Compactron
Dissimilar Double Pentode

- Low Heater Power
- 140 Volts B+
- High Sensitivity Sound Detector

The 18AJ10 is a compactron containing a sharp-cutoff, dual-control pentode (Section 2) and a power pentode (Section 1). The dual-control pentode is intended for use as an FM detector and the power pentode as an audio-frequency output amplifier in television receivers.

**GENERAL**

**ELECTRICAL**

Cathode - Coated Unipotential

Heater Characteristics and Ratings

Heater Voltage, AC or DC* ........................................... 18 Volts
Heater Current† .................................................. 0.315 ± 0.02 Amperes
Heater Warm-up Time, average‡ ........................................ 11 Seconds
Direct Inter-electrode Capacitances, approximate§

**Section 1**

Grid-Number 1 to Plate: (1g1 to 1p) .............. 0.24 pf
Input: 1g1 to (h + 1k + 1g2 + b.p. + 2k + i.s.) ....... 9.5 pf
Output: 1p to (h + 1k + 1g2 + b.p. + 2k + i.s.) ....... 10 pf

**Section 2**

Grid-Number 1 to Plate: (2g1 to 2p) .............. 0.036 pf
Grid-Number 3 to Plate: (2g3 to 2p) ............. 3.0 pf
Grid-Number 1 to All Except Plate: 2g1 to (h + 2k + 2g2 + 2g3 + i.s.) ............. 7.0 pf
Grid-Number 3 to All: 2g3 to (h + 2k + 2g1 + 2g2 + 2p + i.s.) ............. 7.8 pf
Grid-Number 1 to Grid-Number 3: (2g1 to 2g3) .... 0.14 pf

**MECHANICAL**

Operating Position - Any
Envelope - T-9, Glass
Base - E12-70, Button 12-Pin
Outline Drawing - EIA 9-59

Maximum Diameter ........................................... 1.188 Inches
Minimum Diameter ........................................... 1.062 Inches
Maximum Over-All Length ................................. 2.625 Inches
Maximum Seated Height ................................... 2.250 Inches
Minimum Seated Height ................................... 2.000 Inches

**PHYSICAL DIMENSIONS**

![Physical Dimensions Diagram](image)

**TERMINAL CONNECTIONS**

- Pin 1 - Heater
- Pin 2 - Cathode (Section 2) and Internal Shield
- Pin 3 - Grid Number 1 (Section 2)
- Pin 4 - No Connection
- Pin 5 - Grid Number 3 (Suppressor)(Section 2)
- Pin 6 - Grid Number 2 (Screen)(Section 2)
- Pin 7 - Plate (Section 2)
- Pin 8 - Grid Number 1 (Section 1)
- Pin 9 - Cathode and Beam Plates (Section 1)
- Pin 10 - Grid Number 2 (Screen)(Section 1)
- Pin 11 - Plate (Section 1)
- Pin 12 - Heater

**BASING DIAGRAM**

![Basing Diagram](image)

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The tubes and arrangements disclosed herein may be covered by patents of General Electric Company or others. Neither the disclosure of any information herein nor the sale of tubes by General Electric Company conveys any license under patent claims covering combinations of tubes with other devices or elements. In the absence of an express written agreement to the contrary, General Electric Company assumes no liability for patent infringement arising out of any use of the tubes with other devices or elements by any purchaser of tubes or others.
## MAXIMUM RATINGS

### DESIGN-MAXIMUM VALUES

**Section 1**
- Plate Voltage: 165 Volts
- Screen Voltage: 150 Volts
- Plate Dissipation: 6.0 Watts
- Screen Dissipation: 1.25 Watts
- DC Cathode Current: 60 Milliamperes

**Heater-Cathode Voltage**
- Heater Positive with respect to Cathode
  - DC Component: 100 Volts
  - Total DC and Peak: 200 Volts
- Heater Negative with respect to Cathode
  - Total DC and Peak: 200 Volts

**Grid-Number 1 Circuit Resistance**
- With Cathode Bias: 1.0 Megohms

**Section 2**
- Plate Voltage: 300 Volts
- Suppressor Voltage
  - Positive (DC + Peak): 25 Volts
  - Negative (DC + Peak): 100 Volts
- Screen Supply Voltage: 300 Volts
- Screen Voltage - See Screen Rating Chart
- Positive DC Grid-Number 1 Voltage: 0 Volts
- Negative DC Grid-Number 1 Voltage: 50 Volts
- Plate Dissipation: 1.7 Watts
- Suppressor Dissipation: 0.1 Watts
- Screen Dissipation: 1.0 Watts

**Heater-Cathode Voltage**
- Heater Positive with respect to Cathode
  - DC Component: 100 Volts
  - Total DC and Peak: 200 Volts
- Heater Negative with respect to Cathode
  - Total DC and Peak: 200 Volts
- Suppressor Circuit Resistance: 0.5 Megohms

**Grid-Number 1 Circuit Resistance**
- With Fixed Bias: 0.25 Megohms
- With Cathode Bias: 0.5 Megohms

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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.
# Characteristics and Typical Operation

## Average Characteristics—Class A, Amplifier

### Section 1

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Plate Voltage</td>
<td>145 Volts</td>
</tr>
<tr>
<td>Screen Voltage</td>
<td>110 Volts</td>
</tr>
<tr>
<td>Grid-Number 1 Voltage</td>
<td>-7.0 Volts</td>
</tr>
<tr>
<td>Peak AF Grid-Number 1 Voltage</td>
<td>7.0 Volts</td>
</tr>
<tr>
<td>Plate Resistance, approximate</td>
<td>33000 Ohms</td>
</tr>
<tr>
<td>Transconductance</td>
<td>5600 Micromhos</td>
</tr>
<tr>
<td>Zero-Signal Plate Current</td>
<td>34 Milliamperes</td>
</tr>
<tr>
<td>Maximum-Signal Plate Current</td>
<td>39 Milliamperes</td>
</tr>
<tr>
<td>Zero-Signal Screen Current</td>
<td>6.5 Milliamperes</td>
</tr>
<tr>
<td>Maximum-Signal Screen Current</td>
<td>9.3 Milliamperes</td>
</tr>
<tr>
<td>Load Resistance</td>
<td>2500 Ohms</td>
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<tr>
<td>Total Harmonic Distortion, approximate</td>
<td>12 Percent</td>
</tr>
<tr>
<td>Maximum-Signal Power Output</td>
<td>1.45 Watts</td>
</tr>
</tbody>
</table>

### Average Characteristics

### Section 2

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Plate Voltage</td>
<td>150 Volts</td>
</tr>
<tr>
<td>Suppressor Voltage</td>
<td>0 Volts</td>
</tr>
<tr>
<td>Screen Voltage</td>
<td>100 Volts</td>
</tr>
<tr>
<td>Cathode-Bias Resistor</td>
<td>180 Ohms</td>
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<tr>
<td>Plate Resistance, approximate</td>
<td>0.18 Megohms</td>
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<tr>
<td>Grid-Number 1 Transconductance</td>
<td>2400 Micromhos</td>
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<tr>
<td>Grid-Number 3 Transconductance</td>
<td>750 Micromhos</td>
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<tr>
<td>Plate Current</td>
<td>2.8 Milliamperes</td>
</tr>
<tr>
<td>Screen Current</td>
<td>3.5 Milliamperes</td>
</tr>
<tr>
<td>Grid-Number 1 Voltage, approximate</td>
<td>-4 Volts</td>
</tr>
<tr>
<td>Grid-Number 3 Voltage, approximate</td>
<td>-3.5 Volts</td>
</tr>
</tbody>
</table>

### Notes

* Heater voltage for a bogey tube at If = 0.315 amperes.

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

‡ The time required for the voltage across the heater to reach 80 percent of the bogey value after applying 4 times the bogey heater voltage to a circuit consisting of the tube heater in series with a resistance equal to 3 times the bogey heater voltage divided by the bogey heater current.

§ Without external shield.
AVERAGE TRANSFER CHARACTERISTICS

SECTION 2

\[
E_1 = \text{RATED VALUE} \\
E_b = 150 \text{ VOLTS} \\
E_c \neq 0 \text{ VOLTS}
\]

GRID-NUMBER 1 VOLTAGE IN VOLTS

PLATE CURRENT IN MILLIAMPERES

SCREEN CURRENT IN MILLIAMPERES

GRID-NUMBER 1 VOLTAGE IN VOLTS

E-55011-10337-7

NOVEMBER 30, 1966
AVERAGE TRANSFER CHARACTERISTICS

SECTION 2

Plate Current in Milliamperes

Grid-Number 1 Voltage in Volts

Screen Current in Milliamperes

Grid-Number 1 Voltage in Volts

$E_f = \text{RATED VALUE}$

$E_b = 150 \text{ VOLTS}$

$E_c = 0 \text{ VOLTS}$

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