



PHOENIX HERMETIC GAS WATER HEATER

PHOENIX PH HM 11 LT/DK

SERVICE MANUAL



CONTENT

FLUES.....	2
Flue Length Selection (Initial Start-up).....	2
Horizontal Flue Connections.....	4
Vertical Flue Connections.....	5
SERVICE MENU.....	6
Introduction to the Menu.....	7
Parameter Menu (PA) and Setting Format.....	8
Calibration Menu (CA).....	9
Auto Calibration (Auto).....	9
Manual Calibration (NAnu).....	10
Error "Alarm" Menu (AL).....	10
Error Codes.....	11
Information Menu (In).....	13
Flue Menu (CS).....	13
CONTROL CARD CIRCUIT DIAGRAM.....	14
PART DISASSEMBLY - INSTALLATION INFORMATION AND MAINTENANCE INSTRUCTIONS.....	15
1. Front Cover.....	15
2. Side Covers.....	15
3. Control Panel and Motherboard.....	16
4. High Voltage Cable Group.....	18
5. Low Voltage Cable Group.....	19
6. Electrode.....	20
7. Fan.....	21
8. Gas Valve.....	22
9. Flow Sensor.....	22
10. Temperature Sensor (NTC).....	26
11. Overheat Thermostat.....	27
12. Inlet/Outlet Pipe and Burner Pipe.....	27
13. Hood.....	28
14. Heat Exchanger.....	29
15. Burner.....	30

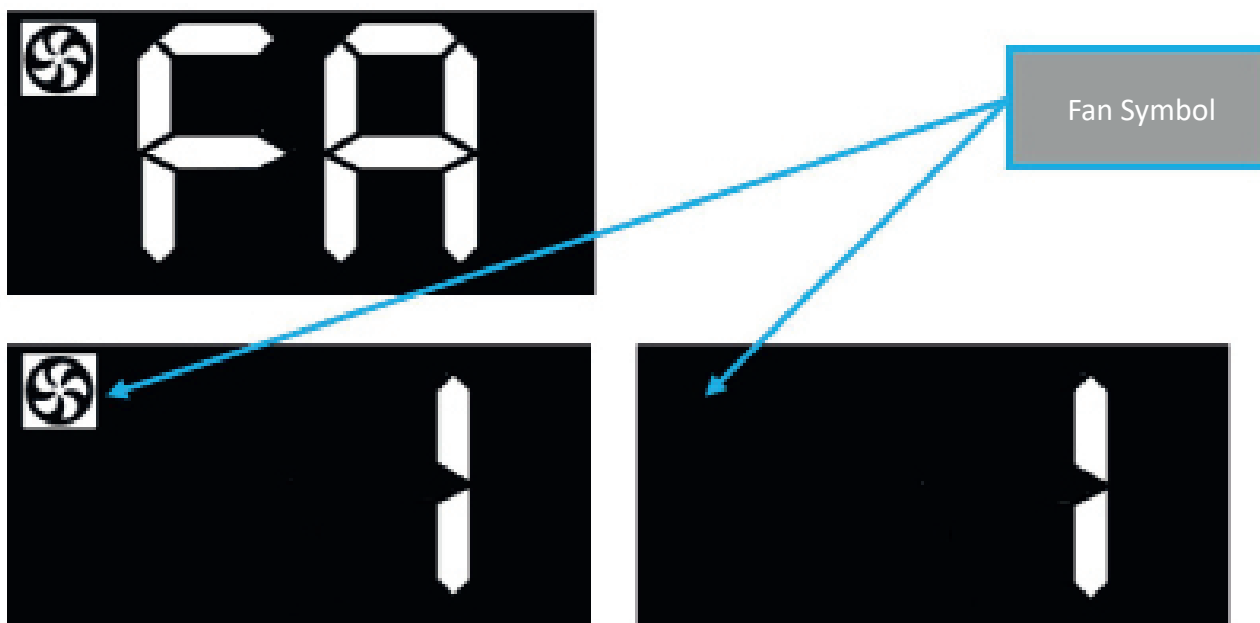
FLUES

Flue Length Selection (Initial Start-up)

Combustion is different according to the total flue length in order to have the best efficiency and flue emission values and it must be adjusted from the software parameters by the authorized service.

Appliances with gas, water and electricity connections are enabled after the flue connections are made, when electricity is given to the appliances to be enabled for the first time, the text FA appears on the screen together with the fan icon. In this case flue selection should be made. While FA phrase is visible, when you turn the button to the right, one of the 1-2-3-4 options should be selected according to the flue length respectively by holding the button. When the fan icon starts flashing, the flue length recording process is realized. The recorded value automatically affects the parameter 11 value and in the nominal operation of the appliance, fan speed is ensured, which ensures that the appliance operates in the most ideal conditions. When installation is complete, this parameter must be set initially by an authorized service technician.

This parameter (P11) should only be set by the authorized service technician when it is necessary to start the gas water heater first time (automatically in FA mode), change the installed fluelength and replace the electronic board..



Product	Elbow	L (m)	Lmax (m)	FA (P11)Parameter
				Set value
PHOENIX PH HM 11	3x90°	<1	4	4
	2x90°	1 < < 2		
	1x90°	2 < < 3		
	0x90°	3 < < 4		
	2x90°	<1	3	3
	1x90°	1 < < 2		
	0x90°	2 < < 3		
	1x90°	<1	2	2
	0x90°	1 < < 2		
	0x90°	<1	1	1

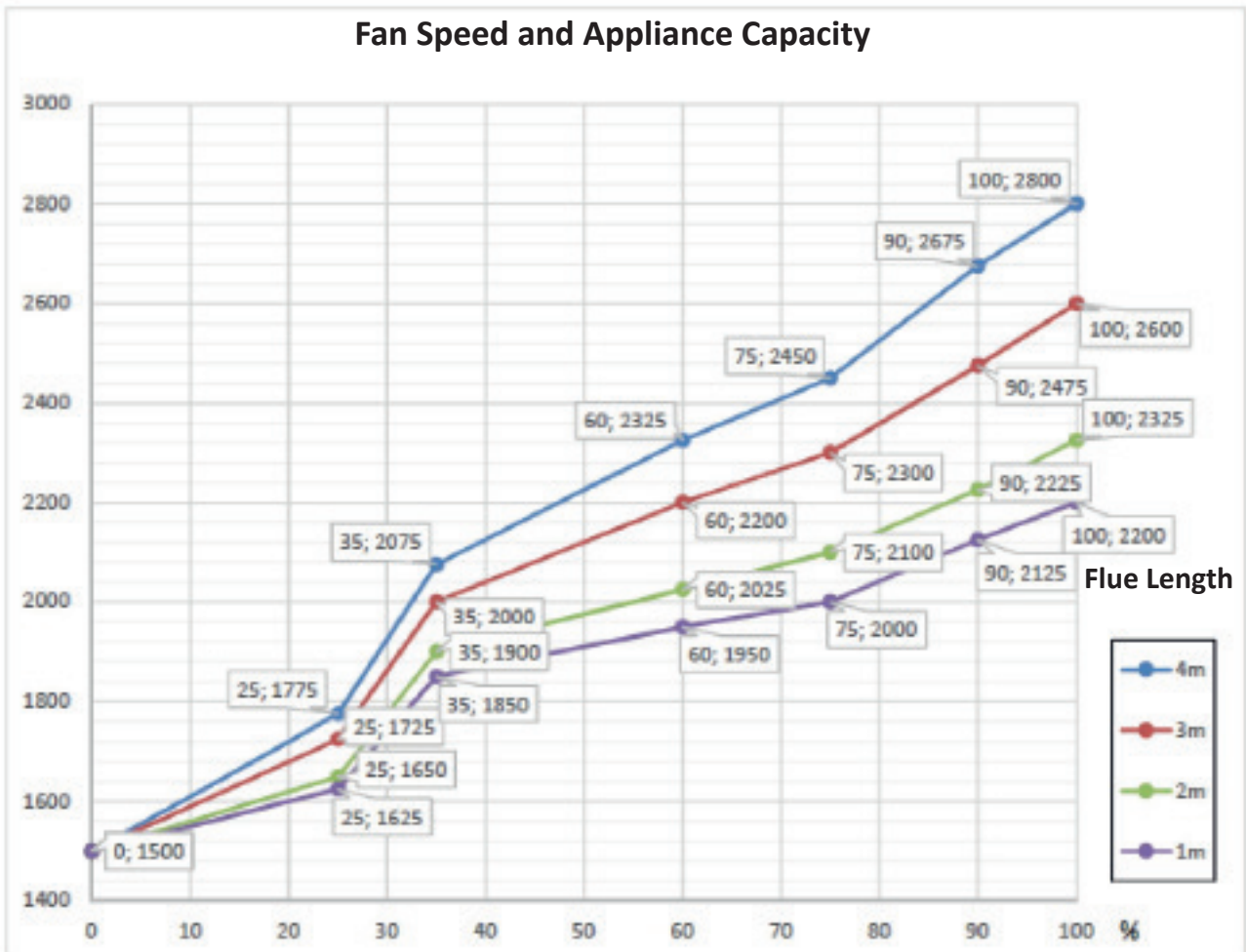
Selection of flue length parameters for horizontal flue



Caution: No restriction sclaes should be used for any flue length.

Product	Elbow	L (m)	Lmax (m)	Parameter 11
				Set value
PHOENIX PH HM 11	4x90°	≤ 1	5	4
	3x90°	1 < ≤ 2		
	2x90°	2 < ≤ 3		
	1x90°	3 < ≤ 4		
	0x90°	4 < ≤ 5		
	3x90°	≤ 1	4	4
	2x90°	1 < ≤ 2		
	1x90°	2 < ≤ 3		
	0x90°	3 < ≤ 4		
	2x90°	≤ 1	3	3
	1x90°	1 < ≤ 2		
	0x90°	2 < ≤ 3		
	1x90°	≤ 1	2	2
	0x90°	1 < ≤ 2		
	0x90°	≤ 1	1	1

Selection of flue length parameters for vertical flue



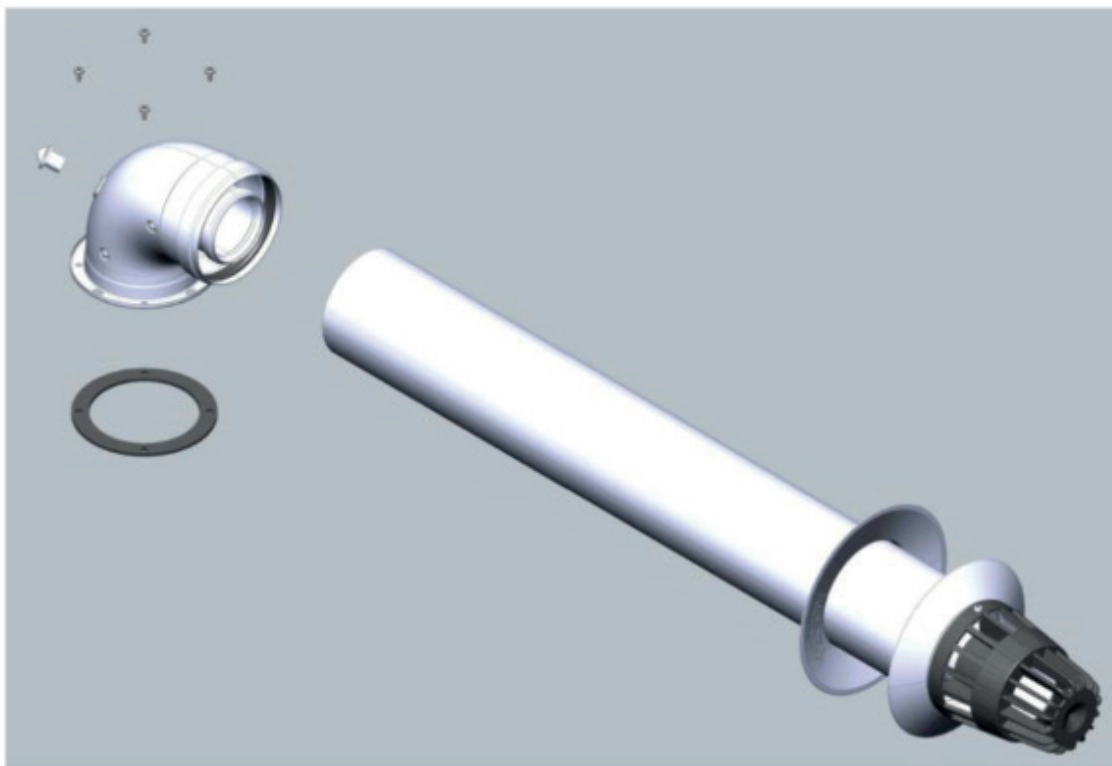
Horizontal Flue Connections

The horizontal flue kit consists of the following parts (7006908351):

- Gas water heater box is supplied with a separate cardboard box containing a standard concentric flue kit.

a) 90° flanged elbow (Ø 60/100mm),
Sealing ring
Sealing ring, Viton (Ø 60mm)
Sealing ring, Silicon(Ø 100mm)

b) Flue outlet terminal, L=750 mm, (Ø 60/100mm)
Internal and external wall flanges, 2 pieces (Ø 100mm)



The flue should be placed with 2% or 3% downward slope to prevent any water or condensate from entering the gas water heater.

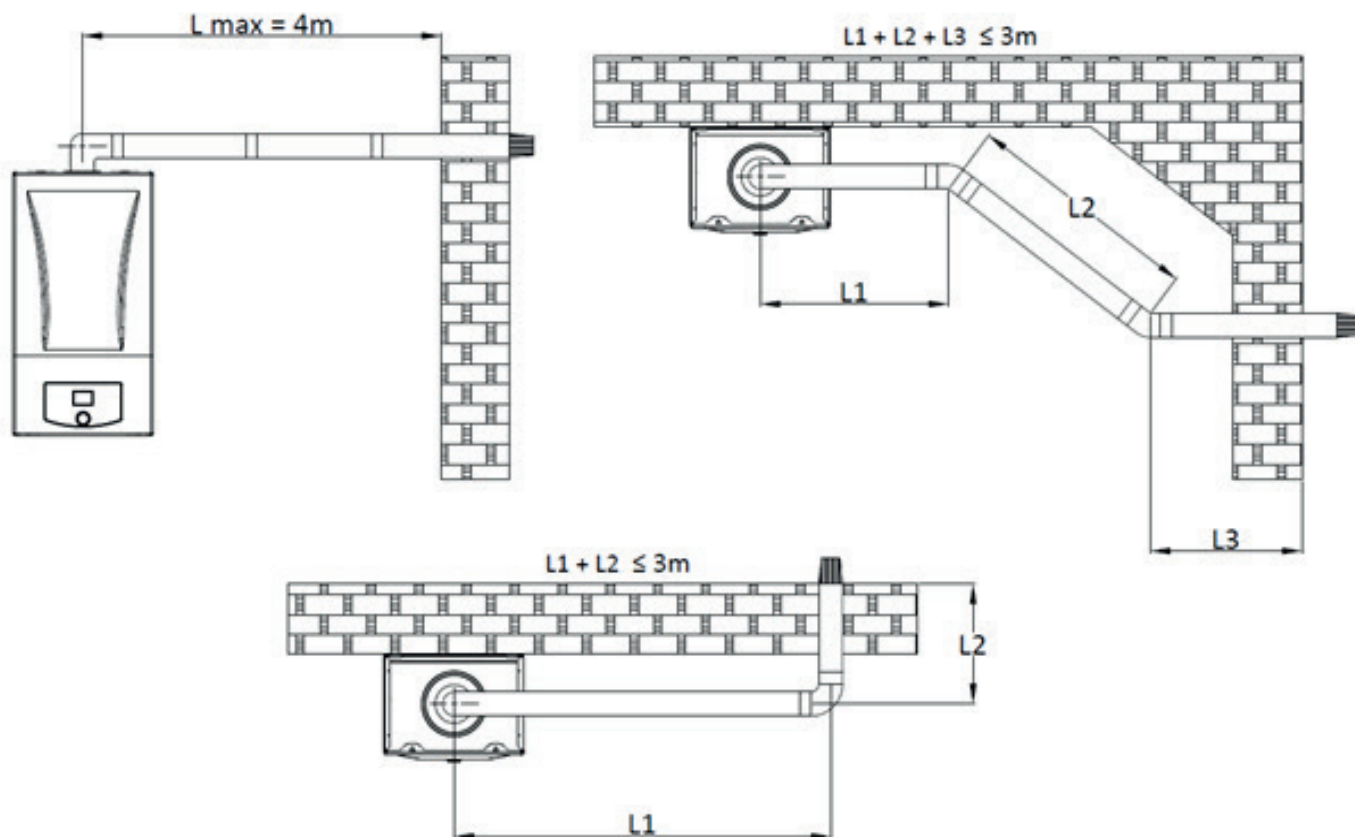
If the flue kit length is insufficient, additional flue accessories should be ordered through an authorized service. No other type/brand should be used for flue parts.

- Horizontal flue kit accessories:

a) Concentric extension, L=500 mm, Ø 60/100 mm (7006902786)
Concentric extension, L=1000 mm, Ø 60/100 mm (7006902787)
b) 90° Concentric elbow, Ø 60/100 mm (7006902785)
c) 45° Concentric elbow, Ø 60/100 mm (7006902784)

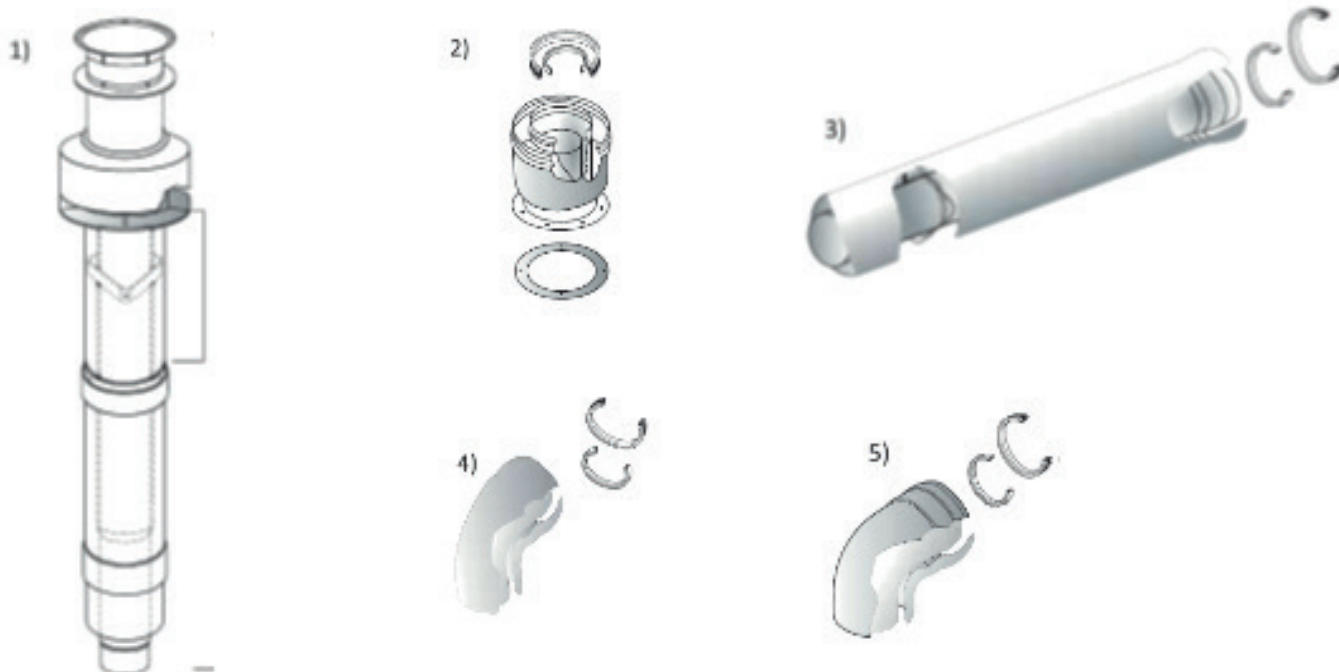


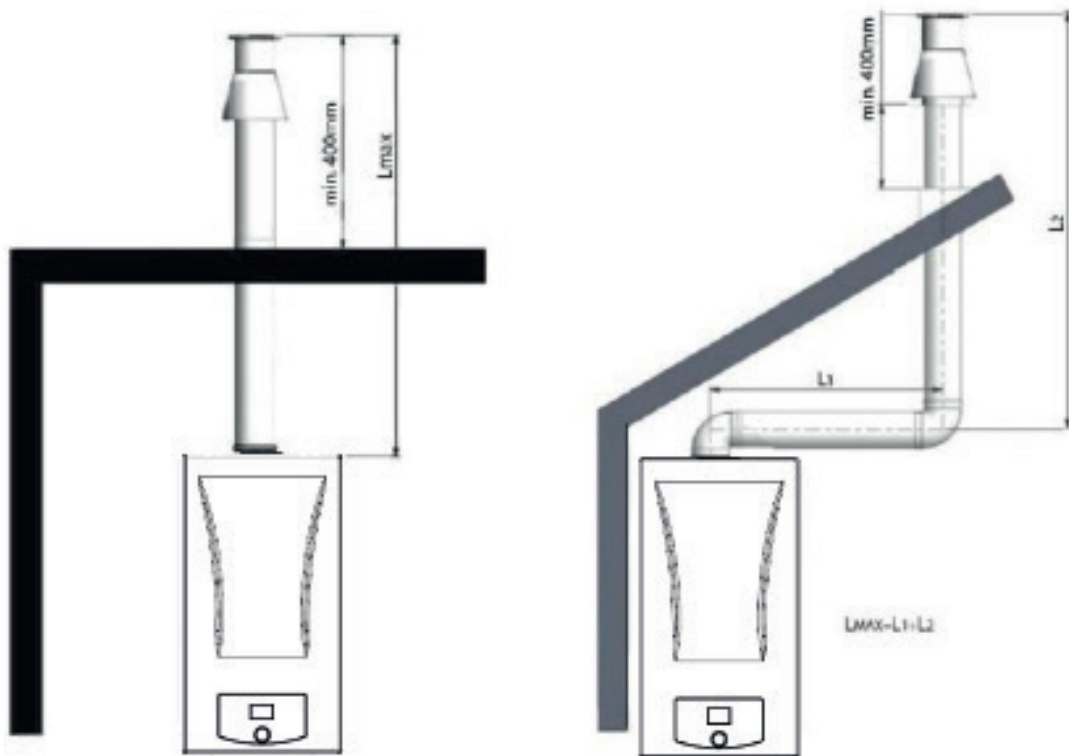
The total length of the horizontal air flue system should not exceed 4m. In addition, each additional 90 ° concentric elbow or two 45 ° concentric elbow reduces the maximum length by 1m (Figure 9). The maximum number of 90 ° concentric elbows to be used is 3.



Vertical Flue Connections

1. Vertical Flue Set (\varnothing 60/100mm) (7006902326)
2. Vertical Flue Adaptor (\varnothing 60/100mm) (7006901413)
3. Extension Pipe 500mm / 1000mm (\varnothing 60/100mm)(7006901415)/(7006901416)
4. 45° Elbow (\varnothing 60/100mm) (7006901420)
5. 90° Elbow (\varnothing 60/100mm) (7006901421)

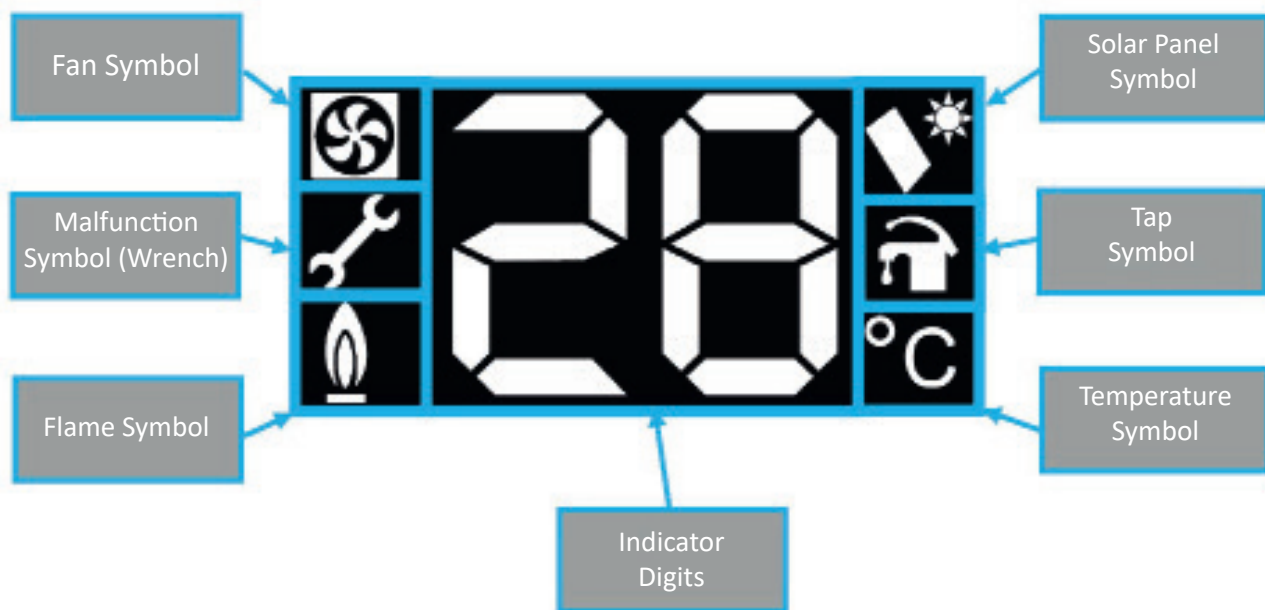




SERVICE MENU



A single button has been designed to provide ease of use to enter the service menu and complete all other settings in Phoenix Gas Water Heater.. Adjustments are made by pressing or turning left or right this button.



Introduction to the Menu

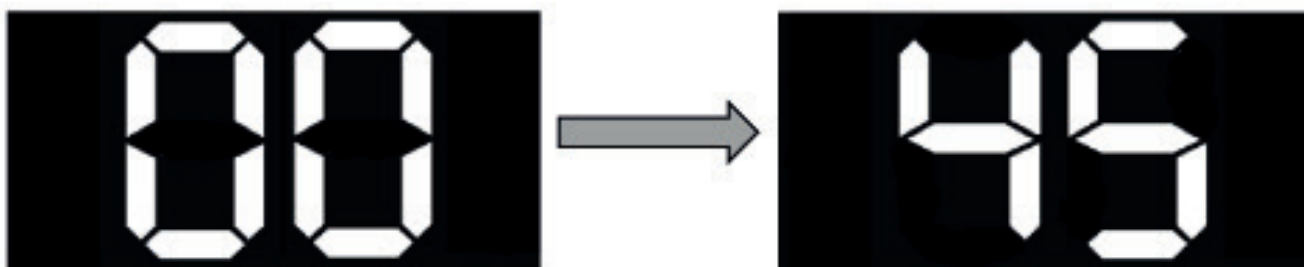
The appliance must be switched to OFF mode to enter the service menu.



The appliance is then de-energized and energized again. The following images appear on the screen respectively;



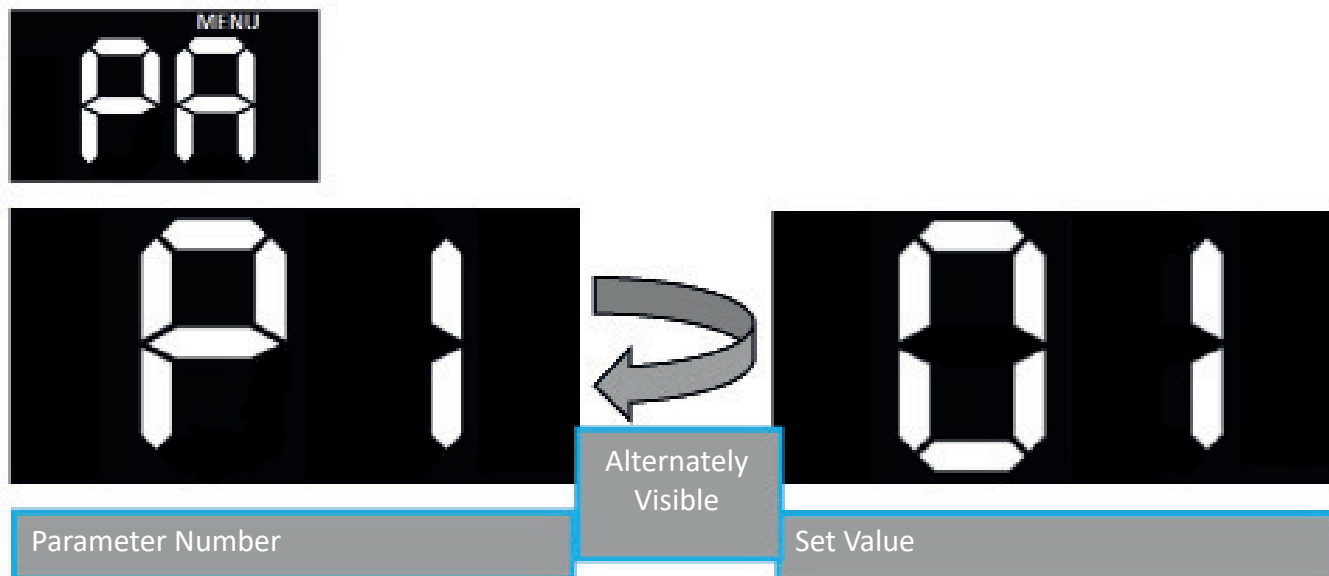
The appliance starts in OFF mode (double line) after the “ECA” brand text is displayed on the screen. While in OFF mode, the button is kept pressed for 5 seconds and the “00” password menu appears on the screen.



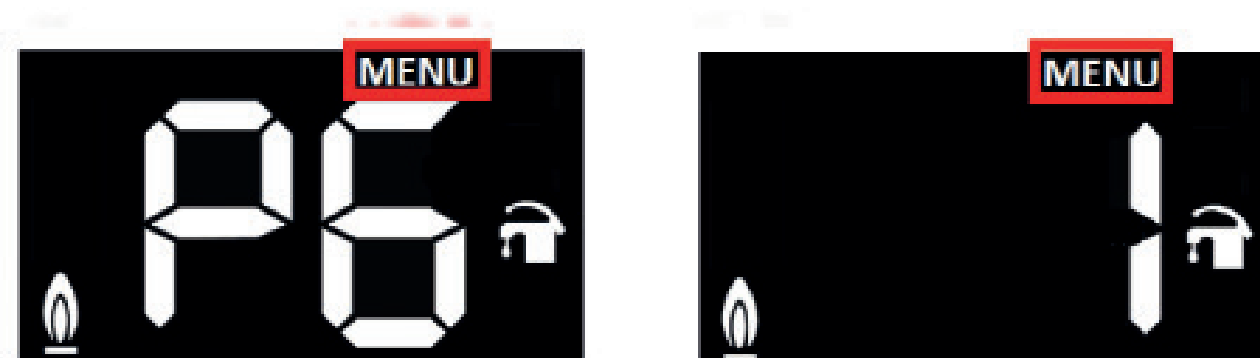
To enter the parameter settings, the password must be selected as 45. After selecting 45 as a password, menu titles appear when the button is turned. The menu titles are as follows: Parameter Menu (PA), Calibration Menu (CA), Alarm/Error Menu (AL), Information Menu (In), Flue Menu (CS). The relevant menu is selected by pressing the button once.

Parameter Menu (PA) and Setting Format

It is the parameter menu used to control appliance functions. When clicked, the 1st Parameter will appear as “P1” on the screen. At the same time, the set value (stored) alternately set with this parameter number appears on the screen.



When the button is turned, P1, P2 ... The parameter numbers begin to rotate on the screen and clicking once enters the selected parameter, the setting value starts to flash. The setting value is changed by turning the button and returned to the parameter number by pressing the button again.



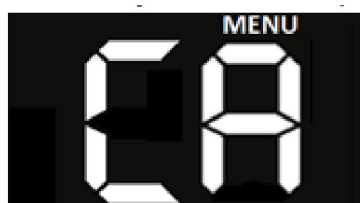
When this screen comes up, it is necessary to store the set value by keeping it pressed (5 seconds) until “MENU” starts to flash. . After recording, the appliance switches to “PA” parameter setting main menu. . In order to exit, the button should be kept pressed until “MENU” flashes. When the button is released, the routine screen appears. This form of adjustment works the same in other main menus.

Parameter menus can be adjusted to the values shown in the table below.

Code	Description	Factory Default	Value 00	Value 01	Value 02
P1	Gas type selection	0	DG	LPG	
P2	Domestic Water Sensor-Switch Selection	1	0 Flow Switch	1 Flow Sensor	
P3	Ignition Capacity	40	It can be adjusted between 0-40.		

P4	Ignition Curve Type Selection	1	0 = Lo	1 = Mid	2 = Hi
P5	Calibration Type Selection	-	5 is selected for calibration.		
P6	DHW Modulation with Flow Sensor	1	0 = No	1 = Yes	
P7	Combustion Time in Frost Protection	7	It can be adjusted between 5-20. (sec)		
P9	Solar NTC Selection	0	0 = No	1 = Yes	
P10	Overrun Protection	6	It can be adjusted between 6-24. (hours)		
P11	Flue Length Selection	1	It can be adjusted between 1,2,3 or 4. (meter)		

Calibration Menu (CA)

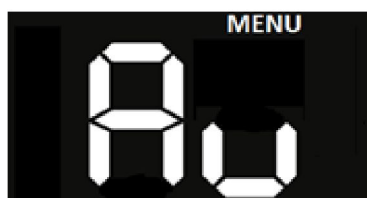


An electronically controlled gas valve is used in the Phoenix gas water heater, so it is possible to adjust the gas automatically. When small adjustments are required, it is possible to make adjustments manually via electronic card.

Nominal and minimum combustion gas settings must be made for card changes, gas valve changes, or situations requiring reassembly of the appliance or the flue.

Auto Calibration (Auto)

For automatic calibration, Parameter 5 is set as 5 from the PA menu first. The parameter is saved and switched from PA menu to CA menu, and once the button is pressed, "Au" "to" text will appear on the screen.



After the text appears, C and 01 start to appear alternately on the screen automatically. Setting C01 is the parameter tab used to set the nominal combustion load of the appliance. A gas valve operating stage between 0 ... 100

After the text appears, C and 01 start to appear alternately on the screen automatically. Setting C01 is the parameter tab used to set the nominal combustion load of the appliance. A gas valve operating stage between 0 ... 100 is selected to adjust the load. The ideal stage setting may differ from appliance to appliance. This stage should be selected by following the burner pressure value to obtain the desired burner pressure.



When you start to turn the button, the change of gas steps will appear on the screen. When the desired burner pressure is achieved, the button is pressed once, gas setting is saved when the set value starts flashing and the screen automatically returns to the "C" "01" menu tab.

	Minimum		Maximum	
	Lower Value	Top Value	Lower Value	Top Value
Cabinet Closed-Burner Pressure (mbar)	1,4	2,1	10,6	13,6
Cabinet Open-Burner Pressure (mbar)	1,6	2,4	10,9	12,9



Pressing the button once switches to the "C" "00" menu tab and "C" "00" starts to appear alternately on the display. The C00 parameter tab is used to set the minimum combustion load. Likewise, when the minimum load desired gas step value is obtained, the button is pressed once and load setting is completed when the record value starts to flash.

However, after the calibration is finished, the routine screen should be changed by holding the button until "MENU" flashes.

Manual Calibration (NAnu)

Sometimes small adjustments are required to keep the burner pressure balanced when adjusting the load. In this setting, it is not possible to select the gas step value between 0 ... 100 as in automatic calibration. However, if the target value is approached, it can be used to fine tune.

When you enter the "CA" menu without setting any parameters, "NA" "nu" will appear alternately on the screen and automatically switch to the C01 menu. Gas can be adjusted by turning the button, or you can switch to C00 menu for minimum gas setting by pressing the button once.



Error “Alarm” Menu (AL)



The AL menu is used to see the last 10 errors encountered by the appliance. While the last error encountered when entering the menu appears on the screen alternately with the code “A1”, 10th error, is shown alternately with “A” “10” view. For example, if A1 and 02 appear alternately as shown below, it means that the AL02 error was last seen.



When the button is turned to the right, 10 past error codes that can be seen can be detected.

Error Codes

Error conditions are generated as specified in the table below;

PROBLEM CODE	PROBABLE CAUSE	RECOMMENDED SOLUTION
ON / OFF appliance failed to start.	There is no electrical connection.	<ul style="list-style-type: none"> - Check energy, - Check the plug. - Check the cable connections, - Check the fuse in the card box.
AL01 Flame Loss Error	The connector may be displaced, or the cables may be problematic	-Cables and connectors should be checked.
AL02 Overheating Error	Overheat thermostat disabled	<ul style="list-style-type: none"> -Clogging caused by calcification and similar reasons should be removed. -Thermostat and cables should be checked.
AL06 NTC Error	Cable connection error	- Check NTC and cable connections,
AL07 DHW Solar Sensor Error	Cable connection error	-Check sensor and cable connections,
AL11 Gas Valve Noise Error	Noise flame detected after gas valve closed (FE)	-Electrode, Gas valve and/or electronics should be checked; if necessary, it should be replaced.
	Noise flame detection (FS) before the gas valve closes	
	Noise Flame Detection in Fault Mode (Fc)	
AL12 Gas Valve Cable Error	Gas valve modulation cable error	Check gas valve connectors and cables.
AL28 Continuous Reset Error	Failure to reset 6 times successively	Check the button. Check the electronic board assembly .
AL37 Low Voltage Source Error	Voltage source is out of limits	Supply voltage must be measured. The operating range of the appliance is 180V-250V. The customer should be informed about the necessary deficiencies.
AL40 Frequency Measurement Error	The electricity supply frequency varies.	The customer should be informed about the supply frequency.

PROBLEM CODE	PROBABLE CAUSE	RECOMMENDED SOLUTION
AL41 Flame Loss for More than 6 Consecutive Faults	Wrong mounting place selection for the gas water heater	Error detection is made from the AL error menu.
AL42 Button Failure	The button is stuck	Button and electronic board assembly should be checked.
AL43 Opentherm connection error	Cable connection error	Cable connections should be checked.
AL44 Gas Valve Activation Timeout error	Gas Valve Error	Cable connections should be checked.
AL62 Calibration Request Error	Wrong mounting place selection for the gas water heater	Nominal and minimum load settings should be made and the error should be
AL70 DHW Solar Sensor Overheating Error	NTC not installed properly	The installation location of the Solar NTC should be checked.
AL71 High Temperature Warning	Limit thermostat not installed properly	Limit thermostat should be checked.
AL72 NTC Measurement Error	NTC not installed properly	NTC should be checked.
AL80 Gas Valve Driver Error	Gas valve is jammed or the electronic board is faulty	Gas valve, electronic card should be checked and replaced if necessary.
AL81 Combustion Error On First Start-Up	Incorrect combustion on first start- up	Check the flue inlet and outlet, Check the electrode position. Disconnect power from the appliance and connect it again.
AL82 Incorrect Combustion Error	Incorrect combustion error	Check the flue inlet and outlet Disconnect power from the appliance and connect it
AL83 Temporary Incorrect Combustion Warning	Flue gas recirculation due to strong windy weather conditions.	The error disappears automatically.
AL84 Temporary Combustion Error	Bad combustion occur for any reason	Combustion elements should be checked. Elements of error that cause recirculation should be eliminated.
AL86 Fan Sensor Error	Fan sensor is disconnected, connector is dislocated, or cables may be problematic	The fan sensor cable should be corrected. If the error continues, the sensor should be replaced.
AL98 Software Error	PCB initialization error	EMAR should be informed.
A99 Undefined Error		EMAR should be informed.
FE Frost Protection Error	Appears in weather conditions below 4 ° C, protects appliance against freezing.	The customer should be informed.
FX Long Term Operating Failure	It is seen for 6 hours due to the constant operation of the gas water heater. It is the parameter created to prevent gas waste in case of a long flow .	The customer should be informed.

Information Menu (In)

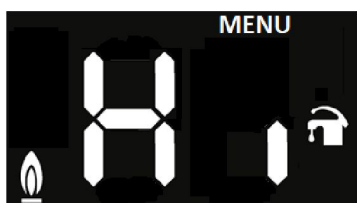
The software version is followed using this menu.

Flue Menu (CS)



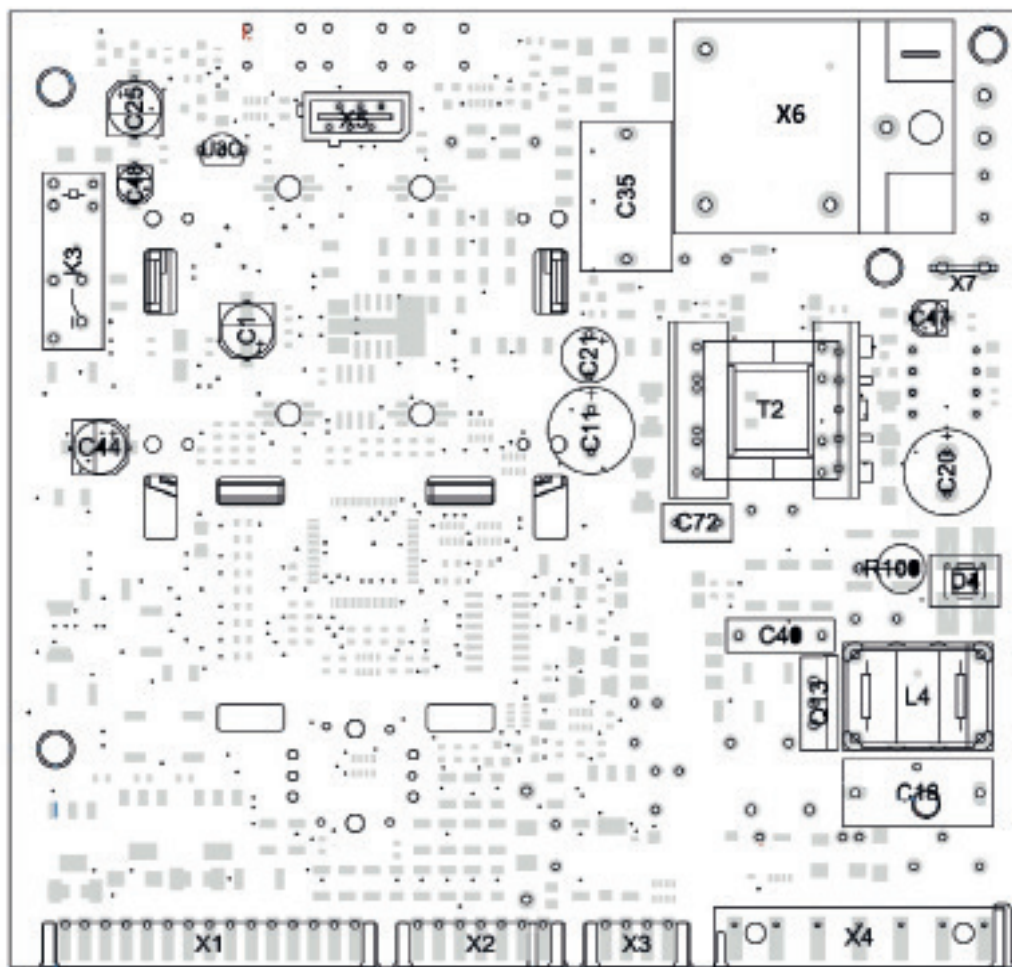
The "CS" Menu is used to be able to combust the appliance at nominal and minimum gas settings.

When the "CS" menu is selected, the appliance starts to flash at maximum load and "Hi" appears on the screen. When you turn the button to the left, the appliance will start to light at minimum load and "Lo" will appear on the screen. The button is turned to the right to switch to maximum combustion again.



Service mode will be terminated automatically after 15 minutes of continuous operation in the event of water flow and no action on the control panel.

CONTROL CARD CIRCUIT DIAGRAM



PHOENIX MOTHERBOARD CONNECTIONS						
CONNECTOR	ORDER	DESCRIPTION	CONNECTOR	ORDER	DESCRIPTION	
X1	1	- EV1 GAS VALVE	X3	1	GROUND SERIES (OPTIONAL)	
	2	- EV2 GAS VALVE (MODE)		2	+24V SERIES (OPTIONAL)	
	3	+ EV1 GAS VALVE		3	TX D2 SERIAL INTERFACE (OPTIONAL)	
	4	+ EV2 GAS VALVE (MODE)		4	RX D2 SERIAL INTERFACE (OPTIONAL)	
	5	+ EV3 GAS VALVE (ON/OFF)	X4	1	PHASE RELAY AUX	
	6	- EV3 GAS VALVE		2	NEUTRAL	
	7	AIR SWITCH/FLUE SWITCH		3	PHASE FAN SUPPLY	
	8	+5V AIR SWITCH/FLUE SWITCH		4	NEUTRAL FAN SUPPLY	
	9	OUTPUT TEMPERATURE PROBE		5	PHASE MOTHERBOARD SUPPLY	
	10	OUTPUT TEMPERATURE PROBE GROUND		6	NEUTRAL MOTHERBOARD SUPPLY	
	11	FLOW SWITCH INPUT		7	FUNCTIONAL GROUND	
	12	FLOW SWITCH GROUND	X5	1	TX D0 SERIAL INTERFACE (SOFTWARE)	
	13	+5V FLOW SWITCH		2	RX D0 SERIAL INTERFACE (SOFTWARE)	
	14	LIMIT THERMOSTAT GROUND		3	+24V NS	
	15	LIMIT THERMOSTAT SWITCH		4	GROUND	
X2	1	INPUT HALLSENSOR (FAN)	5	MODE		
	2	POWER COMMON HALL SENSOR (FAN)	6	IC RES		
	3	GROUND HALL SENSOR (FAN)	X6		IGNITION and IONIZATION ELECTRODE	
	4	INLET TEMPERATURE SENSOR GROUND	X7			
	5	INLET TEMPERATURE SENSOR				
	6	SERIAL INTERFACE CONNECTION (OPTIONAL)				
		7	SERIAL INTERFACE CONNECTION (OPTIONAL)			FUNCTIONAL GROUND

PART DISASSEMBLY - INSTALLATION INFORMATION AND MAINTENANCE INSTRUCTIONS

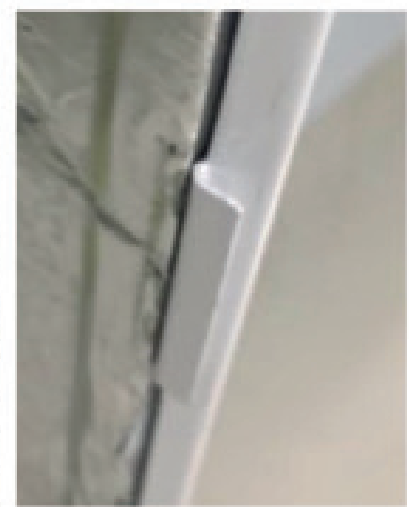
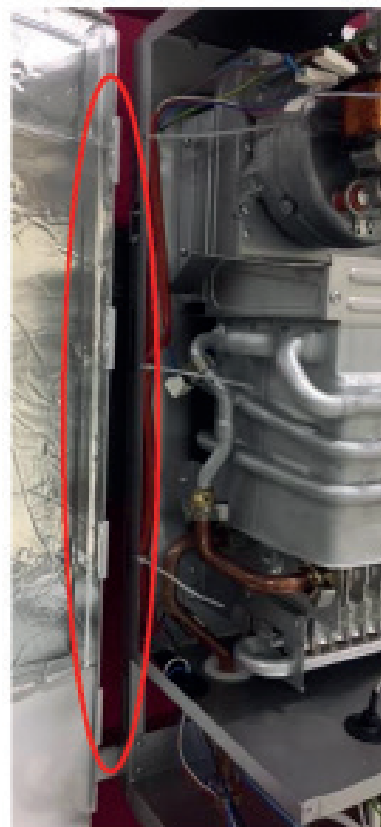
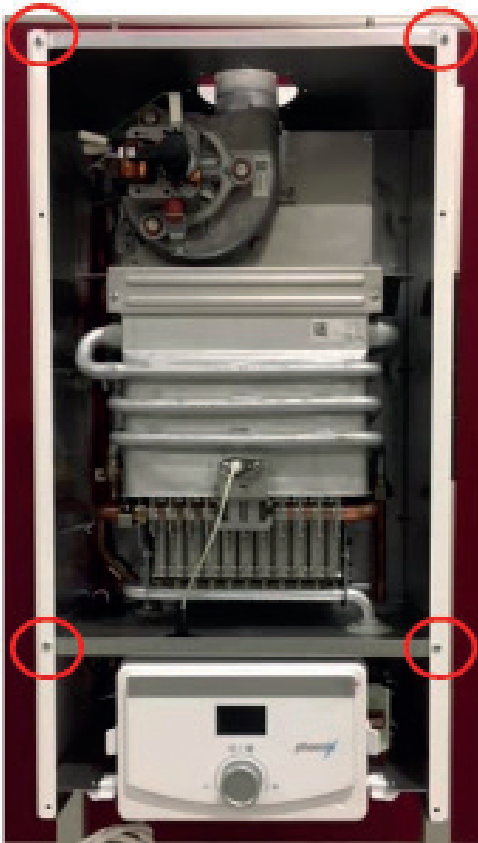
1. Front Cover

The front cover is removed by removing the two screws at the bottom and then removing it from the mounting pins at the top. It is attached to the pins in the same way to install, and mounted with two screws. The insulation behind the front cover provides both heat and sound insulation and hermetic cabin sealing. Since the insulation is not removable, the front cover should be replaced in case the insulation is damaged.



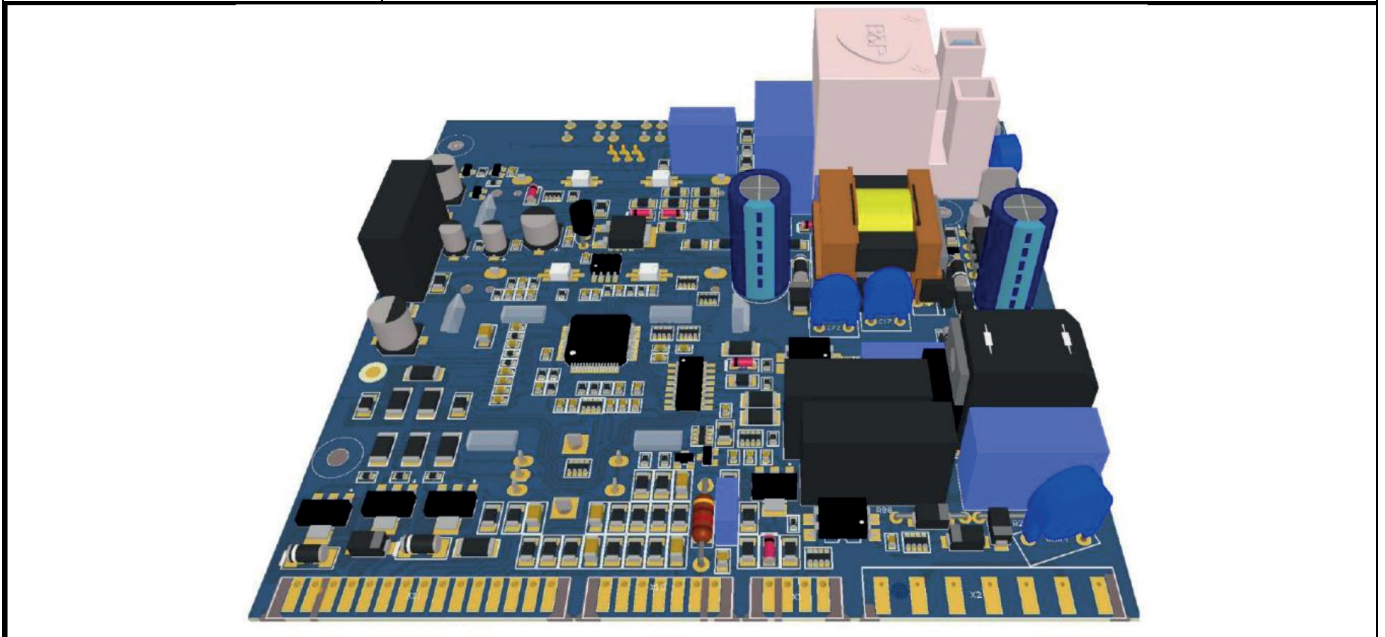
2. Side Covers

In order to remove the side covers, two screws connected to the hermetic body and two screws attached to the subframe must be removed and taken out from the rear fittings. When installing, it should be checked that the rear fittings are seated.

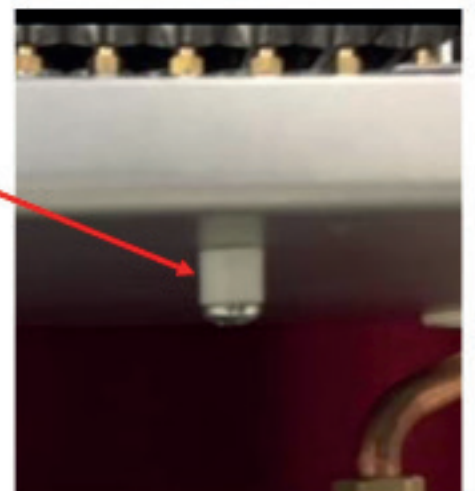


3. Control Panel and Motherboard

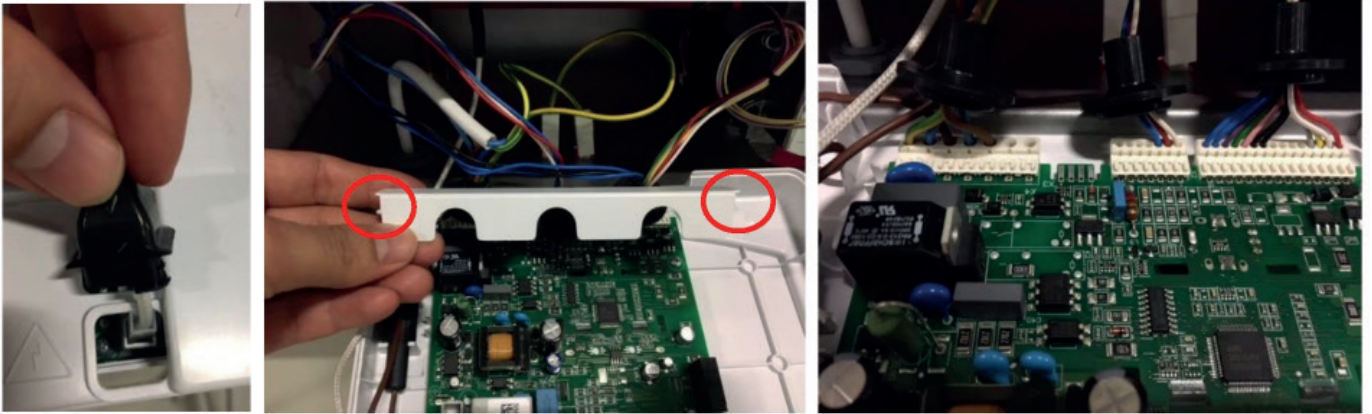
Topic	Description
Part Function	Electronic Board
Impact in Case of Malfunction	The appliance will not work, Light will not appear on the screen, Button will not work,
Main Associated Error Codes	AL11, AL42, AL86
Diagnostics-Test Method and Maintenance	<ul style="list-style-type: none"> -Supply energy should be controlled, -Card's fuse should be checked, - There may be a lack of contact in the supply cable, -The gas valve control circuit on the motherboard may be damaged, the motherboard must be replaced. -If the electronic board assembly or button assembly is not suitable, a button pressing error may occur.



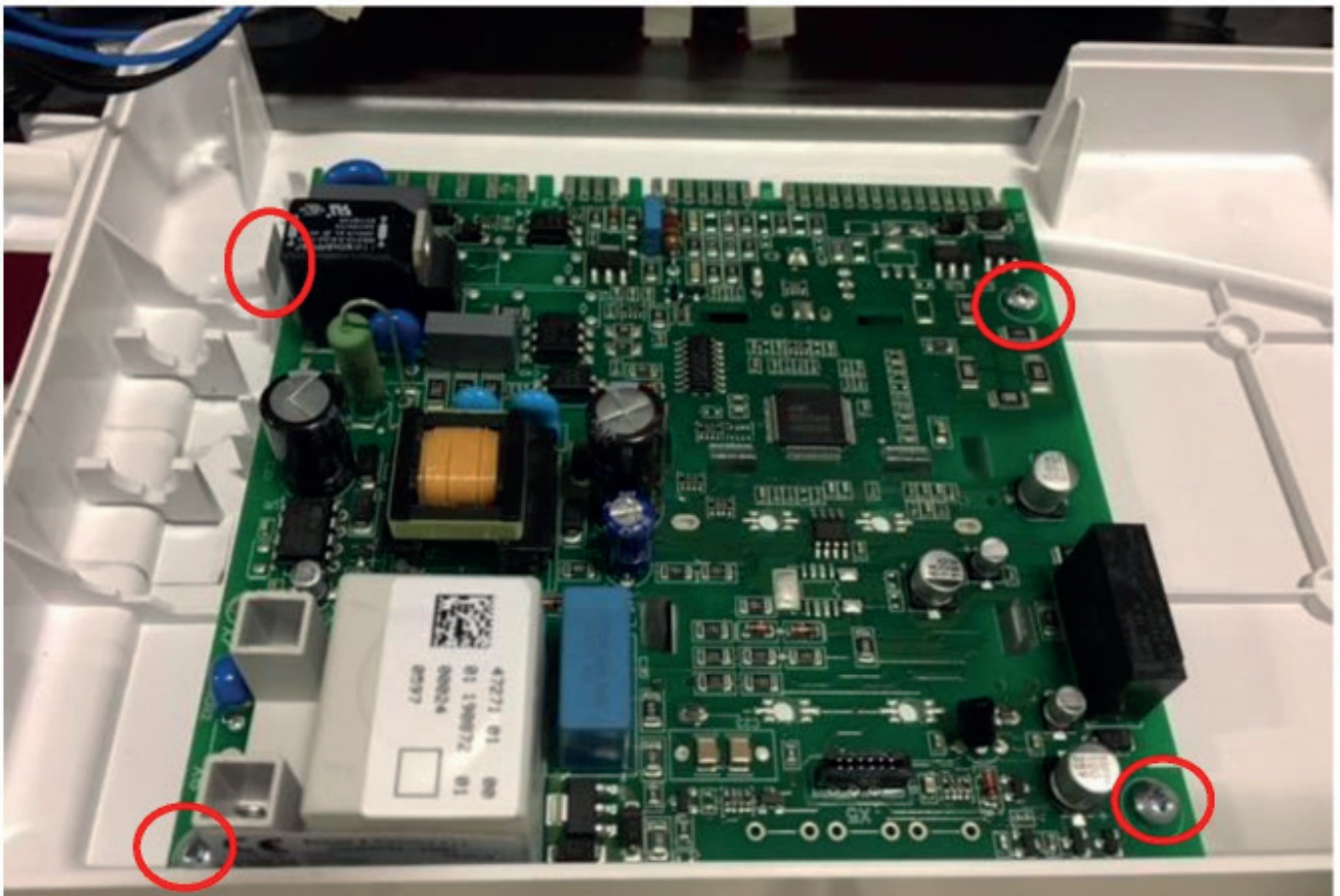
The Control Panel has a snap-fit mechanism, can be pulled forward to access the back cover.



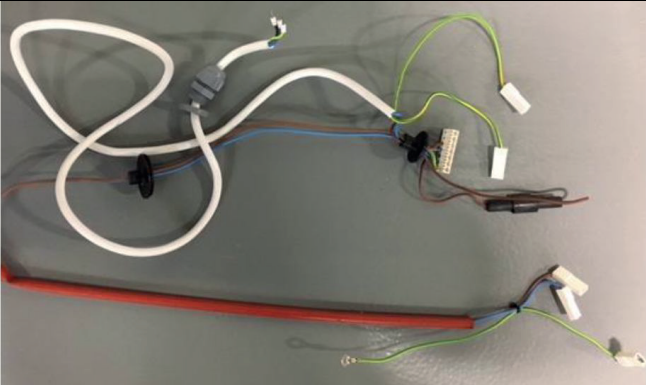
To access the motherboard, the electrode cable and ground wire are removed. Then, the holder at the bottom is pulled upwards from the cover slides. The connectors are removed.

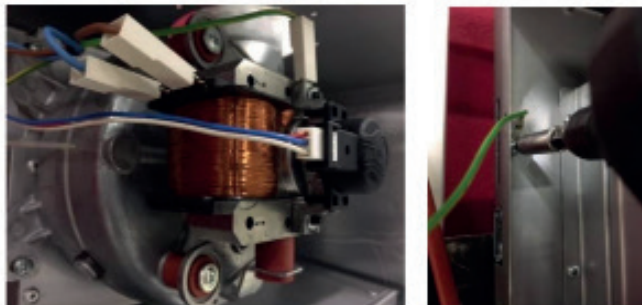


The card is removed from the claw by removing 3 screws that connect the motherboard to the front panel. The button and button shaft on the front are carefully held and the card is removed from its place.



4.High Voltage Cable Group

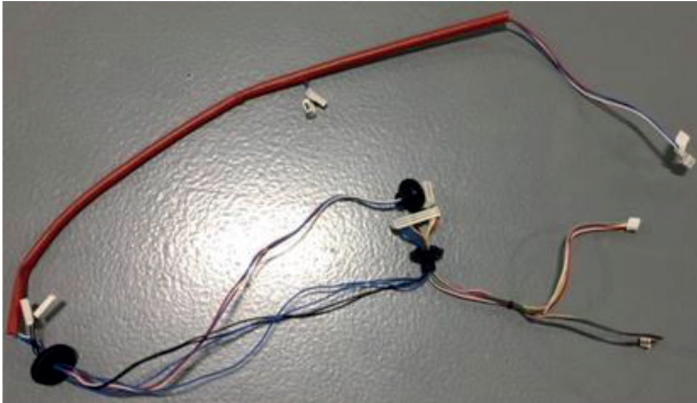
Topic	Description
Part Function	High Voltage Cable Group
Impact in Case of Malfunction	Appliance will not work,
Main Associated Error Codes	AL12, AL86
Diagnostics-Test Method and Maintenance	<ul style="list-style-type: none"> -Supply energy 230V AC (195V AC-250V AC) should not be out of tolerance range, -Check that there is no looseness in the high voltage cable connector motherboard connection, -Fan cables and terminals should be checked, -The gas valve connector should be checked.
	



Phase, Neutral and Earth wires of the fan are removed, the other end of the fan ground cable is removed from the chassis. Cable ties are cut using a side cutter. Subframe ground cables are removed. Cable grommet is removed. The cable group is taken from below by pressing the gasket as shown in the figure.



5.Low Voltage Cable Group

Topic	Description
Part Function	Low Voltage Cable Group
Impact in Case of Malfunction	Appliance will not work
Main Associated Error Codes	AL01, AL02, AL06, AL07, AL12, AL70, AL72, AL86
Diagnostics-Test Method and Maintenance	<ul style="list-style-type: none"> -Cables should be checked, any breakage or deformations should be observed, -It should be checked that the terminals at the connection point are correctly installed, - It should be checked that the motherboard connectors are not disconnected or loosened.
	

Motherboard connectors, overheat thermostat terminals, NTC terminals, fan sensor cable, gas valve connector, flow sensor connector are removed. When removing the fan sensor, gas valve connector and flow sensor the claw in the sockets must be opened and the connectors must be removed.

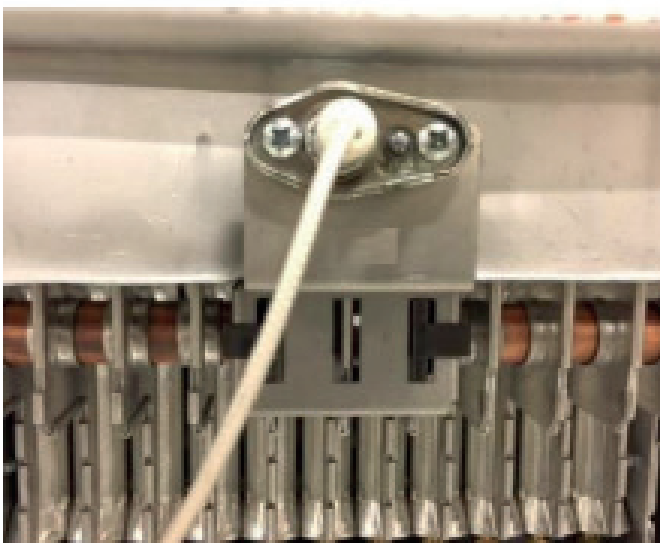
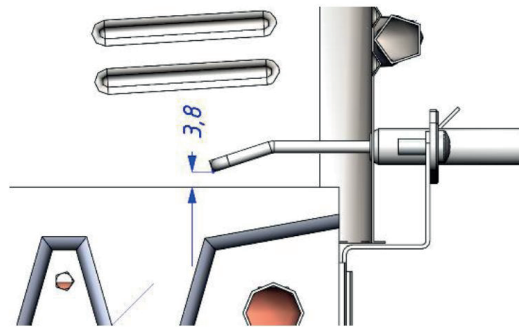
As shown in the figure below, the cable is removed by pressing the seal down and cutting the cable ties.



6. Electrode

To remove the electrode cable, the cable terminal is removed, the screws on the electrode flange are removed and the cable seal is pulled up and removed. While mounting, it should be visually checked that the distance between the electrode tip and the burner is approximately 4mm.

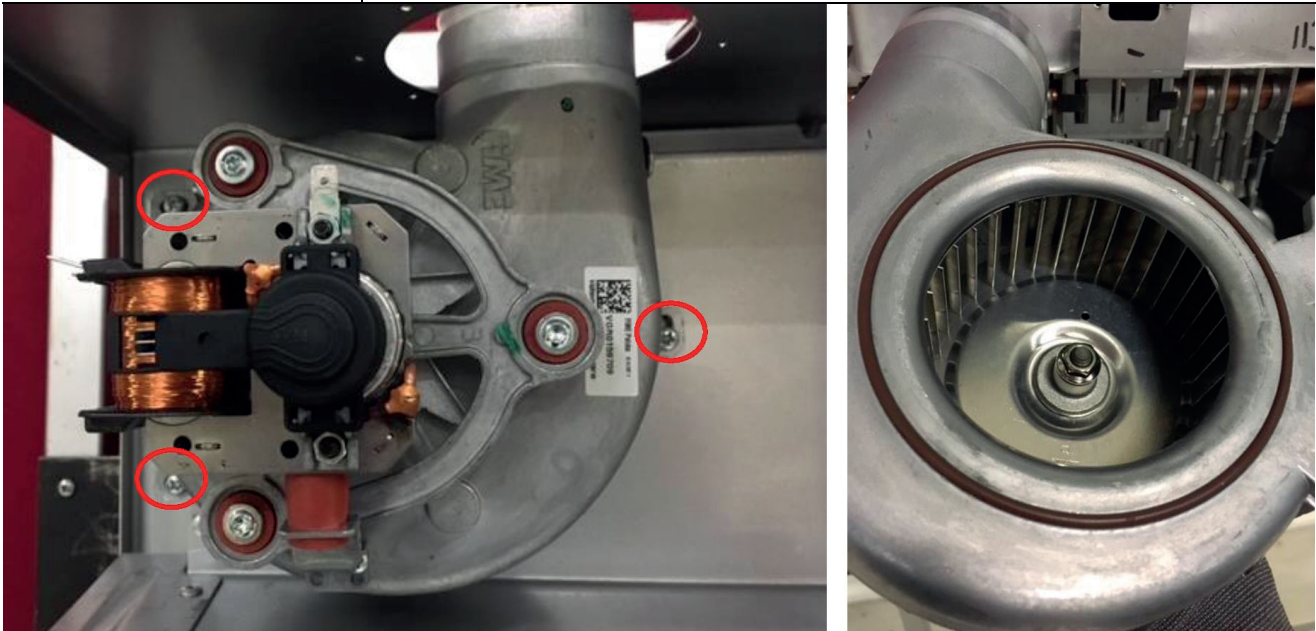
Topic	Description
Part Function	Ignition and Ionization Electrode
Impact in Case of Malfunction	Ignition does not occur, no flame occurs, flame lift-off occurs.
Main Associated Error Codes	AL01, AL81
Diagnostics-Test Method and Maintenance	<p>Electro cable and connection terminal should be checked,</p> <p>Electrode assembly should be checked,</p> <p>The distance between the electrode burner should be checked,</p> <p>Whether the electrode surface is clean should be observed, if not It must be replaced..</p> <p>If the flue assembly is not suitable, there may be permanent flame loss, if the flue assembly is suitable but the ionization circuit on the card is defective (If there is permanent flame loss because of this), the card should be replaced.</p> <p>If the ignition transformer on the card is faulty, the card should be replaced.</p>



7.Fan

Phoenix 22 HM gas water heater uses 32W fan. The fan body is attached to the hood with 3 screws. Make sure that the fan O-ring is in place when installing the fan.

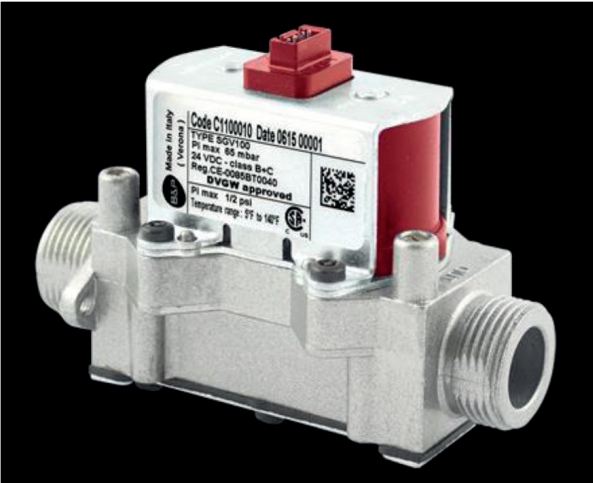
Topic	Description
Part Function	Fan
Impact in Case of Malfunction	The appliance will not work, it will work loudly,
Main Associated Error Codes	AL81, AL82, AL83,AL84,AL86
Diagnostics-Test Method and Maintenance	- Cable connections should be checked, Fan assembly should be checked, It should be checked that there is no obstruction causing resistance in the waste gas path. In the part where the flue supplies the waste gas, it should be checked that there is enough distance to discharge the burnt gases. It should be checked that P11 (flue length) parameter is set appropriately.



To ensure the relay on the board is feeding, approximately 230V AC supply voltage should be measured between pins 3 and 4 in X4 connector in maximum operating mode. If the supply voltage is not measured, the card relay may be malfunctioning.



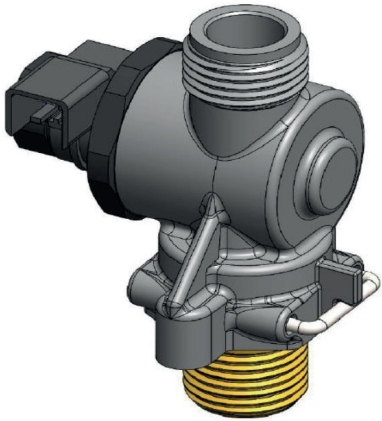
8. Gas Valve

Topic	Description
Part Function	Gas Valve
Impact in Case ofMalfunction	Gas leak, The need for calibration, The appliance will not work
Main Associated Error Codes	AL11, AL12, AL62
Diagnostics-Test Method and Maintenance	<p>-Whether there is a gas leak should be checked with the controller. -In case of calibration requirement AL62 error occurs, calibration should be done.</p> <p>-The gas valve control circuit on the motherboard may be damaged, the motherboard must be replaced.</p> <p>- When the gas valve physical damage is detected, the gas valve should be replaced.</p> <p>-If gas valve modulation circuit is damaged or there is contactless over the connectors gas valve cable connectors are connected through the gas valve or electronic board , AL12 error will be given. Loose contact should be eliminated.</p>
	

The gas valve AA 30 is opened using the key and by turning the key counterclockwise. The gas valve is removed by unscrewing the star-head screw at the bottom.



9. Flow Sensor

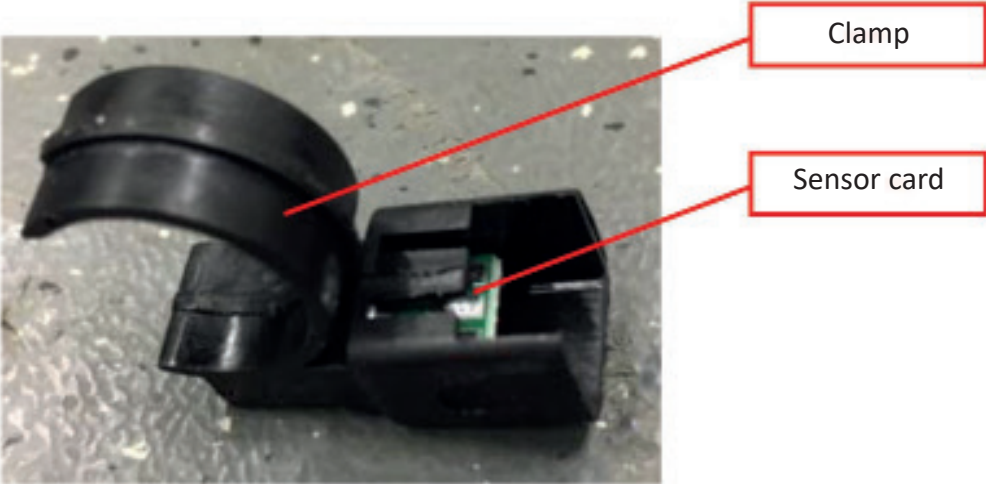
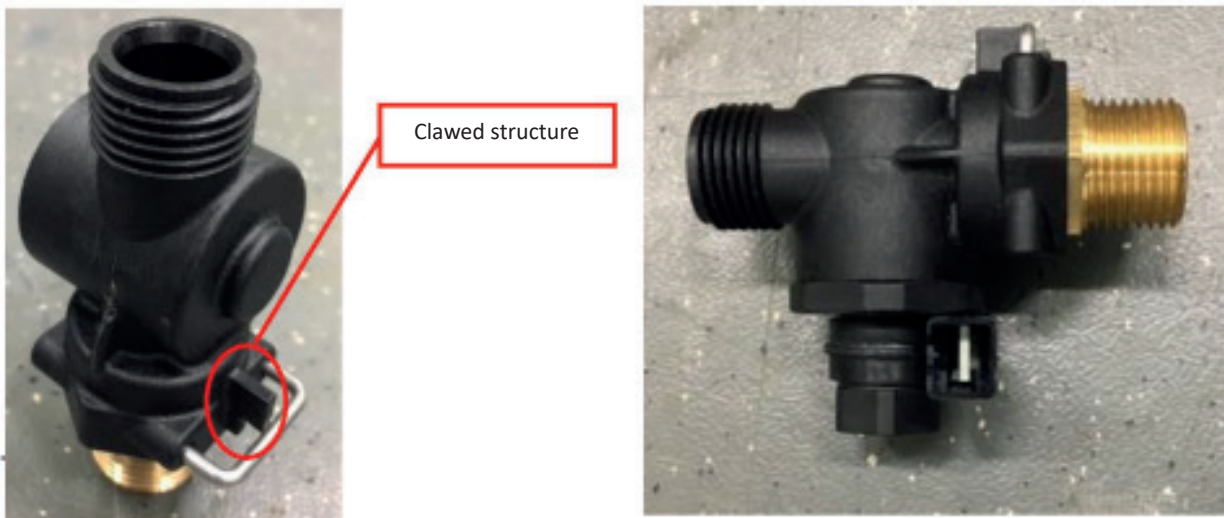
Topic	Description
Part Function	Flow Sensor
Impact in Case of Malfunction	Boiling, Not getting hot water, Dry combustion
Main Associated Error Codes	AL02, AL72
Diagnostics-Test Method and Maintenance	<p>If calcification is present in the water circuit, boiling may occur due to low water flow rate.</p> <p>Blackening may occur on the heat exchanger due to incorrect NTC measurement or incorrect overheating thermostat installation.</p> <p>Frost protection is disabled if electricity and gas supplies are cut off will remain, if freezing has occurred, since there will be no water flow, there may be dry combustion..</p>
	

The flow sensor is loosened by turning it counterclockwise using the AA 24mm wrench. It is removed by removing 2 star head screws on the bottom.



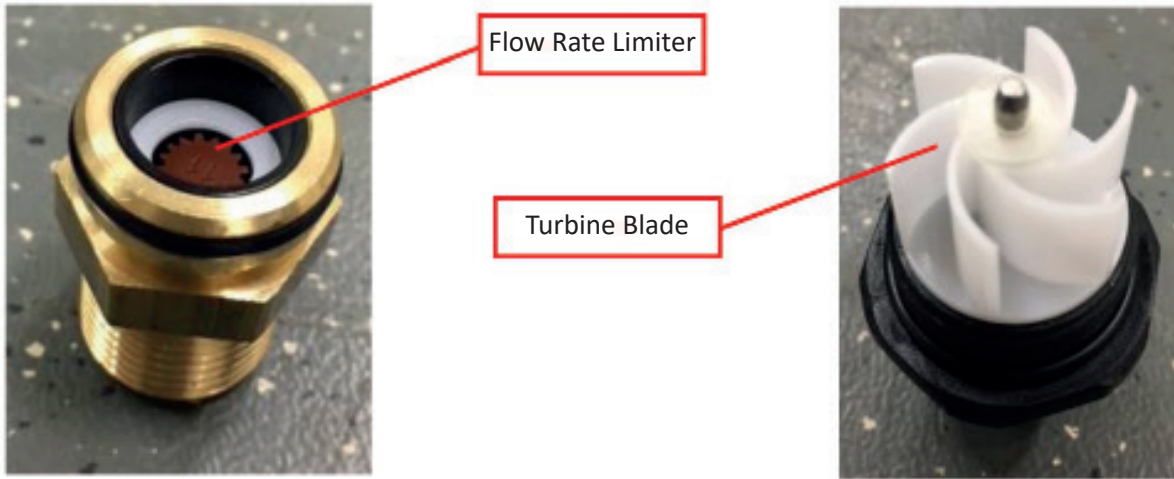


The flow sensor can be opened by removing the clip, the clip assembly must be done on the clawed side of the body.

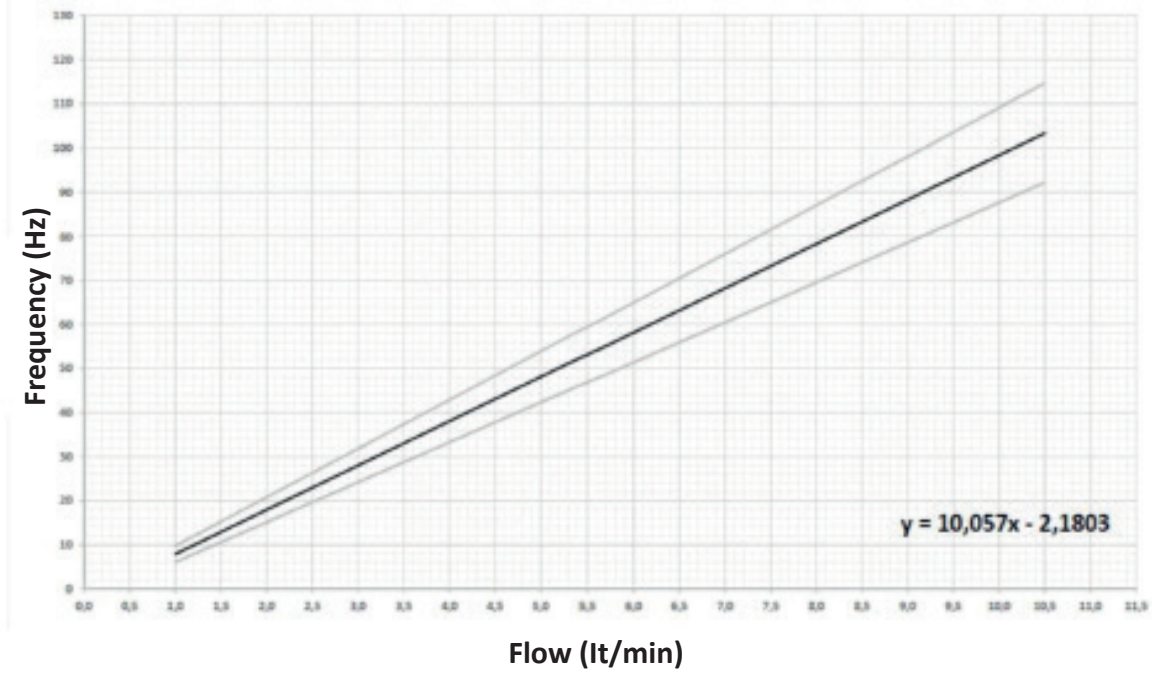


11 lt/min flow rate limiter is used inside the sensor.

It should be checked that no melting occurs in the turbine blades during unusual temperature rises, and if there is melting, the flow sensor should be replaced.

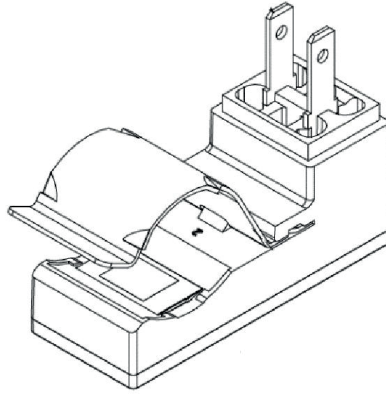


Flow and Frequency Curve



10. Temperature Sensor (NTC)

Topic	Description
Part Function	Temperature Sensor
Impact in Case of Malfunction	The appliance will not work, it will make incorrect measurements
Main Associated Error Codes	AL06, AL07, AL70, AL72,
Diagnostics-Test Method and Maintenance	NTC with 10 kOhm and a beta value of 3435 is used. Cable connections should be checked. The installation location should be checked.

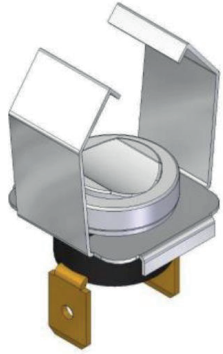


Approximately 10 kOhm of resistance should be measured at room temperature. The measured value may differ depending on the ambient temperature.

Ambient Temperature (°C)	NTC Resistance (kOhm)
0-5	27.3-22.1
6-10	21.2-18
11-15	17.3-14.7
16-20	14.1-12.1
21-25	11.6-10
26-30	9.63-8.3
31-35	8-6.95
36-40	6.7-5.8

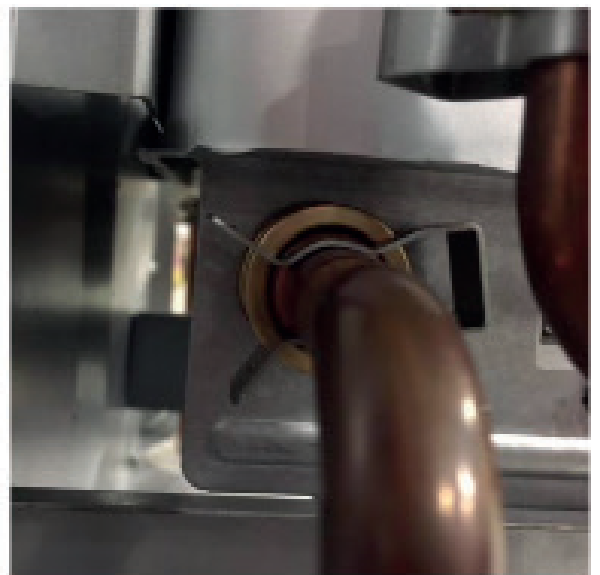
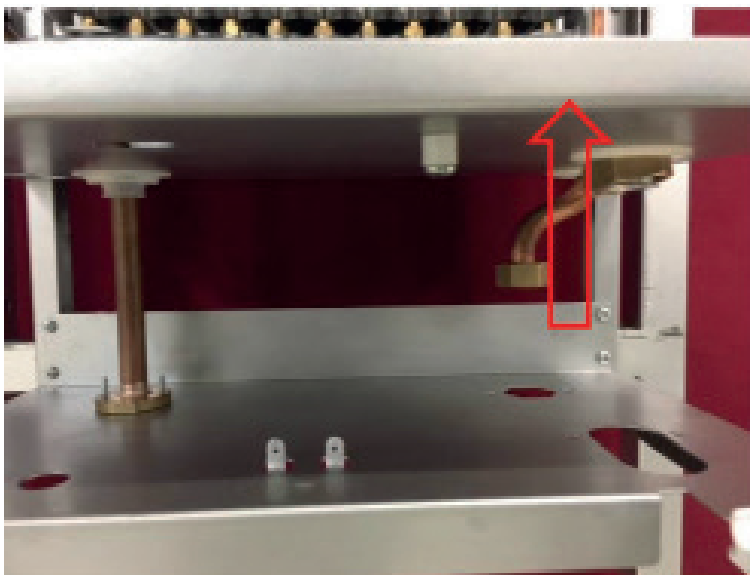


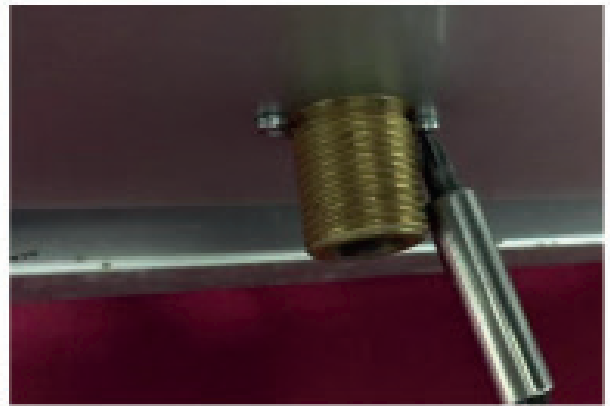
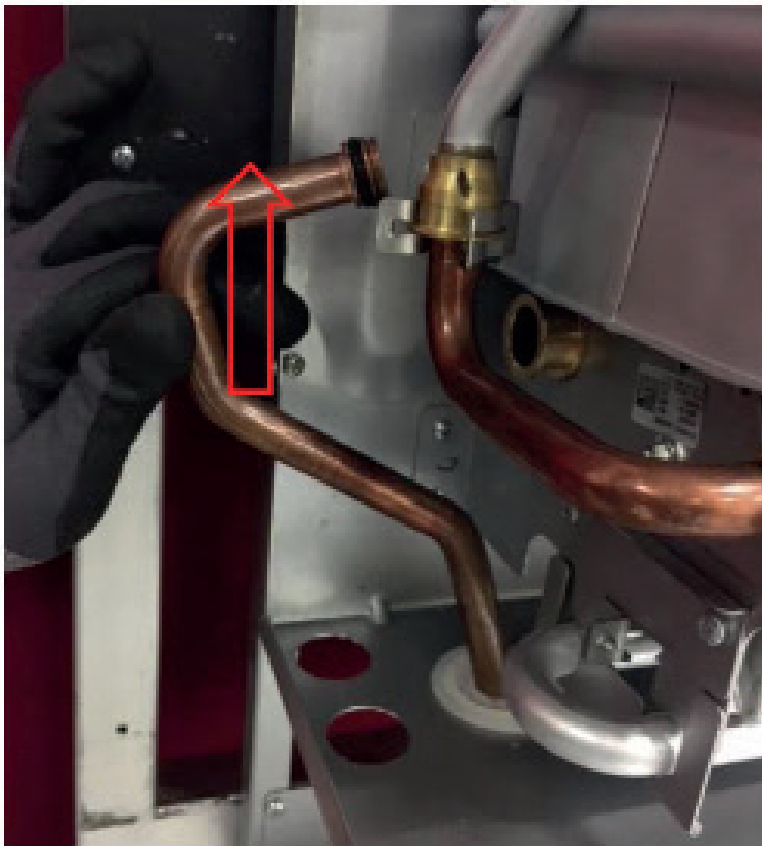
II.Overheat Thermostat

Topic	Description
Part Function	Overheat Thermostat
Impact in Case ofMalfunction	The appliance is deactivated, Boiling, Blackening in the heat exchanger,
Main Associated Error Codes	AL02
Diagnostics-Test Method and Maintenance	<p>-Water temperature should be measured. f the water temperature is above $85 \pm 4 \text{ }^\circ\text{C}$, the overheat thermostat will be activated and will terminate the heating. When the water temperature drops to $55 \pm 6 \text{ }^\circ\text{C}$, the error will be disabled and the heating will be restored automatically..</p> <p>- Overheating thermostat installation should be done in accordance with the instructions. If it is not installed in a suitable place, boiling or blackening may occur in the heat exchanger.</p>
	

12. Inlet/Outlet Pipe and Burner Pipe

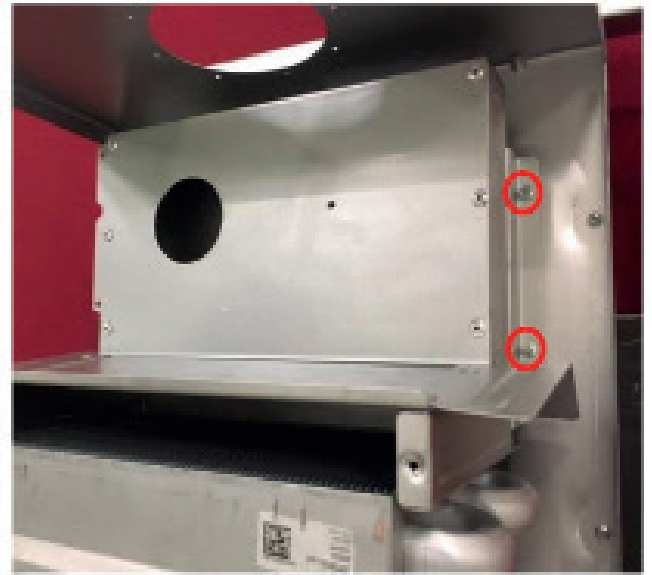
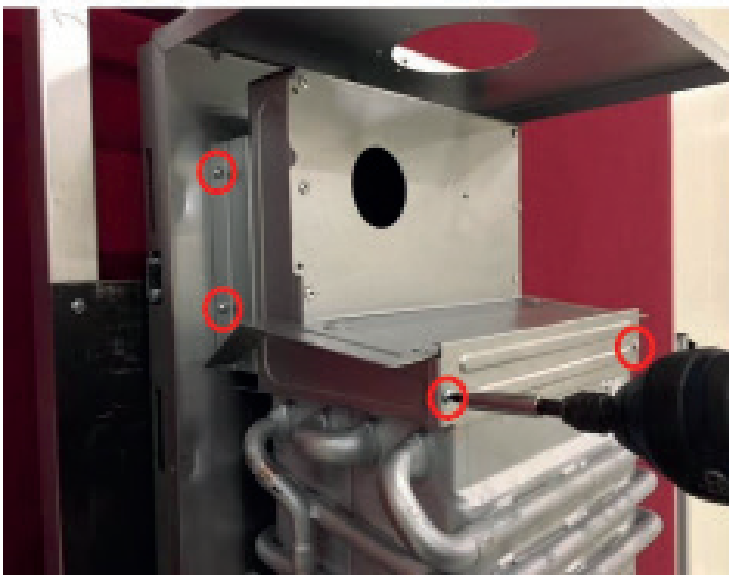
Pipes are connected to the burner with a clip. The pipes can be pulled upwards by removing the inlet and outlet pipe clips and the screws on the flange of the flow pipe. After the burner pipe clips are removed, it can be pulled down from the heat exchanger and removed.



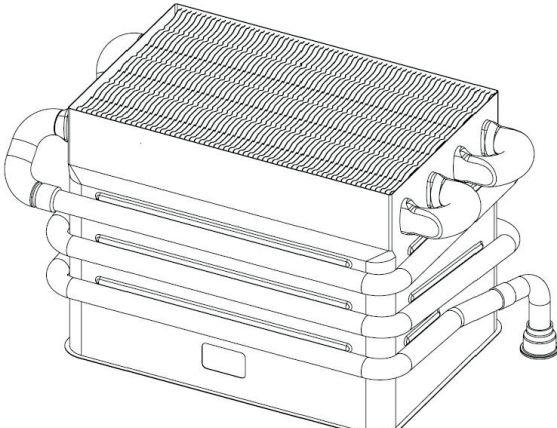


13. Hood

There are two phillips head screws in heat exchanger holder bracket and there are a total of four phillips head screws in the hood two on the right and two on the left. These screws must be removed to remove the hood.

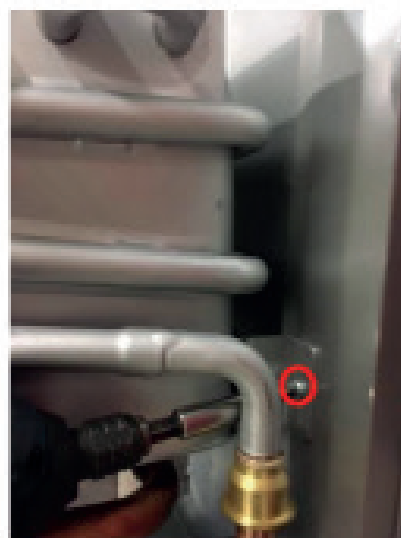


14. Heat Exchanger

Topic	Description
Part Function	Heat Exchanger
Impact in Case of Malfunction	High CO or CO2 emissions, Boiling, Dry Combustion, Recirculation (combustion products mix into the inlet air and re-enter in combustion, and emission values increase), Boiling sound, Noisy
Main Associated Error Codes	AL82, AL84
Diagnostics-Test Method and Maintenance	<p>-Check whether there is corrosion in the heat exchanger or if there is corrosion in the form of greening, the surface should be cleaned with a cleaning brush.</p> <p>-Check whether there is any rupture in the heat exchanger pipes or tear in the body sheet, if there is puncture or tear, the heat exchanger should be replaced and if the combustion emissions are disordered, the defective factor should be determined and the error should be eliminated.</p> <p>-It should be checked whether there is blackening in the heat exchanger. Blackening may indicate dry combustion, so the root cause should be identified and the error should be eliminated and the heat exchanger should be replaced.</p>
	

To get the heat exchanger, two different methods are used:

1. First the hood is dismantled and then the bracket behind the heat exchanger is removed from the combustion body.

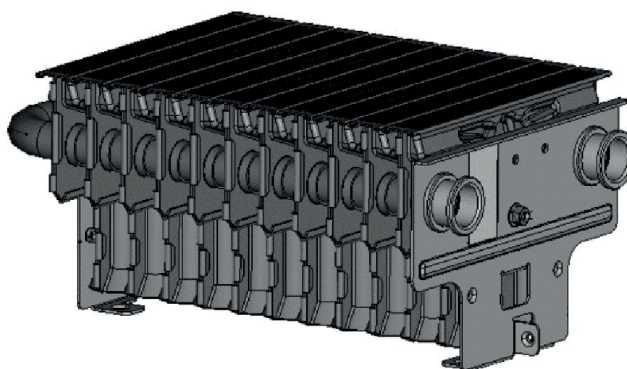


2. First, the burner is removed, then the hood bracket and the heat exchanger bracket are removed and the heat exchanger is taken down.

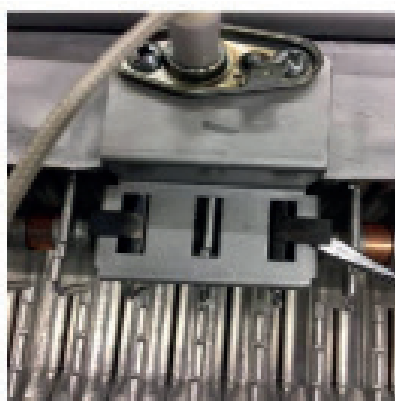


15. Burner

Topic	Description
Part Function	Burner
Impact in Case of Malfunction	There is gas or water leakage, High CO or CO2 emission. Explosive combustion occurs.
Main Associated Error Codes	AL81,AL82
Diagnostics-Test Method and Maintenance	Gas or water leakage should be checked, Burner assembly should be checked, Inspect the blades of the burner for corrosion.



The electrode bracket must be removed before the burner can be removed. Claw clips used to fasten the burner bracket are removed by using a screwdriver and the electrode bracket is removed.



After the gas pipe and water pipes are taken from the burner, the burner brackets on the right and left sides are removed.

