



TRIODE PENTODE

Designed primarily for use as a frequency changer in Television Receivers operating at frequencies up to 220 M/cs. The Triode and Pentode sections have separate cathodes.

PHYSICAL DETAILS.

Base	...	...	B9A—Noval.
Max. Overall Length	...	...	56 mm. (2 $\frac{1}{4}$ ins.).
Max. Seated Height	...	...	49 mm. (1 $\frac{5}{8}$ ins.).
Max. Diameter	...	...	22.2 mm. ($\frac{7}{8}$ in.).
Mounting Position	...	...	Any.

BASE CONNECTIONS.

Pin 1—Triode Anode	Pin 5—Heater.
Pin 2—Pentode g_1	Pin 6—Pentode Anode.
Pin 3—Pentode g_2	Pin 7—Pentode cathode, $g_{3,5}$.
Pin 4—Heater.	Pin 8—Triode Cathode.
	Pin 9—Triode Grid.

HEATER.

Heater Voltage	...	...	6.3 volts
Heater Current.	...	...	0.45 amp.

RATINGS.

PENTODE SECTION.

Max. H.T. Supply Voltage	...	...	550 volts.
Max. Anode Voltage	...	...	300 volts.
Max. Screen Voltage	...	...	300 volts.
Max. Anode Dissipation	...	...	2.8 watts.
Max. Screen Dissipation	...	...	0.5 watts.
Max. Neg. Grid Voltage	...	...	...
(for $I_g < +0.3 \mu A.$)	...	...	-1.3 volts.
Max. Cathode Current	...	...	20 mA.
Max. V_{h-kp} (heater positive)	...	...	100 volts.
(heater negative)	...	...	100 volts.
Max. R_{g_1-kp}	...	...	1.0 M Ω
Max. R_{h-kp}	...	...	20 k Ω

TRIODE SECTION.

Max. H.T. Supply Voltage	...	...	550 volts.
Max. Anode Voltage	...	...	300 volts.
Max. Anode Dissipation	...	...	1.5 watts.
Max. Neg. Grid Voltage	...	...	...
(for $I_g < +0.3 \mu A.$)	...	...	-1.3 volts.
Max. Cathode Current	...	...	20 mA.
Max. V_{h-kt} (heater positive)	...	...	100 volts.
(heater negative)	...	...	100 volts.
Max. R_{gt-kt}	...	...	1.0 M Ω
Max. R_{h-kt}	...	...	20 k Ω

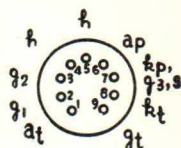
CHARACTERISTICS.

PENTODE SECTION.

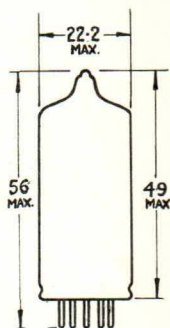
Anode Voltage	...	...	250 volts.
Screen Voltage	...	...	110 volts.
Cathode Bias Resistor	...	...	68 ohms
Anode Current	...	...	10 mA.
Screen Current	...	...	3.5 mA.
Mutual Conductance	...	...	5.2 mA/V.
Anode Impedance	...	...	400 k Ω
Inner μ	...	...	32
V_{g_1} for cut-off	...	...	-10 volts.

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Base
Connections
Underside View
of Base



Ferranti

CHARACTERISTICS (Continued).

TRIODE SECTION.

Anode Voltage	...	...	...	...	150 volts.
Cathode Bias Resistor	...	...	...	...	180 ohms.
Anode Current	...	...	...	...	11 mA.
Mutual Conductance	...	...	...	...	5.6 mA/V.
Anode Impedance	...	...	...	...	6.0 k Ω
μ	...	...	...	...	34

TYPICAL OPERATING CONDITIONS (As Frequency Changer).

TRIODE as Oscillator.

Anode Supply Voltage	$V_a(b)$	170	200	250	volts.
Anode Resistor	R_a	20	20	20	k Ω
Grid Resistor	R_g	20	20	20	k Ω
Oscillator Voltage	$V_{osc.}$	3	3	3	Volts. (r.m.s.).
Anode Current	I_a	3.3	4.1	5.7	mA.
Grid Current	I_g	160	160	160	μ A.
Mutual Conductance	$g_m(eff)$	2.8	3.2	3.9	mA/V.

PENTODE as Mixer.

Anode Voltage	V_a	170	200	250	volts.
Screen Feed Resistor	R_{g2}	30	45	70	k Ω
Grid Resistor	R_{g1}	1	1	1	M Ω
Grid Voltage	V_{g1}	0	0	0	volts.
Oscillator Voltage	$V_{osc.}$	3	3	3	volts. (r.m.s.).
Anode Current	I_a	5.0	5.0	5.2	mA.
Screen Current	I_{g2}	2.0	2.0	2.0	mA.
Grid Current	I_{g1}	3.7	3.7	3.7	μ A.
Conversion Conductance	g_c	1.75	1.65	1.8	mA/V.

CAPACITANCES

		with ext. shield	without ext. shield
Cap-at	...	0.018	<0.07 pF.
Cap-gt...	...	0.0035	0.008 pF.

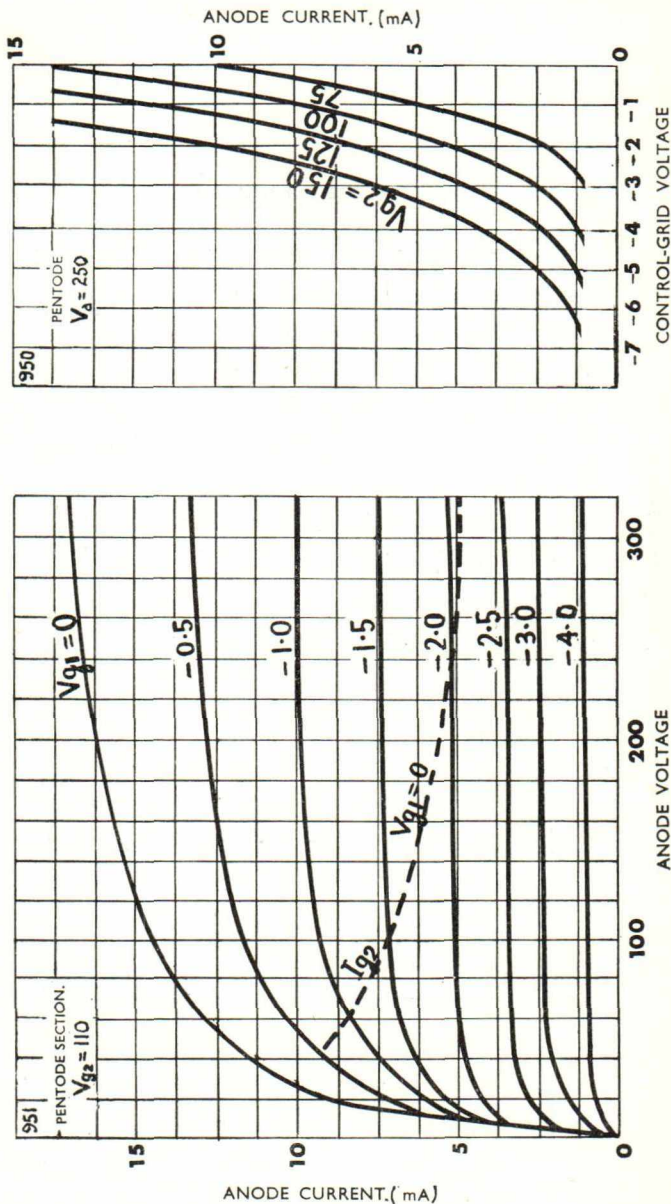
Pentode Section.

C_{in}	...	5.0	5.0 pF.
C_{out}	...	3.5	2.6 pF.
C_{a-g1}	...	<0.006	<0.01 pF.
C_{h-k}	...	3.0	3.0 pF.

Triode Section.

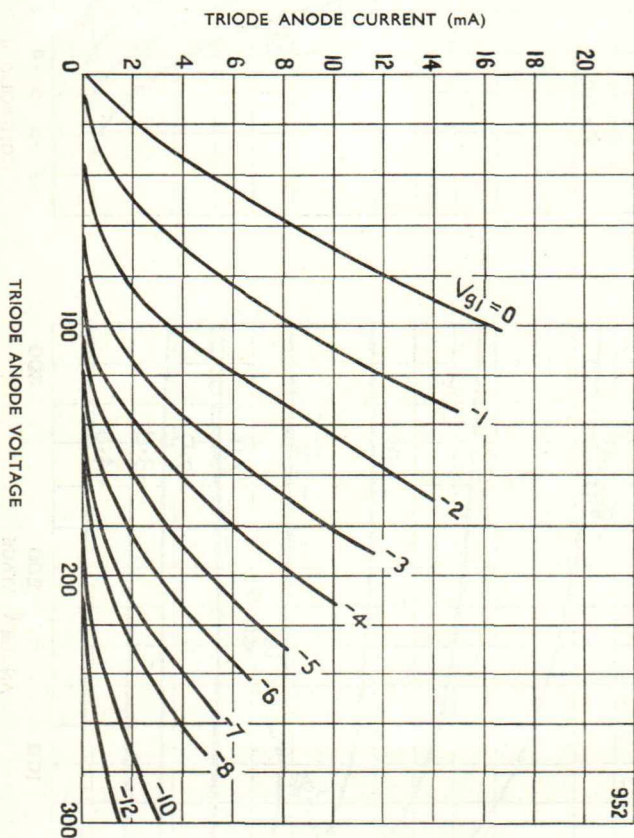
C_{in}	...	2.5	2.5 pF.
C_{out}	...	1.0	0.4 pF.
C_{a-g}	...	1.8	1.8 pF.
C_{h-k}	...	3.0	3.0 pF.

Typical Characteristics - PENTODE Section



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Typical Characteristics - TRIODE Section.