

REPAIR INSTRUCTIONS

Ind IV:4I

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1 SAFETY

1.1 Safety observations



Danger!

All repairs must be performed by factory technical personnel.

All inadequate repairs may cause injury to users.

The housing and frame may be subject to voltage in the event of failure.

The appliance must be disconnected from the power grid before being disassembled. In its interior, there are parts under high voltage.

Always use a circuit breaker if testing while under power is necessary.

The ground connection must not exceed standardised values. It is of utmost importance for personal safety and operating the appliance.

After any repair, VED 0701 tests must be performed, or specific country rules must be followed.

The power supply cord can only be replaced by technical service personnel and using the replacement cable.

Special observations for induction appliances!

The induction appliances comply with all safety rules and electromagnetic compatibility rules in force. People with pacemakers implanted must abstain from using or repairing this appliance. It is possible that the appliance could interfere with operation of an implant.

People who use hearing aids may note disturbances.

1.2 Repair observations



Caution!

Never try to repair by indiscriminately exchanging components.

Proceed systematically, and consider the technical documentation of the appliance.

The electronics boards must not be repaired. They must be replaced with original parts. All exceptions are documented separately.



Components sensitive to electrostatic discharges:
Respect the EGB reference (“General Repair Manual“)



Sharp Edges:
Use protective gloves!!

2 INSTALLATION

2.1 Assembly instructions



IMPORTANT!

Induction cooktops can only be installed over ventilated ovens of brands from the group and over kitchen furniture.

In the event that the cooktop is installed over un-ventilated ovens of our brands, or other brands, the cooktop control may reduce the power level and, if applicable, turn off one or more burners that may be operating, thereby showing indication C3 (shut off due to excessive temperature on the radiator).

2.1.1 Overview

Correct installation in accordance with the installation instructions is a necessary condition for the correct operation and a long service life of the appliance. The installer is liable for all damages due to incorrect installation.

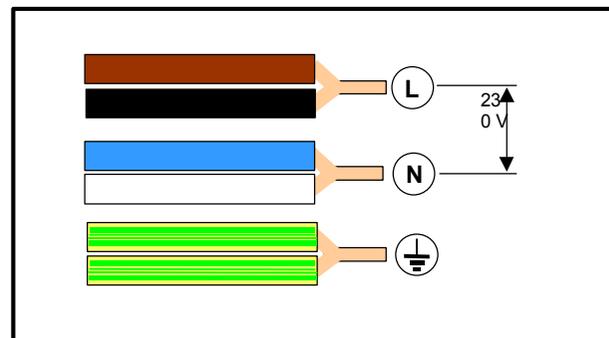
2.1.2 Connection

The electrical connection of the appliance must be performed by a qualified technician, thereby considering the installation instructions, the connection schematics and all legal provisions that may be applicable in order to prevent personal injury.

All induction cooktops come equipped with a power cord. One end is connected to the electronics boards, while the other end has 6 wires grouped in pairs by pin terminals.

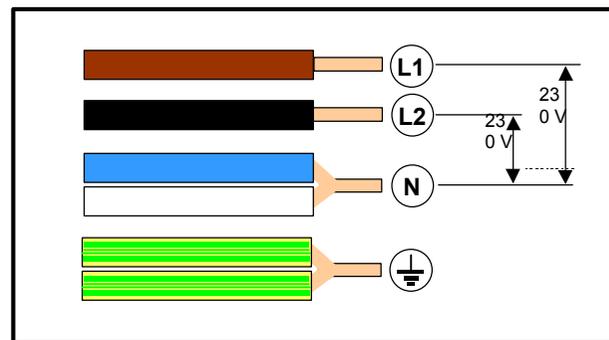
Depending on the type of connection, one or more of the pin terminals must be eliminated in order to connect correctly..

Single phase connection



A single phase connection is made by connecting the ground, phase and neutral terminals in the corresponding places of the plug or jack. In the event that the pin terminal that joins two wires does not fit in the hole of the plug or jack, remove the pin terminal, strip the ends of the wires and twist them together.

Two phase connection with a common neutral

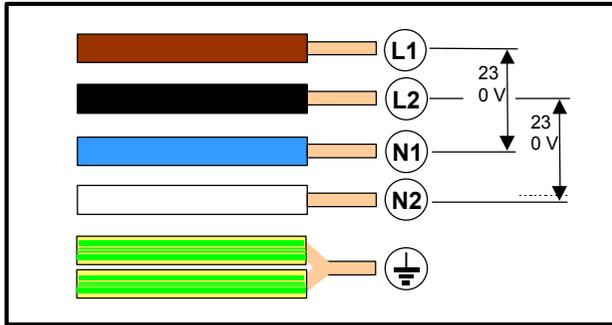


As regards a two phase connection, the installer must know the voltages supplied by the electrical distribution system of the home.

Remove the pin terminal that joins the two lines, strip the ends of the wires, and connect each one to the terminal of the corresponding plug or jack.

In distribution systems with a common neutral, the pin can be connected at the corresponding terminal.

Connection to two phases with neutrals at a different voltage



In systems with a differentiated neutral, remove the pin, strip the ends of the wires, and connect them to the corresponding terminals, thereby making the power supply voltage of the appliance 230 VAC.

If the appliance is connected erroneously, the guaranty is void.

In the event that the appliance is erroneously connected at 400 V, the Touch Control (TC) will show the U400 error on the display, and an alarm tone will sound. The cooktop must be disconnected immediately and the connection checked in order to eliminate the cause of the failure.

2.1.3 Installation

All indications in the installation manual must be respected. There is additional information in the appliance manual and in the technical documentation.

The appliance must not be started up if any damage due to transport is observed.

2.1.4 Characteristics of Induction IV appliances

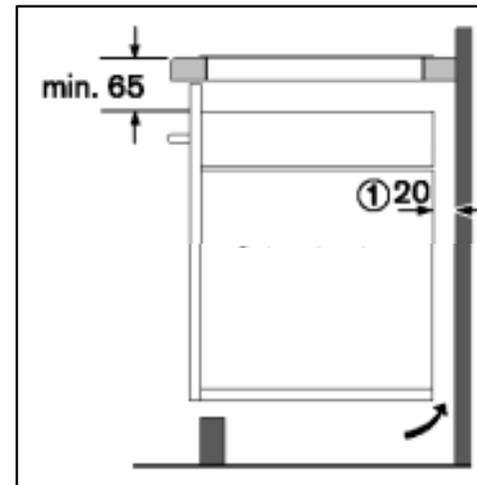
Pay special attention to the cooling inlets and outlets of induction appliances.

For installation over an oven as well as over a cabinet, a separation of 20 mm from the wall or the back of the furniture must be left at the rear of the appliance in order to allow correction ventilation.

In the event of installation over an oven, a distance of 4 mm between the bottom part of the counter and the top part of the oven front must be respected.

Air entry to the cooktop must not be obstructed.

If the appliance is installed in an enclosed piece of kitchen furniture, the rear panel must be eliminated in order to provide correct ventilation.



The new generation of Induction IV cooktops improves the installation conditions of the previous generation in the following aspects:

- ▶ It does not require a front air exit for installations without an oven underneath.
- ▶ It allows installation on 20-mm counters with cabinets and ventilated ovens manufactured by FMH (Montañana).
- ▶ It allows installation on 30-mm counters with ventilated ovens not manufactured by FMH, with pyrolitic ovens, 40-cm compact ovens and “Nostalgia” ovens.

The new Induction IV generation is not officially approved for installation with dishwashers.

3 OPERATION

3.1 Induction cookware

3.1.1 Overview

All pots and pans with a ferromagnetic base are valid for induction.

Only containers that have a base where a magnet remains adhered can be used.

The induction system does not heat up other kinds of containers, and the power level indicator on the display will blink.

The minimum diameter of the container must likewise be taken into account.

3.1.2 Valid pots and pans

Enamelled steel pots and pans.

Cast iron pots and pans.

Iron pans.

Stainless steel pots and pans, as long as they have a special ferromagnetic base for induction.

3.1.3 Pots and pans not valid for induction

Non-ferromagnetic or non-metallic materials.

Aluminium pots and pans.

Copper pots and pans.

Brass pots and pans.

Standard stainless pots and pans.

Glass ("Pyrex") containers.

Earthenware pans.

3.2 Modification of the YL146/147/... TC alarm tones

The user can, in accordance with the instructions for use, connect or disconnect the alarm sounds of the cooktop. The warning or alarm lights are always connected.

Step	Sound connection or disconnection
1	Connect the main switch of the cooktop.
2	Put all heating elements at level 3.
3	Disconnect the heating elements from right to left.
4	Press the main sensor and hold for more than 5 seconds.
5	After 4 seconds, a beep is heard.
6	The alarm sounds have now been activated or deactivated depending on the previous status.

4 COMPONENTS

4.1 Components of the 4Ind IV, 60-cm cooktops

4.1.1 Components

- ▶ Synthetic material cooktop base.
- ▶ Cable retention device.
- ▶ 4I power supply connection.
- ▶ YL146/147 touch control (only display and sensor board).
- ▶ Left induction electronics (ELIN IZDA).
- ▶ Right induction electronics (ELIN DCHA).
- ▶ Fan.
- ▶ 180/180 inductor unit.
- ▶ 210/150 inductor unit.
- ▶ Frame/glass unit.
- ▶ ELIN-IZDA Board - Touch Control LIN connection.
- ▶ 18-V connection.
- ▶ ELIN-IZDA ELIN-DCHA RELAY Board LIN connection.
- ▶ 4I SAT communication connection.
- ▶ Plastic thread screws.
- ▶ Metric thread screws.

4.1.2 60-cm frame/glass unit

The glass of the glass-ceramic forms a unit with the frame. The bottom surface of the glass is not polished, except in the place where there are TC displays and where a fine layer of transparent silicone has been laid down in order to see better through the glass.

The TC, together with the induction electronics, is fastened to the cooktop base using clips and/or screws. The frame/glass unit is fastened to the cooktop base using screws.

4.2 4i-3i cooktop base

The following image shows the 4i cooktop base. All of the parts that comprise the appliance are assembled on this part.



The base therefore has the following elements:



Tabs (2), clips and holes (2) for fastening the induction electronics boards.



Tabs and clips for fastening the Touch Control board.



Mounts (2) and stubs (2) for fastening the fan by two screws.



Mounts (8) for fastening the inductor assemblies (2), suspended using springs.



Holes (12) around the perimeter of the part for fastening the frame/glass unit using screws, and pins for installation on rails (Komfort models).

4.3 4I-3I power supply connection

It supplies power to the induction electronics board, and it is fastened to the base using a retention part and a screw.



The ends of the connection provide 6 wires grouped together in pairs using pin terminals.



Caution!

This connection can only be replaced by technical service personnel and only using an original replacement part.

4.4 180 + 180 left inductor unit

4.4.1 Overview

The inductor unit contains the inductors corresponding to heating elements 1 and 2. It is fastened to the support base using four holes, where the 4 mounts of the support base are inserted.

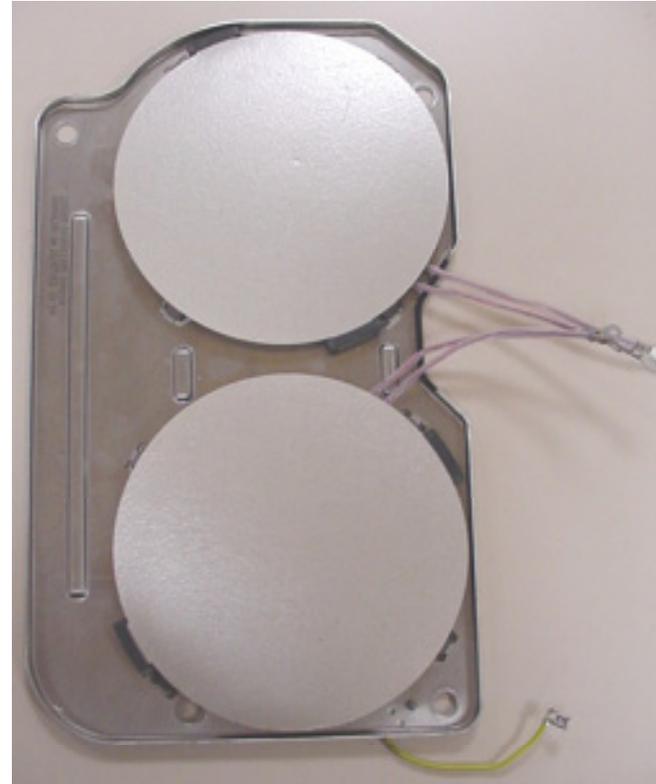
The inductors transform the high-frequency alternating current into a variable magnetic field.

The inductors contain two NTC sensors that measure the temperature of the inductor and protect it against excessive temperatures. Moreover, they serve to measure the temperature at which the residual heat indicators turn on.

The mica sheets serve as electrical insulation between the inductor and the glass. These sheets are installed without glue, wherefore they can be replaced in the event that they become damaged.

4.4.2 Assembly

Fastened on 4 mounts of the base using helicoid springs and connected to the ELIN-left electronics board.



4.5 210 + 150 right inductor unit

4.5.1 Overview

The inductor unit contains the inductors corresponding to heating elements 3 and 4. It is fastened to the support base using four holes, where the 4 mounts of the support base are inserted.

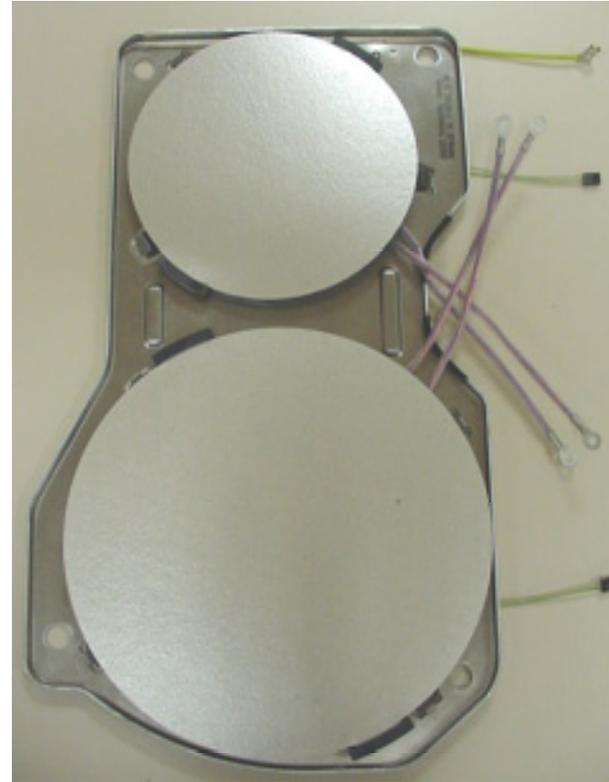
The inductors transform the high-frequency alternating current into a variable magnetic field.

The inductors contain two NTC sensors that measure the temperature of the inductor and protect it against excessive temperatures. Moreover, they serve to measure the temperature at which the residual heat indicators turn on.

The mica sheets serve as electrical insulation between the inductor and the glass. These sheets are installed without glue, wherefore they can be replaced in the event that they become damaged.

4.5.2 Assembly

Fastened on 4 mounts of the base using 4 helicoid springs and connected to the ELIN-RIGHT electronics board.



4.6 Fan

4.6.1 Overview

The fan that is installed uses direct current (brush-less), and it contains electronic components in its interior.

It is connected to the ELIN DCHA board by a 3-wire connection, with one of the ends welded to the printed circuit of the fan.

+24V

GND = ground

TACHO = tachometer



4.7 Left induction electronics (ELIN left)

4.7.1 Overview

The new induction electronics integrate all the electronic components associated with burners 1 and 2, which components in the previous generation were divided into the power board, the control board and the filter board.

The ELIN IZDA board moreover contains the only power supply source of the cooktop.

The induction electronics board communicates with the TC through LIN communication. The TC sends the power level orders of each burner, and the induction electronics return the burner status (container detection, errors, etc.).

4.7.2 Assembly

The left induction electronics (ELIN IZDA) are fastened by two screws to the base.

4.7.3 Components

Basically, the induction electronics board consists of the following systems:

▶ Interference filter.

The interference filter consists of an assembly of coils and condensers that allow limiting the emission of conducted interference.

▶ Power supply.

The power supply is the switched type and has 4 different outputs:

+24 V for the fan power supply.

+5 V for power supply of the control logic.

+21 V for power supply of the drivers of the power inverter devices.

+21 V for power supply of the drivers of the power inverter devices for the right electronics board.

▶ Inverter with two outputs

The power devices of the inverter are controlled by an integrated circuit especially designed by BSH. This circuit communicates with the microprocessor and imposes the operating frequency of the inverter, and it is in charge of feeding back the output current of the inverter.

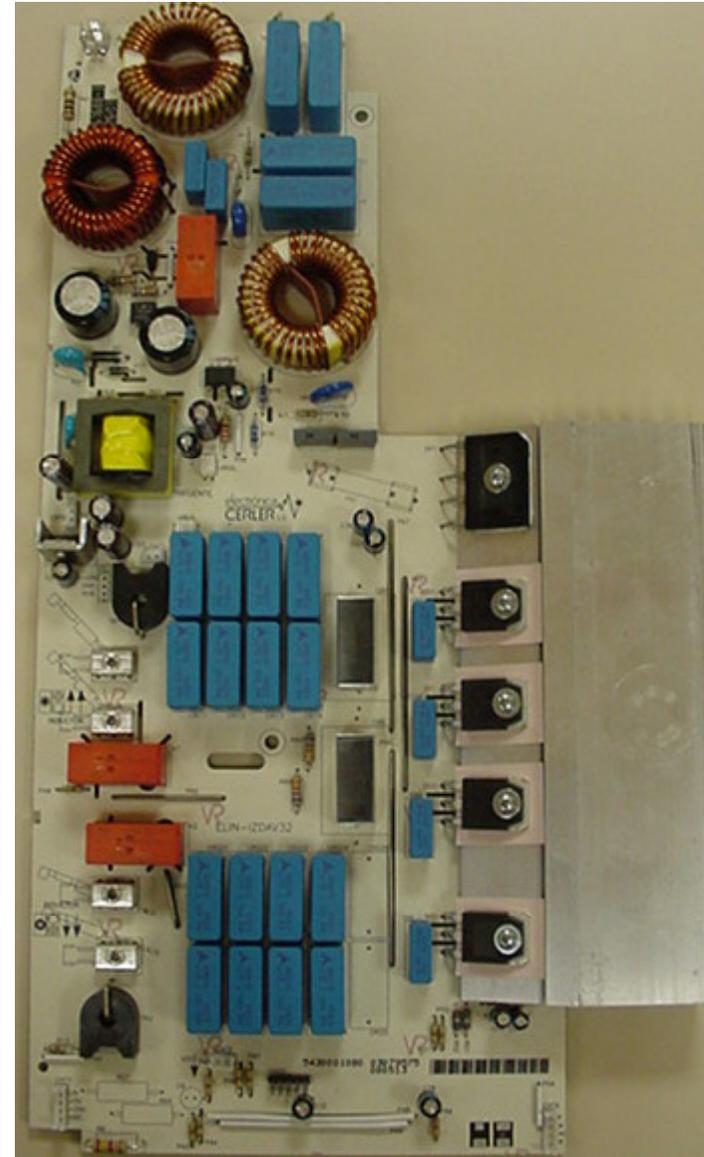
▶ Induction module control

The induction electronics module is controlled by a microprocessor. This component communicates with the TC, thereby receiving the power levels selected by the user, and it returns information on the burner status to the TC (container detection, errors, etc.).

Cooktop control is moreover responsible for monitoring the temperature of the power inverter and the inductors, for deciding on fan connection, for monitoring the residual heat indicators, etc.

4.7.4 Left ELIN connections

CNT 1	NTC connection, top inductor
CNT 2	Microprocessor FLASH programming connection
CNT 3	NTC connection, bottom inductor
CNT 4	LIN connection (-> DCHA)
CNT 5	Not used
CNT 6	+18 connection (21 volts)
CNT7	LIN connection (TC->)
FST 1	Line connection
FST 5	Neutral connection
FST 2	Ground connection
FST 4	Inductor unit ground connection
CNX1	Top inductor connection
CNX2	Top inductor connection
CNX3	Bottom inductor connection
CNX4	Bottom inductor connection



4.7.5 Position of left ELIN connections

	NTC, top inductor	Not used by BSHI	NTC, bottom inductor	To the right ELIN		To the right ELIN	From TC	From the power supply cord			To the inductor unit	To the top coil		To the bottom coil		
PIN	CNT 1	CNT 2	CNT 3	CNT 4	CNT5	CNT 6	CNT7	FST1	FST5	FST2	FST 4	CN X1	CNX2	CNX 3	CNX4	
1	NTC	+5	NTC	LIN		+21 V	LIN	Connection fastons from the power supply cord to the board			Ground connection fastons of the inductor unit		Threaded connections for the ring lugs of the top inductor		Threaded connections for the ring lugs of the left inductor	
2	GND	+13	GND	+5		0 V	+5									
3		GND		+24			+24 V									
4		TX		GND			GND									
5		SEL														

4.8 Right induction electronics (ELIN right)

4.8.1 Overview

The new induction electronics integrate all the electronic components associated with burners 3 and 4, which components in the previous generation were divided into the power board, the control board and the filter board.

This board receives its power supply from the left ELIN and contains the fan connection.

The induction electronics board communicates with the TC through LIN communication. The TC sends the power level orders of each burner, and the induction electronics return the burner status (container detection, errors, etc.).

4.8.2 Assembly

The right induction electronics (ELIN DCHA) are fastened by two screws to the base.

4.8.3 Components

Basically, the induction electronics board consists of the following systems:

▶ Interference filter.

The interference filter consists of an assembly of coils and condensers that allow limiting the emission of conducted interference.

▶ Inverter with two outputs

The power inverter converts the alternating current of the power grid into the variable high-frequency alternating current that powers the inductors.

It basically consists of a power rectifier and two inverters with series-resonant half bridge topology.

▶ Inverter control

The inverter power devices are controlled by an integrated circuit especially designed by BSH. This circuit communicates with the microprocessor and imposes the operating frequency of the inverter and is responsible for feeding back the output current of the inverter.

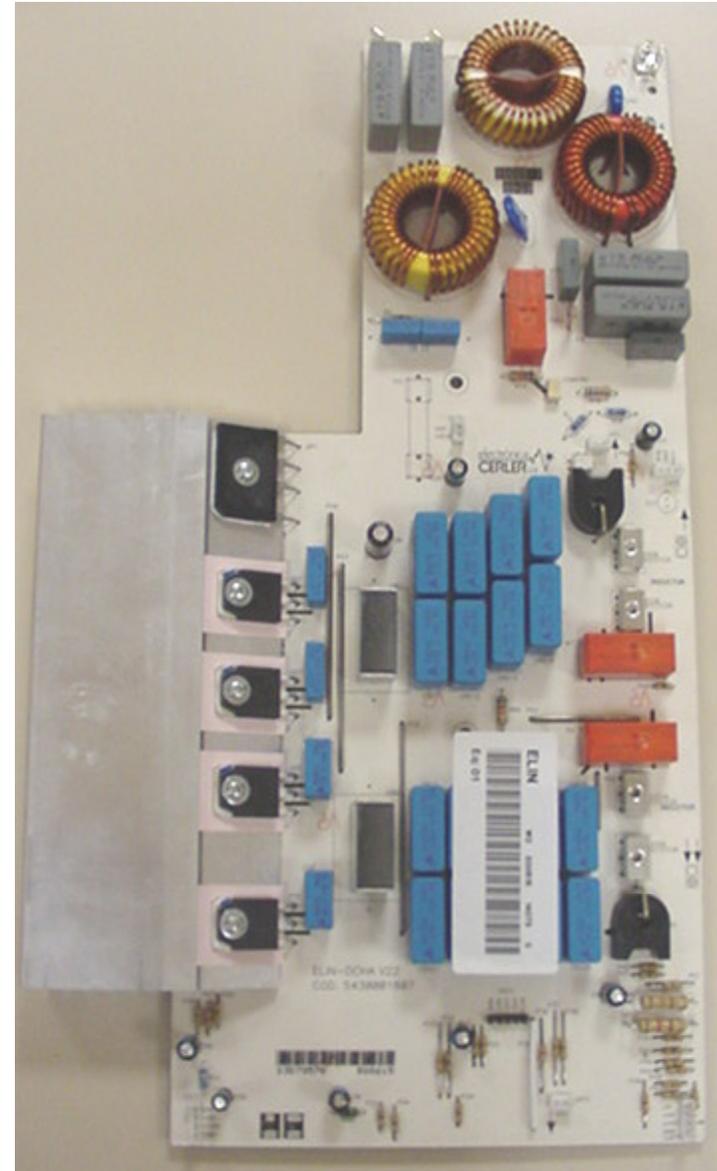
▶ Induction module control

The induction electronics module is controlled by a microprocessor. This component communicates with the TC, thereby receiving the power levels selected by the user, and it returns information on the burner status to the TC (container detection, errors, etc.).

Cooktop control is moreover responsible for monitoring the temperature of the power inverter and the inductors, for deciding on fan connection, for monitoring the residual heat indicators, etc.

4.8.4 Right ELIN connections

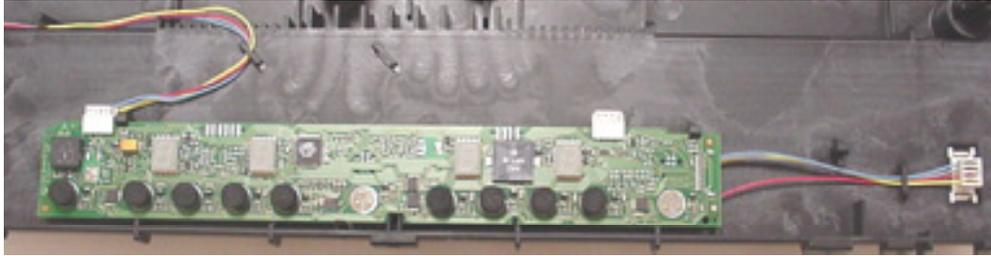
CNT 1	NTC connection, top inductor
CNT 2	Microprocessor FLASH programming connection
CNT 3	NTC connection, bottom inductor
CNT 4	LIN connection (IZDA->)
CNT 5	Fan activation
CNT 6	+18 connection (21 volts)
CNT7	Not used
FST 1	Line connection
FST 5	Neutral connection
FST 2	Ground connection
FST 4	Inductor unit ground connection
FST6	Top inductor connection
FST8	Top inductor connection
FST9	Bottom inductor connection
FST10	Bottom inductor connection



4.8.5 Posición de conexiones de la ELIN derecha

	NTC, top inductor	Not used by BSHI	NTC, bottom inductor	From left ELIN	To the fan	From left ELIN	Not used	From the power supply cord			To the inductor unit	To the top coil		To the bottom coil	
PIN	CNT 1	CNT 2	CNT 3	CNT 4	CNT5	CNT 6	CNT7	FST1	FST5	FST2	FST 4	FST6	FST8	FST9	FST10
1	NTC	+5	NTC	LIN	+ VDC	+21 V		Connection fastons from the power supply cord to the board		Connection fastons of the power supply cord ground	Ground connection fastons of the inductor unit	Threaded connections for the ring lugs of the top inductor		Threaded connections for the ring lugs of the left inductor	
2	GND	+13	GND	+5	GND	0 V									
3		GND		+24	TACH										
4		TX		GND											
5		SEL													

4.9 YL146 Touch Control (BASIC)



In induction cooktops, only the sensor and displays board of the TC is used. The power supply is obtained from the induction modules.

The TC board communicates with the induction electronics boards by serial communications based on LIN protocol (Local Interconnect Network). The connection is made by a 4-wire cable.

There is another connection for the technical service connector.

Cooktops with touch control have the control zone marked on the glass surface. The capacitive sensors are located underneath these indicators.

Sensors, from left to right, in the YL 146-34 model (4i BO/SI):

- ▶ Main switch (on, off, lock).
- ▶ More and less, zone 1
- ▶ More and less, zone 2
- ▶ More and less, zone 3
- ▶ More and less, zone 4

Sensors, from left to right, in the YL 146-31 (4i, 2i Ba) and the YL 146-30 (OLA Ba) models:

- ▶ More and less, zone 1
- ▶ More and less, zone 2
- ▶ Main switch (on, off, lock).
- ▶ More and less, zone 3
- ▶ More and less, zone 4

Sensors, from left to right, in the YL 146-33 (2i BO, SI) model:

- ▶ Main switch (on, off, lock).
- ▶ More and less, zone 1
- ▶ More and less, zone 2
- ▶ Dual burner expansion
- ▶ More and less, zone 3
- ▶ More and less, zone 4

Sensors, from left to right, in the YL 146-32 (3i Ba) model:

- ▶ Dual burner expansion
- ▶ More and less, zone 1/2
- ▶ Main switch (on, off, lock).
- ▶ More and less, zone 3
- ▶ More and less, zone 4

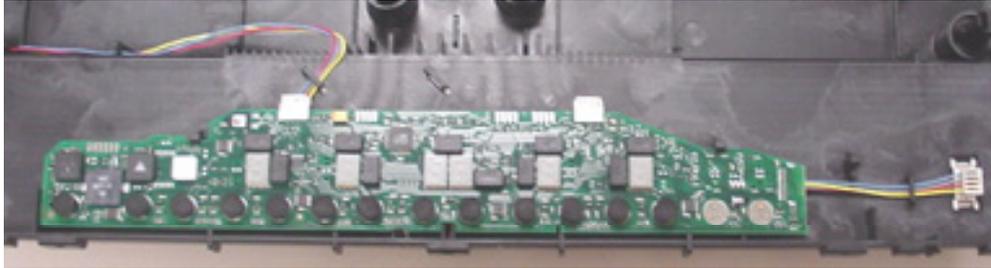
Sensors. from left to right. in the YL 146-35 (3i BO) model:

- ▶ Main switch (on, off, lock).
- ▶ More and less, zone 1/2
- ▶ Dual burner expansion
- ▶ More and less, zone 3
- ▶ More and less, zone 4

The power levels are indicated by seven-segment displays. On/off and other functions are indicated by indicator lights.

After connecting the cooktop, the Stand-by mode is displayed. Only the main switch indicator and the residual heat indicators are turned on.

4.10 YL147 (KOMFORT)



In induction cooktops, only the sensor and display board of the TC is used. The power supply is obtained from the induction modules.

The TC board communicates with the induction electronics boards by serial communications based on LIN protocol (Local Interconnect Network). The connection is made by a 4-wire cable.

There is another connection for the technical service connector.

Cooktops with touch control have the control zone marked on the glass surface. The capacitive sensors are located underneath these indicators.

Sensors, from left to right, in the YL 147-35 (4i BO/SI) and YL 147-73 (4i polibox BO/SI) models:

- ▶ Main switch (on, off, lock)
- ▶ Memory function sensor
- ▶ More and less, zone 1
- ▶ More and less, zone 2
- ▶ Activation sensor for timer function
- ▶ More and less, zone 3
- ▶ More and less, zone 4

Sensors, from left to right, in the YL 147-31 (4i Ba) model:

- ▶ Main switch (on, off, lock)
- ▶ More and less, zone 1
- ▶ More and less, zone 2
- ▶ Activation sensor for timer function
- ▶ More and less, zone 3
- ▶ More and less, zone 4
- ▶ Memory function sensor

Sensors, from left to right, in the YL 147-30 (2i Ba) model:

- ▶ Main switch (on, off, lock)
- ▶ Dual burner expansion
- ▶ More and less, zone 1
- ▶ More and less, zone 2
- ▶ Activation sensor for timer function
- ▶ More and less, zone 3
- ▶ More and less, zone 4
- ▶ Memory function sensor

Sensors, from left to right, in the YL 147-34 (2i BO/SI) and YL 147-72 (2i polibox BO/SI) models:

- ▶ Main switch (on, off, lock)
- ▶ Memory function sensor
- ▶ Dual burner expansion
- ▶ More and less, zone 1
- ▶ More and less, zone 2
- ▶ Activation sensor for timer function
- ▶ More and less, zone 3
- ▶ More and less, zone 4

The power levels are indicated by seven-segment displays. On/off and other functions are indicated by indicator lights.

After connecting the cooktop, the Stand-by mode is displayed. Only the main switch indicator and the residual heat indicators are turned on.

4.11 Touch Control YL147 (polibox)

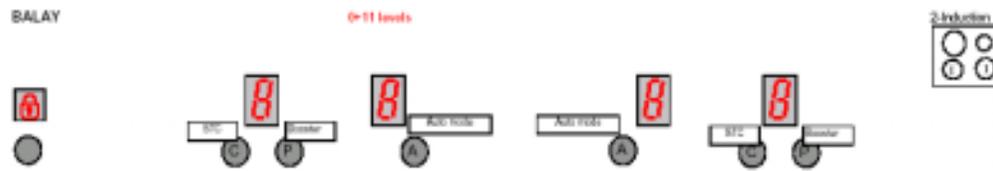
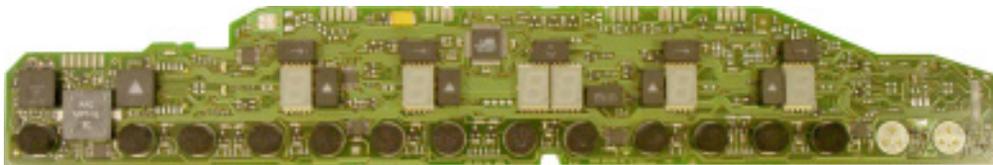
In induction cooktops, only the sensor and display board of the TC is used. The power supply is obtained from the induction modules.

The TC board communicates with the induction electronics boards by serial communications based on LIN protocol (Local Interconnect Network). The connection is made by a 4-wire cable.

There is another connection for the technical service connector.

Cooktops with touch control have the control zone marked on the glass surface. The capacitive sensors are located underneath these indicators.

Sensors, from left to right, in the YL 147-70 (2i Ba)

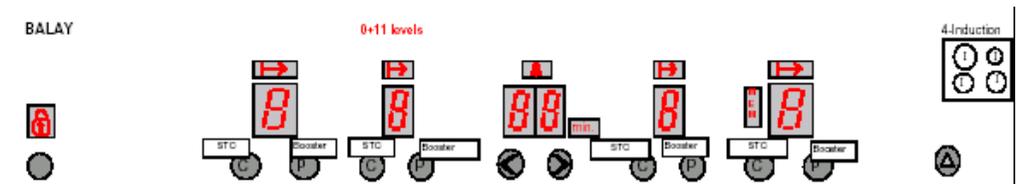


STC / Thcontrol = superficie de mando para la función control de temperatura.

Rapid / booster = superficie de mando para la función Powerboost

Auto / auto mode = superficie de mando para la función de precalentamiento rápido.

Sensors, from left to right, in the YL 147-71(4i Ba):

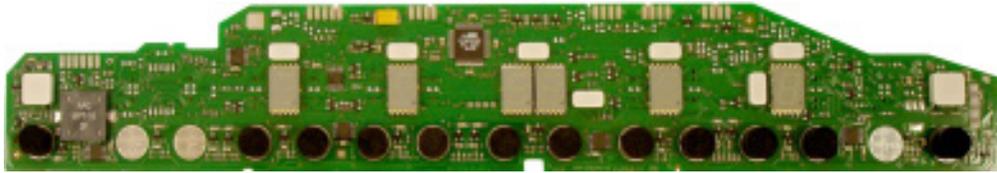


STC / Thcontrol = superficie de mando para la función control de temperatura.

Rapid / booster = superficie de mando para la función Powerboost

Auto / auto mode = superficie de mando para la función de precalentamiento rápido.

Sensors, from left to right, in the YL 147-72(2i BO/SI):

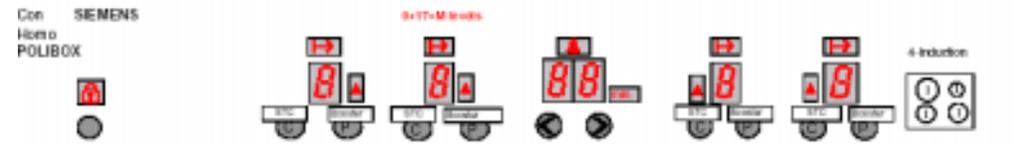
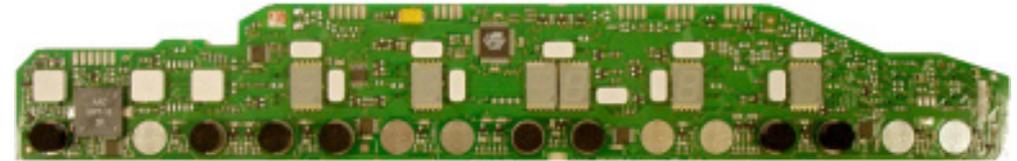


STC / Thcontrol = superficie de mando para la función control de temperatura.

Rapid / booster = superficie de mando para la función Powerboost

Auto / auto mode = superficie de mando para la función de precalentamiento rápido.

Sensors, from left to right, in the YL 147-73(4i BO/SI)

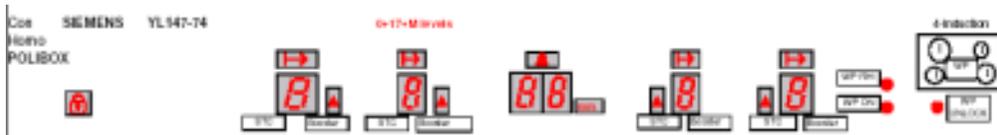
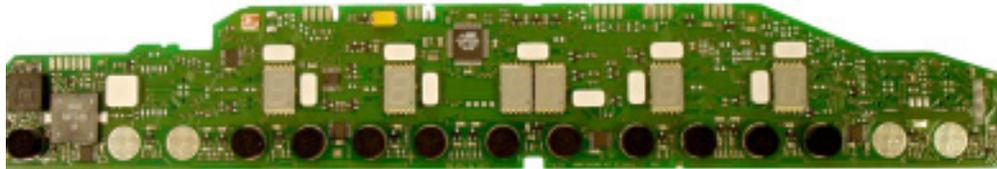


STC / Thcontrol = funtion temperature control

Rapid / booster = funtion Powerboost

Auto / auto mode = funtion quick heating

Sensors, from left to right, in the YL 147-74(4i SI)

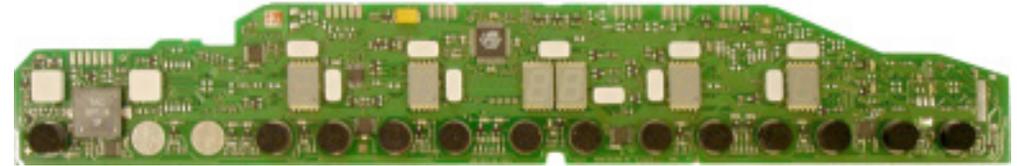


STC / Thcontrol = function temperature control

Rapid / booster = function Powerboost

Auto / auto mode = function quick heating

Sensors, from left to right, in the YL 147-75(2i SI) Bräter



STC / Thcontrol = function temperature control

Rapid / booster = function Powerboost

Auto / auto mode = function quick heating

The power levels are indicated by seven-segment displays. On/off and other functions are indicated by indicator lights.

After connecting the cooktop, the Stand-by mode is displayed. Only the main switch indicator and the residual heat indicators are turned on.

4.12 Touch Control YL160 (Neff)

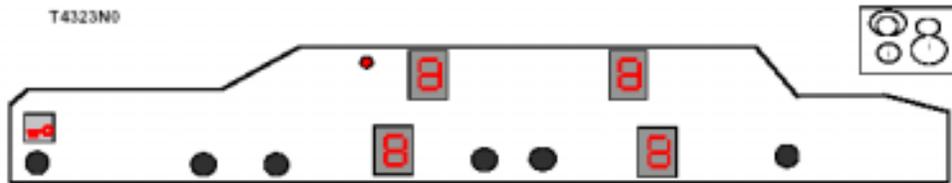
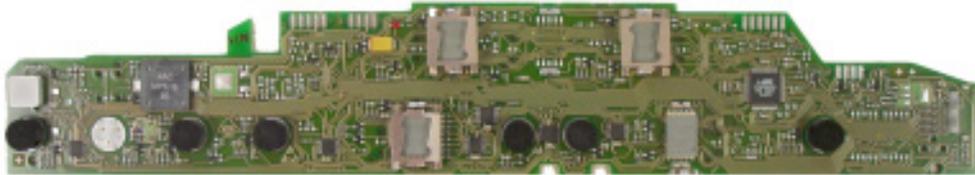
In induction cooktops, only the sensor and display board of the TC is used. The power supply is obtained from the induction modules.

The TC board communicates with the induction electronics boards by serial communications based on LIN protocol (Local Interconnect Network). The connection is made by a 4-wire cable.

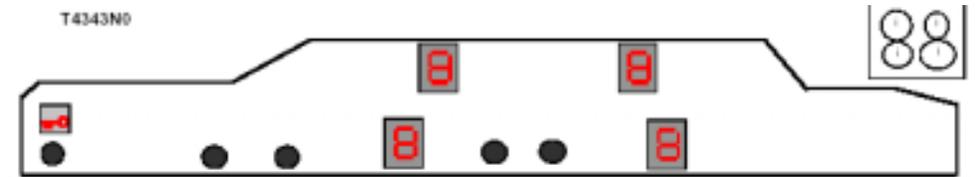
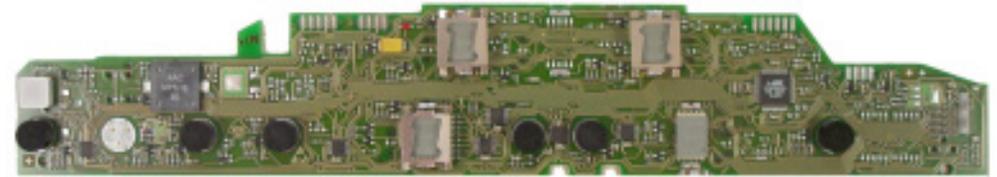
There is another connection for the technical service connector.

Cooktops with touch control have the control zone marked on the glass surface. The capacitive sensors are located underneath these indicators.

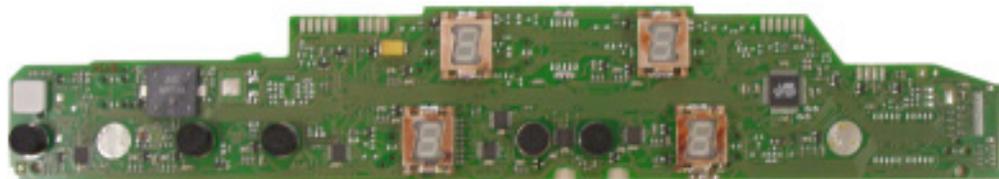
Sensors, from left to right, in the YL 160-30 (2i Ne)



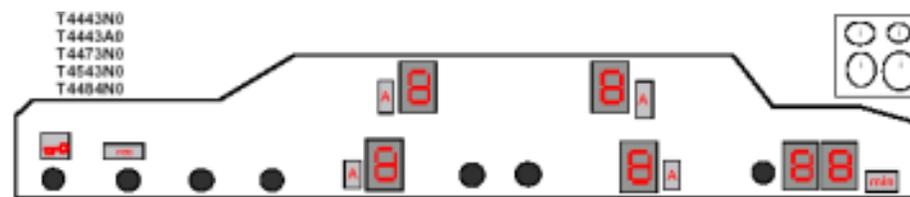
Sensors, from left to right, in the YL 160-31(4i Ne):



Sensors, from left to right, in the YL 160-32(3i Ne):

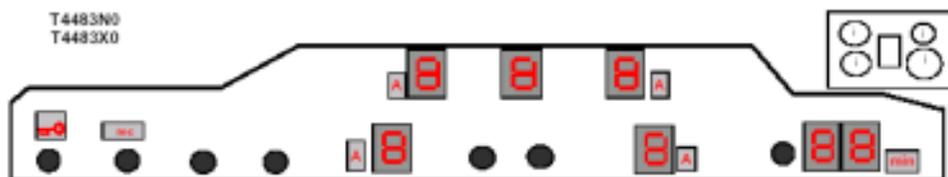
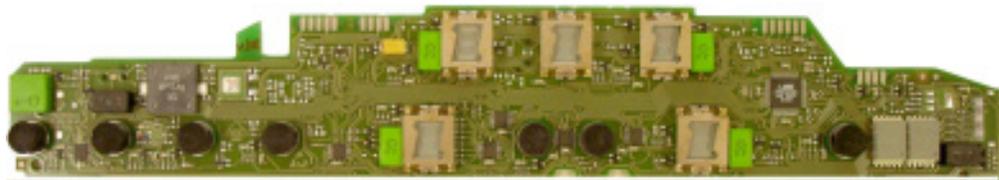


Sensors, from left to right, in the YL 160-33(4i Ne)



T4443N0
T4443A0
T4473N0
T4543N0
T4484N0

Sensors, from left to right, in the YL 160-34(4i Ne)



The power levels are indicated by seven-segment displays. On/off and other functions are indicated by indicator lights.

After connecting the cooktop, the Stand-by mode is displayed. Only the main switch indicator and the residual heat indicators are turned on.

4.13 Touch Control YL154 (Piezo)

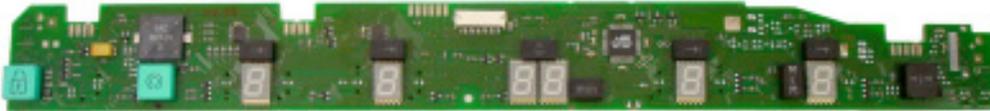
In induction cooktops, only the sensor and display board of the TC is used. The power supply is obtained from the induction modules.

The TC board communicates with the induction electronics boards by serial communications based on LIN protocol (Local Interconnect Network). The connection is made by a 4-wire cable.

There is another connection for the technical service connector.

Cooktops with touch control have the control zone marked on the glass surface. The capacitive sensors are located underneath these indicators.

Sensors, from left to right, in the YL 154-20 (2i Ba)



- ▶ Main switch (on, off, lock)
- ▶ Dual burner expansion
- ▶ More and less, zone 1
- ▶ More and less, zone 2
- ▶ Activation sensor for timer function
- ▶ More and less, zone 3
- ▶ More and less, zone 4
- ▶ Memory function sensor

Sensors, from left to right, in the YL 154-21(2i BO/SE):



- ▶ Main switch (on, off, lock)
- ▶ Memory function sensor
- ▶ Dual burner expansion
- ▶ More and less, zone 1
- ▶ More and less, zone 2
- ▶ Activation sensor for timer function
- ▶ More and less, zone 3
- ▶ More and less, zone 4

Sensors, from left to right, in the YL 154-23(4i BO/SE):



The power levels are indicated by seven-segment displays. On/off and other functions are indicated by indicator lights.

After connecting the cooktop, the Stand-by mode is displayed. Only the main switch indicator and the residual heat indicators are turned on.

4.14 Touch Control YL155 (Piezo Neff)

In induction cooktops, only the sensor and display board of the TC is used. The power supply is obtained from the induction modules.

The TC board communicates with the induction electronics boards by serial communications based on LIN protocol (Local Interconnect Network). The connection is made by a 4-wire cable.

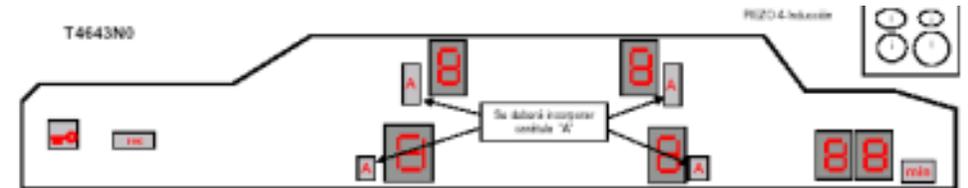
There is another connection for the technical service connector.

Cooktops with touch control have the control zone marked on the glass surface. The capacitive sensors are located underneath these indicators.

Sensors, from left to right, in the YL 155-23 (4i Ne)



Sensors, from left to right, in the YL 155-24(4i Ne):



4.15 Touch Control YL161 (Twist Pad)

In induction cooktops, only the sensor and display board of the TC is used. The power supply is obtained from the induction modules.

The TC board communicates with the induction electronics boards by serial communications based on LIN protocol (Local Interconnect Network). The connection is made by a 4-wire cable.

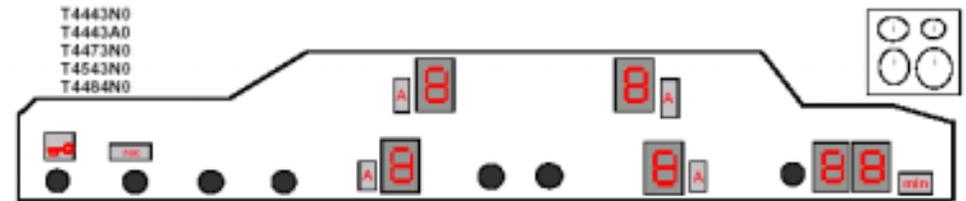
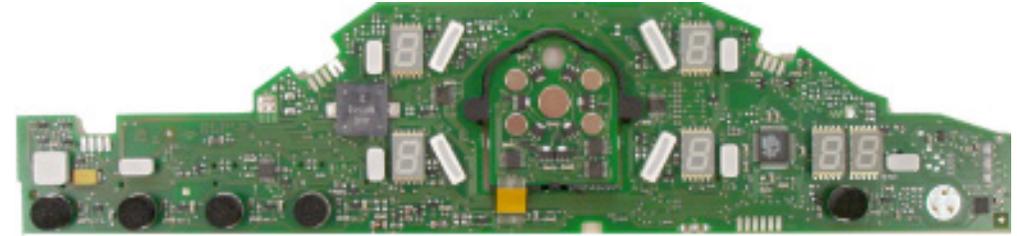
There is another connection for the technical service connector.

Cooktops with touch control have the control zone marked on the glass surface. The capacitive sensors are located underneath these indicators

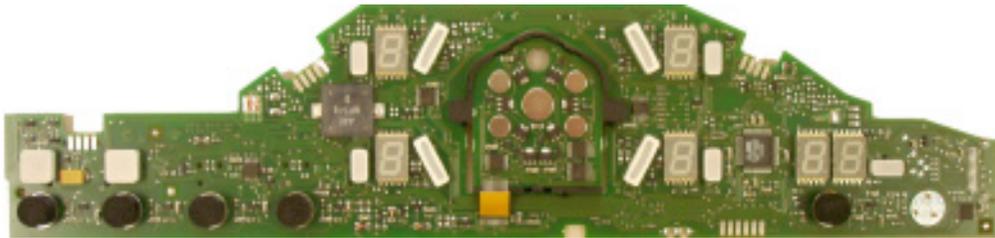
Sensors, from left to right, in the YL 161-40 (4i Ne)



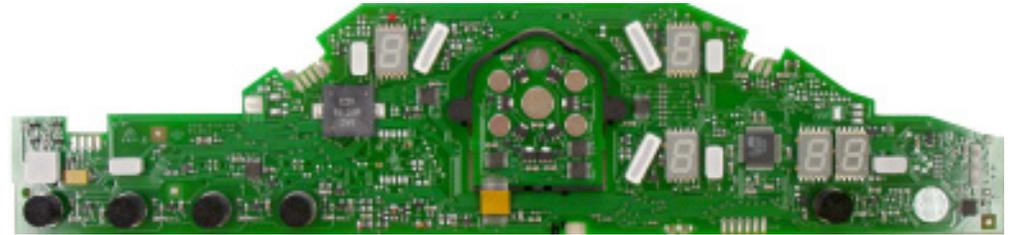
Sensors, from left to right, in the YL 161-41(4i Ne):



Sensors, from left to right, in the YL 161-43(4i BO):



Sensors, from left to right, in the YL 161-44(3 iNe)



Sensors, from left to right, in the YL 161-45(4i Ga)

Sensors, from left to right, in the YL 161-46(3i Ga)

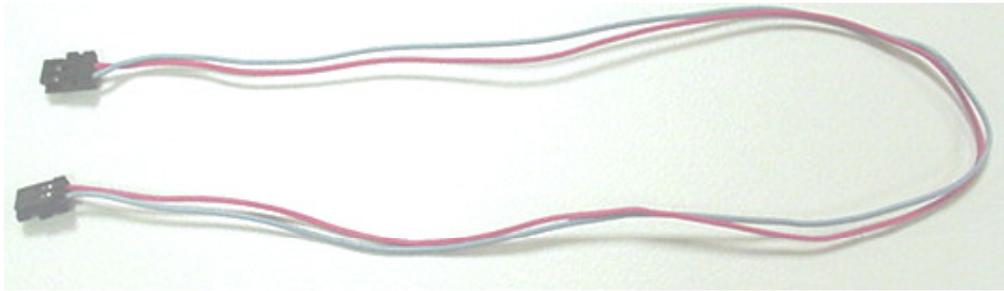


The power levels are indicated by seven-segment displays. On/off and other functions are indicated by indicator lights.

After connecting the cooktop, the Stand-by mode is displayed. Only the main switch indicator and the residual heat indicators are turned on.

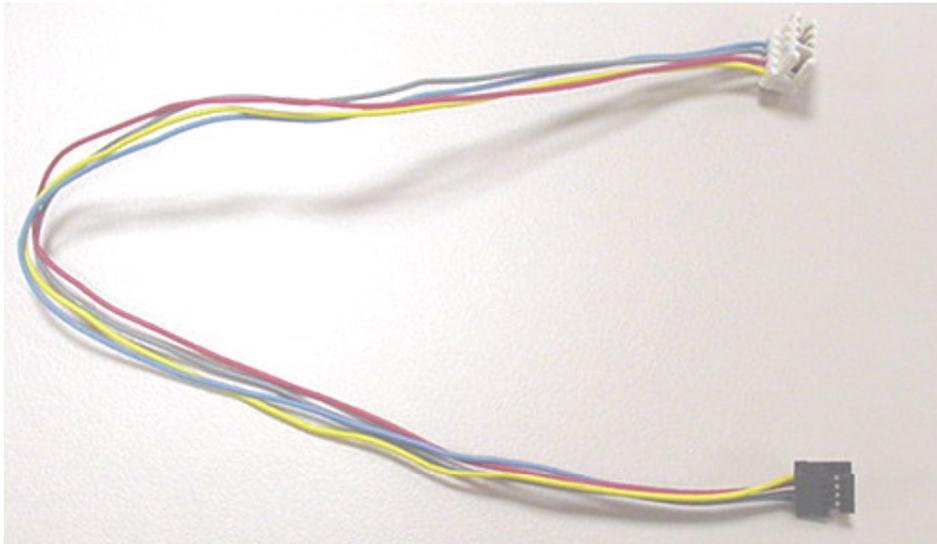
4.16 IV induction connections

4.16.1 Left-right, +18 V connection



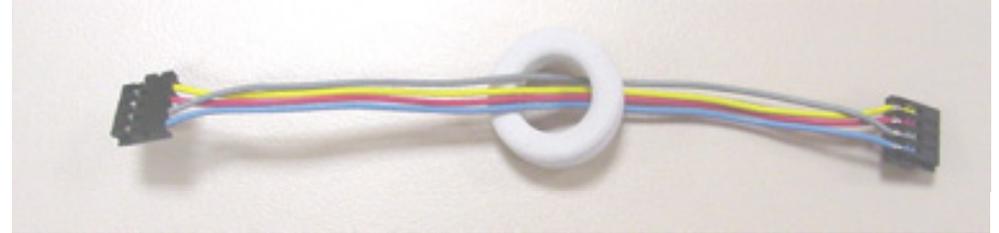
4.16.2 Left ELIN-TC connection

4-wire patch cord connector that connects the TC with the induction modules and that powers the TC.

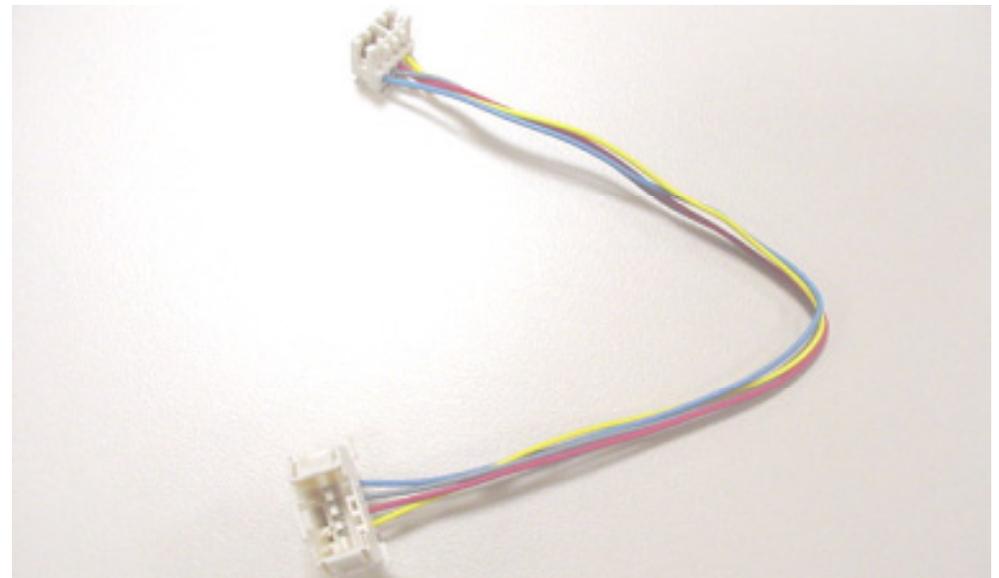


4.16.3 ELIN-IZDA ELIN-DCHA board LIN connection

This is a 4-wire connection that is used to communicate the right module with the TC and that powers the right module from the left module.



4.16.4 TC-PC diagnostic connection



4.17 Plastic thread screws

This screw is used to fasten the ELIN IZDA board, the ELIN DCHA board, the fan, the power supply cord to the retention device and the frame/glass unit to the cooktop base.



4.18 Metric thread screws

This screw is only used to fasten the inductor terminals to the induction electronics boards.



4.19 Parts for polibox connector (for german ovens)

4.19.1 RELAY PLATE IND-IV – LEFT-ELIN connection (medium-medium)

The connection has a high temperature coating and a thoroidal ferrite at the end connected to the relay plate to limit the emission of interference.



4.19.2 TC – RIGHT-ELIN connection (small- large)

The connection permits sending the power levels selected by the user through the TC and receiving the state of the cooking zones (detection of receptacle, residual heat, etc.).



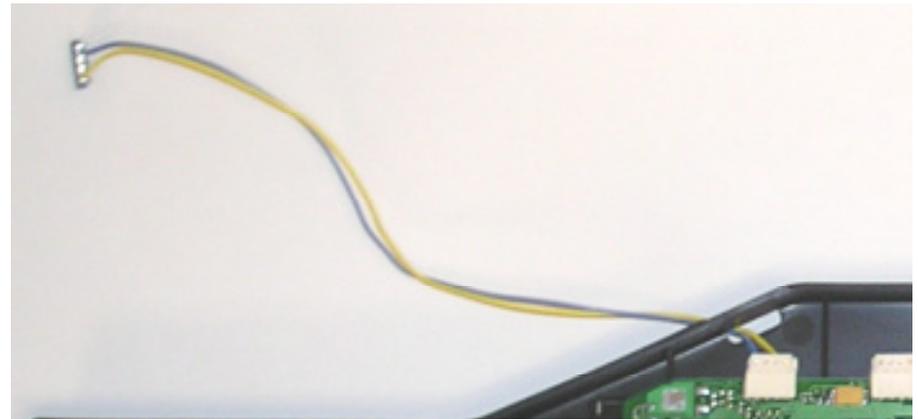
4.19.3 SAT 2I communication connection

This is a 4-wire connection, which permits connecting the hob to a computer through a diagnostic device for the technical service.



4.19.4 TC-LEFT ELIN connection (medium-medium)

Touch Control module supply connection through the LEFT ELIN (m-m).



4.19.5 Oven's connection + box polibox

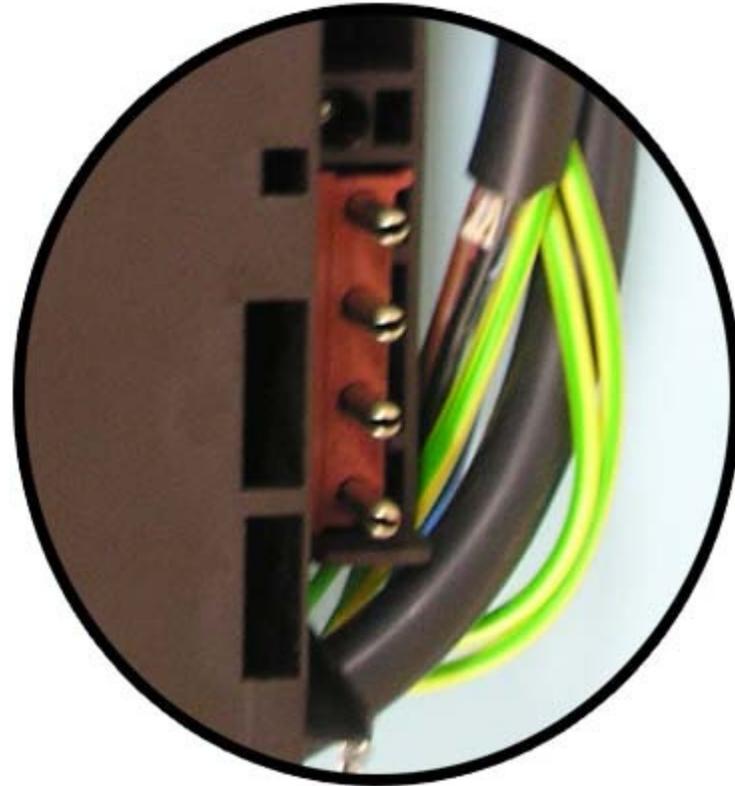
It's a connection from 4 wires (plus earth), which can be put up with 90 °C temperature. Connect the oven (from German manufactured) with the induction hob.

This box is placed above the oven's right back.



4.19.6 Polibox connector

At the back of polibox box it's the polibox connector.



1.1.7 Lin connector to oven

It consists of a black PVC cover and 2 stocko terminals..

One terminal is placed below the induction hob to the right and the other one goes above the oven's right back.

See polibox installation.



4.20 IV 4i Induction connections with plate-warmer

4.20.1 RELAY PLATE IND-IV – LEFT-ELIN connection (medium-medium)

The connection has a high temperature coating and a thoroidal ferrite at the end connected to the relay plate to limit the emission of interference.



4.20.2 TC – RIGHT-ELIN connection (small- large)

The connection permits sending the power levels selected by the user through the TC and receiving the state of the cooking zones (detection of receptacle, residual heat, etc.).



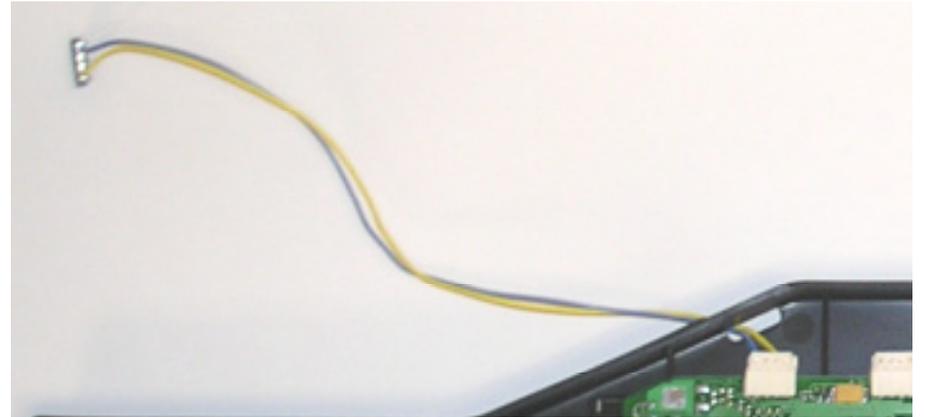
4.20.3 SAT 2I communication connection

This is a 4-wire connection, which permits connecting the hob to a computer through a diagnostic device for the technical service.



4.20.4 TC-LEFT ELIN connection (medium-medium)

Touch Control module supply connection through the LEFT ELIN (m-m).



4.20.5 Universal combination connector

It is placed in the box at the oven's front.



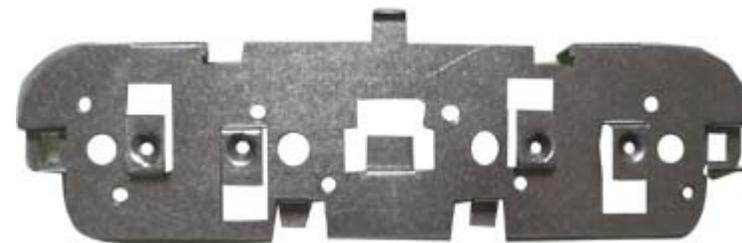
4.20.6 Set of combination module

It consists of the following

- Knobs support



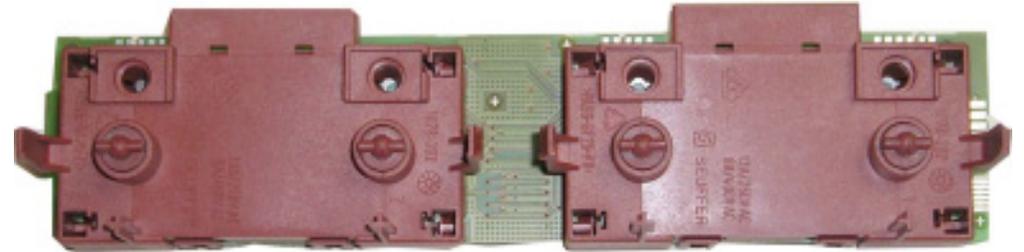
- Combination plate



- Combination spindle support
- Spindle
- Spindle stop



- Graycode set



5 FUNCTIONS

5.1 Powerboost function in Induction IV

The powerbooster function makes it possible to very quickly heat a container, thereby increasing power in the cooking zone by up to 150% (approximately) of the nominal power.

After reaching the desired temperature, the user must deactivate the function. If not, the control deactivates the function after 10 minutes.

The powerbooster function is available for all induction cooking zones.

In order to activate it, after reaching power level 9, press the “+” key for the corresponding zone, and the display will show the letter “P.”

To deactivate this function, either press the “-“ in order to return to level 9 or press the “+” key to turn off the cooking zone.

The powerbooster function is available when only one of the inductors connected to a module is being used. To the contrary, the indicator (“P” on the display) will blink and then disappear, thereby indicating that the function is not available.

If, while the powerbooster function is being used, another cooking zone that is connected to the same module is turned on, the booster function will be disconnected, thereby displaying the “P” indicator and the power level “9” indication.

5.2 Basic induction principles

5.2.1 Overview

The use of induction heating in glass-ceramic cooking devices has existed since 1987.

With this technique, the container is heated directly. Therefore the cooking surface heats up only as a result of the heat transmitted from the container to the glass, which is much lower than in conventional systems.

The base of the container is heated by the electric currents that circulate in its base and which are induced by a variable, medium-frequency magnetic field generated by the inductors located underneath the ceramic glass.

Only containers with a base made of ferromagnetic steel or iron can be used with induction cooktops. Containers that cannot be used for induction can be recognised by the magnet test.

Even though it is recommendable to use containers that fit the size of the cooking zone, containers of a smaller diameter can be used without causing notable reductions of efficiency. The cooktop control reduces the power delivered to small containers and, if applicable, stops supplying power when the container does not have the minimum required diameter.

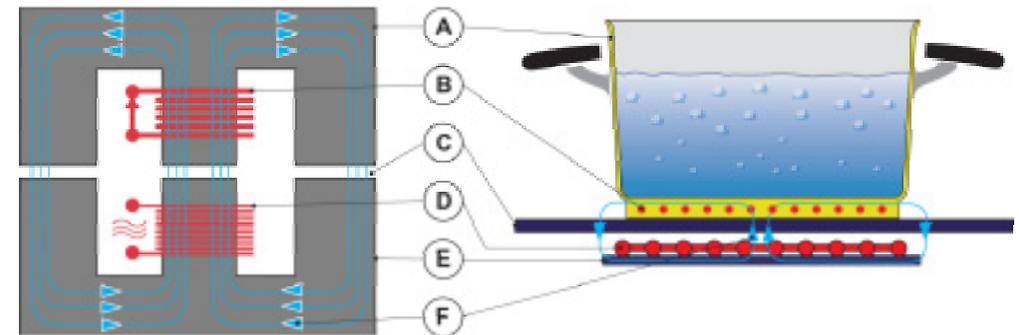
5.2.2 Operation

The power inverter transforms the 50 Hz of the power grid into an alternating current with a frequency between 20 and 50 Hz.

Direct heating of the container base provides the induction system with very fast heating. Likewise, the system reacts very quickly to power level changes.

Induction provides very precise control of the power levels, wherefore it allows delicate recipes to be prepared.

A temperature sensor under the glass is used in order to protect the inductor, and it moreover allows detecting that an empty container is being over-heated and stopping the heating process.



5.3 Induction IV power control

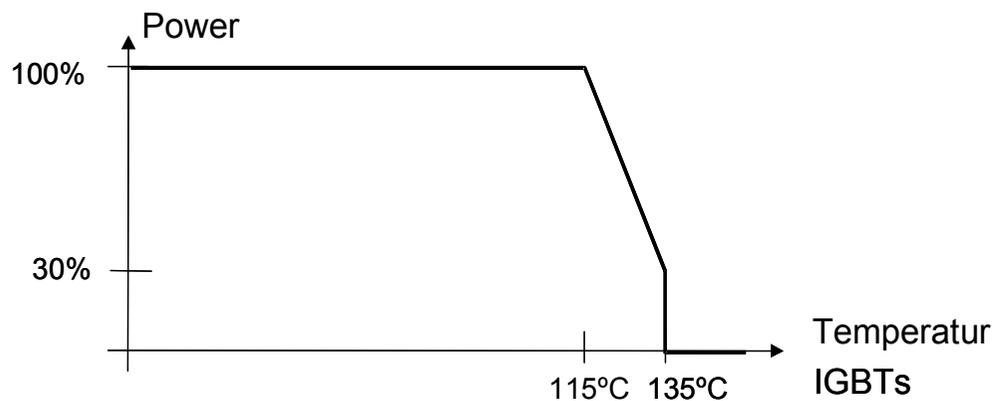
The induction electronics incorporates power control in a closed loop that allows keeping the output power equal to the established reference power (shown in the TC description).

However, it is possible for the cooktop to supply power below the nominal power in the following cases::

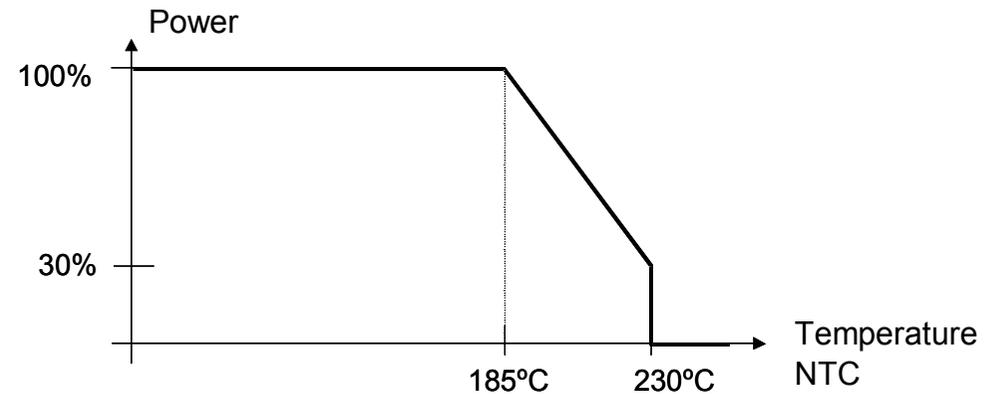
- ▶ Small diameter containers.
- ▶ The power grid voltage is too low (less than 215 VAC).
- ▶ After prolonged frying.
- ▶ During intensive use of the cooktop.

In the last two cases, the power recovers nominal power as soon as the temperature falls below the established limits.

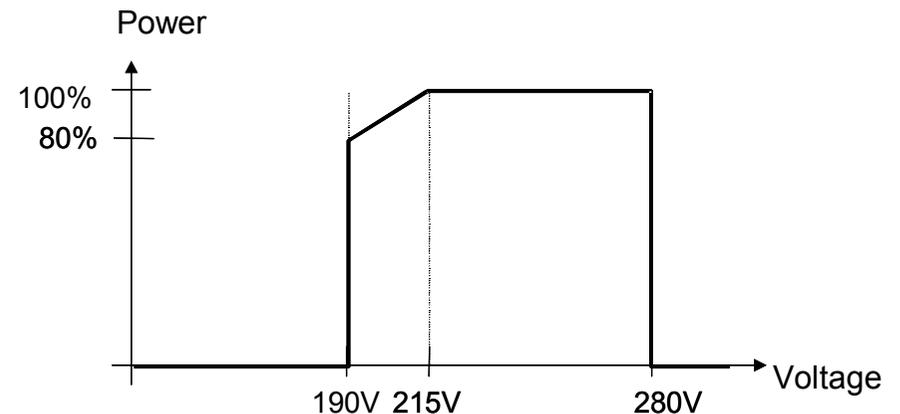
5.3.1 Power regulation in accordance with the radiator



5.3.2 Power regulation in accordance with the inductor



5.3.3 Power regulation in accordance with the power grid voltage



5.4 Temperature control (STC)

The STC allows the user to keep the temperature constant as from the instant that the user turns power on, without using additional temperature sensors.

The STC system can be applied to any container, although the control tolerance can vary depending on the size, the material and the temperature that has been activated.

The STC function can be very useful for maintaining the optimum temperature for fried dishes, for deep frying and for keeping food hot: all without abrupt temperature changes and while consuming the minimum possible energy.

The STC system works by evaluating the variation of the inductor-container coupling with the temperature. This variation is due, fundamentally, to the variation of the electrical resistivity of the container base with the temperature.



Important!

The STC function does not control boiling (bubbling). This is due to the fact that it applies the minimum energy in order to keep the container temperature constant. Therefore, if you activate STC for boiling (for example, using an espresso coffee maker, when steaming or when using a pressure cooker), it is possible to observe that the water will stop bubbling, although the temperature will continue to be at the boiling point temperature.

The STC system evaluates the coupling by always using a frequency of 35 kHz. This evaluation is made during 600 ms, and it is repeated every 6 seconds. For the remaining 5.4 seconds, the system applies the power necessary to keep the temperature at the level at which the STC function was activated.

Therefore, depending on the quantity of the food, the container and the temperature, these power variations could be noted..



Attention!

In the event that very small containers are used, and with very little content, when the STC function is selected at very low levels, the temperature of the container may be increased due to the minimum power that the system has to apply in order to evaluate the coupling.

The STC function works with the limitations described in the user manual as regards the type of applications, the power levels prior to activation, etc. Likewise, the user manual describes the possible solutions when the STC function does not satisfy user expectations. The STC limitations described in the user manual are detailed below.

Boiling or cooking with a pressure cooker.

1. Position the pot or pressure cooker.
2. To boil, put the switch in the cooking zone at cooking level 7.7 or 8. If the dish boils or if pressure has already formed in the pressure cooker and the valve is up, activate temperature control
3. To do so, press the “+” and “-” symbols at the same time.

For dishes that contain hot liquids, adjust as aforementioned, and at the end add the food to the broth.

Grilling

Never heat oil, butter or lard without monitoring. There is a risk of fire!

-
1. Position the pan.
 2. Heat the oil in the pan at cooking level 7.

Verify that the pan is hot enough. Add a bit of bread crumbs to the oil in the pan. If the bread crumbs toast, the pan is hot. Then activate temperature control.

3. To do so, press the “+” and “-“ symbols at the same time.
4. Then place the food in the pan.

Frying

Never heat oil, butter or lard without monitoring. There is a risk of fire!

For frying, use the appropriate oil or grease for frying (i.e., vegetable oil).

Always fry uncovered

1. Position the pan.
2. Heat the oil, butter or lard in the pan at cooking level 7.7 or 8.

Verify that the oil, butter or lard are hot enough. To do so, place a wooden cooking spoon in the oil, butter or lard. If small bubbles form around the spoon, the oil, butter or lard has reached the appropriate frying temperature. Then active the temperature control.

3. To do so, press the “+” and “-“ symbols at the same time.
4. Then place the first portion in the oil, butter or lard.

After each portion, check the temperature with the wooden spoon. Only when little bubbles form again can the next portion be fried.

SUGGESTIONS FOR TEMPERATURE CONTROL

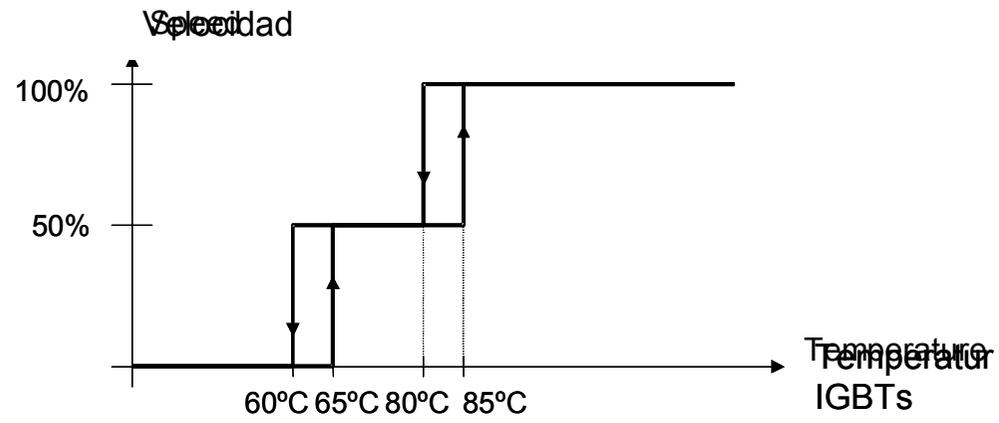
For boiling with the temperature control, always use a lid in order to save energy.

The water does not boil correctly.	When boiling with the temperature control, the water does not bubble as usual, given that the temperature remains just below the boiling point. The temperature is sufficient for boiling.
A long time passes before the dish is done.	The next time, add more liquid or select a lower fast-cooking level.
The dish boils excessively.	The next time, cut the cooking time or select a lower fast-cooking level.
When grilling, the pan does not heat up sufficiently.	The next time, increase the heating time or select a lower grilling level.
When grilling, the pan heats up excessively.	The next time, cut the heating time or select a lower fast-cooking level.
The temperature for frying is too low.	The next time, increase the heating time or select a lower fast cooking level.
The temperature for frying is too high.	The next time, cut the heating time or select a lower fast-cooking level.

Note

If the container used for cooking is moved or removed from the cooking zone, disconnect the temperature control. The “C” disappears from the visual display, and cooking position 4 is illuminated. If the container is again placed on the cooking zone, cooking position 4 is illuminated.

5.5 Fan activation



5.6 Timer and alarm function

The timer function is included in all cooking zones.

After selecting the appropriate power level, the cooking duration can be selected from 1 to 99 minutes, thereby using the Timer sensors. Once the selected cooking time elapses, the cooking zone will turn off automatically.

The cooktop also incorporates an alarm function that allows programming a period after which an acoustic signal will sound.

In order to activate the Timer function, press the “+” and “-“ sensors at the same time until the corresponding illuminated signal of the desired zone comes on the display. At that time, the “-“ sensor can be pressed, which displays the 10-minute pre-selection, or the “+” sensor can be pressed, which displays the 30-minute pre-selection. Then press the “+” or “-“ sensors in order to reach the desired time.

The alarm function works similarly. The selection is made on the timer digits.

The timer allows programming up to 4 cooking zones, and the alarm function as well. If multiple zones are programmed, the display will show the time corresponding to the zone that will turn off first.

5.7 Memory function

Some induction cooktops incorporate the memory function for all cooking zones.

Basically, this function allows recording the preparation of a recipe so that it can be reproduced at a later time.

The description of the function is found in the user manual of the corresponding models.

Only the power levels that are kept stable for more than 10 seconds will be recorded.

5.8 Container detection

All the induction zones incorporate an automatic container detection system included in the induction control. Even though the minimum diameters may vary according to the material, they are found at 50% of the nominal diameter.

When a container is considered to be small, the induction control automatically reduces the power delivered in order to adapt to the container.

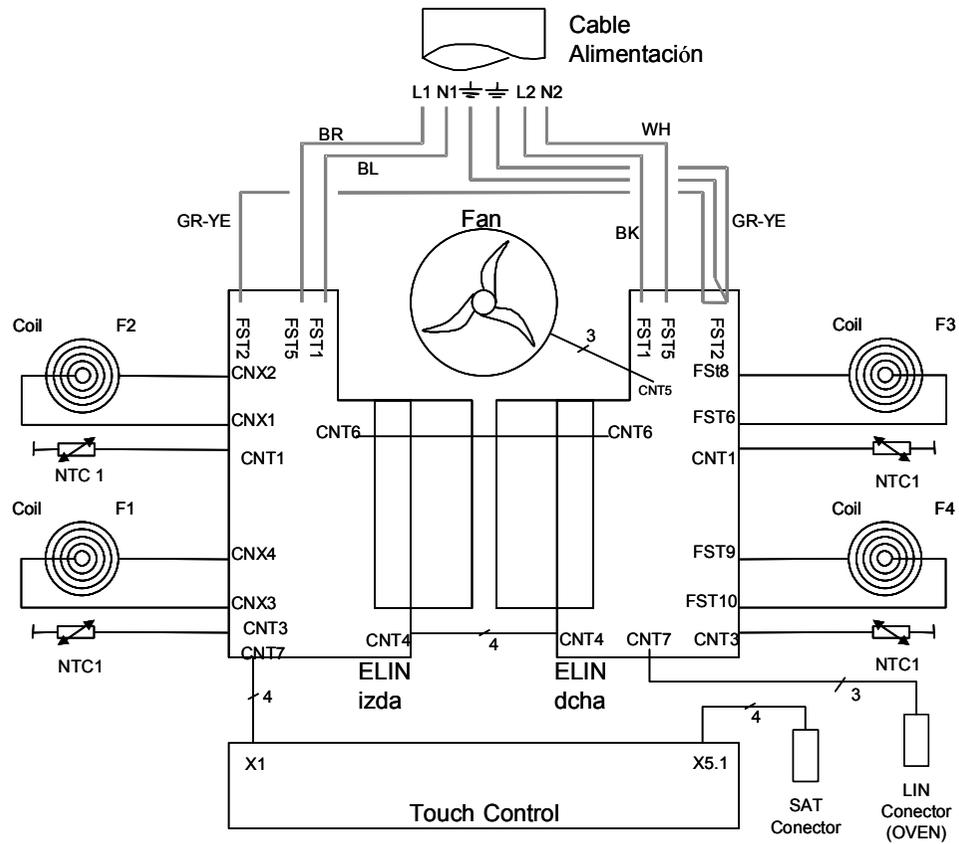
After activating the zone, if a container is not positioned there or if the container is the incorrect type, the display will flash the power level. After 90 seconds, the TC emits an acoustic tone and turns off the cooking zone.

When a container is recognised as valid, the power level display remains constant, and the power indicated on the display is supplied.

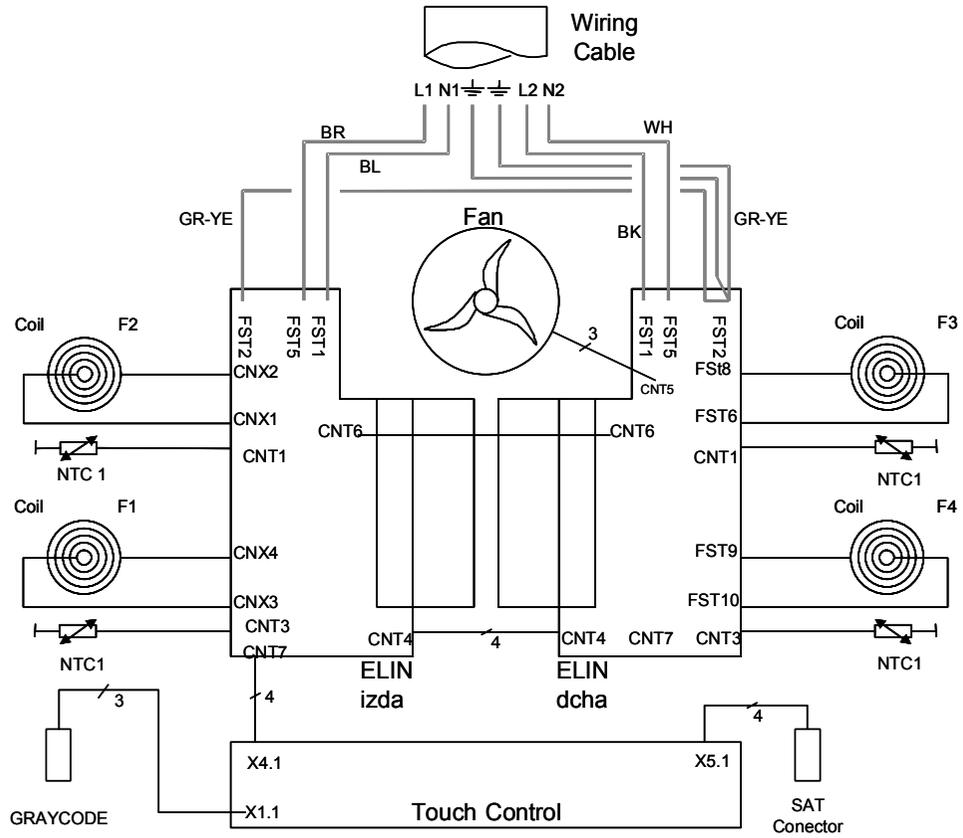
5.9 Touch Control Parameters

Level	Automatic mode duration			% s/Pmax	% s/Pmax	ON Time (s)	OFF Time (s)	Period (s)	Maximum duration
	Conv.	Ind III	Ind IV	Ind. IV	Conv.				
0			Not used						
1	2,0	1,0		3	3,1	1,6	50,4	52	10
1.	2,4	1,2		6	4,7	2,4	49,6	52	10
2	2,8	1,4		8	6,3	3,2	48,8	52	5
2.	4,0	2,0		10	7,8	4,1	47,9	52	5
3	4,4	2,2		14	10,9	4,8	39,2	44	5
3.	5,0	3,0		20	12,5	5,5	38,5	44	5
4	5,5	3,2		27	15,6	6,9	37,1	44	4
4.	6,1	3,5		35	18,8	8,2	35,8	44	4
5	7,7	4,3		42	21,9	9,6	34,4	44	4
5.	11,6	6,3		50	25,0	11,0	33,0	44	3
6	2,8	1,4		56	29,7	13,1	30,9	44	3
6.	2,8	1,4		64	35,9	15,8	28,2	44	3
7	2,8	1,4		71	43,8	19,2	24,8	44	2
7.	2,8	1,4		78	53,1	23,4	20,6	44	2
8	3,3	1,6		85	64,1	28,2	15,8	44	2
8.	3,3	1,6	92	79,7	35,1	8,9	44	1	
9	0,3	0,3	100	100,0	44,0	0,0	44	1	
P	-	-	150	-	-	-	-	-	

5.11 4I TC, 60-cm block diagram Polibox



5.12 4I TC, 60-cm block diagram Graycode



6 REPAIR

6.1 4i, 60-cm IV Induction

6.1.1 Disassembly of the appliance:

- ▶ Remove the cooktop plate, thereby taking care not to damage the installation pins.
- ▶ Place the cooktop plate on the counter with the glass side down. Be careful not to damage it.
- ▶ Remove the 12 screws that fasten the frame/glass to the base
- ▶ Position the frame/glass unit with the glass up.

6.1.2 Assembly of the appliance:

- ▶ Fasten the frame/glass unit to the base using 12 screws.
- ▶ Install the plate on the cooktop, thereby taking care not to damage the installation pins.



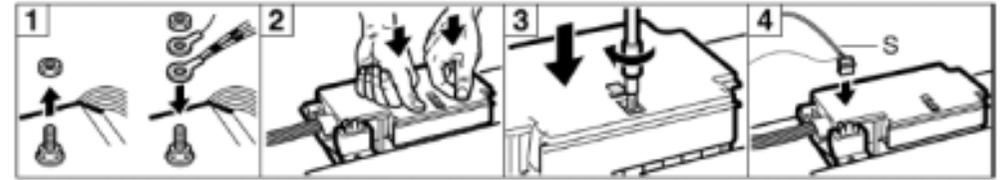
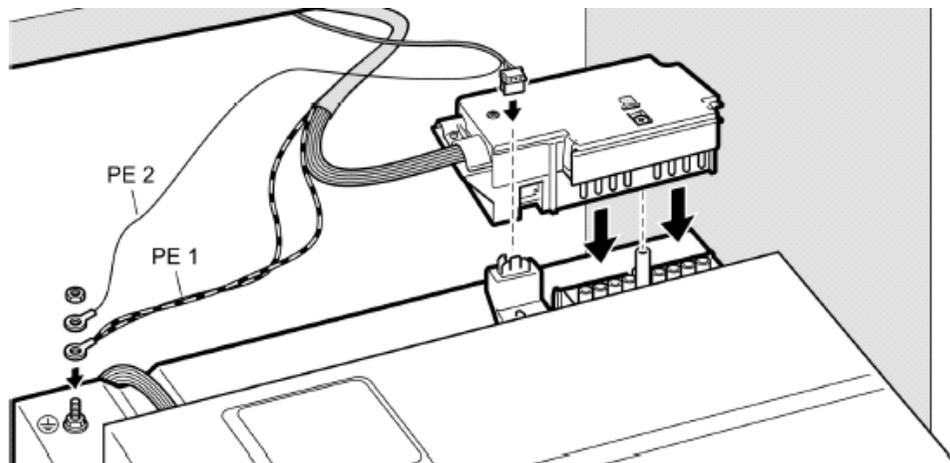
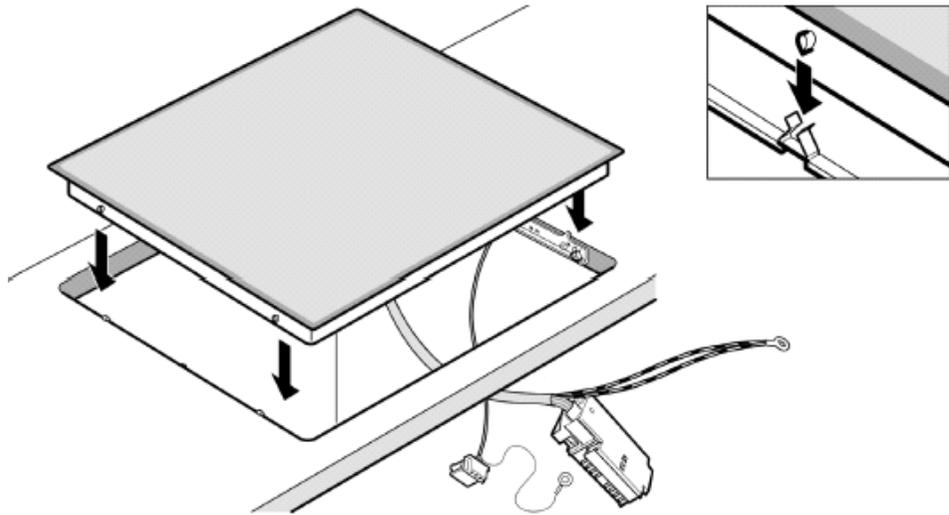
Attention!

The power connections of the inductors are made using a ring lug and a metric thread screw. Tighten the screw until the terminal cannot be turned by hand. If the screw thread becomes stripped, the induction electronics board will be useless.

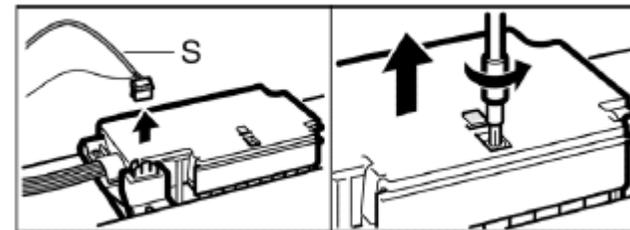
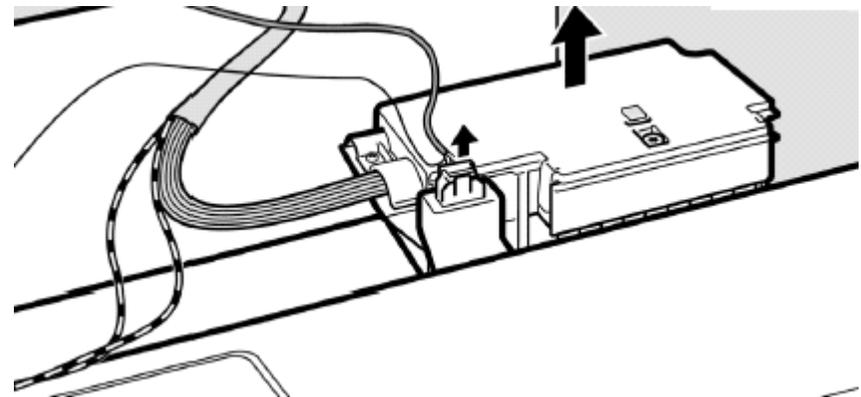
6.2 Assembly and disassembly Ind IV polibox

Always, you must the installation manual follow.

6.2.1 Assembly



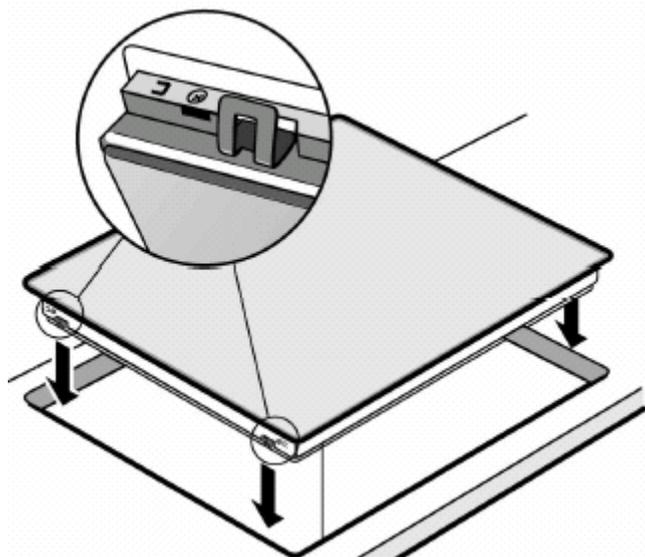
6.2.2 Disassembly



6.3 Assembly and disassembly Ind IV universal combination (Balay)

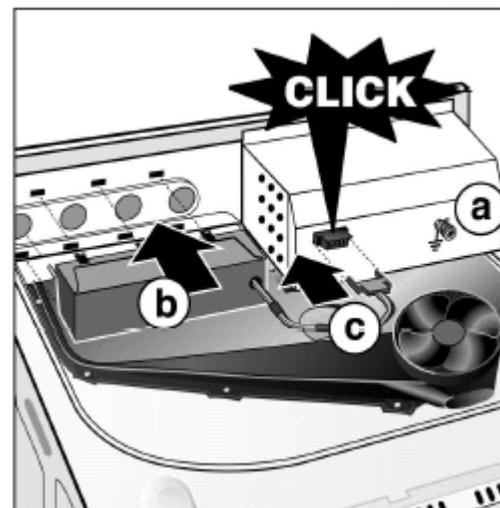
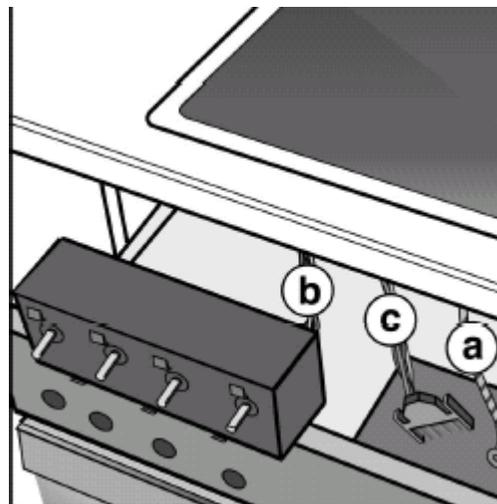
Always, you must follow the installation instructions.

6.3.1 Assembly



The hob's wires must be correctly connected to the oven:

- The earth wire (a) must be connected at first and must be the last when it's disconnected.
- The hob's control box (b) must be placed at the oven's front.
- Connect the power supply wire (c). A click must be heard to fix correctly.



6.3.2 Disassembly

- Disconnect the appliance from the power supply.
- After, it must be taken out the oven from the furniture and disconnect the wires . The earth wires (the yellow-green one) must be disconnected at the end.
- Push out the cooking zone from below.

7 FAULT DIAGNOSTICS

7.1 A container presents electric current

7.1.1 Description of the failure

The customer feels a slight electric discharge when touching a container that is being heated by induction.

7.1.2 Cause

- ▶ Induction technology uses magnetic fields to cause the container to heat.
- ▶ Due to the inductive coupling between the container and the inductor, the container induces a small part of the voltage to which the inductor is subject.

7.1.3 Solution

The following should be considered:

- ▶ The induction plates of BSH comply with all national and international legislation in force.
- ▶ Under the least favourable conditions, the contact current transmitted by the container is 5.3 mA, much less than the limit of 40 mA.
- ▶ This current is a measurement taken using a passive power grid described in legislation, which simulates the impedance of the human body.
- ▶ It is completely normal that a measurement made between the container and the ground connection using a tester give a value of around 80 V. This voltage is reduced by approximately half when a container is touched by a hand.

Therefore, this voltage does not present any danger to the user.

7.2 YL146/147 Touch Control Test

7.2.1 TC YL/146



7.2.2 TC YL147

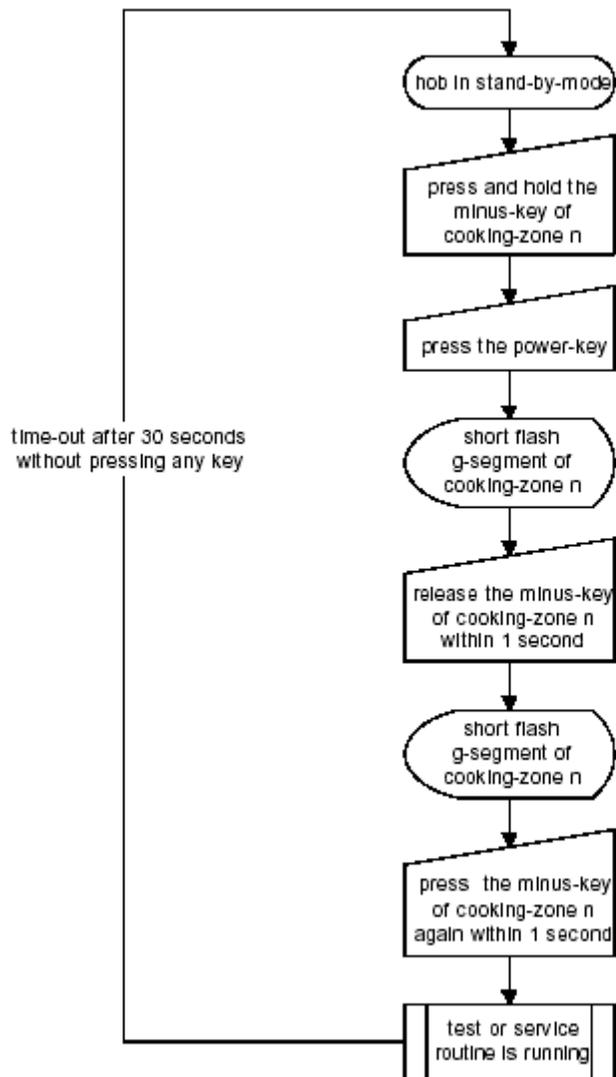


- ▶ The Touch Control can be checked by performing a practical check of all the sensors.
- ▶ It is not possible to test the serial communication between the TC and induction electronics with the means that a service technician has available.
- ▶ Nevertheless, the voltage on the communication line can be measured when the TC is in the active mode.
- ▶ The TC has a technical service program that allows displaying the various parameters.

7.2.3 Service program

Service program start

- Entry-procedure with **minus-key** of cooking-zone 2 (all TCs except Neff) or selection of cooking-zone 2 (Neff TC and Twistpad):
- Entry-procedure with **plus-key** of cooking-zone 2 (all TCs except Neff) or selection of cooking-zone 1 (Twistpad):



Note:

In Neff-variants instead of the minus-key the select-key of the corresponding cooking-zone has to be used.
 In Twistpad-variants instead of the minus-key the corresponding cooking zone has to be selected and instead of the plus-key the cooking zone 1 has to be selected. At the beginning of the procedure any key except of the power key has to be selected to activate the Twistpad.

End of Service program

- After executing the service programs P0,P2, P8 and P9, the TC leaves the service mode and goes into stand by mode.
- Time-out: after 120 sec. Without operation, the TC leaves the service mode and goes into stand by mode (exception: in P8 menu, the time-out acts after the whole life-time course).

Step P0: Leaving the service mode

The P0 menu makes it possible to leave the service mode (before time out).

To start the P0 menu, any key except the power key has to be pressed. After that the TC goes into stand by mode.

Step P1: Sensor-test&Display- and buzzer-test

1. To start the test in the P1 menu any key except the power key has to be pressed.
2. Wait 2 sg. Whereas the TC detects the reference values.
 During this process, the display's horizontal superior segments stay illuminated
3. When the horizontal intermediate segments are illuminated, the sensor checking can be initiated.
4. Press individually each sensor and check the display indication.

Indication	Meaning
0	correct running
1	Lack of sensitive in sensor
2	Sensor too much sensitive
3	Out of tolerance
4	Problem with the start key
9	Activation at the same time of some sensors.

Once, all of the sensors have been checked and if these ones work properly, the program goes automatically to the buzzer and displays checking.

For this, the buzzer is activated for 2 s and all the LEDs and segments are illuminated for 10 s.

Step P2: Setting the defaults for the TC

The P2 menu makes it possible to set the defaults for the TC

- Fictitious residual-heat indication „H/h“ deleted.
- Data for Memory deleted, set default.
- Buzzer Off not set
- Reduced Key lock time not set
- Child lock not activated

The steps are as follows:

1. Press any key except power key.
2. A Beep sounds.
3. to signalize the set defaults, all displays show „0000“ for 2 sec. After that, the TC leaves the service mode and goes into stand by mode

Step P7: Parameter output

Some of these diagnostic and error- or state-counter functions write cells in the EEPROM.

These functions can be disabled by an EEPROM-cell. The default value is enabled.

In the "**P7-menu**" with each key the service-technician can read out a parameter. In Twistpad control additionally the selection of cooking zones is used. The parameter is shown as long as the corresponding key/cooking zone is pressed/selected.

*) six digits in Comfort-TC/Twistpad
four digits in Basic-TC

three digits in 3-fold TC (without units place)

** in 3-fold TC's with only 6 keys except the power key the first and second key must be pressed together

***) The first key is the key on the left side. The second key is the next key right to the first key. The

power key is left and mustn't be used. In Twistpad control there are also the selections of the cooking-zones used and the directions for the cooking zones are like four keys that come after

the key on the left side of the knob.

Step P8: Life-time test

This step is only for factory.

Step P9: Single deactivation of the operation time limit

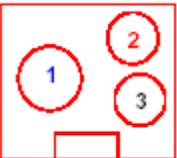
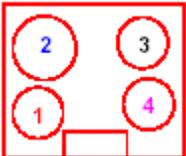
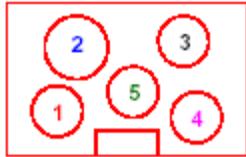
To deactivate the operation-time-limit, in "**P9-menu**" any key except the power key has to be pressed. While the key is pressed, every 7-segm.-display shows "1". (e.g. "1111 ")

After 3sec., the service menu is stopped and the control goes into stand-by mode. The keylock-LED is switched on.

Now, the control can be switched on (active mode) with the operation-time-limit deactivated. The keylock-LED remains on.

After switching off the control (stand-by mode) or after a reset, the operation-time-limit is activated again. The keylock-LED switches off.

Sensor***	Indication	Description
1	Ej. „S 1. 0 4“	Software version e.g. V1.04
2	Ej. „o 0 0 0“	Counter mains failure (400V)
3	Ej. „t 0 0 0“	Maximum selftemperature (conversion required)
4	Ej. „0 0 0 0“	Hour counter * (6 digits in confort TC)
5	Ej. „P 1 1 2“	Part number
6	Ej. „r 0 0 0“	Counter power on
7**	Ej. „E 1. 0 4“	Version EEPROM e.g. Version 1.04
8	„- - - -“	reserved

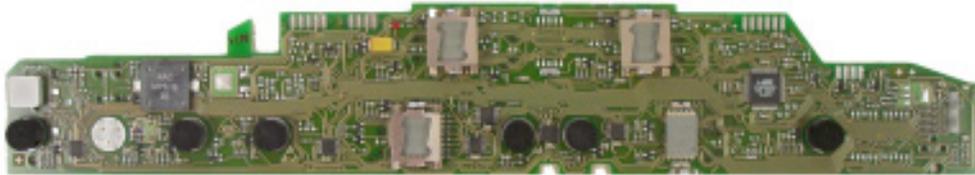


7.3 Checking TouchControl YL160/161/

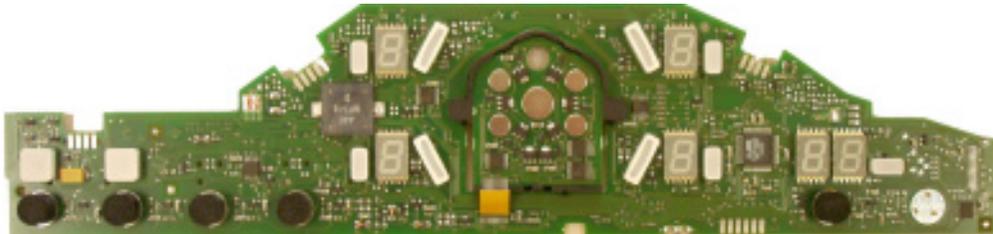
The checking are the same for Touch control, except for TC YL160 (Neff) and TC YL161 (Twistpad).

Though they are very similar, they only differ in the entry way.

7.3.1 TC YL 160



7.3.2 TC YL161

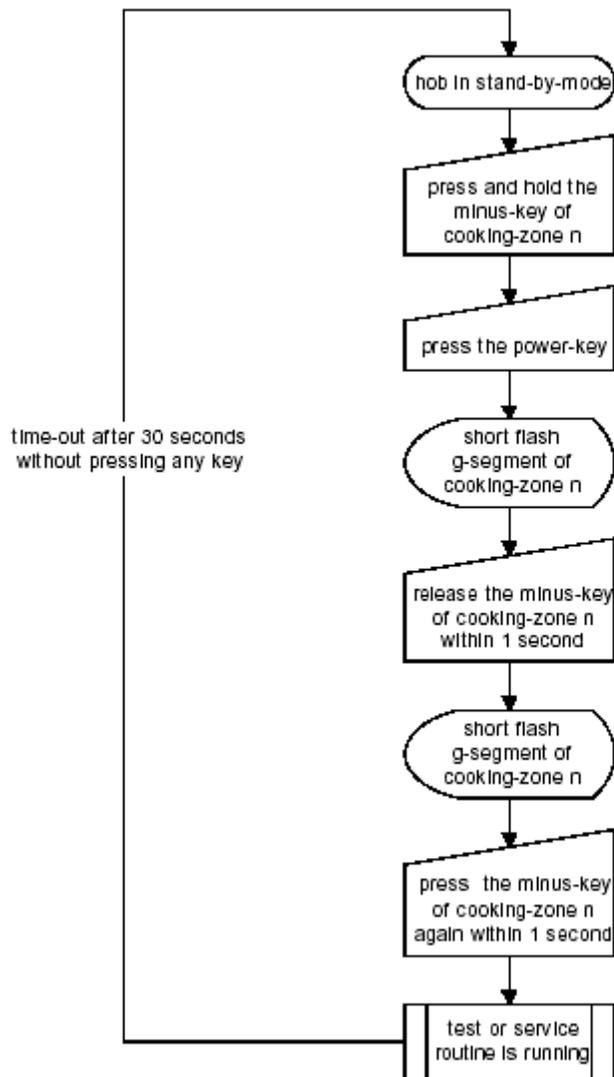


- ▶ The Touch Control can be checked by performing a practical check of all the sensors.
- ▶ It is not possible to test the serial communication between the TC and induction electronics with the means that a service technician has available.
- ▶ Nevertheless, the voltage on the communication line can be measured when the TC is in the active mode.
- ▶ The TC has a technical service program that allows displaying the various parameters.

7.3.3 Service program

Service program start

- Entry-procedure with **minus-key** of cooking-zone 2 (all TCs except Neff) or selection of cooking-zone 2 (Neff TC and Twistpad):
- Entry-procedure with **plus-key** of cooking-zone 2 (all TCs except Neff) or selection of cooking-zone 1 (Twistpad):



Note:

In Neff-variants instead of the minus-key the select-key of the corresponding cooking-zone has to be used.
 In Twistpad-variants instead of the minus-key the corresponding cooking zone has to be selected and instead of the plus-key the cooking zone 1 has to be selected. At the beginning of the procedure any key except of the power key has to be selected to activate the Twistpad.

End of Service program

- After executing the service programs P0,P2, P8 and P9, the TC leaves the service mode and goes into stand by mode.
- Time-out: after 120 sec. Without operation, the TC leaves the service mode and goes into stand by mode (exception: in P8 menu, the time-out acts after the whole life-time course).

Step P0: Leaving the service mode

The P0 menu makes it possible to leave the service mode (before time out).

To start the P0 menu, any key except the power key has to be pressed. After that the TC goes into stand by mode.

Step P1: Sensor-test&Display- and buzzer-test

5. To start the test in the P1 menu any key except the power key has to be pressed.
6. Wait 2 sg. Whereas the TC detects the reference values.
 During this process, the display's horizontal superior segments stay illuminated
7. When the horizontal intermediate segments are illuminated, the sensor checking can be initiated.
8. Press individually each sensor and check the display indication.

Indication	Meaning
0	correct running
1	Lack of sensitive in sensor
2	Sensor too much sensitive
3	Out of tolerance
4	Problem with the start key
9	Activation at the same time of some sensors.

Once, all of the sensors have been checked and if these ones work properly, the program goes automatically to the buzzer and displays checking.

For this, the buzzer is activated for 2 s and all the LEDs and segments are illuminated for 10 s.

Step P2: Setting the defaults for the TC

The P2 menu makes it possible to set the defaults for the TC

- Fictitious residual-heat indication „H/h“ deleted.
- Data for Memory deleted, set default.
- Buzzer Off not set
- Reduced Key lock time not set
- Child lock not activated

The steps are as follows:

1. Press any key except power key.
2. A Beep sounds.
3. to signalize the set defaults, all displays show „0000“ for 2 sec. After that, the TC leaves the service mode and goes into stand by mode

Step P7: Parameter output

Some of these diagnostic and error- or state-counter functions write cells in the EEPROM.

These functions can be disabled by an EEPROM-cell. The default value is enabled.

In the "**P7-menu**" with each key the service-technician can read out a parameter. In Twistpad control additionally the selection of cooking zones is used. The parameter is shown as long as the corresponding key/cooking zone is pressed/selected.

*) six digits in Comfort-TC/Twistpad
four digits in Basic-TC

three digits in 3-fold TC (without units place)

***) in 3-fold TC's with only 6 keys except the power key the first and second key must be pressed together

***) The first key is the key on the left side. The second key is the next key right to the first key. The

power key is left and mustn't be used. In Twistpad control there are also the selections of the cooking-zones used and the directions for the cooking zones are like four keys that come after

the key on the left side of the knob.

Step P8: Life-time test

This step is only for factory.

Step P9: Single deactivation of the operation time limit

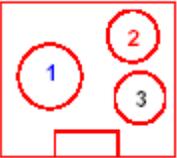
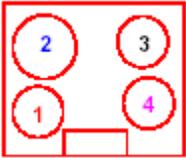
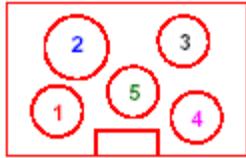
To deactivate the operation-time-limit, in "**P9-menu**" any key except the power key has to be pressed. While the key is pressed, every 7-segm.-display shows "1". (e.g. "1111 ")

After 3sec., the service menu is stopped and the control goes into stand-by mode. The keylock-LED is switched on.

Now, the control can be switched on (active mode) with the operation-time-limit deactivated. The keylock-LED remains on.

After switching off the control (stand-by mode) or after a reset, the operation-time-limit is activated again. The keylock-LED switches off.

Sensor***	Indication	Description
1	Ej. „S 1. 0 4“	Software version e.g. V1.04
2	Ej. „o 0 0 0“	Counter mains failure (400V)
3	Ej. „t 0 0 0“	Maximum selftemperature (conversion required)
4	Ej. „0 0 0 0“	Hour counter * (6 digits in confort TC)
5	Ej. „P 1 1 2“	Part number
6	Ej. „r 0 0 0“	Counter power on
7**	Ej. „E 1. 0 4“	Version EEPROM e.g. Version 1.04
8	„- - - -“	reserved



7.4 NTC sensor check

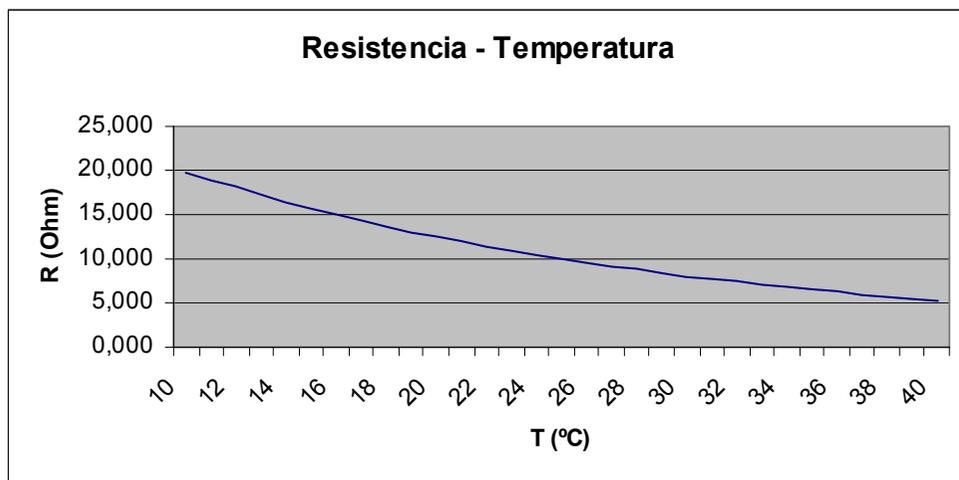
7.4.1 NTC of the inductors

Each one of the inductors uses an NTC sensor for monitoring the operating temperature. The NTC sensor of the inductor is interchangeable. Conductive grease must be used when replacing the NTC in order to favour thermal conduction.

7.4.2 NTC of the induction module

The temperature of the semi-conductor devices is measured by two NTC sensors that protect the electronics from excessive temperatures. These sensors cannot be replaced.

7.4.3 Diagram and conversion table of the NTC sensor



T in °C	R in ohms	T in °C	R in ohms
10	19,873	26	9,573
11	18,946	27	9,166
12	18,069	28	8,779
13	17,237	29	8,410
14	16,447	30	8,059
15	15,699	31	7,725
16	14,988	32	7,406
17	14,314	33	7,101
18	13,674	34	6,811
19	13,066	35	6,535
20	12,488	36	6,271
21	11,939	37	6,019
22	11,417	38	5,779
23	10,921	39	5,549
24	10,449	40	5,330
25	10,000		

7.5 Coil check

The inductor has no operational parts other than the NTC temperature sensor, wherefore it is not usually a source of breakdowns. Nevertheless, the procedure presented below can be followed:

- ▶ The inductor must be checked without power connected.
- ▶ Remove the mica sheet carefully so that it does not become damaged, and perform a visual inspection. Check that there are no burned areas.
- ▶ Check the continuity of the inductor using a tester (<1 ohm).
- ▶ Replace the mica sheet, being careful not to damage it.

Do not replace the inductor unless burned zones are observed or there is no electrical conductivity.

7.6 Fan check

- ▶ Check to see if the fan is blocked.
- ▶ The working voltage is 24 VDC.
- ▶ It is possible to check the fan using an adequate direct voltage.

The fan cannot be checked by measuring its resistance, given that it has a diode factory installed in its own electronics.

7.7 Error indications shown on the TC



Attention!

Before making any repairs on the appliance, turn it off and then back on.

If the indications remain after turning it off and then on, disconnect the appliance from the power grid, wait 20 seconds, and then reconnect it.

7.7.1 Error indications sent by the ELIN

The induction electronics, through communications with the TC, are capable of showing error messages on the TC. These messages allow identifying the majority of possible errors.

► Cause of the breakdown: appliance components

Error	Description	Burners	Solution
F0	There is no communication between the TC and the ELIN	2 or 4	<ol style="list-style-type: none"> 1. Disconnect the cooktop from the power grid. 2. Check the TC-ELIN connection 3. If the failure continues, replace the ELIN.
e0	ELIN failure:(a defective path, NTC of ELIN open or short-circuited, damaged electronic component...).	2	Replace the ELIN
e1	ELIN failure that affects one burner (problem in the components or electrical paths of the board that power only one burner).	1	Replace the ELIN
e2	Fan failure	4 or 2	<ol style="list-style-type: none"> 1. Check the fan connection. 2. Check the

			fan. 3. Replace the right ELIN.
e3	NTC open	1	Replace the NTC
e4	NTC short-circuited	1	Replace the NTC

► **Cause of the breakdown: factors external to the appliance**

The error indication disappears when the external problem is solved and/or upon disconnecting the appliance from the power grid or after a period of time under operation.

Failure	Description	Burners	Solution
c1	Insufficient voltage error (<185 V)	4 or 2	Disconnect the cooktop from the power grid. The error disappears when the correct voltage is supplied.
c2	Inductor temperature failure	1	The cooktop has heated up excessively, and the appliance must be disconnected from the power grid. If the failure continues, allow to cool.
c3	Radiator temperature failure	1	The cooktop has heated up excessively, and it must be disconnected from the power grid. If the failure continues, allow to cool.

7.7.2 Warning indications sent by the touch control

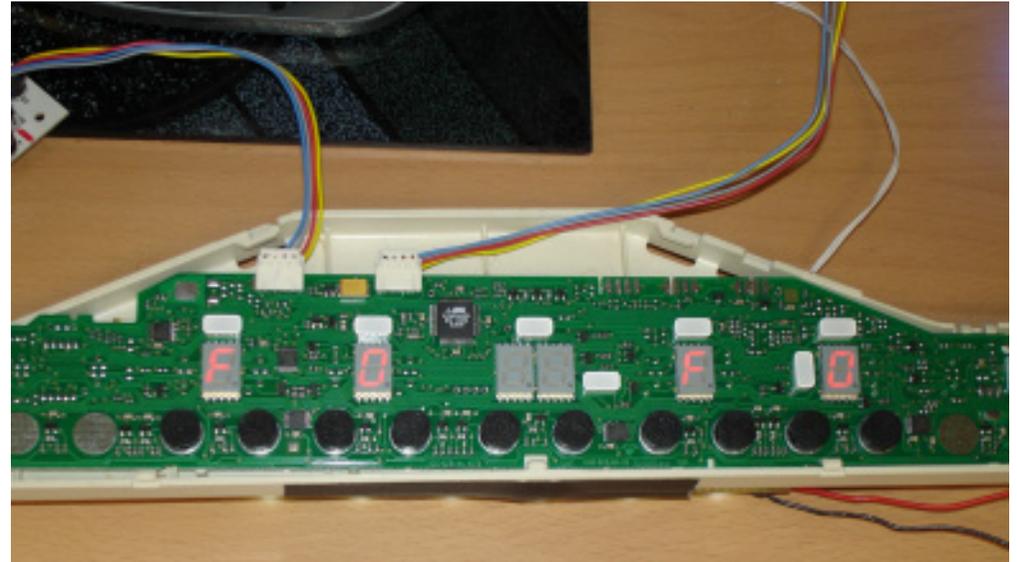
Failure	

U400	U400 appears static on the display and indicates an acoustic signal when the electronics have been connected erroneously at 400 V (This warning appears when the measured voltage on the power grids reaches 280 volts, and cases have occurred in which this warning appears at 250 volts).The electric company can divert the supplied voltage by +/- 7%.Disconnect the cooktop from the power grid.The failure disappears when the incorrect voltage is corrected.
F8	F and 8 blink alternately on the display corresponding to the cooking zone if the maximum cooking time has been exceeded.The times depend on the power level and go from 1 to 10 hours.
E	“E” blinks alternately with the power level or the residual heat indicator when the corresponding sensor has been pressed for too long (> 5 seconds), thereby sounding the acoustic signal. When the “on” sensor is pressed for more than this time, “E” appears on all displays.It can occur due to liquids spilled over the sensor zone or due to an object that has been left on top.The indicator disappears when the problem has been removed from the sensor and any other key is pressed.
F2	F and 2 blink alternately on the corresponding display if the NTC temperature of the TC is excessively high (> 100° C).If F2 appears, cooking zones 1 and 4 will not work.
F4	F and 4 blink alternately on the corresponding display if the NTC temperature of the TC is excessively high (> 100° C).If F4 appears, none of the 4 zones works.
ErXY	The touch control has an internal failure (except with Er32).
Er32	This warning occurs when a touch control of a 2l appliance is connected to a 4l appliance, or vice versa. Check the replacement part.
cl	The power grid voltage is too low.

7.7.3 Mistakes with combination appliances

- When the knobs are switched off, in touch control appear **F0F0** without blinking.

This mistake can be solved connecting the knobs properly.

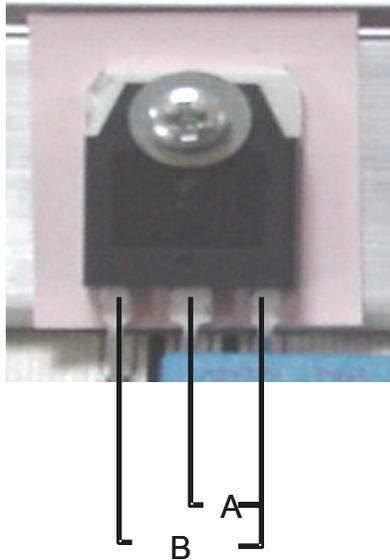


- On connecting the appliance, if the knob is not in zero position, a zero blinks in touch control depending on the knob.

7.8 ELIN induction module check

- ▶ Check that the fuse path is intact. If it is open, the complete board must be replaced.

- ▶ This check must be performed with no power supplied.
- ▶ Perform a visual inspection, thereby paying close attention to burned components.
- ▶ Verification of the IGBT's. The resistance values between the



legs of the IGBT's should be:

$$A > 10 \text{ Kohm}$$

$$B > 5 \text{ Kohm}$$

- ▶ Check that the inductor construction screw has not been stripped. If so, replace the screw, and if the thread problem is on the fixed part, replace the complete module.
- ▶ If, in spite of the fact that all the preceding checks were negative, the induction zones associated with this board still did not operate, replace the board.

7.9 Normal operating noise

Induction heating technology is based on the capacity that certain metal materials have to vibrate when they are subject to high frequency waves.

Under certain circumstances, these vibrations may make certain sounds of a low volume due to the following:

- ▶ **Low tone noise, similar to that of a transformer:** It occurs when cooking at high power levels. It is due to the enormous amount of energy that the cooktop is supplying to the container. It disappears or attenuates as the power level used is reduced.
- ▶ **Soft whistling:** They occur when the container is empty. They disappear or attenuate when water or the food to be cooked is added.
- ▶ **Crackling:** This kind of noise may occur in containers composed of layers of different materials. The noise is due to the vibration in the separation zones between the various layers of material. This noise is proper to the container. It can change according to the quantity and type of food that is cooked.
- ▶ **Sharp whistling (beeps):** They occur basically with containers composed of different layers of materials when two adjacent cooking zones are started up at the same time and at maximum power. They disappear or attenuate when the power is reduced.
- ▶ **Intermittent clicks:** They are noises caused by the commutations of the control electronics, above all when low power levels are selected.
- ▶ **Fan noise:** In order to control the correct operation of the electronics, they must work at a controlled temperature. To achieve this, the cooktop is equipped with a fan that works at different speeds according to the temperature detected. The

fan can also continue operating when the cooktop is turned off after being used if the detected temperature continues to be high.



Attention!

All these noises are normal and inherent to induction technology, and they are not a sign of any breakdown.

The noises that occur with greatest frequency are those with containers that have a “sandwich” type base, and they depend entirely on the container.

7.10 Difficult breakdowns

7.10.1 The board does not respond, the TC does not turn on

- ▶ Verify that the board is receiving power.
- ▶ Check the connection between the touch control and the ELIN.
- ▶ If the preceding is correct, proceed as follows:

Remove the connection between the right and left ELIN (CNT4 and CNT4).

In the event that the burners on the left do work, replace the right ELIN.

If the failure persists, change the touch control.

If it still does not work, reinstall the original touch control and change the left ELIN.

7.10.2 Fan failure

After detecting a fan error (e2) and subsequently replacing the fan, if the error persists, then replace the right board and reinstall the original fan.

8 TECHNICAL SPECIFICATIONS

8.1 Technical data of the appliance

Maximum power	6800 W
Power supply voltage	220-240 V
Input current	28.33-30.91A
Power supply frequency	50/60 Hz
Operating frequency	20-50 Hz
Weight	10.8 kg.
Number of induction elements	4
Nominal power/burner 1 booster	1700/2500 W
Nominal power/burner 2 booster	1700/2500 W
Nominal power/burner 3 booster	1200/1800 W
Nominal power/burner 4 booster	2200/3300 W

8.2 Appliances Ind IV with oven combination

We have 2 kinds of appliances with oven combination:

- **Polibox appliances**, which combined with german ovens.
- **Universal combination appliances**, which have graycode and touch control.

Appliances' list

POLIBOX	GRAYCODE TOUCH UNIVERSAL
NIB645E01	3EF920F
NIE675T01	3EF900L
NIF675T01	3EF900X
EI755501	
EI857501	
EI877501	
EI887501	