

ELECTRONIC TUBE REFERENCE

19X8

Voltage - Radio Detector Converter electronic tube

CONSOLIDATED TECHNICAL DATA

2 SECTIONS

CONSTRUCTION

PENTODE-TRIODE

Medium-mu triode and sharp-cutoff pentode used as a combined oscillator and mixer in television and AM/FM receivers.

GENERAL CHARACTERISTICS

BASE DESIGNATION	9AK	BASE PINS	9
NOMINAL HEATER	18.9 V / 150 mA	PARALLEL HEATER	– / –
HEATING	Indirect	SERIES OPERATION	Not specified
CATHODE ARRANGEMENT	Separate cathodes	SECTION CONSTRUCTION	Dissimilar

9AK - TERMINAL PINOUT

TERMINAL	SECTION	ELEMENT	STATUS
PIN1 – 1G3	A	G3 – Suppressor Grid	CONNECTED
PIN2 – 2G1	B	G1 – Control Grid	CONNECTED
PIN3 – 2P	B	P – Plate (Anode)	CONNECTED
PIN4 – H	–	H – Heater	CONNECTED
PIN5 – H	–	H – Heater	CONNECTED
PIN6 – K	A	K – Cathode	CONNECTED
PIN7 – 1G1	A	G1 – Control Grid	CONNECTED
PIN8 – 1G2	A	G2 – Screen Grid	CONNECTED
PIN9 – 1P	A	P – Plate (Anode)	CONNECTED

SECTION RATINGS

SECTION1 Pentode	
PLATE RESISTANCE	750000 Ω
TRANSCONDUCTANCE	0.0046 S
MAXIMUM PLATE VOLTAGE	250 V
MAXIMUM SCREEN VOLTAGE	250 V
MAXIMUM PLATE DISSIPATION	2.3 W
MAXIMUM SCREEN DISSIPATION	0.45 W
<i>Pentode section; characteristics at Class A operating point.</i>	

SECTION2 Triode	
PLATE RESISTANCE	6900 Ω
TRANSCONDUCTANCE	0.0058 S
AMPLIFICATION FACTOR	40
MAXIMUM PLATE VOLTAGE	250 V
MAXIMUM PLATE DISSIPATION	1.7 W
<i>Triode section; characteristics at 100 V Class A operating point.</i>	

19X8 — Triode-Pentode Converter Vacuum Tube

The **19X8** is a multi-unit miniature vacuum tube containing a medium-mu triode and a sharp-cutoff pentode within a single envelope. Designed primarily for use as a combined oscillator and mixer in television receivers utilizing an intermediate frequency (IF) in the order of 40 MHz, as well as in AM/FM receivers, the 19X8 is particularly suited for "transformerless" series-string receiver designs.

Overview

The 19X8 is a versatile, multi-unit receiving valve housed in a miniature T-6 1/2 glass envelope with a 9-pin small-button noval base. It combines a medium-mu triode, typically employed as a local oscillator, and a sharp-cutoff pentode, designed for mixer service. This combination allows a single tube to perform the complete frequency conversion function in VHF television tuners and AM/FM receivers.

The electrical characteristics of the 19X8 are identical to those of the [6X8A](#) and [5X8](#), and it is closely related to the [9X8](#), differing from these types only in its heater ratings. The 19X8 is designed to operate reliably in equipment subject to line voltage variations within $\pm 10\%$ of a 117 V line-center.

Heater and Cathode Characteristics

The 19X8 features an indirectly heated, unipotential cathode structure. The heater is designed for series-string operation, drawing a constant current of 150 mA. Depending on the specific manufacturing

standards and rating systems applied, the nominal heater voltage is specified as either 18.4 V or 18.9 V.

Heater Parameter	Value
Heater Voltage (AC or DC)	18.4 V to 18.9 V
Heater Current	0.15 A (150 mA)
Cathode Type	Indirectly heated, unipotential

Heater-Cathode Voltage Ratings

To ensure insulation integrity between the heater and cathode, designers must adhere to the published voltage limits. Two distinct sets of maximum ratings exist in the technical documentation:

- **Design-Maximum Ratings:**
 - Peak heater-cathode voltage (heater negative or positive with respect to cathode): 200 V maximum.
 - Average heater-cathode voltage: 100 V maximum.
- **Design-Center / Absolute Ratings:**
 - Heater negative with respect to cathode (Total DC and Peak): 100 V maximum.
 - Heater positive with respect to cathode (DC): 100 V maximum.
 - Heater positive with respect to cathode (Total DC and Peak): 100 V maximum.

Physical Construction and Pinout Configurations

The 19X8 is constructed in a T-6 1/2 miniature glass envelope with a maximum diameter of 0.875 inches, a maximum seated height of 1.937 inches, and a maximum overall height of 2.187 inches. It utilizes a 9-pin small-button noval base.

The technical documentation outlines several variations of the 9AK basing arrangement. These variations represent different internal connections, specifically regarding whether the triode and pentode sections share a common cathode or maintain separate cathode connections.

Basing Configuration A (Common Cathode)

In this configuration, the triode and pentode share a single cathode pin, and the pentode's suppressor grid (Grid No. 3) is internally connected to a shield or separate pin.

- **Pin 1:** Pentode Plate
- **Pin 2:** Triode Grid
- **Pin 3:** Pentode Grid No. 1
- **Pin 4:** Heater
- **Pin 5:** Heater
- **Pin 6:** Triode Plate
- **Pin 7:** Pentode Grid No. 3
- **Pin 8:** Pentode Grid No. 2

- **Pin 9:** Common Cathode

Biasing Configuration B (Separate Cathodes)

In this configuration, the triode and pentode sections have independent cathode connections, allowing separate biasing arrangements.

- **Pin 1:** Triode Plate
- **Pin 2:** Pentode Grid No. 1
- **Pin 3:** Pentode Grid No. 2
- **Pin 4:** Heater
- **Pin 5:** Heater
- **Pin 6:** Pentode Plate
- **Pin 7:** Pentode Grid No. 3, Cathode
- **Pin 8:** Triode Cathode
- **Pin 9:** Triode Grid

Biasing Configuration C (Alternative Common Cathode)

Another documented variant of the 9AK pinout assigns the pins as follows:

- **Pin 1:** Triode Grid
- **Pin 2:** Pentode Grid No. 2
- **Pin 3:** Pentode Grid No. 1
- **Pin 4:** Heater
- **Pin 5:** Heater
- **Pin 6:** Pentode Plate
- **Pin 7:** Pentode Grid No. 3, Shield
- **Pin 8:** Common Cathode
- **Pin 9:** Triode Plate

Biasing Configuration D (Alternative Separate Cathodes)

- **Pin 1:** Pentode Grid No. 1
- **Pin 2:** Pentode Cathode, Grid No. 3, Internal Shield
- **Pin 3:** Pentode Grid No. 2 (Screen Grid)
- **Pin 4:** Heater
- **Pin 5:** Heater
- **Pin 6:** Pentode Plate
- **Pin 7:** Triode Grid
- **Pin 8:** Triode Plate
- **Pin 9:** Triode Cathode

Basing Configuration E (Alternative Common Cathode Variant)

- **Pin 1:** Pentode Grid No. 3
- **Pin 2:** Triode Grid
- **Pin 3:** Triode Plate
- **Pin 4:** Heater
- **Pin 5:** Heater
- **Pin 6:** Cathode
- **Pin 7:** Pentode Grid No. 1
- **Pin 8:** Pentode Grid No. 2
- **Pin 9:** Pentode Plate

Due to these documented variations, circuit designers must verify the physical pinout of the specific 19X8 variant being utilized to ensure correct socket wiring.

Direct Interelectrode Capacitances

The high-frequency performance of the 19X8 is heavily influenced by its internal capacitances. The table below details these values both with and without an external shield (RTMA Standard ET-109A with shield No. 315 connected to the cathode or pentode plate as noted).

Capacitance Parameter	Unshielded	Shielded
Triode Unit		
Grid to Plate	1.4 pF to 1.5 pF	1.4 pF to 1.5 pF
Input (Grid to Cathode & Heater)	2.0 pF	2.4 pF to 2.6 pF
Output (Plate to Cathode & Heater)	0.5 pF	1.0 pF
Pentode Unit		
Grid No. 1 to Plate (Max.)	0.09 pF	0.06 pF
Input (G1 to K, H, <u>G2</u> , G3)	4.3 pF to 4.6 pF	4.5 pF to 4.8 pF
Output (P to K, H, <u>G2</u> , G3)	0.7 pF to 0.9 pF	1.4 pF to 1.6 pF
Unit-to-Unit Coupling		
Pentode Grid No. 1 to Triode Plate (Max.)	0.045 pF to 0.05 pF	0.035 pF to 0.04 pF
Pentode Plate to Triode Plate (Max.)	0.040 pF to 0.05 pF	0.008 pF

Capacitance Parameter	Unshielded	Shielded
Other Capacitances		
Heater to Cathode	5.2 pF to 6.5 pF	5.2 pF to 6.5 pF

Pentode Connected as Triode Capacitances

When the pentode unit is triode-connected (Grid No. 3 connected to cathode, Grid No. 2 connected to plate), its capacitances are modified as follows:

- **Grid No. 1 to Plate:** 1.4 pF (Unshielded) / 1.3 pF (Shielded)
- **Input:** 3.0 pF (Unshielded) / 3.2 pF (Shielded)
- **Output:** 1.6 pF (Unshielded) / 2.0 pF (Shielded)

Electrical Characteristics and Class A Operating Points

The 19X8 can be operated under several typical Class A conditions. The triode section provides moderate amplification with low plate resistance, while the pentode section offers high plate resistance and high transconductance.

Typical Operating Points

Parameter	Triode (Point A)	Triode (Point B)	Pentode (Point A)	Pentode (Point B)	Pentode (Triode-Conn.)
Plate Voltage	100 V	125 V	250 V	125 V	150 V
Grid No. 3 (Suppressor)	—	—	Tied to K	Tied to K	Tied to K
Grid No. 2 (Screen) Voltage	—	—	150 V	125 V	Tied to Plate
Grid No. 1 (Control) Voltage	—	-1 V	—	-1 V	—
Cathode Bias Resistor	100 Ω	—	200 Ω	—	250 Ω
Amplification Factor (μ)	40	40	—	—	32

Parameter	Triode (Point A)	Triode (Point B)	Pentode (Point A)	Pentode (Point B)	Pentode (Triode-Conn.)
Plate Resistance (Approx.)	6,900 Ω	5,000–6,000 Ω	750,000 Ω	300,000 Ω	7,900 Ω
Transconductance (g_m)	5,800 μ mhos	6,500–6,600 μ mhos	4,600 μ mhos	5,500 μ mhos	4,000 μ mhos
Plate Current	8.5 mA	12 mA	7.7 mA	9 mA	7.8 mA
Grid No. 2 Current	—	—	1.6 mA	2.2 mA	—
Cutoff Grid Bias (Approx.)*	-10 V	-7 V	-10 V	-6.5 V	-10 V

Maximum Ratings and Circuit Values

The maximum ratings of the 19X8 are defined under both the Design-Maximum and Design-Center rating systems. These limits must not be exceeded under the worst-case operating conditions.

Maximum Ratings Comparison

Parameter	Triode (Design-Center)	Triode (Design-Maximum)	Pentode (Design-Center)	Pentode (Design-Maximum)	Pentode (Triode-Conn.)
Plate Voltage	250 V	275 V	250 V	275 V	250 V
Grid No. 2 Supply Voltage	—	—	250 V	275 V	—
Grid No. 2 Voltage	—	—	See Curve	See Curve	—
Grid No. 1 Negative Bias	40 V	—	40 V	—	40 V
Grid No. 1 Positive Bias	0 V	0 V	0 V	0 V	0 V
Plate Dissipation	1.5 W	1.7 W	2.0 W	2.3 W	2.4 W

Parameter	Triode (Design- Center)	Triode (Design- Maximum)	Pentode (Design- Center)	Pentode (Design- Maximum)	Pentode (Triode- Conn.)
Grid No. 2 Input (up to 137.5 V)	—	—	0.4 W	0.45 W	—
Grid No. 2 Input (137.5 to 275 V)	—	—	—	See Curve	—
Grid No. 1 Input	0.5 W	—	—	—	—

Maximum Circuit Values

- **Grid-No. 1-Circuit Resistance (both units):**
 - For fixed-bias operation: 0.1 M maximum.
 - For cathode-bias operation: 0.5 M maximum.

Typical RF and Mixer Operation

In practical receiver designs, the triode section of the 19X8 is typically operated as a local oscillator, while the pentode section serves as a mixer.

Triode Unit as a 250 MHz Oscillator

When operated as a high-frequency local oscillator at 250 MHz, the triode section exhibits the following typical performance:

- **Plate Voltage:** 150 V
- **Oscillator Grid Resistor:** 2,700 Ω
- **Plate Current:** 13 mA
- **Grid No. 1 Current:** 3.6 mA
- **Approximate Power Output:** 0.5 W

Pentode Unit as a Mixer (Separate Excitation)

With the triode unit grounded and separate excitation applied, the pentode unit operates under the following typical conditions:

Parameter	Pentode Mixer	Triode-Connected Pentode Mixer
Plate Voltage	150 V	150 V

Parameter	Pentode Mixer	Triode-Connected Pentode Mixer
Grid No. 3 (Suppressor)	Connected to cathode	Connected to cathode
Grid No. 2 (Screen) Voltage	150 V	Tied to Plate
Mixer Grid No. 1 Supply Voltage	-3.5 V	-3.5 V
Oscillator Voltage at Grid No. 1 (RMS)	2.6 V	2.6 V
Grid No. 1 Circuit Resistance	120,000 Ω	120,000 Ω
Conversion Transconductance	2,100 μ mhos	2,800 μ mhos
Plate Current	6.0 to 6.2 mA	7.8 mA
Grid No. 2 Current	1.8 mA	—
Grid No. 1 Current	2.0 μ A	2.0 μ A

Operating Considerations and Application Notes

When designing circuits around the 19X8, several specific application factors must be considered to ensure optimal performance and prevent instability:

- 1. AM Broadcast Receiver IF Impedance:** To prevent excessive degeneration caused by internal feedback within the pentode mixer, the tuned plate-load impedance of the first IF coil must be kept below **75,000 Ω** .
- 2. FM Receiver Oscillator Power:** It is highly desirable to operate the local oscillator with less power input than the maximum tabulated values. This precaution avoids over-excitation of the mixer grid and minimizes undesirable oscillator radiation from the receiver antenna.
- 3. Line Voltage Variations:** The 19X8 is specifically designed to accommodate the voltage fluctuations common in transformerless AC/DC line-operated equipment, maintaining stable operation within $\pm 10\%$ of a nominal 117 V line-center.

Qualitative Curve Observations

The performance of the 19X8 across various operating regions is illustrated by several characteristic curves:

- **Grid-No. 2 Input Rating:** The screen grid input rating remains at 100% for Grid No. 2 voltages up to 50% of the maximum rated value. Above this point, the allowable input rating decreases linearly, reaching 0% at 100% of the rated voltage.
- **Triode Plate Characteristics:** Standard triode curves show plate current versus plate voltage for grid voltages ranging from +12 V down to -12 V (or +4 V to -14 V). Grid current curves are also

present for positive grid voltage regions up to +12 V.

- **Pentode Plate Characteristics:** The sharp-cutoff pentode curves display distinct, sharp knee characteristics at low plate voltages (typically below 50 V) for grid-No. 1 voltages ranging from +0.5 V down to -4.0 V.
- **Pentode Connected as Triode:** When Grid No. 2 is tied to the plate, the plate characteristics transition to triode-like curves, spanning grid-No. 1 voltages from 0 V to -10 V. The transconductance in this triode-connected mode peaks at approximately 10,000 μmhos near 0 V grid bias.
- **Operation Characteristics:** Conversion transconductance curves show a distinct peak of approximately 2,100 μmhos when operating with a grid-No. 1 supply voltage of -3.5 V and a peak oscillator injection voltage of approximately 3.5 V.

Technical Summary

The **19X8** is a miniature, 9-pin triode-pentode converter tube designed for frequency conversion in VHF television and AM/FM receivers. Featuring an 18.4 V to 18.9 V heater rated at 150 mA, it is optimized for series-string heater circuits. The medium-mu triode section provides an amplification factor of 40 and a transconductance of up to 6,600 μmhos , making it an efficient local oscillator. The sharp-cutoff pentode section delivers a transconductance of up to 5,500 μmhos and a high plate resistance of up to 750,000 Ω , ensuring high conversion gain when configured as a mixer. By observing the specified limits on IF plate-load impedance and oscillator power, the 19X8 provides stable and reliable frequency conversion in compact consumer receiver designs.

SOURCE OPERATING CONDITIONS
[SOURCE PDF](#)

1940 RCA

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

1940 RCA

Section 1 · Pentode

OTHER		
PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
receivers, The	35	receivers, The 19X8 has a [50-milliamperere heater (I)SEUEE e e e e i-g 35 mt:
The pentode mixer unit of the	100 V	The pentode mixer unit of the 19X8 provides Plate Voltages « « « o o o « o & 100 volts
No.! and plate minimizes feedback problems often for Plate Current of	-10 V	No.! and plate minimizes feedback problems often for Plate Current of 10 wamp . . -10 volts
encountered in mixer circuits operating into Plate Current. . . « « « « v &« o «	8.5 mA	encountered in mixer circuits operating into Plate Current. . . « « « « v &« o « 8.5 ma
high-impedance plate loads., The low value of Plate Voltage. o« o v o o v o o o &	250 V	high-impedance plate loads., The low value of Plate Voltage. o« o v o o v o o o & 250 volts
a high-impedance plate circuit with resultant Grid-No	150 V	a high-impedance plate circuit with resultant Grid-No.2 Voltage. « « + « o + » & 150 volts
increase in mixer gain. Cathode-Bias Resistor. . PR	200 ohm	increase in mixer gain. Cathode-Bias Resistor. . PR 200 ohms
AM/ receivers. n e section, e pentode for Plate Current of	-10 V	AM/ receivers. n e section, e pentode for Plate Current of 10 uamp . . -10 volts
unit may be used as a pentode mixer to provide Plate Current. o« « + « « o o o o &	7.7 mA	unit may be used as a pentode mixer to provide Plate Current. o« « + « « o o o o & 7.7 ma
A N . Grid-No	1.6 mA	. A N . Grid-No.2 Current. . . . 1.6 ma
may be used either as a pentode mixer or as a Plate voltage. « + « « = v ¢ o«	150 V	may be used either as a pentode mixer or as a Plate voltage. « + « « = v ¢ o« 150 volts

PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
f . . . Cathode-Bias Res:stor. e e v e e	250 ohm	f . . . Cathode-Bias Res:stor. e e v e e 250 ohms
an rf stage, a pentode mixer not only provides for Plate Current of	-10 V	an rf stage, a pentode mixer not only provides for Plate Current of 10 pamp . . -10 volts
PLATE VOLTAGE. . . . Salus "	250 V	PLATE VOLTAGE. . . . Salus " 250 max. volts
Negatlve blas va ue «	40 V	Negatlve blas va ue « . 40 max. volts
GRID VOLTAGE Positive bias value	0 V	GRID VOLTAGE Positive bias value . . . 0 max. volts
GENERAL DATA GPLATE DISS PATION.© s b e e e s e e«	1.5 W	GENERAL DATA GPLATE DISS PATION.© s b e e e s e e« . 1.5 max, watts
RID INPUT . . . <«	0.5 W	. RID INPUT . . . <« . 0.5 max, watt
voltage (AC Or OC) + + + + « o« & &	100 V	voltage (AC Or OC) + + + + « o« & & 18.9 volts .., cathode 100 max. volts
Current. . . s e e e s	150 mA	Current. . . s e e e s 0.15 ampere Heater positive with respect to
pirect Intereiectrode' capamtances: cathode	100 V	pirect Intereiectrode' capamtances: cathode 100 max. volts
Shield Shield# PLATE VOLTAGE. . . e s e	250 V	Shield Shield# PLATE VOLTAGE. . . e s e 250 max. volts
Trioqe unit: GR1D=-NO	0 V	Trioqe unit: GR1D=-NO.3 (SUPPRESSOR) VOLTAGE . e e . 0 max, volts
Grid to Plate., . . ,	250 V	Grid to Plate., . . , 1.4 1.4 puf GRID-NO.2 SUPPLY VOLTAGE « .« . 250 max. volts
Inpute & o & & & &	1	Inpute & o & & & & 2.0 2.6 put GRID-No.2 (SCREEN) VOLTAGE « & See Fig.1
Output . . o	1 pF	Output . . o . . . 0.5 1.0 uuf GRID-No.1 (CONTROL-GRID) VOLTAGE:
Pentode unit: Negative bias value. . . . + « + .+	40 V	Pentode unit: Negative bias value. . . . + « + .+ . 40 max. volts
Grid No	0 V	Grid No.1 to Plate 0.09 max. 0.06 max, puf Positive bias value., ... « . 0 max. volts
Input	2 W	Input. 4.3 4.5 puf PLATE DISSIPATION. & o & « & o o o « o 2.0 max. watts
output	0.4 W	output 0.7 1.4 puf GRID-NO.2 INPUT. .+ « « o« o s e e e 0.4 max. watt
Pentode Grid No	1	Pentode Grid No. 1 to PEAK HEATER-CATHODE VOLTAGE

PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Pentode Plate to cathode	100 V	Pentode Plate to cathode. 100 max. volts
Heater to Cathode,	100 V	Heater to Cathode, . 5.2 5.2 puf cathode, ... 100 max. volts
PLATE VOLTAGE. . . . «	250 V	PLATE VOLTAGE. . . . « . 250 max. volts
GRID-NO	1	GRID-NO. 1 (CONTROL-GRID) VOLTAGE: »
Negative bias value., . . . + .+ + .«	40 V	Negative bias value., . . . + .+ + .« . 40 max, volts Z%
Positive bias value. . . + « « «	0 V	Positive bias value. . . + « « « . 0 max. volts MAX.
PLATE DISSIPATION., . . . “ e e e	2.4 W	PLATE DISSIPATION., . . . “ e e e 2.4 max, watts
cathode,	100 V	cathode, ... 100 max. volts
cathode. . . +	100 V	cathode. . . + . . . 100 max, volts
Plate voltage. . +« « v « o +» o & o &	150 V	Plate voltage. . +« « v « o +» o & o & 150 volts
Grid Resistor. . . . + . .« «	2700 ohm	Grid Resistor. . . . + . .« « 2700 ohms MAX. »* ”
Power Output (APProX.) . + « + « + &	3 W	Power Output (APProX.) . + « + « + & 0.5 watt 3 L4
Plate voltage. . . s e e e s	150 V	Plate voltage. . . s e e e s 150 volts
Grid-No	150 V	Grid-No.2 Voltage. . . I 150 volts
Mixer Grig-No	3.5 V	Mixer Grig-No.1 Supply VOLTage . e . =3.5 volts
Grig No	2.6 V	Grig No.1. . . . 2.6 rms volts
Mixer Grid-No.i1-Circuit Res»stance	120000 ohm	Mixer Grid-No.i1-Circuit Res»stance 120000 ohms
Ptate Current. . . + . « . + « . +	6.2 mA	Ptate Current. . . + . « . + « . + . 6.2 ma
Grid-No	1.8 mA	Grid-No.2 Current. . . « + . . . 1.8 ma
Grid-No	2	Grid-No.1i Current. . .) 2.0 uamp SMALL BUTTON NOVAL
plate voltage. . . « e e	150 V	plate voltage. . . « e e 150 volts
Grid-No	3.5 V	Grid-No.1 Supply VOLTage v e e s . =3.5 volts
Oscillator voltage at Grid No	1 V	Oscillator voltage at Grid No.1 . . 2.6 rms volts AS DETERMINED BY RING GAUGE OF 7/16" 1.D.
Plate Current. . . « « ¢ « « «	7.8 mA	Plate Current. . . « « ¢ « « « 4 . . 7.8 ma

PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Grid-No	2	Grid-No.1 Current. . « . « « +« . . . 2.0 pamp
For fixed-bias operation	0.1	For fixed-bias operation 0.1 max. megohm
For cathode~-bias operation	0.5	For cathode~-bias operation 0.5 max, megohm SOCKET CONNECTIONS
from ac or dc power-line supplies whose normal voltage PIN	4	from ac or dc power-line supplies whose normal voltage PIN 4: HEATER
line~center voltage value of	117 V	line~center voltage value of 117 volts.
impedance of the first if coil does not exceed	2 ohm	impedance of the first if coil does not exceed 75000 ohms, PIN 8: PENTODE GRID No.2
[T THIS CURVE ALSO APPLIES TO TYPES Fl £ g =	189 V	[T THIS CURVE ALSO APPLIES TO TYPES Fl £ g =189 VOLTS
GRID-N®	2	GRID-N® 2 VOLTAGE EXPRESSED AS PER CENT OF MAX. < ol o
2 SUPPLY VOLTAGE RATING PLATE (Is) OR GRID (Iç) MILLIAMPERES	2	2 SUPPLY VOLTAGE RATING PLATE (Is) OR GRID (Iç) MILLIAMPERES
92CM-7779	7779	92CM-7779
I Eç£ =	19 V	I Eç£ =18.9 VOLTS E £=19.
ol GI:ID-NQ	3 V	ol GI:ID-NQ 2 VOLTS=150 t:_ GRID N2 3 CONNECTED TO CATHODE
M GRID-NZ	2 V	M GRID-NZ 3 VOLTS=0 j_ GRID N2 2 CONNECTED TO PLATE
— >	4	— > 4\!'™ °
PLATE (Ib) OR GRID~-N2	1	PLATE (Ib) OR GRID~-N22 (1C2) MILLIAMPERES LATE MILLIAMPERES
92CM-7777 92CM~7787	7787	92CM-7777 92CM~7787
E ç =IBY VOLTS I Ep	189 V	E ç =IBY VOLTS I Ep 189 VOLTS
PLATE VOLTS =	150 V	PLATE VOLTS =150
i PLATE VOLTS	150 V	i PLATE VOLTS 150
GRID-N2	0 V	GRID-N2 3 VOLTS GRID-N2 3 VOLTS 0
I GRID-N2	150 V	I GRID-N2 2 VOLTS 150 GRID-N2 2 VOLTS 150

CHARACTERISTIC		
PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
other tubes having !	50	other tubes having !50-milliamperes heaters. Characteristics:

Section 1 · Pentode

OTHER		
PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Plate voltage	250 V	ClassA
Screen voltage	150 V	ClassA
Cathode resistor	200 ohm	ClassA
Plate current	7.7 mA	ClassA
Screen current	1.6 mA	ClassA

195X GENERAL ELECTRIC ESSENTIAL CHARACTERISTICS

Section 2 · Triode

OTHER		
PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Plate voltage	100 V	ClassA
Cathode resistor	100 ohm	ClassA
Plate current	8.5 mA	ClassA



SOURCE DATA APPENDIX

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 · Pentode

CHARACTERISTIC		
PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Plate Voltage	125 V	ClassA
Screen Voltage	125 V	ClassA
Plate Current	9 mA	ClassA
Screen Current	2.2 mA	ClassA
Transconductance	5500 uS	ClassA

CAPACITANCE		
PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Grid No.1 to Plate Capacitance	—0.09 pF	Unshielded

1975 RCA RC30

Section 2 · Triode

CHARACTERISTIC		
PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Plate Voltage	125 V	ClassA
Plate Current	12 mA	ClassA
Transconductance	6500 uS	ClassA

CAPACITANCE		
PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Grid to Plate Capacitance	1.5 pF	Unshielded

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