



ITACA KB 24 - 32



IST 03 845 - 01

INSTALLATION, USE AND MAINTENANCE



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EN

Translation of the
original instructions (in
Italian)

Dear Sirs,

thank You for choosing and buying one of our products. Please read these instructions carefully in order to properly install, operate, and maintain the product.



WARNING

- **We inform users that:**
 - **Boilers shall be installed by an authorised company under the requirements set forth by the prevailing rules, in full compliance with the prevailing regulations and standards.**
 - **Anyone entrusting installation to an unqualified installer will be subject to administrative sanctions.**
 - **Boilers must be maintained by qualified personnel only, under the requirements set forth by the prevailing rules.**
-

We hereby inform you that certain models, versions and/or accessories relevant to the products this manual refers to, might not be available in some countries.

Therefore, it is recommended to contact the manufacturer or the importer in order to get the necessary information about the actual availability of such models, versions and/or accessories.

The manufacturer reserves the right to modify the products and/or its components as deemed necessary, in any moment and without prior notice.

This instruction manual is available in two languages, Italian and English, without prejudice to the prevalence of Italian language in case of differences in translation and/or dispute on construction of the text.

General notes for installing and maintenance technicians, and users

This instruction manual is an integral and essential part of the product. It shall be supplied by the installer to the user who shall keep it carefully to consult it whenever necessary.

This document shall be supplied together with the equipment in case the latter is sold or transferred to others.



DANGER

**This equipment has been manufactured to be connected to a room heating system and to a DHW distribution system.
Any other use shall be considered unsuitable and dangerous for people, animals, and/or property.**

The equipment shall be installed in compliance with the prevailing standards and in accordance with the manufacturer's instructions specified in this manual: the manufacturer will not be held responsible for injuries to people and animals and/or damages to property resulting from an incorrect installation.

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

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

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

Do not obstruct the air intake openings.

Only original accessories or optional kits (including the electric ones) are to be installed.

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

After removing the packaging, make sure that its elements (clips, plastic bags, foam polystyrene etc.) are not left within the reach of children as they are potential hazard sources.

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

Original parts must be used for all repairs to the boiler.

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

This appliance is not intended for use by persons (including children) with reduced physical, sensory or mental capabilities, or lack of experience and knowledge, unless they have been given supervision or instruction concerning use of the appliance by a person responsible for their safety.

Children should be supervised to ensure that they do not play with the appliance.



WARNING

**The boiler must be serviced periodically as indicated in the relevant section of this manual.
Appropriate boiler maintenance ensures efficient operation, environment preservation, and safety for people, animals and objects.
Incorrect and irregular maintenance can be a source of danger for people, animals and property.**

The user is strongly advised to have the system serviced and repaired by qualified personnel, satisfying all prevailing law requirements, and trained to properly carry out these operations.

In the event of long periods of inactivity of the boiler, disconnect it from the electrical power mains and close the gas cock. **The electronic antifreeze function will not be operative with the device disconnected from the electric power supply and gas cock closed.**

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



DANGER

With gas fired boilers, take the following measures if you smell gas:

- Do not turn on or off electric switches and do not turn on electric appliances.
- Do not ignite flames and do not smoke.
- Close the main gas cock.
- Open doors and windows.
- Contact a Service Centre, a qualified installer or the gas supply company.

Never use a flame to locate a gas leak.

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

The manufacturer will bear no contractual and tortious liability for failure to comply with all the instructions above.

Rapid operating instructions



The following instructions will help you to switch the boiler on quickly and regulate it for immediate use.

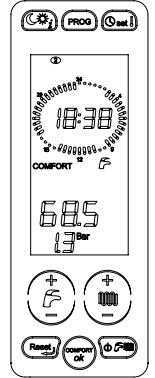




WARNING

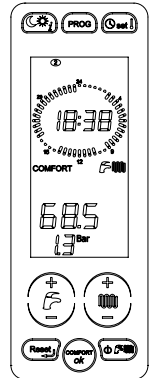
It is presumed that the boiler has been installed by a qualified installer, it has been commissioned and is ready to operate correctly. If any accessories have been fitted on the boiler, these instructions will not cover them. You will therefore have to refer to the full boiler instructions as well as to the specific instructions for the accessories.




This manual contains full details of how the boiler works, and full operating and safety instructions.

1. Open the gas cock installed ahead of the boiler.
2. Turn the master switch installed ahead of the boiler **ON**; the boiler display turns on.
3. If you do not wish to activate the CH function, press the  button until displaying the symbol : only the DHW function will be enabled.



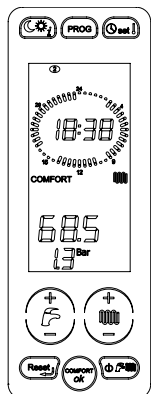
4. If you wish to activate both the heating and DHW functions, press the  button until displaying the symbol .



5. If you do not wish to activate the DHW function, press the  button until displaying the symbol : only the CH function will be enabled.
6. To set the domestic hot water temperature, press **DHW +/-** buttons.
7. Activate water heater pressing  button. **COMFORT** is displayed.
8. To set the heating water temperature, press **CH +/-** buttons.
9. Set the desired temperature on the (optional) ambient thermostat in the building. The boiler is now ready to operate.

If the boiler shuts down, press button .

If boiler does not resume its operation after three attempts, contact a qualified Service Centre.



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1. Instructions for the user

1.1 Control panel

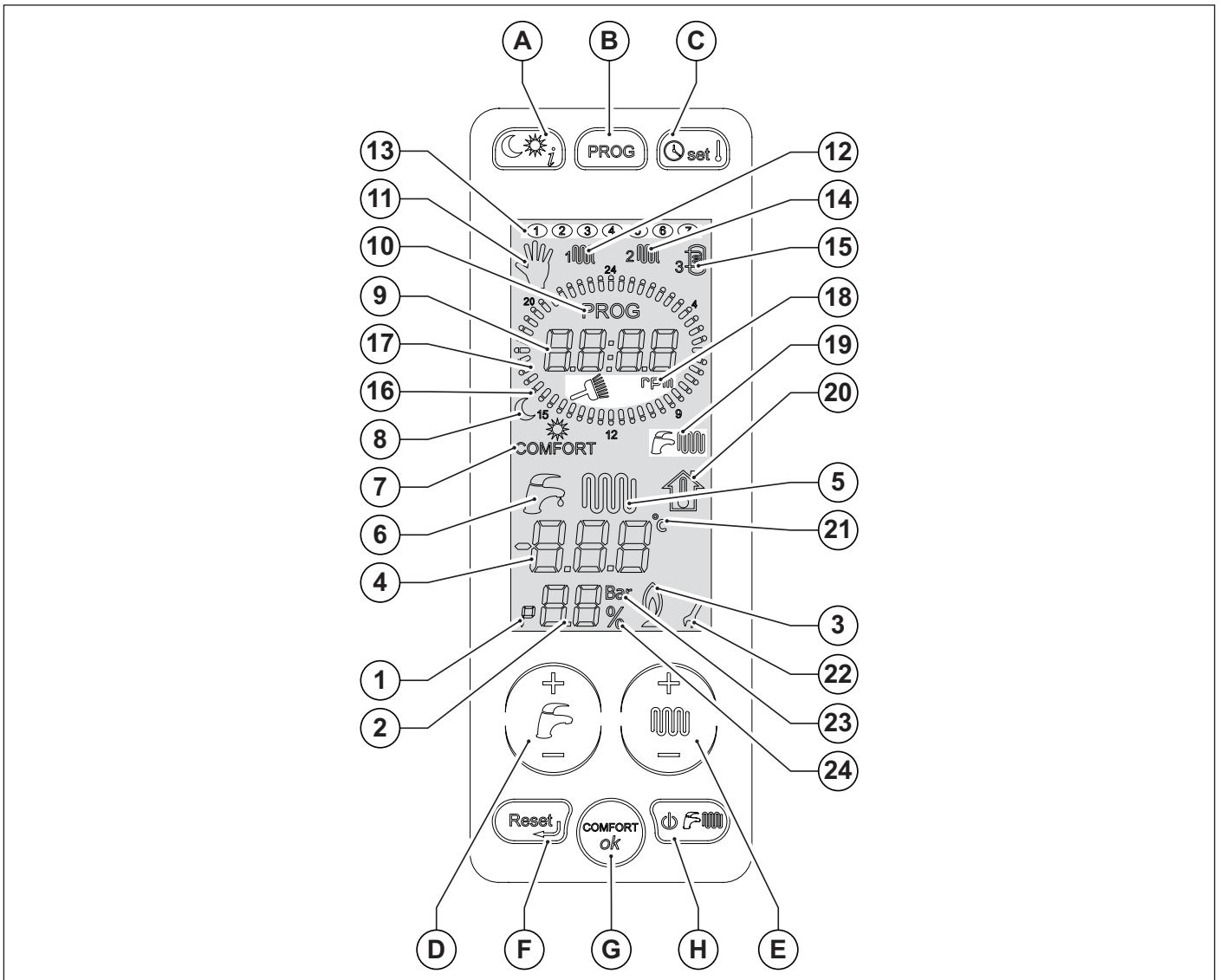







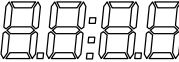















Fig. 1 Control panel

- A. Temperature selection (day/night) and information recall.
- B. Weekly programme for temperature zones and manual programme selection.
- C. Time and ambient temperature setting.
- D. Set the domestic hot water (DHW +/-).
- E. Set the heating water and the (CH +/-) settings.
- F. Alarm reset and back to the starting page during parameter selection.
- G. DHW comfort function setting and confirm button
- H. Operating status selection.

Touch the display in order to activate it. Unless an operation is performed, the display deactivates after 15 seconds.

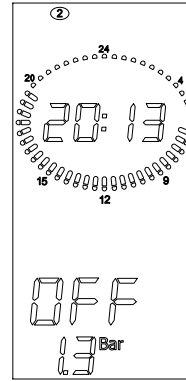
| Ref. | Symbol | Steady on | Flashing |
|------|---|--|---|
| 1 |  | Indication of "parameter" inside the parameter menu | Not used |
| 2 |  | Displaying of the number of parameters, or of the system pressure, or of the burner power percentage | Not used |
| 3 |  | Lit flame indication | Not used |
| 4 |  | Indication of the temperatures and values of fault and shutdown parameters | Not used |
| 5 |  | A heating request is present | Displaying of the heating temperature set-point |
| 6 |  | A DHW request is present | Displaying of the DHW temperature set-point |
| 7 | COMFORT | DHW "Comfort" function enabled | Not used |
| 8 |  | Current temperature (sun = day; moon = night) | Setting of the two temperatures associated with the day and the night |
| 9 |  | Display of current time/fan revolutions | Not used |
| 10 | PROG | Indicates if the unit is in time slot programming mode | Not used |
| 11 |  | Manual mode operation | Manual mode setting |
| 12 |  | Display of zone 1 heating programme | Edit zone 1 heating programme |
| 13 |  | Current day of the week | Edit day of the week |
| 14 |  | Display of zone 2 heating programme | Edit zone 2 heating programme |
| 15 |  | Display of water heater programme | Edit water heater programme |
| 16 |  | Night time temperature indication | Not used |
| 17 |  | Daytime temperature indication | All lights flashing; automatic mode setting |
| 18 |  rpm | Displaying of the flue cleaning function | Indicates that you are accessing the flue cleaning function. |
| 19 |  | Boiler operating condition indication | Not used |

| Ref. | Symbol | Steady on | Flashing |
|------|---|--|--|
| 20 |  | Not used | Displaying of the fictitious ambient temperature set-point |
| 21 |  | Indication of the centigrade degrees | Not used |
| 22 |  | During parameter setting, the 'wrench' symbol stays on until the value is confirmed. | Not used |
| 23 | Bar | Indication of system pressure measurement unit | Not used |
| 24 |  | Percentage indication | Not used |

1.2 Interpreting boiler status from display indications

1.2.1 Normal operation

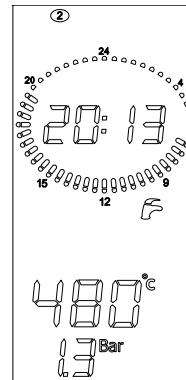
Boiler switch in OFF mode.



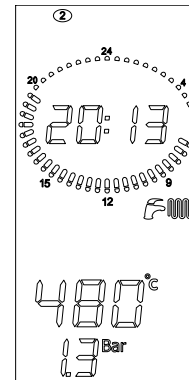
Boiler switch in SUMMER or WINTER mode or CH ONLY.

No active function.

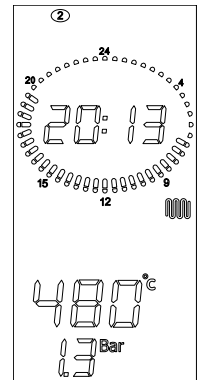
The flow temperature and the heating system pressure are displayed.



SUMMER



WINTER

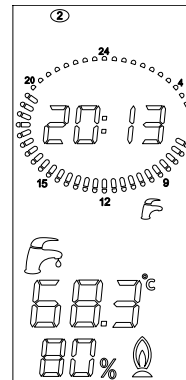


CENTRAL HEATING ONLY

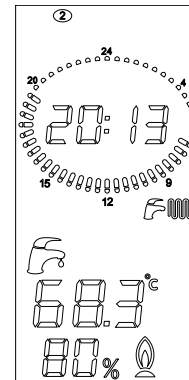
Boiler switch in SUMMER or WINTER mode.

Water heater enabled - DHW function active

DHW temperature displayed (water heater)



SUMMER

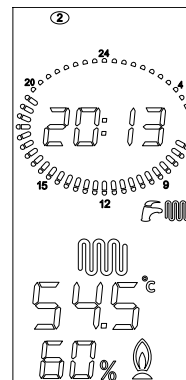


WINTER

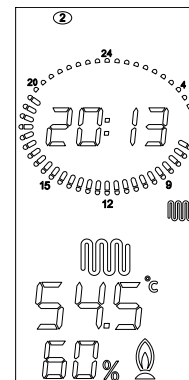
Boiler switch in WINTER mode or CH ONLY.

CH function active.

The flow water temperature is displayed.



WINTER



CENTRAL HEATING ONLY

1.2.2 Malfunction

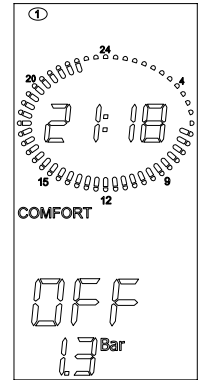
To identify any malfunctions, refer to paragraph *Troubleshooting* on page 76.

1.3 Selecting the operating mode

Whenever  key is pressed, the "SUMMER", "WINTER", "CH ONLY", "OFF" modes are enabled in sequence. At this stage, all buttons are enabled.

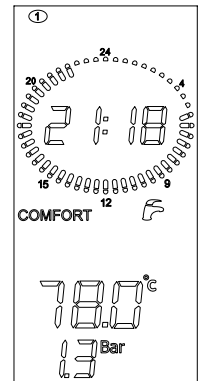
1. "OFF" operating status

When the "OFF" mode is enabled, no function is active.



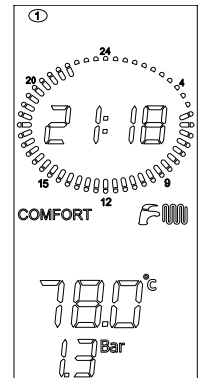
2. "SUMMER" operating status

When the "SUMMER" mode is enabled, only the DHW production function is active.



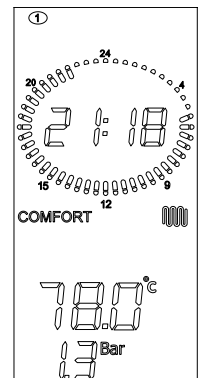
3. "WINTER" operating status

When the "WINTER" mode is enabled, both DHW and CH functions are active.



4. "CH ONLY" operating status

When the "CH ONLY" mode is enabled, only the heating water production function is active.



1.4 Comfort function enable/disable

This function always keeps the water heater warm, without considering the programming of water heater heating time (see par. *Programming mode for heating and water heater* on page 21).

When the "COMFORT" icon is on, the function is enabled. When it is off the function is disabled and the boiler follows the set water heater hour programming (see par. *Programming mode for heating and water heater* on page 21).

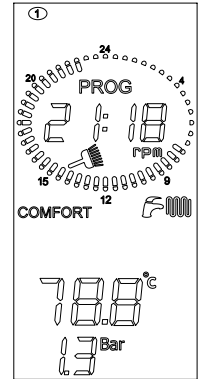
If "comfort" function is enabled ("comfort"), press "OK" button to disable it.

If "comfort" function is disabled ("comfort" icon OFF), press "OK" button to enable it.

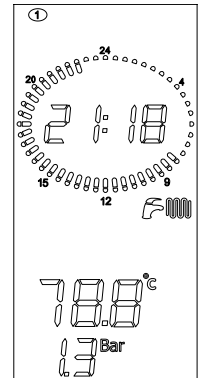
Water heater heating, through the "COMFORT" function or programming, is carried out only if the boiler is in "SUMMER" or "WINTER" mode.

If the boiler is in "CH ONLY" or "OFF" operating mode the water heater is not heated.

1. "Comfort" function enabled
2. Press **OK**



3. "Comfort" function disabled



1.5 Adjusting heating and DHW temperature

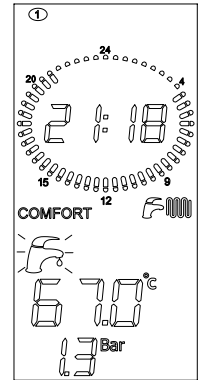
Press button +/- **DHW** to select the desired DHW temperature.

During selection,  icon will flash.

In the phase in which the icon is flashing, only the buttons to adjust the temperature are enabled.

As soon as button is released, icon will continue flashing for approx. 3 seconds, and temperature value will flash as well.

After this time, value is stored and display standard operation will be restored.



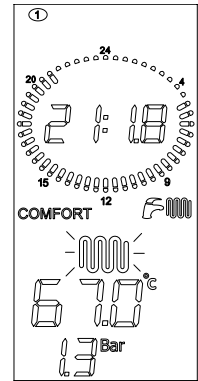
Press **CH +/-** button to select the desired flow water temperature.

During selection,  icon will flash.


In the phase in which the icon is flashing, only the buttons to adjust the temperature are enabled.

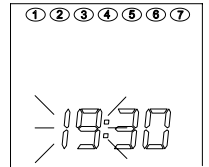
As soon as button is released, icon will continue flashing for approx. 3 seconds, and temperature value will flash as well.

After this time, value is stored and display standard operation will be restored.

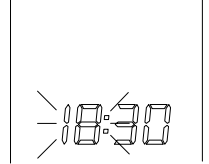



1.6 Time setting

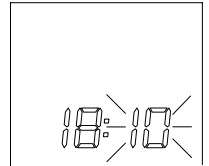
1. To set time, minutes and day of the week, press .



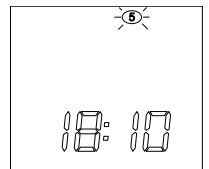
2. Flashing values can be edited by pressing **CH +/-** buttons. The first value to be modified is "HOURS".



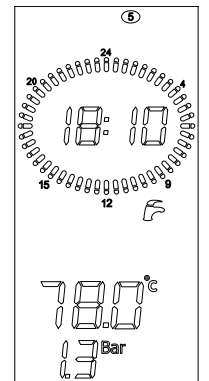
3. Press **OK** to confirm the edited values and shift to next parameter. The second value to be modified is "MINUTES".
Flashing values can be edited by pressing **CH +/-** buttons.
4. Press  to access the day and night setting function described in the following paragraph.



5. Press **OK** to confirm the edited values and shift to next parameter. The third value to be modified is "DAYS". Day of the week can be selected by pressing **CH +/-** buttons.



6. Press **OK** to confirm the edited values. Press  to quit the function and go back to starting page.

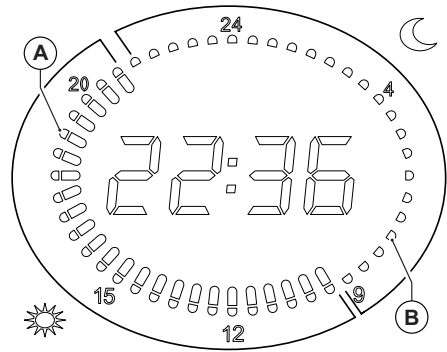


1.7 "Day temperature" and "night temperature" setting


When one or more ambient probes are connected to boiler electronic board, two levels of desired ambient temperatures can be set. Boiler will manage the heating request based on the set temperatures, as follows.
If no ambient probe is connected to the boiler, temperatures cannot be set.

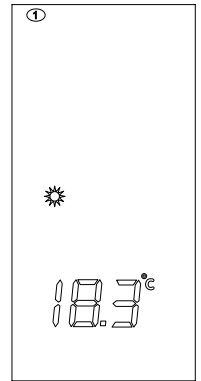
"Day" temperature is identified by the symbol ☀, while "night" temperature by the symbol 🌙.

The "day temperature" is active when bars are on, while "night" temperature is active when bars are off.

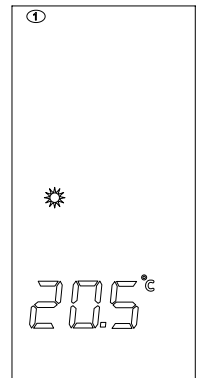


A bars on
B bars off

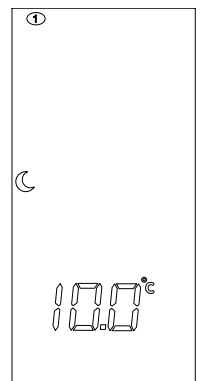
1. Press  twice to access the "day temperature" setting mode.



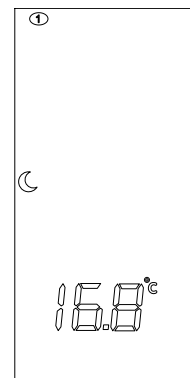
2. Press **CH +/-** buttons to edit "day temperature" values.



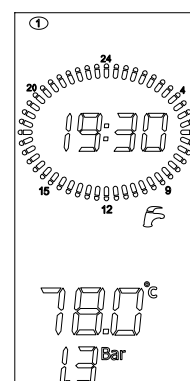
3. Press **OK** to confirm the edited values and enter the "night temperature" setting mode.



4. Press **CH +/-** buttons to edit "night temperature" values.



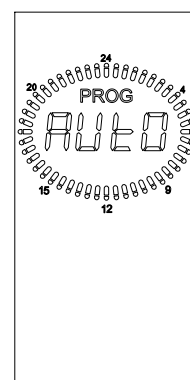
5. Press **OK** to confirm the edited values and quit the setting mode.



1.8 "Automatic" programme setting

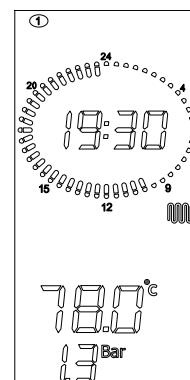
The selection of "automatic" mode, identified by symbol **AUTO**, allows boiler to enable heating of both zones in "day temperature" or "night temperature", based on the programming envisaged for zone 1 and zone 2.

1. Press **PROG** twice to access the automatic programme setting mode.





2. Press **OK** to confirm.

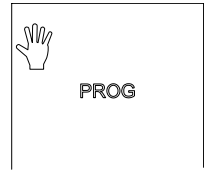
3. Press **Reset** to go back to the starting page, namely to quit the function.



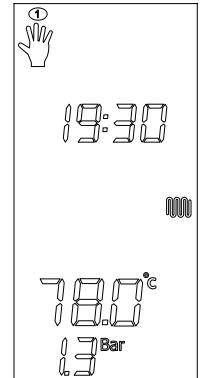
1.9 "Manual" programme setting

The "manual" mode selection indicated with symbol , allows activating the heating function, 24 hours a day, in both zones at the "day temperature", disabling at the same time zone 1 and zone 2 programming. External water heater, if there is one, is heated according to the specific programme.

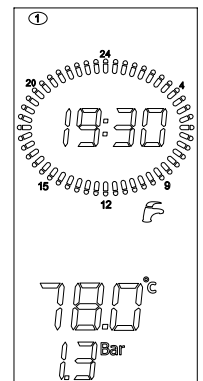
1. Press  to access the manual programme setting mode.



2. Press **OK** to confirm.



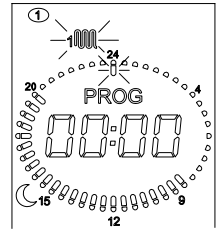
3. Press  to go back to the starting page, namely to quit the function.



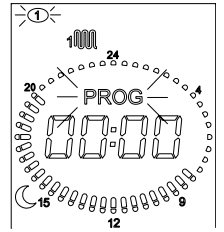
1.10 Programming mode for heating and water heater

To access zone 1 heating programme displaying or editing, press **PROG** button twice.

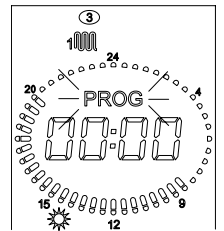
1. The display shows zone 1 symbol flashing, sun or moon symbols, bars on or off, respectively, at 00:00. Clock lights display the programming connected to day 1 (Monday) and 00:00 bar is flashing.







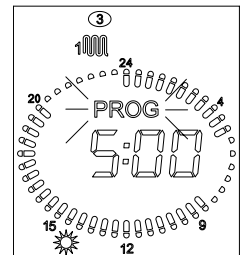
2. Press **OK** to access zone programming function. "PROG" wording starts flashing together with number 1 (Monday).



3. The required day can be selected by pressing **CH +/-** buttons.
4. Press **OK** to select the desired day.
5. Now you can associate the day/night level to the desired time of the day.

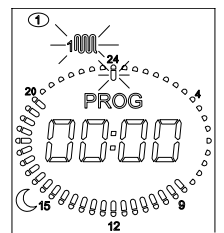


6. Whenever  /  button is pressed, the sun and moon symbols are alternatively activated (sun = day level; moon = night level).
7. At the same time, close to the current time (flashing bar) clock bar comes on if the  icon is on, and turns off the  icon is off.
8. Current time is indicated by both the clock and the flashing bar.
9. Press **CH +/-** buttons to move inside the different times of the day.



10. To program other days of the week or to program zone 2 and water heater, press **Reset**.

11. You will go back to the starting page.





Whatever part of the programme can be quit by pressing the **Reset** button twice.

The procedure to program zone 2 and water heater, is very similar to the one followed to program zone 1.

Press the "prog" button to access, in sequence, to the following 4 programmes: manual; zone 1; zone 2; water heater.


If ambient probes are connected, the "day temperature" and the "night temperature" levels will acquire the temperature value, and heating will be active until the temperature measured by the ambient probe reaches the preset value for the different time slots.


When no ambient probe is connected, the two day/night levels will acquire the on and off values.

Heating is ON in the selected periods with the  icon, while it is OFF in the selected periods with the  icon.

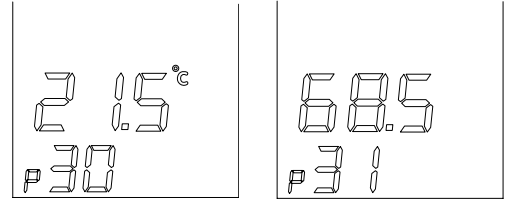
In case of connection with "Open Therm" Remote Control, that zone shall not be managed by boiler boards, as it will be directly managed by the remote control and, as a consequence, zone programming will be inhibited.

1.11 Parameter display

Press  to scroll the different parameter values.

You can quit this function at any time by simply pressing the  button.

To find the meaning of all parameters, see *TSP parameters* on page 58.




| Par. | DESCRIPTION |
|-------------|---|
| P30 - TSP30 | external temperature displayed (if an external probe is installed). |
| P31 | Flow temperature is displayed. |
| P32 | Calculated nominal flow temperature is displayed. If an external probe is not installed the flow temperature manually set on the boiler is displayed. If an external probe is installed the flow temperature automatically set by the boiler on the basis of the thermoregulation curves is displayed. |
| P43 | Return temperature displaying. |
| P44 | Water heater temperature displaying. |
| P45 | Flue gas temperature displaying. |
| P49 | Ambient probe 1 temperature displaying (if connected to ambient probe 1). |
| P50 | Ambient probe 2 temperature displaying (if connected to ambient probe 2). |

Tab. 1 Displayable parameters with info button

1.12 Failures that cannot be reset

The display shows the failure based on the corresponding error code (see *Troubleshooting* on page 76).

Some failures can be reset through the  key, while some others are self-resettable (refer to the following paragraph).

If failures cannot be reset but are of the self-resettable type, no key will be enabled and only the LCD backlighting will be on.

As soon as the error cause is eliminated, the failure signal will disappear from the interface.

The interface is enabled and after 15 seconds is disabled, unless a button is pressed.




1.13 Resume boiler function

The display shows the failure based on the corresponding error code (see *Troubleshooting* on page 76).

Some failures can be reset through the  key, while some others are self-resettable.

If failures can be reset (E01, E02, E03, E08, E09) the reset button and the touch screen backlighting will be on.

The only active key you can press is the  key.

When the reset key is pressed and boiler is under the correct conditions, the error is reset. The failure signal will disappear from the interface.

The interface is enabled and after 15 seconds is disabled, unless a button is pressed.




1.14 Boiler operation

1.14.1 Switching on



DANGER

It is presumed that the boiler has been installed by a qualified installer, it has been commissioned and is ready to operate correctly.

- Open the gas shut-off cock.
- Turn the master switch installed ahead of the boiler to ON.
- The display turns on and indicates the function currently active (see *Interpreting boiler status from display indications* on page 13).
- Select boiler operating mode by pressing  button on the touch-screen: OFF, SUMMER, WINTER, CH ONLY (see *Selecting the operating mode* on page 14).
- Set desired CH temperature (see *CH function* on page 23).
- Set desired DHW temperature (see *DHW function* on page 24).
- If one or more ambient probes or a thermostat are present, set the desired ambient temperature value and the weekly programming.



WARNING

Should the boiler be left inactive for a long time, particularly when boiler is propane-fired, ignition might be difficult.

Before starting the boiler switch on another gas powered device (e.g. kitchen range).

Beware that even by following this procedure, the boiler might still experience some starting difficulties and shut down once or twice. Press the RESET button to restore boiler operation.


1.14.2 CH function

To set the heating water temperature, press +/- CH buttons.

Heating temperature adjustment range depends on the selected operating range.:

- standard range: from 20°C to 78°C (pressing CH +/-);
- reduced range: from 20°C to 45°C (pressing CH +/-).

Operation range selection is to be implemented by a installer or an authorized Service Centre (see par. *Selecting the operating range in heating mode* on page 54).

During temperature setting, the  symbol flashes on the screen and the CH current temperature setting is displayed.

When the CH system requests heat from the boiler, the LCD displays the CH symbol  and the current CH flow water temperature.

The waiting time between one boiler ignition and the following one, used to prevent boiler frequent turning on and off, ranges between 0 and 10 minutes (default value: 4 minutes), and can be edited with the **P11** parameter.

Should water temperature in the system fall below set minimum value, between 20°C and 78°C (default value 40°C for standard range, 20°C for reduced range) to be edited with the **P27** parameter, the waiting time is reset and the boiler re-ignites.

The burner ON symbol  shows while the burner is operating.

1.14.3 DHW function


The boiler is equipped with a stainless steel water heater with 45 litres single coil.

DHW production function may be enabled by the user in two ways:

- setting a water heater hour programming on the boiler (see par. *Programming mode for heating and water heater* on page 21);
- using COMFORT function (see par. *Comfort function enable/disable* on page 15).

DHW temperature may be set within a range from 35°C to 65°C.

Temperature may be set by pressing +/-DHW buttons.

During temperature setting, the DHW symbol  on the display flashes and the domestic hot water setting is displayed.

The water heater heating through "COMFORT" function, or programming, is carried out only if the boiler is in SUMMER or WINTER operating mode. If the boiler is in CH ONLY or OFF operating mode, the water heater is not heated.

Boiler electronics always gives priority to DHW over CH supply.

1.14.4 Comfort function

The COMFORT function keeps the water heater hot, to minimise the waiting time for the production of DHW.

Enable COMFORT function by pressing the corresponding button on the display (see *Comfort function enable/disable* on page 15).

1.14.5 Anti-legionella function

Every 15 days the anti-legionella function is enabled. It gets the water heater temperature to 65 °C for 30 minutes, regardless of any other setting, in order to prevent or remove possible proliferation of bacteria inside the water heater

1.14.6 Freeze protection function

This boiler is fitted with a freeze protection system, which works when the following functions are activated: OFF/SUMMER/WINTER/CH ONLY.



DANGER

The freeze protection function only protects the boiler, not the whole heating system.

Ambient probes or a room thermostat must be used to provide freeze protection for the central heating system. Bear in mind, however, that they are disabled when the boiler is in OFF operating mode.

To protect the system, as well as the boiler, set the boiler to WINTER operating mode.

The central heating system can be effectively protected against icing by using specific anti-freeze products that are suitable for multi-metal systems.



WARNING

Do not use anti-freeze products for car engines, and check the effectiveness of the product used over time.

In case burner cannot be ignited due to the lack of gas, the freeze protection functions are anyway enabled through the circulation pumps.

1.14.6.1 Ambient probe freeze protection function

If the boiler board is OFF, or DHW ONLY, and the ambient probes detect a temperature below 5°C, a heating request to heat the probe-controlled room is launched.

The heating function ends when the probe ambient temperature reading reaches +6°C.

1.14.6.2 Flow freeze protection function

When the heating water temperature sensor detects a water temperature of +5 °C, the boiler switches on and stays on at its minimum heat output until the temperature reaches +30 °C or 15 minutes have elapsed.

The pump continues to operate even if the boiler shuts down.

1.14.6.3 Water heater freeze protection function

When water heater temperature sensor detects a water temperature of 5°C, the boiler switches on and stays on at its minimum heating output until the temperature of the water in the heater reaches 10°C or 15 minutes have elapsed. The pump continues to operate even if the boiler shuts down.

During the water heater anti-freeze operation the temperature detected by the flow probe is constantly checked, and in case it reaches 60°C the burner is switched off. The burner is switched on again if the operation request in anti-freeze mode is still present and the flow temperature is below 60°C.

1.14.7 Anti-seize function

If the boiler remains inactive and connected to the power mains, the circulation pump and the deviating valve will be shortly enabled every 24 hours so as to avoid any shut-down.

The same applies to the relay which can be freely programmed whenever this latter is used to power a recirculation pump or a deviating valve.

1.14.8 Operation with external probe (optional)

Boiler can be connected to a probe measuring the external temperature (optional - not compulsory, supplied by the manufacturer).

Once the external temperature value is known, the boiler will automatically adjust the heating water temperature: increasing it as the external temperature decreases and decreasing it as the external temperature increases. This will both improve room comfort and reduce fuel consumption. The maximum temperature is respected all the same.

This boiler operating mode is called "sliding temperature operation".

Heating water temperature varies based on a programme written inside boiler electronic microprocessor.

When working with an external probe, the **CH +/-** buttons are no longer used to set heating water temperature, but to edit fictitious ambient temperature, namely the desired theoretical temperature.

During temperature setting, the fictitious ambient temperature  symbol flashes on the display and the value being set is shown.

For optimal curve adjustment, a position close to +20 °C is recommended.

For further details on "cruising temperature operation", refer to paragraph *Installation of the (optional) external probe and sliding temperature operation* on page 56.



WARNING

Only original external temperature probes supplied by the manufacturer must be used.

The use of non-original external probes, not supplied by the manufacturer, may affect the operation of the external probe itself and of the boiler.

1.14.9 Operation with (optional) remote control

The boiler can also be connected to a Remote Control (optional - not compulsory, supplied by the manufacturer) so as to manage several boiler parameters, such as:

- boiler status selection.
- ambient temperature selection.
- CH system water temperature selection.
- DHW temperature selection.
- CH system or heater activation times programming.
- boiler diagnostics display.
- boiler reset and other parameters.

To connect the Remote Control, see *Installation and operation with Open Therm Remote Control (optional)* on page 55.



WARNING

Only use original Remote Control Units supplied by the manufacturer.

The use of non-original remote controls, not supplied by the manufacturer, may affect Remote Control and boiler operation.

1.15 Boiler shut-down

The boiler shuts down automatically if a malfunction occurs (see *Interpreting boiler status from display indications* on page 13).


To determine the possible causes of malfunction (see *Troubleshooting* on page 76).

Below is a list of shut-down types and the procedure to follow in each case.

1.15.1 Burner shut-down

Fault code **E01** is displayed flashing on the display in the event of burner shut-down due to missing flame.

If this happens, proceed as follows:

- check that the gas cock is open and light a kitchen gas ring for example to check the gas supply;
- once having checked if the fuel is available, press the  button to restore burner operation: if, after two starting attempts, the boiler still fails to start and enters the shut-down mode again, contact a service centre or qualified personnel for maintenance.



WARNING

If the burner shuts down frequently, there is a recurring malfunction, so contact a service centre or a qualified service engineer.

1.15.2 Shut-down due to incorrect air/flue gas system draught

If the air/flue gas system malfunctions, the boiler shuts down and the code **E03** is displayed flashing on the display. (triggering of flue gas thermostat).

Contact a service centre or a qualified service engineer to carry out the maintenance.

1.15.3 Shut-down due to low water pressure

If "shutdown due to insufficient pressure in system" error **E04** starts flashing (indicating safety water pressure switch triggering), fill the system by opening the filler cock as shown in Fig. 2 Filler cock. **E04** error is displayed when system pressure drops below 0.4 bar and error will be automatically reset as soon as system pressure reaches 1.0 bar. Water pressure must be 1-1.3 bars while the boiler is cold.

In order to restore water pressure, proceed as follows:

- turn the filler cock Fig. 2 Filler cock anticlockwise to allow water to enter the boiler;
- keep the cock open until the control panel shows a value of 1 ÷ 1,3 bar;
- turn cock clockwise to close it.

If the boiler still fails to operate, contact a service centre or a qualified service engineer.



DANGER

Make sure you close the cock carefully after filling. If you do not, when the pressure increases, error E09 may be displayed and the heating system safety valve may activate and discharge water.

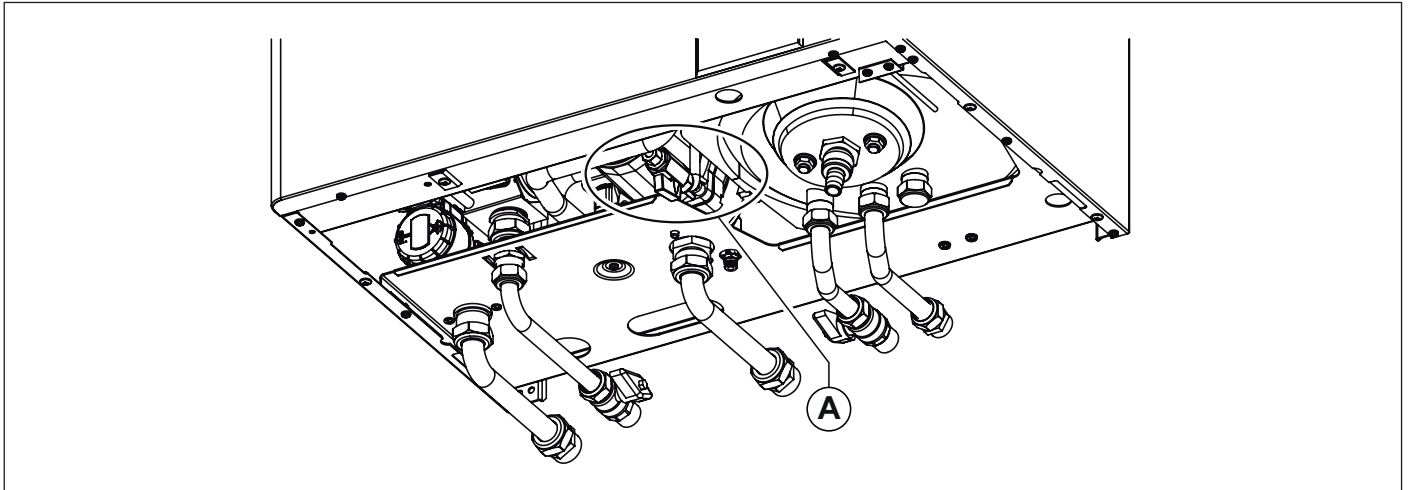


Fig. 2 Filler cock

1.15.4 Shut-down for fan malfunction

The fan operation is constantly monitored and in case of malfunction the burner goes off; the code **E40** flashes on the display. This mode is maintained until the fan recovers normal working parameters.

If the boiler does not start and remains in this mode, contact a service centre or a qualified service engineer.

1.15.5 Alarm due to temperature probe malfunction

The following fault codes are shown on the display in the event of burner shut-down due to a temperature probe fault:

- **E05** for the CH probe: in this case the boiler does not work.
- **E12** for water heater probe, in this case, the boiler works in central heating mode only, and the DHW function is disabled.
- **E15** for the return probe; in this case the boiler does not work.



WARNING

In any case, contact a service centre or qualified personnel for maintenance.

1.15.6 Alarm due to (optional) Remote Control connection malfunction

The boiler recognises whether or not there is a Remote Control (optional, not compulsory).

If the boiler does not receive information from the Remote Control after the Remote Control itself is connected, the boiler attempts to re-establish communication for 60 seconds, after which the fault code **E31** is shown on the remote control display.

The boiler will continue to operate according to the settings on the touch screen and ignore the Remote Control settings.



WARNING

Contact a service centre or a qualified service engineer to carry out the maintenance.

The remote control can indicate faults or shutdown conditions and can also restore boiler operation after shutdown up to a maximum of 3 times in a 24 hour period.

If the maximum number of attempts is reached, fault code **E99** is shown on the boiler display.

To reset error **E99**, disconnect and re-connect again boiler from/to power mains.

1.15.7 Alarm due to (optional) external temperature probe malfunction

In case of external temperature probe failure, boiler will continue to operate, but the "sliding temperature" operation will be disabled.

Heating water temperature is adjusted based on the value set with **CH +/-** buttons that, in this case, are no longer used to adjust calculated ambient temperature.

Contact a service centre or a qualified service engineer.

1.16 Maintenance



WARNING

The boiler must be serviced periodically as indicated in the relevant section of this manual.

Appropriate boiler maintenance ensures efficient operation, environment preservation, and safety for people, animals and objects. Boilers must be maintained by qualified personnel only, under the requirements set forth by the prevailing rules.



WARNING

The user may only clean the external casing of the boiler, employing common household products.

Do not use water!

1.17 Notes for the user



WARNING

The user may only access parts of the boiler that can be reached without using special equipment or tools. The user is not authorised to remove the boiler casing or to operate on any internal parts.

No one, including qualified personnel, is authorised to modify the boiler.

The manufacturer shall not be held responsible in case of damage to people, animals, or property due to failure to follow the above mentioned instructions.

If the boiler remains inactive and the power supply is switched off for a long time, it may be necessary to reset the pump.

This involves removing the casing and accessing internal parts, so it must only be carried out by suitably qualified personnel.

Pump failure can be avoided by adding to the water filming additives suitable for multi-metal systems.

2. Technical features and dimensions

2.1 Technical features

The boiler is equipped with a fully pre-mixed gas burner. The following model is available:

- **KB:** condensing boiler with sealed chamber and forced draught, supplying CH water and domestic hot water through integrated water heater.
- **KB 24:** with heat input of 23.7 kW
- **KB 32:** with heat input of 30.4 kW

All models are equipped with electronic ignition and ionisation flame sensing device.

The boilers meet local applicable Directives enforced in the country of destination, which are stated on their rating plate.

Installation in any other country may be a source of danger for people, animals and property.

The key technical features of the boilers are listed below.

2.1.1 Manufacturing characteristics

- IPX4D electrically protected control panel.
- Integrated, modulating electronic safety board.
- Electronic start-up with built-in igniter and ionisation flame detection.
- Stainless steel, fully pre-mixed burner.
- Mono-thermal, high efficiency, composite and stainless steel heat exchanger with air purging device.
- Twin shutter modulating gas valve with constant air/gas ratio.
- Modulating, electronically managed combustion fan.
- High-efficiency circulation pump with variable speed.
- Heating circuit pressure sensor.
- CH water flow probe.
- Flue gas thermostat on discharge tower
- Flue gas probe on primary heat exchanger.
- Integrated, automatic by-pass.
- Heating expansion vessel - 10 litres.
- Heating system manual filling and draining cocks.
- Motorised deviating valve.
- 45-litre stainless steel DHW water heater.
- Sacrificial magnesium anode.
- CH water return probe.
- Water heater temperature probe.
- Domestic hot water expansion vessel - 2 litres.
- Water heater drain manual cock.
- 3-bar heating safety valve.
- 7-bar DHW safety valve.

2.1.2 User interface

- Built-in touch screen interface to display and control boiler operating conditions: OFF, WINTER, SUMMER and CH ONLY.
- CH water temperature regulator: 20-78°C (standard range) or 20-45°C (reduced range).
- DHW water temperature regulator: 35-65 °C .

2.1.3 Operating features

- CH electronic flame modulation with timer-controlled rising ramp (60 seconds, adjustable).
- Electronic flame modulation in DHW mode.
- DHW function priority.
- Flow freeze protection function: ON 5°C; OFF 30°C or after 15 minutes of operation if CH temperature > 5 °C.
- water heater freeze protection function: ON 5°C; OFF 10 °C or after 15 minutes of operation if boiler temperature > 5 °C.
- Timer-controlled flue cleaning function: 15 minutes.
- Anti-legionella function.
- CH Maximum heat input parameter adjustment.
- Ignition heat input adjustment parameter.
- Possibility to select the heating range: standard or reduced.
- Ignition flame propagation function.
- CH thermostat timer: 240 seconds (adjustable).
- Heating pump post-circulation function in CH, freeze protection and flue cleaning modes: 30 seconds (adjustable).
- DHW post-circulation function: 30 seconds.
- Post-circulation function for heating temperature > 78 °C: 30 seconds.
- Post-ventilation function after working: 10 seconds.
- Post-ventilation function for CH temperature >95 °C.
- Circulation pump and deviating valve anti shut-down function: 30 seconds of operation after 24 hours of inactivity.
- Ready for connection to an (optional) ambient thermostat.
- Ready for operation with an external probe (optional, supplied by the manufacturer).
- Ready for operation with an OpenTherm remote control (optional, supplied by the manufacturer).
- Ready for zone operation (optional, supplied by the manufacturer).
- Ready for chronothermostat function on the boiler, in combination with two ambient probes (optional, supplied by manufacturer).
- Anti water hammer function: adjustable from 0 to 3 seconds via parameter **P15**.

2.2 Dimensions

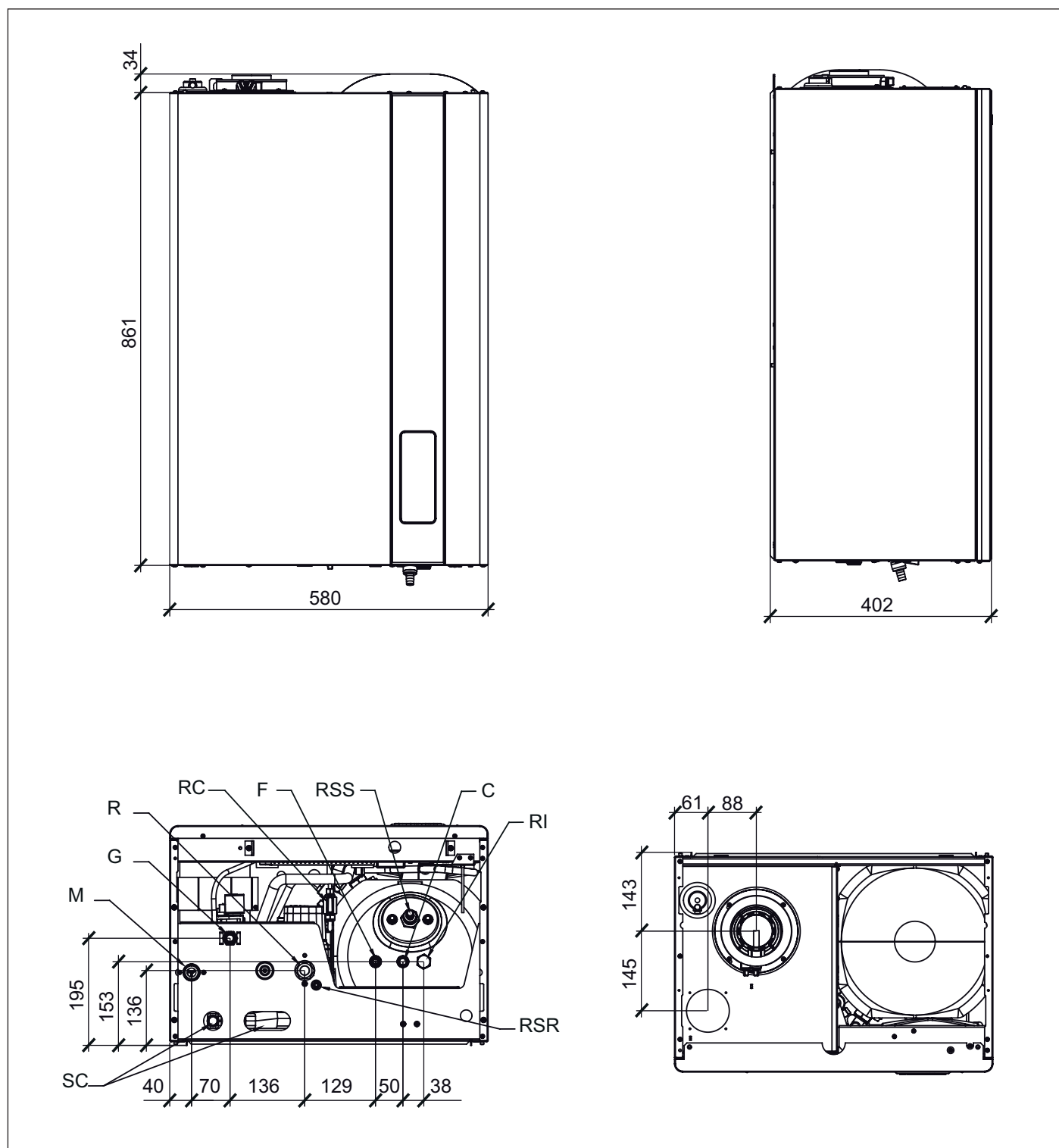


Fig. 3 Dimensions

M CH system flow (3/4")
 G Gas inlet (1/2")
 R CH system return (3/4")
 RC Filler cock
 RSR CH discharge cock

F Cold water inlet (1/2")
 C DHW outlet (1/2")
 RI DHW recirculation inlet (1/2")
 RSS DHW drain cock
 SC Condensate drain and safety valves

2.3 Key components

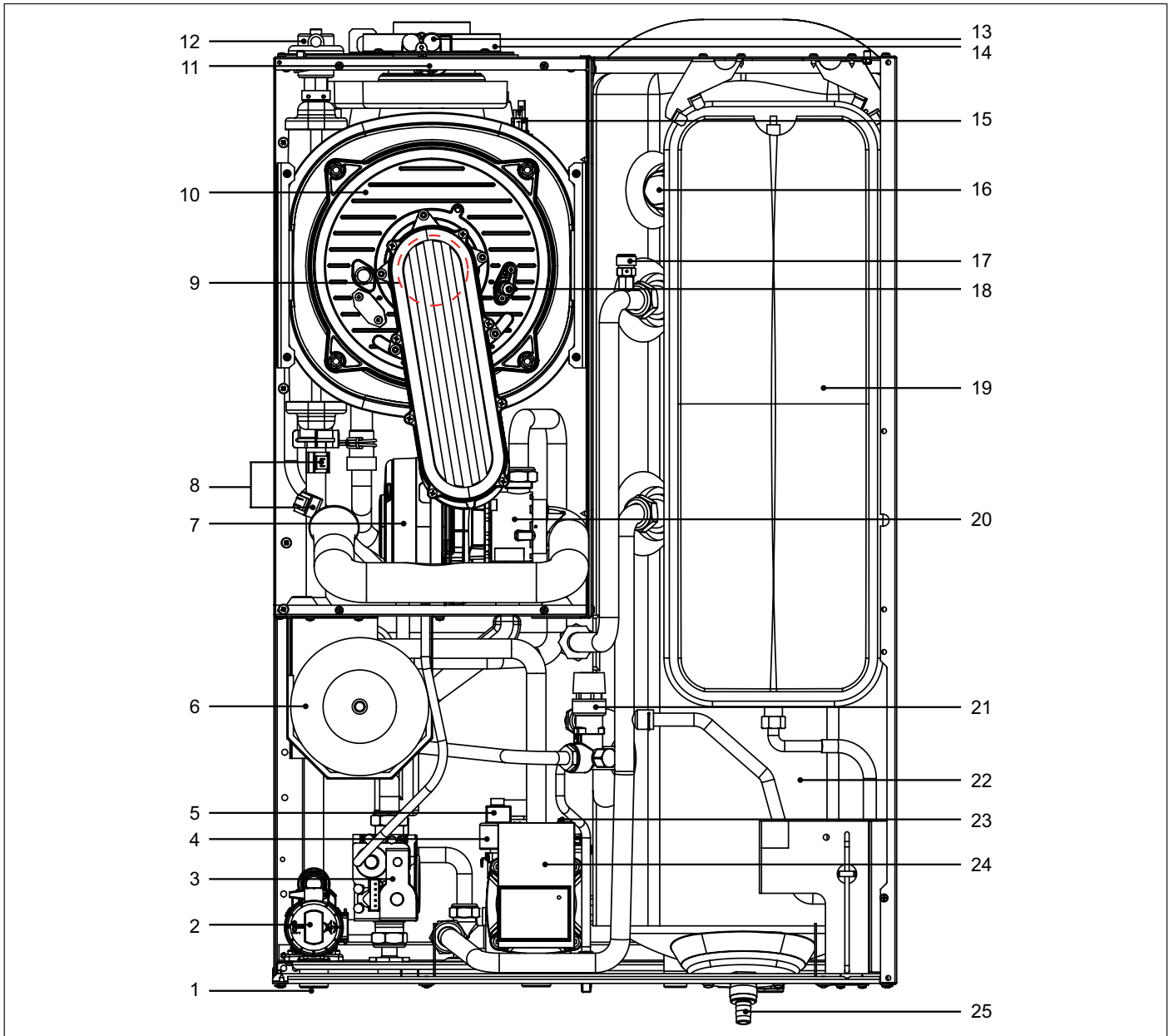


Fig. 4 Key components

- | | |
|--------------------------------|--|
| 1. Condensate trap | 14. Air intake and flue gas venting duct |
| 2. Motorised 3-way valve | 15. Flue gas temperature sensor on exchanger |
| 3. Modulating gas valve | 16. Magnesium anode |
| 4. Pressure transducer | 17. Coil air bleed valve |
| 5. 3-bar safety valve (CH) | 18. Ignition/detection electrode |
| 6. DHW expansion vessel | 19. CH expansion vessel |
| 7. Combustion fan | 20. Air/gas mixer |
| 8. Flow temperature twin probe | 21. 7-bar safety valve (DHW) |
| 9. Pre-mixed burner | 22. Stainless steel water heater |
| 10. Heat exchanger | 23. CH deaerator |
| 11. Flue gas thermostat | 24. Circulation pump |
| 12. Deaerator on exchanger | 25. Water heater drain cock |
| 13. Flue gas analysis ports | |

2.4 Boiler layouts

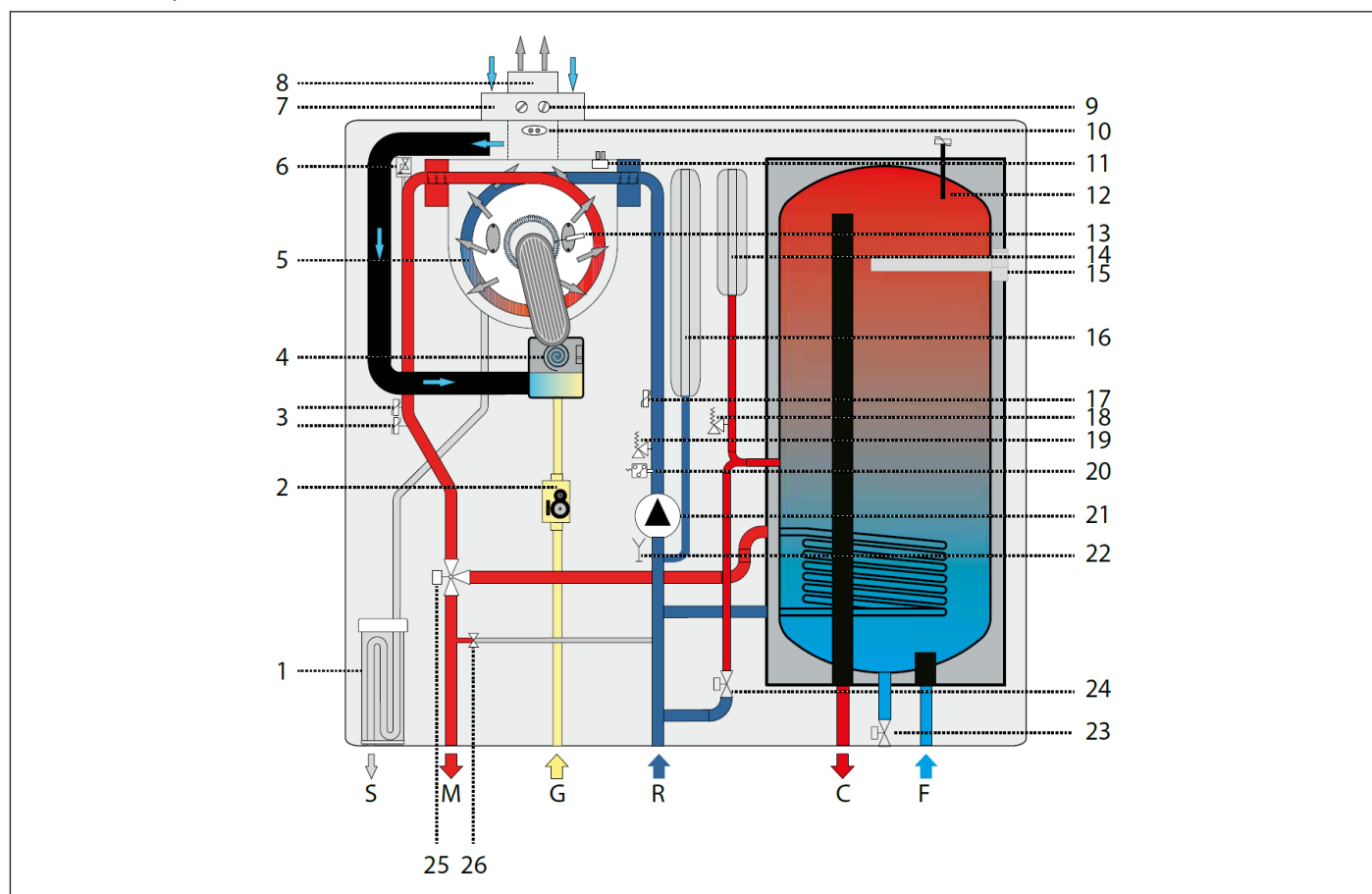


Fig. 5 Hydraulic diagram

- | | |
|--|--------------------|
| 1. Condensate trap | S Condensate drain |
| 2. Modulating gas valve | G Gas inlet |
| 3. Flow temperature twin probe | M CH system flow |
| 4. Combustion fan | R CH system return |
| 5. Heat exchanger | C DHW outlet |
| 6. Deaerator on exchanger | F Cold water inlet |
| 7. Air intake duct | |
| 8. Flue gas venting duct | |
| 9. Flue gas analysis ports | |
| 10. Flue gas thermostat | |
| 11. Flue gas temperature sensor on exchanger | |
| 12. DHW temperature probe | |
| 13. Ignition/detection electrode | |
| 14. DHW expansion vessel | |
| 15. Magnesium anode | |
| 16. CH expansion vessel | |
| 17. Return temperature probe | |
| 18. 7-bar safety valve (DHW) | |
| 19. 3-bar safety valve (CH) | |
| 20. Pressure transducer | |
| 21. Circulation pump | |
| 22. CH system drain cock | |
| 23. Water heater drain cock | |
| 24. CH system filler cock | |
| 25. Motorised 3-way valve | |
| 26. Automatic by-pass | |

2.5 Operating data

Burner pressures reported in the following page must be verified after the boiler has been operating for 3 minutes.

Gas category: II2H3P

| Fuel | Gas mains pressure [mbar] | Nozzle [mm] | Diaphragm diameter [mm] | Flue CO2 value [%] |
|-----------------|---------------------------|-------------|-------------------------|--------------------|
| Natural gas G20 | 20 | 3,7 | - | 9.0 ÷ 9.3 |
| Propane Gas G31 | 37 | 3,0 | - | 10,0 |

Tab. 2 Adjustment rates, KB 24

| Fuel | Gas mains pressure [mbar] | Nozzle [mm] | Diaphragm diameter [mm] | Flue CO2 value [%] |
|-----------------|---------------------------|-------------|-------------------------|--------------------|
| Natural gas G20 | 20 | 4,45 | - | 9.0 ÷ 9.3 |
| Propane Gas G31 | 37 | 3,55 | 7,2 | 10,0 |

Tab. 3 Adjustment rates, KB 32

2.6 General characteristics

| Description | um | KB 24 | KB 32 |
|--|---------|----------|----------|
| CH nominal heat input | kW | 23,7 | 30,4 |
| CH minimum heat input | kW | 3,0 | 4,2 |
| Maximum heat output (80-60°C) - CH | kW | 22,8 | 29,4 |
| Minimum heat output (80-60°C) - CH | kW | 2,7 | 3,9 |
| Maximum heat output (50-30°C) - CH | kW | 25,0 | 32,2 |
| Minimum heat output (50-30°C) - CH | kW | 3,2 | 4,4 |
| Minimum CH system pressure | bar | 0,5 | 0,5 |
| Maximum CH system pressure | bar | 3,0 | 3,0 |
| DHW maximum heat input | kW | 27,3 | 34,5 |
| DHW minimum heat input | kW | 3,0 | 4,2 |
| Maximum heat output - DHW | kW | 26,8 | 33,4 |
| Minimum heat output - DHW | kW | 2,7 | 3,9 |
| DHW circuit min. pressure | bar | 0,5 | 0,5 |
| DHW circuit max. pressure | bar | 6,0 | 6,0 |
| DHW specific flow rate ($\Delta T=25K$) | l/min | 19,4 | 23,4 |
| DHW specific flow rate ($\Delta t=30K$) | l/min | 16,2 | 19,5 |
| Electric power supply – voltage / frequency | V - Hz | 230 - 50 | 230 - 50 |
| Power mains supply fuse | A | 3,15 | 3,15 |
| Maximum power consumption | W | 89 | 99 |
| Pump absorption | W | 46 | 46 |
| Electric protection rating | IP | X4D | X4D |
| Net weight | kg | 61,5 | 66,5 |
| Natural gas consumption at maximum CH output (*) | cu. m/h | 2,51 | 3,22 |
| Propane gas consumption at maximum CH output | kg/h | 1,84 | 2,36 |
| Maximum CH working temperature | °C | 83 | 83 |
| Maximum DHW working temperature | °C | 65 | 65 |
| Heating expansion vessel total capacity | l | 10 | 10 |
| DHW expansion vessel total capacity | l | 2 | 2 |
| Maximum recommended system capacity (**) | l | 200 | 200 |

Tab. 4 General specifications

(*) Value referred to 15 °C - 1013 mbar

(**) Maximum water temperature 83°C, expansion vessel pressure 1 bar

| Description | um | Max. output | Min. output | 30% load |
|--|-----------|--------------------|--------------------|-----------------|
| Casing heat loss with burner on | % | 1,13 | 6,54 | - |
| Casing heat loss with burner off | % | 0,30 | | |
| Flue system heat loss with burner on | % | 2,67 | 2,06 | - |
| Flue system mass capacity | g/s | 12,43 | 1,33 | - |
| Flue gas temperature - Air temperature | °C | 61 | 33 | - |
| Heat efficiency (80-60°C) | % | 96,2 | 91,4 | - |
| Heat efficiency (50-30°C) | % | 105,4 | 105,4 | - |
| 30% heat output efficiency rating | % | - | - | 106,9 |
| NOx emission class | - | 5 | | |

Tab. 5 Combustion specifications, KB 24

| Description | um | Max. output | Min. output | 30% load |
|--|-----------|--------------------|--------------------|-----------------|
| Casing heat loss with burner on | % | 0,96 | 5,98 | - |
| Casing heat loss with burner off | % | 0,19 | | |
| Flue system heat loss with burner on | % | 2,44 | 1,92 | - |
| Flue system mass capacity | g/s | 15,81 | 1,87 | - |
| Flue gas temperature - Air temperature | °C | 60 | 40,5 | - |
| Heat efficiency (80-60°C) | % | 96,6 | 92,1 | - |
| Heat efficiency (50-30°C) | % | 105,8 | 105,1 | - |
| 30% heat output efficiency rating | % | - | - | 107,3 |
| NOx emission class | - | 5 | | |

Tab. 6 Combustion specifications, KB 32

2.7 ERP and Labelling data

| | |
|----------------------------------|---|
| Model(s): ITACA KB 24 | |
| Condensing boiler: yes | |
| Low-temperature (**) boiler: yes | |
| B1 boiler: no | |
| Cogeneration space heater: no | If yes, equipped with a supplementary heater: - |
| Combination heater: yes | |

| Item | Symbol | Value | Unit | Item | Symbol | Value | Unit |
|--|-------------|-------|------|---|-------------|--------|--------|
| Rated heat output | P_{rated} | 23 | kW | Seasonal space heating energy efficiency | η_s | 91 | % |
| For boiler space heaters and boiler combination heaters: Useful heat output | | | | For boiler space heaters and boiler combination heaters: Useful efficiency | | | |
| At rated heat output and high-temperature regime (*) | P_4 | 22,8 | kW | At rated heat output and high-temperature regime (*) | η_4 | 86,5 | % |
| At 30 % of rated heat output and low-temperature regime (**) | P_1 | 7,6 | kW | At 30 % of rated heat output and low-temperature regime (**) | η_1 | 96,3 | % |
| Auxiliary electricity consumption | | | | Other items | | | |
| At full load | eI_{max} | 0,032 | kW | Standby heat loss | P_{stby} | 0,071 | kW |
| At part load | eI_{min} | 0,016 | kW | Ignition burner power consumption | P_{ign} | 0,000 | kW |
| In standby mode | P_{SB} | 0,003 | kW | Annual energy consumption | Q_{HE} | 40 | GJ |
| | | | | Emissions of nitrogen oxides | NO_x | 29 | mg/kWh |
| | | | | Sound power level, indoors | L_{WA} | 51 | dB(A) |
| For combination heaters: | | | | | | | |
| Declared load profile | XL | | | Water heating energy efficiency | η_{wh} | 82 | % |
| Daily electricity consumption | Q_{elec} | 0,179 | kWh | Daily fuel consumption | Q_{fuel} | 28,220 | kWh |
| Annual electricity consumption | AEC | 38 | kWh | Annual fuel consumption | AFC | 21 | GJ |

Contact details: FONDITAL S.p.A. - Via Cerreto, 40 I-25079 VOBARNO (Brescia) Italia - Italy

(*) High-temperature regime means 60 °C return temperature at heater inlet and 80 °C feed temperature at heater outlet.

(**) Low temperature means for condensing boilers 30 °C, for low-temperature boilers 37 °C and for other heaters 50 °C return temperature (at heater inlet).

| | |
|---|----------|
| Seasonal space heating energy efficiency class | A |
| Water heating energy efficiency class | A |

Tab. 7 ERP and Labelling data KB 24

| | |
|-----------------------------------|---|
| Model(s): ITACA KB 32 | |
| Condensing boiler: yes | |
| Low-temperature (***) boiler: yes | |
| B1 boiler: no | |
| Cogeneration space heater: no | If yes, equipped with a supplementary heater: - |
| Combination heater: yes | |

| Item | Symbol | Value | Unit | Item | Symbol | Value | Unit |
|--|---------------|-------|------|---|-------------|--------|--------|
| Rated heat output | P_{rated} | 29 | kW | Seasonal space heating energy efficiency | η_s | 92 | % |
| For boiler space heaters and boiler combination heaters: Useful heat output | | | | For boiler space heaters and boiler combination heaters: Useful efficiency | | | |
| At rated heat output and high-temperature regime (*) | P_4 | 29,4 | kW | At rated heat output and high-temperature regime (*) | η_4 | 86,8 | % |
| At 30 % of rated heat output and low-temperature regime (**) | P_1 | 9,8 | kW | At 30 % of rated heat output and low-temperature regime (**) | η_1 | 96,6 | % |
| Auxiliary electricity consumption | | | | Other items | | | |
| At full load | $e_{l_{max}}$ | 0,038 | kW | Standby heat loss | P_{stby} | 0,059 | kW |
| At part load | $e_{l_{min}}$ | 0,017 | kW | Ignition burner power consumption | P_{ign} | 0,000 | kW |
| In standby mode | P_{sb} | 0,003 | kW | Annual energy consumption | Q_{HE} | 52 | GJ |
| | | | | Emissions of nitrogen oxides | NO_x | 34 | mg/kWh |
| | | | | Sound power level, indoors | L_{WA} | 52 | dB(A) |
| For combination heaters: | | | | | | | |
| Declared load profile | XL | | | Water heating energy efficiency | η_{wh} | 80 | % |
| Daily electricity consumption | Q_{elec} | 0,233 | kWh | Daily fuel consumption | Q_{fuel} | 28,670 | kWh |
| Annual electricity consumption | AEC | 50 | kWh | Annual fuel consumption | AFC | 22 | GJ |

Contact details: FONDITAL S.p.A. - Via Cerreto, 40 I-25079 VOBARNO (Brescia) Italia - Italy

(*) High-temperature regime means 60 °C return temperature at heater inlet and 80 °C feed temperature at heater outlet.

(**) Low temperature means for condensing boilers 30 °C, for low-temperature boilers 37 °C and for other heaters 50 °C return temperature (at heater inlet).

| | |
|---|----------|
| Seasonal space heating energy efficiency class | A |
| Water heating energy efficiency class | A |

Tab. 8 ERP and Labelling data KB 32

3. Instructions for the installer

3.1 Installation standards

This boiler must be installed in compliance with the laws and standards in force in the country of installation, which are herein considered as entirely transcribed.

To find out about the gas category and technical specifications, refer to operation data and general features specified in the previous pages.



DANGER

Accessories and spare parts for installation and service procedures are to be supplied by the Manufacturer.

Should non original accessories and spare parts be employed, boiler proper performance is not guaranteed.

3.1.1 Packaging

The boiler is delivered packed in a robust cardboard box, fixed on a wooden pallet.

Remove boiler from cardboard box and check its integrity.

The packing materials can be recycled. Disposal must be managed via appropriate waste collection sites.

Keep packaging out of reach of children, as it may be dangerous.

The manufacturer shall not be held responsible in case of damage to people, animals, or property due to failure in following the above mentioned information.

Packaging includes:

- the hydraulic kit with copper pipes for boiler connection to gas mains;
- the hydraulic kit with copper pipes for boiler connection to the heating system;
- the hydraulic kit with copper pipes for boiler connection to DHW system;
- gas shut-off cock;
- cold water shut-off cock;
- two wall brackets.
- 2 double screw treads with relevant dowels and 4 M8 nuts to fix the two brackets to the wall.
- a silicon tube for CH safety valve drain.
- a silicon tube and a fitting for DHW safety valve drain.
- a flue gas closing cap.
- a bag containing:
 - » the present boiler installation, use and maintenance manual;
 - » the template for mounting the boiler on a wall (see Fig. 6 Paper template).

3.2 Choosing where to install the boiler

The following must be taken into account when choosing where to install the boiler:

- indications contained in paragraph *Air intake and flue gas venting system* on page 44 and its sub-paragraphs.
- check the wall for sturdiness, avoiding weak areas.
- do not install the boiler over appliances which may affect boiler operation (e.g. cookers, which produce steam and grease, washing machines etc.).

3.3 Positioning the boiler

Each boiler is supplied with a paper template, found inside the packaging (see Fig. 6 Paper template).

The template allows you to ensure that the pipes connected to the CH system, the DHW system and the gas mains, and the air intake/flue gas venting ducts are all laid out correctly during the realisation of the water system and before installation of the boiler.

This template is made of heavy-duty paper and must be fixed, with the help of a level, onto the wall where the boiler is to be mounted.

The template provides all the indications required to drill the boiler mounting holes to the wall, procedure which is done using two screws and wall blocks.

The lower area of the template shows where to mark the exact point at which the couplings are to be positioned for boiler connection to the gas supply pipe, cold water mains supply pipe, hot water outlet, CH flow and return pipes.

The upper area of the template shows where air intake and flue gas ducts are to be positioned.



DANGER

Since the temperature of the walls on which the boiler is mounted and external temperature of coaxial air/flue gas system do not exceed 60°C, no minimum distance from flammable walls is to be accounted for.

For boilers with split air intake and flue gas venting ducts, in the case of proximity with flammable walls and passages through walls, apply insulating material between the wall and the flue gas venting duct.

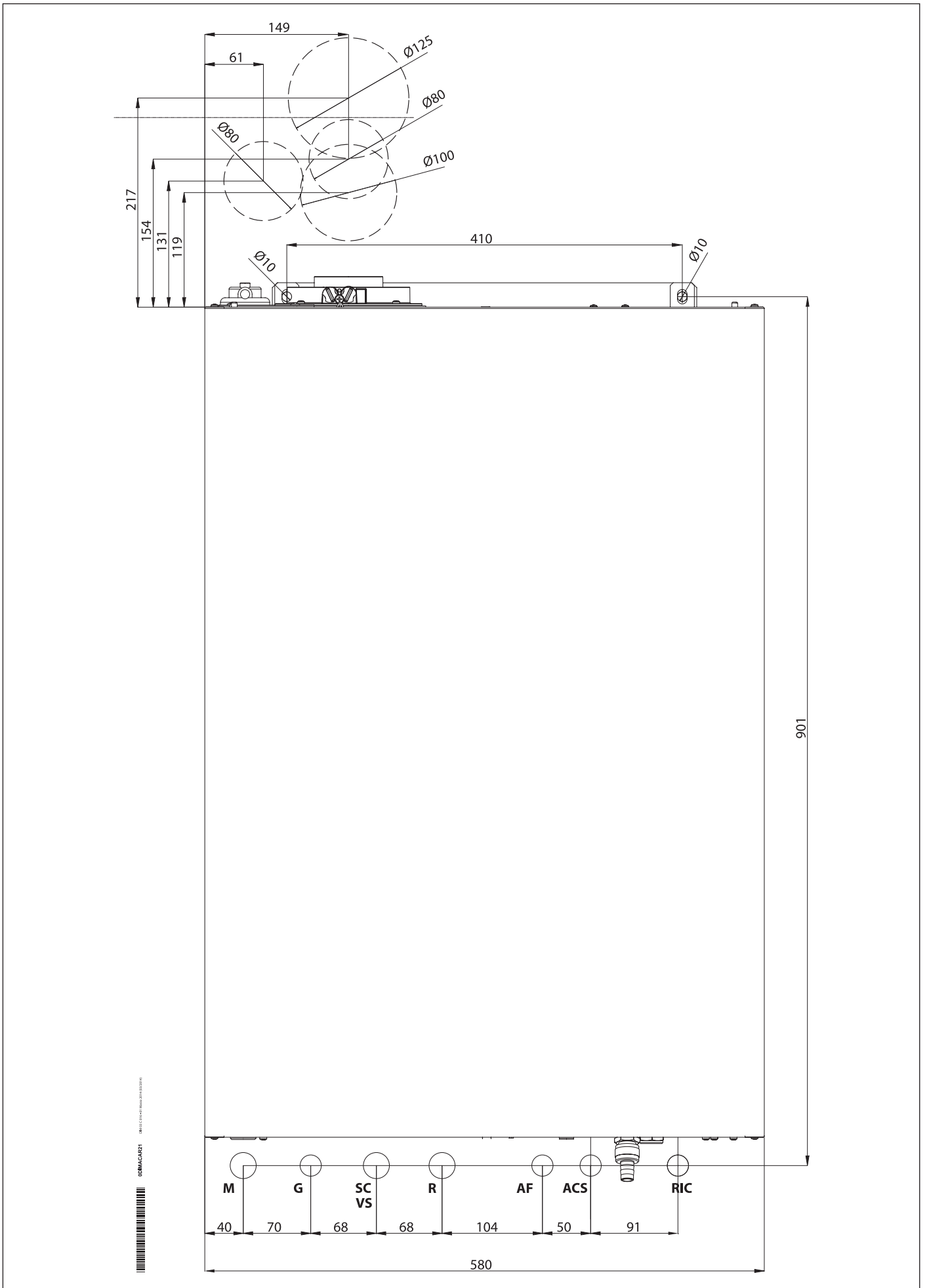


Fig. 6 Paper template

3.4 Installing the boiler



DANGER

Before connecting the boiler to CH and DHW networks, clean the pipes carefully.

Before commissioning a NEW system, clean it to remove any metal chips due to machining and welding, and any oil and grease that might negatively affect boiler operation or even damage it in case they get inside it.

Before commissioning a RECONDITIONED system (where radiators have been added, the boiler has been replaced, etc.) thoroughly clean it to remove any sludge and residues.

Clean the system using standard non acid products, available on the market.

Do not use solvents as they could damage system components.

Furthermore, in the central heating system (either new or reconditioned), it is always advisable to add to water a suitable percentage of corrosion protectants for multi-metal systems that will create a protective film onto all internal surfaces.

The manufacturer shall not be held responsible in case of damage to people, animals, or property due to failure to follow the above mentioned instructions.



DANGER

For all boiler installation types, it is necessary to install a filter which can be inspected (Y-shaped type) with \varnothing 0.4mm-mesh, on the return pipe before the boiler.

In order to install the boiler proceed as follows:

- Affix the template (see Fig. 6 Paper template) on the wall.
- Drill two \varnothing 10 mm holes in the wall to accommodate the two boiler bracket wall blocks.
- If necessary, provide holes in the wall to allow air intake and/or flue gas venting ducts to pass through it;
- Fix the two brackets to the wall carrying out in sequence the following steps:
 - » screw the first two M8 nuts fully home inside the double screw threads.
 - » screw in the screws fully home inside the wall blocks.
 - » insert the brackets in the parts of the screws that protrude from the wall.
 - » screw the last two M8 nuts fully home inside the double screw threads.
- Position the connections for the gas mains pipe **G**, the cold water inlet pipe **F**, the hot water outlet pipe **C**, the hot water inlet pipe **M** and return pipe **R** and the DHW recirculation if provided **RI**, as indicated at the bottom of the template.
- Provide a condensate drain and an outlet for the 3-bar and 7-bar safety valves.
- Hook boiler to supporting brackets.
- Connect the boiler to mains pipes by means of the coupling kit supplied with the boiler (see *Hydraulic connections* on page 52).
- Connect the boiler to the pipe for 3-bar and 7-bar safety valves drain, using the silicon tubes provided.
- Connect the boiler to pipe for condensate drain (refer to *Condensate drain* on page 53).
- Connect the boiler to the air intake and flue gas venting system (see *Air intake and flue gas venting system* on page 44).
- connect power supply, ambient thermostat (when available) and other available accessories (refer to the following paragraphs).

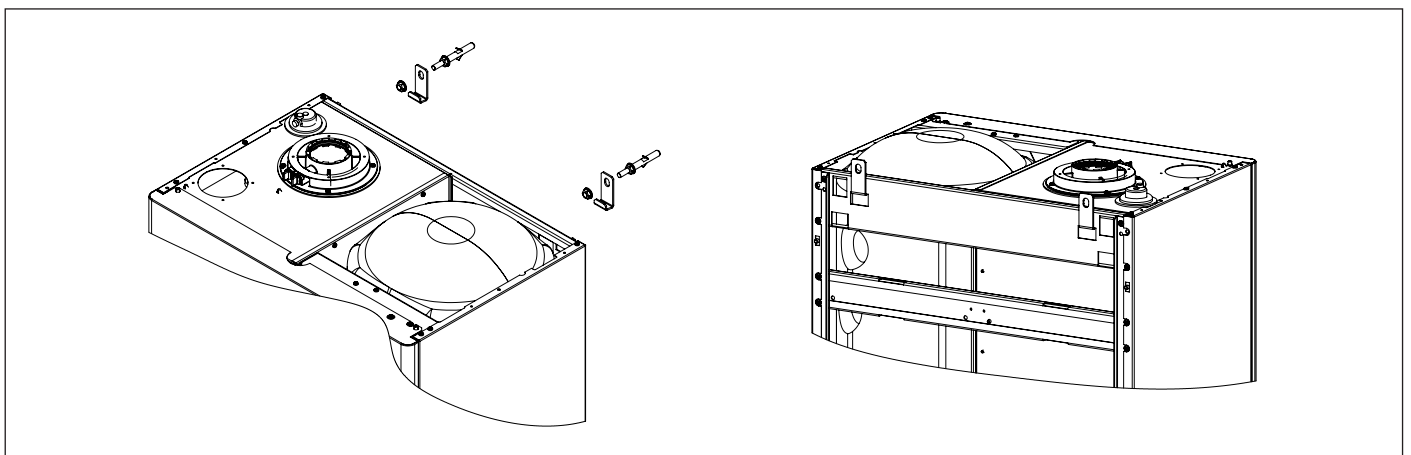


Fig. 7 Mounting bracket fixing

3.5 Boiler room ventilation

The boiler has sealed combustion chamber. Combustion air is not drawn from boiler room, therefore no specific recommendations need to be applied concerning the boiler room or openings and ventilation provided to the boiler room.



DANGER

the boiler must be installed in a room that is compliant with the legislation and standards in force in the country of installation, which are herein considered as entirely transcribed.

3.6 Air intake and flue gas venting system

Flue gas discharge into the atmosphere and air intake/flue gas venting systems must comply with applicable laws and standards in the country of installation that are considered as fully transcribed herein.



DANGER

The boiler is equipped with safety devices checking correct flue gas exhaustion.

If the air/flue gas system malfunctions, the boiler shuts down and the code E03 is displayed flashing on the display..

It is strictly forbidden to tamper with and/or prevent operation of such safety devices.

Should the boiler repeatedly shut down, it is necessary to have the boiler air intake/flue gas venting ducts checked, since they could be obstructed or incorrectly sized for flue gas discharge into the atmosphere.



DANGER

For the air intake/flue gas venting systems, specific, manufacturer approved, condensate acid-resistant pipes and systems must be used, suitable for condensing boilers.



DANGER

Flue gas venting pipes are to be installed tilted toward the boiler so that condensate runs toward the combustion chamber, which is designed for condensate collection and drainage.

Should the above procedure not be possible, it is necessary to install, in condensate stagnation areas, devices designed for condensate collection and conveying to the condensate drain system.

It is necessary to avoid formation of condensate stagnation areas in the flue gas venting system, with the exception of the condensate trap possibly connected to the venting system itself.

The manufacturer cannot be held responsible for any damage caused by inappropriate boiler installation or operation, modification to the boiler, or due to non-observance of the instructions provided by the manufacturer or of legislation and standards applicable for the materials installed.

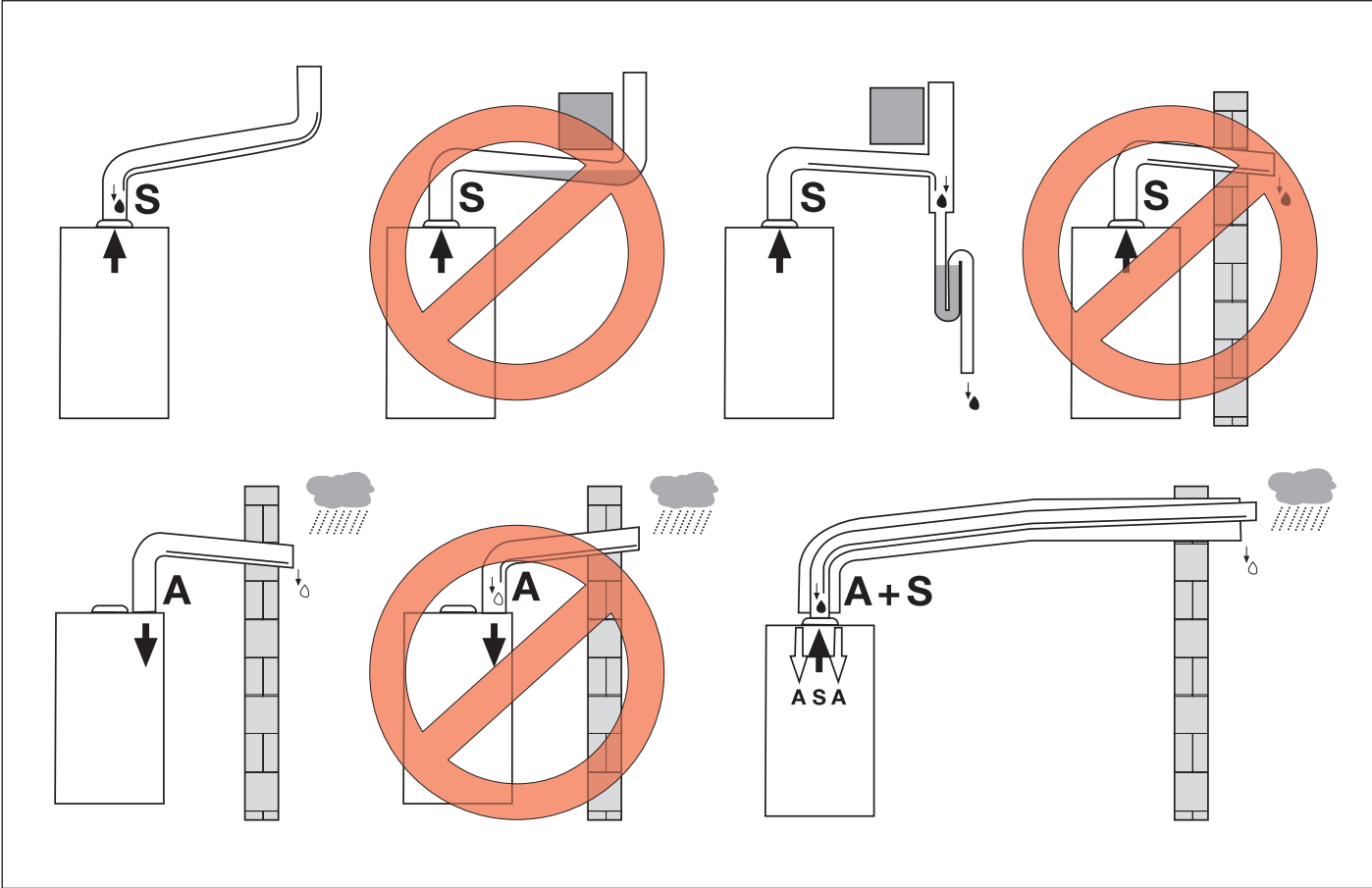


Fig. 8 Installation examples

- KEY**
- A** Air intake
 - S** Flue gas vent
 - ☾ Condensate
 - ☼ Rain

3.6.1 Possible configuration of air intake and flue gas venting ducts

Type B23

Boiler intended for connection to an existing flue system external to the boiler room.

Combustion air is taken directly from the boiler room itself while flue gas is conveyed to the outside.

The boiler is not to be fitted with anti-wind gust device; it has to be equipped with a fan mounted before the combustion chamber/heat exchanger.

Type B53

Boiler intended for connection, via an independent duct, to the flue gas venting terminal.

Combustion air is taken directly from the boiler room itself while flue gas is conveyed to the outside.

The boiler is not to be fitted with anti-wind gust device; it has to be equipped with a fan mounted before the combustion chamber/heat exchanger.

Type C13

Boiler intended for connection to horizontal outlet and intake ducts connected to the outside by means of coaxial or split ducts.

The minimum distance between the air intake duct and the flue gas venting duct must be at least 250 mm, whereas both terminals must be contained within a square measuring 500 x 500 mm.

The boiler is to be equipped with a fan mounted before the combustion chamber/heat exchanger.

Type C33

Boiler intended for connection to vertical outlet and intake ducts connected to the outside by means of coaxial or split ducts.

The minimum distance between the air intake duct and the flue gas venting duct must be at least 250 mm, whereas both terminals must be contained within a square measuring 500 x 500 mm.

The boiler is to be equipped with a fan mounted before the combustion chamber/heat exchanger.

Type C43

Boiler intended for connection to collective chimney pipe system that includes two ducts, air intake and flue gas exhaust. These ducts may be coaxial or split.

The chimney must be compliant with applicable legislation and standards.

The boiler is to be equipped with a fan mounted before the combustion chamber/heat exchanger.

Type C53

Boiler with separate pipes for combustion air intake and flue gas evacuation.

These flues may discharge in areas at a different pressure.

The terminals may not face each other from opposed walls.

The boiler is to be equipped with a fan mounted before the combustion chamber/heat exchanger.

Type C83

Boiler intended to be connected to combustion air terminal and to a single flue gas terminal or collective chimney.

The chimney must be compliant with applicable legislation and standards.

The boiler is to be equipped with a fan mounted before the combustion chamber/heat exchanger.

3.6.2 Ø 100/60 mm and Ø 125/80 mm air/flue gas coaxial duct system



WARNING

The information given above is with reference to air intake/flue gas venting ducts made from smooth, rigid pipes approved and supplied by the manufacturer.

C13 installation type

KB 24

- Minimum permissible length of horizontal coaxial pipes is 1 meter without accounting for the first elbow connected to the boiler.
- Maximum permissible length of Ø 100/60 mm horizontal coaxial pipes is 10 meters including the first elbow connected to the boiler.
- Maximum permissible length of Ø 125/80 mm horizontal coaxial pipes is 14.5 meters including the first elbow connected to the boiler.
- For each additional 1 meter of straight pipe maximum permissible length is to be reduced by 1 meter.
- For each additional 90° elbow, maximum permissible length is to be reduced by 1 meter.
- For each additional 45° elbow, maximum permissible length is to be reduced by 0.5 meter.
- The wall terminal reduces maximum permissible length by 1.5 meters.
- The air intake duct is to be tilted down by 1% toward its exit, in order to avoid rain water to enter it.

KB 32

- Minimum permissible length of horizontal coaxial pipes is 1 meter without accounting for the first elbow connected to the boiler.
- Maximum permissible length of Ø 100/60 mm horizontal coaxial pipes is 7 meters including the first elbow connected to the boiler.
- Maximum permissible length of Ø 125/80 mm horizontal coaxial pipes is 10.5 meters including the first elbow connected to the boiler.
- For each additional 1 meter of straight pipe maximum permissible length is to be reduced by 1 meter.
- For each additional 90° elbow, maximum permissible length is to be reduced by 1 meter.
- For each additional 45° elbow, maximum permissible length is to be reduced by 0.5 meter.
- The wall terminal reduces maximum permissible length by 1.5 meters.
- The air intake duct is to be tilted down by 1% toward its exit, in order to avoid rain water to enter it.

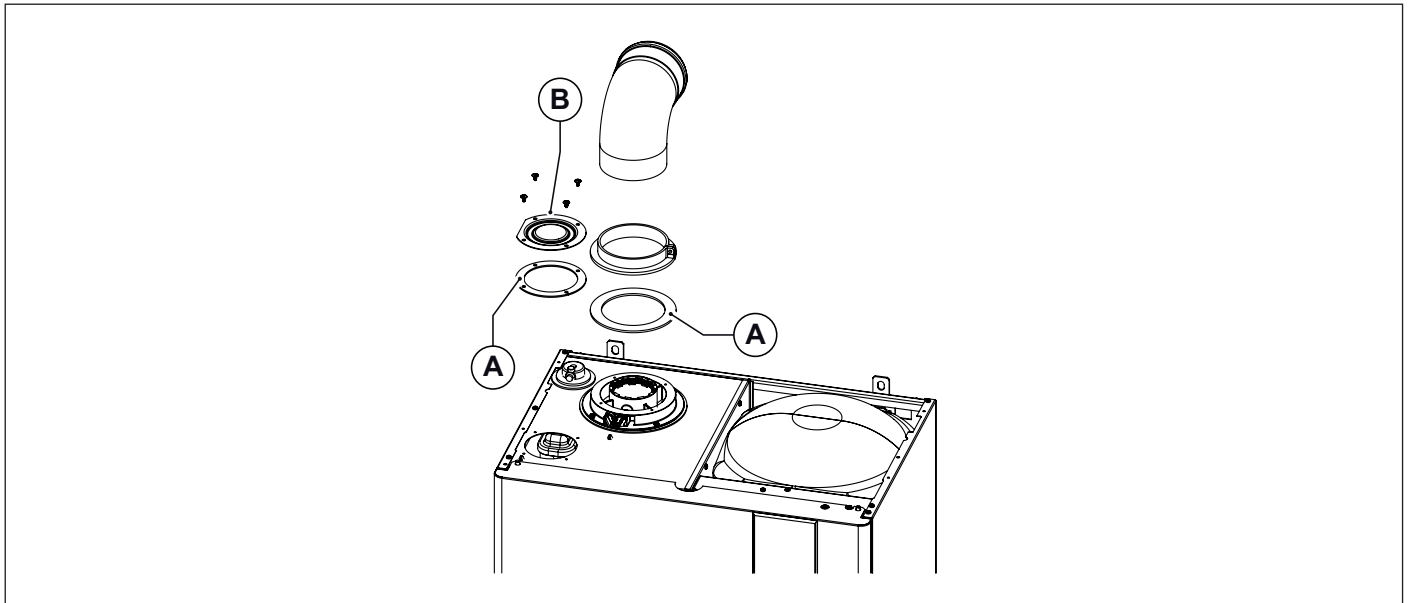


Fig. 9 Type C13 - C33 coaxial ducts

- A.** Gasket
- B.** Blanking cap

C33 installation type

KB 24

- Minimum permissible length of vertical coaxial pipes is 1 meter.
- Maximum permissible length of Ø 100/60 mm vertical coaxial pipes is 10 meters.
- Maximum permissible length of Ø 125/80 mm vertical coaxial pipes is 14.5 meters.
- For each additional 1 meter of straight pipe maximum permissible length is to be reduced by 1 meter.
- For each additional 90° elbow, maximum permissible length is to be reduced by 1 meter.
- For each additional 45° elbow, maximum permissible length is to be reduced by 0.5 meter.
- The roof vent terminal reduces maximum permissible length by 1.5 meters.

KB 32

- Minimum permissible length of vertical coaxial pipes is 1 meter.
- Maximum permissible length of Ø 100/60 mm vertical coaxial pipes is 7 meters.
- Maximum permissible length of Ø 125/80 mm vertical coaxial pipes is 10.5 meters.
- For each additional 1 meter of straight pipe maximum permissible length is to be reduced by 1 meter.
- For each additional 90° elbow, maximum permissible length is to be reduced by 1 meter.
- For each additional 45° elbow, maximum permissible length is to be reduced by 0.5 meter.
- The roof vent terminal reduces maximum permissible length by 1.5 meters.

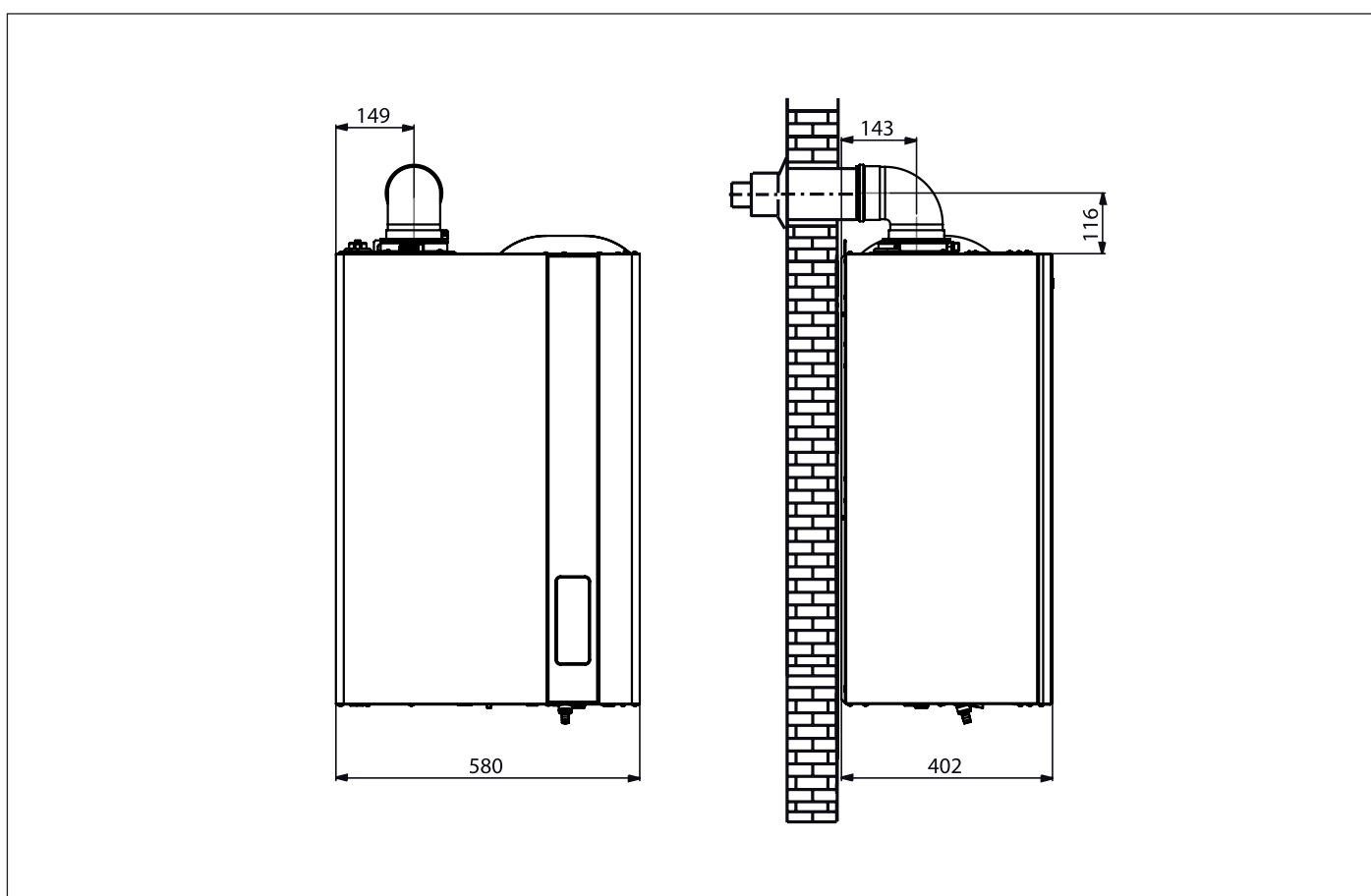


Fig. 10 Type C12 - C33 coaxial pipes dimensione

3.6.3 Air intake and flue gas venting via 80 mm split pipes

Installation types C43 - C53 - C83

KB 24

- Minimum permissible length of air intake pipe is 1 meter.
- Minimum permissible length of flue gas venting pipe is 1 meter.
- Maximum permissible length of intake/flue gas venting pipes is 84 meters (combined length of air intake and flue gas venting pipe).
- For each additional 1 meter of straight pipe maximum permissible length is to be reduced by 1 meter.
- For each additional 90° elbow, maximum permissible length is to be reduced by 1 meter.
- For each additional 45° elbow, maximum permissible length is to be reduced by 0.5 meter.
- The roof terminal reduces maximum permissible length by 5.5 meters.
- The wall terminal reduces maximum permissible length by 5 meters.

KB 32

- Minimum permissible length of air intake pipe is 1 meter.
- Minimum permissible length of flue gas venting pipe is 1 meter.
- Maximum permissible length of intake/flue gas venting pipes is 78 meters (combined length of air intake and flue gas venting pipe).
- For each additional 1 meter of straight pipe maximum permissible length is to be reduced by 1 meter.
- For each additional 90° elbow, maximum permissible length is to be reduced by 1.5 meter.
- For each additional 45° elbow, maximum permissible length is to be reduced by 1 meter.
- The roof terminal reduces maximum permissible length by 6 meters.
- The wall terminal reduces maximum permissible length by 5.5 meters.

3.6.4 Air intake and flue gas venting via 60 mm split pipes

Installation types C43 - C53 - C83

KB 24 - KB 32

- Minimum permissible length of air intake pipe is 1 meter.
- Minimum permissible length of flue gas venting pipe is 1 meter.
- Maximum permissible length of air intake/flue gas venting pipes is 23 metres for model KB 24 and 20 metres for model KB 32 (combined length of air intake and flue gas venting pipe length).
- For each additional 1 meter of straight pipe maximum permissible length is to be reduced by 1 meter.
- For each additional 90° elbow, maximum permissible length is to be reduced by 1 meter.
- For each additional 45° elbow, maximum permissible length is to be reduced by 0.5 meter.
- The wall terminal reduces maximum permissible length by 4.5 meters.

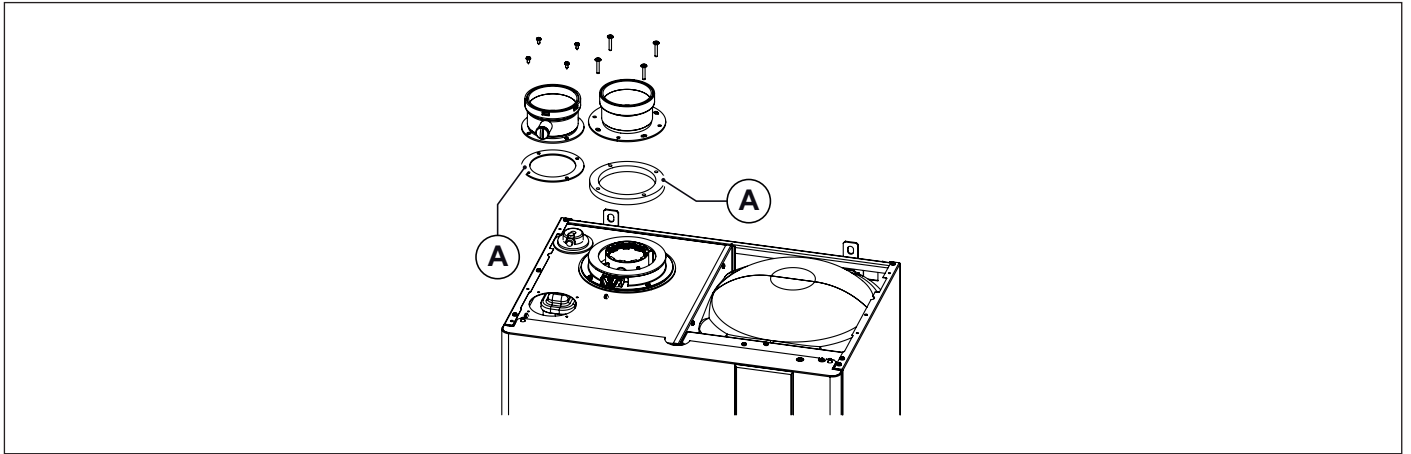


Fig. 11 Type C43 - C53 - C83 split ducts

A. Gasket

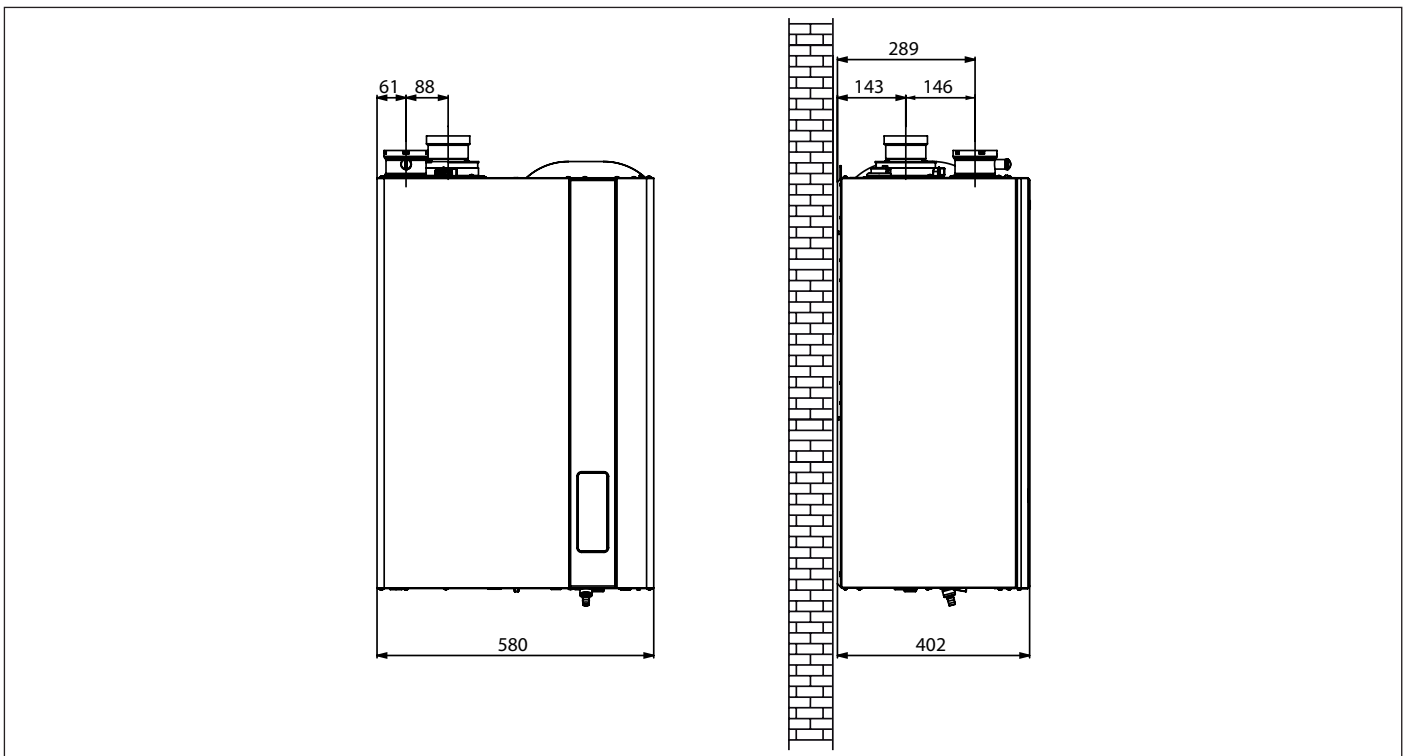












Fig. 12 Type C43 - C53 - C83 split pipes dimensione

3.7 Checking combustion efficiency

3.7.1 Flue cleaning function

- The boiler features a flue cleaning function which must be used to measure combustion efficiency during operation and to adjust the burner.
- To enable the flue cleaning function, press the  key and keep it pressed for 3 seconds.
- The  symbol steady on, the flame symbol  (if burner is on) and flow temperature and fan speed displaying indicate that the flue cleaning function has been activated.
- The boiler performs the ignition sequence and then operates at the heating maximum output (parameter **P4**).
- The keys active in this function are:  and **DHW +/-**.
- By pressing the **+/- DHW** keys it is possible to change the fan speed from **P5** (minimum speed) to **P4** (maximum speed). The display shows the  symbol indicating that the parameter is being edited, the  symbol, letter **H** (indicating Hertz), the speed set-point value in Hz, the current speed and the  symbol if burner is on.
- As soon as the **+/- DHW** key is released, the display will show fan current rpm value, flow temperature, system pressure, the  symbol, the  symbol to indicate that the flue cleaning function is active.
- The flue cleaning function lasts 15 minutes. To quit the flue cleaning function, press  button and you will go back to the standard operating mode.

3.7.2 Measurement procedure

The boiler is equipped with a tower allowing for air intake/flue gas venting pipe connection (see Fig. 13 Plugs position and Fig. 14 Hole position).

The tower is designed with two pre-arranged openings directly accessing air and flue gas ducts (see Fig. 14 Hole position).

Remove caps **A** and **B** from the pre-arranged openings on the tower, before starting combustion checking procedure (see. Fig. 13 Plugs position).

In order to verify combustion efficiency the following measurements must be implemented:

- assess combustion air from opening **1** (see Fig. 14 Hole position).
- assess flue gas temperature and CO₂ from opening **2** (see Fig. 14 Hole position).

Allow boiler to reach working temperature before taking any measurement.

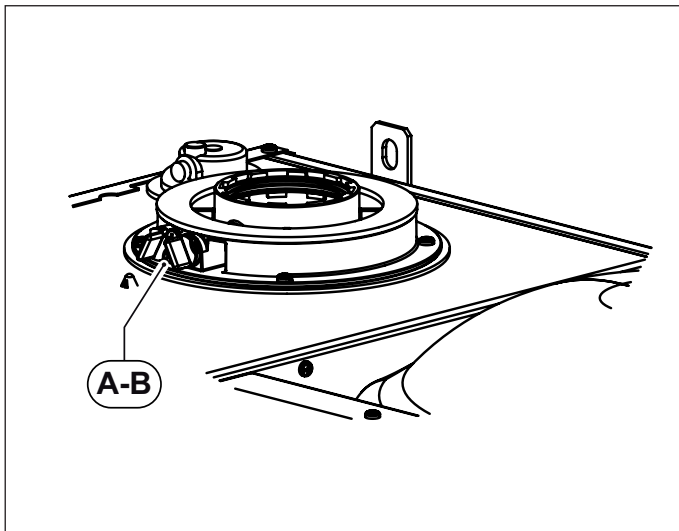


Fig. 13 Plugs position

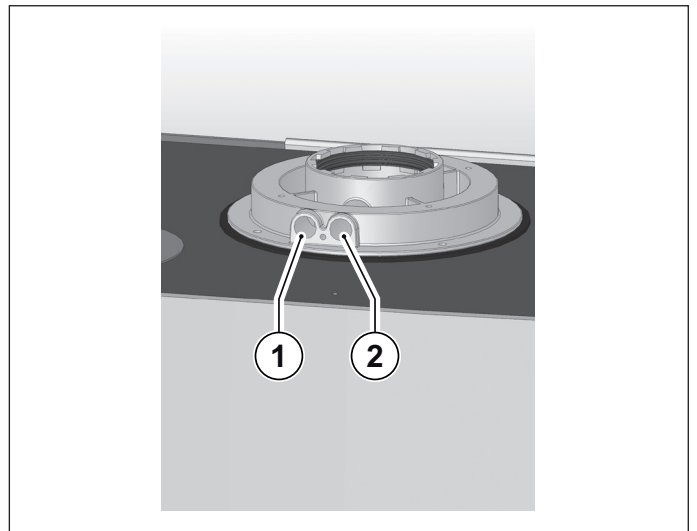


Fig. 14 Hole position

3.8 Connection to gas mains

Cross-section gas pipe size must be chosen depending on its length, layout pattern, gas flow rate.
Gas supply pipe cross-section must be equal or greater than boiler gas pipe.



Comply with installation standards enforced in the country where the boiler is installed which are considered as fully transcribed in this booklet.

Remember that before operating an indoor gas distribution system and before connecting it to a meter, it must be checked for leaks.

If some system parts are not visible, the leak test is to be carried out before the pipes are covered.

Leak test is NOT to be carried out employing flammable gas: use air or nitrogen for this purpose.

Once gas is in the pipes, leak test by a naked flame is forbidden; use specific products available on the market.

When connecting the boiler to gas supply network, it is **COMPULSORY** to install an appropriately sized gasket (A) made from suitable material (see Fig. 15 Connection to gas mains).

The boiler gas inlet coupling is NOT suitable for hemp, teflon tape or similarly made gaskets.

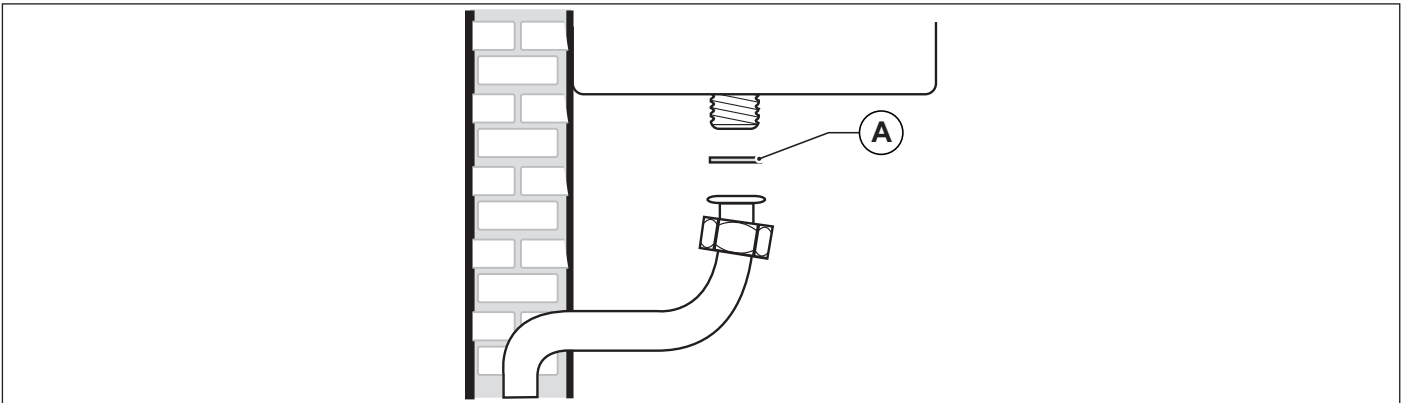


Fig. 15 Connection to gas mains

3.9 Hydraulic connections

3.9.1 Central heating

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

The CH flow and return pipes must be connected to the respective 3/4" connectors (M and R) on the boiler (see Fig. 6 Paper template).

When calculating the cross section of CH system pipes, bear in mind load losses induced by radiators, thermostatic valves, radiator gate valves, and the configuration of the system itself.



It is advisable to convey the discharge flow of boiler safety valve to the sewer system. Should the above precaution not be implemented and the safety valve be activated, boiler room flooding may occur.

The manufacturer shall not be held responsible in case of damage to people, animals, or property due to failure to follow the above mentioned instructions.

3.9.2 DHW

Prior to installing the boiler, the hydraulic system is to be cleaned in order to remove impurities; they could be present in system components and damage the water heater.

The cold water inlet and the DHW outlet must be connected to the respective 1/2" connectors **C** and **F** on the boiler (see Fig. 6 Paper template). Hardness of water supplied to the boiler may increase the plate heat exchanger cleaning/replacement intervals.



WARNING

Depending on the hardness of the mains water supply, ascertain whether or not to install appropriate domestic water treatment systems using water treatment products suitable for drinking water and compliant with the regulations and standards in force in the country of installation.

Water treatment is always advisable when water supplied to the boiler is more than 20°F hard.

Water supplied by commonly marketed water softeners, due to PH level induced in water, may not be compatible with some components in the system.



WARNING

It is advisable to convey the discharge flow of boiler safety valve to the sewer system. Should the above precaution not be implemented and the safety valve be activated, boiler room flooding may occur.

The manufacturer shall not be held responsible in case of damage to people, animals, or property due to failure to follow the above mentioned instructions.

3.9.3 Condensate drain

Comply with condensate drain laws and standards applicable in the country of installation, which are considered herein integrally transcribed. Unless forbidden, the condensate produced by combustion is to be routed via the condensate drain through a discharge system connected to the domestic sewer, which due to its basicity, counteracts flue gas condensate acidity. In order to avoid domestic sewer odour to reach the premises, it is advisable to install an appropriate device between the discharge system and the domestic sewer. The condensate drain system and the domestic discharge system is to be made of an adequate, condensate-resistant material.



WARNING

The manufacturer shall not be held responsible in case of damage to people, animals, or property due to failure to follow the above mentioned instructions.

3.10 Connection to electrical mains

The boiler is supplied with a three-poled power cable, already connected to the electronic board and it is provided with a safety clamp. The boiler is to be connected to a 230V-50Hz electrical power supply.

When connecting it to power mains, follow correct phase / neutral polarity sequence.

Installation standards must be complied with and they are herein considered as entirely transcribed.

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

Power supply to the boiler must be fitted with a residual-current circuit breaker having suitable disconnection capacity. Electric power supply must be properly earthed.

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



WARNING

The manufacturer cannot be held responsible for any damage caused by failure to earth the system correctly: gas, water, or CH system pipes are not suitable for grounding power networks.

3.11 Connection to ambient thermostat (optional)

The boiler is designed to be connected to an ambient thermostat (optional, not compulsory).

Ambient thermostat contacts must be properly sized in compliance with a load of 5 mA at 24 Vdc.

The ambient thermostat cables must be connected to terminals (1) and (2) of the electronic board (see Fig. 19 Wiring diagram) after eliminating the jumper supplied as a standard with the boiler.

The ambient thermostat cables are not to be grouped together in the same sheath as power mains supply cables.

3.11.1 Selecting the operating range in heating mode

Heating water temperature adjustment range depends on the selected operating range.:

- **standard range:** from 20°C to 78°C (pressing **CH +/-**);
- **reduced range:** from 20°C to 45°C (pressing **CH +/-**).

The standard range is active with curves **P10** ≥ 1 , while the reduced range is active with curves **P10** < 1 .

The two ranges can also be selected even with the external probe disconnected.

The waiting time between one boiler ignition and the following one, used to prevent boiler frequent turning on and off is 4 minutes for both ranges, and can be edited with the parameter **P11**.

If system water temperature decreases below a certain value, the waiting time is reset and the boiler re-ignited, as shown in the following table:

| Selected range | Re-ignition temperature |
|----------------|-------------------------|
| Standard range | < 40°C (P27) |
| Reduced range | < 20°C |

Tab. 9 Boiler re-ignition temperature

Operation range selection is to be implemented by a installer or a qualified Service Centre.

3.12 Installation and operation with Open Therm Remote Control (optional)



WARNING

Only use original Remote Control Units supplied by the manufacturer.

The correct operation of the Remote Control itself and of the boiler is not guaranteed if non original Remote Control units not supplied by the manufacturer are used.

The boiler may be connected to an Open Therm Remote Control (non-compulsory optional accessory supplied by manufacturer).

The Remote Control must only be installed by qualified personnel.

To install the Remote Control, refer to the instructions provided with the Remote Control itself.

The Remote Control must be installed on an indoor wall at a height of approximately 1.5 m from the floor and in a suitable location for measuring ambient temperature: do not install in recess or corners, behind doors or curtains, and install away from heat sources, direct sunlight, air draughts and water sprays.

The Remote Control cables must be connected to terminals 3 and 4 of the electronic board (see Fig. 19 Wiring diagram).

The Remote Control connector is protected against inverted polarity, and the connections may be inverted.



WARNING

Do not connect the remote control to mains electrical power 230 V ~ 50 Hz.

The remote control wiring must not be grouped together in the same sheath as the power cables: if the cables are sheathed together, electrical interference from the power cables may compromise the functions of the Remote Control;

For complete instructions on how to program the Remote Control, refer to the instruction manual included in the Remote Control kit.

Board and Remote Control communicate in each operating mode: OFF, SUMMER, WINTER, CH ONLY.

Boiler display layout corresponds to the setting made from the Remote Control, as for the operating mode.

The remote control may be used to view and set a number of special parameters denominated **TSP** parameters and reserved solely for qualified technicians.

TSP0 parameter sets default data table and restores all factory settings, cancelling all preceding modifications on single parameters.

If a single parameter is found to be incorrect, the value given in the default value table is restored.

If the user attempts to set a value not within the permissible range for the parameter, the new value is rejected and the existing value is maintained.

| Parameter | Configurable value range | 24 kW natural gas | 24 kW propane | 32 kW natural gas | 32 kW propane |
|--|--------------------------|-------------------|---------------|-------------------|---------------|
| P0 - TSP0 Equipment type and default data chart | 1, 3, 6, 7 | 1 | 3 | 6 | 7 |
| P4 - TSP4 Fan speed at burner maximum output (DHW) | From TSP5 ÷ 250 Hz | 199 Hz | 194 Hz | 210 Hz | 205 Hz |
| P5 - TSP5 Fan speed at burner minimum power (DHW and heating) | 25 - 120 Hz | 42 Hz | 42 Hz | 43 Hz | 43 Hz |
| P6 - TSP6 Fan speed at ignition power and propagation | 25 - 160 Hz | 58 Hz | 58 Hz | 76 Hz | 76 Hz |
| P7 - TSP7 Heating maximum power upper limit | 10 ÷ 100 % | 88% | 88% | 88% | 88% |
| P8 - TSP8 Negative ramp start minimum speed | TSP5 ÷ TSP6 | 56 | 56 | 60 | 60 |
| P9 - TSP9 Negative ramp time | 0 ÷ 30 (1 = 10 sec.) | 18 (180 sec.) | 18 (180 sec.) | 18 (180 sec.) | 18 (180 sec.) |
| P10 - TSP10 Heating curves | 0 ÷ 3 | 1,5 | 1,5 | 1,5 | 1,5 |

Tab. 10 Limits to be set for TSP parameters and default values in relation to boiler type (TSP0)

3.12.1 Installation of the (optional) external probe and sliding temperature operation

The boiler can be connected to an (optional) external temperature probe (optional, provided by the manufacturer) for sliding temperature operation.



WARNING

Only original external temperature probes supplied by the manufacturer must be used.

If non-original external temperature probes are used, correct operation of the boiler and external probe cannot be guaranteed.

The external temperature probe must be connected by means of a double insulated wire, minimum cross-section 0.35 sq.mm. The external probe must be connected to terminals 5-6 of boiler electronic board (see Fig. 19 Wiring diagram).



WARNING

The temperature probe cables must NOT be routed together with power cables.


The temperature probe must be installed on an outside wall facing NORTH - NORTH EAST, in a position protected from weather. Do not install near a window, ventilation openings or sources of heat.

The external temperature probe automatically modifies the CH flow temperature in relation to:

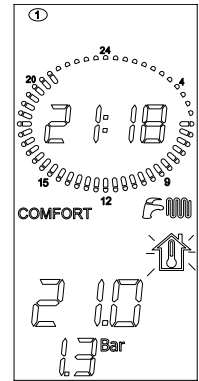
- Measured external temperature.
- Selected thermoregulation curve.
- Selected fictitious ambient temperature.

The fictitious ambient temperature is set using **CH +/-** buttons that, with external probe installed, no longer work to set the heating water temperature (see *Operation with external probe (optional)* on page 25).

Through boiler parameter **P30** it is possible to display the value of the outside temperature detected by the external probe.

With installed external probe, press **+/- CH** buttons to set calculated ambient temperature. As soon as the button is released, icon  will continue flashing for approx. 3 seconds, and the calculated ambient temperature value will flash as well.

After this time, value is stored and display standard operation will be restored.



The figure shows the curves for a fictitious ambient temperature of 20°C. Parameter **P10** allows selecting the curve value shown (see Fig. 16 Thermoregulation curves).

If fictitious ambient temperature value is edited on boiler display, the curves shift up or down, respectively, by the same amount.

With a fictitious ambient temperature setting of 20°C, for example, if you select the curve corresponding to parameter 1 and the outdoor temperature is -4°C, the CH flow temperature will be 50°C.

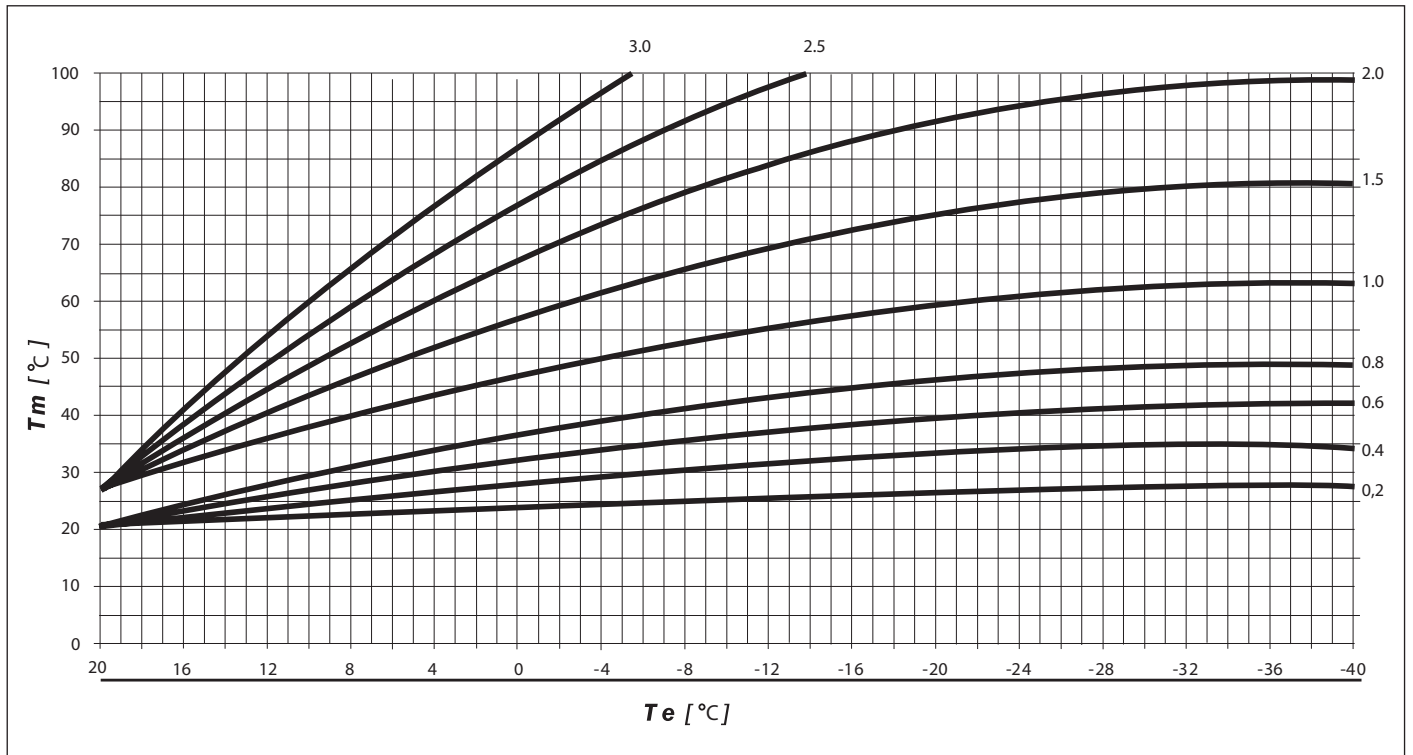




Fig. 16 Thermoregulation curves

Tm indicates flow water temperature in °C


Te indicates external temperature in °C


3.13 TSP parameters

The boiler operation is controlled by several parameters.

To change the parameters, press  and  at the same time for 3 seconds.


Scroll through the parameters by pressing **CH +/-** buttons.

Set onto the required one and press .

The  symbol turns on to indicate that you can edit the parameter value.

The parameter value can be edited using **CH +/-** buttons.

To confirm modification press .

To quit the parameter editing mode press .

| Parameter | Settable values | Default values | Notes |
|---|----------------------|---|---|
| P0 - TSP0 Boiler power selection | 1, 3, 6, 7 | According to the model | 1 = 24 kW natural gas; 3 = 24 kW propane; 6 = 32 kW natural gas; 7 = 32 kW propane |
| P4 - TSP4 Fan speed at burner maximum output | Value of P5 ÷ 250 Hz | According to the model | 199 = 24 kW natural gas; 194 = 24 kW propane; 210 = 32 natural gas; 205 = 32 kW propane |
| P5 - TSP5 Fan speed at burner minimum output | 25 - 120 Hz | According to the model | 42 = 24 kW; 43 = 32 kW |
| P6 - TSP6 Fan speed at ignition power | 25 - 160 Hz | According to the model | 58 = 24 kW; 76 = 32 kW |
| P7 - TSP7 Fan speed at heating maximum output | 10 ÷ 100% | 88 | n.a. |
| P8 - TSP8 Negative ramp start minimum speed | P5 ÷ P6 | According to the model | 56 = 24 kW; 60 = 32 kW |
| P9 - TSP9 Negative ramp time | 0 ÷ 30 (1 = 10 sec.) | 18 (180 sec.) | n.a. |
| P10 - TSP10 Heating output curves | 0 ÷ 3 | 1,5 | Resolution 0.05 |
| P11 - TSP11 Heating thermostat timing | 0 ÷ 10 min. | 4 | n.a. |
| P12 - TSP12 CH power rising ramp timer | 0 ÷ 10 min. | 1 | n.a. |
| P13 - TSP13 Timer for CH post-circulation, freeze protection and flue cleaning function | 30 ÷ 180 sec. | 30 | n.a. |
| P15 - TSP15 | 0 ÷ 3 sec. | 0 | n.a. |
| P16 - TSP16 Ambient/remote control thermostat reading delay | 0 ÷ 199 sec. | 0 | n.a. |
| P17 - TSP17 Multifunction relay setting | 0, 1, 3 | 0 | 0 = shut-down and malfunction; 1 = ambient thermostat 1 request/Remote control; 2 = solar; 3 = ambient thermostat 2 request |
| P27 - TSP27 Heating timer reset temperature | 20 ÷ 78 °C | P10 < 1 (low temp.) = 20 °C; P10 > 1 (high temp.) = 40 °C | |
| P29 - TSP29 Setting of default parameters (except P0, P1, P2, P17) | 0 ÷ 1 | 0 | 0 = user parameters; 1 = default parameters |
| P30 Display of external temperature | n.a. | n.a. | only with external probe connected |
| P31 Display of flow temperature | n.a. | n.a. | n.a. |
| P32 Calculated nominal flow temperature displaying | n.a. | n.a. | only with external probe connected |
| P33 Set point of zone 2 flow temperature | n.a. | n.a. | only with at least one zone board connected |
| P34 Current zone 2 flow temperature displaying | n.a. | n.a. | only with at least one zone board connected |
| P36 Display of flow temperature set-point for zone 3 | n.a. | n.a. | only with two zone boards connected |
| P37 Current zone 3 flow temperature displaying | n.a. | n.a. | only with two zone boards connected |

| Parameter | Settable values | Default values | Notes |
|--|-----------------|----------------|--|
| P39 Set point of zone 4 flow temperature | - | - | only with three zone boards connected |
| P40 Current zone 4 flow temperature | - | - | only with three zone boards connected |
| P43 Boiler return temperature | - | - | - |
| P44 Water heater temperature | - | - | - |
| P45 Flue gas temperature | - | - | - |
| P49 Ambient probe SA1 temperature | - | - | only with connected ambient probe |
| P50 Ambient probe SA2 temperature | - | - | only with connected ambient probe |
| P51 SA1 Ambient probe triggering differential OFF | 0.0 ÷ 1.0 °C | 0.0 °C | only with connected ambient probe |
| P52 SA2 Ambient probe triggering differential ON | -1.0 ÷ -0.1 °C | -0.5 °C | only with connected ambient probe |
| P53 Ambient probe SA1 correction range | -5.0 ÷ 5.0 °C | 0.0 °C | only with connected ambient probe |
| P54 SA2 Ambient probe triggering differential OFF | 0.0 ÷ 1.0 °C | 0.0 °C | only with connected ambient probe |
| P55 SA2 Ambient probe triggering differential ON | -1.0 ÷ -0.1 °C | -0.5 °C | only with connected ambient probe |
| P56 Ambient probe SA2 correction range | -5.0 ÷ 5.0 °C | 0.0 °C | only with connected ambient probe |
| P57 Type of modulation with connected ambient probes (only with P61 set between 03 and 07) | 0 ÷ 4 | 4 | 0 = on/off; 1 = ambient probe modulation; 2 = external probe modulation; 3 = ambient probe and external probe modulation; 4 = no ambient probe connected |
| P58 Ambient probe weight during modulation | 0 ÷ 20 °C | 8 °C | used for thermoregulation with P57=3 |
| P59 Type of temperature visualization on display | 0, 1, 2, 3, 4 | 0 | 0 = flow temp.; 1 = SA1 probe temp.; 2 = SA2 probe temp.; 3 = external temp.; 4 = water heater temp. |
| P60 Number of additional boards connected | 0 ÷ 3 | 0 | 3 boards max. |
| P61 Association between remote and ambient thermostats | 00 ÷ 07 | 00 | 00 = remote zone 2 / TA2 zone 1; 01 = TA1 zone 2 / TA2 zone 1; 02 = TA2 zone 2 / remote zone 1; 03 = SA1 zone 1 / TA2 zone 2; 04 = SA1 zone 1 / SA2 zone 2; 05 = remote zone 1 / SA2 zone 2; 06 = zone 1 not managed / SA2 zone 2; 07 = TA1 zone 1 / SA2 zone 2. |
| P62 Selection of zone 2 curve | 0 ÷ 3 | 0,6 | only with zone board connected |
| P63 Zone 2 set-point | 15 ÷ 35 °C | 20 °C | only with zone board connected |
| P66 Selection of zone 4 curve | 0 ÷ 3 | 0,6 | only with two zone boards connected |
| P67 Zone 3 set-point | 15 ÷ 35 °C | 20 °C | only with two zone boards connected |
| P70 Zone 4 set-point | 0 ÷ 3 | 0,6 | only with three zone boards connected |
| P71 Zone 4 set-point | 15 ÷ 35 °C | 20 °C | only with three zone boards connected |
| P74 Low temperature zone mixer valve opening time | 0 ÷ 300 sec. | 140 sec. | only with zone boards connected |
| P75 Rise in nominal boiler temperature with zone board | 0 ÷ 35 °C | 5 °C | only with zone boards connected |

| Parameter | Settable values | Default values | Notes |
|--|-----------------|----------------|---|
| P78 Interface back-lighting switching on | 0 ÷ 2 | 0 | 0 = standard; 1 = LCD always on 2 = LCD and keys always on |
| P80 Multifunction relay forcing | 0 ÷ 1 | 0 | 0 = standard function; 1 = relay energised |
| P81 Zone 2 pump relay forcing | 0 ÷ 1 | 0 | 0 = standard function; 1 = relay energised |
| P82 Zone 2 mixing valve forcing | 0 ÷ 2 | 0 | 0 = standard function; 1 = force opening; 2 = force closing |
| P84 Zone 3 pump relay forcing | 0 ÷ 1 | 0 | 0 = standard function; 1 = relay energised |
| P85 Zone 3 mixing valve forcing | 0 ÷ 2 | 0 | 0 = standard function; 1 = force opening; 2 = force closing |
| P87 Zone 4 pump relay forcing | 0 ÷ 1 | 0 | 0 = standard function; 1 = relay energised |
| P88 Zone 4 mixing valve forcing | 0 ÷ 2 | 0 | 0 = standard function; 1 = force opening; 2 = force closing |

3.14 Filling the system

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

The procedure is to be cautiously carried out, following each step:

- Open the bleeding valves on all radiators and verify the boiler automatic valve operation.
- Gradually open the relevant filler cock, checking any automatic bleeding valves installed in the system properly work (see Fig. 2 Filler cock);
- Close all radiator bleeding valves as soon as water starts coming out.
- Check on boiler display that water pressure reaches the 1÷1.3 bar reading.
- Shut the filler cock and bleed any air out again, by opening the air bleeding valves on radiators.
- Start the boiler and bring the system to working temperature, stop the pump, and repeat air bleeding procedure.
- Allow the system to cool and restore water pressure to 1÷1.3 bars.



WARNING

As for water treating in the domestic heating systems in order to optimise efficiency and safety, ensure a long life, trouble-free operation of auxiliary equipment, minimise power consumption, thereby integrating the standards and rules in force in the country of installation, it is recommended to use specific products suitable for multi-metal heating systems.



WARNING

Pressure sensor will not electrically enable the burner ignition when water pressure is below 0.4 bar (this parameter can be edited by qualified professional staff).

Water pressure in the CH system must not be lower than 1 bar. In case it is not so, fill the system with water (see *Shut-down due to low water pressure* on page 27).

The procedure is to be followed while the system is cold.

Digital pressure gauge is used to read pressure inside the heating circuit.

3.15 Starting up the boiler

3.15.1 Preliminary checks

Before starting the boiler, check that:

- the flue gas venting duct and the relative terminal are installed in conformity with the instructions: when the boiler is working there must be no leakage of combustion by-products from any of the gaskets.
- the supply power to the boiler must be 230 V ~ 50 Hz.
- the heating system is correctly filled with water (pressure gauge reading $1 \div 1.3$ bar).
- any shut-off cocks in the system pipes are open.
- the mains gas type is correct for the boiler calibration: convert the boiler to the available gas if necessary (see *Adaptation to other gas types and burner adjustment* on page 68). This operation is to be exclusively carried out by qualified personnel.
- The gas supply cock is open.
- There are no fuel gas leaks.
- The main switch installed adjacent to the boiler is turned on.
- the 3-bar (CH system) and 7-bar (DHW system) safety valves are not stuck.
- There are no water leaks.
- The condensate trap installed on the boiler is discharging condensate correctly and is not stuck.

3.15.2 Switching on and switching off

To switch the boiler on and off, refer to the **"Instructions for the User"** (see *Instructions for the user* on page 10).

3.16 Available head

The boiler is equipped with a high-efficiency circulation pump with variable speed.

Circulation pump speed is automatically managed by the electronics, according to the settings of boiler parameters.

It is possible to choose between two pump working modes:

1. "Constant ΔT " operation

In the constant ΔT operating mode, circulation pump speed changes automatically to keep system delivery and return ΔT fixed at a value set in the boiler parameters.

2. "Fixed speed" operation

In the fixed speed operating mode, circulation pump speed remains constant at a value set in the boiler parameters.

During DHW phase, circulation pump works at a fixed speed set in the boiler parameters.



WARNING

Circulation pump is set to constant ΔT operating mode during production.

For a correct operation of the boiler, it is recommended not to change factory setting.

Should it be necessary to change circulation pump settings, contact a Service Centre.

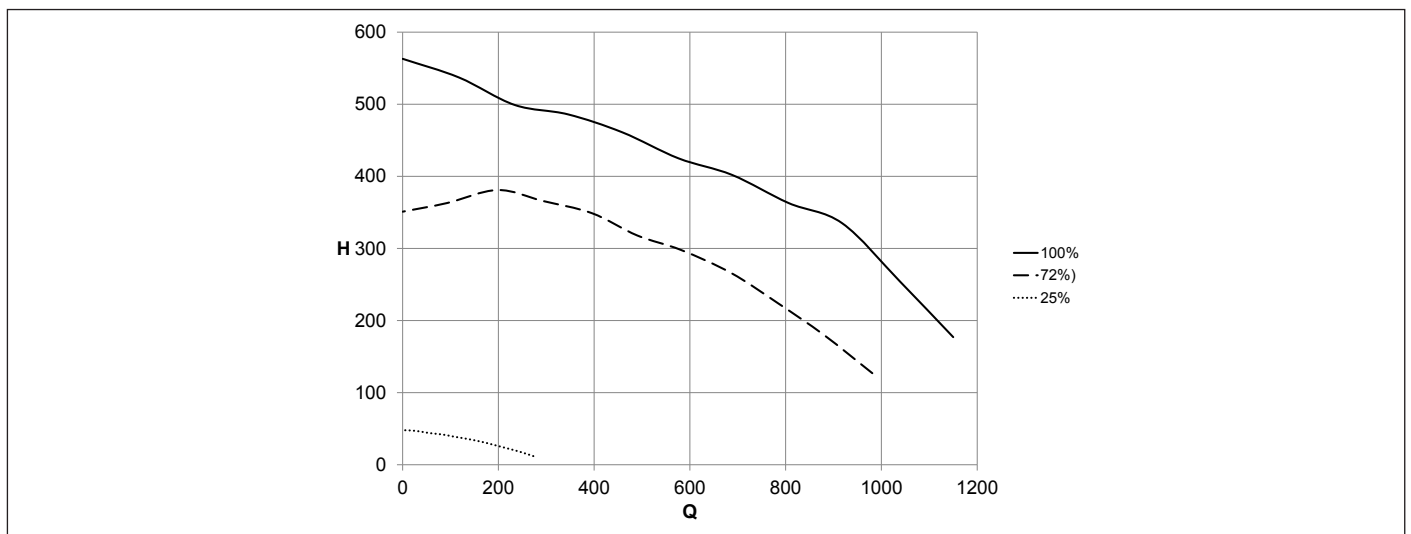


Fig. 17 Available head KB 24

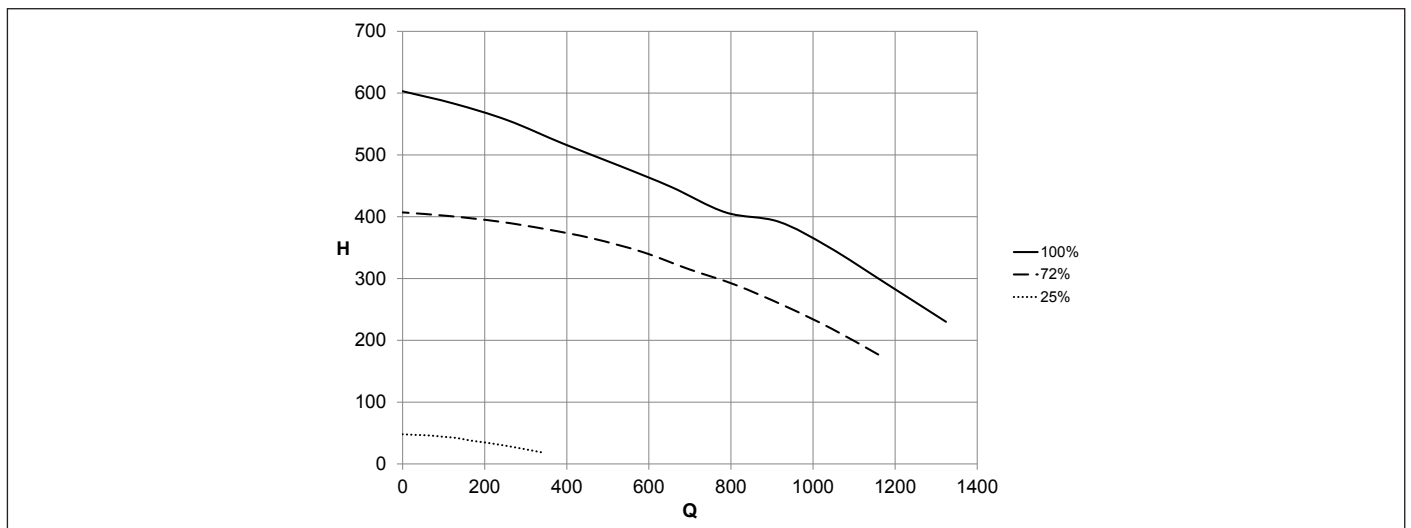


Fig. 18 Available head KB 32

Q.....Flow rate (l/h)

H.....Available head (mbar)

3.17 Wiring diagram

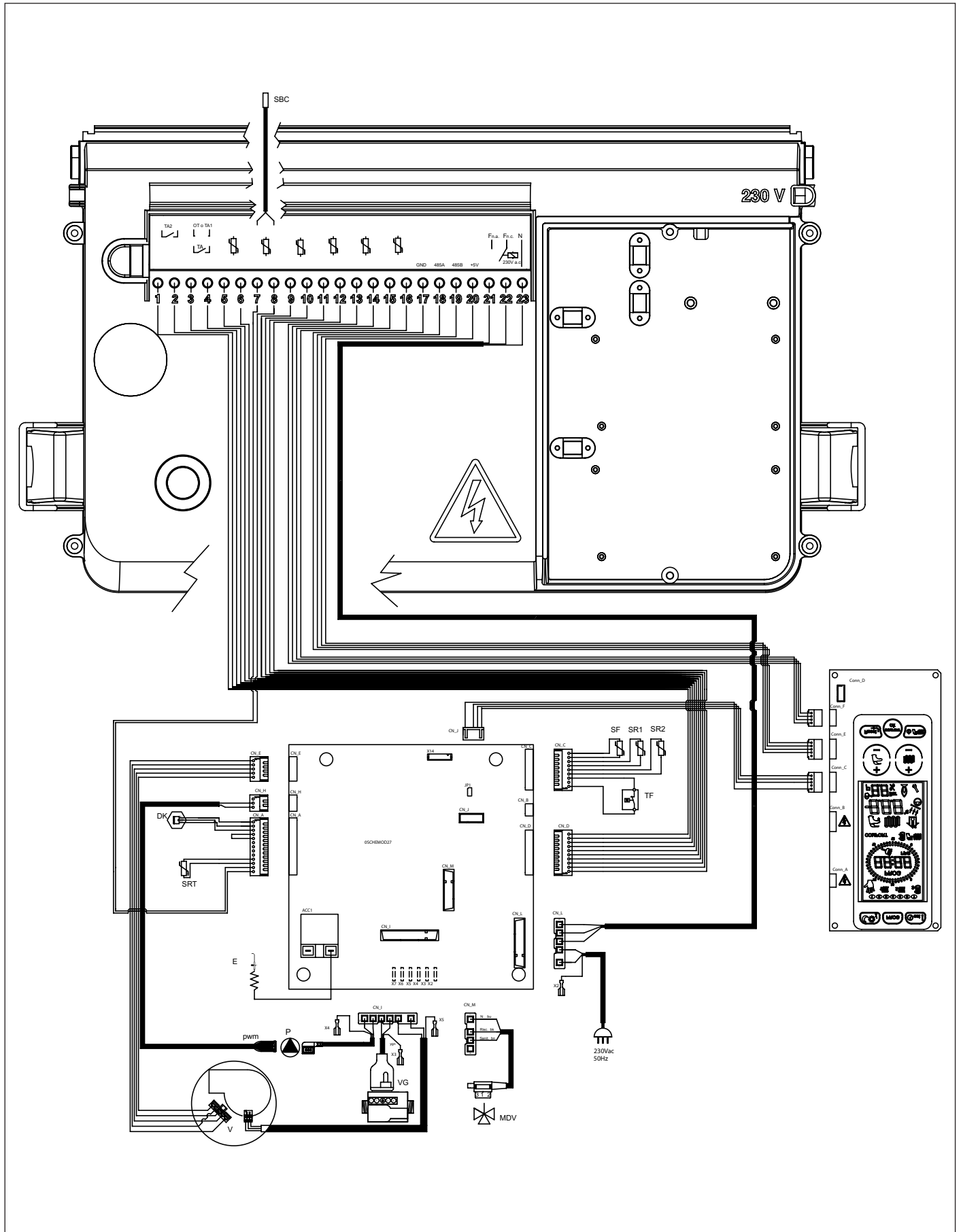


Fig. 19 Wiring diagram

Internal connections

- DK**:pressure transducer
- SBC**:water heater NTC probe 10k Ohm at 25°C B=3435
- SRT**:return NTC probe 10 k Ohm at 25°C B=3435
- SR1-SR2**:CH NTC probe 10k Ohm at 25°C B=3435 (double)
- SF**:flue gas temperature sensor on exchanger
- TF**:flue gas thermostat
- VG**:gas valve
- P**:boiler pump
- PWM**:PMW signal cable for circulation pump
- MDV**:electric 3-way valve
- E**:ignition/flame detection electrode
- V**:Fan
- CN_A-CN_M**:Load/signal connectors
- X2-X7**:ground connectors

Electrical connections to be made by the installer

- 1-2**:TA2 - Ambient thermostat 2
- 3-4**:OT or TA1 - Remote Control or ambient thermostat
- 5-6**:external probe (10K Ohm B=3977 at 25° C)
- 7-8**:Not available
- 9-10**:Not available
- 11-12**:Not available
- 13-14**:Ambient probe 1 (10K Ohm B=3977)
- 15-16**:Ambient probe 2 (10K Ohm B=3977)
- 17-18-19-20**:485 port for connection of additional boards
 - 17**:GND
 - 18**:A
 - 19**:B
 - 20**:+5V
- 21-22-23**:Programmable relay
 - 21**:phase (NO)
 - 22**:phase (NC)
 - 23**:neutral (COMMON)

3.17.1 Multifunction relay connection diagram

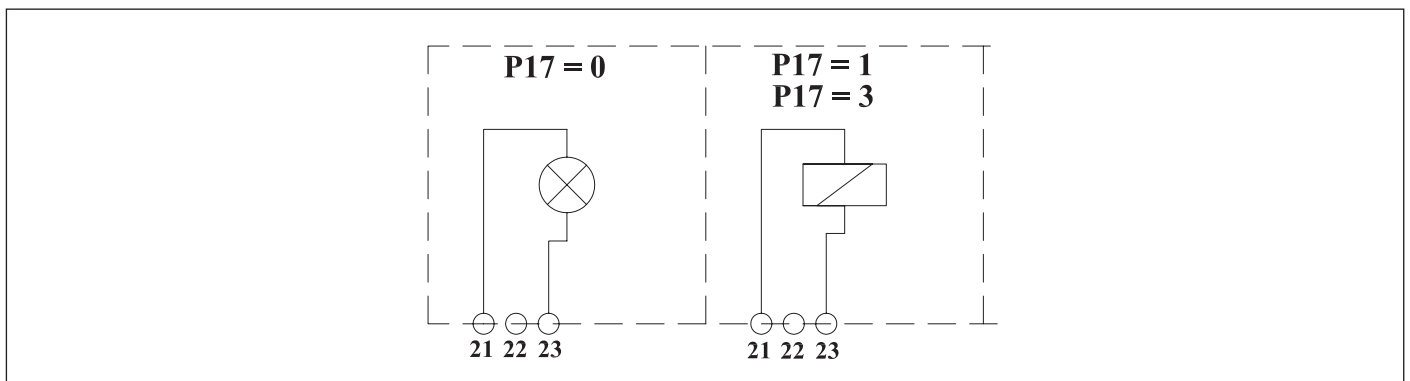


Fig. 20 Multifunction relay connection diagram

3.17.2 Multifunction relay setting diagrams

The control panel features a multifunction relay, to be set through the parameter **P17-TSP17**

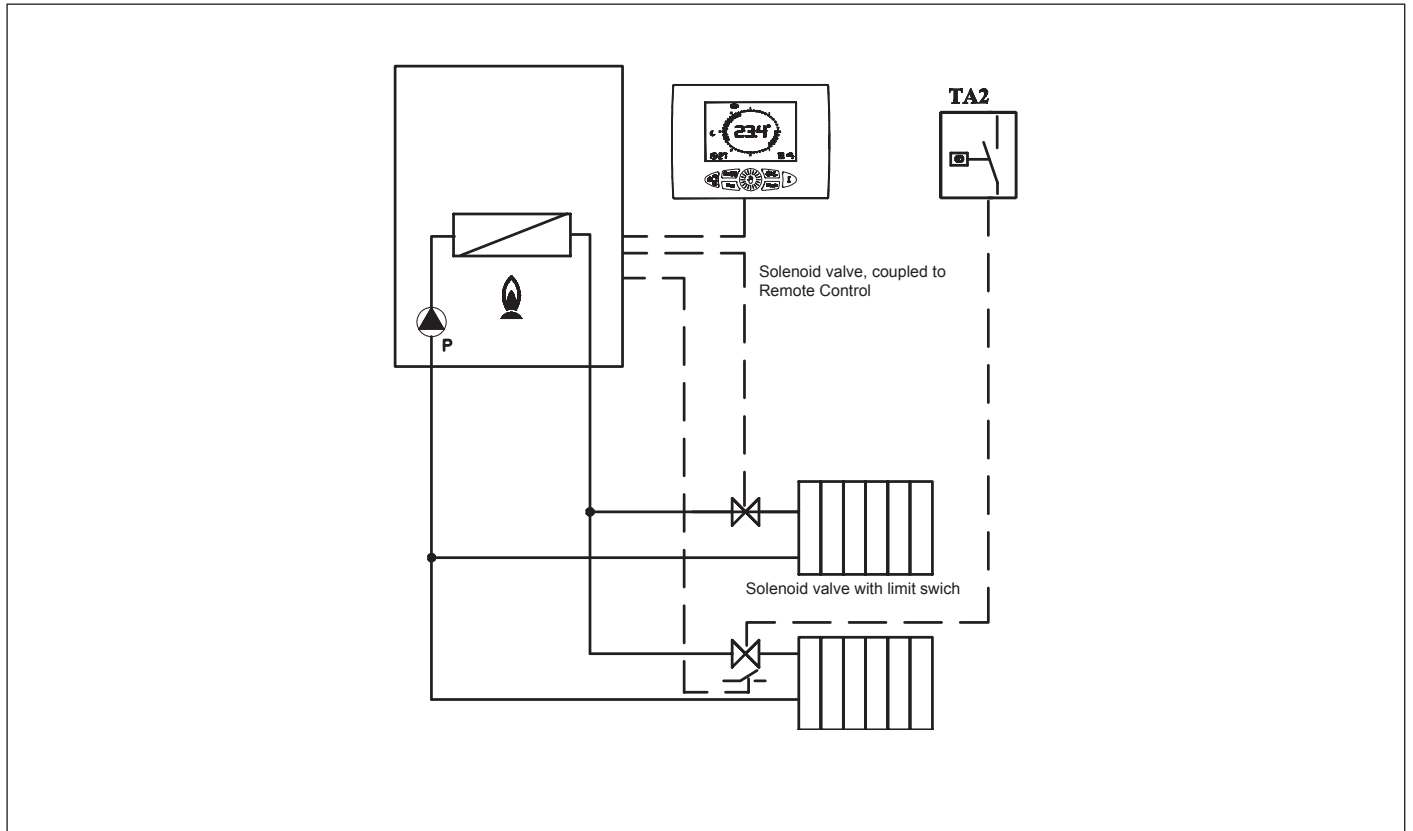


Fig. 21 Relay with remote control and TA2

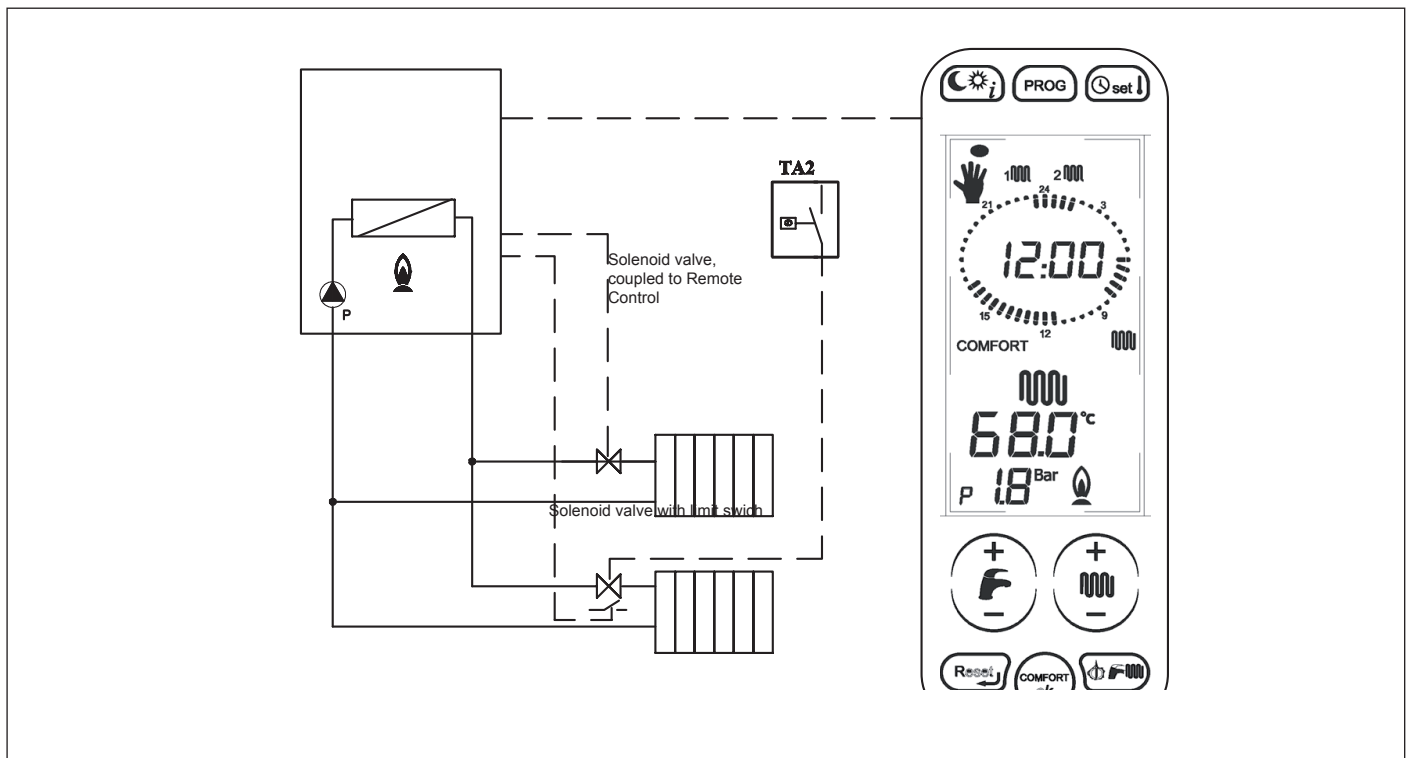


Fig. 22 Relay with interface and TA2

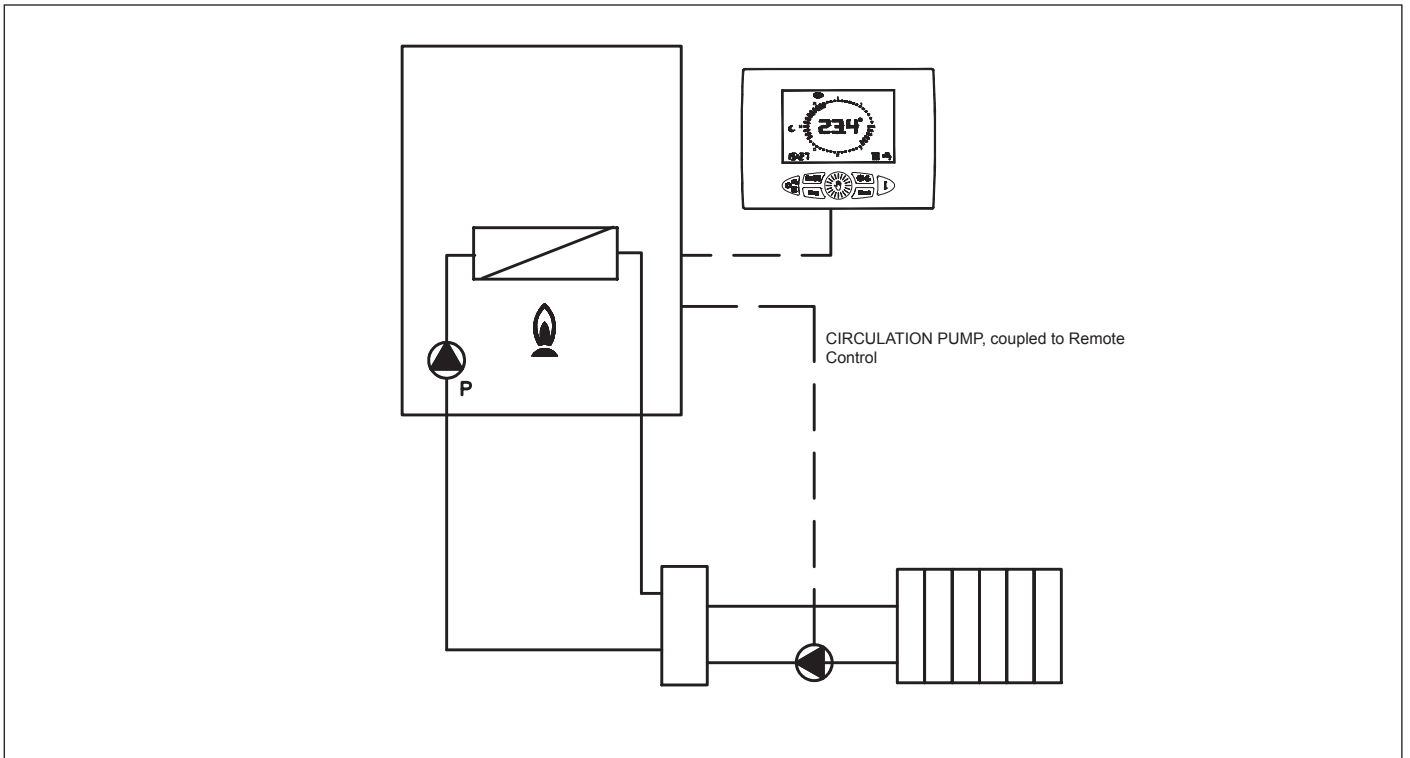


Fig. 23 Relay with remote request (P17=1)

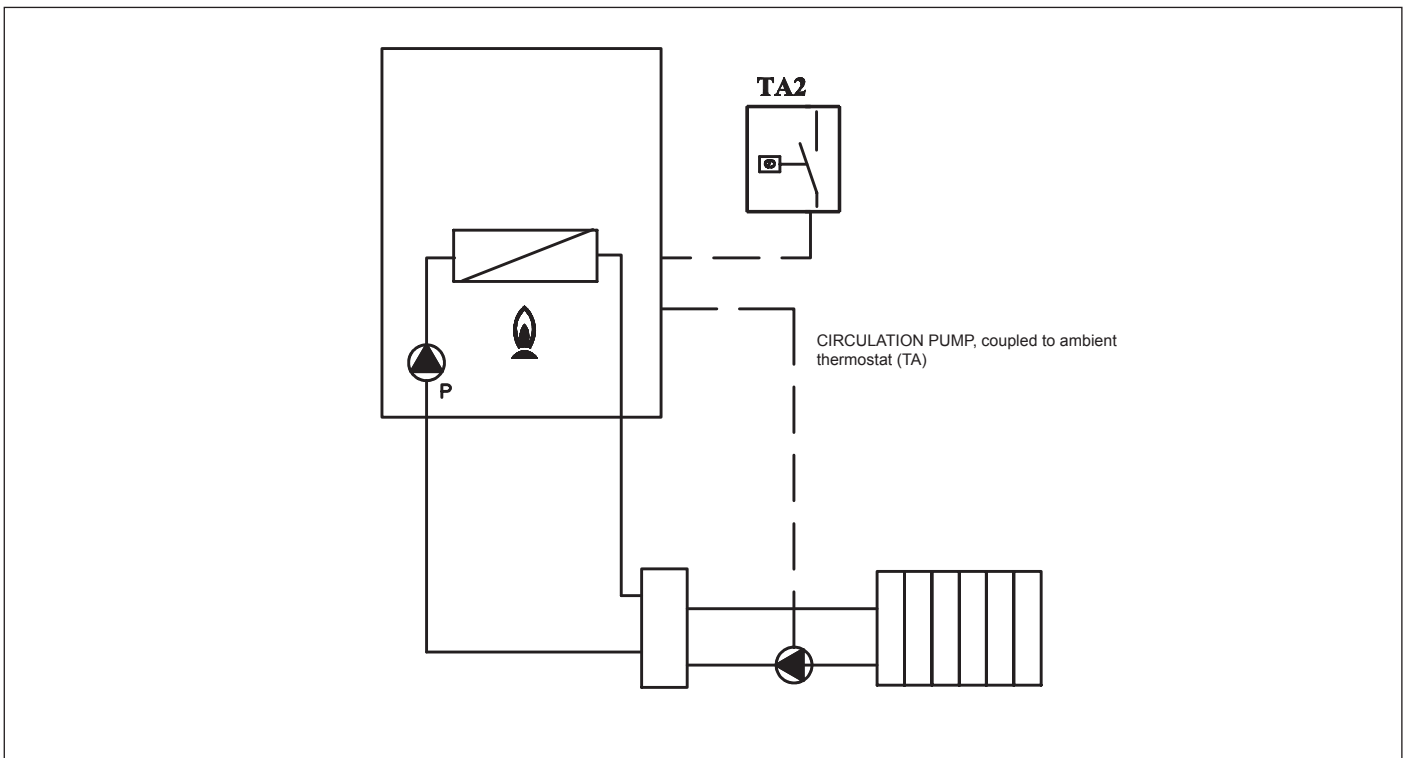


Fig. 24 Relay with TA2 request (P17 = 3)

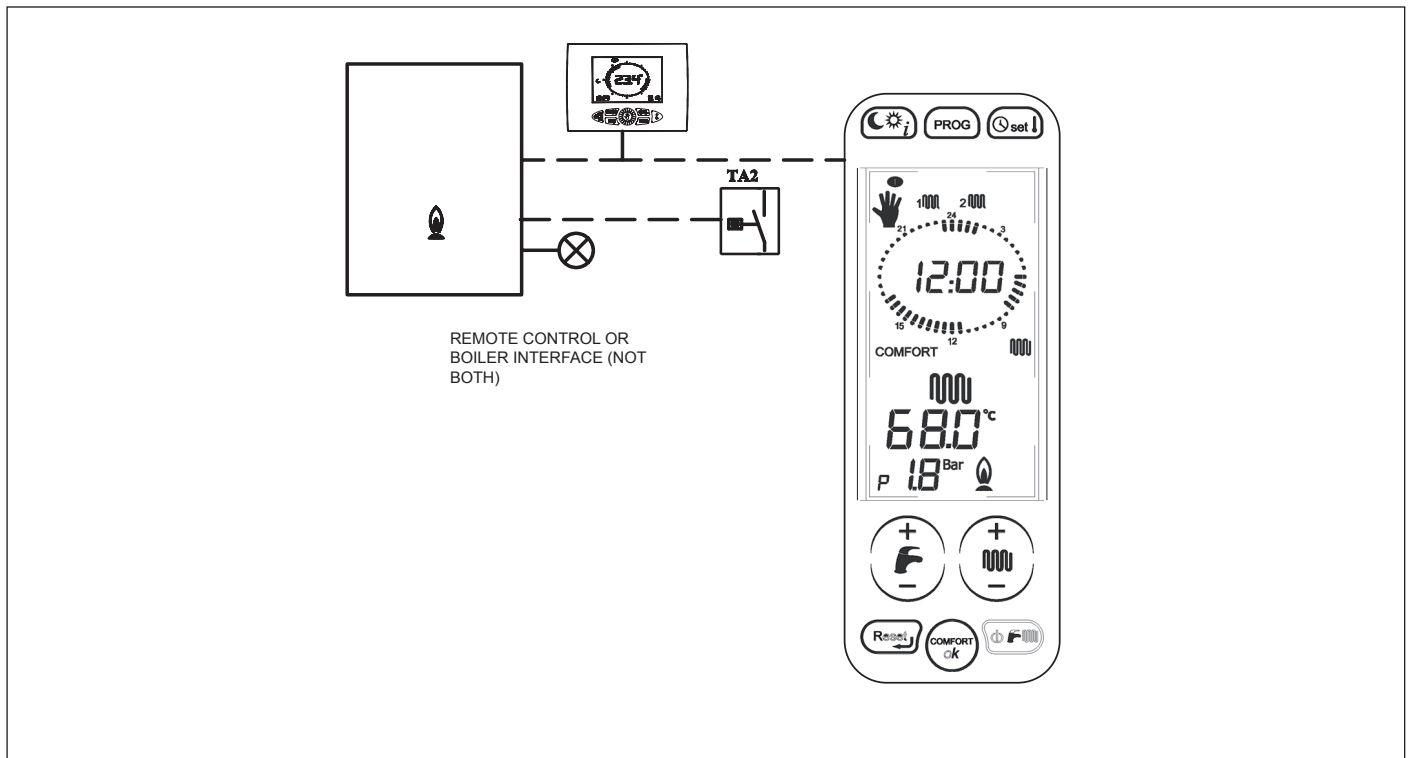


Fig. 25 Relay with alarm alert (P17 = 0)

| DIAGRAM PARAMETER SETTING (SOLAR PLANT EXCLUDED) | P17 |
|--|-----|
| Error signalling relay | 0 |
| Relay controlled by TA1 or by the Remote Control | 1 |
| Relay controlled by TA2 or by the interface | 3 |

Tab. 11 Parameter setting

3.17.3 Relationship between temperature and nominal resistance of all NTC probes

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

Tab. 12 Relationship between "Temperature and Nominal resistance" for temperature probes

3.18 Adaptation to other gas types and burner adjustment



WARNING

This boiler is built to run on the type of gas specified on the order, which is shown on the packaging and on the boiler rating plate. Any later transformation is to be exclusively carried out by qualified personnel, using manufacturer designed accessories and following the procedure and adjustment instructions for an accurate boiler setting-up.

3.18.1 Switching from NATURAL GAS to PROPANE

- Disconnect the boiler from the electric power supply.
- Remove boiler outer front panel.
- Loosen the three screws securing combustion chamber front panel to frame, then remove panel.
- Loosen the screw securing intake pipe to mixer, and remove pipe (see Fig. 26 Intake pipe).
- Disconnect the gas pipe from the mixer (see Fig. 26 Intake pipe).
- Loosen the three socket head screws, and remove the mixer (see Fig. 27 Mixer).
- Loosen the two retaining screws, and slide out mixer plastic body (see Fig. 28 Mixer plastic body).
- Using a 6 mm Allen wrench, loosen the two mixer nozzles (see Fig. 28 Mixer plastic body).
- Screw the new nozzles for propane listed in Tab. 15 Diameter of nozzles - diaphragms (mm), taking care to drive them fully home, without tightening.
- Only for the KB 32 model, insert the 7.2 mm diaphragm on the outlet of the gas valve.



WARNING

In case the nozzle idles when reaching the bottom of the nozzle threaded seat, it means that the thread is damaged and perfect sealing is not ensured. The whole mixer shall be replaced.

- To refit the plastic body (Venturi), insert it inside mixer and secure it in place with the retaining screws. Take care not to damage the O-rings assembled on plastic body ends (see Fig. 28 Mixer plastic body) and to respect the assembling direction (see Fig. 29 Assembling direction).
- Refit the reassembled mixer onto the fan with the socket head screws, making sure to insert the O-ring between mixer and fan (see Fig. 28 Mixer plastic body).
- Reconnect boiler to electric power supply, and open the gas cock.
- Edit value for parameter **P0-TSP0** depending on boiler power (see par. *Edit parameter P0-TSP0* on page 71).
- Adjust the gas valve (see par. *Gas valve setting* on page 71).

3.18.2 Switching from PROPANE to NATURAL GAS

- Disconnect the boiler from the electric power supply.
- Remove boiler outer front panel.
- Loosen the three screws securing combustion chamber front panel to frame, then remove panel.
- Loosen the screw securing intake pipe to mixer, and remove pipe (see Fig. 26 Intake pipe).
- Disconnect the gas pipe from the mixer (see Fig. 26 Intake pipe).
- Loosen the three socket head screws, and remove the mixer (see Fig. 27 Mixer).
- Loosen the two retaining screws, and slide out mixer plastic body (see Fig. 28 Mixer plastic body).
- Using a 6 mm Allen wrench, loosen the two mixer nozzles (see Fig. 28 Mixer plastic body).
- Screw the new nozzles for methane listed in Tab. 15 Diameter of nozzles - diaphragms (mm), taking care to drive them fully home, without tightening.
- Only for the KB 32 model, remove the 7.2 mm diaphragm on the outlet of the gas valve.



WARNING

In case the nozzle idles when reaching the bottom of the nozzle threaded seat, it means that the thread is damaged and perfect sealing is not ensured. The whole mixer shall be replaced.

- To refit the plastic body (Venturi), insert it inside mixer and secure it in place with the retaining screws. Take care not to damage the O-rings assembled on plastic body ends (see Fig. 28 Mixer plastic body) and to respect the assembling direction (see Fig. 29 Assembling direction).
- Refit the reassembled mixer onto the fan with the socket head screws, making sure to insert the O-ring between mixer and fan (see Fig. 28 Mixer plastic body).
- Reconnect boiler to electric power supply, and open the gas cock.
- Edit value for parameter **P0-TSP0** depending on boiler power (see par. *Edit parameter P0-TSP0* on page 71).
- Adjust the gas valve (see par. *Gas valve setting* on page 71).

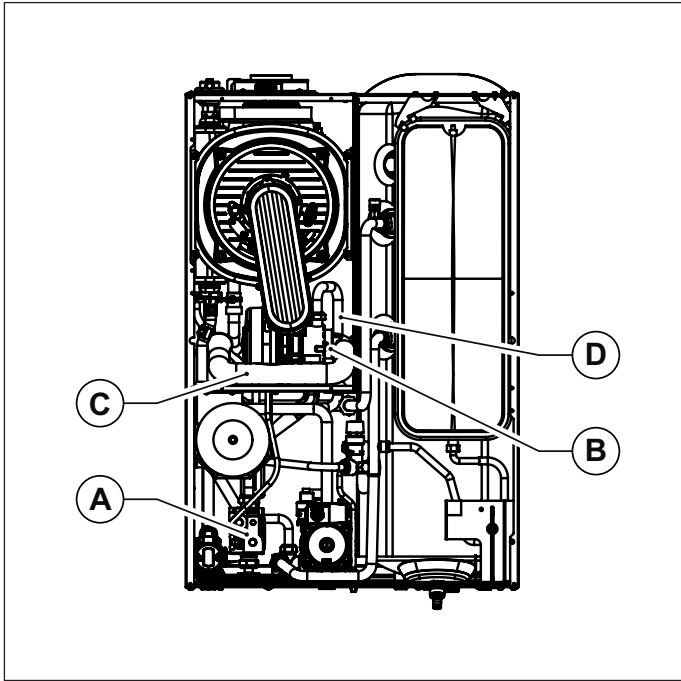


Fig. 26 Intake pipe

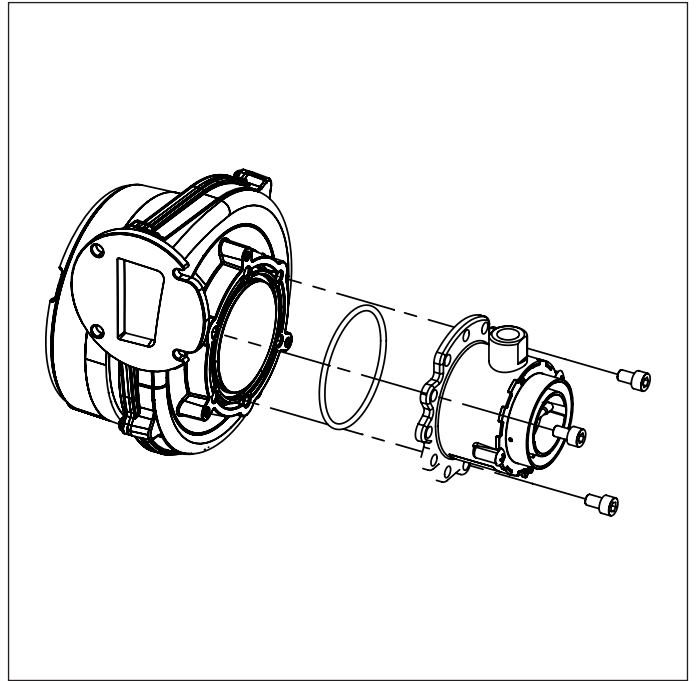


Fig. 27 Mixer

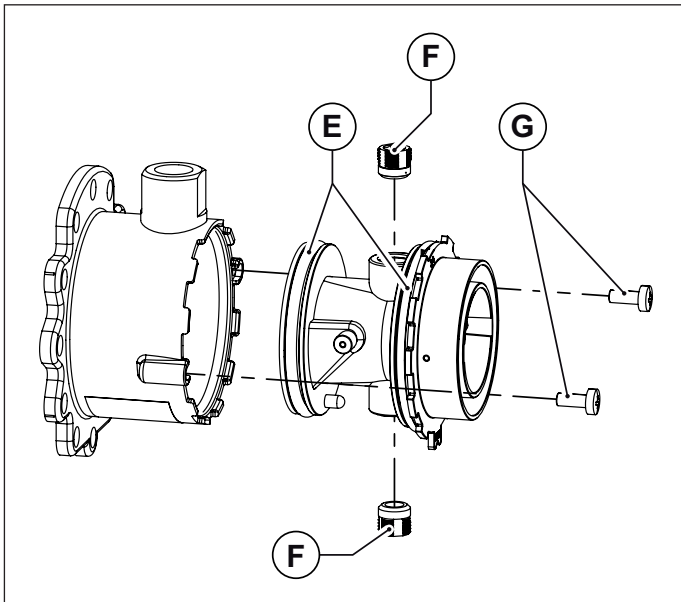


Fig. 28 Mixer plastic body

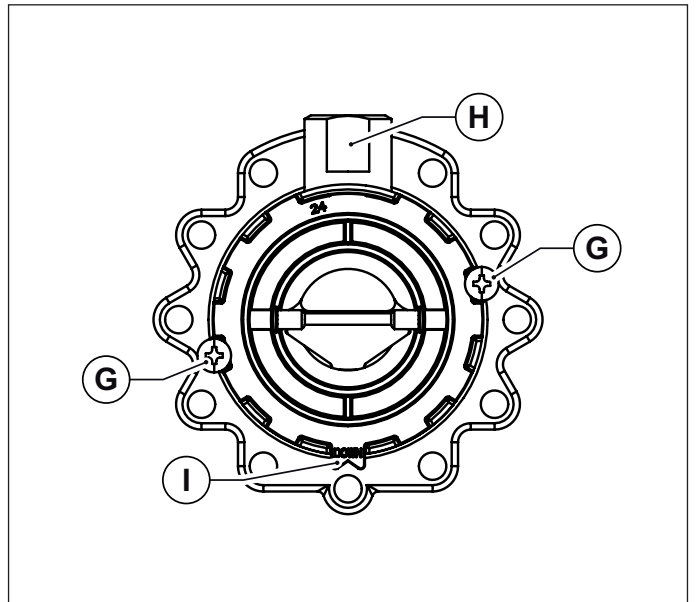

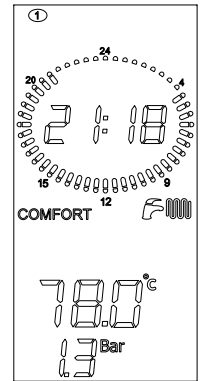


Fig. 29 Assembling direction

- A. Gas valve
- B. Mixer
- C. Air intake
- D. Gas pipe
- E. O-ring
- F. Nozzles
- G. Venturi to mixer retaining screws
- H. Gas fitting
- I. Direction tab

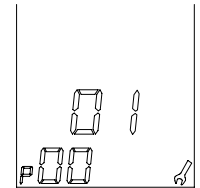
3.18.3 Edit parameter P0-TSP0

1. Press  and **ON** at the same time for three seconds.




2. Scroll through the parameters by pressing **CH +/-** buttons. As soon as you reach the one to be modified, press **OK**.

3. The wrench symbol turns on and indicates you can edit the parameter value.



4. The parameter value can be edited using **CH +/-** buttons.

5. To confirm modification press **Ok**.

6. To quit editing mode without changing the parameter press .



| Boiler settings | Parameter P0-TSP0 value |
|-----------------|-------------------------|
| 24 kW Methane | 1 |
| 24 kW Propane | 3 |
| 32 kW Methane | 6 |
| 32 kW Propane | 7 |



Tab. 13 P0-TSP0 parameter values

7. Adjust the gas valve (see *Gas valve setting* on page 71).


3.18.4 Gas valve setting

Maximum heating output adjustment

- Make sure that the ambient thermostat (optional), if fitted, is set to **ON**.
- Select the HEATING ONLY mode on the control panel pressing key  until symbol  is displayed.

- Start the flue cleaning function by pressing button  until symbol  stops flashing. The boiler starts operating at maximum heat output.
- If a gas switching has been made, access the programming page and set the parameter **P0** based on the power and on the gas, as specified in Tab. 10 Limits to be set for TSP parameters and default values in relation to boiler type (TSP0).
- Set flue gas CO2 content by turning the ratio adjuster **B** (see Fig. 30 Adjusting CO2 value) and ensure that reading falls within the limits of Tab. 14 Flue CO2 content. Let boiler flue cleaning function on and continue with the next point "Minimum heating output adjustment".

Minimum heating output adjustment

- Set boiler min. output operation by keeping **CH -** button pressed until the value corresponding to fan min. speed for the output and boiler gas is displayed, according to Tab. 10 Limits to be set for TSP parameters and default values in relation to boiler type (TSP0).
- Boiler switches to min. output operation.
- Set flue gas CO2 content by turning the offset control **C** (see Fig. 30 Adjusting CO2 value) and ensure that reading falls within the limits of Tab. 14 Flue CO2 content.
- Keep key  pressed to end the flue cleaning function.

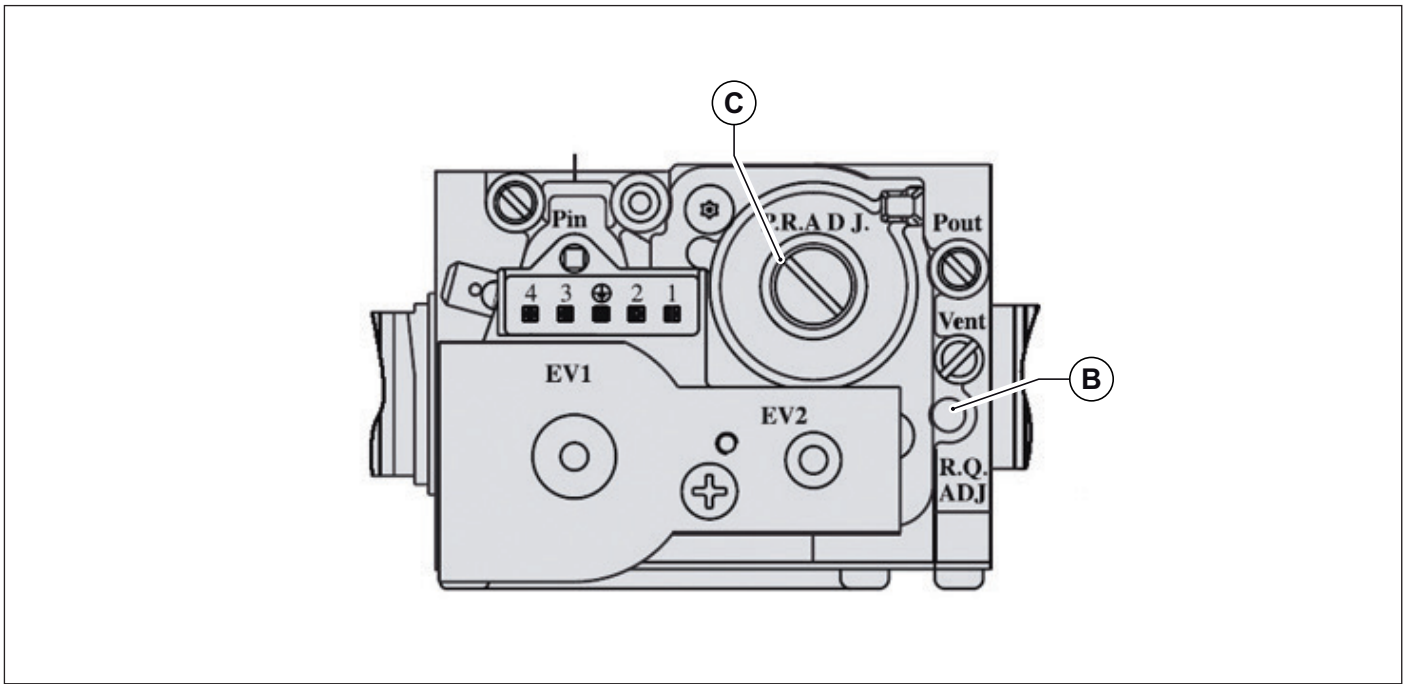


Fig. 30 Adjusting CO2 value

| Fuel | CO2 value (%) |
|---------------|---------------|
| 24 kW Methane | 9,0 - 9,3 |
| 24 kW Propane | 10 |
| 32 kW Methane | 9,0 - 9,3 |
| 32 kW Propane | 10 |

Tab. 14 Flue CO2 content

| Model | Natural gas | Propane |
|-------|-------------|------------------------|
| 24 kW | 3,70 | 3,00 |
| 32 kW | 4,45 | 3.55 + diaphragm Ø 7.2 |

Tab. 15 Diameter of nozzles - diaphragms (mm)

4. Testing the boiler

4.1 Preliminary checks

Before testing the boiler, it is recommended to check the following:

- the flue gas venting duct and the relative terminal are installed in conformity with the instructions: **there must be no leakage of combustion by-products from any of the gaskets.**
- the supply power to the boiler must be 230 V ~ 50 Hz;
- the system is correctly filled with water (pressure gauge reading 1 to 1.3 bar);
- any shut-off cocks in the system pipes are open;
- the mains gas type is correct for the boiler calibration: convert the boiler to the available gas when necessary; this operation must only be performed by qualified technical personnel;
- the gas supply cock is open;
- **there are no fuel gas leaks;**
- the main switch installed ahead of the boiler is turned on;
- the 3 bar (CH) and 7 bar (DHW) safety valves are not stuck;
- there are no water leaks;
- the condensate trap installed on the boiler is discharging condensate correctly and is not stuck.



WARNING

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

4.2 Switching on and switching off

To switch the boiler on and off, refer to the **“Instructions for the User”**.

5. Maintenance



WARNING

Any maintenance (and repair) work must only be carried out by qualified personnel.

The user is strongly advised to have the product serviced and repaired by a service centre or qualified personnel. Appropriate boiler maintenance ensures efficient operation, environment preservation, and safety for people, animals and objects.

The boiler must be serviced at least once every year.



WARNING

Disconnect electric power supply before starting any maintenance procedure, involving replacement of components and/or cleaning inside parts of boiler.

5.1 Maintenance schedule

Maintenance operations include check and cleaning procedures. In particular:

Inspections and checks

- Check general integrity of the boiler.
- Check boiler and network gas supply for leakage.
- Check gas supply pressure to boiler.
- Check boiler ignition sequence.
- Check the condition and seal integrity of the flue gas venting ducts.
- Check integrity of safety devices of the boiler in general.
- Check for water leaks and oxidised areas on the boiler's couplings.
- check efficiency of the system safety valves.
- Check boiler combustion parameters by flue gas analysis
- Check the state of combustion fan.
- check expansion vessels filling pressure.
- Check correct draining of condensate from the condensate trap installed on the boiler.
- check wear state of water heater magnesium anode.

The following cleaning is to be done

- Clean the general interior of the boiler.
- Clean the gas nozzles.
- Clean the air intake and flue gas venting circuits.
- Clean the heat exchanger.
- clean the condensate trap and discharge ducts.

When checking the boiler for the very first time, also verify:

- Boiler room suitability.
- Diameter and length of flue gas system ducts.
- Boiler installation in accordance to this "Installation use and maintenance" manual instructions.



WARNING

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

5.2 Combustion analysis

The combustion parameters of the boiler, which have to be checked in order to determine efficiency and emissions, must be measured in compliance with applicable legislation and standards.

6. Decommissioning, disassembly and disposal



Warning

If you decide to definitively decommission the boiler, have decommissioning, disassembly and disposal procedures carried out by qualified personnel, only.

The user is not authorised to carry out such operations.

Decommissioning, disassembly and disposal operations must be performed with boiler cold and disconnected from gas and power mains.

The materials the boiler is made of can all be recycled.

Once disassembled, boiler must be disposed of in accordance with the national prevailing regulations.

7. Malfunctions, possible causes and solutions

7.1 Troubleshooting

| BOILER STATUS | MALFUNCTION | PROBABLE CAUSE | USER'S TASKS | QUALIFIED PERSONNEL'S TASKS | |
|--|---|---|--|--|--|
| E01* | Burner does not ignite | Gas supply failure. | Check gas supply. Check gas supply cock or gas network safety valve intervention. | | |
| | | Gas valve is disconnected. | Contact qualified personnel | Reconnect it. | |
| | | Gas valve is faulty. | Contact qualified personnel | Replace it. | |
| | | The board is faulty. | Contact qualified personnel | Replace it. | |
| | Burner does not ignite: no spark | Ignition relay is faulty. | Contact qualified personnel | Replace the electrode. | |
| | | Ignition transformer is faulty | Contact qualified personnel | Replace the ignition transformer. | |
| | | Electronic board does not ignite. It is faulty. | Contact qualified personnel | Replace electronic board. | |
| | Burner ignites for a few seconds and goes off. | Electronic board does not detect flame: inverted phase and neutral. | Contact qualified personnel | Verify correct neutral and phase connection. | |
| | | Detection electrode cable is interrupted. | Contact qualified personnel | Reconnect or replace wire. | |
| | | Detection electrode is faulty. | Contact qualified personnel | Replace the electrode. | |
| | | Electronic board does not detect flame: it is faulty. | Contact qualified personnel | Replace electronic board. | |
| | | Ignition heat input setting is too low. | Contact qualified personnel | Increase it. | |
| Minimum heat input is not set correctly. | | Contact qualified personnel | Check burner setting. | | |
| E02* | Flow temperature exceeded the max. allowed value. | Circulation pump is faulty. | Contact qualified personnel | Replace it. | |
| | | Circulation pump is seized. | Contact qualified personnel | Check pump electrical connection. | |
| E03* | Air pressure switch triggering. | Flue gas exhaust pressure switch is faulty | Contact qualified personnel | Check pressure switch: replace it if faulty. | |
| | | The silicone pipes are disconnected or damaged. | Contact qualified personnel | Connect or replace silicone pipes | |
| | | Air intake or flue gas vent flow is not correct. | Contact qualified personnel | Check air intake/flue gas vent ducts: clean or replace if necessary. | |
| | | Fan disconnected. | Contact qualified personnel | Reconnect it. | |
| | | Fan faulty. | Contact qualified personnel | Replace it. | |
| | | The board is faulty. | Contact qualified personnel | Replace it. | |
| E04** | CH system water pressure is low. | The system is leaking. | Check system. | | |
| | | Pressure transducer is disconnected. | Contact qualified personnel | Reconnect it. | |
| | | Pressure transducer is faulty. | Contact qualified personnel | Replace it. | |

| BOILER STATUS | MALFUNCTION | PROBABLE CAUSE | USER'S TASKS | QUALIFIED PERSONNEL'S TASKS |
|---------------|--|---|---|-----------------------------|
| E05** | CH probe failure | Flow probe is electrically disconnected. | Contact qualified personnel | Reconnect it. |
| | | Flow probe faulty. | Contact qualified personnel | Replace it. |
| E07** | Flue probe failure | Flue probe is electrically disconnected. | Contact qualified personnel | Reconnect it. |
| | | Flue probe is faulty. | Contact qualified personnel | Replace it. |
| E09 | System pressure is too close to the max. limit. | During manual filling, a system pressure too close to the safety valve drain value has been restored. | Progressively drain the system until the error symbol disappears. | |
| E12** | Water heater probe failure (model RTFS with external water heater, optional, and NTC probe). | Probe is disconnected. | Contact qualified personnel | Reconnect it. |
| | | Probe is faulty. | Contact qualified personnel | Replace it. |
| E15** | Return probe failure. | Probe is disconnected. | Contact qualified personnel | Reconnect it. |
| | | Probe is faulty. | Contact qualified personnel | Replace it. |
| E31** | Remote Control connection failure (only shown on Remote Control display). | The Remote Control is not connected to boiler board. | Contact qualified personnel | Reconnect it. |
| | | Remote control faulty. | Contact qualified personnel | Replace it. |
| | | Boiler board is faulty. | Contact qualified personnel | Replace it. |
| E35** | Safety Thermostat triggering to protect the mixed "zone 2" (with zone kit "OKITZONE05" installed, only). | Mixer valve is faulty. | Contact qualified personnel | Replace it. |
| | | Thermostat is disconnected. | Contact qualified personnel | Reconnect it. |
| | | Thermostat is faulty | Contact qualified personnel | Replace it. |
| E36** | Flow probe failure on one of the installed zones (with zone kit "OKITZONE05" installed, only). | Probe is disconnected. | Contact qualified personnel | Reconnect it. |
| | | Probe is faulty. | Contact qualified personnel | Replace it. |
| E40* | Fan failure. | Fan disconnected. | Contact qualified personnel | Reconnect it. |
| | | Fan faulty. | Contact qualified personnel | Replace it. |
| E41** | No communication between board and peripheral devices (panel interface and/or zone/solar boards). | Interface display is disconnected. | Contact qualified personnel | Reconnect it. |
| | | Zone/solar boards are disconnected. | Contact qualified personnel | Reconnect them. |
| | | Interface display and/or zone/solar boards are faulty. | Contact qualified personnel | Replace them. |

| BOILER STATUS | MALFUNCTION | PROBABLE CAUSE | USER'S TASKS | QUALIFIED PERSONNEL'S TASKS |
|---------------|---|--|-----------------------------|---|
| E42 | Hydraulic system setting error. | Wrong boiler board or solar board setting parameters. | Contact qualified personnel | Check that the P17 and P18 parameter set values match with those specified on the reference tables. |
| E44 | Ambient probe 1 failure | Disconnected or short-circuited probe. | Contact qualified personnel | Reconnect it or replace it. |
| E45 | Ambient probe 2 failure | Disconnected or short-circuited probe. | Contact qualified personnel | Reconnect it or replace it. |
| E46 | Pressure transducer failure. | Pressure transducer is disconnected. | Contact qualified personnel | Reconnect it. |
| | | Pressure transducer is faulty. | Contact qualified personnel | Replace it. |
| E49 | Communication error between boiler board and touch screen. | The interface is faulty. | Contact qualified personnel | Replace interface. |
| E51 | Shut-down due to safety circuit hardware fault | Boiler electronic board is faulty. | Contact qualified personnel | Check boiler electronic board. |
| E52 | | | | |
| E53 | | | | |
| E80* | The ΔT between flow and return is not within the limits. | Flow and/or return probes are faulty. | Contact qualified personnel | Replace them. |
| | | Obstructed bypass pipe | Contact qualified personnel | Remove any obstructions, or replace the pipe. |
| | | The bypass valve is not assembled or wrongly assembled. | Contact qualified personnel | Restore bypass valve correct assembling. |
| | | Heat exchanger primary circuit is obstructed. | Contact qualified personnel | Clean or replace the exchanger. |
| E86* | Flow temperature increases too quickly. | Pump is seized. | Contact qualified personnel | Unseize the pump. |
| | | Pump is faulty. | Contact qualified personnel | Replace it. |
| | | Air present inside heating system. | Contact qualified personnel | Bleed the air from the boiler by opening the jollies on the exchanger and pump. |
| E87* | Flow temperature increases too quickly. | Circulation of foreign water in boiler. | Contact qualified personnel | Check that there are no other boilers or additional cascading heat sources. |
| | | Air present inside heating system. | Contact qualified personnel | Bleed the air from the boiler by opening the jollies on the exchanger and pump. |
| E89*** | Faulty flue temperature value. | Flue probe on heat exchanger is faulty or damaged. | Contact qualified personnel | Replace it. |
| E98 | The max. number of resets from the boiler interface has been reached. | The user has reached the max. number of resettable errors from boiler. | Press RESET button | |
| E99 | The max. number of resets from the Remote Control has been reached. | The user has reached the max. number of resettable values from the Remote Control. | Press RESET button | |

* errors that can be reset by the user by keeping the **RESET** button pressed

** self-resettable errors, they automatically reset as soon as the failure is fixed

*** errors that can be reset only by the Technical Service personnel

In case errors **E51, E52, E53, E73, E85, E90** and **E91** might occur, contact a Qualified Service Centre.

MANUFACTURER'S COMPLIANCE STATEMENT

Gas Directive 2009/142/EC
Efficiency Requirements Directive 92/42/EC
Electromagnetic Compatibility Directive 2004/108/EC
Low Voltage Directive 2006/95/EC
Ecodesign Directive 2009/125/CE
Energy Labelling Directive 2010/30/CE

FONDITAL S.p.A.
having its registered office in
Via Cerreto 40 - 25079 Vobarno (BS), Italy

STATES

that the products
Itaca KB 24, Itaca KB 32

are manufactured in conformity

1. With the Type described in the CE-Type Examination Certificate **51CM4094**
and in the CE-Type Examination Certificate **51CM4095DR**

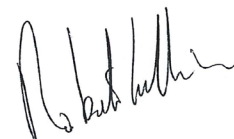
following the provisions of the Directives
Gas Directive 2009/142/EC
Efficiency Requirements Directive 92/42/EC
which satisfy the essential requisites.

2. With the provisions of the **Electromagnetic Compatibility Directive 2004/108/EC.**
3. With the provisions of the **Low Voltage Directive 2006/95/EC.**
4. With the provisions of the **Ecodesign Directive 2009/125/CE.**
5. With the provisions of the **Energy Labelling Directive 2010/30/CE.**

Fondital S.p.A.

For management
Officer i/c Technical Office

Eng. Roberto Cavallini



Vobarno, date of issue or of postal mark

Dichiarazione di conformità caldaie

Itaca KB

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