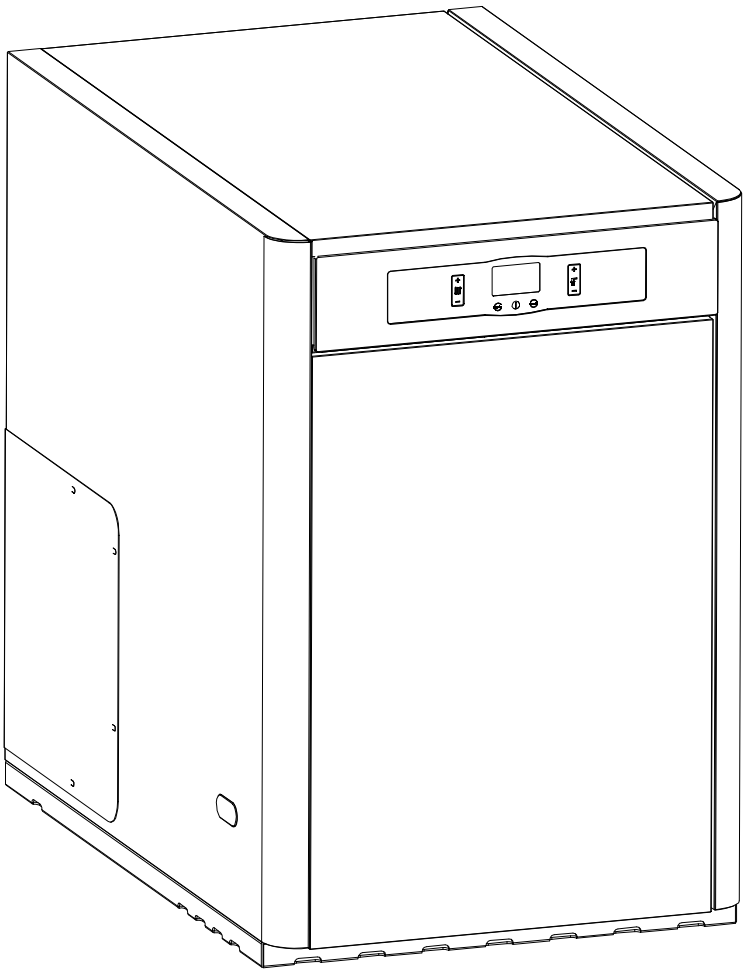
INSTALLATION AND OPERATING INSTRUCTIONS

↪ EVOLUTION EV HFC



Applus+ ISO 14001 MA-3661/17 Systems Certification

Applus+ ISO 9001 EC-8890/17 Systems Certification

DOMUSA TEKNIK

Thank you for choosing a DOMUSA TEKNIK heating boiler. From the range of **DOMUSA TEKNIK** products you have chosen the **Evolution EV HFC** model. With a suitable hydraulic installation, this oil-fired boiler 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 are to be installed by skilled 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 **DOMUSA TEKNIK**'s Authorised Technical Assistance Services.

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

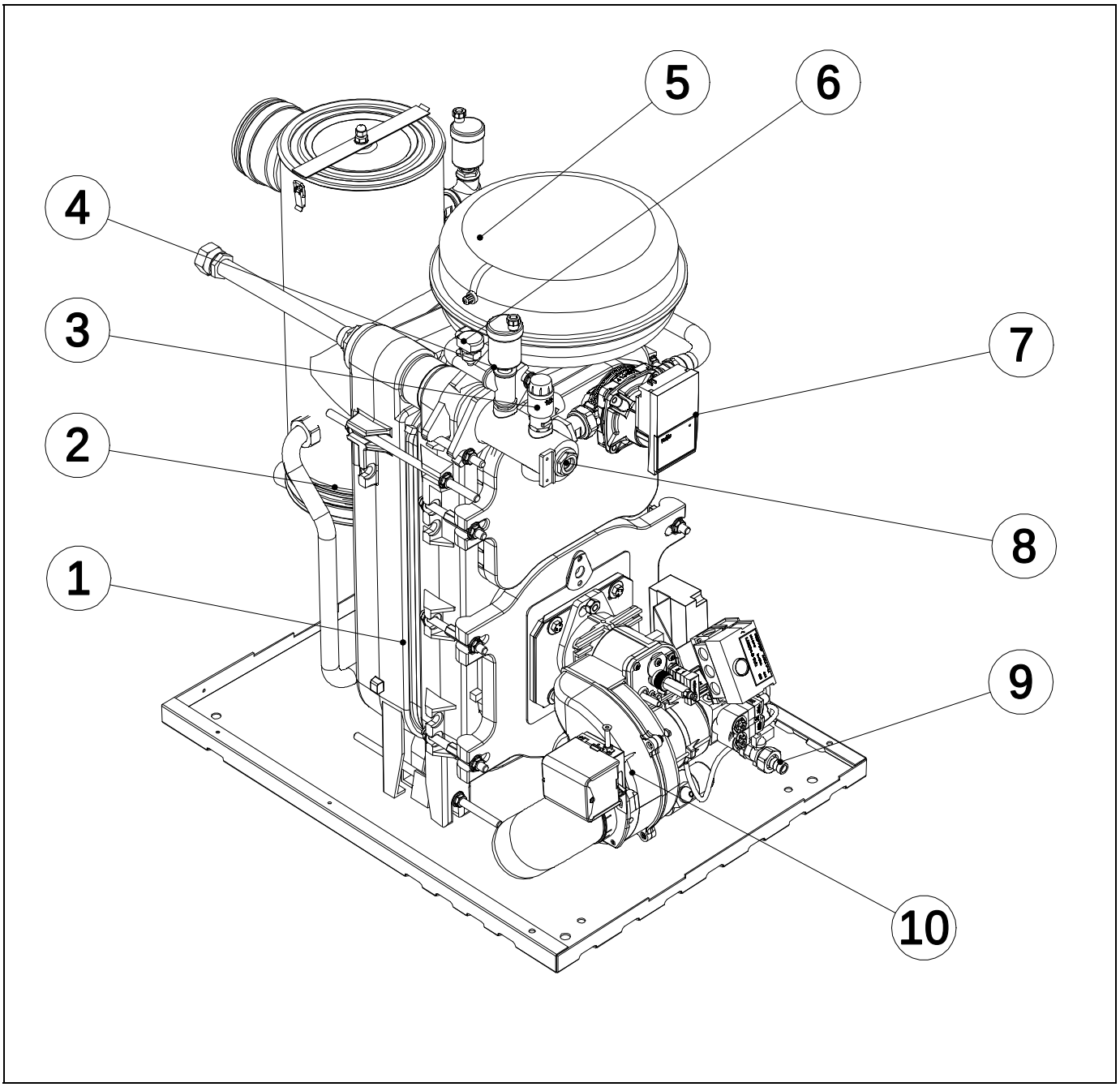
DOMUSA TEKNIK informs all parties concerned that, in compliance with section 1 of the first additional provision of Law 11/1997, the responsibility for delivering packaging waste or used packaging for its proper environmental management will be that of the final owner of the product (Article 18.1 Royal 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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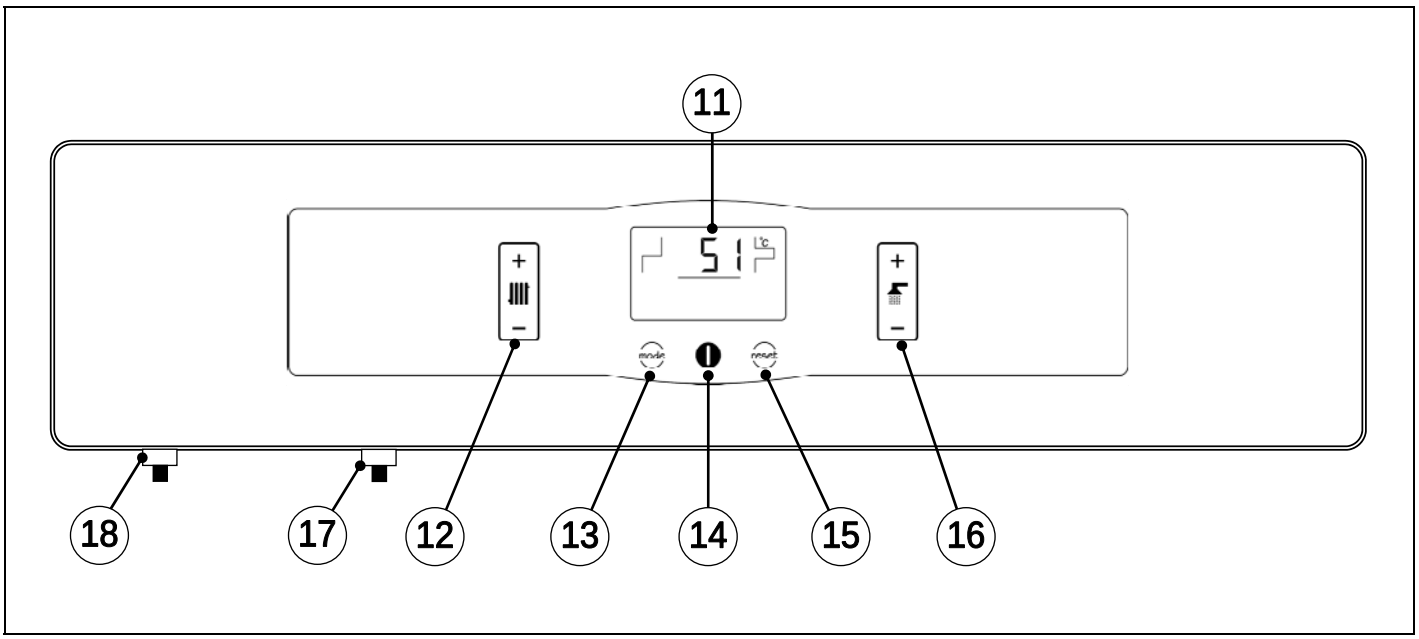
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1 DESCRIPTION OF COMPONENTS



1.- Cast iron body.
2.- Stainless steel condenser.
3.- Safety valve.
4.- Automatic air vent.
5.- Expansion vessel.
6.- Pressure sensor.
7.- Heating circulating pump.
8.- Boiler temperature sensors.
9.- Drainage valve.
10.- Domestic sealed burner.

2 CONTROL ELEMENTS



11. 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.

12. 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.

13. MODE touch button:

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

14. ON touch button:

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

15. 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.

16. DHW temperature touch button:

This button can be used to select the desired domestic hot water temperature (only if a DHW tank is connected to the boiler). 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.

17. Boiler safety thermostat:

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

18. Fume safety thermostat:

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

3 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:

3.1 Location

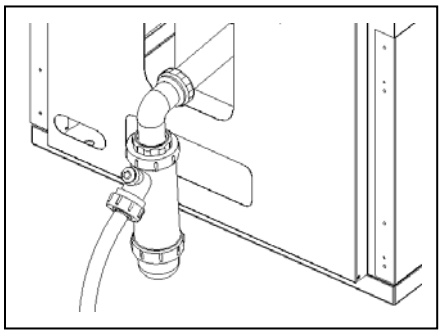
The boiler must be installed in a sufficiently ventilated site. **It is essential to leave a space at the top of the boiler** so that it is accessible for maintenance operations. It must therefore not be installed under a fixed worktop or any other obstacle preventing access.

It must maintain sufficient access space to carry out preventive or corrective maintenance operations.

3.2 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.
- 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.



3.3 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.

3.4 Fuel installation

The **Evolution** boiler is supplied with a **Domestic** oil burner ***(10)*** (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 o

3.5 Installing a DHW storage tank Sanit (Optional)

The procedure for suitably connecting a Sanit DHW tank to the **Evolution EV HFC** boiler is as follows:

- **Unplug the boiler from the mains.**
- Connect a DHW temperature sensor (supplied optionally) to sensor terminal strip **J3** (terminals 16 and 17), first removing the resistance (**Ra**) supplied by default (see “Electrical Connection Diagram").
- Insert the temperature sensor bulb in the bulb-holder sheath provided on the hot water tank.
- Connect the hot water tank feed pump to the supply terminal strip **J2** (BV; terminals N and 5) see “Electrical Connection Diagram").

For correct hydraulic installation, carefully follow the assembly and connection instructions enclosed with the hot water tank.

3.6 Anti-legionella function (with hot water tank only)

The **Evolution EV HFC** boiler allows the activation of the legionella prevention function for The **Evolution EV HFC** boiler with a Sanit hot water tank installed has a legionella prevention function that can be enabled for the domestic hot water in the tank.

This function must be activated by sufficiently qualified personnel. The function is enabled by changing the boiler model selectors on the display card inside the control panel.

Before carrying out any work on the inside of the boiler, **unplug it from the mains**. To activate the anti-legionella function, remove the top cover of the boiler then remove the lid of the control panel box using a screwdriver to remove the two screws holding it in place. When this cover has been removed, the electronic circuit board of the display, containing the programming switches, can be accessed.

Select the anti-legionella function by turning **selector 4** to **ON** (see "Electrical Diagram").

3.7 Installing the SRFC2/EV Underfloor Heating Kit (Optional)

The procedure for suitably connecting the SRFC2/EV Underfloor Heating Kit to the **Evolution EV HFC** 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 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 SRFC2/EV kit.

3.8 Heating circuit 2 (Optional)

All the models in the **Evolution EV HFC** range of boilers are supplied with a circulation pump connected to heating circuit 1 (BC1). 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 SRFC2/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 “Electrical Connection Diagram").

4 COMBUSTION PRODUCTS EXHAUSTION

The Evolution 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 can also work by taking the air intake for the burner from the room, this is how the boilers come set from factory. To operate in this mode, the room must be sufficiently ventilated and not obstruct or block any ventilation openings.

4.1 External position of the gas evacuation pipes terminal

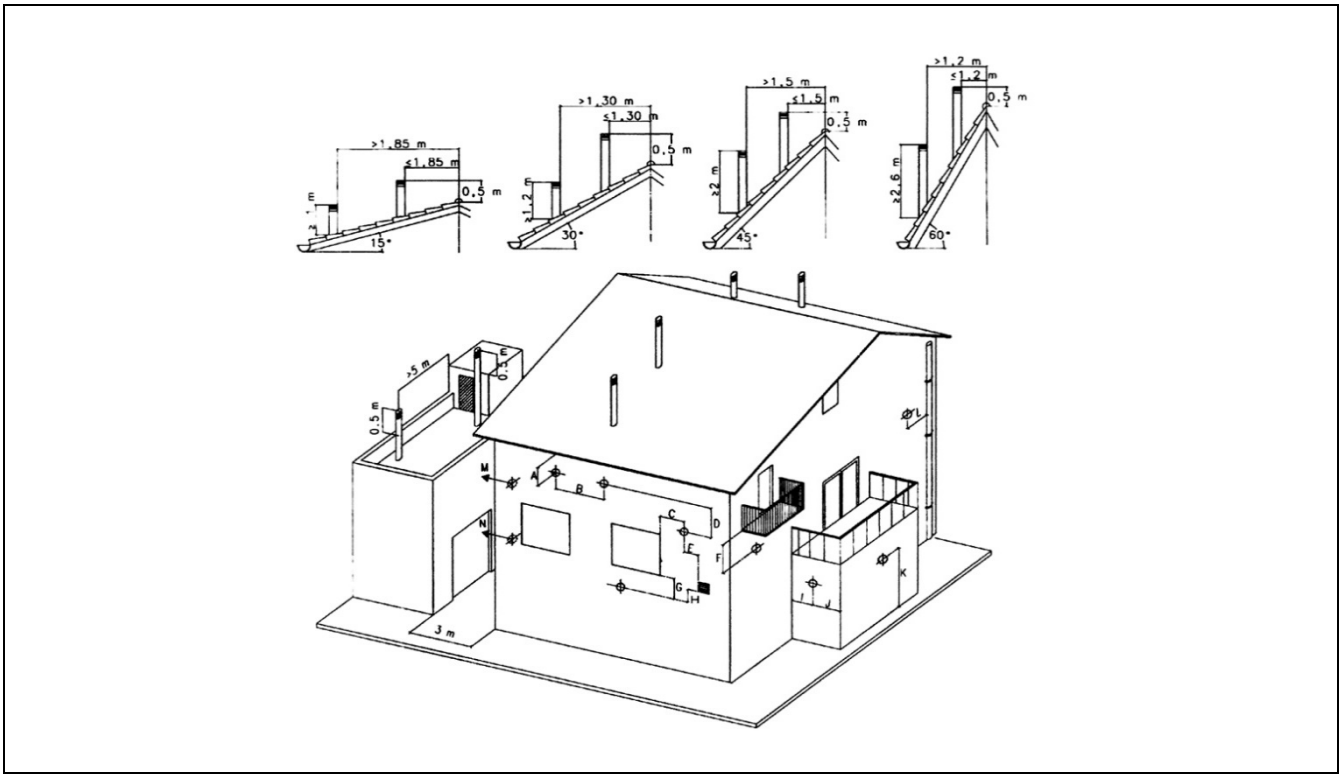
The installation of exhaustion of the products of combustion has to be carried out by qualified personnel staff and it will fulfill the requirements demanded in the legislation and effective regulatory schemes.

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.

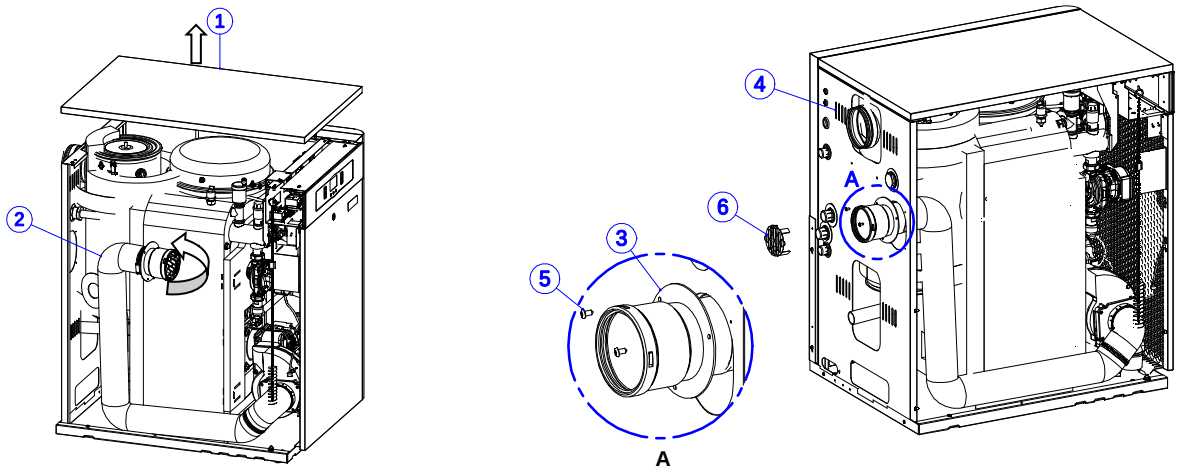
ATTENTION: All the fittings used in the combustion products exhaustion and air intake are to be those supplied by DOMUSA TEKNIK firm.



4.2 Preparation of the burner air intake for balanced flue operation mode

Evolution boilers come prepared from factory for operation by taking the intake air for the burner from the room.

In case of choosing room sealed mode operation, with the evacuation of the combustion gases through an outlet conduct and a independent external air intake, air intake for the burner must be prepared following these instructions:



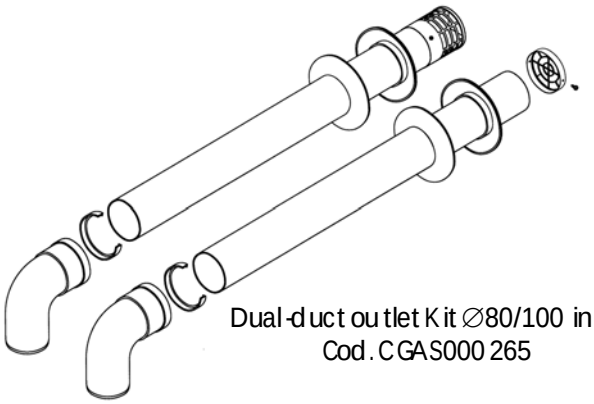
- Remove the top panel (1).
- Turn the air intake conduct (2) and take out the air intake terminal (3) por from the back (4).
- Tie air intake terminal (3) at the back (4) with two screws (5) (included in the documentation bag).
- Remove the grid (6) (this won´t be used).
- Reattach the roof (1).

4.3 Combustion products exhaustion and air intake dual-duct device ø80 / ø100 (typr C_{53})

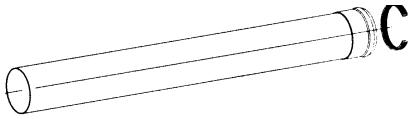
In this type, the combustion products exhaustion and air intake are carried out with separated pipes of Ø80/100mm, by means of the dual-duct outlet Kits of Ø80/100 code CGAS000265. It is the default type of exhaustion for boilers **Evolution**.

The **maximum length** of pipe that can be installed is 12 metres (EV 40 HFC) and 15 metres (EV 20/30 HFC) 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 of horizontal pipe represents 2 metres of vertical pipe.

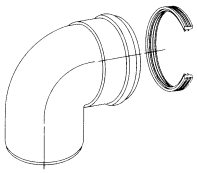
It is recommended that the flue gases outlet pipe be fitted slightly upwardly-inclined 2º to 3º thus preventing water and condensate projections from being ejected outside.



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

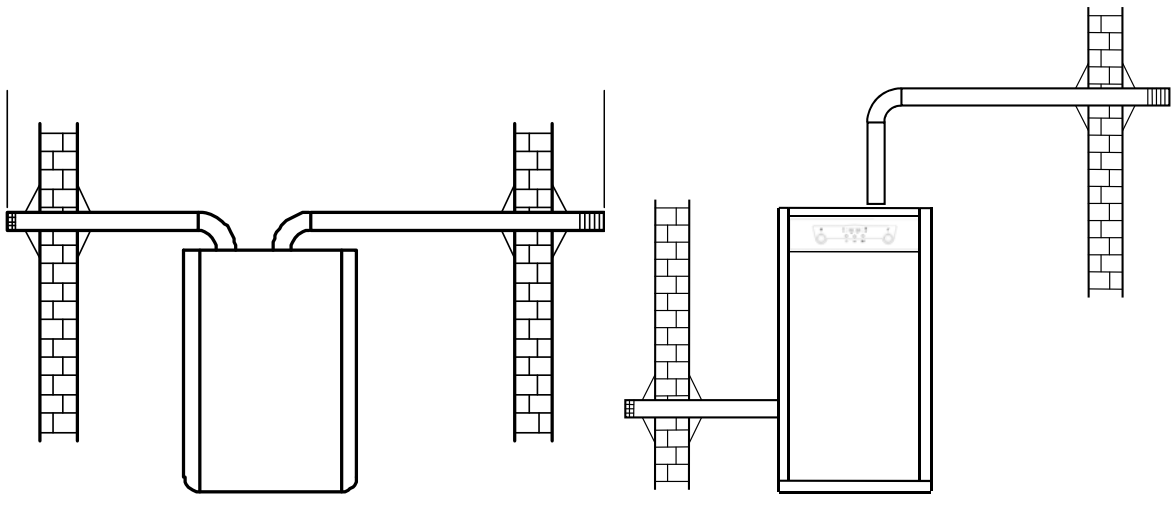


90º elbow ∅80 inox Cod. CGAS000147
90º elbow ∅100 inox Cod. CGAS000267
90º elbow ∅100 PP Cod. CGAS000358



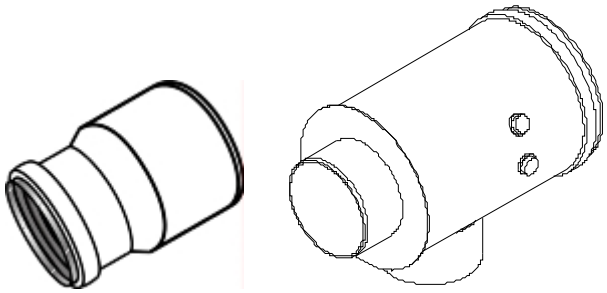
45º elbow ∅80 inox. Cod. CGAS000148
45º elbow ∅100 inox Cod. CGAS000266
45º elbow ∅100 PP Cod. CGAS000357

Examples of installation:



4.4 Double conduit to coaxial exhaustion transformation (Only for EV 20/30 HFC)

The boiler **Evolution** 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 +

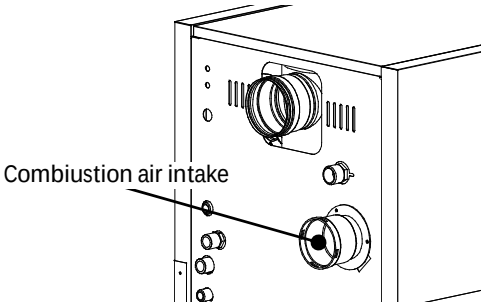


Kit adaptor for coaxial tube ∅80/125
Cod. CGAS000213+ Cod. CGAS000222

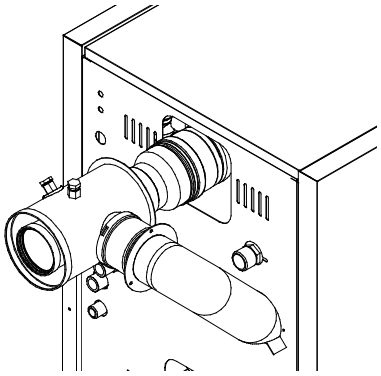
The transformation will be able to realize with two different mounting setups:

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.

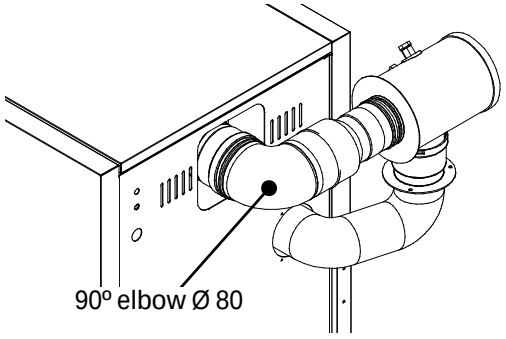
In the following pictures they can observe both setups:



Back exit



Lateral exit

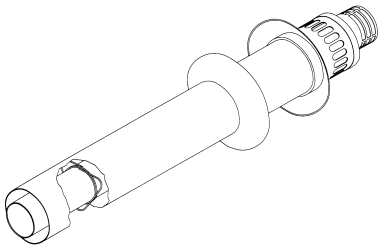


4.5 Combustion products exhaustion and air intake horizontally-arranged coaxial device ø80-125 (type C_{13}) (Only for EV 20/30 HFC)

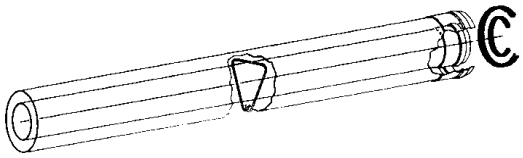
The combustion products exhaustion and air intake can be carried out through concentric pipes of Ø80 mm. for the combustion products exhaustion and Ø125 mm. for the air intake by means of the horizontally-arranged outlet Kit 1m Ø80-125 code CGAS000189.

The **maximum horizontal length** counted from the boiler, including the kit end, is 6 metres (EV 30 HFC) and 8 metres (EV 20 HFC). Each elbow of 90°, or two of 45°, reduces the available length by 1 metre,.

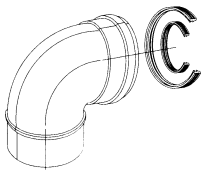
It is recommended that the flue gases outlet pipe be fitted slightly upwardly-inclined 2º to 3º thus preventing water and condensate projections from being ejected outside.



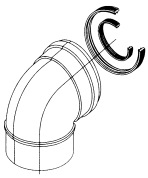
Horizontally-arranged outlet 1m ∅80/125 inox
Cod. CGAS000189
Horizontally-arranged outlet 1m ∅80/125 PP
Cod. CGAS000188



1m coaxial duct ∅80/125 inox Cod. CGAS000184
1m coaxial duct ∅80/125 PP Cod. CGAS000082

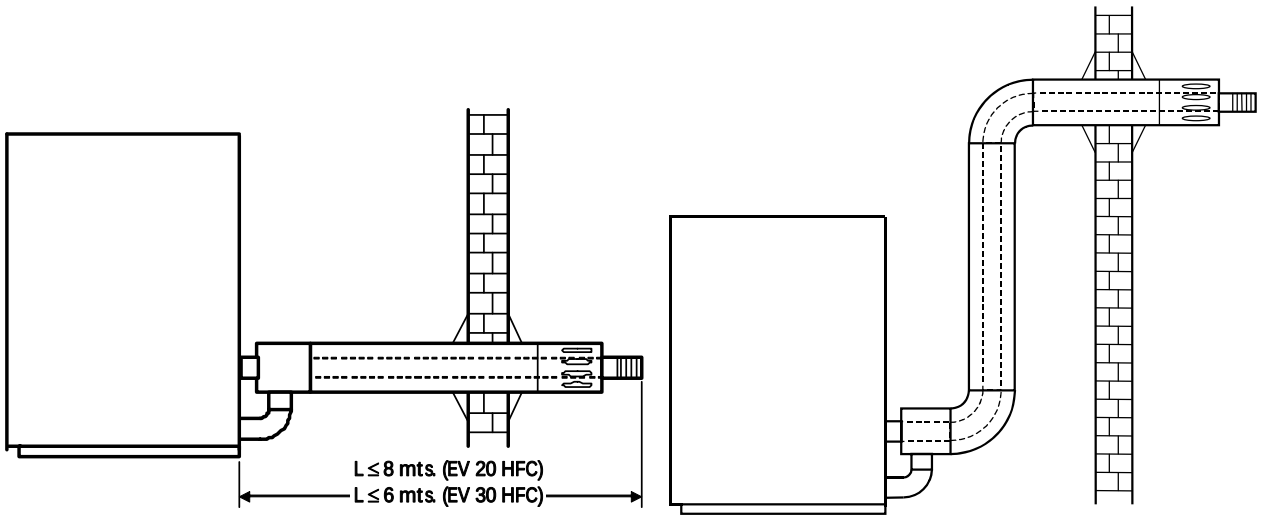


90º coaxial elbow ∅80/125 inox
Cod. CGAS000182
90º coaxial elbow ∅80/125 PP
Cod. CGAS000080



45º coaxial elbow ∅80/125 inox
Cod. CGAS000183
45º coaxial elbow ∅80/125 PP
Cod. CGAS000081

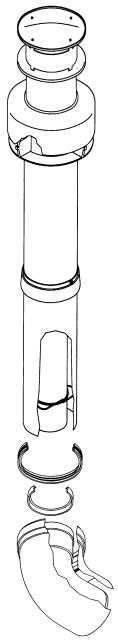
Examples of installation:



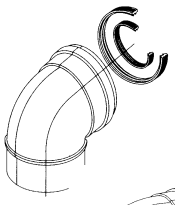
4.6 Combustion products exhaustion and air intake vertically-arranged coaxial device ø80-125 (type C_{33}) (Only for EV 20/30 HFC)

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 CGAS000181.

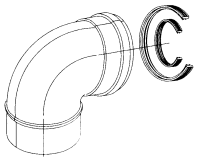
The **maximum vertical length** counted from the boiler, including the kit end, is 7 metres (EV 30 HFC) and 10 metres (EV 20 HFC). Each elbow of 90°, or two of 45°, reduces the available length by 1 metre.



Vertically outlet ∅80/125 inox Cód. CGAS000181
Vertically outlet ∅80/125 PP Cód. CGAS000360



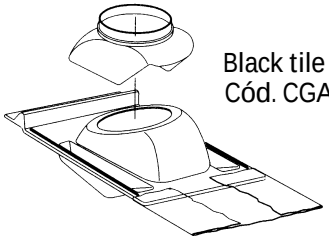
45º elbow ∅80/125 inox Cód. CGAS000183
45º elbow ∅80/125 PP Cód. CGAS000081



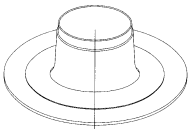
90º elbow ∅80/125 inox Cód. CGAS000182
90º elbow ∅80/125 PP Cód. CGAS000080



1m coaxial duct ∅80/125 inox Cód. CGAS000184
1m coaxial duct ∅80/125 PP Cód. CGAS000082

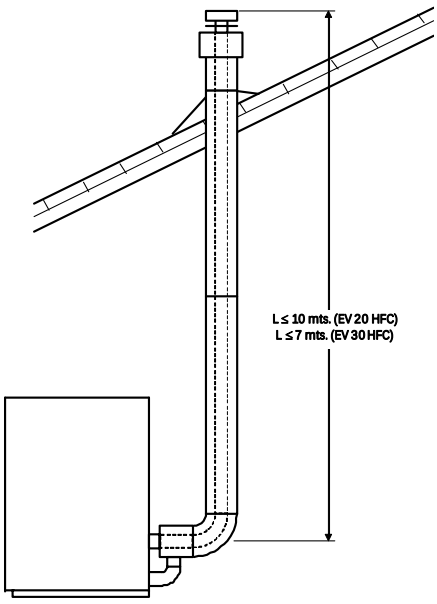


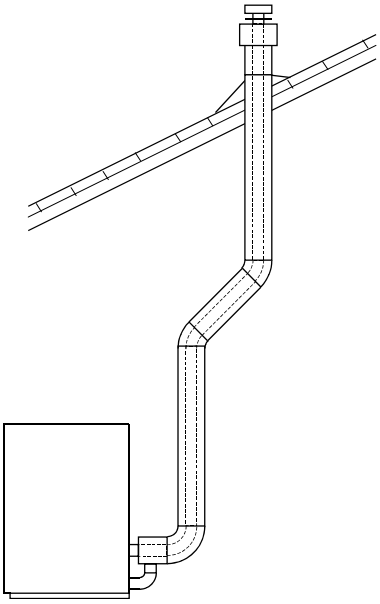
Black tile ∅80/125 Cód. CGAS000075



Black tile ∅80/125 Cód. CGAS000074

Examples of installation:





5 FILLING THE INSTALLATION

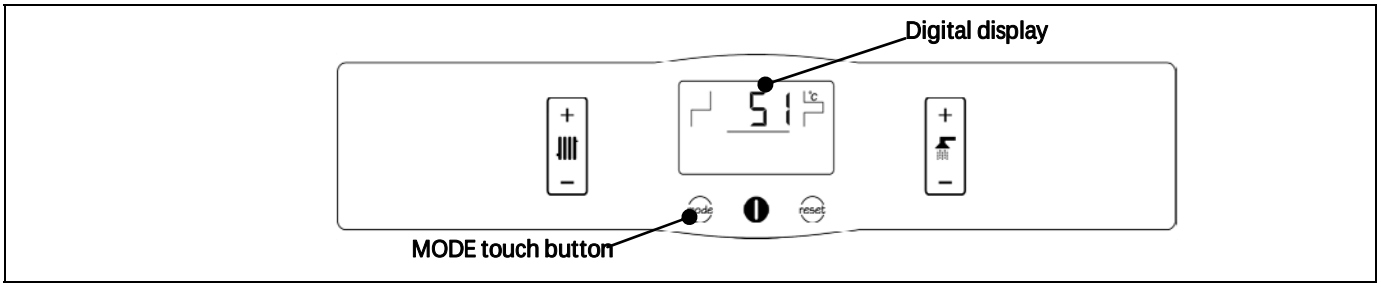
To fill the installation, it should be provided with a fill valve, which can be used to fill the installation until a pressure of 1,5 - 1.5 bars appears on the "*boiler pressure*" setting on the display. The circuit should be filled slowly and with the automatic air bleed valve cap ***(4)*** loose, to 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.

Evolution boilers have a pressure sensor ***(6)*** 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.

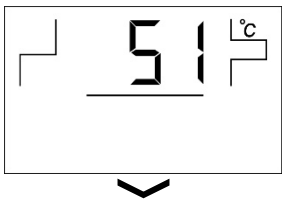
6 DIGITAL DISPLAY

The **Evolution** boiler is electronic and includes a digital display ***(11)*** showing the actual temperatures, the setpoint temperatures and the pressure of the installation. In standby mode, the actual boiler temperature in ºC 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:

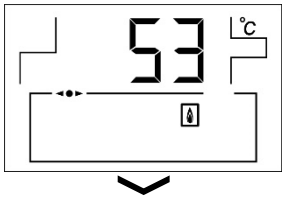


Repeatedly place your finger on the MODE touch button to select the different display options. When the desired option has been selected, it will return to standby after 20 seconds have elapsed.

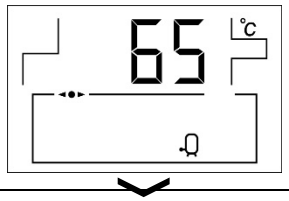
The following table shows the different display options:



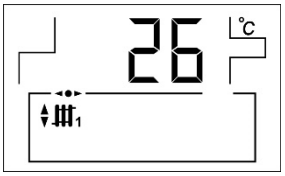
Standby. The actual boiler temperature is shown.



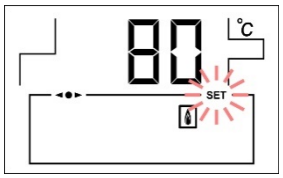
Actual boiler temperature.



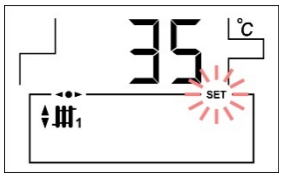
Actual domestic hot water temperature (with hot water tank).



Actual flow temperature of the underfloor heating installation
(option SRFC2/EV only)



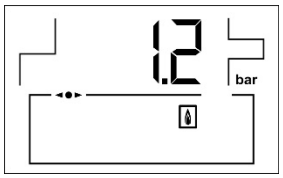
Boiler setpoint temperature selected using the corresponding touch button ***(12)***.



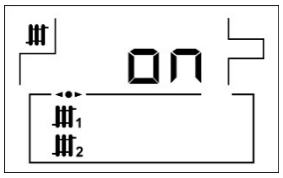
Underfloor heating installation flow setpoint temperature selected using the corresponding touch button ***(12)***.
(option SRFC2/EV only)



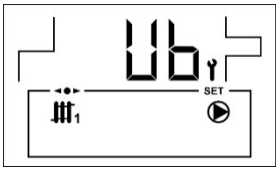
DHW setpoint temperature selected using the corresponding touch button ***(16)*** (with hot water tank).



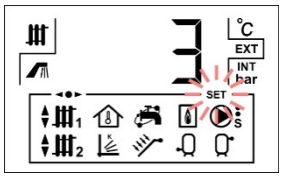
Actual boiler pressure, measured by the Pressure Sensor ***(6)***.



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



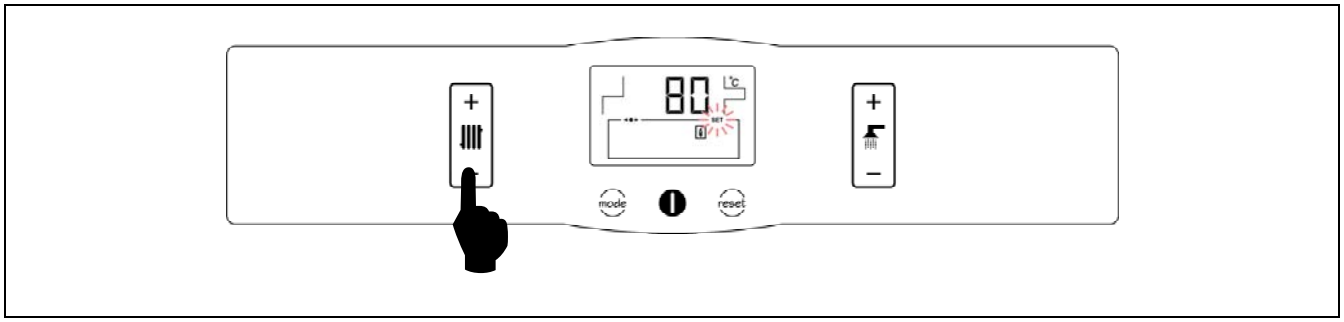
Setpoint of the heating pump speed **BC_1**.



The desired display contrast can be adjusted using the touch button on the right of the display ***(16)***.

7 TEMPERATURE SELECTION

7.1 Selecting the boiler set point temperature



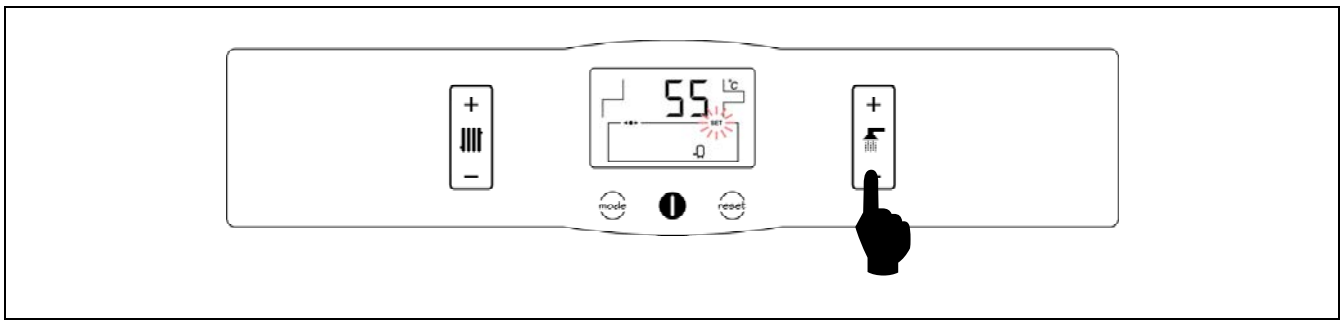
The desired boiler operating temperature is selected using the touch button, as shown in the figure. To select the desired temperature, touch the "**+**" or "**-**" symbols to increase or decrease the temperature respectively. When the temperature has been selected, the display will return to standby 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 ºC. **Evolution** 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 ºC, providing this is permitted by the heating system installed and the insulation conditions of your home.

7.2 Selecting the DHW setpoint temperature (with hot water tank only)

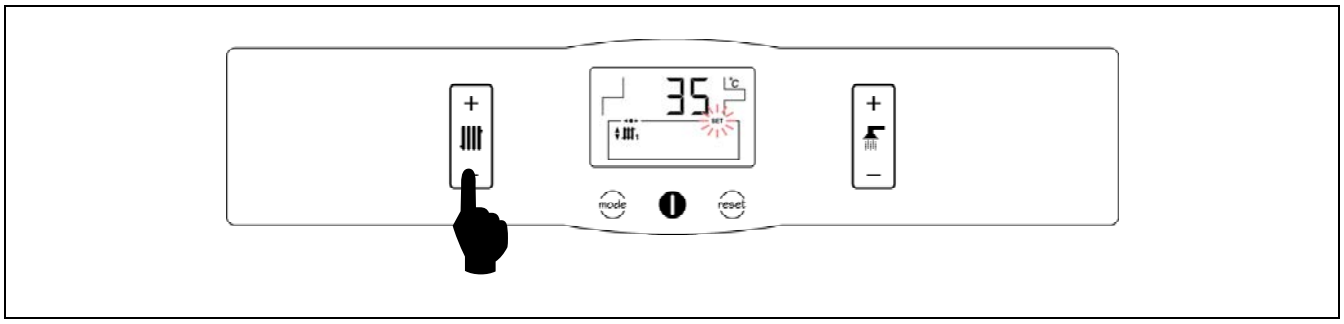


The desired DHW temperature is selected using the touch button, as shown in the figure. To select the desired temperature, touch the "**+**" or "**-**" symbols to increase or decrease the temperature respectively. When the temperature has been selected, the display will return to standby mode after a few seconds. The DHW setpoint temperature range permitted is OFF and 15 - 65 ºC.

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.

7.3 Selecting the Underfloor Heating flow setpoint temperature (with SRFC2/EV kit option)



When the boiler is installed with the optional SRFC2/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.

8 OPERATION

The **Evolution EV HFC** boiler is supplied in "heating only" mode by default, designed only to heat up a heating installation (heating circuit 1). Optionally, a Domestic Hot Water tank (Sanit) and/or an Underfloor Heating Kit (SRFC2/EV) and/or a second heating circuit, heating circuit 2, may be connected to the installation to improve its performance.

8.1 Functioning in "Heating Only" mode

In this mode, 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 and the heating pump of circuit 1 ($\mathbf{BC_1}$) will begin to function until the installation reaches the selected boiler setpoint temperature (or the temperature on room thermostat, 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.

The boiler heating function can be totally disabled (***Summer*** mode) by selecting "**oFF**" as the boiler setpoint value. In this operating mode, only the DHW production function will remain enabled, providing there is a DHW tank connected to the boiler.

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

8.2 Functioning with a Sanit hot water tank

The **Evolution EV HFC** boiler may be installed together with a hot water tank from the **DOMUSA TEKNIK Sanit** range, to obtain domestic hot water. For correct installation of the tank, carefully follow the instructions given in the "Installation Instructions" section of this manual.

In this mode, select the desired DHW setpoint temperature (see "*Selecting the DHW setpoint temperature*"). The burner and the DHW pump will switch on. When the hot water tank reaches the selected DHW setpoint temperature, it is ready to heat up the heating installation if it is enabled, starting up the heating pump and switching off the DHW pump. The burner will shut down when the boiler reaches its selected setpoint temperature. The heating pump will stop when the room temperature reaches or exceeds the temperature set on the installation's room thermostat (if it has one).

If you wish, you may totally disable the domestic hot water production function by selecting "**oFF**" as the DHW setpoint temperature.

8.3 Heating circuit 2 functioning (Optional)

All the models in the **Evolution EV HFC** 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.

8.4 Functioning with an SRFC2/EV Underfloor Heating Kit (Optional)

The **Evolution EV HFC** boiler may be used with an SRFC2/EV Underfloor Heating Kit (fitted to heating circuit 1). This kit basically consists of a motorised 3-way mixing valve, a circulation 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 SRFC2/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.

9 ADDITIONAL FUNCTIONS

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

9.1 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.

9.2 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 8ºC. This system remains on standby while the boiler is plugged into the mains.

9.3 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 ***(6)***, 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.

9.4 Telephone relay connection

The **Evolution** 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.

9.5 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.

9.6 Anti-legionella function (optional) (with hot water tank only)

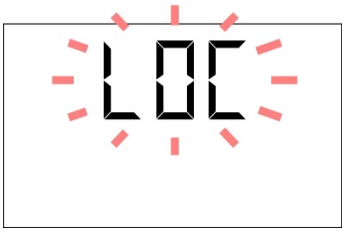
This optional function prevents the bacteria causing legionnaire's disease from proliferating in the hot water accumulated in the tank. Every 7 days, the temperature of the water in the tank is raised to 70 ºC to kill any such bacteria. This function will only run if the boiler is left switched on.

The boiler is supplied with this function disabled. To enable it, carefully read the "*Installation Instructions*" section. We recommend that the operation for enabling this function is carried out by qualified personnel.

9.7 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.

10 E20 REMOTE CONTROL (OPTIONAL)

A remote control (E20) may optionally be supplied together with the **Evolution EV HFC** 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.

10.1 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.

Heating installation with an SRFC2/EV underfloor heating kit (mixed circuit)

If the boiler has an SRFC2/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.

10.2 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 SRFC2/EV underfloor heating kit (mixed circuit)

If the boiler has an SRFC2/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.

10.3 Functioning with a DHW tank (Optional)

When the boiler is installed with a DHW production tank connected, the E20 remote control can be used to select up to two DHW temperatures and the desired DHW production times. The E20 remote control regulates the DHW tank temperature at each particular time, and enables or disables the DHW function according to the times scheduled.

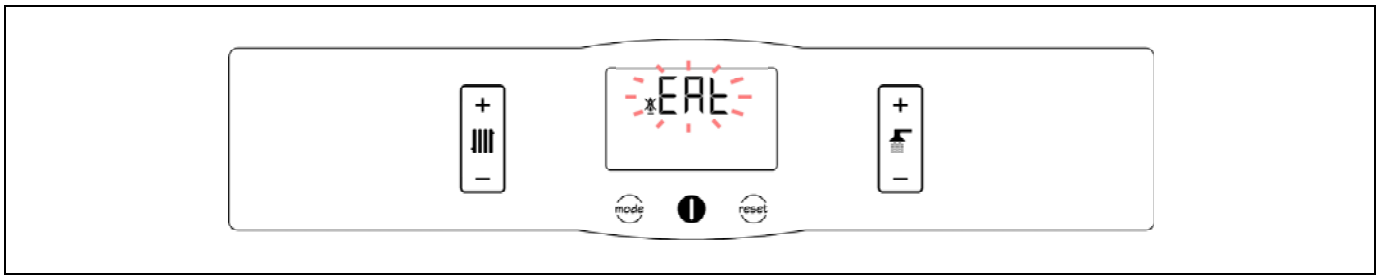
The E20 remote control also has an option for enabling a function to protect against legionella bacteria (see instructions enclosed with the E20 remote control).

10.4 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).

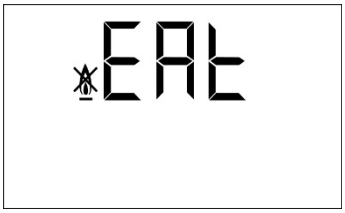
11 SAFETY CUT-OUTS

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.

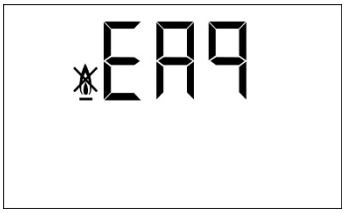
11.1 Temperature safety cut-out



When this cut-out occurs, the alarm code **"EAt"** (temperature alarm) will begin to flash on the digital display ***(11)***. The burner will switch off and stop heating the installation.

This occurs when the boiler exceeds a temperature of 110 ºC. To unblock it, wait until the boiler drops to below 100ºC 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.

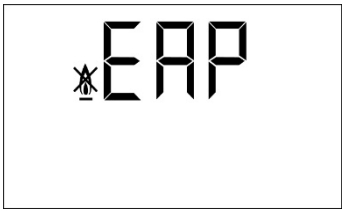
11.2 Burner cut-out



When this cut-out occurs, the alarm code **"EAQ"** (burner alarm) will begin to flash on the digital display ***(11)***. The burner will switch off and stop heating the installation.

This occurs as a result of an anomaly in the burner ***(10)*** or in the fuel installation. To unblock it, press the illuminated button that lights up on the burner.

11.3 Low pressure cut-out



When this cut-out occurs, the alarm code **"EAP"** (pressure alarm) will begin to flash on the digital display ***(11)***. 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***(11)***.

12 DRAINING THE BOILER

The water is drained from the boiler by opening the air drain valve ***(9)*** 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.

13 SHUTTING DOWN THE BOILER

To switch off the boiler, place your finger on the power touch button ***(14)*** for 1 second. In **Off mode**, while the boiler is plugged into the mains and connected to the fuel installation, its heating and DHW 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.

14 FIRST START-UP

For the **guarantee to be valid**, the boiler must be started up for the first time by an **official DOMUSA TEKNIK 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.

15 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.

16 BOILER MAINTENANCE

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

16.1 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.

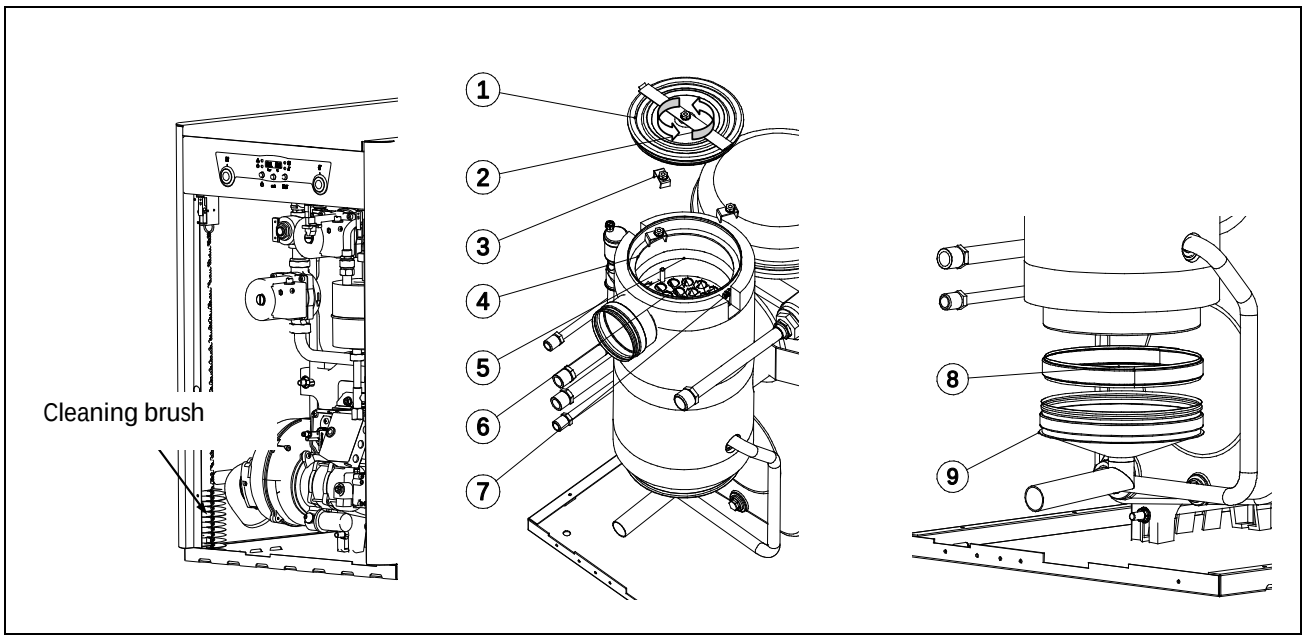
For correct cleaning, the following recommendations should be carefully observed:

Cleaning the boiler body

- Open and remove the outer door of the boiler.
- Remove the burner *(10)* 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 upper cover of the condenser, to access to the flue gases pipes of it. To open this cover, first open the fixing clamp and extract 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.



16.2 Anti-frost protection

The **Evolution** 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**.

16.3 Boiler water characteristics

In areas with water hardness of over 25-30ºF, 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.

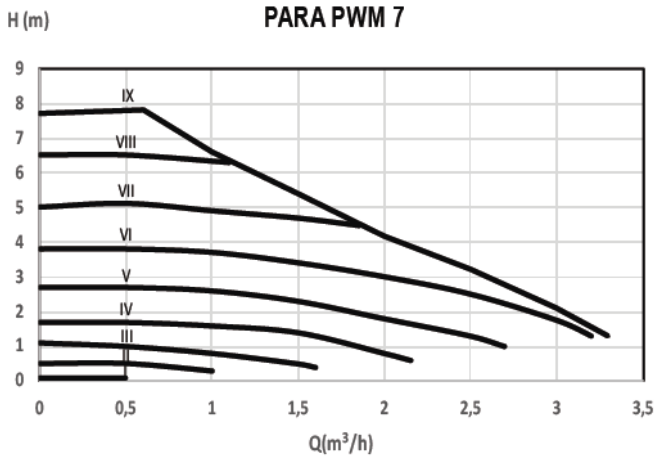
17 TECHNICAL DATA

EVOLUTION HFC			EV 20 HFC	EV 30 HFC	EV 40 HFC
Boiler type	-		Condensation		
			Heating only		
Rated heat output	P_{rated}	kW	19	30	40
Useful heat output	P_4	kW	19,0	28,7	38,7
Useful heat output (30%)	P_1	kW	6,1	8,5	12,4
Seasonal space heating energy efficiency	η_S	%	90	91	92
Useful efficiency	η_4	% (PCI)	96,55	97,96	97,29
		% (PCS)	91,04	92,38	91,74
Useful efficiency (30%)	η_1	% (PCI)	103,82	103,45	104,15
		% (PCS)	97,90	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	0,127	0,135	0,17
Emissions of nitrogen oxides	NOx	mg/kWh	86	84	88
Heating temperature adjustment	ºC		OFF, 30 - 85		
Maximum safety temperature	ºC		110		
Maximum pressure for heating mode	bar		3		
Heating expansion vessel capacity	Lts		8	8	12
Heating water volume	Lts		14	19,2	23,2
Water pressure drop	mbar		96	163	272
Fume temperature	ºC		69	67	83
Volume on fume side	m^3		0,094	0,114	0,175
Maximum fume flow	Kg/s		0,0085	0,0132	0,0186
Fume pressure drop	mbar		0,20	0,20	0,21
Combustion chamber length	mm		220	300	400
Combustion chamber type	-		Wet, with three flue runs		
Burner adjustment type	-		ON/OFF		
Electrical supply	-		~220-230 V - 50 Hz - 200 W		
Gross weight	Kg		122	155	180

18 CIRCULATING PUMP FLOW CURVES

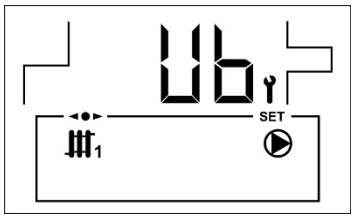
The hydrodriving pressure available in the installation at the boiler output can be deduced from the following graphs, having taken the boiler pressure drop into account.

18.1 Characteristic curves of the pump



18.2 Regulation of the circulation pump

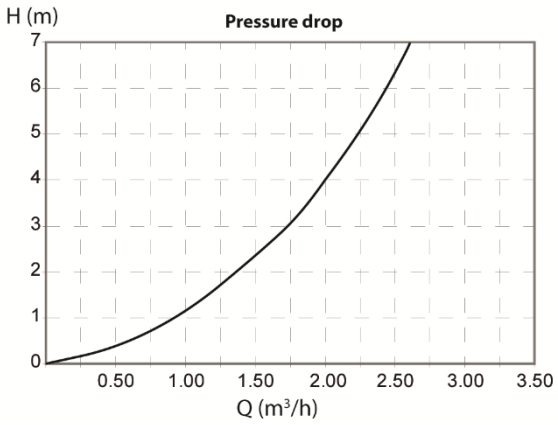
To regulate the speed of the circulation pump BC1 you should navigate to the "**Ub**" parameter by touching MODE button and touch ON button **(14)** to access it. Once inside the setting, using the jog dial on the right side of the display **(16)** the value changes. After selecting the desired speed, touch the ON touch button to record the value and exit the parameter "**Ub**".



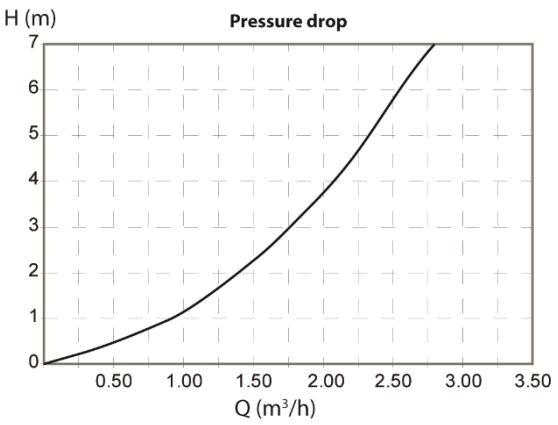
WARNING: **Any interference in the operation and installation of the heating circuit must be done by authorised personnel, always respecting current legislation and installation safety standards, both national and local level.**

18.3 Pressure drop

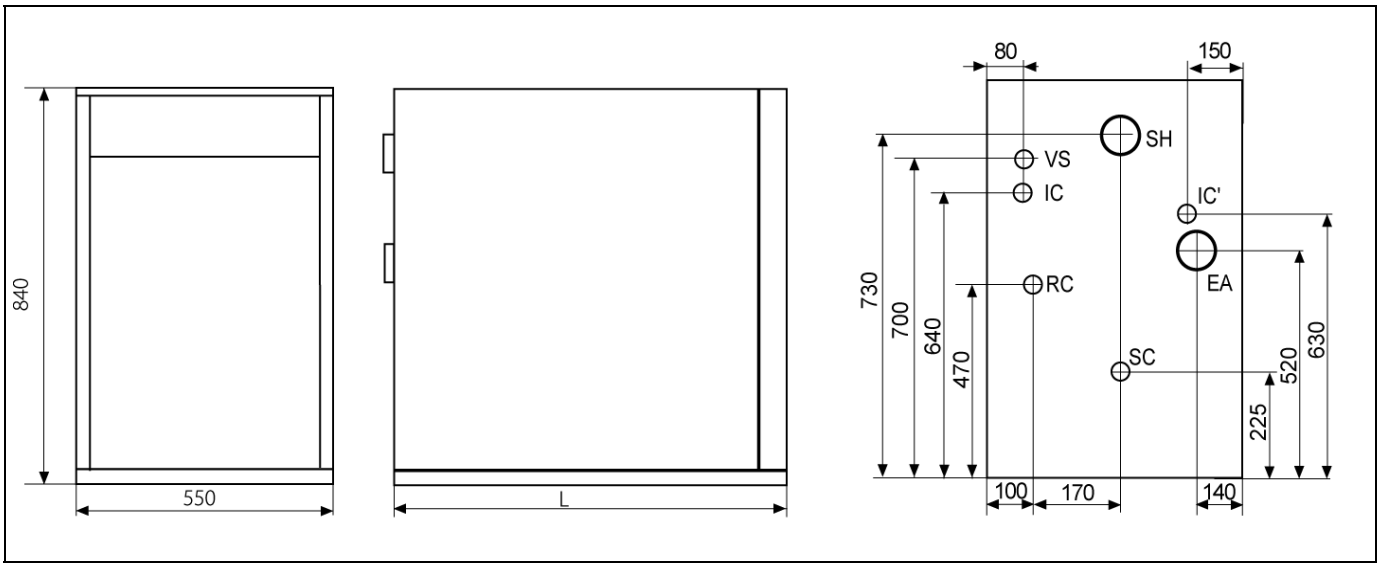
Evolution 30 HFC:



Evolution 40 HFC



19 DIAGRAMS AND MEASUREMENTS

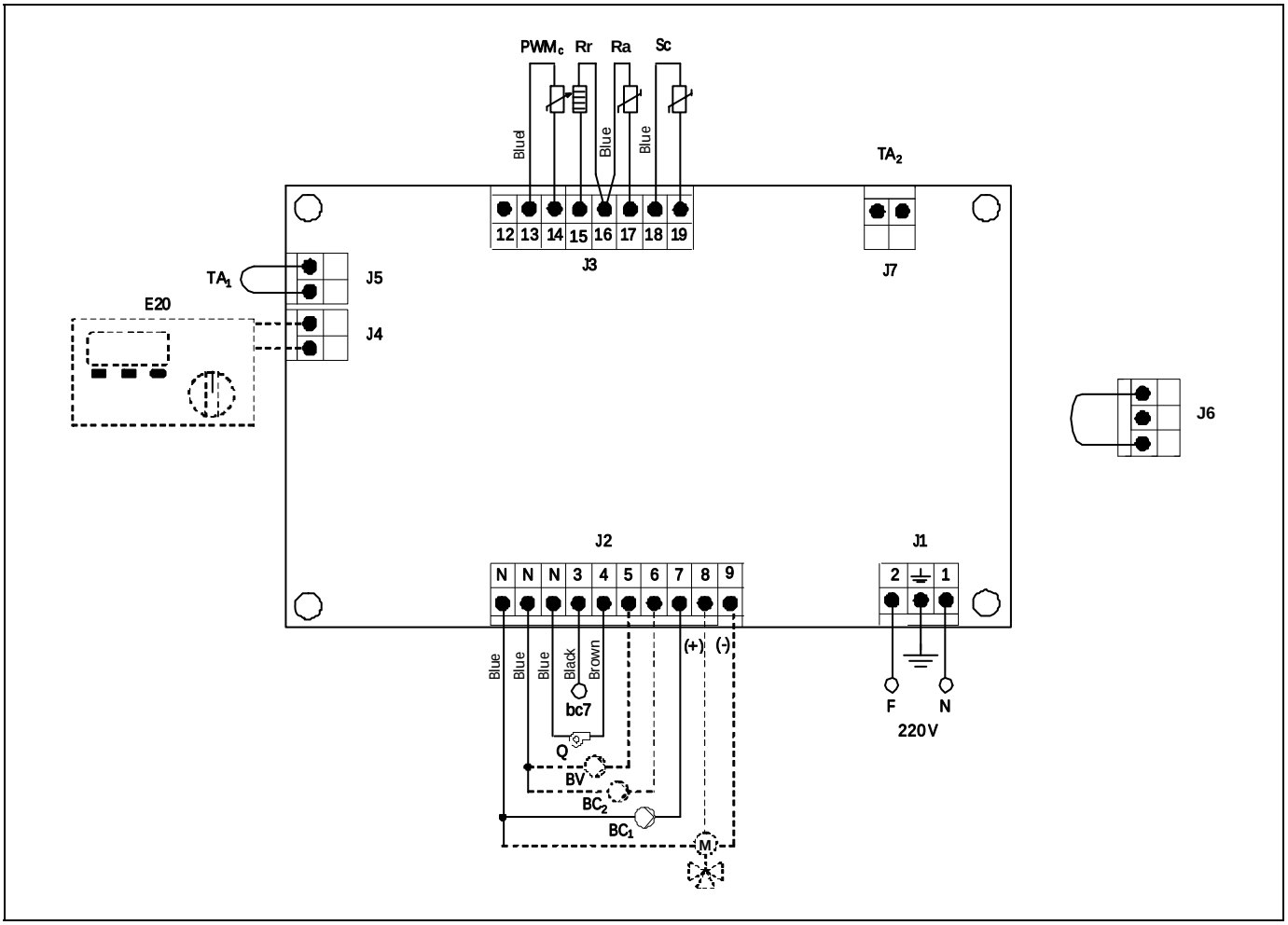


IC: Heating outlet.
IC': Optional heating outlet.
RC: Heating return.
VS: Safety valve.
SC: Condensation water outlet, 1" H.
SH: Fume exhaustion duct.
EA: Air intake, Ø80.

MODEL	IC, IC' RC	L MEAS.
EV 20 HFC	1"M	755
EV 30 HFC		855
EV 40 HFC		955

20 ELECTRICAL CONNECTION DIAGRAM

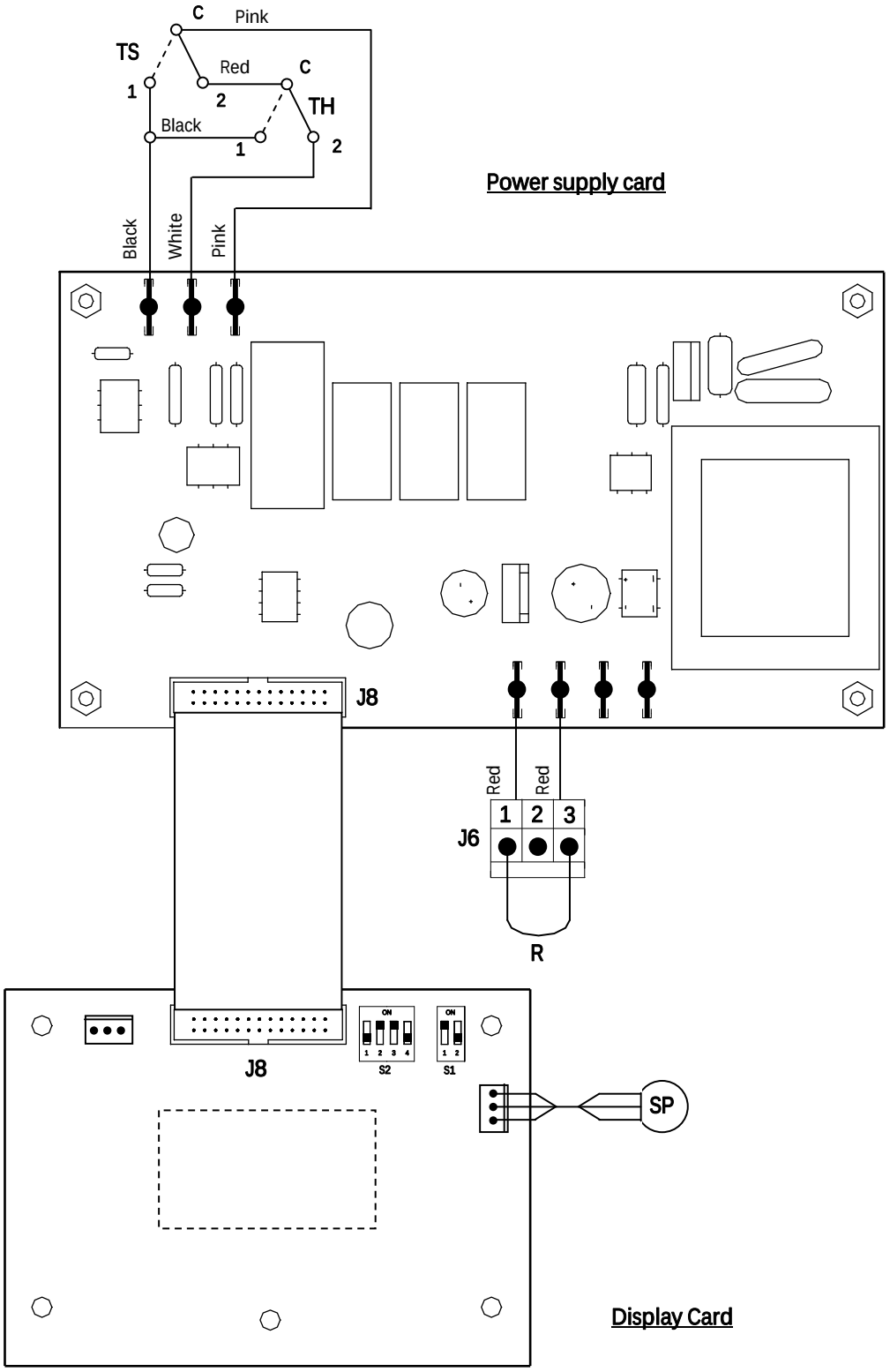
There are a series of removable connectors located on the rear of the control panel, for connecting the various options and components for this model. For correct connection, carefully follow the indications shown below:



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_c: Heating PWM cable.
Rr: Underfloor heating option resistance.
Ra: Storage tank option resistance.
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.

21 ELECTRICAL DIAGRAM



TS: Security thermostat.

TH: Fumes thermostat.

SP: Pressure sensor.

R: Phone relay.

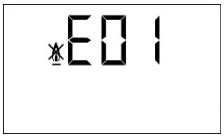
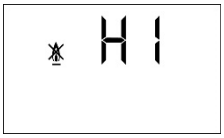
J6: Phone relay connector.

J8: PCB's connector.

S1, S2: Boiler model selection switches.

22 ALARM CODES

The **Evolution EV HFC** boiler has an electronic circuit which performs continuous self-testing to detect any operating failures in the boiler. When the electronic control detects an operating error, it indicates this by showing an alarm code on the display. The following list describes the possible alarm codes:

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 ***(10)***. 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. (with hot water tank only)	The tank DHW sensor is damaged or disconnected. Contact your nearest official technical assistance service to have it replaced.
	SRFC2/EV flow sensor (only with SRFC2/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 ***(6)*** 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.

23 BURNER

23.1 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.

23.2 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).

The suction of fuel must never reach the bottom of the tank, always leaving a minimum distance of 10 cm to the bottom, if possible, the suction kit with float is recommended.

In installations that allow it, the fuel returns must be made to a recirculation filter with air purge, thus avoiding oxidations in the diesel pump.

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.

23.3 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 DOMUSA TEKNIK 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.

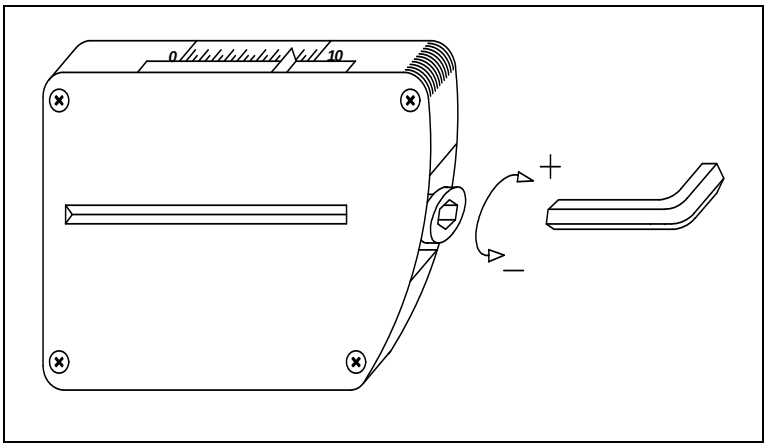
If the shape of the boiler makes it difficult or impossible to observe the flame, the combustion air flow can be regulated by observing the smoke coming out of the flue. If the smoke is dark in colour, more air will need to be provided to the burner, and if it is very white, the air in the burner will 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.

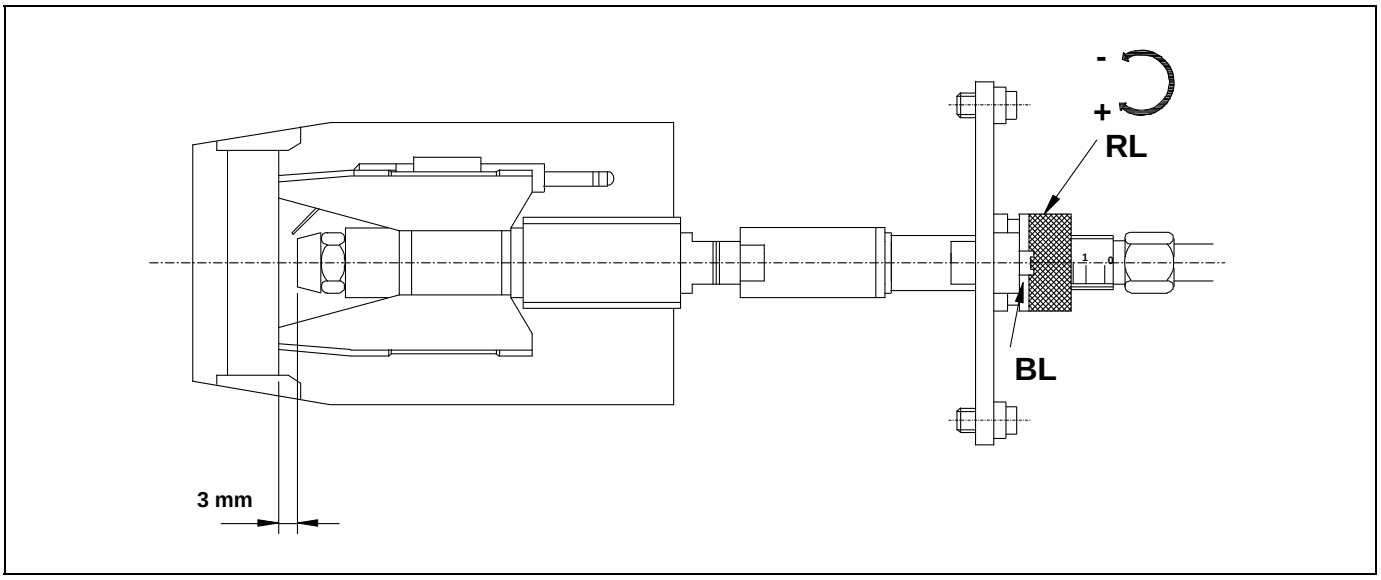
Primary air adjustment

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.



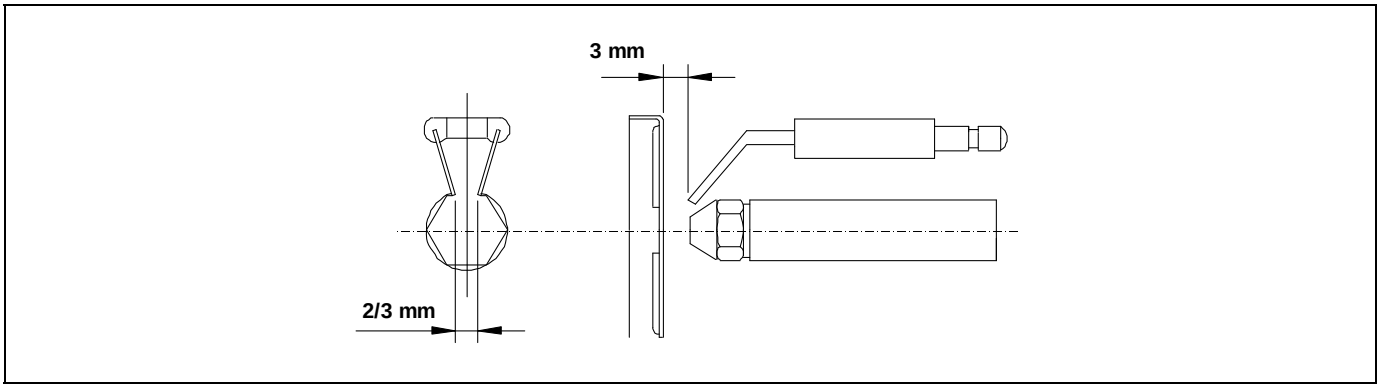
Combustion line adjustment

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.



23.4 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.

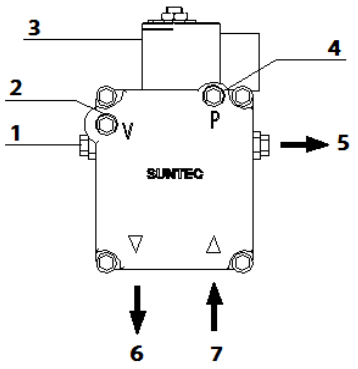
4 - Manometer point.

5 - Nozzle outlet.

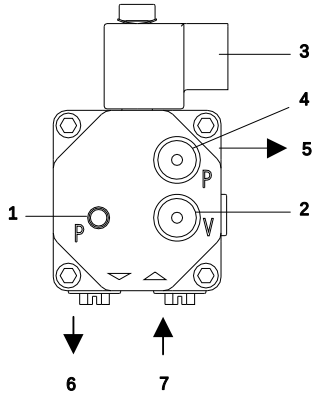
6 - Return.

7 - Intake.

SUNTEC - MOD. AS47C



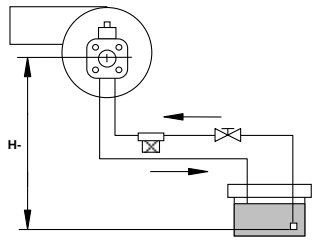
DANFOSS - MOD. BFP 21 L3



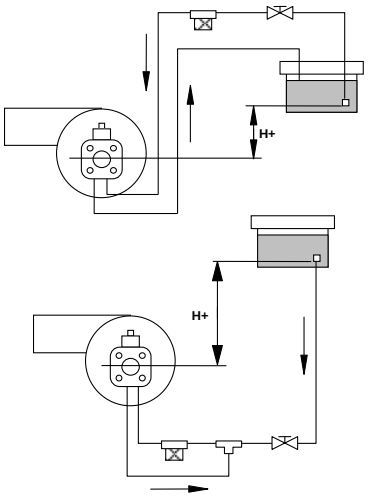
23.5 Oil supply piping diagrams

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.

Intake installation



Charging installation



Intake installation		
H- (m)	Pipe length	
	int.∅ 8 mm.	int.∅ 10 mm.
0.0	34	82
0.5	30	72
1.0	25	62
1.5	21	52
2.0	17	42
2.5	13	32
3.0	9	21
3.5	6	16

Charging installation		
H+ (m)	Pipe length	
	int.∅ 8 mm.	int.∅ 10 mm.
0.5	36	80
1,0	42	90
1.5	46	100
2.0	50	100

23.6 Technical specifications

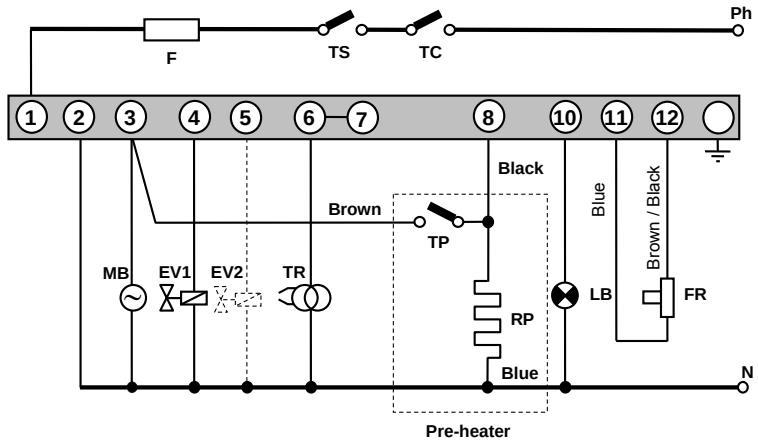
MODEL	EVOLUTION EV 20 HFC	EVOLUTION EV 30 HFC	EVOLUTION EV 40 HFC
Consumption max. Kg/h.	1,6	2,5	3,4
Power kW.	19	30	40
Motor power	200 W		
Functioning type	Todo o nada		
Power supply	220 V - 50 Hz		

23.7 Nozzles

Evolution 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
EVOLUTION EV 20 HFC	0,40/ 80º H	15	6,5	1
EVOLUTION EV 30 HFC	0,60/ 60º H	11	4,5	1
EVOLUTION EV 40 HFC	0,60/ 45º H	18,5	4	1

23.8 Electrical connection diagram



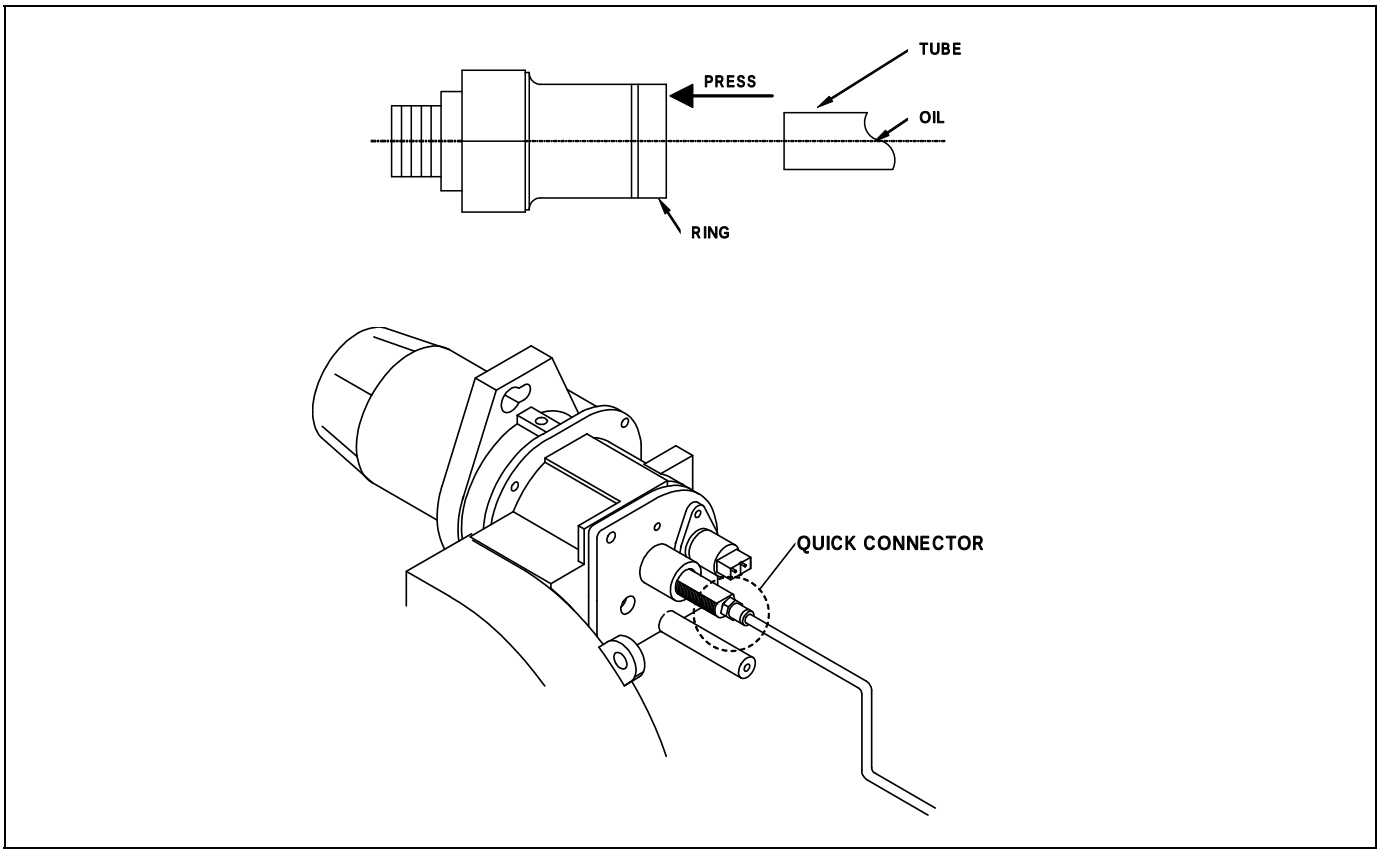
TC: Boiler Thermostat.
TS: Safety Thermostat.
F: Fuse.
LB: Cut-off Light.
FR: Photocell.
TR: Transformer.
MB: Oil Pump Motor.
EV: Valve.
RP: Pre-heater resistance.
Ph: Phase.
N: Neutral.
TP: Pre-heater thermostat.

23.9 Quick

23.10 connector

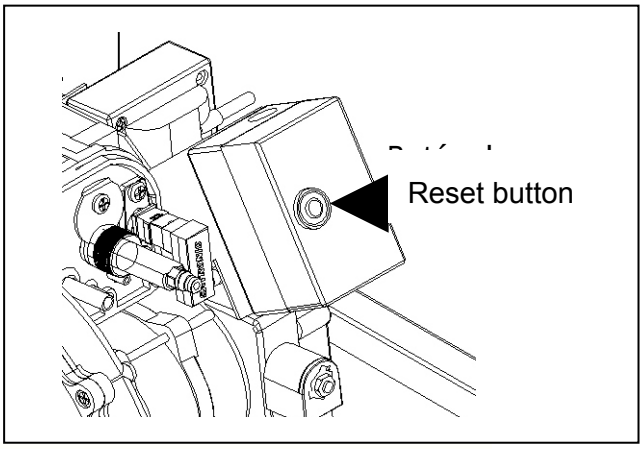
To connect and disconnect the red oil intake tube to the nozzle, proceed as follows:

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



23.11 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:

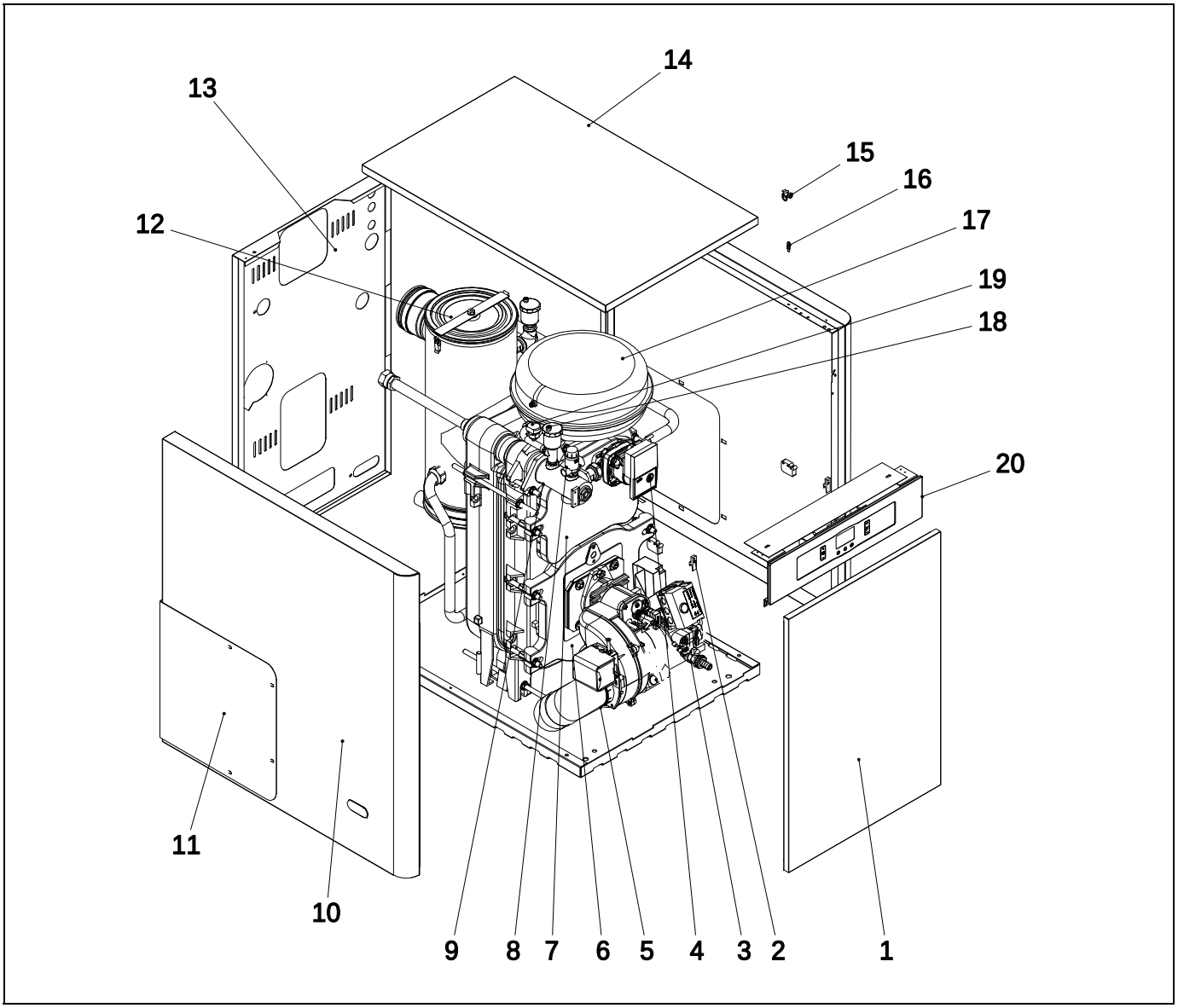


Colour code table for multi-colour indicator lights (LEDs)		
Status	**Colour code**	**Colour**
Wait time "tw", other stanby statues	○	Off
Fuel pre-heater on	●.....	Yellow
Ignition phase, controlled ignition	● ○ ● ○ ● ○ ● ○ ● ○	Flashing yellow
Functioning, flame Ok	□	Green
Functioning. flame not OK	□ ○ □ ○ □ ○ □ ○ □ ○	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

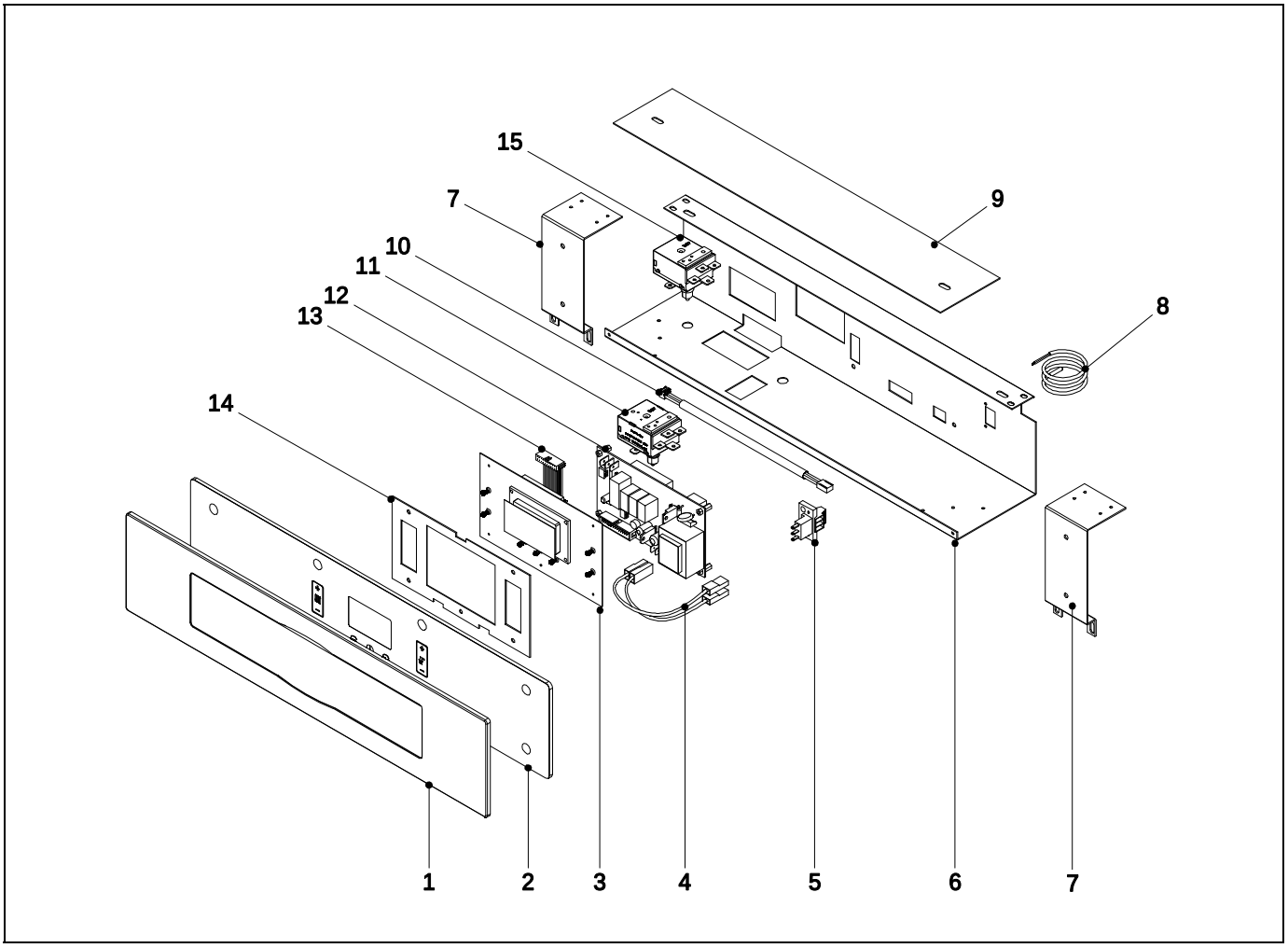
24 SPARE PARTS LIST

Boiler



Pos.	Code	Name
1	SEPO000594	Door
2	CFER000059	Automatic door-close
3	CVAL000034	Drainage valve
4	CFOV000148	Heating circulating pump
5	CFER000051	Extraflex tube
6	MAIS000042	Cast iron door's isolation
7	MAIS000041	Cast iron fume cover isolation
8	CVAL000004	Safety valve with T.M.
9	CFUR000022	Boiler colector
10	SEPO001872	Left side 20 HFC
	SEPO000691	Left side 30 HFC
	SEPO000694	Left side 40 HFC
10	SEPO001873	Right side 20 HFC
	SEPO000689	Right side 30 HFC
	SEPO000693	Right side 40 HFC
11	SEPO000801	Side cover
12	SCON000803	Condenser
13	SEPO000990	Rear panel
14	SEPO001874	Top cover 20 HFC
	SEPO000690	Top cover 30 HFC
	SEPO000692	Top cover40 HFC
15	CFER000048	Click spring
16	CTOE000012	Covers fixing clip
17	CFOV000025	Expansion vessel 30 HFC
	CFOV000043	Expansion vessel 40 HFC
18	CFOV000024	Automatic air vent
19	CELC000252	Pressure sensor
20	SELEEVO020	Electrical main board

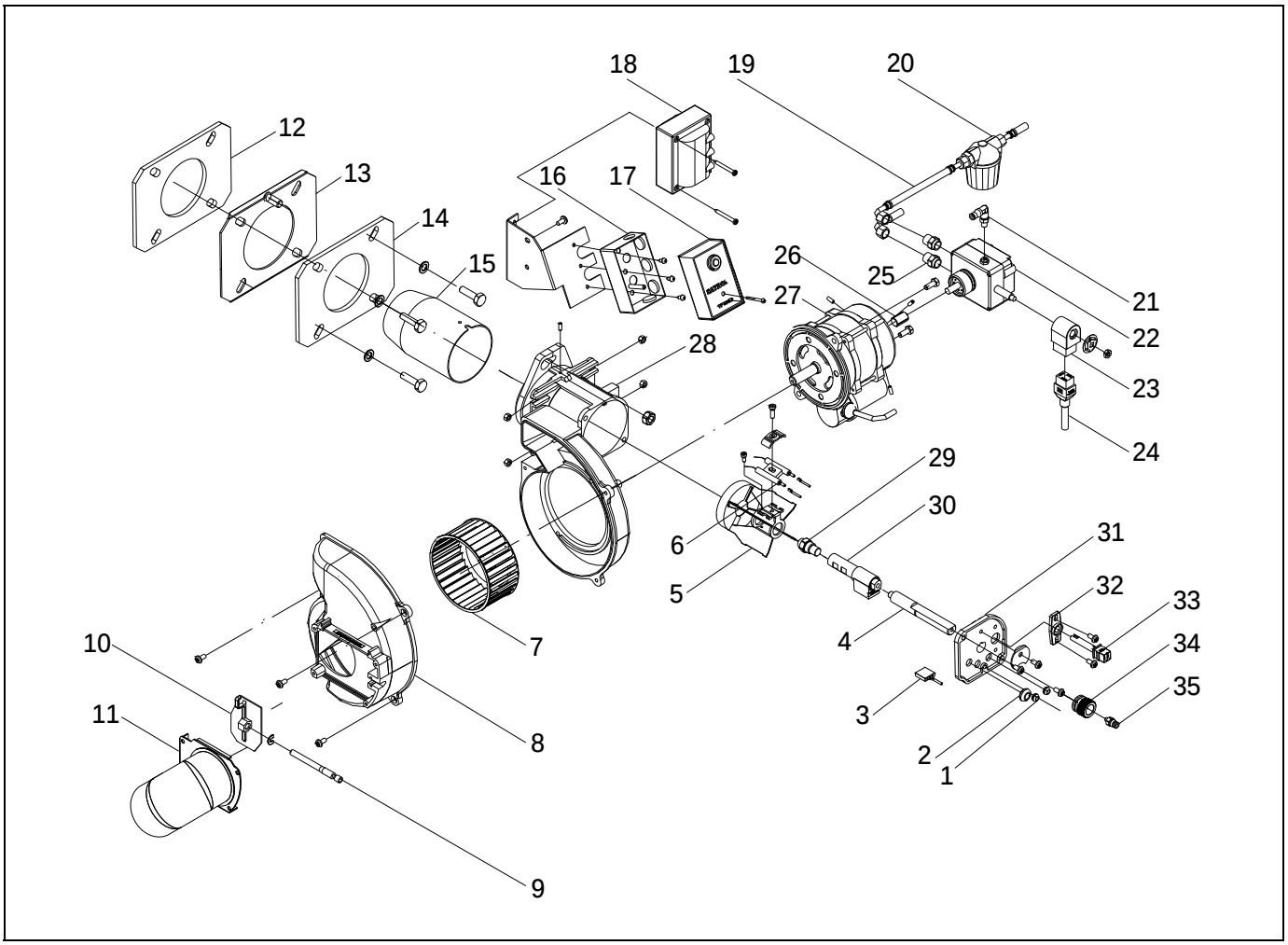
Electrical main board



Nº	Code	Name
1	CELC000294	Control panel embellisher
2	COTR000046	Main board glass
3	CELC000360	Display card
4	CMAZ000128	Cable harness
5	CELC000036	Weidmuller strip 3 poles
6	SEPO001947	Drawer
7	SEPO001325	Panel fastening
8	CELC000234	Temperature Evolution sensor 0,90 mts.
9	SEPO001326	Drawer cover
10	CELC000255	Pressure sensor cable
11	CELC000022	Safety thermostat 110º 1,5m
12	CELC000358	Power supply card
13	CELC000298	Electronic cards cable
14	SCHA008320	Display suport
15	CELC000022	Fumes thermostat

Evolution EV HFC

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
	CQUE000022	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	CQUE000033	Flange seal
13	SATQUE0001	Flange
14	CQUE000158	Support seal
15	SCON001667	Canon (EV 20)
	CQUE000198	Canon (EV 30/ EV 40)
16	CQUE000129	Control box plugs
17	CQUE000169	Control box
18	CQUE000005	Transformer
19	CQUE000147	Oil hose

Pos.	Code	Name
20	CQUE000055	Oil filter
21	CTOR000007	Elbow connector
22	CQUE000011	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	CQUE000172	Nozzle (EV 20)
	CQUE000203	Nozzle (EV 30)
	CQUE000074	Nozzle (EV 40)
30	CQUE000051	Preheater
31	CQUE000096	Line cover
32	CQUE000223	Photocell support
33	SOPE000241	Photocell
34	CTOE000054	Line adjustment nut
35	CTOR000006	Straight connector

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

NOTES:

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