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	Built-in ovens and Cookers	
<p>© ELECTROLUX ZANUSSI S.p.A. Corso Lino Zanussi, 30 I - 33080 PORCIA /PN (ITALY) Tel +39 0434 394850 Fax +39 0434 394096</p> <p>SOI</p> <p>Edition: 05.2008 Rev. 01</p>	<p>GENERAL MANUAL FOR SELF-CLEANING OVENS</p>	
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1 - INTRODUCTION

1.1 - PURPOSE OF THIS MANUAL

This manual contains a general introduction to the oven cleaning system called "pyrolysis". This new self-cleaning system includes hardware and software that differs depending on the model involved (For example, on the KRONOS oven, on the SOEC 0 oven, on the RHEA oven, on free standing models, etc.). The manual contain theoretical and general information. Information on specific functions and characteristics will be contained in specific manuals that will be released soon.

2 - PYROLYSIS

Pyrolysis is the process that is used in self-cleaning ovens. Self-cleaning is made possible by special enamelling inside the muffle combined with temperatures that reach approx. 500°C, which pulverizes the deposits of fat and sugars that normally soil the walls of ovens.

2.1 - SAFETY IN THE SELF-CLEANING MODE

During the self-cleaning process, the oven door is locked mechanically to prevent it from being opened with the oven at 500°C, which would cause the fats to catch fire due to the presence of oxygen. During the process, it is normal for small, brief flames to erupt inside the muffle. These flames die out immediately due to the lack of oxygen

3 - THE SELF-CLEANING OVEN

3.1 - DIFFERENCES AS COMPARED WITH A NORMAL OVEN

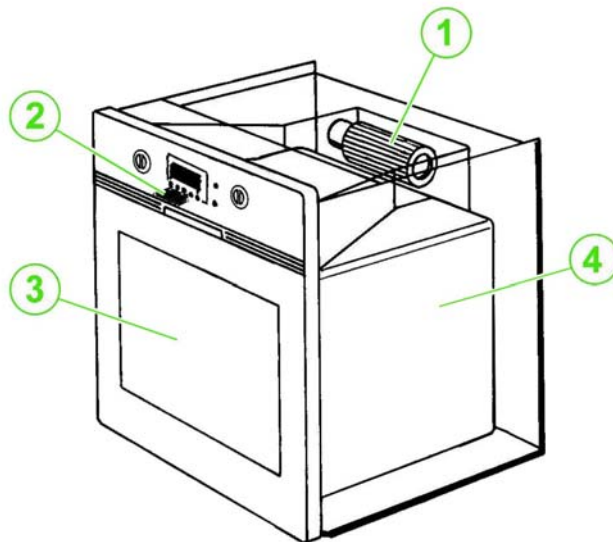
An oven equipped with a self-cleaning feature is different from a normal oven in that it has a door lock system that is activated during the cleaning cycle. Also, since temperatures in the muffle reach 500°C, the oven is properly insulated and the door is specially designed to keep the outside of the oven cool enough to protect surrounding cabinetry during cleaning.

In short, a self-cleaning oven has:

- A system that locks the door, which is controlled by a timer and a thermostat
- Improved insulation to keep the outside of the oven at an acceptably low temperature despite the higher temperature inside the oven
- A fan with a higher flow rate for better cooling
- An oven door equipped with a greater number of windows to improve heat dispersion, given the higher internal temperature

Fig. 1

- 1 - NEW TWO-SPEED FAN
- 2 - SYSTEM THAT LOCKS DOOR DURING SELF-CLEANING
- 3 - NEW DOOR WITH MORE WINDOWS
- 4 - IMPROVED INSULATION AROUND MUFFLE



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3.2 - DIAGRAM OF FUNCTIONS

3.2.1 - DIAGRAM OF FUNCTIONS – MODELS WITHOUT DISPLAY

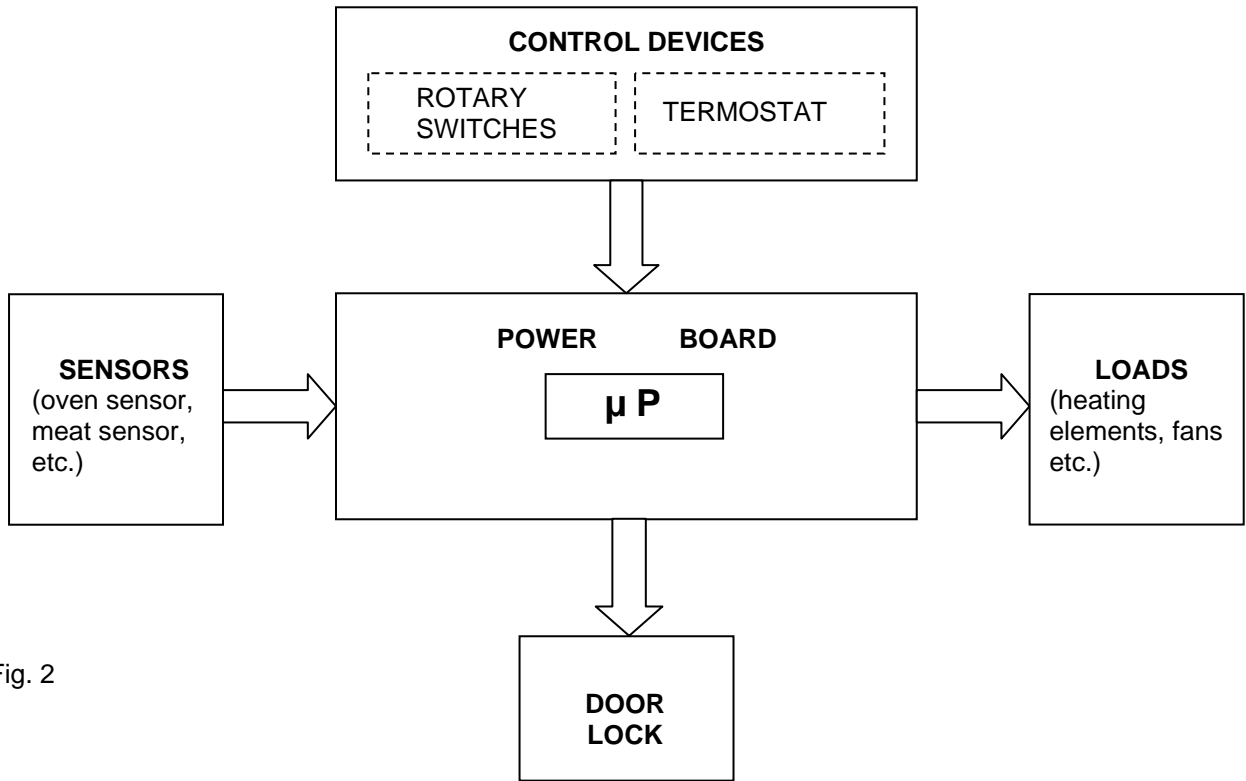


Fig. 2

3.2.2 - DIAGRAM OF FUNCTIONS – MODELS WITH DISPLAY

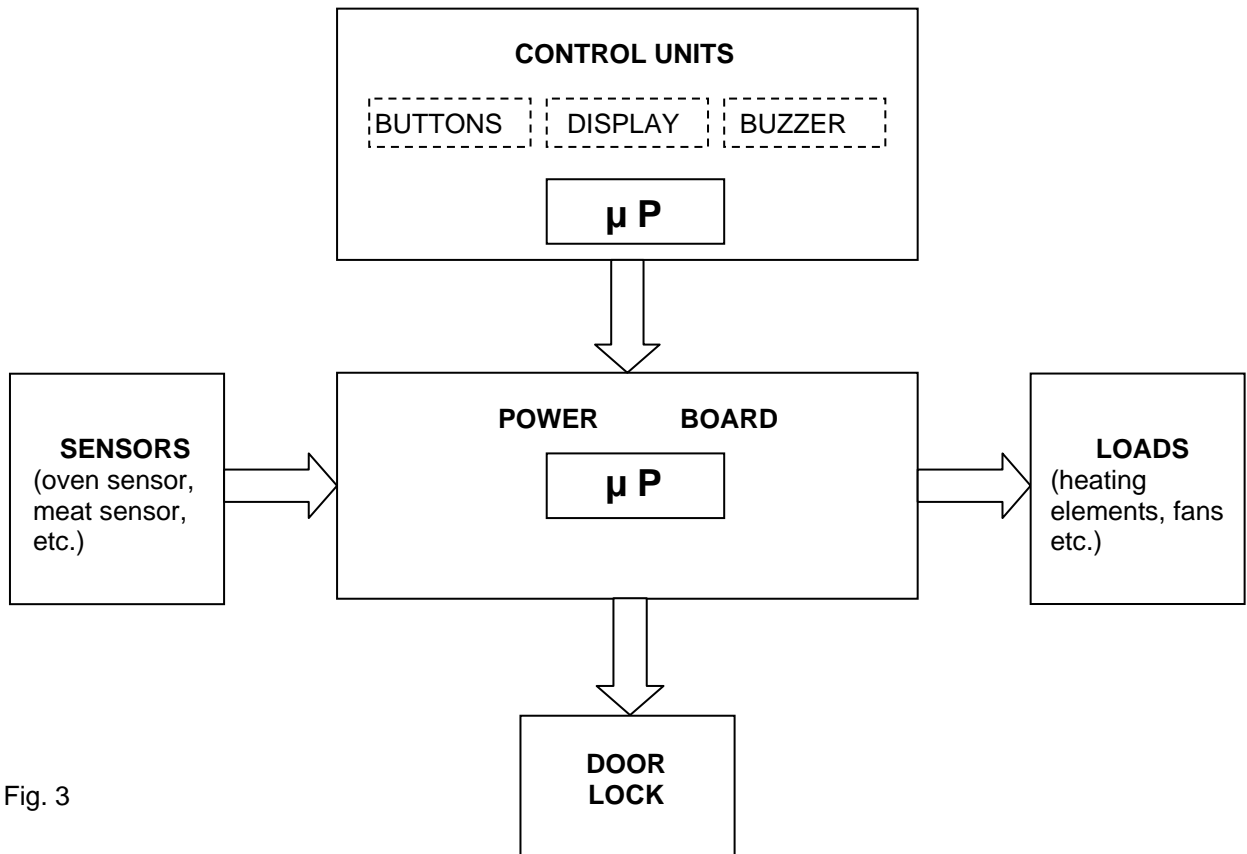


Fig. 3

3.3 - VENTILATION

Since a self-cleaning oven reaches higher temperatures than a normal oven, the ventilation system operates differently.

The cooling fan can operate at two speeds. During baking, the fan is powered through a voltage dropping resistor.

When the self-cleaning mode is selected and the temperature at the centre of the oven exceeds 350°, fan control thermostat CV short-circuits resistor RC. As a result, the fan is powered directly and its speed (and air flow) increases.

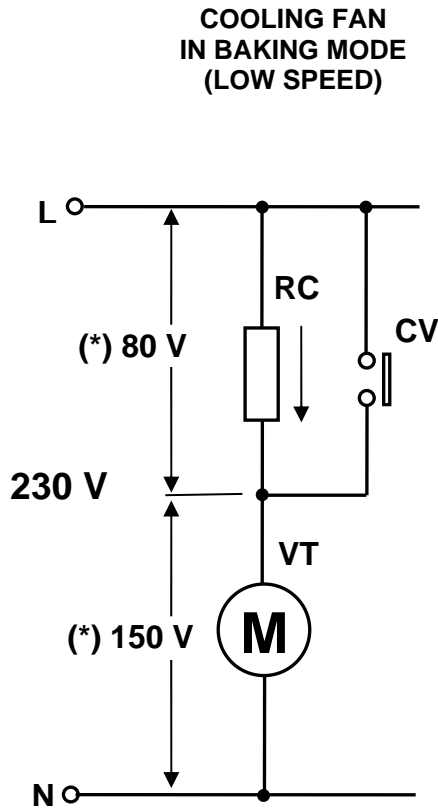


Fig. 4

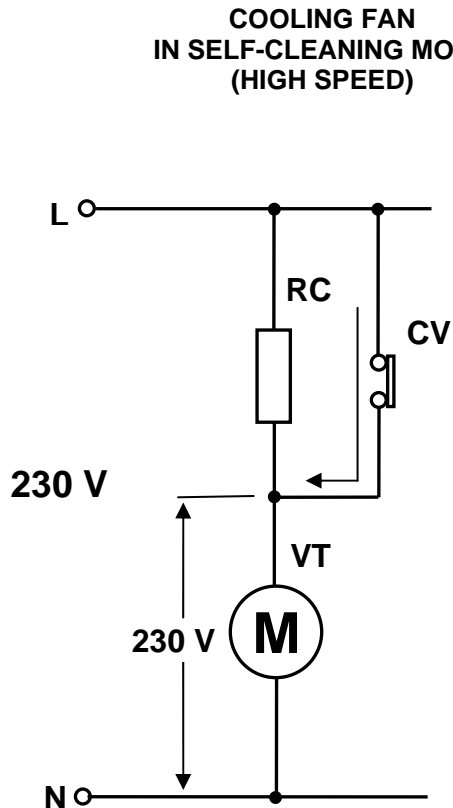


Fig. 5

CV - FAN SWITCH
L - POWER PHASE
N - NEUTRAL PHASE
RC - VOLTAGE DROPPING RESISTOR
VT - COOLING FAN

(*) VALUES ARE APPROXIMATE AND DEPEND ON COMPONENT TOLERANCES

3.4 - BIMETALLIC DOOR LOCK

Units with a self-cleaning feature are equipped with a special door lock system (see Fig. 6 and 7) that prevents the door from opening when the self-cleaning cycle is in progress. The door is locked by two bimetallic elements that move a bar which locks or releases the door.

The system operates during the self-cleaning cycle whether mains power is fed to the appliance or not. The door locks when the temperature at the centre of the oven exceeds 325°C and is released when the temperature reaches 300°C, as detected by thermostat TH2 (see diagram, Fig. 39, p. 24). The thermostat is located on the support for the grill element at the top of the oven (see Fig. 9).

DOOR LOCK ON OVENS

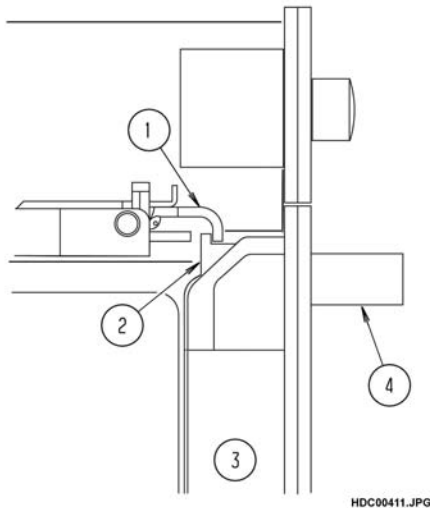


Fig. 6

- 1 - DOOR LATCH
- 2 - LATCH RETAINER
- 3 - DOOR
- 4 - DOOR HANDLE

DOOR LOCK ON COOKERS

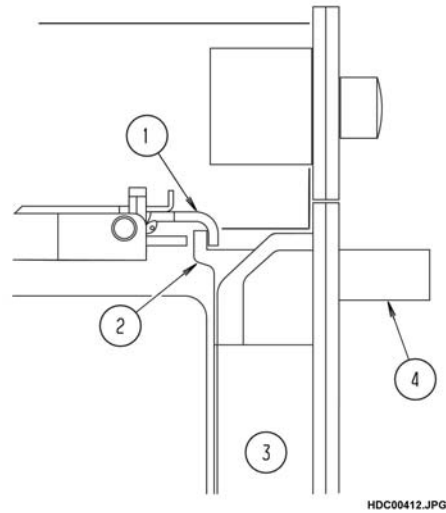


Fig. 7

- 1 - DOOR LATCH
- 2 - LATCH RETAINER
- 3 - DOOR
- 4 - DOOR HANDLE

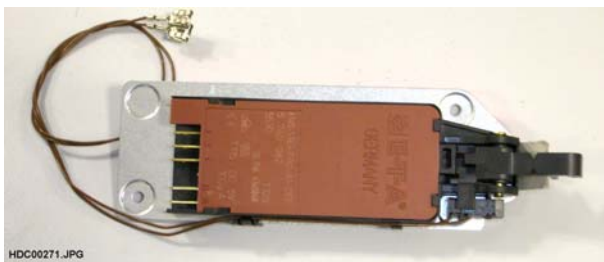


Fig. 8

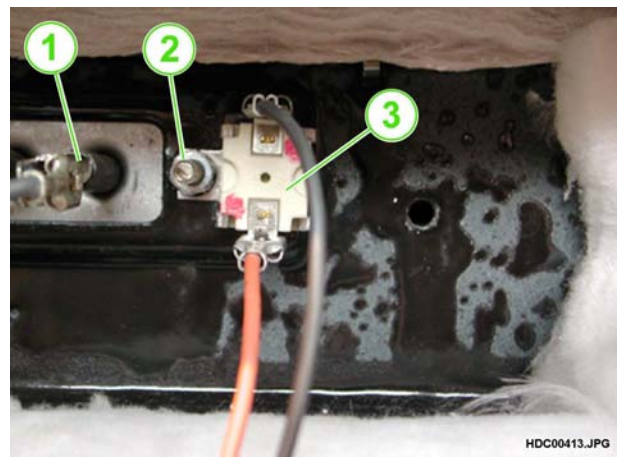
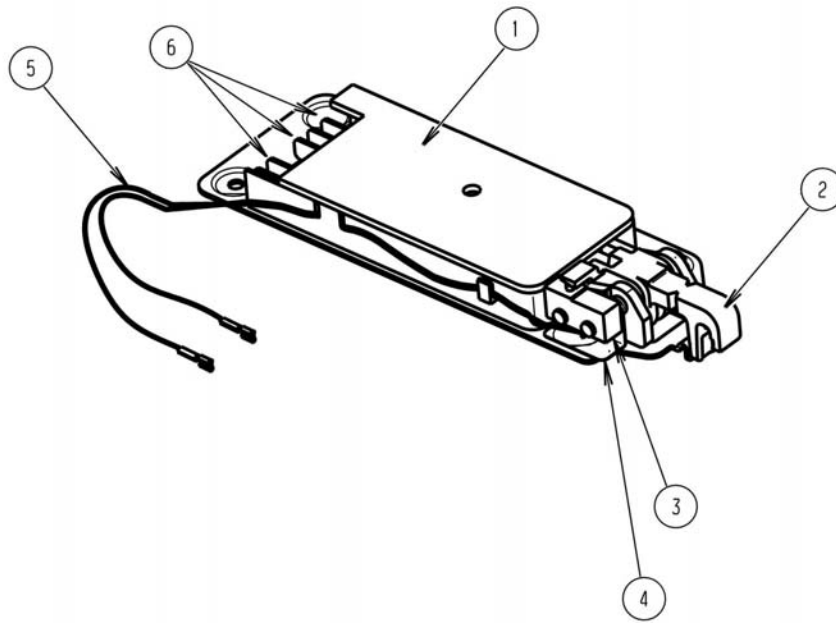


Fig. 9

- 1 - GRILL ELEMENT
- 2 - MOUNTING SCREWS FOR GRILL ELEMENT AND THERMOSTAT
- 3 - THERMOSTAT FOR SELF-CLEANING FUNCTION

BIMETALLIC DOOR LOCK



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Fig. 10

- 1 - DOOR LOCK
- 2 - DOOR LATCH
- 3 - DOOR SWITCH
- 4 - INSULATION LEAF
- 5 - CONNECTING WIRES FOR SWITCH
- 6 - CONTACTS FOR DOOR LOCK SYSTEM

When 230VAC is applied to contacts 3 and 4, bar "A" moves in the opposite direction after 2 – 10 seconds and locks the door latch into position. In this condition, the door cannot be opened. Also, when bar "A" moves, internal contact "B" opens to allow the door latch to move (see Fig. 13, p. 12 and Fig. 16, p. 13), and contacts 33/34 on the internal switch close. When these contacts close, an electronic circuit interrupts the door lock command signal. When bar "A" moves, it also closes internal contact "C". To unlock the door, 230VAC is applied to contacts 2 and 3, which retracts bar "A" and releases the door latch. The door can be unlatched only when the contacts on thermostat TH2 are closed. Also, a microswitch that detects the position of the door is installed in the door lock system. The signal from the microswitch is sent to an electronic circuit for control of the self-cleaning cycle and to light up the oven lamp when the door is open.

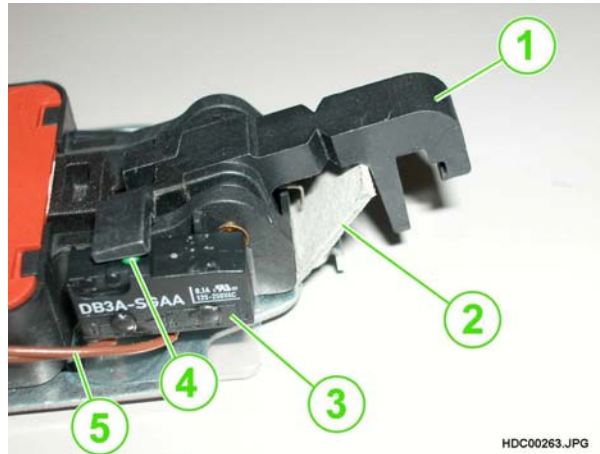


Fig. 11

- | | |
|-------------------------------|--------------------------------------|
| 1 - DOOR LATCH | 4 - CONTROL LEVER ON MICROSWITCH |
| 2 - PROTECTION CARD | 5 - CONNECTING WIRES FOR MICROSWITCH |
| 3 - MICROSWITCH (DOOR SWITCH) | |

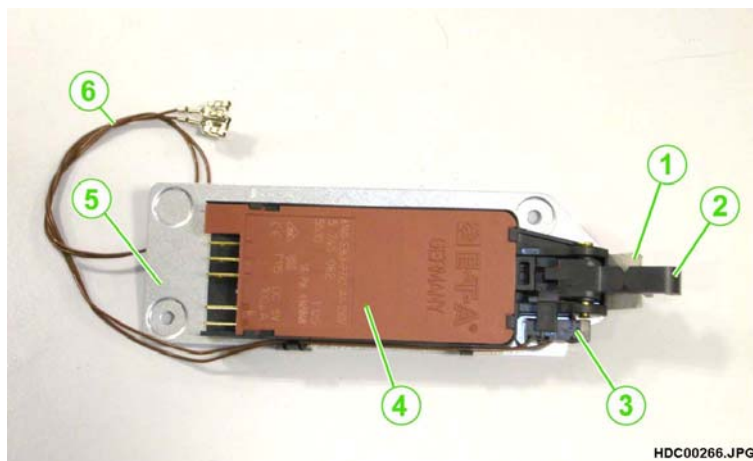


Fig. 12

- | | |
|-------------------------------|--------------------------------------|
| 1 - PROTECTION CARD | 4 - DOOR LOCK |
| 2 - DOOR LATCH | 5 - DOOR LOCK BODY |
| 3 - MICROSWITCH (DOOR SWITCH) | 6 - CONNECTING WIRES FOR MICROSWITCH |

NOTE: BEFORE USING A DOOR LOCK ASSEMBLY AS A REPLACEMENT PART, REMOVE THE PROTECTION CARD SHOWN IN FIGURE 11.

3.4.1 - CONTACTS THAT ACTUATE THE DOOR LOCK

The various electrical contacts that control the door lock are illustrated below.

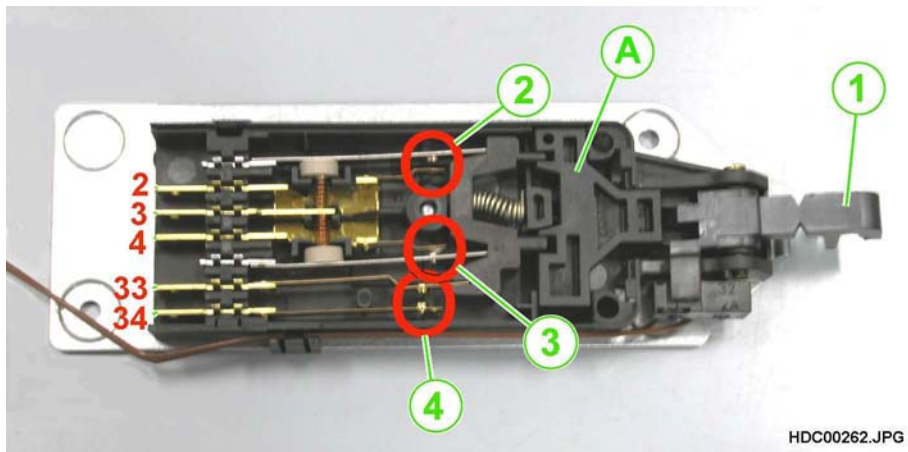


Fig. 13

- 1 - DOOR LATCH
- 2 - SWITCH CONTACTS 3 - 2
- 3 - SWITCH CONTACTS 3 - 4
- 4 - SWITCH CONTACTS 33 - 34
- A - CONTROL BAR

3.4.2 - CONFIGURATION OF LOCK WHEN DOOR IS FREE

POSITION OF LATCH WHEN DOOR IS FREE

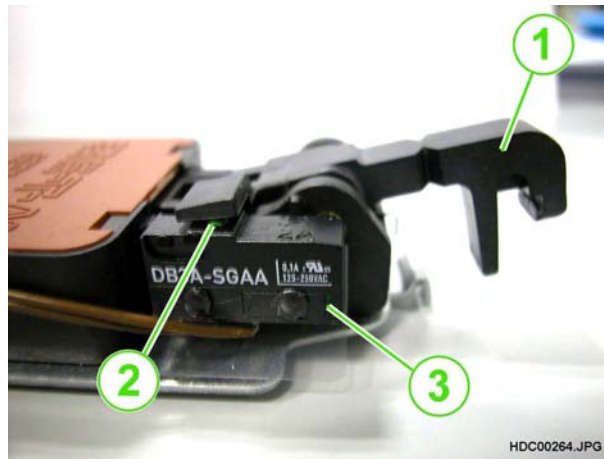


Fig. 14

- 1 – DOOR LATCH OPEN (DOOR IS FREE)
- 2 – BUTTON ON MICROSWITCH
- 3 – MICROSWITCH IN CLOSED POSITION

DIAGRAM: POSITION OF CONTACTS WHEN DOOR IS FREE

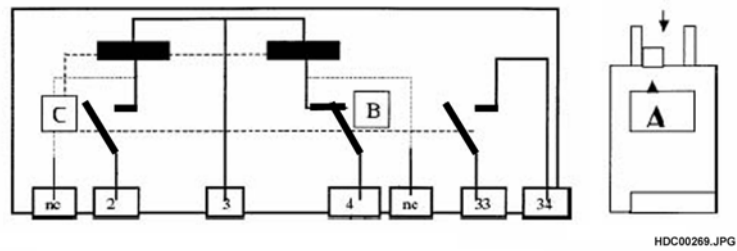


Fig. 15

CLOSE-UP OF CONTACTS WHEN DOOR IS FREE

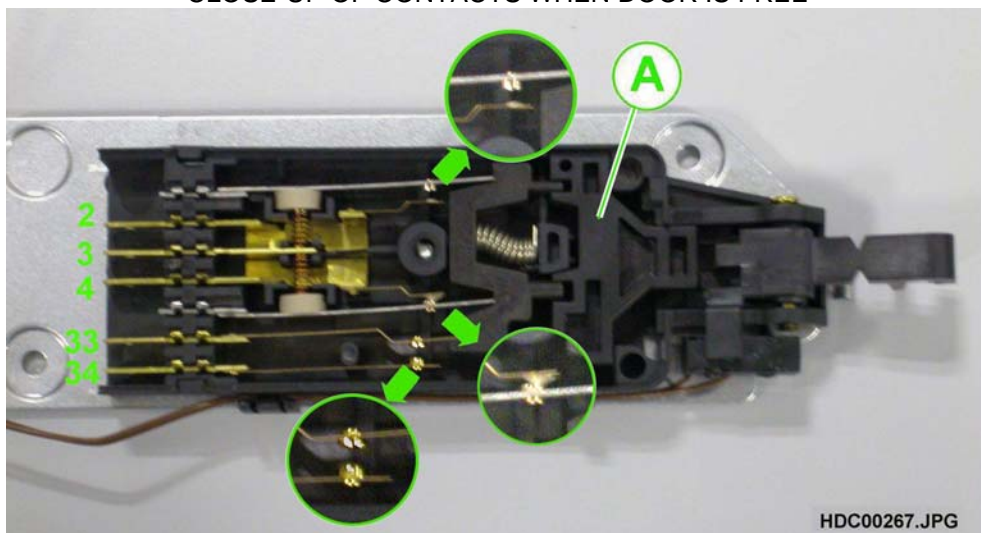


Fig. 16

- A – CONTROL BAR

3.4.3 - POSITIONS OF DOOR LOCK SYSTEM WHEN DOOR IS LOCKED

POSITION OF LATCH WHEN DOOR IS LOCKED

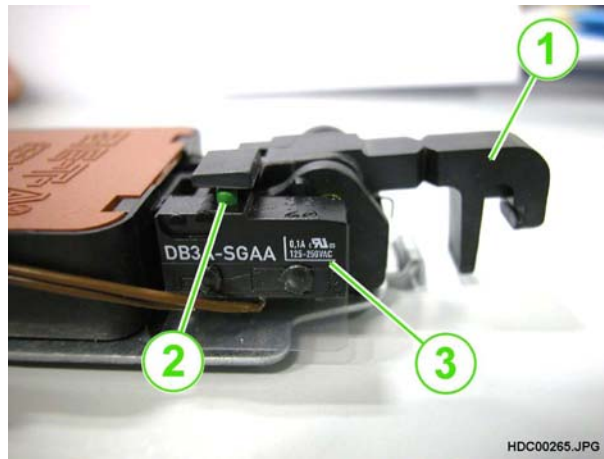


Fig. 17

- 1 – DOOR LATCH CLOSED (DOOR LOCKED)
- 2 – MICROSWITCH BUTTON
- 3 - MICROSWITCH IN OPEN POSITION

POSITION OF CONTACTS WHEN DOOR IS LOCKED

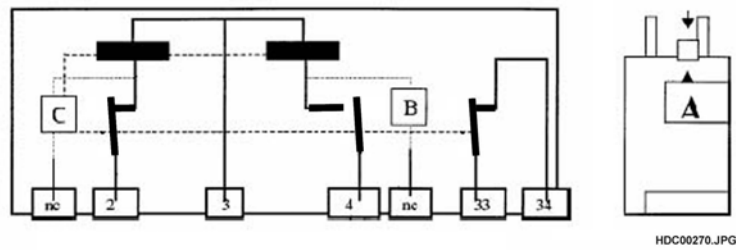


Fig. 18

CLOSE-UP OF CONTACTS WHEN DOOR IS LOCKED

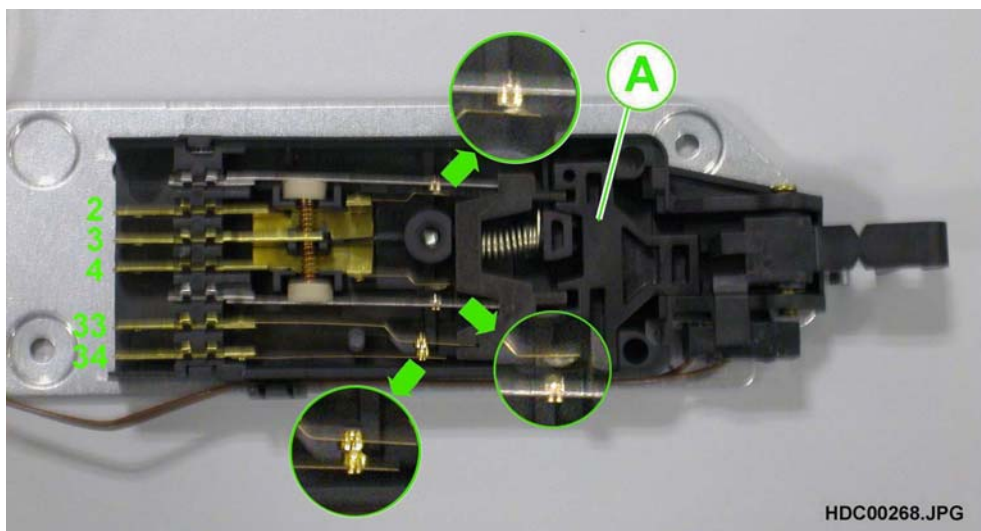


Fig. 19

- A – CONTROL BAR

3.5 - MOTOR-POWERED DOOR LOCK METEOR

This system also operates during the self-cleaning cycle whether mains power is being fed to the appliance or not. In this system the door latch is moved by a small electric motor.

The door is locked when the temperature at the centre of the oven reaches 325°C and is released when the temperature reaches 300°C, as detected by thermostat TH2 (see diagram, Fig. 40, p. 25). The thermostat is located on the support for the grill element at the top of the oven (see Fig. 23).

DOOR LOCK ON OVENS

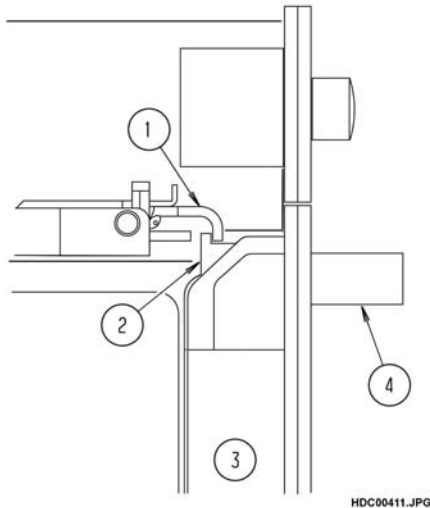


Fig. 20

- 1 - DOOR LATCH
- 2 - LATCH RETAINER
- 3 - DOOR
- 4 - DOOR HANDLE

DOOR LOCK ON COOKERS

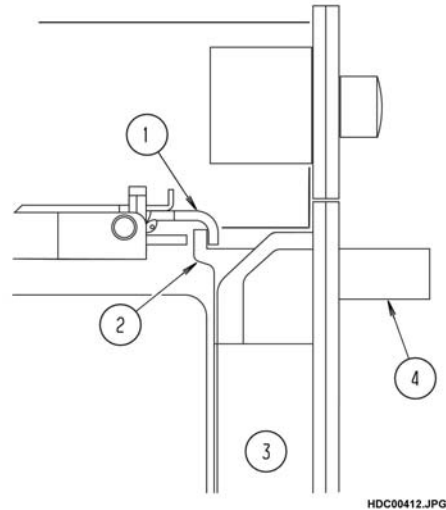


Fig. 21

- 1 - DOOR LATCH
- 2 - LATCH RETAINER
- 3 - DOOR
- 4 - DOOR HANDLE

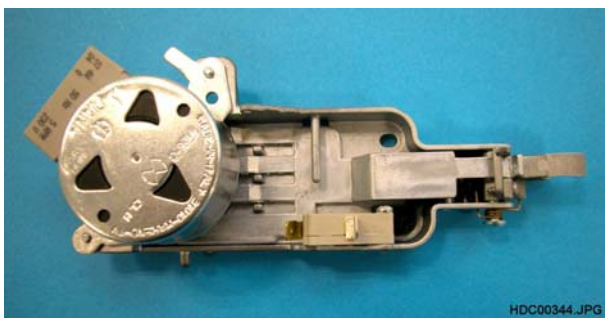


Fig. 22

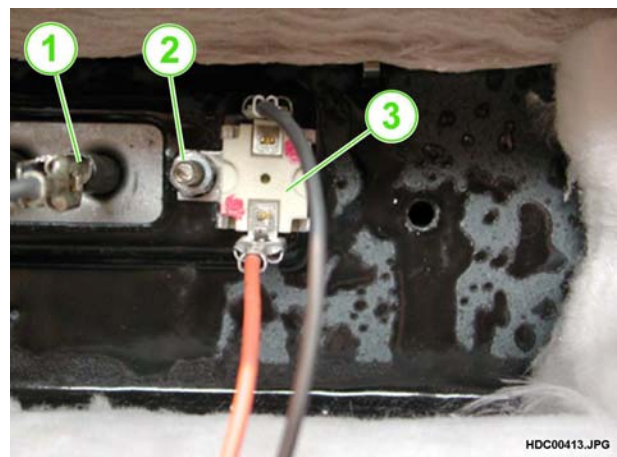
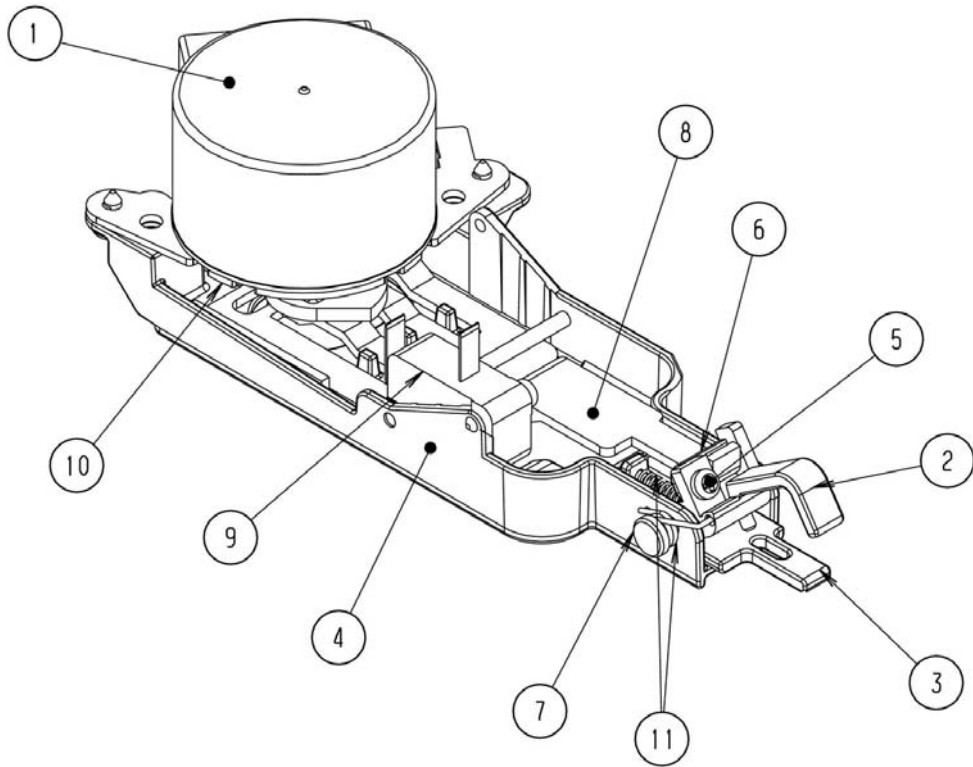


Fig. 23

- 1 - GRILL ELEMENT
- 2 - MOUNTING SCREWS FOR GRILL ELEMENT AND THERMOSTAT
- 3 - THERMOSTAT FOR SELF-CLEANING FUNCTION

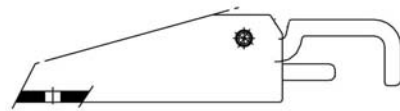
MOTOR-POWERED DOOR LOCK



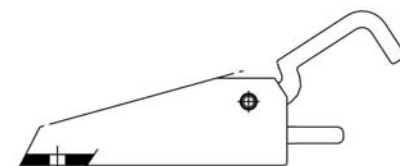
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Fig. 24

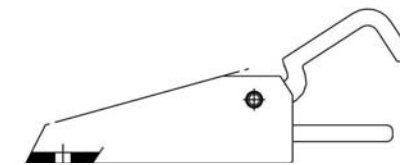
- 1 - MOTOR
- 2 - DOOR LATCH
- 3 - DOOR SENSOR
- 4 - BODY
- 5 - MANUAL RELEASE SCREW
- 6 - MANUAL RELEASE LEVER
- 7 - PIN
- 8 - SLIDE
- 9 - DOOR SWITCH
- 10 - MICROSWITCH FOR SENSING POSITION OF LATCH
- 11 - SPRINGS



LOCKED POSITION
(DOOR CLOSED)



UNLOCKED POSITION
(DOOR CLOSED)



UNLOCKED POSITION
(DOOR OPEN)

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Fig. 25

3.5.1 - DOOR LOCK CONTACTS

The electrical contacts that activate the motor-powered door lock are shown below:

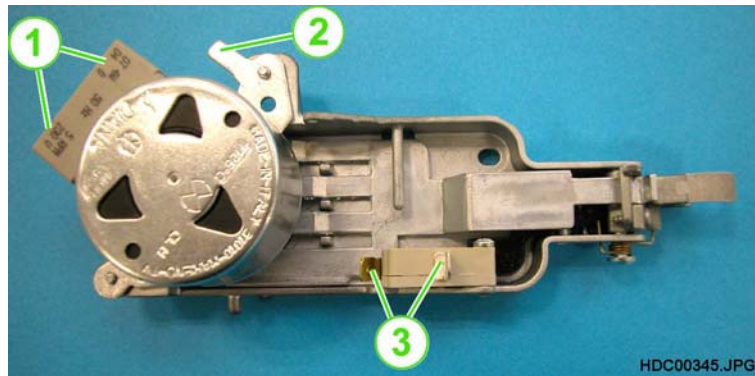


Fig. 26

- 1 - MOTOR CONTACTS **M1** AND **M2**
- 2 - GROUND CONTACT **MT**
- 3 - DOOR SWITCH CONTACTS **DP1** AND **DP2**



Fig. 27

- 1 - CONTACTS ON MICROSWITCH THAT SENSES LATCH POSITION: **DL1** AND **DL2**

3.5.2 - CONTACT POSITIONS

DOOR OPEN AND UNLOCKED

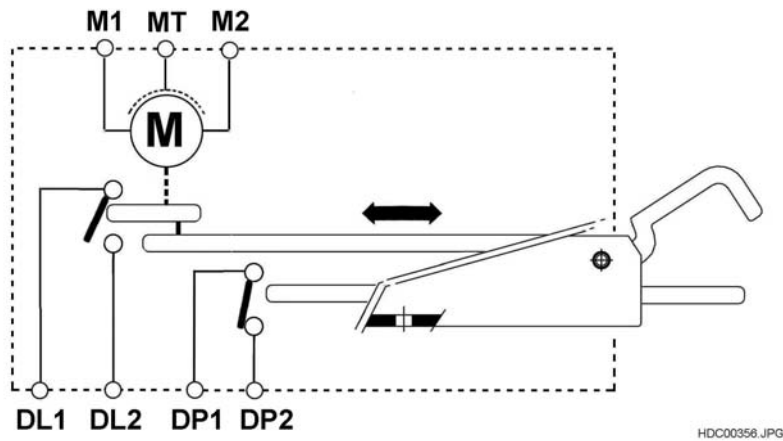


Fig. 28

DOOR CLOSED AND UNLOCKED

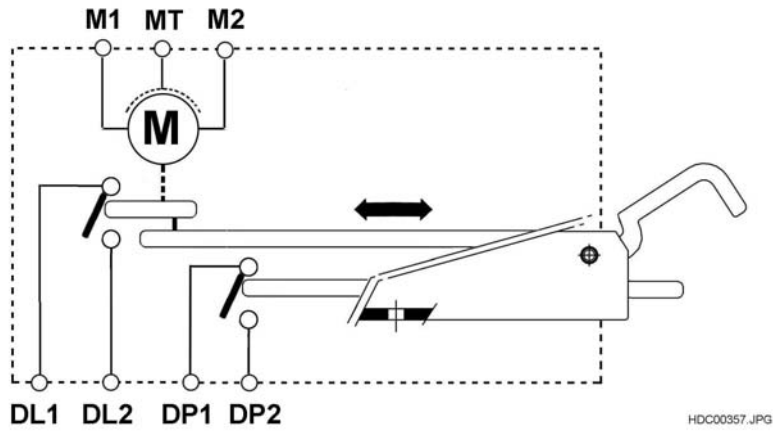


Fig. 29

DOOR CLOSED AND LOCKED

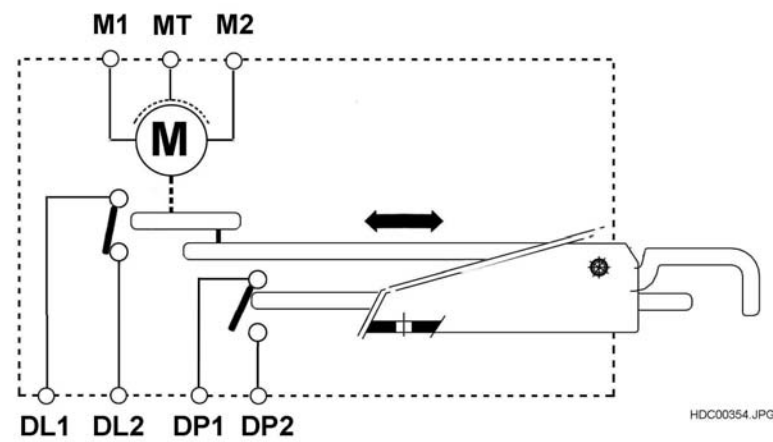


Fig. 30

3.5.3 - POSITIONS OF DOOR LOCK WITH DOOR OPEN

POSITION OF LATCH WITH DOOR OPEN

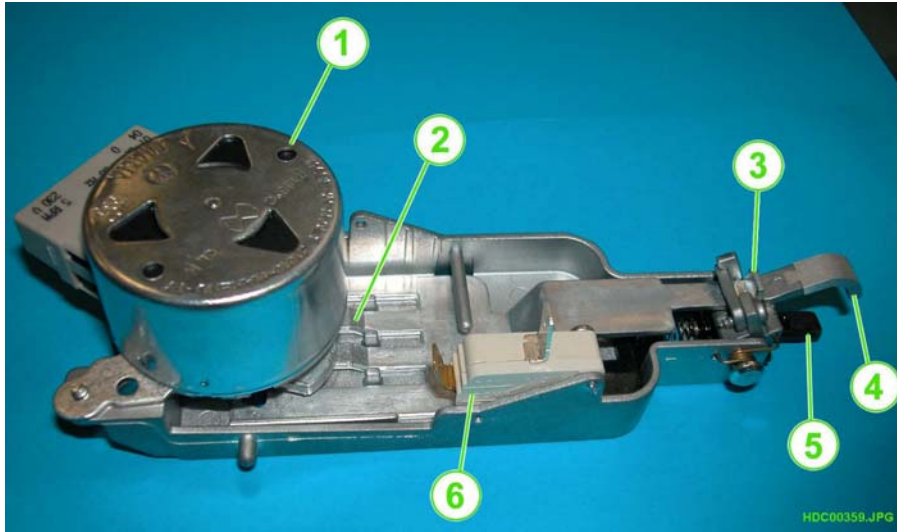


Fig. 31

- 1 – DRIVE MOTOR
- 2 – SLIDE
- 3 – LOCK LEVER
- 4 – LATCH
- 5 – DOOR DETECTION LEVER
- 6 – DOOR SWITCH

POSITION OF CONTACTS WITH DOOR OPEN

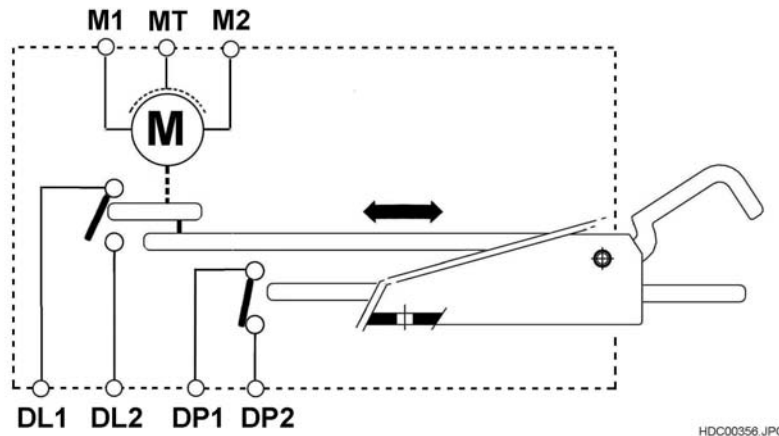


Fig. 32

3.5.4 - POSITIONS OF DOOR LOCK WITH DOOR CLOSED AND UNLOCKED

POSITIONS OF LATCH WITH DOOR CLOSED AND UNLOCKED

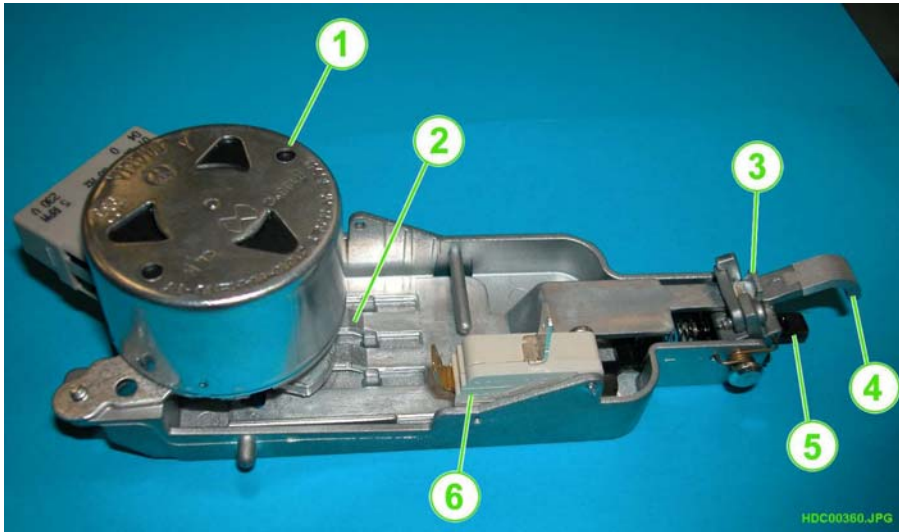


Fig. 33

- 1 – DRIVE MOTOR
- 2 – SLIDE
- 3 – LOCK LEVER
- 4 – LATCH
- 5 – DOOR DETECTION LEVER
- 6 – DOOR SWITCH

POSITION OF CONTACTS WITH DOOR CLOSED AND UNLOCKED

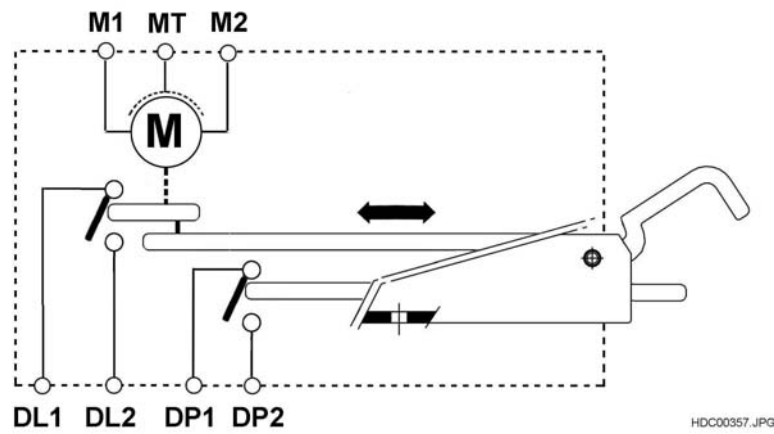


Fig. 34

3.5.5 - POSITIONS OF DOOR LOCK WITH DOOR LOCKED

POSITION OF LATCH WITH DOOR LOCKED

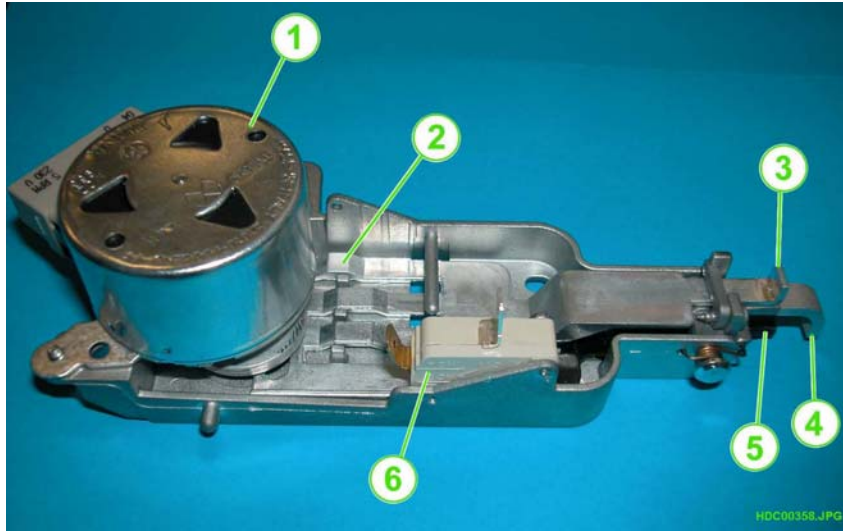


Fig. 35

- 1 – DRIVE MOTOR
- 2 – SLIDE
- 3 – LOCK LEVER
- 4 – LATCH
- 5 – DOOR DETECTION LEVER
- 6 – DOOR SWITCH

POSITION OF CONTACTS WITH DOOR LOCKED

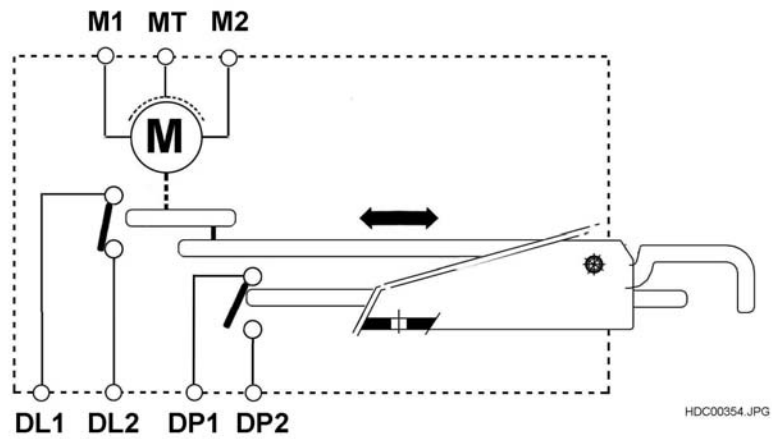


Fig. 36

3.6 - MOTOR-POWERED DOOR LOCK "ELTEK"

This type of door lock has the same functioning of the door lock "METEOR" explained in the chapter 3.5. It differs for the type of electric connection and the presence of a plastic cover on the functional structure.

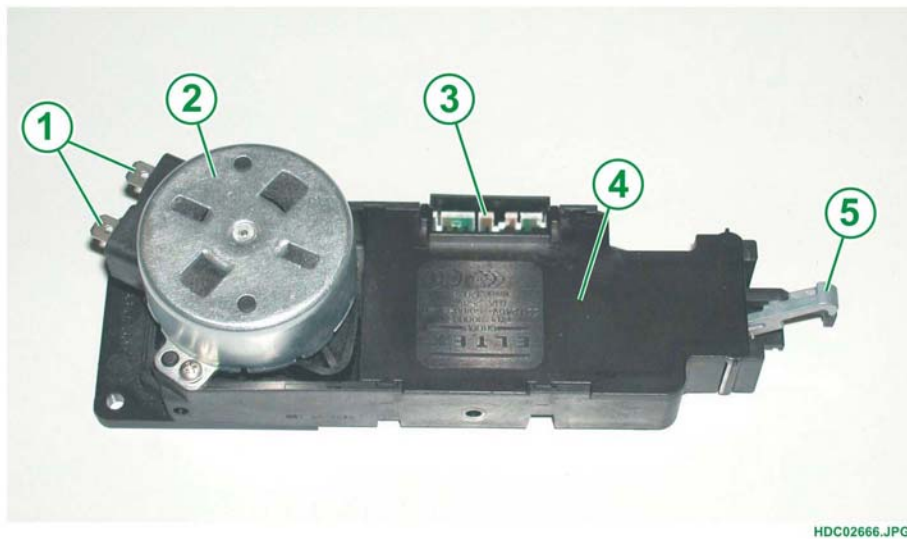


Fig. 37

- 1 - ELECTRIC CONTACT OF THE MOTOR
- 2 - MOTOR
- 3 - CONNECTOR
- 4 - PLASTIC COVER
- 5 - METALLIC HOOK OF DOOR LOCK

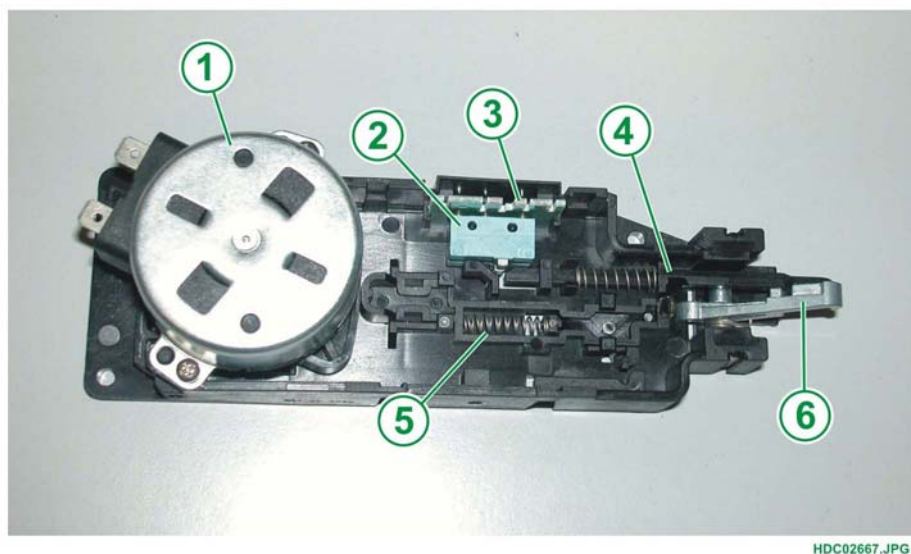


Fig. 38

- 1 - MOTOR
- 2 - MICROINTERRUTTORE PRESENZA PORTA
- 3 - CONNECTOR
- 4 - DOOR PRESENCE CONTROL DEVICE
- 5 - DOOR LOCK CONTROL DEVICE
- 6 - DOOR LOCK METALLIC HOOK

3.7 - SELF-CLEANING CYCLE

To clean the oven with a self-cleaning cycle, one of the self-cleaning programs must be selected. Since the oven must be precisely controlled during the cleaning cycle, the self-cleaning process can only be executed using one of the programs provided.

The following must occur during cleaning programs employing pyrolysis:

- The door must be locked during the entire process due to the high temperature in the oven.
- A heating period must be provided to allow the oven to reach the temperature necessary for self-cleaning.
- The self-cleaning temperature must be maintained.
- A cooling period must be provided to allow the oven to reach a temperature that is low enough to open the door safely

Referring to the schematic diagram below, we now offer a description of what occurs during the self-cleaning cycle:

Beginning with the oven at room temperature, when one of the self-cleaning programs is selected, relay SP06 on the power board closes. The oven lamp is off if the oven door is closed, as detected by microswitch SW4, which is connected to the power board through input connector BD01.

When the self-cleaning cycle is confirmed by pressing the "PYRO" button, the control unit actuates relays SP35 and SP30 on the power board. These relays power the upper and lower heating elements respectively (or SP35 and SG01 on models with a grill element instead of the lower element).

As occurs during standard baking, when the temperature sensor (PT500) reaches a temperature of approx. 120°C (the temperature at the centre of the oven will be approx. 100°C), the cooling fan powered by triac TP54 and voltage dropping resistor RL begins operating at low speed.

When the temperature sensor reaches approx 305°C, triac TP54 actuates door lock DL to lock the oven door (terminal 1 on power board connector BP21).

When the temperature reaches approx 310°C. (as sensed by the oven sensor), thermostat TH3 closes and short-circuits resistor RL, which causes the cooling fan to operate at high speed.

When door lock DL locks, contacts 33 and 34 on the door switch close and "door locked" is signalled on the power board through connector BD01.

If this "door locked" signal is not present on the power board, the system will not increase the temperature of the oven and the control relay SP35 on upper heating element will open.

When this occurs, the circuit that detects the "door locked" signal executes a control cycle that lasts approx. 10 minutes. If the "door locked" signal is not present at the end of this cycle, the system enters the alarm mode.

When the temperature in the oven is between 320°C and 350°C (i.e., when the temperature on the oven temperature sensor is from 380°C to 400°C), thermostat TH2 opens to prevent false signals from unlocking the door.

When the self-cleaning temperature is reached (approx 465°C. on the oven temperature sensor), the self-cleaning time starts:

- approx. 1 hour for program P1 (see Fig. 42).
- approx. 1 hour and 30' for program P2 (see Fig. 43).

The self-cleaning temperature is maintained by the heating elements (upper, lower or grill element).

At the end of the self-cleaning time (during the final 30 minutes, see diagrams Fig. 42 and Fig. 43), all heating elements are shut off.

When the temperature in the oven is between 350°C and 320°C (i.e., when the temperature on the oven temperature sensor is from 400°C to 380°C), thermostat TH2 closes and sends an "unlock door" signal to the power board, which will unlock the door when the temperature on the oven temperature sensor falls below 300°C.

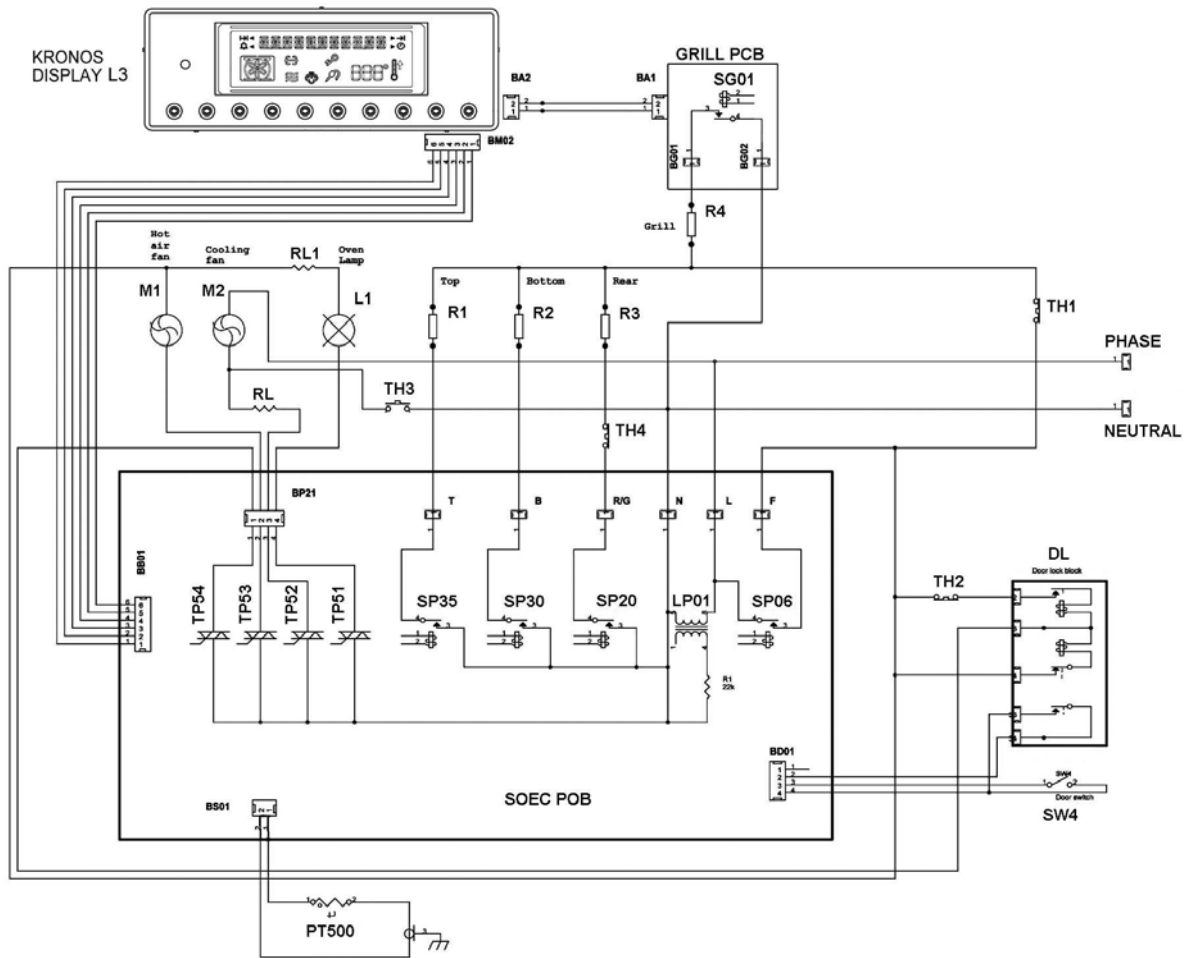
At this point, the appliance emits a beep.

When the oven temperature reaches approx. 280°C (with the oven temperature sensor at 300°C), thermostat TH3 opens and places voltage dropping resistor RL back on line, which causes the cooling fan to operate at low speed. The fan shuts off when the temperature on the temperature sensor drops to 115°C.

IMPORTANT: The temperature values specified above for the centre of the oven are approximate and may vary from model to model.

3.7.1 - SCHEMATIC DIAGRAM

VERSION WITH BIMETALLIC DOOR LOCK SYSTEM

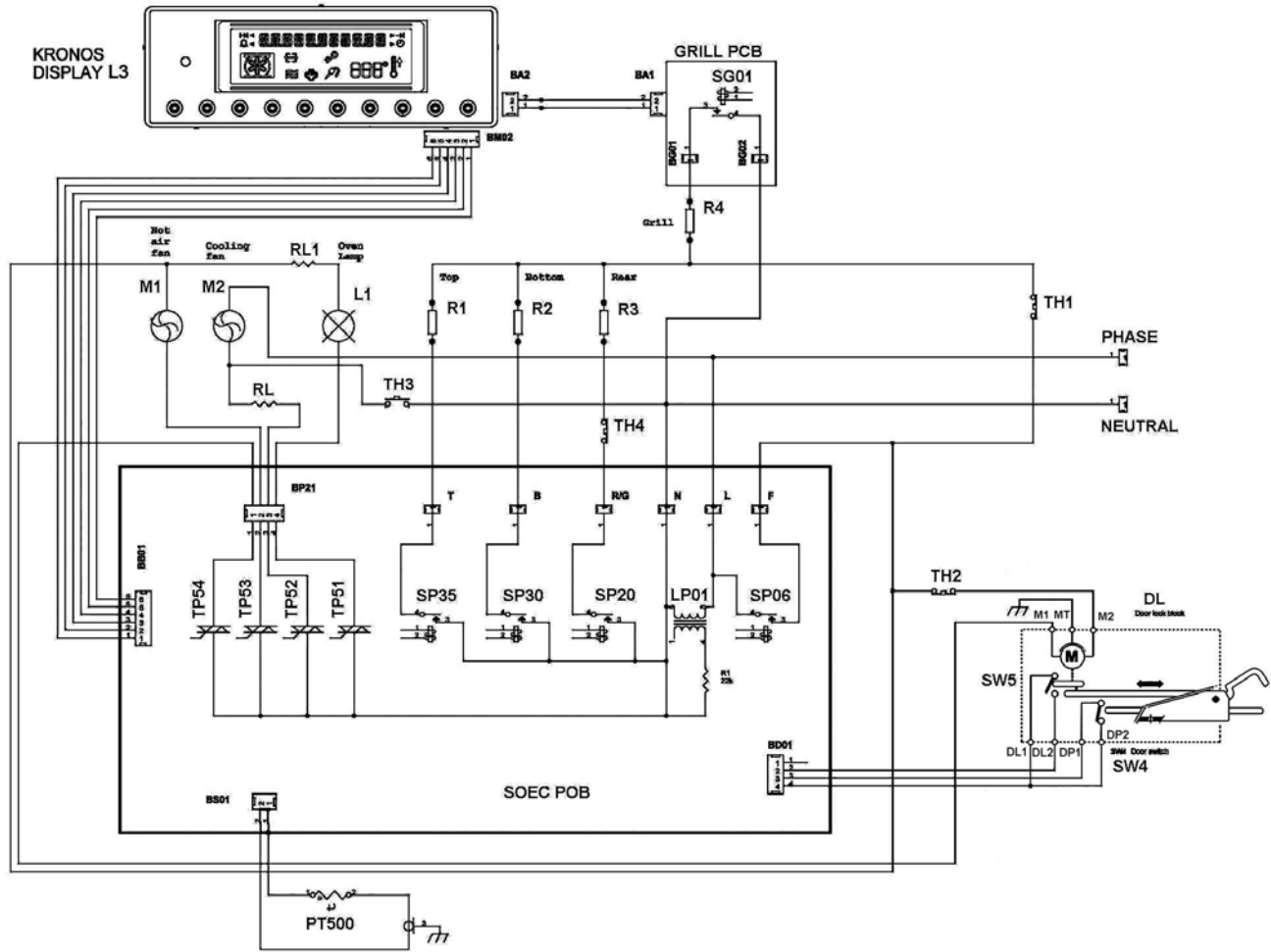


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Fig. 39

KEY			
DISPLAY L3	- KRONOS LEVEL 3 CONTROL UNIT	SP20	- CONTROL RELAY FOR CONVECTION HEATING ELEMENT
DL	- DOOR LOCK ASSEMBLY	SP30	- CONTROL RELAY FOR BOTTOM HEATING ELEMENT
GRILL PCB	- GRILL RELAY BOARD	SP35	- CONTROL RELAY FOR TOP HEATING ELEMENT
L1	- OVEN LAMP	SW4	- MICROSWITCH ON DOOR
LP01	- LOW VOLTAGE TRANSFORMER	TH1	- SAFETY THERMOSTAT ON MAIN POWER CIRCUIT
M1	- HOT AIR FAN	TH2	- CONTROL THERMOSTAT FOR DOOR LOCK SYSTEM
M2	- COOLING FAN	TH3	- THERMOSTAT FOR FAN SPEED CONTROL
NEUTRAL	- MAINS (NEUTRAL PHASE)	TH4	- OVERLOAD PREVENTION THERMOSTAT
PHASE	- MAINS (POWER PHASE)	TP51	- TRIAC FOR OVEN LAMP
PT500	- OVEN SENSOR	TP52	- TRIAC FOR COOLING FAN
R1	- UPPER HEATING ELEMENT (TOP)	TP53	- TRIAC FOR HOT AIR FAN
R2	- LOWER HEATING ELEMENT (BOTTOM)	TP54	- TRIAC FOR DOOR LOCK
R3	- CONVECTION HEATING ELEMENT (REAR)		
R4	- HEATING ELEMENT FOR GRILL		
RL	- VOLTAGE DROPPING RESISTOR FOR (DOUBLE SPEED) FAN		
RL1	- DAMPING RESISTOR FOR OVEN LAMP		
SOEC POB	- POWER BOARD		
SP06	- GENERAL SAFETY RELAY		

VERSION WITH MOTOR-POWERED DOOR LOCK SYSTEM



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Fig. 40

KEY			
DISPLAY L3	- KRONOS LEVEL 3 CONTROL UNIT	SP20	- CONTROL RELAY FOR CONVECTION HEATING ELEMENT
DL	- DOOR LOCK ASSEMBLY	SP30	- CONTROL RELAY FOR BOTTOM HEATING ELEMENT
GRILL PCB	- GRILL RELAY BOARD	SP35	- CONTROL RELAY FOR TOP HEATING ELEMENT
L1	- OVEN LAMP	SW4	- MICROSWITCH DOOR CLOSED
LP01	- LOW VOLTAGE TRANSFORMER	SW5	- MICROSWITCH ON DOOR LATCH
M1	- HOT AIR FAN	TH1	- SAFETY THERMOSTAT ON MAIN POWER CIRCUIT
M2	- COOLING FAN	TH2	- CONTROL THERMOSTAT FOR DOOR LOCK SYSTEM
NEUTRAL	- MAINS (NEUTRAL PHASE)	TH3	- THERMOSTAT FOR FAN SPEED CONTROL
PHASE	- MAINS (POWER PHASE)	TH4	- OVERLOAD PREVENTION THERMOSTAT
PT500	- OVEN SENSOR	TP51	- TRIAC FOR OVEN LAMP
R1	- UPPER HEATING ELEMENT (TOP)	TP52	- TRIAC FOR COOLING FAN
R2	- LOWER HEATING ELEMENT (BOTTOM)	TP53	- TRIAC FOR HOT AIR FAN
R3	- CONVECTION HEATING ELEMENT (REAR)	TP54	- TRIAC FOR DOOR LOCK
R4	- HEATING ELEMENT FOR GRILL		
RL	- VOLTAGE DROPPING RESISTOR FOR FAN (DOUBLE SPEED)		
RL1	- DAMPING RESISTOR FOR OVEN LAMP		
SOEC POB	- POWER BOARD		
SP06	- GENERAL SAFETY RELAY		

3.6.2 - STEPS IN THE SELF-CLEANING CYCLE

Here is a summary of the events that occur as sensor temperature varies

SENSOR TEMPERATURE	ACTION
120°C	Fan turns on at low speed
305°C	Triac TP54 locks the door
310°C	Thermostat TH3 switches the fan to high speed (TH3 closes)
380/400°C	Thermostat TH2 opens to prevent false door open signal
465°C	Self-cleaning (Program P1: 1 hour ; Program P2: 1 hour and 30')
400/380°C	Thermostat TH2 closes to allow the door to open
300°C	Fan switches back to low speed (TH3 opens)
115°C	Fan shuts off

3.7.2.1 - DIAGRAM OF SELF-CLEANING CYCLE

The following diagram shows the sequence of events in the self-cleaning cycle:

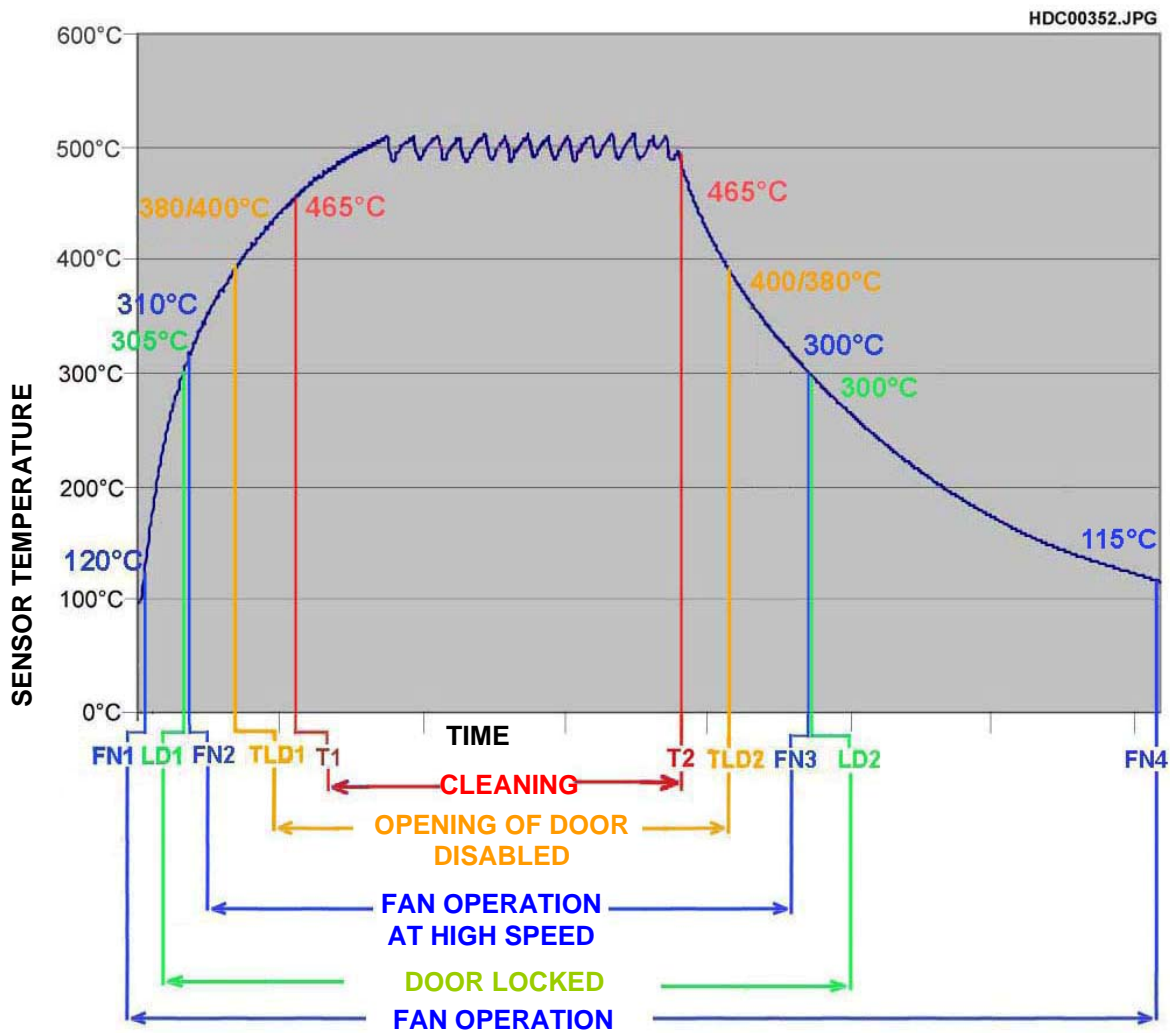


Fig. 41

KEY		
FN1	FAN TURNS ON AT LOW SPEED	FAN
FN2	FAN SWITCHES TO HIGH SPEED	
FN3	FAN SWITCHES BACK TO LOW SPEED	
FN4	FAN OPERATING AT LOW SPEED SHUTS OFF	
LD1	DOOR LOCKED	DOOR
LD2	DOOR UNLOCKED	
TLD1	THERMOSTAT ON DOOR LOCK SYSTEM OPENS (OPENING DISABLED)	OPENING OF DOOR DISABLED
TLD2	THERMOSTAT ON DOOR LOCK SYSTEM CLOSES (OPENING ENABLED)	
T1	SELF-CLEANING BEGINS	CLEANING
T2	SELF-CLEANING ENDS	

3.7.3 - PROGRAMS WITH SELF-CLEANING CYCLE

PROGRAM P1

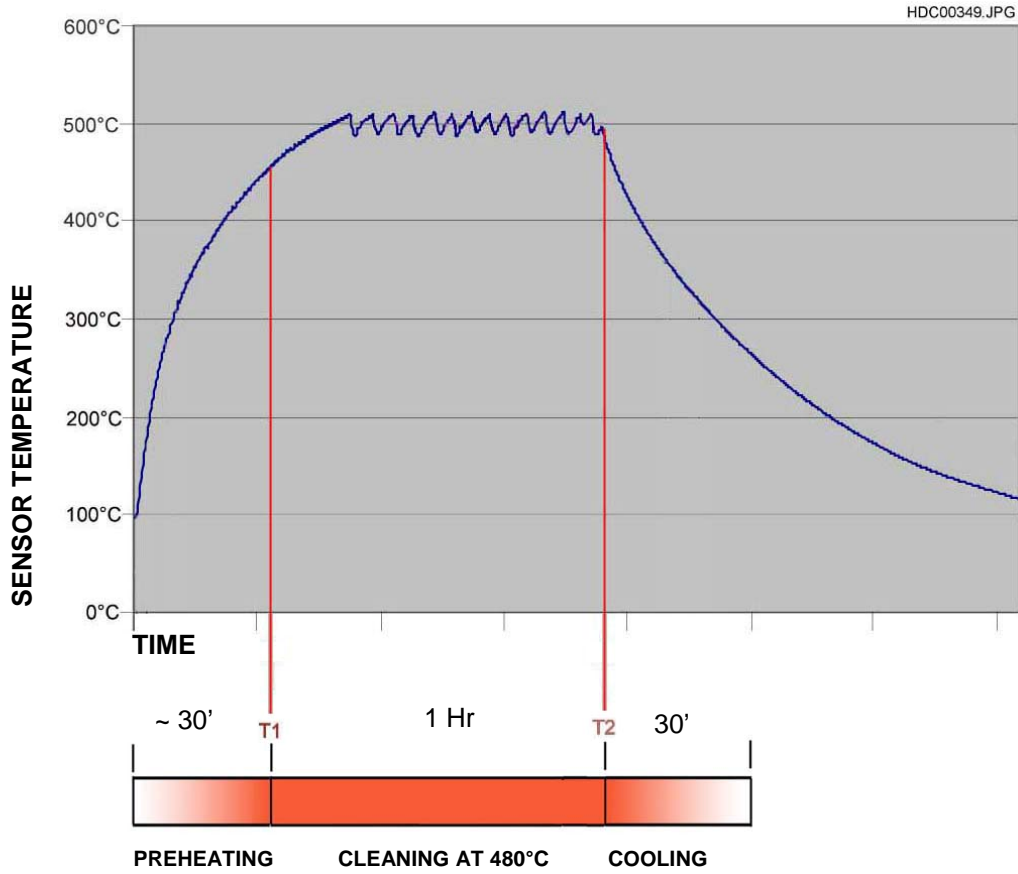


Fig. 42

PROGRAM P2

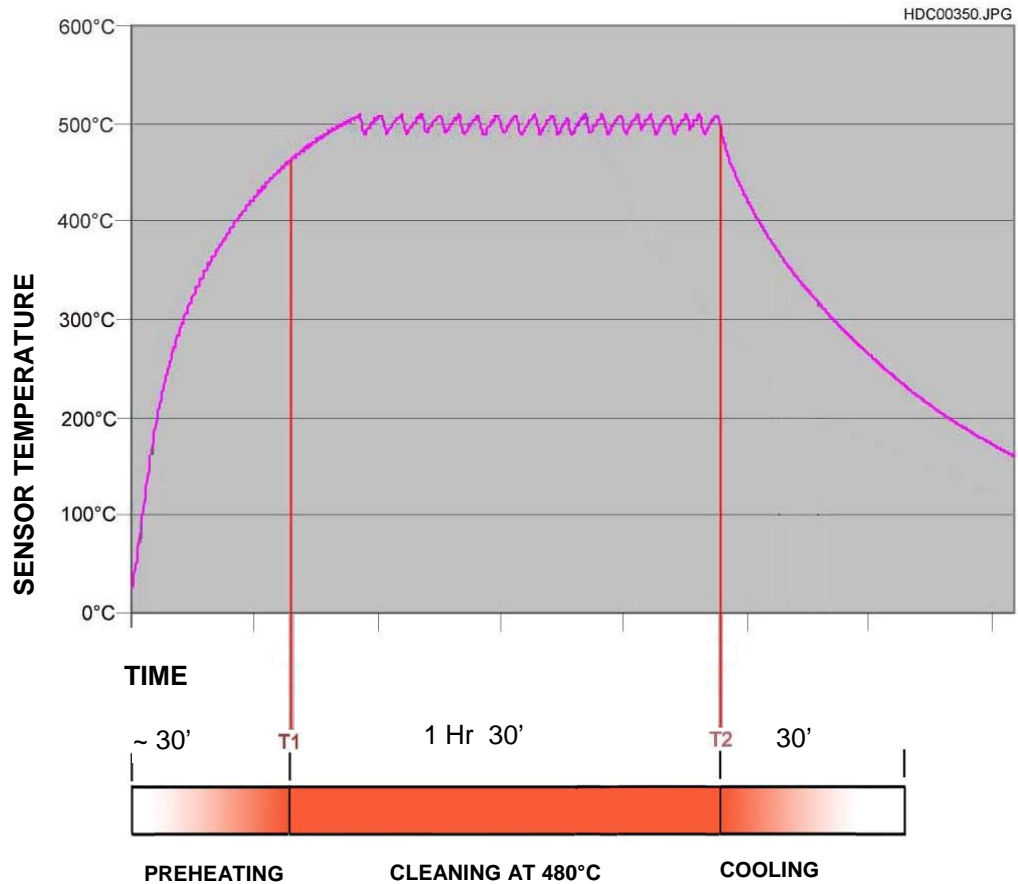












Fig. 43

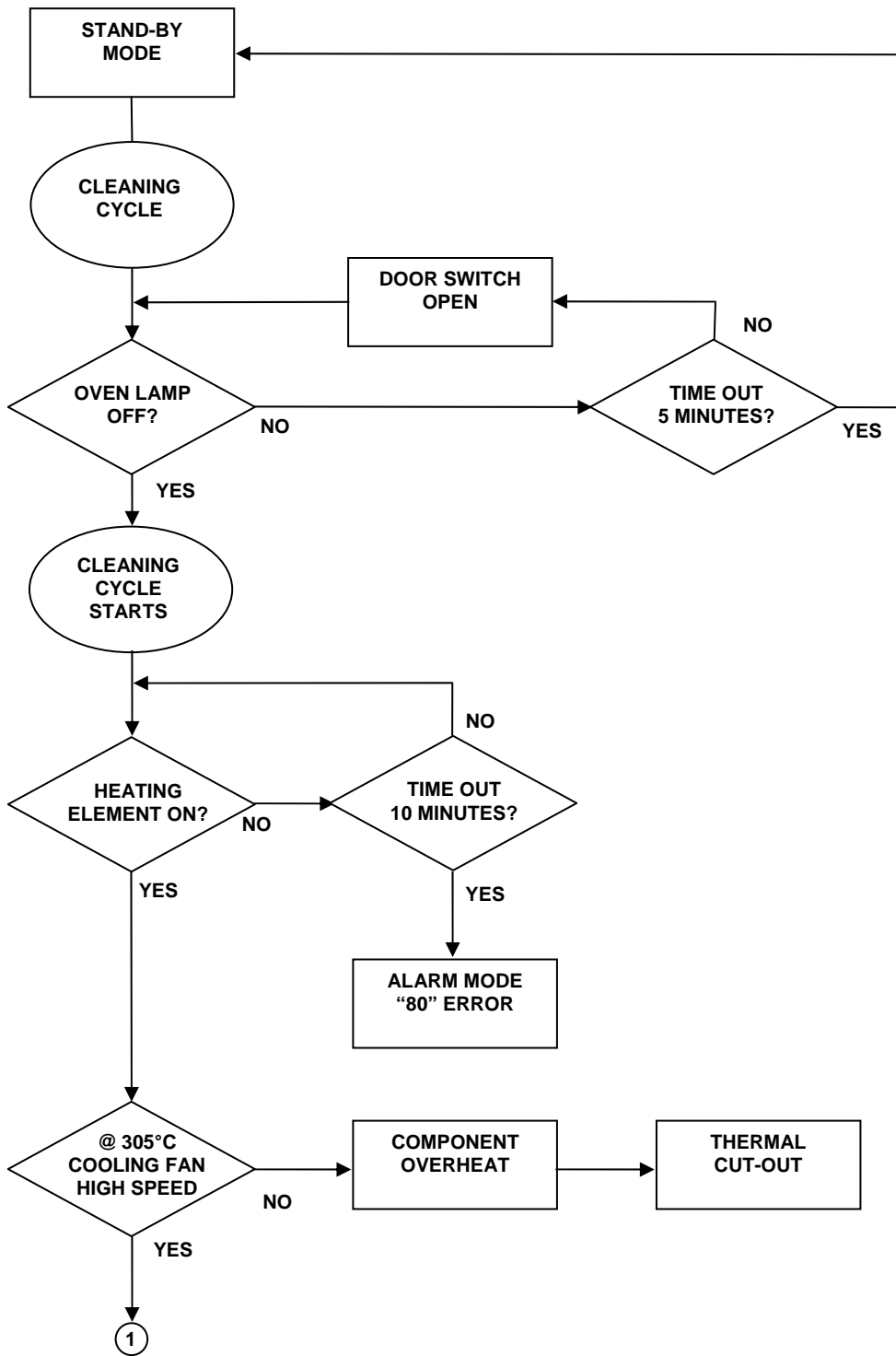
3.7.3.1 - OPERATING SEQUENCE - PROGRAM P1

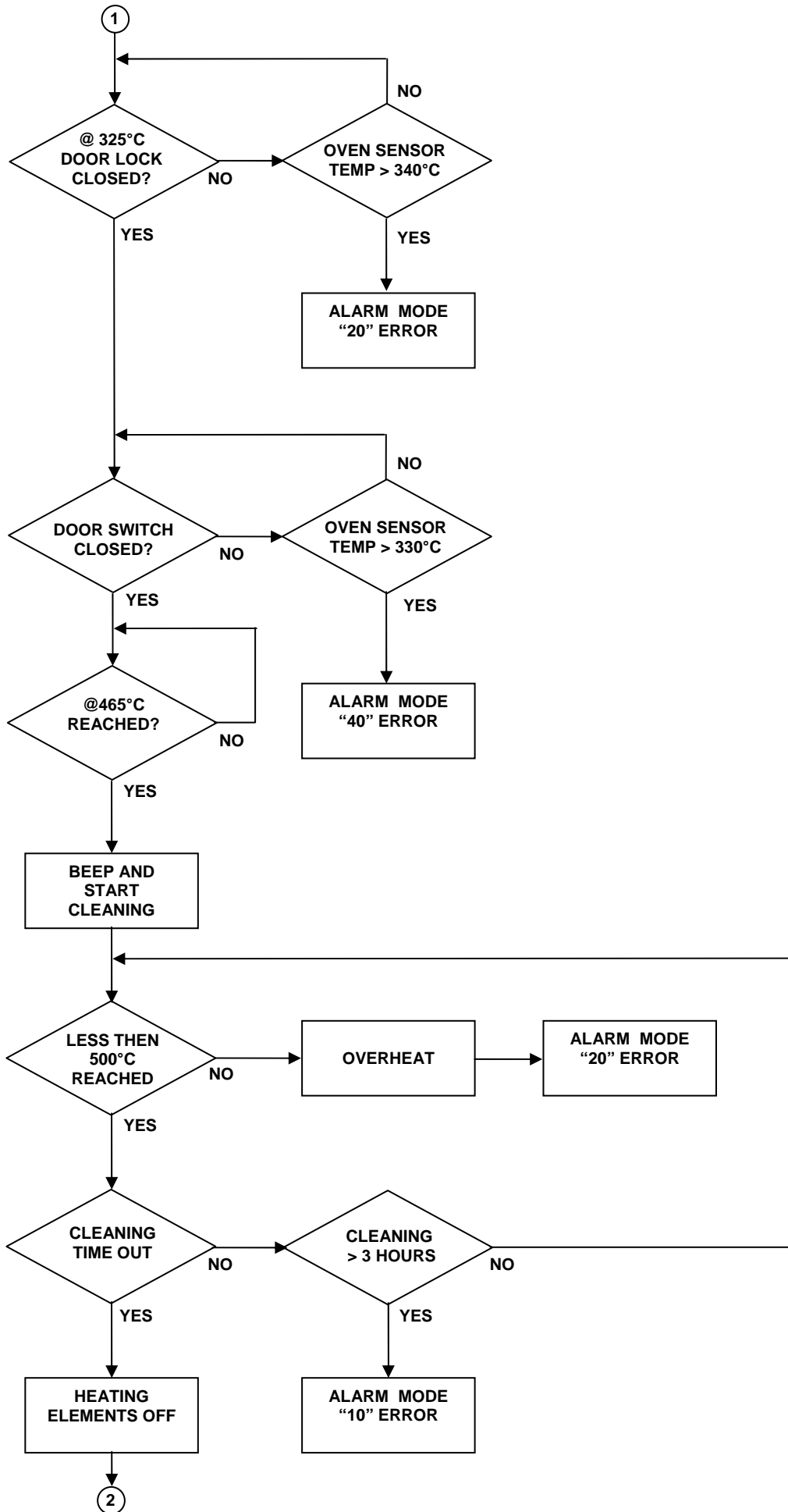
	PHASE 0	PHASE 1	PHASE 2	PHASE 3	PHASE 4	PHASE 5	PHASE 6	PHASE 7	PHASE 8	PHASE 9
	Stand-by	Cleaning	Cleaning	Cleaning	Cleaning	Cleaning	Cleaning (1 hr)	Cleaning	Cleaning	Cleaning
DISPLAY	12:00	Pyro 1	Pyro 1	Pyro 1	Pyro 1	Pyro 1	Pyro 1	Pyro 1	Pyro 1	Pyro 1
PYRO KEY	OFF	OFF	Active	OFF	OFF	OFF	OFF	OFF	OFF	OFF
"PYRO" WORDING	OFF	Flashes	Flashes	ON	ON	ON	ON	ON	ON	OFF
THERMOMETER SYMBOL	OFF	OFF	OFF	Flashes	Flashes	Flashes	Flashes	Flashes	Flashes	OFF
SENSOR TEMPERATURE	30°C	30°C	30°C	100°C	305°C	325°C	465°C	465°C	320°C	300°C
FAN SPEED	OFF	OFF	OFF	LOW	HIGH	HIGH	HIGH	HIGH	HIGH	LOW
TERMOSTAT TH3 (FAN)	OFF	OFF	OFF	OFF	ON	ON	ON	ON	ON	OFF
OVEN LAMP	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF
HEATING ELEMENTS INVOLVED IN CLEANING CYCLE	OFF	OFF	OFF	2450 W 	2450 W 	2450 W 	1800 W  alternated with 2450 W 	OFF	OFF	OFF
DOOR LOCK	DOOR FREE	DOOR FREE	DOOR FREE	DOOR FREE	DOOR LOCKED	DOOR LOCKED	DOOR LOCKED	DOOR LOCKED	DOOR LOCKED	DOOR FREE
DOOR LOCK THERMOSTAT	CLOSED	CLOSED	CLOSED	CLOSED	CLOSED	OPEN	OPEN	OPEN	CLOSED	CLOSED

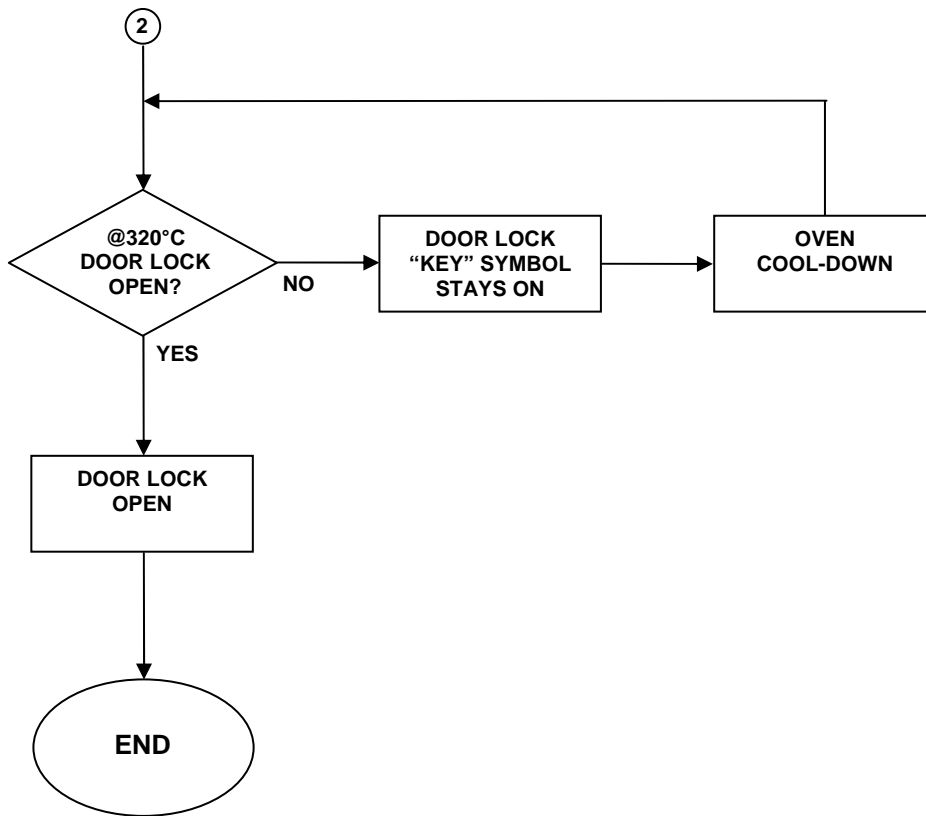
3.7.3.2 - OPERATING SEQUENCE - PROGRAM P2

	PHASE 0	PHASE 1	PHASE 2	PHASE 3	PHASE 4	PHASE 5	PHASE 6	PHASE 7	PHASE 8	PHASE 9
	Stand-by	Cleaning	Cleaning	Cleaning	Cleaning	Cleaning	Cleaning (1 hr 30')	Cleaning	Cleaning	Cleaning
DISPLAY	12:00	Pyro 2	Pyro 2	Pyro 2	Pyro 2	Pyro 1	Pyro 2	Pyro 2	Pyro 2	Pyro 2
PYRO KEY	OFF	OFF	Active	OFF	OFF	OFF	OFF	OFF	OFF	OFF
“PYRO” WORDING	OFF	Flashes	Flashes	ON	ON					
THERMOMETER SYMBOL	OFF	OFF	OFF	Flashes	Flashes	Flashes	Flashes	Flashes	Flashes	OFF
SENSOR TEMPERATURE	30°C	30°C	30°C	100°C	305°C	325°C	465°C	465°C	320°C	300°C
FAN SPEED	OFF	OFF	OFF	LOW	HIGH	HIGH	HIGH	HIGH	HIGH	LOW
TERMOSTAT TH3 (FAN)	OFF	OFF	OFF	OFF	ON	ON	ON	ON	ON	OFF
OVEN LAMP	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF
HEATING ELEMENTS INVOLVED IN SELF-CLEANING CYCLE	OFF	OFF	OFF	2450 W 	2450 W 	2450 W 	1800 W  alternated with 2450 W 	OFF	OFF	OFF
DOOR LOCK	DOOR FREE	DOOR FREE	DOOR FREE	DOOR FREE	DOOR LOCKED	DOOR LOCKED	DOOR LOCKED	DOOR LOCKED	DOOR LOCKED	DOOR FREE
DOOR LOCK THERMOSTAT	CLOSED	CLOSED	CLOSED	CLOSED	CLOSED	OPEN	OPEN	OPEN	CLOSED	CLOSED

3.7.4 - FLOW CHART OF SELF-CLEANING CYCLE





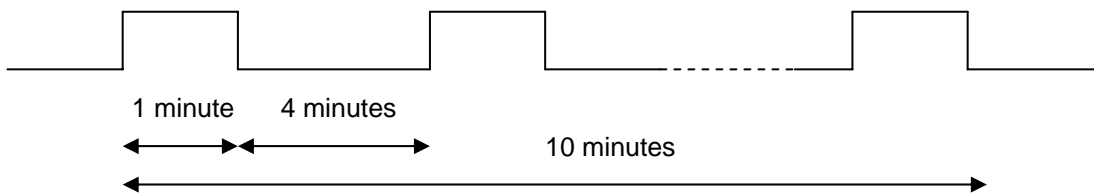


3.7.4 - DOOR LOCK/UNLOCK SIGNALS

The door lock signal is given from terminal 1 of connector BP21 on the power board. If a bimetallic door lock is used, this signal actuates the bimetallic device. If a motor-powered door lock is used, this signal actuates the motor. The diagrams below graphically show how these signals are given.

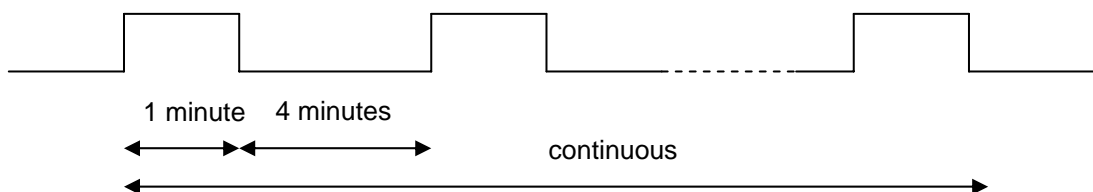
CLOSE SIGNAL

Change from door unlocked to door locked : intervals of 1 minute of close signal followed by 4 minutes of pause, for a maximum time of 10 minutes.



OPEN SIGNAL

Change from door locked to door unlocked: intervals of 1 minute of open signal followed by 4 minutes of pause until the system detects that the door is unlocked.



4 - APPLICATIONS OF SELF-CLEANING FEATURE

The feature described above is available on appliances with different electronic control systems:

- KRONOS
- Versions without display and with rotary controls
- RHEA

4.1 - APPLICATION ON KRONOS

4.1.1 - SCHEMATIC DIAGRAM OF APPLICATION ON KRONOS - LEVEL 1 WITH BIMETAL DOOR LOCK (SOEC BOARD)

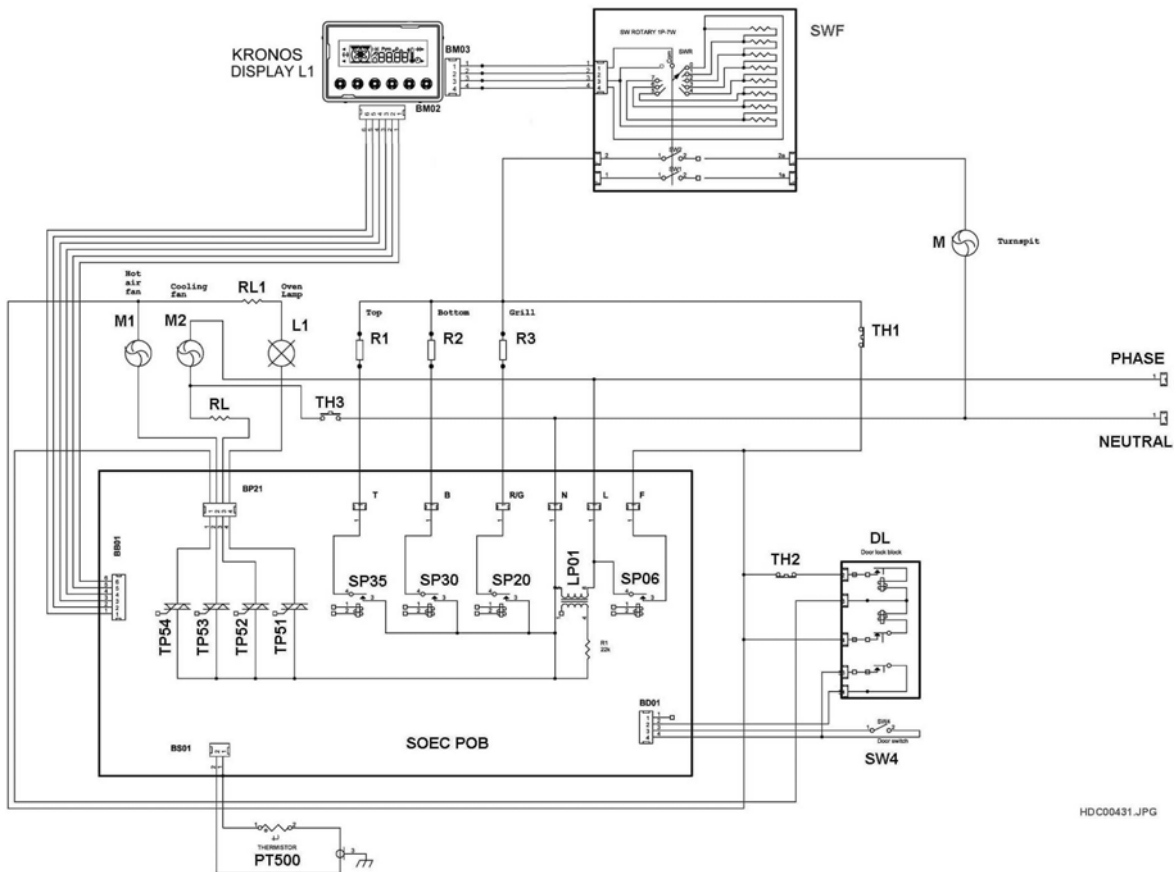


Fig. 44

KEY	
DISPLAY L1	- LEVEL 1 CONTROL UNIT KRONOS LEVEL 3
DL	- DOOR LOCK UNIT
L1	- OVEN LAMP
LP01	- LOW VOLTAGE TRANSFORMER
M	- ROTISSERIE MOTOR
M1	- HOT AIR FAN
M2	- TANGENTIAL COOLING FAN
NEUTRAL	- MAINS (NEUTRAL PHASE)
PHASE	- MAINS (POWER PHASE)
PT500	- OVEN SENSOR
R1	- UPPER HEATING ELEMENT (TOP)
R2	- LOWER HEATING ELEMENT (BOTTOM)
R3	- HEATING ELEMENT FOR GRILL
RL	- VOLTAGE DROPPING RESISTOR FOR (DOUBLE SPEED) FAN
RL1	- DAMPING RESISTOR FOR OVEN LAMP
SOEC POB	- POWER BOARD
SP06	- GENERAL SAFETY RELAY
SP20	- CONTROL RELAY FOR GRILL ELEMENT
SP30	- CONTROL RELAY FOR BOTTOM HEATING ELEMENT
SP35	- CONTROL RELAY FOR TOP HEATING ELEMENT
SWF	- ROTARY FUNCTION SWITCH
TH1	- SAFETY THERMOSTAT
TH2	- CONTROL THERMOSTAT FOR DOOR LOCK SYSTEM
TH3	- THERMOSTAT FOR FAN SPEED CONTROL
TH4	- OVERLOAD PREVENTION THERMOSTAT
TP51	- TRIAC FOR OVEN LAMP
TP52	- TRIAC FOR COOLING FAN
TP53	- TRIAC FOR HOT AIR FAN
TP54	- TRIAC FOR DOOR LOCK
SW4	- MICROSWITCH DOOR CLOSED

4.1.2 - OPERATIONAL DESCRIPTION OF LEVEL 1 KRONOS SELF-CLEANING OVEN WITH BIMETAL DOOR LOCK (SOEC BOARD)

Mains power is fed to the power board, which supplies the control unit with low voltage. The oven circuit is protected by safety thermostat TH1, which interrupts the power in case of overheating caused by a malfunction in the electronics.

When baking operation is selected (see the chapter entitled "Using the level 1 programmer" in Service Manual Kronos), the relative relays and triacs on the power board are switched on.

Temperature sensor PT500 is also connected to the power board. The resistance of this sensor varies as oven temperature varies. When the electronic control system detects the resistance value on PT500 that corresponds to the temperature set for the oven, the system shuts off the heating elements.

The door lock assembly for the self-cleaning function (powered by triac TP54) is also connected to the power board.

Thermostat TH2 prevents false signals from unlocking the door during the self-cleaning cycle (see explanation on p. 23).

Microswitch SW4 signals the power board that the door is closed.

If oven temperature exceeds 120°C, triac TP52 starts cooling fan M2 to improve cooling in the areas outside the oven compartment (muffle) where electronic components are located.

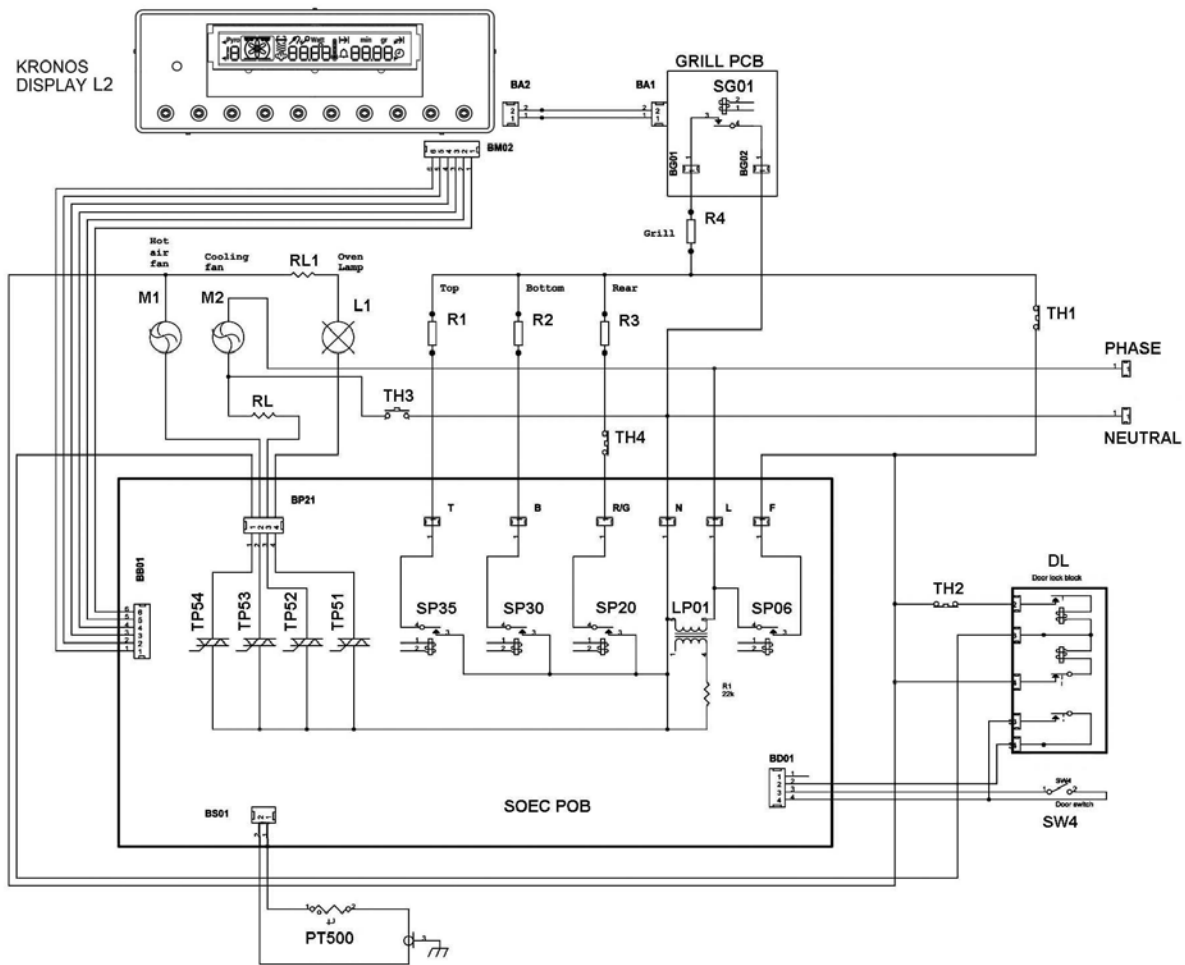
When the selected baking cycle ends, or when the appliance is shut off, the cooling fan operates until the temperature at the centre of the oven falls below 110°C.

Thermostat TH3 and resistor RL form a circuit that generates two speeds on the cooling fan, as explained on p. 23.

If a fault occurs in the oven system (such as a malfunctioning relay or temperature sensor), the temperature sensor detects the malfunction and the system shuts off the power to the appliance using safety relay SP06.

The system also generates an error code identifying the fault that has occurred (see the chapter entitled "Error codes").

4.1.3 - SCHEMATIC DIAGRAM OF APPLICATION ON KRONOS - LEVEL 2 WITH BIMETAL DOOR LOCK (SOEC BOARD)



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Fig. 45

KEY	
DISPLAY L2	- LEVEL 2 CONTROL UNIT KRONOS
DL	- DOOR LOCK UNIT
GRILL PCB	- GRILL RELAY PCB
L1	- OVEN LAMP
LP01	- LOW VOLTAGE TRANSFORMER
M	- ROTISSERIE MOTOR
M1	- HOT AIR FAN
M2	- TANGENTIAL COOLING FAN
NEUTRAL	- MAINS (NEUTRAL PHASE)
PHASE	- MAINS (POWER PHASE)
PT500	- OVEN SENSOR
R1	- UPPER HEATING ELEMENT (TOP)
R2	- LOWER HEATING ELEMENT (BOTTOM)
R3	- HEATING ELEMENT FOR GRILL
R4	- GRILL RESISTOR
RL	- VOLTAGE DROPPING RESISTOR FOR (DOUBLE SPEED) FAN
RL1	- DAMPING RESISTOR FOR OVEN LAMP
SOEC POB	- POWER BOARD
SP06	- GENERAL SAFETY RELAY
SP20	- CONTROL RELAY FOR GRILL ELEMENT
SP30	- CONTROL RELAY FOR BOTTOM HEATING ELEMENT
SP35	- CONTROL RELAY FOR TOP HEATING ELEMENT
SW4	- MICROSWITCH DOOR CLOSED
TH1	- SAFETY THERMOSTAT
TH2	- CONTROL THERMOSTAT FOR DOOR LOCK SYSTEM
TH3	- THERMOSTAT FOR FAN SPEED CONTROL
TH4	- OVERLOAD PREVENTION THERMOSTAT
TP51	- TRIAC FOR OVEN LAMP
TP52	- TRIAC FOR COOLING FAN
TP53	- TRIAC FOR HOT AIR FAN
TP54	- TRIAC FOR DOOR LOCK

4.1.4 - OPERATIONAL DESCRIPTION OF LEVEL 2 KRONOS SELF-CLEANING OVEN WITH BIMETAL DOOR LOCK (SOEC BOARD)

Mains power is fed to the power board, which supplies the control unit with low voltage. The oven circuit is protected by safety thermostat TH1, which interrupts the power in case of overheating caused by a malfunction in the electronics.

When baking operation is selected (see the chapter entitled "Using the level 2 programmer" in Service Manual Kronos), the relative relays and triacs on the power board are switched on. If the grill is used, relay SG01 on the grill control board is also actuated.

Temperature sensor PT500 is also connected to the power board. The resistance of this sensor varies as oven temperature varies. When the electronic control system detects the resistance value on PT500 that corresponds to the temperature set for the oven, the system shuts off the heating elements.

The door lock assembly for the self-cleaning function (powered by triac TP54) is also connected to the power board.

Thermostat TH2 prevents false signals from unlocking the door during the self-cleaning cycle (see explanation on p. 23).

Microswitch SW4 signals the power board that the door is closed.

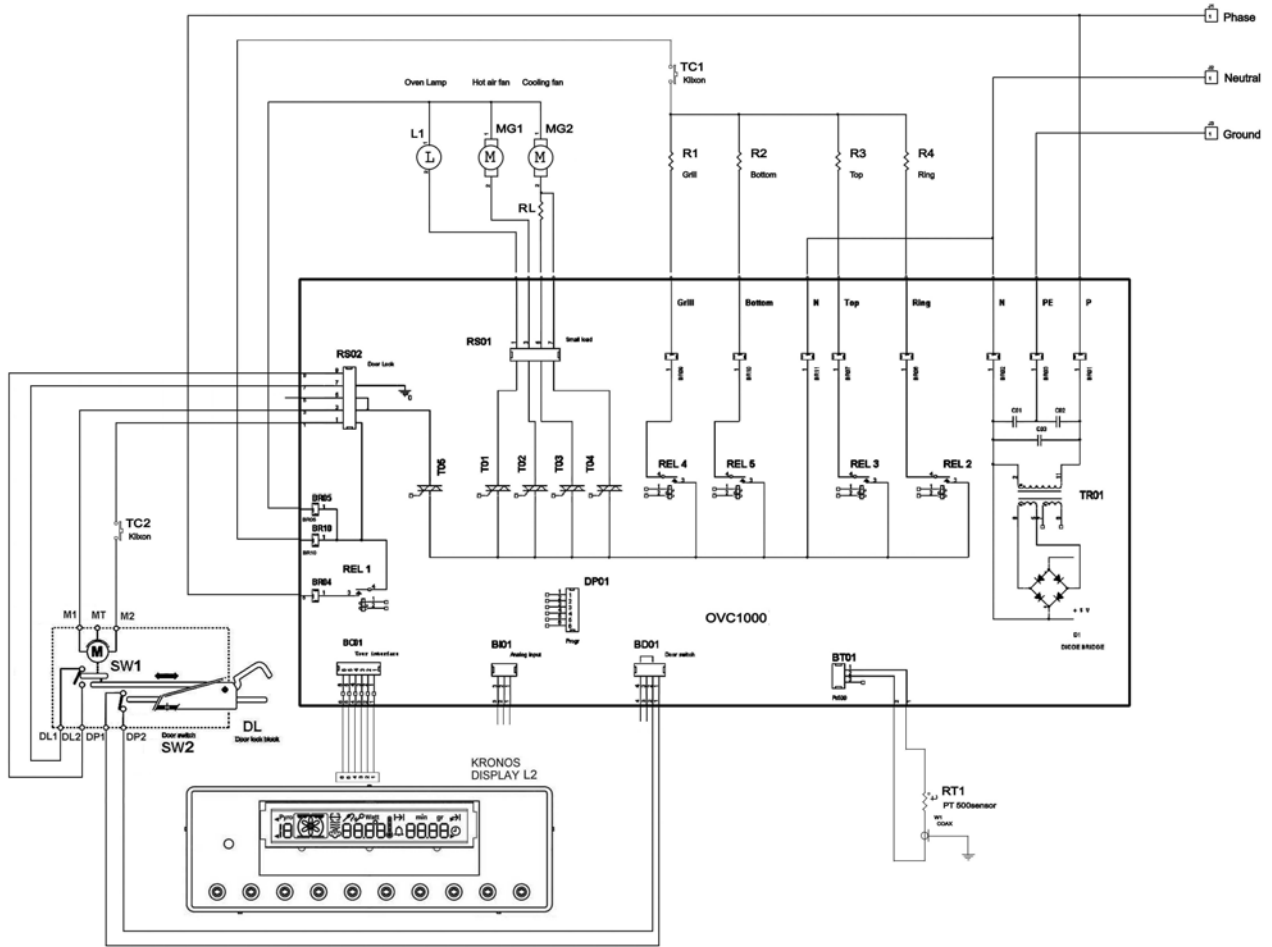
If oven temperature exceeds 120°C, triac TP52 starts cooling fan M2 to improve cooling in the areas outside the oven compartment (muffle) where electronic components are located.

When the selected baking cycle ends, or when the appliance is shut off, the cooling fan operates until the temperature at the centre of the oven falls below 110°C.

Thermostat TH3 and resistor RL form a circuit that generates two speeds on the cooling fan, as explained on p. 23.

If a fault occurs in the oven system (such as a malfunctioning relay or temperature sensor), the temperature sensor detects the malfunction and the system shuts off the power to the appliance using safety relay SP06. The system also generates an error code identifying the fault that has occurred (see the chapter entitled "Error codes").

4.1.5 - SCHEMATIC DIAGRAM OF APPLICATION ON KRONOS - LEVEL 2 WITH MOTOR-POWERED DOOR LOCK (OVC1000 BOARD)



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Fig. 46

KEY			
DISPLAY L2	- KRONOS LEVEL 2 CONTROL UNIT	REL4	- CONTROL RELAY FOR GRILL HEATING ELEMENT
DL	- DOOR LOCK ASSEMBLY	REL5	- CONTROL RELAY FOR BOTTOM HEATING ELEMENT
Ground	- MAINS (EARTH)	RL	- DROP RESISTOR FOR FAN (DOUBLE SPEED)
L1	- OVEN LAMP	SW1	- DOOR LOCK HOOK MICROSWITCH
MG1	- CONVECTION FAN	SW2	- DOOR CLOSED MICROSWITCH
MG2	- COOLING TANGENTIAL FAN	TC1	- SAFETY THERMOSTAT
NEUTRAL	- MAINS (NEUTRAL PHASE)	TC2	- DOOR LOCK THERMOSTAT
PHASE	- MAINS (POWER PHASE)	TO1	- TRIAC FOR LAMP OVEN
RT1	- OVEN SENSOR PT500	TO2	- TRIAC FOR CONVECTION FAN
R1	- GRILL HEATING ELEMENT	TO3	- CONTROL TRIAC FOR COOLING TANGENTIAL FAN
R2	- LOWER HEATING ELEMENT (BOTTOM)	TO4	- CONTROL TRIAC FOR COOLING TANGENTIAL FAN (SECOND SPEED)
R3	- HEATING ELEMENT (TOP)	TO5	- TRIAC FOR DOOR LOCK
R4	- CONVECTION HEATING ELEMENT (CIRCULAR)	TR01	- LOW VOLTAGE TRANSFORMER
OVC1000	- POWER BOARD		
REL1	- SAFETY MAIN RELAY		
REL2	- CONTROL RELAY FOR CONVECTION HEATING ELEMENT		
REL3	- CONTROL RELAY FOR UPPER HEATING ELEMENT		

4.1.6 - OPERATIONAL DESCRIPTION OF LEVEL 2 KRONOS WITH MOTOR-POWERED DOOR LOCK (OVC 1000 BOARD)

Mains power is fed to the power board, which supplies the control unit with low voltage. The oven circuit is protected by safety thermostat TH1, which interrupts the power in case of overheating caused by a malfunction in the electronics.

When baking operation is selected (see the chapter entitled "Using the level 2 programmer" in Service Manual Kronos OVC1000), the relative relays and triacs on the power board are switched on. If the grill is used, relay SG01 on the grill control board is also actuated.

Temperature sensor PT500 is also connected to the power board. The resistance of this sensor varies as oven temperature varies. When the electronic control system detects the resistance value on PT500 that corresponds to the temperature set for the oven, the system shuts off the heating elements.

The door lock assembly for the self-cleaning function (powered by triac TO5) is also connected to the power board.

Thermostat TC2 prevents false signals from unlocking the door during the self-cleaning cycle (see explanation on p. 23).

Microswitch SW2 signals the power board that the door is closed.

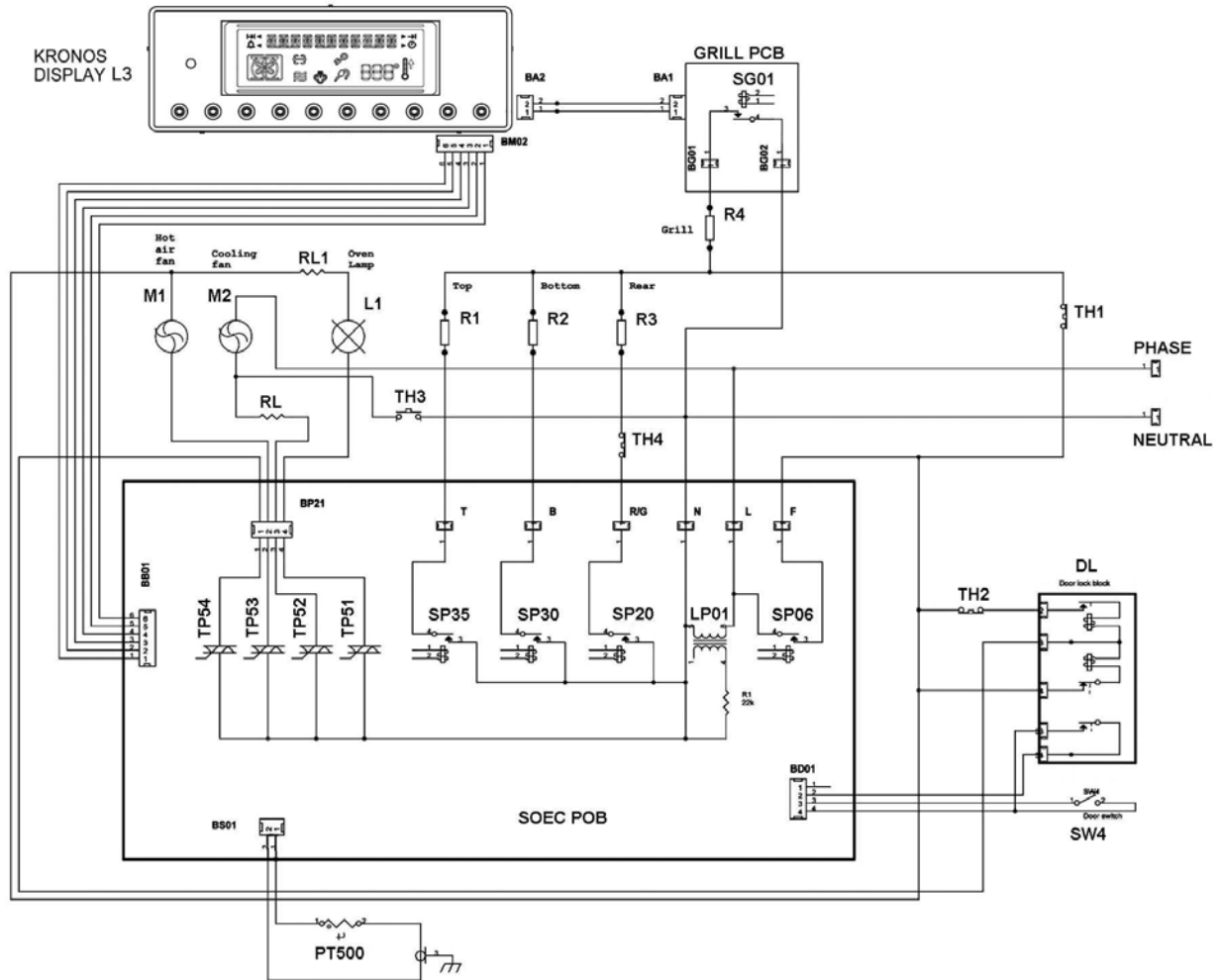
If oven temperature exceeds 120°C, triac TO3 starts cooling fan MG2 to improve cooling in the areas outside the oven compartment (muffle) where electronic components are located.

When the selected baking cycle ends, or when the appliance is shut off, the cooling fan operates until the temperature at the centre of the oven falls below 110°C.

Triac TO4 and resistor RL form a circuit that generates two speeds on the cooling fan, as explained on p. 23.

If a fault occurs in the oven system (such as a malfunctioning relay or temperature sensor), the temperature sensor detects the malfunction and the system shuts off the power to the appliance using safety relay REL1. The system also generates an error code identifying the fault that has occurred (see the chapter entitled "Error codes").

4.1.7 - SCHEMATIC DIAGRAM OF APPLICATION ON KRONOS - LEVEL 3 WITH BIMETAL DOOR LOCK (SOEC BOARD)



HDC00351.JPG

Fig. 47

KEY	
DISPLAY L2	- LEVEL 3 CONTROL UNIT KRONOS
DL	- DOOR LOCK UNIT
GRILL PCB	- GRILL RELAY PCB
L1	- OVEN LAMP
LP01	- LOW VOLTAGE TRANSFORMER
M1	- CONVECTION FAN
M2	- TANGENTIAL COOLING FAN
NEUTRAL	- MAINS (NEUTRAL PHASE)
PHASE	- MAINS (POWER PHASE)
PT500	- OVEN SENSOR
R1	- UPPER HEATING ELEMENT (TOP)
R2	- LOWER HEATING ELEMENT (BOTTOM)
R3	- CONVECTION HEATING ELEMENT (CIRCULAR)
R4	- GRILL HEATING ELEMENT
RL	- VOLTAGE DROPPING RESISTOR FOR (DOUBLE SPEED) FAN
RL1	- DAMPING RESISTOR FOR OVEN LAMP
SOEC POB	- POWER BOARD
SP06	- SAFETY MAIN RELAY
SP20	- CONTROL RELAY FOR CONVECTION HEATING ELEMENT
SP30	- CONTROL RELAY FOR LOWER HEATING ELEMENT
SP35	- CONTROL RELAY FOR UPPER HEATING ELEMENT
SW4	- MICROSWITCH DOOR CLOSED
TH1	- SAFETY THERMOSTAT FOR POWER LOADS
TH2	- CONTROL THERMOSTAT FOR DOOR LOCK SYSTEM
TH3	- THERMOSTAT FOR FAN SPEED CONTROL
TH4	- OVERLOAD PREVENTION THERMOSTAT
TP51	- TRIAC FOR OVEN LAMP
TP52	- TRIAC FOR COOLING FAN
TP53	- TRIAC FOR HOT AIR FAN
TP54	- TRIAC FOR DOOR LOCK

4.1.8 - OPERATIONAL DESCRIPTION OF LEVEL 3 KRONOS WITH BIMETAL DOOR LOCK (SOEC BOARD)

Mains power is fed to the power board, which supplies the control unit with low voltage. The oven circuit is protected by safety thermostat TH1, which interrupts the power in case of overheating caused by a malfunction in the electronics.

When baking operation is selected (see the chapter entitled "Using the level 3 programmer" in Service Manual Kronos), the relative relays and triacs on the power board are switched on. If the grill is used, relay SG01 on the grill control board is also actuated.

Temperature sensor PT500 is also connected to the power board. The resistance of this sensor varies as oven temperature varies. When the electronic control system detects the resistance value on PT500 that corresponds to the temperature set for the oven, the system shuts off the heating elements.

The door lock assembly for the self-cleaning function (powered by triac TP54) is also connected to the power board.

Thermostat TH2 prevents false signals from unlocking the door during the self-cleaning cycle (see explanation on p. 23).

Microswitch SW4 signals the power board that the door is closed.

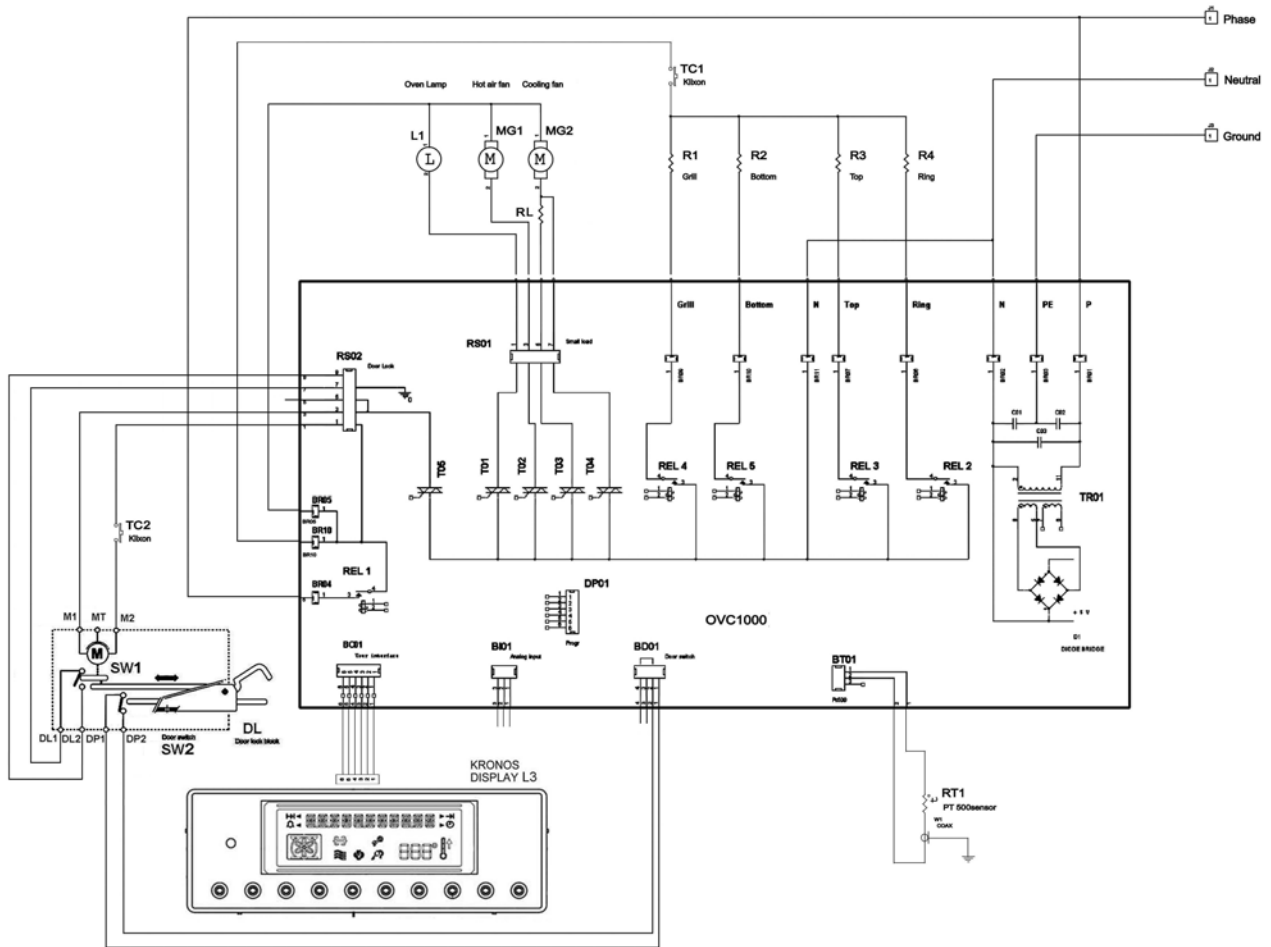
If oven temperature exceeds 120°C, triac TP52 starts cooling fan M2 to improve cooling in the areas outside the oven compartment (muffle) where electronic components are located.

When the selected baking cycle ends, or when the appliance is shut off, the cooling fan operates until the temperature at the centre of the oven falls below 110°C.

Thermostat TH3 and resistor RL form a circuit that generates two speeds on the cooling fan, as explained on p. 23.

If a fault occurs in the oven system (such as a malfunctioning relay or temperature sensor), the temperature sensor detects the malfunction and the system shuts off the power to the appliance using safety relay SP06. The system also generates an error code identifying the fault that has occurred (see the chapter entitled "Error codes").

4.1.9 - SCHEMATIC DIAGRAM OF APPLICATION ON KRONOS - LEVEL 3 WITH MOTOR-POWERED DOOR LOCK (OVC1000 BOARD)



HDC01065.JPG

Fig. 48

KEY			
DISPLAY L3	- KRONOS LEVEL 3 CONTROL UNIT	REL4	- CONTROL RELAY FOR GRILL HEATING ELEMENT
DL	- DOOR LOCK ASSEMBLY	REL5	- CONTROL RELAY FOR BOTTOM HEATING ELEMENT
Ground	- MAINS (EARTH)	RL	- DROP RESISTOR FOR FAN (DOUBLE SPEED)
L1	- OVEN LAMP	SW1	- DOOR LOCK HOOK MICROSWITCH
MG1	- CONVECTION FAN	SW2	- DOOR CLOSED MICROSWITCH
MG2	- COOLING TANGENTIAL FAN	TC1	- SAFETY THERMOSTAT
NEUTRAL	- MAINS (NEUTRAL PHASE)	TC2	- DOOR LOCK THERMOSTAT
PHASE	- MAINS (POWER PHASE)	TO1	- TRIAC FOR LAMP OVEN
RT1	- OVEN SENSOR PT500	TO2	- TRIAC FOR CONVECTION FAN
R1	- GRILL HEATING ELEMENT	TO3	- CONTROL TRIAC FOR COOLING TANGENTIAL FAN
R2	- LOWER HEATING ELEMENT (BOTTOM)	TO4	- CONTROL TRIAC FOR COOLING TANGENTIAL FAN (SECOND SPEED)
R3	- HEATING ELEMENT (TOP)	TO5	- TRIAC FOR DOOR LOCK
R4	- CONVECTION HEATING ELEMENT (CIRCULAR)	TR01	- LOW VOLTAGE TRANSFORMER
OVC1000	- POWER BOARD		
REL1	- SAFETY MAIN RELAY		
REL2	- CONTROL RELAY FOR CONVECTION HEATING ELEMENT		
REL3	- CONTROL RELAY FOR UPPER HEATING ELEMENT		

4.1.10 - OPERATIONAL DESCRIPTION OF LEVEL 3 KRONOS WITH MOTOR-POWERED DOOR LOCK (OVC1000 BOARD)

Mains power is fed to the power board, which supplies the control unit with low voltage. The oven circuit is protected by safety thermostat TC1, which interrupts the power in case of overheating caused by a malfunction in the electronics.

When baking operation is selected (see the chapter entitled "Using the level 3 programmer" in Service Manual Kronos OVC1000), the relative relays and triacs on the power board are switched on. If the grill is used, relay SG01 on the grill control board is also actuated.

Temperature sensor PT500 is also connected to the power board. The resistance of this sensor varies as oven temperature varies. When the electronic control system detects the resistance value on PT500 that corresponds to the temperature set for the oven, the system shuts off the heating elements.

The door lock assembly for the self-cleaning function (powered by triac TO5) is also connected to the power board.

Thermostat TC2 prevents false signals from unlocking the door during the self-cleaning cycle (see explanation on p. 23).

Microswitch SW2 signals the power board that the door is closed.

If oven temperature exceeds 120°C, triac TO3 starts cooling fan MG2 to improve cooling in the areas outside the oven compartment (muffle) where electronic components are located.

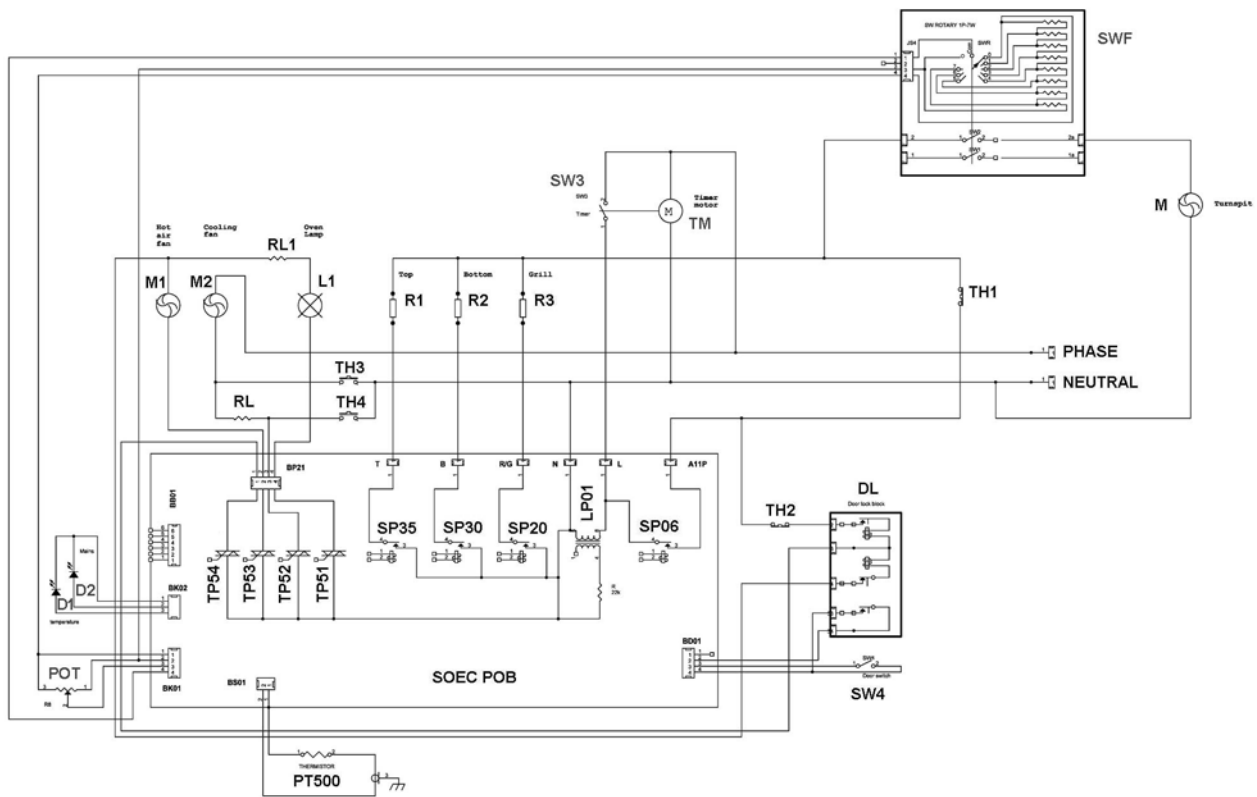
When the selected baking cycle ends, or when the appliance is shut off, the cooling fan operates until the temperature at the centre of the oven falls below 110°C.

Thermostat TO4 and resistor RL form a circuit that generates two speeds on the cooling fan, as explained on p. 23.

If a fault occurs in the oven system (such as a malfunctioning relay or temperature sensor), the temperature sensor detects the malfunction and the system shuts off the power to the appliance using safety relay REL1. The system also generates an error code identifying the fault that has occurred (see the chapter entitled "Error codes").

4.2 - APPLICATION ON MODELS WITHOUT DISPLAY

4.2.1 - SCHEMATIC DIAGRAM OF APPLICATION ON MODELS WITHOUT DISPLAY WITH BIMETAL DOOR LOCK



HDC00428.JPG

Fig. 45

KEY			
D1	- TEMPERATURE LED	SP30	- CONTROL RELAY FOR BOTTOM HEATING ELEMENT
D2	- SWITCH ON LED	SP35	- CONTROL RELAY FOR TOP HEATING ELEMENT
DL	- DOOR LOCK ASSEMBLY	SW3	- TIMER CONTACT
L1	- OVEN LAMP	SW4	- MICROSWITCH DOOR CLOSED
LP01	- LOW VOLTAGE TRANSFORMER	SWF	- ROTARY FUNCTION SWITCH
M	- TURNSPIT MOTOR	TH1	- SAFETY THERMOSTAT FOR POWER LOADS
M1	- HOT AIR FAN	TH2	- DOOR LOCK THERMOSTAT
M2	- TANGENTIAL COOLING FAN	TH3	- THERMOSTAT FOR FAN SPEED VARIATION
NEUTRAL	- MAINS (NEUTRAL PHASE)	TH4	- OVERLOAD PROTECTION THERMOSTAT
PHASE	- MAINS (POWER PHASE)	TM	- TIMER MOTOR
POT	- TEMPERATURE/TIME REGULATION	TP51	- TRIAC FOR OVEN LAMP
PT500	- OVEN SENSOR	TP52	- TRIAC FOR COOLING FAN
R1	- UPPER HEATING ELEMENT (TOP)	TP53	- TRIAC FOR HOT AIR FAN
R2	- LOWER HEATING ELEMENT (BOTTOM)	TP54	- TRIAC FOR DOOR LOCK
R3	- GRILL HEATING ELEMENT		
RL	- VOLTAGE DROPPING RESISTOR FOR (DOUBLE SPEED) FAN		
RL1	- DAMPING RESISTOR FOR OVEN LAMP		
SOEC POB	- POWER BOARD		
SP06	- GENERAL SAFETY RELAY		
SP20	- CONTROL RELAY FOR GRILL HEATING ELEMENT		

4.2.2 - OPERATIONAL DESCRIPTION OF SELF-CLEANING OVEN ON MODELS WITHOUT DISPLAY WITH BIMETAL DOOR LOCK

Mains power for the system is fed to the power board, which supplies the control unit with low voltage. The oven circuit is protected by safety thermostat TH1, which interrupts the power in case of overheating caused by a malfunction in the electronics.

When baking operation is selected (see the chapter entitled "Using the programmer" in the Service Manual for these models), the relative relays and triacs on the power board are switched on.

Temperature sensor PT500 is also connected to the power board. The resistance of this sensor varies as oven temperature varies. When the electronic control system detects the resistance value on PT500 that corresponds to the temperature set for the oven, the system shuts off the heating elements.

The door lock assembly for the self-cleaning function (powered by triac TP54) is also connected to the power board.

Thermostat TH2 prevents false signals from unlocking the door during the self-cleaning cycle (see explanation on p. 23).

Microswitch SW4 signals the power board that the door is closed.

If oven temperature exceeds 120°C, triac TP52 starts cooling fan M2 to improve cooling in the areas outside the oven compartment (muffle) where electronic components are located.

When the selected baking cycle ends, or when the appliance is shut off, the cooling fan operates until the temperature at the centre of the oven falls below 110°C.

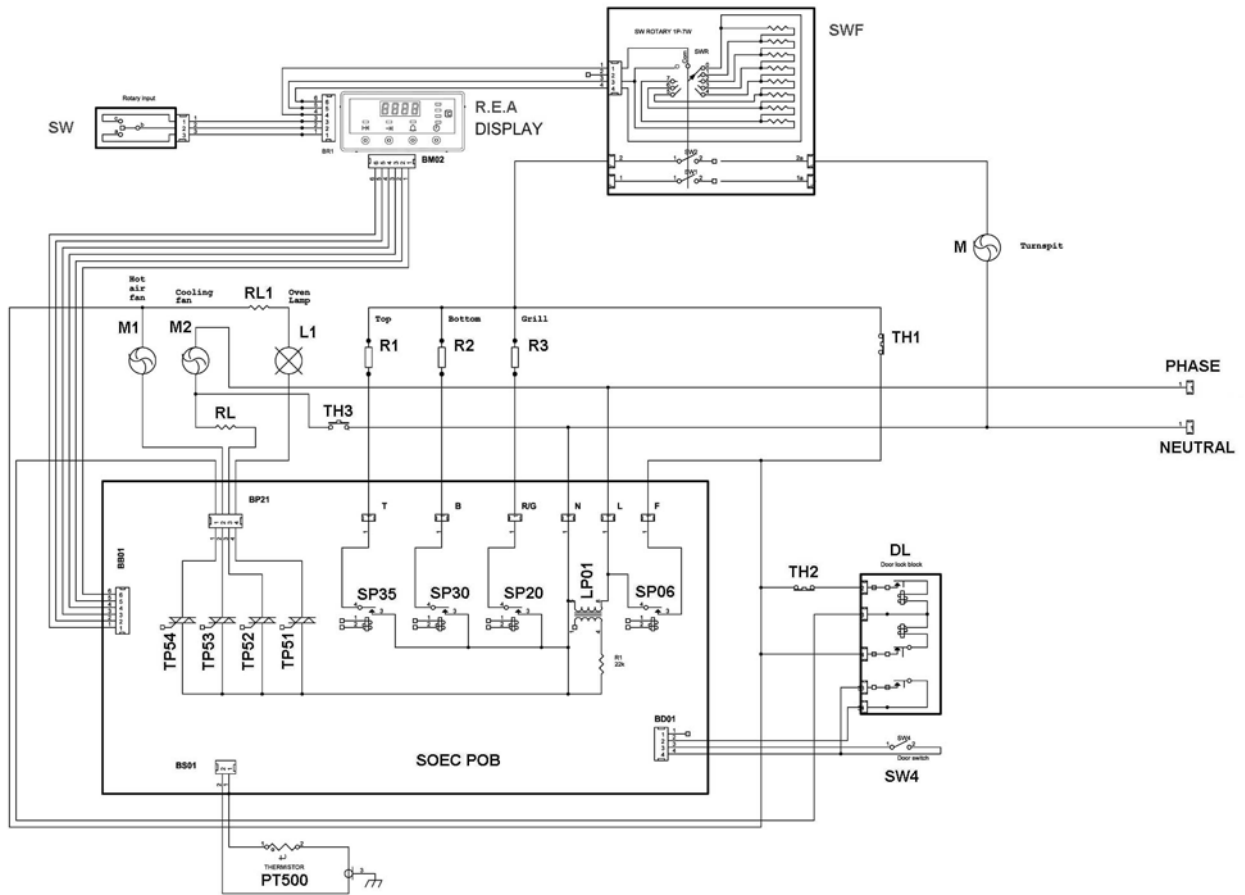
Thermostat TH3 and resistor RL form a circuit that generates two speeds on the cooling fan, as explained on p. 23.

Thermostat TH4 keeps the cooling fan operating if the temperature exceeds 120°C at the end of the automatic baking cycle set on the timer.

If a fault occurs in the oven system (such as a malfunctioning relay or temperature sensor), the temperature sensor detects the malfunction and the system shuts off the power to the appliance using safety relay SP06.

4.3 - APPLICATION ON RHEA

4.3.1 - SCHEMATIC DIAGRAM OF APPLICATION ON RHEA WITH BIMETAL DOOR LOCK (SOEC BOARD)



HDC00429.JPG

Fig. 50

KEY			
DISPLAY	- R.H.E.A. CONTROL UNIT	SP06	- GENERAL SAFETY RELAY
DL	- DOOR LOCK ASSEMBLY	SP20	- CONTROL RELAY FOR GRILL HEATING ELEMENT
L1	- OVEN LAMP	SP30	- CONTROL RELAY FOR BOTTOM HEATING ELEMENT
LP01	- LOW VOLTAGE TRANSFORMER	SP35	- CONTROL RELAY FOR TOP HEATING ELEMENT
M	- TURNSPIT MOTOR	SW4	- MICROSWITCH DOOR CLOSED
M1	- HOT AIR FAN	SWF	- ROTARY FUNCTION SWITCH
M2	- TANGENTIAL COOLING FAN	TH1	- SAFETY THERMOSTAT FOR POWER LOADS
NEUTRAL	- MAINS (NEUTRAL PHASE)	TH2	- DOOR LOCK THERMOSTAT
PHASE	- MAINS (POWER PHASE)	TH3	- THERMOSTAT FOR FAN SPEED VARIATION
PT500	- OVEN SENSOR	TP51	- TRIAC FOR OVEN LAMP
R1	- UPPER HEATING ELEMENT (TOP)	TP52	- TRIAC FOR COOLING TANGENTIAL FAN
R2	- LOWER HEATING ELEMENT (BOTTOM)	TP53	- TRIAC FOR HOT AIR FAN
R3	- GRILL HEATING ELEMENT	TP54	- TRIAC FOR DOOR LOCK
RL	- VOLTAGE DROPPING RESISTOR FOR (DOUBLE SPEED) FAN		
RL1	- DAMPING RESISTOR FOR OVEN LAMP		
SOEC POB	- POWER BOARD		

4.3.2 - OPERATIONAL DESCRIPTION OF RHEA SELF-CLEANING OVEN WITH BIMETAL DOOR LOCK (SOEC BOARD)

Mains power for the system is fed to the power board, which supplies the control unit with low voltage. The oven circuit is protected by safety thermostat TH1, which interrupts the power in case of overheating caused by a malfunction in the electronics.

When baking operation is selected (see the chapter entitled "Using the programmer" in the RHEA Service Manual, General Information), the relative relays and triacs on the power board are switched on.

Temperature sensor PT500 is also connected to the power board. The resistance of this sensor varies as oven temperature varies. When the electronic control system detects the resistance value on PT500 that corresponds to the temperature set for the oven, the system shuts off the heating elements.

The door lock assembly for the self-cleaning function (powered by triac TP54) is also connected to the power board.

Thermostat TH2 prevents false signals from unlocking the door during the self-cleaning cycle (see explanation on p. 23).

Microswitch SW4 signals the power board that the door is closed.

If oven temperature exceeds 120°C, triac TP52 starts cooling fan M2 to improve cooling in the areas outside the oven compartment (muffle) where electronic components are located.

When the selected baking cycle ends, or when the appliance is shut off, the cooling fan operates until the temperature at the centre of the oven falls below 110°C.

Thermostat TH3 and resistor RL form a circuit that generates two speeds on the cooling fan, as explained on p. 23.

If a fault occurs in the oven system (such as a malfunctioning relay or temperature sensor), the temperature sensor detects the malfunction and the system shuts off the power to the appliance using safety relay SP06. The system also generates an error code identifying the fault that has occurred (see the chapter entitled "Error codes").

4.3.3 - SCHEMATIC DIAGRAM OF APPLICATION ON RHEA WITH MOTOR-POWERED DOOR LOCK (OVC1000 BOARD)

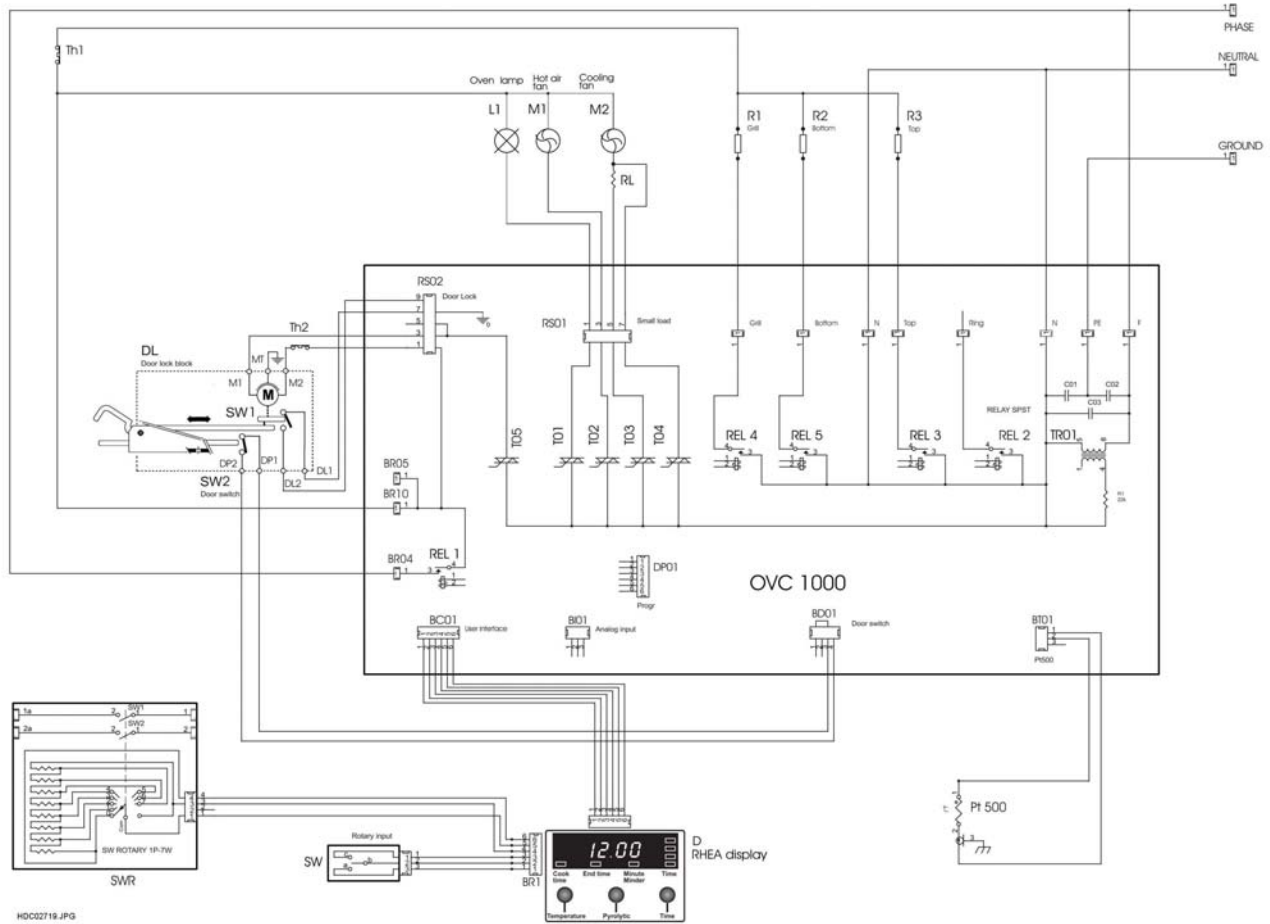


Fig. 51

KEY			
DL	- DOOR LOCK	RL	- VOLTAGE DROPPING RESISTOR FOR (DOUBLE SPEED) FAN
GROUND	- MAINS (EARTH)	SW	- ROTARY SELECTOR TIME/TEMPERATURE
L1	- OVEN LAMP	SW1	- DOOR LOCK HOOK MICROSWITCH
M1	- CONVECTION FAN	SW2	- MICROSWITCH DOOR CLOSED
M2	- COOLING TANGENTIAL FAN	SWR	- ROTARY FUNCTION SELECTOR
NEUTRAL	- MAINS (NEUTRAL PHASE)	Th1	- MAIN SAFETY THERMOSTAT
PHASE	- MAINS (POWER PHASE)	Th2	- DOOR LOCK THERMOSTAT
PT500	- OVEN SENSOR	TO1	- TRIAC OVEN LAMP
R1	- GRILL HEATING ELEMENT	TO2	- TRIAC CONVECTION FAN
R2	- LOWER HEATING ELEMENT (BOTTOM)	TO3	- TRIAC COOLING TANGENTIAL FAN
R3	- UPPER HEATING ELEMENT (TOP)	TO4	- TRIAC HIGH-SPEED FAN
R.H.E.A.	- R.H.E.A. CONTROL UNIT	TO5	- TRIAC DOOR LOCK
OVC 1000	- POWER BOARD OVC1000	TR01	- LOW VOLTAGE TRANSFORMER
REL1	- SAFETY MAIN RELAY		
REL2	- RELAY (NOT USED)		
REL3	- CONTROL RELAY FOR UPPER HEATING ELEMENT		
REL4	- CONTROL RELAY FOR GRILL HEATING ELEMENT		
REL5	- CONTROL RELAY FOR LOWER HEATING ELEMENT		

4.3.4 - OPERATIONAL DESCRIPTION OF RHEA SELF-CLEANING OVEN WITH MOTOR-POWERED DOOR LOCK (OVC1000 BOARD)

Mains power for the system is fed to the power board, which supplies the control unit with low voltage. The oven circuit is protected by safety thermostat TH1, which interrupts the power in case of overheating caused by a malfunction in the electronics.

When baking operation is selected (see the chapter entitled "Using the programmer" in the RHEA OVC1000 Service Manual, General Information), the relative relays and triacs on the power board are switched on.

Temperature sensor PT500 is also connected to the power board. The resistance of this sensor varies as oven temperature varies. When the electronic control system detects the resistance value on PT500 that corresponds to the temperature set for the oven, the system shuts off the heating elements.

The door lock assembly for the self-cleaning function (powered by triac TO5) is also connected to the power board.

Thermostat TH2 prevents false signals from unlocking the door during the self-cleaning cycle (see explanation on p. 23).

Microswitch SW2 signals the power board that the door is closed.

If oven temperature exceeds 120°C, triac TO3 starts cooling fan M2 to improve cooling in the areas outside the oven compartment (muffle) where electronic components are located.

When the selected baking cycle ends, or when the appliance is shut off, the cooling fan operates until the temperature at the centre of the oven falls below 110°C.

Triac TO4 and resistor RL form a circuit that generates two speeds on the cooling fan, as explained on p. 23.

If a fault occurs in the oven system (such as a malfunctioning relay or temperature sensor), the temperature sensor detects the malfunction and the system shuts off the power to the appliance using safety relay REL1. The system also generates an error code identifying the fault that has occurred (see the chapter entitled "Error codes").

5 - ERROR CODES

5.1 - ERROR CODES ON MODELS WITH POWER BOARD “SOEC”

Standard error codes are used on models with a display.
 Specific error codes for the self-cleaning function are included on models with a self-cleaning oven.
 Here is a table listing the error codes for self-cleaning ovens with SOEC power board:

ERROR CODE	CAUSE OF ERROR
01	Safety temperature (525°C) exceeded
08	Short circuit on oven sensor
20	Safety temperature (325°C) exceeded
25	Open circuit on temperature sensor
80	Temperature has failed to rise

Here is an example of how the error codes are shown on the various applications:

Example of error code (65) on Kronos with level 1 control unit

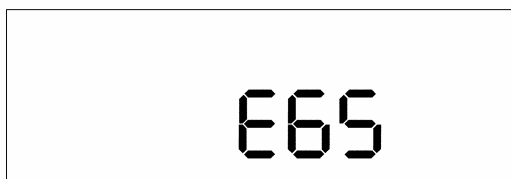


Fig. 52

HD001904.TIF

Example of error code (65) on Kronos with level 2 control unit

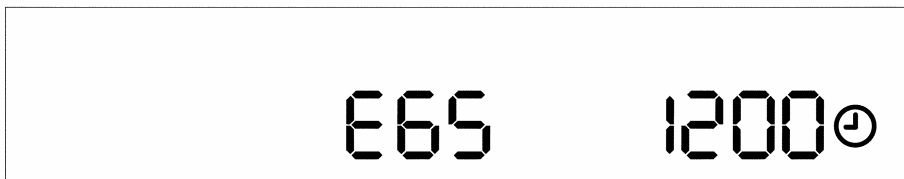


Fig. 53

HD001905.TIF

Example of error code (65) on Kronos with level 3 control unit

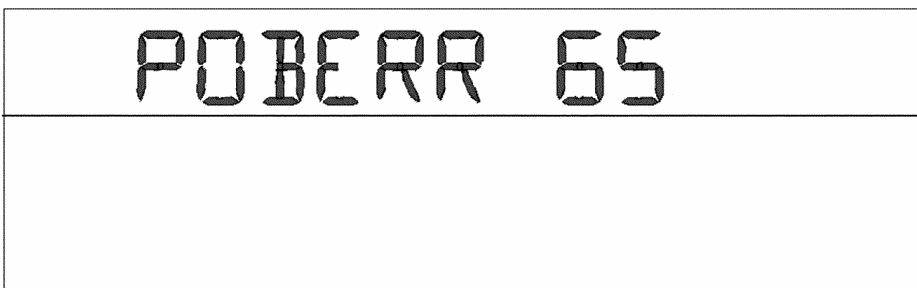


Fig. 54

HD001906.TIF

Example of error code (65) on RHEA

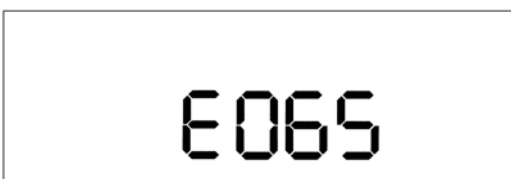


Fig. 55

HDC00415.JPG

NOTE: Malfunctions (signalled with error codes on models with a display) are indicated by a flashing “Pilot light” LED on models without a display.

5.2 - ERROR CODES ON MODELS WITH POWER BOARD “SOEC”

Standard error codes are used on models with a display.

Specific error codes for the self-cleaning function are included on models with a self-cleaning oven.

Here is a table listing the error codes for self-cleaning ovens with SOEC power board

ERROR CODE	CAUSE OF ERROR
F02	Door lock system (only on pyrolytic ovens)
F03	EEPROM Memory on Control Unit
F04	Temperature range of oven sensor exceeded (for more than 5 seconds)
F05	Safety temperature exceeded > 350°C on normal ovens > 530°C on pyrolytic ovens (for more than 10 seconds)
F08	Communication interrupted between control unit and power board
F09	Software compatibility between control unit and power board
F10	Triac faulty (on power board)

Here is an example of how the error codes are shown on the various applications:

Example of error code (F05) on Kronos with level 1 control unit



Fig. 56

HDC02668.JPG

Example of error code (F05) on Kronos with level 2 control unit

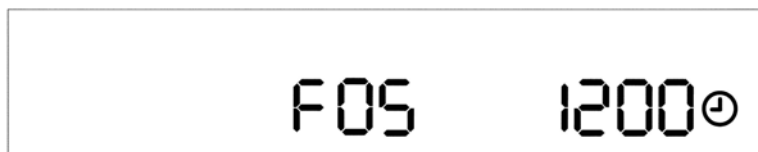


Fig. 57

HDC01138.JPG

Example of error code (F05) on Kronos with level 3 control unit



Fig. 58

HDC001139.JPG

Example of error code (F05) on RHEA

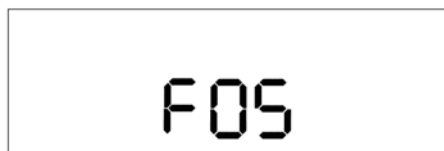


Fig. 59

HDC02669.JPG

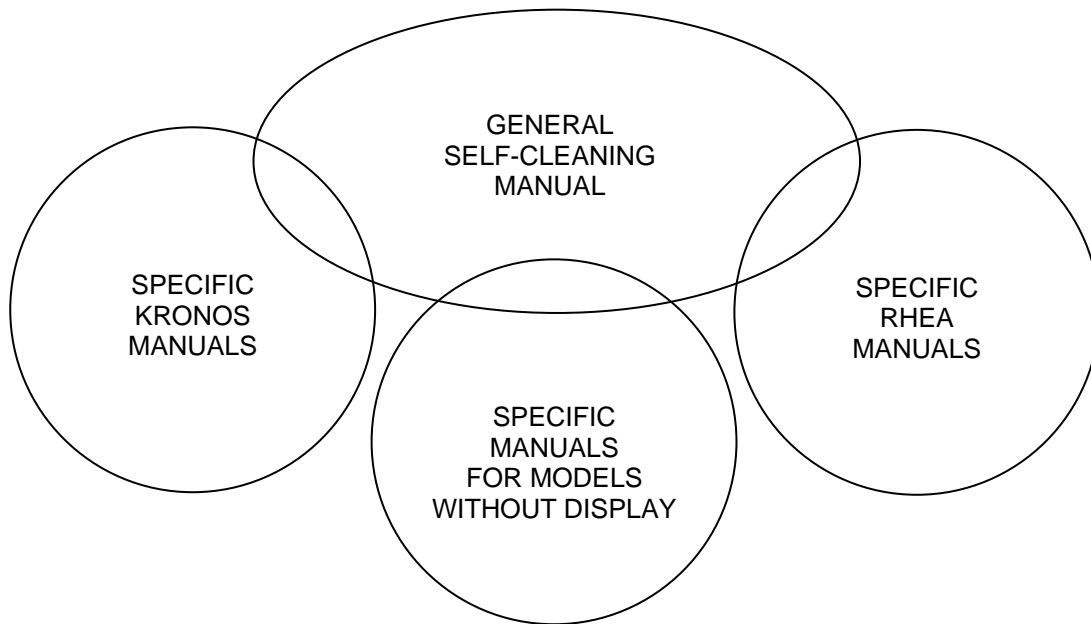
NOTE: Malfunctions (signalled with error codes on models with a display) are indicated by a flashing “Pilot light” LED on models without a display .

6 - SERVICE MANUALS FOR SELF-CLEANING OVENS

The self-cleaning feature is used on various types of ovens. As is true for KRONOS /ACCESS Service Manuals, general information on all models is included in a general service manual, which is then supplemented with information contained in dedicated Service Manuals for specific groups of appliances.

Only the manuals that deal with the type of appliance being serviced should be used.

The following diagram illustrates how the Service Manuals are organized.



7 - REVISIONS

REVISION	DATE	
01	05/2008	<ul style="list-style-type: none">- Added Chapter 3.6 - MOTOR-POWERED DOOR LOCK "ELTEK" page 22.- Added new diagrams to chapter 4 - VARIOUS APPLICATION pages 38, 42 and 48.- Modified chapter 5 - ERROR CODES pages 50 and 51.