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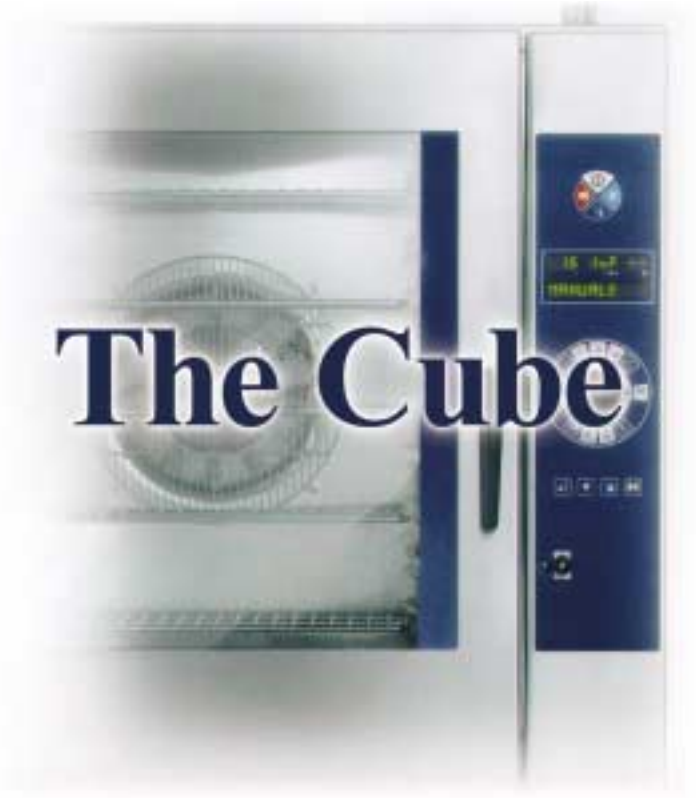
"THE CUBE" COMBIS TECHNICAL MANUAL

GAS AND ELECTRIC



TECHNICAL SERVICE

March 2003

“THE CUBE” COMBIS TECHNICAL MANUAL

GAS AND ELECTRIC

The purpose of this manual is to provide information of a strictly technical nature and instructions on routine and major servicing of the appliance, by the manufacturer's specialized, authorized personnel.

Before referring to the technical manual, it is imperative to consult the documentation supplied with the appliance, with particular reference to the installation and maintenance manual.

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FOREWORD: The model used as an "example" in the drafting of this Technical Manual is the MG 101 T. All pictures and illustrations therefore refer to this model.

1.0 APPLIANCE IDENTIFICATION DATA

Remove the outer packing from the appliance.
For all models, the technical data is marked on the adhesive plate at the bottom of the right hand side of the oven.


1

1.1 Data plate

The data plate (fig. 1-2) shows the essential data for identifying the appliance:

- **Model** of oven "TYP", e.g. **MG 101 T**
- **Year** of manufacture, e.g. 2002
- **Serial** number "NR", e.g. **LA020002011** which is essential for identifying the construction data in full

NB: always quote the above data when contacting the technical service.

As well as the details above, the data plate also gives the following data:

- **Minimum/maximum admissible** supply water pressure "Kpa"
- **Gas power** "∑Qn" or nominal heat capacity expressed in kW
- **Nominal electrical power** or electrical absorption "TOT" expressed in kW
- **Permitted type of** combustion fume connection, e.g.

"B23" - appliance set up for connection beneath an extractor hood or ceiling extractor - or "B13" -- appliance equipped with anti-return device for connection to a flue

- **Country** of destination, e.g. "IT", for the purpose of identifying the test gas category
- **Gas categories** permitted by the country of destination "Cat."
- **Nominal gas supply pressure** for the defined gas category "P mbar"

2

The label above the data plate (fig. 3): "Warning - appliance connected AC…" shows the type of supply voltage for which the appliance is designed.

The standard voltage for gas versions is AC 230V 50Hz, and for electric versions is 3NAC 400V 50Hz, unless indicated otherwise.

3

The model name and serial number are also marked on the front of the appliance, at the bottom of the control panel for the sake of easy reading. (fig. 4)

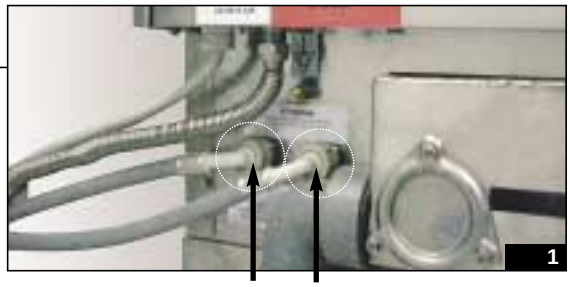

4

1.2 Technical data

See tables pages at the back of the manual (section 16).

1.3 Connections

On the back of the appliance, in the left hand corner, there are some important markings in different colours to indicate the type of connection required.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WATER SYSTEM CONNECTION:
Two 1/2 inch diameter inlets (fig.1)

- **BLUE sticker** (fig. 2): inlet connection **for normal mains water, cold only**, for steam condensation and boiler washing. **IT IS NOT NECESSARY TO CONNECT SOFTENED WATER.**

2

- **RED sticker** (fig. 3): inlet connection **for softened water only** for steam production and “autoclima”: the colour red is often mistaken for a symbol for hot water; in fact, it is used to draw attention to the necessity of connecting softened water. **IT IS NOT NECESSARY TO CONNECT HOT WATER, but if you do, its temperature must not exceed 50 °C.**

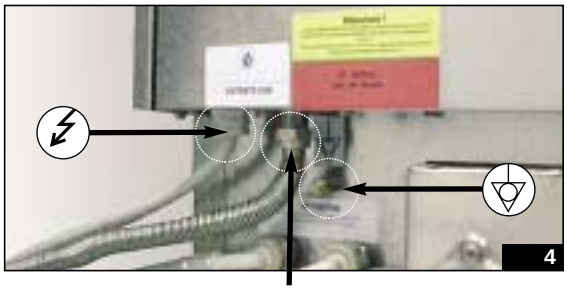
3

The characteristics of the water must fall strictly within the limits set out below.

The purpose of this is to prevent extremely harmful corrosion as a result of using water that is too soft or too aggressive, and to prevent the formation of limescale inside the oven and in the water system, as a result of using water that is too hard.

Hardness: between 3° and 6° fH
PH: greater than 7,5
Chlorides: less than 30 ppm

These values are important for ensuring that the water used by the appliance is suitably treated.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GAS CONNECTION (GAS VERSIONS):
inlet 1/2 inch (fig. 4)

- **White “gas inlet” sticker:** supply gas inlet connection (fig. 5).

5

- **Red G20 sticker:** ndicates that the appliance has been commissioned for G20 methane gas, nominal pressure 20 mbar (fig. 6).

6

- **Yellow sticker (G30/G31):** indicates that the appliance has been commissioned for liquid gas, nominal supply pressure 28-30/37; 50 mbar (fig. 7).

7

EQUIPOTENTIAL CONNECTION: necessary for the connection of all the devices (electrical and neutral) in the installation, so as to ensure a suitable equipotential connection.

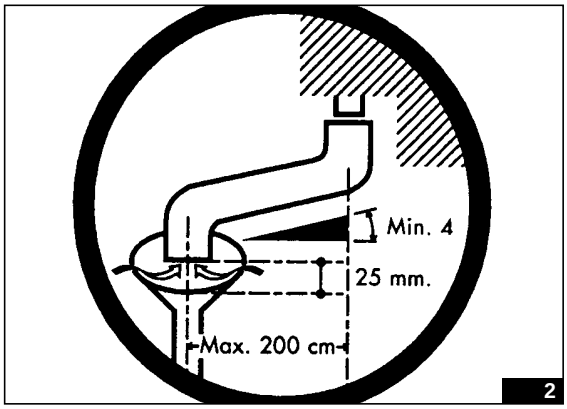
ELECTRICAL CONNECTION: insert the electrical cable through the cable clamp indicated and ensure that it is properly tight.

2.0 Oven drain connection

For the T and H/P versions it is possible to make a direct connection, without fitting a drain cup, as the drainage manifold system has an internal air drop (see also section 13.12).


1

For the M versions it is imperative to fit a drain cup so as to ensure a minimum air drop of 25 mm between the plastic drainage bend of the appliance and the drainage piping. **Direct connection is not permitted.**



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2.1 Correct positioning of models ME-MG 201/202 equipped with KS trolley

Follow the instructions below for easy fitting of the trolley structure.

The purpose of this is to prevent damage to the sealing gaskets and to prevent steam from escaping from the oven during use with the trolley structure.

IMPORTANT: the trolley structure forms an integral part of the appliance. (fig. 1)

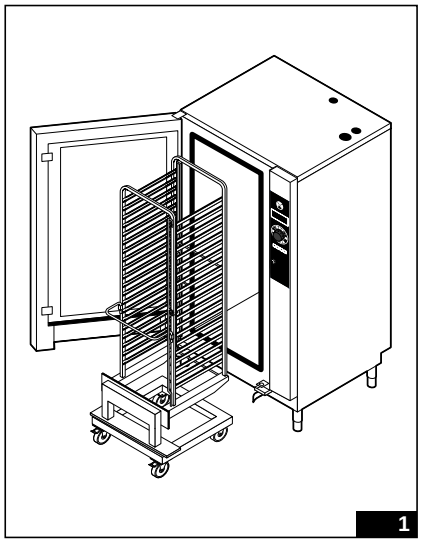
It must be placed inside the oven even during pre-heating before the introduction of foodstuffs, so as to ensure that the gaskets seal properly and to prevent heat and steam escaping from the bottom of the door.

For appliances equipped with washing system, insert the trolley structure during the course of the “soft” and “hard” wash program.

The surface on which the trolley structure runs must be **absolutely horizontal.** The surface must on no account slope sideways or forwards, so as to prevent the situations shown in figures 2 and 3. Level the surface as shown in fig. 4 if it slopes towards the front of the appliance.

If there is a **drainage grid** in the floor in front of the appliance, fit the two steel tracks (fig. 5), so as to allow easy insertion and removal of the trolley structure and avoid the risk of dangerous tipping due to the irregularity of the floor.

Level the appliance by means of the adjustable feet at the front and back. (fig. 6)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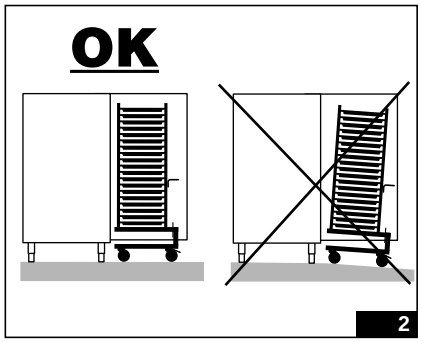

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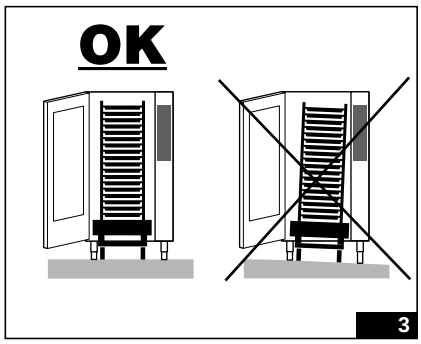

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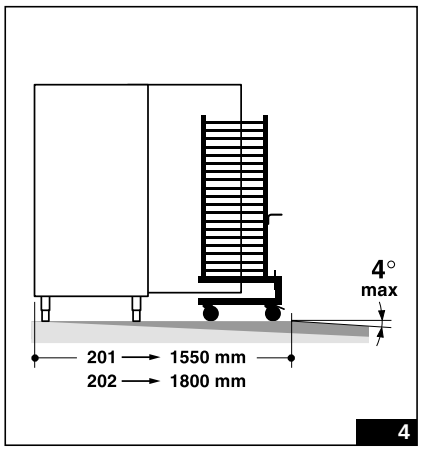

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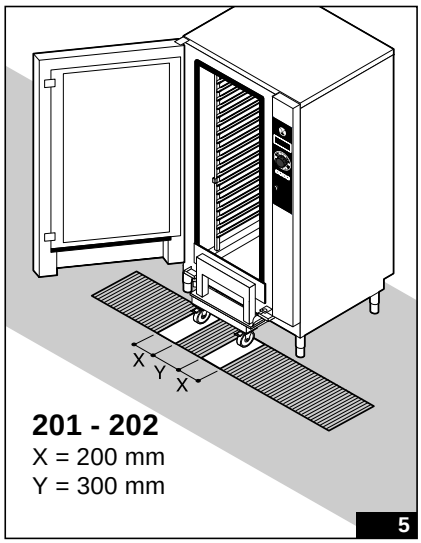

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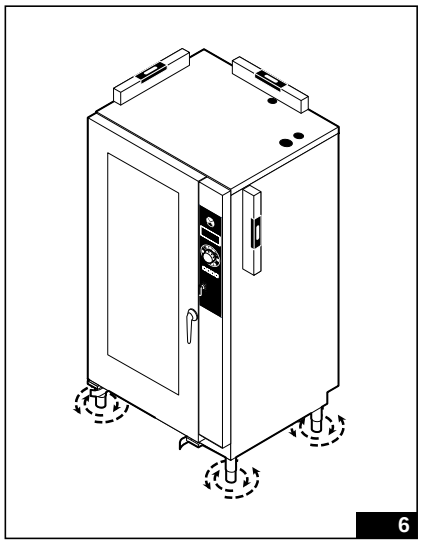
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2.1 Correct positioning of models ME-MG 201/202 equipped with KS trolley

When moving the appliance into position, take care not to damage the trolley guides fixed to the frame of the appliance (fig. 8).

Approach the oven with the trolley, insert it slowly (the bottom runners serve to center it) and make certain that it runs freely without any obstruction or collision (fig. 9).

Check that the basin of the trolley structure (the side nearest the operator) slots in between the bottom of the oven frame and the top of the trolley structure runner. It should not be impeded in any way during insertion (fig 10). If necessary, adjust the feet up or down according to the height of the appliance.

Push the trolley structure in as far as it will go, i.e. until the fastening flange comes to a stop against the oven front gasket (fig. 12).

At the same time, hold the trolley structure against the stop and **IMMOBILIZE** the front wheels with the brake, so that it **CANNOT MOVE** from this position (fig. 13).

No crack should be visible between the trolley fastening flange and the gasket of the oven front (fig. 14). If this is not the case, check that the oven/floor is correctly leveled as shown in figures 2-3-4.

It is permissible to make slight corrections to the leveling of the oven with respect to the leveling of the floor. Adjust the front feet in the event of poor sealing at the bottom, or the back feet in the event of poor sealing at the top (fig. 15).

The front wheels of the trolley must be locked using the 2 brakes each time it is inserted into the oven, in order to prevent damage to the sealing gaskets, which would otherwise be subject to excessive pressure and friction.


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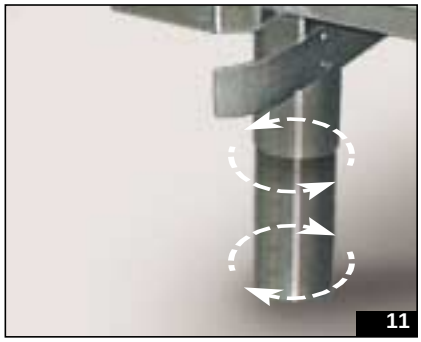
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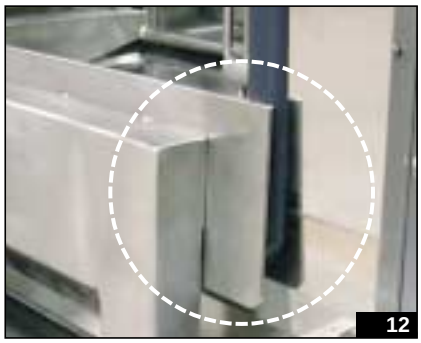
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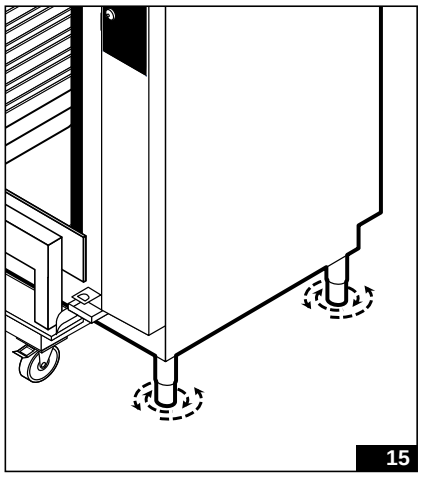
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2.1 Correct positioning of models ME-MG 201/202 equipped with KS trolley

Make sure that the interior door glass is sitting uniformly along the full length of the seat of the side door gasket profile.

If not, (gasket “pinched” beneath the glass), open the glass, lay the gasket uniformly, and then close the glass (fig. 16-17).

Then bring the door gradually into contact, while watching carefully from the left hand side to ensure that the flange of the trolley structure F mates with the door gasket (see inset detail in fig. 18).

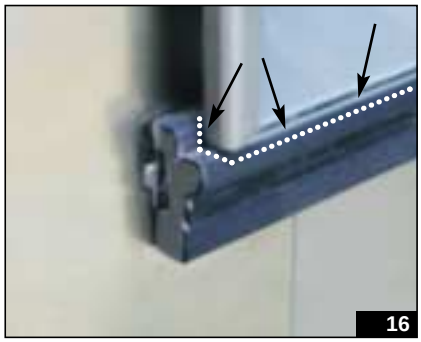
Check that the door closes properly both when cold and hot. If necessary, adjust the door strut housing adjuster plates located on the up/down hinges on the right hand side (fig. 19-20).

If it is difficult to close the door, **do not force it** as this may damage the strut movement closure mechanism.

Move the right hand adjuster plates (top and bottom) outwards (fig. 19-20), and also adjust, if necessary, the left hand adjustable hinges by loosening the adjuster screws so that the door can move away from the interior front face of the oven (fig. 21-22).

If you notice steam and moisture escaping from the door, move the right hand adjuster plates (top and bottom) inwards (fig. 19-20). If necessary, also adjust the left hand hinges by loosening the adjuster screws, pushing the door towards the inside of the oven, and tightening the adjuster screws so that the door is closer to the interior front face of the oven (fig. 21-22).

Warning: take out the trolley handle and use the "pan lock" rod to prevent the pans from coming out of their runners (fig. 25-26-27).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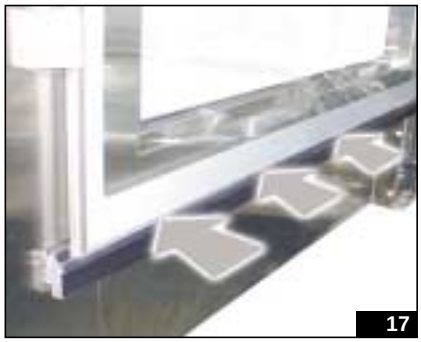
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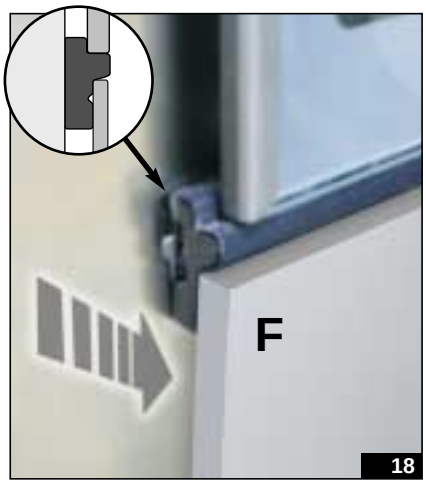

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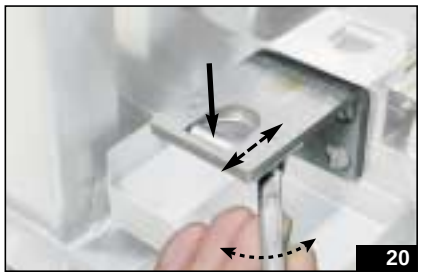
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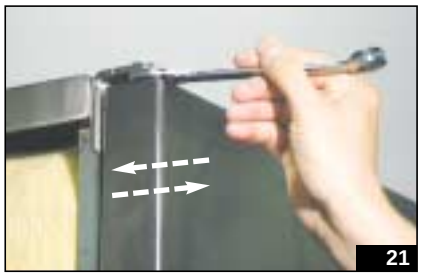
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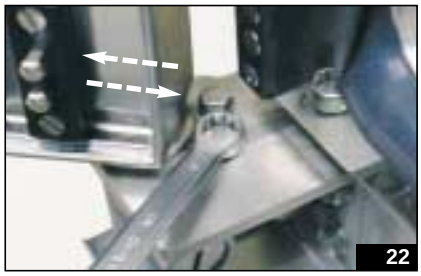
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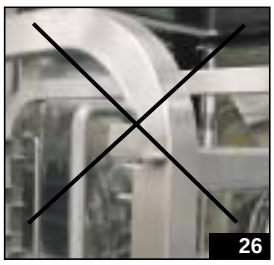
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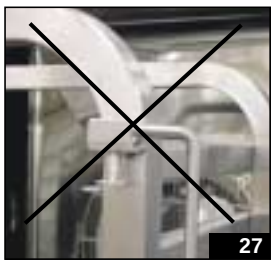
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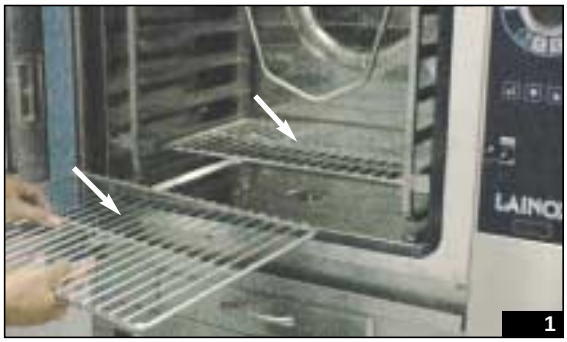
3.0 CHECKING AND USE OF THE STANDARD / OPTIONAL EQUIPMENT

After removing the appliance from its packaging, check the standard equipment. The example used here is the **gas model MG 101 T:**

- **2 grids** art. X1100 in GN 1/1 steel - (fig. 1)
- **Drainage bend** in heat-resistant plastic to be fitted, if required, to the oven drainage manifold at the back of the appliance, ø 50 mm. - (fig. 2)
- **Washing arm** (optional), which must be fitted in the oven in the fitting at the top of the oven ceiling - (fig. 3)



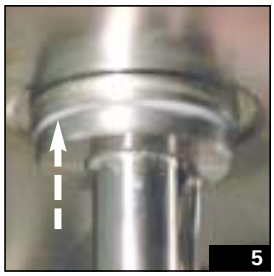
3.1 Washing arm installation and removal

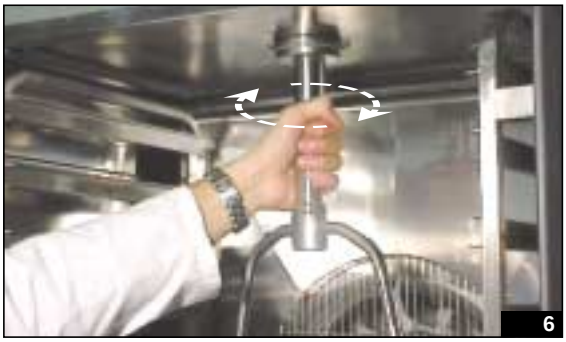
Washing arm installation and removal: for correct connection and disconnection of the washing arm, it is imperative to proceed as described below.

Connection: fit the central shaft of the washing arm into the fitting on the ceiling of the oven; turn clockwise as far as its travel limit - (fig. 4-6).

Disconnection: turn the central shaft of the washing arm anticlockwise until it reaches its travel limit, then pull slowly downwards and remove the washing arm inside the oven - (fig. 7-8).

Warning: put the washing arm back in the holder supplied or in the appropriate compartment of the detergent trolley, in order to prevent possible damage.





3.2 Spray

Spray: the part shown is the spray compartment - (fig. 9)

(A) **Water ON/OFF tap:** when the lever is pointing down, the tap is ON; when the lever is pointing up, the tap is OFF.

(B) **Retractable spray** for cleaning the oven interior.

Open the door, bring the spray into the oven and proceed with cleaning. Wind the hose back in very carefully, taking care not to wind it in quickly. (fig. 11-14)

DO NOT wind the hose in quickly - (fig. 15) DO NOT leave the spray on the ground - (fig. 16).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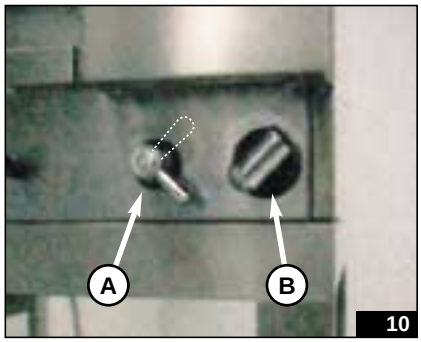

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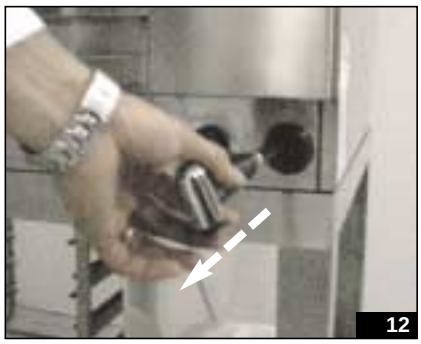
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3.3 Storage drawer

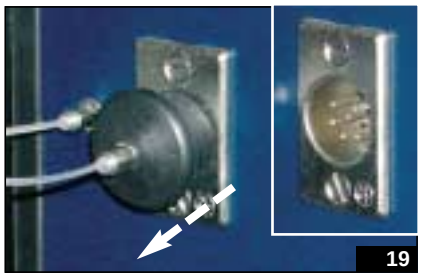
The storage drawer (fig. 17) **contains:**

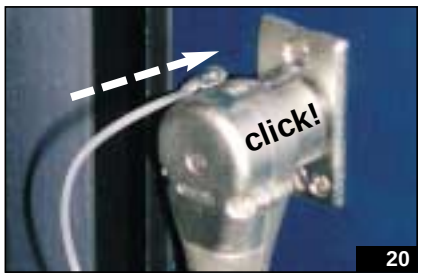
- **Core probe**

Stored in a special compartment in the drawer. (fig. 18)

To connect the probe, remove the protection cap from the core probe connector on the control panel (fig. 19).

Plug the male core probe connector into the appropriate female socket; the probe can now be inserted into the food to be cooked; close the door and the cable will pass through the door gasket without being damaged (fig. 20-22).

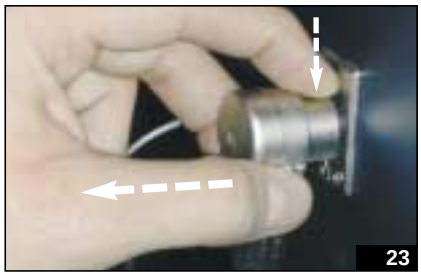




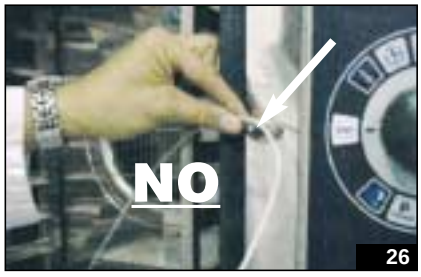
When cooking is complete, remove the core probe from the food and unplug the male connector from the female socket on the control panel by pressing the release mechanism at the top (fig. 23).

The probe must be cleaned, coiled carefully and put back in the probe compartment in the storage drawer in order to prevent it from being damaged in any way

(fig. 24-25). Fit the protector cap to prevent the entry of moisture, etc..



Warning: do not run the cable into the oven in the area around the door closure mechanism, as this could damage it (fig. 26).



As well as the core probe, the storage drawer can be used for storing the gloves, recipe book, manuals and other small utensils used on a daily basis.

3.3 Storage drawer

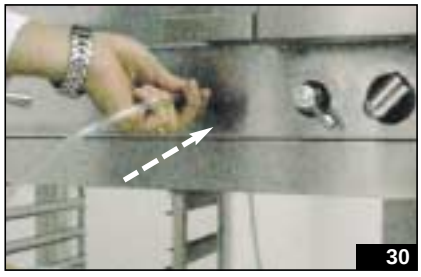
- **Detergent suction hose and rapid connector** - (fig. 28)

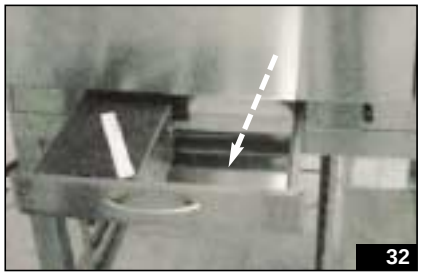
- **Detergent container art. DL 010** (fig. 29)

You are advised to use the detergent recommended by the manufacturer, as it has been tested for the specific uses in question. The correct operation of the washing system and perfect condition of the components cannot be guaranteed if other products are used.

Before starting the oven interior cleaning program connect / insert the detergent suction hose connector kept in the oven storage drawer, and insert the weight/filter into the detergent container, making certain that it is fully immersed in the detergent (fig. 30-31).

After washing, rinse the hose and put it back in the oven storage drawer so that it does not get lost (fig. 32-34)





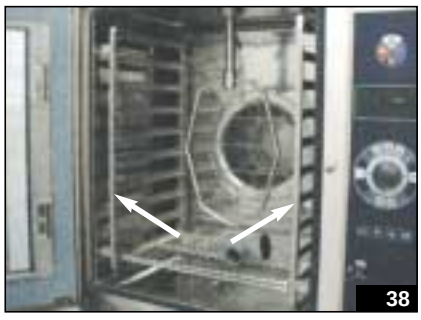
- **User manual** - (fig. 35)

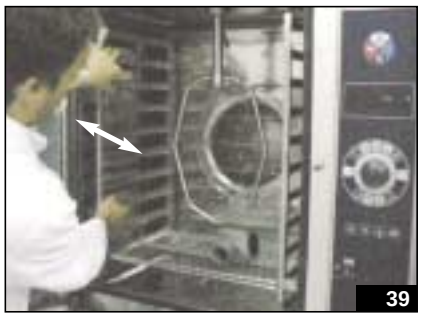
- **Installation and maintenance manual** - (fig. 35)

- **Appliance electrical diagrams** - (fig. 36)

- **Recipe book** - (fig. 37)

- **Side grid supports** or GN 1/1 RH and LH pans and grids; check that they are fixed securely. (fig. 38-39)

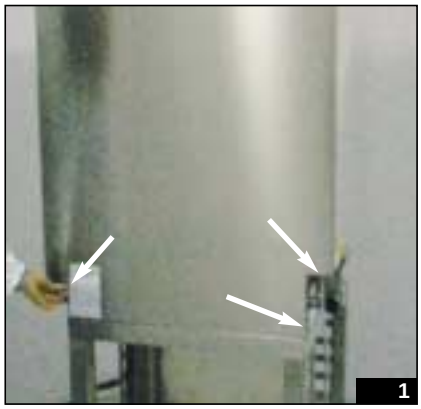


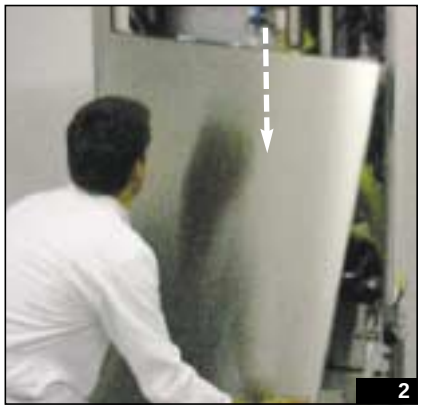


4.0 ELECTRICAL COMPONENT COMPARTMENT

The electrical components are located on the right hand side of the appliance. To gain access to them, remove the right hand side panel; this must be done in order to connect the electrical power cable to the terminal board.

Remove the three screws fixing the right hand side panel, pull the panel downwards, and remove it completely from its base (fig. 1-2).





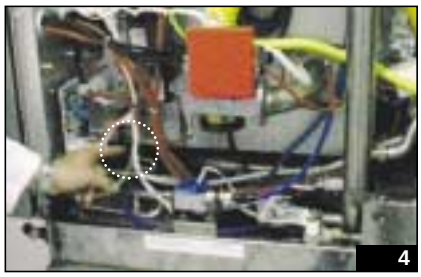
4.1 Connecting the oven electrical cable from the technical compartment

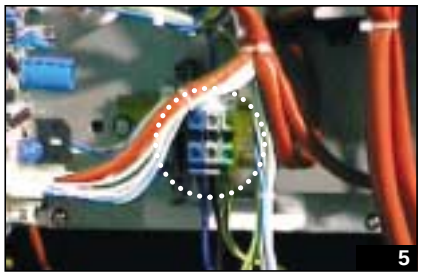
The electrical power cable for the oven enters through the cable clamp at the bottom of the technical compartment, and has to be connected to the power supply terminal board. (fig. 3-5)

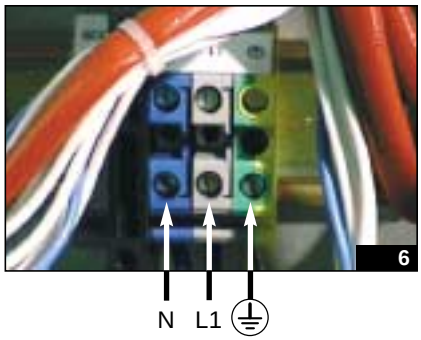
<u>Warning!</u> Ensure that neutral, phase and earth are connected to the correct terminals in order to avoid overloading the auxiliary circuit. (fig. 6)

Warning for gas versions: t is imperative that the neutral wire of the power cable, which must have zero potential (V), corresponds with neutral on the appliance.

Otherwise, the ionization flame detection system is unable to detect the presence of the flame and systematically shuts the burner off, thus making it unusable.





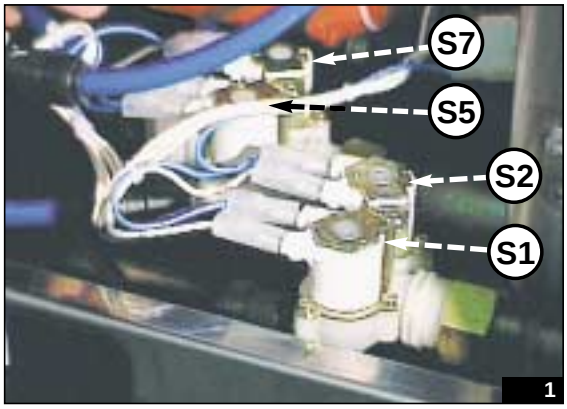


5.0 IDENTIFICATION OF COMMON ELECTRICAL COMPONENTS

The paragraphs that follow identify the electrical components located in the technical compartment of the appliance, in the order in which they are laid out, from the bottom upwards.

5.1 Water solenoid valve

- The code stamped on the connection cables **S1 identifies the solenoid valve that operates the "autoclima" system.**



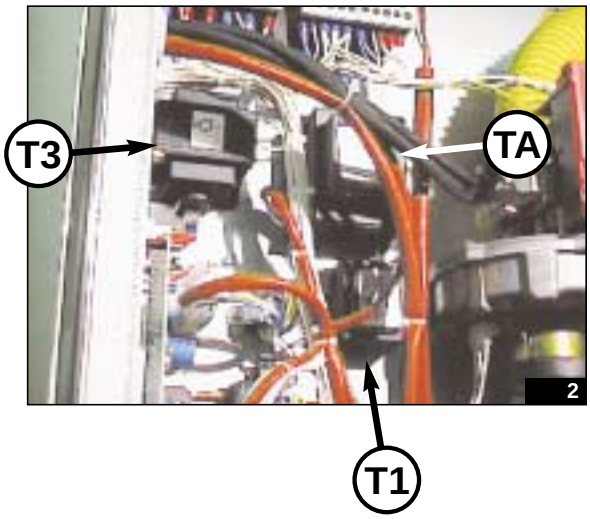
At the solenoid valve output, there is a red flow control valve, which reduces the flow rate of water to 15 l per hour.

If the solenoid valve is replaced with one without a flow control valve, the humidity generated during use of the "autoclima" function can no longer be controlled because of the excessive amount of water conveyed into the oven.

- the code **S2** identifies the boiler water filling / boiler washing **solenoid valve.**
- the code **S7** identifies the **rinse** solenoid valve for the **WCS** oven interior washing phase (optional).
- the code **S5** identifies the solenoid valve for **cold water input** through nozzles for condensing vapor upon outlet.

5.2 Transformers

You are advised to check the correct operation of the transformers (check input and output voltage) with the appliance operating under load, in order to check for anomalies that may not occur without load. If the protection fuse blows, disconnect the secondary circuit to determine whether the fault was caused by the load or by the transformer itself.



T1 - Electronic card supply transformer:

power 20 VA; the primary circuit supplied at 230 Volts is protected by 125 mA fuse E2; the secondary circuit supplies the electronic card at 12 Volts. This is an "essential" replacement part to keep, because in the event of a fault, the electronic card does not work.

T3 - Oven interior lights supply transformer:

the power rating depends on the model of oven. Bear in mind that 20 VA of power is used for each light installed.

The primary circuit supplied at 230 Volts between the output phase from the lights relay of the electronic card and the neutral of the installation, is protected by fuse E3.

The secondary circuit powers the 20 W (each) halogen lights via the light cable, which runs into the bottom of the appliance and ground, which must be properly secured at all times to ensure that the circuit is closed.

TA - See section. 10.4

5.3 Boiler drain driven valve V1

Valve V1 is motorized and fixed on a ball valve, consisting of a geared motor, a cam mounted on the motor spindle and two limit microswitches.

Electrical connection is as follows: BLACK WIRE neutral, RED WIRE phase for opening (OPEN), BLUE WIRE phase for closing (CLOSE).

Pay close attention to the colour of the electrical connection wires: NEVER supply power to both the open and close phases (red and blue wires) as this will short-circuit the component.

Operating sequence:

When switching on the appliance after it has been switched off for more than 5 minutes (time limit applicable to H/P and T versions only) the driven valve V1 receives power at the red wire (opening phase) until it reaches the maximum open position **(OPEN)**, which corresponds to the opening of the microswitch (fig. 3).

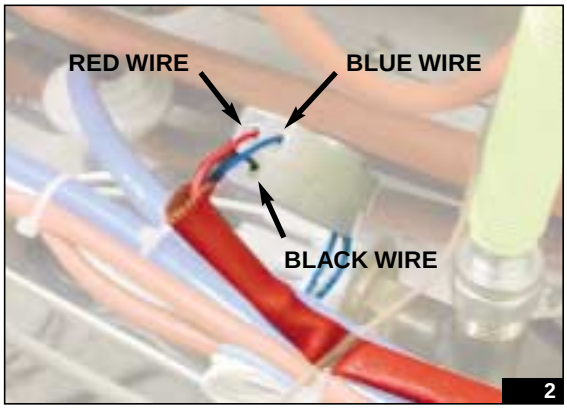
The water in the boiler flows out, and a steam generator wash cycle is executed for 30 sec. (parameter 64), by supplying power to solenoid valve S2 (function available for H/P and T versions only).

The driven valve V1 then receives power at the blue wire (closing phase) (fig. 4) until it reaches the fully closed position **(CLOSE)**, which corresponds to the opening of the microswitch. As driven valve V1 closes, solenoid valve S2 allows the steam generator to fill with water until the maximum level.

Note: the water is drained automatically from the steam generator only if it is at a temperature of less than 60 °C. This temperature is read by the boiler pre-heating thermostat F6 on M versions (contact closed for water temperatures of less than 60 °C, contact open for higher temperatures), and by the boiler temperature probe SB managed by the electronic card on the H/P and T versions.

The automatic sequence of opening and subsequent closing of the boiler drain driven valve V1 on the M version is handled by the TES timer (see section 6.5).


1



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5.4 230 Volt relay - Door microswitch B3

RM: 230 Volt relay Door microswitch B3 (fig. 1). For M version ovens only.

The RM coil is supplied by the normally open contact of the “reader” B3, which acts as a door open and door closed sensor, located in the bottom left hand corner of the control panel (fig. 5).

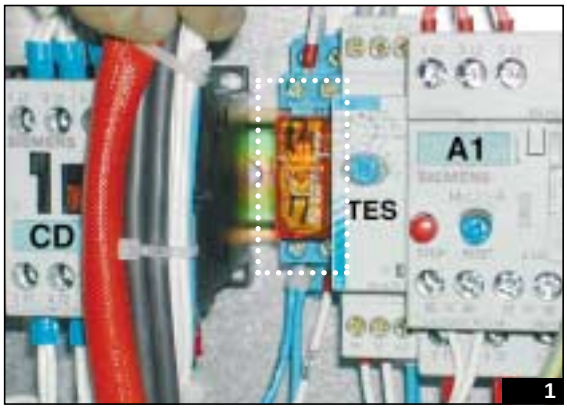
When the door is closed, contact B3 closes and the power is supplied to the RM coil, which closes the RM contact 21-24 (fig. 2-3). This in turn enables the heating elements, motor, and cooking timer.

If contact B3 does not close, close the door firmly and check the distance between the control panel and the door profile (fig. 4).

Check that the magnetic field of the magnet located inside the door (fig. 6) in the bottom corner strikes the “reader” inside the control panel (fig. 5).

If the RM coil is powered up and RM contact 21 and 24 does not close the contact, replace the relay.

Sensor B3 is connected directly to the electronic card (fig. 2-3) on the H/P and T versions: input 46-47 (T version) and input 12-13 (H/P version).



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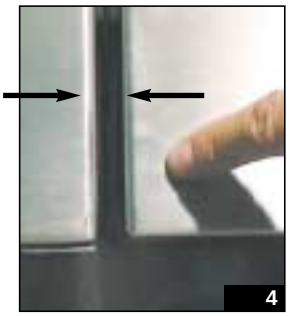
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6

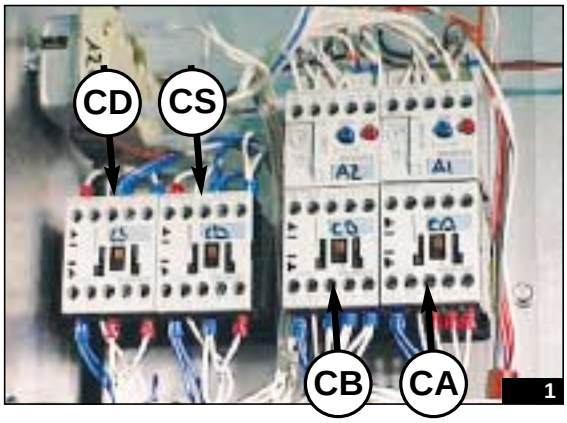
5.5 Remote switches

CD and CS

LH and RH motor rotation remote switches for ensuring maximum uniformity of cooking. For three-phase versions it is not necessary to check the direction of motor rotation at the installation phase, as the appliance is equipped with a system that performs this task.

On the T and H/P electronic versions the periods of LH and RH rotation are equally divided by means of a mathematical algorithm managed by the electronic card, which keeps track of the cooking time.

On the M mechanical versions, the same function is managed by a cyclical timer I (see section 6.9) which activates RH motor rotation for 3' 45 sec., a pause for 15 seconds, followed by LH motor rotation for 3' 45 sec. As the wiring diagram shows, these remote switches are protected by an interlock system: the CS coil is in series with the normally closed contact 21-22 of the CD remote switch and vice versa, so as to prevent them from being powered up simultaneously.



CA and CB

High and low motor speed remote switches respectively. Low fan speed is ideal for cooking delicate products (see Recipe Book).

As the wiring diagram shows, these remote switches are protected by an interlock system: the CS coil is in series with the normally closed contact 21-22 of the CD remote switch and vice versa, so as to prevent them from being powered up simultaneously.

5.6 Motor thermal cut-outs

A1 and A2

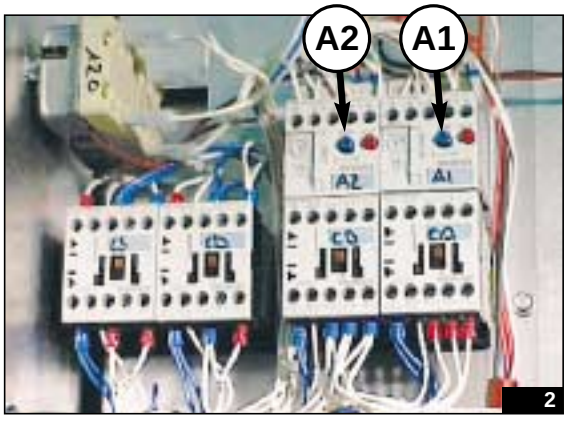
Motor thermal cut-outs for high and low speed respectively.

The cut-outs protect the motor in the event of anomalous power absorption. They must be reset manually, by an authorized member of the technical service staff only, so as to establish the cause of the anomaly.

The motor thermal cut-out is equipped with two NC and NO contacts: if the thermal cut-out trips, NC (contacts 95-96) opens, thus cutting off the power to the circuit, and NO (contacts 97-98) closes, to enable the acoustic signal to sound and the corresponding error message to appear on the display, for H/P and T digital versions.

On versions equipped with two-speed motor, it is necessary to determine which of the two thermal cut-outs A1 or A2 has tripped, as they are located in series. Once you have established the cause of the error, press the BLUE reset button.

Do not modify the settings of the adjustable thermal cut-outs. For further details, refer to the data plate on the motor.



Gas oven thermal cut-out settings table

Model	Thermal cut-out A1 setting (Amp)	Thermal cut-out A2 setting (Amp)
MG 061	2	0,8
MG 101	3	1,4
MG 102	3,6	2
MG 201	3	1,4
MG 202	3	1,4

5.6 Motor thermal cut-outs

If a motor thermal cut-out trips, use an amp meter to check the actual consumption data of the motor (excluding motor start-up phase) compared with the data shown on the data plate: note that the most unfavorable consumption conditions occur during cooling with the door open; consumption should therefore be checked in these conditions.

The initial start-up phase involves exceptional motor consumption for a period of 7 - 8 seconds at the most.

In normal operating conditions (nominal supply voltage) the 15 sec. pause between clockwise and anticlockwise rotation allows the motor to slow down sufficiently.

Electric oven thermal cut-out settings table

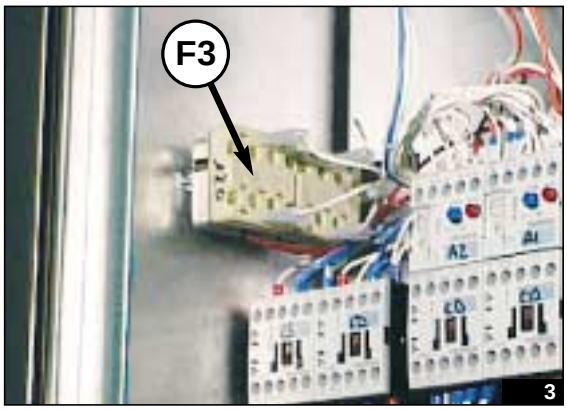
Model	Thermal cut-out A1 setting (Amp)	Thermal cut-out A2 setting (Amp)
ME 061	2	0,8
ME 101	2,3	1,3
ME 102	1,8	0,7
ME 201	2,3	1,3
ME 202	1,8	0,7

5.7 Boiler safety thermostat F3

F3

Operates by immediately opening the contact as a result of a **temperature inside the steam generator in excess of (150-15) °C.** On the H/P and T electronic versions, triggering of the thermostat is confirmed by an acoustic alarm and accompanying error message.

In the event of damage or interruption to the capillary, the contact opens. If the thermostat trips repeatedly, you are advised to replace it.



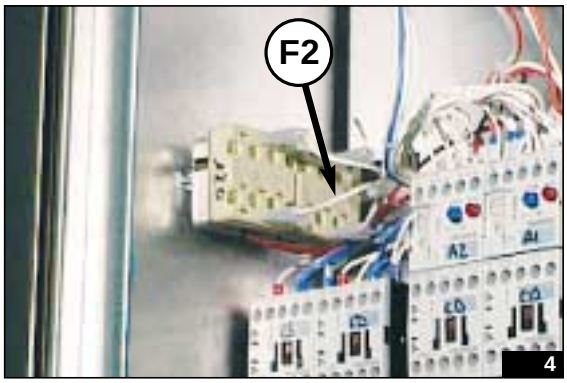
5.8 Cavity safety thermostat F2

F2

Operates by immediately opening the contact as a result of a **temperature inside the oven in excess of (360-20) °C.** On the H/P and T electronic versions, triggering of the thermostat is confirmed by an acoustic alarm and an accompanying error message.

In the event of damage or interruption to the capillary, the contact opens. If the thermostat trips repeatedly, you are advised to replace it.

NOTE: On the M version, tripping of the protection devices described in sections 5.6 - 5.7 - 5.8 causes the appliance to stop, and the green light H1 (power ON) to switch off.

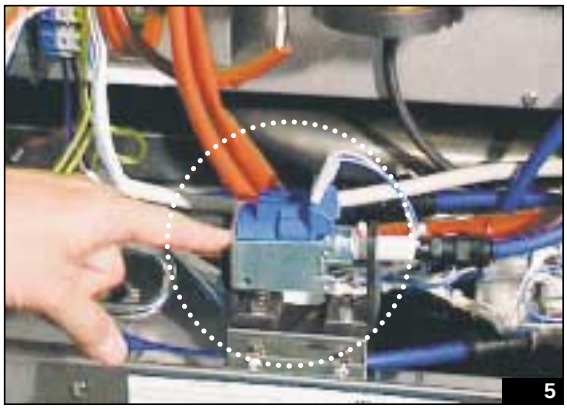


5.9 PD detergent pump

Automatic priming detergent suction pump for oven washing.

In the event of incorrect operation, prime the pump manually with water (it is advisable to zero the pressure head by lifting the receptacle containing the water) in order to bleed any excess bubbles / detergent foam from the pump circuit.

Make certain that the suction pipe filter, the connection hoses and the male and female rapid connectors provide a perfect seal, so as to ensure correct pump suction. No specific instructions need be followed with regard to the position of the power supply phase and neutral.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NOTES

6.1 Adjustable steam control valve F4 (70 °C)

The steam control valve operates when cooking in steam mode and mixed mode, and has the function of momentarily **interrupting** the heating of the steam generator, so to avoid generating more steam than the product can absorb.

1

The thermostat saves energy, provided that the steam condensation system is switched on (see notes in section 6.2); otherwise, the oven interior cannot reach a state of complete steam saturation.

The thermostat is located in the oven discharge tube (beneath the floor of the oven). In steam and mixed mode, when steam comes out of the discharge tube at more than 70°, it shuts off the heating to the boiler and switches the heating to the oven. After a few seconds, it then restores the heating to the steam generator as soon as the temperature in the discharge tube falls below 70 °C.

The contacts affected by thermostat F4 are 1 (common), 2 (normally closed) boiler heating, and 3 (normally open) oven heating.

The thermostat is adjustable: simply increase the set point by a few degrees by turning the upper adjuster screw clockwise (towards maximum on the scale) in order to extend the activation time of the heating elements in the steam generator, at the expense of energy savings.

6.2 Adjustable steam condensation thermostat F5

Activates in all cooking modes, including convection (think of chicken, for example, which releases a lot of steam/humidity). It supplies steam condensation solenoid valve S5, which sprays COLD water through the condensation nozzle on the oven drain tube (beneath the oven floor).

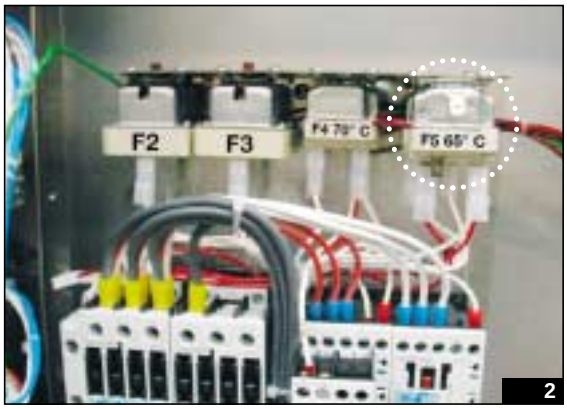
The aim is to prevent anomalous escape of steam from the drain tube and to contribute to the correct operation of the above-mentioned steam control system, given that the functions are directly dependent.

The thermostat is located in the vertical safety vent tube. When the steam comes out at more than 65 °C, it activates the steam condensation function for a few seconds, until the steam is almost completely condensed, and then opens the contact as soon as the temperature falls below 65 °C.

The contacts controlled by thermostat F5 are: 1 (common), 3 (normally open) steam condensation solenoid valve S5 operation.

The thermostat is adjustable, but it is not advisable to adjust the set point because it interacts directly with the steam control system: in brief, the temperature difference of 5 degrees between thermostat F4 and thermostat F5 must be maintained at all times.

It is imperative that the water supplied to steam condensation solenoid valve S5 is **COLD**, otherwise the system does not work.



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On H/P and T appliances with digital controls, the thermostats F4 and F5 are replaced with a single temperature probe PT100 SD located on the discharge tube (beneath the oven floor).

The steam control function is managed by parameters No. 8 and No. 106; the steam condensation function is managed by parameter No. 10.

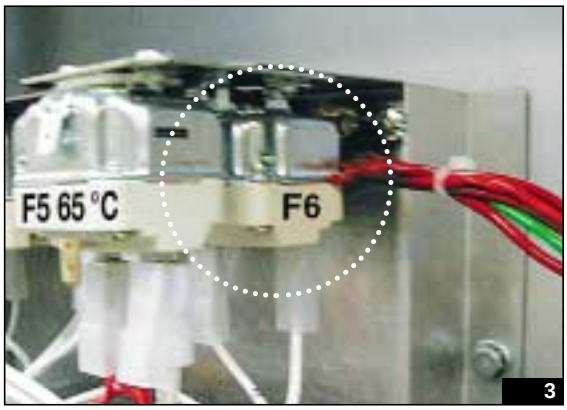
6.3 Boiler water drain thermostat F6 (55 °C)

This thermostat activates the boiler drain driven valve V1 (see section 5.3).

At switch-on, if the temperature of the water in the boiler is less than 55 °C, the contact remains in the closed position, thus allowing power to be supplied to the RED wire of driven valve V1.

Otherwise, automatic drainage of the boiler is not possible in the event that the water temperature rises above 60 °C (thermostat contact open).

On H/P and T appliances with digital controls, the thermostat F6 is replaced with a boiler pre-heating probe SB located on the boiler; the boiler drain temperature is managed by parameter No. 61.



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6.4 PL boiler level control

The PL level control card with which the mechanical ovens with steam generator are equipped, controls the water level in the boiler by opening / closing an electric circuit created by the presence of the water, which acts as a conductor.

The Max. level probe connected to PL No. 8 controls the maximum water level: probe immersed, Max. level reached, solenoid valve S2 disactivated (230V output No. 5 OFF); probe not immersed, Max. level not reached, solenoid valve S2 activated (230V output No. 5 ON).

The minimum level probe or Min. alarm, connected to PL No. 9, controls the minimum level below which the heating elements are disactivated to prevent the boiler from overheating.

Probe immersed, Min. level reached, boiler heating activated (230 V output No. 4 ON); probe not immersed, Min. level not reached, boiler heating disactivated (230V output No. 4 OFF).

Power is supplied to PL by the contacts 1 common phase of relay 1 boiler filling solenoid valve S2 activation and 2 (neutral); contact 3 is the common phase of relay 2 boiler heating; contact

10 is the earth connection.

The power supply phase to contact 1 passes through the timed contact during closure 15-18 of the TES boiler drain timer, so ensure that it is working.

It is essential that the Max. level probe (the shorter) and the Min. level probe or alarm (the longer) are clean, otherwise the PL level control does not work.


4

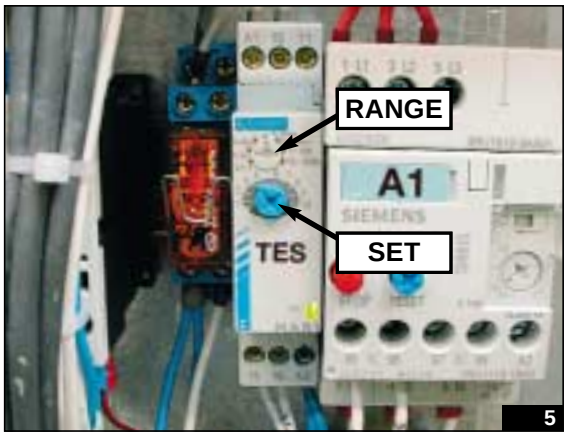
6.5 TES boiler drain timer

Supplies power to the opening phase (Red wire) of driven valve V1 and subsequently supplies power to the closing phase (Blue wire).

The TES coil is powered up as soon as the appliance is switched on (flashing green LED), contact 15 closes with 16 for “x” sec. (this time can be adjusted by means of the blue SET wheel at the front), which enables the steam generator to drain.

Contact 15 then closes with 18 (green LED lit steadily) which enables driven valve V1 to close and power to be supplied to PL contact 1, to gradually fill the steam generator with water.

The timer function is essential for managing steam generator filling and draining, so make certain that it works properly and is correctly set.



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TES setting table			
	Electric ovens 061-101-102	Gas ovens 061-101-102	Electric ovens 201-202
RANGE	**1-10 min.**	**6-60 sec.**	**1-10 min.**
SET	**130 sec. (2)***	**40 sec. (6/7)***	**210 sec. (3/4)***

***** Corresponding value in the screen-print above the SET wheel.

6.6 Cooking mode selector B1

Cooking mode selector B1 enables the activation of specific components involved in the various cooking modes. The contacts are detailed in the wiring diagram identified by the numbers and letters with B1 marked next to them.

The contact diagram below each wiring diagram represents closure of the contact with the shaded circle, and the cooking modes in the left hand column: (M) mixed, (V) steam, (C) convection, (0) OFF, (∞-Rpa) cooling with door open. The contacts in the various branches of the wiring diagram are identified with letters and numbers.

Example: the “switch” function for all cooking modes is provided by contacts A-1 and B-2, which are open when the selector is in position 0, and closed in all the other positions to supply the auxiliary circuit with neutral and phase respectively.

Example: the “cooling with door open” function operates by means of the closure of contact D-5, which directly supplies motor remote switch CD or CS, while disabling the remainder of the circuit.

6

6.7 Cavity thermostat F1

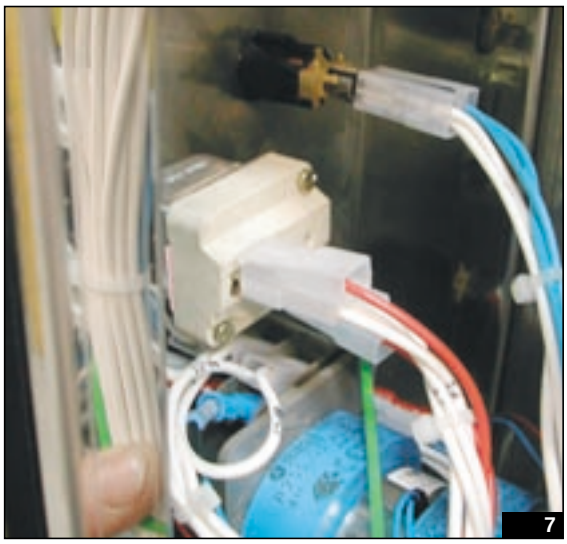
This thermostat controls the temperature inside the oven by varying the power supply to the heating elements: operating range 50-300 °C, common contact C No. 2, NO contact No. 1.

The thermostat is set and sealed. **DO NOT** set manually in any way. The position of the sensor bulb **MUST NOT** be changed, because the temperature in this position is the same as in the oven interior.

If replacing the part, take care to seal it correctly with high-temperature silicone in order to prevent leakage into the electrical component compartment.

The state of the thermostat is indicated by the orange light next to it: light OFF, heating elements OFF (contact 1-2 open); light ON, heating elements ON (contact 1-2 closed).

<u>WARNING:</u> in order to comply with the requirements of the EMC standard for controlling the input and emission of electromagnetic waves, an anti-interference filter FL1 consisting of a condenser is connected in parallel with each thermostat. If damaged, it could conduct current even with the thermostat contact in the “open” position, so must be replaced to ensure correct thermostat operation.



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6.8 Core probe control card SC (optional)

The operation of the PT 100 core probe at a given reading point is managed by a main card and a keypad card fixed to the control panel.

Power to the main card SC is always supplied directly to contacts 1 and 2 (230 Volts); it is also equipped with two relays, IS (core probe switch) and RT (core probe thermostat relay).

It supplies power to the keypad card via connections A and B (12 Volts output), and communicates by means of a serial connection with the keypad card via connections C and D (voltage present during communication 1-1.5 Volts).

If the error message “Err” appears on the keypad card display, this indicates that the core probe is faulty.

Check that the connector is plugged into the control panel properly, that the core probe is undamaged and that the main card and keypad card are connected correctly.

The microchip and the probe temperature reading circuit are contained in the keypad card.

To check the setting of the core probe, which consists of a PT 100 thermal resistance, connect an ohmmeter to terminals 1 and 4 (red wires connected directly to the keypad card) and compare the resistance with the data shown in the adjacent table for the various temperatures.

Example: at ambient temperature (20 °C) the correct resistance of the probe should be 107.79 Ω

If there is a discrepancy in the values, a short circuit or an open circuit, this means that the probe is faulty.


9

PT 100: reference table

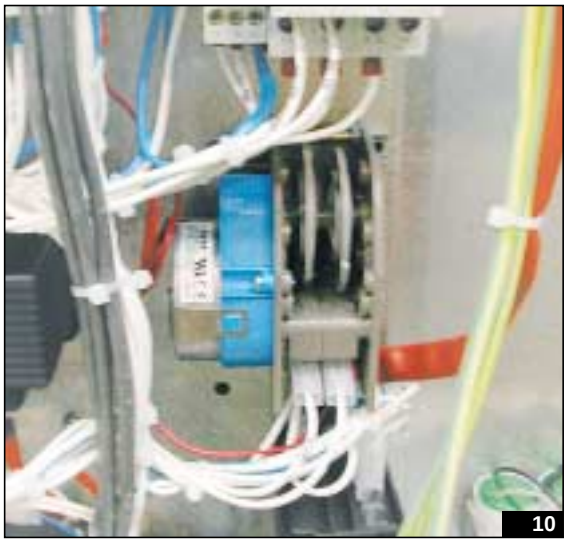
Temperature (°C)	Resistance (Ω)
0	100.00
10	103.90
20	107.79
30	111.67
40	115.54
50	119.40
60	123.24
70	127.07
80	130.89
90	134.70
100	138.50
110	142.29
120	146.86
130	149.82
140	153.58
150	157.31
160	161.04
170	164.76
180	168.46
190	172.16
200	175.84
210	179.51
220	183.17
230	186.82
240	190.45
250	194.69
260	197.69
270	201.29
280	204.88
290	208.45

6.9 Motor rotation cyclical inverter I

The motor rotation cyclical inverter is a cyclical timer with a rotation time of 8 min. The non-adjustable cams C1 and C2 supply the two remote switches CD or CS, which activate the clockwise or anticlockwise rotation of the motor, and allow a pause of 15 sec. between cycles.

The motor is supplied by the cam C contact (bottom of the component).

The NO contacts (centre of the component) must be left free; the NC contacts supply coils CD and CS alternately, via contacts 21/22 of CS and CD.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<u>WARNING:</u> Make certain that the motor does not accidentally lock during the pause between cycles.

This would stop the motor for an indefinite period of time, causing the heating elements inside the oven to overheat due to a lack of ventilation.

NOTES

7.0 ELECTRONIC CARD T

7.1 Electronic card T - Technical specifications

TECHNICAL DATA

	Nominal	Min.	Max
Supply voltage (from external transformer)	12V~	Tip. -15%	Tip. +15%
Supply frequency	50Hz / 60Hz	Tip. -5%	Tip. +5%
Power	18VA	-	-
Insulation class	2	-	-
Keypad protection class (IP)	PC Board open work		
Ambient operating temperature	25 °C	0 °C	60 °C
Ambient operating humidity (non-condensing)	30%	10%	90%
Ambient storage temperature	25 °C	-20 °C	85 °C
Ambient storage humidity (non-condensing)	30%	10%	90%

ELECTROMECHANICAL DATA

The product consists of two cards known as the keypad card and the main relay card. The two cards are sandwiched together and interconnected by a six-pole cable fitted with JST connectors.

- **The main relay card** consists of a double-faced printed circuit board which contains the inputs, outputs and a microcontroller which controls them;

- **The keypad card** consists of a double-faced printed circuit board which mounts the keys, LEDs, and display used as the user interface, and the microcontroller dedicated to controlling these components.

All of the terminals on the card are marked with a number stamped on the vetronite. The same numbering appears in the wiring diagram, e.g. door microswitch B3 is connected to terminals **12** and **13** of connector **I2** and so on.

7.2 KEYPAD CARD - TECHNICAL DATA

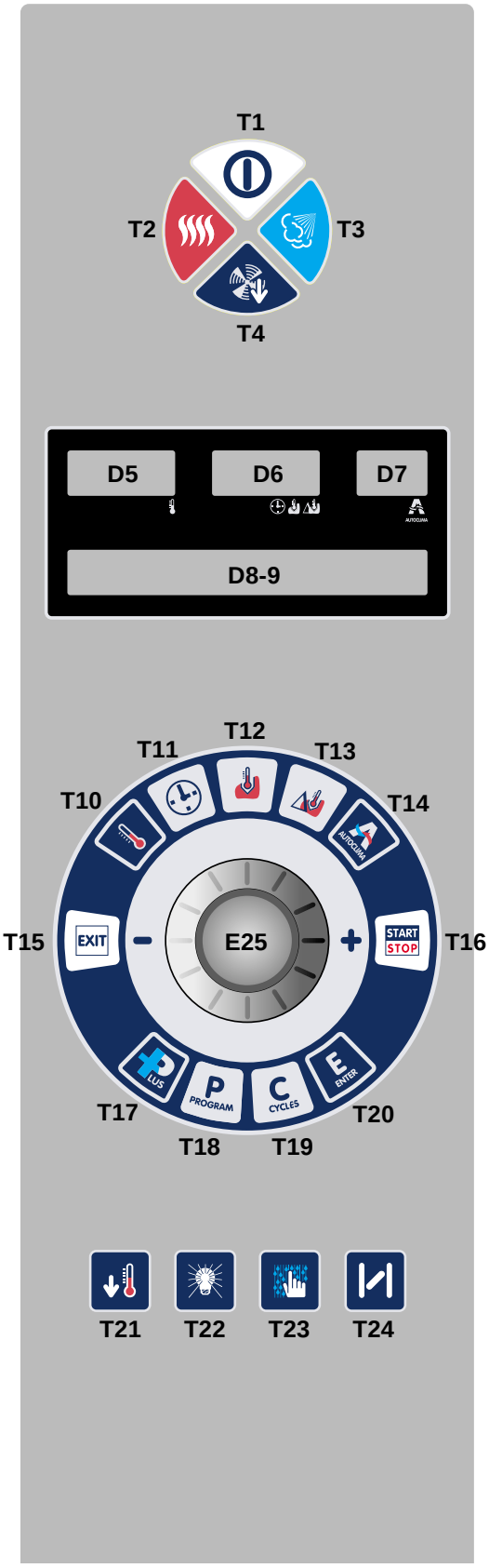
KEYS

Description	Denomination
On/off	T1
Convection mode	T2
Steam mode	T3
Low speed / power	T4
Set oven temperature	T10
Set cooking time	T11
Set core probe	T12
Delta T core probe	T13
Autoclima	T14
Start/stop	T16
Enter	T20
Cooking cycles	T19
Programs	T18
Plus	T17
Exit - Reset	T15
Cooling with door open	T21
Light	T22
Manual humidity	T23
Oven vent	T24

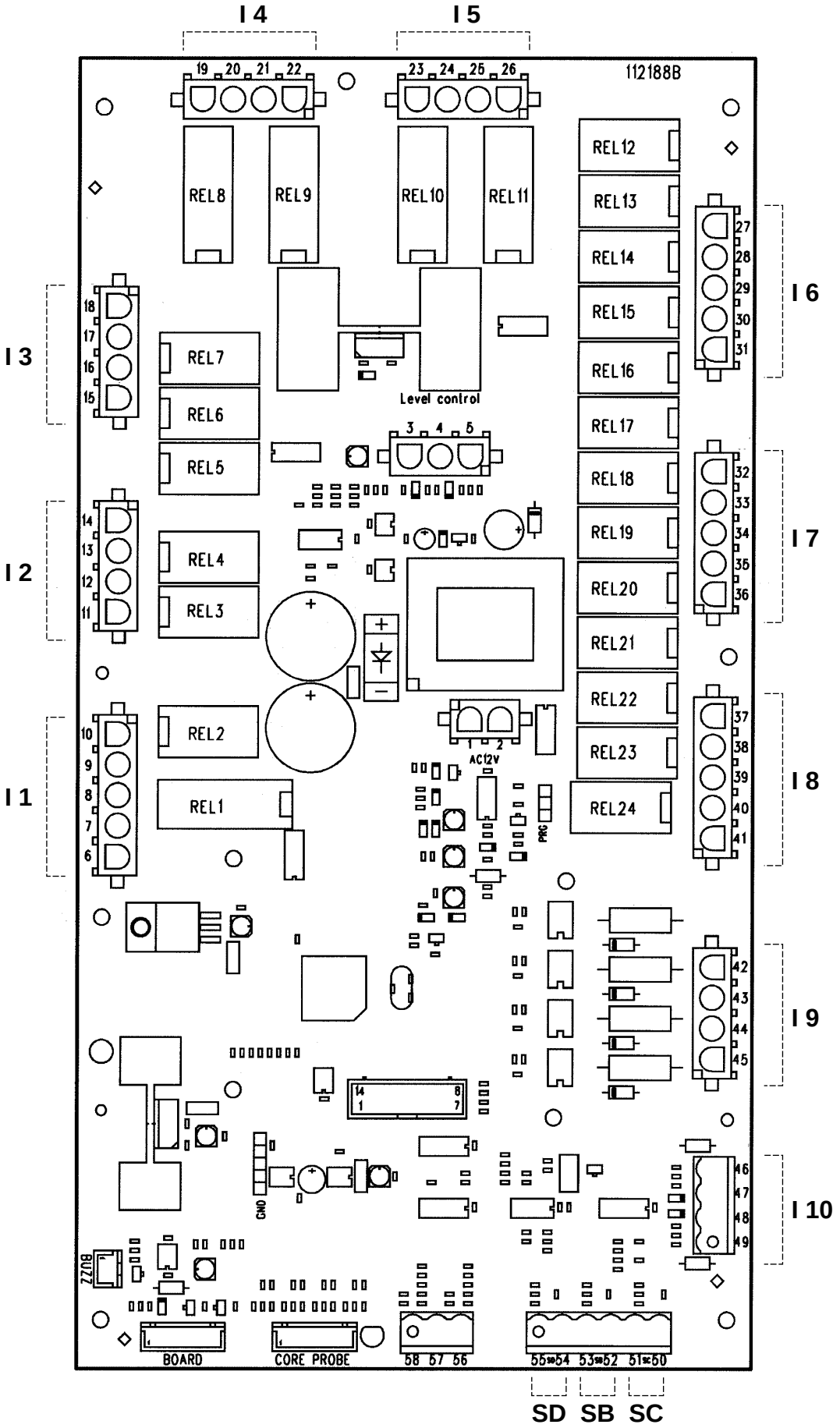
DISPLAY

Description	Denomination
Temperature display	D5
Time/core probe display	D6
Autoclima display	D7
Alphanumeric display	D8-9

For the sake of simplicity, the denomination of the keys and displays is the same as the numbering used in the User Manual.



7.3 MAIN RELAY CARD - TECHNICAL DATA



7.4 Analogue inputs

Probe description	Type	Denomination	Terminals	Range of use
Oven	PT100	SC	50-51 SC	0°C ÷ +300°C
Boiler	PT100	SB	52-53 SB	0°C ÷ +300°C
Condensation	PT100	SD	54-55 SD	0°C ÷ +300°C
Probe 1	Thermocouple K	SS 1	CORE PROBE	0°C ÷ +300°C
Probe 2	Thermocouple K	SS 2	CORE PROBE	0°C ÷ +300°C
Probe 3	Thermocouple K	SS 3	CORE PROBE	0°C ÷ +300°C
Probe 4	Thermocouple K	SS 4	CORE PROBE	0°C ÷ +300°C
Probe	Thermocouple K	SS K Probe 1 point	56 57 58	0°C ÷ +300°C
Cold joint	NTC	AN8		0°C ÷ +100°C
Card temperature	NTC	AN9		0°C ÷ +100°C

Outside the operating range, the probe may break; outside the conversion range, a probe error is generated; outside the range of use, an alarm is generated.

7.5 Digital inputs

Description	Technical data	Denomination	Terminals
Door microswitch	Clean contact	B3	46-47
Gas pressure switch	Clean contact	PG	48-49
“Maximum” water level		Max lev	3
“Alarm” water level		Min lev	4
"Common" water level		Common	5
Oven burner shut-off	I230 Vac input	RG	42
Boiler safety thermostat	230 Vac input-230 V input	F3	43
Oven safety thermostat	230 Vac input-230 V input	F2	44
Fan thermal cut-out	230 Vac input-230 V input	A1-A2	45

7.6 Relay outputs

Relay description	Contact data	Denomination	Terminals
Reduced power oven heating	Contact NO 5A AC1 Contact NC 5A AC1	R1	C 8 - NO 7 NC 6
Full power oven heating	Contact NO 5A AC1	R2	C 10 - NO 9
Reduced power boiler heating Not used on the gas version	Contact NO 5A AC1	R3	C 12 - NO 11
Full power boiler heating Gas burner ignition activation	Contact NO 5A AC1	R4	C 14 - NO 13
Phase On/Off	Contact NO 8A AC1	R5	C “OUT” 15 NO “IN” 16
Boiler filling	Contact NO 5A AC1	R6	NO 17
Oven light	Contact NO 5A AC1	R7	NO 18
Cooking finished signal - 230 Volts Optional	Contact NO 5A AC1 Contact NC 5A AC1	R8	NO 20 - NC 19
Gas version combustion fume timer management	Contact NO 5A AC1 Contact NC 5A AC1	R9	NO 22 - NC 21
Boiler draining	Contact NO 5A AC1 Contact NC 5A AC1	R10	NO 24 - NC 23
Fan inversion	Contact NO 5A AC1 Contact NC 5A AC1	R11	NO 26 - NC 25
Steam condensation	Contact NO 5A AC1	R12	NO 27
Autoclima humidifier	Contact NO 5A AC1	R13	NO 28
Boiler washing	Contact NO 5A AC1	R14	NO 28
High speed fan	Contact NO 5A AC1	R15	NO 30
Low speed fan	Contact NO 5A AC1	R16	NO 31
Detergent pump	Contact NO 5A AC1	R17	NO 32
Descaling pump - NOT USED	Contact NO 5A AC1	R18	NO 33
Oven washing (WS)	Contact NO 5A AC1	R19	NO 34
Low speed extractor operation	Contact NO 5A AC1	R20	NO 35
High speed extractor condensation	Contact NO 5A AC1	R21	NO 36
Free	Contact NO 5A AC1	R22	NO 37
Neutral On/Off	Contact NO 8A AC1	R23	NO “IN” 38 C “OUT” 39
Oven and boiler gas ignition reset	Contact NO 5A AC1	R24	NO 41 - C 40

Relay description	Contact data	Denomination	Terminals
Power supply		AC12 V	1-2
Keypad card connection	JST 6 vie		BOARD

7.7 Modulating buzzer

Relay description	Contact data	Terminals
Buzzer	JST 2-way	BUZZ

The volume of the buzzer can be modulated by means of parameter 110. The types of acoustic signal emitted are as follows:

- End of cooking: the buzzer sounds in intermittent bursts. To switch the sound off, simply press any key or open the door; after one minute, the buzzer switches off automatically.
- Program with more than one cycle: at the end of each cycle the buzzer sounds a 10-second beep.
- At the end of an oven washing or boiler washing cycle the buzzer sounds in intermittent bursts as at the end of cooking.
- Fatal errors: the buzzer sounds continuously.
- Non-fatal errors: the buzzer sounds for 10 seconds once every minute.

7.8 Keypad terminals

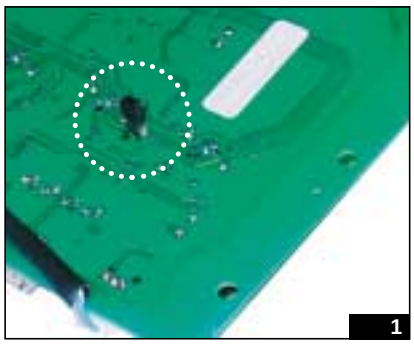
Relay description	Technical data	Denomination
Encoder	JST 3-way	ENC (E25)
RS232 serial	JST 5-way	RS232
Connection with main relay card	JST 6-way	SUPPLY

7.9 Jumpers

The electronic card is equipped with 1 jumper located at the bottom of the keypad card on the inner side (near keys T21 and T22), for switching off the power to the keypad; horizontal jumper position:

- Jumper enabled, power ON; jumper disabled, power OFF -check that it is enabled if the keypad card does not switch on.

The other jumpers located in the main relay and keypad card **must remain disconnected.**



7.10 Memory

In the event of power failure and subsequent return of power, the card returns to the state it was in before the power was lost: with regard to cooking times, the card saves the time every 10 minutes. This means that if you set a cooking time of 40 minutes, of which 12 have elapsed when the power is cut off, when the power is restored, the timer will load a time of 30 minutes (the time remaining until end of cooking).

7.11 PLUS button OFF

If you press PLUS when the oven is OFF, the following functions stream across the display when you turn the central SCROLLER knob.

To access any of these functions, press ENTER T20.
To exit the menu, press PLUS T17 or EXIT T15.
For further details, consult the user manual for the appliance.

- ***DATE***
  Set date
  This function enables you to display or modify the date. To modify the values, turn the scroller. The flashing cursor moves automatically from day to month etc.; **press T20 to save the new setting.**

- ***TIME***
  Set time
  By pressing T20 you can display or modify the actual time. To modify the values, turn the scroller. The flashing cursor moves automatically from hour to minutes etc.; **press T20 to save the new setting.**

- ***BOILERHEAT***
  Enable or disable boiler
  By pressing T20 you can disable the automatic pre-heat function of the steam generator until the appliance is next switched off or until a steam or mixed cycle is selected: this function is useful for saving energy when you do not envisage using the steam or mixed modes during the course of the day.

- ***LANGUAGE***
  Select user interface language
  By pressing T20 you can use the scroller to display the available languages, i.e. Italian, English, German, French and Spanish. Once you have selected the language you want, press T20, switch the appliance off by pressing T1, and all messages/indications will appear in the new language.
  Translation examples: lingua-italiano - language-english - sprache-deutsch - langue-franÁais - idioma-espanol.

- ***BOARDLIFE***
  Count number of hours for which electronic card has been ON
  By pressing T20 you can display the number of hours for which the appliance has been ON, in order to facilitate the organization of maintenance intervals.

- ***BOILERLIFE***
  Display number of hours for which the boiler heating system has been ON
  By pressing T20 you can display the number of service hours of the steam generator, which is useful for comparison with the "hours remaining" before the next descaling cycle.

- ***S.G.CLEAN***
  Boiler descaling cycle
  (see section 7.13)

- ***SOFTCLEAN***
  Soft oven interior washing
  (see section 7.14)

- ***HARDCLEAN***
  Hard oven interior washing
  (see section 7.15)

- ***HOTAIREFF.***
  Oven elements output
  Function not yet implemented

- ***BOILEREFF.***
  Steam elements output
  Function not yet implemented

- ***CLIMA EFF.***
  Humidifier output
  Function not yet implemented

- ***PARAMETERS***
  Programmable parameters with free user access
  f you press T20, the display shows a series of parameters that can be adjusted according to your requirements, for customized management of certain functions.
  Parameter ***"36"*** flashes on display D8-9; turn the scroller to display the remaining parameters. Once you have identified the desired parameter, press T20, and the standard value assigned to the selected parameter will start flashing. Turn the scroller to set the desired value.
  Press T20 to go from the standard parameter value to the parameter number and continue viewing the remaining parameters if you want to. To exit and save the new value, press T17.
  For further details and a complete list of parameters, consult the user manual.

7.11 PLUS button OFF

- ***PARAM. TECH***
  Programmable parameters - full list - password-protected access
  By pressing T20 you can enter the technical parameters section of the electronic card - **for use by authorized technicians only** (see section 7.19).

- ***PROBETEST***
  Temperature probe test
  (see section 7.16)

- ***SERVICE***
  Card relay test
  (see section 7.17)

- ***HACCP***
  Remote data management
  *Function not yet implemented

- ***MODEM***
  Serial setting
  *Function not yet implemented

- ***SOFTWARE***
  By pressing T20, you can display the date of the software installed in the appliance, so as to check how up-to-date it is.

7.12 Boiler descaling interval check

The card enables you to check the number of hours remaining before the message ***"DESCALE"*** appears, to remind you to descale the steam generator according to the set parameters (see section9.1). This enables you to organize the operation in advance.

With the card OFF, press T17: the display shows the word ***"DATE"***.
Turn the scroller to the right until the message ***"S.G.CLEAN"*** appears, then press T20, and key in "START". If you turn the scroller to the left, the message ***"REMAIN.H."*** appears: press T20, and the display shows how many hours are left before the boiler needs to be descaled, so that you can plan the operation in advance.

NOTE: To select the following functions/programs, follow the instructions in section 7.11. Press T20 to confirm selection.

7.13 *S.G.CLEAN*

Press T20 and turn the scroller until the message ***"STARTING"*** appears. Press T20 to start the boiler descaling cycle, which includes the following phases:

1. Water in boiler is drained.
2. The "boiler washing" relay activates for 70 seconds.
3. The boiler drain driven valve closes.
4. The message ***"FILL DESCALER"*** indicates that it is time to put in the descaler.
5. After introducing the descaler through the appropriate tube, press START.
6. The boiler refills with water, which mixes with the descaler.
7. Phase 1 starts, in which the boiler elements keep the water at a temperature of 60 °C (parameter 103) for a duration of 30 minutes (parameter 102).
8. When the time managed by parameter 102 expires, the boiler drains, washes and refills.
9. Phase 2 then starts, involving the use of steam at 100 °C (parameter 105) for 25 minutes (parameter 104).
10. The boiler drains, washes and refills.
11. When the message ***"EXIT"***, appears, press T20 to exit the program.
12. **Switch off the power at the switch upstream of the appliance, and then switch the power back on to reset the the number of hours remaining before the next descaling cycle.**

PRACTICAL TIPS FOR DESCALING THE BOILER

The appearance of the message ***"DESCALE"*** reminds you to descale the steam generator in accordance with the set parameters (see section7.13), as soon as possible.

Press T15 to cancel the ***"DESCALE"*** message temporarily (it will reappear the next time you switch the appliance on).

RUNNING THE *"S.G.CLEAN"* CYCLE

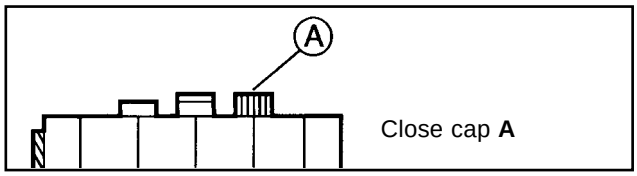
Switch off the appliance by pressing T1, then press T17, and the display will show the message ***"DATE"***; turn the scroller until ***"S.G.CLEAN"*** is displayed, then press T20. The message ***"START"*** appears; press T20.

Display D8-9 shows first ***"S.G. DRAIN"*** then ***"S.G.RINSING"*** , which indicate the automatic boiler draining and washing operations, and then the message ***"WAIT"*** appears.

The message ***"FILL DESCALER"*** then appears, with a cyclical acoustic signal, at which point the operator must unscrew cap A and introduce the correct amount of descaler (diluted, if necessary, in accordance with the product manufacturer's instructions), for the capacity of the boiler (see table):

DESCALER ACTION

Models	Litres	Models	Litres
ME 061	3.5	MG 102	6
MG 061	2.5	ME 201	18
ME 101	11	MG 201	6
MG 101	4	ME 202	30
ME 102	12.5	MG 202	20.5



Press T20; display D8-9 shows the message ***" BOILERFILL"*** and the boiler fills up completely with a mixture of water and descaler.

CYCLE 1:

This is the first automatic cycle, which enables the boiler to heat up and maintain its temperature for 30 minutes so that the descaler can act effectively. After 30 minutes, the boiler drains ***"S.G. DRAIN"*** its contents (impurities and descaler mixed with water). Make sure that it flows out freely. If it does not, call the technical service, as the drain outlet may be clogged and it may be necessary to service the boiler. This problem is also shown on display D8-9 (see section 7.18.13).

The boiler then removes the more adherent limescale deposits by flushing at high pressure with normal mains water ***"S.G.RINSING"***, before filling with purified water ***"BOILERFILL"***.

CYCLE 2:

This is the second automatic cycle, which activates the oven in steam mode for 25 min. for the purpose of deep cleaning of the steam generator and the steam inlet tubes. The cycle is completed with the following phases: drain boiler ***"S.G. DRAIN"***, and wash boiler ***"S.G.RINSING"*** by flushing with normal mains water and then filling with purified water ***"BOILERFILL"***.

7.13 *S.G.CLEAN*

IMPORTANT:

The sequence described in detail above ensures thorough cleaning of the steam generator, leaving it ready for use. Any anomalies that occur during the cycle will be indicated on D8-9. **If this happens, the appliance MUST NOT be used until it has been checked by an authorized technician!**

The correct completion of the program is indicated by the appearance of the message ***"EXIT"***. Press T20 to exit the ***S.G.CLEAN*** program, switch off at the switch upstream of the appliance, and switch back on again. This will reset the number of hours left before the next descaling cycle ***"REMAIN.H."***.

To stop the program while it is running, press the ON/OFF and EXIT buttons simultaneously; this procedure may be carried out by authorized personnel only, who are aware of the risks (descaler remaining in boiler) involved in premature stopping of the cycle.

WARNING:

This operation must be carried out under the close supervision of the operator!

The operator must adhere strictly to the precautions (mask, gloves etc.) for use of the product! The descaling cycle must not be interrupted for any reason!

Interrupting the cycle renders the whole process ineffective, wastes descaler, and provokes the risk of contamination if the descaler has not been completely flushed out of the boiler.

It is advisable to thoroughly rinse the oven interior with the spray at the end of the program.

7.14 *SOFTCLEAN*

Pressing 20 starts the short oven washing program ***"SOFTCLEAN"***, which consists of the following cycles:

1. Convection "Cooling or pre-heating" cycle: the oven is brought to a temperature of 50 °C (parameter 116), by means of a convection heating cycle if the existing temperature is less than 50 °C, or cooling if more than 50 °C. As soon as the set temperature has been reached, the message ***"FIT IN SHOWER"*** appears, instructing the operator to install the washing arm. To move to the next cycle, press START.
2. "Detergent spray" cycle in convection mode with set point of 60 ° (parameter 117). This lasts for 3 minutes, and activates the detergent spray on a timed basis (3 times) for a total of 50 seconds (parameter 127).
3. "Detergent action" cycle with fans and heating switched off, for 3 minutes to allow the detergent to act.
4. "Steam" cycle with oven set point of 70° steam (parameter 118) for 5 minutes (parameter 125). Ventilation is switched on in both directions.
5. "Rinse" cycle with oven set point of 70 °C steam (parameter 119) for 8 minutes (parameter 126). The relay controlling the washing arm is activated only once the fans have stopped moving.
6. "Combined rinse" cycle in convection mode for 2 minutes with oven set point of 70 °C (parameter 117). The washing arm, ventilation and humidifier are all ON simultaneously.
7. "Drying" cycle in convection mode with oven set point of 70 °C (parameter 124) for 3 minutes with oven vent open.

At the end of the washing program the message ***"REMOVE SHOWER"*** appears: **open the door**, remove the washing arm, close the door, and press the ON/OFF button to exit the program and switch the appliance off.

To stop the program while it is still running, press the START/STOP and ON/OFFbuttons simultaneously. This procedure may be carried out by authorized personnel only, who are aware of the risks (detergent remaining in oven) involved in premature stopping of the cycle.

7.15 *HARDCLEAN*

Pressing 20 starts the long oven washing program ***"HARDCLEAN"***, which consists of the following cycles:

1. Convection "Cooling or pre-heating" cycle: the oven is brought to a temperature of 50 °C (parameter 116), by means of a convection heating cycle if the existing temperature is less than 50 °C, or cooling if more than 50 °C. As soon as the set temperature is reached, the message ***"FIT IN SHOWER"*** appears, instructing the operator to install the washing arm. To move to the next cycle, press START.
2. "Detergent spray" cycle in convection mode with set point of 60 °C (parameter 117). This lasts for 3 minutes, and activates the detergent spray on a timed basis (3 times) for a total of 50 seconds (parameter 127).
3. "Detergent action" cycle with fans and heating switched off, for 3 minutes to allow the detergent to act.
4. "Steam" cycle with oven set point of 70° steam (parameter 118) for 5 minutes (parameter 125). Ventilation is switched on in both directions.
5. "Rinse" cycle with oven set point of 70° steam (parameter 119) for 5 minutes (parameter 125). The relay controlling the washing arm is activated only once the fans have stopped moving.
6. "Detergent spray" cycle in convection mode with set point of 60 °C (parameter 120). This lasts for 3 minutes, and activates the detergent spray on a timed basis (3 times) for a total of 50 seconds (parameter 127).
7. "Detergent action" cycle with fans and heating switched off, for 3 minutes to allow the detergent to act.
8. "Steam" cycle with oven set point of 70° steam (parameter 121) for 3 minutes. Ventilation is switched on in both directions.
9. "Rinse" cycle with oven set point of 70 °C steam (parameter 122) for 8 minutes (parameter 126). The relay controlling the washing arm is activated only once the fans have stopped moving.
10. "Combined rinse" cycle in convection mode for 2 minutes with oven set point of 70 °C (parameter 123). The washing arm, ventilation and humidifier are all ON simultaneously.
11. "Drying" cycle in convection mode with oven set point of 70 °C (parameter 124) for 3 minutes with oven vent open.

At the end of the washing program the message ***"REMOVE SHOWER"*** appears: open the door, remove the washing arm, close the door, and press the ON/OFF button to exit the program and switch the appliance off.

To stop the program while it is still running, press the ON/OFF and EXIT buttons simultaneously. This procedure may be carried out by authorized personnel only, who are aware of the risks (detergent remaining in oven) involved in premature stopping of the cycle.

7.16 *PROBE TEST*

By pressing T20 and turning the scroller you can display all the temperature probes in the following order, for the purpose of checking their calibration:

Probe display	Type	Denomination	Terminals
Cold joint	NTC	AN8	
Card temperature	NTC	AN9	
Probe 1	Thermocouple K	SS 1	Core P
Probe 2	Thermocouple K	SS 2	Core
Probe 3	Thermocouple K	SS 3	Core P
Probe 4	Thermocouple K	SS 4	Core P
Oven	PT100	SC	50-51 SC
Boiler	PT100	SB	52-53 SB
Condensation	PT100	SD	54-55 SD

7.17 *SERVICE*

This program enables you to check the closure of the contact of each individual relay on the electronic card and hence the activation of the electrical component supplied by it.

If you select ***"SERVICE"***, and then press T20, you will be asked for your password (the standard password is 123).

Once you have entered the password with the scroller, when you press T20 again, the display shows ***"rel No. 1"***. Pressing START/STOP once activates the corresponding relay and pressing it a second time disactivates it (in this case, relay No. 1). In certain cases, for safety reasons, the relay is disactivated automatically after a few seconds.

To exit the program press T20

Example:

turn the scroller until the display shows relay No. 12 "steam condensation relay".

Press START/STOP; solenoid valve S5 is activated automatically, and you will be able to hear the steam condensation nozzle running.

When you press START/STOP again, the function stops; if the sequence is not activated, it is imperative to check with a voltmeter for the correct closure of relay 12 with 230 Volt output to No. 27 on the main card (see access to electronic card section 14.3).

Check that there is voltage to the coil of solenoid valve S5, set the multimeter to Ohms and check that the coil is undamaged, and lastly check that the water shut-off tap is open.

This program is extremely useful for finding a single fault without having to run an actual cooking cycle involving the use of various functions, and enables you to devote all the time necessary to a precise diagnosis of the fault.

If it is necessary to check the operation of the washing system, prepare to connect the accessories (washing arm, detergent suction tube, detergent container) so as to avoid damaging the washing circuit (pump, hoses, seals).

See main card T RELAY OUTPUTS (section 7.6) for a complete overview of the relays and their functions.

Note: after relay No. 24 the message "BUZ ON" or REL 25 appears, enabling you to check that the buzzer works when you press START/STOP.

Further example of operation of relay 9 (combustion fume motor management): see section 13.9.

7.18 FAULT DIAGNOSIS

The fault diagnosis system associated with the card draws a distinction between **"indications"** and **"fatal errors".**

The first type simply indicates that the event has occurred, whereas the second type interrupts the cycle in progress if the component that has generated the fatal error is used (e.g. a probe error interrupts the cycle only in the event of a phase involving the use of the probe).

To reset a non-fatal error state, press the reset button "EXIT".

If the alarm is triggered during a phase which is directly linked with the alarm in question, the appliance will stop definitively, and can only be started again by pressing ON/OFF after the fault has been rectified. When you try to start the appliance, if an alarm state is active which is directly linked with one of the subsequent phases of the program, the appliance will not start until the fault has been rectified.

7.18.1 Door open

The message is displayed by means of door microswitch input B3.

This is a "non-serious" alarm; the card stops temporarily and it is not possible to run a new cooking or preheating cycle until contact is restored.

The state is shown on display D8-9. Error message: ***"DOOR OPEN"***

7.18.2 No water

The appliance always warns you if there is insufficient water. If the long minimum level probe "Min lev" (alarm) ceases to be immersed in water, the boiler controls are disabled and the warning light comes on.

The absence of water in the boiler (message on display D8-9) is indicated

only if the time set with parameter 3 has passed (see section 9.0) since the end of the boiler draining and washing phase or at the start of a steam or mixed cycle.

Error message: ***"NO WATER"***

7.18.3 Keypad card communication - main relay card

No serial communication between the main card and the keypad card is a "serious" alarm; the card is inactive despite the fact that both cards are powered up: error message: ***"NO COLL"***

Check that the serial cable connecting the main card "BOARD" and the keypad "SUPPLY" is plugged in properly. If the problem is still not resolved, replace the keypad card; if the problem still persists, the fault lies with the main relay card, which must therefore be replaced.

7.18.4 Oven safety thermostat

Operation of the safety thermostat is detected by input F2.

This is a "serious" alarm; the card stops definitively, and it is not possible to run a new cooking or preheating cycle until the thermostat has been reset.

The error is indicated on display D8-9 and by means of an acoustic signal.

Error message: ***"CHAMB.HI"***

7.18.5 Boiler safety thermostat

Operation of the safety thermostat is detected by input F3.

This is a “serious” alarm; the card stops definitively, and it is not possible to run a new cooking or preheating cycle until the thermostat has been reset.

The error is indicated on display D8-9 and by means of an acoustic signal.

Error message: ***“BOILER.HI”***

7.18.6 Oven probe error

This is a “serious” alarm; the card stops definitively, and it is not possible to run a new cooking or preheating cycle until the fault has been rectified.

The error is indicated on display D8-9 and by means of an acoustic signal.

Error message: ***“CHAMB.ERR”***

7.18.7 Boiler probe error

This is a “non-serious” alarm. The error disables the boiler controls (R3, R4). The cycle in progress is not interrupted.

The error is indicated on display D8-9 and by means of an acoustic signal.

Error message: ***“BOILER.ERR”***

7.18.8 Condensation probe error

This is a “non-serious” alarm, which does not disable any controls.

The error is indicated on display D8-9 and by means of an acoustic signal.

Error message: ***“QUENCH.ERR”***

7.18.9 No gas

Operation of the gas pressure switch is detected by input PG for gas ovens.

This is a “serious” alarm; the card stops definitively, and it is not possible to run a new cooking or preheating cycle until the pressure switch contact has been restored.

The error is indicated on display D8-9 and by means of an acoustic signal.

Error message: ***“NO GAS”***

7.18.10 Components too hot

The response to overheating is detected by input AN9.

A first message appears indicating that the temperature is high and has exceeded the threshold set with parameter 21 (see section 9.0) "high temperature threshold".

If the temperature increases further, once it exceeds the threshold defined in parameter 22 (see section 9.0) "very high temperature threshold", a second message appears, which is a “serious” alarm; the card stops definitively and it is not possible to run a new cooking or preheating cycle until normal conditions have been restored.

The error is indicated on display D8-9 and by means of an acoustic signal.

Error messages: **“HOT” (1st threshold), *“TOO HOT”* (2nd threshold).**

7.18.11 Motor thermal cut-out

Tripping of the high or low speed motor thermal cut-out is detected by input A1-A2.

This is a “serious” alarm; the card stops definitively, and it is not possible to run a new cooking or preheating cycle until the thermal cut-out has been reset.

The error is indicated by means of a message on display D8-9 and by an acoustic signal.

Error message: ***“MOTOR.HI”***

7.18.12 Burner shut-off

Activated on gas ovens by input RG. This is a “non-serious” alarm; the cooking program stops temporarily (with Start/Stop button LED flashing). When the Start/Stop button is pressed again, the burner ignition sequence is re-activated.

The error is indicated by an acoustic signal and a message on display D8-9.

Error message: ***“FLAMEFAIL”***

7.18.13 Boiler not drained

If, on expiry of the boiler draining time, the maximum level “Max lev” is still active (the shorter water level sensor), this means that the boiler has not drained.

This is a non-fatal alarm and the oven stops temporarily. To reset the alarm, press EXIT.

The error is indicated by an acoustic signal and a message on display D8-9. Error message: ***“NO DRAIN”***

7.18.14 No steam

During steam cooking with a gas oven, if after three minutes the boiler temperature does not increase by “x” degrees, as set with parameter 16, this means that boiler pre-heating is not activated (see section 9.1).

This is a fatal alarm and the oven stops definitively.

To reset the alarm, press EXIT. The error is indicated by an acoustic signal and a message on display D8-9.

Error message: ***“NO STEAM”***

7.19 Programmable parameters

INSTRUCTIONS FOR INSTALLING THE ELECTRONIC CARD

The following instructions are also enclosed with the card supplied as a replacement part.

This procedure must be carried out after fitting the new electronic card on the front control panel, so as to assign the correct values to the programmable parameters according to the model of oven, **in order to prevent the appearance of incorrect error codes.**

Check that all the electrical connections are inserted in the correct position on the electronic card (absolute match between the initials/numbers printed on the card and the screen prints stamped on the connection cables), and that the card is fixed with the small self-locking bolts in such a way that it is possible to operate with the same pressure on all of the card's keys.

NO keys must remain pressed down when they are not actually being pressed by the operator.

Power up the appliance and make certain that the card displays are OFF; if they are not, switch them off by pressing the ( ) button.

Press **PLUS** with the oven OFF; the display will show ***"DATE"***.

Turn the SCROLLER knob clockwise until the message ***"PARAM.TECH"*** appears. Press T20, and the display shows the message ***"PASSWORD"***.

Turn the SCROLLER knob to enter the password ***"123"*** for access to the programmable parameters. Press T20.

WARNING: the programmable parameters of the card are factory-set according to the values in the "STANDARD" column set out overleaf. Set the values shown in the "Settings" column according to model of oven, so that incorrect error codes do not appear.

- The display at the bottom flashes ***"PAR No. 1"*** (parameter number column). The temperature display indicates ***"0"***, which **is the standard value assigned to parameter 1 (STANDARD value assigned to parameter column).**
- The standard value ***"0"*** for parameter 1 flashes; if you need to change the setting, do so by turning the SCROLLER knob. Example: to enable the operation of ovens without steam generator, set the parameter to ***"1".***
- Press T20, to return to the flashing display ***"No. 1"***.

  Turn the SCROLLER knob to display the next programmable parameter ***"No. 5"***. Press T20 if you need to change the standard value ***"150"*** assigned to the parameter, and so on until the last programmable parameter shown in the table.

To sum up: use the SCROLLER knob to increase/decrease the **"Parameter No."** and **"STANDARD value assigned to parameter"**; pressing T20 enables you to enter the **"Parameter No."** and **"STANDARD value assigned to parameter"** fields alternately; any new value you may assign is confirmed automatically.

7.19 Programmable parameters

Parameter No.	STANDARD value assigned to parameter	Unit of measurement	Setting
1	0	-	Leave as ***"0"*** for ovens with steam generator Set to ***"1"*** - to enable operation of ovens **not equipped with steam generator**
5	150	sec/10	**Full power activation delay -** Leave as ***"150"*** for ovens with gas heating Set to ***"50"*** for electric ovens
8	73	°C/°F	**Steam shut-off** temperature in STEAM mode: Set to ***"95 °C"*** for MG 202 gas models only
10	70	°C/°F	Cut-in temperature for **Steam condensation** at drain outlet in CONVECTION, STEAM and MIXED modes
36	0	sec	**Light switch-off delay** - Set (if desired) a time (max. 100 sec.) after which the lighting in the oven will switch off automatically
44	95	°C/°F	**Humidifier cut-in** threshold (1 degree above the STEAM cycle set temperature) Power activation in oven during STEAM cycle above parameter
51	60	°C/°F	**Boiler pre-heating temperature** - Leave as ***"60"*** for ovens with gas heating Set to ***"85"*** for electric ovens
56	1	-	**Identification of type of heating** Leave as ***"1"*** for gas ovens - Set to ***"0"*** for electric ovens
75	10	sec	**Autoclima 0..9** - Leave as ***"10"*** for gas ovens - Set to ***"2"*** for electric ovens
77	11	sec	**Autoclima 10..19** - Leave as ***"11"*** for gas ovens - Set to ***"3"*** for electric ovens
79	12	sec	**Autoclima 20..29** - Leave as ***"12"*** for gas ovens - Set to ***"4"*** for electric ovens
81	13	sec	**Autoclima 30..39** - Leave as ***"13"*** for gas ovens - Set to ***"5"*** for electric ovens
83	14	sec	**Autoclima 40..49** - Leave as ***"14"*** for gas ovens - Set to ***"6"*** for electric ovens
85	15	sec	**Autoclima 50..59** - Leave as ***"15"*** for gas ovens - Set to ***"7"*** for electric ovens
87	16	sec	**Autoclima 60..69** - Leave as ***"16"*** for gas ovens - Set to ***"8"*** for electric ovens
89	17	sec	**Autoclima 70..79** - Leave as ***"17"*** for gas ovens - Set to ***"9"*** for electric ovens
91	18	sec	**Autoclima 80..89** - Leave as ***"18"*** for gas ovens - Set to ***"10"*** for electric ovens
93	20	sec	**Autoclima 90..99** - Leave as ***"20"*** for gas ovens - Set to ***"11"*** for electric ovens
106	73	°C/°F	**Steam shut-off** temperature in MIXED mode
107	1	-	Address for communication with PC - Only for versions connected to a Personal Computer
110	100	-	**Acoustic signal volume** from 0 (minimum volume) to 100 (maximum volume)
127	50	sec	**Total detergent injection time** SOFT cycle The HARD cycle involves two detergent injections equal to parameter 127 x 2
142*	15	Lt.	**Hourly consumption of softened water by the appliance: change the setting only for installations with a softener dedicated exclusively to the oven (case 2)** (see section 9.1)
143*	20	°fH	**Mains water hardness: change only for installations without a softener dedicated exclusively to the oven (case 1)** (see section 9.1)
144*	5	m_	**Softener capacity: change setting only for installations with softener dedicated exclusively to the oven (case 2) or set to "0" (zero) for installations without softener dedicated exclusively to the oven (case 1)** (see section 9.1)
145	5	°C/°F	Printer connection 232: **printing interval in operation with core probe - expressed in degrees**
146	5	Min	Printer connection 232: **printing interval in timed operation - expressed in minutes**
148	0	Dec	Output 22 activation delay (boiler ignition): **applies to MG 202/201 only; set to 80 de c.**
149	0	°C/°F	**Humidifier disactivation temperature during first thermostat cut-in in steam cycle: applies to MG 202 only; set to 70 °C**
150	123	-	**Programmable password** (three digits) for access to technical parameters and "service" program

***WARNING: parameters (142) (143) (144) - if the data required is not available for the installation in question, LEAVE THE STANDARD VALUES, or see "DEFINING SUPPLY WATER CHARACTERISTICS"** (section 9.1).

IMPORTANT: once you have checked and, if appropriate, modified the parameters, **press PLUS to exit parameter programming and thus save the values set**; the control panel now switches off.

Switch the appliance on with the ( ) button, and run a complete test of oven functions, checking that the **DATE**, **TIME** and **LANGUAGE** are set correctly; see user manual for details.

8.0 ELECTRONIC CARD H / P

8.1 Electronic card H / P - Technical specifications

TECHNICAL DATA

	Nominal	Min.	Max
Supply voltage (from external transformer)	12V~	Tip. -15%	Tip. +15%
Supply frequency	50Hz / 60Hz	Tip. -5%	Tip. +5%
Power	18VA	---	---
Insulation class	2	---	---
Keypad protection class (IP)	PC Board open work		
Ambient operating temperature	25 °C	0 °C	60 °C
Ambient operating humidity (non-condensing)	30%	10%	90%
Ambient storage temperature	25 °C	-20 °C	85 °C
Ambient storage humidity (non-condensing)	30%	10%	90%

ELECTROMECHANICAL DATA

The SF card consists of the KEYPAD CARD and MAIN RELAY CARD sandwiched together and interconnected by a flat, 24-pole cable.

The BOILER EXPANSION card, if present, is connected to the main card by means of a flat, 16-way cable and to the front panel with columns.

All of the terminals on the card are marked with a number stamped on the vetronite. The same numbering appears in the wiring diagram, e.g. door microswitch B3 is connected to terminals **12** and **13** of connector **I2** and so on.

8.2 KEYPAD CARD - TECHNICAL DATA

KEYS

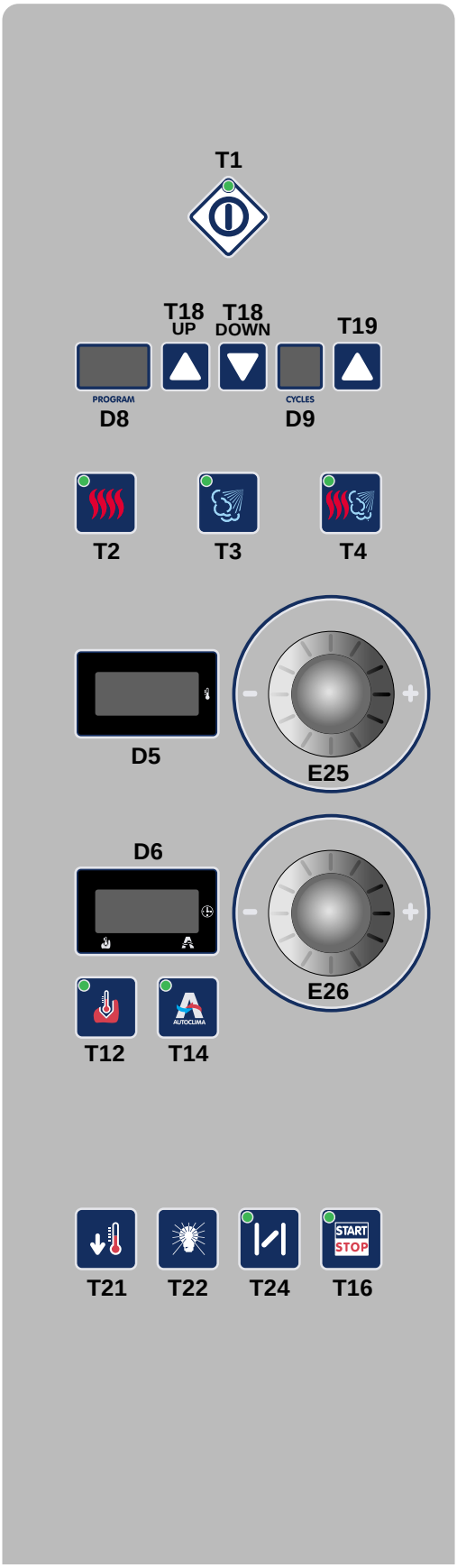
Description	Denomination
On/off	T1
Convection mode	T2
Steam mode	T3
Mixed Mode for version H	T4
Normal and low speed selection for version P	
Up	T18 UP
Down	T18 DOWN
Cycles	T19
Set core probe	T12
Autoclima	T5
Start/stop	T16
Cooling with door open	T21
Light	T22
Oven vent	T24

DISPLAY

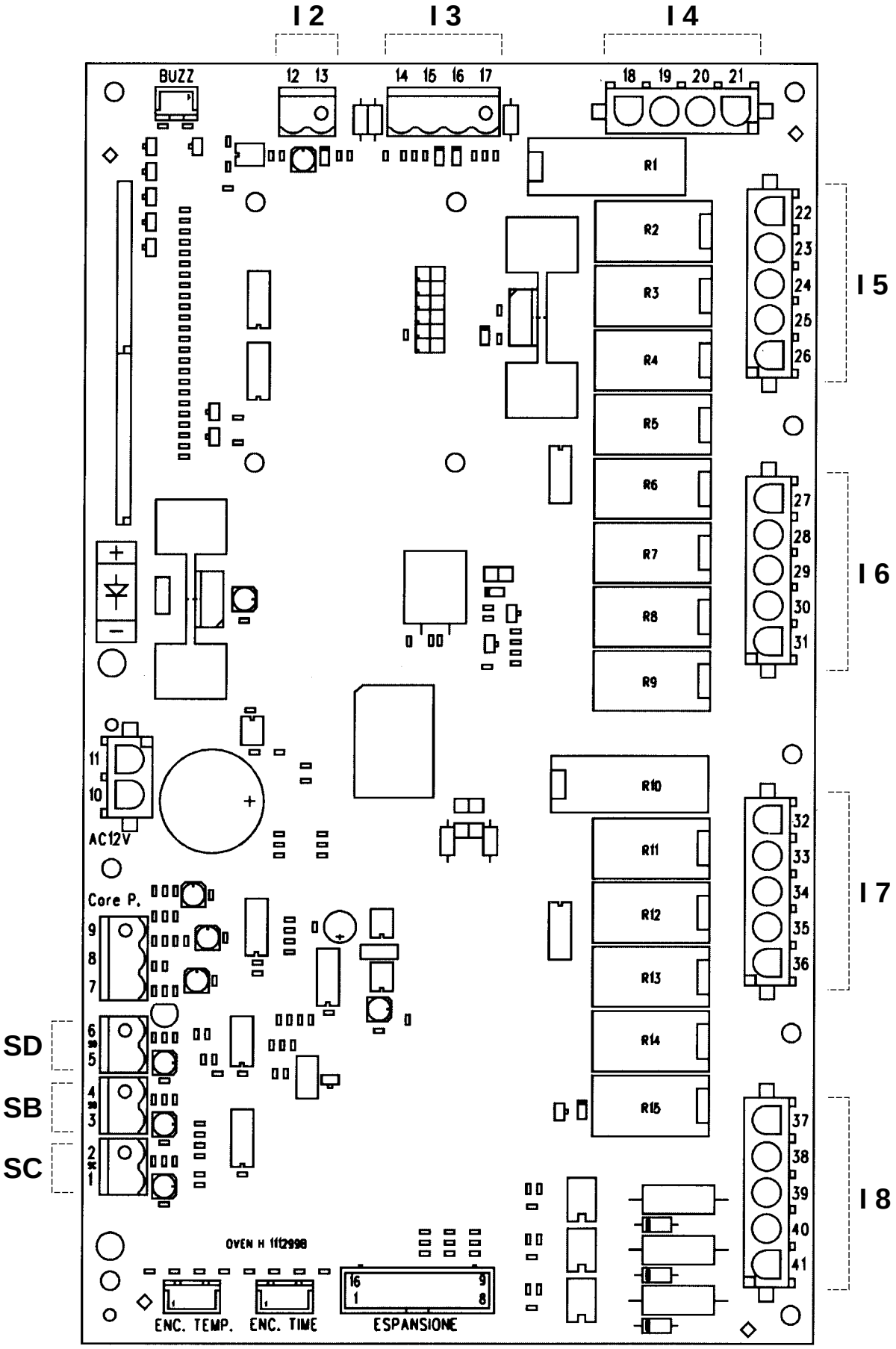
Description	Denomination
Temperature display	D5
Time display	D6
Program display	D8
Phase display	D9

LED

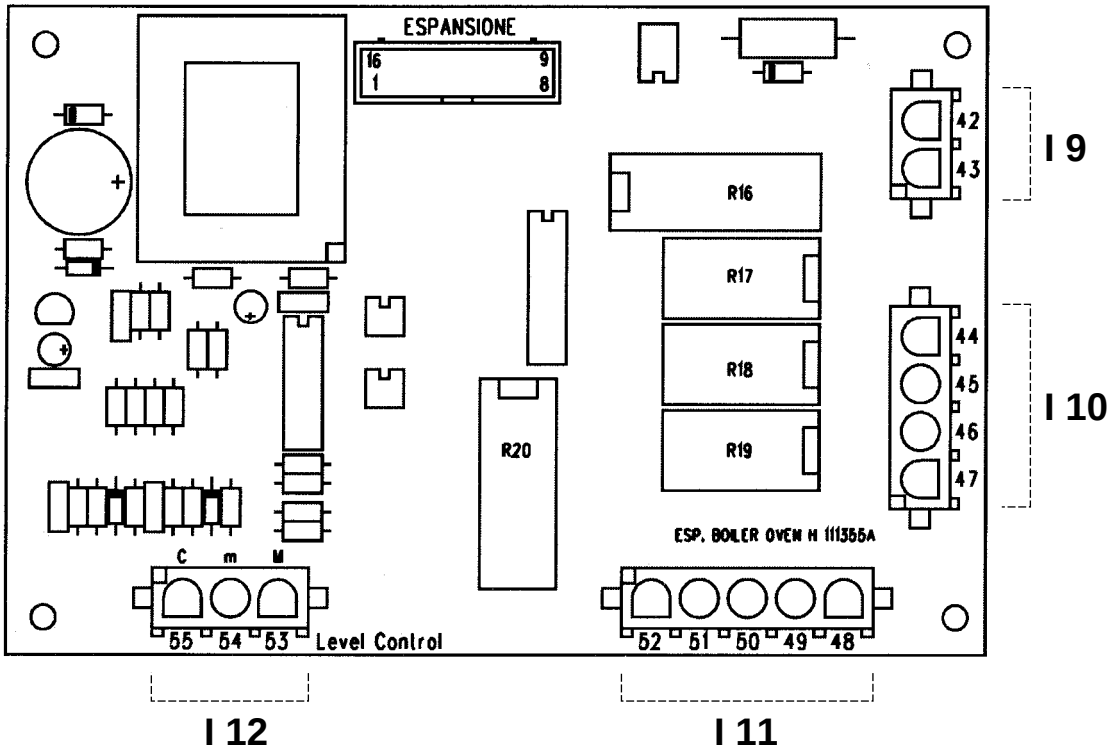
Description	Denomination
ON/OFF LED	L1
Convection mode LED	L2
Steam mode LED	L3
Version H mixed mode LED	L4
Version P low speed LED	
Core probe LED	L12
Autoclima LED	L5
Oven vent LED	L24
Start/stop LED	L16



8.3 MAIN RELAY CARD - Technical specifications



8.4 BOILER EXPANSION CARD - Technical specification



8.5 Analogue inputs

Probe description	Type	Denomination	Terminals	Range of use
Oven	PT100	SC	1 - 2 SC	0 °C ÷ +300 °C
Boiler	PT100	SB	3 - 4 SB	0 °C ÷ +300 °C
Condensation	PT100	SD	5 - 6 SD	0 °C ÷ +300 °C
Probe	Thermocouple K	SS Core P	7-8-9 Core P	0 °C ÷ +300 °C
Cold joint	NTC	AN5		0 °C ÷ +100 °C
Card temperature	NTC	SPC		0 °C ÷ +100 °C

Outside the operating range, the probe may break; outside the conversion range, a probe error is generated; outside the range of use, an alarm is generated.

8.6 Digital inputs

MAIN RELAY CARD

Description	Technical data	Denomination	Terminals
Door microswitch	Clean contact	B3	12 - 13
Gas pressure switch	Clean contact	PG	14 - 15
Water pressure switch	Clean contact	PA	16 - 17
Oven burner shut-off	230Vac input	RG	39
Oven safety thermostat	230Vac input	F2	40
Motor thermal cut-out	230Vac input	A1 - A2 (Vers. P)	23

BOILER EXPANSION CARD

Description	Denominazione	Morsetti
“Maximum” water level	Max lev	53 - M level control
“Alarm” water level	Min lev	54 - m level control
“Common” water level	Common	55 - C level control
Boiler safety thermostat	F3	43

8.7 Relay outputs

MAIN RELAY CARD

Relay description	Contact data	Denomination	Terminals
Reduced power oven heating	Contact NO 5A AC1 Contact NC 5A AC1	R1	C 21 NO 19 NC 18
Full power oven heating	Contact NO 5A AC1	R2	C 21 NO 20
Phase On/Off	Contact NO 8A AC1	R3	NO “IN” 23 C “OUT” 22
Steam condensation	Contact NO 5A AC1	R4	NO 24
Autoclima humidifier	Contact NO 5A AC1	R5	NO 25
Motor drive	Contact NO 5A AC1	R6	NO 26
Oven vent	Contact NO 5A AC1	R7	NO 27
Oven light	Contact NO 5A AC1	R8	NO 28
Gas burner ignition activation Free on electric version	Contact NO 5A AC1	R9	NO 29
Fan inversion	Contact NO 5A AC1 Contact NC 5A AC1	R10	NO 31 NC 30
Version P low speed activation	Contact NO 5A AC1	R11	NO 32
Version P detergent pump	Contact NO 5A AC1	R12	NO 33
Version P oven washing (WS)	Contact NO 5A AC1	R13	NO 34
Neutral On/off	Contact NO 8A AC1	R14	NO “IN” 35 C “OUT” 36
Oven and boiler gas ignition reset Insulated neutral input	Contact NO 5A AC1	R15	NO 38 C 37
Power supply		AC 12V	10-11

8.7 Relay outputs

BOILER EXPANSION CARD

Relay description	Contact data	Denomination	Terminals
Boiler draining	NO 5A AC1	R16	NO 45
	NC 5A AC1		NC 44
Boiler washing	NO 5A AC1	R17	NO 46
Boiler filling	NO 5A AC1	R18	NO 47
Reduced power boiler heating	NO 5A AC1	R19	NO 50
Free on gas version			
Full power boiler heating - Combustion fume	NO 5A AC1	R20	NO 52
timer management on gas version	NC 5A AC1		NC 51
Relay common			48
Relay common 19 -20			49

Encoder	Contact data	Denomination/terminals
Encoder1 Oven	Jst 3-way	ENC. TEMP. (E25)
Encoder2 Time	Jst 3-way	ENC. TIME (E26)

8.8 Modulating buzzer

Relay description	Contact data	Denomination/terminals
Buzzer	Jst 2-way	BUZZ

The volume of the buzzer can be modulated by means of parameter 110. The types of acoustic signal emitted are as follows:

- End of cooking: the buzzer sounds in intermittent bursts. To switch the sound off simply press any key or open the door; after one minute, the buzzer switches off automatically.
- Program with more than one cycle: at the end of each cycle the buzzer sounds a 10-second beep.
- Fatal errors: the buzzer sounds continuously.
- Non-fatal errors: the buzzer sounds for 10 seconds once every minute.

8.9 Jumpers

The electronic card is equipped with 1 jumper for switching off the power to the keypad; horizontal jumper position:

- Jumper enabled, power ON; jumper disabled, power OFF -check that it is enabled if the keypad card does not switch on.

The other jumpers located in the main relay and keypad card **must remain disconnected.**

8.10 Memory

In the event of power failure and subsequent return of power, the card returns to the state it was in before the power was lost.

With regard to cooking times, the card saves the time every 10 minutes. This means that if you set a cooking time of 40 minutes, of which 12 have elapsed when the power is cut off, when the power is restored, the timer will load a time of 30 minutes (the time remaining until end of cooking).

8.11 FAULT DIAGNOSIS

The error diagnosis system associated with the card draws a distinction between **"indications"** and **"fatal errors"**.

The first type simply indicates that the event has occurred, whereas the second type interrupts the cycle in progress if the component that has generated the fatal error is used (e.g. a probe error interrupts the cycle only in the event of a phase involving the use of the probe).

To reset a non-fatal error state, identify the fault and then press the START button, which acts as a "reset" button.

If the alarm occurs during a phase directly involving the alarm in question, the appliance will stop definitively, and can only be started again by pressing ON/OFF after the fault has been rectified. When you try to start the appliance, if an alarm state is active which is directly linked with one of the subsequent phases of the program, the appliance will not start until the fault has been rectified.

8.11.1 Door open

The message is displayed by means of door micro-switch input B3.

This is a “non-serious” alarm; the card stops temporarily and it is not possible to run a new cooking or preheating cycle until contact is restored.

The error is indicated by the message ***“dop”*** on display D5 without any acoustic signal Error message: ***“dop”***

8.11.2 No water

Ovens equipped with steam generator:

The appliance always warns you if there is insufficient water. If the long minimum level probe “Min lev” (alarm) ceases to be immersed in water, the boiler controls are disabled and the error message appears.

If the boiler is discharging, the "no water" indication (error message on displays D5 and D6) appears only if the time set with parameter 3 has passed (see section 9.0) since the end of the boiler draining and washing phase or at the start of a steam or mixed cycle. Press START to reset the alarm. Error message: ***“no h2o”***

Ovens not equipped with steam generator:

A shortage of water is generally indicated only if the

selected cycle involves the use of water. The boiler “Min lev” minimum level input becomes the water pressure switch input to be associated with humidity relay R5. The alarm generated by the function is of manual reset type and occurs if the input is active for the time set in parameter 58 since the activation of R5 in steam and mixed modes. The input is not active if the relay is OFF, but the alarm remains if detected before the relay was switched off.

This alarm temporarily stops steam control if the cycle involved the use of steam, and indicates the absence of water with a message on displays D5 and D6.

Error message: ***“no h2o”***

8.11.3 Oven safety thermostat

Operation of the safety thermostat is detected by input F2.

This is a “serious” alarm; the card stops definitively, and it is not possible to run a new cooking or preheating cycle until the thermostat has been reset.

The error is indicated by a message on display D6 and an acoustic signal.

Error message: ***“Er2”***

8.11.4 Boiler safety thermostat

Operation of the safety thermostat is detected by input F3.

This is a “serious” alarm; the card stops definitively, and it is not possible to run a new cooking or preheating cycle until the thermostat has been reset.

The error is indicated by a message on display D6 and an acoustic signal.

Error message: ***“Er3”***

8.11.5 Oven probe error

This is a “serious” alarm caused by a probe interruption or short circuit; the card stops definitively, and it is not possible to run a new cooking or preheating cycle until the fault has been rectified.

The error is indicated by the message ***“Err”*** on display D5 and ***“SC”*** on D2 and by an acoustic signal. Error message: ***“Err SC”***

8.11.6 Boiler probe error

This is a “non-serious” alarm caused by a probe interruption or short circuit.

The error disables the boiler controls (R20, R21). The cycle in progress is not interrupted.

The error is indicated by the message ***“Err”*** on display D5 and ***“Sb”*** on D6 and by an acoustic signal. Error message: ***“Err Sb”***

8.11.7 Condensation error

This is a ‘non-serious’ alarm caused by a probe interruption or short circuit, and does not disable any controls. The error is indicated by the message ***“Err”*** on display D5

and ***“Sd”*** on D6 and by an acoustic signal. Error message: ***“Err Sd”***

8.11.8 Core probe error

This alarm appears as a result of a core probe interruption or short circuit only if operation with the core probe is activated.

The error is indicated by the message ***“Err”*** on display D5

and ***“SS”*** on D6 and by an acoustic signal. Error message: ***“Err SS”***

8.11.9 No gas

Operation of the gas pressure switch is detected by input PG for gas ovens.

This is a “serious” alarm; the card stops definitively, and it is not possible to run a new cooking or preheating cycle until the pressure switch has been reset.

The error is indicated by the message ***“no”*** on display D5 and ***“GAS”*** on D6 and by an acoustic signal. Error message: ***“no GAS”***

8.11.10 Components too hot

The components compartment overheating alarm message is sent by input AN6. A first message appears indicating that the temperature is high and has exceeded the threshold set with parameter 21 (see section 9.0) "high temperature threshold".

If the temperature increases further, once it exceeds the threshold defined in parameter 22 (see section 9.0) "very high temperature threshold", a second message appears, which is a “serious” alarm.

The card stops definitively and it is not possible to run a new cooking or preheating cycle until normal conditions have been restored.

The error is indicated by means of a message on display D6 and an acoustic signal.

High temperature error message: ***“Er7”*** Very high temperature error message: ***“Er8”***

8.11.11 Motor thermal cut-out

Operation of the safety thermostat is detected by input A1-A2 (version P).

This is a “serious” alarm; the card stops definitively, and it is not possible to run a new cooking or preheating cycle until the thermal cut-out has been reset. The error is indicated by a message on display D6 and an acoustic signal.

Error message: ***“Er1”***

8.11.12 Burner shut-off

Activated on gas ovens by input RG, this condition indicates that the burner has not lit.

This is a “serious” alarm; the program stops temporarily (with START/STOP button LED flashing).

Press START to activate the burner ignition sequence (3 automatic attempts).

The error is indicated by an acoustic signal and a message on displays D5 and D6.

Error message: ***“no IGn”***

8.11.13 Boiler not drained

If, on expiry of the boiler draining time, the maximum level “Max lev” is still active (the shorter water level sensor), this means that the boiler has not discharged. This is a non-fatal alarm and the oven stops temporarily.

To rest the alarm, press START. The error is indicated by an acoustic signal and a message on displays D5 and D6. Error message: ***“no drn”***

8.11.14 No steam

During steam cooking with a gas oven, if after three minutes the boiler temperature does not increase by “x” degrees, as set with parameter 16, this means that boiler pre-heating is not activated (see section 12.1). This is a fatal alarm and the oven stops definitively. To reset the alarm, press START. Error message: ***“no STEAM”***

8.11.15 Software updating check

The card enables you to check how up-to-date the software is. With the card OFF, hold button T4 (MIXED) down for 5 seconds; in sequence displays D5 and D6 will show the software version installed.

Press T2 "convection" again to exit the function automatically.

8.11.16 Temperature probe test

The card enables you to check the temperatures displayed by the temperature probes connected to it, so that you can identify any faults or inaccurate calibration.

With the card OFF hold button T2 down for 5 seconds.

In sequence, displays D5 and D6 show the temperature and the identification code of the temperature probe currently displayed, in the following sequence: SC, SB, SD, SS, SPC.

Wait 10 seconds to exit automatically due to time out, or press T2 again (see section 8.5).

8.11.17 Boiler descaling interval check

The card enables you to check the number of hours remaining before the message ***"CAL"*** appears, to remind you to descale the steam generator according to the set parameters (see section 9.1). This enables you to organize the operation in advance.

The message ***"CAL"*** appears when you switch off the appliance.

With the card OFF, hold button T3 down for 5 seconds; in sequence, displays D5 and D6 will show: ***"-h"***, ***"200"*** hours remaining.

Wait 10 seconds to exit automatically due to time out, or press T3 again.

8.12 Boiler descaling program *"dE"*

Using the T18 UP button, select the automatic boiler descaling program ***"dE"*** at the end of the series of cooking programs. All the displays are extinguished; press the START/STOP button, and the wait message ***"Wait"*** will appear, asking you to wait. The descaling cycle consists of the following phases:

1. Water in boiler is drained
2. The BOILER WASHING relay is activated for 70 seconds.
3. The boiler drain driven valve closes.
4. The message ***"dEt In"*** indicates that it is time to put in the descaler.
5. After introducing the descaler through the appropriate tube, press START.
6. The boiler refills with water, which mixes with the descaler.
7. Phase 1 starts, in which the boiler elements keep the water at a temperature of 60 °C (parameter 103) for a duration of 30 minutes (parameter 102).
8. When the time managed by parameter 102 expires, the boiler drains, washes and refills.
9. Phase 2 then starts, involving the use of steam at 100 °C (parameter 105) for 25 minutes (parameter 104).
10. Drains, washes and refills.
11. The message ***"End"*** appears; press OFF to exit the program.
12. Switch off the power at the switch upstream of the appliance, and then switch the power back on to reset the number of hours remaining before the next descaling cycle.

PRACTICAL TIPS FOR DESCALING THE BOILER

The appliance is able to count the service hours of the steam generator, and hence to remind the operator, with the message ***"CAL"***, of when the steam generator needs to be descaled by means of the special ***"dE"*** cycle.

The message ***"CAL"*** does not definitively stop the appliance, for obvious reasons of service continuity. However, you are advised to run the ***"dE"*** as soon as possible after the message appears.

To check the number of hours remaining before the appearance of the message ***"CAL"*** see section 8.11.17.

The presence of limescale causes loss of power in the steam circuit and serious damage to the steam generator.

Note that the steam generator runs a drain and wash cycle automatically every day so as to change the water in it.

The descaling interval is defined by various parameters set on the electronic card by the technician at the time of installation, on the basis of the characteristics of the water supply (upstream of the water-softener) and the technical characteristics of the water-softener.

Descaling must be carried out when the appliance is cold and clean, preferably under the supervision of an authorized technician.

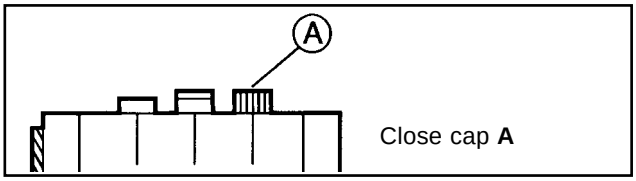
ACTIVATING THE DESCALING CYCLE *"dE"*

Switch the appliance on by pressing T1, then press T18 UP.

The display shows the last available program ***"dE"*** boiler descaling at the end of the series of cooking programs. All the displays are extinguished; press the START/STOP button and the wait message ***"Wait"*** appears, asking you to wait.

The message ***"dEt" "In"*** then appears, with a cyclical acoustic signal to tell the operator to unscrew cap A and add the descaler (diluting it if necessary in accordance with the product manufacturer's instructions) with the correct amount for the capacity of the boiler, see table:

Models	Litres	Models	Litres
ME 061	3.5	MG 102	6
MG 061	2.5	ME 201	18
ME 101	11	MG 201	6
MG 101	4	ME 202	30
ME 102	12.5	MG 202	20.5



Close cap **A**

Descaler action

Press T16; the boiler fills completely with water and mixes it with the descaler.

CYCLE 1: This is the first automatic cycle, which enables the boiler to heat and maintain the temperature for 30 minutes (the countdown is shown on display 6) so that the descaler can act effectively. After this time the boiler drains its contents (impurities and descaler mixed with water). Make sure that it flows out freely. If it does not, call the technical service, as the drain outlet may be clogged

8.12 Boiler descaling program *"dE"*

and it may be necessary to service the boiler. This problem is also indicated on displays D5-D6 (see section 8.11.13).

The boiler then removes the more adherent limescale deposits by flushing at high pressure with normal mains water, before refilling with purified water.

CYCLE 2: This is the second automatic cycle which enables activation of the oven in steam mode for 25 minutes to ensure thorough cleaning of the steam generator and steam delivery pipelines to the oven. The cycle is completed with the following phases: drain boiler and wash boiler by flushing with normal mains water and then filling with purified water.

IMPORTANT:

The sequence described in detail above ensures thorough cleaning of the steam generator, leaving it ready for use. Any anomalies that occur during the cycle will be indicated on D5-D6. **If this happens, the appliance MUST NOT be used until it has been checked by an authorized technician!**

Correct completion of the program is indicated by the message ***"End"***; press T1 to exit program ***"dE", switch the power off upstream of the appliance, and then switch the power back on.*** This will reset the descaling hour countdown.

WARNING:

This operation must be carried out under the close supervision of the operator!

The operator must adhere strictly to the precautions (mask, gloves etc.) for use of the product!

The descaling cycle must not be interrupted for any reason!

Interrupting the cycle renders the whole process ineffective, wastes descaler, and provokes the risk of contamination if the descaler has not been completely flushed out of the boiler. An interruption will also prevent the electronic control from resetting the boiler hour-counter to zero.

It is advisable to thoroughly rinse the oven interior with the spray at the end of the program.

To stop the program while it is running, press the ON/OFF and START buttons simultaneously; this procedure may be carried out by authorized personnel only, who are aware of the risks (descaler remaining in boiler) involved in premature stopping of the cycle.

8.13 Programmable parameters - H / P version

Instructions to be followed when installing the electronic card.

The following instructions are also enclosed with the card supplied as a replacement part.

This procedures must be carried out after fitting the new electronic card on the front control panel, so as to assign the correct values to the programmable parameters according to the model of oven, in order to prevent the appearance of incorrect error codes.

Check that all the electrical connections are inserted in the correct position on the electronic card (absolute match between the initials/numbers printed on the card and the screen prints stamped on the connection cables), and that the card is fixed with the small self-locking bolts in such a way that it is possible to operate with the same pressure on all of the card's keys: NO keys must remain pressed down without being pressed by the operator.

Power up the appliance and make certain that the card displays are OFF; if they are not, switch them off by pressing the ( ) button.

Press the two keys ( ) simultaneously for 3 seconds. Display D5 flashes and shows the first programmable parameter **"P 01"** (Parameter No. column); display D6 shows **"0"** which is the standard value attributed to parameter 1 (STANDARD value column).

WARNING:

The programmable parameters of the card are factory set according to the values indicated in the "STANDARD" column below. Set the values shown in the "Settings" column according to the model of oven, so that incorrect error codes do not appear.

- Turn the cooking time knob if you need to assign a value other than **"0"** to parameter **"P 0"** (e.g. to enable operation of an oven not equipped with steam generator, set **"1"**).
- Turn the cooking temperature knob until programmable parameter **"No. 5"** is displayed. Turn the cooking time knob if you need to assign a value other than the standard value **"150"**, to the parameter, and so on.

To sum up: the cooking temperature knob enables you to display the **"Parameter Nos."** one after the other; the cooking time knob enables you to change the **"STANDARD value assigned to the parameter"**. Any new setting is confirmed automatically.

8.13 Programmable parameters - H / P version

Parameter No.	STANDARD value assigned to parameter	Unit of measurement	Setting
1	0	-	Leave as ***"0"*** for operation of ovens **with steam generator** Set to ***"1"*** - to enable operation of ovens **not equipped with steam generator**
5	150	sec/10	**Full power activation delay** - Leave as "150" for gas ovens Set to ***"50"*** for electric ovens
8	73	°C/°F	**Steam shut-off** temperature in STEAM mode: **Set to 95°C for MG 202 gas models only**
10	70	°C/°F	Cut-in temperature for steam condensationat drain outlet in CONVECTION, STEAM and MIXED modes
36	0	sec	**Light switch-off delay** - Set (if desired) a time (max. 100 sec.) after which the lighting in the oven will switch off automatically
44	95	°C/°F	**Humidifier cut-in** threshold (1 degree above the STEAM cycle set temperature) Power activation in oven during STEAM cycle above parameter
51	60	°C/°F	**Boiler pre-heating temperature** - Leave as ***"60"*** for gas ovens Set to ***"85"*** for electric ovens
56	1	-	**Identification of heating type** - leave as ***"1"*** - or gas ovens Set to ***"0"*** - for electric ovens
75	10	sec	**Autoclima 0…9** Leave as ***"10"*** for gas ovens - Set to ***"2"*** for electric ovens
77	11	sec	**Autoclima 10..19** Leave as ***"11"*** for gas ovens - Set to ***"3"*** for electric ovens
79	12	sec	**Autoclima 20..29** Leave as ***"12"*** for gas ovens - Set to ***"4"*** for electric ovens
81	13	sec	**Autoclima 30..39** Leave as ***"13"*** for gas ovens - Set to ***"5"*** for electric ovens
83	14	sec	**Autoclima 40..49** Leave as ***"14"*** for gas ovens - Set to ***"6"*** for electric ovens
85	15	sec	**Autoclima 50..59** Leave as ***"15"*** for gas ovens - Set to ***"7"*** for electric ovens
87	16	sec	**Autoclima 60..69** Leave as ***"16"*** for gas ovens - Set to ***"8"*** for electric ovens
89	17	sec	**Autoclima 70..79** Leave as ***"17"*** for gas ovens - Set to ***"9"*** for electric ovens
91	18	sec	**Autoclima 80..89** Leave as ***"18"*** for gas ovens - Set to ***"10"*** for electric ovens
93	20	sec	**Autoclima 90..99** Leave as ***"20"*** for gas ovens - Set to ***"11"*** for electric ovens
106	73	°C/°F	**Steam shut-off** temperature in MIXED mode
107	1	-	Address for communication with PC - Only for versions connected to a Personal Computer
110	100	-	**Acoustic signal volume** from 0 (minimum volume) to 100 (maximum volume)
127	50	sec.	Total detergent injection time for oven washing cycle (version P)
*142	15	Lt.	**Hourly softened water consumption** of appliance: **change the setting only for installations with a water-softener dedicated exclusively to the oven (case 2)** - see section 9.1
*143	20	°fH	**Mains water hardness: change only for installations without a water-softener dedicated exclusively to the oven (case 1)** - see section 9.1
*144	5	m^3	**Water-softener capacity: change the setting only for installations with a water-softener dedicated exclusively to the oven (case 2), or set to "0" (zero) for installations without a water-softener dedicated exclusively to the oven (case 1)** - see section 9.1
145	5	°C/°F	Printer connection 232: printing interval in operation with core probe - expressed in degrees
146	5	Min	Printer connection 232: printing interval in timed operation - expressed in minutes
148	0	Dec	Output 22 activation delay (boiler ignition): **applies to MG 202 only; set to 80 dec.**
149	0	°C/°F	**Humidifier disactivation temperature during the first thermostat cut-in in steam cycle: applies to MG 202 only; set to 70 °C**
150	0	-	**Management of dual ventilation speed on version P:** leave as ***"0"*** for versions H (single speed) -- Set to ***"1"*** for versions P (dual ventilation speed)

***WARNING: parameters (142) (143) (144) - if the data required is not available for the installation in question, LEAVE THE STANDARD VALUES, or see "DEFINING SUPPLY WATER CHARACTERISTICS" (section 9.1).**

IMPORTANT: once you have checked and, if appropriate, modified the parameters, **press ( ) to exit parameter programming and thus save the values set;** the control panel now switches off.

Switch the appliance on with the ( ) button, and run a complete test of oven functions.

9.0 Integrated list of programmable parameters on T and H/P cards

No.	Description	Def.	Min	Max	Unit of measurement
1	Leave as ***"0"*** for ovens with **steam generator** Set to ***"1"*** - to enable operation of ovens **not equipped with a steam generator**	0	0	1	
3	Water alarm delay after washing	300	0	300	sec
4	Autoclima mode control delta	10	0	270	°C/°F
5	Delay between ON Rx and ON Rx+1 - **Full power activation delay** Leave as ***"150"*** for gas ovens Set to ***"50"*** for electric ovens	150	0	600	dec
6	Delay between ON Rx and ON Rx+1	50	0	300	dec
8	Steam shut-off temperature in STEAM mode: **Set to 95°C for MG 202 gas models only**	73	50	266	°C/°F
9	OFF temperature full power mixed	100	0	266	°C/°F
10	Cut-in temperature for steam condensation at outlet in CONVECTION, STEAM and MIXED modes	70	0	250	°C/°F
11	Condensation hysteresis	2	0	20	°C/°F
12	Rotation stop period	15	0	300	sec
13	Speed change pause	20	0	300	dec
14	Max. rotation period	420	0	999	sec
15	Min. rotation period	60	0	300	sec
16	Gas oven boiler temperature increase	0	0	100	°C/F°
17	Vent pre-opening at travel limit	0	0	300	sec
18	Vent long delay	120	0	500	dec
19	Vent long pulse	30	0	300	dec
20	Vent short pulse	10	0	300	dec
21	Card temperature warning threshold	70	0	100	°C/°F
22	Card temperature alarm threshold	75	0	100	°C/°F
23	Oven default setting in convection mode	130	0	270	°C/°F
24	Oven default setting in steam mode	100	0	270	°C/°F
25	Oven default setting in mixed mode	130	0	150	°C/°F
26	Max. convection temperature	300	60	300	°C/°F
27	Min. convection temperature	30	20	100	°C/°F
28	Max. steam temperature	130	60	300	°C/°F
29	Min. steam temperature	30	20	100	°C/°F
30	Max. mixed temperature	300	60	300	°C/°F
31	Min. mixed temperature	30	20	100	°C/°F
32	Default convection humidity	0	0	100	%
33	Default mixed humidity	0	0	100	%
34	Default steam humidity	0	0	100	%
35	Enable re-start with door	1	0	1	
36	Light switch-off delay Set (if desired) a time (max. 100 sec.) after which the lighting in the oven will switch off automatically.	0	0	100	sec
37	Probe default setting	30	0	100	°C/°F
38	Probe minimum setting	20	0	100	°C/°F
39	Probe maximum setting	100	0	100	°C/°F
40	Overheating delta Humidif. ON conv/mixed below threshold	30	0	280	°C/°F
41	Overheating delta Humidif. OFF conv./mixed below threshold	30	0	280	°C/°F
42	Delta due to overheating Humidif. ON steam below threshold	4	0	100	°C/°F
43	Delta due to overheating Humidif. OFF steam below threshold	1	0	50	°C/°F
44	Oven temperature threshold for steam humidification	95	30	230	°C/°F
49	Cell hysteresis	1	0	30	°C/°F
50	Cell half power threshold	5	0	30	°C/°F
51	Boiler pre-heating temperature - Leaves as ***"60"*** for gas ovens Set to ***"85"*** - for electric ovens	60	0	110	°C/°F
52	Boiler hysteresis	1	0	30	°C/°F
53	Boiler half power threshold	5	0	30	°C/°F
54	Programming timeout	10	10	120	sec
56	Identification of heating type - leave as ***"1"*** - for gas ovens - Set to ***"0"*** - for electric ovens	1	0	1	

9.0 Integrated list of programmable parameters on T and H/P cards

No.	Description	Def.	Min	Max	Unit of measurement
58	Water pressure switch alarm delay (mix vapor)	30	0	300	dec
59	Degrees C° / F° (1:°C, 0:°F)	1	0	1	
61	Max. boiler temperature for starting washing	50	20	150	°C/°F
62	Delay from OFF for washing	300	0	600	sec
63	Boiler washing delay	90	1	600	sec
64	Boiler washing duration	30	1	600	sec
65	Oven probe offset	0	-30	30	°C/°F
66	Boiler probe offset	0	-30	30	°C/°F
67	Condensation probe offset	0	-30	30	°C/°F
69	Probe offset	0	-30	30	°C/°F
70	Components probe offset	0	-30	30	°C/°F
71	Autoclima cycle time	60	1	600	sec
72	“Sd” probe setting Autoclima mode OFF	50	0	250	°C/°F
73	R5 ON time Autoclima OFF	0	0	100	%
74	“Sd” probe setting Autoclima mode 0..9	53	0	250	°C/°F
75	R5 ON time Autoclima 0..9	10	0	100	%
76	“Sd” probe setting Autoclima mode 10..19	56	0	250	°C/°F
77	R5 ON time Autoclima 10..19	11	0	100	%
78	“Sd” probe setting Autoclima mode 20..29	59	0	250	°C/°F
79	R5 ON time Autoclima 20..29	12	0	100	%
80	“Sd” probe setting Autoclima mode 30..39	62	0	250	°C/°F
81	R5 ON time Autoclima 30..39	13	0	100	%
82	“Sd” probe setting Autoclima mode 40..49	65	0	250	°C/°F
83	R5 ON time Autoclima 40..49	14	0	100	%
84	“Sd” probe setting Autoclima mode 50..59	68	0	250	°C/°F
85	R5 ON time Autoclima 50..59	15	0	100	%
86	“Sd” probe setting Autoclima mode 60..69	71	0	250	°C/°F
87	R5 ON time Autoclima 60..69	16	0	100	%
88	“Sd” probe setting Autoclima mode 70..79	74	0	250	°C/°F
89	R5 ON time Autoclima 70..79	17	0	100	%
90	“Sd” probe setting Autoclima mode 80..89	77	0	250	°C/°F
91	R5 ON time Autoclima 80..89	18	0	100	%
92	“Sd” probe setting Autoclima mode 90..99	80	0	250	°C/°F
93	R5 ON time Autoclima 90..99	20	0	100	%
96	Enables controller on probe “Sd”	1	0	1	
99	Enable boiler elements in mixed mode	0	0	2	
100	Cooling setpoint	50	30	250	°C/°F
101	Oven display upper offset (Hysteresis)	5	0	30	°C/°F
102	Phase 1 descaling time	30	1	120	min
103	Phase 1 descaling boiler temperature	60	30	110	°C/°F
104	Phase 2 descaling time	25	1	120	min
105	Phase 2 descaling temperature	100	30	110	°C/°F
106	Steam shut-off temperature in MIXED mode	73	50	255	°C/°F
107	Address for communication with PC	0	0	31	
	Only for versions connected to a Personal Computer				
108	Top-up time	1	1	300	sec
109	Humidifier key mode	1	0	1	
110	Acoustic signal volume from 0 (minimum volume) to 100 (maximum volume)	100	0	100	
111	Burner automatic reset activation delay	200	10	250	dec
112	Number of pulses to reset	3	0	10	
113	Burner shut-off indication delay	100	10	250	dec
114	Fan pause in holding mode	240	0	600	sec
115	Fan ON time in holding mode	30	0	600	sec
116	Oven setting phase 1 oven washing	60	0	100	°C/°F
117	Oven setting phase 2 oven washing	70	0	100	°C/°F
118	Oven setting phase 4 oven washing	85	0	100	°C/°F
119	Oven setting phase 5 oven washing	85	0	100	°C/°F
120	Oven setting phase 6 oven washing	70	0	100	°C/°F
121	Oven setting phase 8 oven washing	85	0	100	°C/°F

9.0 Integrated list of programmable parameters on T and H/P cards

No.	Description	Def.	Min	Max	Unit of measurement
122	Oven setting phase 9 oven washing	85	0	100	°C/°F
123	Oven setting phase 10 oven washing	85	0	100	°C/°F
124	Oven setting phase 11 oven washing	70	0	100	°C/°F
125	CYCLE 2 time CL program	20	0	30	min
126	Phase 9 time oven washing	8	0	30	min
127	Detergent ON time phase 2 soft wash Oven	50	0	250	sec
128	Oven excess temperature finishing 1	20	0	100	°C/°F
129	Oven excess temperature finishing 2	30	0	100	°C/°F
130	Oven excess temperature finishing 3	40	0	100	°C/°F
131	Start time finishing 1	10	0	60	min
132	Start time finishing 2	15	0	60	min
133	Start time finishing 3	20	0	60	min
134	Start time finishing 1 with core probe	2	0	10	°C/°F
135	Start time finishing 2 with core probe	4	0	10	°C/°F
136	Start time finishing 3 with core probe	6	0	10	°C/°F
137	Cell temperature in dry holding	80	0	200	°C/°F
138	Cell temperature in holding with humidity	80	0	200	°C/°F
139	Cell temperature in 30% Autoclima mixed holding	80	0	200	°C/°F
140	Cell temperature in 60% Autoclima mixed holding	80	0	200	°C/°F
141	Cell temperature in 90% Autoclima mixed holding	80	0	200	°C/°F
142	**Hourly consumption of softened water by the appliance: change the setting only for installations with a water-softener dedicated exclusively to the oven (case 2)** - see section 9.1	15	4	100	litri
143	**Mains water hardness: change only for installations without a softener dedicated exclusively to the oven (case 1)** - see section 9.1	20	0	50	
144	**Water-softener capacity: change setting only for installations with a water-softener dedicated exclusively to the oven (case 2) or set to "0" (zero) for installations without a water-softener dedicated exclusively to the oven (case 1)** see section 9.1	50	0	999	m^3
145	Printer connection 232: printing interval in operation with core probe expressed in degrees	5	0	300	°C/°F
146	Printer connection 232: printing interval in timed operation - expressed in minutes	5	0	300	Min
148	Output 22 activation delay (boiler ignition): **applies only to MG 210/202 set to 80 dec**	0	0	999	Dec
149	Humidifier disactivation temperature during first thermostat cut-in in steam cycle: **applies only to MG 202, set to 70 °C**	0	0	300	°C/°F
150	Management of dual ventilation speed on **"P"** model: leave as ***"0"*** for H versions (single speed) - Set to ***"1"*** for P versions (dual ventilation speed)	0	0	1	-
160	Programmable password T version (three digits) for access to technical parameters and "service" program	123	0	999	-

9.1 Defining supply water characteristics T - H/P electronic card

The T and H/P electronic versions make it possible to program the frequency with which the boiler needs to be descaled by entering the data of the supply water.

In brief, the harder the water, the more frequent the need for descaling, which will be indicated by the appropriate alarm message ***"DESCALE"*** on the T version and ***"DESCALE"*** on H/P versions..

For this purpose, it is essential that you:

- establish the type of installation in question (case 1 or case 2)
- Check/analyse the hardness of the water connected to the softened water inlet (for further details see section 1.3) expressed in French degrees °fH with a suitable hardness tester (case 1)
- Find out the technical data of the water-softener if it is dedicated exclusively to treating the water for the oven (case 2).

Case 1:

appliance connected to a centralized softened water supply system ensuring constant treatment; there is no water-softener dedicated exclusively to the oven.

Set parameter 143 "Mains water hardness" °fH according to the hardness measurement taken.

The standard value assigned to the parameter (20 °fH) is significantly higher than the maximum set (6 °fH) in order to set more frequent descaling and thus protect the steam generator against the build-up of limescale.

Set parameter 144 "water-softener capacity" to ***"0"*** (zero); the standard value assigned to the parameter is 50 m3.

Case 2:

Appliance equipped with a water-softener dedicated exclusively to the oven.

In this case, it is necessary to set the following parameters:

Parameter 142: hourly consumption of softened water by the oven (see table 3 "General water data" - section 16) Example: the model ME 061 has a maximum softened water consumption of 10 l/hr.

Parameter 144: capacity of the water-softener to ensure constant treatment of water at 6 °fH, based on the water-softener manufacturer's data tables, given the "degree of hardness (°fH) of the water upstream of the water-softener".

Example: let's consider a medium-sized water-softener capable of softening 50 m3, with known input water hardness (35 °fH) and required output hardness (6 °fH).

In brief, the electronic card defines the descaling interval on the basis of "water-softener capacity" and "hourly consumption of softened water".

To check the time remaining before the appearance of the message ***"DESCALE"*** on T version or ***"DESCALE"*** on H/P version indicating the need to descale the boiler, see respectively section "Boiler descaling interval check" (section 7.12) and (section 11.17) of this manual.

Important: if you do not intend to personalize the descaling interval, do not change the standard values assigned to the parameters. The electronic card automatically establishes a safe average descaling interval.

Summary of parameters:

Parameter No.	STANDARD value assigned to parameter	Unit of measurement	Setting
142	**15**	**Lt.**	**Hourly consumption of softened water of the appliance: change the setting only for installations with a water-softener dedicated exclusively to the oven (case 2)**
143	**20**	**°fH**	**Mains water hardness: change only for installations without a water-softener dedicated exclusively to the oven (case 1)**
144	**50**	**m^3**	**Water softener capacity: change setting only for installations with a water-softener dedicated exclusively to the oven (case 2) or set to "0" (zero) for installations without a water softener dedicated exclusively to the oven (case 1)**

10.1 Gas pressure switch

The gas pressure switch PG is located at the entrance of the gas pipe and acts as a **minimum pressure switch.** It therefore opens contact C-NO at mains pressure values below the set value.


1

For use with G20 methane gas, the upper plastic ring nut must be unscrewed completely so that the index corresponds to 5 mbar.

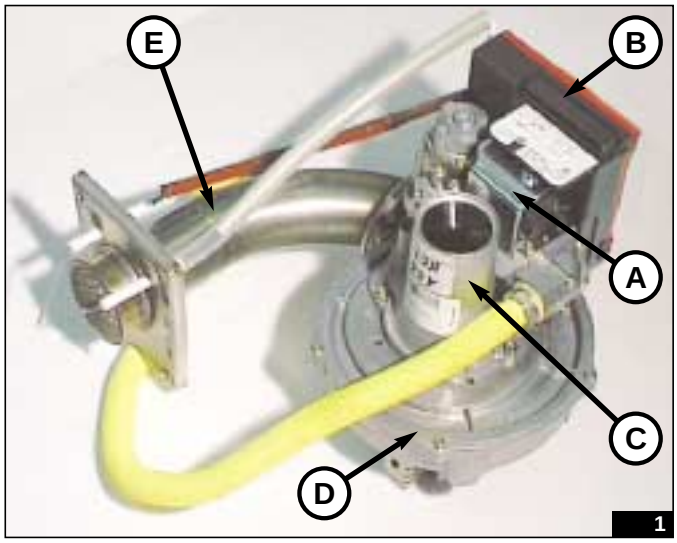
For use with G30/G31 liquid gas, the upper plastic ring nut should be screwed down fully so that the index corresponds to 20 mbar.

If the C-NO contact does not close, the appliance will not start; electronic versions display the alarm message no gas.

10.2 Pre-mixed gas burner unit

TECHNICAL NOTES ON OPERATION

The system that makes it possible to reach high combustion output consists of an integrated air and gas control system made up of:



1

(A) • Honeywell valve 1:1 air/gas valve with side output B + C

(B) • Honeywell flame control and discharge ignition

(C) • 16/2/34/40 kW Venturi unit for models MG 061/202

(D) • EMB 24 Volts DC 45 W, 3495 U/min fan

(E) • Gas burner

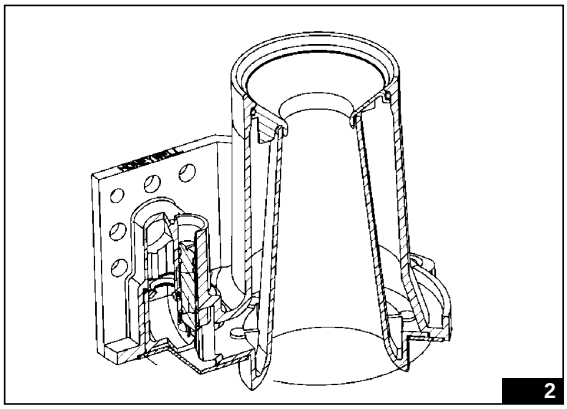
• Honeywell two-stage fan speed control card (fig. 2-3 section 10.3)

The flow of air into the combustion chamber is controlled by the fan; in the Venturi tube, the flow of air generates a pressure drop, and the burner flame is modulated by controlling the air flow.

The flow of gas will be determined by the flow of air in the ratio set by adjusting the “THROTTLE” screw, known also as adjusting the MIX.

Unlike atmospheric burners, with which the gas injected into the Venturi unit drew in the air necessary for combustion, with premixed burners the injected air conveys the gas necessary for combustion through the Venturi unit.

The Venturi unit shown schematically in fig. 2 works on the basis of the pressure difference between **the high pressure of the air at the mouth of the fan** (pressure in the fan rotor) and **the low pressure connected with the output of the gas valve** (valve output - Venturi input).


2

10.3 Burner adjustment – Checking nominal heat capacity PTN (kW)

Tools needed:

- Decimal gauge
- Set of Torks wrenches
- 3 mm screwdriver
- 8 mm screwdriver
- Digital tester for measuring frequency
- Faston


1

It is essential to check the parameters of the burner **when commissioning** the appliance, in order to optimise ignition and make certain the nominal heat capacity envisaged for each model of oven is reached (see section 16).

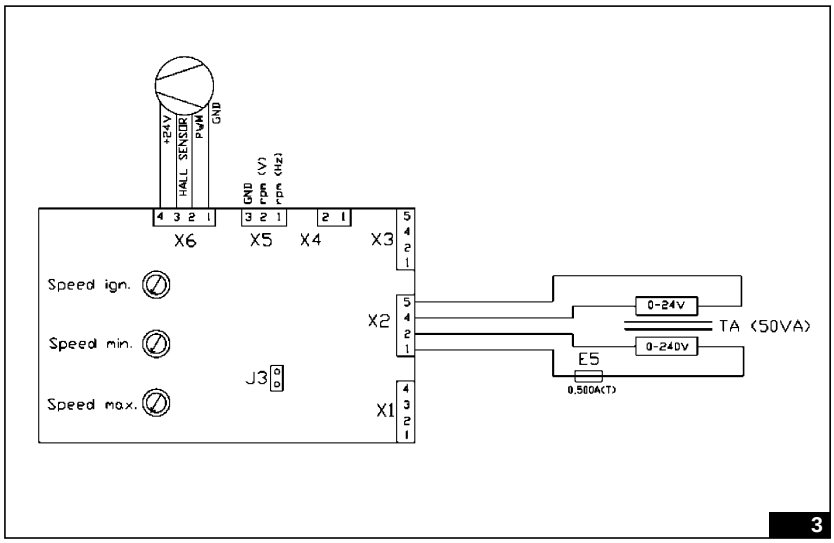

2

Important notes regarding the ignition sequence of the burner controlled by the two-stage electronic card (fig. 2-3):

The two-stage electronic card controls the burner fan according to the minimum (Min Hz) and maximum (Max Hz) ignition stages (Ign Hz), so as to ensure gradual ignition of the burner flame.

Setting a cooking temperature higher than the temperature in the oven causes the closure of the voltage-free clean contact 4-5 (X3), which acts as an ON-OFF control.

At the same time, power (230 V) reaches contact 3 of X1, which activates in succession:
the burner ignition discharge electrode and the burner fan at ignition speed (Ign Hz) via connector X6 and supplies the gas valve S3 via the output contact 2 (230V) of X1.



3

5 seconds after the burner is lit, the voltage-free clean contact 1-2 of X3 closes, enabling the burner fan to reach maximum speed or nominal power (Max Hz).

5 degrees before the set point on T and H/P versions, the power is reduced by opening contact 1-2 of X3; the pressure then drops to minimum (Min Hz).

When the set oven temperature is reached contact 4-5 of X3 opens and power to contact 3 of X1 is switched off; the burner fan stops and gas valve S3 de-energizes.

10.3 Burner adjustment – Checking nominal heat capacity PTN (kW)

- **MIX ADJUSTMENT (MM.)**

Before switching the oven on, check the depth of Mix adjustment screw A against the data in table 4 attached (section 16.1).

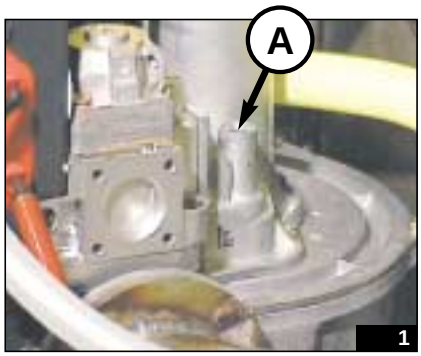
Reference example: Oven model MG 101 G20 methane gas: the screw must be adjusted to a depth of 13.0 mm (fig. 1-3) Cat II 2H3+(IT)

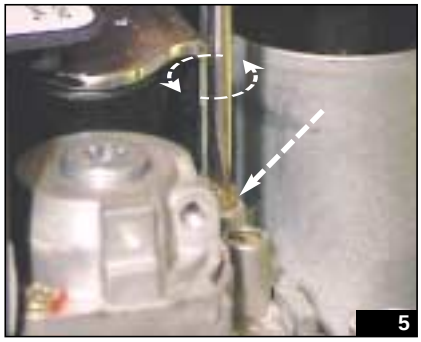
Unscrew slightly the “IN” screw with the 3 mm screwdriver and connect a digital pressure gauge to check the mains gas pressure, which must comply with the limits stipulated in the relevant standards.

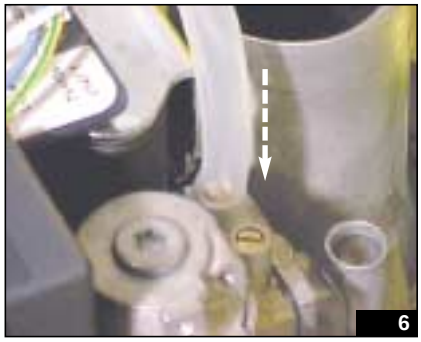
See table 5 (section 16.1) relating to the appropriate gas category and country of destination (fig. 4-7).

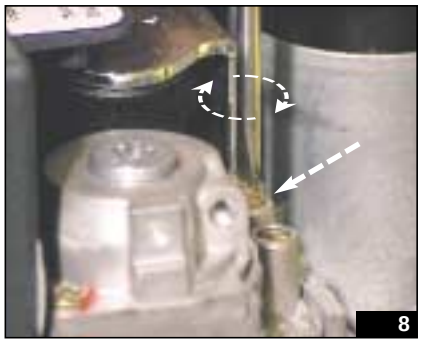
Once you have checked the mains pressure, disconnect the pressure gauge and tighten the “IN” screw so as to prevent accidental gas leakage (fig. 8).

Using this method, you can check whether the gas installation is of sufficient capacity, i.e. capable of meeting the requirements of the appliance.





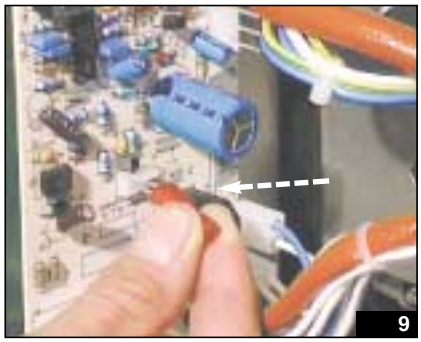




10.3 Burner adjustment – Checking nominal heat capacity PTN (kW)

- **TRIMMER ADJUSTMENT FAN SPEED (IGN HZ):**

Insert a FASTON between terminals B and C on the control card so as to short-circuit the connections. This disables the burner activation sequence at the ignition stage (Ign Hz) for an indefinite period (fig. 9-10).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Connect the ends of the TESTER to points D and E and position the TESTER in frequency Hz (fig. 11-12). Check that the jumper J4 is inserted on the two-stage electronic card located next to the TRIMMER (Max Hz).

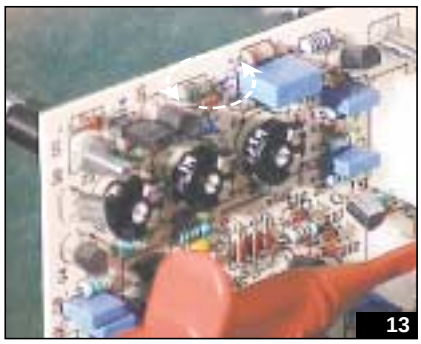

11


12

At this point it is necessary to check, and if appropriate adjust, the speed of the fan during the ignition phase, by adjusting the TRIMMER marked “Ign Hz” (fig. 15).

Turning it clockwise increases the frequency and hence the **speed of the fan during the ignition phase.**

Turning it anticlockwise reduces the frequency and hence the speed of the fan during the ignition phase.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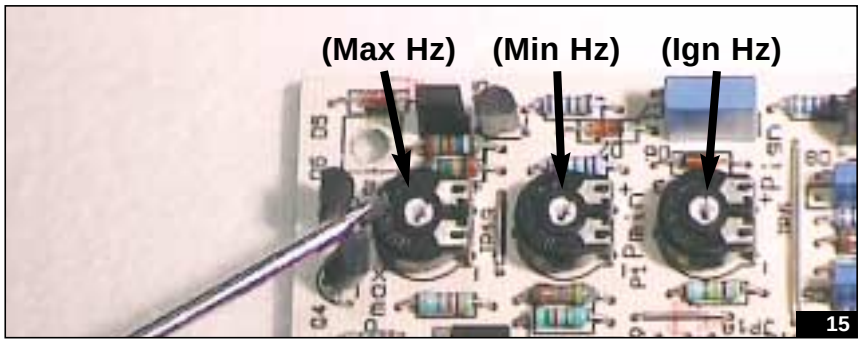

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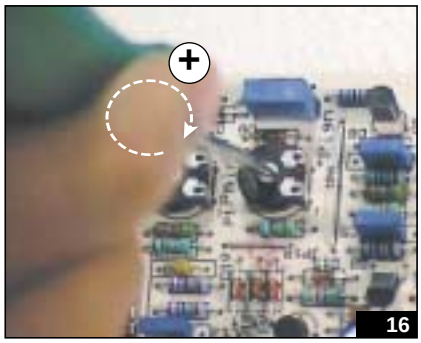
16

10.3 Burner adjustment – Checking nominal heat capacity PTN (kW)

Switch the oven on with the ON/OFF key at the top of the control panel, set it to convection mode, set the temperature and time and start the cooking cycle by pressing START/STOP (fig. 18-20).

It is imperative to **check the position of neutral** on the power supply terminal board; it must correspond with neutral on the electrical installation of the oven (section 4.1).

The ignition frequency (Ign Hz) must be adjusted +/- as shown in table 4 of section 16.1 (approximately 85 Hz in the case of mod. 101 running on methane gas). G20 cat.II 2H3+(IT)

By turning the trimmer “Ign Hz” with the screwdriver, you can increase or reduce the ignition frequency in order to optimize oven ignition and prevent “vibration” and “resonance” during burner ignition (fig. 21).

Switch off and restart the oven several times by pressing START/STOP, to make sure that the burner lights correctly (fig. 22).

With the burner ON, remove the FASTON from points B and C of the control card (fig.23). The fan starts automatically at maximum speed, which must be adjusted by means of the trimmer (Max Hz) to 155 Hz (MG 101 - G20) in accordance with the table (fig.24).

At this point, by selecting **low fan speed** from the control panel (fig. 25), the fan switches on at minimum speed, which must be adjusted by means of the trimmer (Min Hz) to 112 Hz (MG 101 - G20) in accordance with the table (fig.26).

Press START/STOP on the oven control panel to stop/re-start the burner, then check the three adjustment stages Ign Hz, Min Hz, max Hz again.


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19


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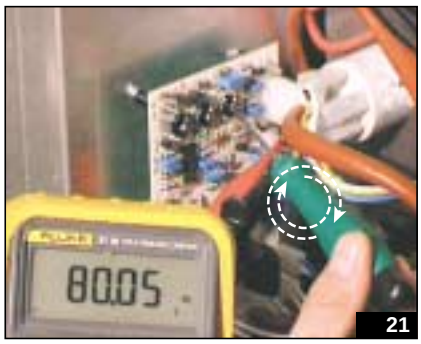

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10.3 Burner adjustment – Checking nominal heat capacity PTN (kW)

Check a complete cycle so as to ensure that there are no bursts or resonance during lighting, both from cold and when hot.

Resonance: if the burner whistles when lighting, increase the ignition speed (Ign), or reduce the input of gas by means of screw A which controls the Mix Hz (by turning clockwise for a quarter of a turn at a time and thus reducing the gas input).

If the burner tends to light with **bursts:** reduce the ignition speed (Ign Hz).

Important: systematically adjust first the ignition speed (Ign Hz), and then the Mix.

Warning: in the case of appliances installed at high altitude and running on liquid gas, the gas mix is called PROPANE-AIR.

Its % of LPG/air by volume is approximately 40/60, so it is necessary to gradually increase the gas input by means of Mix adjustment screw A, with respect to the standard data shown in the table. This must be done because the burner is showing ignition difficulties, which manifest themselves in the form of bursts or spluttering during lighting or an irregular flame.

Unscrew (anticlockwise) Mix adjustment screw A by 1-2 full turns, wait for the flame to settle, then gradually fine tune the depth of the Mix screw according to the mix present.

You are advised to open and close the door so as to switch off and re-light the burner in order to facilitate fine adjustment.

If performance is not improved by the adjustment, remove the burner and check/clean it as described in the chapter "Burner removal".

If you hear a sharp whistling sound when the burner is switched on at maximum speed (Max Ign), this means that combustion is taking place with an excess of gas.

Reduce the gas input by turning Mix adjustment screw A (clockwise by a quarter of a turn at a time). You must only make limited adjustments. If the adjustment does not produce the desired result, reset everything as shown in table 4 (section 16.1), and try adjusting again, working on one parameter at a time.

POSSIBLE FAULTS:

- **Burner shut-off:** after 6 seconds (burner ignition electrode activation time), if no flame is detected , the discharge stops and the gas valve de-energizes; the 230 Volt signal reaches contact 42 of the SF main relay card on T versions and contact 39 on H/P versions. After 10 seconds (parameter 113 burner shut-off indication delay), since no flame is detected, the contact opens with output to 13 on the SF main relay card (switches off the power to the two-stage adjustment electronic card) and the fan stops.
- After 5 seconds, output 41 activates automatically for T versions, and output 38 for H/P versions, on the same SF main relay card for one second, which supplies the reset neutral to the gas ignition module. At the same time, contact 13 on T versions and contact 29 on H/P versions closes, and the burner ignition procedure re-starts automatically.
- **After three attempts, the message "burner shut-off" appears. The START key serves to re-activate output 41 for T versions, and 38 for H/P versions, regardless of whether the cell temperature is reached or not. Make certain that the set temperature is higher than the oven temperature, then the burner ignition procedure re-starts.**

On M versions, the appearance of the burner shut-off signal (burner shut-off button light ON) reminds the operator to press the burner shut-off button, located below the front control panel, in order to re-start the ignition procedure (see section 10.9).

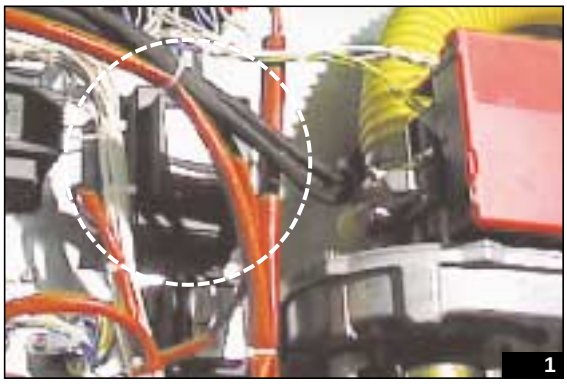
If the burner shut-off signal persists, establish why the burner is failing to light by following the above-mentioned ignition sequence step by step.

10.4 Burner fan supply transformer

Transformer TA power 50 VA (fig. 1)

The primary circuit supplied at 230 Volts through outputs 1 and 2 of connector X2 of the burner fan speed adjustment electronic card is protected by 500 mA fuse E5.

The secondary circuit supplies the burner fan at 24 Volts. It is an "essential" replacement part to keep in stock, because in the event of a fault, the fan is disabled.


1

10.5 Two-stage burner fan speed control card

The card manages the following components: burner fan, burner fan supply transformer, burner Z1 ignition panel, gas valve S3.

Its operation is described in the section ”two-stage adjustment electronic card” (section 10.3).

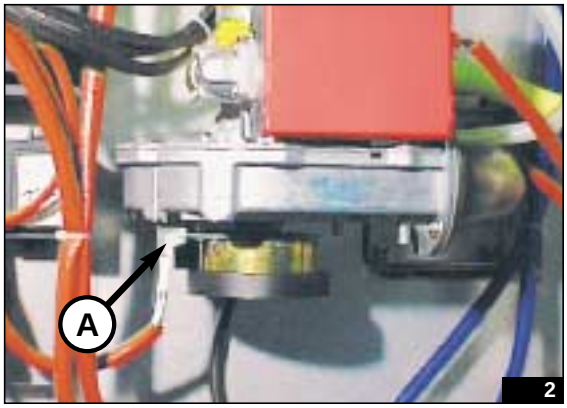
It is imperative to protect it against phenomena such as excess temperature and humidity. Before replacing it, make certain that the connectors X1….X6 are plugged in properly and check that the jumper J4 located next to the trimmer (Max Hz) is connected. If disconnected, it prevents activation of the power stage (Max Hz). Check that the 2 Amp fuse F1 on the card is in correct working order.


1

10.6 Burner fan

The lower motor is a one-piece unit with internal fan and alloy worm screw. If faulty, it must be replaced as a single unit. It is marked with a specific symbol in the wiring diagram and draws power from connector X6 of the two-stage adjustment electronic card.

Outputs 1 and 4 of X6 must be connected to the GND and +24V DC contacts of the fan. Make sure that the female terminal A is inserted into the vetronite housing of the fan to its travel limit.



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10.7 Burner ignition panel

Denominated **Z1**, the burner ignition panel enables activation of the burner ignition electrode through output IGN, detects the presence of the FP input flame by means of the flame sensor, and supplies the gas valve by means of the 5-pin lower female contact section 10.8).

The red, external, plastic protection can be removed by releasing the side fastening clips for the purpose of checking for any visible anomalies on the components of the internal electronic card. It is not, however, equipped with an internal protection fuse.


3

The upper comb connector (fig. 4) accommodates 9 conductors in sequence:

- Contact 4 ignition reset: when the reset button RG is pressed or the gas ignition reset relay on the SF electronic card closes automatically, the neutral contact is temporarily closed, which makes it possible to re-start the burner ignition phase for a maximum of three automatic attempts, 60 seconds apart for gas models equipped with T or H/P electronic card..
- Contact 5: neutral input
- Contact 6: burner shut-off alarm signal output
- Contact 7: power supply phase input
- Contact 8-9: connection jumper


4

10.7 Burner ignition panel

- Contact 10 and 11:
  power supply to phase and neutral respectively from connector X4 of the two-stage adjustment electronic card.
  WARNING: outputs 1 and 2 of X4 must correspond exactly to inputs 10 and 11 respectively of the ignition panel Z1. Do not invert the connection.
- Contact 12: earth


4

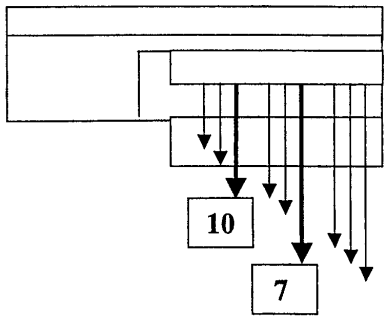
WARNING: gas appliances are fitted with one of two models of ignition panel, which can be interchanged with each other simply by adapting the wiring. They can be identified by the code stamped on them or by the presence or absence of the burner reset button “RESET”.


5

If replacing a faulty ignition panel Z1, check which model has been sent as a replacement part and adapt the wiring if appropriate:

Original model S4565A 2092 1:
original ignition panel which **DOES NOT require a connection jumper between wires 7 and 10 of the connector comb** (fig. 6). The adjacent ignition panel DOES NOT have a manual reset button. During installation, no precautions are necessary with regard to the connection of wires 7 and 10.

S4565A 2092 1



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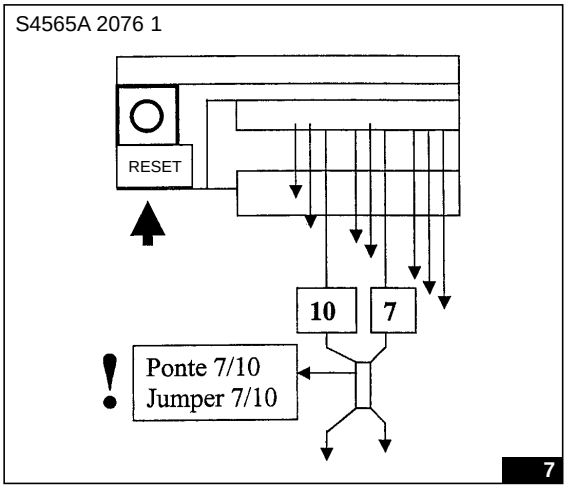
Alternative model S4565A 2076 1:
original ignition panel which requires a connection jumper between wires 7 and 10 of the connector comb, to bypass the function of the “reset” button located on the ignition panel (fig. 7). The adjacent ignition panel is EQUIPPED with a manual “RESET” button. During installation, make certain that there is a jumper connection between wires 7 and 10.

Make the jumper connection if none exists, otherwise it is not possible to activate maximum power (Max Ign), which enables the burner to reach its nominal heat capacity PTN kW.

In order to ensure that the maximum or nominal burner power stage is activated (Max Hz), during installation of the ignition panel “2” make/check the presence of a jumper connection between 7 - 10.

S4565A 2076 1



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10.8 Gas valve

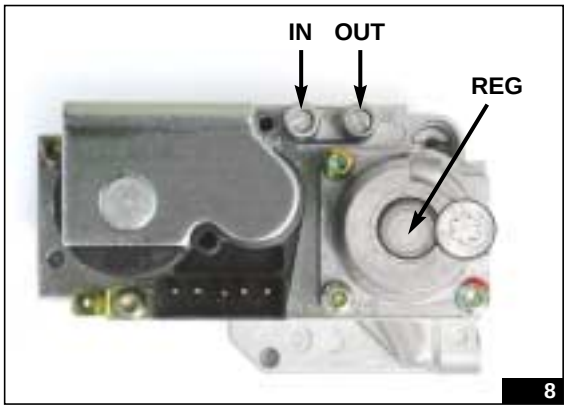
S3 two-stage gas valve, equipped with two coils V1 pin 1-2 and V2 pin 4-5, and central earth connection pin: coil impedance check: V1 ~2.9 Kohm, V2 ~1.3 Kohm.

The two gas sockets IN and OUT make it possible to check the mains pressure (IN pressure socket) and the output pressure OUT, **which is "0" for all gas models** (valve pressure adjustment put out of service).

To adjust the gas output pressure OUT in order to return the value to "0", use a 40 Torks wrench to turn the plastic screw of the pressure regulator REG shown in figure 8 (remove the metal protection screw to gain access to the regulator REG).

To check the output pressure, light the burner at nominal heat capacity (Max Hz) and measure the pressure with a digital pressure gauge.

Tightening the screw (clockwise) increases the output pressure OUT , and slackening the screw (clockwise) reduces the output pressure. Remember to close the pressure socket screws properly and refit the protection screw located on the pressure regulator REG.



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10.9 Burner ignition reset button (mechanical control version M)

RG illuminating, double-contact pushbutton which enables manual resetting of the burner ignition in the event of shut-off, available only on mechanical control versions.

If the pushbutton light illuminates, this indicates a shut-off situation. When the button is then pressed, the light should switch off, and after a delay of a few seconds, you should hear the burner ignition electrode starting up.

If the ignition shuts off frequently, read the later sections about positioning the flame detection sensor ignition electrode and burner adjustments.


9

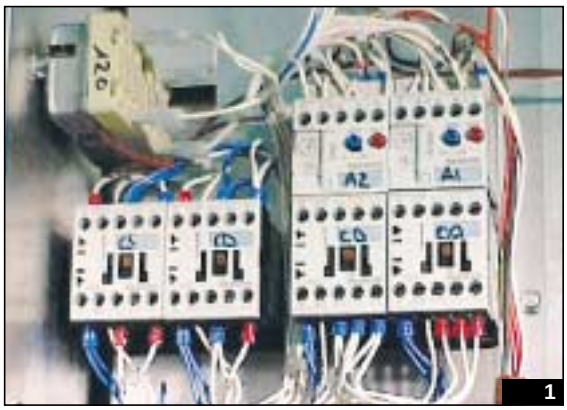
10.10 230 Volt relay (mechanical control version M)

RA-RB-RC-RC1:
Single and double contact 230 Volt relays for activating various functions better identified in the wiring diagram, for managing ignition and modulation of the gas valve and activation of the burner fan at the power stages "Min Hz" and "Max Hz".

R1:
230V relay used exclusively for gas versions. Enables activation of automatic cooling of the oven by introducing water from the humidifier.

This function is activated when the oven temperature set point is reached, in order to reduce thermal hysteresis when cooking small quantities in STEAM mode.

11.1 Contactors



1

- **C6**:
  C6 is a safety contactor. The power contacts supply the circuit powering the heating elements and motor.
  If one of the appliance's safety devices trips, the coil of the is de-energized and the power circuit is promptly disconnected.

- **C2-C3-C4-C5**:
  Contactors whose power contacts supply the heating elements of the oven and boiler respectively in the following sequence:

  Convection, high fan speed: full power is obtained with the activation of both contactors C2 and C3. On T and H/P versions, C3 disconnects 5 degrees before the set temperature and power is reduced so as to limit thermal hysteresis. Once the set temperature is reached, C2 also de-energizes.

  Convection, low fan speed: full power is never activated: only contactor C2 activates, and de-energizes when the set temperature is reached.

  Steam, high and low fan speed: full power is obtained with the activation of both contactors C4 and C5. On T and H/P versions, C5 disconnects 5 degrees before the set temperature and power is reduced so as to limit thermal hysteresis. Once the set temperature is reached, C4 also de-energizes.
  For further details on operation in steam mode, see sections 6.1 and 6.2.

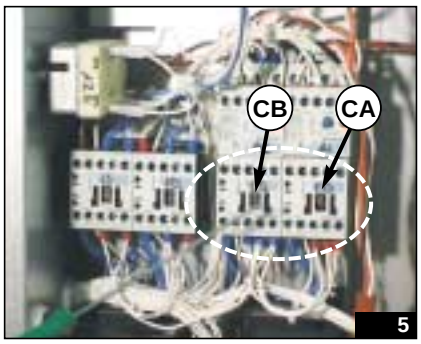
  Mixed, high and low fan speed: contactors C2 and C4 activate, to heat the oven and boiler simultaneously at low power.
  Once the oven is saturated with steam, full power in the oven is switched over with consequent activation of C3 and disactivation of C5. The initial situation of oven and boiler heating is restored as soon as the oven is no longer saturated with steam.
  For further details on operation in mixed mode, see sections 6.1 and 6.2.

11.2 Checking low-speed activation and ventilation auto-reverse

1st phase: switch on the oven with the ON/OFF button and set it to convection mode.

Set a temperature of 220 °C and an indefinite time, press the low speed button, then press START/STOP (fig. 1-4).

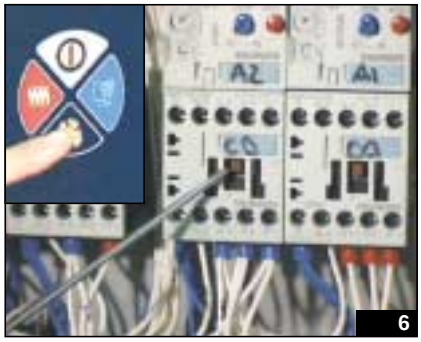
2nd phase: check that low speed contactor CB activates (fig. 5).



3rd phase: press the low speed button to disactivate low speed contactor CB, thus checking that high speed contactor CA activates, and vice versa.

LIGHT "ON" on control panel = activation of low speed contactor (fig. 6)

LIGHT "OFF" on control panel = activation of high speed contactor (fig. 7)



LIGHT "ON"
LOW SPEED "ON"

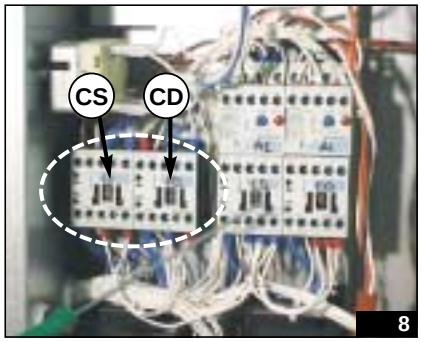
LIGHT "OFF"
HIGH SPEED "ON"

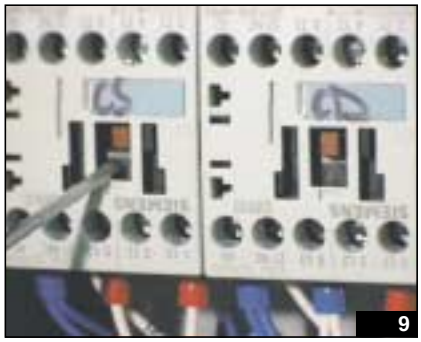
The two contactors identified with the initials CD and CS invert the direction of rotation of the motor (AUTO-REVERSE). While the appliance is in operation, check the alternation of contactor CD and CS.

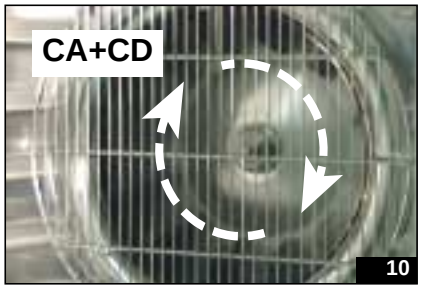
With the oven OFF (upstream switch ON) it is possible to check the left-hand or right-hand rotation of the motor by manually activating contactors CA and CD, which enables you to see the fan rotating clockwise (fig. 10).

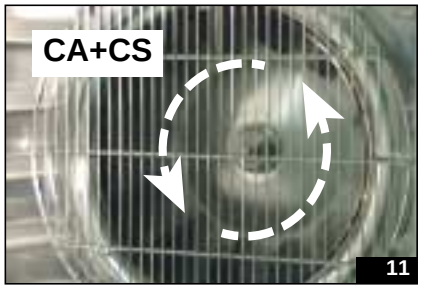
Manual activation of buttons CA and CS enables you to see the fan rotating anticlockwise

(fig. 11).









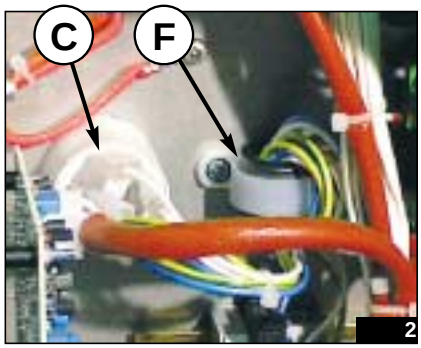
11.3 Appliance supply filters

Condenser (C)
Ferrite (F)

WARNING: these devices are used in order to comply with the requirements of the EMC standard for controlling the emission and output of electromagnetic waves.

If damaged, they could cause the appliance's fuses to blow or the upstream protection devices to trip. Disconnect them momentarily in order to isolate the fault.


1



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NOTES

12.0 INSTRUCTIONS FOR TESTING GAS OVENS IN USE

12.1 STEAM mode

Introductory note about the door microswitch: on T - H/P electronic versions, the appearance of the message DOOR OPEN when the door is closed, indicates that the door microswitch sensor contact has failed to close (see section 5.4).

1st phase: press the ON/OFF button to switch the oven on (fig.1).

The driven valve opens (fig.3-4) and the water is drained from the boiler automatically (the display shows the message ***"S.G. DRAIN"***).

The boiler washing cycle starts (the display shows the message ***"S.G.RINSING"***). Note that the water is drained from the boiler only if it is at a temperature of less than 50 °C and if the appliance is switched off for more than 5 minutes.

2nd phase: after washing, make certain that the boiler drainage driven valve returns to the closed position (fig. 6). The boiler will then refill automatically.

Once the boiler has refilled with water, the burner activates to automatically preheat the boiler (fig. 7).

3rd phase: check that the combustion fumes are released through the outlet of the boiler fume flue (butterfly open) and that there are no fumes at the outlet of the oven fume flue (butterfly closed) (fig. 8).

4th phase: about 90 seconds after activation of the burner, the boiler reaches pre-heating temperature (60 °C) and is ready to start producing steam.


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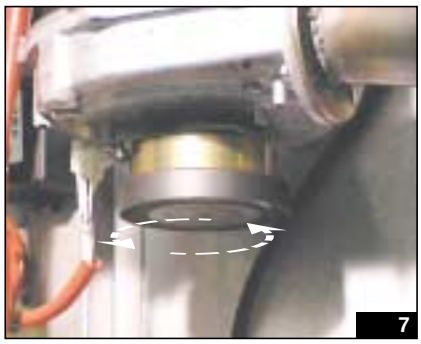
4

5


6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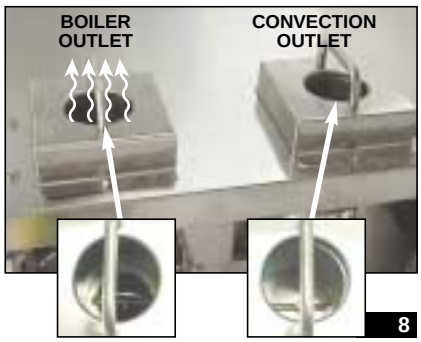


8

12.1 STEAM mode

5th phase: Press the cook button (STEAM). The proposed cooking temperature is 100 °C, and cooking time is indefinite. Press START/STOP to start the program (fig. 9-11).

Within a few minutes, condensation will start to appear on the inside of the glass (fig. 12). This means that steam is starting to be generated inside the oven.

6th phase: check that the temperature in the oven gradually increases on the display (fig. 13).

After a few minutes, solenoid valve **S5** will activate, which in turn causes the vapor at the outlet to condense by means of an intermittent jet of cold water at the outlet (fig. 14).

Make certain that the upper oven vent remains closed (fig. 15). Ensure that there are no leaks onto the oven conduits and condensation/steam generation system.

7th phase: Open the door very carefully, check that the motor has stopped, close the door again and make certain that the cooking cycle starts automatically.

12.2 CONVECTION mode

1st phase: Press the CONVECTION mode button (the proposed cooking temperature is 130 °C and the cooking time is infinite), and press START/STOP to run the program (fig. 1-3).


1

2


3

2nd phase: Press the MANUAL HUMIDITY button and check that moisture is injected into the oven for as long as the button is pressed, via the humidifier pipe
(fig. 4-5).


4


5

3rd phase: Press the vent button and make sure that the vent at the top of the oven opens (fig. 6-8). Button light illuminated = oven vent open.
Button LED flashing = oven vent moving.

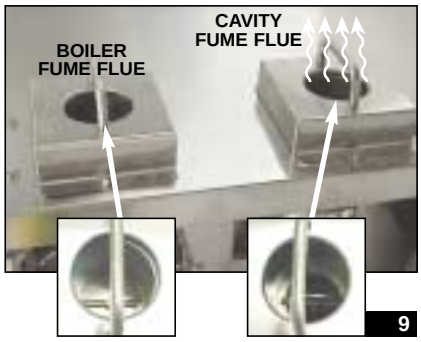

6


7


8

4th phase: with the oven vent open, press the button again: the LED goes OFF and the vent MUST close.
Button LED OFF = oven vent closed.
For further details see section 13.4.

5th phase: Check that the combustion fumes are released through the outlet of the boiler fume flue (butterfly open) and that there are no fumes at the outlet of the cavity fume flue (butterfly closed) (fig. 9).



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6th phase: Check that the temperature in the oven gradually increases on the display Check that there are no leaks from the water intake conduit for humidification; check the seal of the 90° joint above the motor (see section 13.1).

7th phase: Open the door very carefully, check that the motor has stopped, close the door again and make sure that the appliance has started automatically.

12.3 COMBI mode (CONVECTION/STEAM)

1st phase: Select COMBI mode (press the convection + steam keys simultaneously); the proposed temperature is 130 °C. Increase the cooking set temperature to 200 °C, for example. The cooking time sets itself to infinite. Press START/STOP to run the program (fig. 1-3).


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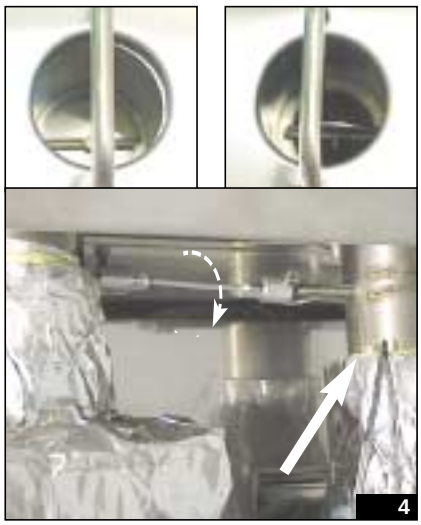
2nd phase: At the rear of the appliance, the fume butterfly valves will close and open alternately, thus alternating oven heating and boiler heating (fig. 4-5).

3rd phase: At the beginning of the mixed cycle steam will be generated in the oven (butterfly valve open on boiler) (fig. 6).

When the oven is saturated with steam, the butterfly valve closes the fume outlet from the boiler and starts heating the oven (fig. 7).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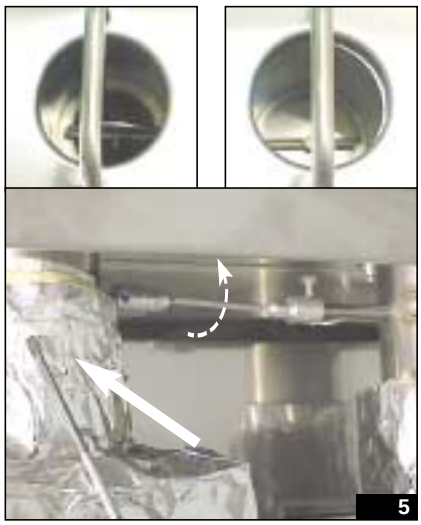
OVEN HEATING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BOILER HEATING

4th phase: The oven and boiler are then heated alternately (and cyclically) according to the saturation of steam in the oven, controlled by the steam control probe SD on the horizontal drain tube of the oven (fig. 4-5).

When the temperature is reached, oven heating is switched off and boiler heating remains ON until the oven is saturated with steam.

Note: on mechanical versions, steam saturation is controlled by the thermostat F4 (see section 6.1)

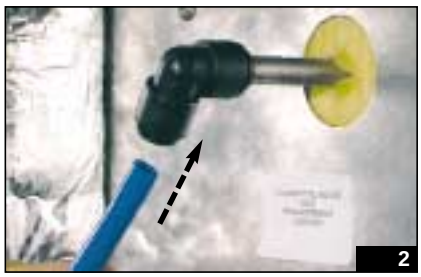
13.1 Connecting the plastic conduits to the fast connection joints

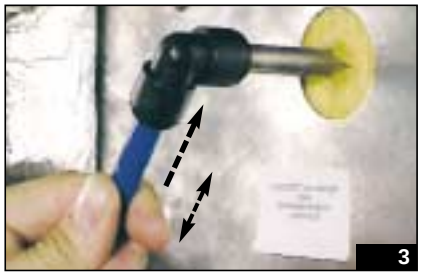
To connect, simply fit the plastic tube onto the rapid connection joint as far as it will go (fig. 2). Check that it is correctly fitted by applying tension to the plastic tube (fig. 3).

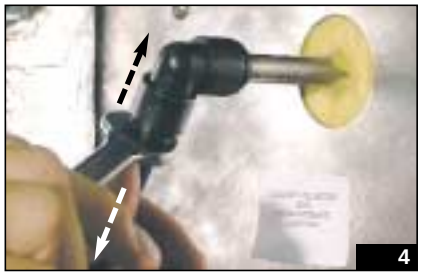
This ensures that the system is hermetically sealed.

To disconnect, apply uniform pressure to the washer beneath the rapid connection joint, with

the aid of a 10 mm wrench, and pull out the plastic tube (fig.4).







13.2 Resetting the cavity and boiler safety thermostats Replacing the fuses - Resetting the motor thermal cut-out

Tools needed:

- 8 mm wrench

Before starting, switch off the electrical power upstream of the appliance.

13.2.1 - Resetting the oven/boiler safety thermostat.

Using the 8 mm wrench, slacken the 2 screws at the bottom of the control panel
(fig. 2).

Pull the control panel downwards, release it from its seat, turn it through 90° and clip it into the fastening at the top (fig. 3-5).

This leaves the control panel open like a book and enables you to reset the oven safety thermostat F2 and the boiler safety thermostat F3 (fig. 6).

To reset, press the red button on the safety thermostat fully down.

13.2.2 - Replacing the fuses

To replace a fuse, pull out the black fuse box located inside the control panel at the bottom. The fuse box contains 2 fuses: 1 replacement (outer), and 1 in use (inner) (fig. 8-10).

For further details on removing and refitting the control panel, see section 14.3.

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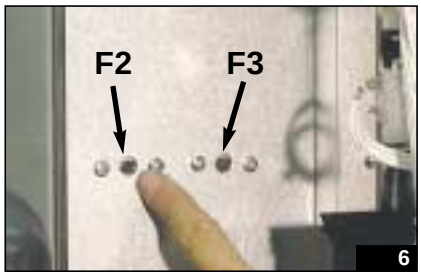

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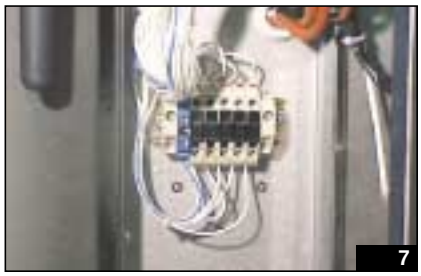
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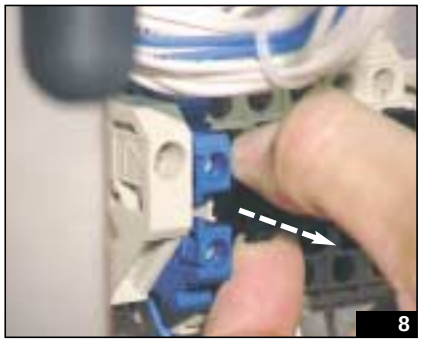
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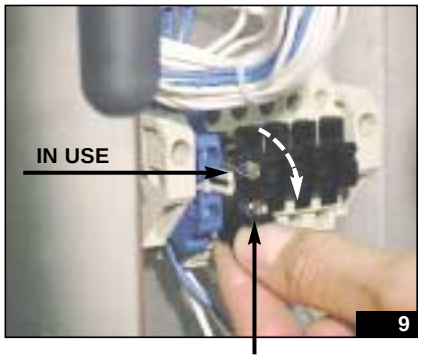

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13.2 Resetting the oven/boiler safety thermostat Replacing the fuses - Resetting the motor thermal cut-out

13.2.3 - Resetting the motor thermal cut-outs A1 and A2

On 6-pan versions this operation also enables you to reset the motor thermal cut-out (high-speed A1 and low-speed A2), **both of which are located above the 2 safety thermostats F2 and F3.**

On all other versions (10, 20 and 40 pan) the cut-out must be reset by removing the right-hand side panel and pressing the blue button (fig. 12-14).

To reset the motor thermal cut-out, press the blue button (reset). You will hear a click, which means that the thermal cut-out has been reset (see section 5.6).


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13.3 Example of water solenoid valve replacement

Tools needed:

- pliers
- 30 mm wrench
- 10 mm wrench (for pressing the conduit sealing joint)


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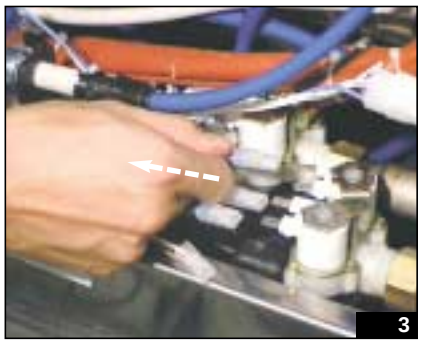
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Before starting any operation, switch off the electrical power to the appliance and turn off the water supply. Carefully follow the various phases set out below.

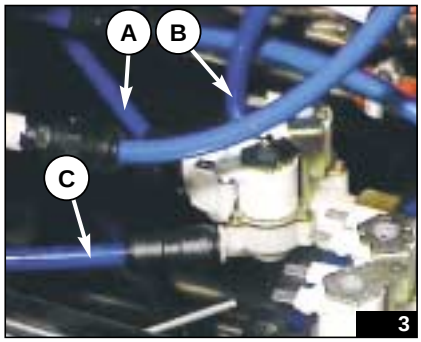
1st phase: disconnect the electrical wires that supply the various coils (noting the position of the wires for the purpose of reconnection) (fig. 3-4).

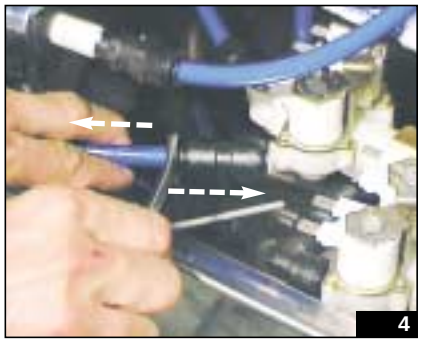
13.3 Example of water solenoid valve replacement

2nd phase: Disconnect the 3 plastic conduits from the solenoid valve outputs. In sequence: (fig. 3-4)

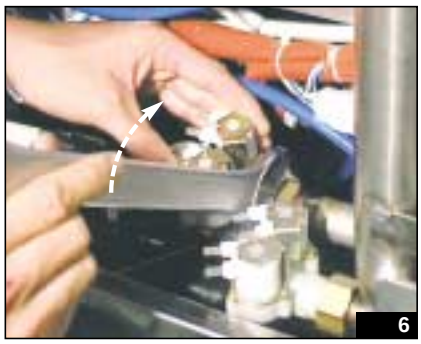
A) Steam condensation conduit
B) Spray conduit
C) Oven washing conduit

Press the sealing washer round its full perimeter and forwards at the same time, and pull out the conduit (fig. 4).





3rd phase: Once you have removed the 3 plastic conduits, slacken the solenoid water input brass nut by turning it anticlockwise with the 30 mm wrench, so that you can completely remove the water solenoid valve three-way unit (fig. 5-6). This example describes the procedure for removing the oven washing steam condensation solenoid valve (normal mains water intake).



4th phase: Remove the solenoid valve water intake filter and clean it (fig. 7-9).

5th phase: To refit, proceed as above, taking care that you have first cleaned the solenoid valve water intake filter thoroughly.
Also reconnect in the correct sequence the plastic conduits on the 3 solenoid valve outputs (previously identified) (fig. 3-4).

This done, check that no water leaks from the valve casing and that the plastic water conduits are inserted as far as they will go, into the black plastic sealing joint.

Note: To activate the steam condensation solenoid valve manually, in order to check its seal, it is possible, on the T version, to activate the SERVICE program, relay No. 12 (see section
7.17).

13.4 Removing the cavity vent motor (and correct position adjustment if applicable)

Tools needed:

- Scissors
- 7 mm wrench
- Cross-head screwdriver

The operation described below is for replacing the vent motor and/or checking that it is correctly positioned/fixed.
It is therefore necessary to ensure that the physical position of the vent cap corresponds with the indicator light on the manual open/close vent button on the control panel:

- **button illuminated:** vent open (fig. 3)
- **button flashing:** vent moving (fig. 4)
- **button OFF:** vent closed (fig. 5)

1st phase: Disconnect the oven vent wires, noting the position of the electrical connections (fig. 6-15).

2nd phase: Slacken the cross-head screw A with the cross-head screwdriver (it is the screw nearest the motor casing): take care not to unscrew screw B (fig. 7).

3rd phase: With the same cross-head screwdriver, unscrew the 2 screws (top and bottom) fixing the vent motor to the steel flange, taking care not to lose the two rear fixing nuts
(fig. 8-9).

4th phase: Slide the motor out of its seat (fig. 10).

5th phase: Once you have removed the motor, check that the vent cap turns freely and unimpeded and that it is perfectly lined up with the internal cap cam; otherwise, obstructed rotation can damage the vent motor
(fig. 11).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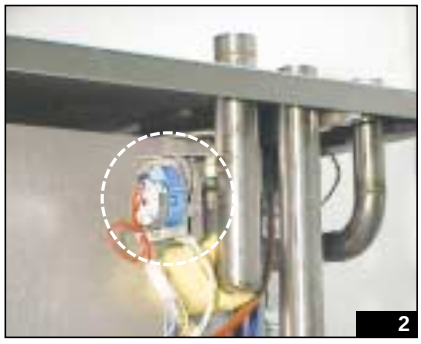
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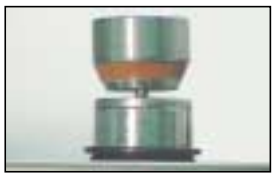
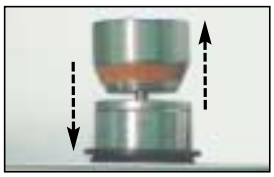
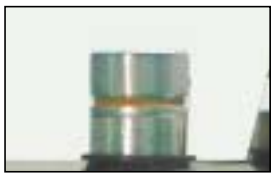
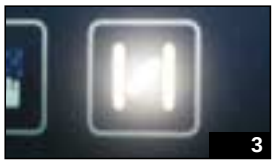
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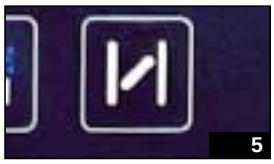
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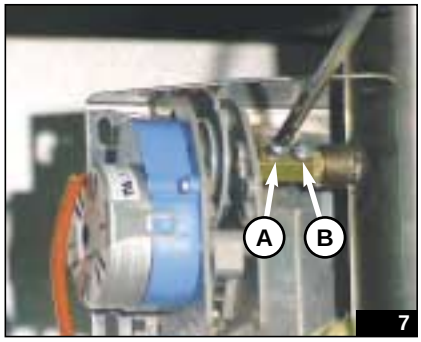

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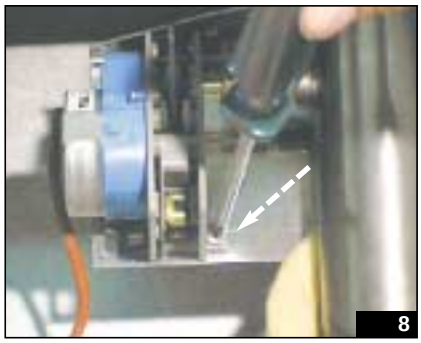
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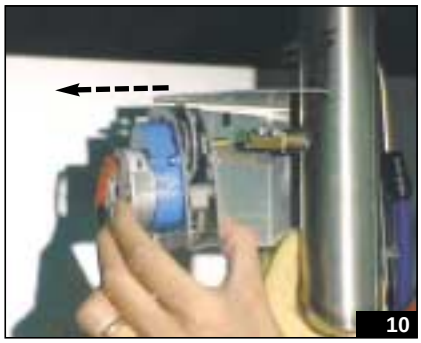
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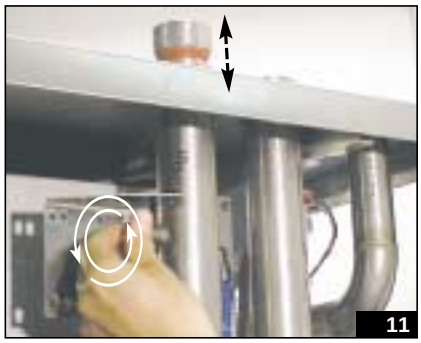
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13.4 Removing the oven vent motor (and correct position adjustment if applicable)

6th phase: Fit and align the new vent motor.

This is essential to ensure perfect rotation. The axis of the vent motor must be perfectly in line with the axis of the internal vent cap cam (fig. 12).

7th phase: Fix the vent motor to the steel flange by tightening the 2 screws (top and bottom) (fig. 13) manually, making sure that its position is aligned. Then fasten the two screws with the screwdriver, and check that the alignment is still correct. Do not fasten screw A.

8th phase: Reconnect the new motor NO cable in the center of the 3 contacts, and common connection C at the bottom of the 3 contacts; this leaves the NC contact free (fig. 14-15).

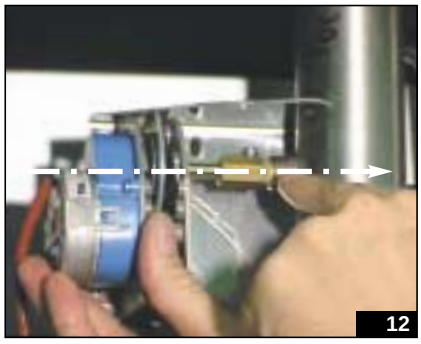
9th phase: Check that the vent cap is positioned correctly. Switch the appliance on with the ON-OFF switch. The vent button will start flashing automatically. Wait until the button illuminates steadily, showing that the vent is open (fig. 16).

10th phase: Turn the brass joint until the vent cap is open to maximum (fig. 17).

11th phase: Fasten screw A with the cross-head screwdriver so as to fix the vent motor spindle (fig. 18).

12th phase: Press the VENT button and the vent should CLOSE (button light OFF) (fig. 19-20).

Only by carrying out this last step can you be certain that the vent responds correctly to the control.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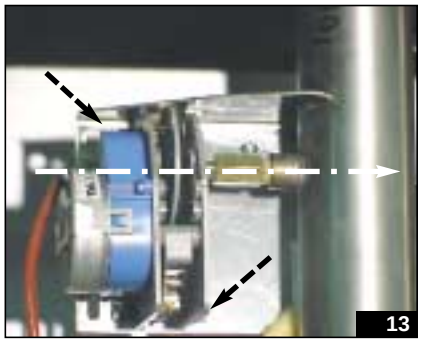
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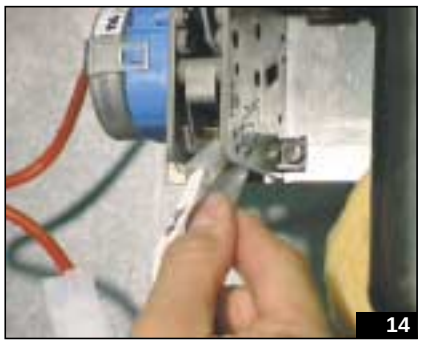
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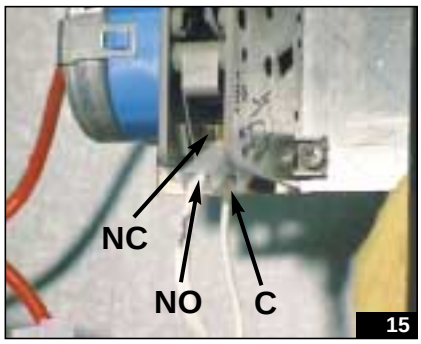

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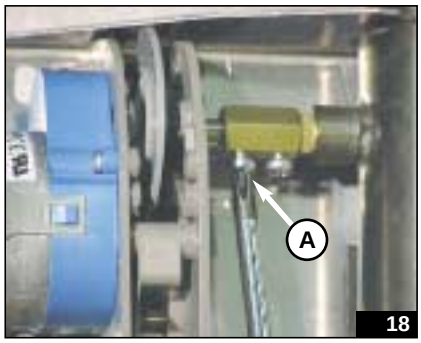

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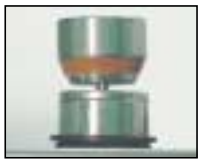

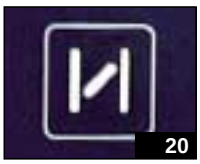
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13.5 Door lock adjustment

Tools needed::

- 7 mm wrench
- 13 and 14 mm wrench

Door closure can be adjusted at three points: bottom LH side hinge, top LH adjustable hinge and RH closure catch.

First remove the LH side panel from the oven (fig. 2-3).

To adjust the LH side of the door, slacken the top hinge nut by turning it anticlockwise and then move the door closer or further away by moving the grooved top bushing (fig. 4-5).

To adjust the bottom LH corner, if necessary, move the bottom hinge (fig. 6).

The door must be at a uniform distance along its full vertical length of about 15 mm from the oven chamber (fig. 7).

It is not advisable to go below the indicated distance of 15 mm, as this could make it difficult to close the door during the cooking phases.

Fasten the fixing nuts with the 10 mm wrench (fig. 6) and, if necessary, adjust the catch on the right to prevent steam from escaping during cooking (fig. 8-9).

The catch can be moved up and down or tightened (by 360°, one full turn on its seat) or slackened (by 360°, one full turn on its seat) so as to move the door closer to or further from the front sealing gasket (fig. 10-11). The catch can be fixed with a 13 and a 14 mm wrench, making certain that its closure seat is perfectly fitted at the bottom (fig. 12).


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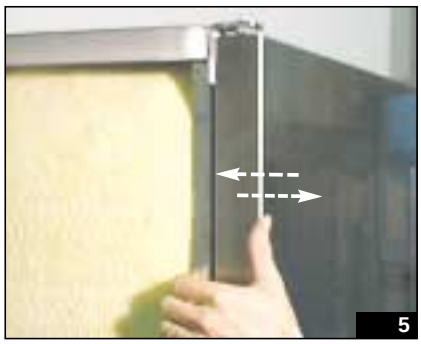
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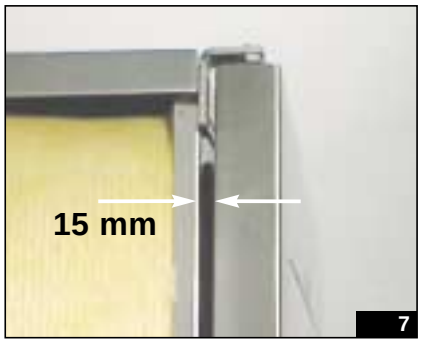

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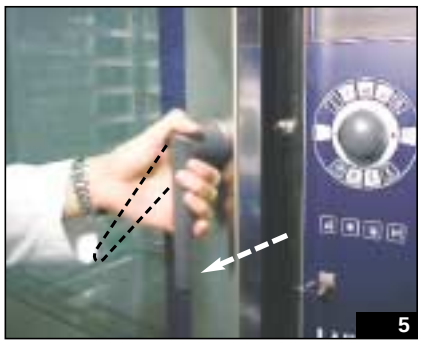
13.6 Two steps locking mechanism

The alternative to the single step closure (standard) is the two steps closure catch (optional), which enables the door to be opened in two stages (fig. 1).

Turn the handle to the right (fig. 2-3). The door locks so as to allow steam to escape. Wait for a few seconds (fig. 4). Turn the handle to the left so as to allow the door to open fully (fig. 5).



13.7 Replacing the door lights and cleaning the interior door glass

Tools needed:

- screwdriver

Open the interior door glass by pressing the two latches at the top and bottom left hand side, in the direction of the arrow see (fig. 2).

Open the glass like a book, to an aperture of 90°.


1

Unscrew the 4 screws fixing the lamp protectors, taking care not to drop the tempered glass of the lamp, which acts as a protector

(fig. 3-4). Check / replace the faulty lamp.

During fitting, make certain that the lamp seal fits tightly so as to ensure that the lamp body is properly sealed.

Avoid tightening the screws too vigorously, as this could break the lamp protector glass.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<u>Do not touch halogen lamps with your bare hands.</u>

Before fastening the interior protection glass, carefully clean the glass panels of the door.

The lighting supply circuit is activated by contact A located on the door and contact B located in the bottom left of the oven (fig. 6).

To make the lights work, at least one of the two spring contacts of A must press against the fixed contact B.

Make certain that the contacts are clean and that the spring contact corresponds perfectly with the fixed contact. If not, adjust the positions of both by means of the fixing screws.


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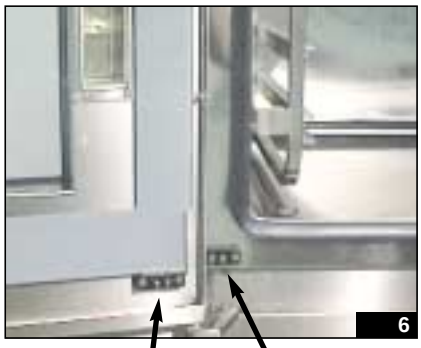
Door open, lights OFF.
Door closed, lights ON.

The lighting cable, insulated in its braiding, passes beneath the oven chamber and its terminal stops at contact B (fig. 7). The door is therefore independent of the electrical connection cable, and can be very easily removed if necessary.



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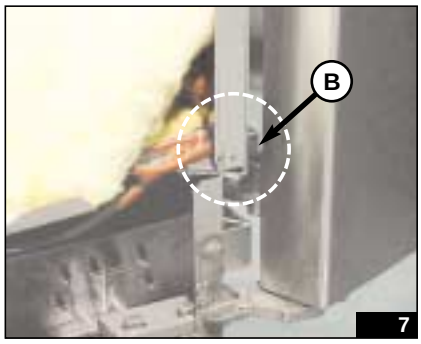

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13.8 Removing/installing the oven sealing gasket

For correct installation of the oven sealing gasket, follow the steps indicated, in order to make sure that the **gasket is fixed smoothly and uniformly** around its whole perimeter.

After removing the gasket, clean all the way round the inside perimeter of its seat, so that no residues are left (fig. 1-2).

Position the 4 corners of the gasket inside the seat by pressing it in with your fingers; then fit the long sides of the gasket uniformly
(fig. 3-4).

The gasket is slightly smaller than the perimeter of its housing , so lay it uniformly along the whole seat in such a way that there are no sections in which it is unevenly stretched or compressed (fig.5).


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To keep the gasket in good condition over time, clean it every day with water and detergent so as to remove any residual dirt or grease.
Thoroughly rinse any trace of detergent from the surface of the gasket, dry it with a cloth and leave the door open.


5

Residues of detergent left on the gasket in contact with the hot door glass cause the gasket and its performance to deteriorate rapidly.

13.9 Combustion fume motor management: CONVECTION, STEAM and COMBI mode

Tools needed:

- Cross-head screwdriver
- 7 mm hex wrench
- Scissors
- 2 mm hex wrench supplied with the replacement part


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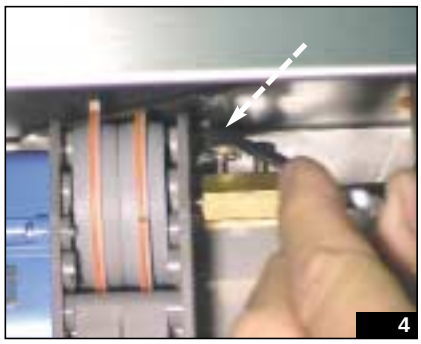
2

Carefully follow the steps set out below for removing, installing and checking the operation of the combustion fume motor (fig. 2).


3


4

1st phase: Disconnect the fume motor electrical connections, noting the position of the wires V3 C2 (LH), V3 C1 (RH), and CAM2 and CAM1 power supply (fig. 3).

2nd phase: Using the 7 mm wrench, unscrew the top inner screw fixing the motor to the transmission shaft (fig. 4).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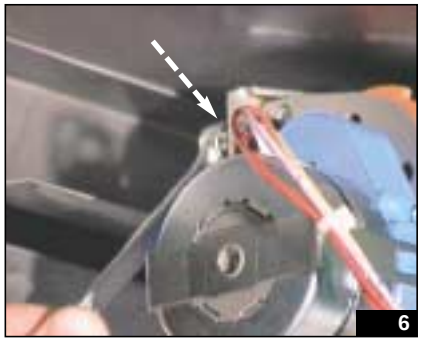
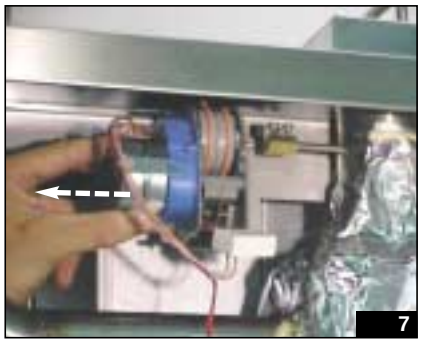

6

3rd phase: Unscrew the screws fixing the motor to the fixing flange, at bottom right and top left (fig. 5-6).

4th phase: Remove the vent motor (by sliding it out to the left) from its fixing flange, taking care not to lose the screws (fig. 7-8).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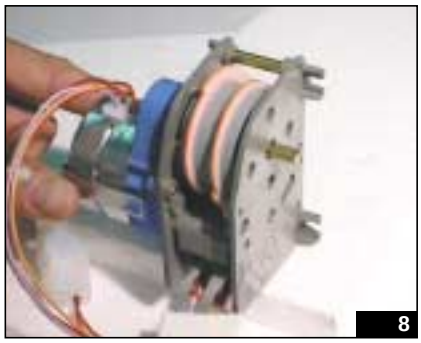
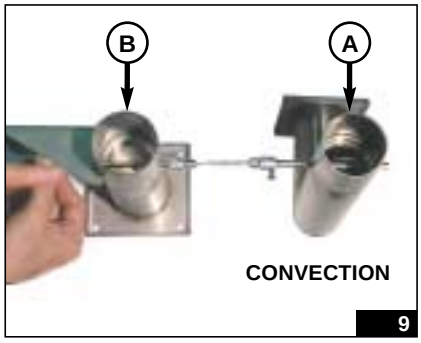

8

Position of the butterfly valves in CONVECTION mode.

In CONVECTION mode, butterfly valve A remains completely open to allow the combustion fumes to flow through; by means of the flexible connection joint, butterfly valve B will be fully closed, thus preventing combustion fumes from escaping from the steam generator (fig. 9).



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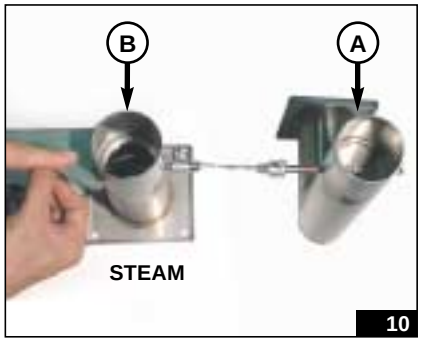


10

Position of the butterfly valves in STEAM mode.

Butterfly valve B is open and butterfly valve A is closed, thus preventing the combustion fumes from passing through the oven exchanger (fig. 10).

13.9 Combustion fume motor management: CONVECTION, STEAM and COMBI mode

5th phase - Cam adjustment:

Faulty motor G - new motor N, supplied as a replacement part, to be adjusted (fig. 11).

1. Position the spindle of motor N horizontally (fig. 12).
2. Bring faulty motor G close to the new motor, and using the plastic hex wrench supplied, adjust the adjustable cams of new motor N, so that they are in the same position as on faulty motor G (fig. 13).

   In order to facilitate correct positioning of the cams that impart rotational movement to the motor for cooking in CONVECTION and STEAM mode, use notch 72 stamped on the grey graduated scale as a reference. Depending on the model, move cam 1 backwards or forwards by 4 or 13 notches and move cam 2 backwards or forwards by 10 or 7 notches (fig. 14-15).

6th phase: Motor N is now suitably adjusted for installation on the appliance.

Fix it with the two screws, taking care that it is properly aligned with the butterfly valve transmission shaft. Using the 7 mm wrench, fasten the top inner screw fixing the motor to the transmission shaft (fig. 16-18).

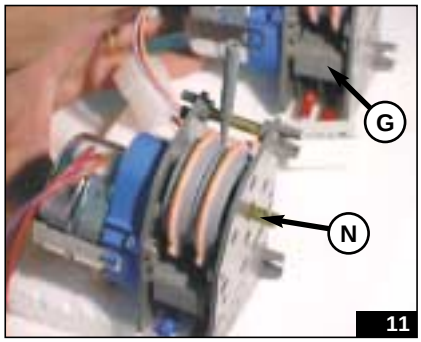
Test manually to make sure that there are no obstructions and that the two butterfly valves on the motor turn freely (fig. 19). Any obstructions must be eliminated, otherwise the butterfly valves will jam in the half open position and compromise correct operation.

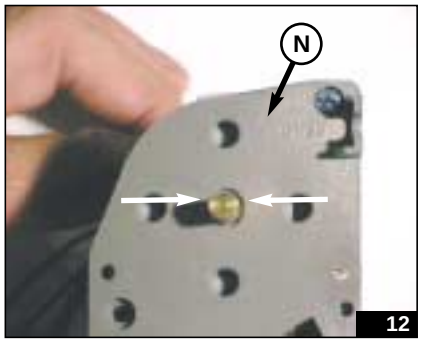
Connect the electrical wiring of the combustion fume motor.

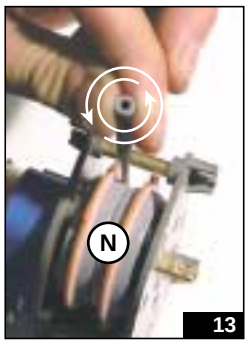
Take care to correctly position wires V3 C2 (LH cam supply common contact next to the motor) and V3 C1 (RH cam supply common contact, which is the outermost of the two) and the RH cam NO terminals (orange wire) and LH cam NO terminals (purple wire) in parallel with the condenser

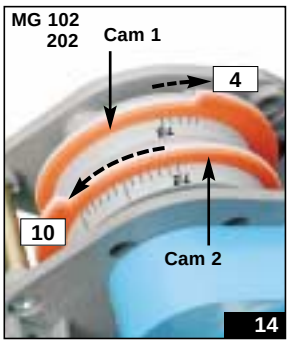
(fig. 20-21).

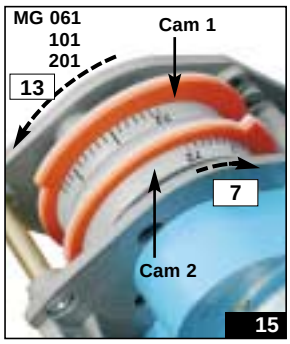
It may then be necessary to fine tune adjustable cams 1 and 2 by running the vent motor electrically by means of the SERVICE program (“relay 9”) on the T version, or by selecting convection and steam modes for the remaining MH/P versions.

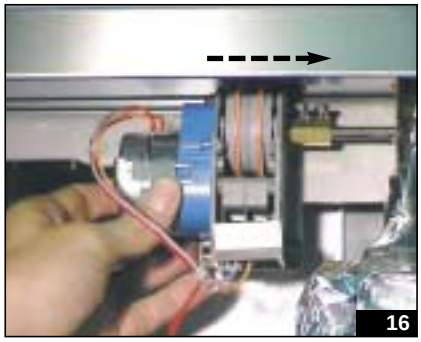


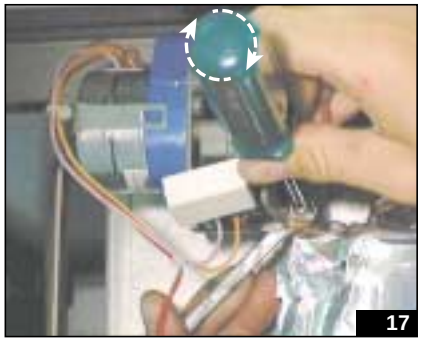


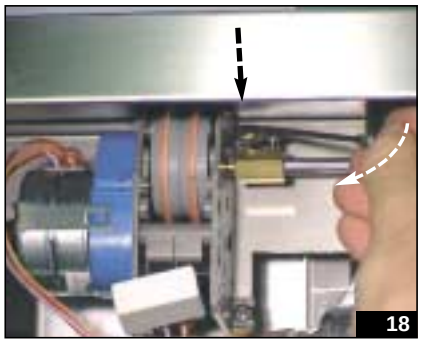


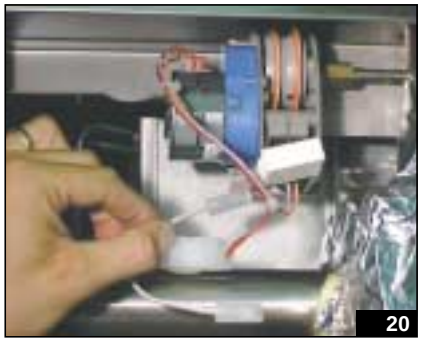


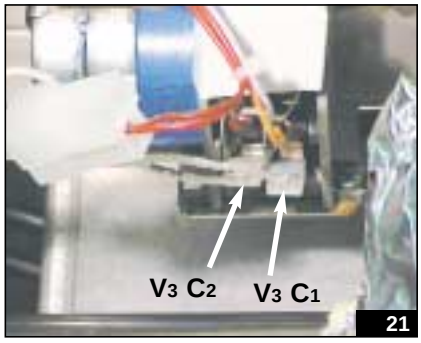












13.9 Combustion fume motor management: CONVECTION, STEAM and COMBI mode

Procedure to follow for T version:

Go into the SERVICE program from the control panel for operating "relay 9", which manages the position of the combustion fume vent.

1. Switch the appliance off with the ON/OFF button (fig. 20).
2. Press PLUS. The word ***"DATE" flashes on the display.*** Turn the scroller until the word ***"SERVICE"*** appears, then press ENTER. The word ***"PASSWORD"*** appears (fig. 21-24).
3. Use the scroller to enter the password ***"123"*** and press ENTER to confirm (fig. 25).
4. At this point the message ***"REL 1"*** flashes on the display. Turn the scroller to the right, until you find ***"REL 9"*** (fig. 26).
5. Press START/STOP to operate the vent motor manually (fig. 27-28).

6. Then check that:
   START/STOP LED "OFF" = boiler butterfly valve closed, **CONVECTION MODE** (fig. 27-29)
   START/STOP LED "ON" = boiler butterfly valve open, **STEAM MODE** (fig. 30-32)

<u>IMPORTANT:</u> If the CAMS have been adjusted correctly, the motor should stop as soon as the butterfly valve has reached the OPEN or CLOSED position. From the side of the motor, check that the rotating spindle stops. Adjust the adjustable cams so as not to damage the fume motor (fig. 34).

To exit the SERVICE program press ENTER and then PLUS, which switches off the activated function (fig. 35-36).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CONVECTION
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CONVECTION
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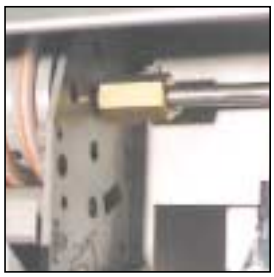
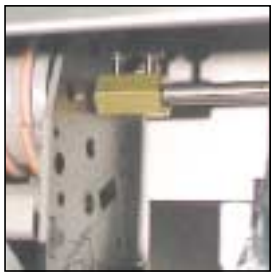
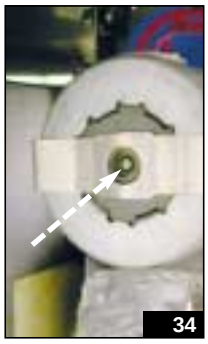

CONVECTION
29


STEAM
30


STEAM
31


STEAM
32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13.10 Replacing the card component cooling motor and correct fixing

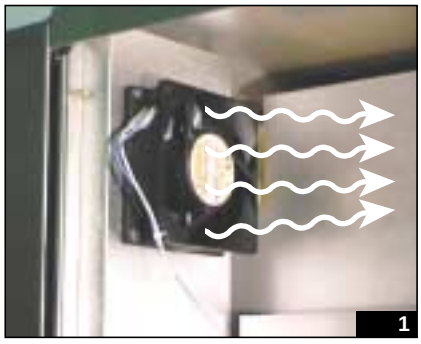
Tools needed::

- 4 mm screwdriver

Unscrew the 4 screws fixing the component cooling motor. Disconnect the electrical wiring and remove the motor (fig. 2/3).

Position the new motor in accordance with the direction of installation: note the arrow on the motor casing, which indicates the direction of air flow (fig. 4).

Once you have fitted the motor with the 4 fixing screws and reconnected the electrical wiring, check that the air flows out in the direction of the electrical components (fig. 1).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13.11 Replacing the appliance back cooling motor and correct fixing

Tools needed:

- 4 mm dwarf screwdriver to facilitate reaching the screws

Unscrew the 4 screws fixing the cooling motor to the back of the appliance.

Disconnect the electrical wiring and remove the motor (fig. 1-2).

Position the new motor in accordance with the direction of installation: note the arrow on the motor casing, which indicates the direction of air flow (fig. 3).

Once you have fitted the motor with the 4 fixing screws and reconnected the electrical wiring, check that the air flows out downwards and towards the outside of the appliance (fig. 4).


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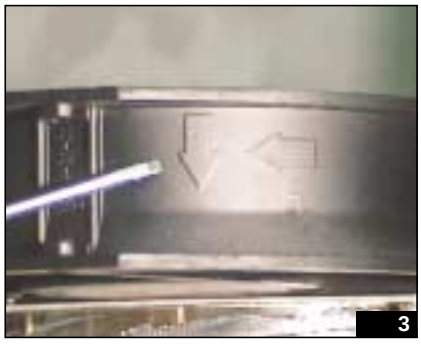
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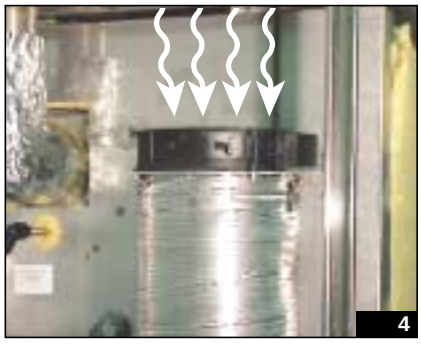
4

13.12 Inspecting the oven drain outlet

Tools needed:

- 8 mm T-wrench

Using an 8 mm T-wrench, unscrew the 3 screws fixing the triangular rear flange, so that it is possible to inspect the oven drain outlet
(fig. 1-2). Any residues of dirt must be removed through the circular inspection hole (fig. 3).
When refitting the flange, make certain that the seal holds evenly.


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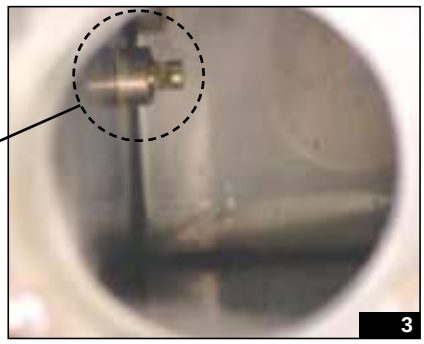


3

NOTES

14.0 MAJOR SERVICING

14.1 Motor removal and fan replacement

Tools needed:

- screwdriver (A)
- 8 mm T-wrench (B)
- 10 mm T-wrench (C)
- socket wrench (D)
- 17, 19, 24 mm socket wrenches (E)
- fan puller (F)

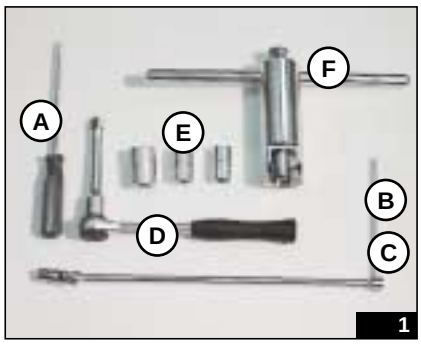
The sequence illustrated describes how to remove the interior oven fan and subsequently replace the motor located outside the oven.

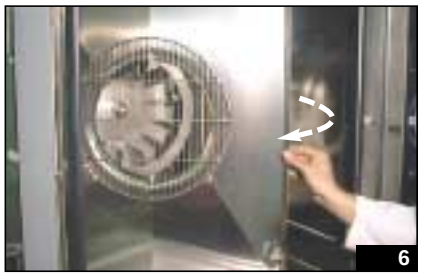
Particular attention must be paid to centering the motor spindle and replacing the motor gasket. The latter is supplied in the replacement “motor kit”.

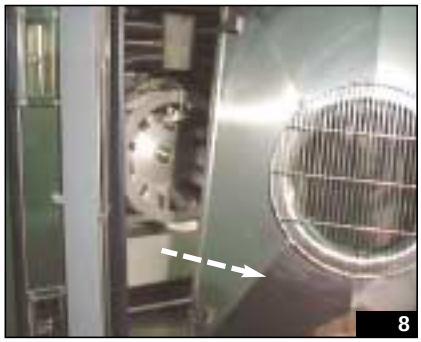
1st phase: Remove the 2 grid supports (RH and LH) from inside the oven
(fig. 3).

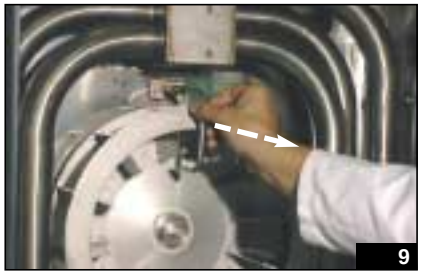
2nd phase: Using a screwdriver or a coin, unscrew the two deflector fixing screws (top and bottom), open the deflector by about 45° and then lift it upwards to release and then extract it (fig. 4-8).

3rd phase: Remove the humidity injection tube from inside the oven (fig. 9).









14.1 Motor removal and fan replacement

4th phase: Using the 10 mm T-wrench unscrew the center screw of the motor spindle **by turning it anti-clockwise**, and then extract it (fig. 12).


12


13

5th phase: Using the 19 mm T-wrench, unscrew the motor spindle screw by turning it **clockwise** (NB the screw has a left-hand thread) and remove it (fig. 13-14). Avoid forcing the fan blades as this could affect their balance.


14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6th phase: Insert the motor fan puller, and using the 24 mm wrench to turn the central pin of the puller, remove the fan.

If removal is difficult, heat the motor spindle (fig. 15-18).


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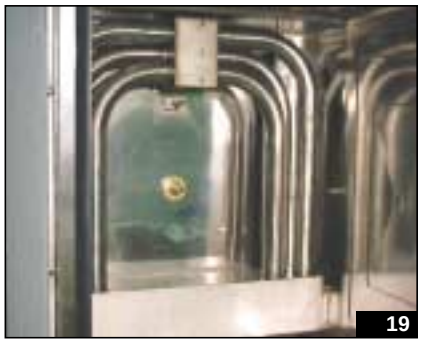
19

7th phase: Using the 8 mm T-wrench, unscrew the 3 screws securing the flange inside the oven, which hold the important motor seal (fig. 19-20).


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21

14.1 Motor removal and fan replacement

8th phase: Remove the inner sealing gasket, which must be replaced with the new one supplied as a replacement part.

The motor gasket must be replaced when worn and every time the oven motor is removed. Take care to install it in the right direction. The cable side with the inner spring must not be visible to the operator (fig. 22-23).


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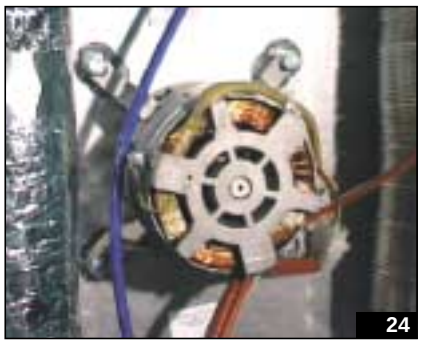
9th phase: Disconnect the motor power supply cable (fig. 24-25).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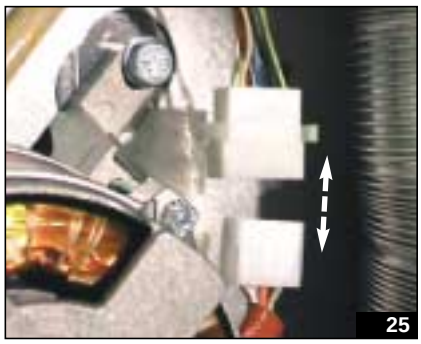
25

10th phase: Using the 17 mm socket wrench, unscrew the 4 screws fixing the motor to the oven chamber, taking care not to lose the washers, which act as a spacer between the motor arm and the oven chamber (fig. 26-29).


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14.2 Motor installation and centering

1st phase: Position the new motor in its seat, making sure that it is correctly centered.

Insert the 4 screws and washers, in diagonally opposite sequence (fig. 1/2).


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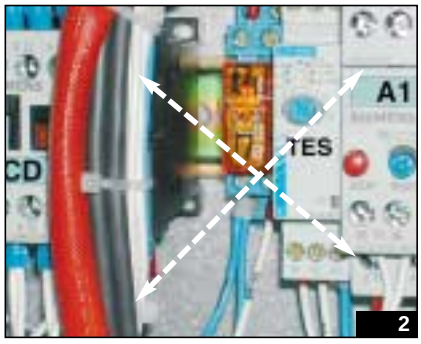

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2nd phase: Tighten the 4 screws manually (fig. 3).


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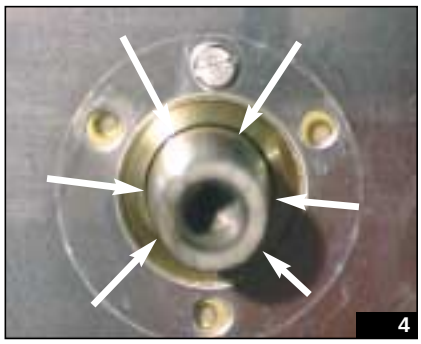
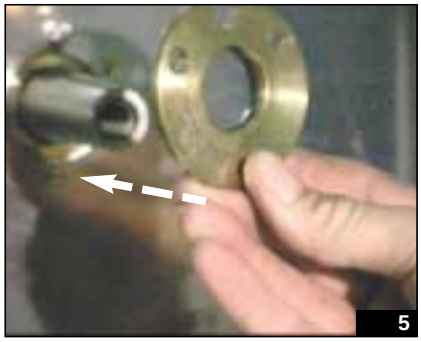
3rd phase: Check that the motor spindle is correctly centered inside the oven in relation to the brass flange fixed with the three screws (8 mm wrench). The motor spindle must be equidistant from the flange along its full perimeter (fig. 4).


4

4th phase: Position the brass flange with the new motor spindle gasket (fig. 6).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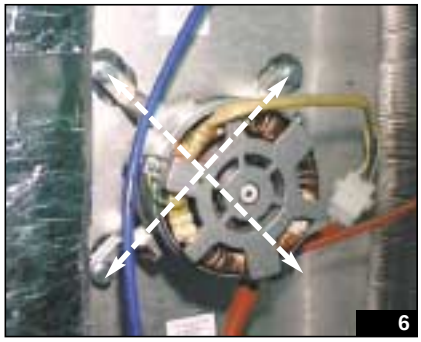
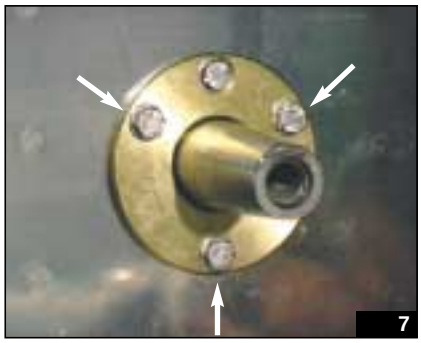
5th phase: After centering the motor, fasten the 4 screws in diagonally opposite sequence, and check manually that the motor spindle turns freely (fig. 5).

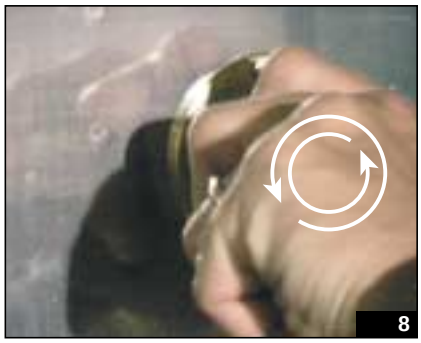

6

6th phase: Using the 8 mm T-wrench, insert the 3 flange fixing screws, and check manually that the motor spindle turns freely (fig. 7/8).


7

7th phase: Insert the fan, and fasten it with the inner screw using the 19 mm socket wrench.

Turn anticlockwise to fasten, taking care not to exert pressure on the fan blades (fig. 9/10).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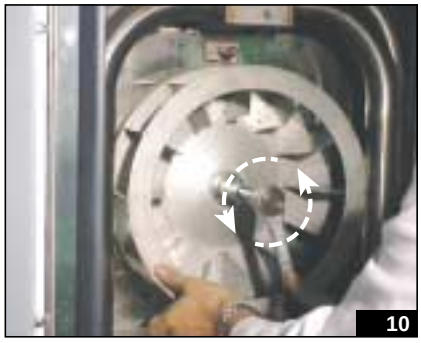
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14.2 Motor installation and centering

8th phase: Insert the outer screw of the motor spindle, and fasten by turning clockwise with the 10 mm T-wrench
(fig. 11-12).

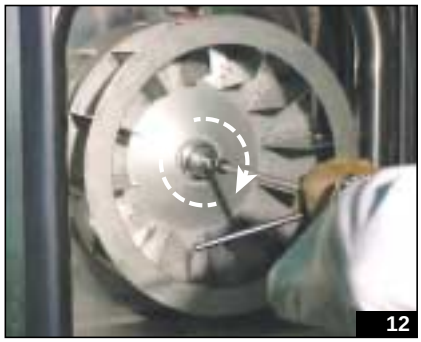
9th phase: Firmly fasten the inner motor spindle screw (anticlockwise with the 19 mm socket wrench) and the outer motor spindle screw (clockwise with the 10 mm T-wrench) (fig. 10 and 12).

10th phase: Insert the vaporized water injection tube in the oven (fig. 13).

11th phase: Fit the deflector by inserting it at 45 °, first in the top hinge pin then in the bottom hinge pin (fig. 14-15).
Then secure the deflector by tightening the top and bottom screws.

12th phase: Fit the 2 grid supports (RH and LH) in the oven, by inserting first the back and then the front of the support, and pushing downwards to fix them (fig. 16-17).


11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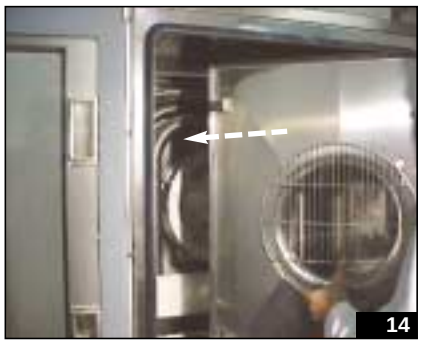
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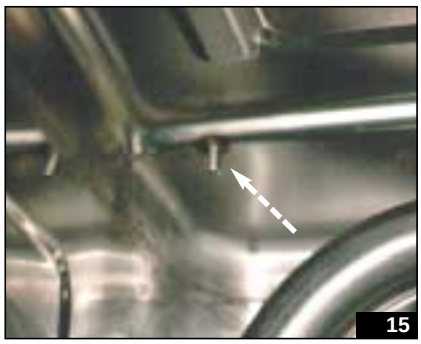
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14.3 Electronic card replacement/installation

The example refers to installation of the T card, but the procedure is the same for H/P versions.

Tools needed:

- 8 mm wrench or 8 mm screwdriver
- 7 mm screwdriver
- 11 mm wrench

Before starting any maintenance operation, switch off the electrical power upstream of the appliance with the main switch.

The electronic card is housed inside the front control panel of the oven.

Then proceed as described below.

Using the 8 mm wrench, unscrew the 2 bottom screws of the control panel (fig. 2).

Move the control panel downwards, extract it, turn it through 90° and clip it into its slot (fig. 3-8).

Manually disconnect the electronic card connections (fig. 9-10).

Unscrew the terminals of the green connector for the door microswitch wires so as to release the control panel completely (fig. 11-13).


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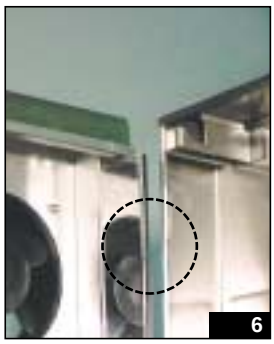
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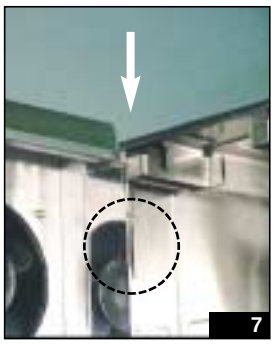
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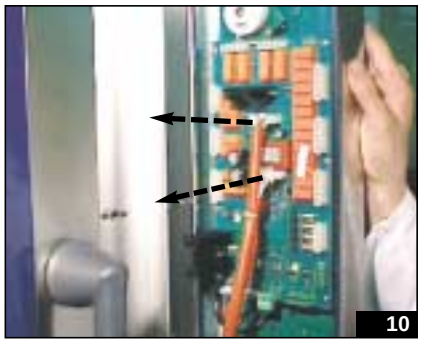
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14.3 Electronic card replacement/installation

Lift the control panel and remove it from its location
(fig. 14).


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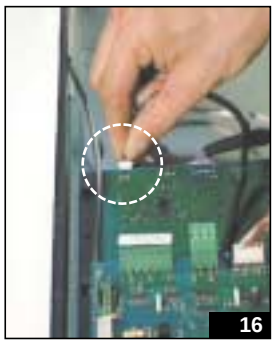
Now that the control panel is free from any obstructions, lay it on a flat surface to facilitate replacement of the electronic card.

Remove the clips from around the core probe cable and the front card and main card communication cable (fig. 15).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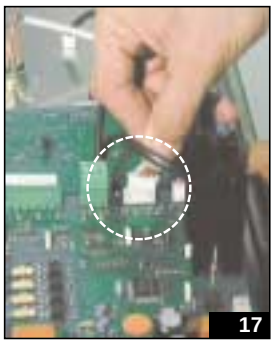
Disconnect the connecting wire of the encoder “ENC” (fig. 16).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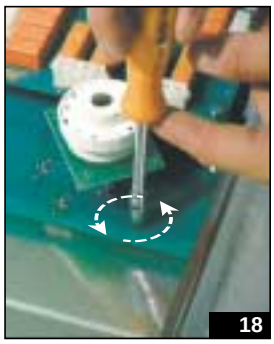
Disconnect the “CORE PROBE” connection cables (fig. 17).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Using the 7 mm screwdriver, unscrew the 10 self-locking nuts around the perimeter of the card (fig. 18).


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Gently lift the electronic card, taking care to ease the encoder cable through (fig. 19).


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Should it be necessary to replace the encoder too, remove the scroller knob, unscrew its fixing nut and remove the encoder (fig. 20-23).


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To fit the new electronic card, proceed as follows.

Place the original rubber spacers on the 10 stud bolts (fig. 24).

Make certain that the encoder is fixed securely to the control panel (fig. 25-26).


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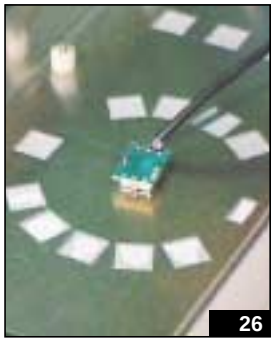
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14.3 Electronic card replacement/installation

Insert the encoder knob if applicable, and fit the new electronic card, taking care not to damage the buttons during installation (fig. 27-28).

Fix the card, by gradually and evenly tightening the 10 self-locking nuts, so that the electronic card is uniformly aligned with the control panel, and is not deformed in any way.

Fasten the nuts with the 7 mm screwdriver, while at the same time testing the buttons on the front panel: they must be uniformly responsive to contact (fig. 29-30).

Connect the core probe cable connection to the CORE-PROBE socket (fig. 31).

Connect the encoder connection cable to the ENC socket (fig. 32). Fix the front and main card communication cable with 2 clips (fig. 33).

Fit the control panel onto the appliance, holding it open at 90° (fig. 34).

Connect the male connections to the electronic card in sequence, taking particular care that the numbers stamped on the cables correspond with the numbers stamped on the card. Make sure that all the connectors are plugged in properly and the wiring is laid out correctly (fig. 35-36).

Lift the control panel up, so as to release it from the fittings.

Turn it through 90°, bring it nearer to the oven chamber, and press upwards so that the two top fittings engage with the top of the panel.

Push upwards, insert the two bottom fixing screws, and fasten with the 8 mm wrench so that the control panel is correctly aligned and equidistant from the edge of the door (fig. 37).

<u>WARNING:</u> once you have fixed the electronic card, set the programmable parameters as described in the relevant instructions (section 7.19 and 8.13).


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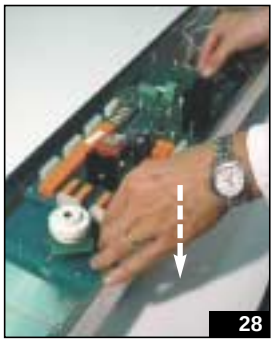
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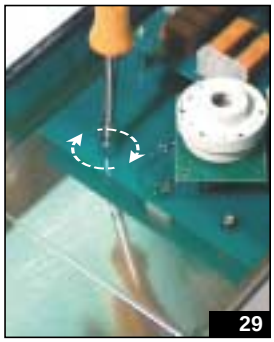
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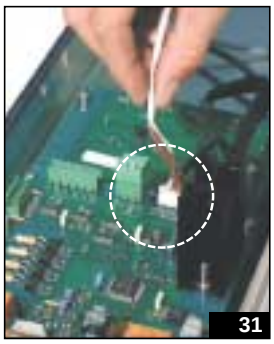
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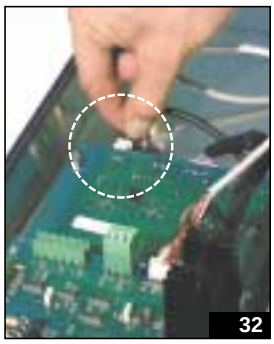
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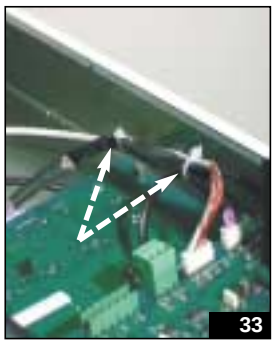
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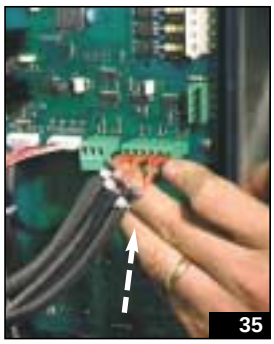
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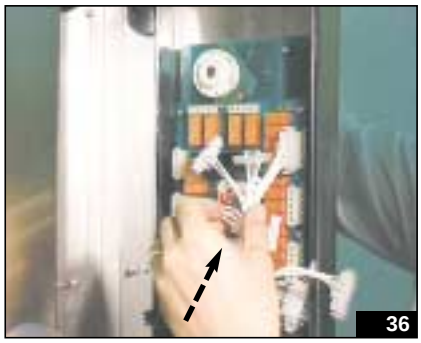
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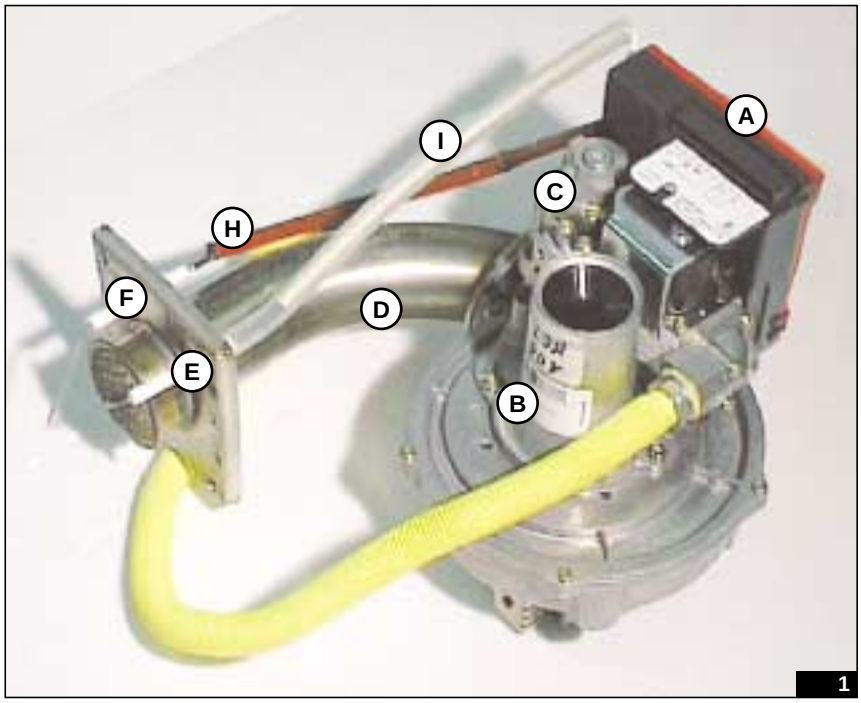
14.4 Burner unit

Burner unit consisting of:

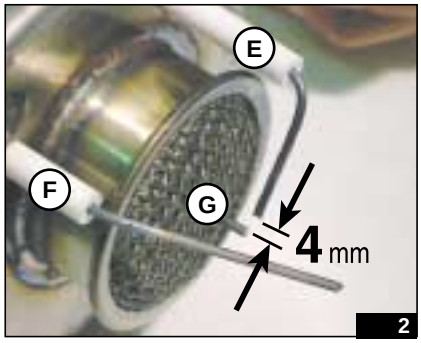
- ignition panel (A)
- Venturi unit (B)
- gas valve (C)
- burner (D)
- ignition spark plug (E)
- flame detection spark plug (F)
- central electrode (G) (which must be at a distance of 4 mm from the ignition spark plugs)
- ignition wires (H)
- flame detection wire (I)



IMPORTANT: in order to ensure correct burner ignition, check the following.

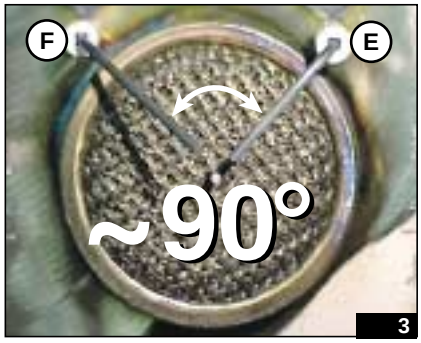
Central ignition discharge electrode G: the tip of the electrode must NOT be burred; make sure that the mesh of the burner head around the electrode is well distributed so as to ensure the free passage of gas, as for the remaining area.

The tip of the electrode must project above the burner mesh by about 5-6 mm.



The ignition spark plug E must be at a distance of 4 mm from the central ignition discharge electrode.

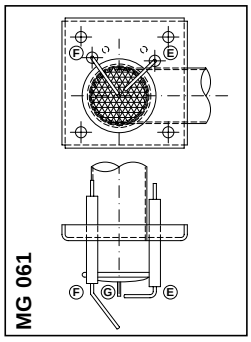
The end of the spark plug must therefore be positioned next to the central ignition discharge electrode so as to allow a discharge arc across the flow of gas from the burner.

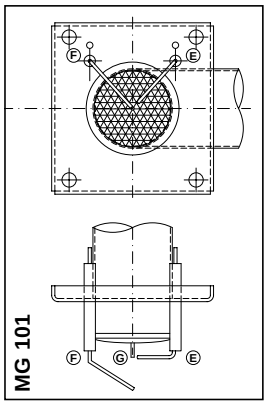


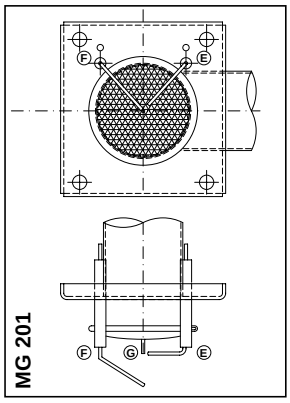
The flame detection spark plug F is located at 90 degrees with respect to the ignition spark plug, at a distance of about 30 mm from the burner mesh.

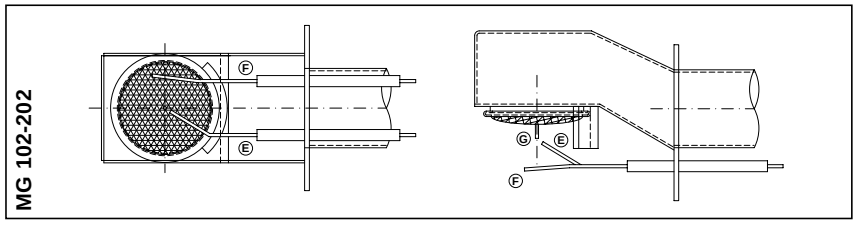
This distance does not need to be within millimetric tolerances, in view of the function performed by the sensor (flame presence detector sensor).

The end can be reduced in length towards the outer crown in order to avoid excessive contact with the flame. The example in the photo shows the burner unit of model MG 101.









14.5 Burner removal

Tools needed:

- 10 mm T-wrench
- T25 Torks wrench
- 3 mm screwdriver
- 7 mm screwdriver
- gauge
- 14 mm wrench
- 24 mm wrench
- brass ring for adapting new supply from methane gas to LPG (fig. 2).

To carry out this operation, adhere strictly to the sequence described below.

For models on which it is present, unscrew the screw fixing the clip around the burner air intake hose (fig. 3-4).

Using the 14 mm wrench and the 24 mm wrench unscrew the flexible gas nut on the gas input tube, taking care not to lose the copper sealing gasket (fig. 5-6).

Disconnect the burner ignition panel connector comb, disconnect the gas valve earth cable and disconnect the burner fan supply connector (fig. 7-8).

Using the 10 mm T-wrench, unscrew the 4 brass nuts on the flange fixing the burner to the oven chamber by turning them anticlockwise (fig. 9).

Remove the burner unit very carefully, taking care not to damage the burner ignition and flame detection spark plugs (fig. 10).

For MG 102-201-202 ovens, you are advised to remove the ignition spark plug and the flame detection spark plug fixed to the burner flange before carrying out this operation (7 mm wrench), otherwise the burner cannot be extracted easily.

Check that the burner flange sealing gasket is in good condition and replace if worn (fig. 11).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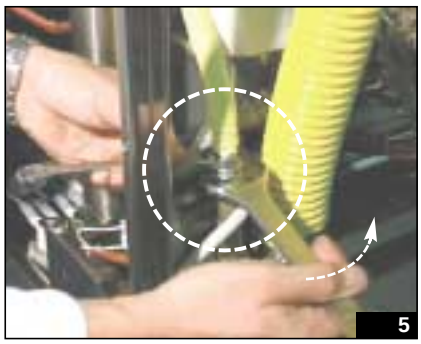
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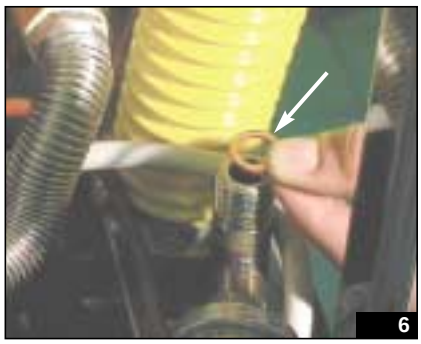
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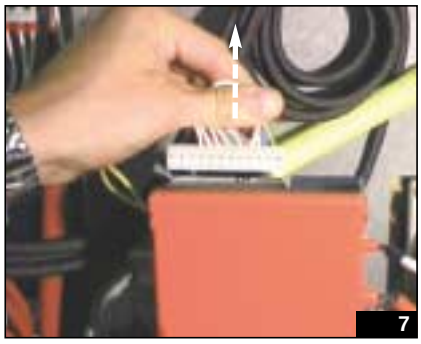
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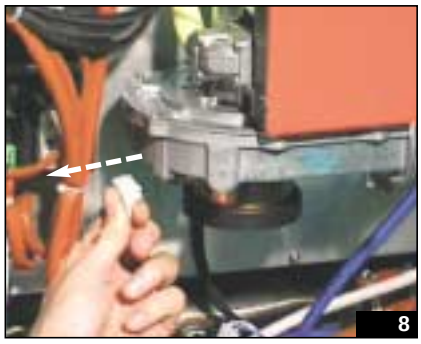
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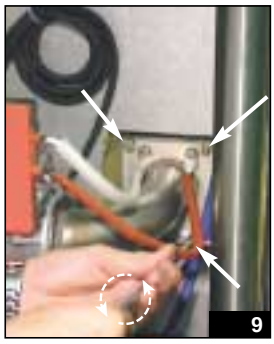
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14.6 Conversion from Natural gas to LPG and vice versa

Gas appliances are commissioned as standard to run on G20 natural gas. Requests for commissioning for different types of gas (e.g. G30/31 liquid gas) must be made at the time of ordering, as the conversion kit is not included with the appliance for safety reasons.

In the event of conversion from G20 natural gas to G30/31 liquid gas, it is imperative to fit the specific ring for the model in question (fig. 2 of section 14.5).

This ring, which acts as a gas duct diameter reducer, must be fitted at the gas valve output.

The opposite applies in the case of conversion from G30/31 liquid gas to G20 natural gas: the ring must be removed.

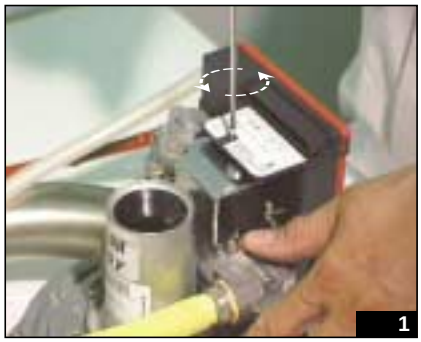
For an overview of the rings used and the different size needed for each model, refer to the technical gas data table (section 16.1).

Procedure:

unscrew the fixing screws and remove the ignition panel Z1.

Using the T25 Torks wrench, unscrew the 3 screws shown, which fix the valve to the Venturi unit (fig. 1-4).

At this point, the valve is disassembled from the Venturi unit. Remove the black rubber gasket at the gas valve outlet and fit the brass ring inside the gasket (see table 4 in section 16.1 for correct ring). Position the gasket/ring assembly at the gas valve outlet, making sure that it adheres uniformly around the full perimeter of the valve outlet (fig. 5-8).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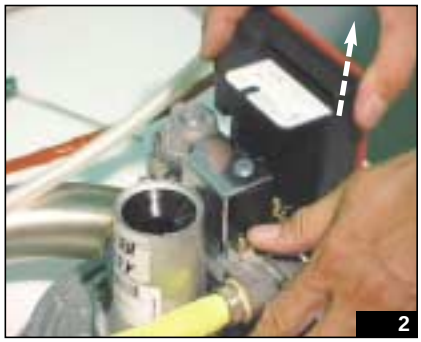
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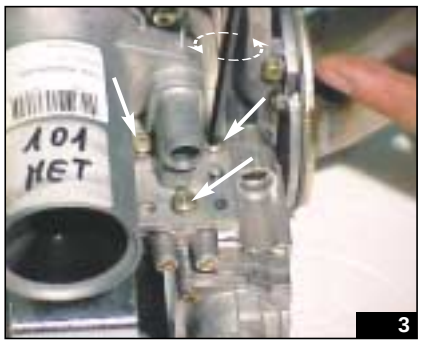

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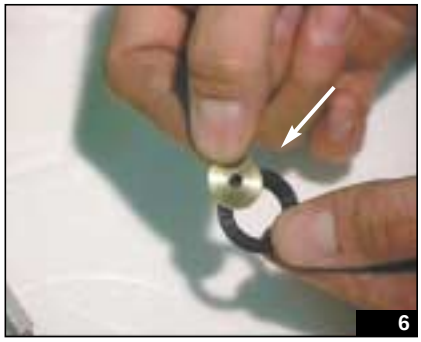
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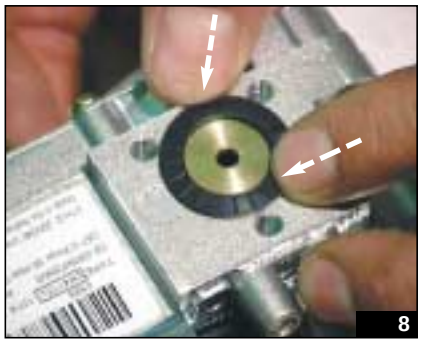
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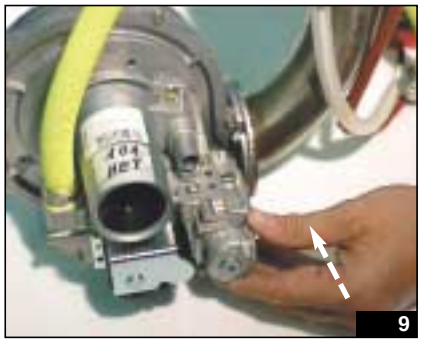
14.6 Conversion from Natural gas to LPG and vice versa

Refit the valve casing to the Venturi unit, taking care not to move the gasket/ring assembly (fig. 9).

Fix the 3 screws manually and then fasten them firmly with the T25 Torks wrench, to ensure that the gas circuit is properly sealed.

Using the 4 mm screwdriver, turn the Mix adjuster screw A anticlockwise until it is at a depth of “x” mm (see table 4 heading “Mix mm” in section 16.1) (fig. 10).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Take the measurement from the head of the screw to the end of the cylinder shown in the figure (fig. 11).

Example: MG 101 with G30/31liquid gas - depth of Mix adjuster screw A = 11.0 mm (fig. 12-13) cat.II 2H3+(IT).


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Reposition the ignition panel, ensuring that all the lower connections of the gas valve coincide, then fasten the sealing screw (fig. 14).


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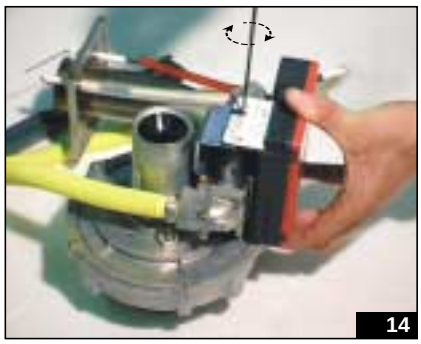
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For conversion from G30/31 LPG to G20 natural gas, follow the same instructions, but removing the ring described above.

Adjust the Mix screw A in accordance with data set out in the G20 methane gas column of table 4 (section 16.1).


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14.7 Burner installation

To carry out this operation, adhere strictly to the sequence described below.

Insert the burner casing with extreme care, making sure that the burner flange adheres to the oven chamber (fig. 1).

Manually position the 4 washers and the 4 brass fastening nuts, and fully tighten the 4 nuts with the 10 mm T-wrench (fig. 2).

Securely fasten the 4 brass screws in diagonally opposite sequence, to ensure that the gas circuit is properly sealed (fig. 3). Fix the ignition spark plug and flame detection spark plug for models MG 102-202-201 in the correct position.

Reconnect in the following order:

1. burner ignition connector comb Z1 (push fully home to ensure correct contact) (fig. 4).

2. connect the earth cable to the gas valve (fig. 5).

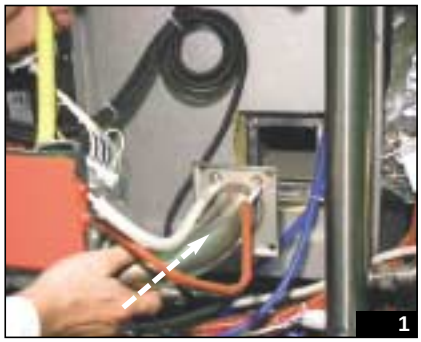
3. connect the gas fan supply cable (fig. 6).

Using the 14 mm wrench and the 24 mm wrench, fix the nut securely to the gas inlet tube. In order to prevent gas leaks from the tube, make sure that the copper sealing gasket is present (fig. 7/8).

If fitted, tighten the screw fastening the clip around the yellow burner air intake hose (fig. 9).

Then check the seal of the gas circuit (with the burner ON) and further tighten, while hot, the brass nuts fixing the burner flange.

Correctly adjust the gas pressure switch according to the type of gas used (see section 10.1).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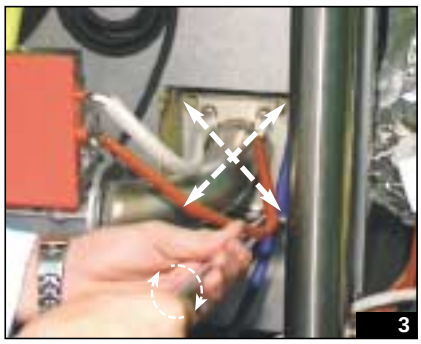
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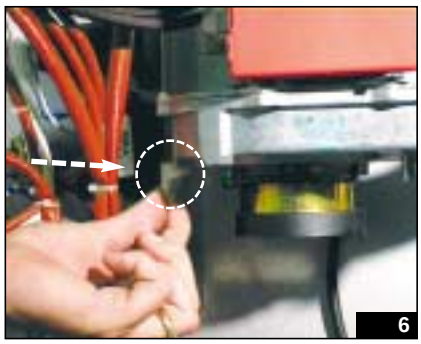
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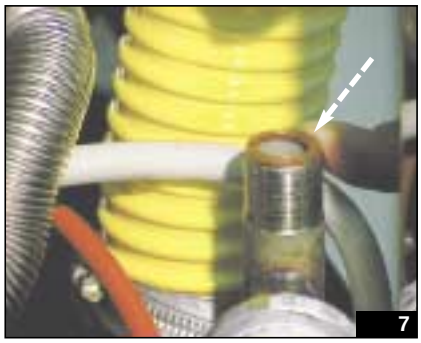
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14.8 Boiler removal and installation

Tools needed:

- 6, 7, 10, 26 and 30 mm wrench
- 8 and 10 mm T-wrench


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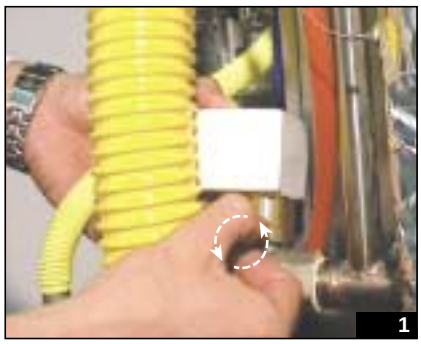
14.8 Boiler removal

Manually unscrew the knurled screw fixing the boiler driven valve and then remove it (fig. 1-2).

Using the 6 mm wrench, set the ball valve to the open position so that the water can drain out of the boiler (fig. 3).

Using the 10 mm wrench, disconnect and remove the boiler safety thermostat (located at the bottom) and the PT100 boiler pre-heating probe (located at the top) (fig. 4-6).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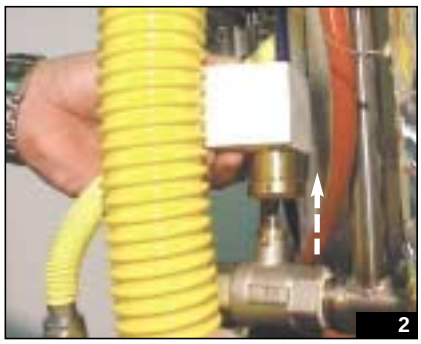
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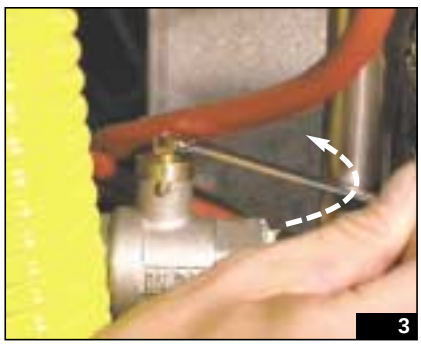
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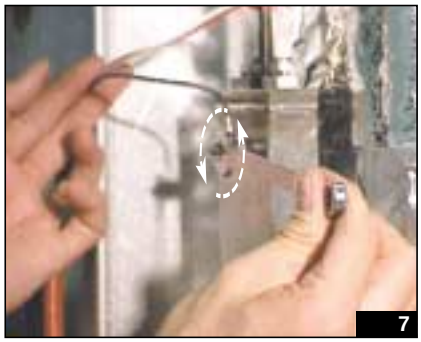
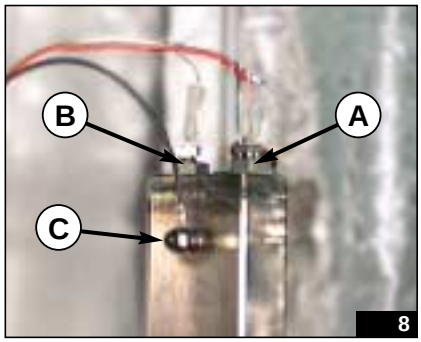
14.8 Boiler removal

Using the same 10 mm wrench, unscrew the bolt fixing the earth wire of level control C, and disconnect the 2 level probes, having first noted their position so as to avoid malfunctions at a later stage (fig. 7-8).

A: “Min lev” alarm probe, red wire B: “Max lev” probe, white wire



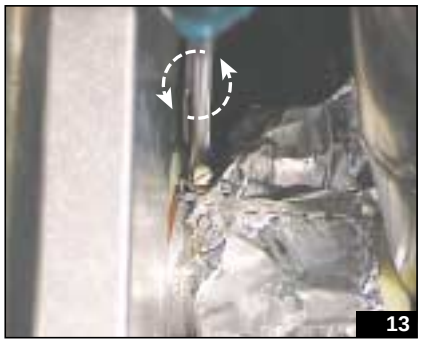


Disconnect the combustion fume motor wiring (see section 13.9), noting the position of the connections (fig. 9).

Unscrew the butterfly valve flexible coupling fixing screw on the oven exchanger fume conduit side (fig. 10-11).

Using the screwdriver, unscrew the clip securing the top of the steam input sleeve (between the oven and the boiler), until the clip turns freely (fig. 12-13).

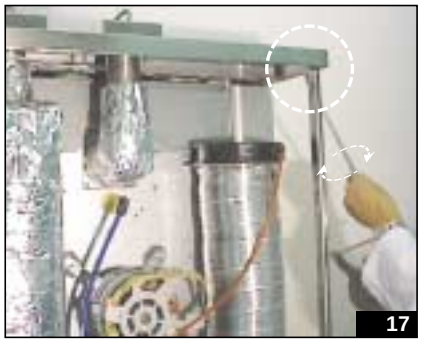
Using the 8 mm T-wrench, unscrew and remove the 2 screws fixing the oven cover to the oven chamber (fig. 14).



Unscrew the descaler inlet plug located in the right-hand corner of the oven ceiling, and remove the gasket (fig. 15-16).

14.8 Boiler removal

Using the 8 mm T-wrench, unscrew and remove the RH and LH oven side upright cover fixing screws (fig. 17-18).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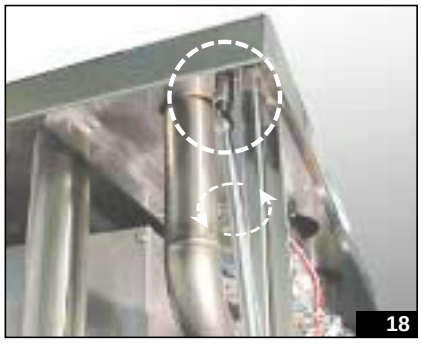
18

The oven cover is now free from all obstructions. Use a spacer to keep the cover raised above the oven, as this will later facilitate removal of the boiler (fig. 19-20).


19


20

Using the 30 mm hex wrench, unscrew the boiler drain hose fixing nut, taking care not to lose the sealing gasket (fig. 21-23).


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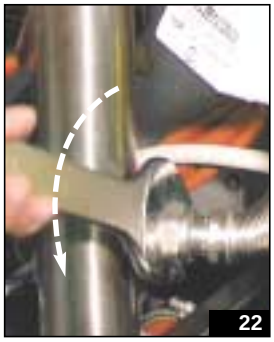
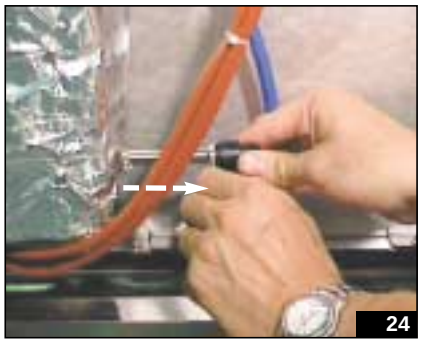

22


23

Disconnect the boiler water filling conduit, using a 10 mm wrench, and pulling the connecting joint towards the outside of the boiler
(fig. 24-25). For further details, see section 13.1.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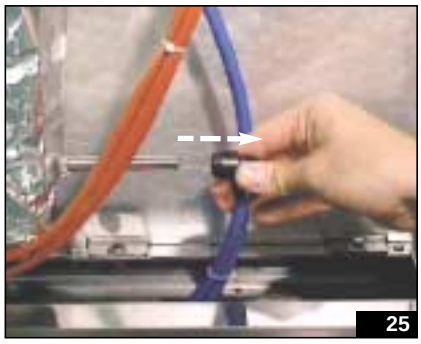

25

For models on which it is present, unscrew the clip around the yellow plastic hose in the area near the bottom left-hand side of the frame (fig. 26-27).

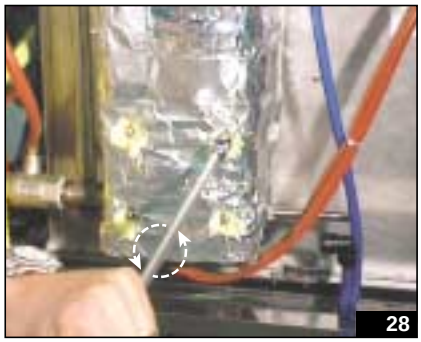

26


27

14.8 Boiler removal

Using the 10 mm T-wrench, unscrew the 4 fixing nuts at the bottom of the boiler.

If necessary, remove the aluminium tape cladding from the boiler in order to reach the fixing nuts, taking care not to lose the nuts (fig. 28).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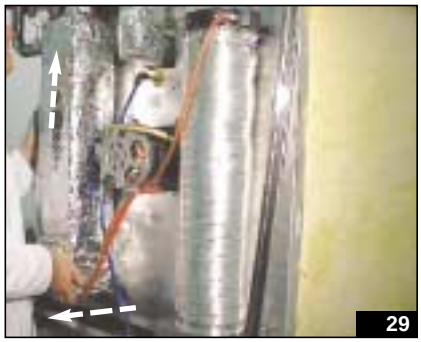
Remove the previously unscrewed flexible coupling connecting the fume butterfly valves from the oven fume conduit side.


29

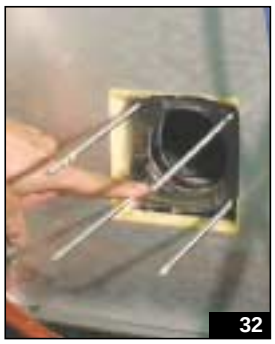
Lift the boiler and at the same time pull it outwards, paying attention to the electrical connections (fig. 29-30).


30

Then remove the protective ceramic bushing from the boiler (fig. 30-31).


31

Check that the gasket between the oven and the boiler is in good condition, and replace if necessary (fig. 32).


32

Remove the 2 clips from around the silicone sleeve connecting the oven with the boiler (fig. 33-34).

Remove the silicone sleeve, check that it is in good condition and replace it with a new one if necessary.


33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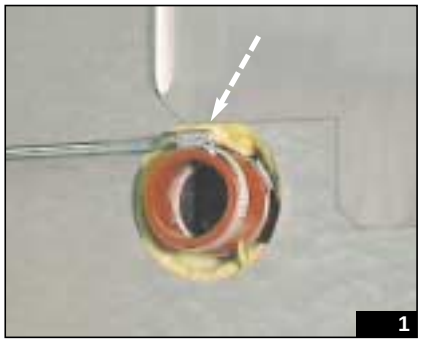
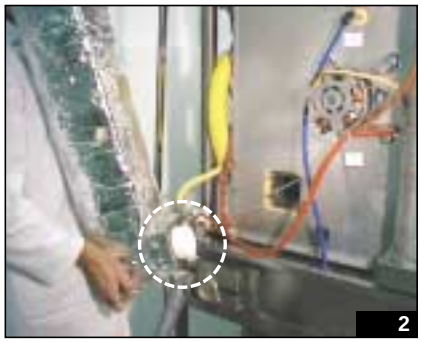
35

14.9 Boiler installation

Fix the silicone sleeve to the oven with the fixing clip and refit the second boiler fixing clip at the top (fig. 1).


1

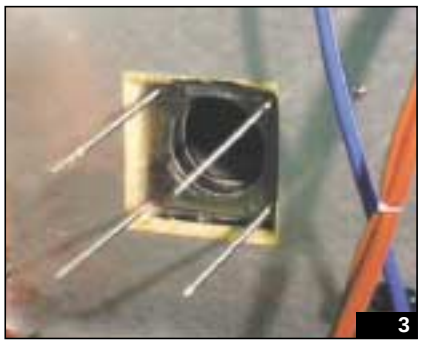
Insert the new protective ceramic bushing in the boiler (fig. 2).


2

Make certain that the 4 stud bolts are properly fastened to the 4 oven screws (fig. 3).

Lift and position the boiler in such a way that the stud bolts pass through the boiler.

Lift the oven cover as in the previous removal stage and push the boiler fully in against the oven chamber, taking care not to damage the silicone sleeve and the ceramic bushing (fig. 4).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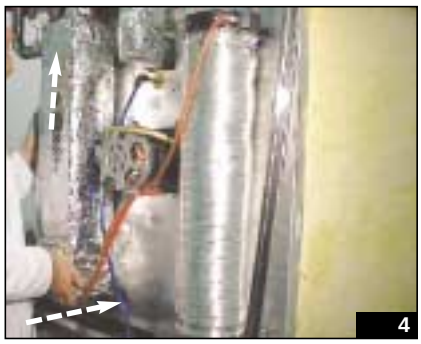
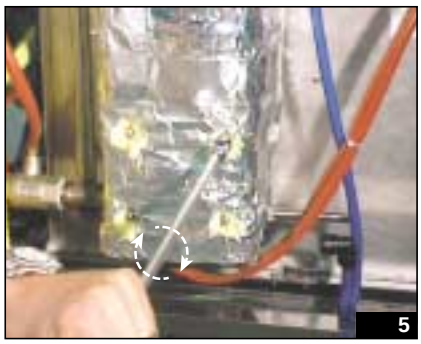

4

Using the 10 mm T-wrench, tighten the 4 bottom boiler fixing nuts (fig. 5).

Fasten the second boiler fixing clip to the silicone sleeve, and push the boiler vigorously towards the oven chamber, taking care not to overtighten the clip as this could break the sleeve (fig. 6).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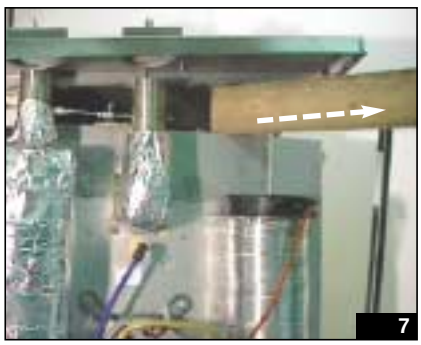
6

Remove the spacer from the oven cover. Put the oven cover back into its seat (fig. 7).

Insert the oven vent butterfly valve flexible coupling onto the oven fume conduit pin, and fasten the fixing screw with a 7 mm wrench (fig. 8/9).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For models on which it is present, now fit the fixing clip of the yellow plastic hose in the area near the bottom left of the frame (fig. 10).


9


10

14.9 Boiler installation

Connect the boiler water filling conduit, pushing the fixing coupling fully into the boiler (fig. 11).

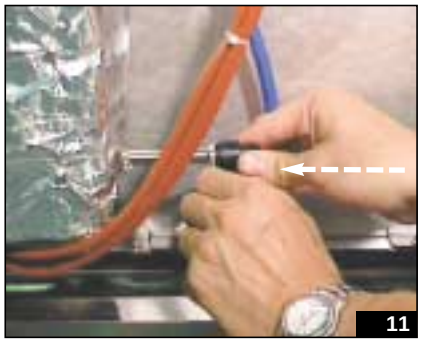
Using the 30 mm hex wrench, tighten the boiler drain hose fixing nut, while preventing the hose itself from moving with a 26 mm hex wrench. Remember to refit the sealing gasket (fig. 12-13).

Using the 8 mm T-wrench, fasten the 2 screws that fix the oven cover to the oven chamber (fig. 14).

Using the 8 mm T-wrench, also fasten the RH and LH oven side upright cover fixing screws (fig. 15-16).

Fit the descaler inlet cap and gasket in the top right hand corner of the oven ceiling (fig. 17-18).

Using the 10 mm wrench, connect the boiler safety thermostat and the boiler pre-heating probe PT100, taking care to fit the safety thermostat at the bottom (fig.19-20).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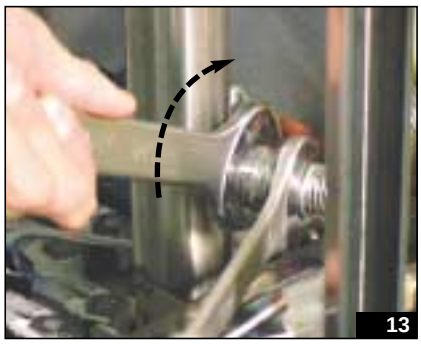
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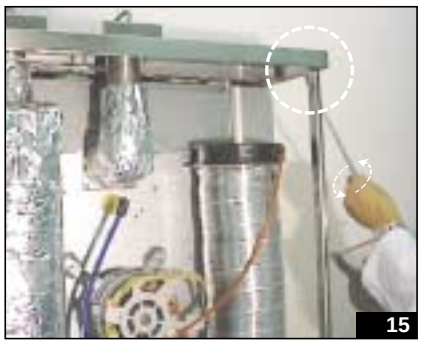
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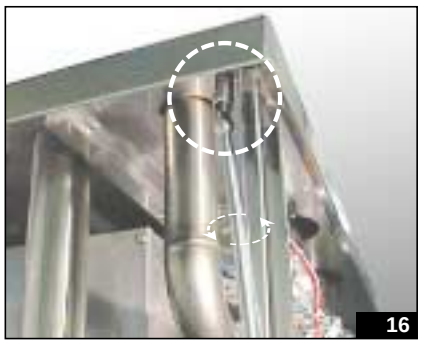
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14.9 Boiler installation

Using the same 10 mm wrench, fasten the level control earth wire fixing nut, and make the electrical connections for the 2 level probes, taking care to position them correctly in order to avoid malfunctions at a later stage (fig. 21-22).

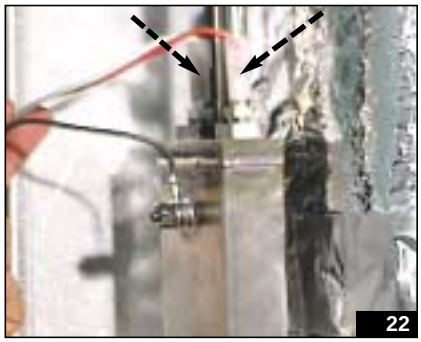
Make the electrical connections for the vent butterfly valve motor (see section 13.9), taking care that they are in the right position
(fig. 23-24).

Using the 6 mm wrench, close the ball valve of the drainage driven valve, so as to enable the boiler to fill with water (fig. 25).

Lastly, manually tighten the knurled screw fixing the drainage driven valve (fig. 26-27).

Carry out a test in steam mode in order to check that the water/gas/steam injection circuit is properly sealed.


21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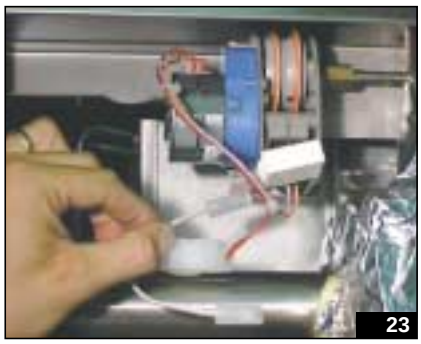
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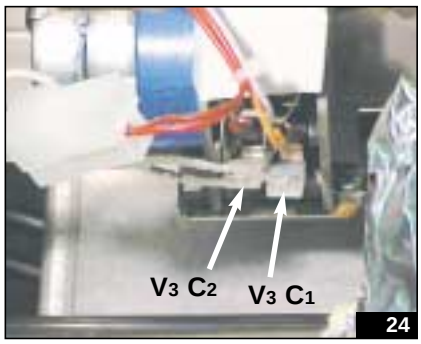

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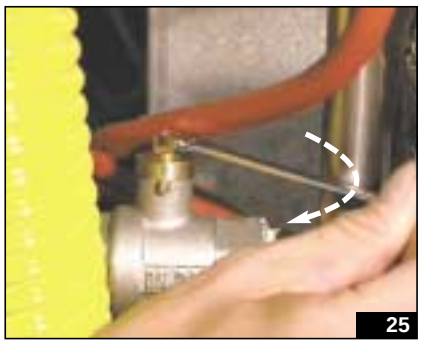
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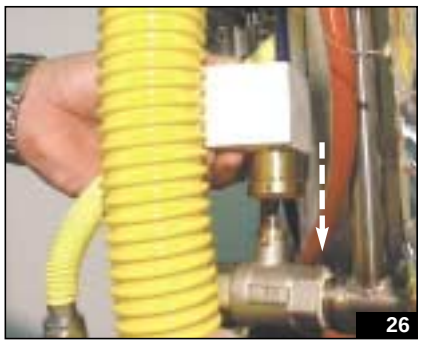
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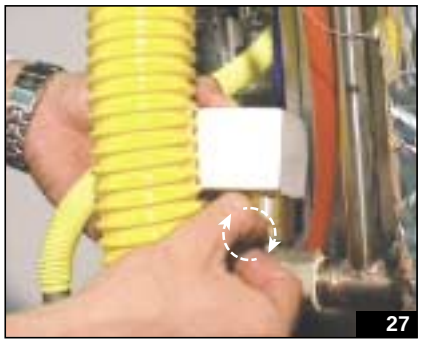
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14.10 Door handle replacement

This operation could become necessary in the event that the overall dimensions of the appliance need to be reduced to a minimum for the purpose of installation.

Tools needed:

- 3 mm screwdriver
- Cross-head screwdriver

With the door open, remove the "handle mechanism cover" transparent plastic bushing, to gain access to the fixing screws.

Release the door glass from its fittings so as to gain easy access to the bushing (fig. 3).

Using a 3 mm screwdriver, lever up the bottom edge so as to release the tab that fastens it to the door (fig. 4).

Remove the bushing, and then with a cross-head screwdriver remove the 3 inner screws, taking care not to drop them inside the door as it would be difficult to get them back, and noting the position of the release pin (towards the bottom) (fig. 5-7). Hold the handle with your hand, to stop it from falling as you remove the screws. The handle is now out of its seat (fig. 8).

Check that the inner screw securing the spring mechanism is fully tightened (fig. 9).

Using a cross-head screwdriver, unscrew the bottom self-tapping screw located at the end of the handle, to release it from the handle casing assembly that may have been supplied as a replacement part (fig. 10).

Install in the reverse order of removal.

Warning: the plastic bushing covering the handle mechanism casing must be fixed with the clip pin at the bottom, in the same position as it was in before removal. Insert the bushing by pushing it upwards and pressing hard at the bottom until the pin clicks fully home, easing it in with the aid of a screwdriver (fig. 6).


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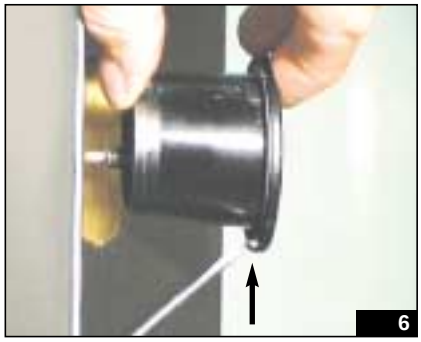
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15.0 Analyzing combustion and optimizing output

The steps described below enable you to check combustion in order to make sure that the integrated pre-mixed burner system is working correctly and to check its output.

Tools needed:

- magnet
- digital instrument for combustion analysis


1

1st phase: Switch the oven on with the ON/OFF button, select convection mode, set the temperature to 200 °C with the scroller, and then press START/STOP to start the T version. Use the same settings for the H/P and M versions
(fig. 2-4).


2

3


4

2nd phase: wait for the temperature in the oven to reach 200
°C, open the door and place the magnet at the bottom of the control panel (towards the oven chamber) (fig. 5-6). Press START/STOP to make the oven operate with the door open (fig. 7).


5


6


7

3rd phase: Leave the oven running with the door open for about 2 minutes.

Place the fume analysis probe at the outlet of the CONVECTION combustion fume output collar and keep the probe in the center of the fume outlet collar. Switch on the data acquisition program of the combustion analysis instrument (fig. 14-16).


14


15

4th phase: Once the CO and CO_2 values of combustion in CONVECTION mode have stabilized (data acquisition normally takes a maximum of 3 minutes), stop the analysis by pressing the Stop button on the analysis instrument.

Compare the maximum CO and minimum CO2 readings with those shown in the installation manual.


16


17

The CO_2 reading

for G20 methane gas must be between 9% and 10.5%; for G30/G31 liquid gas, it must be between 11% and 13%.

The CO reading

for G20 methane gas and G30/G31 liquid gas must not exceed 150 ppm.


18

Print the test values with the infrared printer (fig. 17).

The sequence and timing described above must be strictly adhered to in order to recreate the same conditions on different appliances, so as to be able to compare output figures.

Press START/STOP to stop the cooking cycle (fig. 18).

Conversion parameters:

10000	**ppm =**	**1%**
1000	**ppm =**	**0,1%**
100	**ppm =**	**0,01%**
10	**ppm =**	**0,001%**
1	**ppm =**	**0,0001%**

ppm/10000 = %

The fume analysis instrument enables you to check a range of variables. The combustion analysis probe must be inserted at the outlet of the oven/boiler fume manifold, at the center and at the edge of the manifold.

You are unlikely to be able to operate at theoretical combustion conditions, so it is necessary to operate **with excess air (air that has not reacted during combustion).**

During combustion, part of the oxygen "O_2" combines with hydrogen "H_2" to form condensate "H_2O", which is why it is advisable to clean the condensate trap of the fume detection probe.

"O_2" valore % = oxygen measured this is the remaining oxygen, which makes it possible to measure combustion output, and is used to determine heat loss in the flue and carbon dioxide "CO_2" content.

"CO_2" - CARB. DIOX. % = carbon dioxide MEASURED
"CO_2" - THEORETICAL % = THEORETICAL carbon dioxide

In theoretical combustion (without excess air) the theoretical "CO_2" is determined.

The greater the excess of air used in combustion, the lower the measured "CO_2" values will be, in comparison with the theoretical "CO_2".

"CO" value = (ppm) carbon monoxide:

Monoxide is the result of incomplete combustion.

The limit for industrial burners is **0.1** which is obtained from the following calculation:

practical example of a combustion analysis of G20 methane gas:

11.7 (theoretical CO_2 %) x 14 ppm (CO measured) / 8.8 (CO_2 measured) / 10000 = 0.00186 (value significantly below the limit)

This limit corresponds to the "undiluted CO" in the print-out.

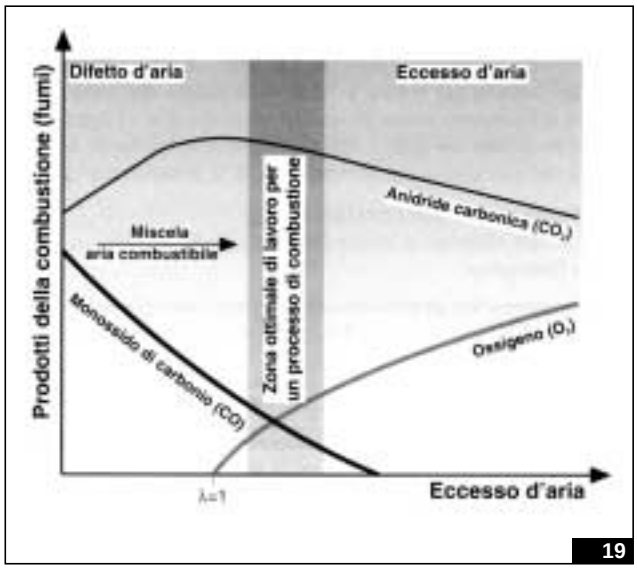
Warning: the most important value is the ratio of measured "CO"/"CO_2".

Do not take single values into consideration.

For example if the "CO" rises to 100 ppm in the ratio and the "CO_2" falls, the diluted "CO" exceeds the limit.

To sum up: for maximum output, the CO_2 value must be as high as possible, while keeping the CO within the maximum permissible limits.

Fume temperature: this tells you how much the burner is exchanging; the lower the fume output temperature, the higher the percentage output.



$$\frac{\text{Stoichiometric value (theoretical } CO_2\ \%) \times \dfrac{\text{CO value ppm (measured value)}}{\text{CO}_2\text{ CARB. DIOX. \% (measured value)}}}{10000} = \leq \mathbf{0,1}$$

15.2 Calculating burner power

With the aid of a volumetric measuring instrument, the Nominal Heat Capacity is defined with the formula:

[3600 (sec. in 1 hour) x (low heat value)* x (litres consumed in the time)] divided by [time in seconds of measuring].

* the low heat value of the gas under examination

• Example for G20 methane gas:

$$\frac{\text{3600 x 9.45 (kw per cubic m) x 10 l (1 cont. revolution)}}{\text{time necessary for 10 l (1 cont. revolution)}}$$

• Example for G30 liquid gas:

$$\frac{\text{3600 x 32.247 (kw per cubic m.) x 10 l (1 cont. revolution)}}{\text{time necessary for 10 l (1 cont. revolution)}}$$

• Example for LPG (G31 pure propane) normally in use:

$$\frac{\text{3600 x 24.4 (kw per cubic m) x 10 l (1 cont. revolution)}}{\text{time necessary for 10 l (1 cont. revolution)}}$$

15.3 Operating principle of washing system WCS (Washing Cube System)

The purpose of this operation is to identify the operating principle of the washing system, check the correct position of the anti-return devices and inspect the sealing parts on the cover flange.

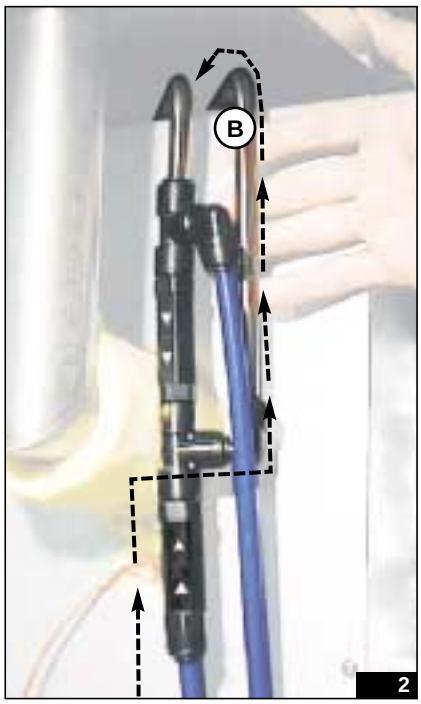
B - Detergent input conduit inside the oven. The anti-return device is located at the bottom; see arrow pointing upwards. The detergent flows from the bottom upwards (fig. 2 and 4).

A - RH water input conduit for oven rinsing: top anti-return device, arrow at bottom (fig. 3 and 5).

The rinsing water rises through steel conduit A, the detergent rises through conduit B.

• During the rinsing phase, the water enters the oven and rinses the detergent conduit at the same time via this route. This prevents residues of detergent from remaining in the conduit (fig. 3).


1



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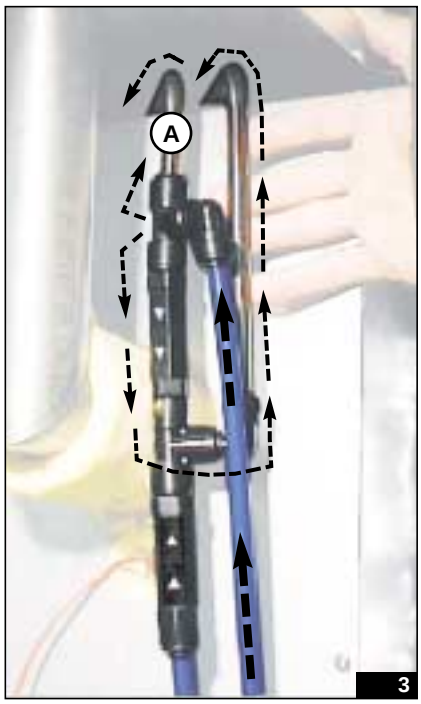

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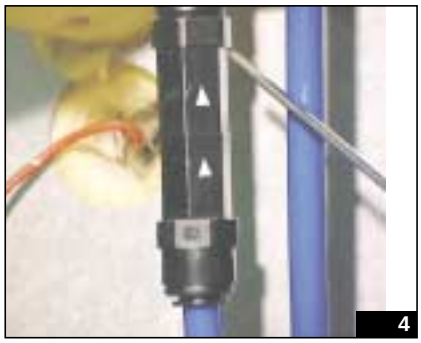
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15.3 Operating principle of washing system WCS (Washing Cube System)

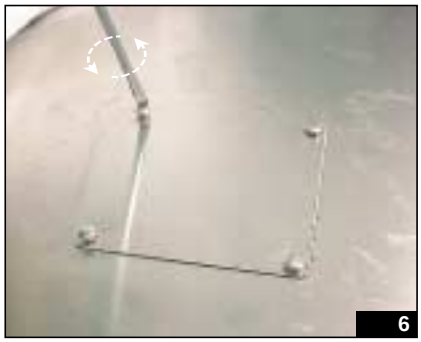
• To inspect the sealing parts on the cover flange, unscrew the 4 sealing screws on the cover and remove the insulation panel (fig. 6-7).

Check for leaks in the vicinity of the top of the cover.

• The 2 nuts at the top contain the inner springs and sealing balls.

• If necessary, unscrew the 2 nuts with the 22 mm socket wrench, in order to replace/check the sealing ball and spring of the rinsing circuit (A) and detergent circuit (B) (fig. 8-11).

• When fastening the 2 nuts, make sure that they have sealing teflon on them.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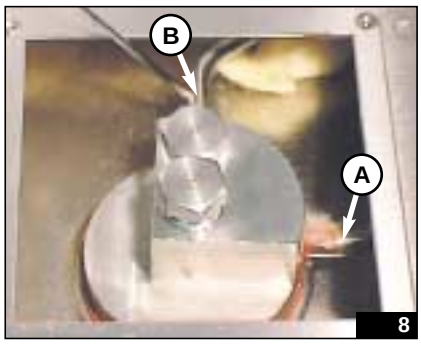

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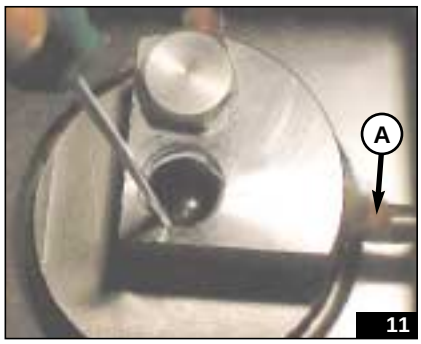

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16.0 TECHNICAL DATA

TABLE 1 - GENERAL DATA

Model	Versions	Supply voltage	Frequency	Total input	Amps	Oven power	Boiler power	Motor	Oil-proof connecting cable
ME 061	M - P - T	**3N AC 400 V** 3 AC 230 V AC 230 V	50 Hz	8 kW	**12** 20 35	7,5 kW	7,5 kW	1 x 0,25 Hp	**5 x 1,5 mm²** 4 x 2,5 mm² 3 x 6 mm² 2)
ME 101	M - P - T	**3N AC 400 V** 3 AC 230 V	50 Hz	16 kW	**23** 40	15 kW	15 kW	1 x 0,75 Hp	**5 x 2,5 mm²** 4 x 6 mm²
ME 102	M - P - T	**3N AC 400 V** 3 AC 230 V	50 Hz	31 kW	**45** 78	30 kW	30 kW	1 x 0,75 Hp	**5 x 10 mm² 3)** 4 x 25 mm²
ME 201	M - P - T	**3N AC 400 V** 3 AC 230 V	50 Hz	31.8 kW	**46** 80	30 kW	30 kW	2 x 0,75 Hp	**5 x 10 mm² 3)** 4 x 25 mm²
ME 202	M - P - T	**3N AC 400 V** 3 AC 230 V	50 Hz	61.8 kW	**89** 155	60 kW	60 kW	2 x 0,75 Hp	**5 x 25 mm²** 4 x 70 mm² 4)

***) 2 power cables – 1) min Ø 12 mm – 2) max Ø 18 mm – 3) min Ø 25 mm – 4) max Ø 44 mm**

Warning: The safety device (RCD to be fitted on the power line to the appliance) must be sized for a leakage of 1 mA x kW of power installed.

TABLE 2 - GENERAL DATA

Model	Versions	Supply voltage	Frequency	Electrical input	Motor	Oil-proof connecting cable	Gas power	Gas connection
MG 061	M - P - T	AC 230 V	50 Hz	0.5 kW	1 x 0,25 Hp	3 x 1 mm²	9 kW	1 x R 1/2"
MG 101	M - P - T	AC 230 V	50 Hz	1 kW	1 x 0,75 Hp	3 x 1 mm²	18 kW	1 x R 1/2"
MG 102	M - P - T	AC 230 V	50 Hz	1 kW	1 x 0,75 Hp	3 x 1 mm²	27 kW	1 x R 1/2"
MG 201	M - P - T	AC 230 V	50 Hz	1,8 kW	2 x 0,75 Hp	3 x 1,5 mm²	27 kW	1 x R 1/2"
MG 202	M - P - T	AC 230 V	50 Hz	1,8 kW	2 x 0,75 Hp	3 x 1,5 mm²	54 kW	1 x R 3/4"

TABLE 3 - GENERAL WATER DATA

Model	Versions	Water pressure kPa	Max. softened water consumption l/h	Water connection
ME 061	M - P - T	200 - 500	10	2 x R 3/4" (1)
ME 101	M - P - T	200 - 500	19	2 x R 3/4" (1)
ME 102	M - P - T	200 - 500	30	2 x R 3/4" (1)
ME 201	M - P - T	200 - 500	37	2 x R 3/4" (1)
ME 202	M - P - T	200 - 500	68	2 x R 3/4" (1)
MG 061	M - P - T	200 - 500	8	2 x R 3/4" (1)
MG 101	M - P - T	200 - 500	17	2 x R 3/4" (1)
MG 102	M - P - T	200 - 500	24	2 x R 3/4" (1)
MG 201	M - P - T	200 - 500	24	2 x R 3/4" (1)
MG 202	M - P - T	200 - 500	48	2 x R 3/4" (1)

(1) The ovens are equipped with two water inlets, one for cold, non-softened water and the other for hot (max. 50 C) or softened cold water.

TABLE 4 - FLUE GAS EXTRACTION DATA (TYPE B13)

Modells	MG 061	MG 101	MG 102	MG 201	MG 202
Flue pressure	- 1.4 Pa	- 1.4 Pa	- 3 Pa	- 3 Pa	- -
Volumetric mass	16 g/sec.	22 g/sec.	27 g/sec.	27 g/sec.	- -
Flue gas temperature	130 ˚C	155 ˚C	200 ˚C	200 ˚C	- -

16.1 DATI TECNICI - ITALIA - Categoria II 2H3+

TABELLA 4 - DATI GAS TECNICI

Modello	Tipo di gas	Gas Metano		Gas Liquido		Gas Liquido		Potenza apparecchiatura	Tipo installazione
	Denominazione gas	2H - G20		3+ - G30		3+ - G31 (GPL)			
	Potere calorifico inferiore	9,45 kWh/m≥		12,68 kWh/kg		12,87 kWh/kg			
	Pressione nominale	20 mbar		28-30/37 mbar		28-30/37 mbar			
	Bruciatore	camera	boiler	camera	boiler	camera	boiler		
MG061	PTN (kW)	9,0		9,0		9,0		9,0 kW	A_{13} - B_{13} - B_{23}
	PTR (kW)	5,7		6,5		6,5			
	Mix (1/100 mm)	14,0		14,0		11,0			
	Ign	90 Hz	2,6 Vdc	75 Hz	2,2 Vdc	75 Hz	2,2 Vdc		
	Min	100 Hz	2,9 Vdc	90 Hz	2,6 Vdc	90 Hz	2,6 Vdc		
	Max	140 Hz	4,0 Vdc	108 Hz	3,6 Vdc	120 Hz	3,6 Vdc		
	Orifizio (1/100 mm)	-		3,3		3,3			
	Consumo	0,95 m^3/h		0,71 kg/h		0,70 kg/h			
MG101	PTN (kW)	18,0		18,0		18,0		18,0 kW	A_{13} - B_{13} - B_{23}
	PTR (kW)	11,0		13,0		13,0			
	Mix (1/100 mm)	13,0		13,5		11,0			
	Ign	85 Hz	2,4 Vdc	80 Hz	2,3 Vdc	80 Hz	2,3 Vdc		
	Min	112 Hz	3,2 Vdc	112 Hz	3,2 Vdc	112 Hz	3,2 Vdc		
	Max	155 Hz	4,4 Vdc	130 Hz	4,08 Vdc	135 Hz	4,08 Vdc		
	Orifizio (1/100 mm)	-		4,0		4,0			
	Consumo	1,90 m^3/h		1,42 kg/h		1,40 kg/h			
MG102	PTN (kW)	27,0		27,0		27,0		27,0 kW	A_{13} - B_{13} - B_{23}
	PTR (kW)	16,0		18,0		18,0			
	Mix (1/100 mm)	12,5		12,0		9,0			
	Ign	80 Hz	2,3 Vdc	90 Hz	2,5 Vdc	90 Hz	2,5 Vdc		
	Min	112 Hz	3,2 Vdc	112 Hz	3,2 Vdc	112 Hz	3,2 Vdc		
	Max	170 Hz	4,7 Vdc	155 Hz	4,4 Vdc	160 Hz	4,4 Vdc		
	Orifizio (1/100 mm)	-		4,5		4,5			
	Consumo	2,86 m^3/h		2,13 kg/h		2,10 kg/h			
MG201	PTN (kW)	27,0		27,0		27,0		27,0 kW	A_{13} - B_{13} - B_{23}
	PTR (kW)	16,0		18,0		18,0			
	Mix (1/100 mm)	12,5		12,0		9,0			
	Ign	80 Hz	2,3 Vdc	90 Hz	2,8 Vdc	90 Hz	2,8 Vdc		
	Min	112 Hz	3,2 Vdc	112 Hz	3,4 Vdc	112 Hz	3,4 Vdc		
	Max	170 Hz	4,9 Vdc	140 Hz	4,4 Vdc	150 Hz	4,4 Vdc		
	Orifizio (1/100 mm)	-		4,5		4,5			
	Consumo	2,86 m^3/h		2,13 kg/h		2,10 kg/h			
MG202 (dati per ogni bruciatore)	PTN (kW)	27,0		27,0		27,0		54,0 kW	A_{13} - B_{13} - B_{23}
	PTR (kW)	16,0		18,0		18,0			
	Mix (1/100 mm)	12,5		12,0		9,0			
	Ign	80 Hz	2,3 Vdc	90 Hz	2,5 Vdc	90 Hz	2,5 Vdc		
	Min	112 Hz	3,2 Vdc	112 Hz	3,2 Vdc	112 Hz	3,2 Vdc		
	Max	170 Hz	4,7 Vdc	155 Hz	4,4 Vdc	160 Hz	4,4 Vdc		
	Orifizio (1/100 mm)	-		4,5		4,5			
	Consumo	2,86 m^3/h		2,13 kg/h		2,10 kg/h			

Nota: **PTN =** potenza termica nominale
IGN = Taratura per ottenere la potenza di accensione
MIN = Taratura per ottenere la potenza termica nominale
MAX = Taratura per ottenere la potenza termica ridotta

TABELLA 5 - PRESSIONI GAS IN ENTRATA

Pressione nominale in rete per i vari tipi di gas:	Gas della 1. Famiglia - Città Gas della 2. Famiglia - Metano Gas della 3. Famiglia - GPL	**8 mbar** **20 mbar** **28-30/37 mbar**
Funzionamento ammissibile se la pressione è **compresa** fra:	Gas della 1. Famiglia - Città Gas della 2. Famiglia - Metano Gas della 3. Famiglia - GPL	**da 6 a 15 mbar** **da 18 a 25 mbar** **da 20/25 a 35/45 mbar**
Funzionamento non ammissibile se la pressione è **inferiore** a:	Gas della 1. Famiglia - Città Gas della 2. Famiglia - Metano Gas della 3. Famiglia - GPL	**6 mbar** **18 mbar** **20/25 mbar**
Funzionamento non ammissibile se la pressione è **superiore** a:	Gas della 1. Famiglia - Città Gas della 2. Famiglia - Metano Gas della 3. Famiglia - GPL	**15 mbar** **25 mbar** **35/45 mbar**

16.1 DATI TECNICI - SVIZZERA - Categoria II 2H3B/P

TABELLA 4 - DATI GAS TECNICI

Modello	Tipo di gas	Gas Metano		Gas Liquido		Gas Liquido		Potenza apparecchiatura	Tipo installazione
	Denominazione gas	2H - G20		3+ - G30		3+ - G31 (GPL)			
	Potere calorifico inferiore	9,45 kWh/m≥		12,68 kWh/kg		12,87 kWh/kg			
	Pressione nominale	20 mbar		50 mbar		50 mbar			
	Bruciatore	camera	boiler	camera	boiler	camera	boiler		
MG061	PTN (kW)	9,0		9,0		9,0		9,0 kW	A_{13} - B_{13} - B_{23}
	PTR (kW)	5,7		6,5		6,5			
	Mix (1/100 mm)	14,0		14,0		11,0			
	Ign	90 Hz	2,6 Vdc	75 Hz	2,2 Vdc	75 Hz	2,2 Vdc		
	Min	100 Hz	2,9 Vdc	90 Hz	2,6 Vdc	90 Hz	2,6 Vdc		
	Max	140 Hz	4,0 Vdc	108 Hz	3,6 Vdc	120 Hz	3,6 Vdc		
	Orifizio (1/100 mm)	-		3,3		3,3			
	Consumo	0,95 m^3/h		0,71 kg/h		0,70 kg/h			
MG101	PTN (kW)	18,0		18,0		18,0		18,0 kW	A_{13} - B_{13} - B_{23}
	PTR (kW)	11,0		13,0		13,0			
	Mix (1/100 mm)	13,0		13,5		11,0			
	Ign	85 Hz	2,4 Vdc	80 Hz	2,3 Vdc	80 Hz	2,3 Vdc		
	Min	112 Hz	3,2 Vdc	112 Hz	3,2 Vdc	112 Hz	3,2 Vdc		
	Max	155 Hz	4,4 Vdc	130 Hz	4,08 Vdc	135 Hz	4,08 Vdc		
	Orifizio (1/100 mm)	-		4,0		4,0			
	Consumo	1,90 m^3/h		1,42 kg/h		1,40 kg/h			
MG102	PTN (kW)	27,0		27,0		27,0		27,0 kW	A_{13} - B_{13} - B_{23}
	PTR (kW)	16,0		18,0		18,0			
	Mix (1/100 mm)	12,5		12,0		9,0			
	Ign	80 Hz	2,3 Vdc	90 Hz	2,5 Vdc	90 Hz	2,5 Vdc		
	Min	112 Hz	3,2 Vdc	112 Hz	3,2 Vdc	112 Hz	3,2 Vdc		
	Max	170 Hz	4,7 Vdc	155 Hz	4,4 Vdc	160 Hz	4,4 Vdc		
	Orifizio (1/100 mm)	-		4,5		4,5			
	Consumo	2,86 m^3/h		2,13 kg/h		2,10 kg/h			
MG201	PTN (kW)	27,0		27,0		27,0		27,0 kW	A_{13} - B_{13} - B_{23}
	PTR (kW)	16,0		18,0		18,0			
	Mix (1/100 mm)	12,5		12,0		9,0			
	Ign	80 Hz	2,3 Vdc	90 Hz	2,8 Vdc	90 Hz	2,8 Vdc		
	Min	112 Hz	3,2 Vdc	112 Hz	3,4 Vdc	112 Hz	3,4 Vdc		
	Max	170 Hz	4,9 Vdc	140 Hz	4,4 Vdc	150 Hz	4,4 Vdc		
	Orifizio (1/100 mm)	-		4,5		4,5			
	Consumo	2,86 m^3/h		2,13 kg/h		2,10 kg/h			
MG202 (dati per ogni bruciatore)	PTN (kW)	27,0		27,0		27,0		54,0 kW	A_{13} - B_{13} - B_{23}
	PTR (kW)	16,0		18,0		18,0			
	Mix (1/100 mm)	12,5		12,0		9,0			
	Ign	80 Hz	2,3 Vdc	90 Hz	2,5 Vdc	90 Hz	2,5 Vdc		
	Min	112 Hz	3,2 Vdc	112 Hz	3,2 Vdc	112 Hz	3,2 Vdc		
	Max	170 Hz	4,7 Vdc	155 Hz	4,4 Vdc	160 Hz	4,4 Vdc		
	Orifizio (1/100 mm)	-		4,5		4,5			
	Consumo	2,86 m^3/h		2,13 kg/h		2,10 kg/h			

Nota: **PTN =** potenza termica nominale
IGN = Taratura per ottenere la potenza di accensione
MIN = Taratura per ottenere la potenza termica nominale
MAX = Taratura per ottenere la potenza termica ridotta

TABELLA 5 - PRESSIONI GAS IN ENTRATA

Pressione nominale in rete per i vari tipi di gas:	Gas della 1. Famiglia - Città Gas della 2. Famiglia - Metano Gas della 3. Famiglia - GPL	**8 mbar** **20 mbar** **50 mbar**
Funzionamento ammissibile se la pressione è **compresa** fra:	Gas della 1. Famiglia - Città Gas della 2. Famiglia - Metano Gas della 3. Famiglia - GPL	**da 6 a 15 mbar** **da 18 a 25 mbar** **da 42,5 a 57,5 mbar**
Funzionamento non ammissibile se la pressione è **inferiore** a:	Gas della 1. Famiglia - Città Gas della 2. Famiglia - Metano Gas della 3. Famiglia - GPL	**6 mbar** **18 mbar** **42,5 mbar**
Funzionamento non ammissibile se la pressione è **superiore** a:	Gas della 1. Famiglia - Città Gas della 2. Famiglia - Metano Gas della 3. Famiglia - GPL	**15 mbar** **25 mbar** **57,5 mbar**

16.1 TECHNICAL DATA - ENGLAND - IRELAND - GREECE - PORTUGAL Category II 2H3+

TABLE 4 - GAS DATA

Model	Type of gas	Natural Gas		Liquid gas		Liquid gas		Equipment power	Installation type
	Gas description	2H - G20		3+ - G30		3+ - G31 (GPL)			
	Inf. calorific value	9,45 kWh/m≥		12,68 kWh/kg		12,87 kWh/kg			
	Rated pressure	20 mbar		28-30/37 mbar		28-30/37 mbar			
	Burners	Oven	Boiler	Oven	Boiler	Oven	Boiler		
MG061	PTN (kW)	9,0		9,0		9,0		9,0 kW	A_{13} - B_{13} - B_{23}
	PTR (kW)	5,7		6,5		6,5			
	Mix (1/100 mm)	14,0		14,0		11,0			
	Ign	90 Hz	2,6 Vdc	75 Hz	2,2 Vdc	75 Hz	2,2 Vdc		
	Min	100 Hz	2,9 Vdc	90 Hz	2,6 Vdc	90 Hz	2,6 Vdc		
	Max	140 Hz	4,0 Vdc	108 Hz	3,6 Vdc	120 Hz	3,6 Vdc		
	Orifice (1/100 mm)	-		3,3		3,3			
	Consumption	0,95 m^3/h		0,71 kg/h		0,70 kg/h			
MG101	PTN (kW)	18,0		18,0		18,0		18,0 kW	A_{13} - B_{13} - B_{23}
	PTR (kW)	11,0		13,0		13,0			
	Mix (1/100 mm)	13,0		13,5		11,0			
	Ign	85 Hz	2,4 Vdc	80 Hz	2,3 Vdc	80 Hz	2,3 Vdc		
	Min	112 Hz	3,2 Vdc	112 Hz	3,2 Vdc	112 Hz	3,2 Vdc		
	Max	155 Hz	4,4 Vdc	130 Hz	4,08 Vdc	135 Hz	4,08 Vdc		
	Orifice (1/100 mm)	-		4,0		4,0			
	Consumption	1,90 m^3/h		1,42 kg/h		1,40 kg/h			
MG102	PTN (kW)	27,0		27,0		27,0		27,0 kW	A_{13} - B_{13} - B_{23}
	PTR (kW)	16,0		18,0		18,0			
	Mix (1/100 mm)	12,5		12,0		9,0			
	Ign	80 Hz	2,3 Vdc	90 Hz	2,5 Vdc	90 Hz	2,5 Vdc		
	Min	112 Hz	3,2 Vdc	112 Hz	3,2 Vdc	112 Hz	3,2 Vdc		
	Max	170 Hz	4,7 Vdc	155 Hz	4,4 Vdc	160 Hz	4,4 Vdc		
	Orifice (1/100 mm)	-		4,5		4,5			
	Consumption	2,86 m^3/h		2,13 kg/h		2,10 kg/h			
MG201	PTN (kW)	27,0		27,0		27,0		27,0 kW	A_{13} - B_{13} - B_{23}
	PTR (kW)	16,0		18,0		18,0			
	Mix (1/100 mm)	12,5		12,0		9,0			
	Ign	80 Hz	2,3 Vdc	90 Hz	2,8 Vdc	90 Hz	2,8 Vdc		
	Min	112 Hz	3,2 Vdc	112 Hz	3,4 Vdc	112 Hz	3,4 Vdc		
	Max	170 Hz	4,9 Vdc	140 Hz	4,4 Vdc	150 Hz	4,4 Vdc		
	Orifice (1/100 mm)	-		4,5		4,5			
	Consumption	2,86 m^3/h		2,13 kg/h		2,10 kg/h			
MG202 (data for any burners)	PTN (kW)	27,0		27,0		27,0		54,0 kW	A_{13} - B_{13} - B_{23}
	PTR (kW)	16,0		18,0		18,0			
	Mix (1/100 mm)	12,5		12,0		9,0			
	Ign	80 Hz	2,3 Vdc	90 Hz	2,5 Vdc	90 Hz	2,5 Vdc		
	Min	112 Hz	3,2 Vdc	112 Hz	3,2 Vdc	112 Hz	3,2 Vdc		
	Max	170 Hz	4,7 Vdc	155 Hz	4,4 Vdc	160 Hz	4,4 Vdc		
	Orifice (1/100 mm)	-		4,5		4,5			
	Consumption	2,86 m^3/h		2,13 kg/h		2,10 kg/h			

Note: **PTN =** Nominal heat capacity
IGN = Burner ignition set
MIN = Reduced heat capacity set
MAX = Nominal heat capacity set

TABLE 5 - GAS INLET PRESSURES

Rated mains pressure for the various types of gas:	Gas of family 2 – Natural Gas of family 3 – LPG	**20 mbar** **28-30/37 mbar**
Operation permissible if pressure is **between**:	Gas of family 2 – Natural Gas of family 3 – LPG	**from 17 to 25 mbar** **from 20/25 to 35/45 mbar**
Operation not permissible pressure is **less** than:	Gas of family 2 – Natural Gas of family 3 – LPG	**17 mbar** **20/25 mbar**
Operation not permissible pressure is **greater** than:	Gas of family 2 – Natural Gas of family 3 – LPG	**25 mbar** **35/45 mbar**

16.1 TECHNICAL DATA - DENMARK - SWEDEN - FINLAND - CZECH REPUBLIC Category II 2H3B/P

TABLE 4 - GAS DATA

Model	Type of gas	Natural gas		Liquid gas		Liquid gas		Equipment power	Installation type
	Gas description	2H - G20		3+ - G30		3+ - G31 (GPL)			
	Inf. calorific value	9,45 kWh/m≥		12,68 kWh/kg		12,87 kWh/kg			
	Rated pressure	20 mbar		28-30/37 mbar		28-30/37 mbar			
	Burners	Oven	Boiler	Oven	Boiler	Oven	Boiler		
MG061	PTN (kW)	9,0		9,0		9,0		9,0 kW	A_{13} - B_{13} - B_{23}
	PTR (kW)	5,7		6,5		6,5			
	Mix (1/100 mm)	14,0		14,0		11,0			
	Ign	90 Hz	2,6 Vdc	75 Hz	2,2 Vdc	75 Hz	2,2 Vdc		
	Min	100 Hz	2,9 Vdc	90 Hz	2,6 Vdc	90 Hz	2,6 Vdc		
	Max	140 Hz	4,0 Vdc	108 Hz	3,6 Vdc	120 Hz	3,6 Vdc		
	Orifice (1/100 mm)	-		3,3		3,3			
	Consumption	0,95 m^3/h		0,71 kg/h		0,70 kg/h			
MG101	PTN (kW)	18,0		18,0		18,0		18,0 kW	A_{13} - B_{13} - B_{23}
	PTR (kW)	11,0		13,0		13,0			
	Mix (1/100 mm)	13,0		13,5		11,0			
	Ign	85 Hz	2,4 Vdc	80 Hz	2,3 Vdc	80 Hz	2,3 Vdc		
	Min	112 Hz	3,2 Vdc	112 Hz	3,2 Vdc	112 Hz	3,2 Vdc		
	Max	155 Hz	4,4 Vdc	130 Hz	4,08 Vdc	135 Hz	4,08 Vdc		
	Orifice (1/100 mm)	-		4,0		4,0			
	Consumption	1,90 m^3/h		1,42 kg/h		1,40 kg/h			
MG102	PTN (kW)	27,0		27,0		27,0		27,0 kW	A_{13} - B_{13} - B_{23}
	PTR (kW)	16,0		18,0		18,0			
	Mix (1/100 mm)	12,5		12,0		9,0			
	Ign	80 Hz	2,3 Vdc	90 Hz	2,5 Vdc	90 Hz	2,5 Vdc		
	Min	112 Hz	3,2 Vdc	112 Hz	3,2 Vdc	112 Hz	3,2 Vdc		
	Max	170 Hz	4,7 Vdc	155 Hz	4,4 Vdc	160 Hz	4,4 Vdc		
	Orifice (1/100 mm)	-		4,5		4,5			
	Consumption	2,86 m^3/h		2,13 kg/h		2,10 kg/h			
MG201	PTN (kW)	27,0		27,0		27,0		27,0 kW	A_{13} - B_{13} - B_{23}
	PTR (kW)	16,0		18,0		18,0			
	Mix (1/100 mm)	12,5		12,0		9,0			
	Ign	80 Hz	2,3 Vdc	90 Hz	2,8 Vdc	90 Hz	2,8 Vdc		
	Min	112 Hz	3,2 Vdc	112 Hz	3,4 Vdc	112 Hz	3,4 Vdc		
	Max	170 Hz	4,9 Vdc	140 Hz	4,4 Vdc	150 Hz	4,4 Vdc		
	Orifice (1/100 mm)	-		4,5		4,5			
	Consumption	2,86 m^3/h		2,13 kg/h		2,10 kg/h			
MG202 (data for any burners)	PTN (kW)	27,0		27,0		27,0		54,0 kW	A_{13} - B_{13} - B_{23}
	PTR (kW)	16,0		18,0		18,0			
	Mix (1/100 mm)	12,5		12,0		9,0			
	Ign	80 Hz	2,3 Vdc	90 Hz	2,5 Vdc	90 Hz	2,5 Vdc		
	Min	112 Hz	3,2 Vdc	112 Hz	3,2 Vdc	112 Hz	3,2 Vdc		
	Max	170 Hz	4,7 Vdc	155 Hz	4,4 Vdc	160 Hz	4,4 Vdc		
	Orifice (1/100 mm)	-		4,5		4,5			
	Consumption	2,86 m^3/h		2,13 kg/h		2,10 kg/h			

Note: **PTN =** Nominal heat capacity
IGN = Burner ignition set
MIN = Reduced heat capacity set
MAX = Nominal heat capacity set

TABLE 5 - GAS INLET PRESSURES

Rated mains pressure for the various types of gas:	Gas of family 1 – Town Gas of family 2 – Natural Gas of family 3 – LPG	**8 mbar** **20 mbar** **28-30/37 mbar**
Operation permissible if pressure is **between**:	Gas of family 1 – Town Gas of family 2 – Natural Gas of family 3 – LPG	**from 6 to 15 mbar** **from 18 to 25 mbar** **from 20/25 to 35/45 mbar**
Operation not permissible pressure is **less** than:	Gas of family 1 – Town Gas of family 2 – Natural Gas of family 3 – LPG	**6 mbar** **18 mbar** **20/25 mbar**
Operation not permissible pressure is **greater** than:	Gas of family 1 – Town Gas of family 2 – Natural Gas of family 3 – LPG	**15 mbar** **25 mbar** **35/45 mbar**

16.1 TECHNICAL DATA - NEDERLAND - Category II 2L3B/P

TABLE 4 - GAS DATA

Model	Type of gas	Natural gas		Liquid gas		Liquid gas		Equipment power	Installation type
	Gas description	2L - G25		3+ - G30		3+ - G31 (GPL)			
	Inf. calorific value	8,13 kWh/m≥		12,68 kWh/kg		12,87 kWh/kg			
	Rated pressure	25 mbar		28-30 mbar		28-30 mbar			
	Burners	Oven	Boiler	Oven	Boiler	Oven	Boiler		
MG061	PTN (kW)	9,0		9,0		9,0		9,0 kW	A_{13} - B_{13} - B_{23}
	PTR (kW)	5,7		6,5		6,5			
	Mix (1/100 mm)	11,0		14,0		11,0			
	Ign	90 Hz	2,6 Vdc	75 Hz	2,2 Vdc	75 Hz	2,2 Vdc		
	Min	100 Hz	2,9 Vdc	90 Hz	2,6 Vdc	90 Hz	2,6 Vdc		
	Max	135 Hz	3,9 Vdc	108 Hz	3,6 Vdc	120 Hz	3,6 Vdc		
	Orifice (1/100 mm)	-		3,3		3,3			
	Consumption	1,11 m^3/h		0,71 kg/h		0,70 kg/h			
MG101	PTN (kW)	18,0		18,0		18,0		18,0 kW	A_{13} - B_{13} - B_{23}
	PTR (kW)	11,0		13,0		13,0			
	Mix (1/100 mm)	10,5		13,5		11,0			
	Ign	85 Hz	2,4 Vdc	80 Hz	2,3 Vdc	80 Hz	2,3 Vdc		
	Min	112 Hz	3,2 Vdc	112 Hz	3,2 Vdc	112 Hz	3,2 Vdc		
	Max	155 Hz	4,4 Vdc	130 Hz	4,08 Vdc	135 Hz	4,08 Vdc		
	Orifice (1/100 mm)	-		4,0		4,0			
	Consumption	2,21 m^3/h		1,42 kg/h		1,40 kg/h			
MG102	PTN (kW)	27,0		27,0		27,0		27,0 kW	A_{13} - B_{13} - B_{23}
	PTR (kW)	16,0		18,0		18,0			
	Mix (1/100 mm)	10,5		12,0		9,0			
	Ign	80 Hz	2,3 Vdc	90 Hz	2,5 Vdc	90 Hz	2,5 Vdc		
	Min	112 Hz	3,2 Vdc	112 Hz	3,2 Vdc	112 Hz	3,2 Vdc		
	Max	170 Hz	4,7 Vdc	155 Hz	4,4 Vdc	160 Hz	4,4 Vdc		
	Orifice (1/100 mm)	-		4,5		4,5			
	Consumption	3,32 m^3/h		2,13 kg/h		2,10 kg/h			
MG201	PTN (kW)	27,0		27,0		27,0		27,0 kW	A_{13} - B_{13} - B_{23}
	PTR (kW)	16,0		18,0		18,0			
	Mix (1/100 mm)	10,5		12,0		9,0			
	Ign	80 Hz	2,5 Vdc	90 Hz	2,8 Vdc	90 Hz	2,8 Vdc		
	Min	112 Hz	3,4 Vdc	112 Hz	3,4 Vdc	112 Hz	3,4 Vdc		
	Max	170 Hz	4,9 Vdc	140 Hz	4,4 Vdc	150 Hz	4,4 Vdc		
	Orifice (1/100 mm)	-		4,5		4,5			
	Consumption	3,32 m^3/h		2,13 kg/h		2,10 kg/h			
MG202 (data for any burners)	PTN (kW)	27,0		27,0		27,0		54,0 kW	A_{13} - B_{13} - B_{23}
	PTR (kW)	16,0		18,0		18,0			
	Mix (1/100 mm)	10,5		12,0		9,0			
	Ign	80 Hz	2,3 Vdc	90 Hz	2,5 Vdc	90 Hz	2,5 Vdc		
	Min	112 Hz	3,2 Vdc	112 Hz	3,2 Vdc	112 Hz	3,2 Vdc		
	Max	170 Hz	4,7 Vdc	155 Hz	4,4 Vdc	160 Hz	4,4 Vdc		
	Orifice (1/100 mm)	-		4,5		4,5			
	Consumption	3,32 m^3/h		2,13 kg/h		2,10 kg/h			

Note: **PTN =** Nominal heat capacity
IGN = Burner ignition set
MIN = Reduced heat capacity set
MAX = Nominal heat capacity set

TABLE 5 - GAS INLET PRESSURES

Rated mains pressure for the various types of gas:	Gas of family 2 – Natural Gas of family 3 – LPG	**25 mbar** **28-30 mbar**
Operation permissible if pressure is **between**:	Gas of family 2 – Natural Gas of family 3 – LPG	**from 20 to 30 mbar** **from 20 to 35 mbar**
Operation not permissible pressure is **less** than:	Gas of family 2 – Natural Gas of family 3 – LPG	**20 mbar** **20 mbar**
Operation not permissible pressure is **greater** than:	Gas of family 2 – Natural Gas of family 3 – LPG	**30 mbar** **35 mbar**

16.1 TECHNICAL DATA - NORWAY - Category I 3B/P

TABLE 4 - GAS DATA

Modello	Type of gas	Liquid gas		Liquid gas		Equipment power	Installation type
	Gas description	3+ - G30		3+ - G31 (GPL)			
	Inf. calorific value	12,68 kWh/kg		12,87 kWh/kg			
	Rated pressure	28-30 mbar		28-30 mbar			
	Burners	Oven	Boiler	Oven	Boiler		
MG061	PTN (kW)	9,0		9,0		9,0 kW	A_{13} - B_{13} - B_{23}
	PTR (kW)	6,5		6,5			
	Mix (1/100 mm)	14,0		11,0			
	Ign	75 Hz	2,2 Vdc	75 Hz	2,2 Vdc		
	Min	90 Hz	2,6 Vdc	90 Hz	2,6 Vdc		
	Max	108 Hz	3,6 Vdc	120 Hz	3,6 Vdc		
	Orifice (1/100 mm)	3,3		3,3			
	Consumption	0,71 kg/h		0,70 kg/h			
MG101	PTN (kW)	18,0		18,0		18,0 kW	A_{13} - B_{13} - B_{23}
	PTR (kW)	13,0		13,0			
	Mix (1/100 mm)	13,5		11,0			
	Ign	80 Hz	2,3 Vdc	80 Hz	2,3 Vdc		
	Min	112 Hz	3,2 Vdc	112 Hz	3,2 Vdc		
	Max	130 Hz	4,08 Vdc	135 Hz	4,08 Vdc		
	Orifice (1/100 mm)	4,0		4,0			
	Consumption	1,42 kg/h		1,40 kg/h			
MG102	PTN (kW)	27,0		27,0		27,0 kW	A_{13} - B_{13} - B_{23}
	PTR (kW)	18,0		18,0			
	Mix (1/100 mm)	12,0		9,0			
	Ign	90 Hz	2,5 Vdc	90 Hz	2,5 Vdc		
	Min	112 Hz	3,2 Vdc	112 Hz	3,2 Vdc		
	Max	155 Hz	4,4 Vdc	160 Hz	4,4 Vdc		
	Orifice (1/100 mm)	4,5		4,5			
	Consumption	2,13 kg/h		2,10 kg/h			
MG201	PTN (kW)	27,0		27,0		27,0 kW	A_{13} - B_{13} - B_{23}
	PTR (kW)	18,0		18,0			
	Mix (1/100 mm)	12,0		9,0			
	Ign	90 Hz	2,8 Vdc	90 Hz	2,8 Vdc		
	Min	112 Hz	3,4 Vdc	112 Hz	3,4 Vdc		
	Max	140 Hz	4,4 Vdc	150 Hz	4,4 Vdc		
	Orifice (1/100 mm)	4,5		4,5			
	Consumption	2,13 kg/h		2,10 kg/h			
MG202 (data for any burners)	PTN (kW)	27,0		27,0		54,0 kW	A_{13} - B_{13} - B_{23}
	PTR (kW)	18,0		18,0			
	Mix (1/100 mm)	12,0		9,0			
	Ign	90 Hz	2,5 Vdc	90 Hz	2,5 Vdc		
	Min	112 Hz	3,2 Vdc	112 Hz	3,2 Vdc		
	Max	155 Hz	4,4 Vdc	160 Hz	4,4 Vdc		
	Orifice (1/100 mm)	4,5		4,5			
	Consumption	2,13 kg/h		2,10 kg/h			

Note: **PTN =** Nominal heat capacity
IGN = Burner ignition set
MIN = Reduced heat capacity set
MAX = Nominal heat capacity set

TABLE 5 - GAS INLET PRESSURES

Rated mains pressure for the various types of gas:	Gas of family 3 – LPG	**28-30 mbar**
Operation permissible if pressure is **between**:	Gas of family 3 – LPG	**from 20 to 35 mbar**
Operation not permissible pressure is **less** than:	Gas of family 3 – LPG	**20 mbar**
Operation not permissible pressure is **greater** than:	Gas of family 3 – LPG	**35 mbar**

16.1 TECHNICAL DATA - EXTRACEE COUNTRIES

TABLE 4 - GAS DATA

Model	Type of gas	Natural Gas		Liquid gas		Liquid gas		Liquid gas		Liquid gas		Equipment power	Installation type
	Gas description	2H - G20		G30		G31 (GPL)		G30		G31 (GPL)			
	Inf. calorific value	9,45 kWh/m≥		12,68 kWh/kg		12,87 kWh/kg		12,68 kWh/kg		12,87 kWh/kg			
	Rated pressure	20 mbar		28-30/37 mbar		28-30/37 mbar		50 mbar		50 mbar			
	Burners	Oven	Boiler	Oven	Boiler	Oven	Boiler	Oven	Boiler	Oven	Boiler		
MG061	PTN (kW)	9,0		9,0		9,0		9,0		9,0		9,0 kW	A_{13} - B_{13} - B_{23}
	PTR (kW)	5,7		6,5		6,5		6,5		6,5			
	Mix (1/100 mm)	14,0		14,0		11,0		14,0		11,0			
	Ign	90 Hz	2,6 Vdc	75 Hz	2,2 Vdc	75 Hz	2,2 Vdc	75 Hz	2,2 Vdc	75 Hz	2,2 Vdc		
	Min	100 Hz	2,9 Vdc	90 Hz	2,6 Vdc	90 Hz	2,6 Vdc	90 Hz	2,6 Vdc	90 Hz	2,6 Vdc		
	Max	140 Hz	4,0 Vdc	108 Hz	3,6 Vdc	120 Hz	3,6 Vdc	108 Hz	3,6 Vdc	120 Hz	3,6 Vdc		
	Orifice (1/100 mm)	-		3,3		3,3		3,3		3,3			
	Consumption	0,95 m^3/h		0,71 kg/h		0,70 kg/h		0,71 kg/h		0,70 kg/h			
MG101	PTN (kW)	18,0		18,0		18,0		18,0		18,0		18,0 kW	A_{13} - B_{13} - B_{23}
	PTR (kW)	11,0		13,0		13,0		13,0		13,0			
	Mix (1/100 mm)	13,0		13,5		11,0		13,5		11,0			
	Ign	85 Hz	2,4 Vdc	80 Hz	2,3 Vdc	80 Hz	2,3 Vdc	80 Hz	2,3 Vdc	80 Hz	2,3 Vdc		
	Min	112 Hz	3,2 Vdc	112 Hz	3,2 Vdc	112 Hz	3,2 Vdc	112 Hz	3,2 Vdc	112 Hz	3,2 Vdc		
	Max	155 Hz	4,4 Vdc	130 Hz	4,08 Vdc	135 Hz	4,08 Vdc	130 Hz	4,08 Vdc	135 Hz	4,08 Vdc		
	Orifice (1/100 mm)	-		4,0		4,0		4,0		4,0			
	Consumption	1,90 m^3/h		1,42 kg/h		1,40 kg/h		1,42 kg/h		1,40 kg/h			
MG102	PTN (kW)	27,0		27,0		27,0		27,0		27,0		27,0 kW	A_{13} - B_{13} - B_{23}
	PTR (kW)	16,0		18,0		18,0		18,0		18,0			
	Mix (1/100 mm)	12,5		12,0		9,0		12,0		9,0			
	Ign	80 Hz	2,3 Vdc	90 Hz	2,5 Vdc	90 Hz	2,5 Vdc	90 Hz	2,5 Vdc	90 Hz	2,5 Vdc		
	Min	112 Hz	3,2 Vdc	112 Hz	3,2 Vdc	112 Hz	3,2 Vdc	112 Hz	3,2 Vdc	112 Hz	3,2 Vdc		
	Max	170 Hz	4,7 Vdc	155 Hz	4,4 Vdc	160 Hz	4,4 Vdc	155 Hz	4,4 Vdc	160 Hz	4,4 Vdc		
	Orifice (1/100 mm)	-		4,5		4,5		4,5		4,5			
	Consumption	2,86 m^3/h		2,13 kg/h		2,10 kg/h		2,13 kg/h		2,10 kg/h			
MG201	PTN (kW)	27,0		27,0		27,0		27,0		27,0		27,0 kW	A_{13} - B_{13} - B_{23}
	PTR (kW)	16,0		18,0		18,0		18,0		18,0			
	Mix (1/100 mm)	12,5		12,0		9,0		12,0		9,0			
	Ign	80 Hz	2,3 Vdc	90 Hz	2,8 Vdc	90 Hz	2,8 Vdc	90 Hz	2,8 Vdc	90 Hz	2,8 Vdc		
	Min	112 Hz	3,2 Vdc	112 Hz	3,4 Vdc	112 Hz	3,4 Vdc	112 Hz	3,4 Vdc	112 Hz	3,4 Vdc		
	Max	170 Hz	4,9 Vdc	140 Hz	4,4 Vdc	150 Hz	4,4 Vdc	140 Hz	4,4 Vdc	150 Hz	4,4 Vdc		
	Orifice (1/100 mm)	-		4,5		4,5		4,5		4,5			
	Consumption	2,86 m^3/h		2,13 kg/h		2,10 kg/h		2,13 kg/h		2,10 kg/h			
MG202 (data for any burners)	PTN (kW)	27,0		27,0		27,0		27,0		27,0		54,0 kW	A_{13} - B_{13} - B_{23}
	PTR (kW)	16,0		18,0		18,0		18,0		18,0			
	Mix (1/100 mm)	12,5		12,0		9,0		12,0		9,0			
	Ign	80 Hz	2,3 Vdc	90 Hz	2,5 Vdc	90 Hz	2,5 Vdc	90 Hz	2,5 Vdc	90 Hz	2,5 Vdc		
	Min	112 Hz	3,2 Vdc	112 Hz	3,2 Vdc	112 Hz	3,2 Vdc	112 Hz	3,2 Vdc	112 Hz	3,2 Vdc		
	Max	170 Hz	4,7 Vdc	155 Hz	4,4 Vdc	160 Hz	4,4 Vdc	155 Hz	4,4 Vdc	160 Hz	4,4 Vdc		
	Orifice (1/100 mm)	-		4,5		4,5		4,5		4,5			
	Consumption	2,86 m^3/h		2,13 kg/h		2,10 kg/h		2,13 kg/h		2,10 kg/h			

Note: **PTN =** Nominal heat capacity
IGN = Burner ignition set
MIN = Reduced heat capacity set
MAX = Nominal heat capacity set

TABLE 5 - GAS INLET PRESSURES

Rated mains pressure for the various types of gas:	Gas of family 1 – Town Gas of family 2 – Natural Gas of family 3 – LPG	**8 mbar** **20 mbar** **28-30/37 mbar**
Operation permissible if pressure is **between**:	Gas of family 1 – Town Gas of family 2 – Natural Gas of family 3 – LPG	**from 6 to 15 mbar** **from 18 to 25 mbar** **from 20/25 to 35/45 mbar**
Operation not permissible pressure is **less** than:	Gas of family 1 – Town Gas of family 2 – Natural Gas of family 3 – LPG	**6 mbar** **18 mbar** **20/25 mbar**
Operation not permissible pressure is **greater** than:	Gas of family 1 – Town Gas of family 2 – Natural Gas of family 3 – LPG	**15 mbar** **25 mbar** **35/45 mbar**

16.1 CARACTÉRISTIQUES TECHNIQUES - FRANCE - BELGIQUE - LUXEMBOURG Catégorie I 3+

TABLEAU 4 - CARACTÉRISTIQUES GAZ

Modèles	Type de gaz	Gaz Liquide		Gaz Liquide		Puissance appareils	Type installation
	Dénomination gaz	3+ - G30		3+ - G31 (GPL)			
	Pouvoir calorifique inferieur	12,68 kWh/kg		12,87 kWh/kg			
	Pression nominale	28-30/37 mbar		28-30/37 mbar			
	Brûleurs	Enceinte	Générateur	Enceinte	Générateur		
MG061	PTN (kW)	9,0		9,0		9,0 kW	A_{13} - B_{13} - B_{23}
	PTR (kW)	6,5		6,5			
	Mix (1/100 mm)	14,0		11,0			
	Ign	75 Hz	2,2 Vdc	75 Hz	2,2 Vdc		
	Min	90 Hz	2,6 Vdc	90 Hz	2,6 Vdc		
	Max	108 Hz	3,6 Vdc	120 Hz	3,6 Vdc		
	Orifice (1/100 mm)	3,3		3,3			
	Consommation	0,71 kg/h		0,70 kg/h			
MG101	PTN (kW)	18,0		18,0		18,0 kW	A_{13} - B_{13} - B_{23}
	PTR (kW)	13,0		13,0			
	Mix (1/100 mm)	13,5		11,0			
	Ign	80 Hz	2,3 Vdc	80 Hz	2,3 Vdc		
	Min	112 Hz	3,2 Vdc	112 Hz	3,2 Vdc		
	Max	130 Hz	4,08 Vdc	135 Hz	4,08 Vdc		
	Orifice (1/100 mm)	4,0		4,0			
	Consommation	1,42 kg/h		1,40 kg/h			
MG102	PTN (kW)	27,0		27,0		27,0 kW	A_{13} - B_{13} - B_{23}
	PTR (kW)	18,0		18,0			
	Mix (1/100 mm)	12,0		9,0			
	Ign	90 Hz	2,5 Vdc	90 Hz	2,5 Vdc		
	Min	112 Hz	3,2 Vdc	112 Hz	3,2 Vdc		
	Max	155 Hz	4,4 Vdc	160 Hz	4,4 Vdc		
	Orifice (1/100 mm)	4,5		4,5			
	Consommation	2,13 kg/h		2,10 kg/h			
MG201	PTN (kW)	27,0		27,0		27,0 kW	A_{13} - B_{13} - B_{23}
	PTR (kW)	18,0		18,0			
	Mix (1/100 mm)	12,0		9,0			
	Ign	90 Hz	2,8 Vdc	90 Hz	2,8 Vdc		
	Min	112 Hz	3,4 Vdc	112 Hz	3,4 Vdc		
	Max	140 Hz	4,4 Vdc	150 Hz	4,4 Vdc		
	Orifice (1/100 mm)	4,5		4,5			
	Consommation	2,13 kg/h		2,10 kg/h			
MG202 (pour chaque Brûleurs)	PTN (kW)	27,0		27,0		54,0 kW	A_{13} - B_{13} - B_{23}
	PTR (kW)	18,0		18,0			
	Mix (1/100 mm)	12,0		9,0			
	Ign	90 Hz	2,5 Vdc	90 Hz	2,5 Vdc		
	Min	112 Hz	3,2 Vdc	112 Hz	3,2 Vdc		
	Max	155 Hz	4,4 Vdc	160 Hz	4,4 Vdc		
	Orifice (1/100 mm)	4,5		4,5			
	Consommation	2,13 kg/h		2,10 kg/h			

Note: **PTN =** puissance thermique nominal
IGN = Set d'allumage bruleur
MIN = Set puissance de chauffage reduit
MAX = Set puissance de chauffage nominal

TABLEAU 5 - PRESSIONS GAZ EN ENTRÉE

Pression nominale du réseau pour les différents types de gaz :	Gaz de la 2e Famille - Méthane Gaz de la 3e Famille - GPL	**20/25 mbar** **28-30/37 mbar**
Fonctionnement admissible si la pression est **comprise** entre :	Gaz de la 2e Famille - Méthane Gaz de la 3e Famille - GPL	**de 18/20 à 25/30 mbar** **de 20/35 à 35/45 mbar**
Fonctionnement non admissible si la pression est **inférieure** à :	Gaz de la 2e Famille - Méthane Gaz de la 3e Famille - GPL	**18/20 mbar** **20/35 mbar**
Fonctionnement non admissible si la pression est **supérieure** à :	Gaz de la 2e Famille - Méthane Gaz de la 3e Famille - GPL	**25/30 mbar** **35/45 mbar**

16.1 CARACTÉRISTIQUES TECHNIQUES - FRANCE - Catégorie I 2Esi

TABLEAU 4 - CARACTÉRISTIQUES GAZ

Modèles	Type de gaz	Gas Méthane		Puissance appareils	Type installation
	Dénomination gaz	2Esi - G20			
	Pouvoir calorifique inferieur	9,45 kWh/m≥			
	Pression nominale	20 mbar			
	Brûleurs	Enceinte	Générateur		
MG061	PTN (kW)	9,0		9,0 kW	A_{13} - B_{13} - B_{23}
	PTR (kW)	5,7			
	Mix (1/100 mm)	14,0			
	Ign	90 Hz	2,6 Vdc		
	Min	100 Hz	2,9 Vdc		
	Max	140 Hz	4,0 Vdc		
	Orifice (1/100 mm)	-			
	Consommation	0,95 m^3/h			
MG101	PTN (kW)	18,0		18,0 kW	A_{13} - B_{13} - B_{23}
	PTR (kW)	11,0			
	Mix (1/100 mm)	13,0			
	Ign	85 Hz	2,4 Vdc		
	Min	112 Hz	3,2 Vdc		
	Max	155 Hz	4,4 Vdc		
	Orifice (1/100 mm)	-			
	Consommation	1,90 m^3/h			
MG102	PTN (kW)	27,0		27,0 kW	A_{13} - B_{13} - B_{23}
	PTR (kW)	16,0			
	Mix (1/100 mm)	12,5			
	Ign	80 Hz	2,3 Vdc		
	Min	112 Hz	3,2 Vdc		
	Max	170 Hz	4,7 Vdc		
	Orifice (1/100 mm)	-			
	Consommation	2,86 m^3/h			
MG201	PTN (kW)	27,0		27,0 kW	A_{13} - B_{13} - B_{23}
	PTR (kW)	16,0			
	Mix (1/100 mm)	12,5			
	Ign	80 Hz	2,3 Vdc		
	Min	112 Hz	3,2 Vdc		
	Max	170 Hz	4,9 Vdc		
	Orifice (1/100 mm)	-			
	Consommation	2,86 m^3/h			
MG202 (pour chaque Brûleurs)	PTN (kW)	27,0		54,0 kW	A_{13} - B_{13} - B_{23}
	PTR (kW)	16,0			
	Mix (1/100 mm)	12,5			
	Ign	80 Hz	2,3 Vdc		
	Min	112 Hz	3,2 Vdc		
	Max	170 Hz	4,7 Vdc		
	Orifice (1/100 mm)	-			
	Consommation	2,86 m^3/h			

Note: **PTN =** puissance thermique nominal
IGN = Set d'allumage bruleur
MIN = Set puissance de chauffage reduit
MAX = Set puissance de chauffage nominal

TABLEAU 5 - PRESSIONS GAZ EN ENTRÉE

Pression nominale du réseau pour les différents types de gaz :	Gaz de la 1ère Famille - Ville Gaz de la 2e Famille - Méthane Gaz de la 3e Famille - GPL	**8 mbar** **20 mbar** **50 mbar**
Fonctionnement admissible si la pression est **comprise** entre :	Gaz de la 1ère Famille - Ville Gaz de la 2e Famille - Méthane Gaz de la 3e Famille - GPL	**de 6 à 15 mbar** **de 18 à 25 mbar** **de 42,5 à 57,5 mbar**
Fonctionnement non admissible si la pression est **inférieure** à :	Gaz de la 1ère Famille - Ville Gaz de la 2e Famille - Méthane Gaz de la 3e Famille - GPL	**6 mbar** **18 mbar** **42,5 mbar**
Fonctionnement non admissible si la pression est **supérieure** à :	Gaz de la 1ère Famille - Ville Gaz de la 2e Famille - Méthane Gaz de la 3e Famille - GPL	**15 mbar** **25 mbar** **57,5 mbar**

16.1 CARACTÉRISTIQUES TECHNIQUES - BELGIQUE - Catégorie I 2E(R)B

TABLEAU 4 - CARACTÉRISTIQUES GAZ

Modèles	Type de gaz	Gas Méthane		Puissance appareils	Type installation
	Dénomination gaz	2E(R)B - G20			
	Pouvoir calorifique inferieur	9,45 kWh/m≥			
	Pression nominale	20 mbar			
	Brûleurs	Enceinte	Générateur		
MG061	PTN (kW)	9,0		9,0 kW	A_{13} - B_{13} - B_{23}
	PTR (kW)	5,7			
	Mix (1/100 mm)	14,0			
	Ign	90 Hz	2,6 Vdc		
	Min	100 Hz	2,9 Vdc		
	Max	140 Hz	4,0 Vdc		
	Orifice (1/100 mm)	-			
	Consommation	0,95 m^3/h			
MG101	PTN (kW)	18,0		18,0 kW	A_{13} - B_{13} - B_{23}
	PTR (kW)	11,0			
	Mix (1/100 mm)	13,0			
	Ign	85 Hz	2,4 Vdc		
	Min	112 Hz	3,2 Vdc		
	Max	155 Hz	4,4 Vdc		
	Orifice (1/100 mm)	-			
	Consommation	1,90 m^3/h			
MG102	PTN (kW)	27,0		27,0 kW	A_{13} - B_{13} - B_{23}
	PTR (kW)	16,0			
	Mix (1/100 mm)	12,5			
	Ign	80 Hz	2,3 Vdc		
	Min	112 Hz	3,2 Vdc		
	Max	170 Hz	4,7 Vdc		
	Orifice (1/100 mm)	-			
	Consommation	2,86 m^3/h			
MG201	PTN (kW)	27,0		27,0 kW	A_{13} - B_{13} - B_{23}
	PTR (kW)	16,0			
	Mix (1/100 mm)	12,5			
	Ign	80 Hz	2,3 Vdc		
	Min	112 Hz	3,2 Vdc		
	Max	170 Hz	4,9 Vdc		
	Orifice (1/100 mm)	-			
	Consommation	2,86 m^3/h			
MG202 (pour chaque Brûleurs)	PTN (kW)	27,0		54,0 kW	A_{13} - B_{13} - B_{23}
	PTR (kW)	16,0			
	Mix (1/100 mm)	12,5			
	Ign	80 Hz	2,3 Vdc		
	Min	112 Hz	3,2 Vdc		
	Max	170 Hz	4,7 Vdc		
	Orifice (1/100 mm)	-			
	Consommation	2,86 m^3/h			

Note: **PTN =** puissance thermique nominal
IGN = Set d'allumage bruleur
MIN = Set puissance de chauffage reduit
MAX = Set puissance de chauffage nominal

TABLEAU 5 - PRESSIONS GAZ EN ENTRÉE

Pression nominale du réseau pour les différents types de gaz :	Gaz de la 2e Famille - Méthane Gaz de la 3e Famille - GPL	**20/25 mbar** **28-30/37 mbar**
Fonctionnement admissible si la pression est **comprise** entre :	Gaz de la 2e Famille - Méthane Gaz de la 3e Famille - GPL	**de 18/20 à 25/30 mbar** **de 20/35 à 35/45 mbar**
Fonctionnement non admissible si la pression est **inférieure** à :	Gaz de la 2e Famille - Méthane Gaz de la 3e Famille - GPL	**18/20 mbar** **20/35 mbar**
Fonctionnement non admissible si la pression est **supérieure** à :	Gaz de la 2e Famille - Méthane Gaz de la 3e Famille - GPL	**25/30 mbar** **35/45 mbar**

16.1 CARACTÉRISTIQUES TECHNIQUES - LUXEMBOURG - Catégorie I 2E

TABLEAU 4 - CARACTÉRISTIQUES GAZ

Modèles	Type de gaz	Gas Méthane		Puissance appareils	Type installation
	Dénomination gaz	2E - G20			
	Pouvoir calorifique inferieur	9,45 kWh/m≥			
	Pression nominale	20 mbar			
	Brûleurs	Enceinte	Générateur		
MG061	PTN (kW)	9,0		9,0 kW	A_{13}- B $_{13}$- B $_{23}$
	PTR (kW)	5,7			
	Mix (1/100 mm)	14,0			
	Ign	90 Hz	2,6 Vdc		
	Min	100 Hz	2,9 Vdc		
	Max	140 Hz	4,0 Vdc		
	Orifice (1/100 mm)	-			
	Consommation	0,95 m ^{3}/h			
MG101	PTN (kW)	18,0		18,0 kW	A_{13}- B $_{13}$- B $_{23}$
	PTR (kW)	11,0			
	Mix (1/100 mm)	13,0			
	Ign	85 Hz	2,4 Vdc		
	Min	112 Hz	3,2 Vdc		
	Max	155 Hz	4,4 Vdc		
	Orifice (1/100 mm)	-			
	Consommation	1,90 m ^{3}/h			
MG102	PTN (kW)	27,0		27,0 kW	A_{13}- B $_{13}$- B $_{23}$
	PTR (kW)	16,0			
	Mix (1/100 mm)	12,5			
	Ign	80 Hz	2,3 Vdc		
	Min	112 Hz	3,2 Vdc		
	Max	170 Hz	4,7 Vdc		
	Orifice (1/100 mm)	-			
	Consommation	2,86 m ^{3}/h			
MG201	PTN (kW)	27,0		27,0 kW	A_{13}- B $_{13}$- B $_{23}$
	PTR (kW)	16,0			
	Mix (1/100 mm)	12,5			
	Ign	80 Hz	2,3 Vdc		
	Min	112 Hz	3,2 Vdc		
	Max	170 Hz	4,9 Vdc		
	Orifice (1/100 mm)	-			
	Consommation	2,86 m ^{3}/h			
MG202 (pour chaque Brûleurs)	PTN (kW)	27,0		54,0 kW	A_{13}- B $_{13}$- B $_{23}$
	PTR (kW)	16,0			
	Mix (1/100 mm)	12,5			
	Ign	80 Hz	2,3 Vdc		
	Min	112 Hz	3,2 Vdc		
	Max	170 Hz	4,7 Vdc		
	Orifice (1/100 mm)	-			
	Consommation	2,86 m ^{3}/h			

Note: **PTN =** puissance thermique nominal
IGN = Set d'allumage bruleur
MIN = Set puissance de chauffage reduit
MAX = Set puissance de chauffage nominal

TABLEAU 5 - PRESSIONS GAZ EN ENTRÉE

Pression nominale du réseau pour les différents types de gaz :	Gaz de la 2e Famille - Méthane Gaz de la 3e Famille - GPL	**20 mbar** **28-30/37 mbar**
Fonctionnement admissible si la pression est **comprise** entre :	Gaz de la 2e Famille - Méthane Gaz de la 3e Famille - GPL	**de 18 à 25 mbar** **de 20/35 à 35/45 mbar**
Fonctionnement non admissible si la pression est **inférieure** à :	Gaz de la 2e Famille - Méthane Gaz de la 3e Famille - GPL	**18 mbar** **20/35 mbar**
Fonctionnement non admissible si la pression est **supérieure** à :	Gaz de la 2e Famille - Méthane Gaz de la 3e Famille - GPL	**25 mbar** **35/45 mbar**

16.1 CARACTÉRISTIQUES TECHNIQUES - SUISSE - Catégorie II 2H3B/P; II 1a2H

TABLEAU 4 - CARACTÉRISTIQUES GAZ

Modèles	Type de gaz	Gas Méthane		Gas Liquide		Gas Liquide		Puissance appareils	Type installation
	Dénomination gaz	2H - G20		3+ - G30		3+ - G31 (GPL)			
	Pouvoir calorifique inferieur	9,45 kWh/m≥		12,68 kWh/kg		12,87 kWh/kg			
	Pression nominale	20 mbar		50 mbar		50 mbar			
	Brûleurs	Enceinte	Générateur	Enceinte	Générateur	Enceinte	Générateur		
MG061	PTN (kW)	9,0		9,0		9,0		9,0 kW	A_{13} - B_{13} - B_{23}
	PTR (kW)	5,7		6,5		6,5			
	Mix (1/100 mm)	14,0		14,0		11,0			
	Ign	90 Hz	2,6 Vdc	75 Hz	2,2 Vdc	75 Hz	2,2 Vdc		
	Min	100 Hz	2,9 Vdc	90 Hz	2,6 Vdc	90 Hz	2,6 Vdc		
	Max	140 Hz	4,0 Vdc	108 Hz	3,6 Vdc	120 Hz	3,6 Vdc		
	Orifice (1/100 mm)	-		3,3		3,3			
	Consommation	0,95 m^3/h		0,71 kg/h		0,70 kg/h			
MG101	PTN (kW)	18,0		18,0		18,0		18,0 kW	A_{13} - B_{13} - B_{23}
	PTR (kW)	11,0		13,0		13,0			
	Mix (1/100 mm)	13,0		13,5		11,0			
	Ign	85 Hz	2,4 Vdc	80 Hz	2,3 Vdc	80 Hz	2,3 Vdc		
	Min	112 Hz	3,2 Vdc	112 Hz	3,2 Vdc	112 Hz	3,2 Vdc		
	Max	155 Hz	4,4 Vdc	130 Hz	4,08 Vdc	135 Hz	4,08 Vdc		
	Orifice (1/100 mm)	-		4,0		4,0			
	Consommation	1,90 m^3/h		1,42 kg/h		1,40 kg/h			
MG102	PTN (kW)	27,0		27,0		27,0		27,0 kW	A_{13} - B_{13} - B_{23}
	PTR (kW)	16,0		18,0		18,0			
	Mix (1/100 mm)	12,5		12,0		9,0			
	Ign	80 Hz	2,3 Vdc	90 Hz	2,5 Vdc	90 Hz	2,5 Vdc		
	Min	112 Hz	3,2 Vdc	112 Hz	3,2 Vdc	112 Hz	3,2 Vdc		
	Max	170 Hz	4,7 Vdc	155 Hz	4,4 Vdc	160 Hz	4,4 Vdc		
	Orifice (1/100 mm)	-		4,5		4,5			
	Consommation	2,86 m^3/h		2,13 kg/h		2,10 kg/h			
MG201	PTN (kW)	27,0		27,0		27,0		27,0 kW	A_{13} - B_{13} - B_{23}
	PTR (kW)	16,0		18,0		18,0			
	Mix (1/100 mm)	12,5		12,0		9,0			
	Ign	80 Hz	2,3 Vdc	90 Hz	2,8 Vdc	90 Hz	2,8 Vdc		
	Min	112 Hz	3,2 Vdc	112 Hz	3,4 Vdc	112 Hz	3,4 Vdc		
	Max	170 Hz	4,9 Vdc	140 Hz	4,4 Vdc	150 Hz	4,4 Vdc		
	Orifice (1/100 mm)	-		4,5		4,5			
	Consommation	2,86 m^3/h		2,13 kg/h		2,10 kg/h			
MG202 (pour chaque Brûleurs)	PTN (kW)	27,0		27,0		27,0		54,0 kW	A_{13} - B_{13} - B_{23}
	PTR (kW)	16,0		18,0		18,0			
	Mix (1/100 mm)	12,5		12,0		9,0			
	Ign	80 Hz	2,3 Vdc	90 Hz	2,5 Vdc	90 Hz	2,5 Vdc		
	Min	112 Hz	3,2 Vdc	112 Hz	3,2 Vdc	112 Hz	3,2 Vdc		
	Max	170 Hz	4,7 Vdc	155 Hz	4,4 Vdc	160 Hz	4,4 Vdc		
	Orifice (1/100 mm)	-		4,5		4,5			
	Consommation	2,86 m^3/h		2,13 kg/h		2,10 kg/h			

Note: **PTN =** puissance thermique nominal
IGN = Set d'allumage bruleur
MIN = Set puissance de chauffage reduit
MAX = Set puissance de chauffage nominal

TABLEAU 5 - PRESSIONS GAZ EN ENTRÉE

Pression nominale du réseau pour les différents types de gaz :	Gaz de la 1ère Famille - Ville Gaz de la 2e Famille - Méthane Gaz de la 3e Famille - GPL	**8 mbar** **20 mbar** **50 mbar**
Fonctionnement admissible si la pression est **comprise** entre :	Gaz de la 1ère Famille - Ville Gaz de la 2e Famille - Méthane Gaz de la 3e Famille - GPL	**de 6 à 15 mbar** **de 18 à 25 mbar** **de 42,5 à 57,5 mbar**
Fonctionnement non admissible si la pression est **inférieure** à :	Gaz de la 1ère Famille - Ville Gaz de la 2e Famille - Méthane Gaz de la 3e Famille - GPL	**6 mbar** **18 mbar** **42,5 mbar**
Fonctionnement non admissible si la pression est **supérieure** à :	Gaz de la 1ère Famille - Ville Gaz de la 2e Famille - Méthane Gaz de la 3e Famille - GPL	**15 mbar** **25 mbar** **57,5 mbar**

16.1 TECHNISCHE DATEN - DEUTSCHLAND - Kategorie II 2ELL3B/P

TABELLE 4 - GASTECHNISCHE DATEN

Model	Gasart	Erdgas		Erdgas		Flüssiggas		Flüssiggas		Geräte-leistung	Installations-typ
	Gasbezeichnung	2E - G20		2LL - G25		3+ - G30		3+ - G31 (GPL)			
	Unt. Heizwert	9,45 kWh/m≥		8,13 kWh/m≥		12,68 kWh/kg		12,87 kWh/kg			
	Nenndruck	20 mbar		20 mbar		50 mbar		50 mbar			
	Brenner	Garraum	Boiler	Garraum	Boiler	Garraum	Boiler	Garraum	Boiler		
MG061	PTN (kW)	9,0		9,0		9,0		9,0		9,0 kW	A_{13} - B_{13} - B_{23}
	PTR (kW)	5,7		5,7		6,5		6,5			
	Mix (1/100 mm)	14,0		11,0		14,0		11,0			
	Ign	90 Hz	2,6 Vdc	90 Hz	2,6 Vdc	75 Hz	2,2 Vdc	75 Hz	2,2 Vdc		
	Min	100 Hz	2,9 Vdc	100 Hz	2,9 Vdc	90 Hz	2,6 Vdc	90 Hz	2,6 Vdc		
	Max	140 Hz	4,0 Vdc	135 Hz	3,9 Vdc	108 Hz	3,6 Vdc	120 Hz	3,6 Vdc		
	Diaframm (1/100 mm)	-		-		3,3		3,3			
	Verbrauch	0,95 m^3/h		1,11 m^3/h		0,71 kg/h		0,70 kg/h			
MG101	PTN (kW)	18,0		18,0		18,0		18,0		18,0 kW	A_{13} - B_{13} - B_{23}
	PTR (kW)	11,0		11,0		13,0		13,0			
	Mix (1/100 mm)	13,0		10,5		13,5		11,0			
	Ign	85 Hz	2,4 Vdc	85 Hz	2,4 Vdc	80 Hz	2,3 Vdc	80 Hz	2,3 Vdc		
	Min	112 Hz	3,2 Vdc	112 Hz	3,2 Vdc	112 Hz	3,2 Vdc	112 Hz	3,2 Vdc		
	Max	155 Hz	4,4 Vdc	155 Hz	4,4 Vdc	130 Hz	4,08 Vdc	135 Hz	4,08 Vdc		
	Diaframm (1/100 mm)	-		-		4,0		4,0			
	Verbrauch	1,90 m^3/h		2,21 m^3/h		1,42 kg/h		1,40 kg/h			
MG102	PTN (kW)	27,0		27,0		27,0		27,0		27,0 kW	A_{13} - B_{13} - B_{23}
	PTR (kW)	16,0		16,0		18,0		18,0			
	Mix (1/100 mm)	12,5		10,5		12,0		9,0			
	Ign	80 Hz	2,3 Vdc	80 Hz	2,3 Vdc	90 Hz	2,5 Vdc	90 Hz	2,5 Vdc		
	Min	112 Hz	3,2 Vdc	112 Hz	3,2 Vdc	112 Hz	3,2 Vdc	112 Hz	3,2 Vdc		
	Max	170 Hz	4,7 Vdc	170 Hz	4,7 Vdc	155 Hz	4,4 Vdc	160 Hz	4,4 Vdc		
	Diaframm (1/100 mm)	-		-		4,5		4,5			
	Verbrauch	2,86 m^3/h		3,32 m^3/h		2,13 kg/h		2,10 kg/h			
MG201	PTN (kW)	27,0		27,0		27,0		27,0		27,0 kW	A_{13} - B_{13} - B_{23}
	PTR (kW)	16,0		16,0		18,0		18,0			
	Mix (1/100 mm)	12,5		10,5		12,0		9,0			
	Ign	80 Hz	2,3 Vdc	80 Hz	2,5 Vdc	90 Hz	2,8 Vdc	90 Hz	2,8 Vdc		
	Min	112 Hz	3,2 Vdc	112 Hz	3,4 Vdc	112 Hz	3,4 Vdc	112 Hz	3,4 Vdc		
	Max	170 Hz	4,9 Vdc	170 Hz	4,9 Vdc	140 Hz	4,4 Vdc	150 Hz	4,4 Vdc		
	Diaframm (1/100 mm)	-		-		4,5		4,5			
	Verbrauch	2,86 m^3/h		3,32 m^3/h		2,13 kg/h		2,10 kg/h			
MG202 (von jedem Brenner)	PTN (kW)	27,0		27,0		27,0		27,0		54,0 kW	A_{13} - B_{13} - B_{23}
	PTR (kW)	16,0		16,0		18,0		18,0			
	Mix (1/100 mm)	12,5		10,5		12,0		9,0			
	Ign	80 Hz	2,3 Vdc	80 Hz	2,3 Vdc	90 Hz	2,5 Vdc	90 Hz	2,5 Vdc		
	Min	112 Hz	3,2 Vdc	112 Hz	3,2 Vdc	112 Hz	3,2 Vdc	112 Hz	3,2 Vdc		
	Max	170 Hz	4,7 Vdc	170 Hz	4,7 Vdc	155 Hz	4,4 Vdc	160 Hz	4,4 Vdc		
	Diaframm (1/100 mm)	-		-		4,5		4,5			
	Verbrauch	2,86 m^3/h		3,32 m^3/h		2,13 kg/h		2,10 kg/h			

Nota: **PTN =** Nennheizleistung
IGN = Einstellung, um die Zuendheizleistung zu erhalten
MIN = Einstellung, um die reduzierte Heizleistung zu erhalten
MAX = Einstellung, um die Nennheizleistung zu erhalten

TABELLE 5 - GASEINGANGSDRÜCKE (TYP B13)

Netznenndruck für die verschiedenen Gasarten	Gas der 2. Gruppe – Methan E - LL Gas der 3. Gruppe – Flüssiggas	**20 mbar** **50 mbar**
Betrieb zulässig bei einem Druckwert **zwischen**	Gas der 2. Gruppe – Methan E - LL Gas der 3. Gruppe – Flüssiggas	**18 bis 25 mbar** **42,5 bis 57,5 mbar**
Betrieb nicht zulässig Bei einem Druckwert **unter**	Gas der 2. Gruppe – Methan E - LL Gas der 3. Gruppe – Flüssiggas	**18 mbar** **42,5 mbar**
Betrieb nicht zulässig Bei einem Druckwert **über**	Gas der 2. Gruppe – Methan E - LL Gas der 3. Gruppe – Flüssiggas	**25 mbar** **57,5 mbar**

16.1 TECHNISCHE DATEN - ÖSTERREICH - SCHWEIZ - Kategorie II 2H3B/P

TABELLE 4 - GASTECHNISCHE DATEN

Modell	Gasart	Erdgas		Flüssiggas		Flüssiggas		Geräte-leistung	Installations-typ
	Gasbezeichnung	2H - G20		3+ - G30		3+ - G31 (GPL)			
	Unt. Heizwert	9,45 kWh/m≥		12,68 kWh/kg		12,87 kWh/kg			
	Nenndruck	20 mbar		50 mbar		50 mbar			
	Brenner	Garraum	Boiler	Garraum	Boiler	Garraum	Boiler		
MG061	PTN (kW)	9,0		9,0		9,0		9,0 kW	A_{13} - B_{13} - B_{23}
	PTR (kW)	5,7		6,5		6,5			
	Mix (1/100 mm)	14,0		14,0		11,0			
	Ign	90 Hz	2,6 Vdc	75 Hz	2,2 Vdc	75 Hz	2,2 Vdc		
	Min	100 Hz	2,9 Vdc	90 Hz	2,6 Vdc	90 Hz	2,6 Vdc		
	Max	140 Hz	4,0 Vdc	108 Hz	3,6 Vdc	120 Hz	3,6 Vdc		
	Diaframm (1/100 mm)	-		3,3		3,3			
	Verbrauch	0,95 m^3/h		0,71 kg/h		0,70 kg/h			
MG101	PTN (kW)	18,0		18,0		18,0		18,0 kW	A_{13} - B_{13} - B_{23}
	PTR (kW)	11,0		13,0		13,0			
	Mix (1/100 mm)	13,0		13,5		11,0			
	Ign	85 Hz	2,4 Vdc	80 Hz	2,3 Vdc	80 Hz	2,3 Vdc		
	Min	112 Hz	3,2 Vdc	112 Hz	3,2 Vdc	112 Hz	3,2 Vdc		
	Max	155 Hz	4,4 Vdc	130 Hz	4,08 Vdc	135 Hz	4,08 Vdc		
	Diaframm (1/100 mm)	-		4,0		4,0			
	Verbrauch	1,90 m^3/h		1,42 kg/h		1,40 kg/h			
MG102	PTN (kW)	27,0		27,0		27,0		27,0 kW	A_{13} - B_{13} - B_{23}
	PTR (kW)	16,0		18,0		18,0			
	Mix (1/100 mm)	12,5		12,0		9,0			
	Ign	80 Hz	2,3 Vdc	90 Hz	2,5 Vdc	90 Hz	2,5 Vdc		
	Min	112 Hz	3,2 Vdc	112 Hz	3,2 Vdc	112 Hz	3,2 Vdc		
	Max	170 Hz	4,7 Vdc	155 Hz	4,4 Vdc	160 Hz	4,4 Vdc		
	Diaframm (1/100 mm)	-		4,5		4,5			
	Verbrauch	2,86 m^3/h		2,13 kg/h		2,10 kg/h			
MG201	PTN (kW)	27,0		27,0		27,0		27,0 kW	A_{13} - B_{13} - B_{23}
	PTR (kW)	16,0		18,0		18,0			
	Mix (1/100 mm)	12,5		12,0		9,0			
	Ign	80 Hz	2,3 Vdc	90 Hz	2,8 Vdc	90 Hz	2,8 Vdc		
	Min	112 Hz	3,2 Vdc	112 Hz	3,4 Vdc	112 Hz	3,4 Vdc		
	Max	170 Hz	4,9 Vdc	140 Hz	4,4 Vdc	150 Hz	4,4 Vdc		
	Diaframm (1/100 mm)	-		4,5		4,5			
	Verbrauch	2,86 m^3/h		2,13 kg/h		2,10 kg/h			
MG202 (von jedem Brenner)	PTN (kW)	27,0		27,0		27,0		54,0 kW	A_{13} - B_{13} - B_{23}
	PTR (kW)	16,0		18,0		18,0			
	Mix (1/100 mm)	12,5		12,0		9,0			
	Ign	80 Hz	2,3 Vdc	90 Hz	2,5 Vdc	90 Hz	2,5 Vdc		
	Min	112 Hz	3,2 Vdc	112 Hz	3,2 Vdc	112 Hz	3,2 Vdc		
	Max	170 Hz	4,7 Vdc	155 Hz	4,4 Vdc	160 Hz	4,4 Vdc		
	Diaframm (1/100 mm)	-		4,5		4,5			
	Verbrauch	2,86 m^3/h		2,13 kg/h		2,10 kg/h			

Nota: **PTN =** Nennheizleistung
IGN = Einstellung, um die Zuendheizleistung zu erhalten
MIN = Einstellung, um die reduzierte Heizleistung zu erhalten
MAX = Einstellung, um die Nennheizleistung zu erhalten

TABELLE 5 - GASEINGANGSDRÜCKE

Netznenndruck für die verschiedenen Gasarten	Gas der 2. Gruppe – Methan Gas der 3. Gruppe – Flüssiggas	**20 mbar** **50 mbar**
Betrieb zulässig bei einem Druckwert **zwischen**	Gas der 2. Gruppe – Methan Gas der 3. Gruppe – Flüssiggas	**18 bis 25 mbar** **42,5 bis 57,5 mbar**
Betrieb nicht zulässig Bei einem Druckwert **unter**	Gas der 2. Gruppe – Methan Gas der 3. Gruppe – Flüssiggas	**18 mbar** **42,5 mbar**
Betrieb nicht zulässig Bei einem Druckwert **über**	Gas der 2. Gruppe – Methan Gas der 3. Gruppe – Flüssiggas	**25 mbar** **57,5 mbar**

16.1 DATOS TÉCNICOS - ESPANA - PORTUGAL - Categoría II 2H3+

TABLA 4 - DATOS TÉCNICOS - INSTALACIÓN DE GAS

Modelo	Tipo de gas	Gas Metano		Gas Líquido		Gas Líquido		Potencia total	Tipo de instalación
	Denominación del gas	2H - G20		3+ - G30		3+ - G31 (GPL)			
	Capacidad calórica	9,45 kWh/m≥		12,68 kWh/kg		12,87 kWh/kg			
	Presión de entrada	20 mbar		28-30/37 mbar		28-30/37 mbar			
	Quemadores	cámara	boiler	cámara	boiler	cámara	boiler		
MG061	PTN (kW)	9,0		9,0		9,0		9,0 kW	A_{13} - B_{13} - B_{23}
	PTR (kW)	5,7		6,5		6,5			
	Mix (1/100 mm)	14,0		14,0		11,0			
	Ign	90 Hz	2,6 Vdc	75 Hz	2,2 Vdc	75 Hz	2,2 Vdc		
	Min	100 Hz	2,9 Vdc	90 Hz	2,6 Vdc	90 Hz	2,6 Vdc		
	Max	140 Hz	4,0 Vdc	108 Hz	3,6 Vdc	120 Hz	3,6 Vdc		
	Orificio (1/100 mm)	-		3,3		3,3			
	Consumo	0,95 m^3/h		0,71 kg/h		0,70 kg/h			
MG101	PTN (kW)	18,0		18,0		18,0		18,0 kW	A_{13} - B_{13} - B_{23}
	PTR (kW)	11,0		13,0		13,0			
	Mix (1/100 mm)	13,0		13,5		11,0			
	Ign	85 Hz	2,4 Vdc	80 Hz	2,3 Vdc	80 Hz	2,3 Vdc		
	Min	112 Hz	3,2 Vdc	112 Hz	3,2 Vdc	112 Hz	3,2 Vdc		
	Max	155 Hz	4,4 Vdc	130 Hz	4,08 Vdc	135 Hz	4,08 Vdc		
	Orificio (1/100 mm)	-		4,0		4,0			
	Consumo	1,90 m^3/h		1,42 kg/h		1,40 kg/h			
MG102	PTN (kW)	27,0		27,0		27,0		27,0 kW	A_{13} - B_{13} - B_{23}
	PTR (kW)	16,0		18,0		18,0			
	Mix (1/100 mm)	12,5		12,0		9,0			
	Ign	80 Hz	2,3 Vdc	90 Hz	2,5 Vdc	90 Hz	2,5 Vdc		
	Min	112 Hz	3,2 Vdc	112 Hz	3,2 Vdc	112 Hz	3,2 Vdc		
	Max	170 Hz	4,7 Vdc	155 Hz	4,4 Vdc	160 Hz	4,4 Vdc		
	Orificio (1/100 mm)	-		4,5		4,5			
	Consumo	2,86 m^3/h		2,13 kg/h		2,10 kg/h			
MG201	PTN (kW)	27,0		27,0		27,0		27,0 kW	A_{13} - B_{13} - B_{23}
	PTR (kW)	16,0		18,0		18,0			
	Mix (1/100 mm)	12,5		12,0		9,0			
	Ign	80 Hz	2,3 Vdc	90 Hz	2,8 Vdc	90 Hz	2,8 Vdc		
	Min	112 Hz	3,2 Vdc	112 Hz	3,4 Vdc	112 Hz	3,4 Vdc		
	Max	170 Hz	4,9 Vdc	140 Hz	4,4 Vdc	150 Hz	4,4 Vdc		
	Orificio (1/100 mm)	-		4,5		4,5			
	Consumo	2,86 m^3/h		2,13 kg/h		2,10 kg/h			
MG202 (dati per ogni bruciatore)	PTN (kW)	27,0		27,0		27,0		54,0 kW	A_{13} - B_{13} - B_{23}
	PTR (kW)	16,0		18,0		18,0			
	Mix (1/100 mm)	12,5		12,0		9,0			
	Ign	80 Hz	2,3 Vdc	90 Hz	2,5 Vdc	90 Hz	2,5 Vdc		
	Min	112 Hz	3,2 Vdc	112 Hz	3,2 Vdc	112 Hz	3,2 Vdc		
	Max	170 Hz	4,7 Vdc	155 Hz	4,4 Vdc	160 Hz	4,4 Vdc		
	Orificio (1/100 mm)	-		4,5		4,5			
	Consumo	2,86 m^3/h		2,13 kg/h		2,10 kg/h			

Nota: **PTN =** Potencia térmica nominal
IGN = Ajuste para obtención de la potencia de ignición
MIN = Ajuste para obtención de la potencia térmica reducida
MAX = Ajuste para obtención de la potencia térmica nominal

TABLA 5 - PRESIÓN DEL GAS ENTRANTE

Presión nominal de la red con distintos tipos de gas:	Gas del Grupo 1: gas de ciudad Gas del Grupo 2: metano Gas del Grupo 3: GPL	**8 mbar** **20 mbar** **28-30/37 mbar**
Funcionamiento permitido si la presión está **entre**:	Gas del Grupo 1: gas de ciudad Gas del Grupo 2: metano Gas del Grupo 3: GPL	**de 6 a 15 mbar** **de 18 a 25 mbar** **de 20/25 a 35/45 mbar**
Funcionamiento no permitido si la presión es **menor** que:	Gas del Grupo 1: gas de ciudad Gas del Grupo 2: metano Gas del Grupo 3: GPL	**6 mbar** **18 mbar** **20/25 mbar**
Funcionamiento no permitido si la presión es **mayor** que:	Gas del Grupo 1: gas de ciudad Gas del Grupo 2: metano Gas del Grupo 3: GPL	**15 mbar** **25 mbar** **35/45 mbar**

16.1 TECHNICAL DATA - HUNGARY - Category II 2HS3B/P

TABLE 4 - GAS DATA

Model	Type of gas	Gas Metano		Natural gas		Liquid gas		Liquid gas		Equipment power	Installation type
	Gas description	2H - G20		2S - G25.1		3+ - G30		3+ - G31 (GPL)			
	Inf. calorific value	9,45 kWh/m≥		8,13 kWh/m≥		12,68 kWh/kg		12,87 kWh/kg			
	Rated pressure	25 mbar		25 mbar		28-30 mbar		28-30 mbar			
	Burners	Oven	Boiler	Oven	Boiler	Oven	Boiler	Oven	Boiler		
MG061	PTN (kW)	9,0		9,0		9,0		9,0		9,0 kW	A_{13} - B_{13} - B_{23}
	PTR (kW)	5,7		5,7		6,5		6,5			
	Mix (1/100 mm)	14,0		11,0		14,0		11,0			
	Ign	90 Hz	2,6 Vdc	90 Hz	2,6 Vdc	75 Hz	2,2 Vdc	75 Hz	2,2 Vdc		
	Min	100 Hz	2,9 Vdc	100 Hz	2,9 Vdc	90 Hz	2,6 Vdc	90 Hz	2,6 Vdc		
	Max	140 Hz	4,0 Vdc	135 Hz	3,9 Vdc	108 Hz	3,6 Vdc	120 Hz	3,6 Vdc		
	Orifice (1/100 mm)	-		-		3,3		3,3			
	Consumption	0,95 m^3/h		1,11 m^3/h		0,71 kg/h		0,70 kg/h			
MG101	PTN (kW)	18,0		18,0		18,0		18,0		18,0 kW	A_{13} - B_{13} - B_{23}
	PTR (kW)	11,0		11,0		13,0		13,0			
	Mix (1/100 mm)	13,0		10,5		13,5		11,0			
	Ign	85 Hz	2,4 Vdc	85 Hz	2,4 Vdc	80 Hz	2,3 Vdc	80 Hz	2,3 Vdc		
	Min	112 Hz	3,2 Vdc	112 Hz	3,2 Vdc	112 Hz	3,2 Vdc	112 Hz	3,2 Vdc		
	Max	155 Hz	4,4 Vdc	155 Hz	4,4 Vdc	130 Hz	4,08 Vdc	135 Hz	4,08 Vdc		
	Orifice (1/100 mm)	-		-		4,0		4,0			
	Consumption	1,90 m^3/h		2,21 m^3/h		1,42 kg/h		1,40 kg/h			
MG102	PTN (kW)	27,0		27,0		27,0		27,0		27,0 kW	A_{13} - B_{13} - B_{23}
	PTR (kW)	16,0		16,0		18,0		18,0			
	Mix (1/100 mm)	12,5		10,5		12,0		9,0			
	Ign	80 Hz	2,3 Vdc	80 Hz	2,3 Vdc	90 Hz	2,5 Vdc	90 Hz	2,5 Vdc		
	Min	112 Hz	3,2 Vdc	112 Hz	3,2 Vdc	112 Hz	3,2 Vdc	112 Hz	3,2 Vdc		
	Max	170 Hz	4,7 Vdc	170 Hz	4,7 Vdc	155 Hz	4,4 Vdc	160 Hz	4,4 Vdc		
	Orifice (1/100 mm)	-		-		4,5		4,5			
	Consumption	2,86 m^3/h		3,32 m^3/h		2,13 kg/h		2,10 kg/h			
MG201	PTN (kW)	27,0		27,0		27,0		27,0		27,0 kW	A_{13} - B_{13} - B_{23}
	PTR (kW)	16,0		16,0		18,0		18,0			
	Mix (1/100 mm)	12,5		10,5		12,0		9,0			
	Ign	80 Hz	2,3 Vdc	80 Hz	2,5 Vdc	90 Hz	2,8 Vdc	90 Hz	2,8 Vdc		
	Min	112 Hz	3,2 Vdc	112 Hz	3,4 Vdc	112 Hz	3,4 Vdc	112 Hz	3,4 Vdc		
	Max	170 Hz	4,9 Vdc	170 Hz	4,9 Vdc	140 Hz	4,4 Vdc	150 Hz	4,4 Vdc		
	Orifice (1/100 mm)	-		-		4,5		4,5			
	Consumption	2,86 m^3/h		3,32 m^3/h		2,13 kg/h		2,10 kg/h			
MG202 (data for any burners)	PTN (kW)	27,0		27,0		27,0		27,0		54,0 kW	A_{13} - B_{13} - B_{23}
	PTR (kW)	16,0		16,0		18,0		18,0			
	Mix (1/100 mm)	12,5		10,5		12,0		9,0			
	Ign	80 Hz	2,3 Vdc	80 Hz	2,3 Vdc	90 Hz	2,5 Vdc	90 Hz	2,5 Vdc		
	Min	112 Hz	3,2 Vdc	112 Hz	3,2 Vdc	112 Hz	3,2 Vdc	112 Hz	3,2 Vdc		
	Max	170 Hz	4,7 Vdc	170 Hz	4,7 Vdc	155 Hz	4,4 Vdc	160 Hz	4,4 Vdc		
	Orifice (1/100 mm)	-		-		4,5		4,5			
	Consumption	2,86 m^3/h		3,32 m^3/h		2,13 kg/h		2,10 kg/h			

Note: **PTN =** Nominal heat capacity
IGN = Burner ignition set
MIN = Reduced heat capacity set
MAX = Nominal heat capacity set

TABLA 5 - PRESIÓN DEL GAS ENTRANTE

Rated mains pressure for the various types of gas:	Gas of family 2 – Natural Gas of family 3 – LPG	**25 mbar** **28-30 mbar**
Operation permissible if pressure is **between**:	Gas of family 2 – Natural Gas of family 3 – LPG	**from 20 to 33 mbar** **from 20 to 35 mbar**
Operation not permissible pressure is **less** than:	Gas of family 2 – Natural Gas of family 3 – LPG	**20 mbar** **20 mbar**
Operation not permissible pressure is **greater** than:	Gas of family 2 – Natural Gas of family 3 – LPG	**33 mbar** **35 mbar**

NOTES

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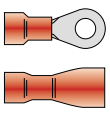
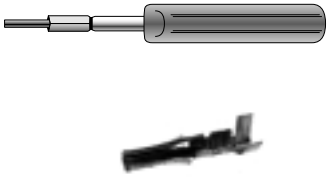
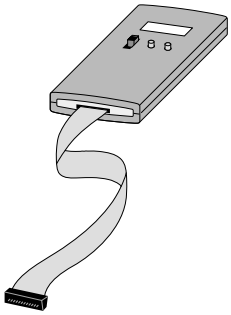
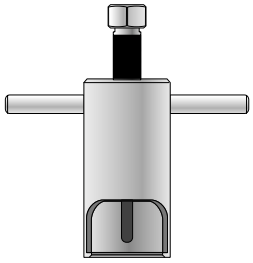
Utensili - Strumentazione consigliata

Advised instruments-tools
Empfohlene Werkzeuge-Instrumente
Outils-Instruments conseillés
Herramientas e instrumentos aconsejados

	Articolo Art. code Art.- Nr. Code article Código artículo	Descrizione / Description Beschreibung / Description / Descripción	
	**LAR65230900**	**Valigia Pastorino in allumino anodizzato dim. 450x350x140 mm completa di:** **set chiavi a bussola serie chiavi 6-22 mm • serie chiave a "T" 8-10-17-19 mm • Nr .7 giraviti Cr-V • Serie chiavi maschio esagonale • Set nr 3 pinze • Pinza tira inserti filettati M 3-4-5-6 • Forbici • Specchio • Chiave a rullino 200 mm • Martello-scalpello-punteruolo • Serie chiavi Torks 9-40 • Cutter • Dita meccaniche 500 mm • Impugnatura porta lame • Rilevatore gas spray • Spry disincrostante • Guanti e occhiali da lavoro • Loctite • Estrattore capicorda cil. "AMP" • Pinza per puntali isolati e conett.JST • Pinza per capicorda isolati • Pinza per capicorda aperti non isolati • Nr. 2 scatole a settori.** **Tools box alloy frame dim. 450x350x140 mm. containing following articles:** Socket wrench set • Wrench set 6-22 mm • "T" wrench set 8-10-17-19 mm • Screwdriver flat/philips - 7 pcs Cr-V • Socket head wrench set • Pliers 3 pcs • Pull-inserts M 3-4-5-6-pliers • Shears • mirror • Roll-wrench 200 mm • Hammer-chisel-punch • Torks wrench set 9-40 • Cutter • Mechanical fingers 500 mm length • Blade with handle • Gas leaking spray • Descaling spray • Gloves and glasses • Loctite • AMP cable terminal Pull-out tool • Pliers for insulated cable terminals + JST cable terminal • Pliers for insulated cable terminals • Pliers for open -non insulated cable terminals • Sectors box 2 pcs. **Pastorino-Werkzeugkasten aus eloxiertem Aluminium Abm. 450x350x140 mm. Er enthält:** Satz Steckschlüssel • Satz Schlüssel: 6-22 mm • Satz Vierkant-Schlüssel 8-10-17-19 mm • 7 Schraubendreher Cr-V • Satz Einsteckschlüssel • 3 Zangen • Zange zum Ausziehen von Gewindeeinsätzen M 3-4-5-6 • Schere • Spiegel • Rollenschlüssel 200 mm • Hammer-Meißel-Treiber • Satz Torx-Schlüssel 9-40 • Cutter • Mechanische Finger 500 mm • Griff Messerhalter • Gasdetektor-Spray • Entzunderspray • Arbeitshandschuhe und -brille • Loctite • Zyl. Kabelschuhauszieher "AMP" • Zange für isolierte Kontaktstifte und JST-Verbinder • Zange für isolierte Kabelschuhe • Zange für offene, nicht isolierte Kabelschuhe • 2 Behälter mit Fächern. **Valise Pastorino aluminium anodisé diam. 450x350x140 mm avec:** Jeu clés à douille • Série clés 6-22 mm • Série clés en "T" 8-10-17-19 mm • 7 tournevis Cr-V • Série clés mâles hexagonales • Jeu de 3 pinces • Pince tire-inserts filetés M 3-4-5-6 • Ciseaux • Miroir • Clés à rouleaux 200 mm • Marteau-scalpel-poinçon • Série clés Tork 9-40 • Cutter • Ergots mécaniques 500 mm • Poignée porte-lames • Détecteur gaz spray • Vaporisateur détartrant • Gants et lunettes de travail • Loctite • Extracteur de cosses cyl. "AMP" • Pince pour poinçons isolés et connect. JST • Pince pour cosses isolées • Pince pour cosses ouvertes non isolées • 2 boîtiers à secteurs. **Caja Pastorino de aluminio anodizado dim. 450x350x140 mm con:** Juego de llaves Allen • Juego de llaves 6-22 mm • Juego de llaves T: 8-10-17-19 mm • Siete destornilladores Cr-V • Juego llaves macho hexagonal • Tres alicates • Alicates para insertos roscados M 3-4-5-6 • Tijeras • Espejo • Llave inglesa 200 mm • Martillo-escoplo-punzón • Juego de llaves Torks 9-40 • Cúter • Dedos mecánicos 500 mm • Empuñadura para hojas • Spray detector pérdidas de gas • Spray desincrustante • Guantes y gafas de trabajo • Loctite • Extractor terminales cil. "AMP" • Alicates para terminales en punta aislados y conect. JST • Alicates para terminales aislados • Alicates para terminales abiertos no aislados • Dos cajas de sectores.	
	**LAR65230910** **LAR65230920** **LAR65230930**	**Pinze per capicorda (già incluse nella valigia ...)** Pliers for cable terminals (included in tool box ...) Zangen für Kabelschuhe (bereits im Werkzeugkoffer Art. Nr. ... enthalten) Pinces pour cosses (déjà inclues dans la valisecod. ...)  **Pinza per puntali isolati e conettori JST** Pliers for insulated cable terminals + JST cable terminal Zange für isolierte Kontaktstifte und JST-Verbinder Pince pour poinçons isolés et connect.JST Alicates para terminales en punta aislados y conect. JST  **Pinza per capicorda isolati** Pliers for insulated cable terminals Zange für isolierte Kabelschuhe Pince pour cosses isolées Alicates para terminales aislados  **Pinza per capicorda aperti non isolati** Pliers for open -non insulated cable terminals Zange für offene, nicht isolierte Kabelschuhe Pince pour cosses ouvertes non isolées Alicates para terminales abiertos no aislados	

	Articolo Art. code Art.- Nr. Code article Código artículo	Descrizione / Description Beschreibung / Description / Descripción	
	**LAR65230940**	**Estrattore capicorda cil. "AMP" (già incluso nella valigia cod. ...)** AMP cable terminal Pull-out tool (included in tool box cod. ...) Zyl. Kabelschuhauszieher "AMP" (bereits im Werkzeugkoffer Art. Nr. ... enthalten) Extracteur de cosses cyl. "AMP" (déjà inclu dans la valise cod. ...) Extractor terminales cil. "AMP" (incluido en la caja cód. ...)	
	**LAR65300990**	**Calibratore per schede elettroniche versione S-L** Calibration tool for electronic PC board S-L series Eichgerät für Platinen Version S-L Calibreur pour cartes électroniques version S-L Calibrador de tarjetas electrónicas versión S-L	
	**LAR75401200** **LAR75401210** **LAR75401230**	**Estrattore per ventole diam. 160 / 220 mm.** Fan puller for fans diam. 160 / 220 mm. Lüfterauszieher Durchm. 160 / 220 mm. Extracteur ventilateurs diam. 160 / 220 mm. Extractor de ventiladores diám. 160 / 220 mm. **Estrattore per ventole diam. 300 / 350 mm.** Fan puller for fans diam. 300 / 350 mm. Lüfterauszieher Durchm. 300 / 350 mm. Extracteur ventilateurs diam. 300 / 350 mm. Extractor de ventiladores diám. 300 / 350 mm. **Estrattore per ventole diam. 350 mm. esclusivamente per forni "The Cube"** Fan puller for fans diam. 350 mm. only for ovens "The Cube" serie Lüfterauszieher Durchm. 350 mm. ausschließlich Öfen "The Cube" Extracteur ventilateurs diam. 350 mm. exclusivement fours "The Cube" Extractor de ventiladores diám. 350 mm. exclusivamente hornos "The Cube"	
	**LAR65230950**	**Pinza tira inserti filettati M 3-4-5-6 (già incluso nella valigia cod. ...)** Pull-inserts M 3-4-5-6- pliers (included in tool box cod. ...) Zange zum Ausziehen von Gewindeeinsätzen M 3-4-5-6 (bereits im Werkzeugkoffer Art. Nr. ... enthalten) Pince tire-inserts filetés M 3-4-5-6 (déjà inclue dans la valise cod. ...) Alicates para insertos roscados M 3-4-5-6 (incluido en la caja cód. ...)	

	Articolo Art. code Art.- Nr. Code article Código artículo	Descrizione / Description Beschreibung / Description / Descripción	
	**LAR65300930**	**Manometro portatile digitale per la verifica pressione gas "Testo 505"** **Campo di misura 130 mbar.** Portable digital pressure gauge for gas pressure measurement "Testo 505" Range 130 mbar. Digitales tragbares Manometer für die Gasdruckmessung "Testo 505" Messbereich 130 mbar. Manomètre portable numérique de contrôle de pression de gaz "Testo 505" Champ de mesure 130 mbar. Manómetro portátil digital para controlar presión gas "Testo 505" Campo de medición 130 mbar.	
	**LAR65300940**	**Analizzatore di combustione " Testo 325 - I " • Misure: O_2, CO_2, CO, temperatura fumi, tiraggio camino, rendimento combustione, pressione gas mbar….** **Completo di: batteria, alimentatore da rete AC 230 V - 50 Hz, sonda per gas combusti, stampante all'infrarosso con 7 rotoli di carta termica, valigia di contenimento.** **** Attenzione tale strumento svolge anche funzione di manometro digitale con campo di misura 50 mbar (copre la funzione dell art. 17).*** Flue gas analizer mod. " Testo 325 - I " • Measurements: O_2, CO_2, CO, flue gas temperature, chimney draft, combustion efficency, gas pressure mbar….. Equipped by: battery, AC/DC adapter input AC 230 V - 50Hz. flue gas compact probe, infrared printer with 7 thermic paper coils, storage plastic box. **Attention: this analiser is able to measure gas pressure range 50 mbar, (cover function of art. 17).* Verbrennungsanalysegerät " Testo 325-I " • Messungen: O_2, CO_2, CO, Rauchtemperatur, Kaminzug, thermischer Wirkungsgrad, Gasdruck mbar... Vollständig mit: Batterie, Stromteil AC 230 V - 50Hz., Fühler für Verbrennungsgase, IR-Drucker mit 7 Papierrollen, Tragekoffer. ** Achtung, dieses Gerät dient auch als digitales Manometer mit einem Messbereich von 50 mbar (selbe Funktion wie Art. 17).* Analyseur de combustion " Testo 325-I " • Mesures: O_2, CO_2, CO, température fumées, tirage carneau, rendement combustion, pression gaz mbar… Avec: batterie, alimentateur réseau AC 230 V - 50Hz., sonde gaz brûlés, imprimante infrarouge avec 7 rouleaux de papier thermique, valise. * Attention cet instrument joue également le rôle de manomètre numérique avec champ de mesure 50 mbar (joue le rôle de l'art. 17). Analizador de combustión "Testo 325-I" • Mediciones: O_2, CO_2, CO, temperatura humos, tiro chimenea, rendimiento combustión, presión gas mbar. Con: batería, alimentador de red AC 230 V - 50Hz., sonda para gases quemados, impresora de infrarrojos con 7 rollos de papel térmico, maletín. * Atención: este instrumento funciona también como manómetro digital con campo de medición de 50 mbar (cubre la función del art. 17.)	
	**LAR65300960**	**Mini-termometro digitale portatile campo di misura –50 / +350 °C per misure ad immersione e penetrazione.** **• Sensore di temperatura tipo K • Precisione: +/- 2,5°C a 250 °C • Risoluzione: 0,1 °C** Portable mini-digital thermometer range –50 / +350 °C for penetration and immersion temperatures measurement. • K type temperature sensor • Accurancy: +/- 2,5 °C a 250 °C • Resolution: 0,1 °C Digitales Kleinstthermometer, Messbereich –50 / +350 °C für Tauch-und Penetrationsmessungen. • Temperaturfühler Typ K • Präzision:+/- 2,5 °C bis 250 °C • Auflösung: 0,1 °C Mini-thermomètre numérique portable champ de mesure –50 / +350 °C pour mesures à immersion et pénétration. • Capteur de température type K • Précision +/- 2,5 °C à 250 °C • Résolution: 0,1 °C Minitermómetro digital portátil, campo de medición –50 / +350 °C, para mediciones por inmersión y penetración. • Sensor de temperatura tipo K • Precisión: +/- 2,5 °C a 250 °C • Resolución: 0,1 °C	

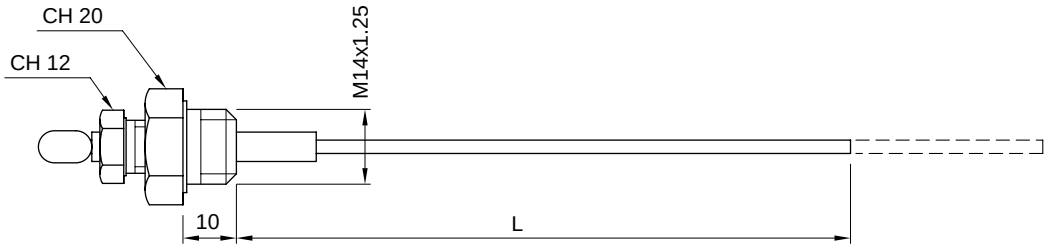
	Articolo Art. code Art.- Nr. Code article Código artículo	Descrizione / Description Beschreibung / Description / Descripción	
	**LAR65300980**	**Multimetro digitale con schermo retroilluminato per la misura di:** **- Tensione AC/DC 320 mV - 600 VAC/DC** **- Frequenza** **- Corrente AC/DC max 10 Amp.** **- Resistenza 0-30 MΩ** **- Valore TRUE RMS** **Completo di batteria 9 V, Contenitore, cavi di misura con terminali a puntali, pinze a coccodrillo, pinze ad uncino.** Multimeter with retrolighted digital display, measurement of: - Voltages AC/DC 320 mV - 600V AC/DC - Frequency - Current AC/DC max 10 Amp. - Resistance 0-30 MΩ - Value TRUE RMS. Equipped with battery 9 Volts, containing box, measurement cables with test prod, croccodille pliers, hook pliers. Digitales Multimeter mit hintergrundbeleuchtetem Display für smessun: - Spannung AC/DC 320 mV - 600 V AC/DC - Frequenz - Stromstärke AC/DC, max. 10 Amp. - Widerstand 0-30 MΩ - Wert TRUE RMS. Vollständig mit Batterie 9 V, Behälter, Messkabel mit Kontaktspitzen, Krokodilzangen, Hakenzangen. Multimètre numérique écran rétroluminescent pour mesure de: - Tension CA/CC 320 mV - 600 VCA/CC - Fréquence - Courant CA/CC max 10 Amp. - Résistance 0-30 MΩ - Valeur TRUE RMS. Avec batterie 9V, conteneur, câbles de mesure avec terminaux à poinçons, pinces crocodiles, pinces à crochet. Multímetro digital pantalla retroiluminada para medir: - Tensión 320 mV - 600 V CA/CC - Frecuencia - Corriente A/C máx. 10 Amp. - Resistencia 0-30 MΩ - Valor TRUE RMS. Con batería de 9 V, caja, cables de medición con clavijas, pinzas de cocodrilo y alicates de punta acodada	
			
			

	Articolo Art. code Art.- Nr. Code article Código artículo	Descrizione / Description Beschreibung / Description / Descripción	
	**LAR65300970**	**TESTER digitale combinato pH/CONDUCIBILITA', TDS, temperatura acqua di alimentazione.** **Tascabile a microprocessore con compensazione automatica** **Scala pH: da 0.00 a 14.00 • Scala EC: da 0 a 3999 nS/cm** **Scala TDS: da 0 a 2000 ppm (TDS) • Scala temp. °C / °Fh: da 0.0 a 60.0 °C** Combined digital supplying water TESTER: pH / CONDUCTIVITY, TDS, temperature Portable microprocessor type auto-calibration type. Range pH: from 0.00 to 14.00 • Range EC: from 0 to a 3999 nS/cm Range TDS: from 0 to 2000 ppm (TDS) • Range Temp. °C / °Fh: from 0.0 to 60.0 °C Digitales Kombi-Messgerät pH/Leitfähigkeit, TDS, Wassertemperatur Taschengerät mit Mikroprozessor und automatischem Ausgleich pH-Skala: von 0,00 bis 14,00 • EC-Skala: von 0 bis 3999 ns/cm TDS-Skala: von 0 bis 2000 ppm (TDS) • Skala Temp. °C / °F: Von 0,0 bis 60,0 °C Testeur numérique combiné pH/CONDUCTIBILITÉ, TDS, température eau d'alimentation. De poche avec microprocesseur à compensation automatique Echelle pH: de 0.00 à 14.00 • Echelle EC: de 0 à 3999 nS/cm Echelle TDS: de 0 à 2000 ppm (TDS) • Echelle temp °C / °Fh: de 0.0 à 60.0 °C COMPROBADOR digital combinado pH/CONDUCTIVIDAD, TDS, temperatura agua de alimentación. De bolsillo, provisto de microprocesador con compensación automática Escala pH: de 0,00 a 14,00 • Escala EC: de 0 a 3999 nS/cm Escala TDS: de 0 a 2000 ppm (TDS) • Escala temp. °C / °Fh: de 0,0 a 60,0 °C	
	**LAR74200110**	**TESTER CLORURI acqua di alimentazione.** **Scala: 0/100 mg/l (ppm) Cl** **0/1000 mg/l (ppm) Cl** SUPPLYING WATER CHLORIDES TESTER: Range: 0/100 mg/l (ppm) Cl 0/1000 mg/l (ppm) Cl Messgerät für Chloride im Wasser Skala: 0/100 mg/l (ppm) Cl 0/1000 mg/l (ppm) Cl TESTEUR CHLORURES eau d'alimentation. Echelle: 0/100 mg/l (ppm) Cl 0/1000 mg/l (ppm) Cl ANALIZADOR CLORUROS agua de alimentación Escala: 0/100 mg/l (ppm) Cl 0/1000 mg/l (ppm) Cl	
ACCESSORI / ACCESSORIES / ZUBEHÖR / ACCESSOIRES / ACCESORIOS			
	LAR74200120	**pH TEST 4 - 7,1 (5 + 5 paper of 20 ml each)**	
	LAR74200130	**CHLORIDES TEST 1413 µs (25 paper of 20 ml each)**	
	**LAR74200100**	**TESTER DUREZZA acqua di alimentazione.** **Scala: 0/30 mg/l (ppm) $CaCO_3$** **0/300 mg/l (ppm) $CaCO_3$** Supplying water HARDNESS TESTER: Range: 0/30 mg/l (ppm) $CaCO_3$ 0/300 mg/l (ppm) $CaCO_3$ WASSERHÄRTEMESSER. Skala: 0/30 mg/l (ppm) $CaCO_3$ 0/300 mg/l (ppm) $CaCO_3$ TESTEUR DURETÉ eau d'alimentation. Echelle: 0/30 mg/l (ppm) $CaCO_3$ 0/300 mg/l (ppm) $CaCO_3$ ANALIZADOR DUREZA agua de alimentación Escala: 0/30 mg/l (ppm) $CaCO_3$ 0/300 mg/l (ppm) $CaCO_3$	

ATTENZIONE: la verifica delle caratteristiche dell'acqua di alimentazione è indispensabile al fine di prevenire fenomeni di formazione di calcare (durezza acqua), e corrosione (cloruri).
WARNING: in order to prevent corrosion (Cholides) and scale build up (water hardness) verifying water characteristics is compulsory.
ACHTUNG: Die Prüfung der Merkmale des Wassers ist unerlässlich, um die Bildung von Kalkstein (Wasserhärte) und Korrosion (Chloride) zu vermeiden.
ATTENTION: le contrôle des caractéristiques de l'eau d'alimentation est indispensable pour prévenir la formation de calcaire (dureté de l'eau), la corrosion (chlorures).
ATENCIÓN: la determinación de las características del agua de alimentación es indispensable para evitar la formación de depósitos calcáreos (agua dura) y corrosión (cloruros).

18.0 TECHNICAL SHEET

18.1 Water level sensors of the steam generator



Combi Model	Water Max. Level	Water Min. Level	Min. Level. (Spare Part)
ME 061	60 mm P.N. 65324630	70 mm P.N. 65324620	-
ME 101-102	80 mm P.N. 65324660	100 mm P.N. 65324720	-
ME 201	160 mm P.N. 65324840	180 mm (intera) P.N. 65320010	-
ME 202	100 mm P.N. 65324720	110 mm P.N. 65324750	-
MG 061-101-102 201-202 P-T	80 mm P.N. 65324660	100 mm P.N. 65324720	-
MG 061-101-102 201-202 M	100 mm P.N. 65324720	120 mm P.N. 65324740	-

NOTES

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