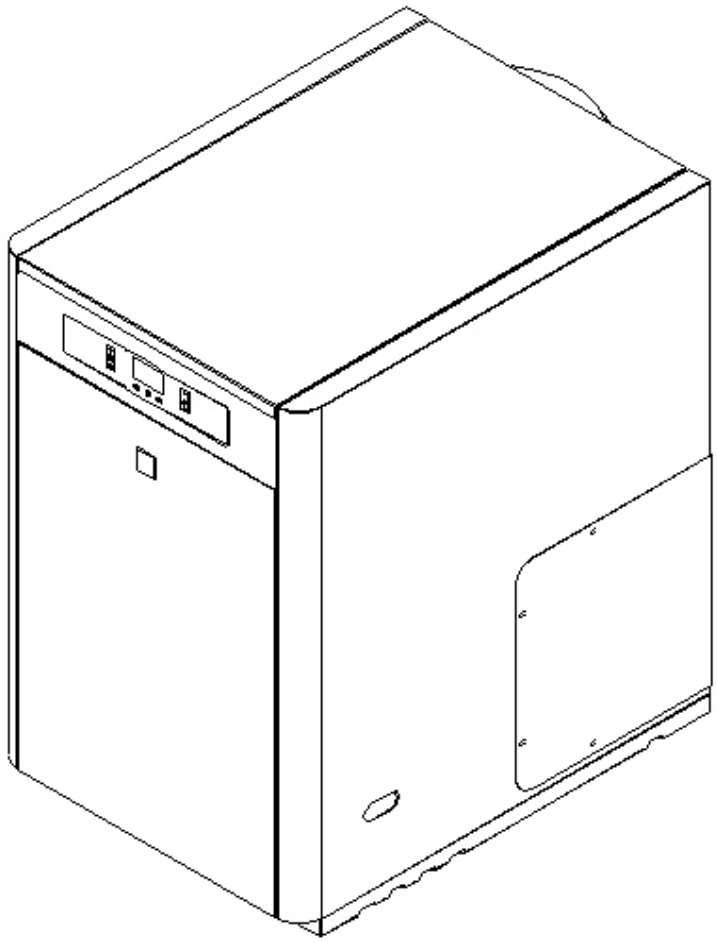
TRIANCO

INSTALLATION AND OPERATING INSTRUCTIONS

TRO EVOLUTION COMBI



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1. PRESENTATION

Thank you for choosing a **TRIANCO** heating boiler. You have chosen a boiler that, with a suitable hydraulic installation and using oil for fuel, will provide the ideal level of comfort for your home.

This manual forms an essential part of the product and it must be given to the user. Read the warnings and recommendations in the manual carefully, as they contain important information on the safety, use and maintenance of the installation.

These boilers must be installed by qualified personnel only, in accordance with the legislation in force and following the manufacturer's instructions.

The start-up of these boilers and any maintenance operations must only be carried out by Official Technical Assistance Services of **TRIANCO**.

Incorrect installation of these boilers could result in damage to people, animals or property, and the manufacturer will hold no liability in such cases.

TRIANCO informs all parties concerned that, in compliance with section 1 of the first additional provision of Law 11/1997, the responsibility for delivering packaging waste or used packaging for its proper environmental management will be that of the final owner of the product (Article 18.1 Royal Decree 782/1998). At the end of its useful life, the product must be taken to a selected collection point for electrical and electronic equipment or must be returned to the distributor at the time of purchasing a new equivalent appliance. For more detailed information on the collection schemes available, contact either the collection facilities of the local authority or the distributor where the purchase was made.

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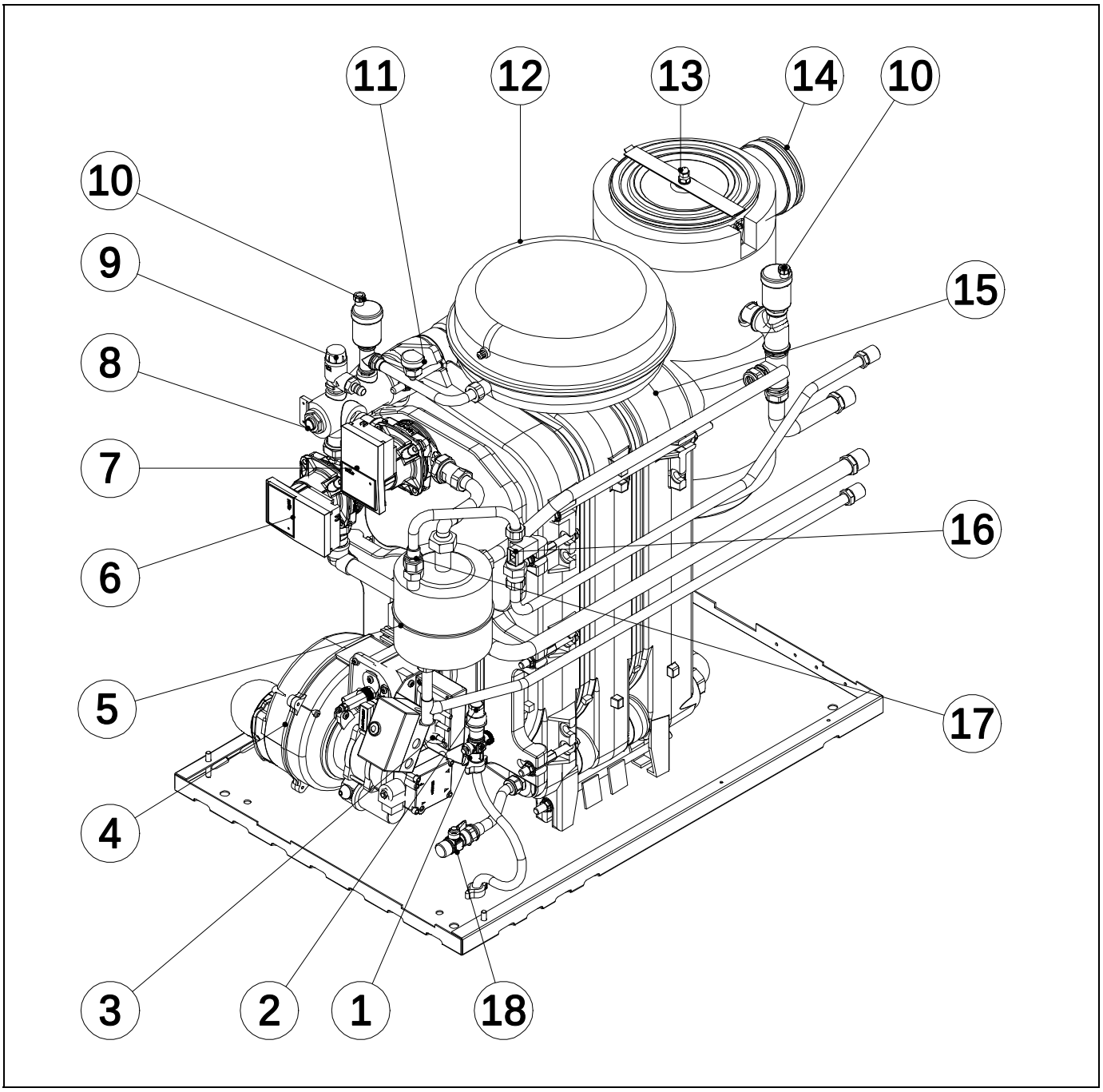
2. DESCRIPTION OF COMPONENTS



1. Filling valve..
2. Reducing socket.
3. DHW temperature sensor
4. Balance flue burner.
5. DHW exchanger.
6. Heating pump.
7. DHW pump.
8. Boiler temperature sensors.
9. Safety valve.
10. Automatic air vent.
11. Pressure sensor.
12. Expansion vessel.
13. Condensator INOX.
14. Flue gases outlet.
15. Cast iron corp.
16. DHW flow switch.
17. DHW flow limiter.
18. Blowoff valve.

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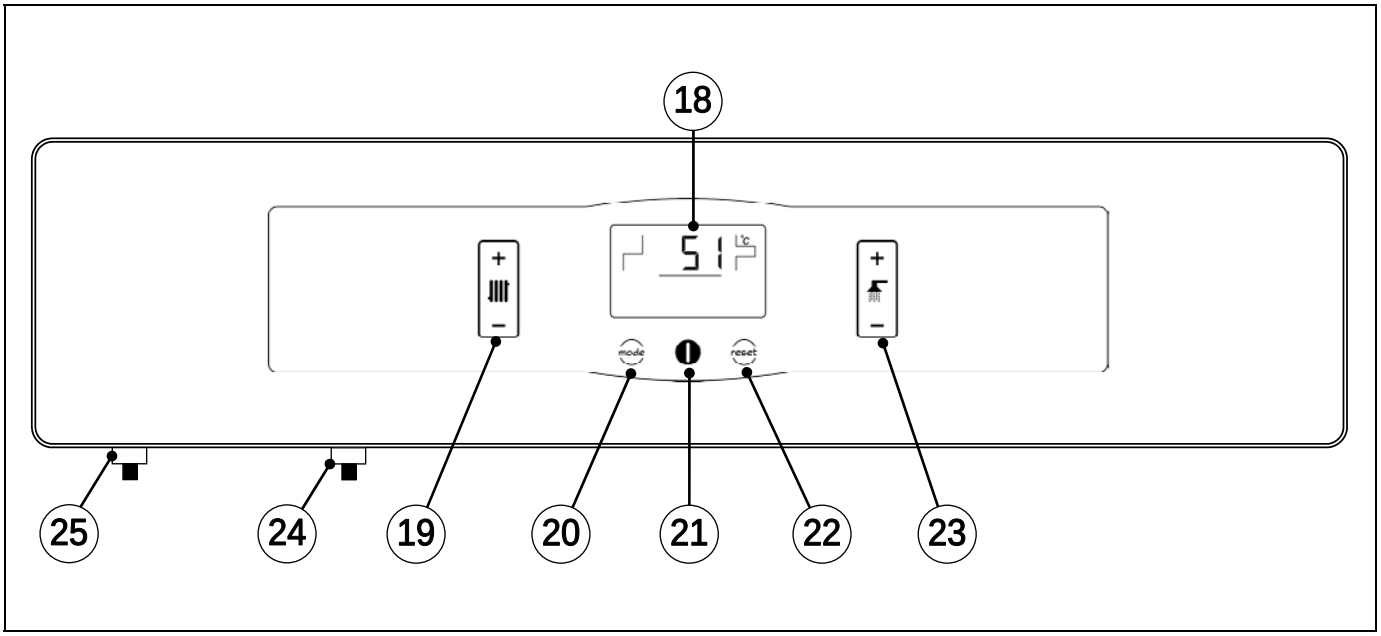
3. CONTROL ELEMENTS



18. Digital display:

This is the boiler functioning display, on which all the operating information, settings and values appear. In standard operating mode (default display), the actual boiler temperature is shown. If any malfunctioning should occur, the corresponding alarm code will appear on the digital display.

19. Boiler temperature touch button:

This is used to select the boiler setpoint temperature. If **oFF** is selected, the heating function is disabled. To select the desired temperature, simply place your finger on the "**+**" or "**-**" symbols on the touch button to increase or decrease the desired boiler temperature.

20. MODE touch button:

When this button is touched the different boiler temperatures appear on the digital display.

21. ON touch button:

If you place your finger on this button for 1 second the boiler will switch on or off.

22. RESET touch button:

If the boiler is in lock-out mode as the alarm has been triggered, touch the RESET button to reset the lock-out and restore functioning.

If you are modifying any of the settings or browsing the user menu, you may touch the RESET button to exit the menu WITHOUT SAVING and return to the previous menu level.

23. DHW temperature touch button:

This is used to select the setpoint temperature for domestic hot water. If **oFF** is selected, the DHW function will be disabled. To select the desired temperature, simply place your finger on the "**+**" or "**-**" symbols on the touch button to increase or decrease the desired DHW temperature.

24. Boiler safety thermostat:

This is a cut-out mechanism to ensure the boiler temperature does not exceed 110ºC.

25. Fume safety thermostat:

This safety thermostat operates when the temperature of the combustion products exceeds 110ºC, in order to protect the polypropylene duct.

4. INSTALLATION INSTRUCTIONS

The boiler must be installed by personnel authorised by the Department of Industry in accordance with the applicable regulations and standards in force. However, the following recommendations must be complied with when installing the boiler:

4.1 Location

The boiler must be installed in a sufficiently ventilated site. **It is essential to leave a space at the top of the boiler** so that it is accessible for maintenance operations. It must therefore not be installed under a fixed worktop or any other obstacle preventing access.

4.2 Hydraulic installation

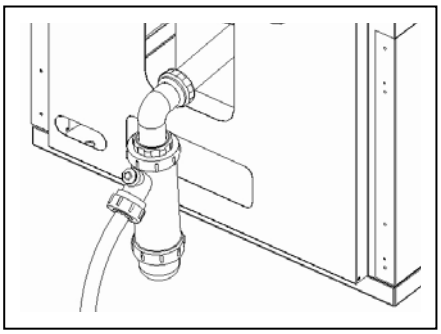
The hydraulic installation must be made by qualified personnel. The applicable installation legislation is to be complied with, and the following recommendations should also be taken into account.

- The inside of the installation piping should be thoroughly cleaned before switching on the boiler.
- We recommend inserting cut-off valves between the installation piping and the boiler to simplify maintenance tasks.

-The hose connected to the pressure relief valve is installed on a provisional basis.

The discharge pipes should be fitted in accordance with the current edition of the Building Regulations.

- If a shut-off valve is fitted at the DHW inlet, it must have a safety valve incorporated, calibrated to 9 bar.
- For correct boiler functioning, there must be a pressure of at least 0.5 bar in the domestic hot water circuit.
- Before starting up the unit, it is essential to install the condensation siphon supplied with the boiler documentation on the condensation drain tube on the back of the boiler.
- **The condensation pipe should lead to a drain outlet**, as the Evolution boiler is a condensation boiler and a large amount of water may be generated. This connection should be made in accordance with the regulations for draining off condensation water to the drain network.
- Fill the siphon with water before starting up the unit, to prevent fumes coming out of it.



4.3 Electrical Connection

The boiler is equipped for connection at 230 V~, 50 Hz to terminals **1** and **2** of terminal strip **J1** (see *Electrical Connection Diagram*). **Remember to earth the appliance.**

The boiler has two terminal strips, **TA_1** (J5) and **TA_2** (J7) for connecting room thermostats or room chronothermostats (see "*Electrical Connection Diagram*") for remote control of heating circuits 1 and 2 respectively. To correctly connect the room thermostats, firstly remove the bridge joining the terminals of terminal strip **TA_1**. For connection to **TA_2**, simply connect the thermostat to the terminal strip.

4.4 Fuel installation

The **TRO Evolution Combi** boiler is supplied with a **Domestic** sealed oil burner ***(4)*** (see model in "Technical Characteristics"). For the fuel installation, proceed in accordance with the burner instructions enclosed with this manual (see "Burner" section). The oil line installation and start-up of the burner must be carried out by qualified, authorised personnel.

4.5 Combustion products exhaustion

The installation of exhaustion of the products of combustion has to be carried out by qualified personnel staff and it will fulfil the requirements demanded in the legislation and effective regulatory schemes.

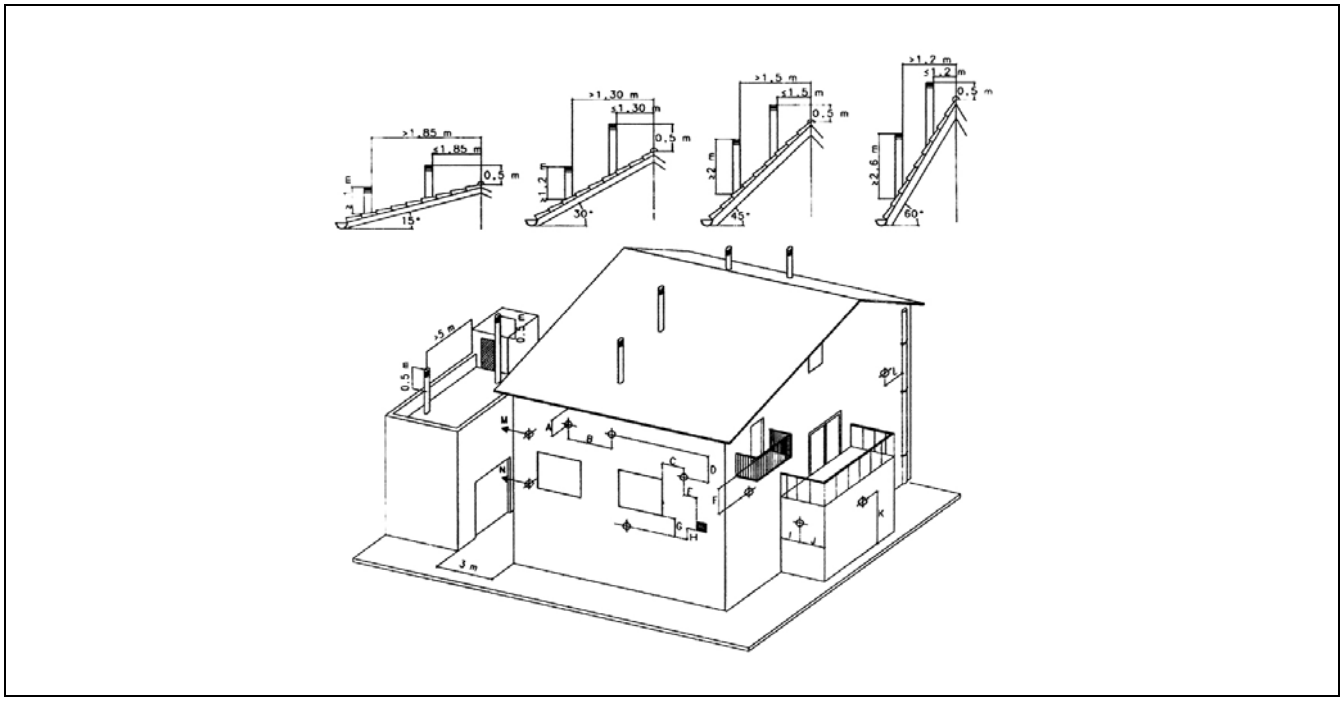
The **TRO Evolution Combi** boilers are balanced flue oil boilers, so that the combustion products exhaustion is carried out by means of an outlet duct and an air intake from outside. It is recommended that the position at the exhaustion duct exterior portion should be in accordance with the data of the following figures and table:

Position of the exhaustion duct	**Minimum distance mm**
A under a cornice	300
B between two horizontally-arranged ducts	1000
C from a next window	400
D between two vertically-arranged ducts	1500
E from a next venting grid	600
F under a balcony (*)	300
G under a window	600
H under a venting grid	600
I from a break back of a building	300
J from an angle of a building	300
K from the floor level	2500
L from a vertically/horizontally-arranged outlet or pipe (**)	300
M from a front surface at a distance of 3 metres from the exhaust gas outlet	2000
N like the previous one, but with opening	3000

(*) In so far the balcony width does not exceed 2000 mm.

(**) If the pipe constructive materials were sensitive to the action from the flue gases, this distance should be longer than 500 mm.

ATTENTION: All the fittings used in the combustion products exhaustion and air intake are to be those supplied by TRIANCO firm.



4.6 Installing the SRFM2/EV Underfloor Heating Kit (Optional)

The procedure for suitably connecting the SRFM2/EV Underfloor Heating Kit to the **TRO Evolution Combi** boiler is as follows:

- **Unplug the boiler from the mains.**
- Connect a flow temperature sensor (supplied with the kit) to sensor terminal strip **J3** (terminals 15 and 16), first removing the resistance (**Rr**) supplied by default (see "Electrical Connection Diagram").
- Fit the temperature sensor bulb according to the instructions enclosed with the kit.
- Connect the heating pump to supply terminal strip **J2** on the circuit 1 pump connection (pump BC_1; terminals N and 7) (see "Electrical Connection Diagram").
- Connect the pump´s PWM_C cable to sensor terminal strip **J3** (terminals 13 and 14) (see "Electrical Connection Diagram").
- Connect the 3-way mixer valve motor to supply terminal strip **J2** (terminals N, 8 (+) and 9 (-)) (see "Electrical Connection Diagram").

For correct hydraulic installation, carefully follow the assembly and connection instructions enclosed with the SRFM2/EV kit.

4.7 Installing heating circuit 2 (Optional)

All the models in the **TRO Evolution Combi** range of boilers are supplied with a circulation pump connected to heating circuit 1 (BC_1). In addition to this circuit, all the models are designed to control a second heating circulation pump in a second heating circuit (circuit 2, BC_2).

The hydraulic installation of heating circuit 2 should be made using the **optional flow circuit (IC')** on the rear of the boiler (see "Diagrams and Measurements"). If there is an SRFM2/EV underfloor heating kit connected to the optional flow IC', heating circuit 2 should be connected at the additional sockets provided in the kit (on the boiler T-connectors).

The circulation pump installed in heating circuit 2 must be electrically connected between terminals N and 6 on the supply connector block **J2** (see "Connection Diagram").

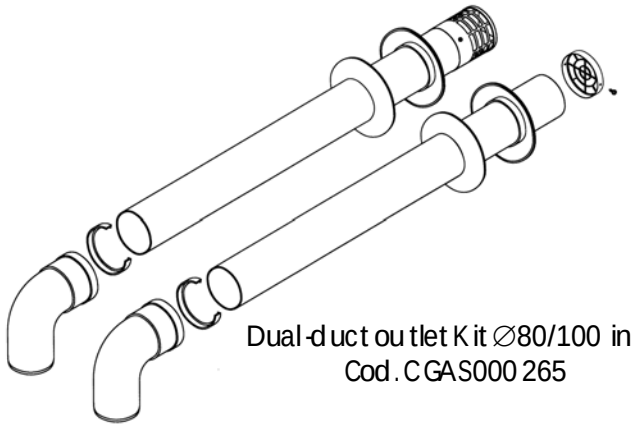
5. COMBUSTION PRODUCTS EXHAUSTION

5.1 Combustion products exhaustion and air intake dual-duct device ø80/ ø100 (typr C53)

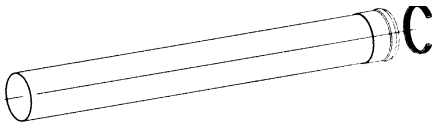
In this type, the combustion products exhaustion and air intake are carried out with separated pipes of ø80/100mm., by means of the dual-duct outlet Kits of ø80/100 code CGAS000265. It is the default type of exhaustion for **TRO Evolution Combi** boilers.

The **maximum length** of pipe that can be installed is 12 metres (TRO Evolution 40 Combi) and 15 metres (TRO Evolution 30 Combi), which is the result from adding the pipe metres for the air intake and those of the combustion products exhaustion. Each elbow of 90°, or two of 45°, reduces the available length by 1 metre and 1 metre in horizontal, reduces the available length by 2 metres.

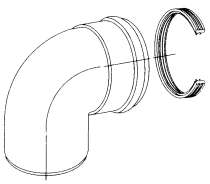
It is recommended that the flue gases outlet pipe be fitted slightly upwardly-inclined 2° to 3° thus preventing water and condensate projections from being ejected outside.



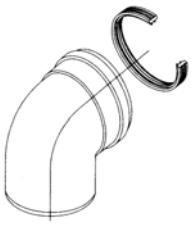
Dual-duct outlet Kit ∅80/100 inox
Cod. CGAS000265



1m. duct ∅80 inox Cod. CGAS000145
1m. duct ∅100 inox. Cod. CGAS000268
1 m. duct ∅100 PP Cod. CGAS000355

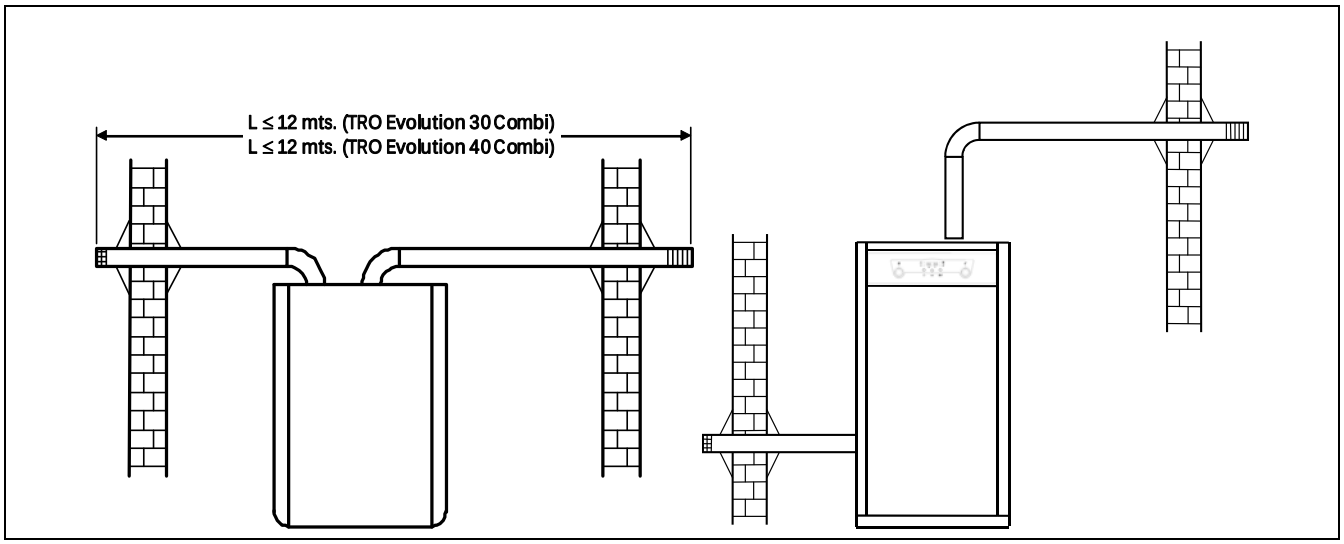


90º elbow ∅80 inox Cod. CGAS000147
90º elbow ∅100 inox Cod. CGAS000267
90º elbow ∅100 PP Cod. CGAS000358



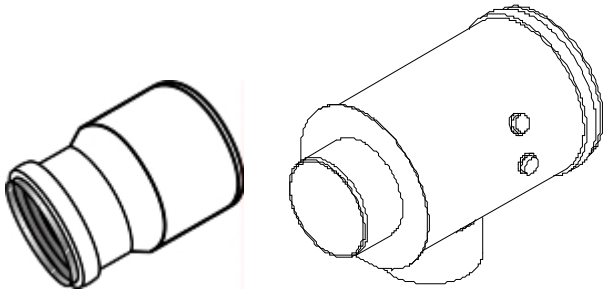
45º elbow ∅80 inox. Cod. CGAS000148
45º elbow ∅100 inox Cod. CGAS000266
45º elbow ∅100 PP Cod. CGAS000357

Examples of installation:



5.2 Double conduit to coaxial exhaustion transformation (Only for TRO Evolution 30 Combi)

The boiler **TRO Evolution Combi** is given prepared for the exhaustion of the products of combustion and air intake by means of the system of double conduit of Ø80. When you want to carry out the exhaustion of combustion gases by means of coaxial tube of Ø80/125, you will use for it a Kit adaptor for coaxial tube Ø80/125 (given under order) Code CGAS000213 +Cód. CGAS000222.

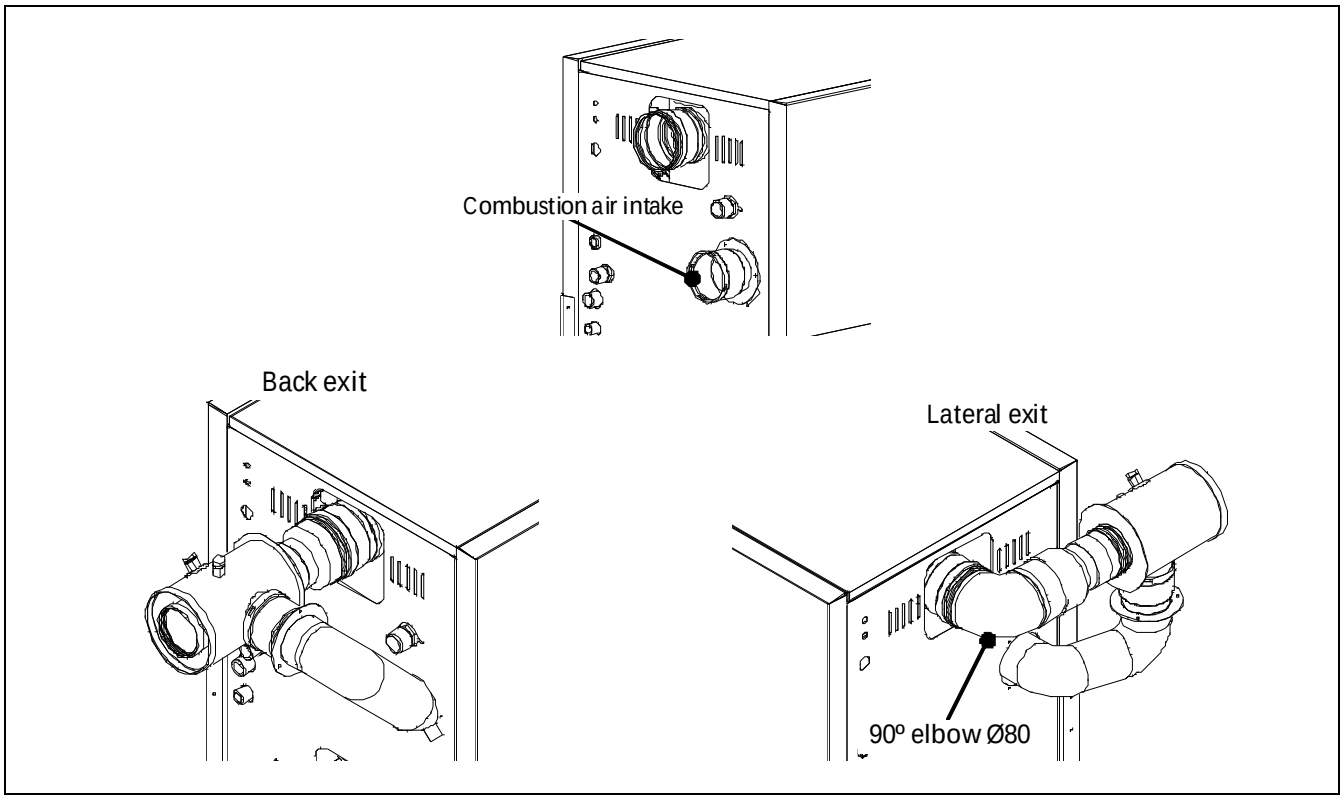


Kit adaptor for coaxial tube ∅80/125
Cod. CGAS000213+ Cod. CGAS000222

The transformation will be able to realize with two different mounting setups:

1. Back exit: it will be enough with disassembling the combustion air intake of the boiler, unscrewing the three screw, mount the adaptor in the exit of flue gases of the boiler backwards and using the flexible tube of entry of air, connect it to the adaptor.
2. Lateral or upwards exit: it will be realized in the same way, but to mount the adaptor kit laterally it is necessary to mount an elbow of 90º Ø80 (code CGAS000147), before the adaptor in the exit of flue gases.

In the following pictures they can observe both setups:

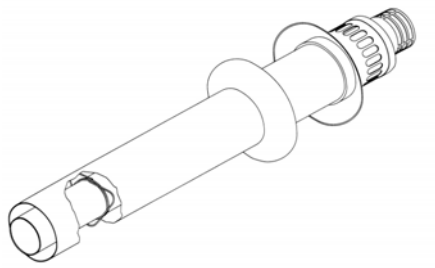


5.3 Combustion products exhaustion and air intake horizontally-arranged coaxial device ø80-125 (type C13) (Only for TRO Evolution 30 Combi)

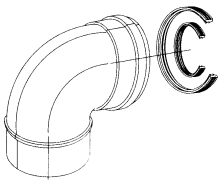
The combustion products exhaustion and air intake can be carried out through concentric pipes of Ø80 mm. for the combustion products exhaustion and Ø125 mm. for the air intake by means of the horizontally-arranged outlet Kit 1m Ø80-125 code CGAS000189.

The **maximum horizontal length** counted from the boiler, including the kit end, is 6 metres. Each elbow of 90°, or two of 45°, reduces the available length by 1 metre.

It is recommended that the flue gases outlet pipe be fitted slightly upwardly-inclined 2° to 3° thus preventing water and condensate projections from being ejected outside.



Horizontally-arranged outlet 1m ∅80/125
Cod. CGAS000189

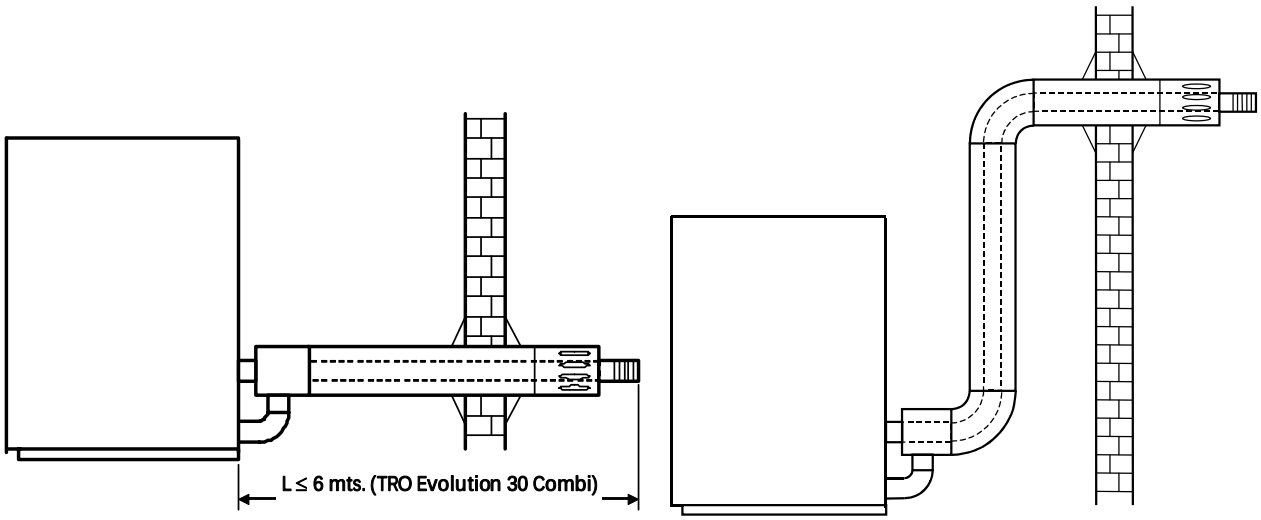


90º coaxial elbow ∅80/125
Cod. CGAS000182

1m coaxial duct ∅80/125
Cod. CGAS000184

45º coaxial elbow ∅80/125
Cod. CGAS000183

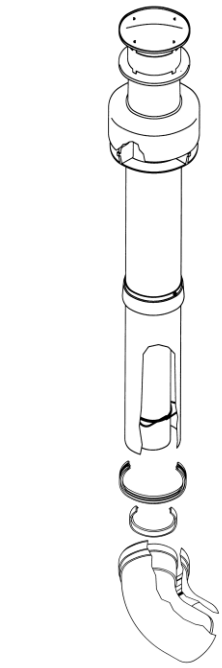
Examples of installation:



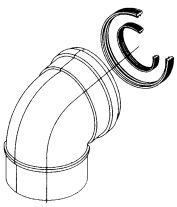
5.4 Combustion products exhaustion and air intake vertically-arranged coaxial device ø80-125 (type C33) (Only for TRO Evolution 30 Combi)

The combustion products exhaustion and air intake can be carried out through concentric pipes of Ø80 mm. for the combustion products exhaustion and Ø125 mm. for the air intake, by means of the vertically-arranged outlet Kit Ø80-125 code CGAS000231.

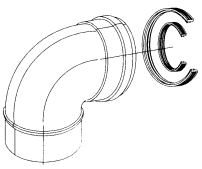
The **maximum vertical length** counted from the boiler, including the kit end, is 7 metres. Each elbow of 90°, or two of 45°, reduces the available length by 1 metre.



Vertically outlet ∅80/125
Cód. CGAS000231

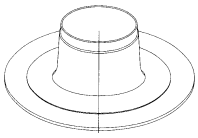


45º elbow ∅80/125
Cód. CGAS000183

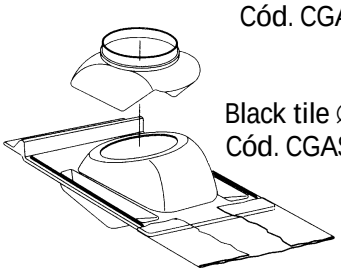


90º elbow ∅80/125
Cód. CGAS000182

1m coaxial duct ∅80/125
Cód. CGAS000184

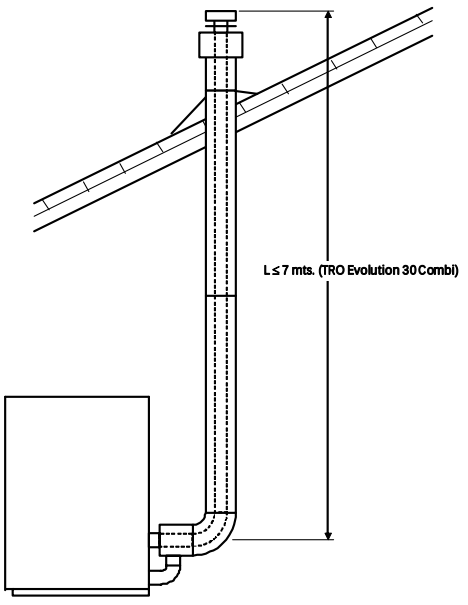


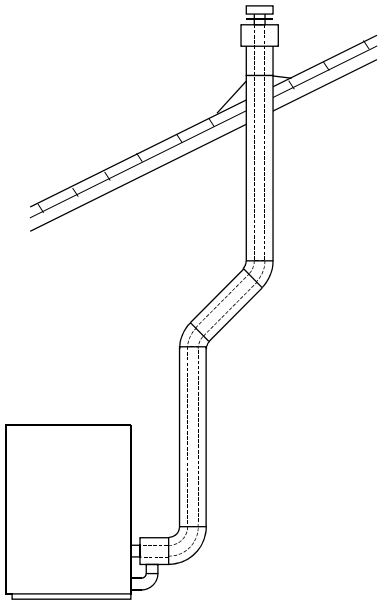
Black tile ∅80/125
Cód. CGAS000074



Black tile ∅80/125
Cód. CGAS000075

Examples of installation:





6. FILLING THE INSTALLATION

To fill the installation, open the fill valve ***(2)*** until a pressure of 1 - 1.5 bars appears on the *"boiler pressure"* setting on the display. The circuit should be filled slowly and with the automatic air bleed valve cap ***(10)*** loose, to let the air out of the installation. The air should also be bled from the rest of the installation using the air bleed valves provided. When the installation has been filled, close the fill valve.

TRO Evolution Combi boilers have a pressure sensor ***(11)*** for controlling the pressure of the installation. If the installation pressure drops below a minimum of 0.5 bar, the boiler will not switch on and a low pressure alarm will appear on the display (**"AP"**).

NOTE: Switching on the boiler with no water inside could result in serious damage.

7. DRAINING THE BOILER

The water is drained from the boiler by opening the air drain valve ***(1)*** inside the boiler (on the lower right hand side on opening the door). Connect a flexible tube to this valve and run it to a drain. After draining the boiler, close the valve again and remove the flexible tube.

8. SHUTTING DOWN THE BOILER

To switch off the boiler, place your finger on the power touch button ***(21)*** for 1 second. In **Off mode**, while the boiler is plugged into the mains and connected to the fuel installation, its heating and hot water functions will be switched off but the anti-frost protection and pump anti-block functions will remain activated.

To shut down the boiler functioning completely, unplug it from the mains and cut off the fuel supply.

9. FIRST START-UP

For the **guarantee to be valid**, the boiler must be started up for the first time by an **official TRIANCO Technical Assistance Service.** Before beginning start-up, the following must be complied with:

- The boiler must be electrically connected to the mains.
- The installation must be filled with water (1 - 1.5 bar must be indicated on the digital display).
- Fuel must be reaching the burner at a pressure of no more than 0.5 bar.

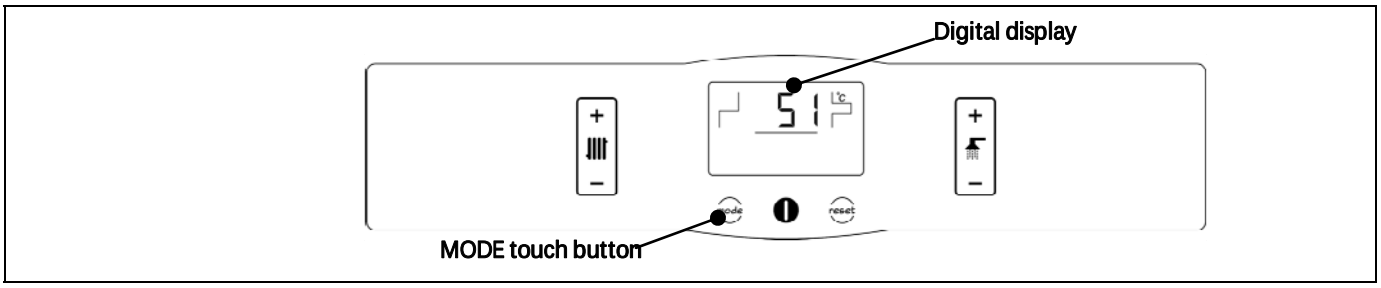
10. INSTALLATION DELIVERY

After the initial start-up, the Technical Assistance Service will explain to the user how the boiler functions, making any observations they consider relevant.

The installer is responsible for clearly explaining to the user the functioning of any control or regulation device forming part of the installation but not supplied with the boiler.

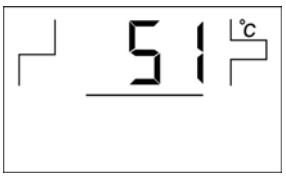
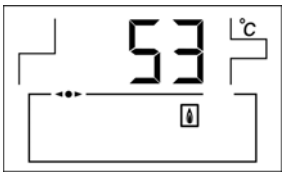
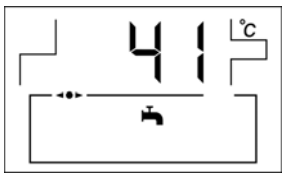
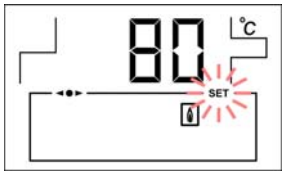
11. DIGITAL DISPLAY

The **TRO Evolution Combi** boiler is electronic and includes a digital display ***(18)*** showing the actual temperatures, the setpoint temperatures and the pressure of the installation. In standby mode, the actual boiler temperature in °C is shown on the display. The rest of the available display options can be browsed by touching the MODE button below the display, as follows:



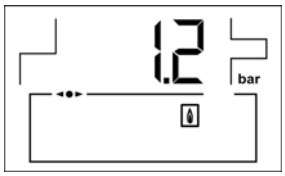
Repeatedly place your finger on the MODE touch button to select the different display options. When the desired option has been selected, it will return to standby after 20 seconds have elapsed.

The following table shows the different display options:

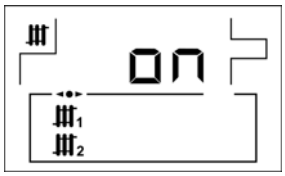
	Standby. The actual boiler temperature is shown.
	Actual boiler temperature.
	Actual Domestic Hot Water temperature.
	Actual flow temperature of the underfloor heating installation. (option SRFM2/EV only)
	Boiler setpoint temperature selected using the corresponding touch button ***(19)***.

Underfloor heating installation flow setpoint temperature selected using the corresponding touch button ***(19)***.
(option SRFM2/EV only)

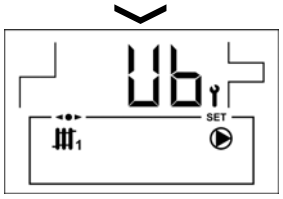
DHW setpoint temperature selected using the corresponding touch button ***(23)***.



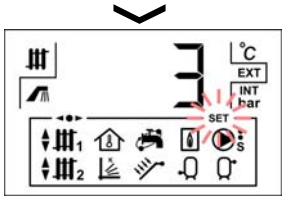
Actual boiler pressure, measured by the Pressure Sensor ***(11)***.



Indication of the heating demand status of each circuit connected to the boiler.



Setpoint of the heating pump speed **BC_1**.



The desired display contrast can be adjusted using the touch button on the right of the display ***(23)***.

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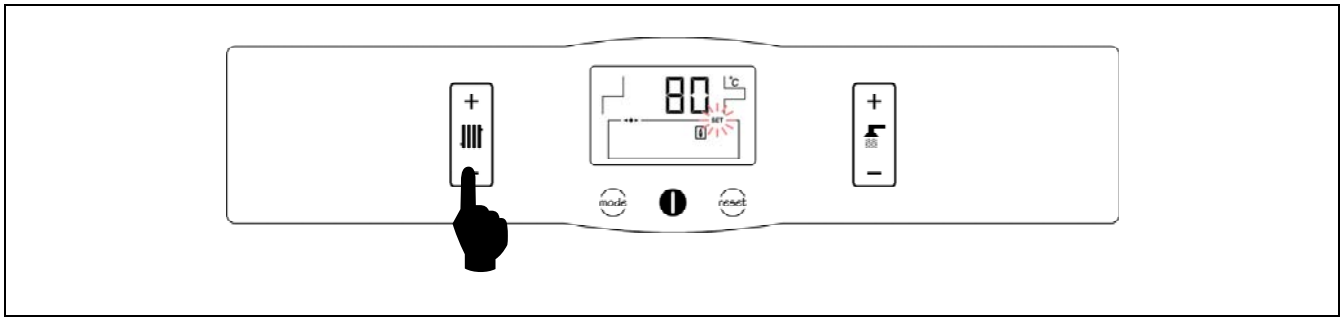
12. TEMPERATURE SELECTION

12.1 Selecting the boiler set point temperature



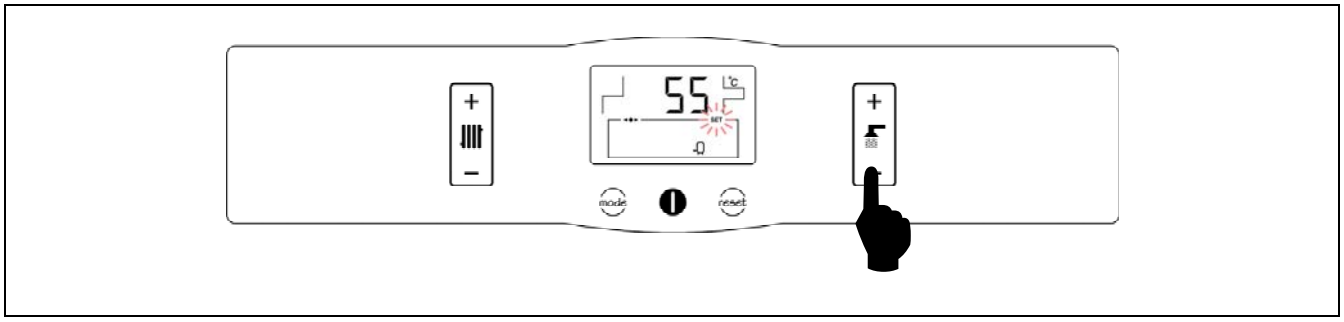
The desired boiler operating temperature is selected using the touch button, as shown in the figure. To select the desired temperature, touch the "**+**" or "**-**" symbols to increase or decrease the temperature respectively. When the temperature has been selected, the display will return to standby mode after a few seconds.

The boiler setpoint temperature can also be selected by using the MODE touch button to browse to the "*boiler setpoint temperature*" display option. When the display shows this option, touch the "+ /-" symbols to select the desired temperature.

If you wish to totally disable the boiler heating function (***Summer*** mode), select the setpoint value "**OFF**" by touching the "-" symbol until this value appears on the display.

The permitted boiler setpoint temperature range is OFF and 30 - 85 °C. **TRO Evolution Combi** model boilers are condensing boilers. In order to obtain maximum boiler performance and energy savings, it is therefore recommended to select a setpoint temperature of 55-70 °C, providing this is permitted by the heating system installed and the insulation conditions of your home.

12.2 Selecting the DHW setpoint temperature

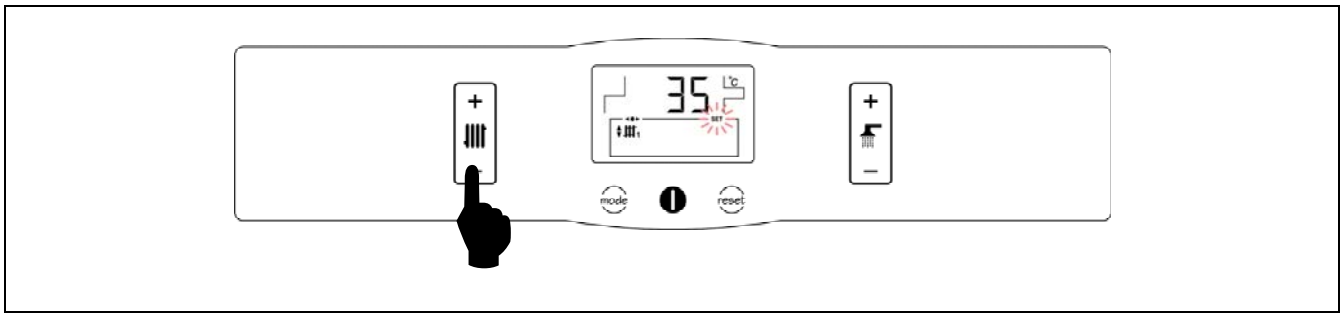


The desired DHW temperature is selected using the touch button, as shown in the figure. To select the desired temperature, touch the "**+**" or "**-**" symbols to increase or decrease the temperature respectively. When the temperature has been selected, the display will return to standby mode after a few seconds. The DHW setpoint temperature range permitted is OFF and 30 - 65 °C.

The DHW setpoint temperature can also be selected by using the MODE touch button to browse to the "*DHW setpoint temperature*" display option. When this option appears on the display, touch the "+ /-" symbols to select the desired temperature.

If you wish to totally disable the boiler's DHW production function, select the setpoint value "**OFF**" by touching the "-" symbol until this value appears on the display.

12.3 Selecting the Underfloor Heating flow setpoint temperature (with SRFM2/EV kit option)



When the boiler is installed with the optional SRFM2/EV underfloor heating kit, the desired flow temperature of the installation can be selected using the touch button as shown in the figure above. To select the desired temperature, touch the "**+**" or "**-**" symbols to increase or decrease the temperature respectively. When the temperature has been selected, the display will return to standby mode after a few seconds.

The installation flow setpoint temperature can also be selected by using the MODE touch button to browse to the "*underfloor heating installation flow setpoint*" display option. When this option appears on the display, touch the "+ /-" symbols to select the desired temperature.

If you wish to disable the underfloor heating circuit function, select the setpoint value "**OFF**" by touching the "-" symbol until this value appears on the display.

The flow setpoint temperature range permitted is OFF and 0 - 45ºC. To obtain optimum performance from the underfloor heating system installed, we recommend selecting a setpoint temperature of 25 - 35 ºC, providing this is permitted by the heating system installed and the insulation in your home.

13. OPERATION

The **TRO Evolution Combi** boiler is designed to heat a heating installation and provide instantaneous domestic hot water. Optionally, an Underfloor Heating Kit (SRFM2/EV) and/or a second heating circuit, heating circuit 2, may be connected to the installation to improve its performance.

13.1 Heating Function

In this mode, the boiler can heat up the heating installation. To do this, select the desired boiler setpoint temperature (see *"Selecting the boiler setpoint temperature"*) and the temperature of room thermostat 1 (**TA1**) or remote control **E20** (if the boiler is equipped with these). The burner will switch on. When the boiler reaches 60ºC it is ready to heat up the heating installation and will start up the heating pump for this purpose. The burner will shut down when the boiler reaches the adjusted setpoint temperature. The heating pump and the burner will stop when the room temperature reaches or exceeds the temperature set on the installation's room thermostat (if it has one). If a hot tap is turned on, the instantaneous DHW production function will start up and provide constant domestic hot water at the selected DHW setpoint temperature.

The boiler heating function can be totally disabled (***Summer*** mode) by selecting "**OFF**" as the boiler setpoint value. In this operating mode, only the instantaneous DHW production function will remain enabled.

NOTE: When the heating function is disabled, circuit 2 will also be disabled if it is connected.

13.2 Domestic Hot Water production function

In this mode, the boiler provides instantaneous DHW. To activate this mode, select the desired DHW setpoint temperature (see *"Selecting the DHW setpoint temperature"*). The burner will ignite until the boiler reaches 60 ºC. If a hot tap is turned on, the instantaneous DHW production system will start up and provide constant hot water at the selected setpoint temperature.

The **TRO Evolution Combi** boiler is equipped with system for **modulating** instantaneous DHW production and **progressive adjustment** of the Domestic Hot Water consumption temperature:

- **The modulation** allows the boiler power to constantly adapt to the hot water consumption requirements at all times, without altering the efficiency of the boiler. Consumption savings are thus obtained together with improved boiler functioning and lower emissions.
- **Progressive electronic adjustment** of the DHW temperature, a system designed by **TRIANCO**, enables the DHW consumption temperature to be stabilised at the temperature selected using the button on the control panel, and a constant hot water temperature with no variations is obtained **regardless of the water flow required and the cold water inlet temperature at any given time.** This enables optimum hot water comfort and adaptation to each user's particular needs.

If you wish, you may totally disable the Domestic Hot Water production function by selecting "**OFF**" as the DHW setpoint temperature.

13.3 Functioning with an SRFM2/EV Underfloor Heating Kit (Optional)

The **TRO Evolution Combi** boiler may be used with an SRFM2/EV Underfloor Heating Kit (fitted to heating circuit 1). This kit basically consists of a motorised 3-way mixing valve, a circulating pump and an underfloor heating installation flow temperature sensor. For correct hydraulic installation, carefully follow the assembly and connection instructions enclosed with the kit.

The underfloor heating installation is worked by the electronic boiler control. The installation flow sensor is used to adjust the temperature, selecting the installation flow setpoint temperature using the boiler setpoint adjustment touch button on the control panel, between OFF, 0 and 45 ºC (see *"Selecting the Underfloor Heating flow setpoint temperature*"). In this operating mode, the electronic control sets the boiler setpoint temperature to 75ºC by default, and the installation flow temperature can be adjusted to the selected setpoint temperature using the mixing valve.

The boiler setpoint temperature can be changed using the MODE touch button to browse to the "*boiler temperature setpoint*" display option. When the display shows this option, touch the "+ /-" symbols to select the desired temperature.

If you wish, the SRFM2/EV Underfloor Heating circuit function can be totally disabled, by selecting "OFF" as the installation flow setpoint temperature.

NOTE: When the Underfloor Heating circuit function is disabled by selecting OFF as the setpoint temperature, only circuit 1 will be disabled. Circuit 2 will continue to function.

13.4 Heating circuit 2 functioning (optional)

All the models in the **TRO Evolution Combi** range of boilers have the option of controlling a second heating circuit. This requires the installation of a second circulation pump on the boiler. To correctly install this pump, carefully follow the instructions given in the "*Installing heating circuit 2*" section of this manual.

Heating circuit 2 will work with the selected boiler setpoint temperature (see "*Selecting the boiler setpoint temperature"*) and the temperature of room thermostat 2 (**TA2**) (if the boiler has one). The burner and the heating pump of circuit 2 (**BC_2**) will begin to function until the installation reaches the selected boiler setpoint temperature (or the temperature on room thermostat 2, if the unit has one). When the temperature of the installation drops below the selected boiler temperature, the burner will start up again, running the heating cycle.

NOTE: When the heating function is disabled, if OFF is selected circuit 2 will also be disabled.

14. ADDITIONAL FUNCTIONS

The **TRO Evolution Combi** boiler is equipped with an electronic control for efficiently regulating automatic boiler functioning. It also has the following additional control features:

14.1 Pump anti-block function

This function prevents the boiler circulation pumps from seizing up if they have been out of use for a long period. This system remains enabled while the boiler is plugged into the mains.

14.2 Anti-frost function

This function protects the boiler from freezing up during cold weather. If the boiler temperature drops to below 6 ºC, the heating circulation pump will start up. If the boiler temperature continues to drop and reaches 4 ºC, the burner will start up, heating the installation. When this function has been activated, it will continue working until the boiler reaches 8 ºC. This system remains on standby while the boiler is plugged into the mains.

14.3 Boiler pressure sensor function

This function prevents boiler failure caused by a low water level or excess pressure in the boiler. The pressure is detected by a pressure sensor ***(11)***, and its value appears on the control panel display (see *"Digital display").* If the pressure drops below 0.5 bar, the electronic control blocks boiler functioning and triggers the "**AP**" alarm on the display. If boiler pressure exceeds 2.5 bar, the "**HI**" warning will flash on the display to warn of the excess pressure. If this should occur we recommend calling the nearest **Technical Assistance Service**, and slightly draining the boiler.

14.4 Telephone relay connection

The **TRO Evolution Combi** boiler is designed to enable a phone relay to be connected for switching the boiler on and off. This feature allows the boiler to be switched on and off remotely, from any location, by means of a phone call. The relay is connected to the boiler via terminal strip **J6** (see "*Electrical Connection Diagram*"). When the telephone relay contact closes the boiler switches on. When the contact opens, the boiler switches off and remains in anti-frost protection and pump anti-block mode.

14.5 Room thermostat connection

The boiler has two terminal strips, **TA_1** and **TA_2**, for connecting room thermostats or room chronothermostats (J5 and J7, see "*Electrical Connection Diagram*"). This allows the heating mode for each circuit installed to be switched off according to the room temperature. To suitably connect them, first remove the bridge joining the terminals of terminal strip **TA_1**, and to connect **TA_2**, simply connect the thermostat to the terminal strip.

Installing a room thermostat will optimise the installation's performance, adapting the heating to the requirements of your home and obtaining enhanced comfort. Also, if the thermostat allows the hours of functioning to be programmed (chronothermostat), it can adapt the heating system to the hours of use of the installation.

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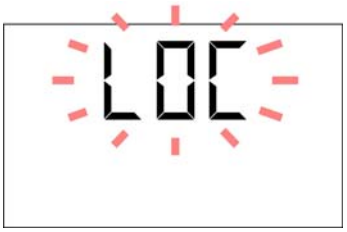
14.6 Keypad block function

This function protects the control panel from being accidentally or erroneously pressed while it is being cleaned, by children or by unauthorised persons. When this function is enabled, the electronic control will not react when any of the symbols or touch buttons on the control panel are pressed.

To lock the keypad, keep your finger on the RESET touch button for 5 seconds. The word "**LOC**" will flash on the display until the control panel is unlocked again.



To unlock the keypad, place your finger on the RESET touch button again for 5 seconds. The display will then return to its normal status.

15. E20 REMOTE CONTROL (OPTIONAL)

A remote control (E20) may optionally be supplied together with the **TRO Evolution Combi** boiler. This remote control can be used to fully operate the boiler from any room in the home it is installed in. The E20 remote control governs the settings of heating circuit 1 and the installation's domestic hot water production (where the case may be).

This remote control allows the hours of home comfort to be programmed for heating circuit 1, adjusting the installation to the particular requirements of the home by measuring the room temperature and consequently adapting the installation temperature. The remote control can also be used to adjust the DHW and heating setpoint temperatures at any time, and for viewing the different boiler operation settings. It also warns of any functioning anomalies affecting the boiler.

The E20 remote control may optionally be connected to an external sensor, for measuring the outside temperature. When this option is installed, the remote control can adjust the home comfort level (circuit 1) according to the weather conditions at each particular time, optimising fuel consumption and heating comfort in the home.

The E20 remote control takes over the control of the boiler when it is connected to it. The different selectable boiler temperatures must be modified using the remote control. It is easy to install, only requiring 2 wires for communication between the boiler and the E20 control. It is connected to the boiler by connecting the two wires on terminal strip **J4** (see "*Electrical Connection Diagram*"). For correct installation and functioning, carefully read the instructions enclosed with the remote control.

The following sections contain a general explanation of the E20 remote control's different operating modes and options.

15.1 Functioning without an outdoor sensor

Conventional heating installation (direct circuit)

The maximum temperature for heating circuit 1, the scheduled heating times and the desired room temperatures can be selected on the remote control. The E20 remote control will calculate the boiler temperature required at each particular time, depending on the temperature of the room, and it will activate or disable the heating mode of circuit 1 depending on the heating times and room temperatures programmed.

Installing heating with an SRFM2/EV underfloor heating kit (mixed circuit)

If the boiler has an SRFM2/EV Underfloor Heating Kit installed on circuit 1, the underfloor heating circuit is adjusted and controlled from the boiler control panel (see *"Functioning with an underfloor heating kit"*).

The E20 remote control can be used to programme the desired heating times and room temperatures.

15.2 Functioning with an external sensor (Optional)

If the E20 remote control is fitted with an outdoor temperature sensor, it can calculate the heating temperature of heating circuit 1 according to the outside weather conditions at each particular time, with optimum adjustment of the heating installation conditions for improved comfort in the home and energy savings.

Conventional heating installation (direct circuit)

The maximum temperature, an operating curve for heating circuit 1 (see instructions enclosed with the E20 remote control) and the desired heating times and room temperatures can all be selected on the remote control. The E20 remote control calculates the required boiler temperature at each particular time, depending on the temperature inside the home and the outside weather conditions, in accordance with the operating curve selected (setting HEATSLOPE 1 on the E20), switching the heating on and off in accordance with the heating times and the room temperatures programmed.

Heating installation with an SRFM2/EV underfloor heating kit (mixed circuit)

If the boiler has an SRFM2/EV underfloor heating kit installed on circuit 1 and the control of this kit is activated on the E20 remote control using the HEATSLOPE 2 setting (see instructions enclosed with the E20 remote control), the adjustment and control of the underfloor heating circuit flow temperature will be performed by the remote control. The E20 will calculate the required flow temperature at each particular time, depending on the temperature inside the home and the outside weather conditions, in accordance with the operating curve selected (the HEATSLOPE 2 setting on the E20 remote control). For mixed underfloor heating circuits, we recommend selecting operating curves of less than 0.8.

The boiler setpoint temperature will be fixed at 75ºC and can be changed using the boiler control panel. This setpoint temperature can be changed by using the MODE touch button to browse to the "*boiler temperature setpoint*" display option. When the display shows this option, touch the "+ /-" symbols to select the desired temperature.

The E20 remote control can also be used to select the maximum flow temperature for heating circuit 1 and to programme the desired heating times and room temperature. The E20 remote control will switch the heating function of this circuit on and off in accordance with the heating times and room temperatures programmed.

NOTE: For mixed underfloor heating circuits, we recommend selecting a maximum flow temperature NO HIGHER THAN 45 ºC, to protect the underfloor heating installation from overheating.

15.3 DHW mode functioning

The remote control can be used to select the DHW setpoint temperature and the desired DHW production times. The E20 remote control regulates the instantaneous hot water temperature at each particular time and enables or disables DHW mode in accordance with the times programmed.

15.4 Telephone relay function

The E20 remote control is designed for connection to an external telephone relay. If a telephone relay is connected to the E20 remote control, the heating mode of heating circuit 1 and the DHW mode can be switched on and off from anywhere in the world, simply by making a telephone call (see instructions enclosed with the E20 remote control).

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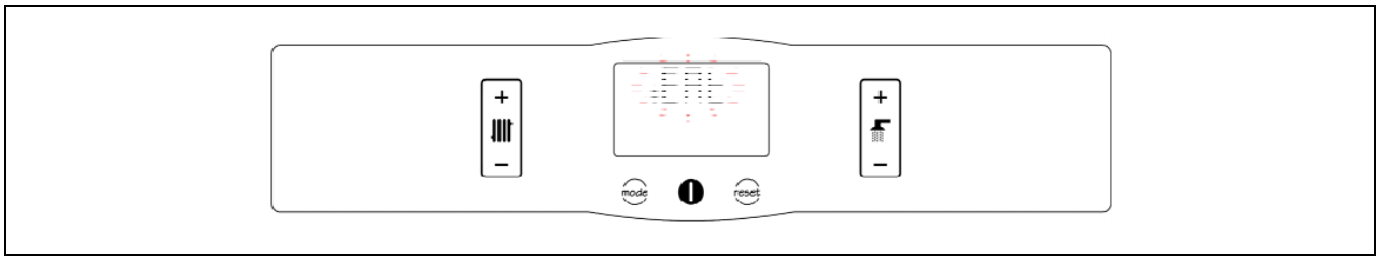
16. SAFETY CUT-OUTS

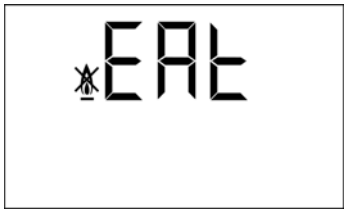
The boiler's electronic control system may activate the following safety cut-outs to stop the boiler functioning. When one of these safety cut-outs occurs, the boiler will stop functioning, a cut-out code will flash on the display and the red alarm warning pilot light will flash on the control panel.



If any of the safety cut-outs described below should occur repeatedly, switch off the boiler and call your nearest official technical assistance service.

16.1 Temperature safety cut-out

When this cut-out occurs, the alarm code **"EAt"** (temperature alarm) will begin to flash on the digital display ***(18)***. The burner will switch off and stop heating the installation.



This occurs when the boiler exceeds a temperature of 110 °C. To unblock it, wait until the boiler drops to below 100 °C and press the button on the safety thermostat, located inside the boiler on the underside of the electrical box, after first having removed the button cover.

16.2 Burner cut-out

When this cut-out occurs, the alarm code "**EAQ**" (burner alarm) will begin to flash on the digital display ***(18)***. The burner will switch off and stop heating the installation.

This occurs as a result of an anomaly in the burner ***(4)*** or in the fuel installation. To unblock it, press the illuminated button that lights up on the burner.

16.3 Low pressure cut-out

When this cut-out occurs, the alarm code **"EAP"** (pressure alarm) will begin to flash on the digital display ***(18)***. The burner and the boiler circulation pumps will switch off, cutting off the heating and water flow to the installation.

This occurs when the boiler pressure drops to below 0.5 bar, preventing the boiler from functioning when the water is drained from the installation, due to either leakage or maintenance operations. To unlock it, fill the installation again until a pressure of 1 - 1.5 bar appears on the "*boiler pressure*" setting on the display***(18)*** .

17. BOILER MAINTENANCE

To maintain the boiler in perfect working order, a yearly overhaul should be performed by **TRIANCO's authorised personnel**.

17.1 Cleaning the boiler

To keep the boiler in perfect working order, we recommend cleaning the boiler chamber, exhaustion ducts and condenser on a yearly basis. A cleaning brush of a suitable size for cleaning the inside of the exhaustion ducts is supplied with the boiler for this purpose. This brush is located at the rear of the boiler, beside the condenser.

The combustion chamber and exhaustion ducts should not be cleaned using chemical products or hard steel brushes. After any cleaning operation has been carried out, it is important to run several ignition cycles to check all the elements are functioning correctly.

For correct cleaning, the following recommendations should be carefully observed:

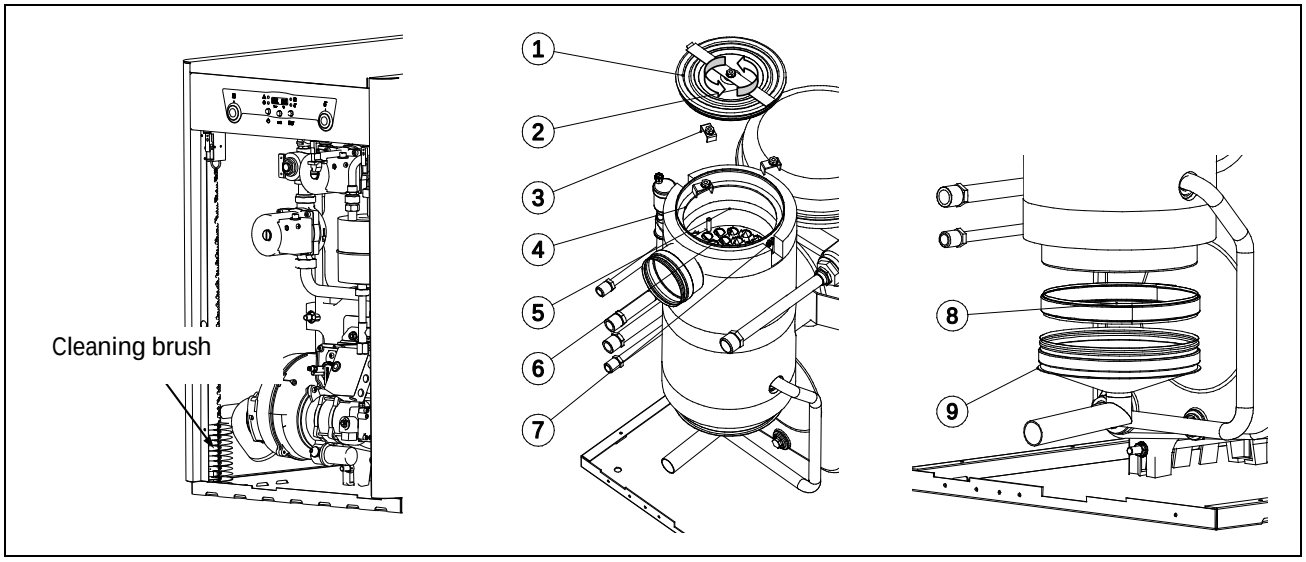
Cleaning the boiler body

- Open and remove the outer door of the boiler.
- Remove the burner ***(4)*** by unscrewing the fixing nut on the top of the burner.
- Remove the combustion chamber door and the exhaustion duct cover, unscrewing the six fixing nuts beside them.
- Clean the exhaustion ducts on the cast iron body, using the cleaning brush supplied with the boiler.
- Clean the boiler combustion chamber. We recommend using a soft brush for scraping the combustion chamber surfaces, and a blower to remove scale.
- After cleaning, replace the combustion chamber door, the exhaustion duct cover, the burner and the outer door of the boiler.

Cleaning the condenser

- Open and remove the top cover of the boiler to access the condenser on the rear of the boiler body.
- Open the top cover of the condenser (1) to access its exhaustion ducts. To open this cover, firstly release the two side closures (7), turn the locking plate (2) anti-clockwise and pull the cover upwards to remove it.
- Remove the fume deflectors (6) inside the fume outlets.
- Clean the exhaustion ducts using the cleaning brush supplied with the boiler. Scale could fall out of the lower condenser cover and come out of the condensation drain, and it is therefore recommendable to pour water into the top of the condenser, for more effective cleaning. This water will be automatically discharged through the condensation drain.
- To clean the outer part of the condenser cylinder, remove the three screws (3) and then remove the metal ring (4). Take out the seal (5) and use the brush to clean it. Then put the components back in place again and replace and tighten the three screws and the metal ring.

- If the lower condenser cover (9) needs cleaning, remove the side cover of the boiler to access it. Firstly remove the bracket (8) holding it in place and pull on it to open it. Then pull the lower cover down to open and clean it.
- After cleaning, replace the fume deflectors, the top condenser cover and the top outer cover of the boiler. Then put the cleaning brush back inside the boiler.
- The condensation siphon should be cleaned once a year. To do this, remove it and wash it in soapy water. Replace the siphon after cleaning.



17.2 Anti-frost protection

The **TRO Evolution Combi** boiler has a function for preventing frost damage to the installation. This will function as long as the appliance remains plugged into the mains. Despite this function, and particularly in areas with very cold weather, we recommend taking precautions in order to prevent damage to the boiler. It is advisable to add anti-freeze to the water in the heating circuit. If the boiler is to be out of use for long periods of time, we recommend **draining all the water and leaving it empty**.

17.3 Boiler water characteristics

In areas with water hardness of over 25-30°F, treated water must be used in the heating installation to avoid any scale deposits on the boiler. It should be noted that even a few millimetres of scale will greatly reduce the boiler's heat conductivity, causing a major drop in performance.

Treated water must be used in the heating circuit in the following cases:

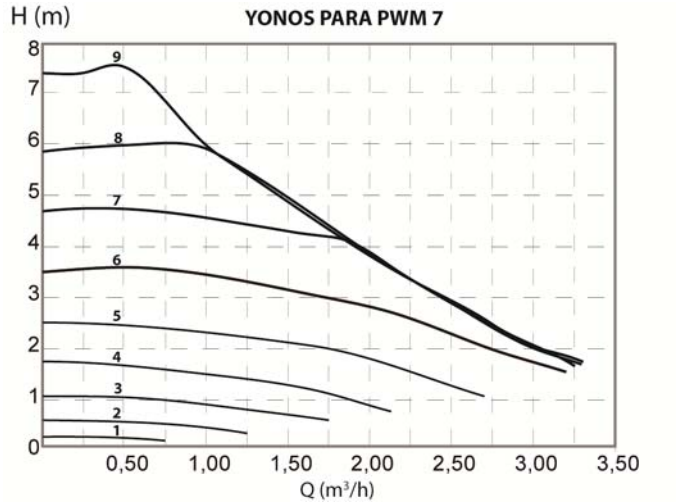
- Very large circuits (containing a large amount of water).
- Frequent filling of the installation.

If repeated partial or total draining of the installation is necessary, we recommend filling it with treated water.

18. CIRCULATING PUMPS FLOW CURVES

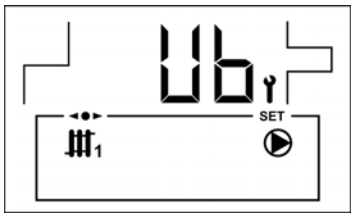
The hydrodriving pressure available in the installation at the boiler output can be deduced from the following graphs, having taken the boiler pressure drop into account.

18.1 Characteristic curves of the pump



18.2 Regulation of the circulation pump

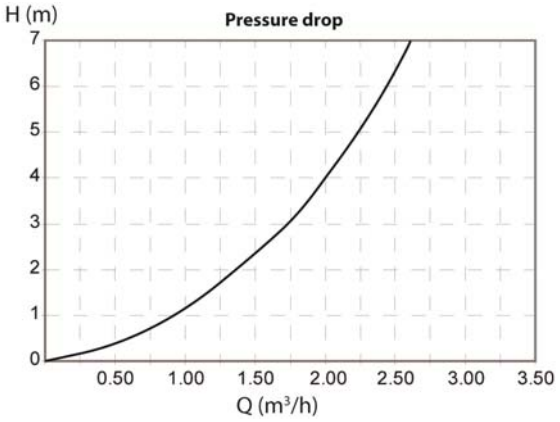
To regulate the speed of the circulation pump BC1 you should navigate to the "**UB**" parameter by touching MODE button and touch ON button **(21)** to access it. Once inside the setting, using the jog dial on the right side of the display **(23)** the value changes. After selecting the desired speed, touch the ON touch button to record the value and exit the parameter **"UB"**.



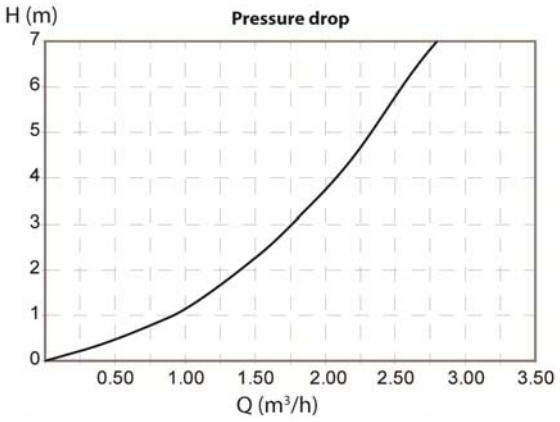
WARNING: Any interference in the operation and installation of the heating circuit must be done by authorised personnel, always respecting current legislation and installation safety standards, both national and local level.

18.3 Pressure drop

TRO Evolution 30 Combi:



TRO Evolution 40 Combi:



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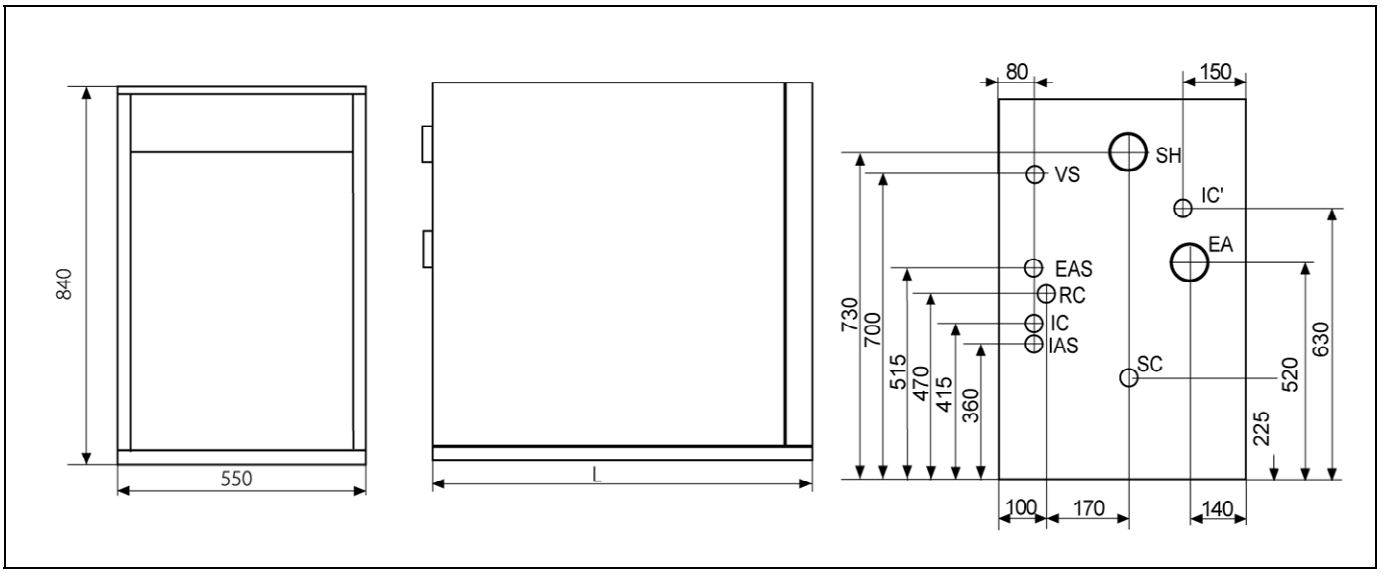
19. DIMENSIONS



IC: Heating outlet.

RC: Heating return.

EAS: DHW inlet.
IAS: DHW outlet.

VS: Safety valve.

SC: Condensate drainage, 1" H.

EA: Combustion air inlet, Ø80.
SH: Flue gases outlet.

MODEL	IC RC	EAS IAS	DIM. L
TRO Evolution 30 Combi	3/4"M	1/2"M	855
TRO Evolution 40 Combi	1"M		955

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20. TECHNICAL DATA

TRO EVOLUTION COMBI			**30**	**40**
Boiler type	-		**Condensation**	
			combi	
Rated heat output	P_{rated}	kW	30	40
Useful heat output	P_4	kW	28,7	38,7
Useful heat output (30%)	P_1	kW	8,5	12,4
Seasonal space heating energy efficiency	η_s	%	91	92
Useful efficiency	η_4	% (PCI)	97,96	97,29
		% (PCS)	92,38	91,74
Useful efficiency (30%)	η_1	% (PCI)	103,45	104,15
		% (PCS)	97,55	98,21
Auxiliary electricity consumption at full load	el_{max}	kW	0,226	
Auxiliary electricity consumption at part load	el_{min}	kW	0,078	
Auxiliary electricity consumption in standby mode	PSB	kW	0,001	
Standby heat loss	P_{stby}	kW	0,135	0,17
Emissions of nitrogen oxides	NOx	mg/kWh	118	119
Declared load profile	-		XL	XL
Water heating energy efficiency	η_{wh}	%	80	80
Daily electricity consumption	Q_{elec}	kWh	0,337	0,296
Daily fuel consumption	Q_{fuel}	kWh	24,110	24,630
DHW Production Δt = 30°C	l/min.		12,8	17,8
Heating temperature adjustment	°C		OFF, 30-85	
DHW temperature adjustment	°C		OFF, 15-65	
Maximum safety temperature	°C		110	
Maximum pressure for heating mode	bar		3	
Heating expansion vessel capacity	Lts		8	12
Heating water volume	Lts		19,2	23,2
Water pressure drop	mbar		163	272
Fume temperature	°C		67	83
Volume on fume side	m^3		0,114	0,175
Maximum fume flow	Kg/s		0,0132	0,0186
Fume pressure drop	mbar		0,20	0,21
Combustion chamber length	mm		300	400
Combustion chamber type	-		wet, three smoke steps	
Burner adjustment type	-		ON/OFF	
Electrical supply	-		~220-230 V - 50 Hz - 200 W	
Gross weight	Kg		160	190

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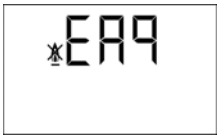
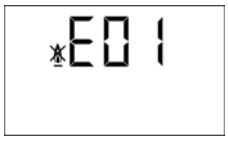
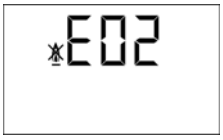
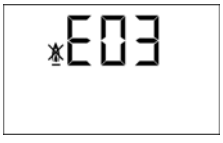
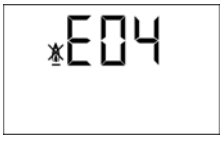
21. ALARM CODES

The boiler **Evolution EV HFM** is equipped by an electronic circuit able to sense, by means of a continuing autotest, the operation lockouts and alarms of the boiler. When the electronic control senses an operation error, indicates it showing an alarm code in the screen of the display. In the following list the possible alarm codes are described:

CODE	ALARM	DESCRIPTION
	Pressure	The pressure in the installation has dropped to below 0.5 bar. The boiler will cut out. To unblock it, fill the installation at a pressure of 1 - 1.5 bar. This alarm may be set off due to the water having been drained from the boiler or leakage in the installation. If this alarm occurs repeatedly, you should contact the nearest official technical assistance service.
	Temperature	The boiler has exceeded the safety temperature of 110 ºC. The boiler will cut out. To unblock it, press the safety thermostat button when the temperature has dropped. If this alarm occurs repeatedly, you should contact the nearest official technical assistance service.
	Burner	The burner has cut out. To unblock it, press the illuminated button on the burner ***(4)***. This alarm is set off when there is a functioning anomaly in the burner or the fuel installation. If this alarm occurs repeatedly, you should contact the nearest official technical assistance service.
	Boiler sensor	The boiler sensor ***(8)*** is damaged or disconnected. Contact your nearest official technical assistance service to have it replaced.
	DHW sensor.	The DHW sensor is damaged or disconnected. Contact your nearest official technical assistance service to have it replaced.
	SRFM2/EV flow sensor (only with SRFM2/EV kit)	The underfloor heating sensor is damaged or disconnected. Contact your nearest official technical assistance service to have it replaced.
	Pressure sensor	The pressure sensor ***(11)*** is damaged or disconnected. Contact your nearest official technical assistance service to have it replaced.

	Overpressure	This indicates that the water pressure in the boiler is over 2.5 bar, warning that the installation is in overpressure status. Boiler functioning will NOT cut out. To restore normal boiler functioning, drain the boiler until it reaches a pressure of 1 – 1.5 bar. If this warning occurs repeatedly, you should contact the nearest official technical assistance service.

NOTE: It will be very useful for the technical assistance service if you can inform them of the alarm code that has appeared on call-out.

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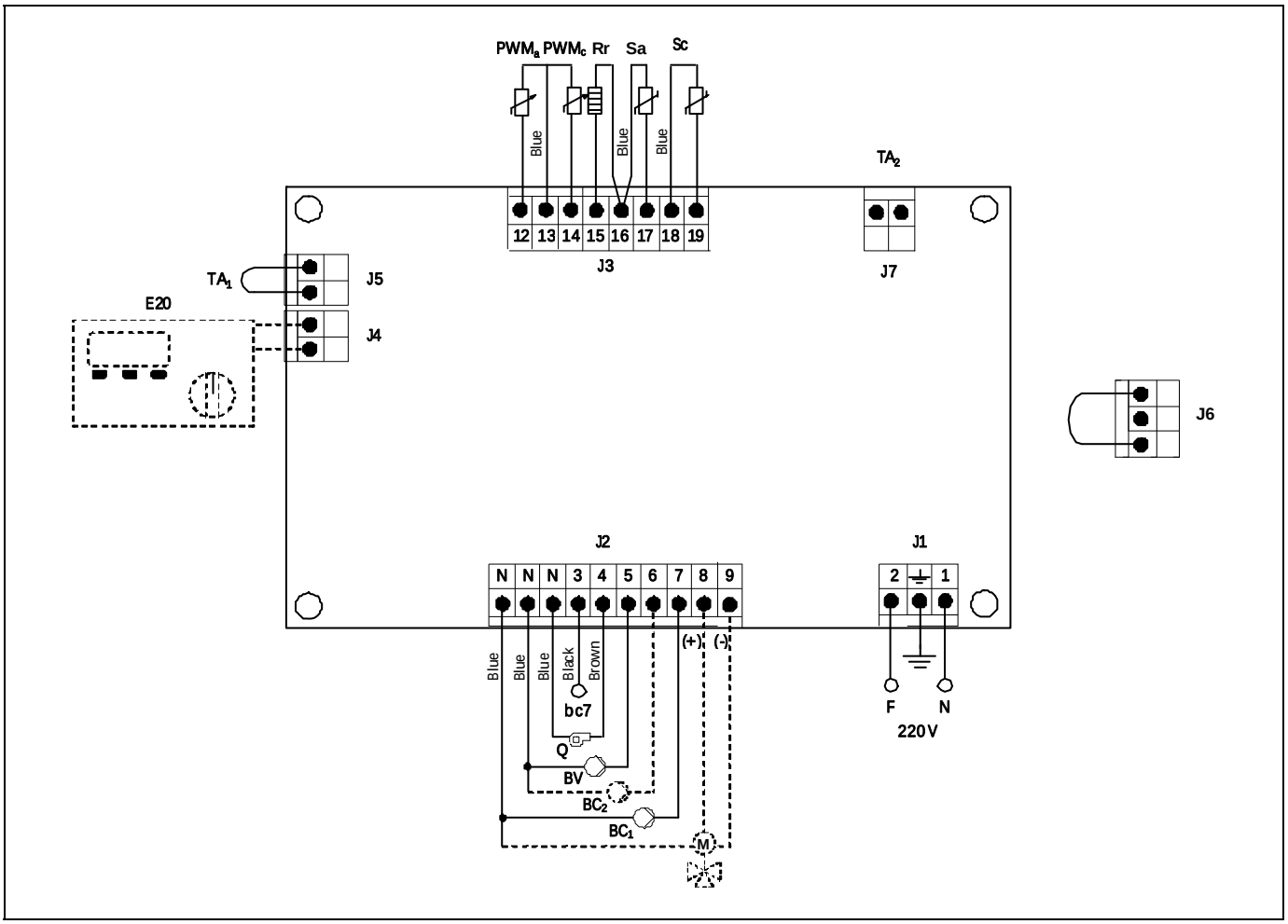
22. ELECTRICAL CONNECTION DIAGRAM

There are a series of removable connectors located on the rear of the control panel, for connecting the various options and components for this model. For correct connection, carefully follow the indications shown below:



Ph: Phase.

N: Neutral.

bc7: Burner terminal n. 7.

Q: Burner.

BV: DHW charge pump.

BC_1: Heating circuit N. 1 circulating pump.

BC_2: Heating circuit N. 2 circulating pump.

M: Underfloor 3 way valve motor.

E20: Remote control E20 (optional).

TA_1: Heating circuit N. 1 room thermostat.

TA_2: Heating circuit N. 1 room thermostat.

PWM_a: DHW PWM cable.

PWM_c: Heating PWM cable.

Rr: Underfloor heating option resistance.

Sa: DHW temperature sensor.

Sc: Boiler temperature sensor.

J1: Power supply connector.

J2: Components connector.

J3: Sensor connector.

J4: Remote control connector.

J5: Room thermostat N. 1 connector.

J6: Telephone relay connector.

J7: Room thermostat N. 2 connector.

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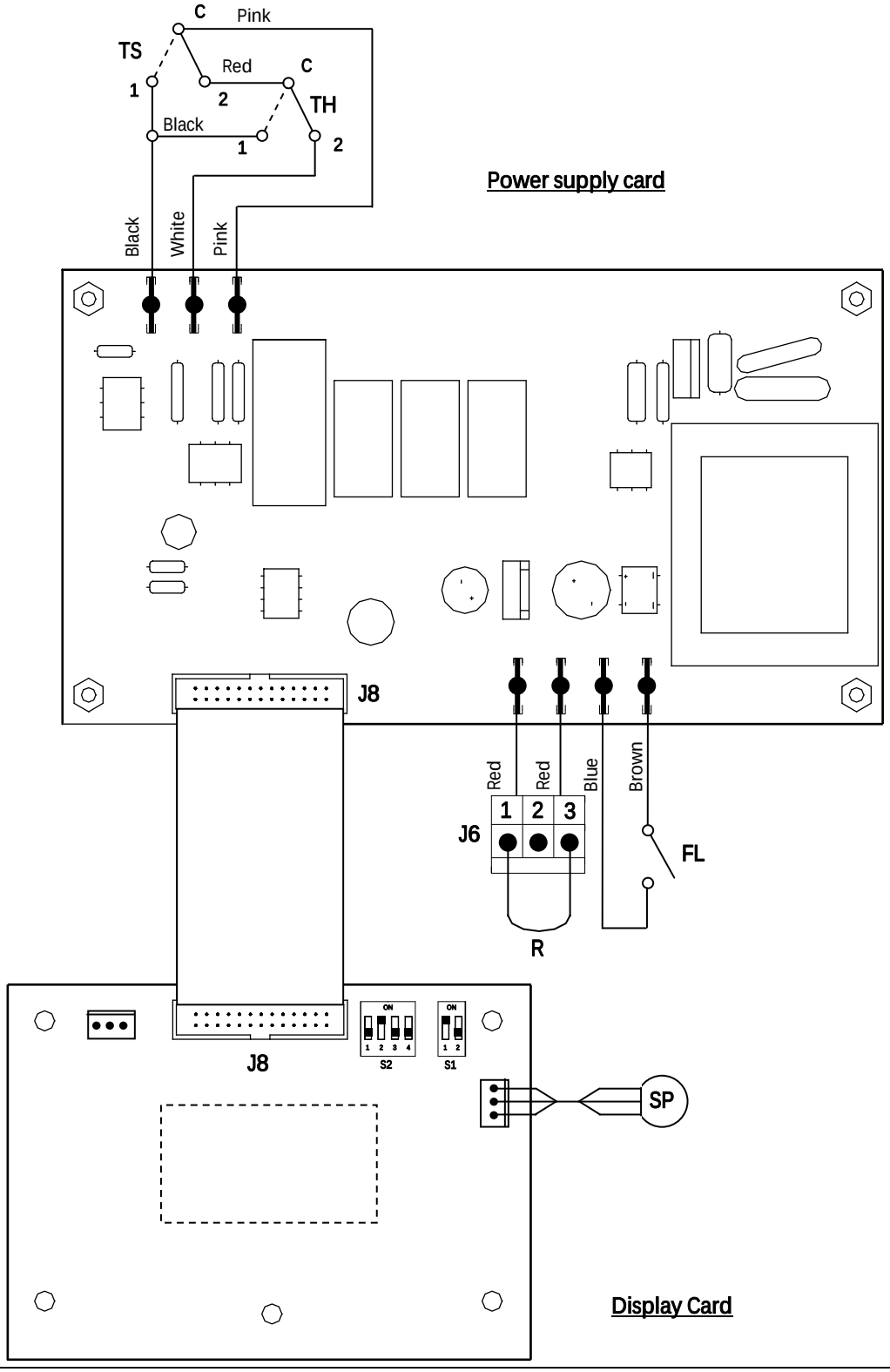
23. ELECTRICAL DIAGRAM



TS: Security thermostat.

TH: Fumes thermostat.

SP: Pressure sensor.

R: Phone relay.

FL: DHW flow switch.

J6: Phone relay connector.

J8: PCB's connector.

S1: Boiler model selection switches.

S2: Floor heating selection switches.

24. BURNER

24.1 Assembly

Fix the burner support to the boiler, then fix the burner to the support. This will allow the correct tilt of the flame tube towards the combustion chamber. Fit the intake and return tubes, inserting the oil filter in the intake tube.

24.2 Burner start-up

The **"Domestic"** burner is equipped with a self-extracting pump, enabling fuel intake from a tank installed at a lower level than the burner, provided the pressure difference measured with the vacuum gauge at the pump does not exceed 0.4 bar (30 cmHg).

Ensure there is fuel in the tank, that the oil valves are open and that there is an electric connection to the burner. Turn on the master switch. Unscrew the air bleed screw (manometer point). Then, when the valve opens, remove the photocell sensor and move it towards a light source until fuel comes out. Disconnect the burner and screw the bleed screw back in.

24.3 Adjusting the combustion conditions

As each particular installation has a different combustion circuit, it is essential to adjust the combustion conditions of each boiler. For the **guarantee to be valid**, the burner must be adjusted by an **official TRIANCO Technical Assistance Service**.

Observe the flame. If there is insufficient combustion air, it will be dark in colour and will produce smoke, obstructing the flue outlet.

On the contrary, if there is an excess of combustion air, the flame will be pale or bluish in colour. This will reduce the performance of the boiler and it will fail to comply with anti-pollution standards, and the excess air may also hinder the ignition process.

The flame should be orange in colour.

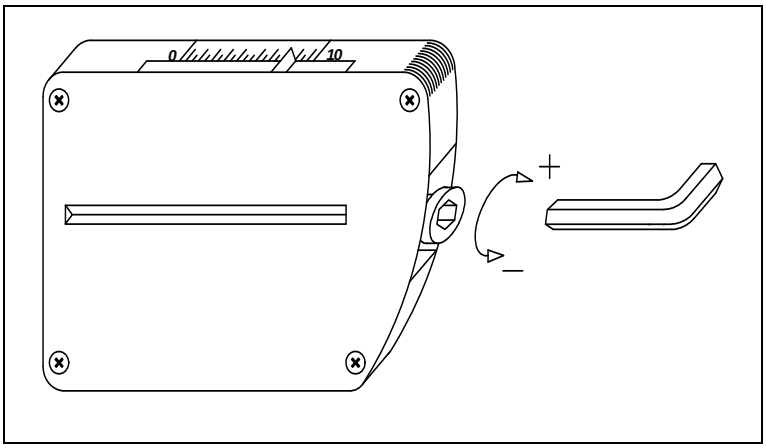
If the shape of the boiler makes it difficult or impossible to observe the flame, the combustion air flow can be regulated by observing the smoke coming out of the flue. If the smoke is dark in colour, more air will need to be provided to the burner, and if it is very white, the air in the burner will need to be decreased until no smoke at all is observed.

If you have a device for determining the composition of the combustion gases, this will be the best guide for flame adjustment. If not, simply follow the above indications.

To adjust the air and burner line conditions, carefully follow the instructions given below.

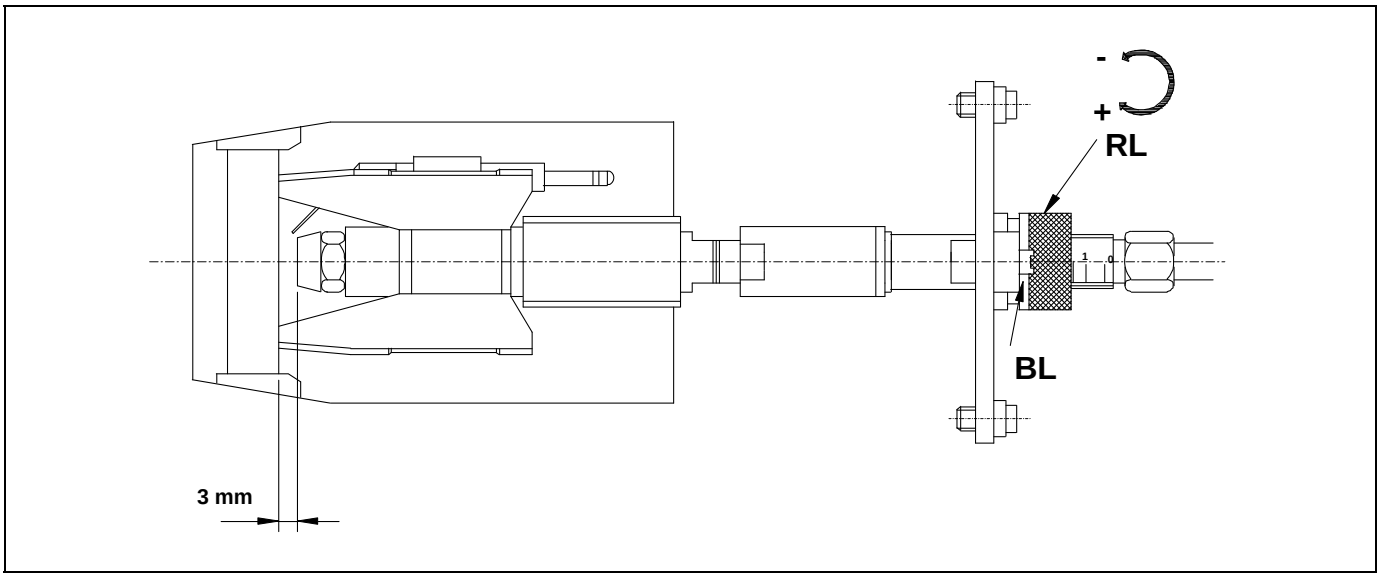
Primary air adjustment

To adjust the primary combustion air, turn the screw using a 6 mm. Allen key, as shown in the diagram. Turn it clockwise to increase the airflow, and anticlockwise to decrease it.



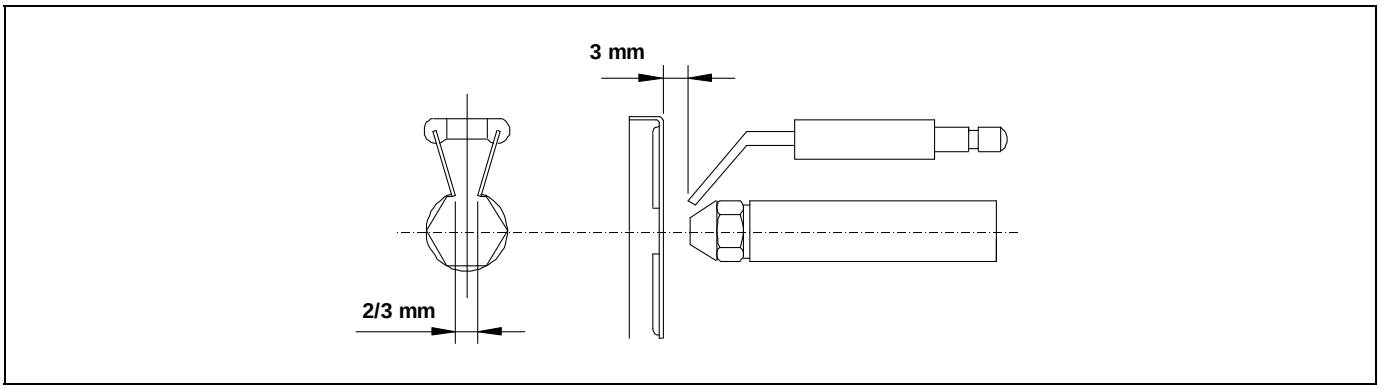
Combustion line adjustment

To adjust the combustion line, loosen the combustion line blocking screw **"BL".** Turn the line regulator **"RL"** clockwise to increase the airflow and anticlockwise to decrease it. After adjustment, tighten the combustion line blocking screw **"BL"**.



Correct position of electrodes

To ensure correct ignition of the **"Domestic"** burner, the measurements shown in the diagram must be observed. Also ensure the electrode fixing screws have been screwed in place before replacing the flame tube.



24.4 Oil pressure adjustment

To adjust the oil pump pressure, turn the screw ***(1)*** clockwise to increase the pressure, and anticlockwise to decrease it.

1 - Pressure adjustment.

2 – Vacuum gauge point.

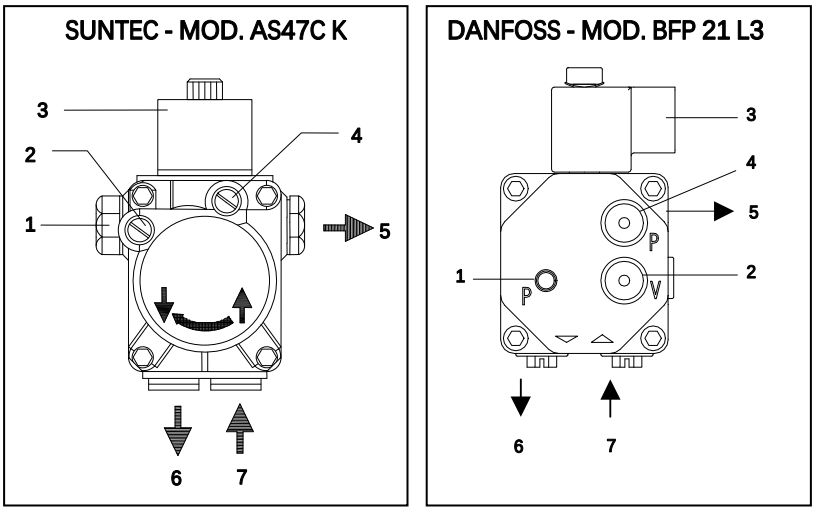
3 - Valve.

4 - Manometer point.

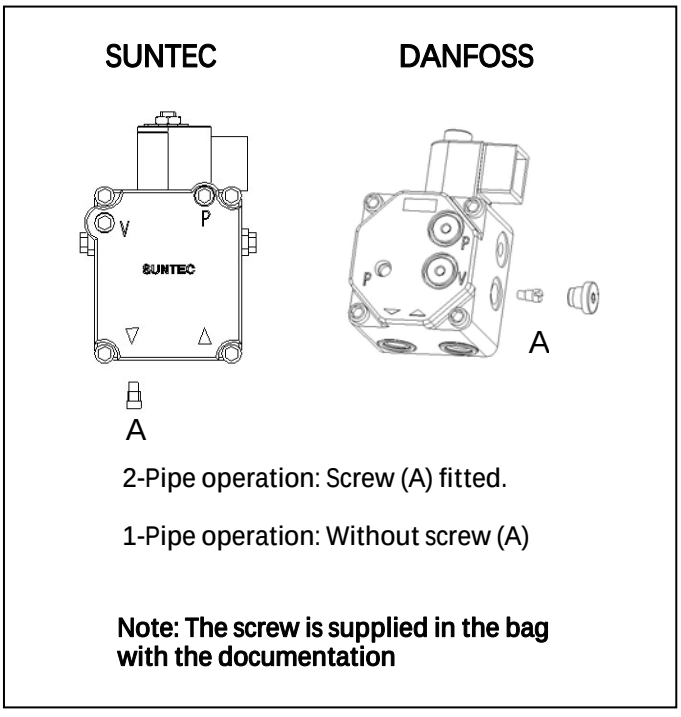
5 - Nozzle outlet.

6 - Return.

7 - Intake.



24.5 Pipe operation



2-Pipe operation: Screw (A) fitted.

1-Pipe operation: Without screw (A)

Note: The screw is supplied in the bag with the documentation

24.6 Oil supply piping diagrams

The diagrams and tables below correspond to installations without reductions and with a perfect hydraulic seal. It is recommended to use copper pipes. A pressure drop of 0.4 bar (30 cmHg) must not be exceeded.

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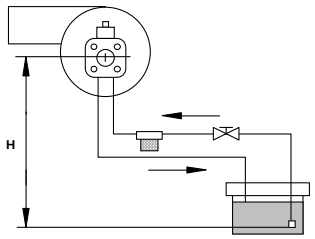
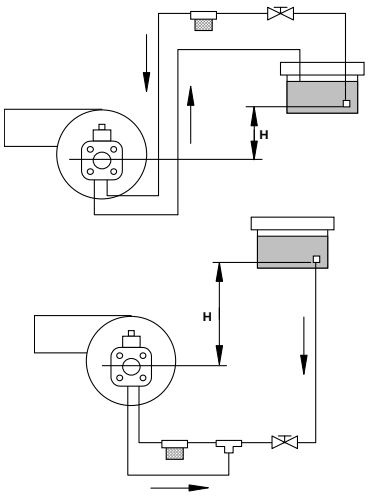
Intake installation



Charging installation



2.0	60	100

Intake installation		
H (m)	Pipe length	
	int.∅ 8 mm.	int.∅ 10 mm.
0.0	25	60
0.5	21	50
1.0	18	44
1.5	15	38
2.0	12	26
2.5	10	26
3.0	8	20
3.5	6	16

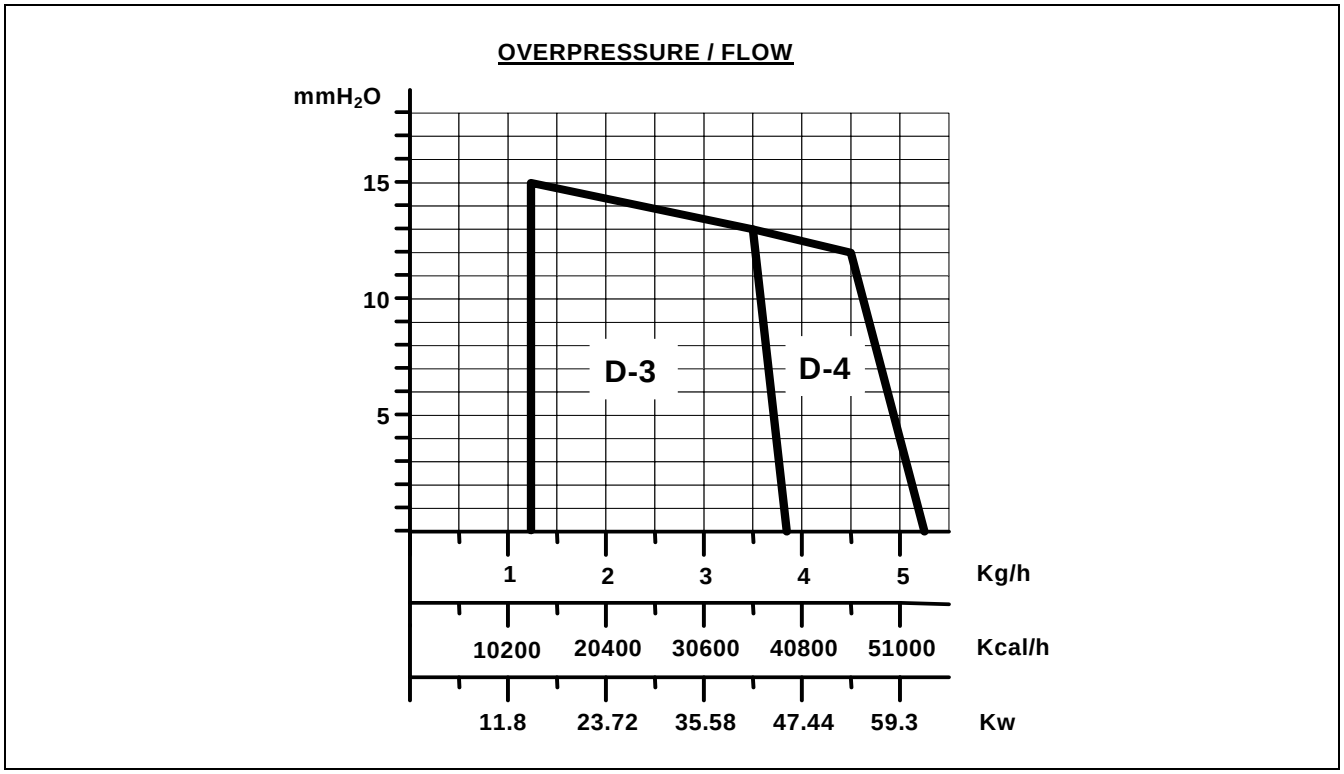
Charging installation		
H (m)	Pipe length	
	int.∅ 8 mm.	int.∅ 10 mm.
0.5	10	20
1,0	20	40
1.5	40	80

Warning: Check periodically conditions of the flexible pipes. Using kerosene, the flexible pipes must be replaced at least every 2 years.

24.7 Technical specifications

MODEL		D-3	D-4
Minimum consumption	**Kg/h**	1,5	2,3
Maximum consumption	**Kg/h**	3	4,65
Minimum power	**kW**	17,7	27,2
Maximum power	**kW**	35,5	55,2
Fuel		Gas oil 35 sec max. viscosity 6 mm^2/s at 20°C Kerosene 28 sec	
Motor power at 2800 r.p.m.	**W**	200	
Adjustment type		On/Off	
Electric current		220 V - 50 Hz	
Weight	**Kg**	12,5	
Preheater		YES	

24.8 Operating curves



24.9 Nozzles

TRO Evolution Combi boilers are supplied with the burner fitted, together with its corresponding nozzle and a standard pre-adjustment. The following table shows the nozzles and adjustments for each particular model:

MODEL	Nozzle	Burner pressure (bar)	Air adjustment	Line adjustment
TRO Evolution 30 Combi	0,65 60° H	10	3,5	1
TRO Evolution 40 Combi	1,00 45° H	9	3,5	1

24.10 Oil flow versus nozzle and pump pressure

Nozzle GPH	Oil Kg/h		Kerosene Kg/h	
	9 bar	10 bar	9 bar	10 bar
0,65	2,29	2,42	2,02	2,17
1,00	3,53	3,72	3,34	3,41

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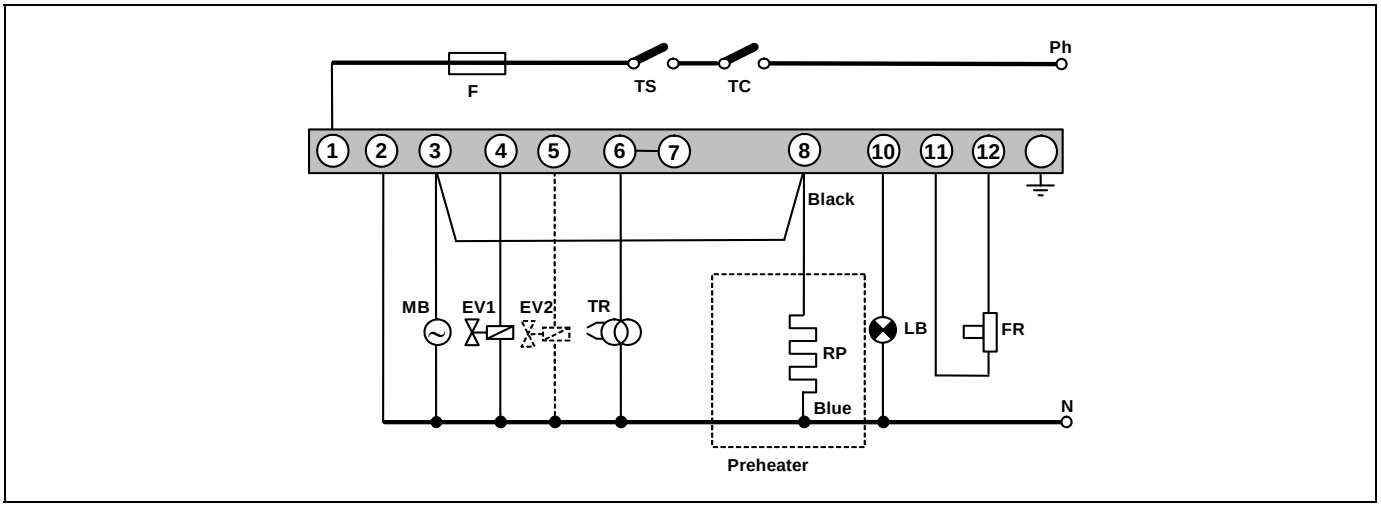
24.11 Electrical connection diagram



TC: Boiler Thermostat.

TS: Safety Thermostat.

F: Fuse.

LB: Cut-off Light.

FR: Photocell.

TR: Transformer.

MB: Oil Pump Motor.

EV: Valve.

RP: Preheater Element.

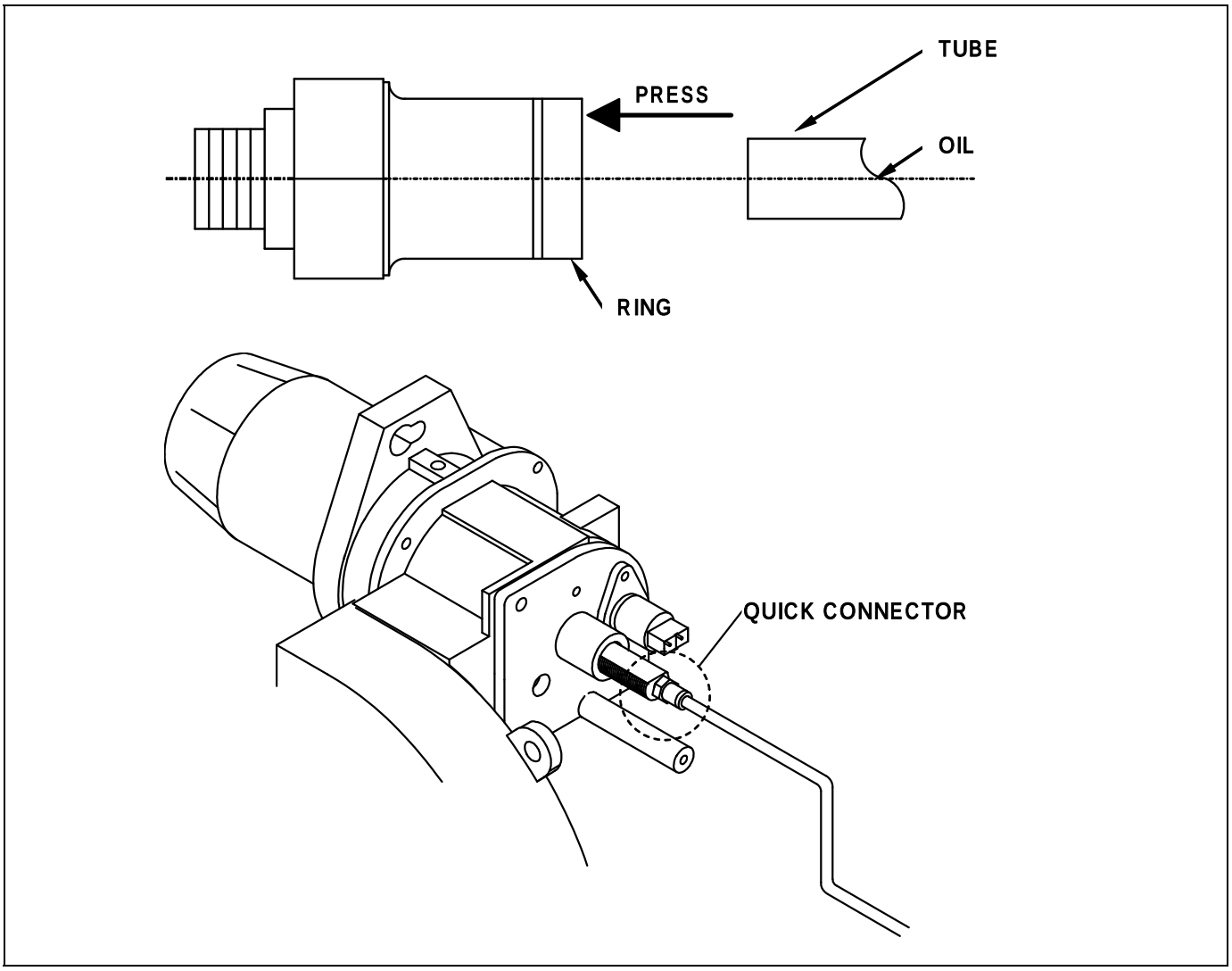
Ph: Phase.

N: Neutral.

24.12 Quick connector

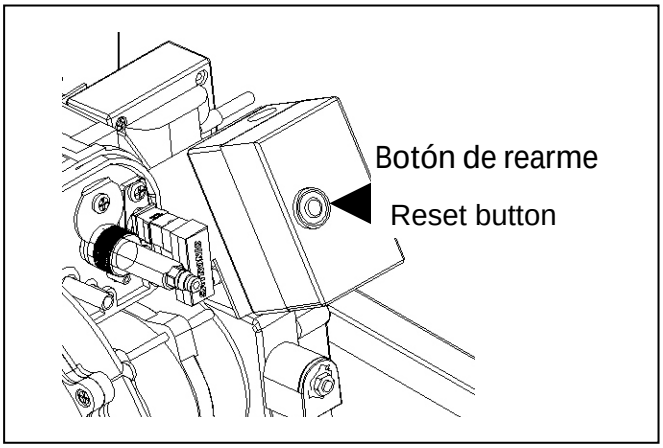
To connect and disconnect the red oil intake tube to the nozzle, proceed as follows:

- Press the connector ring in the direction of the arrow, pulling on the red tube at the same time.



24.13 Burner control operating sequence

The burner's LMO control box has a reset button which is the key element for resetting the burner control and activating/deactivating the diagnosis functions.
The multi-colour LED on the reset button is the indicator for visual diagnosis. The button and the LED are located under the transparent cover of the reset button. During normal functioning, the various operating statuses are indicated in the form of colour codes (see the colour code table below). During ignition, the indication is as shown in the following table:



Colour code table for multi-colour indicator lights (LEDs)		
Status	**Colour code**	**Colour**
Wait time «tw», other standby statuses	○.....	Off
Fuel pre-heater on	●.....	Yellow
Ignition phase, controlled ignition	●○●○●○●○●○●○●	Flashing yellow
Functioning, flame OK	□.....	Green
Functioning, flame not OK	□○□○□○□○□○□○	Flashing green
External light during burner ignition	□▲□▲□▲□▲□▲	Red/green
Undervoltage	●▲●▲●▲●▲●	Yellow/red
Failure, alarm	▲.....	Red
Error code output (see «Error code table»)	▲○ ▲○ ▲○ ▲○ ▲○	Flashing red
Interface diagnosis	▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲	Flashing red light

….. **Steady light**

○ **Off**

▲ **Red**

● **Yellow**

□ **Green**

25. FAILURES

This section provides a list of the most common burner and boiler failures.

Burner error code

We have already mentioned that the burner is equipped with a cut-out system, indicated by the reset button light. It may cut out accidentally, and in this case the steady red light on this button will come on. You may unblock it by pressing the button for approx. 1 second. When the burner is blocked and the steady red light is on, visual failure diagnosis may be activated, in accordance with the error code table. To enter visual failure diagnosis mode, hold down the reset button for at least three seconds.

Error code table		
Red flashing LED code	**"AL" on term. 10**	**Possible cause**
Flashes 2 times	On	No flame established when ignition safety time ends. - Fuel valves defective or dirty - Flame detector defective or dirty - Burner maladjustment, no fuel - Ignition unit defective
Flashes 4 times	On	External light during burner ignition
Flashes 7 times	On	Excessive flame loss during functioning (limited number of repetitions) - Fuel valves defective or dirty - Flame detector defective or dirty - Burner maladjustment
Flashes 8 times	On	Supervision of fuel pre-heater time
Flashes 10 times	On	Cabling fault or internal failure, output contacts, other failures

During the failure diagnosis time, the control outputs are disabled and the burner remains off. To exit failure diagnosis and activate the burner again, reset the burner control. Hold down the reset button for approx. 1 second (<3 s).

Boiler failures:

FAILURE	CAUSE	SOLUTION
RADIATOR DOES NOT HEAT UP	- The pump is not turning - Air in hydraulic circuit	Unblock the pump Drain the installation and the boiler (the automatic air drain valve cap must always be loose)
EXCESSIVE NOISE	- Burner badly adjusted - Flue not correctly sealed - Flame unstable - Flue not insulated	Adjust it correctly Eliminate any leaks Examine the burner Suitably insulate it

Circulating pump alarms

The high efficiency pumps include a Led (light) which displays their status.

PUMP LIGHT	DESCRIPTION	STATUS	CAUSE	SOLUTION
It is lit green	The pump is functioning	The pump operates according to its setting	Standard functioning	
It flashes green	Standby mode (PWM version)	The pump is in standby mode		
It flashes red/green	The is ready for service but is not functioning	The pump will start up again automatically once the error has been solved	1. Low voltage U<160 V or Excess voltage U>253 V	1. Check the power supply 195 V<U<253 V
			2. Excess temperature of the module: the temperature of the motor is too high	2. Check the room temperature and that of the fluid
Flashes red	The pump is out of order	The pump is stopped (blocked)	The pump does not start up automatically.	Change the pump. Please contact your nearest official technical assistance service to have it replaced
Light off	There is no power supply	The electrical system is not receiving power supply	1. The pump is not connected to the power supply	1. Check the connection of the cable
			2. The LED is faulty	2. Check if the pump works
			3. The electrical system is faulty	3. Change the Pump. Change the pump. Please contact your nearest official technical assistance service to have it replaced

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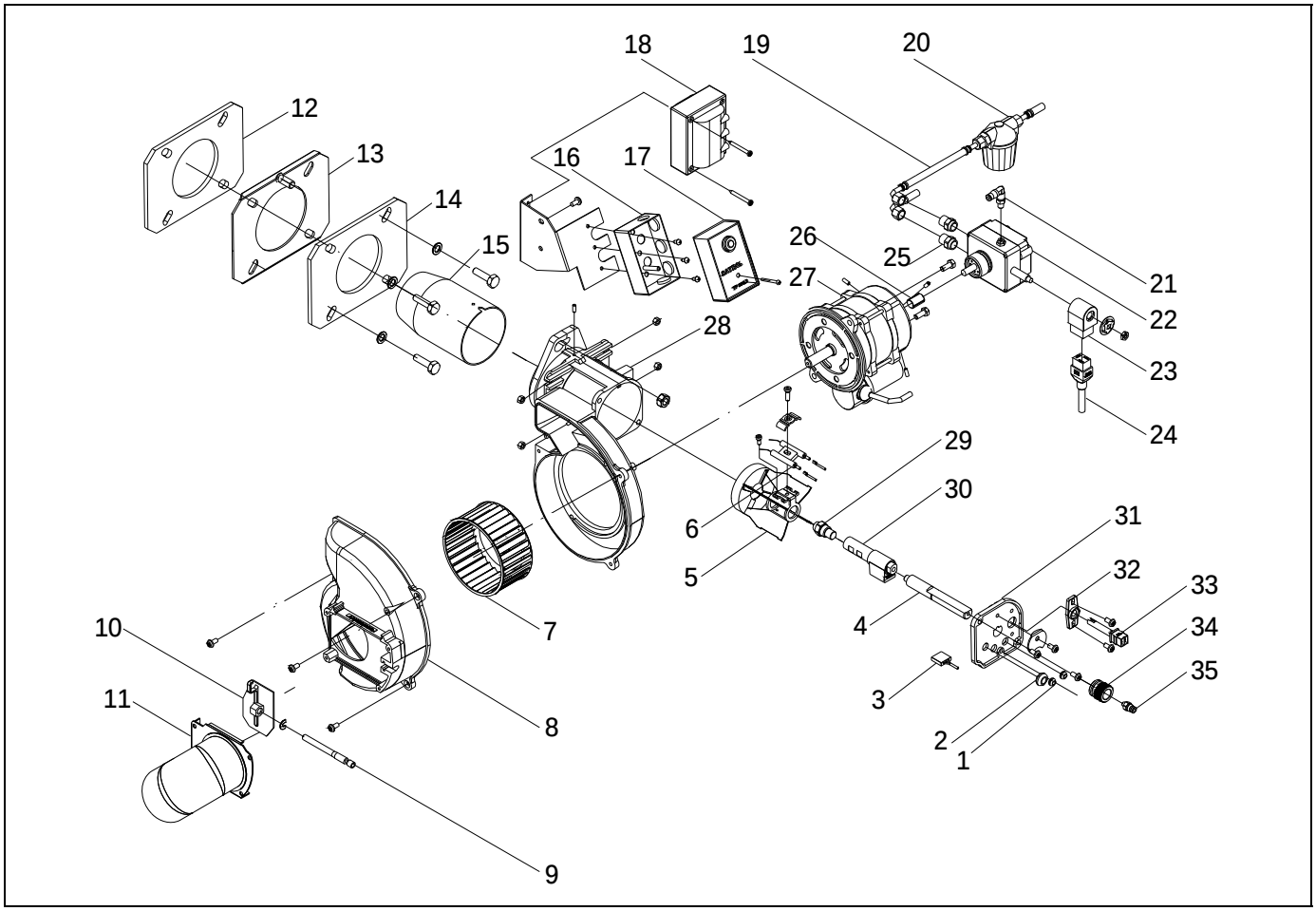
26. SPARE PARTS LIST

Burner



Pos	Code	Name
1	CFER000032	Cable gland
2	CFER000033	Cable gland
3	CQUE000027	Preheater cable
4	CTOE000063	Burner line D3
5	CQUE000155	Turbulator disc D3
5	CQUE000013	Turbulator disc D4
6	CQUE000019	Set of electrodes
7	CQUE000044	Fan
8	CQUE000095	Air adjustment support
9	CTOE000064	Air adjustment screw
10	CQUE000151	Air adjustment plate D3
	CQUE000152	Air adjustment plate D4
11	CGAS000220	Manifold
12	CQUE000173	Flange seal
13	SATQUE0001	Flange
14	CQUE000158	Support seal
15		Short flame tube D3
		Long flame tube D4
16	CQUE000129	Control box plugs
17	CQUE000169	Control box
18	CQUE000005	Transformer

Pos	Code	Name
19	CQUE000191	Oil hose
20	CQUE000055	Oil filter
21	CTOR000007	Elbow connector
22	CQUE000062	Oil pump Suntec
	CQUE000088	Oil pump Danfoss
23	CQUE000056	Valve coil Suntec
	CQUE000089	Valve coil Danfoss
24	CQUE000054	Valve coil cable Suntec
	CQUE000124	Valve coil cable Danfoss
25	CTOE000065	Counter thread
26	CQUE000004	Motor pump coupling
27	CQUE000102	Motor
28	CQUE000094	Motor support
29	CQUE000077	Nozzle D3
	CQUE000079	Nozzle D4
30	CQUE000061	Preheater
31	CQUE000096	Line cover
32	CQUE000149	Photocell support
33	CQUE000156	Photocell
34	CTOE000054	Line adjustment
35	CTOR000006	Straight connector

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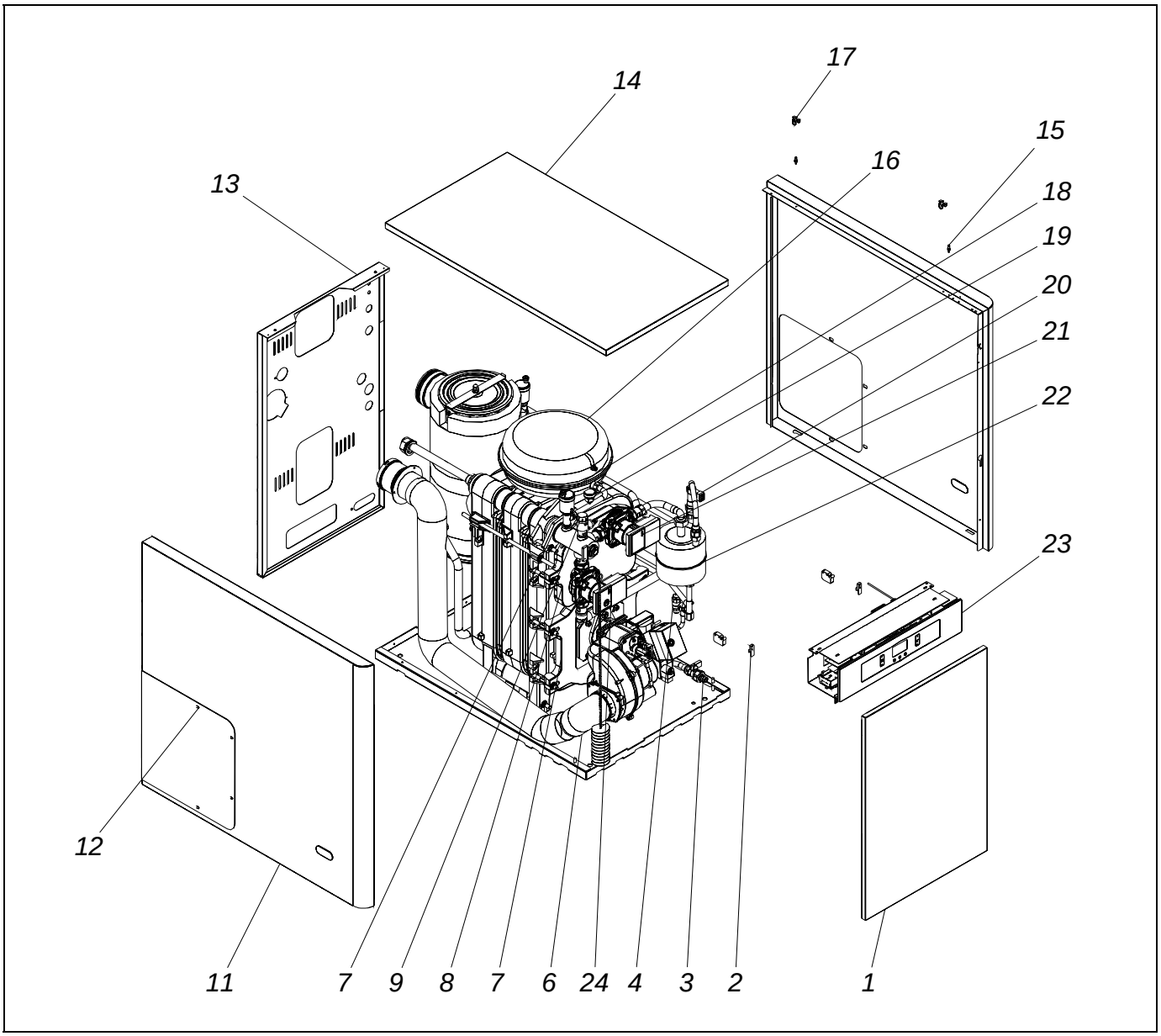
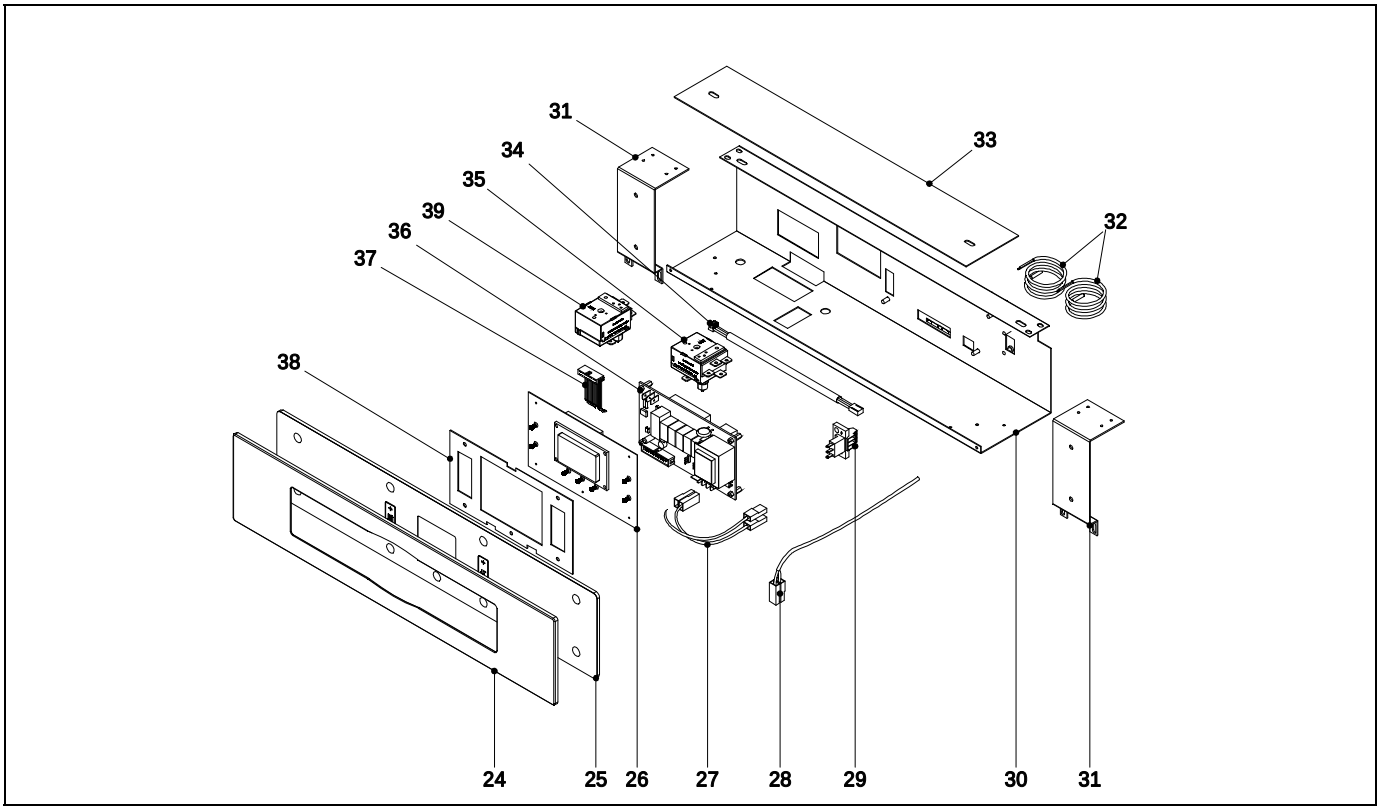
Boiler





Pos.	Code	Name
1	SEPO000594	Door
	SEPO002235	Door W
2	CFER000059	Automatic door-close
3	CFOV000163	Disconnector Robofil
4	CFOV000163	Disconnector Robofil
5	CFOV000148	Heating pump 30 HFM
	CFOV000149	Heating pump 40 HFM
6	CFER000051	Extraflex 80 extendable tube
7	CFUC000052	Cast iron burner support door
8	CFUC000053	Cast iron vent cover
9	CVAL000004	½ 3kg. Safety valve with man. pt.
10	CFUR000020	Manifold 30 HFM
	CFUR000017	Manifold 40 HFM
11	SEPO000691	Left side 30 HFM
	SEPO000689	Right side 30 HFM
	SEPO000694	Left side 40 HFM
	SEPO000693	Right side 40 HFM
	SEPO002238	Left side 30 HFM W
	SEPO002237	Right side 30 HFM W
	SEPO002245	Left side 40 HFM W
	SEPO002244	Right side 40 HFM W
12	SEPO000801	Cover side
	SEPO002240	Cover side W
13	SEPO000985	Rear panel 30 HFM
	SEPO001000	Rear panel 40 HFM
	SEPO002239	Rear panel 30 HFM W
	SEPO002246	Rear panel 40 HFM W
	SEPO000690	Top cover 30 HFM
14	SEPO000692	Top cover 40 HFM
	SEPO002236	Top cover HFM W
	SEPO002243	Top cover HFM W

Pos.	Code	Name
15	CTOE000012	Fixing clip
16	CFOV000025	Expansion vessel 30 HFM
	CFOV000043	Expansion vessel 40 HFM
17	CFER000048	Spring closure
18	CFOV000024	3/8 PURGOMAT drain valve
19	CELC0000252	Presure transducer
20	CFOV000061	Flowswitch
21	CFOV000148	Pump
22	CFOV000033	Heatexchanger 30 HFM
	CFOV000067	Heatexchanger 40 HFM
23	SELEEVO021	Electrical main board HFM
	SELEEVO024	Electrical main board HFM W
24	CELC000294	Control panel embellisher
25	COTR000046	Main board glass
26	CELC000360	Display card
27	CMAZ000128	Cable harness
28	CELC000240	Flowswitch connector
29	CELC000036	Weidmuller strip 3 poles
30	SEPO001947	Drawer
	SEPO002249	Drawer W
31	SEPO001325	Panel fastening
	SEPO002247	Panel fastening W
32	CELC000234	Temperature Evolution sensor 0,90 mts.
33	SEPO001326	Drawer cover
	SEPO002248	Drawer cover W
34	CELC000255	Pressure sensor cable
35	CELC000022	Safety thermostat 110° 1,5m
36	CELC000358	Power supply card
37	CELC000298	Electronic cards cable
38	SCHA008320	Display suport
39	CELC000022	Fumes thermostat

27. WARRANTY CONDITIONS

TRIANCO's commercial guarantee covers the standard functioning of the products manufactured by **Domusa Calefacción S.Coop**., in accordance with the following conditions and time periods:

1. This **commercial guarantee** is valid for the following periods, as from the **commissioning** date:

   2 Years for electric and hydraulic elements: pumps, valves, etc.

   12 Years for heat exchangers.

   10 Years for domestic hot water tanks.

   After these 2 years have elapsed and until the end of the guarantee period, labour costs and call-out charges will be payable by the user.

2. The annual maintenance is not included in the terms of this guarantee.

3. The commissioning and annual maintenance must be carried out by personnel authorised by **TRIANCO.**

4. The **commercial guarantee** will be null and void in the following cases:

   - If the annual maintenance by personnel authorised by **TRIANCO** has not been carried out.

   - If the boiler has not been installed in accordance with the applicable laws and regulations for this type of appliance.

   - If the boiler has not been registered on the website domusateknik.com, immediately after its installation.

Failures due to misuse or incorrect installation, use of non-suitable electrical power or fuel, supply with water with physical or chemical properties causing incrustation or corrosion, incorrect handling of the appliance, lack of pressure on the primary water circuit and, in general, for any reason beyond **TRIANCO's** control, are excluded from this guarantee.

This guarantee does not affect the consumer's rights as stipulated by law.

TRIANCO

NOTES:

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TR Engineering's policy is one of conitnous reserarch and development. This may necessitate alterations to this specification. Instructions correct at time of going to print.

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