

Maximum Heater-Cathode Voltage	
Heater Negative with Respect to Cathode	
Total DC and Peak.....	200 Volts
Heater Positive with Respect to Cathode	
DC.....	100 Volts
Total DC and Peak.....	200 Volts

DIRECT INTERELECTRODE CAPACITANCES (Shielded)⁽¹⁾

Triode:	
Grid to Plate	1.35 Pf
Input	2.45 Pf
Output	0.8 Pf
Pentode:	
Grid 1 to Plate	0.008 Pf
Input	4.6 Pf
Output	1.8 Pf
Grid 1 to Grid 2	1.3 Pf

RATINGS (Design Maximum Rating System)

	Triode Section	Pentode Section
Plate Voltage (Max.)	275	275 Volts
Grid 2 Supply Voltage (Max.)	—	275 Volts
Grid 2 Voltage	See Rating Chart (Gen. Info. Sec.)	
Plate Dissipation (Max.)	1.5	2.2 Watts
Grid 2 Dissipation (Max.)	—	0.45 Watts
Positive Grid 1 Voltage (Max.)	0	0 Volts
Negative Grid 1 Voltage (Max.)	40	40 Volts
Cathode Current (Max.)	20	20 Ma
Grid 1 Circuit Resistance		
Fixed Bias (Max.)	0.5	0.25 Megohm
Cathode Resistor Bias	1.0	0.5 Megohm

CHARACTERISTICS AND TYPICAL OPERATION

Triode Unit:		
Plate Voltage	100	125 Volts
Grid Voltage	—	-1.0 Volt
Grid Circuit Resistance	0.1	— Megohm
Amplification Factor	40	—
Plate Resistance	4880	— Ohms
Transconductance	8200	9500 μ mhos
Plate Current	14	19 Ma
Grid Cutoff Voltage ⁽²⁾	-5.0	-6.0 Volts
Pentode Unit:		
Plate Voltage	120	125 Volts
Grid 2 Voltage	90	125 Volts
Grid 1 Voltage	—	-1.0 Volt
Grid 1 Circuit Resistance	0.1	— Megohm
Plate Resistance	70,000	— Ohms
Transconductance	8000	7000 μ mhos
Plate Current	10.5	12 Ma
Grid 2 Current	3.0	3.5 Ma
Grid 1 Cutoff Voltage ⁽²⁾	-2.5	-6.5 Volts

NOTES:

- (1) With external shield connected to cathode.
(2) For a plate current of 20 μ a.

Color Television Type

**VERTICAL DEFLECTION
AMPLIFIER**

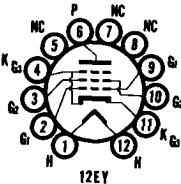
6HE5

Beam Power Pentode

- Construction.....Compactron T-9
Base Button 12 Pin, E12-70
Basing 12EY
Outline 9-60
Maximum Diameter 1.188 In.
Maximum Seated Height 2.500 In.
Maximum Overall Height 2.875 In.

ELECTRICAL DATA
HEATER OPERATION

- Heater Voltage.....
Heater Current



- 6.3 Volts
800 Ma

Maximum Heater-Cathode Voltage

Heater Negative with Respect to Cathode

Total DC and Peak 200 Volts

Heater Positive with Respect to Cathode

DC 100 Volts

Total DC and Peak 200 Volts

DIRECT INTERELECTRODE CAPACITANCES (Unshielded)

Grid No. 1 to Plate (Max.) 0.54 Pf

Input: g_1 to $(h + k + g_2 + g_3)$ 9.5 PfOutput: p to $(h + k + g_2 + g_3)$ 7.0 Pf**RATINGS (Design Maximum Rating System)****Vertical Deflection Amplifier⁽¹⁾**

Plate Voltage (Max.) 350 Volts

Peak Positive Pulse Plate Voltage (Abs. Max.) 2500 Volts

Grid No. 2 Voltage (Max.) 300 Volts

Plate Dissipation (Max.)⁽²⁾ 12 WattsGrid No. 2 Input (Max.)⁽²⁾ 2.75 Watts

Average Cathode Current (Max.) 75 Ma

Peak Cathode Current (Max.) 260 Ma

Bulb Temperature (Max.) 200 °C

Grid Circuit Resistance

Fixed Bias (Max.) 1.0 Megohm

Cathode Bias (Max.) 2.2 Megohms

CHARACTERISTICS AND TYPICAL OPERATION

Plate Voltage 250 Volts

Grid No. 2 Voltage 250 Volts

Grid No. 1 Voltage -20 Volts

Plate Current 43 Ma

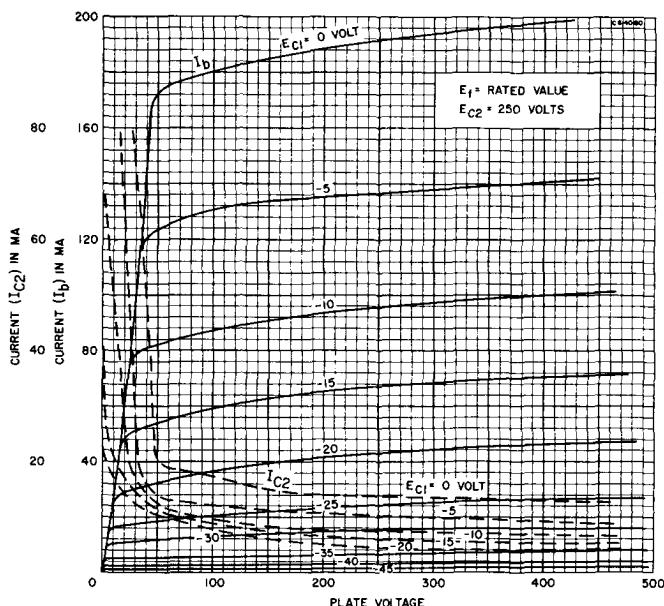
Grid No. 2 Current 3.5 Ma

Transconductance 4100 μ mhos

Plate Resistance (Approx.) 5000 Ohms

Ec1 Voltage for $I_b = 100 \mu$ a (Approx.) -50 Volts**INSTANTANEOUS PLATE KNEE VALUES** $E_b = 60$ V; $E_{c2} = 250$ V; $E_{c1} = 0$ V; $I_b = 180$ Ma and $I_{c2} = 20$ Ma**NOTES:**

- (1) 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 horizontal scanning cycle.
- (2) In stages operating with grid-leak bias, an adequate bias resistor or other suitable means is required to protect the tube in the absence of excitation.

AVERAGE PLATE CHARACTERISTICS

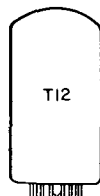
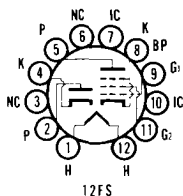
DAMPER and HORIZONTAL DEFLECTION AMPLIFIER

6HE7

12HE7, 33HE7, 38HE7, 58HE7

High Perveance Diode and Beam Power Pentode

Construction.....Compactron T-12
 Base Button 12 Pin, E12-74
 Basing 12FS
 Outline 12-57
 Maximum Diameter 1.562 In.
 Maximum Seated Height 2.750 In.
 Maximum Overall Height 3.125 In.



ELECTRICAL DATA

HEATER OPERATION

	58HE7	38HE7	33HE7	12HE7	6HE7
Heater Voltage.....	58	37.8	33.6	12.6	6.3 Volts
Heater Current.....	300	450	450	1350	2700 Ma
Heater Warm-up Time.....	11	11	11	—	— Seconds
Maximum Heater Cathode Voltage.....					

Heater Negative with Respect to Cathode

DC	500	— Volts
Total DC and Peak.....	4200	200 Volts

Heater Positive with Respect to Cathode

DC	100	100 Volts
Total DC and Peak	200	200 Volts

DIRECT INTERELECTRODE CAPACITANCES (Unshielded)

Diode Section

Cathode to Plate and Heater.....	8.0 Pf
Plate to Cathode and Heater.....	7.0 Pf
Heater to Cathode.....	1.6 Pf

Pentode Section

Grid No. 1 to Plate.....	0.38 Pf
Input: g_1 to $(h + k + g_2 + bp)$	19 Pf
Output: p to $(h + k + g_2 + bp)$	8.0 Pf

RATINGS (Design Maximum Rating System)

Horizontal Deflection Amplifier Service⁽¹⁾

Pentode Section

DC Plate Supply Voltage (Boost + DC Power Supply) (Max.).....	500 Volts
Peak Positive Pulse Plate Voltage (Max.).....	5000 Volts
Peak Negative Pulse Plate Voltage (Max.).....	0 Volt
Screen Voltage (Max.).....	150 Volts
Negative DC Grid No. 1 Voltage (Max.).....	55 Volts
Peak Negative Grid No. 1 Voltage (Max.).....	330 Volts
Plate Dissipation (Max.) ⁽²⁾	10.0 Watts
Screen Dissipation (Max.).....	3.5 Watts
Screen Dissipation (With Plate Dissipation Limited to 9 Watts) (Max.).....	4.0 Watts
DC Cathode Current (Max.).....	230 Ma
Peak Cathode Current (Max.).....	800 Ma
Grid No. 1 Circuit Resistance (Max.).....	1.0 Megohm

TV Damper Service⁽¹⁾

Diode Section

Peak Inverse Plate Voltage (Max.).....	4200 Volts
Steady State Peak Plate Current (Max.).....	1200 Ma
DC Output Current (Max.).....	200 Ma
Bulb Temperature at Hottest Point (Max.).....	200 °C

CHARACTERISTICS AND TYPICAL OPERATION

Pentode Section

Plate Voltage.....	5000	50	130 Volts
Screen Voltage.....	130	130	130 Volts
Grid No. 1 Voltage.....	—	0	-22 Volts
Plate Resistance (Approx.).....	—	—	6200 Ohms
Transconductance.....	—	—	8800 μ mhos
Plate Current.....	—	450	60 Ma
Screen Current.....	—	40	2.8 Ma
Grid No. 1 Voltage (Approx.).....			
$I_b = 1.0$ Ma.....	-80	—	-39 Volts
Triode Amplification Factor ⁽³⁾	—	—	4.2

Diode Section

Tube Voltage Drop.....			
$I_b = 250$ Ma DC.....			21 Volts