WATER-COOLED, METAL-JACKETED, MERCURY-POOL-CATHODE TYPE HAVING MOUNTING PLATE FOR THERMOSTATIC CONTROL

For Intermittent-Power-Rectifier and Resistance-Welding-Control Applications

GENERAL DATA

Electrical:

Cathode Excitation. ........................................... Cyclic
Cathode-Spot Starting ........................................ By Ignitor
Minimum Requirements for Cathode Excitation:
  Peak ignitor voltage required to fire ................... 200 volts
  Peak ignitor current required to fire .................... 30 amp
  Starting time at required ignitor voltage
    or current. .................................................. 100 µsec
  Peak Tube Voltage Drop at peak anode amperes:
    6800. ....................................................... 28 volts
    440 . ....................................................... 14 volts

Mechanical:

Operating Position. ........................................... Vertical, flexible lead up
Maximum Overall Length (Including flexible lead) ....... 26-9/16"
Maximum Radius (Including water connections) ........... 3-5/8"
Weight (Approx.) .............................................. 10 lbs

Terminal Diagram:

\[
P - \text{Anode} \\
(\text{Flexible lead}) \\
K - \text{Cathode} \\
(\text{Bar opposite anode terminal})
\]

\[
\text{I - Ignitor} \\
(\text{Within jacket} \\
\text{skirt at cathode end})
\]

S - Shell

Thermal:

Cooling:

Type. .............................................................. Water
Minimum inlet-water temperature .......................... 0 °C
Maximum cooling-system temperature
(Measured at thermostat mount):
  For Intermittent-Power-Rectifier Service ............. 45 °C
  For Resistance-Welding-Control Service at
    rms anode supply volts =
    600 ....................................................... 45 °C
    500 ....................................................... 50 °C
    250 ....................................................... 55 °C
Typical cooling requirements for Resistance-Welding-Control Service at rms anode supply volts = 500:

<table>
<thead>
<tr>
<th>Inlet Water Temperature (°C)</th>
<th>Required Water Flow (gpm)</th>
<th>Pressure Drop (psi)</th>
</tr>
</thead>
<tbody>
<tr>
<td>With 100% load:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>15</td>
<td>3/8</td>
<td>0.6</td>
</tr>
<tr>
<td>30</td>
<td>1/2</td>
<td>0.9</td>
</tr>
<tr>
<td>40</td>
<td>1-1/4</td>
<td>4</td>
</tr>
<tr>
<td>With 50% load:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>15</td>
<td>1/8</td>
<td>0.2</td>
</tr>
<tr>
<td>30</td>
<td>1/4</td>
<td>0.4</td>
</tr>
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<td>40</td>
<td>1/2</td>
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</tr>
</tbody>
</table>

Water-temperature rise with 100% load at flow of 1 gpm: ............... 5 °C

Temperature Rise (Approx.), inlet water to thermostat, with 100% load at flow of 1 gpm: ............... 4 °C

INTERMITTENT POWER-RECTIFIER SERVICE

Maximum Ratings, Absolute-Maximum Values:

For zero phase-control angle and frequencies from 25 to 60 cps

PEAK ANODE VOLTAGE:
Forward ................... 500 max. volts
Inverse .................... 500 max. volts

ANODE CURRENT:
Peak. ....................... 1600 max. amp
Average .................... 100 max. amp
AVERAGING TIME. .............. 6 max. sec
PEAK FAULT ANODE CURRENT. ............... 6000 max. amp
FAULT-ANODE-CURRENT DURATION. ............... 0.15 max. sec

RESISTANCE-WELDING-CONTROL SERVICE

Maximum Ratings, Absolute-Maximum Values:

For two tubes in inverse parallel circuit, zero phase-control angle, frequencies from 25 to 60 cps, and rms supply voltages from 250 to 600 volts

DEMAND. ............................ 1200 max. kva
Corresponding average anode current
(Per tube). ........................... 75.6 max. amp
AVERAGE ANODE CURRENT (Per Tube) b ........................... 140 max. amp
Corresponding demand. ......... 400 max. kva
AVERAGING TIME at rms supply volts =
600b ................................ 8.75 max. sec
250b ................................ 21 max. sec
IGNITOR

Maximum Ratings, Absolute-Maximum Values:

PEAK IGNITOR VOLTAGE:
  Positive ........................................ Equal to anode volts
  Negative ........................................ 5 max. volts

IGNITOR CURRENT:
  Peak .............................................. 100 max. amp
  Average ........................................... 1 max. amp
  RMS ................................................ 10 max. amp
  AVERAGING TIME .................................. 5 max. sec

a Ignition will occur if either the minimum peak ignitor voltage is applied or the minimum peak ignitor current flows for the minimum starting time.

b With the use of log-log graph paper, straight-line interpolation between tabulated points may be used to determine intermediate maximum ratings for RMS Anode Current and Average Anode Current or Averaging Time and RMS Supply Voltage.