

# engineering TUBE DATA

F-6401  
PULSE  
TRIODE



*Components Division*

## DESCRIPTION

The F-6401 is a three-electrode tube designed for pulse operation as an oscillator or amplifier in the UHF region. The anode is capable of dissipating 1 kilowatt of plate power, exclusive of filament excitation power, during Continuous Commercial Service. Water cooling is used for the anode and forced-air cooling is required for the bulb and seals. The cathode is a thoriated-tungsten filament. Maximum ratings apply up to 600 megacycles.

## ELECTRICAL

|                                     |                    |
|-------------------------------------|--------------------|
| Filament Voltage                    | 4.25 volts         |
| Filament Current                    | 400 amperes        |
| Filament Starting Current           | 1000 amperes       |
| Filament Cold Resistance            | 0.0018 ohms        |
| Amplification Factor                |                    |
| $I_b = 10$ amps; $E_c = -100$ volts | 12                 |
| Peak Cathode Current                | 145 amperes        |
| Direct Inter-electrode Capacitance  |                    |
| Grid-Plate                          | 25 $\mu\text{mf}$  |
| Grid-Filament                       | 36 $\mu\text{mf}$  |
| Plate-Filament                      | 2.1 $\mu\text{mf}$ |

## MECHANICAL

|                                    |                                |
|------------------------------------|--------------------------------|
| Mounting Position                  | Vertical, Anode End Up or Down |
| Water Flow Required Anode (Note 1) | 1 min. gpm                     |
| Outlet Water Temperature           | 70 max. °C                     |
| Air Flow Required (Note 2)         | 10 min. cfm                    |
| Net Weight, approximate            | 3-1/2 pounds                   |
| Maximum Glass Temperature          | 180°C                          |

Note 1: A special water connection is required as specified on the outline drawing. Water cooling must be maintained for a period of 2 minutes after shutdown of filament power.

Note 2: Air flow on the cathode and grid terminals and on the bulb must be sufficient to limit the maximum temperature to 180°C.



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-2-

## RATINGS

Grounded Grid Circuit  
Plate Pulsed Oscillator and Amplifier

### Maximum Ratings, Absolute Values

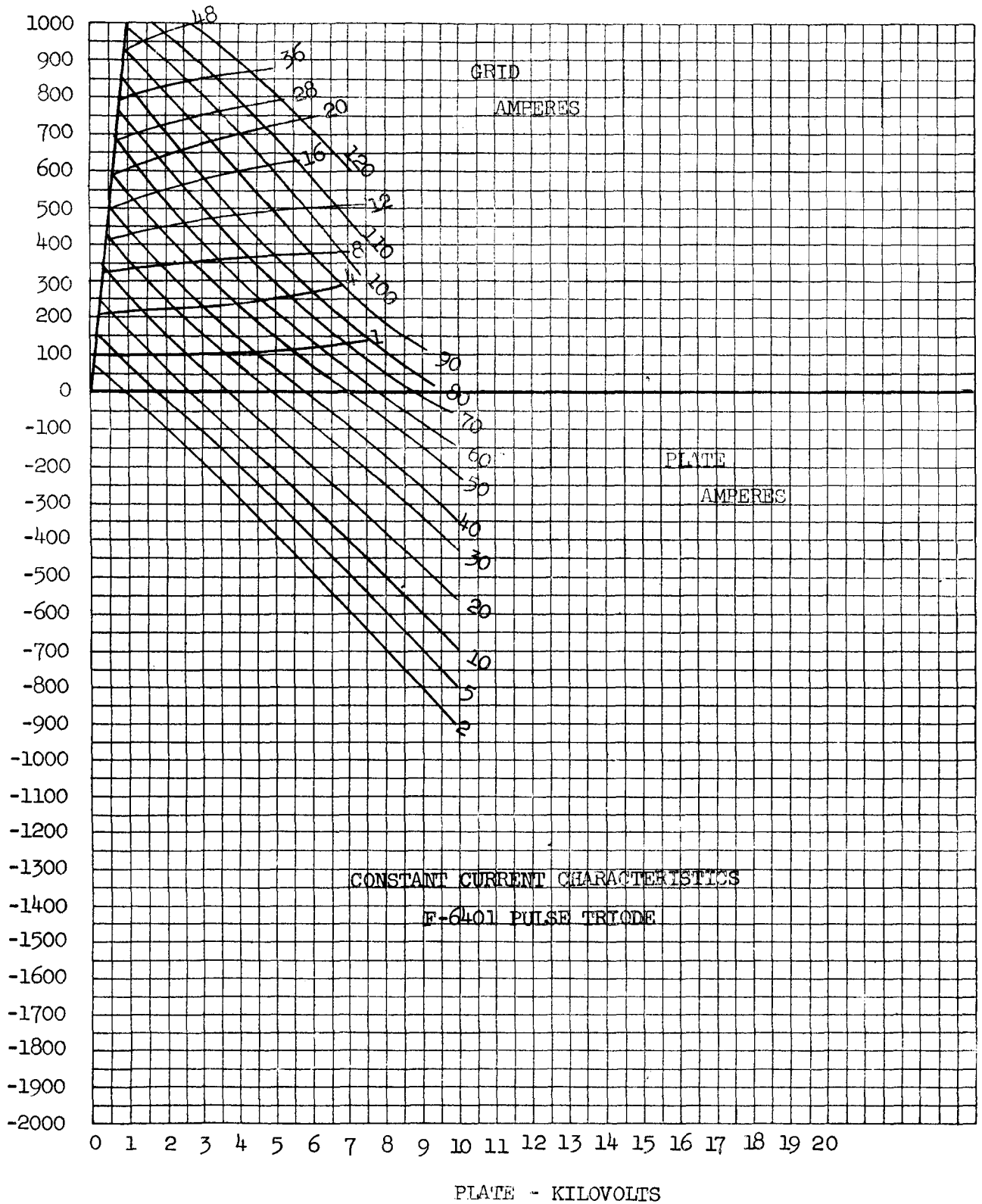
|                          |                    |
|--------------------------|--------------------|
| D-C Plate Voltage        | 17 max. kv         |
| D-C Grid Voltage         | -2 max. kv         |
| D-C Plate Current (peak) | 75 max. amperes    |
| D-C Grid Current (peak)  | 5 max. amperes     |
| Pulse Length             | 15 max. $\mu$ sec. |
| Duty Factor              | .002 max.          |
| Plate Input              | 1.6 max. kw        |
| Plate Dissipation        | 1.0 max. kw        |

The above are limiting values beyond which the serviceability of the tube will be impaired if exceeded. Each maximum rating must be considered in relation to every other to insure that under no conditions any maximum rating will be exceeded.

### Typical Operation

|                             |               |
|-----------------------------|---------------|
| D-C Plate Voltage           | 12 kv         |
| D-C Grid Voltage            | -.5 kv        |
| D-C Plate Current (average) | .090 amperes  |
| D-C Grid Current (average)  | .005 amperes  |
| Pulse Length                | 15 $\mu$ sec. |
| Duty Factor                 | .0015         |
| Power Out (during Pulse)    | 250 kw        |
| Power Gain                  | 4             |

GRID - VOLTS



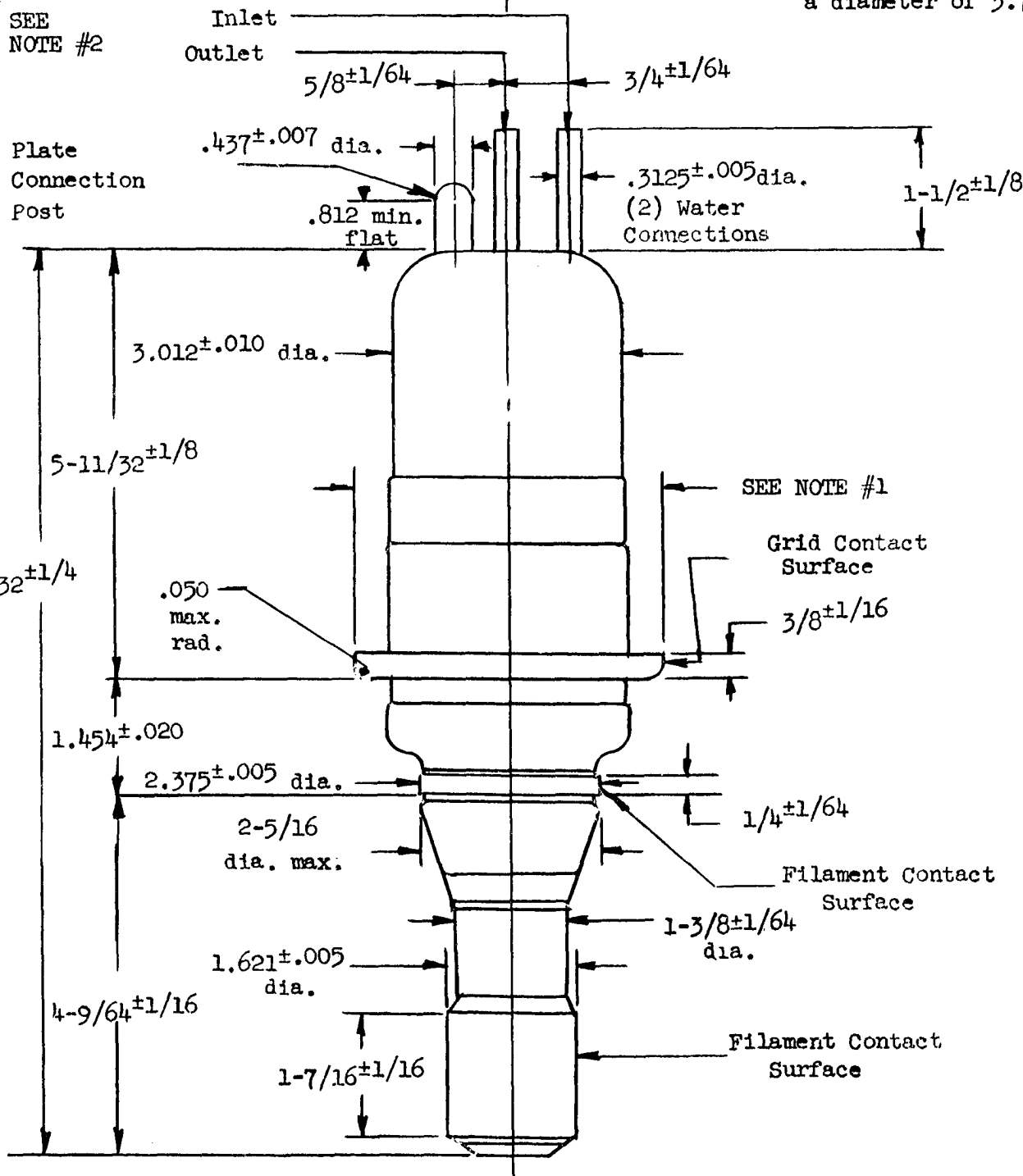
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NOTE #1: Grid ring must be capable of entering to a distance of  $1/4$ " into a flat gage having a diameter of  $3.764^{+.0000}_{-.0005}$  but will not enter more than  $1/16$ " into a flat gage having a diameter of  $3.744^{+.0005}_{-.0000}$

SEE NOTE #2



OUTLINE  
P-6401 PULSE TRIODE

NOTE #2: If tube is operated anode down, reverse designations from those shown to apply to the inlet and outlet.