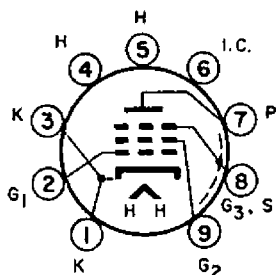


# AMPEREX TUBE TYPE 7737

## TENTATIVE DATA

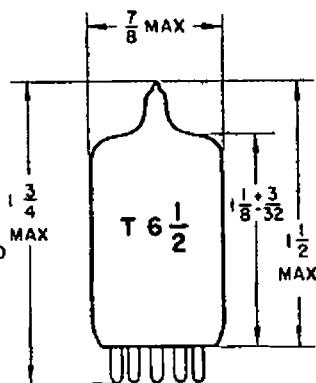
The Amperex 7737 is a ruggedized tube intended for use in environment subject to unusually high shock and vibration conditions and where freedom from microphony is essential. It has application in coaxial cable amplifiers, video amplifiers, broad-band IF amplifiers in communication links, and TV equipment.

It is one of the Amperex "Premium Quality 10,000 Hour" tubes.



### PIN CONNECTIONS

- 1- CATHODE
- 2- GRID NO. 1
- 3- CATHODE
- 4- HEATER
- 5- HEATER
- 6- INTERNALLY CONNECTED
- 7- PLATE
- 8- GRID NO. 3 & SHIELD
- 9- GRID NO. 2



6-1

## GENERAL CHARACTERISTICS

### MECHANICAL

Dimensions

see outline drawing

Mounting Position

any

Bulb

T-6½

Base

small button, 9 pin E 9-1

Basing

9MZ

### ELECTRICAL

Heating

parallel supply

Heater Voltage <sup>1</sup>

6.3 volts

Heater Current

320 mA

### Direct Interelectrode Capacitances

Plate to all other Elements

3.3 μf

Grid No. 1 to all other Elements

7.6 μf

Plate to Grid No. 1

0.03 μf max

Transconductance

16,500 micromhos

Amplification Factor - Grid No. 2  
to Grid No. 1

53

<sup>1</sup> Minimum value of Heater Voltage = 6.0V; Maximum Value of Heater Voltage = 6.6V.

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## Maximum Ratings, Absolute Values

Plate Voltage, Cut-Off Condition	400 volts max
Plate Voltage	210 volts max
Plate Dissipation	3.0 watts max
Grid No. 2 Voltage, Cut-Off Condition	400 volts max
Grid No. 2 Voltage	175 volts max
Grid No. 2 Dissipation	0.7 watts max
Grid No. 1 Voltage	0 volts max
Negative Grid No. 1 Voltage	50 volts max
Peak Negative Grid No. 1 Voltage	100 volts max
Cathode Current	25 mA max
Heater-Cathode Voltage	60 volts max
Series Grid Resistor (Automatic Bias)	0.5 megohms max
Series Grid Resistor (Fixed Bias)	0.25 megohms max
Heater to Cathode Resistance	20,000 ohms max
Bulb Temperature	165°C max
Negative Grid No. 1 Voltage (Grid No. 1 Current = 0.3 $\mu$ A)	0.5 volts

## Typical Operation<sup>2</sup>

	<u>I</u>	<u>II</u>
Plate Supply Voltage	190	180 volts
Grid No. 3 Voltage	0	0 volts
Grid No. 2 Supply Voltage	160	150 volts
Grid No. 1 Supply Voltage	9	0 volts
Cathode Resistor	630	100 ohms
Plate Current	13	11.5 mA
Grid No. 2 Current	3.3	2.9 mA
Transconductance	16,500	15,900 micromhos
Amplification Factor - Grid No. 2 to Grid No. 1	53	
Internal Plate Resistance	100,000	ohms
Equivalent Noise Resistance ( $f = 45$ Mc/s)	160	ohms

<sup>2</sup> Operation of the tube under the conditions as given in Column I is recommended because of the small spread in characteristics.

## Characteristic Range Value for Equipment Design

	Initial		End of Life <sup>3</sup>	
	Min	Max	Min	Max
<b>Heater Current</b> ( $E_f = 6.3 \text{ V}$ )	295	345	295	345 mA
<b>Plate Current</b> ( $E_f = 6.3 \text{ V}$ , $E_{bb} = 190 \text{ V}$ , $E_{c3} = 0 \text{ V}$ , $E_{cc2} = 160 \text{ V}$ , $E_{c1} = 9 \text{ V}$ , $R_k = 630 \text{ ohms}$ )	12.2	13.8	11.5	mA
<b>Grid No. 2 Current</b> ( $E_f = 6.3 \text{ V}$ , $E_{bb} = 190 \text{ V}$ , $E_{c3} = 0 \text{ V}$ , $E_{cc2} = 160 \text{ V}$ , $E_{c1} = 9 \text{ V}$ , $R_k = 630 \text{ ohms}$ )	2.9	3.7		mA
<b>Transconductance</b> ( $E_f = 6.3 \text{ V}$ , $E_{bb} = 190 \text{ V}$ , $E_{c3} = 0 \text{ V}$ , $E_{cc2} = 160 \text{ V}$ , $E_{c1} = 9 \text{ V}$ , $R_k = 630 \text{ ohms}$ )	14,200	18,800	11,000	micromhos
<b>Negative Grid No. 1 Current</b> ( $E_f = 6.3 \text{ V}$ , $E_{bb} = 190 \text{ V}$ , $E_{c3} = 0 \text{ V}$ , $E_{cc2} = 160 \text{ V}$ , $E_{c1} = 9 \text{ V}$ , $R_k = 630 \text{ ohms}$ , $R_g = 0.1 \text{ megohms}$ )		0.2		0.5 $\mu\text{A}$
<b>Heater-Cathode Current</b> ( $E_f = 6.3 \text{ V}$ , $E_k/f = 100 \text{ V}$ , $R_{series} = 0.1 \text{ megohms}$ , cathode positive or negative)		10		20 $\mu\text{A}$
<b>Insulation Resistance</b> ( $E_f = 6.3 \text{ V}$ , $V_{grid}$ ; all electrodes = 100 V, $V_{plate}$ - all electrodes = 300 V, cathode positive)	100		50	megohms
<b>Equivalent Signal Grid Hum Voltage<sup>4</sup></b> ( $E_f = 6.3 \text{ V}$ , $E_{bb} = 207 \text{ V}$ , $R_p = 2000 \text{ ohms}$ , $E_{cc2} = 150 \text{ V}$ , $R_k = 78 \text{ ohms}$ , $C_k = 1000 \mu\text{f}$ , $R_{g1} = 0.5 \text{ megohms}$ )		100		microvolts
<b>Vibrational Noise Output<sup>5</sup></b> ( $E_f = 6.3 \text{ V}$ , $E_{bb} = 180 \text{ V}$ , $R_p = 2000 \text{ ohms}$ , $E_{c2} = 150 \text{ V}$ , $E_{c3} = 0 \text{ V}$ , $R_k = 78 \text{ ohms}$ (not bypassed))		500		millivolts
<b>Vibrational Noise Output<sup>6</sup></b> ( $E_f = 6.3 \text{ V}$ , $E_{bb} = 180 \text{ V}$ , $R_p = 2000 \text{ ohms}$ , $E_{c2} = 150 \text{ V}$ , $E_{c3} = 0 \text{ V}$ , $R_k = 78 \text{ ohms}$ (not bypassed))		200		millivolts
<b>Plate Current</b> ( $E_f = 6.3 \text{ V}$ , $E_b = 180 \text{ V}$ , $E_{c3} = 0 \text{ V}$ , $E_{c2} = 150 \text{ V}$ , $E_{c1} = -4.5 \text{ V}$ )		0.8		mA

SPECIAL RATINGS <sup>7</sup>

Shock Rating abt. 500 g

Forces as applied by the NRL impact machine for electronic devices caused by 5 blows of the hammer lifted over an angle of 30° in each of four different directions.

Fatigue Rating 2.5 g

Vibrational forces for a period of 32 hours at a frequency of 50 c/s in each of three directions.

<sup>3</sup> Life test conditions:

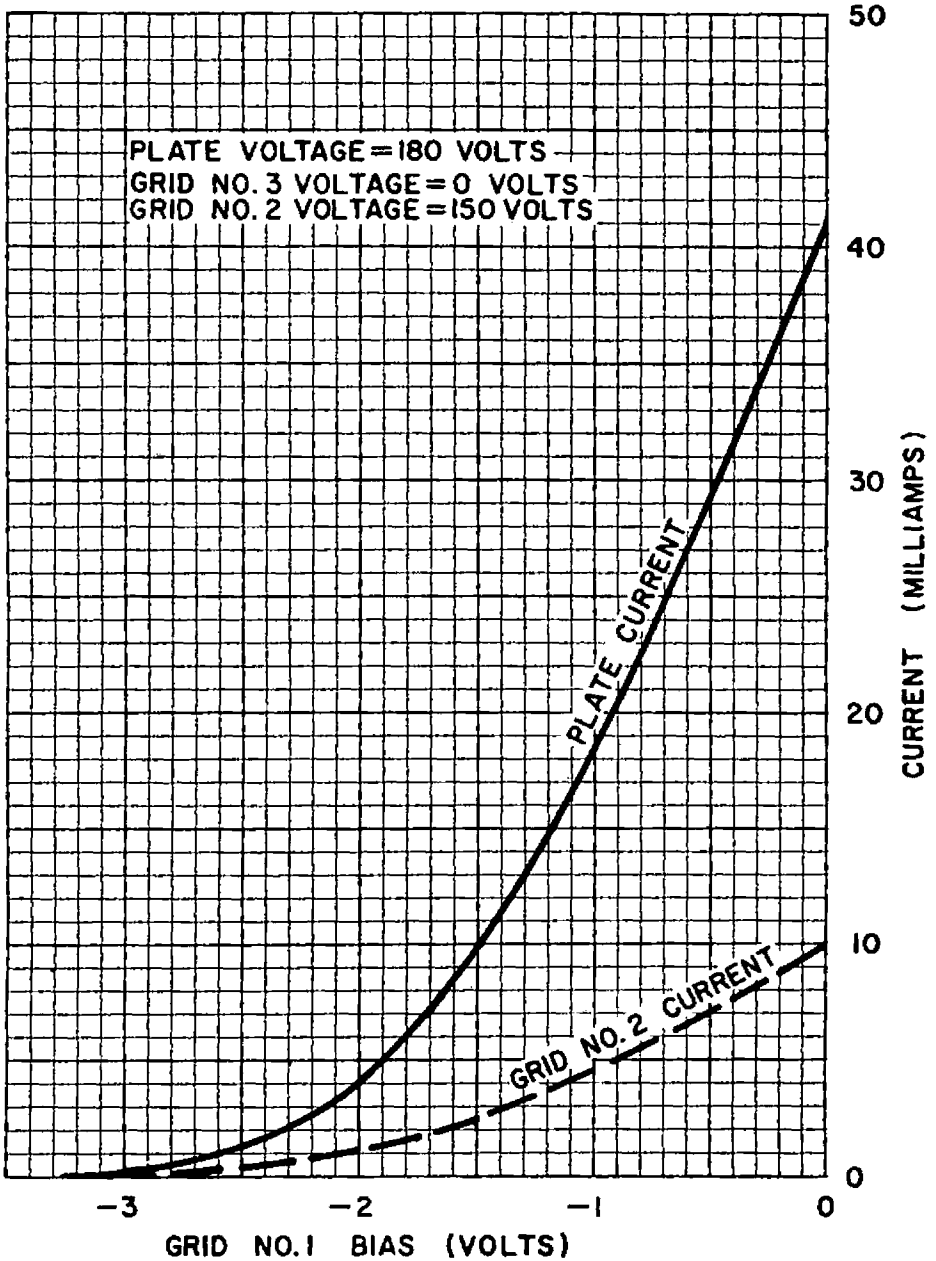
Heater Voltage	6.3 volts
Plate Supply Voltage	190 volts
Grid No. 3 Voltage	0 volts
Grid No. 2 Supply Voltage	160 volts
Grid No. 1 Voltage	9 volts
Cathode Resistor	630 ohms
Life Expectancy = 10,000 hours	

<sup>4</sup> Center tap of the heater supply transformer grounded and cathode resistor decoupled by a capacitor of 1000μf. Measured with a line frequency of 50 c/s and a filter with a linear band-pass characteristic.

<sup>5</sup> Vibrational acceleration 10 g peak, frequency range 50 to 2000 c/s.

<sup>6</sup> Vibrational acceleration = 10 g peak, frequency 50 c/s

<sup>7</sup> These test conditions are only given for evaluation of the ruggedness of the tube and should by no means be interpreted as suitable operating conditions.



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