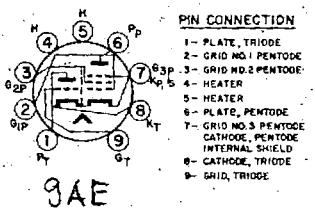
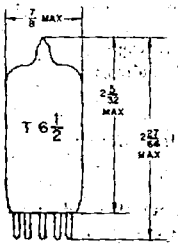
AMPEREX TUBE TYPE 7643

TENTATIVE DATA

The Amperex 7643 is a premium quality, long life, ruggedized triode-pentode with separate cathode leads. The pentode section is designed for use as a mixer, RF or AF amplifier. The triode section is designed for use as an oscillator up to 300 Mc/s, multivibrator or blocking oscillator.

The 7643 will maintain its emission capabilities after long periods of operation under cut-off conditions.





GENERAL CHARACTERISTICS

MECHANICAL

Bulb	T 6½
Base	E9-1
Dimensions	see outline drawing
Mounting position	any

ELECTRICAL

Cathode	unipotential
Heater arrangement	parallel supply
Heater voltage [1]	6.3 volts
Heater current	330 mA

Direct Interelectrode Capacitances

Pentode Section	
Control grid (between pins 2 and 3+4+5+7)	5.2 μμf
Plate (between pins 6 and 3+4+5+7)	3.4 μμf
Plate to control grid (between pins 6 and 2)	< 0.025 μμf
Control grid to filament (between pins 2 and 4+5)	< 0.160 μμf
Triode Section	
Control grid (between pins 9 and 4+5+7+8)	2.5 μμf
Plate (between pins 1 and 4+5+7+8)	1.5 μμf
Plate to control grid (between pins 1 and 9)	1.5 μμf
Control grid to filament (between pins 9 and 4+5)	< 0.220 μμf
Between Pentode and Triode Sections	
Plate to plate (between pins 6 and 1)	< 0.07 μμf
Plate of pentode to grid of triode (between pins 6 and 9)	< 0.02 μμf
Control grid of pentode to plate of triode (between pins 2 and 1)	< 0.16 μμf

fro, JEDEC release #2806, May 9, 1960

7643

Maximum Ratings, Absolute Values
Triode Section

Plate voltage, cut-off condition	550 volts max
Plate voltage	275 volts max
Plate dissipation	1.75 watts max
Peak grid voltage [2]	30 volts max
Grid dissipation	0.1 watts max
Cathode current	18 mA max
Peak cathode current [2]	100 mA max
Grid resistor	0.5 megohms max
Cathode to filament voltage	100 volts max
Negative control grid voltage	100 volts max

Pentode Section

Plate voltage, cut-off condition	550 volts max
Plate voltage	275 volts max
Plate dissipation	2.15 watts max
Screen grid voltage, cut-off condition	550 volts max
Screen grid voltage (I_k > 10 mA)	200 volts max
Screen grid voltage (I_k < 10 mA)	225 volts max
Screen grid dissipation (P_p > 1.2 W)	0.7 watts max
Screen grid dissipation (P_p < 1.2 W)	0.8 watts max
Cathode current	18 mA max
Control grid dissipation	0.1 watts max
Control grid resistor (automatic grid bias)	1 megohm max
Control grid resistor (fixed grid bias)	0.5 megohms max
Cathode to filament voltage	100 volts max
Negative control grid voltage	100 volts max
Bulb temperature	170°C max

Typical Operation
Triode Section

Plate supply voltage	100 volts
Cathode resistor	120 ohms
Plate current [3]	14 mA
Transconductance [3]	5000 micromhos
Negative grid current [3]	< 0.3 μA
Amplification factor	18

Pentode Section

Plate supply voltage	170 volts
Screen grid supply voltage	170 volts
Cathode resistor	155 ohms
Plate current [3]	10 mA
Screen grid current	2.8 mA
Transconductance [3]	6200 micromhos
Amplification factor (Grid No. 2 to Grid No. 1)	40
Plate resistance	0.4 megohms
Negative control grid current [3]	< 0.3 μA

[1] In order to obtain a prolonged tube life, the maximum variation of the heater voltage should be less than ±5% (absolute limits).

[2] Max pulse duration 4% of a cycle with a max of 0.8 milliseconds.

[3] The end point of life is reached when one or more of these characteristics have changed to the following values:

	Pentode	Triode
Plate Current	< 6	< 8.4 mA
Transconductance	< 4300	< 3500 micromhos
Negative control grid voltage	≧ 1	≧ 1 μA

Operating Characteristics
For Use as a Frequency Converter [4]

Plate supply voltage	170 volts
Screen grid supply voltage	170 volts
Input resistance	0.1 megohm
Cathode resistor	330 ohms
Oscillator voltage	3.5 volts rms
Plate current	8 mA
Screen grid current	2.5 mA
Control grid current	12 μA
Conversion conductance	2400 micromhos
Plate resistance	0.5 megohms

Operating Characteristics
Pentode Section
For Use as an RF Amplifier

Plate supply voltage	170 volts
Screen grid supply voltage	170 volts
Cathode resistor	155 ohms
Plate current	10 mA
Screen grid current	2.8 mA
Transconductance	6200 micromhos
Amplification factor (Grid No. 2 to Grid No. 1)	40
Plate resistance	0.4 megohms
Input resistance (f = 50 Mc/s)	10,000 ohms
Equivalent resistance	1500 ohms

Special Ratings

The pentode section of this tube can be used without special precautions against microphonic effect in AF circuits in which the input voltage = 50 mV for an output of 50 mW of the output tube.

Shock Resistance [5]

Shock rating = about 500 g

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

Vibration Resistance [5]

Vibration rating = 2.5 g

Vibrational forces for a period of 32 hours at a frequency of 50 c/s in each of 3 positions of the tube.

---

[4] Use of the triode in a Colpitts type of circuit and not in a Hartley type is recommended.

[5] These test conditions are only given for evaluation of the ruggedness of the tube. They are by no means to be interpreted as suitable operating conditions.

7643

PLATE CHARACTERISTICS

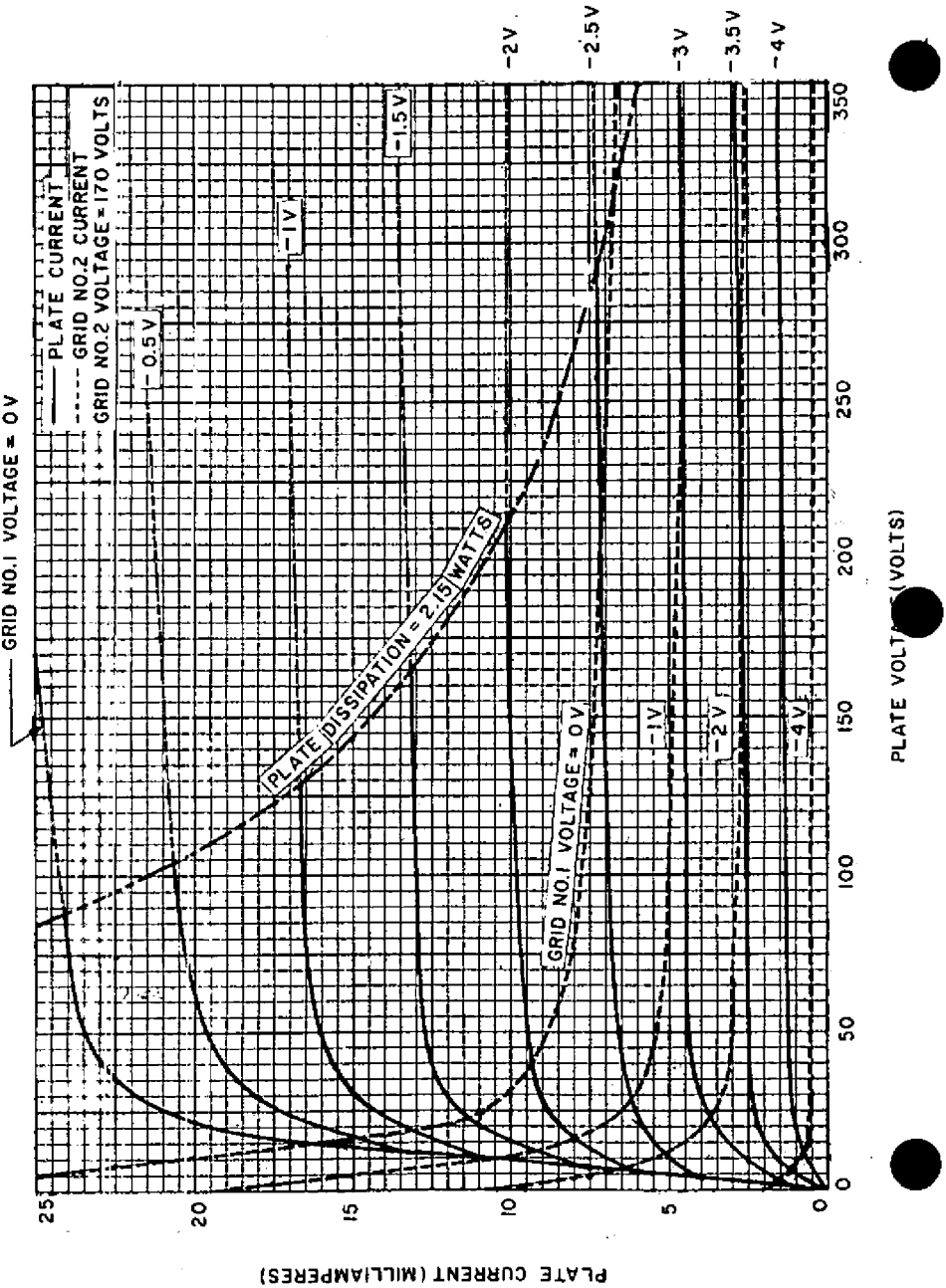
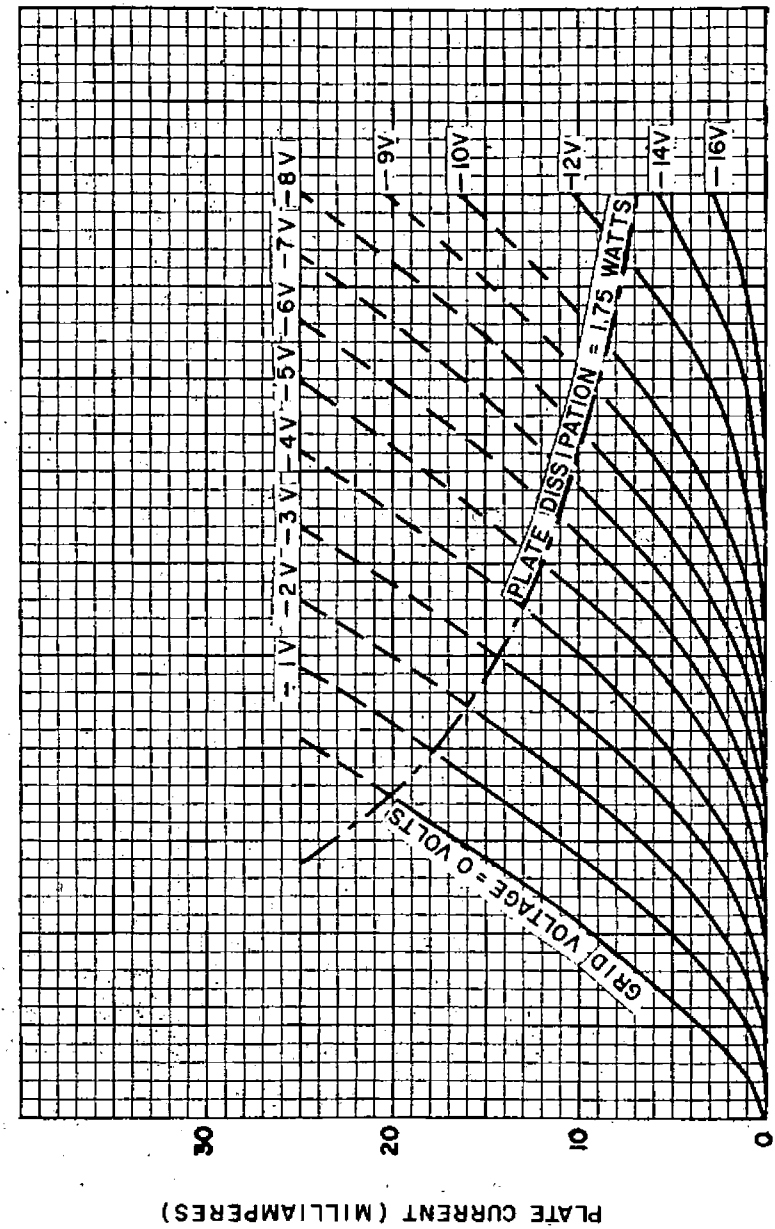


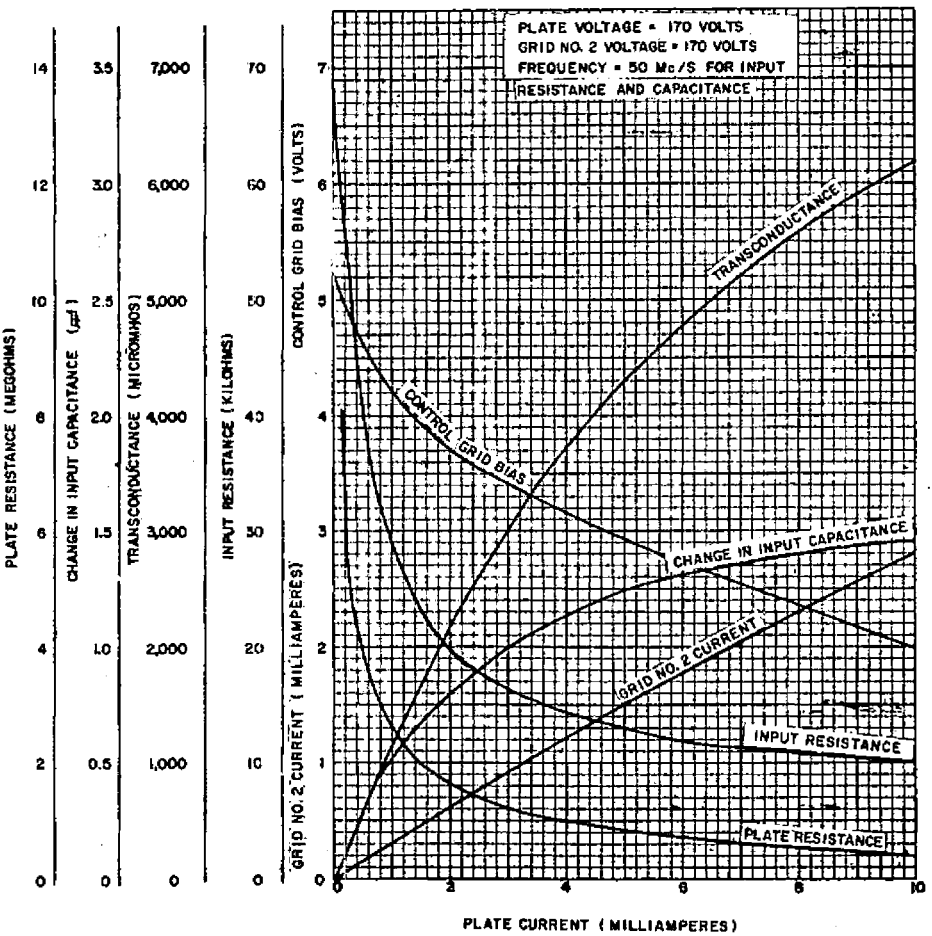
PLATE VOLTAGE (VOLTS)

AVERAGE PLATE CHARACTERISTICS

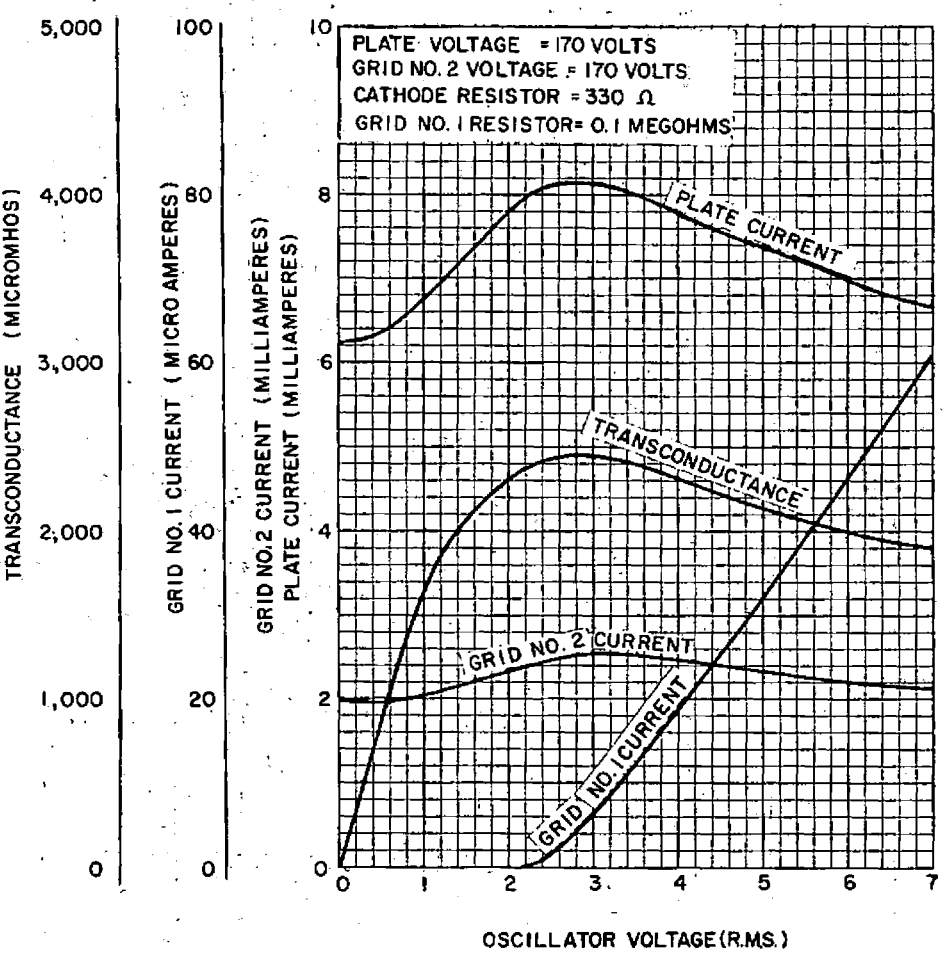


7643

CHARACTERISTICS - PENTODE SECTION

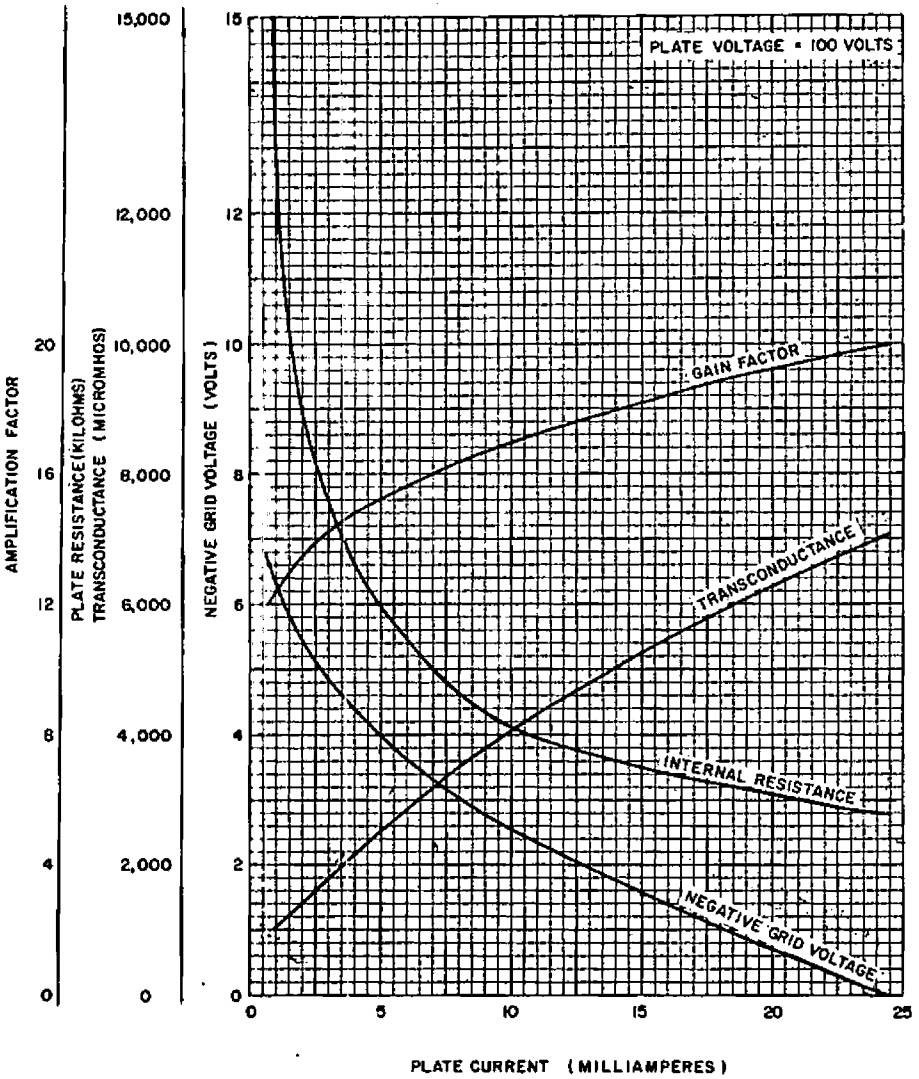


CONVERTOR CHARACTERISTICS—PENTODE



7643

AVERAGE CHARACTERISTICS-TRIODE SECTION



TRANSFER CHARACTERISTICS