

Ferranti

TRIODE PENTODE

Combined high slope R.F. pentode and triode with separate cathodes. Designed primarily for use as a frequency changer in Television Receivers operating at frequencies up to 220 Mc/s.

PHYSICAL DETAILS.

Base	...	...	...	B9A—Noval.
Max. Overall Length	...	...	...	56 mm. ($2\frac{1}{2}$ in.).
Max. Seated Height	...	...	...	49 mm. ($1\frac{1}{2}$ in.).
Max. Diameter	...	...	...	22.2 mm. ($\frac{7}{8}$ in.).
Mounting Position	...	...	...	Any.

BASE CONNECTIONS.

Pin 1—Triode Anode.	Pin 6—Pentode Anode.
Pin 2—Pentode g ₁	Pin 7—Pentode Cathode, g ₃
Pin 3—Pentode g ₂	and shield.
Pin 4—Heater.	Pin 8—Triode Cathode.
Pin 5—Heater.	Pin 9—Triode Grid.

HEATER.

Heater Voltage	...	...	...	6.3 volts.
Heater Current	...	...	...	0.43 amp.

RATINGS.

PENTODE SECTION.

Max. Anode Supply Voltage	...	...	550 volts.
Max. Anode Voltage	...	...	250 volts.
Max. Screen Voltage	...	...	175 volts.*
Max. Anode Dissipation	...	...	1.7 watts.
Max. Screen Dissipation	...	...	0.5 watts.†
Max. Cathode Current	...	...	14 mA.
**Min Negative Grid Voltage	...	...	-1.3 volts.
Max. V _{h-k} (heater positive)	...	...	100 volts.
‡Max. V _{h-k} (heater negative)	...	...	150 volts.
Max. R _{g1-k} (auto bias)	...	...	1.0 MΩ
Max. R _{g1-k} (fixed bias)	...	...	0.5 MΩ

TRIODE SECTION.

Max. Anode Supply Voltage	...	...	550 volts.
Max. Anode Voltage	...	...	250 volts.
Max. Anode Dissipation	...	...	1.5 watts.
Max. Cathode Current	...	...	14 mA.
§Max. Peak Cathode Current	...	...	200 mA.
Max. R _{g-k}	...	...	0.5 MΩ
**Max. Negative Grid Voltage	...	...	-1.3 volts.
Max. Peak Instantaneous Negative Grid Voltage	...	...	350 volts.
‡Max. V _{h-k} (heater negative)	...	...	150 volts.
Max. V _{h-k} (heater positive)	...	...	100 volts.

CHARACTERISTICS.

	Pentode Sect.	Triode Sect.
Anode Voltage	250	100 volts.
Screen Voltage	200	— volts.
Grid Bias Voltage	-3.2	-2 volts.
Anode Current	7	14 mA.
Screen Current	1.8	— mA.
Mutual Conductance	5.5	5.0 mA/V.
Anode Impedance	900	4 kΩ
μ	—	20
Inner μ	47	—
Input Impedance (f=50 Mc/s.)	11	— kΩ
Equivalent Noise Resistance	1.5	— kΩ

*May be increased to 200 volts with cathode current not exceeding 10 mA.

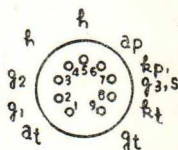
†May be increased to 0.75 watts with anode dissipation not exceeding 1.2 watts.

‡Max. d.c. component 150 volts.

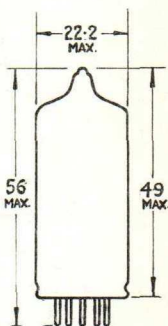
§Max. duration of pulse 200 μsecs.

**At grid current of 0.3 μA.

ECF80



Base
Connections
Underside View
of Base



All dimensions
shown are in
millimetres.

Ferranti

TYPICAL OPERATION (as Frequency Changer)

Supply Voltage	...	Vb	250	250	volts.
Anode Voltage	...	Va	250	250	volts.
Screen Feed Resistor	...	Vg2	47	68	k Ω
Grid Resistor	...	Rg1	100	100	k Ω
Auto Bias Resistor	...	Rk	820	0	ohms.
Anode Current	...	Ia	5.7	5.6	mA.
Screen Current	...	Ig2	1.4	1.5	mA.
Oscillator Voltage	...	Vosc.	3.5	4.0	volts (r.m.s.)
Conversion Conductance	...	gc	2.1	1.95	mA/V.
Anode Impedance	...	ra	1.5	1.15	M Ω
Grid Current	...	Ig1	0	58	μ A.

CAPACITANCES (without external shield).

C _{ap-at}	...	...	...	...	<0.06 pF.
C _{ap-gt}	...	...	...	...	<0.02 pF.
C _{gp-at}	...	...	...	...	<0.16 pF.
C _{gp-gt}	...	...	...	...	<0.02 pF.

Pentode Section.

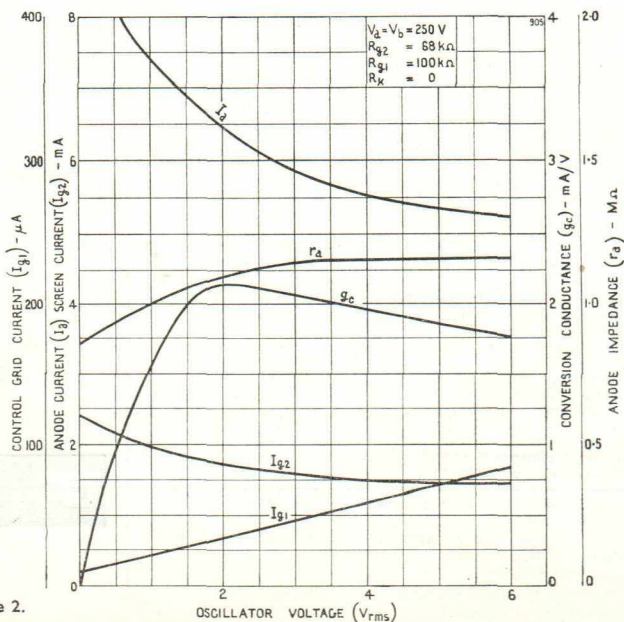
C _n	...	...	...	...	5.3 pF.
C _{out}	...	...	...	...	3.6 pF.
C _{a-g1}	...	...	...	...	<0.025 pF.

Triode Section.

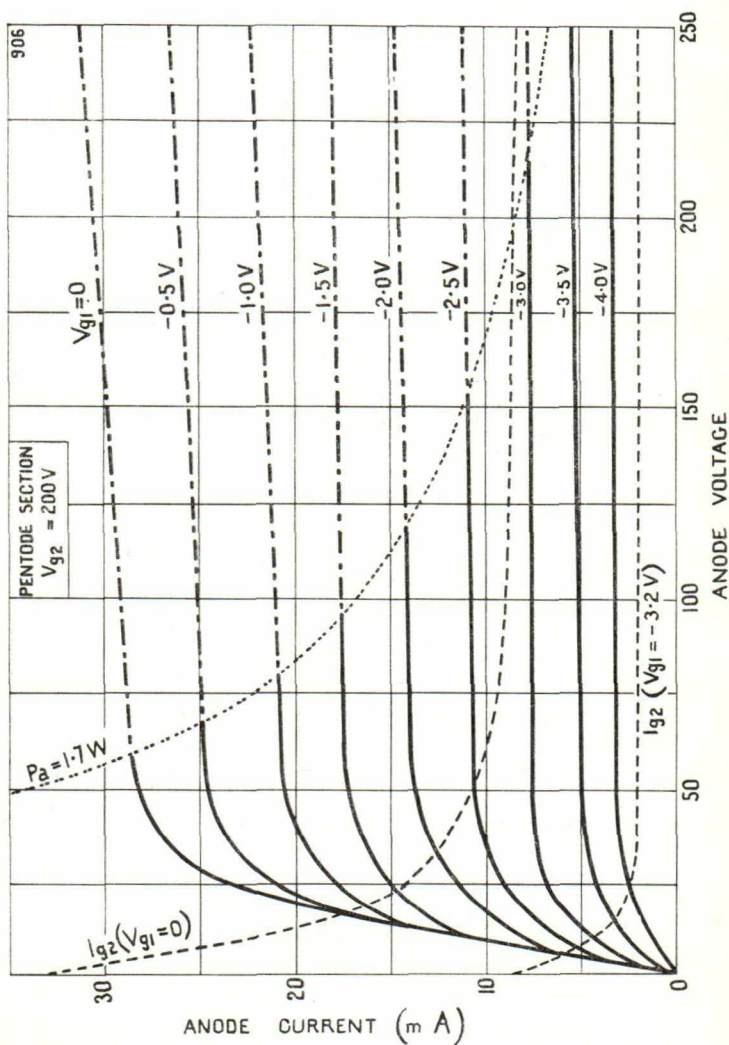
C _{g-k+h}	...	...	...	...	2.5 pF.
C _{a-k+h}	...	...	...	...	1.8 pF.
C _{a-g}	...	...	...	...	1.5 pF.

OPERATING NOTE.

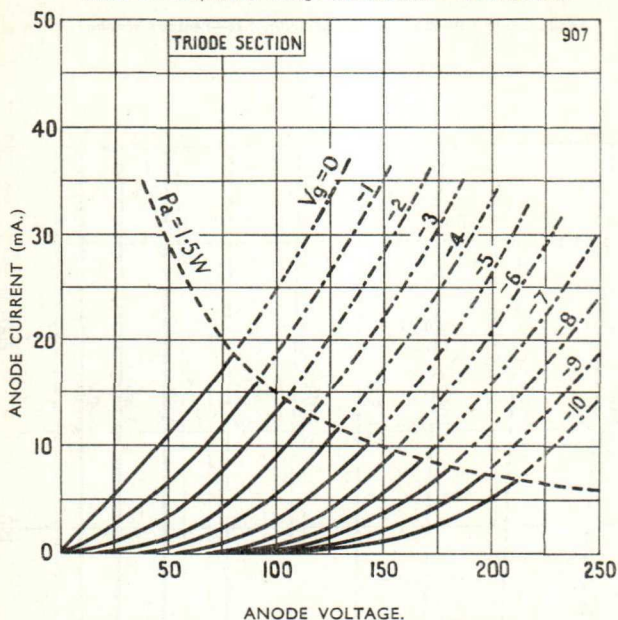
*Variations in heater-cathode capacitance may render this valve unsuitable for use in Hartley oscillator circuits, particularly in F.M. receivers; it is recommended that a Colpitts type of circuit be employed.



Anode Current/Anode Voltage Characteristics—Pentode Section.



Anode Current/Anode Voltage Characteristic—Triode Section.



Anode Current/Grid Voltage Characteristics—Triode Section.

