cod. 20167954 rev.0 12/2019

WARNING: If the information in this manual is not followed exactly, a fire or explosion may result causing property damage, personal injury or loss of life.

Do not store or use gasoline or other flammable vapors and liquids or other combustible materials in the vicinity of this or any other appliance. To do so may result in an explosion or fire.

WHAT TO DO IF YOU SMELL GAS:

- Do not try to light any appliance.
- Do not touch any electrical switch; do not use any phone in your building.
- Immediately call your gas supplier from a neighbor's phone. Follow the gas supplier's instructions.
- If you cannot reach your gas supplier, call the fire department.

Installation and service must be performed by a qualified installer, service agency or the gas supplier.

This manual should be maintained in legible condition and kept adjacent to the boiler or in a safe place for future reference.

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Family PRO 42 KIS-IS

INSTALLATION & OPERATING INSTRUCTIONS FOR CONTRACTORS

Scan the QR code for the latest edition of this manual

RIELLO

Legend model terminology:
KIS = combi boiler
IS = heating only boiler

1 KEY TO SYMBOLS

This ⚠ is the safety-alert symbol. When you see this symbol on the appliance and in instructions or manuals, be alert to the potential for personal injury.

Understand the signal words **DANGER**, **WARNING**, and **CAUTION**. These words are used with the safety-alert symbol.
DANGER identifies the most serious hazards which will result in severe personal injury or death.
WARNING signifies a hazard which could result in personal injury or death.
CAUTION is used to identify hazards which may result in minor personal injury or product and property damage.
NOTE and **NOTICE** are used to highlight suggestions which will result in enhanced installation, reliability, or operation.

2 WARNINGS

2.1 Ratings and Certifications

- Gas fired hot water boiler for either direct vent installation. Design according to: ANSI Z21.13-2017 •CSA 4.9-2017 – Gas-Fired low pressure hot water boilers. Direct vent boiler, Category IV.
- SCAQMD Rule 1146.2

⚠ **WARNING**: Altering any **RIELLO** pressure vessel by installing replacement heat exchangers, or any ASME parts not manufactured and/or approved by **RIELLO** will instantly void the ASME and CSA ratings and any warranty on the vessel. Altering the ASME or CSA ratings of the vessel also violates national, state, and local approval codes.

Combi models are certified to NSF/ANSI 372-2016 - Low lead content certification program - plumbing products and conform to the requirements for "lead free" plumbing products.

2.2 Regulations and guidelines

The installation must conform to the requirements of the authority having jurisdiction or, in the absence of such requirements, to the latest edition of the National Fuel Gas Code, ANSI Z223.1/NFPA 54. In Canada, installation must be in accordance with the requirements of CAN/CSA B149.1, Natural Gas and Propane Installation Code. Where required by the authority having jurisdiction, the installation must conform to the Standard for Controls and Safety Devices for Automatically Fired Boilers, ANSI/ASME CSD-1.
Install CO detectors per local regulations. The use of a carbon monoxide detector in conjunction with the **RIELLO** heating products is required. When installing a carbon monoxide detector, the manufacturer's instructions of the carbon monoxide detector must be followed in their entirety. It is recommended to use a carbon monoxide detector in compliance with a nationally recognized standard such as ANSI/UL 2034-2002 in the United States and CSA 6.19-01 in Canada.

Boilers require yearly maintenance, see chapters "12.2" and 14.

General warnings

⚠ **DANGER:** Make sure the gas on which the boiler will operate is the same type as that specified on the boiler rating plate and on the colored sticker near the boiler gas connection.

⚠ **WARNING: This product is a gas appliance that emits poisonous gases; such as CO (Carbon Monoxide). For this reason, it is required that CO detectors be installed in buildings where the boiler is installed. Failure to do so may result in severe injury or death.**

⚠ **WARNING:** Should overheating occur or the gas supply valve fail to shut off, turn off the manual gas control valve to the appliance.

⚠ **WARNING:** Do not use this boiler if any part has been under water. Immediately call a qualified service technician to inspect the appliance and to replace any part of the control system and any gas control which has been under water.

⚠ **WARNING:** Chlorine and chloramine concentration in domestic water must be less than 50 ppm.

⚠ **WARNING:** Automatic filling systems are not recommended with this product as they will continually add fresh water to the system if there is a leak resulting in the addition of new contaminants that could reduce the lifespan of the boiler.

⚠ **WARNING:** To minimize the possibility of improper operation, serious personal injury, fire, or damage to the boiler:
Always keep the area around the boiler free of combustible materials, gasoline, and other flammable liquids and vapors.
Boiler should never be covered or have any blockage to the flow of fresh air to the boiler.

⚠ **WARNING:** Risk of electrical shock. More than one disconnect switch may be required to de-energize the equipment before servicing.

⚠ **WARNING:** Failure to comply with the above could result in severe personal injury, death or substantial property damage. Failure to adhere to the guidelines on this page can result in severe personal injury, death or substantial property damage.

⚠ **WARNING:** Installation and service must be performed by a gas supplier or a licensed qualified installer/service Technician.

⚠ **WARNING – CALIFORNIA PROPOSITION 65:** This product contains chemicals known to the State of California to cause cancer, birth defects or other reproductive harm.

⚠ **CAUTION:** This boiler requires forced water circulation when the burner is operating. See minimum and maximum flow rates. Severe damage will occur if the boiler is operated without proper water flow circulation.

Minimum 20 AWG, 194°F (90°C), solid thermostat wire must be used for all low voltage (less than 30 volts) external connections to the unit. Solid conductors should not be used because they can cause excessive tension on contact points. Install conduit as appropriate.

NOTICE: When the boiler has been filled for the first time or the system has been drained and refilled, it will be necessary to release any air that may have become trapped within the appliance heat exchanger. Loosen the bleed screw until water is released and then close. IMPORTANT, THERE ARE NO OTHER MANUAL AIR RELEASE VALVES LOCATED ON THE APPLIANCE.

Follow all safety codes. Wear safety glasses, protective clothing, and work gloves. Have a fire extinguisher available. Read these instructions thoroughly and follow all **WARNING**s or **CAUTION**s included in literature and attached to the appliance.

The following instructions must be observed

- The boiler must only be used for its designated purpose, observing the Installation Instructions.
- Only use the boiler in combinations and with the accessories and spare parts listed.
- Other combinations, accessories and consumables must only be used if they are specifically designed for the intended application and do not affect the system performance and the safety requirements.
- Maintenance and repairs must only be carried out by authorized professionals.
- You must report the installation of a condensing gas boiler to the relevant gas and plumbing inspection authority and have it approved.
- You are only allowed to operate the condensing gas boiler with the combustion air/flue gas system that has been specifically designed and approved for this type of boiler.
- Please note that local permission for the flue system and the condensate water connection to the public sewer system may be required.
- The hot water distribution system must comply with all applicable codes and regulations. When replacing an existing boiler, it is important to check the condition of the entire hot water distribution system to ensure safe operation.

You must also observe:

- The local building regulations stipulating the installation rules.
- The local building regulations concerning the air intake and outlet systems and the chimney connection.

- The regulations for the power supply connection.
- The technical rules laid down by the gas utility company concerning the connection of the gas connection to the local gas main.
- The instructions and standards concerning the safety equipment for the water/space heating system.
- The Installation instructions for building heating systems.
- The boiler must be located in an area where leakage of the tank or connections will not result in damage to the area adjacent to the boiler or to lower floors of the structure. When such locations cannot be avoided, it is recommended that a suitable drain pan, adequately drained, be installed under the boiler. The pan must not restrict combustion air flow.
- The boiler must be installed such that the gas ignition system components are protected from water (dripping, spraying, rain etc.) during boiler operation and circulator replacement, condensate trap, control replacement, etc.
- The boiler must not be installed on carpeting.
- The boiler must only be installed on a wall.
- Do not restrict or seal any air intake or outlet openings.
- If you find any defects, you must inform the owner of the system of the defect and the associated hazard in writing.

⚠ **DANGER**: Flammable gas explodes. Beware if you smell gas: there may be an explosion hazard!

⚠ **WARNING**: If the information in these instructions is not followed exactly, a fire or explosion may result causing property damage, personal injury or death.

⚠ **WARNING**: Do not store or use gasoline or other flammable vapors and liquids in the vicinity of this or any other boiler.

Observe these instructions as general **WARNING**s:
- Chemicals used to clean the system and/or inhibit corrosion must be pH neutral, i.e. they should ensure that the level of the pH in the system water remains neutral. Premature failure of certain components can occur if the pH level in the system water is out of normal range.
- **RIELLO** recommends that an inhibitor – suitable for use with stainless steel heat exchangers – is used to protect the boiler and system from the effects of corrosion and/or electrolytic action. The inhibitor must be administered in strict accordance with the manufacturers instructions.
- When the boiler has been filled for the first time or the system has been drained and refilled, it will be necessary to purge any air that may have become trapped within the appliance heat exchanger.

NOTICE: Propylene glycol in the system must not exceed 40%.

Boiler water
- If you have an old system with cast iron radiators, thoroughly flush the system (without the boiler connected) to remove sediment. The high-efficiency heat exchanger can be damaged by build-up or corrosion due to sediment
- Do not use petroleum-based cleaning or sealing compounds in the boiler system. Gaskets and seals in the system may be damaged. This can result in substantial property damage.
- Do not use "homemade cures" or "boiler patent medicines." Substantial property damage, damage to boiler, and/ or serious personal injury may result.
- Continual fresh make-up water will reduce boiler life. Mineral build up in heat exchanger reduces heat transfer, overheats the stainless steel heat exchanger, and causes failure. Addition of oxygen carried in by make-up water can cause internal corrosion in system components. Leaks in the boiler or piping must be repaired at once to prevent make-up water.
- We recommend the use of water treatment additives to prolong the life of the boiler and prevent against corrosion and contaminant build ups in the heating system.
- Ensure piping in the heating system has an oxygen barrier.

Observe these instructions for space heating water:
- Thoroughly flush the system prior to filling. Only use untreated potable water to fill and top off the system.
- Do not use water softeners in the system.
- The maximum permissible flow rate of the Family PRO 42 is 150k BTU/h per minute (GPM).
- When using oxygen-permeable pipes, e.g. for floor heating systems, you must separate the system using heat exchangers. Unsuitable heating system water promotes the formation of sludge and corrosion. This may damage the heat exchanger or affect its operation.

Tools, materials and additional equipment
For the installation and maintenance of the boiler you will need the standard tools for space heating, gas and water connection.
In addition, a handtruck with a fastening belt is very useful.

Disposal:
- Dispose of the boiler packaging in an environmentally sound manner.
- Dispose of components of the heating system (e. g. boiler or control device), that must be replaced, by taking them in to an authorized recycling facility.

3 SAFETY

3.1 General safety

To meet domestic hot water use needs, the high limit safety control on this boiler is adjustable up to 140°F (60°C).Water temperatures over 125°F (52°C) can cause instant severe burns or death from scalds.
When supplying general purpose hot water, the recommended initial setting for the temperature control is 120 °F (49°C).
Safety and energy conservation are factors to be considered when setting the water temperature on the thermostat. The most energy-efficient operation will result when the temperature setting is the lowest that satisfies the needs of the application.
Children, disabled and elderly are at highest risk of being scalded.
- Feel water before bathing or showering.
- Temperature limiting valves are available.

NOTICE (for heating only model): When this boiler is supplying general purpose hot water for use by individuals, a thermostatically controlled mixing valve for reducing point of use water temperature is recommended to reduce the risk of scald injury. Contact a licensed plumber or the local plumbing authority for further information.

Maximum water temperatures occur just after the boiler's burner has shut off. To determine the water temperature being delivered, turn on a hot water faucet and place a thermometer in the hot water stream and read the thermometer.

⚠ Only for heating only model
WARNING: This boiler cannot supply hot water for use by individuals directly. A heat exchanger must be used in conjunction with this boiler to meet DHW needs.

3.2 Scalding time/temperature relationships

The following chart details the relationship of water temperature and time with regard to scald injury and may be used as a guide in determining the safest water temperature for your applications.

Water Temperature	Time to Produce Serious Burn
120°F (49 °C)	More than 5 minutes
125°F (52 °C)	1-1/2 to 2 minutes
130°F (54 °C)	About 30 seconds
135°F (57 °C)	About 10 seconds
140°F (60 °C)	Less than 5 seconds
145°F (63 °C)	Less than 3 seconds
150°F (66 °C)	About 1-1/2 seconds
155 °F (68 °C)	About 1 second

Table courtesy of The Shriners Burn Institute
The temperature of the water in the boiler can be regulated by using the **RIELLO** boiler front control. To comply with safety regulations, the control is set to a lower temperature when shipped from the factory.

CAUTION: Hotter water increases the risk of scalding! There is a hot water scald potential if the thermostat is set too high.

4 PRODUCT RECEIPT

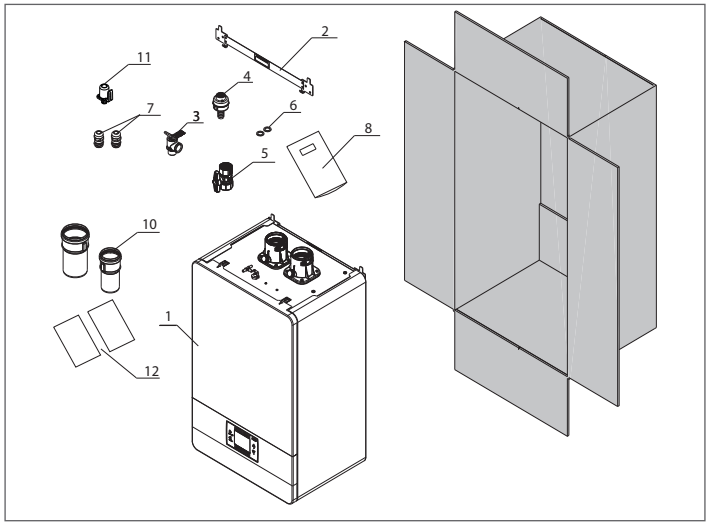
On receipt of your boiler it is suggested that you visually check for external damage to the shipping package.
If the package is damaged, make a note to that effect on the Bill of Lading when signing for the shipment.
- Remove the boiler from the shipping packaging.
- Report any damage to the carrier immediately.
- On occasion, items are shipped loose.
- Be sure that you receive the correct number of packages as indicated on the Bill of Lading.
- Claims for shortages and damages must be filed with the carrier by consignee.
- Permission to return goods must be received from the manufacturer or your local **RIELLO** distributor prior to shipping. Goods returned to the factory without an authorized Returned Goods Receipt number will not be accepted. All returned goods are subject to a restocking charge.
- When ordering parts, you must specify the model and serial number of the boiler.
- When ordering under warranty conditions, you must also specify the date of installation.
- Purchased parts are subject to replacement only under the manufacturer's warranty. Debits for defective replacement parts will not be accepted and will be replaced in kind only per **RIELLO** standard warranty.

4.1 Model Identification

The model identification number and boiler serial number are found on the boiler rating plate located on the bottom side of the unit.
Also the boiler serial number can be found on the back page of this manual and on the front of the boiler casing.

4.2 Boiler box content

Component		Qty
1	Condensing gas boiler	1
2	Wall bracket	1
3	Pressure relief valve ASME	1
4	Condensate check valve	1
5	Gas cock	1
6	Condensate check valve gasket	1
	Pressure relief valve gasket	1
	Gas cock gasket	1
7	Strain relief for secondary high voltage connexion: – Family KIS	1
	– Family IS	2
8	Set of documents for appliance	1
9	Vent adaptor Ø 3" (80 mm), L=6" (155 mm) for concentric Ø 3/5" (80/125 mm) – see section 8.8 fig. 4	1
10	Vent adaptor Ø 2" (60 mm), L= 5 5/16" (135 mm) for concentric Ø 2/4" (60/100mm) – see section 8.8 fig. 1	1
11	Outdoor temperature sensor	1
	Paper template (see "7.2 Boiler template")	1
12	Lighting Instructions (see Section 5.5-6)	1
	WARNING Label (see Section 5.5-6)	1
	LP Gas Conversion Sticker	1



4.3 Installation at elevation

Rated inputs are suitable for up to 10,000 ft (3048 m) elevation (see technical data table).
No hardware changes are required to the boilers for installations up to 10,000 ft (3048 m) (adjustments are required).
For additional settings on high altitude installations refer to your local **RIELLO** distributor.

5 INTRODUCTION

The FAMILY PRO boilers have a new ACC (Active Combustion Control) system.
This new control system ensures functionality, efficiency and low emissions under any conditions.
The ACC system uses an ionization sensor (flame sensor)immersed in the burner flame, whose information allows the control board to operate the gas valve that regulates the fuel.
This sophisticated control system provides the auto-regulation of the combustion, so there is no need for an initial calibration; however, it is recommended (required in some jurisdictions) that a combustion analysis is performed during initial start-up and annual maintenance.
The ACC system is able to adapt the boiler to operate with different gas compositions, different air inlet and exhaust vent lengths and different altitudes (within the specified design limits).
The ACC system can also perform an auto-diagnostic operation that locks out the burner before the permitted upper emission limit is exceeded.
FAMILY PRO is a wall hung fan assisted room-sealed condensing boiler.
The **FAMILY PRO** combi is a direct vent, CAT IV wall mounted boiler for heating and prodution domestic hot water.
The **FAMILY PRO** heating only is a direct vent, CAT IV wall mounted boiler that is able to operate as follows:
- **EXAMPLE A:** heating only with no external indirect tank connected. The boiler does not provide domestic hot water.
- **EXAMPLE B**: heating only with an external indirect tank managed by a thermostat: in this condition, the boiler delivers hot water to the water tank whenever a demand is made by the relative thermostat.
- **EXAMPLE C:** heating only with an external indirect tank (available by request) managed by a temperature sensor for the production of DHW. If the water heater is not supplied by our company, make sure that the relative indirect tank sensor (NTC sensor) has the following characteristics: 10 kOhm at 77 °F (25 °C), B 3435 ±1%.

These appliances are designed for use with a sealed system only; consequently they are not intended for use on power vented systems.
This manual is an integral part of the appliance. It is therefore necessary to ensure that the manual is handed to the person responsible for the property in which the appliance is located/installed. A replacement copy can be obtained from www.riello.com.
IMPORTANT
It is the law that all gas appliances are installed by a competent person. It is in your own interest and that of safety to ensure that the law is complied with.
- The installation must conform to the requirements of the authority having jurisdiction or, in the absence of such requirements, to the National Fuel Gas Code, ANSI Z223.1/NFPA 54 Where required by the authority having jurisdiction, the installation must conform to the Standard for Controls and Safety Devices for Automatically Fired Boilers, ANSI/ASME CSD-1.
- The installation should conform with CAN/CSA B149.1 INSTALLATION CODE and/or local installation Code, plumbing or waste water codes and other codes as applicable.
- Clearances from combustible material must be strictly adhered to.
- Manufacturers instructions must NOT be interpreted in anyway as overriding local regulations.

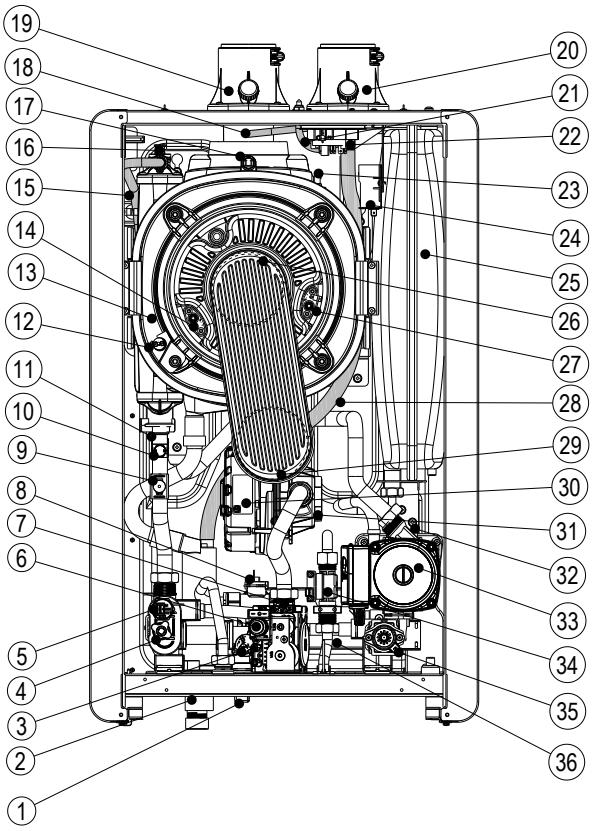
Massachusetts:
Boiler installation must conform to Commonwealth of Massachusetts code 248 CMR which includes but is not limited to:
- Installation by licensed plumber or gas fitter.

In the state of Massachusetts:
- This product must be installed by a licensed plumber or gas fitter.
- When flexible connectors are used, the maximum length shall not exceed 36 in. (914 mm).
- When lever type gas shutoffs are used they shall be T-handle type.
- The use of copper tubing for gas piping is not approved by the state of Massachusetts.

Gas boilers manufactured on or after May 1, 2017 are not permitted to be used in Canada for heating of buildings or structures under construction.

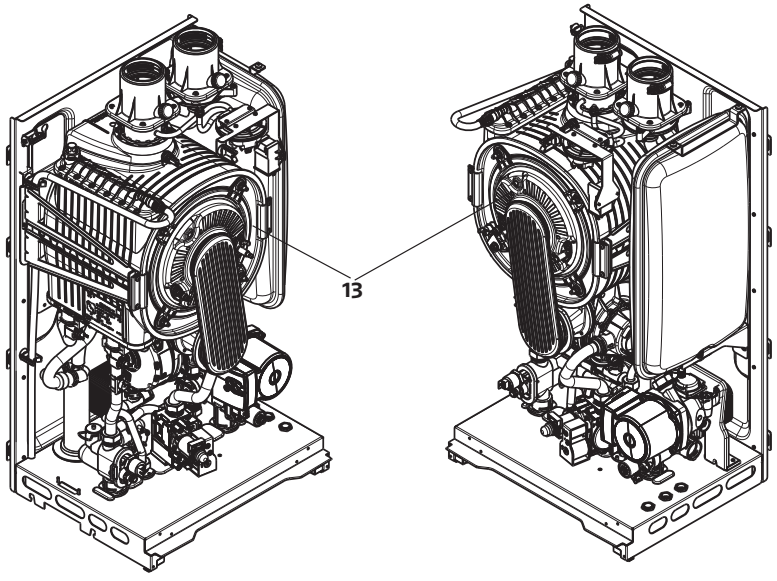
5.1 Structure

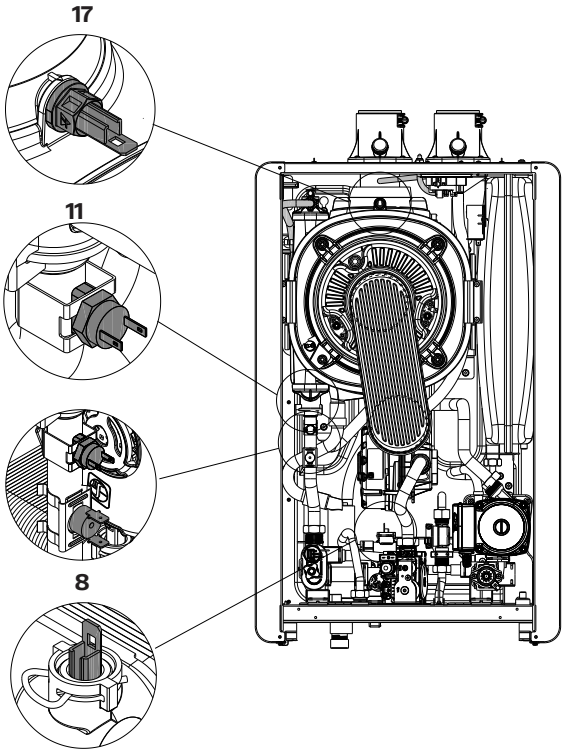
FAMILY PRO 42 KIS



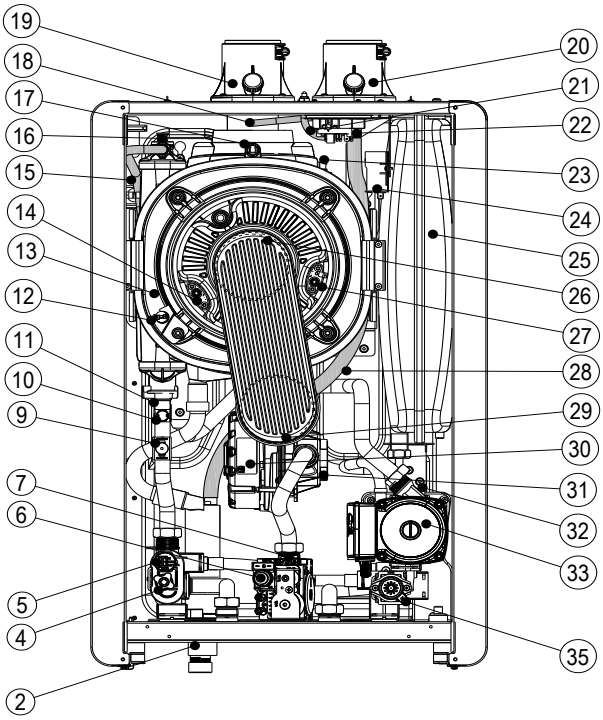
1 Filling tap
2 Condensate Trap
3 Backflow preventer valve
4 Drain valve
5 Low Water Cutoff
6 Gas valve
7 Injector
8 DHW sensor
9 Water Temperature High Limit
10 Supply sensor
11 Return sensor
12 Heat exchanger thermostat
13 Primary Heat exchanger
14 Flame sensor
15 Manual air vent hose
16 Manual upper air vent valve
17 Flue temperature sensor
18 Positive air pressure tube
19 Flue outlet
20 Air intake
21 Negative air pressure tube
22 Air pressure switch
23 Thermal fuse
24 Ignition transformer
25 Expansion tank
26 Burner
27 Ignition electrode
28 Water discharge hose
29 Clapet
30 Fan
31 Mixer
32 Lower air vent valve
33 Pump
34 Flow sensor
35 Three way valve
36 DHW heat exchanger

Side views





FAMILY PRO 42 IS



2 Condensate Trap
4 Drain valve
5 Low Water Cutoff
6 Gas valve
7 Injector
9 Water Temperature High Limit
10 Supply sensor
11 Return sensor
12 Heat exchanger thermostat
13 Primary Heat exchanger
14 Flame sensor
15 Manual air vent hose
16 Manual upper air vent valve
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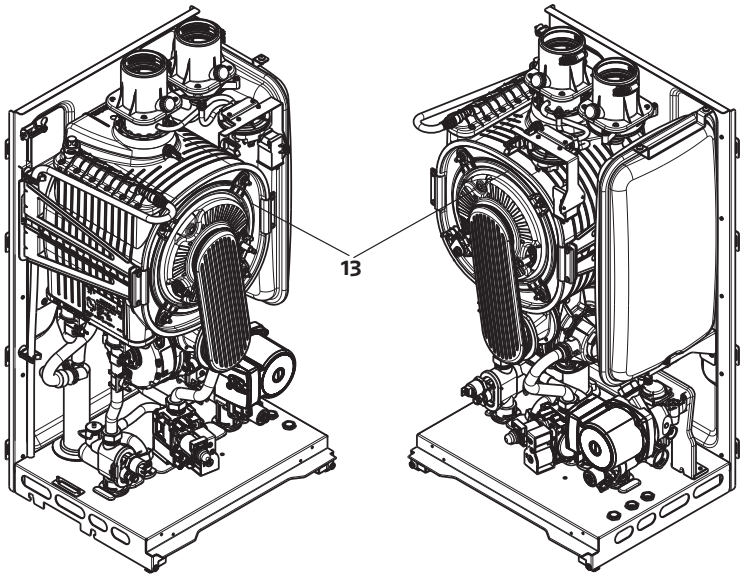
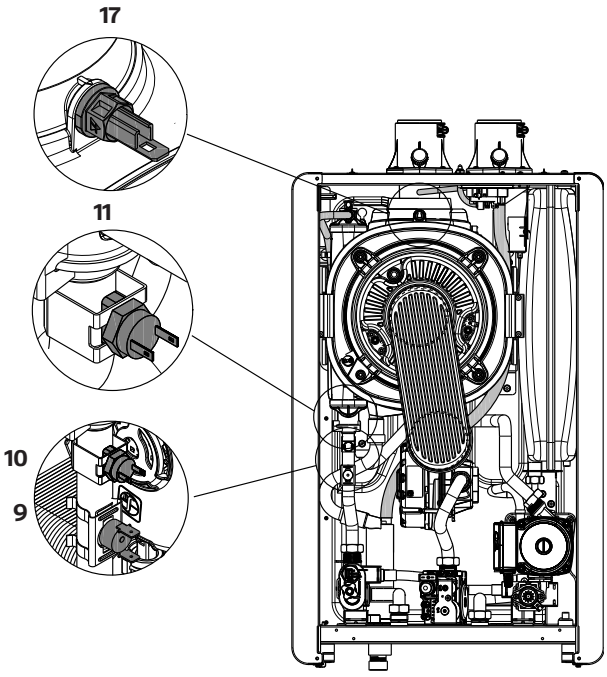
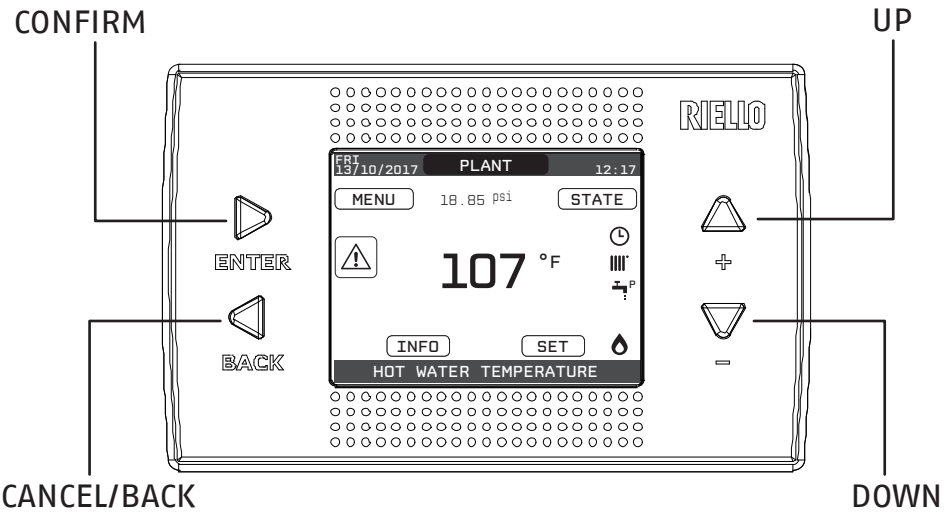
20 Air intake
21 Negative air pressure tube
22 Air pressure switch
23 Thermal fuse
24 Ignition transformer
25 Expansion tank
26 Burner
27 Ignition electrode
28 Water discharge hose
29 Clapet
30 Fan
31 Mixer
32 Lower air vent valve
33 Pump
35 Three way valve

Side views





5.2 Boiler front control



The boiler control panel functions as an interface, displays system information and provides access to the parameters.
The center of the main screen displays the temperature of the domestic hot water sensor, unless there is a request for heat in progress, in this case the supply temperature from the boiler is displayed.

The value expressed in psi refers to the system's water pressure.
The top of the screen shows the information regarding the current date and time, as well as the outdoor temperature, if an outdoor temperature sensor is provided.
On the left and right sides of the display are the icons indicating the status of the system; their meaning is as follows.

	This icon indicates that the OFF operating status mode has been set. Each ignition request is ignored except for the anti-freeze function. The pump anti-seize, 3-way valve anti-seize and anti-freeze function remain active.
	This icon indicates that heating mode has been selected (HEATING function enabled). If a heating request from a thermostat is in progress, the icon will be flashing.
	This icon indicates that the circuit for domestic hot water production is enabled. When a domestic hot water request is in progress, the icon flashes. - In a system with an indirect tank: if the time switch programming is in the setback mode the icon presents crossed - In a system with a combination: the P at the top of the domestic hot water icon indicates that the boiler pre-heating function is enabled; the P when flashing indicates that a pre-heating request is in progress.
	When the "central heating time switch programming" is enabled this icon indicates that the heating system is in AUTOMATIC mode (the management of the heating requests follows what has been set with the timer). If the heating function is not enabled during the current time frame, the icon will be crossed out.
	When the "central heating time switch programming" is enabled this icon indicates that the heating system is in MANUAL mode (the management of the heating requests does not follow what has been set with the time switch programming, but it is always active).
OFF	This icon indicates, when the "central heating time switch programming" is not enabled, that the system has been set to off (not active).
	This icon indicates that the system is detecting the presence of a flame.
	This icon flashing indicates the presence of an error.

The front control display is equipped with a "Color Bar", which quickly informs the user about the operation of the boiler.
Operating states and errors are grouped according to 4 colors:
- GREEN: regular functioning, the system is serving DHW/CH or automatic functions such as antilegionella, antifreeze, chimney sweep etc.
  A sliding text describes the active function in real time.
- YELLOW: potentially solvable error that allows, even partial, operation of the product. A triangle icon on the display gives access to fault details such as "call for service", error of the DHW sensor, etc.
- RED: presence of blocking error requiring the presence of licensed service technician. A triangle icon on the display gives access to fault details such as "stop for service", final stop, etc.
- GRAY: the system is ready to serve any requests or functions, no error detected.

By pressing the buttons "UP" and "DOWN" it is possible to choose from the following options:
- PLANT (system): a scrolling message on the display can indicate the temperature of the domestic hot water sensor rather than the supply sensor of the boiler
- STATE (when the SYSTEM SCREEN is selected): to set the status of the boiler (OFF, DHW mode or CH & DHW mode) and, when managed by the room thermostat, the operating mode of the main area in heating mode (ON/OFF if the time schedule is disabled, AUTO according to hourly programming, MANUAL or OFF if programming timing is enabled)
- SET: to establish the heating or hot water setpoint value or for activating preheating
- INFO: to display the value of the system variables
- MENU: to access the system's configuration menus

The configuration MENU is organized with a multi-level tree structure.
With the "ENTER" button you can access the selected sub-menu, with the "UP" and "DOWN" buttons it is possible to navigate through the sub-menus, while the "BACK" button takes you back to the previous level.
An access level has been fixed for each sub-menu: USER level, always available; TECHNICAL level, password protected.
On the next page is a summary of the MENU tree structure of the boiler control panel.

NOTICE: some of the information might not be available on the boiler control panel depending on the access level, the status of the boiler or the system configuration.

5.3 Technical data

Description			Family PRO 42 KIS (*)	FAMILY PRO 42 IS (*)
Country destination			US/CAN	US/CAN
Input – Output				
Maximum CH input rate (0 – 2,000 ft / 0 – 610 m)		Btu/hr	119,000	119,000
		kW	34.88	34.88
Maximum DHW input rate (0 – 2,000 ft / 0 – 610 m)		Btu/hr	151,000	151,000
		kW	44.25	44.25
Maximum CH input rate (2,001 – 5,000 ft / 610 – 1,524 m)		Btu/hr	119,000	119,000
		kW	34.88	34.88
Maximum DHW input rate (2,001 – 5,000 ft / 610 – 1,524m)		Btu/hr	125,000	125,000
		kW	36.63	36.63
Maximum CH input rate (5,001 – 7,500 ft / 1,524– 2,286 m)		Btu/hr	114,000	114,000
		kW	33.41	33.41
Maximum DHW input rate (5001 – 7,500 ft / 1,524– 2,286 m)		Btu/hr	114,000	114,000
		kW	33.41	33.41
Maximum CH input rate (7,501 – 10,000 ft / 2,286 – 3,048 m)		Btu/hr	105,000	105,000
		kW	30.77	30.77
Maximum DHW input rate (7,501 – 10,000 ft / 2,286 – 3,048 m)		Btu/hr	105,000	105,000
		kW	30.77	30.77
Minimum input rate (0 – 2,000 ft / 0 – 610 m)		Btu/hr	20,400	20,400
		kW	5.98	5.98
Minimum input rate (2,001 – 5,000 ft / 610 – 1,524m)		Btu/hr	19,600	19,600
		kW	5.74	5.74
Minimum input rate (5,001 – 7,500 ft / 1,524– 2,286 m)		Btu/hr	17,500	17,500
		kW	5.13	5.13
Minimum input rate (7,501 – 10,000 ft / 2,286 – 3,048 m)		Btu/hr	15,500	15,500
		kW	4.54	4.54
CH output rating (0 – 5,000 ft / 0 – 1,524 m)		Btu/hr	113,050	113,050
		kW	33.13	33.13
CH output rating (5,001 – 7,500 ft / 1,524– 2,286 m)		Btu/hr	108,300	108,300
		kW	31.74	31.74
CH output rating (7,501 – 10,000 ft / 2,286 – 3,048 m)		Btu/hr	99,750	99,750
		kW	29.23	29.23
Energy guide				
AFUE		%	95.0	95.0
Gas				
Gas supply pressure Natural Gas (A)		in. W. C.	7.0	7.0
		KPa	1.7	1.7
Min. gas supply pressure Natural Gas (A)		in. W. C.	3.5	3.5
		KPa	0.9	0.9
Max. gas supply pressure Natural Gas (A)**		in. W. C.	10.5	10.5
		KPa	2.6	2.6
Gas supply pressure LPG (E)		in. W. C.	11.0	11.0
		KPa	2.7	2.7
Min. gas supply pressure LPG (E)		in. W. C.	8.0	8.0
		KPa	2.0	2.0
Max. gas supply pressure LPG (E)**		in. W. C.	13.0	13.0
		KPa	3.23	3.23
CH max gas rate natural gas (A)	(0 – 2,000 ft / 0 – 610 m)	ft^3/hr	110.70	110.70
		m^3/hr	3.13	3.13
	(2,001 – 5,000 ft / 610 – 1,524m)	ft^3/hr	110.70	110.70
		m^3/hr	3.13	3.13
	(5,001 – 7,500 ft / 1,524– 2,286 m)	ft^3/hr	106.05	106.05
		m^3/hr	3.00	3.00
	(7,501 – 10,000 ft / 2,286 – 3,048 m)	ft^3/hr	97.67	97.67
		m^3/hr	2.76	2.76
DHW max Gas Rate natural gas (A)	(0 – 2,000 ft / 0 – 610 m)	ft^3/hr	140.47	140.47
		m^3/hr	3.97	3.97
	(2,001 – 5,000 ft / 610 – 1,524m)	ft^3/hr	116.28	116.28
		m^3/hr	3.29	3.29
	(5,001 – 7,500 ft / 1,524– 2,286 m)	ft^3/hr	106.05	106.05
		m^3/hr	3.00	3.00
	(7,501 – 10,000 ft / 2,286 – 3,048 m)	ft^3/hr	97.67	97.67
		m^3/hr	2.76	2.76

Description			Family PRO 42 KIS (*)	FAMILY PRO 42 IS (*)
Min gas rate natural gas (A)	(0 – 2,000 ft / 0 – 610 m)	ft³/hr	18.98	18.98
		m³/hr	0.54	0.54
	(2,001 – 5,000 ft / 610 – 1,524m)	ft³/hr	18.23	18.23
		m³/hr	0.52	0.52
	(5,001 – 7,500 ft / 1,524– 2,286 m)	ft³/hr	16.28	16.28
		m³/hr	0.46	0.46
	(7,501 – 10,000 ft / 2,286 – 3,048 m)	ft³/hr	14.42	14.42
		m³/hr	0.41	0.41
CH max gas rate LPG (E)	(0 – 2,000 ft / 0 – 610 m)	ft³/hr	47.60	47.60
		m³/hr	1.35	1.35
	(2,001 – 5,000 ft / 610 – 1,524m)	ft³/hr	47.60	47.60
		m³/hr	1.35	1.35
	(5,001 – 7,500 ft / 1,524– 2,286 m)	ft³/hr	45.20	45.20
		m³/hr	1.28	1.28
	(7,501 – 10,000 ft / 2,286 – 3,048 m)	ft³/hr	39.20	39.20
		m³/hr	1.11	1.11
DHW max gas rate LPG (E)	(0 – 2,000 ft / 0 – 610 m)	ft³/hr	60.40	60.40
		m³/hr	1.71	1.71
	(2,001 – 5,000 ft / 610 – 1,524m)	ft³/hr	48.40	48.40
		m³/hr	1.37	1.37
	(5,001 – 7,500 ft / 1,524– 2,286 m)	ft³/hr	45.20	45.20
		m³/hr	1.28	1.28
	(7,501 – 10,000 ft / 2,286 – 3,048 m)	ft³/hr	39.20	39.20
		m³/hr	1.11	1.11
Min gas rate LPG (E)	(0 – 2,000 ft / 0 – 610 m)	ft³/hr	8.16	8.16
		m³/hr	0.23	0.23
	(2,001 – 5,000 ft / 610 – 1,524m)	ft³/hr	7.60	7.60
		m³/hr	0.22	0.22
	(5,001 – 7,500 ft / 1,524– 2,286 m)	ft³/hr	7.20	7.20
		m³/hr	0.20	0.20
	(7,501 – 10,000 ft / 2,286 – 3,048 m)	ft³/hr	6.60	6.60
		m³/hr	0.19	0.19
Number of fan rotations with start up/ignition RPM (A)	(0 – 2,000 ft / 0 – 610 m)	rpm	4,000	4,000
	(2,001 – 5,000 ft / 610 – 1,524m)	rpm	4,000	4,000
	(5,001 – 7,500 ft / 1,524– 2,286 m)	rpm	4,000	4,000
	(7,501 – 10,000 ft / 2,286 – 3,048 m)	rpm	4,000	4,000
Number of fan rotations max CH (A)	(0 – 2,000 ft / 0 – 610 m)	rpm	7,700	7,700
	(2,001 – 5,000 ft / 610 – 1,524m)	rpm	9,000	9,000
	(5,001 – 7,500 ft / 1,524– 2,286 m)	rpm	9,400	9,400
	(7,501 – 10,000 ft / 2,286 – 3,048 m)	rpm	9,400	9,400
Number of fan rotations max DHW (A)	(0 – 2,000 ft / 0 – 610 m)	rpm	9,800	9,800
	(2,001 – 5,000 ft / 610 – 1,524m)	rpm	9,400	9,400
	(5,001 – 7,500 ft / 1,524– 2,286 m)	rpm	9,400	9,400
	(7,501 – 10,000 ft / 2,286 – 3,048 m)	rpm	9,400	9,400
Number of fan rotations min CH–DHW (A)	(0 – 2,000 ft / 0 – 610 m)	rpm	1,800	1,800
	(2,001 – 5,000 ft / 610 – 1,524m)	rpm	2,200	2,200
	(5,001 – 7,500 ft / 1,524– 2,286 m)	rpm	2,200	2,200
	(7,501 – 10,000 ft / 2,286 – 3,048 m)	rpm	2,200	2,200
Number of fan rotations with start up/ignition RPM (E)	(0 – 2,000 ft / 0 – 610 m)	rpm	4,000	4,000
	(2,001 – 5,000 ft / 610 – 1,524m)	rpm	4,000	4,000
	(5,001 – 7,500 ft / 1,524– 2,286 m)	rpm	4,000	4,000
	(7,501 – 10,000 ft / 2,286 – 3,048 m)	rpm	4,000	4,000
Number of fan rotations max CH (E)	(0 – 2,000 ft / 0 – 610 m)	rpm	7,500	7,500
	(2,001 – 5,000 ft / 610 – 1,524m)	rpm	9,250	9,250
	(5,001 – 7,500 ft / 1,524– 2,286 m)	rpm	9,400	9,400
	(7,501 – 10,000 ft / 2,286 – 3,048 m)	rpm	9,400	9,400

Description			Family PRO 42 KIS (*)	FAMILY PRO 42 IS (*)
Number of fan rotations max DHW (E)	(0 – 2,000 ft / 0 – 610 m)	rpm	9,350	9,350
	(2,001 – 5,000 ft / 610 – 1,524m)	rpm	9,400	9,400
	(5,001 – 7,500 ft / 1,524– 2,286 m)	rpm	9,400	9,400
	(7,501 – 10,000 ft / 2,286 – 3,048 m)	rpm	9,000	9,000
Number of fan rotations min CH–DHW (E)	(0 – 2,000 ft / 0 – 610 m)	rpm	1,800	1,800
	(2,001 – 5,000 ft / 610 – 1,524m)	rpm	2,200	2,200
	(5,001 – 7,500 ft / 1,524– 2,286 m)	rpm	2,200	2,200
	(7,501 – 10,000 ft / 2,286 – 3,048 m)	rpm	2,200	2,200
CH system data				
Minimum relief valve capacity		lbs/hr	510	510
		g/s	64	64
Maximum operating pressure		p.s.i.	30	30
		bar	2.07	2.07
Minimum operating pressure		p.s.i.	4.5	4.5
		bar	0.3	0.3
Pump residual head at max flow rate		ft. hd	5	5
		mbar	150	150
At system capacity of		gpm	4.4	4.4
		l/h	1,000	1,000
Maximum temperature		°F	194	194
		°C	90	90
Selection field of heating water temperature (high temperature)		°F	104–180	104–180
		°C	40–82	40–82
Selection field of heating water temperature (low temperature)		°F	68–113	68–113
		°C	20–45	20–45
Expansion tank charge and initial system pressure		psi	14.5	14.5
		bar	1	1
Total water content of system using 2.6 gal/10.0 l capacity expansion tank supplied with appliance		gal	31.7	31.7
		l	120	120
DHW system data				
Maximum operating pressure		p.s.i.	116	–
		bar	8	–
Minimum operating pressure		p.s.i.	2.9	–
		bar	0.2	–
Selection field of domestic hot water temperature		°F	100–140 (120 max default)	–
		°C	37–60 (49 max default)	
Minimum DHW flow rate		gal/min	0.52	–
		l/min	2.0	
Flow regulator		gal/min	3.96	–
		l/min	15	
DHW flow rate at a 72 °F (40°C) rise		gal/min	4.2	–
		l/min	15.9	–
Electric data				
Electric rate voltage		VAC – Hz	120 – 60	120 – 60
Current less than		A	0.99	0.99
Electric consumption		W	119	119
Max overcurrent protection (***)		A	4	4
Min wire size (***)		AWG	18	18
Flue gas values				
CO_2 setting natural gas (A)	high–fire	%	8.8 ± 1%	8.8 ± 1%
	low–fire		9.4 ± 1%	9.4 ± 1%
CO_2 setting LPG (E)	high–fire	%	9.8 ± 1%	9.8 ± 1%
	low–fire		10.4 ± 1%	10.4 ± 1%
NOx natural gas (A)	max air free	ppm	≤ 40	≤ 40
	min air free	ppm	≤ 30	≤ 30
NOx LPG (E)	max air free	ppm	≤ 40	≤ 40
	min air free	ppm	≤ 40	≤ 40
CO natural gas (A)	max air free	ppm	≤ 90	≤ 90
	min air free	ppm	≤ 15	≤ 15

Description			Family PRO 42 KIS (*)	FAMILY PRO 42 IS (*)
CO LPG (E)	max air free	ppm	≤ 150	≤ 150
	min air free	ppm	≤ 15	≤ 15
Max CH rate flue temperature (A) at boiler return temp. 140°F/60°C		°F	157	157
		°C	69	69
Max CH rate flue temperature (E) at boiler return temp. 140°F/60°C		°F	158	158
		°C	70	70
Min CH rate flue temperature (A) at boiler return temp. 140°F/60°C		°F	133	133
		°C	56	56
Min CH rate flue temperature (E) at boiler return temp. 140°F/60°C		°F	140	140
		°C	60	60
Boiler dimensions and weight				
Boiler dimensions (heigh - width- depht)		in.	29.13x13.7x18.5	29.13x13.7x18.5
		mm	740x348x470	740x348x470
Weight net		lb	97	93
		kg	44	42
Components				
Burner		Sermeta 54486		
Main heat exchanger		Sermeta 4+1+1 Afue 95		
Gas valve		Sit 849		
Pump		Grundfos UPS 15-58		
Pressure relief valve		Watts		
3 -Way valve for DHW		Eltek		

* KIS= combi - IS= heating only

** The maximum inlet gas pressure must not exceed the value specified by the manufacturer and the minimum value listed is for purposes of input adjustment.

(A) Natural gas

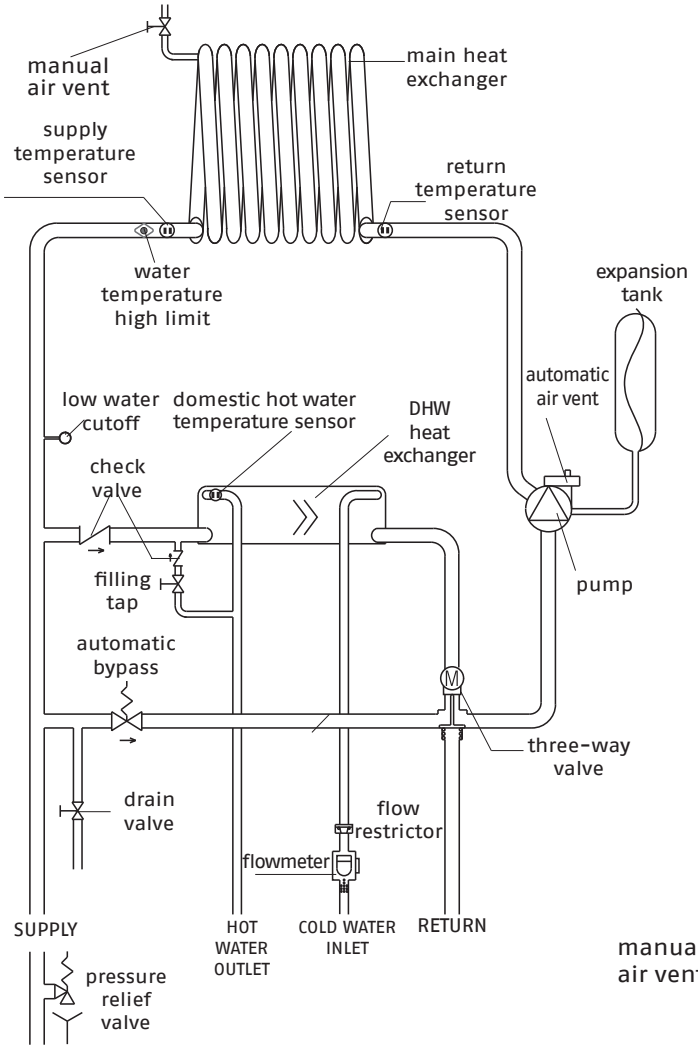
(E) LPG

(***) Boiler is equipped with a standard NEMA 5-15 grounded plug connection. Receptacle outlet Max Overcurrent Protection and Min Wire Size should conform to the codes listed in Section 7.10"

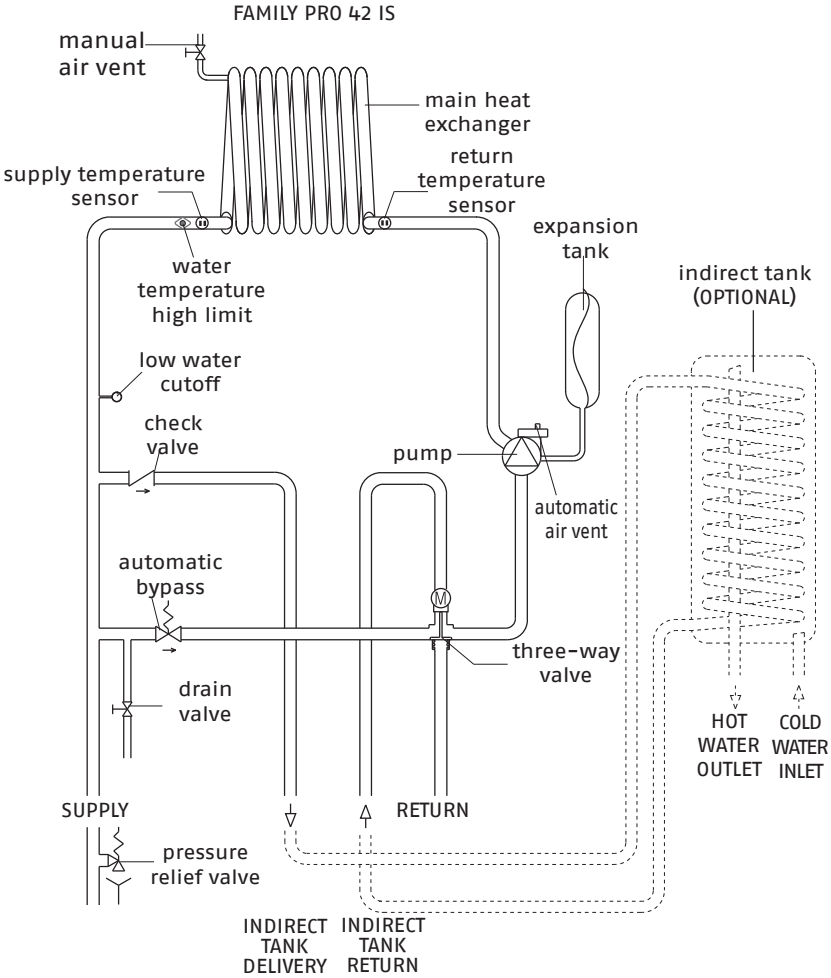
Family PRO 42 IS: DHW data must be considered only if an indirect tank is connected to the boiler

5.4 Hydraulic circuit

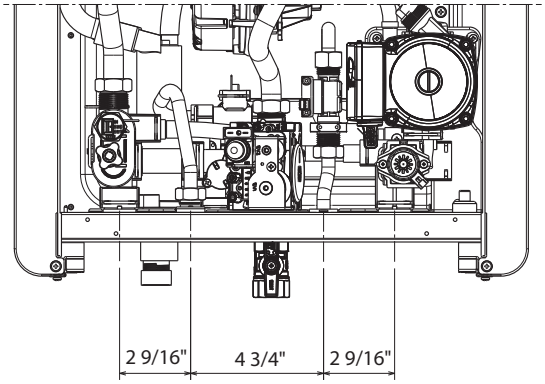
FAMILY PRO 42 KIS



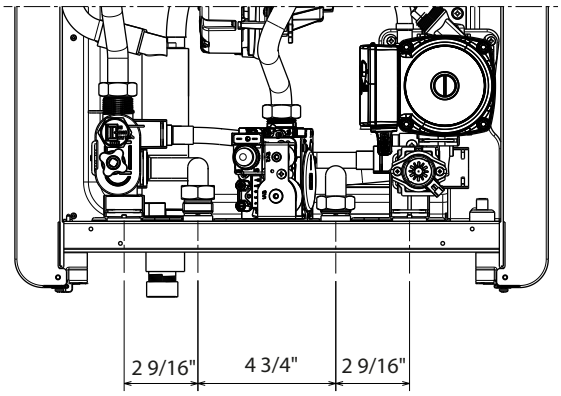
FAMILY PRO 42 IS

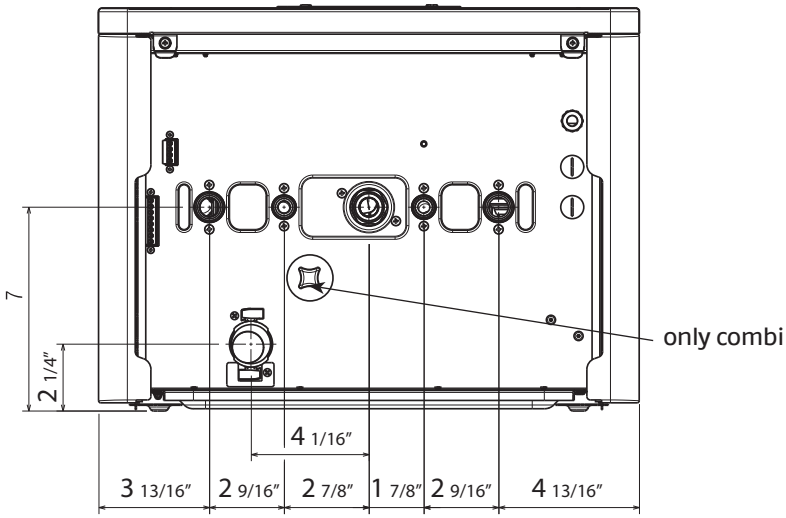


FAMILY PRO 42 KIS

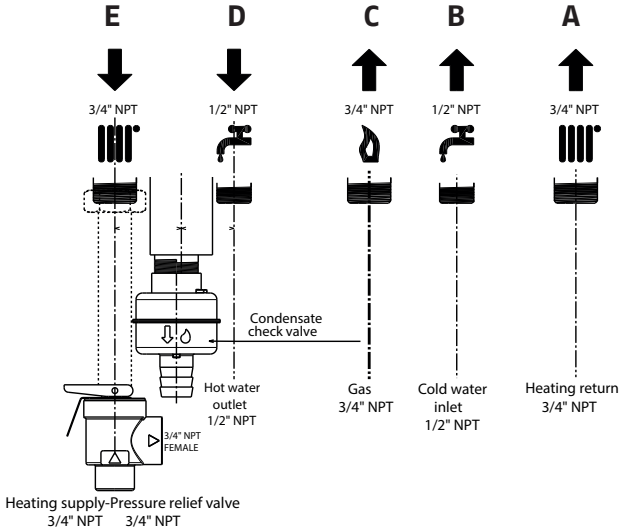


FAMILY PRO 42 IS

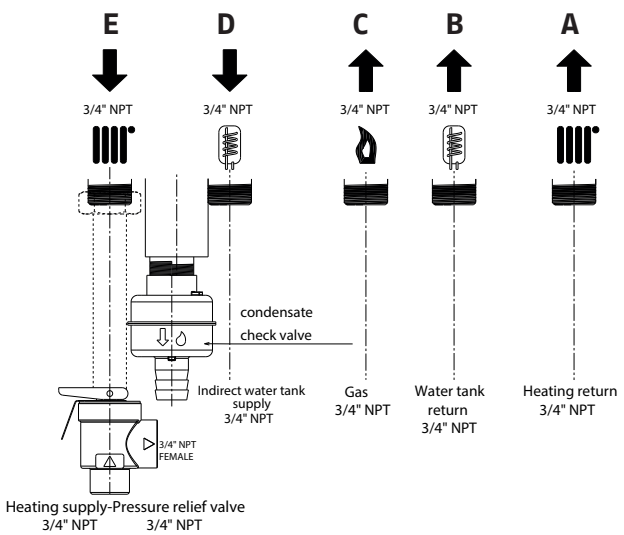




FAMILY PRO 42 KIS



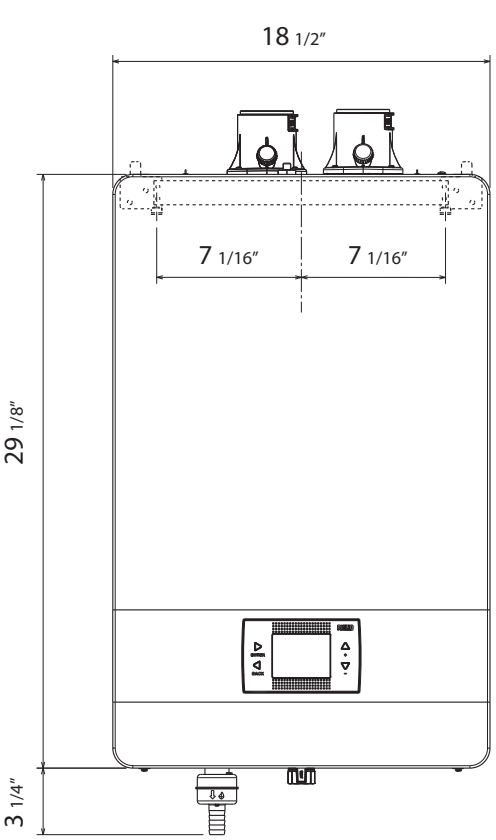
FAMILY PRO 42 IS

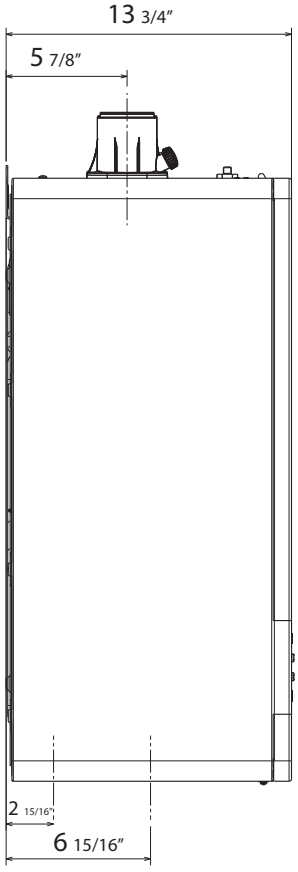


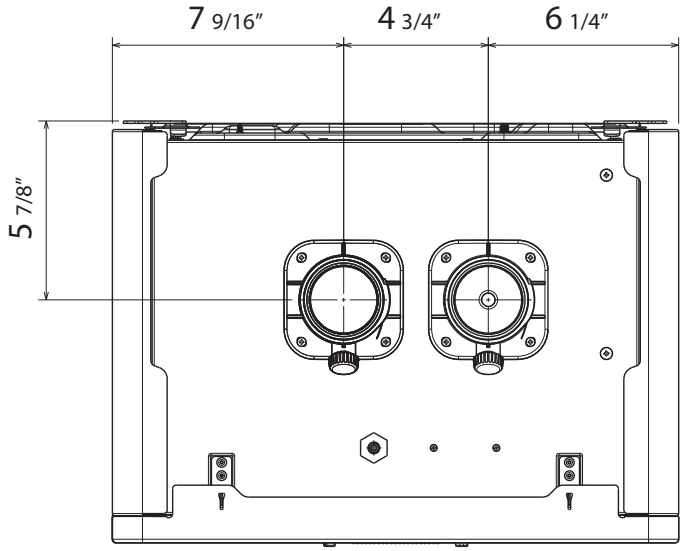
Legend		
A	Heating return	3/4" NPT
B	Cold water inlet	1/2" NPT
C	Gas	3/4" NPT
D	Hot water outlet	1/2" NPT
E	Heating supply	3/4" NPT
	Condensate check valve	3/4" NPT
	Pressure relief valve	3/4" NPT

Legend		
A	Heating return	3/4" NPT
B	Water tank return	3/4" NPT
C	Gas	3/4" NPT
D	Indirect tank supply	3/4" NPT
E	Heating supply	3/4" NPT
	Condensate check valve	3/4" NPT
	Pressure relief valve	3/4" NPT

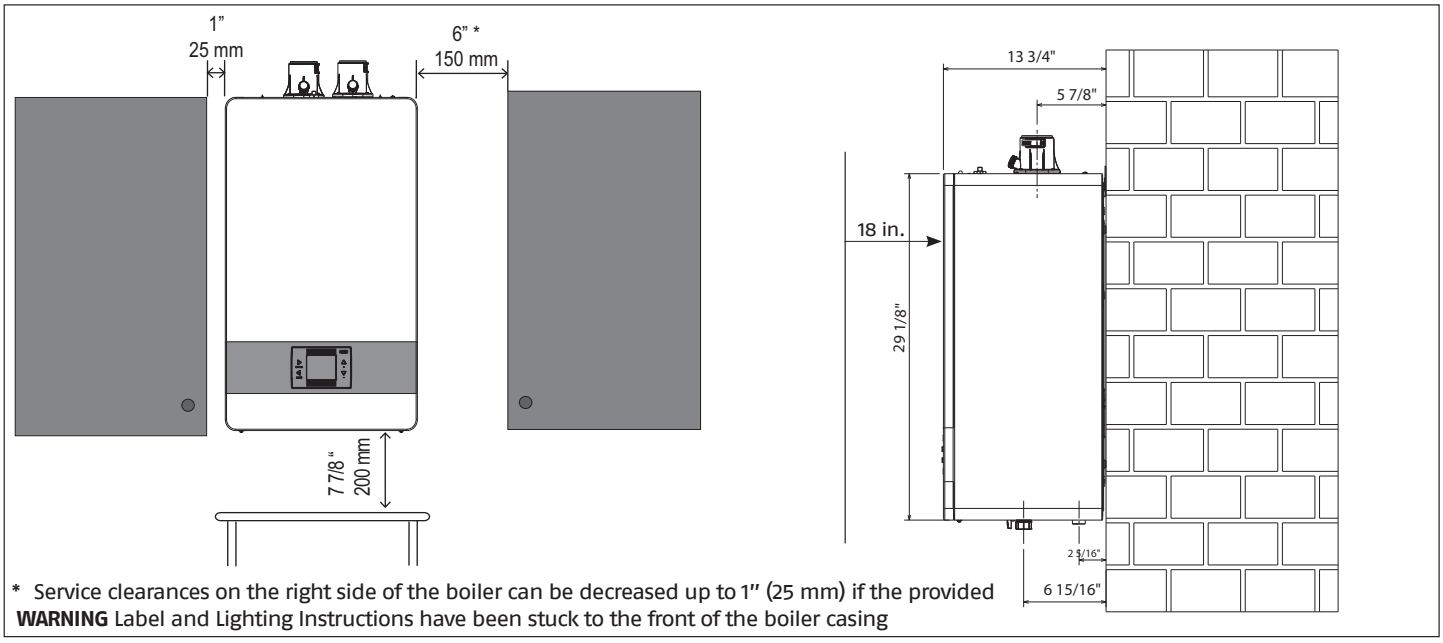
5.5 Dimensions and connections







Recommended Minimum service clearances



* Service clearances on the right side of the boiler can be decreased up to 1" (25 mm) if the provided **WARNING** Label and Lighting Instructions have been stuck to the front of the boiler casing

6 BEFORE INSTALLATION

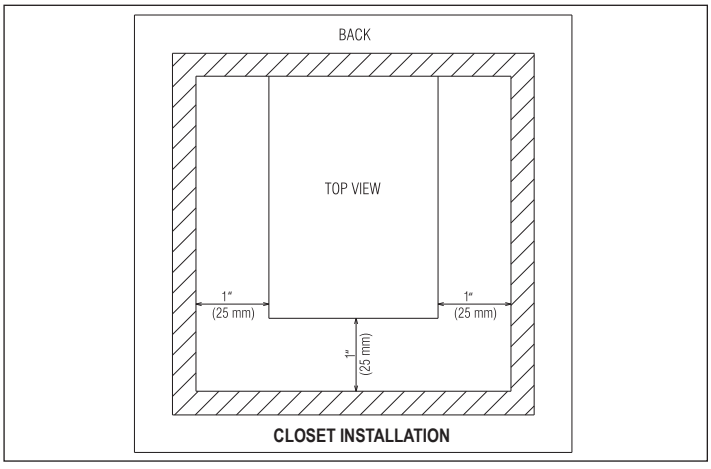
RIELLO strongly recommends that this manual be reviewed thoroughly before installing your Family PRO boiler. Please review section "3 Safety" page 4 before installing the boiler. Factory warranty does not apply to boilers that have been improperly installed or operated.
Installation and service must be performed by a qualified installer, service agency or gas supplier. If, after reviewing this manual, you still have questions which this manual does not answer, please contact or your local **RIELLO** distributor or Riello Technical Support at 1(800)474-3556. Thank you for purchasing this **RIELLO** product. We hope you will be satisfied with the high quality and durability of our equipment.

6.1 Installations must comply with:

- Local, state, provincial, and national codes, laws, regulations
- and ordinances.
- National Fuel Gas Code, ANSI Z223.1/NFPA 54 – latest edition.
- National Electrical Code.
- For Canada only: CAN/CSA B149.1 Installation Code, CSA C22.1 Canadian Electrical Code Part 1 and any local codes.

Family PRO boiler must be installed indoors in a dry location where the ambient temperature must be maintained above freezing and below 100°F [38°C]. All boiler components must be protected from dripping, spraying water, or rain during operation and servicing. Consider the proximity of system piping, gas and electrical supply, condensate disposal drain, and proximity to vent termination when determining the best boiler location.
The boiler is both for closet and alcove installation.

Closet Installations



0"/0 mm between the back of the unit and the wall

CAUTION Stick the provided **WARNING** Label and Lighting Instructions to the front of the boiler casing if the closet or alcove sides are less than 6" (150 mm) from the boiler right side. Doing so will make the Lighting Instruction and **WARNING** Label visible for the appliance in an Alcove or Closet.

Alcove Installations
Alcove installations have the same minimum clearances as closet installations, except the front must be completely open to the room at a distance no greater than 18 in. [457 mm] from the front of the boiler and the room is at least three (3) times the size of the alcove. Provided these conditions are met, the boiler requires no extra ventilation air openings to the space.

Residential Garage Installations
When installed in a residential garage, mount the boiler a minimum of 18 in. [457 mm] above the floor. Locate or protect the boiler so it cannot be damaged by a moving vehicle. Check with your local authorities for other possible regulations pertaining to the installation of a boiler in a garage.

6.2 Before locating the Family PRO boiler

Check for nearby connections to:
- System water piping
- Venting connections
- Gas supply piping
- Electrical power

Check area around boiler. Remove any combustible materials, gasoline and other flammable liquids.

WARNING: Failure to keep boiler area clear and free of combustible materials, gasoline and other flammable liquids and vapors can result in severe personal injury, death or substantial property damage.

The Family PRO must be installed so that gas control system components are protected from dripping or spraying water or rain during operation or service.
If the new Family PRO is to replace an existing boiler, check for and correct any existing system problems such as:
- System leaks
- Incorrectly-sized expansion tank
- Lack of freeze protection in the heating system causing the system and boiler to freeze and leak
- Excessive glycol which will affect the boiler system operation.

6.3 Clearances for service access

See "5.5 Dimensions and connections" page 15 for recommended service clearances. If you do not provide the minimum clearances shown, it might not be possible to service the boiler without removing it from the space.

WARNING: The space must be provided with combustion/ ventilation air openings correctly sized for all other appliances located in the same space as the Family PRO boiler. The boiler front cover must be securely fastened to the boiler to prevent the boiler from drawing air from inside the boiler room in a sealed combustion application. This is particularly important if the boiler is located in the same room as other appliances. Failure to comply with the above **WARNING**s could result in severe personal injury, death or substantial property damage.

6.4 Exhaust vent and intake air vent

Family PRO are certified to the ANSI Z21.13-2017 • CSA 4.9-2017 – Gas-Fired low pressure steam and hot water boilers. Direct vent, Category IV (likely to condense in the vent) appliances.

NOTICE: To prevent combustion air contamination when considering the exhaust vent and intake air vent termination, intake and exhaust may be vented vertically through the roof or out a side wall.

The intake and exhaust venting methods are detailed in the General venting Section. Do not attempt to install the Family PRO Boiler using any other means. Be sure to locate the boiler such that the air intake and exhaust vent piping can be routed through the building and properly terminated. The air intake and exhaust vent piping lengths, routing and termination method must all comply with the methods and limits given within the Venting section.

6.5 Prevent combustion air contamination

Install intake air piping for the Family PRO as described in the Venting section. Do not terminate exhaust in locations that can allow for contamination of the intake air.

WARNING: You must pipe outside air to the boiler air intake for sealed combustion operation. Ensure that the intake air will not contain any of the contaminants below. Contaminated air will damage the boiler, resulting in possible severe personal injury, death or substantial property damage. For example, do not pipe the intake air vent near a swimming pool. Also avoid areas subject to exhaust fumes from laundry facilities. These areas may contain contaminants.

6.6 When removing an existing boiler from an existing common vent system

Do not install the Family PRO boiler into a common vent with any other appliance. This will cause flue gas spillage or appliance malfunction, resulting in possible severe personal injury, death or substantial property damage.

WARNING: Failure to follow all instructions can result in flue gas spillage and carbon monoxide emissions, causing severe personal injury or death.

When an existing boiler is removed from a common venting system, the common venting system is likely to be too large for proper venting of the appliances remaining connected to it.
At the time of removal of an existing boiler, the following steps shall be followed with each appliance remaining connected to the common venting system placed in operation, while the other appliances remaining connected to the common venting system are not in operation.

A Seal any unused openings in the common venting system.

B Visually inspect the venting system for proper size and horizontal pitch and to determine there is no blockage or restriction, leakage, corrosion and other deficiencies which could cause an unsafe condition.

C Insofar as is practical, close all building doors and windows and all doors between the space in which the appliances remaining connected to the common venting system are located and other spaces of the building, so long as it is practical to do so. Turn on clothes dryers and any appliance not connected to the common venting system. Turn on any exhaust fans, such as range hoods and bathroom exhausts, so they will operate at maximum speed. Do not operate a summer exhaust fan. Close fireplace dampers.

D Place in operation the appliance being inspected. Follow the lighting instructions. Adjust thermostat so the appliance will operate continuously.

E Test for spillage at the draft hood relief opening after 5 minutes of main burner operation. Use the flame of a match or candle, or smoke from a cigarette, cigar or pipe.

F After it has been determined that each boiler remaining connected to the common venting system properly vents when tested as outlined above, return doors, windows, exhaust fans, fireplace dampers and any other gas burning boiler to their previous condition of use.

G Any improper operation of the common venting system should be corrected so the installation conforms with the National Fuel Gas Code, ANSI Z223.1/NFPA 54 – latest edition. Correct by resizing to approach the minimum size as determined using the appropriate tables in ANSI Z223.1/NFPA 54 of that code. Canadian installations must comply with CAN/CSA B149.1 Installation Code.

WARNING: Verify proper operation after servicing.

6.7 Prepare the Family PRO

CAUTION: Cold weather handling – If boiler has been stored in a very cold location (below 0°F (-18°C)) before installation, handle with care until the plastic components come to room temperature.

7 INSTALLATION

7.1 Wall mounting information

Family PRO comes with a template, which allows you to easily mark the location of the screws for the mounting bracket and the location of the flue gas pipe on the wall.
The gas connection must be made on site, a 3/4" gas cock is supplied with the boiler.

WARNING: This boiler is heavy and awkward to lift. It is recommended and safer to install the boiler with two people. Use **CAUTION** as to not drop the boiler which could cause personal injury. Verify that the boiler is securely mounted before leaving the boiler unsupervised.

The wall must be vertically plumb and capable of carrying the weight of the Family PRO and its related components.

CAUTION: If the Family PRO is not vertically plumb, improper and unsatisfactory operation may occur. This will cause excessive condensation build-up resulting in unnecessary maintenance and nuisance fault codes.

NOTICE: The mounting bracket is shown for installation of the Family PRO 42 and IS boiler.

7.1.1 Placing the wall-mounted Family PRO boiler

Family PRO boilers are wall mounted. Use only the Family PRO 42 and IS boiler wall mounting instructions included in the box.

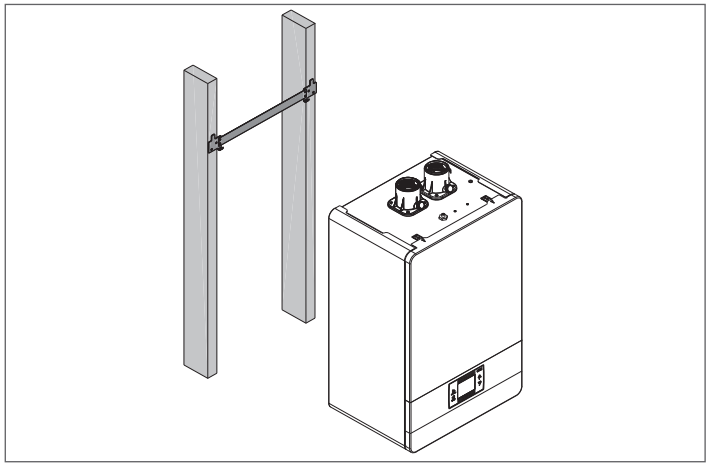
WARNING: The wall must be capable of carrying the weight of the boiler and its related components. The shipping weights of the boiler are approximately:

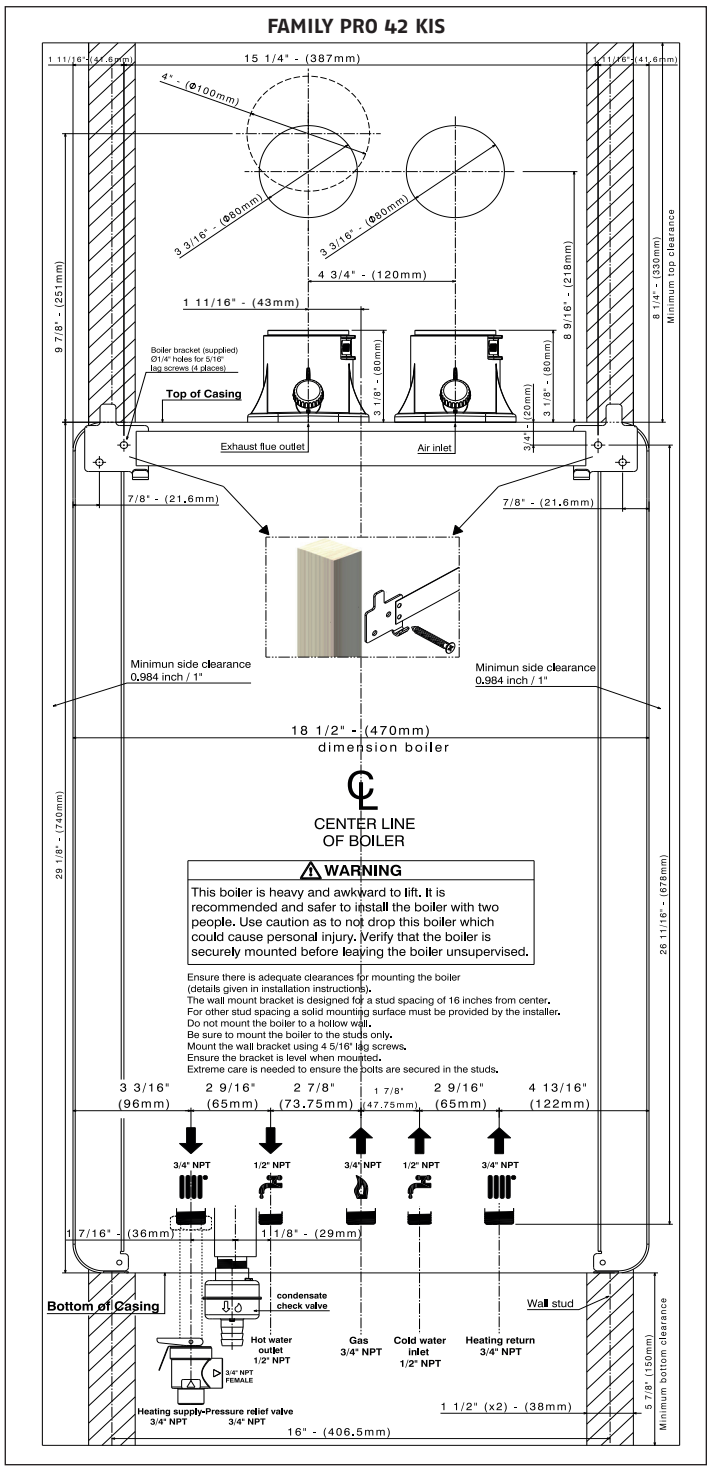
Family PRO 42 combi = 97 lbs (44 kg)

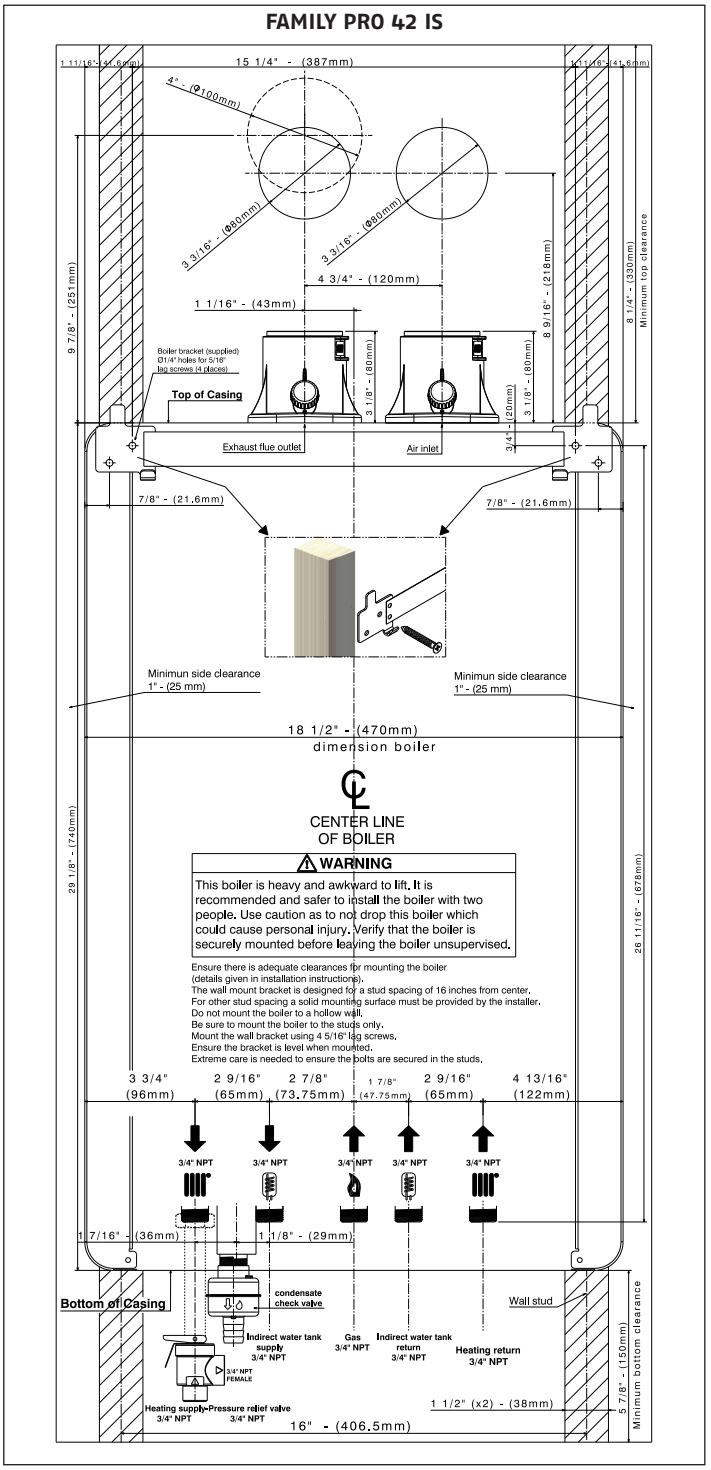
Family PRO 42 heating only = 93 ibs (42 kg)

Failure to comply with above could result in severe personal injury, death or substantial property damage.

7.2 Boiler template







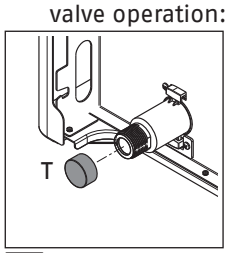
7.2.1 Installation steps

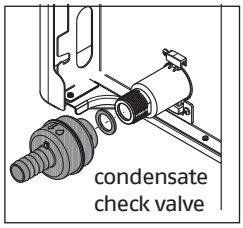
Prior to lifting the Family PRO Boiler onto the wall, use the enclosed template to level and locate the wall bracket.
- fasten the boiler support plate to the wall and use a spirit level to make sure it is perfectly horizontal
- mark the placement of the 2 holes for securing the boiler support plate make sure that all measurements are exact, then drill the wall using drill tips with the diameters indicated on the wall template
- fix the plate, using the wall template, to the wall
- hang the boiler
- fix the pressure relief valve (PRV) ad described on the wall template
- install the condensate check valve
- install the gas valve main supply
- install the exhaust flue and intake air piping
- carry out the electrical connection according to local code rules

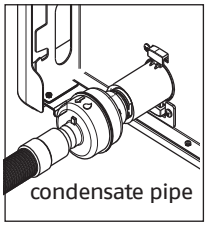
7.3 ASME pressure relief valve

The Family PRO has a pressure relief valve supplied with the boiler.
Connect the valve hydraulically on the heating supply connection and in vertical position (see reference picture).
This device is designed for emergency safety relief and shall not be used as an operating control.

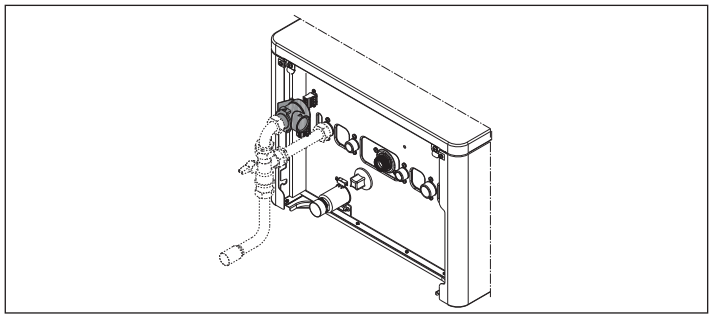
⚠ **WARNING:** To avoid water damage or scalding due to relief valve operation:







⚠ the discharge line must be connected to relief valve outlet and run to a safe place of disposal. Terminate the discharge line in a manner that will prevent possibility of severe burns or property damage.
- the discharge line must be as short as possible and be the same size as the valve discharge connection throughout its entire length.
- the discharge line must pitch downward from the valve and terminate at least 6" (152 mm) above the floor drain where any discharge will be clearly visible.
- The discharge line shall terminate through plain (unthreaded) pipe. The discharge line material must conform to local plumbing code or A.S.M.E. requirements
- No shutoff valve shall be installed between the relief valve and the boiler, or in the discharge line.
- Do not pipe the discharge to any place where freezing could occur.
- Do not plug or place any obstruction in the discharge line.
- Test the operation of the valve after filling and pressurizing system by lifting the lever. Make sure the valve discharges freely. If the valve fails to operate correctly, replace it with a new relief valve.
- For boilers installed with only a pressure relief valve, the indirect tank (if used) must have a temperature and pressure relief valve installed. This relief valve shall comply with the standard for Relief Valves for Hot Water Supply Systems, ANSI Z21.22/CSA4.4.
- Failure to comply with the above guidelines could result in the failure of the relief valve to operate, resulting in the possibility of severe personal injury, death or substantial property damage.
- For safe operation of the appliance, the relief valve must not be removed or plugged.



Maintenance of the relief valve

⚠ **CAUTION**: The valve lever must be operated at least once a year by qualified personnel during annual maintenance to insure that water-ways are clear.

Certain natural occurring mineral deposits may adhere to the valve, rendering it inoperative.
When manually operating the lever, water will discharge and precautions must be taken to avoid contact with hot water to avoid water damage.
Before operating the lever, check to see that a discharge line is connected to this valve directing the flow of hot water from the valve to drain otherwise personal injury may result. If no water flows, the valve is inoperative.
Call a qualified plumber immediately.
Pressure relief valve should be inspected at least once every three years by a licensed plumbing contractor or authorized inspection agency, to insure that the product has not been affected by corrosive water conditions and to insure that the valve and discharge line have not been altered or tampered with illegally.
Certain naturally occurring conditions may corrode the valve or its components over time, rendering the valve inoperative.
Such conditions are not detectable unless the valve and its components are physically removed and inspected.
Do not attempt to conduct this inspection on your own.
Contact your plumbing contractor for a reinspection to assure continuing safety.

⚠ **WARNING:** Failure to reinspect this valve as directed could result in unsafe pressure buildup which can result in serious injury or death and/or severe property damage.

7.4 Installing the condensate check valve

It is mandatory, before starting the boiler, even just temporarily, to install the condensate check valve supplied as standard.
For the installation proceed as follows:
- remove the plug (T) from the condensate trap
- carefully secure the condensate check valve, using the proper gaskets, screwing it on tight and checking its seal
- connect a pipe for draining the condensate to a suitable collection and evacuation system in the white water outlet and in compliance with current legislation.

⚠ **WARNING**: the manufacturer is NOT responsible for any damage caused by the installation of the boiler without the condensate check valve being correctly positioned. An improperly installed or damaged condensate check valve may result in substantial property damage, severe personal injury or death.

Install the flexible condensate drain pipe (Ø 7/8" - 21 mm flexible rubber female connection) with a suitable gradient to avoid condensate stagnation.
Discharge condensate from the boiler into the drainage system, either directly or (if required) via a neutralizer kit (not supplied).
The condensate drain of the boiler is equipped with a built-in condensate trap in order to keep flue gases from being discharged via the condensate drain.
The condensate formed both in the condensing boiler and in the flue gas pipe must be discharged into the public sewage system in accordance with all applicable local regulations.
The condensate produced by a gas-fired heating system has a pH value between 3 and 4. Some local codes may require the use of a separate neutralizer kit to treat the aggressive and corrosive condensate. With a neutralizer kit installed, all condensate from the boiler and the flue gas pipe enters into the neutralizer kit where it is treated and released into the public sewage system with a safe pH value of above 6.5.
The use of neutralization granulate (performing the neutralizing process) is dependent on the operation of the heating system.
To determine the required refill amount, check granulate level several times during the first year of operation. In some cases one granulate fill may last an entire year.
The condensate discharge outlet to the drainage system connection must be clearly visible. It must be installed with a suitable gradient and provided with a stench trap.
If the condensate outlet of the boiler is lower than the drain, a condensate pump must be used.
Only corrosion-resistant materials may be used for condensate drainage purposes (e.g. braided hose). Do not use galvanized materials or materials containing copper for piping, couplings etc.
Please note that other requirements may apply depending on local regulations and/or project-specific details.

It is advisable to contact your local waterworks office (authority responsible for waste water regulations) well before commencing with the installation of the neutralizer kit in order to establish details of local regulations that apply.
NOTICE: to avoid a negative pressure onto the condensate check valve, pipe ventilation must take place between the condensate trap and the drainage system, in case of discharge into:
a public sewage system
a neutralizer kit
a condensate pump kit

7.5 General piping information

CAUTION: Use two wrenches when tightening water piping at the boiler, using one wrench to prevent the boiler return line or supply line from turning. Failure to support the boiler piping connections to prevent them from turning could cause damage to boiler components.

NOTICE: The Family PRO boiler control module uses temperature sensors to provide both high limit protection and modulating temperature control. The PCB also provides low water protection using a water pressure sensor (minimum 6.5 psi (0.45 bar)). Some codes/jurisdictions may require additional external controls for high limit and/or low water cutoff protection.

7.5.1 Separate low water cutoff

A low water cutoff may be required by state local code or some insurance companies. Check code requirements before installation of the Family PRO boiler. If required:

- Use a low water cutoff designed for hydronic installations
- Follow low water cutoff manufacturer's instructions

A hot water boiler installed above the radiation level or as required by the Authority having jurisdiction, must be provided with a low water cutoff device either as part of the boiler or at the time of boiler installation.
Note: The electronic low water cutoff located internally in the Family PRO 42 KIS-IS is below the lowest safe permissible water level established by the boiler manufacturer.

7.5.2 Backflow preventer (heating only model)

Use a backflow preventer specifically designed for hydronic boiler installations. This valve should be installed on the cold water fill supply line per local codes.

7.5.3 Fitting the heating circuit supply and return pipes

NOTICE: To protect the entire heating system **RIELLO** recommends installing a Y-Strainer in the return circuit. When connecting the boiler to an existing heating system this device must be installed.

- Install shut-off valves immediately before and after the Y-Strainer to enable the Y-Strainer to be cleaned.
- Install a fill valve and drain valve in the heating system supply pipe if required.
- Also plumb the pressure relief valve to the drain system.

NOTICE: When using oxygen-permeable pipes, e. g. for floor heating systems, you must separate the system using heat exchangers.

- Thoroughly flush all pipes and radiators
- Refer to the installation wall template for the pipe connection dimensions
- Connect the pipes so that they are free from strain.

7.5.4 Available Pump Head (ft. hd.)

Size the piping and components in the space heating system using recognized design methods.

NOTICE: The boiler, when used in connection with a refrigeration system, must be installed so the chilled medium is piped in parallel with the boiler and with appropriate valves to prevent the chilled medium from entering the boiler.
NOTICE: The boiler piping system of a hot water boiler connected to heating coils, located in air handling units, where they may be exposed to refrigerated air circulation must be equipped with flow control valves or other automatic means to prevent gravity circulation of the boiler water during the cooling cycle.

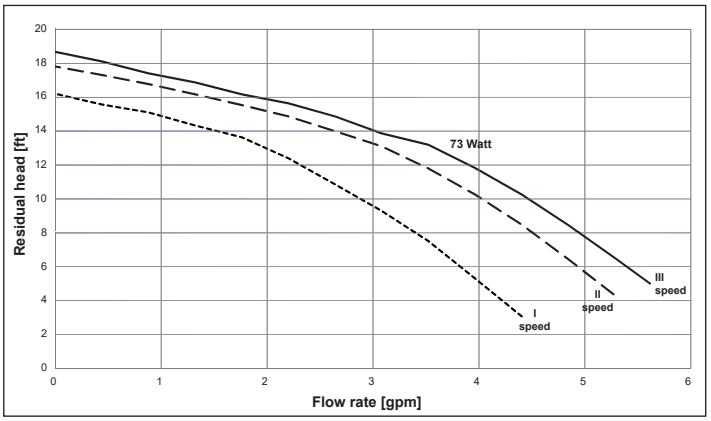
7.5.5 Waterside Flow (primary circuit)

The boiler is designed for closed loop, forced circulation hot water heating systems only.
Family PRO is equipped with an internal pump.

PUMP DUTY
Residual head of circulator

The residual head for the heating system is represented in the graph, according to the flow rate. The piping on the heating system must be sized taking into account the available residual head value.
Bear in mind that the boiler will operate correctly if there is sufficient water circulation in the heat exchanger, as the boiler is equipped with an automatic internal by-pass which is designed to ensure water flow rate into the heat exchanger is correct under any installation conditions.

CAUTION: The Family PRO IS must not be operated as a potable Hot Water Boiler. The Family PRO must not be operated in a open system.



An external CH/System pump and additional bypass (or hydraulic separator) is required for heating systems outside the flow requirements of the internal circulator pump. It is recommended to have a Primary and Secondary loop configuration with closely spaced Tee's.

7.6 Making the gas connection

DANGER: Only carry out work on gas piping and connections if you are licensed for such work.

- Determine proper size gas pipe for the installation according to the general and local rules.
- Do not forget the pipe connection losses and observe proper size of the fittings.
- Install the furnished 3/4" female gas cock on the gas connection (3/4" male on the boiler).
- Connect the gas pipe to the gas cock so that it is free from any strain.

WARNING: Failure to keep boiler area clear and free of combustible materials, gasoline and other flammable liquids and vapors can result in severe personal injury, death or substantial property damage.

WARNING: Before carrying out the connection, check that the type of gas is that for which the appliance is set up.

WARNING: Remove any combustible materials, gasoline and other flammable liquids awmanuay from the hot water pipes.

WARNING: The boiler and its gas connections must be leak tested before placing the boiler in operation.

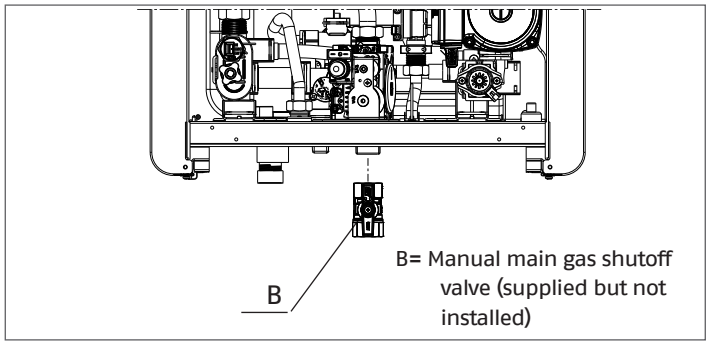
CAUTION: The boiler and its individual shut off valve must be disconnected from the gas supply piping system during any pressure testing of that system at test pressures in excess of 1/2 psi (3.5 kPa).

WARNING: Before starting the Family PRO, and during initial operation, smell near the floor and around the boiler for gas or any unusual odor. Do not proceed with start-up if there is any indication of a gas leak. Repair any leak at once.

WARNING: for LP boilers only – Your propane supplier mixes an odorant with the gas to make its presence detectable. In some instances, the odorant can fade, and the gas may no longer have an odor. Before start-up (and periodically thereafter), have the LPG supplier verify the correct odorant level in the gas.

WARNING:
- Cover endangered positions before leak testing.
- Do not spray the leak testing agent onto cables, plugs or electrical connection lines.
- Do not allow it to drip onto them either.

DANGER: Leaks may be caused to pipes and screw connections during commissioning and maintenance activities.
  - Carry out a proper leak test.
  - Only use approved leak detection agents for leak detection.
  - Disconnect the heating system from the power supply
- Check the exterior tightness of new pipe sections up to and including the direct sealing point on the gas burner connection.



NOTICE: When installing the gas supply connection, it must comply with local regulations or, if such regulations do not exist, with the National Fuel Gas Code, ANSI Z 223.1/NFPA 54 in the United States. In Canada, the gas supply connection must comply with local regulations or, if such regulations do not exist, with CAN/CSA B149.1, Natural Gas and Propane Installation Code. A sediment trap must be provided upstream of the gas controls.
NOTICE: The boiler must be isolated from the gas supply piping system by closing its individual manual shutoff valve during any pressure testing of the gas supply piping system at test pressures equal to or less than 1/2 psi (3.5 kPa).

7.7 Electrical connections

A qualified electrician has to connect the electrical supply to the appliance. If controls – external to the appliance – are required, a competent person must undertake the design of any external electrical circuits.
Wiring to the appliance must be rated for operation in contact with surfaces up to 194°F (90°C).

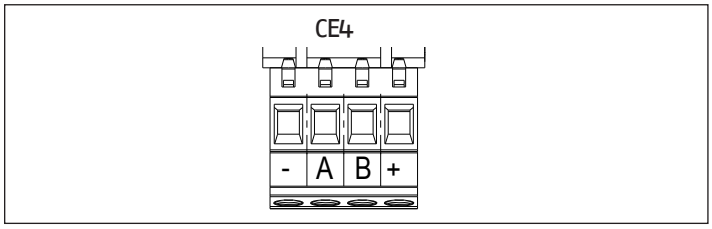
If an external electrical source is utilized, the boiler, when installed, must be electrically bonded to ground in accordance with the requirements of the authority having jurisdiction or, in the absence of such requirements, with the National Electrical Code, ANSI/NFPA 70 and/or the Canadian Electrical Code Part 1, CSA C22.1, Electrical Code.

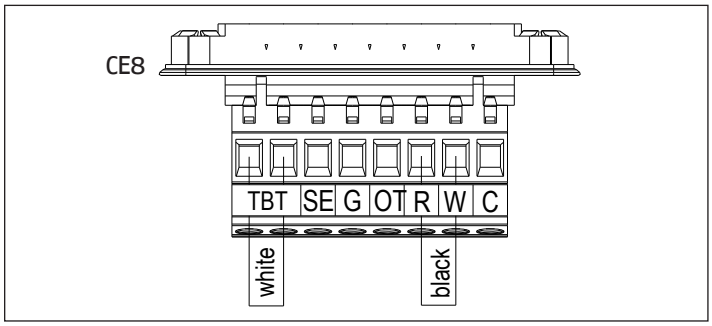
WARNING: ELECTRICAL SHOCK HAZARD – For your safety, turn off the electric power supply at service entrance panel before making any electrical connections to avoid possible electric shock hazard. Failure to do so can cause severe personal injury or death.

- **NOTICE**: the boiler must be electrically grounded as required by National Electrical Code ANSI/NFPA 70 – latest edition.

CAUTION: Label all wires prior to disconnection when servicing controls. Wiring errors can cause improper and dangerous operation. Verify proper operation after servicing.

Low voltage connections
Carry out the low voltage connections as follows:
- use the external low voltage connectors supplied
- 4-poles connector for BUS 485 (- A B +) signal
- 8-poles connector for TBT - TA -OT - SE signal





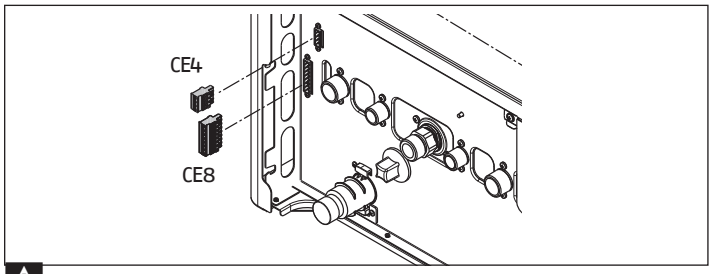
Connector	Label	Description
CE4	(- A B +)	Bus 485
CE8	TBT	Low Temperature Thermostat
	SE - G	Outdoor Temperature Sensor
	OT - G	Open therm (OT)
	R	Room Thermostat (24V)
	W	Room Thermostat - Heating
	C	Room Thermostat - Common
M4a (PRO IS)	T.BOLL.	DHW Aquastat
	S.BOLL.	DHW 10kOhm NTC

carry out electric connections using the desired connector

IMPORTANT
This boiler is equipped with a feature that saves energy by reducing the boiler water temperature as the heating load decreases. This feature is equipped with an override which is provided primarily to permit the use of an external energy management system that serves the same function. THIS OVERRIDE MUST NOT BE USED UNLESS AT LEAST ONE OF THE FOLLOWING

CONDITIONS IS TRUE:
- An external energy management system is installed that reduces the boiler water temperature as the heating load decreases.
- This boiler is not used for any space heating
- This boiler is part of a modular or multiple boiler system having a total input of 300,000 BTU/hr or greater.
- This boiler is equipped with a tankless coil.

Insert correctly the connector into its counterpart.



CAUTION: It is recommended to use wires not exceeding 20 AWG (0.5 mm^2). All wiring must be in accordance with local codes and the National Electrical Code ANSI/ NFPA 70 - latest edition. In Canada, the installation must conform to CSA C22.1 Canadian Electrical Code Part 1 and any local codes.

NOTICE: In case of W R or TBT connection, remove the respective jumpers.

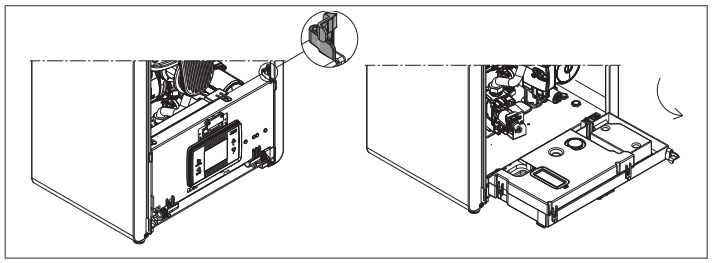
⚠ 24V room thermostat connection. The maximum load admitted is 40 mA (max 1.5 VA)

NOTICE: In case of W – R and TBT connection, remove the respective jumpers.

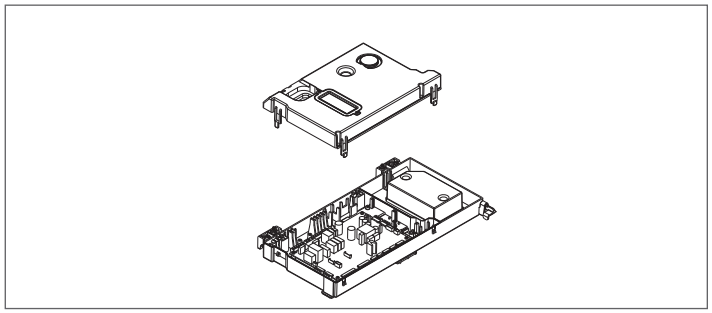
TBoll or Sboll connection

To connect water tank thermostat and water tank probe access the boiler board as follows:

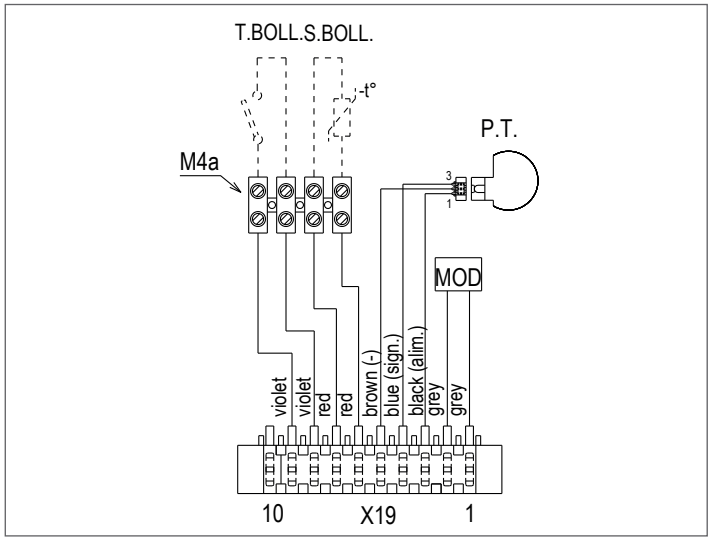
- remove the casing a
- gently lift and turn the control panel to free it from the side hooks.



- remove the electrical parts cover as shown in the figure below



- connect TBOLL and SBOLL to M4a as shown in the figure



⚠ In case of boiler+external indirect tank with sensor (CASE C – see description on page 5) add a jumper on the TBOLL input of M4a terminal board.

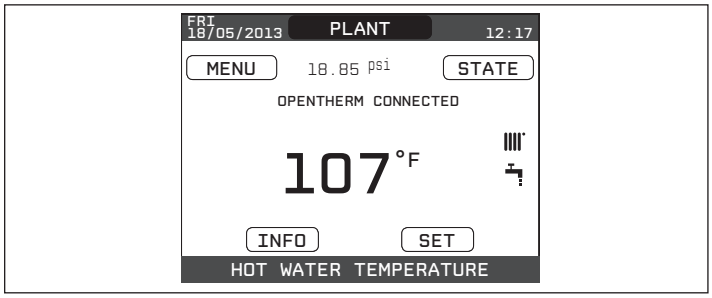
Remote control OT

In case the boiler is connected to a remote control OT, the boiler display shows "Open Therm Connected". The boiler control functions are disabled and the remote control OT becomes the master for the main heating zone setting and the domestic hot water set point.

On the boiler front panel:

- The boiler status mode selection is disabled (the CH & DHW/DHW/off mode is selectable only on the control OT).
- The domestic hot water setting is disabled (the domestic hot water set point is selectable only on the control OT).
- In the INFO menu the domestic hot water set point is visible instead of the domestic hot water flow rate.
- The central heating set point on the boiler display is related only to a room thermostat request when there is not a CH request from the control OT.

Please note that in the case of control OT is connected, all the parameters type request and type activation related to the main heating zone, are disabled.

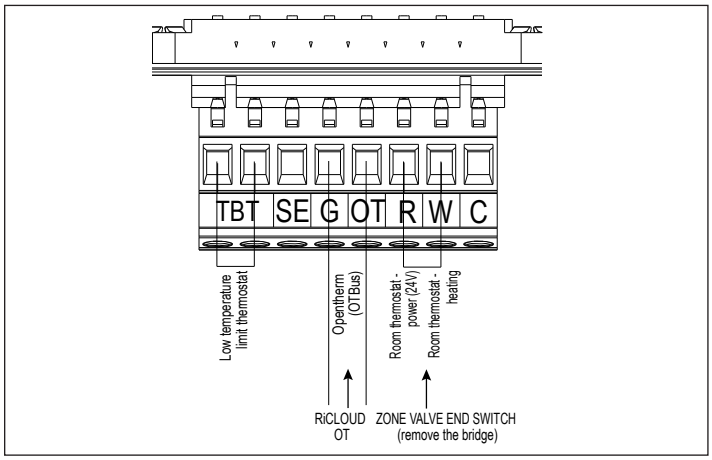


7.7.1 OT and Room Thermostat connection to the boiler

The **Family PRO 42 KIS-IS** boilers have the ability to communicate with OT (OpenTherm) thermostats such as the Riello RiCLOUD, sold as an accessory.

When using the RiCLOUD thermostat it, or the WiFi box it is communicating with, needs to be connected to OT-G terminal.

NOTICE in case of both use of OT and ON/OFF thermostat: if the RiCLOUD thermostat is to be used in OT (OpenTherm) and another ON/OFF thermostat is to be used to activate a request for heat using W an R terminals, set DO_AUX1 parameter to 1 (see section "11.7.1 Boiler configuration").



The central heating set point selected on the boiler display is used when a heating request is made at the room thermostat connection (W-R) if there is no request from the OT connection.

When a heating request is made from a RiCLOUD thermostat at the OT connection the central heating set point set on the RiCLOUD will be supplied to the heating loop. Priority is given therefore to OT thermostat.

Presence of an outdoor temperature sensor connected to the boiler will influence the CH set point and therefore the supply temperature in the above situation.

7.8 Electrical supply

High voltage connections

The appliance works with alternating current at 120 V/60 Hz, and is in compliance with requirements of National Electrical Code and any additional national, state, or local code requirements having jurisdiction.

Boiler must be electrically grounded in accordance with the National Electrical Code, ANSI/NFPA No. 70-latest edition. In Canada, installation must conform to CSA C22.1 Canadian Electrical Code Part 1 and any local codes.

It is obligatory to make the connection with a safe ground/earth, in compliance with current directives.

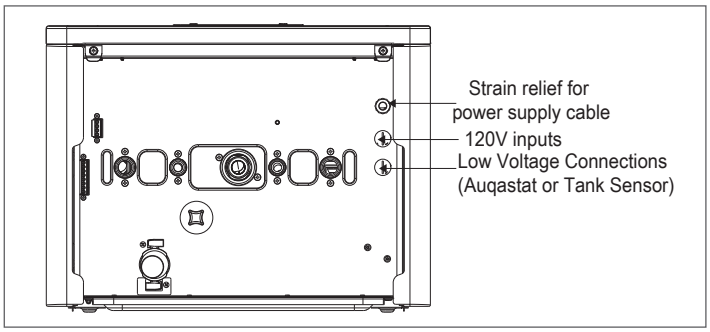
CAUTION: To ensure the tightness of the boiler, use a self-locking wire connector and tighten it on the wire.

WARNING: It is the responsibility of the installer to provide suitable grounding for the appliance; the manufacturer will not be liable for any damage resulting from an incorrect or absent ground connection.

It is forbidden to use gas and/or water pipes as a ground to electrical appliances.
Use the power cable supplied to connect the boiler to the main power supply.
If the power cable has to be replaced, use the original spare part.

MAIN SUPPLY CONNECTION
The power supply cable has to pass through the related strain relief (see figure below).

CAUTION: The electrical socket must be provided on the right or left side of the boiler.
It is forbidden to put the electrical socket under the boiler.



7.9 External wiring limitations

Any external wiring must remain within the limits as detailed in the table below

Connection	Maximum length	
	ft	meters
Outdoor temperature sensor	100	30
Room thermostat	100	30
OT connection	100	30

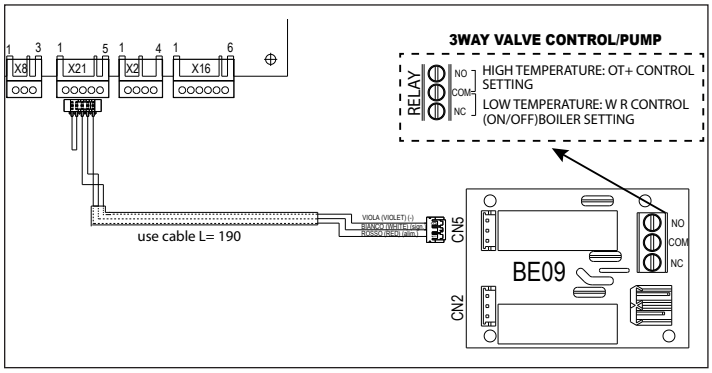
7.10 Outdoor temperature sensor

The outdoor temperature sensor supplied as standard inside the boiler box must be connected at terminals SE-G terminals of CE8. Once the sensor is connected the boiler automatically adjusts to operate with the sensor. See Section 11.13 Setting the Outdoor Reset Curve with Outdoor Sensor.

7.11 3 way valve/ pump card management (BE09)

A 3 way valve/pump card (BE09) is a available as an accessory for the **Family PRO 42 KIS-IS**. This card under normal circumstances allows the boiler to close a relay on the card to activate a device such as a pump when there is a call for heat.
When using the accessory card in conjunction with a RiCLOUD thermostat it is possible to control a two temperature system.
In this situation the RiCLOUD will be used as a the high temperature zone and will take priority.
The low temperature zone will be controlled by the ON/OFF thermostat connected to W and R terminals.

Working mode BE09
- The supply temperature setpoint for an ON/OFF thermostat on W and R terminals is set directly on the boiler, otherwise the OT setpoint is calculated by the RiCLOUD.
- The RiCLOUD can also act as an ON/OFF thermostat connected to W and R terminals, either wired or wireless, instead of on the OT connection.
- The accessory card (BE09) has two relays to choose from. The first relay is a normally open relay with two terminal connections. The second relay is a normally open/normally closed relay which has three terminal connections including a common. This one is used to alternate between the high/ low temperature in a two temperature system. When using the first relay, the on/off switch of the relay activates from an OT request (if there is a OT request the relay is closed).
- The accessory card (BE09) is activated on the above version with DO_AUX1 parameter set to 1. If DO_AUX1 parameter is set to 2, the relay is used to activate a second pump on the circuit – the second pump runs when the primary pump runs (the second pump will shutdown if there is instantaneous DHW request).



7.12 Other devices

Contact Riello North America's technical department should you require additional specific information on the suitability of a particular control. Further guidance on the recommended practice for the installation of external controls, can be found below.

IMPORTANT
- The boiler must always be supplied with a permanent 120V – 60Hz electrical supply.
- Do not connect any controls or auxiliary equipment to the 24V terminal strip, other than those approved/supplied by the manufacturer.

7.13 Check/control water chemistry

WARNING: Do not use petroleum-based cleaning or sealing compounds in heating system. Damage to elastomer seals and gaskets in the system could occur, resulting in substantial property damage.

Water pH over 7.0
- Maintain a water pH over 7.0 for a stainless steel heat exchanger and below 8.0 if there are aluminium components in the heating system. Check with litmus paper or have the system chemically analysed by water treatment company.
- If pH differs from above, consult the local water treatment company for treatment needed.

Hardness less than 9 Grains/US Gallon.
- Consult the local water treatment companies for unusually hard water areas (above 9 Grains/US Gallon hardness).

Chlorine concentration less than 50 ppm
- Filling with chlorinated fresh water should be acceptable since drinking water chlorine levels are typically less than 4 ppm.
- Do not use the boiler to directly heat a swimming pool or spa water.
- Do not fill boiler or operate with water containing chlorine in excess of 50 ppm.

Clean system to remove sediment
- You must thoroughly flush the system (without the boiler connected) to remove sediment. The high-efficiency heat exchanger can be damaged by build up or corrosion due to sediment.
- Flush system until water runs clean and you are sure piping is free of sediment.

Test/replace glycol fluid
- For systems using glycol fluids, follow glycol manufacturer's instructions to verify the inhibitor level and that other fluid characteristics are satisfactory.
- Do not exceed 40 % of the system volume with glycol fluids.

NOTICE: Glycol must be replaced periodically due to degradation of inhibitors over time. Follow all glycol manufacturer's instructions.

7.14 Freeze protection (when used)

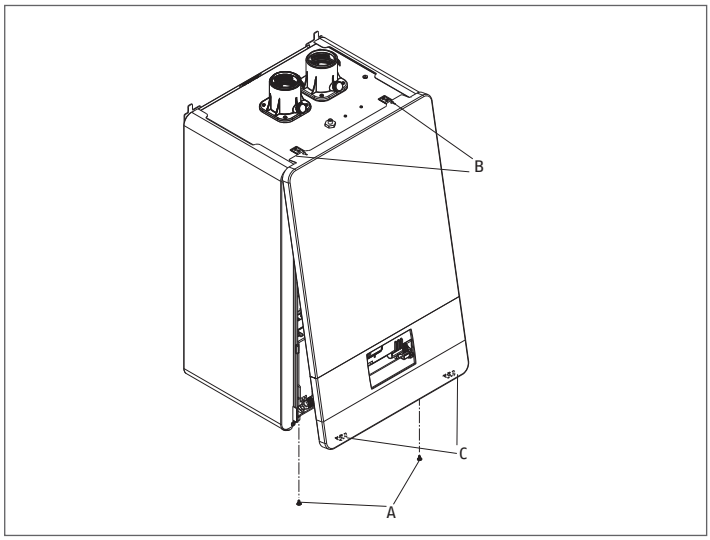
WARNING: NEVER use automotive or standard glycol antifreeze, even ethylene glycol made for hydronic systems. Use only glycol fluids certified by a glycol manufacturer as suitable for use with stainless steel, verified in glycol manufacturer's literature.
Throroughly clean and flush any system that has used glycol before installing the new Family PRO boiler. Provide the Family PRO boiler owner with a material safety data sheet (MSDS) on the glycol used (if requested).

- Determine glycol fluid quantity using total system water content, following the glycol manufacturer's instructions. Remember to include expansion tank water content.
- Local codes may require a backflow preventer or actual disconnect from city water supply.

7.15 Casing removal

To access the components inside, remove the casing as indicated below:
- locate and unscrew the 2 screws (A - figure beside) that fix the casing to the boiler
- by leveraging the fixing clips (C), unhinge the lower part of the casing
- lift the casing upwards to release it from the top tabs (B), then remove it.

NOTICE: If the side panels have been removed, reassemble them in the initial position by referring to the adhesive labels on the side walls.
NOTICE: If the front panel has been permanently removed it must be replaced.
NOTICE: The noise absorbing panels inside the front and side walls ensure an airtight seal for the air supply duct.
NOTICE: It is therefore ESSENTIAL, after removing any of the casing, to correctly reposition the panels to ensure limited air leakage.



7.16 Initial filling of the system and air purge

NOTE: The initial filling of the system and each later refill must be done with the electrical supply ON and the boiler in OFF mode.

NOTE: Whenever the boiler is electrically powered, the automatic venting cycle starts.
Once the hydraulic connections have been carried out, fill the heating system.
- For existing systems, the entirety of the system mush be drained and flushed with a pH neutral solution.
- See the Application Guide (available on HVAC Partners) for system piping recommendations.
- Follow all local codes and regulations for installation and piping of boiler.

This operation must be carried out when the system is cold by following the steps below:
- Ensure both supply and return service valves are open.
- Open the cap of the automatic air vent valve (A) by two or three turns to allow a continuous venting of the air, leave the plug of the valve (A) open permanently with the operation of the boiler.
- Connect the supplied silicone tube to the manual air vent valve (D) and take a bin to collect the water that eventually comes out after the air purge.
- Open the manual air vent valve (D).

WARNING: Frontal water flushing can occur and cause instant severe burns or death from scalds while acting on the manual air vent valve of the heat exchanger. Act on this valve only if the system is cold.

- Make sure the cold water inlet tap is open.
- Open the filling tap (B).
- Switch on the electrical power supply to the boiler leaving it in OFF mode.
- Wait until only water comes out continuously from the manual air vent valve, close the valve (D).
- Check the pressure value on the screen: when the pressure indicated by the sensor is between 15-21 psi (1-1.5 bar) close the filling tap (B).
- Switch off and (after few seconds) switch on the electrical power supply and leave the boiler in OFF mode for starting the venting cycle.

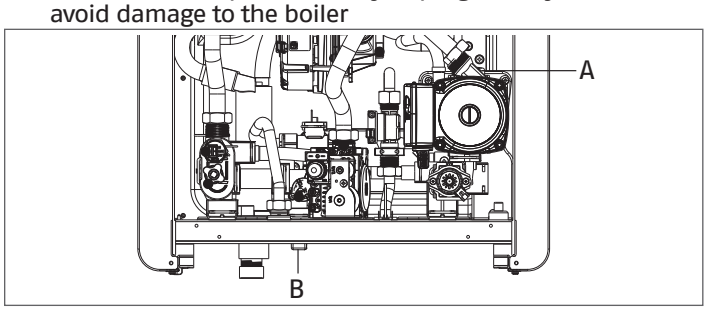
NOTE: see section "11.7.1 Boiler configuration".
- Begin venting all manual air vents in the system, starting at the lowest first. It may be necessary to go back and add water to the system to increase the pressure until the entire system has been filled.
- Check the operation of the pressure relief valve by lifting the lever from the seat. Purge air through this valve by keeping open until only water comes out.
- Be sure boiler is in "OFF" mode. Open hot water tap(s) to remove air from the DHW circuit. Keep open until only water exits the tap to ensure the air is removed.
- Inspect the system for leaks, fixing any if found.

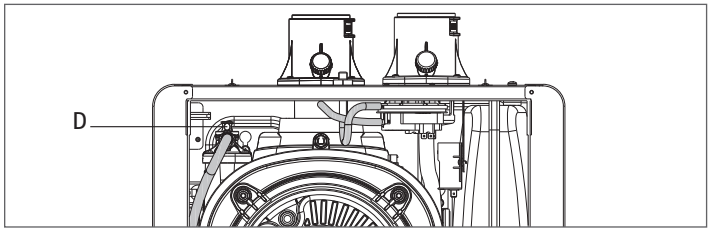
After the bleeding cycle the boiler is ready to operate.
If there is still air present during operation, repeat the bleeding cycle.

WARNING: Eliminate all system leaks. Continual fresh makeup water will reduce boiler life. Minerals can build up in the heat exchanger, reducing heat transfer, overheating heat exchanger, and causing heat exchanger failure.

The system may have residual substances that could affect water chemistry. After the system has been filled and leak tested, verify water pH and chlorine/chloramines concentrations are acceptable (see section "7.13 Check/control water chemistry" page 23).

CAUTION: It is important that you purge the system of air to avoid damage to the boiler





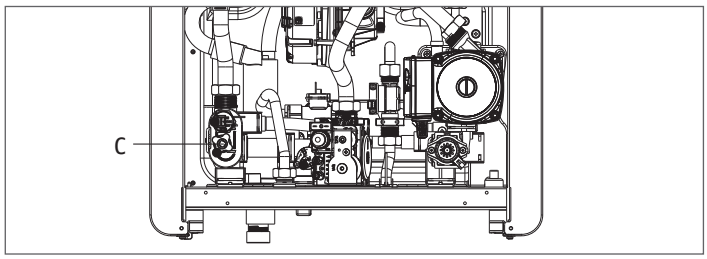
7.17 Refill of the system

When the system needs to be refilled and an air purge is not

needed, perform the steps below:
- Put the boiler in OFF mode.
- Make sure the cold water inlet tap is open.
- Open the filling tap (B).
- Check the pressure value on the screen: when the pressure indicated by the sensor is between 15-21 psi (1-1.5 bar) close the filling tap.

7.18 Draining the heating circuit of the boiler

Before draining the system, switch off the electrical supply by turning off the main switch of the system.
- close the heating system's valves
- manually loosen the system drain valve (C).



7.19 Emptying the domestic hot water system

Whenever there is risk of freezing, the domestic hot water system must be emptied in the following way:
- turn off the main water supply tap
- turn on all the hot and cold water taps
- drain from the lowest points.

DANGER: The system water temperature could be very hot, be sure when opening the drain valve that the rubber pipe is well attached. Water could spray from the front of the unit and cause instant severe burns or death from scalds.

8 GENERAL VENTING

Install the boiler/venting system in accordance with the vent manufacturer's instructions and with the National Fuel Gas Code, ANSIZ223.1/NFPA 54, CAN/CSA B149.1, and/or applicable provisions of local building codes.
This boiler is a direct vent appliance according to ANSI Z21.13/CSA4.9 standard.

Vent installations shall be in accordance with Part 7, Venting of Equipment, of the National Fuel Gas Code, ANSI Z223.1/NFPA 54 and/or CAN/CSA B149.1, Natural Gas and Propane Installation Code, or applicable provisions of the local building codes.

DANGER: Ensure the exhaust and intake vent piping comply with these instructions regarding the vent system. Inspect finished combustion air intake and exhaust piping thoroughly to ensure all joints are secured well, airtight and comply with all applicable code requirements, as well as with the instructions provided in this manual and the vent manufacturer's installation manual. Failure to provide a properly installed vent system will cause severe personal injury or death.

DANGER: Carbon Monoxide is invisible, odorless, and toxic! Install a carbon monoxide alarm in your home, even if you do not own a gas appliance. Locate the carbon monoxide alarm in the living area of your home and away from gas appliances and doorways to attached garages. Follow the alarm manufacturer's instruction included with the alarm. **NOTICE**: pipe supports shall be placed per local code and the vent manufacturer's instructions.

WARNING: RISK OF CARBON MONOXIDE POISONING OR FIRE DUE TO JOINT SEPARATION OR PIPE BREAKAGE. Ensure all of the venting system is properly supported and secured per these instructions, venting manufacturer's instructions and with the National Fuel Gas Code, ANSIZ223.1/NFPA 54, CAN/CSA B149.1, and/or applicable provisions of local building codes. Failure to do so may result in substantial property damage, severe personal injury or death.

WARNING: This vent system will operate with a positive pressure in the pipe. Do not connect vent connectors serving appliances vented by natural draft into any portion of mechanical draft systems operating under positive pressure. Follow the venting instructions carefully. Failure to do so may result in severe personal injury, death, or substantial property damage.

The safe operation of a system is based on the use of parts supplied by the vent manufacturer and the performance of the system may be affected if the combination of these parts is not used in actual building construction.

Acceptance of the system is dependent upon full compliance with the vent manufacturer's installation instructions, National Fuel Gas Code, ANSIZ223.1/NFPA 54, CAN/CSA B149.1, and/or applicable provisions of local building codes.

8.1 Combustion Air-inlet Contamination

Be careful not to locate the air-inlet termination in an area where contaminants can be drawn in and used for combustion. Combustion air containing dust, debris or air-borne contaminants will drastically increase the required maintenance and may cause a corrosive reaction in the Heat Exchanger which could result in premature failure, fire, serious injury, or death. See table below for a list of areas to avoid when terminating air-inlet piping:

Products to Avoid	Contaminated Sources to Avoid
Antistatic fabric softeners, bleaches, detergents, cleaners	Laundry facilities
Perchloroethylene (PCE), hydrocarbon based cleaners	Dry cleaning facilities
Chemical fertilizer, herbicides/ pesticides, dust, methane gas	Farms or areas with livestock and manure
Paint or varnish removers, cements or glues, sawdust	Wood working or furniture refinishing shops
Water chlorination chemicals (chloride, fluoride)	Swimming pools, hot tubs
Solvents, cutting oils, fiberglass, cleaning solvents	Auto body or metal working shops
Refrigerant charge with CFC or HCFC	Refrigerant repair shops
Permanent wave solutions	Beauty shops
Fixer, hydrochloric acid (muriatic acid), bromide, iodine	Photo labs, chemical / plastics processing plants
Cement powder, crack fill dust, cellulose, fiber based insulation	Concrete plant or construction site

WARNING: Do not store or use gasoline or other flammable vapors and liquids in the vicinity of this or any other boiler. Failure to follow instructions may result in serious injury or death.

8.2 Flammable Solvents and Plastic Piping

Due to the extremely flammable characteristics of most glues, cements, solvents and primers used in the process of joining plastic vent and air-inlet pipes, explosive solvent vapors must be evacuated from the vent and air-inlet prior to start-up. Avoid using excess cement or primer that may lead to pooling inside the pipe assembly. Freshly assembled piping assembly should be allowed to cure for a minimum of 8 hours before applying power to the gas fired boiler. Refer to Mandatory Pre-commissioning Procedure for Plastic Venting in this section.

DANGER: Flammable Cements and Primers – It is the installers' responsibility to familiarize themselves with the hazards associated with explosive solvents and to take all precautions to reduce these risks. Failure to follow these instructions can cause explosions, property damage, injury or death.

WARNING: Only solvents, cements and primers approved by the vent manufacturer shall be used with their vent system. Failure to do so may result in severe personal injury, substantial property damage or death.

8.3 Mandatory Pre-commissioning Procedure for PVC (Air-inlet only) and CPVC (Plastic Venting)

WARNING: Read and install the vent in accordance with the vent manufacturer's instructions. Failure to do so may result in severe personal injury, substantial property damage or death.

CAUTION: Do not apply power to the boiler prior to Step 4 in the Mandatory Pre-commissioning.

CAUTION: Adhesives and sealents used in the assembly are to be used within their marked time limitations.

Procedure for PVC (air-inlet only) and CPVC Plastic Venting.

1 With the power turned off to the boiler, completely install the vent and air-intake system, securely cementing joints together. If possible, allow primers/cements to cure for 8 hours before firing the burner. If curing time is less than 8 hours, proceed with Steps 2 through 6.
2 Keep the boiler gas supply shut-off valve in the off position.
3 Remove the wiring from the spark generator.

WARNING Spark Ignition Circuit - Maintain a safe distance (2 in. minimum) from the spark ignition circuit to avoid injury from electrical shock.

4 Turn power on to the boiler and apply a heat demand.
5 Allow for 5 complete trials for ignition, consisting of pre and post purge of the combustion blower, until an ignition lockout occurs. Repeat the process one more time (i.e. 10 complete ignition sequences in total).
6 Turn power off and reconnect the wiring to the spark generator.

8.4 General Venting Rules and Guidelines

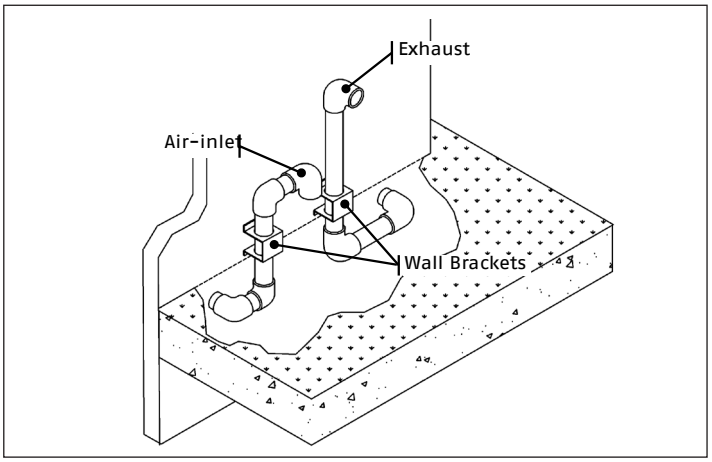
- Prevailing Winds: Ensure the vent is located where it will not be exposed to normal prevailing winds.
- Combustion Air-inlet Contamination: Air for combustion must be drawn from an area free of dust and contaminants.
- Vertical between air-inlet and exhaust vent: The exhaust must be a minimum of 12 in. (305mm) above the air-inlet, and the air-inlet must always be a minimum of 12 in. (305mm) plus allowance above any surface that will support snow. (Two feet plus snow allowance is highly recommended). Consult your weather office for the maximum typical snowfall for your region.
- Horizontal between air-inlet and exhaust vent: The horizontal distance between the inlet and exhaust must be a minimum of 4" [102 mm] center to center.
- Wall Flashing: Under normal operating conditions this boiler will produce a plume of white gases, and should be taken into consideration when selecting an adequate location. A stainless, plastic, or vinyl shield can be used to flash the exterior of the residence.
- Flue Gas Hazard: Position the vent termination where vapors cannot make accidental contact with people and pets or damage nearby shrubs and plants.
- Elbow Extensions: Elbows on outside of wall must be no more than ½ in. away from the wall.
- Vent Sloping: All indoor exhaust piping must be on a slope back to the boiler a minimum of ¼ in. per linear foot (21 mm/m) of vent. For applications where excessive condensation is possible ½ in. per linear foot (42 mm/m) is recommended. The venting system shall be installed so as to prevent accumulation of condensate and, where necessary, have means provided for drainage of condensate.
- Vent screens: It is recommended to install a vent screen or vent termination approved by the vent manufacturer as the last venting component of the vent system (both inlet and exhaust vent) to prevent undesired objects (ie. birds, rodents, debris) from entering the vent system.
- Vent Supports: Where required Vent and Air-inlet piping shall be secured to the wall for more rigidity. All interior vent pipe shall have a minimum support distance given per vent manufacturer's instructions. In the absence of such instructions than a minimum support distance of 36" (914 mm) shall be maintained. The vent and air-inlet piping shall be supported at every connection. The vent and air-inlet piping shall be supported at every fitting.

  Horizontal portions of the venting shall be supported to prevent sagging.

WARNING: Failure to provide adequate support may result in substantial property damage, severe personal injury or death.

NOTE: the framing in walls and roofs that the vent will penetrate through shall be constructed to provide for support and attachment of termination assemblies.

- Roof Exhaust: In all roof applications the discharge must point away from the pitch of the roof.
- Roof Flashing: Install adequate flashing where the pipe enters the roof, to prevent water leakage.
- Rain Cap: Install and seal a rain cap over existing chimney openings, in vacant chimney applications.
- Venting Below Grade: For installations that exit the wall below grade refer to figure below.



For installations that exit the wall below grade:

1. Excavate site to a point below where the pipes are to exit as shown.
2. Ensure the wall is fully sealed where the pipes penetrate.
3. The Vent/Air-inlet piping MUST be secured to the side of the building above grade, as shown, to provide rigidity.
4. Only use wall brackets approved for outdoor use and by the vent manufacturer for securing the air-inlet and vent exhaust pipes to the wall.

WARNING: Failure to provide adequate support may result in substantial property damage, severe personal injury or death.

5. Ensure that the Vent/Air-inlet clearances are maintained, see Section 5.0 for details.

WARNING: Condensate Hazard: Do not locate vent over public walkways, driveways or parking lots. Condensate could drip and freeze resulting in a slip hazard or damage to vehicles and machinery.

- Wall Thickness: Direct vent terminations are designed to work with any standard wall thickness. Installation guidelines for min/max wall thickness are as follows: Min. = 1 in., Max. = 36 in.
- Plastic Venting: Plastic venting systems shall not pass through a fire wall without a sufficient fire stop that complies with the local code having jurisdiction for plastic venting.
- Metal Venting Systems: Except for installation in single-and two-family dwellings, metal venting systems which extend through any storey above that on which the connected appliance is located are to be provided with enclosures having a fire resistance rating equal to or greater than that of the floor or roof assemblies through which they pass.

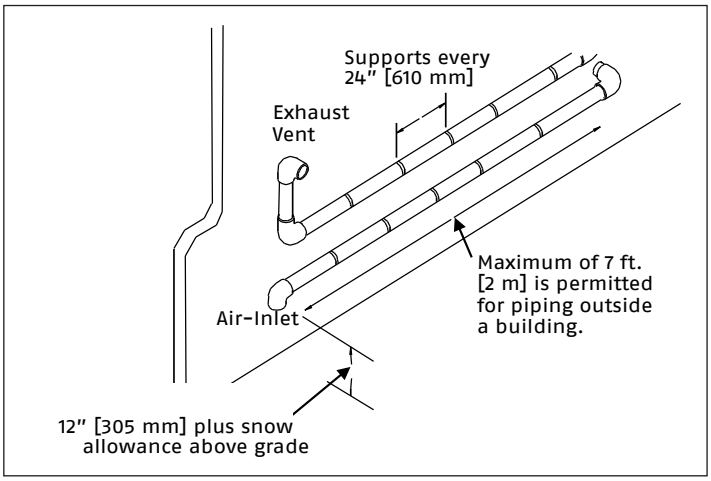
WARNING: Insulation shall not be used on plastic pipes.

WARNING: Insulation or other materials shall not be within the required clearance spaces surrounding the vent unless specified in the vent manufacturer's installation instructions.

- Venting Options: Due to potential moisture build-up along the exterior wall or overhangs, the location of sidewall venting must be carefully selected.

WARNING: extra precaution must be taken to adequately support the weight of the Vent/Air-inlet piping in applications using roof-top terminations. Failure to follow these instructions may result in venting or boiler component failure resulting in flue gas spillage leading to property damage, serious injury or death.

Vent piping outside the building

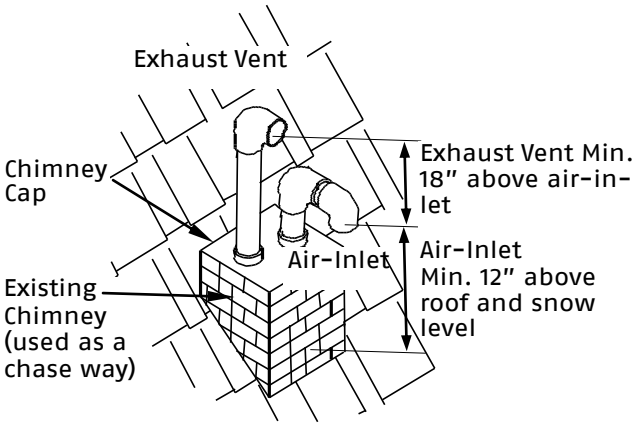


WARNING: Failure to follow the instructions below may result in substantial property damage, severe personal injury or death.

Vent piping outside the building is permitted under the following conditions:

1. The maximum length outside the building is 7 ft. Note that outdoor length must be included in the overall vent length calculation.
2. All normal termination clearances are maintained.
3. The pipe is supported every 24 in.
4. The exhaust and inlet are sloped back to the boiler ½ in. elevation for every linear foot.
5. The air-inlet and vent pipe must be located in a area where it cannot be contacted or tampered with.

Existing Chimney Chase Way



It is permissible to use an existing chimney as a chase way to run the Vent/Air-inlet piping as long as:

1. The chimney is not being used by any other appliance.
2. Flue gases do not enter the vacant chimney.
3. Only Family PRO approved vent manufacturer's venting shown in section 8.9 can be used.
   Vent lengths are within the maximums specified.
4. The top of the chimney is capped and the Vent Air-inlet pipes are flashed to prevent leakage into the vacant chimney.

Under no circumstances may an existing chimney or chase-way be used to vent or provide combustion intake air to the FAMILY PRO. The existing chimney or chaseway can only be used as a passageway to allow the approved venting material to pass through. Failure to follow these instructions will result in fire, property damage, serious injury or death.

8.5 Combustion Air and Ventilation Openings

Provisions for combustion and ventilation air must be made in accordance with section 5.3, Air for Combustion and Ventilation, of the National Flue Gas Code, ANSI Z223.1/NFPA 54, or Sections 7.2, 7.3 or 7.4 of CAN/CGA B149.1, Installation Codes, or applicable provisions of the local building codes.

CAUTION: BOILER DAMAGE AND OPERATIONAL FAILURES! Provisions for combustion air and ventilation are always required through a grille, regardless whether the combustion air is taken from the outside (sealed combustion).

Make sure that intake and exhaust openings are sufficiently sized and no reduction or closure of openings takes place.

If this is not the case, then the problem is not resolved, do not operate the boiler.

- Please note these restrictions and its dangers to the operator of the boiler.

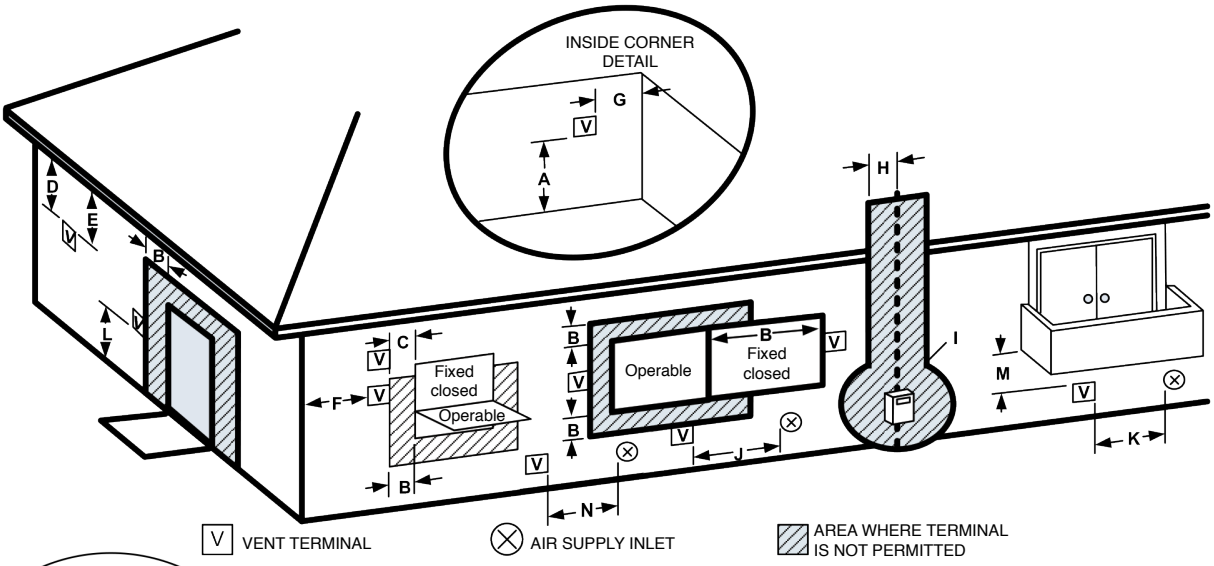
WARNING: BOILER DAMAGE !

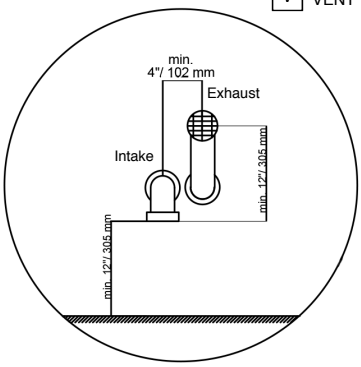
- Boiler must be clear and free from combustible materials, gasoline and other flammable vapors and liquids, and corrosive liquids and vapors. Never use chlorine and hydrocarbon containing chemicals (such as spray chemicals, solution and cleaning agents, paints, glues etc.) in the vicinity of the boiler.
- Do not store and use these chemicals in the boiler room.
- Avoid excessive dust formation and build-up.

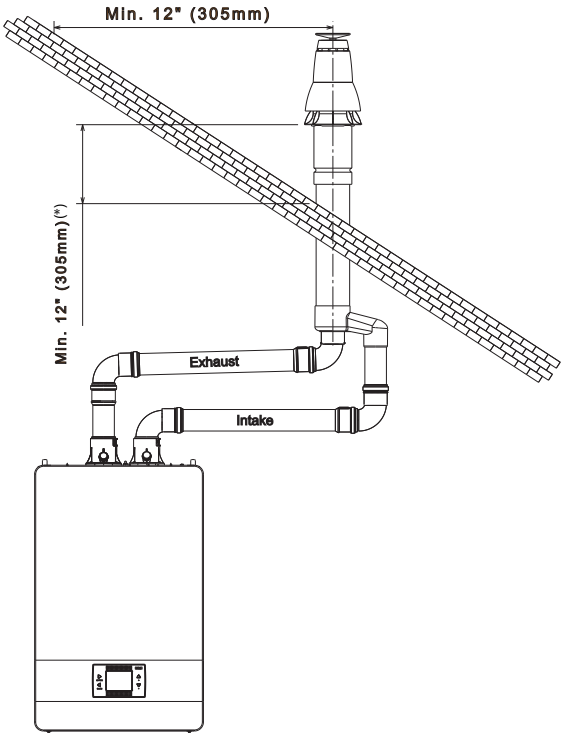
DANGER: FIRE **DANGER** !

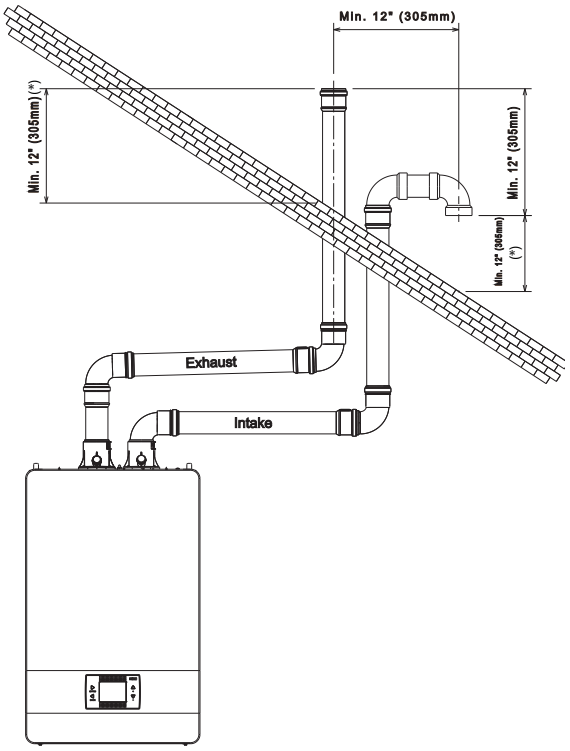
- Do not store flammable materials and liquids in the immediate vicinity of the boiler.

Termination Clearance Quick Reference Diagram



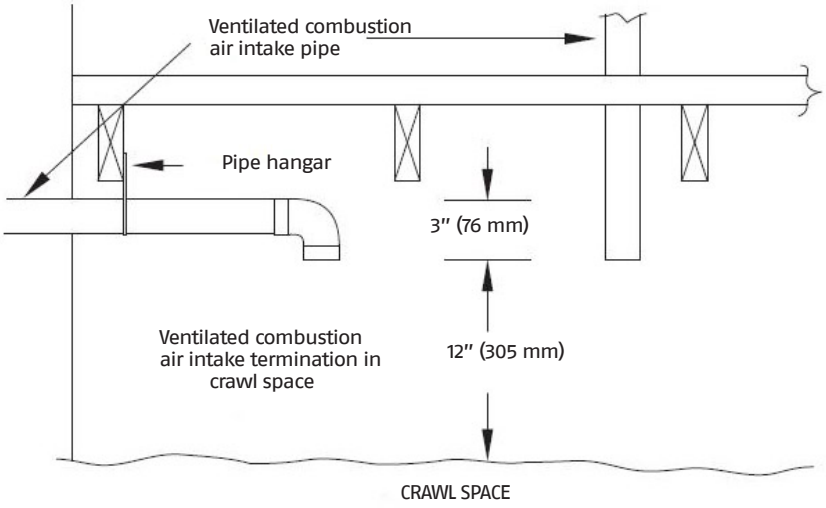






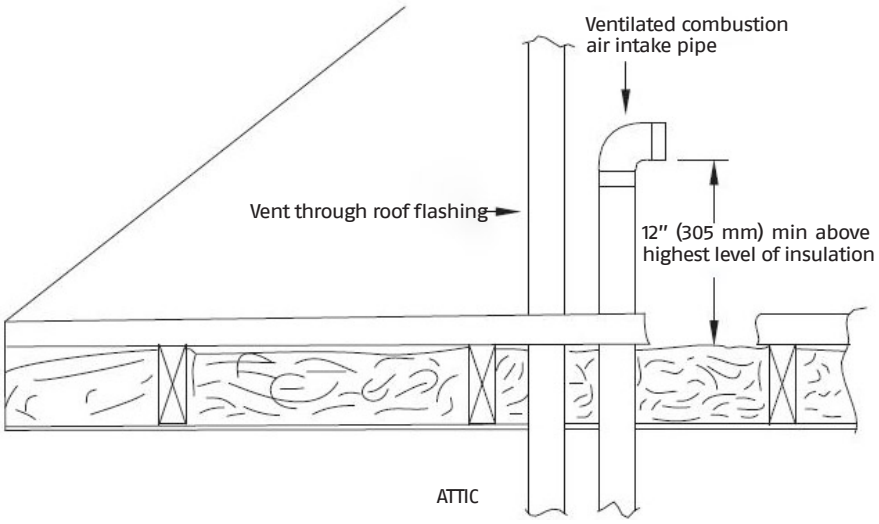
(*) above maximum snow level or at least 24" (610 mm) whichever is greater

Crawl Space and Attic combustion air



CRAWL SPACE
For vent and combustion air pipe length refer to the approved configuration of horizontal and vertical vent installation - Section 8.8, fig. 7 for 2" and fig. 20 for 3"

WARNING: When using a ventilated crawl space for combustion air ensure the make-up air opening is adequately sized for the boiler per National Flue Gas Code, ANSI Z223.1/NFPA 54as well as applicable provisions of the local building code, in the United States and CAN/CGA B149.1, Installation Codes as well as applicable provisions of the local building code, in Canada.



ATTIC
For vent and combustion air pipe length refer to the approved configuration of horizontal and vertical vent installation - Section 8.8, fig. 13-14 for 2" and fig. 18-19 for 3"

WARNING: When using a ventilated attic space for combustion air ensure the make-up air opening is adequately sized for the boiler per National Flue Gas Code, ANSI Z223.1/NFPA 54as well as applicable provisions of the local building code, in the United States and CAN/CGA B149.1, Installation Codes as well as applicable provisions of the local building code, in Canada.

Alberta and Saskatchewan Vent Terminations

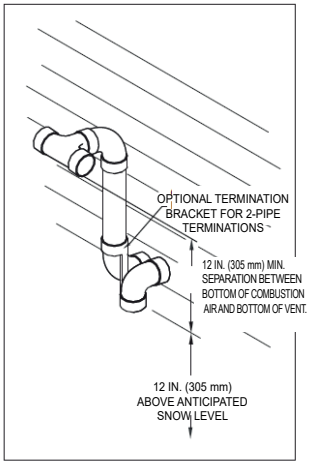
The Provinces of Alberta and Saskatchewan require a minimum unobstructed distance of 4ft. (1.2M) from the foundation to the property line of the adjacent lot for vent termination of any appliance with an input over 35,000 btuh. If there is less than 4 ft. (1.2M) of unobstructed distance to the property line of the adjacent lot, no type of vent termination is permitted for appliances with inputs greater than 35,000 btuh.

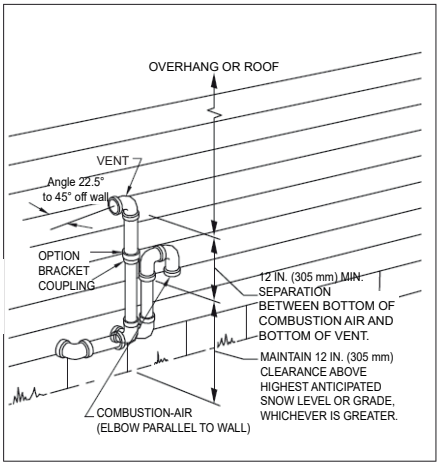
There are no additional restrictions on unobstructed distances greater than 8ft. (2.4M). All single, two-pipe and concentric vents may be used, providing all other Code and manufacturer's requirements in these instructions are adhered to. Refer to the appropriate Vent Termination section above for locating the vent termination.

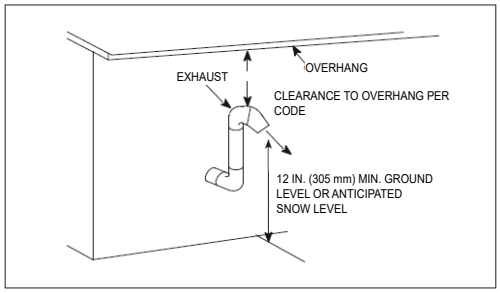
If the unobstructed distance from the foundation to the property line of the adjacent lot is no less than 4ft. (1.2M) and no greater than 8ft. (2.4M), it will be necessary to re-direct the flue gas plume. In this situation, a concentric vent kit cannot be used. A 2-pipe termination (or single pipe termination when permitted with ventilated combustion air applications) that re-directs the flue gas away by use of an elbow or tee, certified to ULC S636 from the adjacent property line must be used. See fig. below.

The kit currently cannot be modified to attach an elbow to the vent portion of the rain cap. A tee attached to the rain cap could potentially direct the flue gas plume toward the intake air stream and contaminate the incoming combustion air for the boiler.

Refer to figure below for terminations approved for use in Alberta and Saskatchewan.







ALBERTA AND SASKATCHEWAN
For vent and combustion air pipe lenght refer to approved configuration of horizontal and vertical vent installation - Section 8.8, fig. 10 for 2" and fig. 15 for 3"

FLEXIBLE POLYPROPYLENE PIPE

Flexible Polypropylene Pipe Equivalent Length Chart of rigid (added restriction inherent to the design of corrugated flex venting having minor length deviation for replacement)

		2" (60mm) Dia.	3" (80mm) Dia.
Selkirk Polyflue Flexible Polypropylene Pipe	1 ft (305mm) Flex Pipe	2.5 ft (762mm)	2.3 ft (701mm)
	1 ft (305mm) Flex Pipe (Upsized 1 Diameter)	0.4 ft (122mm)	0.9 ft (274mm)
Z-DENS Flexible corrugated Polypropylene Pipe	1 ft (305mm) Flex Pipe	3.2 ft (975mm)	1.7 ft (518mm)
	1 ft (305mm) Flex Pipe (Upsized 1 Diameter)	0.9 ft (274mm)	0.6 ft (183mm)

VENT/AIR-INLET TERMINATION CLEARANCES

The quick reference table below is to be read in conjunction with the numbered notes as indicated in figures of the previous page, and the Venting Rules and Guidelines in Section 8.4. The instructions detailed in this section are a combination of Family PRO specific and National Gas Code restrictions. Ensure the installation clearances are in accordance with the National Fuel Gas Code, ANSIZ223.1/NFPA 54 in the US, CAN/CSA B149.1 in Canada, and/or applicable provisions of local building codes; the clearances shown within this manual do not supersede these codes. Compliance alone does not insure a satisfactory installation as good common sense must also be applied.
WARNING: failure to follow these instructions may result in fire, property damage, serious injury or death.

Vent Termination Minimum Clearances		US Insatallations [2]	Canadian Installations [1]
A	Clearance above grade, veranda, porch, deck, or balcony	12" (305mm)	12" (305mm)
B	Clearance to window or door that may be opened	12" (305mm)	3 ft. (0.9m)
C	Clearance to permanently closed window	12" (305mm)	12" (305mm)
D	Vertical clearance to ventilated soffit located above the terminal within a horizontal distance of 2 feet (610mm) from the center line of the terminal	18" (457mm)	18" (457mm)
E	Clearance to unventilated soffit	18" (457mm)	18" (457mm)
F	Clearance to outside corner	9" (229mm)	9" (229mm)
G	Clearance to inside corner	3 ft. (0.9m)	3 ft. (0.9m)
H	Clearance to each side of centerline extended above meter/ regulator assembly	3 ft. (0.9m) within a height of 15 ft. (4.5m) above the meter/ regulator assembly	3 ft. (0.9m) within a height of 15 ft. (4.5m) above the meter/ regulator assembly
I	Clearance to service regulator vent outlet	3 ft. (0.9m)	3 ft. (0.9m)
J	Clearance to non-mechanical air supply inlet	12" (305mm)	3 ft. (0.9m)
K	Clearance to mechanical air supply inlet	3 ft. (0.9m) above if within 10 ft. (3m) horizontally	
L	Clearance above paved sidewalk or paved driveway located on public property [5]	7 ft. (2.1m)†	7 ft. (2.1m)†
M	Clearance under veranda, porch, deck or balcony	12" (305mm)‡	12" (305mm)‡
N	Clearance to the combustion air inlet to any other appliance	12" (305mm)	3 ft. (0.9m)

Notes:
1- Canadian installations must comply with the current CSA B149.1 Natural Gas and Propane Installation Code and local building codes.
2- US installations must comply with current ANSI Z223.1/NFPA 54 National Fuel Gas Code and local building codes.
3- Concentric vent must protrude from the roof 24" (610mm) measuring from the terminalend-cap vanes
4 - 24" is the recommended snow level allowance above grade/roofline or any surface that will support snow, debris, or ice (i.e. for roof venting clearances - roofline and snow level). If living in a snowfall region, consult your local weather office for the maximum typical snowfall for your area.
5 - Above public walkways, driveways or parking lots if adjacent to it and condensate cannot drip, freeze, or create a hazard.
6 - The termination shall be located, or protected by a guard, in such a way to prevent possible contact .
† A vent shall not terminate directly above a sidewalk or paved driveway that is located between two sinlge family dwellings and serves both dwellings.
‡ Permitted only if veranda, porch, deck or balcony is fully open on a minimum of two sides beneath the floor.

⚠ **WARNING**: Vent termination must keep the following minimum clearances from electric meters, gas meters, regulators and relief equipment: 4 ft. (1220mm) horizontally and in no case above and below, unless a horizontal distance of 4 ft. (1220mm) is maintained.

APPROVED FOR

Material	Item	Standard [USA]	Standard [Canada]	Pipe diameter per boiler	
CPVC schedule 40	Flue gas or combustion air only	ANSI/ASTM F441	ULC S636	2" (60mm) 3" (80mm)	⚠ **WARNING**: all vent and air inlet materials installed on gas fired appliances in CAN/US must meet the specifications provided in this table. Failure to comply could result in fire, serious injury or death.
PVC schedule 40	Combustion air only	ANSI/D1785		2" (60mm) 3" (80mm)	
PP approved vendor(s)/ material - M&G Duravent PolyPro, Centrotherm Innoflue SW, Z-Flex , Z-Dens, Selkirk Polyflue	Flue gas or combustion air only	ANSI Cat IV Approved Polypropylene		2" (60mm) 3" (80mm)	
PP-Flex approved vendor(s)/part number Z-Flex/Z-Dens (ZZDFL412 or ZZDFL413) (***)	Flue gas or combustion air only	ANSI Cat IV Approved Polypropylene		2" (60mm) 3" (80mm)	
Stainless Steel AL29-4C	Flue gas or combustion air only	UL1738		2" (60mm) 3" (80mm)	
CPVC	Primer	ASTM F656		X	
	Cement	ANSI/ASTM F493			
PVC	Primer	ASTM F656		X	
	Cement	ANSI/ASTM D2564			
Tab. 1 Approved Flue gas or combustion air materials and fittings per boiler					

Roof Terminal (vertical)	Material	Supplier	Part Number
Ø 3/5" (Ø 80/125 mm) Concentric	CPVC	IPEX System 636 Type IIa & IIb	197117 (CPVC) 197107 (CPVC) 197109(CPVC)
Ø 2/4" (Ø 60/100 mm) Concentric	PP	M&G Duravent PolyPro	2PPS-VKL 2PPS-VKL-TC
Ø 3/5" (Ø 80/125 mm) Concentric	PP	M&G Duravent PolyPro	3PPS-VKL 3PPS-VKL
3" (Ø 80 mm)	PP	Centrotherm InnoFlue	ISTT03
Tab. 2 Roof terminals approved			

Wall Terminal (horizontal)	**Material**	**Supplier**	**Part Number**
Ø 3/5" (Ø 80/125 mm) Concentric	CPVC	IPEX System 636 Type IIa & IIb	197117 (CPVC) 197107 (CPVC) 197109(CPVC)
Ø 2/4" (Ø 60/100 mm) Concentric	PP	M&G Duravent PolyPro	2PPS-HKL-N (*)
Ø 3/5" (Ø 80/125 mm) Concentric	PP	M&G Duravent PolyPro	3PPS-HKL-N (**)
Ø 3" (Ø 80 mm) twin pipe termination	PP	M&G Duravent PolyPro	3PPS-HTPL
Ø 2" (Ø 60 mm) twin pipe termination	PP	M&G Duravent PolyPro	2PPS-HTPL
2" (Ø 60 mm) single pipe horizontal termination	PP	M&G Duravent PolyPro	2PPS-HSTL
3" (Ø 80 mm) single pipe horizontal termination	PP	M&G Duravent PolyPro	3PPS-HSTL
Ø 3/5" (Ø 80/125 mm)	PP	Centrotherm InnoFlue	ICWT352
3" (Ø 80 mm) low profile wall termination	PP	Centrotherm InnoFlue	ISLPT03303
Tab. 3 Wall terminals approved			

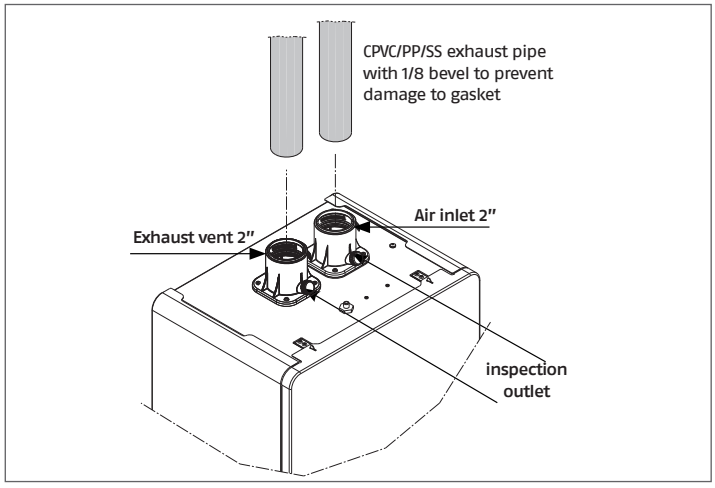
(*) with this type of terminal, It is mandatory to use the Ø 2" (60 mm) vent adapter (see "4.2 Boiler box content" page 5), factory supplied and approved with the boiler, for venting connection

(**) with this type of terminal, It is mandatory to use the Ø 3" (80 mm) vent adapter (see "4.2 Boiler box content" page 5), factory supplied and approved with the boiler, for venting connection

(***) requires a reduced percentage of the overall length of the venting system according the table page 29

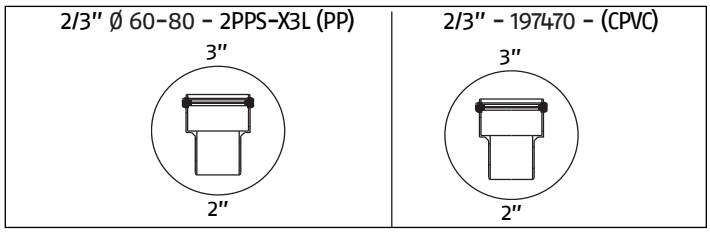
8.6 NearBoiler Vent/Air-inlet Piping

The Family PRO employs universal Exhaust-vent and Air-inlet appliance adapters that accept 2 in. (60 mm) CPVC, Polypropylene (PP) or FasNSeal Stainless Steel (SS) piping, without the need for additional adapters.
Prior to inserting the piping into the universal adapter, ensure it is properly beveled (approximately 1/8 in.) to avoid damaging or dislodging the sealing gasket during installation.



WARNING: The boiler Exhaust and Combustion Air Inlet are 2-in. (60 mm). If larger pipes are required, field supplied increasers are required. Increasers must be of the same material type used as the venting system. For polypropylene vent systems, refer to the vent manufacturer's instructions for connecting polypropylene pipe.

⚠ Fix the increaser by tighten the clamps present in the flue exhaust and air intake adapters



WARNING: Gasket Seating - Improper seating can cause leakage and eventual failure of the sealing gasket. Ensure the vent pipe is properly beveled, prior to installation, and that the pipe is fully inserted into universal appliance adapter. Failure to follow these instructions may result in serious injury or death.

⚠ **WARNING**: exhaust venting must be supported using the approved materials and methods stated in the vent manufacturer's instructions, to reduce strain on piping joints. Failure to follow these instructions may result in result in damage, serious injury or death.

The first 3 ft (915 mm) of vent piping must be readily accessible for inspection.

8.7 Connecting flue gas accessories

Approved vent systems are:
- Twin pipe, concentric pipe
- Approved materials: CPVC, PP (M&G Duravent PolyPro, Centrotherm InnoFlue, Z-Flex, Z-Dens and Selkirk Polyflue)
- Approved materials: PP-Flex (Z-Flex, Z-Dens)
- Stainless steel
- Sealed combustion/direct vent
- Terminations can be either horizontal or vertical (see approved configurations)
- The diameters of the flue outlet and combustion air intake inlet adapters supplied with the boiler are designed to fit standard PP, CPVC pipes.

When installing approved venting, the installation instructions provided by the vent manufacturer shall be followed in their entirety. Failure to do so can result in severe injury, death or property damage.

⚠ Do not use any DWV plumbing pipes to vent this boiler.

⚠ **WARNING**: ABS/PVC venting is not approved for use as a an exhaust vent material. Failure to comply could result in personal injury, death or property damage and could void the boiler warranty.

⚠ **WARNING**: Use of cellular core PVC (ASTM F891) or Radel® (polyphenolsulfone) in venting systems is strictly prohibited.

⚠ **WARNING**: Covering non-metallic vent pipe and fitting with thermal insulation shall be prohibited.

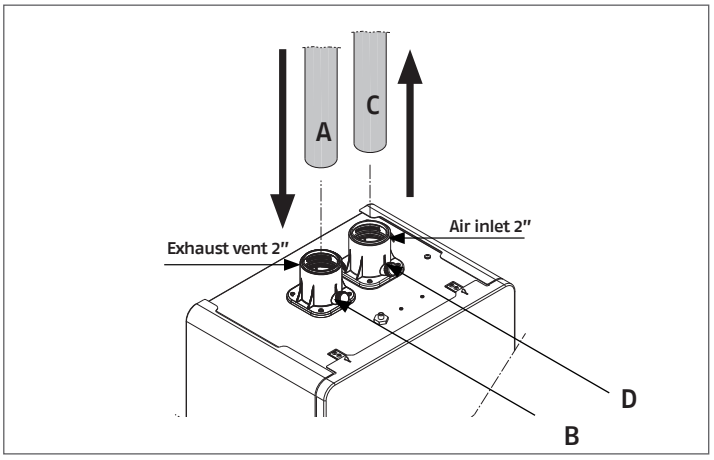
⚠ **WARNING**: the vent must be secured to the boiler by tightening the gear clamp at the top of the boiler.

8.7.1 Installing of the exhaust and air intake system

- Insert the flue exhaust pipe "A" completely into the adapter and tighten the clamp "B" present in the flue exhaust adapter.
- Insert the air intake pipe "C" completely into the adapter and tighten the clamp "D" present in the air intake adapter.

The correct flow direction into two pipes is shown in the figure below.

WARNING: Failure to follow the above instruction in their entirety will result in in substantial property damage, severe personal injury or death.



8.8 Vent and combustion air pipe length

The maximum length for vent and combustion air pipes can be found in the following table. Please note the length is for each vent / combustion air pipe and not combined.
In the following tables are listed the equivalent length for CPVC pipes and PP pipes:

Equivalent length for CPVC pipes	Ø 2" (60 mm)	Ø 3" (80 mm)
1 ft vent pipe	1 ft	1 ft
45° elbows	2.5 ft	3 ft
90° elbows	5 ft	6 ft
Tee	9 ft	12 ft

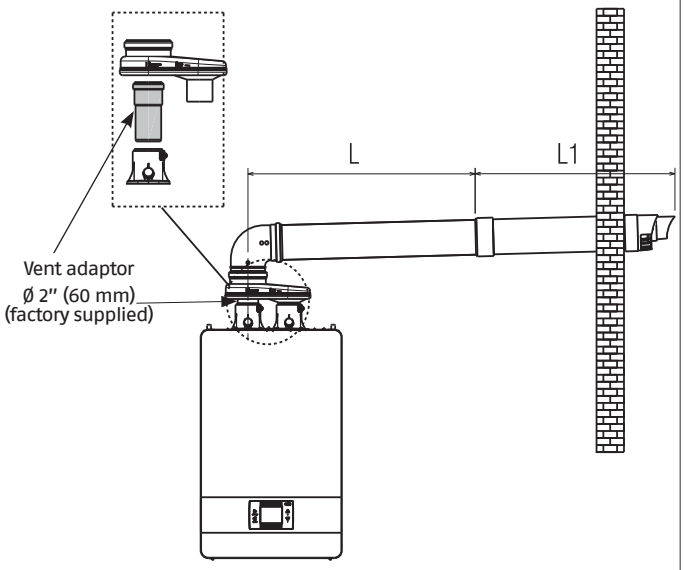
Equivalent length for PP pipes	Ø 2/4" (60/100 mm)	Ø 3/5" (80/125 mm)	Ø 2" (60 mm)	Ø 3" (80 mm)
1 ft vent pipe	1 ft	1 ft	1 ft	1 ft
45° elbows	4 ft	3 ft	3 ft	3 ft
90° elbows	5 ft	5 ft	5 ft	5 ft

To calculate lengths different from the approved configuration please consider the losses indicated in the above tables

8.9 Approved configurations of horizontal and vertical venting installation

- Place pipe supports per the vent manufacturer's instructions and local code. The first support should be as close to the boiler as possible .
- The condensate must be disposed of in accordance with applicable rules.
- Avoid locating vent terminals near equipment or building features which can be subject to degradation from exhaust gases.
- If multiple boilers are installed in a row, allow at least 1 foot (305 mm) in the United States and 3 foot (915 mm) in Canada clearance between the exhaust vent termination of one and the combustion air intake of the other.

Fig. 1 Horizontal flue terminal 2/4" (ø 60-100 mm) PP flue gases/air	
Max length (L)	23 ft (7.01 m)
Terminal length (L1)	2.33 ft (0.711 m)



It is mandatory to use the Ø 2" (60 mm) vent adapter (see "4.2 Boiler box content"), factory supplied and approved with the boiler, for venting connection

fig. 1

Fig. 2 Vertical flue terminal 2/4" (Ø 60-100 mm) PP flue gases/air for pitched roof	
Max length (L)	28 ft (8.53 m)
Terminal length (L1)	4.17 ft (1.27 m)

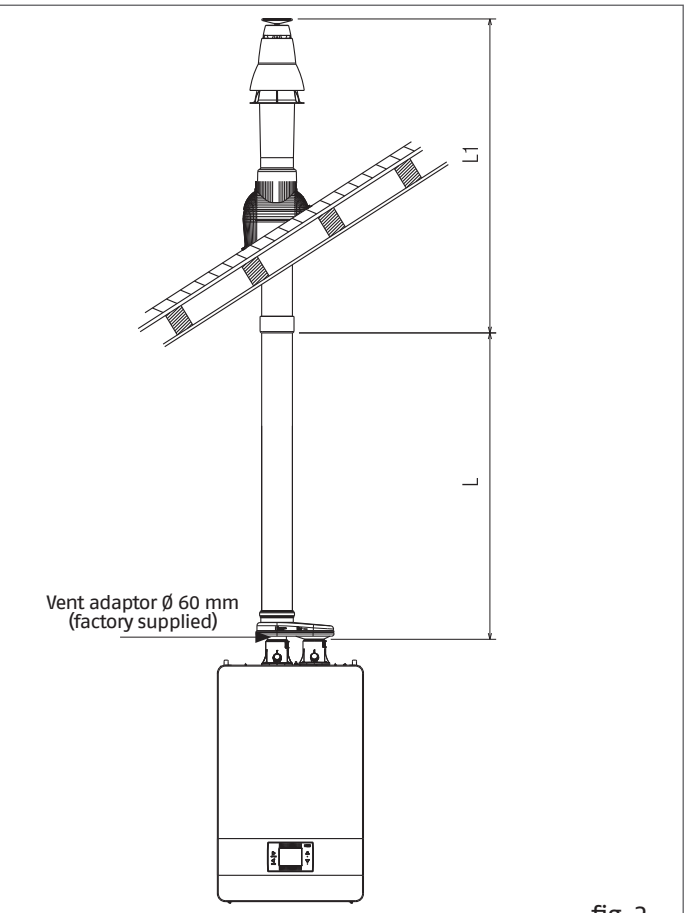


fig. 2

Fig. 3 Vertical flue terminal 2/4" (Ø 60-100 mm) PP flue gases/air for flat roof	
Max length (L)	28 ft (8.53 m)
Terminal length (L1)	4.17 ft (1.27 m)

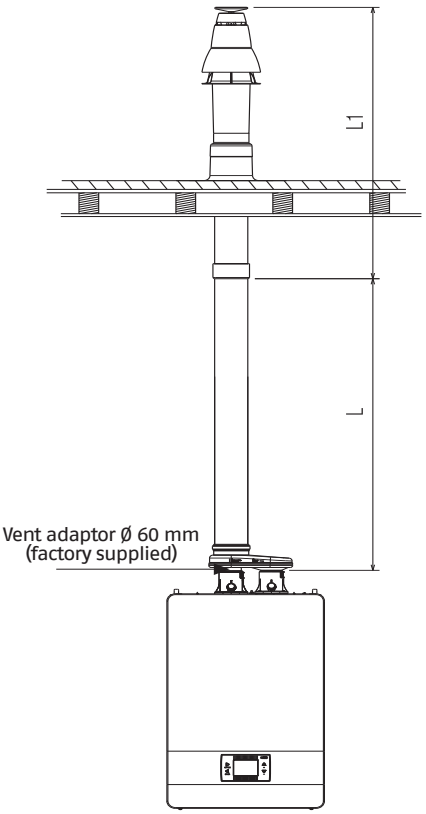
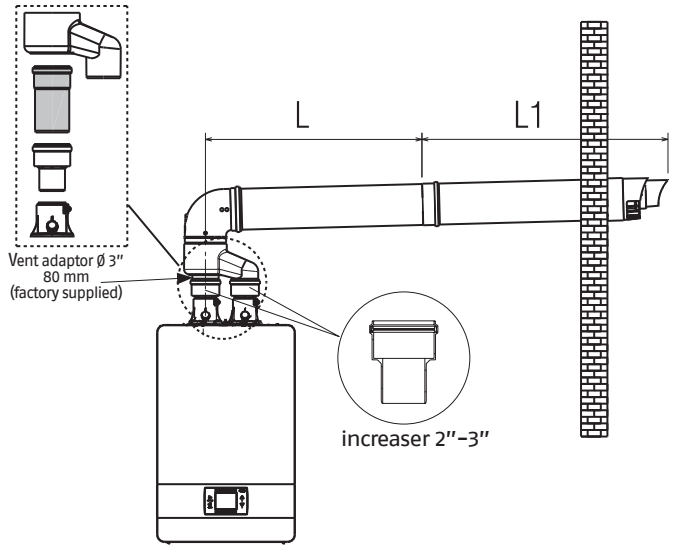


fig. 3

Fig. 4 Horizontal flue terminal 3/5" (Ø 80-125 mm) PP flue gases/air	
Max length (L)	60 ft (18.29 m)
Terminal length (L1)	2.42ft (0,74 m)



t is mandatory to use the Ø 3" (80 mm) vent adapter (see "4.2 Boiler box content" page 5), factory supplied and approved with the boiler, for venting connection

fig. 4

Fig. 5 Vertical flue terminal 3/5 in. (Ø 80-125 mm) PP flue gases/air for pitched roof	
Max length (L)	65 ft (19.81 m)
Terminal length (L1)	4.42 ft (1.35 m)

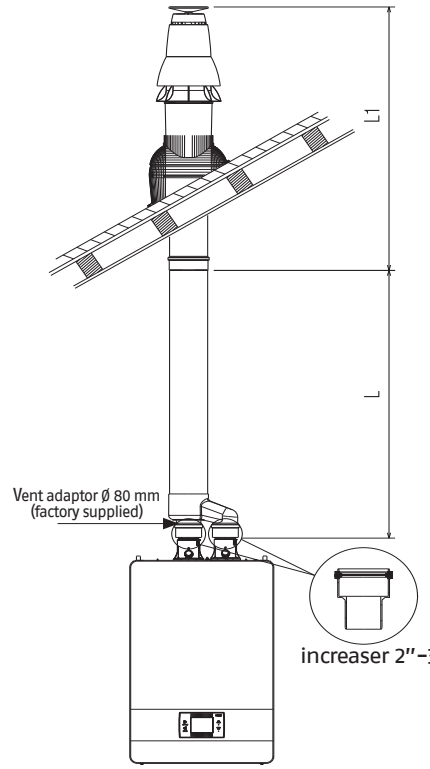


fig. 5

Fig. 6 Vertical flue terminal 3/5" (Ø 80-125 mm) PP flue gases/air for flat roof	
Max length (L)	65 ft (19.81 m)
Terminal length (L1)	4.42 ft (1.35 m)

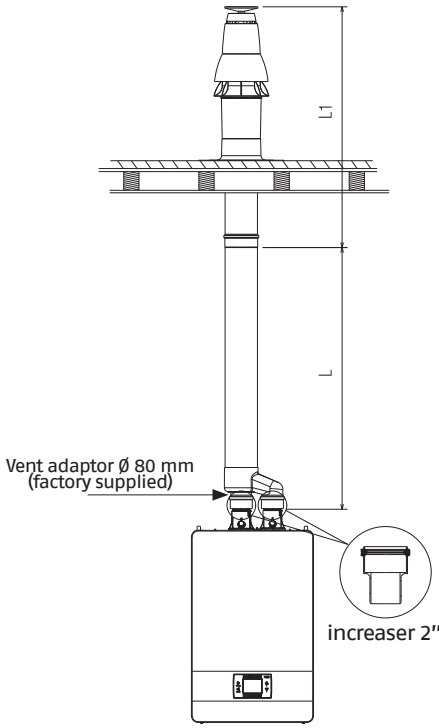


fig. 6

Fig. 7 Twin flue system 2" PP (Ø 60 mm)	
Max length (L)	28 + 28 ft (8.53 + 8.53 m)
Max length (L1)	23 + 23 ft (7.01 + 7.01 m)
90° bend	5 ft (1.52m)
the expressed lengths are without the terminations	

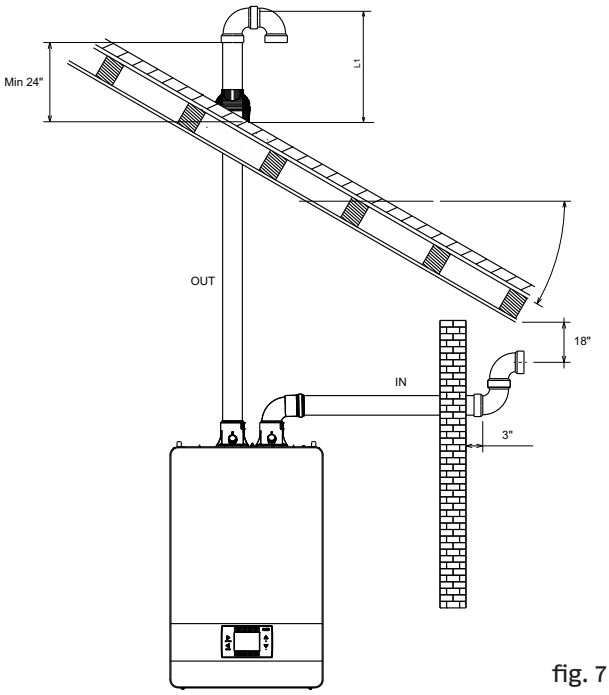


fig. 7

Fig. 8 Twin flue system 2" (Ø 60 mm) with horizontal terminal 2/4" (Ø 60 /100 mm) PP flue gases/air	
Max length (L)	23 + 23 ft (7.01+7.01 m)
Terminal length (L1)	2.33 ft (0.71 m)

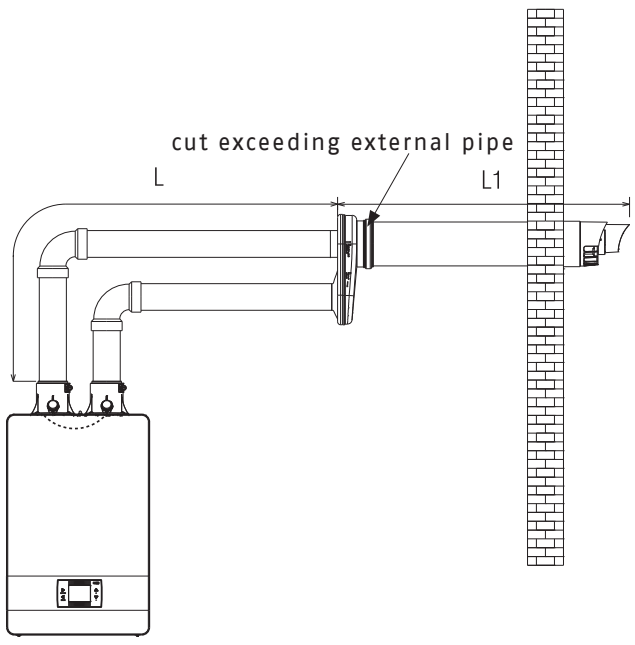


fig. 8

Fig. 9 Twin flue system 3" (Ø 80 mm) with horizontal terminal 3/5" (Ø 80-125 mm) PP flue gases/air	
Max length	76 +7 6 ft (23.16 + 23.16 m)
Terminal length (L1)	2.42 ft (0.74 m)

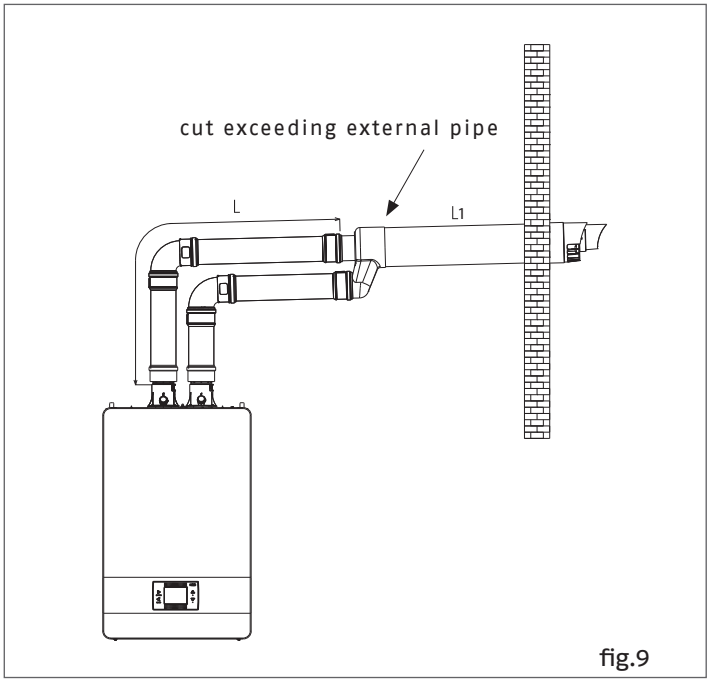


fig.9

Fig. 10 Horizontal twin flue system 2" (Ø 50,8 mm) with terminal bend CPVC	
Max length	23 + 23 ft (7.01 + 7.01 m)
90° bend	5 ft (1.52m)
the expressed lengths are without the terminations	

Horizontal twin flue system 2" (Ø 50,8 mm) with terminal bend PP	
Max length	23 + 23 ft (7.01 + 7.01 m)
90° bend	5 ft (1.52m)
the expressed lengths are without the terminations	

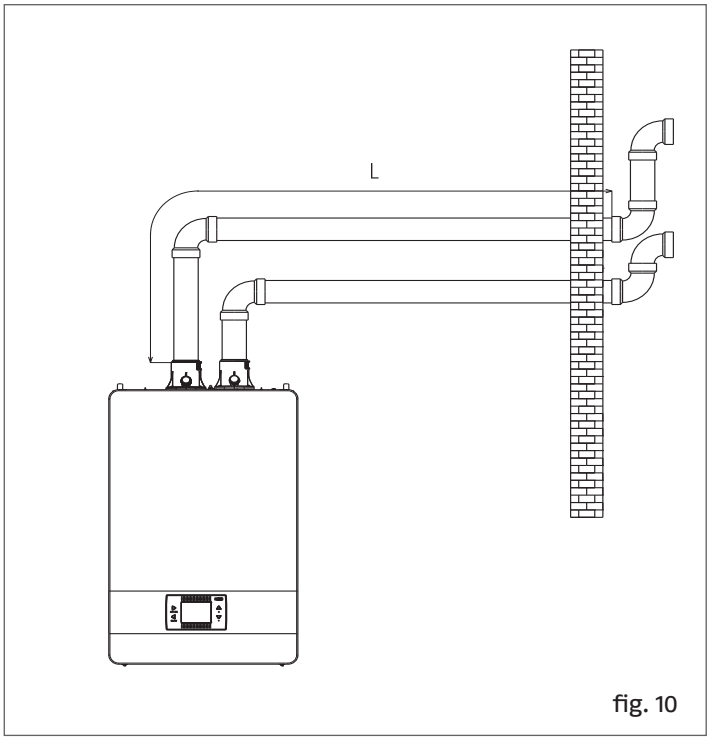


fig. 10

Fig. 11 Twin flue system 2" (Ø 50,8 mm) with horizontal terminal 3" (Ø 72,6 mm) CPVC		
Max length		23 + 23 ft (7.01 + 7.01 m)
Terminal length (L1)	part no 197009	1.67 ft (0.5 m)
	part no 197107	2.67 ft (0.8 m)
	part no 197117	3.67 ft (1.1 m)

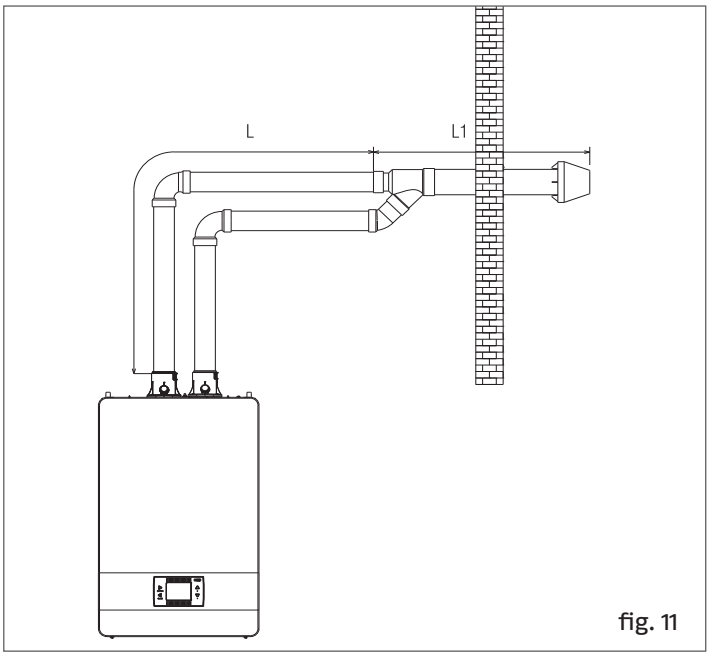


fig. 11

Fig. 12 Twin flue system 2" (Ø 50,8 mm) with vertical terminal 3" (Ø 72,6 mm) CPVC		
Max length (L)		28 + 28 ft (8.53 + 8.53 m)
Terminal length (L1)	part n° 197009	1.67 ft (0.5 m)
	part n° 197107	2.67 ft (0.8 m)
	part n° 197117	3.67 ft (1.1 m)

Twin flue system 2" (Ø 50,8 mm) with vertical terminal 3" (Ø 72,6 mm) PP		
Max length (L)		28 + 28 ft (8.53 + 8.53 m)
Terminal length (L1)	part n° 197009	1.67 ft (0.5 m)
	part n° 197107	2.67 ft (0.8 m)
	part n° 197117	3.67 ft (1.1 m)

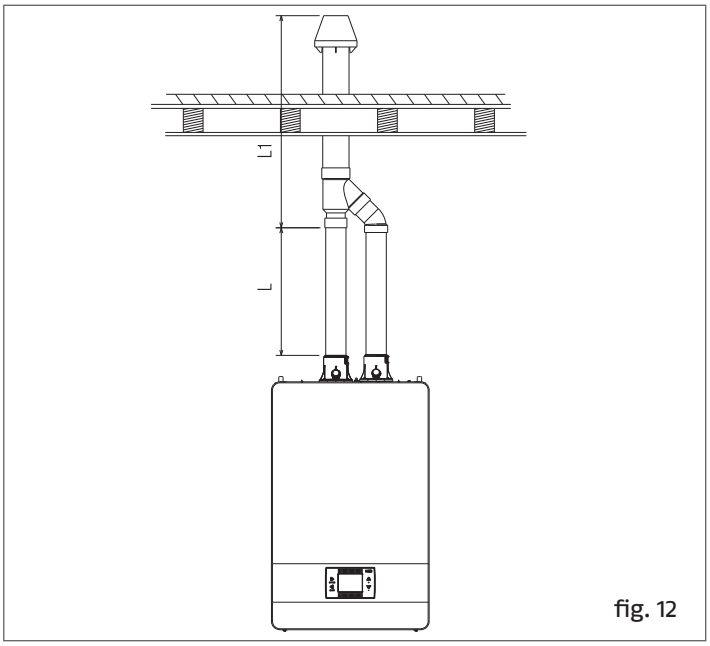


fig. 12

Fig. 13 Vertical twin flue system 2" (Ø 50,8 mm) with terminal bend CPVC for pitched roof	
Max length	28 + 28 ft (8.53 + 8.53 m)
90° bend	5 ft (1.52m)
the expressed lengths are without the terminations	

Vertical twin flue system 2" (Ø 50,8 mm) with terminal bend PP for pitched roof	
Max length	28 + 28 ft (8.53 + 8.53 m)
90° bend	5 ft (1.52m)
the expressed lengths are without the terminations	

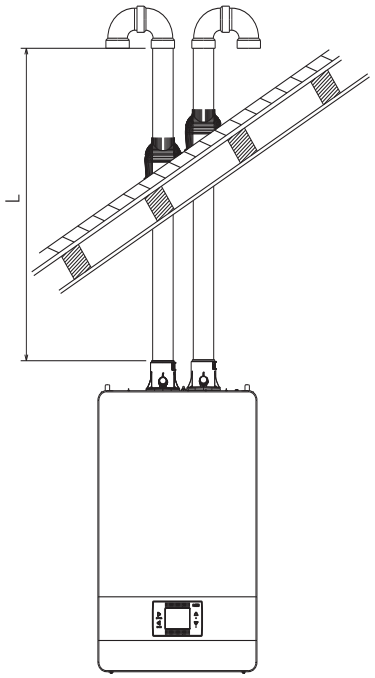


fig. 13

Fig. 14 Vertical twin flue system 2" (Ø 50,8 mm) with terminal bend CPVC for flat roof	
Max length	28 + 28 ft (8.53 + 8.53 m)
90° bend	5 ft (1.52m)
the expressed lengths are without the terminations	

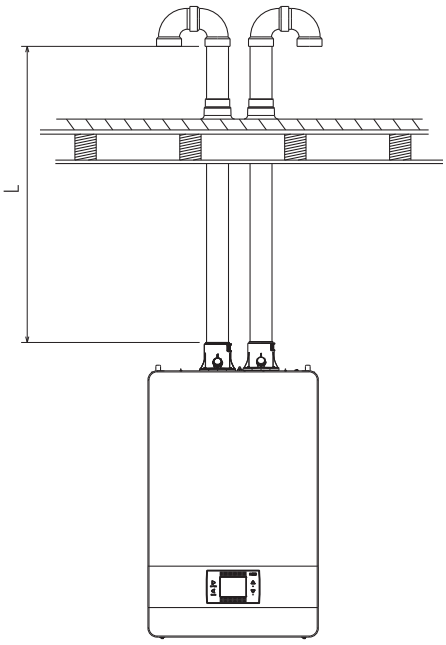


fig. 14

Fig. 15 Horizontal twin flue system 3" (Ø 76,2 mm) with terminal bend CPVC	
Max length	76+76 ft (23.16+23.16 m)
90° bend	6 ft (1.83m)
the expressed lengths are without the terminations	

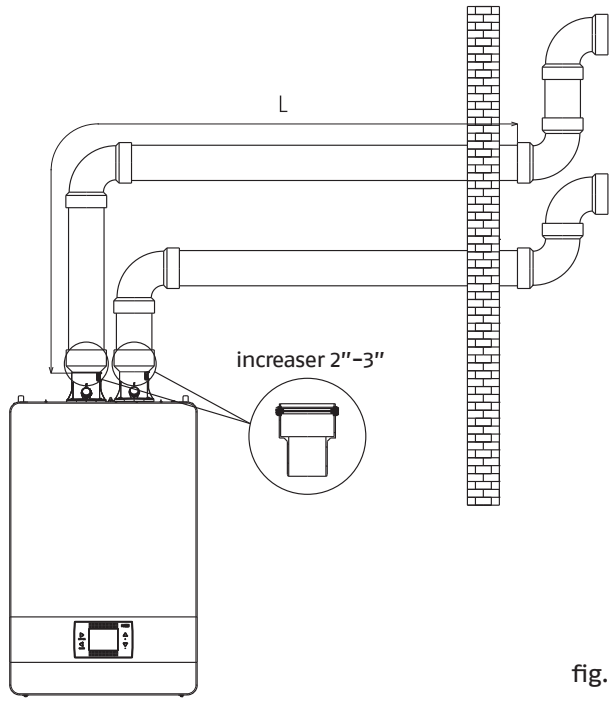


fig. 15

Fig. 16 Twin flue system 3" (Ø 76,2 mm) with horizontal terminal 3" (Ø 76,2 mm) CPVC		
Max length (L)		76+76 ft (23.16+23.16 m)
Terminal length (L1)	part no 197009	1.67 ft (0.5 m)
	part no 197107	2.67 ft (0.8 m)
	part no 197117	3.67 ft (1.1 m)

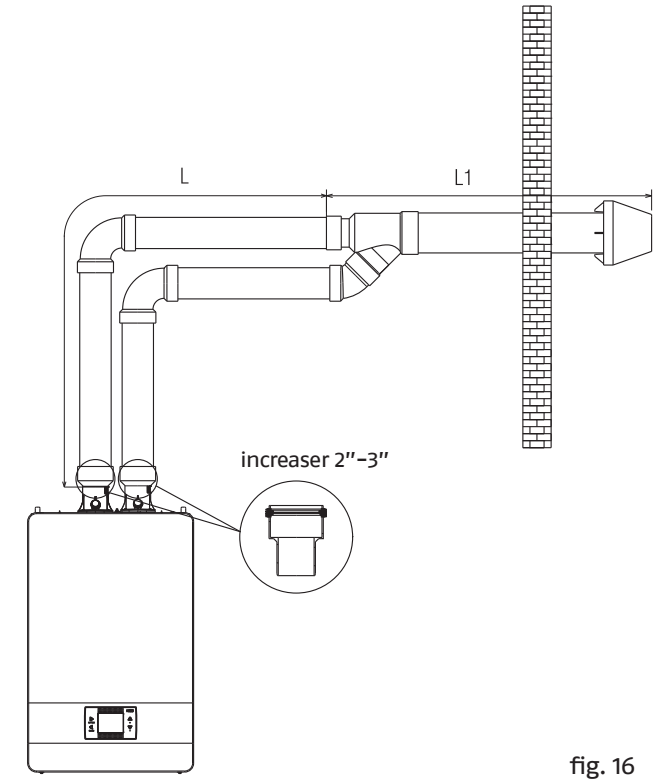


fig. 16

Fig. 17 Twin flue system 3" (Ø 76,2 mm) with vertical terminal 3" (Ø 76,2 mm) CPVC (L)		
Max length		82+82 ft (24.99+24.99 m)
Terminal length (L1)	part no 197009	1.67 ft (0.5 m)
	part no 197107	2.67 ft (0.8 m)
	part no 197117	3.67 ft (1.1 m)

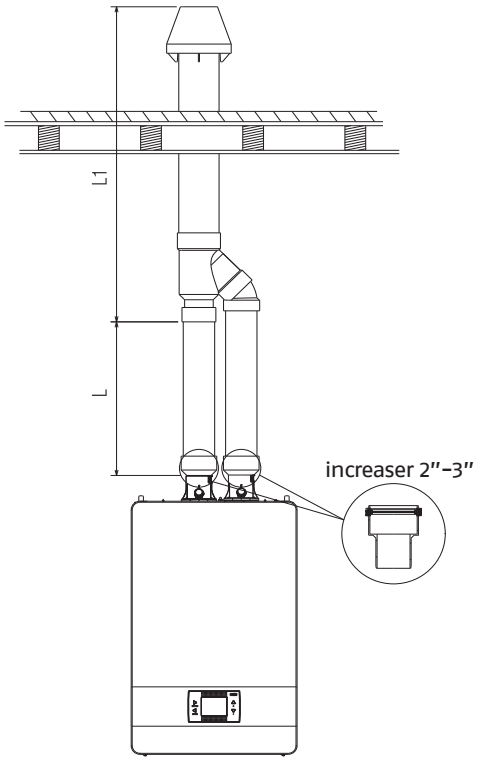


fig. 17

Fig. 18 Vertical twin flue system 3" (Ø 76,2 mm) with terminal bend CPVC for pitched roof (L)	
Max length	82+82 ft (24.99+24.99 m)
90° bend	6 ft (1.83m)
the expressed lengths are without the terminations	

Vertical twin flue system 3" (Ø 76,2 mm) with terminal bend PP for pitched roof (L)	
Max length	82+82 ft (24.99+24.99 m)
90° bend	6 ft (1.83m)
the expressed lengths are without the terminations	

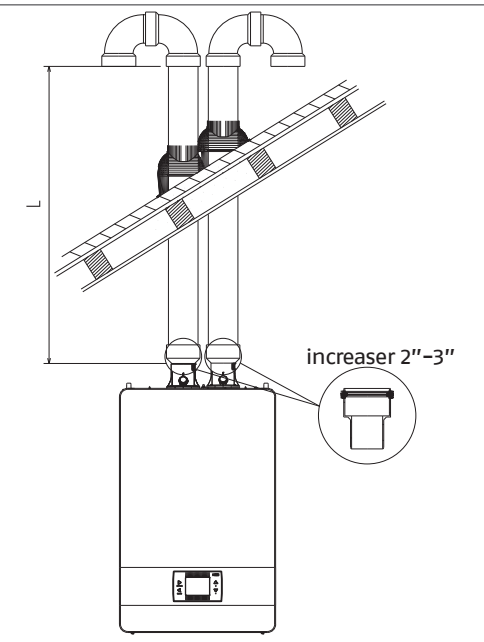


fig. 18

Fig. 19 Vertical twin flue system 3" (Ø 76,2 mm) with terminal bend CPVC for flat roof (L)	
Max length	82+82 ft (24.99+24.99 m)
90° bend	6 ft (1.83m)
the expressed lengths are without the terminations	

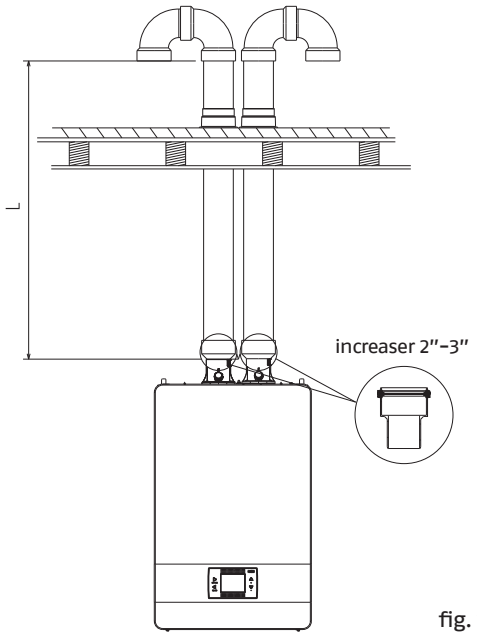


fig. 19

Fig. 20 Twin flue system 3" PP (Ø 76,2 mm)	
Max length (L)	82+82 ft (24.99+24.99 m)
Max length (L1)	76+76 ft (23.16+23.16 m)
90° bend	6 ft (1.83m)
the expressed lengths are without the terminations	

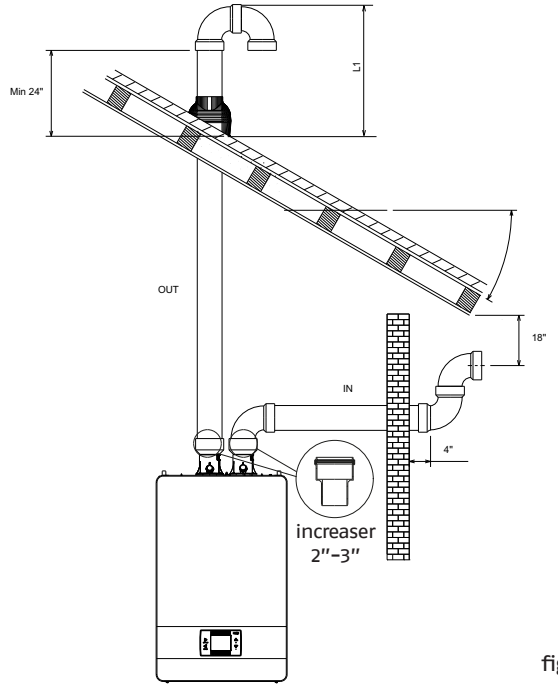


fig. 20

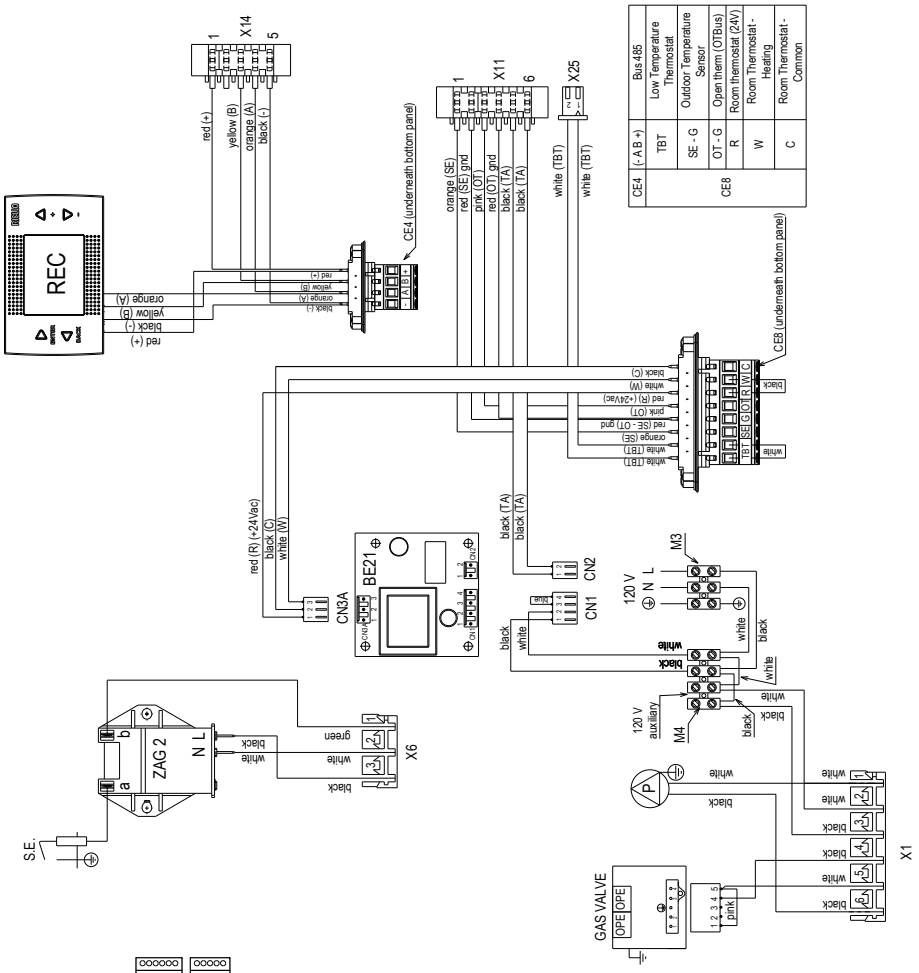
8.10 Multi Family boiler installation

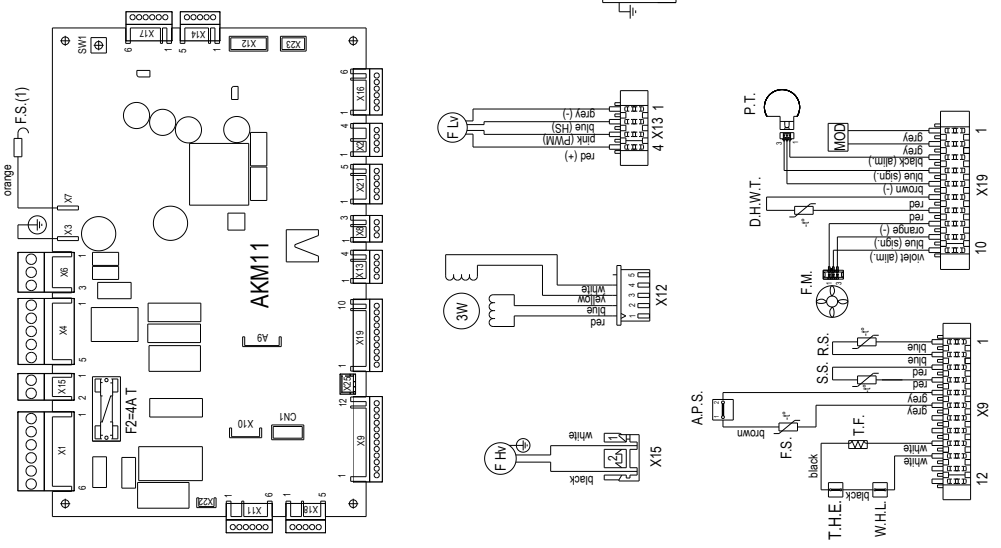
In Multi-Family installations where venting assemblies pass through fire rated floors or partitions, submit requests directly to Duravent (layouts@duravent.com) or Security Chimneys (layouts@securitychimneys.com) for an approved engineered design by the venting manufacturer. The application must also be in compliance with local codes and the local authority having jurisdiction.

9 WIRING DIAGRAM

9.1 Electrical diagram

Family PRO 42 KIS - Combi Model

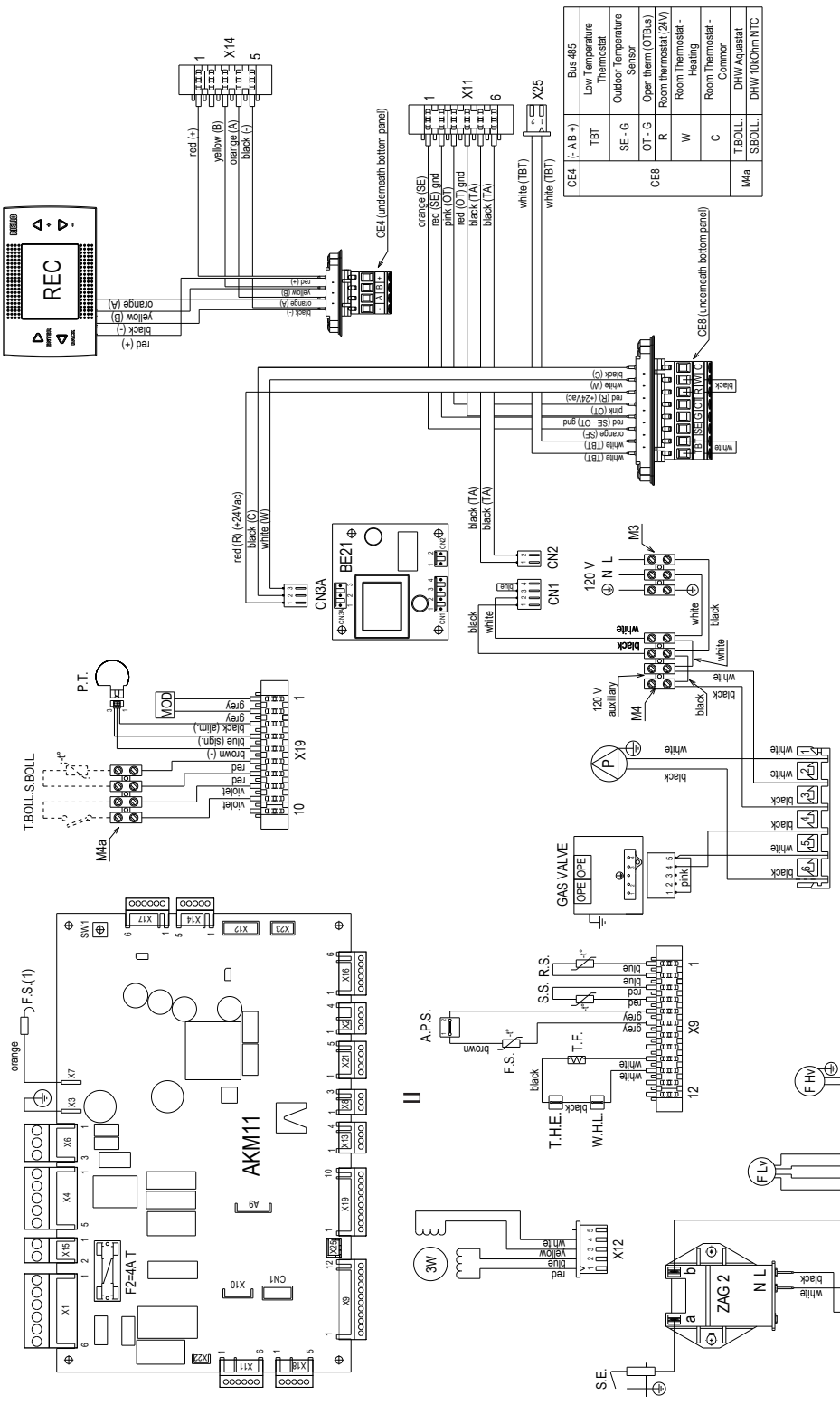




AKM11	Main PCB
REC	Control Interface
BE21	24VAC Thermostat
X1-X25	Connectors
CN1-CN2-CN3A	Connectors
S.W.1	CO_2 function button
F.S.(1)	Flame sensor
F2	Fuse 4A T
M3-M4	Terminal strip for electrical connection high power
CE4	External links connector: (- A B +) Bus 485
CE8	External links connector: TBT Low Temperature Thermostat SE - G Outdoor Temperature Sensor OT - G Open therm (OT) R Room Thermosat (24V) W Room Thermosat - Heating C Room Thermosat - Common
X11	SE Outdoor temperature sensor OT Opentherm (OT)
TA	Room thermostat (voltage free contact input)
P	Pump
OPE	Gas valve solenoids
F Hv	Fan power supply 120 V
F Lv	Fan signal control
3W	3 way valve motor
ZAG 2 (US...)	Spark generator
S.E.	Spark electrode
W.H.L.	Water high limit
T.H.E.	Thermostat heat exchanger
T.F.	Thermal fuse
F.S.	Flue sensor
A.P.S.	Air pressure switch
S.S.	Supply sensor (thermistor)
R.S.	Return sensor (thermistor)
F.M.	Flow meter
D.H.W.T	Domestic hot water temperature sensor
P.T.	Low water cutoff
MOD	Modulator gas valve

NOTICE: It is recommended to comply with terminal markings:
L (LINE) N (Neutral) and Chassis Ground

Family PRO 42 IS – Heating Only Model

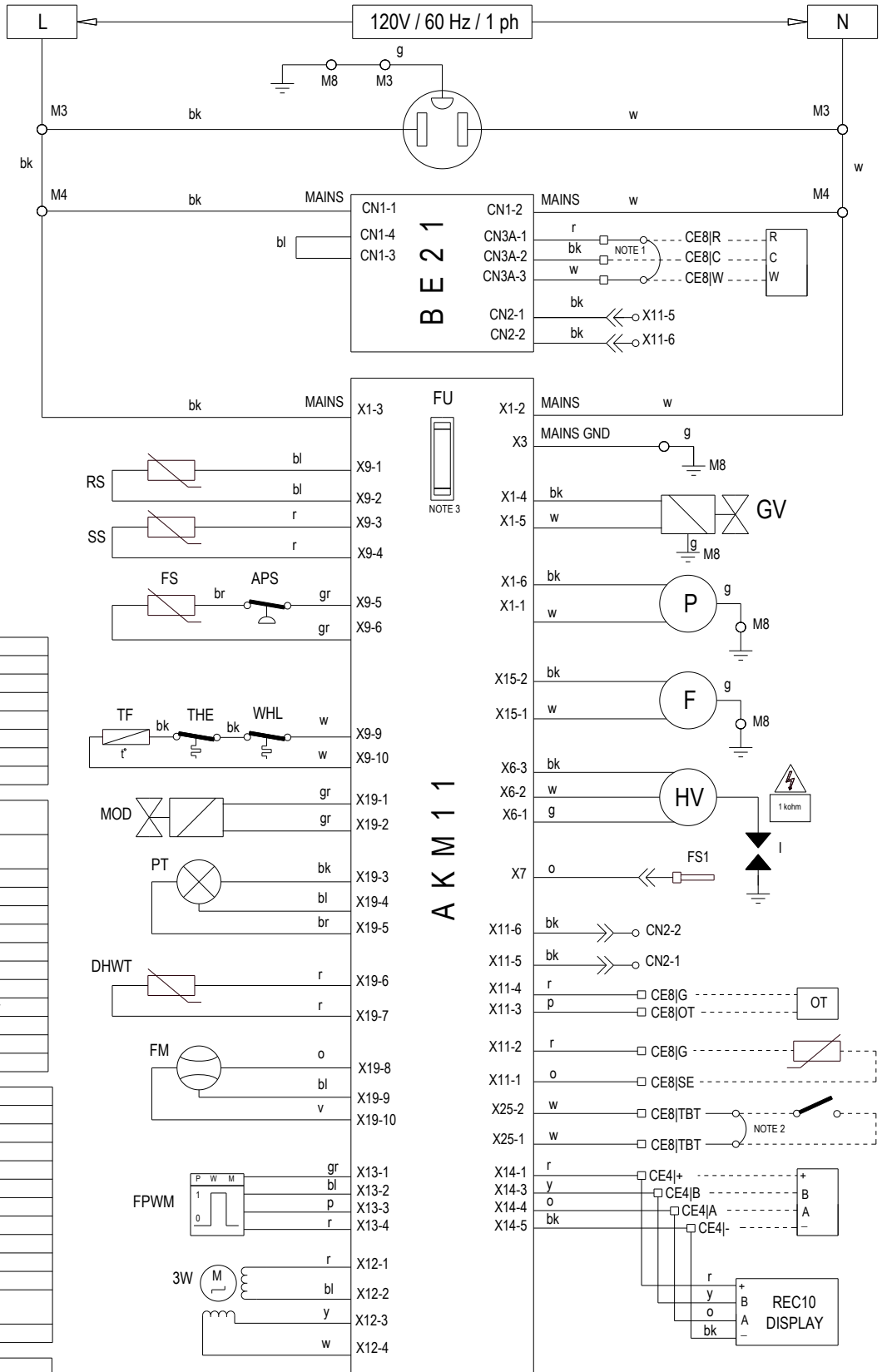


AKM11	Main PCB
REC	Control Interface
BE21	24VAC Thermostat
X1–X25	Connectors
CN1–CN2–CN3A	Connectors
S.W.1	CO2 function button
F.S.(1)	Flame sensor
F2	Fuse 4A T
M3–M4	Terminal strip for electrical connection high power
M4a	Terminal strip for electrical connection:
T.BOLL	DHW Aquastat
S.BOLL	DHW 10kOhm NTC
CN4	External links connector: (– A B +) Bus 485
CN8	External links connector: TBT Low Temperature Thermostat
	SE – G Outdoor Temperature Sensor
	OT – G Open therm (OT)
	R Room Thermosat (24V)
	W Room Thermosat – Heating
	C Room Thermosat – Common
X11	SE Outdoor Temperature Sensor
	OT Open therm (OT)
TA	Room Thermostat (voltage free contact input)
P	Pump
OPE	Gas valve solenoids
F Hv	Fan power supply 120 V
F Lv	Fan signal control
3W	3 way valve motor
ZAG 2 (US...)	Spark generator
S.E.	Spark electrode
W.H.L.	Water high limit
T.H.E.	Thermostat heat exchanger
T.F.	Thermal fuse
F.S.	Flue sensor
A.P.S.	Air pressure switch
S.S.	Supply sensor (thermistor)
R.S.	Return sensor (thermistor)
P.T.	Low water cutoff
X1 MOD	Modulator gas valve

NOTICE: It is recommended to comply with terminal markings:
L (LINE) N (Neutral) and Chassis Ground

9.2 Ladder diagram

Family PRO 42 KIS – Combi Model



wire color code	
bk	black
w	white
bl	blue
br	brown
r	red
g	green
y	yellow
p	pink
v	violet
o	orange
gr	grey

wire line type	
———	factory wiring
- - - - -	field wiring

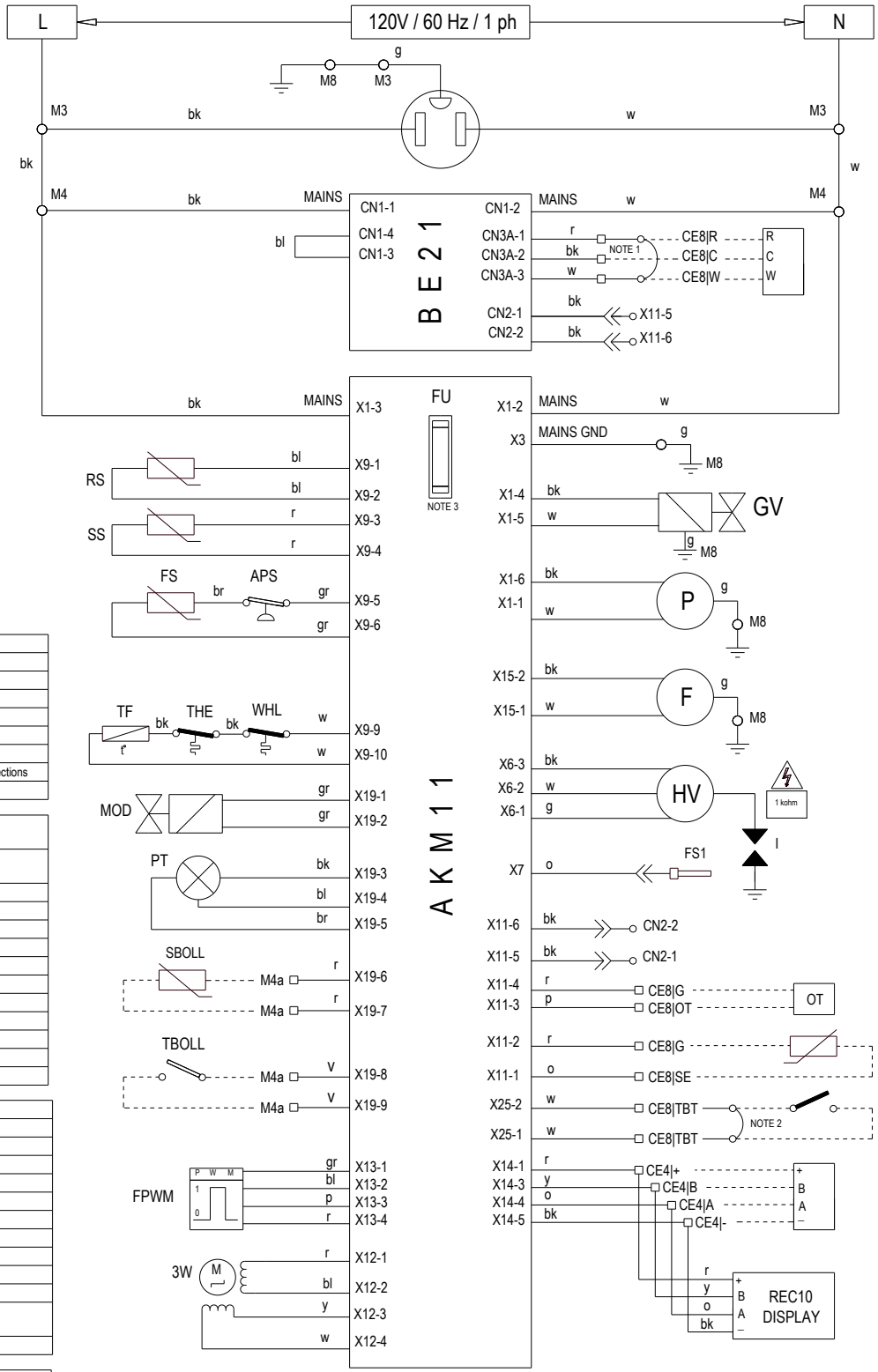
COMPONENTS LABELS	
AKM11	Main board
BE21	24 VAC Thermostat
REC10	Control interface
M3-M4	Mains terminal strip
M8	Multi-clip ground plate
CE8-CE4	External links connectors
FU	Fuse

RS	Return sensor (thermistor)
SS	Supply sensor (thermistor)
FS	Flue sensor
APS	Air pressure switch
TF	Thermal fuse
WHL	Water high limit
THE	Thermostat Heat Exchanger
MOD	Gas valve modulator coil
PT	Pressure transducer
DHWT	Domestic hot water temp. sensor
FM	Flow meter
FPWM	Fan PWM signal
3W	3 way stepper valve

R	Room thermostat 24 VAC
C	Common
W	Room thermostat heating
GV	Gas valve
P	Pump
F	Fan (blower)
HV	High voltage
I	Ignitor
FS1	Flame sensor
OT	OpenTherm (OTbus)
SE	Outdoor temp. sensor
TBT	Low temp. limit thermostat
+ B A -	Bus 485

Notes:
1. Remove jumper to connect 24VAC thermostat.
2. Remove jumper to connect TBT.
3. Fuse 4A T.

Family PRO 42 IS – Heating Only Model



wire color code	
bk	black
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wire line type	
———	factory wiring
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COMPONENTS LABELS	
AKM11	Main board
BE21	24 VAC Thermostat
REC10	Control interface
M3-M4	Mains terminal strip
M8	Multi-clip ground plate
CN4-CN8	External links connectors
M4a	Terminal strip for electrical connections
FU	Fuse

RS	Return sensor (thermistor)
SS	Supply sensor (thermistor)
FS	Flue sensor
APS	Air pressure switch
TF	Thermal fuse
WHL	Water high limit
THE	Thermostat Heat Exchanger
MOD	Gas valve modulator coil
PT	Pressure transducer
SBOLL	Indirect tank sensor
TBOLL	Aquastat
FPWM	Fan PWM signal
3W	3 way stepper valve

R	Room thermostat 24 VAC
C	Common
W	Room thermostat heating
GV	Gas valve
P	Pump
F	Fan (blower)
HV	High voltage
I	Ignitor
FS1	Flame sensor
OT	OpenTherm (OTbus)
SE	Outdoor temp. sensor
TBT	Low temp. limit thermostat
+ B A -	Bus 485

Notes:
1. Remove jumper to connect 24VAC thermostat.
2. Remove jumper to connect TBT.
3. Fuse 4A T.

10 LIGHTING INSTRUCTIONS

There are several steps involved in starting up the boiler.

FOR YOUR SAFETY READ BEFORE OPERATING

WARNING: If you do not follow these instructions exactly, a fire or explosion may result causing property damage, personal injury, or loss of life (death).

A. This appliance does not have a pilot. It is equipped with an ignition device which automatically lights the burner. Do not try to light the burner by hand.
B. BEFORE OPERATING smell all around the appliance area for gas. Be sure to smell next to the floor because some gas is heavier than air and will settle on the floor.

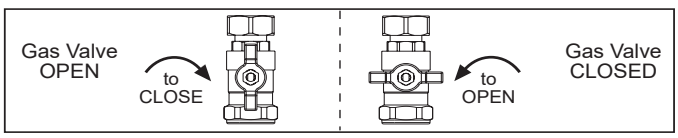
WHAT TO DO IF YOU SMELL GAS:

- Do not try to light any appliance.
- Do not touch any electric switch; do not use any phone in your building.
- Immediately call your gas supplier from a neighbor's phone. Follow the gas supplier's instructions.
- If you cannot reach your gas supplier, call the fire department.

C. Use only your hand to turn the gas control knob. Never use tools. If the knob will not turn by hand, don't try to repair it, call a qualified service technician. Force or attempted repair may result in a fire or explosion.
D. Do not use this appliance if any part has been under water. Immediately call a qualified service technician to inspect the appliance and to replace any part of the control system and any gas control which has been under water.

OPERATING INSTRUCTIONS

1. **STOP!** Read the safety information above on this label.
2. Set the thermostat to lowest setting.
3. Turn off all electric power to the appliance.
4. This appliance is equipped with an ignition device which automatically lights the burner. Do not try to light the burner by hand.
5. Turn external gas shutoff valve clockwise to close valve to the full OFF position.
6. Wait five (5) minutes to clear out any gas. Then smell for gas, including near the floor. If you smell gas, STOP! Follow "B" in the safety information above on this label.
7. Turn gas shutoff valve counterclockwise to open valve to the ON position.
8. Turn on all electrical power to the appliance.
9. Set thermostat to desired setting.
10. If the appliance will not operate, follow the instructions "To Turn Off Gas To the Appliance" and call your service technician or gas supplier.



TO TURN OFF GAS TO APPLIANCE

1. Set the thermostat to lowest setting.
2. Turn off all electric power to the appliance if service is to be performed.
3. Turn gas shutoff valve clockwise to close valve to the full OFF position.

POUR VOTRE SECURITE LISEZ AVANT DE METTRE EN MARCHE

AVERTISSEMENT: Quiconque ne respecte pas à la lettre les instructions dans la présente notice risque de déclencher un incendie ou une explosion entraînant des dommages, des blessures ou la mort.

A. Cet appareil ne comporte pas de veilleuse. Il est muni d'un dispositif d'allumage qui allume automatiquement le brûleur. Ne tentez pas d'allûmer le bruleur manuellement.
B. AVANT DE FAIRE FONCTIONNER, reniflez tout autour de l'appareil pour déceler une odeur de gaz. Reniflez près du plancher, car certains gaz sont plus lourds que l'air et peuvent s'accumuler au niveau du sol.

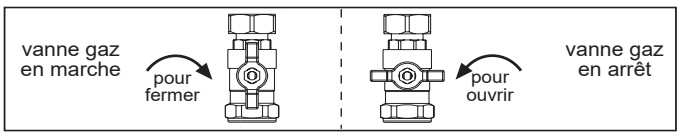
QUE FAIRE SI VOUS SENTEZ UNE ODEUR DE GAZ:

- Ne pas tenter d'allumer d'appareil.
- Ne touchez à aucun interrupteur; ne pas vous servir des téléphones se trouvant dans le bâtiment.
- Appelez immédiatement votre fournisseur de gaz depuis un voisin. Suivez les instructions du fournisseur.
- Si vous ne pouvez pas rejoindre le fournisseur, appelez le service des incendies.

C. Ne tournez la manette d'admission du gaz qu'à la main; ne jamais utiliser d'outil. Si la manette reste coincée, ne pas tenter de la réparer; appelez un technicien qualifié. Le fait de forcer la manette ou de la réparer peut déclencher une explosion ou un incendie.
D. N'utilisez pas cet appareil s'il a été plongé dans l'eau, même partiellement. Faites inspecter l'appareil par un technicien qualifié et remplacez toute partie du système de contrôle et toute commande qui ont été plongés dans l'eau.

INSTRUCTIONS DE MISE EN MARCHE

1. **ARRÊTEZ!** Lisez les instructions de sécurité sur la portion supérieure de cette étiquette.
2. Réglez le thermostat à la température la plus basse.
3. Coupez l'alimentation électrique de l'appareil.
4. Cet appareil ne comporte pas de veilleuse. Il est muni d'un dispositif d'allumage qui allume automatiquement le brûleur. Ne tentez pas d'allumer le brûleur manuellement.
5. Tournez le bouton de la vanne gaz extérieur dans le sens horaire à la position "arrêt" (OFF).
6. Attendre cinq (5) minutes pour laisser échapper tout le gaz. Reniflez tout au tour de l'appareil, y compris près du plancher, pour déceler une odeur de gaz. Si vous sentez une odeur de gaz ARRÊTEZ! Passez à l'étape "B" des instructions de sécurité sur la portion supérieure de cette étiquette. S'il n'y a pas d'odeur de gaz, passez à l'étape suivante.
7. Tourner le bouton de commande de gaz dans le sens antihoraire à la position "marche" (ON).
8. Mettez l'appareil sous tension.
9. Réglez le thermostat à la température désirée.
10. Si l'appareil ne se met pas en marche, suivez les instructions intitulées "Comment couper l'admission de gaz de l'appareil" et appelez un technicien qualifié ou le fourmisseur de gaz.



COMMENT COUPER L'ADMISSION DE GAZ DE L'APPAREIL

1. Réglez le thermostat à la température la plus basse.
2. Coupez l'alimentation électrique de l'appareil s'il faut procéder à l'entretien.
3. Tournez le bouton de commande de gaz dans le sens horaire à la position "arrêt".

11 COMMISSIONING

11.1 Preliminary checks

When commissioning the boiler, the first ignition is carried out by competent person from an authorized service agency.
Massachusetts:
Boiler installation must conform to Commonwealth of Massachusetts code 248 CMR which includes but is not limited to:
Installation by licensed plumber or gas fitter.
In the state of Massachusetts:
- This product must be installed by a licensed plumber or gas fitter.
- When flexible connectors are used, the maximum length shall not exceed 36" (914 mm).
- When lever type gas shutoffs are used they shall be T-handle type.
- The use of copper tubing for gas piping is not approved by the state of Massachusetts.

Gas boilers manufactured on or after May1, 2017 are not permitted to be used in Canada for heating of buildings or structures under construction.

Before starting up the boiler, check:
- that the data of the supply networks (electricity, water, gas) correspond to the label data
- that the exhaust extraction pipes and the air inlet pipes are working correctly
- ensure the vent system has been installed properly and in accordance with the instructions and codes
- verify there is enough access to the boiler to perform future maintenance and future repairs
- check the gas piping system to the boiler for leaks. Close the boiler's individual manual shutoff valve during any pressure testing of the gas supply piping system. Test at pressures equal to or less than 1/2 psi (3.5 kPa) and check for leaks using gas detector
- non corrosive detection fluid, or other leak detection method acceptable to local codes. Do not use open flames or other ignition sources to check for leaks. Correct all leaks, are re-test for leaks to verify correction
- that the fuel flow rate corresponds to values required by the boiler (check using gas meter)
- that the fuel supply system is sized to provide the correct flow rate to the boiler, and that it has all the safety and control devices required by current regulations
- that the hydronic system has been filled, vented, and the pressure set to 15 p.s.i. (1 bar)
- that the circulator rotates freely because, especially after long periods of inactivity, deposits and/or debris can prevent free rotation (see section "11.7.1 Boiler configuration".

11.2 Instructing the user

Hand over all documentation supplied with this appliance – including these instructions – and explain the importance of keeping them in a safe place.
Explain to the user how to isolate the appliance from the gas, water and electrical supplies, and the locations of all drain points. Show the user how to operate the appliance and any associated controls correctly.
Show the user the location of any isolating valves and the location of all manual vent points.
Explain to the user how to turn off the appliance for both long and short periods and advise on the necessary precautions to prevent freeze damage.
Explain to the user not to try to repair the boiler personally. Call a qualified technician.
Explain to the user that for continued safe and efficient operation, the appliance must be serviced annually by a qualified service person.

11.3 Initial flushing of the system

The whole of the heating system must be flushed before connecting this boiler to the heating system. Open all radiator or heating valves and the boiler supply & return service valve. Drain the boiler and system from the lowest points. Open the drain valve completely to remove any installation debris from the boiler.

Refill the boiler and heating system (see section "7.16 Initial filling of the system and air purge" for more details).
Once the system is brought to the central heating setpoint, it is recommended that a second flush and fill be commenced to remove any other contaminants from the system.

⚠ **DANGER:** When flushing the system there is a risk of spraying, scalding water proper precautions should be made to prevent severe injury or death.

⚠ Do not drain or flush the system until it has reached room temperature.

NOTICE: Chemicals used to clean the system and/or inhibit corrosion must be pH neutral, i.e. they should ensure that the level of the pH in the system water remains neutral.Premature failure of certain components can occur if the level of pH in the system water is out of normal levels.

11.4 Flushing of the heating system

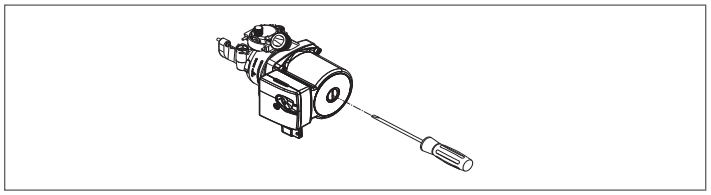
The system shall be flushed. Cleaners or chemicals used, must be suitable for stainless steel heat exchangers and shall be from a reputable manufacturer and shall be administered in strict accordance with the manufacturers' instructions.

NOTICE: Chemicals used to clean the system and/or inhibit corrosion must be pH neutral, i.e. they should ensure that the level of the pH in the system water remains neutral. Premature failure of certain components can occur if the level of pH in the system water is out of normal levels.

11.5 Eventual releasing of the circulator shaft

The pump used in the boiler is a wet rotor pump; for this reason the pump should be bled by:
- Turn the closing cap with a large flat-bladed screw driver until is release from the seal, and some fluid begins dripping.
- Re-tighten the closing cap to reseal.
- Perform this operation with extreme **CAUTION** to avoid damaging the components.

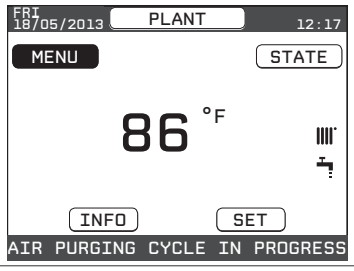
NOTICE: Before loosening or removing the closing cap, protect any electrical devices underneath any water outlet.



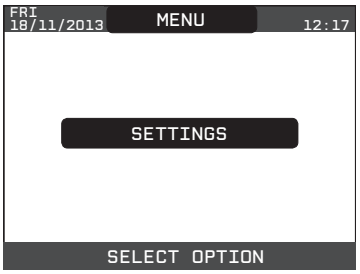
NOTICE: The boilers are live-fired tested at the factory. In some instances water can dry around the pump impeller causing it to stick upon initial commissioning. This can be resolved by removing the closing cap and spinning the impeller with a #2 Phillips screwdriver.

11.6 Access to the technical parameters

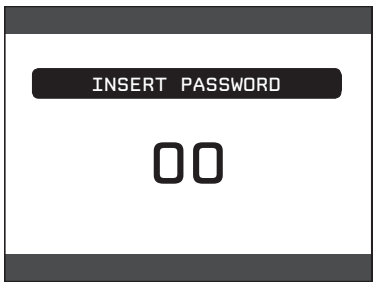
Using the boiler control panel it is possible to access the technical parameters, using the TECHNICAL menu, a series of parameters that can be programmed to allow you to personalize the operation of the boiler:
- select MENU on the initial page of the user interface and press the ▷ button



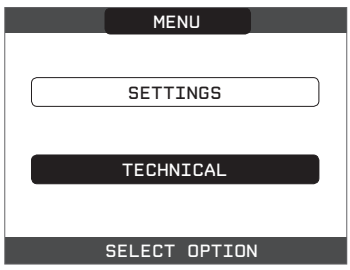
- simultaneously press the ◁ and ▽ buttons to enter the password menu (approximately 5 sec)



- using the △ and ▽ buttons select the password "018" **WARNING**: The parameters accessed by using this parameter should only be adjusted by a qualified service technician. Failure to comply may result in substantial property damage, severe personal injury or death. Access the INSTALLER authorization level, then press the ▷ button.



- select TECHNICAL with the △ and ▽ buttons, confirming the selection with the ▷ button

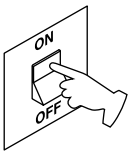


- access the desired menu and change/view the parameter (see the tree menu).

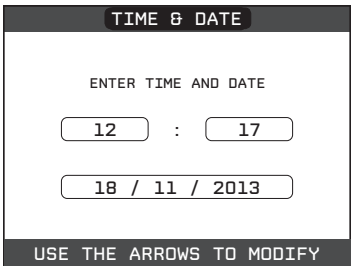
It is possible to return to the start page at any time by continuing to press the "BACK" button, for at least 2 seconds.

11.7 Programming the boiler

- Turn the systems master power switch to the "ON" position.



- If necessary set the TIME and DATE, setting the HOURS, MINUTES, DAY, MONTH and YEAR with the "up" and "down" buttons, confirming the selection using the enter button.

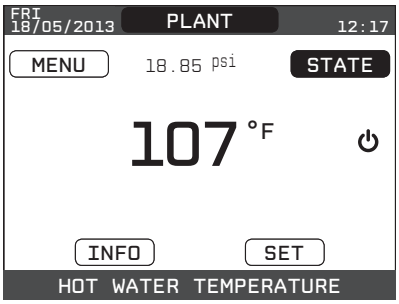


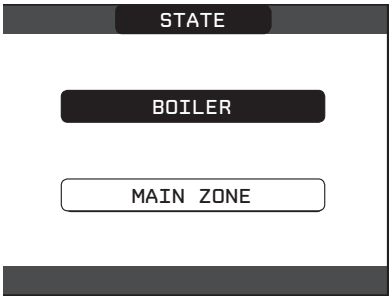
- Note: it is possible to change the TIME and DATE settings, LANGUAGE, and the duration of the back-lighting as well by entering the MENU from the main screen and then selecting SETTINGS.

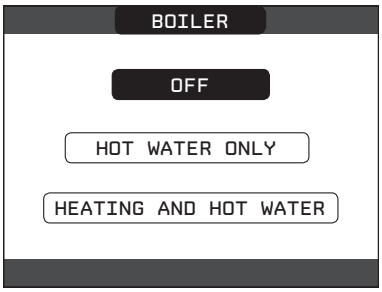
NOTICE: Each time that the boiler is powered an automatic venting cycle is carried out lasting 4 min. To interrupt the air purging cycle, carry out the procedure explained in the section "AIR PURGE CYCLE FUNTION" page 45.

The user can indirectly modify the value of the HEATING setpoint by inserting an offset on the reference DAY temperature 68°F (20°C) rather than NIGHT 61°F (16°C) that can vary within the range [-5÷+5].

- Set the boiler to OFF ⏻ from the user interface selecting the STATE menu and then BOILER.



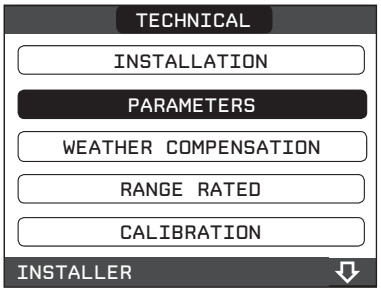




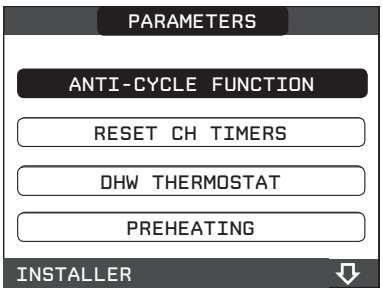
- Using the user interface it is possible to access, the TECHNICAL menu, a series of parameters that can be programmed to allow you to personalize the operation of the boiler based on the type of system.
- Then set the parameters according to the desired operating modes.

11.7.1 Boiler configuration

- Access the technical parameters as explained in the section "11.6 Access to the technical parameters".
- Select PARAMETERS with the "up" and "down" buttons, confirming the selection by pressing the "ENTER" button.

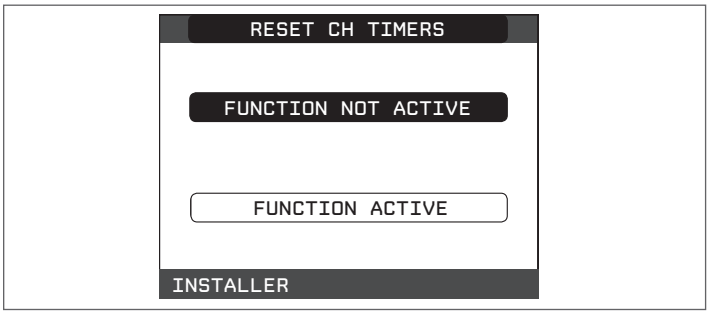


- Select from among the following options with the "up" and "down" buttons, confirming the selection by pressing the "ENTER" button.



ANTI-CYCLE FUNCTION (burner pause time)
This parameter allows you to change the burner pause time, regarding the delay time for re-igniting the burner when there is an off cycle due to the heating supply temperature being reached. The factory setting for this parameter is 3 minutes and it can be set to a value between 0 min and 20 min selecting the desired one with the "up" and "down" buttons confirming the selection by pressing the "ENTER" button.

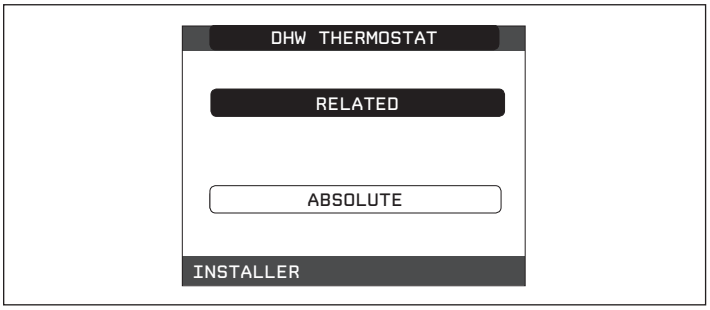
RESET TIMERS CH
If this function is enabled, the REDUCED MAXIMUM HEATING phase is skipped and ANTI-CYCLE FUNCTION resetted as well.
The factory setting for this parameter is FUNCTION NON ACTIVE, select FUNCTION ACTIVE using the buttons "up" and "down", confirming the selection for resetting the timings.
Note: the REDUCED MAXIMUM HEATING phase is a built in function limiting the maximum heating power to 75% for the first 15 minutes of an heating request.



DOMESTIC HOT WATER THERMOSTAT (combi boiler only)
This parameter allows you to set the type of DOMESTIC HOT WATER THERMOSTAT differential.
The factory setting for this parameter is ABSOLUTE: values where the boiler for domestic hot water will switch off at +149°F(65°C) and restart at +145°F (63°C).
To select the RELATIVE, values where the boiler for domestic hot water will switch off at the setpoint +9°F (+5°C) and restarts at the setpoint +7°F(+4°C), use the "up" and "down" buttons, select "RELATIVE" and then press the "ENTER" button.

DO AUX_1
This parameter allows you to configure the operation of an additional relay (only if the relay board is installed (not supplied as standard)) to bring a phase (120V) to a second heating pump (additional pump) or a zone valve.
The factory setting for this parameter is 0 and can be set within the 0 - 2 range with the following

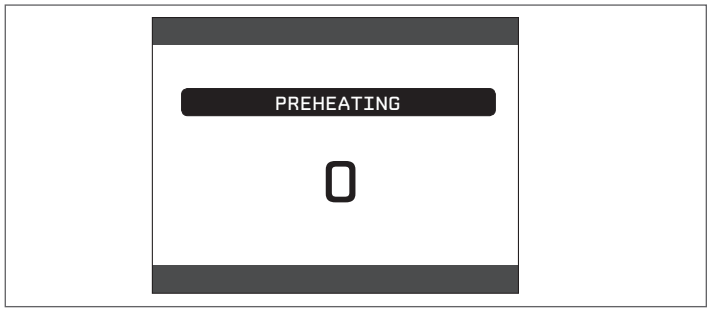
Pin 1 and 2 of X21	Non present	Jumpered
DO_AUX1= 0	additional pump management	W-R input active when OT presence
DO_AUX1= 1	W-R input active when OT presence	W-R input active when OT presence
DO_AUX1= 2	additional pump management	additional pump management



PREHEATING (combi boiler only)
Setting PREHEATING = 1 the boiler's domestic hot water function activates. This function keeps the water in the domestic hot water exchanger at the DHW setpoint to reduce standby times when a request is made. When the preheating function is enabled the symbol P comes on with a steady light at the top with respect to the hot water icon. During the burner ignition following a preheating request, the symbol P starts flashing.
To deactivate the preheating function, set the parameter to PREHEATING = 0, the symbol P switches off.
The function is not active when the boiler is OFF.

NOTICE: some applications may not be suitable for preheating, such as those with low flow rates and above

average incoming water temperatures. The combination of these two occurrences can result in short-cycling when used in conjunction with preheating.

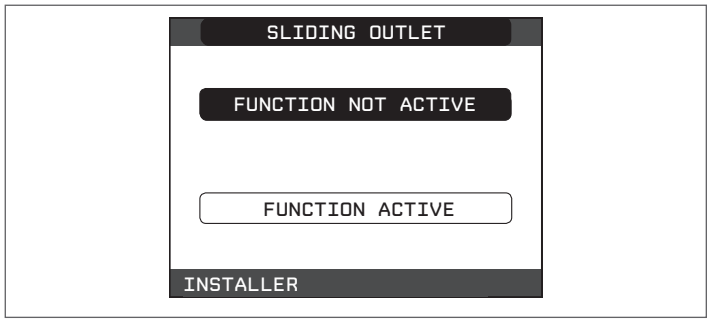


TOUCH & GO
By setting parameter PREHEATING = 2 the function Touch&Go is activated. This function allow you to activate one preheating cicle
by open and close the water tap just before an hot water request.

SLIDING OUTLET (heat only boiler)
The SLIDING OUTLET function modifies the outlet setpoint used by the boiler when receiving a DHW request. The factory setting for this parameter is FUNCTION NON ACTIVE; this setting performs a modulation to a fixed outlet value of 176°F (80°C) when there is a DHW request. Select FUNCTION ACTIVE using the "up" and "down" buttons, confirming the selection. In this case, the outlet setpoint in a DHW request is no longer fixed at 176°F (80°C) but variable, and it is calculated automatically by the boiler based on the difference between the desired DHW setpoint and the temperature value detected by the indirect tank sensor.

Note: we do not recommend activating this function for water tanks with a capacity of over 26 US gallons (100 liters) since the water tank filling would be too slow.

NOTICE: it may be necessary to set the value of this parameter again after replacing the PCB.



The following parameters will be also available by accessing technical parameters with a SERVICE authorization level:

HYST ON HIGH TEMP
This parameter allow you to change the central heating setpoint value detractor for burner ignition on high temperature zone type
Range 2sec – 10sec, factory setting 5sec

HYST OFF HIGH TEMP
This parameter allow you to change the central heating setpoint value add for overtemperature burner power off on high temperature zone type
Range 2sec – 10sec, factory setting 5sec

HYST ON LOW TEMP
This parameter allow you to change the central heating setpoint value detractor for burner ignition on low temperature zone type
Range 2sec – 10sec, factory setting 3sec

HYST OFF LOW TEMP
This parameter allow you to change the central heating setpoint value add for overtemperature burner power off on low temperature zone type
Range 2sec – 10sec, factory setting 3sec

SP INCR HIGH TEMP
This parameter allow you to change central heating control setpoint offset on high temperature zone type
Range 0sec – 10sec, factory setting 0sec

SP INCR LOW TEMP
This parameter allow you to change central heating control setpoint offset on low temperature zone type
Range 0sec – 10sec, factory setting 0sec

CH DELAY POST-DHW
This parameter allow you to enable central heating delaying at the end of an hot water request:
0 = function disabled (factory setting)
1 = function enabled

CH DELAY TIME
When CH DELAY POST-DHW is enabled, this parameter allow you to setup the central heating delay time in teh range 1sec – 255sec, 6sec is the factory setting

WATER TRANSDUCER
This parameter allow you to setup the water pressure transducer type:
0 = water pressure switch
1 = water pressure transducer (factory setting)

AUTO WATER FILL ENABLE
When WATER TRANSDUCER = 1, this parameter allow you to enable a water fill valve management:
0 = function disabled (factory setting)
1 = function enabled

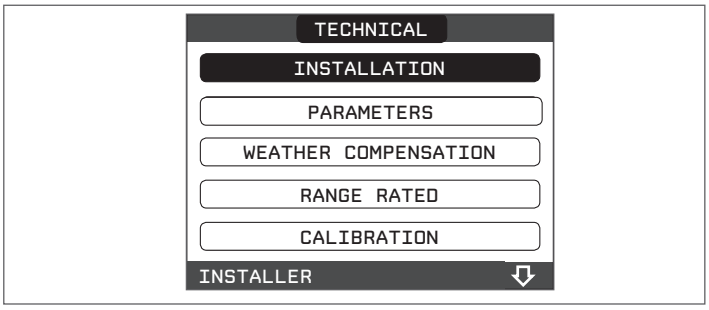
BEGIN SYSTEM FILLING
When AUTO WATER FILL ENABLE = 1, this parameter allow you to setup the water pressure threshold for auto fill

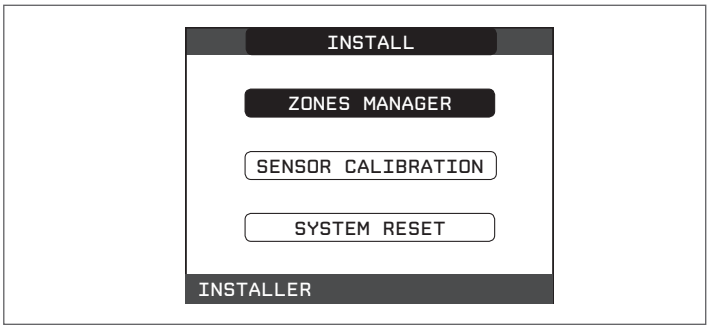
DHW DELAY
This parameter allow you to setup an hot water request burner ignition delay in the range 0sec – 60sec. 0sec is the factory setting.

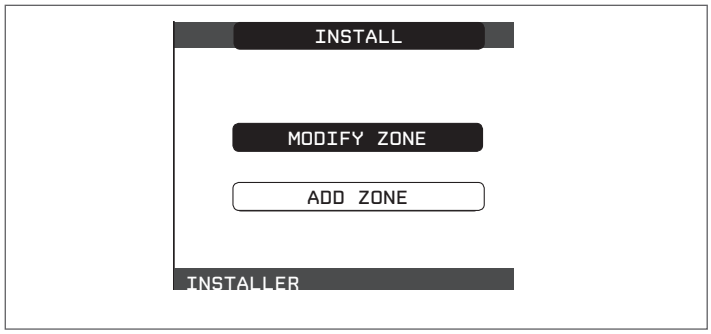
11.8 Configuration of the zone

It is possible to customize the management of the heating zone by accessing the ZONES MANAGER menu.

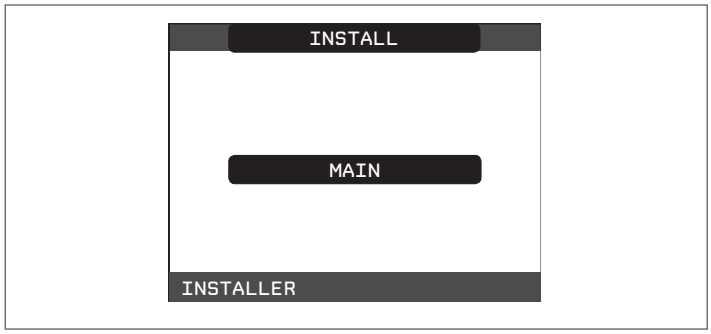
- Access the technical parameters as explained in the section "11.6 Access to the technical parameters".
- In sequence, select INSTALLATION, ZONES MANAGER and MODIFY ZONE with the "up" and "down" buttons, confirming the selection by pressing the "ENTER" button.







- Select the desired heating zone and then choose from among the options with the "up" and "down" buttons, confirming the selection by pressing the "ENTER" button:



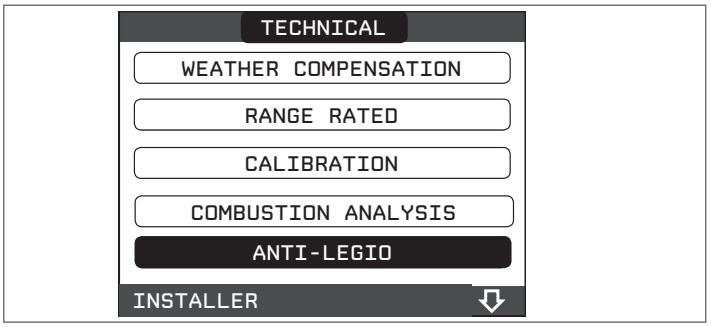
- **ACTUATION TYPE**
  Not used
- REQUEST TYPE
  This parameter allows you to specify the type of heat request, it is possible to choose from among the following options:
  - THERMOSTAT (factory setting): the heat request is generated with an ON/OFF thermostat
  - FRONT CONTROL MASTER: the heat request is generated by the FRONT CONTROL MASTER; in this case the FRONT CONTROL MASTER assumes the function of MACHINE INTERFACE
- **ZONE TYPE**
  This parameter allows you to specify the type of zone to be heated, it is possible to choose from among the following options:
  - HIGH TEMPERATURE (factory setting) [68°F (20°C) – 180 °F (82°C)]
  - LOW TEMPERATURE [68°F (20°C) – 113°F (45°C)]
- **MIN CH SET**
  This parameter allows you to specify the minimum heating setpoint that is possible (range 68°F (20°C) – 180°F (82°C), default 68 °F (20°C) for high temperature systems – range 68°F (20°C) – 113°F (45°C), default 68°F (20°C) for low temperature systems)
- **MAX CH SET**
  This parameter allows you to specify the maximum heating setpoint that is possible (range 68°F (20°C) – 180°F (82°C), default 180°F (82°C) for high temperature systems – range 68°F (20°C) – 113°F (45°C), default 113°F (45°C) for low temperature systems)
- **CHANGE NAME**
  This parameter allows you to attribute a specific name to the heating zone
- **POR (heating programming time)**
  This parameter allows you to enable the central heating programming timing for the zone if the heat request is carried out using a room thermostat
  Time schedule not enabled = 0
  When the room thermostat contact closes the heat request is always met without any time band limitation.
  Time schedule enabled = 1
  When the room thermostat contact closes the heat request is enabled according to the programming timing.
  Note: in this case make sure that the operating mode of the zone is set to AUTO in the STATE menu.

11.8.1 Anti-legionella function (only if an indirect tank sensor is connected)

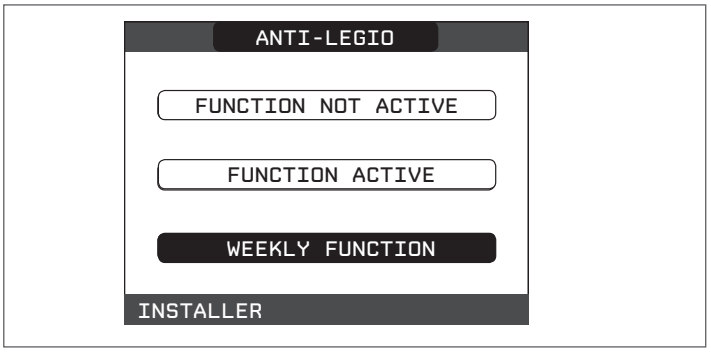
The machine has an automatic ANTI-LEGIONELLA function that, if necessary, heats the domestic water to 149°F (65°C) and keeps it at that temperature for 30 minutes to prevent the proliferation of bacteria in the indirect tank. This function can be set to be activated every day or every week.
This function is not performed if the indirect tank temperature has reached 149°F (65°C) over the past 24 h – if it is set to start daily – or over the last 7 days – if it is set to start once a week.
If the function is activated, it is performed every day at 3:00 a.m. when set to start every day, or on Wednesdays at 3:00 a.m. if it is set to start every week. Once the function is in progress, it has top priority and cannot be interrupted.

⚠ The function is not performed when the boiler is OFF.

The function can be activated by accessing the TECHNICAL menu of the front control:
- select MENU from REC 10 (front controller) main page and press "ENTER"
- access the technical parameters as explained in the section "11.6 Access to the technical parameters"
- select ANTI-LEGIONELLA using the "up" and "down" buttons, confirming the selection

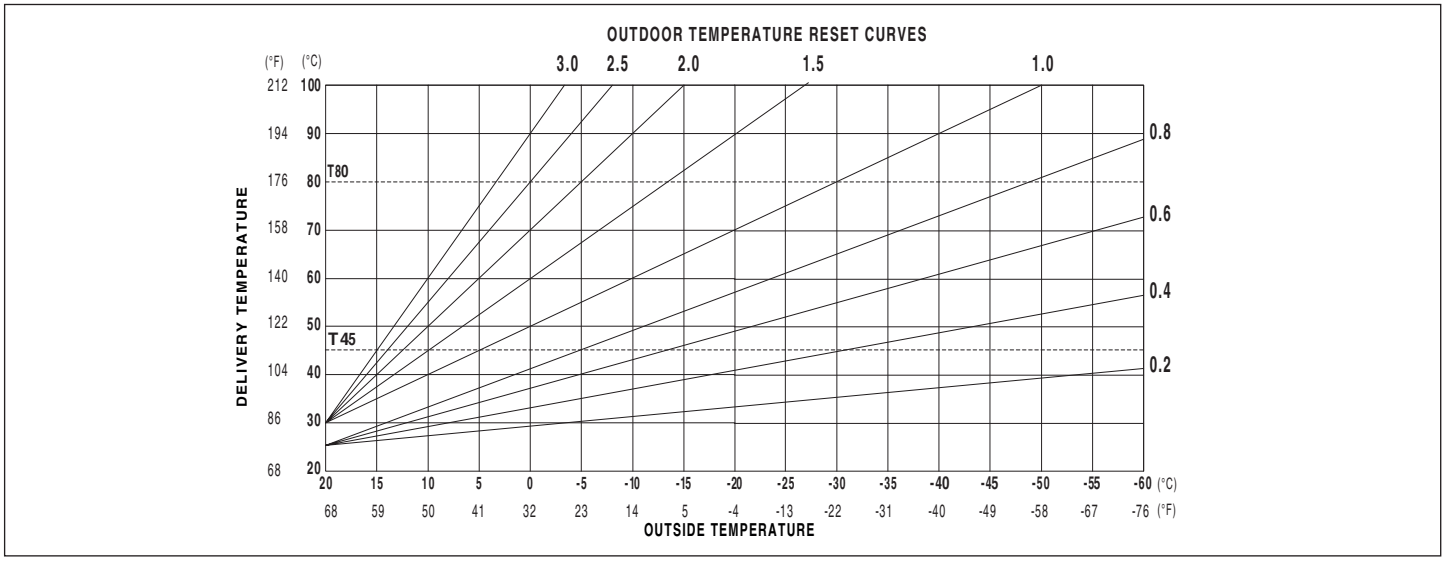


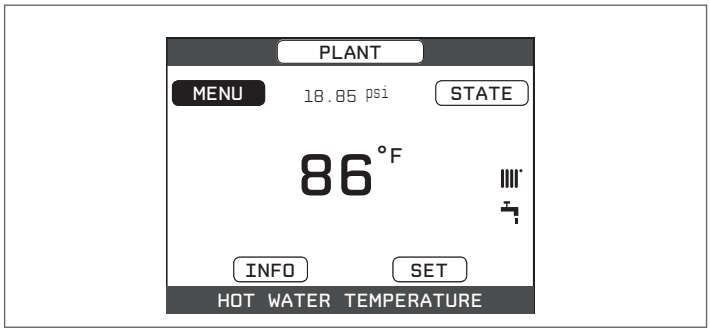
- select one of the options FUNCTION NOT ACTIVE, DAILY FUNCTION, WEEKLY FUNCTION with the "up" and "down" buttons, confirming the selection by pressing the "ENTER" button.



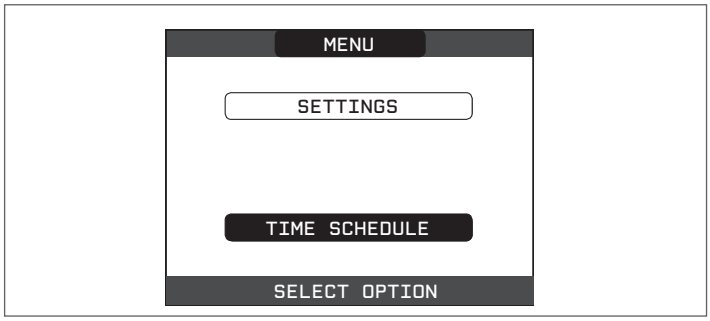
11.9 Time band schedule function (room thermostat)

Whenever the heating system is managed by a room thermostat, without any time schedule, it is possible to tie the heat requests coming from the device to programmable time bands by setting the parameter POR = 1 (see section "11.8 Configuration of the zone"), in other cases it is always enabled.
To access this function:
- select MENU on the main page of the front control and press "ENTER"

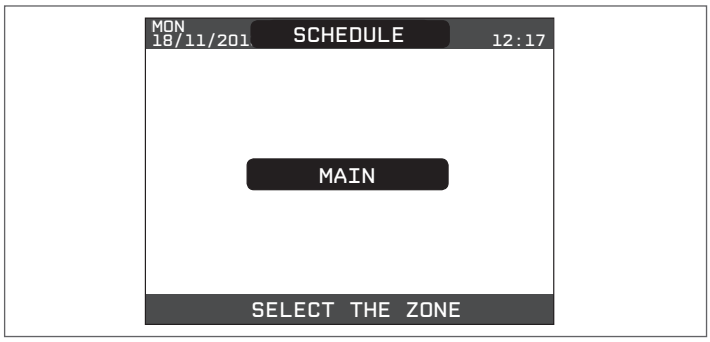


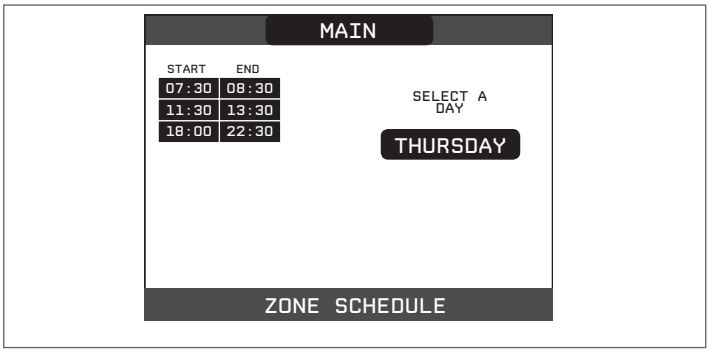


- using the "up" and "down" buttons select PROGRAM TIMER confirming the selection by pressing the "ENTER" button.



From this menu it is possible to access the display and adjustment of the programming timing for the heating functions of the zone. For each day of the week it is possible to set up to 4 bands, characterized by a starting time and an end time.
Note: for more details on the use of the programming timing see the Family PRO 42 KIS-IS US/CAN USER MANUAL.

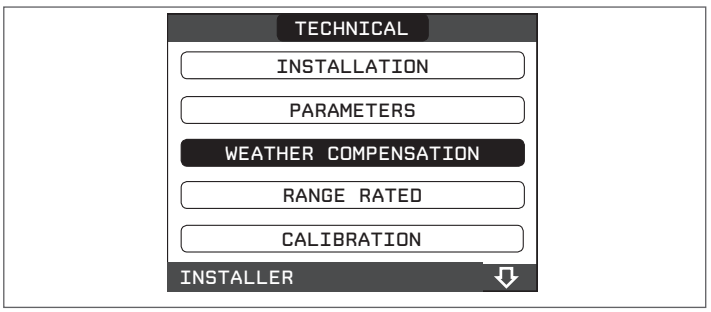




11.10 Setting the outdoor reset curve with outdoor sensor

The outdoor temperature reset only works with the outdoor air sensor connected, therefore, after installation, connect the outdoor air sensor to the relative connections on the boiler terminal board.
This enables the outdoor temperature reset function.
The temperature measured by the outdoor temperature sensor is displayed on the initial page in the top right, alternating with the display of the time.
The user can program the desired supply temperature based on the heat transmitter that will be used in the installation. Once the outdoor sensor is connected to the control board, the water temperature of the boiler will adjust to run the boiler more efficiently and provide greater comfort to the living space.

NOTICE: The DHW temperature is independent from the outdoor air sensor.
Enable the outdoor temperature reset in the following way:
- access the technical parameters
- select WEATHER COMPENSATION with the "up" and "down" buttons, confirming the selection by pressing the "ENTER" button.



Using the front control it is possible to set the value of the following parameters:

BUILDING TYPE
Determines the frequency with which the value of the calculated outdoor temperature is updated, a lower value for this value is used for buildings that have little insulation.
Setting range: [5min - 20min]
Factory setting: [5min]

OUTDOOR REACTIVITY (EXTERNAL SENSOR)
Determines the speed with which variations of the measured outdoor temperature affect the calculated outdoor temperature value for WEATHER COMPENSATION, low values indicate high speeds.
Setting range: [0 - 256]
Factory setting: [20]
To change the value of the previous parameters, proceed as described below:
- access the technical parameters as explained in the section "11.6 Access to the technical parameters"
- in sequence, select WEATHER COMPENSATION and TYPE OF BUILDING rather than REACTIVITY EXT SENSOR with the "up" and "down" buttons, confirming the selection with the "ENTER" button
- set the desired value with the "up" and "down" buttons, confirming the selection with the "ENTER" button.

NOTICE: The value of the calculated outdoor temperature used by the algorithm is displayed in the INFO menu under T EXT FOR THERMOREG.

HEAT REQUEST FROM ROOM THERMOSTAT
In this case the outlet setpoint depends on the outdoor temperature for obtaining a reference ambient temperature of 68°F (20°C). There are 2 parameters that compete to calculate the output setpoint:
- slope of the compensation curve (KT)
- offset on the reference ambient temperature.

Selecting the OFFSET heating curve
The offset heating curve maintains a theoretical ambient temperature of 68°F (20°C) at outdoor temperatures ranging from 68°F to -4°F (+20°C to -20°C).
The choice of the curve depends on the rated minimum outdoor temperature (of the geographical area) and the rated delivery temperature (on the type of system) and must be carefully calculated by the installer using the following formula using the correct values in °F or °C:

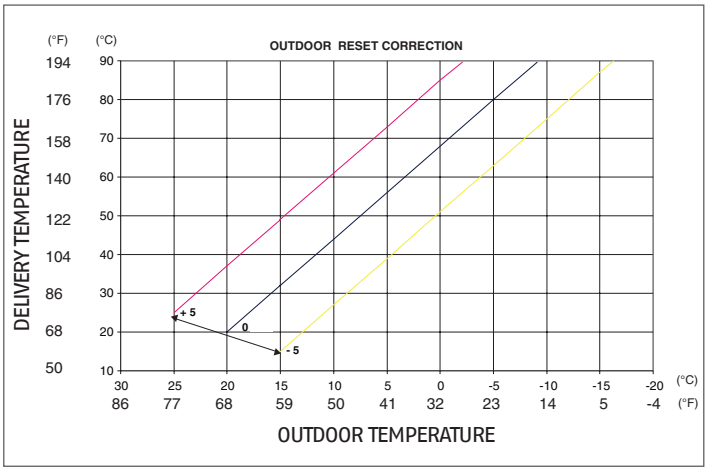
$$\text{Curve selection} = \frac{\text{Nominal supply Temp. - Tshift}}{\text{72°F (20°C) - min. external design Temp.}}$$

Tshift = 86°F (30°C) standard systems (radiators)
77°F (25°C) infloor systems

If the calculation generates an intermediate value between two curves, choose the nearest offset heating curve to that value.
E.g.: if the value obtained by the calculation is 1.3, it lies between curve 1 and curve 1.5. In this case, select the nearest curve, i.e.: 1.5.
Using the front control it is possible to set the curve:
- access the technical parameters as explained in the section"11.6 Access to the technical parameters"
- in sequence:
  - select WEATHER COMPENSATION and CLIMATIC CURVES with the "up" and "down" buttons, confirming the selection with the "ENTER" button
  - select the desired heating zone with the "up" and "down" buttons, confirming the selection with the "ENTER" button
  - set the desired climatic curve with the "up" and "down" buttons, confirming the selection with the "ENTER" button.

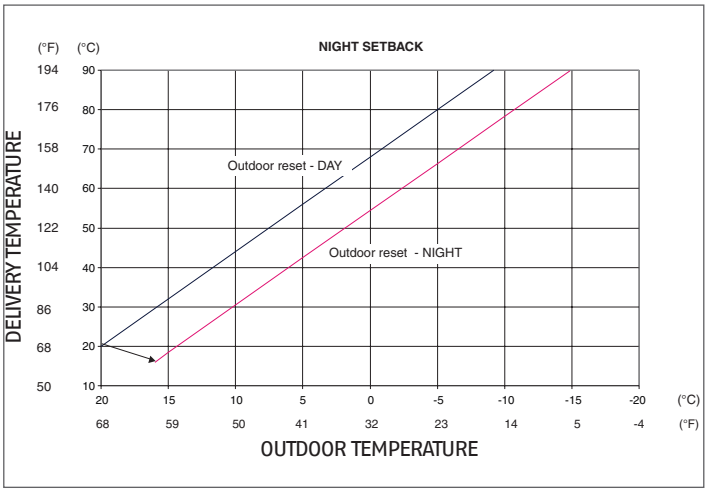
The settable values of curves are:
- standard system: 1.0, 1.5, 2.0, 2.5, 3.0
- infloor system: 0.2, 0.4, 0.6, 0.8

TYPE OF HEAT REQUEST
If a room thermostat is connected to the boiler: room thermostat
The room thermostat makes a heat request when its contact closes, while it stops it when its contact opens. Though delivery temperature is automatically calculated by the boiler, the user may manually override it. By modifying HEATING on the user interface, the HEATING SET POINT will no longer be available but just a value that can be set from +5 to -5 as required. Please note that the number displayed is a comfort level: +5 means it feels hotter, -5 means it feels colder. Modifications to this value do not directly change supply temperature but affect the calculation made to automatically determine its value by modifying the reference temperature of the system (0 = 68°F (20°C)).



PROGRAMMABLE TIMER (DAY+NIGHT)
Available if NIGHT COMP parameter is settet to "FUNCION ACTIVE".If a programmable timer (day+night selector) is connected to the boiler. When the contact is closed, the heat request is made by the delivery sensor on the basis of the external temperature in order to maintain the rated ambient temperature at the DAY level 68°F (20 °C). When the contact opens, it does not stop the heat request but reduces (parallel shift) the temperature curve to the NIGHT level 61°F (16 °C).
This activates the night mode.
Though supply temperature is automatically calculated by the boiler, the user may manually override it.
By modifying HEATING on the user interface, the HEATING SET POINT will no longer be available but just a value that can be set from +5 to -5 as required. Please note that the number displayed is a comfort level: +5 means it feels hotter, -5 means it feels colder.
Modifications to this value do not directly change flow temperature but affect the calculation made to automatically determine its value by modifying the reference temperature of the system (0 = 68°F (20°C) for DAY level; 61°F (16°C) for NIGHT level).
If a RiCLOUD is installed refer to instructions for setting the outdoor sensor.

NIGHT SETBACK

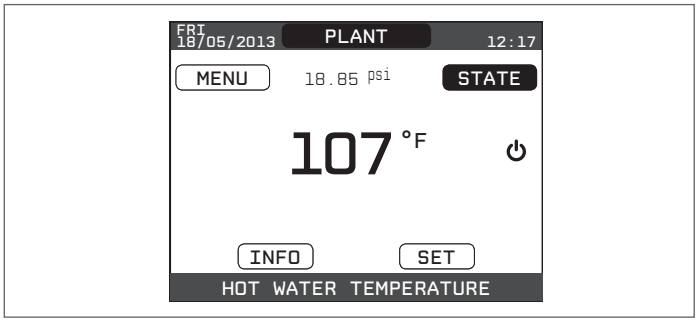


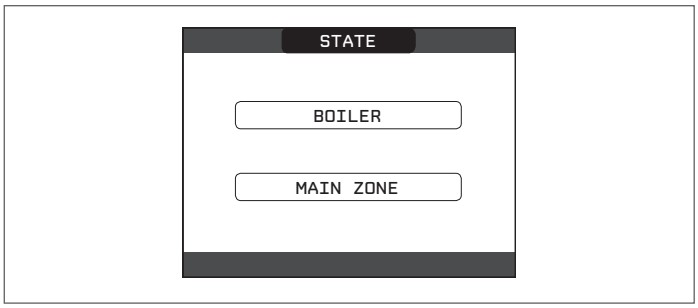
11.11 First commissioning

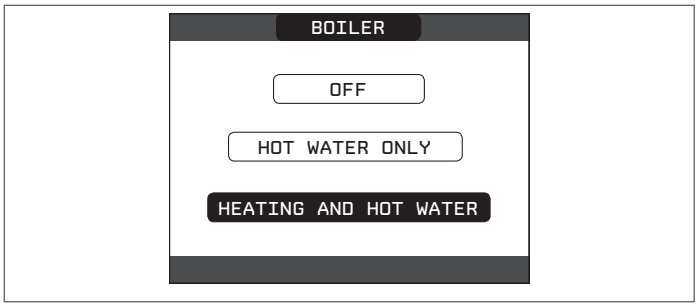
- Turn the systems master power switch to the "on" position.
- Open the gas cock to allow fuel to flow.
- Adjust the programmable thermostat to the desired temperature ~68°F (~20°C) or, if the system is equipped with a thermostat, programmable timer or the front control set as

an ambient thermostat, ensure that the thermostat or timer is "active" and set correctly ~68°F (~20°C)

- Then set the boiler for HEATING AND HOT WATER selecting the STATE menu on the front control and then BOILER, based on the season and the type of operation selected.





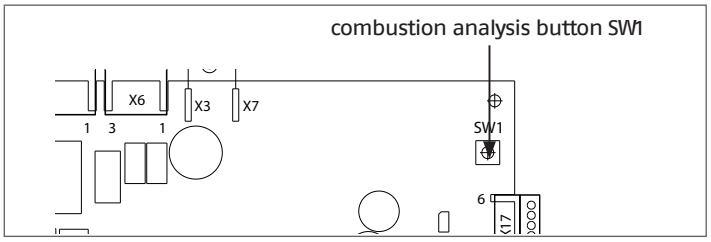


- When there is a heat request and the boiler has ignited the " " icon appears on the display. The boiler will start-up and continue working until the set temperatures are reached, after which it will then go back to standby.

AIR PURGE CYCLE FUNCTION

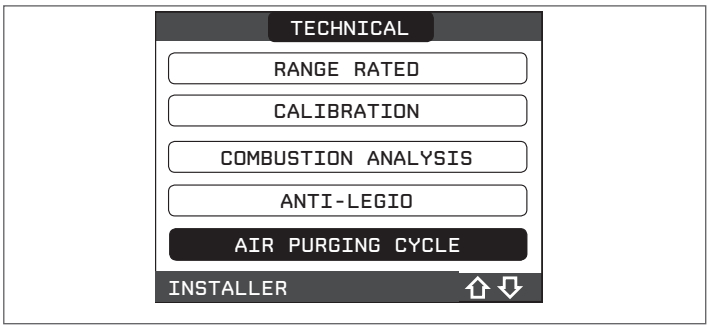
NOTICE: Each time the boiler is started up an automatic air purging cycle is carried out, lasting 4 min (6min for heating only model). When the AIR PURGE CYCLE is in progress, all heat requests are inhibited and a sliding message at the foot of the page appears on the main page of the front control.

- In this condition the green and red LEDs light up alternately for 0.1 sec with a pause of 0.5 sec and 1 sec between one ignition and another.

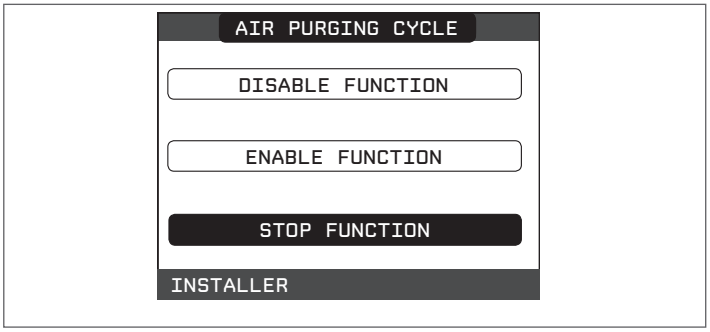


NOTICE: The AIR PURGE CYCLE can be interrupted beforehand by removing the cap from the control board cover and pressing the combustion analysis button SW1 or from the TECHNICAL menu of the front control in the following way:

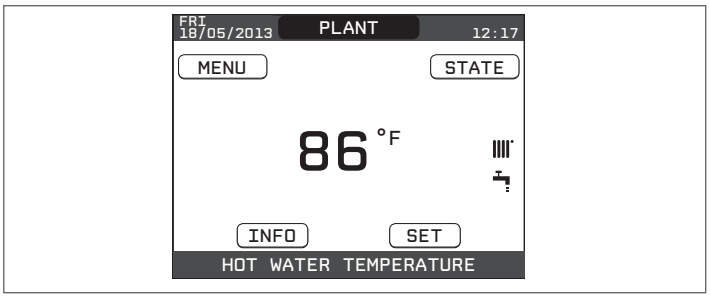
- access the technical parameters as explained in the section "11.6 Access to the technical parameters"
- select AIR PURGING CYCLE with the "up" and "down" buttons, confirming the selection by pressing the "ENTER" button



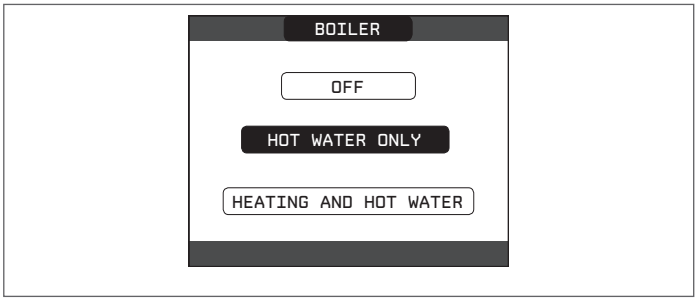
- select STOP FUNCTION with the "up" and "down" buttons, confirming the selection using the "ENTER" button.



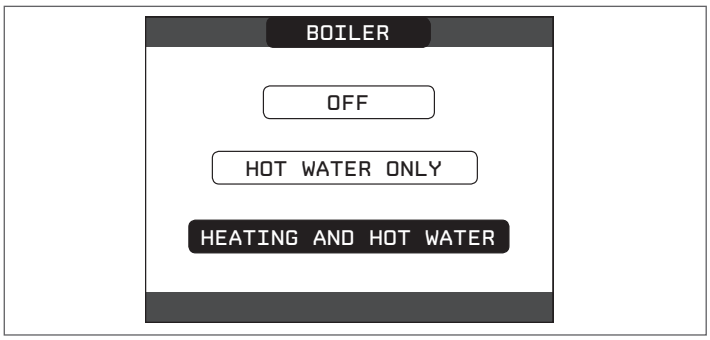
The front control will briefly display a wait message after which, you will automatically be taken to the main screen.



HOT WATER ONLY : by selecting the HOT WATER ONLY operating mode in the STATE menu and then BOILER, just the domestic hot water will be activated. The user interface normally displays the temperature of the domestic hot water supplied by the boiler.
With the FAMILY PRO IS boilers the function is active only with an indirect tank.
The user interface normally displays the temperature of the domestic hot water stored in the indirect tank (only when using an indirect tank sensor).
When using an indirect tank with aquastat or a domestic hot water request in progress, the boiler delivery temperature is displayed.

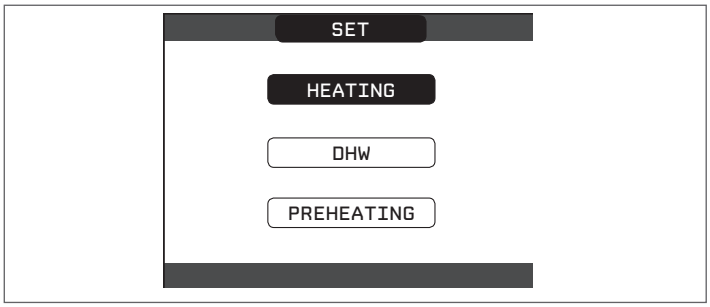


HEATING AND HOT WATER / : by selecting HEATING AND HOT WATER in the STATE menu and then BOILER, the heating and domestic hot water functions are activated. The front control normally displays the domestic hot water temperature unless there is a heating request in progress, in which case the boiler's outlet temperature is displayed.



11.12 Adjusting the heating water temperature without an outdoor temperature sensor connected

When there is no outdoor temperature sensor, the boiler operates at a fixed setpoint, the HEATING setpoint can be set selecting SET on the main screen of the front control and selecting the desired value within the range [68°F (20°C) - 180°F (82°C)] for high temperature systems and [68°F (20°C) - 113°F (45 °C)] for low temperature systems.



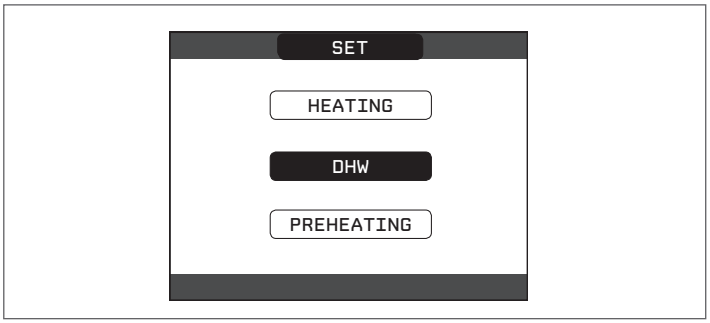
11.13 Adjusting the heating water temperature with an outdoor temperature sensor connected

When an outdoor temperature sensor is installed, the outlet temperature is automatically selected by the system, which quickly adjusts the ambient temperature according to the variations in the outdoor temperature. If you want to change the temperature, raising it or lowering it with respect to that automatically calculated by the electronic board, it is possible to change the HEATING setpoint by selecting SET on the main screen of the front control and selecting within the range (-5 - +5) the desired comfort level (see section "11.10 Setting the outdoor reset curve with outdoor sensor").
Note: when there is an outdoor temperature sensor connected it is still possible to have the boiler operate at a fixed point setting the values of MIN SP HEAT and MAX SP HEAT at the desired HEATING setpoint.

11.14 Adjustment of the domestic hot water temperature

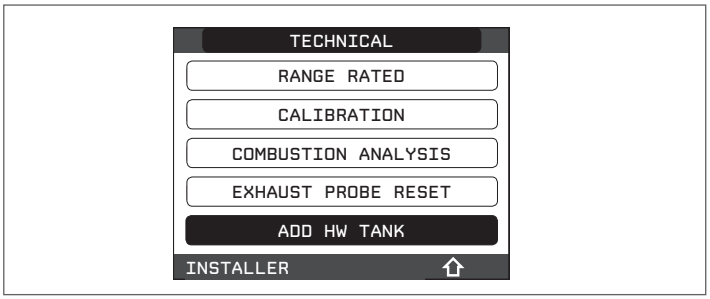
To adjust the domestic hot water temperature (bath, shower, kitchen, etc.), set the DOMESTIC HOT WATER setpoint selecting SET on the main screen of the front control and selecting the desired value within the range [+99.5°F (37.5°C) - 140°F (60°C)].

For Family PRO IS boilers:
EXAMPLE A: heat only with no indirect tank connected - adjustment not applicable.
EXAMPLE B: heat onlyg with an indirect tank managed by an aquastat - adjustment not applicable.
EXAMPLE C: heat only with an indirect tank managed by a sensor - to adjust the stored domestic hot water temperature in the indirect tank. Set the DOMESTIC HOT WATER setpoint selecting SET on the main screen of the front control and choosing the desired value within the range [+99.5°F (37.5°C) - 140°F (60°C)].



11.15 Adding devices (heating only boiler)

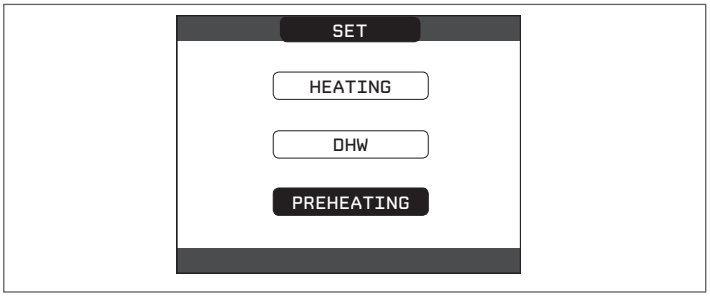
- Access the technical parameters as explained in the section "11.6 Access to the technical parameters".
- Select ADD HW TANK with the "up" and "down" buttons, confirming the selection by pressing the "ENTER" button.



NOTICE: After adding the indirect tank, in the "PROGRAM" screen "DHW" appears. This function allows you to create the DHW time-switch programming (see user manual).

11.16 "Preheating" function (combi boiler only)

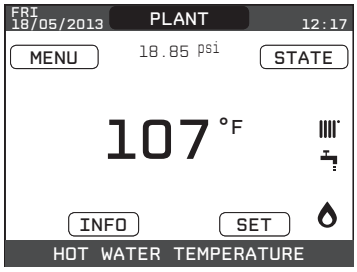
It is possible to access the PREHEATING function selecting SET on the main screen of the front control.
Setting PREHEATING = 1, the boiler's domestic hot water function activates. This function keeps the water in the domestic hot water exchanger at the DHW setpoint, to reduce standby times when a request is made. When the preheating function is enabled, the symbol P comes on with a steady light at the top with respect to the hot water icon. During burner ignition following a preheating request, the symbol P starts flashing.
To deactivate the preheating function, set the parameter to PREHEATING = 0, the symbol "P" switches off.
The function is not active when the boiler is OFF.
NOTICE: some applications may not be suitable for preheating, such as those with low flow rates and above average incoming water temperatures. The combination of these two occurrences can result in short-cycling when used in conjunction with preheating.



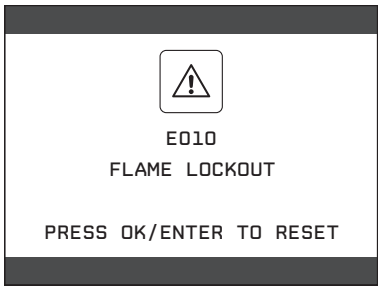
11.17 Boiler start-up

If there is a room thermostat, programming timer, or the front control MASTER is set as a thermostat, it is necessary that these are on and that they have been adjusted to a temperature higher than the ambient temperature so that the boiler switches on.
The boiler will be in standby until the burner switches on following a heat request.

The display shows "🔥" to indicate the presence of a flame.



The boiler will run until the selected temperature is reached, afterwards it will be in "standby" again, keeping the outlet temperature displayed.
If faults arise in ignition or operation, the boiler performs a "SAFETY STOP": the triangle signal fault will flash on the front control. To identify the fault codes and to reset the boiler, see section "11.22 Lights and faults".



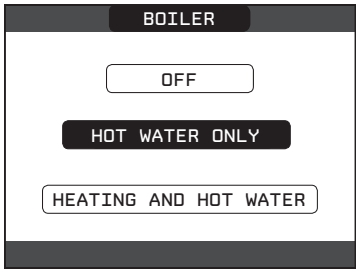
11.18 Reset function

In the event of a lockout, it is possible to try and reset the normal operation of the appliance by pressing the "ENTER" button on the front control when the fault message is displayed for resetting the error in progress.

⚠ If the release attempts do not restart the boiler, contact the local Technical Assistance Centre.

11.19 Checks during and after the first commissioning

After start-up check that the boiler carries out the start-up procedures and subsequent shut-down properly.
Check the domestic hot water operation by opening a hot water tap in Indirect tank or HEATING AND HOT WATER mode.
Check the full stoppage of the boiler by turning off the system's main power switch.
After a couple of minutes of continuous operation with the boiler mode selector to HOT WATER ONLY mode and by keeping the domestic hot water tap open, it will be possible to carry out a combustion check.



11.20 Converting the boiler gas type

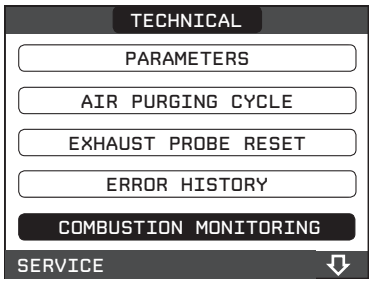
The Family PRO boiler is factory supplied to use natural gas (gas A). The boiler can use also LP (gas E) by setting the parameter.

⚠ **WARNING**: The boiler may only be converted by qualified technician. Failure to comply may result in substantial property damage, severe personal injury or death.

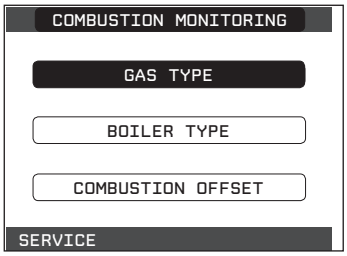
To convert the boiler to LPG (gas E) proceed as follows:
- access the technical parameters as explained in the section "11.6 Access to the technical parameters"
- set the INSTALLER password "018"

⚠ **WARNING**: The parameters accessed by using this parameter should only be adjusted by a qualified service technician. Failure to comply may result in substantial property damage, severe personal injury or death.

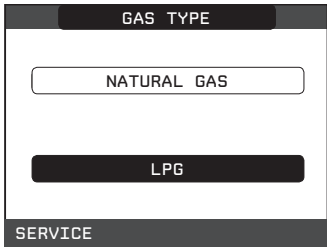
- select COMBUSTION MONITORING with the "up" and "down" buttons, confirming the selection by pressing the "ENTER" button



- select GAS TYPE

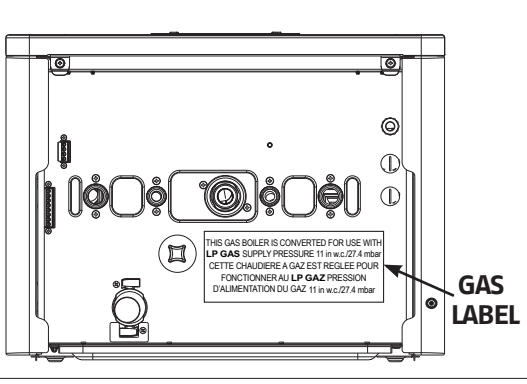


- select LPG



The boiler DOES NOT require additional adjustments.

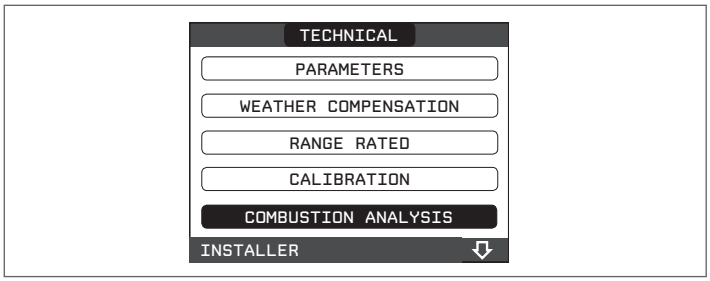
⚠ **WARNING**: After conversion apply the new rating plate supplied with the boiler. Failure to do so may result in substantial property damage, severe personal injury or death.



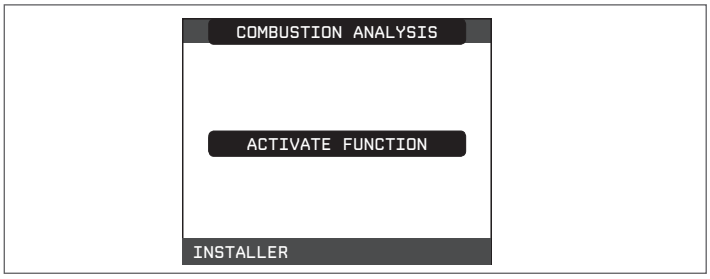
11.21 Combustion analysis

To carry out the combustion analysis, proceed as follows:
- power the boiler electrically by turning the main power switch to "ON"
- set the status of the boiler to OFF ⏻

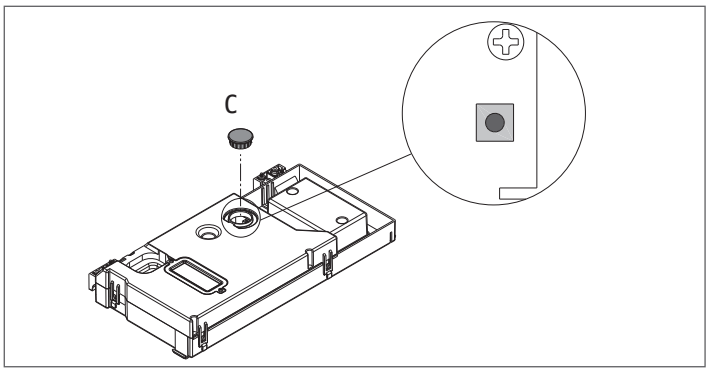
- access the technical parameters as explained in the section "11.6 Access to the technical parameters"
- select COMBUSTION ANALYSIS with the "up" and "down" buttons, confirming the selection



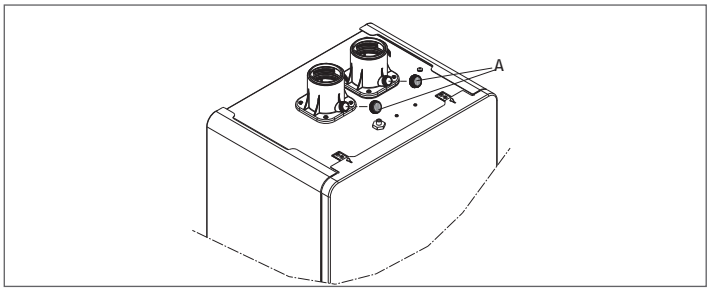
- select ACTIVATE/DEACTIVATE FUNCTION with the "up" and "down" buttons, confirming the selection.



- Note: the combustion analysis function can also be activated by pressing the SW1 button on the electronic board MAIN PCB (this requires removing the tap (C) from the cover of the instrument panel to access the electrical components).



Wait for the burner to ignite.
The boiler will operate at maximum heating output and it will be possible to regulate the combustion.
- Insert the analyzer probe in the specific positions on the air distribution box, after removing the two taps (A).



- Perform the combustion check verifying that the CO_2 values correspond to those indicated in the "5.3 Technical data"
- Once checks are completed, remove the analyzer probe and close the combustion analysis sockets with appropriate caps and screw.

WARNING: If the value displayed is different from the one shown in the section "5.3 Technical data" DO NOT MAKE ANY ADJUSTMENT ON THE GAS VALVE, please contact the Technical Assistance Centre.

WARNING: The gas valve DOES NOT REQUIRE ADJUSTMENTS and the possible tampering can cause a malfunction or failure of the boiler which may result in substantial property damage, severe personal injury or death.

NOTICE: When the combustion analysis function is in progress all the heat requests are inhibited and a scrolling message appears at the foot of the main page of the front control.

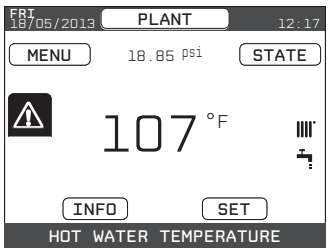
When the checks are completed:
- set the boiler to "DHW" or "CH&DHW" mode
- regulate the heat request temperature values according to the customer's needs.

IMPORTANT
The combustion analysis function is active for a time limit of 15 minutes; the burner shuts down if an outlet temperature of 203°F (95° C) is reached. It will ignite again when the temperature falls below 167°F (75° C).

In case of a low temperature system we recommend carrying out the efficiency test, setting the boiler STATE to DHW mode, opening the hot water tap to full capacity and setting the temperature of the domestic hot water to the maximum.

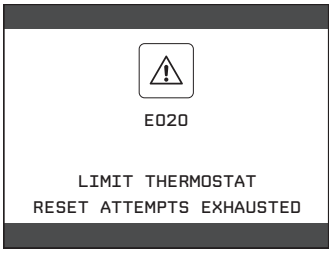
11.22 Lights and faults

In the unlikely event of boiler fault, the appliance will enter a final or temporary fault condition, whereby it will shut down and a **WARNING** triangle ⚠ will appear on the left side of the UI screen. Use the arrow buttons on the user inferface to navigate to the **WARNING** triangle, and press "ENTER". Then follow the instructions/advice as shown on the user interface screen.



The faults description screen is automatically displayed once the display illumination time has elapsed without any button being pressed.
Press the "up" and "down" buttons to display the descriptions of any other faults that may be present.

Reset function
In order to reset the boiler's operation in the event of a fault, it is necessary to access the fault description screen. If the lockout is of a non-volatile type that requires a reset procedure, this will be indicated on the screen, and can be performed **by pressing the "ENTER" button on the front control.**
At this point, if the correct operating conditions have been restored, the boiler will restart automatically.
There are a maximum of 3 consecutive attempts at a release by the front control, should it go through all 3 attempts to reset the fault, the appliance will need to be disconnected briefly from the electrical supply in order to carry out any further reset attempts. Once the electrical supply has been restored, further attempts at reset can be carried out.



⚠ If the attempts to reset the boiler are unsuccessful, please contact the technical service.

Fault E020

This kind of fault has two potential causes:

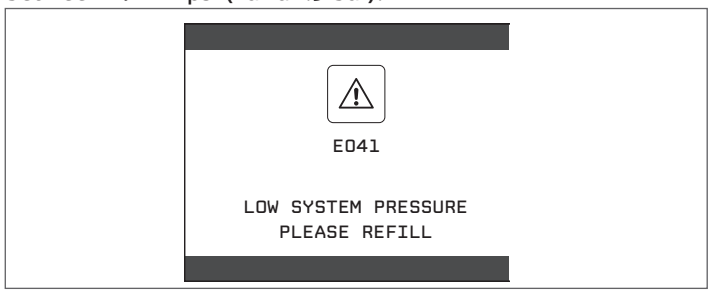
1) **Water high limit thermostat intervention:** due to absence or poor water in the circuit or absence of circulation; check pressure value on the pressure gauge and if necessary restore it (14 – 22 psi (1 and 1.5 bar)) and check the correct working of the circulator.
2) **Heat Exchanger Thermostat intervention:** due to presence of excessive dirty/deposits inside the primary heat exchanger. This condition could lead to frequent faults E020. Once established that condition 1 is satisfied, it is necessary to go on with heat exchanger cleaning – see "13.4 Maintenance of the combustion control system" page 66.

Press the "ENTER" button with the rules described on reset function paragraph.

⚠ **WARNING** – If the attempts to reset the boiler are unsuccessful, please contact the technical service.

Fault E041

If the pressure drops below the safety pressure limit of 4.3 psi the boiler displays the fault code "E041 – LOW SYSTEM PRESSURE– PLEASE REFILL" for a transitional time of 30 sec during which it is possible to open the external filling tap until the pressure is between 14 – 22 psi (1 and 1.5 bar).



If the pressure drops frequently, contact your installer or the customer care centre.

For fault E060

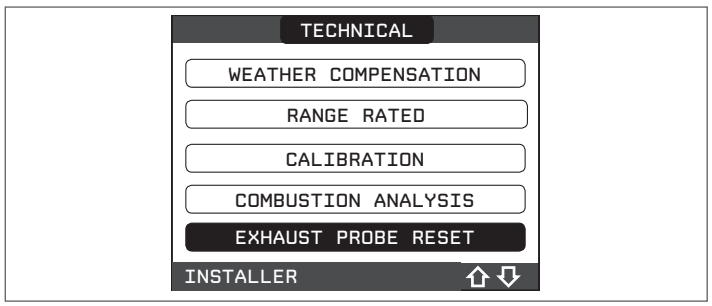
The boiler is working normally, but does not provide any stable domestic hot water temperature is supplied at a temperature of around 120 °F (49°C). A service technician is required.

For fault E091

The boiler has an auto-diagnostic system which, based on the total number of hours in certain operating conditions, indicates the need for periodic maintenance.

Once the maintenance operation has been completed, re-set the total hour meter to zero (0) as indicated below:

- access the technical parameters as explained in the specific section
- select EXHAUST SENSOR RESET with the "up" and "down" buttons, confirming the selection

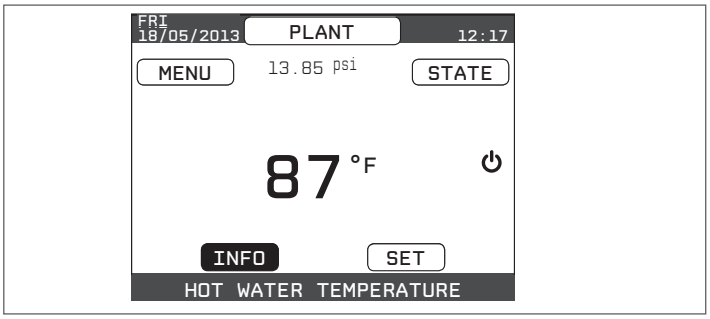


- select "ENTER" to confirm the rest of the flue gas probe meter or else CANCEL to cancel the operation

NOTE: the meter resetting procedure should be carried out after each in-depth cleaning of the primary exchanger or if the latter is replaced.

The total hours can be verified in the following way:

- select INFO on the initial screen of the front control and press "ENTER"



- with the "up" and "down" buttons select "EXHAUST SENSOR RESET" to display the value of the flue gas sensor.

Boiler faults list

ERROR CODE	DISPLAYED COLOUR	ERROR TYPE	DESCRIPTION OF ERROR TYPE
E010	yellow	final	flame lockout/ACF electronic fault
E011	yellow	temporary	parasitic flame
E020	red	final	water high limit/heat exchanger thermostat
E030	red	final	fan fault
E040	yellow	final	low water cutoff - check system water pressure
E041	yellow	temporary	low water cutoff - check system water pressure
E042	yellow	final	low water cutoff fault
E060	yellow	temporary	domestic hot water sensor fault (combi model)/indirect tank sensor fault (heating only model)
E070	yellow	temporary/ final final	fault supply sensor/ high limit supply sensor supply/return sensor differential error
E077	red	temporary	external error contact
E080	yellow	temporary/ final/ final	fault return line sensor/ return line sensor high limit/ outlet/return line sensor differential error
E090	red	temporary final	fault flue gas sensor/air pressure switch flue high limit sensor
E091	yellow	temporary	need for periodic maintenance
E099	red	final, not resettable	reset attempts exhausted, boiler blocked
	red	temporary	water pressure high check system
	red	temporary	boiler board communication lost
	red	temporary	BUS 485 communication lost

List of combustion faults

ERROR CODE	DISPLAYED COLOUR	ERROR MESSAGE	ERROR TYPE	DESCRIPTION OF ERROR TYPE
E021	red	iono error	temporary	These are temporary errors that if they occur several times in an hour they become a hard lockout; the error E097 is displayed and is followed by post-purging for 45 seconds at the fan's maximum speed. It is not possible to release the error before the end of the post-purging unless the boiler's power supply is switched off.
E022	red	iono error	temporary	
E023	red	iono error	temporary	
E024	red	iono error	temporary	
E067	red	iono error	temporary	
E088	red	iono error	temporary	
E097	red	iono error	final	
E085	red	ACC monitor error	temporary → final (see condition in the beside column)	These are temporary errors that if they occur several times in an hour they become definitive; the last error to occur is displayed and is followed by a post-purging of 5 minutes at the fan's maximum speed. It is not possible to reset the error before the end of the post-purging unless the boiler's power supply is switched off.
E094	red	ACC monitor error	temporary → final (see condition in the beside column)	
E095	red	ACC monitor error	temporary → final (see condition in the beside column)	
E058	red	supply voltage fault	temporary	These are temporary faults that restrict the ignition cycle.
E065	red	error modulation current	temporary	
E086	red	error flue obstruction	temporary	Temporary fault reported during the post ventilation. It is maintained a post ventilation of 5 min at maximum fan speed.

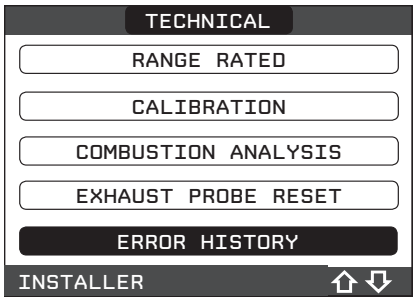
Final= boiler BLOCK, manual reset needed
Transitional= the boiler automatically restores the alarm without any external intervention.

11.23 Error history

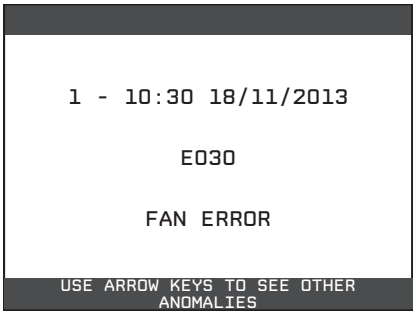
The error history function is automatically enabled only after the boiler has been powered up for at least 2 consecutive hours, during this period of time any errors that arise would not be saved in the "ERROR HISTORY".

The errors can be displayed in chronological order, from the most recent to the oldest, up to a maximum of 50 errors; to display the error history:

- access the technical parameters as explained in the section "11.6 Access to the technical parameters"
- select ERROR HISTORY with the "up" and "down" buttons, confirming the selection by pressing the "ENTER" button.



- scroll through the error history with the "up" and "down" buttons; for each error a sequential number is displayed, an error code and the date and time the error occurred.



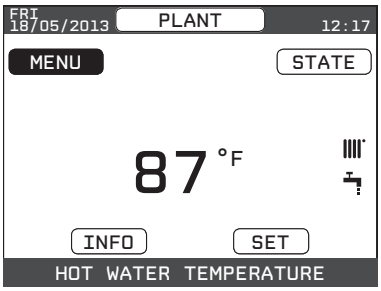
It is possible to return to the start page at any time by continually pressing the "BACK" button for at least two seconds at a time.

Note: once enabled, the error HISTORY function can no longer be disabled; there is no procedure for resetting the error history.

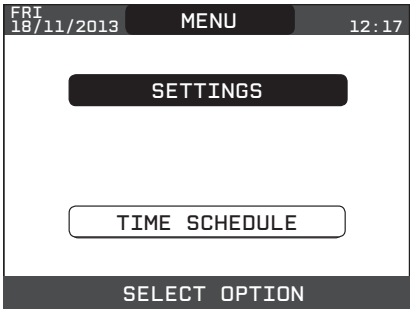
NOTICE: If an error repeats consecutively, it is saved only once.

11.24 Indirect tank configuration (heating only boiler)

- Access the technical parameters as explained in the section "11.6 Access to the technical parameters".
- Select HW TANK with the "up" and "down" buttons, confirming the selection by pressing the "ENTER" button.



- Choose between the following options: REMOVE HW TANK and HW TANK TYPE.

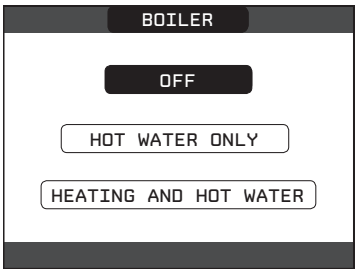


REMOVE HW TANK
This function is used to disable the operation of the indirect tank; disabling the indirect tank, its configuration menu is no longer accessible.

HW TANK TYPE
The parameter is used to set the indirect tank type.
Set 0 (default value) to select an indirect tank with an aquastat.
Set 1 to select an indirect tank with an indirect tank sensor.

11.25 Temporary switch-off

In the event of temporary absences (weekends, vacations, etc.) set the status of the boiler to OFF ⏻.



While the electrical supply and the fuel supply remains active, the boiler is protected by the following:

- heating anti-freeze: this function is activated if the temperature measured by the supply sensor drops below 41°F (5°C). A heat request is generated in this mode with the ignition of the burner at minimum output, which is maintained until the outlet water temperature reaches 95°F (35° C);
- domestic hot water anti-freeze: the function starts if the temperature measured by the DHW NTC sensor falls below 41°F (5°C). A heat request is generated in this mode with the ignition of the burner at minimum output, which is maintained until the outlet water temperature reaches 131°F (55° C).
- domestic hot water anti-freeze (only if indirect tank connected): the function starts if the temperature measured by the indirect tank sensor falls below 41°F (5°C). A heat request is generated in this mode with the ignition of the burner at minimum output, which is maintained until the outlet water temperature reaches 131°F (55° C).

⚠ The activation of the ANTI-FREEZE function is indicated by a scrolling message on the foot of the user interface display.

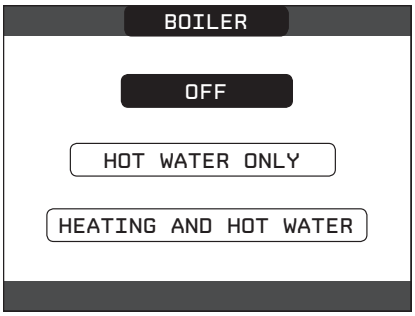
- circulator anti-seize: the circulator activates every 24 hours of stoppage for 30 seconds.

11.26 Switching off for long periods

If the Family PRO boiler is not used for a long period of time, the following operations must be carried out:

- set the status of the boiler to OFF ⏻
- set the system's main power switch to "OFF"
- close the fuel and water taps of the heating and domestic hot water system.

In this case, the anti-freeze and anti-seize systems are deactivated. Drain the heating and domestic water system if there is any risk of freezing.

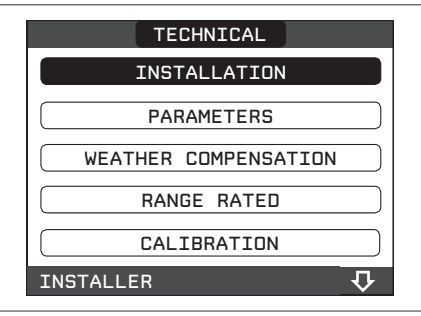


11.27 System reset

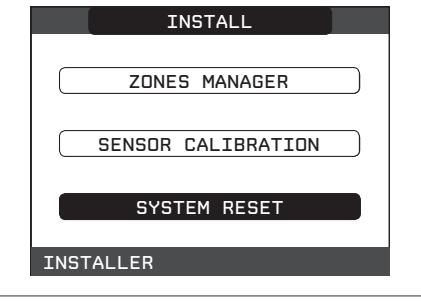
WARNING: This operation must be carried out only by professionally qualified personnel. Failure to comply may result in substantial property damage, severe personal injury or death.

Whenever necessary, it is possible to restore the factory settings by carrying out a SYSTEM RESET:

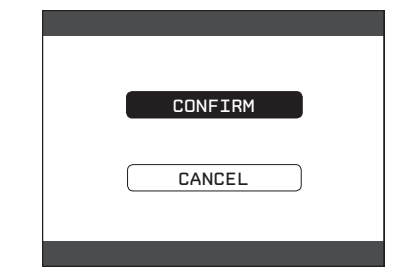
- access the technical parameters as explained in section "11.6 Access to the technical parameters"
- select INSTALLATION with the "up" and "down" buttons, confirming the selection by pressing the "ENTER" button



- select SYSTEM RESET with the "up" and "down" buttons, confirming the selection by pressing the "ENTER" button



- press "ENTER" button to confirm the system reset or CANCEL to cancel the operation.

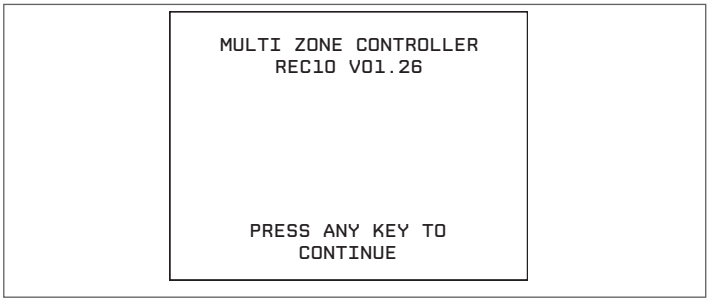


Note: after a reset it is necessary to carry out a new configuration of the system; for details about this procedure, see the following section.

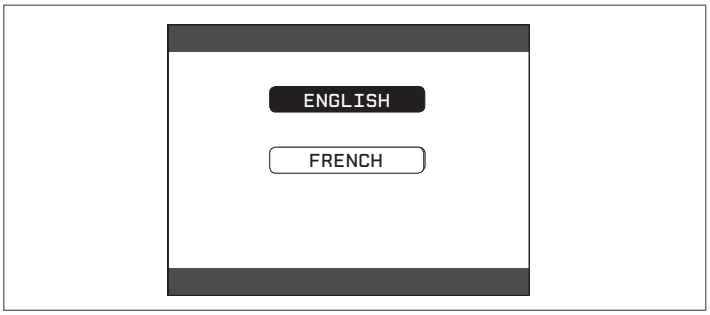
11.28 System configuration

WARNING: This operation must be carried out only by professionally qualified personnel. Failure to comply may result in substantial property damage, severe personal injury or death.

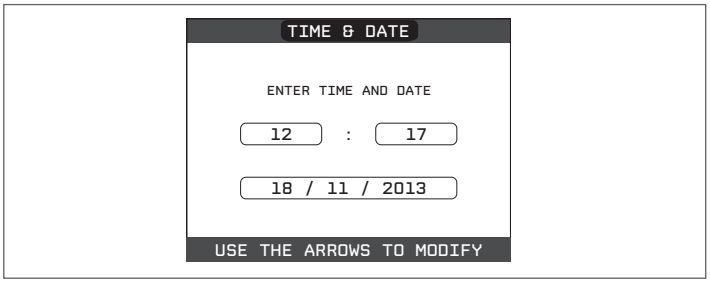
When restarting after the replacement of the user interface rather than after a "SYSTEM RESET", the front control displays an initial screen with the firmware version. Pressing "ENTER" a guided procedure is started for configuring the system; select the desired options with the "up" and "down" buttons, confirming the selections made with the "ENTER" button:



- LANGUAGE selection:
  ENGLISH
  FRENCH
- SPANISH



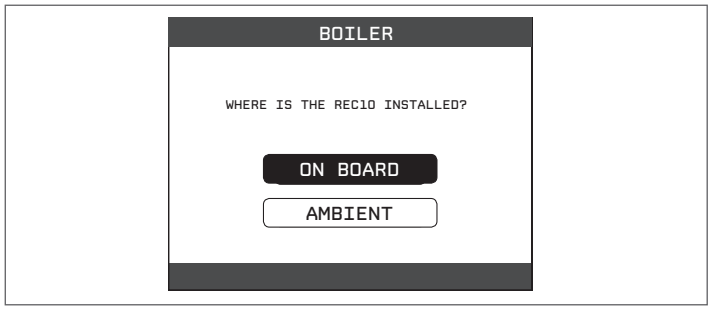
- setting TIME and DATE



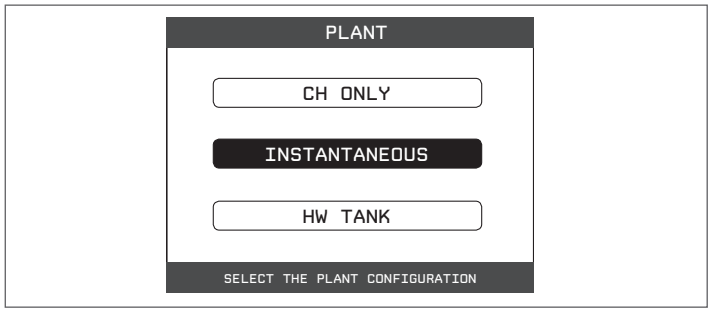
- setting the operating mode of the user interface:
  If this is the system user interface the MASTER option must be selected.

- configuration selection:
  FROM MAIN PCB (Main control board): to recover the current boiler configuration on user interface MASTER and finish the operation
  NEW: set a new system configuration. Reset all parameters to factory settings

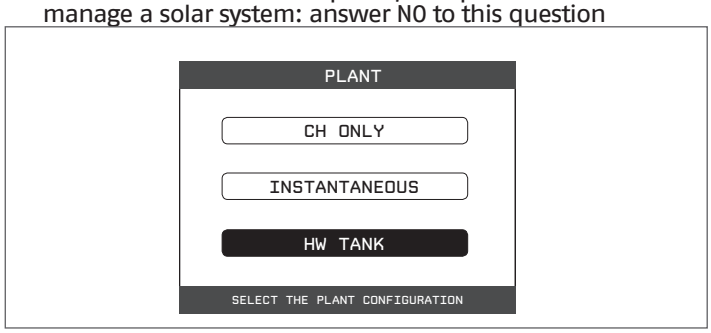
Whenever a "NEW" configuration is selected, proceed as follows:
- select user interface functionality:
  ON BOARD: if the user interface is used only as a system interface and not as a thermostat
  AMBIENT: if the user interface is used as a system interface and also a thermostat of the zone where it is installed



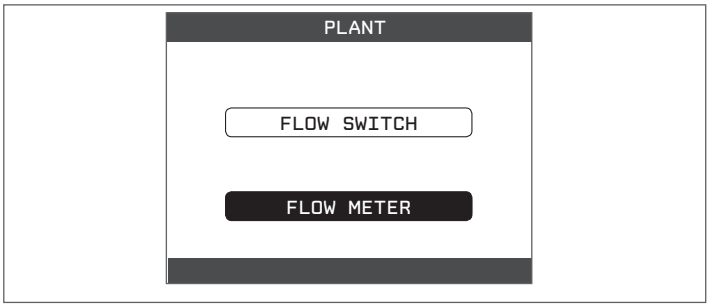
- select the type of boiler INSTANTANEOUS (if the boiler is the Family PRO KIS, combination boiler)



- For Family PRO IS select the type of boiler choosing between:
  - CH ONLY: when the boiler doesn't manage domestic hot water (case A)
  - HW TANK: when the boiler manages an indirect tank.
    NOTE: in this case you will be asked to specify the type of hot water request (AQUASTAT – case B; or INDIRECT TANK SENSOR – case C)
    If selected a HW tank with probe, is required if there is also to manage a solar system: answer NO to this question



- select the type of domestic hot water FLOW METER



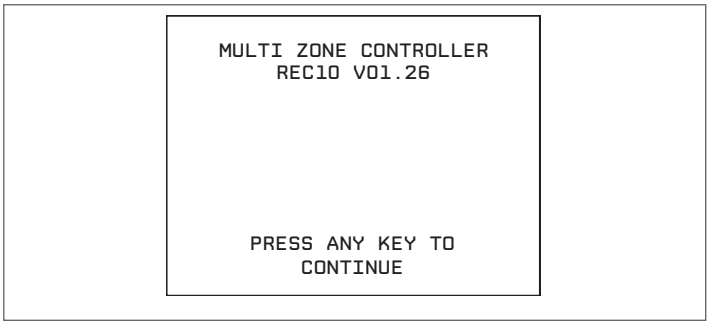
- Once the guided procedure has finished, the user interface will go to the initial screen.

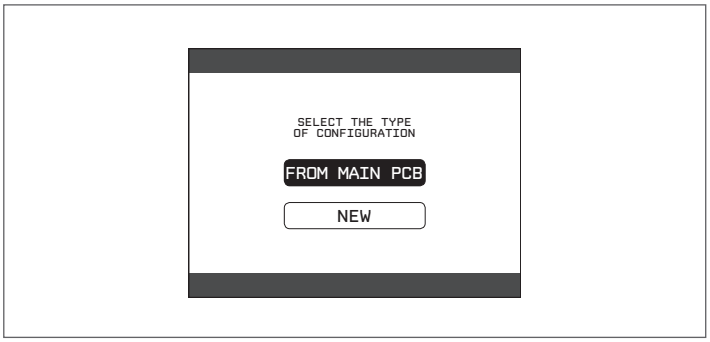
Continue with the configuration as follows:
- access the technical parameters as explained in the section "11.6 Access to the technical parameters", using the installer password "018" **WARNING**: The parameters accessed by using this parameter should only be adjusted by a qualified service technician. Failure to comply may result in substantial property damage, severe personal injury or death
- select PARAMETERS with the "up" and "down" buttons, confirming the selection by pressing the "ENTER" button

Then proceed with the reprogramming of the boiler, carrying out the operations described in the section"11.7 Programming the boiler". "It is possible to return to the start page at any time by continuing to press the "BACK" button, for at least 2 seconds."continuing to press the "BACK" button, repeatedly, for at least 2 seconds at a time.

11.29 Replacing the front control MASTER

The system's configuration needs to be carried out by a professionally qualified personnel.
When replacing the front control MASTER, at the subsequent restart it displays an initial screen with the firmware version.
Pressing "ENTER" starts a guided procedure for configuring the system, see section "11.28 System configuration". Follow the procedure and carry out the FROM MAIN PCB type of configuration.

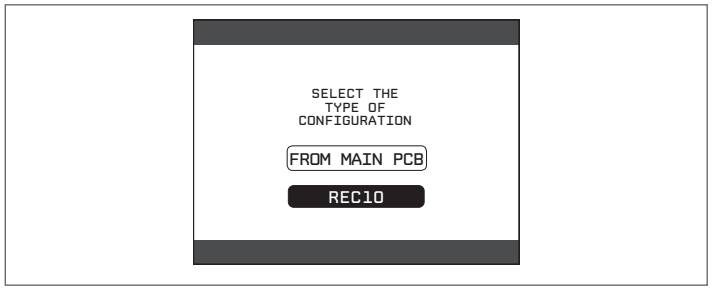




11.30 Replacing the PCB board

The system's configuration should be carried out by professionally qualified personnel. The system continually carries out a consistency control between the saved configuration data on the MAIN PCB electronic board and those saved in the user interface; therefore, when replacing the MAIN PCB electronic board, the system can detect an inconsistency between the data saved on the MAIN PCB and that in the user interface. In this case, the latter will ask the user which of the two configurations is to be considered valid; selecting to recuperate the configuration from the user interface itself it is possible to avoid reconfiguring the machine:

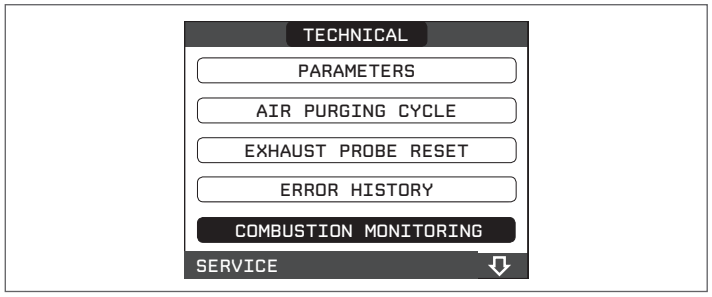
- select user interface with the "up" and "down" buttons, confirming the selection by pressing the "ENTER" button.



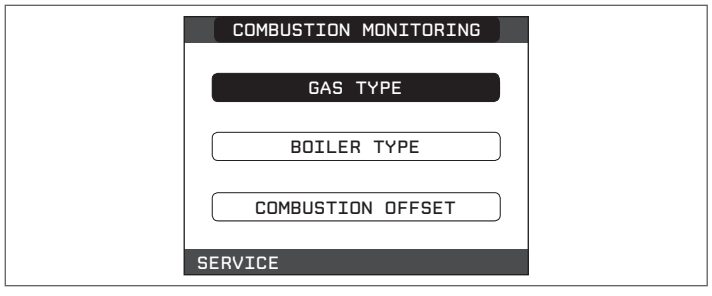
11.31 Parameters combustion monitoring

Although the parameters referring to the new combustion control system ACC (Active Combustion Control) are preset in the factory, the simultaneous replacement of both electronic boards (MAIN PCB and the REC 10, front control panel) could make it necessary to re-program these parameters.

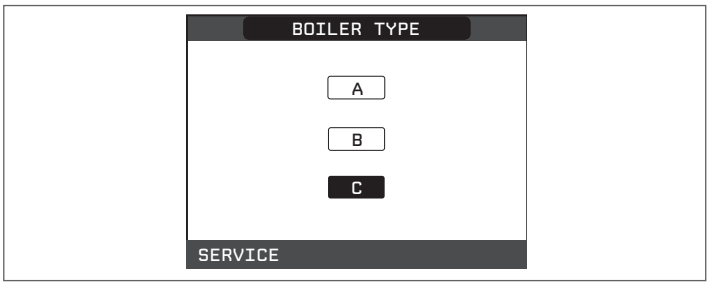
- Access the technical parameters as explained in section "11.6 Access to the technical parameters" setting the installer password "53" **WARNING**: The parameters accessed by using this parameter should only be adjusted by a qualified service technician. Failure to comply may result in substantial property damage, severe personal injury or death
- Select COMBUSTION MONITORING with the "up" and "down" buttons, confirming the selection by pressing the "ENTER" button



- Select GAS TYPE
- Set this parameter depending on the type of gas the boiler is using. The values for this parameter are NG = NATURAL GAS - LPG (Liquid Propane Gas = LPG

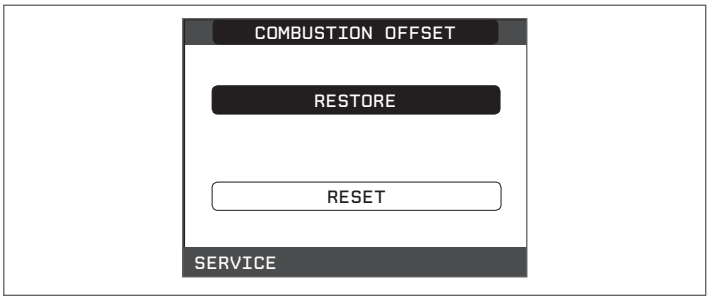


- Select BOILER TYPE
- Set this parameter depending on the type of boiler as shown in the table



	BOILER TYPE
Family PRO 42	C

Select COMBUSTION OFFSET.
It may be necessary to program this parameter in case of a maintenance on the PCB board rather than on the flame sensor on the burner, in a case where, after the operation, the combustion values did not fall within predetermined values.



12 PARAMETERS

MENU	DEFAULT VALUE FACTORY SET	MINIMUM VALUE	MAXIMUM VALUE	ACCES LEVEL NOTES	SET VALUE
SETTINGS				USER	
TIME & DATE				USER	
LANGUAGE		ENGLISH/FRENCH/SPANISH		USER	
BACKLIGHT	5 min	1 min	15 min	USER	
UNITS	METRIC	METRIC/IMPERIAL		USER (only if MAIN PCB)	
TIME SCHEDULE				USER	
MAIN				USER Visible only if parameter P0R = 1	
DHW				USER	
TECHNICAL				INSTALLER	
INSTALLATION				INSTALLER	
ZONES MANAGER				INSTALLER	Described on page 45
MODIFY ZONE	MAIN	MAIN		INSTALLER	Described on page 46
ACTUATION TYPE	ITRF05/MAIN PCB	ITRF05/MAIN PCB	BE16	INSTALLER	Not used
REQUEST TYPE	THERMOSTAT	THERMOSTAT / TEMPERAURE PROBE / REC10 MASTER / REC10 SLAVE		INSTALLER	The request type changes the input device used for the zone to one of the following options: Thermostat, Temperature probe, REC10 Master and REC10 Slave
ZONE TYPE	HIGH TEMP	HIGH TEMP	LOW TEMP	INSTALLER	Described on page 46
MIN CH SET	68°F (20°C) (AT) 68°F (20°C) (BT)	68°F (20°C)	MAX CH SET	INSTALLER	Described on page 46
MAX CH SET	180°F (82°C) (AT) 113°F (45°C) (BT)	MIN CH SET	180°F (82°C) (AT) 113°F (45°C) (BT)	INSTALLER	Described on page 46
CHANGE NAME				INSTALLER	Described on page 46
POR	0	0	1	INSTALLER	Described on page 46
ADD ZONE				INSTALLER	Not used
SENSOR CALIBRATION	32°F (0.0°C)	21°F (- 6.0°C)	43°F (6.0°C)	INSTALLER	Sensor calibration can be used as an anticipator to offset the zones temperature sensor by ± 11°F (6°C)
SYSTEM RESET				INSTALLER	Described on page 55

MENU	DEFAULT VALUE FACTORY SET	MINIMUM VALUE	MAXIMUM VALUE	ACCES LEVEL NOTES	SET VALUE
PARAMETERS				INSTALLER	
ANTI-CYCLE FUNCTION	3 min	0 min	20 min	INSTALLER	Described on page 44
HYST ON HIGH TEMP	41 °F (5°C)	36 °F (2°C)	50 °F (10°C)	SERVICE	Described on page 45
HYST OFF HIGH TEMP	41 °F (5°C)	36 °F (2°C)	50 °F (10°C)	SERVICE	Described on page 45
HYST ON LOW TEMP	37 °F (3°C)	36 °F (2°C)	50 °F (10°C)	SERVICE	Described on page 45
HYST OFF LOW TEMP	37 °F (3°C)	36 °F (2°C)	50 °F (10°C)	SERVICE	Described on page 45
SP INCR HIGH TEMP	32 °F (0°C)	32 °F (0°C)	50 °F (10°C)	SERVICE	Described on page 45
SP INCR LOW TEMP	32 °F (0°C)	32 °F (0°C)	43 °F (6°C)	SERVICE	Described on page 45
RESET CH TIMERS	FUNCTION NOT ACTIVE	FUNCTION NOT ACTIVE	FUNCTION ACTIVE	INSTALLER	Described on page 45
DHW THERMOSTAT	ABSOLUTE	RELATED	ABSOLUTE	INSTALLER Only in instantaneous configuration	Described on page 45
SLIDING OUTLET	DEACTIVATE FUNCTION	DEACTIVATE FUNCTION	ACTIVATE FUNCTION	INSTALLER	Described on page 45
CH DELAY POST-DHW	0	0	1	SERVICE	Described on page 45
CH DELAY TIME	6 sec	1 sec	255 sec	SERVICE IF CH DELAY POST-DHW= 1	Described on page 45
WATER TRANSDUCER	0	0	1	SERVICE	Described on page 45
AUTO WATER FILL ENABLE	0	0	1	SERVICE IF WATER TRANSDUCER= 1	Described on page 45
BEGIN SYSTEM FILLING	0,6	0,4	1	SERVICE Solo se AUTO WATER FILL ENABLE = 1	Described on page 45
PREHEATING	0	0	2	INSTALLER (only if managed by the PCB)	Described on page 44
MAX SETPOINT DHW	120.2°F (49°C)	120.2°F (49°C)	140°F (60°C)	INSTALLER	
MIN SETPOINT DHW	99.5°F (37.5°C)	99.5°F (37.5°C)	120.2 °F (49°C)	INSTALLER	
DHW DELAY	0 sec	0 sec	60 sec	SERVICE (Only in instantaneous configuration)	Described on page 45
DO_AUX1	0	0	2	INSTALLER	Described on page 44
WEATHER COMPENSATION		INSTALLER			Described on page pagina 47
CLIMATIC CURVES	MAIN	MAIN		INSTALLER	Described on page pagina 48
FIXED SET POINT	177°F (80.5 °C) (AT) 113°F (45 °C) (BT)	MIN CH SET	MAX CH SET	INSTALLER If EXT PROBE NOT connected	Fixed Set Point allows the maximum central heating setpoint to be set for the coldest time of the season

MENU	DEFAULT VALUE FACTORY SET	MINIMUM VALUE	MAXIMUM VALUE	ACCES LEVEL NOTES	SET VALUE
NIGHT COMP	FUNCTION NOT ACTIVE	FUNCTION NOT ACTIVE	FUNCTION ACTIVE	INSTALLER If EXT PROBE connected	Only with ON/OFF thermostat, not for REC10 or Ricloud. Described on page 48
CURVE SLOPE	2.0	1.0	3.0	INSTALLER If EXTERNAL PROBE connected, request type TA and zone high temperature type	Only for ON/OFF thermostat and HIGH temperature system
	0.4	0.2	0.8	INSTALLER If EXTERNAL PROBE connected, request type TA and zone low temperature type	Only for ON/OFF thermostat and LOW temperature system
BUILDING TYPE	5min	5min	20min	INSTALLER Only if EXT PROBE connected	Described on page 48
OUTDOOR REACTIVITY	20	0	256	INSTALLER Only if EXT PROBE connected	Described on page 48
RANGE RATED	MAX CH	MIN	MAX CH	INSTALLER	Not used
CALIBRATION				INSTALLER	The calibration parameter allows the output of the boiler to be adjusted by fan speed
MIN	See boiler instruction			INSTALLER	Min adjusts the minumum output of the boiler by fan speed
MAX	See boiler instruction			INSTALLER	Max adjusts the DHW maximum output of the boiler by fan speed
MAX CH	See boiler instruction			INSTALLER	Max CH adjusts the CH maximum output of the boiler by fan speed
COMBUSTION ANALYSIS				INSTALLER	
ACTIVATE FUNCTION				INSTALLER	Described on page 52
DEACTIVATE FUNCTION				INSTALLER	Described on page 52
MAX SPEED	MAX			INSTALLER	
RANGE RATED SPEED	RANGE RATED			INSTALLER	
MIN SPEED	MIN			INSTALLER	

MENU	DEFAULT VALUE FACTORY SET	MINIMUM VALUE	MAXIMUM VALUE	ACCES LEVEL NOTES	SET VALUE
CHANGE FAN SPEED	CURRENT SPEED	MIN	MAX	INSTALLER	Not used
ANTI-LEGIO	WEEKLY FUNCTION	FUNCTION NOT ACTIVE / DAILY FUNCTION / WEEKLY FUNCTION		INSTALLER	Described on page 46
AIR PURGING CYCLE				INSTALLER	
FUNCTION DISABLED				SERVICE	Described on page 49
FUNCTION ENABLED				SERVICE	Described on page 49
STOP FUNCTION				INSTALLER Only if AIR PURGING CYCLE in progress	
EXHAUST PROBE RESET				INSTALLER	Exhaust Probe reset allows you to reset the Exhaust probe hours counter found in the info mode
ADD WATER TANK				INSTALLER	This setting allows the addition of an indirect water tank for installations with the Family PRO 42 IS
WATER TANK				INSTALLER	
REMOVE WATER TANK				INSTALLER	This setting allows an indirect water tank to be removed from the installation (with Family PRO 42 IS only)
ADD SOLAR PLANT				INSTALLER	Not used
ERROR HISTORY				INSTALLER	Described on page 53
SCREED HEATING	DEACTIVATE FUNCTION	DEACTIVATE FUNCTION	ACTIVATE FUNCTION	INSTALLER	Not used
DEACTIVATE FUNCTION				INSTALLER	Not used
ACTIVATE FUNCTION				INSTALLER	Not used
COMBUSTION MONITORING					
GAS TYPE	NG	NG/LPG		SERVICE	Described on page 59
BOILER TYPE	C	A/B/C		SERVICE	Described on page 59
COMBUSTION OFFSET	RESTORE	RESTORE	RESET	SERVICE	Described on page 59
INFO SYSTEM					

13 SERVICING INSTRUCTIONS

13.1 General

To ensure the continued safe and efficient operation of the boiler, it is recommended that it is checked and serviced at regular intervals. Maintenance is mandatory once a year.
If the application works in heavy duty conditions it may require a higher frequency of maintenance than once a year (*), in either case refer to the yearly check list (paragraph 13.2.1).
(*) Higher frequency of maintenance is necessary under conditions below:
- if a problem is identified during a yearly check
- Efficiency reduction, a fault, malfunction or breakage.
- Gas with high sulphur rates, still within the acceptable range but close to the limits declared: a maximum annual peak over a short period of time of 150 mg/m3 and an annual average of 30 mg/m3.
- Water Hardness, pH and Chlorine concentration still inside the acceptable range but close the limits declared in manufacturer's instructions
- Air for combustion drawn from an area with dust, debris or airborne contaminants
- If work or maintenance is performed on structures located near the flue and/or air ducts and their accessories
- Frequent ON-OFF cycles
- Boiler oversized or undersized compared to the actual needs of the building, that leads to frequent ON-OFF cycles or boiler operation much longer than the usual annual average.

It is essential that any worn or failed component be replaced only with genuine RIELLO spare parts.

Use of non-genuine spare parts will void your warranty and may pose a potential safety hazard.

The following instructions apply to the appliance and its controls, however, it is important to pay attention also to the maintenance of the central heating and the domestic hot water systems and all system components.

WARNING: Before commencing any maintenance operations, make sure the boiler is disconnected from the power supply.

WARNING: To avoid the potential of a severe burn, DO NOT REST HANDS ON OR GRASP PIPES. Use flashlight; heating piping and hot water outlet piping will heat up quickly.

WARNING: After servicing, reset the original operating parameters of the boiler if they were changed.

13.2 Maintenance

WARNING: In the boiler there are gas, flue and electrical hazards so maintenance and REGULAR SERVICE must be performed by a qualified service agency. Failure to do so may result in substantial property damage, severe injury or death.

WARNING: Regular service and maintenance are mandatory to ensure safety for the users and maximum operating efficiency for the life of the appliance. Furthermore, it allows for the reduction of energy consumption and emissions; keeping the product reliable over time.

The frequency of servicing will depend upon the particular installation conditions, but, in general, at least once per year must be done.
The State Boiler Laws require that any service work is carried out by a competent person such as a qualified technician, an approved service agent, or other suitably qualified personnel.

Tools for maintenance operations:
- A dynamometer device
- A combustion analyzer
- A vacuum cleaner
- White vinegar in a spray bottle
- A nylon hand brush
- A nylon mechanic brush with a portative drill
- Water
- A gas manometer

13.3 Maintenance program

To ensure the continued safe and efficient operation of the boiler, it is recommended that it is checked and serviced at regular intervals. Maintenance is mandatory according to the below schematic program, refer to the table and to the relevant explanation that the table refers to.

- The maintenance must be done every year or each time that alarm E091 appears on the boiler display (refer to paragraph "Lights and Faults" for an understanding of the conditions related to the E091)
- The first maintenance is intended within 365 days from first ignition and the following maintenances within 365 days from the previous one

WARNING: once the maintenance operation has been completed, reset the total hour meter to zero (0), refer to E091 alarm, as indicated in paragraph "Lights and Faults"

	Yearly maintenance program	Door gasket maintenance procedure	Flame sensor electrode maintenance procedure	Gas valve
Year 1	X			
Year 2	X	X		
Year 3	X			
Year 4	X	X		
Year 5	X		X	
Year 6	X	X		
Year 7	X			
Year 8	X	X		
Year 9	X			
Year 10	X	X	X	X

WARNING: Failure to properly reassemble and reseal the air/exhaust vent system may result in substantial property damage, severe injury or death. To properly reassemble and reseal the air-vent system, follow the vent manufacturer's instructions in their entirety.

WARNING: After carrying out the maintenance operations a combustion analysis needs to be carried out to make sure the boiler is operating correctly.

WARNING: After the replacement of the electronic board or the maintenance of the flame sensor or the burner, the combustion analysis, it may be necessary to proceed with combustion analysis procedure as described in section "11.21 Combustion analysis".

Note: When the flame sensor is replaced, slight variations in the combustion parameters can occur. This data will return to the nominal values after a few hours of operation.

Yearly maintenance program

1	Check that area is free from combustible materials, gasoline and other flammable vapors and liquids.
2	Visually check the top of the vent for soot. Call service person to clean. Some sediment at bottom of vent is normal.
3	Clean the screens in the vent terminal
4	Visually inspect all flue product carrying areas of the boiler including the venting system and main burner for proper functioning, deterioration or leakage.

5	Verify that the vent is not obstructed. Check for and remove any obstruction to the flow of combustion or ventilation air to the heater.
6	Venting must be pitched towards the boiler to allow condensate to drain
7	Ensure that condensate drains are inspected and ensure that condensate is being directed to appropriate condensate management system or drain, as required by local codes.
8	Check operation of safety devices.
9	Check fan and fan motor.
10	Check if there is any flue leakage from the heat exchanger flue outlet and exhaust vent connection. In case of leak detection replace the related gaskets (1).
11	Remove the burner door (8), check that combustion chamber is free of deposits and proceed to clean.
12	Check the burner door insulation panel (6), gasket (4) and high temperature glass braided rope (5) for deterioration, and if they are worn, replace them.
13	Check the combustion chamber insulation panel (3)and, if it is worn, replace it.
14	Check the condition of the burner (7), ensure that it is not loose; clean if necessary.
15	Verify spark and check the flame ignition electrode (12) for deterioration and, if it is worn, replace it. If the electrode is removed from its seat, its gasket (11) must be replaced.
16	Check the flame sensor electrode (10) for deterioration and, at the slightest sign of deterioration, replace it. If the sensor is removed from its seat, its gasket (9) must be replaced.
17	Check the boiler condensate trap, remove and clean if needed – re-prime trap.
18	Check that the condensate check valve is working correctly.
19	Cleaning of the filters is required.
20	Check for piping leaks around pumps, relief valves and other fittings. Repair, if found. DO NOT use petroleum-based stopleak.
21	Inspection of the low water cutoffs in the boiler and system. Also it needs to specify that float type low water cutoffs must be periodically flushed.
22	Check the correct working of the relief valve. **Refer to manufacturer's instructions** on the valve.
23	Visually inspect the burner flame and ignition sequence to ensure proper operation.

Door gasket maintenance procedure

1	Replace the burner door gasket (4).

Flame sensor electrode maintenance procedure

1	Replace the flame sensor electrode (10) and its gasket (9)

Gas valve

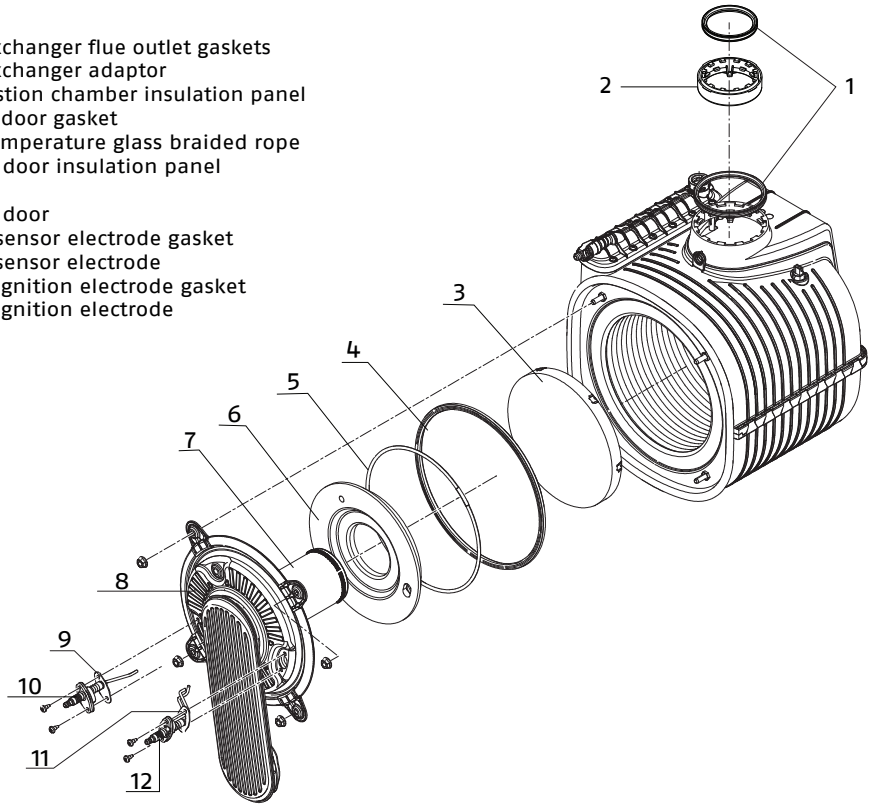
1	Replace gas valve

⚠ **WARNING:** Do not clean the appliance or its parts with flammable substances (e.g. petrol, alcohol, etc.).

NOTICE: Do not clean outer casing panels, painted parts and plastic parts with paint thinner, scourers or abrasive cleaners; use only a clean damp cloth.

CAUTION: Outer casing panels cleaning must be carried out only with soapy water.

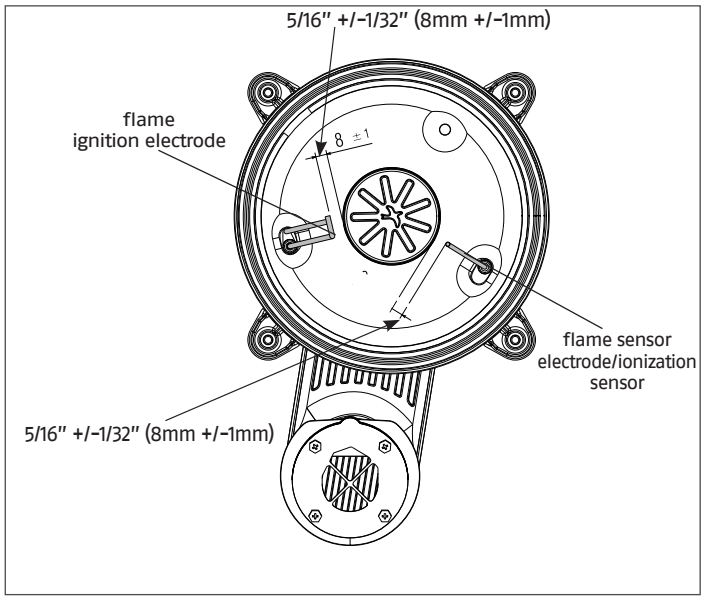
1 Heat exchanger flue outlet gaskets
2 Heat exchanger adaptor
3 Combustion chamber insulation panel
4 Burner door gasket
5 High temperature glass braided rope
6 Burner door insulation panel
7 Burner
8 Burner door
9 Flame sensor electrode gasket
10 Flame sensor electrode
11 Flame ignition electrode gasket
12 Flame ignition electrode



13.4 Maintenance of the combustion control system

13.4.1 Flame sensor

The flame/ionization sensor has an important function in the boiler ignition phase and in the maintenance of proper combustion; If replaced ensure that it is correctly positioned and strictly observe the reference shown in the figure below.



WARNING: do not clean the electrode with sandpaper.

MANDATORY: in order to prevent potential malfunctions, during annual maintenance, check the flame sensor for deterioration and, at the slightest sign of deterioration, replace it.
R**egardless of deterioration, replace it as indicated in the paragraph "13.3 Maintenance program".**
The geometry of the wire, the absence of alumina deposit, as well as the quality of the insulation and of the gaskets must be checked.

- Remove the electrode by unscrewing the two screws.
- Clean the gasket supporting surface.
- Reassemble the electrode by using a new gasket.

CAUTION: take care not to damage the burner door insulation.

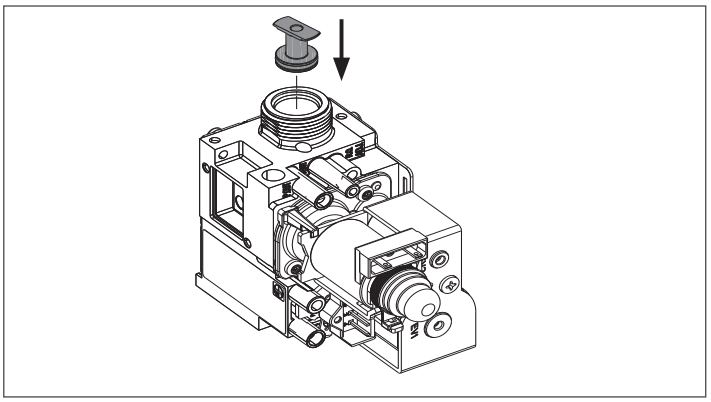
- Fix the electrode by screwing its screws with a torque wrench at 2.5Nm.
- Check the position of the electrode against the burner, as well as the distance of the flame sensor wires (refer to the picture).
- Adjust the electrode gap if necessary.

13.4.2 Gas valve

The gas valve is a safety and adjustment device which oversees the correct operation of the product.

WARNING: in order to maintain the technical characteristics of the device and full efficiency, it is recommended to **replace it every 10 years**.

When replacing the gas valve, ensure the injector located at the top of the gas valve being replaced is removed and correctly inserted into the new gas valve.
Check that the O-ring on the injector is not worn or failed and, if necessary, replace the injector.
Failure to do so may result in substantial property damage, severe personal injury or death.



13.4.3 Burner

Check the condition of the burner, carefully clean it with a soft brush if necessary. Do not use a brush with metallic bristles as this may damage it.
If there is dirt remaining inside the burner, blow it out with compressed air.

13.4.4 Burner door

MANDATORY: check the insulation panel and, if it is worn or condensate water has risen into the heat exchanger, it must be replaced.
Material characteristics do not require individual protection devices but, for safety, we recommend the use of a protective mask, gloves and glasses.

WARNING: the insulation panel is maintained by silicone glue.

- Remove the electrodes.
- Remove the insulation by sliding under its periphery a thin tool to loosen and remove it.
- Remove and clean the residues of the insulation and silicone glue.
- Put two points of silicone temperature-resistant glue (Loctite 5366 or Ottoseal S17) on the plate of the door.
- Engage the insulation and place it in contact with the two points of silicone glue.
- Make sure that the burner is in proper condition, remove any possible insulation residue on the burner blowing them out with compressed air.
- **MANDATORY:** replace the electrodes by using new gaskets.
- **MANDATORY:** check the burner door gasket and, if it is worn, it must be replaced. **Regardless of deterioration, replace it as indicated in the paragraph "13.3 Maintenance program".**
- **MANDATORY:** check the high temperature glass braided rope and, if it is worn, it must be replaced. The high temp braided rope is maintained by silicone glue.
- Remove the braided rope by sliding a thin tool under it to loosen and remove it.

CAUTION: take care not to damage the burner door insulation.

- Remove and clean the residues of the braids and silicone glue.
- Put a thin string of silicone temperature resistant glue (Loctite 5366, Ottoseal S17 or equivalent) in the seal housing.
- Engage the high temperature braided rope and place it in contact of the glue and press the braids.
- **MANDATORY:** check the flame ignition electrode deterioration and, if it is worn, replace it.
- The geometry of the wire, the absence of alumina deposit, as well as the quality of the insulation and of the gaskets must be checked.
- Remove the electrode by unscrewing the two screws.
- Clean the gasket supporting surface.
- Reassemble the electrode by using a new gasket.

CAUTION: Take care not to damage the burner door insulation.

- Fix the electrode by screwing its screws with a torque wrench

at 2.5Nm.
- Check the position of the electrode against the burner, as well as the distance of the ignition electrode wires (refer to the picture).
- Adjust the electrode gap if necessary.

Reassemble the burner door set on the heat exchanger respecting a torque wrench of the four nuts at 5Nm.

13.4.5 Heat exchanger

MANDATORY: Check that combustion chamber is free of deposits and, proceed to clean.

⚠ **WARNING:** before cleaning remove the siphon connection pipe from the condensate drain connection of the exchanger and connect a temporary collection pipe to it.

- Vacuum the combustion residue.
- Clean with a nylon brush.

⚠ **WARNING:** use a nylon brush only. DO NOT use a metallic brush, which can damage the heat exchanger.

- Vacuum the remaining residue.
- Rinse with water.

⚠ **WARNING:** DO NOT rinse the insulation panel.

NOTICE: in case of serious dirt build-up rinsing can be repeated several times, spray white vinegar and wait about 3 to 5 minutes, clean with a mechanical nylon brush and rinse with water.

⚠ **WARNING:** DO NOT spray and rinse the insulation panel.

- **MANDATORY:** check the insulation panel and, if it is worn, it must be replaced

⚠ **WARNING:** the materials use in the heat exchanger do not require individual protection devices but, for safety, we recommend the use of a protective mask, gloves and glasses.

⚠ **WARNING:** during operation, protect the lower part of the internal coils of the heat exchanger to avoid that dust and parts of the insulation panel fall off within them.

To replace the insulation
- Use a blade to cut the insulation panel approximately 2 1/2" (60 mm) from the circumference.
- Lift and remove the 2 panel pieces from the seat.

NOTICE: The insulation panel is fixed by a central clip and six radial clips; if during removal the clips detach, remove them from the combustion chamber.

- Vacuum any material residue present on the exchanger coils and panel support.
- Position the new insulation panel close its seat and insert it completely by pressing on the central part.

- **MANDATORY:** Check the flue outlet gasket and, if it is worn, it must be replaced.
- Reassemble the burner door set on the heat exchanger respecting a tightening torque of the four nuts at 5Nm.

⚠ **WARNING:** Ensure the burner door is sealed properly; preventing flue gases from escaping. Failure to do so may result in substantial property damage, severe injury or death.

RIELLO

Family PRO 42 KIS-IS

Annual Maintenance Checklist

Owner Information:

Name: _____ **ph:** _____

Street: _____ **Email:** _____

City: _____ **StateProv:** _____ **Zip / Postal Code:** _____

✓**Please, providing data as noted.**

Installer Information:

Installer Name:

Company Name:

Company Address:

Phone Number:

Email Address:

Distributor Name:

Unit Purchase Date:

Unit Model:

Unit Serial Number:

Installer Signature:

Unit Commissioning:

This document is intended as a guideline only. The Riello Installation & Operation Manual For Contractors shall be read in it's entirety and adhered to when performing an annual maintenance this appliance.

Yearly maintenance program

	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10
Maintenance date	---/---/---	---/---/---	---/---/---	---/---/---	---/---/---	---/---/---	---/---/---	---/---/---	---/---/---	---/---/---
Disconnect power supply and protect the PC board to ensure it cannot get wet during service	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
Using a digital manometer, check incoming gas pressure at the gas regulator	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
Using a digital manometer, check pressure at bottom of gas valve	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
Check gas line size & length, ensuring it is adequately sized	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
Isolate & drain the boiler, check the expansion tank pressure is correct for the system	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
Check that area is free from combustible materials, gasoline, and other flammable vapors and liquids	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
Check that the Pressure Relief Valve is properly oriented in a vertical position beneath the boiler	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
Check the correct working of the relief valve. Refer to manufacturer's instructions on valve	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
Check the water domestic inlet screen, clean if necessary (KIS model only)	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
Check the water inlet filter screen in the inlet manifold, clean if necessary	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
Check the Central Heating return filter screen, clean if necessary	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
Check venting type, length, installation, condition & screens	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
Visually check top of vent for soot. Call service person to clean. Some sediment at bottom of vent is normal	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
Clean the screens in the vent terminal	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
Visually inspect all flue product carrying areas of the boiler including the venting system and main burner for proper functioning, deterioration or leakage	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
Verify that the vent is not obstructed. Check for and remove any obstruction to the flow of combustion or ventilation air to heater	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
Venting must be pitched towards the boiler to allow condensate to drain	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
Ensure that condensate drains are inspected and ensure that condensate is being directed to appropriate condensate management system or drain, as required by local codes	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
Check operation of safety devices. Refer to manufacturer's instructions	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
Check fan and fan motor	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
Check if there is any flue leakage from the heat exchanger flue outlet and adaptors junctions. In case of leakage detection replace the related gaskets (1).	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
Remove the burner door (8), check that combustion chamber is free of deposits and proceed to clean.	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
Check the burner door insulation panel (6), gasket (4) and high temperature glass braided rope (5) for deterioration, and if they are worn, replace them.	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐

Yearly maintenance program (.... continue)

	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10
Maintenance date	/ /	/ /	/ /	/ /	/ /	/ /	/ /	/ /	/ /	/ /
Check the combustion chamber insulation panel (3)and, if it is worn, replace it.	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
Check the condition of the burner (7), ensure that it is not loose; clean if necessary.	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
Verify spark and check the flame ignition electrode (12) for deterioration and, if it is worn, replace it. If the electrode is removed from its seat, its gasket (11)must be replaced.	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
Check the flame sensor electrode (10) for deterioration and, at the slightest sign of deterioration, replace it. If the sensor is removed from its seat, its gasket (9) must be replaced.	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
Check the boiler condensate trap, remove and clean if needed – re-prime trap	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
Check the correct working of the condensate check valve dispositive	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
Refill the boiler and purge all air from the system	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
Check for piping leaks around pumps, relief valves and other fittings. Repair, if found. DO NOT use petroleum-based stopleak	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
Inspection of the low water cutoff in the boiler and system. Also float type low water cutoffs must be periodically flushed, if used in the system.	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
Power boiler back on	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
Verify the polarity and ground of the power supply (L-N=120v, L-G=0v, N-G=0v)	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
Check incoming power to spark generator - minimum 120VAC	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
Verify the unit is set for the proper gas by accessing the "Gas Type" parameter on the boilers front screen	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
Visually inspect the burner flame and ignition sequence to ensure proper operation	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
Perform a combustion check per section 11.21 - Combustion Analysis in the Installation & Operation Instructions For Contractors using a combustion analyzer. Ensure the CO2% and CO ppm are within the acceptable limits given in the IOM and by local codes.	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
Ensure the CH and DHW temperature setpoints are set correctly	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐

Door gasket maintenance procedure										
	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10
Maintenance date	/ /	/ /	/ /	/ /	/ /	/ /	/ /	/ /	/ /	/ /
Replace the burner door gasket (4).		☐		☐		☐		☐		☐

Flame sensor electrode maintenance procedure

	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10
Maintenance date	/ /	/ /	/ /	/ /	/ /	/ /	/ /	/ /	/ /	/ /
Replace the flame sensor electrode (10) and its gasket (9)					☐					☐

Gas valve maintenance procedure

	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10
Maintenance date	/ /	/ /	/ /	/ /	/ /	/ /	/ /	/ /	/ /	/ /
Gas valve										☐

⚠ **DANGER:** All seals, gaskets, O-rings and washers that are disturbed during maintenance must be replaced. If any portion of venting system is disturbed, it must be re-installed in accordance to the vent manufacturer's instructions, the Riello Installation & Operation Instructions For Contractors and any applicable provisions of local building codes as well as the National Fuel Gas Code ANSI Z223.1/NFPA 54 and/or CAN/CSA B149.1, Natural Gas and Propane Installation Code. Failure to do so may results in substantial property damage, severe injury or death.

⚠ **WARNING**: This document is intended as a guideline only, the Riello **Family PRO 42 KIS-IS** US/CAN Installation & Operations Instructions For Contractors must be read and followed in its entirety. Failure to do so may results in substantial property damage, severe personal injury or death.

14 WARRANTY

LIMITED WARRANTY – TERMS AND CONDITIONS

GENERAL NOTE

This limited warranty is provided by Riello Canada Inc. ("Riello") the following Riello products sold and installed in the United States and Canada:
Family PRO 42 KIS
Family PRO 42 IS
Residence PRO 32 KIS
Residence PRO 32 IS
Condexa PRO 75 P
Condexa PRO NA 117 P

This warranty is provided to the original purchaser as long as the boiler remains installed at its original place of installation. This warranty is provided in respect of the boiler heat exchanger and its insulation, casing and approved accessories designated by Riello.
The warranty is conditional upon:
• The proper installation of the boiler by a qualified HVAC mechanical contractor or installer trained and certified in accordance with applicable laws and regulations of the jurisdiction in which the boiler is installed ("the Qualified Contractor"); and
• Proper operation and maintenance of the boiler in accordance with the boiler operation manual and service bulletins as issued by Riello from time to time and the mandatory maintenance schedule provided in the Riello Installation & Operation Manual For Contractors.
Installation or maintenance of the boiler by a person other than a Qualified Contractor shall void this warranty.
Any component of a boiler returned to Riello in connection with this warranty agreement remains the property of Riello.

WARRANTY TERMS & CONDITIONS PARTS WARRANTY

Riello warrants that the boilers and approved accessories designated by Riello shall be free of defects in manufacture, material and workmanship for 18 months from shipment or TWELVE (12) MONTHS from start-up (whichever comes first).
Furthermore, Riello will warrant parts for boilers mentioned in this certificate for an additional FOUR (4) YEARS bringing the total parts warranty to FIVE (5) YEARS provided the boiler is registered on the riello website, www.riello.com, within NINETY (90) DAYS.
The obligation of Riello under this warranty shall be to repair or replace those parts determined by Riello to be defective in material or workmanship.
This warranty is only in respect of boilers for which payment has been made in full.

TEN (10) YEAR WARRANTY OF PRIMARY and SECONDARY PLATE HEAT EXCHANGERS

Riello warrants that the heat exchanger(s) of the boiler shall be free from leakage, thermal shock and condensate corrosion, and shall be free from defects in material and workmanship for TEN (10) YEARS from the date of manufacture, which date is found within the boilers serial number on the data plate so long as the boiler has been registered at www.riello.com.
The obligation of Riello under this ten year heat exchanger warranty shall be to repair or replace those parts of the heat exchanger
determined by Riello to be defective in material and workmanship in the heat exchanger as determined by Riello.

WARRANTY EXCLUSION

- If the boiler is not installed by a qualified, Riello-trained heating contractor
- Any costs for labor for the examination, removal or reinstallation of allegedly defective Boiler parts, and transportation thereof to and from Riello facilities in North America or Italy, or as determined by Riello.
- Failures or malfunctions resulting from: Failure to properly install, operate or maintain the Boilers in accordance with our published Installation, Operation and Maintenance Manual or Users Information Manual provided with the product.
- Failure to install a low loss header or provide proper hydronic separation where required.
- Damage to the Boilers or any of its original or authorized replacement parts or other accessories designated by Riello as standard equipment caused by excessive temperatures or pressures, unsuitable fuels, fuel impurities, improper fuel mixture, fuel or gas explosion, electrical, chemical or electrochemical reaction, water impurities, unsuitable water conditions which may have caused unusual deposits within the water side and heat exchanger combustion area of the pressure vessel within the Boiler, water treatment chemicals, or water conditioning systems, electrical failures, insurrection, riots, war, or acts of God, combustion air contaminated externally, air impurities, sulfur or sulphuric action or reaction, dust particles, corrosive vapors, oxygen corrosion, and situating the Boiler in an unsuitable location or continuing use of the Boiler after onset of a malfunction or discovery of a defect.
- Deformation occurs due to freezing; improper storage or handling.
- If the appliance is not installed in accordance with all applicable local and national codes and regulations.
- If the boiler is not installed in a clean, dry area.
- Any alterations are made without written authorization by the manufacturer.

WARRANTY DAMAGES AND LIMITATIONS

The obligations of Riello here under shall also be subject to the following terms and conditions;
• Any repaired or replaced component of a Boiler and approved accessories will be warranted only for the remaining unexpired term of the warranty applicable to the original Boiler.
• Negotiations, intermediate acts, discussions, disagreements or denials concerning alleged defects or deficiencies shall not extend any warranty herein and shall not waive or be deemed to waive any requirement for notification of defect or deficiency.
• Additional costs arising out of the performance of this warranty including but not limited to transport, labor, installation, assembly, testing and putting a Boiler back into operational use are the responsibility of the owner.
• RIELLO IS NOT RESPONSIBLE FOR ANY INDIRECT, INCIDENTAL OR CONSEQUENTIAL DAMAGES CAUSED BY A Boiler.
• Riello does not extend this warranty to any Boiler or related parts or products that are not supplied and soldirectly by Riello.

ASSIGNABILITY

This warranty is not assignable.

WARRANTY NOTIFICATION

- All warranty enquiries must notify Riello in writing, within FOURTEEN (14) DAYS of the discovery of the alleged defect or deficiency, and provide the following data:
  a. Serial number of the affected Boiler, list of the alleged
     parts with a short description of the failure and of the conditions under which the failure happened.
  b. Information about the hydraulic system, flow rate, length of the venting system, installation scheme and total heating power of the system.

c. Identify of the Qualified installer who performed the Boiler start-up.

Written permission is required for the return of any parts or equipment and any such return must be made on the basis of transportation charges prepaid. Shipments may be refused unless prior written permission is obtained and goods returned prepaid.

Written permission must be obtained through a local Riello distributor and must be obtained by your qualified service technician.

Contact your installing/service contractor to initiate a claim. Do not contact Riello as they cannot provide technical assistance unless you are a qualified service technician.

Parts under warranty will be replaced or credited only. Credits will only be issued to authorized wholesalers.

Maintain a copy of all service records and combustion tests as these may be required for any warranty claim.

APPLICABLE LAW, JURISDICTION AND DISPUTE RESOLUTION

All disputes, claims or demands arising from or relating to this warranty shall be determined in accordance with the laws within the Province of Ontario, Canada and the Courts of Ontario shall have exclusive jurisdiction to adjudicate all such disputes, claims or demands.

If you have any questions about the coverage provided by this warranty, contact Riello at one of the addresses set out below

Riello Burners North America - Canada
2165 Meadowpine Blvd.
Mississauga, ON L5N 6H6
Riello Burners North America - America
35 Pond Park Rd.
Hingham, MA 02043

⚠ Ensure that the customer receives the Warranty Documentation included with the installation manual.

⚠ Leave the manual with the customer so they know when to call for annual maintenance and inspection.

15 COMMONWEALTH OF MASSACHUSETTS

15.1 Important instructions for the commonwealth of Massachusetts

The Commonwealth of Massachusetts requires compliance with regulation 248 CMR 4.00 and 5.00 for installation of through – the – wall vented gas appliances as follows:

For all side wall horizontally vented gas fueled equipment installed in every dwelling, building or structure used in whole or in part for residential purposes, including those owned or operated by the Commonwealth and where the side wall exhaust vent termination is less than seven (7) feet above finished grade in the area of the venting, including but not limited to decks and porches, the following requirements shall be satisfied:

1. INSTALLATION OF CARBON MONOXIDE DETECTORS
At the time of installation of the side wall horizontal vented gas fueled equipment, the installing plumber or gasfitter shall observe that a hard wired carbon monoxide detector with an alarm and battery back-up is installed on the floor level where the gas equipment is to be installed. In addition, the installing plumber or gasfitter shall observe that a battery operated or hard wired carbon monoxide detector with an alarm is installed on each additional level of the dwelling, building or structure served by the side wall horizontal vented gas fueled equipment. It shall be the responsibility of the property owner to secure the services of qualified licensed professionals for the installation of hard wired carbon monoxide detectors.

a. In the event that the side wall horizontally vented gas fueled equipment is installed in a crawl space or an attic, the hard wired carbon monoxide detector with alarm and battery back-up may be installed on the next adjacent floor level.

b. In the event that the requirements of this subdivision can not be met at the time of completion of installation, the owner shall have a period of thirty (30) days to comply with the above requirements; provided, however, that during said thirty (30) day period, a battery operated carbon monoxide detector with an alarm shall be installed.

2. APPROVED CARBON MONOXIDE DETECTORS
Each carbon monoxide detector as required in accordance with the above provisions shall comply with NFPA 720 and be ANSI/UL 2034 listed and IAS certified.

3. SIGNAGE
A metal or plastic identification plate shall be permanently mounted to the exterior of the building at a minimum height of eight (8) feet above grade directly in line with the exhaust vent terminal for the horizontally vented gas
fueled heating appliance or equipment. The sign shall read, in print size no less than one-half (1/2) in. in size, "GAS VENT DIRECTLY BELOW. KEEP CLEAR OF ALL OBSTRUCTIONS".

4. INSPECTION
The state or local gas inspector of the side wall horizontally vented gas fueled equipment shall not approve the installation unless, upon inspection, the inspector observes carbon monoxide detectors and signage installed in accordance with the provisions of 248 CMR 5.08(2)(a)1 through 4.

(b) EXEMPTIONS
The following equipment is exempt from 248 CMR 5.08(2)(a)1 through 4:

1 The equipment listed in Chapter 10 entitled "Equipment Not Required To Be Vented" in the most current edition of NFPA 54 as adopted by the Board; and
2 Product Approved side wall horizontally vented gas fueled equipment installed in a room or structure separate from the dwelling, building or structure used in whole or in part for residential purposes.

(c) MANUFACTURER REQUIREMENTS – GAS EQUIPMENT VENTING SYSTEM PROVIDED.
When the manufacturer of Product Approved side wall horizontally vented gas equipment provides a venting system design or venting system components with the equipment, the instructions provided by the manufacturer for installation of the equipment and the venting system shall include:

1 Detailed instructions for the installation of the venting system design or the venting system components; and
2 A complete parts list for the venting system design or venting system.

(d) MANUFACTURER REQUIREMENTS – GAS EQUIPMENT VENTING SYSTEM NOT PROVIDED
When the manufacturer of a Product Approved side wall horizontally vented gas fueled equipment does not provide the parts for venting the flue gases, but identifies "special venting systems", the following requirements shall be satisfied by the manufacturer:

1 The referenced "special venting system" instructions shall be included with the appliance or equipment installation instructions; and
2 The "special venting systems" shall be Product Approved by the Board, and the instructions for that system shall include a parts list and detailed installation instructions.

(e) A copy of all installation instructions for all Product Approved side wall horizontally vented gas fueled equipment, all venting instructions, all parts lists for venting instructions, and/or all venting design instructions shall remain with the appliance or equipment at the completion of the installation.

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