FEDERICA BUGATTI

# INSTRUCTION MANUAL

Heating systems • Federica Bugatti

## series VARME

**99 COND B** **120 COND B**

Safe. Reliable. Warm.

FEDERICA BUGATTI LLC.
MANUFACTURER: VARMECOM INC., MADE IN TURKEY

FEDERICABUGATTI.COM

## *Congratulations On Your Successful Choice!*

*You have purchased a high-efficiency boiler with an electronic ignition, a deep modulation, an electronic power control and a sealed combustion chamber.*
*Compared to traditional boilers, this condensing boiler allows energy to be recovered by condensing the water vapour, which is contained in the flue gases, thus for the same amount of heat produced, the appliance consumes less gas, and, in addition, flue gases of the condensing boiler contain fewer substances, making it more environmentally friendly.*
*The materials which the boiler is made from and its regulation systems ensure safety, a high level of comfort and energy saving, allowing you to appreciate all the benefits of autonomous heating.*

## *USER GUIDE*

***DANGER: The instructions marked with this symbol must be strictly observed to avoid physical injury (wounds, bruises, etc.).***

***DANGER: The instructions marked with this symbol must be strictly observed to avoid accidents due to electric shock.***

***DANGER: The instructions marked with this symbol must be strictly observed to avoid the risk of fire or explosion.***

***DANGER: The instructions marked with this symbol must be strictly observed to avoid thermal injuries (burns).***

***DANGER: Instructions marked with this symbol must be strictly observed to avoid any malfunction and/or damage to equipment or other items.***

***ATTENTION: The instructions marked with this symbol are important information that must be read carefully.***

### *IMPORTANT APPOINTMENTS*

***Read this manual carefully to use the boiler rationally*** *and safely. Keep the manual carefully as it may be needed again in the future. If the boiler is handed over to another user, the present manual must be delivered with the appliance.*

***The commissioning*** *must be carried out by Federica Bugatti's authorized service centres or by a fully qualified technician to service and repair gas appliances, certified by Federica Bugatti Ltd; the warranty period starts from the date of the first start-up.*

***The manufacturer*** *is not responsible for any misinterpretation of this manual due to incorrect translation, failure to follow the instructions contained in this manual, or for the consequences of any action not specified in this manual.*

***Storage conditions and shelf life of the product:***
*The product should be stored in the manufacturer's packaging, indoors with natural air circulation, under the standard conditions (no shock and vibration, temperature difference between -10 °C and +37 °C, air humidity up to 80%, non-hazardous and dust-free environments). If the circumstances are fulfilled, the shelf life of the appliance is up to 2 years. Subject to the rules of transportation, storage, installation and operation, the product has a service life of 10 years.*

***Disposal of the product***
*Disposal of the equipment must be carried out by authorized organizations for handling and recycling of household appliances in accordance with applicable regulations. To clarify the procedure for disposing of your old equipment, please contact your local public utility service or district administration office.*



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## *DURING INSTALLATION*

***Installation*** *must be carried out by a qualified technician, who is obliged to comply with applicable national and local laws and regulations.*

***The boiler*** *allows the heating medium to be heated to a temperature below boiling point. The boiler must be connected to a heating and/or hot water system compatible with its performance and capacity. The boiler must be supplied with methane gas (G20). The condensate drain must be connected to the room sanitation, which is designed for condensate drainage and be verified (standard UNI 11071/08). The boiler is intended to be used for the purposes strictly prescribed and, in addition, it is necessary to:*

- *Use only water as a heating medium;*
- *Protect the boiler from atmospheric influences;*
- *Keep the children and/or persons, who are unfamiliar with the usage, away from the boiler;*
- *Avoid misuse;*
- *Do not perform any actions to the sealed parts of the boiler;*
- *Avoid contact with the hot parts of the boiler during its operation.*

## *DURING OPERATION*

***Due to the danger, it is strictly forbidden to*** *cover, even partially, the air intake of the exhaust ventilation in the room where the boiler is installed* ***(UNI 11071/08).***

***Repairs must*** *only be carried out by Federica Bugatti authorized service centres using original spare parts (see warranty certificate); in case of malfunction, turn off the boiler (see instructions).*

***If an odour of gas is present:***
- *do not use electrical switches, telephones, or other objects that could cause sparks.*
- *open doors and windows immediately, allowing the air to ventilate the room.*
- *switch off the gas main.*
- *call a qualified technician.*

***Before switching on the boiler,*** *it is recommended to call a qualified technician to check the gas supply system according to the following points:*
- *tightness;*
- *ensuring the inflow of the gas volume, which is required to feed the boiler;*
- *availability of all the necessary safety and control devices stipulated by applicable standards;*
- *whether the pressure relief valve is connected to the drainage funnel. The manufacturer is not liable for any damage caused by the water leakage as a result of the incorrect connection of the pressure relief valve to the drain system.*
- *the connection of the drain siphon with a drain funnel complying with the standards "UNI 11071/08" must be made in such a way that the condensate does not freeze and is properly drained off.*

***Do not touch*** *the boiler with wet parts of your body.*

***When maintaining or repairing objects*** *in the vicinity of chimneys and/or flue gas bleeding devices or fittings, the boiler must be switched off, after the work has been completed, have an authorized specialist check the boiler for the correct operation.*

***The manufacturer reserves the right to make changes to the related manual at any time and without prior notice in order to continuously improve the product. Herein the document is for informational purposes and cannot be considered as a contract in relation to third parties.***

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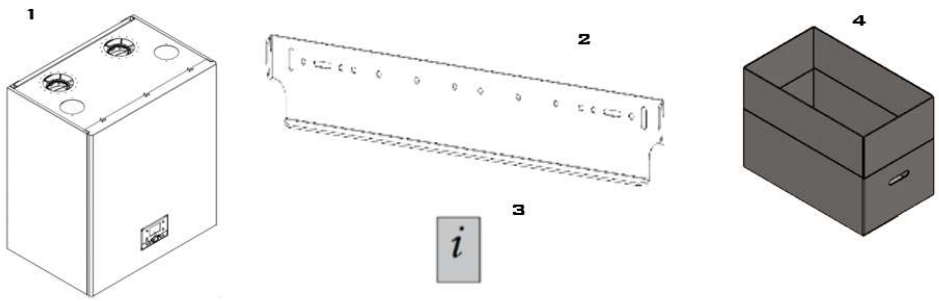
***Scope of delivery***




*1 – gas boiler*
*2 – hinge bar*
*3 – instruction manual set*
*4 – box*

***Introduction***

***The instruction manual is an integral and supplementary part of the product and is supplied with the boiler.***

*Read the instructions manual carefully for all important information for the safe installation, operation and maintenance of the appliance.*

*• The dangers of carbon monoxide (CO): CO is an odourless and colourless gas. When installing a boiler with room air intake (type B2), constant ventilation of the room is extremely important. Ventilation must be carried out in accordance with the applicable standards and regulations. Covering or neutralizing ventilation can lead to serious health consequences such as carbon monoxide poisoning, irreversible organ damage and even death. In addition, a mixture of CO and O2 can be explosive.*
*• A qualified technician is a person who has specialized technical training and experience in the installation of domestic heating appliances and acts in accordance with the norms and regulations.*
*• The user may only perform the operations listed in the "User Manual" section.*
*• The manufacturer accepts no responsibility for any damage caused by incorrect installation, improper use, and non-compliance with the applicable regulations and instructions.*
*• **ATTENTION!** A gas boiler is used for heating the water to a temperature below boiling point at atmospheric pressure and must be connected to a heating and/or hot water supply system according to its characteristics and capacity.*
*• Packaging objects (cardboard, nails, plastic bags, etc.) should not be left within reach of children, as it may be dangerous.*
*• Before any cleaning or maintenance of the boiler, disconnect it from the mains and switch off the gas main.*
*• In the event of a malfunction and/or improper appliance operation, disconnect it immediately and do not attempt to repair it by yourself.*
*• The boiler must be maintained and repaired only by a qualified technician using the original spare parts. This requirement must be strictly observed.*
*• If the appliance needs to be dismantled, remove any remaining dangerous objects and eliminate them by the regulations in force.*
*• When relocating the appliance (e.g. moving), make sure that the operating instructions are maintained and handed over to the future owner and/or installer.*
*• The appliance should only be used for strictly recommended purposes. Any other use is considered dangerous and improper.*
*• It is strictly forbidden to use the equipment for other than its intended purpose.*
*• The appliance must be mounted exclusively on the wall.*
*• This instruction manual is an important part of the product and is supplied with it.*
*• Read the instructions carefully, applying all information for the safe installation, usage, and maintenance of the appliance.*
*• Installation must be carried out by a qualified technician in accordance with the applicable regulations and manufacturer's instructions.*

## *DESCRIPTION OF THE BOILER*

### *1. Description of the boiler*

### *1.1 General appearance*

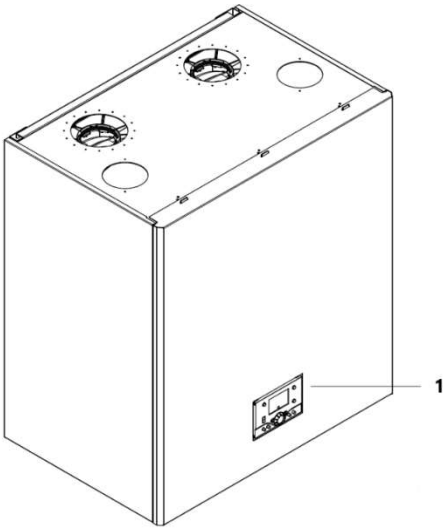



***Figure 1.1***

***1*** *– Control panel*

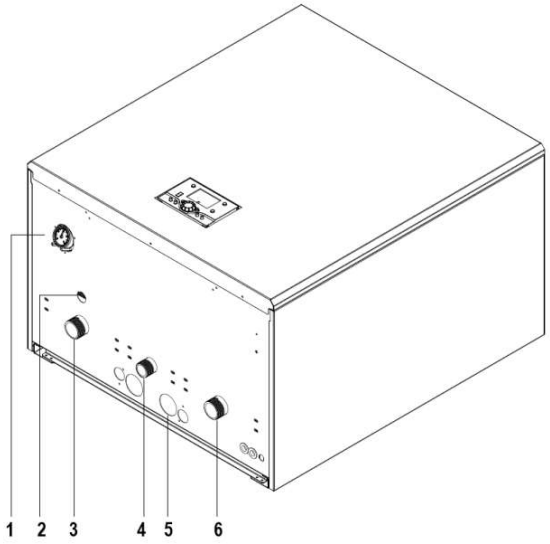



***Figure 1.2***

***1 –*** *Pressure gauge*

***2 –*** *Pressure relief valve*

***3 –*** *Heating outlet (1 1/4")*

***4 –*** *Gas valve (1")*

***5 –*** *Condensate drain siphon*

***6 –*** *Heating return (1 1/4")*

### *1.2 Shut-off valves*

***Safety valves must be installed on the gas inlet.***

***It is necessary to install safety valves on the inlet and outlet of the boiler's threaded connections. A dirt filter must be plugged into the return line of the heating system in order to avoid foreign particles entering the boiler, which can cause malfunction of the boiler.***

***The drawings in this manual illustrate only one of several possible mounting solutions for installing valves, pipes, and connections.***



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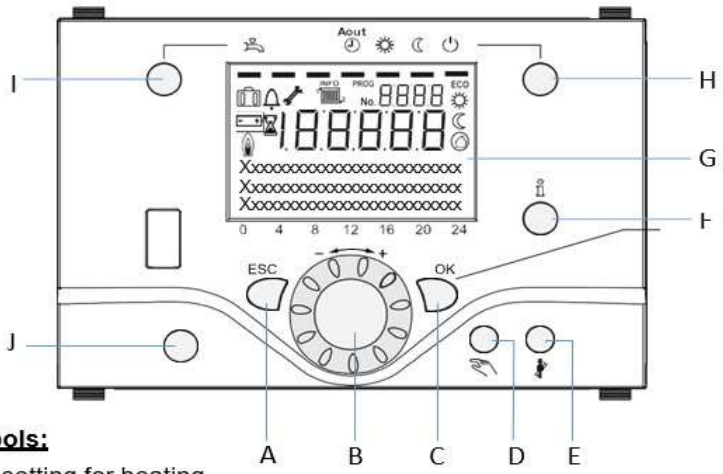
### *1.3 Control panel*




**Display symbols:**

- Comfort setting for heating
- Reduced heating setting for heating
- Frost protection setting for heating
- In progress – Please wait
- Change the battery
- Burner on
- INFO Info menü activated
- PROG Programming menu activated
- ECO ECO funtion activated
- Holiday function activated
- Heating referance
- Maintenance mode
- Error

***A) Cancel Button – ESC***
*Used to cancel the settings and return to the upper menu section.*

***B) Navigation and Adjustment Knob***
*Changes comfort temperature setting. Additionally, it is also used for;*
*increase/decrease temperatures,*
*choose and select sub-menus,*
*change the settings.*

***C) Confirm Button***
*Used for applying selected values or settings. In the parameters section, this button is used for the further menu options.*

***D) Manual Control Button***
*Used for running to boiler manually. During the manual operation all pumps will be running, but mixing valves will not be operated. The burner temperature will be held at the adjusted temperature during the commissioning. Pushing the button for more than 3 seconds will operate the air relief function. During this function burner will be held into standby mode, pumps will be energised periodically, and mixing valves will run into the middle position. This function will be turned off automatically after the cycle.*

***E) Flue Function***
*Used for flue gas emission measuring. During this function boiler will be operated according to the maximum adjusted temperature until it reaches the exact value. Then this function will be turned off automatically.*

***F) Info Button***
*Used for displaying information about the boiler such as temperatures, operating modes, error codes etc.*

***G) Display***
*The display backlighting automatically turns off without operation.*
*Push any button to turn it on again.*
*The screen displays information/settings below:*
*- Operation modes*
*- Temperatures*
*- Parameters*
*- Faults/errors*

***H) Heating Mode Button***
*Used for choosing and selecting 4 different heating modes.*

***I) DHW Mode Button***
*Used for to turn on or off the DHW mode.*

***J) Reset Button***
*Used for resetting any fault and error which causes to stop the boile*



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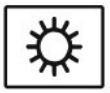
**Auto** : Boiler will be operated according to adjusted time program.



**Comfort Temperature** : Boiler will be operated according to adjusted comfort temperature permanently.

**Reduced Temperature** : Boiler will be operated according to adjusted reduced temperature permanently.

**Standby** : Heating will be turned off, but frost protection still activated unless the power supply is disconnected.

**DHW MODE SEELECTION :**

When the corresponding button is used, the boiler is switched on to operate synchronously with the units that produce hot water (DHW tank, plate heat exchanger, etc.). This function can be switched off or on.
Pressing the button once will be activate the boiler to heat the DHW tank. Pressing it again disables DHW tank heating. Pressing the button for 3 seconds activates the Quick Water Heating Mode for faster hot water production.

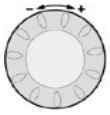
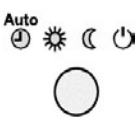
## *INSTRUCTION MANUAL*

## *2. INSTRUCTION MANUAL*

### *2.1 Warnings*

***Even if the boiler is only used for domestic hot water, make sure that the heating system is properly filled with heating medium. Otherwise, it must be filled appropriately according to the section "Filling and adjusting the pressure in the heating system" on page 11.*** *All boilers are equipped with a frost protection system, which is activated when the boiler temperature drops below 5 °C, therefore* ***the boiler must not be switched off.*** *If the boiler is not used in cold seasons and it has a chance to be frozen, appropriate instructions must be fulfilled.*

### *2.2 Opeating Mode Adjustments*

| Button | Action | Procedure | Display / Function |
|---|---|---|---|
|  | Set room temperature | **Zone 1 and Zone 2**<br>Actuate rotary knob left/right<br>Turn the rotary knob Confirm with<br>OK buttonor wait 5 sec.<br>or press | Comfort setpoint with blinking temperature<br>Blinking temperature in 0,5 °C steps from 10 to 30 °C<br>**Comfort setpoint saved**<br>**Comfort setpoint cancelled**<br>- after 3 sec. The main menu appears |
|  | Switch on /off DHW operation | Press button | **DHW mode on / off**<br>(see indication below DHW symbol)<br>- On: DHW mode by time program<br>- Off: no DHW operation<br>Safety functions activated |
|  | Change the heating operation mode | Factory setting<br><br>Press button 1x<br><br>Press button 1x again<br><br>Press button 1x again | **Automatic mode on, with:**<br>- Heating by time program<br>- Temperature setpoint by heating program<br>- Safety functions activated<br>- Summer/Winter automatic switching activated<br>- ECO-functions activated<br>(see indication below operation symbol)<br>**Continuous COMFORT heating on, with:**<br>- Heating without time program by comfort setpoint<br>- Safety functions activated<br>**Continuous REDUCED heating on, with:**<br>- Heating without time program by reduced setpoint<br>- Safety functions activated<br>- Summer/Winter automatic switching activated<br>- ECO-functions activated<br>**Safety mode on, with:**<br>- Heating off<br>- Temperature by frost protection<br>Safety functions activated |



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| | | | |
|---|---|---|---|
| | Controller Stop Mode | Press button > 3 sec.<br>Press button > 3 sec. again | **304: Controller Stop mode** **insert setpoint**<br>after 3 sec. The main menu appears |
|  | Info display | Press button 1x<br>Press button 1x<br>again Press the button 1x again<br>……<br><br><br><br>Press button 1x | **INFO Segment displayed**<br>- Status Boiler - room temperature<br>- room temperature minimum<br>- Status DHW - room temperature maximum<br>- Status zone 1 - outside temperature<br>- Status zone 2 - outside temperature minimum<br>Time / Date - DHW temperature 1<br>- Error indication - Boiler temperature<br>- Maintenance indication - Flow temperature<br><br>- (Info display depends on configuration)<br>Back to the main menu; INFO Segment disappears |
|  | Operation by manual setpoint<br><br>Change factory setting boiler temperature | | |
| | Deaeration | Press button > 3 sec.<br>Press button > 3 sec. again | 312:<br>Deaeration on<br>Deaeration off |
|  | Activate chimney sweeper mode | Press button (< 3 sec.)<br>Press the button again (< 3 sec.) | Chimney sweeper mode on<br>Chimney sweeper mode off |
|  | Temporary reduction of the reduced temperature on QAA75 | Press button<br>Press button again | Heating by reduced setpoint<br>Heating by comfort setpoint |
| **RESET** | Reset button | Press the button (< 3 sec.)<br>Press the button again > 3 sec. | The boiler manually blocked, no release<br>The boiler released, alarm symbol disappears |



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## *3. Useful recommendations*

### *3.1 Pre-operations to be performed before comissioning the boiler*

*• Make sure that the boiler is connected to the gas main;*
*• Make sure that the boiler is energized;*
*• With the help of the pressure gauge, make sure that the heating system is pressurized and corresponds to the operating mode. The maximum permissible pressure in the heating system is 6 bar. The boiler stops working below 0,5 bar pressure. In such a circumstance, switch on the replenishing tap until the required pressure is obtained.*

### *3.2 Filling and adjusting the pressure in the heating system*

*Completing all of the hydraulic connections of the system, to filling operation can proceed. The operation must be done by following the instructions below:*
*• If it is necessary to fill the system with the heating medium, after operating, tightly switch off the connection or valve, which is used for filling up the heating medium to the heating system to normalize the pressure in the system;*
*• Gradually switch on the replenishing tap;*
*• Check whether the installed automatic air bleeding valves are operating appropriately;*
*• Bleed the air from all radiators through the air vents*;
*• Make sure that the pressure indication arrow on the pressure gauge is within the operating range of the heating system;*
*• Switch off the replenishing tap and bleed the air in all radiators once again;*
*• Repeat the process to bleed and pressurize the heating system until all of the air has been removed;*
*• If the heating system is filled up and air in it is vented, the process can be considered done. After some time, it may be necessary to remove the remaining air again because it may still exist in the system.*

### *3.3 Features of the heating circuit*

***Ensure that the heating system pipes are not used as earthing connections***.
*Efficiency, durability and safety of the boiler straightforwardly depends on the quality and filtration of the used water. Proper water purification improves the protection of systems against corrosion (and therefore against lockout, noise, leaks, etc.) and against scale, which largely reduces the efficiency of heat exchanger (it is estimated that 1 mm of limescale reduces the efficiency of the heating medium by 18%, where it has formed). In the heating system, it is recommended to use water as a heating medium. The quality of the water, should comply with the parameters given below:*
*• pH value should be in the range of 7-8,5 pH;*
*• Overall flow should not be exceed the 3.5 mval/l;*
*• Iron content should not be more than 0.3 mg/l.*

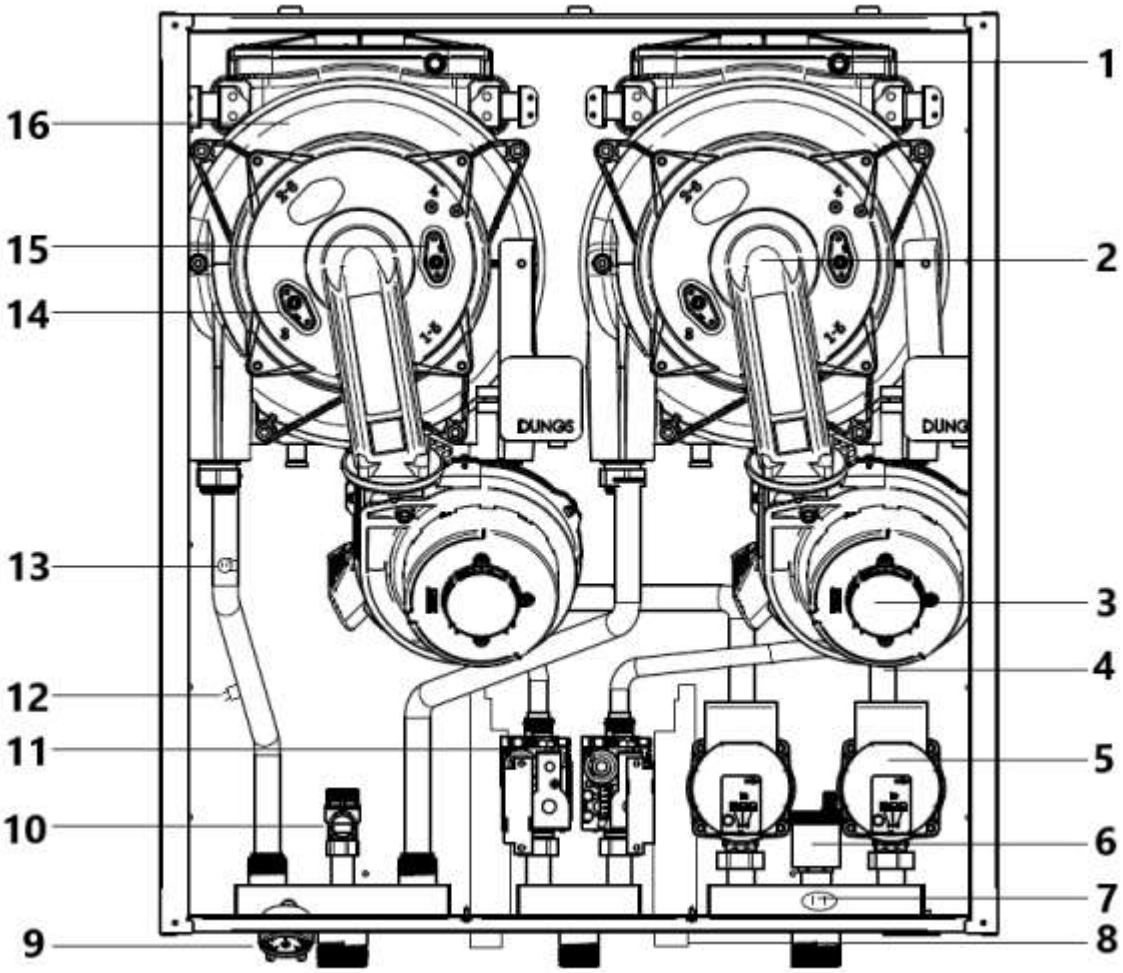
*Flush the heating system thoroughly with water before connecting it to the boiler. The process will help to reduce (or eliminate) residual debris such as welding drips, mastic, dirt deposits of various origins, wax, rust and other accumulations from the heating system and radiators. Otherwise, these particles can damage internal components of the boiler, e.g. the circulation pump.*
*• **In the event of a rusty or polluted system** special cleaning products should be used for flushing in the quantities and proportions recommended by the manufacturer of such product.*
*• The drain from the heating system pressure relief valve (6 bar) must be connected to the sewage system. Failure to do so will result in flooding the room in the event of the pressure relief valve activation, for which the boiler manufacturer will not be held liable.*
*• The boiler is designed for closed heating systems with forced circulation.*
*• To provide long and efficient operation of the boiler and heating system, it is recommended to install the heating system from polymer or copper pipe.*
*• A mechanical filter must be installed on the return line of the heating system.*
*• • It is preferable to use modern low-inertia radiators (steel panel radiators, aluminium radiators, etc.) as heating devices.*

***Do not carry out by yourself any repair works that are the competence of a specialized technician, as well as actions not specified in the "User Manual" section. The accessories used for connection and operation of the boiler must be original. The manufacturer is not liable for improper, inappropriate and erroneous usage of the boiler, as well as non-original accessories and spare parts.***

# TECHNICIAN MANUAL

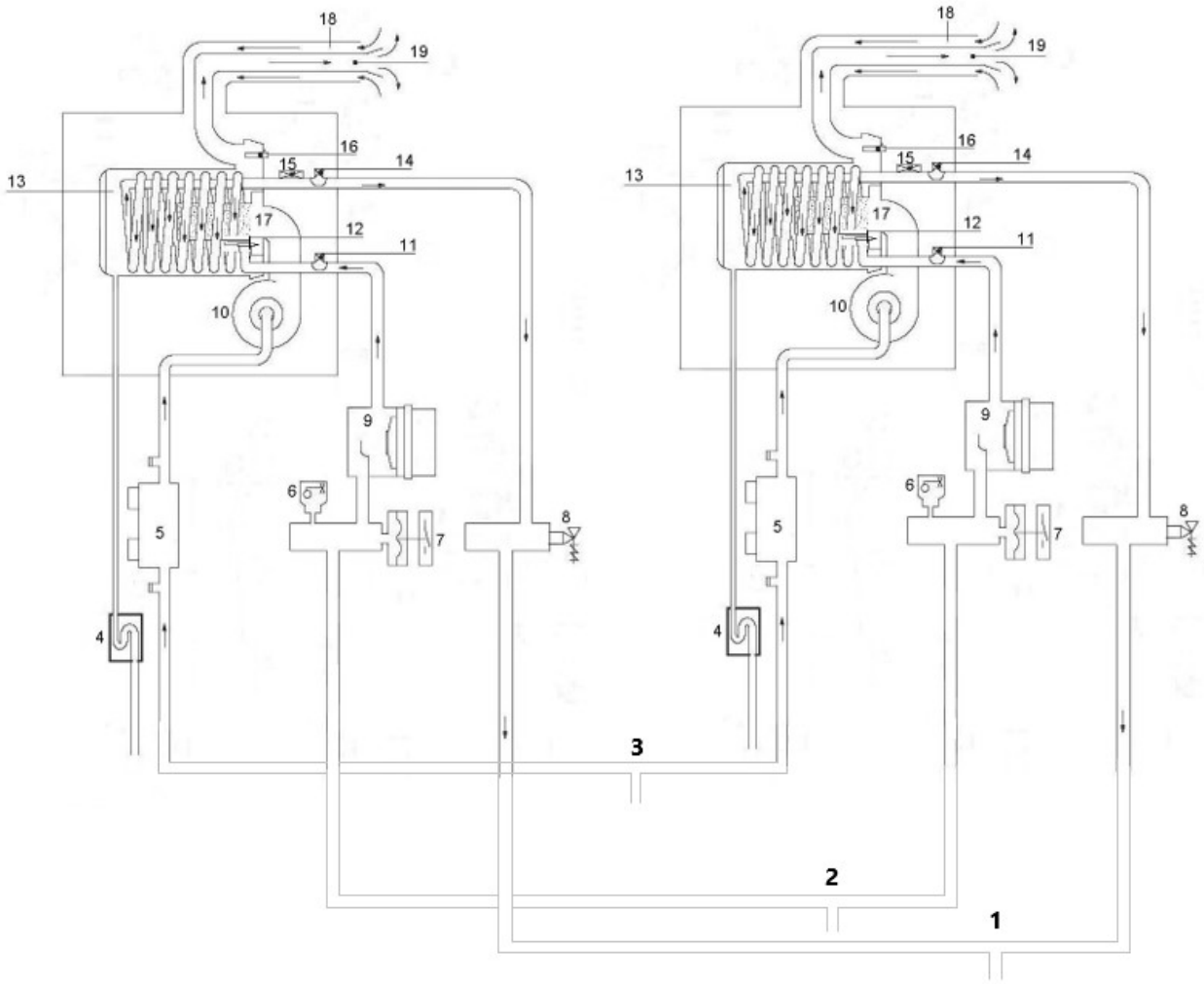
## 4. Technical Features

### 4.1 General appearance



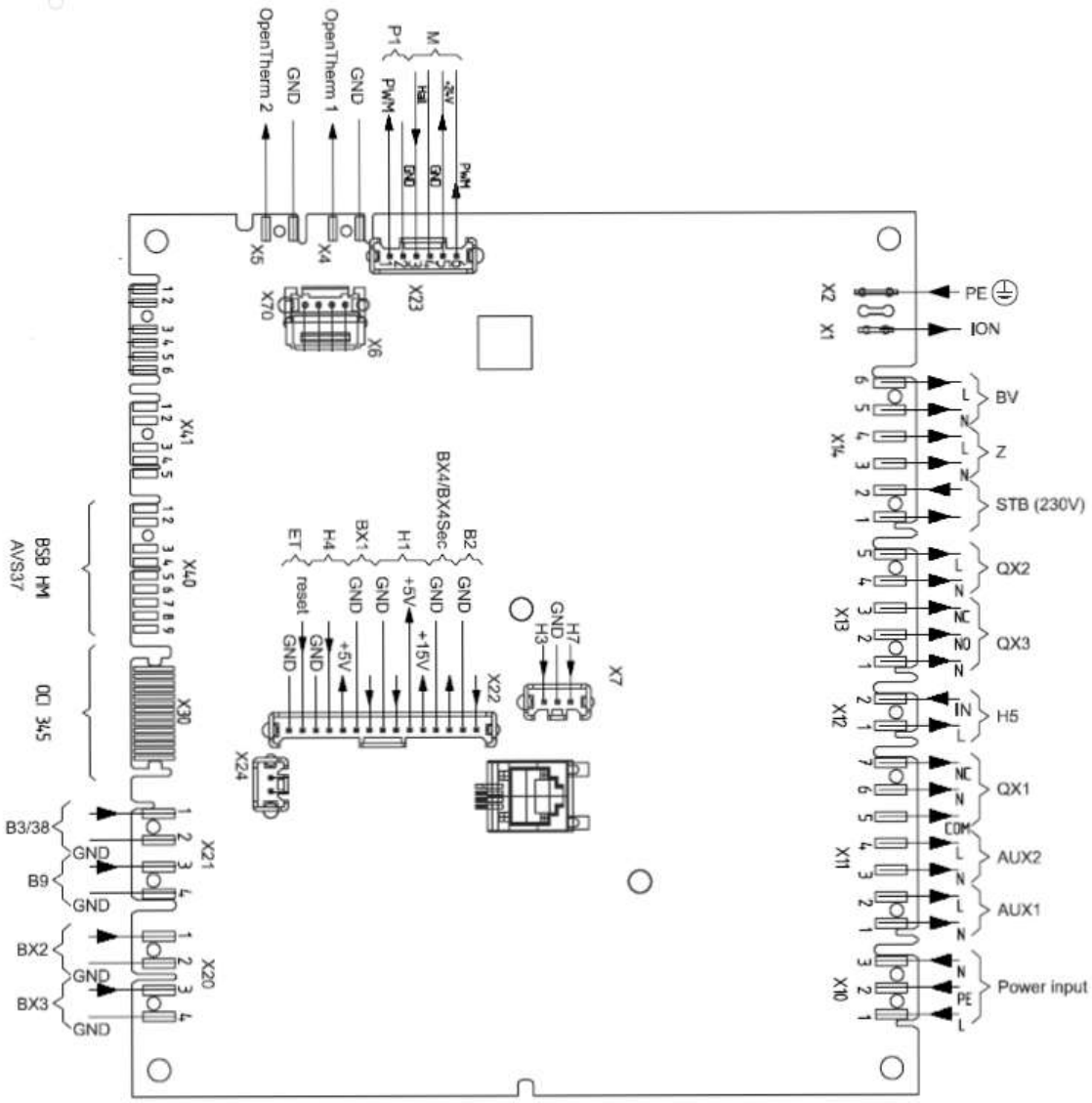

| | |
|---|---|
| *1 Flue gas temperature sensor;*<br>*2 Burner;*<br>*3 Fan;*<br>*4 Heating circuit return line NTC temperature sensor ;*<br>*5 Circulating pump;*<br>*6 Automatic air bleeding valve;*<br>*7 Low water pressure switch;*<br>*8 Condensate water drainage siphon;* | *9 Pressure gauge;*<br>*10 Pressure relief valve 6 bar;*<br>*11 Gas valve*<br>*12 Heating circuit outlet line NTC temperature sensor;*<br>*13 Safety thermostat;*<br>*14 Ignition electrode;*<br>*15 Ionization electrode;*<br>*16 Heat exchanger;* |

### *4.2 Circuit diagram*




| | |
|---|---|
| *1 Heating circuit outlet;*<br>*2 Heating circuit inlet;*<br>*3 Gas connection;*<br>*4 Condensate water drainage siphon;*<br>*5 Gas valve;*<br>*6 Automatic air bleeding valve;*<br>*7 Low water pressure switch;*<br>*8 Pressure relief valve 6 bar;*<br>*9 Circulating pump;*<br>*10 Fan;* | *11 Heating circuit return line NTC temperature sensor;*<br>*12 Ignition and ionization electrode;*<br>*13 Main condensing heat exchanger*<br>*14 Heating circuit outlet line NTC temperature sensor;*<br>*15 Safety thermostat;*<br>*16 Flue gas temperature sensor;*<br>*17 Burner;*<br>*18 Air intake;*<br>*19 Flue gas ventilation.* |

### *4.3 Electrical diagram*




***PE*** *– grounding;*
***ION*** *– ionization sensor;*
***BV*** *– gas valve;*
***Z*** *– ignition transformer;*
***STB*** *– safety thermostat;*
***QX2*** *– DHW circulation pump;*
***QX3*** *– DHW loading pump;*
***H5*** *– room thermostat;*
***QX1*** *– boiler pump;*
***AUX 2*** *– 220 V output;*
***AUX 1*** *– fan;*

***Power input*** *– 220 V power supply;*
***B2*** *– outlet line temperature sensor;*
***BX4*** *– return line temperature sensor;*
***H1*** *– water pressure sensor;*
***BX1*** *– flue gas temperature sensor;*
***H4*** *– fan pressure switch;*
***X40*** *– regulator AVS37;*
***X30*** *– cascade unit LPB;*
***B3/B8*** *– DHW temperature sensor;*
***B9*** *– outdoor air temperature sensor;*
***BX2*** *– cascade outlet line temperature sensor.*



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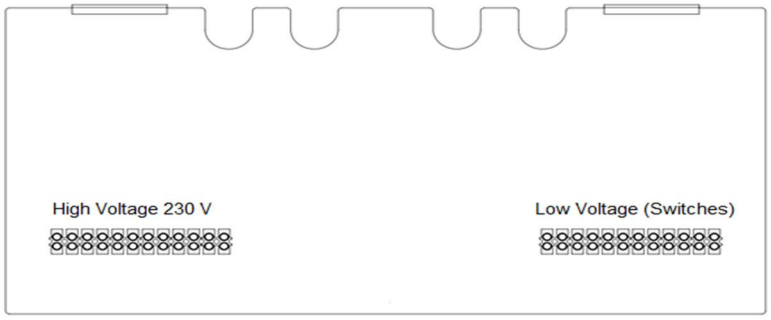


| | |
|---|---|
| High voltage 230V<br>230 V power input | ***Power input 230 V*** |
| High voltage 230V<br>230 V power output | ***Power output 230 V*** |
| High voltage 230V<br>DHW loading pump | ***DHW Loading Pump*** |
| High voltage 230V<br>DHW circulating pump | ***DHW Circulating Pump*** |
| Low voltage (Switches)<br>Cascade flow sensor | ***Cascade Temperature Sensor*** |
| Low voltage (Switches)<br>Outdoor air switch | ***Outdoor Air Temperature Sensor*** |
| Low voltage (Switches)<br>DHW sensor | ***DHW Temperature Sensor*** |
| Low voltage (Switches)<br>Room thermostat | ***Room Temperature Sensor*** |



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### *4.4 Technical Features of FEDERICA BUGATTI VARME 99 COND, 120 COND*

| Parameters | Unit of measurement | Cond 99 | Cond 120 |
|---|---|---|---|
| Nominal heating output of the system, max | kW | 99.6 | 120.6 |
| Nominal heating output of the system, min | kW | 9.8 | 9.8 |
| Heating output, min/max (50/30°C) | kW | 9.6 / 97 | 9.6 / 119.2 |
| Efficiency (80/60°C) | % | 101,9 | 101,9 |
| NOx class | - | 6 | 6 |
| Flue gas temperature 50/30 | °C | 58.6 | 60.8 |
| Energy efficiency class | | A | A |
| **Heating circuit** | | | |
| Operating pressure, min | bar | 1 | 1 |
| Operating pressure, max | bar | 6 | 6 |
| Heating circuit operating temperature range | °C | 30 -80 | 30 -80 |
| **DHW circuit** | | | |
| Hot water temperature | °C | 40-65 | 40-65 |
| **Electrical features** | | | |
| Voltage/frequency | V/Hz | 230/50 | 230/50 |
| Power consumption | V | 340 | 340 |
| Protection class | | X4D | X4D |
| **Gas pressure and flow rate** | | | |
| G20 natural gas (inlet pressure) | mbar | 20 | 20 |
| Gas flow rate G20 | $m^3/h$ | 9.8 | 12.2 |
| **Overall features** | | | |
| Weight | kg | 110 | 110 |
| Overall size | mm | 800/730/485 | 800/730/485 |
| Gross, weight | kg | 130 | 130 |
| Package size | mm | 910/810/575 | 910/810/575 |
| $CO_2$ min | % | 9 | 9 |
| $CO_2$ max | % | 9.2 | 9.2 |
| Chimney diameters | mm | 80/125 | 80/125 |

# 5. Installation

## 5.1 Warnings

***The combustion products of the boiler must be bleed directly to the outside or a chimney designed for these purposes, in accordance with the national and local regulations in force. The device is not suitable for receiving the condensing water from the combustion exhaust system.***

***The air, which is used for combustion must not contain chlorine, ammonia or alkaline substances. Installing the boiler near a swimming pool, washing machine or laundry room will result in the presence of a mixture of aggressive substances in the air.***

*Before installation, **it is mandatory** to thoroughly flush all system piping with non-aggressive chemicals. The process is necessary to remove all kinds of sediments and contaminants that may prevent the boiler from working properly. After flushing, the system must be treated. The standard warranty does not cover repair of possible malfunctions resulting from failure to follow the above instructions.*

***Please check:***

*• Whether the boiler is suitable for the type of gas, which is used (check the sticker).*

*• Whether the characteristics of the electricity, gas and water supply networks correspond to the data indicated in the table.*

*It is necessary to use only the manufacturer's chimney flue kits for flue gas extraction, due to the fact that they are the integral parts of the boiler. The pressure relief valve must be connected to the drain line to prevent flooding in the event of its activation. The condensate drain siphon must be connected to the domestic condensate drainage pipe. It must be designed in such a way that it can be checked and prevent condensate from freezing (according to the standard UNI 11071/08).*

*Electrical connections must comply with the technical standards given below:*

*• The boiler **must** always be connected to a reliable earthing system via a special terminal.*

*• A double-pole switch must be installed near the boiler to ensure complete shutdown of the boiler under category III over-voltage conditions. For electrical connections, see "Electrical diagram" on page 16.*

*• **The electrical wires for connecting the remote control and external sensor** to the boiler must be located in trays other than 230 V wire trays, as they are low-voltage.*

## 5.2 Safety precautions for the installation

***During the installation, the instructions below must be followed strictly:***

*• Mount the boiler on a solid wall;*

*• Observe the dimensions of the chimney (see the section "Dimensions and lengths of the chimneys" on page 19) and the correct installation methods are given in the instructions of the chimney flue kit insert.*

*• It is recommended that the system is equipped with an appropriate sediment filter or use a means to prepare the water circulating in it. In particular, the latter solution will not only clean the system but will also have an anti-corrosive effect by forming a protective film on the metal surfaces and neutralizing the gases present in the water;*

*• Leave 5 cm of free space in front of the boiler in case it is installed in a cupboard, panel or indentation;*

*• If the boiler is installed in place of the previous one, the installation site should be thoroughly washed and cleaned.*

## 5.3 Filling up the heating system:

*• If the boiler is installed in rooms where the room temperature may fall below 0 °C, it is recommended to take the necessary precautions to avoid damaging the boiler.*

*• Please do not add anti-freeze and anti-corrosion agents to the heating system water in inappropriate concentrations and/or with physical and chemical characteristics incompatible with the hydraulic components of the boiler. The manufacturer accepts no responsibility for any damage caused in that case. **It is necessary to inform the user about the frost protection function of the boiler and the chemicals introduced into the heating system.***

### *5.4 Dimensions and lengths of the chimneys*

*The flue vent/air intake can be in the following types: $C_{13}$ $C_{33}$ $C_{43}$ $C_{53}$ $C_{63}$ $C_{83}$ $B_{32P}$*
*See insert inappropriate kit packaged separately. Horizontal sections of the chimneys should have a slope of about 1.5 degrees (25 mm per m).*

***The outlet pipe must be located higher than the inlet pipe on the boiler side.***

*Only the coaxial pipe with a diverter must be horizontal, as the diverter is already manufactured with the necessary inclination. The kits described below for connection to the boiler are available.*

### *5.5 Wall-mounted chimney kit*

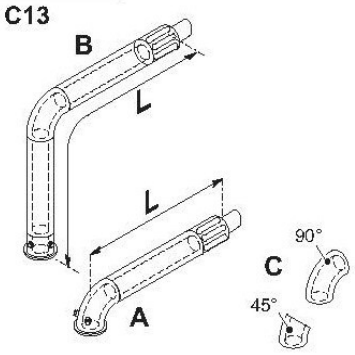


***Figure 5.1***

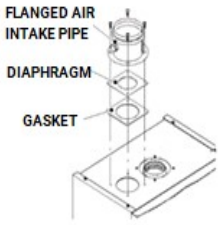


***Figure 5.2***

*Coaxial pipe Ø 80/125 mm with a nominal length of 915 mm. This kit allows the flue gases to be vented into the wall behind or to the side of the boiler. The minimum length of the pipe must not be less than 0.5 m and the maximum length, realized with the usage of extensions, must not exceed 6 m.*
***Vertical chimney kit with 90° elbow (Figure 5.8 B)***
*Coaxial pipe Ø 80/125 mm. This set allows to raise the boiler outlet axis by 635 mm. The length must not be less than 0.5 m and the maximum length including extensions must not exceed 6 m horizontally in any case, the exhaust pipe must vent the flue gases horizontally.*
*When installing these elbows in the chimney, the maximum length of the chimney is reduced in such a way:*

| | |
|---|---|
| *For 45° elbow reduction* | *0.5 m* |
| *For 90° elbow reduction* | *1 m* |

***Kit of split air intake and flue gas venting pipes Ø 80 mm (Рисунок 5.2 - Рисунок 5.3) - (Рисунок 5.4)***
*This kit allows to separate the air intake and flue gas venting pipes. The diverters can be connected to appropriate specially designed air intakes or venting and the air intake can be routed directly through the wall. Note: if the boiler is provided with a split chimney kit, a diaphragm must be inserted between the boiler and the air intake pipe. The diaphragm is supplied together with the split flue kit Ø 80 mm.*

***Notification: The air intake and venting diverters must not be located on opposite walls of the building. (EN 483).***

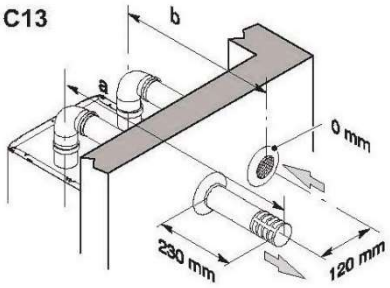


***Figure 5.3***

*The minimum pipe length must not be less than 0.5 m and the maximum length realized with the use of extensions on sections A + B must not exceed 40 m. 90° and 45° elbows Ø 80 mm are also available to reduce the total maximum pipe length:*

| | |
|---|---|
| *For 45° elbow reduction* | *1.4 m* |
| *For 90° elbow reduction* | *3 m* |

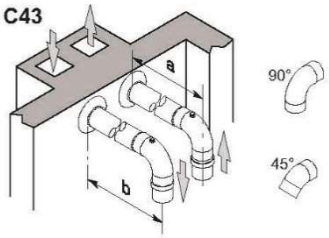


***Figure 5.4***

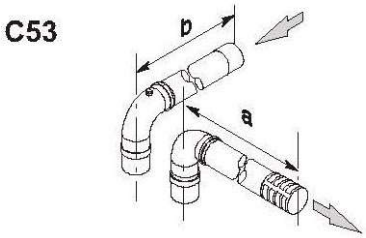


***Figure 5.5***

*If pipelines and diverters from another manufacturer (type C63) are used, they must be compatible with the system and the flue gas pipeline must be made of materials resistant to condensation products.*

***Type C83 (Figure 5.6)***

*A boiler on which this type of venting is installed must draw combustion air from the outside and vent the flue gas through a separate or common chimney designed for such purposes.*

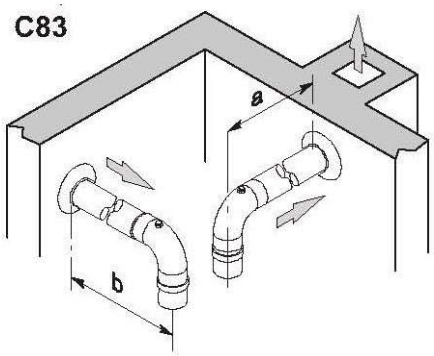


***Figure 5.6***

***Chimney kit through the roof (Figure 5.7)***

*Ø 80/125 mm coaxial pipe nominal length 0.96 m. This kit allows the flue gas to be vented directly from the roof.*

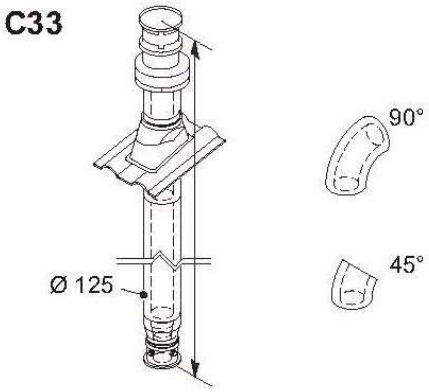


***Figure 5.7***

*Extension cables are available to attain the maximum height. The maximum height with extension cables is 10 meters. Coaxial elbows 90° and 45° Ø 80/125 mm can also be used to reduce the total maximum pipe length:*

| | |
|---|---|
| *For 45° elbow reduction* | *0.5 m* |
| *For 90° elbow reduction* | *1 m* |

***ТИП B23P (Figure 5.8)***

*This type of chimney takes the air, which is required for the combustion, directly from the room where the boiler is installed and vents the combustion materials to the outside; it can be wall-mounted or tubular.*

| | |
|---|---|
| ⚠ | ***A suitable air intake must be provided in the room where the boiler is installed to ensure the necessary combustion air intake and ventilation of the room.*** |

*For the efficient operation, the minimum air exchange should be 2 m3/h per kW of heat output.*

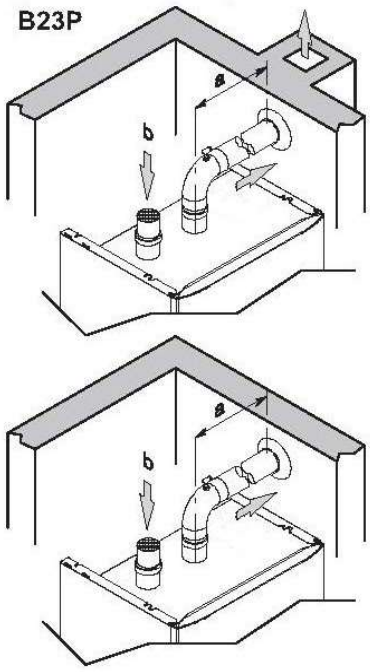


***Figure 5.8***

### *5.6 Placement of the exhaust diverters*

*Exhaust diverters should:*

*• be located on the exterior walls of the building or the roof;*

*• be installed in accordance with the minimum distances Figure 5.9 and applicable national and local regulations.*



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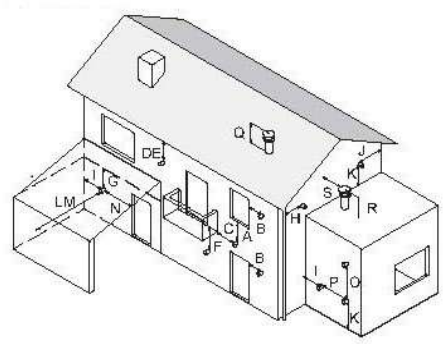



*Figure 5.9*

***Placements of the connection pipes***
***A*** *Under a window or other opening 600 mm*
***B*** *Close to a window or door 400 mm*
***B*** *Close to an aeration or ventilation opening 600 mm*
***C*** *Next to a balcony 1 000 mm*
***D*** *When under gutters or drainage pipes 300 mm*
***E*** *Under cornice overhangs 300 mm*
***F*** *Under a balcony 300 mm*
***G*** *Under a garage roof* ***DO NOT***
***H*** *From vertical drainage pipes 300 mm*
***I*** *From internal corners 300 mm*
***J*** *From external corners 300 mm*
***K*** *From the ground or other walkable surfaces 2200 mm*
***L*** *From an exiting front surface without openings 2000 mm*
***M*** *From an exiting front opening 3000 mm*
***N*** *From an opening in garage* ***DO NOT***
***O*** *Between two vertical diverters on a same wall 1500 mm*
***P*** *Between two horizontal diverters on a same wall 1 000 mm*
***Q*** *Above a roof slope with a pitch less than or equal to 30° * 350 mm*
***Q*** *Above roof pitches greater than 30° * 600 mm*
***R*** *Above a flat roof * 300 mm*
***S*** *From walls * 600 mm*
***S*** *From two corner walls * 1 000 mm*
** Diverter pipe on roof*

## *GAS ADJUSTMENTS*

## *6. GAS ADJUSTMENTS*

### *6.1 Preliminary operations before the first commissioning*

*The first commissioning, includes checking the correct installation, configuration and operation of the appliance.*
*Procedure:*
- *Check whether the boiler can work with the type of gas used.*
- *Check whether the capacity of the gas line and the related pressure in the system correspond to the instructions indicated on the information label.*
- *Check whether the safety devices are functioning in the event of an insufficient gas supply.*
- *Make sure that the supply voltage corresponds to the value indicated on the information label (230 V, 50 Hz) and that the electrical connections have been properly made.*
- *Check whether the grounding is working properly.*
- *Make sure that the air intake for combustion, flue gas ventilation, and condensate drainage have been properly installed in accordance with applicable local and state laws and standards.*
- *Make sure that the shut-off valves of the heating system are open.*
- *Make sure there are no flammable materials or liquids close at hand of the appliance.*
- *Switch on the gas valve of the appliance and make sure that there are no gas leaks. The gas connection of the burner must be checked during the operation of the boiler.*
- *If the gas supply has been recently installed, the air contained in the pipes may block the equipment during the commissioning. To bleed the air from the pipes, repeat the start-up procedure.*

### *6.2 Filling the condensate drainage siphon*

*Before commissioning the appliance, fill the condensate trap to prevent flue gases from escaping through the trap.*
*Procedure for filling the siphon, as it follows* ***(Figure 6.1)****:*
- *Using a glass, pour water into the heat exchanger outlet channel until the siphon is filled to the highest "T" point.*
- *Connect the special flexible condensate drain pipe to the drainage system. Clean the siphon regularly to*

### *6.3 Commissioning the boiler*

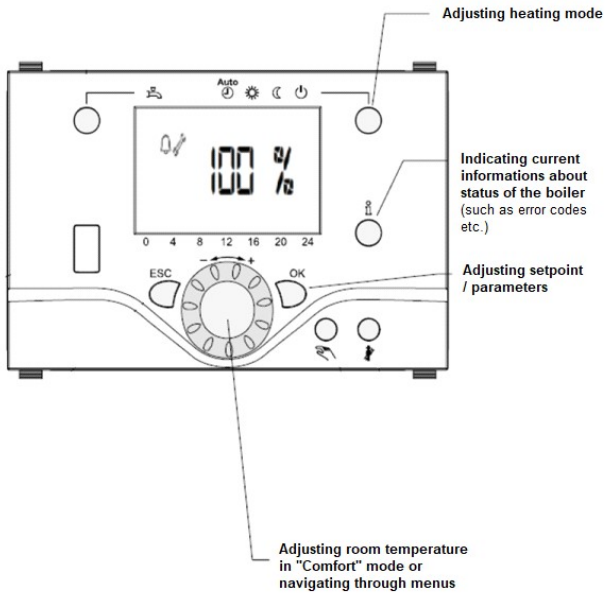
***WARNING!***

*Make sure that the system is filled correctly.*
*The procedure for putting the boiler into operation is as follows:*
- *Before commissioning the boiler, fill the condensate trap to prevent flue gases from escaping through the trap.*
- *Check whether the produced heat can be utilized by the radiators (and/or radiator panels/floor systems) or through the DHW circuit.*
- *Switch the appliance on.*
- *Switch on the gas valve.*

### *6.4 Control and adjustment of $CO_2$ concentration*

***WARNING!***

*The CO2 concentration test is performed with the front cover assembled. Take out the front cover to adjust the gas valve.*
***Adjustments of $CO_2$ concentration at maximum and minimum output, must be performed separately for each burner, for this purpose, follow the steps below:***

| | |
|---|---|
|  | *- Press and hold the "Adjusting heating mode" button for 3 seconds;*<br>*- The "304" mode will be activated;*<br>*- Modulation level will be displayed after pressing the "I" button*<br>*- To adjust, press the "OK" button and select the required power according to the following principle:*<br><br>*100% - maximum output*<br>*0% - minimum output* |

***For the minimum output in the heating mode***
*Insert the flue gas analyzer probe (Figure 6.2) into the appropriate flue gas analysis connection "PF", then check whether the CO2 value corresponds to that given in the "Technical Features" chapter, otherwise unscrew the protective screw "A" and adjust the screw "2" of the offset adjuster using a hexagon key. In order to increase the value of CO2, it is necessary to turn the screw clockwise, and to decrease it - counterclockwise. After completing the adjustment, tighten the safety screw "A" on the offset adjuster.*

***For the maximum output in the heating mode***
- *Check if the CO2 value corresponds to that given in the "Technical Features" chapter, otherwise adjust the screw "1" of the gas regulator (Figure 6.3). To increase the CO2 value, turn the screw counterclockwise, and to decrease it, turn it clockwise.*
- *After each time adjusting the screw "1" of the gas supply regulator, it is necessary to wait for the boiler to stabilize at the set value (about 60 seconds).*

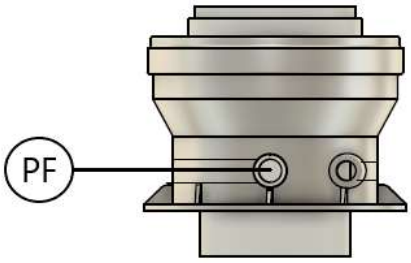



Figure 6.2

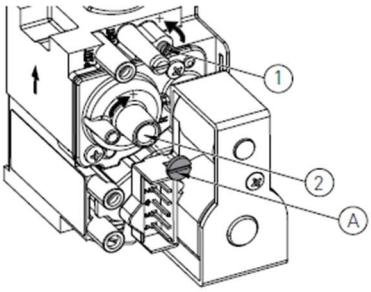
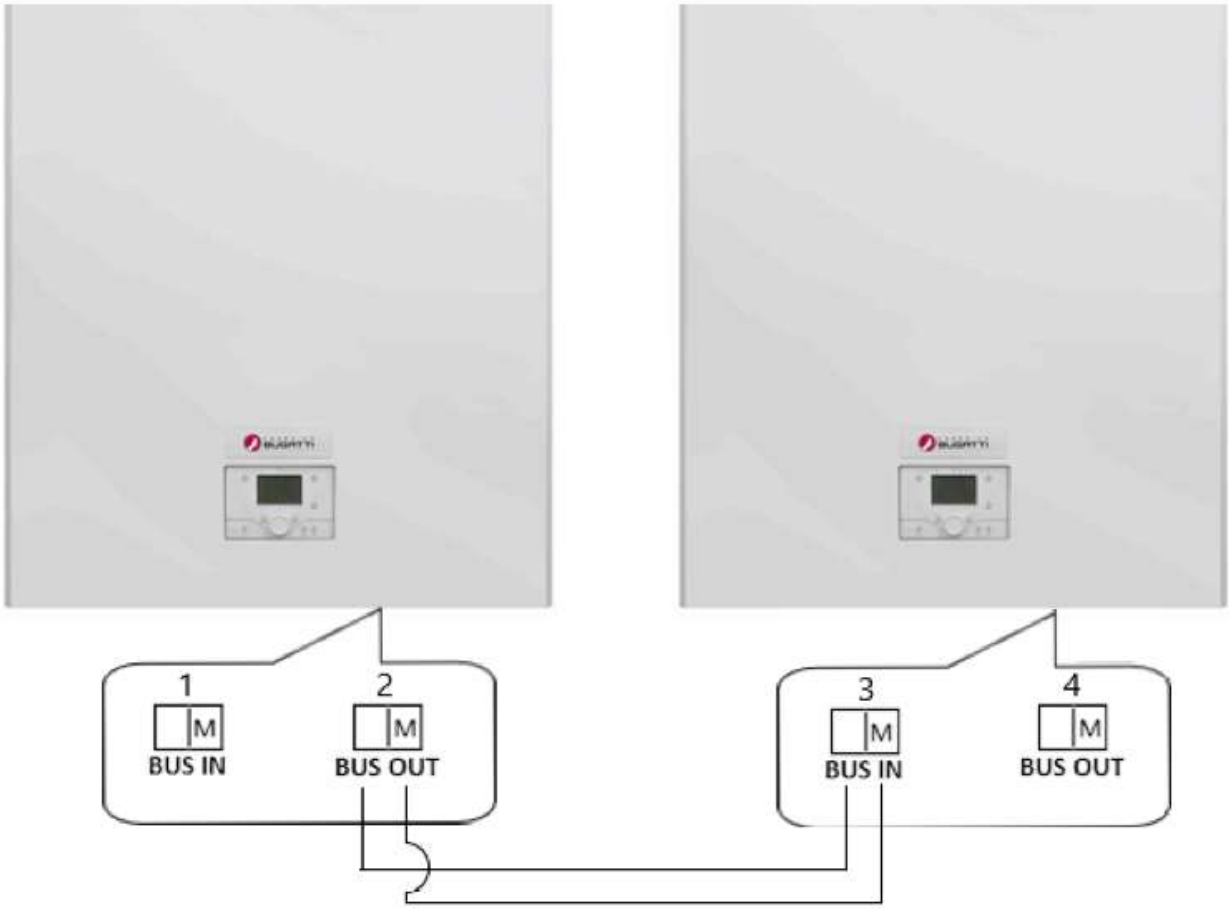



Figure 6.3

### 6.5 Cascade Connection

*To interconnect 2 to 8 devices, the following steps must be performed in order:*

*- The bus must be connected in accordance with the following diagram;*
*- Address the 6600 (1-always main device, 2/16 supportive) boards in the service parameter section;*
*- Outdoor and cascade sensor must be connected to the main (Master) device (cancel these sensors for devices that will work together);*
*- Connect the cascade sensor of the master device to the common hydraulic line.*



## *7. MAINTENANCE*

### *7.1 WARNINGS*

***The actions described in this section must only be performed by a qualified technician. It is recommended to contact an authorized service centre.***

*To ensure the reliable and continuous operation of the boiler, it is necessary to have it maintained and cleaned once a year by an authorized service centre. If this work is not carried out, the warranty does not cover the replacement of damaged parts and repair of possible malfunctions. Before performing any cleaning, maintenance, opening or dismantling of the panels, it is necessary to* ***disconnect the boiler from the mains*** *by a double-pole switch provided at the installation and* ***switch off the gas valve****.*

### *7.2 General safety precautions during the maintenance*

***DANGER! Always disconnect the appliance from the electric network, water and gas mains before any replacement or cleaning of the components.***

*Use only original spare parts during maintenance to ensure the efficient operation of the equipment.*

*To ensure the efficient and safe operation of the boiler, the boiler must be maintained annually. Failure to do so will result in the forfeiture of the right to warranty repair at the Federica Bugatti Service Center. For this reason, only a qualified technician who has been certified by Federica Bugatti is allowed to work on the boiler.*

***Annual maintenance consists of the following operations:***

- *Make sure that the pH value of the water in the system is between 6.5 and 8.5.*
- *Check the gas connections for leaks, and replace gaskets if necessary.*
- *Check the hydraulic connections for leaks, and replace gaskets if necessary.*
- *If necessary, make sure that the combustion parameters are set correctly, in case of deviations, re-adjust the combustion parameters. The procedure is described in the section* ***"Checking and adjusting the CO2 concentration"***
- *Check the condition of the primary heat exchanger, clean it if necessary*
- *Check the ignition and safety systems for proper operation. If necessary, dismantle the ignition and flame ionization electrode and clean it from deposits. The distance between the electrode and the burner must remain unchanged.*
- *Check the heating circuit safety components: pressure relief valve, safety thermostat, water pressure sensor and flue gas sensor.*
- *Check the pressure of the expansion tank (when empty).*
- *Check the permanently open vents, their size and efficiency about the requirements of the installed equipment and local and national regulations.*
- *Regularly check the integrity of the flue gas system to ensure the safe and correct operation of the appliance.*
- *Make sure that the electrical connections are made according to the instructions given in the manual.*
- *Check the electrical connections in the control panel.*
- *Check the DHW flow rate and temperature.*
- *Check the function of the condensate drainage system, including components located outside of the boiler, e.g. condensate neutralization units for a condensate with a high acid content.*
- *Make sure there are no obstructions to liquid flow and flue gases are not leaking into the system.*

***NOTE:*** *During the annual maintenance, the thermal management and energy efficiency also must be checked****.*** *The frequency and methodology of the inspection must comply with the instructions of applicable legislation.* ***Do not clean the boiler or components with flammable substances (e.g. gasoline, alcohol, etc.). Do not clean the panels, painted parts and plastic parts with products, which are contain paint thinner solutions. The exterior parts of the boiler must be wiped with a damp cloth.***

***7.3 Remarks on Scheduled Maintenance***

| *Maintenance date* | *Name of the organization* | *Full name of the technician* | *Contact number* | *Technician's signature* |
|---|---|---|---|---|
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |

## *WARRANTY CONDITIONS*

***8. WARRANTY CONDITIONS***

*Federica Bugatti guarantees the real quality. For installation, commissioning, subsequent maintenance and repair, it is recommended to contact an authorized Federica Bugatti Service Center. According to the contract with Federica Bugatti, the company will eliminate free of charge during the warranty period all the defects which occurred due to the fault of the manufacturer. The warranty period is 24 months from the date of putting the appliance into use, but not more than 27 months from the date of purchase by the owner of the appliance.*

***1. Regulations in the event of a handover of the equipment****. 1.1. When purchasing the appliance, the owner inspects and checks the quality and completeness of the equipment. Claims on the appearance, presence of any external mechanical damage and incompleteness of the equipment after the sale. 1.2. Demand that the warranty card be filled out!* ***2. Installation and commissioning.*** *2.1. Installation and commissioning of the equipment is performed in full compliance with the manufacturer's instructions. 2.2. Installation and commissioning of the equipment must be carried out by an authorized Federica Bugatti service center, or by a specialist who has all permits for maintenance and repair of the equipment, who has been certified and received a certificate from Federica Bugatti Ltd. 2.3 The organization that performed installation and commissioning of the equipment fills in the protocol (act) on the performed work and puts corresponding marks in the warranty card. The warranty period for the equipment in the presence of a completed product identification sheet, sales and commissioning data, as well as a completed protocol (act) on the commissioning of the equipment, is 24 months from the date of commissioning, but not more than 27 months from the date of purchase by the owner of the equipment.* ***3. Maintenance of the appliance****. 3.1. After commissioning the device, the owner of the boiler is obliged to conclude a contract for annual maintenance of the appliance. For maintenance, it is recommended to contact Federica Bugatti authorized service centres, whose technicians are certified to perform the above-mentioned operations. The maintenance is performed in accordance with the manufacturer's instructions at least once a year, and in some cases, on the recommendation of the service organization, even more often, in accordance with the conditions of the used heating medium requirements and other features of the appliance operation, which differ from those declared by the manufacturer. 3.2 Please note that the installation, commissioning, maintenance and service works are performed on a reimbursable basis.*

***4. Warranty registration****. 4.1. If a malfunction is detected, cut the power, and switch the water and gas supplies off. Do not attempt to dismantle or repair the device by yourself. For prompt and quality maintenance or warranty repairs, please contact an authorized Federica Bugatti service centre in your area. In case of a situation detected by the authorized service centre regarding the appliance malfunction, which occurred due to the manufacturer's fault, the equipment is subject to warranty repair by replacing the defective part with the correct one. 4.3. Warranty claims of the company Federica Bugatti are accepted by authorized service organizations only if the following requirements are fulfilled: - commissioning is performed by an authorized Federica Bugatti service centre or by a certified Federica Bugatti technician; - all the fields of the warranty card are correctly filled in date of sale and seller's stamp, the model with the factory number of the product, date of commissioning, installation and commissioning mark (to be filled in by the service technician at the time of installation and commissioning); the commissioning protocol (act) of the appliance is filled in; the power supply system, fuel supply system, heat carrier, as well as exhaust system of the combustion products must have technical characteristics and be connected in full compliance with the requirements of the documents for safe operation, service and maintenance of the equipment; - completion annual technical maintenance. 4.4 Warranty obligations shall be invalidated in the following cases: - the product was not used for its intended purpose; - the conditions of herein the warranty are not fulfilled; - mechanical or thermal damage is detected on the appliance body, as well as traces of liquid, dirt and dust, which could be the cause of a part failure or an inoperability of the appliance; - installation, commissioning, maintenance, repair of the appliance were performed by unauthorized persons; - making design changes on the appliance. 4.5. To ensure more reliable operation of the appliance in accordance with the local operating conditions (parameters of the electricity, gas, and water supplies) and prevent malfunctions, it is*

*recommended that installing additional components: voltage stabilizer, surge protector, dielectric on the gas pipe, filtration system, etc. 4.6. Federica Bugatti does not assume any other obligations or responsibilities than those stated herein the warranty obligations. The current addresses of the service centres can be found on the website: www.federicabugatti.com*

***9. WARRANTY CARD***

<table>
<tr><td colspan="2">Appliance model:</td><td colspan="2" rowspan="2">Serial number of the boiler</td></tr>
<tr><td colspan="2">Data of the sales organization</td></tr>
<tr><td colspan="3">Name:</td><td rowspan="5">Stamp location</td></tr>
<tr><td colspan="3">Address:</td></tr>
<tr><td colspan="3">Phone number:</td></tr>
<tr><td colspan="3">Full name of the seller:</td></tr>
<tr><td>Seller's signature:</td><td colspan="2">Date of sale:</td></tr>
<tr><td colspan="4">Customer data</td></tr>
<tr><td colspan="4">Full name of the customer:</td></tr>
<tr><td colspan="4">Address:</td></tr>
<tr><td colspan="4">Phone number:</td></tr>
<tr><td colspan="4">I confirm that I have received the appliance in its entirety and agree to the warranty terms and conditions, I have no complaints about the appearance of the appliance.<br><br>Customer's signature:_____</td></tr>
<tr><td colspan="4">To be filled in by the organization that performed commissioning operations</td></tr>
<tr><td colspan="3">Organization data</td><td rowspan="5">Stamp location</td></tr>
<tr><td colspan="3">Name:</td></tr>
<tr><td colspan="3">Address:</td></tr>
<tr><td colspan="3">Full name of the technician :</td></tr>
<tr><td colspan="3">Certificate number:</td></tr>
<tr><td colspan="4">Appliance start-up date: Technician's signature:</td></tr>
<tr><td colspan="4">Remarks during the start-up:_____<br>_____<br>_____</td></tr>
<tr><td colspan="4">Additional appliances:</td></tr>
<tr><td>Dynamic gas pressure</td><td>mBar</td><td>Gas pressure at the burner min</td><td>mBar</td></tr>
<tr><td>Mains voltage:</td><td>V</td><td>Gas pressure at the burner max</td><td>mBar</td></tr>
</table>

***I hereby confirm that the appliance has been commissioned, is in good working order, and has been instructed in the rules of operation and safety. The operating instructions for the appliance have been received, the contents are clear and understandable, I agree and undertake to comply with the operating requirements. I am familiar with and agree with the manufacturer's warranty obligations.***

***Customer's signature:_____***


FEDERICA BUGATTI LLC.
MANUFACTURER: VARMECOM INC., MADE IN TURKEY

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