Lamborghini
CALORECLIMA

AZIENDA CERTIFICATA ISO 9001:2000

BRUCIATORE A PELLET
PELLET BURNER
BRÛLEUR À PELLETS

GP 20

LIBRETTO DI INSTALLAZIONE E MANUTENZIONE
INSTALLATION AND MAINTENANCE MANUAL
NOTICE D'INSTALLATION ET D'ENTRETIEN

Please read the instructions carefully as they provide important information about the safety, installation, use and maintenance of the burner.
Keep the manual in a safe place for future consultation.
Installation must be carried out by qualified personnel in conformance with technical standards, the national and local laws in force, and the instructions in the manual provided with the equipment.

CONTENT

ENGLISH

Complimenti...

... on your excellent choice.
And thank you for choosing our products.
LAMBORGHINI CALORECLIMA is daily committed to the search for innovation technical solutions that will meet all requirements. The constant presence of our products on the Italian and international markets is guaranteed by a widespread network of Agents and Dealers who are backed up by "LAMBORGHINI SERVICE", which ensures qualified equipment assistance and maintenance.

INTRODUCTION

The present manual is designed for those who will use the pellet burner. You will find inside the necessary mounting, starting, maintenance and safety data for the device.

We recommend to keep our instructions about the safety measures with a special responsibility.

Operations that require removal of elements should be executed only by qualified and authorized specialists.

The remedial actions and settings which are not described in the manual, should not be executed.

APPLICATION FIELD

The pellet burner is created for burning pellets from wooden fragments.
It is installed in special boilers or adjusted ones, used to work with another type of fuel.

TECHNICAL DATA

DESCRIPTION	GP 20
Fuel	wooden pellets 6-12mm
Indulgence power	10-20 Kw
For boilers with burning area up to 3m^2 (heat-exchanging surface)	
Fuel tank	not a part of the delivery
Fuel feeding	outside auger transporter, included into the burner set
Tracking the burning process	photo-, heating and positioning sensors
Light signalization for the burner performance	
Controlling	microprocessor
Ignition	automatic
Possibility for adjusting the outgoing power in wide limits	
Net connecting	220 – 240 V
Ignition electricity	up to 4,5 A
Consumed average power	below 100 W
Burner weight	16 kg
Auger transporter	9 kg

SAFETY

SAFETY RULES
Before starting the burner it is necessary to know in details all regulations of the hereby manual.
It is needed to keep all common rules for the safety when working with heating-technical devices.

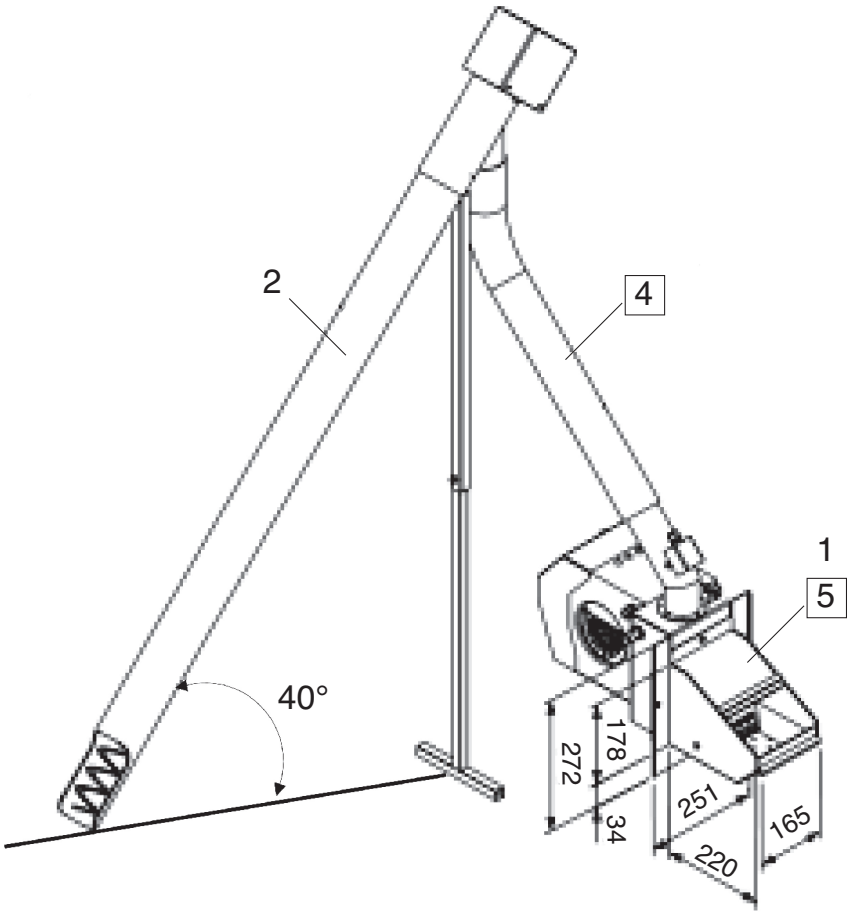
- The boiler premises where the equipment will be installed, must respond to all the fire requirements according to the current standards and lows.
- The device should be placed a in way, so there will be enough space for cleaning, removing the soot from the burner, the boiler and the draught pipes.
- The burner must be installed in the boiler outlet with the relevant isolation.
  It must be joined up with nuts. Under one of the nuts there must be put a **SPECIAL T-FIGURE TIN DETAIL** which is for pushing the limit switch, **INFORMING THAT THE BURNER IS INSTALLED**.

- It is absolutely forbidden the eliminating of this protection since it is directly connected to the fire safety.
- The contact between the burner and the boiler should be well tight in order to prevent gas leaks in the service room.
- When installing the system, it should be in optimal horizontal position.
- The hose should be straight and the connections should be tight.
- After connecting the burner to the boiler, the technician should connect the burner to the electrical network as shown on the enclosed connection scheme.
- The connection must be done by a qualified electrical technician and there must be paid high attention to the safety grounding of the device.
- The connecting is shown in the present manual and also with special stickers to the main cable.
- The auger transporter connects by a special plug and switch and it is controlled by a special algorithm (there are two plugs on the burner, **ATTENTION! THE DOWN PLUG CH IS CONSTANTLY LIVE AND IS DESIGNED FOR INITIAL CHARGING OF THE AUGER**, the other one is for normal work. This is shown with stickers on the plug and on the pin-plug).
- The burner is designed **ONLY FOR BURNING PELLETS FROM WOODEN FRAGMENTS!**

CONSTRUCTIVE SAFETY RULES

- The process of ignition and burning is being monitored by a microprocessor or logistical module.
- There is an end exclusion mechanism on the burner's frame and a special T-figured detail which does not allow starting of the burner if it is not attached to the boiler (for example when cleaning up the boiler). If during work there is received a signal from the exclusion mechanism for bad mounting of the burner, its work will be automatically stopped and this will be shown with blinking of lamp ALARM.
  After fixing the disturbance in the normal work, the burner starts with its switching off and on.
  This can be done by the POWER switch placed on the burner's cover (it stoppes the feeding of the logistical module in the burner and clears the alarm), or by stopping the common feeding of the boiler through its main switch.
- The process of ignition and burning is being monitored by a photo sensor and if does not ignite after few attempts (adjustable function), the burner goes into stop-mode with activated alarm.
- If during work the pellets bring to end into the feeding bunker, the burner goes into stop-mode with activated alarm.
- The flexible tube for transporting the pellets is transparent and made of a special heat-resistant material.
- The customer's access to the microprocessor logistical module's program is secured by a password. Only few parameters about the normal work of the burner can be accessed by the customer.
- There have been used stickers, maximum showing the correct usage of the burner. The burner is provided with elements, securing the right burning of the fuel:
- Falling shaft – it stops the flow of pellets from the auger transporter to the burner. This shaft is deep about 250 mm. Besides the transporter is connected to the burner by a flexible hose, which is not full of pellets. In the burner there are only a dose of pellets which burns out during the pause of the transporter and the safe burning of the fuel is secured.
- A sensor for temperature higher than 90-95°C – it is placed on the feeding tube of the burner.
  If during work the temperature sensor detects a temperature higher than 90–95°C, the auger transporter stops and the burner turns off. At this time a lamp ALARM starts to blink.
  Even if the temperature falls below 90–95°C, the burner won't start working again. It is necessary the intervention of the operative staff. After fixing the error in the normal work, the burner starts by its turning off and on.
  This can be done by the POWER switch placed on the burner's cover (it stoppes the feeding of the logistical module in the burner and clears the alarm), or by stopping the common feeding of the boiler through its main switch.

DESCRIPTION OF THE CONSTRUCTION

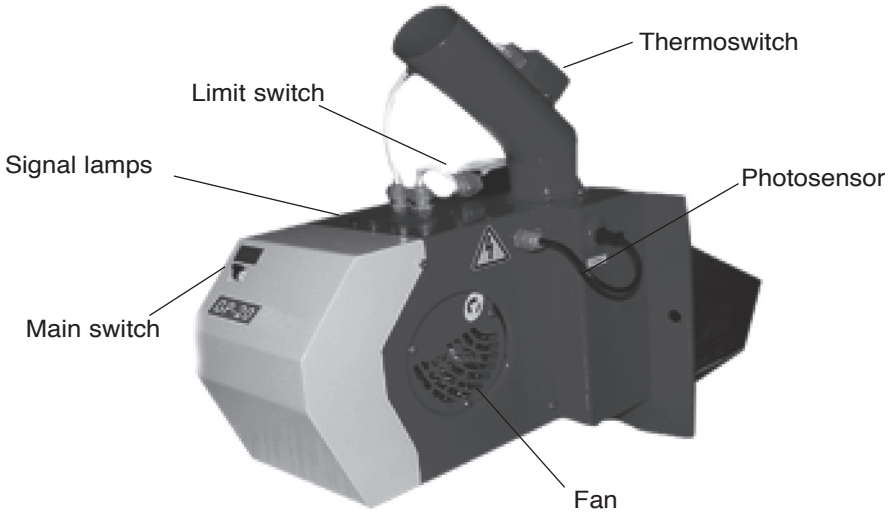


1 Burner
2 Auger transporter
3 Flexible tube

MAIN KNOTS AND MECHANISM

The general appearance of the burner together with the feeding auger are shown on Fig.
The set contains mainly the following composition parts:
- Burner
- Auger transporter
- Flexible tube
- Body, feeding chute and cover
- Fan
- Ignite heater
- Control block
- Sensors (exclusion mechanism, photosensor, thermoswitch)

The burner contains mainly of the following composition parts:
- Body with cover with mounted feeding chute
- Fan
- Ignite heater
- Control block and signalization
- Sensors (exclusion mechanism, photosensor, thermoswitch)



SPARE PARTS LIST

In correspondence with any of our sales representatives regarding the bought burner, please provide the following information:

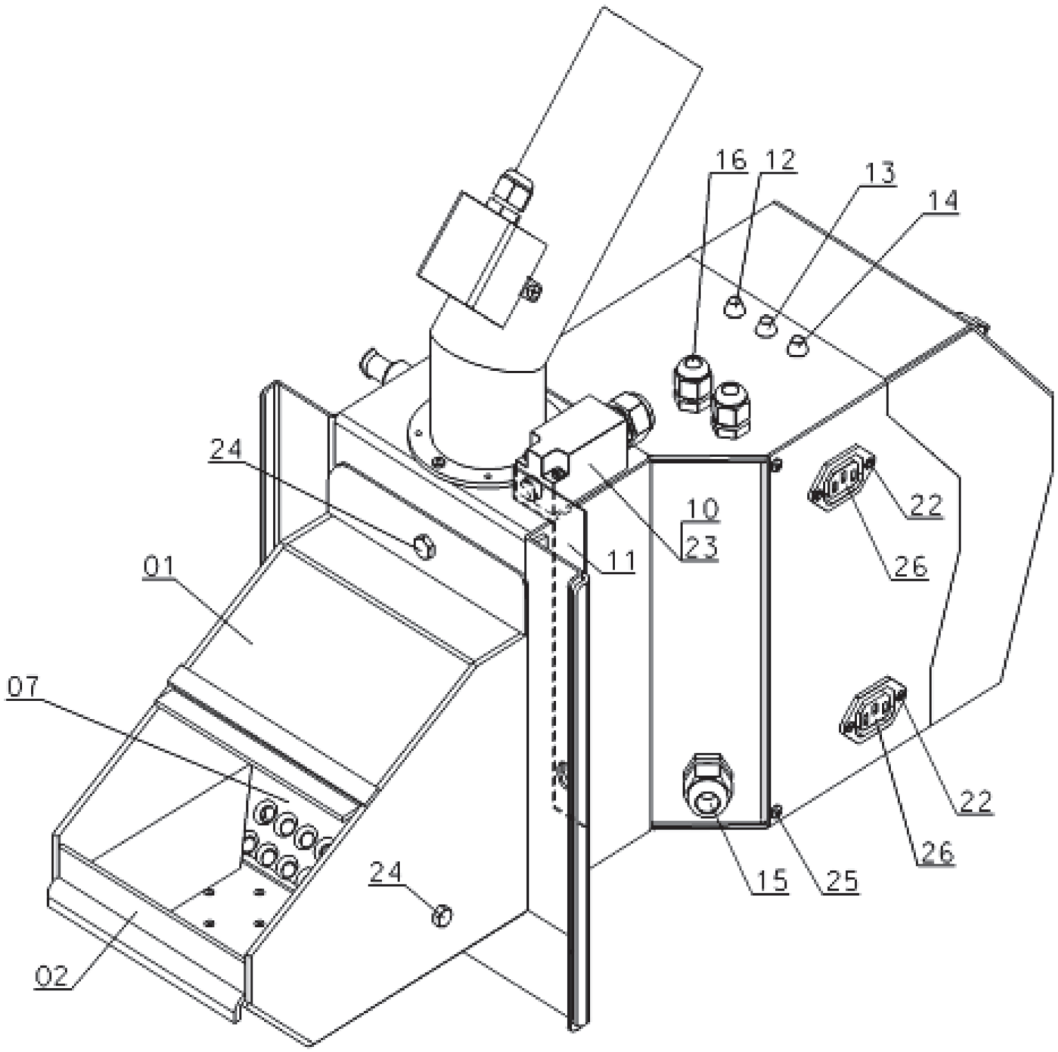
1. Serial number;
2. Working voltage and electricity frequency;
3. Delivery date;
4. Detailed description of the eventual damage;
5. The sum of the operation continuance – number of the working hours.

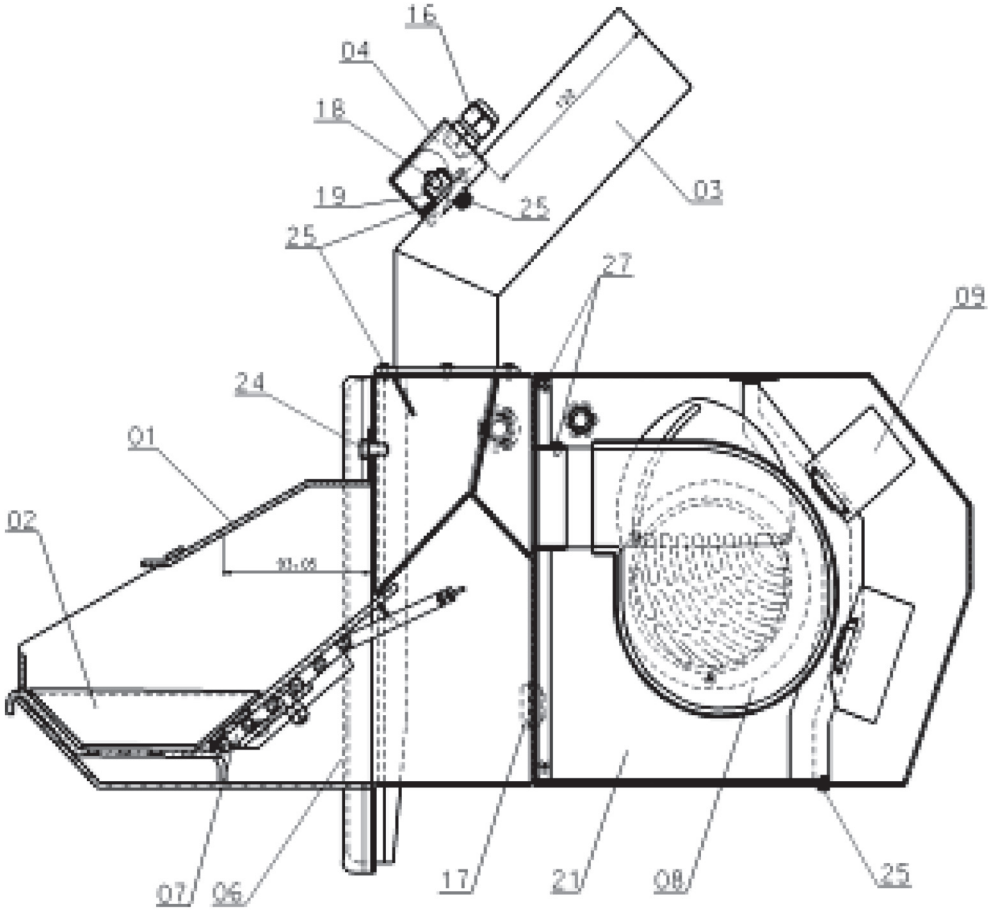
You may order defective elements from the burner by using the following codes:

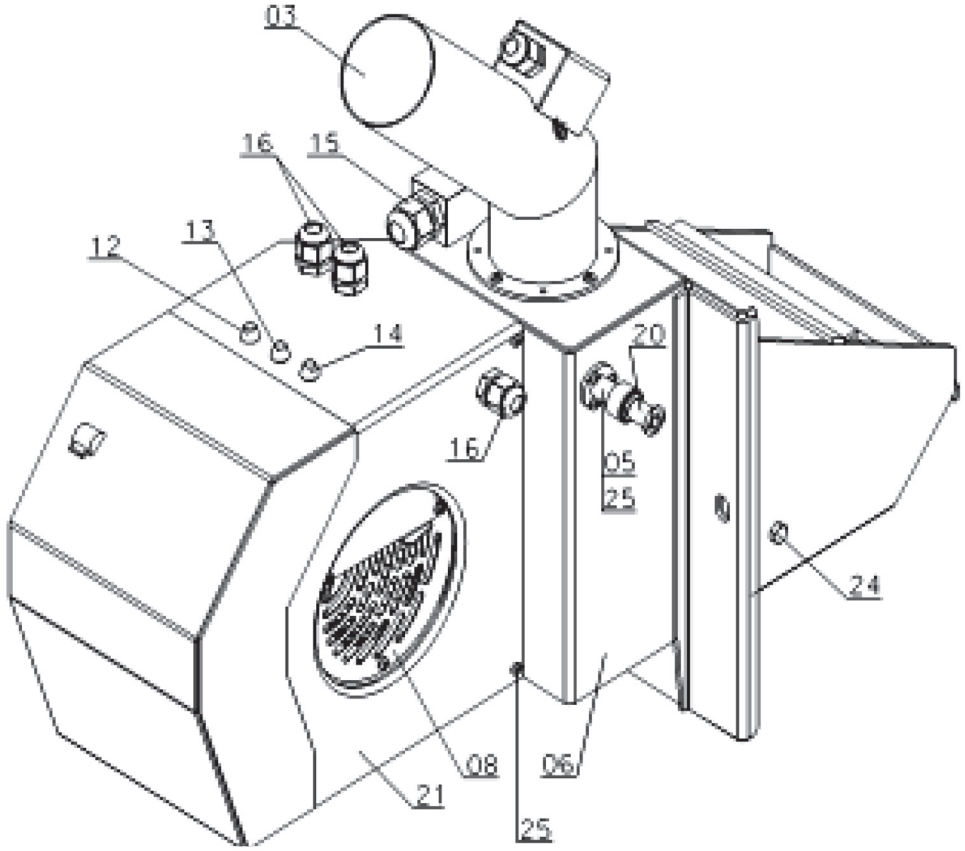
N°	DESCRIPTION	CODE
1	Auger's engine	GP-20/A - CODE 001
2	Auger spring	GP-20/A - CODE 002
3	Auger's tube	GP-20/A - CODE 005
4	Fan	GP-20 - CODE 008
5	Logical module	GP-20 - CODE 009
6	Feeding module	GP-20 - CODE 009BPS
7	Indicating lights	GP-20 - CODE 012 GP-20 - CODE 013 GP-20 - CODE 014
8	8 One-poled switch	GP-20 - CODE 009 FS
9	Photo sensor	GP-20 - CODE 020
10	Thermal switch (disc)	GP-20 - CODE 018
11	Limit switch	GP-20 - CODE 010
12	Ignite heater	GP-20 - CODE 007
13	"L" shaped plate	GP-20 - CODE 011
14	Fire-grate	GP-20 - CODE 002
15	A set of plug and pin-plug for the auger	GP-20 - CODE 026

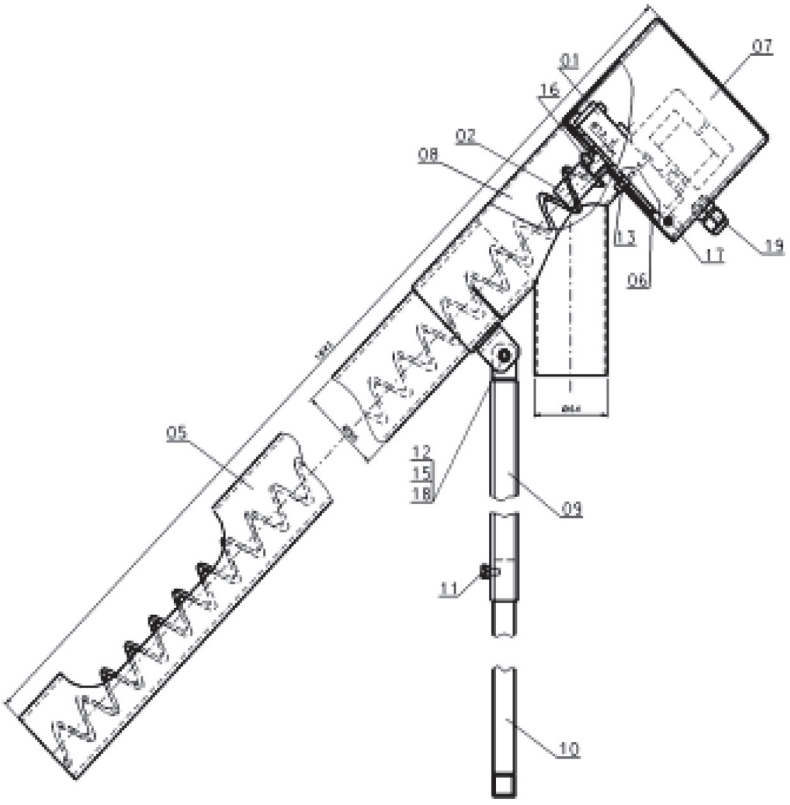
REMARK: "L" shaped plate
When the burner is mounted, it starts the limit switch.

POSITION OF THE ELEMENTS




16
04
18
19
25
25
03
27
09
24
01
02
07
06
17
21
08
25


03
16
15
12
13
14
20
16
05
25
24
08
06
21
25


01
07
16
02
08
13
17
19
06
05
12
15
18
09
11
10

CONNECTING TO THE BOILER

- The device should be placed a in way, so there will be enough space for cleaning, removing the soot from the burner, the boiler and the draught pipes.

- The burner must be installed in the boiler outlet with the relevant isolation. It must be joined up with nuts.
  Under one of the nuts there must be put a SPECIAL T-FIGURE TIN DETAIL which is for pushing the limit switch, INFORMING THAT THE BURNER IS INSTALLED. It is absolutely forbidden the eliminating of this protection since it is directly connected to the fire safety.

- The contact between the burner and the boiler should be well tight in order to prevent gas leaks in the service room.

- When installing the system, it should be in optimal horizontal position. The hose should be straight and the connections should be tight.

CONNECTING TO THE ELECTRICAL NETWORK

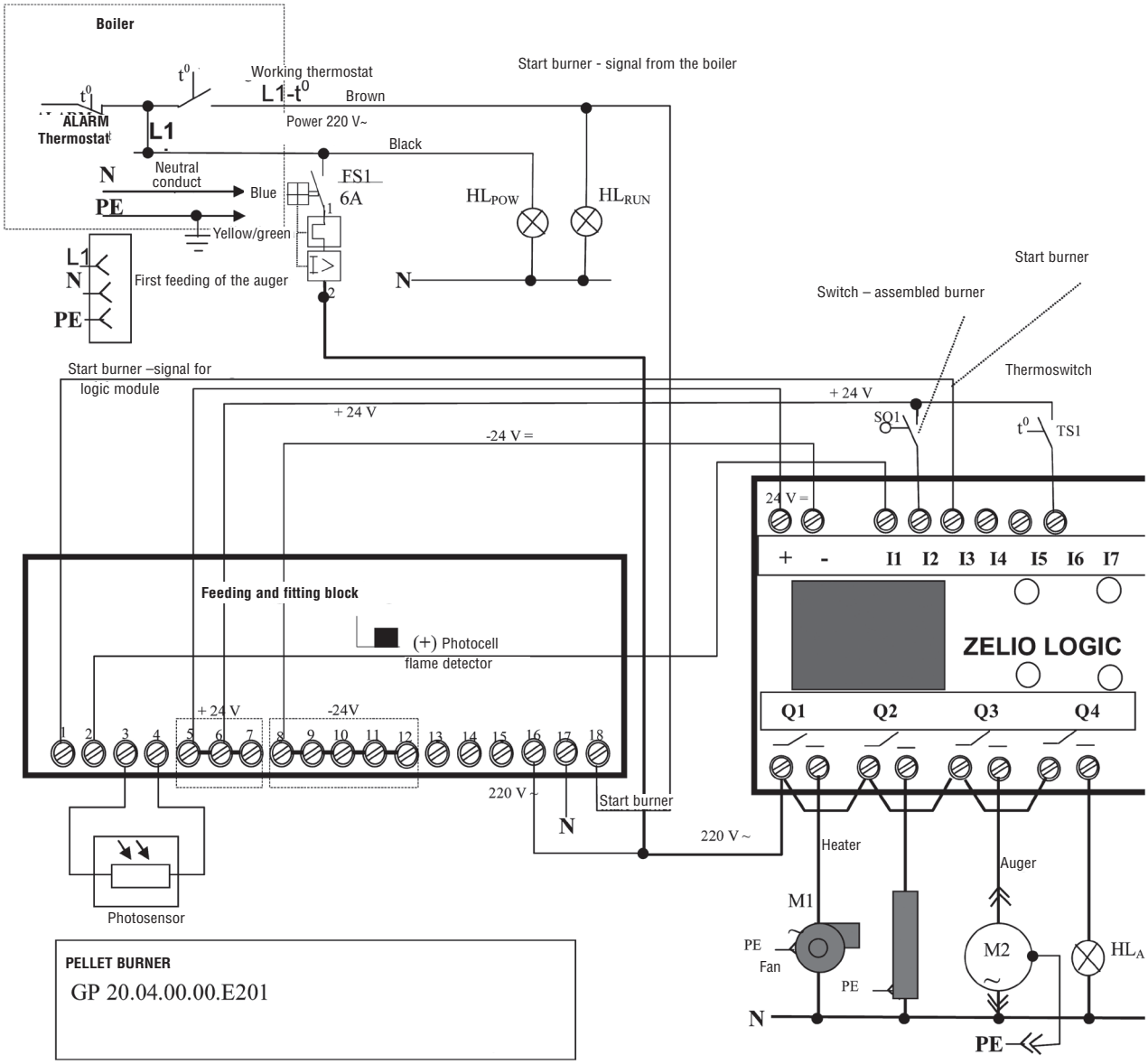
- After connecting the burner to the boiler, the technician should connect the burner to the electrical network as shown on the enclosed connection scheme.

ATTENTION

- The connection must be done by a qualified electrical technician and there must be paid high attention to the safety grounding of the device.

The connecting is shown in the present manual and also with special stickers to the main cable.
Connecting:
- A four-wired cable which is connected to the boiler, goes out of the burner.
  The meanings of the conductors are as they follow:
- **black** - phase (220V, 50Hz) - the black conductor connects to a terminal from the boiler, which when the main switch is on always has 220V phase (if the emergency thermostat is not on). This is the power supply of the burner.
- **brown** - (220V, 50Hz) from thermostat (start burner) - the brown conductor connects to a terminal, connected with the boiler's thermostat. It gives a phase (with the same polarity as the power supply) for starting the burner, i.e. when a voltage shows on this conductor, the burner perceives it as a start-burning signal.
  When the set temperature is reached, the thermostat turns off, the pressure goes off and the burner stops running.
- **blue - N** - neutral - the blue conductor must be connected to the neutral conductor.
- **yellow/green** - PE - protective earth - the yellow-green conductor must be connected to the grounding.

ELECTRICAL DIAGRAM



PELLET BURNER

GP 20.04.00.00.E201

ENGLISH

GETTING IN OPERATION

The device can start only if it is connected to the boiler by a chimney, providing enough traction, there is a pressure and pellets from the pellet transporter.
Requirements for supplying pellets during the burner start:
- the auger transporter must be placed in a way, so that it can easy get pellets from the bunker.
- the auger transporter's cable must be plugged in for the primary auger loading (the down plug, placed on the left side of the burner).

ATTENTION

- THE DOWN PLUG IS CONSTANTLY UNDER PRESSURE AND IS DESIGNED FOR PRIMARY AUGER'S LOADING, and the other plug is for normal work.
  This is shown by stickers on the contact-plug and the pin-plug **the boiler must be started with thermostat set the way, so there is no setting from the thermostat to the burner or the burner's switch (POWER), feeding its control, must be turned off (the switch must be placed downside).**
  In this case the auger gets feeding pressure from the down plug (which is always under pressure as soon as the boiler works) and it starts to transport pellets.
  When the first pellets pass the highest point and start falling down by the flexible tube to the burner, the auger transporter's cable must be plugged in the plug for the auger's normal work (the upper plug, placed on the burner's left side), the burner's switch must be turned on (in must point upside), the thermostat must be set at a desired temperature (80–90°C) and the burner is ready for work.

Normal start (example):
The boiler must be turned on by the main switch and the thermostat must be set at 80-90°C.
In this case the burner is fed with pressure (the POWER light is on), there is a signal from the boiler to the burner to start (the RUN light is on) and the burner starts for executing the preset algorithm.

The starting algorithm is as follows:
- The auger transporter, the ignition helix and the fan are on;

- After the preset (from the manufacturer) time is up, providing feeding with a dose of pellets for the primary ignition, the auger transporter turns off;

- When the pfoto sensor in the burner detects light, the feeding to the ignition helix stops.
  There is time for burning of first dosage (PARAMETER T7);

- After that the device starts its normal work, proceeds to pellets feeding and pause for their burning.
  The times for pellets feeding – parameter T4 and pause for their burning – parameter T6 can be set from the user.
  The feeding, the burning time and the quantity of the air supplying which can be controlled by the fan valve of the burner, are parameters showing the flue gases temperature;

- After reaching the set water temperature in the boiler, (for example 85°C), the boiler's thermostat stops the start-signal to the burner and the burner turns off.
  The fan stays turned on for about 5 min. (parameter T5, set by the manufacturer) so that the pellets in the burner's head will burn out.
  After the temperature falls and follows starting-signal from the thermostat, the burner turns on again;

- If during work the set temperature goes down, the burner will turn off;

- If during rest when a set temperature is being increased, then the burner will turn on;

- If the pellets don't ignite, a new attempt for their burning will start automatically;

- If the sensor does not detect any flame during work, the ignite algorithm will start again;

- If more than few attempts for ignition appear unsuccessful, for example if the fuel ends (parameter C1, set at two attempts), then the device turns off the normal algorithm and a mode ALARM will start – a lamp ALARM will light constantly which is a signal for the user that the reason should be removed.
  After removing the disturbance in the normal work, the burner starts again with its turning off and on.
  This may be done by the switcher POWER placed on the burner's cover (it stops the feeding for the logical module into the burner and clears the alarm) or by turning off the common boiler feeding through its main circuitbreaker;

- When the electrical supply stops and then restores, the burner starts automatic.

TURNING THE BURNER OFF
IMPORTANT!
If during work you wish to turn off the burner, this must be done in the following way: **first decrease the set temperature from the boiler thermostat through its turning in starting position.**
After 5 minutes (time enough for the combustion of the pellets in the burner), the burner turns off through its switch and the boiler respectively through its main switch.

ATTENTION

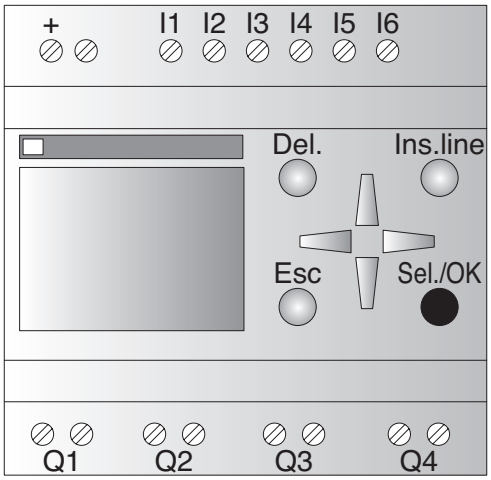
- if the above sequence is not kept, the pellets burn out without burner fan turned on (it is possible overheating and breakdown of the photosensor).

MAINTENANCE

ADJUSTING THE CONTROLLING LOGISTICAL MODULE

The logistical module controls the burner. It is secured by a password, so that the currently running program will be safe from undesirable changes.

The possible settings of the parameters are as they follow (in the brackets are shown the original manufacturer's settings):
- timer T1 – time for initial pellets feeding (01:30 min.)
- timer T2 – maximum ignition time (07.00 min.)
- timer T3 – filter S (10.00 sec.)
- timer T4 – time for pellets feeding in standing mode (12:00 sec.)
- timer T5 – time for burning after stop-command (10:00 min.)
- timer T6 – time for burning in standing mode (12:00 sec.)
- timer T7 – time for burning of a first dosage (00:30 min.)
- timer T8 – filter (05.00 sec.)
- counter C1 – counter of the ignition attempts (0003)



Remark:
As soon as flame from the photosensor is registered, the attempts for new ignition end.
The number of the ignition attempts is n-1, where n is the setting of counter C1.
If at n-1 attempts the ignition is not reached, at the n attempt (in this case the third attempt) the system gets into emergency mode (a signal lamp ALARM lights).
An intervention is necessary (check the reason for the unsuccessful attempts).
The alarm clears through the burner turning off by its switch.

The available for settings parameters during work are the following:
- timer T1 – time for initial pellets feeding
- timer T2 – maximum ignition time
- timer T4 – time for pellets feeding in standing mode
- timer T5 – time for burning after stop-command
- timer T6 – time for burning in standing mode
- timer T7 – time for burning of a first dosage
- counter C1 – counter of the ignition attempts

With their help and with adjusting the air valve can be set the burner power (an analyze of the flue gases is necessary to be made with appropriate gauge instruments, so the burning process will be optimized).

Settings of parameters T1, T2, T4, T6 and T7 can be done by the following pattern:
- Push button Sel/OK on the logistical module.
- A menu with buttons “arrow up” or “arrow down“ appears and a mode PARAMET must be chosen.
- Push button Sel/OK.
- A menu with the permitted for change parameters appears and with buttons “arrow up” or “arrow down“ you can chose the desired for changing parameter.
- All the different parameters are blinking. If you press button Sel/OK the blinking will stop and you may make settings.

With buttons “arrow right”, “arrow left”, “arrow up” or “arrow down“ you may set the desired value.
- Press button Sel/OK.
- Another parameter can be changed by the same way.
- Press button Esc. (twice) to exit mode PARAMET.
- The RUN light shows that the mode for normal work is on.
- If due some reason you have entered mode STOP, you have to chose by the above described way from the menu RUN/STOP and to press RUN.

ADJUSTING THE BURNER

If the device does not work properly:
- check the pellets quality (they must have no dust).
  If the burner works correctly, the pellets on the fire-grate should be as many as the holes on the grate will be covered.
- in case that there are too many pellets in the burner, adjust the pellets feeding or turn the fan valve and open it.
- check the flue gases temperature (175-240°C). If it is too high, decrease the pellets feeding.
  If the temperature is too low, increase the quantity of the air supply.
- if the pellets’ level in the burner is too low, check the flue gases temperature (see above) and decrease the quantity of the air or increase the quantity of the feeding pellets.
- if the quantity of the feeding pellets must be changed, use the way described in point 9.
  Criterion for the proper burner operation is the flame color.
  If the color is dark yellow, mixed with smoke, probably the quantity of the supplied pellets is bigger than the necessary and it should be reduced through setting parameters T4 and T6 (decrease T4 and increase T6).
  Opening of the air valve affects on the combusting process, the purpose is calm, stable combustion, without a residue (normally the valve is not tightly closed).
  If the initial feeding dose for ignition is too big, it is possible burner “choke”, i.e. it can not be started through activation of the thermostat once again. That is as a result of the fact that the initial dose of pellets is bigger than the necessary and pellets are accumulated at the ignitable heater area.
  If there are charcoals from the previous combustion, they start the burner, a flame is registered and the burner gets in operating mode before the pellets start burning by the ignitable heater and the flame subsides from the big quantity of fuel. The time for initial dose feeding should be reduced by means of the parameter T1

IMPORTANT: when adjusting the burner you will need a gauge instrument for flue gases analysis.

BURNER MAINTENANCE

The device for pellets burning in designed in a way that it requires minimal maintenance.
The maintenance level directly depends of the quality and the size of the used pellets.
IMPORTANT! BEFORE STARTING SERVICE AND MAINTENANCE SHUT DOWN THE ELECTRICITY SUPPLYING BY THE BOILER'S MAIN SWITCH!

Removing the ash:
During the process of wooden pellets burning there remain about 1.5 % ash.
By experience you will precise how often you should clean the burner, depending of the size of the burning camera and the type of the used fuel.
The ash should be removed from the burner and from the boiler and should be stored in a closed box.
We recommend to clean the burner (2-5 days in accordance of pellets quality).

Before starting the burner cleaning it must be stopped by the above way:
- turn the thermostat down and leave the burner working for 4-8 minutes more;
- turn off the boiler's main switch and leave the burner become cold.

If it is necessary:
- unscrew the bolts and remove the burner from the boiler;
- remove and clean the burner's throat;
- remove the ash under the fire-grate;
- remove the cinder over the helix and clean the outlets.

For this purpose remove the photocell backwards, clean the soot and put it back in its catch.
Be careful for its position according to the canal in the holder.
Welding proceedings on the device:
It is forbidden to do welding proceedings on the device if it is switched on to the electrical system and the electrical control is not removed.

RECOMMENDED MAINTENANCE PLAN
1 time in a week remove the ash and the cinder
1 time in a week check the burner control with a gas analysis instrument

POSSIBLE TROUBLESHOOTING

ATTENTION

- **ALL SERVICES ON THE ELECTRICAL SYSTEM MUST BE DONE BY A QUALIFIED ELECTRICAL TECHNICIAN WHO HAS CAREFULLY READ THE WORKING MANUAL.**

The device does not work:
- check if the pellets quantity is enough (lamp ALARM lights);
- check if the auger transporter works (whether there is pellets feeding);
- restart.

The device does not start:
- check if the burner is under electrical pressure (lamp POWER must light);
- check if there is starting signal to the burner (lamp RUN must light);
- check the safety valve in the feeding module (if there is missing not 24 V constant feeding).

ATTENTION!
SWITCH OFF THE POWER SUPPLY BEFORE OPENING THE COVER!

The check must be done by a qualified electrical technician!
- check the voltage source, check for loose connections;
- check the boiler's thermostat if a start signal does not come from the boiler;
- if a lamp ALARM lights, remove the reason for the disturbance.

It may be overheating on the burner's feeding tube, not pressed exclusion mechanism (controlling the reliable burner's fixture to the boiler), unsuccessful ignition (if there is not enough initial dose of pellets or a problem with the heater).

Interrupted power supply:
- must be checked by a specialist:
- main switch;
- safety valve of the power block;
- reinstall the cover and switch it again to the feeding.

The fuel feeding is OK but there is no fire:
- check the ignition heater;
- check the voltage supply to the ignition heater.

The feeding and the ignition are both OK but the fan does not turn on:
- check the fan engine.

The feeding, the ignition and the fan are all OK but after ignition the system does not get into cycle:
- check and clean the photocell and see if it is correctly oriented.

The device has stopped but after restarting it works normal:
- the photocell gives false signals, check the pellets quality on the firegrate;
- big quantity, open the fan valve or adjust the pellets debit;
- small quantity, decrease the fan outlet (the valve) or adjust the pellets debit.

If after all the above recommendations the device does not work call the mounting company or the manufacturer.

BRUCIATORI
CALDAIE MURALI E TERRA A GAS
GRUPPI TERMICI IN GHISA E IN ACCIAIO
GENERATORI DI ARIA CALDA
TRATTAMENTO ACQUA
CONDIZIONAMENTO

LAMBORGHINI CALOR S.p.A.
VIA STATALE, 342
44040 DOSSO (FERRARA)
ITALIA
TEL. ITALIA 0532/359811 - EXPORT 0532/359913
FAX ITALIA 0532/359952 - EXPORT 0532/359947

Libretto cod. 97.00350.0 (07/06)