BRAND NAME

NOVA FLORIDA

VELA
COMPACT

INSTALLATION
USE AND MAINTENANCE

GB

IST 04 C 167 - 02

Dear Customer,

Thank you for choosing and buying one of our boilers. Please read these instructions carefully in order to install, operate, and maintain this equipment properly.

General information for fitters, maintenance technicians and users

This INSTRUCTION MANUAL, which is an integral and indispensable part of the product, must be handed over to the user by the installer and must be kept in a safe place for future reference. The manual must accompany the boiler should it be sold or its possession transferred. Following the boiler installation, the fitter is to advise the user about boiler operation and its safety devices

This boiler must be used for the purposes for which it has been intended. Any other use shall be considered incorrect and therefore dangerous.

The boiler must be installed by qualified personnel, in compliance with applicable laws and standards and according to the manufacturer's instructions given in this manual. Incorrect installation may cause injury to persons and/or animals and damage to property. The manufacturer shall not be held liable for any such injury and/or damage.

Damage and/or injury caused by incorrect installation or use and/or damage and/or injury due to non-observance of the manufacturer's instructions shall relieve the manufacturer from any and all contractual and extra-contractual liability.

Before installing the boiler, check that the technical data correspond to the requirements for its correct use in the system.

Check that the boiler is intact and it has not been damaged during transport and handling. Do not install equipment which is damaged and/or faulty.

Do not obstruct the air suction and/or heat dissipation openings.

Only manufacturer approved and supplied accessories or optional kits (including electric ones) are to be installed.

Properly dispose of the packaging as all the materials can be recycled. The packaging must therefore be sent to specific waste management sites.

Keep the packaging out of the reach of children as it may represent a choking and suffocation hazard.

In the event of failure and/or faulty functioning, switch off the boiler. Do not attempt to make repairs: contact qualified technicians.

Manufacturer approved and supplied parts must be used for all repairs to the boiler.

Non-observance of the above requirements may affect the safety of the boilers and endanger people, animals and property.

The manufacturer, in order to guarantee efficient and correct functioning of the equipment, recommends the boiler to be serviced and repaired by an authorized Service Centre.

Routine boiler maintenance is to be performed according to the schedule indicated in the relevant section of this manual. Appropriate boiler maintenance ensures efficient operation, environment preservation, and safety for people, animals and objects.

In the event of long periods of inactivity of the boiler, disconnect it from the power mains and close the gas tap.
Warning! Should power mains be disconnected, boiler electronic anti-freeze function will not be operative.

Should there be a risk of freezing, add antifreeze: it is not advisable to empty the system as this may result in damage; use specific anti-freeze products suitable for multi-metal heating systems.

IMPORTANT
If you smell gas:
- do not turn on or off electric switches and do not turn on electric appliances;
- do not ignite flames and do not smoke;
- close the main gas tap;
- open doors and windows;
- contact a Service Centre, a qualified installer or the gas supply company.

Never use flames to detect gas leaks.

The boiler is designed for installation in the country indicated on the technical data plate: installation in any other country may be a source of danger for people, animals and property.

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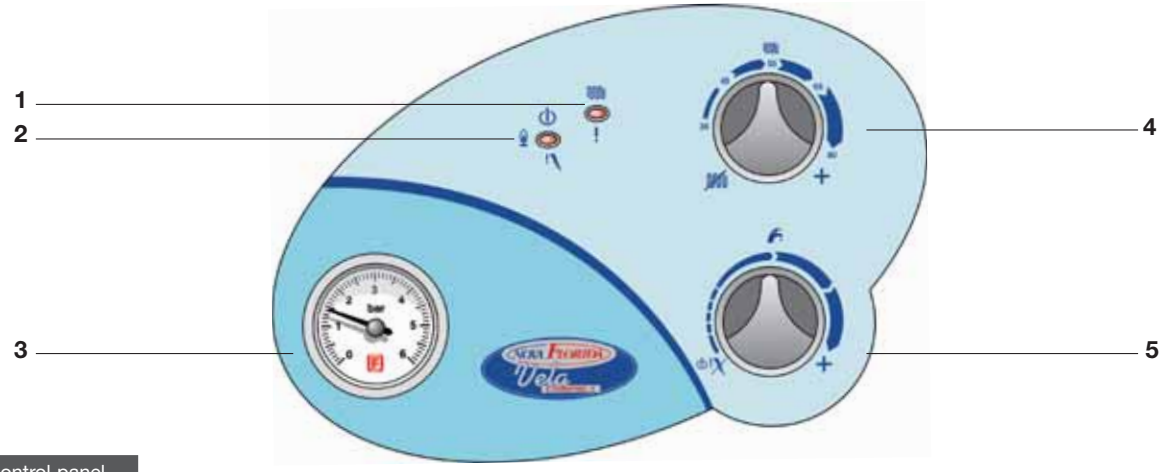
1. INSTRUCTIONS FOR THE USER

1.1 CONTROL PANEL



Pic. 1 – Control panel

1. Boiler working mode led (multi-color)
See no. 1 chart at the bottom of the page for further details on color displayed by led in relation to boiler working mode.

2. Boiler working mode led (multi-color)
See no. 1 chart at the bottom of the page for further details on color displayed by led in relation to boiler working mode.

3. Water pressure gauge
The gauge shows water pressure in the CH system.

4. CH selector and adjusting knob
The knob activates or de-activates CH operation, and adjusts CH water temperature between a minimum of 35°C and a maximum of 78°C.
When the knob is set to (fully turned counter-clockwise), the boiler is set to summer mode and CH operation is de-activated.

4. DHW selector and boiler shutdown reset
The knob sets the boiler to stand-by (position, fully turned counter-clockwise), and adjust DHW temperature between a minimum of 35°C and a maximum of 58°C.
When the boiler has shut down is to be reset by turning the knob to position.

WARNING
The boiler has a special built-in regulator limiting DHW flow up to 10 liter per minute. In addition to the setting of no. 5 selector, the temperature of the DHW supplied also depends on the flow requested by the user and the temperature of the water mains supply.

	LED 1	LED 2
Power connected to boiler	n/a	GREEN
Flame presence	n/a	YELLOW
Active CH mode	GREEN	n/a
Shutdown due to flame absence	OFF	RED
Flue gas thermostat shutdown (CTN) **Air/flue gas pressure switch shutdown (CTFS)**	YELLOW	OFF
Safety thermostat shutdown	RED	OFF
Safety thermostat shutdown	FLASHING GREEN	OFF
Gas valve alarm	FLASHING YELLOW	OFF
Water pressure switch alarm (>85°)	FLASHING RED	n/a
CH flow probe alarm	FLASHING YELLOW/RED	OFF
DHW flow probe alarm	FLASHING GREEN/RED	OFF

No. 1 Chart – Color displayed by led in relation to boiler operation status

KEY CHART TO ACHRONYMS

OFF	**LED off**
RED	**LED on, displaying the color stated in the chart**
FLASHING RED	**LED flashing, displaying the color stated in the chart**
RED/GREEN	**LED flashing, displaying in sequence the colors stated in the chart**
n/a	**LED status is not relevant**

1.2 Operating the Boiler
1.2.1 Switching On

The following procedures are to be implemented only after the boiler is installed, tested and its installation is certified by a qualified fitter.

- Open the gas stop cock.
- connect power mains to the boiler (no. 2 LED turns on displaying the green color);
- choose boiler mode by means of no. 4 selector (pic. 1);
- set the desired central heating water temperature by means of no. 4 adjusting knob (pic. 1);
- set the desired domestic hot water temperature by means of no. 5 adjusting knob (pic. 1);
- set room temperature by means of room thermostat (when available).

When CH is required, no. 1 LED turns on (green).
When flame is present no. 2 LED turns on (yellow).

Should the boiler be left inactive for a long time, particularly if boiler is lpg powered, ignition might be difficult.
Before starting the boiler switch on another gas powered device (e.g. kitchen range).
Beware that even by following that procedure, the boiler might still shut down once or twice.
Reset the boiler by turning no. 5 knob to reset position for a few seconds.

1.2.2. Operation

To prevent frequent ignition and switching off in the heating mode, the boiler has a waiting time of 4 minutes between subsequent ignitions.
Should water temperature in the system fall below 40°C, the waiting time is disallowed and the boiler re-ignites.

Boiler electronics always gives priority to DHW over CH supply.
Temperature can be adjusted within a 35°C to 58°C range.

The boiler is fitted with a flow-limiting device that allows a maximum DHW flow of 10 liter per minute.
Available DHW liters per minute depend on boiler thermal output and water mains supply temperature, according to the following formula:

l = DHW liter $= \frac{340}{\Delta t}$ (CTFS model) or $318/\Delta t$ (for CTN model)

where Δt = DHW temperature – water mains supply temperature

E.g. when water mains supply temperature is 8°C and DHW is required at 38°C, the value of Δt is:

$\Delta t = 38\ °C - 8\ °C = 30\ °C$

and DHW liters per minute) obtainable at the required temperature of 38°C are:

$l = 340/30 = 11.3$ [liters per minute] (mixed water to the tap - for model CTFS).

The boiler is equipped with an anti-frost protection system which is not active when the boiler is in stand-by mode.
When central heating water temperature sensor detects a water temperature of 5°C, the boiler switches on and stays on at its minimum heating output until the temperature of central heating water reaches 30°C or 15 minutes have elapsed.
Should the boiler shut down, pump operation is in any case granted.

The anti-freeze function only protects the boiler and not the central heating system.
The central heating system must be protected by using an ambient thermostat, although it is disabled when the selector is set to stand-by.

The heating system can be effectively protected against icing by using specific anti-freeze products that are suitable for multi-metal systems. Do not use anti-freeze products for car engines, and check the effectiveness of the product used over time.

Where the boiler is left inactive and still connected to power the pump is activated for 30 seconds every 24 hours to prevent seizure.

1.3. Boiler shut-down

When any malfunction occurs, the boiler automatically shuts down.
Refer to no. 1 chart (on page 6) in order to detect the boiler operation status.
In order to identify plausible malfunction origin, see **no. 6 paragraph "Troubleshooting"** at the end of the manual.
In relation to the type of malfunction, proceed as described hereafter.

1.3.1. Burner shut-down

When the burner shuts down, no. 2 LED turns on (red). Should this happen proceed as follows:
- Check the gas stopcock to be open, and gas mains have gas in them e.g. by lighting a kitchen range burner;
- Once gas presence is verified, reset the burner by turning no. 5 selector (pic. 1) to its reset position : if the equipment does not restart and shuts down again, after performing two attempts, contact an authorized Service Centre or qualified personnel for service.
Should the burner shut down frequently, signaling a recurrent operation malfunction contact an authorized Service Centre or qualified personnel for service.

1.3.2. Shut-down due to overheating

When central heating flow overheats, no. 1 LED (pic. 1) flashes (red). Should that happen, contact an authorized Service Centre or qualified personnel to carry out maintenance work.

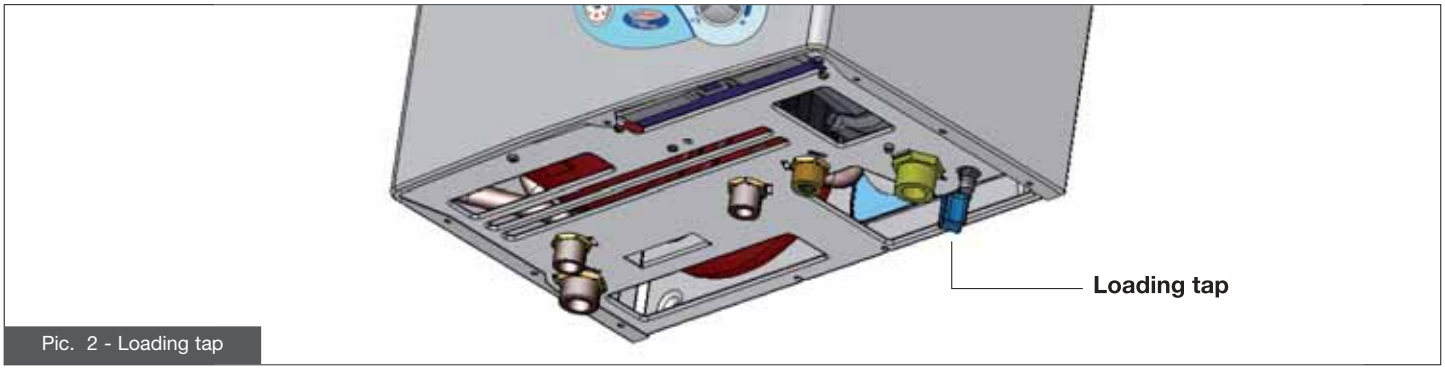
1.3.3. Shut-down due to low water pressure

In case of shutdown due to water pressure switch intervention, no. 1 LED flashes (yellow).
Fill up the boiler by opening the loading tap A (pic. 2), located in the lower area of the boiler, next to the hydraulic connections.
Water pressure must be 1-1.3 bars while the boiler is cold.

In order to restore water pressure, proceed as follows:
- Turn the filling tap counter-clockwise to let water into the boiler and keep it open until no. 5 pressure gauge (pic. 1) shows that a pressure of 1-1,3 bars is reached; now close the tap by rotating it clockwise.

Should boiler shuts down frequently occur it means there is boiler malfunction in progress. Contact qualified personnel or an authorized Service Centre for maintenance.

Once the system is filled, close the tap properly. If the tap is not properly closed, as pressure increases, boiler safety valve may open and water flow out.



Pic. 2 - Loading tap

1.3.4 Shut-down due to flue system incorrect draught

Should the boiler shut down due to an anomaly in the air intake and/or flue gas discharge system, no. 1 LED (pic. 1) turns on (yellow). Should that occur, contact an authorized Service Centre or qualified personnel for maintenance.

1.3.5 Shut-down due to malfunction of temperature probes

Should the burner shut down due to a malfunction of the temperature probes, no. 1 LED (pic. 1) flashes as follows:

- yellow/red for CH probe;
- red/green for DHW probe.

When that happens, contact an authorized Service Centre or qualified personnel to carry out maintenance.

1.4. Maintenance

Have routine boiler maintenance performed according to the schedule indicated in the relevant section of this manual.
Appropriate boiler maintenance ensures efficient operation, environment preservation, and safety for people, animals and objects.
Only qualified personnel are to service the boiler.

The manufacturer recommends Customers to contact authorized Service Centers for maintenance and repairs, they are best qualified for that procedure.

The user may only clean the external casing of the boiler, employing common household products.
Do not use water!

1.5. Notes for the User

The user may only access boiler parts which can be reached without using technical equipment and/or tools: therefore the user is not authorized to remove the boiler casing and act upon inside components.
Nobody, including qualified personnel, is authorized to modify the boiler.

The manufacturer shall not be held responsible for damage to people, animals, or property due to tampering or improper intervention to the boiler.
When the boiler remained inactive and disconnected from power mains supply for a long period of time, pump unblocking procedure may be necessary.
The above mentioned procedure involves boiler casing removal in order to access the inside of the boiler and must therefore be implemented by qualified personnel.
Pump blockage may be prevented by adding to the water in the CH system, specific protective, film-producing products, suitable for multi-metal CH systems.

2. Technical Characteristics and Dimensions

2.1. Technical Characteristics

The boiler is equipped with an integrated gas atmospheric burner and the following versions are available:
- CTN 24 AF: open chamber, natural draught boiler with electronic ignition and instantaneous DHW supply;
- CTFS 24 AF: sealed chamber, forced draught boiler with electronic ignition and instantaneous DHW supply;

Both models are equipped with ionization flame detection device.

The boilers meet applicable requirements of laws enforced in the country of destination and shown in their data plate Installation in a country other than specified might be source of hazard to people, animals and objects.

The principal technical characteristics of the boilers are listed below:

Construction Characteristics

- Bi-thermal, high performance, copper heat exchanger.
- CH pump with integrated air purging device.
- 6-litre expansion vessel.
- Safety pressure switch, preventing low water pressure operation.
- DHW priority flow switch.
- 10 liter/min DHW flow limiting device.
- Boiler loading and unloading taps.
- DHW and CH temperature probes.
- Safety limit thermostat.
- IPX4D electrically protected control panel.
- Integrated safety and modulation electronic board.
- Electronic ignition and ionization flame detection device.
- Air/flue gas pressure switch (CTFS).
- Flue gas thermostat (CTN).
- Twin shutter, modulating gas valve.

User Interface

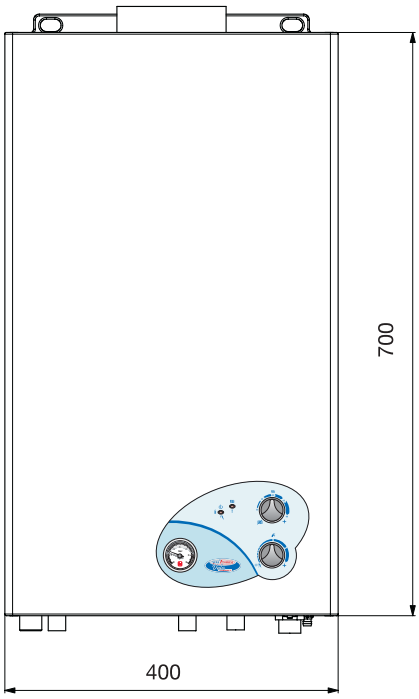
- Central heating selector/adjusting knob (35°C/78°C range).
- Boiler shutdown reset/DHW adjusting knob (35°C/58°C range).
- System water pressure gauge.
- Light emitting indicators for:
• Power ON;
• CH supply;
• flame detection;
• burner shut-down;
• gas valve alarm;
• burner shut-down due to overheating;
• burner shut-down due to air/flue gas pressure switch intervention (CTFS);
• burner shut-down due to faulty chimney draught (CTN);
• insufficient water pressure in the system;
• malfunction of temperature probes.

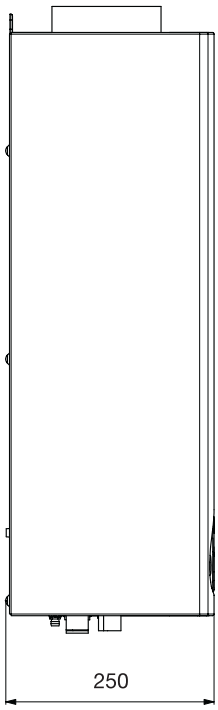
Functional characteristics

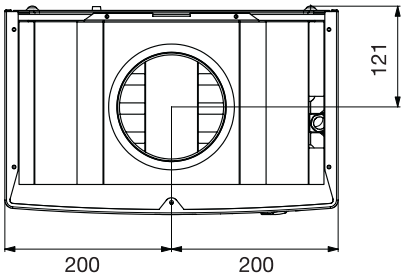
- DHW priority function.
- Electronic flame modulation in CH mode, with timed rising ramp.
- Electronic flame modulation in DHW mode.
- Boiler anti-frost function (ON: 5°C, OFF: 30°C or after 15 minutes operation).
- Flame propagation function during ignition procedure (CTFS).
- Timer controlled ambient thermostat (240 seconds with CH flow temperature > 40°C).
- Post-circulation function of pump in CH and anti-frost modes (30 seconds).
- Post-circulation function of pump in DHW (6 seconds in winter mode, 1 second in summer mode).
- Post-ventilation function in DHW mode and only when boiler is set to summer (10 seconds – CTFS).
- Post ventilation safety function after boiler shutdown of malfunction of probes (1 minute – CTFS).
- Pump anti-blocking function (30 seconds of pump operation each 24 hours of boiler inactivity).

2.2 Dimensions

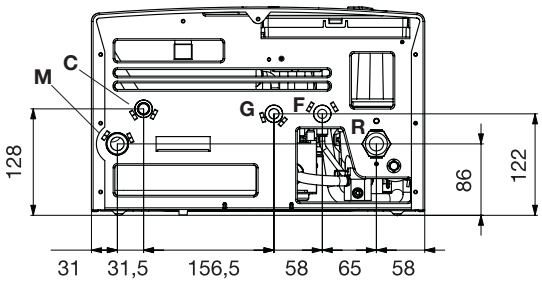
Model CTN





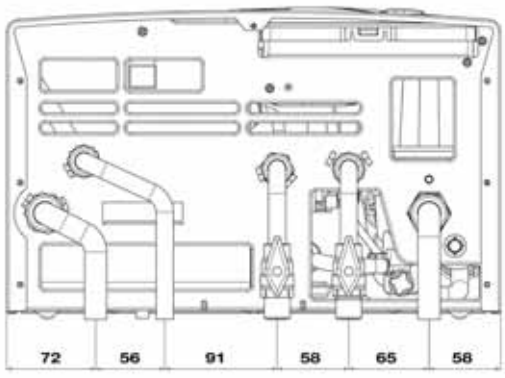


top view

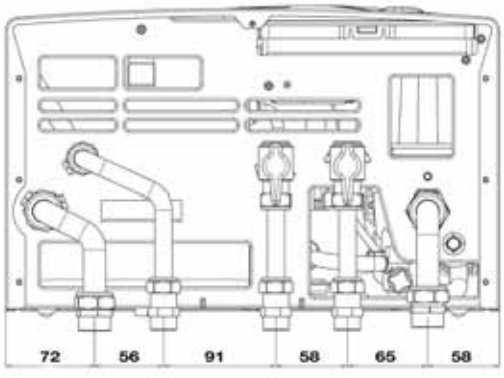


bottom view

G Gas inlet (1/2”)
M CH flow (3/4”)
C DHW flow (1/2”)
F Cold water inlet (1/2”)
R CH return (3/4”)



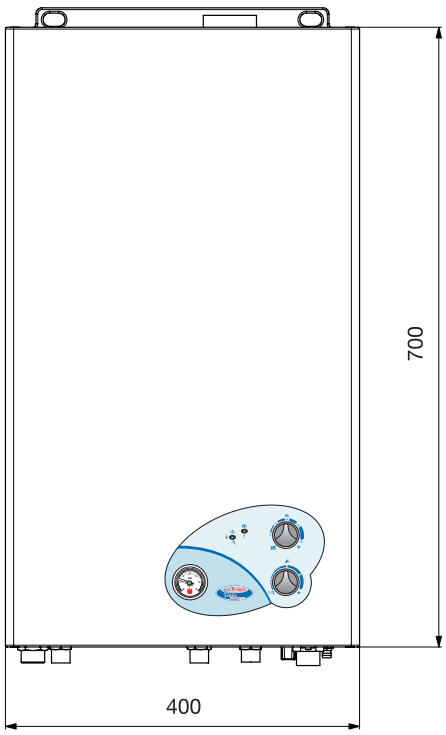
Dimensions for connection to base hydraulic kit (option)

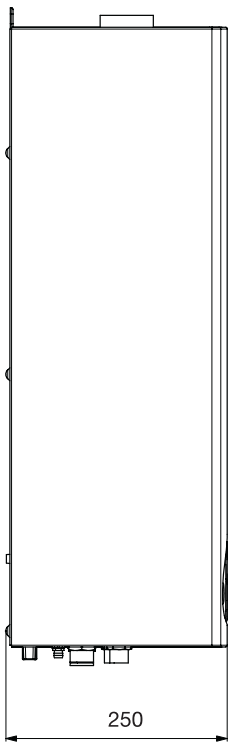


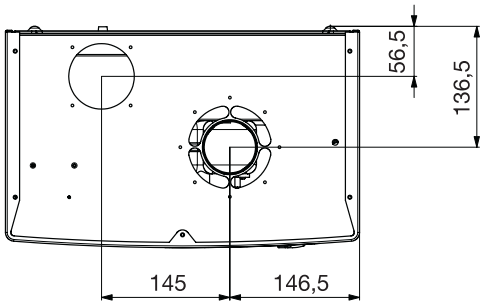
Dimensions for connection to “plus” hydraulic kit (option)

Pic. 3 – CTN model dimensions

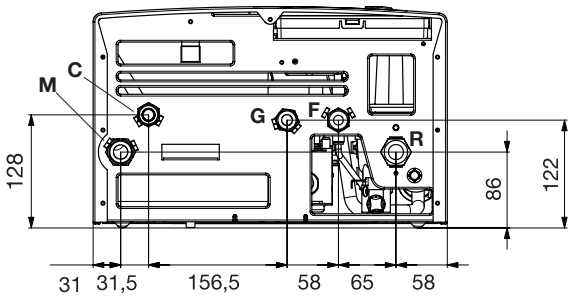
Model CTFS





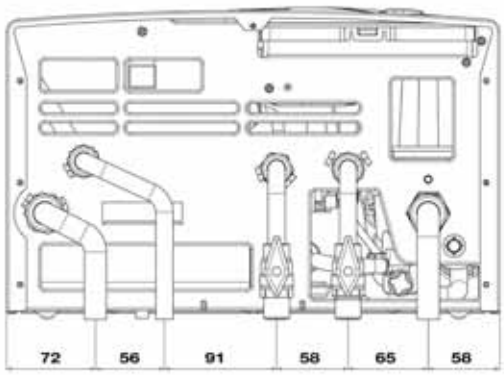


top view

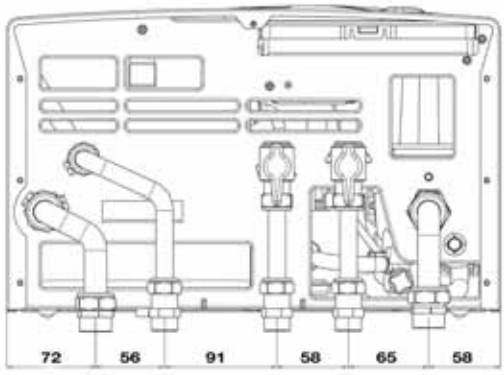


bottom view

G Gas inlet (1/2”)
M CH flow (3/4”)
C DHW flow (1/2”)
F Cold water inlet (1/2”)
R CH return (3/4”)



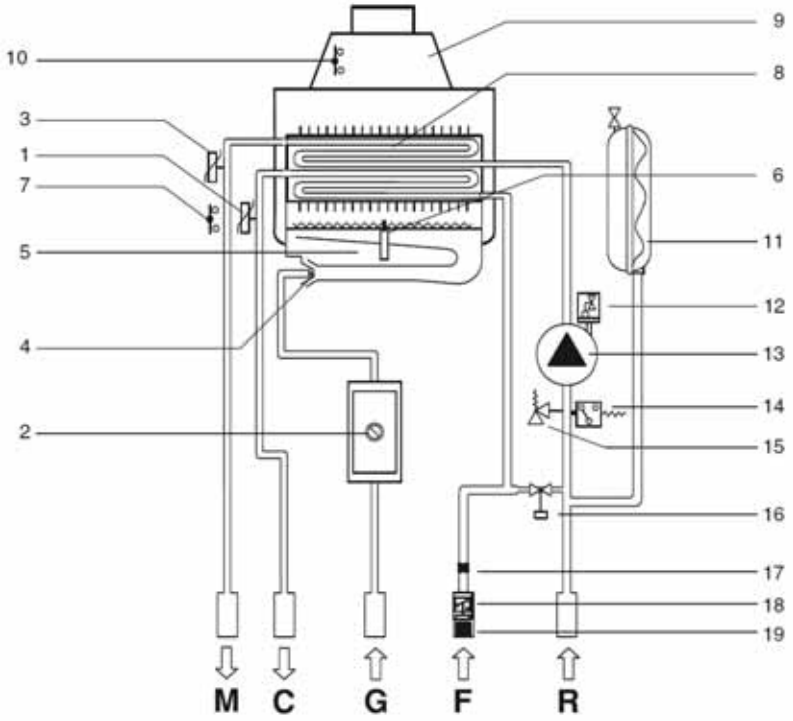
Dimensions for connection to base hydraulic kit (option)



Dimensions for connection to “plus” hydraulic kit (option)

Pic. 4 – CTFS model dimensions

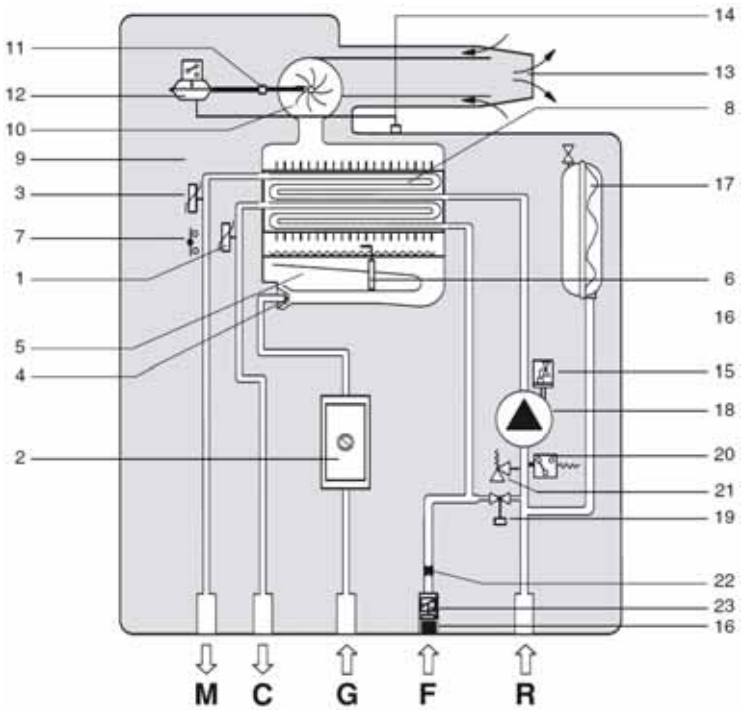
2.3 Hydraulic layouts



1. DHW temperature probe
2. Modulating gas valve
3. CH temperature probe
4. Burner nozzles
5. Burner
6. Ignition/flame sensing electrode
7. Safety thermostat
8. Bi-thermal heat exchanger
9. Flue gas hood
10. Flue gas thermostat
11. Expansion vessel
12. Air purging device
13. Pump
14. Water pressure switch
15. 3 bar safety valve
16. Loading tap
17. DHW flow limiting device – 10 liter per minute
18. Domestic cold water flow switch
19. Domestic cold water inlet filter

M CH flow
C DHW flow
G Gas intake
F Water mains inlet
R CH return

Pic. 5 – Hydraulic layout CTN model



1. DHW temperature probe
2. Modulating gas valve
3. CH temperature probe
4. Burner nozzles
5. Burner
6. Ignition/flame sensing electrode
7. Safety thermostat
8. Bi-thermal heat exchanger
9. Sealed combustion chamber
10. Flue gas discharge fan
11. Flue gas check
12. Air/flue gas safety pressure switch
13. Air/flue gas coaxial ducts
14. Air check
15. Air purging device
16. Domestic cold water inlet filter
17. Expansion vessel
18. Pump
19. Loading tap
20. Water pressure switch
21. 3 bar safety valve
22. DHW flow limiting device – 10 liter per minute
23. Domestic cold water inlet flow switch

M CH flow
C DHW flow
G Gas intake
F Water mains inlet
R CH return

Pic. 6 – Hydraulic layout CTFS model

2.4 Operating Data

Below indicated burner pressures are to be checked after a three minute boiler operation.

CTN 24 AF							
Function	**Max. heat input**	**Max. heat output**	**Min. heat output**	**Gas mains inlet pressure**	**Diameter of nozzles**	**Burner pressure**	
	(kW)	(kW)	(kW)	(mbar)	(mm)	(mbar)	
						min	max
Methane Gas G20	24.5	22.2	10.8	20	1.30	3.2	12.5
Butane Gas G30	24.5	22.2	10.8	29	0.78	6.6	27.5
Propane Gas G31	24.5	22.2	10.8	37	0.78	8.5	35.5

No. 2 chart – CTN model adjustment data

Hot water supply ΔT 45°C = 7,1 l/min
Hot water supply ΔT 40°C = 8,0 l/min
Hot water supply ΔT 35°C = 9,1 l/min
Hot water supply ΔT 30°C = 10,6 l/min*
Hot water supply ΔT 25°C = 12,7 l/min*
***mixed water to the tap**

CTFS 24 AF							
Function	**Max. heat input**	**Max. heat output**	**Min. heat output**	**Gas mains inlet pressure**	**Diameter of nozzles**	**Burner pressure**	
	(kW)	(kW)	(kW)	(mbar)	(mm)	(mbar)	
						min	max
Methane Gas G20	25,5	23,7	11,2	20	1,35	3,0	12,5
Butane Gas G30	25,5	23,7	11,2	29	0,80	7,0	28,0
Propane Gas G31	25,5	23,7	11,2	37	0,80	9,5	36,0

No. 3 chart – CTFS model adjustment data

Hot water supply ΔT 45°C = 7,5 l/min
Hot water supply ΔT 40°C = 8,5 l/min
Hot water supply ΔT 35°C = 9,7 l/min
Hot water supply ΔT 30°C = 11,3 l/min*
Hot water supply ΔT 25°C = 13,6 l/min*
***mixed water to the tap**

2.5 General Characteristics

		CTN 24 AF	CTFS 24 AF
Equipment category	-	II2H3+	II2H3+
Number of burner nozzles installed	n°	11	11
Minimum CH flow rate	l/h	550	550
Minimum CH pressure	bar	0.5	0.5
Maximum CH pressure	bar	3	3
Minimum DHW pressure	bar	0.5	0.5
Maximum CH pressure	bar	8	8
DHW specific capacity (Δt 30 °C)	l/min	10.6	11.3
Electric power Supply – Voltage / Frequency	V - Hz	230-50	230-50
Power mains supply fuse	A	2	2
Maximum power consumption	W	80	140
Electric protection rating	IP	X4D	X4D
Net weight	Kg	24.9	27.5
Methane gas consumption (*)	m^3/h	2.59	2.70
Butane gas consumption	kg/h	1.93	2.01
Propane gas consumption	kg/h	1.90	1.98
Maximum CH working temperature	°C	83	83
Maximum DHW working temperature	°C	58	58
Total capacity of expansion vessel	l	6	6
Maximum recommended CH system capacity (**)	l	100	100

No. 4 chart – General characteristics

(*) Value related to 15°C – 1013 mbar condition
(**) Maximum water temperature of 83°C, vessel preloaded at 1 bar.

CTN 24 AF		Max. heat output	Min. heat output	30% load
Casing heat loss	%	3.2	2.7	-
Flue system heat loss with burner on	%	6.1	9.4	-
Flue system mass capacity (methane gas)	g/s	16.7	16.5	-
Flue temp.– air temp.	°C	85	66	-
CO_2 (methane - propane - butane)	%	5.7 / 7.4 / 7.3	2.7 / 3.8 / 3.7	-
Boiler efficiency rating	%	90.6	90.0	90.0
92/42/CEE rating		★★		

No. 5 chart – Combustion data CTN 24 model

CTFS 24 AF		Max. heat output	Min. heat output	30% load
Casing heat loss	%	1.2	0.4	-
Flue system heat loss with burner on	%	5.8	11.7	-
Flue system mass capacity (methane gas)	g/s	16.0	16.9	-
Flue temp.– air temp.	°C	107	77	-
CO_2 (methane - propane - butane)	%	6.3 / 7.2 / 7.0	2.7 / 3.3 / 3.2	-
Boiler efficiency rating	%	93.0	90.2	90.2
92/42/CEE rating		★★★		

No. 6 chart – Combustion data CTFS 24 AF model

3. INSTRUCTIONS FOR THE INSTALLER

3.1 INSTALLATION STANDARDS

The boiler is designed as II2H3+ category and is to be installed in compliance with laws and standards in force in the country of installation.

3.2. Installation

Installation and maintenance procedures are to be implemented employing exclusively accessories and spare parts which are approved and supplied by the manufacturer. Correct boiler operation is not guaranteed when using accessories and spare parts which are not manufacturer approved and supplied.

3.2.1. Packaging

The boiler is shipped in a sturdy cardboard box.
Remove boiler from cardboard box and check its integrity.
The packing materials can be recycled: disposal of must be managed via specific waste collection sites.
Keep packaging out of the reach of children, as it may be source of danger.
The manufacturer shall not be held responsible for damage to people, animals, or property due to failure in following the above mentioned instructions.
Packaging includes one plastic bag containing:
a) installation, use and maintenance manual;
b) wall mounting template (pic. 7);
d) two screws and wall plugs in order to affix the boiler to the wall;
e) in CTFS model: one diaphragm for flue gas discharge (diameter 42.5);
f) in CTFS model: one sealing caps with gasket.

3.2.2. Choosing where to install the boiler

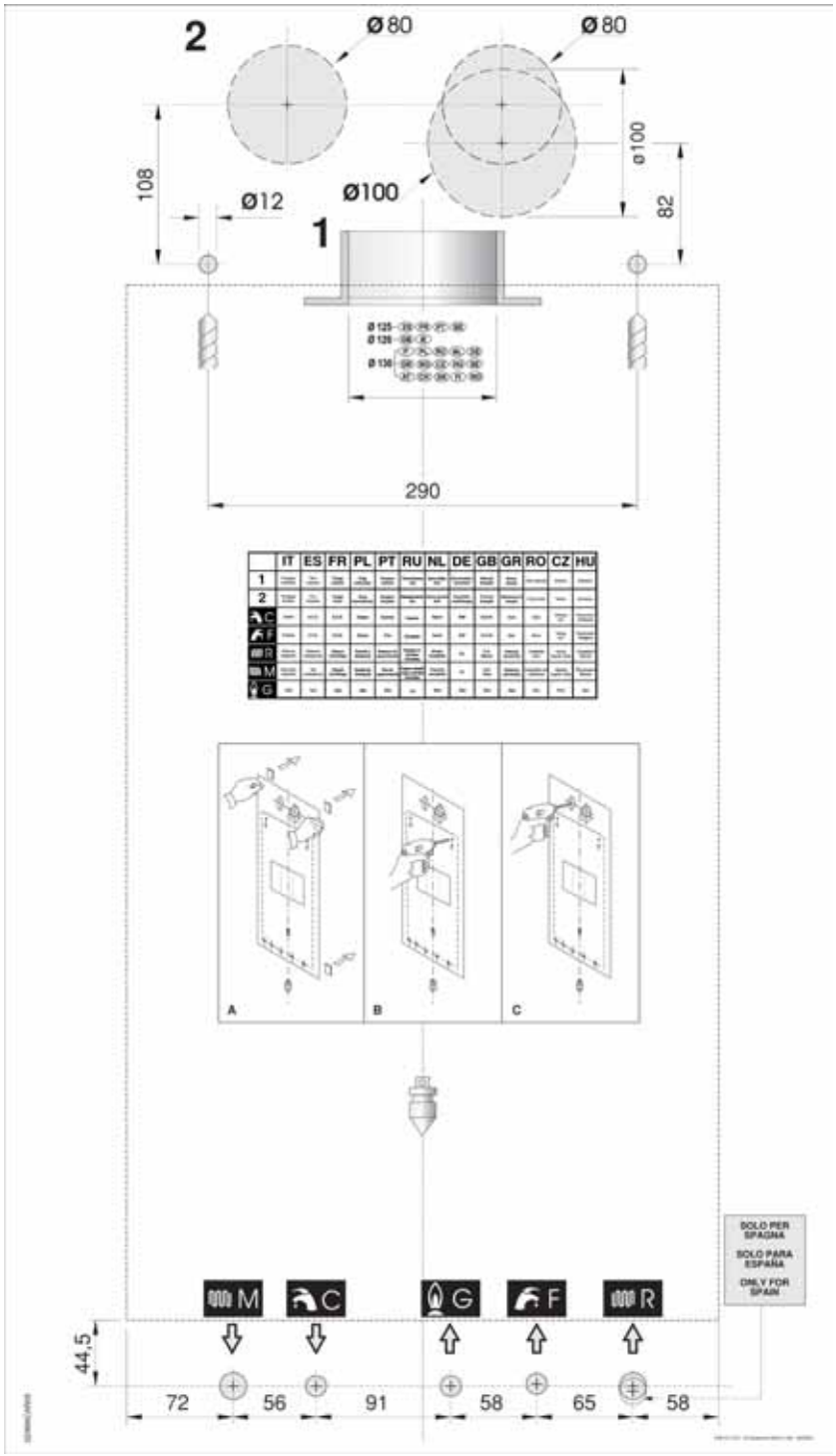
The following must be taken into account when choosing where to install the boiler:
- the indications given in … “Flue gas discharge system” paragraph;
- check the wall to be adequately well-built avoiding to fit the boiler on fragile walls;
- after the installation, check that 1 cm to the right and 1 cm to the left of the boiler was left for casing removal;
- Do not fit the boiler above any equipment that may prejudice proper operation (steam and grease vapor emitting kitchen appliances, washing machines, etc.);
- Do not install boilers with a natural draught in rooms with a corrosive or very dusty atmosphere, such as hair salons, laundries, etc., as that may greatly reduce boiler lifespan.

3.2.3. Positioning the Boiler

Each unit is supplied along with a paper template, in the package, allowing positioning the pipes connecting CH system, DHW system, gas supply, and air intake/flue gas discharge ducts to the boiler before installing the boiler itself.
The template is made of highly resistant paper and is to be affixed to the wall on which the boiler is to be mounted using a carpenter's level. It provides all the indication required in order to drill the holes for fixing the boiler to the wall, the boiler is secured to the wall using two screws and wall plugs.
The lower part of the template shows the areas to be marked for the couplings positioning of boiler connection to the gas supply pipe, water mains supply pipe, DHW flow pipe, CH flow and return pipes.
The upper part of the template shows the areas to be marked for positioning of air intake and flue gas discharge ducts.

Since the temperature of the walls on which the boiler is mounted and the temperature of coaxial flue system do not exceed 60°C, minimum distances from flammable walls do not need to be arranged.

For boilers with split pipe flue system, in presence of flammable walls and passages through such walls, provide insulating layer between wall and flue pipes.



pic. 7 - Template

3.2.4. Installing the Boiler

Before connecting the boiler to the CH and DHW pipe systems, clean the pipes carefully and eliminate any metal left during manufacturing and welding process, any oil or grease that may be left and that could damage the boiler or alter its operation if it reaches the boiler.

Do not use solvents as they could damage components.
Exclusively employ original and manufacturer supplied, air intake/flue gas discharge systems in order to ensure correct boiler operation
The manufacturer shall not be held responsible in case of damage to people, animals, or property due to failure in following the above mentioned information.

In order to install the boiler, proceed as follows:
- affix the template to the wall;
- check that 1 cm to the right and 1 cm to the left of the boiler is left for casing removal;
- provide two 12 mm Ø holes in the wall for the boiler wall plugs, insert the wall plugs provided with the boiler and place in the screws;
- when necessary provide holes in the wall to allow air intake and/or flue gas discharge pipes to pass through it;
- Position the couplings for connection to the gas supply pipe (G), the cold domestic water supply pipe (F), the domestic cold water flow pipe (C), and the central heating flow (M) and return pipes (R), as shown on the template (lower area);
- Hook the boiler to the previously provided screws;
- Connect the boiler to the feed pipes;
- Connect the boiler to the air intake and flue gas discharge system (refer to 3.2.5. and 3.2.6. paragraphs);
- Connect power supply and ambient thermostat (when available).

3.2.5. Boiler room ventilation

CTN boiler model has an open combustion chamber and is designed for connection to a chimney: combustion air is drawn directly from the room where the boiler is installed.

CTFS boiler model has a sealed combustion chamber and does not withdraw combustion air from the room where the boiler is installed, so specific recommendations do not need to be applied involving air intake ventilation openings, or concerning boiler room requirements.

The Manufacturer shall not be held liable for damage resulting in incorrect installation, use, modification of the equipment or non-observance of instructions provided by the manufacturer or applicable installation standards for the product.

3.2.6. Air intake and flue gas discharge system

In terms of the flue discharge into the atmosphere, comply with applicable laws and prescriptions in the country of installation.

The boiler is equipped with a safety device which is oversees flue gas exhaustion.
In case of malfunction of the air intake/flue gas discharge system, the device shuts down the equipment and no. 1 LED turns on (yellow).
It is strictly forbidden to tamper or de-activate the safety device.
Should the boiler repeatedly shut down, it is necessary to have the boiler air intake/flue gas discharge ducts checked, they could be obstructed or incorrectly sized for flue gas exhaust into the atmosphere.

3.2.6.1. Natural draught boiler

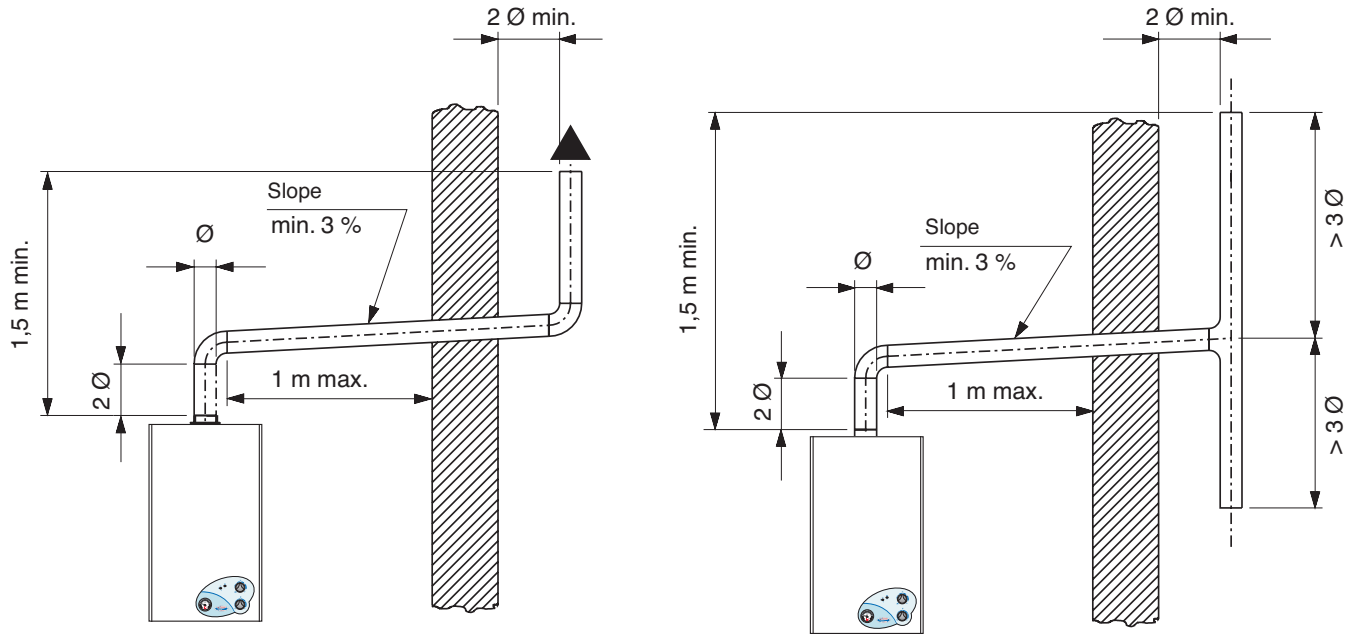
Connecting to the chimney
The chimney is indispensable for correct boiler operation; it must therefore comply with the following requirements:
- it must be made of waterproof material and be resistant to flue gas temperature and related condensate;
- it must have appropriate mechanical characteristics and low thermal conductivity;
- it must be perfectly sealed;
- it must be as vertical as possible and the roof terminal is to have a removable cap for inspection and cleaning;
- the chimney diameter is not to be less wide than the boiler flue gas outlet diameter; squared or rectangular section chimneys must bear an internal section, 10% larger than the section connected to the boiler anti-wind gust device;
- starting from the boiler, the duct connecting to the chimney is to follow a vertical direction and must be long not less than twice its diameter before joining the chimney.

Direct emission into the atmosphere

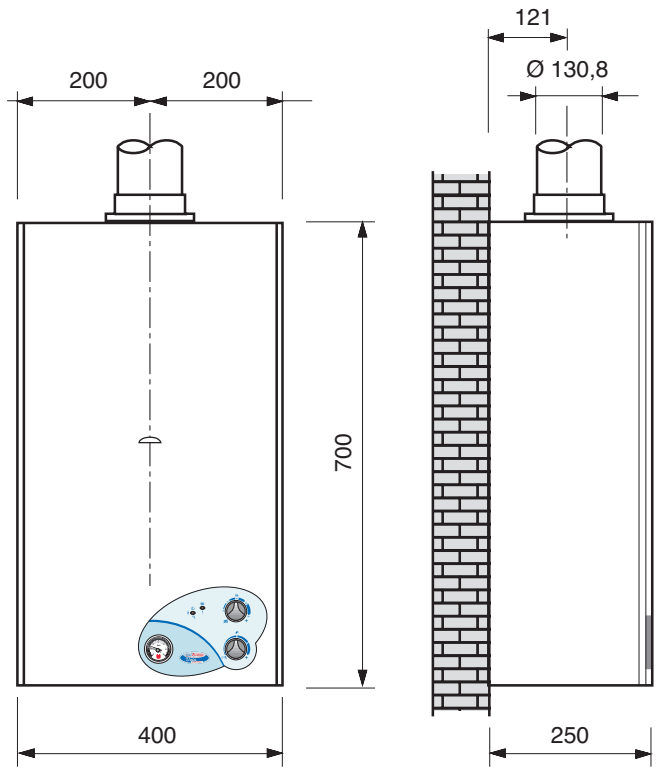
Natural draught boilers can discharge flue gas directly into the atmosphere via a duct which goes through the outside walls of the building and ends with an anti-wind gust device terminal.

The flue gas exhaust duct is to comply with the following requirements:

- its sub-horizontal part inside the building must be as short as possible (not longer than 1,000 mm);
- it is not to have more than 2 direction changes;
- it can host only one single boiler flue gas exhaust system;
- its section, which is passing through the wall is to be protected by a sheath duct; the part of the sheath duct facing the inside of the building is to be sealed, while the part facing outwards is to be left open;
- its end section, on which the terminal is to installed, is to protrude from the wall of the building for a length of a least twice the diameter of the duct;
- the terminal is to be positioned no less than 1.5 meters higher than the flue gas exhaust duct from the boiler (see pic. 8).



Pic. 8 – Connection to the chimney for CTN model

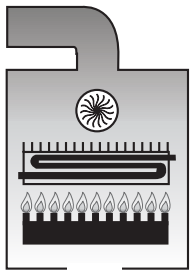


Pic. 9 – Dimensions for connection of CTN model to the chimney

3.2.6.2. Forced draught boiler

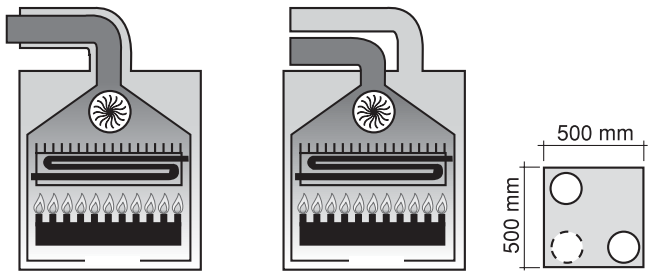
3.2.6.2.1 Configuration of air intake and flue gas discharge ducts

Type B22



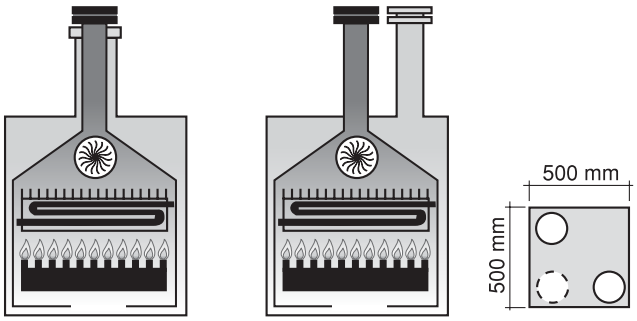
B22 This boiler is conceived for connection to an existing flue system either internal or external to the boiler room. Combustion air is taken directly from the boiler room itself while flue gas is conveyed to the outside. The boiler is not to be fitted with an anti-wind gust device, while it is to be equipped with a fan, mounted after the combustion chamber.

Type C12



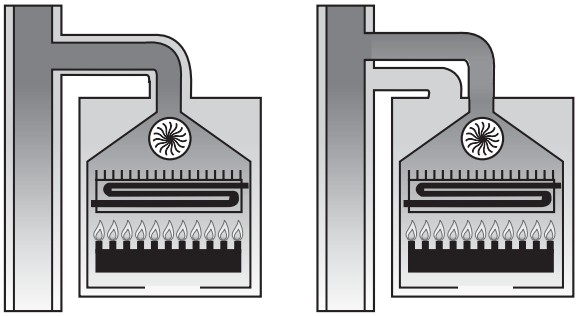
C12 This boiler is designed to be connected to horizontal outlet and intake ducts connected to the outside by means of coaxial or split ducts.
The distance between the air intake duct and the flue gas outlet duct is to be a minimum of 250 mm (refer to the picture on the lateral area of the page) and both terminals must be positioned within a squared area having 500 mm sides.

Type C32



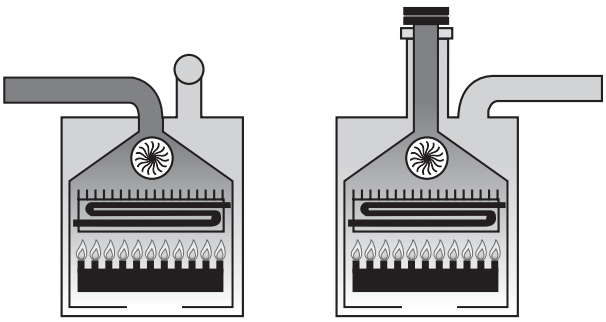
C32 This boiler is designed to be connected to vertical outlet and intake ducts connected to the outside by means of coaxial or split ducts. The distance between the air intake duct and the gas flue duct is to be a minimum of 250 mm (refer to the picture on the lateral area of the page) and both ends must be positioned within a squared area having 500 mm sides.

Type C42



C42 This boiler is designed to be connected to a collective chimney pipe system that includes two ducts, one for taking in combustion-supporting air and the other for removing the products of combustion. These ducts may be coaxial or split.
The flue gas chimney system must comply with current standards.

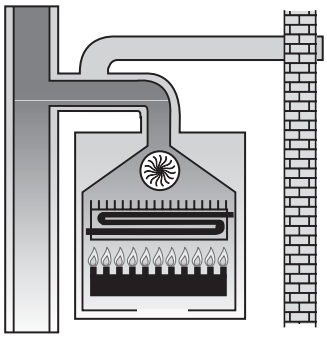
Type C52



C52 Boiler with separate pipes for the combustion supporting air intake and for removal of the products of combustion. These flues may discharge in areas at a different pressure. The terminals may not face each other from opposed walls.

C82 This boiler is designed to be connected to combustion air terminal and to a single flue gas terminal or to collective chimney.
The flue gas chimney must comply with current standards.

Type C82



3.2.6.2.2. Air intake and flue gas discharge system via 100/60 mm coaxial pipes

Type C12

Minimum permissible length of horizontal coaxial pipes is 1 meter, not counting the very first elbow connected to the boiler. Maximum permissible length of horizontal coaxial pipes is 4 meter, not counting the first elbow connected to the boiler.
For each additional elbow maximum permissible length must be reduced by 1 meter. In addition to that, the duct is to have a 1% slope toward the exit direction, in order to prevent rainwater entering it.

Choosing the applicable diaphragm supplied with the boiler (pic. 10)

Pipe length (m)	Flue gas discharge diaphragm diameter (mm)
1 ≤ L ≤ 2*	Ø 42,5
2 ≤ L ≤ 4*	No diaphragm

* the first elbow from the boiler is not to be accounted for

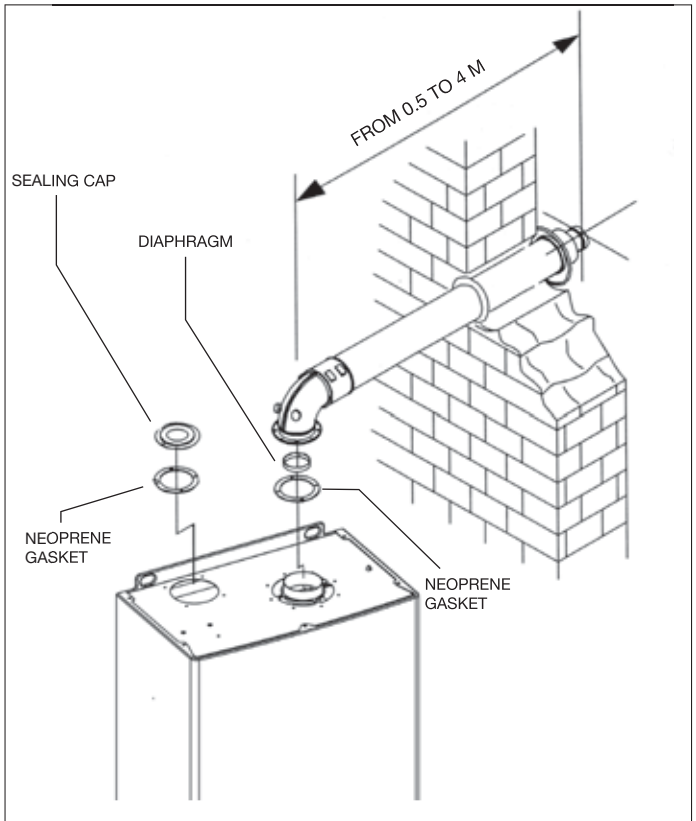
Type C32

Minimum permissible length for vertical coaxial pipes is 1 meter, equal to the length of the chimney.
Maximum permissible length for vertical coaxial pipes is 4 meter, including the chimney.
For each additional elbow the maximum permissible length must be reduced by 1 meter.

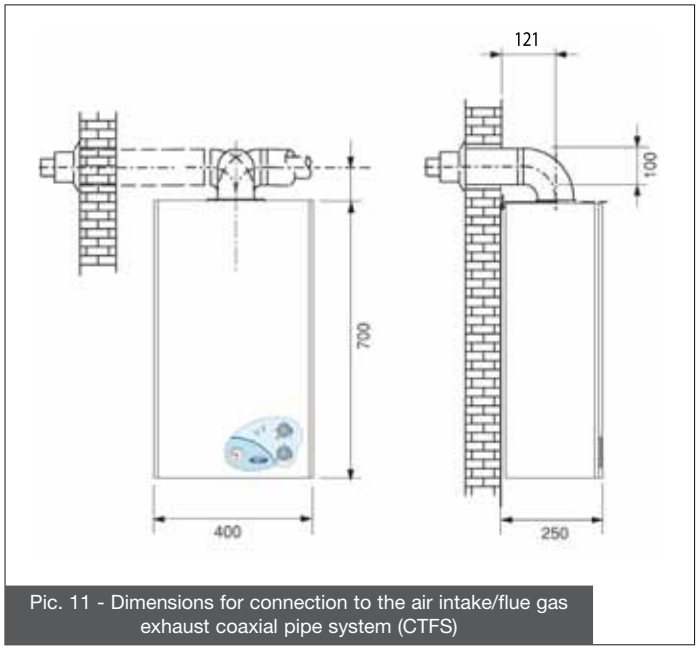
Choosing the applicable diaphragm supplied with the boiler (pic. 10)

Pipe length (m)	Flue gas discharge diaphragm diameter (mm)
1 ≤ L ≤ 2	Ø 42,5
2 ≤ L ≤ 4	No diaphragm

The above data are referred to air intake/flue gas exhaust systems which are implemented by means of smooth, rigid manufacturer approved and supplied pipes.



Pic. 10 - Air intake/flue gas exhaust coaxial pipe system (CTFS)



Pic. 11 - Dimensions for connection to the air intake/flue gas exhaust coaxial pipe system (CTFS)

3.2.6.2.3 Air intake and flue gas discharge system via 80/80 mm split pipes

C42 – C52 – C82 installation category

Air intake
Minimum permissible length of air intake pipe is 1 meter.
Each wide radius 90° elbow (R=D) equals a 1 meter long pipe section.
Each narrow radius 90° elbow (R<D) equals a 1 meter long pipe section.

Flue gas discharge
Minimum permissible length of flue gas discharge pipe is 0,5 meter.
Each wide radius 90° elbow (R=D) in flue gas discharge equals a 1,5 meter long pipe section.
Each narrow radius 90° elbow (R<D) in flue gas discharge equals a 3,5 meter long pipe section.

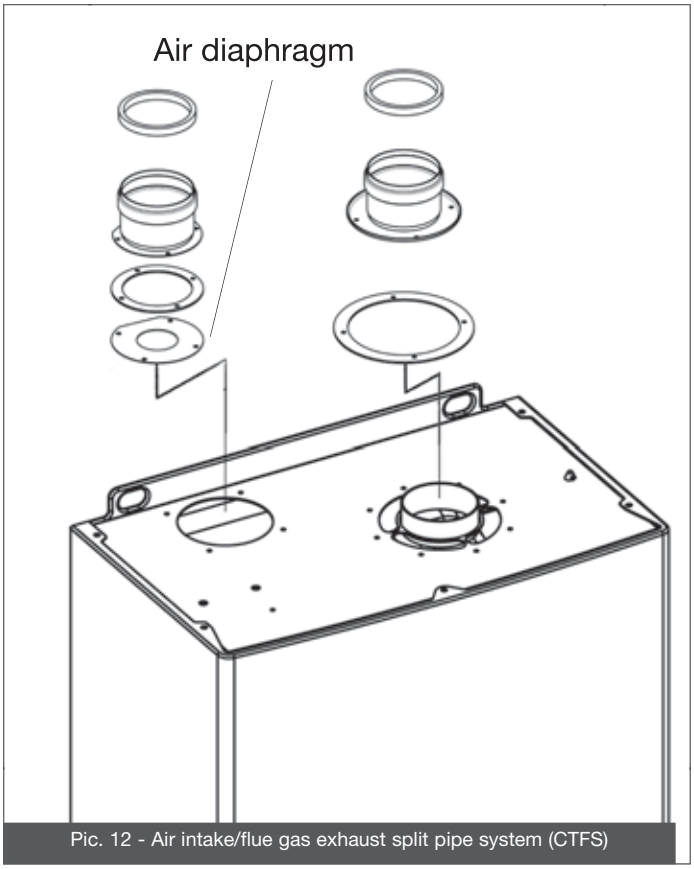
Choosing the applicable diaphragm supplied with the boiler

Ø 47 diaphragm is supplied by the manufacturer in the optional air/flue gas split pipe kit

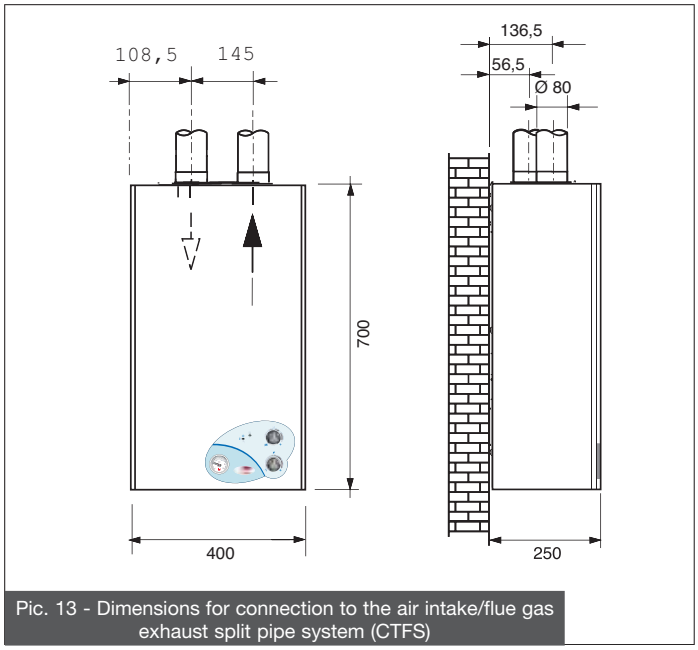
Pipe length (m)	Air intake diaphragm diameter (mm)
0,5 ≤ L ≤ 10*	Ø 47
10 ≤ L ≤ 26*	No diaphragm

* the first elbow from the boiler is not to be accounted for

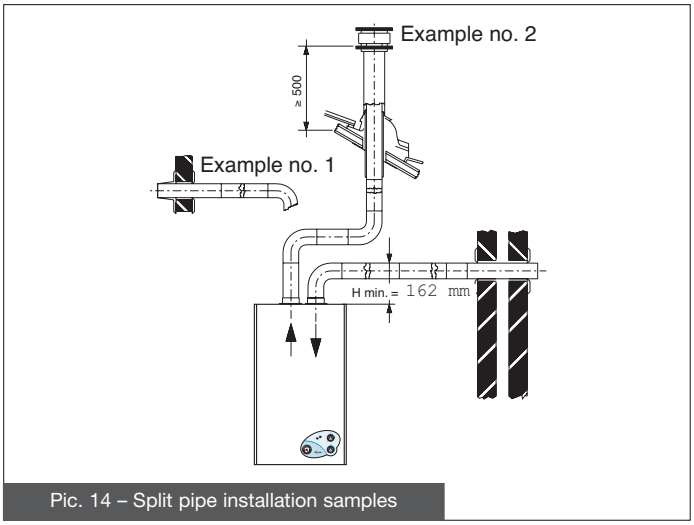
The above data are referred to air intake/flue gas exhaust systems which are implemented by means of smooth, rigid manufacturer approved and supplied pipes.



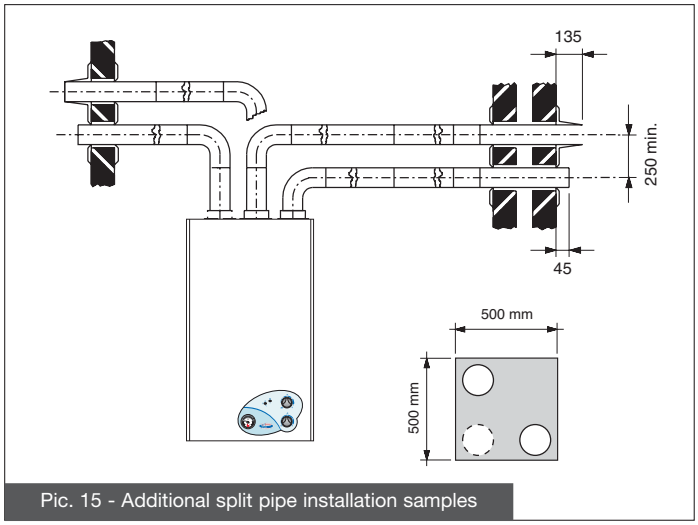
Pic. 12 - Air intake/flue gas exhaust split pipe system (CTFS)



Pic. 13 - Dimensions for connection to the air intake/flue gas exhaust split pipe system (CTFS)



Pic. 14 – Split pipe installation samples



Pic. 15 - Additional split pipe installation samples

3.2.7 Checking combustion efficiency

In order to check combustion efficiency, turn no. 5 knob fully clockwise and completely open one or two domestic hot water taps so that the boiler will operate at max. output.

3.2.7.1 Coaxial pipe system

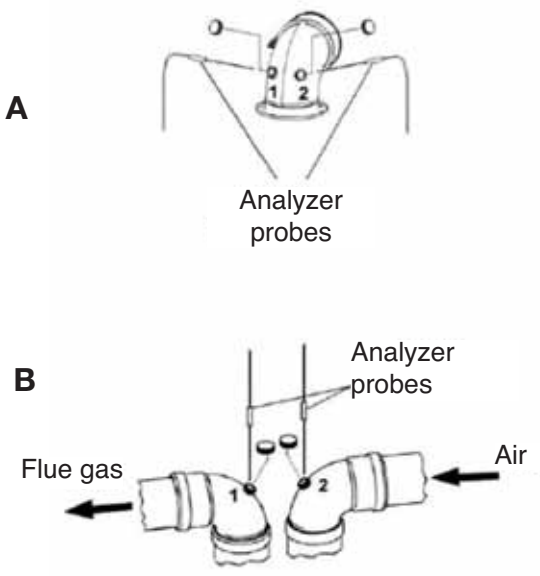
In order to verify combustion performance the following measurements must be implemented:
- Measure air temperature (from no. 1 opening shown in pic. 16A for sealed chamber boilers with prearranged openings).
- Measure flue gas temperature and CO_2 concentration (from no. 2 opening shown in pic. 16A for sealed chamber boilers with prearranged openings).

Perform measurements while the boiler is operating at working temperature.
Once the above procedure is completed, close the domestic hot water taps and position no. 5 knob (pic. 1) to the desired setting.

3.2.7.2. Split pipe system

In order to determine combustion performance the following measurements must be implemented:
- Measure air temperature (from no. 2 opening shown in pic. 16B for sealed chamber boilers with prearranged openings).
- Measure flue gas temperature and CO_2 concentration (from no. 1 opening shown in pic. 16B for sealed chamber boilers with prearranged openings).

Perform measurements while the boiler is operating at working temperature.
Once the above procedure is completed, close the domestic hot water taps and position no. 5 knob (pic. 1) to the desired setting.



Pic. 16 - Sample areas for combustion efficiency measurements

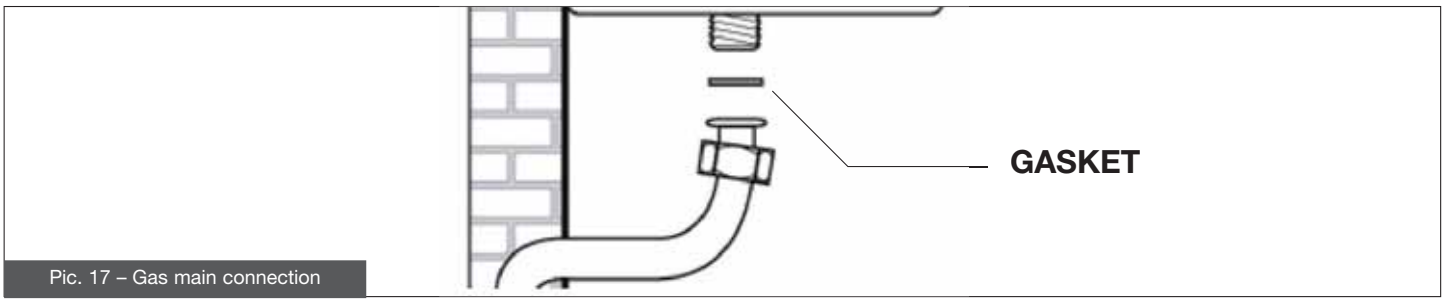
3.2.8. Gas mains connection

Cross-section of gas supply pipe must be equal or greater than the boiler one. Cross-section size depends on its length, layout pattern, gas flow rate. It is therefore to be sized accordingly.

Comply with installation standards enforced in the installation country. They are considered as an integral part of this booklet.

Remember that before operate an internal gas distribution system and before connecting it to a meter, it must be checked for leaks. In order to perform a leak test, operate according to the following indication:
- The leak test is to be carried out before the pipes are covered. The leak test must not be carried out using flammable gas: use air or nitrogen for this purpose.
- Once gas is in the pipes, leak test by a naked flame is forbidden. Use specific products available on the market.

When connecting a boiler to gas supply network the use of an appropriately sized and made gasket (pic. 17).
The boiler gas inlet thread configuration is not suitable for hemp, plastic tape or similarly made gaskets.



Pic. 17 – Gas main connection

3.2.9. Plumbing connections

Prior to installing the boiler, the hydraulic system should be cleaned in order to remove impurities; they might be present in system components and damage the pump or the heat exchanger.

CENTRAL HEATING

CH flow pipe and CH return pipe must be connected to their relevant 3/4” coupling on the boiler (see pic. 7).
When sizing CH system pipes, bear in mind load losses caused by radiators, thermostatic valves, radiator gate valves, and the configuration of the system itself.

It is advisable to convey the discharge flow of boiler safety valve to the sewer system. Should that not be performed, and the safety valve be activated, flooding of the room in which the boiler is installed may occur.
The manufacturer shall not be held responsible for any damage resulting from failure in observing the above mentioned technical provision.

DOMESTIC HOT WATER

DHW flow pipe and water mains pipe must be connected to their relevant 1/2” couplings C and F on the boiler (pic. 7).
Hardness of water supplied to the boiler may increase heat exchanger cleaning and /or replacement frequency.

WARNING

Depending on hardness level of the water supplied, it might be necessary installing a suitable water treatment device for domestic use and in compliance with applicable laws and standards.
Water treatment is always advisable when water supplied to the boiler is more than 20°F hard.
Water supplied by commonly marketed water softeners, due to PH level induced in water, may not be compatible with some components in system.

3.2.10. Power mains connections

The boiler is supplied with a three-poled power cable, already connected to the electronic board and it is provided with an anti-rupture firming clamp.

The boiler is to be connected to a 230V-50Hz electric power supply.
Comply with phase / neutral polarity sequence when power connecting the boiler.

Installation standards must be complied with and they are considered as an integral part of this booklet.

An easily accessible two-poled switch, with a minimum 3 mm distance between contacts, is to be installed outside of the boiler. The switch is to allow power supply cut-off in order to safely perform maintenance and service procedures.

Power supply to the boiler must be fitted with a differential magnetic-thermal automatic switch of suitable disconnection capacity.

Electric power supply must be properly earthed.
The above mentioned safety measure must be verified. If in doubt, ask a qualified technician to thoroughly check the power network.

WARNING
The manufacturer shall not be held responsible for any damage due to failure in grounding the system: gas, hydraulic, or CH system pipes are not suitable for grounding power networks.

3.2.11. Room thermostat connection (optional equipment)

The boiler is designed to be connected to an ambient thermostat (not supplied with the boiler).
Room thermostat contacts must be properly sized in compliance with a load of 5 mA load at 24 Vdc.

Ambient thermostat wiring must be connected to the relevant terminal board (see electric layout), after removing the jumper supplied as standard with the boiler.
The ambient thermostat wirings are NOT to be grouped together with power mains supply cables.

3.3. Loading the system

Once all boiler connections have been completed, CH system can be filled.

The procedure is to be cautiously carried out, following each step:
- open the air purging valves on all radiators and verify the boiler automatic valve operation;
- gradually open the relevant loading tap (pic. 2), checking all automatic air purging valves installed in the system properly work;
- close all radiator air purging valves as soon as water starts coming out;
- check boiler water pressure gauge not to exceed 1 / 1.3 bars reading;
- shut the loading tap and bleed any air out again, by opening the air bleeding valves on radiators;
- start the boiler and bring the system to working temperature, stop the boiler and wait for the pump to stop, then repeat the air bleeding procedures;
- allow the system to cool and restore water pressure to 1 / 1.3 bars.

WARNING
As far as domestic heating systems treatment of water is concerned, in order to optimize performance and safety, to preserve these conditions over time, to ensure long-lasting regular operation of auxiliary equipment as well, and to minimize energy consumption, thereby integrating current local laws and standards it is advisable to use specific products that are suitable for multi-metal plants.

WARNING
The safety low water pressure switch will not give electric consensus to the burner turn on procedure when water pressure is below 0,4/0,6 bar. CH water pressure is not to be less than 0,8/1 bar. Restore proper value as needed, via the loading tap which is provided as standard with the boiler (pic. 2). The procedure is to be followed while the system is cold. The pressure gauge fitted on the boiler control panel indicates the pressure in the CH system.

WARNING
After long inactivity of the boiler has its pump may be stuck. Before starting up the boiler, make sure that the pump is operative, by the following procedure:
- remove the boiler casing;
- unscrew the protective cap at the centre of the pump motor;
- put a screwdriver into the hole and manually rotate the pump shaft clockwise;
- once the unblocking operation is completed, screw the protective cap back on and check for water leaks.
When the protection cap is removed, some water may flow out. Before re-installing the boiler casing, make sure all internal surfaces are dry.

3.4 Starting the Boiler

3.4.1 Preliminary Checks

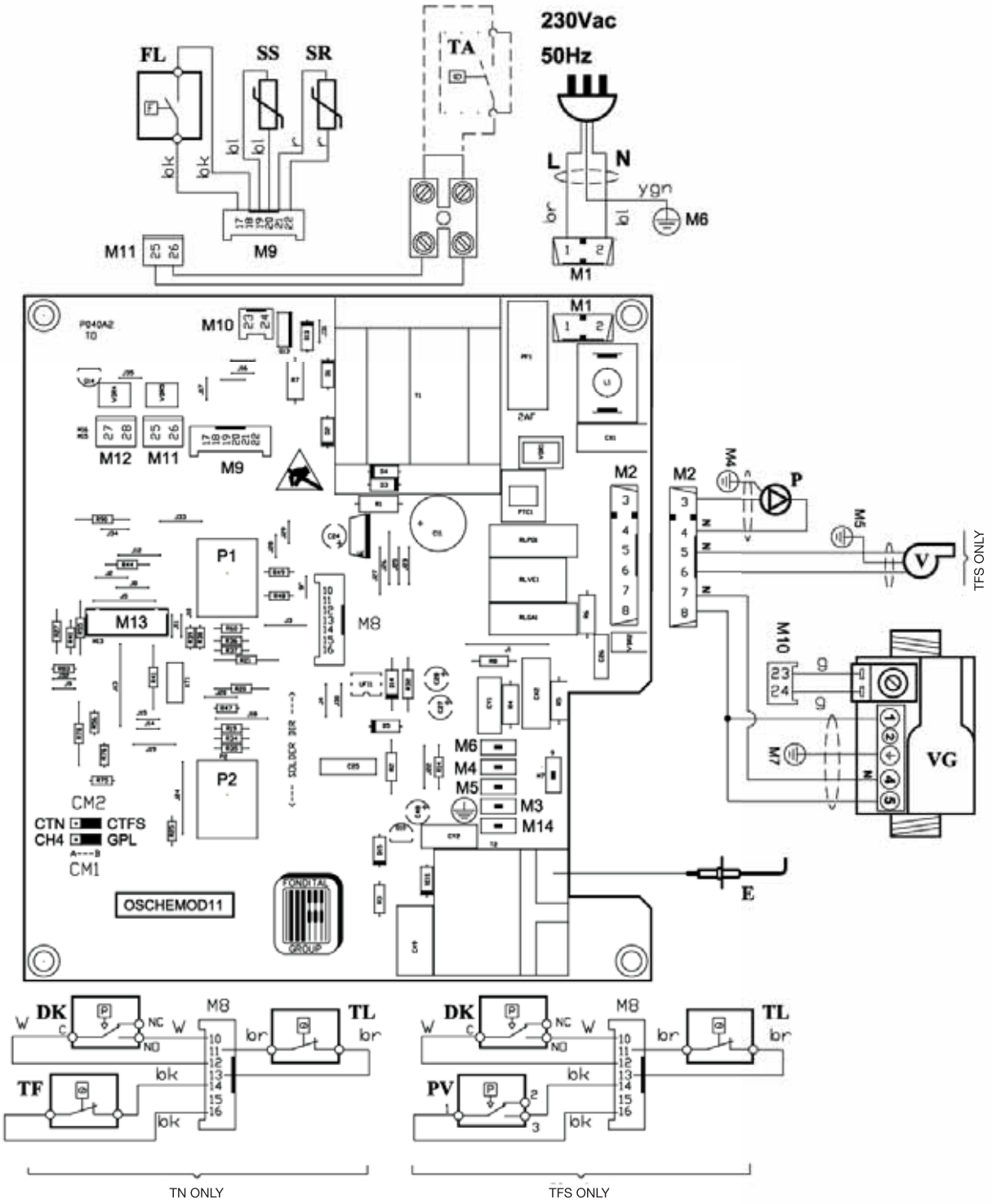
Before starting the boiler it is necessary to perform the following checks:
- flue gas discharge pipe and its terminal are installed in accordance to the instructions: when the boiler is running no products generated by combustion are to leak from any gasket;
- power supplied to the boiler is 230 V – 50 Hz;
- the system is correctly loaded with water (water pressure gauge reading is 1 / 1,3 bars);
- all system pipes stopcocks are open;
- the gas supplied to the boiler corresponds to that for which the boiler is manufactured: convert the boiler to the available gas when necessary (see section 3.6 “Adaptation to other gases and burner adjustment”. The procedure is to be carried out by qualified technical personnel;
- the gas supply stopcock is open;
- there are no gas leaks;
- the main switch external to the boiler is set to on;
- the 3 bar safety valve is not blocked;
- there are no water leaks;
- the pump is not blocked.

3.4.2. Switching on and switching off

In switching on and switching off the boiler, follow the “Instructions for the user”.

3.5. Wiring Diagram

0SCHEMOD11:	Electronic pcb
M1-M10:	Power Supply connector, TA
M13:	Connector for tele-metering
M2-M12:	Service connectors
E:	Detection/ignition electrode
P:	Circulation pump
V:	Fan (TFS models only)
TF:	Thermostat preventing flue gas overflow
PV:	Fan pressure switch (TFS models only)
DK:	Low water pressure switch
SR:	CH probe 10 Ohm A 25°C B = 3435
SS:	DHW probe 10 Ohm A 25°C B = 3435
TA:	Ambient thermostat (option)
CM1-CM2:	Boiler type and gas type selection jumpers
FL:	Flow sensor
VG:	Gas valve
TL:	Limit thermostat



Pic. 18 – Wiring diagram

Relation between temperature (°C) and nominal resistance (Ohm) of CH probe SR and DHW probe SS.

T (°C)	0	2	4	6	8
0	27203	24979	22959	21122	19451
10	17928	16539	15271	14113	13054
20	12084	11196	10382	9634	8948
30	8317	7736	7202	6709	6254
40	5835	5448	5090	4758	4452
50	4168	3904	3660	3433	3222
60	3026	2844	2674	2516	2369
70	2232	2104	1984	1872	1767
80	1670	1578	1492	1412	1336
90	1266	1199	1137	1079	1023

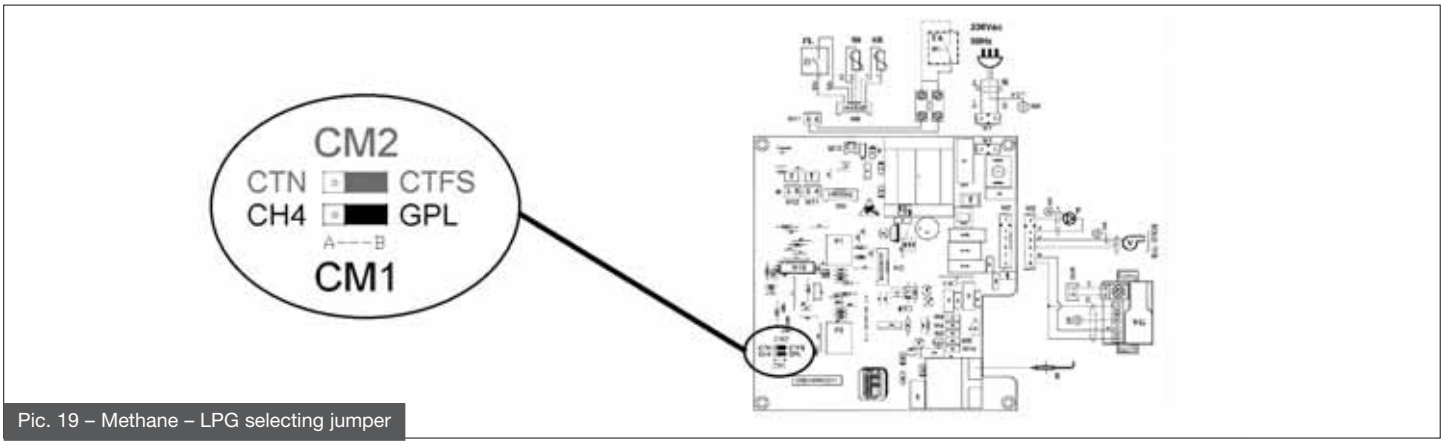
No. 7 chart – “Temperature - Nominal resistance” relation of temperature probes

3.6 Adaptation to other gas types and burner adjustment

The boilers are manufactured for the gas specified upon order.
After sale transformation is to be exclusively implemented by qualified personnel, employing manufacturer designed accessories and following the procedure and adjustment instructions for an accurate boiler setting-up.

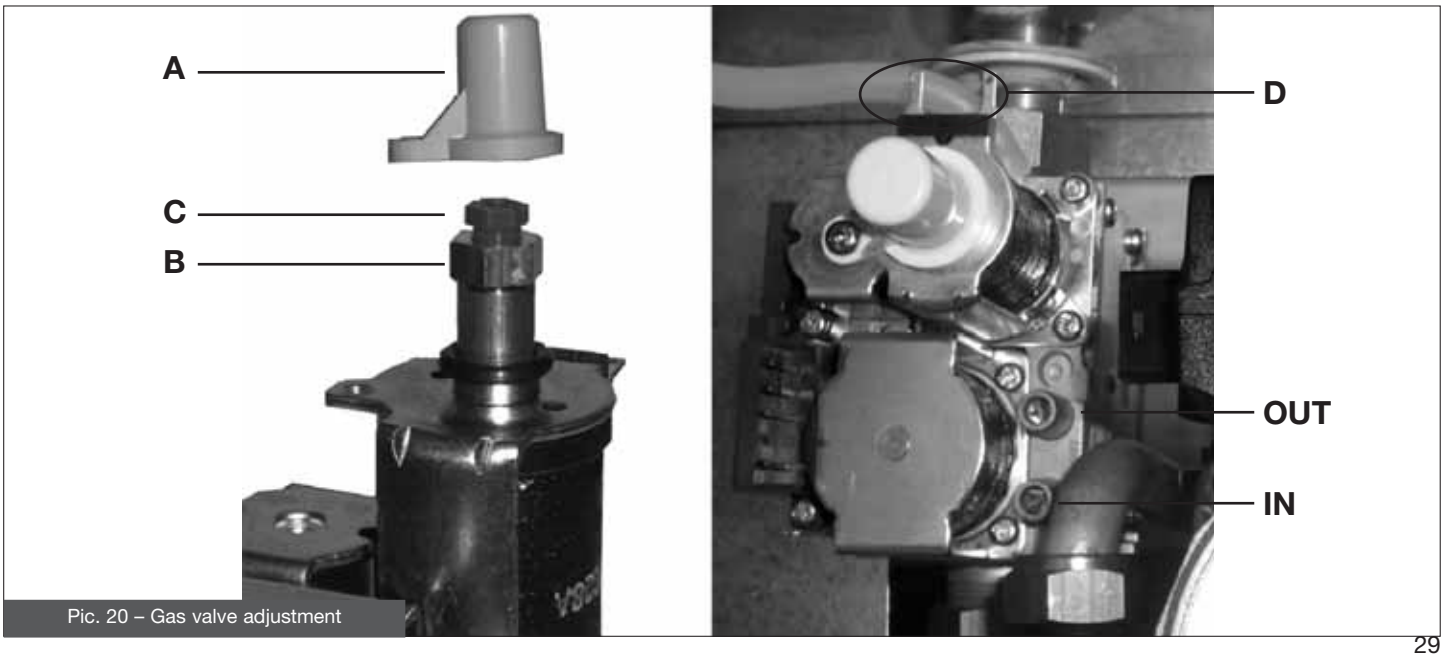
Adapting the boiler from METHANE to LPG
- Remove the main burner;
- remove nozzles from main burner replacing them by new gas type correct diameter ones; WARNING! It is mandatory to install the copper gaskets;
- re-install the main burner;
- on the electronic board, switch CM1 CH4-GPL jumper to GPL position (pic. 19).

Adapting the boiler from LPG to METHANE
- Remove the main burner;
- remove nozzles from main burner replacing them by new gas type correct diameter ones; WARNING! It is mandatory to install the copper gaskets;
- re-install the main burner;
- on the electronic board, switch CM1 CH4-GPL jumper to CH4 position (pic. 19).



Pic. 19 – Methane – LPG selecting jumper

A) Maximum heat output adjustment
- Check gas mains supply and burner pressure (see no. 2 and no. 3 charts on page 14).
- remove plastic cap A (pic. 20), positioned on top on the coil of the modulating device, and protecting the screws of the pressure adjusting device;
- connect a manometer to IN check (pic. 20), in order to verify the entering pressure and to the OUT check (pic. 20) in order to verify the exiting pressure;
- fully turn clockwise no. 5 knob on the control panel (pic. 1), and open one or two domestic hot water taps for the boiler to operate at max. output;
- turn CLOCKWISE the brass nut B for max. output adjustment (pic. 20) in order to increase nozzle pressure, and COUNTER-CLOCKWISE in order to decrease nozzle pressure;
- for LPG operation, turn brass nut B fully CLOCKWISE.



Pic. 20 – Gas valve adjustment

B) Minimum heat output adjustment
- Disconnect electric wiring from D modulation coil (pic. 20);
- turn the burner on and check minimum pressure value according to no. 2 and no. 3 charts on page 14;
- in order to adjust pressure, hold nut B still by means of a 100 mm tool, and turn plastic screw C CLOCKWISE to increase and COUNTER-CLOCKWISE to decrease gas pressure;
- re-connect electric wiring to modulation coil.

C) Final settings
- Turn the boiler on and check its correct operation;
- check again for correct minimum and maximum gas valve pressure of gas valve;
- adjust as necessary;
- install protective plastic cap A;
- close gas pressure checks;
- check for gas leaks.

4. TESTING THE BOILER

4.1 Preliminary checks

Before testing the boiler, it is recommended to carry out the following checks:
- flue gas evacuation ducts and terminal are implemented according to instruction: **when the boiler is running products generated by combustion are not to leak from gaskets;**
- power mains supply to boiler is 230 V – 50 Hz;
- the system is correctly loaded (water pressure on gauge 1 / 1,3 bars);
- all stopcocks in the system piping are open;
- the gas type supplied to the boiler is in compliance with boiler specifications In contrast, modify the boiler for the gas type available (see no. 3.6 section “ADAPTATION TO OTHER GAS TYPES AND BURNER ADJUSTMENT”);
- the gas supply stopcock is open;
- **no gas leaks are detected;**
- the power switch, external to the boiler, is on;
- the boiler 3 bar safety valve is not blocked;
- the boiler pump is not blocked.

Should the boiler not be installed in compliance with current laws and standards, notify the system supervisor and do not test the boiler.

4.2. Switching on and switching off

For boiler starting up and switching off procedure follow the “Instructions for the User”.

5. MAINTENANCE

Routine boiler maintenance is to be scheduled according to current laws and regulations.

Appropriate boiler maintenance ensures efficient operation, environment preservation, and safety for people, animals and objects. All maintenance and repair procedures are to be carried out by qualified personnel.

The manufacturer recommends Customers to contact an authorized Service Centre for all maintenance and repair procedure as they are best trained for the purpose.

Before implementing any maintenance procedure, involving replacement of components and/or cleaning inside parts of boiler, disconnect electric power supply.

Maintenance schedule

Routine maintenance schedule are to include the following:
- check general integrity of the boiler;
- check boiler and network gas supply for leakage;
- check gas supply pressure to boiler;
- check minimum and maximum gas pressures to boiler nozzles;
- check boiler ignition sequence;
- check boiler combustion parameters by way of flue gas analysis;
- check flue gas system for integrity, good state of preservation, and leakage;
- check draught stop device for good state of preservation (CTN);
- check absence of flue gas reflux in the room and correct flue gas discharge (CTN);
- check operation of safety thermostat installed on the draught stop (CTN);
- check air intake/flue gas pressure switch operation (CTFS);
- check integrity of safety devices of the boiler in general;
- check water leaks and oxidized areas on the boiler's couplings;
- check efficiency of the system safety valve;
- check expansion vessel loading pressure;
- check water pressure switch efficiency.

The following cleaning is to be done:
- cleaning of boiler internal areas;
- cleaning of gas nozzles;
- cleaning of air intake and flue gas exhaust system (CTFS);
- cleaning of draught stop device (CTN);
- cleaning of ventilation grille in the boiler room (CTN);
- cleaning of flue gas side of the heat exchanger.

When checking the boiler for the very first time, also verify:
- boiler room suitability;
- air vents in the boiler room (CTN);
- diameter and length of flue gas system ducts;
- boiler installation in accordance to this "Installation use and maintenance" manual instructions;

Should the boiler not correctly operate, while not posing danger to people, animals or property, notify the system supervisor both verbally and in writing.

6. TROUBLESHOOTING

BOILER STATUS	MALFUNCTION	PROBABLE CAUSE	SOLUTION
The boiler has shut down, and no. 2 led is on in red. Turn no. 5 knob to reset position in order to resume boiler operation.	Burner does not ignite	Gas supply failure	Check gas pressure Check gas network stopcock or gas network safety valve intervention
		Gas valve has disconnected	Reconnect it
		Gas valve is faulty	Replace it
		PCB is faulty	Replace it
	Burner does not ignite: there is no spark	Ignition/flame sensing electrode is faulty	Replace the electrode
		PCB does not ignite: it is faulty	Replace PCB
	Burner ignites for a few seconds and goes off	PCB does not detect flame: inverted phase and neutral	Verify correct neutral and phase connection sequence
		Ignition/flame detection electrode wire is interrupted	Connect flame detection electrode wire or replace it
		Ignition/flame detection electrode is faulty	Replace electrode
		PCB does not detect flame, it is faulty	Replace PCB
		Ignition heat input setting is too low	Increase it
		Minimum heat input in not set correctly	Check burner setting
The boiler has shut down and no. 1 led is on in yellow. Turn no. 5 knob to reset position in order to resume boiler operation.	Air intake/flue gas exhaust pressure switch is not operating (CTFS)	Air intake/flue gas exhaust pressure switch is faulty	Check Air intake/flue gas pressure switch: replace it if faulty
		The silicone pipes of switch are disconnected or damaged	Connect or replace silicone pipes
		Air intake or flue gas discharge flow is nor correct	Check air intake or flue gas discharge
		Fan is faulty	Replace it
		PCB is faulty	Replace it
	Flue gas thermostat has shut the boiler down (CTN)	Air intake or flue gas discharge system is weak	Check air intake or flue gas discharge system and vent grilles in the boiler room
		Flue gas thermostat is faulty	Replace it
The boiler has shut down and no. 1 led is on in red. The boiler will automatically resume operation after 10 seconds or turning no. 5 knob to reset position.	The safety thermostat has shut boiler down	CH water does not flow in the system: pipes might be clogged, thermostatic valves might have shut, system stopcocks might be closed	Check CH system
		Pump is blocked or faulty	Check the pump
No. 1 led is on in red. The boiler will resume operation as soon as the malfunction is corrected.	CH water flow temperature exceeded 85°C	Water flow in the system is not adequate	Check the pump
			Check CH system
No. 1 led is on in yellow. The boiler will automatically resume operation as soon as the malfunction is corrected.	CH system water pressure is low	The system is leaking	Check CH system
		Water pressure switch is disconnected	Reconnect it
		Water pressure switch is not operating: it is faulty	Replace it
No. 1 led is flashing yellow and red. The boiler will automatically resume operation as soon as the malfunction is corrected.	CH flow is not working	CH probe is disconnected	Reconnect it
		CH probe is faulty	Replace it

BOILER STATUS	MALFUNCTION	PROBABLE CAUSE	SOLUTION
No. 1 led is flashing green and red. The boiler will automatically resume operation as soon as the malfunction is corrected.	DHW probe is not working	DHW probe is disconnected	Reconnect it
		DHW probe is faulty	Replace it
Boiler is not supplying DHW	DHW flow meter is not working	System insufficient pressure or flow rate	Check DHW system
			Check DHW flow meter filter
		DHW flow meter sensor is faulty or disconnected	Replace or reconnect it
		DHW flow meter sensor is blocked	Replace it
No. 1 led is flashing green. The boiler will automatically resume operation as soon as the malfunction is corrected.	Gas valve modulation coil is not working	PCB and gas valve link is disconnected or faulty	Check connection to the gas valve
		Gas valve modulation coil is faulty	Replace gas valve modulation coil

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NOVA FLORIDA

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