ELECTRON TUBE DATA SHEET
WESTERN ELECTRIC 437A ELECTRON TUBE

DESCRIPTION

The 437A electron tube is a high figure of merit triode with an indirectly heated cathode. It was designed primarily for the output amplifier of the L-3 tandem two stage amplifier.

CHARACTERISTICS

Heater Voltage		6.3 volts
Cathode Current	E_b = 160 volts;	36.5 milliamperes
Transconductance	E_{ccl} = +7.5 volts; R_k = 262 ohms	46000 micromhos

File: General Purpose Section
Issue 1, 10-55

GENERAL CHARACTERISTICS

ELECTRICAL DATA

Heater Voltage	6.3 volts
Heater Current	450 milliamperes

Direct Interelectrode Capacitances	Without External Shield	With External Shield (RETMA #309)
Grid to Plate (maximum)	3.8	3.8 uuf
Input: g to (h+k+i.s.)	11.1	11.3 uuf
Output: p to (h+k+i.s.)	1.0	2.1 uuf

MECHANICAL DATA

Cathode	Coated Unipotential
Bulb	T9
Base	See outline drawing page 4
Mounting Position	Any

Dimensions and pin connections shown in outline drawing on page 4

MAXIMUM RATINGS, Design Center Values

Plate Voltage	250 volts
Plate Dissipation	7.0 watts
Control Grid Dissipation	see footnote 1
Cathode Current	45 milliamperes
Heater-Cathode Voltage	50 volts
Bulb Temperature	130 centigrade

MAXIMUM CIRCUIT VALUES

Grid Circuit Resistance:	
For Fixed Bias	0.05 megohm
For Cathode Bias	0.10 megohm

TYPICAL OPERATING CONDITIONS AND CHARACTERISTICS

Plate Voltage	140	180	160	volts
Control Grid Voltage	-2.0	-3.0	---	volts
Control Grid Supply Voltage[2]	---	---	+7.5	volts
Cathode Bias Resistor[2]	---	---	262	ohms
Plate Current	29.0	25.0	36.5	milliamperes
Amplification Factor	41.0	41.0	41.0	
Plate Resistance	950	980	900	ohms
Transconductance	43000	42000	46000	micromhos
Control Grid Voltage (approximate) for Plate Current of 10 microamperes	-5.0	-6.3	---	volts
Modulation				
Second Order (2F)[3]	--	---	-37	db
Third Order (3F)[4]	---	---	-56	db
Load Resistance	---	---	270	ohms

Note 1: Operation with the control grid positive with respect to cathode is not recommended.

Note 2: Reference point for Control Grid Voltage is the negative end of the cathode bias resistor.

Note 3: Ratio of product to fundamental at output for 0.1 volt rms signal from grid to cathode.

Note 4: Ratio of product to fundamental at output for a 0.2 volt rms signal from grid to cathode.

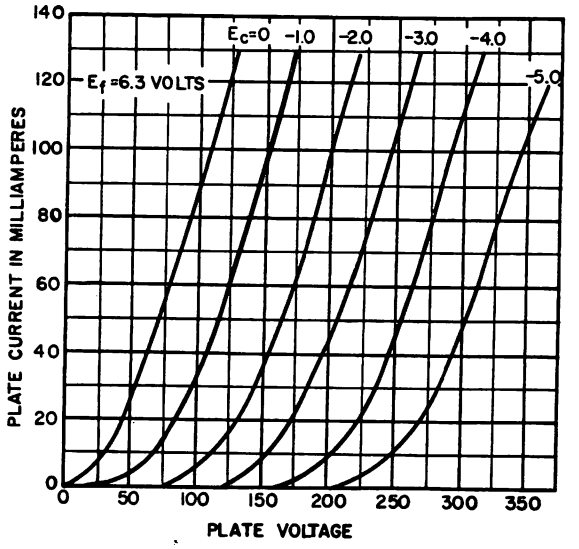


PLATE CURRENT IN MILLIAMPERES
PLATE VOLTAGE
E_f = 6.3 VOLTS
E_c=0 -1.0 -2.0 -3.0 -4.0 -5.0
0 20 40 60 80 100 120 140
0 50 100 150 200 250 300 350

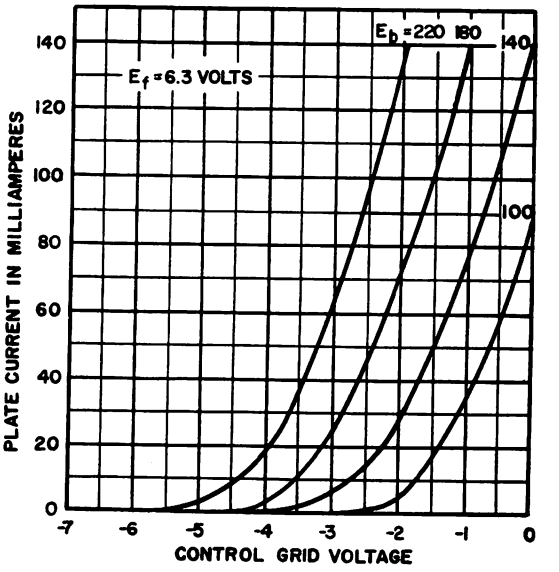
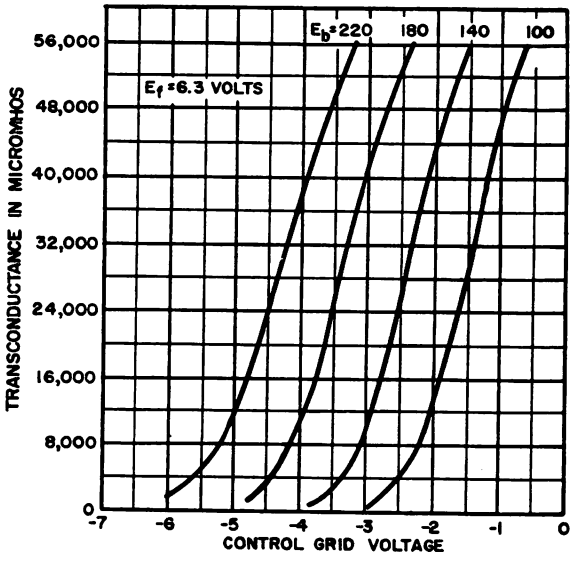


PLATE CURRENT IN MILLIAMPERES
CONTROL GRID VOLTAGE
E_f = 6.3 VOLTS
E_b = 220 180 140 100
0 20 40 60 80 100 120 140
-7 -6 -5 -4 -3 -2 -1 0


TRANSCONDUCTANCE IN MICROMHOS
CONTROL GRID VOLTAGE
E_f = 6.3 VOLTS
E_b = 220 180 140 100
0 8,000 16,000 24,000 32,000 40,000 48,000 56,000
-7 -6 -5 -4 -3 -2 -1 0

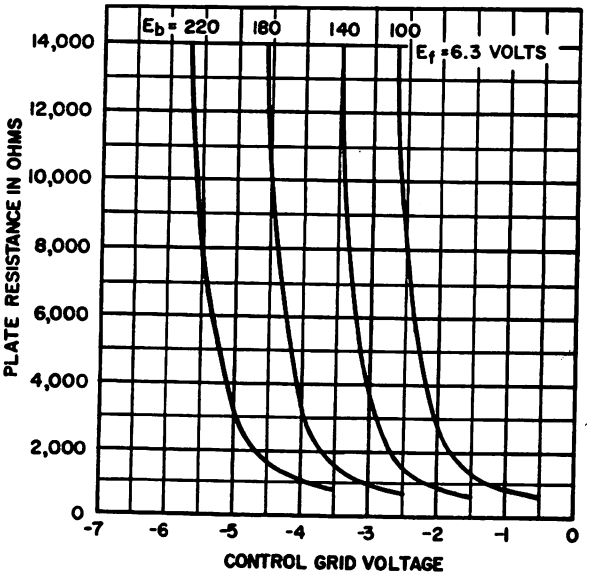
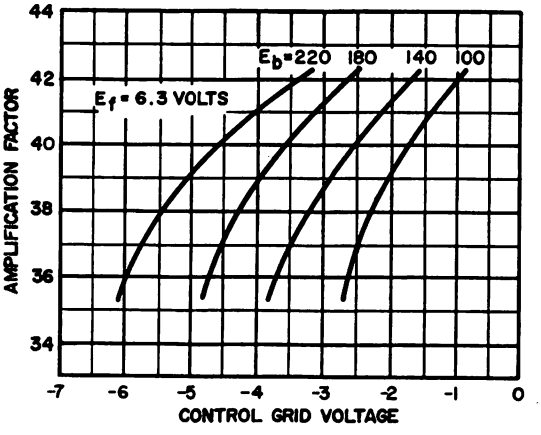
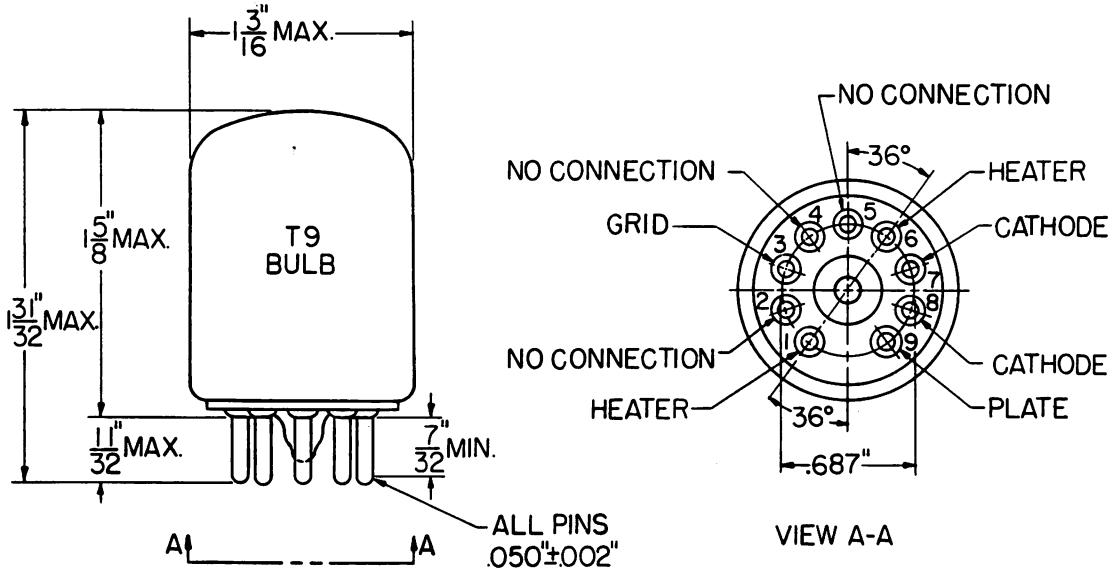


PLATE RESISTANCE IN OHMS
CONTROL GRID VOLTAGE
E_b = 220 180 140 100
E_f = 6.3 VOLTS
0 2,000 4,000 6,000 8,000 10,000 12,000 14,000
-7 -6 -5 -4 -3 -2 -1 0


AMPLIFICATION FACTOR
CONTROL GRID VOLTAGE
E_b = 220 180 140 100
E_f = 6.3 VOLTS
34 36 38 40 42 44
-7 -6 -5 -4 -3 -2 -1 0



A development of Bell Telephone Laboratories, the research laboratories of the American Telephone and Telegraph Company and the Western Electric Company