ELECTRICAL DATA

HEATER OPERATION	12CM6	5CM6	6CM6
Heater Voltage	12.6	4.7	6.3 Volts
Heater Current	225	600	450 Ma
Heater Warm-up Time	—	11	— Seconds
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 to Plate	0.7 Pf
Input: g1 to (h + k + g2 + g3)	8.0 Pf
Output: p to (h + k + g2 + g3)	8.5 Pf

RATINGS (Design Center Rating System)

Class A1 Amplifier

Plate Voltage (Max.)	315 Volts
Plate Dissipation (Max.)	12 Watts
Grid No. 2 Voltage (Max.)	285 Volts
Grid No. 2 Dissipatiom (Max.)	2 Watts
Grid No. 1 Circuit Resistance	
Fixed Bias (Max.)	0.1 Megohm
Cathode Bias (Max.)	0.5 Megohm

Vertical Deflection Amplifier(1)	Pent. Conn.	Tri. Conn.
Plate Voltage (Max.)	315	315 Volts
Peak Positive Plate Voltage (Abs. Max.)	2000	2000 Volts
Plate Dissipation (Max.)(2)	8	9 Watts
Grid No. 2 Voltage	285	— Volts
Grid No. 2 Dissipation(2)	1.75	— Watts
Peak Negative Grid Voltage (Max.)	250	250 Volts
Average Cathode Current (Max.)	40	40 Ma
Peak Cathode Current (Max.)	120	120 Ma
Grid No. 1 Circuit Resistance		
Cathode Bias (Max.)	2.2	2.2 Megohms

CHARACTERISTICS AND TYPICAL OPERATION

Class A1 Amplifier	Tri. Conn.	Single Tube			Push-Pull	
Plate Voltage	250	180	250	315	250	285 Volts
Grid No. 2 Voltage	—	180	250	225	250	285 Volts
Grid No. 1 Voltage	-12.5	-8.5	-12.5	-13.0	-15	-19 Volts
Peak AF Grid No. 1 Voltage	—	8.5	12.5	13.0	30	38 Volts
Zero Signal Plate Current	49.5	29	45	34	70	70 Ma
Maximum Signal Plate Current	—	30	47	35	90	92 Ma
Zero Signal Grid No. 2 Current	—	3.0	4.5	2.2	5	4 Ma
Max. Signal Grid No. 2 Current	—	4.0	7.0	6.0	13	13.5 Ma
Plate Resistance (Approx.)	1960	50,000	50,000	80,000	—	— Ohms
Transconductance	5000	3700	4100	3750	—	— μmhos
Amplification Factor	9.8	—	—	—	—	—
Load Resistance	—	5500	5000	8500	10,000	8000 Ohms
Maximum Signal Power Output	—	2.0	4.5	5.5	10	14 Watts
Total Harmonic Distortion	—	8	8	12	5	3.5 Percent
Ec1 for Ib = 0.5 Ma (Approx.)	-37	—	-37	—	—	— Volts

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 a grid-leak bias, an adequate cathode bias resistor, or other suitable means, is required to protect the tube in the absence of excitation.

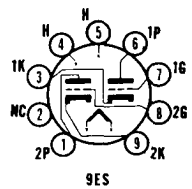
VERTICAL DEFLECTION OSCILLATOR and AMPLIFIER

6CM7

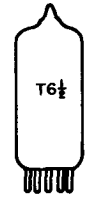
8CM7

Dissimilar Double Triode

Construction	Miniature T-6½
Base	Button 9 Pin, E9-1
Basing	9ES
Outline	6-3
Maximum Diameter	0.875 In.
Maximum Seated Height	2.375 In.
Maximum Overall Height	2.625 In.



9ES



ELECTRICAL DATA

HEATER OPERATION

	8CM7	6CM7
Heater Voltage	8.4	6.3 Volts
Heater Current	450	600 Ma
Heater Warm-up Time	11	11 Seconds
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)

	Section 1(1)	Section 2
Grid to Plate	3.8	3.0 Pf
Input: g to (k + h)	2.0	3.5 Pf
Output: p to (k + h)	0.5	0.4 Pf

RATINGS (Design Center Rating System)

Vertical Deflection Oscillator and Amplifier(2)

	Section 1(1) (Oscillator)	Section 2 (Amplifier)
DC Plate Voltage (Max.)	500	500 Volts
Peak Positive Pulse Plate Voltage (Abs. Max.)	—	2200 Volts
Plate Dissipation (Max.)(3)	1.25	5.5 Watts
Peak Negative Pulse Grid Voltage (Max.)	200	200 Volts
Average Cathode Current (Max.)	15	20 Ma
Peak Cathode Current (Max.)	70	70 Ma
Grid Circuit Resistance		
Fixed Bias (Max.)	2.2	1.0 Megohms
Cathode Bias (Max.)	2.2	2.5 Megohms

CHARACTERISTICS AND TYPICAL OPERATION

	Section 1(1) (Oscillator)	Section 2 (Amplifier)
Plate Voltage	200	250 Volts
Grid Voltage	−7	−8 Volts
Plate Current	5	20 Ma
Transconductance	2000	4400 μmhos
Amplification Factor	21	18
Plate Resistance	10,500	4100 Ohms
Plate Current at Ec = −10 Volts	1.0	— Ma
Grid Voltage for Ib = 10 μa	−14	— Volts

NOTES:

(1) Section 1 connects to pins 3, 6, and 7. Section 2 connects to pins 1, 8, and 9.

(2) 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.

(3) In stages operating with grid leak bias, an adequate cathode bias resistor or other suitable means is required to protect the tube in the absence of excitation.

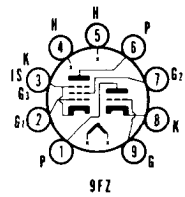
6CM8

5CM8

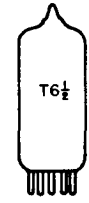
GENERAL PURPOSE AMPLIFIER (T) IF/VIDEO/AGC AMPLIFIER (P)

High Mu Triode and Sharp Cutoff Pentode

Construction ..... Miniature T-6½
Base ..... Button 9 Pin, E9-1
Basing 9FZ
Outline 6-2
Maximum Diameter ..... 0.875 In.
Maximum Seated Height ..... 1.937 In.
Maximum Overall Height ..... 2.187 In.



9FZ



ELECTRICAL DATA

HEATER OPERATION

	5CM8	6CM8
Heater Voltage	4.7	6.3 Volts
Heater Current	600	450 Ma
Heater Warm-up Time	11	11 Seconds