

# SHUNDE MHC SERVICE TRAINING

MHC BRAND & MODEL  
MHC FAILURE MODE AND SERVICE  
MHC COMPONENT AND SERVICE  
ERROR CODE

# MHC BRAND & MODEL



# KITCHENAID & JENN-AIR



Brand	Model	Function		
		Microwave	Convection	Grill & Convection
KAD	KMHS120	√		
	YKMHS120	√		
	KMHC319		√	
	YKMHC319		√	
	KHMP519			√
	YKMHP519			√



Brand	Model	Function	
		SOLO	Convection
JEN	JMV8208C	√	
	JMV9196		√
	YJMV9196		√

# AMANA & MAYTAG

**Amana**

**Whirlpool**  
CORPORATION



Brand	Model	Function	
		Microwave	Convection
Amana	AMV1150	√	
	YAMV1160	√	
	YAMV1170	√	
	AMV2307	√	
	YAMV2307	√	
	AMV6502	√	



Brand	Model	Function	
		Microwave	Convection
MAY	MMV4205 D & F	√	
	YMMV4205 D & F	√	
	MMV4206F	√	
	MMV5219 D & F	√	
	MMV5220F	√	
	MMV6190 D & F		√
	MMV1164	√	
	MMV1174D	√	
	YMMV1174D	√	
	MMV1174F	√	
	YMMV1174F	√	

# WHIRLPOOL & IKEA




Brand	Model	Function	
		Microwave	Convection
IKE	IMH15	√	
	IMH16	√	
	IMH160D	√	
	IMH172D	√	
	IMH160F	√	
	IMH172F	√	
	IMH205F	√	



Brand	Model	Function	
		Microwave	Convection
WHP	WMH73521	√	
	WMH53520C	√	
	YWMH53520C	√	
	WMH76719		√
	YWMH76719		√
	WMH31017A	√	
	WMH32519C	√	
	YWMH31017A	√	
	WMH31017F	√	
	WMH32519F	√	
	YWMH31017F	√	



**⚠ WARNING**



**Electrical Shock Hazard**  
 Disconnect power before servicing.  
 Replace all parts and panels before operating.  
 Failure to do so can result in death or electrical shock.

## FAILURE MODE

## FAILURE COMPONENT

<a href="#">No display (pg 7)</a>	<a href="#">Noise (pg 13)</a>	<a href="#">Interlock assembly (pg 27)</a>	<a href="#">Magnetron (pg 28)</a>
<a href="#">Door will not close (pg 12)</a>	<a href="#">Cavity lamp not going off (pg 18)</a>	<a href="#">PCBA (pg 24)</a>	<a href="#">Transformer (pg 29)</a>
<a href="#">Lamp/Fan/TT motor not working (pg 18)</a>	<a href="#">Improper display Error code display (pg 19)</a>	<a href="#">Thermostat (pg 25)</a>	<a href="#">HVD&amp;HVC (pg 30)</a>
<a href="#">Not heating No MW power (pg 16)</a>	<a href="#">Key not working control not working (pg 20)</a>	<a href="#">Filter board (pg 26)</a>	<a href="#">Hood fan motor (pg 31)</a>
<a href="#">Lamp/Fan/ TT motor not working (pg 17)</a>	<a href="#">MW Not starting (pg 21)</a>	<a href="#">TT motor (pg 32)</a>	
<a href="#">MW Shut down (pg 22)</a>	<a href="#">MW Starts by itself/ Will not stop (pg 23)</a>		

# NO DISPLAY

1

Check customer's outlet



2

Check circuit resistance



Circuit resistance standard:

Titan:

1.WMH32517,WMH53520,WMH32L19:  
0.5MΩ+/-0.02MΩ.

2.WMHC31017,MMV1174: 280Ω+/-30Ω

Red: 0.51MΩ+/-0.1MΩ

OK (pg 24)

Infinite (pg 25)

# NO DISPLAY

**3** Disassemble control panel



**4** Check wiring connection



NG

OK

**5** Connect wiring

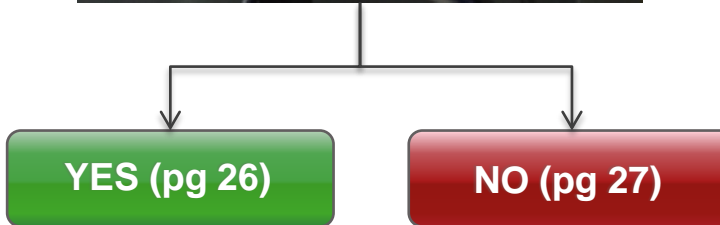
**5** Replace PCBA

# NO DISPLAY

**3** Disassemble outer wrapper



**4** Check filter board if fuse burnt out



# NO DISPLAY

**5** Replace fuse



**6** Retest circuit resistance



**Circuit resistance standard:**

**Titan:**

1.WMH32517,WMH53520,WMH32L19:  
0.51M $\Omega$ +/-0.1M $\Omega$ .

2.WMHC31017,MMV1174: 280 $\Omega$ +/-30 $\Omega$

**Red:** 0.51M $\Omega$ +/-0.1M $\Omega$

OK

Problem fixed

$\infty$

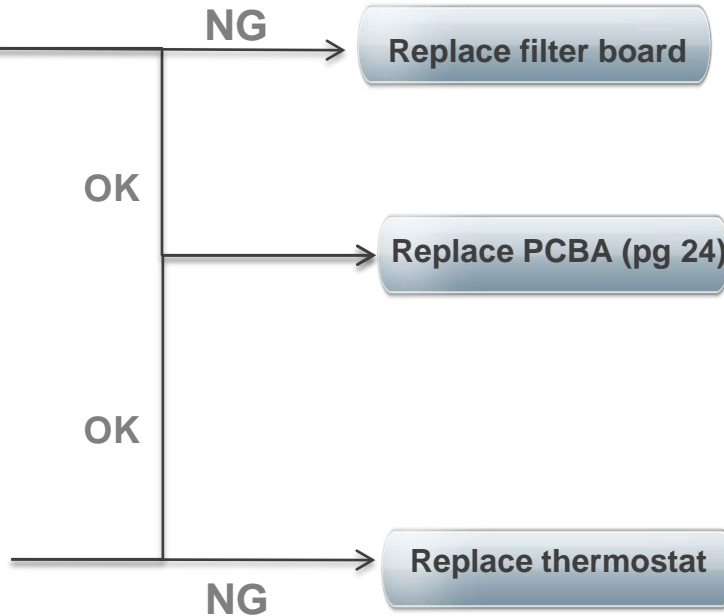
**Check interlock system:**  
1.Refer to Interlock system  
“door **will** not close” (pg 12)  
2.Refer to interlock assembly  
(pg 13)

# NO DISPLAY

**5** Check filter board (pg 18)



**5** Check cavity thermostat (pg 17)



# DOOR WILL NOT CLOSE - (INTERLOCK SYSTEM FAIL)

1

Check door alignment and gaps between door and other parts :



- Door interference with any part?
- Door misalignment?
- Door sagging?
- Door deformation/warp?
- Hinge bent?
- Hinge warp?
- Hinge screw loose?

No display (pg 7)

Cavity lamp not going off (pg 18)

Not heating  
No MW power (pg 14)

Not starting (pg 21)

Shut down (pg 22)

OK

2

Check function: Open and close door to see if oven lamp work normal.

NG



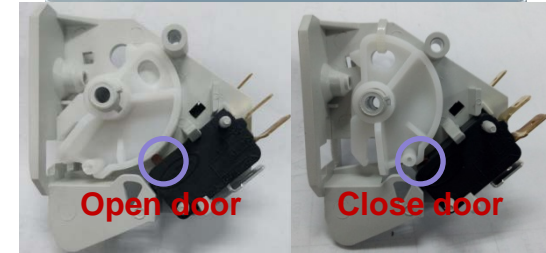
- Normal status:
- Close door: oven lamp off
  - Open door: oven lamp on

2

Replace or adjust

3

Check interlock assembly status (pg 27):



- Any loose/misalignment/stuck/out of position/broken/trip...on holder/cam/switch/latch/spring? Refer to microswitch page to check micro switch.

NG

OK

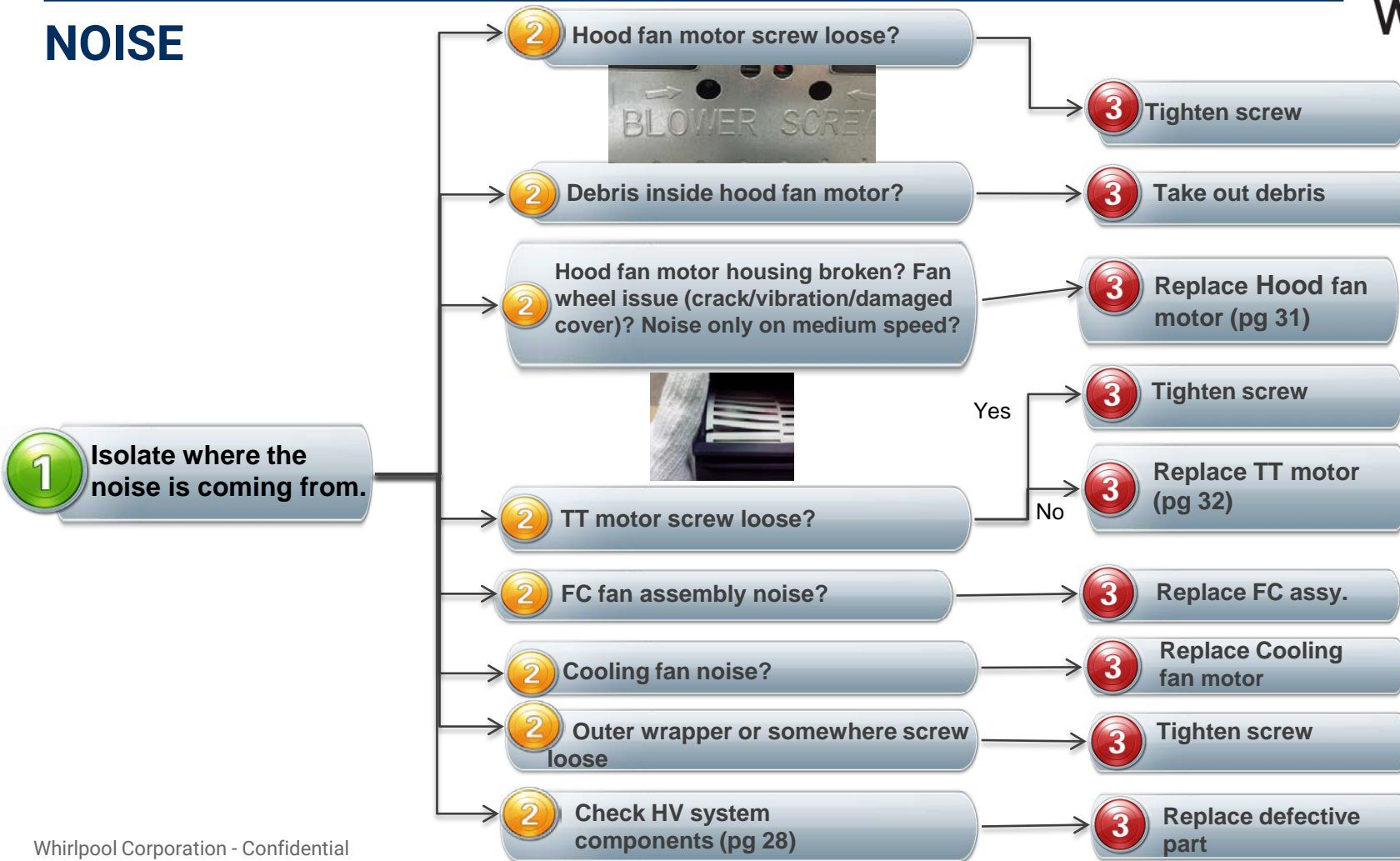
4

Replace or adjust

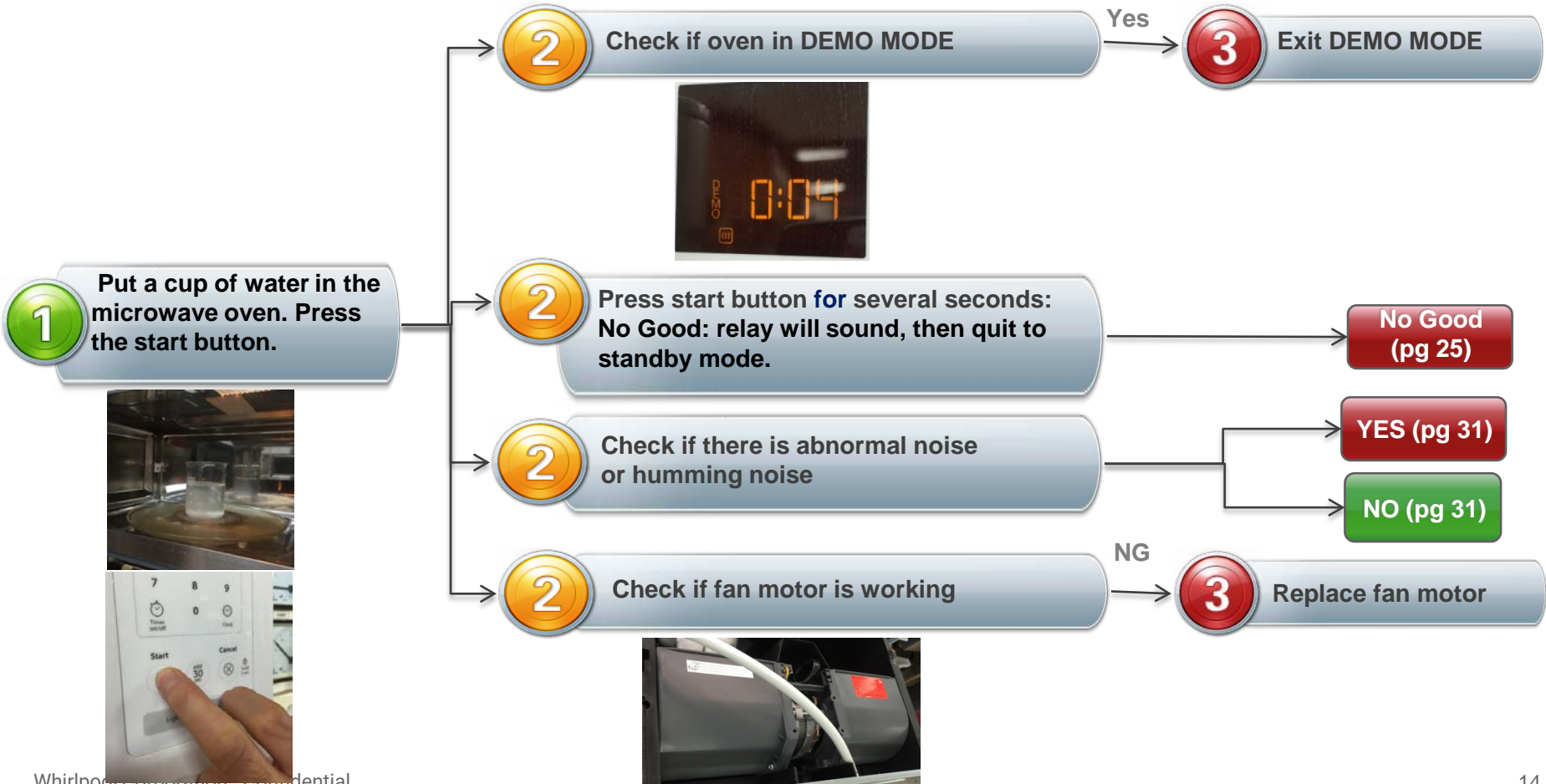
4

Replace PCBA (pg 24)

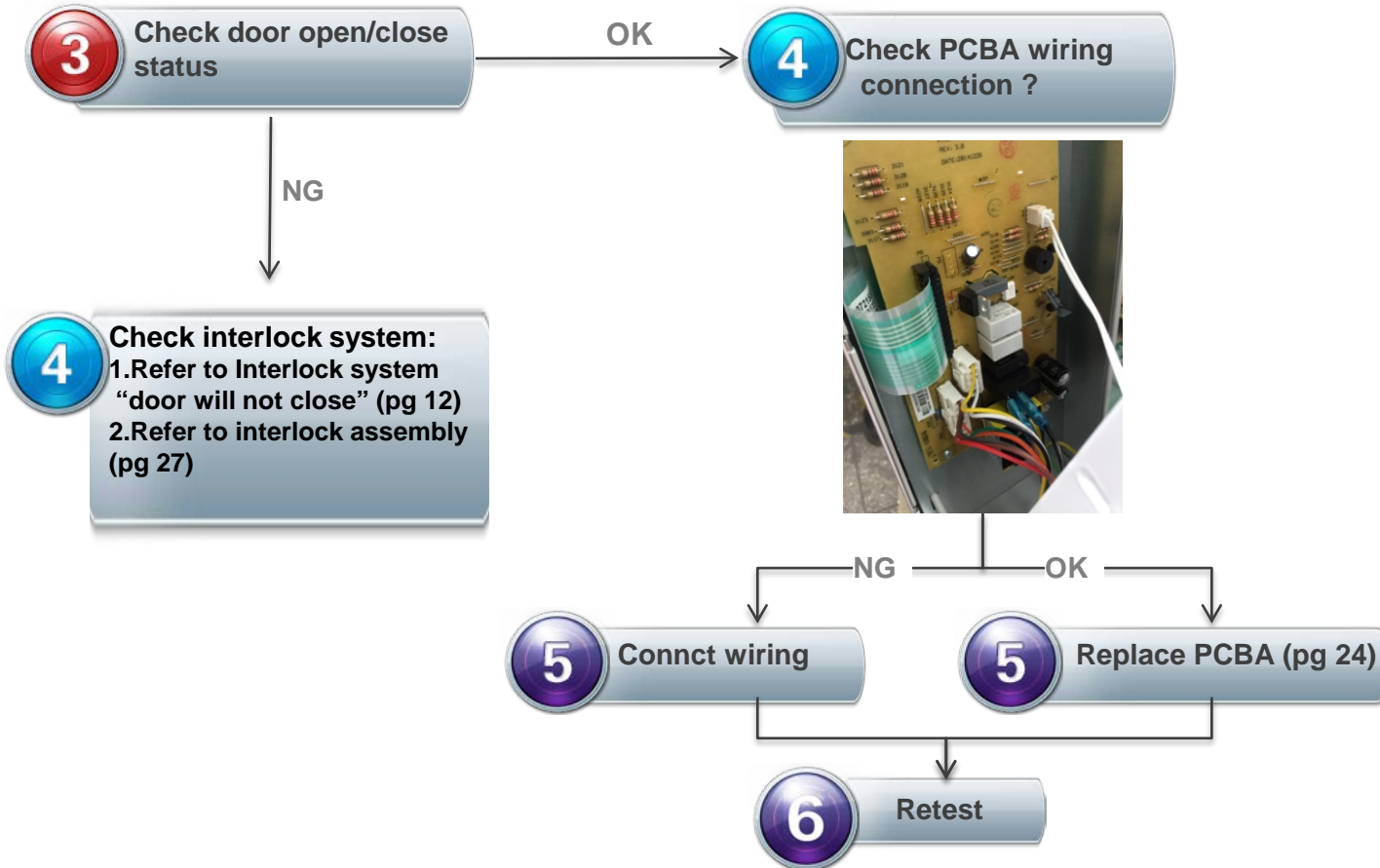
# NOISE



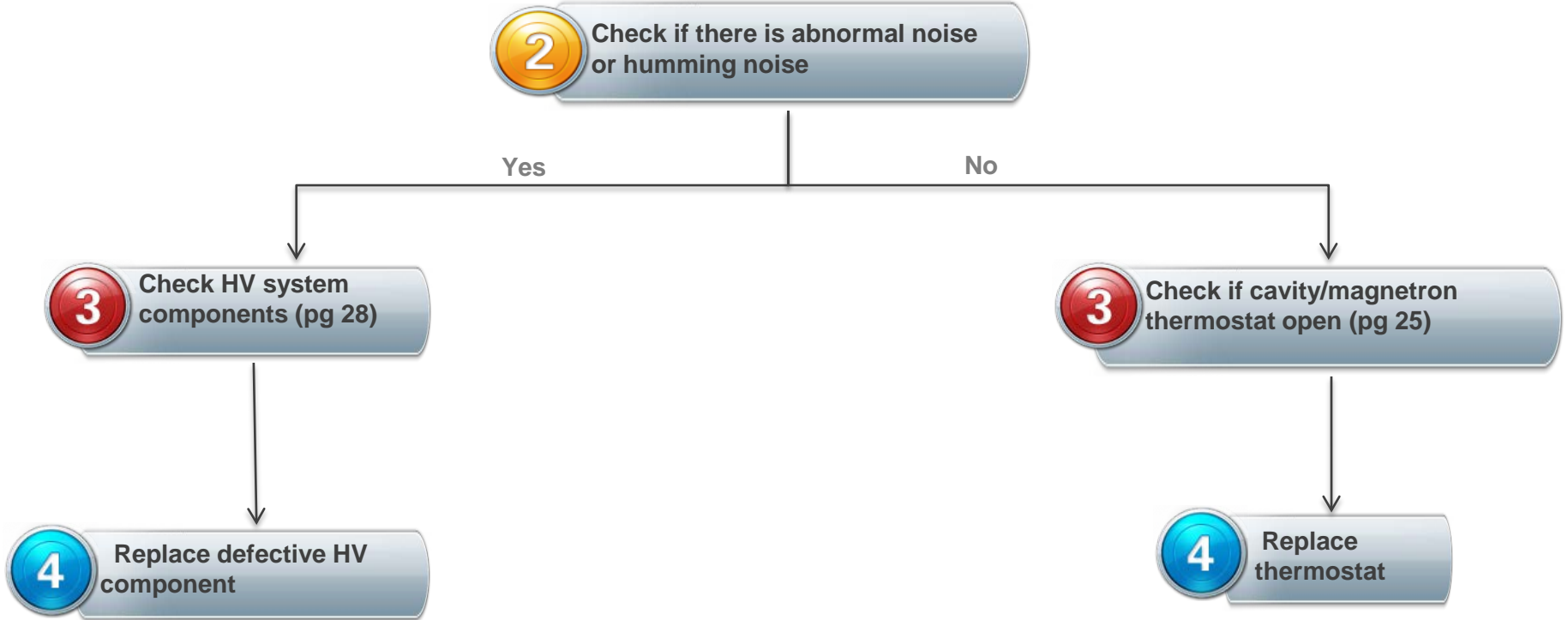
# NOT HEATING/NO MW POWER



# NOT HEATING/NO MW POWER



# NOT HEATING/NO MW POWER



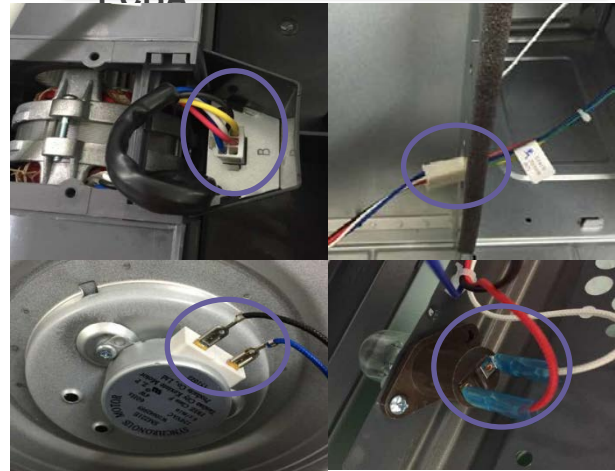
# LAMP/FAN MOTOR/TURNTABLE MOTOR NOT WORKING

(NOTE: NOT WORKING ALSO MEANS LAMP/FAN/TT SHOULD LIGHT OR TURN BUT WILL NOT.)

**1** Check lamp,tt motor,fan motor to see if **these parts** are working normally.

Hood fan motor (pg 31)

TT motor (pg 32)



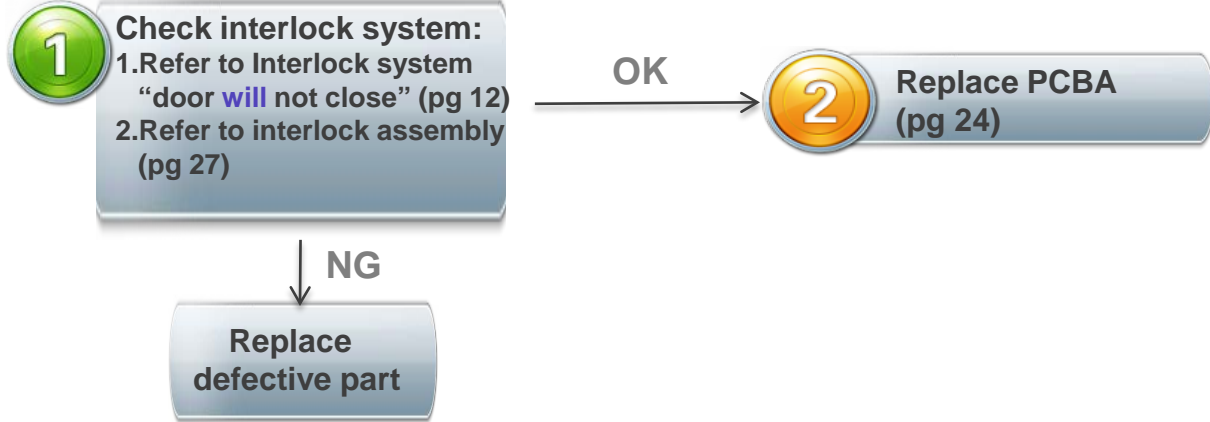
**2** Replace defective part

**3** Replace PCBA (pg 24)

**3** Connect wiring

# CAVITY LAMP NOT GOING OFF

(NOTE: when door is closed, cavity lamp is not off)



# HOOD LAMP /FAN MOTOR/TURNTABLE MOTOR NOT GOING OFF

Replace PCBA (pg 24)



# IMPROPER DISPLAY (SEGMENT, DARK, UNEVEN)

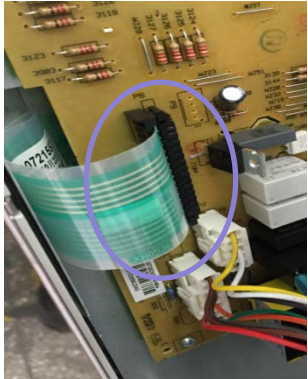


# ERROR CODE/DISPLAY ERROR



# KEY NOT WORKING/CONTROL NOT WORKING

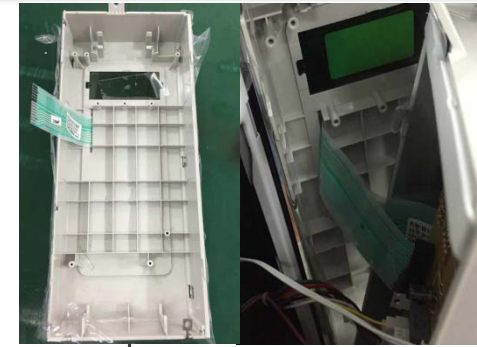
**1** Check if ribbon cable is connected.



**2** Check for loose PCBA wiring connections



**3** Test to check problem from PCBA or touchfoil : Use new touchfoil to old PCBA



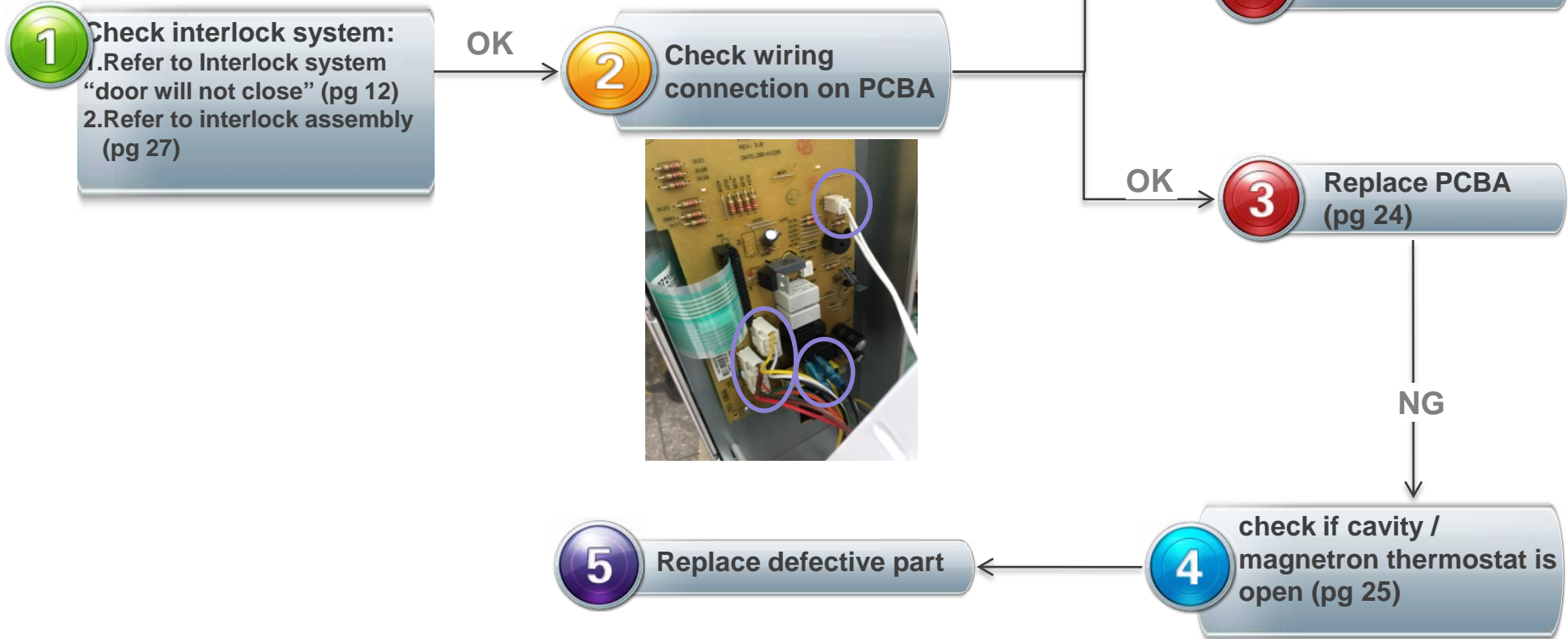
OK

NG

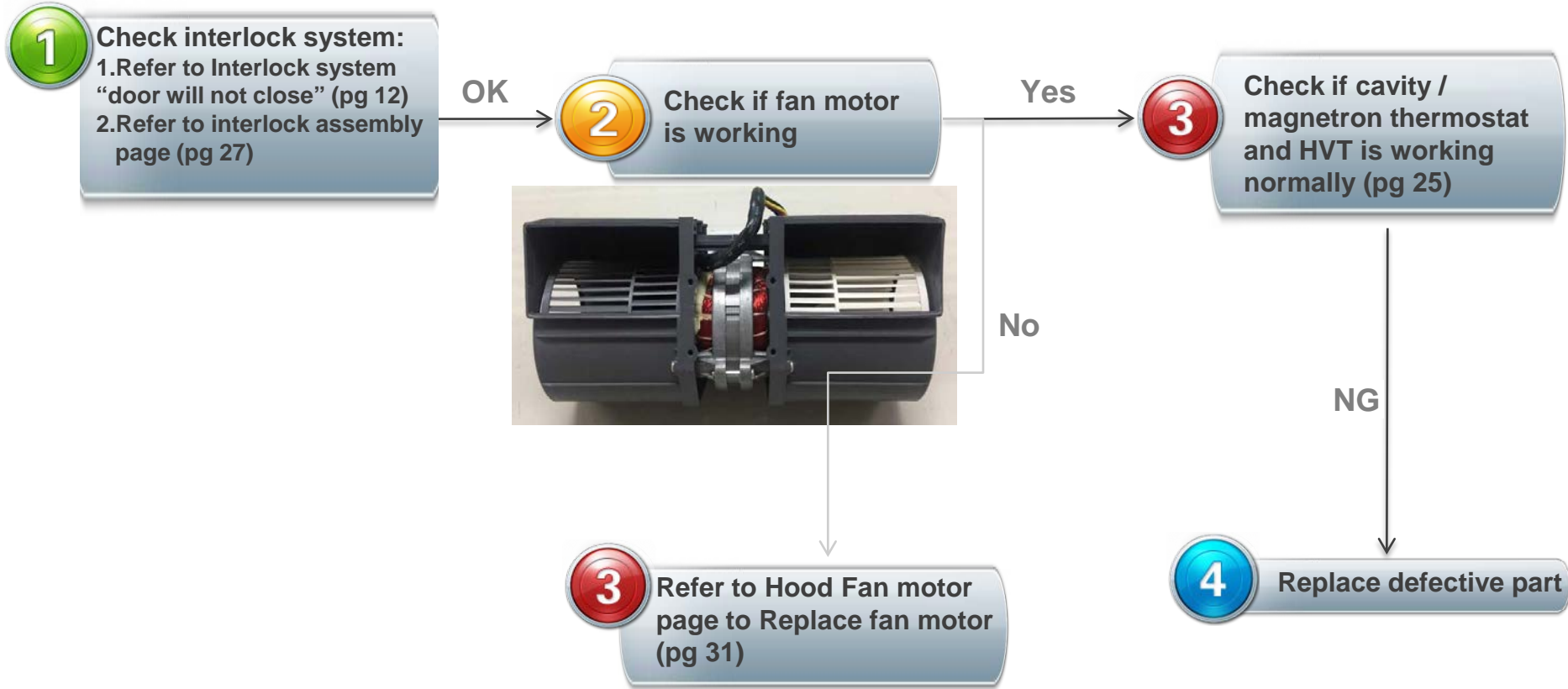
**4** Replace the control panel and touch foil

**4** Replace PCBA (pg 24)

# MW NOT STARTING



# MW STOPPED WHEN RUNNING (SHUT DOWN)



# MW STARTS BY ITSELF/WILL NOT STOP

**1** Disassemble control panel and Open door

**2** Check MW relay 4903 terminal: Measure the terminal's resistance:  $\infty$  or close to  $\infty$  means OK

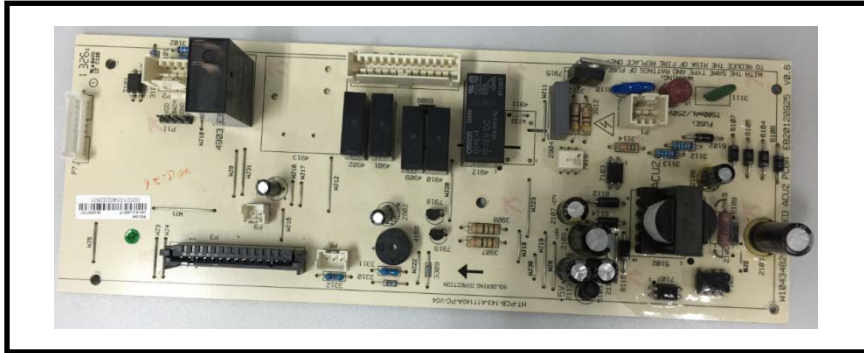


NG → **3** Replace PCBA - relay problem (pg 24)

OK → **3** Replace PCBA - not relay problem (pg 24)

# PCBA (CONTROL BOARD)

## COMPONENT

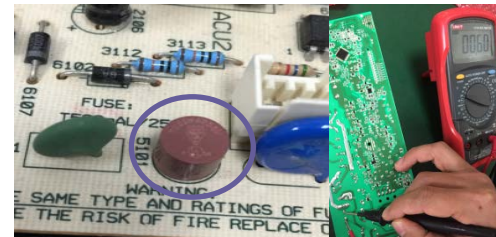


## FAILURE MODES:

- NO DISPLAY (pg 7)
- NOT HEATING/NO MW POWER (pg 14)
- DOOR WILL NOT CLOSE (pg 12)
- LAMP/FAN/TT MOTOR NOT WORKING(pg 17)
- LAMP/FAN/TT MOTOR NOT GOING OFF (pg 18)
- IMPROPER DISPLAY/ERROR CODE (pg19)
- KEY NOT WORKING/CONTROL NOT WORKING (pg 20)
- NOT STARTING (pg 21)
- STARTS BY ITSELF/WILL NOT STOP (pg 23)

## CHECK STEPS

- 1-Any connection issues ( wiring & pins ) ?
- 2-Any damage on components of PCBA?
- 3-Check the following items:
  - ① Check if the fuse on PCBA is ok?
  - ② Check if relay is ok?



- ① Check if the fuse on PCBA is OK



- ② Check if relay is ok

# THERMOSTAT

## COMPONENT



### FAILURE MODES:

- NO DISPLAY (pg 7)
- NOT HEATING/NO MW POWER (pg 14)
- NOT STARTING (pg 21)
- SHUT DOWN (pg 22)

## CHECK STEPS

- 1-Is the wiring connect well?
- 2-Any damage to wiring?
- 3-Check the two terminals of thermostat: almost  $0\Omega$  ◦



Two terminals resistance

### Thermostats



Cavity Thermostat  
Magnetron Thermostat

**NOTE:** Refer to the "Parts Layout" section for opening and closing temperatures.

1. Unplug microwave oven or disconnect power.
2. Remove wire leads.
3. Measure continuity:

■ Normal: Continuity

# FILTER BOARD

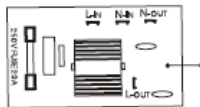
## COMPONENT



## FAILURE MODES:

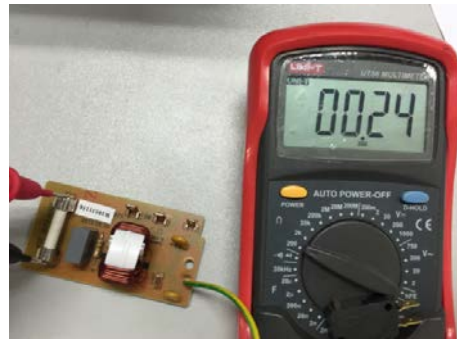
- NO DISPLAY (pg 7)

AC Line Filter Board



## CHECK STEPS

- 1-Check fuse by multimeter: It should be almost 0  $\Omega$ . If not, it is burned out.
- 2-Is the wiring connect well?
- 3-Check the welding side to see if there is bad soldering.



Fuse test

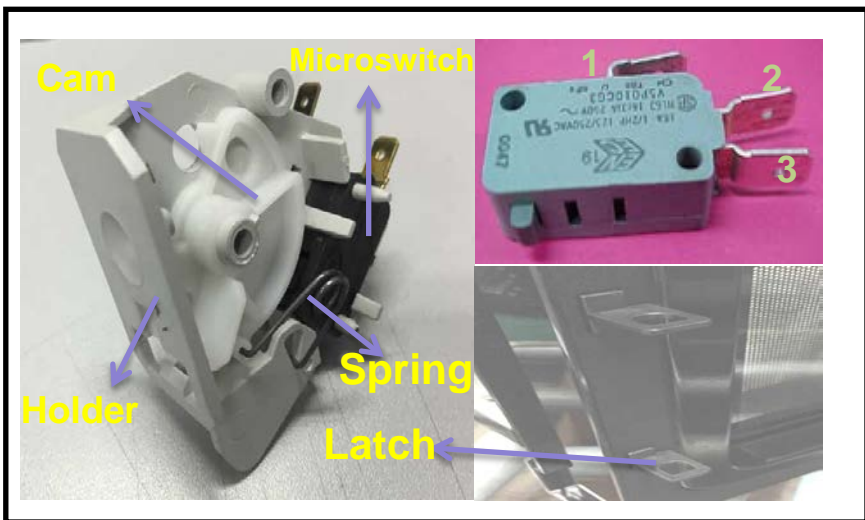


Soldering check

1. Unplug microwave oven or disconnect power.
2. Remove wire leads.
3. Measure resistance:
  - Normal: L-IN to L-OUT (coil): Less than 1 ohm; N-IN to N-OUT (coil): Less than 1 ohm

# INTERLOCK ASSEMBLY

## COMPONENT



## CHECK STEPS

- 1-Wiring connection
- 2- Parts damaged or broken (latch/holder/cam/switch)
- 3- Parts out of position or loose(latch, holder, cam, switch or spring)
- 4-Screws loose
- 5-Switches stuck
- 6-Check if micro switch short or not.**

① Adjust the multimeter to "short test" position;

Do not press the button(open door):(terminal 1,2,&3 refer to the photo on left)

② test terminal 1&3, will sound

③ test terminal 1&2, no sound.

Press the button(close door) :

④ test terminal 1&3, no sound.

⑤ test terminal 1&2,will sound

Microswitch is ok if all 4 tests above comply with the description.

## FAILURE MODES:

- DOOR WILL NOT CLOSE(pg 12)
- NO DISPLAY (pg 7)
- NOT HEATING/NO MW POWER (pg 14)
- CAVITY LAMP NOT GOING OFF (pg 18)
- NOT STARTING (pg 21)
- SHUT DOWN (pg 22)



①



Open door

②



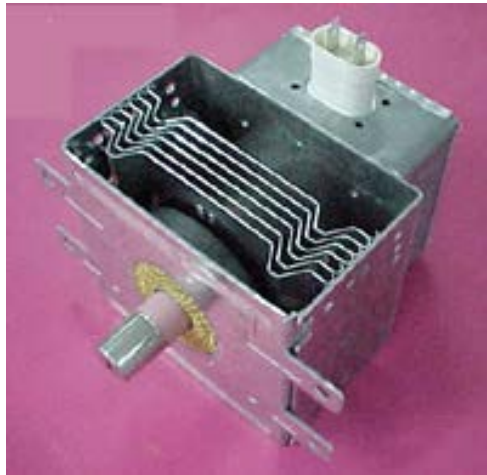
Close door

③



# HV SYSTEM-MAGNETRON TRANSFORMER HVD&HVC

## COMPONENT



## CHECK STEPS

- 1-Check if wiring is connected well. Terminal burned black or not?
- 2-Check if there is any burning smell.
- 3-Check if the ceramics ring or magnetic body present any cracks or damage?
- 4-Check resistance value between two terminals and between terminal and outer wrapper by using multimeter:
  - Between two terminals: less than 1 ohm.
  - Between terminal and outer wrapper: infinite  $\infty$

## FAILURE MODES:

### Magnetron



1. Unplug microwave oven or disconnect power.
2. Remove wire leads.
3. Measure resistance:
  - Filament terminal: Normal: Less than 1 ohm
  - Filament to chassis: Normal: Infinite

•NOT HEATING/NO MW POWER (pg 14)

•HUMMING NOISE (pg 13)



Two terminals resistance



Terminal and outer wrapper resistance

# HV SYSTEM-MAGNETRON TRANSFORMER HVD &HVC

## COMPONENT



## CHECK STEPS

- 1-Any connection issues?
- 2-Any burned or spark damage on the terminals?
- 3-Any burning smell? Very strong pungent smell of polyester varnish? (slight pungent smell is acceptable)
- 4-Check winding resistance by multimeter:
  - Primary winding resistance: show small value
  - Secondary winding resistance: around 100ohm (Refer to tech sheet)

## FAILURE MODES:

- NOT HEATING/NO MW POWER (pg 14)
- HUMMING NOISE (pg 13)



Primary winding resistance



Secondary winding resistance  
(Scrape the paint on metal base to test)

# HV SYSTEM-MAGNETRON TRANSFORMER HVC & HVD

## COMPONENT



## CHECK STEPS

- 1-Any connection issues?
- 2-Any burned, spark damage, bulge or oil leakage exist? Any burning smell?
- 3-Check resistance

**Note:** Unplug microwave oven. **Must discharge** the high-voltage capacitor by shorting two terminals of capacitor. Then disconnect the components.

**HV Capacitor:** (check and read until the value gets stable)

- Resistance value between two terminals: 10MΩ
- Resistance value between terminal and outer wrapper: ∞.

## FAILURE MODES:

- NOT HEATING/NO MW POWER (pg 14)
- HUMMING NOISE (pg 13)



∞



Two terminals resistance



Terminal and outer wrapper resistance

**Discharge first**

## HV Diode:

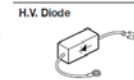
1. It is recommended that you use an ohmmeter with a over 9-volt battery on the R scale to properly test the H.V. diode. Some inexpensive ohmmeters do not have a lower voltage battery incorporated in them, and may indicate infinite resistance in both directions when testing the diode.

- Forward direction: Normal: Continuity.
- Reverse direction: Normal: Infinite

2. For ohmmeters without a 9-volt battery, prepare the DC 9-volt battery and 10 kΩ resistor in series including wire leads.

- ① Connect the DC 9-volt battery and 10 kΩ resistor in series to the H.V. diode.
- ② Set the ohmmeter to the DC voltage scale.
- ③ Measure the voltage of diode as follows (values are approximate):

- Forward Direction: Normal: several volts (Forward Voltage Drop). Abnormal: Open = 9 volts, short = 0 volts.
- Reverse Direction: Normal: 9 volts. Abnormal: Open = 9 volts, short = 0 volts.



**NOTE:** Some inexpensive meters may indicate infinite resistance in both directions.

1. Unplug microwave oven or disconnect power.
2. Measure resistance:

- Forward: Normal: Continuity
- Reverse: Normal: Infinite

# HOOD FAN MOTOR

## COMPONENT



## FAILURE MODES:

- NOISE (pg 13)
- FAN NOT WORKING(pg 17)
- SHUT DOWN (pg 22)

## CHECK STEPS

- 1-Does 6 pin connector connect well?
- 2-Is fan installed in right direction?
- 3-Any screws loose?
- 4-Any debris like screws, tape, plastic bags, etc. inside?
- 5-Any crack or damage on fan wheel or fan housing?
- 6-Does customer complain fan “works by itself” when cooktop being used? (this is normal)
- 7-How to inspect if motor is not working:

Here, we suggest testing the hood fan motor by means other than standard multimeter probes (use wire jumper or fine needle probes). Standard probes may enlarge the terminal connector, which may cause bad contact in the future. Alternatively, if the hood fan motor is not working, just use a new motor to test. If the new one is ok, this means the hood fan motor is the problem. Otherwise, please refer to PCBA problems.



Fan Motor Not Working Test

# TURNTABLE MOTOR

## COMPONENT



## CHECK STEPS

- 1-Is the wiring connected well on tt motor terminal or on 6 pin terminal?
- 2-Any damage on it?
- 3-Check two terminal's resistance by multimeter:  
several hundreds  $\Omega$  – several K $\Omega$ .



Two terminals resistance

## FAILURE MODES:

- TT MOTOR NOT WORKING (pg 17)
- NOISE (pg 13)

### Turntable Motor



1. Unplug microwave oven or disconnect power.
2. Remove wire leads.
3. Measure resistance:
  - Normal: 2.4k to 3.2k ohms (approximate)

# ERROR CODE LIST

<b>Error code</b>	<b>Failure condition</b>	<b>Possible components</b>
F1E4	MW Power Relay Failure	PCBA
F2E1	Stuck Key failure	Touch control foil
F2E1	Keyboard Failure	Touch sensor board
F4E1	Cavity Temperature Sensor Failure	NTC sensor, PCBA
F4E4	Humidity Sensor Failure	Humidity sensor, PCBA
F4E0	Inverter SMPS Feedback Failure	PCBA
F4E9	Smart pop sound failure	Sound board
F8E5	Exhaust Air Temperature Sensor Failure	Humidity sensor, PCBA

NOTE: For reference only. Refer to service manual for details.

# TECH SHEET LIST

Platform	Model	Tech sheet	Platform	Model	Tech sheet
Titan	AMV1150	W10487519	Titan II	AMV2307	W10868837
	YAMV1160	W10487522		IMH160F	W10851839
	IMH160D	W10487520		IMH172F	W10851840
	IMH172D	W10791656		IMH205F	W10844817
	MMV1174D	W10791658		MMV1174F	W10867019
	WMH31017A	W10791657		WMH31017F	W10867019
	WMH32519C	W10763120		WMH32519F	W10848098
	YWMH31017A	W10791656		YWMH31017F	W10851840
	UMV1160C	W10836908		UMV1160F	W10867021

# TECH SHEET LIST

Platform	Model	Tech sheet	Platform	Model	Tech sheet
Red	AMV6502	W10799435	Red	JMC8208C	W10619042
	KMHS120	W11038369		JMV9196	W10917911
	YKMHS120	W10644781		YJMV9196	W10847777
	MMV4205D	W10598189		KMHC319	W10917912
	MMV4205F MMV4206F	W10844811		YKMHC319	W10917918
	YMMV4205 D & F	W10844815		KHMP519	W10847768
	MMV5219D	W10598190		YKHMP519	W10847776
	MMV5219F MMV5220F	W10844812		WMH73521	W10847771
	MMV6190 D & F	W10847770		WMH76719	W10917919
	WMH53520	W11038369		YWMH76719	W10917920
YWMH53520	W10644781				

**THANK YOU!**