P H I L C O

RECEIVING TUBE

DATA SHEET

October 26, 1960

6FD7, 10FD7, 13FD7

DESCRIPTION

Types 6FD7, 10FD7, and 13FD7 are dissimilar section double triodes intended to serve the combined functions of the vertical deflection oscillator and amplifier. They feature the T-9 bulb with integral wafer base which fits the standard 9-pin miniature socket. The T-9 bulb has the advantage of increasing the heat dissipation safety margin over the 9-pin miniature tubes utilizing the T-6 1/2 bulb.

MECHANICAL DATA

Bulb	Special, T-9
Base	9-Pin, same as E9-1, Except bulb diameter
Outline.	9-77
Basing	9HF
Cathode.	Coated Unipotential
Mounting Position.	Any

ELECTRICAL DATA

Heater Characteristics

	6FD7	10FD7	13FD7	
Heater Voltage	6.3[1]	9.7	13.0	Volts
Heater Current	925	600[2]	450[2]	Ma
Heater Warm-up Time[3]		11	11	Seconds
Maximum Heater Voltage Range[4].	5.7-6.9			Volts
Maximum Heater Current Range[4].		560-640	420-480	Ma
Heater-Cathode Voltage (Design Maximum Values)[4]				
Heater Negative with Respect to Cathode				
Total DC and Peak	200	200	200	Volts Max.
Heater Positive with Respect to Cathode				
DC.	100	100	100	Volts Max.
Total DC and Peak	200	200	200	Volts Max.

Direct Interelectrode Capacitances (Unshielded)

	Section No. 1	Section No. 2	
Grid to Plate.	4.5	10.0	μμf
Input: g to (h + k).	2.2	6.5	μμf
Output: p to (h + k)	0.40	1.2	μμf

Ratings (Design Maximum Values)[4]

Vertical Deflection Oscillator and Amplifier[5]

	Section[7] No. 1 Oscillator	Section[7] No. 2 Amplifier	
Plate Voltage	330	330	Volts Max.
Peak Positive Pulse Plate Voltage		1500	Volts Max.
Peak Negative Pulse Grid Voltage	400	250	Volts Max.
Plate Dissipation[6]	1.5	10.0	Watts
Average Cathode Current	20	50	Ma
Peak Cathode Current	70	175	Ma
Grid Circuit Resistance Self Bias	2.2	2.2	Megohms

Average Characteristics

	Section[7] No. 1	Section[7] No. 2	
Plate Voltage	250	150	Volts
Grid No. 1 Voltage	-3.0	-17.5	Volts
Plate Current	1.4	40.0	Ma
Transconductance	1600	7500	µmhos
Amplification Factor	64	6.0	
Plate Resistance (Approx.)	40000	800	Ohms
Ec/ for Ib = 10 µa (Approx.)	-5.5		Volts
Ec/ for Ib = 100 µa (Approx.)		-40.0	Volts
Transconductance at Ib = 1.0 Ma.		500	µmhos
Ib at Ec/ = -25 Vdc		6.0	Ma
Ib with Eb = 60 V and Ec = 0 V (Instantaneous Value)		95	Ma

NOTES:

1. For parallel heater operation, equipment should be so designed so that at normal supply voltage bogie tubes will operate at this value of heater voltage.

2. For series heater operation, equipment should be so designed so that at normal supply voltage bogie tubes will operate at this value of heater current.

3. Heater warm-up time is defined as the time required for the voltage across the heater to reach 80% of the rated heater voltage after applying four (4) times rated heater voltage to a circuit consisting of the tube heater in series with a resistance equal to three (3) times the rated heater voltage divided by the rated heater current.

4. Design-Maximum Ratings are limiting values of operating and environmental conditions applicable to a bogie electron device of a specified type as defined by its published data, and should not be exceeded under the worst probable conditions.

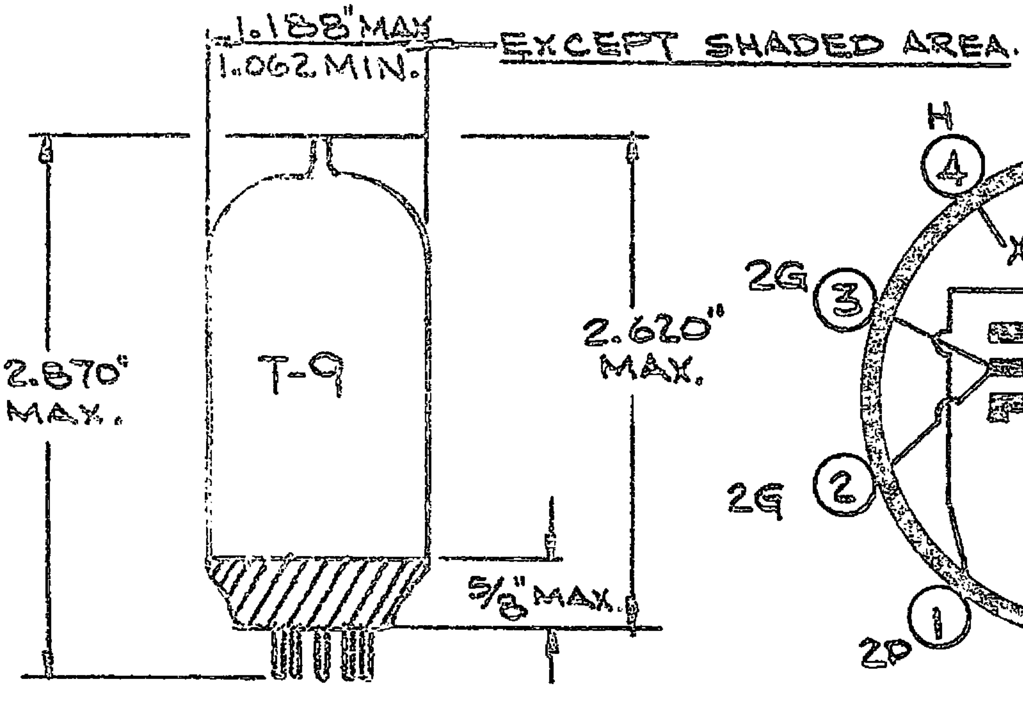
   The device manufacturer chooses these values to provide acceptable serviceability of the device, taking responsibility for the effects of changes in operating conditions due to variations in device characteristics.

The equipment manufacturer should design so that initially and throughout life no design-maximum value for the intended service is exceeded with a bogie device under the worst probable operating conditions with respect to supply-voltage variation, equipment component variation, equipment control adjustment, load variation, signal variation, and environmental conditions.

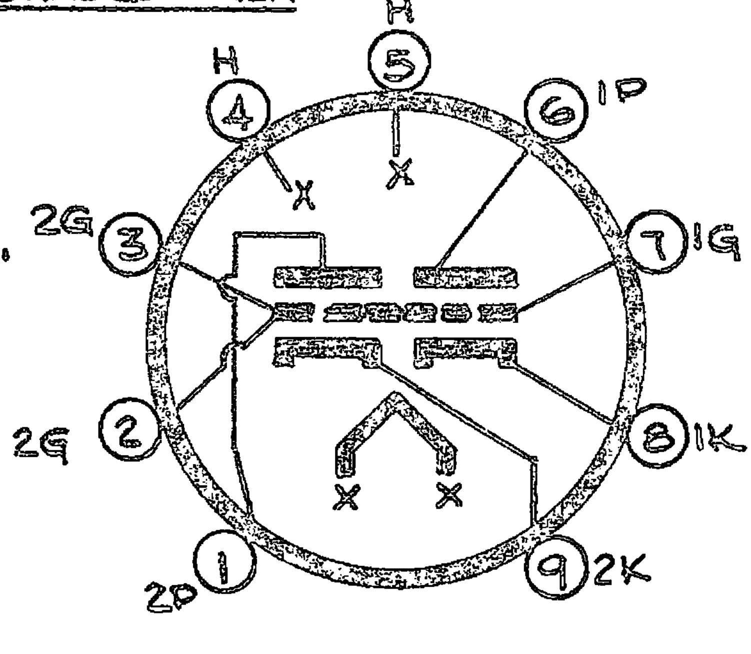
5. For operation in a 525 line, 30 frame system as described in "Standards of Good Engineering Practice for Television Stations; Federal Communications Commission". The duty cycle of the voltage pulse must not exceed 15% of one scanning cycle.

6. 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.

7. Section No. 1 connects to Pins 6, 7 and 8. Section No. 2 connects to Pins 1, 2, 3 and 9.



OUTLINE



BASING DIAGRAM