

# TAHITI DUAL HC - HR



GB

Gas fired wall Mounted condensing boiler  
Tahiti Dual 24 - 32 kW Combi (HC)  
Tahiti Dual 24 - 32 kW Regular (HR)



## INSTALLATION, USE AND MAINTENANCE



Line

High quality  
Italian product

MADE IN ITALY

## Natural Gas

### **Fondital Tahiti Dual HC 24 kW Line Combi (HC)**

G.C.N° 47 309 04

### **Fondital Tahiti Dual HR 24 kW Line Regular (HR)**

G.C.N° 47 309 05

### **Fondital Tahiti Dual HC 32 kW Line Combi (HC)**

G.C.N° xx xxx xx

### **Fondital Tahiti Dual HR 32 kW Line Regular (HR)**

G.C.N° xx xxx xx

Benchmark places responsibilities on both manufacturers and installers. The purpose is to ensure that customers are provided with the correct equipment for their needs, that it is installed, commissioned and serviced in accordance with the manufacturer's instructions by competent persons and that it meets the requirements of the appropriate Building Regulations. The Benchmark Checklist can be used to demonstrate compliance with Building Regulations and should be provided to the customer for future reference.

Installers are required to carry out installation, commissioning and servicing work in accordance with the Benchmark Code of Practice which is available from the Heating and Hotwater Industry Council who manage and promote the Scheme.

Visit [www.centralheating.co.uk](http://www.centralheating.co.uk) for more information.



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

# 1. General information for fitters, maintenance technicians and users

## 1.1. General warnings

This INSTRUCTION MANUAL, which is an integral and indispensable part of the product, must be handed over to the user by the installer and must be kept in a safe place for future reference. The manual must accompany the boiler should it be sold or its possession transferred. Following to the boiler installation, the fitter is to advise the user about boiler operation and its safety devices. This Manual must be left along with the Benchmark commissioning booklet with the boiler as Regulation 29 of the HSC Gas safety (installation and use) Regulations 1998.



**This boiler is designed for connection to a domestic heating or hot water system. Any other use is deemed as improper and as such dangerous. Under no circumstances will the manufacturer be held responsible for damage or injury to persons or animals caused by errors in the installation and/or use of the appliance, or through non-compliance with current local and national standards and/or the manufacturer's instructions.**

The boiler must be installed by qualified personnel, in compliance with applicable laws and standards and according to the manufacturer's instructions given in this manual.

In GB, the installation must be carried out by a Registered Installer. To check for authorised qualified engineers please contact CORGI 01256 372400. It must be carried out in accordance with the relevant requirements of the:

- Gas Safety Regulations;
- The appropriate Building Regulations either The Building Regulation, The Building Regulations (Scotland), Building Regulations (Northern Ireland);
- The Water Fittings Regulations or Water Bylaws in Scotland;
- The current I.E.E. Wiring Regulations.

Where no specific instructions are given, reference should be made to the relevant British Standards Code of Practice.

In IE, the installation must be carried out by a competent Person and installed in accordance with the current edition of I.E. 813 "Domestic Gas Installations", the current Building Regulations and reference should be made to the current ETCI rules for electrical installations.

The commissioning of the boiler and any subsequent works carried out on the appliance must be effected by an appropriately qualified technician or an approved Fondital Helpline Service Centre.

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

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

Check that the boiler is intact and it has not been damaged during transport and handling: do not install equipment which is damaged and/or faulty. In case of doubt, do not attempt to use the product but refer to the supplier. Packing materials (cardboard box, wooden crate, nails, staples, plastic bags, polystyrene, etc.) must not be left within reach of children in that these items represent a potential hazard and must be disposed of in a responsible manner.

Do not obstruct the air intake or flue exhaust grills and terminals.

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

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

In the event of failure and/or malfunction, shut down the system. Do not interfere with or attempt any repairs. Call for professionally qualified technical assistance only. Fondital helpline UK 08700 34 8820.

Any warranty repairs to the appliance must be carried out exclusively by the manufacturer's authorised service centre using original spare parts. Non-observance of the above requirements may affect the safety of the boilers and endanger people, animals and property.

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

Before carrying out any cleaning or maintenance operations, disconnect the appliance from the mains electricity supply by switching off at the main switch and/or any other isolating device.



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

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

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



**Should you smell gas:**

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

Never use flames to detect gas leaks.

**NATIONAL GRID GAS EMERGENCY 0800 111 999**



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

The “operating instructions” of this manual must be read carefully as it provides information on the operating and the operating limits of the appliance.

This appliance must be used exclusively in an un-vented central heating system.

The warnings contained in this chapter have been written for the appliance user, the installer and the service engineer.

## **1.2. Product conformity**

FONDITAL S.p.a. declare that all its products are manufactured to a high specification and in compliance with the relevant standards.

All FONDITAL boilers are CE certified and possess technical and functional characteristics that comply with the following standards:

UNI EN 297 for GAS-FIRED CENTRAL HEATING BOILERS TYPE B OF NOMINAL HEAT INPUT  $\leq 70$  kW

EN 483 for GAS-FIRED CENTRAL HEATING BOILERS TYPE C OF NOMINAL HEAT INPUT  $\leq 70$  kW

UNI EN 677 for GAS-Fired CENTRAL HEATING BOILERS. SPECIFIC REQUIREMENTS FOR CONDENSING BOILERS WITH NOMINAL HEAT INPUT  $\leq 70$  kW

Gas fired boilers also comply with the following directives:

GAS APPLIANCES DIRECTIVE 90/396 CEE for CE compliance

LOW VOLTAGE DIRECTIVE 2006/95 CE

BOILER EFFICIENCY DIRECTIVE 92/42 CE

ELECTROMAGNETIC COMPATIBILITY DIRECTIVE 89/336 CE

The materials used such a copper, brass, stainless steel, etc. form a compact, homogeneous, highly functional unit that is easy to install and simple to operate. In its simplicity, the wall-mounted appliance is equipped with all the appropriate accessories required to make it a fully independent boiler capable of satisfying domestic hot water production and central heating needs. All boilers are fully inspected and are accompanied by a quality certificate, signed by the inspector, and a guarantee certificate. This manual must be kept in a safe place and must **accompany the boiler at all times**.

**FONDITAL S.p.a. will not be held responsible for any misinterpretation of this manual resulting from the inaccurate translation of same.**

**FONDITAL S.p.a. will not be held responsible for the consequences in the case of non observance of the instructions contained in this manual or in the case where actions not specifically described herein are undertaken.**

**FONDITAL S.p.a. declare that no substances harmful to health are contained in the appliance or used during appliance manufacture and have not used or intend to use any of the following substances in the manufacture of Fondital heating products:**

- Asbestos
- Mercury
- CFC's



**It is a condition of the manufacturers warranty that the Benchmark Commissioning Checklist is fully completed and left with the appliance.**

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## 2. Instructions for the user

Fondital is a licensed member of the Benchmark Scheme which aims to improve the standards of installation and commissioning of domestic heating and hot water systems in the UK and to encourage regular servicing to optimise safety, efficiency and performance.

Benchmark is managed and promoted by the Heating and Hotwater Industry Council.  
For more information visit [www.centralheating.co.uk](http://www.centralheating.co.uk)

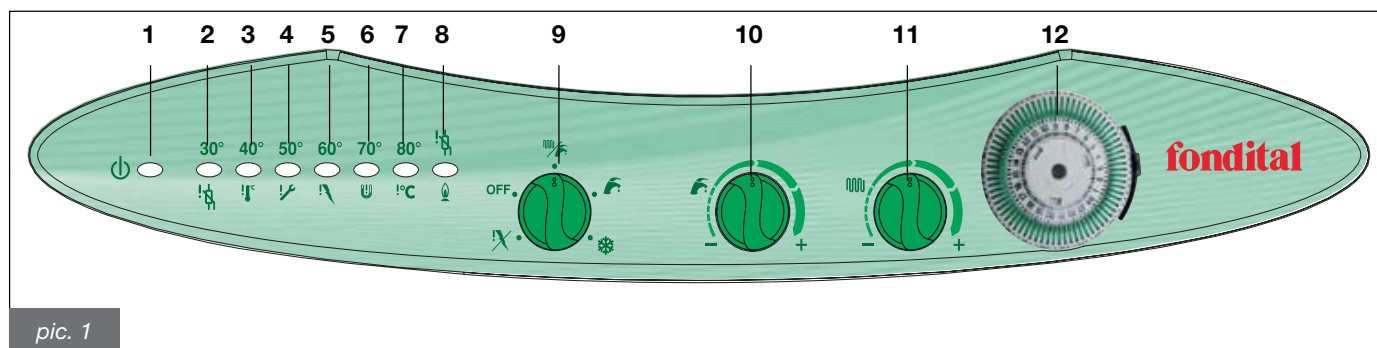
Please ensure that the installer has fully completed the Benchmark Checklist on the inside back pages of the installation instructions supplied with the product and that you have signed it to say that you have received a full and clear explanation of its operation. The installer is legally required to complete a commissioning checklist as a means of complying with the appropriate Building Regulations (England and Wales).

All installations must be notified to Local Area Building Control either directly or through a Competent Persons Scheme. A Building Regulations Compliance Certificate will then be issued to the customer who should, on receipt, write the Notification Number on the Benchmark Checklist.

This product should be serviced regularly to optimise its safety, efficiency and performance. The service engineer should complete the relevant Service Record on the Benchmark Checklist after each service.

The Benchmark Checklist may be required in the event of any warranty work and as supporting documentation relating to home improvements in the optional documents section of the Home Information Pack.

### 2.1. Control panel



#### 1. Power mains connection light (green)

This light indicates that the power supply to the boiler is on.

#### 2. Indicator light (red)

When this light is on, it means the temperature of the water in the heating system is between 25°C and 35°C.  
When this light is flashing, it means the boiler has shut down due to a malfunction.

#### 3. Indicator light (red)

When this light is on, it means the temperature of the water in the heating system is between 36°C and 45°C. When this light is flashing, it means the boiler's safety thermostat has shut the boiler down.

#### 4. Indicator light (red)

When this light is on, it means the temperature of the water in the heating system is between 46°C and 55°C.  
When this light is flashing, it means there is a fault in the air intake and/or flue discharge piping.

#### 5. Indicator light (red)

When this light is on, it means the temperature of the water in the heating system is between 56°C and 65°C.  
When this light is flashing, it means the burner has shut down.

#### 6. Indicator light (red)

When this light is on, it means the temperature of the water in the heating system is between 66°C and 75°C.  
When this light is flashing, it means the water pressure in the boiler is too low.

#### 7. Indicator light (red)


When this light is on, it means the temperature of the water in the heating system is between 76°C and 85°C.  
When this light is flashing, it means the CH temperature is above 85°C.

#### 8. Indicator light (yellow)


When this light is on, it means the flame is present on the burner.  
When this light is flashing, it means the boiler has shut down due to a malfunction.


## 9. Boiler mode

When the knob is in the OFF position the boiler is in stand-by mode.

When the knob is in the SUMMER position , the boiler supplies DHW only.

When the knob is in the WINTER position , the boiler supplies both CH and DHW.

When the knob is in the ANTI-FREEZE position , only the boiler anti-freeze function is active.

When the knob is turned to the RESET position and back , the boiler resumes operation.

## 10. DHW temperature regulator

This knob is used to set the DHW temperature within the range 35 - 57°C

### WARNING

The boiler has a special built-in regulator that limits DHW flow up to 10 litres per minute. In addition to the DHW temperature set on this regulator, the DHW temperature also depends on the amount of water requested by the user and the supply temperature.

## 11. CH temperature adjustment

This knob is used to set the temperature of the water in the heating system. The setting range is 35 - 78°C.

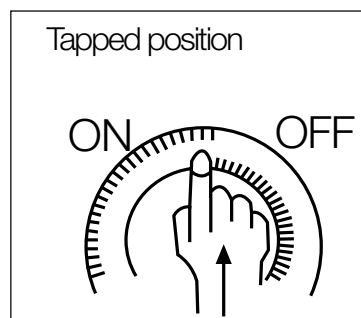
## 12. Time clock

The time clock is for central heating control only. The clock is provided with a selector switch with three positions:

- Position "I" CONSTANT:** in this position, the clock circuit is always closed (switch on), therefore the boiler will constantly on and will only shut off upon the request of the room thermostat (if installed) or the heating thermostat;
- Position "O" HEATING OFF:** in this position, the clock circuit is always open (switch off) and the boiler will therefore never igniter for heating, Domestic hot water will operate on demand;
- "Central" position PROGRAMMING ACTIVE:** in this position, the programming set by the user is active.

Using the three position switch the timer will allow either constant operation, timed operation or central heating off. Move the switch bottom by sliding to the desired position.

The time clock is provided with 72 switches, each of which cover a time interval of 20 minutes (three per hour).



When a rider is switched from the outside (on setting) to the inside of the clock border (off setting), the circuit is open (switch off) for a period of 20 minutes and then the boiler stops.

For set the time of day, turn the timer outer bezel clockwise, to align the pointer with the correct time to the nearest 20 minutes. Do not at any time attempt to turn the bezel anti-clockwise.

For set the timed heating program, decide which times of the day the central heating is required. The heating will operate when the green tappets are set to the outer edge of the bezel. To ensure the heating stays OFF set the required tappets inwards towards the centre of the bezel.



## COLOUR DISPLAY ACCORDING TO BOILER STATUS

Regular working	LIGHT 1	LIGHT 2	LIGHT 3	LIGHT 4	LIGHT 5	LIGHT 6	LIGHT 7	LIGHT 8
Power connected to boiler	GREEN	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Burner on	GREEN	n/a	n/a	n/a	n/a	n/a	n/a	YELLOW
CH temperature < 25°C	GREEN	OFF	OFF	OFF	OFF	OFF	OFF	n/a
26°C < CH temperature < 35°C	GREEN	RED	OFF	OFF	OFF	OFF	OFF	n/a
36°C < CH temperature < 45°C	GREEN	OFF	RED	OFF	OFF	OFF	OFF	n/a
46°C < CH temperature < 55°C	GREEN	OFF	OFF	RED	OFF	OFF	OFF	n/a
56°C < CH temperature < 65°C	GREEN	OFF	OFF	OFF	RED	OFF	OFF	n/a
66°C < CH temperature < 75°C	GREEN	OFF	OFF	OFF	OFF	RED	OFF	n/a
76°C < CH temperature < 85°C	GREEN	OFF	OFF	OFF	OFF	OFF	RED	n/a

Table 1 - Colour displayed by Light in relation to boiler operation status

Malfunctions	LIGHT 1	LIGHT 2	LIGHT 3	LIGHT 4	LIGHT 5	LIGHT 6	LIGHT 7	LIGHT 8
Power is missing	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF
Safety thermostat shutdown	GREEN	OFF	RED L	OFF	OFF	OFF	OFF	OFF
Air/flue gas pressure switch shutdown	GREEN	OFF	OFF	RED L	OFF	OFF	OFF	OFF
Shutdown due to flame absence	GREEN	OFF	OFF	OFF	RED L	OFF	OFF	OFF
Water pressure switch shutdown	GREEN	OFF	OFF	OFF	OFF	RED L	OFF	OFF
Gas valve alarm	GREEN	OFF	RED L	OFF	OFF	OFF	OFF	YELLOW L
Water temperature switch alarm (>85°C)	GREEN	OFF	OFF	OFF	OFF	OFF	RED L	OFF
DHW flow probe alarm	GREEN	RED L	OFF	OFF	OFF	OFF	OFF	OFF
CH flow probe alarm	GREEN	RED L	OFF	OFF	OFF	OFF	OFF	YELLOW L
External cylinder probe alarm	GREEN	RED LA	OFF	OFF	OFF	OFF	OFF	YELLOW LA
Remote control malfunction	GREEN	OFF	OFF	RED L	OFF	OFF	OFF	YELLOW L

Table 2- Colour displayed by Light in relation to boiler malfunction status

### KEY TO ACRONYM

OFF	LIGHT off
RED	LIGHT on, displaying the colour shown on the table
L RED	LIGHT or lights flashing, displaying the colour shown on the table
LA RED	LIGHTS flashing, displaying in sequence the colours shown on the table
n/a	LIGHT status not relevant

## 2.2. Operating the boiler

### 2.2.1. Switching on



These instructions presuppose that the boiler has been installed by an authorized fitter, started up for the first time and set up for correct operation.

- Open the gas stop cock.
- Connect the boiler to the mains power supply (LIGHT 1 on the control panel comes on).
- Choose boiler mode by operating the "OFF/SUMMER/WINTER/ANTI-FREEZE" selector (9).
- Turn the CH temperature adjustment knob (11) to set the temperature required for the heating system.
- Turn the DHW temperature knob (10) to set the temperature required for the DHW (HC).
- Set desired room temperature by means of the room thermostat in the premises (when available).

**WARNING:** If the boiler is not used for a long time, particularly if it runs on LPG, ignition may be difficult.

Before operating the boiler, switch on another gas-powered device (e.g. kitchen range or oven). Be aware that even if this procedure is followed, the boiler may still experience some starting difficulties and shut down once or twice.

Reset the boiler by operating knob (9), then turn the knob back to the required position. Allow three minutes between each attempt to re-light the boiler.

### 2.2.2. CH function

Use the regulation knob (11, pic. 1) to set the temperature in the central heating system.

The temperature setting range is 35-78°C (from the counter-clockwise limit position to the time limit position).

The CH temperature can be read from lights 2÷7 (pic. 1) on the control panel.

To prevent frequent ignition and switching off in heating mode, the boiler has a 4-minute waiting time between subsequent ignitions.

If the water temperature in the system fall below 40°C, waiting procedure is aborted and the boiler re-ignites (*Antifast* function).

### 2.2.3. DHW function

The domestic hot water supply function is active on model HC, and on model HR with an (optional) external water heater. This function always has priority over central heating water.

For model HC, the temperature setting range is 35-57°C (from the counter-clockwise limit position to the time limit of regulation knob **10**). For model HR with an (optional) external water heater with an NTC probe (10 kΩ @ β=3435; refer to the water heater specifications), the temperature setting range is 35-57°C (from the counter-clockwise limit position to the time limit of regulation knob **10**).

For model HR with an (optional) external water heater with thermostat probe, the desired DHW temperature must be set on the water heater (refer to the attached instructions). Regulation knob **10** has no effect on this configuration.

The boiler is fitted with a flow-limiting device that allows a maximum DHW flow of 10 litres per minute.

The DHW flow rate depends on the boiler's thermal capacity and the mains water supply temperature, and can be calculated from the following formula:

$$I = \text{DHW liter per minute} = \frac{K}{\Delta T}$$

K represents:

349 (HC 24)

434 (HC 32)

ΔT = DHW temperature – mains water supply temperature.

E.g. In model HC 24, if the mains water supply temperature is 8°C and DHW is required at 38°C, the value of ΔT is:

$$\Delta T = 38^{\circ}\text{C} - 8^{\circ}\text{C} = 30^{\circ}\text{C}$$

and DHW litres (l per minute) available at the required temperature of 38°C is

$$I = 349 / 30 = 11.7 \text{ [litres per minute - mixed water to the tap].}$$

### 2.2.4. ANTI-FREEZE FUNCTION

This boiler is fitted with an anti-freeze protection system, which works when the following functions are activated: SUMMER, WINTER and ANTI-FREEZE.





**The anti-freeze function only protects the boiler, not the whole heating system. The heating system must be protected using a room thermostat, although this is disabled when the selector is set to the ANTI-FREEZE or OFF mode.**

**Therefore, if you want to protect both the boiler and the system, turn to WINTER mode on selector 9.**

When the heating water temperature sensor detects a water temperature of 5°C, the boiler switches on and stays on at its minimum thermal power until the temperature reaches 30°C or 15 minutes have elapsed. The pump continues to operate even if the boiler shuts down.

In model HC, anti-freeze function also protects the DHW circuit.

When the DHW temperature sensor detects a temperature of 5°C, the boiler switches on and stays on at its minimum thermal power until the temperature reaches 10°C or 15 minutes have elapsed (the deviating valve is in the DHW position). The pump continues to operate even if the boiler shuts down.

In boilers with an external heater for the supply of domestic hot water, which have a thermostat-type temperature sensor, the anti-freeze function does NOT protect the water heater. It can be protected by setting the boiler to Summer  or Winter , or by setting a value above 0°C on the water heater thermostat.

In CH boilers with an external water heater for the supply of domestic hot water, which have an NTC temperature sensor (10 kΩ @ β=3435; refer to the boiler specifications), the anti-freeze function protects the water heater as well.

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

The CH system can be protected effectively against freezing by means of specific anti-freeze additives suitable for use in multi-metal systems.

**Do not use car engine anti-freeze products, and periodically check the effectiveness of the anti-freeze product.**

### 2.2.5. PUMP AND THREE-WAY VALVE ANTI-SEIZE FUNCTION

Where the boiler is to remain inactive and:

- no. **9** selector is not set to the OFF position;
- boiler is not disconnected from electric main power supply;

the circulation pump (for all models) and three-way valve (HC model), are operated for 30 second every 24 hours in order to prevent the components from seizing.

### 2.2.6. External probe operation (optional equipment)

The boiler can be equipped with an (optional) external temperature probe, by means of which the boiler adjusts the CH water temperature according to the outdoor temperature, in other words, increasing the CH water temperature when the outdoor temperature decreases, and vice-versa. This increases energy-saving operation (this boiler mode is called "sliding temperature operation").

The boiler microprocessor program determines CH water temperature variations.

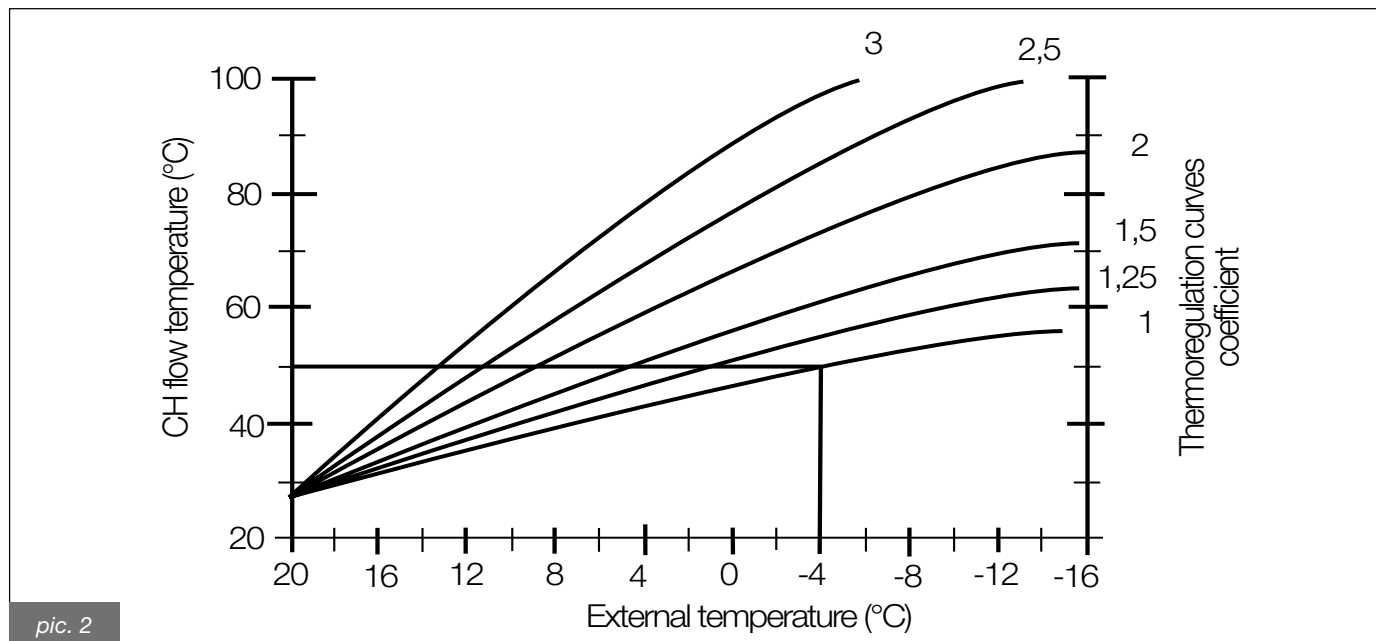
When an external temperature probe is connected to the boiler, the CH water temperature adjusting knob (**11**, pic. 1) loses its function and becomes a room temperature control device.

When knob **11** is turned fully counter-clockwise, the room temperature setting is 15°C; when set to 9 o'clock, the temperature is 18°C; when set to 12 o'clock, the temperature is 25°C; when set to 3 o'clock the temperature is 32°C; when it is turned fully clockwise the temperature is 35°C.

For the best curve setting, it is advisable to set the temperature at around 20°C.

Picture 2 shows the curves for a room temperature of 20°C. As this value is increased via the regulation knob **11**, the curves move upwards. With this setting, if for example you select the curve corresponding to coefficient 1, with an outdoor temperature of -4°C, the flow temperature will be 50°C.

Refer to subsection 4.5.7 for detailed sliding temperature operation.



pic. 2

### 2.3. Boiler lockout

If a malfunction occurs, the boiler automatically shuts down.

Refer to tables 1 and 2 for boiler status.

In order to determine the probable causes of the malfunction, refer to section 8 - Troubleshooting - at the end of this manual (in addition to tables 1 and 2).

Follow the procedure described for the type of shut-down.

#### 2.3.1. Burner lockout

When the burner shuts down because the flame has gone out, light 5 (red) starts flashing. If this happens, proceed as follows.

- Check that the gas stopcock is open, and make sure the gas main is actually providing service by lighting a gas-powered kitchen appliance such as a kitchen range or oven.
- Once the presence of gas has been verified, reset the burner by turning knob **9** to the RESET position for 2 seconds, and then to the desired operating mode. If the boiler does not shut down, and you have performed the reset procedures three times, contact an authorized Service Centre or a qualified service engineer.

Should frequent burner shut-down occur, a recurrent malfunction may be present. Contact an authorized Service Centre or a qualified service engineer.

#### 2.3.2. Shut-down due to overheating

When the CH water gets too hot, the boiler shuts down, and light 3 (red) starts flashing. If this happens, contact an authorized Service Centre or a qualified service engineer.

Should the above happen contact the Fondital helpline UK or CORGI registered engineer with appropriate competence for service.

#### 2.3.3. Shut-down due to inadequate air/flue gas draught

If the burner shuts down due to a malfunction of the air intake and/or flue discharge piping, light 4 starts to flash.

Should the above happen contact the Fondital helpline UK or CORGI registered engineer with appropriate competence for service.

### 2.3.4. Shut-down due to low water pressure

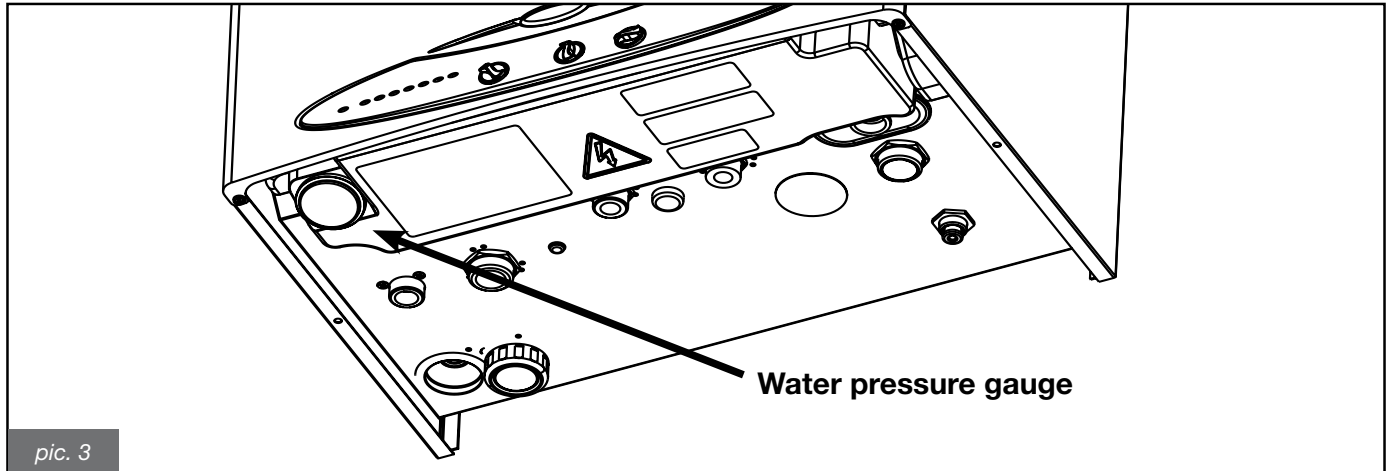
If red shout-down light 6 comes on, it indicates low water pressure and intervention of the low water pressure switch.

The following situation may occur: **the water pressure gauge (pic.3) indicates a pressure value lower than 1 bar.**

Follow the loading procedure as below described:

- open the loading tap upstream the boiler to fill the system with water;
- keep the loading tap open until the water pressure gauge reads 1 ÷ 1.3 bar;
- close the loading tap;
- reset the burner by turning knob 9 to the RESET position for 2 seconds, and then to the desired operating mode.

Should the boiler shut down again, contact the Fondital helpline UK or CORGI registered engineer with appropriate competence for service.



Once the loading procedure is completed, properly close the loading tap. Should the tap not be appropriately closed, as pressure increases, CH system safety valve may open and water flow out.

### 2.3.5. Shut-down due to temperature probe malfunction

If the burner shuts down due to temperature probe malfunction, the following lights start to flash:

- Red light no. 2 and yellow light no. 8 when CH probe malfunction occurs.
- Red light no. 2 when DHW probe malfunction occurs.
- Red light no. 2 and yellow light no. 8 (flashing alternately) for external cylinder probe (model HR with external boiler and NTC temperature probe).

Should the boiler not re-start and still remain in the above status, contact the Fondital helpline UK or CORGI registered engineer with appropriate competence for service.

## 2.4. Maintenance

Routine boiler maintenance must be provided according to the applicable laws in the country of installation and following the instructions given in the relevant section in this manual. Correct maintenance ensures that the boiler operates efficiently, is environmentally friendly, and is not a danger to people, animals or property.

By law, only qualified personnel are allowed to service the boiler.

The Manufacturer recommends that Customers contact an authorized Service Centre for maintenance and repairs.

For maintenance interventions, refer to section 6 – Maintenance.

**The external boiler housing must only be cleaned with standard household cleaning products.**

**Do not use water!**

## 2.5. Notes for the user

**The user may only access boiler parts that can be reached without using any technical equipment or tools. The user is not authorized to remove the boiler housing or touch any of the internal parts.**

**No one, including qualified service engineers, is authorized to modify the boiler.**

The manufacturer can not be held liable for damage to people, animals, or property due to tampering or improper work done to the boiler.

If the boiler remains inactive and the power supply disconnected for a long time, the pump may not operate.

**Pump servicing includes removing the boiler housing and accessing the internal parts of the boiler, so this must only be done by a qualified service engineer.**

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

### 3. Technical characteristics and dimensions

The boiler is equipped with an atmospheric burner. All versions are equipped with electronic ignition and ionization flame control.

The following models of boiler are available:

- HC 24: sealed chamber and forced draught, electronic ignition and instant DHW supply (25.5 kW);
- HR 24: sealed chamber and forced draught, electronic ignition, CH supply only (25.5 kW);
- HC 32: sealed chamber and forced draught, electronic ignition and instant DHW supply (31.5 kW);
- HR 32: sealed chamber and forced draught, electronic ignition, CH supply only (31.5 kW);

The boilers meet local applicable Directives enforced in the country of destination, which is stated on their data plate. Boiler installation in a different country from specified may endanger people, animals and objects.

The main technical characteristics of the boilers are listed below:

#### Construction characteristics

- IPX4D electrically protected control panel
- Integrated, modulating electronic safety board
- Electronic ignition via separated transformer and ionization flame detection
- Stainless steel multi-gas atmospheric burner
- Modulating gas valve with double shutter
- Mono-thermal, high efficiency, composite and stainless steel heat exchanger with air purging device
- Stainless steel DHW heat exchanger (only HC)
- Motorized deviating valve (only HC)
- Three-speed pump with air purging device
- Safety flow-switch, preventing operation with low water pressure in the CH system
- 8 litre expansion vessel
- DHW priority flow switch (only HC)
- 10 litres/min DHW flow limiting device (only HC)
- Integrated, automatic by-pass
- Boiler filling and draining taps
- CH (all models) and DHW (only HC) temperature probes
- Safety limit thermostat
- Flue pressure switch

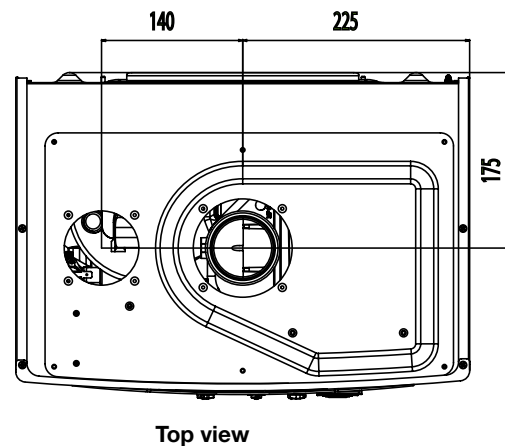
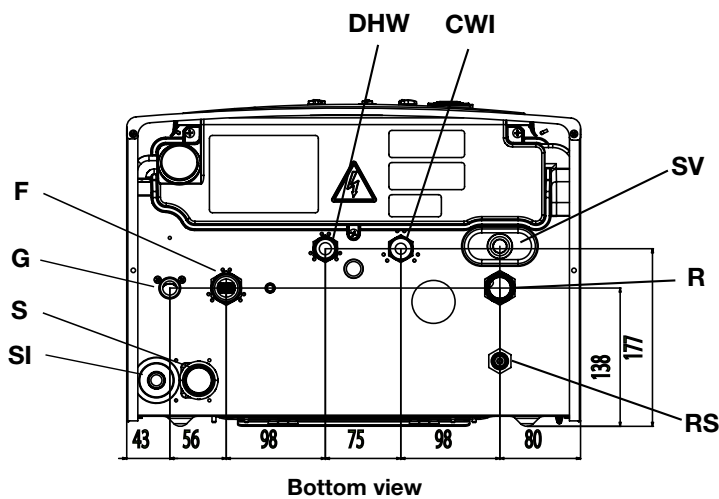
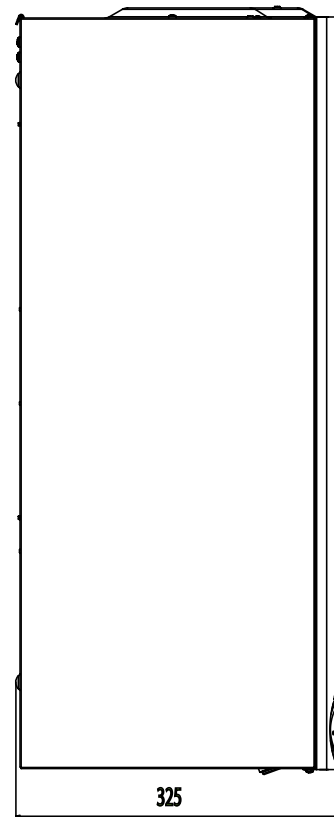
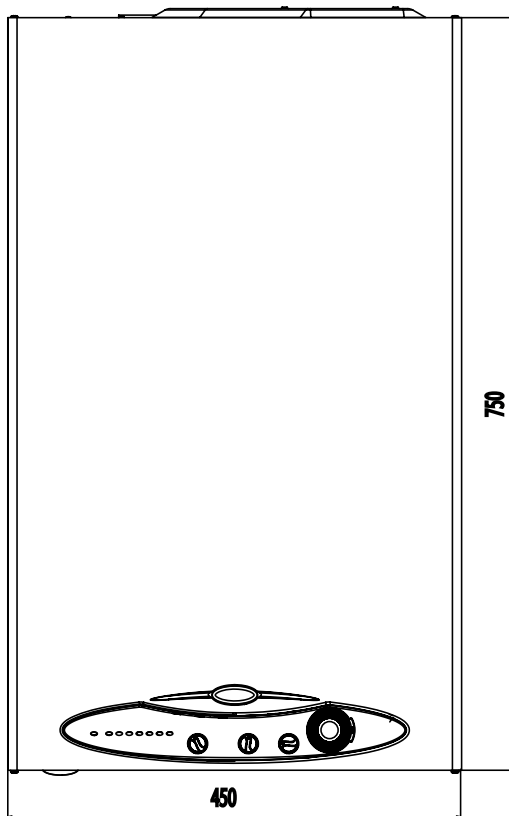
#### User interface

- RESET, STAND-BY, SUMMER/WINTER, SUMMER and ANTI-FREEZE function selector
- DHW temperature switch for model HC and HR equipped with external cylinder and NTC temperature probe (35-75 °C)
- Leds indicating water temperature
- Water pressure gauge
- CH temperature switch (35-78 °C)

#### Operating characteristics

- CH mode electronic flame modulation, timer controlled flame rising ramp (50 seconds)
- DHW mode electronic flame modulation, timer controlled flame rising ramp (for models HC and HR equipped with external cylinder and NTC temperature probe)
- DHW priority function
- CH flow anti-freeze function: ON at 5 °C; OFF at 30 °C or after 15 minutes operation when CH water > 5 °C
- DHW anti-freeze function: ON at 5 °C; OFF at 10 °C or after 15 minutes operation when DHW temperature > 5°C; (for models HC and HR equipped with external cylinder and NTC temperature probe)
- External boiler anti-freeze function (HR + external cylinder equipped with NTC probe): ON at 5 °C; OFF at 10 °C or after 15 minutes operation when external cylinder water temperature > 5 °C
- Timer controlled "chimney sweep" function: 15 minutes
- "Anti-Legionnaires' disease" function (only for model HR equipped with external cylinder and NTC temperature probe)
- Flame propagation function during ignition
- CH max heat output adjusting trimmer
- Ignition heat output adjusting trimmer
- Timer-controlled room thermostat (240 seconds when CH flow temperature >40°C)
- Pump over run function in CH, anti-freeze or chimney sweep mode (180 seconds)
- Pump over run function in DHW (30 seconds)
- CH temperature post-circulation function: >85°C:30 seconds
- Safety post-circulation function (ON: 95°C; OFF: 90°C)
- Pump and deviating valve anti-locking function (180 seconds operation after 24 hours of boiler inactivity)
- Can be connected to a room thermostat (optional)
- Can be connected to an external temperature probe (optional supplied by the Manufacturer)
- Can be connected to a cylinder timer connection (only for model HR equipped with external cylinder and NTC temperature probe).

### 3.1. Dimensions

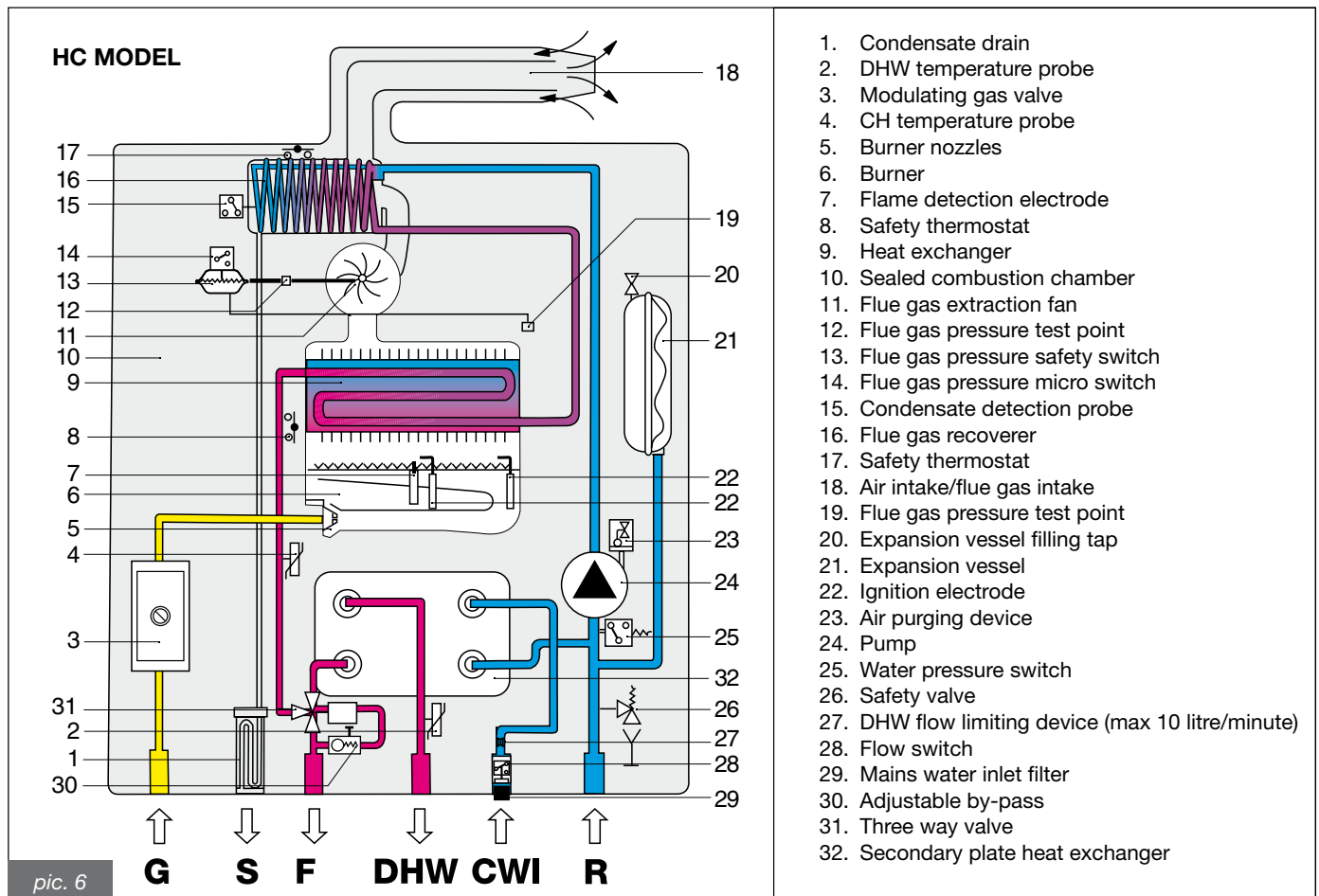
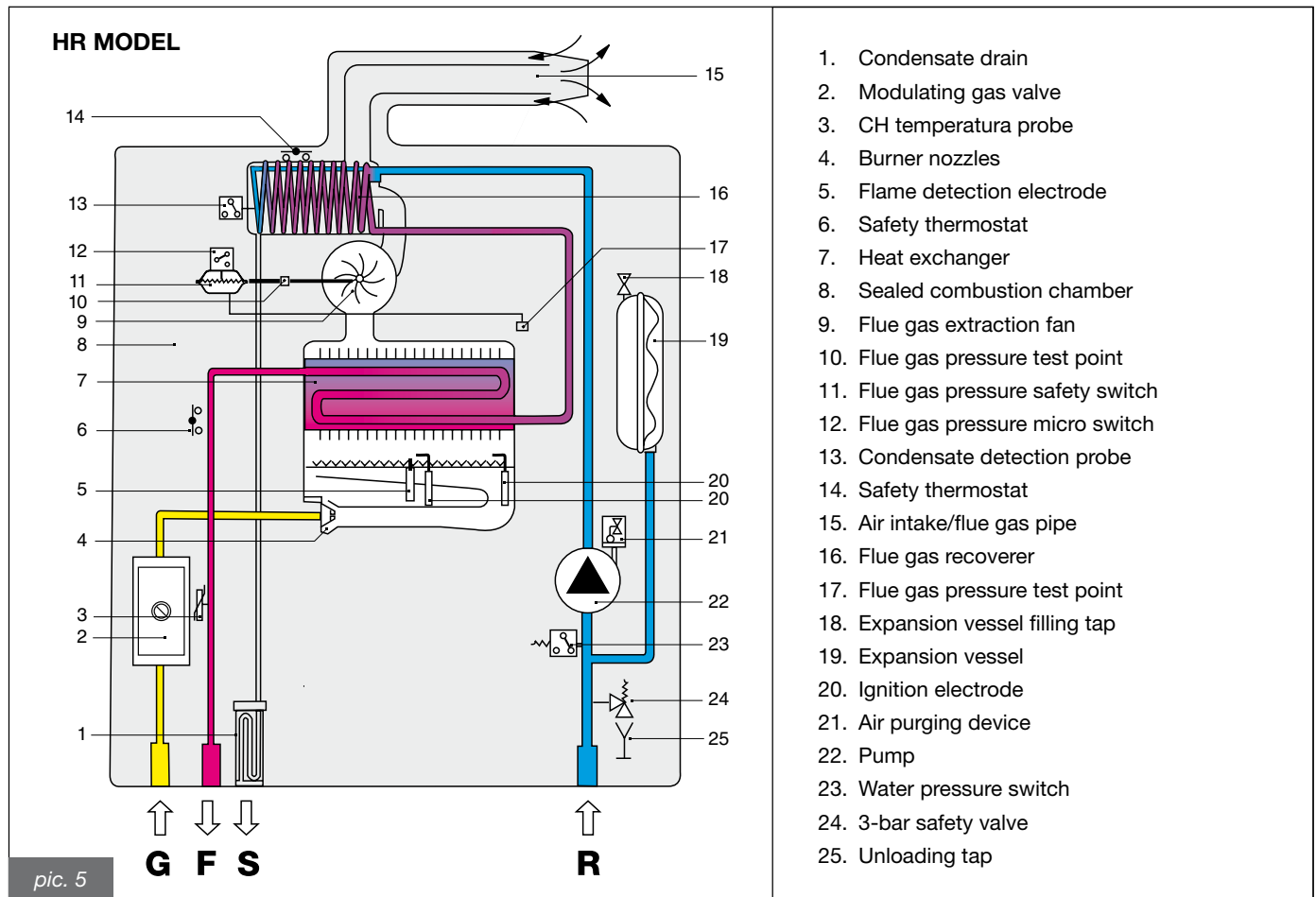


S	Condensate drain
F	CH system flow
G	Gas intake
SI	Inspection trap plug
DHW	DHW hot water draw off (HC model only)

CWI	Cold water inlet (HC model only)
SV	3-bar safety valve drain cock
R	CH system return
RS	Drain cock

pic. 4

### 3.2. Layout



### 3.3. Operating data

Burner pressures must be verified after a three minute boiler operation time.

#### HC 24 / HR 24

Function	Heat input [kW]		Heat output 80-60°C [kW]		Heat output 50-30°C [kW]		Mains gas pressure [mbar]	Nozzle diameter [mm]	Burner pressure [mbar]	
	min	max	min	max	min	max			min	max
Methane gas G20	11.5	25.5	10.7	24.4	11.4	26.4	20	1.25	2.90	13.2
Butane gas G30	11.5	25.5	10.7	24.4	11.4	26.4	28-30	0.77	5.74	27.7
Propane gas G31	11.5	25.5	10.7	24.4	11.4	26.4	37	0,77	6,5	29,5

Table 3 - Calibration data for HC 24 and HR 24

Hot water supply  $\Delta T$  45°C = 7.8 l/min  
 Hot water supply  $\Delta T$  40°C = 8.7 l/min  
 Hot water supply  $\Delta T$  35°C = 10.0 l/min

Hot water supply  $\Delta T$  30°C = 11.7 l/min \*  
 Hot water supply  $\Delta T$  25°C = 14.0 l/min \*  
**\*Note: mixed water to the tap**

#### HC 32 / HR 32

Function	Heat input [kW]		Heat output 80-60°C [kW]		Heat output 50-30°C [kW]		Mains gas pressure [mbar]	Nozzle diameter [mm]	Burner pressure [mbar]	
	min	max	min	max	min	max			min	max
Methane gas G20	12.0	31.5	11.2	30.3	12.0	32.7	20	1.25	2.90	13.2
Butane gas G30	12.0	31.5	11.2	30.3	12.0	32.7	28-30	0.76	4.7	29.0
Propane gas G31	12.0	31.5	11.2	30.3	12.0	32.7	37	0,76	6,5	29,5

Table 4 - Calibration data for HC 32 and HR 32

Hot water supply  $\Delta T$  45°C = 9.6 l/min  
 Hot water supply  $\Delta T$  40°C = 10.9 l/min  
 Hot water supply  $\Delta T$  35°C = 12.4 l/min

Hot water supply  $\Delta T$  30°C = 14.5 l/min \*  
 Hot water supply  $\Delta T$  25°C = 17.4 l/min \*  
**\*Note: mixed water to the tap**

### 3.4. General characteristics

		HC 24	HR 24	HC 32	HR 32
Category	-	I12H3+	I12H3+	I12H3+	I12H3+
Burner nozzles	no.	12	12	15	15
Minimum CH flow rate	l/h	500	500	500	500
Minimum CH pressure	bar	0.5	0.5	0.5	0.5
Maximum CH pressure	bar	3	3	3	3
Minimum DHW pressure	bar	0.5	-	0.5	-
Maximum DHW pressure	bar	8	-	8	-
DHW specific capacity ( $\Delta t$ 30°C)	l/min	11.8	-	15.0	-
Electrical power supply - voltage / frequency	V ~ Hz	230 ~ 50	230 ~ 50	230 ~ 50	230 ~ 50
Power mains supply fuse	A	2	2	2	2
Maximum power consumption	W	142	142	177	177
Net weight	kg	43.3	41.0	44.5	41.9
Natural gas consumption(*)	m <sup>3</sup> /h	2.698	2.698	3.333	3.333
Butane gas consumption	Kg/h	2.008	2.008	2.480	2.480
Propane gas consumption	Kg/h	1.977	1.977	2.442	2.442
Maximum CH working temperature	°C	78+5	78+5	78+5	78+5
Maximum DHW working temperature	°C	57+5	57+5	57+5	57+5
Total capacity of expansion vessel	l	8	8	8	8
Maximum recommended CH system capacity	l	100	100	100	100

Table 5 - General data for each model

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



HC 24 / HR 24		Max. heat output	Min. heat output	30% heat output
Boiler casing heat loss with burner on	%	1.71	2.06	-
Flue system heat loss with burner on	%	2.39	4.74	-
Flue system mass capacity	g/s	13.5	14.3	-
Flue temp. – air temp.	°C	47.9	45.4	-
CO <sub>2</sub> (gas G20)	%	7.5	3.0	-
CO <sub>2</sub> (gas G30)	%	9.1	3.6	-
Boiler efficiency rate (80-60 °C) (Net)	%	95.8	93.2	-
Boiler efficiency rate (50-30 °C) (Net)	%	103.4	99.4	-
Boiler efficiency at 30 % of the load (Net)	%	-	-	100.9
Efficiency rating (according to 92/42/CE)	-	★★★★		
SEDBUK classification HC 24 kW	-	B (86.5 %)		
SEDBUK classification HR 24 kW	-	B (86.6 %)		
NOx emission class	-	3		

Table 6 - HC 24 - HR 24 model combustion rates

HC 32 / HR 32		Max. heat output	Min. heat output	30% heat output
Boiler casing heat loss with burner on	%	1.31	0.66	-
Flue system heat loss with burner on	%	2.59	5.94	-
Flue system mass capacity	g/s	16.7	16.7	-
Flue temp. – air temp.	°C	54.9	50.6	-
CO <sub>2</sub> (gas G20)	%	7.6	2.6	-
CO <sub>2</sub> (gas G30)	%	9.0	3.0	-
Boiler efficiency rate (80-60 °C) (Net)	%	96.1	93.4	-
Boiler efficiency rate (50-30 °C) (Net)	%	103.8	99.8	-
Boiler efficiency at 30 % of the load (Net)	%	-	-	100.0
Efficiency rating (according to 92/42/CE)	-	★★★★		
SEDBUK classification HC 32 kW	-	B (86.2 %)		
SEDBUK classification HR 32 kW	-	B (86.3 %)		
NOx emission class	-	3		

Table 7 - HC 32 - HR 32 model combustion rates

## 4. Instructions for the fitter

This is an I12H3+ category boiler and must be installed in compliance with laws and standards enforced in the country of installation, which are here considered as entirely transcribed.

### 4.1. Reference standard

In GB, the installation must be carried out by a CORGI Registered Installer. To check for authorised qualified engineers please contact CORGI 01256-372400. It must be carried out in accordance with the relevant requirements of the:

- Gas Safety Regulations;
- The appropriate Building Regulations either The Building Regulation, The Building Regulations (Scotland), Building Regulations (Northern Ireland);
- The Water Fittings Regulations or Water Bylaws in Scotland;
- The current I.E.E. Wiring Regulations.

Where no specific instructions are given, reference should be made to the relevant British Standards Code of Practice. The following list is the full lists of codes of practice and British Standards that engineers should work to in the UK.

It is law in the UK that a competent person installs all gas-burning appliances. Please ensure that the installer is a class of person approved for the time being by the Health and Safety Executive for the purpose of carrying out this work. An approved engineer should be registered to an approved scheme i.e. CORGI 01256-372400.

In GB, the following Codes of Practice apply:

BS 5440: Part 1 2000 - Flues

BS 5440: Part 2 2000 - Air Supply

BS 5446: Installation of hot water supplies for domestic purposes (1<sup>st</sup>, 2<sup>nd</sup> and 3<sup>rd</sup> family gases)

BS 5449: 1990 Forced circulation hot water systems

BS 6700: 1987 - Installation of cold water supplies for domestic purposes (1<sup>st</sup>, 2<sup>nd</sup> and 3<sup>rd</sup> family gases)

BS 6798: 2000 Specification for installation of gas-fired boilers of rated input not exceeding 70 kW net

BS 6891: Specification for installation of low pressure gas pipe work of up to 28 mm (R!) in domestic premises (2nd family gas)

BS 7074: Expansion Vessels and ancillary equipment for sealed water systems

BS 7593: 1992 Code of practice for treatment of water in domestic hot water central heating systems

BS 7671: 2001 IEE wiring regulations.

This appliance meets the requirements of:

- UNI EN 677 for GAS-FIRED CENTRAL HEATING BOILERS. SPECIFIC REQUIREMENTS FOR CONDENSING BOILERS WITH NOMINAL HEAT INPUT  $\leq 70$  kW,
- IPX4D rating for electrical appliances,
- EMC DIRECTIVE 89/336 CE,
- LVD DIRECTIVE 2006/95 CE,
- BOILER EFFICIENCY DIRECTIVE 92/42 CE

Failure to install a gas appliance correctly and in accordance with the above norms could lead to prosecution. It is in the interest of the installer and safety that the law is complied with.

The manufacturers instructions form an integral part of the installation and should be left with the appliance but do not over ride in any-way statutory obligations.

## 4.2. System details

### 4.2.1. Central heating circuit

The boiler is designed for use in a sealed central heating system in accordance with the requirements of BS 5449 and BS 6798. The system should be designed to operate with flow temperatures of up to 78 °C. When designing the system, the pump head, expansion vessel size, mean radiator temperature, ect. must all be taken into account. Refer to the pump performance table for guidelines. System volume: the expansion vessel incorporated into the boiler is suitable for a sealed heating system. The boiler is supplied with the following components built in:

**Pressure relief valve:** set to operate at 3 bars. The outlet connection of the boiler safety valve must terminate to atmosphere in accordance with current regulations. The manufacturer will not be held responsible for flooding caused by the operation of the safety valve in the case of system overpressure.

**Pressure gauge:** to indicates the system pressure to be maintained.

**Expansion vessel:** capacity of 8 litres.

**By-pass:** The boiler incorporates an automatic by-pass.

All recirculatory water systems will be subject to corrosion unless an appropriate water treatment is applied. This means that the efficiency of the system will deteriorate as corrosion sludge accumulates within the system, risking damage to pump and valves, boiler noise and circulation problems.

All systems must be thoroughly drained and flushed out. System additives - corrosion inhibitors and flushing agents/descalers should comply to BS7593 requirements. It is important to check the inhibitor concentration after installation, system modification and at every service in accordance with the manufacturer's instructions.

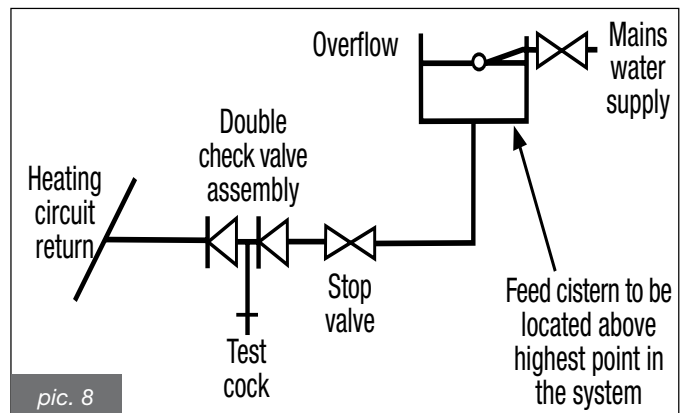
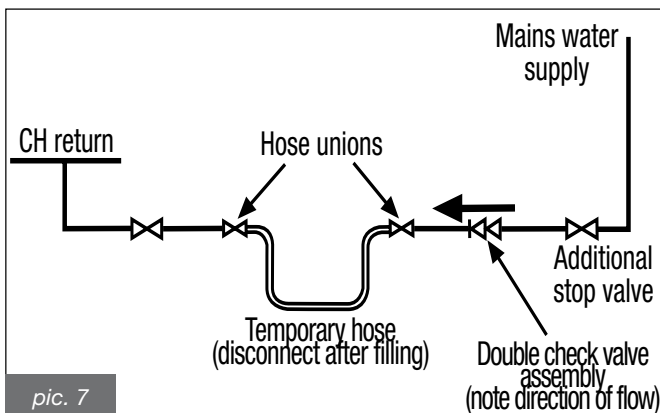
### 4.2.2. Filling the central heating system

The system design pressure (cold) should be set to 1,5 bar. This pressure is equivalent to a static head of 15,4 metres of water. Provision should be made to replace water lost from the system. This can be by manual or automatic means as shown in Pics. 7 and 8. A double check valve assembly must be used as show in pic 8.

Filling of the system must be carried out in a manner approved by the local Water Undertaking. Where allowed the system may be filled via a temporary connection as shown in pic 7. After filling, always disconnect the flexible hose of the filling loop. All fittings used in the system must be able to withstand pressures up to 3 bar. Drain taps must be used to allow the system to be completely drained.



**In order to prevent scaling or deposits in the primary heat exchanger, the mains supply water to the heating circuit must be treated according to the requirements of standard. This treatment is indispensable in the case where the circuit is frequently topped-up or when the system is often either partially or fully drained.**



### 4.2.3. Domestic Hot Water Circuit

All DHW circuits, connections, fittings, etc. should be fully in accordance with relevant standards and water supply regulations. Your attention is drawn for GB: Guidance G17 to G24 and recommendation R17 to R24 of the Water Regulations Guide.

## 4.3. Site requirements

### 4.3.1. Choosing where to install the boiler

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

- Approved document L1 + L2 government guidelines.
- Check the wall is strong enough to support the weight of the boiler.
- Do not fit the boiler above any equipment that may affect operation (kitchen appliances that emit steam or greasy vapour, washing machines, etc.).
- Do not install natural draught boilers in corrosive or very dusty atmosphere areas, such as hairdressing salons or laundries as this would greatly reduce the boiler's lifespan.

### 4.3.2. Positioning the boiler

Each boiler is supplied with a paper template (pic. 10), within its packaging, allowing arrangement of CH pipe system, DHW pipe system, gas supply pipe system and air intake/flue gas discharge system before actually installing the boiler.

The template is made of heavy-duty paper, it is to be affixed to the wall where the boiler is to be mounted using a carpenter's level.

It provides all the indications required to drill the boiler fixing holes to the wall, procedure which is done using two screws and wall plugs.

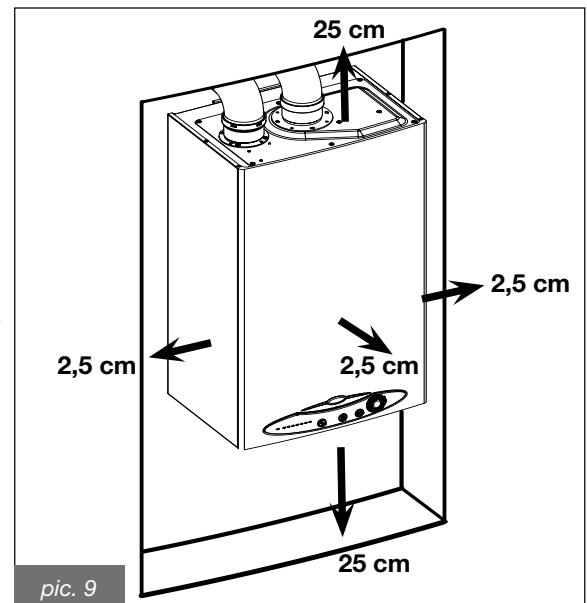
The lower area of the template displays where to mark the exact point at which the couplings are to be positioned for boiler connection to the gas supply pipe, water mains supply pipe, DHW flow pipe, CH flow and return pipes.

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

The manufacturer recommends leaving a space all round the boiler during installation as follows:

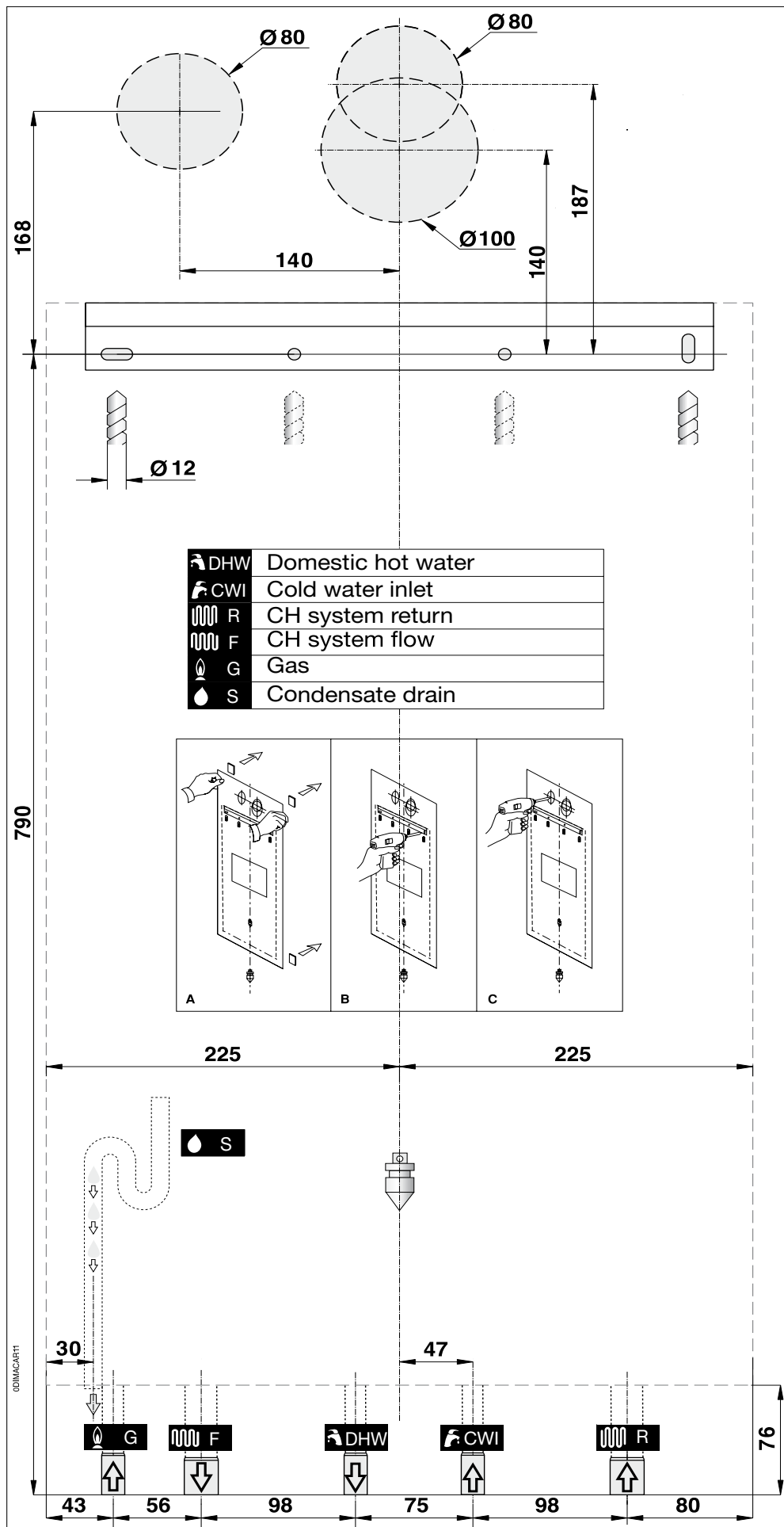
- at least 2,5 cm on the right and left;
- at least 25 cm above and below.

This facilitates service operations on the boiler, e.g. maintenance and repair interventions (pic. 9).



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.

**Boilers with split pipe flue system:** in presence of flammable walls and flue gas ducts through such walls, ensure air gap of 15 mm between wall and flue gas ducts.



pic. 10

### 4.3.3. Boiler room ventilation

The boiler has sealed combustion chamber. Combustion air is not drawn from boiler room therefore specific recommendations need not to be applied concerning the boiler room or openings and ventilation provided to the boiler room.



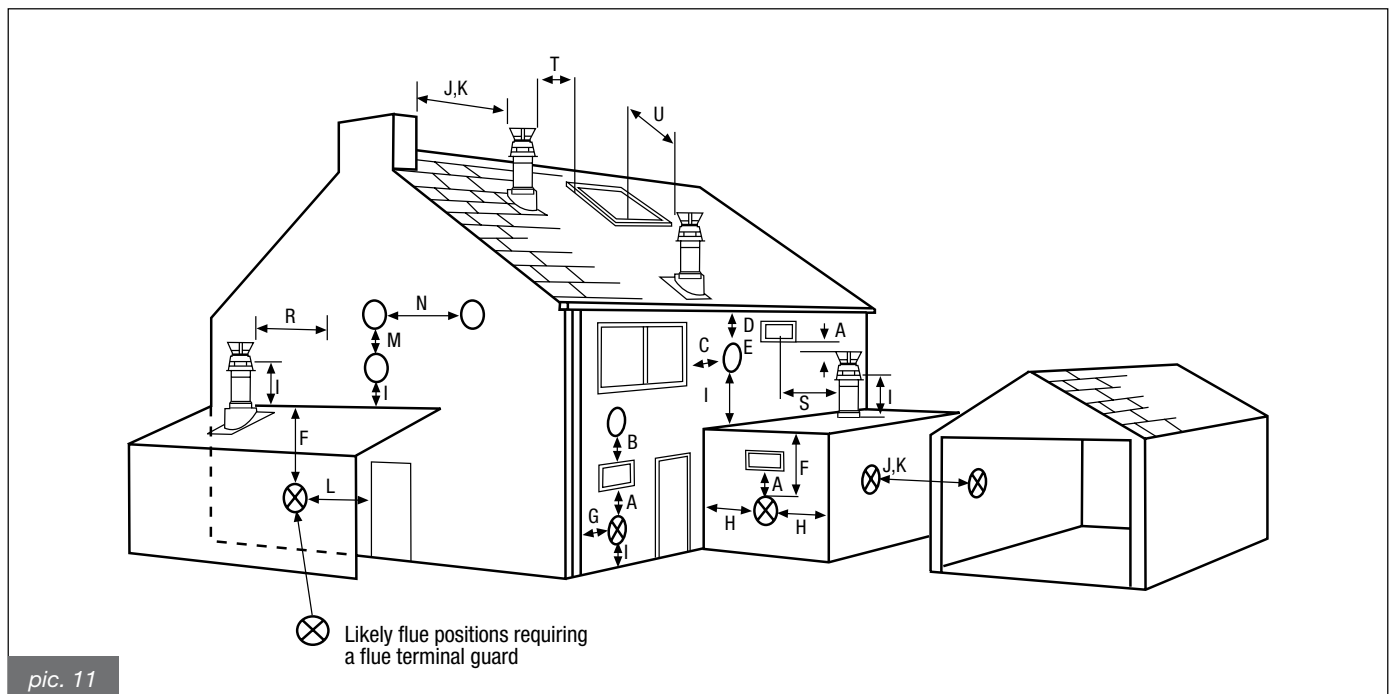
**It is mandatory to install the boiler in an adequate room following laws and standards applicable in the country of installation, which are considered as fully transcribed in this manual.**

### 4.3.4. Flue

The following guidelines indicate the general requirements for siting balanced flue terminals. For GB recommendations are given in BS 5440 Part 1. If the terminal discharges onto a pathway or passageway, check that combustion products will not cause a nuisance and that the terminal will not obstruct the passageway. If a terminal is less than 2 metres above a balcony, above ground or above a flat roof to which people have access, then a suitable terminal guard must be provided.

TERMINAL POSITION WITH MINIMUM DISTANCE (mm)	
<b>Aa</b> Directly below an opening, air brick, opening windows, etc.	300
<b>Ba</b> Above an opening, air brick, opening window etc.	300
<b>Ca</b> Horizontally to an opening, air brick, opening window etc.	300
<b>D</b> Below gutters, soil pipes or drain pipes	25
<b>E</b> Below eaves.	25
<b>F</b> Below balconies or car port roof.	25
<b>G</b> From a vertical drain pipe or soil pipe.	25
<b>H</b> From an internal or external corner.	25
<b>I</b> Above ground, roof or balcony level.	300
<b>J</b> From a surface or boundary line facing a terminal.	600
<b>K</b> From a terminal facing a terminal (Horizontal flue). From a terminal facing a terminal (Vertical flue).	1200 600
<b>L</b> From an opening in carport (e.g. door, window) into the dwelling.	1200
<b>M</b> Vertically from a terminal on the same wall.	1500
<b>N</b> Horizontally from a terminal on the same wall.	300
<b>R</b> From adjacent wall to flue (vertical only).	300
<b>S</b> From an adjacent opening window (vertical only).	1000
<b>T</b> Adjacent to windows or openings on pitched and flat roofs	600
<b>U</b> Below windows or openings on pitched roofs	2000

**a** In addition, the terminal should be no nearer than 150 mm to an opening in the building fabric formed for the purpose of accommodating a built-in element such as a window frame. See BS 5440 Pt. 1.



pic. 11

#### 4.4. Installation (authorised personnel)



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.

##### 4.4.1. Packaging

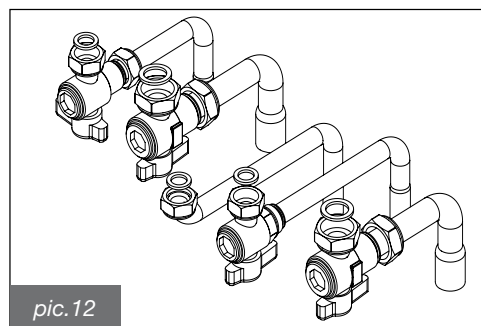
Boiler is shipped in a sturdy cardboard box. Remove boiler from cardboard box and check its integrity.

The packing materials can be recycled and should be disposed of at an appropriate waste collection site. **Keep packaging out of reach of children, as it may be dangerous.**

The manufacturer shall not be held responsible for harm to people and/or animals, and/or damage to property due to failure in following the above mentioned instructions.

Packaging includes:

- copper pipe kit for boiler connection to the gas mains, to the CH system (HC and HR) and DHW system (HC) (pic.12);
- four shutoff valves: one for gas, one for heating flow, one for heating return and one for cold water supply (pic.12);
- a bag containing:
  - a) boiler installation, use and maintenance manual;
  - b) boiler wall mounting template (pic. 10);
  - c) metal plate for fixing the boiler to the wall;
  - d) two screws and wall plugs for fixing the metal plate to the wall;
  - e) one closing caps with gaskets.
  - f) benchmark commissioning booklet.
  - g) air intake diaphragm.



##### 4.4.2. Installing the boiler



**Before connecting the boiler to the CH and DHW systems, clean the pipes carefully. Prior to operating a NEW system, eliminate any metallic leftover during manufacturing and welding process, and any oil or grease deposits, which might get into the boiler and damage it or affect operation. Prior to operating an UPGRADED system (addition of radiators, boiler replacement, etc.), clean it thoroughly to remove all sludge and foreign particles. Clean the system using a non-acid product available on the market. Do not use solvents as they could damage the components of the system. In the (new or upgraded) central heating system, it is always advisable to add to the water, in a suitable concentration, a corrosion inhibiting product for use in multi-metal systems to produce a protective film on internal metal surfaces. The Manufacturer can not be held liable for injury to people or animals or damage to property resulting from failure to follow the above instructions.**

Proceed as follows to install the boiler:

- Fix the template (pic. 10) onto the wall.
- Drill two 12 mm Ø holes in the wall to accommodate the boiler bracket wall plugs.
- Arrange air intake/flue gas system in the wall as needed.
- Secure the boiler bracket to the wall using the wall plugs supplied.
- Position the gas supply fitting (G), the mains water fitting (F), the DHW flow fitting (C, only in model HC), the CH flow fitting (M) and the CH return fitting (R) as shown on the template (refer to the lower part).
- Provide a disposal system for relieving the 3-bar safety valve.
- Hang the boiler on the bracket fixed onto the wall.
- Connect the boiler to the mains pipes using the kit supplied with the boiler (refer to subsections 4.4.3. and 4.4.4.).
- Connect the boiler to the air intake and flue gas exhaust system (refer to subsections 4.5.1; 4.5.2; 4.5.3 and 4.5.4).
- Connect the power supply, room thermostat (optional) and other accessories (refer to subsections 4.5.5; 4.5.6 and 4.5.7).

##### 4.4.3. Gas main connection

The gas installation should be in accordance with the relevant standards. In GB this is BS 6891.

Gas supply pipe cross-section must be equal or greater than boiler gas pipe.

Cross-section gas pipe size calculation depends on its length, layout pattern, gas flow rate. Gas pipe size is to be dimensioned accordingly.



**Comply with installation standards BS 6891 enforced in the installation country which are considered as fully transcribed in this booklet.**

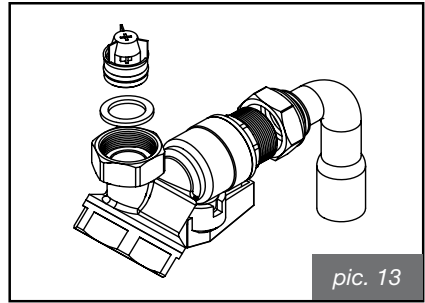
**Remember that before operating an indoor gas distribution system and before connecting it to a meter, it must be checked for leaks.**

**Adhere to the following leak test instructions:**

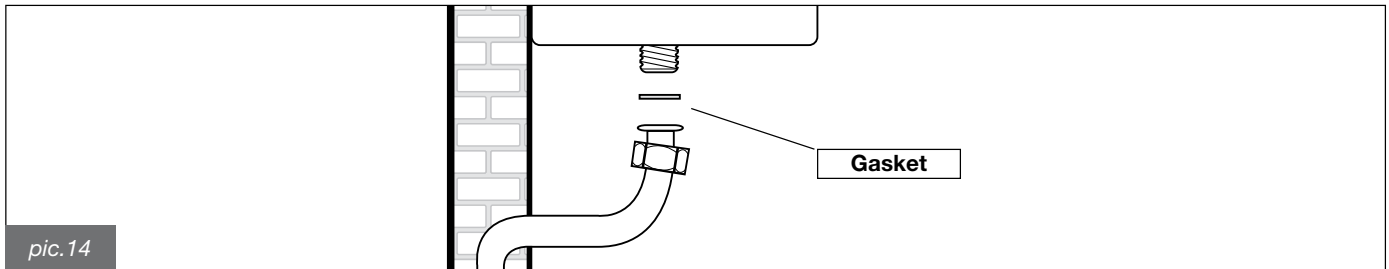
- leak test is to be carried out before pipes are covered;
- leak test is not to be carried out employing flammable gas: use air or nitrogen for this purpose;
- when gas is already in the pipes supplying the boiler, leak testing by naked flame is forbidden, use specific products available on the market.



To prevent the main exchanger pipes from getting clogged with any material accumulated in the system it is necessary to install a filter which can be inspected (Y-shaped type) with Ø 0.4mm-mesh span, on the heating return pipe, before the boiler (part of hydraulic kit) like our accessory 0KITFILT00 (pic.13)



When connecting the boiler to gas supply network, install an appropriately sized and made gasket (pic. 14). The boiler gas inlet thread configuration is not appropriate for hemp, plastic tape or similarly made gaskets.



#### 4.4.4. Hydraulic connections

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 (refer to 4.4.2 paragraph).

#### CENTRAL HEATING

CH flow and CH return pipes must be connected to the relevant 3/4" **F** and **R** couplings on the boiler (pic. 4). 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. Manufacturer shall not be held responsible for any damage resulting as failure in observing the above mentioned technical precaution.

#### DOMESTIC HOT WATER (only for HC model)

DHW flow and water mains inlet pipes are to be connected to the relevant 1/2" **CWI** and **DHW** couplings on the boiler (pic. 4). Hardness of water supplied to the boiler may increase the plate heat exchanger cleaning/replacement frequency. All DHW circuits, connections, fittings, etc. should be fully in accordance with relevant standards and water supply regulations.



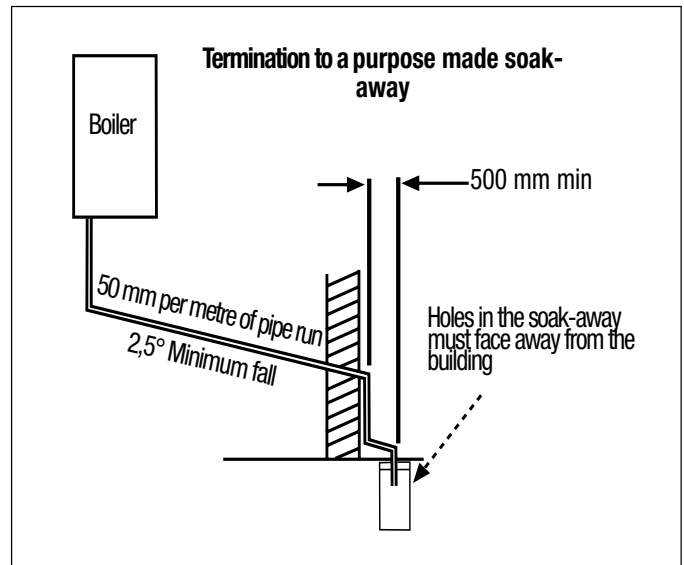
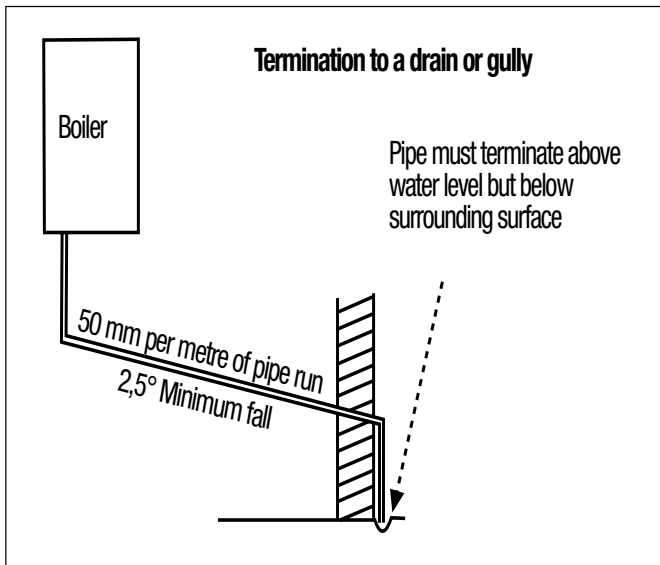
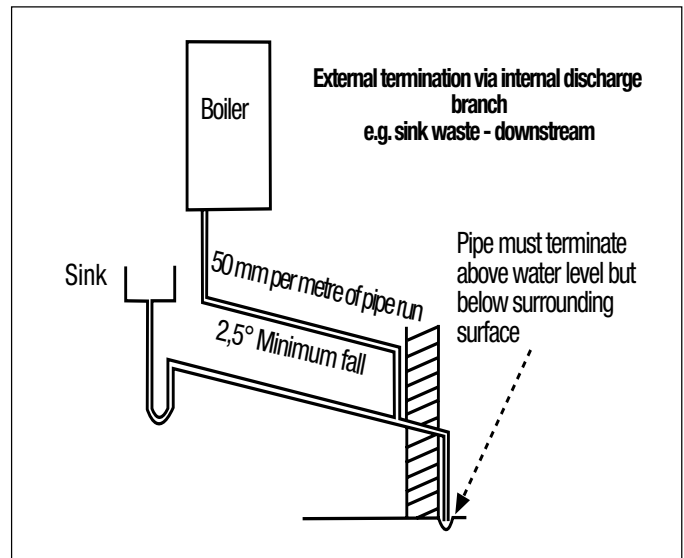
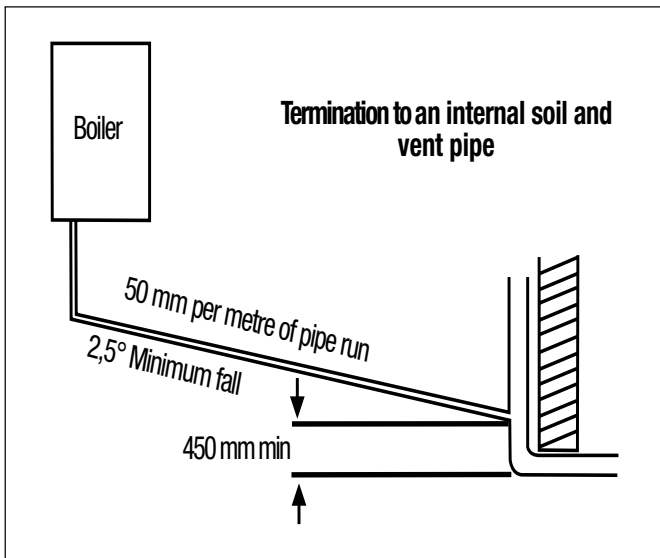
Depending on hardness level of the water supplied, it might be necessary installing a suitable water treatment device for domestic use and in compliance with applicable laws and standards. Water treatment is always advisable when water supplied to the boiler is more than 20°F hard. Water treated by commonly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

#### CONDENSATE DRAIN

Comply with condensate drain laws and standards applicable in the country of installation and which are considered herein integrally transcribed.

When the law is not stating differently, the condensate produced by combustion, is to be routed (via the condensate drain **S** in pic. 4) 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 adequate condensate resistant material. Manufacturer shall not be held responsible for any damage to people, animals or objects, resulting as failure in observing the above mentioned technical precaution.



**FAILURE TO INSTALL THE CONDENSATE DISCHARGE PIPEWORK CORRECTLY WILL AFFECT THE RELIABLE OPERATION OF THE BOILER**

The condensate discharge pipe **MUST NOT RISE** at any point along its length. There **MUST** be a fall of **AT LEAST 2.5°** (50mm per metre) along the entire run.

1. The condensate outlet will accept 21.5 mm (3/4 in) plastic overflow pipe which should generally discharge internally into the house hold drainage system. If this is not possible, discharge into an outside drain is acceptable.
2. Ensure the discharge of condensate complies with any national or local regulations in force. BS 6798:2000 & Part H1 of the Building Regulations give further guidance.
3. The discharge pipe should be run in a proprietary drain pipe material e.g. PVC, PVC-U, ABS, PVC-C or PP.
4. Metal pipework is **NOT** suitable for use in condensate discharge systems.
5. The pipe should be a minimum of 21.5 mm diameter and must be supported using suitably spaced clips to prevent sagging.
6. It is advisable to keep the condensate pipe internal.
7. External runs greater than 3 metres or runs in cold areas should use 32 mm waste pipe.
8. If the boiler is fitted in an unheated location the entire condensate discharge pipe should be treated as an external run.
9. In all cases discharge pipe must be installed to aid disposal of the condensate. To reduce the risk of condensate being trapped, as few bends and fittings as possible should be used.
10. When discharging condensate into a soil stack or waste pipe the effects of existing plumbing must be considered. If soil pipes or waste pipes are subjected to internal pressure fluctuations when WC's are flushed or sinks emptied then back-pressure may force water out of the boiler trap and cause appliance lockout.

Examples are shown of the following methods of termination:

- i) to an internal soil & vent pipe
- ii) via an internal discharge branch (e.g. sink waste)
- iii) to a drain or gully
- iv) to a purpose made soakaway



#### 4.4.5. Adjustable by-pass

The boiler is equipped by an adjustable by-pass. By-pass operation can be inhibited.

Pic. 15A shows an adjusting by-pass screw set for by-pass operation preclusion.

Pic. 15B shows an adjusting by-pass screw set for by-pass operation.

The boiler is supplied with by-pass set to closed by-pass.



#### 4.5. Flue options

##### 4.5.1. Air intake / flue gas discharge system

As far as flue gas discharge into the atmosphere and air intake / flue gas discharge systems are concerned, comply with laws enforced in the country of installation, which are considered as fully transcribed in this manual.



In accordance with BS 5440 Part 1 and BS 5440 Part 2 the boiler is equipped with safety devices checking correct flue gas exhaustion. Should an air/flue gas system malfunction occur, the safety devices shut down the boiler and flashing red light 4.

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 air/flue gas system ducts inspected, as they might be obstructed or inadequate to flue gas discharge into the atmosphere.



In air intake/flue gas discharge systems, specific, manufacturer approved, condensate acid-resistant systems for condensing boiler are to be used.

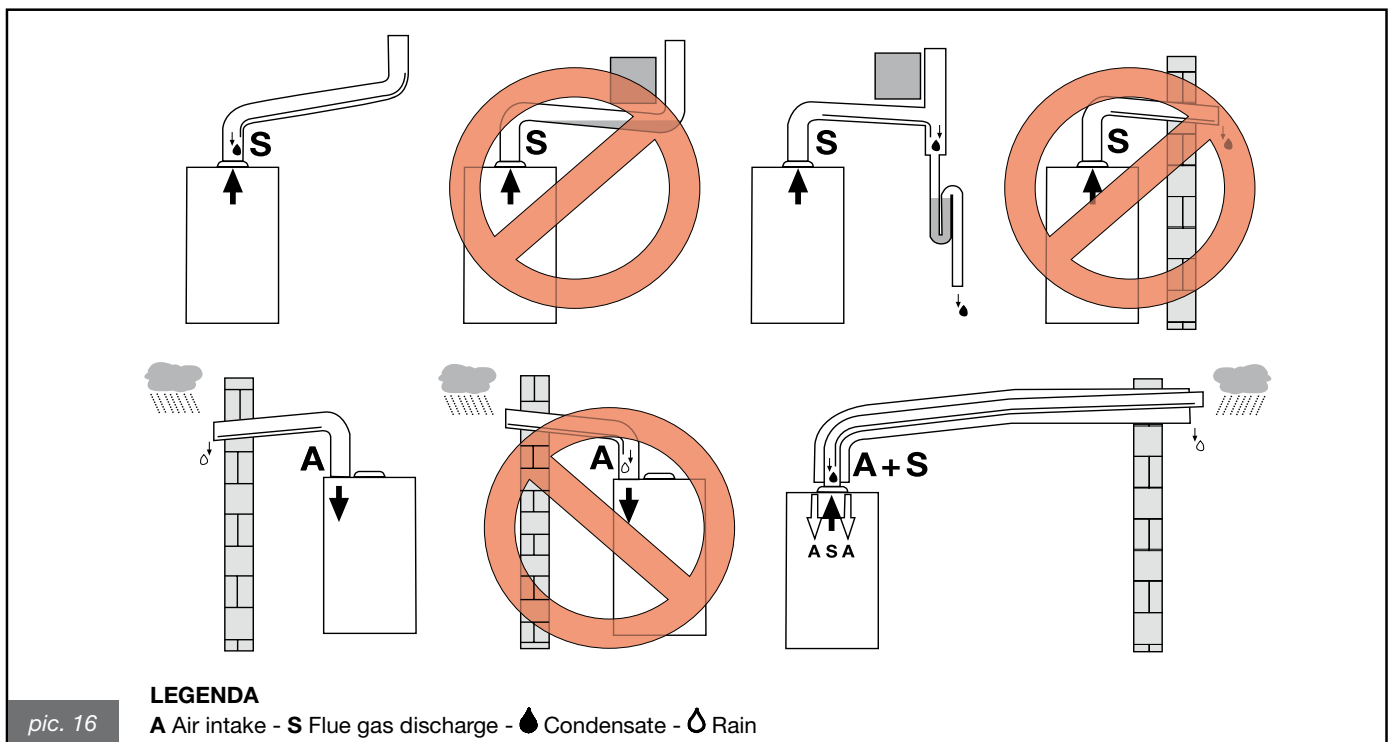


Flue gas discharge pipes are to be installed tilted toward the boiler so that condensate runs in the direction of the combustion chamber, which is designed for condensate collection and drainage.

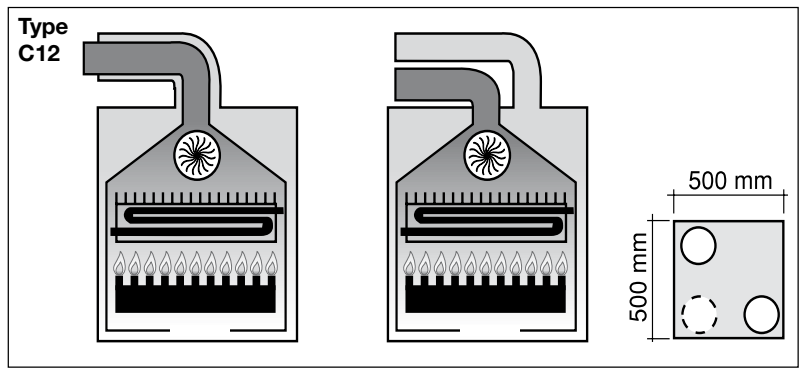
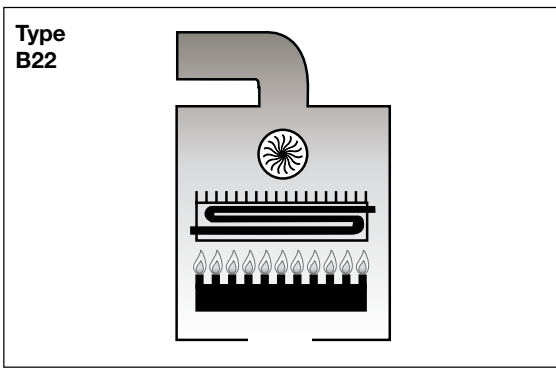
Should the above procedure not be possible to be implemented, it is necessary to install, in condensate stagnation areas, devices designed for condensate collection and conveying to the condensate drain system.

It is necessary to avoid formation of condensate stagnation areas in the flue gas discharge system, with the exception of the condensate drain siphon eventually connected to the discharge system itself.

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



pic. 16



#### 4.5.2. Configuration of air/flue system pipes

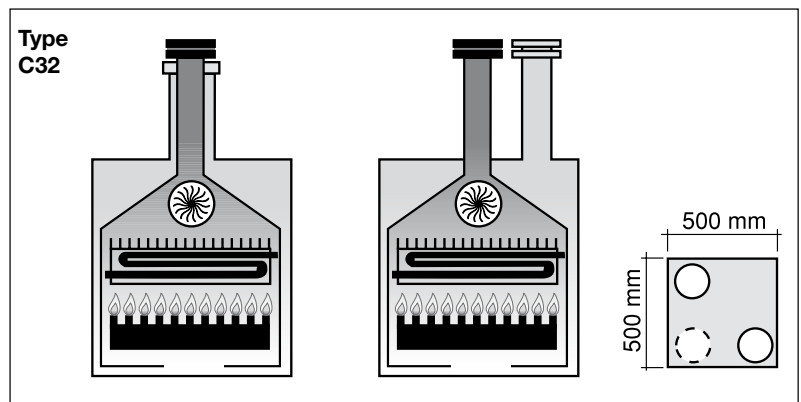
**Types: B22, C12, C32, C42, C52, C82**

##### **B22**

This boiler is intended for connection to an existing flue system either inside or outside the boiler room. Combustion air is drawn straight from the boiler room itself and flue gas is conveyed to the outside. The boiler must not be fitted with an anti-wind gust system; it must be equipped with a fan mounted after the combustion chamber.

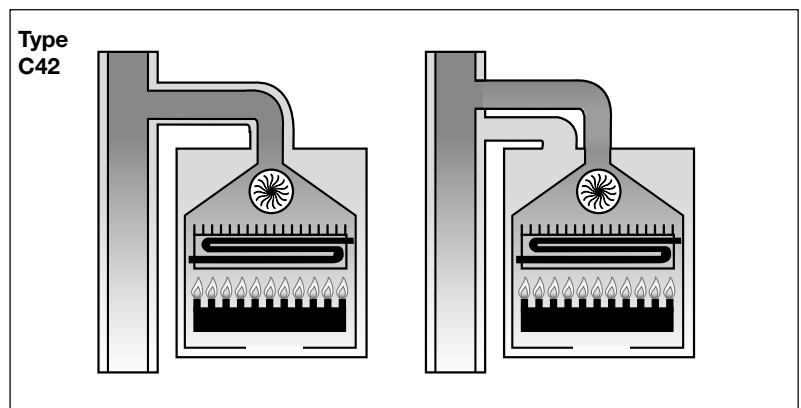
##### **C12**

This boiler is intended for connection to horizontal flue gas and air-intake pipes connected to the outside by means of coaxial or split pipes. The distance between the air intake pipe and the flue gas pipe must be at least 250 mm and both terminals must be positioned in a 500mm-side square area.



##### **C32**

This boiler is intended for connection to vertical flue gas and air-intake pipes connected to the outside by means of coaxial or split pipes. The distance between the air intake pipe and the flue gas pipe must be at least 250 mm and both terminals must be positioned in a 500mm-side square area.

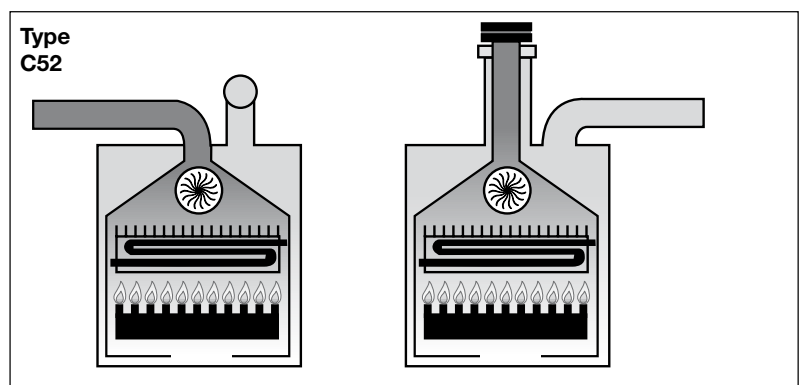


##### **C42**

This boiler is intended for connection to a common chimney pipe system that includes two pipes, one for the air intake and the other for flue gas discharge. These pipes may be coaxial or split. The flue gas chimney system must comply with current standards.

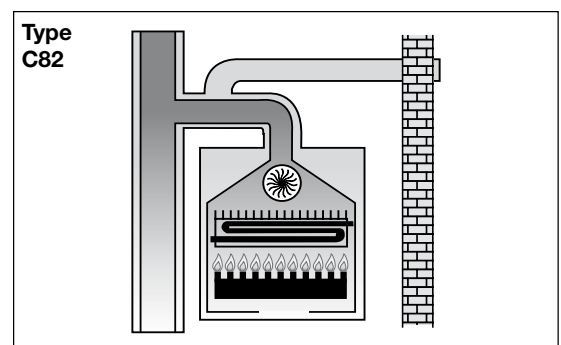
##### **C52**

Boiler with separate pipes for air intake and flue gas. Air and flue gas may have different discharge pressures. Air and flue gas terminals must not face each other from opposite walls.



##### **C82**

This boiler is intended to be connected to a combustion air-intake terminal and to a single flue gas terminal or to a common chimney. The flue gas chimney system must comply with current standards.





In order to ensure that the appliance functions correctly and efficiently, the flue connection between the boiler and the flue terminal must be made using original components specifically designed for condensing boilers.



Traditional flue components cannot be used for conveying exhaust fumes from condensing boilers, nor vice versa.

It is recommended that:

- for the exhaust discharge duct, the entire length of the flue slopes upwards towards the exterior in order to facilitate the flow of condensate back to the combustion chamber, which has been specifically designed to collect and drain the acidic condensate;
- for the air intake, the entire length of the duct slopes upwards towards the boiler to prevent the entry of rainwater, dust or foreign bodies into the pipe;

in the case where a horizontal coaxial system is installed, the coaxial terminal must be positioned horizontally in that the exhaust duct has been specifically designed with the required slope ( $\varnothing$  60) and the air intake ( $\varnothing$  100) has been suitably protected against the weather.

#### 4.5.3. $\varnothing$ 100/60 mm air/flue gas coaxial duct system

##### Type C12

The minimum permissible length of horizontal coaxial pipes is 0.5 metre, not including the first elbow connected to the boiler.

The maximum permissible length of horizontal coaxial pipes is 5 metres for HC-HR 24 and 4 metres for HC-HR 32, not including the first elbow connected to the boiler. For each additional elbow, the maximum permissible length must be reduced by 1 metre.

In addition, the pipe must have a 1% slope to prevent rainwater entering it.

##### Choosing the applicable diaphragm supplied with the boiler (pic. 17)

###### HR 24 and HC 24

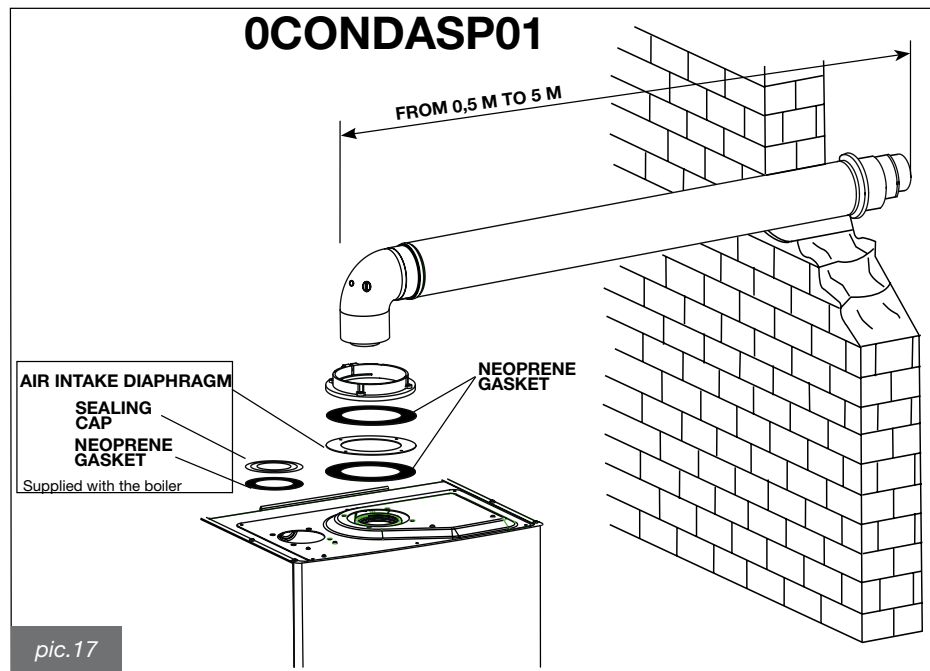
Pipe length (m)	Air intake diaphragm (mm)
$0,5 \leq L \leq 2$	80
$2 \leq L \leq 5$	82

\* excluding the first elbow connected to the boiler

###### HC 32 and HC 32

Pipe length (m)	Air intake diaphragm (mm)
$0,5 \leq L \leq 2$	87
$2 \leq L \leq 4$	-

\* excluding the first elbow connected to the boiler



pic.17

##### Type C32

The minimum permissible length of vertical coaxial pipes is 0,5 metre, equal to the length of the chimney.

The maximum permissible length of vertical coaxial pipes is 5 metres for HC-HR 24 and 4 metres for HC-HR 32, including the terminal. For each additional elbow, the maximum permissible length must be reduced by 1 metre.

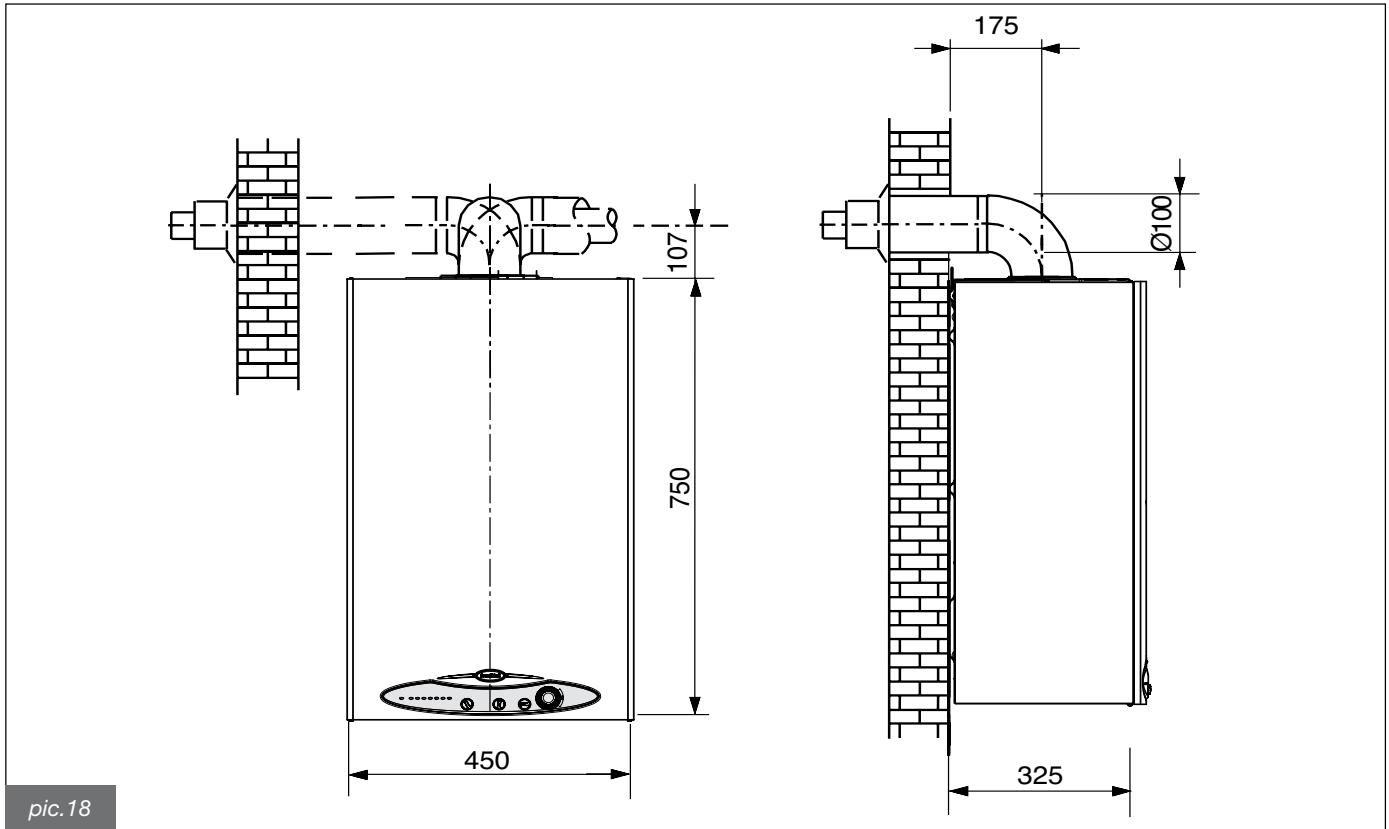
##### Choosing the applicable diaphragm supplied with the boiler (pic. 17)

Pipe length (m)	Air intake diaphragm (mm)
$0.5 \leq L \leq 2$	80
$2 \leq L \leq 5$	82

Pipe length (m)	Air intake diaphragm (mm)
$0,5 \leq L \leq 2$	87
$2 \leq L \leq 4$	-



The boiler is equipped with a device for controlling the emissions of the products of combustion. If the flue gas and/or combustion air intake system fails, the device sets the equipment in the safety configuration (subsection 2.3.3).



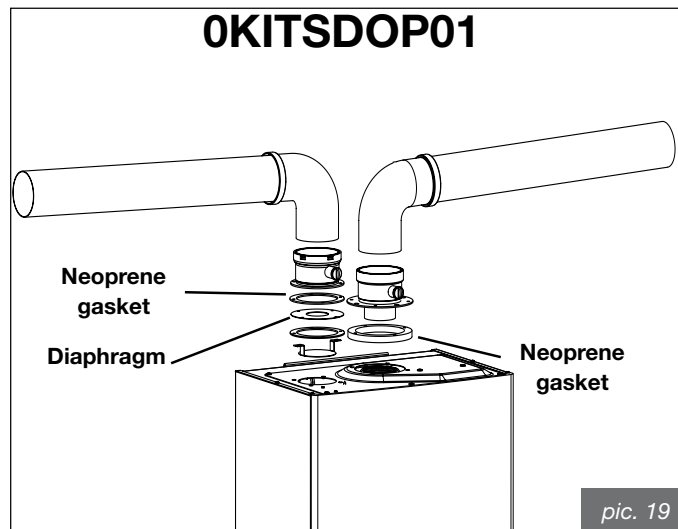
pic.18

These pictures are merely an indication. For installation of optional fittings please refer to the instruction enclosed to the same fittings.

4.5.4. Ø 80 mm air/flue gas split duct system



The below data are referred to air intake/flue gas discharge system, implemented with original, rigid and smooth ducts, delivered by the manufacturer.



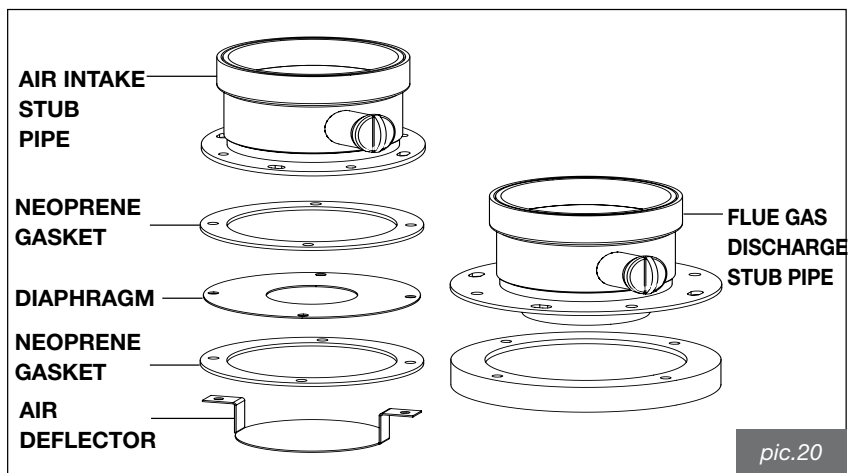
pic. 19

## Installation types C12- C32- C42- C52- C82

### HR-HC 24 and HR-HC 32

For installations with separate air intake and flue gas discharge pipes the split base kit (code 0KITSDOP01) must be used. The kit consists of the following components (pic. 20):

- no. 1 Ø 80 mm female stub pipe with flange for connection to the flue gas discharge pipe (flue gas deflector included);
- no. 1 Ø 80 mm female stub pipe with flange for connection to the air intake pipe;
- no. 1 standard air deflector;
- no. 2 air intake diaphragm (43 and 52 mm);
- fixing screws and seals.



### Air intake

The minimum length of the air intake pipe is 0.5 metre.

Each wide-radius 90° elbow (R=D) installed on the air intake pipe is equal to 1 m linear length.

Each narrow-radius 90° elbow (R<D) installed on the air intake pipe is equal to 1 m linear length.

The load loss of the air intake terminal is not to be taken into consideration.

**A standard air deflector MUST be installed.**

### Flue gas system

Each wide-radius 90° elbow (R=D) installed on the flue pipe is equal to 1.5 m linear length.

Each narrow-radius 90° elbow (R<D) installed on the flue pipe is equal to 1 m linear length.

### HC 24 and HR 24

Pipe length (m)	$\Delta p$ (Pa)	Air intake diaphragm (mm)
$0.5 \leq L \leq 28,5$	$1 \leq L \leq 50$	43
$28,5 \leq L \leq 57$	$50 \leq L \leq 102$	-

\* excluding the first elbow connected to the boiler

### HC 32 and HR 32

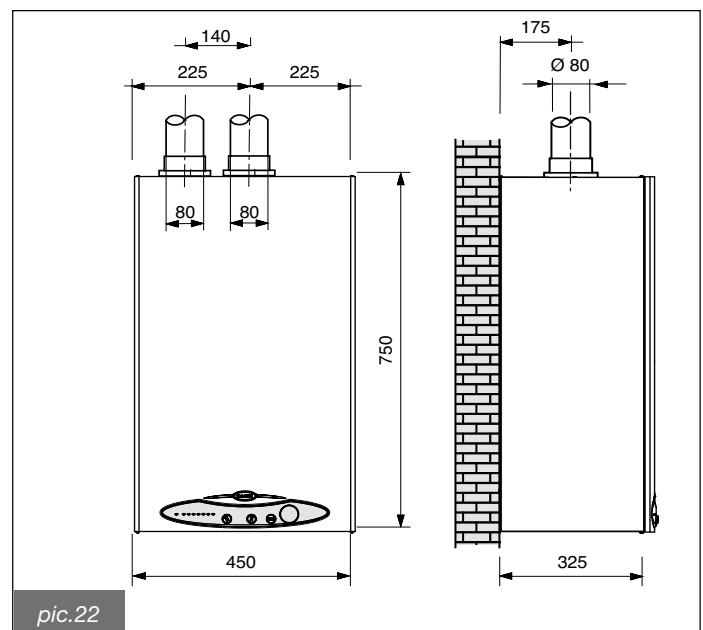
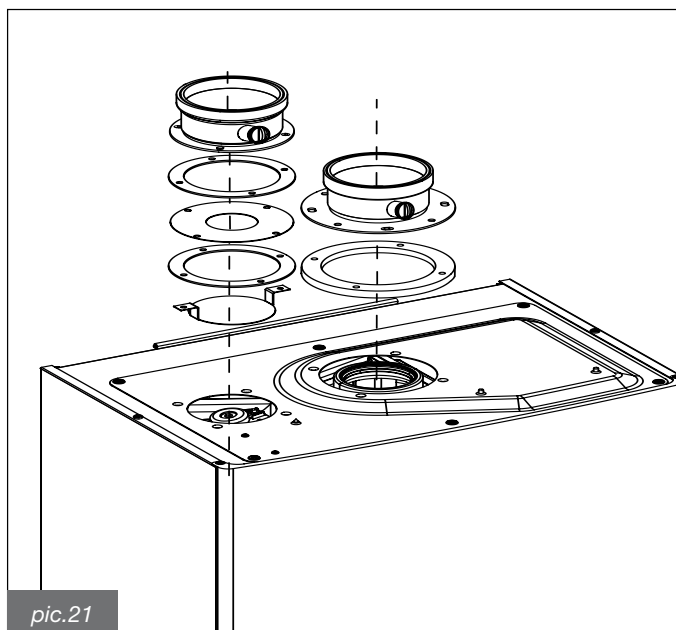
Pipe length (m)	$\Delta p$ (Pa)	Air intake diaphragm (mm)
$0.5 \leq L \leq 14,5$	$1 \leq L \leq 25$	52
$14,5 \leq L \leq 29$	$25 \leq L \leq 51$	-

\* excluding the first elbow connected to the boiler



**A flue pressure switch is fitted to the boiler. It controls the flue gas discharge flow rate. If the flue gas discharge and/or air intake system malfunctions, the device shuts down the boiler to prevent unsafe operation (see subsection 2.3.3).**

The following are merely an indication. For installation of optional fittings please refer to the instruction enclosed to the same fittings.



**Configuration of Ø 80 mm flue gas discharge and air intake pipes**

**Example no. 1 (pic. 23)**

Primary air intake and flue gas discharge through two opposing outside walls.

**Example no. 2 (pic. 24)**

Primary air intake through outside wall and flue gas discharge through outside wall behind the boiler.

**Example no. 3 (pic. 25)**

Primary air intake through outside wall and flue gas discharge through the same wall.

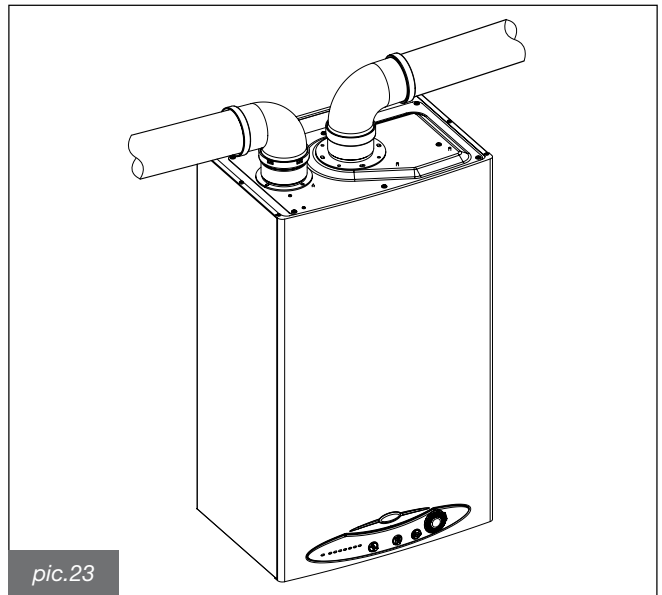
**Example no. 4 (pic. 26)**

Primary air intake through outside wall and flue gas discharge through the same wall behind the boiler.

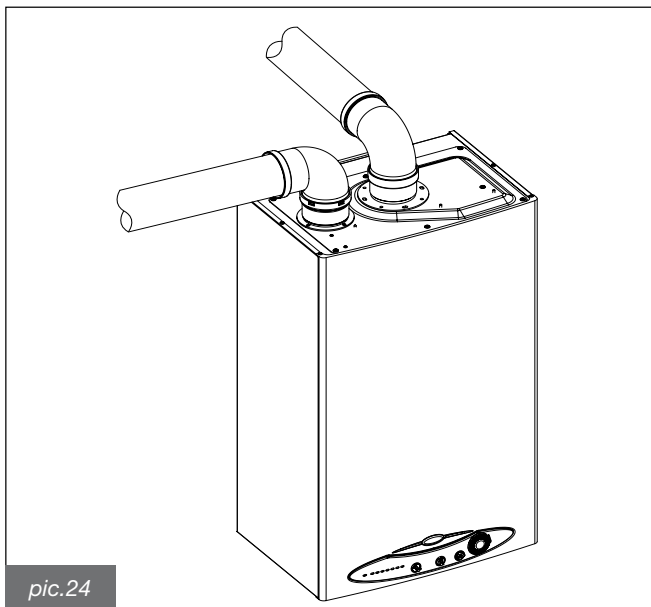
**Example no. 5 (pic. 27)**

Primary air intake through outside wall and flue gas discharge through the roof.

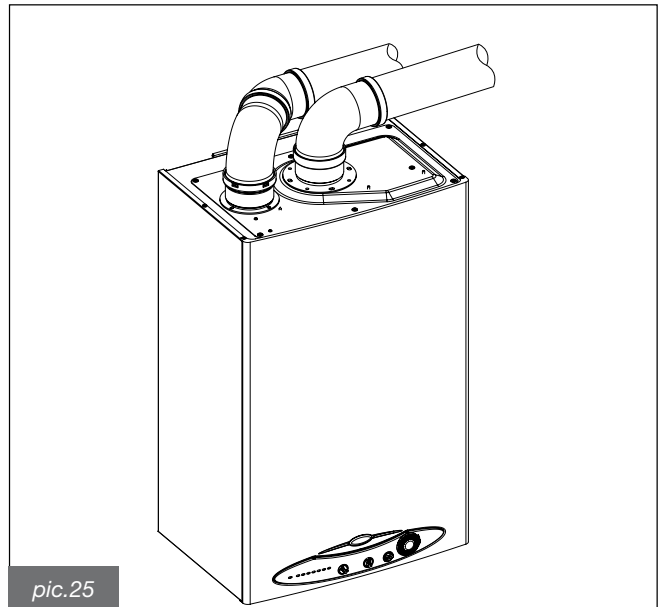
**These pictures are merely an indication.**



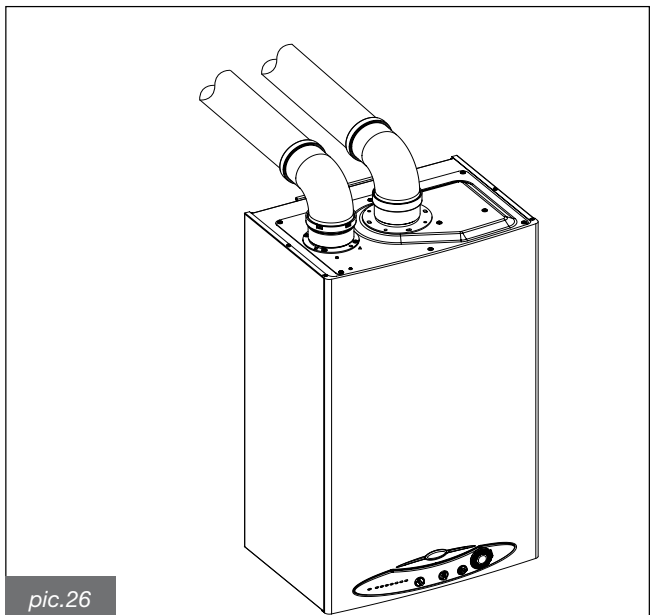
pic.23



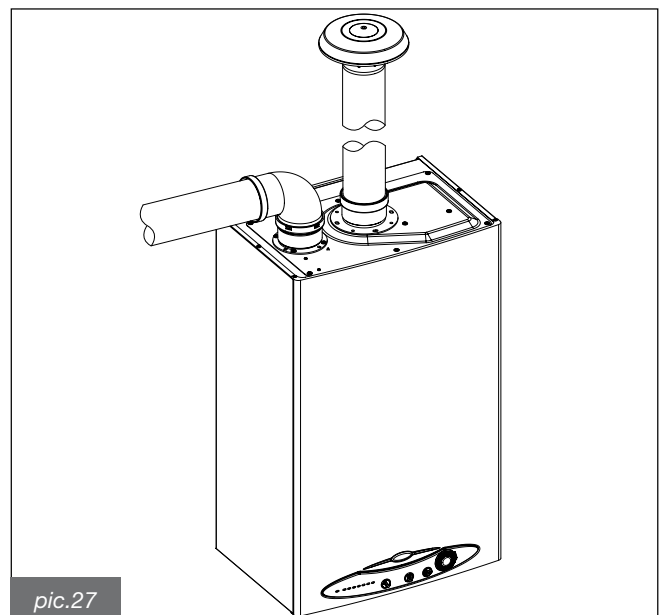
pic.24



pic.25



pic.26



pic.27

#### 4.5.5. Electrical supply connection

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

The boiler is to be connected to a 230V~50Hz electrical power supply.

**When connecting the boiler to power mains, follow correct phase/neutral polarity sequence.**

Installation standards BS7671 IEE WIRING REGS must be complied with and are which are considered herein integrally transcribed.

An easy accessible two-poled switch is to be installed externally to the boiler, in an easy to reach position. The switch minimum distance between contacts is to be 3 mm.

The switch is to allow power supply interruption in order to safely perform maintenance and service procedures.

Power supply to the boiler is to be fitted with a differential magnetic-thermal automatic switch of appropriate shut-down capacity.

Electrical power supply is to be appropriately earthed.

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



**DO NOT:**

- touch the electrical connections with wet hands
- put any electrical cables under stress
- leave the electrical components exposed to weather conditions



**Check and inspect the cable supplied with the boiler do not use if this cable is damaged. The boiler should be connected in line with the requirements of the IEE electrical regulations and should only be connected by a competent person.**



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

#### 4.5.6. Room thermostat connection (optional equipment)

The boiler can be connected to a room thermostat (not supplied with the boiler).

Room thermostat contacts must be properly sized for 5 mA at 24 V D.C.

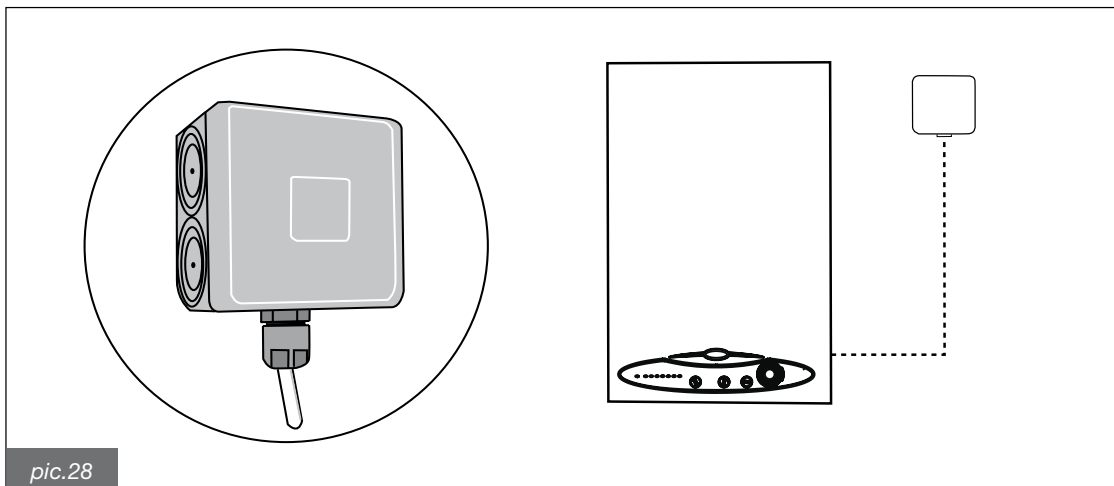
The room thermostat must be connected to the terminal block shown in pic. 39, after removal of the jumper which is delivered as standard fitting to the boiler.

**Room thermostat wiring must not be grouped together with power mains supply cables.**

#### 4.5.7. External temperature probe installation (optional equipment) and “sliding temperature” operation

The boiler can be connected to an external temperature probe (optional equipment), which adjusts CH flow temperature for temperature compensation operation (pic. 28).

The manufacturer supplies 0SONDAES01: external probe for direct connection to the boiler.



pic.28

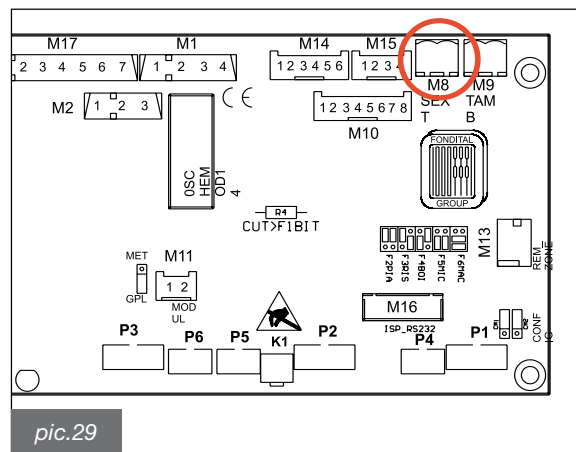


**Only original external temperature probes supplied by the manufacturer must be used.  
If non-original external temperature probes are used, correct operation of the boiler cannot be guaranteed.**

External temperature probe connection is to be performed by means of a double insulated wire, its minimum cross-section is to be 0.35 sq.mm.

External temperature probe is to be connected to **M8** position of the boiler printed circuit board (pic. 29).


**External temperature probe wiring is NOT to be grouped together with power mains supply cables.**




External temperature probe is to be installed on an outside wall facing north/north-east, in a position protected from atmospheric agents. Do not install in window area, next to ventilation openings, or heat sources.

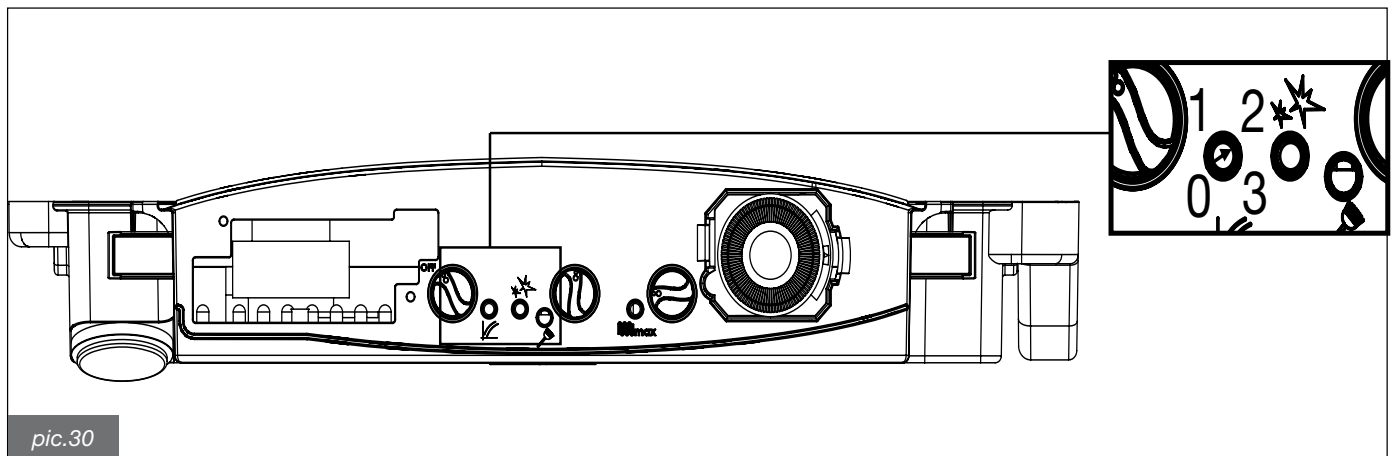
The external temperature probe automatically modifies CH flow temperature in relation to:

- sensed outdoor temperature;
- selected thermoregulation curve;
- selected virtual room temperature.

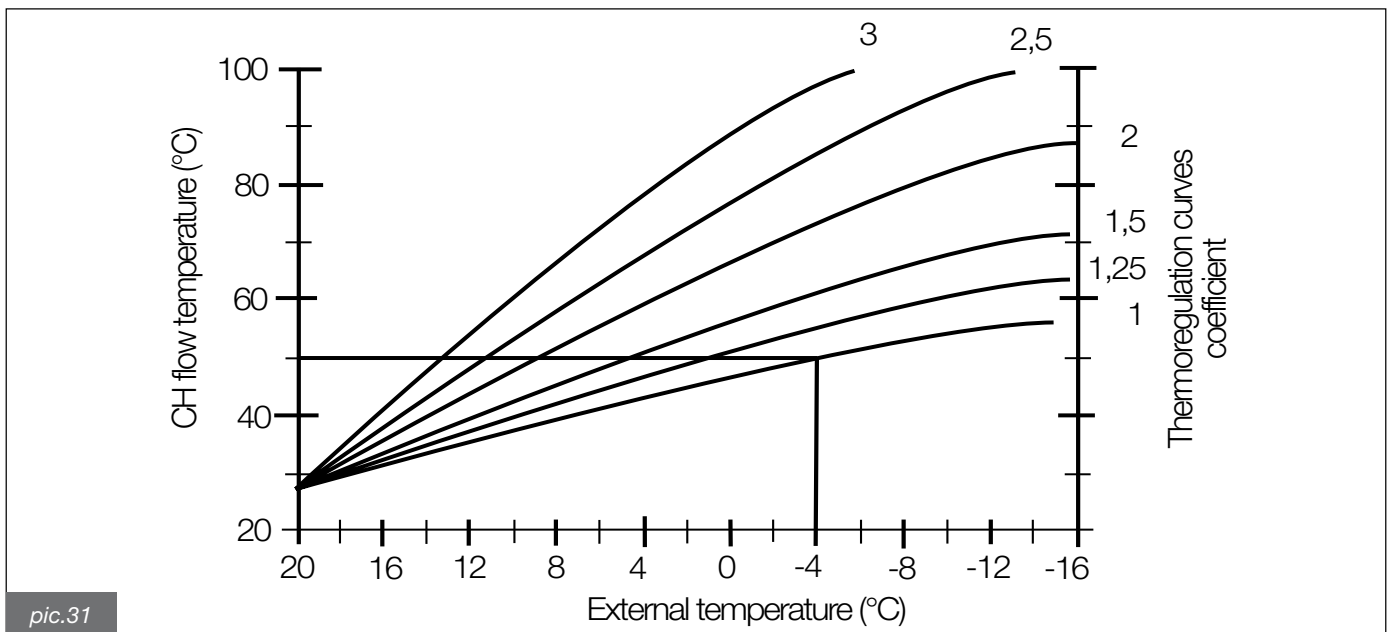
The thermoregulation curve is selected via trimmer .

It is important for trimmer  to be set to a value of 1-3 (pics. 30).

The virtual room temperature is set via adjuster 11 (pic. 1), which, when the external temperature probe is installed, loses its capability to set CH flow temperature (see subsection 2.2.6.).







pic.31

#### 4.5.8. Installation of the *OpenTherm* remote control (optional equipment only for HR model)

The boiler can be connected to an *OpenTherm* remote control, an optional only for HR model supplied by the manufacturer. **The remote control must be installed by a suitably qualified person.**



**Only original remote controls supplied by the manufacturer must be used. If non-original remote controls are used, correct operation of the boiler cannot be guaranteed.**

For installation instructions, refer to the booklet accompanying the remote control. Precautions to take when installing the remote control:

- **The remote control cables must NOT be routed together with power cables:** otherwise the disturbance would cause the remote control to malfunction.
- Position the remote control on a wall inside the building, about 1,5 metres from the floor, in a suitable position for measuring the environmental temperature.
- Do not install in alcoves, behind doors or curtains, near sources of heat, or exposed to sunlight, draughts or spray.

#### 4.5.9. Loading the system

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

This procedure is to be cautiously carried out, following each below indicated step:

- Open the air purging valves on all radiators and verify the boiler automatic valve operation.
- Gradually open the filling loop to fill the system up, checking that all automatic air purging valves installed in the system properly work.
- Close all radiator air purging valves as soon as water starts coming out.
- Check boiler water pressure gauge for pressure to reach 1-1.3 bars reading.
- Shut the filling loop and bleed any air out again by opening all air purging valves on radiators.
- Start the boiler and, as soon as the system reaches working temperature, stop the boiler and pump and repeat the air purging procedures.
- Allow the system to cool and restore water pressure to 1-1.3 bars.

#### WARNING

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

#### WARNING

The safety fluid flow meter will not allow the burner to be started when CH water flow is too low. CH system water pressure is not to be below 1 bar; restore proper value as needed via the filling loop. The procedure is to be carried out while water in the system is cold.

Boiler pressure gauge displays water pressure in the CH system.

#### WARNING

After long boiler inactivity, its pump may be stuck. Before operating the boiler, follow the below indicated pump clearing procedure:

- unscrew the protective bolt, located in the center front section of pump motor;
- put a screwdriver into the opening and manually rotate the circulation unit shaft clockwise;
- once the pump is released, screw back on the protection bolt and check for water leaks.

When the pump protective bolt is removed, some water may flow out. Before re-installing the boiler external housing, verify all internal surfaces to be dry.

## 4.6. Burner adjustment

### A) Max power adjustment

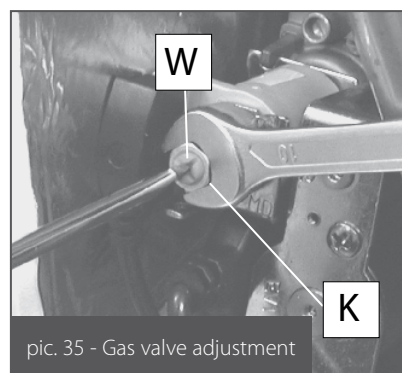
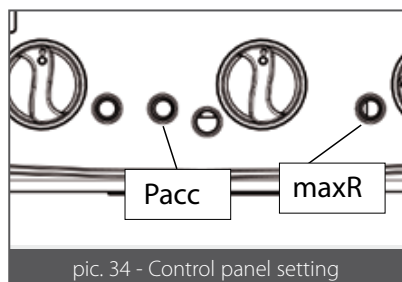
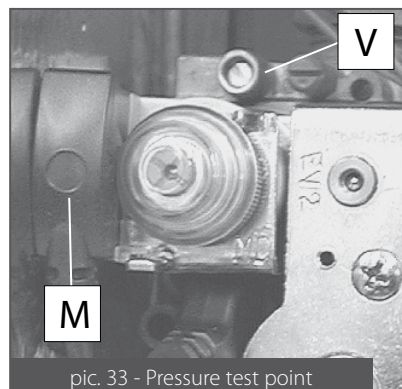
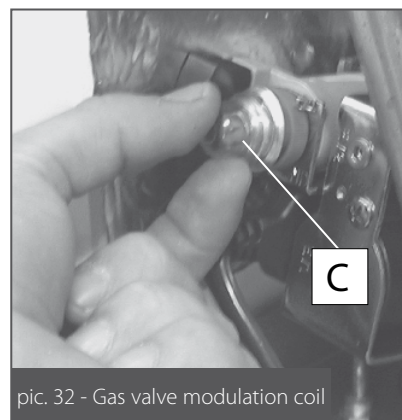
- Check the gas supply pressure (refer to tables 3 and 4)
- Remove the plastic cap (**C**, pic. 32), which is positioned on top on the modulating coil and protects the gas valve pressure adjusting nut and screw.
- Connect a manometer to **V** test point in pic. 33.
- Adjust the screw (**maxR**, pic. 34) to MAX by rotating fully clockwise.
- Select WINTER boiler operation on switch **9** (pic. 1).
- Start the boiler in “chimney sweep” mode (subsection 6.5.1.).
- Turn (external) nut **K** clockwise to increase nozzle pressure or vice versa (pic. 35).
- In LPG-fuelled boilers, turn the brass nut **K** fully clockwise.

### B) Min power adjustment

- Disconnect the electrical wiring from the modulation coil (**M**, pic. 33).
- Turn the burner on and check MIN pressure according to tables 3 and 4.
- To adjust the pressure, hold nut **K** still using a 100 mm tool, and turn screw **W** clockwise to increase or counter-clockwise to decrease the gas pressure (pic. 35).
- Re-connect the electrical wiring to the modulation coil.

### C) Final settings

- Turn the **Pacc** screw (pic. 34) to the middle set point, exit “chimney sweep” mode (subsection 6.5.1.) and make sure the burner works correctly and silently. If necessary, increase or decrease ignition power via the **Pacc** adjuster (clockwise to increase, counter-clockwise to decrease).
- Re-check the min and max gas valve pressure values.
- Adjust as necessary.
- Fit on plastic protective cap **C**.
- Close gas pressure check valves.
- **Check for gas leaks.**



## 5. Commissioning

### 5.1. Commissioning the boiler

It is recommended to carry out the following:

- reference should be made to BS 5449 Section 5 when commissioning the boiler;
- open the mains water supply to the boiler;
- open all hot water taps to purge the DHW system;
- ensure that the filling loop is connected and open, then open the heating flow and return valves on the boiler;
- the system must be flushed in accordance with BS 7593 and the flushing agent manufacturers instructions;
- pressurise the system to 1.5 bar then close and disconnect the filling loop;
- turn the gas supply on and purge according to BS 6891 "Domestic Gas Installations";
- test for gas soundness;
- turning either of the temperature control knobs will set the relevant temperature. When the knob is turned the display will alter and show the selected temperature. After a few seconds the display reverts to show the current boiler temperature.

**At the time of commissioning, complete all relevant sections of the Benchmark Checklist located on the inside back pages of this document.**

### 5.2. Setting the timer

The Electro-Mechanical Timer allows the central heating system to be set every 20 minutes. Using the three position switch the timer will allow either constant operation, timed operation or central heating off. Move the switch button by sliding to the desired position.

There are three position switch:

**Constant (Top position):** The heating will be on constantly irrespective of the position of the tappets. The heating will be controlled by the main thermostat on the appliance and/or any external controls.

**Timed (Central position):** The heating will operate according to the position of the tappets and be controlled as above.

**Off (Bottom position):** No central heating. Domestic hot water will operate on demand.

#### To set the time of day

Turn the timer outer bezel clockwise, to align the pointer with the correct time to the nearest 20 minutes. Do not at any time attempt to turn the bezel anti-clockwise.

#### To set the timed heating program

Decide which times of the day the central heating is required. The heating will operate when the green tappets are set to the outer edge of the bezel. To ensure the heating stays OFF set the required tappets inwards towards the centre of the bezel. Each tappet represents 20 minutes.

### 5.3. Checking

Before testing the boiler, it is recommended to carry out the following checks:

- compliance of flue gas discharge ducts and terminal installation according to instructions: **when the boiler is operating no products generated by combustion are to leak from any gasket;**
- power mains supply to boiler is 230 V ~ 50 Hz;
- the system is correctly filled (water pressure gauge is to display 1 - 1.3 bar);
- all stopcocks in the system piping are to be open;
- gas type is to be in accordance to boiler specifications: convert the boiler to the available gas type; the procedure is to be performed by technically qualified personnel;
- gas supply stopcock is to be open;
- **no gas leaks are to be detected;**
- electric power switch, external to the boiler is to be on;
- boiler 3 bar safety valve is not to be blocked and correctly terminated;
- the condensate trap must drain correctly and is correctly terminated;
- water leaks are not to be detected;
- pump is not to be stuck;
- a gas rate measurement may now be made. (see tables 3, 4, 5)



**Should the boiler not be installed in compliance with current laws and standards, inform the installer and do not test the boiler.**

#### WARNING

The boiler is equipped with a pump with three speeds, corresponding to the residual head to the system (refer to subsection 3.4.)

The boiler is delivered with the pump set to third speed.

**When changing speed to the pump, in accordance with the flow rate required by the boiler (ensured by the primary flow switch) and the system characteristics, verify that all the conditions relative to the system itself (such as closing of one or more zones in the CH system or closing of thermostatic valves) are respected.**

### 5.4. Switching on and switching off

For boiler switching on and switching off procedure follow § 1. Instructions for the User.

## 6. SERVICING

### 6.1. General Warnings



Before carrying out any type of maintenance operation, disconnect the appliance from the mains electricity supply and close the gas valve.



In order to guarantee the long life of the appliance and in accordance with the current gas safety regulations, only use original spare parts.



The frequency of the boiler maintenance must comply with current law and, nevertheless, should be carried out once a year.

### 6.2. Boiler inspection

Maintenance and repair procedures are strictly to be carried out by professionally qualified personnel.

The manufacturer recommends Customers to contact the Fondital Helpline UK for all maintenance and repairs, which are best trained for the purpose.

Appropriate boiler maintenance ensures efficient operation, preservation of the environment, and safety for people, animals and objects.

Maintenance operations must be carried out at least once a year.



Before carrying out any maintenance involving replacement of components and/or cleaning inside parts of the boiler, switch off the power supply to the boiler.

### 6.3. Servicing schedule

The routine maintenance schedule must include the following checks:

- General integrity of the boiler.
- Boiler and gas supply pipework for tightness.
- Gas supply pressure to boiler.
- Boiler ignition.
- Minimum and maximum gas pressures to boiler nozzles.
- Flue gas system integrity, good state of preservation, and absence of leaks.
- Flue system integrity, good state of preservation, and leak test.
- Air pressure switch operation.
- Efficiency of boiler safety devices in general.
- Absence of water leaks and oxidized areas on boiler couplings.
- Efficiency of the system's safety valve.
- Expansion vessel loading pressure (1±0,2 bar).
- Safety flow switch efficiency preventing low water pressure operation.
- Condensate discharge through the trap.

#### Cleaning operations:

- General boiler internal areas.
- Gas nozzle.
- Air intake and flue gas exhaust system.
- Flue side of the heat exchanger.
- Siphon and condensate discharge pipes.

When operating the boiler for the first time, also check:

- Boiler room suitability.
- Duct diameter and length in the flue gas system.
- Boiler installation in accordance to this "Installation use and maintenance" manual instructions.

Should the boiler not correctly operate, while not creating any danger to people, animals or property, inform the Fondital helpline UK both verbally and in writing.

After servicing, complete the relevant Service Interval Record section of the Benchmark Checklist located on the inside back pages of this document.

### 6.4. Analysis of combustion parameters

The boiler combustion parameters must be checked in accordance with legal requirements to determine the efficiency and the emission of pollutants.

## 6.5. Testing combustion efficiency

### 6.5.1. "Chimney sweep" function

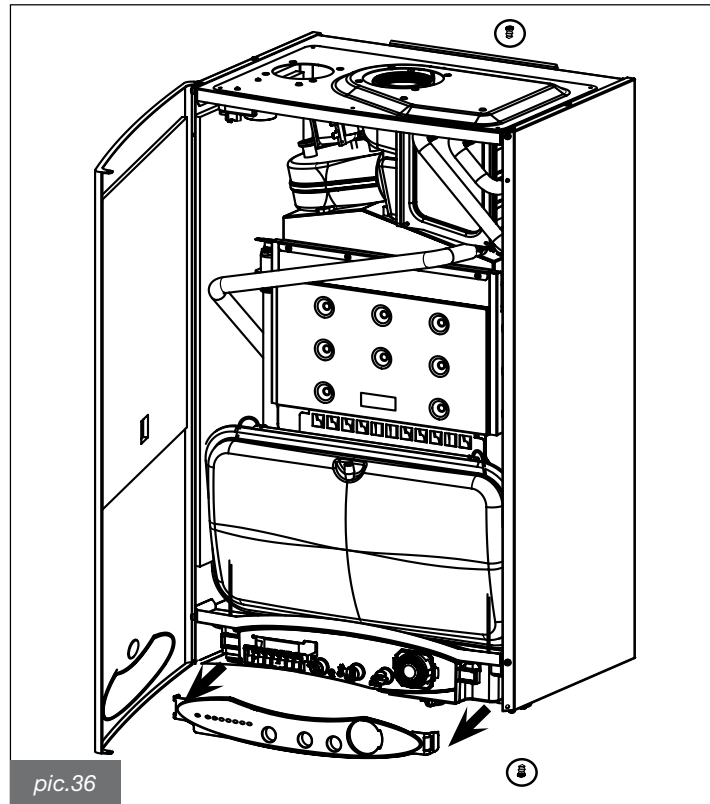
The boiler has a "chimney sweep" function, used to test its efficiency and adjust burner performance.

The boiler comes with the chimney-sweep function, which must be used to measure combustion efficiency and regulate the burner.




To activate the chimney-sweep function, you need to open the front panel to access the controls. To do this, follow the sequence below:

- unscrew two of the four screws securing the panel (right or left, pic. 36) and open it, but without removing it from the boiler;
- remove the control panel template by widening the right and left hooks and pulling it outwards (pic. 36).

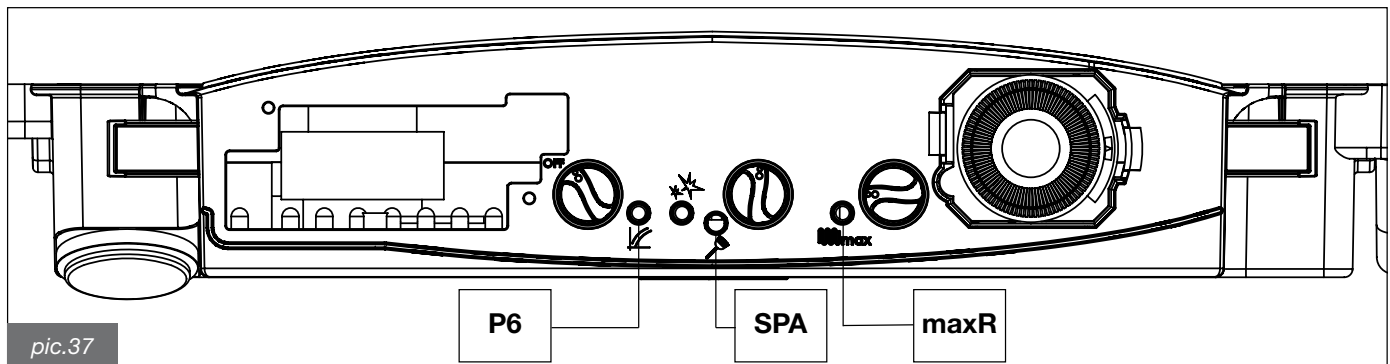
The control panel is like shown in pic. 37.



Turn knob 9 (pic. 1) to WINTER and the room thermostat (if there is one) to ON.

While the boiler is operating, press the button  for a few seconds (pic. 37). The boiler will turn off and then resume the ignition sequence, starting again at the max power. Maximum boiler power output max is as much as set point max (pic. 37).

The "Chimney sweep" function remains active for 15 minutes. To deactivate this function, turn selector 9 to any position other than WINTER.



### 6.5.2 Measurements

#### Coaxial pipe system

Proceed as follow to verify combustion performance.

- Measure air intake through hole 2 (A, picture 38)
- Measure flue gas and CO<sub>2</sub> temperature through hole 1 (A, picture 38)

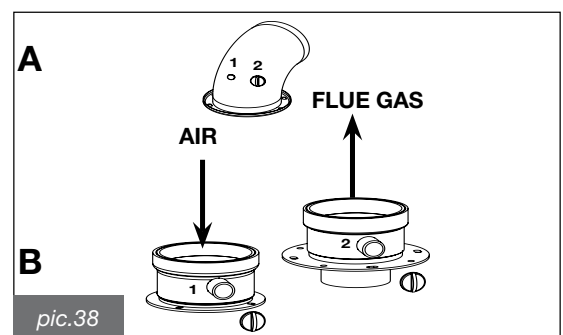
Allow the boiler to react working temperature before taking the readings.

#### Split pipe system

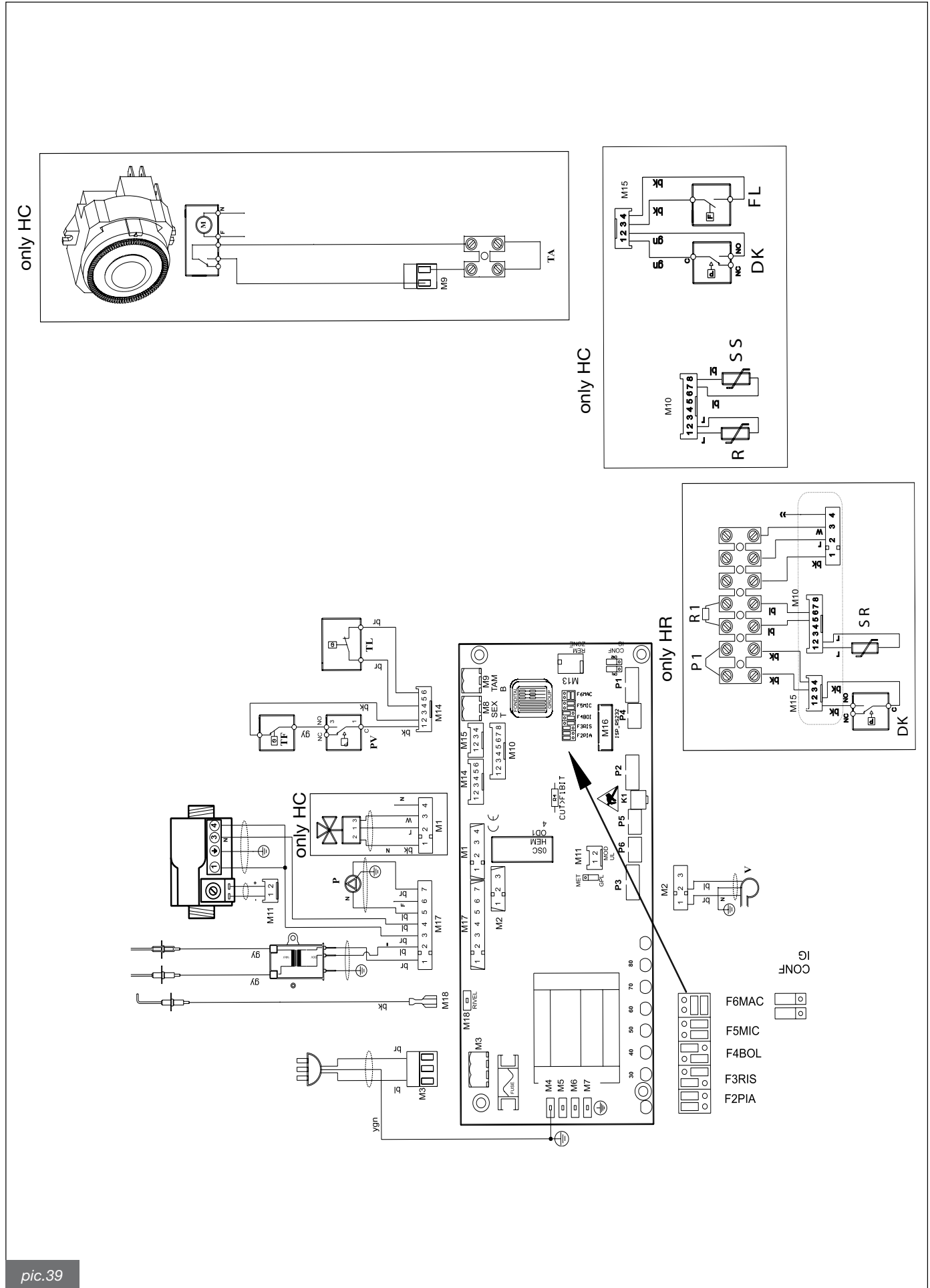
Proceed as follow to verify combustion performance.

- Measure air intake through hole 1 (B, picture 38)
- Measure flue gas and CO<sub>2</sub> temperature through hole 2 (B, picture 38)

Allow the boiler to react working temperature before taking the readings.



6.6. Wiring diagram



pic.39

**Chart to pic. 30 acronyms**

**F1BIT:** Bi-thermal heat exchanger boiler  
**F2PIA:** Mono-thermal heat exchanger boiler  
**F3RIS:** CH only boiler  
**F4BOL:** System boiler  
**F5MIC:** Micro-reservoir boiler  
**F6MAC:** "ACQUA PREMIUM" boiler (en-cased installation)  
**M3-M8-M9:** Power Supply connector, outdoor probe, TA  
**M16:** Connector for tele-metering  
**M2-M15:** Service connector  
**E.RIV:** Detection electrode  
**E.ACC:** Ignition electrode

**P:** Pump  
**V:** Fan  
**MVD:** Three-way valve motor  
**DK:** Water pressure switch  
**SR:** CH probe 10K Ohm B=3435  
**SE:** Outdoor temperature probe 0SONDAES01 10K Ohm B=3977 (optional)  
**SS:** DHW probe 10K Ohm B=3435  
**TA:** Room thermostat (optional)  
**CM1 - CM2:** Boiler type selection jumper  
**FL:** DHW flow switch  
**VG:** Gas valve  
**TL:** Limit thermostat

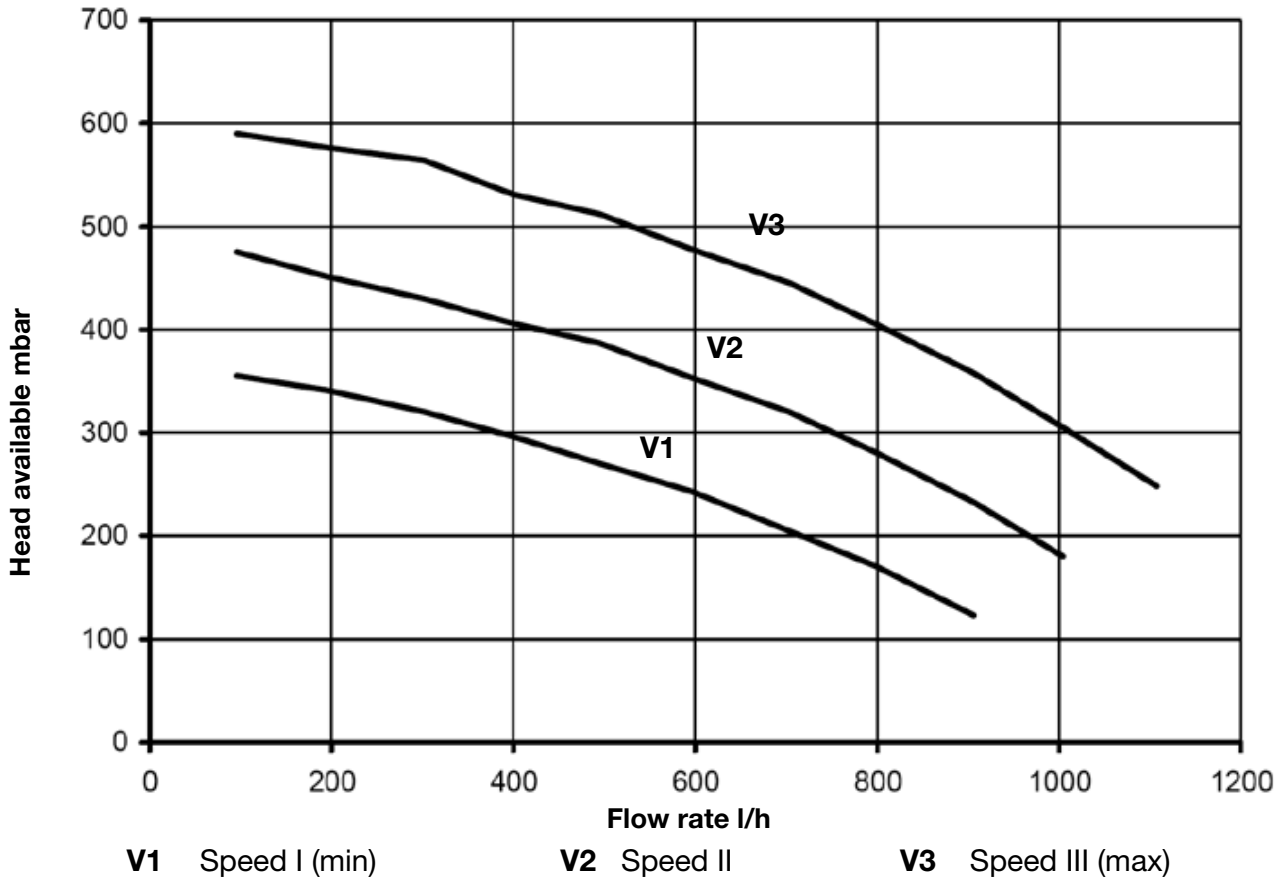
**PV:** Fan pressure switch  
**TIMER:** Electromechanical day timer  
**TF:** Flue gas leak detection thermostat  
**P1:** CH flow temperature potentiometer  
**P2:** DHW temperature potentiometer  
**P3:** Boiler selection  
**P4:** Maximum CH output adjusting potentiometer  
**P5:** Ignition power adjusting potentiometer  
**P6:** Thermoregulation curve adjuster  
**K1:** "Chimney sweep" function key

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

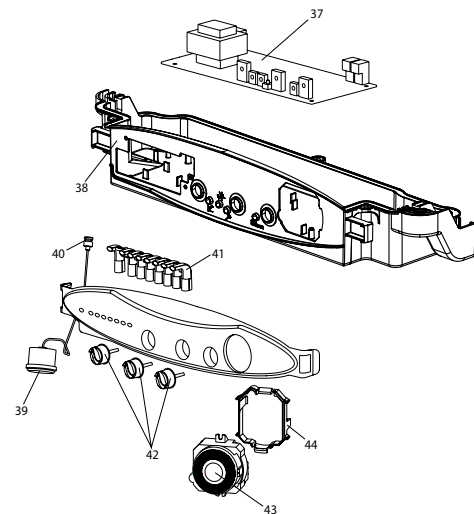
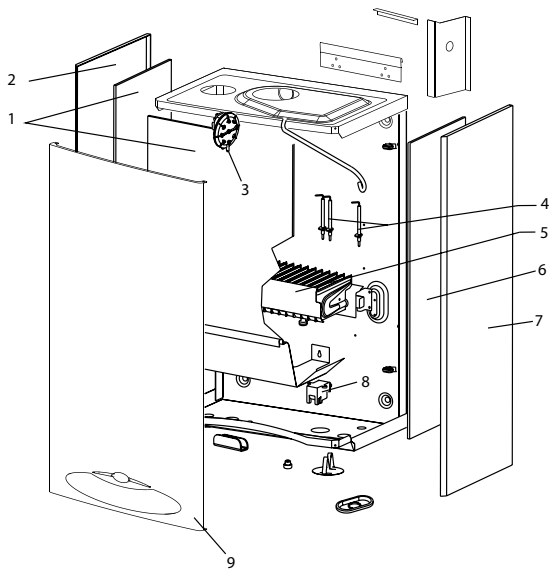
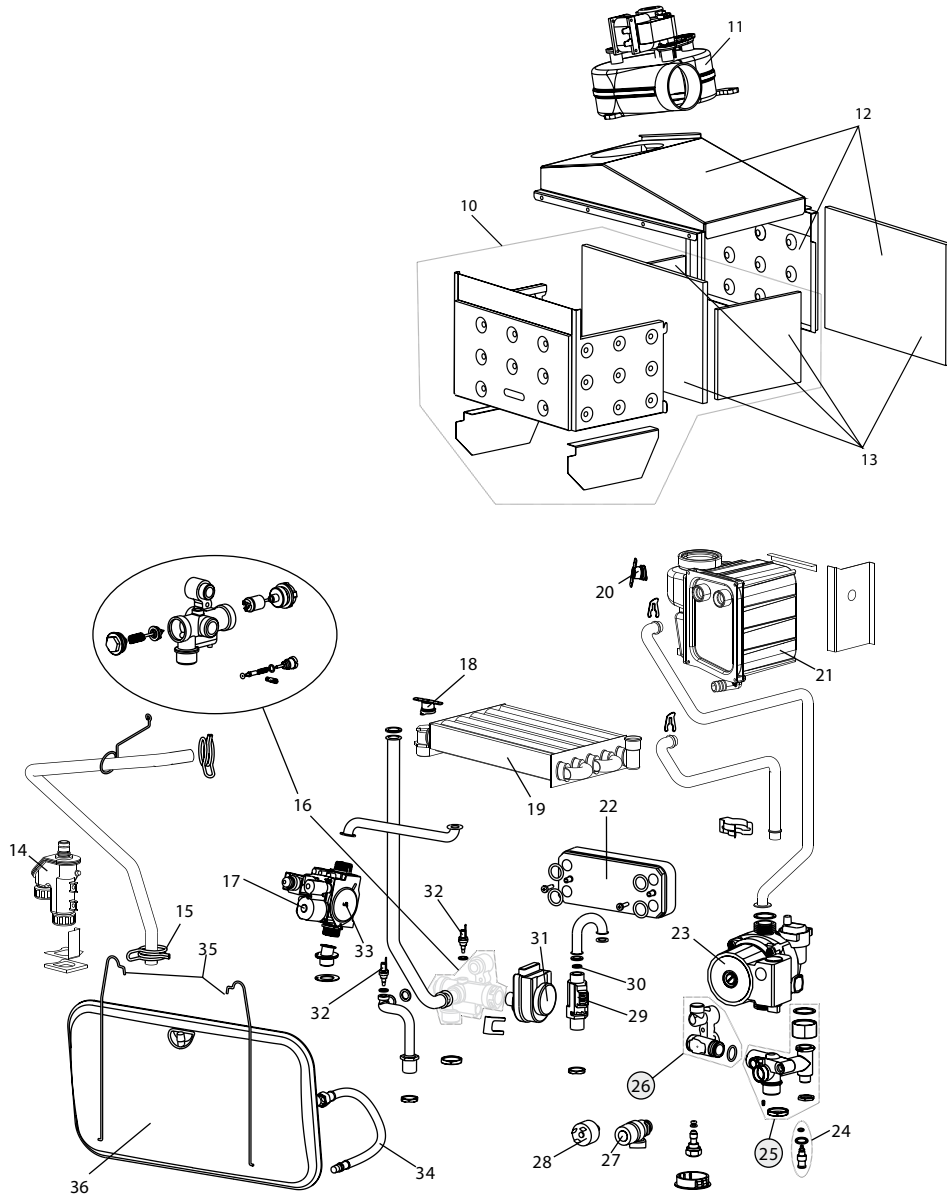
T (°C)	0	2	4	6	8
0	27203	24979	22959	21122	19451
10	17928	16539	15271	14113	13054
20	12084	11196	10382	9634	8948
30	8317	7736	7202	6709	6254
40	5835	5448	5090	4758	4452
50	4168	3904	3660	3433	3222
60	3026	2844	2674	2516	2369
70	2232	2104	1984	1872	1767
80	1670	1578	1492	1412	1336
90	1266	1199	1137	1079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

Table 8 - Correlation "temperature - nominal resistance" of temperature probes

**6.7 Hydraulic loss**



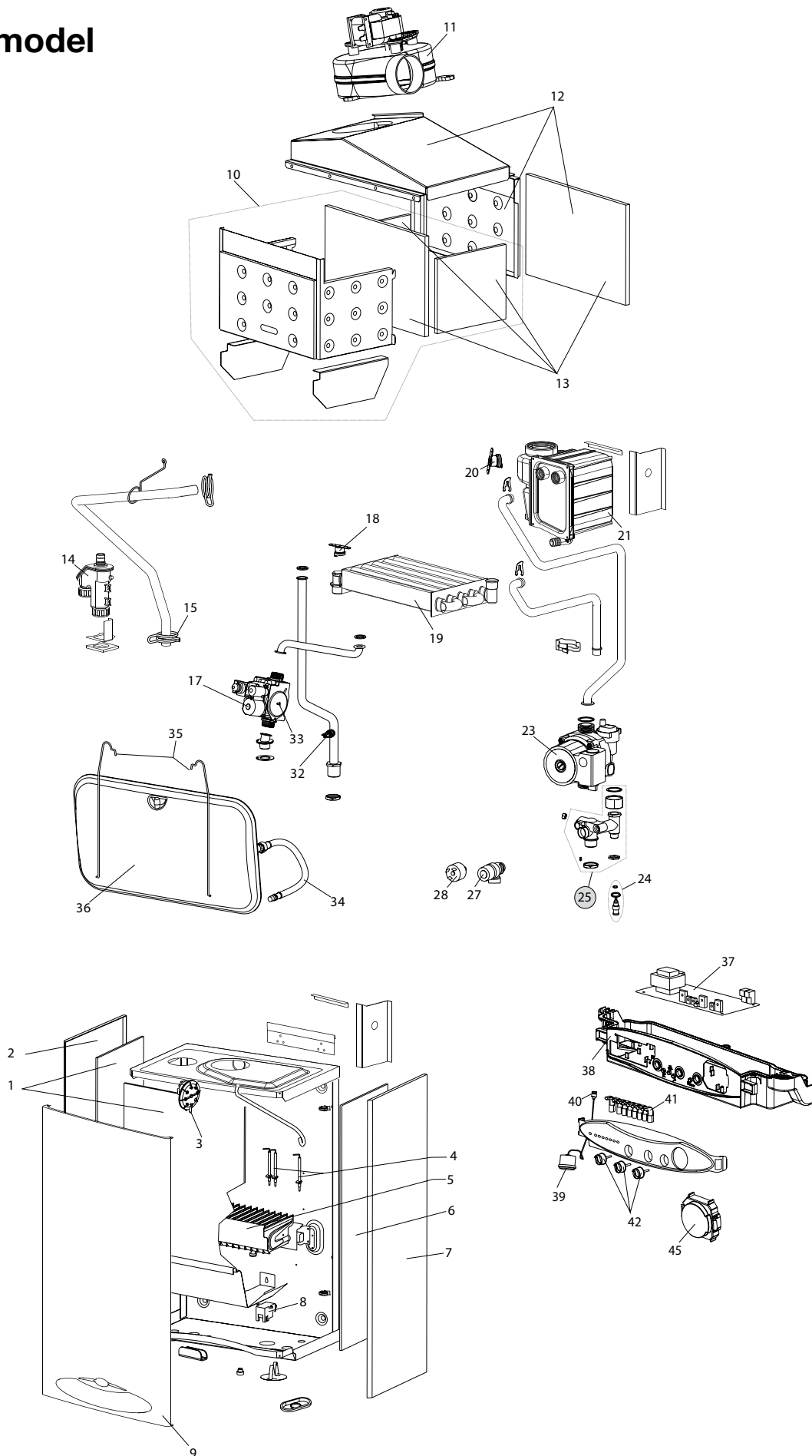
# HC model



pic. 40



# HR model



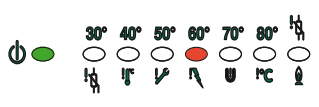
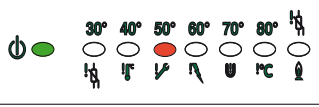
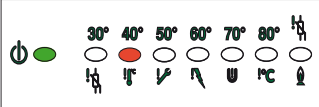
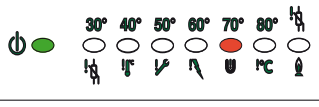
pic. 41

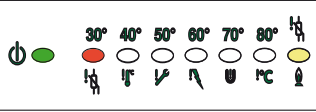
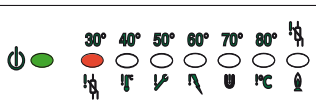
Item	Code	Description	No. of pieces per pack
1	6ISOLRIC00	Complet panel insulation	1
2	6PANLACM00	Wall-hung boiler side panel	1
3	6PRESSOS04	Air pressure switch (24 Kw)	1
	6PRESSOS05	Air pressure switch (32 Kw)	1
4	6CANDELA00	Igniter plug	3
5	6BRUMMET03	Methane 12-ramp gas burner 24	1
	6BRUMGPL03	LPG 12-ramp gas burner 24	1
	6BRUMMET11	Methane 15-ramp gas burner 32	1
	6BRUMGPL11	LPG 15-ramp gas burner 32	1
	0TRASMET04	Methane conversion kit dual HC-HR 24 line	12
	0TRASGPL03	LPG conversion kit dual HC-HR 24 line	12
	0TRASMET12	Methane conversion kit dual HC-HR 32 line	15
0TRASGPL11	LPG conversion kit dual HC-HR 32 line	15	
6	6ISOLRIC00	Complet panel insulation	1
7	6PANLACM00	Wall-hung boiler side panel	1
8	6YTRAACC00	Ignition transformer	1
9	6PANFRM06	Dual Line front panel	1
10	6CAMCORC00	Combustion chamber for wall-hung boilers	1
11	6VENTILA15	Fan (24 Kw)	1
	6VENTILA16	Fan (32 Kw)	1
12	6CAPFURC01	Fume hood	1
13	6SETISRC00	Fume hood insulation	1
14	6SIFRACO02	Condensate trap	1
15	6FASCMOL00	Spring retainer diameter 24	1
16	6CORPVAL04	Condensing three-way valve unit	1
17	6YBOBINA00	Gas valve coil	1
18	6YTERSIC00	Safety thermostat 95 °C	3
19	6SCAMMON08	Heat exchanger HC	1
20	6TERMSIC05	Safety thermostat 105 °C	3
21	6RECUFUM00	Flue gas recoverer	1
22	6SCAMPIA01	Plate heat exchanger (24 Kw)	1
	6SCAMPIA05	Plate heat exchanger (32 Kw)	1
23	6CIRCOLA07	Circulating pump	1
24	6RUBISCA01	Boiler drain cock unit	1
25	6GRIDIR00	Hydraulic unit for heating return circuit	1
26	6GRURIRC00	Heat exchanger connector unit	1
27	6VALSIBA11	3 bar safety valve	1
28	6PRESSAC00	Water pressure switch	1
29	6FLUSSOS00	Flow meter switch	1
30	6REGOFLU00	Flow regulator	1
31	6PROATTT00	Actuator programmer	1
32	6SONDNTC01	NTC immersion probe 10 Kohm	3
33	6VALVGAS11	Gas valve	1
34	6TUBFLEX02	Hose	1
35	6MOLSUVC00	Expansion vessel supporting spring	2
36	6VASOESP10	8-litre expansion vessel	1
37	6SCHEMOD14	Modulating board	1
38	6SCAELPA02	Box for control panel housing	1
39	6MANOMET08	Pressure gauge	1

<b>Item</b>	<b>Code</b>	<b>Description</b>	<b>No. of pieces per pack</b>
40	6ORINNMA00	Pressure gauge o-ring seal	10
41	6GUIPPCM04	Boiler control panel light guide	1
42	6MANOPOL04	Knob	3
43	6TIMERGB00	Timer	1
44	6CORTIME00	Timer Fixing Frame	1
45	6TAPTIME00	Timer plug	1

Table 9 - Spare part list

## 8. Troubleshooting

BOILER STATUS	MALFUNCTION	PROBABLE CAUSE	SOLUTION
 <p>The boiler has shut down, and red light 5 is flashing.</p> <p>Turn selector 9 to RESET position to resume boiler operation.</p>	<b>Burner does not ignite.</b>	Gas supply failure.	Check gas pressure. Check mains gas safety valve.
		Gas valve has disconnected	Reconnect gas valve
		Gas valve is faulty.	Replace it.
		PCB is faulty	Replace it.
	<b>Burner does not ignite: no spark.</b>	Spark electrode is faulty.	Replace it.
		Ignition transformer is faulty.	Replace ignition transformer
		PCB is faulty.	Replace PCB
	<b>Burner ignites for a few seconds and goes off.</b>	Burner ignites for a few seconds and goes off.	Verify correct neutral and phase connections.
		Flame detection electrode wire is disconnected or faulty.	Connect flame detection electrode wire or replace it
		Detection electrode is faulty.	Replace electrode
		PCB does not detect flame	Replace PCB
		P ACC ignition value setpoint is too low.	Adjust P ACC ignition value set point
Min. heat input is not set correctly.		Check burner adjustment	
<b>Condensate is not discharged.</b>	Condensate drain is clogged.	Check the condensate drain	
	The trap is full.	Check the condensate trap and boiler drain	
 <p>The boiler has shut down and red light 4 is flashing.</p> <p>Turn selector 9 to RESET position to resume boiler operation.</p>	<b>Flue pressure switch not operating</b>	Flue pressure switch is faulty	Check flue pressure switch and replace if necessary
		Silicon pipes are disconnected or faulty	Reconnect or replace silicone pipes
		Insufficient air intake or flue gas discharge	Check air/flue gas pipes: unclog or replace as required
		Fan is faulty	Replace it.
	PCB is faulty	Replace it.	
	<b>Boiler safety thermostat has shut boiler down</b>	Insufficient air intake or flue gas discharge	Check air/flue gas pipes: unclog or replace as required
 <p>The boiler has shut down and red light 3 is flashing.</p> <p>Turn selector 9 to RESET position to resume boiler operation.</p>	<b>Boiler safety thermostat has shut boiler down</b>	CH water does not flow: pipes might be clogged, thermostatic valves might be shut, system stopcocks might be closed.	Check CH system.
		Pump is stuck or faulty.	Check the pump.
 <p>The boiler has shut down and red light 6 is flashing.</p> <p>Reset boiler by restoring correct water pressure.</p>	<b>Insufficient water pressure</b>	Possible water leaks.	Check system for leaks.
		Pressure switch is disconnected	Reconnect it.
		Water pressure switch is faulty.	Replace it.

BOILER STATUS	MALFUNCTION	PROBABLE CAUSE	SOLUTION
 <p>The boiler has shut down, red light 2 and yellow light 8 are flashing. Boiler will automatically resume operation when the problem has been solved.</p>	<p><b>CH probe is not operational.</b></p>	<p>CH probe is disconnected</p>	<p>Reconnect it.</p>
 <p>The boiler has shut down and red light 2 is flashing. Boiler will automatically resume operation when the problem has been solved.</p>	<p><b>DHW probe is not operational.</b> <i>Model HC.</i></p>	<p>DHW probe disconnected.</p>	<p>Reconnect it.</p>
<p>Boiler is not providing DHW</p>	<p><b>DHW flow meter is not operational.</b> <i>Model HC</i></p>	<p>Insufficient system pressure or capacity</p> <p>Flow meter sensors is disconnected or faulty.</p> <p>Flow meter is stuck.</p>	<p>Check DHW system.</p> <p>Check DHW flow meter filter.</p> <p>Replace or reconnect it.</p> <p>Replace it.</p>



# Service Record

It is recommended that your heating system is serviced regularly and that the appropriate Service Interval Record is completed.

## Service Provider

Before completing the appropriate Service Record below, please ensure you have carried out the service as described in the manufacturer's instructions.

Always use the manufacturer's specified spare part when replacing controls.

**Service 1** Date: \_\_\_\_\_  
Engineer Name: \_\_\_\_\_  
Company Name: \_\_\_\_\_  
Telephone No. \_\_\_\_\_  
Gas Safe Register No. \_\_\_\_\_  
Comments: \_\_\_\_\_  
Signature: \_\_\_\_\_

**Service 2** Date: \_\_\_\_\_  
Engineer Name: \_\_\_\_\_  
Company Name: \_\_\_\_\_  
Telephone No. \_\_\_\_\_  
Gas Safe Register No. \_\_\_\_\_  
Comments: \_\_\_\_\_  
Signature: \_\_\_\_\_

**Service 3** Date: \_\_\_\_\_  
Engineer Name: \_\_\_\_\_  
Company Name: \_\_\_\_\_  
Telephone No. \_\_\_\_\_  
Gas Safe Register No. \_\_\_\_\_  
Comments: \_\_\_\_\_  
Signature: \_\_\_\_\_

**Service 4** Date: \_\_\_\_\_  
Engineer Name: \_\_\_\_\_  
Company Name: \_\_\_\_\_  
Telephone No. \_\_\_\_\_  
Gas Safe Register No. \_\_\_\_\_  
Comments: \_\_\_\_\_  
Signature: \_\_\_\_\_

**Service 5** Date: \_\_\_\_\_  
Engineer Name: \_\_\_\_\_  
Company Name: \_\_\_\_\_  
Telephone No. \_\_\_\_\_  
Gas Safe Register No. \_\_\_\_\_  
Comments: \_\_\_\_\_  
Signature: \_\_\_\_\_

**Service 6** Date: \_\_\_\_\_  
Engineer Name: \_\_\_\_\_  
Company Name: \_\_\_\_\_  
Telephone No. \_\_\_\_\_  
Operative ID No. \_\_\_\_\_  
Comments: \_\_\_\_\_  
Signature: \_\_\_\_\_

**Service 7** Date: \_\_\_\_\_  
Engineer Name: \_\_\_\_\_  
Company Name: \_\_\_\_\_  
Telephone No. \_\_\_\_\_  
Gas Safe Register No. \_\_\_\_\_  
Comments: \_\_\_\_\_  
Signature: \_\_\_\_\_

**Service 8** Date: \_\_\_\_\_  
Engineer Name: \_\_\_\_\_  
Company Name: \_\_\_\_\_  
Telephone No. \_\_\_\_\_  
Gas Safe Register No. \_\_\_\_\_  
Comments: \_\_\_\_\_  
Signature: \_\_\_\_\_

**Service 9** Date: \_\_\_\_\_  
Engineer Name: \_\_\_\_\_  
Company Name: \_\_\_\_\_  
Telephone No. \_\_\_\_\_  
Gas Safe Register No. \_\_\_\_\_  
Comments: \_\_\_\_\_  
Signature: \_\_\_\_\_

**Service 10** Date: \_\_\_\_\_  
Engineer Name: \_\_\_\_\_  
Company Name: \_\_\_\_\_  
Telephone No. \_\_\_\_\_  
Gas Safe Register No. \_\_\_\_\_  
Comments: \_\_\_\_\_  
Signature: \_\_\_\_\_













OLIBMUEN25

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P.O. Box 159 - Fareham  
Hants - PO17 6WX  
e mail: [admin@fondital.co.uk](mailto:admin@fondital.co.uk)

The manufacturer reserves the right to implement any necessary and/or useful variation to products, without modifying fundamental characteristics.

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