



ELECTRONIC TUBE REFERENCE

PCL86

Power - Beam (NOT sweep) electronic tube

CONSOLIDATED TECHNICAL DATA

2 SECTIONS

CONSTRUCTION

BEAMPOWER-TRIODE

Triode beam-power combination valve designed for audio-frequency amplification, integrating a voltage-amplifier triode with a beam-power output stage in one envelope.

GENERAL CHARACTERISTICS

BASE DESIGNATION	B9A	BASE PINS	9
NOMINAL HEATER	13.3 V / 300 mA	PARALLEL HEATER	– / –
HEATING	Indirect	SERIES OPERATION	Not specified
CATHODE ARRANGEMENT	Separate cathodes	SECTION CONSTRUCTION	Dissimilar

SECTION RATINGS

SECTION1 Triode	
PLATE RESISTANCE	50000 Ω
TRANSCONDUCTANCE	0.0016 S
AMPLIFICATION FACTOR	100
MAXIMUM PLATE VOLTAGE	300 V
MAXIMUM PLATE DISSIPATION	0.5 W
MAXIMUM CATHODE CURRENT	4 mA
<i>Published ratings and characteristics promoted where clearly stated; identical repeated sections compressed when applicable.</i>	

SECTION2 Beam Power	
PLATE RESISTANCE	45000 Ω
TRANSCONDUCTANCE	0.0105 S
MAXIMUM PLATE VOLTAGE	300 V
MAXIMUM SCREEN VOLTAGE	300 V
MAXIMUM PLATE DISSIPATION	9 W
MAXIMUM SCREEN DISSIPATION	1.8 W
MAXIMUM CATHODE CURRENT	55 mA
<i>Published ratings and characteristics promoted where clearly stated; identical repeated sections compressed when applicable.</i>	

Triode-pentode for high-quality audio voltage amplification and output-power stages.

SOURCE OPERATING CONDITIONS

[SOURCE PDF](#)

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	230 V	AudioPreamplifier
Control-grid voltage	-1.7 V	AudioPreamplifier
Plate current	1.2 mA	AudioPreamplifier

CHARACTERISTIC		
PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Transconductance	1600 μ S	Section1
Amplification factor	100	Section1

1963 PHILIPS ELECTRON TUBES HANDBOOK V1

Section 2 · Beam Power

OTHER		
PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Plate voltage	230 V	AudioOutput
Screen voltage	230 V	AudioOutput
Control-grid voltage	-5.7 V	AudioOutput
Plate current	39 mA	AudioOutput
Screen current	6.5 mA	AudioOutput

CHARACTERISTIC		
PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Transconductance	10500 μ S	Section2
Plate resistance	45000 Ω	Section2
Amplification factor	21	Section2

SOURCE OPERATING CONDITIONS

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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	13.3 V	Nominal
HeaterCurrentNominal	300 mA	Nominal
Maximum Plate Voltage	250 V	—
Maximum Plate Dissipation	1 W	—
Maximum Cathode Current	12 mA	—

CHARACTERISTIC		
PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Transconductance	1600 μ S	Typical
Amplification Factor	100	Typical
Plate Resistance	50000 ohm	Typical

1968 MAZDA BELVU

Section 2 · Beam Power

OTHER		
PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
HeaterVoltageNominal	13.3 V	Nominal
HeaterCurrentNominal	300 mA	Nominal
Maximum Plate Voltage	250 V	—
Maximum Screen Voltage	250 V	—
Maximum Plate Dissipation	9 W	—
Maximum Screen Dissipation	2.5 W	—
Maximum Cathode Current	65 mA	—

CHARACTERISTIC		
PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Transconductance	10000 μ S	Typical
Amplification Factor	10	Typical
Plate Resistance	20000 ohm	Typical



SOURCE DATA APPENDIX

SOURCE OPERATING CONDITIONS

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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

CHARACTERISTICS		
PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Heater voltage	13.3 V	Published nominal value
Heater current	300 mA	Published nominal value
Transconductance	1600 μ S	Published operating characteristic

OTHER		
PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Maximum plate dissipation	0.5 W	Published maximum rating
Audio output power	4.1 W	Published quick-reference value

1972 PHILIPS RECEIVING TUBES

Section 2 · Beam Power

CHARACTERISTICS		
PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Heater voltage	13.3 V	Published nominal value
Heater current	300 mA	Published nominal value
Transconductance	10500 μ S	Published operating characteristic

OTHER		
PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Maximum plate dissipation	9 W	Published maximum rating

SOURCE OPERATING CONDITIONS

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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	13.6 V	—
Maximum Anode Dissipation $p_{a(max)} \ 05$	90 W	—
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 Heater to Cathode Voltage $V_{h-k(max)} \ 100$	100 V	—
Maximum Cathode Current $I_{k(max)} \ +0$	55 mA	—
Grid 1 to Heater $c_{g1_h} <$	24 pF	—
Grid Triode to Heater c_{gt_h} <	6 pF	—
Supply Voltage $V_b \ 170 \ 170$ $170 \ 230 \ 230$	230 V	—

CHARACTERISTIC		
PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
For speech and music —	30 W	—

PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Pentode Input Cin(p)	10 pF	—
Grid 1 to Anode Pentode Cgl_ap <	0.4 pF	—
Triode Input Cin(t)	23 pF	—
Triode Output Cout(t)	2.5 pF	—
Grid Triode to Anode Triode Cgt-ac	1.4 pF	—
Grid Triode to Grid 1 cgt_gt <	2 pF	—
Grid Triode to Anode Pentode Cgt-ap <	6 pF	—
Anode Triode to Anode Pentode Cat-ap <	0.15 pF	—
Anode Triode to Grid 1 cat_gl <	0.2 pF	—
Anode Voltage Va 230	230 V	—
Screen Grid Voltage Vga –	230 V	—
Control Grid Voltage Vgl –17 –	57 V	—
Anode Current Ia 1.2	39 mA	—
Screen Grid Current IgQ –	65 mA	—
Mutual Conductance gm 16	10.5 mA	—
Anode Voltage Va 200	230 V	—
Screen Grid Voltage Vg, 200	230 V	—
Quiescent Anode Current Ia(o> 35	39 mA	—
Current Igs(o> 6.0	65 mA	—
Input Voltage (R.M.S.) Vinir.m.,.> 32	36 V	—
50mW output 029	3 V	—
Power Output Pout 31	41 W	—
Anode Current Ia 082 0.58 037 137 09	57 mA	—
5% total distortion 9 13 15 15 22	26 V	—
5% total distortion* 11 16 21 18 26	33 V	—

PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Vg =	230 V	—
u Pa max	-0.5 W	—



SOURCE DATA APPENDIX

SOURCE OPERATING CONDITIONS

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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 Ia	1.2 mA	—
Transconductance S	1.6 mA/V	—
Anode voltage vV,	230 V	—
Anode current L	1.2 mA	—
Anode current I 0.42 0.52 0.42	0.52 mA	—
effect in circuits in which an output of	50 mW	—
Input voltage minimum 10 mVRpg for	50 mW	—
Grid circuit impedance max. 0.5 M at	50 Hz	—
150 We	9 W	—
Vo	200 V	—
Vo= i T —	2 V	—
50 b	4 V	—
_4Vfl; I & E =t	6 V	—
Wo [1]	9 W	—
Wo [2]	1 %	—
Wo [3]	230 V	—
mEmr Y HEFEE	-2 V	—

PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
%9 Y	200 V	—
I (ma) Vg,	230 V	—
d(%) g,	-57 V	—

CAPACITANCE		
PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Anode to all except grid Ca(g)	2.5 pF	—
Grid to all except anode Cga)	2.3 pF	—
Anode to grid Cag	1.4 pF	—
Grid to heater Cgf max	0.006 pF	—
Cathode decoupling capacitor minimum	100 pF	—

OTHER		
PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Supply voltage Vp 200 230 200	230 V	—
Va max	300 V	—
Anode dissipation W, max	0.5 W	—
Cathode current Ik max	4 mA	—

1999 PHILIPS E-Z

Section 2 · Beam Power

CHARACTERISTIC		
PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Anode current Iy	39 mA	—
Transconductance S	10.5 mA/V	—
Output power Wo	4.1 W	—
Heater current Ig	300 mA	—
Heater voltage Vi	13.3 V	—
1 to all except anode Cgl(a)	10 pF	—
1 Cagl max	0.4 pF	—
Grid No.1 to heater Cglf max	0.24 pF	—

PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Anode triode to grid No.1 pentode CaTglP max	0.2 pF	—
Grid triode to grid No.1 pentode gTE P max.,	0.02 pF	—
Anode triode to anode pentode CaTaP max	0.15 pF	—
Grid triode to anode pentode CgTaP max	0.006 pF	—
Anode voltage Va	230 V	—
Grid No.1 voltage Vgl	-5.7 V	—
Grid No.2 current Igz	6.5 nA	—
Anode current Iy 35 - 34 39	40.7 mA	ClassA
Grid No.2 current Ig2 6.0 - 9.0 6.5	10.5 mA	—
Output power W, 0 0.05 3.1 0 0.05	4.1 W	—
Anode voltage Va, max	550 V	—
Grid No. 2 voltage Vg20 max	550 V	—
Vg2 max	300 V	—
Anode dissipation Wy max	9 W	—
Grid No. 2 dissipation, average Wg2 max	1.8 W	—
peak Wgzp max	3.25 W	—
Cathode current Iy max	55 mA	—
Grid No. 1 resistor, for automatic bias Rgl max	1 MΩ	—
to a maximum of	10 MΩ	—
1. Vo= Vpp	230 V	—

CAPACITANCE		
PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
duced toa value of less than	0.002 pF	—

OTHER		
PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Grid No. 2 voltage Vgz 200	230 V	ClassA

PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
(Grid No. 1 voltage) Vg1 -4.7	-5.7 V	ClassA

TUBE TINKER

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