

ELECTRONIC TUBE REFERENCE

PCL84

Voltage - Triode Pentode electronic tube

CONSOLIDATED TECHNICAL DATA

2 SECTIONS

CONSTRUCTION

PENTODE-TRIODE

Triode-pentode designed for television synchronization and video-output service, combining signal-processing and output functions in one envelope.

GENERAL CHARACTERISTICS

BASE DESIGNATION	9HX	BASE PINS	9
NOMINAL HEATER	15 V / 300 mA	PARALLEL HEATER	– / –
HEATING	Indirect	SERIES OPERATION	Not specified
CATHODE ARRANGEMENT	Separate cathodes	SECTION CONSTRUCTION	Dissimilar

9HX - TERMINAL PINOUT

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

SECTION RATINGS

SECTION1 Triode	
PLATE RESISTANCE	20000 Ω
TRANSCONDUCTANCE	0.004 S
AMPLIFICATION FACTOR	65
MAXIMUM PLATE VOLTAGE	300 V
MAXIMUM PLATE DISSIPATION	1 W
MAXIMUM CATHODE CURRENT	12 mA
<i>Published values promoted where clearly readable; identical repeated sections compressed when applicable.</i>	

SECTION2 Pentode	
PLATE RESISTANCE	130000 Ω
TRANSCONDUCTANCE	0.011 S
MAXIMUM PLATE VOLTAGE	300 V
MAXIMUM SCREEN VOLTAGE	250 V
MAXIMUM PLATE DISSIPATION	4 W
MAXIMUM SCREEN DISSIPATION	1.7 W
MAXIMUM CATHODE CURRENT	40 mA
<i>Published ratings and characteristics promoted where clearly stated; identical repeated sections compressed when applicable.</i>	

Triode-pentode for television synchronization and video-output service.



SOURCE OPERATING CONDITIONS

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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

CHARACTERISTIC		
PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Application	Cathode follower / oscillator	TriodeSection

1958 BRIMAR RADIO VALVE NO 7

Section 2 · Pentode

CHARACTERISTIC		
PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Application	Video amplifier	PentodeSection

OTHER		
PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Maximum Plate Dissipation	4 W	PentodeSection



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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	15 V	Published nominal value or midpoint of published range

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



SOURCE DATA APPENDIX

SOURCE OPERATING CONDITIONS

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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	200 V	TriodeSection
Control-grid voltage	-1.7 V	TriodeSection
Plate current	3 mA	TriodeSection

CHARACTERISTIC		
PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Transconductance	4000 μ S	Section1
Amplification factor	65	Section1

1963 PHILIPS ELECTRON TUBES HANDBOOK V1

Section 2 · Pentode

OTHER		
PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Plate voltage	200 V	VideoOutput
Screen voltage	200 V	VideoOutput
Control-grid voltage	-2.9 V	VideoOutput
Plate current	18 mA	VideoOutput
Screen current	3 mA	VideoOutput

CHARACTERISTIC		
PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Transconductance	10400 μ S	Section2
Plate resistance	130000 Ω	Section2
Amplification factor	36	Section2



SOURCE DATA APPENDIX

SOURCE OPERATING CONDITIONS

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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	—

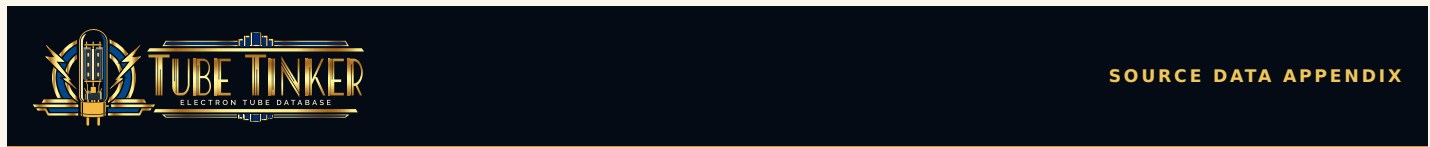
CHARACTERISTIC		
PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Plate voltage	200 V	ClassA
Grid No.1 voltage	-1.7 V	ClassA
Plate current	3 mA	ClassA

1967 MULLARD RECEIVING AND AMPLIFYING VALVES

Section 2 · Pentode

OTHER		
PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Plate supply voltage	650 V	—
Screen-grid supply voltage	550 V	—
Plate voltage	170 V	VideoOutput
Screen-grid voltage	170 V	VideoOutput
Grid No.1 voltage	-2.1 V	VideoOutput

PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Plate current	18 mA	VideoOutput
Screen-grid current	3.2 mA	VideoOutput
Series plate resistor	3000 ohm	VideoOutput



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	15 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	4500 μ S	Typical
Amplification Factor	65	Typical
Plate Resistance	20000 ohm	Typical

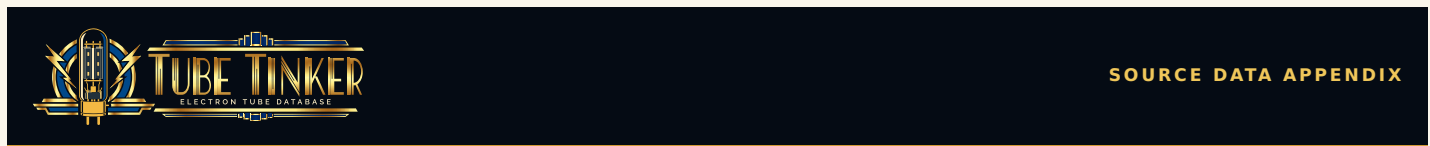
1968 MAZDA BELVU

Section 2 · Pentode

OTHER		
PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
HeaterVoltageNominal	15 V	Nominal
HeaterCurrentNominal	300 mA	Nominal
Maximum Plate Voltage	250 V	—
Maximum Screen Voltage	250 V	—

PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Maximum Plate Dissipation	4 W	—
Maximum Screen Dissipation	1.7 W	—
Maximum Cathode Current	40 mA	—

CHARACTERISTIC		
PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Transconductance	10500 μ S	Typical
Plate Resistance	18000 ohm	Typical



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	15 V	Published nominal value
Heater current	300 mA	Published nominal value
Transconductance	4000 μ S	Published operating characteristic

OTHER		
PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Maximum plate dissipation	1 W	Published maximum rating
Maximum triode peak anode voltage	600 V	Pulse duration $\leq$ 18% cycle, max 18 us

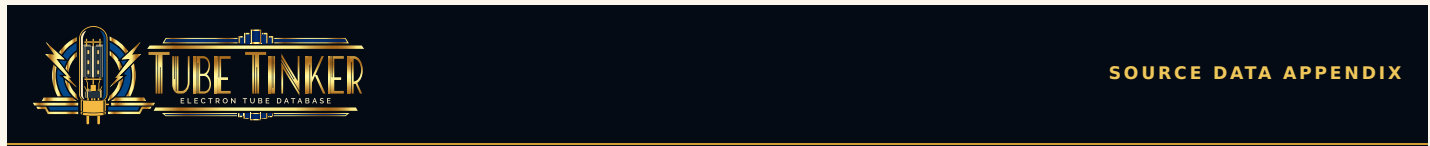
1972 PHILIPS RECEIVING TUBES

Section 2 · Pentode

CHARACTERISTICS		
PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Heater voltage	15 V	Published nominal value
Heater current	300 mA	Published nominal value

PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Transconductance	11000 μ S	Published operating characteristic

OTHER		
PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Maximum plate dissipation	4 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 Ih	3 A	—
Heater Voltage Vh	15 V	—
Maximum Anode Dissipation pa(max) 1	4 W	—
Maximum Screen Grid Dissipation p82(max) —	17 W	—
Maximum Anode Supply Voltage Va(b)max 550	550 V	—
Maximum Anode Voltage Va(max) 250*	250 V	—
Maximum Screen Grid Supply Voltage V\$2 (b)max —	550 V	—
Maximum Screen Grid Voltage Vg2(max) —	250 V	—
(Heater Positive) Vh-k(max) 150	200 V	—
(Heater Negative) Vh-k(max) 350t	200 V	—
Maximum Cathode Current Ik(max) 12\$	40 mA	—

PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
* Maximum peak anode voltage (l a <01mA) =	600 V	—
t Maximum D.C. component =	200 V	—
\$ Maximum peak cathode current = 160mA for maximum pulse duration =	800 μs	—
Grid Triode to Heater Cgt-h <	1 pF	—

CHARACTERISTIC		
PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Pentode Input Cin(p)	87 pF	—
Pentode Output Cout(p)	42 pF	—
Grid 1 to Anode Pentode Cg1-ap <	1 pF	—
Triode Input Cin(t)	38 pF	—
Triode Output COUL(t)	23 pF	—
Anode Triode to Grid Triode Cat-gt	27 pF	—
Grid Triode to Grid 1 Cgt-gl <	1 pF	—
Anode Triode to Grid 1 cat-gl <	1 pF	—
Anode Voltage Va 200 170 200	220 V	—
Screen Grid Voltage VS2 - 170 200	220 V	—
Control Grid Voltage V85 -17 -21 -2.9 -3	4 V	—
Anode Current Ia 3 18 18	18 mA	—
Screen Grid Current I82 - 3 3	3 mA	—
Mutual Conductance gm 4 11 104	10 mA	—
I111:7Na:J1	1 a	—
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SOURCE OPERATING CONDITIONS

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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	200 V	ClassA
Grid No.1 voltage	-1.7 V	ClassA
Plate current	3 mA	ClassA

1975 RCA RC30

Section 2 · Pentode

OTHER		
PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Plate supply voltage	650 V	—
Screen-grid supply voltage	550 V	—
Plate voltage	170 V	VideoOutput
Screen-grid voltage	170 V	VideoOutput
Grid No.1 voltage	-2.1 V	VideoOutput
Plate current	18 mA	VideoOutput
Screen-grid current	3.2 mA	VideoOutput
Series plate resistor	3000 ohm	VideoOutput

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

OTHER		
PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Chauffage: indirect par C.A. ou C.C. Ir	300 mA	—
Va, = max	550 V	—
Va = max	250 V	—
Vap = max	400 V	—
Ik = max	12 mA	—
Vi (x neg.; f pos.) = max	150 V	—
Va, = max. +	550 V	—
Va = max. +	250 V	—
Vap (Ia [1])	< 0.1 mA	—
Vap (Ia [2])	600 V	—
Wa = max	1 W	—
Ik = maX	12 mA	—
Vkr (x neg.; f pos.) = max	150 V	—

CHARACTERISTIC		
PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
alimentation série Vp	157 V	—
CaTg1P	< 0.01 pF	—
alimentation série Ve	15 V	—
Vs	200 V	—
Vg	-1.7 V	—
Ia	3 mA	—
Vg (Ig = 40,3 pa)	1.3 V	—
Va	200 V	—
Vg	1.7 V	—

PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
I3	3 mA	—
Vg (Ig = +0,3 pa)	1.3 V	—
Vkf (k pos.; f neg.) = max,	200 V	—
Vo	200 V	—

CAPACITANCE		
PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Cg [1]	4 pF	—
Cg [2]	9 pF	—
Ca = 2,3 DF Ca	4.5 pF	—
Cag	2.7 pF	—
Cgr ϕ [1]	0.1 pF	—
Cgr ϕ [2]	0.1 pF	—

1999 PHILIPS E-Z

Section 2 · Pentode

CAPACITANCE		
PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Cg [1]	3.8 pF	—
Cg [2]	8.7 pF	—
Ca = 2,3 DF Ca	4.2 pF	—
Cag [1]	2.7 pF	—
Cag [2]	0.1 pF	—

CHARACTERISTIC		
PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Va = 170 200	220 V	—
Vg2 = 170 200	220 V	—
Vg1 = ~241 =259	34 V	—
Ia = 18 18	18 mA	—
— Ri > 100 130	150 k Ω	—
Vg] = '2,1 ~2,9	-3.4 V	—
Vit = max,	200 V	—
Rg1 = max.,	2 M Ω	—

PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
V _{kr} = max	200 V	—

OTHER		
PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
V _g = -2 2,8	~3.3 V	—
I _a = 18 18	18 mA	—
S = 10,4 10,0	9.7 mA	—
V _p = V _{gQ} = 170 200	220 V	—
R _a = 3 3	3 kΩ	—
V _{g1} = -2 ~2,8 =3	3 V	—
I _{g2} = 3,2 3,1	3.1 nA	—
S = 10,4 10,0	9.7 mA/V	—
V _{ag} = max	550 V	—
V _a = max,	250 V	—
W _a = Max. ,	4 W	—
V _{g2} , = max	550 V	—
V _{g2} = max,	250 V	—
H _{go} = max	1.7 W	—
I _g = max. ,	40 mA	—
R _{e1} = max	1 MΩ	—
V _a = max	250 V	—
W _a = max	4 W	—
V _{g2} , =max,	550 V	—
V _{g2} = max	250 V	—
W _{go} = max	1.7 W	—
I _y = max	40 mA	—

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