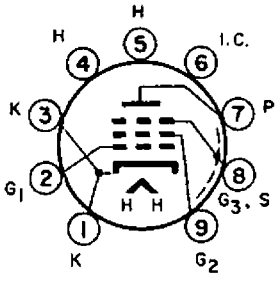
from JEDEC release #4450, Oct. 7, 1963

AMPEREX TUBE TYPE 7737

TENTATIVE DATA

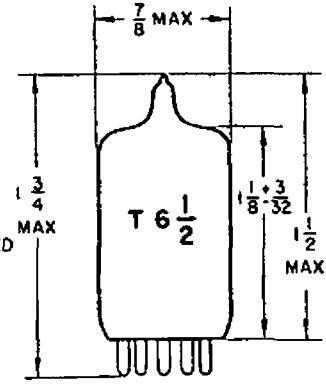
The Amperex 7737 is a ruggedized tube intended for use in environment subject to unusually high shock and vibration conditions and where freedom from microphony is essential. It has application in coaxial cable amplifiers, video amplifiers, broad-band IF amplifiers in communication links, and TV equipment.

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



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GENERAL CHARACTERISTICS

MECHANICAL

Dimensions	see outline drawing
Mounting Position	any
Bulb	T-6½
Base	small button, 9 pin E9-1
Basing	9MZ

ELECTRICAL

Heating	parallel supply
Heater Voltage [1]	6.3 volts
Heater Current	320 mA
Direct Interelectrode Capacitances	
Plate to all other Elements	3.3 μμf
Grid No. 1 to all other Elements	7.6 μμf
Plate to Grid No. 1	0.03 μμf max
Transconductance	16,500 micromhos
Amplification Factor - Grid No. 2 to Grid No. 1	53

[1] Minimum value of Heater Voltage = 6.0 V; Maximum Value of Heater Voltage = 6.6 V.

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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 μA)	0.5 volts

Typical Operation [2]

	I	II
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

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

SPECIAL RATINGS [7]

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.

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[3] 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	

[4] 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.

[5] Vibrational acceleration 10 g peak, frequency range 50 to 2000 c/s.

[6] Vibrational acceleration = 10 g peak, frequency 50 c/s

[7] 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.

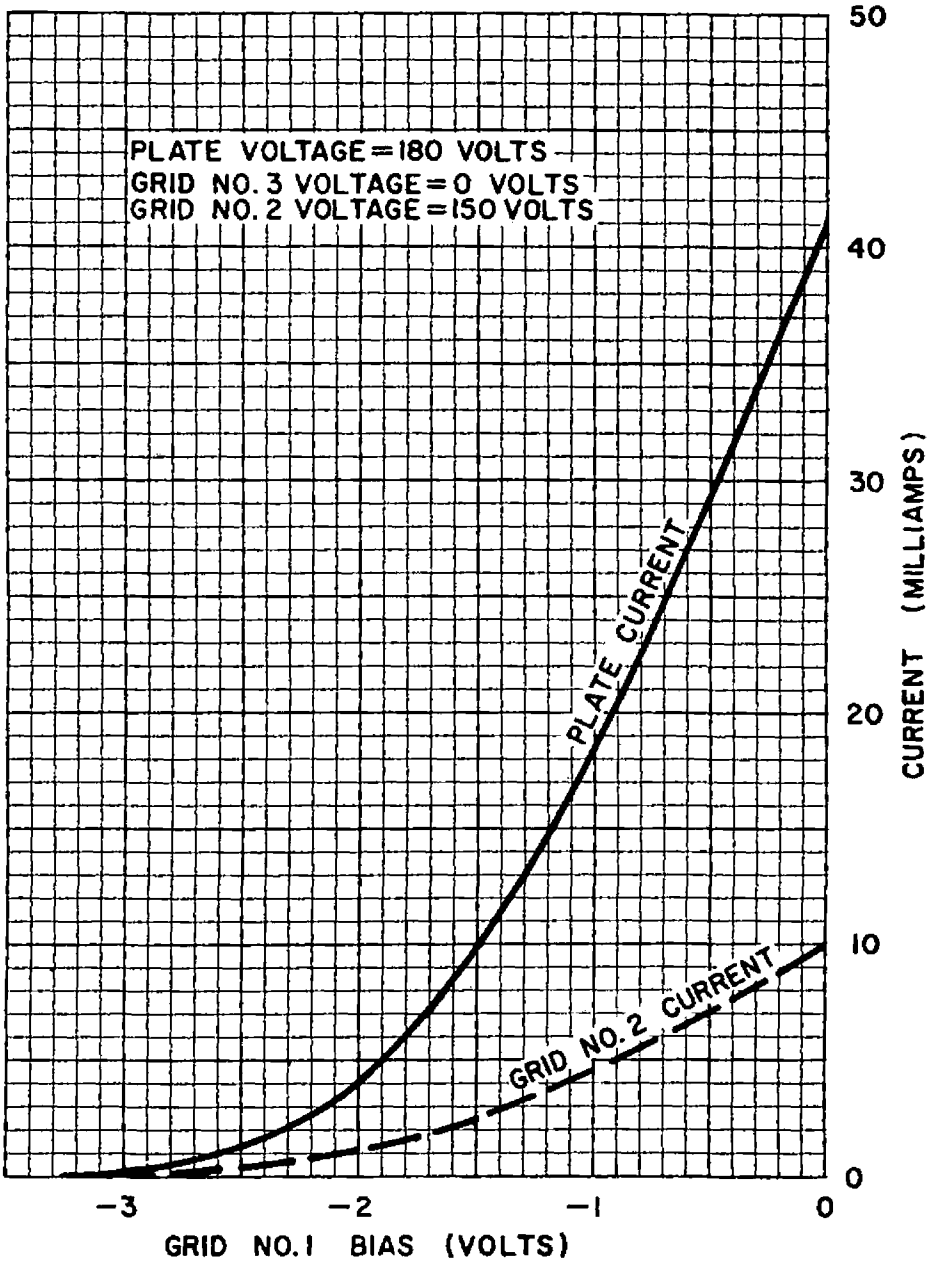
PLATE VOLTAGE=180 VOLTS
GRID NO. 3 VOLTAGE=0 VOLTS
GRID NO. 2 VOLTAGE=150 VOLTS
PLATE CURRENT
GRID NO. 2 CURRENT
50
40
30
20
10
0
CURRENT (MILLIAMPS)
-3
-2
-1
0
GRID NO. 1 BIAS (VOLTS)

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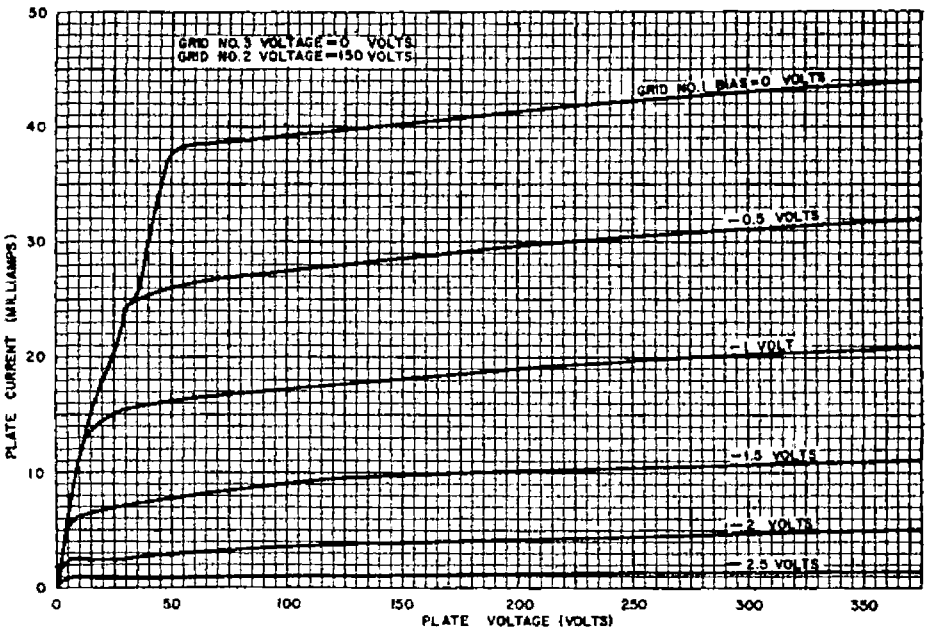
GRID NO. 3 VOLTAGE = 0 VOLTS
GRID NO. 2 VOLTAGE = 150 VOLTS
GRID NO. 1 BIAS = 0 VOLTS
−0.5 VOLTS
−1 VOLT
−1.5 VOLTS
−2 VOLTS
−2.5 VOLTS
PLATE CURRENT (MILLIAMPS)
PLATE VOLTAGE (VOLTS)
0
10
20
30
40
50
0
50
100
150
200
250
300
350