

## 9 T 4 0

### Vapour Cooled Triode

The NEC 9T40 is a high power vapour cooled triode designed for use as an amplifier, modulator and oscillator in medium and short wave frequency broadcast transmitter and in industrial heating services.

The tube features rugged coaxial construction and its ring-sealed terminals provide low lead inductances which assures stable operation at high frequencies.

The cathode consists of multistrand, thoriated-tungsten filaments, completely balanced and stress free throughout life.

Electrical characteristics of the NEC 9T40 are similar with those of the 9T38, except than the anode dissipation rating is increased to 150 kW.

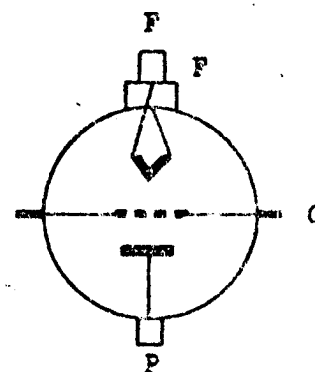
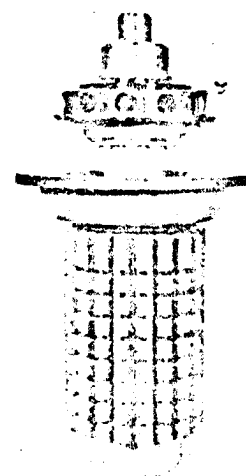
Maximum ratings of plate voltage and input apply at frequencies up to 2 MHz/s.

#### ELECTRICAL DATA

#### GENERAL DATA

Filament : Thoriated tungsten

|               |           |
|---------------|-----------|
| Voltage ..... | 18 volts  |
| Current ..... | 315 amps. |



F: Filament  
G: Grid  
P: Plate

#### TERMINAL CONNECTIONS

|                                           |      |            |
|-------------------------------------------|------|------------|
| Maximum Starting Current .....            | 1000 | amps.      |
| Transconductance (at $I_b=5$ amps.) ..... | 80   | milli-mhos |
| Amplification Factor .....                | 40   |            |

## Direct Interelectrode Capacitances :

|                         |     |               |
|-------------------------|-----|---------------|
| Grid to Plate .....     | 100 | $\mu\text{F}$ |
| Grid to Filament .....  | 180 | $\mu\text{F}$ |
| Plate to Filament ..... | 3   | $\mu\text{F}$ |

## MECHANICAL DATA

### Dimension :

|                                          |     |    |
|------------------------------------------|-----|----|
| Maximum Diameter .....                   | 360 | mm |
| Maximum Overall Length .....             | 745 | mm |
| Net Weight (approx.) .....               | 53  | kg |
| Mounting Position : Vertical, anode down |     |    |

### Cooling :

To plate : Vapour-cooling required

To stem and glass bulb : Forced-air-flow required (Note 1, 2)

|                                 |     |                          |
|---------------------------------|-----|--------------------------|
| Minimum air flow .....          | 5   | $\text{m}^3/\text{min.}$ |
| Maximum glass temperature ..... | 180 | $^{\circ}\text{C}$       |
| Maximum seal temperature .....  | 165 | $^{\circ}\text{C}$       |

### Accessories Required :

|                          |            |
|--------------------------|------------|
| Filament connector ..... | NEC VT-326 |
| Filament connector ..... | NEC VT-327 |

Note 1. The specified air flow should be directed vertically from a nozzle of approx. 70 mm diameter into the center of stem.

Note 2. Start forced-air-flow for each portion of the tube prior to the application of filament voltage. Continue air flow at least 3 minutes after removal of all voltages.

## AF POWER AMPLIFIER AND MODULATOR-CLASS B

### MAXIMUM RATINGS : Absolute Values

|                                             |       |       |
|---------------------------------------------|-------|-------|
| DC Plate Voltage .....                      | 15000 | volts |
| Max.-Signal DC Plate Current (Note 3) ..... | 18    | amps. |
| Max.-Signal Plate Input (Note 3) .....      | 270   | kW    |
| Plate Dissipation (Note 3) .....            | 150   | kW    |

### TYPICAL OPERATION : Values are for two tubes

|                                                 |       |       |       |
|-------------------------------------------------|-------|-------|-------|
| DC Plate Voltage .....                          | 12000 | 14000 | volts |
| DC Grid Voltage .....                           | -300  | -340  | volts |
| Peak AF Plate to Plate Voltage .....            | 19200 | 22400 | volts |
| Zero-Signal DC Plate Current .....              | 2     | 2     | amps. |
| Max.-Signal DC Plate Current .....              | 32    | 30    | amps. |
| Max.-Signal DC Grid Current .....               | 1.72  | 1.24  | amps. |
| Effective Load Resistance, Plate to Plate ..... | 784   | 896   | ohms  |
| Max.-Signal Driving Power (approx.) .....       | 572   | 390   | watts |
| Max.-Signal Power Output (approx.) .....        | 234   | 273   | kW    |

Note 3. Averaged over any audio-frequency cycle of sine-wave form.

## PLATE-MODULATED RF POWER AMPLIFIER-CLASS C TELEPHONY

(Carrier conditions per tube for use with a maximum modulation factor of 1.0)

## MAXIMUM RATINGS : Absolute Values

|                         |             |
|-------------------------|-------------|
| DC Plate Voltage .....  | 12000 volts |
| DC Grid Voltage .....   | -1500 volts |
| DC Plate Current .....  | 16 amps.    |
| DC Grid Current .....   | 4.5 amps.   |
| Plate Input .....       | 190 kW      |
| Plate Dissipation ..... | 100 kW      |
| Grid Dissipation .....  | 2.5 kW      |

## TYPICAL OPERATION :

|                                 |       |       |       |       |
|---------------------------------|-------|-------|-------|-------|
| DC Plate Voltage .....          | 10000 | 10000 | 12000 | volts |
| DC Grid Voltage .....           | -530  | -530  | -720  | volts |
| Peak RF Grid Voltage .....      | 980   | 1010  | 1300  | volts |
| DC Plate Current .....          | 10.4  | 13    | 14.5  | amps. |
| DC Grid Current (approx.) ..... | 2.3   | 3     | 3.8   | amps. |
| Power Output (approx.) .....    | 85.2  | 104   | 150   | kW    |

## RF POWER AMPLIFIER AND OSCILLATOR-CLASS C TELEGRAPHY

(Key-down conditions per tube without amplitude modulation)

## MAXIMUM RATINGS : Absolute Values

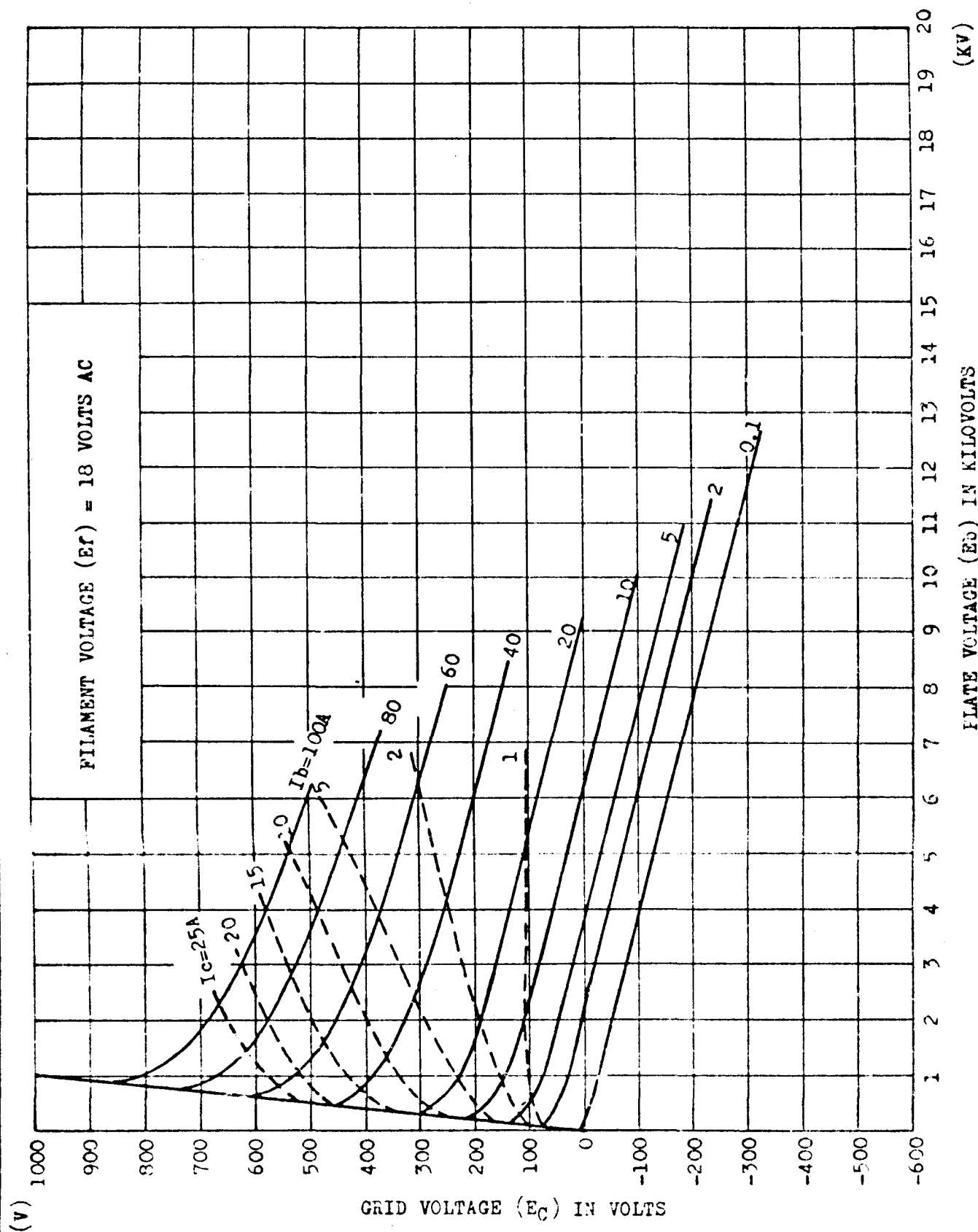
|                         |             |
|-------------------------|-------------|
| DC Plate Voltage .....  | 15000 volts |
| DC Grid Voltage .....   | -1500 volts |
| DC Plate Current .....  | 20 amps.    |
| DC Grid Current .....   | 4.5 amps.   |
| Plate Input .....       | 300 kW      |
| Plate Dissipation ..... | 120 kW      |

Grid Dissipation ..... 2.5 kW

## TYPICAL OPERATION :

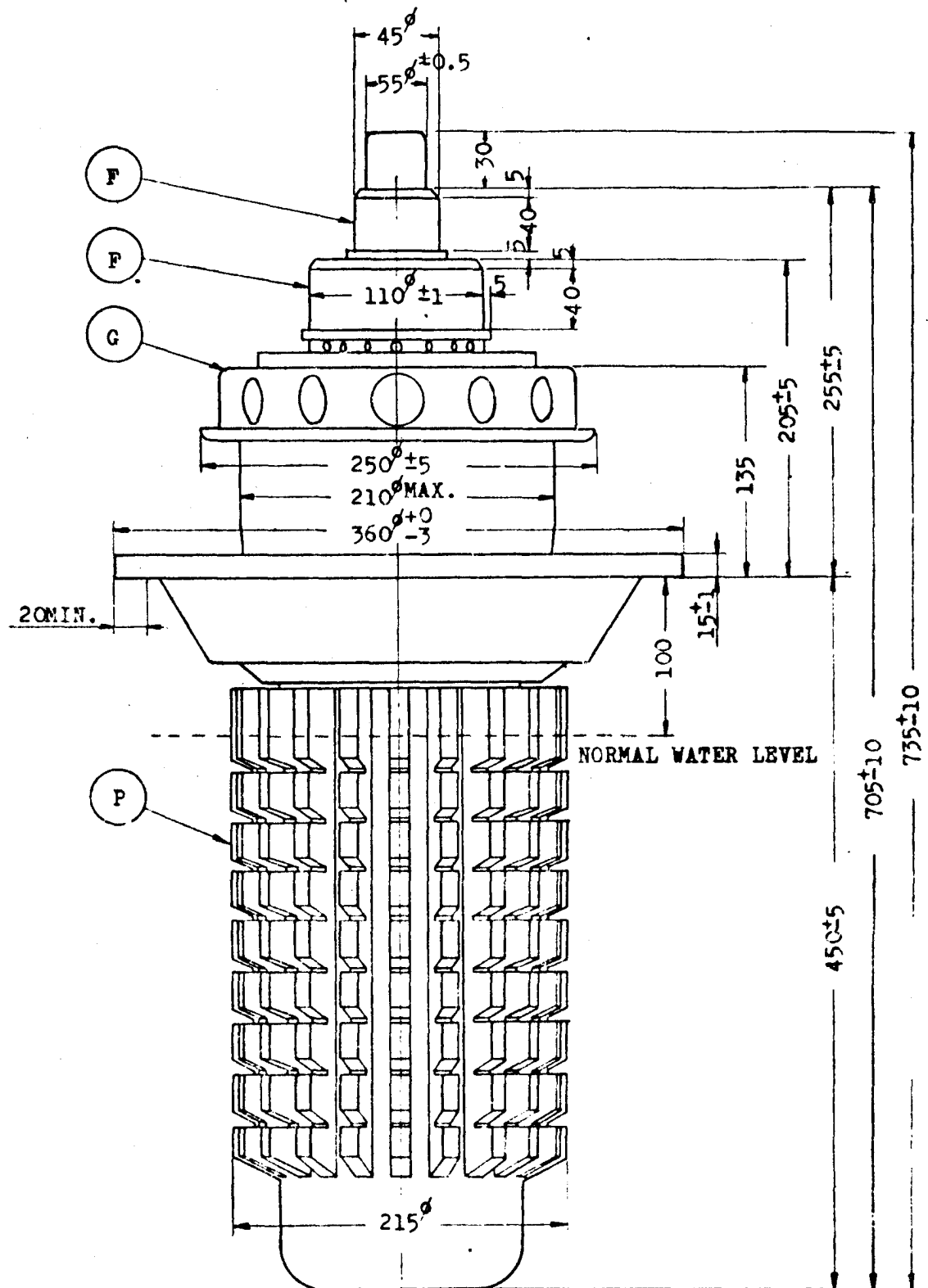
|                                 |       |       |       |
|---------------------------------|-------|-------|-------|
| DC Plate Voltage .....          | 12000 | 15000 | volts |
| DC Grid Voltage .....           | -1200 | -1200 | volts |
| (From a grid resistor of) ..... | 400   | 400   | ohms  |
| Peak RF Grid Voltage .....      | 1830  | 1830  | volts |
| DC Plate Current .....          | 18    | 20    | amps. |
| DC Grid Current .....           | 3     | 3     | amps. |
| Driving Power (approx.) .....   | 5     | 5.1   | kW    |
| Power Output (approx.) .....    | 177   | 233   | kW    |

## CONSTANT CURRENT CHARACTERISTICS



## OUTLINE DRAWING

(Unit in mm)



## LIFTING HADLE

(Unit in mm)

