ELNUR GABARRON®

INSTALLATION INSTRUCTIONS AND USER GUIDE

DIGITAL MODULATING ELECTRIC BOILER
FOR CENTRAL HEATING AND DOMESTIC HOT WATER

MATTIRA

MODELS

MBX15

Por favor, lea estas instrucciones antes de instalar o utilizar este equipo por primera vez. Es indispensable seguir estas instrucciones para garantizar una instalación segura de la unidad. Cualquier problema, fallo o daño ocasionado por el incumplimiento de estas instrucciones no estará cubierto por la garantía del fabricante. Este manual debe conservarse junto con el equipo para futuras consultas.

Please read these instructions before installing or using this appliance for the first time. These instructions must be followed for the safe installation of the unit. Any problem, fault or damage caused by the non-observance of these instructions will not be covered under the manufacturer's warranty. This manual should be retained with the appliance by the user for future reference.

INDEX

1 IMPORTANT

The following installation instructions are intended to guide the competent person throughout the entire installation process.
The boiler's guarantee does not cover any damage caused by non-observance of any of these instructions.
These installation instructions and user's guide must be conserved and given to any new user.

The symbols used in the text are explained below:

 WARNING	This indication shows the possibility of causing death from electric shock.
 WARNING	This indication shows the possibility of causing death or serious injury.
 CAUTION	This indication shows the possibility of causing injury or damage to properties only.
	Symbol for useful information.

2 SAFETY

- This appliance is not destined for use by anyone (including children) with reduced physical, sensorial or mental capacities or those who do not know how to use the appliance, unless they are supervised or instructed by a person responsible for their safety.
- Check that the voltage on the indicator plate of the boiler coincides with the voltage of the mains circuit to which it is going to be connected.
- The use of these boilers in the presence of gases, explosives or inflammable objects is prohibited.
- The air inputs and outputs of the boiler ensure its correct operation and protect it from over-heating. They must never be covered.
- This boiler must be disconnected from the mains electricity before carrying out any internal repairs.
- The boiler must be installed in such a manner that the switches or other controls cannot be touched by anyone who is using the bath or shower.
- The installation must be performed in accordance with current electricity regulations.
- This appliance is destined to be permanently connected to a fixed installation. The power circuit of the boiler must incorporate an omni-polar cut-off switch with a separation between the contacts of at least 3 mm.
- The electricity supply circuit must incorporate a Residual-Current Device.
- This boiler must be earthed.
- All the models incorporate different safety elements. If one or more of them are activated, consult the section 7 TROUBLE SHOOTING.
- In time, the presence in the air of smoke, dust and pollution may stain the walls and areas close to the appliance.
- Any improper use is forbidden.
- Do not install the boiler in rooms prone to frost.

3 INTRODUCTION

3.1 DESING & OPERATION

The Gabarrón MATTIRA MBX15 combi boilers are electrically heated appliances providing wet central heating through a standard radiator system (or underfloor system with special kit) and domestic hot water (DHW) delivered from an integral unvented store at mains water pressure.

Outputs are from 2 to 18kW. Maximum output can be adjusted to match the heat requirement of the system or the limitations of the incoming available power supply. Operation is possible on three phase 3x400V+N or single phase 230V – (Standard configuration allows a maximum of 12kW in single phase mode).

The boilers are designed for internal installation on a suitable wall with consideration for the total weight of the appliance when full.

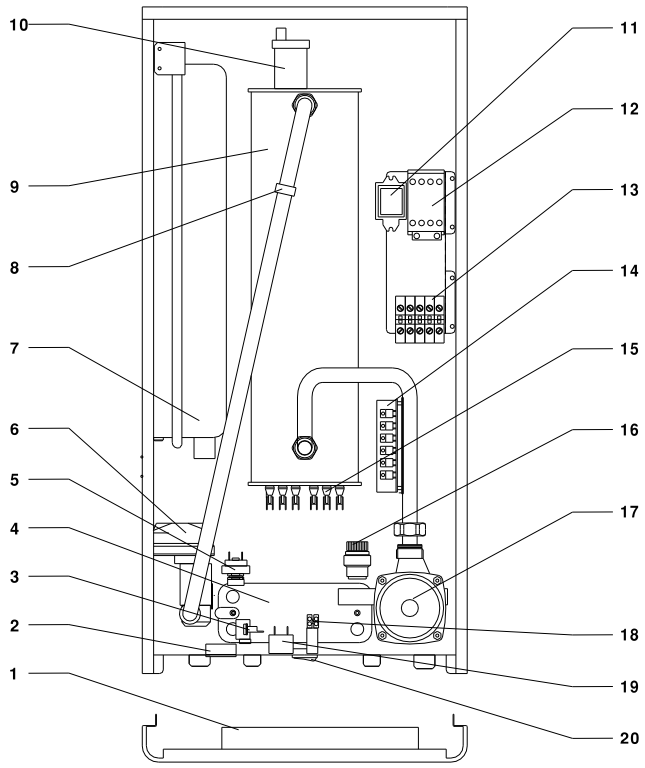
A digital control panel provides user control to adjust the temperatures of heating and hot water. A power modulation feature automatically adjusts the heating output to the demand to ensure economic operation. A suitable external time clock/room thermostat should be fitted (not supplied). All components for sealed system central heating are built-in.

Heating and hot water functions will operate independently but not simultaneously, with priority always to hot water production.

3.2 PRINCIPAL COMPONENTS

- Insulated steel boiler unit with immersed stainless steel elements INCOLOY800.
- Fully integrated electronic control boards featuring temperature control and modulation function, pump over-run, anti-seize and frost protection. Self-diagnostic fault information.
- Sealed system heating components: circulating pump, 6 litres expansion vessel, auto air-vent, 3 bar relief valve, pressure gauge, pressure switch and temperature limit safety thermostat.
- Silent TRIAC power switches.
- Digital control board.

3.3 KEY TO COMPONENTS



1 Main electronic PCB.
2 Pressure gauge.
3 DHW temperature sensor.
4 Plate heat exchanger.
5 Water pressure switch.
6 3Way valve.
7 Heating expansion vessel 6L.
8 Heating temperature sensor.
9 Insulated heating header tank.
10 Automatic air vent.
11 Aux. relay.
12 Main contactor.
13 Connection block.
14 Power electronic PCB.
15 Heating resistance.
16 Heating 3 bar relief valve.
17 Circulation pump.
18 Ambient thermostat intake.
19 Safety thermal limit switch.
20 ON / OFF switch.

3.4 SAFETY DEVICES

Safe operation under various conditions is ensured by the following controls fitted inside the boiler:

- Water pressure switch that monitors water pressure in the heating system and will prevent operation in case of low pressure. If the system pressure is below the permitted level, error E5 will appear (see 7.3 Heating system pressure switch – E5 Error).
- Heating system high limit safety thermostat will prevent operation if the temperature exceeds 100°C. It requires re-setting manually.
- Heating system pressure relief valve will discharge to relieve excess pressure at 3 bar. (Requires piping to a safe external discharge point.)

4 INSTALATION

IMPORTANT PRE- INSTALLATION POINTS

In order to ensure the successful installation and operation of your Elnur Gabarron boiler, please consider the following points before commencing.

SITING THE BOILER

WARNING Wall and fixings must be suitable to support the total weight; MATTIRA MBX boiler when full is **40kg.**

Allow sufficient clearance and access for operating, maintenance and repair work.
Boiler must be protected from any water, moisture or dampness.
Where installations are in a bathroom, the installation must comply with the relevant electrical regulations.
Boiler electrical protection rating is IP20/IP2X. This boiler is not designed to be installed in the open air.
The boiler must be installed in the upright position.

ELECTRICAL POWER SUPPLY & WIRING

WARNING Before carrying out any work inside the boiler and obtaining access to terminals, all supply circuits must be disconnected.

WARNING Earth the appliance. If the appliance is not earthed, it may hold voltage if a defect occurs.

The cable, MCB and RCD must be of sufficient capacity to carry the required load.

Boiler is supplied set at maximum output and must be adjusted to suit the incoming supply before being switched on. (See 5.2 LIMITING BOILER MAXIMUM OUTPUT).

HEATING SYSTEM & CONTROLS

Any existing system must be suitable for sealed system operation at up to 3bar pressure and may require flushing/cleansing.
Isolation valves and drain point are required.
A time clock/room thermostat should be installed.
(Necessary to activate automatic power modulation).

If the installation includes thermostatic radiator valves or automatic temperature zone controller, it is essential not to interrupt the flow rate trough the boiler in any case, it will cause the action of safety thermostat.

HOT WATER SYSTEM

Competency to install unvented hot water system is required.
Any existing system and controls (e.g. shower) must be suitable to operate at mains water pressure.
The incoming water main pressure and flow must be sufficient for requirements.
If incoming mains pressure is excessive (above 5 bar) a pressure reducing valve is required.

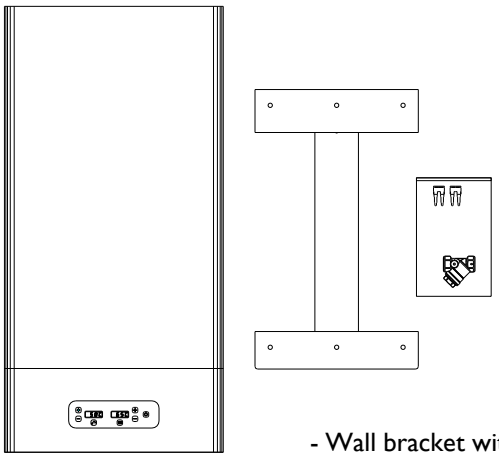
In hard water areas it is advisable to take normal precautions against lime scale formation.

4.1 GENERAL REQUIREMENTS

The installation should be carried out by a person certified as competent in accordance with current building regulations.

Installation should also be in accordance with the relevant Standards and Codes of Practice.

4.2 UNPACKING & CONTENTS



- Wall bracket with template.
- Boiler.
- Documentation.
- Bag with connecting links and filter.

Dispose of the cardboard packaging at a cardboard recycling site. Observe national regulations.

4.3 LOCATION

WARNING: INSTALL UPRIGHT ON A WALL SUITABLE TO SUPPORT THE TOTAL WEIGHT OF THE BOILER WHEN FULL OF WATER – 40kg

The location should be clean and dry with no presence of gases, explosives, or flammable objects.

It is not suitable for installation outside and should be protected from moisture and frost.

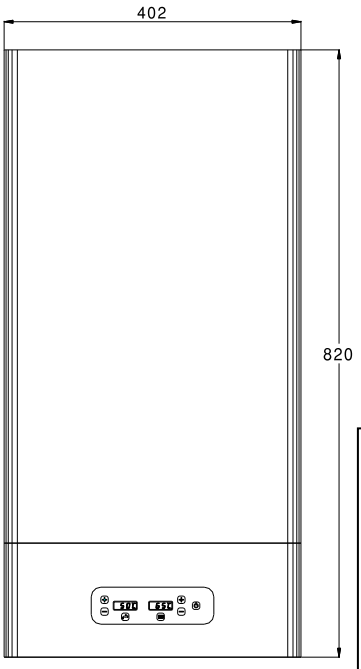
The boiler must be sited so that the boiler and controls are not accessible to any persons whilst using a bath or shower and there should be no possibility of water dripping or splashing onto the boiler or controls.

Electrical safety regulations for clearances must be followed if installed in a bathroom or shower area.

Where possible the boiler should be sited to minimize the pipe distance to hot water outlets.

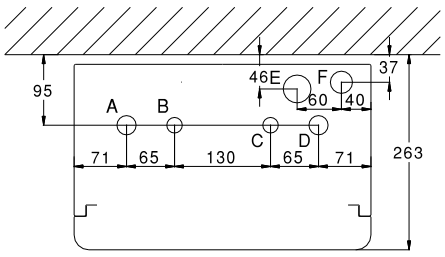
The power supply cable should be carefully routed and secured and provision made for a suitable isolation switch and MCB/RCD.

4.4 DIMENSIONS & CONNECTIONS

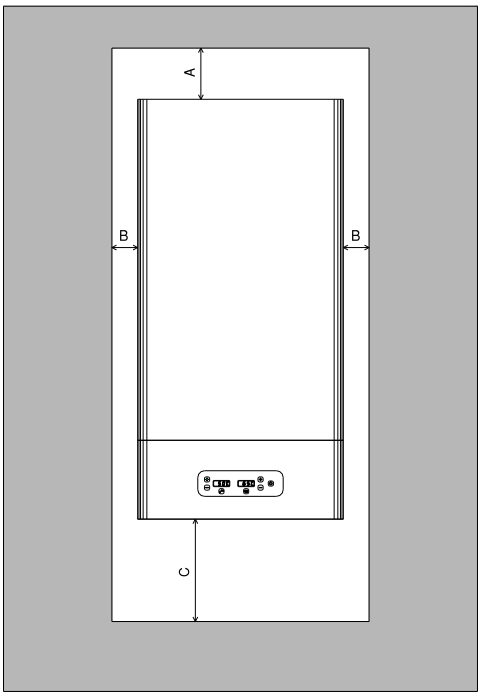


A. Heating flow ¾"
B. DHW outlet ½"
C. Cold water input ½"
D. Heating return ¾"
E. Electrical connection
F. Sealed heating system pressure relief valve (to drain)

All measures in mm.



4.5 CLEARANCES



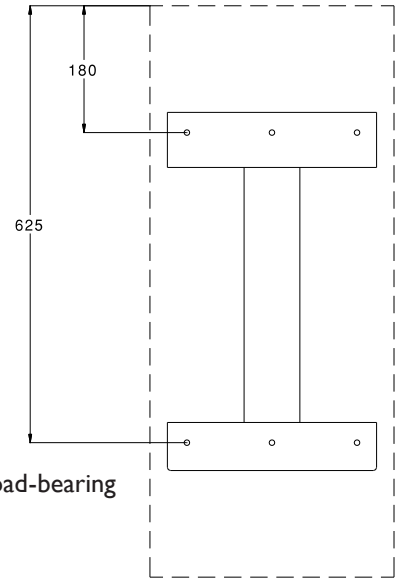
A: 50 mm B: 10 mm C: 200 mm

The clearances around the boiler as shown above must be observed for correct operation.

A minimum of 200mm clearance must be maintained underneath the boiler to allow replacement of the heating elements if required. A minimum of 500 mm clearance must be maintained in front of the boiler to enable easy access for servicing.

Ensure sufficient space to make all water connections including the outlet pipes for the heating safety valve which should be routed to a suitable discharge point.

4.6 MOUNTING BRACKET



Mark the hole positions using the wall bracket as a template per the diagram.

Fit bracket securely onto wall before lifting appliance into position. Drill the holes and fit the bracket ensuring it is level using suitable high strength screws, with appropriate plugs or fixings, minimum M10 size.

Always use assistance if required. Wear suitable cut resistant gloves when handling the appliance.

Ensure safe lifting techniques are used. Do not lift the appliance by attached pipe-work or components.

When lifting the boiler ensure that the fixing elements and the wall have a sufficient load-bearing capacity. Check the quality of the wall.

4.7. FRONT PANEL

To remove the front panel, remove the two screws located on the top of the boiler that are fixing the front panel to the top cover of the boiler. Lastly, slide the front panel upwards to remove the front panel from the unit.

4.8 WATER CONNECTIONS


CAUTION: The hydraulic connections must be carried out respecting the flow and return marked on the boiler.


CAUTION: When tightening or loosening threaded connections, always use suitable tools as open-end spanners. Do not use pipe wrenches, extensions or unsuitable tools that may cause damage or water leaks.


Install purges in the radiators and high points of the installation.

Heating Flow & Return

These connections are ¾ " for connection to 22mm pipe. Service valves should be installed at this position to allow the boiler to be isolated for maintenance without the need to drain the entire system. The valves should be of sufficiently large bore so not to restrict the heating circulation.

Single pipe heating systems are not recommended only a twin-pipe heating system should be used.

Water Filter

The boiler comes with a ¾" Y-type filter that must be correctly installed in the heating return pipe to prevent impurities from entering through the boiler return.

Shut-off valves must be installed on both sides of the filter to facilitate maintenance and periodic cleaning. Inspect and clean the filter at least once a year. Failure to perform this task may cause damage to the equipment and void the warranty.

Drain Point

A drain point should be fitted at the lowest point of the system. It is not acceptable to drain the boiler through the safety valve as debris and deposits will prevent correct operation of the valve.

Heating System By-pass

The boiler requires a minimum flow rate of 7 L per minute for correct operation. Systems fitted throughout with Thermostatic Radiator Valves will require provision of a System By-pass to maintain sufficient flow should all the valves be closed.

System Expansion

An integral 6 L expansion vessel provides for expansion of the heated system water under normal conditions however a system with larger volumes of water may require extra expansion capacity to be provided.

Cold Water Inlet

A ½" connection is provided for connection to 15mm pipe.


CAUTION: If the incoming water pressure exceeds 5 bar it is necessary to install a Pressure Reducing Valve set at 2.5 bar on the water main into the dwelling.

Hot Water Outlet

A ½" connection is provided for connection to 15mm pipe. To ensure economic operation the pipe run between the boiler and taps should be in not more than15 mm dia. pipe and the distance as short as possible. The pipe-work should be insulated to reduce heat loss.

4.9 SAFETY VALVE CONNECTIONS

The 3 bar pressure relief valve may discharge boiling water and should be piped with a continuous fall to a safe yet visible point where any discharge cannot cause damage or injury.


CAUTION: The discharge pipe-work from the pressure relief valve must be installed by a competent person.

- The discharge pipe material must be capable of conveying water / steam at 100°C.
- All installations must be fitted in accordance with all local regulations in force at that time. Failure to comply with these regulations will invalidate the manufacturers' warranty.

4.10 PUMP DUTY

Boiler equipped with a high efficiency circulation pump, with a maximum delivery head of 7.5 m and a maximum flow of 2.5m³/h.

There are selectable operation modes with the built-in key. You can select delivery head (5m, 6m, 7m, 7.5m) depending onf the installation requirements.

The LED light indicates the operating status of the pump:

- Green fixed: correct operation.
- Over voltage protection. During the power-on test, when the input voltage is detected to be higher than 270 ± 10V for 2 seconds, overvoltage protection is entered. The indicator light flashes once, and the circulating pump stops running. When the voltage returns to 260 ± 10V, the circulating pump resumes normal operation.
- Under voltage protection: During the power on test, it is detected that the input voltage is below 165 ± 10V. After 2 seconds, it enters under voltage protection, and the indicator light flashes twice. The circulating pump stops running. When the voltage returns to 170 ± 10V, the circulating pump operates normally.
- Over current protection: When the circulating pump is running at full load, if there is a hardware over current, turn on the over current protection. When overcurrent occurs, the circulating pump immediately stops working and the indicator light flashes 3 times. After 10 seconds, the circulating pump restarts. If the fault is not eliminated, it will continue to circulate.
- Phase loss protection: When the motor is in phase loss, the indicator light flashes 4 times. The circulating pump immediately stops working and restarts after 10 seconds. After the cumulative number of protections reaches 5, the circulating pump is completely protected and will not restart again. It needs to be powered on again.
- Locked rotor protection: If the circulation pump is blocked for 3 seconds, the controller will trigger the locked rotor protection. The indicator light will flash 5 times, and the circulation pump will stop working. After 10 seconds, the circulation pump will restart. If the fault is not eliminated, after the cumulative number of protection times reaches 5, the circulation pump will be completely protected and will not restart. It is necessary to power on again.
- Over temperature protection: When operating in a high temperature environment with high temperature water at rated voltage and frequency, and when the surface temperature of the IPM module exceeds 125 ± 10% ℃, the circulating pump stops and the indicator light flashes 7 times simultaneously. When the surface temperature of the IPM is below 100 ± 10% ℃, the circulation pump resumes normal operation.

4.11 ELECTRICAL CONNECTIONS

Connection to Mains Supply

The MBX boilers must be installed in premises having a system impedance of not more than 0.25 + j0.25Ω.
The MBX boilers comply with the technical requirements of EN 61000-3-3.
The MBX boilers must be installed in premises having a service capacity ≥100 A per phase.
Complete all the pipe-work before connecting the boiler to the electricity supply.
Any re-installation must be performed by qualified electricians.
Ensure that the mains voltage available coincides with that shown on the rating label.

WARNING: THE SUPPLY CABLE TO THE BOILER SHOULD BE OF SUFFICIENT SIZE TO CARRY THE LOAD CAPACITY REQUIRED. IT SHOULD BE WIRED THROUGH A LINKED ISOLATOR SWITCH WITH MINIMUM CONTACT GAPS OF 3mm IN EVERY POLE AND PROTECTED BY A SUITABLY RATED CIRCUIT BREAKER MCB/RCD Install the necessary electrical protections as indicated in the current regulations. In the event of these regulations not being complied with, the manufacturer will not be liable for any bodily injury or material damage that may occur.

WARNING: IT IS ESSENTIAL THAT THE BOILER IS PROPERLY EARTHED and the wiring tested to current IEE regulations.

Electrical Supply Sizing

The following table shows the specification for a boiler installed on three phase 3x400V+N~.

Rated output of boiler	4kW	5kW	6kW	7kW	8kW	9kW	10kW	11kW	12kW	13kW	15kW	18kW
Supply current	13.0A	13.0A	13.0A	13.0A	13.0A	13.0A	21.7A	21.7A	21.7A	21.7	21.7A	26.0A
RCD rating	16A	16A	16A	16A	16A	16A	25A	25A	25A	25A	25A	32A
Minimum cable size	4mm²	4mm²	4mm²	4mm²	4mm²	4mm²	6mm²	6mm²	6mm²	6mm²	6mm²	10mm²

The following table shows the specification for a boiler installed on single phase 230V~ supply.

Rated output of boiler	4kW	5kW	6kW	7kW	8kW	9kW	10kW	11kW	12kW	13kW	15kW	18kW
Supply current	17.4A	21.7A	26.1A	30.4A	34.8A	39.1A	43.5A	47.8A	52.2A	56.5A*	65.2A*	78.3A*
RCD rating	20A	25A	32A	32A	40A	50A	50A	50A	63A	63A*	80A*	80A*
Minimum cable size	4mm²	6mm²	10mm²	10mm²	10mm²	16mm²	16mm²	16mm²	16mm²	25mm²	25mm²	35mm²

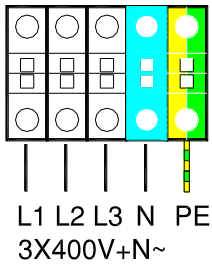
*** The standard configuration of the boiler only allows a maximum of 12kW when connected SINGLE-PHASE 230V~.**

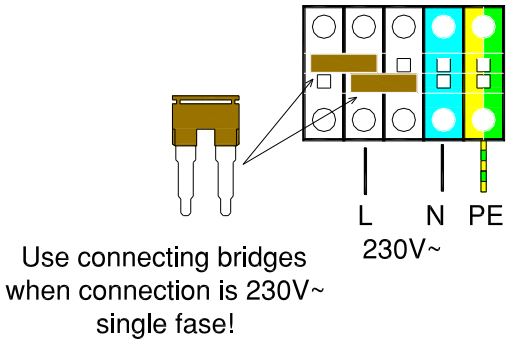
Connection to Boiler

WARNING: Touching live connections can cause serious personal injury.

Before establishing a mains connection switch off the power supply. Secure the power supply against being switched on again. Mains connection terminals remain live even if the on/off switch is turned off.

The boiler is delivered ready for operation on 3x400V three phase supply. For operation on 230V single phase the bridging connection supplied must be connected across the terminals of the connection block as shown.





*** The standard configuration of the boiler only allows a maximum of 12kW when connected SINGLE-PHASE 230V~.**

The terminal connection block is accessed after removing the boiler front panel . The supply cable should be safely routed to this point through the cable entry point on the right hand bottom of the boiler.

CAUTION: A mains voltage at the incorrect plug terminal can destroy the electronics.

Make sure the connectin cables are securely fastened to the plug terminals.

Wiring External Controls

It is recommended that the boiler is controlled by an external control such as a time clock or room thermostat or a combined programmable room thermostat such as the Elnur Gabarron model CTM20.

CAUTION: The switching connection of this control should be VOLT FREE and connected to the block connector indicated **'TA'**. The factory fitted link across these terminals must be removed.

The boiler's automatic power modulation feature is activated by the initial interruption of this switching link.

4.12 ROOM THERMOSTAT CONNECTION

A **'volt free'** room thermostat can be connected to regulate heating installation. To take advantage of the modulation feature of MAS Boiler, the use of a room thermostat is required.

Connect the room thermostat across the block connector marked 'TA' on the boiler. See "13 WIRING DIAGRAMS".

4.13 OUTDOOR NTC TEMPERATURE SENSOR CONNECTION

An outdoor temperature sensor must be fitted to the boiler to activate the auto heating regulation depending on the outdoors temperature.

Connect a NTC sensor (10kΩ - 25°C) across the terminals marked T.EXT on the PCB. See "13 WIRING DIAGRAMS".

5 COMISSIONING

5.1 INSTALLATION PARAMETERS

These parameters must be adjusted by the installer to match the requirements of the installation.

To access to installation parameters menu – with front display OFF, press and hold the and buttons together for at least 5 seconds.

To move forward or backward through the menu use the and buttons respectively.

To modify a parameter, press the button to display the current setting, modify the setting as required using the and buttons. To confirm the new setting, press the button once.

After setting the various parameters it is necessary to validate by pressing the button for 3 seconds. If none of the buttons are pressed for 30 seconds, the installation parameter menu will be automatically closed without validating/saving any changes.

P00 **Boiler type.** If the boiler is for central heating and Domestic Hot Water (DHW) this parameter is 1. If the boiler is only for central heating it will be 0.

P01 **Model.** 15 corresponds to model MBX15.

P03 **Boiler maximum output limit.**
Model MBX15 can be limited to 15 - 13 - 12 - 11 - 10 - 9 - 8 - 7 - 6 - 5 - 4 - 3 - 2 kW.

P04 **Underfloor heating.** If the boiler is underfloor heating ready this parameter will be 1 (an especial limiter is required), otherwise it will be 0.

P05 **Outdoor temperature probe.** An outdoor temperature probe (not provided) can be installed. In this case the parameter value will be 1.

P06 **Heating temperature differential.** The heating temperature differential can be selected from 2°C to 10°C. The default value is 2°C.

P07 **DHW temperature differential.** The DHW temperature differential can be selected from 2°C to 8°C. The default value is 4°C. It is recommended not to modify this value.

P08 **Modulation.** Possible values: 1 (modulation ON), 0 (modulation OFF).

Units. It is possible to change temperature units (°C Celsius, °F Fahrenheit). Default value: °C.

To access the parameters menu from **P11 – P15**, an outdoor temperature probe must be installed and the parameter in **P05** set to **1**

AUTO heating regulation. If a fan outdoor temperature probe is installed it is possible to activate the auto heating regulation by shifting this parameter value to 1.

TIMAX. Maximum water flow temperature in AUTO heating mode.

TIMIN. Minimum water flow temperature in AUTO heating mode.

TEMAX. Outdoor temperature from which the water flow temperature will be TIMIN.

TEMIN. Outdoor temperature below which the water flow temperature will be TIMAX.

TSCON. Time interval between DHW output adjustments. Factory pre-set.

5.2 LIMITING BOILER MAXIMUM OUTPUT

The boiler is supplied for operation on maximum heat output of 15kW. The output can be rated below this maximum to match the heat load required. The setting is realized modifying P03 parameter. See "5.1. INSTALLATIONS PARAMETERS".

WARNING: ON INSTALLATIONS WHERE THE INCOMING POWER SUPPLY IS NOT CAPABLE OF MAXIMUM LOAD THE BOILER CONTROL MUST BE RE-CONFIGURED TO LIMIT THE OUTPUT BEFORE SWITCHING ON.

As the output for Domestic Hot Water will also be limited to the same level it is recommended to adjust to the highest output possible to maintain the best hot water performance.

The chart below shows the maximum flow based on the power setting, and the inlet and outlet temperatures.

Power (kW)	T. outlet(°C)	T. inlet (°C)	Max Flow (l/min)
10	45	15	4,78
11	45	15	5,26
12	45	15	5,73
13	45	15	6,21
15	45	15	7,17

The boiler will not exceed this pre-set maximum but will still modulate in heating mode up to this level, adapting to demand and ensuring economic operation.

Correct configuration for the selected output can be checked on the boiler display panel following the procedure shown in "7.4 CHECKING RATED HEAT OUTPUT".

CAUTION: It is essential to confirm the power output with the use of a clamp meter

LIMITATION OF OUTPUT ON MODELS MATTIRA SYSTEM MBX15

Maximum output limited to:	MAXIMUM CURRENT **L1**	MAXIMUM CURRENT **L2**	MAXIMUM CURRENT **L3**
15kW	21.7A	21.7A	21.7A
13kW	21.7A	21.7A	13.0A
12kW	8.7A	21.7A	21.7A
11kW	21.7A	13.0A	13.0A
10kW	13.0A	8.7A	21.7A
9kW	13.0A	13.0A	13.0A
8kW	13.0A	8.7A	13.0A
7kW	8.7A	13.0A	8.7A
6kW	8.7A	8.7A	8.7A
5kW	8.7A	13.0A	-
4kW	-	8.7A	8.7A
3kW	13.0A	-	-
2kW	-	-	8.7A

CONNECTION THREE-PHASE 3x400V~+N

Maximum output limited to:	MAXIMUM CURRENT
15kW*	65.2A*
13kW*	56.5A*
12kW	52.2A
11kW	47.8A
10kW	43.5A
9kW	39.1A
8kW	34.8A
7kW	30.4A
6kW	26.1A
5kW	21.7A
4kW	17.4A
3kW	13.0A
2kW	8.7A

CONNECTION SINGLE PHASE 230V~

*** The standard configuration of the boiler only allows a maximum of 12kW when connected SINGLE-PHASE 230V~.**

5.3 HEATING SYSTEM FLUSHING

CAUTION: Flush the heating installation thoroughly prior to installation.

The heating system should be flushed which will remove any debris or contaminants detrimental to the operation and life of the boiler. Any cleanser or additives used should comply with current standards and the manufacturer's instructions carefully followed.

NOTE: IT IS IMPORTANT NOT TO USE THE BOILER PRESSURE RELIEF VALVE TO DRAIN OR FLUSH THE SYSTEM AS TRAPPED DEBRIS WILL CAUSE INCORRECT OPERATION. A PURPOSE PROVIDED DRAIN POINT SHOULD BE USED.

Use the drain point of the installation.

5.4 HEATING SYSTEM INITIAL FILLING

Ensure both flow and return isolation valves are open. Identify the boiler automatic air release valve at the top side of boiler and loosen the cap. Close any manual air vents fitted on the system.

Be careful not to splash any of the electrical components.

Fill slowly until the pressure gauge indicates between 1 and 1.5 bar.

Proceed to vent all the manual release valves until all air is purged from the system. It will be necessary to top-up through the filling during this operation, filling the installation until the pressure gauge indicates between 1 and 1.5 bar.

5.5 PUMP CHECKING & VENTING

Sometimes it is necessary to check that the pump is properly vented and spinning freely.

If excess air remains in the system or there is insufficient pressure or flow rate the boiler will fail to operate and display fault E5.

A LED indicator informs about the operating status of the pump. Check the 4.10 PUMP DUTY section in case of error.

5.6 FILLING DOMESTIC HOT WATER

Open the mains water inlet valve underneath the boiler. Turn on all the hot water system taps and thoroughly flush allowing water to flow until no air is present. This will automatically vent the integral hot water installation of any air.

5.7 MORE INSTALLATION DATA

It is possible to display more installation data by pressing  for a few seconds and then  or  .

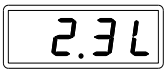
 Heating return temperature.

 Maximum output limitation in kW.

 Modulated output in kW.

 Outdoors temperature. (Only if the sensor is connected and P005 is activated).

It is possible to display additional info about the DHW side by pressing  for a few seconds. Press  or  to move through the different values:

 First value displayed is the DHW water flow in l/min. The data is displayed followed by a "L"

 Press  once to move to the actual DHW temperature outlet.

 By pressing again  , the frequency reading of the water flow sensor will be displayed.

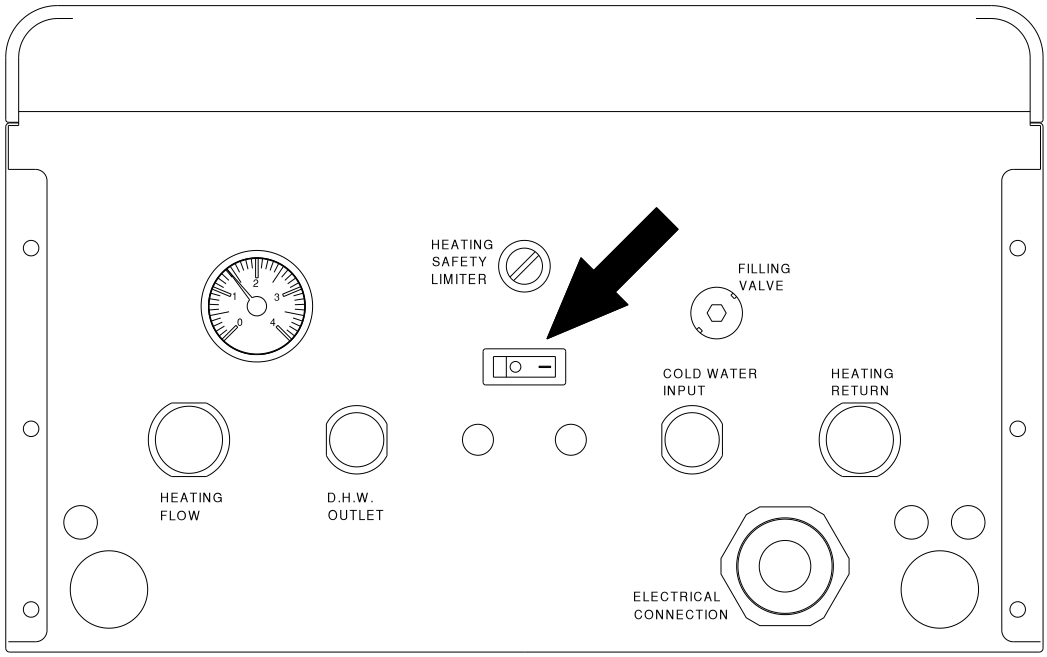
 By pressing again  , the actual power output will be displayed.

6 OPERATING THE BOILER

6.1 INITIAL SWITCHING ON

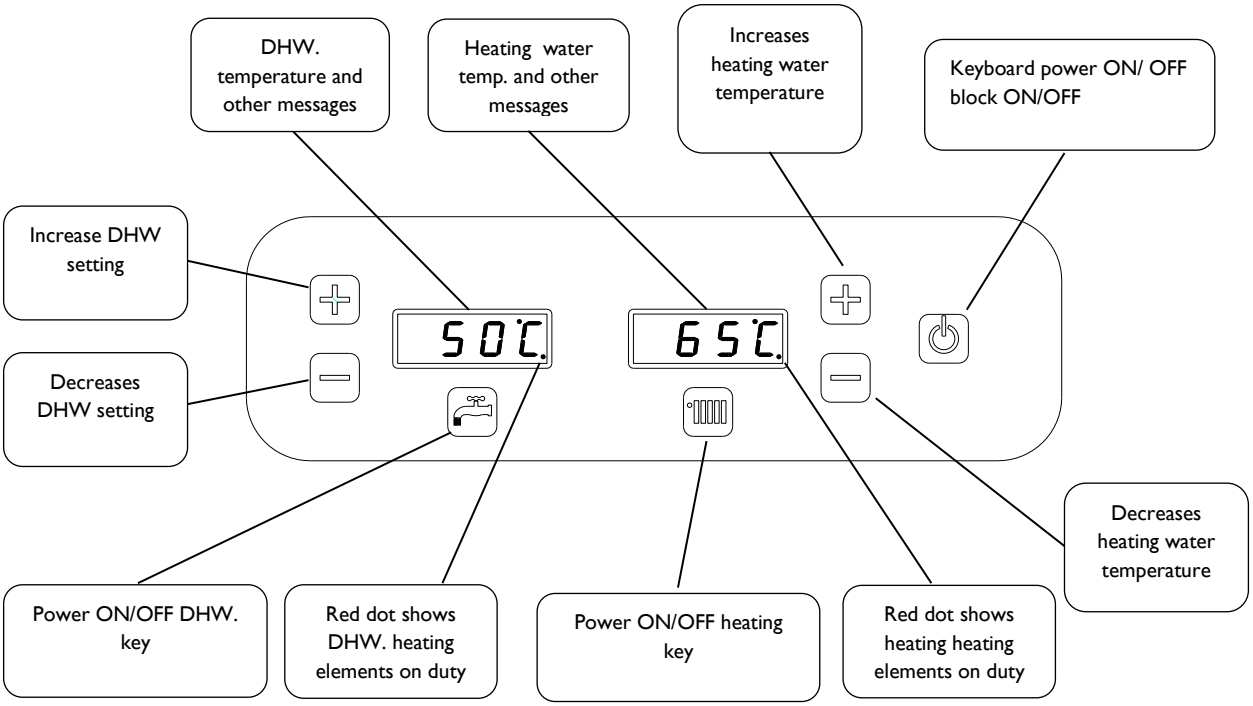
CAUTION: THE MAXIMUM HEAT OUTPUT MUST BE ADJUSTED BEFORE SWITCHING ON. THE BOILER SHOULD NEVER BE SWITCHED ON WITH THE HEATING SYSTEM TANK EMPTY. DAMAGE COULD OCCUR.

When the boiler is first connected it will perform a general self-check and if a fault is detected it will be indicated on the display.



Turn on the boiler with the on/off switch located at the back of the boiler as shown.

6.2 CONTROL PANEL DESCRIPTION

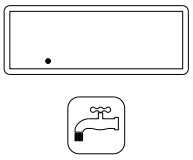


Push the button to start the boiler up. The same button will turn the boiler off when pushed again.

If the heating or DHW function are not powered on, the relevant screen will not display a value but just a red dot.

6.3 DOMESTIC HOT WATER OPERATION

To turn on the DHW function push the press the button. Pushing again will switch the function off and return the display to just a red dot.



When the DHW mode is selected, the display will show the DHW temperature setting. The boiler will always give priority to DHW production over central heating.

If heat is demanded by the DHW and the elements are energized a small red indicator is displayed to the right of the temperature display.

This light will go out when the DHW temperature is reached or the DHW demand is over.

The setting of the DHW temperature can be modified by pushing either the button or the button and using the same buttons to adjust the setting that flashes on the display. The modified setting will be stored automatically after a few seconds, or instantly by pushing the button.

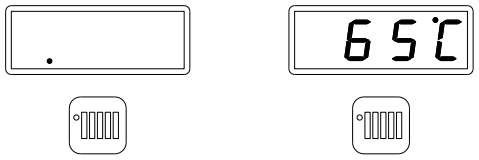
The DHW setting can be varied between 20 and 60°C.

The DHW has priority over the central heating operation and so the outputs are never added together.

6.4 CENTRAL HEATING OPERATION

First ensure that any external controls such as room thermostat or time clock are demanding heat.

To select the heating function, push the button. Pushing again will switch the function off and return the display to just a red dot.

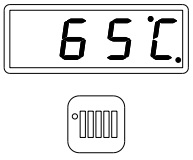


When the heating mode is selected the display will show the temperature of the heating water.

We can modify the setting of the temperature of the water by pushing either the button or the button and using the same buttons to adjust the value that flashes on the display. The modified setting will be stored after a few seconds or instantly by pushing the button.

The heating setting can be varied between 8°C and 80°C. The symbol H appears after the 80 value or before the 8 value. If this value is selected, the heating will function in anti-freeze mode.

If the setting is higher than the actual temperature of the heating water and the DHW is not connected, the heating will connect and a small red indicator of the consumption of heating resistances will light up.



6.5 ANTI-FREEZE MODE (Frost Protection)

It is possible to select an anti-freeze mode for frost protection during periods of inactivity. The power supply to the boiler must be maintained.
By attempting to set a central heating temperature below the 8°C value or above the 80°C value the symbol H will appear on the display. By selecting this value, the heating will only work in anti-freeze mode i.e. if the boiler temperature falls to 7°C the heating will activate automatically.

6.6 USER PARAMETERS.

The user can change a number of parameters to set some functions of the boiler to the needs of each customer.

To access the user parameters menu – with front display OFF, press and hold the  and  buttons for at least 5 secs.

To move forward or backward through the menu use the  and  buttons respectively.

To modify a parameter, press the  button and the current value will be displayed. It can be modified with the  and  buttons. Press the  button to validate.

After setting the various parameters it is necessary to validate by pressing the  button for 3 seconds. If none of the buttons are pressed for 30 seconds, the installation parameter menu will be automatically closed without validating/saving any changes.

Modulation. 1 (modulation ON)
0 (modulation OFF).

Units. °C (Celsius)
°F (Fahrenheit).

AUTO heating regulation. If a fan outdoor temperature probe is installed it is possible to activate the auto heating regulation by shifting this parameter value to 1.

TIMAX. Maximum water flow temperature in AUTO heating mode.

TIMIN. Minimum water flow temperature in AUTO heating mode.

TEMAX. Outdoor temperature from which the water flow temperature will be TIMIN.

TEMIN. Outdoor temperature below which the water flow temperature will be TIMAX.

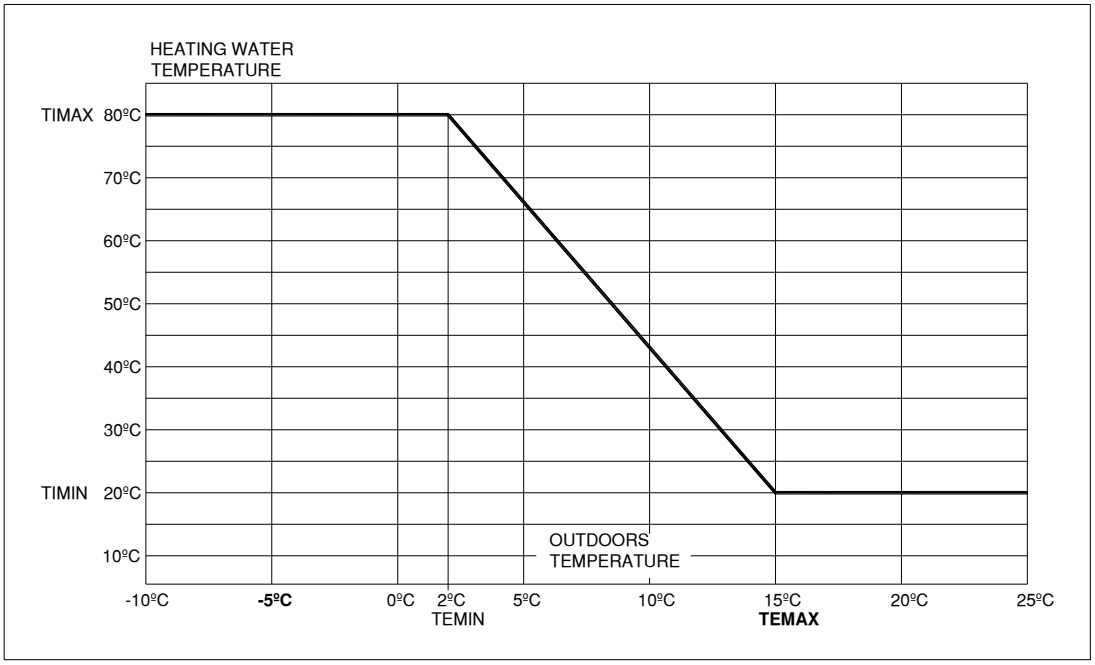
6.7 HEATING MODULATION FEATURE

The advanced control board on the boiler will automatically modulate the heating output to the demand required to save energy.
This function works by the boiler 'learning' and anticipating the time taken to reach the temperature level demanded by the external thermostatic control. The power output is automatically adjusted therefore reducing power consumption on warmer days or when another heat source is present.
An external 'volt free' control must be fitted across the terminals marked 'TA' on the boiler and the 'bridge' removed for this function to be activated.
This feature can be disabled using parameter P08. See "6.6 USER PARAMETERS".

6.8 AUTO HEATING REGULATION.

It is possible to regulate the temperature at which the boiler drives the water heating circuit depending on the outdoors temperature. This method of regulation provides maximum comfort as it anticipates changes in the thermal needs of the house. The room thermostat continues to regulate the temperature inside the house.

To activate this mode of heating, the installer will need to connect an external temperature sensor (not supplied) and activate the P05 and P11 parameters.



There are four parameters that define this function.

TIMAX. Maximum water flow temperature in AUTO heating mode.
In the above example TIMAX=80°C.

TIMIN. Minimum water flow temperature in AUTO heating mode.
In the above example TIMIN=20°C.

TEMAX. Outdoor temperature from which the water flow temperature will be TIMIN.
In the above example TEMAX=15°C.

TEMIN. Outdoor temperature below which the water flow temperature will be TIMAX.
In the above example TEMIN=2°C.

On the coldest days the water will be driven at higher temperatures and vice versa on the hottest days-less water will be driven at a lower temperature. In the example we see how, if the outdoors temperature is of 5°C the water flow temperature heating circuit would be about 66 °C.

You can temporarily override the automatically calculated set point. If, for example, you want to use the boiler to the maximum for a few hours even when automatic control mode, you would proceed as follows:

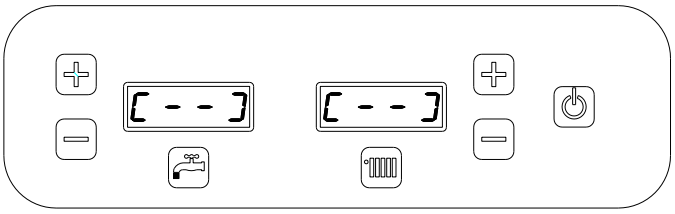
When pressing the ⊕ or ⊖ button, the display will alternatively show the calculated set point and the indication AUTO. By holding down either of these two keys for at least 5 seconds, the calculated set point will start flashing and the set point can now be modified with the same keys. Validate the selection by pressing the button. The time that the set point is going to be overridden is shown: 1H. It can be modified from 1 to 24h. Validate the selection by pressing the button. The override set point and the remaining time are displayed alternatively every 10 seconds.
At any time, it is possible to cancel this state just by turning off and restarting the boiler.

6.9 BLOCKING THE CONTROLS

It is possible to lock the buttons of the control panel to prevent any adjustment.

By keeping the button pressed down for a few seconds, the control panel will be locked.

The control buttons of the boiler will be locked, and no button will respond when pressed. Internally all the settings remain the same and the boiler will function normally.



To unlock the buttons, press the same button down for a few seconds until the above displayed symbol goes off. If the boiler is disconnected from the mains or there is a failure in the house's electricity supply, the buttons will also be unlocked.

6.10 PUMP ANTI-SEIZE FUNCTION

The advanced boiler control will automatically energize the pump for 10 seconds each month to protect it from seizing during long periods of inactivity. The power supply must be maintained for this function to operate.

7 TROUBLESHOOTING

7.1 POSSIBLE FAULTS & SOLUTIONS

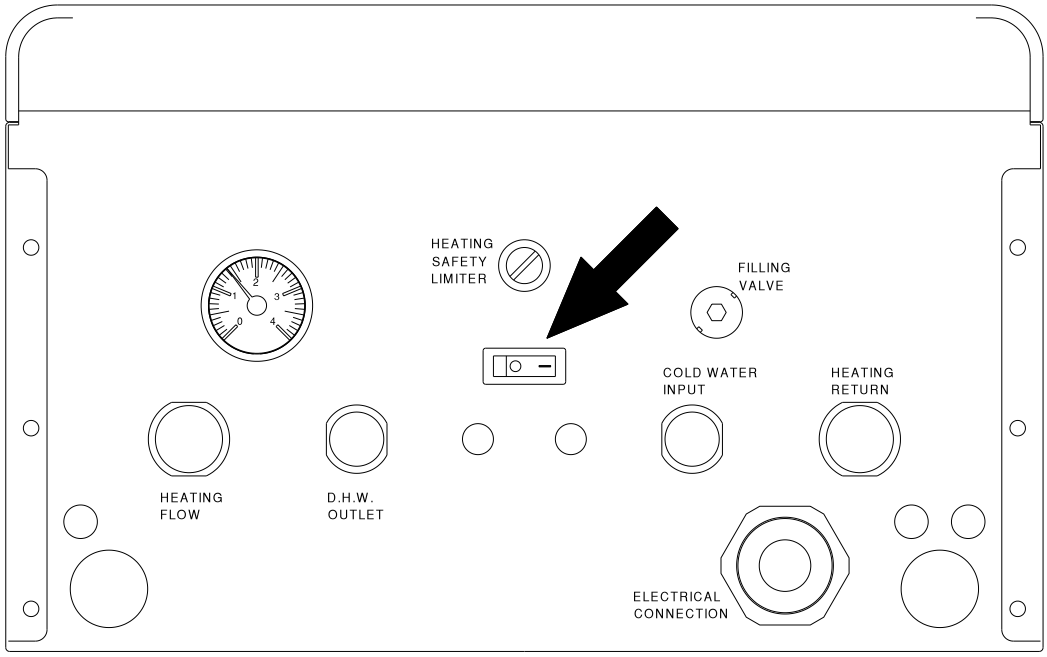
Problem	Possible cause	Solution
Boiler will not start	No power to boiler.	Check incoming power supply.
	No power.	Check boiler control switch is on. (See Section 6.1.)
	Overheat. Thermal cut-out tripped.	Locate switch and reset. (See Section 7.2)
Fault E1 displayed Heating flow temperature sensor	Heating water out temperature probe defective.	Contact Technical Service
Fault E2 displayed Heating return temperature sensor	Heating water return temperature probe defective.	Contact Technical Service
Fault E5 displayed Heating system water pressure switch	Low heating system pressure.	Check for leaks. Refill heating system to 1.5 bar.
	Air in system.	Purge thoroughly. Check automatic air valve open.
Fault E6 displayed DHW temperature sensor	Defective DHW tank temperature sensor.	Check connections. Replace sensor if necessary.
Fault E8 displayed Outdoor temperature sensor	Defective outdoor temperature sensor or not present.	This sensor is optional. Check connections. Replace sensor if necessary.
Fault E9 displayed Temperature Protection	Faulty Auto air vent, presence of air in the installation, electronic fault.	Contact Technical Service
Heating system water discharging from 3 bar safety valve	Excessive heating system pressure.	Check filling valve is not open Check expansion vessel is charged to correct level with air. Check system expansion volume.
The buttons do not respond	Control panel blocked	See Section 6.9 BLOCKING THE CONTROLS
Low heating temperature	Settings too low.	Check temperature & output selected.
	Failure of heating elements	Check and replace.
	Heat requirements miscalculated.	Re-calculate & configure.

If the suggested action fails to resolve a problem, please contact ELNUR technical service for further advice.

7.2 OVERHEAT LOCK-OUT & RE-SETTING

Central heating overheat.

If the boiler detects an overheat condition of 100°C in the central heating circuit a safety thermal limit switch will operate and switch the boiler off disabling all functions including DHW production.
The cause of the overheat should be investigated.
The safety limit switch is underside of the boiler and will require re-setting manually by following the procedure shown:



Unscrew & remove the black cap and push the small pin behind it until you hear a click. The limiter will not re-set until the temperature in the heating header drops below 100°C.

7.3 HEATING SYSTEM PRESSURE SWITCH – E5 ERROR

If the error E5 appears on the display, the pressure switch has detected insufficient water pressure in the heating circuit and heat production is disabled to protect the boiler from overheating.

The possible causes for this condition are:

- Insufficient water pressure in the heating system requiring re-filling to 1.5bar
- Air in system requiring purging thoroughly. Check automatic air valve open.

7.4 CHECKING RATED HEAT OUTPUT

It is possible to check the actual heat power output configuration that is set on the boiler and also the modulated operating output at that moment.
Press the button for three seconds.

The heating display will show Sr followed by the temperature value of the return probe of the heating circuit.

On pushing button, the display will show Pn followed by the value of the limited maximum output according to the tables (see 5.1).

On pushing button again, the display will show PA followed by the actual modulated output power at that moment.

8 MAIN COMPONENTS

Expansion vessel 6L	ref. 60091518	DHW. resistance joint	ref. 60105671
Insulated heating header tank	ref. 60101701	Heating resistance joint	ref. 60091090
Circulation pump	ref. 60106045	0-4 bar pressure gauge	ref. 60100820
Main electronic PCB MBX	ref. 60105586	100°C thermal limiter	ref. 60101860
Power PCB MBX with support	ref. 60105595	3 bar central heating relief valve	ref. 60106085
Heating Temperature Sensors	ref. 60106100	Keyboard MBX	ref. 60105555
DHW Temperature Sensor	ref. 60106090	3 way valve	ref. 60106065
15 kW heating resistance	ref. 60100751	Pressure switch	ref. 60106095

9 MAINTENANCE & CARE

Elnur Gabarron electric boilers do not require any special maintenance for a prolonged and trouble-free life however the following points should be observed.

- Check and maintain the heating system pressure between 1 & 1.5 bar when cold. Frequent re-filling of the system could cause scaling and corrosion and should be avoided. Regular pressure loss could indicate a leak and should be investigated promptly.

 CAUTION: Under no circumstances should the boiler be switched on when the system is dry.

 CAUTION: Never start the boiler when the DHW tank is empty; to fill it for the first time open a hot water tap and wait until water comes out of it.

- Keep the ventilation openings on the boiler clear to ensure correct operation and protect from overheating. Do not place or store objects on the boiler.

- Protect against freezing by ensuring power is maintained to the boiler at all times. In dwellings frequently un-occupied or at risk of freezing an appropriate anti-freeze can be added to the heating system at a concentration of not more than 30% by volume. Otherwise it is recommended to isolate the power and completely drain the heating and hot water systems.

- The outer case can be cleaned with a damp cloth having first isolated the boiler from the mains. Do not use solvents or abrasive cleaners.

- Regular cleaning and maintenance of the water filter are essential to ensure the proper functioning of your electric boiler. A clogged filter can decrease equipment efficiency, increase energy consumption, and negatively impact the boiler's performance. Inspect and clean the filter at least once a year. Failure to perform this task may result in equipment damage and void the warranty.

10 ENVIRONMENTAL INFORMATION

Elnur Gabarron Mattira boilers are manufactured within a certified environmental management system. From the design stage, all the production phases are performed taking into account the most rigorous environmental requirements. For example, the selection of materials involves guaranteeing their biodegradability, re-use and recycling.

When this boiler's long, useful life is over; it must be handed in to an electrical equipment collection point for proper recycling. By ensuring that this product is correctly disposed of, you will help to avoid any possible negative effects on the environment and public health that could occur if this product is not properly handled. To obtain more detailed information on the recycling of this product, contact your local authority, your waste disposal service or the shop where you purchased the product. These regulations only apply in EU member countries.

The symbol on the product or in its packaging indicates that this product may not be treated as household waste. Instead it shall be handed over to the applicable collection point for the recycling of electrical and electronic equipment. By ensuring this product is disposed of correctly, you will help prevent potential negative consequences for the environment and human health, which could otherwise be caused by inappropriate waste handling of this product. For more detailed information about recycling of this product, please contact your local city office, your household waste disposal service or the shop where you purchased the product. These instructions are only valid in the EU member states.

11 TECHNICAL DATA

			MBX15
Frequency		Hz	50
3x400V+N~ Connection			◆
Output limited to **15kW**; Maximum intensity		A	21.7
Output limited to **13kW**; Maximum intensity		A	21.7
Output limited to **12kW**; Maximum intensity		A	21.7
Output limited to **11kW**; Maximum intensity		A	21.7
Output limited to **10kW**; Maximum intensity		A	21.7
Output limited to **9kW**; Maximum intensity		A	13.0
Output limited to **8kW**; Maximum intensity		A	13.0
Output limited to **7kW**; Maximum intensity		A	13.0
Output limited to **6kW**; Maximum intensity		A	13.0
Output limited to **5kW**; Maximum intensity		A	13.0
Output limited to **4kW**; Maximum intensity		A	13.0
Output limited to **3kW**; Maximum intensity		A	13.0
230V~ Single - phase Connection			◆[1]
Nominal maximum intensity **15kW**		A	65.2[1]
Maximum converted intensity at **13kW**		A	56.5[1]
Maximum converted intensity at **12kW**		A	52.2
Maximum converted intensity at **11kW**		A	47.8
Maximum converted intensity at **10kW**		A	43.5
Maximum converted intensity at **9kW**		A	39.1
Maximum converted intensity at **8kW**		A	34.8
Maximum converted intensity at **7kW**		A	30.4
Maximum converted intensity at **6kW**		A	26.1
Maximum converted intensity at **5kW**		A	21.7
Maximum converted intensity at **4kW**		A	17.4
Maximum converted intensity at **3kW**		A	13.0
[2]Maximum DHW flow with **15kW**	**Δt=30°C**	l/min	7.17[2]
[2]Maximum DHW flow with **13kW**	**Δt=30°C**	l/min	6.21[2]
[2]Maximum DHW flow with **12kW**	**Δt=30°C**	l/min	5.73[2]
[2]Maximum DHW flow with **11kW**	**Δt=30°C**	l/min	5.26[2]
[2]Maximum DHW flow with **10kW**	**Δt=30°C**	l/min	4.78[2]
Weight		kg	32
Insulated steel heater header		No CFC	◆
Stainless steel plated resistance elements INCOLOY800		Heating	◆
6 litre expansion vessel			◆
Electronic regulation of heater modulation			◆
Electronic regulation DHW			◆
Digital display			◆
0-4 bar pressure gauge			◆
Accelerator pump			◆
Automatic purge			◆
TRIACS silent power switches			◆
Pressure switch			◆
100°C heating temperature limiter			◆
3 bar central heating relief valve			◆
Heating circuit entry valve and filling valve			◆
Ambient thermostat intake			◆
Sound power level (LWA)		dB	36

◆ included

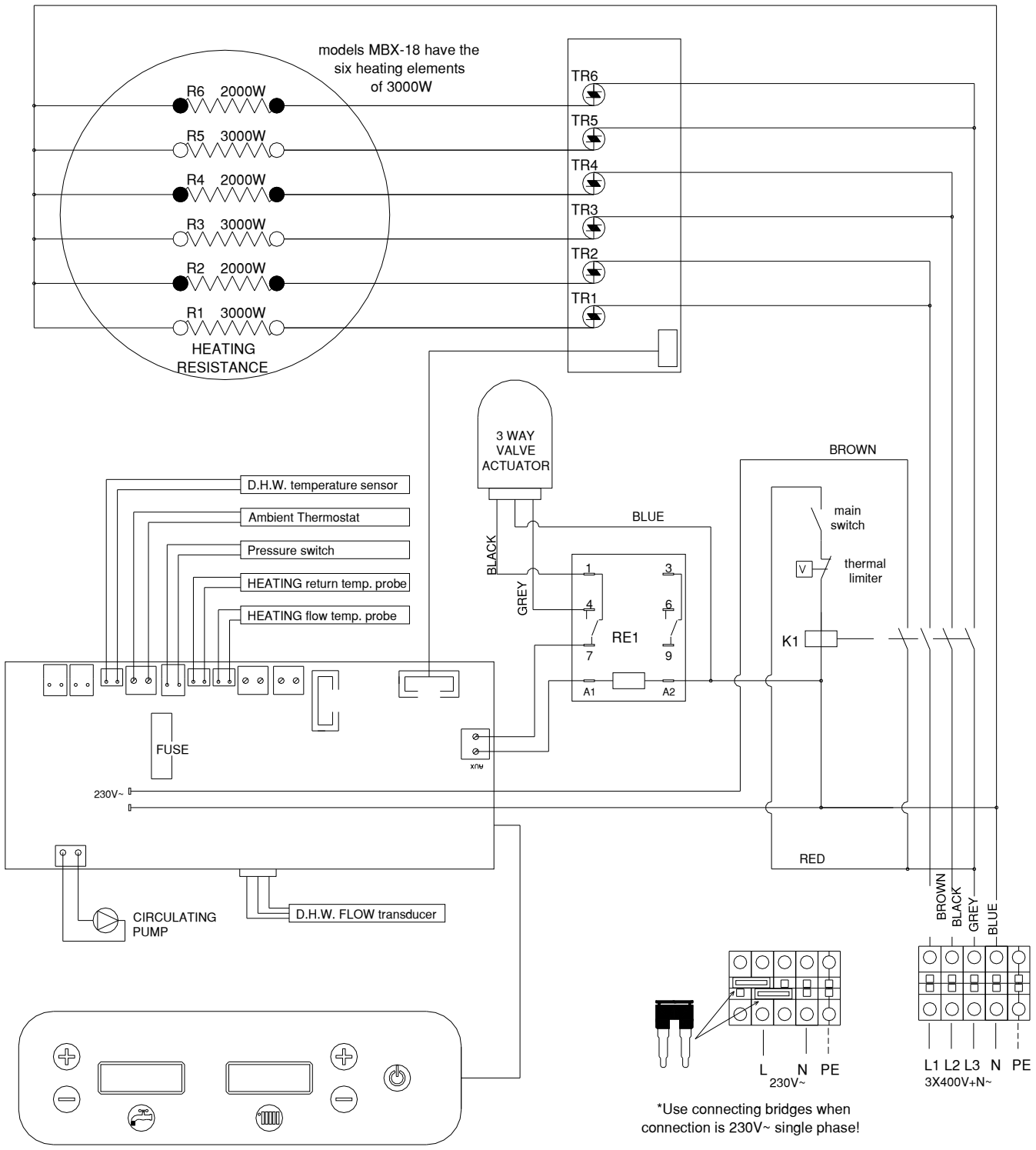
[1] Using connecting bridge included. The standard configuration of the boiler only allows a maximum of 12kW when connected SINGLE-PHASE 230V~.

[2] Maximum flow calculated with a 30°C temperature increase between inlet and outlet. Contact Elnur for additional data.

Model(s): **ELNUR GABARRON MATTIRA MBX15**
Condensing boiler: NO
Low temperature boiler: NO
B11 Boiler: NO
Co-Generation space heater: NO
Combination heater: YES

Information	**Symbol**	**Value**	**Unit**
		MBX15	
Space heating:			
Rated heat output	Prated	15	kW
Power output	P4	14,812	kW
Seasonal space heating energy efficiency	ηs	36,4	%
Useful efficiency at rated heat output and high-temperature regime	η4	39,5	%
Auxiliary electricity consumption in standby mode	Psb	0,003	kW
Standby heat loss	Pstby	0,07	kW
Sound power level, indoors	LWA	36	dB
Seasonal space heating energy efficiency class		D	
Contact details:	ELNUR, S.A. Travesía de Villa Esther, 11 28110 – Algete (Madrid) Spain		

13 WIRING DIAGRAMS



*The standard configuration of the boiler only allows a maximum of 12kW when connected SINGLE-PHASE 230V~.

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