Thermador®

MICRO/THERMAL CONVECTION COMBINATION OVENS

MODELS:

CMT131 & CMT231
CMT127 & CMT227
CMT127N & CMT227N

SERVICE MANUAL

Thermador®
CORPORATION

5551 MCFADDEN • HUNTINGTON BEACH, CALIFORNIA 92649 • TELEPHONE: 1(800) 735-4328

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TO AVOID EXPOSURE TO EXCESSIVE MICROWAVE ENERGY

Observe these precautions before and during servicing:

1. Do not operate or allow the oven to be operated with the door open.
2. Make the following safety checks on all ovens to be serviced before activating the magnetron or other microwave source, and make repairs as necessary:

   a) Interlock Operation.
   b) Proper Door Closing.
   c) Seal and Sealing Surfaces (arcing, wear, and other damage).
   d) Damage To or Loosening of Hinges and Latches.
   e) Evidence of Dropping or Abuse.
3. Before turning on microwave power for any service test or inspection within the microwave generating compartments, check the magnetron, waveguide, or transmission line, and cavity for proper alignment, integrity, and connections.
4. Any defective or misadjusted components in the interlock, monitor, door seal, and microwave generating and transmission systems shall be repaired, replaced, or adjusted by procedures described in this manual before the oven is released to the owner.

⚠ WARNING

This product should be serviced only by trained qualified personnel.

5. Although this product has been manufactured in compliance with "FDA Radiation Performance Standards, 21 CFR Subchapter J," it is very important that all repairs should be made in accordance with procedures described in this manual to avoid being exposed to excessive microwave radiation.
6. Check for radiation leakage before and after every servicing according to the "Procedure For Measuring Microwave Radiation Leakage."
7. Certain components used in the microwave oven are important for safety. It is essential to replace these critical parts only with manufacturer's specified parts to prevent microwave leakage, shock, fire, or other hazards. Do not modify the original design.

CAUTIONS TO OBSERVE WHEN TROUBLESHOOTING

Unlike many other appliances, the microwave oven is high-voltage, high-current equipment. Although it is free from danger in ordinary use, extreme care should be taken during repair.

⚠ CAUTION

Remove your wristwatch when working close to or when replacing the magnetron.

1. Check the grounding.

   The microwave oven is designed to be used when grounded. Make sure it is grounded properly before beginning repair work.

2. Discharge the electric charge in the high-voltage capacitor.

   For about 30-seconds after the oven stops, an electric charge remains in the high-voltage capacitor. When replacing or checking parts, short between the oven chassis and the terminal of the high-voltage capacitor (terminals of lead wire from magnetron filament, high-voltage transformer filament lead wire, and diode lead wire) with an insulated screwdriver to discharge.

⚠ WARNING

There is high-voltage present, with high-current capabilities, in the circuits of the high-voltage winding and filament winding of the high-voltage transformer. It is extremely dangerous to work on or near these circuits with the oven energized.

Do not measure the voltage in the high-voltage circuit, including the filament voltage of the magnetron.

⚠ WARNING

Never touch any circuit wiring with your hand or with an insulated tool during operation.

3. When parts must be replaced, disconnect the power to the unit.
4. Avoid inserting nails, wire, etc. through any holes in the unit during operation.

   Never insert a wire, nail, or any other metal object through the lamp holes on the cavity or any other holes or gaps, because such objects may work as an antenna and cause microwave leakage.
5. Confirm after repair.

   After repairing or replacing parts, make sure that the screws of the oven, etc., are neither loose or missing. Microwaves might leak if screws are not properly tightened.
6. Make sure that all electrical connections are tight.
7. Check for microwave energy leakage.

   Refer to "Procedure For Measuring Microwave Radiation Leakage."

⚠ WARNING

To Avoid Electrical Shock:

- Disconnect the power to the appliance before servicing.
- For those checks requiring the use of electrical power, exercise extreme care.
- Do not attempt high-voltage tests.

RESPECT HIGH-VOLTAGE

PROCEDURE FOR MEASURING MICROWAVE RADIATION LEAKAGE

⚠ WARNING

Check for microwave radiation leakage before and after every servicing. Should the leakage be more than 2 mw/cm^2, inform Thermador immediately. After repairing or replacing any radiation safety device, keep a written record for future reference, as required by D.H.H.S. regulations. This requirement must be strictly observed. In addition, the leakage reading must be recorded on the service repair ticket while in the customer's home.

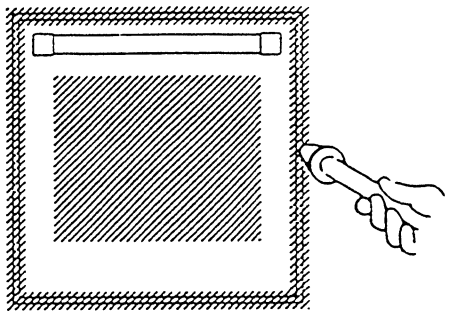
NOTE: The U.S. Government standard is 5 mw/cm^2 while in the customer's home. The 2 mw/cm^2 stated here is our own voluntary standard.

Equipment:

An electromagnetic radiation monitor.
Glass thermometer, 212°F, or 100°C.
600 cc glass beaker.

Before performing any tests, be sure to observe the following precautions:

- Do not exceed the meter's full-scale deflection. Leakage monitor should initially be set to the highest scale.
- To prevent false readings, hold the test probe by the grip portion of the handle only, and move it along the shaded area shown in the following illustration, no faster than 1 inch/second (2.5 cm/second).
- Leakage with the top panel removed should be less than 5 mw/cm^2.
- Leakage for a fully assembled oven with the door normally closed should be less than 2 mw/cm^2.
- Leakage for fully assembled oven, before the latch switch (primary) is interrupted while lightly pulling on the door, should be less then 2 mw/cm^2.



1. Pour 275 ± 15 cc (9 oz. ±1/2 oz.) of 20 ± 5°C (68 ± 9°F) water in a beaker, graduated to 600 cc, and place the beaker in the center of the oven.
2. Set the radiation monitor to 2450 MHz, and follow the manufacturer's recommended test procedure to assure correct results. NOTE: When measuring the leakage, always use the 2 inch (5 cm) spacer supplied with the probe.
3. Start the magnetron and measure the leakage by holding the probe perpendicular to the surface being measured.
4. Measuring With The Top Panel Removed—Whenever you replace the magnetron, measure for radiation leakage before the top panel is installed, and after all necessary components are replaced or adjusted. Special care should be taken in measuring around the magnetron.

⚠ WARNING

Avoid contacting any high-voltage parts.

5. Measuring A Fully Assembled Oven—After all components, including the top panel, are fully assembled, measure for radiation leakage around the door periphery and the door viewing window.
6. Record keeping and notification after measurement—Take a leakage reading after any adjustment or repair to a microwave oven. Record this leakage on the repair ticket, even if it is zero. A copy of this repair ticket and the microwave oven leakage reading should be kept by the repair facility.

   If the radiation leakage is more then 2 mw/cm^2 after determining that all parts are in good condition and functioning properly, and that genuine replacement parts, as listed in this manual, have been used, immediately notify Thermador.
7. At least once a year, have the radiation monitor calibrated by its manufacturer.

DIAGNOSIS AND REPAIR OF CMT MICRO-CONVECTION OVENS

This part of the service manual is designed to teach service technicians proper troubleshooting procedures for the CMT Micro-Convection Oven. It should be presented only after the basics of microwave ovens have been fully understood by the technician.

The manual is designed to teach the technician:

- Safe repair and/or servicing of this unit
- Description and function of components
- Testing of components
- Electrical current flow

MICROWAVE ON & OFF SWITCH

This pushbutton switch has two positions: Off and On. The switch is rated at 18-amperes with 120 volts applied, and 15-amperes with 240 volts applied.

The switch has an internal slide bar that opens and closes the contacts of the switch, as selected (see the illustration).

When the On pushbutton is depressed, the microwave timer light and the microwave power lights turn on.

To test the switch:

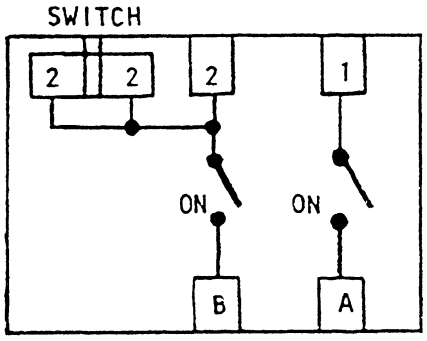
Place an ohmmeter at the indicated contacts shown in the illustration, and check the continuity with the switch in the Off and On positions. Record the readings on the lines shown below.

Terminal 1 to Terminal A (OFF) = _____ Ω

Terminal 2 to Terminal B (OFF) = _____ Ω

Terminal 1 to Terminal A (ON) = _____ Ω

Terminal 2 to Terminal B (ON) = _____ Ω



MICROWAVE POWER SWITCH

The microwave power switch is a rotary switch whose internal cam closes and opens individual sets of contacts, depending on the selected setting.

The knob can be turned clockwise or counter clockwise. The knob settings are: Low, Medium Low, Medium, Medium High, and High.

To test the switch:

Place an ohmmeter at the indicated contacts shown in the illustration, and check the continuity for each of the four terminals in the five different switch positions. Record the readings on the lines shown below.

LOW

Terminal A to Terminal 1 = _____ Ω

Terminal 2 to Terminal 2 = _____ Ω

Terminal 1 to Terminal 3 = _____ Ω

Terminal 2 to Terminal 4 = _____ Ω

MEDIUM LOW

Terminal A to Terminal 1 = _____ Ω

Terminal 2 to Terminal 2 = _____ Ω

Terminal 1 to Terminal 3 = _____ Ω

Terminal 2 to Terminal 4 = _____ Ω

MEDIUM

Terminal A to Terminal 1 = _____ Ω

Terminal 2 to Terminal 2 = _____ Ω

Terminal 1 to Terminal 3 = _____ Ω

Terminal 2 to Terminal 4 = _____ Ω

MEDIUM HIGH

Terminal A to Terminal 1 = _____ Ω

Terminal 2 to Terminal 2 = _____ Ω

Terminal 1 to Terminal 3 = _____ Ω

Terminal 2 to Terminal 4 = _____ Ω

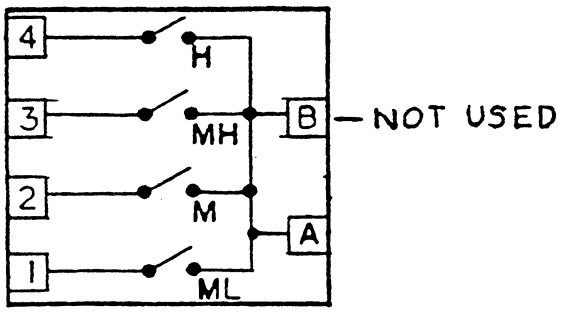
HIGH

Terminal A to Terminal 1 = _____ Ω

Terminal 2 to Terminal 2 = _____ Ω

Terminal 1 to Terminal 3 = _____ Ω

Terminal 2 to Terminal 4 = _____ Ω



MICROWAVE TIMER

The timer is a single speed, 60 -minute timer assembly consisting of the motor and switch assembly. The normally open (N.O.) switch is an internal 25-ampere, 125-volt switch. The switch is activated by an internal cam when the timer is set. When the timer reaches the "0" position, the contacts open and the bell rings once. The timer uses a split scale that has the first two minutes divided into 15-second intervals. The next 8-minutes are divided into 10-second intervals. The next 10-minutes are divided into 30-second intervals and the next 40-minutes are divided into one minute intervals.

To test the motor:

- Set the ohmmeter to R x 100.
- Touch the ohmmeter leads to the motor leads. The reading should be 1300 Ω.

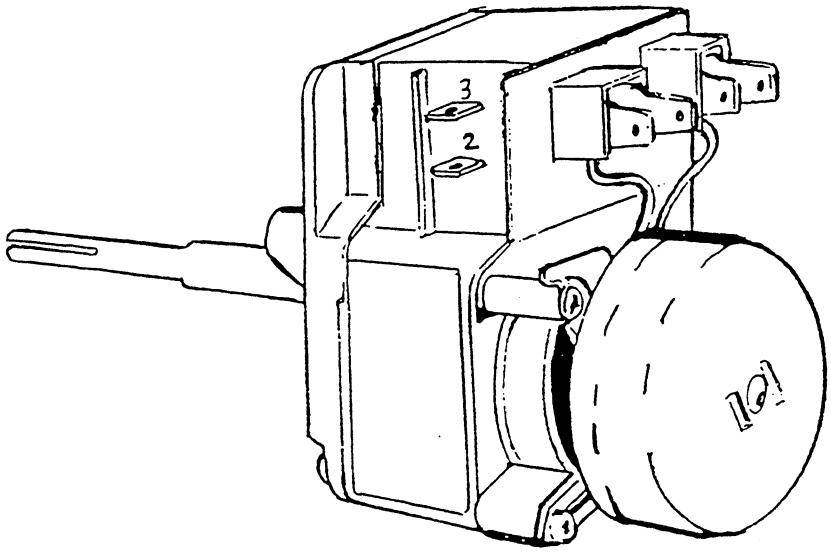
To test the switch:

- Set the ohmmeter to R x 1
- Touch the ohmmeter leads to leads #2 and #3 of the timer switch.

  With switch OFF the meter should read infinity.

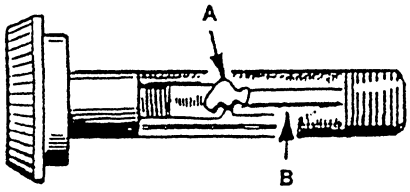
  With switch ON the meter should read 0 Ω.

NOTE: The dial can be adjusted so that the zero (0) lines up with the indicator line when the time is elapsed. When the timer reaches zero, the bell will ring once, and the microwave indicator light will turn off.



2-AMPERE FUSE

The oven is protected from interlock switch failure by a 2-ampere fuse. The fuse protects the microwave oven from any surge of high amperage. A defective door safety switch, or any other factor causing an overload on the line, will blow the fuse and stop the operation of the oven. The fuse is located behind the lower oven temperature dial.



2 AMP FUSE

MICROWAVE FUSE FAILURE

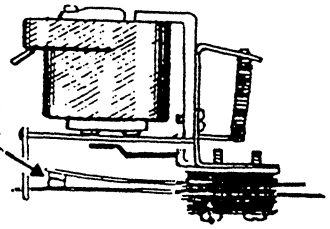
The purpose of the fuse system is to prevent operation of the unit in the event of an interlock switch failure. This prevents the unit from emitting microwave energy while the door is open.

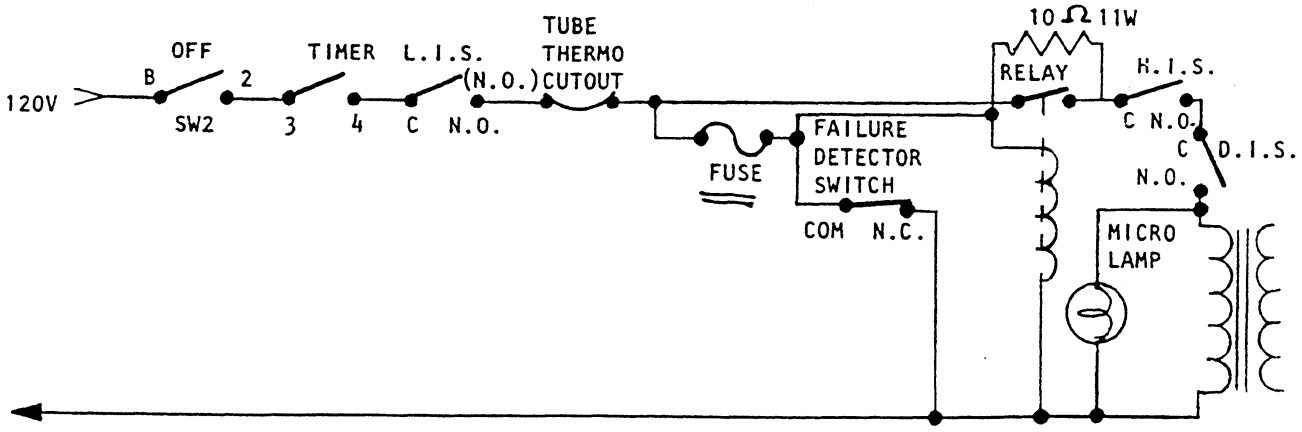
The following is a description of the switches and the explanation of the fuse protection system.

- The Latch Interlock Switch and the Door Interlock Switch are both mounted on the back end of the latch assembly. They are operated by the movement of the door latch lever.
- The failure detector switch and the hinge interlock switch are mounted behind both door hinge mounts, and are operated by the door movement as shown.
- Normally, with the oven door closed and the unit energized, current travels through the series of switches and the timer switch. From the switches, it goes through the 2-ampere fuse and the 10 ohm surge resistor for 15-milliseconds. After the 15-milliseconds, the relay closes, and shunts out the resistor. The current then flows directly through the door interlock switch and the surge relay. The only current now flowing through the fuse is 80-milliamps to the relay coil. If the latch interlock switch fails in a closed positon, the door interlock switch and the hinge interlock switch are open. The failure detector switch is closed with the door open, therefore current will flow from the timer switch, through the 2-ampere fuse, then through the failure detector switch directly to ground. This creates a dead short which will blow the fuse and open the circuit.

RELAY 14-19-249

Should be a slight bend in arm when contacts closed





Fuse Failure Modes

The fuse can fail during any of the following four failure modes. NOTE: The Door Interlock Switch and the Latch Interlock Switch are monitored interlocks. The switches must both be closed for the fuse to blow.

1. The Latch Interlock Switch tacks closed—The fuse will blow after approximately $^1/_{10}$ of a second after the door is closed (see point "B" on the fuse illustration below).
2. The Door Interlock Switch fails to close—The fuse blows after approximately 8-seconds (up to 25-seconds with the 14-19-770 fuse) after the door is closed, and the 10 Ω resistor will be hot (see point "A" on the fuse illustration).
3. The failure detector switch fails to open—The unit will not microwave. The fuse blows after approximately $^1/_{10}$ of a second.
4. The relay fails to close —The fuse will blow after approximately 8-seconds (up to 25- seconds with the 14-19-770 fuse) and the 10 Ω resistor will get hot (see point "A" on the fuse illustration).

- When the contacts close but do not wipe as they close, arcing can occur and no electrical current will pass through the contacts, therefore blowing the fuse at point A. Generally, the unit will work for about a week before it stops because of the fuse. A visual inspection of the relay and its contacts will determine if the part is good.
- The Micro-Lamp Light is an indicator of the condition of the fuse. When this light is on, the fuse is good. This light also indicates that the transformer is energized. This light MUST ALWAYS GO OUT when the door opens. If this light is on with the door open, there should be a short circuit between the infrared and microwave circuits.

The following are some of the reasons that the fuse will blow:

a) The Latch Interlock Switch momentarily tacks closed. DO NOT ATTEMPT REPAIR WHEN THIS HAPPENS.

b) The relay is not closing rapidly enough.

To prevent repeat service calls on a fuse failure, the following is suggested:

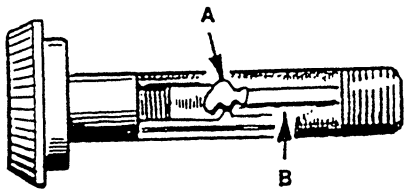
1. Place an ohmmeter on the terminals of the Door Interlock Switch. Open and close the door latch to see if the switch is operating properly.
2. While closing the latch, also observe the operation of the Latch Interlock Switch above the Door Interlock Switch. Also open and close the oven door and check the Failure Detector Switch.
3. After these steps, replace the fuse with Part No. 14-19-770. Be sure to observe the condition of this fuse when and if it fails to give you a clue as to the cause of the failure.

The fuse will fail at point "A" on the illustration if:

1. The relay does not close every time.
2. The Door Interlock Switch does not close. This failure may take up to 25-seconds from the time the unit is turned on.

The fuse will fail at point "B" if:

1. The Latch Interlock Switch fails to open. This failure takes about $^1/_{10}$ of a second.



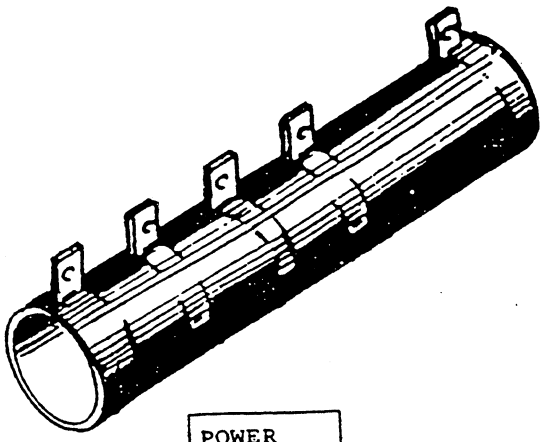
2 AMP FUSE

POWER RESISTOR

The Model CMT 231 oven uses a variable power resistor. On the high setting, current is switched around the resistor and the circuit operates at full power.

On the Medium setting, the current normally flowing through the diode, flows through half of the resistor. The resistor reduces the amount of current flowing through the diode. This reduces the amount of current flowing in the entire microwave circuit (except the heater), and therefore lowers the heat rise.

On the Low setting, the current normally flowing through the diode, flows through the entire resistor. The resistor reduces the amount of current flowing through the diode. This reduces the amount of current flowing in the entire microwave circuit (except heater), and therefore lowers the heat rise.

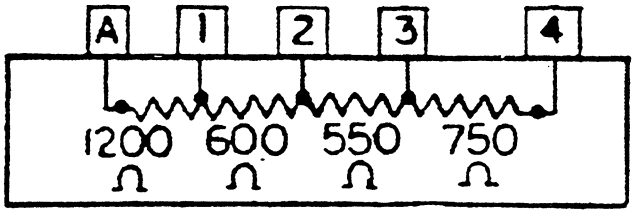


The microwave settings are:

High	100%	700 watts
Medium High	75%	525 watts
Medium	60%	420 watts
Medium Low	45%	315 watts
Low	30%	210 watts

<u>To test the resistor:</u>

1. Set the meter to R x 100 scale. Touch the meter leads to terminals 1 and A (see the illustration below). The meter should read 1200 Ω.
2. Touch the meter leads to terminals 1 and 2. The meter should read 600 Ω.
3. Touch the meter leads to terminals 2 and 3. The meter should read 550 Ω.
4. Touch the meter leads to terminals 3 and 4. The meter should read 750 Ω.



MAGNETRON TUBE

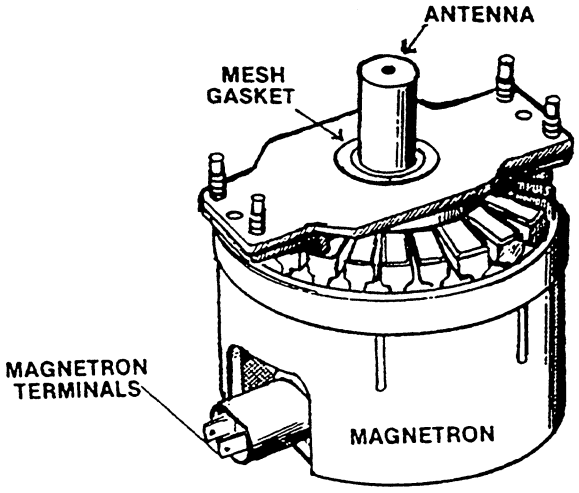
The magnetron tube is a vacuum tube in which the flow of electrons from the heated cathode to the anode is controlled by a magnetic field to produce an electromagnetic wave (2450 MHz). These electromagnetic waves are called "microwaves."

To operate the magnetron tube requires both a minimum power input of 3800- to 4000-volts DC from the capacitor, and 3.8 volts from the filament transformer lead. The tube has a 700-watt rating.

To test the magnetron:

1. Set ohmmeter to the R x 1 scale.
2. Disconnect the top two wires leading to the magnetron tube.
3. Touch the ohmmeter leads to the magnetron tube terminals. The meter should read a very low resistance of 0.05 Ω. This could mistakenly be read as 0 Ω.
5. Check resistance between each terminal and chassis ground. The meter should read infinite resistance at each terminal.

CAUTION: The antenna is extremely fragile. Care should be taken to avoid damaging magnetron.



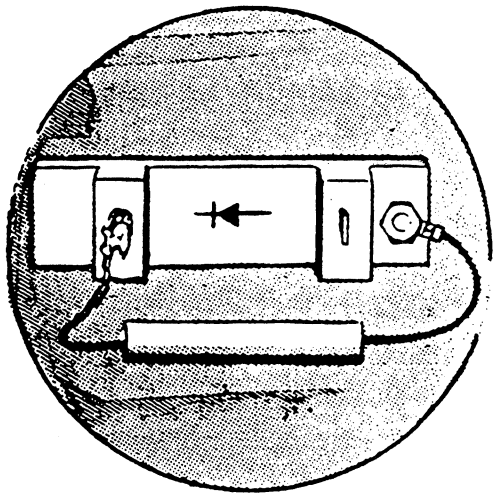
NOTE: Wire mesh gasket on top of magnetron tube must be in place when tube is reinstalled.

DIODE RESISTOR

Without this diode installed, an open ground in any part of the microwave circuit could apply high voltage to the selector switch causing it to fail. Note: The switch has no voltage applied to it.

An open ground in the microwave circuit could apply 2000-volts to the selector switch (it is only rated for a maximum of 600-volts).

The resistor is in parallel with the diode, and in the event of a microwave circuit ground loss, the resistor will provide a path to ground, thus preventing a high-voltage failure of the selector switch.



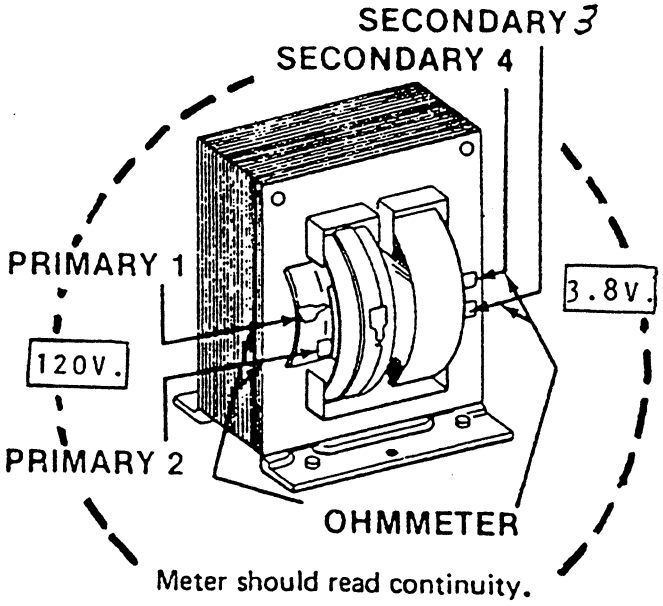
HIGH VOLTAGE TRANSFORMER

The high-voltage transformer has one primary winding and two secondary windings. The "step-up" secondary winding converts 120-volts AC to 2000-volts at the secondary terminal.

The "step-down" secondary winding steps down 120-volts AC to 3.8 volts AC, which supplies the magnetron tube's cathode filament. The cathode filament preheats the filament approximately 3-seconds before the high voltage circuit is energized. This transformer has two high voltage taps. Tap number 7 should be used.

To test the high-voltage transformer:

1. Set ohmmeter to the R x 1 scale.
2. Touch the ohmmeter leads to primary terminals 1 & 2. The meter should read approximately 0.1 Ω. Note: These readings are very difficult to read and may be confused with a short circuit.
3. Touch the ohmmeter leads to the secondary terminal and the chassis. The meter should read approximately 70 Ω.
4. Touch the ohmmeter leads to terminals 3 & 4. The meter should read 0 Ω.



Meter should read continuity.

If readings show no continuity, replace power transformer.

DIODE

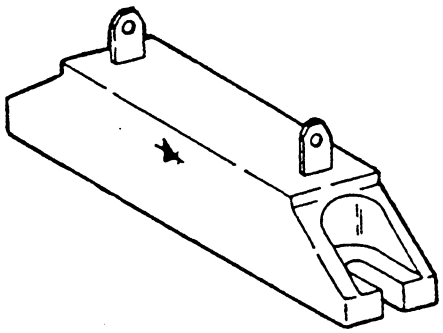
The diode is a device used to convert alternating current (AC) into pulsating direct current (DC) allowing it to pass forward in one direction while blocking the current flow in the opposite direction. There has been no charge to this part.

To test the diode:

NOTE: To conduct this test, you will need a 9-volt ohmmeter.

1. Isolate the diode by removing the one gray and two yellow wires from the diode terminals.
2. Touch the meter leads to the diode terminals.
3. The meter should read infinite resistance forward and 15,000 Ω (15 kΩ) reversed.

   If continuity is indicated in both directions, if infinite resistance is read in both directions, or if continuity to ground is indicated, replace the diode.



DIODE

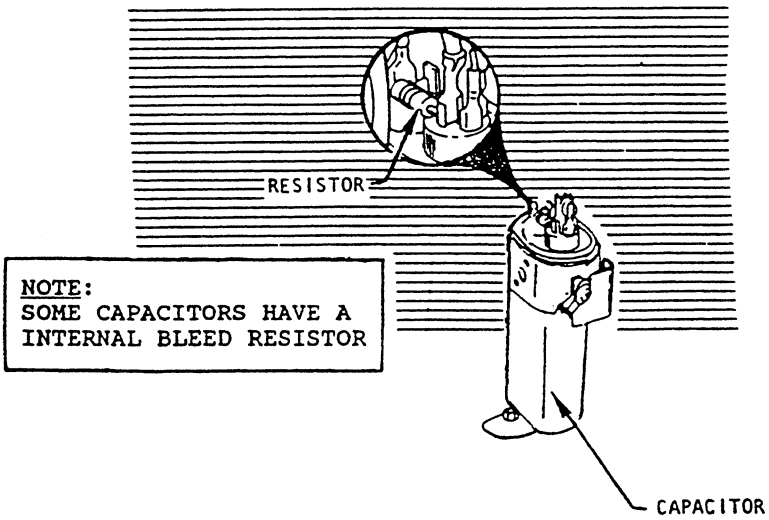
CAPACITOR

The capacitor is a device capable of storing electricity. The capacitor receives a negative 2000-volts from the diode at one side, and a negative 2000-volts from the power transformer at the other side. Both sides combine to discharge a minimum of 3800-volts DC to the magnetron tube.

To test the capacitor:

Note: To conduct this test, first discharge the capacitor.

1. Isolate the capacitor by removing the wires. Note the position of each wire.
2. Touch the ohmmeter leads to each terminal.
3. The needle of the meter should momentarily deflect upwards to indicate continuity, and then slowly drop to infinite resistance.
4. Reverse the meter leads on the capacitor terminals. The meter should give the same indications.
5. Check each terminal to chassis ground. The meter should read infinite resistance at each terminal.



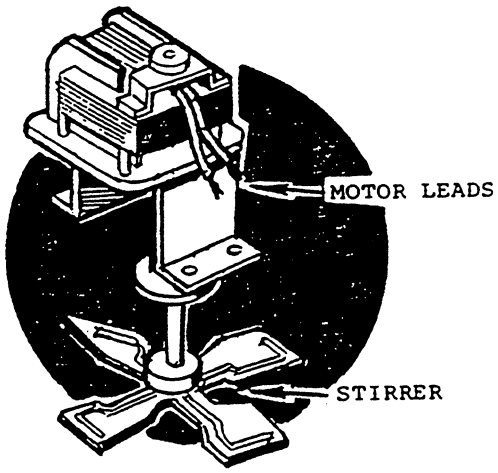
STIRRER MOTOR

The stirrer motor is a 120 volt AC motor. The function of the stirrer motor is to run the stirrer blades inside of the wave guide. The stirrer blades rotate at 55 rpm.

As the microwave energy enters the oven cavity through the wave guide, it bounces off the stirrer blades and is reflected throughout the oven cavity, providing a more even microwave distribution.

To test the stirrer motor:

1. Remove the stirrer cover.
2. Inspect the stirrer blades to be sure the blades are securely attached to the stirrer motor bracket, and that the stirrer shaft is turning freely.
3. Disconnect the two black motor leads from the terminals.
4. Set the ohmmeter to R x 1.
5. Touch the meter leads to the motor leads. The meter should read approximately 2000 Ω.
6. Check the resistance between each motor lead and chassis ground. The meter should read infinity.



THE INTERLOCK SWITCHES

The Model CMT-231 oven has a total of four monitor switches. These switches are designed to keep the microwave oven from operating if the door does not close properly.

⚠ WARNING

Do not attempt to defeat the interlock switch circuitry.

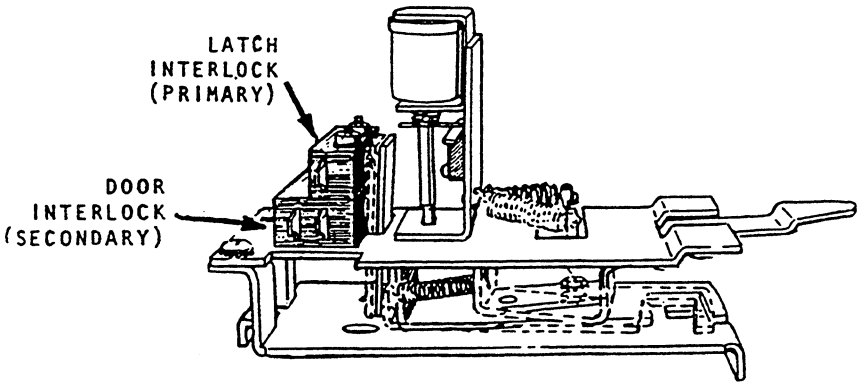
The **Monitor Switches** are mounted on the upper oven latch assembly and on the sides of the oven.

The **Latch Assembly Switches** are activated by opening and closing the door latch.

The **Side Oven Switches** are activated by the hinge arms on the microwave oven door.

The switch functions and locations are shown below.

NAME	NORMAL POSITION	LOCATION & FUNCTION
Failure Detect Switch (Monitor Switch	N.C.	Switch on right side of oven cavity. Wired across positive and neutral "legs" causing a direct short if door switch is not properly made.
Latch Interlock Switch (Primary)	N.O.	Top Switch on Latch Assembly.
Door Interlock Switch (Secondary)	N.O.	Lower Switch on Latch Assembly.
Hinge Interlock Switch	N.O.	Switch on the left side of the oven cavity. This switch provides a circuit path to transformer and micro lamp and tube cutout the thermostat.



UPPER OVEN
LATCH ASSEMBLY

◀ REAR OF OVEN (SIDE VIEW) FRONT OF OVEN ▶

THE OVEN-MOUNTED SWITCHES

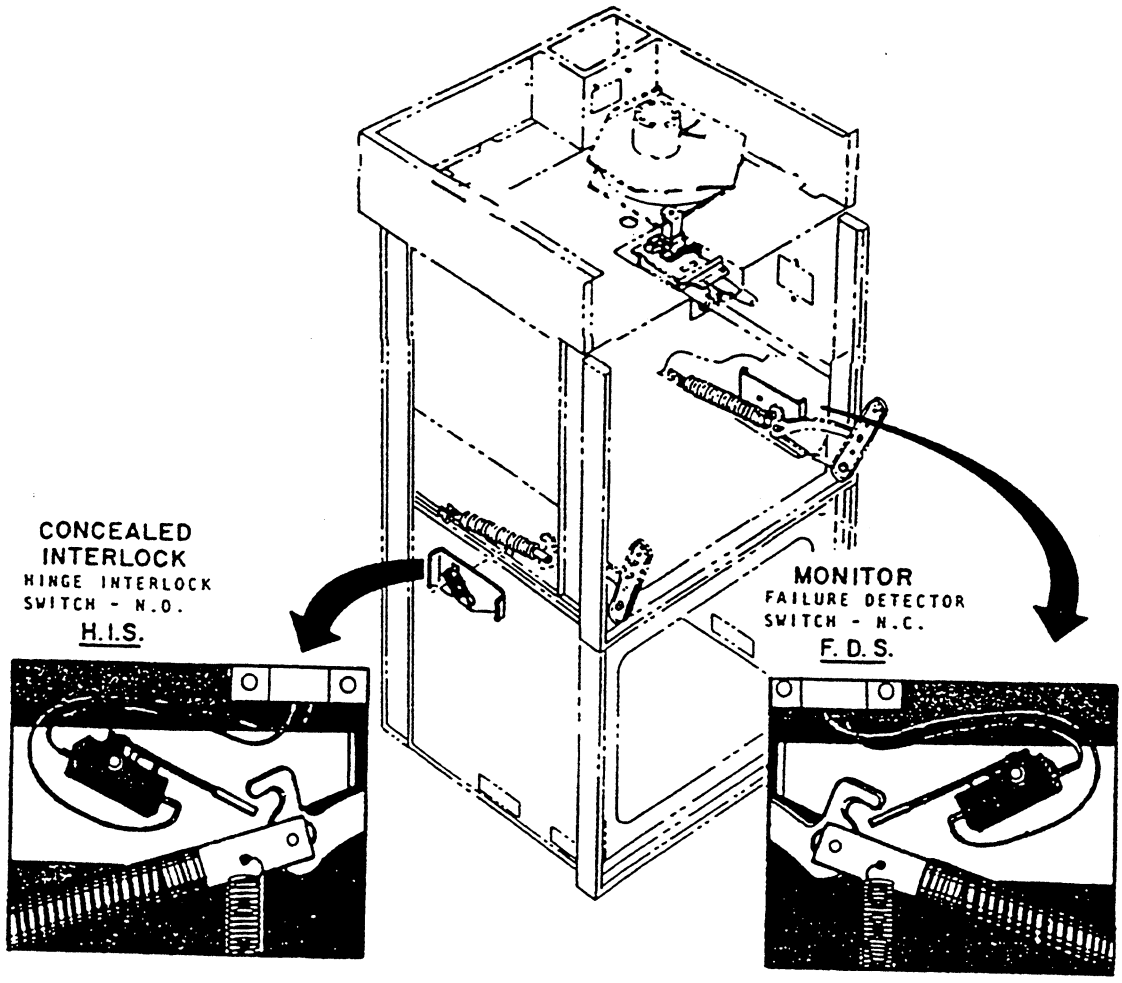
The oven-mounted switches are mounted as shown in the illustration below. They function as follows:

Failure Detect Switch (Monitor)

This switch is located on the right side of the oven, and is in the normally-closed position. It is activated by closing the door so that the switch opens. The switch is wired across the positive and neutral side of the line, and causes a direct short when the door is open and the oven is operated with the latch interlock, door interlock, or hinge interlock switches closed. When that happens, the fuse will blow.

Hinge Interlock Switch

This switch is mounted on the left side of the oven. When the door is closed, the hinge interlock switch is activated, providing a circuit to the plate transformer. With the door open, or if this part fails to close, there is no current to the transformer.

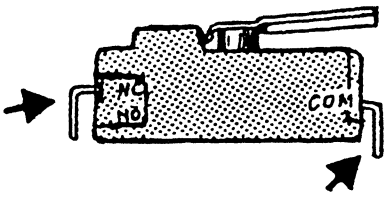


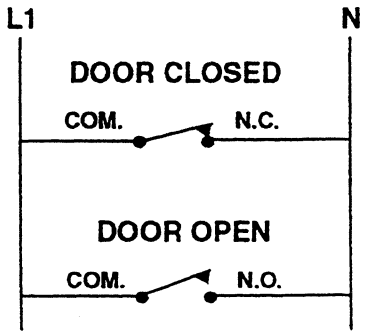
SWITCH CONTINUITY TESTS

<u>Caution:</u> To avoid electrical shock, always unplug the unit or turn off proper switch at the circuit breaker before performing any continuity tests.

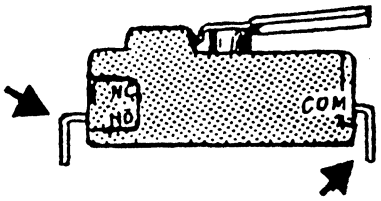
All CMT microwave ovens use normally open (N.O.) interlock switches and normally closed (N.C.) monitor switches. These switches are shown as follows:

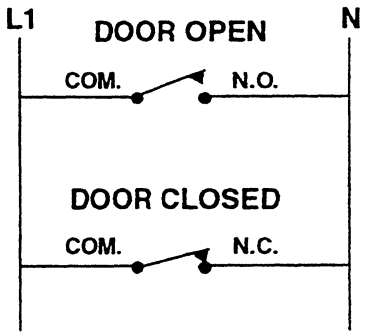
Failure Detect Switch





Hinge Interlock (Secondary) Switch





To test the latch-operated interlock switch:

1. Set the ohmmeter to the R x 1 lowest scale.
2. Touch the ohmmeter to the COM and N.O. terminals.
3. With door latch open, the ohmmeter should indicate an open switch.
4. With door latch in microwave position, ohmmeter should indicate a closed switch (0 Ω).

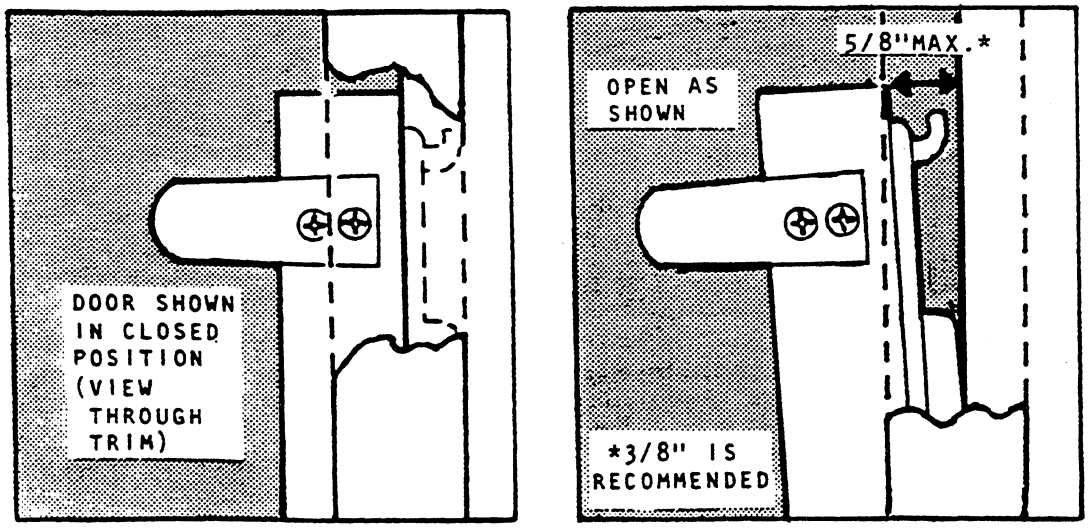
To test the hinge-operated interlock switch:

1. Set the ohmmeter to the R x 1 lowest scale.
2. Touch the ohmmeter to the COM and N.O. terminals.
3. With door closed, the ohmmeter should indicate a closed switch (0 Ω).
4. Slowly pull the door open; by the time the door has moved $^{5}/_{8}$", the ohmmeter should indicate an open switch (infinite resistance).

To test the hinge-operated monitor switch:

1. Set the ohmmeter to the R x 1 lowest scale.
2. Touch the ohmmeter to the COM and N.C. terminals.
3. With door closed, the ohmmeter should indicate an open switch (infinite resistance).
4. Slowly pull the door open; by the time the door has moved $^{5}/_{8}$", the ohmmeter should indicate a closed switch (0 Ω).

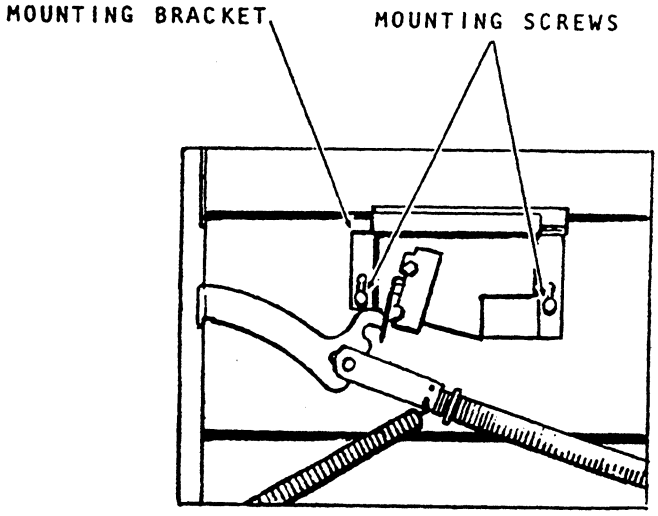
The following illustration is shown in the maximum condition. We recommend that the operating point of these switches be set at $^{3}/_{8}$" instead of $^{5}/_{8}$" maximum.



Bracket Adjustment & Alignment

To adjust the hinge interlock switch and monitor switches, perform the following steps:

1. Loosen the mounting bracket screws (see the following illustration).
2. Adjust the mounting bracket vertically to achieve the correct operation point of the switch.
3. Retighten the mounting bracket screws.
4. Verify the correct adjustment by using the appropriate test, outlined on the previous page.



RELAYS

The model CMT231 microwave oven circuit has four relays: a surge relay, a probe start, clock, and probe interrupt relays. These relays have two sets of contacts. The terminals are marked with numbers or letters.

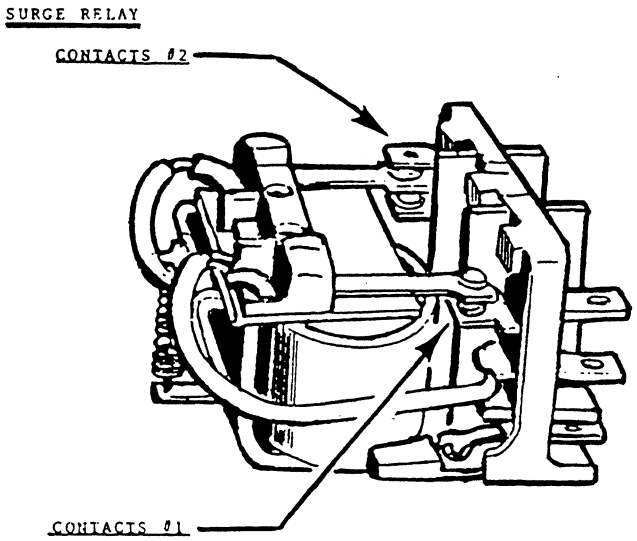
When a relay coil is activated, the contacts close, and current is relayed from one component to another.

The Surge Relay

The surge relay has two sets of contacts. Contacts at terminal #1 are normally-open. Contacts at terminal #2 are normally-closed. When the relay is activated, contacts #1 sends current to the H.I. switch and activates the transformer and micro-lamp. Contacts #2 close to normally-open and draw current from L2, which activates the blower motor.

<u>To test the surge relay (relay activated):</u>

1. Set the ohmmeter to the R x 100 scale.
2. Touch the meter leads to terminals A and B. The meter should read 2000 Ω.
3. Set the ohmmeter to the R x 1 scale.
4. Touch the meter leads to terminals 6 and 9. The meter should read 0 Ω.
5. Touch the meter leads to terminals 4 and 7. The meter should read 0 Ω.



The Probe Interrupt Relay

The probe interrupt relay has two sets of contacts. Both are switched to normally-closed, and send current to the surge relay coil. When the tempmatic indicator reaches the set temperature, the probe interrupt relay coil is energized. This opens the contacts and interrupts current flow to the surge relay to shut the microwave flow down.

To test the probe interrupt relay:

1. Set the ohmmeter to the R x 100 scale.
2. Touch the meter leads to terminals A and B. The meter should read 2000 Ω.
3. Set ohmmeter to the R x 1 scale.
4. Touch the meter leads to terminals 9 and 3. The meter should read 0 Ω.
5. Touch the meter leads to terminals 7 and 1. The meter should read 0 Ω.

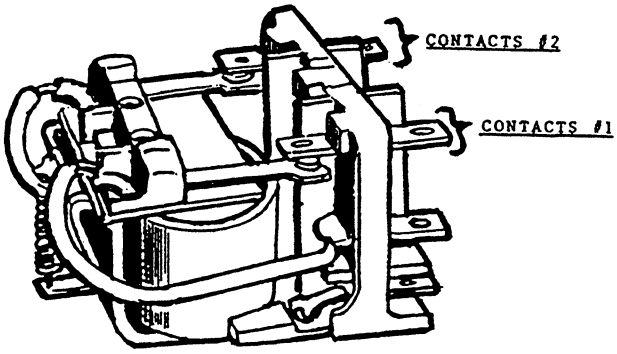
The Probe Start Relay

The probe start relay has two sets of normally-open contacts. When the relay is activated, contact set #1 closes, and the microwave timer is bypassed. The microwave will cook when the temperature is selected, and not when selecting the time. Contact set #2 closes and sends current to the probe lamp to indicate that the oven is operating in the Tempmatic mode.

NOTE: When the meat probe is inserted into the jack, the probe transformer is energized, and 9.5-volts AC is sent to the probe start relay coil to energize it.

To test the probe start relay:

1. Set the ohmmeter to the R x 100 scale.
2. Touch the meter leads to terminals A and B. The meter should read 2000 Ω.
3. Set ohmmeter to the R x 1 scale.
4. Touch the meter leads to terminals 4 and 7. The meter should read infinite resistance.
5. Touch the meter leads to terminals 6 and 9. The meter should read infinite resistance.

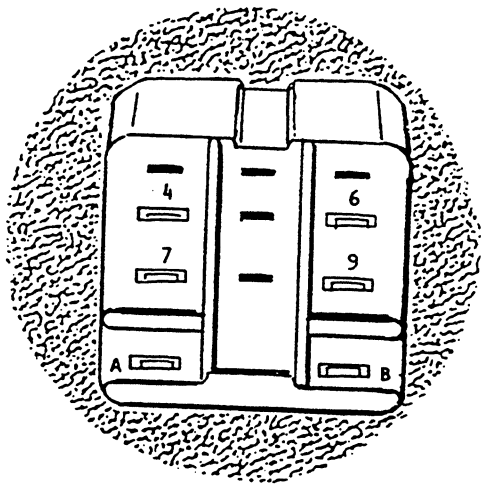


The 28-Volt Clock Relay

The clock relay is energized by 28-volts from the clock, when the clock is set to Time Bake, Time Broil, or Clean. The relay has a 28-volt DC rated coil, and two sets of contacts.

To test the clock relay (relay activated)

1. Set ohmmeter to the R x 1 scale.
2. Touch the meter leads to contacts 6 and 9. The meter should read 0 Ω.
3. Touch the meter leads to terminals 4 and 7. The meter should read 0 Ω.
4. Set the ohmmeter to the R x 100 scale.
5. Touch the meter leads to terminals A and B. The meter should read 2000 Ω.

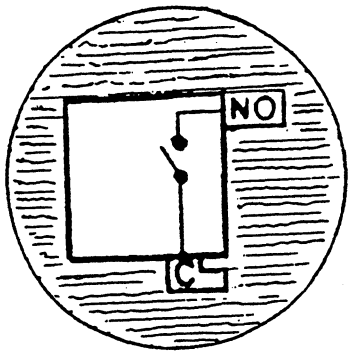


CONVECTION SWITCH

The convection switch is mounted on the oven control panel. It is a normally-open pushbutton switch. Pressing the button closes the contacts and completes the circuit. Pushing the button again opens the contacts and the circuit. De-pressing the convection switch activates the blower and places the oven in Convection mode.

To test the convection switch:

1. Set the ohmmeter to the R x 1 scale.
2. Touch the meter leads to the common and normally-open contacts.
3. With the pushbutton in, the meter should read 0 Ω.
4. With the pushbutton out, the meter should read infinity.

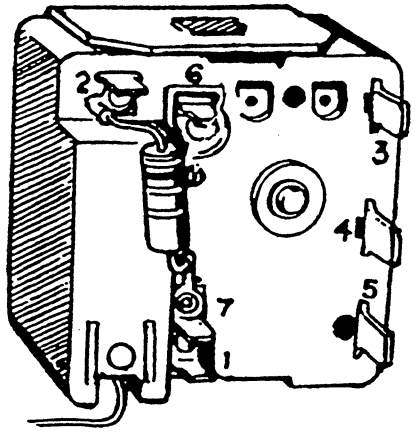


THERMOSTAT

The thermostat contains three switches and a resistor that controls the heating of the oven.

To test thermostat, use the following chart:

SET METER ON RX100 TEST FROM TERMINAL 2 TO TERMINAL 7 FROM TERMINAL 2 TO TERMINAL 6 THE OHMETER SHOULD READ 10,000 OHMS	 THERMOSTAT BULB TEMPERATURE BELOW 55 DEGREES FAHRENHEIT
SET METER ON RX1 TEST FROM TERMINAL 1 TO TERMINAL 3 FROM TERMINAL 4 TO TERMINAL 5 FROM TERMINAL 6 TO TERMINAL 7 THE OHMETER SHOULD READ ZERO OHMS	 IF TEMPERATURE SET IS ABOVE THERMOSTAT BULB TEMPERATURE - - IN ANY POSITION BUT CLEAN - - THERMOSTAT BULB TEMPERATURE BELOW 55 DEGREES FAHRENHEIT
TEST FROM TERMINAL 1 TO TERMINAL 3 FROM TERMINAL 4 TO TERMINAL 5 FROM TERMINAL 6 TO TERMINAL 7 ANY COMBINATIONS NOT MENTIONED THE OHMETER SHOULD READ INFINITE OHMS.	IF TEMPERATURE SET IS BELOW THERMOSTAT BULB TEMPERATURE - - IN CLEAN POSITION - - THERMOSTAT BULB TEMPERATURE ABOVE 550 DEGREES FAHRENHEIT

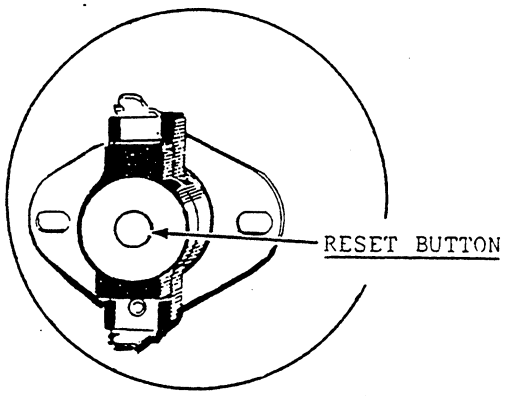


HI-TEMP CUTOUT

The hi-temp cutout is a bimetallic switch set to open at 275°F. Its contacts will handle 15- amperes to the broil element.

To test hi-temp cutout:

1. Set ohmmeter to the R x 1 scale.
2. Touch the meter leads to the terminals. The meter should read 0 Ω.
3. Heat the hi-temp cutout with a lighter, or on a cooktop so it is above 275°F.
4. Touch the meter leads to the terminals. The meter should read infinite resistance.

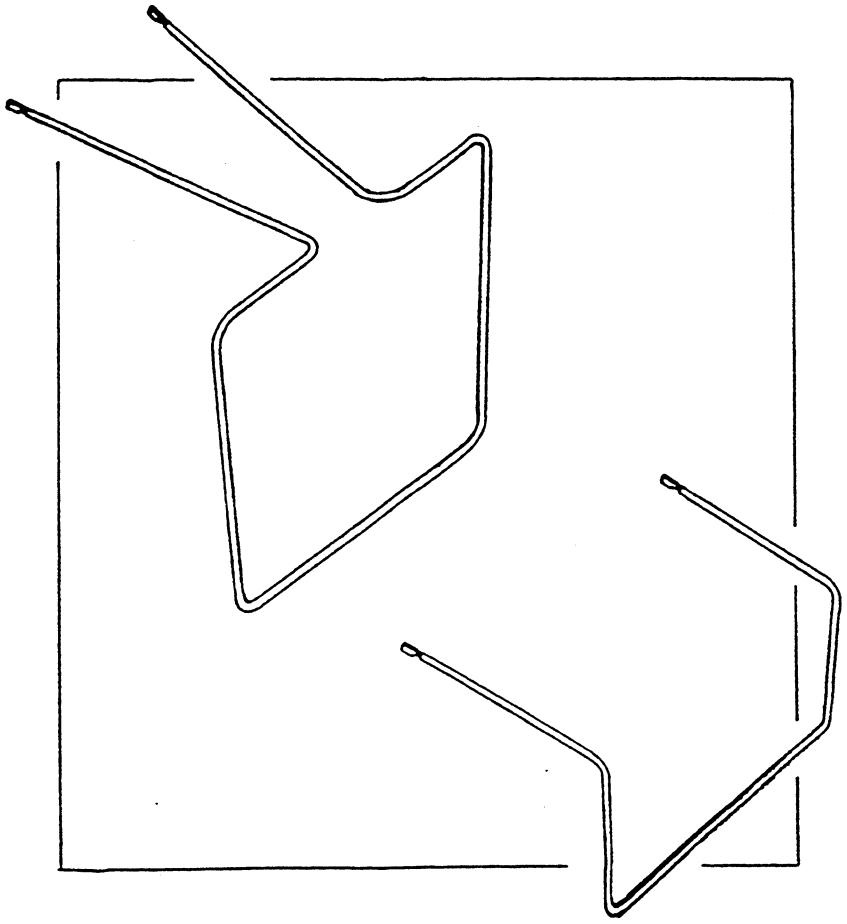


MULLION ELEMENT

The mullion element is a 900-watt element. It has between 15.5 Ω to 17 Ω of resistance at room temperature.

To test mullion element:

1. Set the ohmmeter to the R x 1 scale.
2. Touch the meter leads to the terminals. The meter should read between 15.5 Ω to 17 Ω.

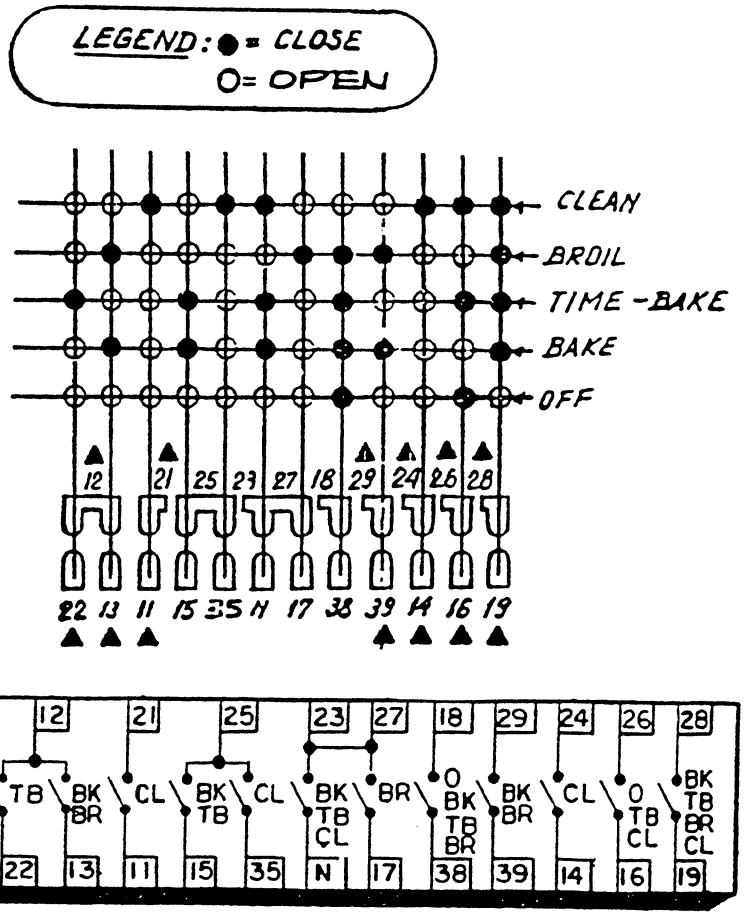


SELECTOR SWITCH

The selector switch has five pushbuttons that controls twelve switches. The contacts vary in current ratings, according to their function.

To test the selector switch:

1. Set the ohmmeter to the R x 1 scale.
2. Use the following chart to test the switch:

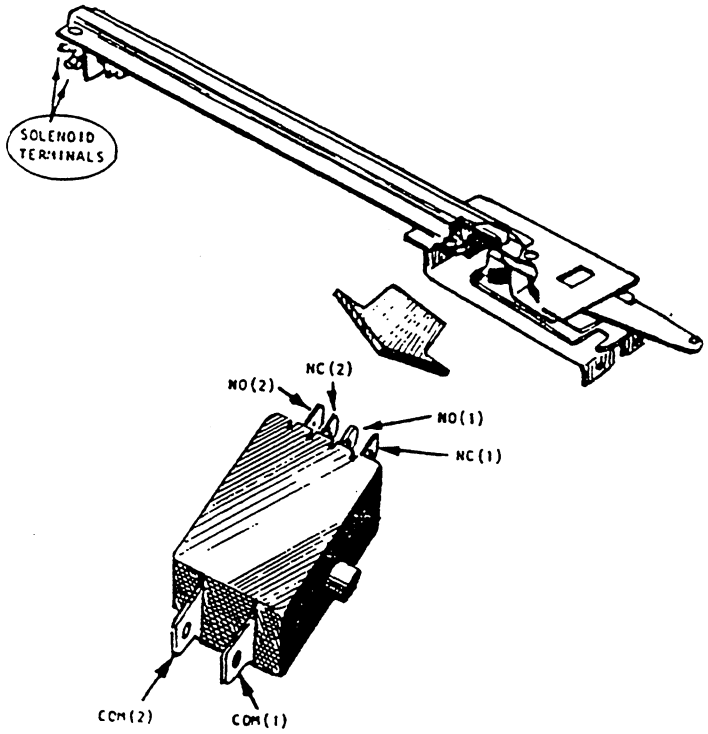


LOWER LATCH ASSEMBLY

The lower latch assembly sends power to the lower oven thermostat & hot wire relay when it is activated, by energizing the solenoid and latching.

To test the lower latch assembly:

1. Set the ohmmeter to the R x 100 scale.
2. Touch the meter leads to the solenoid terminals. The meter should read 130 Ω.
3. Set the ohmmeter to the R x 1 scale.
4. With the switch activated, touch the meter leads to the following terminals and the meter should read 0 Ω:
   a) Terminal 1 (COM) and terminal 1 (N.O.).
   b) Terminal 2 (COM) and terminal 2 (N.O.).
5. With the switch not activated, touch the meter leads to the following terminals and the meter should read 0 Ω:
   a) Terminal 1 (COM) and terminal 1 (N.C.).
   b) Terminal 2 (COM) and terminal 2 (N.C.).
6. Test across any combination of terminals not stated above with the switch active or not active, and the ohmmeter should read infinite resistance.

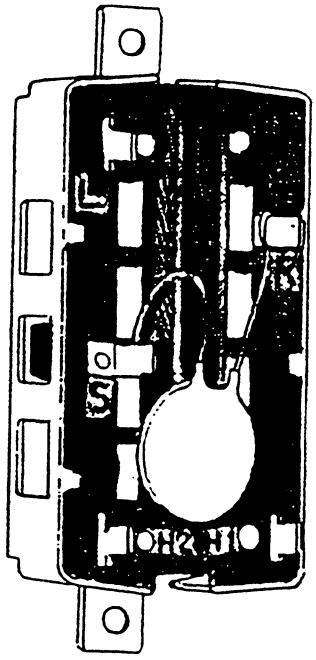


HOT WIRE RELAY

The hot wire relay is a single-pole, single-throw, double-contact switch that is controlled by a heated bimetal. When the bimetal is heated, it warps (bends) and closes the contacts.

To test the hot wire relay:

1. Set the ohmmeter to the R x 100 scale.
2. Touch the meter leads to terminals R and S. The meter should read 1600 Ω.
3. Set the ohmmeter to the R x 1 scale.
4. Use a jumper to 120-volts from terminals R and S. Be careful and wait 20-seconds for the contacts to close.
5. Touch the meter leads to the following test points without the jumper wire attached, and the meter should read 0 Ω:
   a) Terminals H1 and H2.
   b) Terminal H1 and L.
   c) Terminal H2 and L.
6. Test across any combination of terminals not listed above, and the ohmmeter should read infinite resistance.

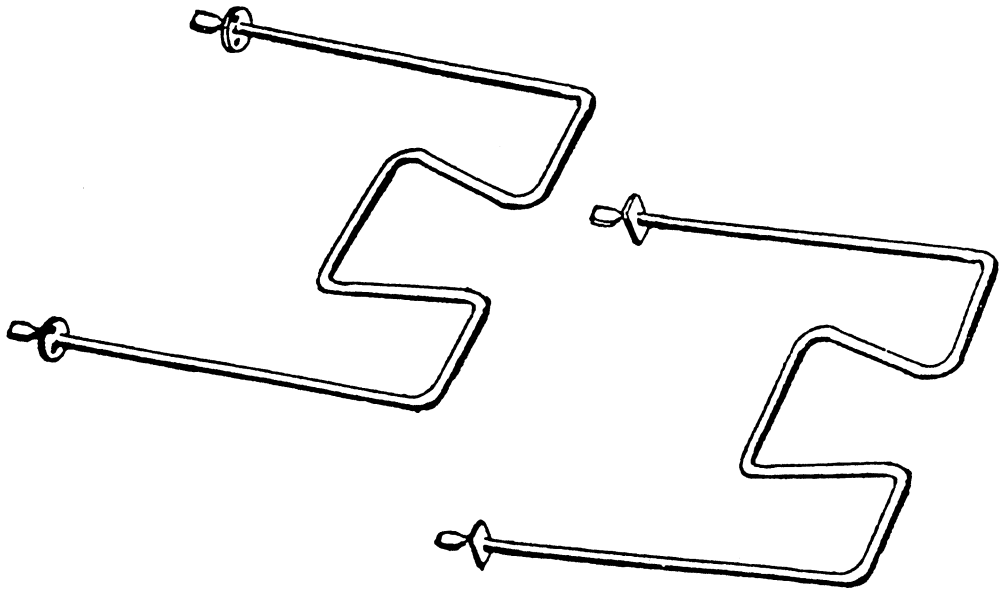


BAKE ELEMENT

The bake element is a 2800-watt element. It has 19.5 Ω of resistance at room temperature.

To test the bake element:

1. Set the ohmmeter to the R x 1 scale.
2. Touch the meter leads to the terminals. The meter should read 19.5 Ω.

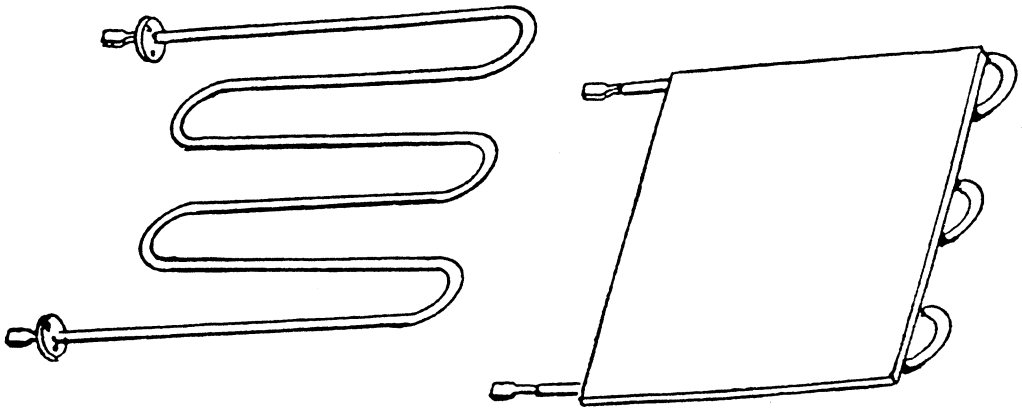


BROIL ELEMENT

The broil element is rated at 3600-watts. It has 15 Ω of resistance at room temperature.

To test the broil element:

1. Set the ohmmeter to the R x 1 scale.
2. Touch the meter leads to the terminals. The meter should read 15 Ω.

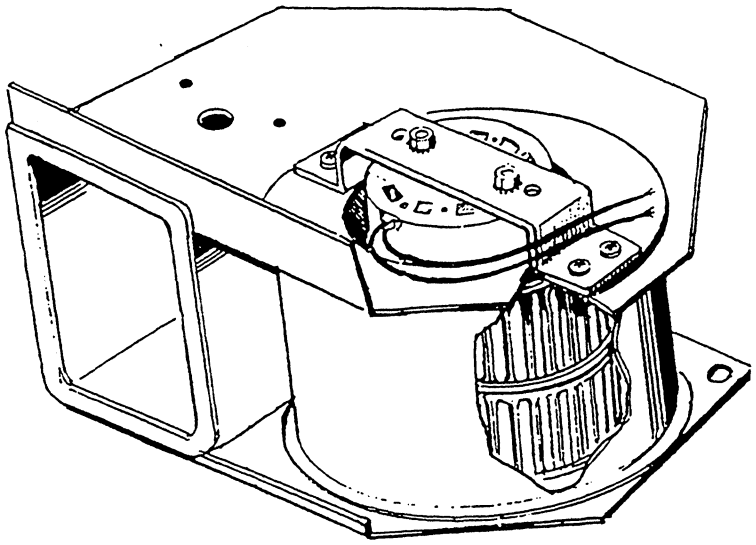


BLOWER MOTOR (120 CFM)

The function of the blower is to provide cooling air when the oven is in the Clean and Time Bake Modes, because they are periods when the oven is on and is likely to be unattended. It should also be used in all other cooking modes when food with a high water content is being cooked. The blower also runs when the microwave oven is on to keep the plenum free of moisture and food particles.

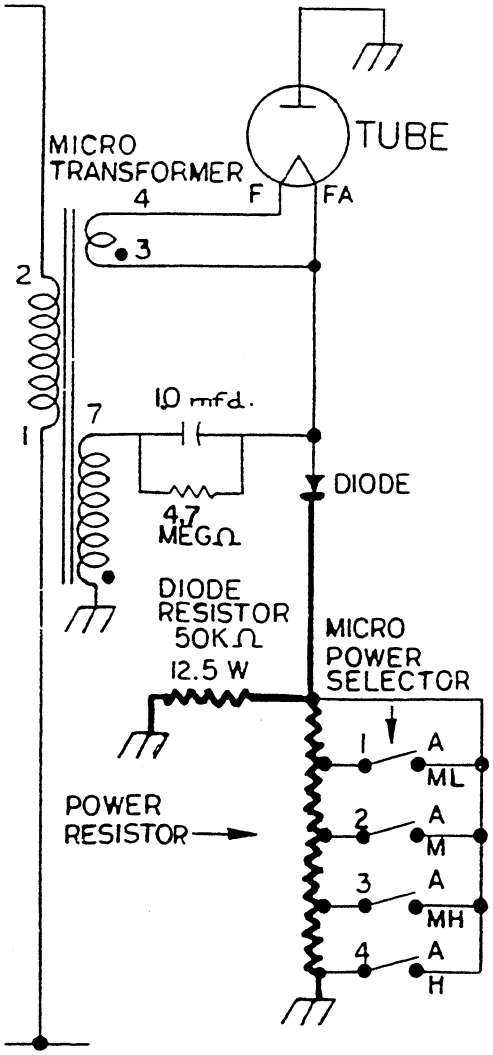
To test the blower motor:

1. Set the ohmmeter to the R x 1 scale.
2. Touch the meter leads to the motor terminals. The meter should read 180 Ω.

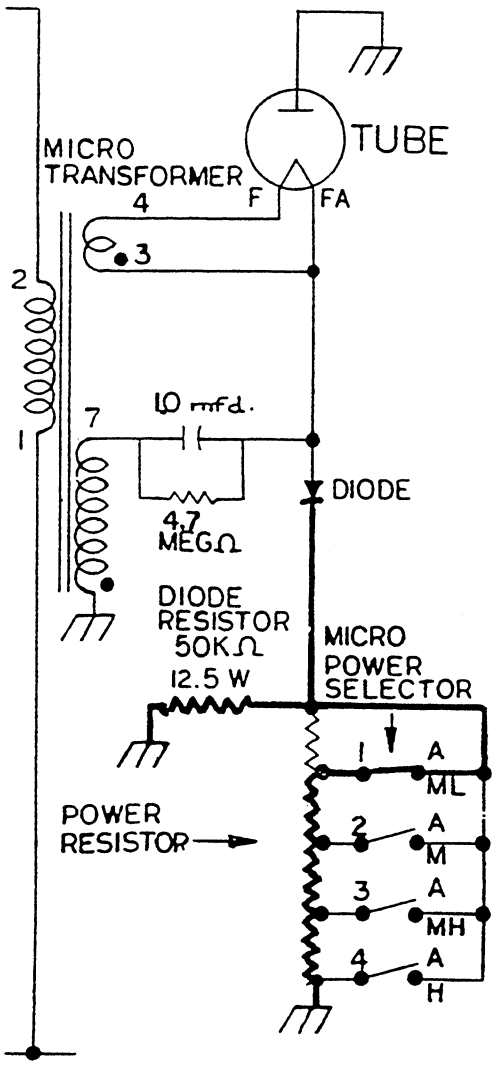


CURRENT FLOW SETTINGS

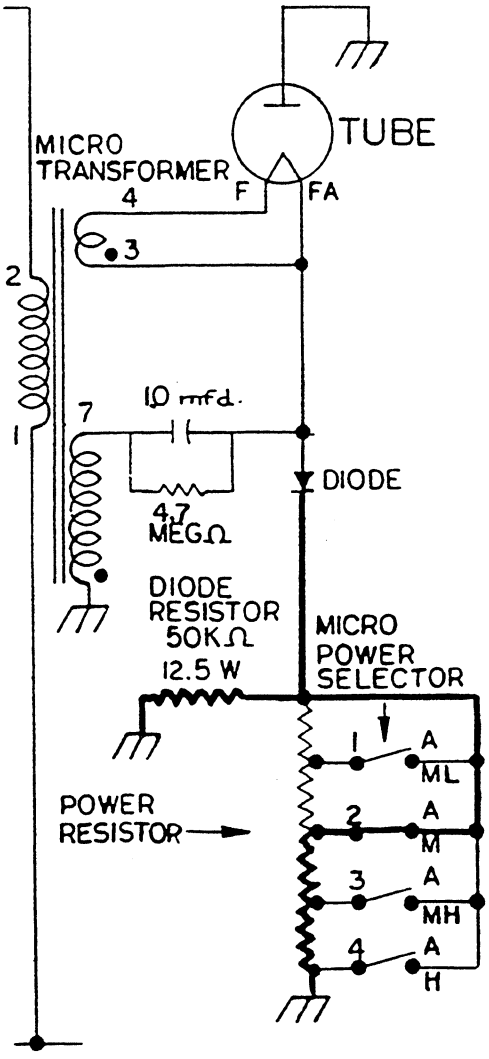
On the Low setting, the current normally flowing through the diode, flows through the entire resistor. The resistor reduces the amount of current flowing through the diode. This reduces the amount of current flowing in the entire microwave circuit (except the heater), and, therefore lowers the heat rise. On Low, the oven cooks at 210-watts.



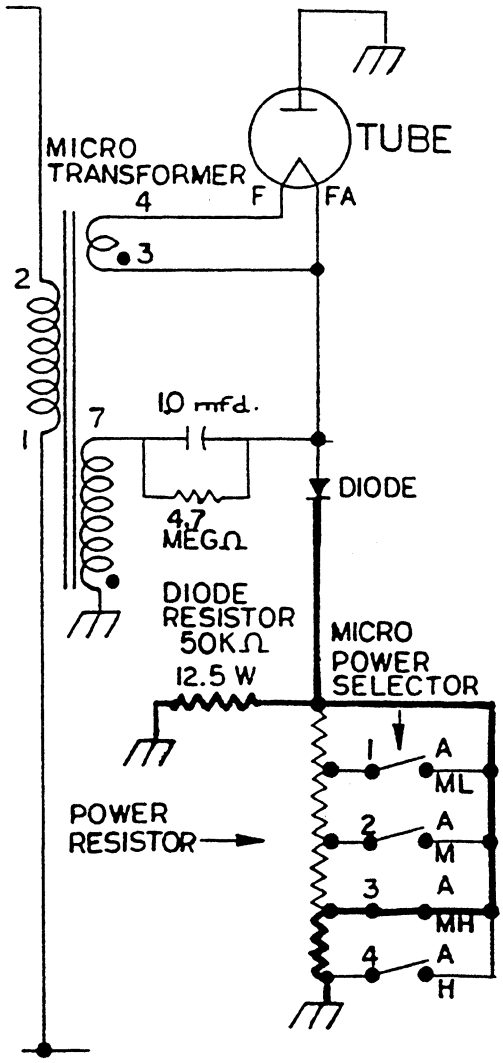
On the Medium Low setting, the current normally flowing through the diode, flows through 3/4 of the resistor. The resistor reduces the amount of current flowing through the diode. This reduces the amount of current flowing in the entire microwave circuit (except the heater), and, therefore lowers the heat rise. On Medium Low, the oven cooks at 315-watts.



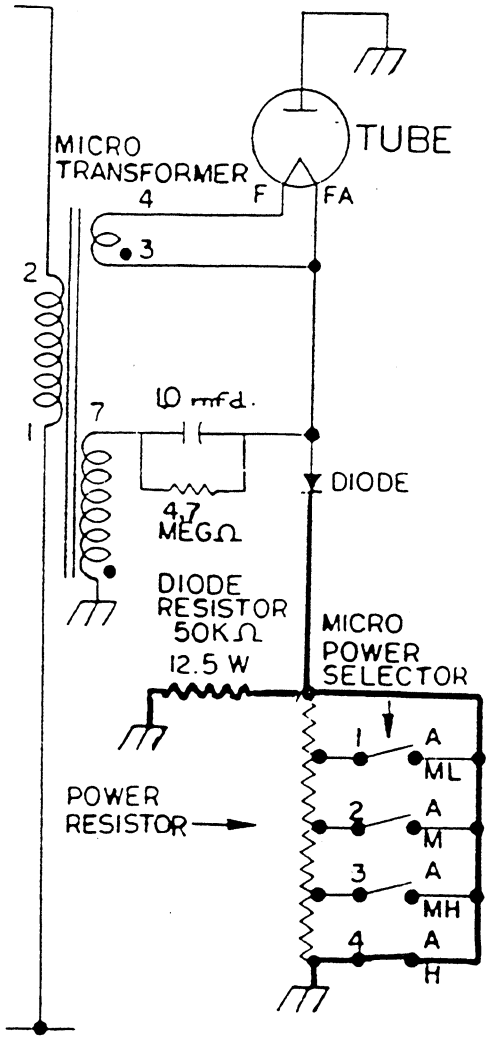
On the Medium setting, the current normally flowing through the diode, flows through half of the resistor. The resistor reduces the amount of current flowing through the diode. This reduces the amount of current flowing in the entire microwave circuit (except the heater), and, therefore lowers the heat rise. On Medium, the oven cooks at 420-watts.



On the Medium High setting, the current normally flowing through the diode, flows through 1/4 of the resistor. The resistor reduces the amount of current flowing through the diode. This reduces the amount of current flowing in the entire microwave circuit (except the heater), and therefore lowers the heat rise. On Medium High, the oven cooks at 525-watts.



When the selector switch is set on High, current is switched around the resistor and the unit operates power and cooks at 700- watts.



CMT "N" PRIMARY DESIGN CHANGES

Introduction To Thermador's New Convection, Micro/Thermal Combination Ovens

MODELS

CMT227N	Double Oven	Black Glass
CMT227NW	Double Oven	White Glass
CMT227NS	Double Oven	Stainless Steel
CMT227NPS	Double Oven	Professional, Stainless Steel
CMT127N	Single Oven	Black Glass
CMT127NW	Single Oven	White Glass
CMT127NPS	Single Oven	Professional, Stainless Steel

CMT "N" Models—Primary Changes

- A restyled appearance with solid trim for flush cabinet fit.
- Single knob oven controls with an electronic precision display that replaces the dial and pushbutton controls.
- Optional indoor or outdoor venting installations.
  a) Deleted filters that are located in the front frame.
  b) A gasketless oven door.
- A 24-hour time-of-day clock that replaces a 12-hour clock.
- Microwave modes:
  a) Single knob control with electronic precision and display that replaces the mechanical timer controls.
  b) Combination heat and microwave modes that can be programed to start later.

Model Specifications—CMT127N/227N

The heart of the new CMT ovens is the Dreefs electronic control board. The control board controls all cooking modes and all timed functions.

The microwave has five power levels that are controlled by a micro-power switch. The power levels are:

HIGH	100%	700 WATTS
MEDIUM HIGH	75%	525 WATTS
MEDIUM	60%	420 WATTS
MEDIUM LOW	45%	315 WATTS
LOW	30%	210 WATTS

The microwave power levels are controlled by a power resistor. The board controls the microwave time through a micro-timer relay that breaks the microwave circuit when the time has elapsed.

The Dreefs control system consists of four separate components that are interconnected:

- An electromechanical rotary selector switch.
- An electronic thermostat/clock and timer.
- A Vacuum Fluorescent Display (VFD).
- An oven cavity temperature sensor.

One complete set of components is required for each oven.

There are two controls, one each for the model CMT127N and model CMT227N. They will be referred to as the" single-oven control," and the "double-oven control." The double/single will be common, the single will be depopulated.

The Dreefs oven control system utilizes a single rotary switch that controls the cooking mode and oven set temperature. The rotary selector switch is a 7-position selector switch whose modes in clockwise rotation from OFF are: BAKE, TIMED BAKE, BROIL, CLEAN, TIME CONV BAKE, and CONV BAKE .

The cooking mode is selected by rotating the control knob in either direction. The control is free to rotate 360° without a mechanical stop. In addition, the controller is an Electronic Clock with two pushbuttons and a center rotary switch, which includes: time-of-day, minute timer, start time, stop time, and oven cleaning.

Each selection position includes a dual-mode of data input. A true mechanical indentation inputs the cooking mode, and a spring- loaded motion "tweak" within the same indentation inputs the temperature setting.

When the switch is first set to any cooking/cleaning mode, the display shows the selected mode. The display also shows three dashes '---'. To set the oven cook temperature, the switch needs to be rotated slightly clockwise or counterclockwise to increase or decrease the set oven temperature. The oven heat begins automatically after the cooking mode and temperature is selected. The OFF position stops all oven operation.

The timed functions include: TIMED BAKE, CLEAN, and TIMED CONV BAKE. The Start/Stop time is controlled by the integrated electronic clock. The control will not provide heat until the Heat-As-Required (air switch) circuit, and the time conditions are satisfied.

Electronic Control Board

HOW IT OPERATES

The board is powered by 120-volts AC. It outputs 120-volts AC, and 35-volts and 24- volts DC to various components.

The following information describes how current flows in the various cooking modes once the selector is set, the corresponding switches close, and the blower comes on and closes the air switch.

Bake, Broil, & Convection

P1 Out sends 35-volts DC through the air switch to the **P4 Heat A/R** terminal. Once this circuit is completed, board relays K1 and K2 close, and send current to the Bake and Broil elements. When the preset temperature is reached, the sensor breaks the circuit, and the relays open.

Timed Bake & Timed Convection

The logic is the same as BAKE, BROIL, and CONVECTION. However, when the start time is reached, relay K4 on the board closes, and the blower motor and convection motors are energized. Once the preset time on the clock is exhausted, K4 opens, and the circuit is defeated. K4 sends 120-volts AC to the blower and convection motors.

Microwave Timer

The board sends 24-volts DC to the microwave timer relay coil, and closes the microwave circuit. When the clock runs out of microwave time, the relay coil opens, and the circuit is defeated.

Model CMT Electronic Control Board

MODE OF OPERATION	E1 AND E2 120 VAC	UK1 24 VDC	UK2 24 VDC	LK1 24 VDC	LK2 24 VDC	UK3 120 VAC	LK3 120 VAC	K4 120 VAC	MTR 24 VDC	P4 35 VDC	P5 35 VDC	P6 35 VDC	P7 35 VDC	P8 35 VDC
BAKE	X	X	X							X				
TIME BAKE	X	X	X					X		X				
BROIL	X	X	X							X				
CLEAN (UPPER)	X	X	X			X		X		X	X	X		
TIMED CONVECTION BAKE	X	X	X					X		X				
CONVECTION BAKE	X	X	X							X				
CLEAN (LOWER)	X			X	X		X			X			X	X
MICROWAVE	X								X		X			

CIRCUITS ENERGIZED

Model CMT Oven Control Logic Table

POSITION NO.	CONTACT NO. / CW SELECTION	o 1 o	o——o 2 o	o 3 o——o	o 4	o 5 o----o	o 6	o——o 7	8 o	TEMPERATURE RANGE OF	PRE-SET OVEN TEMPERATURE OF
0	OFF	O	O	O	O	X	O	O	O	---	
1	BAKE	O	X	O	X	X	X	O	O	150-525	350
2	TIME BAKE	O	X	O	X	X	O	O	O	150-525	350
3	BROIL	O	O	X	O	X	X	O	O	150-550	HI @ 550
4	CLEAN	X	O	X	X	O	O	O	X	850-925	CL @ 875
5	TIMED CONV BAKE	O	X	O	X	X	O	O	X	150-525	325
6	CONV BAKE	O	X	O	X	X	X	X	O	150-525	325

LEGEND:

X = CLOSED CONTACT

O = OPEN CONTACT

SELECTOR GRID

New CMT127N/227N Component Description

THE UPPER OVEN

Selector Switch: Rotary type selector switch that opens and closes the contacts to direct current flow to the appropriate controls. The selector switch positions are Off, Bake, Timed Bake, Broil, Timed Convection Bake, Convection Bake, and Clean.

Bake Element: The Bake element is rated at 2800-watts and draws 11-amperes during the Bake cycle.

Broil Element: The Broil element is rated at 3600-watts. It draws 15-amperes during the Broil cycle, and 7-amperes during Bake cycle (1/4-wattage, 900-watts).

High Temp Cutout: This cutout is normally-closed and set to open at <350 °F, or more.

Air Switch: The air switch is a normally-open switch that is closed by air flow from the blower. The air switch is a critical component because it delivers current to the board that controls the relay functions. If the air switch does not close, the oven will not function in any mode, except microwave.

BLOWER THERMOSTAT

The blower thermostat is a normally-open switch that closes at 140 °F, or higher. It is wired in series with L2, the blower motor, and the tube fan. It closes and activates the blower motor and tube fan to cool off the plenum area and protect the electronics.

LATCH ASSEMBLY

The upper oven latch assembly has four mounted switches. They are:

1) A double-pole, single-throw, normally-open switch. The rear portion serves as the latch position switch. The front portion serves as the latch interlock switch.
2) A single-pole, single-throw, normally-open switch. This switch serves as the door interlock switch.
3) A single-pole, double-throw, normally-closed switch. This is the solenoid activated switch that closes to the normally-open position when the solenoid is activated for the Self-Clean mode. When the solenoid is activated, a plunger drops onto the leaf spring on the switch, and closes it to the normally-open position.

The switches function as follows:

Latch Position Switch	Self Clean
Latch Interlock Switch	Microwave
Door Interlock Switch	Microwave
Solenoid Activated Switch	Self Clean

Additionally, there is a solenoid coil on the upper oven latch assembly that is energized by the control board when the oven is set into Self-Clean. The board sends 120-volts AC to the solenoid.

Current Flow In The Model CMT Ovens

UPPER OVEN BAKE

Set the oven selector to BROIL. The following events will occur:

- Selector contacts 3, 5 and 6 close.
- Tube fan and blower come on and close the air switch.
- Relays LK1 and LK2 close.
- 240-volts flows to the BROIL element (15-amperes, 3600-watts).

Critical

- The blower motor must come on and close the air switch.
- The 35-volt DC circuit from P1 to P4 on the ERC must be completed.
- Relays K1 and K2 must close.

TIMED BAKE

1. Set the oven selector to TIMED BAKE. The following events will occur:
   - Selector contacts 2, 4, and 5 close.
2. Set the COOK TIME.
3. Press the START button.
   - Relay K4 closes and the blower and tube fan come on and close the air switch.
   - Relays K1 and K2 close.
   - 240-volts flow to the 2800-watt Bake element (12-amperes).
   - 120-volts flow to the 3600-watt Broil element (7-amperes, 1/4-wattage).

Critical

- Relay K4 in the ERC must close and activate the blower motor and close the air switch.
- The 35-volt DC circuit from P1 to P4 on the ERC must be completed.
- Relays K1 and K2 must close.

CONVECTION BAKE

1. Set oven selector knob to CONVECTION BAKE. The following events will occur:
   - Selector contacts 2, 4, 5, 6, and 7 close.
   - Tube fan and blower come on and close the air switch.
   - Convection motor comes in.
   - Relays LK1 and LK2 close.
   - 240-volts flow to the BAKE element (12-amperes, 2800-watts).
   - 120 volts flow to the BROIL element (7-amperes, 900-watts).

Critical

- The blower motor must come on and close the air switch.
- The 35- volt DC circuit from P1 to P4 on the ERC must be completed.
- Relays K1 and K2 must close.
- The convection motor must come on.

TIMED CONVECTION BAKE

1. Set oven selector to TIMED CONVECTION BAKE. The following events will occur:
   - Selector contacts 2, 4, 5, and 8 close.
2. Set the COOK TIME.
3. Press the START button.
   - Relay K4 closes and convection motor, blower and tube fan come on and close air switch.
   - Relays K1 and K2 close.
   - 240-volts flow to the 2800-watt Bake element (12-amperes).
   - 120-volts flow to the 3600-watt Broil element (7-amperes, 1/4-wattage).

Critical

- Relay K4 in the ERC must close and activate the blower motor to close the air switch.
- The 35-volt DC circuit from P1 to P4 on the ERC must be completed.
- Relays K1 and K2 must close.

UPPER OVEN BROIL

1. Set oven selector to BROIL. The following events will occur:
   - Selector contacts 3, 5, and 6 close.
   - Tube fan and blower come on and close the air switch.
   - Relays LK1 and LK2 close.
   - 240-volts flow to the BROIL element (15-amperes, 3600-watts).

Critical

- Blower motor must come on and close the air switch.
- The 35-volts DC from P1 to P4 must be completed.
- Relays Kl and K2 must close.

MICROWAVE COOKING

1. Set the MICROWAVE POWER level to HIGH. The following events will occur:
   - Selector contacts 1 and H close.
2. Latch door to MICROWAVE position.
   - Door interlock switch closes.
   - Latch interlock switch closes.
   - Latch position switch closes.
   - Microwave timer relay closes.
3. Set the MICROWAVE COOKING time.
   - Minutes will appear on the clock.
4. Press the START button once.
   - Surge relay closes and the circuit is completed.

Critical

- The 35-volt DC circuit from P1 to P5 must be completed.
- The Micro-timer relay must close to complete the circuit.

CLEAN (UPPER OVEN)

1. Set the oven selector to CLEAN. The following events will occur:
   - Selector contacts 1, 3, 4, and 8 close.
2. Latch the oven door.
   - Latch interlock switch closes.
   - Latch position switch closes.
   - Latch solenoid is energized by the board (120-volts) and the plunger drops.
   - Solenoid activated switch closes.
3. Press the START button.
   - K4 relay closes and energizes the upper convection motor, tube fan, and blower motor, and the air switch closes.
   - Relays K1 and K2 close.
   - 240-volts flow to the Bake and Broil elements.

Critical

- Blower must come on and close the air switch.
- The 35-volt DC circuits from P1 to P4, P5, and P6 must be completed.
- Relays K1 and K2 must close.

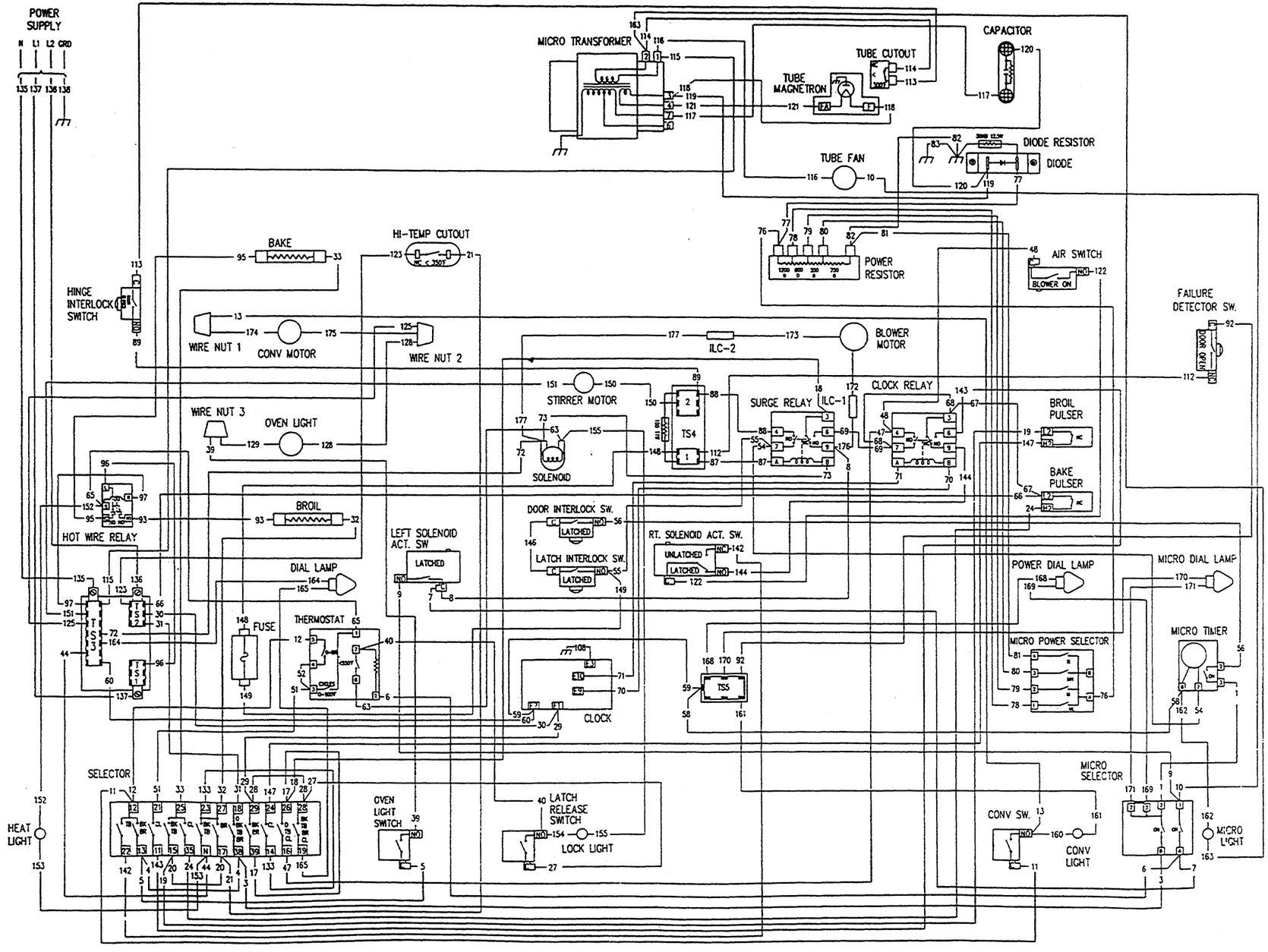
CLEAN (LOWER OVEN)

1. Set the oven selector to CLEAN. The following events will occur:
   - Door position switch closes when the door is closed.
   - Selector contacts 1, 3, 4, and 8 close.
   - Latch solenoid is energized by board (120-volts AC).
2. Latch the oven door.
   - Lower latch switch closes.
3. Press the START button.
   - K4 relay closes and energizes the lower convection motor, tube fan, and blower motor, and the air switch closes.
   - Relays K1 and K2 close.
   - 240-volts flow to the Bake and Broil elements.

Critical

- Blower must come on and close the air switch.
- The 35-volt DC circuit from P1 to P4, P7, and P8 must be completed.
- The relays K1 and K2 must close.

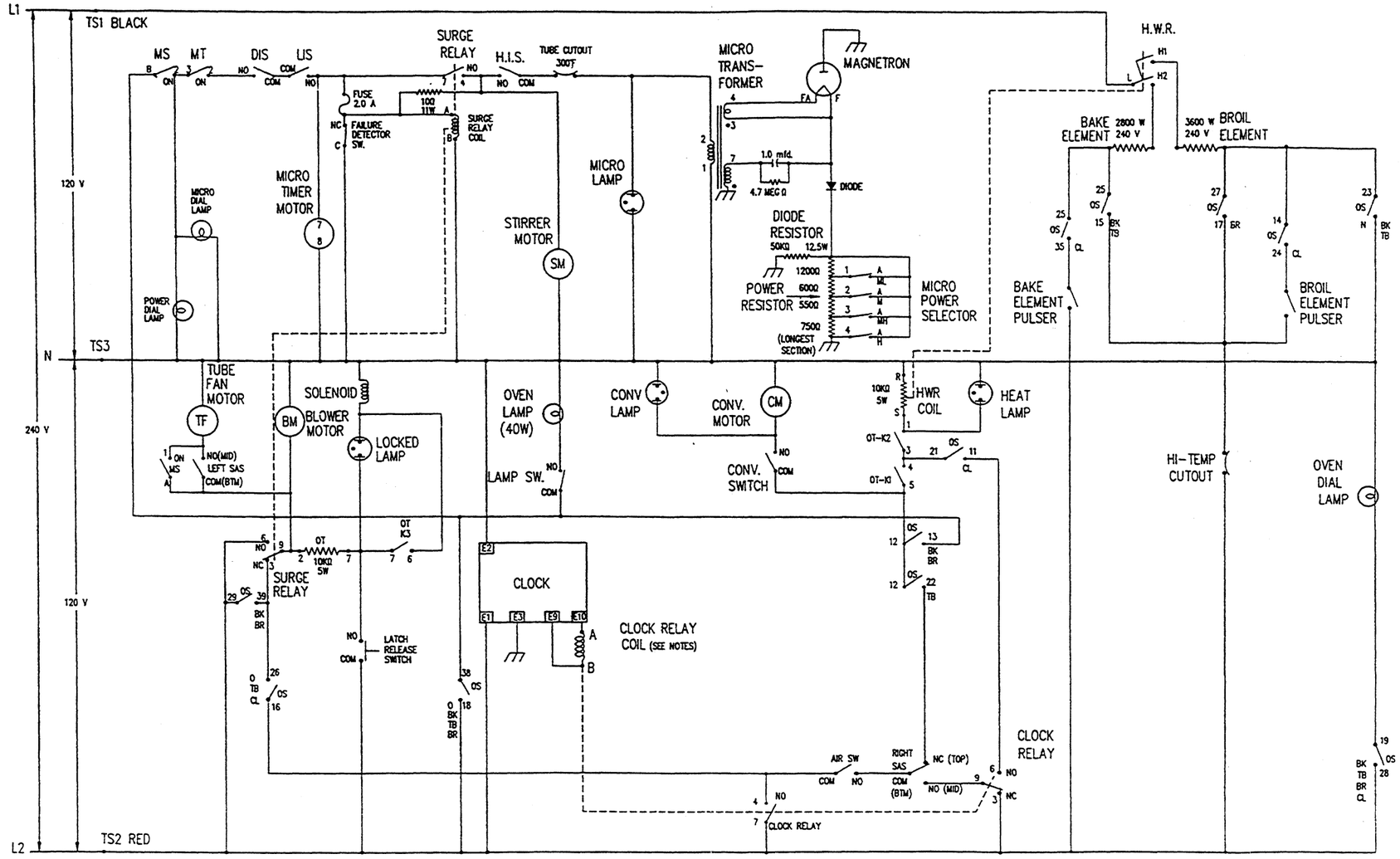
SCHEMATICS & WIRING DIAGRAMS



NOTES:

1. DESCRIPTION NEXT TO SWITCHES INDICATES WHEN SWITCH IS CLOSED
2. SUPPLY WIRES - USE COPPER WIRE ONLY

CMT127 WIRING DIAGRAM Part No.14-37-167



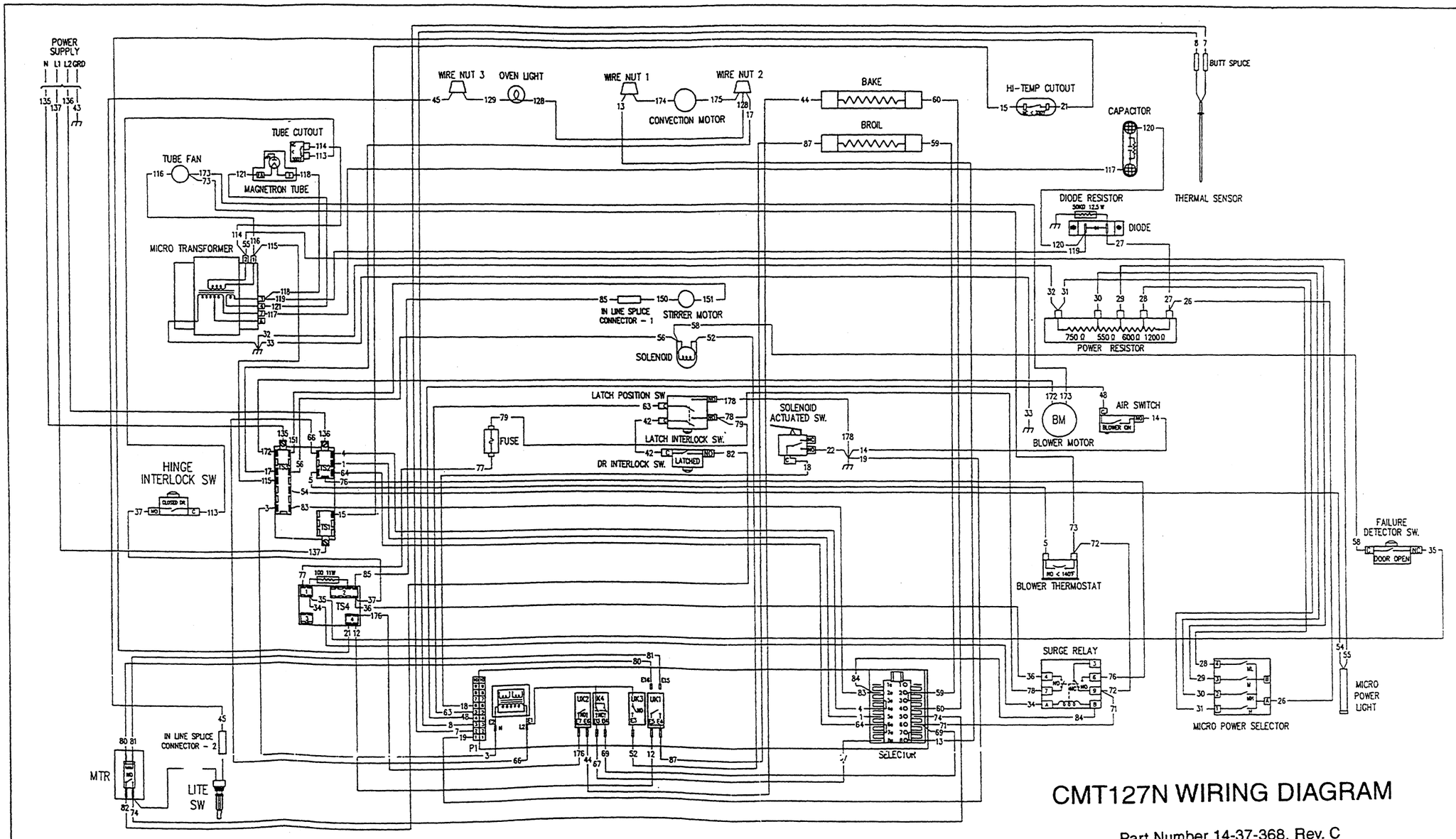
CHASSIS GROUND

NOTES

1. K1 – CAM OPERATED SWITCH IN THERMOSTAT KING SEELEY–OPEN IN CLEAN.
   K2 – THERMALLY OPERATED SWITCH THERMOSTAT KING SEELEY– 140°F – 900°F.
   K3 – THERMALLY OPERATED SWITCH THERMOSTAT KING SEELEY N.C. – OPEN WHEN GREATER THAN 550°F
2. CLOCK RELAY – ENERGIZED WHEN PERFORMING TIME BAKE, TIME BROIL, OR CLEAN.
3. SMALL NUMERALS NEAR SWITCH SYMBOLS ARE TERMINAL MARKINGS.

L.I.S. LATCH INTERLOCK SW.
D.I.S. DOOR INTERLOCK SW.
H.I.S. HINGE INTERLOCK SW.
M.T. MICROWAVE TIMER
M.S. MICROWAVE SELECTOR SW.
HWR HOT WIRE RELAY
S.A.S. SOLENOID ACTUATED SW.
N.O. NORMALLY OPEN
N.C. NORMALLY CLOSED
O.S. OVEN SELECTOR
O.T. OVEN THERMOSTAT

BK BAKE
O OFF
TB TIME BAKE
BR BROIL
CL CLEAN
L LOW
M MEDIUM
H HIGH
ML MEDIUM LOW
MH MEDIUM HIGH



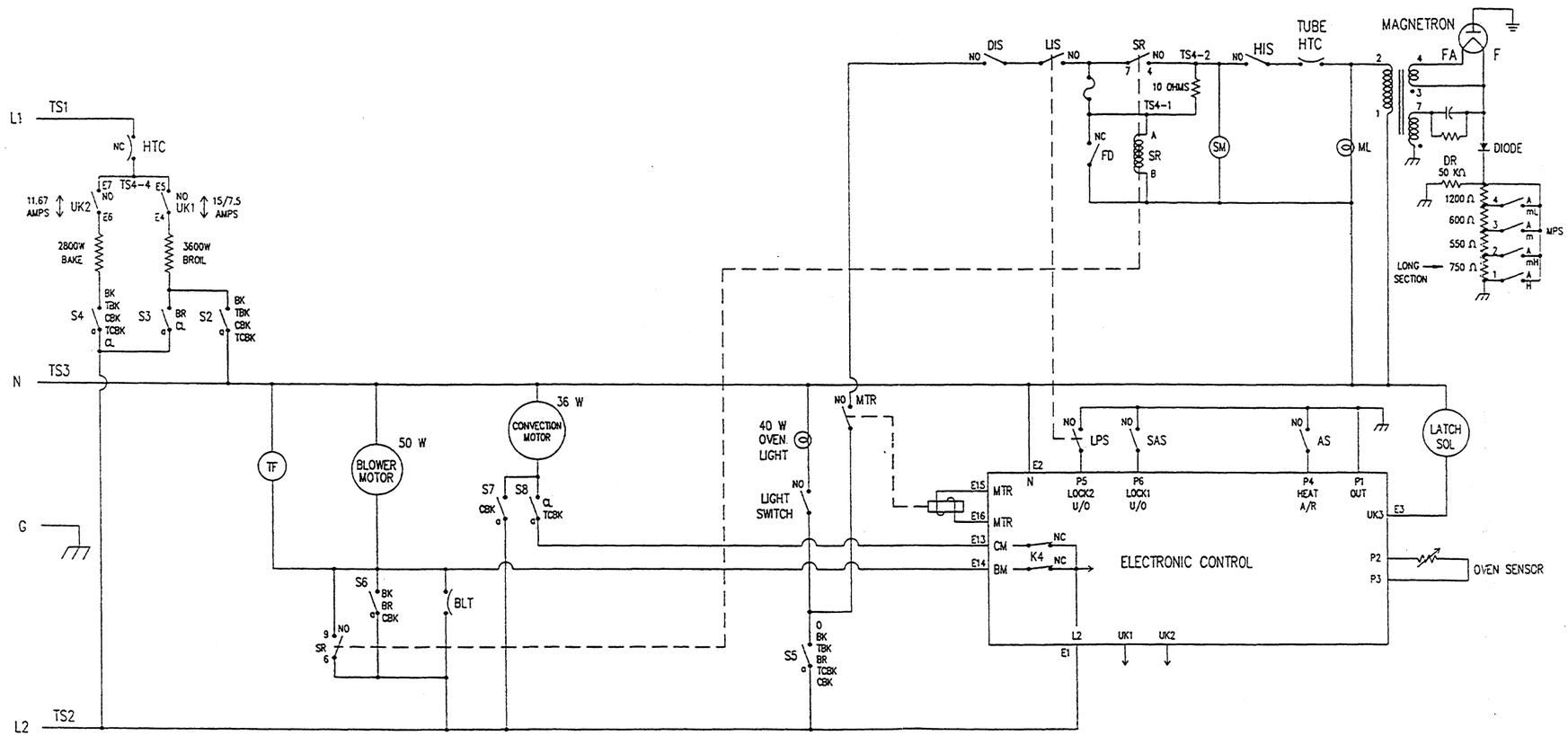
H	HIGH	MTR	MICRO TIMER RELAY	NO	NORMALLY OPEN
MH	MEDIUM HIGH	TS1-5	TERMINAL STRIPS 1-5	<	LESS THAN
M	MEDIUM	C	COMMON		
ML	MEDIUM LOW	NC	NORMALLY CLOSED		

NOTES:

1. DESCRIPTION NEXT TO SWITCHES INDICATES WHEN SWITCH IS CLOSED
2. SUPPLY WIRES - USE COPPER WIRE ONLY

CMT127N WIRING DIAGRAM

Part Number 14-37-368, Rev. C



ABBREVIATIONS:

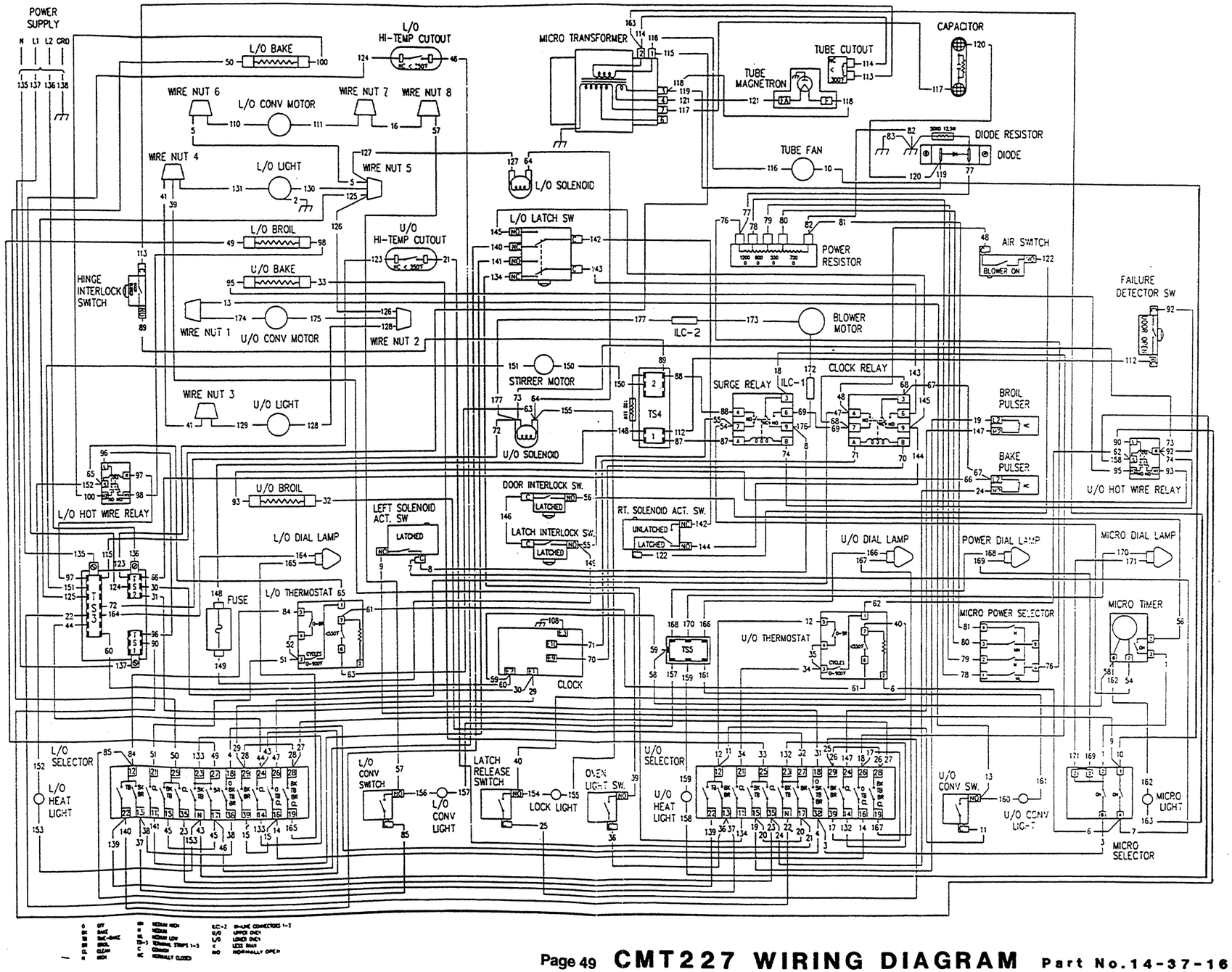
A/R = AS REQUIRED
AS = AIR SWITCH
BK = BAKE
BR = BROIL
CBK = CONVECTION BAKE
CL = CLEAN
DIS = DOOR INTERLOCK SWITCH
DPS = DOOR POSITION SWITCH
DR = DIODE RESISTOR
FD = FAILURE DETECTOR
HIS = HINGE INTERLOCK SWITCH
HTC = HIGH TEMP CUTOUT
UK1 = BROIL RELAY
UK2 = BAKE RELAY
UK3 = LOCK RELAY
LIS = LATCH INTERLOCK SWITCH
LPS = LATCH POSITION SWITCH
ML = MICRO LIGHT
MPS = MICRO POWER SWITCH
MTR = MICRO TIMER RELAY
N = NEUTRAL
N/C = NO CONNECTION
NC = NORMALLY CLOSED
NO = NORMALLY OPEN
O = OFF
SAS = SOLENOID ACTUATED SWITCH
S1 THRU S8 = SELECTOR 1-8
SM = STIRRER MOTOR
SR = SURGE RELAY
TBK = TIME BAKE
TCBK = TIME CONVECTION BAKE
W = WATTS

NOTES:

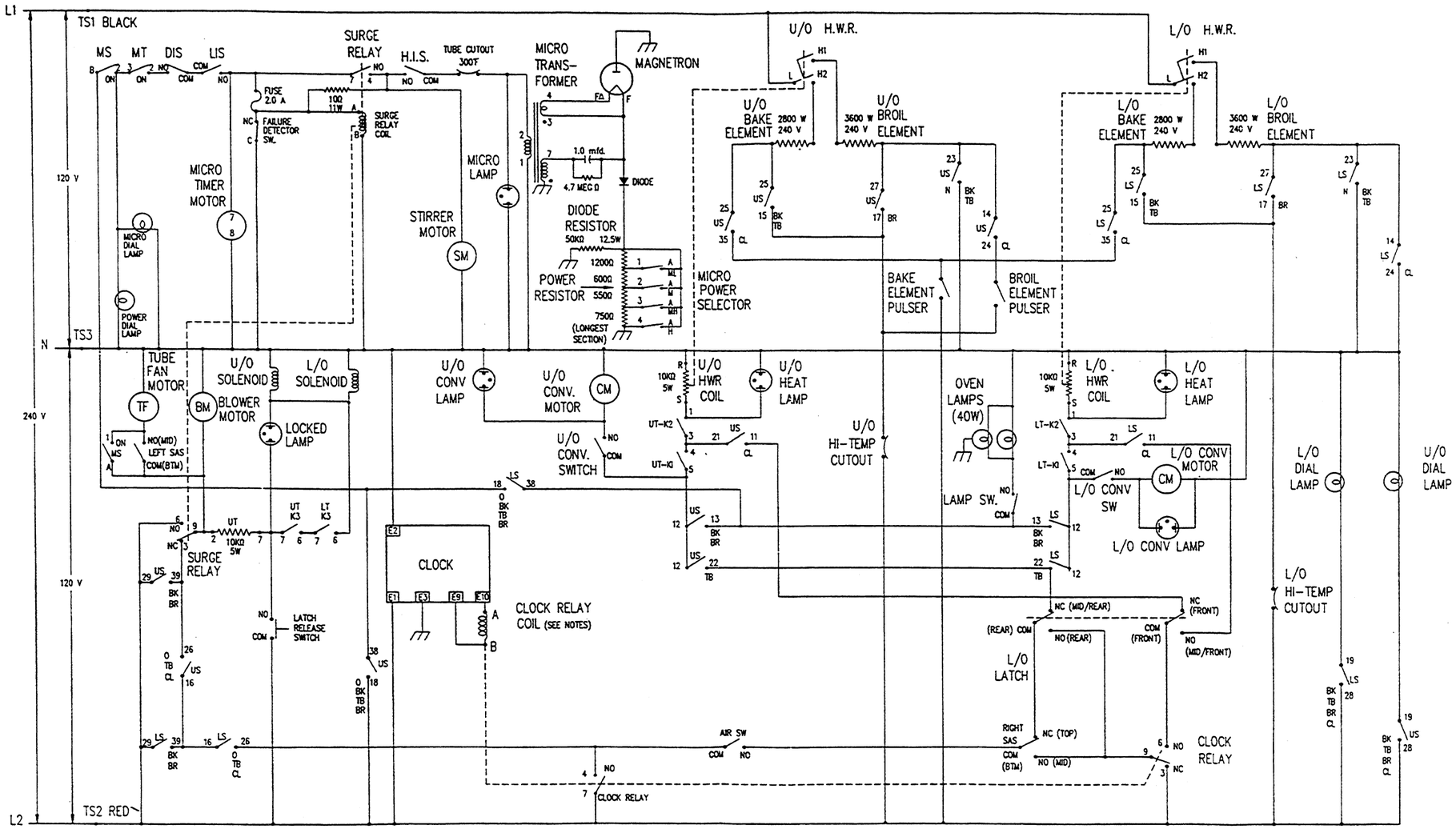
A. "LOCK" COMES ON, WHEN THE OVEN IS ≥ 550°F IN CLEAN..
B. ABBREVIATIONS NEXT TO SWTICHES TELL WHEN SWITCH IS CLOSED.
C. SELECTOR SWITCHES CONTACTS ARE S1-S8.

CMT127N SCHEMATIC

Part Number 14-37-368, Rev. C



 CMT227 WIRING DIAGRAM Part No.14-37-164

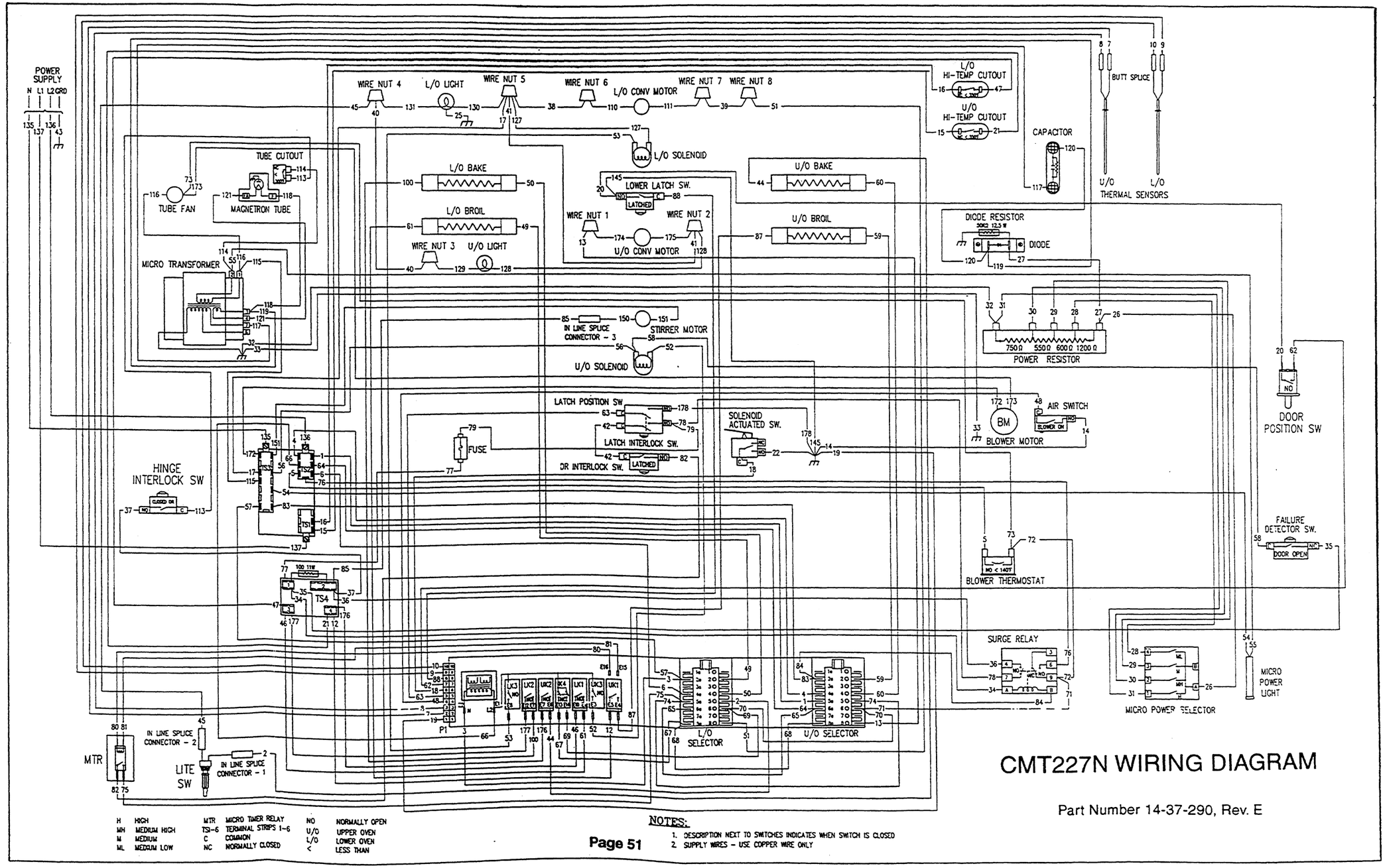


NOTES

1. K1 – CAM OPERATED SWITCH IN THERMOSTAT KING SEELEY–OPEN IN CLEAN.
   K2 – THERMALLY OPERATED SWITCH THERMOSTAT KING SEELEY– 140°F – 900°F.
   K3 – THERMALLY OPERATED SWITCH THERMOSTAT KING SEELEY N.C. – OPEN WHEN GREATER THAN 550°F
2. CLOCK RELAY – ENERGIZED WHEN PERFORMING TIME BAKE, TIME BROIL OR CLEAN.
3. SMALL NUMERALS NEAR SWITCH SYMBOLS ARE TERMINAL MARKINGS.

L.I.S.	LATCH INTERLOCK SW.
D.I.S.	DOOR INTERLOCK SW.
H.I.S.	HINGE INTERLOCK SW.
U/O	UPPER OVEN
L/O	LOWER OVEN
M.T.	MICROWAVE TIMER
M.S.	MICROWAVE SELECTOR SW.
HWR	HOT WIRE RELAY
S.A.S.	SOLENOID ACTUATED SW.
N.O.	NORMALLY OPEN
N.C.	NORMALLY CLOSED
L.S.	LOWER OVEN SELECTOR
U.S.	UPPER OVEN SELECTOR
U.T.	UPPER THERMOSTAT
L.T.	LOWER THERMOSTAT

BK	BAKE
O	OFF
TB	TIME BAKE
BR	BROIL
CL	CLEAN
L	LOW
M	MEDIUM
H	HIGH
ML	MEDIUM LOW
MH	MEDIUM HIGH

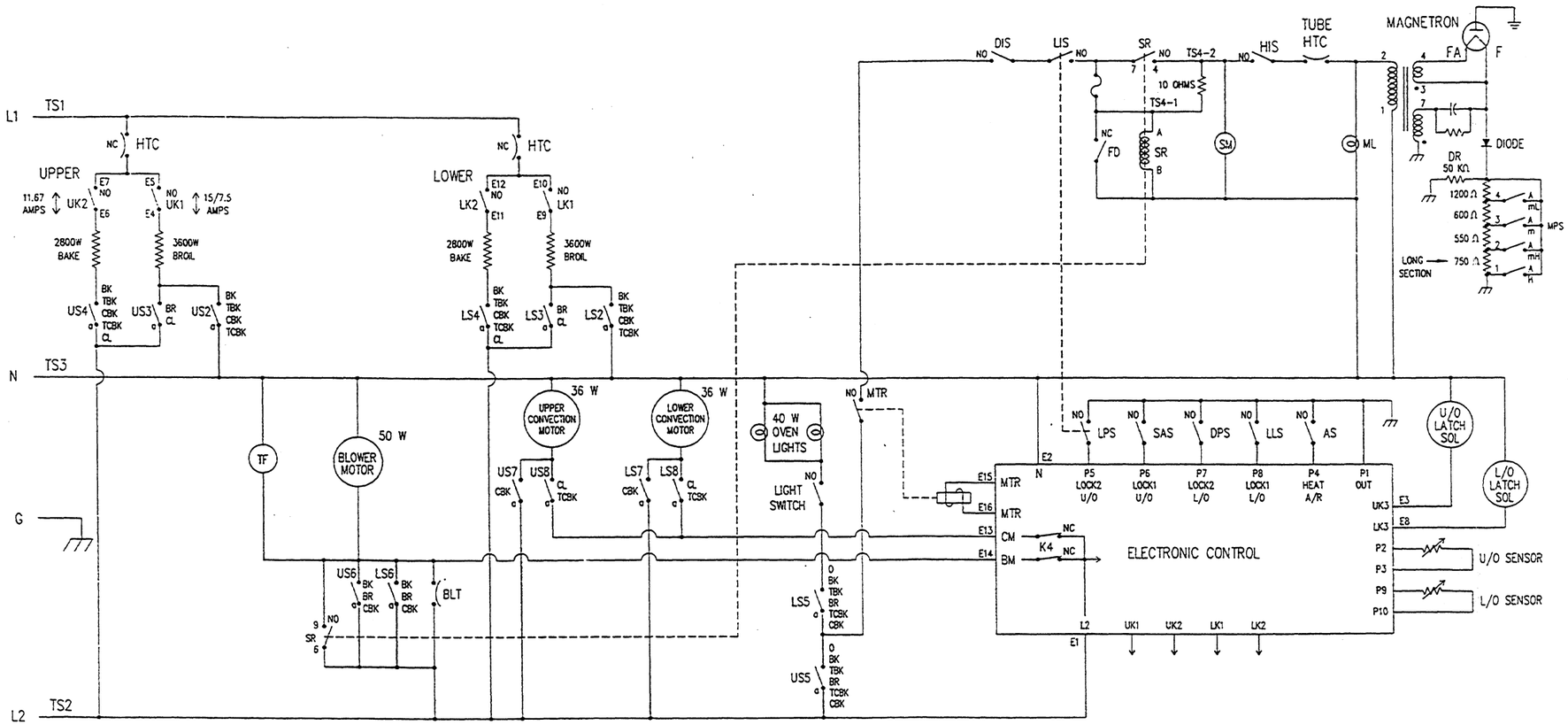


CMT227N WIRING DIAGRAM

Part Number 14-37-290, Rev. E

NOTES:

1. DESCRIPTION NEXT TO SWITCHES INDICATES WHEN SWITCH IS CLOSED
2. SUPPLY WIRES - USE COPPER WIRE ONLY



ABBREVIATIONS:

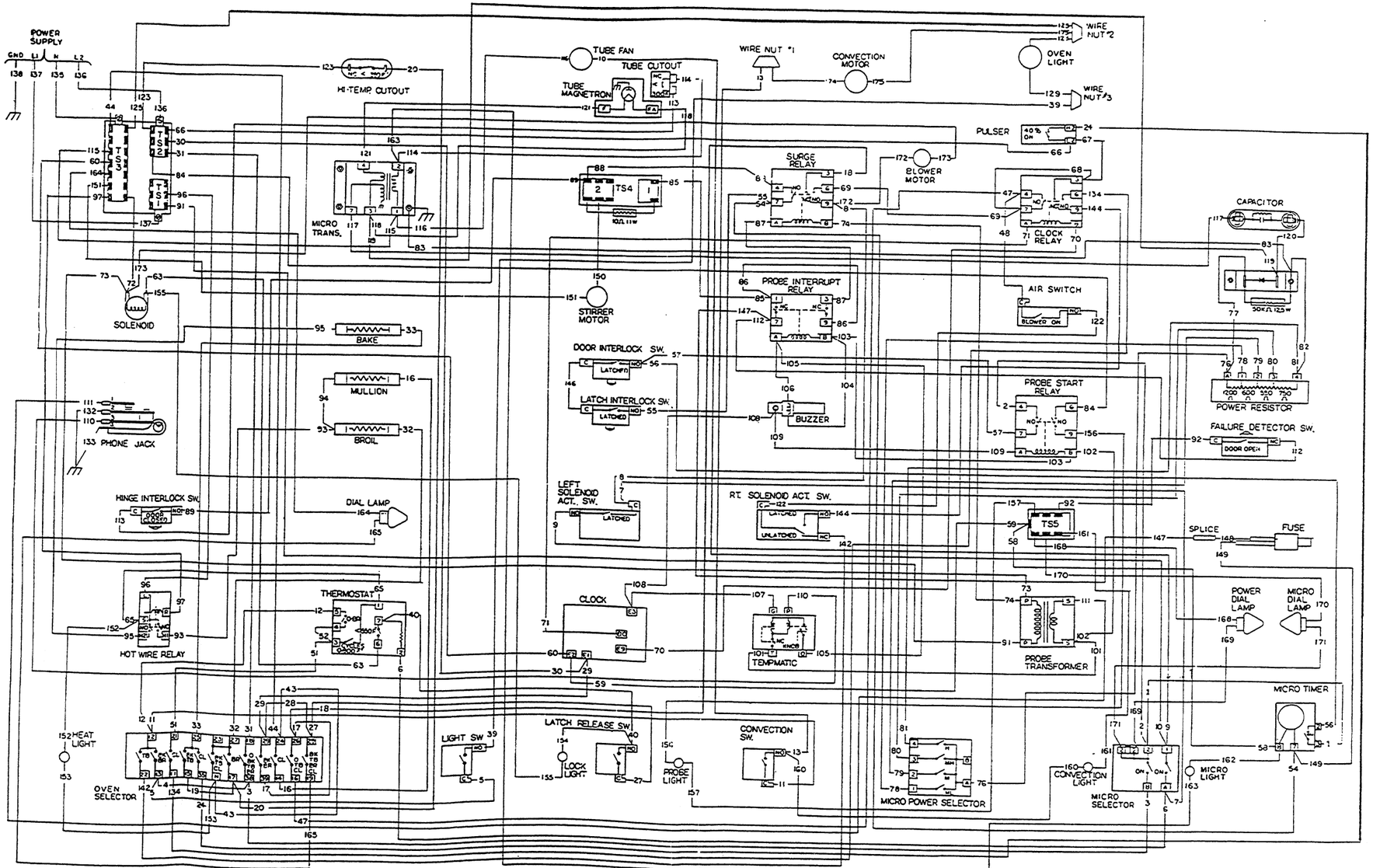
A/R = AS REQUIRED
AS = AIR SWITCH
BK = BAKE
BR = BROIL
CBK = CONVECTION BAKE
CL = CLEAN
DIS = DOOR INTERLOCK SWITCH
DPS = DOOR POSITION SWITCH (L/O)
DR = DIODE RESISTOR
FD = FAILURE DETECTOR
HIS = HINGE INTERLOCK SWITCH
HTC = HIGH TEMP CUTOUT
(U OR L) K1 = (UPPER OR LOWER) BROIL RELAY
(U OR L) K2 = (UPPER OR LOWER) BAKE RELAY
(U OR L) K3 = (UPPER OR LOWER) LOCK RELAY
(U OR L) LCS = (UPPER OR LOWER) LATCH CAM SWITCH
LIS = LATCH INTERLOCK SWITCH
LLS = LOWER LATCH SWITCH
LPS = LATCH POSITION SWITCH
LS1 THRU LS8 = LOWER SELECTOR 1-8
ML = MICRO LIGHT
MPS = MICRO POWER SWITCH
MTR = MICRO TIMER RELAY
N = NEUTRAL
N/C = NO CONNECTION
NC = NORMALLY CLOSED
NO = NORMALLY OPEN
O = OFF
SAS = SOLENOID ACTUATED SWITCH
S = SELECTOR
SM = STIRRER MOTOR
SR = SURGE RELAY
TBK = TIME BAKE
TCBK = TIME CONVECTION BAKE
US1 THRU US8 = UPPER SELECTOR 1-8
W = WATTS

NOTES:

A. "LOCK" COMES ON, WHEN THE OVEN IS ≥ 550F IN CLEAN..
B. ABBREVIATIONS NEXT TO SWITCHES TELL WHEN SWITCH IS CLOSED.
C. SELECTOR SWITCHES CONTACTS ARE US1-US8 AND LS1-LS8.

CMT227N SCHEMATIC

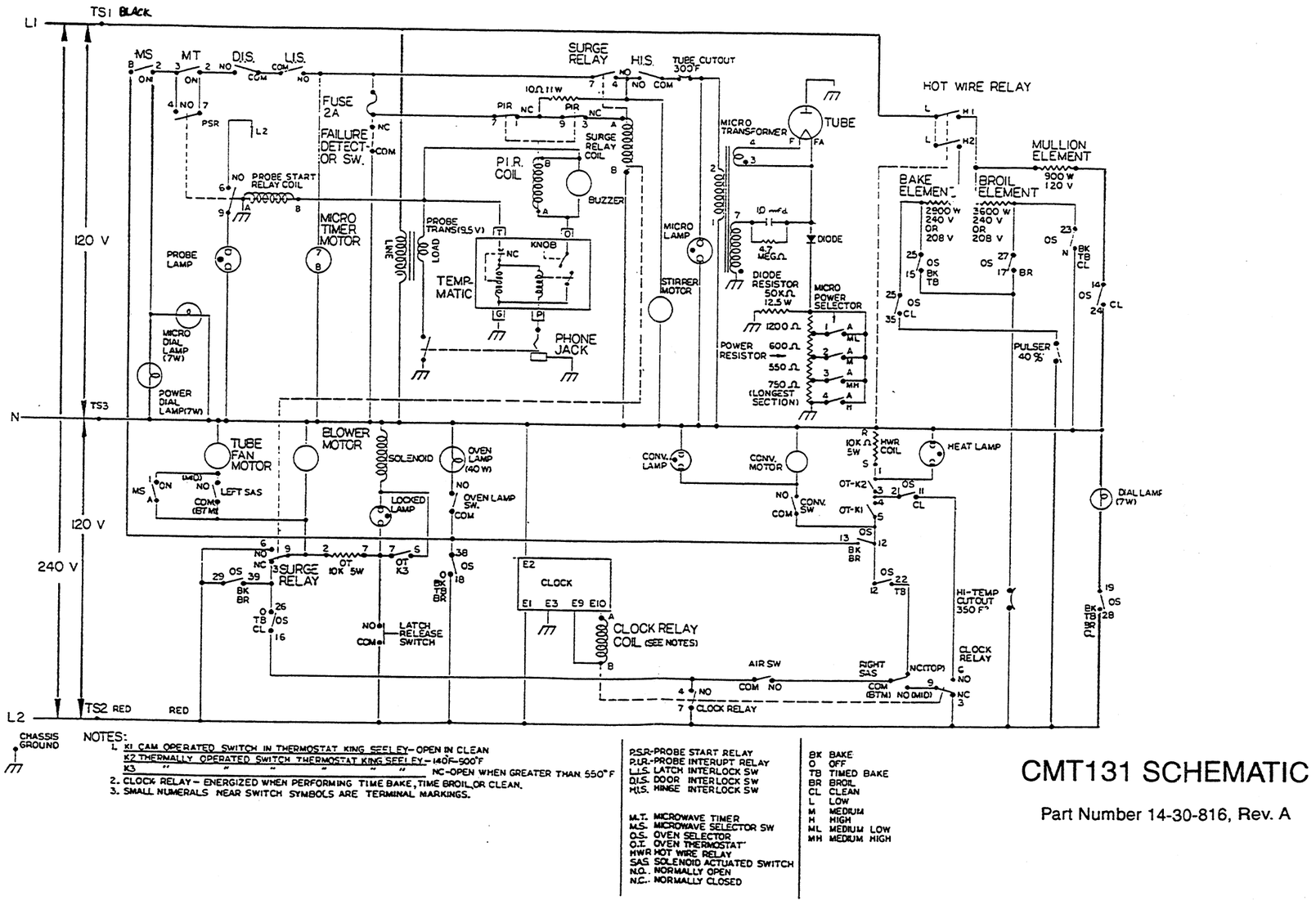
Part Number 14-37-290, Rev. E



NOTES: 1. DESCRIPTION NEXT TO SWITCH INDICATES WHEN SWITCH IS CLOSED.
SCHEMATIC SHOWN ON D SIZE DRAWING 14-30-816
⚠2. SUPPLY WIRES-USE COPPER WIRE ONLY

CMT131 WIRING DIAGRAM

Part Number 14-30-816, Rev. A



NOTES:
1. K1 CAM OPERATED SWITCH IN THERMOSTAT KING SEELEY–OPEN IN CLEAN
   K2 THERMALLY OPERATED SWITCH THERMOSTAT KING SEELEY–140°F–500°F
   K3 " " " " " " NC–OPEN WHEN GREATER THAN 550°F
2. CLOCK RELAY – ENERGIZED WHEN PERFORMING TIME BAKE, TIME BROIL OR CLEAN.
3. SMALL NUMERALS NEAR SWITCH SYMBOLS ARE TERMINAL MARKINGS.

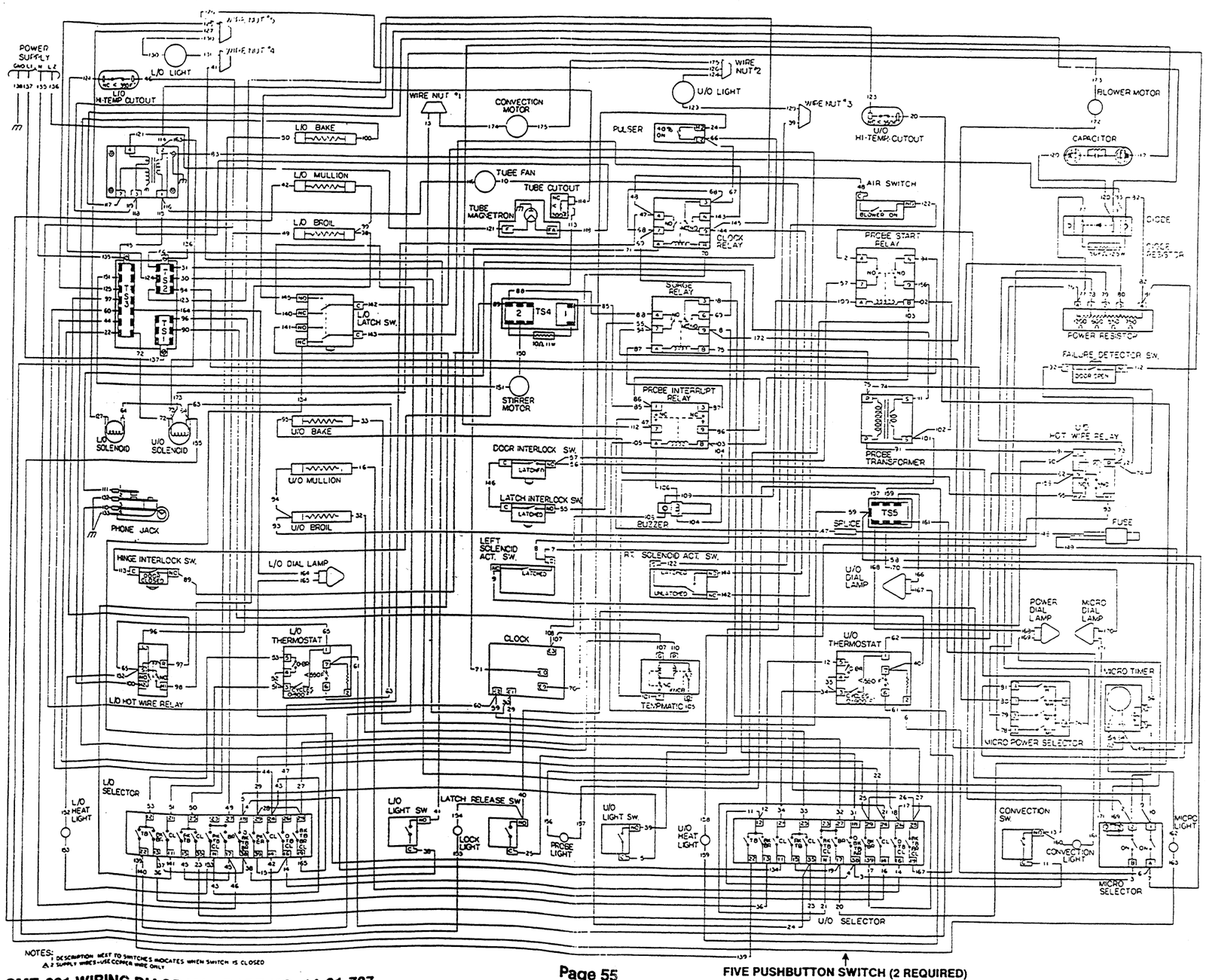
P.S.R.–PROBE START RELAY
P.I.R.–PROBE INTERUPT RELAY
L.I.S. LATCH INTERLOCK SW
D.I.S. DOOR INTERLOCK SW
H.I.S. HINGE INTERLOCK SW

M.T. MICROWAVE TIMER
M.S. MICROWAVE SELECTOR SW
O.S. OVEN SELECTOR
O.T. OVEN THERMOSTAT
HWR HOT WIRE RELAY
SAS SOLENOID ACTUATED SWITCH
N.O.. NORMALLY OPEN
N.C.. NORMALLY CLOSED

BK BAKE
O OFF
TB TIMED BAKE
BR BROIL
CL CLEAN
L LOW
M MEDIUM
H HIGH
ML MEDIUM LOW
MH MEDIUM HIGH

CMT131 SCHEMATIC

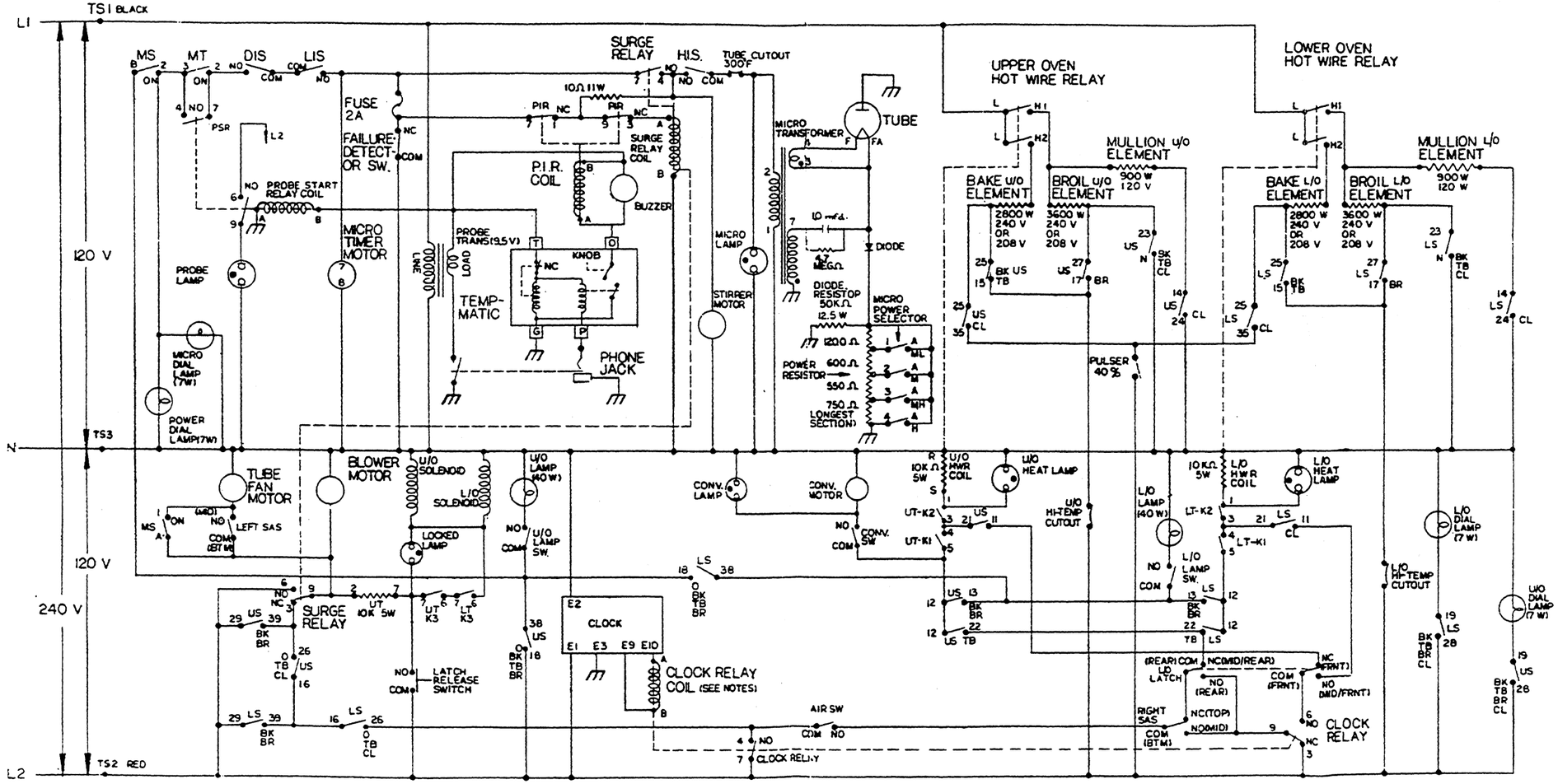
Part Number 14-30-816, Rev. A



NOTES: 1 DESCRIPTION NEXT TO SWITCHES INDICATES WHEN SWITCH IS CLOSED
△ 2 SUPPLY WIRES - USE COPPER WIRE ONLY

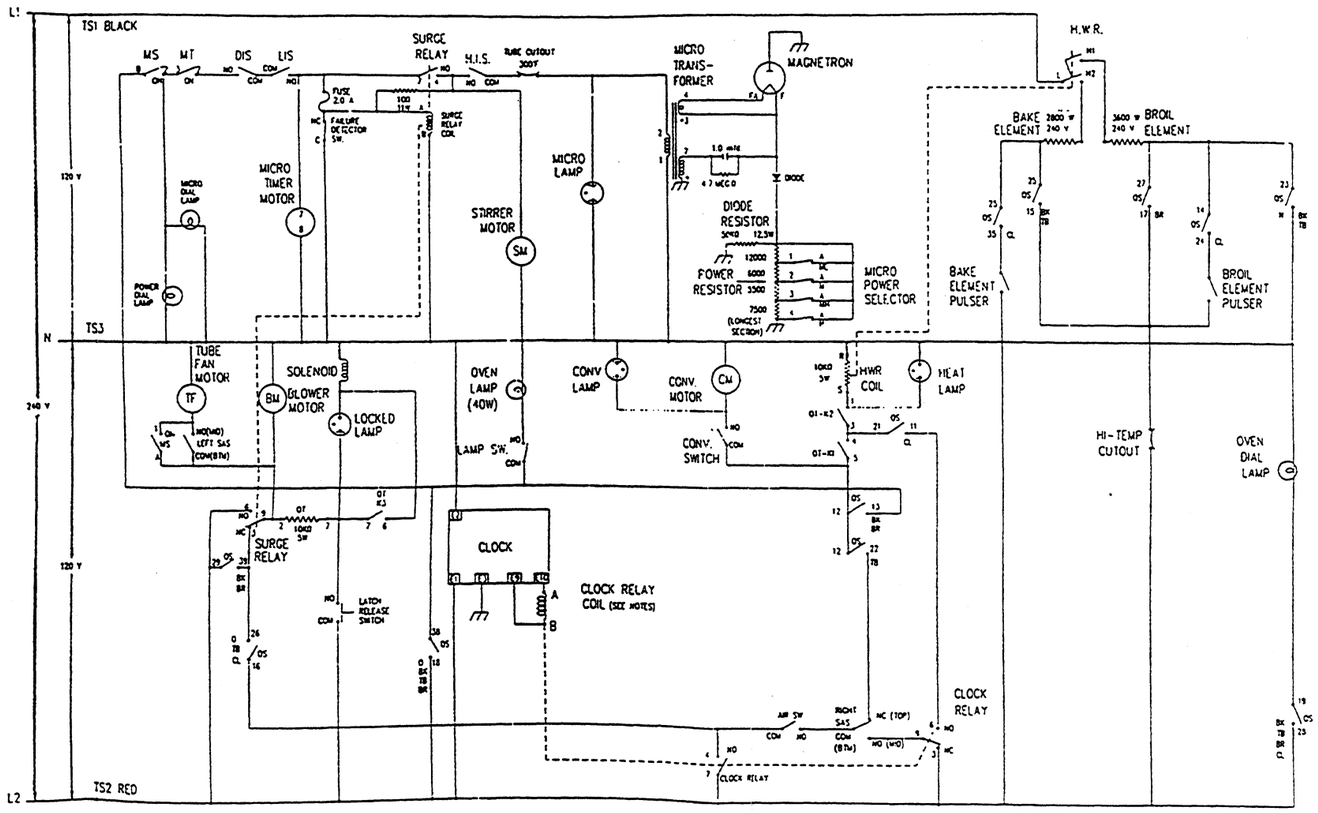
CMT-231 WIRING DIAGRAM - PART NO. 14-31-787

FIVE PUSHBUTTON SWITCH (2 REQUIRED)
PART NO. 14-39-295



NOTES:
1. K1 CAM OPERATED SWITCH IN THERMOSTAT KING SEELEY- OPEN IN CLEAN
   K2 THERMALLY OPERATED SWITCH THERMOSTAT KING SEELEY- 140°F-900°F
   K3 " " " " " " NC-OPEN WHEN GREATER THAN 550°F
2. CLOCK RELAY - ENERGIZED WHEN PERFORMING TIME BAKE, TIME BROIL OR CLEAN.
3. SMALL NUMERALS NEAR SWITCH SYMBOLS ARE TERMINAL MARKINGS.

P.S.R-PROBE START RELAY	BK BAKE
P.I.R.-PROBE INTERUPT RELAY	O OFF
L.I.S. LATCH INTERLOCK SW	TB TIMED BAKE
D.I.S. DOOR INTERLOCK SW	BR BROIL
H.I.S HINGE INTERLOCK SW	CL CLEAN
U/O UPPER OVEN	L LOW
L/O LOWER OVEN	M MEDIUM
M.T. MICROWAVE TIMER	H HIGH
M.S. MICROWAVE SELECTOR SW	ML MEDIUM LOW
	MH MEDIUM HIGH
HWR HOT WIRE RELAY	
SAS SOLENOID ACTUATED SWITCH	
N.O. NORMALLY OPEN	
N.C. NORMALLY CLOSED	
L.S LOWER OVEN SELECTOR	
U.S UPPER OVEN SELECTOR	
U.T UPPER THERMOSTAT	
L.T LOWER THERMOSTAT	



NOTES

1. K1 - CAM OPERATED SWITCH IN THERMOSTAT KNHC SEELEY-OPEN IN CLEAN
   K2 - THERMALLY OPERATED SWITCH THERMOSTAT KNHC SEELEY- 140T - 900T
   K3 - THERMALLY OPERATED SWITCH THERMOSTAT KNHC SEELEY N.C. - OPEN WHEN CREATER than 530T
2. CLOCK RELAY - ENERGIZED WHEN PERFORMING TIME BAKE, TIME BROIL OR CLEAN
3. SMALL NUMERALS NEAR SWITCH SYMBOLS ARE TERMINAL MARKINGS.

LIS	LATCH INTERLOCK Sw	BK	BAKE
DIS	DOOR INTERLOCK Sw	O	OFF
HIS	HINGE INTERLOCK Sw	TB	TIME BAKE
MT	MICROWAVE TIMER	BR	BROIL
MS	MICROWAVE SELECTOR Sw	CL	CLEAN
HWR	HOT WIRE RELAY	L	LOW
SAS	SOLENOID ACTUATED Sw	M	MEDIUM
NO	NORMALLY OPEN	H	HIGH
NC	NORMALLY CLOSED	ML	MEDIUM LOW
OS	OVEN SELECTOR	MH	MEDIUM HIGH
OT	OVEN THERMOSTAT		

MICROWAVE OVEN SCHEMATIC