HYTRON CERAMIC-BASE TUBES

The attached characteristics for the Hytron "GT" "Bantams" are applicable to ceramic-base "GTX" "Bantam" tubes.

These ceramic-based "Bantams" for high-frequency circuits are designated by the suffix letter "X" after "GT".

The tubes have the same physical dimensions as the Hytron "GT" series and identical static characteristics. However, because of the low-loss base, the Hytron "X" "Bantams" have improved dynamic characteristics, particularly at the higher frequencies.

Furthermore, the ceramic-base "Bantams" are specially selected and subjected to rigid tests.

These tubes are supplied with metal shields that contact the metal base ring or shell. This ring is connected to the #1 or ground pin. Therefore, the Hytron ceramic-base "Bantams" are interchangeable with metal tubes.
G E N E R A L  D E S C R I P T I O N

Application: The Hytron 6A8GT is a cathode type pentagrid converter designed for use as a combined oscillator and mixer tube in superheterodyne circuits. The tube construction is such that independent control of these functions is available.

The 6A8GT is a glass tube equipped with a small octal base and may be used interchangeably with the 6A80 glass tube.

Physical Characteristics: Bulb T = 9C

R AT I N G  A N D  C H A R A C T E R I S T I C S

Heater:
Voltage: 6.3 Volts AC or DC
Current: 0.3 Ampere

Note: Voltage between heater and cathode should be kept at a minimum if direct connection is not possible.

M A X I M U M  R A T I N G S

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Rating</th>
</tr>
</thead>
<tbody>
<tr>
<td>Plate Voltage</td>
<td>250 Volts</td>
</tr>
<tr>
<td>Screen Voltage (Grids No. 3 and No. 5)</td>
<td>50 Volts</td>
</tr>
<tr>
<td>Anode Grid Voltage (Grid No. 1)</td>
<td>100 Volts</td>
</tr>
<tr>
<td>Oscillator Grid Voltage (Grid No. 4)</td>
<td>50,000 Volts</td>
</tr>
<tr>
<td>Control Grid Voltage</td>
<td>1.5 Volts Min.</td>
</tr>
<tr>
<td>Screen Current</td>
<td>1.5 Milliamperes</td>
</tr>
<tr>
<td>Anode Grid Current</td>
<td>1.6 Milliamperes</td>
</tr>
<tr>
<td>Oscillator Grid Resistor</td>
<td>0.5 Milliamperes</td>
</tr>
<tr>
<td>Conversion Conductance</td>
<td>500 Microhos</td>
</tr>
<tr>
<td>Conversion Conductance = 2 Microhos</td>
<td>-20 Volts Approx.</td>
</tr>
</tbody>
</table>

* A 20,000 ohm voltage dropping resistor must be used for supply voltages above 200 volts.

C O N V E R T E R  O P E R A T I O N

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Rating</th>
</tr>
</thead>
<tbody>
<tr>
<td>Plate Voltage</td>
<td>100 Volts</td>
</tr>
<tr>
<td>Screen Voltage</td>
<td>50 Volts</td>
</tr>
<tr>
<td>Anode Grid Voltage</td>
<td>100 Volts</td>
</tr>
<tr>
<td>Oscillator Grid Voltage (Grid No. 1)</td>
<td>50,000 Ohms</td>
</tr>
<tr>
<td>Plate Current</td>
<td>1.5 Milliamperes</td>
</tr>
<tr>
<td>Oscillator Grid Resistor</td>
<td>0.5 Milliamperes</td>
</tr>
<tr>
<td>Conversion Conductance</td>
<td>500 Microhos</td>
</tr>
<tr>
<td>Conversion Conductance = 2 Microhos</td>
<td>-20 Volts Approx.</td>
</tr>
</tbody>
</table>

*Anode Grid Supply Voltage - requires 20,000 ohm voltage dropping resistor.

Direct Inter-electrode Capacitances:
- Grid No. 4 to Plate: 0.80 μF
- Grid No. 4 to Grid No. 2: 0.19 μF
- Grid No. 4 to Grid No. 1: 0.13 μF
- Grid No. 1 to Grid No. 2: 1.0 μF
- Grid No. 4 to all other electrodes (RF Input): 7.5 μF
- Grid No. 2 to all other electrodes (Output): 5.0 μF
- Plate to all other electrodes (Mixer Output): 7.5 μF
- Grid No. 1 to all other electrodes (Osc. Input): 6.2 μF

Note: For characteristic curves refer to the type 6A80

B-2 3-39

HYTRON CORPORATION
SALEM, MASS.
GENERAL DESCRIPTION

Application: The Hytron 6J5GT is a cathode type general purpose amplifier triode designed for use in resistance coupled amplifiers or in super-heterodyne circuits as an oscillator. The high mutual conductance and low output capacitance make the tube especially suited for high frequency oscillator service. The 6J5GT is a glass tube equipped with a small octal base. In general, the application and operation of this tube parallels that of the 6CSG.

Physical Characteristics: Bulb T-9D

RATING AND CHARACTERISTICS

Heater:
Voltage 6.3 Volts AC or DC
Current 0.3 Ampere

Note: Voltage between heater and cathode should be kept at a minimum if direct connection is not possible.

Operating Conditions: (Class A Amplifier)

Plate Voltage 250 Volts Max.
Grid Voltage -8 Volts
Plate Current 9.0 Milliamperes
Plate Resistance 7700 Ohms Approx.
Mutual Conductance 8600 Micromhos Approx.
Amplification Factor 20

Direct Interelectrode Capacitances:

Grid to Plate 2.7 µuf.
Input 3.0 µuf.
Output 3.0 µuf.
TYPE 6J7GT

HYTRON BANTAM

GENERAL DESCRIPTION

Application: The Hytron 6J7-GTs is a cathode type pentode designed primarily for service as a biased detector and in such use is capable of comparatively high gain. It may also be employed as a high gain amplifier of radio or audio frequency signals. An internal shield is connected to the No. 1 base pin.

The Hytron 6J7GT is a glass tube equipped with a small octal base and may be used interchangeably with the Hytron 6J7U glass tube.

Physical Characteristics: Bulb T-9C

RATING AND CHARACTERISTICS

Heater:
Voltage 6.3 Volts AC or DC
Current 0.3 Amperes

Note: Voltage between heater and cathode should be kept at a minimum, if direct connection is not possible.

AMPLIFIER OPERATION (CLASSE A)

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value 1</th>
<th>Value 2</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Plate Voltage</td>
<td>250</td>
<td>Max.</td>
<td>Volts</td>
</tr>
<tr>
<td>Screen Voltage</td>
<td>250</td>
<td>**100</td>
<td>Volts</td>
</tr>
<tr>
<td><strong>Grid Voltage</strong></td>
<td>-3</td>
<td></td>
<td>Volts</td>
</tr>
<tr>
<td>Suppressor</td>
<td>Connected to cathode at socket.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Plate Current</td>
<td>2.0</td>
<td>6.0</td>
<td>Milliamperes</td>
</tr>
<tr>
<td>Screen Current</td>
<td>0.5</td>
<td>0.5</td>
<td>Milliamperes</td>
</tr>
<tr>
<td>Plate Resistance</td>
<td>1.0</td>
<td>1.5 Min.</td>
<td>Megohm</td>
</tr>
<tr>
<td>Amplification Factor</td>
<td>1185</td>
<td>1500 Min.</td>
<td>Microhms</td>
</tr>
<tr>
<td>Mutual Conductance</td>
<td>-7</td>
<td>-7</td>
<td>Approx. Volts</td>
</tr>
</tbody>
</table>

* Voltage for Cathode Current Cut-Off.
** Screen Voltage = 125 Max. Volts.
*** Grid Circuit Resistance must not exceed 1.0 Megohm.

BIASED DETECTOR OPERATION

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value 1</th>
<th>Value 2</th>
<th>Value 3</th>
<th>Value 4</th>
</tr>
</thead>
<tbody>
<tr>
<td>Plate Supply Voltage</td>
<td>250</td>
<td>250</td>
<td>250</td>
<td>250</td>
</tr>
<tr>
<td>Screen Voltage</td>
<td>50</td>
<td>85</td>
<td>100</td>
<td>100</td>
</tr>
<tr>
<td>Grid Voltage</td>
<td>-2</td>
<td>-1.7</td>
<td>-3.9</td>
<td>-4.3</td>
</tr>
<tr>
<td>Cathode Resistor</td>
<td>8000</td>
<td>8000</td>
<td>4000</td>
<td>10,000</td>
</tr>
<tr>
<td>Suppressor Connected to Cathode at Socket</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cathode Current (Zero Signal)</td>
<td>0.65</td>
<td>0.21</td>
<td>0.97</td>
<td>0.43</td>
</tr>
<tr>
<td>Plate Resistor</td>
<td>0.75</td>
<td>0.50</td>
<td>0.75</td>
<td>0.50</td>
</tr>
<tr>
<td>Blocking Condenser</td>
<td>0.03</td>
<td>0.03</td>
<td>0.03</td>
<td>0.03</td>
</tr>
<tr>
<td>Grid Resistor of Following Tube</td>
<td>0.25</td>
<td>0.25</td>
<td>0.25</td>
<td>0.25</td>
</tr>
<tr>
<td><strong>RF Signal</strong></td>
<td>1.18</td>
<td>1.21</td>
<td>1.38</td>
<td>1.37</td>
</tr>
</tbody>
</table>

* Effective plate voltage will be this value minus the voltage drop in the plate resistor.
** 80% Modulation. Output voltage for each set of conditions 17 peak audio volts at grid of following tube.

Direct Interelectrode Capacitances:

*Grid No. 1 to Plate | 0.005 µf. Max.
Grid No. 1 to all other electrodes | 4.3 µf.
Plate to all other electrodes | 9.0 µf.

*With shield can.

Note: For characteristic curves refer to the type 6J7.)
Application: The Hytron 6K7-GT is a cathode type super-control pentode primarily designed for amplifier service in radio or intermediate frequency circuits. It may also be used as a mixer tube in superheterodyne circuits. An internal shield is connected to cathode within the tube.

The Hytron 6K7GT is a glass tube equipped with a small octal base and may be used interchangeably with the Hytron 6K7G glass tube.

Physical Characteristics: Bulb T-9C

RATING AND CHARACTERISTICS

Heater:
Voltage 6.3 Volts AC or DC
Current 0.3 Amperes

Note: Voltage between heater and cathode should be kept at a minimum if direct connection is not possible.

AMPLIFIER OPERATION (CLASS A)

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>Value 1</th>
<th>Value 2</th>
<th>Value 3</th>
<th>Value 4</th>
</tr>
</thead>
<tbody>
<tr>
<td>Plate Voltage</td>
<td>90</td>
<td>180</td>
<td>250</td>
<td>250 Max. Volts</td>
</tr>
<tr>
<td>Screen Voltage</td>
<td>30</td>
<td>75</td>
<td>100</td>
<td>105 Max. Volts</td>
</tr>
<tr>
<td>Grid Voltage</td>
<td>-2</td>
<td>-3</td>
<td>-3</td>
<td>-5 Min. Volts</td>
</tr>
<tr>
<td>Suppressor</td>
<td></td>
<td></td>
<td></td>
<td>Connected to Cathode at Socket</td>
</tr>
<tr>
<td>Plate Current</td>
<td>0.4</td>
<td>4.0</td>
<td>7.0</td>
<td>10.5 Milliamperes</td>
</tr>
<tr>
<td>Screen Current</td>
<td>1.3</td>
<td>1.0</td>
<td>1.7</td>
<td>2.8 Milliamperes</td>
</tr>
<tr>
<td>Plate Resistance</td>
<td>0.515</td>
<td>1.0</td>
<td>0.8</td>
<td>0.8 Megohm</td>
</tr>
<tr>
<td>Amplification Factor</td>
<td>400</td>
<td>1100</td>
<td>1180</td>
<td>990 Microhm</td>
</tr>
<tr>
<td>Mutual Conductance</td>
<td>1775</td>
<td>1100</td>
<td>1450</td>
<td>1650 Microhm</td>
</tr>
<tr>
<td>*Grid Voltage</td>
<td>-38.5</td>
<td>-32.5</td>
<td>-42.5</td>
<td>-52.5 Volts</td>
</tr>
</tbody>
</table>

*Mutual Conductance = 8 Microhms.

MIXER OPERATION (VARIABLE BIAS)

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>Value 1</th>
<th>Value 2</th>
<th>Value 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Plate Voltage</td>
<td>250 Max. Volts</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Screen Voltage</td>
<td>100</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Grid Voltage</td>
<td>-10</td>
<td>Approx. Volts</td>
<td></td>
</tr>
<tr>
<td>Suppressor</td>
<td></td>
<td>Connected to Cathode at Socket.</td>
<td></td>
</tr>
</tbody>
</table>

Values shown are optimum. Grid voltage is minimum for 7 volts peak oscillator voltage.

Direct Interelectode Capacitances:

- Grid No. 1 to Plate: 0.005 µF, Max.
- Grid No. 1 to all other electrodes: 4.1 µF
- Plate to all other electrodes: 9.3 µF

*With shield can.

Note: For characteristic curves refer to the type 6K7G

HYTRON CORPORATION
SALEM, MASS.
GENERAL DESCRIPTION

Application: The Hytron 6K8GT is a cathode type triode-tetrode converter tube designed for the purpose of obtaining the faults found in pentagrid type converters. The Hytron 6K8GT, through unique geometrical and electrical design, either totally overcomes or greatly reduces in severity:

1. Interlock between oscillator and signal circuits.
2. Load transconductance in the oscillator section.
3. Change in transconductance of the oscillator section with signal grid bias.
4. Loading of the RF input circuit under ordinary operating conditions due to transit time effect.
5. Loading of the input circuit due to space charge coupling.

In addition to the above advantages, further advancement of performance is possible due to the following improvements over typical pentagrid converter tubes:

1. Lower interelectrode capacitances in all important circuits.
2. Less feedback required for satisfactory oscillator operation.
3. Higher output impedance.
4. Oscillator plate voltage may be the same as the screen voltage.
5. In 100 volt operation, the screen may be operated at the same voltage.
6. A negligible amount of voltage at oscillator frequency appears on the signal grid.

The Hytron 6K8GT is a glass tube equipped with a small octal base and may be used interchangeably with the Hytron 6256 glass tube.

Physical Characteristics: Bulb T-9C
Base Connections

Bottom View

RATING AND CHARACTERISTICS

Heater: Voltage 6.3 a-c or 6 to 8 volts
Current 0.5 amp.

Direct Inter-electrode Capacitances: (Approx.)
- Neonode Grid No. 2 to Neonode Plate: 0.65 mf
- Neonode Grid No. 3 to Triode Grid & Neonode Grid No. 1: 0.5 mf
- Triode Grid & Neonode Grid No. 1 to Triode Plate: 1.0 mf
- Neonode Grid No. 3 to All Other Electrodes - RF Input: 0.6 mf
- Triode Plate to All Other Electrodes (except Triode Grid and Neonode Grid No. 1) - Cathode Output: 3.2 mf
- Triode Grid & Neonode Grid No. 1 to All Other Electrodes (except Triode Plate) - Cathode Input: 6.0 mf
- Neonode Plate to All Other Electrodes - Mixter Output: 5.5 mf

Maximum Overall Length 2-3/16"
Maximum Diameter 1-3/16"
Bulb Size Miniature
Cap Miniature
Base Octal 8-Pin
Mounting position Vertical, base down

Hexode Plate Voltage 250 max. volts
Hexode Screen (Grids #2 & #3) Voltage 100 max. volts
Hexode Control Grid (Grid #1) Voltage <0.5 max. volts
Triode Plate Voltage 200 max. volts
Total Cathode Current 16 max. ma.

Typical Operation:
- Heater Voltage: 6.3 volts
- Hexode Plate Voltage: 6.3 volts
- Hexode Screen Voltage: 100 volts
- Hexode Control Grid Voltage: 6 volts
- Triode Plate Voltage: 100 volts
- Triode Grid Resistor: 50000 ohms
- Hexode Plate Resistance: 0.4 ohms
- Conversion Transconductance: 350 umhos
- Hexode Control Grid Bias for Conver. Transformer: -2 volts
- Hexode Plate Current: 2.3 ma.
- Hexode Screen Current: 6.2 ma.
- Triode Plate Current: 3.9 ma.
- Triode Grid & Neonode Grid #1 Current: 0.15 ma.

Note: The transconductance of the oscillator portion (not oscillating) of the 6K8GT is approximately 5000 ohms when the triode plate voltage is 100 volts, and the triode grid voltage is 0 volts.

Note: For characteristic curves refer to type 6E8G.