from JETEC release #1696, July 23, 1956
Sponsor: Rogers Electronic Tubes, Toronto, Canada

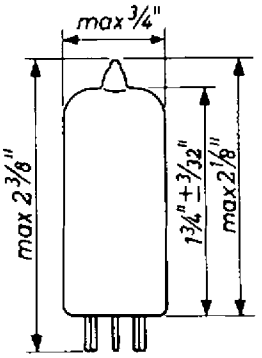
# 6687

DUAL CONTROL HEPTODE for use as gated amplifier in computer and on-off control circuits

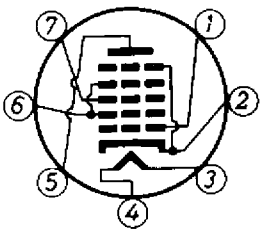
## MECHANICAL DATA

| | |
|---|---|
| Cathode | Coated unipotential |
| Base | E7-1 |
| Bulb | T5½ |
| RETMA basing designation | 7 CH |
| Mounting position | Any |

TUBE OUTLINE




BOTTOM VIEW OF BASE




| BASE PIN No | ELEMENT |
|---|---|
| 1 | Grid No.1 |
| 2 | Cathode and grid No.5 |
| 3 | Heater |
| 4 | Heater |
| 5 | Plate |
| 6 | Grids No.2 and 4 |
| 7 | Grid No.3 |

## ELECTRICAL DATA

### Heater data

| | |
|---|---|
| Heater voltage [1] | 6.3 volts |
| Heater current at 6.3 volts | 270(±5%) mamps |

## DIRECT INTERELECTRODE CAPACITANCES (without external shield)

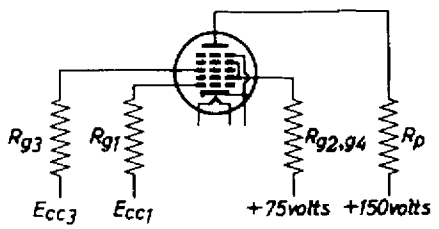
| | | |
|---|---|---|
| Plate to all other elements | | 7.6 μμF |
| Grid No.1 to all other elements | | 5.4 μμF |
| Grid No.3 to all other elements | | 7.1 μμF |
| Plate to grid No.1 | max. | 0.08 μμF |
| Plate to grid No.3 | max. | 0.35 μμF |
| Grid No.1 to grid No.3 | max. | 0.2 μμF |

[1]) In order to obtain a prolonged tube life the maximum variations of the heater voltage should be less than ± 5% (absolute limits)

MAXIMUM RATINGS (Absolute Values)

| | |
|---|---|
| Plate voltage | 250 volts max. |
| Plate voltage (without current) | 500 volts max. |
| Plate dissipation | 1.0 watt max. |
| Grid No.2 and 4 voltage | 100 volts max. |
| Grid No.2 and 4 voltage (without current) | 500 volts max. |
| Grid No.2 and 4 dissipation | 1.0 watt max. |
| Negative grid No.3 voltage | 100 volts max. |
| Positive grid No.3 voltage | 0 volt max. |
| Negative grid No.3 peak voltage | 200 volts max. |
| Positive grid No.3 peak voltage | 90 volts max. |
| Grid No.3 dissipation | 0.5 watt max. |
| Grid No.3 circuit resistance (with fixed bias) | 0.5 megohm max. |
| Grid No.3 circuit resistance (with automatic bias) | 1 megohm max. |
| Negative grid No.1 voltage | 100 volts max. |
| Positive grid No.1 voltage | 0 volt max. |
| Negative grid No.1 peak voltage | 200 volts max. |
| Grid No.1 dissipation | 0.5 watt max. |
| Grid No.1 circuit resistance (with fixed bias) | 0.5 megohm max. |
| Grid No.1 circuit resistance (with automatic bias) | 1 megohm max. |
| Cathode current | 20 mamps max. |
| Peak cathode current | 70 mamps max. |
| Voltage between heater and cathode | 120 volts max. |

## TYPICAL CHARACTERISTICS

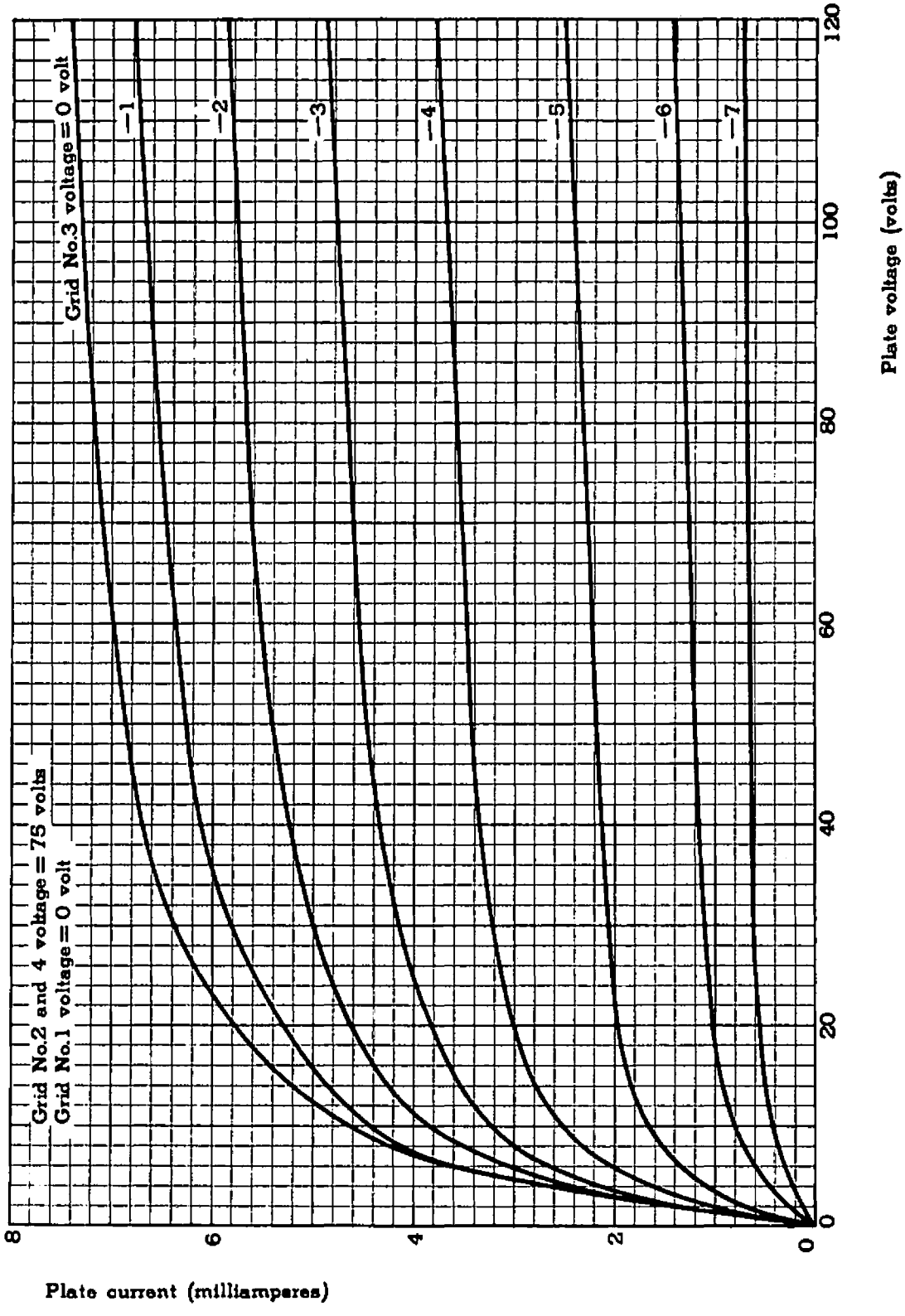


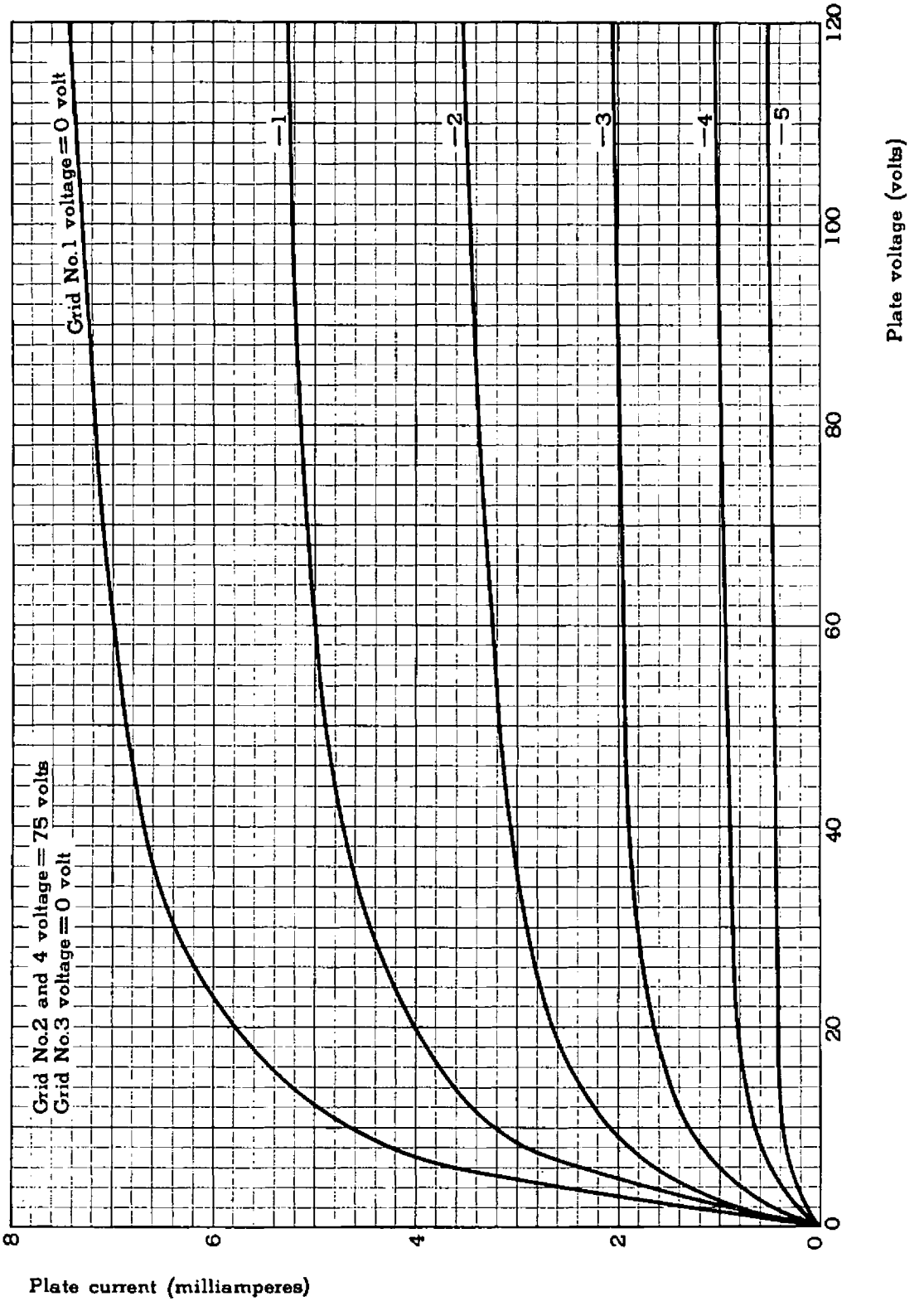

| | | | | | |
|---|---|---|---|---|---|
| Plate supply voltage | 150 | 150 | 150 | 150 | volts |
| Grids No.2 and 4 supply voltage | 75 | 75 | 75 | 75 | volts |
| Grid No.1 supply voltage | 0 | 0 | -10 | 0 | volt |
| Grid No.3 supply voltage | 0 | -10 | 0 | +55 | volts |
| Plate series resistor | 20 000 | 20 000 | 20 000 | 0 | ohms |
| Grids No.2 and 4 series resistor | 470 | 470 | 470 | 0 | ohms |
| Grid No.1 series resistor | 47 000 | 47 000 | 47 000 | 0 | ohms |
| Grid No.3 series resistor | 47 000 | 47 000 | 47 000 | 0 | ohms |
| Plate current | max.6.5<br>min.5.0 | max.0.2 | max.0.2 | - | mamps |
| Grid No.3 current | - | - | min. 0 | | mamp |

Inverse grid No.1 and grid No.3 current (measured in the above circuit diagram)

| | | |
|---|---|---|
| Plate supply voltage | 150 | volts |
| Grid No.2 and 4 supply voltage | 75 | volts |
| Grid No.1 supply voltage | -1.5 | volts |
| Grid No.3 supply voltage | -1.5 | volts |
| Plate series resistor | 20 000 | ohms |
| Grids No.2 and 4 series resistor | 470 | ohms |
| Grid No.1 series resistor | 47 000 | ohms |
| Grid No.3 series resistor | 47 000 | ohms |
| Grid No.1 inverse current | max. 0.2 | µamp |
| Grid No.3 inverse current | max. 0.2 | µamp |

Insulation between cathode and heater
(voltage between heater and cathode 120 volts) min.8 megohm


Grid No.2 and 4 voltage = 75 volts
Grid No.1 voltage = 0 volt
Grid No.3 voltage = 0 volt
-1
-2
-3
-4
-5
-6
-7
0
2
4
6
8
0
20
40
60
80
100
120
Plate current (milliamperes)
Plate voltage (volts)


Grid No.2 and 4 voltage = 75 volts
Grid No.3 voltage = 0 volt
Grid No.1 voltage = 0 volt
—1
—2
—3
—4
—5
0
2
4
6
8
0
20
40
60
80
100
120
Plate current (milliamperes)
Plate voltage (volts)