



UK



SOLIDA 5 - SOLIDA 8
SOLIDA 5 PL - SOLIDA 8 PL +



INDEX

1	OPERATION WOOD AND CARBON	4
2	OPERATION WITH PELLETS AND SPECIAL KIT	9
3	USE AND MAINTENANCE	23

This manual is intended to assist engineers in the installation and maintenance of the Solida 5 PL and the Solida 8 PL +.

It also includes guidance for the user

The appliance must be installed in accordance with the following recommendations:-

- All National Building regulations and any Local Bylaws which you must check with the Local authority.
- Model and Local Water Undertaking Bylaws.

The installation should also be in accordance with the latest edition of the following standards and codes of practice.

- BS 715 Metal Flue pipes, fittings, terminals and accessories.
- BS EN 12828:2003 Heating systems in buildings. Design for water based systems.
- BS EN 12831:2003 Heating Systems in buildings. Method of calculation of the design heat load.
- BS EN 14336:2004 Heating systems in buildings. Installation and commissioning of water based heating systems.
- BS 7593 Code of Practice for treatment of water in heating systems.
- BS 7671 Requirements for electrical installations, IEE wiring regulations.

Pellets

Pellets should comply with EN 14961-2, ENplus- A1

Safe Handling

The installation will require two or more operatives to move it into its installation site, remove it from its packaging and during movement into its installation location. Manoeuvring the appliance may include the use of a pallet truck, and involve lifting, pushing and pulling.

Caution must be exercised during these operations

Operatives should be knowledgeable in handling techniques when performing these tasks and the following precautions should be considered:-

- Be physically capable
- Use personal protective equipment as appropriate e.g. gloves, safety footwear.

During all manoeuvres and handling actions, every attempt must be made to ensure the following unless unavoidable and / or the weight is light.

- Keep back straight
- Avoid twisting at the waist.
- Always grip with the palm of the hand.
- Keep load as close to the body as possible.
- Always use assistance.

Warning

Caution should be exercised when performing any work on the appliance.

Protective gloves and safety glasses are recommended.

- Avoid direct contact with sharp edges
- Avoid contact with hot surfaces.

"Not approved for use in a smokeless zone".

1 OPERATION WOOD AND CARBON

1.1 DESCRIPTION

1.1.1 INTRODUCTION

The cast iron **SOLIDA** boilers are a valid solution for the present energetic pro able to be used with solid fuels: wood and carbon. A kit is available to adapt it to be used with wood pellets (see section 2). **SOLIDA** boilers conform to Directive PED 97/23/CEE.

1.1.2 SUPPLY

The boilers are supplied in three separate parcels:

- Boiler body assembled and equipped with loading port, ash boxes port, smoke chamber with blast gate damper, ash collection basin and thermostatic draught regulator. Bag containing: 2 handles for the ports, a screw with bakelite knob for the manual

adjustment of the blast gate damper, a contact spring for the bulb of the thermometer and the M6 lever to be fixed at the blast gate damper. "Test certificate" to be kept with the documents of the boiler. Miscellaneous accessories required to use the boiler with pellets (see Section 2 in the manual).

- Cardboard box for casing with thermometer and documents bag.

1.1.3 DIMENSIONS

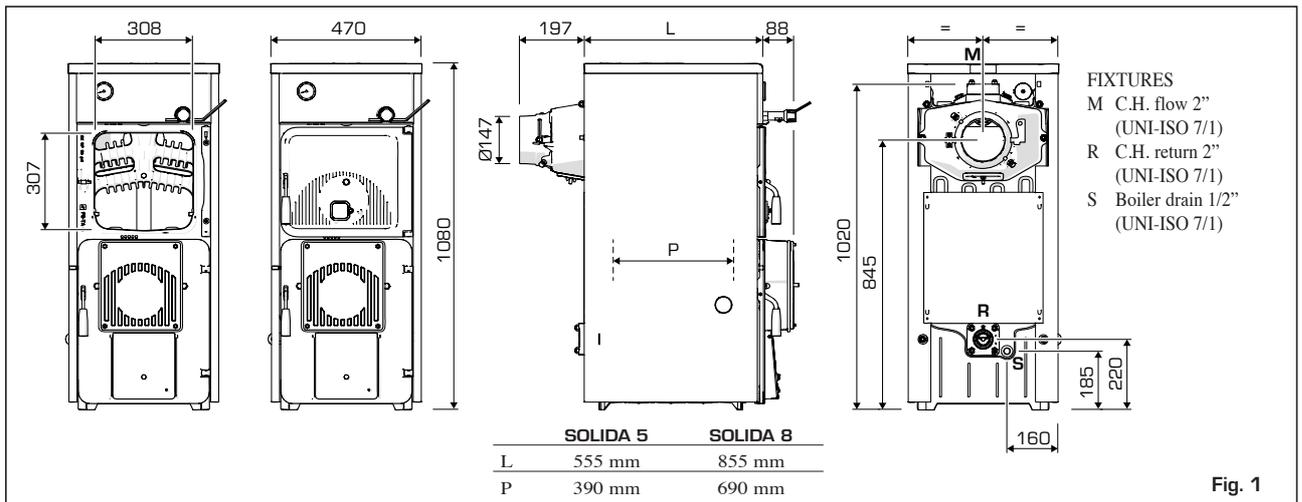


Fig. 1

1.1.4 TECHNICAL FEATURES

Model		SOLIDA 5	SOLIDA 8
Carbon heat rate *	kW (kcal/h)	25.6 (22,000)	39.5 (34,000)
Performance class		2	2
Duration of a coal load	h	≥ 4	≥ 4
Duration of a wood load	h	≥ 2	≥ 2
Load volume	dm ³	34.0	59.5
Minimum chimney depression	mbar	0.12	0.18
Number of elements	n°	5	8
Max. operating temperature	°C	95	95
Min. temperature of water returned to the plant	°C	50	50
Max working pressure	bar	4	4
Test pressure	bar	6	6
Boiler capacity	l	31	43
Weight	kg	245	350

* The heat rate will be reduced with about 10% for the operation with hard wood (birch - oak - olive).

1.1.5 HEAD LOSSES

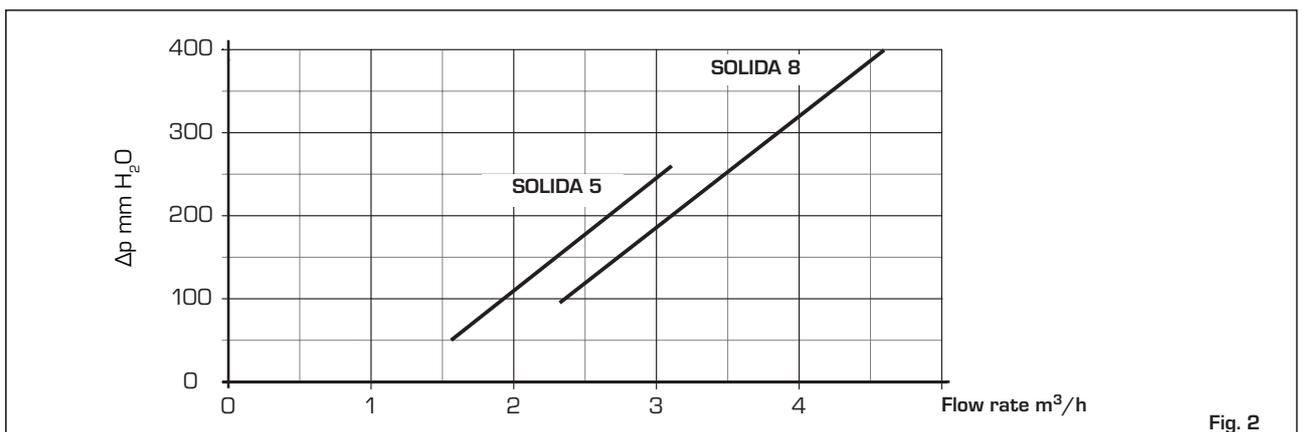


Fig. 2

1.2 INSTALLATION

1.2.1 BOILER ROOM

The boiler must be installed in a fixed location, by qualified engineers in compliance with all the instructions in this manual. The boiler must be positioned on non combustible material able to withstand the weight of the boiler when filled. Furthermore the installation must comply with current standards and regulations.

The boiler should be installed as a class B device(open flued). Purpose made ventilation must be provided and comply with the following:

- They should have a free section of at least 6 cm² for each 1,163 kW (1000 kcal/h). The minimum opening section shouldn't be smaller than 100 cm². The section can also be calculated, using the following ratio:

$$S = \frac{Q}{100}$$

where "S" is expressed in cm².
"Q" is expressed in kcal/h

- The opening should be situated on the lower part of an outer wall, preferably on the opposite of the one for the exhaust discharge.

1.2.2 CONNECTION OF THE FLUE

A flue should correspond to the following requirements:

- It should be of waterproof material and resistant to temperature of the exhaust and related condensations.
- It should be of a sufficient mechanical resistance and a low thermal conductivity.
- It should be ideally be twin walled and sealed in order to avoid cooling of the flue.
- It route should be as vertical as is possible and the terminal part should have a static aspirator, which assures an efficient and constant discharge of the combustion product.
- The flue terminal should be located in a position free from down draughts, at least 1 metre above the point of exit through the roof or 600mm above the apex of then roof- see fig 2a
- The flue diameter should not be less than the diameter of the boiler connection; for flues with square or rectangular sections, the internal section should be higher than 10% compared to the boiler connection one.
- The net section of the flue can be obtained from the following ratio:

$$S = K \frac{P}{\sqrt{H}}$$

S section resulting in cm²
K reduction coefficient:

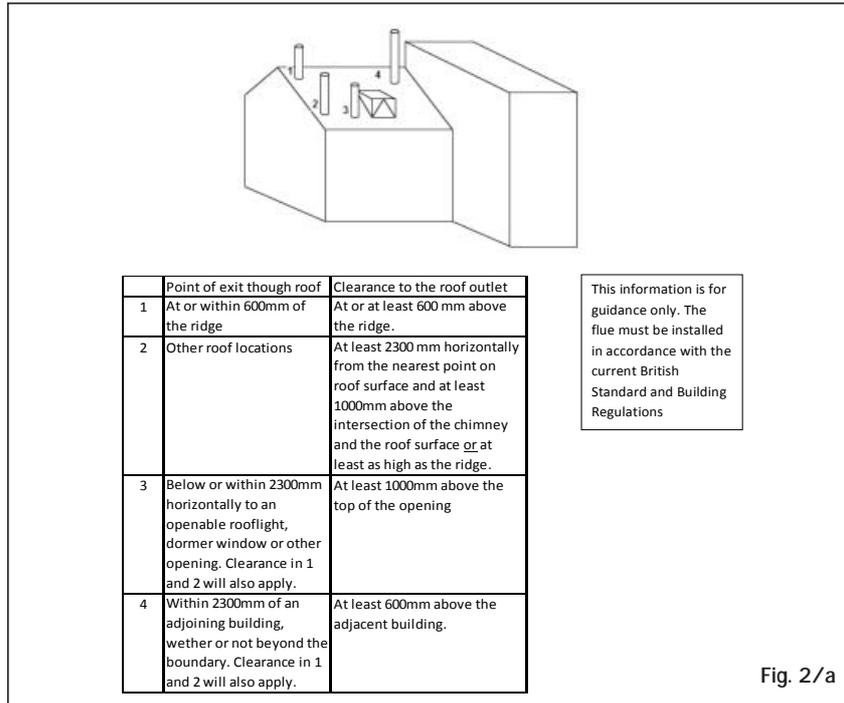


Fig. 2/a

- 0,045 for wood
 - 0,030 for carbon
- P boiler capacity in kcal/h
H height of the chimney in meters measured from the flame axis at the exhaust of the chimney in the atmosphere. For the dimensioning of the flue you should consider the effective height of the chimney in meters, measured from the flame axis at the top, diminished with:
- 0,50 m for each direction changing of the connection tube between boiler and flue;
 - 1,00 m for each horizontal development meter of the connection itself.

1.2.3 CONNECTION OF THE PLANT

The connections to the boiler must be accessible. Isolation valves **MUST NOT** be fitted. Drain points must be included. Plastic piping should not be used.

CAUTION: It is obligatory to include 3 bar safety valves on the system not included in supply.

Plant filling

The heating system should be flushed and cleaned prior to connection of the boiler. The final filling should be done slowly to allow any air to escape. The cold loading pressure of the plant should

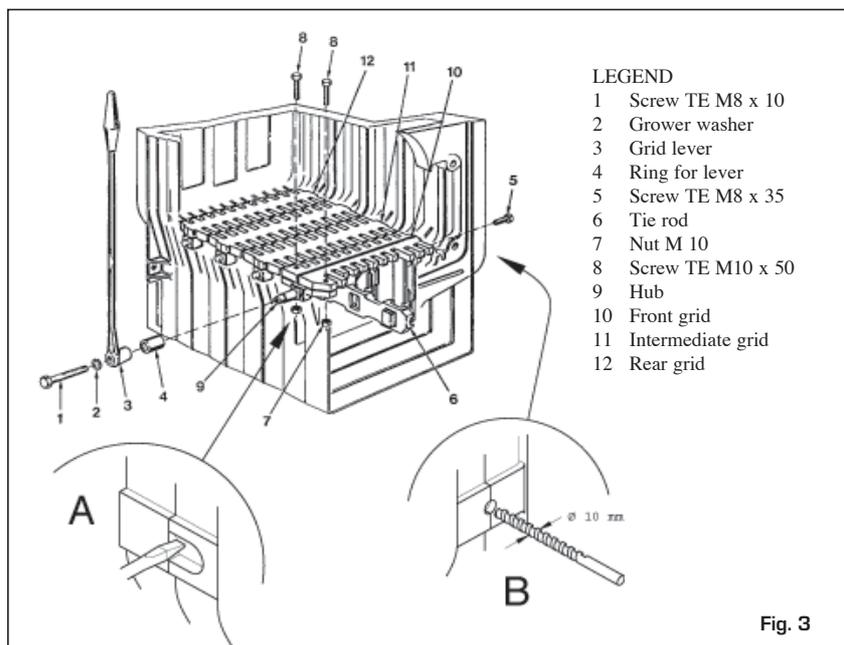
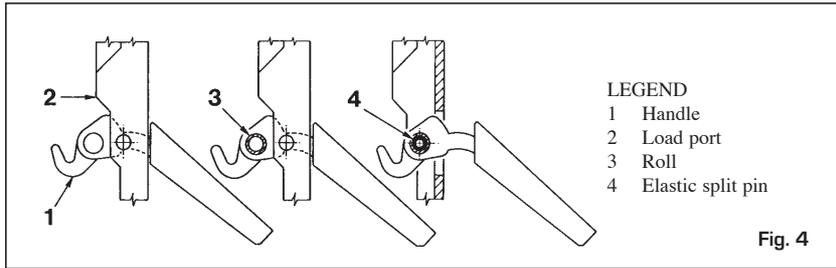


Fig. 3



not be less than 0.5 bar.

Features of the feed water

The system water must be treated in accordance with BS7593.

The inhibitor concentration must be checked frequently particularly in the following circumstances.

- Large systems (high water contents)
- Frequent replenishments due to system leakages.
- If the system is drained.

1.2.4 BRAZIER GRID ASSEMBLY (OPTIONAL)

In order to carry out the assembly proceed in the following way (fig. 3):

- Carefully break out the cast as shown in A (fig. 3). Then using a bit of 10 mm as indicated in the detail (B).
- Place the back grid (12) in the combustion chamber.
- Place the front grid (10) and block it to the hub (9) with the screws (8) and the nuts (7); block the front grid from the right side of the boiler body with the screws (5).
- Hook the tie rod (6) to the seats extracted from the front and rear grid.
- Place the intermediate grids (11).
- Introduce the ring (4) and the lever (3) on the hub (9), fixing then everything with the washer (2) and the screw (1).

1.2.5 ASSEMBLY OF THE ACCESSORIES

The closing handles for the ports and the screw with the adjustment knob for the blast gate damper are supplied separately, to avoid damaged during the transport.

Both the handles and the screws with knob are packed in a nylon bag, placed inside the ash collection basin.

For the assembly of the handles proceed as following (fig. 4):

- Take a handle (1), insert it in the opening of the load port (2) and insert the roller (3) in the opening of the handle; secure the handle with split pin (4).
- Carry out the same operation for the handle of the ash box port.

To assemble the screw with the knob, proceed as follows (fig. 5):

- Remove the screw M8 x 60, which fixes

the air blast damper to the ash box port and screw the screw with the bakelite knob (1) on, which is supplied in the packaging.

Place the blind nut with cap (2) at the end of screw M 10.

- Fix lever M6 to the air blast damper (3) placing it in a horizontal direction on the right. The lever has an opening at its end, where the chainlet of the thermostatic regulator will be connected.

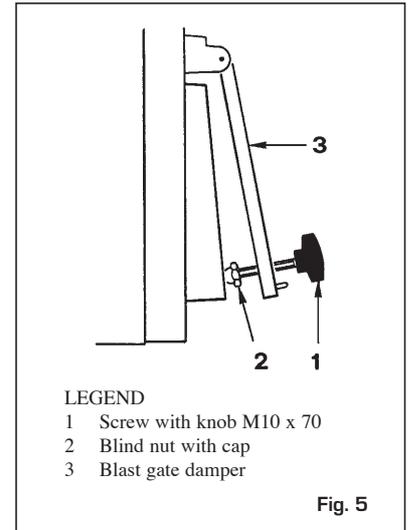
1.2.6 CASING ASSEMBLY

Assemble the casing as shown in figure 6.

The side panes are secured with brackets to the tie rods that hold the cast sections together:

- Loosen the second or third nut of each tie rod.
- Hook the left side (1) on the lower tie rod and superior of the boiler and adjust the position the nut and locknut to correctly locate the side panel.
- Fit the RHS (2) panel in the same way as LHS (1).
- Hook the front upper board (3) on to the two splines in the opening, on each side.
- Carry out the same operation to fix the back lower board (4).
- The protection deflector (5) is fixed to the control board (6) with three self-threading screws.

Fix the board by means of the press fit-



tings.

Then uncoil the capillary of the thermometer and place it in the left pocket in the rear section of the heat exchanger and secure with the clip.

The right pocket is used for a temperature gauge.

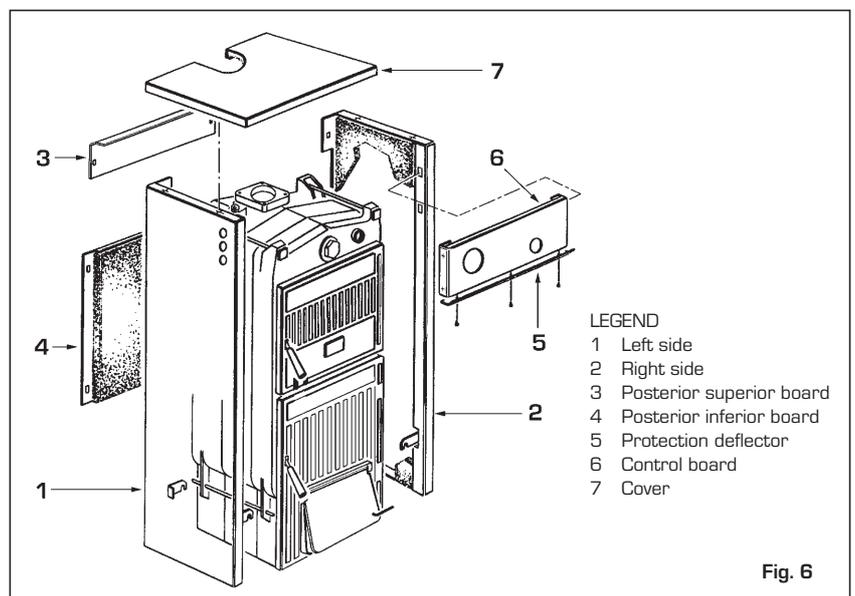
- Fix the cover (7).

NOTE: Remove the test certificates and boiler documentation from the combustion chamber and keep safe.

1.2.7 DRAUGHT REGULATOR

The boilers SOLIDA can be supplied with 2 types of thermostatic regulators.

NOTE: In order to fix the lever with the chainlet in the regulator holder it is necessary to remove the deflector, which is assembled on the control board, by unscrewing the three screws that fix it (fig. 6). Replace the protection deflector after the assembling and related adjustment.



"THERMOMAT RT-C" Regulator

The "Thermomat" regulator is equipped with a thermosetting resin knob of an adjustment field from 30 to 100 °C (fig. 7).

Screw the regulator on the 3/4" opening of the anterior head and orientate the red index on the upper part.

The lever with the chainlet should be introduced in the regulator holder after having assembled the instrument holder board and after having removed the plastic lock.

If the joint is taken out, which fixes the lever with the chainlet, take care in assembling it again in the same position. After having placed the knob at 60°C, block the lever with the chainlet in a slightly inclined position downwards, so that the chainlet will be in axis with the air gate damper.

For the adjustment of the "Thermomat", which essentially consists in the determination of the chainlet length, proceed in the following way:

- Place the knob at 60°C.
- Switch on the boiler with opened air gate damper.
- When the water temperature of 60° C is reached in the boiler, fix the chainlet in such a way on the lever of the air gate damper, in order to obtain an opening of about 1 mm.
- Now the regulator is calibrated and it is possible to choose the desired operating temperature by rotating the knob.

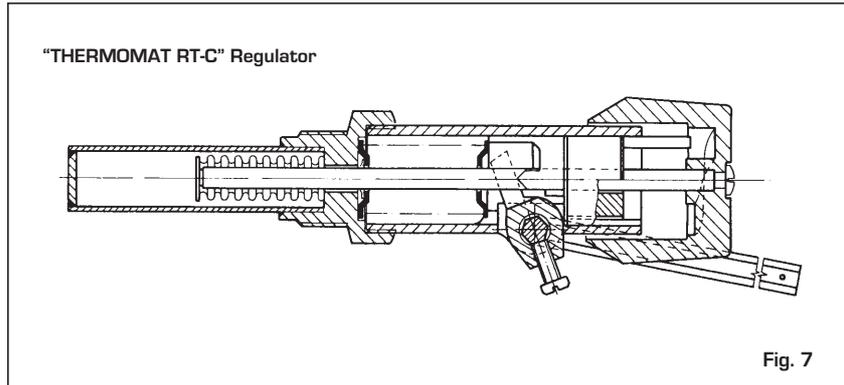


Fig. 7

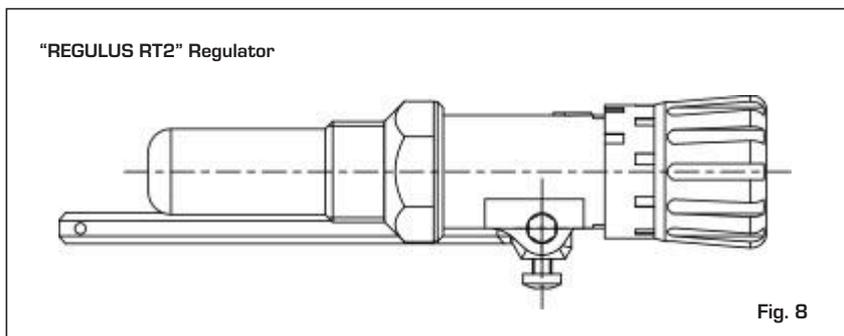


Fig. 8

"REGULUS RT2" Regulator

The adjustment field is included between 30

and 90°C (fig. 8). Follow the same instructions of the "Thermomat" regulator for the assembly and the activation.

1.2.8 HYDRAULIC CONNECTION DIAGRAM

Open expansion tank system

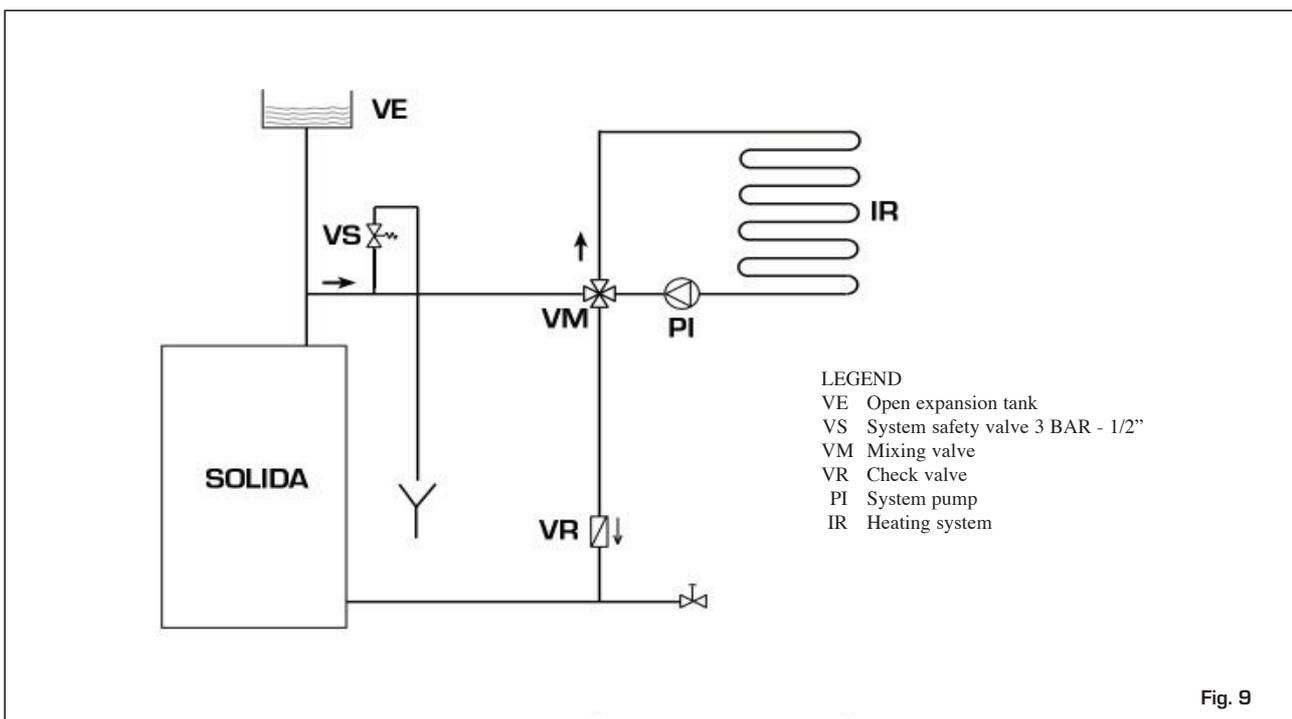


Fig. 9

Closed expansion tank system with heat exchanger and optional thermostat valve

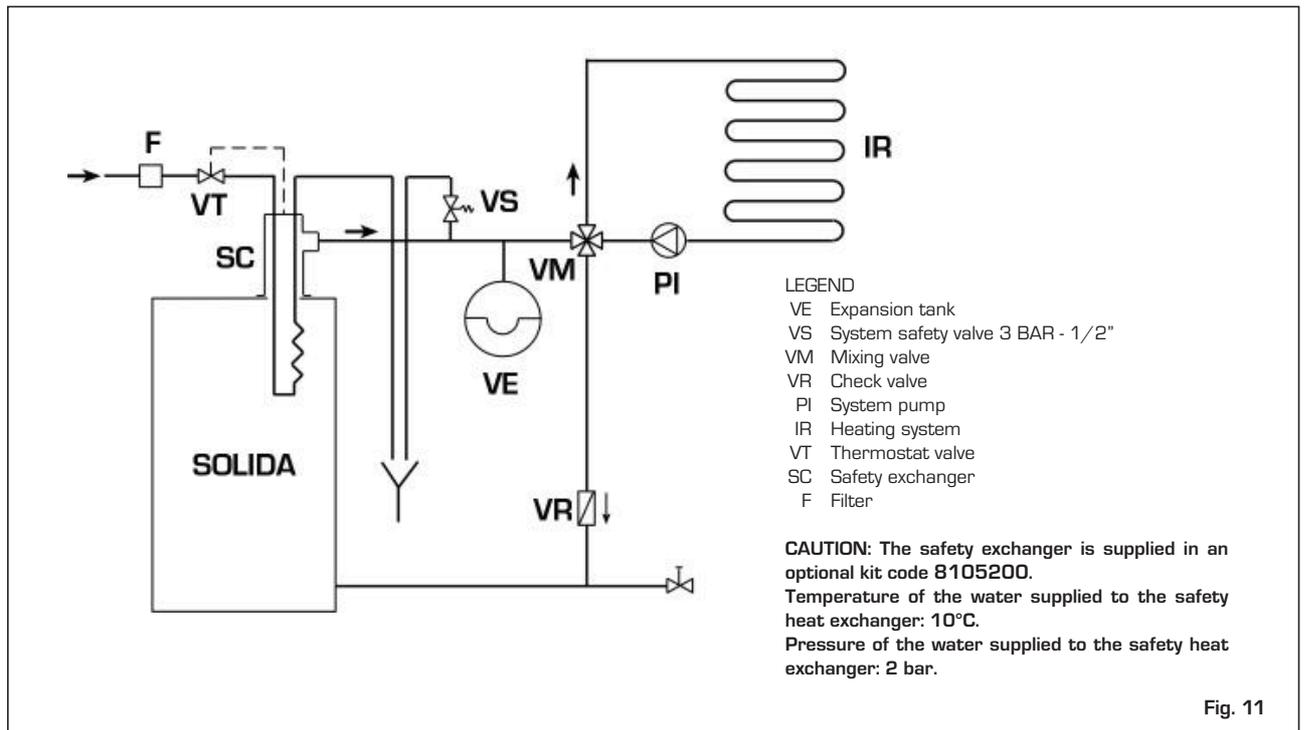


Fig. 11

1.3 DESCRIPTION

1.3.1 PRELIMINARY IGNITION CHECKS

Before the use of the boiler, it is necessary to follow the following instructions:

- It is preferable that the installation is open vented open expansion tank (fig. 9).
- The connecting pipe to the expansion tank should remain open at all times.
- The heating pump should always be running during the operation of the boiler.
- The pump should not be controlled by the thermostat.
- If the installation is equipped with a 3 or 4 ways mixing valve, it should always be placed in the opening position toward the installation.
- Ensure that the draught regulator operates freely, and its mechanism is not obstructed.

1.3.2 CLEANING

The combustion chamber and smoke passages must be cleaned regularly. Use brushes to thoroughly clean the smoke passages (fig. 10) remove and empty the ash tray at the base of the heat exchanger.

1.3.3 MAINTENANCE

Ensure that the boiler is cold before per-

forming any maintenance or repair.

Do not empty the boiler while the system water is hot.

WARNING:

Only suitably qualified personnel are permitted to work on this boiler. Should the boiler is left out of use for a long period

the safety valve must be inspected on recommissioning.

If the safety valve should malfunction and cannot be re-calibrated, replace it with a new 1/2" valve calibrated to 3 BAR and conforming with Directive PED 97/23/CEE.

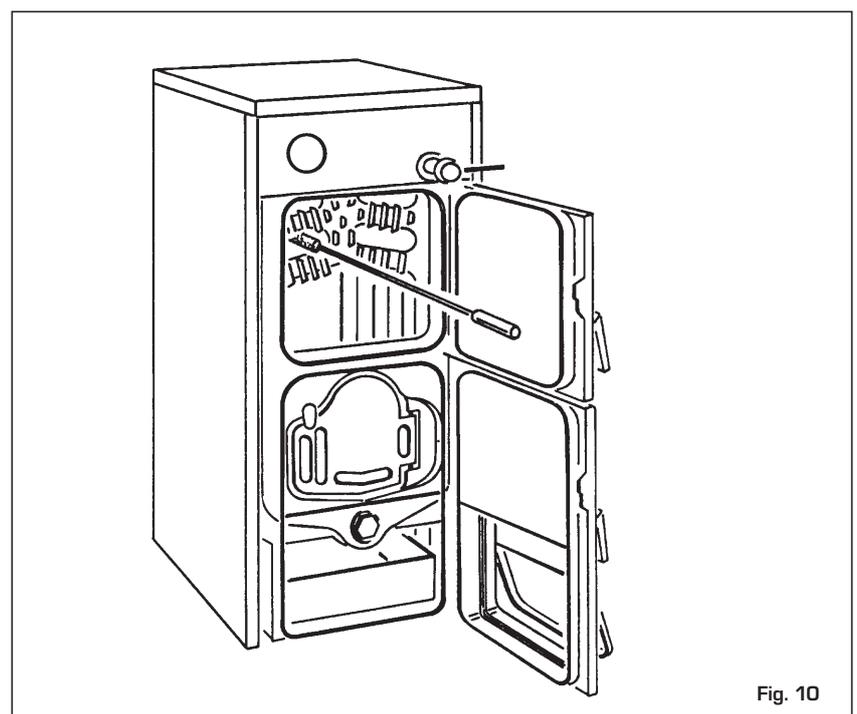


Fig. 10

2 OPERATION WITH PELLETS AND SPECIAL KIT

2.1 DESCRIPTION

The **SOLIDA** boilers may be adapted to operate with pellets.

This is achieved with use of the **SOLIDA PL pellet kit**, consisting of:

1. Burner with incorporated electronic control.
2. Pellet feed with motor and screw feeder.
3. A 80 litre pellet store (formed from the accessory packaging). NOTE available separately are a 200, 300 or 500 litre

- pellet store.
4. Accessory kit containing:

	SOLIDA	
	5 PL	8 PL +
a) front spacers	n° 6	n° 10
b) back spacers	n° 2	n° 4
c) deflectors	n° 3	n° 5
d) cement bricks	n° 2	n° 3
e) 242x272x4 gasket	n° 1	n° 1

Only pellets that comply with EN 149961-2, ENplus- A1. should be used with this appliance.

The boiler complies with Class 3 in accordance with EN 303-5.

2.1.1 OVERALL DIMENSIONS

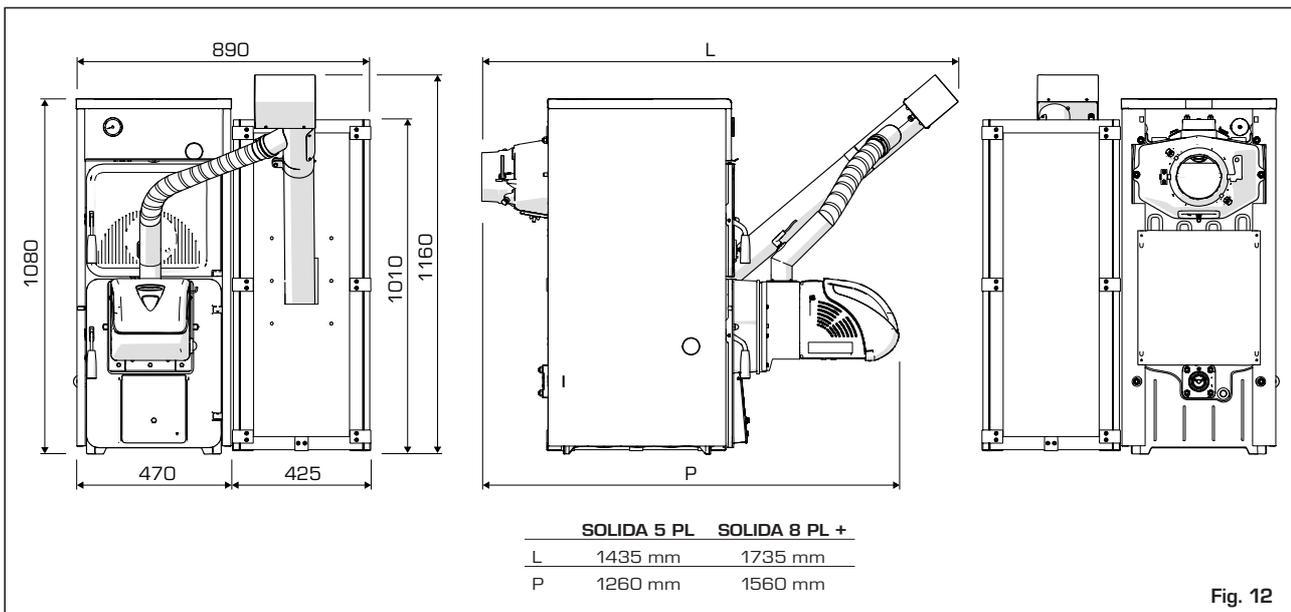


Fig. 12

2.1.2 TECHNICAL FEATURES

Model		SOLIDA 5 PL	SOLIDA 8 PL +
Nominal thermal output	kW	26,20	32,20
Minimum thermal output	kW	7,84	8,98
Nominal heat input	kW	34,07	40,36
Minimum heat input	kW	10,62	11,26
Maximum useful efficiency	%	76,90	79,78
Minimum useful efficiency	%	73,82	79,75
Boiler classification		Class 3	Class 3
CO mg/Nm ³ at 10% of O ₂ at the nominal thermal input		516,01	103,21
CO mg/Nm ³ at 10% of O ₂ at the minimum thermal input		776,17	467,24
OGC mg/Nm ³ at 10% of O ₂ at the nominal thermal input		3,02	3,60
OGC mg/Nm ³ at 10% of O ₂ at the minimum thermal input		8,14	12,09
G mg/Nm ³ at 10% of O ₂ at the nominal thermal input		25,8	22,13
G mg/Nm ³ at 10% of O ₂ at the minimum thermal input		-	-
Size of a pellet container with a capacity of 200 dm ³	H	1081	1081
	L	440	440
Size of a pellet container with a capacity of 300 dm ³	H	1381	1381
	L	440	440
Size of a container with a capacity of 500 dm ³	H	1481	1481
	L	640	640

2.2 INSTALLATION

2.2.1 BOILER ADAPTATION FOR OPERATION WITH PELLETS AND SPECIAL KIT

A) Remove the cast iron cover plate from the lower door. Open the door and remove the latch and screws securing the grill. remove the grill.



Fig. 13 Remove the blind plate



Fig. 14 Remove the grille

B) Place the cast iron deflector with the rear side supports.



Fig. 15 1st deflector



Fig. 16 1st deflector

C) Place the cast iron deflector with the front side supports.



Fig. 17 2nd deflector



Fig. 18 2nd deflector

D) Place the remaining front lateral supports and insert the cement bricks



Fig. 19 Lateral supports



Fig. 20 Cement bricks

WARNING!
THE CEMENT BRICKS MUST BE POSITIONED TO THE FRONT PART OF THE BOILER

E) Place the last cast iron deflector.



Fig. 21 3rd deflector

F) Screw the M10 screws to the blind plate.

G) Fix the plate to the combustion chamber door with the 4 M8 screws using the gasket.

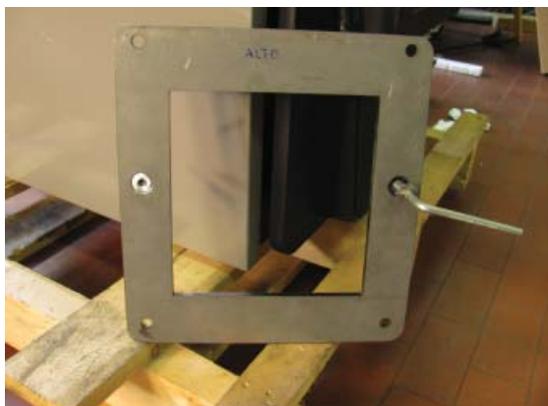


Fig. 22 Plate



Fig. 23 Plate fixed to the combustion chamber door

H) Place the rock wool insulation on the burner sleeve (See Fig. 24).



Fig. 24 Insulation

I) Assemble the burner and fix it with the 2 M10 flange nut.



Fig. 25 Burner assembly



Fig. 26 Fixing of the burner

WARNING!
TIGHTEN THE NUTS UNTIL THE BURNER PLATE RESTS ON THE BOILER PLATE.
DO NOT OVERTIGHTEN.

J) Unscrew the thermostatic regulator (if provided) and screw the brass reducer. use a suitable sealant.

K) Screw the safety thermostat to the reducer.



Fig. 27 Brass reducer



Fig. 28 Safety thermostat

L) Remove the thermometer and plug the panel hole.



Fig. 29 Remove the thermometer



Fig. 30 Plug the hole

M) Block the suction door if the boiler was previously used for operation with wood or carbon.



Fig. 31 Suction door

WARNING!
OPEN THE LOADING DOOR ONLY WHEN THE BURNER IS TURNED OFF.

N) Assembly of an 80-kg tank (this is formed from the packaging).

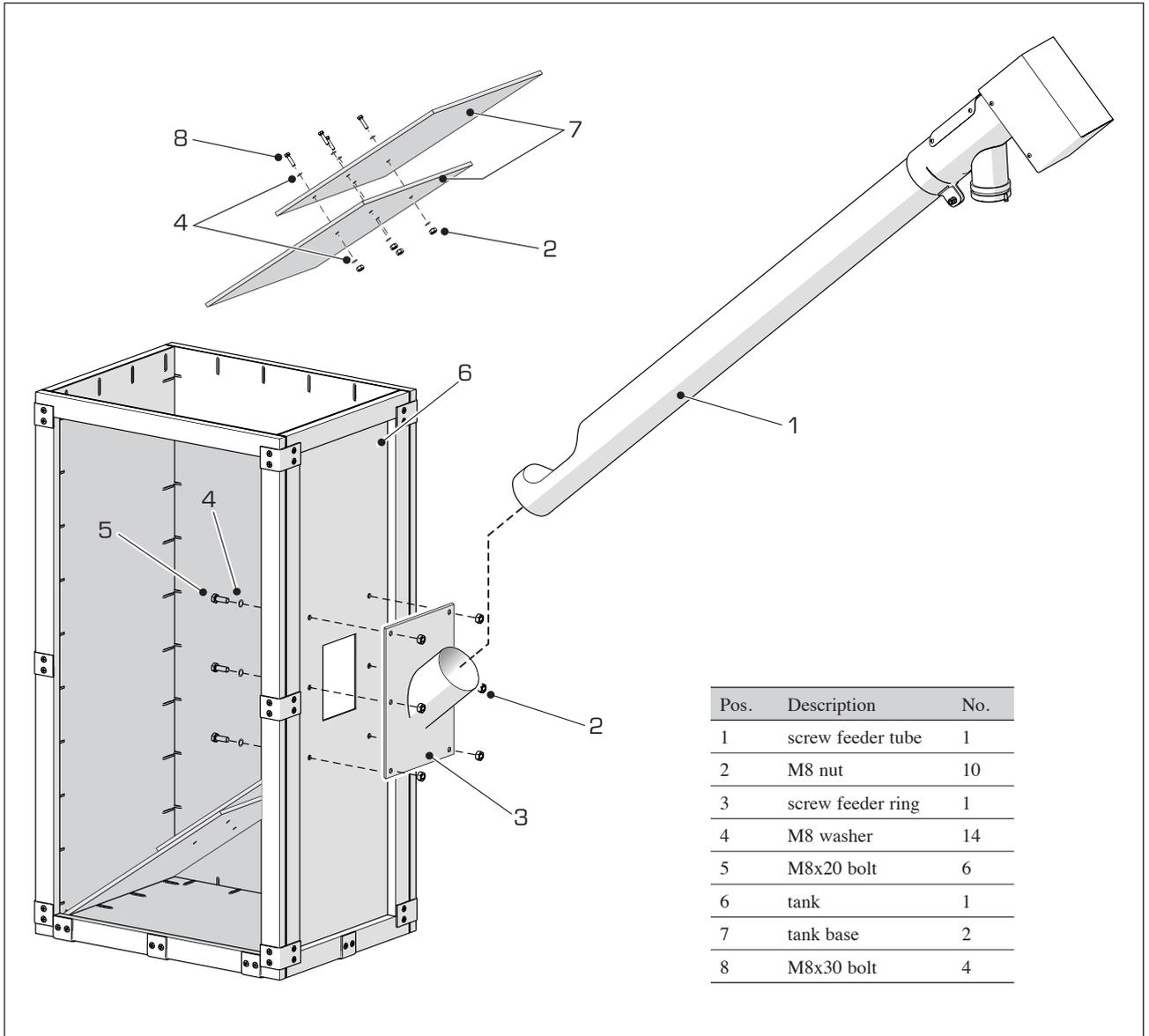


Fig. 32 Tank and screw feeder assembly

2.2.2 ELECTRICAL CONNECTIONS

- A) Connect the cable connector (1) coming from the screw feeder motor to the burner.
- B) Connect the cable connector (2) coming from the burner to the safety thermostat.



Fig. 33 Screw feeder motor cable

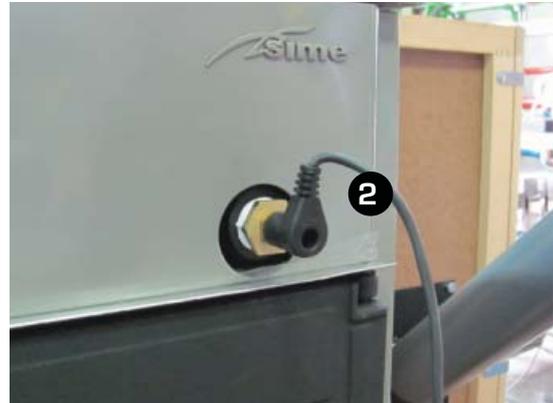


Fig. 34 Safety thermostat connector

- C) Pass the NTC sensor through the grommet on the boiler body

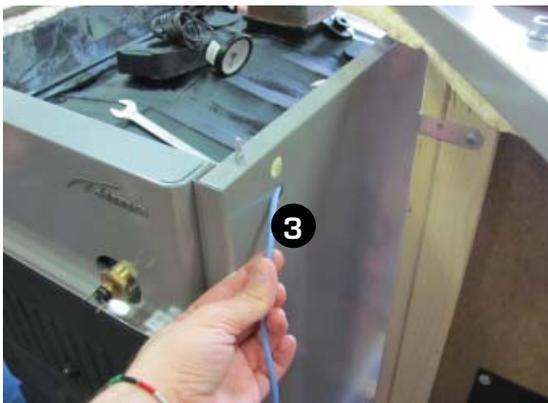


Fig. 35 NTC sensor cable route



Fig. 36 Position and secure the NTC sensor.

- D) Connect the burner power cable (5) to the mains.



Fig. 37 Connection to the mains

BLUE = NEUTRAL
BROWN = PHASE
YELLOW-GREEN = EARTH

2.3 WIRING DIAGRAM

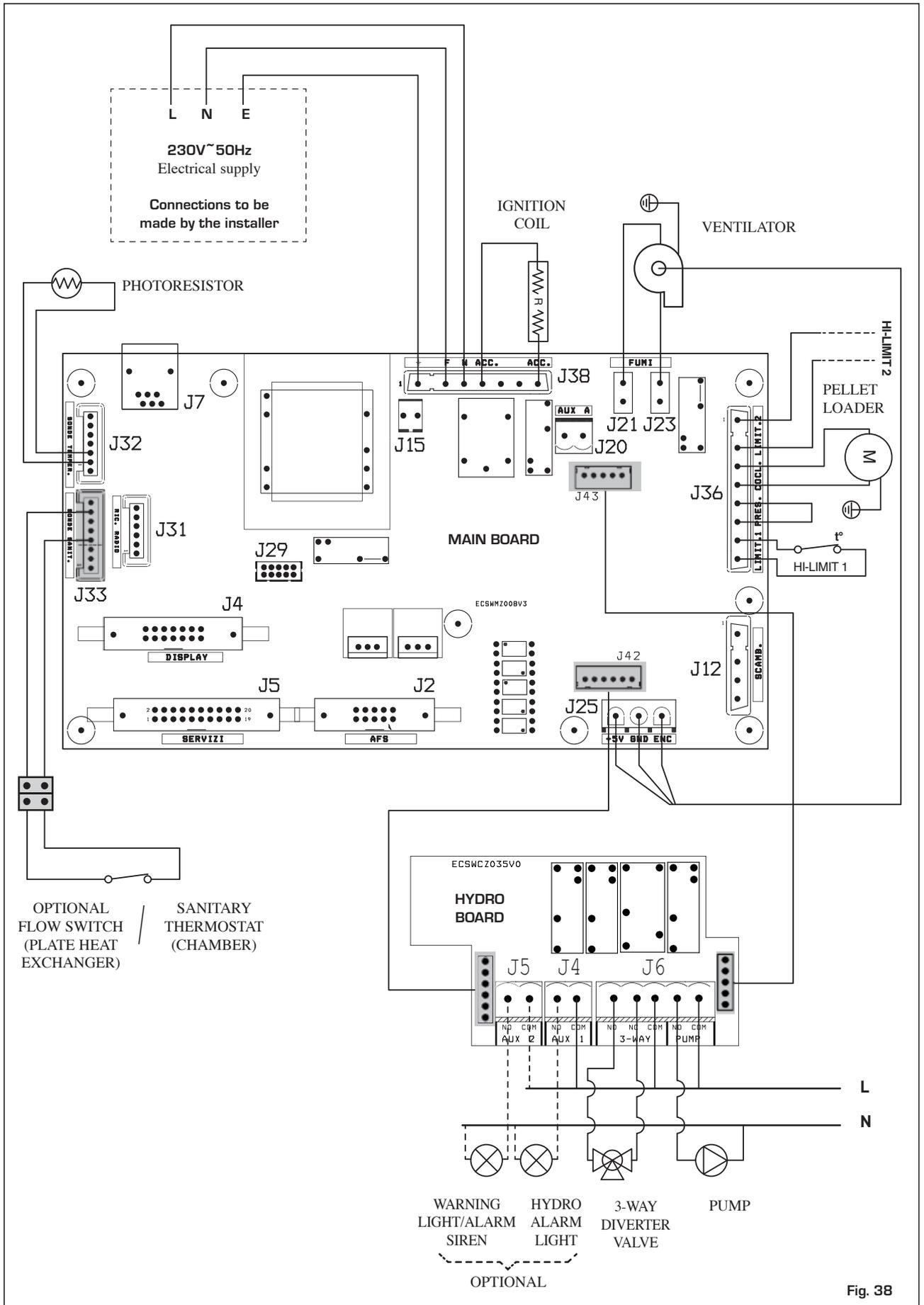
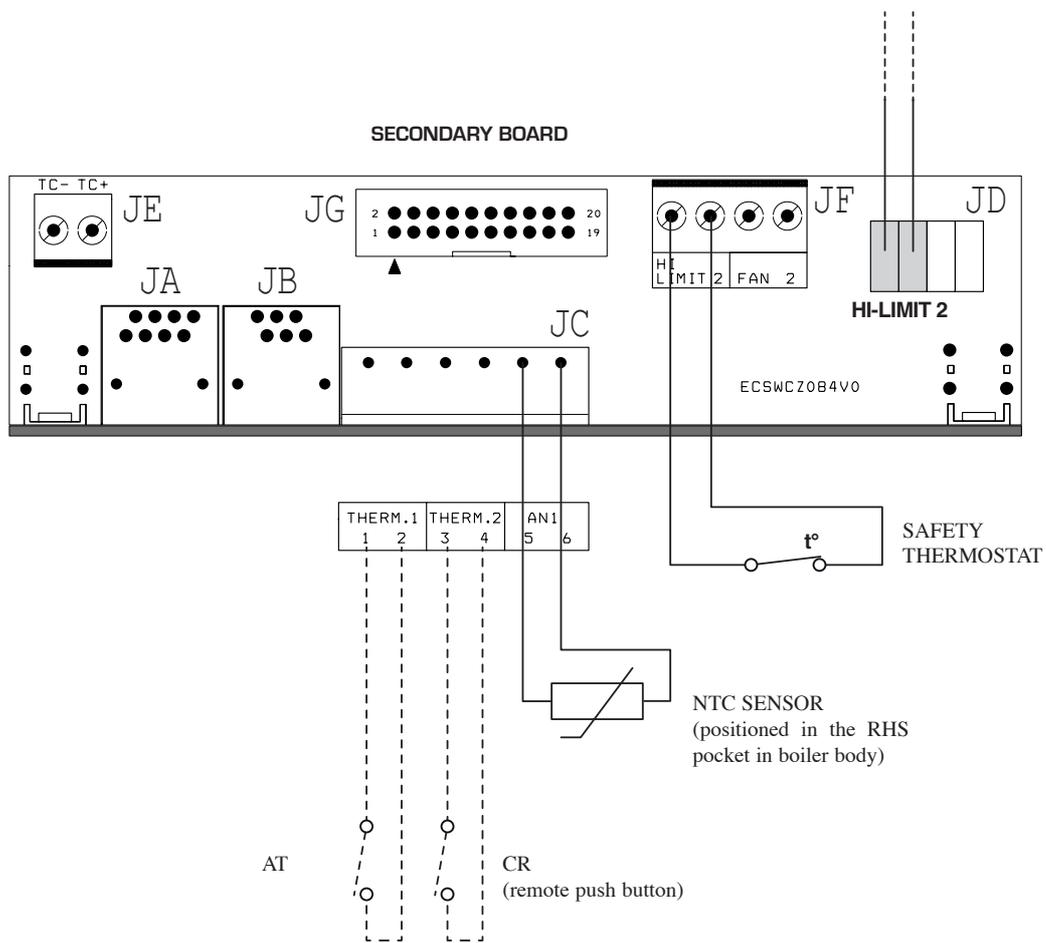


Fig. 38



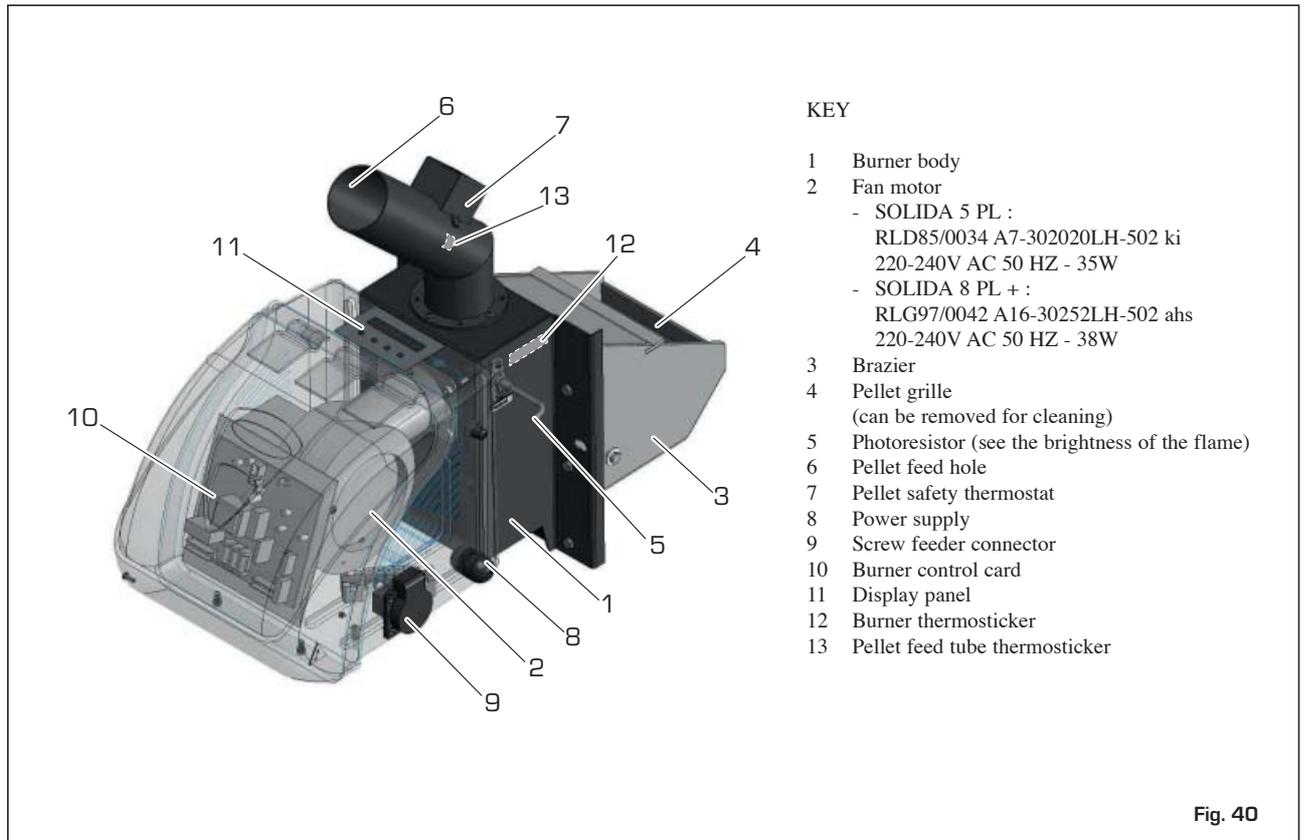
CONNECTION OPTION:

- an ambient thermostat (AT)
- a remote control ON/OFF push button (CR)

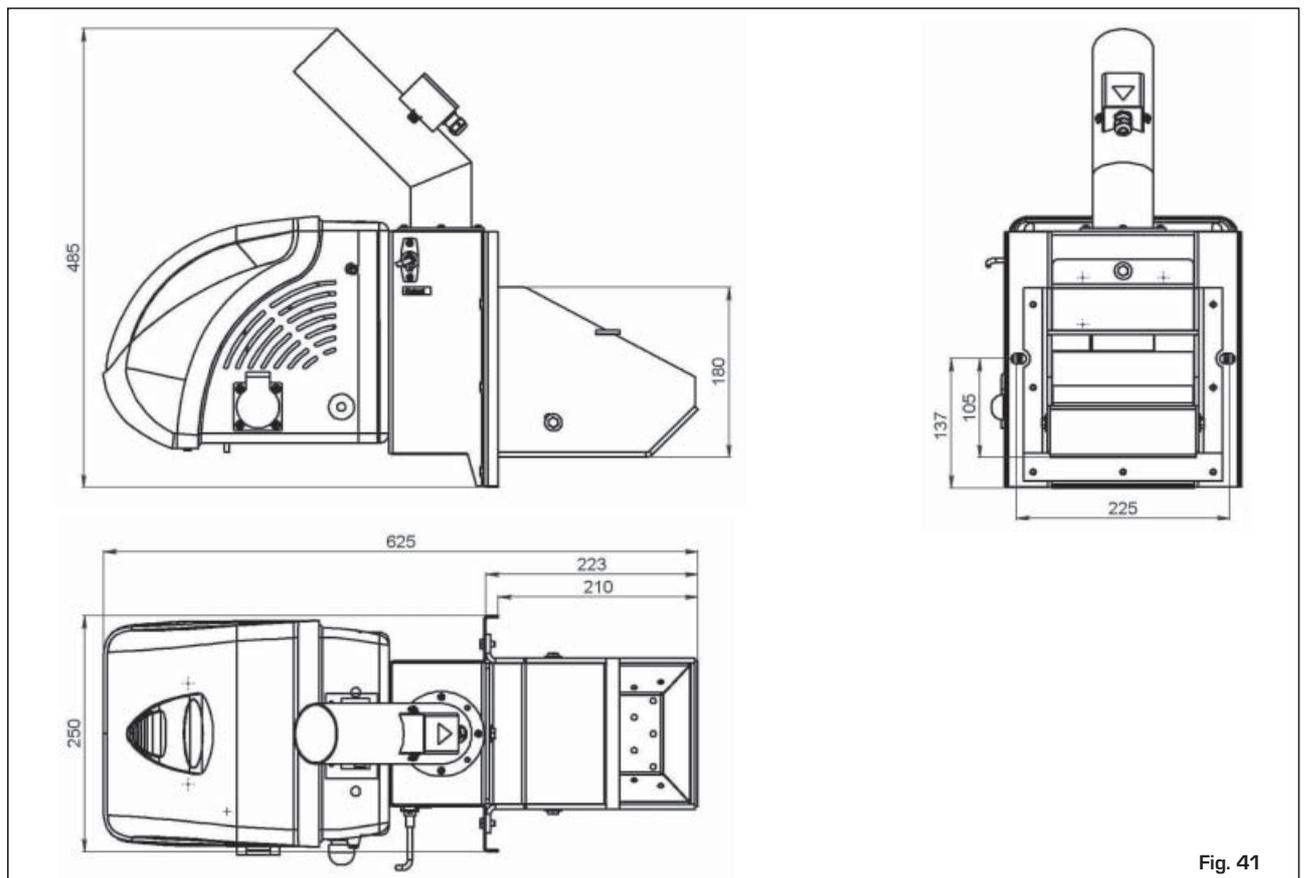
Fig. 39

2.4 PELLET BURNER

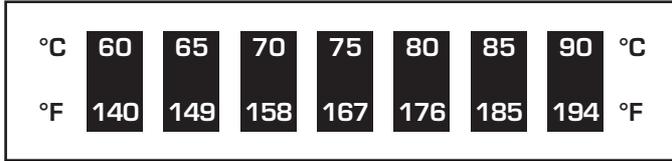
2.4.1 DESCRIPTION



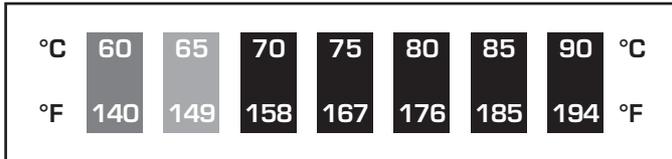
2.4.2 DIMENSIONS



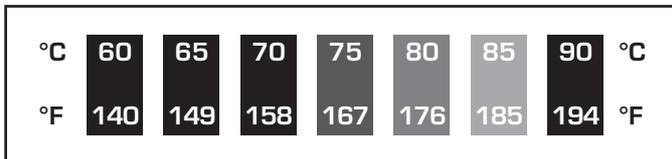
2.4.3 BURNER THERMOSTICKER



Viewing of the sticker with the temperature of the combustion chamber under normal operating conditions.



Viewing of the sticker with the temperature of the combustion chamber between 60° and 65°C.



Viewing of the sticker with the temperature of the combustion chamber between 80° and 85°C.

The thermosticker is used to measure the operating temperature of the burner body. The temperature measurements provide information regarding the condition of the heating system and the need for preventive action or maintenance of the burner and exhaust ducts.

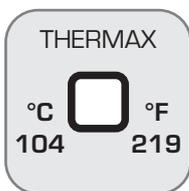
For example: a high temperature of the burner may indicate a high ash deposit.

Once the normal operating conditions are restored, the thermosticker returns to its normal colour (black).

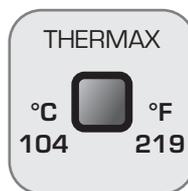
The burner thermosticker must be checked on a regular basis, and after any maintenance procedures carried out on the boiler and/or burner operating with pellets.

Fig. 42

2.4.4 FEED TUBE THERMOSTICKER



Viewing of the sticker in the initial condition: if the active segment is white, the temperature has not reached the activation level (104°C).



Viewing of the sticker in the initial condition: if the active segment is dark, the temperature has exceeded the activation level (104°C).

The thermosticker indicates an overheating of the pellet feed tube.

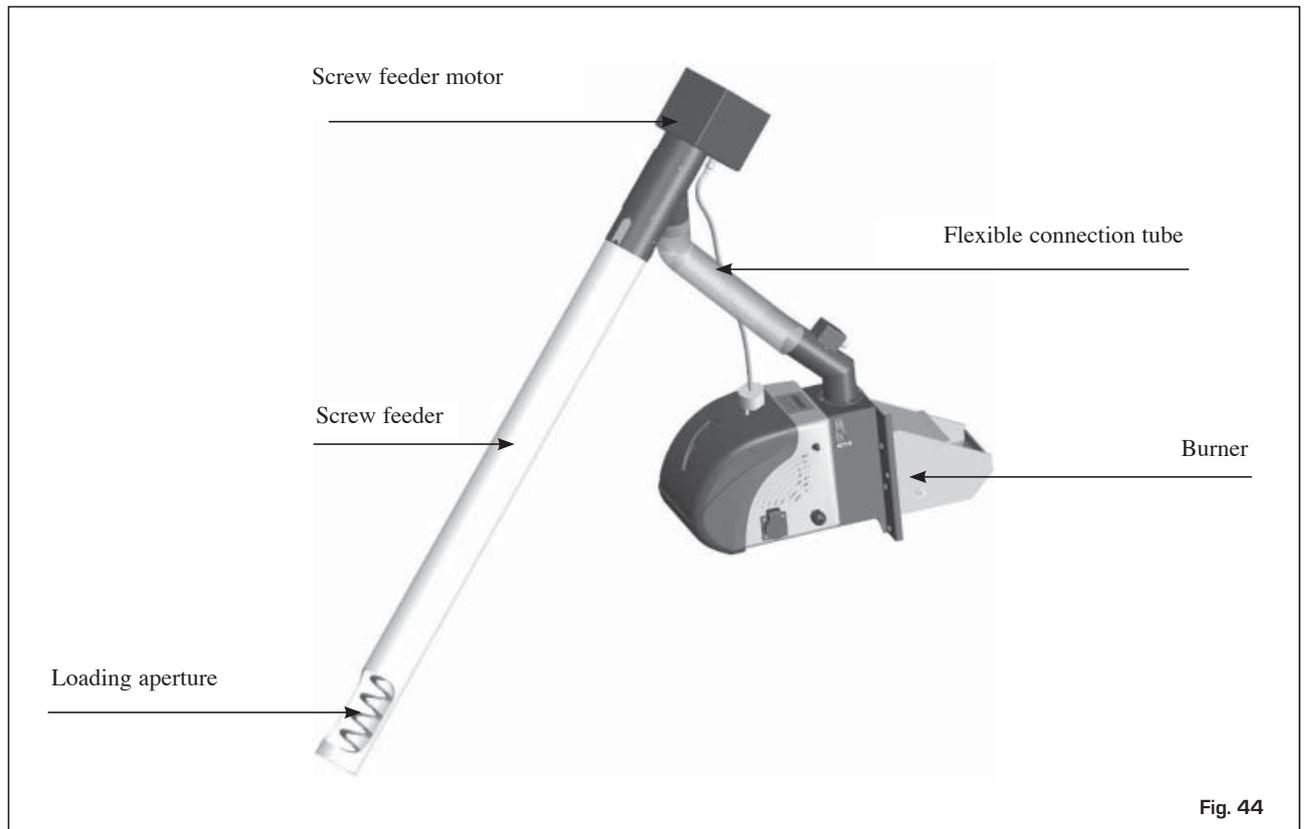
The activation of this thermosticker may occur if the flue gases flow into the pellet tube due to a greater resistance of the exhaust pipe and/or decrease in the chimney draft.

In this cases, the flexible connection tube between the screw feeder and burner body could be damaged.

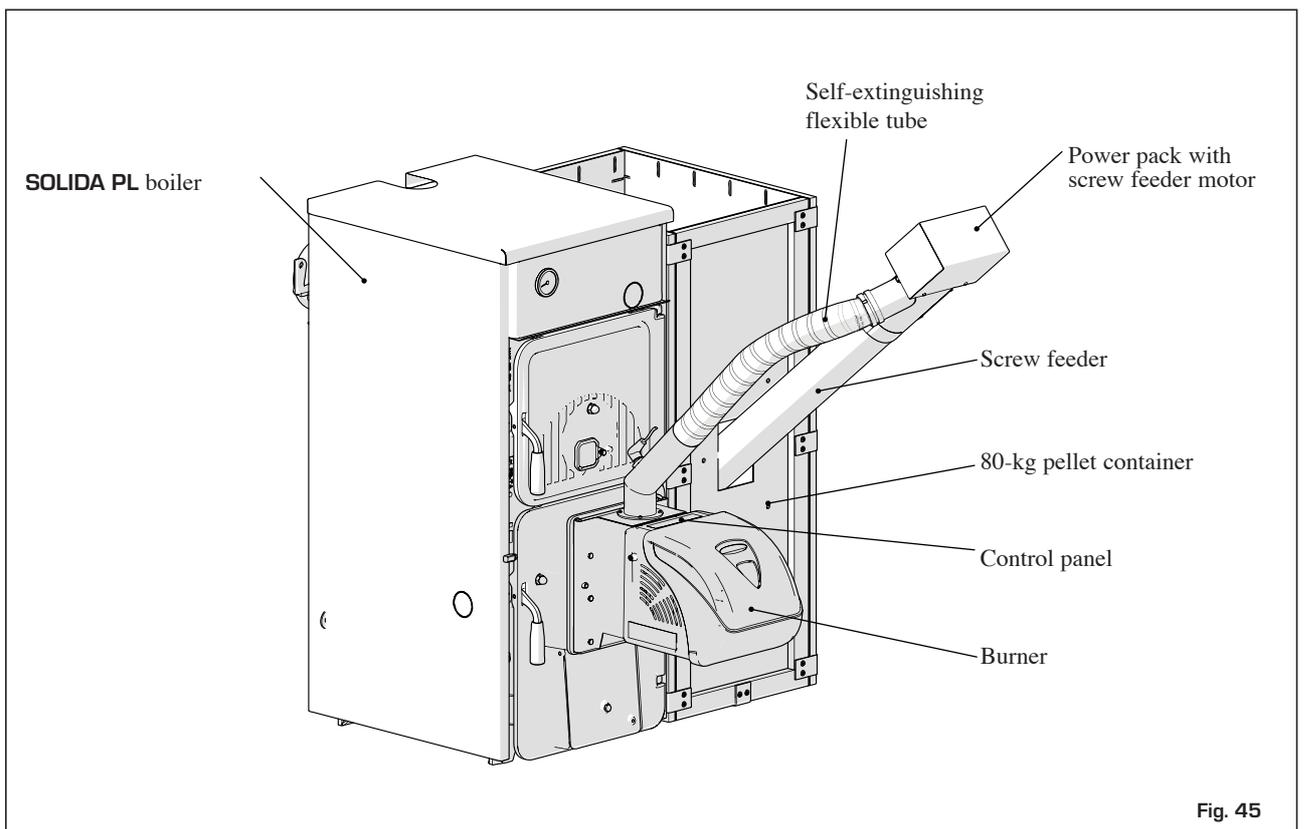
Once activated, the thermosticker will not return to its initial condition. Replace the thermosticker once the normal operating conditions are restored.

Fig. 43

2.4.5 PELLET BURNER AND LOADER



2.4.6 BOILER AND PELLET CONTAINER ASSEMBLY



2.4.7 CHARACTERISTICS OF THE PELLETS

Description	Unit of measurement	Value
Size of the pellets	mm	6 – 8
Recommended net calorific value	MJ/kg	>17.2
	kWh/kg	>4.7
Class (ENplus)	ENplus-A1	
Pellet category	A, AB, B*	
Ash residue	%	See Table 2
Humidity	%	Max. 8 – 10%

Table 1 Properties recommended for wood pellets

* The automatic pellet burner is designed to use wood pellets with the properties described in the ENplus reference standard.

Pellet category	A ^d	DU
A	$A^d \leq 0.6\%$	DU $\geq 97.0\%$
AB	$A^d \leq 0.6\%$	DU $\geq 97.0\%$
B	$0.6\% < A^d \leq 1.0\%$	DU $\geq 97.0\%$
BC	$0.6\% < A^d \leq 1.0\%$	DU $\geq 97.0\%$
C	$1.0\% < A^d \leq 2.0\%$	DU $\geq 97.0\%$
CD	$1.0\% < A^d \leq 2.0\%$	DU $\geq 97.0\%$
D	$2.0\% < A^d \leq 3.0\%$	DU $\geq 97.0\%$
DE	$2.0\% < A^d \leq 3.0\%$	DU $\geq 97.0\%$
E	$A^d > 3.0\%$	DU $\geq 97.0\%$
EF	$A^d > 3.0\%$	DU $< 97.0\%$

Table 2 Classification of the pellets, according to their physical properties

A^d – ash residue [%]

DU – mechanical resistance [%]



The approval of the new European standard for pellets (EN 14961-2) has introduced new certificates: ENplus for pellets used in devices for domestic heating; EN-B for industrial boilers. The standard defines the ENplus wood pellet classes in A1 and A2. The A1 class introduces more severe limits on the possible ash residue. The A2 class allows for a ash residue content up to 1.5%.

Description	Unit of measurement	ENplus-A1	ENplus-A2
Diameter	mm	6 (± 1)	6 (± 1)
Length	mm	$3.15 \leq L \leq 40$ ¹⁾	$3.15 \leq L \leq 40$ ¹⁾
Density	kg/m ³	≥ 600	≥ 600
Calorific value	MJ/kg	≥ 16.5	≥ 16.5
Humidity	%	≤ 10	≤ 10
Dust	%	≤ 1 ³⁾	≤ 1 ³⁾
Mechanical resistance	%	≥ 97.5 ⁴⁾	≥ 97.5 ⁴⁾
Ash residue	% ²⁾	≤ 0.7	≤ 1.5
Ash melting temperature	°C	≥ 1200	≥ 1100
Chlorine	% ²⁾	≤ 0.02	≤ 0.03
Sulphur	% ²⁾	≤ 0.05	≤ 0.05
Nitrogen	% ²⁾	≤ 0.3	≤ 0.5
Copper	mg/kg ²⁾	≤ 10	≤ 10
Chromium	mg/kg ²⁾	≤ 10	≤ 10
Arsenic	mg/kg ²⁾	≤ 1	≤ 1
Cadmium	mg/kg ²⁾	≤ 0.5	≤ 0.5
Mercury	mg/kg ²⁾	≤ 0.1	≤ 0.1
Lead	mg/kg ²⁾	≤ 10	≤ 10
Nickel	mg/kg ²⁾	≤ 10	≤ 10
Zinc	mg/kg ²⁾	≤ 100	≤ 100
1) no more than 1% of the pellet may be longer than 40 mm. Maximum length allowed: 45mm 2) Determined on the dry measurement 3) < 3.15 mm particles (fine dust particles before fuel dispensing) 4) for measurements carried out with a Lignotester, the limit value of the base weight in% is ≥ 97.7			

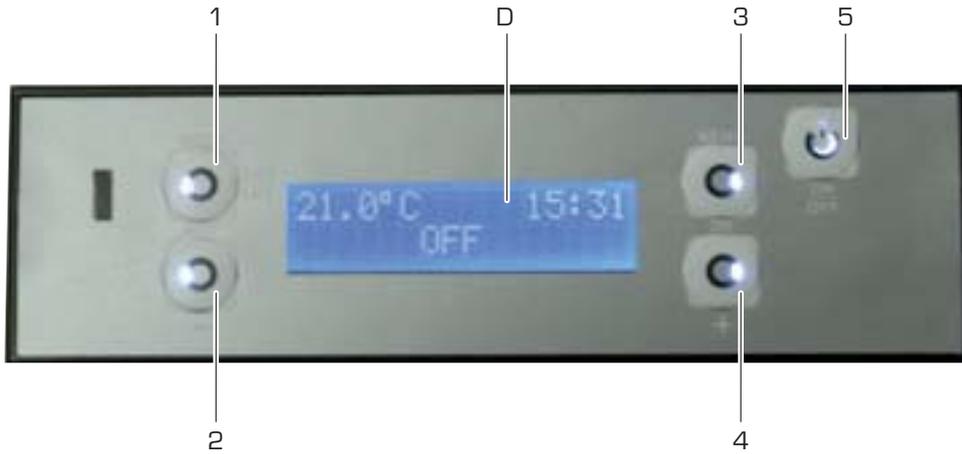
Table 3 ENplus European standard for wood pellets

3 USE AND MAINTENANCE

3.1 DISPLAY PANEL

The display panel is a control panel intended for controlling pellet or biomass feeded furnaces or boilers, integrating a temperature sensor and a RTC used to turn on or off the controlled heater at preset hours.

The panel (See "Fig. 46") is equipped with an on/off button with the corresponding I/O icon and 4 white circled keys whose function descriptions appear on the display, close to each of them.



LEGEND

- 1 Key 1
- 2 Key 2
- 3 Key 3
- 4 Key 4
- 5 Key 5 (ON/OFF)

D Display

Fig. 46

3.3 POWERING UP THE SYSTEM

3.3.1 PANEL STARTUP AFTER CONTROLLED HEATER TYPE SETTING

The display shows the Start screen (See "Fig. 48 START screen")

3.3.1.1 SYSTEM START UP

When starting up, the display shows a "wait" screen; during this time SIME appears on the second line while on the first line the water flow temperature and time will be shown. This screen is shown in Fig. 47:

6	0	°	C		H	2	0			1	0	:	2	3
					S	I	M	E						>

Fig. 47 RESET screen

After about 12s the “START” screen appears (See Fig. 48); this means that the system is ready.

6	0	°	C		H	2	0				1	0	:	2	3
						O	F	F							>

Fig. 48 START screen

On the top line the current temperature (resolution 0,5°C) and the time are shown (See Fig. 49). On the bottom line the system alternates every 2s the text strings describing the controlled heater current status, the active functions (Table 4) and the active alarms, if any;

6	0	°	C		H	2	0				1	0	:	2	3
						O	F	F							>

Fig. 49 START screen (water boiler as controlled heater type)

Function	Displayed string
Controlled heater current status	IGNITION
	ON
	SHUT DOWN
	OFF
	SHUT DOWN AFTER POWER FAILURE
	IGNITION AFTER POWER FAILURE
Crono mode active	Crono Prog
Modem active	Modem is Active
Eco active	Eco is Active*
Alarm conditions active	Alarms**

Table 4 Displayed strings in the START screen

* This notification is only displayed if the ECO option is on and no OFF command has been issued by the user (or an ON command has been issued).

** This notification is displayed only if at least one alarm condition is currently active.

For all the screens which will be described below, the display backlighting will be maintained to the maximum; if no key is pressed for 10s the display will then revert to the START screen (See Fig. 48); after reverting to this screen the display backlighting will be dimmed (See § “BACKLIGHTING” 3.3.3.4) and, after other 20s, the backlighting will be turned off. Exceptions to this rule are outlined in the corresponding screen descriptions.

When the display backlighting is off, when any key is pressed it turns back on, and the SELECTION screen appears (See Fig. 50); this screen is described in paragraph 2.5.3.

3.3.1.2 HEATER FIRING UP/SHUTTING DOWN

Firing (or shutting-down) the controlled heater is accomplished by pressing the ON/OFF key (key #5) from within the START screen; the panel will beep and the displayed status will be updated.

3.3.2 QUICK ACCESS FUNCTIONS

By pressing one of the 4 side buttons from within the START screen changes the display to the SELECTION screen (See Fig. 50), where the “quick access functions” may be set.

m	o	d	e	:	M	A	N	U				M	e	n	u
F	i	r	e	:	4										

Fig. 50 SELECTION screen

As shown in the picture, the main function descriptions appear close to the 4 buttons.

- The advanced functions may be selected by pressing the **Menu** key (See § 2.5.4).
- The **Fire** key cycles through the power values.
- The display reverts back to the START screen by pressing the **On/Off** key.

3.3.2.1 POWER FINE SETTING

The Fire key (key #2) cycles the requested power values sequence. By holding the key pressed for 2s, the selection screen will appear (See Fig. 51); from within this screen the value may be changed by 1 level steps, within an interval ranging from 1 to the maximum value which depends on the controlled heater model (3 ÷ 9).

e	s	c													O	k
-						F	i	r	e							+

Fig. 51 SET_POT screen

The value on the top line flashes to let the user know that it may now be changed. By pressing the buttons + (key #4) and - (key #2), the value may be increased/decreased, while the key Ok (key #3) confirms the new value and the display reverts to the SELECTION screen (See Fig. 50). By pressing the esc key (key #1), the display returns to the SELECTION screen without confirming the new value. The display returns to the START screen without confirming the new value by pressing the On/Off key (key #5).

3.3.2.2 ECO MODE

(See § 2.5.4.4)

In Manual Mode, it’s possible to enable this function only if the Thermostat option is active . In the Automatic Mode , however, it’s always possible to enable this function . ECO function remains active until it is set off from within the setting menu (See § 2.5.4.4).

3.3.3 ADVANCED FUNCTIONS

The “Advanced function” menu is accessed by pressing the key **Menu** (key #3): on the lower line the name of the function currently being displayed appears; on the top line the referred value currently set on is displayed. If on the top line no value is displayed, this means that the item currently being displayed on the lower line is a submenu which can be accessed by pressing the key **Set** (key #3).

The arrow keys allow the user browsing through the various menu items.

Whether a value is shown on the top line or not, to have the displayed function modified, the key **Set** (key #3) should be pressed: The value shown on the top line starts blinking to let the user being informed that it can now be changed, while “**Set**” is replaced by “**Ok**”; the two bottom keys may be two arrows or may also change in **+/-**, depending on the displayed data type; they are used to increase or decrease the data value. The new value is confirmed by pressing the **Ok** key; then, the display reverts to the previous screen (unflashing).

By pressing the **esc** key (key #1), the display will return to the previous screen without confirming the new value. The display returns to the START screen without confirming the new value by pressing the **On/Off** key (key #5).



Fig. 52 MENU screen

In Table 5 the various functions are listed in the same order as they appear on the display, along with their values.

Function	Value
Water Temp.**	See § 2.5.4.1
Day and Time	See § 2.5.4.2
Chrono	See § 2.5.4.3
Settings	See § 2.5.4.4
Technical menu	See § 2.5.4.5
User Info	See § 2.5.4.6
Warnings	See § 2.5.4.7

Table 5 Menu functions list

* This function is visible only if the heater is ON or in IGNITION.

** This function is visible only if the heater is “HYDRO” type and the storing tank option is disabled.

3.3.3.1 WATER TEMPERATURE MENU

Function	Value
Heating Temp.	40 ÷ 80

Table 6 Water Temp. related functions list

This menu includes a set of data and parameters; on the top line no value is displayed but the word **Set**; by pressing the key #3 a submenu will be accessed with the same characteristics of the previous one.

The use of this menu is similar to the “Advanced Functions” menu (See § 2.5.4); the available functions are listed in “Table 6 Water Temp. related functions list” , in the same order as they appear on the display, along with their values.

3.3.3.2 DATE AND TIME MENU

The date and hour menu includes a set of data and parameters; on the top line no value is displayed but the word **Set**; by pressing the key #3, a submenu will be accessed with the same characteristics of the previous one.

The use of this menu is similar to the “Advanced Functions” menu (See § 2.5.4); the available functions are listed in “Table 7 Date and hour menu functions list” , in the same order as they appear on the display, along with their values.

Function	Value
Time	00 ÷ 23
Minutes	00 ÷ 59
Day	Mo ÷ Su
Day numb.	00 ÷ 31
Month	01 ÷ 12
Year	2010 ÷ 2109

Table 7 Date and hour menu functions list

3.3.3.3 TIME SCHEDULED ON/OFF OPERATION MODE (“CHRONO” OPERATION)

The “chrono” function allows the user to set up 6 different on/off time intervals; each interval may be assigned to one or more day(s) of the week, to provide the user with a widely flexible and easily configurable weekly scheduling, so to fit any requirement.

The Chrono menu includes a set of data and parameters; on the top line no value is displayed, but only the word **Set**; by pressing the key #3 a submenu will be accessed with the same characteristics of the previous one.

The use of this menu is similar to the “Advanced Functions” menu (See § 2.5.4); the available functions are listed in “Table 8 Chrono options list” , in the same order as they appear on the display, along with their values.

Function	Value
Enable	On/Off
Reset Chrono	
Prog. 1	
Prog. 2	
Prog. 3	
Prog. 4	
Prog. 5	
Prog. 6	

Table 8 Chrono options list

The option “Enable” is used to set active the chrono operation mode, on the basis of the currently defined weekly on/off time pattern; when active, the relevant string is displayed in the START screen, as described in Table 4.

The option “Reset Chrono” is used to cancel all current settings which will be taken back to the default; a confirmation is required to actually have the default values loaded.

The scheduling options may be accessed in a new menu level, with a set of data and parameters as detailed in Table 9

Function	Value
P# Enable	On/Off
P# Start	0-23 (15 min steps)
P# Stop	0-23 (15 min steps)
P# Heat. Temp.	40-85 (60 by default)
P# Fire	1-9 (1 by default)
P# Days	

Table 9 Chrono options list

To have each daily scheduling set active, both the start and the stop hours must be set in order to define a valid time interval.

The current power the heater must run at and the water temperature data are sent to the main board for each on time interval. This allows the user to get a high comfort degree within each on time interval. Should two or more schedulings be overlapped, the scheduling pattern with the lower index will have priority over the other one.

The last item is used to choose the day of the week which will use that daily on/off time pattern.

3.3.3.4 SETTINGS

The settings menu, like the main menu, includes a set of data and items; it works in the same way as described for the main menu.

In Table 10 the various functions are listed in the same order as they appear on the display, along with their values.

Function	Value
Language	It-En-Fr-Es-De-Pt-Nl-Gr
Eco	On / Off
Back Light	On - 1200" (10" steps)
Tones	On / Off
°C/°F	Auto/ °C/ °F (See § "°C - °F" at page)
Pellet Recipe (pellet feeder on time correction)	See § "PELLET FEEDER CORRECTION"
Thermostat *	On / Off
Charge Pellet (auger feeder activation) **	See § "FUEL FEEDER FILLING FUNCTION"
Cleaning **	See § "BURNER POT CLEANING"
Start Pump ***	See § "PUMP ACTIVATION"

Table 10 Setting functions list

* If the "HYDRO" mode is active (See Table 12), the function Thermostat is displayed only if the Storing tank is disabled.

** May be displayed only if the heater is OFF.

*** May be displayed only if the HYDRO mode is active and the heater is OFF.

BACKLIGHTING

The backlighting option allows the user to set the time and the backlighting level used in the START screen. Choosing On, the display will then be kept lit up all the time; the other items set the time when the backlighting is dimmed down.

°C - °F

The "°C / °F" option allows the user to select the measuring unit to be used for any temperature value displayed.

The default setting is Auto; such setting chooses the measuring unit to fit the heater type in use (for European or U.S.A. market).

When the Set button is pressed (key #3), the value shown on the top line starts blinking to let the user being informed that it may now be changed, while "Set" is replaced by "Ok"; the two bottom keys may be two arrows or change in +/-, depending on the displayed data type, and they are used to increase or decrease the data value. The new value is confirmed by pressing button Ok (key #3), while the display reverts to the previous screen (unflashing).

PELLET FEEDER CORRECTION

The "Pellet Recipe" option allows the user to modify the pellet feeder working duty cycle.

Function	Value
Temporary States Activations	-5 ÷ +5
Power States Activation	-5 ÷ +5

Table 11 List of pellet feeder correction functions

On the bottom line the name of the currently displayed function appears; if the text is too long the line will be scrolled up to the end of the text. The items follow the order shown in Table 12.

Menu	Submenu	Values
General Settings	Stove Type	Stove type name
	Reset Service Time	Hours elapsed since the last maintenance operation
	Pellet Level Sensor	On / Off
Eco Menu	Waiting On	0 ÷ 30 min
	Waiting Off	0 ÷ 30 min
	Delta Temp.	0 ÷ 10 °C
Pellet Feeder Menu	Pellet Feeder Brake (fuel feeder motor quick stop option)	On / Off
	Duration at Min Power (on time @ min. pw.)	0.10 ÷ 12.00 sec ** (step 0.05sec)
	Duration at Max Power (on time @ max. pw.)	0.10 ÷ 12.00 sec ** (step 0.05sec)
	AUX. Output (2nd fuel feeder device)	On / Off
	Periods Ratio (on/off duty cycle)	1 ÷ 100
Percentage Factor (on time correction)	-10 ÷ +100	
Combustion Airflow Menu	RPM Control	On / Off
	Airflow at Min Power	0 ÷ 400 lpm
	Airflow at Max Power	0 ÷ 400 lpm
	RPM Min Power	300 ÷ 2750 rpm
	RPM Max Power	300 ÷ 2750 rpm
Second Extractor Menu	Motor Type	0 ÷ 3
	Enable	On / Off
	Ignition 1	0 ÷ 30
	Ignition 2	0 ÷ 30
	Shut down 1	0 ÷ 30
	Shut down 2	0 ÷ 30
Hydro Menu	Level 1 ***	0 ÷ 30
	Level 5 ***	0 ÷ 30
	Hydro Mode	On / Off
	Water Pressostat	On / Off
	Max Water Pression	2,5 ÷ 4,7 Bar
	Accumulator (water storing tank)	On / Off
	Modulating Pump (on/off temp. dependent timed mode of operation)	On / Off
	Temp. On Pump	40 ÷ 80 °C
	Secondary Fluxmeter	On / Off
	Hydro Shutdown	On / Off
	Hydro Independent	On / Off
Water Temp. Hysteresis	4 ÷ 15	
Sanitary Gain (H.D.W. temp. control loop gain)	-10 ÷ +10	
Ignition Menu	Fumes Temp. On (heater fired up smoke temp. threshold)	0 ÷ 150 °C
	Fumes Temp. Off (smoke shutdown end temp. threshold)	10 ÷ 290 °C
	Pre-Startup 1 Duration (warm-up time 1)	0 ÷ 300 sec
	Pre-Startup 2 Duration (warm-up time 2)	0 ÷ 300 sec
	Warm Pre-Startup Duration (firing up time with a still hot heater)	0 ÷ 300 sec
	Ignition Duration	0 ÷ 3600 sec
	Fire On Duration	0 ÷ 3600 sec
Photoresistor	On / Off	
Alarm Menu	Combustion Airflow Pre-Alarm Duration	180 ÷ 14400 sec

Test Menu	Startup Bypass	
	Test Reset	
	Pellet Feeder	
	Extractor (exhauster fan)	
	Fan 1	
	Fan 2	
	Pump	
	Igniter	
	Photoresist. Calibration On	
	Photoresist. Calibration Off	

Table 12 Maintenance menu functions list

- * This value may be set to 2 only if the 2nd exhauster fan is disabled.
- ** The maximum value which can be displayed depends on the set value, controlled by the board.
- *** This function is hidden with the 2nd exhauster fan disabled.

To access the selected menu, press key **Set** (key #3); from within the submenu, the item value may be changed by pressing the key **Set** (key #3): The value shown on the top line starts blinking to let the user being informed that it may be now changed, while “Set” is replaced by “Ok”; the two bottom keys may be two arrows or may also change in +/-, depending on the displayed data type, and they are used to increase or decrease the item value. By pressing the button **Ok** (key #3) the new value is confirmed and the display reverts to the previous screen (unflashing).

The display will return to the previous screen without confirming the new value by pressing the **esc** key (key #3). Each submenu item and its value stay displayed for 60s; after that time the display reverts back to the START screen. By pressing the **On/Off** key (key #5) the display will return to the START screen without confirming the new value.

The running time reset function deserves a more detailed explanation due to its behaviour and screen, different from those of the other functions. When the key **Set** (key #3) is pressed, the running time starts blinking; the value shown may be reset by pressing key **Ok** (key #3) (See Fig. 56)

e	s	c				2	0	0	0					O	k
	R	e	s	e	t		S	e	r	v	i	c	e		T

Fig. 56 Running time reset

3.3.3.6 USER INFO MENU

The menu User Info includes a set of values and items related to the control system operation and to some external components. All the displayed values cannot be changed; by this way, on the top line of text won't be shown Set/Ok, but only **esc**. On the bottom line the item name whose value is displayed will be shown.

The arrow keys allow the user to browse through the various menu items.

Table 13 shows the various menu items, in the same order as they appear, with their expected values.

Function	Value
Control Board Code	000000
Security code	000000
Display Code	000000
Functioning Time (running hours)	000000 ÷ 999999 hours
Service Time	0000 ÷ 9999 hours
Service	(phone number)
Fumes Extractor (exhauster fan)	0000 ÷ 2500 rpm
Fumes Temperature	000 ÷ 300 °C
Pellet Feeder Time	0.1 ÷ 12.0 seconds *
Water pressure **	0.0 ÷ 5.0 bar

Table 13 User Info menu items list

* The maximum value which can be displayed depends on the set value.

** Displayed only if hydro mode and the water pressure switch option are enabled. (See § 2.5.4.5 – Hydro Menu)

HIDDEN ITEMS

The key #3 is associated with some “hidden items”, without any description being displayed. The item purpose varies; anyway, by pressing and holding for 10 seconds the key #3, the associated option is turned on.

Menu item	Function
Control Board Code	-
Security code	-
Display code	-
Functioning Time (running hours)	-
Service Time	-
Service	-
Fumes Extractor (exhauster fan)	-
Fumes Temperature	-
Pellet Feeder Time	-
Water pressure	-

Table 14 Hidden items list

3.3.3.7 ALARMS

The Alarm menu appears solely if a warning status is active or if a non blocking alarm condition has been detected. By pressing the button **Set** (key #3), a list of the currently active alarm conditions pops up; if more than a single alarm are active, they can be browsed using key #4.

Table 15 lists all the various alarm conditions which can be displayed within the menu.

Alarm condition
Service
Pellet Low Level (fuel low)
Water Temp. Sensor Failure
Water Pressure Switch Failure
Water Pressure Out of Range

Table 15 Alarm conditions list

3.3.4 ALARM CONDITIONS

When an alarm condition occurs, the ALARM screen is displayed (See Fig. 57); in such a situation the start screen cannot be accessed and the heater status cannot be changed before issuing an unblock command.

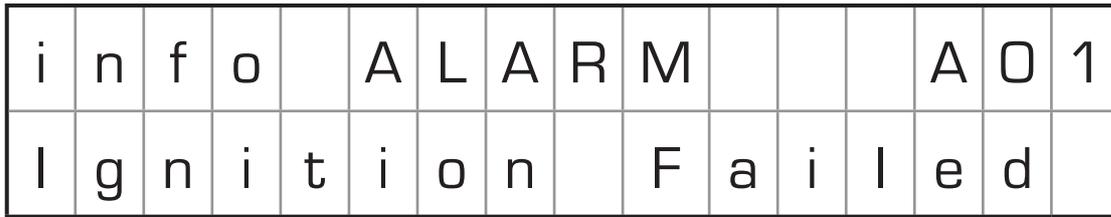


Fig. 57 ALARM screen

On the bottom line the alarm type and name is scrolled and in the middle of the top line “ALARM” blinks, while “info” and the alarm code “Axx” are steady on.

The alarm notifying sound may be stopped by pressing the key **On/Off** (key #5); if the key is pressed for more than 2s, the alarm will be cancelled after a processing wait time (See Fig. 58). After a cancel command has been issued, if the alarm cause is removed, the display reverts back to the START screen (See Fig. 48).

While the ALARM screen is displayed (See “Fig. 57 ALARM screen”), if the key #1 is pressed for 5s, the main menu is accessed; from within this menu the setting up errors which might have caused the alarm condition may be corrected. The heater status may be monitored also from within the info menu.



Fig. 58 ALARM screen

By pressing the key **info** (key #1) the display shows a brief description of the problem occurred (Fig. 59).



Fig. 59 ALARM screen

On the top line “info” is replaced by “**esc**”, while **ALARM** is steady on; on the bottom line a brief description of the problem is scrolled. The display reverts back to the previous screen by pressing the key **esc** (See Fig. 57). If no other key is pressed for 60 seconds, the display reverts back to the start screen.

The Table 16 shows a list of the alarm codes, their names and useful informations about how to reset them.

Code	Alarm type	Informations
A01	Ignition Failed	Clean Brazier and Restart
A02	Flame Shut Down	Fill Pellet Tank
A03	Pellet Tank Over-Temperature	See instruction manual
A04	Fumes Over-Temperature	See instruction manual
A05	Fumes Pressure Switch Alarm	NON PREVISTO
A06	Combustion Airflow Alarm	NON PREVISTO
A07	Door Open	NON PRESENTE
A08	Fumes Extractor Error	Call Assistance
A09	Fumes Temp. Sensor Error	Call Assistance
A10	Pellet Igniter Error	Call Assistance
A11	Pellet Feeder Error	Call Assistance
A13	Electronic MotherBoard Error	Call Assistance
A15	Pellet Level Alarm	Check Pellet Level
A16	Water Pressure Out of Range	Restore the Correct System Pressure
A18	Water Tank Over-Temperature	Safety thermostat. SEE INSTRUCTION MANUAL

Table 16 Alarm list

3.3.5 CLEANING (Fig. 60)

Cleaning operations must be carried out at regular intervals and only when the boiler is cold.

Combustion products collect in the removable drawer that must be emptied before starting the boiler. To remove all combustion residuals, use a brush and vacuum and verify that all the ashes inside the combustion chamber have been completely removed. The vacuum can also be used to clean the pellet grille.

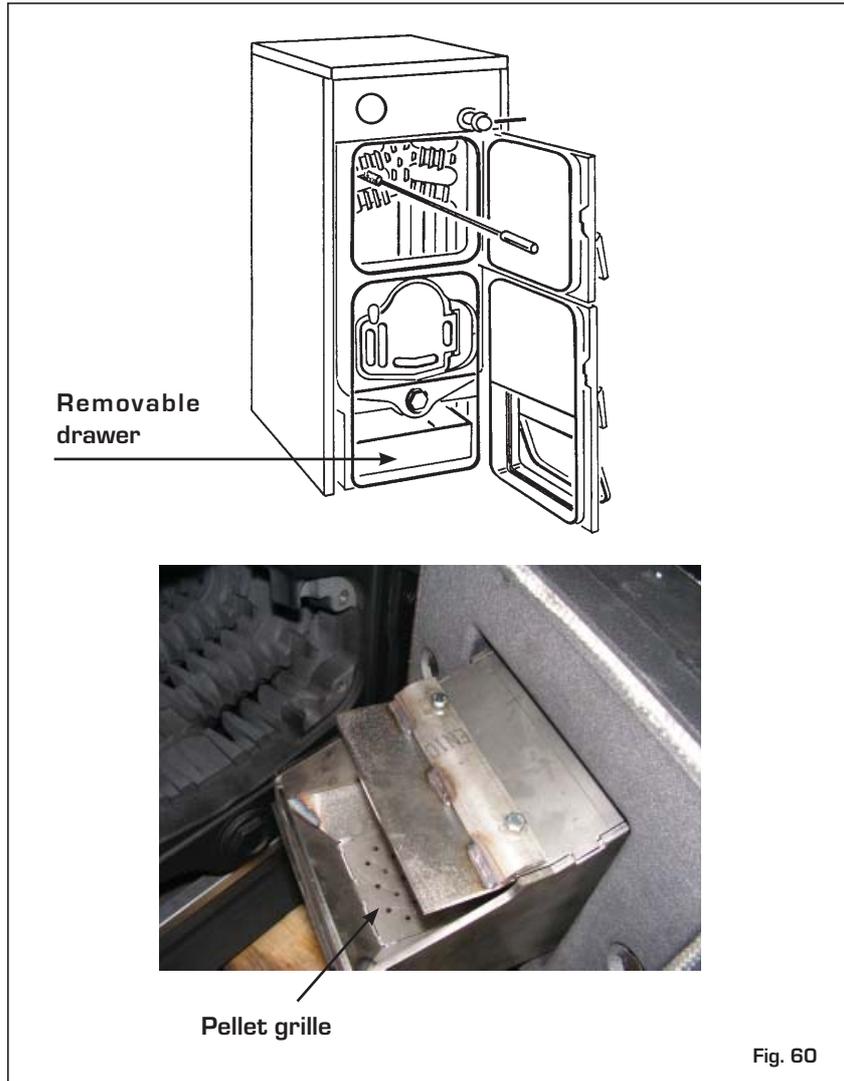
To clean the fume ducts inside the boiler body, use a brush.

ATTENTION: if the generator is switched off for long periods of time (above 15 days), it is necessary to empty the 80 kg pellet container in order to prevent the pellets from absorbing excessive humidity, which could affect the operation of the boiler. A high amount of humidity in the pellets could cause them to pulverize, increase the amount of ash in the brazier and obstruct the pellet feeding system.

3.3.6 ANNUAL MAINTENANCE

For optimum performance, it is advisable to have the boiler serviced regularly and thoroughly by qualified personnel at least once every year.

Before performing maintenance operations, verify that the boiler is cold and has been disconnected from the mains.



3.3.7 ACCESSORIES

ACCESSORY KIT:

- 5197500 200-litre PELLETTANK
- 5197510 300-litre PELLETTANK
- 5197520 500-litre PELLETTANK

WARRANTY

The boiler is guaranteed for a period of 12 months from the date of purchase provided that:

The boiler is installed in accordance with these instructions by a suitably qualified engineer.

Any work undertaken is authorised by Sime Ltd and carried out by an approved service agent.

The boiler is only operated on the approved 6mm wood pellets as described in section 2.4.7

The primary heat exchanger is guaranteed on a parts replacement basis only for 5 years. All other components, except consumables, are guaranteed for a period of 1 year.

The guarantee starts from the date of purchase.

The guarantee does not cover breakdowns caused by incorrect installation, neglect, misuse, accident or failure to operate this boiler in accordance with the manufacturer's instructions. The guarantee will not apply if the boiler is operated on pellets other than those described in section 2.4.7.

The guarantee is not transferable unless agreed by Sime Ltd.

Sime Ltd will endeavour to provide prompt service in the unlikely event of a problem occurring, but cannot be held responsible for any consequential delay however caused.

The guarantee does not cover handling or shipping.

All claims under the guarantee must be approved with Sime Ltd prior to any work being carried out. Proof of purchase and date of installation must be provided on request. Invoices for call out or repair work carried out by a third party will not be accepted unless previously approved Sime Ltd

Sime Ltd will not accept any responsibility for damage to persons, animals or property caused by incorrect use of this appliance or failure to ensure that it is adequately earthed.

Certificate of Registration



This is to certify that the Producer:

Sime Limited
1A Blueridge Park, Glasshoughton, Castleford, UK, WF10 4UA

Manufacturing at:
Fonderie Sime SPA
Via Garbo, 27 – 37045, Legnago (VR), Italy

applicable to

Model Number	Model Name	MCS Certification Number
Solida 5	Solida 5	NQA B 0003/01
Solida 8PL+	Solida 8PL+	NQA B 0003/02

has been assessed and registered by NQA against the provisions of

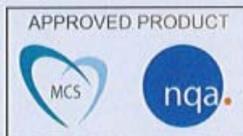
MCS Product Certification Scheme Requirements: MCS 010, MCS 011, MCS 007

This registration is subject to the producer continuing to comply with the NQA MCS Product Scheme Rules and Certification Criteria stated above, which will be monitored by NQA.

Adam Wero

Certification Director

Certificate No: 0000061
Date: 02/04/2013
Valid Until: 22/01/2016



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