

Microwave Oven EMWK 1060.0



THE HEART OF A GOOD KITCHEN



Service Manual: H4-070-52-01

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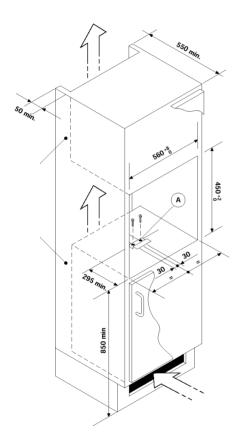
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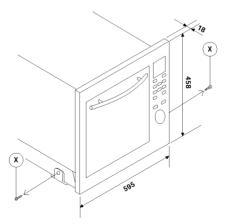
1. General

1.1 Installation and electric connection

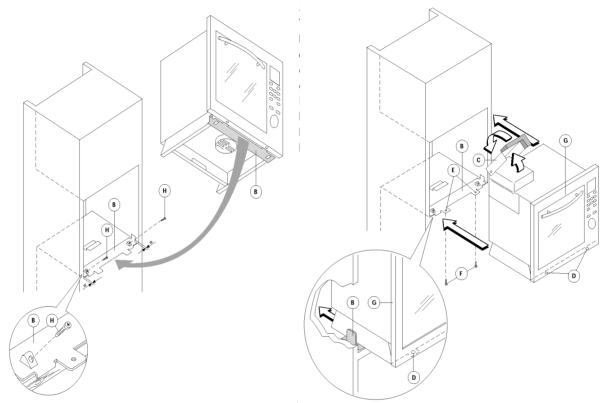
- 1. After you have taken the appliance out of the packing, remove the protective sleeve which holds the turntable, its holder and all the accessories.
- 2. There is a plastic bag with assembly material in the oven cavity. Please take this bag out of the oven.
- 3. Remove the two screws "X" from the attachment section under the microwave oven.
- 4. Attach the metal strip "A" with the two screws "X" you have just undone.



The appliance needs an adequate air supply. The opening in the strip must therefore be at least 280 cm^2 .



- 1. Mount the attachment section **B** in the right position in the niche.
- 2. Make sure that there is still a gap on both sides of the attachment section. Screw the section tight with the screws **H**.
- 3. Open the cover of the vapour extractor **C** full. Push the appliance into the niche. Carefully push the front of the appliance over the attachment section **B**.
- 4. Keep pushing until the oven front **G** is flush with the cupboard and the openings **D** under the oven are located on a plane with the openings **E** in the attachment section **B**.
- 5. Secure the appliance to the attachment section **B** with the screws **F**.
- 6. Mount the attachment section in such a way that the two lips protrude over the edge of the niche bottom and are flush at the front.



Electric connection

- Only connect the appliance to socket outlets with a fuse of at least 16 A. Also check that the main fuse of your home has a minimum output of 16 A so that it does not suddenly blow during operation of the microwave oven.
- Before operation, check whether the mains voltage is the same as that indicated on the name/rating plate of the appliance and whether the socket outlet is effectively earthed. The manufacturer assumes no liability for damage which occurs through the non-observance of these regulations.



Caution: The mains plug of the appliance must be accessible at all times.



2. Notes on safety

The purpose of this service manual is to provide the customer service technicians who already have the technical knowledge necessary to repair microwave ovens with specific information on the mode of operation of the EMWK 1060.0.



Caution!

Risks and damage may arise for the user as a result of improper repairs!

It is imperative to observe the following notes in order to prevent electric shocks:

- The housing and frame may be conductive in the event of a fault!
- Do not touch any components in the appliance, even modules may carry mains voltage!
- Always disconnect the appliance from the mains before starting repair work!
- Always use a residual-current-operated circuit-breaker if tests are required while the appliance is energised!
- The safety earth terminal must not exceed the standardised values! It is of crucial importance for people's safety and the proper functioning of the appliance!
- On completion of the repair work a check to VDE 0701 or a corresponding national regulation must be conducted!
- On completion of the repair work a functional test must be performed!
- On completion of the repair work a leak rate measurement must be made!

It is essential to observe the following notes in order to prevent damage to the appliance or the components:

- Observe regulations on electrostatic hazards!
- Never attempt repairs through the indiscriminate exchange of components!
- Always proceed systematically and observe the notes on troubleshooting!
- Do not take any measurements in the high-voltage circuit during operation. Risk to life and limb!

3. Technical data

Voltage	230V - 50Hz
Max. power consumption	3000 W
Microwave output power	1000 W
Magnetron	Goldstar LG 2M246 - 050GF
Safety thermostat	
Cooking compartment fan	Plaset 23 W
Winding	120 W (at 20 °C)
Temperature sensor NTC	Bowthorpe Thermometrics JS3684 -10 °C / 220 °C
Oven heating element	R1 178V /271W R2 47V / 304W
Grill heating element	1500 W
Break contact for ventilation duct	ELTEK 100332.14 / 3.5 W 0 - 105 °C
Transformer Primary winding Secondary winding	DGN DEL-950NTC 230V - 1.3 W 2430-96
Filament winding	3.4 V
Capacitor	1.00 μF
Diode H V	FciHV0309
Fan Winding	Plaset - 20 W 170
Protective diode	FCI HV 06X1P5
Turntable motor	JAEIL ST-16 3 W
Lamp	25 W
Thermal fuse	Fusit or Omega EM8A



4. Accessories supplied

Turntable holder

The turntable holder and the turntable must always remain in the oven and are used for all functions. Never place objects other than the turntable directly on the holder. We recommend you to use a mild cleaning agent, luke-warm water and a soft cloth to clean the turntable holder.

Turntable

The turntable is suitable for use for all functions. It collects dripping meat juice and bits of food and thus prevents the oven cavity from becoming unnecessarily dirty. It can also be used directly as cookware. The turntable can be cleaned in a dishwasher. It must always be able to move freely.

Low grid

Mode - only hot air oven:

For all traditional types of baking, especially for baking cakes. *Combination function - microwaves + hot air oven and microwaves + grill:*

For the rapid cooking of meat, potatoes, some cakes and

dishes topped with cheese (e.g. lasagne).

Medium-high grid

Only microwave function:

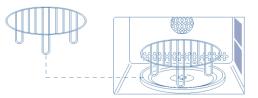
For all types of cooking on two levels AT THE SAME $\ensuremath{\mathsf{TIME}}$

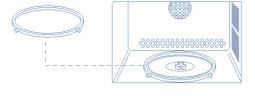
(For example: large amounts of food or different foods).

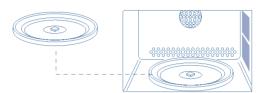
High grid

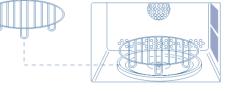
Mode - only grill: For all types of grilling







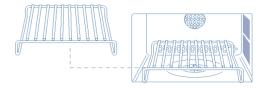




Rectangular grid

Mode - only hot air oven:

Suitable for all traditional methods of cooking in rectangular and round dishes for baking cakes.



Mode	Only microwaves	Combination mode	Only hot air/grill
Glass	YES	NO	NO
Pyrex	YES	YES	YES
Glass ceramic	YES	YES	YES
Terracotta dishes	YES	YES	YES
Aluminium foil	NO	NO	YES
Plastic	YES	NO	NO
Paper or cardboard	YES	NO	NO
Metal containers	NO	NO	YES

4.1 What cookware may be used in your appliance?

In the mode "only microwaves" and in the combination modes with microwaves all containers made of glass (Pyrex even better), ceramic, porcelain or terracotta may be used as long as they have no decorations and metal parts (decorative or gold edges, handles, feet). Heat-resistant plastic containers (200 °C) may also be used.

Containers made of metal, wood, straw and crystal are unsuitable for cooking with microwaves.

At this point it should be recalled once again that the microwaves heat the food and not the cookware and therefore the meals can be cooked directly in the serving dishes; this dispenses with the use and subsequent washing-up of pots and pans. However, it is possible for the very hot food to transfer its heat to the plate, thus necessitating the use of oven cloths.

If the appliance is set to the modes "Only hot air oven" or "Only grill", all containers suitable for a standard oven may be used.

However, their shape and size must always permit the turntable to rotate properly.

To find out whether a container is suitable for a microwave oven, please conduct the following small test:

Place an empty container in the oven for 30 seconds at the maximum power level (function "Only microwaves"). If the container does not become warm at all or only slightly, it is suitable for cooking with microwaves. If, on the other hand, it heats up a lot (or sparks develop), it is unsuitable.



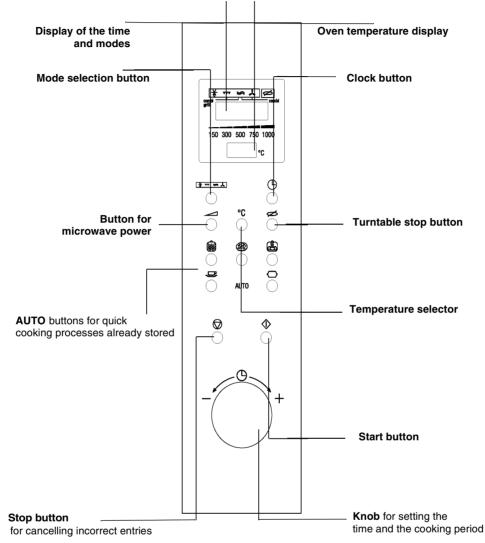
4.2 Power levels and their applications

In order to ensure maximum possible flexibility during the cooking process, the microwave oven was equipped with different power levels:

1000 W	Very rapid heating of liquids and (fresh or deep-frozen) food and for cooking vegetables
750 W	For cooking fish and poultry in general
500 W	For melting chocolate and chocolate coatings and for cooking meat in general (roasts, meat kebabs etc.)
300 W	For very slow cooking, e.g. braising joints, and for heating cakes and pastries.
150 W	For baking certain types of cake and for sensitive foods (fish, roast beef etc.)
*	For defrosting

5. Control elements and modes of operation

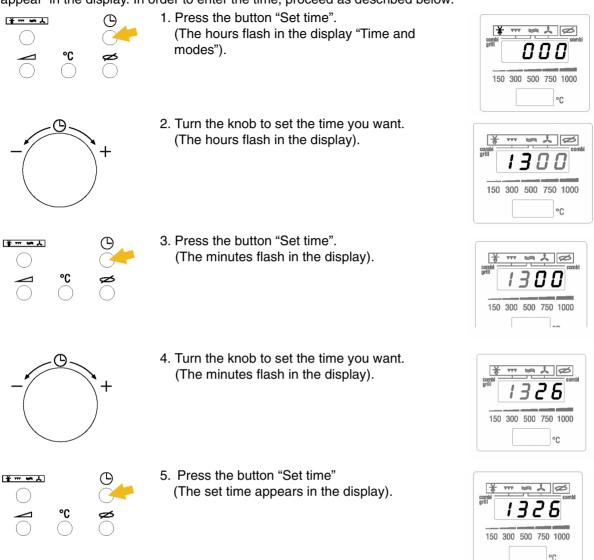
5.1 Control panel





5.2 Setting the clock

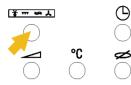
After the appliance has been connected to the house mains or after a power failure, four dashes (--:--) appear in the display. In order to enter the time, proceed as described below:



After the time has been set and you want to change it, press the button "Set time" and set the new time as described above.

The current time can also be displayed after the start of the set mode. Press the button "Set time". (The time appears for 2 seconds).

5.3 "Memotime" function



In this mode the time setting can be used for up to 60 minutes with the oven **not** in operation.





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- - - °C

150 300 500 750 1000

Press the button "Mode selection" until 3 dashes appear in the display "Oven temperature".

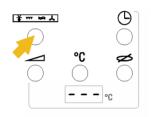
Set the time you want with the knob.

Press the START button.

The countdown of the remaining time appears in the display while the dashes in the display for the oven temperature start to run.

On expiry of the remaining time 3 sounds are emitted and E^{1} appears in the display.

5.4 Programming the modes



Press the mode selection button and select the mode you want; it is shown in the display.

The modes available are as follows:

DISP	LAY	MODE SELECTED	
	*	Only microwaves Automatic defrosting	
^ر ۲ ج		Combination mode microwaves and hot air oven	
8	***	Combination mode microwaves and grill	
	* ***	Only hot air oven Only grill	



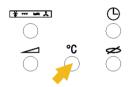
Set the cooking time in minutes by turning the ጦ knob. sa Y 🖉 TX CON 180 With the functions: **Only microwave** ¥ COL °C Combination mode microwave + hot air in the oven

Combination mode microwave + grill

Select the power level of the microwaves by repeatedly pressing the button "Microwave power level" until the level you want is shown in the display in numbers (Watt) above the LOWER display and flashes.

Notes:

- In the mode "Automatic defrosting" no power level has to be selected. .
- In the Combination mode microwave + hot air oven the maximum power level that can be • selected in 750 Watt:
- The power level set can also be changed during the cooking process by simply pressing the button "Microwave power level".



In the modes: Combination mode microwave + hot air oven Only hot air oven

1800 150 300 500 750 1000 200 °C

Select the cooking temperature by pressing the button "Oven temperature" until the temperature you want is shown in the lower display.

Notes:

- After the start the effective temperature increase in the oven cavity is shown in the lower display.
- When the set temperature has been reached, an acoustic signal is emitted. The set temperature is • now shown in the lower display.
- You can also change the set temperature during the cooking process by simply pressing the button "Oven temperature".



Press the START button to start the cooking process. The time remaining until the end of cooking is shown in the upper display and, if programmed in the mode, the temperature of the oven appears in the lower display.

Note:

If the cooking process is not to be started for any reason, all entries are automatically deleted after 2 minutes.



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At the end of the cooking time an acoustic signal is emitted (3 times) and " $\mathcal{E}\mathbb{N}\mathbb{D}$ " appears in the display. Open the door and take out the food (the time appears). If the appliance is hot, the word " \mathcal{LOL} " appears.

Notes:

- You can check the set cooking process at any time by opening the door. As a result, the discharge of the microwaves and operation of the oven are interrupted and they start working again when you close the door and press the button "Start cooking process and rapid heating" again.
- If the cooking process is to be interrupted for any reason without the door being opened, simply press the button "Interruption of the cooking process and cancellation of the entries".
- To end the cooking process, proceed as follows:
 - If the appliance door is open, press the button "Interruption of the cooking process and cancellation of the entries" once.
 - If the appliance door is closed and the cooking process is still under way, press the button "Interruption of the cooking process and cancellation of the entries" twice. The time is shown again in the display.
- This model is equipped with an automatic cooling cycle which comes on when the appliance is very hot (e.g. at the end of prolonged cooking processes). During this cycle the word "**[OOL**" appears in the display "Time and modes". The fan wheels and the oven lighting are on and switch off automatically.

After the end of every cooking process the oven lamp and the cooling remain on until the door is opened.

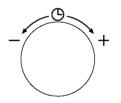
5.5 Automatic, consecutive defrosting and cooking processes

In order to program automatic consecutive defrosting and cooking processes, proceed as follows:



Enter the mode "**Automatic defrosting**" by pressing the mode selection button twice. The relevant display for "Automatic defrosting" appears.

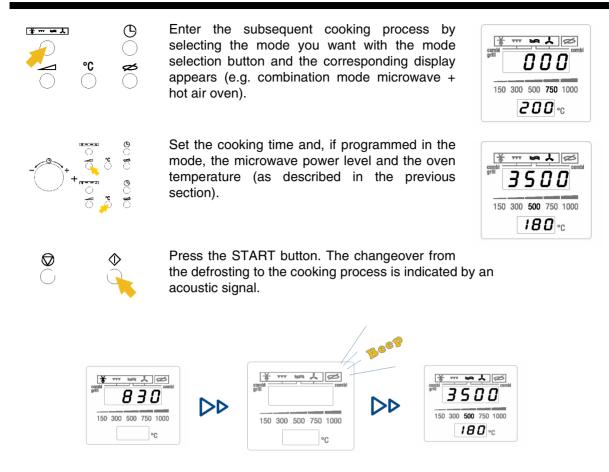




Enter the defrosting period (in minutes) with the knob.







5.6 Retrieving recipes already stored ("Auto" buttons)



Press the AUTO button.

(In the display the figures of the cooking time period already set and the displays of the mode and power level already stored come on).

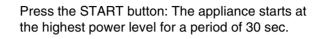
Press the START button to start the cooking process.

On expiry of the set time you will hear 3 long beeps and END appears in the display.

5.7 Rapid heating

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This mode is very useful for heating small amounts of food or drinks or to prolong the cooking process already ended by several minutes.



Pressing the button again increases the time by another 30 sec. up to a maximum duration of 3 minutes.



This mode only starts if it is activated within **1 minute** after the food has been placed in the oven. After the start of the cooking process the set time can be changed with the knob up to a maximum of 60 minutes.

5.8 Children's safety device

The microwave oven is equipped with a safety facility which prevents the set cooking times from being changed during the cooking process so that unintentional or hazardous extensions of the cooking time are excluded (the food could burn!).

To activate the device:

- Keep the STOP button for interrupting the cooking process and cancelling the entries depressed for 5 sec.
- A short signal is emitted. Now it is no longer possible with any cooking process to correct the cooking times.
- To release this feature, keep the STOP button depressed until a signal is emitted.

5.9 Turntable stop button

If too large cookware or cookware with handles is used which can no longer turn, the rotation of the turntable can be blocked. Press the button **Turntable stop**; the procedure is only possible after the cooking function has been set: the LED display in the top right starts to flash.

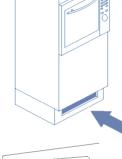
After you have pressed **Start**, the LED display will flash 5 more times and then remain on constantly during the set cooking time. To achieve optimum results, the food is to be stirred or turned several times during the cooking process. The function **Turntable stop** remains activated, also for the subsequent cooking process until you press the button **Turntable stop** again.

With the function "Microwave" the maximum output power of the microwaves used is 750 W (on activation of the button **Turntable stop** the power is automatically reduced by the electronic control).

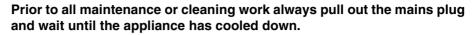


6. Cleaning









The cavity is made of stainless steel and therefore cleaning is extremely easy. Always keep the cover panel of the microwave outlet opening free of oil and grease splashes.

Never use scouring agents, metal wool or sharp metal objects for cleaning the cavity. Moreover, make sure that no water or liquid cleaning agent enters the waste air and vapour extractor slits on the top of the appliance.

No alcohol, scouring agents or ammonia-containing cleaning agents are to be used for cleaning the inside and outside of the door.

To ensure perfect closing, always keep the inside of the door clean and make sure that dirt and food residues are not jammed between the door and the appliance front.

Regularly clean the fresh air openings on the rear of the appliance and the surface under the turntable so that they do not become clogged with dust and dirt over the course of time. Please contact the **Customer service** to check the fresh air openings on the rear of the appliance.

The turntable and the corresponding holder should also be removed for cleaning and the bottom of the microwave oven cleaned from time to time.

Clean the turntable and the holder with normal washing-up liquid (they are also dishwasher-safe).

Do not immerse the turntable after prolonged heating in cold water, it would break owing to the severe temperature shock.

The motor of the turntable is sealed. However, make sure when cleaning the appliance bottom that no water penetrates under the turntable pin (D) of the turntable.

To facilitate the cleaning of the oven cavity, the grill heating element can be flapped down after the ceramic hook has been unscrewed.

Important: After cleaning, correctly position the grill heating element again and hook it on. The combination microwave oven must not be operated with the grill heating element flapped down.



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7. Safety precautions during troubleshooting

Before it leaves the factory, every appliance is carefully checked but it must be correctly installed and operated. In spite of all safety measures, safety depends on correct installation and correct operation and maintenance by the customer.

WARNING - MICROWAVE ENERGY



Service technicians must never be exposed to the microwave radiation which can be emitted by the magnetron or other components producing microwaves if the appliance is not connected correctly or operated improperly.



All input and output connections, waveguides, flanges and seals are to be attached and sealed correctly.



Never operate the appliance without having placed items in the cooking cavity which absorb the microwaves.



Never look into the open waveguide or the antenna when the magnetron is live.

The appliance must never be operated without the housing or with the door open.



If the fuse blows, always block the system operability first (all microswitches) before the appliance is switched on again. If a microswitch is defective, always replace all microswitches.

Before activation of the magnetron or before repair work, check the following points with all appliances:

- The door does not close properly at the frame because it is deformed or the hinges are damaged.
- Door or door seal damaged
- Appliance obviously damaged

All defective or incorrectly set components in the locking, control, door locking, microwave generator and transmission systems must be repaired, replaced or correctly set. Service technicians must first remove their watches for all work on or near the magnetron.

- Caution: The high-voltage capacitor could still be electrically charged about 30 sec. after the appliance
 has been switched off. It is advisable to discharge the capacitor each time through both poles using a
 suitably insulated cable. Secondary power circuits of the transformer have a high voltage and a low
 amperage and for this reason it is extremely dangerous to work near these components if the
 appliance is plugged into the mains. Never touch cables with your bare hands or with non-insulated
 tools when the appliance is in operation.
- Do not measure the electric voltage of a high-voltage circuit or magnetron filament.
- Make sure that the door is not loose or is missing. If the screws are not tightened fully, this could lead to the discharge of microwaves.
- Before you switch on the appliance, check that all electric connections are tight.
- Ensure with a reasonable procedure that no microwaves are emitted.
- Do not insert any metal objects either through the lamp gap or through any other gap as such objects could act as an antenna and could result in the emission of microwaves.



8. Component check

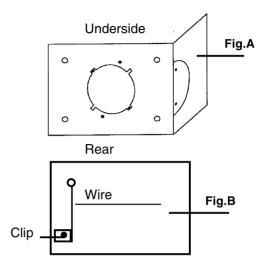
8.1 Maintenance of the turntable motor

To gain access to the motor, it is necessary to cut through the metal reeds holding the motor cover (see Fig. A).

After the maintenance work, install the cover again with the two screws 4.2 x 9 again.

8.2 Maintenance of the power cable

If maintenance work is being performed on the power cable or it is being replaced, the wire must subsequently be attached again with the clip (Fig. B).



8.3 Magnetron check - Resistance measurement

Measuring resistance:

Target value:

> 1 Ω

infinite

With ohmmeter (scale Rx1) between the connections of the heating filaments of the magnetron.

With ohmmeter at maximum measuring range between each of the heating filament connections and the earthed frame.

8.4 **High-voltage transformer**

Measure resistance:	Target value:
With ohmmeter (scale Rx1)	
Primary coil	about 1.24 Ω
Heating filament	>1Ω
Secondary coil	about 87 Ω
With ohmmeter at maximum measuring range	•
Primary coil - earth	infinite
Heating filament - earth	infinite

High-voltage capacitor 8.5

Measure resistance:

With ohmmeter at maximum measuring range Briefly several ohms, then back to "infinite" between the connections

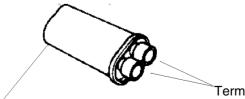
Abnormal result:

Target value:

Continuity or "infinite" from the very start



Caution: Before checking parts of the high-voltage circuit, always discharge the highvoltage capacitor.



Outer housing



Terminals



8.6 Diode

Checking the diode:	Normal result:
Create a circuit with 12 V DC and a 2.5 V lamp between the connections.	The lamp is either on or off, depending on the direction of current
	Abnormal result:

Lamp lights up too brightly: short circuit Lamp is never on: open circuit

8.7 Microwave leak test

This test is to be **performed** after every type of maintenance work on the door, closing device, microswitches and magnetron.

Test equipment

- 600 ml glass beaker
- Microwave measuring instrument

Test procedure

Pour 250 ml of water into the beaker and then place this in the centre of the microwave oven.

Switch on the microwave oven. Set it to 5 minutes at the maximum power level.

Hold the test sensor of the microwave measuring instrument vertical to the door edge of the appliance and slowly move it along.

The following areas must be tested for microwave leaks:

- Door and control section
- All ventilation slits
- All folded joints
- Weld on the underside
- Base plate

Procedure:

- Open the door just so much that the appliance is not switched off.
- The distance between the door and the sensor must not be less than 5 cm.
- The maximum admissible radiation leak is 4 mW / cm².

9. Measuring the output power of the magnetron

The following procedure provides information on the working conditions of the magnetron but it does not reproduce an accurate measurement of the microwave output power.

The test load is one litre (1000 ml) of water with a starting temperature of 15 - 24 °C in a container with a capacity of 1000 ml. The use of a different amount of a different material may lead to a distortion of the test results.

Proceed as follows to measure the output power:

- 1. Measure the voltage of the AC power and set the voltage to the correct value.
- 2. Remember that the test result is affected by the value of the supply voltage.
- 3. If the voltage is too high or too low, the test result is not accurate.
- 4. Place a container holding exactly 1000 ml of water at 15 24 °C in the centre of the microwave oven.
- 5. Use an accurate thermometer to measure the exact starting temperature (T1).
- 6. Run the appliance for 63 seconds at maximum power.
- 7. At the end of this period quickly stir the water and read off the final temperature of the water. The difference between the final temperature T2 and the initial temperature T1 represents the rise in temperature.

Result: The microwave output power of the appliance can be determined with the following formula:

 $P(W) = 70 \times (T2 - T1)$

If the output power is more than 15% of the nominal rating of the microwave oven, the high-voltage capacitor and possibly also the magnetron must be replaced.



10. Troubleshooting

Fault	Cause / Remedy
The appliance does not work.	• The door is not properly closed.
	 The plug is not properly inserted into the socket outlet.
	 There is no electricity in the socket outlet. (Check the house fuse).
Condensation on the cooking surface, inside the cavity or near the door.	• If food containing water is cooked, it is completely normal for the steam which forms inside the appliance to precipitate in the cavity, on the cooking surface or on the door frame as condensation.
Sparking in the appliance.	 In the modes with microwaves and in combination mode, do not operate the appliance without food.
	 In the above-mentioned modes do not use any metal containers, bags or packing with metal clips for cooking.
The food does not heat up and is not cooked through.	Select the correct cooking function or increase the cooking time.
	 The food was not completely thawed out before the cooking process.
The food burns.	Select the correct cooking function or reduce the cooking time.
The food is not cooked evenly.	• Stir the food during the cooking process.
	 Note that the food cooks better when it has been cut into pieces of the same size.
	• The turntable is blocked.

Note:

If the bulb for the interior lighting goes, the appliance can still be readily used. Contact an authorised customer service office to replace the bulb.

11. Wiring diagram and legend

AS	Break contact for ventilation duct
DM	Turntable motor
EC	Electronic check
F1F13	PC board terminals
FM	Magnetron fan
HVC	High-voltage capacitor
HVD	High-voltage diode
нут	High-voltage transformer
J1	Membrane switch contact
J2	Encoder contact
J3	NTC sensor contact
LOG	Microswitch
MGT	Magnetron
MON	Monitor microswitches
NF	Mains filter + thermal fuse
NTC	Temperature sensor
OL	Oven lighting
PDX	Protective diode
PRI	Microswitch, primary
RF1/RF2	Oven heating element
RG	Grill heating element
RL1	Relay for microwaves
RL2	Relay for circulating air heating element
RL3	Relay for grill heating element
RL4	Relay for auxiliary components
RL5	Relay for fan
TY1	Triac for recirculating air flap
TY2	Triac for turntable motor
SEC	Microswitch, secondary
TH. MGT	Magnetron temperature limiter
v	Hot air blower





