MODEL 412A/AR DC VACUUM TUBE VOLTMETER
SERIAL 004-03632 AND BELOW

BIAS CIRCUIT IMPROVEMENTS

To further increase the reliability of your Model 412A/AR DC Vacuum Tube Voltmeter -- particularly at low line voltages (less than 115 volts) -- two changes in the bias supply circuitry are recommended.

In the Model 412A, serial 004-03632 and below, silicon diode CR101 should be replaced by Stock No. G-29G-79, a silicon diode having improved power capabilities. In serial 004-02882 and below, R122, a 560 ohm 1 watt resistor, should also be changed to 120 ohms, 1 watt.

After completing the modification, adjustment of your Voltmeter is required as outlined below under “Adjustment Procedure”.

PARTS REQUIRED FOR MODIFICATION

<table>
<thead>
<tr>
<th>Quantity</th>
<th>Description</th>
<th>Stock No.</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Resistor, fixed, composition,</td>
<td></td>
</tr>
<tr>
<td></td>
<td>120 ohm, ±10%, 1W for R122</td>
<td>0690-1211</td>
</tr>
<tr>
<td>1</td>
<td>© Diode, Silicon, for CR101</td>
<td>G-29G-79</td>
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</tbody>
</table>

MODIFICATION PROCEDURE

1) Disconnect power and remove cabinet.

2) In serial 004-03632 and below: Change Silicon Diode, CR101, located below the DC AMPLIFIER OUTPUT connector at rear of instrument and on line cord side, to a © G-29G-79 Silicon Diode.

3) In serial 004-02882 and below: Replace R122, a 560 ohm 1 W resistor, located between pin 2 of V103 and tap 2 on Power Transformer, T1, with a 120 ohm, 1 W resistor.

4) Replace cabinet.

ADJUSTMENT PROCEDURE

Bias adjustment should be performed as outlined in Section IV, of the Operating and Service Manual for your instrument.