWEEN THIS MAGNET AND MAGNETIC MATERIALS. (MAGNETS, STEEL TOOLS, PLATES, ETC.)
8. THE OPENING OF THE WAVE GUIDE AND THE INPUT SHALL BE ENCLOSED BY A DUST COVER WHEN TUBE IS NOT IN USE.
9. ALL METAL SURFACES COVERED BY GRAY FINISH EXCEPT THOSE MARKED "S".
10. "S" IS PROVIDED WITH INTERNAL STOP FOR IMPACT CAUSED BY UNDETERMINED TUNER DRIVE MOTION FOR A MAX. OF (50) IMPACTS.
11. THESE DIMENSIONS DEFINE EXTREMITIES OF CYLINDRICAL SECTIONS GIVEN BY .250 AND .750 DIMENSIONS.
12. BASE PLATE CAN BE SEALED WITH GASKET C-660001 SEATED IN GROOVE AS SHOWN ON C-660000. WHEN SEALED IN THIS MANNER, THE LEAKAGE RATE SHALL NOT EXCEED 0.1 CUBIC INCH PER MINUTE AT 45 PSIA.

8123 MAGNETRON