

ELECTRONIC TUBE REFERENCE

EL86

Power - TV Vertical Output electronic tube

CONSOLIDATED TECHNICAL DATA

1 SECTION
CONSTRUCTION
PENTODE

Power pentode designed for vertical-deflection amplifier service in color and black-and-white television receivers. Its output capability supplies the current and voltage swing required by vertical scanning circuits.

GENERAL CHARACTERISTICS

BASE DESIGNATION	9CV	BASE PINS	9
NOMINAL HEATER	6.3 V / 760 mA	PARALLEL HEATER	– / –
HEATING	Indirect	SERIES OPERATION	Not specified
CATHODE ARRANGEMENT	Separate cathodes	SECTION CONSTRUCTION	Similar

9CV - TERMINAL PINOUT

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

SECTION RATINGS

SECTION1 Pentode	
PLATE RESISTANCE	23000 Ω
TRANSCONDUCTANCE	0.01 S
AMPLIFICATION FACTOR	8
MAXIMUM PLATE VOLTAGE	250 V
MAXIMUM SCREEN VOLTAGE	200 V
MAXIMUM PLATE DISSIPATION	12 W
MAXIMUM SCREEN DISSIPATION	1.75 W
MAXIMUM CATHODE CURRENT	100 mA
<i>Promoted ratings and characteristics are taken from the printed target-tube entry in the approved PDF.</i>	

Power pentode used for vertical-deflection amplifier service in color and black-and-white television receivers.



SOURCE OPERATING CONDITIONS

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1953 La Radiotechnique

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

1953 LA RADIOTECHNIQUE

Section 1 · Pentode

CHARACTERISTICS

PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Heater voltage	6.3 V	Published nominal value
Heater current	760 mA	Published nominal value
Transconductance	10000 μ S	Published typical/nominal value



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195X Tesla

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195X TESLA

Section 1 · Pentode

CHARACTERISTICS

PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Heater voltage	6.3 V	Published nominal value
Heater current	760 mA	Published nominal value



1963 Amperex Condensed

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1963 AMPEREX CONDENSED

Section 1 · Pentode

OTHER		
PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Plate voltage	250 V	AudioOutput
Screen voltage	200 V	AudioOutput
Control-grid voltage	-18.5 V	AudioOutput
Plate current	70 mA	AudioOutput
Screen current	17 mA	AudioOutput
Power output	25 W	AudioOutput;PushPull;TwoTubes
Load resistance plate-to-plate	8000 Ω	AudioOutput;PushPull;TwoTubes

CHARACTERISTIC		
PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Transconductance	10000 μS	Section1



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1963 Mullard

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1963 MULLARD

Section 1 · Pentode

CHARACTERISTIC		
PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
HeaterOrFilamentVoltage	6.3 V	—
HeaterOrFilamentCurrent	760 mA	—
Input Capacitance	13 pF	—
Output Capacitance	6.8 pF	—

PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
PlateToGridCapacitanceMax	0.6 pF	—
Plate Voltage	170 V	—
Screen Voltage	170 V	—
Grid Voltage	-12.5 V	—
Plate Current	70 mA	—
Transconductance	11 mA/V	—
Plate Resistance	26 kohm	—

OTHER		
PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Power Output	5.3 W	ClassA;PlateVoltage=200V


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1963 Philips Electron Tubes Handbook V1a

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

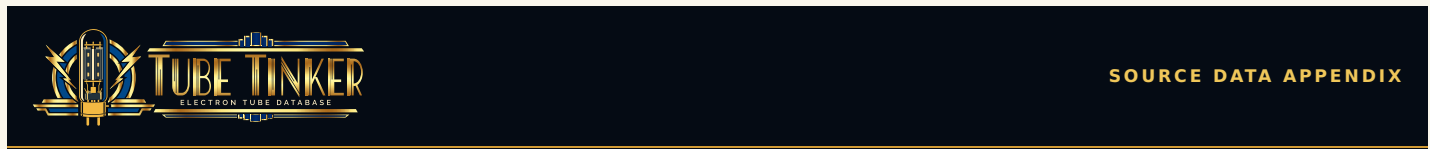
1963 PHILIPS ELECTRON TUBES HANDBOOK V1A

Section 1 · Pentode

CHARACTERISTIC		
PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Heater voltage	6.3 V	Published heater rating
Heater current	760 mA	Published heater rating
Transconductance	11000 μ S	CharacteristicPoint
Plate resistance	26000 ohm	CharacteristicPoint

OTHER		
PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Plate voltage	170 V	CharacteristicPoint
Screen voltage	170 V	CharacteristicPoint
Grid bias	-12.5 V	CharacteristicPoint

PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Plate current	70 mA	CharacteristicPoint
Screen current	3.5 mA	CharacteristicPoint
Power output	5.3 W	ClassA OneTube



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1967 Mullard Receiving Tubes for Maintenance

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1967 MULLARD RECEIVING TUBES FOR MAINTENANCE

Section 1 · Pentode

CAPACITANCE		
PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Cin	13 pF	CAPACITANCES (measured without an external shield)

CHARACTERISTIC		
PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Va	170 V	CHARACTERISTICS
) Vg2	170 V	CHARACTERISTICS
Vg1	-12.5 V	CHARACTERISTICS
gm	11	CHARACTERISTICS
ra	26	CHARACTERISTICS
Vg	1.3 V	CHARACTERISTICS
Vg	-12.5 V	CHARACTERISTICS
gm	12	CHARACTERISTICS
) ra	665	CHARACTERISTICS

OTHER		
PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Vg2(b)	200 V	OPERATING CONDITIONS AS SINGLE VALVE CLASS 'A'

PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Ra	2.5	OPERATING CONDITIONS AS SINGLE VALV E CLASS 'A'
Va- k	250 V	OPERATING CONDITIONS FOR TWO VALVES IN CLASS 'AB'
Vg	200 V	OPERATING CONDITIONS FOR TWO VALVES IN CLASS 'AB'
Rk (per valve)	0	OPERATING CONDITIONS FOR TWO VALVES IN CLASS 'AB'
Va- e	250 V	OPERATING CONDITIONS FOR TWO VALVES IN CLASS 'AB'
Vg	250 V	OPERATING CONDITIONS FOR TWO VALVES IN CLASS 'AB'
Va(b) max	550 V	LIMITING VALUES
Va+ g	250 V	LIMITING VALUES
Vg	550 V	LIMITING VALUES
Vg	250 V	LIMITING VALUES



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1972 Philips Receiving Tubes

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1972 PHILIPS RECEIVING TUBES

Section 1 · Pentode

CHARACTERISTICS		
PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Heater voltage	6.3 V	Published nominal value
Heater current	760 mA	Published nominal value

OTHER		
PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Maximum plate dissipation	12 W	Published or referenced maximum rating
Maximum peak anode voltage	2 kV	Frame-output pulse service
Audio output power	5.3 W	Published quick-reference value

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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 · Pentode

OTHER		
PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Heater Voltage (ac/dc) 8 10.6	15 V	Published in approved XL86 target datasheet entry; Section1
Heater Current 0.76 0.6 0.45	300 mA	Published in approved XL86 target datasheet entry; Section1
Plate Supply Voltage	600 V	Published in approved XL86 target datasheet entry; Section1
Grid-No.2 Voltage	220 V	Published in approved XL86 target datasheet entry; Section1
Grid-No.2 (Screen-Grid) Supply Voltage	600 V	Published in approved XL86 target datasheet entry; Section1
Grid-No.2 Input	2.1 W	Published in approved XL86 target datasheet entry; Section1
Peak Grid-No.2 Input	7 W	Published in approved XL86 target datasheet entry; Section1
Plate Voltage	170 V	Published in approved XL86 target datasheet entry; Section1
Grid-No.1-Circuit Resistance	1 MΩ	Published in approved XL86 target datasheet entry; Section1
Plate Voltage	275 V	Published in approved XL86 target datasheet entry; Section1
Peak Positive-Pulse Plate Voltage#	2200 V	Published in approved XL86 target datasheet entry; Section1
Grid-No.2 Voltage	275 V	Published in approved XL86 target datasheet entry; Section1

CAPACITANCE		
PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Grid No.1 to Plate	0.6 pF	Published in approved XL86 target datasheet entry; Section1
Grid No.1 to Cathode, Heater, Grid No.2, and Grid No.3	13 pF	Published in approved XL86 target datasheet entry; Section1
Plate to Cathode, Heater, Grid No.2, and Grid No.3	6.8 pF	Published in approved XL86 target datasheet entry; Section1

CHARACTERISTIC		
PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Grid-No.2 Voltage	170 V	Published in approved XL86 target datasheet entry; Section1
Grid-No.1 (Control-Grid) Voltage	12.5 V	Published in approved XL86 target datasheet entry; Section1
Plate Resistance	26000 Ω	Published in approved XL86 target datasheet entry; Section1
Transconductance	11000 μ S	Published in approved XL86 target datasheet entry; Section1
Plate Current	70 mA	Published in approved XL86 target datasheet entry; Section1
Grid-No.2 Current	3.5 mA	Published in approved XL86 target datasheet entry; Section1



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1981 Russian Tubes Katsnelson and Larionov

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1981 RUSSIAN TUBES KATSNELSON AND LARIONOV

Section 1 · Pentode

CHARACTERISTIC		
PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Heater voltage	6.3 V	Published nominal/basic-parameter heater condition.

PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Heater current	760 mA	Published heater current.
Plate current	70 mA	Published basic-parameter operating point.
Screen current	5 mA	Published basic-parameter operating point.
Transconductance	10000 μ S	Published basic-parameter value; normalized to μ S.
Plate resistance	23000 Ω	Published internal/plate resistance.
Input capacitance	12 pF	Published in the filename-designated tube entry.
Output capacitance	6 pF	Published in the filename-designated tube entry.
Grid-to-plate capacitance	1 pF	Published in the filename-designated tube entry.

OTHER		
PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Maximum plate voltage	250 V	Published limiting operating value.
Maximum screen voltage	200 V	Published limiting operating value.
Maximum cathode current	100 mA	Published limiting cathode-current value.
Maximum plate dissipation	12 W	Published limiting plate-dissipation value.
Maximum screen dissipation	1.75 W	Published limiting screen-dissipation value.
Output power	5.6 W	Published in the filename-designated tube entry.



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 · Pentode

OTHER		
PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Typical plate voltage	170 V	ClassA
Typical plate current	70 mA	ClassA
Typical output power	5.3 W	ClassA