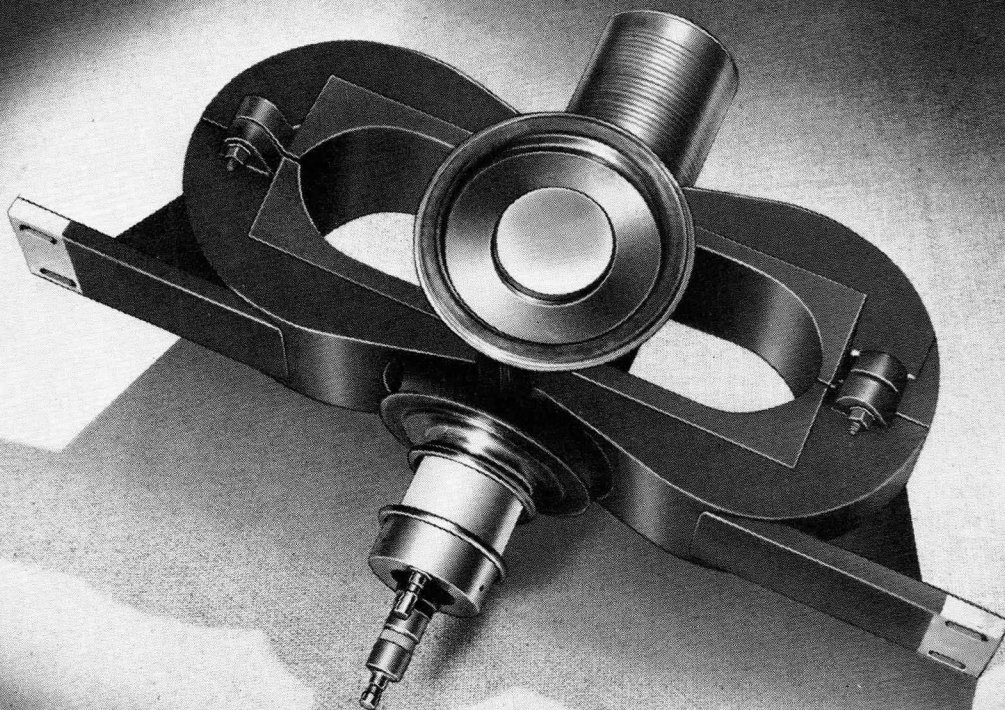




MAGNETRON

INTEGRAL MAGNET
WATER COOLED

2750-2860 MEGACYCLES
4.5 MEGAWATTS PEAK OUTPUT

PULSED

The GL-6410 magnetron is a fixed-frequency pulsed-type oscillator tube.

TECHNICAL INFORMATION

GENERAL

Electrical

Cathode—Coated Unipotential	8.3 ± 1 Volts
Heater Voltage—Pre-Heat	85 Amperes
Heater Current at 8.3 Volts—Pre-Heat	3 Minutes
Heating Time—Pre-Heat, minimum	
Capacitance	27 μf
Measured between Anode and Cathode	

Mechanical

Mounting Position—Axis of Cathode in a Vertical Position	2 Gallons per Minute
Type of Cooling—Water	55 Pounds per Square
Water Flow	Inch Absolute
Pressure Drop, maximum	100 C
Anode Temperature, maximum (See Outline on page 3 for details)	200 C
Cathode Stem Temperature, maximum (See Outline on page 3 for details)	
Output Coupling—See Outline	
Load Transmission Line—RG-48/U Waveguide	
Net Weight, approximate	58 Pounds

GENERAL  ELECTRIC

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TECHNICAL INFORMATION (CONT'D)

MAXIMUM RATINGS AND TYPICAL OPERATING CONDITIONS

Maximum Ratings, Absolute Values

Duty Cycle	0.001	
Heater Voltage	9.3 Max	Volts
Heater Current	88 Max	Amperes
Heater Surge Current	100 Max	Amperes
Peak Anode Voltage	76 Max	Kilovolts
Peak Anode Current	135 Max	Amperes
Average Power Input	7 Max	Kilowatts
Pulse Duration*	2.2 Max	Microseconds
Output Circuit Pressurization	55 Max	Pounds per Square Inch Absolute
Voltage Standing Wave Ratio	1.5/1	

Typical Operation

Duty Cycle	0.00072	
Heater Voltage	8.3 $\pm$ 12%	Volts
Peak Anode Voltage	71	Kilovolts
Peak Anode Current	130	Amperes
Current Pulse Width	2	Microseconds
Voltage Pulse Time-of-Rise	0.3	Microseconds
Pulling Factor, VSWR 1.5/1, maximum	15	Megacycles
Pushing Factor, maximum	0.025	Megacycles per Ampere
Peak Power Output	4500	Kilowatts

* With the 6410 used as a load on the pulser, the pulser should deliver a pulse with the following characteristic:

Time of Rise of Current Pulse	0.25 Microseconds	Measured between 20 and 85 Percent of the Average Peak Current.
Time of Fall of Current Pulse	0.6 Microseconds	Measured between 0 and 85 Percent of the Average Peak Current.
Time of Rise of Voltage Pulse	0.5 Microseconds	Measured between 20 and 85 Percent of the Average Peak Voltage.
Time of Fall of Voltage Pulse	2.5 Microseconds	Measured between 0 and 85 Percent of the Average Peak Voltage.

The spike or ripple must not exceed ± 7 percent of the average peak value of the voltage or current, the inverse voltage must not exceed 20 percent of the forward voltage, and the negative amplitude of a post-voltage pulse oscillation must not exceed 10 percent of the average peak value.

X-RAY WARNING NOTICE

If the GL-6410 is operated at anode voltages in excess of 16 kilovolts, x-ray radiation shielding may be necessary to protect the user against possible danger of personal injury from prolonged exposure at close range. For further information consult the following references or other standard texts on the subject:

- (a) *X-Ray Protection Design*, Handbook No. 50. National Bureau of Standards, Washington, D. C.
- (b) *X-Ray Protection*, Handbook No. 60. National Bureau of Standards, Washington, D. C.

The above references are available from the Superintendent of Documents, Government Printing Office, Washington 25, D. C.

During operation of the tube the high-voltage bushing must be immersed in a liquid insulating medium. General Electric 10 C insulating oil is recommended as having the proper insulating characteristics.

The tube should be mounted by means of the magnet brackets and in such a manner that these brackets support its entire weight. The equipment flanges mating to the cathode and output flanges must not be used for this purpose. Bellows or some other flexible union are recommended in connecting the cathode flange to the equipment flange.

Clearance of 8 inches minimum must be maintained between the magnets and any ferro-magnetic materials in the equipment except at the bracket ends of the tube where 3 inches minimum clearance is satisfactory. A clearance of 12 inches minimum must be maintained between the permanent magnet of the tube and any other permanent magnet or electro-magnet.



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1. Reference plane "A" lies on mounting surface of magnets.
2. Reference plane "B" passes through centerline of holes in bracket and is perpendicular to reference plane "A."
3. Reference plane "C" passes through centerline of holes in bracket and is perpendicular to reference plane "A" and "B."
4. Refers to centerline of the waveguide.
5. Hansen B3-T20 coupling plug.
6. These surfaces coplanar within $\frac{1}{32}$ in.
7. Parts of this centerline may vary from true location by $\pm \frac{1}{16}$ in.

TUBE DEPARTMENT
GENERAL ELECTRIC
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