



ELECTRONIC TUBE REFERENCE

17GV5

Power - TV Horizontal Output (sweep) electronic tube

CONSOLIDATED TECHNICAL DATA

1 SECTION

CONSTRUCTION

BEAMPOWER

Beam-power tube designed for television horizontal-deflection amplification, with high positive- and negative-pulse plate-voltage capability.

GENERAL CHARACTERISTICS

BASE DESIGNATION	12DR	BASE PINS	12
NOMINAL HEATER	16.8 V / 450 mA	PARALLEL HEATER	– / –
HEATING	Indirect	SERIES OPERATION	Not specified
CATHODE ARRANGEMENT	Separate cathodes	SECTION CONSTRUCTION	Similar

12DR - TERMINAL PINOUT

TERMINAL	SECTION	ELEMENT	STATUS
PIN1	–	H – Heater	CONNECTED
PIN3	–	G2 – Screen Grid	CONNECTED
PIN4	–	G3 – Suppressor Grid	CONNECTED
PIN4	–	K – Cathode	CONNECTED
PIN5	–	G1 – Control Grid	CONNECTED
PIN7	–	G2 – Screen Grid	CONNECTED
PIN9	–	G1 – Control Grid	CONNECTED
PIN10	–	G3 – Suppressor Grid	CONNECTED
PIN10	–	K – Cathode	CONNECTED
PIN11	–	G2 – Screen Grid	CONNECTED
PIN12	–	H – Heater	CONNECTED
CAP1	A	P – Plate (Anode)	CONNECTED

SECTION 1 Beam Power	
PLATE RESISTANCE	18000 Ω
TRANSCONDUCTANCE	0.0073 S
AMPLIFICATION FACTOR	4.4
MAXIMUM PLATE VOLTAGE	700 V
MAXIMUM SCREEN VOLTAGE	220 V
MAXIMUM PLATE DISSIPATION	17.5 W
MAXIMUM SCREEN DISSIPATION	5 W
MAXIMUM CATHODE CURRENT	175 mA
Reference/equivalence-only source does not reproduce the referenced electrical ratings/characteristics; promoted values intentionally not inferred from external datasheets.	

17GV5 — Beam Power Pentode

An indirectly heated Compactron beam power tube designed for horizontal-deflection amplifier service in television receivers.

Overview

The **17GV5** is a high-performance beam power pentode constructed in a Compactron (or duodecar) envelope. It is designed primarily for use as a horizontal-deflection amplifier in television receivers operating under 525-line, 30-frame scanning systems. The 17GV5 is electrically identical to the **6GV5** except for its heater ratings, which are tailored for series-string heater circuits.

The tube features high peak plate current capabilities at low plate voltages, a characteristic essential for efficient horizontal-deflection service. It is designed to withstand high-voltage pulses on the plate and contains internal beam-confining electrodes (Grid No. 3) connected internally to the cathode.

Mechanical Construction and Physical Dimensions

The 17GV5 is housed in a T-12 glass bulb with a 12-pin button base (E12-74) conforming to the JEDEC 12-79 outline. The plate connection is made via a miniature top cap (C1-3) to isolate the high-voltage pulse from the base pins, although some documentation also associates the plate with a base pin. The tube can be mounted in any position.

The physical dimensions of the envelope are as follows:

- **Maximum Diameter:** 1.563 inches
- **Maximum Seated Height:** 3.250 inches

- **Maximum Overall Height:** 3.625 inches

Basing and Pin Configuration

The 17GV5 utilizes a 12-pin button base requiring a duodecar 12-contact socket. While the basing arrangement is designated as **12DR**, different technical specifications record varying pin assignments for this configuration. The variations in published pinout descriptions are summarized below:

Electrode	Pin Assignment Variant A	Pin Assignment Variant B	Pin Assignment Variant C	Pin Assignment Variant D
Heater (H)	Pins 4, 12	Pins 1, 12	Pins 1, 12	Pins 4, 12
Cathode & Grid 3 (K, G3)	Pins 1, 10	Pins 5, 10	Pins 4, 10	Pins 5, 10
Grid 1 (G1)	Pins 5, 9	Pins 4, 9	Pins 5, 9	Pins 1, 9
Grid 2 (G2)	Pins 3, 7, 11	Pins 3, 7, 11	Pins 3, 8, 11	Pins 3, 7, 11
Plate (P)	Top Cap	Top Cap	Pin 7 (and Top Cap)	Top Cap
No Connection (NC)	Pins 2, 6, 8	Pins 2, 6, 8	Pins 2, 6	Pins 2, 6, 8

These variations highlight the importance of verifying the specific socket wiring against the physical tube structure in practical applications.

Heater Ratings and Characteristics

The 17GV5 incorporates a coated unipotential cathode. The heater is designed for series-string operation with a controlled warm-up time to ensure reliable performance in series-connected heater chains.

- **Heater Voltage (Average):** 16.8 V (AC or DC)
- **Heater Current (Average):** 0.45 A (450 mA)
- **Heater Supply Limits (Current Operation):** 450 ± 30 mA
- **Heater Warm-up Time (Average):** 11 seconds

(Defined as the time required to reach 80% of the rated heater voltage when four times the rated voltage is applied in series with three times the nominal heater resistance.)

Heater-Cathode Voltage Limits

To prevent insulation breakdown between the heater and cathode, the following design-maximum voltage limits must be observed:

- **Heater Negative with Respect to Cathode (Total DC and Peak):** 200 V maximum
- **Heater Positive with Respect to Cathode (DC):** 100 V maximum

- **Heater Positive with Respect to Cathode (Total DC and Peak):** 200 V maximum

Direct Interelectrode Capacitances

The approximate direct interelectrode capacitances of the 17GV5, measured without an external shield, are:

- **Grid No. 1 to Plate (G_1 to P):** 0.6 pF
- **Input (G_1 to $H + K + G_2$ + Beam Plates):** 16 pF
- **Output (P to $H + K + G_2$ + Beam Plates):** 7.0 pF

Electrical Characteristics and Operating Points

The electrical characteristics of the 17GV5 are documented under three distinct pentode operating conditions, as well as a triode-connected configuration.

Pentode Connection Characteristics

- **Condition A (High-Voltage Cutoff):**
 - Plate Voltage: 5000 V
 - Grid No. 2 Voltage: 150 V
 - Grid No. 1 Voltage (Approximate for $I_b = 1.0$ mA): -100 V
- **Condition B (Peak Current / Knee):**
 - Plate Voltage: 60 V
 - Grid No. 2 Voltage: 150 V
 - Grid No. 1 Voltage: 0 V
 - Plate Current (I_b): 345 mA (*measured via a recurrent waveform applied for a maximum duration of 2 seconds to prevent thermal damage*)
 - Grid No. 2 Current (I_{C2}): 27 mA (*measured via recurrent waveform*)
- **Condition C (Class A / Normal Operation):**
 - Plate Voltage: 250 V
 - Grid No. 2 Voltage: 150 V
 - Grid No. 1 Voltage: -22.5 V
 - Plate Current (I_b): 65 mA
 - Grid No. 2 Current (I_{C2}): 1.8 mA
 - Transconductance (g_m): 7300 μ mhos
 - Plate Resistance (r_p , Approx.): 18,000 Ω
 - Grid No. 1 Voltage (Approximate for $I_b = 1.0$ mA): -42 V

Triode Connection Characteristics

When the screen grid (Grid No. 2) is tied directly to the plate, the 17GV5 operates as a low-mu triode under the following conditions:

- **Plate Voltage:** 150 V
- **Grid No. 2 Voltage:** 150 V
- **Grid No. 1 Voltage:** -22.5 V
- **Amplification Factor (μ):** 4.4

Horizontal-Deflection Service Ratings

The 17GV5 is rated under the Design-Maximum System (EIA Standard RS-239) for horizontal-deflection amplifier service in television receivers. These ratings represent the absolute limits within which the tube must be operated to ensure reliable service life.

Parameter	Design-Maximum Rating
DC Plate Supply Voltage (Boost + DC Power Supply)	770 V
Peak Positive Pulse Plate Voltage	6500 V (<i>Pulse duration must not exceed 15% of a horizontal scanning cycle or 10 microseconds</i>)
Peak Negative Pulse Plate Voltage	1500 V
DC Grid No. 2 (Screen) Voltage	220 V
DC Grid No. 1 (Control Grid) Voltage	-55 V
Peak Negative Pulse Grid No. 1 Voltage	330 V
Peak Cathode Current	550 mA
Average Cathode Current	175 mA
Plate Dissipation	17.5 W
Grid No. 2 Input (Dissipation)	3.5 W
Maximum Grid No. 1 Circuit Resistance	1.0 M Ω
Maximum Bulb Temperature (Hottest Point)	220 °C

Circuit-Specific Operating and Protection Notes

In horizontal-deflection circuits, the control grid (Grid No. 1) often operates with grid-leak bias. Because grid-leak bias depends entirely on the presence of an active drive signal (excitation), any failure in the oscillator or drive stage will cause the bias to collapse to zero.

To prevent catastrophic thermal runaway and destruction of the tube under such conditions, the 17GV5 requires a protective cathode-bias resistor or other suitable automatic protection means to limit the plate and screen currents in the absence of excitation.

Technical Summary

The **17GV5** is a robust **Compactron beam power pentode** designed specifically for the demanding role of a **horizontal-deflection amplifier** in television receivers. It features a **16.8 V, 450 mA heater** with a controlled 11-second warm-up time, making it ideal for series-string heater configurations.

Electrically, the tube is capable of delivering high peak currents (up to **345 mA** plate current at a plate voltage of only **60 V**) and is rated to withstand peak positive plate pulses of up to **6500 V**. With a plate dissipation rating of **17.5 W** and a transconductance of **7300 μ mhos** under typical Class A conditions, the 17GV5 provides the high power handling and efficiency required for electromagnetic deflection systems. Proper circuit design must incorporate protective biasing measures to safeguard the tube against excitation loss.



SOURCE OPERATING CONDITIONS

[SOURCE PDF](#)

1961 Tung Sol

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

1961 TUNG SOL

Section 1 · Beam Power

CHARACTERISTIC		
PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
TriodeConnectionAmplificationFactor	4.4	—
TransconductancePublished	7300 uS	—



SOURCE OPERATING CONDITIONS

[SOURCE PDF](#)

1966 Tung Sol Electronic Tubes 3 of 4

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

1966 TUNG SOL ELECTRONIC TUBES 3 OF 4

Section 1 · Beam Power

OTHER		
PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Peak positive pulse plate voltage	6500 V	HorizontalDeflection;Pulse
Peak negative pulse plate voltage	1500 V	HorizontalDeflection;Pulse
Plate current	65 mA	HorizontalDeflection
Grid 2 current	1.8 mA	HorizontalDeflection
Grid 1 voltage	-22.5 V	HorizontalDeflection
GRID	0.6 pF	Published datasheet
INPUT: G' TO (H+K+G	16 pF	Published datasheet
OUTPUT: P TO (H+K+G	2 pF	Published datasheet
AVERAGE CHARACTERISTICS	450 V	Published datasheet

PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
HEATER WARM-UP TIME A	11 s	Published datasheet
TOTAL DC AND PEAK	200 V	Published datasheet
DESIGN MAXIMUM VALUES -SEE EIA STANDARDS	-239 mA	Published datasheet
GRID	220 V	Published datasheet
NEGATIVE DC GRID	55 V	Published datasheet
PEAK NEGATIVE GRID	330 V	Published datasheet
PLATE DISSIPATION S	17.5 W	Published datasheet
GRID	3.5 W	Published datasheet
GRID	1 ohm	Published datasheet
GRID	150 V	Published datasheet
GRID	-22.5 V	Published datasheet
GRID	1.8 mA	Published datasheet
GRID	-42 V	Published datasheet
TRIODE CONNECTION (SCREEN TIED TO PLATE) WITH E	5 V	Published datasheet

CHARACTERISTICS		
PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
CURRENT OPERATION	450130 mA	Published datasheet
DC PLATE-SUPPLY VOLTAGE (BOOST + DC POWER SUPPLY)	770 V	Published datasheet
PEAK POSITIVE PULSE PLATE VOLTAGE	6500 V	Published datasheet
PEAK NEGATIVE PULSE PLATE VOLTAGE	1500 V	Published datasheet
DC CATHODE CURRENT	175 mA	Published datasheet
PEAK CATHODE CURRENT	550 mA	Published datasheet
PLATE VOLTAGE	250 V	Published datasheet
PLATE RESISTANCE, APPROX. -- --	18000 ohm	Published datasheet
TRANSCONDUCTANCE ----	7300 μS	Published datasheet
PLATE CURRENT ----	65 mA	Published datasheet
TRIODE AMPLIFICATION FACTOR ----	4.4 A	Published datasheet



SOURCE OPERATING CONDITIONS

1968 General Electric Co

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

1968 GENERAL ELECTRIC CO

Section 1 · Beam Power

OTHER		
PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Heater Warmup Time	11 s	—



SOURCE OPERATING CONDITIONS

[SOURCE PDF](#)

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 · Beam Power

OTHER		
PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Plate Current for grid voltage of	14 V	Published in approved 17GV5 target datasheet entry; Section1
Plate Current for grid voltage of 14 volts	4 mA	Published in approved 17GV5 target datasheet entry; Section1
Grid-Circuit Resistance, for fixed-bias operation	1 MΩ	Published in approved 17GV5 target datasheet entry; Section1
Heater Voltage (ac/dc) 6.3	16.8 V	Published in approved 17GV5 target datasheet entry; Section1
Heater Current 1.2	450 mA	Published in approved 17GV5 target datasheet entry; Section1
Heater Warm-up Time (Average)	11 seconds	Published in approved 17GV5 target datasheet entry; Section1
of	1 mA	Published in approved 17GV5 target datasheet entry; Section1

PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Peak Positive-Pulse Plate Voltage*	6500 V	Published in approved 17GV5 target datasheet entry; Section1
Peak Negative-Pulse Plate Voltage	1500 V	Published in approved 17GV5 target datasheet entry; Section1
DC Grid-No.2 Voltage	220 V	Published in approved 17GV5 target datasheet entry; Section1
Peak Negative-Pulse Grid-No.1 Voltage	330 V	Published in approved 17GV5 target datasheet entry; Section1
DC Grid-No.1 Voltage	55 V	Published in approved 17GV5 target datasheet entry; Section1
Peak Cathode Current	550 mA	Published in approved 17GV5 target datasheet entry; Section1
Average Cathode Current	175 mA	Published in approved 17GV5 target datasheet entry; Section1
Plate Dissipation!	17.5 W	Published in approved 17GV5 target datasheet entry; Section1
Grid-No.2 Input	3.5 W	Published in approved 17GV5 target datasheet entry; Section1
Bulb Temperature (At hottest point)	220 °C	Published in approved 17GV5 target datasheet entry; Section1
Grid-No. 1-Circuit Resistance	1 MΩ	Published in approved 17GV5 target datasheet entry; Section1
# Pulse duration must not exceed 15% of a horizontal scanning cycle (	10 microseconds	Published in approved 17GV5 target datasheet entry; Section1

CHARACTERISTIC		
PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Plate Voltage 5000 60 250	150 V	Published in approved 17GV5 target datasheet entry; Section1
Grid-No.2 (Screen-Grid) Voltage 150 150 150	150 V	Published in approved 17GV5 target datasheet entry; Section1
Grid-No.1 (Control-Grid) Voltage – 0 – 22.5	-22.5 V	Published in approved 17GV5 target datasheet entry; Section1

TUBE TINKER

An independent reference for electronic tubes, vacuum tubes,
and their source documents.

[Catalog](#) [Tube types](#) [Full books](#) [Blog](#) [Feedback & corrections](#)

© 2026 Tube Tinker