

FERRANTI TRIODE PENTODE

An indirectly heated triode pentode for use with series or parallel heater connection on a.c. or d.c. mains. Primarily designed for use with the triode as a frame blocking oscillator and the pentode as a frame output valve. The triode section may also be used as a line blocking oscillator or audio voltage amplifier, whilst the pentode section may be used as a sync. pulse separator or audio output valve.

PHYSICAL DETAILS.

Base	...	...	B9A—Noval.
Max. Overall Length	...	...	67.5 mm. ($2\frac{3}{4}$ in.).
Max. Seated Height	...	...	60.5 mm. ($2\frac{3}{8}$ in.).
Max. Diameter (Bulb)	...	...	22.2 mm. ($\frac{7}{8}$ in.).
Mounting Position	...	...	Any.

BASE CONNECTIONS.

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

HEATER.

Heater Voltage	...	...	6.3 volts.
Heater Current	...	...	0.3 amps.

RATINGS.

PENTODE SECTION.

Max. H.T. Supply Voltage	...	...	550 volts.
Max. Anode Voltage	...	...	400 volts.
Max. Peak Instantaneous Anode Voltage	...	...	1.2 kV.
Max. Screen Voltage	...	...	250 volts.
Max. Anode Dissipation	...	...	3.5 watts.
Max. Screen Dissipation	...	...	1.2 watts.
Max. Cathode Current	...	...	25 mA.
Max. Peak Instantaneous Cathode Current	...	...	350 mA.
§ Min. Negative Grid Voltage	...	...	1.3 volts.
† Max. Grid Resistor (1k=12 mA)	...	...	2.2 MΩ
‡ Max. Grid Resistor (1k=20 mA)	...	...	1.0 MΩ
Max. V_{h-k}	...	...	150 volts.
Max. R_{h-k}	...	...	20 kΩ

TRIODE SECTION.**

Max. Anode Supply Voltage	...	...	550 volts.
Max. Anode Voltage	...	...	200 volts.
Max. Anode Dissipation	...	...	1 watt.
Max. Cathode Current	...	...	8 mA.
*Max. Peak Instantaneous Cathode Current	...	...	200 mA.
Max. R_{gt-k}	...	...	3 MΩ
Max. V_{h-k}	...	...	150 volts.
Max. R_{h-k}	...	...	20 kΩ

CHARACTERISTICS.

PENTODE SECTION.

Anode Voltage	...	...	170	200	volts.
Screen Voltage	...	...	170	200	volts.
Suppressor Grid Voltage	...	...	0	0	volts.
Control Grid Voltage	...	...	-6.7	-8.0	volts.
Anode Current	...	...	15	17.5	mA.
Screen Current	...	...	2.8	3.3	mA.
Mutual Conductance	...	...	3.2	3.3	mA/V.
Anode Impedance	...	...	150	150	kΩ
Inner μ	...	...	14	14	

*Max. pulse duration 10% of one cycle, with a maximum of 2 milliseconds.

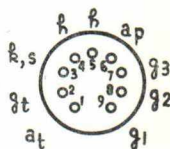
§ At grid current of 0.3 μ A.

† As frame output valve.

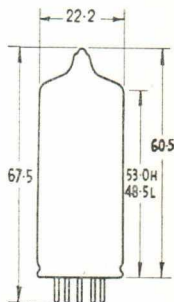
‡ As audio output valve.

**When the triode section is used in amplifier circuits where the input voltage for an output of 50 mW. is less than 50 mV. no special precautions need be taken against microphony.

ECL80



Base
Connections
Underside View
of Base



All dimensions
shown are in
millimetres
(max.).





CHARACTERISTICS—continued.

TRIODE SECTION.

Anode Voltage ...	...	100 volts.
Grid Voltage ...	...	-2.3 volts.
Anode Current ...	...	4.0 mA.
Anode Impedance ...	...	12.5 k Ω
Amplification Factor ...	...	17.5
Mutual Conductance ...	...	1.4 mA/V.

TYPICAL OPERATION.

PENTODE SECTION

(as Audio Output Valve).

Anode Voltage ...	170	200	250	volts.
Screen Voltage ...	170	200	*	volts.
Suppressor Grid Voltage ...	0	0	0	volts.
Control Grid Voltage ...	-6.7	-8.0	-12.2	volts.
**Anode Current ...	15	17.5	14	mA.
**Screen Current ...	2.8	3.3	2.6	mA.
Mutual Conductance ...	3.2	3.3	2.6	mA/V.
Anode Load ...	11	11	17.5	k Ω
†Input Voltage ...	0.7	0.7	—	volts (r.m.s.)
‡Input Voltage ...	3.5	4.0	—	volts (r.m.s.)
‡Power Output ...	1.0	1.4	1.55	watts.

(as Frame Output Valve).

Anode Voltage ...	170	200	volts.
Screen Voltage ...	170	200	volts.
Suppressor Grid Voltage ...	0	0	volts.
Control Grid Voltage ...	-9	-10.6	volts.
**Anode Current ...	8.5	10.0	mA.
**Screen Current ...	1.6	1.9	mA.

(as Sync. Separator).

Anode Voltage ...	20	20	volts.
Screen Voltage ...	12	12	volts.
Suppressor Grid Voltage ...	0	0	volts.
Cathode Grid Voltage ...	0	-1.45	volts.
Anode Current ...	2	0.1	mA.

TRIODE SECTION.

(as A.F. Amplifier).

Anode Voltage ...	170	200	250	volts.
Grid Voltage ...	-3.5	-4.2	-5.5	volts.
Anode Current ...	1.0	0.6	0.75	mA.
Anode Load ...	400	220	220	k Ω
Stage Gain ...	10.5	11.0	11.0	
§Output Voltage ...	24	30	30	volts (r.m.s.)
Grid Resistor ...				k Ω
(following valve) ...	330	680	680	
§Total Distortion ...	7.6	6.5	5.5	%

CAPACITANCES.

Pentode.

Triode.

C _{in} ...	4.5	2.0	pF.
C _{out} ...	5.0	0.3	pF.
C _{a-g} ...	<0.2	0.9	pF.
C _{g-h} ...	<0.25	<0.05	pF.
C _{g-ap} ...	<0.12		pF.
C _{at-ap} ...	<1.2		pF.
C _{at-gp} ...	<0.2		pF.
C _{gt-gp} ...	<0.2		pF.
C _{h-k} ...	3.7		pF.

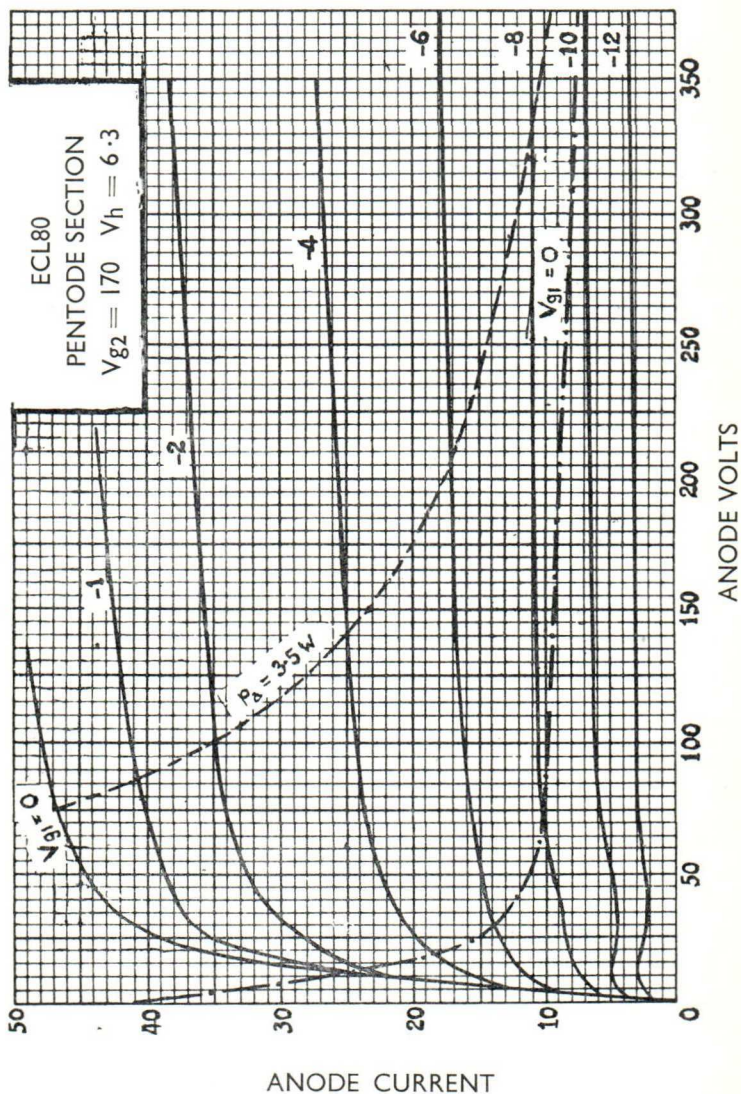
*Screen Feed Resistor 4,700 ohms.

**No Signal.

†Power Output of 50 mW.

‡Total Distortion of 10%.

§Output Voltage and Distortion at the start of positive grid current. At lower output voltages distortion is approximately proportional to the voltage.



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