

ELECTRONIC TUBE REFERENCE

PCL82

Power - Beam (NOT sweep) electronic tube

CONSOLIDATED TECHNICAL DATA
2 SECTIONS
CONSTRUCTION
BEAMPOWER-TRIODE

Triode beam-power valve intended primarily for audio-frequency output service, combining a voltage-amplifying triode with a power-output section for compact receiver audio stages.

GENERAL CHARACTERISTICS

BASE DESIGNATION	9EX	BASE PINS	9
NOMINAL HEATER	16 V / 300 mA	PARALLEL HEATER	– / –
HEATING	Indirect	SERIES OPERATION	Not specified
CATHODE ARRANGEMENT	Separate cathodes	SECTION CONSTRUCTION	Dissimilar

9EX - TERMINAL PINOUT

TERMINAL	SECTION	ELEMENT	STATUS
PIN1	B	G1 – Control Grid	CONNECTED
PIN2	A	G3 – Suppressor Grid	CONNECTED
PIN2	A	K – Cathode	CONNECTED
PIN3	A	G1 – Control Grid	CONNECTED
PIN4	–	H – Heater	CONNECTED
PIN5	–	H – Heater	CONNECTED
PIN6	A	P – Plate (Anode)	CONNECTED
PIN7	A	G2 – Screen Grid	CONNECTED
PIN8	B	K – Cathode	CONNECTED
PIN9	B	P – Plate (Anode)	CONNECTED

SECTION RATINGS

SECTION1 Triode	
PLATE RESISTANCE	40000 Ω
TRANSCONDUCTANCE	0.0022 S
AMPLIFICATION FACTOR	70
MAXIMUM PLATE VOLTAGE	550 V
MAXIMUM PLATE DISSIPATION	1 W
MAXIMUM CATHODE CURRENT	15 mA
<i>Published values promoted where clearly readable; identical repeated sections compressed when applicable.</i>	

SECTION2 Beam Power	
PLATE RESISTANCE	16000 Ω
TRANSCONDUCTANCE	0.0075 S
MAXIMUM PLATE VOLTAGE	550 V
MAXIMUM SCREEN VOLTAGE	250 V
MAXIMUM PLATE DISSIPATION	7 W
MAXIMUM SCREEN DISSIPATION	1.8 W
MAXIMUM CATHODE CURRENT	50 mA
<i>Published ratings and characteristics promoted from the approved English source.</i>	

Triode-pentode for television vertical deflection and audio preamplifier/output stages.

SOURCE OPERATING CONDITIONS

[SOURCE PDF](#)

1958 Brimar Radio Valve No 7

Published test conditions and operating points. Values on this page are preserved as reported by this source.

1958 BRIMAR RADIO VALVE NO 7

Section 1 · Triode

OTHER		
PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Plate Voltage	100 V	TriodeSection
Plate Current	3.5 mA	TriodeSection

CHARACTERISTIC		
PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Transconductance	2500 μ S	TriodeSection
Amplification Factor	70	TriodeSection

1958 BRIMAR RADIO VALVE NO 7

Section 2 · Beam Power

OTHER		
PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Plate Voltage	170 V	PentodeSection
Screen Voltage	170 V	PentodeSection

CHARACTERISTIC		
PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Transconductance	7500 μ S	PentodeSection
Plate Resistance	16000 ohm	PentodeSection
Application	Frame output / sound output	PentodeSection

195X Tesla

Published test conditions and operating points. Values on this page are preserved as reported by this source.

195X TESLA

Section 1 · Triode

CHARACTERISTICS		
PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Heater voltage	16 V	Published nominal value or midpoint of published range
Heater current	300 mA	Published nominal value or midpoint of published range

[SOURCE DATA APPENDIX](#)

1961 Ferranti Technical Handbook

Published test conditions and operating points. Values on this page are preserved as reported by this source.

1961 FERRANTI TECHNICAL HANDBOOK

Section 1 · Triode

CHARACTERISTICS		
PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Heater Voltage	16 V	—
Heater Current	300 mA	—

[SOURCE DATA APPENDIX](#)

1963 Philips Electron Tubes Handbook V1

Published test conditions and operating points. Values on this page are preserved as reported by this source.

1963 PHILIPS ELECTRON TUBES HANDBOOK V1

Section 1 · Triode

OTHER		
PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Plate voltage	100 V	AudioPreamplifier
Control-grid voltage	0 V	AudioPreamplifier
Plate current	3.5 mA	AudioPreamplifier

CHARACTERISTIC		
PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Transconductance	2200 μ S	Section1
Amplification factor	70	Section1

1963 PHILIPS ELECTRON TUBES HANDBOOK V1

Section 2 · Beam Power

OTHER		
PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Plate voltage	170 V	AudioOutput
Screen voltage	170 V	AudioOutput
Control-grid voltage	-11.5 V	AudioOutput
Plate current	41 mA	AudioOutput
Screen current	9 mA	AudioOutput
Peak plate current	85 mA	FrameOutput

CHARACTERISTIC		
PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Transconductance	7500 μ S	Section2
Plate resistance	16000 Ω	Section2
Amplification factor	9.5	Section2



SOURCE DATA APPENDIX

1967 Mullard Receiving and Amplifying Valves

Published test conditions and operating points. Values on this page are preserved as reported by this source.

1967 MULLARD RECEIVING AND AMPLIFYING VALVES

Section 1 · Triode

OTHER		
PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Plate supply voltage	550 V	—
Peak plate voltage	600 V	—

CHARACTERISTIC		
PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Plate voltage	100 V	ClassA
Grid No.1 voltage	0 V	ClassA
Plate current	3.5 mA	ClassA

1967 MULLARD RECEIVING AND AMPLIFYING VALVES

Section 2 · Beam Power

OTHER		
PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Plate supply voltage	550 V	—
Peak plate voltage	2500 V	VerticalDeflection
Plate dissipation	5 W	VerticalDeflection
Plate dissipation	7 W	AudioOutput

CHARACTERISTIC		
PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Plate voltage	200 V	ClassA
Screen-grid voltage	200 V	ClassA
Grid No.1 voltage	-12.5 V	ClassA
Plate current	35 mA	ClassA
Screen-grid current	6.5 mA	ClassA

SOURCE OPERATING CONDITIONS

[SOURCE PDF](#)

1968 Mazda Belvu

Published test conditions and operating points. Values on this page are preserved as reported by this source.

1968 MAZDA BELVU

Section 1 · Triode

OTHER		
PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
HeaterVoltageNominal	16 V	Nominal
HeaterCurrentNominal	300 mA	Nominal
Maximum Plate Voltage	250 V	—
Maximum Plate Dissipation	1 W	—
Maximum Cathode Current	15 mA	—

CHARACTERISTIC		
PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Transconductance	2500 μ S	Typical
Amplification Factor	70	Typical
Plate Resistance	40000 ohm	Typical

1968 MAZDA BELVU

Section 2 · Beam Power

OTHER		
PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
HeaterVoltageNominal	16 V	Nominal
HeaterCurrentNominal	300 mA	Nominal
Maximum Plate Voltage	250 V	—
Maximum Screen Voltage	250 V	—
Maximum Plate Dissipation	7 W	—
Maximum Screen Dissipation	2.5 W	—
Maximum Cathode Current	60 mA	—

CHARACTERISTIC		
PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Transconductance	6400 μ S	Typical
Amplification Factor	9.5	Typical
Plate Resistance	20000 ohm	Typical


SOURCE DATA APPENDIX

SOURCE OPERATING CONDITIONS

[SOURCE PDF](#)

1972 Philips Receiving Tubes

Published test conditions and operating points. Values on this page are preserved as reported by this source.

1972 PHILIPS RECEIVING TUBES

Section 1 · Triode

APPLICATION		
PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Application	Frame0scillator_AFamplifier text	—

1972 PHILIPS RECEIVING TUBES

Section 2 · Beam Power

OTHER		
PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Power Output	3.3 W	ClassA;OneTube;AFPowrAmplifier


SOURCE DATA APPENDIX

SOURCE OPERATING CONDITIONS

[SOURCE PDF](#)

1973 Mazda Valves Binder 2

Published test conditions and operating points. Values on this page are preserved as reported by this source.

1973 MAZDA VALVES BINDER 2

Section 1 · Triode

OTHER		
PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Heater Current i_h	3 A	—
Heater Voltage V_h	16 V	—
Maximum Screen Grid Dissipation $p_{g2(max)}$ —	1.8 W	—
Maximum Anode Supply Voltage ($i_a=0$) $V_{a(b)max}$ 550	550 V	—
Maximum Anode Voltage $V_{a(max)}$ 250	250 V	—
Maximum Screen Grid Supply Voltage ($i_{g2}=0$) $V_{g2(b)max}$ —	550 V	—
Maximum Screen Grid Voltage $V_{g2(max)}$ —	250 V	—
Maximum Mean Cathode Current $i_{k(av)max}$ 15	50 mA	—
* Maximum pulse duration 4 per cent, of one cycle with a maximum of	800 μs	—
t Maximum pulse duration	200 μs	—
Grid Triode to Heater C_{gt_h} 0 018 0 031 0	42 pF	—
Grid 1 to Heater c_{g1_h} 024 038	71 pF	—

CHARACTERISTIC		
PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
For $V_a \sim 250V$ 10	70 W	—
For $V_a > 250V$ —	50 W	—
For speech and music —	32 W	—
Pulse Negative —	500 V	—
Tetrode Input $C_{in(q)}$ 93 96	107 pF	—
Tetrode 'Output $C_{out(q)}$ 90 93	104 pF	—
Tetrode Anode to Grid 1 c_{aq_gi} 035 0.37	38 pF	—
Triode Input $C_{in(t)}$ 30 32	4.1 pF	—

PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Triode Output Cout(t) 43 45	54 pF	—
Grid Triode to Anode Triode Cgt~ t 42 43	44 pF	—
Anode Tetrode to Anode Triode Cag_at 0.15 0.18	0.19 pF	—
Grid 1 to Grid Triode Cg1_gt 0 011 0 030 0	63 pF	—
Grid 1 to Anode Triode Cg1_at 0 017 0 023 0	28 pF	—
Grid Triode to Anode Tetrode Cgt_aq 0 014 0 020 0	22 pF	—
Anode Voltage Va 100	200 V	—
Screen Grid Voltage Vg2	200 V	—
Anode Current Ia 3.5	35 mA	—
Screen Grid Current Ig2 —	7 mA	—
Control Grid Voltage Vg1 0 —	16 V	—
Mutual Conductance gm 2.5	6.4 mA	—
Anode Voltage Va 170	200 V	—
Screen Grid Voltage Vg2 170	200 V	—
Grid Bias Voltage Vg -11.5 —	16 V	—
Quiescent Anode Current Ia(o) 41	35 mA	—
Quiescent Screen Grid Current Ig2(o) 8	7 mA	—
Power Output for 10 per cent, total distortion Pout 3.3	3.5 W	—
Input Swing Voltage (R.M.S.) Vin(r.m.s.) 6	6.6 V	—
Input Swing for 50mW output (R.M.S.) 0.59	0.6 V	—



1975 RCA RC30

Published test conditions and operating points. Values on this page are preserved as reported by this source.

1975 RCA RC30

Section 1 · Triode

OTHER		
PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Plate supply voltage	550 V	—
Peak plate voltage	600 V	—

CHARACTERISTIC		
PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Plate voltage	100 V	ClassA
Grid No.1 voltage	0 V	ClassA
Plate current	3.5 mA	ClassA

1975 RCA RC30

Section 2 · Beam Power

OTHER		
PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Plate supply voltage	550 V	—
Peak plate voltage	2500 V	VerticalDeflection
Plate dissipation	5 W	VerticalDeflection
Plate dissipation	7 W	AudioOutput

CHARACTERISTIC		
PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Plate voltage	200 V	ClassA
Screen-grid voltage	200 V	ClassA
Grid No.1 voltage	-12.5 V	ClassA
Plate current	35 mA	ClassA
Screen-grid current	6.5 mA	ClassA

SOURCE OPERATING CONDITIONS

[SOURCE PDF](#)

1999 Philips E-Z

Published test conditions and operating points. Values on this page are preserved as reported by this source.

1999 PHILIPS E-Z

Section 1 · Triode

CHARACTERISTIC		
PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Anode current I_y	3.5 mA	—
Transconductance S	2.2 mA/V	—
Anode voltage V_a	100 V	—
Anode current I_y 0.52	0.43 mA	—
B. Signal source resistance R_g	0.22 M Ω	—
Anode current I_y 1.05 0.61 0.86	0.5 mA	—
of [1]	50 mW	—
of [2]	50 Hz	—
pin 4 and cathode should not exceed	6.3 V	—
peak I_{kp} max	100 mA	—
for automatic bias R_g max	3 M Ω	—
Grid impedance at S [1]	0 Hz	—
Grid impedance at S [2]	0.5 M Ω	—
Cathode to heater voltage V_{is} max	200 V	—
ne	7 W	—
18 e ℓ }hf L -] V_{oa}	170 V	—
$V_{.} - y A-$	2.5 V	—
yd	-3 V	—
0 i~ - Lt s	4 V	—

CAPACITANCE		
PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Anode to all except grid Ca(g)	4.3 pF	—
Grid to all except anode Cg(a)	2.7 pF	—
Anode to grid Cag	4.4 pF	—
Grid to heater Cpf max	0.02 pF	—

OTHER		
PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
A. Signal source resistance Rg	0.22 MΩ	—
Supply voltage Vb 200	170 V	—
Anode voltage Vao max	550 V	—
Va max	250 V	—
Cathode current, average I max	15 mA	—

1999 PHILIPS E-Z

Section 2 · Beam Power

CHARACTERISTIC		
PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Anode peak voltage Vap max	2.5 kV	—
Anode current I _a	41 mA	—
Transconductance S	7.5 mA/V	—
Output power W _a	3.3 W	—
Heater current I _h	300 mA	—
Heater voltage Vs	16 V	—
Grid No.1 to all except anode Cgi(a)	9.3 pF	—
Anode to grid No.1 Cag max	0.3 pF	—
Grid No.1 to heater Cglf max	0.3 pF	—
Anode triode to grid No.1 pentode CaTglP max	0.02 pF	—
Grid triode to anode pentode CgTaP max	0.02 pF	—

PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Grid triode to grid No.1 pentode CgTgP max	0.025 pF	—
Anode triode to anode pentode CaTaP max	0.25 pF	—
Anode voltage Va	170 V	—
Grid No.1 voltage Vgl	~11.5 V	—
Grid No.2 current Igz	9 mA	—
is	0.8 pF	—
Anode current Ia 42 - 44 35 - 37 30	31 mA	—
Grid No.2 current 9.2 - 15,5 7.8 - 13.3 6.6	11 mA	—
Output power W0 00.05 3.2 00.05 3.3 0 0.05	3.25 W	—
Anode current I 2x35 2x42.5 2x30 2x	34.5 mA	—
Grid No.2 current Ig2 2x8 2x16.5 2x6.2 2x	13.5 mA	—
Cutput power Wo 0 9.3 0	10 W	—
The circuit should operate satisfactorily with peak anode current I3,	85 mA	—
at vV, [1]	50 V	—
at vV, [2]	170 V	—
at vV, [3]	300 mA	—
Anode voltage Vao max	550 V	—
Va max	250 V	—
Anode peak voltage, positive Vap max	2.5 kV	—
negative -Vap max	500 V	—
Grid No.2 voltage Vg20 max	550 V	—
Vg max	250 V	—
for frame output application W, max	5 W	—
for A.F. output application Wy max	7 W	—
average Wg2 max	1.8 W	—

PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
application (W4 max [1])	4 W	—
application (W4 max [2])	2 W	—
peak WgZp max	3.2 W	—
Cathode current I max	50 mA	—
Grid No.1 resistor, for fixed bias Rgl max	1 MΩ	—
for automatic bias Rgl max	2 MΩ	—
Cathode to heater voltage Vif __max	200 V	—

CAPACITANCE		
PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Anode to all except grid No.1 Ca(gl)	8 pF	—