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# Service Manual

## Microwave oven AVM 512

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This documentation is only intended for qualified technicians who are aware of the respective safety regulations.

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Subject to modification

## Introduction safety

### INTRODUCTION

Before leaving the factory each oven is carefully checked.  
It must, however, be installed and used correctly.

Despite all the steps taken to make the oven safe, the safety is dependent on the correct installation and the fact the user understands how to use and maintain the oven.

The information in this section should be used as a reminder that the oven is safe and that anyone who uses it must first read the instructions for use in order to be able to use the oven correctly and obtain best results.

### SAFETY

To avoid injury to yourself and damage to the appliance always work to the following rules when servicing an oven.

Always disconnect the plug from the mains before starting work.

If there is no plug switch off the electric supply at the control box.

When you have finished servicing an oven before you reconnect it to the mains, make sure that:

- all the internal connections are correct
- the wires are insulated and not touching the door or the cabinet or anything sharp
- all the earth connections are electrically and mechanically sound
- do not modify or anyway interfere with the safety devices built-in to the oven

- make sure that each replacement part you use conforms to the manufacturer's specifications

Do not start a repair if you have any doubt as to your ability to complete it.

### CAUTION - MICROWAVE RADIATION

PERSONNEL SHOULD NOT BE EXPOSED TO THE MICROWAVE ENERGY WHICH MAY RADIATE FROM THE MAGNETRON, WAVEGUIDE OR ANTENNA IF THEY ARE IMPROPERLY USED OR CONNECTED. ALL INPUT AND OUTPUT MICROWAVE CONNECTIONS, WAVEGUIDES, FLANGES AND GASKETS MUST BE SECURE. NEVER OPERATE THE DEVICE WITHOUT A MICROWAVE ENERGY ABSORBING LOAD ATTACHED. NEVER LOOK INTO AN OPEN WAVEGUIDE OR ANTENNA WHILE THE DEVICE IS ENERGIZED. NEVER OPERATE AN OVEN WITH CABINET OFF WITHOUT MEASURING THE MICROWAVE LEAKAGE AROUND MAGNETRON AND VISIBLE MICROWAVE CONNECTIONS (WELDING JOINTS).

Do not operate the oven if the following conditions exist:

- the door does not close firmly against the door support because of the door being warped or the hinges damaged.
- The door trims or seals are damaged.
- If there is any visible damage to the oven.
- if the door does not close properly.

Avoid operating the oven if known components in the interlock system, oven door or microwave generating assembly are known defective. They must be replaced.

### WARNING - HIGH VOLTAGE

IT IS POSSIBLE TO COME IN CONTACT WITH LETHAL HIGH VOLTAGE WHEN WORKING WITH HV TRANSFORMER, HV CAPACITOR AND MAGNETRON. THEREFORE NEVER TRY TO MEASURE THE HIGH VOLTAGE. ALWAYS TAKE UTMOST CARE WHEN PERFORMING ELECTRIC MEASUREMENTS INSIDE THE OVEN.

**Technical data****Electrical**

Voltage	230	V
Frequency	50	Hz
Power consumption	1350	W

**Power**

Output power	850	W
Microwave frequency	2450	MHz

**Timer**

Electronic	99 min. 99 sec. 10-level microwave power level 4-stage programmed cooking
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## Text/Legend

# INSTALLATION REQUIREMENTS

## GENERAL

The oven should be placed on a flat and stable surface

Place the oven away from high temperature and steam sources.

Clearance of at least 5cm (2") on each side must be provided to allow adequate ventilation.

The microwave oven must be plugged directly to a 3-prong wall receptacle which is properly grounded.

The power source must be 220V 50Hz 8A single phase.

## GROUNDING INSTRUCTIONS

### IMPORTANT:

**DISCONNECT POWER BEFORE SERVICING, RECONNECT ALL GROUNDING DEVICES.**

All mechanical parts of this appliance capable of conducting electricity are grounded. In the event of an electrical short circuit, grounding reduces the risk of electric shock. This appliance is equipped with a cord having a grounding wire with a ground plug. The plug must be plugged into an outlet that is properly installed and grounded.

### WARNING:

**IMPROPER USE OF THE GROUNDING PLUG MAY RESULT IN ELECTRICAL SHOCK.**

If grounding wires, screws, straps, clips, nuts or washers used to complete a path to ground are removed for service, they must be returned to their original positions and properly fastened.

### GROUNDING SPECIFICATION:

Leakage current:	0.5 mA max.
Ground path resistance:	0.1 ohm max.

## OPERATIONAL DESCRIPTION

The following describe the basic operation of the appliance. Please refer to the schematic diagram when reading:

**Food is placed inside the oven and the door is closed. "Start" button is not pressed:**

Primary and secondary interlock switches are closed. Monitor switch is open. Door switch is closed. Relay 1 and relay 2 are both open.

**When the timer is set for a certain cooking time, cook power is set and the "Start" button pressed:**

Relay 1 is closed. AC power is supplied to the cavity lamp, fan motor and turntable motor. Depending on the power level setting, AC power is supplied to the HV transformer through relay 2 with the duty cycle corresponding to the power level setting. The display timer will start to count down.

**When the timer counts to Zero:**

Relay 1 and relay 2 will be and all AC power to the motor, lamp and HV transformer will be cut. The control board buzzer will give a "beep" sound to give an OFF signal.

**When the door is open during cooking:**

Primary and secondary interlock switch are opened. Door switch is opened. The monitor switch is closed. All AC power will be cut.

**Pure microwave cooking:**

10 power level settings are available for pure microwave cooking. This can be adjusted using the power switch on the touch foil. Power level control is achieved by switching the magnetron ON and OFF periodically. The oven works on 15 second cycle and the following indicate the correct ON/OFF timing.

Power setting	ON time
10(highest)	100%
9	approx 93%
8	approx 87%
7	approx 80%
6	approx 67%
5	approx 60%
4	approx 53%
3	approx 40%
2	approx 33%
1 (lowest)	approx 27%

## MICROWAVE AND LEAKAGE TESTS

### MICROWAVE TEST

The following is a simple test to check if the appliance is generating microwave energy. This test is not intended to be an accurate test. An accurate measurement of output power must be performed under strict control following the IEC standard. In field service, accurate measurement of output power is usually not required and necessary.

Prepare a glass beaker with a diameter of approx. 190 mm round. with a max. 3 mm wall thickness.

Fill the beaker with exact 1 liter of cold water with an temperature of 10-12 °C measure the temperature of the water before placing into the oven.

Start the oven for 1 min. on full power (only microwave) check the time by your writwatch after the magnetron takes full power (Ampere meter).

The unit should be heated up 2-3 times before the test starts.

Check the water temperature under stirring the water and calculate the difference to the start temperature.  
 $^{\circ}\text{C} \times 70(\text{multiplier}) = \text{watt}$

Please take under consideration that always the measured power output is 15-20% lower than the rating plate shows. 850 W = 720-680 W if the measured output is below this rate please repeat the measurement.

### LEAKAGE TEST

### TESTING EQUIPMENT

0.5l beaker.

Microwave tester of high quality.

## TESTING PROCEDURE

Place 0.25l of water into the beaker and place it in the center of the oven.

Turn on the microwave oven by setting the unit on full power.

Hold the probe of the microwave tester to the surface of the oven and scan it at the rate of 2.5 cm per sec.

Test the following areas for microwave leakage:

- round and across the door glass and control panel.
- all ventilation openings.

The leakage should never exceed 5 mW/cm<sup>2</sup>.

Record all data.

## OVEN LEAKAGE REPAIR

If leakage figure is found above 5 mW/cm<sup>2</sup>.

**The unit has to be set out of function, until the unit is repaired and finally saefty tested.  
Service engineer should notify the Service Management immediately.**

## TROUBLE SHOOTING GUIDE

### CAUTION AND IMPORTANT

Before disassembling the oven, the oven power must be turned off. Remove the power plug of the oven from the outlet and wait for at least 3 minutes.

When disassembling, service personnel should remove their watches and metal chains from their hands. Never touch the high voltage components and wire.

Before checking or replacing, discharge the high voltage capacitor to oven chassis grounded with an insulated wire. Make sure that the wire is grounded to chassis side before short circuiting the capacitor terminal.

Do not measure high voltage with a common voltmeter.

## QUICK SERVICE REFERENCES

PROBLEM	POINTS TO CHECK
Cavity lamp does not light, but other electrical components (e.g. turntable) are working.	Lamp burnt. Bad contact between lamp and lamp socket.
Cavity lamp does not light, all other electrical components also do not work.	Power plug not in good connection with the socket. No power supply. Fuse blown. Bad contact between fuse and fuse holder/clip. Loose door hinge, door poorly adjusted, interlock poorly adjusted; causing fuse to be blown. Short circuit within electrical circuit. Lamp filament short, HV transformer short, all causing fuse blown. Bad contact in contacts or terminals of timer switch, primary and secondary interlock switch. HV diode break down.
Oven seems working, food does not cook	Defective magnetron (filament broken, filament short to ground etc.). Ground wire of HV transformer broken. Filament wire short to ground. Filament wire broken. Bad contact in magnetron terminals. Defective control boards. HV diode break down, giving a hum noise.
Oven cooks for a short while and stop.	Cooling fan jammed. Cooling fan motor open circuit. Defective cooling fan control relay.
Turntable does not turn.	Defective turntable motor. Turntable shaft deformed.
User circuit breaker activates.	High leakage in electrical components (mostly motor).

## MAJOR COMPONENT TESTS

### HV TRANSFORMER

Remove lead wire.  
Measure the resistance of the winding using an ohm meter  
Primary winding 3 ohm (approx.)  
Secondary winding 100 ohm (approx.)  
Filament winding 0 ohm (approx.)

### HV CAPACITOR

Remove lead wire  
Measure the resistance using an ohm meter set to R\*1000  
Terminal to terminal should momentarily indicates several ohms but gradually increases to infinite.  
Terminal to case should show infinite.

### HV DIODE

Remove lead wire.  
Measure forward resistance, normal diode show continuity.  
Measure reverse resistance, normal diode show infinite resistance.

### MAGNETRON

Remove lead wire.  
Install the magnetron gasket in the correct position. Check that the gasket is in good condition.  
Measure the resistance of the filament terminals. Normal magnetron should be less than 1 ohm.  
Measure the resistance between the filament terminal to chassis. Normal magnetron should be infinite.

### INTERLOCK SWITCH SYSTEM

**IMPORTANT: The installation of the interlock and monitor switches is required by Federal regulations.**

Oven door status	Primary switch	Secondary switch	Monitor switch
Open	Open	Open	Close
Close	Close	Close	Open

The interlock and monitor switches positions are not service adjustable. If the screws on the hinges of the oven door are loosen, the door may not be in a correct position. In this case, the interlock switches cannot be operated by the latch pins of the door when the door is shut. To repair the door, remount the door and fasten the screws on the door hinges.

The monitor switch is provided to monitor the operation of the primary interlock switch. If the primary switch fails to operate when the door is open, the monitor switch will form a short circuit across the supply and the fuse in the oven will blow. Electric arc may form across the switch contacts of the primary interlock switch, the secondary switch and the monitor switch. The switches may then be damaged. If the fuse is blown due to the failure of the primary interlock, repair the failed mechanical parts and replace all the interlock switches.

### IMPORTANT

After replacement of any part of the interlock and monitor circuit:  
Check if the microswitches are turned ON and OFF by the latches as specified in the table above.  
Apply sealant to the screws and nuts of the door hinges.  
Check microwave leakage.  
Check if the oven will turn off instantly when the door button is pushed to the position where the door latches leave the interlock switches.

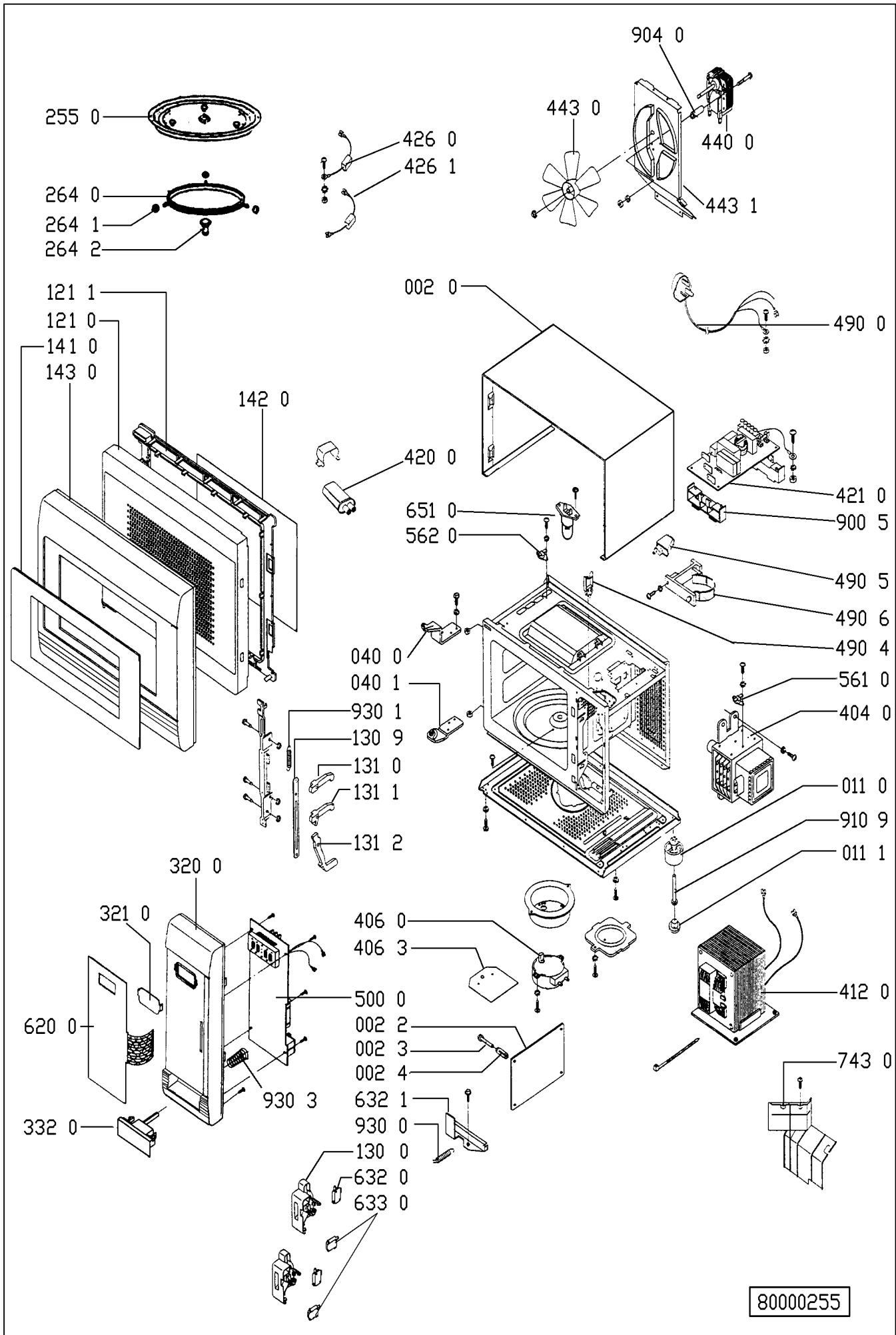


## Spare part list

**Model** AVM 512  
**Service No.** 853851262291  
**Version** 853851262291

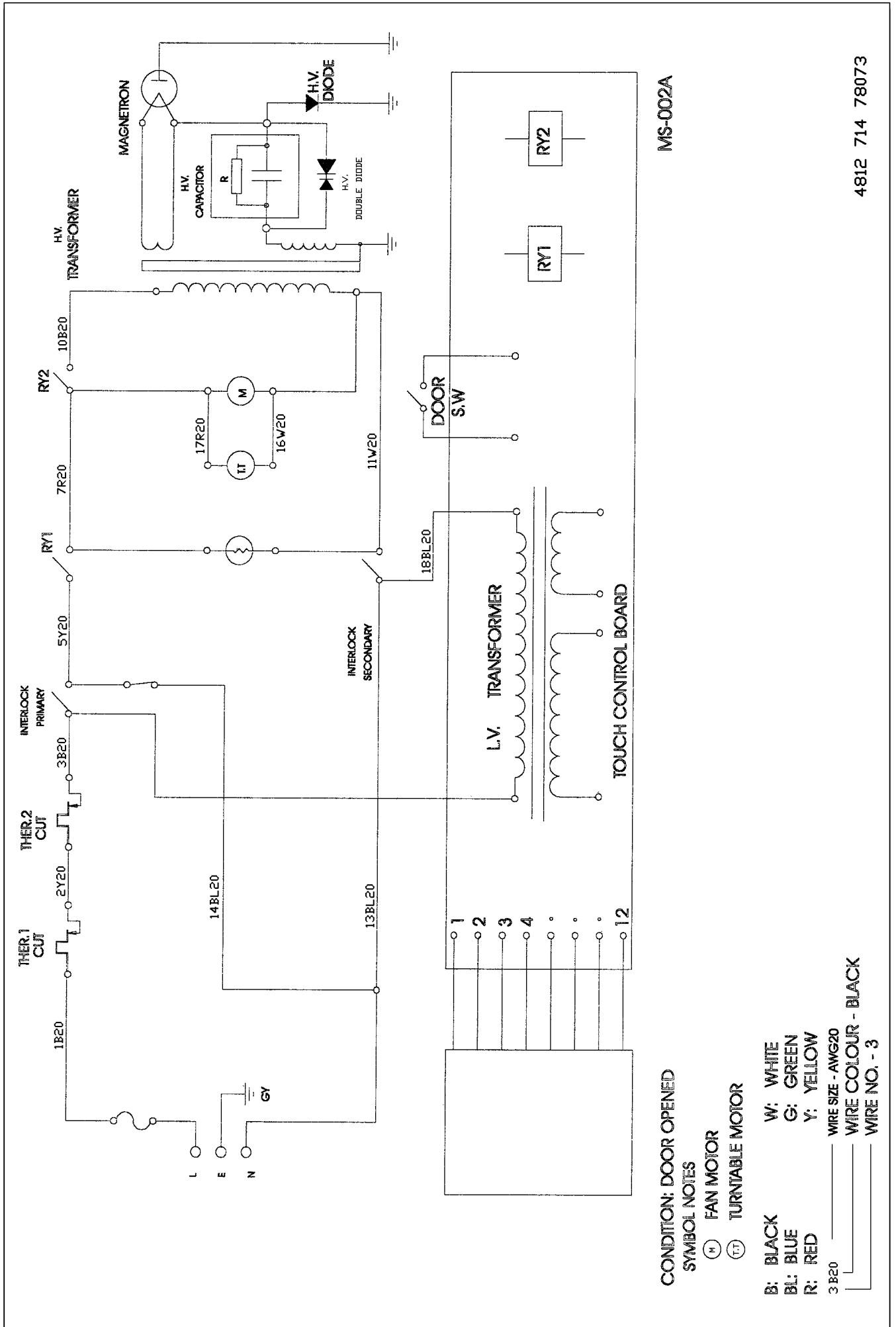
Pos. No.	12NC Code	Description	from	to
002 0	4819 902 00561	Lid		
002 2	4819 902 00568	Plate		
002 3	4819 902 00571	Pin		
002 4	4819 902 00569	Bushing		
011 0	4819 902 00694	Foot		
011 1	4819 902 00566	Cap		
040 0	4819 902 00445	Hinge,upper		
040 1	4819 902 00444	Hinge,lower		
121 0	4819 902 00326	Door,inner		
121 1	4819 902 00599	Door frame inner		
130 0	4819 902 00579	Holder		
130 9	4819 902 00597	Hook connector		
131 0	4819 902 00596	Lockingmechn. upper		
131 1	4819 902 00595	Lockingmechn. lower		
131 2	4819 902 00594	Pivot door pin		
141 0	4819 902 00484	Oven glass outer		
142 0	4819 450 58454	Glass inner (PE plate)		
143 0	4819 459 48923	Door frame		
255 0	4819 902 00654	Turntable glass		
264 0	4819 902 00529	Ring turn table		
264 1	4819 902 00582	Wheel		
264 2	4819 902 00528	Shaft		
320 0	4819 902 00683	Control panel		
321 0	4819 902 00644	Display glass		
332 0	4819 902 00557	Button door		
404 0	4819 902 00614	Magnetron		
406 0	4819 902 00695	Motor turn table		
406 3	4819 902 00567	Gasket		
412 0	4819 902 00556	Transformer HV		
420 0	4819 902 00583	Capacitor HV 0.95UF		
421 0	4819 902 00679	Filter		
426 0	4819 218 38038	Diode HV		
426 1	4819 902 00574	Diode double way		
440 0	4819 902 00696	Propeller,motor		
443 0	4819 902 00592	Fan wheel		
443 1	4819 902 00591	Support fan		
490 0	4819 902 00298	Cable,mains SAA Plug		
490 4	4819 902 00563	Clip wire sadle		
490 5	4819 902 00604	Strain relief		
490 6	4819 404 79411	Bracket for cable		
500 0	4819 214 78684	Control unit		
561 0	4819 902 00586	Thermostat magnetron		
562 0	4819 902 00636	Thermostat		
620 0	4819 902 00682	Switch plate		
632 0	4819 902 00609	Switch security		
632 1	4819 902 00447	Lever		
633 0	4819 902 00611	Switch		
651 0	4819 134 28051	Lamp		
743 0	4819 902 00575	Air guide		
900 5	4819 902 00585	Holder filter board		
904 0	4819 902 00589	Sleeve		
910 9	4819 902 00565	Pin		
930 0	4819 902 00581	Spring,tension		
930 1	4819 902 00598	Spring		
930 3	4819 902 00601	Spring,compres.		

**Exploded view**



80000255

**Wiring diagram**



MS-002A

CONDITION: DOOR OPENED

SYMBOL NOTES

- (M) FAN MOTOR
- (TT) TURNTABLE MOTOR

- B: BLACK
- BL: BLUE
- R: RED
- W: WHITE
- G: GREEN
- Y: YELLOW
- 3 B20 \_\_\_\_\_ WIRE SIZE - AWG20
- \_\_\_\_\_ WIRE COLOUR - BLACK
- \_\_\_\_\_ WIRE NO. - 3

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