Description: Double triode for use as R.F. amplifier and self-oscillating mixer

Mechanical Data
- Cathode: coated, unipotential
- Base: E 9-1
- Bulb: T 6¹/₂
- Outline: 6-2
- Basing: 9AJ
- Mounting position: any

Tube outline

Bottom view of base

<table>
<thead>
<tr>
<th>Base pin No.</th>
<th>Element</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Plate</td>
</tr>
<tr>
<td>2</td>
<td>Grid</td>
</tr>
<tr>
<td>3</td>
<td>Cathode</td>
</tr>
<tr>
<td>4</td>
<td>Heater</td>
</tr>
<tr>
<td>5</td>
<td>Heater</td>
</tr>
<tr>
<td>6</td>
<td>Plate</td>
</tr>
<tr>
<td>7</td>
<td>Grid</td>
</tr>
<tr>
<td>8</td>
<td>Cathode</td>
</tr>
<tr>
<td>9</td>
<td>Internal shield</td>
</tr>
</tbody>
</table>

Heater Data
- Heater voltage: 17.5 volts
- Heater current: 150 ma mps

Direct interelectrode capacitances (each system)
- Plate to grid: 1.5 μF
- Plate to cathode: 0.18 μF
- Plate to cathode, heater and shield: 1.2 μF
- Plate to cathode, heater and shield: 1.9 μF
- Grid to cathode, heater and shield: 3 μF

* With external shield with internal diameter of 0.886"
Direct interelectrode capacitances (continued)

Between the triode systems

Plate to plate  
Plate to plate ≠  
Grid to grid  
Plate triode No.1 to grid triode No.2  
Plate triode No.2 to grid triode No.1  
Plate triode No.1 to cathode triode No.2  
Plate triode No.2 to cathode triode No.1  
Grid triode No.1 to cathode triode No. 2  
Grid triode No.2 to cathode triode No. 1

max. 0.04 µF  
max. 0.008 µF  
max. 0.003 µF  
max. 0.008 µF  
max. 0.008 µF  
max. 0.008 µF  
max. 0.008 µF  
max..0.003 µF

Maximum ratings (each section; Design Center Values)

Plate voltage without current  
Plate voltage  
Plate dissipation  
Plate dissipation of two systems together  
Cathode current  
Negative grid bias  
Grid circuit resistance  
Voltage between cathode and heater  
Circuit resistance between heater and cathode

550 volts max.  
250 volts max.  
2.5 watts max.  
4.5 watts max.  
15 mamps max.  
100 volts max.  
1 megohm max.  
90 volts max.  
20000 ohms max.

Typical characteristics (each section)

Plate voltage  
Grid bias  
Plate current  
Transconductance  
Amplification factor

100 170 200 volts  
-1.1°  -1.5 -2.1 volts  
4.5 10 10 mamps  
4600 6200 5600 micromhos  
50 50 48

≠ With external shield with internal diameter of 0.886"

° In this case grid current may occur. If this is not permissible a condition with a bias of -1.5 volts should be chosen.
Operating characteristics as R.F. amplifier in FM/AM receivers (triode system No.1)

Supply voltage 170 170 100 volts
Plate series resistor 1300 1500 1500 ohms
Plate voltage 160 155 92 volts
Cathode resistor 330 160 160 ohms
Negative grid bias -2 -1.4 -0.85 volts
Plate current 6 8.7 5.2 mamps
Transconductance 4700 6000 5200 micromhos
Internal resistance 10500 8400 10000 ohms
Input resistance at 100 Mc 8000 6000 7000 ohms
Equivalent noise resistance 650 500 580 ohms

Operating characteristics as self-oscillating mixer in FM/AM receivers (triode system No.2)

Supply voltage 100 170 200 volts
Plate series resistor 4700 4700 8200 ohms
Grid leak 1 1 1 megohm *)
Oscillator voltage 1.8 2.8 2.8 volts (rms)
Plate current 2.2 4.8 5.2 mamps
Conversion conductance 1700 2200 2300 micromhos
Internal resistance 20000 16000 15000 ohms
Input resistance at 100 Mc - 15000 - ohms

*) At this value of grid leak squeegging is prevented by feed-back, which normally is applied in order to compensate for the internal resistance

°) See page 2
Plate voltage = 100 volts

Amplification factor
Internal resistance ($\times 10^3$ ohms)

Negative grid voltage (volts)
Transconductance ($\times 10^3$ microamps)

Plate current (milliamps)
Plate voltage = 200 volts

- Amplification factor
- Negative grid voltage
- Transconductance
- Internal resistance

Plate current (milliamps)

Amplification factor vs. Plate current
Transconductance vs. Plate current
Internal resistance vs. Plate current
Negative grid voltage vs. Plate current
Oscillator voltage (volts r.m.s.)

Conversion conductance ($x 10^3$ micromhos)

Plate series resistor = 0 ohm
Grid leak = 1 megohm

Plate voltage = 250 volts
200
150
100
Supply voltage = 170 volts
Plate series resistor = 4700 ohms
Plate series resistor = 0 ohm
Grid leak = 1 megohm

Plate voltage = 50 volts

Supply voltage = 170 volts
Plate series resistor = 4700 ohms

H

Internal resistance (x103 ohms)

Oscillator voltage (volts, r.m.s.)
Plate series resistor = 0 ohm
Grid leak = 1 megohm