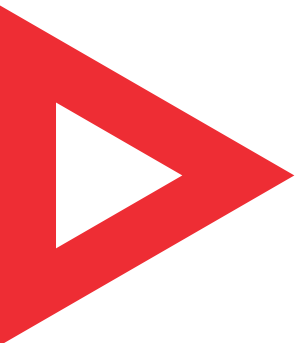
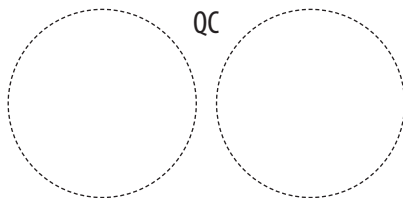


Catalogue No. ....

Production date .....



**Galmet**

## Service and installation manual

# C.H. boiler **Galaxia KWE** kW

With a tank (hopper):

- PC       RK
- Left       Right

Controller:

- eLider

- Straight feeder - fixed retort
- Straight feeder - rotary retort
- Slanted feeder - fixed retort
- Slanted feeder - rotary retort

 Please read the instructions carefully before beginning the installation and use of the product.

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## 1. General information

The Instruction manual is destined to acquaint the user with operation of the solid fuel fired boiler. Prior to commencing installation and operation of the boiler each user should acquaint oneself precisely with the operation instruction manual of the boiler, feeder and controller. The instruction comprises recommendations concerning boiler installation and its operation. Incompliance of the user with regulations and recommendations included in this instruction manual released the boiler manufacturer from all his obligations and guarantees. The boiler should be operated by an adult person only.



Full satisfaction from the boiler performance can be accomplished only using the proper fuel.

### 1.1. Application

Galaxia KWE type steel heating boilers with a screw conveyer feeder are designed for water central heating systems of detached family houses. The top temperature of water in the boilers does not exceed 85°C. The boilers belong to the low temperature water boilers operating in open type installations and do not require registration at the regional Office of Technical Inspection. The boilers are designed for operation in gravitational central heating installations or with open system enforced circulation, having protections compliant with the requirements of PN-91/B-02413 standard. The boilers may operate in closed installations provided devices used for relief of excessive heat are installed (relief-cooling valve of DBV type or a cooling coil).

An indicative table of the boiler selection for a building (building heat demand 40÷60 W/m<sup>3</sup> without domestic hot water demand).

Boiler output [kW]	Room height [m]	Room surface area [m <sup>2</sup> ]	Room cubature [m <sup>3</sup> ]
12	2,5	80 ÷ 120	200 ÷ 300
17	2,5	113 ÷ 170	282 ÷ 425
22	2,5	146 ÷ 220	365 ÷ 550
30	2,5	200 ÷ 300	500 ÷ 750
40	2,5	266 ÷ 400	665 ÷ 1000

Table 1 - Estimated selection of the boiler heat output for the building

Presented values of room heated area for the boiler output are approximated ones. The boiler should be selected individually for the building by a designer or installer on the basis of the energy certificate.

### 1.2. Fuel

Boiler operation depends, to a large extent on fuel quality. In order this operation was trouble-free the fuel should comply with the below requirements:

Specification	Unit	Value
Diameter	mm	8 ÷ 20
Density	kg/m <sup>3</sup>	≥ 600
Calorific value	MJ/kg	28 335
Humidity	%	4,4
Ash content	%	7,87
Sulfur content	%	0,4
Ash melting temperature	°C	≥ 1200
Fuel class	-	a1 (according to the EN 303-5 norm)

Table 2 - Fuel parameters: SILESIAI eco-pea coal

It is allowed to apply substitutive fuels in the Galaxia KWE boilers (e.g. brown coal). While burning substitutive fuels one should consider changing of the boiler heat output approximately proportional to the calorific value. Combustion of substitutive fuels may result in shortening of the boiler life span.

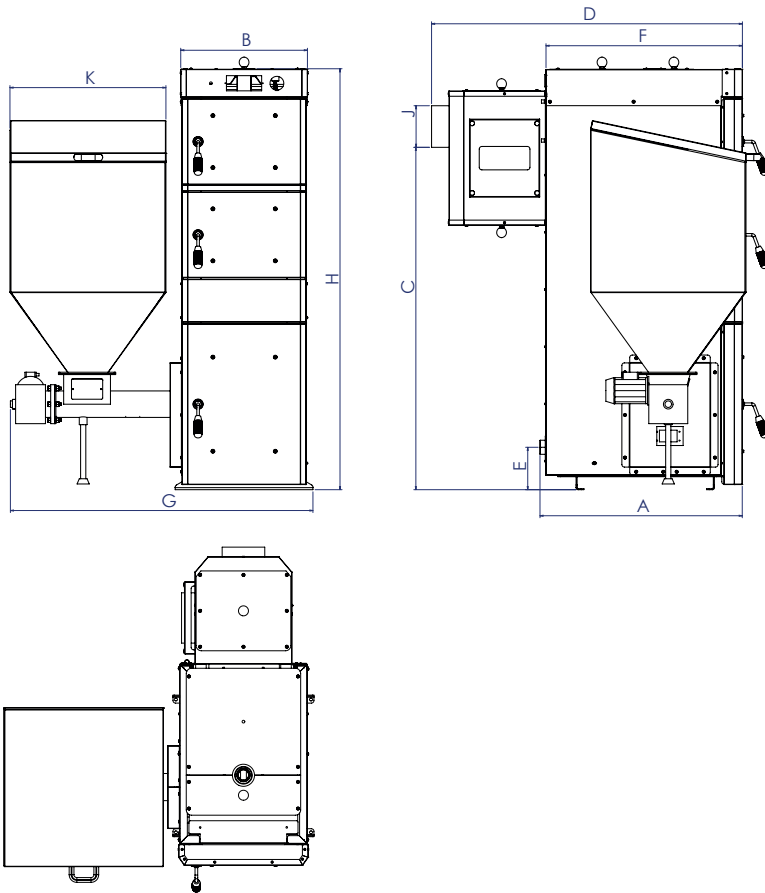
**CAUTION! Coal must be dry! Maximum fuel moisture 4.4%.**

# 1. General information

## 1.3. Technical-operational parameters of the Galaxia KWE boiler

Parameters	Unit	Galaxia KWE		
Rated output	kW	12,0	17,0	22,0
Output range	kW	4,0 ÷ 12,0	5,0 ÷ 17,0	6,6 ÷ 22,0
Boiler class acc. to EN 303-5:2012 standard	-	5		
Boiler heating surface area	m <sup>2</sup>	-	-	3,24
Fuel	-	SILESIA eco-pea coal granulation 8 ÷ 20		
Fuel class	-	a1 (according to the EN 303-5 norm)		
Fuel bin capacity	l	150	240	
Real fuel stream (at maximal capacity)	kg/h	-	-	3,022
Combustion stability for the rated output	h	-	-	60
Thermal effectiveness	%	-	-	94
Required chimney draught	mBar	-	-	0,20
Minimal chimney height	m	6		
Minimal chimney cut section area	mm	Ø 160		
Flue gas temperature for the rated output	°C	-	-	71
Flue gas temperature for the minimal output	°C	-	-	61
Flue gas mass stream for the rated output	kg/s	-	-	0,0083
Flue gas mass stream for the minimal output	kg/s	-	-	0,0035
Flow resistance	mbar	-	-	147
Operation temperature range	°C	55÷85		
Maximal temperature on supply	°C	85		
Minimal temperature of return	°C	55		
Permissible operation pressure	bar	2,2		
Boiler water capacity	l	-	-	90
Boiler mass including the burner, feeder and bin	kg	-	-	533
Outer diameter of flue	mm	Ø 160		
Supply/return tube diameter	"	6/4		
Discharge tube diameter	"	½		
Boiler height	mm	-	-	1660
Boiler width	mm	-	-	1165
Boiler depth	mm	-	-	1320
Flue distance to the floor	mm	-	-	1397
Maximum power consumption	W	354		
Stand-by power consumption	W	4		
Electric connection/protection	-	230V~/50 Hz, 6,3A/250V~		
Protection degree	IP	40		
Noise emission (EN ISO 12100:2010)	dB	< 66		
Operation with a blowing fan	-	tak		

## 1.4. Dimensions of the Galaxia KWE boiler



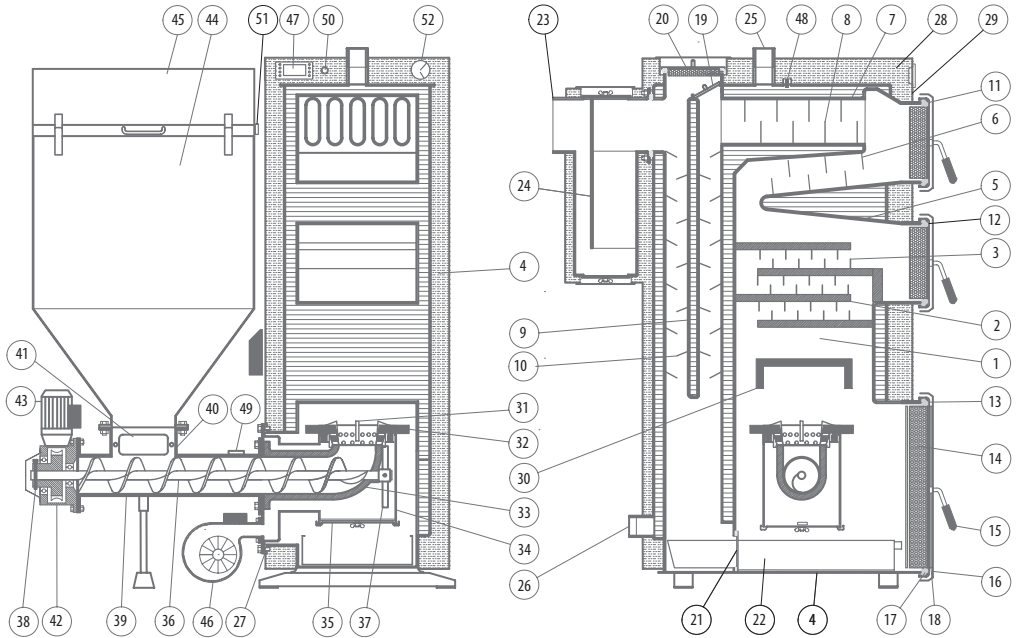
Drawing 1 - Dimensions of the Galaxia KWE boiler

DIMENSION	A	B	C*	D	E*	F	G	H*	I	J	K	POS				
												2	3	7	9	10
Galaxia KWE-12	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Galaxia KWE-17	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Galaxia KWE-22	778	487	1317	1196	163	755	1164	1620	360	ø160	600	4	2	4	1	2
Galaxia KWE-30	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Galaxia KWE-40	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

\* in boilers with slanted feeder, a 30 mm should be added because of the legs below the boiler.

# 2. Technical specification

## 2.1. Galaxia KWE boiler construction



Drawing 2 - Galaxia KWE boiler construction

- |                                  |                           |                               |
|----------------------------------|---------------------------|-------------------------------|
| 1. Combustion chamber            | 19. Water tube duct cover | 37. Collector                 |
| 2. Ceramic water tubes           | 20. Upper cleaning hole   | 38. Overload safety breaker   |
| 3. Swirlers                      | 21. Bottom cleaning hole  | 39. Feeder tube               |
| 4. Bottom                        | 22. Ash drawer            | 40. Feeder stokehole          |
| 5. Horizontal water tube         | 23. Flue                  | 41. Bin cleaning hole         |
| 6. Water tube swirlers           | 24. Flue insert           | 42. Reducer                   |
| 7. Combustion tubes              | 25. Feeding tube          | 43. Motor                     |
| 8. Combustion tube swirlers      | 26. Return tube           | 44. Bin                       |
| 9. Vertical water tube           | 27. Feeder flange         | 45. Bin damper                |
| 10. Vertical water tube swirlers | 28. Insulation            | 46. Blower                    |
| 11. Cleaning door                | 29. Guards                | 47. Boiler controller         |
| 12. Chamber door                 | 30. Deflector             | 48. Boiler temperature sensor |
| 13. Burner door                  | 31. Fire box ring         | 49. Feeder temperature sensor |
| 14. Door insert                  | 32. Fire box pan          | 50. STB                       |
| 15. Door knob                    | 33. Retort band           | 51. Damper opening sensor     |
| 16. Door guard                   | 34. Burner guard          | 52. Thermomanometer           |
| 17. Door frame sealing           | 35. Burner cleaning hole  |                               |
| 18. Burner door insulation       | 36. Screw conveyer        |                               |

## 2.1.1. Boiler water body

The exchanger in boilers is made from certified boiler steel plate grade P 265 GH thickness 6 mm. The boiler shell is made from 4 mm steel plate.

The boiler is constructed as a 4-draught exchanger:

- vertical combustion chamber
- horizontal combustion tube exchanger
- vertical water tube exchanger

In the combustion chamber (1) there are flue gas reheating elements, a deflector (30) and ceramic shells (2) with swirlers (3) placed between them. Over the chamber there is a vertical water tube (5) and horizontally mounted combustion tubes (7), inside of which there are swirlers (8) placed. The vertical exchanger comprises a vertical water tube (9) located in a duct ended on top with a cleaning hole (20) and in the back ended with a hole, in which the flue (23) is mounted with a dust collector (24) fitted inside of it. In the boiler bottom (4) there is a drawer (22) comprising two parts: in the front one the ash from the chamber is accumulated while in the back part the dust from the back water tube duct is collected. Tightness of the duct is provided by the cleaning hole cover (21) with a seal mounted between the two parts of the drawer.

## 2.1.2. Doors

The boiler is provided with 3 steel doors with knobs (15), featuring adjustable pressure on seals (17). The doors have an insulation board (14) protecting the doors against overheating. The cleaning door (11) is used for cleaning water tube ducts and upper surface of the combustion tube. The chamber door (12) is used to position the system of swirlers and cleaning the combustion chamber surface. The burned door (13) is used for lighting up the burner, removing of ash and dust produced in the combustion process accumulated in the ash pan drawer. They have an insulation board protecting the doors against overheating and an additional insulating plate (18) placed under the door guard (16).

## 2.1.3. Insulation panels

The insulation panels (29) are fixed on the surface of the water body. They are made from powder coated steel plate with high corrosion resistance. From inside they are lined with mineral wool (28). Their job is to limit boiler heat loss to the environment apart from the aesthetic purpose.

## 2.2. Feeder

The feeder comprises a feeding unit, which is outside of the boiler and a burner set located inside of the boiler, which is fixed to the boiler flange (27).

### 2.2.1. Feeding unit

The feeding unit is constructed of a feeder tube (39) ended with two flanges and a stokehole (40) with a rectangular flange, to which a fuel bin (44) is mounted through a seal. The fuel bin is constructed from bent and welded steel plates and a bin cover (45) closed with two locking devices. Tightness of the connection is assured by a rubber seal located on the damper circumference. The stokehole of the feeder features holes closed with covers (41), used for emergency emptying of the fuel bin. There is a screw (36) mounted in the feeder tube (39) driven by a gear motor comprising an electric motor (43), coupling and two-stage reduction (42). An overload safety breaker (38) is mounted in the beginning of the screw shaft, whose task is to protect the motor in case of blocking of the screw.

### 2.2.2. Burner unit

The retort burner is constructed of a burner ring (31), burner box pane (32) and bend (33). The above elements are made from cast iron and placed in a steel air chamber (34), which is fixed with a rectangular flange by bolts through a seal to the boiler body. From the bottom the air chamber is covered with the burner cleaning hole (35) with the seal and fixed with M8 thumb nut. The burner unit comprises also a cast iron deflector (30) suspended over the combustion box whose task is reheating of carbon oxide and spreading the flame so as the hot flue gas blew against the combustion chamber walls. The fuel is fed by the screw (36) from the bin (44), feeder tube (39), bend (33) to the burner ring (31) where it is burned. Air to the burner ring nozzles in the combustion box is supplied by a low noise fan (46). Tightness between the steel body of the air chamber (34) and the bottom of the combustion box bottom (32) is obtained by placing a water and high temperature 1200oC resistant sealing, M10 that are located on the air chamber circumference (34) are used to center the combustion box pan towards the bend (the chamber and loosing tightness in respect to the combustion box pan).

## 2. Technical specification / 4. Controller

In the feeder with a rotary retort the screw shaft (36) passes through the retort bend (33) and conveys driving force on the rotary combustion box using a carrier (37) positioned outside the bend on the screw end. The retort rotary movement causes even combustion of the fuel from each side of the combustion box.

The feeder tube in the diagonal feeder is placed at an angle. The fuel fed by the screw located in the tube reaches the retort via the open angle bend. Thanks to this solution smaller force is required to push the fuel into the combustion box, which allows for burning the eco-pea coal with different fraction sizes and results in less frequent breaking of the overload breaker.



We kindly request you to acquaint yourselves with the detailed instruction manual of the feeder!

### 2.3. Boiler equipment

The boiler equipment comprises:

- a set of documents (guarantee cards, instruction manuals),
- a cleaning set
- an ash drawer,
- a weather sensor
- a set of sensors and wires,
- an analogue thermometer,
- 4 pcs of feet (concerning only the boilers with a diagonal feeder installed).

## 3. Controller

The boiler is provided with a microchip eLider controller (47) providing full control of safe and economical boiler operation and adjustment of the combustion process. Thanks to the PID algorithm it can smoothly modulate the boiler output depending on heat reception.

It receives signals from:

- central heating boiler body temperature sensor (48)
- household hot water tank temperature sensor
- external temperature sensor
- valve sensor
- return sensor
- feeder tube overheating sensor (49)
- boiler overheating sensor (50)
- bin damper opening sensor (51)
- fan

The controller operates:

- boiler output (by changing of feeding time and feeder interval)
- fan blowing force
- central heating pump operation
- household hot water pump operation
- household hot water circulation pump operation
- operation of a mixing valve actuator

Optional additional equipment that the controller co-works with:

- room panel
- internet module
- mixing valve module

Prior to starting up the boiler the controller should be configured for the particular boiler output and for the external equipment it is supposed to co-work with. The kind of fuel has to be input with its calorific value (see page 8 in the controller instruction manual for details).

Detailed information:

- safety (page 28 of the controller instruction manual);
- settings (page 12 of the controller instruction manual);
- alarms (page 29 of the controller instruction manual).



In the operation mode the controller automatically adjusts the boiler output depending on its load, trying to maintain the boiler as close to the set temperature as possible. In summer, when the boiler is used for heating the household hot water only, the controller can enter the supporting mode. In this mode the boiler operates acc. to the default supporting and cannot change them. Correct selection of these parameters is the on the user's side because they depend on many factors such as: boiler output, household hot water tank capacity, volume of water consumed, chimney draught, fuel quality. In the extreme cases incorrect settings of supporting parameters may be the cause of excessive temperature increase or boiler switching off.

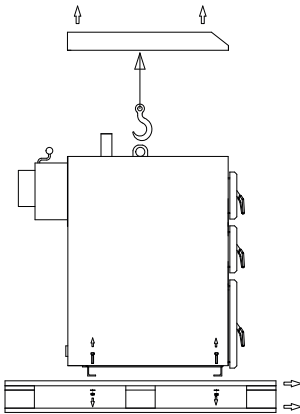


In order to learn about the possibilities offered by the eLider boiler controller from Elster we kindly request you to acquaint yourselves with its detailed instruction manual.

## 4. Assembly

### 4.1. Boiler transport

The boiler with burner, feeder and fuel bin is supplied on a pallet. The boiler should be removed from the pallet acc. to the below drawing.



1. Unscrew bolts connecting the boiler with the pallet.
2. Remove the upper guard.
3. Hook on the lifting lug.
4. Lift the boiler and remove the pallet.
5. Position the boiler on the floor.

Drawing 3 - Removing of boiler from transport pallet.

The boiler is supplied on the pallet in assembled condition. In order to reduce the boiler mass during transport to the boiler room it is allowed to remove the bin and detach the feeder from the boiler. For this purpose you should:

- remove the plug from the bin opening sensor (51),
- unscrew M10 bolts connecting the bin (44) with the stokehole (40),
- remove the plugs of the blower (46) and motor (43),
- remove the feeder sensor (49),
- unscrew 4 M10 bolts from the round flange and remove the feeder tube from the boiler,
- unscrew the blower.



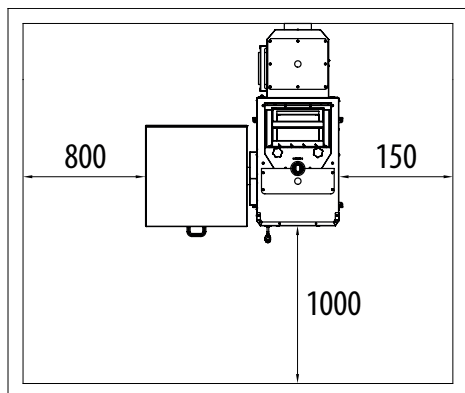
We kindly ask you not to unscrew the Allen's screws fixing the position of the feeder bend!

After installing the boiler in the boiler room check aligning of setting of feeder elements. If the boiler was stored in conditions of high humidity do not start the boiler controller until it is completely dry.

# 4. Assembly

## 4.2. Boiler setting

The boiler does not require a foundation however, the floor should be hard and level. In order to provide easy and safe operation of the boiler it should be removed from the particular walls of the boiler room acc. to the below drawing.



Drawing 4 - Positioning of boiler in boiler room (dim. in mm)

This way of positioning of the boiler will allow for access to the particular boiler parts, which is necessary for its correct exploitation and maintenance. Minimal space of 600 mm must be provided over the boiler.

- Boiler installation should be executed in compliance with PN 87-87/B024411 standard. The room, in which the boiler is going to be located should have two ventilation holes (gravitational ventilation) with dimensions 140x140 mm, of which one should be 150 mm over the floor level while the second one should be under the entrance door to the boiler room should open outside and it must be made from flame resistant material
- The room should be dry with a floor drain, installed water main and electric main with a protective wire.
- Provide lighting for the boiler front.
- The boiler should be placed away from flammable elements, fuel should be behind a partition.

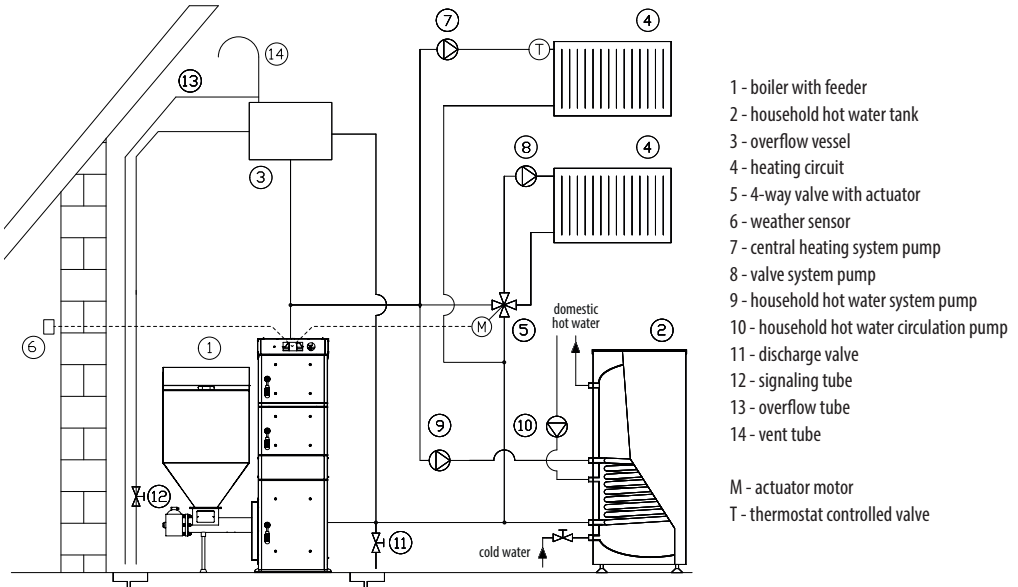
## 4.3. Boiler connection diagram to central heating system

Installing of the controlled mixing valve (e.g. 4-way) will provide the user with heating comfort and protect the boiler against low temperature corrosion. Prior to starting up of the boiler check if the central heating installation is filled up with water and the controller is connected to the socket with earthing protection. Check the direction of fan and feeder revolutions.

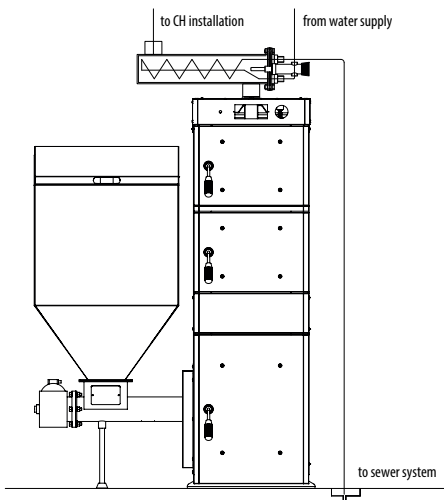
The block diagram of boiler connection to the open type central heating installation with enforced circulation changing the layout of radiators provided with thermostats, floor heating system, household hot water tank is presented on drawing 5.



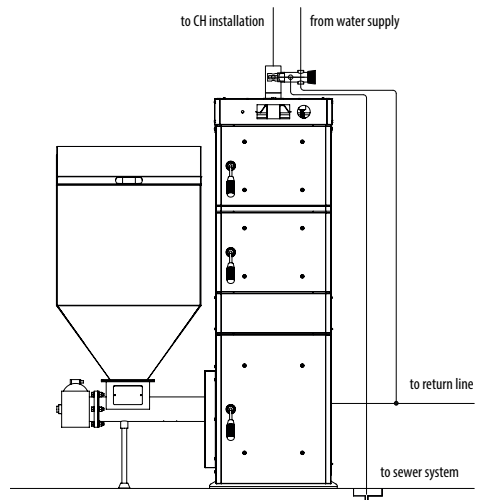
**CAUTION!** If the boiler is mounted into the closed circulation system it must be provided with a device for emergency removing of excessive heat. It can a relief-cooling DBV valve (drawing 7) or a cooling coil with JBV valve (drawing 6). The above solution may be used only when a fail safe, continuous access to water main is provided. According to the safety principles and operating manual of the DVB, JVB valves, correct valve operation must be checked by turning the hand wheel on the valve.



Drawing 5 - Block diagram of Galaxia KWE boiler connection to central heating system



Drawing 6 - Galaxia KWE boiler with cooling coil

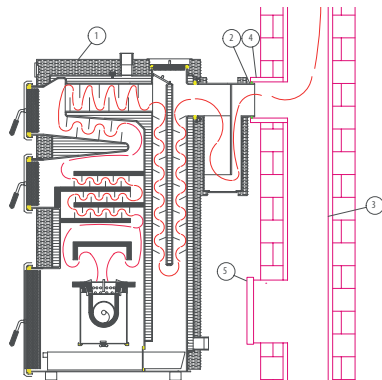


Drawing 7 - Galaxia KWE boiler with relief-cooling valve

## 4. Assembly / 5. Operation and service

### 4.4. Connecting of boiler to chimney and installation

The boiler should be connected directly to the chimney or via a connection made from steel sheet with diameter enabling its tight positioning. The connection should have a cleaning hole and should slightly rise up. The chimney should be made in compliance with PN-91/B-02413 standard. Relevant height and cut section of the chimney duct have significant influence on correct boiler operation. Technical condition of the chimney, to which the boiler is to be connected should be assessed by a chimney firm. In case when there is a problem with the chimney draught, which is transferred to incorrect boiler operation, a chimney cowl or a draught generator or an exhaust fan may be used. The above devices aid and stabilize chimney draught.



Drawing 8 - Connecting boiler to chimney

1. Boiler 2. Flue 3. Chimney duct 4. Chimney connection 5. Chimney cleaning hole



Connect the boiler to the installation in a separable way!

Connection of the boiler to the central heating, electric, water main and chimney installations acc. to regulations in force and instruction manual is performed by an installer. He also performs the first lighting up of the boiler and confirms it with an entry in the guarantee card.

## 5. Operation and service



Prior to commencing lighting up the fixed retort combustion box should be sealed.

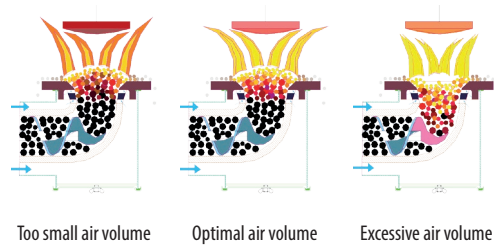
### 5.1. Lighting up

Lighting up is performed acc. to commands displayed on the screen of eLider controller and the fuel bin is filled up with dry eco-pea coal SILESJAN.

### 5.2. Air adjustment

Combustion process is controlled by the boiler controller, which controls operation of the feeder and fan on the basis of the set temperature and constant temperature measurements. In order the fuel that is fed on the combustion box pan is burned completely relevant volume of air should be selected. It is the parameter, which should be adjusted individually for each kind of fuel and draught in chimney. After correct setting of this parameter, the boiler operates automatically and its operation depends on resupplying the fuel, removing ash and periodical cleaning. The fuel should burn on a mound above the edge of the burner ring. The flame of burning fuel should be bright, steady with no flickering ends.

Graphic illustration of the effect of the air volume selection is presented on the below drawing:



Drawing 9 - Selection of air volume in Galaxia KWE boiler burner

If the volume of supplied air is too large in respect to the amount of the fuel fed it may be the cause of:

- lowering of cinders level below the combustion box pan edge,
- formation of slag,
- heating up and burning out of the scrapper claw,
- faster deflector wear,
- larger fuel consumption,
- putting the boiler out.

If the volume of supplied air is too small in respect to the amount of the fuel fed it may be the cause of:

- formation of a pile of unburned fuel on the combustion box pan,
- formation and sedimentation of soot in boiler exchanger,
- falling of unburned fuel on the ash tray,
- larger fuel consumption.

## 5.3. Resupplying of fuel

The fuel bin should be resupplied always when the fuel layer in the bin reaches the height less than 20 cm from the bottom. Supplied fuel should be dry. At the moment of lifting the bin damper the bin opening sensor is initiated switching off the blower and feeder.



**The fuel bin should always be closed tightly! Seal adhesion should be checked!**

## 5.4. Stopping boiler operation

For the summer break it is recommended to:

- clean and protect the boiler exchanger (combustion chamber, water tube ducts, combustion tubes)
- clean the flue and chimney duct
- clean the retort combustion box
- clean the burner air chamber (unscrew M8 thumb nut and take of the burner air chamber cover)
- clean the bend of possible slag
- open the ash tray door
- remove fuel from the bin and protect the bin
- disassemble and remove the screw from the tube, clean and protect it
- cover with grease and mount in the feeder the screw shaft in the place of co-working with the gear motor

# 5. Operation and service

## 5.5. Boiler cleaning



**Boiler cleaning may commence only when the device is off and the temperature displayed by the controller does not exceed 45°C.**

Prior to commencing cleaning of the boiler the controller must be disconnected from the electric main, breathing system as well as hand protective means must be used, For boiler cleaning and protection use:



Drawing 10 - Accessories for boiler maintenance and cleaning

1. Straight scraper 2. Poker 3. Combustion tube cleaning rod 4. Angle scraper 5. Shovel 6. Brush 60x60x100 7. Brush 40x100x100

In order to obtain high boiler efficiency it is recommended to clean it regularly. Prior to commencing cleaning the boiler should be put off and you should wait until it cools down completely. Cleaning should be performed acc. to the following description:

- switch off the boiler controller
- open the cleaning door and clean combustion tubes and horizontal water tube duct,
- remove the ceramic elements and swirlers
- remove the deflector
- clean the combustion chamber walls
- close the cleaning door and open the combustion box door
- clean the combustion chamber
- remove the cover of the upper cleaning hole and disassemble vertical swirlers
- clean the combustion tube walls
- clean the flue through the top and bottom cleaning hole on the flue
- open the ash tray door and remove the tray with ash
- put the tray against the door frame and scrap ash out to the tray
- mount the deflector, ceramic shelves and swirlers
- install the swirlers in the back vertical combustion tube ducts
- mount on the top cleaning hole
- switch on the boiler controller
- start normal boiler operation

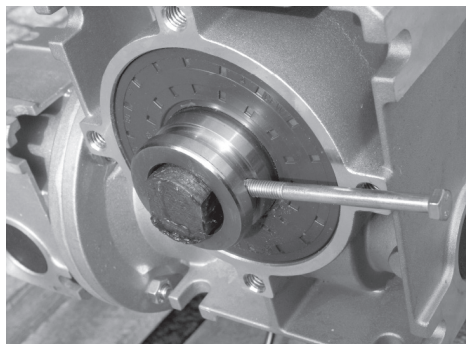
## 5.6. Overload safety breaker

In case of breaking out of the overload breaker on the feeder screw shaft remove the cause of its breaking prior to its reinstallation that can be as follows:

- a stone, a piece of wood
- too small coal particle size
- burning out of the screw tip (claw)
- presence of cinders inside the retort bend due to incorrectly selected volume of air
- adhesion of slag to the retort bend narrowing the bend cut section
- corroded screw on 2÷4 coil

## 5. Operation and service / 6. Conditions of safe operation

Then using a wrench turn the screw shaft left so as the hole in the gear motor matched the hole in the screw shaft and install a new overload breaker.



Drawing 11 - Assembly of overload breaker



**After operating of the overload breaker a new breaker must be used with relevant hardness!**

## 6. Conditions of safe operation

During operation / cleaning of Galaxia KWE boiler it is recommended to use protective gloves, breathing system protective masks and unconditionally observe all the recommendations concerning safe utilization of the boiler included in this instruction manual and controller and burner manuals. During the boiler guarantee period all the repairs or exchange of consumables can be performed by the authorized service only.

The basic condition of safe exploitation of the boiler is execution of the open type installation in compliance with PN-91/B-02413 standard. Moreover, in order to maintain safe exploitation conditions a few principles must be observed:

- it is forbidden to operate the boiler with too little water in the installation and lack of pressure in the installation,
- the installation should be the open type,
- provide signaling of water level in the installation or its automatic topping-up,
- the expansion vessel should be warmed up in the relevant way,
- use protective gloves, goggles and helmets when operating the boiler,
- open the door at open flow damper on the flue and switched off boiler, stand aside while opening the door,
- provide good lighting in the boiler room,
- keep the boiler room in order, no items can be stored in there but the ones related to operation of the boiler,
- take care for correct boiler condition and for water installation connected with it,
- do not insert items or hands into the movable parts of the boiler (fan, feeder),
- in the installations with the enforced circulation use gravitational by-pass with the differential valve, for in the case of power outage hot water could flow to the radiators and be cooled (maintaining the relevant pipe cut sections and slopes),
- in closed type installations apply imperatively a device for releasing excessive amount of heat (a discharge-cooling valve or a cooling coil - this solution can be applied if a fail safe water main connection is provided).



The boiler can be operated only by a person who is acquainted with the content of the boiler and controller instruction manual.

# 6. Conditions of safe operation / 7. System of protections

The condition of safe operation of the boiler is:

- use of the boiler acc.to its designation and maintaining it in the relevant condition (regular cleaning),
- use of fuel recommended by the manufacturer,
- application of the required protections,
- the boiler room should be kept in the relevant order (it is not recommended to store in the boiler room any items not related with operation or maintenance of the boiler).

**Customer service must be called after starting up the boiler in order to:**



- **Regulate the boiler and measure the exhaust emissions.**
- **Instruct the user about the boiler's usage by a competent person.**

## 7. System of protections

### 7.1. Independent safety temperature breakers (STB)

STB sensor is an electro-mechanical device, which operates on the principle of connections broken in the moment of reaching the temperature limit of 95°C. When the STB is activated, it will turn off the voltage from the fan and the feeder. Re-closing of the connections by themselves is impossible even when the heat level is lowered. Re-connection must be performed by the user resetting the sensor. It is done using the push button located on the boiler body under the protective cap (drawing 2, pos. 50).

### 7.2. Boiler temperature sensor

The boiler sensors monitors temperature of the boiler, the current temperature is displayed by the controller. In case when the boiler set temperature is exceeded the controller breaks operation of the fuel feeder and fan. The maximum temperature of the boiler temperature sensor is 92°C. An alarm message will be displayed simultaneously with a signaling sound. After lowering of the temperature to the safe level the controller will restart operation of the feeder and fan.

### 7.3. Feeder temperature sensor

The next level of boiler protection is the feeder thermal sensor. In case of exceeding of the border value (45°C) the controller increases the fuel dose fed to the combustion box until the temperature drops below 45°C. If the temperature reaches 85°C, the feeder will operate continuously for 10 minutes, furthermore, the controller will display a fire warning in the feeder and emit a beeping sound. The message of the necessity of renewed lighting up the boiler and checking the air flow settings will be displayed (they should be diminished).

### 7.4. Fuel bin cover opening sensor

The next level of boiler protection is the fuel bin cover opening sensor. At the moment of opening the cover, power supply to the feeder and fan is interrupted, it prevents smoke leaving the bin during re-loading the fuel. After the cover is closed power supply is returned.



## 8. Troubleshooting

SHORTCOMINGS	CAUSE	CAUSE REMOVAL
FAILED LIGHTING UP	- polluted burner	- clean the burner combustion box of ash and slag
BOILER DOES NOT REACH SET TEMPERATURE	- insufficient chimney draught - lack of incoming ventilation - polluted boiler - bad settings of boiler controller - poor quality of fuel	- check chimney cleanliness and size - make air inflow to boiler room - clean boiler exchanger - correct settings of boiler controller - change fuel
FUEL BURNS TOO QUICKLY	- poor adjustment of air volume - excessive chimney draught  - too little of fuel	- diminish volume of supplied air - check chimney draught and size - reduce opening of air flow damper on flue - increase fuel dose
FUEL DOES NOT BURN COMPLETELY	- poor adjustment of air volume - insufficient chimney draught - excessive fuel feeding	- increase air volume - select air flow parameters- check chimney draught and size - correct settings of boiler controller
SLAG IS FORMED	- excessive burning temperature - too low ash melting temperature	- diminish volume of supplied air - change fuel
SMOKING FROM BOILER	- polluted boiler - reduced opening of flue air damper - insufficient chimney draught - leaking seals	- clean boiler exchanger - open air flow damper - check draught flow, possibly clean chimney duct - check door, flue and fuel bin cover seals and adjust their pressure
FEEDER DOES NOT FEED FUEL	- broken overload safety breaker - feeder motor produces humming	- determine the cause of breaking the breaker and replace it - replace the motor capacitor
BREAKING OF BREAKERS	- screw claw burned out - slag coating in bend	- exchange screw - clean bend
WATER LEAKAGE FROM BOILER	- steam concentration on exchanger walls - untighten boiler body	- may occur at first lighting up (increase temperature to 70°C) - contact service
TEMP. DROP IN THE BOILER (THE PUMPS ARE WORKING, FAN AND FEEDER SHOWN AS WORKING ON THE CONTROLLER'S DISPLAY)	- activation of the STB system (boiler temperature above 95°C)	- push the button located on the boiler body under the protective cap (drawing 2 pos. 50) - check the operation of the CH and DHW pumps - check the operation of the 4-way valve - check if the boiler's power is selected correctly compared to the size of the heating circuit
TEMP. DROP IN THE BOILER (THE PUMPS ARE WORKING, FAN AND FEEDER SHOWN AS NOT WORKING ON THE CONTROLLER'S DISPLAY)	- fuel bin cover opened	- close the fuel bin cover
TEMP. DROP IN THE BOILER (THE PUMPS ARE WORKING, FAN AND FEEDER SHOWN AS WORKING ON THE CONTROLLER'S DISPLAY, NO INCREASE OF EMBERS ON THE FURNACE)	- no fuel in the fuel bin - boiler's power not high enough	- refuel the fuel bin - increase the boiler's power - reduced the calorific value of the fuel - reduce the amount of air
CONTROLLER'S DISPLAY NOT WORKING, NO BACKLIGHT ON THE ON/OFF SWITCH	- no power	- check if the boiler is connected to the ~230V network - check the inclusion of the boiler room's fuse in the domestic fuse box
CONTROLLER'S DISPLAY NOT WORKING, BACKLIGHT ON THE ON/OFF SWITCH, THE BOILER IS WORKING	- no communication with the display	- check the connection - SERVICE! - damaged display - SERVICE!
POWER OUTAGE	- no power for up to 1 hour	- when the power is restored the boiler will operate on previously set parameters
POWER OUTAGE	- no power for more than 1 hour	- when the power is restored the fan and the feeder will operate for 90 min trying to reignite the embers, if after that time there will be no temperature increase the boiler will enter the blanking mode: the fan and the feeder will be stopped, the pumps will continue to operate



**Prior to calling for the service boiler exchanger should be thoroughly cleaned!**



Crossed out symbol of a trash can means that after termination of product use in the area of the European Union it should be disposed of in a special point dedicated for this purpose. It concerns both the device itself as well as the accessories marked with this symbol. These products should not be disposed of with unsorted municipal wastes.

# DECLARATION OF CONFORMITY

„GALMET Sp. z o.o.” Sp. K.  
48-100 Głubczyce, Raciborska 36

declares that the following product:

**Galaxia KWE 12-40**

To which this declaration applies to is compliant with the following directives:

- 2006/42/WE
- 97/23/WE
- 2006/95/WE
- 2004/108/WE

as well as the following standard:

EN3003-5 :2012

This is confirmed by the CE mark



Boilers do not have the possibility of installing an additional grate. Moreover, our boilers meet the criteria of energy-ecology standard imposed on the low-temperature boilers for solid fuel. This is furthermore confirmed by an independent research unit.

Głubczyce 17.05.2016

.....  
(Place and date)

PREZES Zarządu  
*Stanisław Galara*

.....  
(Signature of an authorized person)



TECHNICKÝ SKÚŠOBNÝ ÚSTAV PIEŠŤANY, š.p.  
Krajinská cesta 2929/9  
921 01 Piešťany, Slovak Republic

Issue Nr.: 1

## TEST CERTIFICATE

Nr. O-165000019/1/2016

Producer: „GALMET sp. z o.o.“ Sp. K.  
Ul. Raciborska 36, 48-100 Glubczyce  
Poland

Product: C.H. boiler GALAXIA KWE

Type: GALAXIA KWE 22

### Test results:

Fuel: black coal  
Stoking: automatic

#### • EN 303-5: 2012

		Nominal output power	Minimal output power
Output power	kW	22,17	6,41
CO (10 % O <sub>2</sub> )	mg/m <sub>n</sub> <sup>3</sup>	292	396
OGC (10 % O <sub>2</sub> )	mg/m <sub>n</sub> <sup>3</sup>	2	1
NOX (10 % O <sub>2</sub> )	mg/m <sub>n</sub> <sup>3</sup>	179	150
Dust (10 % O <sub>2</sub> )	mg/m <sub>n</sub> <sup>3</sup>	28	10
Efficiency	%	94,29	88,04

#### • Commission Regulation (EU) 2015/1189 implementing Directive 2009/125/EC of the European Parliament and of the Council with regard to ecodesign requirements for solid fuel boilers

##### Seasonal space heating emissions:

CO (10 % O <sub>2</sub> )	mg/m <sub>n</sub> <sup>3</sup>	380
OGC (10 % O <sub>2</sub> )	mg/m <sub>n</sub> <sup>3</sup>	1
NOX (10 % O <sub>2</sub> )	mg/m <sub>n</sub> <sup>3</sup>	154
Dust (10 % O <sub>2</sub> )	mg/m <sub>n</sub> <sup>3</sup>	13

Seasonal space heating energy efficiency % 81,66

*The test certificate is issued on base of type test of product. The results of particular measurements are listed in the test protocol Nr. 165000019/314 dated 20.6.2016, issued by accredited test laboratory TSÚ Piešťany, š.p., Slovak Republic – laboratory of Technical Equipment of Buildings and Constructions. Accreditation certificate Nr. S-047 from 3.12.2014.*

Date of issue: 18<sup>th</sup>. July 2016

Distribution list:  
1 – applicant  
2 - TSU Piešťany š.p.

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Peter Šumbar

Technical Head of laboratory TZBaS

# 11. Certificate



TECHNICKÝ SKÚŠOBNÝ ÚSTAV PIEŠŤANY, s.p.  
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921 01 Piešťany, Slovak Republik



## CERTYFIKAT CERTIFICATE

Nr / No. 0058/104/2016

Producent / *Manufacturer*: "Galmet sp. z o.o." Sp.K.  
Raciborska 36  
48-100 Głubczyce  
Polska / *Poland*

Produkt / *Product*: Kocioł c. o. Galaxia KWE  
C.H. boiler GALAXIA KWE

Typ / *Type*: GALAXIA KWE 22

Certyfikat niniejszy potwierdza zgodność charakterystyki typu produktu z wymogami technicznymi zawartymi w:

*This certificate confirms the compliance of the product type characteristics with the technical requirements given in:*

**EN 303-5: 2012, Klasa 5 / class 5**

Certyfikat został wydany na podstawie badań próbek typu produktu. Wyniki badań zawarte zostały w raporcie oceny zgodności nr 165000019/1 z dnia 18. lipca 2016

*The certificate has been issued on the basis of the tests of the product type sample. The results are recorded in the Conformity assessment report No. 165000019/1 dated July 18<sup>th</sup>, 2016*

Data wydania / *Issue date*: 20.7. 2016

Data ważności / *Expiry date*: 19.7. 2019

Wydanie / *Issue*: 1



Ing. Dušan Hanko  
Dyrektor Organu Certifikacji Produktów  
*Head of Product Certification Body*





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