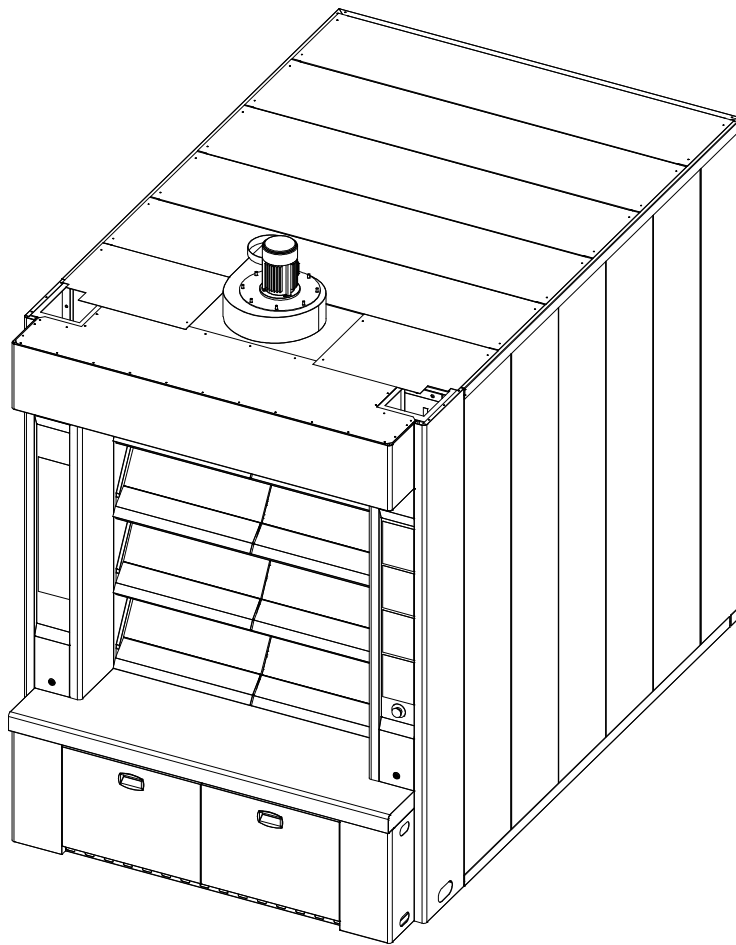


INSTRUCTION MANUAL FOR INSTALLATION, MAINTENANCE AND USE

OF AN ELECTRIC BAKING OVEN

MODEL **LFE**





LOGIUDICE FORNI
technologies by tradition



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Introduction

The layout of this instruction manual was designed for easy and rapid consultation.

There are illustrated diagrams with clear, comprehensive written explanations.

This manual has been divided into chapters for easy consultation by the end-user.

The information contained in this manual concerns the use of this machine and cannot be used for other purposes.

The company reserves all property rights on this manual, therefore any form of reproduction or disclosure of its contents without prior authorization is prohibited.

The Company reserves the right to modify the contents of this manual at any time without prior notice.

For a proper and safe use of the oven, it is absolutely necessary to follow the instructions outlined in this manual - not only for the installation site of the machine but also for its use and maintenance operations on the equipment.

The Company reserves the rights to modify the oven and its instruction manual at any time without undertaking to update products and/or manuals of the previous productions.

Nevertheless, the Company is willing to supply all technical clarifications to end-users needing assistance and will be pleased to accept advice, proposals and suggestions of any kind with the aim of improving the final quality of the product.

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Part 1: WARNING AND GENERAL ADVICE

1.1 GENERAL WARNINGS

Before starting any operation on the oven, carefully read the warnings outlined herein: they provide important guidelines for the operator's safety as well as that of the equipment during normal and maintenance operations.

This manual must be considered as an integral part of the oven and must therefore be kept for all future references until its complete disposal.

Keep this document in a dry place protected from the sunlight and dust and possibly in the vicinity of the oven.

These appliances must only be used by personnel specifically trained for their use.

Operations must be carried out under surveillance.

This equipment must only be used for the purposes for which it was explicitly designed, any other use is considered as improper and therefore dangerous.

During operations, the external surfaces of the equipment can become very hot, be very careful!

Deactivate the equipment in case of faulty or bad working order.

For repairs or maintenance operations, contact one of the authorized Assistance Centres.

All the relevant information on the equipment is reported on the rating plate (see paragraph "*Oven CE marking*") and must be referred to when technical assistance is requested.

Should technical assistance be required, it is important to describe the defect in detail so as to allow the technician to immediately understand the cause and type of fault.

During installation and maintenance operations we recommend that the operator wears gloves to protect his hands.

Warning! All safety fire-extinguishing prescriptions must be rigorously followed.

1.1.1 MANUFACTURER'S RESPONSIBILITIES

The manufacturer is liable for any constructional defects according to the law in force.

The guarantee period starts from the date of the delivery note.

The manufacturer declines any responsibility for damages arising from the non-observance of the precautions outlined in this manual during the use of the oven or from repairs or maintenance operations carried out by unauthorized personnel.

The manufacturer's responsibility declines also in case of improper use of the oven.

1.1.2 BUYER'S RESPONSIBILITIES

The buyer must guarantee an installation site that conforms with the manufacturer's prescriptions and be adequate for the equipment to work properly.

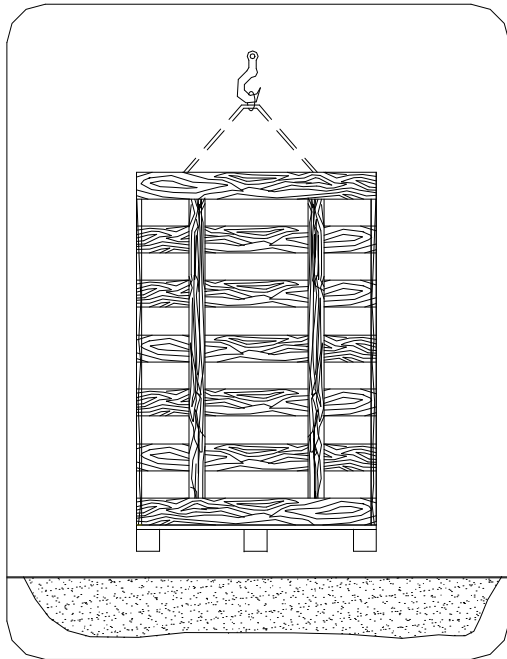
All work carried out on electric, water and draining systems are at customer's charge.

These systems must be adequately dimensioned for the chosen equipment.

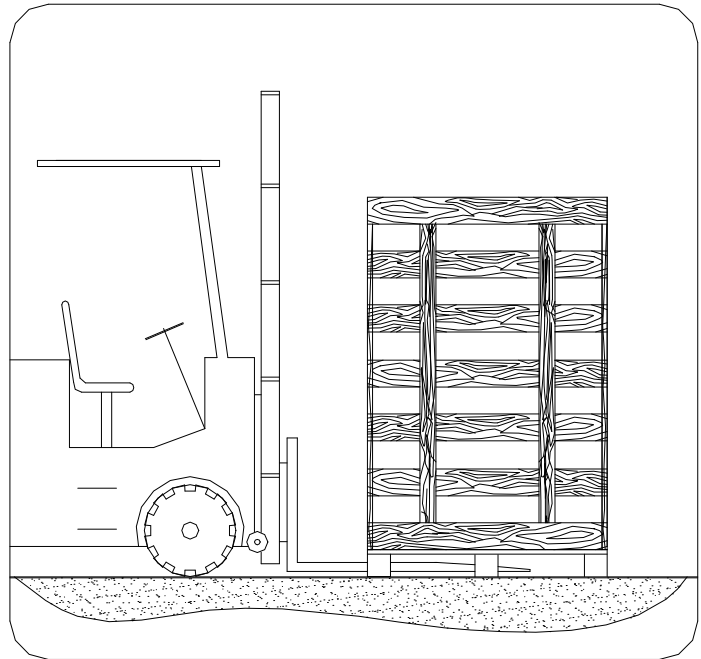
1.2 INSTRUCTIONS FOR TRANSPORT - LOADING AND UNLOADING OPERATIONS

The oven is made up of a series of parts to assemble on site, therefore its loading and unloading operations to/from the means of transport can be carried out through a fork lift truck or a rope of load-carrying capacity adequate to the part being handled.

HANDLING OPERATIONS WITH CRANE



HANDLING OPERATIONS WITH FORK LIFT TRUCK



Warning! Lifting apparatus and ropes must be adequately selected according to the weight of the part to be lifted.

1.3 DISPOSAL OF THE PACKING MATERIAL AND OF THE OVEN AT THE END OF ITS LIFE-SPAN

Packing materials should not be thrown away but recycled and disposed of as directed by local authorities.

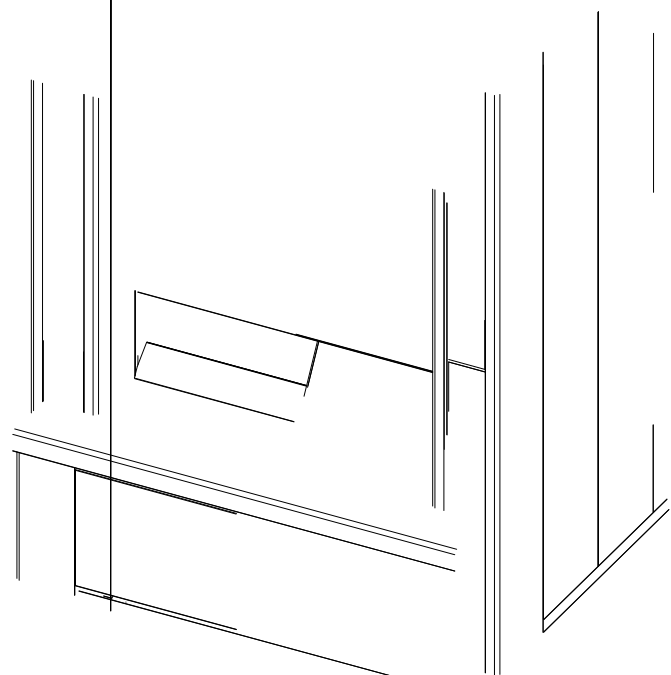
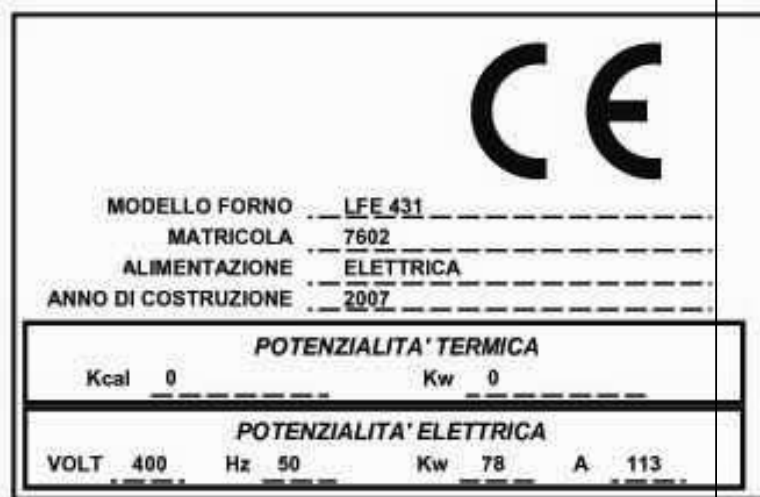
Dismantling and possible complete disposal of the oven should be carried out by a company specifically authorized for waste disposal.

This company will assume responsibility for the disposal of the various types of material such as metals of different nature, mineral fibres, glass and so on, sending them to the most appropriate final destination.

1.4 OVEN CE MARKING AND SERIAL NUMBER

Every oven is equipped with a rating plate reporting all the information necessary for identification, and main technical data.

The rating plate, consisting of an adhesive aluminium film, is always located inside the steam generator compartment at the right-hand side. It is visible after its covering removal. This covering is not secured with screws and can be removed by simply lifting and pulling.



1.5 TECHNICAL FEATURES

LFE - FORNO ELETTRICO										
Modello	N. sportelli per camera	Superficie di cottura	Dimensioni camere		Dimensioni esterne		Altezza	potenza elettrica		
Model	N. of doors for each chamber	Baking surface	Dimensions of the baking chambers		Outside oven dimensions		Oven height	Electric power		
Modèle	N. portes par chambre	Surface de cuisson	Dimensions chambres de cuisson		Dimensions externes du four		Hauteur	Puissance électrique		
Modelo	N. ventanillas por cámara	Superficie de cocción	Medidas cámara de cocción		Medidas externas		Altura	Potencia Eléctrica		
			A	B	C	D	H	Camere	Econ.	Vapor.
		m ²	cm	cm	cm	cm	cm	Kw	Kw	Kw
FORNO A 3 CAMERE • 3 CHAMBERS OVEN • BACKOFEN MIT 3 BACKRÄUME • FOUR A 3 CHAMBRES										
LFE 3212	2 / 620	4,50	124	120	180	250	230	24	12	5,7
LFE 3216		6,00		160		290		29	15	7,5
LFE 3220		7,45		200		330		37	19	9,0
LFE 3224		8,95		240		370		43	22	10,5
LFE 3316	3 / 620	8,95	186	160	242	290	230	39	20	7,5
LFE 3320		11,20		200		330		49	25	9,0
LFE 3324		13,40		240		370		57	29	10,5
LFE 3416	4 / 620	11,95	248	160	304	290	230	48	24	7,5
LFE 3420		14,90		200		330		61	31	9,0
LFE 3424		17,90		240		370		71	36	10,5
FORNO A 4 CAMERE • 4 CHAMBERS OVEN • BACKOFEN MIT 4 BACKRÄUME • FOUR A 4 CHAMBRES										
LFE 4212	2 / 620	6,00	124	120	180	250	230	31	16	7,6
LFE 4216		7,95		160		290		39	20	10,0
LFE 4220		9,95		200		330		49	25	12,0
LFE 4224		11,95		240		370		57	29	14,0
LFE 4316	3 / 620	11,95	186	160	242	290	230	51	26	10,0
LFE 4320		14,90		200		330		65	33	12,0
LFE 4324		17,90		240		370		75	38	14,0
LFE 4416	4 / 620	15,90	248	160	304	290	230	64	32	10,0
LFE 4420		19,85		200		330		81	41	12,0
LFE 4424		23,85		240		370		94	47	14,0
FORNO A 5 CAMERE • 5 CHAMBERS OVEN • BACKOFEN MIT 5 BACKRÄUME • FOUR A 5 CHAMBRES										
LFE 5212	2 / 620	7,45	124	120	180	250	230	39	20	9,5
LFE 5216		9,95		160		290		49	25	12,5
LFE 5220		12,40		200		330		61	31	15,0
LFE 5224		14,90		240		370		71	36	17,5
LFE 5316	3 / 620	14,90	186	160	242	290	230	64	32	12,5
LFE 5320		18,60		200		330		81	41	15,0
LFE 5324		22,35		240		370		94	47	17,5

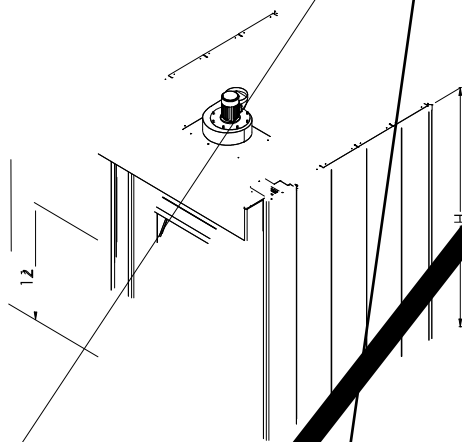
			A	B	C	D	H	Camere	Econ.	Vapor.
		m ²	cm	cm	cm	cm	cm	Kw	Kw	Kw
FORNO A 3 CAMERE • 3 CHAMBERS OVEN • BACKOFEN MIT 3 BACKRÄUME • FOUR A 3 CHAMBRES										
LFE 3216/76	2 / 760	7,30	152	160	208	290	230	29	15	7,5
LFE 3220/76		9,15		200		330		37	19	9,0
LFE 3224/76		10,95		240		370		43	22	10,5
LFE 3316/76	3 / 760	10,95	228	160	284	290	230	39	20	7,5
LFE 3320/76		13,70		200		330		49	25	9,0
LFE 3324/76		16,45		240		370		57	29	10,5
FORNO A 4 CAMERE • 4 CHAMBERS OVEN • BACKOFEN MIT 4 BACKRÄUME • FOUR A 4 CHAMBRES										
LFE 4216/76	2 / 760	9,75	152	160	208	290	230	39	20	10,0
LFE 4220/76		12,20		200		330		49	25	12,0
LFE 4224/76		14,60		240		370		57	29	14,0
LFE 4316/76	3 / 760	14,60	228	160	284	290	230	51	26	10,0
LFE 4320/76		18,25		200		330		65	33	12,0
LFE 4324/76		21,90		240		370		75	38	14,0

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LFE - FORNO ELETTRICO

Modello	N. sportelli per camera	Superficie di cottura	Dimensioni camera		Dimensioni esterne		Altezza	potenza elettrica		
Model	N. of doors for each chamber	Baking surface	Dimensions of the baking chambers		Outside oven dimensions		Oven height	Electric power		
Modèle	N. portes par chambre	Surface de cuisson	Dimensions chambres de cuisson		Dimensions externes du four		Hauteur	Puissance électrique		
Modelo	N. ventanillas por cámara	Superficie de cocción	Medidas cámara de cocción		Medidas externas		Altura	Potencia Eléctrica		
			A	B	C	D	H	Camere	Econ.	Vapor.
		m ²	cm	cm	cm	cm	cm	Kw	Kw	Kw
FORNO A 3 CAMERE • 3 CHAMBERS OVEN • BACKOFEN MIT 3 BACKRÄUME • FOUR A 3 CHAMBRES										
LFE 3112	1 / 820	3,00	82	120	130	235	230	16	8	3,0
LFE 3116		3,95		160		275		20	13	3,9
LFE 3120		4,95		200		315		25	15	4,5
LFE 3124		5,95		240		355		29	15	5,4
FORNO A 4 CAMERE • 4 CHAMBERS OVEN • BACKOFEN MIT 4 BACKRÄUME • FOUR A 4 CHAMBRES										
LFE 4112	1 / 820	3,95	82	120	130	235	230	21	11	4,0
LFE 4116		5,25		160		275		14	5,2	
LFE 4120		6,60		200		315		17	6,0	
LFE 4124		7,90		240		355		20	7,2	
FORNO A 5 CAMERE • 5 CHAMBERS OVEN • BACKOFEN MIT 5 BACKRÄUME • FOUR A 5 CHAMBRES										
LFE 5112	1 / 820	4,95	82	120	130	235	230	26	13	5,0
LFE 5116		6,60		160		275		17	6,5	
LFE 5120		8,20		200		315		21	7,5	
LFE 5124		9,85		240		355		24	9,0	

3-DECK OVEN LFE



1.5.1 TECHNICAL DESCRIPTION

MAIN CHARACTERISTICS:

The electric baking oven is equipped with a series of heating elements adequately shaped and located so as to warm up both ceiling and base deck of the baking decks. Heating elements are connected and maintained frontally with respect to the oven. This allows the oven to be installed even in narrow spaces.

STEAM GENERATORS:

Are located in the zone underneath the baking decks. They are designed to ensure a considerable thermal flywheel and a high supply of steam without water dragging.

ACCESS TO THE BAKING DECKS:

Via multiple doors made of Pyrex tempered glass and counterbalanced.

BAKING DECKS OR "BASE DECKS":

Made from a special refractory cement mix and proper frame to ensure higher resistance and flexibility.

FRONT STRUCTURE:

Made entirely in stainless steel AISI type 304

INSULATION:

The insulating jacket is made with very thick panels in rock wool to avoid detrimental heat losses.

ELECTRIC INSTALLATION:

The electric installation conforms with the regulations currently in force within the European Community.

SAFETY DEVICES:

Every deck of the oven is equipped with a relay system able to detect any phase absence in the power supply and cutting off the supply to the heating elements.

1.6 LEGAL PRESCRIPTIONS, TECHNICAL RULES AND DIRECTIVES

During operation and installation and first start-up especially, the following legal prescriptions must be followed:

- law provisions in force;
- rules of hygiene/health related to cooking environments;
- municipal and/or territorial building code and fire-extinguishing prescriptions;
- legal prescriptions on accident prevention in force;
- provisions of law set by the Electrical Engineers committee on electrical safety;
- prescriptions set by the authority supplying electric energy;
- possible prescriptions set by the water mains authority;
- any other local legal prescriptions.

1.7 SPECIFIC ARRANGEMENTS FOR THE INSTALLATION SITE

Due to the characteristics of this apparatus, it is very important to install it in a well ventilated environment and that it is equipped with all the safety openings prescribed for its power.

Therefore the installation site must have:

- a level floor,
- a steam ducting system (independent from that of other apparatus, if present in the installation site),
- a water connection point,
- an electric outlet, of the appropriate dimensions,
- an exhaust pipe, a sump or any other system to allow an air shift.

1.8 CHARACTERISTICS OF CONNECTIONS

Warning! : All the cocks and switches which intercept supply from the mains and disconnect the equipment from the distribution networks must be located in well visible and accessible areas!

1.8.1 ELECTRIC CONNECTION

The electrical equipment in the oven destination site must conform to the legal prescriptions set by the laws in force. It must be adequately dimensioned according to the oven characteristics reported on the plate, have an efficient ground conductor and an omnipolar disconnecter between the equipment and the distribution network -installed with a distance of at least 3mm between the poles- and a differential gear with characteristics adequate to the nominal power of the appliance (1mA per kW power).

The oven must be enclosed in an equipotential system Connect using the clamp provided in the electric panel, marked out by the International symbol and a conductor having $\frac{1}{2}$ half the nominal section of the power supply phases (for nominal sections $> 16\text{mm}^2$). These are the sections in detail: For power supply with 25mm^2 of section use a 16mm^2 earth wire; For power supply with 35mm^2 of section use a 25mm^2 earth wire; For power supply with 50mm^2 of section use a 25mm^2 earth wire. This connection is effected between all the installed appliances and the earthing system of the work place.

Voltage and absorption are indicated on the rating plate.

the person responsible for installation must provide a regular declaration of conformity of the installation. It is good practice to keep this declaration in a clean and safe place.

1.8.2 CONNECTION TO THE WATER MAINS

The water distribution network in the oven destination site must conform to the legal prescriptions set by the laws in force. The terminal assigned to the oven connection must be equipped with an approved fast-closing shut-off cock. Water pressure in the mains supply must stay within 50 and 300 kPa (between 0.5 and 3 bars). If this is not the case install a pressure reducer (it is recommended to install it anyway, even if pressure is within the allowed limits). Consult the technical drawing of every single model to see the exact location of the ½" connector. The water system must also be correctly installed using only materials suitable for drinking water.

Should pressure in the water system exceed 3 bars (300kPa) an excess of steam in the backing deck would result and cause unhooking of the door from the oven throat and the consequent breakage of the glass. If this is the case, there are three ways to eliminate the problem:

- 1) Reduce water intake pressure to the steam generator by inserting a pressure reducer before the oven (recommended).**
- 2) Decrease the time to intake water into the steam generator.**
- 3) Decrease the working temperature of the steam generator.**

The person responsible for installation must provide a regular declaration of conformity of the installation. It is good practice to keep this declaration in a clean and safe place.

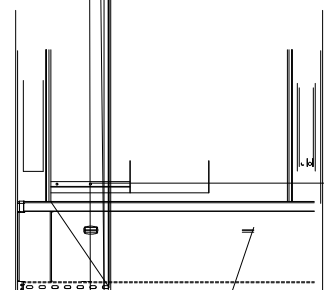
1.8.3 STEAM DISCHARGE SYSTEM

The steam after being discharged from the backing deck is released into the atmosphere through a dedicated draining channel with a diameter of 150 – 200mm. The steam discharge duct must be installed on the aspirator forcing breast.

A condensate collector equipped with drain pipe must be arranged at the base of each ascending section of the steam discharge duct. This condensate collector must be equipped with an adequate opening for inspection and cleaning operations.

Note: For steam discharge ducts construction the use of material in stainless steel is recommended.

To allow good draught, the chimney breast must be at least one metre higher than roof ridges, balustrades or any other possible obstacle or structure located within 10 metres.



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Insert the cable through the appropriate cord flap. Accurately connect the conductors in the corresponding clamps to the terminal board. The earthing conductor must be longer than the other conductors, so that this will be the last to detach should the cable be strongly pulled or should the cord flap break. Clamp the cord flap.

Pos.	Description	Pos.	Description
1	Equipotential Point	2	Terminal board
3	Panel ventilator fuse	4	Lights fuse
5	Fuses of the heating elements deck 2	6	Fuses of the heating elements deck 1
7	Transformer's secondary fuse	8	Transformer's main fuse
9	Fuses of the heating elements deck 3	10	Fuses of the heating elements deck 4
11	Heating element relays for ceiling of deck 1	12	Heating element relays for base of deck 1
13	Heating element relays for ceiling of deck 3	14	Heating element relays for base of deck 3
15	Electromagnetic switch for steam generator of deck 1	16	Electromagnetic switch for steam generator of deck 2
17	Electromagnetic switch for steam generator of deck 3	18	Electromagnetic switch for steam generator of deck 4
19	Light relay deck 1	20	Light relay deck 2
21	Light relay deck 3	22	Light relay deck 4
23	Transformer of power supply to boards	24	Transformer of power supply to the panel
25	Heating element relays for ceiling of deck 4	26	Heating element relays for base of deck 4
27	Heating element relays for ceiling of deck 2	28	Heating element relays for base of deck 2
29	Safety relay of deck 3	30	Safety relay of deck 4

2.2.2 OTHER CONNECTIONS

Effect the connections correctly.

- ✓ To the water supply network (see also paragraphs 1.8.3).
- ✓ of the steam discharge system (see also paragraphs 1.8.2)

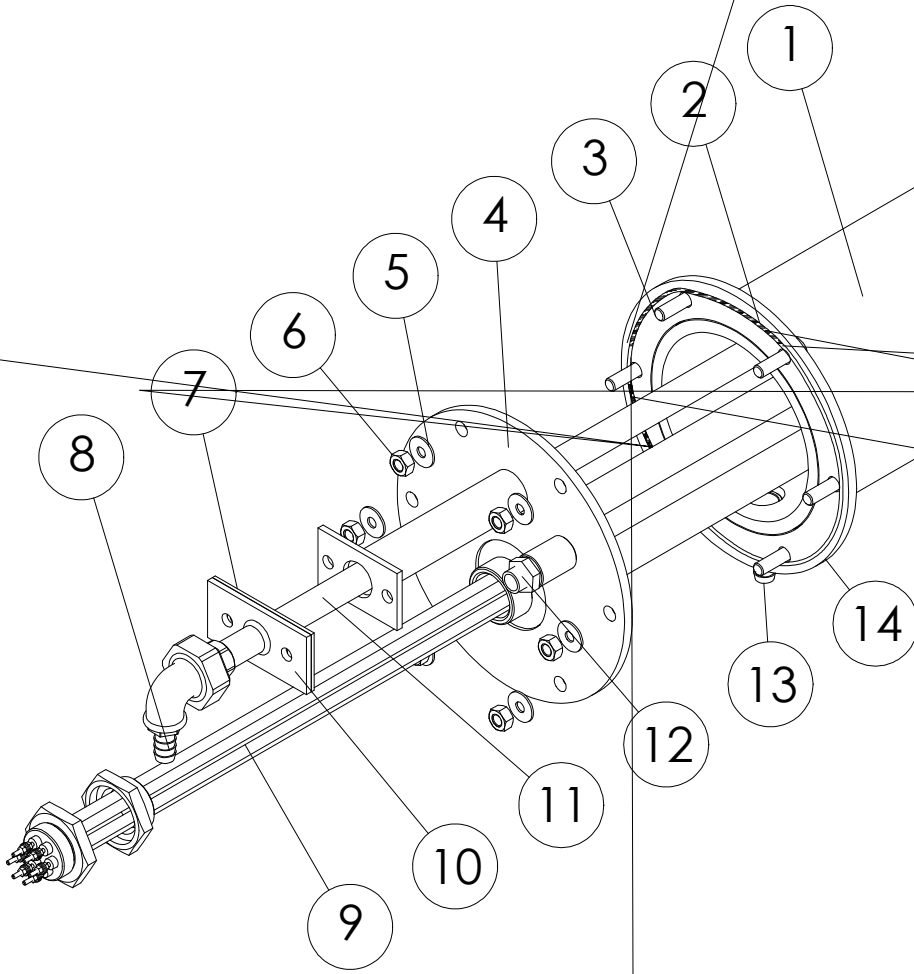
2.3 INSPECTION AND START-UP

Warning! The final inspection and first start-up must be effected by the technicians of the manufacturing company and the technicians authorized by the manufacturer of the burner.

DECK OVEN LFE

- 1) Detach the rubber tube from the joint's rubber hose adaptor. (Pos. 8).
- 2) Remove the flange (Pos. 10) by unscrewing the nuts of the sprayer, then extract the tube (probe) (Pos. 11).
- 3) Effect a complete descaling of the sprayer especially in the holes where water is discharged, by using a rigid iron wire bar or else a 5 mm drill bit. Clean the internal part of the tube extremely well by using descaling products, or even with an extended 10 mm widia drill bit.
Whenever necessary, replace the parts completely.
- 4) N.B. Before inserting the probe in place, we recommend an internal and external cleaning with running water.
- 5) It is recommended to place good rubber gaskets in the joints previously dismantled (if necessary, with the assistance of a plumber), pay attention also to the correct positioning of the joints interposed between the two flanges of the sprayer (Pos. 7).
- 6) If the gaskets of the flanges are too rigid, their replacement is recommended (Pos. 7).

POSITION	DESCRIPTION
1	Steam generators box
2	Gasket in mineral fiber
3	M8x25 screw made in steel
4	Main flange of the steam generator
5	Washer M8 for fixing the main flange of the steam generator
6	Nut M8 made in brass for fixing the main flange of the steam generator
7	Small gasket
8	Connection for H2O inlet
9	Three-phase heater
10	Sprayer flange
11	Sprayer
12	Probe carrier of the probe for steam generator control
13	Condensate drain connector
14	Fixed flange of the steam generators



2.5 TROUBLESHOOTING

Warning! Only qualified technical assistance can carry out the operations as specified below!

Warning! : Always check that the cause of any problems has been effectively removed before resetting the safety devices!

TYPE OF BREAKDOWN	CAUSE	REMEDY
A group of heating elements does not start working	Heating elements' relay defective	Ask a qualified technician to check the defective relay and arrange for its repair or replacement.
	Economizer enabled	Should the economizer be active in the involved deck, wait 20-40 sec. for the group to restart operations.
The electric panel is completely off	Tripping of the general automatic switch IG	Reset the IG switch to position "I" (ON). If the block persists, call for a qualified technician.
The numbers in the display for ceiling and base deck temperature control flash.	One of the safety relays which control the phases has triggered (absence of one of the power supply phases)	Check the three fuses of the involved deck and replace the defective one. If the block persists, call for a qualified technician.
The aspirator does not start up	Put the MT1 automatic selector to "0" position (OFF) Electromagnetic switch K1 defective	Reset the KA switch to position "I" (ON). Replace the faulty parts.
Water continues to spill from the steam trap	Dirty solenoid valves	Clean the solenoid valves of all impurities or limescale formations present.
	Excessive water supply to the steam generators.	Reduce the quantity of water by reducing the set time for steam inlet.
The steam generator does not produce steam	The steam generator is turned off - Faulty electromagnetic switch - Faulty heating element	Turn on the steam generator using the appropriate pushbutton or check the set-point value of the steam generator temperature (it must be appr. 250°) Ask a qualified technician to check the defective part and arrange for its repair or replacement.
The steam generators produce very little steam.	Excessive water supply to the steam generators.	Reduce the quantity of water by reducing the set time for steam inlet.
The lights in the baking decks do not turn on.	Defective relay	Replace the faulty parts. If the problem persists, call for a qualified technician.

Part 3: USE AND ROUTINE MAINTENANCE

3.1 GENERAL WARNINGS

This manual outlines all the necessary instructions for a correct and safe use of the equipment.

This equipment has been designed for professional use and therefore must be used by qualified personnel specifically trained for the purpose.

Do not leave the appliance unattended while it's in use.

Warning! The Manufacturer declines any responsibility for injuries and damages arising from the non-observance of the safety rules or from improper use of the equipment by the operator.

Some functioning faults may be caused by misuse therefore, it is important to train the personnel. Before requesting technical assistance, check that mains supplies have been connected (electricity, water).

All the maintenance operations must be effected by qualified personnel authorized by the manufacturer.

Follow the prescribed intervals between one maintenance and another. It is therefore recommended that a maintenance contract be stipulated with a trusted Technical Assistance Centre.

If there are any malfunctions in the equipment, immediately cut off all the mains supplies (electricity and water).

Recurring faults need to be handled by Technical Assistance. Do not attempt any maintenance that should be handled by a professional! Any work carried out by unqualified and unauthorized individuals is considered as improper and causes the immediate annulment of the guarantee.

The oven has been designed and manufactured for baking bread and derivatives.

The oven cannot be used to bake any substance other than food.

The oven cannot be used to bake bread and/or derivatives and pastries and cakes which might provoke reactions from their explosive mixtures.

It is absolutely forbidden to tamper with or modify the safety systems or the electric circuits fitted by the manufacturer.

3.1.1 SAFETY INSTRUCTIONS

External perimeter surfaces of the oven have been shielded with high density insulating material so as to avoid both useless heat loss and dangerous heating of adjacent apparatus or walls.

Notwithstanding all the precautions taken, there are parts -throats, access doors to the baking decks- which become very hot when in function. It is therefore necessary to wear protective gloves and be very careful in order to avoid accidental contacts and undesired burns.

Since products to be baked get in contact with the surface of the baking decks, these counters were made with material deemed suitable to food processing (asbestos free). The whole environment where the baking process takes place was completely made with materials suitable for this purpose. Harmful steams are not generated.

3.1.2 SAFETY DEVICES

The oven comes with some safety devices to provide protection.

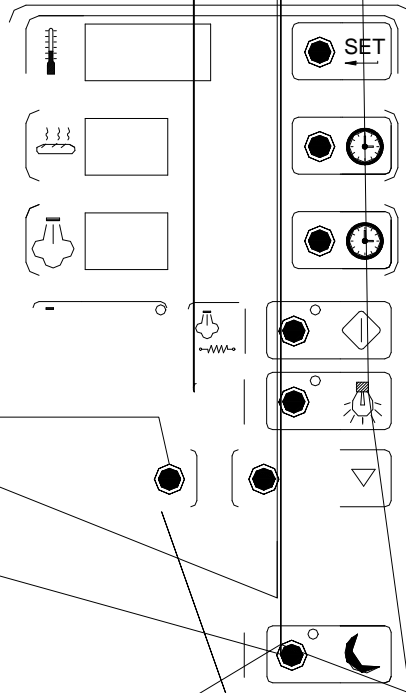
The main system consists of a relay unit able to detect the possible absence of a phase in the power supply and therefore it cuts off the current supply to the heating elements.

DECK OVEN LFE

3.2 START UP AND SWITCHING OFF

3.2.1 CONTROL PANEL

1	TEMPERATURE DISPLAY: shows the temperature in the baking deck	2	TEMPERATURE MODIFICATION BUTTON: Allows modification of the working temperature inside the baking deck.
3	BAKING TIMER DISPLAY: displays the baking time. When the pre-set time elapses, an acoustic signal gets activated. Note: it does not interrupt the oven functioning.	4	TIMER SELECTION BUTTON: Modifies the baking time. Press this button to activate the value modification function.
5	STEAM TIMER DISPLAY: displays the steam emission time.	6	STEAM SELECTION BUTTON: Modifies the steam emission button. Press this button to activate the value modification function.
7	STEAM GENERATOR'S HEATER BUTTON: turns on/off the heating element of the steam generator.	8	STEAM ACTIVATION BUTTON: Activates steam production in the baking deck for the preset time
9	ON/OFF BUTTON: Turns on/off the board	10	ASPIRATOR BUTTON: turns on/off the aspirator
11	ARROW FOR VALUE MODIFICATION (+): Once a parameter modification is activated the set-point values gets altered.	12	AUTOMATIC PROGRAMS: Shows the selected program during automatic operation.
13	PROGRAM SELECTION BUTTON: activates-deactivates operating mode and programs.	14	VALVE MANUAL OPENING BUTTON: opens-closes the steam discharge valve
15	BAKING START: enables the count of the baking time	16	DECK LIGHT BUTTON: turns on/off the light in the backing deck
17	ARROW FOR VALUE MODIFICATION (-): Once a parameter modification is activated the set-point values gets altered.	18	DEFERRED SWITCHING ON BUTTON: activates-deactivates the timed switching on of the oven.

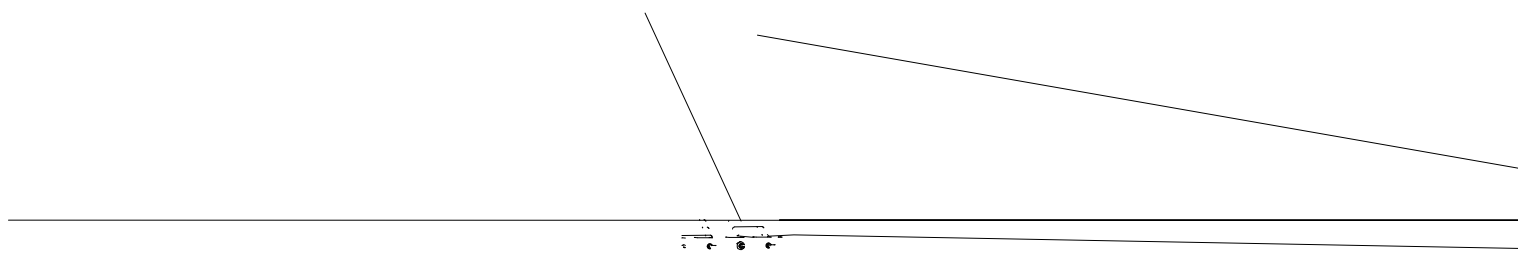


3.3.1 CLEANING THE DOORS

Warning! Let the glass cool down before

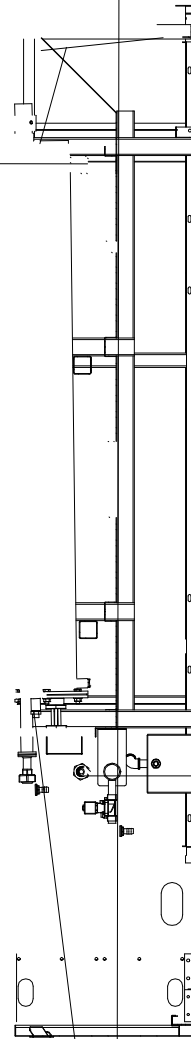
Part 4: TECHNICAL DRAWINGS

4.1 ASSEMBLY DRAWING OF THE OVEN



DECK OVEN LFE

4.1.1 LONGITUDINAL SECTION OF THE OVEN MODEL LFE



4.2 ASSEMBLY DIAGRAMS

4.2.1 DIAGRAM FOR WATER SYSTEM CONNECTION/INSTALLATION

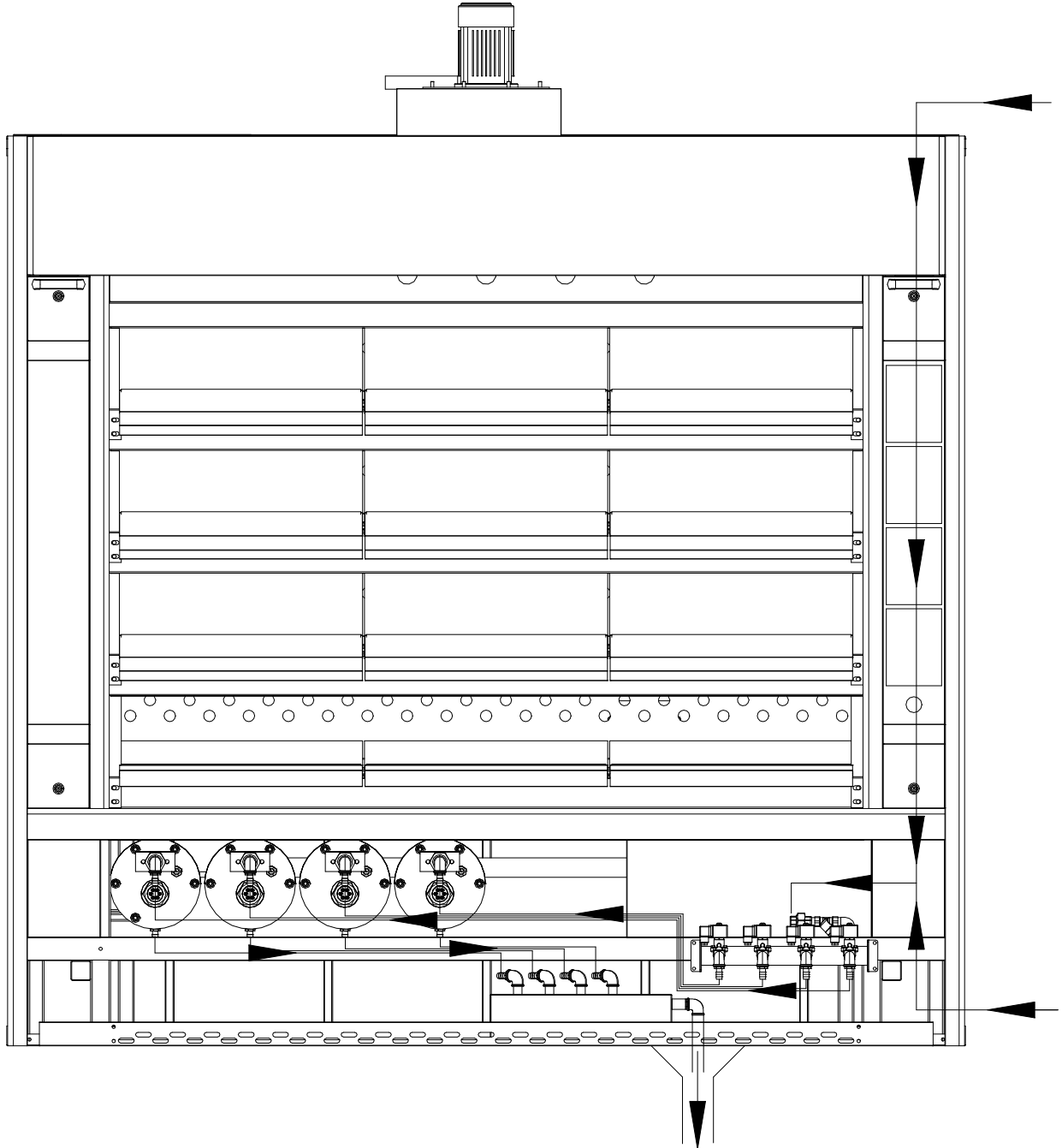
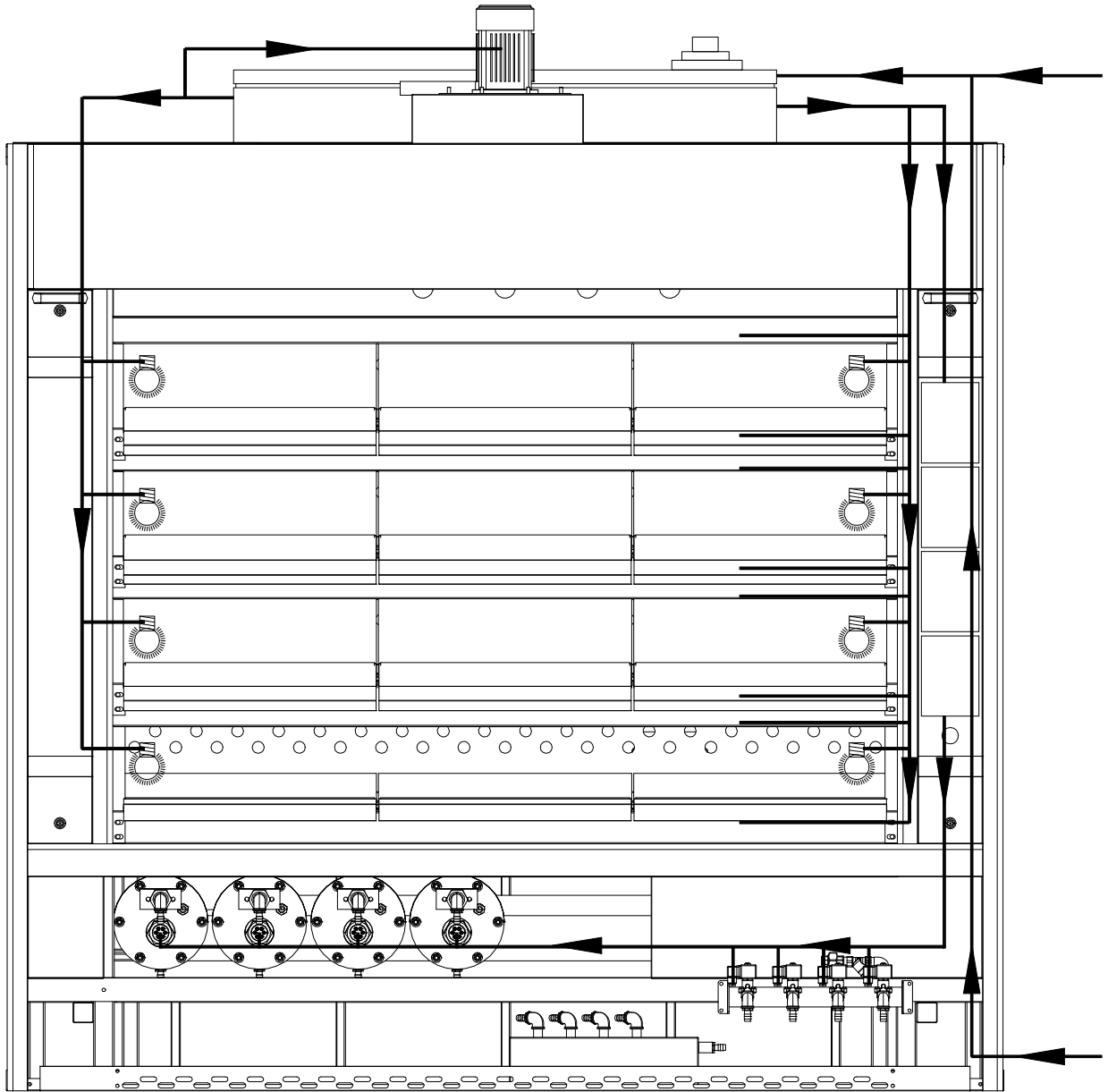
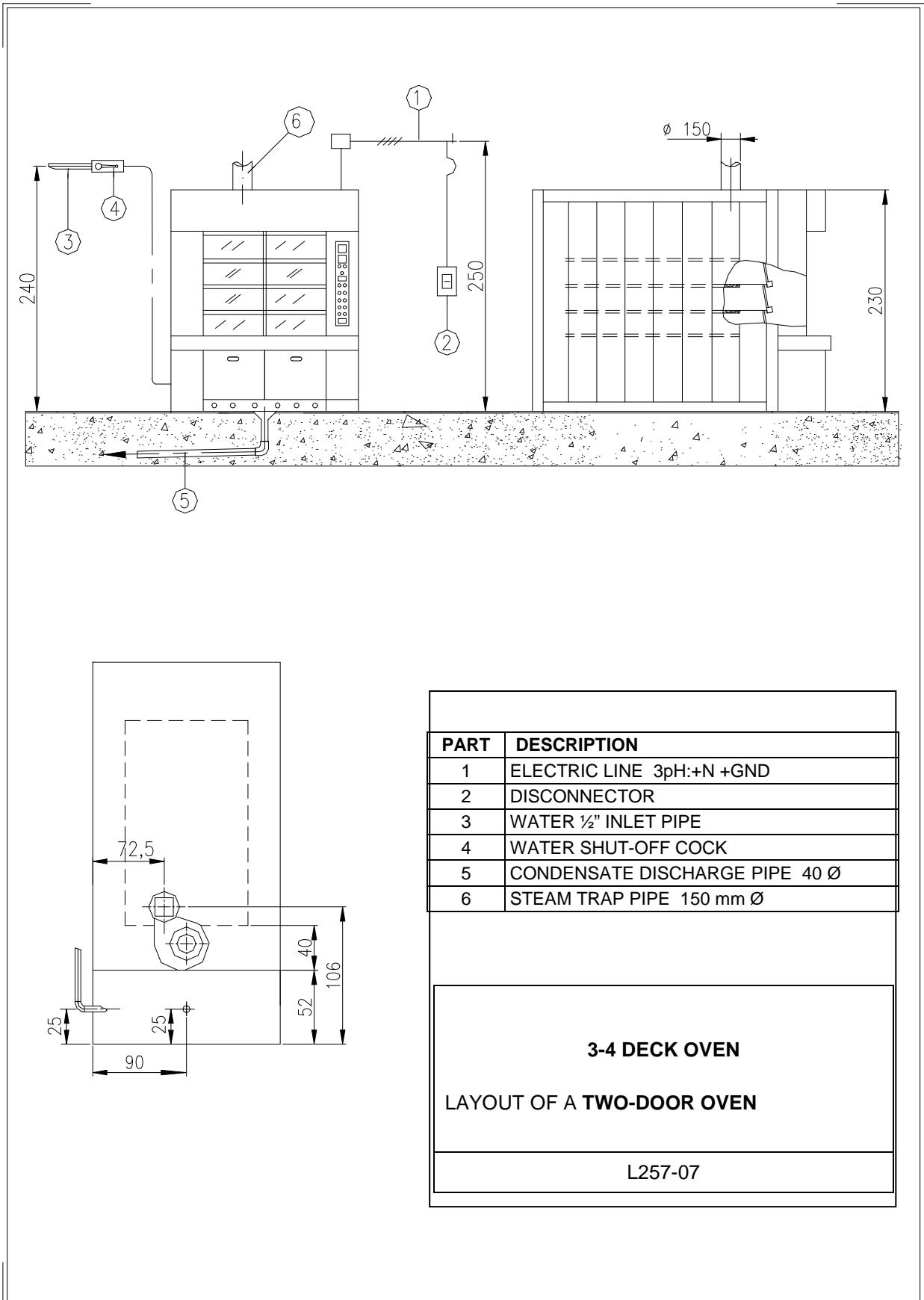


DIAGRAM FOR ELECTRIC SYSTEM CONNECTION/INSTALLATION

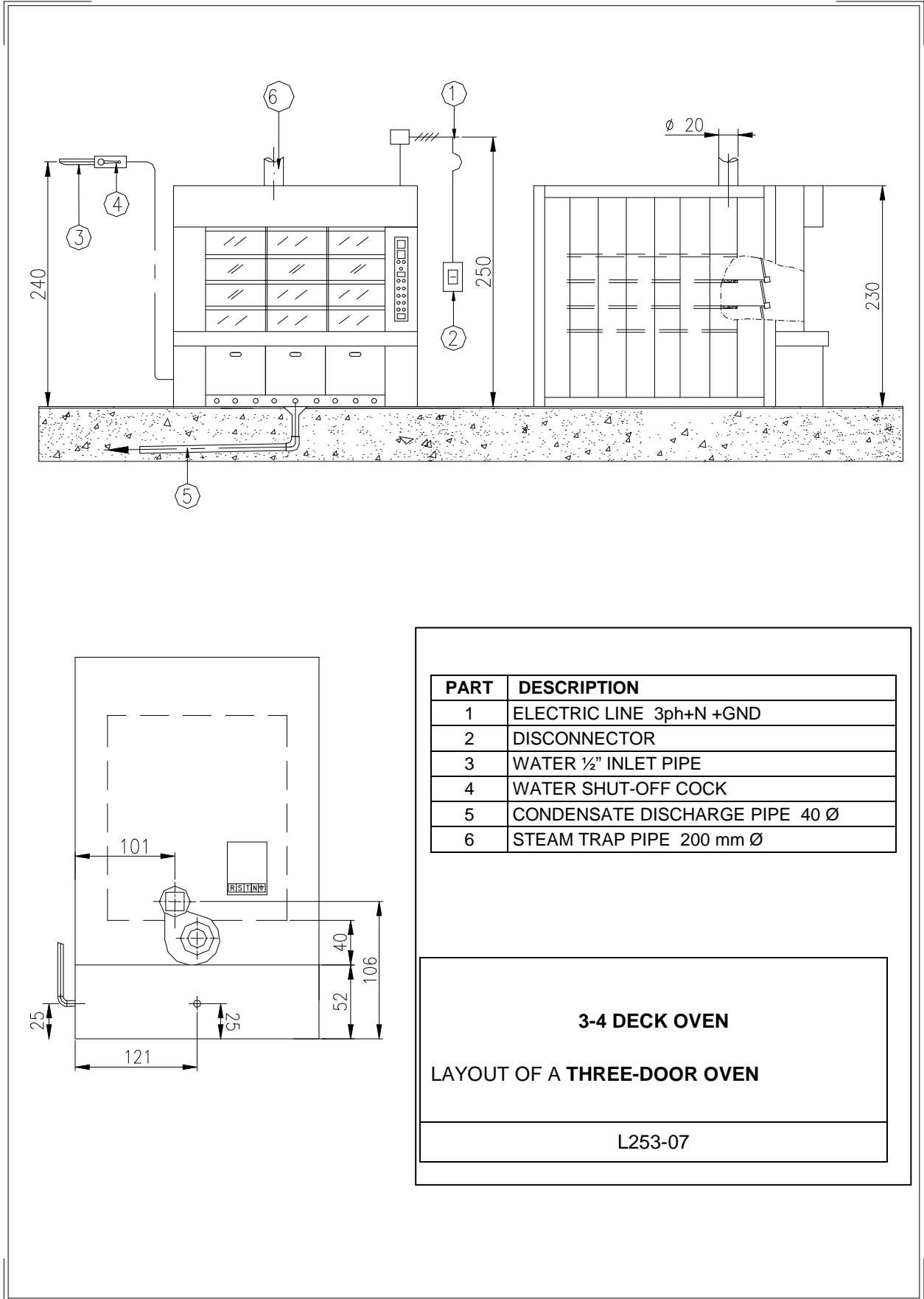


4.3 CONNECTING THE OVENS LFE

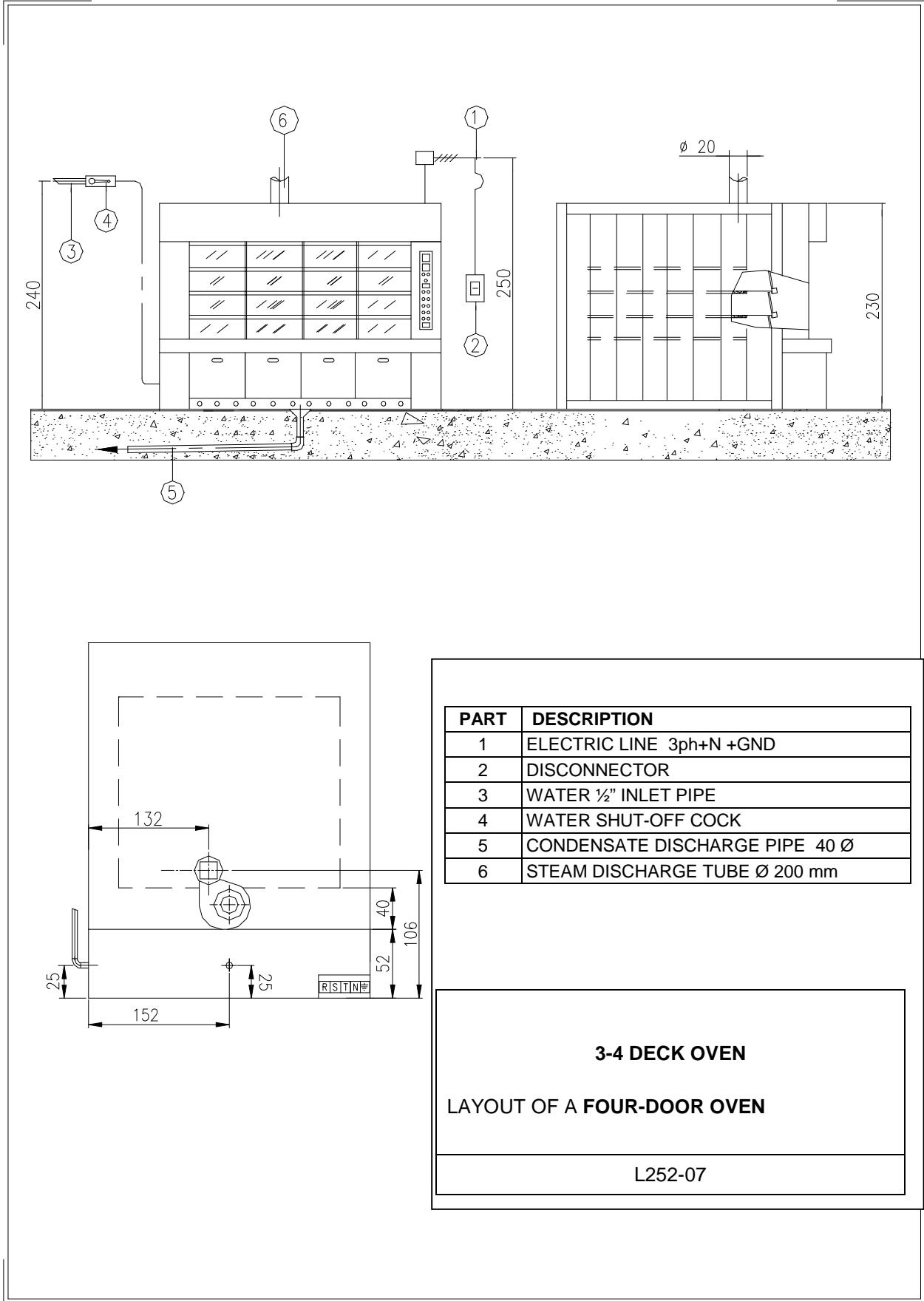
4.3.1 CONNECTING AN OVEN MODEL LFE – TWO DOORS – THREE AND FOUR DECKS



4.3.2 CONNECTING AN OVEN MODEL LFE – THREE DOORS – THREE AND FOUR DECKS



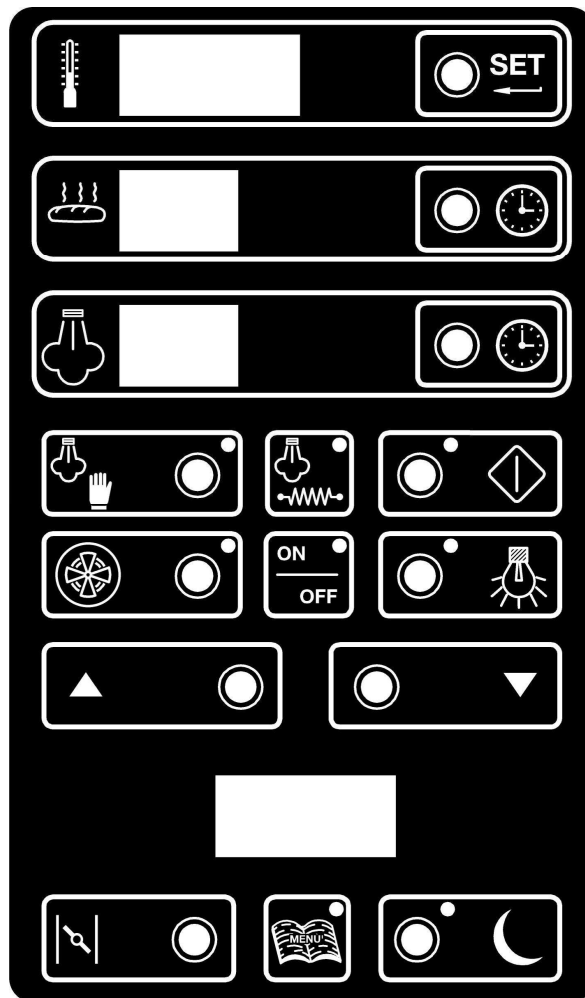
4.3.3 CONNECTING AN OVEN MODEL LFE – FOUR DOORS – THREE AND FOUR DECKS



Part 5: APPENDICES

5.1 INSTRUCTION MANUAL OF THE CONTROL BOARD WITH/WITHOUT PROGRAMS

CONTROL BOARD



INSTRUCTION MANUAL

0) DEFINITIONS


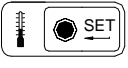
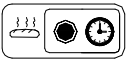


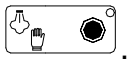
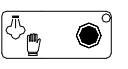



The oven's electronic control board can be supplied in one of these two versions:




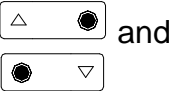



STAR: basic version without any programming possibility

ORION: with additional buttons and display for programming the baking cycles

Listed below all the buttons of the board and their functions.

Board buttons models STAR and ORION

Button image	Button name	Button function
	ON/ OFF	<p>With LED switched on the board is in stand-by mode: the oven is turned off. Press it to switch the oven on.</p> <p>With LED switched off: the oven is turned on: while in this mode, the board can be set to Start baking(during the baking cycle) or alternatively to Stop mode (at the end of a baking cycle or before it starts). Press it to switch the oven off.</p>
	Temperature set-up	Enables you to set the temperature (°C) of the baking deck.
	Time set-up	Enables baking time setting (min:)
	Steam set-up	<p>After setting the machine in Manual mode (Start and Stop baking for the STAR version), press this button to set the steam emission time. During the execution of one of the automatic programs (from 01 to 99 for the ORION version) the display  will show the time (in seconds) the manual emission of steam lasts while the button is kept pressed. .</p>
	Steam manual opening	<p>Opens the steam solenoid valve. This button enables the steam emission for the preset time displayed on the screen  (during which the display stays switched on). During the execution of one of the automatic programs (from 01 to 99 for the ORION version) you can press this button and steam is emitted as long as the button is kept pressed down. The display  shows the duration of the steam emission.</p>
	Switching on of the heating element for steam generator warming up	allows activation or deactivation of the steam generator's heating element. The switching on or not of the LED fitted in the button will show if the steam generator is enabled (LED switched on means that the heater is thermoregulating) or not (LED switched off).

	Start baking	<p>ON STOP mode on the board: when the baking deck has not warmed up, by pressing this button a <i>Beep</i> sound is emitted by the buzzer to signal that the command has been rejected (due to the fact that the deck has not warmed up yet). When the baking deck has warmed up, by activating this function in Stop condition, the baking timer count starts (the respective LED will switch on). For the ORION version, by activating one of the automatic programs, the execution of the steam program is activated and possible manual commands of the steam-lock reset.</p> <p>When the board is in ON START mode, the baking process gets interrupted.</p>
 :	Aspirator	<p>allows the aspirator to be switched on or off. The LED on the button indicates if the aspirator is active (LED on) or inactive (LED off). Press the button to change from off or on accordingly. Every time the board is turned off, while rebooting it, the aspirator is forced to be off (switched off) even if during the previous shutdown it was switched on.</p>
 :	Light switching on	<p>Allows the baking deck lighting to be turned on (when the light is on the LED is on).</p>
 and	Setting buttons	<p>Increase or decrease the parameter value which is being set.</p>
Buttons for the ORION model only		
Three-digit display	Programming display	<p>The first two digits from the left show the program in use (0-99), the third digit shows the phase (0-9)</p>
	Steam discharge valve	<p>Opens and closes the valve for steam discharge (unless the board is not being programmed)</p>
	Programming	<p>In Baking ON STOP mode allows you to select the automatic program to be run. It is possible to choose from one manual program (00) and ninety-nine automatic programs (from 01 to 99). If you select the manual program, after confirming it both the LED fitted in the button and the display visualizing the program will switch off.</p> <p>Keep this button pressed for more than 3 seconds to access the programming mode.</p>
	Automatic start	<p>Activates and deactivates the automatic start of the oven. Allows the weekly program for the oven switching on to be accessed (if the pilot light is switched on, one of the programs for automatic switching on is active).</p>

1) TECHNICAL FEATURES OF THE BOARD

1.1) STAR version

- No. 3 digital inputs optically isolated energized 12 Vac/dc
- No. 2 analog inputs for Fe-Co thermocouple -100 +900 °C with automatic compensation of the cold junction
- No. 5 relay outputs 230 Vac 5A with suppressor, 230 Vac
- No. 1 relay output, 230 Vac, 16A, for direct control of the lights, with suppressor 230 Vac
- No. 1 serial output RS485
- No. 1 buzzer to indicate end of baking time
- No.11 buttons
- No.7 very high efficiency display units 0.5"
- No. 6 LEDs 3 mm
- Eeprom for the manual program
- 12 Vac power supply with line trap

1.2) ORION version

- No. 3 digital inputs optically isolated energized 12 Vac/dc
- No.2 analog inputs for Fe-Co thermocouple -100 +900 °C with automatic compensation of the cold junction
- No.6 relay outputs 230 Vac 5A with suppressor, 230 Vac
- No. 1 relay output, 230 Vac, 16A, for direct control of the lights, with suppressor 230 Vac
- No. 1 serial output RS485
- No. 1 serial output RS232 on standard 9-pole Cannon connector
- No. 1 buzzer to indicate end of baking time
- No.14 buttons
- No.10 display units 0.5"
- No. 8 LEDs 3 mm
- Eeprom for 100 programs – each consisting of at least 9 phases
- Clock with battery backup
- 12 Vac power supply with line trap

1.3) Main information: ALARMS

When the board is switched on, if not all the conditions for its correct operation are fulfilled, an acoustic signal emitted by the control and a code indicate the type of problem detected.

- *A01: One of the relays which detects the absence of a phase has triggered (triggering for signalling purpose only).*
 - One of the power supply phases of the baking deck heating element is missed. Check the nature of the fault and take action.
- *INT: thermo regulator probe of the disconnected board.*
 - Check at the back of the control board that the temperature probe is properly fixed to the correct connecting clamps and that these are well anchored to the control board.

2) OVEN OPERATION

2.0 Board condition

STAR version

ON: When the LED of the On/Off button is switched off.

There are two types of operations:

ON START: with the LED of the On/Off button switched off and after pressing the Start baking button. This is the classic baking mode with the oven turned on and the countdown of the timer active.

ON STOP: with the LED of the On/Off button switched off and at the end of the baking process or before pressing the Start baking button. It means that the oven is turned on but the countdown of the timer is not active.

STAND-BY: the LED of the On/Off button is switched on

ORION version

ON: the same as in the STAR version where in the ON Stop mode you can access the programming by pressing the Programming button.

STAND-BY: the same as in the STAR version but the Automatic Start button is active too (it turns the oven on).

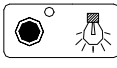
2.1 – Switching the oven on

Press the On/Off button. When the LED turns off it means that the oven is ON. If the temperatures inside the baking deck and the steam generator are lower than the pre-established values, the thermo regulation starts automatically.


2.2 – Switching the oven off





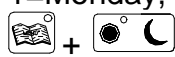
Put the board in *stand-by condition before switching off the heating elements*. In this mode the automatic switching on function can be activated and some settings are also possible (for the ORION version only)

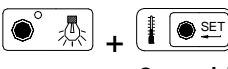
2.3 – Possible operations with stand-by board

 Light switching on

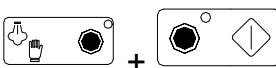
For the ORION version only:

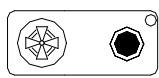


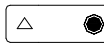


 : If this function has been enabled (see the paragraph concerning the board parameters setting), it activates or deactivates the automatic start-up of the oven (for the time setting see paragraph 3.0).


 : press them at the same time for at least 5 seconds to set the time. Once this function has been activated, the buttons for  time setting are active (hours are in 0 to 23 format);  to set the minutes from 0 to 59.  To set the day of the week (from 1 to 7 format, where 1=Monday, 2=Tuesday, ... 7=Sunday). At the end of the setting operations press again buttons  at the same time for 5 seconds to store the data.

 press them for at least 5 seconds to access the default's parameters (manual program=0 and hidden parameters).






2.3.1 – Test of the board

 : press them at the same time for 5 seconds to access the hardware test function and the three-digit display screen will show the software version. Within this function the active buttons are:

-  : to check the state of the TC1 thermocouple, the GF cold junction (internal temperature of the board), the TC2 thermocouple, the ID1, ID3 and the 3 digital inputs.
-  : test of all the buttons
-  : test of the manual outputs. Buttons  and  are active to change the state of the selected output.
- : test of the outputs in automatic sequence mode
-  : test of the display in automatic sequence mode (press it again to quit)

-  : press it for at least 5 seconds to activate the calibration of the probes (offset and gain of the TC1 thermocouple, GF cold junction and TC2 thermocouple).
 - **ATTENTION: using this function you risk ALTERING THE ADJUSTMENT of the board.**




ORION model

-  +   press them at the same time for 5 seconds to load the default's parameters (hidden parameters and programs).
 - **ATTENTION: using this function you risk ALTERING THE ADJUSTMENT of the board.**
-   : checks the number of altered set-point adjustments compared with the default parameters of the board.





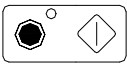
2.4 – Enabled buttons in ON mode:



In ON START mode

-  : allows partial baking time of the phase in progress: one can either increase or decrease it. The minimum value is 0. Also resets the indicator for the end of the baking process and silences the alarm. This way baking can be restarted.
-   : it temporarily changes the temperature setting for the phase in progress. Press the button again to save the change in the memory. The modification will not alter the pre-established set-point for this phase of the automatic programs. This temporary setting gets automatically reset after a stop or a phase change.


2.5 – Setting a program

To choose one of the baking programs press button  and select the program with buttons  and . Press the button again  and start the program with button .


3) OVEN PROGRAMMING

3.0 – Starting automatically : (only for the ORION version)

Press this button with the board set to ON STOP mode to activate the automatic switch-on facility. In particular, the following buttons are used to set the parameters:


 to vary the time (hours in 0 to 23 format);

 to set the minutes from 0 to 59;

 to set the day of the week (from 1 to 7 format, where 1=Monday, 2=Tuesday, ... 7=Sunday);

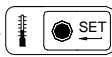


 : to set the number of the program to run on a specific day.

After setting all the modifications, press again button  to store them.

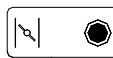
Set the board in Standby mode: the automatic switching on function will be activated (by pressing button ). When the time (hour and minutes) and the day of the week coincide with the day of the program, the oven will set automatically to the selected program and the thermo regulation of the selected program set-point will start (the display will show temperature and program) *NOTE: For some specified days of the week, the automatic switching on function can be deactivated. There are two possible ways to do so:*


- Choose a program >99 (the program display will visualize the symbol --)
- Set it to midnight (00 hours and 00 minutes)

3.1 - Manual modifications to the program

Select the parameter ( temperature,  time in minutes,  steam time in seconds) and modify it through the setting buttons. Press the button again to save the modification in the memory.

While setting one of the three above described parameters two other buttons are active (as long as the number flashes):



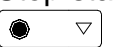
 allows (only for the ORION version) the early activation (in minutes) of the output for automatic steam discharge valve control (if present) to be set with respect to the baking cycle end.

 press it in sequence to set 2 hidden parameters:

- PC between 0 and 100% Ceiling percentage
- PP between 0 and 100% Base deck percentage


NOTE: these two parameters refer to hidden parameter P15. When this parameter is set to 100, the sum of the ceiling and base deck percentages cannot exceed 100%. If this is the case, the other value is automatically decreased.

3.2 - Modifications to an automatic program (only for the ORION version)

Set the instrument to the Stop state and press the button  then use buttons  and  select a value included between "01 and 99" (automatic programs). Follow these instructions to modify preset values of a selected program:


- 1 - Press the Programming button until the three-digit LED starts flashing
- 2 – Choose the number of the program phases (last digit of the three-digit LED) using the setting buttons (from 1 to 9)
- 3 – Press the Programming button to set the parameters (choose the phase to be set). Select the desired parameter and press one of the setting buttons (temperature, time, etc.) to adjust its value.

NOTE: One baking cycle can be divided into 9 consecutive phases and therefore there is a limit to the total baking time of 9 hours and 50 minutes. The display which shows the baking time will also visualize the sum of the baking times of all the phases: the display will be in minutes if the total sum of the time does not exceed 99 minutes in all; in hours and tenths of minutes in the opposite case (a LED fitted to the right of the hours signals out this condition).

Press button  to set, in sequence, 3 parameters

- 1) Steam time during the active phase is included between 0 and the maximum value which cannot be other than P6 seconds.
- 2) Number of steam emissions during the active phase is included between 0 and 9
- 3) The pause during the active phase between one steam emission and another must be included between 0 and 999 seconds.

To change the values always use buttons  and  and, to confirm every modification press  which also enables you to carry on to the following parameter.


Use command  to set the minutes of early output activation for automatic steam discharge valve control (if present) before the end of the active phase.

Eventually, by pressing in sequence button , one can set 3 hidden parameters:



- PC : from 0 to 100, activation percentage of the CEILING group (by default PC=60)
- PP : from 0 to 100 activation percentage of the BASE DECK group (by default PP=40)



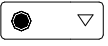
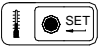
NOTE: the sum of PC+PP is equal to the Pr 15 parameter. When the first PC value is set, the second is automatically set according to Pr 15.


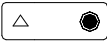


- 4 - To save the program in the memory press for 3 seconds button .


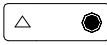
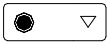

To delete all the modifications just made (but not yet definitively saved) press button 

4) PROCEDURE FOR BAKING CYCLE ACTIVATION WITH MANUAL PROGRAM

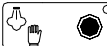
- Check that all the water shut-off cocks are open and that the main cut-out switch of the oven is set to the "I" position;
- Release the Emergency/Stop push-button (if locked).
- Press the button to switch the oven on . Immediately after the switching on, the digital card automatically carries out a scanning of the oven conditions and in case of detection of any malfunction within the installation (e.g.: disconnected probe) it gives an error signal (see paragraph 1.3). After the inspection (once that any malfunction has been reset) enter the manual program  to see the temperature inside the backing deck displayed on the upper screen. Should the temperature inside the oven be lower than the preset one, the heating elements turn on and the thermo regulation starts.
- To make any modification to the manual program, follow these instructions:

 : use this button to set the operating temperature. The value must be set between 0 and the maximum value indicated by the P7 parameter. Press this button and the temperature setting button will start flashing. Use buttons  and  to set the desired value. Press again  to store the data.

 : Use this command to set the baking time value. The value must be within 0 and 99 minutes. Press this button and the number corresponding to the baking time value will start flashing. Use buttons  and  to set the desired value. Press again  to store the data.



 : Use this command to set the steam emission time value. The value must be set between 0 and the maximum value indicated by the P6 Parameter. Press this button and the number corresponding to the steam emission time value will start flashing. Use buttons  and  to set the desired value. Press anew  to store the data.


While setting one of the three above described parameters another button is active (as






long as the number flashes):  press it in sequence to set 2 hidden parameters:

- PC : from 0 to 100, activation percentage of the CEILING group (by default PC=60)
- PP : from 0 to 100 activation percentage of the BASE DECK group (by default PP=40)














NOTE: the sum of PC+PP is equal to the Pr 15 parameter. When the first PC value is set, the second is automatically set according to Pr 15.

To modify these values press buttons  and .

- once that the modifications have been made wait until the temperature inside the baking deck has reached the set temperature. As soon as the oven has reached the working temperature, put the product in the oven and press button  to activate the baking time count.






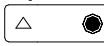


- When the operator deems it necessary, he/she must press button  to activate the steam emission.
- According to the requirements, during baking the aspirator's selectors can be activated  either to enable or disable the functions of: steam aspiration before the baking deck door, lighting  to turn on or off the light in the baking deck, steam generator warming up  to activate or deactivate its thermo regulation.
- When the baking time is finished, a buzzer sounds to warn the operator. **Attention: when the countdown is finished, a buzzer sounds but the thermo regulation IS NOT interrupted.**
- When the baked product is taken out from the oven, the baking deck is ready for another cycle.
- At the end of a working day press button  to turn the card off. It is recommended to press the emergency button too.

5) PROCEDURE FOR PERFORMING A BAKING PROGRAM

- Check that all the water, gas-diesel shut-off cocks are open and that the main cut-out switch of the oven is set to the "I" position; Close the baking deck door.
- Release the Emergency/Stop push-button (if locked).
- Press the button to switch the oven on . Immediately after the switching on, the digital card automatically carries out a scanning of the oven conditions and in case of detection of any malfunction within the installation (e.g.: disconnected probe) it gives an error signal (see paragraph 1.3). After the inspection (once that any malfunction has been reset) the program active at the time of the last switching off will be selected. Should the temperature inside the oven (displayed on the upper screen ) be lower than the working one preset in the active program, the heating elements turn on and the thermoregulation starts.
- Select the program to activate: to select the manual program press button  and, with buttons  and  set the "00" value otherwise, for the automatic programs set a value between "01" and "99".
- Modify the program following the instructions given in paragraphs 3.1 (for the manual program) and 3.2 (for automatic programs).
- once that the modifications have been made wait until the temperature inside the baking deck has reached the set temperature. As soon as the oven has reached the working temperature, put the product in the oven and press button  to activate the baking time count.
- When the operator deems it necessary, he/she must press button  to activate the steam emission.
- According to the requirements, during baking the aspirator's selectors can be activated  either to enable or disable the functions of: steam aspiration before the baking deck door, lighting  to turn on or off the light in the baking deck, steam generator warming up  to activate or deactivate its thermo regulation.
- When the baking time is finished, a buzzer warns the operator. Attention: when the countdown is finished, a buzzer sounds but the thermo regulation IS NOT interrupted.
- When the baked product is taken out from the oven, the baking deck is ready for another cycle.
- At the end of a working day press button  to turn the card off. It is recommended to press the emergency button too.
- with the instrument switched on and set to Start baking:
 - : allows partial baking time of the phase in progress: one can either increase or decrease it. The minimum value is 0. Also resets the indicator for the end of the baking process and silences the alarm. This way it can be restarted.
 - : it temporarily changes the temperature setting for the phase in progress. Press the button again to save the change in the memory. The modification will not alter the pre-established set-point for this phase of the automatic programs. This temporary setting gets automatically reset after a stop or a phase change.

6) MODIFICATIONS TO THE HIDDEN PARAMETERS

ATTENTION: We recommend allowing only qualified personnel to modify the parameters because these settings could compromise the proper working order of the machine while the resetting procedure of the default's values could erase some special programmed functions.

Set the instrument in "Stop" or "Start baking" and press at the same time buttons  and  and  for at least 5 seconds to enter the hidden parameters setting menu. While using this function, the  button is active and can be used to step to the next parameter, button  is used to go back to the previous parameter and buttons  and  are used to modify the value of the parameters. To store the modifications scroll down all the parameters until the last one. When you reach it press again button  to quit the function. All the modifications will be automatically saved. The parameters are:

Param. No.	Limits	Default' svalue	Description
Pr 1	0-1	0	Select centigrade/fahrenheit degrees 0=°C 1=°F
Pr 2	0-10 °C	1 °C	Differential gear for deck setting
Pr 3	0-2	1	Activation of the safety thermal relay input 0=no 1=yes 2=yes + acoustic alarm
Pr 4	20-120 sec	60	Time for a ceiling-base deck cycle
Pr 5	0-99 sec	3	Delay time in the acoustic signal for baking cycle end
Pr 6	0-99 sec	20	Max time which can be set for the steam
Pr 7	0-400 °C	300	Maximum temperature which can be set in the baking deck
Pr 8	0-400 °C	250	Steam generator set-point (if=0 the probe is disabled)
Pr 9	0-10 °C	1 °C	Differential gear for steam generator setting
Pr 10	0-50 °C	20 °C	Lower/upper deviation for Start baking activation E.g.: with baking set-point equals to 220°C the Start baking (with Pr 10 = 20) is active between 200°C and 240°C. If the temperature in the baking deck doesn't correspond to these parameters, when you press the Start baking button, the timer does not start counting and the card emits a warning BEEP sound.
Pr 11	0-1	0	Economizer: with Pr 11=0 the card will be slave, with Pr11=1 the card will be master (control is exerted by the economizer). The factory setting foresees that the "MASTER" card is always the second from top (the user can modify this setting).
Pr 12	1-4	1	In the "master" cards, the Pr 12 value corresponds to the number of decks present, master excluded (ovens with 4 decks have their master card's parameter set to 3); In the "slave" cards, the Pr 12 value corresponds to the number of a deck (master's excluded, in 4-deck ovens, for instance, the first deck on top will be "1", the third will be "2", the fourth will be "3"; . Do not forget that the second one

			is the "MASTER" card)
Pr 13	0-10	0	Maximum number of loads to eliminate in case of heating with economizer (to be set especially on MASTER cards: the factory setting for this value corresponds to 3 for a 3-deck oven and to 4 for a 4-deck oven).
Pr 14	0-1	1	Maximum power enabled to ceiling-base deck before the Start baking activation interval. With Pr 14=0 the economizer is always active, while with Pr 14=1 when the temperature inside the baking deck is lower than that of START baking activation, all the heating elements start working at the same time.
Pr 15	100-200%	100	Maximum percentage which can be set for ceiling-base deck ratio. With Pr 15=100 when the ceiling's heating elements are active those of the base deck are not (and vice versa). There is always an active group; with pr 15<100 when the ceiling's heating elements are active those of the base deck are not (and vice versa) but there are moments when both the two groups are inactive; with Pr 15 >100 there is always one group active at a time but there are moments when both the two groups are active.
Pr 16	1-99	20	Load cycling time when the economizer is active

7) DESCRIPTION OF THE TERMINAL BOARDS

1	R1	oven lighting
2	R1	“ “
3	R2	thermo regulator of the ceiling
4	R2	“ “
5	R3	steam solenoid valve
6	R3	“ “
7	R4	thermo regulator of the base deck
8	R4	“ “
9	R5	steams aspirator
10	R5	“ “
11	R6	steam generator's thermo regulator
12	R6	“ “
13	R7	fumes intake air-lock
14	R7	“ “ “
15	-	buzzer
16	+	“
25	ID1	safety thermal relay 12 Vac
26	ID1	“ “ “
27	ID2	free 12 Vac
28	ID2	“ “
29	ID3	free 12 Vac
30	ID3	“ “
31	12 Vac	power supply to the board
32	12 Vac	“ “
33	A +	RS485
34	B -	RS485
35	-	Fe-Co TC1 deck's thermocouple
36	+	“ “
37	-	Fe-Co TC2 steam generator's thermocouple
38	+	“ “