JEDEC TYPE DESIGNATION REGISTRATION FOR PULSED MAGNETRONS

Manufacturer's Designation: 7589
JEDEC Designation: 7589
Manufacturer: Western Electric Co.

GENERAL CHARACTERISTICS

The 7589 is a pulsed magnetron oscillator tube which operates at a tunable frequency of 8500 to 9600 megacycles. The peak power output is approximately 425 kilowatts and the tube is air cooled. The tube uses an integral magnet and incorporates a high-speed mechanical tuning mechanism.

GENERAL ELECTRICAL DATA

Pre-heat Heater Voltage	20 ± 0.3 volts
Pre-heat Heater Current at 20 volts	4.0 ± 0.2 amp.
Minimum Pre-heat Time	180 sec.
Heater Cold Resistance	0.5 ohm approximate
Anode-Cathode Capacitance	14 μμf approximate

ABSOLUTE MAXIMUM RATINGS

Heater Voltage	22 volts
Heater Current	4.5 amp.
Heater Surge Current	16 amp.
Peak Anode Voltage	40 kv
Peak Anode Current	40 amp.
Average Power Input	500 watts
Duty Cycle	.0005
Pulse Duration	3.0 μsec.
Rate of Rise of Anode Voltage (above 80% point)	325 kv/μs
Output Circuit Pressurization	45 PSIA
Max. Altitude without Pressurization	
Output Circuit	Sea Level
Input Terminals	Sea Level
Anode Temperature	150°C
Cathode Stem Temperature	250°C
VSWR (Magnetron Load)	1.3:1

from JEDEC release #3513, Dec. 4, 1961

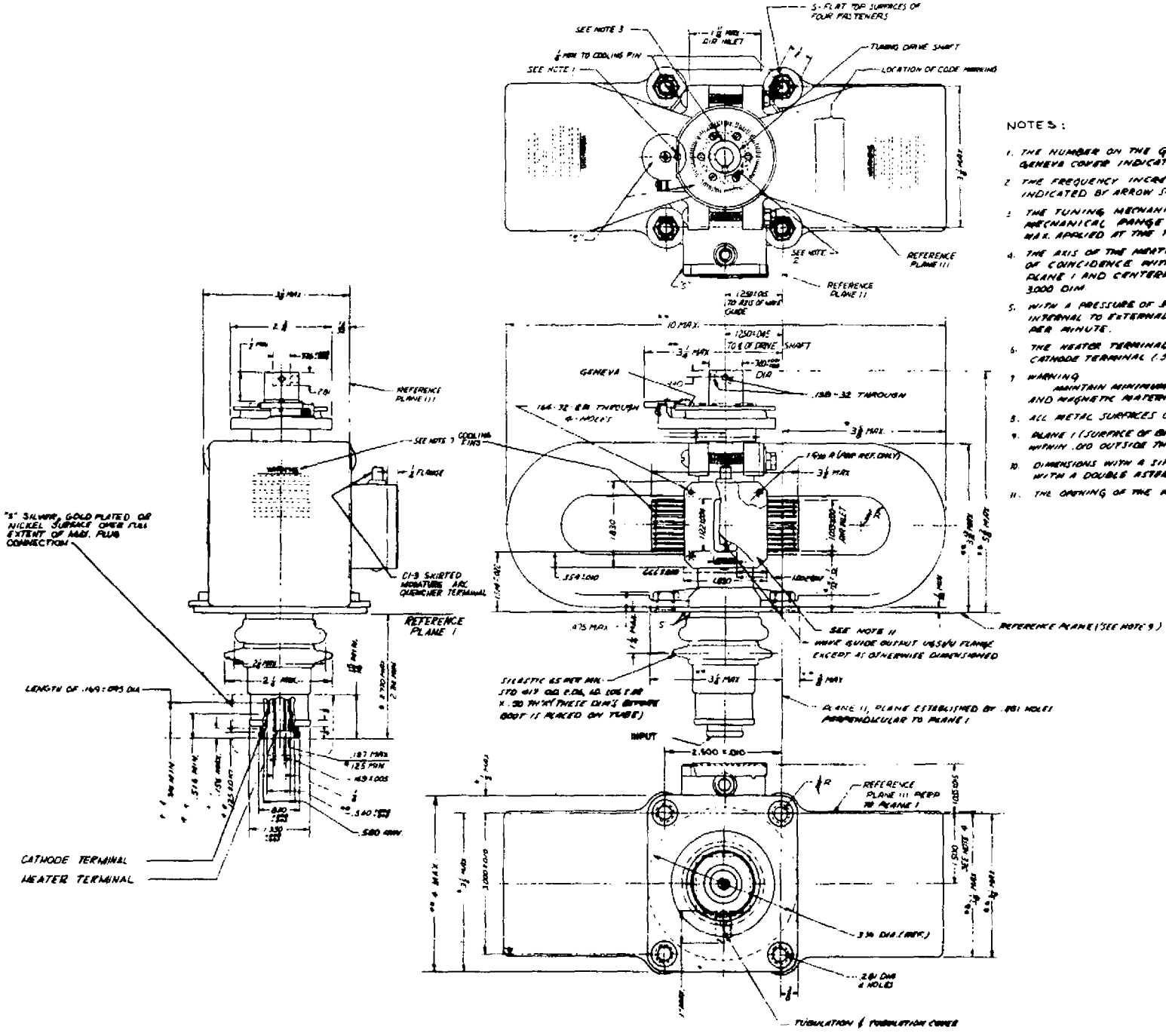
TYPICAL OPERATING RATINGS

Frequency . . . . . 8500 to 9600 Mc
Peak Anode Voltage at 8500 Mc . . . . 33.5 ± 1.0 kv
Pulling Figure (VSWR 1.2:1) . . . . . 13 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 Current
µsec		Amperes	% Missing Pulses (1.2 VSWR)	Kilo-watts (1.05 VSWR Max.)	kv per µsec (above 80 % point)	Mc (1.2 VSWR at worst phase of load)	Amps ±5.0%
0.24 ± .02	.00031	32.2	2% Max.	425	290	6	2.9

GENERAL MECHANICAL CHARACTERISTICS

Mounting Position . . . . . Any
Mounting Support . . . . . See four hole mounting plate on Outline Drawing - page 3
Weight . . . . . 16 pounds approximate
Coupling - Load to Tube ... RG 51/U waveguide with UG 51/U cover flange or modified (clearance holes instead of #8-32 tapped holes) UG 52A/U choke flange (or the equivalent aluminum waveguide and flanges).
Cooling data . . . . . 10 cfm min. required through cooling fins to limit the rise in body temperature to a maximum of 100°C for a dissipation of 270 watts.
Recommended input temperature.. The input temperature, measured on the cathode terminal immediately adjacent to the input glass to metal seal, should be 160°C ± 15°C with 0 anode voltage applied to the magnetron and with a filament current of 3.6 amperes.



NOTES:

1. THE NUMBER ON THE GENEVA APPEARING THROUGH THE HOLE IN THE GENEVA COVER INDICATES REVOLUTIONS FROM ZERO TO SIX.
2. THE FREQUENCY INCREASES WHEN DRIVE SHAFT IS DRIVEN IN DIRECTION INDICATED BY ARROW SHOWN IN TOP VIEW.
3. THE TUNING MECHANISM SHALL OPERATE SMOOTHLY OVER THE ENTIRE MECHANICAL RANGE WHEN SUBJECTED TO TORQUE OF 60 INCH-OUNCES MAX. APPLIED AT THE TUNING DRIVE SHAFT.
4. THE AXIS OF THE HEATER TERMINAL SHALL BE WITHIN A RADIUS OF .08 OF COINCIDENCE WITH THE AXIS WHICH IS PERPENDICULAR TO PLANE I AND CENTERED WITH RESPECT TO THE 2.500 DIM. AND THE 3.000 DIM.
5. WITH A PRESSURE OF 30 PSIA APPLIED AT THE WAVE GUIDE OUTPUT, THE INTERNAL TO EXTERNAL LEAK RATE SHALL NOT EXCEED 0.1 CUBIC INCHS PER MINUTE.
6. THE HEATER TERMINAL (.169 DIM.) SHALL BE CONCENTRIC WITH THE CATHODE TERMINAL (.500 DIM.) WITHIN .010
7. WARNING
   MAINTAIN MINIMUM CLEARANCE OF 8 INCHES BETWEEN THIS MAGNET AND MAGNETIC MATERIALS. (MAGNETS, STEEL TOOLS, PLATES, ETC.)
8. ALL METAL SURFACES COVERED BY GRAY PAINT, EXCEPT THOSE MARKED 5
9. PLANE I (SURFACE OF BASEPLATE OUTSIDE THE 3.84 DIA.) SHALL BE FLAT WITHIN .010 OUTSIDE THE 3.84 DIA.
10. DIMENSIONS WITH A SINGLE ASTERISK (*) DENOTES DESIGN TEST. DIMENSION. WITH A DOUBLE ASTERISK (**) DENOTES QUALIFICATION APPROVAL.
11. THE OPENING OF THE WAVE GUIDE SHALL BE ENCLOSED BY A DUST COVER