

# 8T39

## Vapour Cooled Triode

The NEC 8T39 is a vapour cooled triode with a maximum plate dissipation rating of 10 kW. The tube is a vapour cooled version of the NEC 8T33, water cooled triode. Electrical characteristics of the NEC 8T39 are similar with those of the 8T33.

Due to its high transconductance, high output with high efficiency is easily obtainable at relatively low plate voltage. The ring-sealed grid terminal provides a low lead inductance which assures stable operation at high frequencies. The tube is designed for use as an amplifier, modulator or oscillator in AM broadcast transmitter and in industrial heating services. Maximum ratings apply at frequencies up to 30 Mc/s.

### Electrical Data:

#### General Data:

Filament: Thoriated Tungsten

Voltage .....	7.5 volts
Current .....	60 amps
Maximum Starting Current .....	120 amps
Minimum Heating Time .....	5 sec

(Time interval between the instant of application of filament voltage and that of plate voltage)

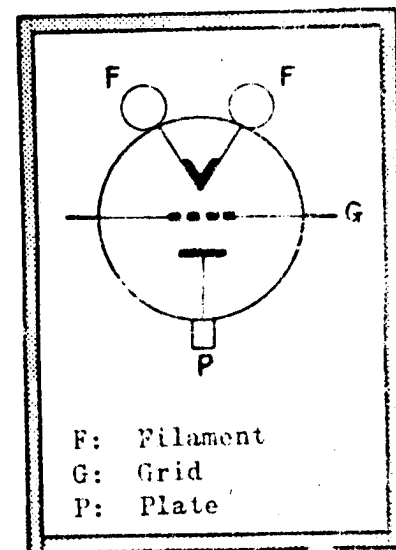
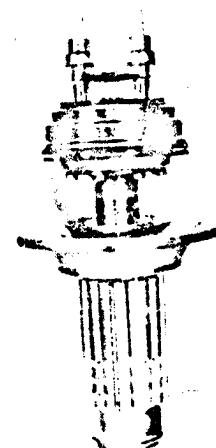
Transconductance ..... 18 millimhos

(at  $E_b=5000$  volts,  $I_b=1.0$  amp)

Amplification Factor ..... 40

Direct Interelectrode Capacitances:

Grid to Plate .....	26 pF
Grid to Filament .....	49 pF
Plate to Filament .....	0.7 pF



TERMINAL CONNECTIONS

**Mechanical Data:**

## Dimensions:

Maximum Diameter .....	162 mm
Maximum Overall Length .....	375 mm
Net weight (approx.) .....	3.5 kg

Mounting position: Vertical, anode down

## Cooling:

To plate: vapour-cooling required

To stem and glass bulb: forced-air flow required (Note 1, 3)

Minimum air flow (Note 2) .....	0.4 m <sup>3</sup> /min
Maximum bulb temperature .....	180°C
Maximum seal temperature .....	180°C

## Accessories Required:

Filer .....	NEC VB506
Vapour condenser .....	NEC VB602
Water level controller .....	NEC VB550
Insulator pipe (steam outlet) .....	NEC VB704
Insulator pipe (condensed water inlet) .....	NEC VB701
Pressure equalizer .....	NEC VB752
Rubber joint between steam piping and insulator pipe .....	NEC VB782
L-joint between insulator pipe (condensed water inlet) and boiler ....	NEC VB740
Joint between insulator pipe (condensed water inlet) and copper tube ..	NEC VB742
Adapter for steam inlet of condenser .....	NEC VB762
Adapter for condensed water outlet of condenser .....	NEC VB766
Adapter for drain valve .....	NEC VB746
Gasket for steam outlet of boiler .....	NEC VB773
Gasket for condensed water inlet of boiler .....	NEC VB770
Steam piping .....	2 inch, type M copper tube
Condensed water piping .....	3/4 inch, type M copper tube
Filament connector (2 required) .....	NEC VT403
Grid connector .....	NEC VT305

Note 1. The specified air flow should be directed vertically from a nozzle of approx. 35 mm diameter into center of the filament terminals.

Note 2. Adequate forced-air flow is required to limit the temperature of the seals and bulb below their specified maximum values.

The amount of air-flow required will increase with the operating frequency.

Note 3. 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 .....	10000 volts
Max. Signal DC Plate Current (Note 4) .....	2.5 amps
Max. Signal Plate Input (Note 4) .....	25 kW
Plate Dissipation (Note 4) .....	10 kW

### Typical Operation: (Values are for two tubes)

DC Plate Voltage .....	5000	8000 volts
DC Grid Voltage .....	-115	-200 volts
Peak AF Grid-to-Grid Voltage .....	600	900 volts
Zero Signal DC Plate Current .....	0.2	0.2 amps
Max. Signal DC Plate Current .....	2.7	4 amps
Max. Signal DC Grid Current .....	160	240 milliamps
Effective Load Resistance, Plate to Plate .....	3500	4200 ohms
Max. Signal Driving Power (approx.) .....	45	100 W
Max. Signal Power Output (approx.) .....	8	22 kW

Note 4. 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 maximum modulation factor of 1.0)

### Maximum Ratings: Absolute Values

DC Plate Voltage .....	7500 volts
DC Grid Voltage .....	-1000 volts
DC Plate Current .....	2 amps
DC Grid Current .....	0.4 amps
Plate Input .....	15 kW
Plate Dissipation .....	6.6 kW
Grid Dissipation .....	250 W

**Typical Operation:**

DC Plate Voltage .....	5000 volts
DC Grid Voltage .....	-400 volts
DC Plate Current .....	1.55 amp
DC Grid Current (approx.) .....	0.33 amps
Peak RF Grid Voltage .....	730 volts
Driving Power (approx.) .....	220 watts
Power Output (approx.) .....	6 kW

**RF Power Amplifier and Oscillator-Class C Telegraphy**

(Key-down conditions per tube without amplitude modulation)

**Maximum Ratings: Absolute Values**

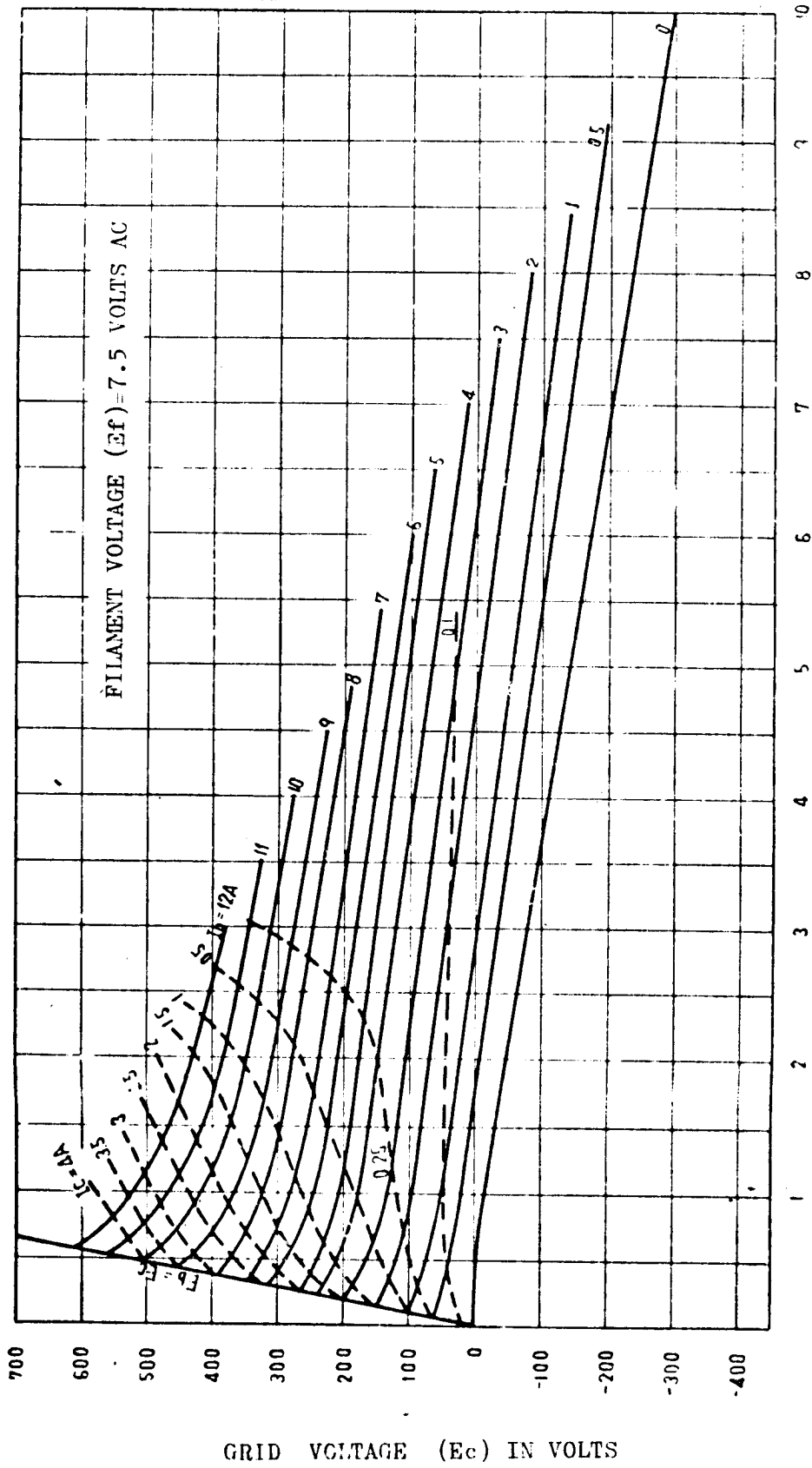
DC Plate Voltage .....	10000 volts
DC Grid Voltage .....	-1000 volts
DC Plate Current .....	2.7 amps
DC Grid Current .....	0.4 amps
Plate Input .....	27 kW
Plate Dissipation .....	10 kW
Grid Dissipation .....	250 watts

**Typical Operation:**

DC Plate Voltage .....	5000	9000 volts
DC Grid Voltage .....	-300	-500 volts
Peak RF Grid Voltage .....	630	900 volts
DC Plate Current .....	1.8	2.5 amps
DC Grid Current (approx.) .....	0.3	0.3 amps
Driving Power (approx.) .....	170	250 watts
Power Output (approx.) .....	6	17 kW

CONSTANT CURRENT CHARACTERISTICS

NEC 8T39



OUTLINE DRAWING

NEC 8T39

UNIT: mm

