WESTERN ELECTRIC 7208B ELECTRON TUBE

TYPE DESIGNATION REGISTRATION

Manufacturer's Designation:
JEDEC Designation: 7208B
Manufacturer: Western Electric Company

GENERAL CHARACTERISTICS

The 7208B is a pulsed magnetron oscillator tube which operates at a tunable frequency of 15500 to 17500 Mc. The peak power output is approximately 130 kilowatts and the tube is forced-air cooled. The tube uses an integral magnet. Special vibration resistant design features minimize vibration induced frequency modulation. The 7208B is unilaterally interchangeable with the 7208A and 7208.

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)	20 amperes
Peak Anode Current. (min)	5 amperes
Peak Anode Voltage (max)	20 kilovolts
Average Power Input (max)	350 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
Rate of Rise of Anode Voltage Above 50% Point. (min)	60 KV/μsec
Output and Input Circuit Pressurization. (max)	45 psia
Output and Input Circuit Pressurization. (min)	15 psia
Maximum Altitude without pressurization: Output Circuit	sea level
Maximum Altitude without pressurization: Input Terminals	sea level
Body Temperature (max)	150°C
Cathode Stem Temperature (max)	300°C
VSWR (Magnetron Load) (max)	1.5:1
Tuner Torque (max)	50 in. oz.

from JEDEC release #3260, May 8, 1961

TYPICAL OPERATING VALUES

Frequency	15500 to 17500	Mc
Peak Anode Voltage at 17.5 kmc.	17.5	kv
Pulling Figure (VSWR 1.5/1)	6	Mc

Current Pulse Duration	Duty Factor	Peak Anode Current	Stability	Peak Power Output	Voltage Pulse Rate-of-Rise	RF Band width at 1/4 po pts.	Heater Voltage
μsec		Amperes	% Missing Pulses	Kilo-watts	KV per μsec (above 50 % point)	σ' = 1.5:1 worst phase Mc	Volts±5%
0.25	0.0007	17	0.01%	105	100	4.5 Mc	8.8
0.25	0.0007	19	0.01%	130	100	4.5 Mc	8.6
3	0.001	19	0.01%	130	100	0.6 Mc	6.8

GENERAL MECHANICAL CHARACTERISTICS

Mounting Position.	any
Mounting Support	See 4 hole Mounting Plate in outline drawing
Weight	14 lbs. Max.

Coupling between Tube and Load:
Waveguide (RG91/U) per outline drawing. The mating flange may be UG419/U cover flange or a modified (clearance holes instead of tapped 6-32) UG541/U choke flange.

Cooling Data
To limit rise in body temperature to 100°C for a dissipation of 200 watts - 10 cfm, min.

Recommended cathode stem temperature 225°C ± 25°C.

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, it is recommended that the output circuit be pressurized for peak anode currents greater than 15 amperes.

PRINTED IN U. S. A. 4-20-61

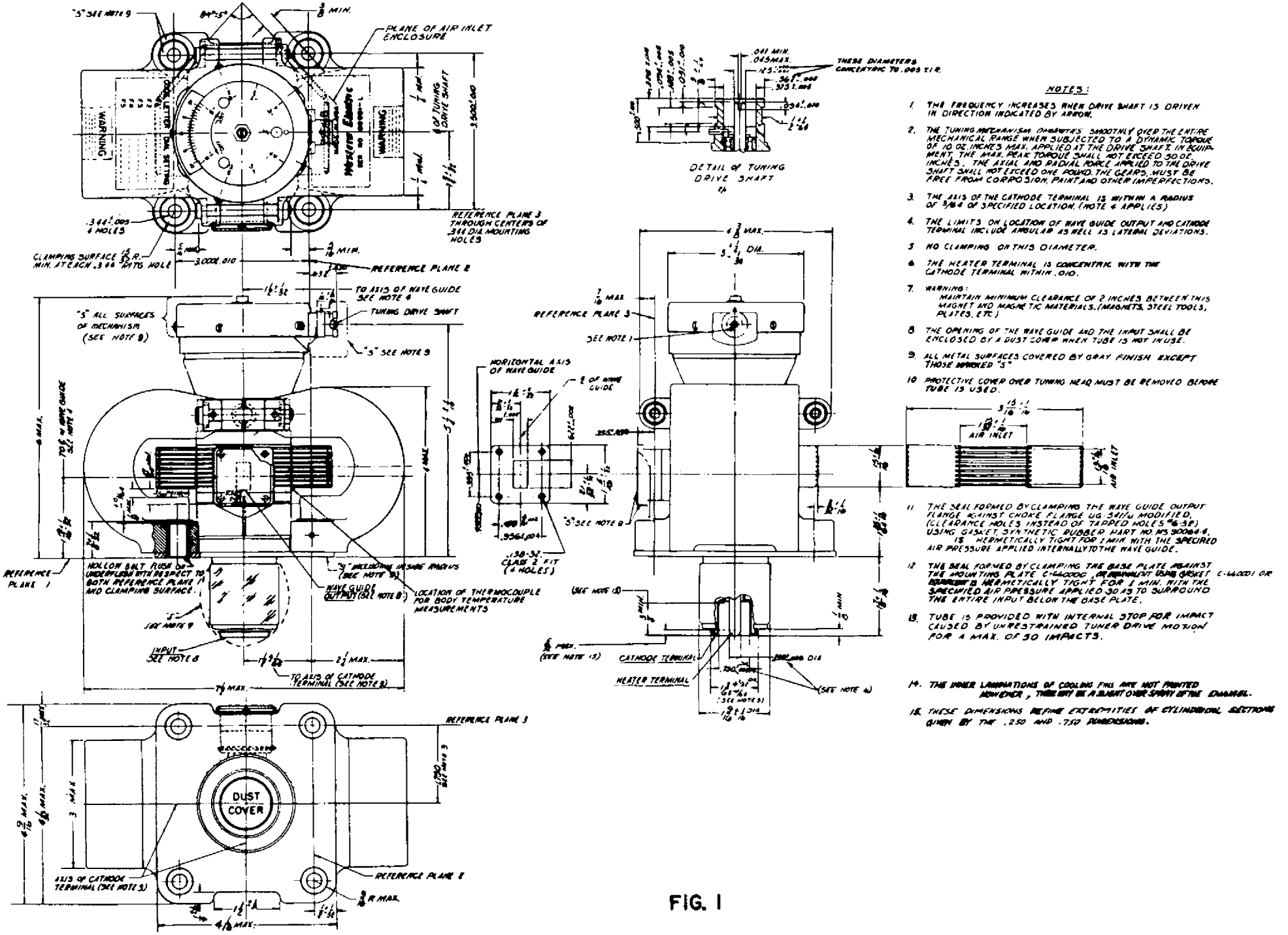

FIG. 1

NOTES:

1. THE FREQUENCY INCREASES WHEN DRIVE SHAFT IS DRIVEN IN 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 30 OZ. INCHES. THE AXIAL AND RADIAL FORCE APPLIED TO THE DRIVE SHAFT SHALL NOT EXCEED ONE POUND. THE GEARS MUST BE FREE FROM CORROSION, PAINT AND OTHER IMPERFECTIONS.
3. THE AXIS OF THE CATHODE TERMINAL IS WITHIN A RADIUS OF 5/64 OF SPECIFIED LOCATION. (NOTE 4 APPLIES)
4. THE LIMITS ON LOCATION OF WAVE GUIDE OUTPUT AND CATHODE TERMINAL INCLUDE ANGULAR AS WELL AS LATERAL DEVIATIONS.
5. NO CLAMPING ON THIS DIAMETER.
6. THE HEATER TERMINAL IS CONCENTRIC WITH THE CATHODE TERMINAL WITHIN .010.
7. WARNING: 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. PROTECTIVE COVER OVER TUNING HEAD MUST BE REMOVED BEFORE TUBE IS USED.
11. THE SEAL FORMED BY CLAMPING THE WAVE GUIDE OUTPUT FLANGE AGAINST CHOKE FLANGE UG-541/U MODIFIED, (CLEARANCE HOLES INSTEAD OF TAPPED HOLES #6-32) USING GASKET SYNTHETIC RUBBER PART NO. MS 9006A4, IS HERMETICALLY TIGHT FOR 1 MIN. WITH THE SPECIFIED AIR PRESSURE APPLIED INTERNALLY TO THE WAVE GUIDE.
12. THE SEAL FORMED BY CLAMPING THE BASE PLATE AGAINST THE MOUNTING PLATE C-44000C (OR EQUIVALENT) USING GASKET C-44001 OR EQUIVALENT IS HERMETICALLY TIGHT FOR 1 MIN. WITH THE SPECIFIED AIR PRESSURE APPLIED 30 AS TO SURROUND THE ENTIRE INPUT BELOW THE BASE PLATE.
13. TUBE IS PROVIDED WITH INTERNAL STOP FOR IMPACT CAUSED BY UNRESTRAINED TUNER DRIVE MOTION FOR A MAX. OF 30 IMPACTS.
14. THE INNER LAMINATIONS OF COOLING FINS ARE NOT PRINTED HOWEVER, THERE MAY BE A SLIGHT OVER SPRAY OF THE ENAMEL.
15. THESE DIMENSIONS DEFINE EXTREMITIES OF CYLINDRICAL SECTIONS GIVEN BY THE .250 AND .750 DIMENSIONS.