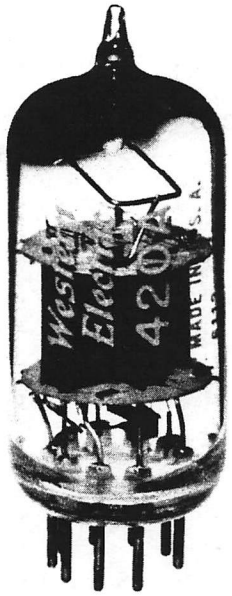
ELECTRON TUBE DATA SHEET

WESTERN ELECTRIC 420A ELECTRON TUBE



DESCRIPTION

→ The 420A electron tube is a double-triode having separate indirectly heated cathodes. The heater is center-tapped to permit operation from a 6.3 or 12.6 volt filament supply. This tube has been designed for use in d-c amplifier circuits where tube requirements include a high order of mechanical and thermionic stability as well as long life expectancy.

CHARACTERISTICS

Heater Voltage		6.3 volts
Plate Current (each section)	E_b = 110 volts; E_c = -0.6 volt	0.15 milliampere
Transconductance (each section)		500 micromhos

FILE: MINIATURE SECTION

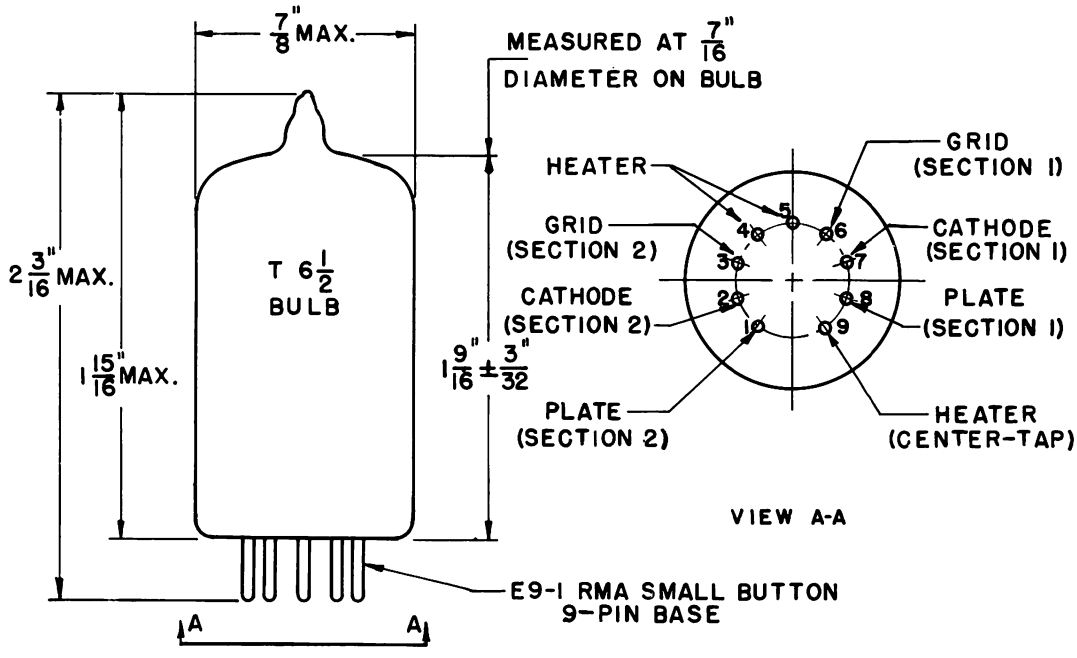
→ Indicates a change

BELL SYSTEM PRACTICES
Transmission Engineering and Data
Electron Tube Data

SECTION AB46.420A
Issue 1, May 1951
A.T.& T. Co. Standard

ADVANCE ELECTRON TUBE DATA SHEET

WESTERN ELECTRIC 420A* ELECTRON TUBE



DESCRIPTION

The 5755/420A* is a double-triode amplifier tube having separate indirectly heated cathodes. The heater is center-tapped to permit operation from a 6.3 or 12.6 volt filament supply. This tube has been designed for use in d-c amplifier circuits where tube requirements include a high order of mechanical and thermionic stability as well as long life expectancy.

CHARACTERISTICS

Heater Voltage		6.3 volts
Plate Current (each section)	E_b=110 volts; E_c=-0.6 volt	0.15 milliampere
Transconductance (each section)		500 micromhos

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GENERAL CHARACTERISTICS

ELECTRICAL DATA

	Parallel	Series	
Heater Voltage	6.3	12.6	volts
Heater Current	360	180	milliamperes
Direct Interelectrode Capacitances	without external shield	with external shield (RMA #315)	
Grid to plate (each section)	1.4	(a) 1.4	uuf
Input (each section)	1.5	(a) 1.7	uuf
Output (Section #1)	0.8	(a) 1.5	uuf
Output (Section #2)	0.6	(a) 1.3	uuf
Plate 1 to Plate 2	0.9	(b) 0.8	uuf
Grid 1 to Plate 2	0.01	(b) 0.01	uuf
Grid 2 to Plate 1	0.01	(b) 0.01	uuf

MECHANICAL DATA

Cathode	Coated Unipotential
Bulb	T6-1/2
Base	Small Button 9-pin
Mounting Position	Any

Dimensions and pin connections shown in outline drawing on Page 4

MAXIMUM RATINGS, Design Center Values (Each Section)

Plate Voltage	225 volts
Plate Dissipation	0.9 watt
Plate Current	4 milliamperes
Heater-Cathode Voltage	70 volts

TYPICAL OPERATING CONDITIONS AND CHARACTERISTICS, D-C AMPLIFIER

(Values are for each section unless otherwise specified)

	(c)	
Heater Supply Voltage	12.6	volts
Heater Ballast Resistor	35	ohms
Plate Supply Voltage	310	volts
Cathode Bias Resistor (Cathodes tied together)	150,000	ohms
Plate Current	0.15	milliampere
Grid Current (max.)	10^{-9}	ampere
Plate Resistance	0.14	megohm
Load Resistance	0.9	megohm
Transconductance	500	micromhos
Amplification Factor	70	
Balance[1]	0.3	volt
Stability[2]	5	millivolts

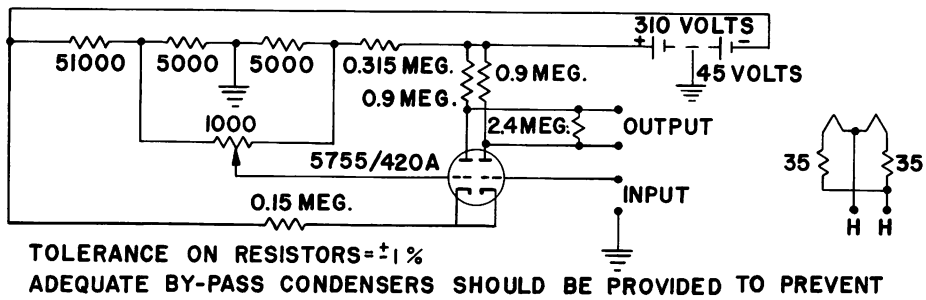
(a) With external shield #315 connected to cathode pin of section under test.

(b) With external shield #315 connected to ground with other elements.

(c) See circuit - Fig. 1

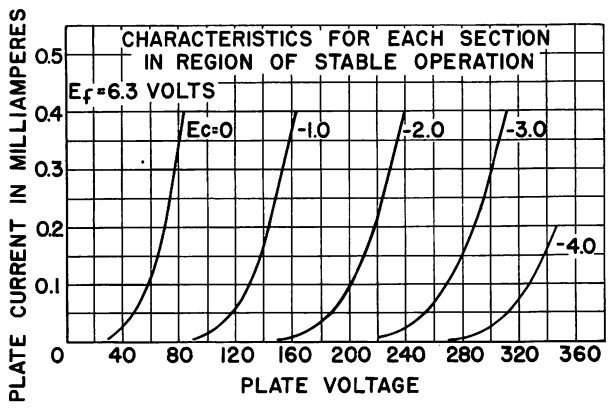
1. Balance is the condition obtained when grid voltages have been adjusted so that resulting plate current values are equal in both sections of the tube. Value shown above is the maximum grid voltage differential necessary to obtain balance.

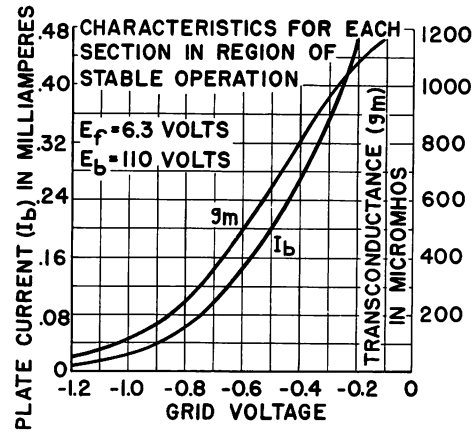
2. Stability is defined as the capability of the tube to maintain the condition of balance described in Note 1 in a circuit such as shown in Fig. 1. The arithmetical average value of input voltage change necessary to maintain balance for a production sample group of tubes will not be greater than the value given. This average value of input voltage change is determined over a 7-hour testing period immediately following a 9-hour circuit acclimation schedule. (A 5 millivolt change in input voltage is equivalent to a 0.26 volt change in the output voltage.)

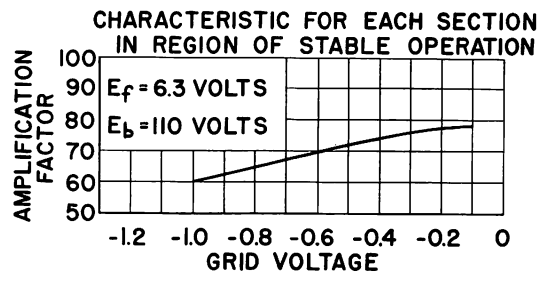


TOLERANCE ON RESISTORS = ±1 %
ADEQUATE BY-PASS CONDENSERS SHOULD BE PROVIDED TO PREVENT PARASITIC OSCILLATIONS.
THE BALLASTED HEATER CIRCUIT IS USED TO ESSENTIALLY CANCEL OUT VARIATIONS IN HEATER POWER DUE TO SMALL VARIATIONS IN HEATER RESISTANCE.

FIG. 1







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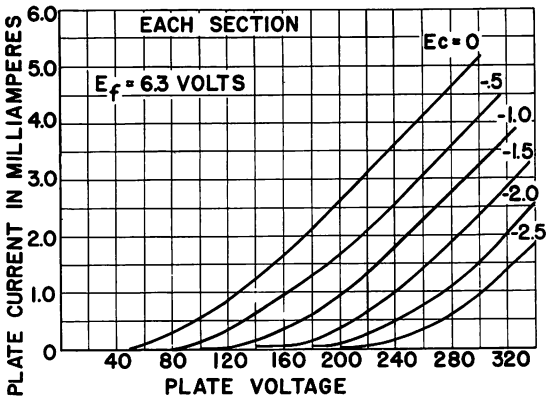

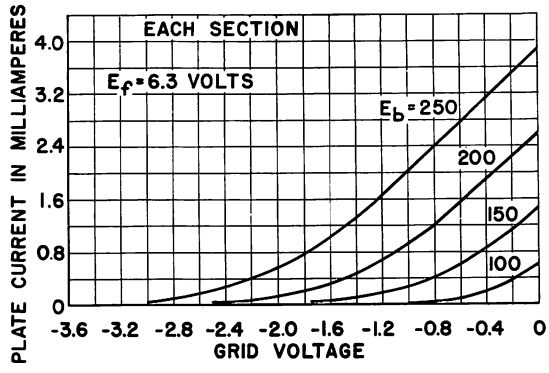

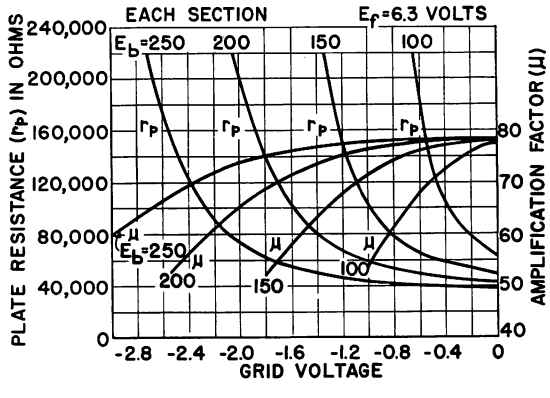

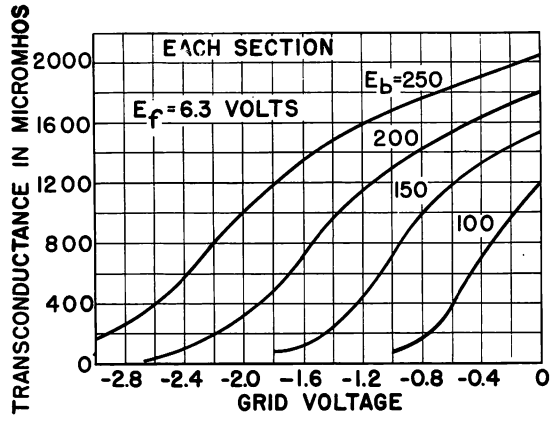

A development of Bell Telephone Laboratories, the research laboratories of the American Telephone and Telegraph Company and the Western Electric Company.

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