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DEVRON SERIES
MULTI FUEL FIRED GASIFICATION HOT WATER BOILERS

DEVRON-30, DEVRON-40

OPERATION, USE AND MAINTENANCE MANUAL

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INDEX

1. INTRODUCTION

This manual comprises the information concerning the operation, use and maintenance of DEVRON Model Multi Fuel Fired **Pellet and wood** Gasification Hot Water Boilers. This manual alone is not sufficient for correct installation, operation and use; installers, services and end user must follow the rules specified in current EN + local norms, EC directives and local codes. This manual gives supplementary information and precautions.

Please keep this booklet near the appliance in a safe place in the boiler room for future reference.

Please read the manual very carefully in order to be able to operate your boiler safely and with high efficiency for a long period.

Due to the continuous development in methods, design and manufacture, the contents of this document may change at any time and without prior notice. Manufacturer does not accept any responsibility for errors or damage of any kind that is attributed to this publication.

2. WARNINGS

- These safety guidelines should be read and fully understood before the first operation of the system, to avoid incorrect usage that might lead to personal injury or damage to the system.
- This boiler must be installed in accordance with the local and international rules in force, only in a well ventilated and frost free spaces, indoor but other then living areas.
- All installation, assembly and maintenance, repair, replacement of components work must be carried out exclusively by fully trained, professionally qualified personnel and must conform with this manual and the local codes and requirements of the authority having jurisdiction, or in the absence of such requirements, apply to the EEC directives and European (EN) and local norms.
- If the boiler is not used for the purposes other then specified in this booklet and incorrect installation, commissioning and use, can cause a fire or explosion which may result property damage, personnel injury, or loss of life.
- Boiler is designed for hot water operation only (max 90 ^{0}C) and the system pressure must be according to the limited operating pressure specified on the boiler name plate and in this booklet. Heat transfer medium is water.
- Boilers must be fired by fuels specified in this manual (8.2).
- This is a B_{23} appliance so the flue gases must be connected to an adequate draught chimney, without any flue gas leakage to the boiler room.
- It is essential that an appropriate pump is fitted in the circulation system which must be kept in operation at all the times when the boiler in use.
- The filling and make up water must be according to the specifications given in this manual. Long term water treatment is essential to the economic operation and life of both new and refurbished heating systems.
- Never obstruct the ventilation openings to the boiler room for a safe and efficient operation. An adequate air supply for combustion and ventilation must be provided at all times.
- Boilers must not be installed in areas where inflammable vapors and materials are likely to present. To avoid damage to the boilers, contamination of the combustion air by high levels of dust or halogenated hydrocarbons (e.g. Solvents, spray can propellants, cleaning agents, adhesives, ect.) must be avoided. The humidity level must not be high in boiler rooms.
- The boiler room must not be used for other purposes and must not have an open connection to the other closed living areas. Connection door must be air tight, fire resistant and self closing.
- All the control devices must be functional and operating with in the limits specified at all the time. If any of them is null functioning do not operate the system and call a qualified service.
- If the boiler is heated above 90 °C, do not supply cold water to the system for rapid cool down. It can cause an explosion. Wait the boiler cool down naturally up to 40 °C before any operation.
- Do not use this appliance if any part has been under water. Immediately call a qualified service to inspect.
- Do not touch the flue gas exit and flue box. These areas are too hot and can cause serious injuries.
- In starting a new installation, first commissioning shall be performed by a qualified service.

- After commissioning repair and maintenance work is under responsibility of user and must be performed by a qualified service.
- If you want to change the fuel type in the future please call your authorized service. The fuel type change can need some part or device changes and surely new adjustments. Never try to change the fuel type by yourself or by unauthorized people.
- Except the operations specified in this manual, do not touch any part of boiler for adjusting or maintenance.
- This boiler is not a condensing type, so be sure that the boiler must not condensate for long periods
- Covers on electrical components may only be removed if the power has been disconnected.
- Never open the bottom drawer while the boiler is in operation, as hot flue gases, flame and red hot dust particles can cause explosions and might cause serious injuries.
- Switch off the system before servicing and chimney sweeping. The system must be allowed to cool down before the cabinet door is opened. Wait around 20 minutes, or until the boiler temperature on the display is under 40 ^{0}C
- Flammable liquids or gases must never be used in the combustion chamber.
- It is recommended that you have a tested, appropriate capacity and approved fire extinguisher at hand in the boiler room.
- There must be access or potential for access to outside air in the boiler room, such as a fixed opening must be provided on top and bottom part of the adjacent wall, which is open to the and must be open always. For proper combustion boiler needs continuous fresh air supply. (> 300 cm²)
- Overheating of the boiler water protection is integrated in the control system.
- It is recommended to use a dust mask when cleaning the boiler and emptying the ash drawer.
- It is recommended that a lifting device should be used to move and transport the boiler.
- The chimney or flue is one of the most critical factors in the successful operation of any solid fuel heater, including your DEVRON boiler. A good chimney will provide a continuous and reliable draft to pull the exhaust gases out of your boiler when the fan is not running. The boiler must be connected to an approved chimney by local authorities. No other appliance should be connected to this chimney. The boiler should be connected to the chimney with the shortest, (minimum 60cm and maximum 200cm with maximum 2x45 degree elbows) and most direct run of black stove pipe. Maintain a minimum of 460 mm between the flue pipe and combustible surfaces. Prior to operation, the installation should be inspected and approved by qualified professionals (i.e., a chimney sweep, a licensed plumbing and heating contractor, electrician, etc.). Boiler will be out of guarantee if it is not connected to a proper chimney, if you have problem with draft (too much or too little), draft inducing fans or draft regulators may need to be considered. Condensation in the chimney must be discharged before boiler.
- Another important requirement is that the chimney and connecting pipe need to be insulated for safety and to prevent condensation and a reduction in the draft caused when the gas in the chimney cools too much.
- Do not use self-contained non-electric zone valves on the main heating zone as it is to be used as the overheat/dump zone. Such a valve would prevent the overheat control from cooling the boiler when necessary.
- Do not use any radiant floor heat tubing that does not have an oxygen barrier otherwise you must use a heat exchanger between the boiler and the radiant floor heat tubing.
- A backup power supply such as a UPS (battery-based Uninterruptible Power Supply) is required to operate the primary circulation pump.
- A primary circulation pump must feed all zones.
- Each boiler should be connected to a heat accumulation tank (buffer tank) for proper operation, and the capacity of the buffer tank must be according to local standards.
- To protect the boiler against low-temperature corrosion the end-user should assure return temperature does not reach lower than 55°C. Installing a three-way mixing valve or anti-condensation valve group (load valve

for buffer tank) can solve this. If there is no system installed for keeping the return temperature over 55°C, the boiler will be out of warranty.

- Before starting assembly, repairs or maintenance, as well as during any connection works, please make sure that the main power supply is disconnected.

- The boiler electric control regulator cannot be used if its casing is damaged.

- In no circumstances can the design of the boiler, burner and electric control regulator be modified.

- Keep the regulator out of reach of children.

- Incorrect selection of the parameters can cause malfunction and serious problems of the boiler. (e.g. overheating of the boiler, etc.).

- The programmed parameters should only be altered by an authorized service.

- The electric system in which the regulator operates must be protected by means of a fuse, selected appropriately to the applied loads.

- Directive WEEE 2002/96/EC: Act on electrical and electronic equipment.

    - Recycle the product and the packaging at the end of the operational use period in an appropriate manner.

    - Do not dispose of the product together with normal waste,

    - Do not burn the product.

3. DECLERATION OF CONFORMITY

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CE Konformitätserklärung

CE Declaration of Conformity

CE Déclaration de conformité

Wir
We **Arikazan Makina Sanayi ve Ticaret A.S. - 06810 Ankara**
Nous

Erklären in alleiniger Verantwortung, dass die Heizkessel-Reihe
Declare under our sole responsibility that the boiler series
Déclarons sous notre seule responsabilité que le serie des chaudieres

Pellet Boilers: DEVRON-30, DEVRON-40

conform ist mit den Anforderungen der Richtlinie
is in conformity with the requirements of the directives
est conforme aux exigences des directives

Richtlinie Directive Directive	Norm Standard Norme	Bemerkung Remark Remarque
97/23/EC Pressure Equipment Directive	*EN 12953-1.2002 , EN 12953-2.2002 , EN 12953-3.2002, EN 12953-4.2002 , EN 12953-5.2002 , EN 12953-6.2002 , EN 12953-9.2007 , EN 12953-12.2003*	-
2014/35/EU Low voltage directive	EN 60335-2-102 EN 60335-2-15	-
2014/30/EU Electromagnetic Compatibility	EN 60730-2-5 EN 60730-2-9 EN 60730-2-6 EN 60730-2-14	-

- No part of boiler contain a material to be known as deleterious.
- The documentation (instructions for operation and installation) delivered together with the product shall be issued in the language of destination country

ARIKAZAN MAKİNA SANAYİ VE TİC. A.Ş.

4. GUARANTEE AND SERVICE

Provided that the principles, warnings and standards set out in the operation in this manual and taking into account the national installation regulation of the country (in the absence or of such requirements, they shall be referred to EN norms, directives and codes) are complied with, your boiler shall be under the warranty for a period of 2 (two) years starting from the date of dispatch (from manufacturer) against any faults of material and workmanship unless it is agreed by a separate agreement..

The certificate of guarantee shall be filled out by seller and the verification of installation and commissioning by a qualified (by the seller) service must be filled out and forwarded to seller for warranty purposes.

Wrong installation, maintenance and use will not be covered by guarantee.

The boiler guarantee will be invalid if the boiler waterways and system water pipes are covered with debris, lime and/or carbonate deposits from the system water and/or boiler heat exchanger parts fails because of corrosion caused by the system water.

The minimum service life for these boilers are 10 (ten) years. The producer and the suppliers undertake to provide service and spare parts to the boilers during said period.

The guarantee does not apply for the boiler if it is operated with wood exceeding 25% moisture content or with fuel not prescribed by the manufacturer.

5. GENERAL SPECIFICATIONS

- DEVRON boilers are a complete unit with, hot water boiler, control regulator unit, flue gas aspirator. Do not attempt to change any of these items.

- DEVRON boilers are gasification wood and automatic pellet boilers, three-pass, wet back, elliptic shell type, hot water, wood log and pellet fired, B_{23} steel boilers.

- They are manufactured by an ISO 9001-2008 registered company.

- The boilers have been specially designed and produced to perform efficient combustion with wood fuels especially dry logs and wood pellet.

- They have low combustion chamber loading for clean combustion with low nitrogen oxide emissions.

- The quality of the material, form and dimensioning of the components ensure that the boiler and burner will operate safely and have a long economic life.

- Primary and secondary combustion air supply can be controlled separately for the wood gasification process.

- The boiler regulator is an electronic device intended for DEVRON boilers. It performs the following functions:

• Automatic stabilization of a given water temperature or flue gas temperature of the boiler cycle,

• Automatic stabilization of a given temperature of the hot utility water tank.

6. OPERATING PRINCIPLES

- DEVRON boilers have been designed to heat hot water and must be connected to a heating plant and/or a domestic hot water plant within the limits of its performance and output.

- They are hot water boilers with a maximum outlet temperature of 90 °C and a maximum allowable operation pressure of 3 bar gauge. Return water temperatures must not be lower than 55°C.

- These boilers are not suitable for use as a direct water heater. Where potable or sanitary hot water is required, a matching indirect heat exchanger must be provided in the system.

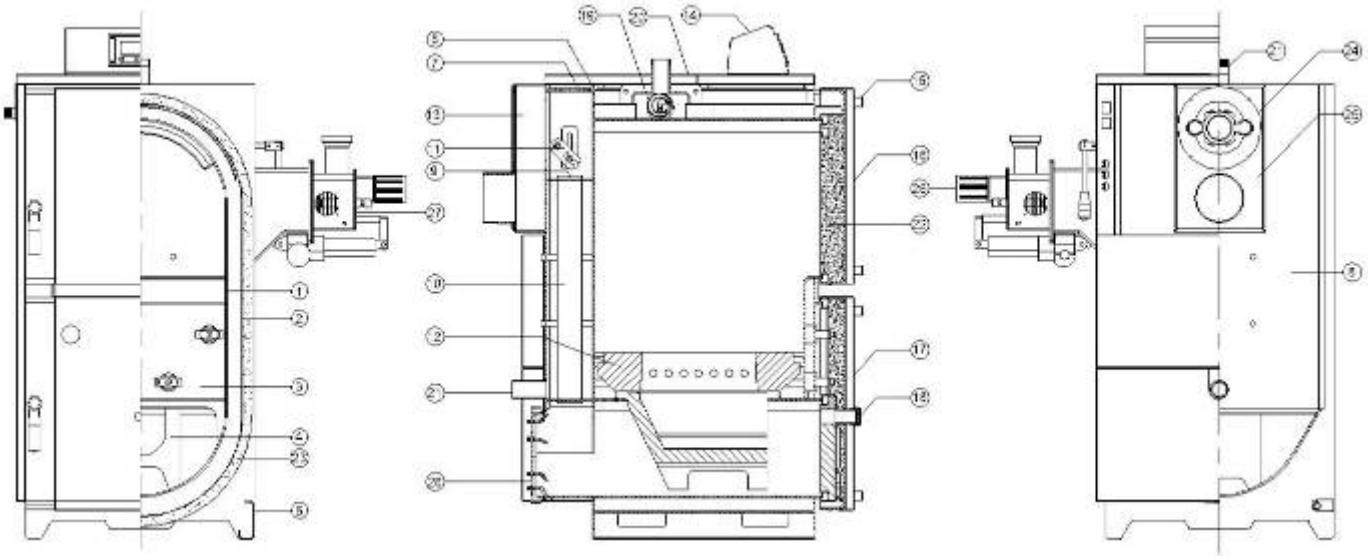
- These boilers are suitable for fuels described in this manual (8.2)

- This boiler is suitable for use in open vented expansion vessel heating systems. The system must have a matching expansion system. Be sure that open vented expansion vessel and pipes are protected against frost and has no manual valves between boiler and expansion tank.

- If you will use this boiler with a closed expansion system, serious precautions and additional equipment must be provided according to local and international standards and directives. Overheating and over pressure can cause very serious hazards.

- This boiler is not a condensate type of boiler so be sure that boiler is not in condensation for long periods.

7. MAIN PARTS



NO	PART NAME
1	Furnace
2	Main Body
3	Water cooled front plate
4	Bottom Refractory
5	Feet
6	Rear Plate
7	Smoke Box Door
8	Smoke Box
9	Tube Plate
10	Boiler Tubes
11	Tube Cleaning Mechanism
12	Top Refractory
13	Fan Box
14	Control Panel

NO	PART NAME
15	Hinges
16	Upper Door
17	Bottom Door
18	Flame Monitoring
19	Safety Cooling Heat Exchanger
20	Cover Plates
21	Water Inlet/Outlet
22	Door Isolation
23	Boiler Body Isolation
24	Ventilation Vacuum Fan
25	Chimney Connection
26	Back Door
27	Pellet Burner

8. INSTALLATION

- All installation, assembly and maintenance work must be carried out exclusively by fully trained, professionally qualified personnel and must conform with this manual and the local codes and requirements of the authority having jurisdiction, or in the absence of such requirements, apply to the EEC directives and European norms (EN).

- This boiler must be installed in accordance with the rules in force and only in a well ventilated and frost free spaces, indoor but other then living areas. Top and bottom ventilation openings must be according to local codes.

- Control of the heating system shall enable the specified designed indoor temperatures to be achieved under the specified variation of internal loads and external climate and, protect building and equipment against frost and moisture damage when normal comfort temperature level is not required.

- It is essential that an appropriate pump is fitted in the circulation system which must be kept in automatic operation (above condensation temperature) at all the times when the boiler in use. The energy created by the boiler must be transferred out of boiler continuously up to end of combustion process.

- The filling and make up water must be according to the specifications given in this manual. Long term water treatment is essential to the economic operation and life of both new and refurbished heating systems.

- All electrical connections must be according to current standards and wiring diagrams are given in this manual. Please pay special attention to earth connections to all electrical items in the boiler room. Never use fuel or water pipes as an earth connection.

- After the installation of the boiler all the water and valves must be controlled for leakage.

- A load valve (anti-condensation 3 way valve) or similar items should be installed for anti-condensation so that the return temperature will be never below the limited temperature 55°C.

- During wood gasifying, tar and condensates (acids) are created, and this process is much worse if the return water the boiler temperature is less than 55°C.

- Feed water temperature of the boiler must be adjusted to minimum 75-80°C.

- The boiler must not be operated lower than 60 % output for a long time.

- We recommend installing the boiler with hot water storage tanks (buffer tank) and load valve group which guarantees economy in fuel and longer service life of the boiler as well as comfortable attendance.

- During the mode with decreased output (summer mode and water heating) it is necessary to have a buffer tank or can be switched to pellet burning mode in the start of the season.

- Wood logs must be used only dried with min. 10% and max. 25 % moisture content (with a higher moisture content up 45 % can burn without any guarantee and note that with high humidity boiler power and efficiency is reduced and also tar problem occurs)

- The choice of the right boiler size, that is its heating output, is a very important condition for economic operation and right function of the boiler. The boiler must be chosen so that its nominal output responds to heat loss of the heated volume.

8.1. SAFETY ARRANGEMENTS

Heating system safety arrangements shall be designed in accordance with the type of heating system, energy source, and the way which the heat supply is provided to the heating system, i.e. automatically controlled or manually operated. Minimum required safety arrangement other than the present systems on boiler is under the responsibility of the installer and must be according to local codes and/or EN 12828. This is a manual running solid fuel boiler so special attention must be applied for correct installation and safety.

8.2. FUELS

DEVRON boilers can be fired with high quality wood especially logs; 25-75 cm long, Moisture 20 %, Never try to change fuel without qualified service approval.

Specified fuel is dried, hard, cut wood and logs of 60-120 mm diameter, with min. 20% and max. 25% moisture content and calorific value of 15-17 MJ/kg.

Note: Logs of bigger dimensions is necessary to cut into halves or quarters (because of the requirement of operation to nominal output). You can burn hard as well as soft wood. Wood must be dried!

WOOD	Energy for 1 kg of fuel		
	kcal	MJ	kWh
Spruce	3900	16,25	4,5
Pine	3800	15,80	4,4
Birch	3750	15,50	4,3
Oak	3600	15,10	4,2
Beech	3450	14,40	4,0

DEVRON boilers can be fired with high quality wood pellets;
6 to 8 mm in diameter,
Moisture < 10 %,
Ash < 1 %,
Fines < 1%,
Lower calorific value > 17 MJ/kg.
Ashes must not melt and stick to each other.
You can use some other alternative solid fuels but never change fuel without qualified service approval. Some parts can be changed according to fuel type.

Chimney

Attachment of the appliance to the flue must be always done with approval of authorized chimney sweeping company. There must always be sufficient draft in the flue and flue gas must be draught to the atmosphere in all possible operation conditions. For the right operation of the boiler the independent flue must be dimensioned in the right way, the draught is influenced by the section of flue, height and roughness of the internal wall. In to the flue where the boiler is attached, no other appliance can be attached. Flue draught must have the specified values. But it must not be too high so as not to decrease the efficiency of boiler and interrupt burning. If the draught is too strong, install a draft regulator to the bottom part of chimney (60 cm below the boiler flue tube connection point).

20x20 cm min. height 7m

Ø20 cm min. height 8m

15x15 cm min. height 11m

Ø16 cm min. height 12m

Exact dimensions of flue must be calculated according to local codes. Flue draught is specified in technical parameters. Exhaust pipe must have the outlet into the chimney. If the boiler can not be attached to the chimney directly, the exhaust pipe must be without heating surface and it must rise to the flue. Exhaust pipes must be tight and resistant against flue gas leakage and clean able from inside. Exhaust pipes must not come through home and utility spaces and the internal section of the exhaust pipe must not be narrowing to the flue. Using of 90° bents is not suitable.

Connecting the boiler to the mains net

The boiler is connected to the mains of 230V, 50Hz by a supply cord and plug. The voltage is of M type and when replaced, the same type must be used by a service organization. The appliance must be located in such a way that the plug was within the reach of the attendance.

8.3. FLUE GAS EXHAUST SYSTEM.

DEVRON type boilers are **B_{23}** type appliance so the flue gases must be connected to an adequate draught chimney, (-1 to -6 mmWC) without any flue gas leakage to the boiler room.

8.4. BOILER WATER AND MAKE UP WATER FOR HOT WATER BOILERS

According to **EN 12953-10:2003** (Shell boilers: Requirements for feed water and boiler water quality.

Parameter	Unit	Make up Boiler Water	Boiler water
Operating pressure	Bar	Total range	
Appearance	-	Clear, free from suspended solids, no stable foam	
Direct conductivity at 25 °C	µS/cm	< 1500	
pH value at 25 °C	-	>7.0	9.0 to 11,5 [a]
Total hardness (Ca + Mg)	mmol/l	< 0,05	
Iron concentration	mg/l	< 0,2	
Composite alkalinity	mmol/l	-	<5
Oil/grease concentration	mg/l	<1	-
Organic substances (as TOC)	-	See footnote [b]	

[a] If non-ferrous materials are present in the system, e.g. aluminum, they may require lower pH value and direct conductivity, however, the protection of the boiler has priority.

[b] Organic substances are generally a mixture of several different compounds. The composition of such mixtures and the behavior of their individual components under the conditions of boiler operation are difficult to predict. Organic substances may be decomposed to form carbonic acid or other acidic decomposition products which increase the acid conductivity and cause corrosion or deposits. They also may lead to foaming and/or priming which shall be kept as low as possible.

Note: During boiler economic life, the total make up water volume can not be more then 3 times of the total system water.

Guarantee will not be valid, if the boiler is out of service because of corrosion, sludge formation and deposits.

In order to prevent corrosion special care needed for oxygen infusion to the heating system water side. Possible points for oxygen infusion are from open vented cisterns, negative pressure points on the system and some gas permeable system items like plastic pipes.

9. START UP PRE-CONTROLS

First start up work shall be carried out exclusively by fully trained, professionally qualified personnel. Please read the installation, operation, use and maintenance manuals before start up

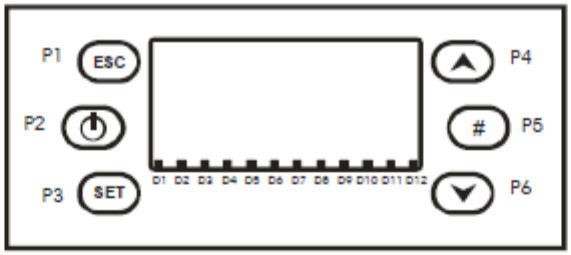
Before first start up check that;

- There is a copy of the boiler and burner instructions in the boiler room.
- The boiler name plate and manual specifications and power supply network and other system need specifications correspond. (electric supply, fuel, water, boiler and burner output, system pressure, circulating pipes)
- The air inlet and outlet supply openings are correctly sized and free from obstacles.
- The flue gas exhaust system is correctly fitted and sized.
- All the system control and security devices are present and installed according to the current regulations and working properly.
- Control the boiler gas side seals are not damaged and fixed properly. (boiler front door, burner mounting plates, smoke box, flame monitoring glass)

In starting a new installation all the water pipes, boiler and all the other heating system items must be flushed and free from deposits.

- Open all the necessary valves for filling
- Fill the heating system with water (water specifications shall be according to boiler manuals) very slowly according to the air bleeding capacity of the components.
- In open vented systems fill the system up expansion cistern's proper level.
- Bleed all the air in the water side. Any air pockets have been eliminated.
- Run the circulating pumps and control that they are working properly.
- Control all the possible water leakage points.
- Check all security and operation items are working properly and set to system needs. If the safety valve is not factory adjusted, set it according to system need and be sure that it is working properly.
- Before firing be sure that system is full of water and all control items are set to desired value and working properly.
- After first running heat the system up to 80 - 85 °C and again bleed the air in the water side. After first heating most of the dissolved air in the system water will be free for bleeding.
- Control all the security and operation devices for proper operation and set values are according to system needs again. Especially check the manual limit thermostat and pressure safety valve.
- Call the owner or operator of the boiler house and give the necessary information for proper operation of the system and warn them about the possible dangers and limitations and what will they do in case of emergency.

10. BOILER CONTROL PANEL

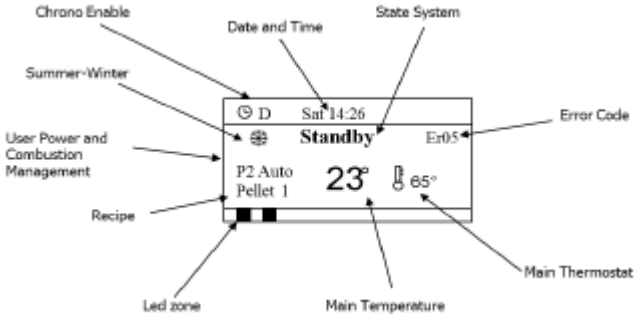


- **Buttons**

Function	Description	Button
On/Off	Ignition and Extinguishing of the boiler/stove pushing the button for 3 seconds until the acoustic signal	**P2**
Unblock	Unblocked of system pushing the button for 3 seconds until the acoustic signal	
Modify Menu Values	In modify mode change parameter's value	**P4**
Run on Menu and Submenu	Run on Submenu and Menu	
Visualizations	Enter and run in Visualization Menu	**P6**
Esc	Function exit	**P1**
Menu	Function enter in Menu or in a Submenu	**P3**
Modify	Enter in modify mode into a Menu	
Set	Save data	
Edit Function (local key only)	In Off allows you to change the operation of the system if P11 = 2, 3, 4	**P5**

- **Leds**

Function	Description	Button
Heating Resistance	Led On: Heating Resistance On	**D1**
Auger	Led On: Auger in the On interval	**D2**
Pump	Led On: Pump On	**D3**
Valve	Led On: Valve On	**D4**
Output V2	Led On: Output V2 On	**D5**
Output Aux2	Led On: Output Aux2 On	**D6**
Output Aux3	Led On: Output Aux3 On	**D7**
External Chrono	Led On: Contact open	**D9**
Pellet Level	Led On: The sensor indicates a lack of material	**D10**
Chrono Thermostat	Led On: Contact open	**D11**
Flow Switch	Led On: There is demand for sanitary water(contact close)	**D12**



- Values displayed in the main screen:
The main Temperature and the Main Thermostat, if the keyboard is set as the local one, are to be considered as the temperature of the boiler probe and the value set for the boiler thermostat respectively; on the other hand, if the keyboard is set as the remote one, they are to be considered the temperature of the room probe in the keyboard itself and the value set for the room thermostat.
- Operating states shown:
Check Up, Ignition, Stabilization, Modulation, Standby, Normal, Safety, Extinguishing, Recover Ignition, Block, Off.

11.1 OPERATION and SHUT-DOWN CONTROLS BEFORE OPERATING

Please read operation, use and maintenance manuals before start up for economic and safe use. Wrong operation can cause a fire or explosion which may result property damage, personnel injury, or loss of life.

The air settings for wood gasification burning are set on the factory and should only be changed by an authorized service. They are located on the bottom door and can be adjusted after removing the bottom door cover plate.

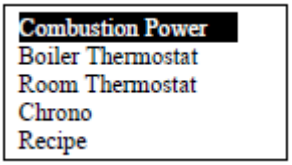
Preliminary checks before operating

Before operating,

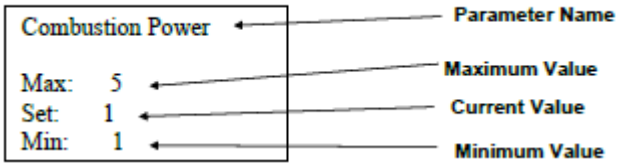
- Check the system water level and pressure
- Check the ventilation openings are free from obstacles.
- Check the valve positions and be sure that all the water circulation valves are open
- Check all the cleaning and servicing parts are securely closed and tight
- Check the open vent system, and or all the safety devices are present and operating in a correct and sufficient way.
- Check all the sensors have in their correct position.
- Check the circulation pumps functioning and the direction of rotation.
- Check the presence of any kind of inflammable substance in boiler room
- The boiler can be operated only in accordance with these instructions in order to work properly.
- It can be operated only by an adult.

Browsing Menu:

Push P3 button to enter in the User Menu.



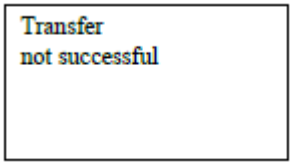
Using P4 and P6 buttons it is possible to select the desired Menu or Submenu. Push P3 button to enter in the desired Menu or Submenu.



The Setting menu consists of the parameter name (first and second row), the minimum, the maximum and the value ("Set") current.

By pressing again button P3 you enter edit mode (the "Set" field flashes);to decrease or increase value push the buttons P4 or P6; to save the new value push the button P3; to cancel the modifies and restore the old parameter's value push the button P1.

If a parameter value is changed, the new value is sent to the control board; if the transmission failures appears the message:



USER MENU :

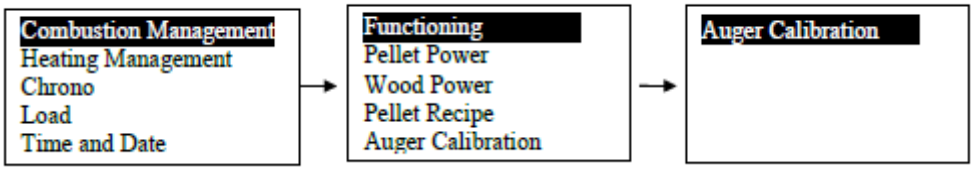
To access the settings menu press (for the touch-screen keyboard) or P3 (for the LCD keyboard).
The menu is as follows:

MENU		DESCRIPTION
Combustion Management*	Functioning	Menu to change the combustion modality. Visible only if P11= 2, 3, 4.
	Pellet Power	Menu to modify the combustion power in Pellet modality. It's visible if P11 is different from 1.
	Wood Power	Menu to modify the combustion power in Wood modality. It is visible only if A36=1 and P11 is different from 0.
	Pellet Recipe	Menu to set the pellet combustion recipe. Visible only if P04>1 and P11 is different from 1.
	Auger Calibration	Menu to modify the Auger's work time or speed. It's visible if P11 is different from 1.
	Fan Calibration	Menu to modify the Combustion Fan speed. It's visible if P11 is different from 1.
Heating Management*	Boiler Thermostat	Menu to modify the Boiler Thermostat value. Is not visible if P74=7 and the climate is enabled.
	Buffer Thermostat	Menu to modify the Buffer Thermostat value. Visible only if P26=2, 3, 4, 8, 10 and P79=9.
	DHW Thermostat	Menu to modify the Domestic Buffer Thermostat. Visible only if P26=10 and P76=9.
	Flow Thermostat	Menu to modify the Flow thermostat value. Visible only if P26=9 and P75=8
	Summer-Winter	Menu to select the Winter or Summer modality
	Climatic Function	Menu to manage the climatic function. It's visible only if P74=7.
	Mixer Valve	Menu to manage the Mixer Valve. It's visible only if P26=7, 8.
Remote Keyboard**	Room Thermostat	Menu to change the value of the room thermostat remote keyboard. It's only visible if A52>0.
	Qualifications	Allows you to enable / disable the operation of the room thermostat. It's only visible if A52>0.
Chrono		Menu to select the Chrono's program modality and the timers of Ignition/Extinguishing of the boiler/stove
Load*		Menu to load the Auger
Reset Service*		This menu allows you to reset the message of Function 2 Maintenance System. This menu is visible only if T67>0.

* entries only in the Local Keyboard
** entries only in the Remote Keyboard

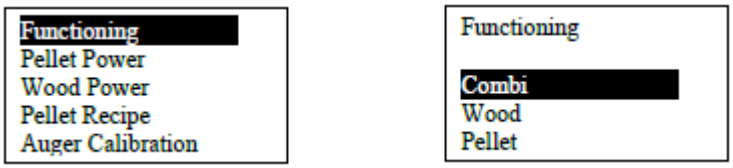
COMBUSTION MANAGEMENT MENU:

Menu to change the combustion parameters. It has some Submenu.



FUNCTIONING:

Menu that allows to change the behaviour of the system, i.e. to switch from Wood to Pellet modality and vice versa or to select the Combi modality. The Menu is visible only if P11= 2, 3, 4.



It is possible to change the functioning modality only if:

- From the state of OFF, you can select any one of the three options
- With System On and P11 = 2, the operation can not be changed
- With System On and P11 = 3, from the function only Wood you can move on to the Combi
- With System On and P11 = 4, from the function only Wood / Pellet you can move on to the Combi

PELLET POWER:

This Menu allows to set the system's combustion in automatic or manual mode in Pellet modality. If the manual mode is set, the user can choose the combustion power. This menu is visible only if P11 is different from 1.

Combustion	*Description*
1 – Number of user power	Power manually set from 1 to Number of User Power (parameter P03)
Auto	Combustion Power set automatic by the system

WOOD POWER:

This Menu allows to set the system's combustion in automatic or manual mode in Wood modality. If the manual mode is set, the user can choose the combustion power. It is visible only if A36=1 and P11 is different from 0.

Combustion	*Description*
1 – Number of user power	Power manually set from 1 to Number of User Power (parameter P03)
Auto	Combustion Power set automatic by the system

COMBUSTION RECIPE:

Menu to select the combustion recipe in Pellet modality. The maximum value is the number of recipes visible to the user (parameter P04). This value can be set in the Secret Menu Default Settings. If P04=1 or P11=1 the Menu isn't visible.

CALIBRATION:

Menu to change the Auger's work time or speed. The system has 10 calibration's steps (0 value is set by the factory). The calibration's effect is valid only in Run Mode and Modulation for the current recipe. For each step the value is increased or decreased of a per cent value P15 set in the Default Settings Menu. This menu is visible only if P11 is different from 1.

Feed screw will start to work continuously. After 6-7 minutes later, pellet feeding screw will be filled with pellets. Wait to see for pellets coming out of flexible hose for an extra 2 minutes in order to be sure that you fill the screw completely. After 2 minutes stop the screw.

Before first start up and every time pellet specifications is changed the fuel feeding quantity must be calibrated. Whenever the heating pellets are changed (size or length of pellet, density, etc.) the feeding rate of pellet screw will also change, which will affect combustion dramatically.

After filling the screw, empty the pot and then run the pellet feeding screw for 15 minutes.

Weight the pellets in pot. Note the weighted pellets in grams. (X = ….. gram)

The first calibration must be performed by the service. The service you will use will make the necessary adjustments after the first calibration process according to the gypsum and boiler capacity. But if you change the pellet you are using and you experience a decrease in performance, you will have to perform a calibration again and change the parameters given below.

First, while the boiler is cold and not working, pull the grille with the help of the handle on the side. Make sure the front ash box is in place and clean.

Press Set. Go to the "Upload" menu. Set the status to "on". The pellet feed will then enter the circuit and feed the pellet continuously for 10 minutes. At the end of this process weigh the pellets that accumulate in the anterior ash pellet (the pellets will fall down here because the grid is drawn). Compare your result with the table below. Assign values P05 and T03 of the closest corresponding value to the table as new values for gain.

Do this only after replacing the pellet you used after the first servicing, and if you notice a performance drop.

You can make the relevant changes by following the steps below.

To change the P05 parameter; Press and hold the "Set" key for 3 seconds. From the resulting menu, select "System menu". You will be prompted to enter the password. See your service provider for the password. Then select the "Pellet feed" menu. You can reach P05 using up and down arrow keys.

To change the T03 parameter; Press and hold the "Set" key for 3 seconds. From the resulting menu, select "System menu". You will be prompted to enter the password. See your service provider for the password. Then select the "Timer" menu. You can reach T03 using up and down arrow keys.

The user must change any parameters except the two parameters within the calibration process. Otherwise the user is responsible for the loss of efficiency.

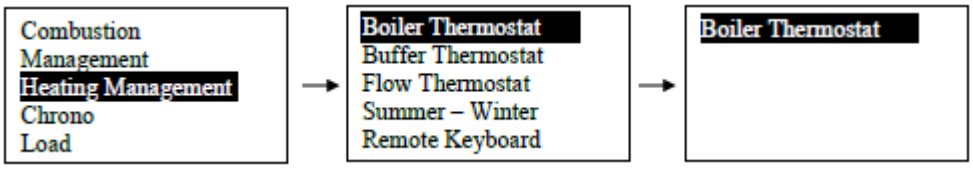
It is recommended that all these operations are done by the service.

Calibration Table;

10Dk/Gr	P05	T03
3000	5,8	100
3100	6,0	97
3200	6,2	94
3300	6,4	91
3400	6,6	88
3500	6,8	86
3600	7,0	83
3700	7,0	81
3800	7,3	79
3900	7,5	77
4000	7,7	75
4100	7,9	73
4200	8,1	71
4300	8,3	70
4400	8,5	68
4500	8,7	67
4600	8,9	65
4700	9,1	64
4800	9,3	63
4900	9,5	61
5000	9,7	60
5100	10,0	59
5200	10,0	58
5300	10,2	57
5400	10,5	56
5500	10,5	55

HEATING MANAGEMENT

Menu to change the system's heating parameters. It has some Submenu



Boiler Thermostat Menu:

Menu which allows to modify the Boiler Thermostat's value. It is possible to program the minimum and the maximum value of the Boiler Thermostat setting the Th26 and Th27 Thermostats. If the climatic function is enable (P74 =7 and activation by user) this menu is not visible, because the value of the thermostat is automatically calculated by the system. This menu is not visible if P74=7 and the climate is enabled.

Buffer Thermostat:

Menu which allows to modify the Buffer Thermostat's value. This Menu is visible only if P76=9 and setting a plumbing plant with a Buffer Probe (parameter P26=2, 3, 4, 8).
It is possible to program the minimum and the maximum value of the Thermostat setting the Th51 and Th52 Thermostats. If the climatic function is enable (P74 =7 and activation by user) and P26=4, 8 it isn't possible to modify the value of this thermostat, because the value is automatically calculated by the system.

DHW Thermostat:

Menu which allows to modify the Domestic Puffer Thermostat value. This Menu is visible only setting the parameter P26=10 and P76=9. The maximum value can be programmed by setting Th83 Thermostat.

Flow Thermostat:

Menu which allows to modify the Flow thermostat's value. This Menu is visible only if P75=8 and setting a plumbing plant with Flow Probe (parameter P26=9).
It is possible to program the minimum and the maximum value of the Thermostat setting the Th71 and Th72 Thermostats. If the climatic function is enable (P74 =7 and activation by user) it isn't possible to modify the value of this thermostat, because the value is automatically calculated by the system.

Summer-Winter Mode:

Menu to modify the plumbing plant functioning according to the season. On display appears one of these symbols: ❄ for winter and ☀ for summer.

Climatic Function Menu:

Menu to manage the climatic function. It has 2 submenu: Enable and Comfort Function and it is visible only if the parameter P74=7. The Enable submenu allows to the user to enable/disable the function; the Comfort submenu allows to correct the calculated thermostat by ±20 °C. The climatic function is only in winter modality. If the function is enable, the display shows the symbol

Mixer Valve Menu:

Menu to manage the Mixer Valve; it is visible only if P26=7, 8.

Functioning	*Description*
Open	Forced opening of the valve for a period equal to twice the parameter T82
Closed	Forced closure of the valve for a period equal to twice the parameter T82
Automatic	Valve regulated automatically

Chrono Menu:

Menu to set the time to turn on/off the system. This feature is available only in Pellet modality. The menu has 2 submenu: Modalities and Program.

Chrono Modality

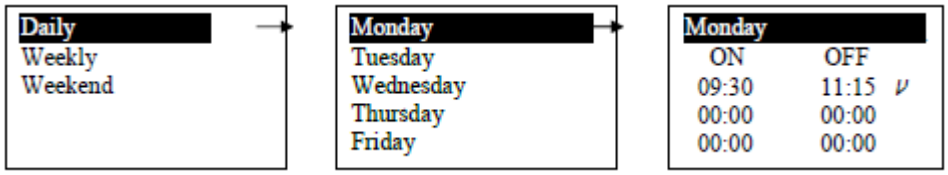
Procedure Description	*Button*	*Display*
The currently selected mode is highlighted		Disabled Daily Weekly **Weekend**
Modify current modality (the selected mode blinks)	**P3**	
Select the favourite mode	**P4** and **P6**	
Enable / disable the desired mode	**P2**	
Cancel the modifies and restore the old modality	**P1**	
Save the new setting	**P3**	
Exit from menu	**P1**	

Chrono Programming

Choose Program	*Button*	*Display*
The current program is highlighted		**Daily** Weekly Weekend
Enter in submenu	**P3**	
Select the favourite program	**P4** and **P6**	
Exit from menu	**P1**	

The three types of programming are saved separately: if you set eg Daily, the other mode are not changed.
After you have programmed to turn on the stove or boiler from Chrono you must select the desired mode from the Mode submenu Chrono. Choose the type of programming that interests set:

- Daily: you must select the day of the week that you want to program (3 slots on / off for each day). For each period there are 3 switch on and switch off times.



**Program across midnight: set the hour of extinguishing of a day at 23:59 and set the hour of ignition for the next day at 00:00

- Weekly: Using this program the 3 switch on and switch off times are the same for all days of the week.
- Week-end**:** It is possible to select the periods “Monday-Friday” or “Saturday-Sunday”. For each period there are 3 switch on and switch off times.

CHRONO PROGRAM	*Buttons*
After choosing the favourite program, select the programming time	**P4** or **P6**
Enter in modify mode (the selected time blinks)	**P3**
Modify the timers	**P4** or **P6**
Save program	**P3**
Enable a program (a "*V*" appears) or disable a program (a "*V*" disappears)	**P5**
Exit	**P1**

LOAD MENU:

This menu allows loading manually the Auger.
For the touch screen keyboard select ON or OFF to select the activation or deactivation of the auger.
For the LCD Keyboard press **P3** button to enter in modify mode (cursor blinking). Press the **P4** and **P6** buttons to select the activation or deactivation of the auger. Press **P3** to **P1** and confirm to exit.
The system has to be in Off state to do the loading.
NOTE: When the Auger is manually, is also activated the Exhaust Fan to close the contact pressure switch and thus be able to power the auger.

CUSTOMIZATION MENU:

To access the menu of Customizations press P3 for 3 seconds. The menu is as follows:

MENU		DESCRIZIONE
Keyboard Setting	Time and Date	Menu which allows to set Date and Time.
	Language	This Menu allows to change the language.
Display/Menu Keyboard	Set Contrast	Set the display contrast
	Set Minimum Light	Set the display light when you don't push the buttons.
	Keyboard Address	Menu for change the address of the RS485 node
	Node List	In this menu the following data are shown: Communication Address of the board, Typology of the board, firmware Code and firmware Version.
	Acoustic Alarm	Enable or disable the acoustic alarm of the keyboard.
System Menu *	This menu allows to enter into the technical menu.	

* entries only in the Local Keyboard

Time and Date:

Menu which allows to set Date and Time. Press the P4 and P6 to select hours, minutes or days of the week. Press P3 to enter edit (cursor blinking), P4 and P6 to change the value of the selected variable. Press P3 to save the setting and P1 to exit.

FUNCTION STATES

The functioning of the controller is managed with functioning states, each one is characterised by the control of the system's main functioning parameters, such as the exhaust temperature, the room temperature, security intervention and operating errors occurring.

- **Functioning states in Pellet Modality**

Off, Check Up, Ignition, Stabilization, Recover Ignition, Run Mode, Modulation, Standby (Extinguishing or Maintenance), Safety, Extinguishing, Block

- **Functioning states in Wood Modality**

Off, Run Mode, Modulation, Standby (Extinguishing or Maintenance), Safety, Extinguishing, Block

Note:

The system guarantees the security and alarms reading in each state.

If the parameter **A27**=1 and Safety High Voltage 1 contact (Safety Thermostat, pin 11-12) is open, the augers and the fans are disabled and the system goes into Extinguishing with error message **Er01**.

If **A27**=1 and the boiler water temperature exceeds the Boiler Thermostat **Th24**, in Extinguishing and Recovery Ignition the augers and the fans are disabled.

PELLET MODALITY:

OFF:

Timer		Control Thermostats		Combustion Fan	Combustion Auger	Heating Resistance
	P71≠4 and P74,P75,P76≠18	exhaust temp.>Th01 Thermostat	→ goes in Extinguishing if the system was previously in Pellet modality	OFF	OFF	OFF
	P71=4 or P74,P75,P76=18	Light Flame > L00 Thermostat				
		water temp.>Thermostat Th25	→ goes in Block			

CHECK UP:

Timer		Control Thermostats		Combustion Fan	Combustion Auger	Heating Resistance
T01	P71≠4 y P74,P75,P76≠18	Si exhaust temp.>Th09 and previously the system was in Pellet Mode	→ goes in Run Mode	Max speed	OFF	OFF
		Si exhaust temp.>Th01 y previously the system was in Wood or Combi Mode	→ goes in Ignition Recovery			
		Control when the timer T01 expires: goes in Ignition				
	P71=4 o P74,P75,P76=18	If Light flame > Thermostat L01	→ goes in Run Mode			
		If Water Temp. >(Boiler Thermostat – Histeresis Boiler T.)y A27=0	→ goes in Standby			

IGNITION:

Preheating

Timer		Control Thermostats		Combustion Fan	Combustion Auger	Heating Resistance
T02	P71≠4 and P74,P75,P76≠18	exhaust temp.>Th09 Thermostat	→ goes in Run Mode	U01	OFF	ON
	P71=4 or P74,P75,P76=18	Light flame > L01 Thermostat	→ goes in Run Mode			

Preload

Timer		Control Thermostats		Combustion Fan	Combustion Auger	Heating Resistance
T03	P71≠4 and P74,P75,P76≠18	exhaust temp.>Th09 Thermostat	→ goes in Run Mode	U01	Always ON	ON
	P71=4 or P74,P75,P76=18	Light flame > L01 Thermostat	→ goes in Run Mode			

Fixed

Timer		Control Thermostats		Combustion Fan	Combustion Auger	Heating Resistance
T04	P71≠4 and P74,P75,P76≠18	exhaust temp.>Th09 Thermostat During the phase the exhaust temperature minimum value is saved by system	→ goes in Run Mode	U01	C01	ON
	P71=4 or P74,P75,P76=18	At the end of T04 if light flame > L01 Thermostat	→ goes in Stabilization			
		At the end of T04 if light flame < L01 Thermostat	→ goes in Variable Phase			

Variable

Timer		Control Thermostats		Combustion Fan	Combustion Auger	Heating Resistance
T05	P71≠4 and P74,P75,P76≠18	exhaust temp.>Th09 Thermostat	→ goes in Run Mode	I Ignition: U01 II Ignition: U10	I Ignition: C01 II Ignition: C10	OFF if exhaust temp.>Th02 otherwise ON
		exhaust temp.>Th06 Thermostat and exhaust temp.>minimum value saved during the phase + D41	→ goes in Stabilization			
		At the end of T05 if exhaust temp.< Th06 Thermostat or exhaust temp.<minimum value saved during the phase + D41	Retry Ignition from the Variable Phase; in case of ignition attempts are over, it goes in Extinguishing with alarm Er12			
	P71=4 or P74,P75,P76=18	Light flame > L01 Thermostat	→ goes in Stabilization			ON
		At the end of T05 if light flame < L01 Thermostat	Retry Ignition from the Variable Phase; in case of ignition attempts are over, it goes in Extinguishing with alarm Er12			

STABILIZATION:

Timer		Control Thermostats		Combustion		Heating Resistance
				Fan	Auger	
T06	P71≠4 and P74,P75,P76≠18	exhaust temp.>Th09 Thermostat	→ goes in Run Mode	U02	C02	OFF if exhaust temp.>Th02 otherwise ON
		exhaust temp.<Th06 Thermostat	Retry Ignition from the Variable Phase; in case of ignition attempts are over, it goes in Extinguishing with alarm Er12			
		at the end of T06 timer: if exhaust temp.>(Th06+D01)	→ goes in Run Mode			
	P71=4 or P74,P75,P76=18	Light flame < L01 Thermostat	Retry Ignition from the Variable Phase; in case of ignition attempts are over, it goes in Extinguishing with alarm Er12			OFF
		At the end of T06 if light flame > L01 Thermostat	→ goes in Run Mode			

IGNITION RECOVERY:

Wait

Timer		Control Thermostats		Combustion		Heating Resistance
				Fan	Auger	
T13	P71≠4 and P74,P75,P76≠18	exhaust temp.>Th01 Thermostat	→ starts T13	P23	OFF	OFF
		At the end of T13 exhaust temp.>Thermostat Th01	→ waits			
	P71=4 or P74,P75,P76=18	Light flame > L00 Thermostat	→ starts T13			
		Light flame > L01 Thermostat	→ goes in Ignition			

Brazier Cleaning

Timer		Control Thermostats	Combustion		Heating Resistance
			Fan	Auger	
-		This phase is realized only if an output is set as Brazier Cleaning Engine; it ends when the engine stops	OFF (Maximum Speed if A67=1)	OFF	OFF

Final Cleaning

Timer		Control Thermostats		Combustion		Heating Resistance
				Fan	Auger	
T16	P71≠4 and P74,P75,P76≠18	If exhaust temp.<Th01 Thermostat and T13 timer finished	→ starts T16 timer	Max speed	OFF	OFF
		At the end of T16 if exhaust temp.< Thermostat Th01	→ goes in Check Up			
	P71=4 or P74,P75,P76=18	If Light flame < L00 Thermostat	→ starts T16 timer			
		At the end of T16 if light flame < L00 Thermostat	→ goes in Check Up			

Auger On

Timer		Control Thermostats		Combustión		Resistencia Encendido
				Fan	Sinfin	
T50	P71≠4 y P74,P75,P76≠18	If exhaust temp.<Th01 Thermostat	→ starts the timer T50	OFF	Always ON	OFF
	P71=4 o P74,P75,P76=18	If Light flame < L00 Thermostat				

Note: The system can go in Ignition Recovery, in Combi 2 modality, also if it is turned on again, once it was turned off in Woode mode, and if the Cleaning Brazier Engine is present.

RUN MODE:

Timer		Control Thermostats		Combustion		Heating Resistance
				Fan	Auger	
T14	P71≠4 and P74,P75,P76≠18	When combustion has reached final power, if: exhaust temp.<Th03 thermostat **or** exhaust temp.< Extinguishing Thermostat for the used power	→ starts T14 timer	**User Power**	**User Power**	**OFF**
		at the end of T14 timer if exhaust temp. is low	→ goes in Extinguishing with alarm **Er03**			
	P71=4 or P74,P75,P76=18	Light flame < Thermostat L00	→ starts T14			
		at the end of T14 timer if light flame < Thermostat L00	→ goes in Extinguishing with alarm **Er03**			
	System with Thermocouple	Exhaust temp > Th08 thermostat	→ goes in **Safety**			
		Water temp.> Th25 thermostat				
	System with Thermocouple	Exhaust temp. > Th07 thermostat				
		Water temp.>Boiler Thermostat **or** A32=1 and the system is a time off of internal chrono **or** Room temp.>Room Thermostat and A01=1 * **or** Room temp.>Remote Room Thermostat and A52=1 *	→ goes in **Modulation**			
T22		Room temp.>Room Thermostat and A01=2, 4, 5, 7** **or** A32=2, 4 and the system is a time off of internal chrono **or** buffer temp.>Buffer Thermostat Th58 and P26=4, 8, 10 **or** buffer temp.>Buffer Thermostat Th58 and P26=2, 3 and Summer modality room temp.>Remote Room Thermostat and A52=2, 4, 5, 7 **	→ goes in **Standby** at the end of T22 timer			

* This condition is true if there isn't a sanitary water demand (if it is selected a plumbing plant with Flow Switch), **or** if buffer temperature>Buffer Thermostat Th58 (if P26=2, 3) or if a plumbing plant with buffer is set
** This condition is true if there isn't a sanitary water demand or if a plumbing plant with buffer is set

MODULATION:

Timer		Control Thermostats		Combustion		Heating Resistance
				Fan	Auger	
T14	P71≠4 and P74,P75,P76≠18	Se When combustion has reached final power, if: exhaust temp.<Th03 thermostat **or** exhaust temp.< Extinguishing Thermostat for the used power	→ T14 timer of pre-extinguishing starts	**U11** if A06=1 otherwise **U03**	**C11** if A06=1 otherwise **C03**	**OFF**
		at the end of T14 timer if exhaust temp. is low	→ goes in Extinguishing with alarm **Er03**			
	P71=4 or P74,P75,P76=18	Light flame < Thermostat L00	→ starts T14			
		at the end of T14 timer if light flame < Thermostat L00	→ goes in Extinguishing with alarm **Er03**			
	System with Thermocouple	Exhaust temp. > Th08 thermostat	→ goes in Safety			
		water temp.>Th25 thermostat				
T22		Room temp.>Room Thermostat and A01=2, 4, 5, 7 * **or** A32=2, 4 and the system is a time off of internal chrono **or** water temp.>(Boiler Thermostat+D23) and A13=1 and T43=0 or A13=2, Summer modality and T43=0 **or** buffer temp.>Buffer Thermostat Th58 and P26=4, 8, 10 **or** room temp.>Remote Room Thermostat and A52=2, 4, 5, 7 * **or** buffer temp.>Buffer Thermostat Th58 and P26=2, 3 and Summer modality	→ goes in Standby at the end of T22 timer			

When the conditions for Modulation are over, the system goes back to Run Mode
* This condition is true if there isn't a sanitary water demand or if a plumbing plant with buffer is set

STAND BY:

In all phases if the flue gas temperature>**Th08** Thermostat **or** water temperature>**Th25** Thermostat the system is in **Safety**.

To reduce oscillations between states Standby→Ignition→Run Mode→Standby, adjust Room Thermostat Hysteresis and Boiler Thermostat Hysteresis. Anyway Standby lasts at least 10 seconds.

Setting the **A27** parameter it is to get the brazier in Maintenance or in Extinguishing.

Standby-Extinguishing (**A27**=**0**)

When the conditions that led to the system in Standby aren't valid, the **T11** timer starts (if **A26**=1 from Wait phase, if **A26**=0 from any phase). At the end the system goes in Check-Up.

Extinguishing

Timer		Control Thermostats		Combustion		Heating Resistance
				Fan	Auger	
T57	P71≠4	exhaust temp > Thermostat Th28	→ starts T57 timer	U12	OFF	OFF
		At the end of timer T57 if exhaust temp.>Th28 thermostat	→ wait			
	P71=4	Light flame > Thermostat L00	→ starts T57 timer			
		At the end of T57 timer if light flame > Thermostat L00	→ wait			

Brazier Cleaning

Timer		Control Thermostats	Combustion		Heating Resistance
			Fan	Auger	
-		This phase is realized only if an output is set as Brazier Cleaning Engine; it ends when the engine stops.	OFF (Maximum Speed if A67=1)	OFF	OFF

Final Cleaning

Timer		Control Thermostats		Combustion		Heating Resistance
				Fan	Auger	
T58	P71≠4 and P74,P75,P76≠18	At the end of timer T57 if exhaust temp.<Th28 thermostat	→ starts T58 timer	Max speed	OFF	OFF
	P71=4 or P74,P75,P76=18	At the end of T57 timer if light flame < Thermostat L00				
		At the end of T58 timer	→ wait			

Auger On

Timer		Control Termostatos		Combustión		Resistencia Encendido
				Ventilador	Sinfín	
T50	P71≠4 y P74,P75,P76≠18	If exhaust temp.<Th01 Thermostat	→ starts the timer T50	OFF	Always ON	OFF
	P71=4 o P74,P75,P76=18	If Light flame < L00 Thermostat				

Wait

Timer		Control Thermostats	Combustion		Heating Resistance
			Fan	Auger	
-		-	OFF	OFF	OFF

- **Standby-Manintenance** (A27=1)
  When the conditions that led to the system in Standby aren't valid, the T11 timer starts. At the end the system goes in **Check-Up**

Pause

Timer		Control Thermostats	Combustion		Heating Resistance
			Fan	Auger	
T32		Extinguishing of the combustion for the T32 time. At the end start the Work phase	OFF	OFF	OFF

Work

Timer		Control Thermostats	Combustion		Heating Resistance
			Fan	Auger	
T33		Combustion on for the T33 time. At the end start the Pause phase	U12	C12	OFF

SAFETY:

Timer		Control Thermostats		Combustion		Heating Resistance
				Fan	Auger	
T15	System with Thermocouple	exhaust temp.>Th08 thermostat	→ starts T15 timer	Power used in the previous state	OFF	OFF
		exhaust temp.<Th08 thermostat	→ goes to the previous state (Modulation or Standby)			
		water temp.>Th25 thermostat	→ starts T15 timer			
		water temp.<Th25 thermostat	→ goes to the previous state (Modulation or Standby)			
		at the end of T15 timer	→ goes in Extinguishing with Error			

EXTINGUISHING:

Wait

Timer		Control Thermostats		Combustion		Heating Resistance
				Fan	Auger	
T13	P71≠4	exhaust temp.>Th01 thermostat	→ starts T13 timer	P23	OFF	OFF
	and P74,P75,P76≠18	At the end of T13 timer if exhaust temp.>Thermostat Th01	→ wait			
	P71=4 or P74,P75,P76=18		→ starts T13 timer			
		At the end of T13 timer if light flame >Thermostat L00	→ wait			

Brazier Cleaning

Timer		Control Thermostats	Combustion		Heating Resistance
			Fan	Auger	
-		This phase is realized only if an output is set as Brazier Cleaning Engine; it ends when the engine stops.	OFF (Maximum Speed if A67=1)	OFF	OFF

Final Cleaning

Timer		Control Thermostats		Combustion		Heating Resistance
				Fan	Auger	
T16	P71≠4 and P74,P75,P76≠18	exhaust temp.<Th01 thermostat and T13 finished	→ starts T16 timer	Max speed	OFF	OFF
	P71=4 or P74,P75,P76=18	Light flame < Thermostat L00				
Control at the end of T16 timer: **the system goes in Off if there isn't any functioning error**, otherwise it goes in **Block**.						

Auger On

Timer		Control Thermostats		Combustion		Heating Resistance
				Fan	Auger	
T50	P71≠4 and P74,P75,P76≠18	exhaust temp.<Th01 thermostat	→ starts T50 timer	OFF	Always ON	OFF
	P71=4 or P74,P75,P76=18	Light flame < Thermostat L00				

BLOCK:

Timer		Control Thermostats		Combustion		Heating Resistance
				Fan	Auger	
	P71≠4 and P74,P75,P76≠18	exhaust temp.>Th01 thermosta		U03	OFF	OFF
		exhaust temp.<Th01 thermosta		OFF		
	P71=4 or P74,P75,P76=18	Light flame > Thermostat L00		U03		
		Light flame < Thermostat L00		OFF		

WOOD MODALITY

RUN MODE:

If the exhaust temperature is lower than **Th13** thermostat, starts the **T21** timer: if the temperature rises above this thermostat, the timer is reset, otherwise the system returns to Off state.

Phase	Timer	Control Thermostats		Combustion		Heating Resistance
				Fan	Auger	
		water temp.>**Boiler Thermostat** **or** exhaust temp.>**Th07** Thermostat **or** room temp.>**Room Thermostat** and **A01**=1,5 6, 7 * **or** room temp.>**Remote Room Thermostat** and **A52**=1, 5, 6, 7 * * This condition is true if there isn't a sanitary water demand (if it is selected a plumbing plant with Flow Switch), or if buffer temperature>**Buffer Thermostat Th58** (if **P26**=2, 3)	→ goes in **Modulation**	**User Power** If **A36**=1, otherwise **OFF**	**OFF**	**OFF**
		room temp.>**Room Thermostat** and **A01**=2, 4 **or** buffer temp.>**Buffer Thermostat Th58** and **P26**=4, 8, 10 **or** buffer temp.>**Buffer Thermostat Th58** and **P26**=2, 3 and Summer modality **or** room temp.>**Remote Room Thermostat** and **A52**=2, 4	→ goes in **Standby** at the end of **T22** timer			
		exhaust temp.>**Th08** thermostat **or** water temp.>**Th25** thermostat	→ goes in **Safety**			

MODULATION:

Phase	Timer	Control Thermostats		Combustion		Heating Resistance
				Fan	Auger	
		exhaust temp.>**Th08** thermostat **or** water temp.>**Th25** thermostat	→ goes in **Safety**	**OFF** if it was off in Run Mode, otherwise **U11** if **A06**=1 or **U03** if **A06**=0	**OFF**	**OFF**
		Exhaust temp< **Th07** thermostat **and** Water temp< **Boiler Temperature** **and** Room temp< **Room Thermostat** and **A01** = 1, 5, 6, 7 **and** Room temp< **Remote Room Thermostat** and **A52**= 1, 5, 6, 7	→ goes in **Run Mode**			
		Room Temp> **Room Thermostat** and **A01**= 2,4 **or** Water Temp>(**Boiler Thermostat** + **D23**) and **A13**= 1 and **T43**=0 or **A13**=2, Summer Mode and **T43**=0 **or** Boiler Temp>**Boiler Thermostat Th58** and **P26**=4, 8, 10 **or** Room Temp>**Remote Room Thermostat** and **A52**=2, 4 **or** Boiler Temp> **Boiler Thermostat Th58** and **P26**=2, 3 and Summer Mode	→ goes in **Standby** at the end of the timer **T22**			

STANDBY:

Setting the **A27** parameter it is to get the brazier in Maintenance or in Extinguishing.

Phase	Timer	Control Thermostats		Combustion		Heating Resistance
				Combustion	Auger	
• **Extinguishing** (**A27**=0)						
Extinguishing		Exhaust temp < **Th13** thermostat	→ Extinguishing of the combustion	**U12** if **A36**=1, otherwise **OFF**	**OFF**	**OFF**
Auger On	**T50**	Exhaust temp < **Th13** thermostat	→ **T50** timer starts	**OFF**	Always **ON**	
Wait			→ wait	**OFF**	**OFF**	
• **Mantenimiento** (**A27**=1)						
Pause	**T32**	Extinguishing of the combustion for the **T32** time. At the end starts the Work phase		**OFF**	**OFF**	**OFF**
Work	**T33**	Combustion on for the **T33** time. At the end starts the Pause phase		**U12** if **A36**=1, otherwise **OFF**		
When the conditions that led to the system in Standby are no longer valid, the **T11** timer starts. At the end, the system goes in **Run Mode**.						
In all phases if the flue gas temperature>**Th08** Thermostat **or** water temperature>**Th25** Thermostat the system goes in **Safety**. To reduce oscillations between states Standby→Ignition→Run Mode→Standby, adjust Room Thermostat Hysteresis and Boiler Thermostat Hysteresis. Anyway, Standby lasts at least 10 seconds.						

SAFETY:

Phase	Timer	Control Thermostats		Combustion		Heating Resistance
				Fan	Auger	
		exhaust temp.>**Th08** thermostat **or** water temp.>**Th25** thermostat	→ Wait	**OFF**	**OFF**	**OFF**
		exhaust temp.<**Th08** thermostat **and** water temp.<**Th25** thermostat	→ goes in the state in which it was before (**Standby** or **Modulation**)			

EXTINGUISHING:

Phase	Timer	Control Thermostats		Combustion		Heating Resistance
				Fan	Auger	
Wait		exhaust temp.>**Th13** thermostat	→ Wait	**U12** if **A36**=1, otherwise **OFF**	**OFF**	**OFF**
Auger On	**T50**	exhaust temp.<**Th13** thermostat	→ start **T50** timer	**OFF**	Always **ON**	
		exhaust temp.<**Th13** thermostat	→ goes in **Off**	**OFF**	**OFF**	

COMBI MODALITY

By parameter **P11** you can configure user-selectable modes of operation for the current system:

Only Pellet Mode (P11=0)

In this configuration the system can only operate at Pellet Mode and in the User Menu, the submenu functioning isn't present.

Only Wood Mode (P11=1)

In this configuration the system can only operate at Wood Mode and in the User menu, the submenu functioning isn't present.

Wood/Pellet Mode (P11=2)

In this configuration the system can operate both Pellet and Wood Mode, but not at the same time.
Through the submenu functioning of the User Menu you can select the desired operation.

Combi Mode 1 (P11=3)

In this configuration, the system can operate in Pellet, Wood and also in combination. Through the submenu functioning of the User Menu you can select the Pellet,Wood or Combi Mode (on display appears the symbol).
The combi mode 1 allows to turn on again automatically in pellet mode, when the wood in the brazier is finish.
When the system is in Pellet mode, the combi mode is deactivated.
When the system is turned on, it starts in Wood Mode. If the exhaust temperature measured by the thermostat is higher than the **Th13** is loaded timer **T21**; if later the temperature is lower than **Th13** for **T21** minutes the system turn on again automatically in Pellet Mode.
For safety reason, the transition from wood to pellets is not allowed until the water temperature in the boiler is higher than the **Boiler Thermostat**.

Combi Mode 2 (P11=4)

In this configuration, the system can operate in Pellet, Wood and also in combination. Through the submenu Functioning of the User Menu you can select the Pellet,Wood or Combi Mode (on display appears the symbol).
The Combi mode 2 turns on the system in Pellet mode and allows to burn the wood, and finally enter in Wood Mode. When the wood is over the system goes in Pellet mode. This modality doesn't turn off automatically, to perform the **Combi** cycle again you must first turn the system off and then on again.
In mode 2 Combined the ignition of wood with pellets is carried out considering the parameter **P71**. If:

- **P71**≠4 and **P74**,**P75**,**P76**≠18 are considered thermostats **Th63**, **Th66**, **Th69** instead of thermostats **Th03**, **Th06**, **Th09**
- **P71**=4 or **P74**,**P75**,**P76**=18 is considered thermostat **L01**

If the system passes the phases of Ignition and Stabilization, comes up to speed and starts the timer **T71**. During the time **T71** the system can only go in Safety or Modulation / Standby for Boiler Temperature according to the parameter **A13**.
At the exit from Standby, the system resumes from Ignition phase, restarting the Ignition of Wood with pellets.
Depending on the value of the parameters **PA29** and **PA23**, the system will work in the following way:

PA29 = 0 and PA23=0

At the end of the **T71** time, if the exhaust temperature is higher than **Th64** thermostat, the system goes in Wood Mode otherwise, at the end of the timer, keeps working with Pellet**.**
When the wood is over (exhaust temp < **Th13** thermostat) at the end of the **T21** timer, the system turns on again in pellet mode automatically(the thermostats considered are **Th03**, **Th06**, **Th09**).
If during Pellet Mode after the end of the wood, the exhaust temperature becomes greater than **Th68** thermostat, the system goes again in Wood Mode and the Combi cycle restarts.
Transition from Wood to Pellet is not allowed if **Door** input is Open.

PA29 = 0 and PA23=1

In this case, the Door input is used for the system transition to Wood.
Once the system came up to speed, at the end of **T71** timer, the thermostat **Th64** is checked: if exhaust temperature is greater than it the system passes to Wood mode, otherwise it keeps working with Pellet. Here the system kepps checking the thermostat **Th68** for the transition to Wood.
If the system successfully passed to Wood, once it finished (exhaust temperature lower than the thermostat **Th13**) when the timer **T21** expires, the system turns on again with Pellet automatically (thermostats **Th03**, **Th06**, **Th09**).
The system keeps working with Pellet until the Door is open, and consequently closed. This condition starts the timer **T71** and, from its expiring, the thermostat **Th68** is checked. If exhaust temperature is greater than it the system passes to Wood, otherwise it will keep working with Pellet.
For the **Th68** thermostat control, the opening / closing of the door can take place both in Wood or Pellets phase.

PA29 ≠ 0 and PA23=1

In this case, the functioning is managed only with door present. During ignition, once fully operational, the system is brought to work to the fixed power **PA29**. At the end of the timer **T71**, **Th64** thermostat is checked: if Exhaust

temperature is greater than it, the system passes to Wood, otherwise it will keep working with Pellet, power is not fixed to **PA29** and no more controls for transition are carried out, unless the door is open (and then closed). In that case, the system fixes again the power to **PA29**, starts counting **T71** and, when this timer expires, checks the thermostat **Th68**: if Exhaust temperature is greater than it, the system switches to Wood mode. When **T71** timer expires, working power is no more fixed, while **Th68** thermostat is still monitored.
If the system successfully passed to Wood, once it finished (exhaust temperature lower than the thermostat **Th13**) when the timer **T21** expires, the system turns on again with Pellet automatically (thermostats **Th03**, **Th06**, **Th09**).
Now the system keeps working in Pellet mode (with not fixed power) until the Door is open, and consequently closed. That condition lead the system to fix the power at PA29 and makes the timer **T71** start. When it expires, the **Th68** thermostat is monitored: if exhaust temperature is greater than it, the system switches to Wood, otherwise it will keep working with Pellet. When T71 expires, working power is no more fixed, while **Th68** thermostat is still monitored.
For the **Th68** thermostat control, the opening / closing of the door can take place both in Wood or Pellets phase.

OTHER FUNCTIONS

Internal Chrono Management

The control board is provided with a clock module for the management of programmed switching on and off (this feature is available only in **Pellet modality**). Setting the parameter **A32** it is possible to:
☐**A32**=0→the chrono manages the system's Ignition/Extinguishing.

This functioning is only available in pellet mode or in Combination mode and parameter P11 = 4 (Combi 2).
☐**A32**=1→the chrono sends the system in Modulation outside the programmed time on bracket.
☐**A32**=2→the chrono sends the system in Standby outside the programmed time on bracket.
☐**A32**=3→the chrono blocks the plant pump outside the programmed time on bracket if the water temperature in the boiler exceeds the **Th19** thermostat. If the temperature exceeds the **Th21** thermostat the pump turn on.
☐**A32**=4→the chrono works as in the cases 2 and 3

NOTE:

- If there is a sanitary water demand the pump system isn't blocked and, if it previously had been blocked, it is reactivated.
- ☐If the parameter **A13=2,** on Summer all functioning of the Room Thermostat are disabled except the one with **A01**=**0**.

Combustion Standby

The Standby is a temporary shutdown of the flame due to the attainment of the target temperature of the medium to be heated. The conditions to go in Standby are managed by parameters **A01**, **A52** and **A13**:
☐**A01**, **A52**=2, 4, 5, 7→if room temperature>Room Thermostat, the system goes in Standby
☐**A13**=0→if boiler water temperature>Thermostat Boiler, the system goes in Modulation
☐**A13**=1→if boiler water temperature>(Boiler Thermostat+**D23**)→when the timer **T43** is finished, the system goes in Standby
☐**A13**=2→ On Winter if water temperature > Boiler Thermostat →the system goes in **Modulation**

On Summer if water temperature > (Boiler Thermostat + **D23**) → the system goes in Standby at the end of **T43** Timer.

To exit Standby set the values of the thermostats' hysteresis. The system exits from standby if:
Room temperature<(Room Thermostat-**Ih33**-1) **and**
Room remote temperature<(Room Remote Thermostat-hysteresis-1) **and**
water boiler temperature<(boiler thermostat-**Ih24**-1)

Automatic Combustion Power

In the Combustion Power Menu, the user can set the Automatic modality [A]. The work power is automatically selected according to the water boiler temperature and the value of Boiler Thermostat **Th24**:
☐boiler water temperature≤**Th24**–**d08**→the system goes to the maximum available power
☐**Th24**–**d08**<boiler water temperature<**Th24**→the combustion power decreases reaching the Boiler Thermostat
☐boiler water temperature≥**Th24**→the system goes to Power 1 if **A06**=0 or to Modulation Power if **A06**=1

Change Power Delay
When the system exits from the Ignition and goes in Run Mode, the Combustion Power, starting from the Power 1, reaches the target one increasing the value with the delay time as the timer **T18**.
The other manual or automatic power changes are managed and actuated with the delay time as timer **T17**.

System Maintenance 1 Function
When the system exceeds the working hours set by the parameter **T66** it is notify the user to contact the service to verify the proper functioning of the system. The display shows the message '**Service**' and the system goes in **Block**. To unblock it is necessary to reset the counters. To disable this feature set **T66**=0.
To enable this feature set **T66**>0

System Maintenance 2 Function
When the system exceeds the working hours set by the parameter **T67** it is notified to the user to clean the boiler or the stove. The display shows the message '**Clean**' and the system gives out an acoustic signal periodically. To stop signalling enter the menu “Reset Service”. To disable this feature set **T67**=0.

Extinguishing in Ignition Phase
When the system is turned off during the Ignition phase (after Preheating phase) by an external device or by internal chrono, it really goes in Extinguishing when it enters the Run Mode at the end of Ignition. On display appears the message "**Block Ignition**".
In Combi 2 modality if the system is turned off (also with manual control):
☐**PA23** =0 the System does the extinguishing if exhaust temp. > **Th64** or if **T71** is expired. In the first case the extinguishing is performed in Wood modality, in the second case in Pellet modality. Furthermore in this case, if exhaust temp. > **Th68** the extinguishing switches to Wood modality.
☐ **PA23** = 1. The System, when T71 expires, checks exhaust temperature. If it’s greater than **Th64** extinguishing is performed in Wood mode, otherwise in Pellet mode. , the system goes on with the extinguishing in pellet modality. If exhaust temperature is > **Th64** the system starts a checking procedure, similar to that of Wood transition described in section 6.3. In this case, the system can switch to Wood extinguishing. Furthermore in this case, if exhaust temp. > **Th68** the extinguishing switches to Wood modality
If it occurs any error, the system goes immediately in Extinguishing with error.
If the **P2** button is pressed it is possible to get immediately the system in Extinguishing or in Ignition.

Automatic switch off function
If the parameter **A40**=1 and the functioning is in Pellet modality the system, after **T84** minutes in Run Mode, Modulation and Standby-Maintenance goes in Recover Ignition.

Supply Voltage Lack Management
In case of supply voltage lack, the system saves the most important functioning data. With the return of the supply voltage, the system evaluates the saved data and, according to parameter **A53** we have:
☐**A53**=**0**
o If the lack is less than **T88** the system returns to the state in which it was previously
o If the system was in a On state and the lack of voltage is between **T88** and **T89** the system goes in Recover Ignition, if it is in Pellet modality; it goes in Run Mode if in Wood modality
o In case of lack of Supply Voltage for a time greater than **T89** the system goes in Block with error message **Er15**
☐**A53**=**1**
o If the lack is less than **T88** the system returns to the state in which it was previously
o If the system was in a On state and the lack of voltage is greater than **T88** the system goes in Recover Ignition, if it is in Pellet modality; it goes in Run Mode if in Wood modality

Auger Feeding in Wood Modality
When the system is in Wood modality and in the states Run Mode and Modulation is possible to feed the Auger and download pellets in the brazier.
If the flue gas temperature is greater than **Th13** thermostat, the Auger is off for the time **T53** and it is on for the time **T54**; if a configurable output is set as the Safety Valve (**P44** or **P48** or **P36**=1) the Auger is turned on only at the end of time **T40**.
If the Combustion Fan was off, it is turned on at the speed **U12**, otherwise it continues to work on the power to which it was working. If the fuel in the tank is run out, the function is disabled.

Periodical Cleaning of Brazier
Periodical Cleaning of brazier occurs in Run Mode for a time **T08** with a repetition time equal to **T07** timer. During the cleaning phase the, Exhaust Fan goes to at **U09** power and the Auger at **C09**.

Configurable Outputs Management
It is possible to configure the outputs V2 (pins 5-6), Aux2 (pins 19-20-21) and Aux3 (pins 46-47) setting the parameter **P44**, **P48** and **P36**.

Safety Valve
The output is on when the Auger is enabled to work; the Auger will be on only at the end of timer **T40**.

Preheating phase of the Ignition phase, the work phase of Standby-Maintenance and the Auger feeding in Wood modality will only start if the timer **T40** expires. State System	Safety Valve
Check Up, Ignition, Stabilisation, Run Mode, Modulation, Standby-Maintenance (work phase), Safety, Extinguishing (Advancement Auger phase)	On
Other States	Off

Load Pellet Engine
When the Pellet Level Sensor signals the absence of pellet, the output is activated to do the loading of the tank. If in a time **T24** is not reached the set pellet level, the system goes in Extinguishing and the display shows the message **Er18**. If the tank is filled manually, it is possible to reset the error and restart the system. If the set pellet level is reached, the loading of the material continues for a time equal to **T23**.

Output under Thermostat
The output is managed by **Th56** Thermostat: above this value is supplied.

12.1 START UP

First start up work shall be carried out exclusively by fully trained, professionally qualified personnel. Please read the installation, operation, use and maintenance manuals before start up

Before first start up check that;

- There is a copy of the boiler and burner instructions in the boiler room.
- The boiler name plate and manual specifications and power supply network and other system need specifications corresponds to each other. (electric supply, fuel, water, boiler and burner output, system pressure, circulating pipes …)
- The air inlet and outlet supply openings are correctly sized and free from obstacles.
- The flue gas exhaust system is correctly fitted and sized.
- All the system control and security devices are present and installed according to the current regulations and working properly.
- The burner output and fuel type is compatible with the boiler and system specifications.
- The flue gas turbulators are present in all the second pass pipes and properly placed.
- Control the boiler gas side seals are not damaged and fixed properly. (boiler front door, burner mounting plates, smoke box, flame monitoring glass)

At starting a new installation all the fuel and water pipes, boiler and all the other heating system items must be flushed and free from deposits.

Before filling the system with water, control the expansion tank pre charge pressure in sealed systems.

Open all the necessary valves for filling

Fill the heating system with water (water specifications shall be according to boiler manuals) very slowly according to the air bleeding capacity of the components.

In open vented systems fill the system up to expansion cistern's proper level. In sealed systems fill the system up to the predefined pressure. In sealed systems there must be an additional safety system for overheating approved by local authorities.

Bleed all the air in the water side. Be sure that any air blockage have been eliminated.

Run the circulating pumps and control that they are working properly.

Control all the possible water leakage points.

Check all security and operation items are working properly and set to system needs. If the safety valve is not factory adjusted, set it according to system need and be sure that it is working properly.

Control the fuel system installation

Fill the pellet feeding screw. Make pellet calibration process.

Before firing the burner, be sure that system is full of water and all control items are set to desired value and working properly.

Run the burner and adjust it to proper output according to boiler needs.

Analyze the flue gas and be sure that emission levels of CO, O2, OGC, Dust and NO_x where appropriate are according to current regulations.

For reference (current and national regulations have to be taken into consideration)

	Limits of emissions mg/m3 at 10 % O2[a)]		
Emission class	**C0 mg/m3**	**CO (mg/kWh)**	**NO_x (mg/kWh)**
1	15 000	1750	200
2	5 000	200	180
3	3 000	100	150
4	1 000	75	75
5	500	50	30
a) Referred to dry flue gas at 0 ºC and 1,013 bar			

Note: Emission values shall be according to current and local limitations. In absence of local limitations refer to current prEN 15270 and/or current EN 300-5. In correct adjustments can cause damage to people, animals, nature and also loss of energy.

After running the burner heat the system up to 80 °C and again bleed the air in the entire system. After first heating most of the dissolved air in the system water will be free for bleeding.

Control all the security and operation devices for proper operation and set values are according to system needs again.

Call the owner or operator of the boiler house and give the necessary information for proper operation of the system and warn them about the possible dangers and limitations and what will they do in case of emergency.

FAULT INDICATION

Both the keyboard touch screen and LCD you can view the messages on the main screen such as error messages.

-Errors:

All errors make the security system block except errors **Er04** and **Er05** to wood.

Er01	Security Error High Voltage 1. It may also intervene with the system off.
Er02	Security Error High Voltage 2. It can only intervene if the fan Combustive is active.
Er03	Extinguishing for low exhaust temperature or missing light in the brazier
Er04	Shutdown over temperature water
Er05	Extinguishing due to high exhaust temperature
Er07	Encoder Error. The error may occur due to lack signal Encoder
Er08	Encoder Error. The error can occur due to problems of adjustment of the number of revolutions
Er09	Water pressure low
Er10	Water pressure high
Er11	Clock Error. The error occurs due to problems with the internal clock.
Er12	Extinguishing for ignition failure.
Er15	Extinguishing due to power failure for more than 50 minutes
Er16	RS485 communication error
Er17	Adjusting the Air Flow Failed
Er18	Exhaustion Pellet
Er23	Boiler probe or Back boiler probe or probe Buffer open
Er25	Engine cleaning brazier broken
Er26	Engine cleaning broken
Er27	Engine cleaning 2 broken
Er34	Depression below the minimum threshold
Er35	Depression above the maximum threshold
Er39	Sensor Flowmeter broken
Er41	Minimum air flow in Check Up is not reached
Er42	Maximum air flow exceeded (**F40**)
Er47	Error Encoder Auger: missing signal Encoder (if **P81**=**1** or **2**)
Er48	Error Encoder Auger: Auger regulation speed not achieved (if **P81**=**1** or **2**)
Er52	Error Module I/O I2C

-Other Messages:

Sond	Displaying the status of the Temperature Sensors. The message is displayed during the check-up and indicates that the temperature reading on one or more probes is equal to the minimum value or the maximum value (depending on the probe considered). Check that the probes are not open (read the minimum value of the temperature scale) or short (read the maximum value of the temperature scale).
Service	Message that signals the achievement of scheduled operating hours (parameter **T66**). It's necessary to call for service.
Cleaning	Message that signals the achievement of scheduled operating hours (parameter **T67**). It's necessary to clean the stove or boiler.
Ignition Block	Message that appears if the system is not manually turned off during Power On (after preload): the system will turn off only when it is arrived at running.
Er20	Sensor Grid closed with system in operation Pellets
Port	Door open.
Er06	Thermostat Pellet open.
Link Error	Lack of communication between keyboard and control board

12.MAINTANACE AND SERVICING

13.1 FOR PELLET

Do not open any part on the boiler or burner when the system is running. Please stop the burner and wait up to no flame condition, after 30 minutes disconnect the power supply and always wait until all the parts are cooled down before cleaning and servicing operations.

In order to extend the lifetime and increase efficiency at every heating season or once a year please call your authorized service to;

Clean the boiler heat exchanger surfaces
Check the combustion parameters
Check the security and operational devices
Check the adequate chimney draught

Cleaning period depends on plant features, fuel and combustion parameters so after first commissioning please control the burner and boiler heat exchange surfaces once a month, if they need any cleaning. After few controls you can decide the period of cleaning you will need.

Stop the burner
Wait for cooling the boiler (min 2 hour)
Stop the circulation pump
Disconnect the main power supply
Dismantle the burner and check the combustion pipe. If it needs cleaning please dismantle the combustion pipe and clean all surfaces.
Dismantle the top boiler jacket
Dismantle the boiler top cover
Take out the turbulators
Clean the 2nd pass pipes by tube brush
Open the bottom ash door and control the ash box. If needed clean manually.
Put back all the dismantled part in its proper place in reverse order.
Connect the main power
And run the system.

Again once a year call your authorized service for checking the combustion parameters, security and operational devices.

Do not alter the security devices preset values

Reset the burner fault maximum 3 times and still not firing call your authorized service

If the flue gas seals in any part of the boiler and flue gas exhaust is not functioning properly and there is a flue gas leakage stop the burner and please call an authorized service for repair or replacement.

Check the makeup water analysis periodically to avoid the formation of scale and corrosion which initially reduces the system efficiency and in long term will permanently damage the boiler.

Periodically check the safety and operational equipments.

During the long shut off periods run the circulation pump(s) and anti-condensation pump 5 min/month in order to avoid pump shaft lock-out.

Frequent make up water need should be nonexistent it is a symptom of leakage which should be repaired as soon as possible. Adding water to the system will shorten the life of the boiler dramatically.

System water never fully drained if it is not necessary. Corrosion is very rapid in empty systems. New water filling means adding new scale and oxygen to the system. Both reasons cause to shorten the boiler service life and cause loss of efficiency.

System water level must be checked minimum once a month. At the fist installation it needs regular check because of air discharge from the system.

Chimney must be cleaned periodically according to the national regulations minimum once a year.

If the system will be shut off for long periods in winter time please take precautionary actions for freezing the system water.

Water filters shall be cleaned regularly according the system need.

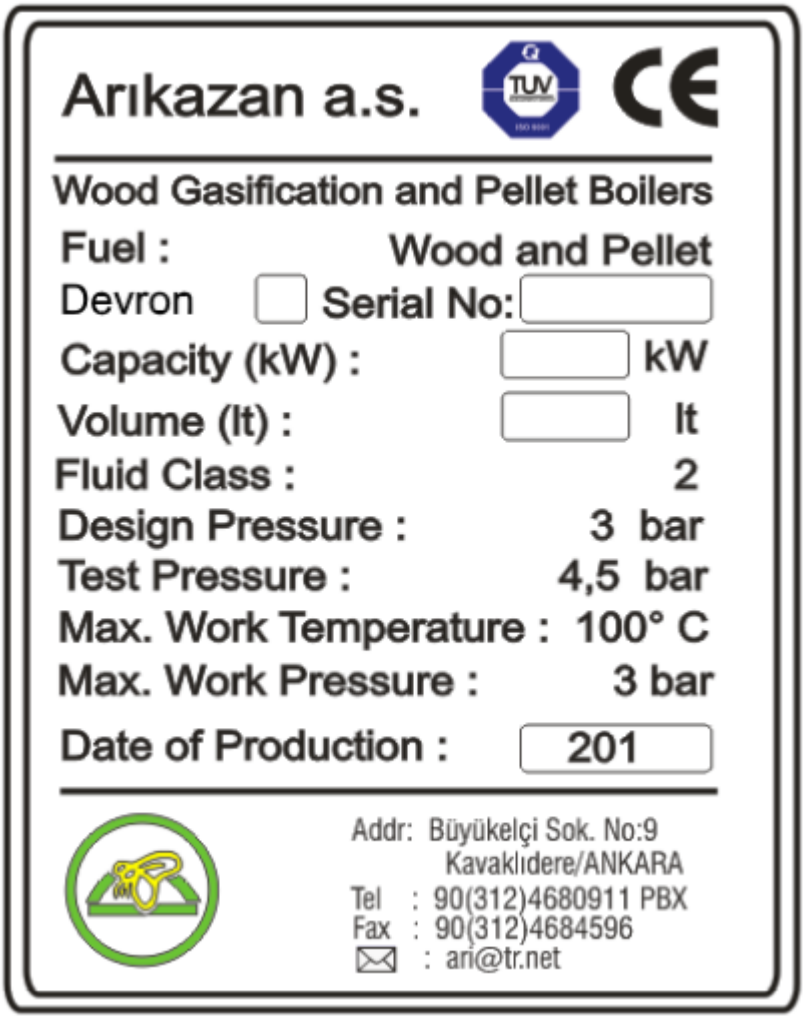
Please be sure that the boiler cannot suck extra air from any opening. Control all the doors are closed tight and gaskets are not damaged.

Before the heating season starts, please buy only 150-250 kg of pellets according to specifications given, and after seeing that you do not have any problem, please buy the rest of the pellets you will need for that heating season. Small changes in the pellet specifications can affect your system parameters.

Chimney is also very important part of the heating system. You must have always negative pressure (-1 / -8 Pa) when the boiler fan is not running. Positive pressure can carry back the hot poisonous flue gases to boiler house. Too much negative pressure will also cause problem. Boiler fan may not control the set pressure under very high vacuum. If you have high vacuum in the chimney please use draught stabilizer.

Please install a standard temperature indicator to the hot water return line to the boiler. You can check the condensation risk (return temperature must be > 55°C) and also you can control your circulation pump capacity. (Feed and return temperature difference must be between 16 – 22 °C if it is more than 26 °C it means that your pump is small for the system)

13. BOILER NAME PLATE



COMMISIONING DATE : ..... / ..... / .....
COMMISIONED BY :

NAME :

TEL :

INTIAL SET VALUES

Fuel type:

System pressure: ..... mbar