

# International Commercial Microwave—Technical Information

## 230 V, 50 Hz Models

**DEC11E2    P2001412M**  
**DEC18E2    P2001414M**  
**MCHDC521   P2001416M**

**DEC14E2    P2001413M**  
**DEC21E2    P2001415M**  
**CHDC5182   P2001417M**

- Due to possibility of personal injury or property damage, always contact an authorized technician for servicing or repair of this unit.
- Refer to Service Manual for detailed installation, operating, testing, troubleshooting, and disassembly instructions.



### CAUTION

All safety information must be followed as provided in Service Manual.



### WARNING

To avoid risk of electrical shock, personal injury, or death, disconnect power to oven and discharge capacitor before servicing, unless testing requires power.


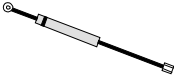
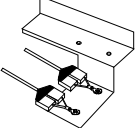
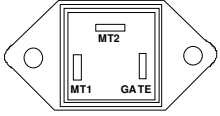
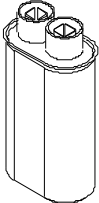

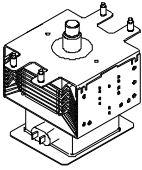

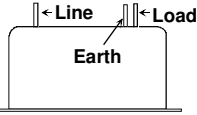
| Models                                  | DEC11E2    | DEC14E2    | CHDC5182<br>DEC18E2 | DEC21E2<br>MCHDC521 |
|---|------------|------------|---------------------|---------------------|
| <b>Power Source</b>                     |            |            |                     |                     |
| Voltage AC                              | 230 VAC    | 230 VAC    | 230 VAC             | 230 VAC             |
| Amperage (single unit)                  | 16 A       | 16 A       | 16 A                | 16 A                |
| Frequency                               | 50 Hz      | 50 Hz      | 50 Hz               | 50 Hz               |
| Single phase, 3 wire earthed            | X          | X          | X                   | X                   |
| <b>Power Output</b>                     |            |            |                     |                     |
| Nominal microwave energy (IEC705)       | 1100 Watts | 1400 Watts | 1800 Watts          | 2100 Watts          |
| Minimum temperature rise ( $\Delta T$ ) | 11°F/5.5°C | 14°F/7.5°C | 18°F/10°C           | 21°F/11.5°C         |
| Operating frequency                     | 2450 MHz   | 2450 MHz   | 2450 MHz            | 2450 MHz            |
| <b>Power Consumption</b>                |            |            |                     |                     |
| Cook condition microwave                | 2000 Watts | 2300 Watts | 3000 Watts          | 3200 Watts          |
| <b>Dimensions</b>                       |            |            |                     |                     |
| <b>Cabinet</b>                          |            |            |                     |                     |
| Width                                   | 423 mm     | 423 mm     | 423 mm              | 423 mm              |
| Height                                  | 335 mm     | 335 mm     | 335 mm              | 335 mm              |
| Depth                                   | 548 mm     | 578 mm     | 578 mm              | 578 mm              |
| <b>Oven Interior</b>                    |            |            |                     |                     |
| Width                                   | 331 mm     | 331 mm     | 331 mm              | 331 mm              |
| Height                                  | 175 mm     | 175 mm     | 175 mm              | 175 mm              |
| Depth                                   | 305 mm     | 305 mm     | 305 mm              | 305 mm              |
| <b>Weight</b>                           |            |            |                     |                     |
| Crated                                  | 28 kg      | 33 kg      | 33 kg               | 33 kg               |

# Component Specifications



## WARNING

To avoid risk of electrical shock, personal injury, or death, disconnect power to oven and discharge capacitor before servicing, unless testing requires power.

| Illustration   | Component        | Testing   | Results  |
|--|------------------|---|--|
|   | Thermal Cutout   | Disconnect all wires from TCO.<br>Measure resistance across terminals.<br>Cavity Thermal Fuse.....<br>Magnetron TCO.....  | Open at 104° C (219° F).<br>Open at 138° C (280° F) and<br>closed at 82° C (180° F).   |
| 1100 Watt units<br><br>1400, 1800 & 2100<br>Watt units<br> | Diode Assembly   | <b>Discharge Capacitors</b><br><br>Remove diode lead from capacitor and<br>connect ohmmeter.<br><br>Reverse leads for second test.  | Infinite resistance should be<br>measured in one direction and 50KΩ<br>or more in the opposite direction.<br><br><b>NOTE:</b> Analog meter must contain a<br>battery of 6 volts minimum.   |
|   | Triac            | Disconnect wires to triac.<br><br>Measure resistance from:<br>MT1 to MT2 .....<br>MT1 to Gate.....<br>MT2 to Gate.....<br>All terminals to ground.....  | <b>Caution - Do not operate oven<br/>when wire to terminal MT2 is<br/>removed.</b><br>Infinite.<br>Approximately 40 Ω or more.<br>Infinite.<br>Infinite.   |
|   | Capacitor        | <b>Discharge Capacitors</b><br><br>Remove wires from capacitor terminals and<br>connect ohmmeter, set on highest<br>resistance scale to terminals.<br><br>Also check between each terminal and<br>capacitor case. | <b>Between Terminals:</b> Meter should<br>momentarily deflect towards zero<br>then return to over 5 MΩ. If no<br>deflection occurs, or if continuous<br>deflection occurs, replace capacitor.<br><br><b>Terminal to Case:</b> Infinite<br>resistance.      |
|   | Snubber Assembly | Disconnect wires to snubber.<br><br>Measure resistance across terminals.....  | Infinite.  |
|   | Magnetron        | <b>Discharge Capacitors</b><br><br>Remove wires from magnetron and connect<br>ohmmeter to terminals. Also check<br>between each terminal and ground.  | <b>Between Terminals:</b> Less than 1 Ω.<br><br>Each terminal to ground measures<br>Infinite resistance.<br><b>NOTE:</b> This test is not conclusive. If<br>oven does not heat and all other<br>components test good, replace the<br>magnetron and retest. |
|   | Blower Motor     | Remove all wires from motor.<br><br>Measure resistance across coil.....   | Approximately 30 Ω.  |
|   | Line filter      | Line to Line .....<br>Load to Load.....<br>Line to Load.....<br>Any terminal to Earth .....   | .8 MΩ.<br>.8 MΩ.<br>Continuity.<br>Infinite.   |
| Wire Harness   |                  | Test continuity of wires .....  | Continuity.  |

# Component Specifications

## ⚠ WARNING

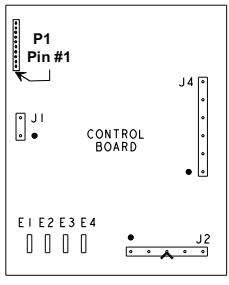
To avoid risk of electrical shock, personal injury, or death, disconnect power to oven and discharge capacitor before servicing, unless testing requires power.

| Illustration | Component  | Testing  | Results  |     |       |             |   |        |            |   |        |            |   |        |            |   |        |            |   |        |            |   |        |            |   |       |            |   |       |            |   |       |            |   |       |            |       |       |            |            |       |            |             |       |            |     |       |            |            |       |            |
|--------------|--|--|--|-----|-------|-------------|---|--------|------------|---|--------|------------|---|--------|------------|---|--------|------------|---|--------|------------|---|--------|------------|---|-------|------------|---|-------|------------|---|-------|------------|---|-------|------------|-------|-------|------------|------------|-------|------------|-------------|-------|------------|-----|-------|------------|------------|-------|------------|
|              | <b>Transformer<br/>1100 Watt</b><br>                   | <b>Discharge Capacitor</b><br>Remove all wires from terminals, and measure resistance from:<br>220 to Common.....<br>230 to Common.....<br>Terminal 5 to 6 .....<br>Terminal 4 to Earth screw on transformer .....<br>Terminal 4 to any other terminal .....<br><div style="text-align: center;"> </div>   | This transformer is equipped with a 155° C thermal cutout.<br><br>1.3 Ω.<br>1.3 Ω.<br><1 Ω.<br>90 Ω.<br>Infinite resistance. If not, replace transformer.  |     |       |             |   |        |            |   |        |            |   |        |            |   |        |            |   |        |            |   |        |            |   |       |            |   |       |            |   |       |            |   |       |            |       |       |            |            |       |            |             |       |            |     |       |            |            |       |            |
|              | <b>Transformer<br/>1400, 1800, &amp; 2100 Watt</b><br> | <b>Discharge Capacitor</b><br>Remove all wires from terminals, and measure resistance from:<br>230 to Common.....<br>Terminal 5 to 6 .....<br>Terminal 7 to 8 .....<br>Terminal 4 to Earth screw on transformer .....<br>Terminal 4 to any other terminal .....  | 1 Ω.<br><1 Ω.<br><1 Ω.<br>70 Ω.<br>Infinite resistance. If not, replace transformer.   |     |       |             |   |        |            |   |        |            |   |        |            |   |        |            |   |        |            |   |        |            |   |       |            |   |       |            |   |       |            |   |       |            |       |       |            |            |       |            |             |       |            |     |       |            |            |       |            |
|              | <b>Stirrer motor<br/>230 VAC</b>                       | Remove all wires from motor.<br><br>Measure resistance across terminals .....  | Approximately 12 KΩ.   |     |       |             |   |        |            |   |        |            |   |        |            |   |        |            |   |        |            |   |        |            |   |       |            |   |       |            |   |       |            |   |       |            |       |       |            |            |       |            |             |       |            |     |       |            |            |       |            |
|              | <b>Interlock switch<br/>assembly</b>                   | Disconnect wires to switch.<br><br>With door open measure resistance from:<br>Terminal C to NO Primary .....<br>Terminal C to NO Secondary .....<br>Terminal C to NC Monitor.....<br><br>With door closed measure resistance from:<br>Terminal C to NO Primary .....<br>Terminal C to NO Secondary .....<br>Terminal C to NC Monitor.....<br><br><div style="text-align: center;"> <b>Door Closed</b><br/>                     Primary / Logic C — ● — NO<br/>                     Monitor C — ● — NC<br/>                     Secondary C — ● — NO                 </div> | Infinite.<br>Infinite.<br>Continuity.<br><br>Continuity.<br>Continuity.<br>Infinite.   |     |       |             |   |        |            |   |        |            |   |        |            |   |        |            |   |        |            |   |        |            |   |       |            |   |       |            |   |       |            |   |       |            |       |       |            |            |       |            |             |       |            |     |       |            |            |       |            |
|              | <b>Touch Panel<br/>Assembly</b>                        | Continuity is indicated as 100 Ω and below.<br><br><b>Pin 1: Ground.</b><br>   | <table border="1"> <thead> <tr> <th>Pad</th> <th>Trace</th> <th>Measurement</th> </tr> </thead> <tbody> <tr><td>1</td><td>8 &amp; 10</td><td>Continuity</td></tr> <tr><td>2</td><td>7 &amp; 10</td><td>Continuity</td></tr> <tr><td>3</td><td>6 &amp; 10</td><td>Continuity</td></tr> <tr><td>4</td><td>5 &amp; 10</td><td>Continuity</td></tr> <tr><td>5</td><td>4 &amp; 10</td><td>Continuity</td></tr> <tr><td>6</td><td>3 &amp; 10</td><td>Continuity</td></tr> <tr><td>7</td><td>8 &amp; 9</td><td>Continuity</td></tr> <tr><td>8</td><td>7 &amp; 9</td><td>Continuity</td></tr> <tr><td>9</td><td>6 &amp; 9</td><td>Continuity</td></tr> <tr><td>0</td><td>5 &amp; 9</td><td>Continuity</td></tr> <tr><td>Start</td><td>4 &amp; 9</td><td>Continuity</td></tr> <tr><td>Stop/Reset</td><td>4 &amp; 8</td><td>Continuity</td></tr> <tr><td>Power Level</td><td>5 &amp; 8</td><td>Continuity</td></tr> <tr><td>X 2</td><td>6 &amp; 8</td><td>Continuity</td></tr> <tr><td>Time Entry</td><td>7 &amp; 8</td><td>Continuity</td></tr> </tbody> </table> | Pad | Trace | Measurement | 1 | 8 & 10 | Continuity | 2 | 7 & 10 | Continuity | 3 | 6 & 10 | Continuity | 4 | 5 & 10 | Continuity | 5 | 4 & 10 | Continuity | 6 | 3 & 10 | Continuity | 7 | 8 & 9 | Continuity | 8 | 7 & 9 | Continuity | 9 | 6 & 9 | Continuity | 0 | 5 & 9 | Continuity | Start | 4 & 9 | Continuity | Stop/Reset | 4 & 8 | Continuity | Power Level | 5 & 8 | Continuity | X 2 | 6 & 8 | Continuity | Time Entry | 7 & 8 | Continuity |
| Pad          | Trace  | Measurement  |  |     |       |             |   |        |            |   |        |            |   |        |            |   |        |            |   |        |            |   |        |            |   |       |            |   |       |            |   |       |            |   |       |            |       |       |            |            |       |            |             |       |            |     |       |            |            |       |            |
| 1            | 8 & 10   | Continuity   |  |     |       |             |   |        |            |   |        |            |   |        |            |   |        |            |   |        |            |   |        |            |   |       |            |   |       |            |   |       |            |   |       |            |       |       |            |            |       |            |             |       |            |     |       |            |            |       |            |
| 2            | 7 & 10   | Continuity   |  |     |       |             |   |        |            |   |        |            |   |        |            |   |        |            |   |        |            |   |        |            |   |       |            |   |       |            |   |       |            |   |       |            |       |       |            |            |       |            |             |       |            |     |       |            |            |       |            |
| 3            | 6 & 10   | Continuity   |  |     |       |             |   |        |            |   |        |            |   |        |            |   |        |            |   |        |            |   |        |            |   |       |            |   |       |            |   |       |            |   |       |            |       |       |            |            |       |            |             |       |            |     |       |            |            |       |            |
| 4            | 5 & 10   | Continuity   |  |     |       |             |   |        |            |   |        |            |   |        |            |   |        |            |   |        |            |   |        |            |   |       |            |   |       |            |   |       |            |   |       |            |       |       |            |            |       |            |             |       |            |     |       |            |            |       |            |
| 5            | 4 & 10   | Continuity   |  |     |       |             |   |        |            |   |        |            |   |        |            |   |        |            |   |        |            |   |        |            |   |       |            |   |       |            |   |       |            |   |       |            |       |       |            |            |       |            |             |       |            |     |       |            |            |       |            |
| 6            | 3 & 10   | Continuity   |  |     |       |             |   |        |            |   |        |            |   |        |            |   |        |            |   |        |            |   |        |            |   |       |            |   |       |            |   |       |            |   |       |            |       |       |            |            |       |            |             |       |            |     |       |            |            |       |            |
| 7            | 8 & 9  | Continuity   |  |     |       |             |   |        |            |   |        |            |   |        |            |   |        |            |   |        |            |   |        |            |   |       |            |   |       |            |   |       |            |   |       |            |       |       |            |            |       |            |             |       |            |     |       |            |            |       |            |
| 8            | 7 & 9  | Continuity   |  |     |       |             |   |        |            |   |        |            |   |        |            |   |        |            |   |        |            |   |        |            |   |       |            |   |       |            |   |       |            |   |       |            |       |       |            |            |       |            |             |       |            |     |       |            |            |       |            |
| 9            | 6 & 9  | Continuity   |  |     |       |             |   |        |            |   |        |            |   |        |            |   |        |            |   |        |            |   |        |            |   |       |            |   |       |            |   |       |            |   |       |            |       |       |            |            |       |            |             |       |            |     |       |            |            |       |            |
| 0            | 5 & 9  | Continuity   |  |     |       |             |   |        |            |   |        |            |   |        |            |   |        |            |   |        |            |   |        |            |   |       |            |   |       |            |   |       |            |   |       |            |       |       |            |            |       |            |             |       |            |     |       |            |            |       |            |
| Start        | 4 & 9  | Continuity   |  |     |       |             |   |        |            |   |        |            |   |        |            |   |        |            |   |        |            |   |        |            |   |       |            |   |       |            |   |       |            |   |       |            |       |       |            |            |       |            |             |       |            |     |       |            |            |       |            |
| Stop/Reset   | 4 & 8  | Continuity   |  |     |       |             |   |        |            |   |        |            |   |        |            |   |        |            |   |        |            |   |        |            |   |       |            |   |       |            |   |       |            |   |       |            |       |       |            |            |       |            |             |       |            |     |       |            |            |       |            |
| Power Level  | 5 & 8  | Continuity   |  |     |       |             |   |        |            |   |        |            |   |        |            |   |        |            |   |        |            |   |        |            |   |       |            |   |       |            |   |       |            |   |       |            |       |       |            |            |       |            |             |       |            |     |       |            |            |       |            |
| X 2          | 6 & 8  | Continuity   |  |     |       |             |   |        |            |   |        |            |   |        |            |   |        |            |   |        |            |   |        |            |   |       |            |   |       |            |   |       |            |   |       |            |       |       |            |            |       |            |             |       |            |     |       |            |            |       |            |
| Time Entry   | 7 & 8  | Continuity   |  |     |       |             |   |        |            |   |        |            |   |        |            |   |        |            |   |        |            |   |        |            |   |       |            |   |       |            |   |       |            |   |       |            |       |       |            |            |       |            |             |       |            |     |       |            |            |       |            |

# Component Specifications

## ⚠ WARNING

To avoid risk of electrical shock, personal injury, or death, disconnect power to oven and discharge capacitor before servicing, unless testing requires power.

| Illustration   | Component        | Testing  | Results  |
|--|------------------|--|--|
|  <p><b>P1 connector used for touch panel ribbon</b></p> | Controller board | Line voltage to control board<br>E1—E3 .....<br>Output drive voltage to triac<br>Triac terminals .....<br>Gate—T1 .....<br>Fan relay (controls blower motor, antenna motor(s), and oven light)<br>Control board .....<br>Terminals J4-1—J2-2 .....<br>Cook relay<br>Control board .....<br>Terminals E1—E4 ..... | Line voltage (All Conditions).<br>0 VAC (Idle and Standby).<br>0.9 VAC (Cook).<br>Line voltage (Idle).<br>0 VAC (Standby and Cook).<br>Line voltage (Idle).<br>0 volts (Standby and Cook). |

### Error Code Table

| Error Code | Corrective Action   |
|------------|---------------------|
| F1         | Replace HV/LV Board |
| F2         | Replace HV/LV Board |
| F3         | Replace HV/LV Board |
| F4         | Replace HV/LV Board |
| F5         | Replace Touch Panel |
| F6         | Replace HV/LV Board |

### Conditions

- Initial Power Up Condition:** Apply power to oven with door closed.
- Idle Condition:** Oven plugged in, display blank (no other components operating).
- Standby Condition:** Open oven door, light and motors operate.
- Cook Condition:** Food load in oven, cook cycle initiated.

# Component Specifications



## WARNING

To avoid risk of electrical shock, personal injury, or death, disconnect power to oven and discharge capacitor before servicing, unless testing requires power.

### Power Test

All Amana and Menumaster microwave oven power outputs are rated using the IEC705 standards. Using the IEC705 test method requires precision measurements and equipment that is not practical to be performed in the field. Using the test shown below will indicate if the oven performance is satisfactory.

#### Test equipment required:

- 1000 ml test container and thermometer.
- Digital watch / watch with a second hand for use on ovens with electromechanical timers.

#### Important Notes:

- Low line voltage will cause low temperature rise / power output.
- Ovens must be on a dedicated circuit, properly grounded, and polarized. Other equipment on the same circuit may cause a low temperature rise / power output.
- This test and results are not a true IEC705 test procedure and are only intended to provide servicers with an easy means of determining if the microwave oven cooking output is correct.

### Procedure

1. Fill the test container to the 1000 ml line with cool tap water.

**NOTE:** Water temperature should be approximately 60°F / 16°C.

2. Using the thermometer, stir water for five to ten seconds; measure, and record the temperature (T1).
3. Place test container of water in the center of oven cavity and close door.
4. Heat the water for a 33-second full power cycle.

**NOTE:** Use a digital watch or a watch with a second hand for ovens with electromechanical timers.

1. At end of the cycle, remove test container. Using the thermometer, stir water for five to ten seconds and record temperature (T2).
2. Subtract the starting water temperature (T1), from the ending water temperature (T2) to obtain the temperature rise ( $\Delta T$ ).
3. If the temperature rise ( $\Delta T$ ) meets or exceeds the minimum, the test is complete. If the temperature rise ( $\Delta T$ ) fails to meet the minimum temperature rise, test the line voltage to verify it is correct. Then repeat steps 1-6 making sure to change the water. If the temperature rise ( $\Delta T$ ) fails to meet the minimum temperature rise again the oven will require service.

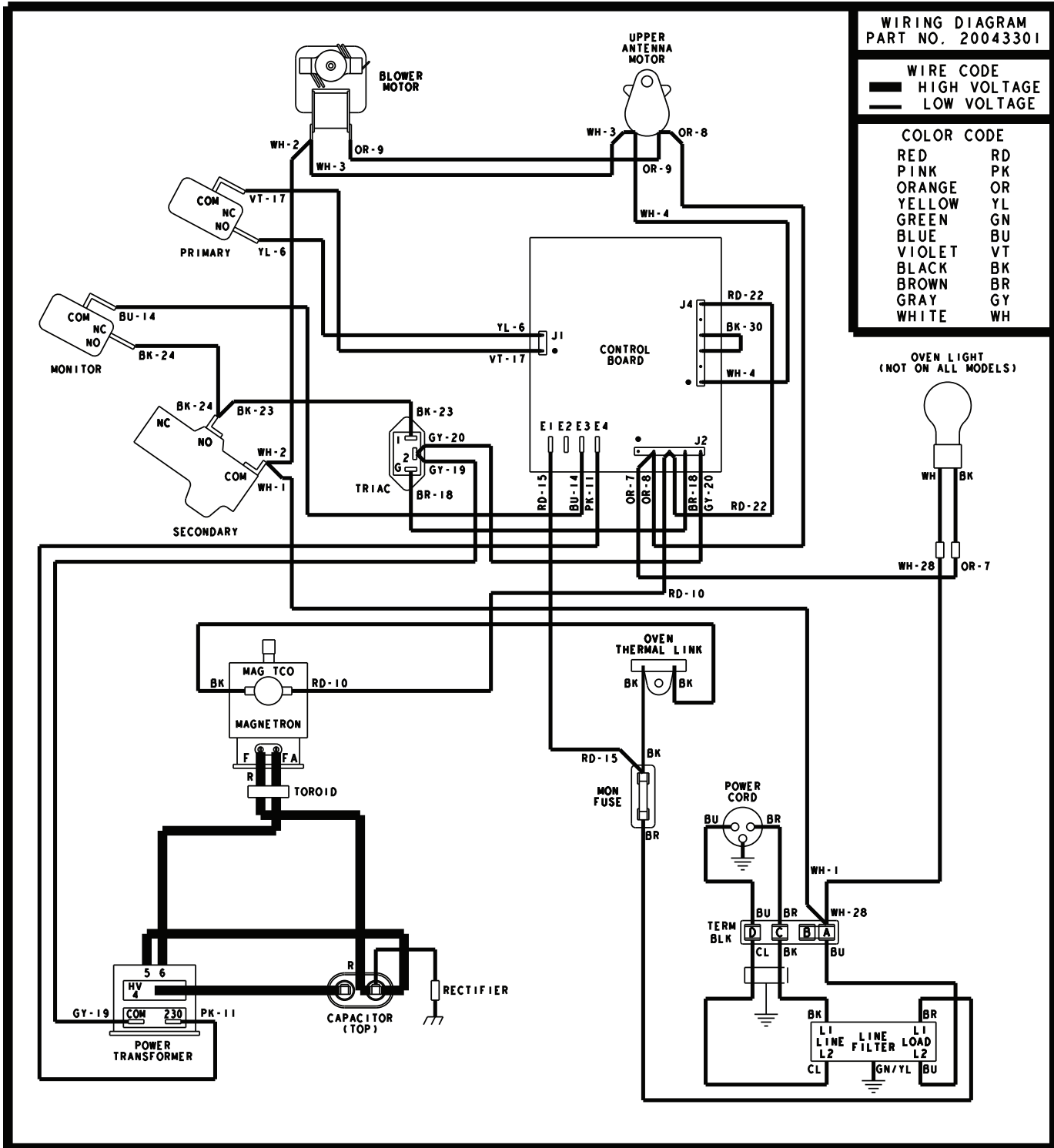
#### Minimum Temperature Rise at Thirty-Three (33) Seconds Run Time

| $\Delta T$<br>(°F) | Cooking<br>Power Output | $\Delta T$<br>(°F) | Cooking<br>Power Output | $\Delta T$<br>(°C) | Cooking<br>Power Output | $\Delta T$<br>(°C) | Cooking<br>Power Output |
|--------------------|-------------------------|--------------------|-------------------------|--------------------|-------------------------|--------------------|-------------------------|
| 10.....            | 1000                    | 20 .....           | 2000                    | 5 .....            | 1000                    | 11 .....           | 2000                    |
| 11.....            | 1100                    | 21 .....           | 2100                    | 5.5.....           | 1100                    | 11.5.....          | 2100                    |
| 12.....            | 1200                    | 22 .....           | 2200                    | 6.5.....           | 1200                    | 12 .....           | 2200                    |
| 14.....            | 1400                    | 24 .....           | 2400                    | 7.5.....           | 1400                    | 13 .....           | 2400                    |
| 17.....            | 1700                    | 25 .....           | 2500                    | 9.5.....           | 1700                    | 13.5.....          | 2500                    |
| 18.....            | 1800                    | 27 .....           | 2700                    | 10.....            | 1800                    | 15.....            | 2700                    |
| 19.....            | 1900                    | 30 .....           | 3000                    | 10.5.....          | 1900                    | 16.5.....          | 3000                    |

# Wiring and Schematic Diagrams

## WARNING

To avoid risk of electrical shock, personal injury, or death, disconnect power to oven and discharge capacitor before servicing, unless testing requires power.



20043301

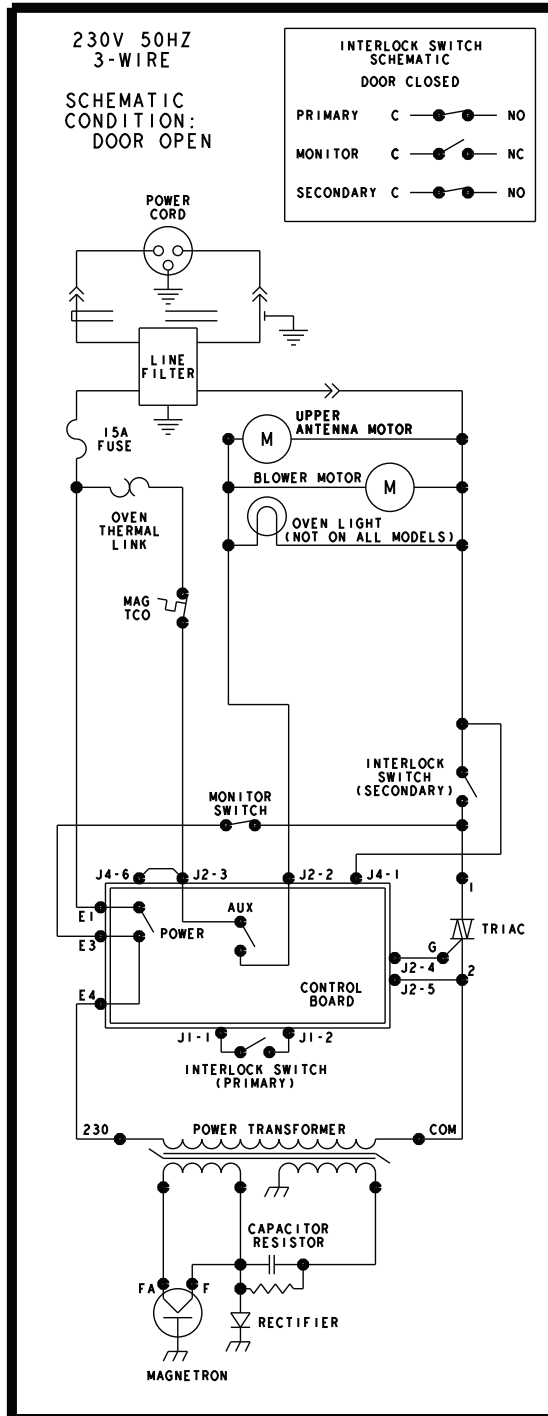
DEC11E2

# Wiring and Schematic Diagrams



## WARNING

To avoid risk of electrical shock, personal injury, or death, disconnect power to oven and discharge capacitor before servicing, unless testing requires power.



20043301



DANGER

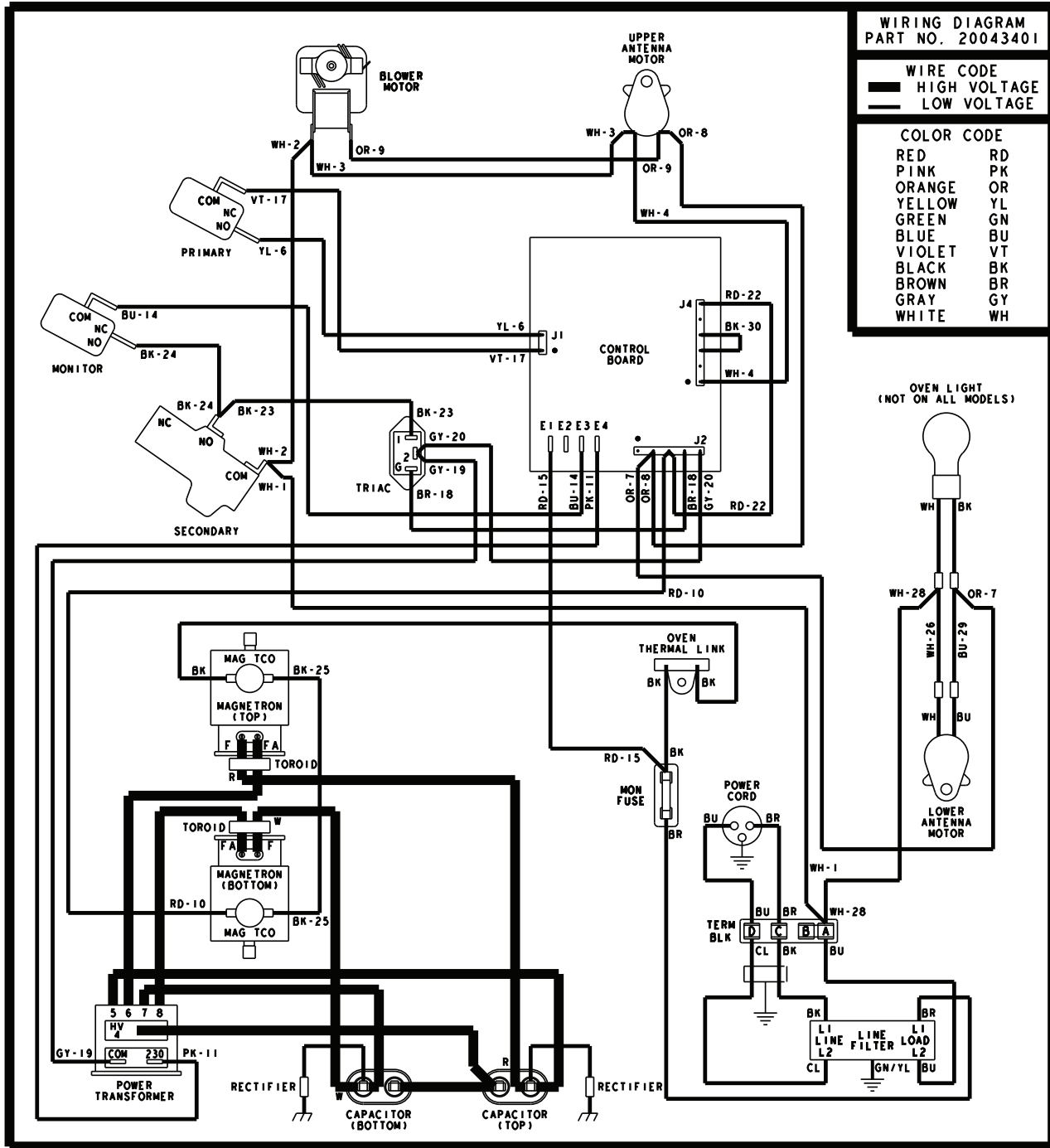
HIGH VOLTAGE

DEC11E2

# Wiring and Schematic Diagrams

## **WARNING**

To avoid risk of electrical shock, personal injury, or death, disconnect power to oven and discharge capacitor before servicing, unless testing requires power.



20043401

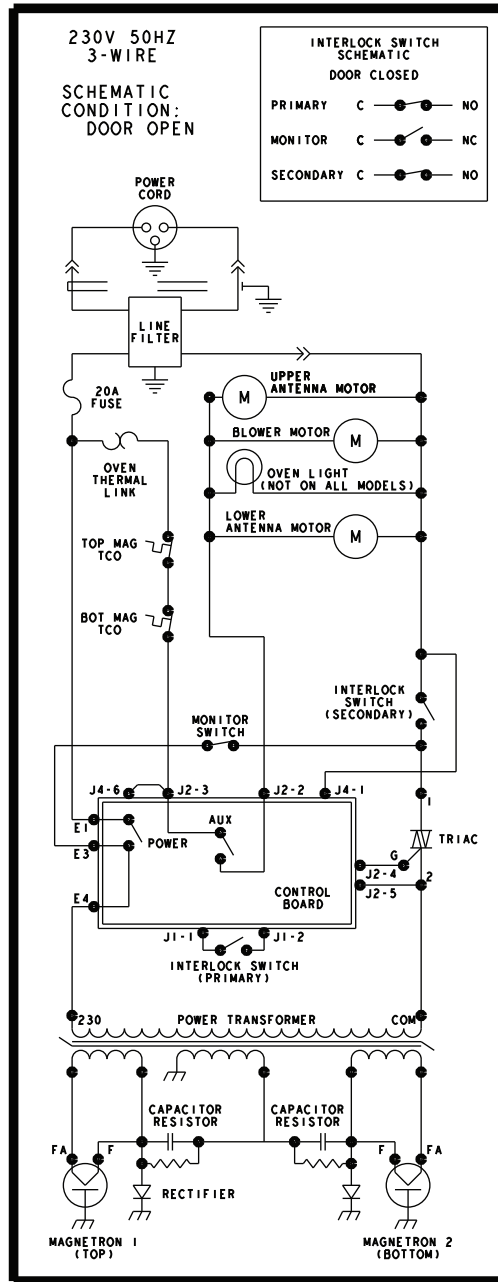
DEC14E2 DEC18E2 DEC21E2 MCHDC521 CHDC5182

# Wiring and Schematic Diagrams



**WARNING**

To avoid risk of electrical shock, personal injury, or death, disconnect power to oven and discharge capacitor before servicing, unless testing requires power.



20043401



**DANGER**

**HIGH VOLTAGE**

DEC14E2 DEC18E2 DEC21E2 MCHDC521 CHDC5182