

JEDEC TYPE DESIGNATION  
REGISTRATION FOR PULSED MAGNETRON

## GENERAL CHARACTERISTICS

The 7976 is a pulsed magnetron oscillator tube which operates at a tunable frequency of 13600 to 15600 Mc. The peak power output is approximately 135 kilowatts and the tube is forced-air cooled. The tube uses an integral magnet. Special vibration resistant design features minimize 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)                 | 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/ $\mu$ sec |
| Above 50% Point. (min)                   | 60 KV/ $\mu$ sec  |
| Output and Input Circuit                 |                   |
| Pressurization (max)                     | 45 psia           |
| Pressurization (min)                     | 15 psia           |
| Maximum Altitude without pressurization: |                   |
| Output Circuit                           | sea level         |
| 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.        |

### TYPICAL OPERATING VALUES

|                                          |                   |
|------------------------------------------|-------------------|
| Frequency . . . . .                      | 13600 to 15600 Mc |
| Peak Anode Voltage at 15.6 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  |
|------------------------|-----------------|--------------------|------------------|-------------------|-------------------------------------------|------------------------------|-----------------|
| $\mu\text{sec}$        |                 | Amperes            | % Missing Pulses | Kilo-watts        | KV per $\mu\text{sec}$ (above 50 % point) | 6'-1.5:1 worst phase Mc      | Volts $\pm 5\%$ |
| 0.25<br>3              | 0.0007<br>0.001 | 19<br>19           | 0.01%<br>0.01%   | 135<br>135        | 100<br>100                                | 4.5 Mc<br>0.45 Mc            | 8.6<br>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

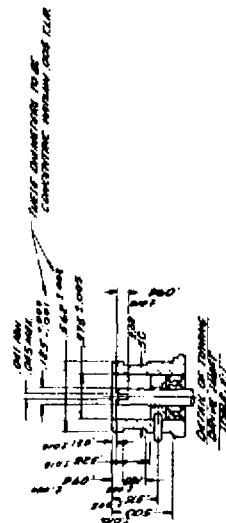
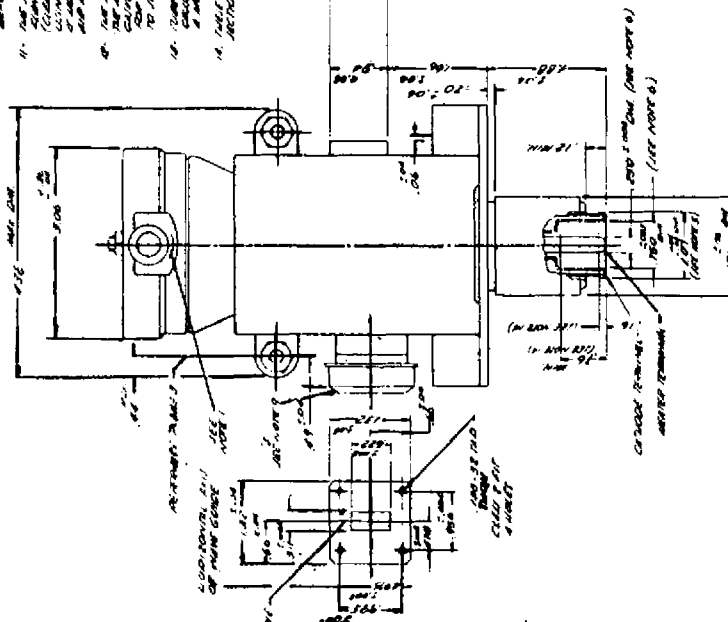
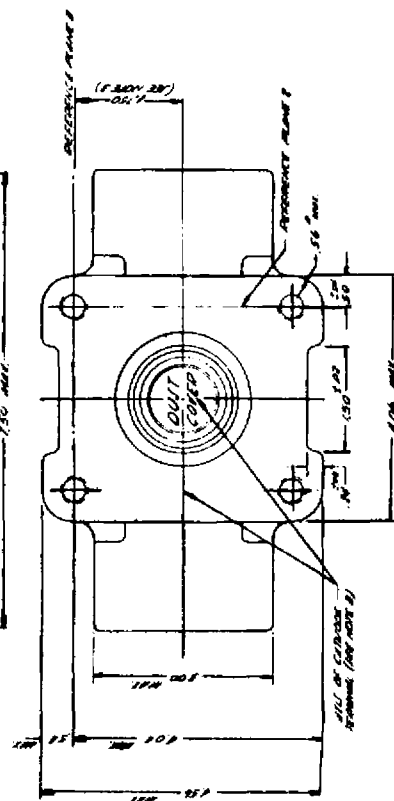
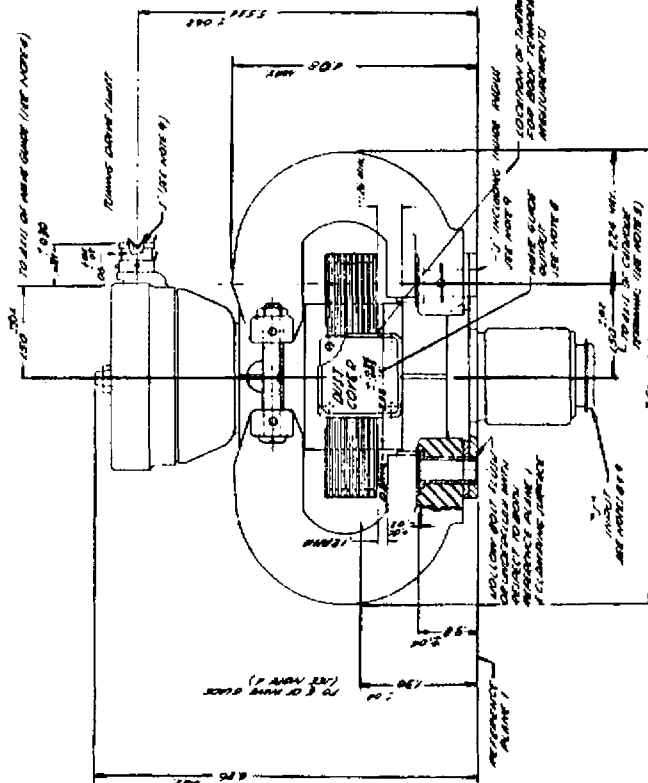
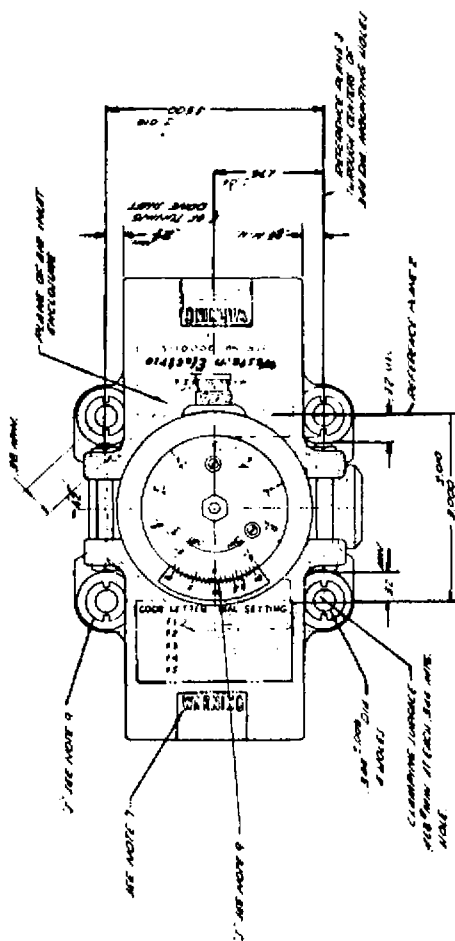
To limit rise in body temperature to 100°C for a dissipation of 200 watts - 10 cfm, min.

Recommended cathode stem temperature 225°C  $\pm$  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.

7976 MAGNETRON



1. RECEIVED 11/11/54
2. RECEIVED 11/11/54
3. RECEIVED 11/11/54
4. RECEIVED 11/11/54
5. RECEIVED 11/11/54
6. RECEIVED 11/11/54
7. RECEIVED 11/11/54
8. RECEIVED 11/11/54
9. RECEIVED 11/11/54
10. RECEIVED 11/11/54
11. RECEIVED 11/11/54
12. RECEIVED 11/11/54
13. RECEIVED 11/11/54
14. RECEIVED 11/11/54
15. RECEIVED 11/11/54
16. RECEIVED 11/11/54
17. RECEIVED 11/11/54
18. RECEIVED 11/11/54
19. RECEIVED 11/11/54
20. RECEIVED 11/11/54
21. RECEIVED 11/11/54
22. RECEIVED 11/11/54
23. RECEIVED 11/11/54
24. RECEIVED 11/11/54
25. RECEIVED 11/11/54
26. RECEIVED 11/11/54
27. RECEIVED 11/11/54
28. RECEIVED 11/11/54
29. RECEIVED 11/11/54
30. RECEIVED 11/11/54
31. RECEIVED 11/11/54
32. RECEIVED 11/11/54
33. RECEIVED 11/11/54
34. RECEIVED 11/11/54
35. RECEIVED 11/11/54
36. RECEIVED 11/11/54
37. RECEIVED 11/11/54
38. RECEIVED 11/11/54
39. RECEIVED 11/11/54
40. RECEIVED 11/11/54
41. RECEIVED 11/11/54
42. RECEIVED 11/11/54
43. RECEIVED 11/11/54
44. RECEIVED 11/11/54
45. RECEIVED 11/11/54
46. RECEIVED 11/11/54
47. RECEIVED 11/11/54
48. RECEIVED 11/11/54
49. RECEIVED 11/11/54
50. RECEIVED 11/11/54
51. RECEIVED 11/11/54
52. RECEIVED 11/11/54
53. RECEIVED 11/11/54
54. RECEIVED 11/11/54
55. RECEIVED 11/11/54
56. RECEIVED 11/11/54
57. RECEIVED 11/11/54
58. RECEIVED 11/11/54
59. RECEIVED 11/11/54
60. RECEIVED 11/11/54
61. RECEIVED 11/11/54
62. RECEIVED 11/11/54
63. RECEIVED 11/11/54
64. RECEIVED 11/11/54
65. RECEIVED 11/11/54
66. RECEIVED 11/11/54
67. RECEIVED 11/11/54
68. RECEIVED 11/11/54
69. RECEIVED 11/11/54
70. RECEIVED 11/11/54
71. RECEIVED 11/11/54
72. RECEIVED 11/11/54
73. RECEIVED 11/11/54
74. RECEIVED 11/11/54
75. RECEIVED 11/11/54
76. RECEIVED 11/11/54
77. RECEIVED 11/11/54
78. RECEIVED 11/11/54
79. RECEIVED 11/11/54
80. RECEIVED 11/11/54
81. RECEIVED 11/11/54
82. RECEIVED 11/11/54
83. RECEIVED 11/11/54
84. RECEIVED 11/11/54
85. RECEIVED 11/11/54
86. RECEIVED 11/11/54
87. RECEIVED 11/11/54
88. RECEIVED 11/11/54
89. RECEIVED 11/11/54
90. RECEIVED 11/11/54
91. RECEIVED 11/11/54
92. RECEIVED 11/11/54
93. RECEIVED 11/11/54
94. RECEIVED 11/11/54
95. RECEIVED 11/11/54
96. RECEIVED 11/11/54
97. RECEIVED 11/11/54
98. RECEIVED 11/11/54
99. RECEIVED 11/11/54
100. RECEIVED 11/11/54