

IST 03 C 351 - 01

**TAHITI CONDENSING  
KR 55 - KR 85**



**GB**

*Line*  
tech



**INSTALLATION  
USE AND MAINTENANCE**




Dear Customer,

Thank you for choosing and buying one of our boilers. Please read these instructions carefully. They will enable you to install, operate, and service the appliance properly.

Any maintenance and repairs must be carried out by fully qualified engineers who carry the appropriate competency for this equipment.

## General information for fitters, maintenance technicians and users

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

 **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.

Before installing the boiler, check that the technical data corresponds 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.

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

Only manufacturer approved and supplied parts or optional kits (including electric ones) must be used for all repairs to the boiler.


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.

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.

Failure to comply with the above requirements may affect the safety of the boiler and endanger people, animals and property.

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.

 **In order to guarantee efficient and correct operation of the equipment, the manufacturer recommends that the boiler be serviced and repaired by a Service Centre.**


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

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.

**It is not advisable to empty the system as this may result in damage.**

 **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.**

 **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 Manufacturer cannot be held contractually or extra-contractually liable in the event of failure to comply with the above.

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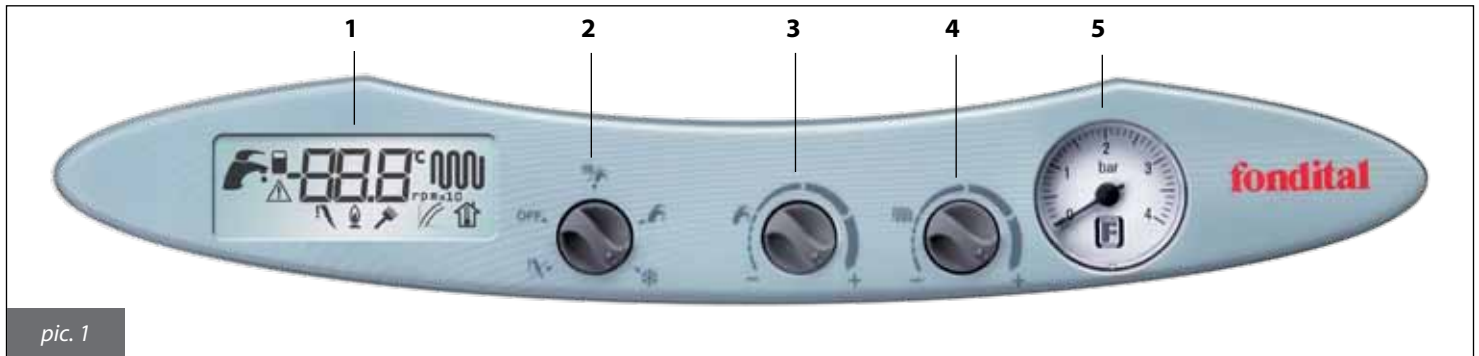
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## 1. User instructions


### 1.1. Control panel





#### 1. Liquid crystal display (LCD)


The LCD displays the boiler status and operating data (pic. 2).


#### 2. Boiler function selector

With the selector on RESET , the boiler restarts after activation of the burner shutdown device (lockout).

With the selector on OFF, the boiler is in stand-by mode, with the heating and hot water functions disabled.

With the selector on SUMMER , the boiler is ready to produce domestic hot water only, provided it is connected to a separate water heater. If the boiler is not connected to a separate water heater, this position is equivalent to ANTI-FREEZE .

With the selector on WINTER , the boiler is ready for both heating and domestic hot water production. Hot water is only provided if the boiler is connected to a separate water heater.

With the selector on ANTI-FREEZE , only the anti-freeze function is enabled; the CH and DHW functions are disabled.

#### 3. DHW temperature regulator

If the boiler is connected to a separate water heater, this regulator is used to switch the water heater on and off.

If the water heater has an NTC probe (10 k $\Omega$  @  $\beta=3435$ ; check the water heater technical data), this is used to regulate the DHW temperature in the range 35-65°C.

If the boiler is not connected to a separate water heater, this regulator has no effect on boiler operation.

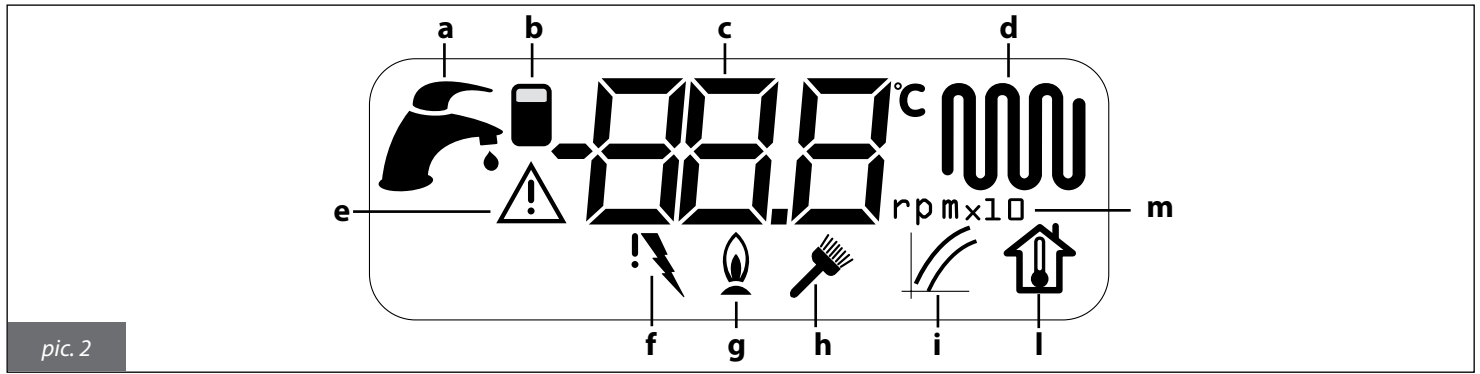
#### 4. CH water temperature regulator

This is used to select the temperature of the water in the heating system in the range 20-45°C or 20-78°C.

#### 5. Water pressure gauge

This shows the pressure of the water in the primary system.

## 1.2. LCD



pic. 2

### a. DHW indicator

This indicator only activates if the boiler is connected to a separate water heater.  
This comes on when the boiler is in DHW mode.  
It flashes when the DHW temperature is being regulated via regulator **3** (pic. 1).

### b. Water heater on indicator

This indicator only activates if the boiler is connected to a separate water heater.  
This indicator comes on when the water heater (optional) is activated via regulator **3** (pic. 1).

### c. Alphanumeric indicator

This shows the following:

- CH flow water temperature
- CH temperature setting
- DHW temperature setting (if the boiler is connected to a separate water heater).
- boiler status
- boiler diagnostics


### d. Central heating indicator

This comes on when the boiler is in CH mode.  
It flashes when the CH temperature is being regulated via regulator **4** (pic. 1).

### e. Boiler shutdown indicator

This comes on when there is a malfunction that cannot be reset via the boiler function selector **2** (pic. 1).  
The problem must be solved before the boiler can be restarted.

### f. Burner shutdown indicator

This comes on when the burner shutdown device activates due to a malfunction.  
To restart the boiler, turn the boiler selector **2** (pic. 1) to the RESET position  for a few seconds and then back to the desired position.

### g. Flame indicator

This comes on when the burner flame is present.

### h. Chimney-sweep function indicator (for fitter only)

This flashes when the chimney-sweep function is activated.  
The flow water temperature and the number of fan revs are shown alternatively (in this case, symbol **m** is also shown)

### i. Thermoregulation indicator (for fitter only)

This comes on when the thermoregulation curve is set.

### l. Calculated ambient temperature indicator

When an external probe is installed, this indicator flashes when the calculated ambient temperature is set via regulator **4**.

### m. Number of fan revs (for fitter only)

When the chimney-sweep function is activated, symbol **h** flashes and flow water temperature and number of fan revs are shown alternatively (in this case, the correspondent symbol is also shown).

### 1.3. Boiler status – Message display

#### Normal operation

Boiler selector on OFF	
Boiler selector on ANTI-FREEZE	
Boiler selector on SUMMER or WINTER No function active The flow water temperature is displayed	
Boiler selector on SUMMER or WINTER DHW system enabled (*) The flow water temperature is displayed	
Boiler selector on WINTER CH function active The flow water temperature is displayed	
Boiler selector on SUMMER or WINTER Water heater enabled, no function active (*) The flow water temperature is displayed	

Table 1 – Boiler Status - Message Display with normal operation

(\*) If the boiler is connected to a separate water heater.

#### Malfunction

Boiler not powered on	
Boiler lockout due to flame absence	
Boiler lockout due to safety thermostat activation	
Boiler lockout due to flue gas thermostat activation	
CH probe failure	
Water heater probe fault <i>Only if the boiler is connected to a separate water heater (optional) with an NTC temperature probe 10 kΩ @ β=3435 (check the water heater technical data)</i>	
Low primary fluid circulation alarm (pump ON – flow switch OPEN)	
Low primary fluid circulation alarm (pump OFF – flow switch CLOSED)	
Fan failure	
Remote control connection failure	
External probe failure	

Table 2 - Boiler status - Message display with malfunction



## 1.4. Operating the boiler

### 1.4.1. Switching on the boiler

 **The following procedure is to be implemented only after the boiler has been installed and commissioned by a qualified fitter.**

- Open the gas stop cock.
- Turn ON the master switch external to the boiler; the LCD shows and indicates the active function (see Table 1).
- Select boiler operation mode via selector **2** (pic. 1): OFF/SUMMER/WINTER/ANTI-FREEZE.
- Set the desired CH temperature (§ 1.4.2.).
- If the boiler is connected to a separate water heater, set the desired DHW temperature (§ 1.4.3.).
- Set the desired ambient temperature by means of the ambient thermostat in the premises (optional).

#### IMPORTANT

**When starting up the boiler for the first time or it has not been used for a long period of time, particularly when it is propane-fired, ignition may be difficult and the boiler may shut down a few times.**

**Resume boiler operation by turning selector **2** (pic. 1) to the reset position  for a few seconds then back to the desired position. If the boiler still does not ignite after several attempts, it needs to be serviced by a Service Centre or a qualified service engineer.**


### 1.4.2. CH function

Set the desired CH water temperature on knob **4** (pic. 1).


The CH water temperature range depends on the selected operating range:

- **standard range:** from 20°C to 78°C (from full anticlockwise to full clockwise position).
- **reduced range:** from 20°C to 45°C (from full anticlockwise to full clockwise position).

The temperature range must be set by the fitter or a Service Centre (§ 3.2.11).

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



When the CH system requests heat, the LCD shows the (stable) CH symbol  and the CH water temperature.

The burner symbol  only shows when the burner is in operation.



To prevent the boiler from switching on and off frequently in CH mode, it is fitted with an anti cycling device with a delay time between subsequent ignitions, which depends on the selected operating range:

- **standard range:** 4 minutes;
- **reduced range:** 2 minutes.

Should the water temperature in the system fall below the default value (§ 3.2.11.), the delay time is zeroed and the boiler re-ignited.

### 1.4.3. DHW function

Domestic hot water function is only enabled if the boiler is connected to a separate water heater (optional).

The DHW function operates on temperature and always has priority over the CH heating function.

#### Enabling/disabling the water heater


The separate water heater (optional) can be enabled or disabled via knob **3**.



If the water heater active symbol is not displayed, turn knob **3** fully anticlockwise and the symbol will appear. Then turn it clockwise until a temperature of at least 40°C is displayed.

To disable the water heater, turn knob **3** fully anticlockwise until the symbol disappears and then clockwise until a temperature of at least 40°C is displayed.



When you turn knob **3**, the DHW symbol  flashes on the display.

## Regulating the DHW temperature

If the water heater has an NTC probe (10 k $\Omega$  @  $\beta=3435$ ; check the water heater technical data), the temperature setting range is 35-65°C (from the fully anticlockwise to the fully clockwise position on knob **3**). During temperature setting, the DHW symbol flashes on the display and the DHW temperature setting is displayed.

**It is advisable to set a temperature of at least 40°C to allow the system to operate efficiently.**



If the water heater has a thermostat probe, the DHW temperature must be set on the water heater (check the water heater technical data). Knob **3** has no effect on this configuration, except to enable/disable the water heater as described above.

**With the water heater enabled, it is always advisable to set knob 3 to at least 40°C.**

When the DHW system requests water, the LCD shows the DHW symbol (stable) and the instant CH water temperature.



The burner symbol  only shows when the burner is in operation.

### 1.4.4. ANTI-FREEZE function

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

When the CH temperature sensor measures 5°C, the boiler switches on and stays at the minimum heat output until it reaches 30°C or 15 minutes have elapsed. The pump continues to operate even if the boiler shuts down.



**Anti-freeze function protects the boiler only, not the entire CH system.  
The CH system must be protected by other methods, depending on the type of installation.**

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

**It is important to check the effectiveness of the anti-freeze product periodically.**

**Do not use car engine anti-freeze products.**

If the boiler is connected to a separate water heater with an NTC probe (10 k $\Omega$  @  $\beta=3435$ ; check the water heater handbook), when the probe measures a temperature of 5°C in the water heater, the boiler switches on and stays at the minimum heat output until it reaches 10°C or 15 minutes have elapsed. The pump continues to operate even if the boiler shuts down.

If the boiler is connected to a separate water heater with a thermostat, the anti-freeze function does not protect the water heater. In this case, to protect the water heater, you need to turn knob **3** on the boiler to WINTER and set a DHW water temperature on the water heater higher than 0°C.

**If the boiler shuts down, the heater is not protected against freezing.**

### 1.4.5. PUMP ANTI-SEIZE function

If:

- the boiler remains inactive for more than 24 hours,
  - selector **2** (pic. 1) is NOT in the OFF position, or
  - the boiler is still connected to the mains supply,
- the pump activates for 30 seconds to keep it efficient.

### 1.4.6. Operation with Remote Control (optional)

The boiler can be connected to an (optional) remote control, which can be used for setting numerous parameters, including:

- boiler status
  - ambient temperature
  - CH water temperature
  - CH water temperature
  - DHW water temperature (only if the boiler is connected to a separate water heater (optional) with an NTC temperature probe 10 k $\Omega$  @  $\beta=3435$  (NTC probe order code: 0KITSOND00);
  - switching on times for the CH system and water heater;
  - boiler diagnostics display
  - boiler reset
- and others.

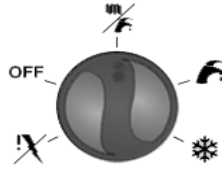
For instructions on how to connect the remote control, refer to § 3.2.13.

**IMPORTANT**

Once the remote control has been installed, turn selector 2 on the boiler (pic. 1) to WINTER.

CH and DHW functions can be enabled and disabled via the remote control.

Correct operation of the boiler and remote control are NOT guaranteed if selector 2 on the boiler is left on a position other than WINTER.



Selector 2 on WINTER



**Only original remote controls supplied by the manufacturer must be used.**

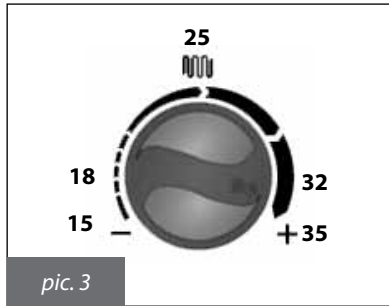
**If non-original remote controls are used, correct operation of the boiler and the remote control cannot be guaranteed.**

**1.4.7. Operation with an external probe (optional)**

The boiler can be connected to an external temperature probe (optional).

When the external temperature has been measured, the boiler automatically regulates the CH water temperature, increasing it when the outside temperature drops and decreasing it when it rises, which improves comfort and saves fuel (this is referred to as “sliding temperature operation”). The CH water temperature varies according to a program in the boiler’s microprocessor.

When an external probe is installed, knob 4 (pic. 1) loses its CH water temperature function and becomes a calculated ambient temperature regulator (pic. 3) for the temperature desired in the rooms to be heated.



pic. 3

During temperature setting, the calculated ambient temperature symbol flashes and the temperature setting is displayed.

Knob 4 in the fully anticlockwise position corresponds to a calculated ambient temperature of 15°C, 9 o'clock corresponds to 18°C, 12 o'clock to 25°C, 3 o'clock to 32°C and the fully clockwise position to 35°C.

To get an optimal curve, a setting of approximately 20°C is recommended.

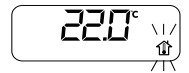
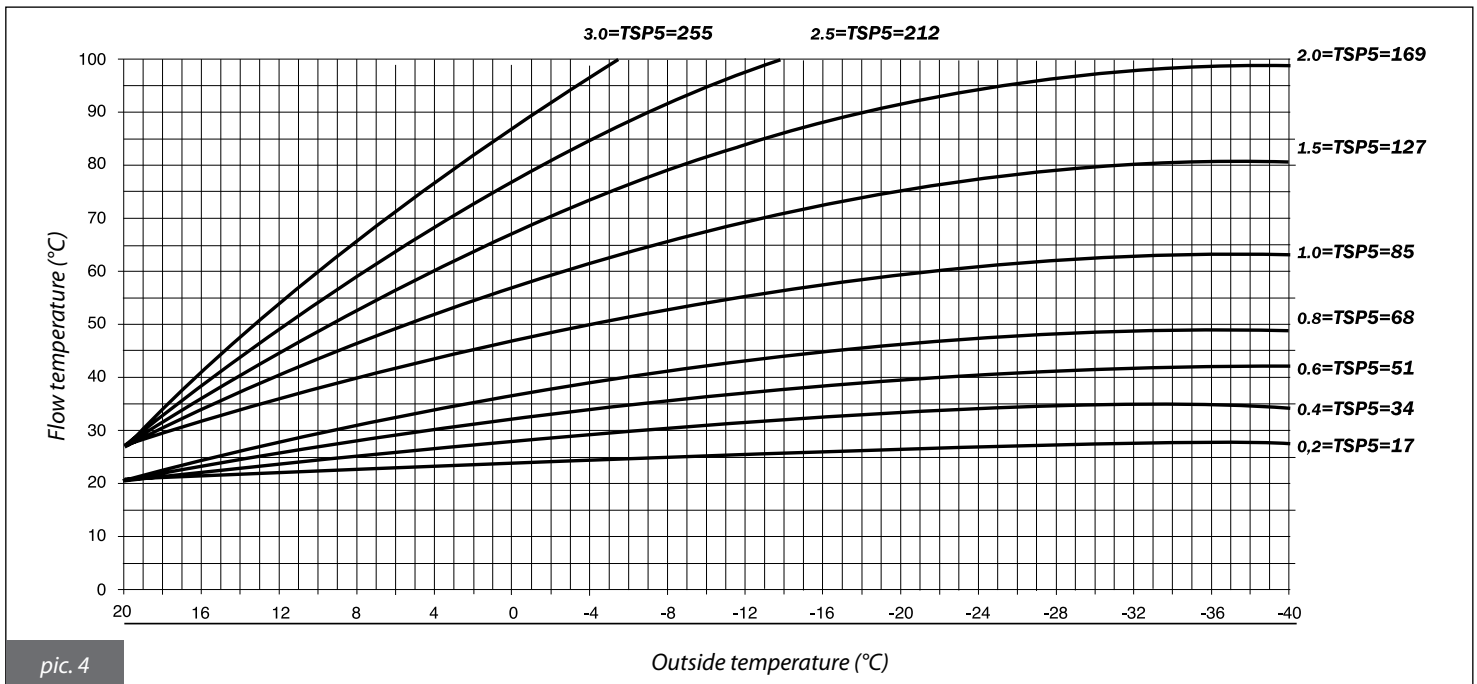


Figure 4 shows the curves for a calculated ambient temperature of 20°C.

If the value is increased or decreased via knob 4, the curve shifts up and down, respectively, by the same amount.

With this setting, for example, if you select the curve corresponding to parameter 1 and the outdoor temperature is -4°C, the flow temperature will be 50°C.



pic. 4

For details on sliding temperature operation mode, refer to § 3.2.14.



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

**If non-original external probes are used, correct operation of the boiler and the probe cannot be guaranteed (external probe order code: 0SONDAES01).**

## 1.5. Boiler lockout


The boiler locks out down automatically if a malfunction occurs.

Refer to Tables 1 and 2 to identify the boiler operating mode.


Refer to Table 2 and section 6 to identify possible causes of the shutdown. The troubleshooting section is at the end of this manual.

Below is a list of possible causes of the shutdown and the procedure to follow in each case.

### 1.5.1. Burner lockout


If the burner locks out down as there is no flame, the burner shutdown symbol  is displayed and code E01 flashes. If this happens, proceed as follows:



- check that the gas cock is open and light a kitchen gas ring for example to check the gas supply;
- if the gas supply is normal, turn selector **2** (pic. 1) to the reset position  for a few seconds, then back to the desired position. If after three attempts the burner still fails to ignite, contact a Service Centre or a qualified service engineer.

If the burner locks out frequently, there is a recurring malfunction, so contact a Service Centre or a qualified service engineer.


### 1.5.2. Lockout due to overheating

If the water temperature is too high, the boiler will lock out. The burner lockout symbol  is displayed and code E02 flashes.



Contact a Service Centre or a qualified service engineer.


### 1.5.3. Lockout due to air/flue gas system malfunction

If the air/flue gas system malfunctions, the boiler locks out. The burner lockout symbol  is displayed and code E03 (flue gas thermostat) flashes.



Contact a Service Centre or a qualified service engineer.

### 1.5.4. Lockout due to a water circulation malfunction

If the pressure or water circulation in the heating system are incorrect, the boiler locks out. The boiler lockout symbol  is displayed and codes E10 or E26 flash, according to the malfunction.

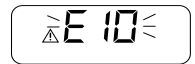
With code E10 flashing there can be two different situations:

#### a) the pressure gauge (5, pic. 1) shows a pressure lower than 1 bar

Proceed as follows to restore the correct water pressure:

- Turn the external filling tap (pic. 5) anticlockwise to allow water to enter the boiler.
- Keep the tap open until the pressure gauge shows a value of 1-1.3 bar.
- Turn the tap clockwise to close it.
- Wait a minute until the malfunction disappears from the display.

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



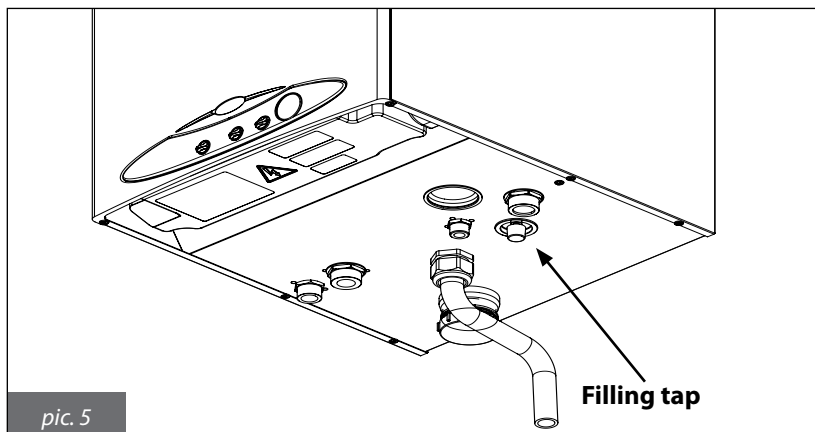
**Make sure you close the external filling tap carefully after filling.**

**If you do not, when the pressure increases, the safety valve may activate and discharge.**

#### b) the pressure gauge (5, pic. 1) shows a pressure of 1-1.3 bar


Contact a Service Centre or a qualified service engineer.

2. With flashing code E26, contact a Service Centre or a qualified service engineer.



pic. 5

### 1.5.5. Lockout for fan malfunction


Fan operation is constantly monitored and in case of a malfunction it goes off; the boiler lockout symbol  is displayed and code E17 flashes.



This mode is maintained until the fan recovers normal working parameters.

If the boiler should not start and remain in this mode, contact a Service Centre or a qualified service engineer.

### 1.5.6. Alarm due to temperature probe malfunction


If the burner locks out due to malfunction of the temperature probes, the boiler lockout symbol  is displayed and the following codes may flash:

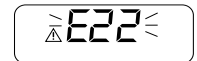
- E05, CH probe: the boiler does not work;
- E12, for the heater probe (if the boiler is connected to an external optional water heater fitted with NTC 10 kΩ @β=3435 temperature probe): the boiler operates in CH mode only.

If the boiler is connected to an external optional water heater fitted with a temperature thermostat, the boiler electronics do not detect possible thermostat malfunctions.

Contact a Service Centre or a qualified service engineer.

### 1.5.7. Alarm due to (optional) remote control connection malfunction


The boiler recognises whether or not there is a remote control (optional). If the remote control is connected but the boiler does not receive instructions, the boiler lockout symbol  is displayed and code E22 flashes.



The boiler will continue to operate according to the settings on the control panel (pic. 1) and ignore the remote control settings.

Contact a Service Centre or a qualified service engineer.

### 1.5.8. Alarm due to (optional) external probe malfunction

If the (optional) external temperature probe malfunctions, the boiler lockout symbol  is displayed and code E23 flashes.



The boiler will continue to operate, but the sliding temperature function is disabled. The temperature of the CH water is regulated according to the position of regulator 4 (pic. 1), which in this case loses its function as a calculated ambient temperature regulator (see 1.4.7.).

Contact a Service Centre or a qualified service engineer.

## 1.6. Maintenance

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

Correct maintenance of the boiler will allow it to work efficiently, without harming the environment, and in complete safety.

Maintenance and repairs must be performed by qualified personnel.

The user is strongly advised to have the boiler serviced and repaired by a fully qualified Service Centre.

Refer to section 5 for Maintenance instructions.

**The end user may clean the case of the appliance using a proprietary cleaning solution applied to the cloth, not directly to the boiler surface. Do not use water.**

### 1.7. Notes for the user

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

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

**The manufacturer cannot be held liable for damage or injury due to tampering of the boiler or improper intervention.**

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

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

**Pump failure can be avoided by adding proprietary central heating system additives.**

## 2. Technical features and dimensions

### 2.1. Technical features

The boiler is equipped with a fully pre-mixed gas burner. All models are equipped with electronic ignition and an ionization flame sensing device.

The following models are available:

**KR 55:** condensing boiler with sealed chamber and forced draught, supplying CH water, 55kW

**KR 85:** condensing boiler with sealed chamber and forced draught, supplying CH water, 85kW

The boilers meet applicable laws in force in the country of destination, which is stated on the rating plate.

If the boiler is installed in a country other than the one specified, it may be dangerous for people, animals and objects.

The main technical features of the boilers are listed below:

#### Construction features

- IPX4D electrically protected control panel
- Integrated, electronic safety and modulation board
- Electronic ignition via separate igniter and ionization flame detection
- Stainless steel, fully pre-mixed burner
- Stainless steel mono-thermal, high-efficiency heat exchanger with deaerator
- Twin shutter, modulating gas valve with constant air/gas ratio
- Electronically-controlled modulating flue gas discharge fan
- Three-speed pump with built-in deaerator
- Air separator with deaerator
- Differential pressure switch, preventing incorrect water circulation in the CH system
- Minimum flow switch detecting no water in the CH system
- CH temperature probe
- Safety thermostat
- Flue gas thermostats
- Filling tap

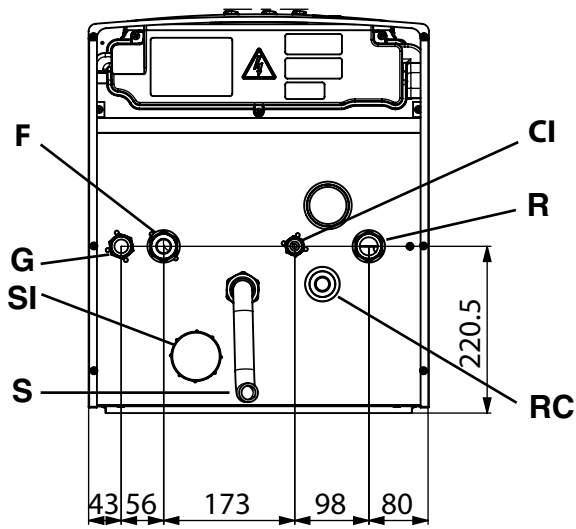
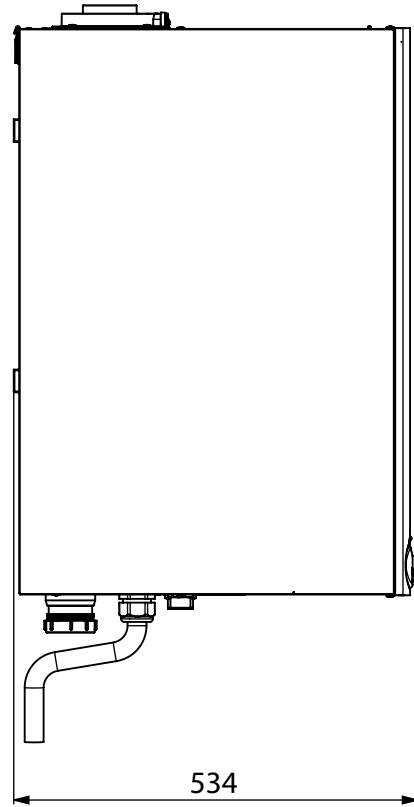
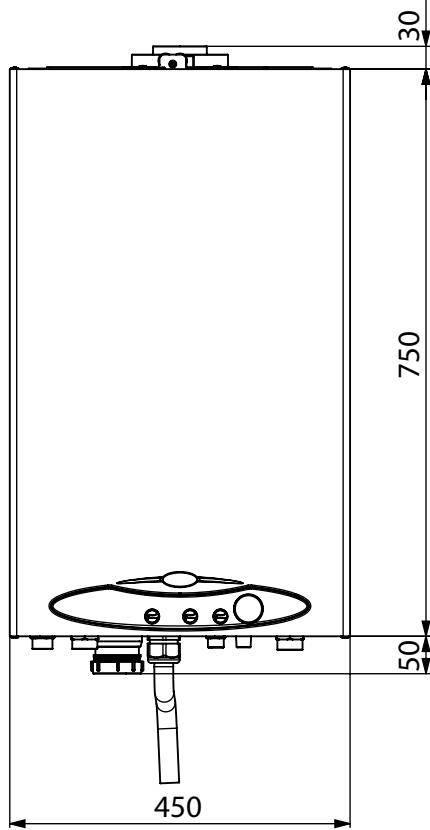
#### User interface

- Liquid crystal display showing the boiler operating status
- Mode selector: OFF, RESET, WINTER, SUMMER and ANTI-FREEZE
- CH water temperature regulator: 20-78°C (standard range) or 20-45°C (reduced range)
- DHW water temperature regulator: 35-65°C (if the boiler is connected to a separate water heater)
- Water pressure gauge

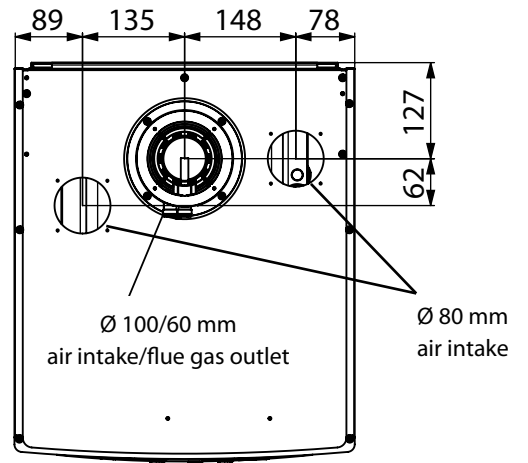
#### Operating features

- Electronic flame modulation in CH mode with timer-controlled rising ramp (50 seconds)
- Flow anti-freeze function: ON at 5°C; OFF at 30°C or after 15 minutes of operation if CH temperature >5°C
- Water heater anti-freeze function (if the boiler is connected to a separate water heater): ON at 5°C; OFF at 10°C or after 15 minutes of operation
- Anti-legionella function (if the boiler is connected to a separate water heater with an NTC 10 k $\Omega$  @  $\beta=3435$  probe)
- Timer-controlled chimney-sweep function: 15 minutes
- Ignition flame propagation function
- Timer-controlled ambient thermostat: 240 seconds with flow temperature >40°C
- Pump post-circulation function in CH, anti-freeze and chimney-sweep modes
- Post-ventilation safety function: ON at 95°C, OFF at 90°C
- Pump anti-seize function: 30-second operation after 24 hours of boiler inactivity
- Provision for connection to a ambient thermostat (optional)
- Provision for operation with an external probe (optional, supplied by the manufacturer)
- Provision for operation with an OpenTerm remote control (optional, supplied by the manufacturer)

2.2. Dimensions of the KR 55



View from below

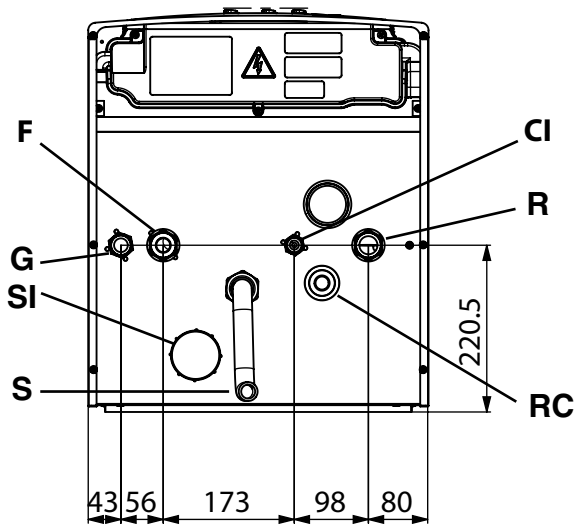
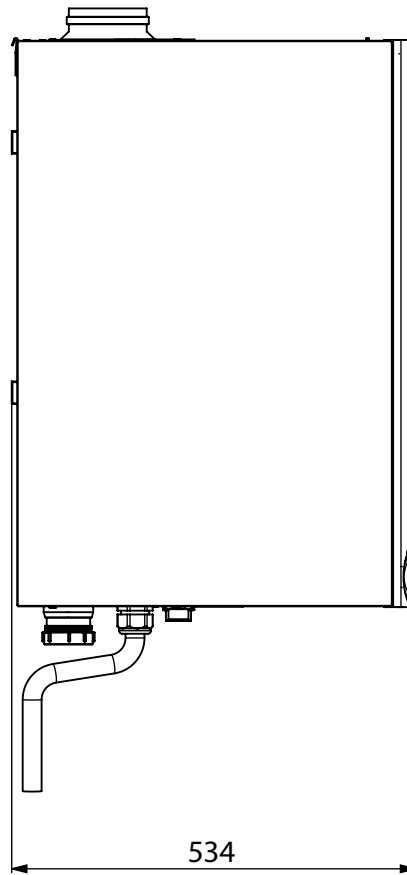
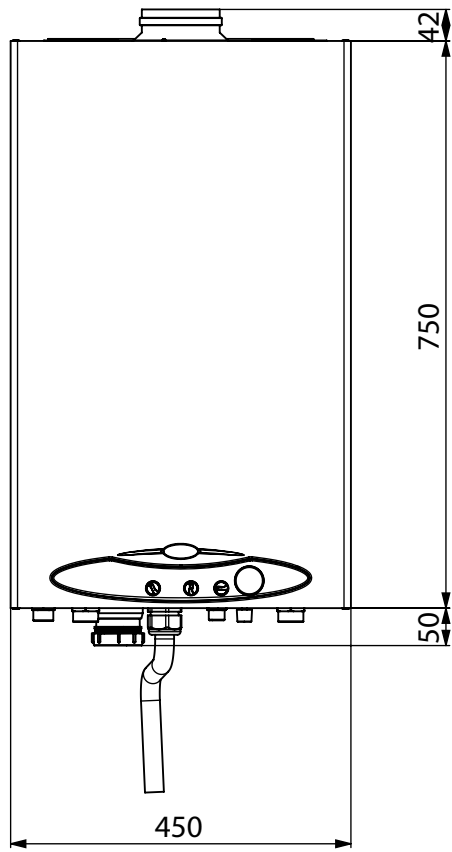


View from above

- S** Condensate drain
- CI** Water mains intake (1/2")
- G** Gas inlet (3/4")
- SI** Condensate trap

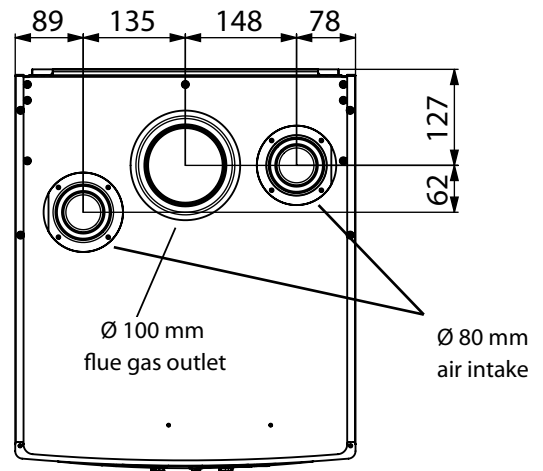
- F** CH system flow (1")
- RC** Filling tap
- R** CH system return (1")

2.3. Dimensions of the KR 85



View from below

- S Condensate drain
- CI Water mains intake (1/2")
- G Gas inlet (3/4")
- SI Condensate trap

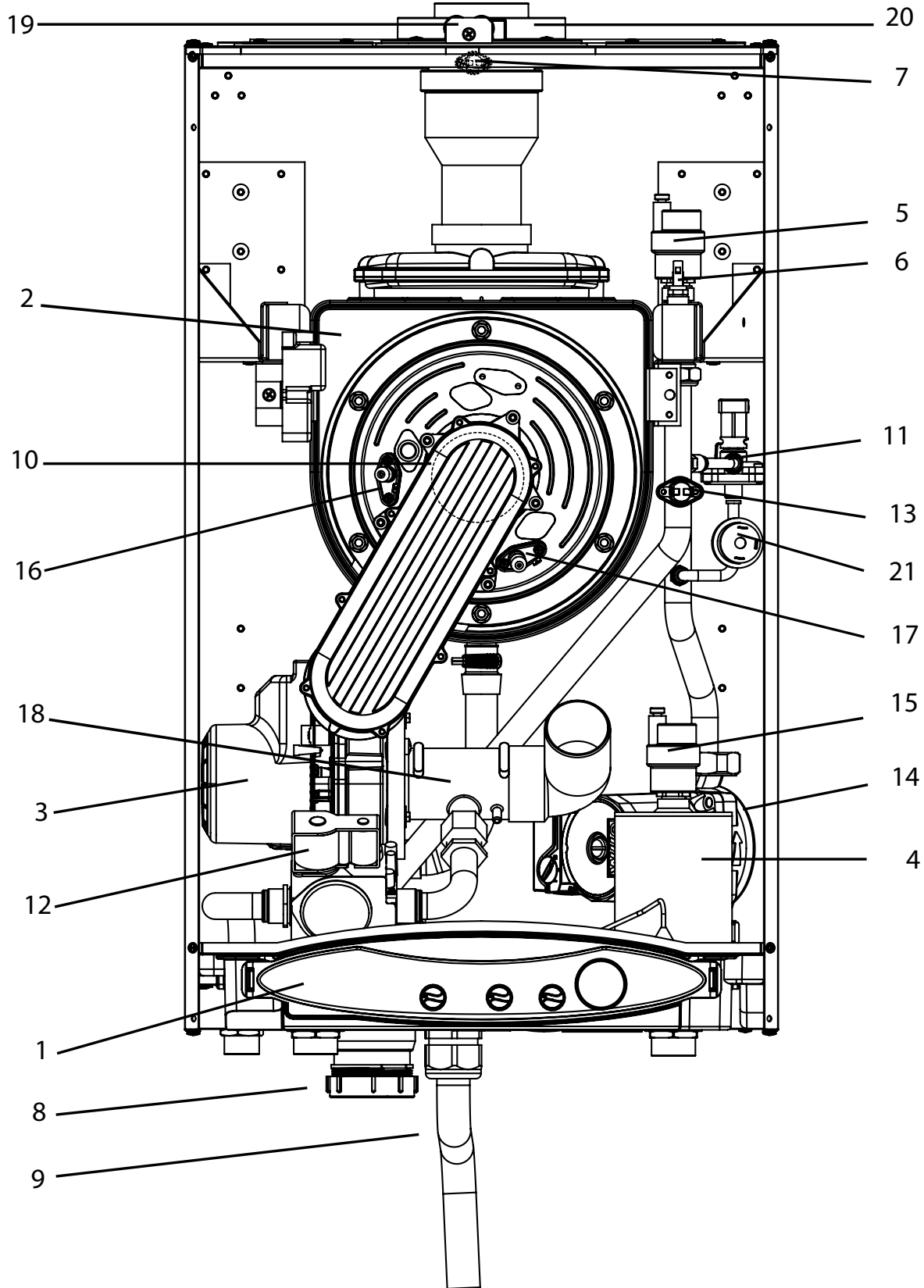


View from above

- F CH system flow (1")
- RC Filling tap
- R CH system return (1")

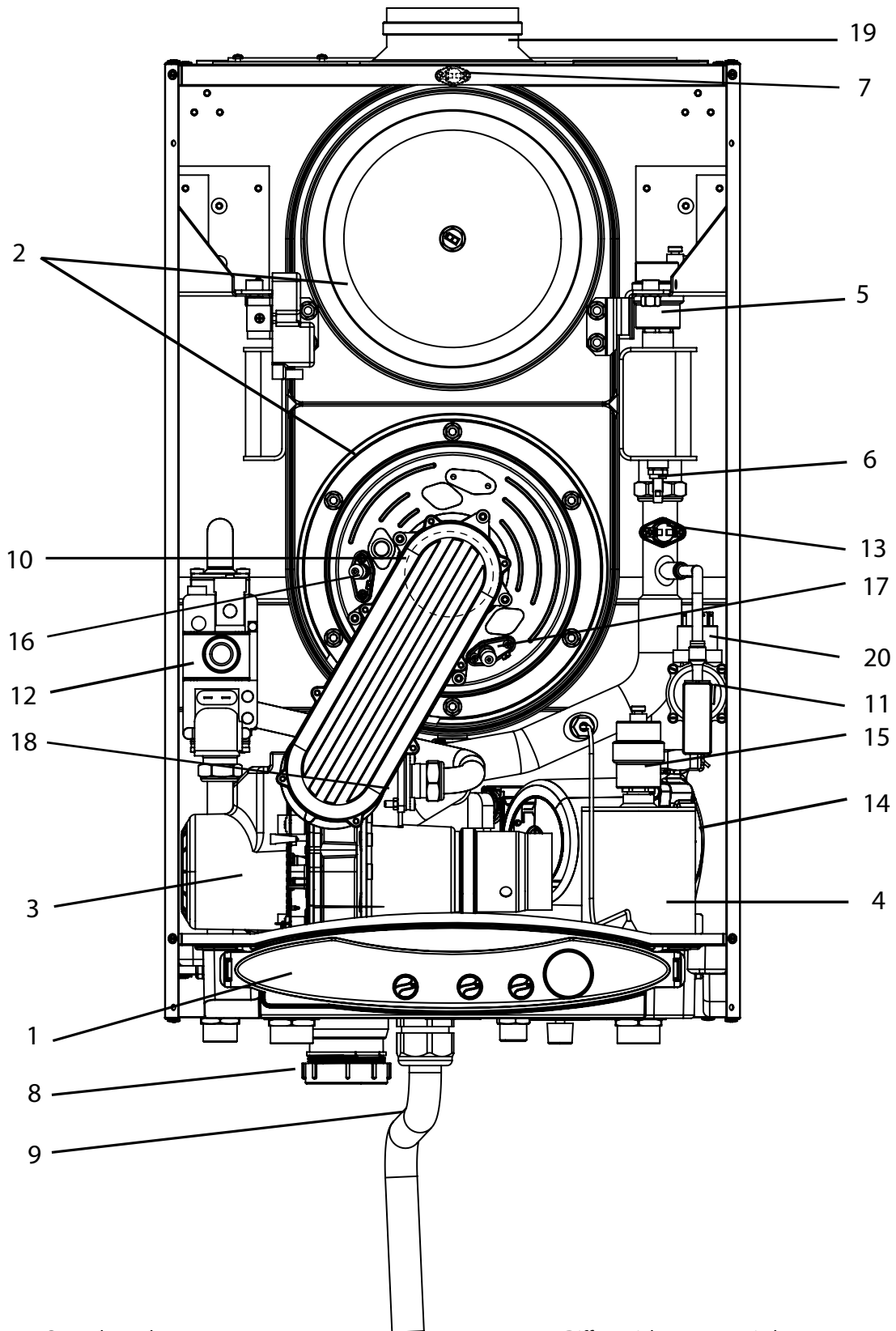


2.4. Main components for the KR 55



- |                                      |                                  |
|--------------------------------------|----------------------------------|
| 1 Control panel                      | 12 Gas valve                     |
| 2 Heat exchanger                     | 13 Safety thermostat             |
| 3 Flue gas fan                       | 14 Circulating pump              |
| 4 Air separator                      | 15 Deaerator on air separator    |
| 5 Deaerator on heat exchanger        | 16 Ignition electrode            |
| 6 CH temperature probe               | 17 Detection electrode           |
| 7 Flue gas thermostat                | 18 Air/gas mixer                 |
| 8 Inspection plug on condensate trap | 19 Air/flue gas test intake      |
| 9 Condensate drain pipe              | 20 Air/flue gas suction tower    |
| 10 Pre-mixing burner                 | 21 Minimum water pressure switch |
| 11 Differential pressure switch      |                                  |

2.5. Main components for the KR 85



- 1 Control panel
- 2 Heat exchanger
- 3 Flue gas fan
- 4 Air separator
- 5 Deaerator on heat exchanger
- 6 CH temperature probe
- 7 Flue gas thermostat
- 8 Inspection plug on condensate trap
- 9 Condensate drain pipe
- 10 Pre-mixing burner

- 11 Differential pressure switch
- 12 Gas valve
- 13 Safety thermostat
- 14 Circulating pump
- 15 Deaerator on air separator
- 16 Ignition electrode
- 17 Detection electrode
- 18 Air/gas mixer
- 19 Flue gas outlet
- 20 Minimum water pressure switch

## 2.6. Operating data

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

### KR 55

Fuel type	Max. CH input [kW]	CH output (80-60°C) [kW]		CH output (50-30°C) [kW]		Gas mains pressure [mbar]	Diaphragm diameter [mm]	Flue gas CO <sub>2</sub> [%]
		min	max	min	max			
Methane Gas G20	55.0	14.1	53.5	15.7	58.8	20	8.2	8.8 ÷ 9.1
Propane Gas G31	55.0	14.1	53.5	15.7	58.8	37	5.9	9.8 ÷ 10.1

Table 3 – Calibration data for KR 55

### KR 85

Fuel type	Max. CH input [kW]	CH output (80-60°C) [kW]		CH output (50-30°C) [kW]		Gas mains pressure [mbar]	Diaphragm diameter [mm]	Flue gas CO <sub>2</sub> [%]
		min	max	min	max			
Methane Gas G20	85.0	20.3	82.7	22.6	90.4	20	10.3	8.8 ÷ 9.1
Propane Gas G31	85.0	20.3	82.7	22.6	90.4	37	7.9	9.8 ÷ 10.1

Table 4 – Calibration data for KR 85

## 2.7. General characteristics

		KR 55	KR 85
Category	-	I12H3P	I12H3P
CH minimum pressure	bar	0.5	0.5
CH maximum pressure	bar	5	5
CH maximum working temperature	°C	83	83
DHW maximum working temperature (*)	°C	65	65
Methane gas consumption at max. flow (**)	m <sup>3</sup> /h	5.82	9.00
Propane gas consumption at max. flow	kg/h	4.26	6.59
Power supply (voltage ~ frequency)	V ~ Hz	230 ~ 50	230 ~ 50
Maximum input power	W	245	245
Index of protection	IP	X4D	X4D

Table 5 – General specifications

(\*) If the boiler is connected to a separate water heater with NTC probe 10 kΩ @ β=3435

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

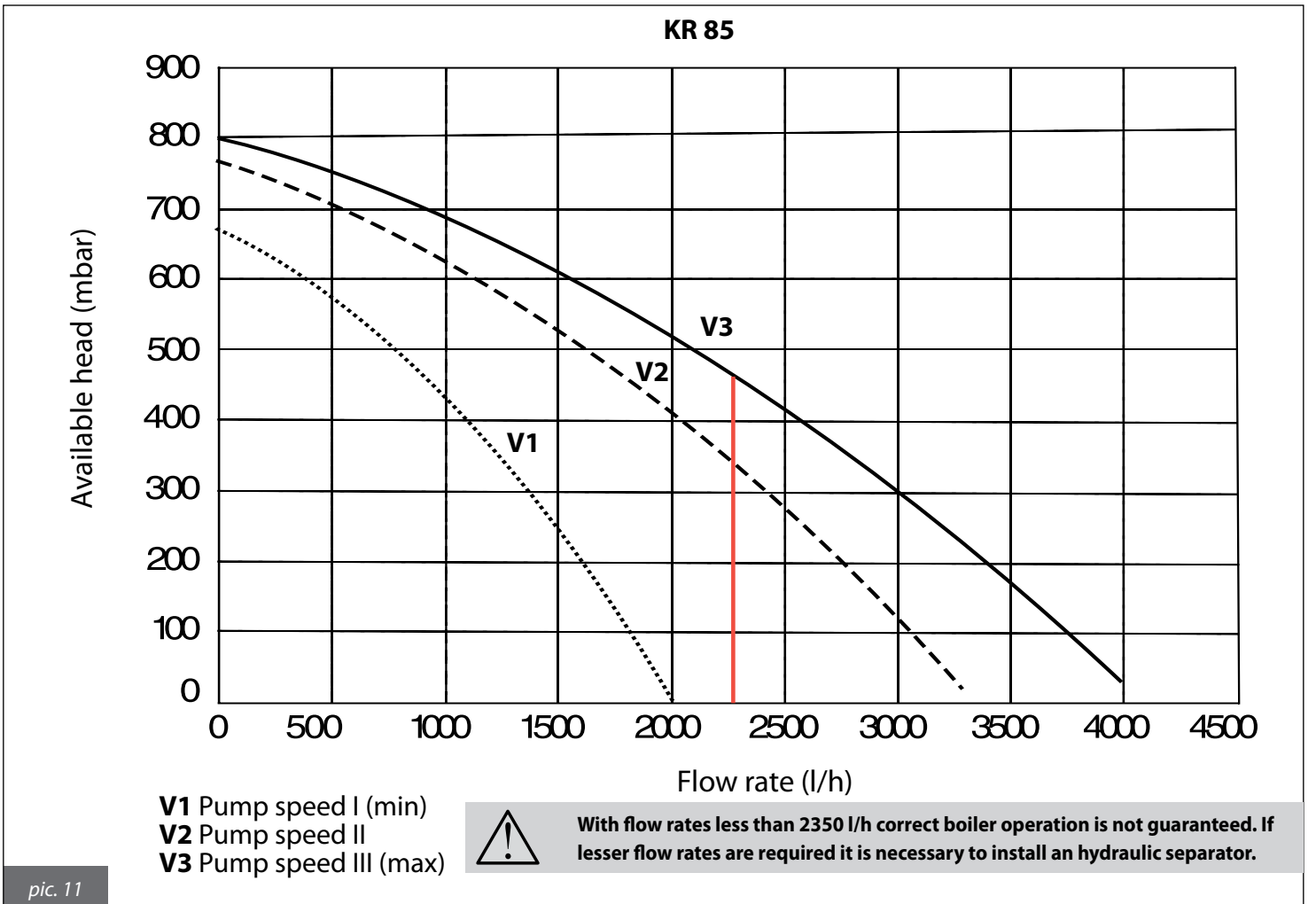
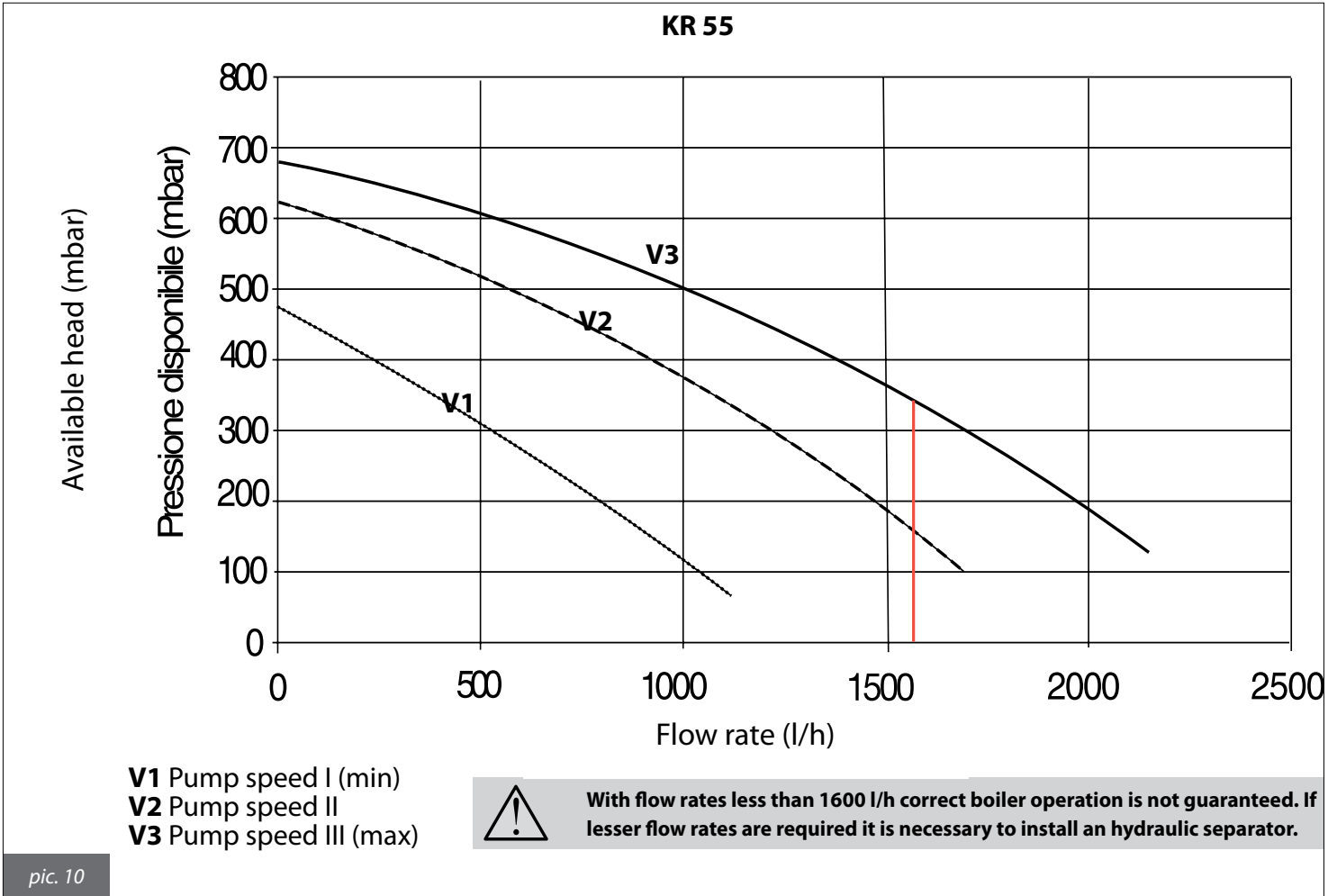
KR 55		Pmax	Pmin	30% heat output
Casing heat loss with burner on	%	0.46	0.83	-
Casing heat loss with burner off	%		0.36	
Chimney heat loss with burner on	%	2.04	1.89	-
Flue gas system mass flow rate	g/s	25.1	6.6	-
Flue gas - air temperature	°C	44	39	-
Available pumping head	Pa	290	23	-
Maximum heat output efficiency rating (60/80°C)	%	97.3	-	-
Maximum heat output efficiency rating (30/50°C)	%	107.0	-	-
Minimum heat output efficiency rating (60/80°C)	%	-	97.0	-
Minimum heat output efficiency rating (30/50°C)	%	-	108.1	-
30% heat output efficiency rating	%	-	-	108.9
Efficiency rating (according to 92/42/CEE)	-		★★★★	
NO <sub>x</sub> emission class	-		5	

Table 6 – Combustion data for KR 55

KR 85		Pmax	Pmin	30% heat output
Casing heat loss with burner on	%	0.30	0.93	-
Casing heat loss with burner off	%		0.48	
Chimney heat loss with burner on	%	2.20	1.79	-
Flue gas system mass flow rate	g/s	38.7	9.6	-
Flue gas - air temperature	°C	47	36	-
Available pumping head	Pa	240	19	-
Maximum heat output efficiency rating (60/80°C)	%	97.3	-	-
Maximum heat output efficiency rating (30/50°C)	%	106.4	-	-
Minimum heat output efficiency rating (60/80°C)	%	-	97.3	-
Minimum heat output efficiency rating (30/50°C)	%	-	107.7	-
30% heat output efficiency rating	%	-	-	108.5
Efficiency rating (according to 92/42/CEE)	-		★★★★	
NO <sub>x</sub> emission class	-		5	

Table 7 – Combustion data for KR 85

2.8. Pumping head



### 3. Instructions for the fitter

#### 3.1. Installation standards

This is an II2H3P category boiler and it must be installed in compliance with the laws and regulations in force in the country of installation.

#### 3.2. Installation



**Accessories and spare parts for installation and service procedures must be supplied by the Manufacturer. Correct boiler performance cannot be guaranteed if non-original accessories and spare parts are used.**

##### 3.2.1. Packaging

The boiler is delivered in a sturdy cardboard box.

Remove the boiler from the box and check that everything is present.

All the packaging materials can be recycled and should be disposed of accordingly.

Keep the packaging out of the reach of children, as it may cause a hazard.

The Manufacturer cannot be held liable for damage or injury caused by failure to comply with the above instructions.

Contents of the box:

- this manual
- a metal wall-fixing bracket
- 4 screws and wall plugs for fixing to the wall
- 2 caps with seal for the air intakes
- a Ø 47 mm air diaphragm
- a wall mounting template (pic. 12).

##### 3.2.2. Choosing where to install the boiler

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

- Read the instructions in § 3.2.6. - Air intake /flue gas discharge system and following subsections.
- Make sure the wall is sturdy enough to support the boiler and avoid any weak areas.
- Do not hang the boiler above any equipment that could affect operation (kitchen appliances that emit steam and grease, washing machines, etc.).

##### 3.2.3. Positioning the boiler

The following should be taken into consideration when positioning the boiler:

- the holes for the wall bracket
- the CH connections (flow **F** and return **R**)
- connection to the cold water system (**CI**)
- connection to the gas mains (**G**)
- connection to the condensate drain (**S**)
- connections to the air intake and flue gas discharge pipes

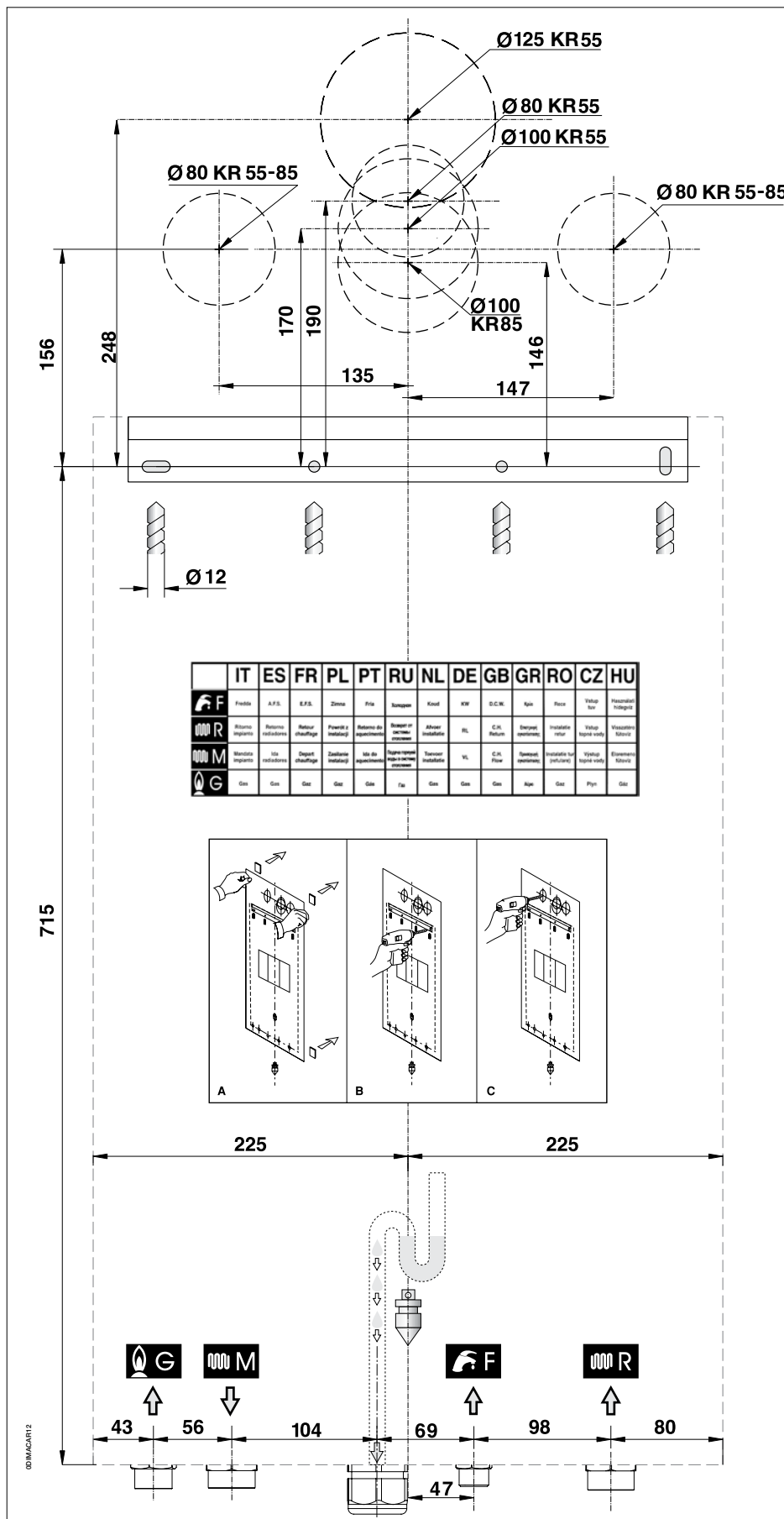
according to the dimensions shown in figs. 6 and 7.

The connections must be prepared before mounting the boiler on the wall.



**Since the temperature of the walls on which the boiler is mounted and external temperature of the coaxial air/flue gas pipes do not exceed 60°C, it is not necessary to keep to the minimum distance specified for flammable walls.**

**With boilers having split air intake and flue pipes that pass along or through flammable walls, insulation must be laid between the wall and the flue pipe.**



Coupling	Coupling Ø
<b>M</b> = flow	1"
<b>G</b> = gas	3/4"
<b>F</b> = cold water	1/2"
<b>R</b> = return	1"

### 3.2.4. Installing the boiler



**The whole system must be cleaned thoroughly before the boiler is connected to the pipes in the central heating system. Before starting up a NEW system, clean it thoroughly to remove any metal residues from the construction or welding process, and any oil or grease present as this could get into the boiler and damage it. Before starting up a MODERNIZED system (additional radiators, replacement of the boiler, etc.), clean it thoroughly to remove any sludge and foreign bodies. To do this, use appropriate non-acidic products available from the trade. Do not use solvents as they would damage the components. In (new or modernized) heating systems, specific anticorrosion products for multi-metal systems must be added to the water in the correct concentration. This will form a protective film on the metal surfaces inside. The Manufacturer cannot be held liable for damage or injury caused by failure to comply with the above instructions.**



**In any type of system it is important to mount an inspectable filter (type Y), with Ø 0.4 mm mesh in the return line to the boiler.**

#### Boiler installation procedure

- Fix the template to the wall (pic. 12).
- Drill four 12 mm holes in the wall for the wall plugs.
- If necessary, drill holes in the wall for the air intake and flue pipes.
- Fix the bracket onto the wall using the wall plugs provided.
- Position on the lower part of the template the fittings for connection to the gas supply pipe (**G**), the cold water pipe (**CI**), the CH flow pipe (**F**) and the return pipe (**R**).
- Provide a connection for the condensate drain pipe (**S** in figs. 6 and 7).
- Hook the boiler onto the bracket.
- Connect the supply pipes (§ 3.2.8. and 3.2.9.).
- Connect up to the condensate drain system (§ 3.2.9.).
- Provide a system for relieving the 4 bar safety valves.
- Connect up to the air intake and flue gas discharge (§ 3.2.6. and following subsections).
- Connect the (optional) ambient thermostat and any other accessories (see below) to the electricity supply.

### 3.2.5. Boiler room ventilation




**The boiler must be installed in a suitable room, in accordance with the laws and regulations in force in the country of installation, which are intended as an integral part of this handbook.**


This boiler has a sealed combustion chamber. This means there are no particular requirements as regards aeration apertures for the combustion air in the boiler room, unless the boiler is type B23 or B53 (refer to § 3.2.6.1). These types of boiler have an open combustion chamber and must be installed in accordance with specific laws.

### 3.2.6. Air intake and flue gas discharge system

Flue gas discharge into the atmosphere and air intake and flue gas discharge systems must comply with the applicable rules and regulations, which are intended as an integral part of this handbook.

 **The boiler is fitted with safety devices to control emission of products of combustion.**  
**If the air intake and flue gas discharge system malfunctions, the safety devices activate, the boiler shuts down, and the burner lockout symbol !X and code E03 flash on the display.**  
**The safety devices must never be tempered with or deactivated.**  
**If the boiler locks out repeatedly, it is important to have the air intake and flue gas discharge pipes checked as they could be damaged or unsuitable for discharging into the atmosphere.**

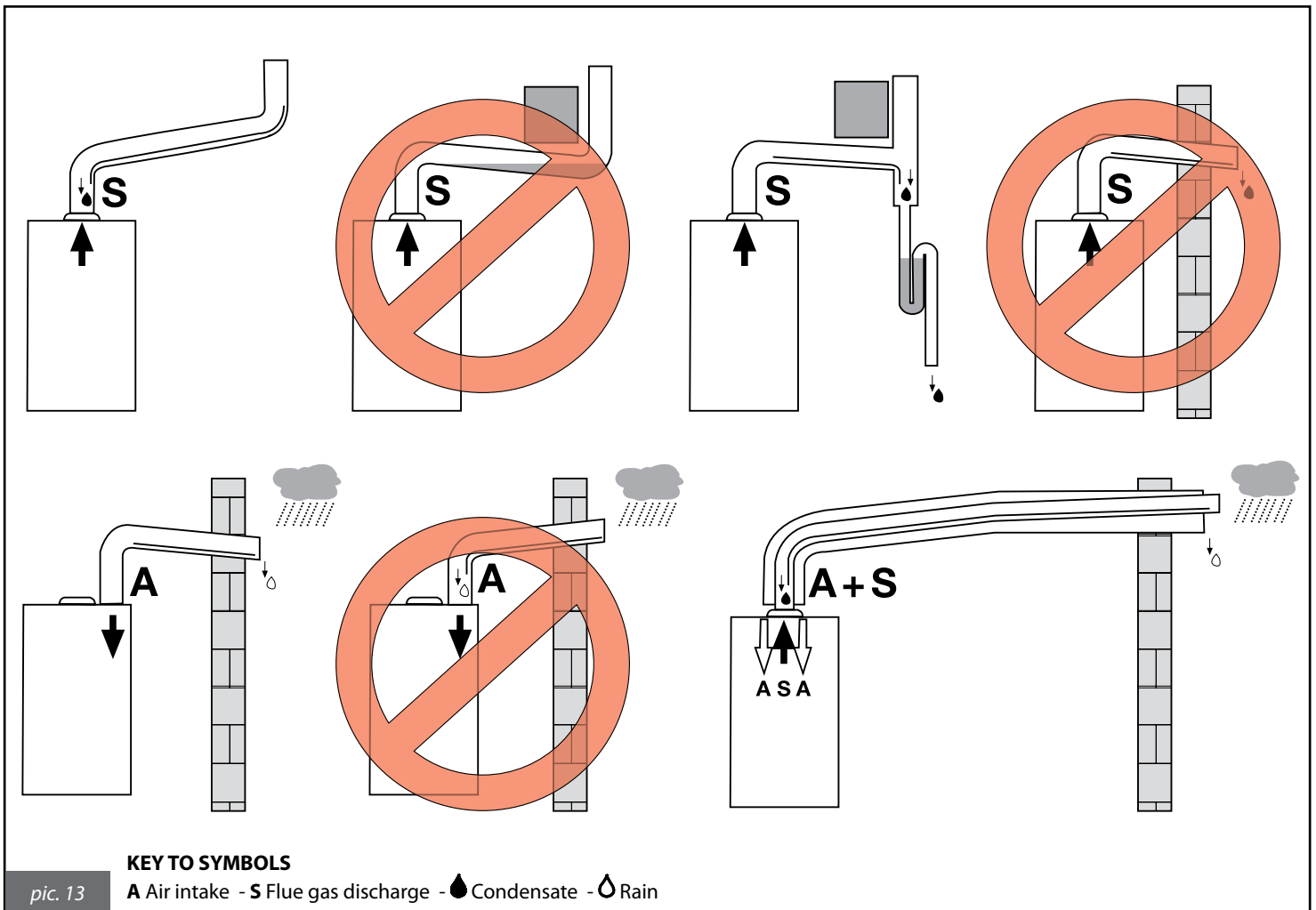
 **The air intake and flue gas discharge system must use original pipes for condensing boilers made by the Manufacturer, which are resistant to the acids in the condensate.**

 **The discharge pipes must be installed sloping towards the boiler. This is to allow the condensate to flow back into the combustion chamber, which is built to collect and discharge the condensate.**  
**If this is not possible for any reason, suitable devices must be installed at the condensate collection points to convey condensate to the outlet system.**  
**Condensate must be prevented from collecting in the combustion product removal system, with the exception of the liquid in the siphon (if there is one) connected to the combustion product removal system.**

**The Manufacture declines all liability for damage caused as a result of wrong installation or use of the boiler, modifications made to it or failure to comply with the manufacturer's instructions or the applicable rules and regulations on boiler installation.**

#### Installation examples

The following examples are merely indicative.



pic. 13



### 3.2.6.1. Configuration of air intake and flue gas discharge pipes

Boilers are approved for installation according to the following types:

**KR 55:** B23, B53, C13, C33, C43, C53, C83

**KR 85:** B23, B53, C43, C53, C83

#### **Type B23**

Boiler designed for connection to a flue or a combustion product discharge device outside the boiler room.

Air is taken from the boiler room and the combustion products are discharged outside the boiler room.

The boiler must not be fitted with an anti-wind draught diverter. It must be equipped with a fan before the combustion chamber / heat exchanger.

#### **Type B53**

Boiler designed for connection, via its own pipe, to its own combustion product removal terminal.

Air is taken from the boiler room and the combustion products are discharged outside the boiler room.

The boiler must not be fitted with an anti-wind draught diverter. It must be equipped with a fan before the combustion chamber / heat exchanger.

#### **Type C13**

Boiler designed for connection to horizontal, intake and discharge terminals directed outside, using coaxial or split pipes.

The distance between the air intake pipe and the flue gas discharge pipe must be at least 250 mm and both terminals must be positioned within a square having 500 mm sides.

The boiler must be equipped with a fan before the combustion chamber / heat exchanger.

#### **Type C33**

Boiler designed for connection to vertical, intake and discharge terminals directed outside, using coaxial or split pipes.

The distance between the air intake pipe and the flue gas discharge pipe must be at least 250 mm and both terminals must be positioned within a square having 500 mm sides.

The boiler must be equipped with a fan before the combustion chamber / heat exchanger.

#### **Type C43**

Boiler designed for connection to a collective flue system with two pipes, one for air intake and the other for discharging the combustion products, using coaxial or split pipes.

The flue pipe must comply with the applicable laws.

The boiler must be equipped with a fan before the combustion chamber / heat exchanger.

#### **Type C53**

Boiler with separate air intake and flue gas discharge pipes.

The pipes can discharge into areas with different pressures.

The two terminals must not be mounted on facing walls.

The boiler must be equipped with a fan before the combustion chamber / heat exchanger.

#### **Type C83**

Boiler designed for connection to a combustion air terminal and an individual or collective stack.

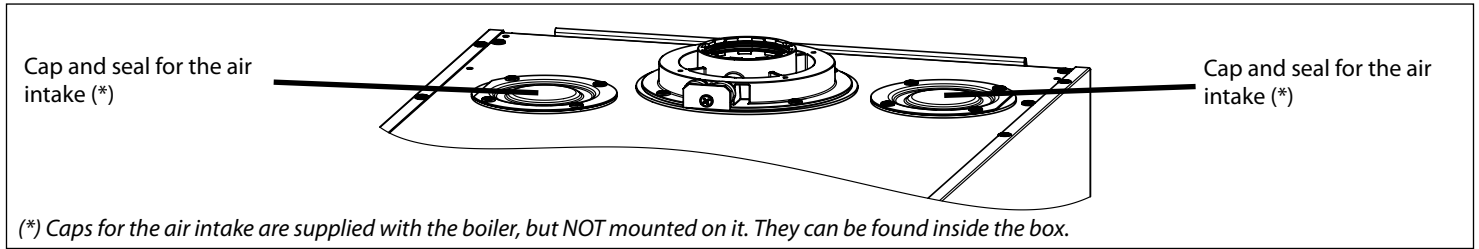
The flue pipe must comply with the applicable laws.

The boiler must be equipped with a fan before the combustion chamber / heat exchanger.

### 3.2.6.2. Air intake and flue gas discharge configuration – model KR 55



These values refer to air intake and flue gas discharge systems comprised of original smooth and rigid pipes supplied by the Manufacturer.



#### Types B23 and B53 (Ø 80 mm)

With this type of boiler, place one of the caps and seals provided on one of the two air intakes in the top of the boiler.  
 The minimum length of the flue gas discharge pipe is 1 metre.  
 The maximum length of the flue gas discharge pipes is 55 metres.  
 With pipes up to 30 metres in length, fit a 47mm air intake diaphragm in the other air intake in the top of the boiler.  
 For each additional 90° elbow the maximum length must be reduced by 2.5 metres.  
 For each additional 45° elbow the maximum length must be reduced by 2 metres.  
 The roof terminal decreases the maximum length by 1 metre.  
 The wall terminal decreases the maximum length by 1 metre.

#### Type C13 (Ø 60/100 mm or 80/125 mm)

With this type of boiler, place both caps and seals on both air intakes in the top of the boiler.  
 The minimum length for horizontal coaxial pipes is 1 metre, excluding the first elbow connected to the boiler.  
 The maximum length for 60/100 horizontal coaxial pipes is 5 metres, excluding the first elbow connected to the boiler.  
 The maximum length for 80/125 horizontal coaxial pipes is 13 metres, excluding the first elbow connected to the boiler.  
 For each additional 90° elbow the maximum length must be reduced by 1 metre.  
 For each additional 45° elbow the maximum length must be reduced by 0.5 metres.  
 The wall terminal decreases the maximum length by 1 metre.  
 The air intake part must be angled 1% downwards in the outlet direction to prevent rainwater from getting in.

#### Type C33 (Ø 60/100 mm or 80/125 mm)

With this type of boiler, place both caps and seals on both air intakes in the top of the boiler.  
 The minimum length for vertical coaxial pipes is 1 metre.  
 The maximum length for 60/100 vertical coaxial pipes is 5 metres.  
 The maximum length for 80/125 vertical coaxial pipes is 13 metres.  
 For each additional 90° elbow the maximum length must be reduced by 1 metres.  
 For each additional 45° elbow the maximum length must be reduced by 0.5 metres.  
 The roof terminal decreases the maximum length by 1 metre.

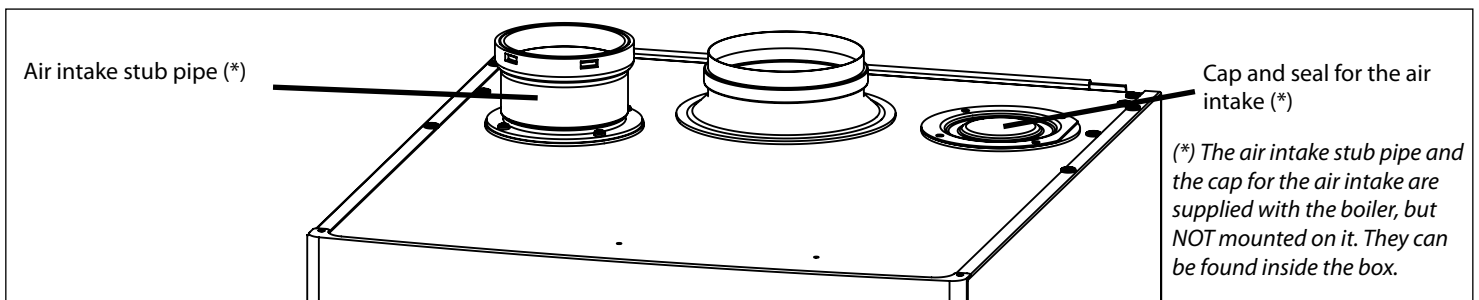
#### Types C43 - C53 - C83 (Ø 80 + 80 mm)

With this type of boiler, place one of the caps and seals provided on one of the two air intakes in the top of the boiler (the one not used for air intake).  
 The minimum length of the air intake pipe is 1 metre.  
 The minimum length of the flue gas discharge pipe is 1 metre.  
 The maximum length of air intake and flue gas discharge pipes is 55 metres (intake + discharge length).  
 With pipes up to 30 metres in length, fit a 47mm air intake diaphragm in the air intake in the top of the boiler.  
 For each additional 90° elbow the maximum length must be reduced by 2.5 metres.  
 For each additional 45° elbow the maximum length must be reduced by 2 metres.  
 The roof terminal decreases the maximum length by 1 metre.  
 The wall terminal decreases the maximum length by 1 metre.

### 3.2.6.3. Air intake and flue gas discharge configuration – model KR 85



These values refer to air intake and flue gas discharge systems comprised of original smooth and rigid pipes supplied by the Manufacturer.



#### Types B23 and B53 (Ø 80 mm)

The minimum length of the flue gas discharge pipe is 1 metre.  
 The maximum length of the flue gas discharge pipes is 50 metres.  
 For each additional 90° elbow the maximum length must be reduced by 3.3 metres.  
 For each additional 45° elbow the maximum length must be reduced by 1 metres.  
 The roof terminal decreases the maximum length by 1 metre.  
 The wall terminal decreases the maximum length by 1 metre.

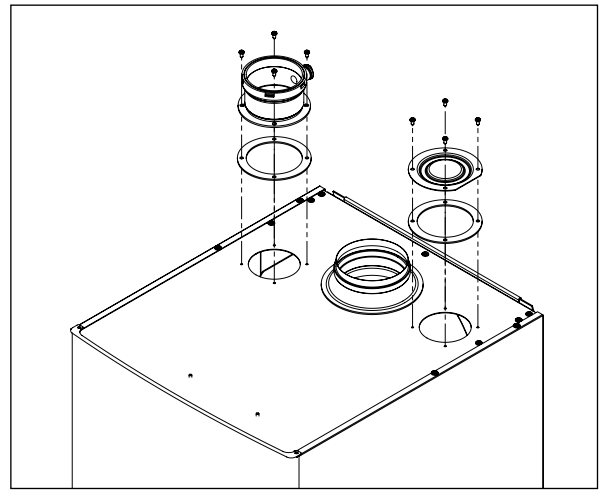
#### Types C43 - C53 - C83 (Ø 80 + 100 mm)

The minimum length of the air intake pipe (Ø 80 mm) is 1 metre.  
 The minimum length of the flue gas discharge pipe (Ø 100 mm) is 1 metre.

The maximum length of air intake and flue gas discharge pipes is 43 metres (intake + discharge length).  
 For each additional 90° elbow on the air intake pipe the maximum length must be reduced by 5.5 metres.  
 For each additional 90° elbow on the flue gas discharge pipe the maximum length must be reduced by 3.3 metres.  
 For each additional 45° elbow on the air intake pipe the maximum length must be reduced by 2 metres.  
 For each additional 45° elbow on the flue gas discharge pipe the maximum length must be reduced by 1 metre.  
 The roof terminal decreases the maximum length by 1 metre.  
 The wall terminal decreases the maximum length by 1 metre.



With boiler model KR85 only use split air intake/flue gas pipes.  
The Ø 80 mm air intake stub pipe is supplied with the boiler.



### 3.2.7. Testing combustion efficiency


#### 3.2.7.1. Chimney-sweep function

The boiler has a chimney-sweep function to be used when testing combustion efficiency and regulating the burner.

To activate this function, open the front part of the casing for access to the controls. To do this, proceed as follows:

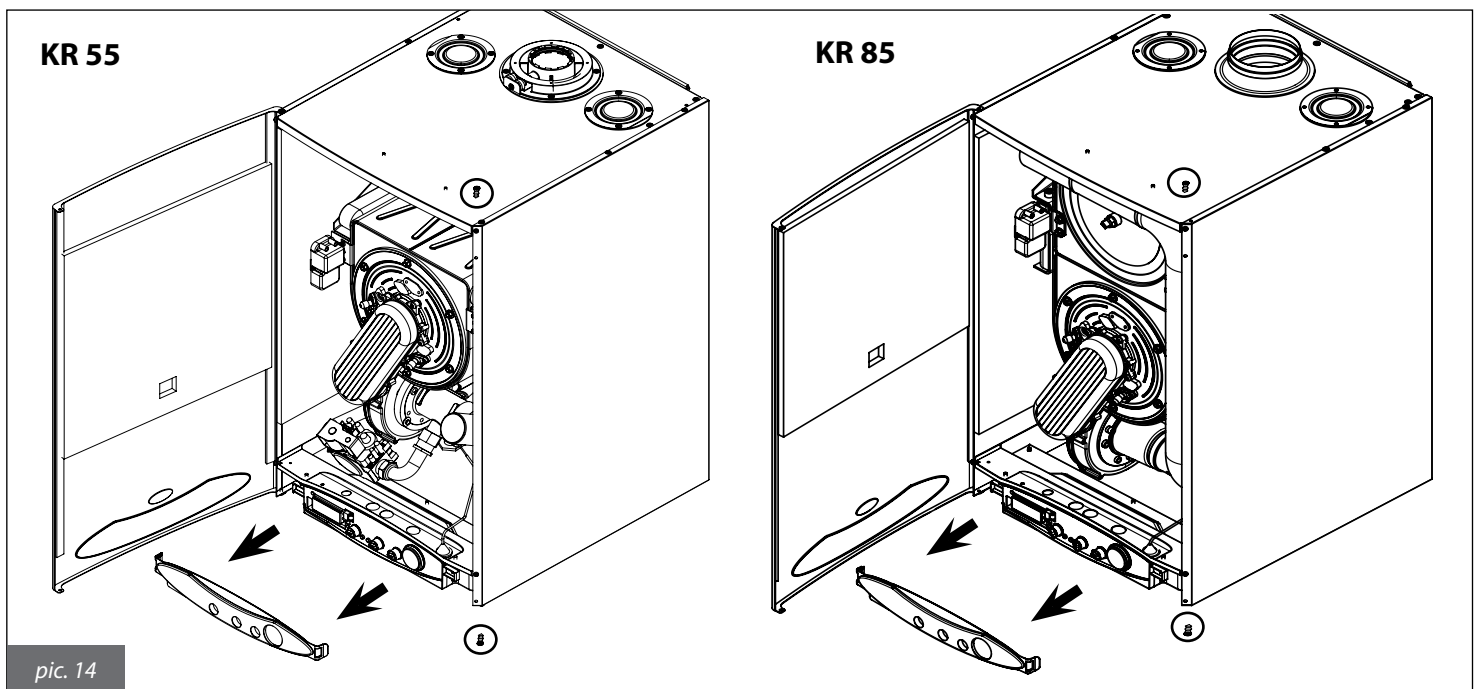
- Unscrew two of the four screws securing the casing – either those on the left or those on the right.
- Open the casing.
- Remove the control panel cover by pulling the hooks on either side outwards and pulling the cover towards you (pic. 14).

The control panel layout is shown in pic. 15.

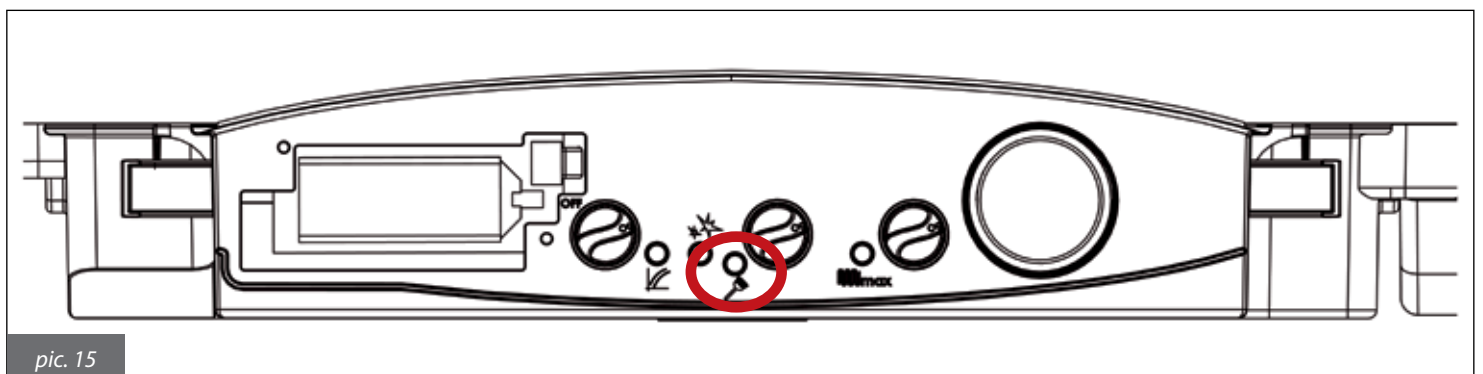
With selector **2** (pic. 1) on WINTER, the room thermostat (if there is one) ON, and the boiler in operation, press the chimney-sweep button  (pic. 15) with a small screwdriver for five seconds. The boiler turns off, performs the ignition sequence and runs at a preset stable heat output corresponding to the maximum setting **max** (pic. 15).

The chimney-sweep function operates for 15 minutes.

To exit chimney-sweep mode, turn selector **2** to any position other than WINTER and then to the desired setting.



pic. 14



pic. 15

### 3.2.7.2. Measurement procedure

#### KR 55

The boiler is equipped with a tower allowing for connection of the air intake and flue gas discharge pipes (figs. 16 and 17).

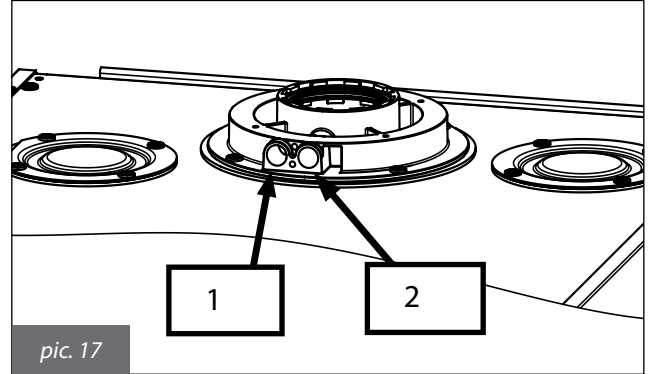
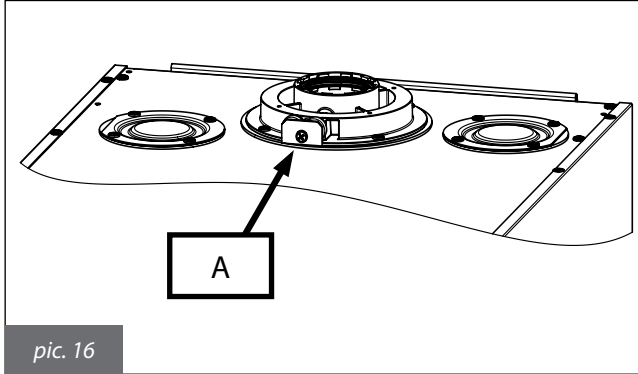
The tower comes with two openings for direct access to the combustion air and flue gas pipes (pic. 17).

Remove the caps (A) from these openings (pic. 16) before measurements.

The following measurements must be made to determine combustion efficiency:

- measure combustion air taken from opening 1 (pic. 17);
- measure flue gas temperature and CO<sub>2</sub> from opening 2 (pic. 17).

The boiler must be working at a steady rate (ten minutes after entering the chimney-sweep mode).



#### KR 85

The boiler is not equipped with a tower allowing for connection of the air intake and flue gas discharge pipes.


In this case combustion air, flue gas temperature and CO<sub>2</sub> are measured at the openings for the accessory pipes, or as close as possible to the air intake and flue gas discharge points on the boiler.


### 3.2.8. Connecting to the gas mains

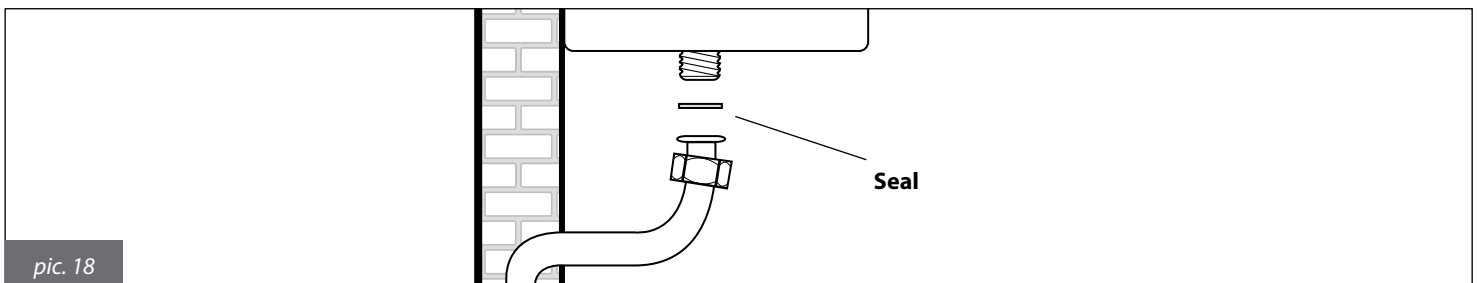
The cross-section of the gas supply pipe must be equal to or greater than that of the boiler (3/4").

The cross-section of the pipe depends on the length of the pipe, the layout pattern and the gas flow rate. This means the pipe must be sized accordingly.

**Gas connections must comply with the applicable rules and regulations in the country of installation, which are intended as an integral part of this handbook.**

 Please note that before activating an indoor gas supply system and before connecting it to a meter, it must be checked for tightness. If any part of the system is not visible, the gas leak test must be performed before the pipe is covered. The test must NOT be performed with combustible gas. Use air or nitrogen. If gas is present in the piping, do not use a naked flame to look for leaks. Use a specific product available on the market.

 When connecting the boiler to the gas supply fitting, an appropriately sized seal made of suitable material MUST be used (pic. 18). Hemp, Teflon tape or the like are NOT SUITABLE for use with gas fittings.



### 3.2.9. Plumbing connections

Prior to installing the boiler, the plumbing system must be cleaned thoroughly to remove impurities from the components, which could damage the pump and heat exchanger (§ 3.2.4.).

#### CH pipes

The flow and return pipes in the CH system must be connected to their respective 1" fittings (**F** and **R**) on the boiler (figs. 6 and 7). When calculating the cross-section of CH pipes, it is important to take into account load losses due to the length of the pipe, the CH terminals and the configuration of the system.

The cold water inlet must be connected to the ½" fitting (**CI**) of the boiler (figs. 6 and 7).



**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.**

#### CONDENSATE DRAINAGE

Comply with condensate drainage laws and standards in force in the country of installation, which are intended as an integral part of this handbook.

When not specifically prohibited by law, the condensate produced by combustion must be conveyed (via the condensate drain - **S** in figs. 6 and 7) to a drainage system connected to the disposal system for domestic sewage, which due to its alkalinity offsets the acidity of the condensate.

To prevent unpleasant odours from the domestic drains, it is advisable to install a separation device between the condensate drainage system and the domestic waste system.

The condensate drainage system and the domestic waste system must be made of suitable materials that are resistant to the condensate.

The Manufacturer cannot be held liable for damage or injury caused by failure to comply with the above instructions.

### 3.2.10. Power mains connection

The boiler is supplied with a three-pole power cable, connected at one end to the electronic board and protected from tearing by a clamping system.

The boiler must be connected to a 230V-50Hz mains supply.

**When connecting the boiler, keep to the correct phase / neutral polarity sequence.**

The installation must comply with the applicable laws in the country of installation, which are intended as an integral part of this handbook.

An easy-access double pole switch with at least 3mm between the contacts must be installed before the boiler to enable the power supply to be cut off, so that maintenance can be performed in complete safety.

The power supply to the boiler must be protected by a differential magnetic-thermal automatic switch of appropriate shut-down capacity.

The mains supply must be appropriately earthed.

This is a vital safety requirement. When in doubt, have the electrical system checked thoroughly by a qualified electrician.





**The Manufacturer shall not be held liable for damage or injury resulting failure to earth the system properly. Gas, water and CH pipes must NOT be used as the primary earth source.**


### 3.2.11. Selecting the CH operating range

The setting range for the CH water temperature depends on the operating range selected.

- standard range: 20-78°C (from full anticlockwise to full clockwise position on knob 4);
- reduced range: 20-45°C (from full anticlockwise to full clockwise position on knob 4).

To select the operating range, turn the thermoregulation trimmer (  pic. 19) with a 2.5 mm flathead screwdriver as instructed below:

- **standard range**:: turn the trimmer  fully clockwise;
- **reduced range**: turn trimmer  fully anticlockwise.

Trimmer  function varies when an external probe is used (§ 3.2.14).

Selection of the operating range also affects the delay time between boiler ignition, the purpose of which is to prevent the boiler switching on and off frequently when in CH mode.

- **standard range**: 4 minutes;
- **reduced range**: 2 minutes.

If the water temperature in the system falls below a set value (Table 8), the delay time is zeroed and the boiler re-ignites.

	Range selected	Ignition temperature
Standard range	with set-point > 55°C with set-point ≤ 55°C	< 40°C set-point T – Flow T > 15°C
Reduced range	regardless of the set-point	< 20°C

Table 8 – Burner ignition temperatures

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

### 3.2.12. Connecting the ambient thermostat (optional)

The boiler can be connected to an ambient thermostat (not supplied with the boiler).

The contacts must be properly sized in relation to a 5 mA 24 VDC load.


The wires must be connected to terminal **M9** on the electronic circuit board (figs. 21A and 21B), after removing the jumper supplied standard with the boiler.

**The ambient thermostat cables must NOT be sheathed together with the power cables.**

### 3.2.13. Connecting the OpenTherm remote control (optional)

The boiler can be connected to a remote control (an optional supplied by the manufacturer).

**It 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, the manufacturer does not guarantee correct operation of the remote control itself or the boiler.**

For installation instructions, refer to the booklet accompanying the remote control.

Precautions to take when installing the remote control.

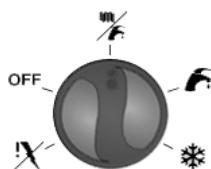
- **The remote control cables must not be sheathed together with the power cables**, otherwise disturbance provoked by other electric devices would cause the remote control to malfunction.
- Position the remote control on a wall inside the building, about 1.5 metres from the ground, in a suitable position for measuring the ambient temperature.
- Do not install in alcoves, behind doors or curtains, near sources of heat, or exposed to sunlight, draughts or spray.

The remote control connection is protected against false polarity, which means the connections can be switched.

Once the remote control has been installed, turn the boiler selector (**2** in pic. 1) to WINTER.

CH and DHW functions can be enabled and disabled from the remote control.

**If the boiler selector is kept in a position other than WINTER, correct operation of the boiler and of the remote control are not guaranteed.**



Boiler selector on WINTER



**The remote control must not be connected to a 230 V ~ 50 Hz power supply.**

For instructions on how to program the remote control, refer to the booklet provided with it.

The remote control can be used to read and enter a series of parameters, called TSPs, which must be set by a qualified technician (Tables 9 and 10).

Parameter TSP0 sets the default values in the table and reloads all the original data, deleting any subsequent modifications.

If a parameter is wrong, the value is restored, taking it from the table of default values. If the value you are trying to enter is outside the set limits, the new value is rejected and the existing one is retained.

Parameter	Limit value	Default values for TSP0 = 4 KR 55	Default values for TSP0 = 5 KR 85
<b>TSP0</b> Boiler model and table of default values	4 - 5	4	5
<b>TSP1</b> Fan speed at maximum burner power	120 ÷ 250 Hz (3600 ÷ 7500 rpm)	201 Hz (6030 rpm)	200 Hz (6000 rpm)
<b>TSP2</b> Fan speed at minimum burner power	30 ÷ 120 Hz (900 ÷ 3600 rpm)	58 Hz (1740 rpm)	54 Hz (1620 rpm)
<b>TSP3</b> Fan speed at burner ignition power	30 ÷ 160 Hz (900 ÷ 4800 rpm)	90 Hz (2700 rpm)	105 Hz (3150 rpm)
<b>TSP4</b> Upper limit of maximum heat output set on trimmer P4	10 ÷ 100 %	100%	100%

Table 9 – Limit values for TSP parameters and default values for each boiler type (TSP0)


Parameter	Minimum limit	Maximum limit
<b>TSP5</b> P6 Trimmer position (  pic. 19)	0 (thermoregulation curve = 0.0)	254 (thermoregulation curve = 3.0)
<b>TSP6</b> Calculated temperature set on knob 4 (only with external probe present)	15°C	35°C

Table 10 - Displayable TSP parameters (not modifiable from remote control)

### 3.2.14. Connecting to the external probe (optional) and sliding temperature operation

The boiler can be connected to an external temperature probe for sliding temperature operation (optional, supplied by the manufacturer; part order number 0SONDAES01).



**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.**

The external temperature probe must be connected by means of a double insulated wire, minimum cross-section 0.35 sq.mm.

The probe must be connected to terminal **M8** on the boiler's printed circuit board (pic. 21).

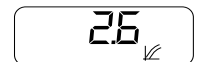
**The temperature probe cables must NOT be sheathed together with power cables.**


The temperature probe must be installed on an outside wall facing north or north-east, in a position protected from atmospheric agents.


Do not install near a window, ventilation openings or sources of heat.

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

- the outdoor temperature measured
- the thermoregulation curve selected
- the calculated ambient temperature selected.




The thermoregulation curve is selected via the thermoregulation trimmer ( in pic. 19).

During regulation, the thermoregulation symbol  flashes and the temperature setting is displayed on the LCD. This value can also be read as parameter TSP5 on the remote control (if there is one).

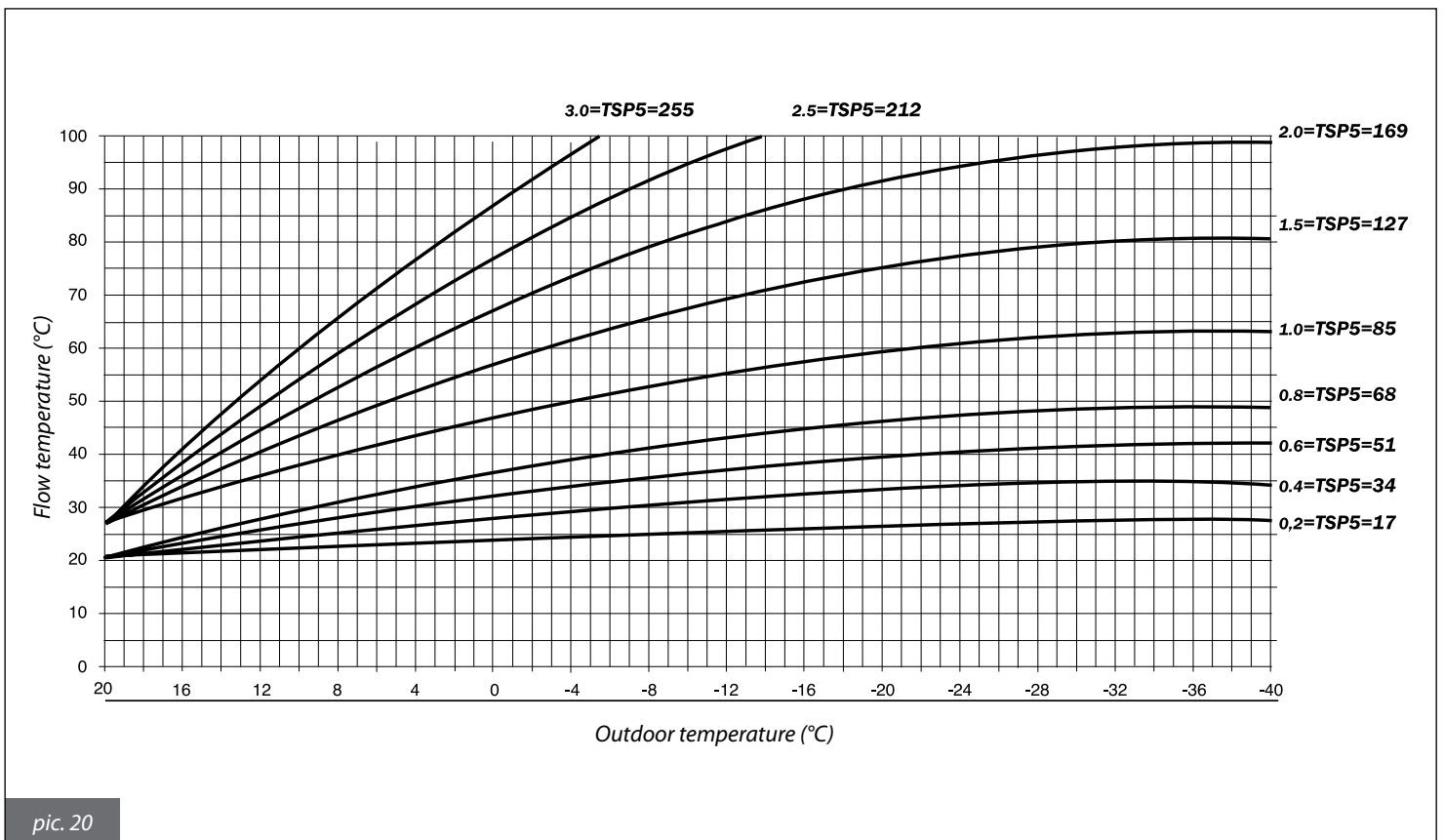
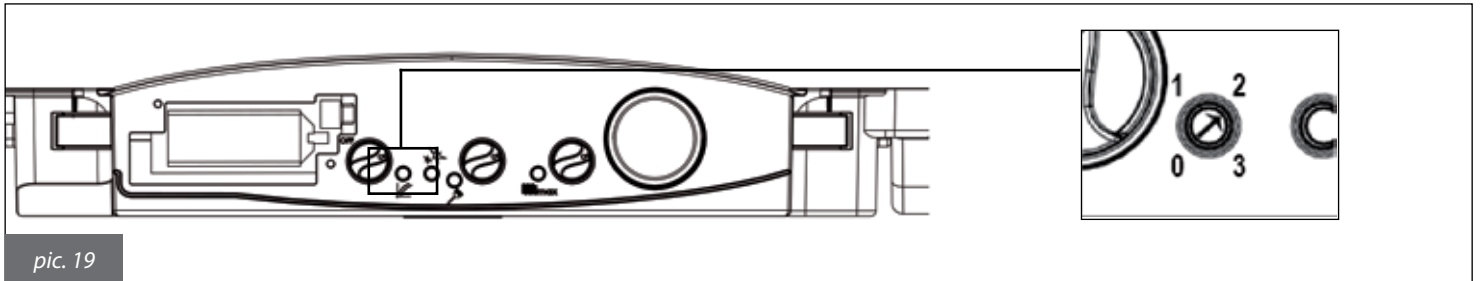
Relation between the value of parameter TSP5 and the thermoregulation curve coefficient is equal to:

$$\text{Relation between value read and thermoregulation curve coefficients:} \\ \text{Coefficient TSP5 / value read 84.67}$$

In addition, the position of the thermoregulation trimmer  determines the CH operating range, according to the following values:

TSP5 parameter values which select the reduced range Coefficients corresponding to thermoregulation curves	0 ÷ 75 0.0 ÷ 0.8
TSP5 parameter values which select the standard range Coefficients corresponding to thermoregulation curves	76 ÷ 255 1.0 ÷ 3.0

The calculated ambient temperature is set on knob **4** (pic. 1), which, in case a temperature probe is present, loses its CH temperature setting function (§ 1.4.7.) and the setting can be read from parameter TSP6 on the remote control (if used).



The curves shown above, which refer to an ambient temperature of 20°C, are always limited by the maximum and minimum values of the operating range. If a calculated ambient temperature other than 20°C is requested (on knob **4**), all the curves shift accordingly.



### 3.3. Filling the system

When all the boiler connections have been completed, the CH system can be filled with water.

This must be done with caution, following these steps in sequence.

- Open the air relief valve on all the radiators and check the efficiency of the automatic boiler valve.
- Gradually open the boiler external filling tap and check that any automatic air relief valves work efficiently.
- Close the relief valves as soon as water starts to come out.
- Check on the reading on the water pressure gauge is in the range 1-1.3 bar.
- Close the external filling tap and bleed all the valves on the radiators to remove any residual air.
- Start the boiler and as soon as the system reaches the working temperature, stop the pump and repeat the air bleeding procedure.
- Allow the system to cool down, then restore water pressure to 1-1.3 bar.

#### IMPORTANT

**As regards treating water in domestic heating systems, it is advisable to use specific products that are suitable for multi-metal plants, in order to optimize performance and safety, preserve these conditions over time, ensure regular operation of auxiliary equipment as well, and minimize energy consumption, in compliance with the applicable laws and standards.**

**Compliance with this standard is a legal requirement.**

**Use specific products suitable for multi-metal systems.**

#### IMPORTANT

**The low water safety pressure switch will prevent the burner from starting up when the water pressure is below 0.4-0.6 bar.**

**A pressure of 1-1.3 bar is recommended in the CH system. If necessary, open the external filling tap.**

**This must be done with the system cold.**

**The pressure gauge on the control panel shows the water pressure in the system.**

#### IMPORTANT

**If the boiler is not used for a long time, the pump may not work.**

**Before starting up the boiler, perform the following procedure to make sure that the pump works.**

- Unscrew the protection bolt in the centre of the pump motor.
- Insert the tip of a screwdriver in the hole and turn the pump shaft clockwise.
- Then screw the protection bolt back in and check for water leaks.

**When the protection bolt is removed, some water may flow out. Dry off any wet surfaces, before remounting the boiler casing.**

### 3.4. Starting the boiler

#### 3.4.1. Preliminary checks

Before starting the boiler, perform the following checks:

- The flue gas exhaust pipe and terminal must be installed as instructed. **When the boiler is running, no combustion products must leak from any of the seals.**
- The boiler must be supplied at 230 V – 50 Hz.
- The system must be filled with water (pressure reading on water gauge 1-1.3 bar).
- Any stopcocks on the pipes must be open.
- The gas supplied to the boiler must be of the type for which the boiler is designed. If necessary, convert the boiler following the instructions in § 3.6 – Adapting to other gases and regulating the burner. This operation must be carried out by a qualified service engineer.
- The gas supply stopcock must be open.
- **There must be no gas leaks.**
- The master power switch before the boiler must be on.
- The boiler safety valve must not be blocked.
- There must be no water leaks.
- The pump must not be blocked.
- The condensate trap installed on the boiler must discharge condensate correctly and not be clogged.



**The boiler is equipped with a three-speed circulation pump, corresponding to three different residual heads. It is delivered with the circulation pump on the third speed setting.**

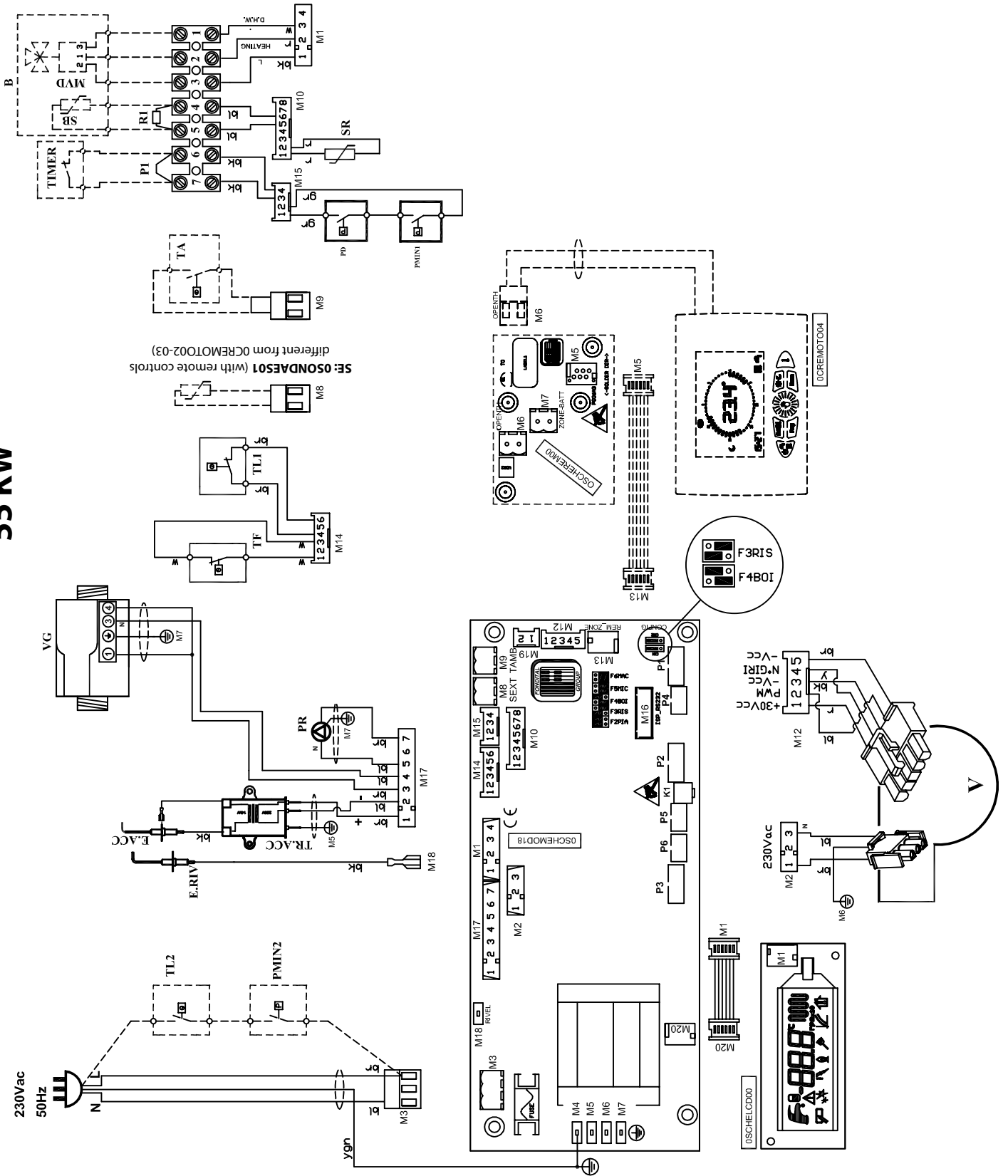
**If you wish to set a different speed, taking account of the water circulation requirements in the boiler (controlled by the water pressure switch) and the resistance properties of the system, check boiler operation under all the conditions dictated by the features of the system (e.g. closure of one or more heating zones or thermostat-controlled valves).**

#### 3.4.2. Switching on and off

To switch the boiler on and off, refer to the User Instructions.

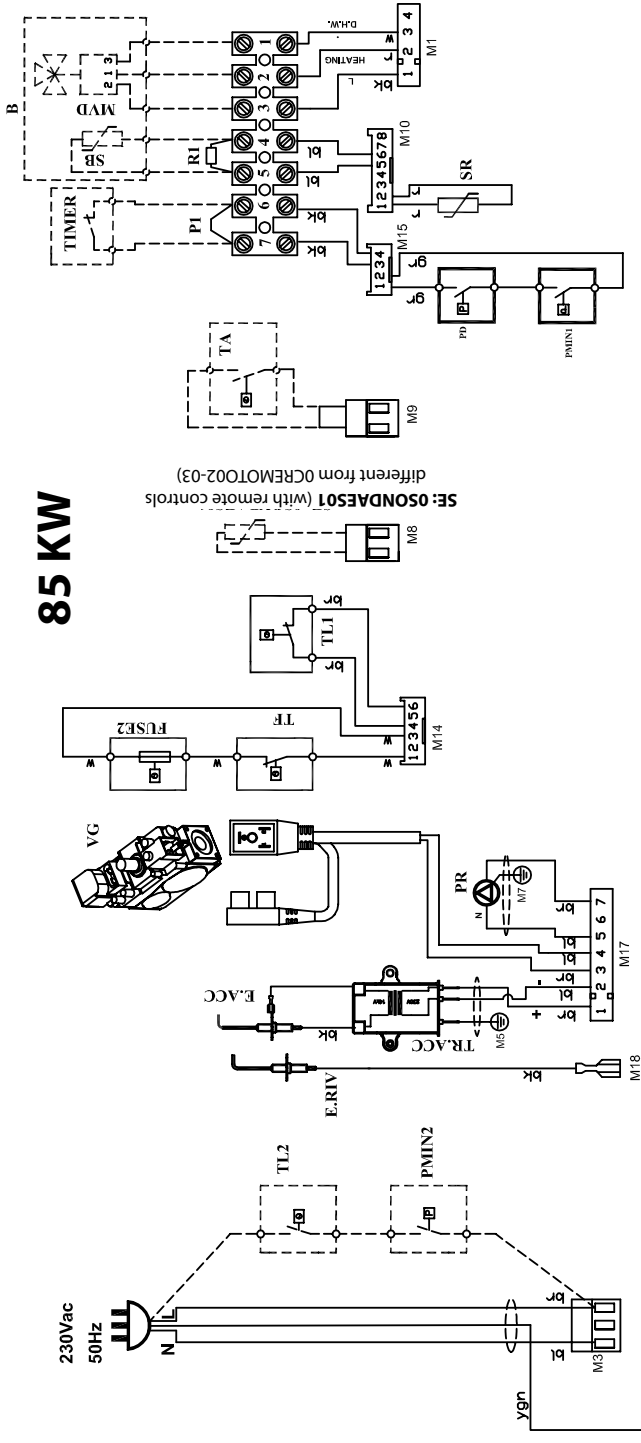
### 3.5. Wiring diagrams

55 kW

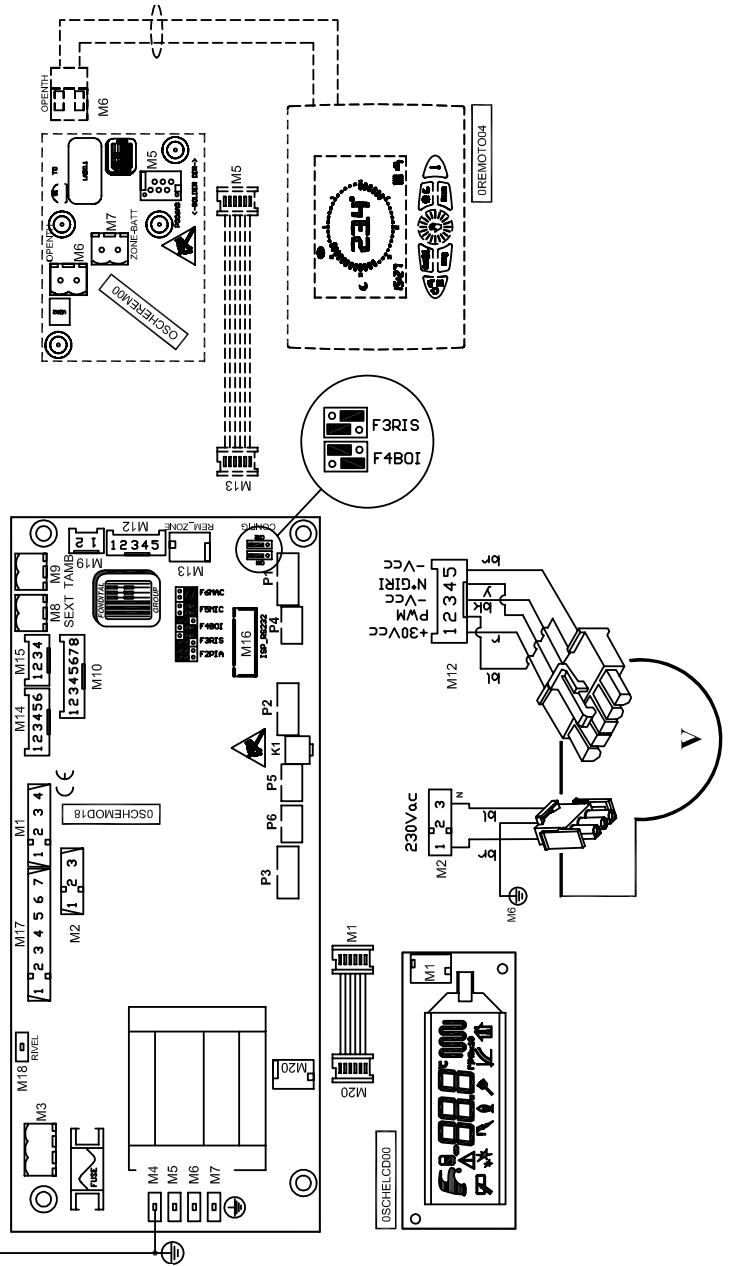


pic. 21 A

# 85 KW



SE: OSONAE501 (with remote controls different from OCREMOT02-03)



## Key to symbols

<b>F2PIA:</b> Mono-thermal/ Aqua Premium boiler	<b>SE:</b> 0SONDAES01 external probe 10K Ohm B=3977 (optional) boiler probe to be connected to the boiler board	<b>P6:</b> thermoregulation curve regulation
<b>F3RIS:</b> CH-only boiler		<b>K1:</b> chimney-sweep selection button
<b>F4BOL:</b> boiler with water heater		<b>B:</b> separate water heater with probe (remove R1)
<b>F5MIC:</b> micro-storage boiler	<b>SS:</b> 10K Ohm B=3435 DHW probe, max length 3 metres	<b>BM120:</b> separate water heater with bulb thermostat (remove P1)
<b>F6MAC:</b> encased Aqua Premium boiler	<b>TA:</b> ambient thermostat (optional)	<b>TIMER:</b> DHW timer (remove P1 if the TIMER is mounted)
<b>M3-M8-M9:</b> Outdoor probe power connector, TA	<b>CM1 - CM2:</b> jumpers for selecting the type of boiler	<b>P1:</b> TIMER jumper – DHW priority
<b>M16:</b> telemetering connector	<b>FL:</b> DHW flow switch	<b>R1:</b> 10KOhm resistance
<b>M2-M15:</b> service connectors	<b>FLP:</b> Safety flow switch for low water in the primary circuit (CH)	<b>REMOTE CONTROL:</b> (optional)
<b>E.RIV:</b> detection electrode		<b>CT (optional):</b> telephone sequence switch for remote boiler activation
<b>E.ACC:</b> ignition electrode	<b>VG:</b> gas valve	
<b>P:</b> pump	<b>TL:</b> limit thermostat	
<b>V:</b> brushless fan	<b>P1:</b> upgrading of flow temperature regulation	
<b>MVD:</b> three-way valve motor	<b>P2:</b> upgrading of DHW temperature regulation	
<b>TF1-TF2:</b> flue gas thermostat (protecting flue gas system and heat exchanger)	<b>P3:</b> boiler selector	
<b>TR.ACC:</b> ignition transformer	<b>P4:</b> upgrading of maximum heat output	
<b>SR:</b> 10K Ohm CH probe B=3435		

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

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 11 – Relation between temperature and nominal resistance of the temperature probes

### 3.6. Adapting to other gases and regulating the burner

**This boiler is built to run on the type of gas specified on the order, which is shown on the packaging and on the boiler rating plate.**



**If you wish to switch to another type of gas, this must be done by a qualified technician using the accessories supplied by the manufacturer. He will make the necessary modifications and adjustments to ensure efficient operation of the boiler.**

#### 3.6.1. Switching from METHANE to PROPANE

- Open the front panel of the boiler: see § 3.2.7.1.
- For model KR 55, unscrew the outlet connection to the gas valve (**A** in pic. 24).
- For model KR 85, unscrew the connecting pipe between the gas valve and the fan (**D** in pic. 23).
- Replace the existing diaphragm with one for PROPANE (Tables 3 and 4).
- Make the reconnection (**A** in pic. 24 for KR 55 and **D** in pic. 23 for KR 85).
- Refer to § 3.6.3.

#### 3.6.2. Switching from PROPANE to METHANE

- Open the front panel of the boiler: see § 3.2.7.1.
- For model KR 55, unscrew the outlet connection to the gas valve (**A** in pic. 24).
- For model KR 85, unscrew the connecting pipe between the gas valve and the fan (**D** in pic. 23).
- Replace the existing diaphragm with one for METHANE (Tables 3 and 4).
- Make the reconnection (**A** in pic. 24 for KR 55 and **D** in pic. 23 for KR 85).
- Refer to § 3.6.3.

#### 3.6.3. Regulating the burner

##### Setting maximum heat output

- Turn the maximum heat output regulator **max** (pic. 19) to MAXIMUM (fully clockwise). Maximum heat output setting is displayed on the LCD as a percentage of the boiler's maximum available value;
- position selector **2** (pic. 1) to WINTER;
- check that the optional ambient thermostat (optional) is set to ON;
- activate the chimney-sweep mode (§ 3.2.7.1);
- adjust CO<sub>2</sub> in flue gas by turning the ratio regulator **B** (pic. 24 for KR 85 and pic. 25 for KR 85) and make sure it is within the limits of Table 12;
- operate the boiler on chimney-sweep mode and move to "Minimum heat output regulation";

##### Minimum heat output regulation

- Rotate the regulator **max** (pic. 19) fully anticlockwise to set the maximum heat output to MINIMUM. The display shows the desired

- maximum heat output as a percentage of the boiler's maximum available heat output;
- Regulate the CO<sub>2</sub> in flue gas by turning the offset regulator **C** (pic. 24 for KR 55 and pic. 25 for KR 85) and make sure it is within the limits of Table 12;
- To terminate the chimney-sweep operating mode, set knob **2** (pic. 1) to any position other than WINTER and then to the desired position.

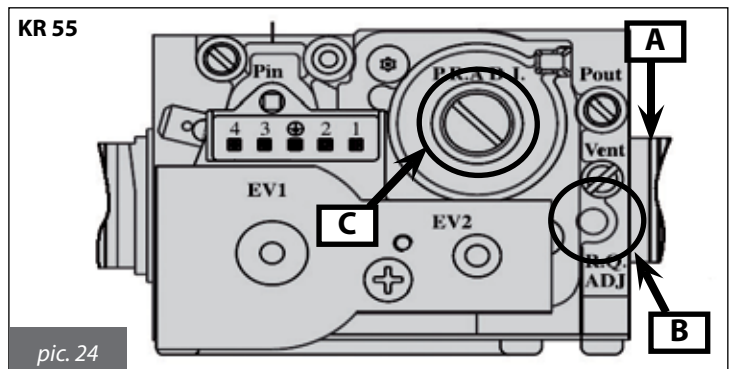
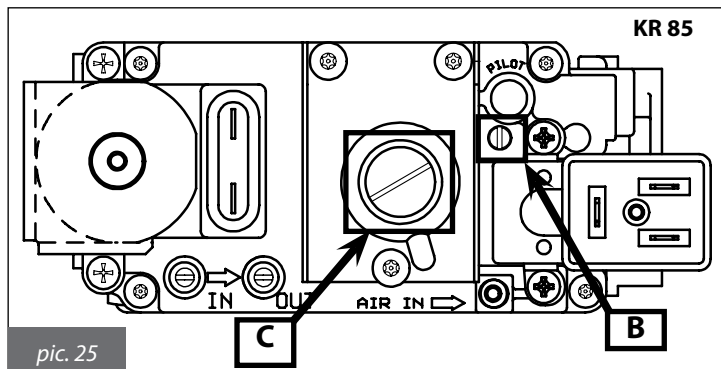
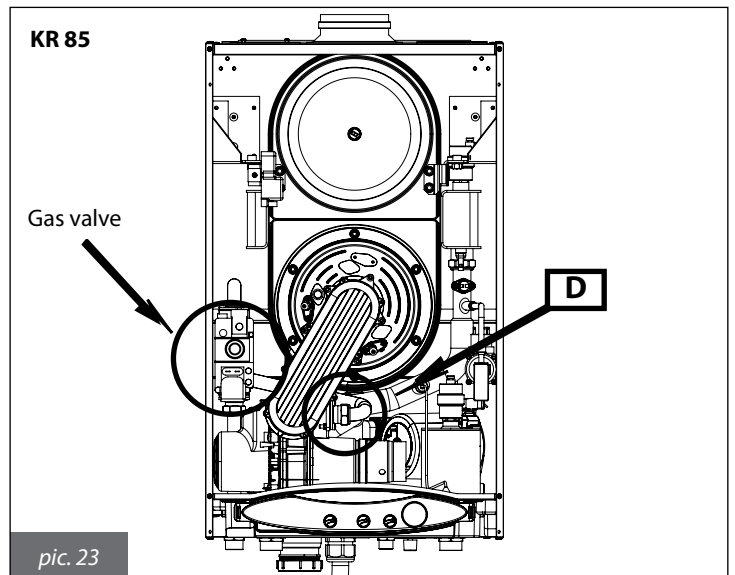
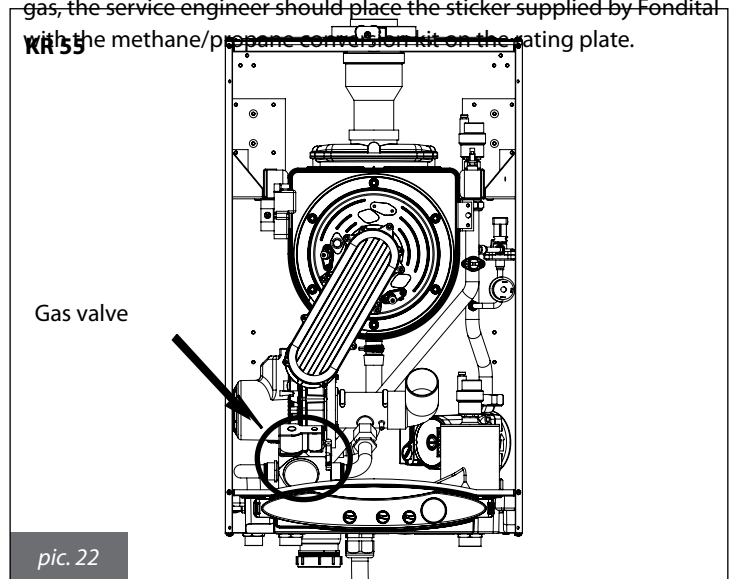
#### Value of carbon dioxide in the flue gas

Fuel	CO <sub>2</sub> rates
Methane	8.8 ÷ 9.2
Propane	9.8 ÷ 10.2

Table 12 – CO<sub>2</sub> rates

#### Final operation

- To indicate that the boiler has been converted to another type of gas, the service engineer should place the sticker supplied by Fondital with the methane/propane conversion kit on the rating plate.



## 4. Commissioning the boiler

### 4.1. Preliminary checks

Before commissioning the boiler, it is advisable to check that

- the installation complies with the current regulations;
- the flue gas exhaust pipe and terminal are installed as instructed. **When the boiler is running, no combustion gas must leak from any of the seals;**
- the power supply to the boiler is 230 V – 50 Hz;
- the system is full of water and the pressure reading is 1-1.3 bar);
- any system pipe stopcocks are open;
- the gas supplied to the boiler corresponds to the setting; if necessary, the boiler must be converted according to the instructions in § 3.6 – Adapting to other gases. This operation must be carried out by a qualified service engineer;
- the gas cock is open;
- **there are no gas leaks;**
- the master switch is on;
- the boiler safety valve is not blocked;
- there must be no water leaks.
- the pump must not be blocked.
- the condensate trap installed in the boiler is discharging condensate correctly and is not stuck.

**IMPORTANT: If the boiler has been fitted to a new or existing system the service engineer should check that the system has been cleaned and the appropriate chemicals have been added.**



**If the boiler has not been installed in accordance with the manufacturer's instructions and the rules and regulations in force in the country of installation inform the responsible person, isolate the boiler from the gas and electrical supply and do not continue to commission the appliance.**

### 4.2. Switching on and off

Refer to the User Instructions for details of how to switch the boiler on and off.

## 5. Maintenance

### Maintenance and repairs must be carried out by a fully qualified technician.

The user is strongly advised to have the boiler serviced and repaired by a fully qualified and authorised Service Centre.

Correct maintenance of the boiler will allow it to work efficiently, without harming the environment, and in complete safety.

### 5.1. Maintenance schedule

Routine maintenance must be performed once a year.



**Before carrying out any maintenance work involving the replacement of components or internal cleaning of the boiler, disconnect the boiler from the mains.**

Routine maintenance must include a series of checks and cleaning operations.

#### Checks:

- General integrity of the boiler
- Boiler and gas supply leaks
- Boiler gas supply pressure
- Minimum and maximum gas pressure at the boiler nozzle
- Boiler ignition
- Flue system integrity, good state of preservation and leak tests
- State of the thermostat on the flue gas stack
- State of the combustion fan
- State of the Hall sensor
- General integrity of the boiler safety devices
- Water leaks and oxidation of the boiler fittings
- Boiler safety valve efficiency
- Expansion vessel pressure
- State of efficiency of the differential/minimum limit pressure switch
- Correct discharge of condensate from the drain siphon in the boiler

#### Cleaning operations:

- Inside of the boiler
- Gas nozzles
- Air intake and flue gas discharge circuit
- Heat exchanger
- Condensate drainage ducts
- Condensate drain siphon

Checks to perform when servicing the boiler for the first time.






- Suitability of the boiler room
- Flue gas discharge pipes – diameters and lengths
- Boiler installation in accordance with the instructions in this manual

**If the boiler does not operate correctly or if you suspect that the boiler could pose a danger to people, animals or property isolate the appliance and make it gas safe. Then prepare a report for the responsible person on site.**





### 5.2. Combustion analysis

The boiler combustion parameter check to assess efficiency and polluting emissions must be performed in accordance with the applicable laws and regulations. Results should be in accordance with table 12.

## 6. Troubleshooting

BOILER STATUS	PROBLEM	POSSIBLE CAUSE	SOLUTION
<p>The boiler has locked out. The symbol  is displayed and code E01 flashes. Turn selector 2 to RESET to resume boiler operation.</p>	<b>Burner does not ignite</b>	Gas supply failure	Check gas pressure. Check that the gas valve opens or whether any system safety valves have cut in
		Gas valve disconnected	Reconnect it
		Gas valve faulty	Replace it
		PCB faulty	Replace it
	<b>Burner does not ignite: spark not generated</b>	Spark electrode faulty	Replace the spark electrode
		Ignition transformer faulty	Replace the ignition transformer
		PCB faulty	Replace the PCB
	<b>Burner ignites for a few seconds and then goes off</b>	PCB does not detect the flame: phase and neutral connections are inverted	Verify correct neutral and phase connections to the power mains
		Flame detection electrode wire faulty	Reconnect or replace the wire
		Flame detection electrode faulty	Replace the electrode
PCB does not detect flame		Replace the PCB	
Ignition value setpoint too low		Increase value setpoint	
Min. heat input not set correctly		Check burner setting	
<p>The boiler has locked out. The symbol  is displayed and code E02 flashes. Turn selector 2 to RESET to resume boiler operation.</p>	<b>Boiler safety thermostat has cut in</b>	CH water does not flow: pipes might be clogged, thermostatic valves might be shut, system stopcocks might be closed	Check the CH system
		Pump blocked or faulty	Check the pump
<p>The boiler has locked out. The symbol  is displayed and code E03 flashes. Turn selector 2 to RESET to resume boiler operation.</p>	<b>One of the boiler safety thermostats has cut in</b>	Difficult draught at chimney	Check the chimney and ambient air suction grids
		Flue gas thermostat faulty	Replace it
<p>The boiler has locked out. The symbol  is displayed and code E05 flashes. Operation is resumed automatically when the cause of shutdown has been removed.</p>	<b>CH probe not working</b>	CH probe disconnected	Reconnect it
		CH probe faulty	Replace it
<p>The boiler has locked out. The symbol  is displayed and code E10 flashes. Operation is resumed automatically when the cause of shutdown has been removed.</p>	<b>Insufficient water in the system</b>	Possible water leaks	Check the system for leaks
		Main flow switch disconnected	Reconnect it
		Main flow switch faulty	Replace it



BOILER STATUS	PROBLEM	POSSIBLE CAUSE	SOLUTION
<p>The boiler has locked out. The symbol  is displayed and code E12 flashes. Operation is resumed automatically when the cause of shutdown has been removed.</p>	<b>Water heater probe not working</b>	Water heater probe disconnected	Reconnect it
		Water heater probe faulty	Replace it
<p>The boiler does not work properly. The symbol  is displayed and code E17 flashes. Operation is resumed automatically when the cause of shutdown has been removed.</p>	<b>Combustion fan not working</b>	Fan disconnected	Reconnect it
		Fan faulty	Replace it
<p>The (optional) remote control is switched off. The symbol  is displayed and code E22 flashes. Operation is resumed automatically when the cause of shutdown has been removed.</p>	<b>No communication with remote control</b>	Cable between boiler and remote control disconnected	Reconnect it
		Remote control faulty	Replace it
<p>The symbol  is displayed and code E23 flashes. Operation is resumed automatically when the cause of shutdown has been removed.</p>	<b>External probe not working</b>	External probe disconnected	Reconnect it
		External probe faulty	Replace it







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The manufacturer reserves the right to modify the products  
as it deems necessary and useful, without affecting their basic features.