TOUCH CONTROL PANEL ASSEMBLY

OUTLINE OF TOUCH CONTROL PANEL

The touch control section consists of the following units.

(1) Key unit
(2) Control Unit
(3) Power unit

The principal functions of these units and the signals communicated among them are explained below.

Key unit
The key unit is composed of a matrix, signals generated in the LSI are sent to the key unit from P10 - P17.
When a key pad is touched, a signal is completed through the key unit and passed back to the LSI through P20 - P23 to perform the function that was requested.

Control Unit and Power Unit
Control unit consists of LSI, IC, reset circuit, indicator circuit, power source circuit, relay circuit, buzzer circuit, synchronizing signal circuit, keyboard unit circuit, humidity sensor circuit and back light circuit.

1) IC1 (LSI)
This is a microcomputer, responsible for controlling the entire control unit.

2) IC2
This is the IC to drive the Liquid Crystal Display.

3) IC5
This is the IC to amplify the signal from the humidity sensor.

4) Reset Circuit
This circuit generates a signal which resets the LSI (IC1) to the initial state when power is supplied.

5) Indicator Circuit
A circuit to drive the Liquid Crystal Displays (LCD1).

6) Power Source Circuit
This circuit generates voltages necessary in the control unit from the AC line voltage.
In addition, the synchronizing signal is available in order to compose a basic standard time in the clock circuit.

Symbol	Voltage	Application
VC	+5V	LSI(IC1)

7) Relay Circuit
A circuit to drive the magnetron, fan motor, stirrer motor and light the oven lamp.

8) Buzzer Circuit
The buzzer is responsive to signals from the LSI to emit audible sounds (key touch sound and completion sound).

9) Synchronizing Signal Circuit
The power source synchronizing signal is available in order to compose a basic standard time in the clock circuit.
It accompanies a very small error because it works on commercial frequency.

10) Door Sensing Switch (Microwave drawer)
A switch to “tell” the LSI if the drawer is open or closed.

11) Door Position Switch Front / Rear
The switch to “tell” the position of the Microwave drawer door.

12) Back Light Circuit
A circuit to drive the back light (Light emitting diodes LD1- LD3).

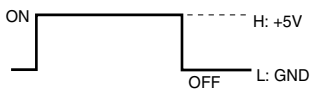
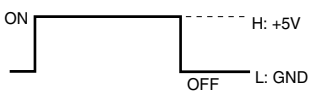
13) Humidity Sensor Circuit
This circuit detects moisture of the cooking food to allow its automatic cooking.

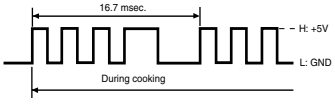
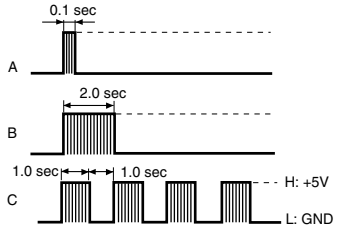
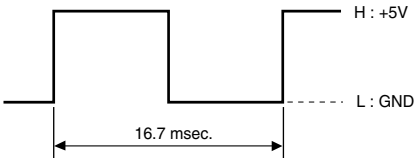
14) Microwave drawer door open-close Circuit
A circuit to drive the microwave drawer door open-close motor.

DESCRIPTION OF LSI (IC-1)

The I/O signal of the LSIis detailed in the following table.

Pin No.	Signal	I/O	Description
1 - 3	AN5- AN3	IN	**Terminal to change cooking input according to the Model.** By using A/D converter contained in the LSI, DC voltage in accordance with the Model in operation is applied to set up its cooking constant.
4	AN2	IN	Input signal which inform the drawer door is in the middle position between the opened position and the closed position, to LSI from the door position switch rear.
5	AN1	IN	Turminal not used.
6	AN0	IN	Turminal not used.
7	CNVSS	IN	**Power source voltage: 0V (GND).** VC voltage of power source circuit input. Connected GND.
8	RESET	IN	**Auto clear terminal.** Signal is input to reset the LSI to the initial state when power is applied. Temporarily set to “L” level the moment power is applied, at this time the LSI is reset. Thereafter set at “H” level.
9	P62	OUT	Turminal not used.
10	P61	IN/OUT	Turminal not used.
11	VSS	IN	**Power source voltage: 0V (GND).** VS voltage of power source circuit input. Connected GND.
12	XIN	IN	**Internal clock oscillation frequency setting input.** The internal clock frequency is set by inserting the ceramic filter oscillation circuit with respect to Xout terminal.
13	XOUT	OUT	**Internal clock oscillation frequency control output.** Output to control oscillation input of Xin.
14	VCC	IN	**Power source voltage: +5V.** VC voltage of power source circuit input.
15	P60	IN	Plus signal coming from the Microwave drawer door open-close motor is input into P60 as revolution number.
16	P37	IN	**Input signal which communicates the drawer door open information to LSI from the door position switch front.** Door opened; “L” level signal(0V). Door closed; “H” level signal(+5V).
17	P36	OUT	**Signal to change the rotational direction is output to the Microwave drawer door open-close motor.**
18	TXOUT	OUT	Signal to change the rotational speed is output to the Microwave drawer door open-close motor.
19	P34	OUT	Power source to drive the Microwave drawer door open-close motor is output.
20	RXD2	IN	**Input terminal to check the data of display.** Data signal from IC-2 is input to RXD2 to check the flow of the data.
21	TXD2	IN	**Output terminal to send IC-2 the data.** The data of display is output to IC-2.
22	SCLK2	OUT	**Clock timing signal output terminal.** Clock timing signal is sent to IC-2.
23	P30	OUT	**Signal to reset LSI.** Signal is output to reset IC-2.
24 - 25	COM3 - COM2	OUT	Turminal not used.
26	COM1	OUT	**Common data signal.** Connected to LCD signal C5.

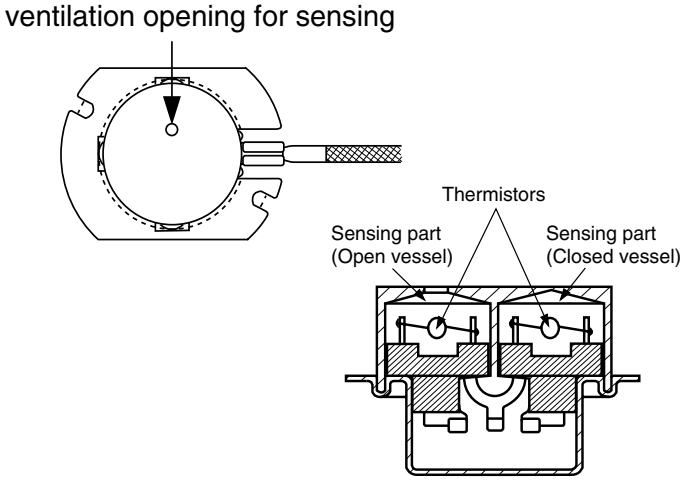
Pin No.	Signal	I/O	Description
27	COM0	OUT	**Common data signal.** Connected to LCD signal C4.
28	VL3	IN	Connected VC (+5V).
29 - 31	P27- P25	OUT	Turminal not used.
32	SEG20	OUT	**Segment data signal.** Connected to LCD segment S24.
33	P23	IN	**Signal coming from touch key.** When any one of J-4 line keys on key matrix is touched, a corresponding signal from P10-P17 will be input into P23. When no key is touched, the signal is held at "L" level.
34	P22	IN	**Signal similar to P23.** When any one of J-3 line keys on key matrix is touched, a corresponding signal will be input into P22.
35	P21	IN	**Signal similar to P23.** When any one of J-2 line keys on key matrix is touched, a corresponding signal will be input into P21.
36	P20	IN	**Signal similar to P23.** When any one of J-1 line keys on key matrix is touched, a corresponding signal will be input into P20.
37	P17	OUT	**Key strobe signal.** Signal applied to touch-key section. A pulse signal is input to P20 - P23 terminal while one of J-12 line key on matrix is touched.
38	P16	OUT	**Key strobe signal.** Signal applied to touch-key section. A pulse signal is input to P20 - P23 terminal while one of J-11 line key on matrix is touched.
39	P15	OUT	**Key strobe signal.** Signal applied to touch-key section. A pulse signal is input to P20 - P23 terminal while one of J-10 line key on matrix is touched.
40	P14	OUT	**Key strobe signal.** Signal applied to touch-key section. A pulse signal is input to P20 - P23 terminal while one of J-9 line key on matrix is touched.
41	P13	OUT	**Key strobe signal.** Signal applied to touch-key section. A pulse signal is input to P20 - P23 terminal while one of J-8 line key on matrix is touched.
42	P12	OUT	**Key strobe signal.** Signal applied to touch-key section. A pulse signal is input to P20 - P23 terminal while one of J-7 line key on matrix is touched.
43	P11	OUT	**Key strobe signal.** Signal applied to touch-key section. A pulse signal is input to P20 - P23 terminal while one of J-6 line key on matrix is touched.
44	P10	OUT	**Key strobe signal.** Signal applied to touch-key section. A pulse signal is input to P20 - P23 terminal while one of J-5 line key on matrix is touched.
45	P07	OUT	**Fan motor (Drawer) driving signal.** To turn on and off relay(RY4). “H” level: During fan motor ON. “L” level: During fan motor OFF. 
46	P06	OUT	**Stirrer motor driving signal.** To turn on and off relay(RY3). “H” level: During fan motor ON. “L” level: During fan motor OFF. 

<table>
<tr><th>Pin No.</th><th>Signal</th><th>I/O</th><th>Description</th></tr>
<tr><td>47</td><td>P05</td><td>OUT</td><td><u>Magnetron high-voltage circuit driving signal.</u>
To turn on and off the cook relay(RY2). In 100% power operation, the signals holds “H” level during microwave cooking and “L” level while not cooking. In other cooking modes (90%, 80%, 70%, 60%, 50%, 40%, 30%, 20%, 10%, 0%) the signal turns to “H” level and “L” level in repetition according to the power level.
<table>
<tr><td></td><td colspan="2">Microwave cooking mode</td><td colspan="2">Other cooking mode</td></tr>
<tr><td>VARI MODE</td><td>ON TIME</td><td>OFF TIME</td><td>ON TIME</td><td>OFF TIME</td></tr>
<tr><td>100% power</td><td>32 sec.</td><td>0 sec.</td><td>60sec.</td><td>0ec.</td></tr>
<tr><td>90% power</td><td>30 sec.</td><td>2 sec.</td><td>54sec.</td><td>6sec.</td></tr>
<tr><td>80% power</td><td>26 sec.</td><td>6 sec.</td><td>48sec.</td><td>12sec.</td></tr>
<tr><td>70% power</td><td>24 sec.</td><td>8 sec.</td><td>42sec.</td><td>18sec.</td></tr>
<tr><td>60% power</td><td>22 sec.</td><td>10 sec.</td><td>36sec.</td><td>24sec.</td></tr>
<tr><td>50% power</td><td>18 sec.</td><td>14 sec.</td><td>30sec.</td><td>30sec.</td></tr>
<tr><td>40% power</td><td>16 sec.</td><td>16 sec.</td><td>24sec.</td><td>36sec.</td></tr>
<tr><td>30% power</td><td>12 sec.</td><td>20 sec.</td><td>18sec.</td><td>42sec.</td></tr>
<tr><td>20% power</td><td>8 sec.</td><td>24 sec.</td><td>12sec.</td><td>48sec.</td></tr>
<tr><td>10% power</td><td>6 sec.</td><td>26 sec.</td><td>4sec.</td><td>56sec.</td></tr>
<tr><td>0% power</td><td>0 sec.</td><td>32 sec.</td><td>0sec.</td><td>60sec.</td></tr>
</table></td></tr>
<tr><td>48-52</td><td>P04-P00</td><td>OUT</td><td>Used for initial balancing of the bridge circuit (absolute humidity sensor).</td></tr>
<tr><td>53</td><td>P57</td><td>OUT</td><td><u>Common relay driving signal. (Square Waveform : 60Hz)</u>
To turn on and off the shut-off relays (RY1). The square waveform voltage is delivered to the relay (RY1) driving circuit.
 
</td></tr>
<tr><td>54</td><td>P56</td><td>IN</td><td>Turminal not used.</td></tr>
<tr><td>55</td><td>TXD1</td><td>IN</td><td>Turminal not used.</td></tr>
<tr><td>56</td><td>RXD1</td><td>IN</td><td>Turminal not used.</td></tr>
<tr><td>57</td><td>P53</td><td>IN</td><td>Turminal not used.</td></tr>
<tr><td>58</td><td>P52</td><td>OUT</td><td><u>Signal to sound buzzer.</u>
A: Key touch sound.
B: Completion sound.
C: When the oven stops so that the food can be checked in Automatic cooking mode.
 
</td></tr>
<tr><td>59</td><td>P51</td><td>IN</td><td><u>Input signal which communicates the drawer door close information to LSI.</u>
Door opened; “H” level signal(+5V).
Door closed; “L” level signal(0V).</td></tr>
<tr><td>60</td><td>INT0</td><td>IN</td><td><u>Signal to synchronize LSI with commercial power source frequency.</u>
This is the basic timing for all real time processing of LSI.
 
</td></tr>
<tr><td>61</td><td>AVSS</td><td>IN</td><td><u>A/D converter power source voltage.</u>
The power source voltage to drive the A/D converter in the LSI.</td></tr>
<tr><td>62</td><td>VREF</td><td>IN</td><td><u>Reference voltage input terminal.</u>
A reference voltage applied to the A/D converter in the LSI. Connected to +5V.</td></tr>
<tr><td>63</td><td>AN7</td><td>IN</td><td><u>AH sensor input.</u>
This input is an analog input terminal from the AH sensor circuit, and connected to the A/D converter built into the LSI.</td></tr>
<tr><td>64</td><td>AN6</td><td>IN</td><td>Used for initial balancing of the bridge circuit (absolute humidity sensor). This input is an analog input terminal from the AH sensor circuit, and connected to the A/D converter built into the LSI.</td></tr>
</table>

HUMIDITY SENSOR CIRCUIT

(1) Structure of Humidity Sensor

The humidity sensor includes two thermistors as shown in the illustration. One thermistor is housed in the closed vessel filled with dry air while another in the open vessel. Each sensor is provided with the protective cover made of metal mesh to be protected from the external airflow.

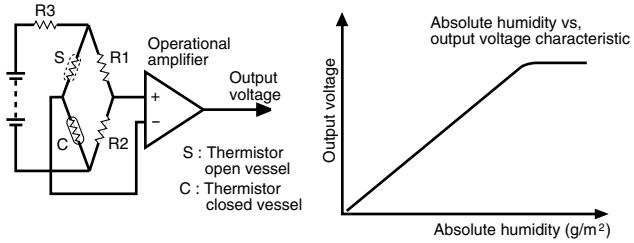


(2) Operational Principle of Humidity Sensor

The figure below shows the basic structure of an absolute humidity sensor. A bridge circuit is formed by two thermistors and two resistors (R1 and R2).

The output of the bridge circuit is to be amplified by the operational amplifier.

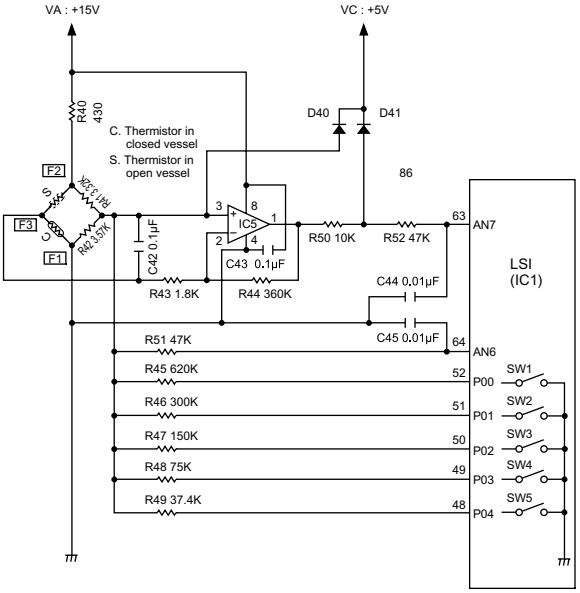
Each thermistor is supplied with a current to keep it heated at about 150°C (302°F), the resultant heat is dissipated in the air and if the two thermistors are placed in different humidity conditions they show different degrees of heat conductivity leading to a potential difference between them causing an output voltage from the bridge circuit, the intensity of which is increased as the absolute humidity of the air increases. Since the output is varied every minute, it is amplified by the operational amplifier.



(3) Detector Circuit of Humidity Sensor Circuit

This detector circuit is used to detect the output voltage of the absolute humidity circuit to allow the LSI to control sensor cooking of the unit. When the unit is set in the sensor cooking mode, 16 seconds clearing cycle occurs than the detector circuit starts to function and the LSI observes the initial voltage available at its AN6 terminal. With this voltage given, the switches SW1 to SW5 in the LSI are turned on in such a way as to change the resistance values in parallel with R45 ~ R49. Changing the resistance values results in that there is the same potential at both F-3 terminal of the absolute humidity sensor and AN6 terminal of the LSI. The voltage of AN7 terminal will indicate about +2.5V. This initial balancing is set up about 16 seconds after the unit is put in the Sensor Cooking mode. As the sensor cooking proceeds, the food is heated to generate moisture by which the resistance balance of the bridge circuit is deviated to increase the voltage available at AN6 terminal of the LSI. Then the LSI observes that voltage at AN7 terminal and compares it with its initial value, and when the comparison rate reaches the preset value (fixed for each menu to be cooked), the LSI causes the unit to stop sensor cooking; thereafter, the unit goes in the next operation automatically. When the LSI starts to detect the initial voltage at AN7 terminal 16 seconds after the unit has been put in the Sensor Cooking mode, if it is not possible to balance the bridge circuit due to disconnection of the absolute humidity sensor, ERROR will appear on the display and the cooking is stopped.

1) Humidity sensor circuit



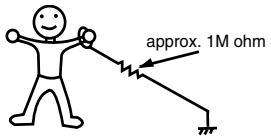
TOUCH CONTROL PANEL SERVICING

1. Precautions for Handling Electronic Components

This unit uses CMOS LSI in the integral part of the circuits. When handling these parts, the following precautions should be strictly followed. CMOS LSI have extremely high impedance at its input and output terminals. For this reason, it is easily influenced by the surrounding high voltage power source, static electricity charge in clothes, etc. and sometimes it is not fully protected by the built-in protection circuit.

In order to protect CMOS LSI.

1) When storing and transporting, thoroughly wrap them in aluminium foil. Also wrap all PW boards containing them in aluminium foil.
2) When soldering, ground the technician as shown in the figure and use grounded soldering iron and work table.



2. Servicing of Touch Control Panel

We describe the procedures to permit servicing of the touch control panel of the microwave oven and the precautions you must take when doing so. To perform the servicing, power to the touch control panel is available either from the power line of the oven itself or from an external power source.

(1) Servicing the touch control panel with power supply of the oven:

CAUTION:

THE HIGH VOLTAGE TRANSFORMER OF THE MICROWAVE OVEN IS STILL LIVE DURING SERVICING AND PRESENTS A HAZARD.

Therefore, before checking the performance of the touch control panel,

1) Disconnect the power supply cord, and then remove outer case.
2) Open the door and block it open.
3) Discharge high voltage capacitor.
4) Disconnect the leads to the primary of the power transformer.
5) Ensure that these leads remain isolated from other components and oven chassis by using insulation tape.
6) After that procedure, re-connect the power supply cord.

After checking the performance of the touch control panel,

1) Disconnect the power supply cord.
2) Open the door and block it open.
3) Re-connect the leads to the primary of the power transformer.
4) Re-install the outer case (cabinet).
5) Re-connect the power supply cord after the outer case is installed.
6) Run the oven and check all functions.

A. On some models, the power supply cord between the touch control panel and the oven itself is so short that the two can't be separated. For those models, check and repair all the controls (sensor-related ones included) of the touch control panel while keeping it connected to the oven.

B. On some models, the power supply cord between the touch control panel and the oven proper is long enough that they may be separated from each other. For those models, it is possible to check and repair the controls of the touch control panel while keeping it apart from the oven proper; in this case you must short both ends of the door sensing switch (on PWB) of the touch control panel with a jumper, which activates an operational state that is equivalent to the oven door being closed. As for the sensor-related controls of the touch control panel, checking them is possible if dummy resistor(s) with resistance equal to that of the controls are used.

(2) Servicing the touch control panel with power supply from an external power source:

Disconnect the touch control panel completely from the oven proper, and short both ends of the door sensing switch (on PWB) of the touch control panel, which activates an operational state that is equivalent to the oven door being closed. Connect an external power source to the power input terminal of the touch control panel, then it is possible to check and repair the controls of the touch control panel it is also possible to check the sensor-related controls of the touch control panel by using the dummy resistor(s).

3. Servicing Tools

Tools required to service the touch control panel assembly.

1) Soldering iron: 30W
   (It is recommended to use a soldering iron with a grounding terminal.)
2) Oscilloscope: Single beam, frequency range: DC-10MHz type or more advanced model.
3) Others: Hand tools

4. Other Precautions

1) Before turning on the power source of the control unit, remove the aluminium foil applied for preventing static electricity.
2) Connect the connectors of the key unit to the control unit being sure that the lead wires are not twisted.
3) After aluminium foil is removed, be careful that abnormal voltage due to static electricity etc. is not applied to the input or output terminals.
4) Attach connectors, electrolytic capacitors, etc. to PWB, making sure that all connections are tight.
5) Be sure to use specified components where high precision is required.

PRECAUTIONS FOR USING LEAD-FREE SOLDER

1. **Employing lead-free solder**
   The "Main PWB" of this model employs lead-free solder. This is indicated by the "LF" symbol printed on the PWB and in the service manual. The suffix letter indicates the alloy type of the solder.
   Example:

Sn-Ag-Cu

Indicates lead-free solder of tin, silver and copper.

2. **Using lead-free wire solder**
   When repairing a PWB with the "LF" symbol, only lead-free solder should be used. (Using normal tin/lead alloy solder may result in cold soldered joints and damage to printed patterns.)
   As the melting point of lead-free solder is approximately 40°C higher than tin/lead alloy solder, it is recommend that a dedicated bit is used, and that the iron temperature is adjusted accordingly.

3. **Soldering**
   As the melting point of lead-free solder (Sn-Ag-Cu) is higher and has poorer wettability, (flow), to prevent damage to the land of the PWB, extreme care should be taken not to leave the bit in contact with the PWB for an extended period of time. Remove the bit as soon as a good flow is achieved. The high content of tin in lead free solder will cause premature corrosion of the bit. To reduce wear on the bit, reduce the temperature or turn off the iron when it is not required.
   Leaving different types of solder on the bit will cause contamination of the different alloys, which will alter their characteristics, making good soldering more difficult. It will be necessary to clean and replace bits more often when using lead-free solder. To reduce bit wear, care should be taken to clean the bit thoroughly after each use.

COMPONENT REPLACEMENT AND ADJUSTMENT PROCEDURE

WARNING AGAINST HIGH VOLTAGE:

Microwave ovens contain circuitry capable of producing very high voltage and current. Contact with the following parts may result in severe, possibly fatal, electric shock.
(Example)
High Voltage Capacitor, Power Transformer, Magnetron, High Voltage Rectifier Assembly, High Voltage Harness etc..

WARNING: **To Avoid possible exposure to microwave energy, please follow the instructions below before operating the oven.**

1. Disconnect the power supply cord.
2. Make sure that a definite" click" can be heard when the microwave oven drawer is unlatched. (Hold the drawer in a closed position with one hand, then pull the drawer open, this causes the latch leads to rise, it is then possible to hear a "click' as the drawer switches operate.)
3. Visually check the drawer and cavity face plate for damage (dents, cracks, signs of arcing etc.).

Carry out any remedial work that is necessary before operating the oven.
Do not operate the oven if any of the following conditions exist:
1. Drawer does not close firmly.
2. Drawer latch hook is damaged.
3. The drawer gasket or seal is damaged.
4. The drawer is bent or warped.
5. There are defective parts in the drawer interlock system.
6. There are de fective parts in the microwave generating and transmission assembly.
7. There is visible damage to the oven.

Do not operate the oven:
1. Without the RF gasket (Magnetron).
2. If the wave guide or oven cavity are not intact.
3. If the drawer is not closed.

WARNING FOR WIRING

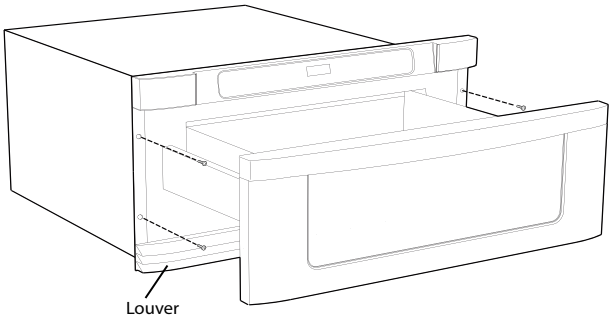
To prevent an electric shock, take the following precautions:
1. Before wiring:
   1) Disconnect the power supply cord.
   2) Open the drawer.
   3) Wait 60 seconds, then discharge the high voltage capacitor.
2. Don't let the wire leads touch to the following parts:
   1) High voltage parts:
      Magnetron, High voltage transformer, High voltage capacitor and High voltage rectifier assembly.
   2) Hot parts:
      Oven lamp, Magnetron, High voltage transformer and Oven cavity.

MICROWAVE DRAWER DISASSEMBLY

WARNING: Follow all safety precautions as stated at the beginning of this Service Manual before proceeding!

1. Before removing Microwave Drawer, take measures to protect the Drawer louver by either removing the louver or by letting the louver over hang off flat protected surface **(Fig 1)**.

Fig. 1



2. Open the Drawer to access the 4 mounting screws holding the unit on to the wall or cabinet opening. **(Fig 1)**.

3. Close Drawer and carefully pull the unit out from opening and unplug the power supply cord.

4. Remove top cover. **(Fig 2)**.

5. Remove air cover from back of unit, then both side cabinets. **(Fig 2)**.

6. Remove exhaust duct and back plate. **(Fig 2)**.

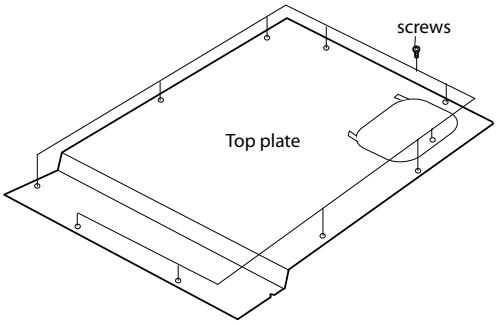
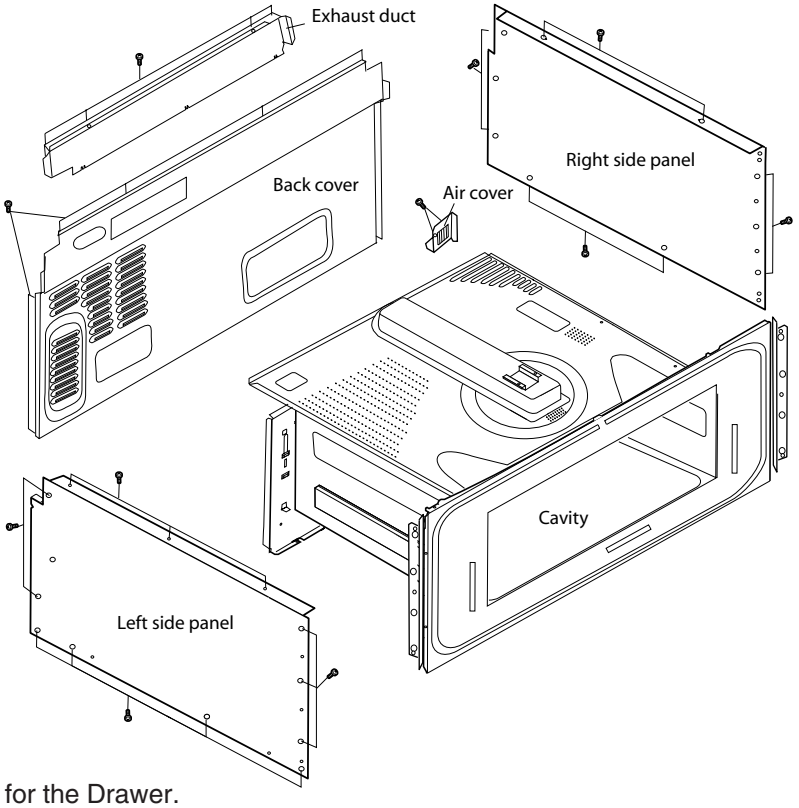


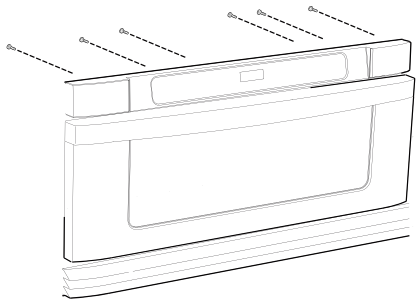
Fig. 2



NOTE: You now have access to various components for the Drawer.

7. To remove the Control Panel Frame Assembly, remove the 6 screws holding the CP frame to the C/P angle in the back **(Fig 3)**.

Fig. 3



8. Unsnap the top C/P frame assembly away from the C/P frame and unplug all wires. The C/P frame assembly is now free.

At this point, you will have access to all parts of the Microwave Drawer.

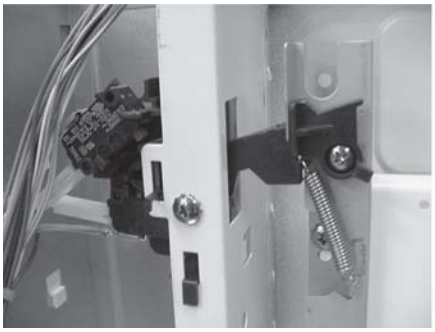
STOP SWITCH, SECONDARY INTERLOCK SWITCH AND MONITOR SWITCH REMOVAL

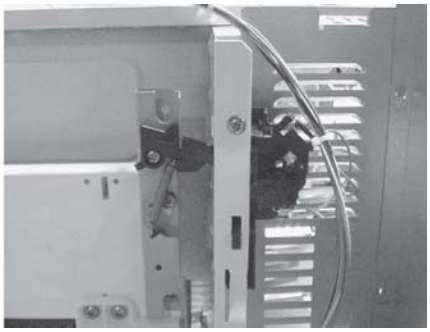
1. Follow the Microwave Drawer disassembly as previously stated
2. Open the drawer and keep it open.
3. To discharge the high voltage capacitor, wait for 60 seconds.
4. Remove the screw holding the latch hook to the oven flange.
5. Remove the latch hook from the oven flange.
6. Disconnect the wire leads of each switch.
7. Remove each switch from the latch hook by pushing the one (1) stopper tab holding each switch.
8. Now, each switch is free.

Re-install

1. Re-install each switch in its place. The secondary interlock switch is in the lower position and the monitor switch is in the top position, located on the left side of the unit. The door sensing switch by itself on the right side of the unit.
2. Re-connect wire leads to each switch. Refer to pictorial diagram.
3. Secure the latch hooks with mounting screws to oven flange.
4. Make sure that the monitor switch is operating properly and check continuity of the monitor circuit. Refer to chapter "Test Procedure" and "Adjustment procedure".

Latch Hook Left





Latch Hook Right

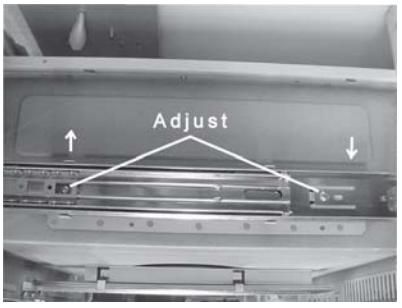
STOP SWITCH, SECONDARY INTERLOCK SWITCH AND MONITOR SWITCH ADJUSTMENT

1. Follow the Microwave Drawer disassembly as previously stated
2. Open the drawer and keep it open.
3. To discharge the high voltage capacitor, wait for 60 seconds.
4. If the door sensing switch, secondary interlock switch and monitor switch do not operate properly due to a misadjustment, the following adjustment should be made.
6. Loosen the screw holding latch hook to the oven cavity flange.
7. With drawer closed, adjust latch hook by moving it back and forth, and up and down. In and out play of the door allowed by the upper and lower position of the latch hook should be less than 0.5mm. The vertical position of the latch hook should be adjusted so that the secondary interlock switch is activated with the drawer closed. The horizontal position of the latch hook should be adjusted so that the monitor switch and drawer sensing switch are activated with the drawer closed.
8. Secure the screws with washers firmly.
9. Check all of the switches operation. If any switch has not activated fully, you will need to adjust the slide rail attached to the Microwave cavity.
10. This is done by following the steps to remove the "DRAWER/SLIDE RAIL REMOVAL" on page 28. After you have removed the slide rails, loosen the "2" screws holding the slide rail to the Microwave cavity and tilt the front end up and the rear end down, then tighten the screws **(Fig. S-1)**.
11. Check and assure that the cap nuts on the Drawer Support Angles are centered when passing through the cavity face plate.

After adjustment, check the following.

1. In and out play of door remains less than 0.5mm when in the latched position. First check upper position of latch hook, pushing and pulling upper portion of drawer toward the oven face. Then check lower portion of the latch hook, pushing and pulling lower portion of the door toward the oven face. Both results (play in the door) should be less than 0.5mm.
2. The secondary interlock switch switch interrupt the circuit before the door can be opened.
3. Monitor switch contacts close when door is opened.
4. Door sensing switch contacts open when door is opened.
5. Reassemble the unit and check for microwave leakage around door with an approved microwave survey meter. (Refer to Microwave Measurement Procedure.

Fig. S-1



DRAWER/SLIDE RAIL REMOVAL

DRAWER ASSEMBLY AND CHOKE REMOVAL

1. Follow the Microwave Drawer disassembly as previously stated
2. Open the drawer and keep it open.
3. To discharge the high voltage capacitor, wait for 60 seconds.
4. Remove the both right and left side panels.
5. Remove (2) Drawer Support Covers from Choke Cover as shown in **(Fig. D-1)**.
6. Insert a putty knife (thickness of about 0.5mm) into the gap between the choke cover and the door frame.
7. Carefully slide choke cover away from drawer as far as possible.
8. Remove (6) screws from all (3) drawer Support Angles as shown in **(Fig. D-2)**.
9. Unhook Drawer Support Angles from drawer, then remove.
10. Now, the door assembly is free and the Choke Cover can now be removed.

Fig. D-1

NOTE:

To remove only the Microwave Drawer, follow steps 1, 2, 5, 8, 9 & 10 as instructed under "DRAWER ASSEMBLY AND CHOKE REMOVAL".

DRAWER SUPPORT ANGLE REMOVAL

1. Remove Drawer Assembly and Choke Cover as stated in "DRAWER ASSEMBLY AND CHOKE REMOVAL".
2. Remove (2) screws from right or left Latch Angle Assembly, then remove Angle assembly **(Fig. D-4)**.
3. Separate Slide Rails by moving inside lever of Slide Rails. The Slide Rail will now separate by pulling straight forward and out **(Fig. D-3)**.
4. At this point, you can replace either Latch Angle Assy or Latch Angles.

To reassemble, just reverse the above order.

Fig. D-2

Fig. D-3

After reassembly, do the following.

(A) Make sure that drawer sensing switch, secondary interlock switch and monitor switch are operating properly. (Refer to chapter "Test Procedures".)

(B) An approved microwave survey meter should be used to assure compliance with proper microwave radiation emission limitation standards.

After any servicing, make sure of the following :

1. Drawer latch heads smoothly catch latch hook through latch holes and that latch head goes through center of latch hole.
2. Deviation of door alignment from horizontal line of cavity face plate is to be less than 1.0mm.
3. Drawer is positioned with its face pressed toward cavity face plate.
4. Reassemble the unit and check for microwave leakage around drawer with an approved microwave survey meter. (Refer to Microwave Measurement Procedure.)

Note: The drawer on a microwave oven is designed to act as an electronic seal preventing the leakage of microwave energy from oven cavity during cook cycle. This function does not require that door be air-tight, moisture (condensation)-tight or light-tight. Therefore, occasional appearance of moisture, light or sensing of gentle warm air movement around oven drawer is not abnormal and do not of themselves indicate a leakage of microwave energy from oven cavity.

Fig. D-4

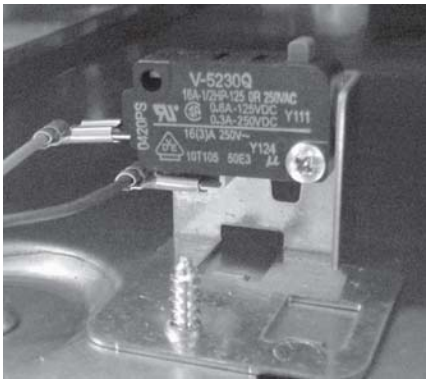
SWITCH ANGLE REMOVAL/ADJUSTMENT

SWITCH ANGLE REMOVAL

(Locate either the right or left switch angle)

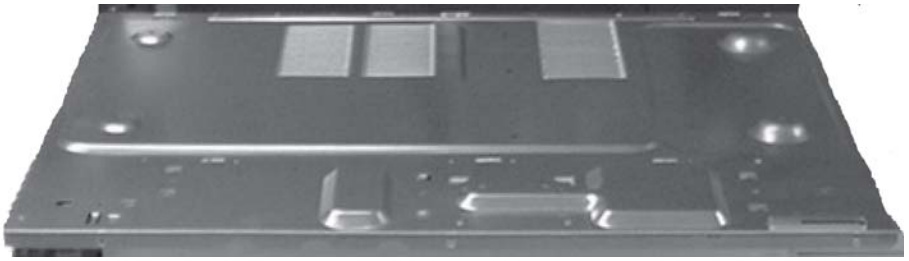
1. Follow the Microwave Drawer disassembly as previously stated
2. Open the drawer and keep it open.
3. To discharge the high voltage capacitor, wait for 60 seconds.
4. To remove switch, remove screw (1) holding switch to switch angle **(Fig. S-1)**.

Fig. S-1



5. To replace switch angle, remove bottom cover and remove the 2 screws holding the switch lever **(Fig. S-2)**.
6. Proceed in reverse to reinstall.
7. Adjust switch.

Fig. S-2



ACTUATOR REMOVAL/ADJUSTMENT

1. Follow the Microwave Drawer disassembly as previously stated
2. Open the drawer and keep it open.
3. To discharge the high voltage capacitor, wait for 60 seconds.
4. Locate either the right or left actuator and remove the 2 screws holding the actuator to the door support angles.
5. Relpace with the new actuator **(Fig. A-3)**.

Actuator adjustment

6. It is very critical that proper adjustment is made to actuator.
7. Adjust each actuator to fully depress ("0" gap) switch lever switches on left and right side **(Fig. A-4)**.

NOTE: If this adjustment is not adjusted correctly, it will effect the performance of the Auto Drawer.

Fig. A-3

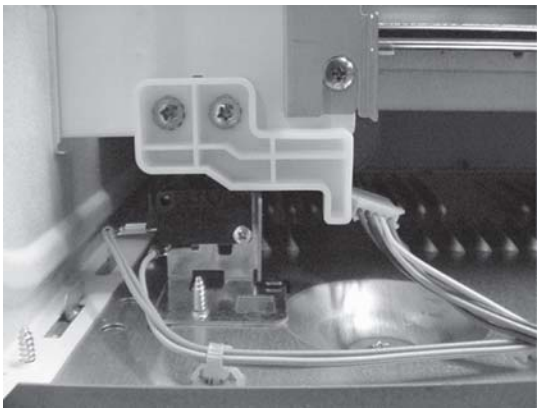
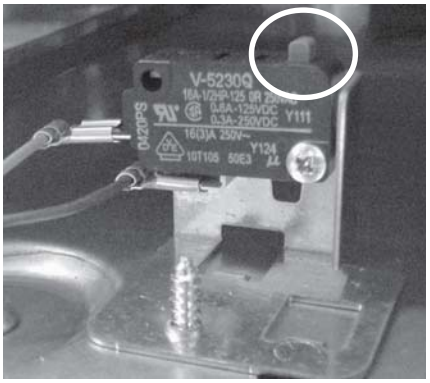


Fig. A-4



AUTO DRAWER GEAR REMOVAL

1. Follow the Microwave Drawer disassembly as previously stated
2. Open the drawer and keep it open.
3. To discharge the high voltage capacitor, wait for 60 seconds.
4. Unhook wiring Auto Drawer Gear**.**
5. Remove the (4) screws holding the auto drawer gear to the bottom cavity angle **(Fig. G-1)**.
5. Pull drawer gear from cavity angle.
6. The drawer gear is now free.
7. Proceed in reverse to reinstall the Auto Drawer Gear taking care that the gear teeth are set into the cavity angle correctly.

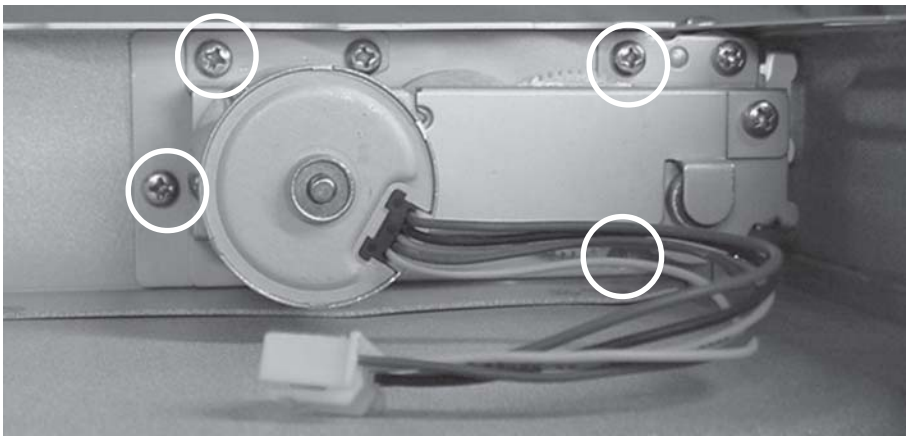


Fig. G-1

RACK GEAR REMOVAL

1. Follow the Microwave Drawer disassembly as previously stated
2. Open the drawer and keep it open.
3. To discharge the high voltage capacitor, wait for 60 seconds.
4. Remove the Microwave Drawer by following steps 1, 2, 5, 8, 9 & 10 as instructed under "DRAWER ASSEMBLY AND CHOKE REMOVAL".
5. Remove the (3) screws holding the Rack Gear to the bottom slide rail **(Fig. G-2)**.
7. Proceed in reverse to reinstall the new Rack Gear.

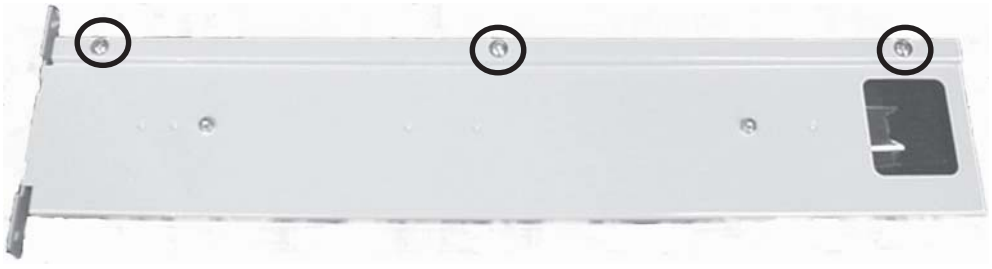


Fig. G-2