Commercial Microwave—Technical Information

208/230 VAC, 60	Hz Models		
ASE70002	P1332813M	ASE90002	P1332814M
DQ22HSI2	P1332805M	KFC2W2	P1332811M
KFC2SA2	P1332812M	RC17S2	P1332801M
RC17SD2OSI	P1332803M	RC17SX	P1332802M
RC22S2	P1332804M	RC27S2	P1332815M
RC30S2	P1332816M	MC23MPTW2	P1332807M
MC23MPW2	P1332806M	WDYRC22	P1332808M

- Due to possibility of personal injury or property damage, always contact an authorized technician for servicing or repair of this unit.
- Refer to Service Manual RS2240003 for installation, operating, testing, troubleshooting, and disassembly instruction.

All safety information must be followed as provided in Service Manual RS2240003.

WARNING

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

Models	RC ¹ RC1 RC179	17S2 17SX SD2OSI	DQ2 RC	2HSI2 22S2	ASES RC3	90002 30S2	RC2 KFC KFC	27S2 2W2 2SA2	ASE	70002	MC23M MC23	/IPTW2 MPW2
Power Source												
Voltage AC	208/23	30 VAC	208/23	30 VAC	208/23	30 VAC	208/23	0 VAC	208/23	30 VAC	208/23	30 VAC
Amperage (Single Unit)	20	A	20	A	30) A	30	A	20	A	20	A
Frequency	60	Hz	60	Hz	60	Hz	60	Hz	60	Hz	60	Hz
Single Phase, 3 wire grounded		Х		Х	2	x)	(Х	2	K
Receptacle	6-2	20R	6-2	20R	6-3	30R	6-3	0R	6-2	20R	لا	:*
Plug	6-2	20P	6-2	20P	6-3	30P	6-3	60P	6-2	20P	ł	*
Power Output –												
Microwave												
Nominal microwave energy (IEC705)	1700	Watts	2200	Watts	3000	Watts	2700	Watts	2500	Watts	2000	Watts
Operating Frequency	2450) MHz	2450) MHz	2450	MHz	2450	MHz	2450) MHz	2450	MHz
Power Consumption							•		•			
Microwave only	2700	Watts	3200	Watts	4400	Watts	4100	Watts	3700	Watts	3200	Watts
Dimensions												
Cabinet (in cm)												
Width	19 1/4"	49 cm	19 1/4"	49 cm	19 1/4"	49 cm	19 1/4"	49 cm	19 1/4"	49 cm	19 1/4"	49 cm
Height	18 1/4"	46 cm	18 1/4"	46 cm	18 1/4"	46 cm	18 1/4"	46 cm	18 1/4"	46 cm	18 1/4"	46 cm
Depth	26 1/4"	67 cm	26 1/4"	67 cm	26 1/4"	67 cm	26 1/4"	67 cm	26 1/4"	67 cm	26 1/4"	67 cm
Oven Interior (in cm)												
Width	13"	33 cm	13"	33 cm	13"	33 cm	13"	33 cm	13"	33 cm	13"	33 cm
Height	8 1/2"	22 cm	8 1/2"	22 cm	8 1/2"	22 cm	8 1/2"	22 cm	8 1/2"	22 cm	8 1/2"	22 cm
Depth	15"	38 cm	15"	38 cm	15"	38 cm	15"	38 cm	15"	38 cm	15"	38 cm
Weight												
Uncrated	94	lbs.	94	lbs.	115	lbs.	115	lbs.	115	lbs.	115	lbs.
Crated	101	lbs.	101	lbs.	123	lbs.	123	lbs.	123	lbs.	123	lbs.

** MC23MPTW2, MC23MPW2 uses 20A Twist-Loc NEMA L6-20P plug

WARNING

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Illustration	Component	Test	Results
	Thermal cutout	Disconnect all wires from TCO.	
		Measure resistance across terminals.	Open at 200° E (140°C) and
			Open at 300 F (149 C) and $closed at 257°E (125°C)$
		Cavity TCO	Opens at 262° F (128°C)
	Diode	Discharge Capacitor	Infinite resistance should be measured
9		5	in one direction and 50K Ω or more in
Ľ.		Remove diode lead from capacitor and	the opposite direction.
		connect ohmmeter.	
		Beverse leads for second test	NOTE: Onmineter must contain a battery of 6 yolts minimum
u(j	Tria	Projetare a Oback	Dattery of o voits minimum.
	Iriac	Resistance Check	Caution - Do not operate oven with wire to terminal MT2 removed
MT2		Disconnect wires to that.	whe to terminal wrz removed.
		Measure resistance from:	
MT1 GATE		MT1 to MT2	Infinite
		MT1 to Gate	Approximately 60 Ω
		All terminals to ground	Infinite
Triac 1 (center)		Voltage Check	0.8 VAC when energized If no
Triac 2 (left)		Measure voltage from:	voltage, check H.V. board and wiring.
Triac 3 (right		MT1 to Gate	
6	Capacitor	Discharge Capacitor	
	Some units may use	Remove wires from capacitor terminals	Between Terminals: Meter should
	more then one type of	and connect ohmmeter, set on highest	momentarily deflect towards zero then
	capacitor. Refer to	resistance scale to terminals.	return to over 5 M Ω . If no deflection
	Parts Manual for		occurs, or if continuous deflection
	quantity.		occurs, replace capacitor.
	4	Also check between each terminal and	Terminal to Case: Infinite resistance
		capacitor case.	
	Snubber assembly	Disconnect wires to snubber.	
		Measure resistance across terminals	Infinite
A	Magnetron	Discharge Capacitor	Between Terminals: Less than 1 Ω
		Remove wires from magnetron and	Each terminal to ground measures
		connect ohmmeter to terminals. Also	Infinite resistance.
		check between each terminal and ground.	Note: This test is not conclusive. If
			oven does not heat and all other
The second secon			components test good replace the
<u> </u>	Blower motor	Remove all wires from motor.	magnerion and relest.
CASA.		Measure resistance across coil	Approximately 25 Ω
A B			
- tot			

WARNING

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Illustration	Component	Test	Results
	Auto Transformer	Discharge Capacitors	
	230	Remove all wires from terminals.	
	208	Management internet former	
0 V	ξ .	Measure resistance from:	Annewingtok 20 O
	120	208 V to 0 V	Approximately 38 Ω
	o	120 V to 0 V	Approximately 37 52
	Transformor	Discharge Canacitor	Approximately 25 52
б., г	Transionnei	Bemove all wires from terminals	
	lí lí		
сом 4	∽ 5 S	Measure resistance from:	
	}	230 to COM	Less than 1 Ω
230	0 6	208 to COM	Less than 1 Ω
208		230 to Ground	Infinite
		208 to Ground	Infinite
	3	Terminal 5 to 6	Less than 1 Ω
		Terminal 4 to Ground	Approximately 59 Ω
	Interlock switch	Disconnect wires to switch.	
	David Classed		
	Door Closed	With door open measure resistance from:	1.0.1
19.02	2 3 Secondary	Terminal 2 to 3	
	7 8 Monitor	Terminal 4 to 5	
8	, • • • • • • • • • • • • • • • • •		indicates continuity
		With door closed measure resistance from:	
		Terminal 2 to 3	Indicates continuity
4		Terminal 4 to 5	Indicates continuity
		Terminal 7 to 8	Infinite
5			
	Lamp receptacle	Test continuity of receptacle terminals.	Indicates continuity if bulb is good
	(some models)		and screwed in.
	Antenna motor	Remove all wires from terminals	
ା			
		Measure resistance from:	
		Terminal to terminal	Approximately 12K Ω
			-
	De const		
Heter to Parts Manual	Power cord	Measure resistance of wires.	Continuity should be indicated on
nart number			
			Verify polarity and grounding
		1	, polarity and grounding.



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

Illustration	Component	Test		Results	
	Side touch panel	Continuity is indicated as 100 Ω and	Pad	Trace	Measurement
		below.	1	3&5	Continuity
			2	3&6	Continuity
			3	3&7	Continuity
$\overline{p_{i}}$			4	3&8	Continuity
77			5	3&9	Continuity
19			6	4 & 5	Continuity
			7	4&6	Continuity
19			8	4 & 7	Continuity
			9	4 & 8	Continuity
			0	4 & 9	Continuity
			Start	5&6	Continuity
			Stop/Reset	6&9	Continuity
	Top touch panel	Removal of touch panel is required to	Pad	Trace	Measurement
		perform test.	Time Entry	5&7	Continuity
		Continuity is indicated as 100 Ω and	Power Level	5 & 8	Continuity
		below.	Stage	5&9	Continuity
			Program Save	6&7	Continuity
			Quantity	6&8	Continuity
			Menu	7 & 9	Continuity
			Hidden Pad	8&9	Continuity

Display board						
Side Pin 1 Pin						
Function	Test Set-Up	Meter Setting	Probe Placement	Results		
Input to Display	At Display	Volts	Test points A and B	3.0 VAC		
Board	Board			If voltage is present and no display is indicated, replace display board.		
				If no voltage is present, check wire harness connections and H.V. board.		

WARNING

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



NOTE: For the following	test, place oven in Service Test Mode	(see page 11).
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Relay	Function	Test Set-Up	Meter Setting	Probe Placement	Results
K1 at 230 VAC line voltage	Blower motor Antenna motor Cavity light	Disconnect J2 connector	Ohms	J1 pin 1 (Brown wire) & J2 pin 4	Test mode 5 off – no continuity Test mode 5 on – < 1 Ω
K2 at 208 VAC line voltage	Blower motor Antenna motor Cavity light	Disconnect J2 connector	Ohms	J1 pin 1 (Brown wire) & J2 pin 3	Test mode 5 off – no continuity Test mode 5 on – < 1 Ω

WARNING

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H.V. Board – Relay Test

Three Magnetron Models – ASE70002, ASE90002, KFC2W2, KFC2SA2, MC23MPTW2, MC23MPW2, RC27S2, and RC30S2

Relay	Function	Test Set-Up	Meter Setting	Probe Placement	Results
K8	Magnetron 1 (Top rear) at 230 VAC	All wires connected to H.V. board	VAC	E2 (Black wire) & J4 pin 2 (Red wire)	Test mode 1 off – line voltage Test mode 1 on – 0 volts
K9	Magnetron 1 (Top rear) at 208 VAC	All wires connected to H.V. board	VAC	E2 (Black wire) & J4 pin 1 (White wire)	Test mode 1 off – line voltage Test mode 1 on – 0 volts
K4	Magnetron 2 (Top front) at 230 VAC	All wires connected to H.V. board	VAC	E5 (Red wire) & J3 pin 1 (Gray wire)	Test mode 2 off – line voltage Test mode 2 on – 0 volts
K5	Magnetron 2 (Top front) at 208 VAC	All wires connected to H.V. board	VAC	E5 (Red wire) & J3 pin 3 (Orange wire)	Test mode 2 off – line voltage Test mode 2 on – 0 volts
K6	Magnetron 3 (Bottom) at 230 VAC	All wires connected to H.V. board	VAC	J4 pin 4 (Black wire) & J4 pin 6 (Black wire)	Test mode 3 off – line voltage Test mode 3 on – 0 volts
K7	Magnetron 3 (Bottom) at 208 VAC	All wires connected to H.V. board	VAC	J4 pin 4 (Black wire) & J4 pin 5 (Brown wire)	Test mode 3 off – line voltage Test mode 3 on – 0 volts

Two Magnetron Models – DQ22HSI2, RC17S2, RC17SD22, and RC22S2

Relay	Function	Test Set-Up	Meter Setting	Probe Placement	Results
K8	Magnetron 1 (Top rear) at 230 VAC	All wires connected to H.V. board	VAC	E5 (Red wire) & J4 pin 2 (Red wire)	Test mode 1 off – line voltage Test mode 1 on – 0 volts
K9	Magnetron 1 (Top rear) at 208 VAC	All wires connected to H.V. board	VAC	E5 (Red wire) & J4 pin 1 (White wire)	Test mode 1 off – line voltage Test mode 1 on – 0 volts
K6	Magnetron 3 (Bottom) at 230 VAC	All wires connected to H.V. board	VAC	J4 pin 4 (Black wire) & J4 pin 6 (Black wire)	Test mode 3 off – line voltage Test mode 3 on – 0 volts
K7	Magnetron 3 (Bottom) at 208 VAC	All wires connected to H.V. board	VAC	J4 pin 4 (Black wire) & J4 pin 5 (Brown wire)	Test mode 3 off – line voltage Test mode 3 on – 0 volts

WARNING

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

Three Magnetron Models



H.V. System # 1	H.V. System # 2	H.V. System # 3
Top Rear Magnetron	Top Front Magnetron	Bottom Magnetron
Center Transformer	Left Transformer	Right Transformer
Bottom Center Capacitor	Top Left Capacitor	Right Capacitor
Diode	Diode	Diode
Center Triac	Left Triac	Right Triac



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

Two Magnetron Models



H.V. System # 1	H.V. System # 3
Top Rear Magnetron	Bottom Magnetron
Left Transformer	Right Transformer
Top Capacitor	Bottom Capacitor
Diode	Diode
Left Triac	Right Triac

WARNING

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

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

Test equipment required:

- 1000 ml test container and thermometer (Amana power test kit R0157397 Fahrenheit / Menumaster power test kit M95D5 Celsius).
- Digital watch / watch with a second hand for use on ovens with electromechanical timers.

Important Notes:

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

Procedure

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

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

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

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

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

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

∆T (°F)	Cooking Power Output	∆T (°F)	Cooking Power Output	∆T (°C)	Cooking Power Output	∆T (°C)	Cooking Power Output
10		20		5	1000	11	
11		21	2100	5.5	1100	11.5	2100
12		22		6.5	1200	12	
14		24	2400	7.5	1400	13	2400
17		25		9.5	1700	13.5	2500
18		27	2700	10	1800	15	2700
19		30		10.5	1900	16.5	3000

Display Diagnostics

To avoid risk of electrical shock, personal injury, or death, disconnect power to oven and discharge capacitor before servicing, unless testing requires power.						
"CALL SERV" — Will appear in the display when there is a fault occurring with the unit. After servicing the unit, the servicer must reset the service code to remove "CALL SERV" from the display.						
ITEM STG QTY POWER POWER 1 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2	TG QTY Formula 1 1 2 1 3 1 4 LMT Power Pow					
1 seconds ON	1 seconds ON					
The display will then be OFF for 5 seconds						
Unit must be in OFF condition ——— or	ITEM STG QTY POWER 1 2 3 3 C M 4 LMT PREMATINOT READY STANDEY LEVEL					
INITIAL power up mode.						
	C M 4 LMT PREHEAT NOT READY STANDED LEVEL					
Oven door must be closed.						
NOTE: Pads will not beep when accessing Service Test Mode.						
Press Hidden Pad.	1 3 5 7 9					
Hidden Pad ITEM STG QTY	POWER					
Display will indicate the Service Test Mode.						

- 1. Enter Service Code by pressing the following pads in order shown: HIDDEN pad, 1 pad, 3 pad, 5 pad, 7 pad, and 9 pad.
- 2. Press 0 pad to clear "CALL SErv" from the display. Display will indicate "C L r".
- **3.** Press STOP/RESET pad to exit Service Test Mode.

Diagnostics Procedures

WARNING

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

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All repairs as described in this troubleshooting section are to be performed only after the caution procedures one through eight listed below have been followed.

- 1. Check grounding before checking for possible causes.
- 2. Be careful of the high voltage circuit.
- 3. Discharge high voltage capacitor.
- 4. When checking the continuity of the switches or the high voltage transformer, disconnect one lead wire from these parts and then check continuity with the AC plug removed. To do otherwise may result in a false reading or damage to your meter.
- 5. Do not touch any parts of the circuitry on the P.C. Board circuit since static electric discharge may damage this control panel. Always touch yourself to ground while working on this panel to discharge any static charge in your body.
- 6. 208/230 VAC is present in the high voltage circuit board, power relay and primary circuit of low voltage transformer.
- 7. When troubleshooting, be cautious of possible electrical hazard.

Error Codes

During operation, the display may show the following service codes:

NOTE: Before scheduling service for any error codes, instruct customer to unplug oven for 1 minute, reconnect power, and retest. If unit operates properly, no service call is required.

Display	Description	Corrective Action
Err1	Failed H.V. Board	Replace H.V. board.
Err2	Failed H.V. Board Shorted Touch Panel Shorted Display Board Shorted Cable HV to Display Board	Replace H.V. board. Replace Touch Panel. Replace Display Board. Replace Cable.
Err3	Failed H.V. Board	Replace H.V. board.
Err4	Failed H.V. Board	Replace H.V. board.
Err5	Shorted Touch Panel	 NOTE: If Touch Panel is pressed for more than 30 seconds, this error code will appear. 1. Disconnect oven from power supply. 2. Disconnect side touch panel connector from display board (J5). 3. Reconnect oven to power supply. 4. If "Err5" reappears after 30 seconds, replace top touch panel. 5. If "Err5" does not reappear after 30 seconds, replace side touch panel.
Err6	Failed H.V. Board	Replace H.V. board.
НОТ		 Open TCO (magnetron). Blower motor inoperative. Restricted air filter. H.V. board inoperative. High ambient temperature. Oven operated empty or with light loads. Broken or loose wire.
Door	Door Interlock Primary Switch	 Verify latch mechanism moves freely on door. Verify J1 connector on display board is properly seated. Test interlock switch assembly and perform door adjustment if necessary. Replace interlock switch assembly.
CALL SErv	Amperage monitoring System on H.V. Board	 Power interruption while oven is operating may cause this code to display when power is restored. Reset CALL SErv , Service Test procedure – Pad "0" Place water load inside cavity and use pre-programmed pad to operate oven for 30 seconds or more. If CALL SErv does not appear, no further repairs are necessary. If CALL SErv reappears, use Service Test procedure to operate each H.V. system independently to isolate fault. Replace H.V. Board If Call SErv display will not clear. Reset CALL SErv after fault has been corrected.





Wiring Diagram and Schematic

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



12719301

DQ22HSI2

RC17S2

RC17SD2OSI

RC17SX

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RC22S2
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WARNING

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



12719301



DQ22HSI2

RC17S2

RC17SD2OSI

RC17SX

Wiring Diagram and Schematic

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

WARNING



12719101

ASE70002 MC23MPTW2 ASE90002 MC23MPW2 KFC2W2 **RC27S2**

KFC2SA2 **RC30S2**

WDYRC2

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12719101



ASE70002 MC23MPTW2 ASE90002 MC23MPW2 KFC2W2 **RC27S2**

KFC2SA2 **RC30S2**