



### DESCRIPTION AND RATING

The 6JH8 is a miniature double-plate sheet-beam tube which incorporates a pair of balanced deflectors to direct the electron beam to either of the two plates and a control grid to vary the intensity of the beam. The resulting unique characteristics of this tube make it especially suited for service as a synchronous detector in color television receivers. In this application, relatively large, balanced output signals of both positive and negative polarities are developed which eliminate the need for phase-inversion functions in the matrix circuits. Other features of the 6JH8 synchronous detector circuit include low oscillator injection power requirements, freedom from the space-charge coupling effects which are present in dual-control pentodes and heptodes, linear output voltages, insensitiveness to variations in oscillator amplitude over a wide range, and a high ratio of plate to accelerator current. The 6JH8 is also suitable for service in the burst gate circuit of color TV receivers and a variety of other switching and gating applications.

### GENERAL

#### ELECTRICAL

Cathode—Coated Unipotential  
Heater Characteristics and Ratings

Heater Voltage, AC or DC*	6.3 ± 0.6	Volts
Heater Current†	0.3	Amperes

Direct Interelectrode Capacitances, approximate‡

Deflector-Number 1 to All	4.8	pf
Deflector-Number 2 to All	4.8	pf
Grid-Number 1 to All except Plates	7.5	pf
Plate-Number 1 to All	5.0	pf
Plate-Number 2 to All	5.0	pf
Grid-Number 1 to Deflector-Number 1, maximum	0.04	pf
Grid-Number 1 to Deflector-Number 2, maximum	0.07	pf
Plate-Number 1 to Plate-Number 2	0.4	pf
Deflector-Number 1 to Deflector-Number 2	0.38	pf

#### MECHANICAL

Mounting Position—Any  
Envelope—T-6½, Glass  
Base—E9-1, Small Button 9-Pin  
Outline Drawing—EIA 6-3

Maximum Diameter	7/8	Inches
Maximum Over-all Length	2 5/8	Inches
Maximum Seated Height	2 3/8	Inches

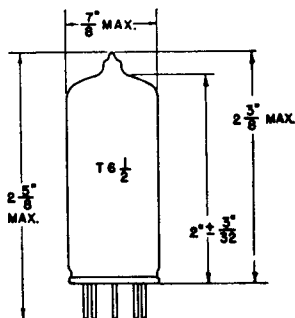
### MAXIMUM RATINGS

#### DESIGN-MAXIMUM VALUES

Plate Voltage, Each Plate	330	Volts
Accelerator Voltage	330	Volts
Peak Positive Deflector Voltage	165	Volts
Peak Negative Deflector Voltage	165	Volts
Positive DC Grid-Number 1 Voltage	0	Volts

Plate Dissipation, Each Plate	3.0	Watts
Accelerator Dissipation	1.0	Watts
DC Cathode Current	33	Milliamperes
Grid-Number 1 Circuit Resistance		
With Fixed Bias	0.1	Megohm
With Cathode Bias	0.25	Megohm

#### PHYSICAL DIMENSIONS

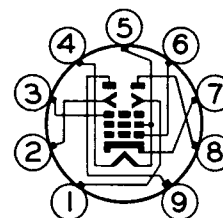


EIA 6-3

#### TERMINAL CONNECTIONS

- Pin 1—Deflector Number 2
- Pin 2—Deflector Number 1
- Pin 3—Accelerator
- Pin 4—Heater
- Pin 5—Heater, Internal Shield, and Focus Electrodes§
- Pin 6—Grid Number 1 (Control Grid)
- Pin 7—Cathode
- Pin 8—Plate Number 2
- Pin 9—Plate Number 1

#### BASING DIAGRAM



EIA 9DP

## CHARACTERISTICS AND TYPICAL OPERATION

### AVERAGE CHARACTERISTICS WITH DEFLECTORS GROUNDED

Plate-Number 1 Voltage	250	Volts
Plate-Number 2, Connected to Plate-Number 1		
Accelerator Voltage	250	Volts
Deflector-Number 1 Voltage	0	Volts
Deflector-Number 2 Voltage	0	Volts
Cathode-Bias Resistor	220	Ohms

Total Plate Current	14	Milliamperes
Accelerator Current	1.5	Milliamperes
Grid-Number 1 Transconductance	4400	Micromhos
Grid-Number 1 Voltage, approximate		
Ib (total) = 10 Microamperes	-13	Volts

### AVERAGE DEFLECTOR CHARACTERISTICS

Plate-Number 1 Voltage	250	Volts
Plate-Number 2 Voltage	250	Volts
Accelerator Voltage	250	Volts
Cathode-Bias Resistor	220	Ohms
Deflector Switching Voltage, maximum ¶	20	Volts
Deflector-Bias Voltage for Minimum Deflector Switching Voltage ¶	-14	Volts
Voltage Difference between Deflectors for Ib1 = Ib2, approximate	0	Volts

Plate-Number 1 Current, maximum		
Ed1 = -15 Volts, Ed2 = +15 Volts	0.7	Milliamperes
Plate-Number 2 Current, maximum		
Ed1 = +15 Volts, Ed2 = -15 Volts	0.7	Milliamperes
Deflector-Number 1 Current, maximum		
Ed1 = +25 Volts, Ed2 = -25 Volts	0.1	Milliamperes
Deflector-Number 2 Current, maximum		
Ed1 = -25 Volts, Ed2 = +25 Volts	0.1	Milliamperes

\* The equipment designer should design the equipment so that heater voltage is centered at the specified bogey value, with heater supply variations restricted to maintain heater voltage within the specified tolerance.

† Heater current of a bogey tube at Ef = 6.3 volts.

‡ Without external shield.

§ Pin 5 should be connected directly to ground.

¶ Deflector switching voltage is defined as the total voltage change on either deflector with an equal and opposite change on the other deflector required to switch the plate current from one plate to the other.

Note: The 6JH8 should be so located in the equipment that it is not subjected to stray magnetic fields.

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

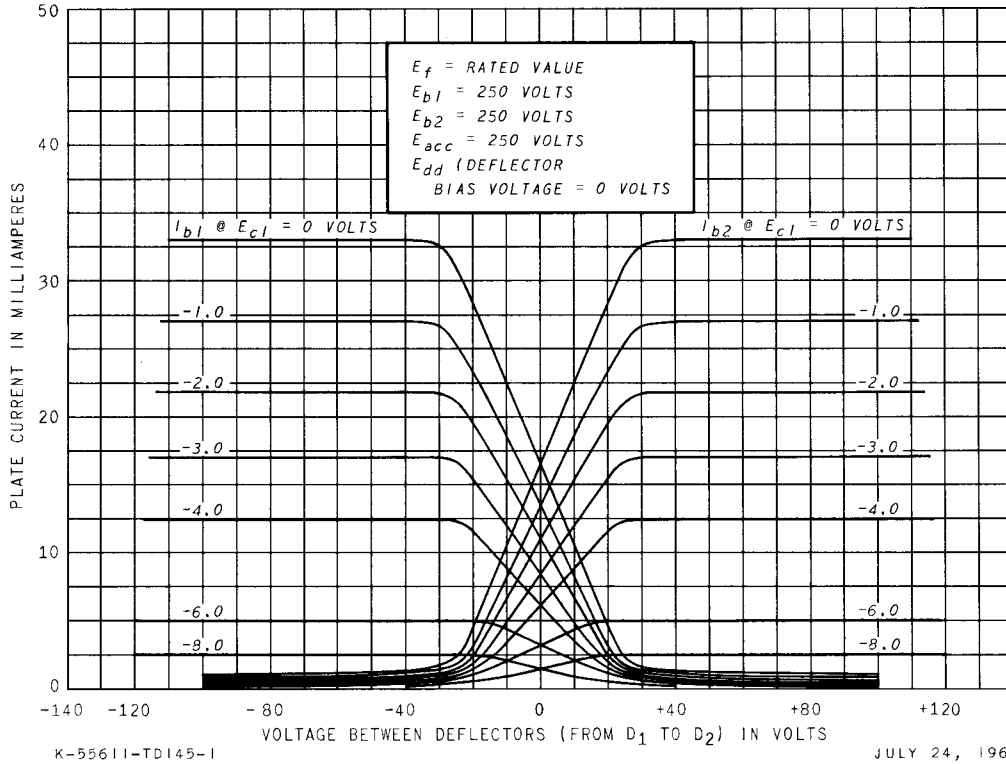
The tube manufacturer chooses these values to provide acceptable serviceability of the tube, making allowance for the effects of changes in operating conditions due to variations in the characteristics of the tube under consideration.

The equipment manufacturer should design so that initially and throughout life no design-maximum value for the intended service is exceeded with a bogey tube under the worst probable operating conditions with respect to supply-voltage variation, equipment component variation, equipment control adjustment, load variation, signal variation, environmental conditions, and variations in the characteristics of all other electron devices in the equipment.

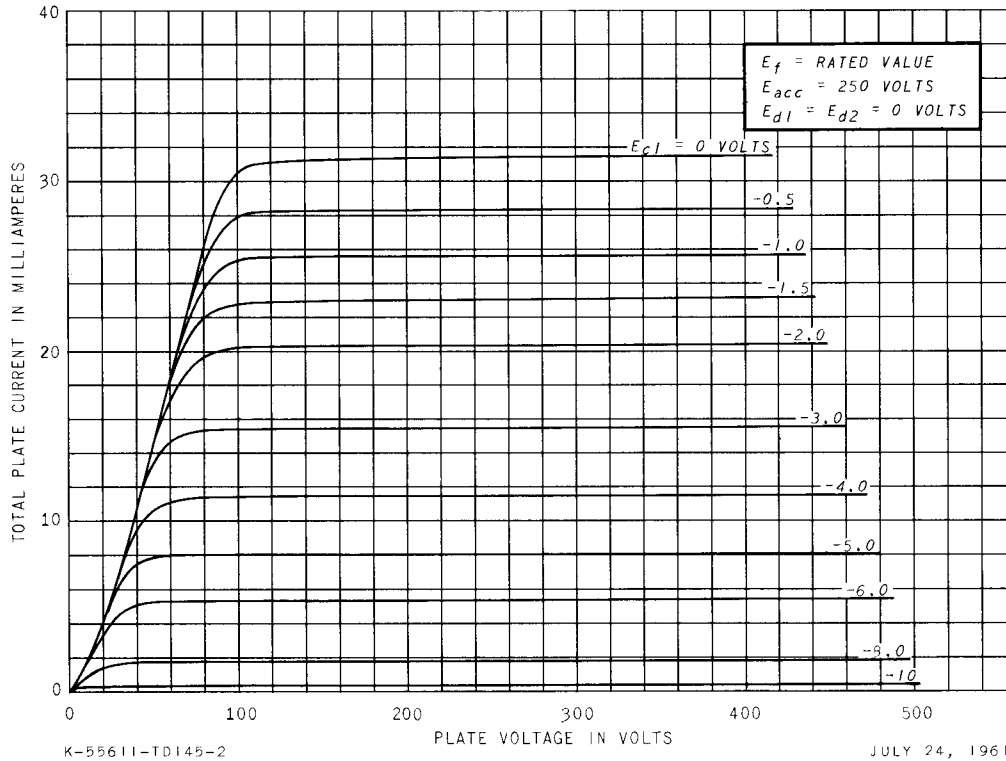
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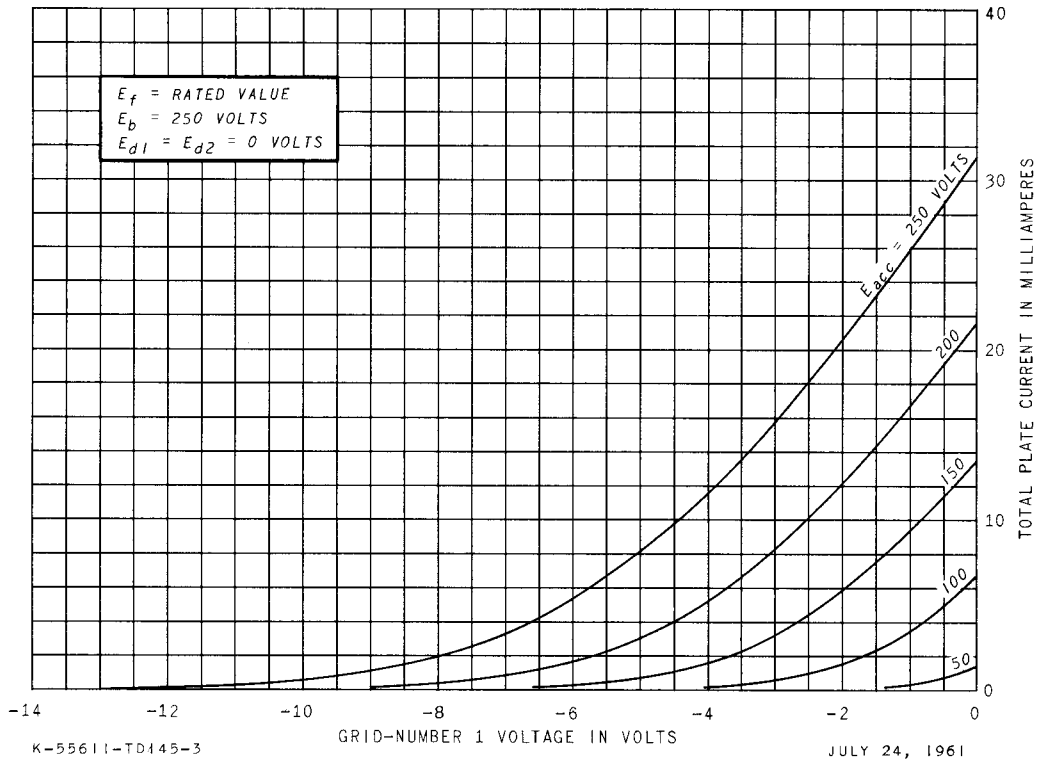
**AVERAGE TRANSFER CHARACTERISTICS**



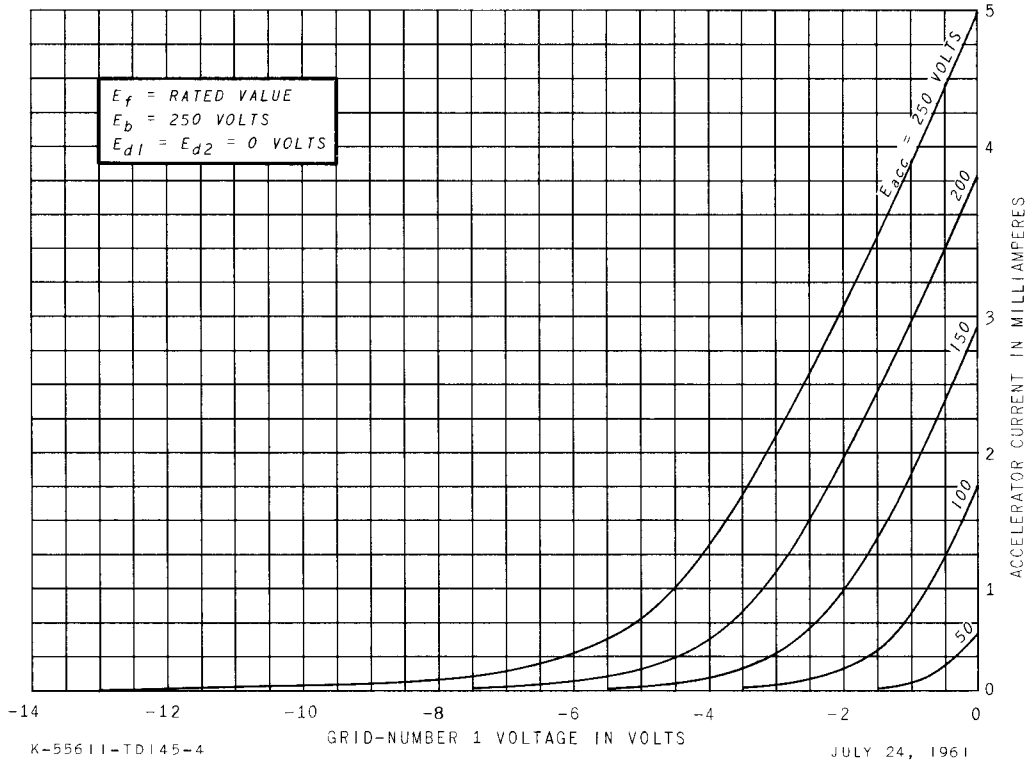
**AVERAGE PLATE CHARACTERISTICS**



**AVERAGE TRANSFER CHARACTERISTICS**



**AVERAGE TRANSFER CHARACTERISTICS**



**RECEIVING TUBE DEPARTMENT**



**Owensboro, Kentucky**