Model

MT 263/WH

Exploded view

Wiring diagram



Service Manual

Microwave oven MT 263/WH

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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

Europe 230 V, 50 Hz

230 - 240 V, 50 Hz (UK)

East Europe 220 V, 50 Hz
Australia 240 V, 50 Hz
Hong Kong 220 V, 50 Hz
USA 120 V, 60 Hz
Canada 120 V, 50 Hz

Microwave characteristics

Output power 950 W frequency 2450 Mhz

Grill

900 W

Timer

Electronic, Range 5 s to 90 min

Weight

Gross 23,5 kg

Dimensions

Outer dimensions 320 x 530 x 450 mm Cavity dimensions 205 x 330 x 370mm

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Text/Legend



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Description of the Display Symbols

- a) The Food Class Bar indicates the food class and is lit when auto defrost, auto crisp, auto crisp reheat or auto crisp cook is selected.
- b) "AUTO" is lit when auto defrost, auto reheat, beverage or auto crisp is selected.
- c) "SENSE" or "boil" is displayed when an auto function is started.
 - "HEAT" or "COOK" is displayed when Auto Crisp Reheat or Auto Crisp Cook.
 - "JET" is displayed when using maximum MW power.
- d) Personal preference for the auto functions is indicated by "-2", "-","+", "+2". When no personal preference is chosen, all are turned off.
- e) The defrost symbol is lit during manual or auto defrost.
- f) The beverage symbol is lit when Beverage is selected.
- g) The reheat symbol is lit when Auto Reheat, Auto Crisp Reheat, Auto Crisp Cook or Auto Boil is selected.
- h) The grill symbol is lit when a function using the grill element is selected. The lower part of the symbol blinks during cooking.
- i) The MW symbols are lit when a function using microwaves is selected.
- j) The fan symbol indicates that the convection function is in operation.
- k) The pan symbol is lit when a crisp function is selected, indicating that the crisp pan must be used.
- I) The plate symbol is lit when a cooking function is selected, indicating whether the turn table is rotating or not. It flashes

rapidly if the turntable is switched off when it must be rotating.

- m) The Power-/Temp-/Process bar indicates:
- · MW power. Jet is indicated by a rolling bar.
- the temperature in convection heating.
- how far the process has advanced when using the auto functions.

Real time clock

Time is set by pressing the CLOCK button. Set the hours with the timer knob. Press the CLOCK button again and set the minutes with the timer knob. Finally, press the CLOCK button again to clear the seconds and start the clock.

Cooking time

The cooking time is set with the timer knob. The maximum cooking time that can be set is 90 minutes.

Microwave power

To adjust the microwave power, press the POWER buttons. The current power level is displayed in Watts for 2 seconds. The power level is stepped with the POWER buttons, while the power level is displayed. If POWER is pressed when the oven is in stand by, the power level is set to 750 W. The oven is started with the START button.

JET

If the oven is in stand by and the START button is pressed, cooking is started immediately at full power. If the oven is already cooking, the timer is incremented 30 seconds each time the button is pressed, but the power setting is not affected.

Auto Defrost (El Crisp and Crisp Convection only)

Press the AUTO DEFROST button until the wanted Food Class is selected. See Table . Turn the rotacoder until the shown weight corresponds as close as possible to the weight of the food. Press the START button. The time needed will be calculated and the oven starts.

Note: The turntable must be rotating when using this function.

Table: Food Classes for Auto Crisp

1	Auto Defrost Meat	50 g - 2 kg
2	Auto Defrost Fish	50 g - 2 kg
3	Auto Defrost Bread	50 g - 2 kg
4	Auto Defrost Vegetables	50 g - 2 kg
5	Auto Defrost Chicken/Chicken parts	50 g - 3 kg

Auto Crisp (El Crisp and Crisp Convection only)

Press the **AUTO CRISP** button until the wanted Food Class is selected. See Table . Turn the rotacoder until the shown weight corresponds as close as possible to the weight of the food. Press the START button. The time needed will be calculated and the oven starts.

Note: The turntable must be rotating when using this function.

Table: Food Classes for Auto Crisp

1	Auto Crisp Pizza	200 g - 600 g
2	Auto Crisp Pie/Quiche	200 g - 600 g
3	Auto Crisp Chicken Parts	200 g - 600 g
4	Auto Crisp Potato Products	200 g - 600 g

Crisp

Select crisp by pressing the **CRISP** button. Set the cooking time with timer knob and start with the **START** button.

NOTE: The turntable must be rotating when using this function.

Grill

Use the GRILL button to select grill operation. Set the cooking time with timer knob and start with the START button. The grill can be toggled on/off with the Grill button.

NOTE: - When the Crisp or Grill function is selected, the grill indicator is lit. When cooking is started, the lower grill indicator blinks.

NOTE 2: - The turntable must be rotating when using GRILL only. Grill/MW-combination is allowed with nonrotating turntable however.

Forced Air (El Convection and Fuzzy Crisp Convection only)

Press the Forced air button repeatedly until the desired temperature (in C) is displayed.

If the Forced air button is pressed again, the temperature will change to the next level. If "0 C" is selected the Forced air function will be switched off. Temperature is also displayed in the bargraph. A flashing segment indicates the set temperature and the steady segments indicate the real oven temperature. When all the lit segments in the bargraph are steady the set temperature is reached. One beep/ping indicates this. Forced air can be used alone or in combination with microwaves (max 650W. For CH/DK and some other countries there are some strict limitations. See technical manual for details).

SERVICE

Quick Heat (El Convection and Fuzzy Crisp Convection only)

The Quick heat function is used to warm up the empty oven to a wanted temperature as fast as possible. (Both the grill and the forced air are switched on simultaneously).

Press the Quick heat button repeatedly until the desired temperature (in C) is displayed.

Press the Start button (no cooking time shall be selected). The oven starts and the set temperature is displayed. When the set temperature is reached, the oven beeps three times and automatically switches over to Forced air (see display symbols).

(If you don't open the door the temperature will be kept for ten minutes, the oven beeps every minute and then it switches off). Place the food in the oven, select time and press the **START** button.

Turn Table Stop

The Turn Table Stop switch is used to select between rotating and non rotating turntable. Some functions require that the turntable is rotating however.

Stop

The STOP button aborts any operation started, and returns the oven to standby. If the door is left open one extra press of the Stop button will switch of the light.

Microwave Power Control

Power table and timings

The peak microwave power is specified in the technical specification of the oven. To obtain lower power levels, the magnetron is switched on and off. The cycle time is 20 seconds. The magnetron is on during a portion of the cycle time, then it is switched off until the beginning of the next cycle. The on-time varies depending on which power level has been selected.

Power table 50 Hz

Indicated power (W)	Cycle Time (s)	On time from contr. system (s)	Start delay time (s)	Effecive on time (s)
90	20.5	3.5	1.5	2
160	20.5	5	1.5	3.5
350	20.5	9	1.4	7.6
500	20.5	12.1	1.3	10.8
650	20.5	15.3	1.2	14.1
750	20.5	17.2	1	16.2
850	20.5	18.9	0.5	18.4

Power table 60 Hz

Indicated power (W)	Cycle Time (s)	On time from contr. system (s)	Start delay time (s)	Effecive on time (s)
90	23	3.7	1.5	2.2
160	23	5.4	1.5	3.9
350	23	9.9	1.4	8.5
500	23	13.4	1.3	12.1
650	23	17	1.2	15.8
750	23	19.2	1	18.2
850	23	21.1	0.5	20.6

Circuit description

Transformer and Rectifier

El Crisp:

The voltages necessary to the control system are taken from transformer 5101. It has two secondary windings, one 2.4V (RMS.) with a centre-tap, to drive the filament of the display, and one 25V (RMS.) winding to supply the rest of the circuits. There is a thermal overload protection included in the transformer, to avoid insulation breakdown in the case of short circuits on the secondary side. The primary and secondary circuits are completely isolated from each other. The rectifier consists of diodes 6110, 6111, 6112 and 6113. The rectified voltage is smoothed by capacitor 2210.

Fuzzy Crisp, Conv, Fuzzy Crisp Conv:

The voltages necessary to the control system are taken from transformer 5101. It has two secondary windings, one 2.5V winding to drive the filament of the display, and one 20V (RMS) winding to supply the rest of the circuits. There is a thermal overload protection included in the transformer, to avoid insulation breakdown in the case of short circuits on the secondary side. The primary and secondary circuits are completely isolated from each other.

The voltage is doubled in the circuit consisting of the diodes 6110 and 6112 and the capacitors 2101 and 2110.

Microcomputer

The oven is controlled by a single chip microcomputer. It contains RAM and ROM, timer and a clock generator. The input- and output ports are used to control the display and relays, to read the keys and the rotary encoder. and to measure the signals from the weight, humidity and temperature sensors. The clock generator uses an external ceramic resonator to keep an accurate frequency.

VDD and micro processor reset

The voltage between VDD and VSS is regulated by zener diode 6222 and the base-emitter voltage of the transistor 7222. At start-up the transistor is not conducting, so the reset-pin of 7000 is held low by the resistor 3223. When the voltage between VDD and VSS has increased to about 4.0 Volts, the base current of 7222 is high enough to make the transistor conduct, and the reset-pin goes high.

When port P13 is set low the reset level is approximately 3 V. This function is used to avoid reset in some parts of the program execution.

Current to the VDD is feed from either the F/L relay (4901) when this is activated or from transistor 7223 when the relay is turned off.

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VKK, Display and Buzzer.

El Crisp:

Zener diode 6126 and transistor 7125 generates a stabilised voltage of approximately -22V DC.

This voltage supplies the midpoint of the transformer filament winding and the buzzer.

VKK voltages is supplied by a voltage divider (3127 and 3128) and emitter follower 7128.

Fuzzy Crisp, Convection and Fuzzy Crisp Convection:

The transistors 7172 and 7171, and the zener diode 6172 stabilise the VKK and buzzer supply voltage to approximately -34 V.

The midpoint of the transformer filament winding is feed via zener diode 6171.

Relay Driver Circuits

To prevent the relays from being activated if the processor is hung up, the relay driver is ac coupled. This means that a pulse train on output P20 is necessary to activate the relays.

When any relay shall be activated the output of P20 will deliver pulses t low = 229 us and t high = 15 us.

Transistor 7232 and 7134 is switched on when P20 goes low and they are switched of when P20 goes high. Capacitor 2232 and resistor 3232 forms an integrator. The voltage over capacitor 2240 is equal to the average voltage over the relay coils. When transistor 7134 is switched of the current in the relay coils continue to flow through the diodes 6133.. The negative pole of 2232 goes to plus 0,6 V. If the voltage over 2232 exceeds the zenervoltage of 6236 the zener diode will conduct and when P20 goes low and the transistors 7232 and 7134 can not switch on.

Transistors 7131, 7130, 7161, 7163 is used to switch on MW, Grill, FC heat and the FC fan relays. The El Crisp does not contain the FC relays.

The F/L relay has to be on to enable any other relay to be activated.

When the door is open and the fan supply is interrupted by the secondary door switch, the frequency of the pulse train on P20 is 340 Hz when the F/L relay shall be turned on. the dutycycle is 75 % (low) on the El Crisp control and 58 % (low) on Fuzzy Crisp, Convection and Fuzzy Crisp Convection.

50 Hz Sensing Circuit

The 50Hz-signal is taken from the secondary winding of the mains transformer, before the rectifier. The voltage is divided by 3210 and 3211 before it is fed to transistor 7211. Port G13/R32 of the micro processor is normally high (Vss), except for a short moment when the voltage on the collector of 7211 is sensed once every ms.

Feedback Circuit

The feed back circuit consists of 3101-3106, 6105 and 7101. When a current flows through the LED of 7101 and the output pin 4 is high and turns off transistor 7102. Port R61 of the micro processor is normally kept low (Vss), except for a short moment when the voltage on 2201 is sensed. If 7102 is off the micro processor will read a "zero" and when 7202 is on the micro processor will read a "one". The RC time constant 2201 * 3201 is only 5,6 us and will not influence the timing of the feedback signal.

Keyboard

All keyboard switches are connected in a matrix with four rows and four columns. The columns are pulled high, one at a time, during scanning. The key scanning is combined with the display drive circuitry.

If any key is pressed, one of the processor inputs will be high when the corresponding output is high. The inputs K00-K03 have internal pull down resistors.

When OTP is used external pull down resistors must be used (3285, 3286, 3287 and 3288).

Display

The display is of the vacuum fluorescent type. It is driven directly from the microprocessor high voltage outputs. These are provided with internal pull down resistors. The display has a matrix of segments and grids. The grids are continuously scanned by the processor, except for a pause during key scanning. Each grid is held high for a moment, then there is a short blanking period before the next grid is activated. The segments are pulled high when they should be lit during scanning.

Buzzer with ping

By controlling the supply voltage to the Buzzer the volume can be controlled. This is used to form the clock-like PING function. Transistor 7152 feeds the buzzer with the voltage over the capacitor 2152. The resistor 3152 discharges the capacitor logarithmically. This gives the clock like decay effect. The transistor 7153 loads the capacitor again at request from the micro processor.

The buzzer (4625) voltage is switched by transistor 7251. The base of 7251 is fed with a 2048 Hz square wave from the micro processor.

Convection Temperature Sensor Interface (Crisp Convection and Fuzzy Crisp Convection only)

This interface works in the same way as the fuzzy temperature sensor interface.

Error Codes

Certain fault conditions are indicated by an error code. The following codes are implemented:

- ERR 0 Convection temperature sensor fault Not connected or short circuit
- ERR 1 Short circuit in the MW relay
- ERR 6 Weight sensor calibration has not been performed
- ERR 7 Humidity sensor is defect or has not been connected
- ERR 8 Impossible to write to E PROMERR 9Options have not been set
- ERR A No wheel detected on weight sensor
- ERR B No pulses from the weight sensor or <4267 Hz
- ERR C Fuzzy temperature sensor fault. Not 19-41 C°

Test Mode

The microprocessor program contains a test mode, in order to simplify checking and trouble shooting of the control system. To enter test mode: Keep the STOP button pressed, open S1 or open the door of the oven and force a reset of the microprocessor. This can be done by short circuiting the base and emitter of 7202, or by disconnecting the power at least two seconds.

To exit test mode press the STOP button.

Test Mode Entry

Action Reaction

Open the door

Release the TT-stop switch. This must be done only if the power has been disconnected for more than 30 sec.

Press **STOP** and, at the same time, connect power All segments on the display are lit.

Close the door

The display will darken for half a second while the Running mask number is output to the display pins.

Mask number and Options will show on the display in

the format MMMOO (Ex: 1 02).

When test mode is entered, all segments in the display will be lit. Close the door. The Running mask number is output to the display pins for 500 milliseconds. Then the mask number and the option setting will be indicated in the following format:

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MMMO201

Where MMM is the mask number and O1 and O2 are option 1 and option 2.

When the keys are affected, display segments and relays etc. are switched on and off according to table 2. If no key has been touched for 30 seconds the oven leaves test mode.

When test mode is entered the following tests are initiated:

(Crisp Convection and Fuzzy Convection only)

Convection temperature reading. This takes approximately 5 seconds, then the temperature value is available when any of FC or QH keys is pressed.

Test Mode Functions

The following table is valid for processor 4619 678 4333x

Key Crisp + Conv.	Digit	F/L relay 1901	Grill relay 1904	FC heat 1905	FC fan 1907	Buzzer	
Clock 4251	5 G	on	off	off	off	off	Toggles Buzzer com- munication on/off
AUT Dfr 4240	4 G	on	off	off	off	off	
AUT Cri 4243	1 G	on	off	off	off	off	
Crisp 4241	2 G	on	on	off	off	off	
Grill 4242	3 G	on	on	off	off	off	
Forced Conv. 4252	Temp	on	off	on	on	off	Convection temp measurement
Quick Heat 4252	Temp	on	on	on	on	off	Convection temp measurement
Power - 4230	2 G	on	off	off	off	off	
Power 4231	3 G	on	off	off	off	off	
Power + 4232	4 G	on	off	off	off	off	
Start 4220	1 G	off	off	off	off	off	
Stop 4222	off	off	off	off	off	off	Exit test mode

Switch	Digit	F/L relay 1901	Grill relay 1904	FC heat 1905	FC fan 1907	Buzzer	
4220	UE CAL S	off	off			off	If buzzer is on: Start weighing, "UE" If Buzzer is off: Start calibration, "CAL" If calibration is finished, store calibration factor, "S"
4222	off	off	off			off	Exit test mode
4252	Cal Fact	on	off			off on if fault	Display calibration factor. If no pulses display Errb
4232	Balance Err 7	on	off			off on if fault	Display humidity sensor balance. The value should be from 129 to 767." Err7" is displayed if no sensor is connected
4231	Fuzzy Temp	on	on			off on if fault	Displayed of fuzzy temp <17 or fuzzy temp >29 then display ErrC

Spare part list

 Model
 MT 263/WH

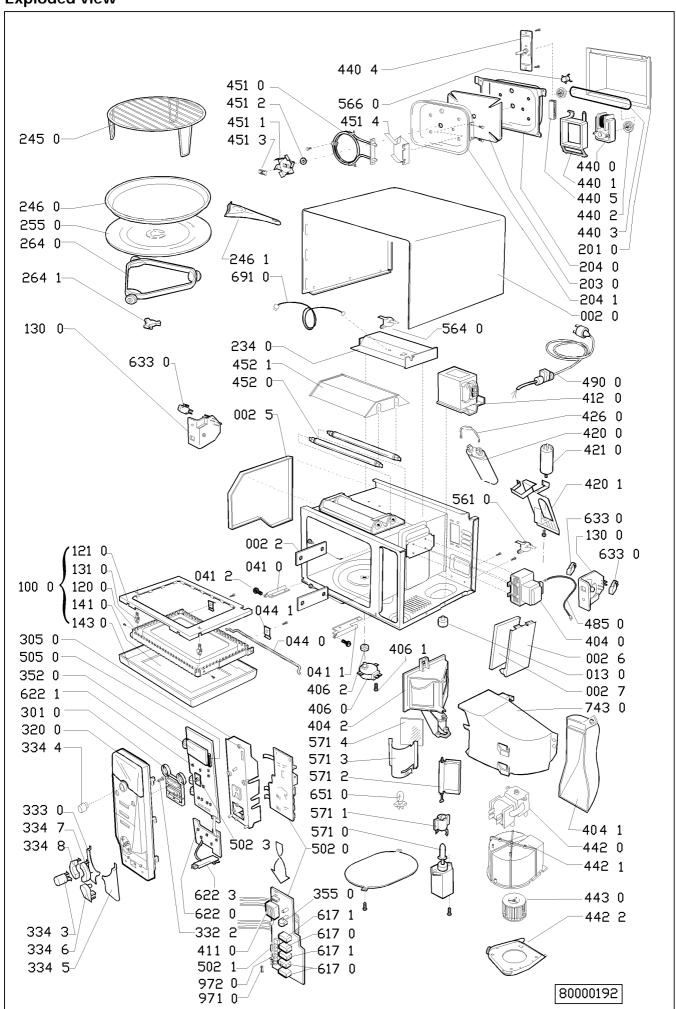
 Service No.
 853826353291

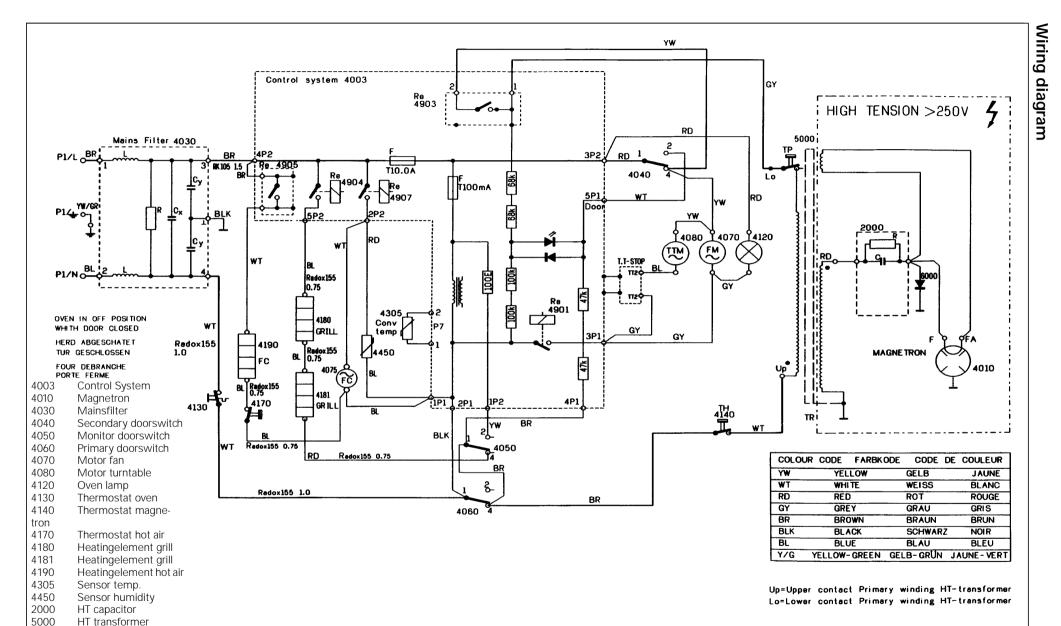
 Version
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Version		853826353291
Pos. No.	12NC Code	Description
002 0 002 2 002 5 002 6 002 7	4819 442 38912 4819 442 38914 4819 325 28031 4819 325 28032 4819 325 28033	Cabinet Cover Mica plate upper Insulator plate left Insulator plate right Insulator right
013 0 041 0 041 1 041 2 044 0	4819 462 79423 4819 417 19547 4819 417 19548 4819 535 98354 4819 492 48168	Foot Hinge left Hinge right Shaft Spring
044 1 100 0 120 0 121 0 130 0	4819 404 79353 4819 442 38973 4819 442 38917 4819 459 48832 4819 404 79332	Support Door compl. WH Door,inner Frame door inner Unit,pushbutton for doorswitch
131 0 141 0 143 0 201 0 203 0	4819 535 38153 4819 450 58203 4819 459 48847 4819 442 38974 4819 325 28029	Lock door Oven glass Frame outer Panel, rear Insulator
204 0 204 1 234 0 245 0 246 0	4819 462 58337 4819 418 79676 4819 325 18122 4819 458 68122 4819 310 18538	Heat shield Separator set Plate / Holder Grid Crisp plate VIP27
246 1 255 0 264 0 264 1 301 0	4819 498 78193 4819 466 78408 4819 535 79159 4819 462 38767 4819 276 38355	Handle crisp Turntable Rail Crosspiece Switch,pushbut.
305 0 320 0 332 2 333 0 334 3	4819 404 79333 4819 453 59159 4819 410 28924 4819 410 28932 4819 410 28929	Holder Panel,control WH Button clockset Button start Button power
334 4 334 5 334 6 334 7 334 8	4819 412 58619 4819 410 28934 4819 410 28936 4819 410 28927 4819 410 28925	Knob timer Button stop Button tt-stop Button plus Button minus
352 0 355 0 404 0 404 1 404 2	4819 130 38083 4819 280 18029 4819 131 58019 4819 462 38875 4819 462 38874	Display Buzzer Magnetron Conveyor Air guide
406 0 406 1 406 2 411 0 412 0	4819 361 18381 4819 502 18372 4819 532 68686 4819 148 68081 4819 145 78208	Motor TT Screw for TT-Motor Gasket ring Transformer Transformer,HT 240 V
420 0 420 1 421 0 426 0 440 0	4819 121 38012 4819 404 78839 4819 121 18162 4819 121 18265 4819 361 18439	Capacitor HT 240V Bracket capacitor Filter,mains Diode HV Motor

Pos. No. 12NC Code	Description
440 1 4819 361 18438 440 2 4819 358 18151 440 3 4819 522 38025 440 4 4819 520 18035 440 5 4819 529 18121	Holder motor Belt pulley FC-Wheel Belt ,drive Bearing,ball Shock absorber
442 0 4819 361 18361 442 1 4819 462 38876 442 2 4819 462 38877 443 0 4819 515 28224 451 0 4819 259 28908	Motor Blower Cap fan Inlet fan Fan wheel Heating element
451 1 4819 515 28282 451 2 4819 532 28256 451 3 4819 492 68802 451 4 4819 462 58336 452 0 4819 259 98558	Fan wheel Washer for motor Spring Guard heating element Infraredelement
452 1 4819 325 18123 485 0 4819 320 28025 490 0 4819 321 18262 502 0 4819 214 78649 502 1 4819 113 88001	
502 3 4819 101 48142 505 0 4819 209 88058 561 0 4819 282 48281 564 0 4819 282 48275 566 0 4819 282 48247	Potentiometer Microprocessor Thermostat for magnetron 125 C Thermostat 165C Thermostat 145 C
571 0 4819 360 58589 571 1 4819 404 79354 571 2 4819 442 78326 571 3 4819 462 58335 571 4 4819 450 58233	Valve Holder Flap Reflector Glass lamp
617 0 4819 280 68363 617 1 4819 280 68321 622 0 4819 276 18349 622 1 4819 276 18273 622 3 4819 271 38256	Switch VKS
633 0 4819 276 18336 651 0 4819 134 28029 691 0 4819 210 78081 743 0 4819 442 78327 971 0 4819 252 28125	Switch, door Lamp cavity 240V - 25W Sensor temp. Conveyor Fuse 10A
972 0 4819 252 28121	Fuse T100mA

Exploded view





6000

HT diode

8538 263 20291

