



INSTRUCTIONS FOR USE



*Boiler for pellet
combustion*

ATTACK
PELLET 30
Automatic Plus
8 – 30 kW



ATTACK PELLET 30 Automatic Plus - Boiler for pellet combustion

Important information:

- Boiler for wood pellet combustion.
- Installation, test heat-up and training of attendance must be performed by trained service technician, who has to fill-in the protocol about boiler installation.
- Recommended boiler operation temperature is 80-90°C. Lower operation temperature may cause creation of condensate, shorter life-time of boiler and warranty expiration.
- The only fuel to use are pellets, adequate to the approved fuel specification.
- Appropriate boiler output represents very important condition of economic operation and correct boiler function. Nominal boiler output has to be adequate to thermal losses of the heated object.

Please, read this manual before starting-up the boiler.

Keep this manual for attendance on a suitable place in the boiler room. It is recommended to keep it in a plastic pack and to hang it on a visible place on the wall to be reached by technician, when doing service in your boiler room.

Boiler door and connections between boiler and chimney have to be airtight.

Overpressure in combustion chamber should be at least 5 pascal (0,5mm of water column, resp. 0,05hPa).

The PEL30AP appliance is intended for combustion of wood pellets and it cannot be used for combustion of other fuel types.


The PEL30AP appliance for pellet combustion can be installed in a boiler room only, in conformity with prescriptions of the local fire safety / construction authority.


Warranty for boiler is not valid if:

- **it is not operated with prescribed fuel - pellets adequate to the approved fuel specification.**
- **there is no mixing device ATTACK Regumat OVENTROP installed in the system to ensure temperature of the boiler return water over 65°C.**

WARNING SIGN

Warning sign is used in this manual to prevent potential hazards by breaking the instructions. Two types of warnings are used in this manual:

 **WARNING** - warns about dangerous situations and situations that may cause health injury or damage by breaking the indispensable measures

 **ATTENTION** - warns about less dangerous procedures that may cause safety hazard or damage of property.



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Introduction:

Dear customer,

thank you for your confidence, expressed by purchase of our product - the ATTACK PELLET AUTOMATIC PUS boiler for pellet combustion. We wish it serves you well and for a long time. Proper attendance of the boiler is one of the conditions for reliable and correct operation. Therefore it is necessary to read this manual carefully. This manual is written with respect to the correct boiler function.

Main conditions of the correct boiler operation are:

- selection of the correct boiler type and output
- impeccable commission
- correct attendance
- periodical technical maintenance
- reliable service

General description

The ATTACK PELLET boiler for pellet combustion is intended for economical and ecological heating of dwelling houses, cottages, small plants and similar objects.

Wood pellets are prescribed fuel for the ATTACK PELLET boiler.

Marking of the ATTACK PELLET:

ATTACK PELLET 30 Automatic Plus

- | | |
|-----------|--|
| PELLET | - Boiler for wood pellets combustion |
| 30 | - Output of boiler |
| Automatic | - Automatic cleaning of ashtray |
| Plus | - Automatic cleaning of exchanger by movable turbulators |



Purpose of usage

The ATTACK PELLET is a modern boiler for wood pellet combustion. By its technology it saves environment and offers comfort comparable with usage of gas boiler.

Boiler is intended for heating of family houses, shops, industrial objects and other similar buildings.

Boiler description

The ATTACK PELLET boiler burns pellets with diameter of 6-10mm and max. length of 35mm.

Construction of boiler consists from combustion chamber with partition, heat exchanger and flue connection.

Boiler body cooled by water is a basic part of boiler. It is welded from boiler steel plates of 3-6mm thickness to ensure long lifetime. Tubular exchanger is equipped with turbulators, ensuring better heat transfer into heating water. They also serve for exchanger cleaning to provide uniform efficiency.

Combustion takes place in the burner. Optimal conditions for burning and output regulation are ensured electronically, by controlling fuel and air supply, in dependence on the heating parameters required by user.

Construction of burner, combustion chamber and exchanger ensures optimal burning of all combustible contents.

Boiler is equipped with device for automatic ash removal from the bottom of combustion chamber into the external box. Ash removing is set by production for every 12 hours.

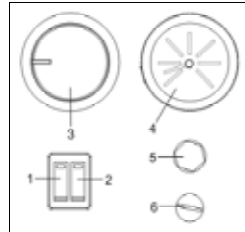
Boiler body is insulated with mineral wool. Boiler covering is treated by powder technology.

Boiler can be accessorized with device for fuel supply and with pellet hopper of 450l. In case of fuel shortage or burner failure it is possible to use electrical coil up to the 6kW output (and 450mm length), installed into the flange with G6/4" internal thread on the left side of boiler. This coil can be also used as an anti freeze protection. Coil is equipped with operating and emergency thermostat. Its electrical installation is independent from electrical installation of boiler.

Boiler regulation

The "ATTACK PELLET" boiler for pellet combustion is regulated by control panel placed on the upper covering.

- 1 - Main boiler switch - Plugs boiler into / off the power
- 2 - Burner mode switch - switches burner between stand-by and operating mode
- 3 - Boiler thermostat - setting of boiler operating temperature
- 4 - Thermomanometer
- 5 - Reset button - under cover
- 6 - Fuse 10A/250V



Operation, parameters and settings of burner are described in the appendix of this manual.

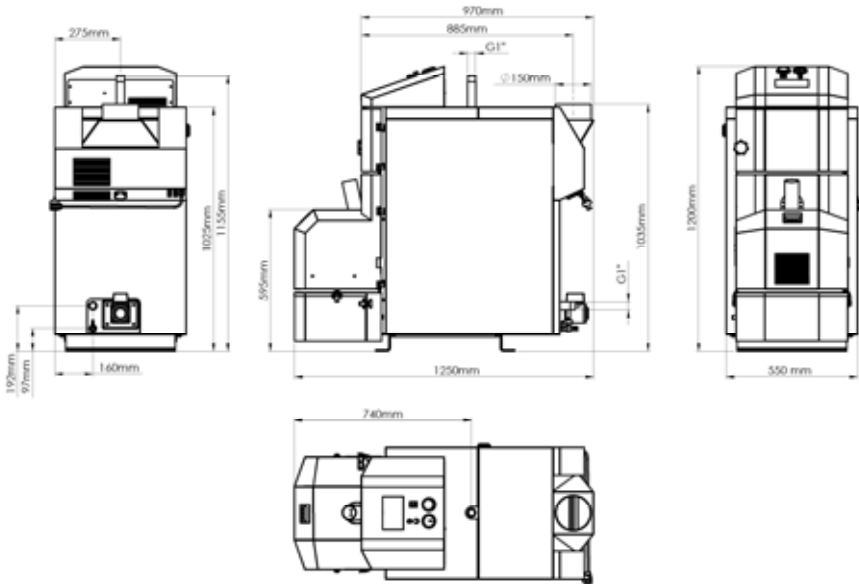
Technical parameters

Boiler type		PELLET 30 Automatic Plus
Boiler output	kW	30
Output range	kW	8-30
Heat exchange area	m ²	1,9
Prescribed chimney draught	Pa	15-20
Max. operating water overpressure	kPa	250
Pressure loss of water	Pa	152(ΔT=10K); 38 (ΔT=20K)
Boiler weight	kg	355
Flue diameter	mm	150
Boiler height	mm	1220
Boiler width	mm	575
Boiler depth	mm	1250
Protection of el. parts	IP	IP 40
Max.el.input (by ignition)	W	600
Operating el. input	W	90
Boiler efficiency	%	90,6
Boiler class by CO emission (under EN 303-5)		3
Flue temperature by nominal output	°C	143
Prescribed fuel		Wood pellets d=6-10mm, l=35mm max.
Average consumption	kg ^h ⁻¹	2,4 - 6,9
Volume of water in boiler	l	62
Range for setting of heat. water temperature	°C	60-90
Connection voltage	V/Hz	230/50

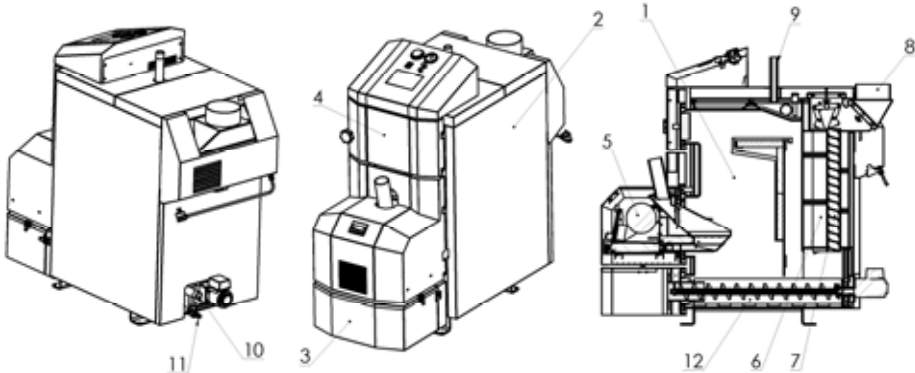
Prescribed temperature of boiler return water within operation is 65°C.P
Recommended operating temperature of water in boiler is 80-90°C.

The ATTACK, s.r.o. manufacturer reserves right for change of technical parameters and boiler dimensions without previous announcement.

Dimensions of boiler ATTACK PELLET 30 Automatic Plus



Main parts of boiler ATTACK PELLET 30 Automatic Plus



1 boiler body

2 covering

3 detachable ash container

4 door of control opening

5 burner

6 tubular exchanger

7 turbulators

8 flue collector with flue exhaust

9 flow connection 1"

10 return connection 1"

11 inlet / outlet valve

12 ash tray

13 main switch

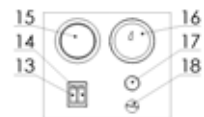
14 switch of burner modes

15 boiler thermostat

16 thermomanometer

17 el. fuse 10A

18 emergency thermostat





Assembly and installation of boiler

Installation of boiler

Only the person with valid approval for installation and assembly of the heat technology devices can install the boiler. For installation it is necessary to elaborate a project in conformity with the valid prescriptions. Technician must check, if information on data plate comply with project and accompanying documentation, before doing the installation. Boiler must be connected in conformity with valid prescriptions, norms, regulations and this manual. Manufacturer takes no responsibility for damages caused by incorrect connection, eventually by incorrect operation.

Placing of boiler

Boiler is intended for installation and operation in premises with elementary environment (AA5/AB5) under the STN 33 2000-3. By boiler installation it is necessary to keep safety distance of its surface from flammable materials in dependence on the grade of flammability:

- | | |
|---|-------|
| - from materials of flammability B,C1,C2 | 200mm |
| - from materials of flammability C3 | 400mm |
| - from materials, which grade of flammability has not been approved under the STN 73 0853 | 400mm |

Examples of division of constructive materials by the grade of flammability:

- grade of flammability A - inflammable (brick, block, ceramic tiles, mortar, plaster)
- grade of flammability B – very difficult to ignite (heraclith, lignos, boards from bazart felt)
- grade of flammability C1 – hard flammable (beech, oak, plywood, wersalit, hardened paper)
- grade of flammability C2 – medium flammable (pine, spruce chipboard, solodur)
- grade of flammability C3 – lightly flammable (boards from wood fibres, polyurethane, PVC, foam rubber, polystyrene)

If boiler stands on the floor from flammable materials, it must be protected by inflammable heat insulating pad, excessing boiler edge for 150mm at least.

It is possible to use materials of the flammable grade A as inflammable and heat insulating materials.

Any items from flammable materials cannot be placed on the boiler and in distance shorter than 500mm.

When placing boiler in the boiler room, there should be free space left of at least 1m beyond and 0,5m from the sides and rear part of boiler. Above the boiler, there should be free space of at least 1m. This space is necessary for ordinary operation, maintenance and eventual boiler servicing.

It is inadmissible to place the ATTACK PELLET boiler in dwelling premises (including corridors)!

Air inlet

For correct boiler operation, it is necessary to ensure sufficient air supply for combustion. Minimum area of the air inlet is 200 cm².



Boiler connection into heating system

Installation and service of the ATTACK PELLETT boiler can be performed by trained service technician only. Before boiler installation into the older heating system, it is necessary to flush the whole system to clean it. Heating system must be filled with water fulfilling requirements of the STN 07 7401:1991 and its callosity cannot exceed 1mmol/l and concentration Ca_{2+} 0,3mmol/l. By unkeeping these conditions, warranty for boiler expires!

Selection and way of connection of regulation and control elements

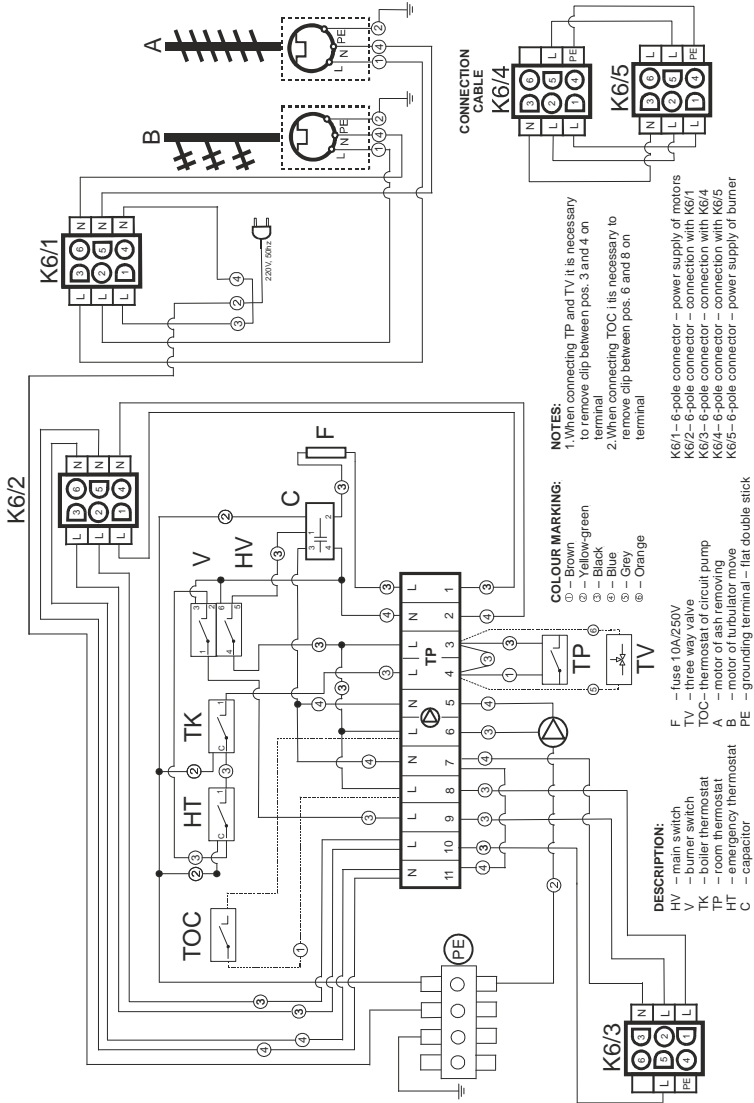
Boiler is delivered with basic regulation and control equipment. Connection of these elements is given on connection scheme. It is recommended to extend boiler regulation for next regulation elements for more comfortable and economical operation. Every pump in the system must be controlled by individual thermostat to prevent boiler undercooling at the return water inlet (return connection) under 65°C.

Connection of these elements is proposed by projectant, following specific conditions of heating system. Electrical installation in combination with sufficient boiler equipment must be done by specialist under the valid norms.

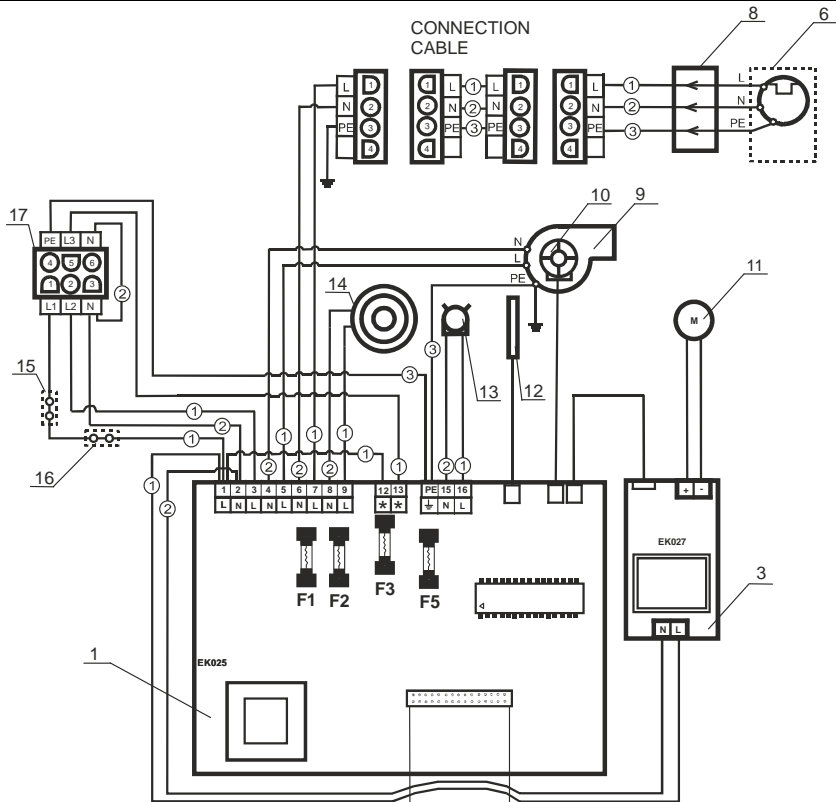
Connection to electricity mains

Boiler is connected to el. mains 230V / 50Hz by plug with fork. Plug of M type has to be replaced by service technician with the same type of plug. Appliance must be placed in the way enabling attendance to reach the connection fork (under the STN EN 60335-1+A11:1997). Connection of el. socket must be in conformity with the STN 33 2000-4-46 norm. Socket must be equipped with middle protection stick, connected to the PE conductor. It is not permitted to use different cable distributors and extensions. Due to safety, power inlet must be freely accessible, when being connected to the el. mains.

Boiler connection scheme



Burner connection scheme



- 1 – Basic electronics
- 2 – Display electronics
- 3 – Electronics of cleaning
- 4 – Display
- 5 – Data cable
- 6 – Feeder
- 7 – Motor of ash removing
- 8 – Socket for feeder
- 9 – Ventilator
- 10 – Sensor of ventilator rotations
- 11 – Gear of cleaning
- 12 – Boiler temperature sensor
- 13 – Photocell
- 14 – Coil
- 15 – End-switch
- 16 – Thermal fuse
- 17 – Connector

* – Contact without potential

COLOUR MARKING:

- ① – Black
- ② – Blue
- ③ – Yellow-green

- F1 – F800mAL250V – Ventilator
- F2 – F1AL250V – Pellet feeder
- F3 – T6 3AL250V – Ignition
- F5 – F800mAL250V – Gear of ash removing



FLUE CONNECTION

Flue connection must empty into chimney vent. If it is not possible to connect boiler to chimney vent directly, appropriate extension of flue should be as short as possible (not longer than 1m), without additional heating area and it has to ascend in direction towards chimney. Extensions of flue connection must be mechanically firmly joined, tight against flue leakage and easily cleanable. Extensions of flue connection cannot lead through foreign dwelling or utility units. It is necessary to eliminate usage of elbows and horizontal parts.

Chimney

Connection of appliance to chimney vent must always be done with agreement of the appropriate chimney authority. Chimney vent must create sufficient draught and reliably exhaust flue into atmosphere under all practically possible conditions. Correct size of the chimney vent ensures correct boiler function. Chimney draught directly depends on its diameter, height and roughness of its internal wall. Chimney vent must be sufficiently insulated to prevent creation of condensate. Temperature of the area of 1m under the chimney collar cannot be lower than 60°C. Any other appliance cannot be connected to the chimney joined with the boiler. Diameter of chimney cannot be smaller than boiler outlet. Chimney draught must achieve prescribed values. However, it cannot be too high, not to decrease boiler efficiency and not affect the combustion (not to disturb the flame). In case of too strong draught it is necessary to install throttling flap between boiler and chimney.

Information values of chimney diameter

20x20cm min. height 7m

ø20cm min. height 8m

15x15cm min. height 11m

ø16cm min. height 12m

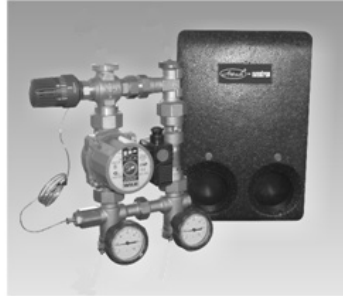
Exact chimney dimension is determined by the STN 73 42 10. Prescribed chimney draught is given in the Technical parameters.

Boiler protection against corrosion

Suitable solution of this problem is usage of the mixing device Regumat Attack-Oventrop). This solution enables creation of separate boiler and heating circuit and prevention against boiler undercooling under 65°C. Thereby it comes to decrease of water steams condensation and acid and tar creation in boiler exchanger and combustion chamber.

Usage of device is a condition of the valid warranty.

Regumat serves to keep temperature of the return heating water flowing into the boiler over 65°C, when thermostatic head is set to the 5-6th grade. Temperature of 60°C in the return connection causes increased creation of condensate and tar and consequently, shorter lifetime of boiler.



Technical parameters:	Clearance	DN25
	Max.pressure	10 bar
	Max.temperature	120°C
	Value kvs	3,9

The Regumat consists of three way mixing valve, circuit pump, closing valve, thermometers and isolation. This solution is advantageous due to its compactness, easy attendance and guaranteed protection of the boilers heat exchanger.

Regumat for boiler ATTACK PELLET: ordering code - DPP25003

Binding norms for boiler projecting and assembly:

- STN EN 303-5 - Heating boilers for solid fuels
- STN 734210 - Design of chimneys and flue exhausts
- STN 920300 - Fire safety of local appliances and heat sources
- STN EN 60335-1+A11 - safety of el. appliances for household
- STN 061000 - Local appliances for solid, liquid and gaseous fuels
- STN 060310 - Central heating projecting and assembly
- STN 060830 - Safety device for central heating and DHW
- STN 077401 - Water and steam for heat energy devices with operation pressure of steam up to 8MPa
- STN 33 2000 4-46 Electrical installations of buildings. Part 4: Ensuring safety.
- STN 33 2000-3 Electrical installations of buildings. Part 3: Determination of basic characteristics
- STN 061008 – Safety of heat devices
- STN EN ISO 11202 – Acustics
- STN EN ISO 3746 – Acustics
- STN EN 62233 – Measuring methods of electromagnetic arrays of appliances for household and similar devices by the exposition of persons
- STN ISO 80000 – Measurements and units



Operation prescriptions

Boiler preparation for operation

Before starting the boiler, make sure, that the system is filled with water, deaerated and there is no pressure decrease of the heating water. Check tightness and construction of flue exhaust. To ensure quality function, the boiler must be attended in conformity with instructions given in this manual. Only adult person can operate the boiler.

Boiler start-up

Boiler is switched to the stand-by mode by the main switch (left button of double-switch), placed on the boiler control panel. This is signaled by red control light in the main switch. Boiler is started by switching the burner mode switch on (right button of double switch). This is signaled by control light in the switch. Knob of boiler thermostat has to be set to the required temperature of heating water. By clockwise turning the thermostat is the required temperature increased and vice versa. Fuel in the burner is ignited automatically by el. coil built inside. Boiler operation is automatic and it is controlled by boiler thermostat and other regulation elements, that can be connected into boiler terminal (e.g. room thermostat, programmable regulator,...). Details about setting the burner parameters are described in the next chapters of this manual.



ATTENTION!

Condensation and condensate leakage may occur by first heat-up. After longer heating, condensation is eliminated.

If the boiler was out of order for longer period (turned off or faulty), it is necessary to be more careful when starting it again. After longer idle period it may come to pump blockage or water leakage from system.

Regular and proper cleaning is important to ensure sustainable output and boiler life-time. Poor cleaning may cause boiler damage. All boiler door have to be tightly closed during the operation.

Fuel

By burners for wood pellets combustion:

APPROVED FUEL SPECIFICATION

Moulded wood pellets

Measured weight: 600 - 750 kg/m³

Heat value: 4,7 - 5,0 kWh/kg

Size/diameter: 6 - 10 mm

Size/length: Attention! Max. 35 mm

Moisture max.: 12 %

Ash content: 0,5 - 1 %

Dust content: max. 3 %

Ash smoulder temperature: min. 1100°C

Fuel must be in conformity with requirements of the norm DIN 51 731.

Methods of boiler regulation

Boiler regulation without room thermostat

For this case there is interconnection installed on contacts of boiler electrical terminal (TP-U1/ U2). Boiler is regulated according to the boiler temperature set on the boiler thermostat placed on the boiler control panel.



Boiler regulation with room thermostat

Boiler is controlled by the room thermostat, connected to the terminal contacts (TP - L1/L2) instead of interconnection, that has to be removed. The required boiler temperature will be considered as well. Also other type of requirement can be installed instead of the room thermostat – e.g. programmable regulator of heating.



ATTENTION!

There is dangerous contact voltage of 230V on the connection contacts of the room thermostat! Boiler must be disconnected from electricity by any action into the electrical terminal or boiler electrical installation!

Boiler protection

Boiler is equipped with emergency thermostat. If the boiler temperature exceeds 110°C, boiler safely gets out of order. When the boiler temperature decreases, it is possible to start the boiler again by using the reset button placed on the front control panel.

Fuel refill

Fuel is refilled in the container that belongs to the optional boiler accessories. Fuel should be refilled before the pellets in the container are totally consumed.



ATTENTION! Fuel container can be open only when fuel is being refilled, eventually by cleaning. Container has to be closed during the boiler operation.

Ash removing

The "ATTACK PELLET Automatic Plus" boiler is equipped with device for automatic ash removing into the detachable box. It is necessary to check the box 2x per season and to empty it, if necessary. Stop the boiler for a short time, when removing the ash container.

When emptying the box (see the picture):

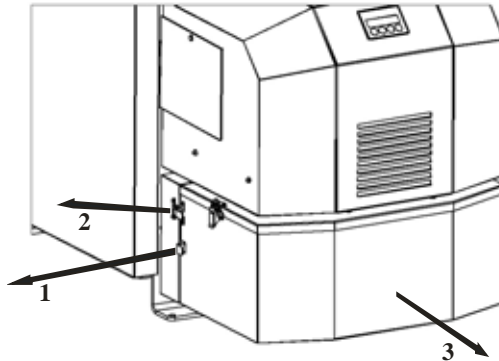
1. Close inlet opening into the container by pulling the lever on the container rear side fully to the left
2. Release lever catches on container sides
3. Detach container from inlet tube of door cover by pulling it to yourself
4. Remove the ash

Do the reverse procedure to fit the container back.

When cleaning bottom of the combustion chamber, stop the boiler for a short time. Empty the iron ashtray, eventually – sweep the boiler bottom. Ash tray is placed in the bottom part of boiler, behind the ash tray door. Use gloves by manipulation with ash tray to prevent burning your hands. When the ash is removed, it is necessary to put the ash tray back and to close the ash tray door tightly.



WARNING – Do not operate the boiler without the ash container fixed with the closed upper cover (possible flue leakage) – life safety hazard!



Short-time boiler stop

If you wish to stop the boiler for a short time, turn the burner switch off and let the fuel burn down in the burner. Do not turn off the main switch.

Long-time boiler stop

When stopping the boiler for a long time, firstly – turn the burner switch off and let the fuel in the burner burn down. After the boiler is cooled down to 30°C, turn the main switch off and disconnect the plug from power socket.

Maintenance of heating system with boiler

At least 1x in 14 days it is necessary to check, eventually to refill water in the heating system. If the boiler is out of order during the winter, there is danger of water freezing in the system. Thereby it is reasonable to drain the water out. In other cases, drain the water out only, when it is absolutely necessary and for as short period as possible. After the heating season it is necessary to clean the boiler properly (after long idle period, the ash has to be swept out from the container / ash tray, walls and bottom of combustion chamber have to be cleaned as well) and replace the damaged parts.

Exchange of the door sealing cord

Remove the old sealing cord by screw driver and clean the groove, where the cord is placed. Take new cord and put its leading end between the horizontal parts of the groove. Use hand, eventually hammer to fit the cord into the groove along the door edge.

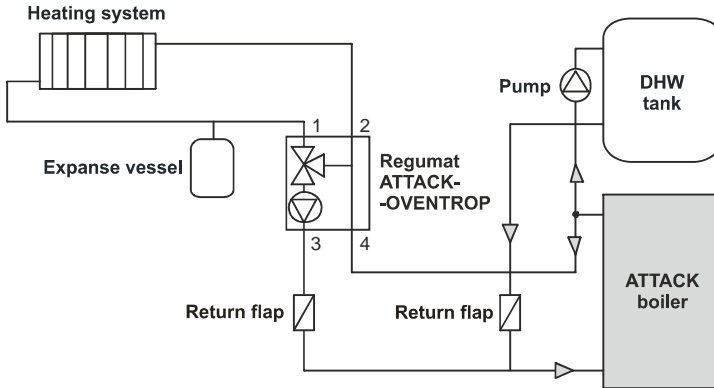
Fitting the hinges

After a particular period, it may come to abrasion of the sealing cord. To endure tightness of door, it is necessary to change their position by screwing the hinges. Inspection door is fixed to the boiler body by a long pin. Pull the pin out and screw the hinge by turning to change its position. Fit the door and put the pin back into the hinge.

⚠ WARNING! To pull the pin of the upper door out, it is necessary to demount the upper boiler covering. To protect the health, the boiler has to be turned off and the plug has to be disconnected from electrical socket.

Recommended schemes of connection

Scheme of connection with the REGUMAT ATTACK-OVENTROP regulation system






Technical description of burner

Burner operation is based on principle of *pellets falling* from pellet feeder through *inlet hose* and *inlet pipe* on the *grate* to be burned.

Burner is equipped with *electric ignition device*, that automatically lights pellets fallen on the grate. Ignition begins, when thermostat gives instruction to burner. Burner has own built-in thermostat (if there is no boiler / external thermostat, eventually combined device with room thermostat). Its temperature sensor must be in suitable casing in the boiler's water coat. *Switch-on* and *switch-off temperature* can be adjusted via the burner menu buttons. Actual operation data are visible on display.

 **ATTENTION!** Head of boiler temperature sensor must not be treated with any contact liquid, nor paste.

Burner output is set from production for the range of 14-30kW and it is divided into 3 levels: 1. (14 kW), 2. (22 kW) and 3. (30 kW).

Selected output level is written on display during the operation. Output level can be selected by burner menu buttons and displayed information. Output range can be changed in advanced menu in 3 levels: 8-14kW, 14-22kW and 22-30kW.

Burner is equipped with automatic grate cleaning mechanism. When thermostat achieves required temperature, the burn-down cycle is started, the grate goes out to be cleaned by scraping. Thereby, the longer usage period is ensured, with no need to dismantle burner from boiler body. Burner uses control system to regulate gear of ash removing auger and gear of exchanger cleaning by turbulators.

Boiler convection parts should be cleaned periodically to keep high efficiency of heating.

Burner is intended for combustion of wood pellets with diameter of 6-10 mm.

Burner is manufactured following the industrial norms and prescriptions and it was tested and approved in conformity with directives about low voltage devices and with directives about electromagnetic disturbance.



Technical data of burner

Model	PELH30Plus
Fuel	Wood pellets, 6-10 mm
Mode	8 – 12 kW; 14 – 22 kW; 22 – 30kW
Output range	8 - 30 kW, by 2 kW
For boilers with heating chambers up to	3 m ²
Weight	28,5 kg

Main voltage	Main current	Hz
~230V	10A fuse	50



WARNING! Electrical installation must be done by certified electrotechnician. Main cables can be exchanged by approved electrotechnician only.

Voltage and energy consumption of burner

Component	Mains/Volt	Min./Max. voltage	Fuse
Display	5V DC	1 W	-----
Ventilator	230V~	15-58W	800mA
Circuit board	230V~		-----
Grate cleaning	24V DC	10-50W	switched
Ignition	230V~	600W	6.3A
External pellet feeder	230V~	15-220W	1A
Ash removing	230V~	15-220W	1A

Description of burner function



ATTENTION! Burner works with boiler thermostat only, eventually extended with room thermostat. In both cases it has to be connected through protection against boiler overheating.

Normal start-up

When thermostat gives instruction to burner, ventilator is started and photocell controls flame. If there is no flame, then comes the instruction for test blow-through of burner. Afterwards, pellets start falling into burner within the period stated by control system and ignition is activated. When the phase of fuel supply for ignition ends, control system awaits flame signal from photocell.

When photocell recognizes flame, small amounts of pellets are falling within the *transition period*. Duration of this period depends on the output level set on burner. Pellet supply is being continually increased, unless it is adequate to the required output.

This amount is further supplied into burner, until the operation thermostat gives instruction to stop.

This signal stops pellet supply, while ventilator continues with air supply into burner.

When photocell recognizes fuel burn-down, the burner blow-through begins.

According to the adjusted delay, after fuel burn-down, burner cleaning begins – burner grate moves out against scraper and ash with unburnt pieces fall through front side of burner bottom into ash tray.

After the grate moves back, the burner awaits new signal from thermostat.



ATTENTION! Grate drive unit is very strong and it may cause danger. Never put any body parts or other foreign objects into burner, when it is operating.

Normal start, when there is still flame in burner

If photocell recognizes flame during the start-up phase (e.g. after short-time power failure), control system immediately begins transition period. Pellet burner continues in operation as by normal start. (see above)

Normal start, when no flame is recognized by control system

Normal start-up process runs even in case, if there is no flame signal received by control system. Shortly after, system begins the new start-up trial again, when fuel supply for ignition is reduced to 45% and it can be reduced during the whole ignition period. These parameters can be changed in service menu – by trained person only. If the second trial fails, all functions are turned off and alarm is activated. This alarm is indicated on display.



ATTENTION! Make sure, that sufficient flue gas temperature had been achieved. It has to be at least 60°C – one meter under the chimney top. Lower temperature should be consulted with chimneyer. Flue gas temperature lower than 60°C during the combustion process increases risk of chimney damage by condensation.



Usage of pellet burner

Pellet burner needs air for combustion. Thereby, boiler room must have opening for air inlet of at least 200cm².

Pellet burner must not be started before it is verified, that smoke can freely flow through boiler and chimney into atmosphere.

Pellet are supplied into burner from external feeder, connected to pellet container. Feeder has to be installed under the 45° angle to ensure the best function and uniform fuel supply. Feeder should be able to supply approximately 10 kg of pellets per hour of continual operation / requirement for pellet supply.

Pellets must be stored in well ventilated room without moisture, or in specially designed container.



ATTENTION! Burner consists from components of high quality, that must not be replaced with less quality spare parts. If components are replaced by other than original spare parts, warranty expires.

Menu buttons and their function

Burner functions are set by menu buttons under display. (see also options of settings under the **Production settings** - below).



How to change settings of pellet burner:

„S“ Menu / Enter: activation of miscellaneous records and access / save of changes

„-“ Backspace from menu and decrease of adjustable values

„+“ Step forward in menu and increase of adjustable values

„ESC“ Exit/Escape: Exit from menu without saving new values.

Values adjustable by user are given in the following table:

MENU	Explanation
OUTPUT SETTING	Required output level (1, 2 or 3)
PELLETS DOSING	Setting of pellet supply
RECORD	Error recording for control purposes
BURN-DOWN	Instruction for burner burn-down
ADVANCED MENU	Access into service menu through code

Messages on display

Stand-by mode

PAUSE		
OFF		FC: 0 %

Nothing operates in the burner, burner awaits start signal from thermostat.

Thermostat turns on.

Step 1 *Test blowing*

TEST-BLOWING		
ON		FC: ? %

Ventilator starts to work, and when photocell measures value lower than 5%, program continues.

Step 2 *Heat-up fuel feed*

IGNITION 1		
ON		FC: ? %

Heat-up fuel feed is supplied into burner and program awaits „flame“ signal from photocell.

Step 3 *Transition phase*

TRANS.PHASE		??KW
ON		FC: ? %

Transition phase begins, when photocell and control system detect flame. Small, continually increasing amounts of pellets are feeded into burner, unless the necessary pellet dosis is achieved.

Step 4 *Combustion*

COMBUST		??KW
ON		FC: ? %

Combustion phase runs, until it is aborted by thermostat.

Step 5 *Burn-down*

FINAL-COMBUST		
OFF		FC: ? %

Thermostat aborted combustion phase and burner begins the burn-down phase.

Step 6 *Cleaning*

SCRAPING		
OFF		FC: 0 %

Grate moves out. When it is completely shifted out, ventilator works at full output, until it moves back.

Step 7 *Ash removing*

STOKERTIME		
OFF		FC: 0 %

Gear of ash removing is started after determined period (e.g. 6 hours) and it works within the stated time (e.g. within 3 min).

Step 8: Return into standby mode.

Menu messages

PAUSE	
OFF	FC: 0 %

Burner in standby mode.

Press "M" button

EFFECT LEVEL	
ENTER	EXIT

Here you can change burner output. Level 1 = 8 – 14 kW, Level 2 = 14 – 22 kW, Level 3 = 22 – 30 kW.

Range and output Levels are adjustable in advanced menu.

Press "+" button.

PELLET-TRIM	
ENTER	EXIT

Here you can set supplied amount of pellets. It is not necessary, if correct weight of pellets had been set in the Pellet trim in service menu.

Press "+" button.

FINAL-COMBUST	
ENTER	EXIT

To clean burner or to abort operation from other reasons, press the „M“ button and the burn-down mode begins. To restart burner after ash removing, press „M“.

Press "+" button.

LAST ERRORS	
ENTER	EXIT

This internal recording can be helpful by troubleshooting, when burner stops and alarm is activated. Last 10 different error codes are recorded. For more information about error codes, see „Troubleshooting“.

Press "+" button.

MENU/ADVANCED	
ENTER	EXIT

To enter into advanced menu you need password (code). It is necessary to be familiar with program functions of burner.



Production settings

Before being delivered, burner should be set in the following way:

Generally accessible menu:

Menu	Settings	Selection	Adjustable
Output level	1 = 14 kW	1, 2, 3	8-30 kW
Pellet dosing	95 %	50-200 %	50 – 200 %
Burn-down	90 sec.		10-600 sec.
Record	10 – 26	Not adjustable	Not adjustable
Advanced menu	Random number	+ 5	Not adjustable

“Record” means, that control system saves last 10 error codes. See also „Troubleshooting“.

Advanced menu

Advanced menu	Production settings	Min. – max.	Unit
Output settings	1 – 14 2 – 22 3 – 30	8 - 14 14 - 22 22 - 30	kW kilowatt
Ignition setting	90%	50 – 300 %	%
Period of test blowing	15	0-60	sec.
Transition period	240-480	60 - 600	sec.
Transition pellet supply	15	10-50	%
Period of blow cleaning	45	10 - 600	sec.
Ash removal Time	3	0 – 10	Min.
Interval	6	1 - 200	Hour
Max. combust.time	360	0 - 1080	Min.
Anti-cycling	10	0 - 60	Min.
Output modulation	75	0 – 100	%
ΔT	10	1 - 100	K
Photocell (sensitivity)	50	40-80	%
Selected thermostat	External	Ext./int./comb. with room thermostat	
Cleaning active	1	0, 1	
Start if thermostat	Turns off	Turns off/on	
Language *)	SLOVENSKY		
Output range	1	0 (8-12), 1 (14-30)	
Set. of feeder heat. amount	46 1100	45-50 0 - 2000	10xkwh/kg g/6 min.
Fan factor	95	10 - 500	%
Operation time, feeder	0		hour
Menu/Test		Auto/Manual	
Menu/Setting		See Advanced	
Menu / Record	Saves error codes	See Advanced	



*) Languages: Slovak, Czech, English, German, Italian, French, Spanish, Russian, Hungarian, Greek.

How to change production settings

To change settings, select the required menu /parameters. Change actual values by pressing „+“ . O:...indicates actual value, N:...can be adjusted to new value. Values can be increased by „+“ button and decreased by „-“ . Change is confirmed and saved by „S“ button. Not to save changes, press „ESC“ (Exit / Escape).

Please, do not make any changes before reading this manual.

Example:

EFFECT ADJ.	
O: 1	N: 2

Reset of production settings

To reset production settings, select advanced menu and enter password (code = figure by „O“ + 5). Then, select Menu / setting and press „S“. Go to „return to production“ and press „S“ again. Thereby, the production settings are reset.

In the following way you can also save your own settings: by pressing „+“ you get to „Save settings?“. Save your settings by pressing „S“. Exit from menu by the „ESC“.

Regulation of pellet dosing

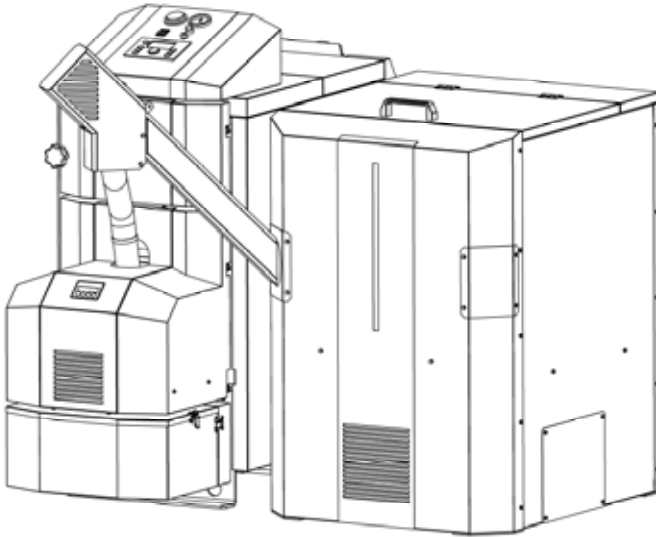
Before starting the burner, it is necessary to adjust pellet feeding through parameter „Pellet trim“ in Advanced menu. Thermostat must not turn the heating on, while setting.

Firstly, set the „Heat value“ parameter to value given by your pellet producer (e.g. by 4,8kWh/kg – set parameter to 48, etc.).

Now, fasten plastic bag around opening of pellet feeder. Confirm by „S“ and keep the instructions. Weigh pellets fallen into the plastic bag, enter weight in gramms by „+/-“ buttons and press „S“ to save value. This setting has to be done within 15 minutes. Otherwise, burner switches to standby mode. Weigh the pellets very precisely!

After setting of the above mentioned parameters, all other parameters related with pellet supply are automatically adjusted by control system.

How to install pellet feeder and container



Install pellet container and pellet feeder. There should be min. height difference of 400mm between opening of feeder and burner inlet pipe. In horizontal direction, opening of feeder and inlet pipe should be in min. distance of 150mm (i.e. not vertically aligned).

Fill container with pellets and connect feeder into power socket (230V~). Let feeder run, unless it achieves continual pellet supply. It is recommended to fasten plastic bag to the opening of feeder to catch the falling pellets. Disconnect feeder from socket. Install inlet hose between feeder opening and inlet pipe and set length of hose. Hose should not be straight, but not too bent – otherwise, pellets would accumulate and stuck in it. Connect feeder into socket on the rear boiler side.



Burner start

Burner is automatically turned into standby mode by switching the main boiler switch. Burner is started by turning the burner mode switch on and by turning the boiler thermostat into position adequate to the required boiler temperature. According to the requirement for heat supply, is the burner started and combusts pellets, until thermostat gives instruction for stop.

Burner is alternatively controlled by boiler thermal probe, connected to the TS1 connection on the right upper side of circuit board. Make sure, that connection is tightly fixed.

Burner shut down

Burner is turned off by the stop signal from operating thermostat, by turning the burner switch off (standby mode) or by the *burn-down* activated through menu.

Emergency shut down



ATTENTION!

In emergency case can be burner turned off by the main boiler switch and disconnection of boiler power plug from electrical socket.

Cleaning and maintenance

Burner has to be cleaned after every consumption of 2.000 kg pellets. It is based on assumption, that boiler keeps adequate amount of ash and the quality pellets are used. It is also recommended to sweep boiler exchanger parts at least 2x a month.

1. Clean pellet inlet into burner by bottle brush or other suitebla kit
2. Scrape ignition plate a grate and clean the holes in grate
3. Open the lid of turbulators and remove remaining dust (e.g. by vacuum cleaner). Make sure, that dust is not hot and it cannot burn bag of vacuum cleaner.
4. Once in 3 months it is necessary to dismantle rotary chimney part and to remove accumulated dust.



ATTENTION!

Keep ash in closed containers from inflammable material.

Maintenance once a year or in case of need (by a qualified person)

Select *Burn-down* by menu buttons and wait, until the fuel in burner burns out. Turn burner off by burner switch and by main switch as well. Disconnect boiler plug from electrical socket. Open door with burner for approximately 90°.

1. Dismantle burner covering and clean photocell by cloth and soft abrasive detergent (tooth paste). Be careful by flat cable and buttons of display!
2. Clean blades of ventilator – it is the best to blow them with compressed air.
3. Dismantle scraper and ignition plate.
4. Clean space behind ignition plate
5. Scrape ignition plate and scraper
6. Brush the grate properly and clean holes in grate
7. Assemble all the parts back
8. Clean container and pellet feeder from dust and small dirt
9. Check state of the pellet inlet hose.
10. Start pellet feeder by connecting the plug into electrical socket (230V~) to fill it with pellets.
11. Adjust the amount of pellets to be supplied



Troubleshooting

Burner stopped.

Check alarm indicated on display.

If display is black and without text, check thermal protection of boiler. If there is no error, probably it was switched off by thermal fuse. To restart burner, disconnect it from electricity, remove the cover and press the small button between connections of thermal fuse. Thermal fuse is placed directly on the fuel inlet pipe. After restarting, Mount the cover back and enable the energy supply. Burner thermal fuse turns off by temperature of 93°C.

Displayed message	Explanation	Recorded error code
ERROR:IGNITION FAILED		10
ERROR: LOST FIRE	Extinction by heating, restart failed	11
ERROR: PHOTOSENS	Faulty photocell, abnormal light	12
ERROR: PCB OVERHEATED	Too high temperature under cover	13
ERROR: TEMP SENSOR LOW	Faulty thermal probe of built-in operating thermostat	14
ERROR: TEMP SENSOR OVERHEAT	Faulty thermal probe of built-in operating thermostat	15
ERROR: OPTOCOULPER	Faulty PCB	16
ERROR: FAN ALWAYS ON	Fan works, when not necessary	18
ERROR: FAN STOP	Fan stopped, when not necessary	19
ERROR: FAN SPPED	Fan rotates too slowly	20
ERROR: IGNITION 1	First ignition trial failed	21
ERROR: STOKER	Pellet feeder is not connected to burner	22
ERROR: FINAL COMBUST FAILED	Photocell receives signal even 15 minutes after selecting „Burn down“	23
ERROR: BACKLIGHT	Photocell detects no flame, ignition failed	24
ERROR: NO CLEANING	Error in circuit board of scraper or in grate gear	25
ERROR: SLOW CLEANING	Grate moves too slowly	26

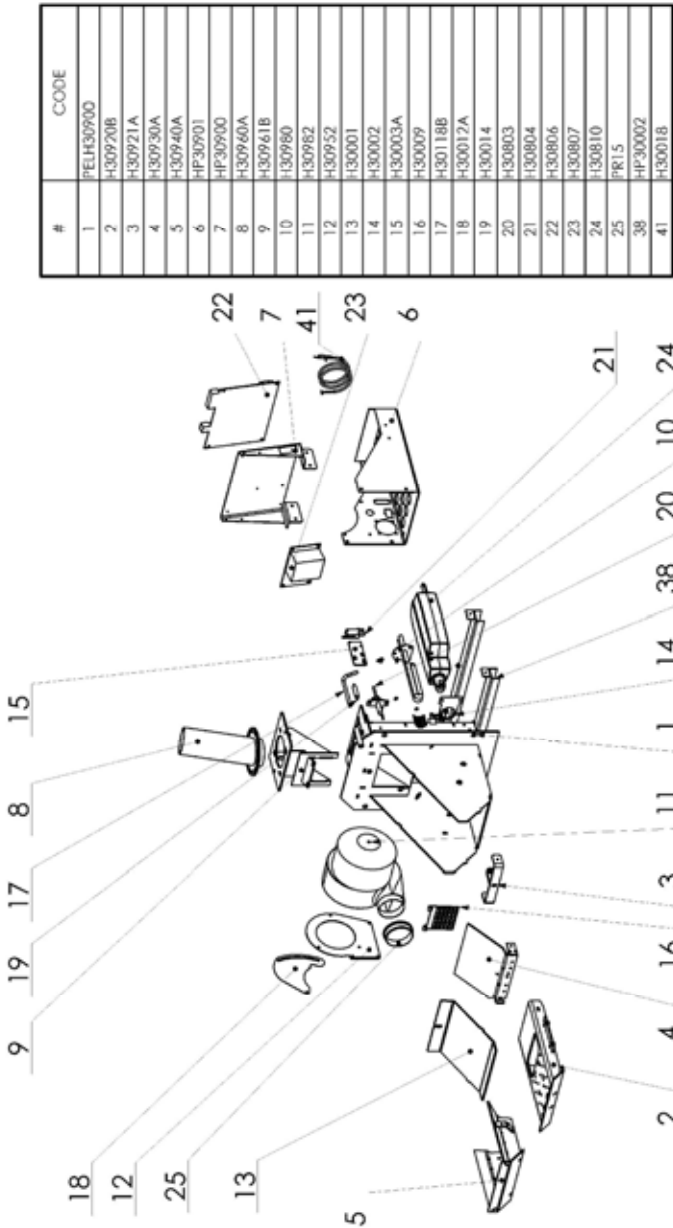


Possible causes of faults

Error code	Possible cause	Opatrenia na odstránenie
10	Feeder does not supply enough pellets. Pellet container empty. Faulty ignition fuse. Faulty ignition coil. Photocell has to be cleaned.	Set pellet dosis. Refill container. Exchange fuse. (10A). Exchange coil. (48 Ω +/- 5%). Clean photocell.
11	Feeder does not supply enough pellets. Pellet container empty. Faulty ignition fuse. Faulty ignition coil. Photocell has to be cleaned.	Set pellet dosis. Refill container. Exchange fuse. (10A). Exchange coil. (48 Ω +/- 5%). Clean photocell.
12	Short circuit or other fault of photocell	Exchange photocell.
13	Too high temperature in boiler room.	Prevent from warmth leakage.
14	Faulty sensor of thermostat	Exchange sensor.
15	Faulty sensor of thermostat	Exchange sensor.
16	Faulty circuit board	Exchange circuit board.
18	Fan works, while burner is under the pause mode.	Exchange circuit board.
19	Fan does not work, when it should.	Exchange fuse of fan (800mA); check connection; exchange fan
20	Fan runs too slowly.	Clean fan; Exchange fan
21	First ignition trial failed	Set pellet dosis
22	Pellet feeder is missing	Connect pellet feeder
23	Wrong pellet supply	Set pellet dosis
24	Wrong amount of pellets supplied. Faulty photocell	Set pellet dosis Exchange photocell.
25	Cleaning does not work	Check connection between circuit board of scraper and main circuit board.
26	Cleaning is slow	Clean the grate.

Error	Cause	Solution
Control light „network“ does not shine	No voltage in mains Fork of plug is incorrectly connected into el.socket Wrong power switch Damaged power plug	Check Check Exchange Exchange
Control light „burner switch“ does not shine	No requirement for heat supply Disconnected emergency thermostat Faulty switch	Find cause, solve and reset Exchange
Boiler does not achieve required parameters	Water shortage in system Too high output of pump Boiler output is not sufficient for the concrete system Bad quality fuel Low chimney draught Strong chimney draught Burner fault	Refill Correct overflow and switching Matter of project Combust prescribed fuel New chimney, appropriate connection Place reducing flap into smoke connection See Appendix 1 or 2 – Error detection
Door does not seal	Wrong glass cord	Exchange, tighten door hinges

Decomposed view



#	CODE
1	PELH30900
2	H30920B
3	H30921A
4	H30930A
5	H30940A
6	HP30901
7	HP30900
8	H30940A
9	H30961B
10	H30980
11	H30982
12	H30952
13	H30001
14	H30002
15	H30003A
16	H30009
17	H3018B
18	H30012A
19	H30014
20	H30803
21	H30804
22	H30806
23	H30807
24	H30810
25	PR15
38	HP30002
41	H30018



Accessories

Name	Code
Pellet container, 450l	PEL9700
Pellet feeder, 1.5 m	PED150A
Pellet feeder, 2.5 m	PED250



Advanced menu

Following data/parameters are adjustable by qualified person only.

All aspects of the advanced menu are available by pressing the „S“ button. Actual setting is permanently indicated in the left bottom corner by „O:“ (time/value), while new value is given in the right bottom corner by „N:“ (time/value).

To increase and decrease time or values, press buttons „+“ and „-“. To confirm and save new values, press „S“. To exit without saving, press „ESC“.

To enter into advanced menu, add 5 to the displayed random number. Example: there can be „18“ by both – „O:“ and „N:“. Now, press „+“, unless „N:18“ changes to „N:23“ and press „S“. Thereby it is enabled to enter into the advanced menu.

Example:

MENU/ADVANCED	
O: 18	N: 23
Old	New

Output setting:

EFFECT ADJ.		
ENTER	>	EXIT

Here you can select three outputs as FINAL OUTPUTS in generally accessible menu (8-30kW).

When you press „S“ by „EFFECT ADJ.“ message, in the left upper corner appears „OUTPUT 1 (kW)“ and in the left bottom corner appears „O:14“ (i.e. actual value of the final output in kW). Then, the second output level is displayed („OUTPUT 2“) to be set to the required value. If you do not wish to change it, press „S“ to save the displayed value (e.g. „N:22“ – OUTPUT 2 - thereby, the second output level will be 22 kW).

To let display without saving changes, press „ESC“.

Ignition setting:

IGNITION			
ENTER	<	>	EXIT

Here you can adjust ignition fuel feed in %. This value had been automatically calculated adequately to the weight entered by the feeder setting – amount.

After pressing „S“, the „Ignition dosis 1“ is displayed in the left upper corner. Changes are made in %, first dosis had been pre-set to 170g. If you increase this amount to 110%, the first dosis will be changed to 187 g.

If the first trial of burner ignition fails, the „Ignition dosis 2“ is activated. It is set by production to 45% from 170 g, i.e. 76,5 g.



Setting of test-blow time

TESTBLOW TIME			
ENTER	<	>	EXIT

Testblow time represents period of ventilation of boiler and chimney, before the combustion starts (10-100 seconds).

By boilers with difficulty to achieve own draught it is suitable to increase the testblow time. Production setting is 15 sec.

Setting of transition phase:

TRANS.PHASE			
ENTER	<	>	EXIT

Here you can set the period from the first flame detection until the full pellet dosis is supplied according to the final output.

There are two parameters of transition: the first is 14 kW and the second is 30 kW. Time set by the first parameter defines, how long it will take to achieve 14 kW (since the flame is detected) and time set by the second parameter defines, how long it will take to achieve 30 kW (since the flame is detected). Lower required output needs shorter time to be achieved.

Setting of supply during transition phase:

TRANS.FEED			
ENTER	<	>	EXIT

Here you can set fuel supply during transition period since flame detection, until the 14 kW output is achieved.

Set the required fuel dosis to be supplied into burner after flame detection. Setting from production is 15% of full dosis for 14 kW.

Setting of cleanblow time:

CLEANBLOW TIME			
ENTER	<	>	EXIT

Cleanblow is activated, when thermostat turns off and the value detected by photocell decreases under 12%.

Setting of ash removing:

STOKER			
ENTER	<	>	EXIT

Ash removing starts automatically in the intervals set from 1 to 200 hours for the pre-set operation period.

Setting of max. combustion time:

MAX. COMB. TIME			
ENTER	<	>	EXIT

By this parameter you can set max. period of permanent burner operation.

Setting of min. pause between burn-down and ignition:

ANTI-CYCLING			
ENTER	<	>	EXIT

This parameter ensures, that the burner will not be started immediately after burner-out, but after the adjusted period.



Modulation:

MODULATION.		
ENTER	<	> EXIT

By adjusted temperature difference ΔT , boiler output automatically decreases under the set level before the required boiler temperature is achieved.

Setting the photocell sensitivity:

PHOTOSENS.		
ENTER	<	> EXIT

Here you can set photocell sensitivity, i.e. value of light (in %) that will control system consider as a flame.

It should not be necessary to adjust sensitivity for light, if the photocell is installed correctly. Production setting is 50%.

Selection of thermostat:

THERMOSTAT		
ENTER	<	> EXIT

Here you select the required thermostat: external boiler thermostat or burner thermal probe or combination with room thermostat.

If you use burner thermal probe, you can set 2 parameters. Select the *start temperature* as first and save the value by pressing „S“ button. Then you can change *stop temperature* and save it by „S“. Burner will operate in the range of the actually adjusted temperatures. Difference between start and stop temperature should be at least 5°C.

Grate cleaning:

SCRAPING		
ENTER	<	> EXIT

This parameter determines, if and when will be the grate cleaning activated – before ignition or after burn-down.

Selection of language:

LANGUAGE		
ENTER	<	> EXIT

You can select Slovak, Czech, English, German, Italian, French, Spanish, Russian Hungarian or Greek language.

Setting of output range:

EFFECT SPAN		
ENTER	<	> EXIT

Burner can work with output range of 8– 14 kW, 14 – 22 kW or 22 – 30 kW, according to the range determined by this parameter.

Setting of pellet dosing:

PELLET TRIM		
ENTER	<	> EXIT

= The most important parameter of control system!
Here you can set pellet amount supplied by feeder by full operation.

To set pellet amount you need bag and very precise scale. Firstly you work with parameter Heat value (kWh/kg). After entering this value, text „Put the bag on“ is displayed (pellet feeder should be totally filled with pellets). Put the bag on and press „S“.

Watch the countdown on display, while the feeder works for 6 minutes. Then, enter weight of the fallen pellets by pressing „+“ and „-“ and confirm / save it by „S“ button.



Ventilator setting:

FANFACTOR			
ENTER	<	>	EXIT

By this parameter you can adjust flue gas by using the flue analyser for CO and CO2 content in flue gas.

Time of feeder operation:

STOKERTIME			
ENTER	<	>	EXIT

Here you can see, how long did the pellet feeder work. You can use it to calculate energy consumption, etc.

Test:

MENU/TEST			
ENTER	<	>	EXIT

Serves by troubleshooting. Here you can control components – manually or automatically.

This function is very useful by solving problems with particular components. In manual mode you can test each component individually, by pressing „S“ for start and „ESC“ for stop. To move forward / backwards, press „+/-“.

Components are displayed in the following order:

Ventilator (rotations should be stable at 2.000 during the ventilator testing);

Pellet feeder (start / stop by using „S“ / „ESC“ buttons)

Grate (moves out by pressing „S“ and moves back by pressing „ESC“. Here you can see, how many mA are consumed by unit for shifting. It should not exceed 1.800 mA – this is limit for the „Grate blockage“ message).

Other displayed options: Actual value, if thermal probe is connected; actual photocell value; indicates light (On / Off); application close.

Settings:

MENU/SETTINGS			
ENTER	<	>	EXIT

Here you can set settings saved by installation. Production and installation settings can be reset here as well.

Three main options are available: Boot settings, Save settings and Production settings.

- “Boot settings” – here you can set original settings.
- “Save settings” – definitive adjustment of burner settings, made by installer. This enables easier browsing of settings for the case of too many parameter changes.
- “Production settings” - original settings are saved here to be rebooted, when necessary .

Record:

MENU/ERRORS			
ENTER	>	EXIT	

All errors are saved and displayed here together with their frequency. Total number of ignition trials is saved here as well.

Four options are accessible: number of errors, number of first ignitions, number of second ignitions, the newest errors.

- “Number of errors” –indicates every error code separately, e.g. E-CODE 10(X). See page 30 to see the codes and explanation.
- “Number of first ignitions”- indicates, how many times there was an ignition.



- “Number of second ignitions” – indicates, how many second ignition trials were made by burner (i.e. how many times did the first trial fail).
- “Last errors” – indicates error codes ordered by their frequency. It enables easier troubleshooting.