WESTERN ELECTRIC 7208 ELECTRON TUBE

TYPE DESIGNATION REGISTRATION

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

GENERAL CHARACTERISTICS

The 7208 is a pulsed magnetron oscillator tube which operates at a tunable frequency of 15800 to 17200 Mc. The power output is approximately 100 kilowatts and the tube is forced air cooled. The tube uses an integral magnet.

GENERAL ELECTRICAL DATA

Pre-heat Heater Voltage	12 ± 5% volts
Pre-heat Heater Current at 12.6 Volts	3.25 ± 0.25 amperes
Minimum Pre-heat Time	270 seconds
Heater Cold Resistance	0.4 ohm approximately
Anode-Cathode Capacitance	14 μμf (nominal)

ABSOLUTE MAXIMUM RATINGS

Heater Voltage	13.9 volts
Heater Current	3.5 amperes
Heater Surge Current	13.6 amperes
Peak Anode Voltage	20 kilovolts
Peak Anode Current	20 amperes
Average Power Input	350 watts
Duty Cycle	0.001
Pulse Duration	3.3 microseconds
Rate of Rise of Anode Voltage (above 85% point)	120 KV μs/max.
Output Circuit Pressurization	15 psia min., 45 psia max.
Maximum Altitude without Pressurization	
Output Circuit	sea level
Input Terminals	sea level
Body Temperature	150°C
Cathode Stem Temperature	300°C
VSWR (Magnetron Load)	1.5:1 max.

TYPICAL OPERATING RATINGS

Frequency	15800 to 17200 Mc.
Peak Anode Voltage at 17.0 kmc	17.5 ± 1.5 kv
Pulling Figure (VSWR 1.5/1)	6 Mc.
Pushing Factor	- Mc/a
Magnetic Field for External Magnet	-

from JEDEC release #2946, Aug. 29, 1960

TYPICAL OPERATING RATINGS (Continued)

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 85 % point)	(state VSWR & phase of load) Mc	Volts±5%
1/4	0.0007	17	1% max.	100	100 KV/μs	σ'= 1.5:1* 4.5 Mc	8.8
3	0.001	17	1% max.	100	100 KV/μs	0.6 Mc	7.6
						*= Worst Phase)	

GENERAL MECHANICAL CHARACTERISTICS

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

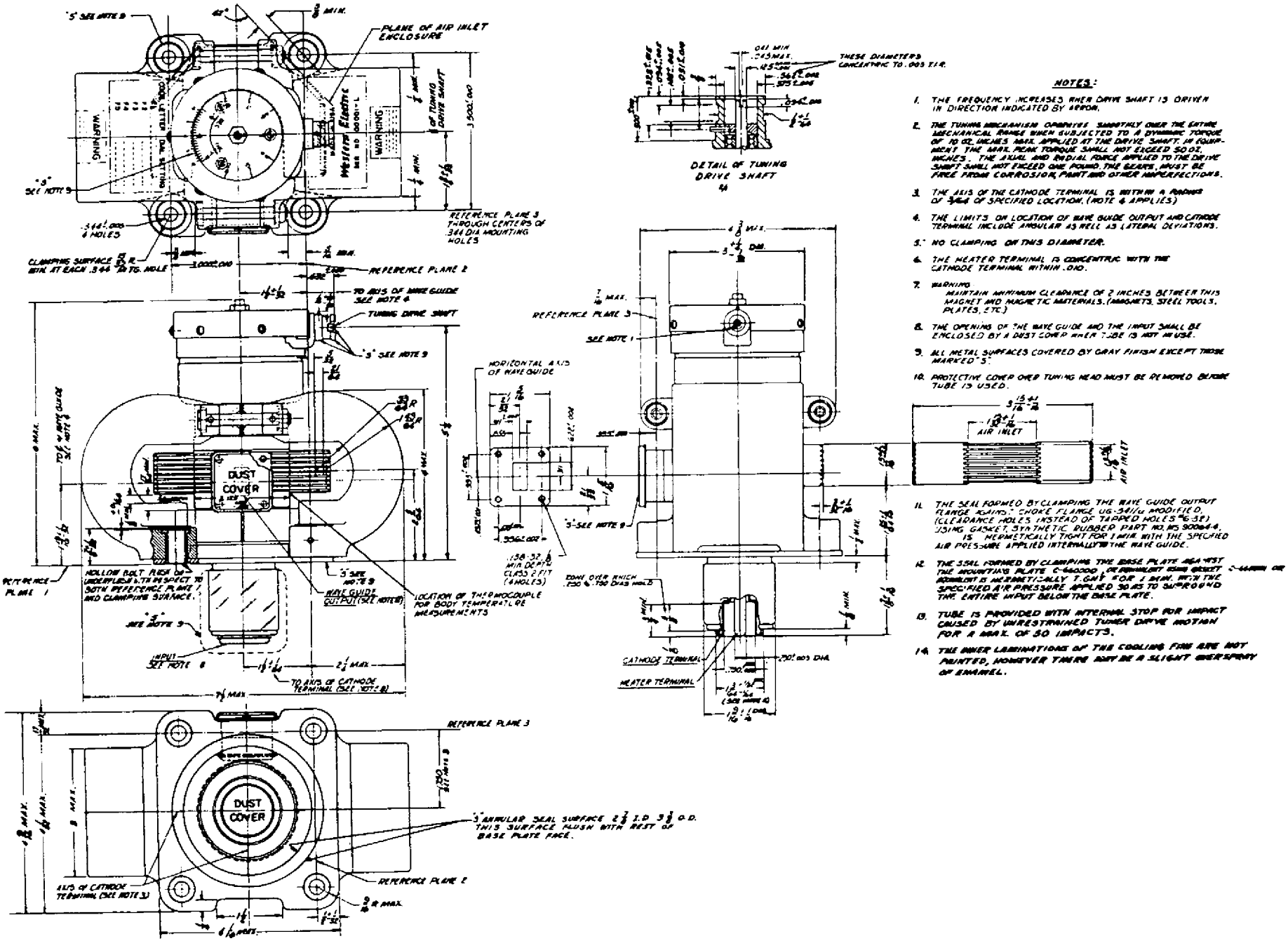
Coupling between Tube and Load

The tube is coupled to RG 91/U waveguide by means of an UG419/U cover flange on a modified UG541/U (Clearance holes instead of tapped 6-32 holes) choke flange.

Cooling Data

To limit rise in body temperature to 100°C for a dissipation of 200 watts - 10 cfm

Recommended cathode stem temperature 225°C ± 25°C



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 50 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 [illegible] OF SPECIFIED LOCATION. (NOTE 6 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 OPENINGS 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 90064-4, 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-660000 OR EQUIVALENT USING GASKET [illegible] OR EQUIVALENT IS HERMETICALLY TIGHT FOR 1 MIN. WITH THE SPECIFIED AIR PRESSURE APPLIED TO AIR 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 THE COOLING FINS ARE NOT PAINTED, HOWEVER THERE MAY BE A SLIGHT OVERSPRAY OF ENAMEL.