Mullard
H.F. PENTODE

SP13

The SP13 is an indirectly heated straight H.F. Pentode for use in D.C./A.C. receivers, and for car radio, as an R.F. amplifier, detector or L.F. amplifier.

HEATER CHARACTERISTICS

Heater Voltage	Vf = 13·0 volts
Heater Current	If = 0·2 amp
Heating Time—60 seconds	

DIMENSIONS

Overall Length ...	= 109 mm.
Overall Diameter...	= 42 mm.
Bulb Finish—Metallised	

OPERATING CHARACTERISTICS AS R.F. AMPLIFIER

Normal Anode Voltage	Va_w	= 200 volts
Normal Auxiliary Grid Voltage	$Vg2_w$	= 100 volts
Anode Current	Ia_w	= 3·3 mA
Control Grid Voltage	$-Vg1$	= 2 volts
Anode Impedance	Ri_w	= 1·3 megohms
Amplification Factor	G_w	= 3,000
Mutual Conductance (Ia = 3·3 mA)	S_w	= 2·2 mA/V
Cathode Bias Resistance	Rk	= 400 ohms

OPERATING CHARACTERISTICS AS SPEECH DETECTOR

Anode Voltage (line)	Va	= 200 volts
Series Resistance (Grid 2)	Rg2	= 1·0 megohm
Anode Resistance	Ra	= 0·3 megohm

OPERATING CHARACTERISTICS AS L.F. AMPLIFIER

Anode Voltage	Va	= 200 volts
Auxiliary Grid Voltage	Vg2	= 100 volts
Anode Load	Ra	= 0·1 megohm
Bias Resistance	Rk	= 2,500 ohms

CAPACITIES

Anode to Control Grid	Cag1	= <0·003 $\mu\mu$F
Cathode to Control Grid	Ckg1	= 7·1 $\mu\mu$F
Anode to Cathode + Auxiliary Grid	Cak+g2	= 7·7 $\mu\mu$F

LIMITS

Maximum Anode Voltage	Va_{max}	= 200 volts
Maximum Anode Dissipation	Wa_{max}	= 1·0 watt
Maximum Cathode Current	Ik_{max}	= 6·0 mA
Maximum Auxiliary Grid Voltage	$Vg2_{max}$	= 100 volts
Maximum Resistance in Grid Circuit	$Rg1a_{max}$	= 1·5 megohms
Maximum Voltage Heater to Cathode	Vfk_{max}	= 125 volts
Maximum Resistance Heater to Cathode ...	Rfk_{max}	= 20,000 ohms
Range of Grid Voltage for 1 μA Grid Current ...	Vg1	= −0·5 to −1·0 volt

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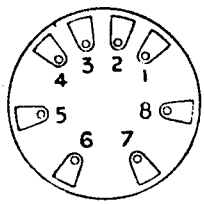
CONNECTIONS



Viewed from under side of base

Contact No. 1 Metallising
" 2 Heater
" 3 Heater
" 4 Cathode
" 5 Suppressor Grid (G_3)
" 6 —
" 7 Auxiliary Grid (G_2)
" 8 Anode
Top Cap—Control Grid.

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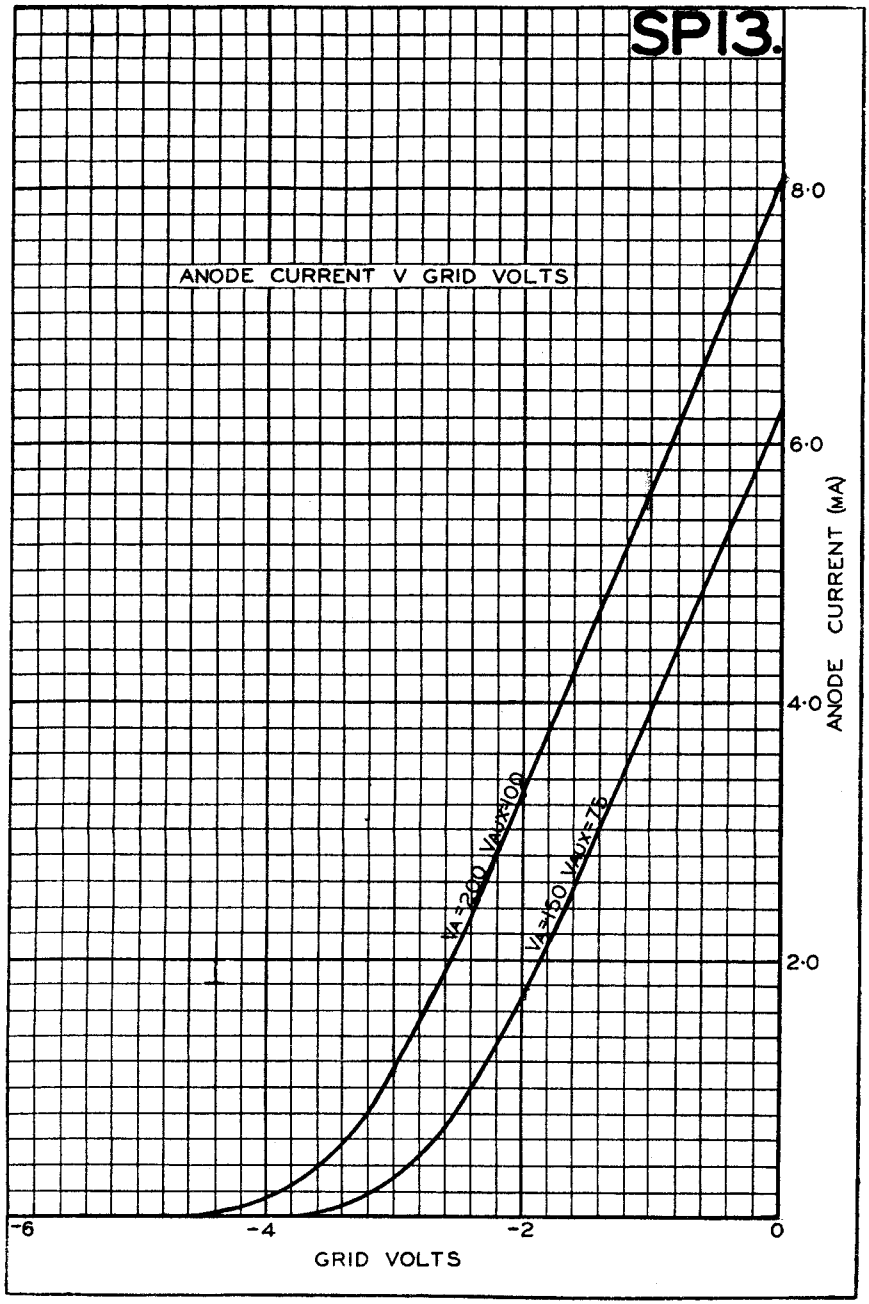

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