

CHARACTERISTICS AND TYPICAL OPERATION

Class A1 Amplifier (Each Section)

Plate Voltage	100	250 Volts
Grid Voltage	-1	-2 Volts
Plate Current	0.5	1.2 Ma
Plate Resistance.....	80,000	62,500 Ohms
Transconductance	1250	1600 μ mhos
Amplification Factor	100	100

NOTES:

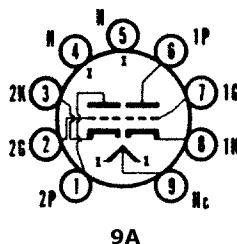
- (1) Section No. 1 connects to Pins 6, 7, and 8. Section No. 2 connects to Pins 1, 2, and 3.
- (2) External Shield No. 315 connected to cathode of section under test.
- (3) Controlled Heater Warm-up Time applies to parallel connection only.

Color Television Type
GROUNDING GRID AMPLIFIER

12AZ7A

Double High Mu Triode

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



ELECTRICAL DATA

HEATER OPERATION

Heater Voltage.....	12.6/6.3 Volts
Heater Current	225/450 Ma
Heater Warm-up Time	11 Seconds
Maximum Heater-Cathode Voltage	90 Volts

DIRECT INTERELECTRODE CAPACITANCES

	Shielded	Unshielded
Grid to Plate (Each Section)	1.9	1.9 Pf
Input (Each Section)	3.2	3.1 Pf
Output (Section 1) ⁽²⁾	1.3	0.5 Pf
Output (Section 2)	1.6	0.4 Pf

Grounded Grid Operation

Input (Each Section)	7.0	6.9 Pf
Output (Section 1) ⁽²⁾	2.8	2.0 Pf
(Section 2)	3.2	2.0 Pf
Plate to Cathode	0.23	0.24 Pf

RATINGS (Design Center Rating System)

Plate Voltage (Max.)	300 Volts
Plate Dissipation (Max.)	2.5 Watts
Negative Grid Voltage (Max.)	50 Volts
Grid Circuit Resistance	
Fixed Bias (Max.)	0.25 Megohm
Self Bias (Max.)	1.0 Megohm

CHARACTERISTICS AND TYPICAL OPERATION

Class A1 Amplifier (Each Section)

Plate Voltage	100	250 Volts
Cathode Bias Resistor	270	200 Ohms
Plate Current	3.7	10 Ma
Transconductance	4000	5500 μ mhos
Amplification Factor	60	60
Plate Resistance.....	15,000	10,900 Ohms
Ec1 for Ib = 10 μ a (Approx.).....	-5	-12 Volts

NOTES:

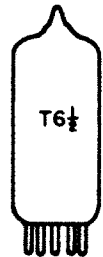
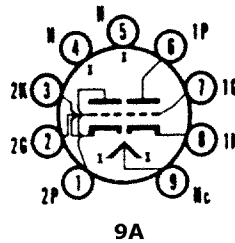
- (1) Shield No. 315.
- (2) Section 1 connects to pins 6, 7, and 8.

12BH7A

Color Television Type VERTICAL or HORIZ. DEFLECTION OSCILLATOR and AMPLIFIER

Double Low Mu Triode

Construction Miniature T-6½
 Base Button 9 Pin, E9-1
 Basing⁽²⁾ 9A
 Outline 6-3
 Maximum Diameter 0.875 In.
 Maximum Seated Height 2.375 In.
 Maximum Overall Height 2.625 In.



ELECTRICAL DATA

HEATER OPERATION

Heater Voltage.....	12.6/6.3 Volts
Heater Current.....	300/600 Ma
Heater Warm-up Time ⁽¹⁾	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 ⁽²⁾	Section 2
Grid to Plate.....	2.6	2.6 Pf
Input.....	3.2	3.2 Pf
Output.....	0.5	0.4 Pf
Plate to Plate.....	0.8	Pf

RATINGS (Design Center Rating System)

	Vertical Deflection Amplifier	Class A1 Amplifier
Plate Voltage (Max.).....	450	300 Volts
Peak Positive Plate Voltage (Abs. Max.).....	1500	— Volts
Plate Dissipation (Each Plate) (Max.).....	3.5	3.5 Watts
Peak Negative Pulse Grid Voltage (Max.).....	250	— Volts
Average Cathode Current (Each Section).....	20	20 Ma
Peak Cathode Current (Max.).....	70	— Ma
Grid Circuit Resistance		
Fixed Bias (Max.).....	—	0.25 Megohm
Cathode Bias (Max.).....	2.2	1.0 Megohms

	Vertical ⁽³⁾ Deflection Oscillator	Horizontal ⁽³⁾ Deflection Oscillator
DC Plate Voltage (Max.).....	450	450 Volts
Plate Dissipation		
Each Plate (Max.).....	3.5	3.5 Watts
Both Plates (Max.).....	7.0	7.0 Watts
Peak Negative Grid Voltage (Max.).....	400	600 Volts
Average Cathode Current (Max.).....	20	20 Ma
Peak Cathode Current (Max.).....	70	300 Ma
Grid Circuit Resistance (Max.).....	2.2	2.2 Megohms

CHARACTERISTICS AND TYPICAL OPERATION

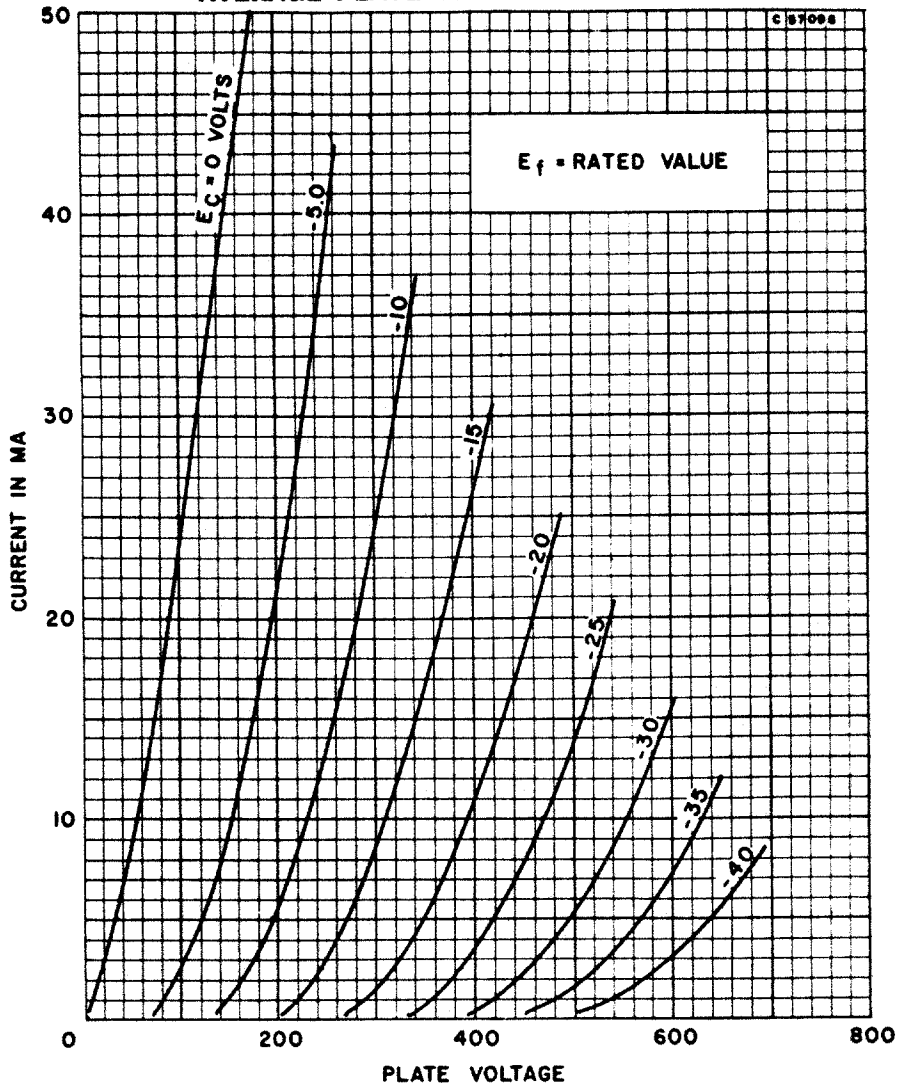
Class A1 Amplifier

Plate Voltage.....	250 Volts
Grid Voltage.....	-10.5 Volts
Plate Current.....	11.5 Ma
Transconductance.....	3100 μmhos
Amplification Factor.....	16.5
Grid Voltage for Ib = 50 μa.....	-23 Volts
Plate Resistance (Approx.).....	5300 Ohms

NOTES:

- (1) Applies to parallel connection only.
- (2) Section 1 connects to pins 6, 7, and 8.
- (3) 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.

AVERAGE PLATE CHARACTERISTICS

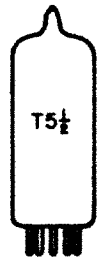
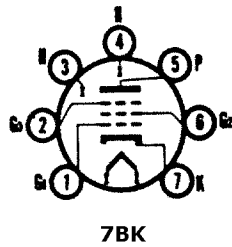


RF/IF AMPLIFIER

12BL6

Semi-Remote Cutoff Pentode

- Construction Miniature T-5½
- Base Button 7 Pin, E7-1
- Basing 7BK
- Outline 5-2
- Maximum Diameter 0.750 In.
- Maximum Seated Height 1.875 In.
- Maximum Overall Height 2.125 In.



ELECTRICAL DATA

HEATER OPERATION

- Heater Voltage⁽¹⁾ 12.6 Volts
- Heater Current 150 Ma
- Maximum Heater-Cathode Voltage
- Heater Negative with Respect to Cathode 30 Volts
- Heater Positive with Respect to Cathode 30 Volts

DIRECT INTERELECTRODE CAPACITANCES (Shielded)

- Grid No. 1 to Plate (Max.) 0.006 Pf
- Input 5.5 Pf
- Output 4.8 Pf