

**Mealstream EC501 (Series 5) CTM3 208V, 60Hz**  
**FCC ID: PCVCTM3206015A**  
**FCC Class II Permissible Change**

**Description of changes**

The changes which Merrychef Limited wish to introduce to the Mealstream 501 (Series 5) microwave oven (FCC ID: PCVCTM3206015A) as discussed in the letter of correspondence reference 27110201.pdf are described in more detail below.

**1. Change of Magnetron Type:**

The Magnetron (2 off) requires changing from Sanyo 2M219H (Merrychef Part No. 30Z0264) to Panasonic 2M244 (Merrychef Part No. 30Z1171).

The change is needed to overcome obsolescence of the Sanyo part.

**2. Change turns ratio of High Voltage Transformer (30Z1139, 208V model; 30Z1191, 240V model).**

The turns ratio of the transformer requires changing slightly to provide the ideal drive conditions to the Panasonic Magnetron.

<b>High Voltage Transformer 30Z1139, 208V model</b>		
	<b>Original Winding Details</b>	<b>Modified Winding Details</b>
<b>Primary Winding</b> 1.4mm diameter	217 Turns	173 Turns
<b>Secondary Winding</b> 0.475mm diameter	2275 Turns	1960 Turns
<b>Heater Filament Winding</b> 1.0mm diameter	3.5 Turns	2.5 Turns

<b>High Voltage Transformer 30Z1191, 240V model</b> (Included for information only – used on FCC ID: PCVCTM3246015A)		
	<b>Original Winding Details (30Z0992)</b>	<b>Modified Winding Details</b>
<b>Primary Winding</b>	241 Turns, 1.18mm diameter	200 Turns, 1.4mm diameter
<b>Secondary Winding</b> 0.475mm diameter	2260 Turns	1960 Turns
<b>Heater Filament Winding</b> 1.0mm diameter	3.5 Turns	2.5 Turns

**3. Change High Voltage Capacitor (30Z1065) voltage rating from 2300V to 2500V (30Z0681).**

The capacitance value of the capacitor remains the same but the voltage rating has been increased from 2300V to 2500V to give a greater operational margin which will improve the reliability (Mean Time Between Failure) of the capacitor.

**4. Addition of two High Voltage Rectifiers (30Z0939).**

Each additional Diode Rectifier is fitted in series with an existing rectifier of the same type and a series resistor. The components are now mounted on a small Printed Circuit Board (11M0325).

The series diodes have been added to improve the overall reliability of the HV diode circuit since the internal self heating of any one of the current sharing diodes is reduced.

## **5. Inclusion of Opto-Triac (30Z1189) within the heater control circuitry.**

Refer to the block diagram at the end of this document.

A Semiconductor Triac device has been added in the heater control circuitry. Before the modification, the convection heater element was controlled by two series connected relay contacts. The two relay contacts were operated sequentially but could be switched whilst current is flowing.

The modified circuit uses a Triac, which performs the function of zero crossing detection. This allows sequential switching of the relay contacts such that there is minimum current flowing when the relay switch contacts change over.

The control logic to drive the Triac is isolated from the mains switching voltages by means of an opto-isolated triac linked to the switching triac.

The reduction of relay switching current will increase electro-mechanical switch contact life and therefore improve the reliability of the product.

## **6. Inclusion of thermal overheat switch sensor**

A thermal sensor switch is thermally bonded to the Mains switching Triac of the modified heater control circuitry. Should the mains switching Triac overheat, the thermal sensor will trip and cause the heater element to switch off.

## **7. Hardware update to control heater relay switch contacts.**

Additional logic gates have been introduced to perform the control functions needed to switch the new opto-triac and associated Triac devices.

## **8. Change of Printed Circuit Board part number to incorporate Opto-Triac and Triac change.**

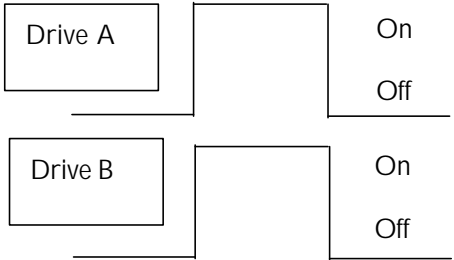
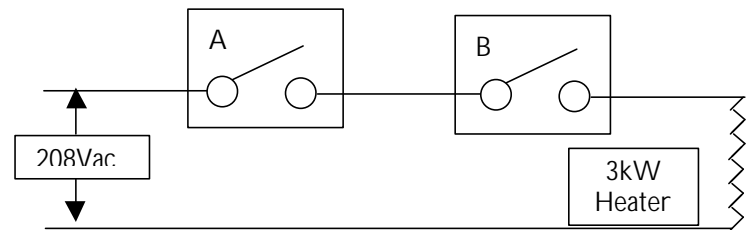
The Relay Control Printed circuit board has been modified from Merrychef Part No. 49C0734 to 40C1104. The modified PCB includes the changes associated with the heater control circuit. That is, the opto-triac, Triac, Thermal sensor switch and additional logic gates have been added.

## **9. Incorporation of Class I modifications previously notified to the ATCB.**

These changes were notified to the ATCB in correspondence dated 22 March 2002 and accepted by ATCB on 23 March 2002.

Heater Control Circuit Proposal

Current Arrangement



Proposed New Design

