

September 24, 1954

Beam Power Amplifier Type 12W6-GT

The 12W6-GT is a glass octal beam power pentode designed for use as a vertical deflection amplifier in television receiver sweep circuits. It is also used as an audio-frequency power-output tube.

The 12W6-GT has been designed for use in receivers which employ series-connected heaters, especially in television receivers where the picture-tube heater is in series with other heaters. When it is employed in this type of circuit with other tubes having a heater current rating of 600 ma., heater voltage surges across individual tubes are minimized inasmuch as the heater warm-up characteristic is controlled.

GENERAL DATA

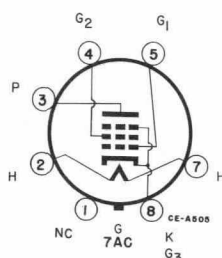
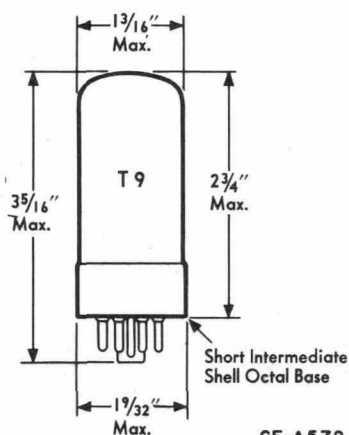
Electrical:

Cathode	Coated Unipotential
Filament:	
Voltage	12.6 ac or dc Volts
Current	0.6 Ampere
Warm-up Time (Approx.)**	10.5 Seconds
Direct Interelectrode Capacitances:	
Grid to Plate	0.8 $\mu\mu\text{f}$
Input	15 $\mu\mu\text{f}$
Output	9.0 $\mu\mu\text{f}$

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Mechanical:

Bulb	T-9
Base	B7-7 Intermediate Shell Octal
Basing	G-7AC
Mounting Position	Any



Bottom View

AMPLIFIER — CLASS A₁

Maximum Ratings

Design Center Values (Except as Noted)

Plate Voltage	300	max.	Volts
Screen Voltage	150	max.	Volts
Plate Dissipation	10	max.	Watts
Screen Dissipation	1.25	max.	Watts

Characteristics and Typical Operation

Plate Voltage	110	200	Volts
Screen Voltage	110	125	Volts
Control Grid Voltage	-7.5		Volts
Cathode Bias Resistor		180	Ohms
Peak AF Control Grid Voltage...	7.5	8.5	Volts
Zero-Signal Plate Current	49	46	Ma.
Zero-Signal Screen Current	4.0	2.2	Ma.
Max. Signal Plate Current	50	47	Ma.
Max. Signal Screen Current	10	8.5	Ma.
Plate Resistance (Approx.)	13000	28000	Ohms
Transconductance	8000	8000	μmhos
Load Resistance	2000	4000	Ohms
Max. Signal Power Output	2.1	3.8	Watts
Total Harmonic Distortion (Approx.)	10	10	Percent

Maximum Circuit Values

Grid 1 Circuit Resistance	
Fixed Bias	0.1 max. Megohm
Cathode Bias	0.5 max. Megohm

VERTICAL DEFLECTION AMPLIFIER *
Triode Connected

Maximum Ratings

Design Center Values

Plate Voltage	300	max.	Volts
Peak Positive Plate Voltage	1200 abs.	max.	Volts
Plate Dissipation**	7.5	max.	Watts
Peak Negative Grid Voltage	250	max.	Volts
Average Cathode Current	40	max.	Ma.
Peak Cathode Current	140	max.	Ma.

VERTICAL DEFLECTION AMPLIFIER*—(Continued)

Triode Connected

Characteristics

Plate Voltage	225	Volts
Grid Voltage	-30	Volts
Plate Current	22	Ma.
Transconductance	3800	μ mhos
Amplification Factor	6.2	
Plate Resistance	1600	Ohms
Grid Voltage for $I_b = 0.5$ ma. (Approx.).	-42	Volts

Typical Operation

90° Picture tube—17.2 kv 2nd Anode Voltage

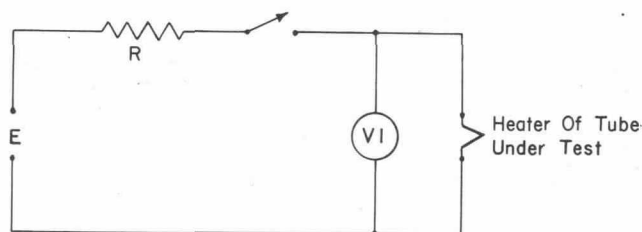
Plate Supply Voltage	310	Volts
Plate Output Voltage		
Peak to Peak	535	Volts
Sawtooth Component	310	Volts
Grid Input Voltage		
Peak to Peak	110	Volts
Sawtooth Component	60	Volts
Average Cathode Current	35	Ma.
Peak Cathode Current	90	Ma.
Cathode Resistor	1100	Ohms

* For operation in a 525-line, 30 frame system as described in "Standards of Good Engineering Practice for Television Broadcast Stations; Federal Communications Commission", the duty cycle of the voltage pulse must not exceed 15% of one scanning cycle.

**Stages operating with grid leak bias must use an adequate cathode bias resistor or similar arrangement to protect the tube in the absence of excitation.

**HEATER WARM-UP TIME MEASUREMENTS

Heater warm-up time is defined as the time required for the voltage across the heater terminals to increase from zero to the heater test voltage (V_1) in the circuit shown below. The conditions used in conjunction with the test circuit depend upon the rated heater voltage and current of the tube under test.



CE-A933

E—Applied Voltage, RMS or DC	50	Volts
R—Total Series Resistance	63	Ohms
V_1 —Heater Test Voltage, RMS or DC	10.0	Volts
E_r —Rated Heater Voltage of Tube		
Under Test	12.6	Volts
I_r —Rated Heater Current of Tube		
Under Test	0.6	Ampere

