

VIADRUS

VIADRUS HERCULES ECO

MANUAL FOR BOILER OPERATION
AND INSTALLATION



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Dear customer,

We would like to thank you for purchase of automatic boiler VIADRUS HERCULES ECO and for your confidence in ŽDB GROUP a. s., VIADRUS division.

For you to get used to a correct way of handling your new product from the beginning please read at first this operation manual (first of all the chapter no. 8 – Boiler operation by user, the chapter no. 9 – IMPORTANT NOTES and the chapter no. 10 – Maintenance by user). Please follow the undermentioned information in order to guarantee a long-time and trouble-free boiler operation to both your and our satisfaction.

1. Manufactured boiler versions

1.1 Order

There must be specified in the order the following:

Ordering specification code

VIADRUS HERCULES ECO X

Size:

5: 5 sectional fulfilment
10: 10 sectional fulfilment

1. Boiler fulfilment (defined by fuel reservoir position compared with boiler drum from the front view):
 - left version
 - right version
2. Optional accessories (see chapter 4.4.)

The version of the boiler you received is only intended for combustion of wooden pellets (see the specification page 6) and its trade name is **VIADRUS HERCULES ECO**.

The boiler is produced as an hot-water boiler with forced heating water circulation and with working overpressure 400 kPa. Before dispatch of each boiler, it is tested for tightness with testing overpressure 800 kPa.

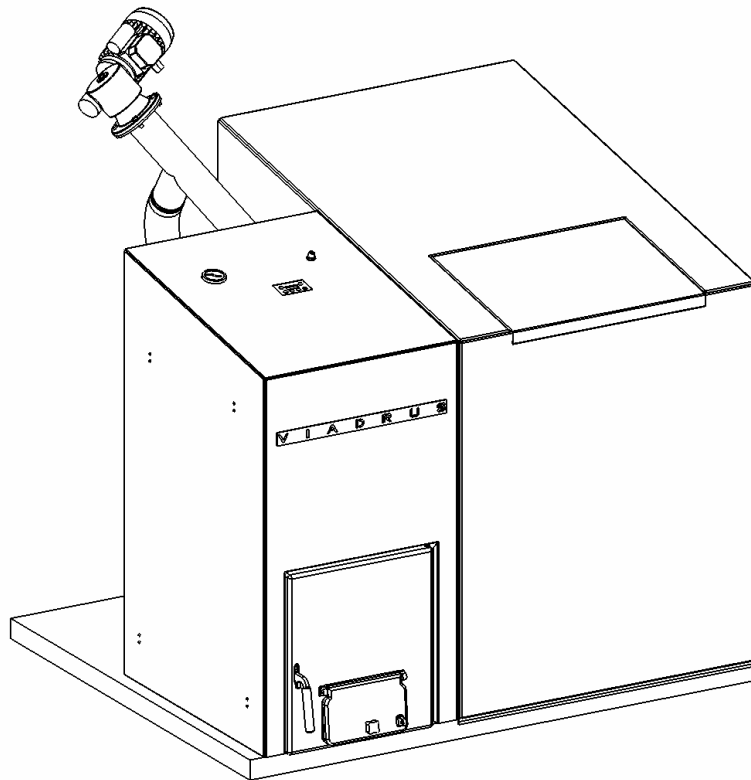
2. Boiler usage and advantages

Boiler usage:

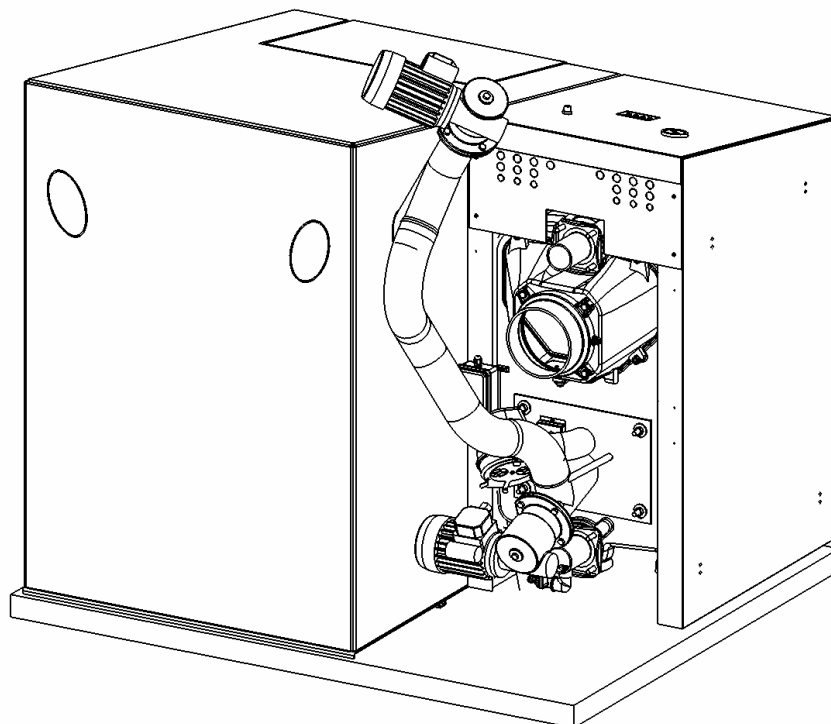
- **5-sectional fulfilment** of boiler VIADRUS HERCULES ECO is designed for heating the individual house units, family houses, cottages and office buildings, small premises and small leisure amenities, ect.
- **10-sectional fulfilment** of boiler VIADRUS HERCULES ECO is designed for heating of medium-sized buildings – shops, schools, leisure amenities, large family houses, ect.

Boiler advantages:

- The automatic boiler operation that guarantees a comfortable heating, equithermal operation of one heating circuit and HWS preparation
- Mechanical fuel supply from any fuel reservoir
- Automatic ignition
- Simple, not time-couming operation and maintenance
- Boiler efficiency achieving up to 84 %
- Low emissions complying with the values defined by „Enviromentally friendly product“ directions
- According to the boiler room layout it is possible to select right-hand or left-hand version of the boiler (according to the fuel reservoir position).
- Long-time proved construction of boiler drum
- Long working life of boiler drum
- 5 years guarantee for boiler body
- Flue gases temperature measurement and monitoring
- Possibility to combine the boiler with solar water heater (in case of the use of relevant software)



Picture no. 1 Front view of boiler VIADRUS HERCULES ECO with fuel reservoir – right version



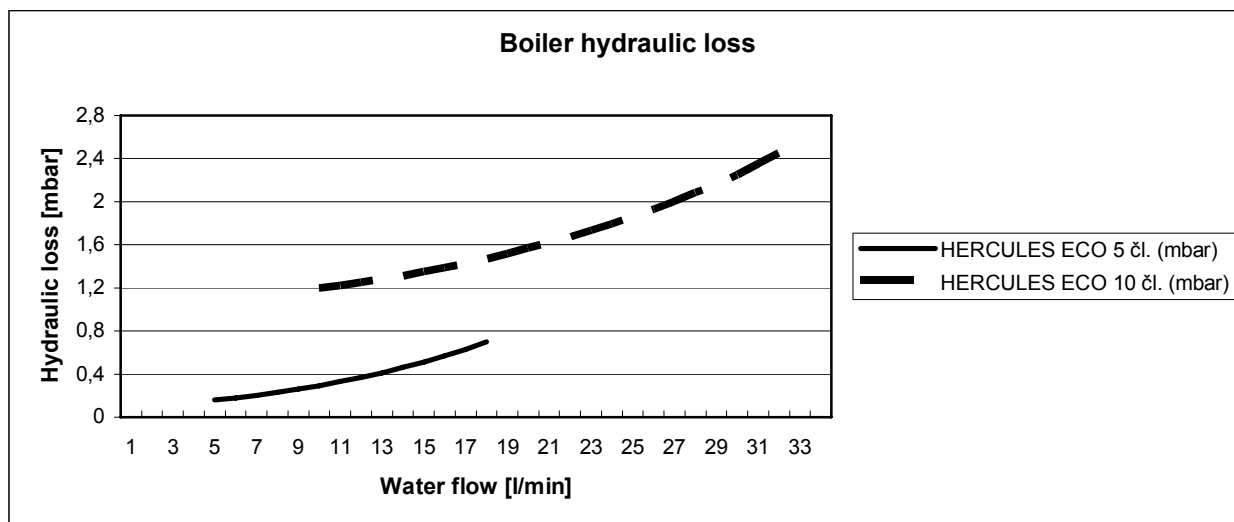
Picture no. 2 Back view of boiler VIADRUS HERCULES ECO with fuel reservoir – right version

3. Boiler technical specifications

Tab. no. 1 Dimensions, thermo-technical specifications of boiler

VIADRUS HERCULES ECO		5 sectional	10 sectional
Nominal output	kW	24	42
Adjustable output	kW	7 – 24	13 - 42
Fuel consumption (Calorific value cca 16,78 MJ.kg ⁻¹)	kg. h ⁻¹	1,8 – 5,9	3,9 – 10,8
Output in „stand-by“ mode	kW	1,5	
Fuel consumption in „stand-by“ mode	kg. h ⁻¹	0,37	
Efficiency	%	83	84,3
Flue gases temperature	°C	110 – 170	110 – 142
Boiler class according to EN 303-5		3	3
Weight	kg	441	645
Water space volume	dm ³	40,9	64,4
Diameter of smoke socket	mm	156	
Capacity of original fuel reservoir	dm ³	555	
	kg	344	
Burning time at nominal output	h	58	32
Burning time at minimum output	h	191	88
Boiler dimensions: width x height x depth	mm	521 x 1064 x 654	521 x 1146 x 1128
Boiler dimensions incl. reservoir: width x height x depth	mm	1321 x 1164 x 1128	
Maximum water working overpressure	kPa	400	
Testing water overpressure	kPa	800	
Minimum heating water temperature	°C	60	
Maximum heating water temperature	°C	90	
Minimum return water temperature*	°C	40	
Chimney draught	Pa	15 – 25	20 – 30
Flue gases mass flow rate at:			
- nominal output	kg. s ⁻¹	0,017	0,032
- minimum output	kg. s ⁻¹	0,011	0,020
Boiler connections - heating water	Js	2 “	
- return water	Js	2 “	
Connecting voltage		1 PEN ~ 50 Hz 230 V TN - S	
Maximum electric input	W	950	
Operating electric input	W	150	
Regulator electric coverage		IP 40	

* By complying the required minimum heating water temperature



Specified fuel:

The pellets must comply at least with one of the following directions or standards:

- Direction no. 14-2000 MŽP ČR
- DIN 517 31
- ÖNORM M 7135

Specified pellets granularity: between 6 and 10 mm

Maximum fuel water content. 12%.

Ash content max. 1,5 %

WARNING! A poor quality of fuel can markedly negatively affect the boiler output and emission parameters

4. Boiler description

4.1 Boiler drum construction

The main boiler component is the cast iron sectional boiler drum made of grey cast iron according to EN 1561

- Front sections – quality 150 (previously ČSN 42 2415)
- Middle and back sections – quality 200 (previously ČSN 42 2420)

The boiler pressure components comply with strength requirements according to the following standards:

EN 303-5 Heating boilers – Part 5: Heating boilers for solid fuel, hand and automatically stocked, nominal heat output of up to 300 kW – Terminology, requirements, testing and marking.

The boiler drum consists of cast-iron sections by means of forced boiler sections and secured by anchor bolts. The boiler sections create a heating chamber and ash pan space, water space and convection section. Ash pan space is divided from heating chamber by solid water cool-grate.

Between the combustion chamber and convection part of heat exchanger there are placed the ceramic plates that regulate burning and that have a positive influence on emission values.

There are inserted turbulators into the convection part of the heat exchanger, whose aim is to decrease the exhaust temperature and thus increase the efficiency of the boiler.

The boiler rear section has in its upper part a smoke adapter and heating water flange (2"), then in lower part the return water flange (2") with a sleeve piece for filling and discharging cocks (G 1/2"). To the front section there are mounted the stoking and ash pan doors; the combustion chamber door is behind them.

The entire boiler drum is isolated by health harmless mineral insulation, which reduces the losses by sharing the heat to surroundings. The steel boiler shell is made up by high-quality powder paint.

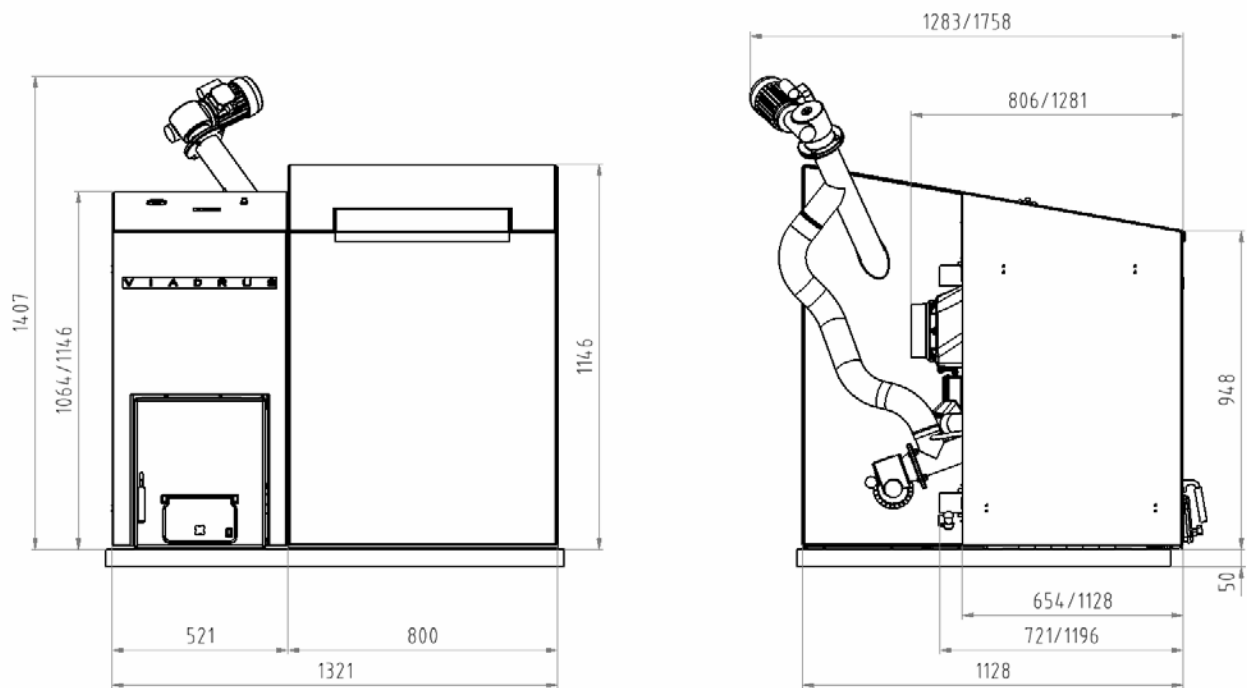
4.2 Construction of combustion chamber and fuel transport lines

The fireplace is made of a longitudinal hollow body of heat resisting steel into which from below and at an angle there is inserted the piping for fuel inlet in which there is the fireplace screw conveyor. This conveyor is interconnected with the pellets reservoir of other height-offset screw conveyor. The hollow body of the fireplace is interconnected with the air inlet directed to the slots in the burner walls.

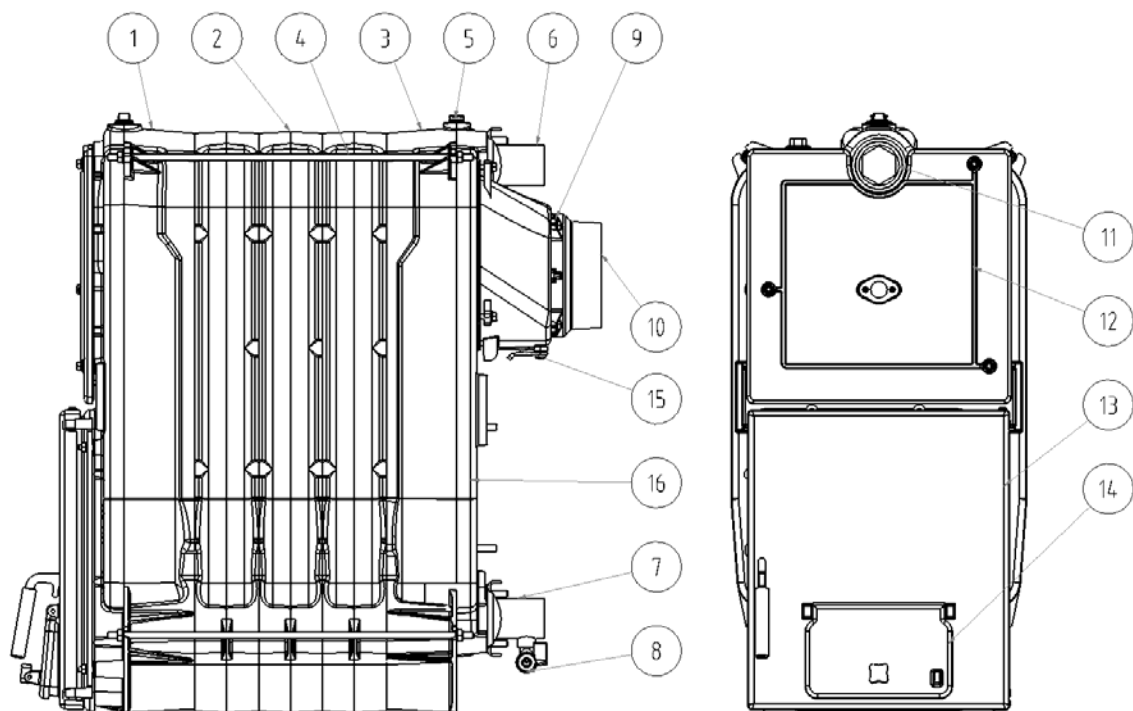
Thanks to a favourable arrangement of the fireplace the functional space is not choked with the combusted material because after the combustion it is continually removed by the mechanical pressure of supplied fresh fuel so that the non-combustible fuel isn't baked through and it is not attached to the walls of the fireplace either. Thanks to a regulated fuel supply (according to the set supply shifts) and the height-offset of screw conveyers the fire penetration of communication is prevented.

The combustion chamber screw conveyor and the fuel reservoir screw conveyor are interconnected by a flex hose.

Combustion chamber is from above covered by a ceramic arch which directs the flames to the secondary air inlets. This results a better burning with a significant reduction in light ash particles.



Picture no. 3 Dimensions of boiler VIADRUS HERCULES ECO
(dimensions mentioned behind slash are valid for 10 sectional version)



- 1 – front section
- 2 – middle section
- 3 – back section
- 4 – anchor bolt
- 5 – three-figure well
- 6 – heating water flange
- 7 – return water flange
- 8 – Filling and discharging cock

- 9 – smoke adapter
- 10 – Smoke adapter socket
- 11 – boiler plug
- 12 – closing plate
- 13 – ash door
- 14 – choking
- 15 – smoke adapter cleaning cover
- 16 – combustion chamber opening

Picture no. 4 Cast-iron boiler drum VIADRUS HERCULES ECO

4.3 Control, regulation and safety elements

The boiler regulator AREKO 10 serves for an automatic control of boiler activities and elements. It processes the input data from the sensors and external control elements (see chap. 8.1) and according to parameters set by the manufacturer or user it controls automatically the boiler activity in required regimes. The regulator also enables to operate the boiler manually which can be advantageously used to boiler commissioning.

A high variability in setting the limit and operating parameters makes it possible for both the manufacturer and user to use fully and effectively the characteristics of automatic boilers for pellets, it means an economical boiler operation, controlled combustion process thus the toxicants content in flue gases minimization.

Safety thermostat is installed in the boiler shell console and its function is to protect the heating system against overheating. It is set on 95 °C by manufacturer, i.e. the temperature higher than temperature which can be set as the required temperature at the boiler. In case of switched off safety thermostat, the fuel conveyors and fan become stopped. The circulating pump is in operation. After the high temperature damps out, it is necessary to restart the boiler by resetting manually the boiler thermostat by pushing its button. In case that the safety thermostat was switched off repeatedly the boiler must be shut down and the reason for repeated boiler overheating must be found out.

ATTENTION!

For boiler control there can only be used the free potential-free contact, switching voltage is 5 V DC.

Thermomanometer serves for determination of heating water output temperature and its pressure in heating system and it is installed in the upper part of boiler shells. The back valve and the well for thermomanometer connection are situated in the upper part of rear boiler section.

Pressure fan for combustion air is mounted directly in combustion chamber body. The combustion air volume is regulated by a throttling flap manually.

Cleaning cover of the smoke adapter positioned in its lower part serves for flue gases ways cleaning..

4.4 Boiler outfit and accessories

A) Standard boiler outfit:

Boiler drum including furniture fittings	1 pc
Upper part of shell	1 pc
Side part of shell	2 pcs
Back part of shell	1 pc
Front part of shell	1 pc
Ash tray	1 pc
Boiler drum insulation	
Thermomanometer support	1 pc
Regulator AREKO 10 support	2 pc
Regulator AREKO 10 cover	1 pc
Sleeve HEYCO	21 pcs
Bushing PG 9	6 pcs
Bushing PG 11	8 pcs
Inlet PG 13,5	3 pcs
Ceramic plate central	2 pcs/3 pcs
Ceramic plate central with risers	0 pc/3 pcs
Ceramic plate outer	1 pc/1 pc
Ceramic plate frontal	1 pc
Turbulator	4 pcs
Combustion chamber including chamber screw conveyor and ignition	1 pc
Inter-flange	1 pc
Combustion chamber ceramic arch	1 pc
Flexible hose	1 pc
Fuel reservoir screw conveyor	1 pc
Regulator AREKO 10	1 pc
Pressure fan with cover including fan rescription	1 pc
Brush handle	1 pc
Cinder hook	1 pc
Operation and instalation manual	1 pc

Production plate	1 pc
Safety thermostat	1 pc
Boiler output sensor (B1)	1 pc
Combustion temperature sensor (B2)	1 pc
Package (see. point B)	1 pc
• Fuel reservoir 555 l	
Base of fuel reservoir	1 pc
Back part of fuel reservoir	1 pc
Left side of fuel reservoir	1 pc
Right side of fuel reservoir	1 pc
Front side of fuel reservoir	1 pc
Upper part of fuel reservoir	1 pc
Cover of fuel reservoir	1 pc
Inner plate with bend	1 pc
Inner plate flat	1 pc
Inner plate – triangle	1 pc
Screw with cylindrical head and cross-race M5x14	34 pcs
Screw with raced cylindrical head M5x10	22 pcs
Washer 5	22 pcs
Hexagonal nut M5	22 pcs
Linking spine	4 pcs
Spring clamp	4 pcs
Washer 6	4 pcs
Screw with raced cylindrical head m6 X 16	2 pcs
Hexagonal nut M6	2 pcs

Notes: Quantity mentioned behind the slash is valid for 10 sectional version.

B) Accessories in package:

Rosette blind 6/4"	2 pcs
Sealing Ø 60x48x2 mm	2 pcs
Thermomanometer	1 pc
Logo VIADRUS	1 pc
SK tape Ø 70 - 90	2 pcs
Heating water flange	1 pc
Return water flange	1 pc
Nut M8	12 pcs
Washer 8	12 pcs
Sealing Ø 90x60x3 mm	2 pcs
Elbow 1/2"	1 pc
Filling and discharging cock 1/2"	1 pc
Wall plug 8 mm (type 63158)	2 pcs
Straight threaded hook 5 x 60 (typ 17120)	2 pcs
Brush	1 pc
Point	1 pc
Manipulation key	1 pc
Capillar spring	1 pc
Service box ABB	1 pc
Linking spine	8 pcs
Spring clamp	8 pcs
Self-drilling screw ST 4,2 x 13	6 pcs
Screw with cylindrical head and corss-race M5x10	8 pcs
Wire clapm self-adhesive	4 pcs
Binding tape	5 pcs
Fan choking	1 pc
Countersink screw M4x6	4 pcs
Boiler binding material	

*** Regulator AREKO 10 – SOFTWARE VERSION: HEATING CIRCUIT+ HWS HEATING**

Outside temperature sensor (B3)	1 pc
Heat line temperature sensor (B4)	1 pc
Domestic hot water temperature sensor * (B5)	1 pc
Room temperature sensor (B6)	1 pc

*** Regulator AREKO 10 – SOFTWARE VERSION: HEATING CIRCUIT+ SOLAR HEATER**

Outside temperature sensor (B3)	1 pc
Heat line temperature sensor (B4)	1 pc
Bottom part of reservoir temperature sensor (B7)	1 pc
Solar heater temperature sensor * (B8)	1 pc

* depends on required fulfilment

5. Positioning and instalation

5.1 Rules and regulations

The solid fuel boiler can only be installed by a company authorized to mount these equipments. A project according to valid regulations must be designed for installation.

The heating system must be filled with water that meets the requirements ČSN 07 7401, especially its hardness can not exceed the required parameters.

Recommended values		
Hardness	mmol/l	1
Ca ²⁺	mmol/l	0,3
Total Fe + Mn concentration	mg/l	(0,3)*

*) Recommended value

WARNING!!! The use of anti-freeze mixture is not recommended by the manufacturer.

a) to the heating system

ČSN 06 0310	Heating systems in buildings – Designing and installation
ČSN 06 0830	Heating systems in buildings – protecting device
ČSN 07 7401	Water and steam for thermal energy equipments with working pressure up to 8 MPa
EN 303-5	Heating boilers – Part 5: Heating boilers for solid fuele, hand and automatically stocked, nominal heat output of up to 300 kW – Terminology, requirements, testing and marking

b) to the chimney

ČSN 73 4201	Chimneys and flue gas ducting– designing, implementation and connection of fuel consumers.
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We recommend to connect the VIADRUS HERCULES ECO boiler to smoke-flue diameter min. 160 mm. The chimney draught can not be less than 15 – 30 Pa – see tab. No. 1.

c) regarding the fire regulations

ČSN 06 1008	Fire safety of heat installations.
EN 13501-1	Fire classification of construction products and building elements – Part 1: Classification using test data from reaction to fire tests

d) to the electrical network

ČSN 33 0165	Electrical regulations. Marking the conductors with colours or digits. Implementing regulations.
ČSN 33 1500	Electrical regulations. Electrical equipments revision
ČSN 33 2000-3	Electrical regulations. Electrical equipments Part 3: Setting the basic characteristics.
ČSN 33 2000-4-41	Electric equipments: part 4: Safety chap. 41: Protection against electrical accident.
ČSN 33 2000-5-51 ed. 2	Electrical regulations. Electrical equipments construction.
ČSN 33 2130	Electrical regulations. Internal wiring.
ČSN 33 2180	Electrical regulations. Connection of electrical devices and appliances.
ČSN 34 0350	Electrical regulations. Regulations for mobile connections and cord extension sets.
EN 60 079-10	Electrical apparatus for explosive gas atmospheres – Part 10: Classification of hazardous areas.
EN 60 252-1	AC motor capacitors – Part 1: General – Performance, testing and rating – Safety requirements – Guide for installation and operation.
EN 60 335-1 ed.2	Household and similar electrical appliances – Safety – Part 1: General requirements.
EN 60 335-2-102	Household and similar electrical appliances – Safety – Part 2-102: Particular requirements for gas, oil and solid-fuel burning appliances having electrical connections.
EN 60 445 ed. 3	Basic and safety principles for man – machina interface, marking and identification – Identification of equipment terminals and conductor terminations.

e) to the system of HWS heating

ČSN 06 0320

Heating systems in buildings – Hot water preparation – Designing and planning

ČSN 06 0830

Heating systems in buildings – Safety devices.

ČSN 73 6660

House water plumbing

5.2 Positioning possibilities

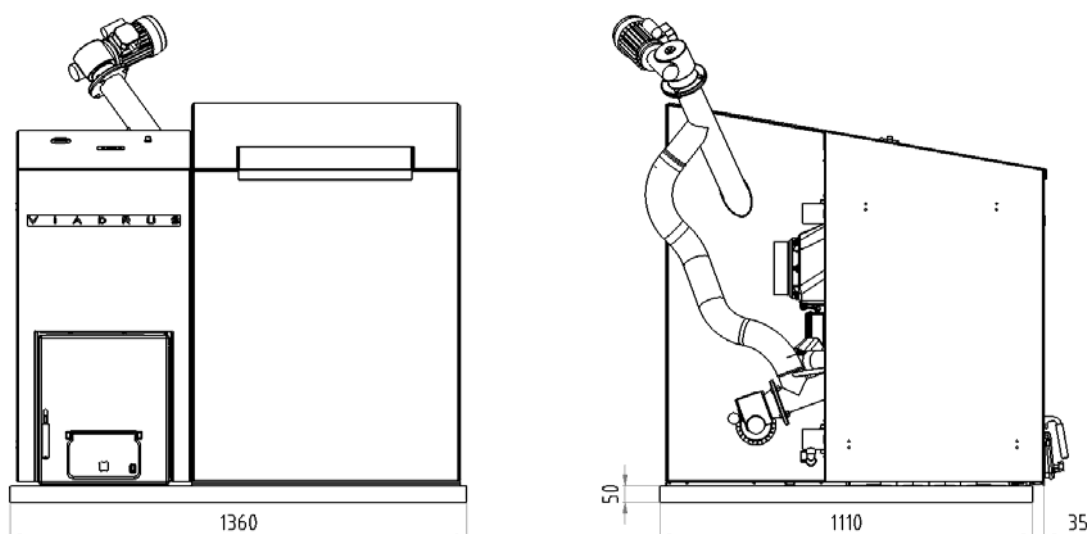
The boiler is equipped with a movable mains supply and a plug. The boiler must be according to EN 60 335 – 1 ed. 2 Art. 7.12.4 positioned in a way making sure that the plug is accessible.

Boiler positioning respecting the fire regulations:

Hercules ECO boilers is approved for installation in non-residential premises (e.g. cellars, corridors, ect.)

1. Positioning on the floor made of fireproof material (see picture no. 5)

- Place the boiler on the fireproof base exceeding the boiler platform on sides about 20 mm.
- If the boiler is placed in a cellar, we recommend to install it on base wall minimum 50 mm high. The boiler must be installed horizontally.



Picture no. 5 Dimensions of the boiler drum wall base

2. Safety distance from combustible materials

- When installing and operating the boilers, there must be kept safety 200 mm distance from combustible material with combustibility degrees B, C₁ a C₂ (according to ČSN 06 1008)
- For easily combustible materials with combustibility degree C₃, that burn quickly and by themselves after the ignition inspite of ignition source removal (e. g. Paper, millboard, stiff paper, asphalt and tar boards, wood and wood-fibre plates, plastic materials, floor materials) the safe distance is doubled, it means to 400 mm.
- Safety distance is necessary to double also in case that combustibility degree of building material wasn't proved.

Boiler positioning with regard to the necessary handling space:

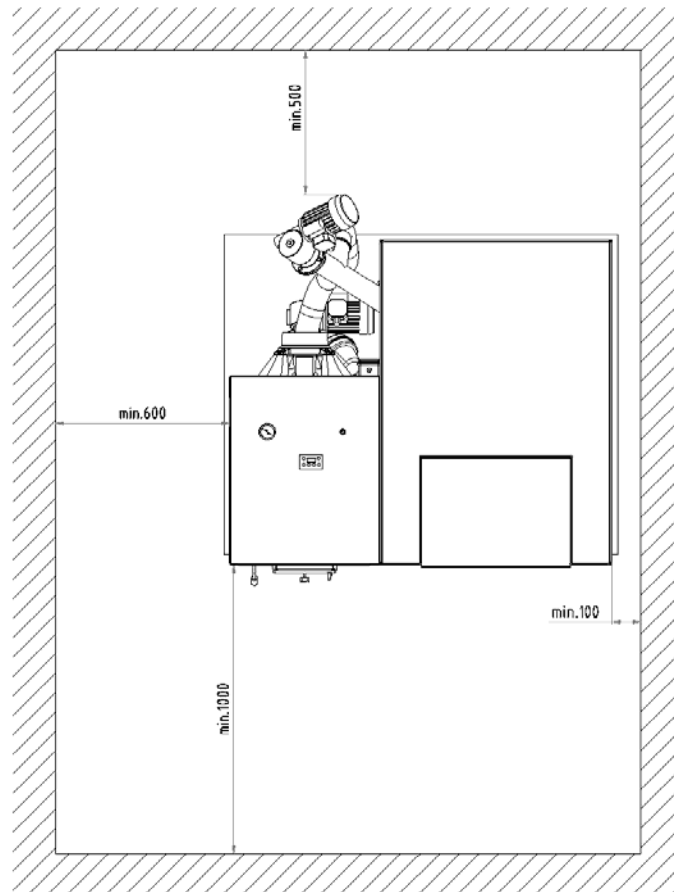
- Basic setting AA5 / AB5 according to ČSN 33 2000-3
- Minimum boiler-room height 2 100 mm

Boiler positioning with regard to the electricity network:

- Boiler must be installed in a way making sure that the plug in socket (230 V/50 Hz) is always accessible.
- Boiler is connected to el. Network by a wired in and movable cord terminated by a standardized plug.
- Protection against electric shock must be provided according to valid rules EN (see chapter. 5.1.)

Tab. no. 2 Combustibility degrees of building materials and products

Combustibility degree of building materials and products	Building materials and products ranked in combustibility degree (extract from EN 13 501-1)
A – fire-resistant	granite, sandstone, concretes, bricks, ceramic tiles, mortar, fireproof plasters,...
B – hardly combustible	acumin, izumin, heraklit, lignos, boards and basalt felts, fibreglass boards,...
C₁ – uneasily combustible	Beech wood, oak boards, hobrex, plywood, werzalit, umakart, sirkolit,...
C₂ – medium combustible	Pine-wood, larch, whitewood, plywood and cork boards, rubber flooring,...
C₃ – easily combustible	Asphalt board, fireboards, cellulose materials, polyurethane, polystyrene, polyethylen, PVC, ...



Picture no. 6 Boiler VIADRUS HERCULES ECO positioning in boiler-room

Fuel positioning:

- **For a correct fuel combustion in the boiler here must be used dry fuel** (up to 12% moisture). We recommend to store the pellets in their original package from manufacturer (PET bags) on a dry place.
- It is impossible to store the fuel behind the boiler or to store in next to the boiler in less distance than 400 mm
- The manufacturer recommends to keep min. 1000 mm distance between the boiler and fuel or to store the fuel in another room than where he boiler is installed.

The room, where the boiler is installed, must be provided with the permanent air supply for combustion and possible ventilation (the air consumption of VIADRUS HERCULES ECO/5 boiler is approx. 80 m³ · h⁻¹ (the air consumption of VIADRUS HERCULES ECO/10 is approx. 160 m³ · h⁻¹).

The heating system piping connection must be done by a person authorized according to regulations.

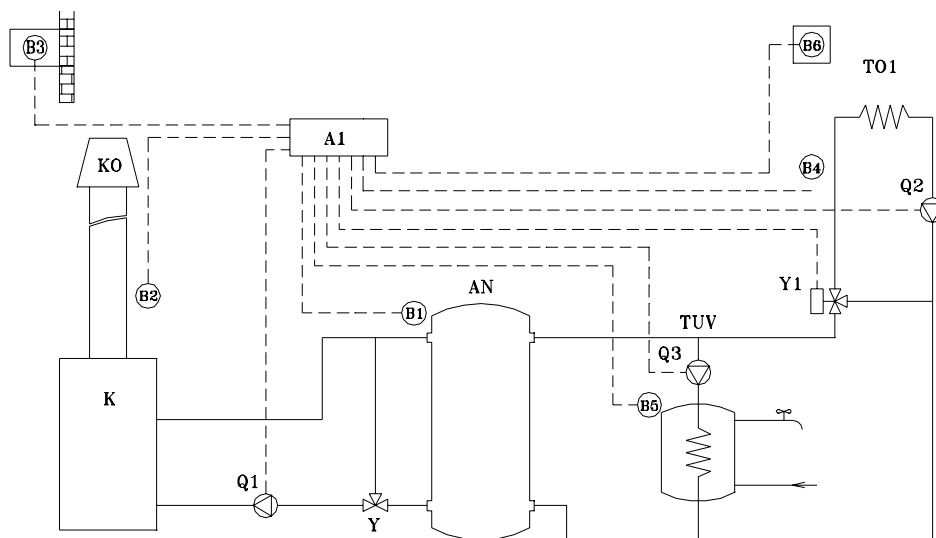
! WARNING !: There must be installed at the boiler connection to the heating system a discharge cock at the lowest point and as close as possible to the boiler.

6. Boiler assembly

6.1 Boiler drum installation

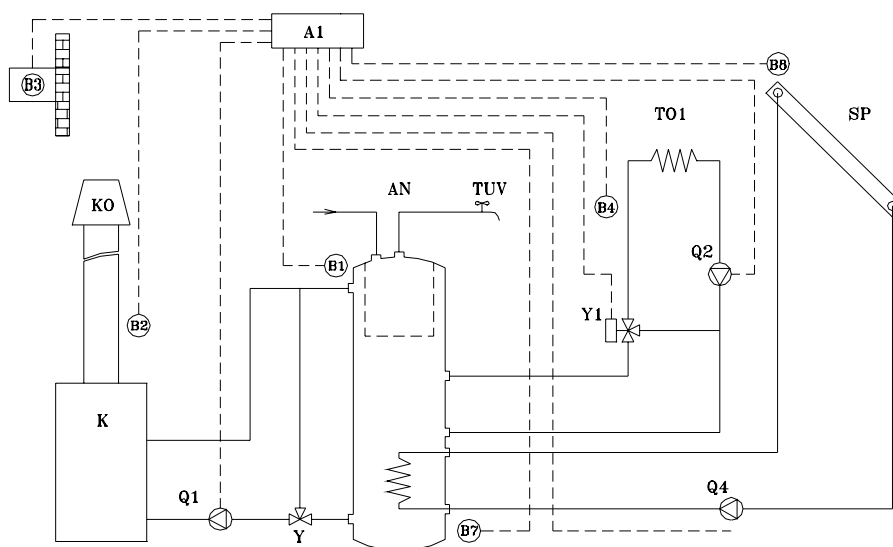
1. Set up the boiler drum on bedding (see picture no. 5).
2. Set the sealing $\phi 90 \times 60 \times 3$ to the flanged upper part of the rear boiler section and mount the heating water flange (see picture no. 4). Beforehand weld the flange to the heating water distribution system
3. Set the sealing $\phi 90 \times 60 \times 3$ to bottom flanged part of the boiler rear section and fasten the return water flange with a socket for filling and discharging cock (see picture no. 4). Beforehand weld the flange to the return water distribution system. In order to guarantee the boiler protection against the low-temperature corrosion we recommend to install a thermostatic valve to the heating system.

VIADRUS HERCULES-ECO – REGULATOR AREKO 10
SOFTWARE VERSION: HEATING CIRCUIT+ HOT WATER SERVICE HEATING



A1	regulator AREKO 10
B1	output water temperature sensor
B2	flue gases temperature sensor
B3	outdoor temperature sensor
B4	heating circuit temperature sensor
B5	HWS temperature sensor
B6	reference room temperature sensor
Q1	primary boiler circuit pump
Q2	heating circuit pump
Q3	HWS circuit charging pump
Y	thermostatic valve
Y1	mixing valve
K	boiler
AN	storage reservoir
TUV	HWS reservoir
TO1	heating circuit
K0	chimney

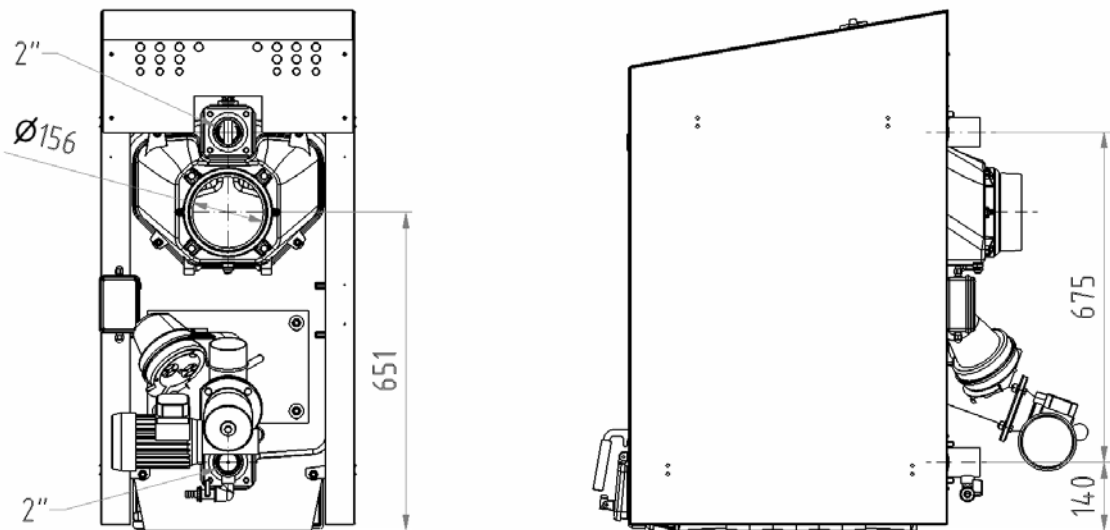
VIADRUS HERCULES-ECO – REGULATOR AREKO 10
SOFTWARE VERSION: HEATING CIRCUIT+ SOLAR HEATER



A1	regulator AREKO 10
B1	output water temperature sensor
B2	flue gases temperature sensor
B3	outdoor temperature sensor
B4	heating circuit temperature sensor
B7	storage reservoir bottom part temperature sensor
B8	temperature sensor in solar panel
Q1	primary boiler circuit pump
Q2	heating circuit pump
Q4	solar circuit pump
SP	solar panel
Y	thermostatic valve
Y1	mixing valve
K	boiler
AN	storage reservoir
TUV	hot water service heating
TO1	heating circuit
K0	chimney

Picture no. 7 Recommended (ideological) diagram of boiler connection to the heating system

4. For boiler connection to the heating system there must be screwed an elbow with filling and discharging cock to the return water flange socket (see. Picture No. 4.)

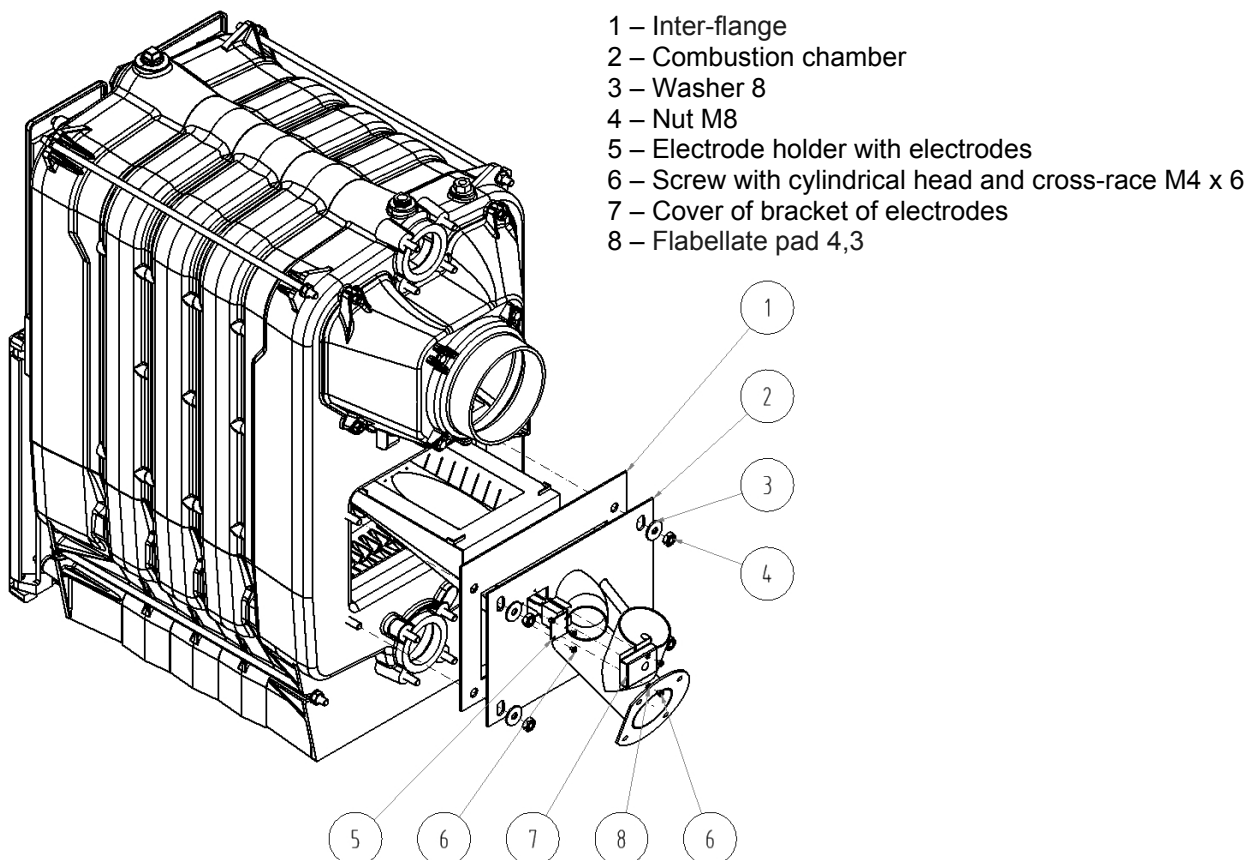


Picture no. 8 Connecting dimensions of VIADRUS HERCULES ECO boiler

5. Set the smoke pipe to the smoke adapter and insert it into the chimney opening.
6. Blind the two openings threaded Js 6/4" in front section using the Js 6/4 plugssealing ϕ 60 x 48 x 2.

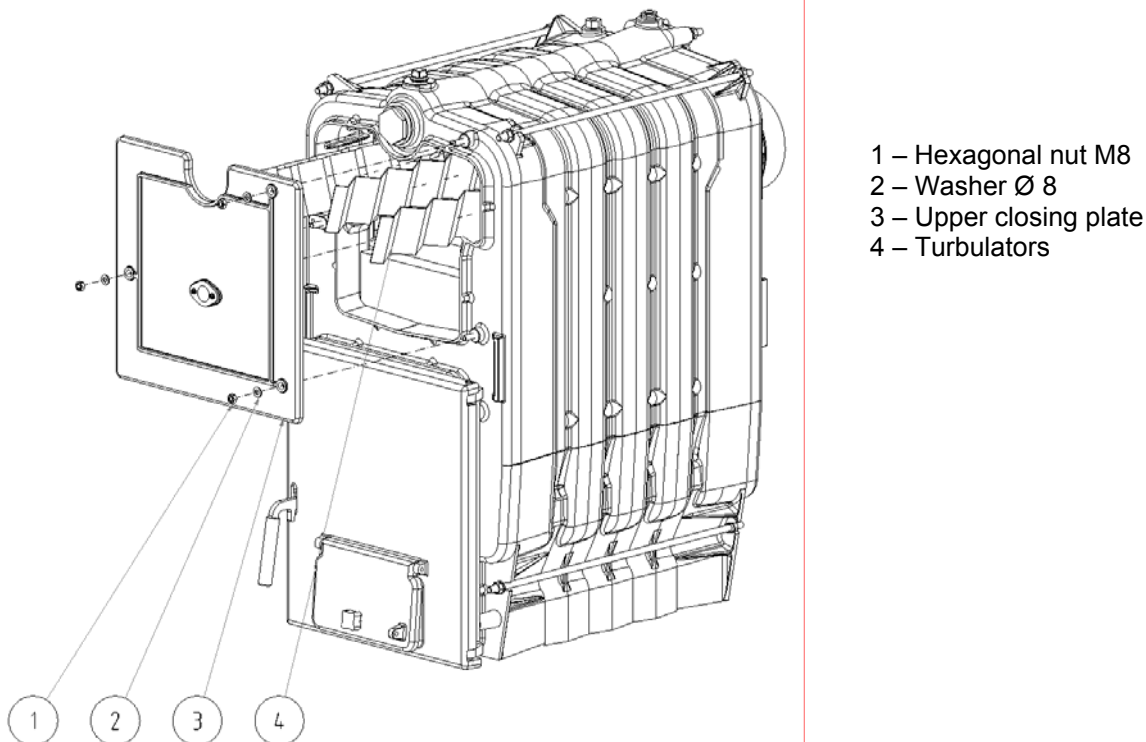
6.2 Combustion chamber and fuel transport lines assembly

1. Apply the silicon sealant to the inter-flange(between the flange and the section) and put it on 4pc stud bolts M10 on the rear boiler section. Then apply the silicon sealant to the rectangular bearing surface of the combustion chamber and put the unit on 4pc stud bolts M10 on the inter-flange a on the rear boiler section. The combustion chamber fasten by nuts with washers (according to the picture nr. 9). The inter-flange must be positioned between the rear section and the burner.
2. Carry out the assembly of ignition according to picture nr. 9. Measure the resistance value of ignition electrodes (circuit resistance \div 150 Ω , dielectric resistance $>$ 2 M Ω).



Picture no. 9 Combustion chamber and ignitron assembly

3. Carry out the disassembly of upper closing plate (see pict. 10).

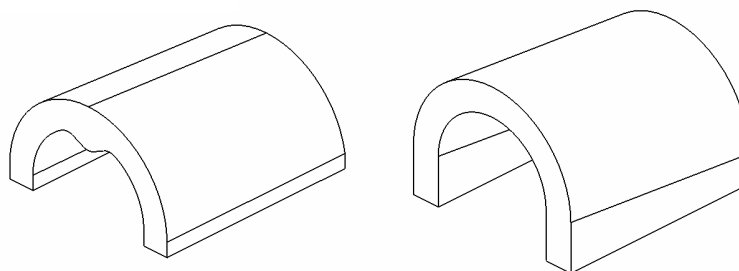


Picture no. 10 Disassembly of upper closing plate and turbulators insertion

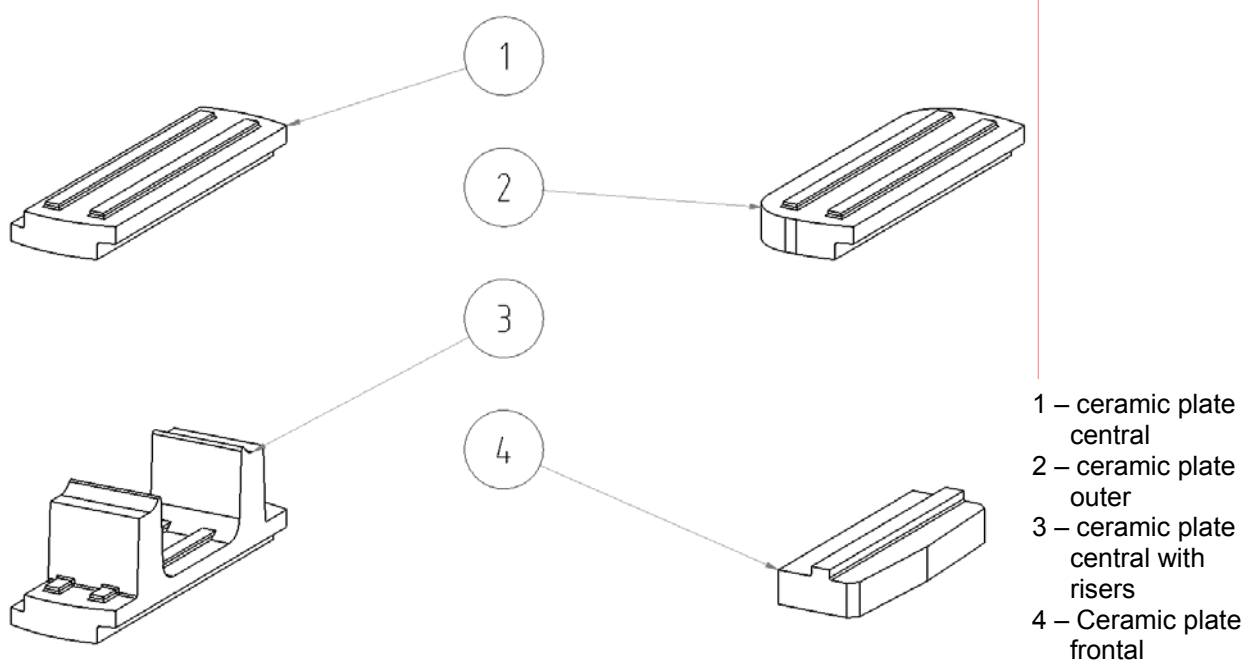
4. Insert 4 pcs of turbulators (see picture No. 10) into the combustion space behind the upper closing plate into the convectional part of cast-iron exchanger (4 channels of combustion ways).
5. Insert the ceramic arch (picture No. 11 Ceramic arch) into the combustion chamber and settle it down on combustion chamber with open part in front (see picture No. 13 and 14). For VIADRUS HERCULES ECO boiler exist 4 types of ceramic plates (see Tab. No. 3 and picture no. 12). Setting down of ceramic plates do according picture no. 13 and 14. By setting the ceramic plates it is necessary to pay attention to put the ceramic plates properly on risers of sections and fit the nicks of ceramic plates together. It is possible to seal the possible untightness by boiler sealing material with resistance up to 1200 °C (e.g. ZWALUW) or by pyrobeton.

Ceramic arch
for 5 sec. boiler.

Ceramic arch
for 10 sec. boiler



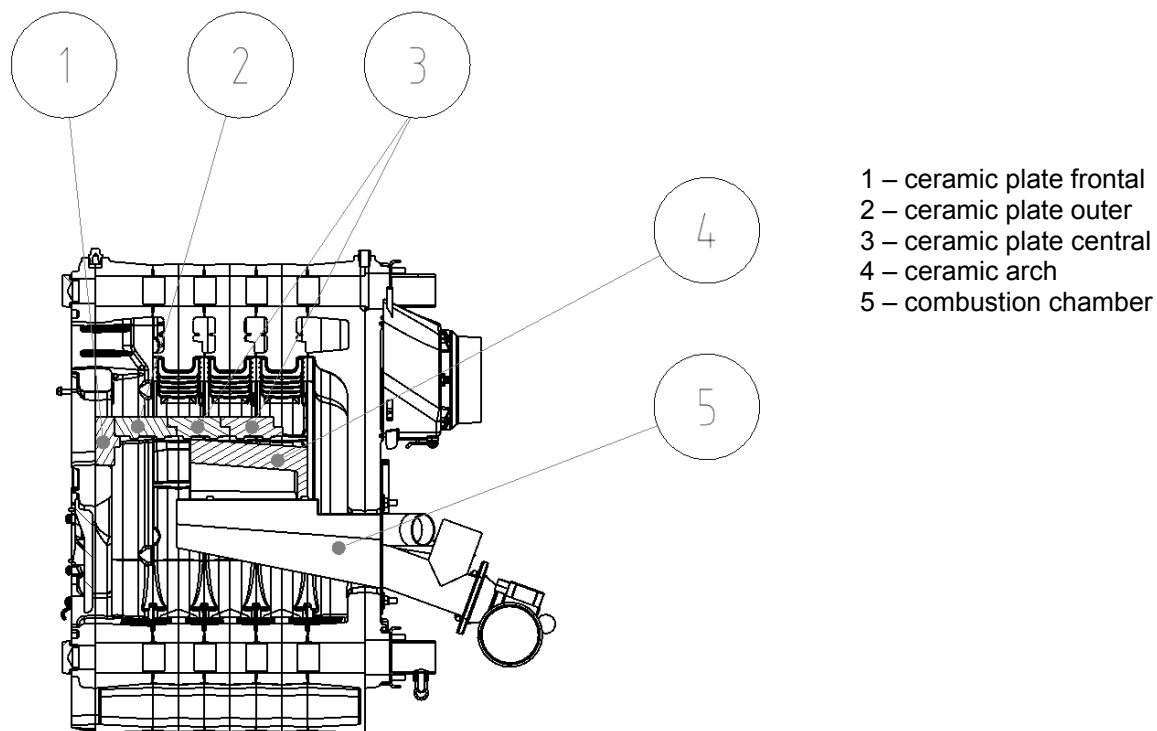
Picture no. 11 Ceramic arch



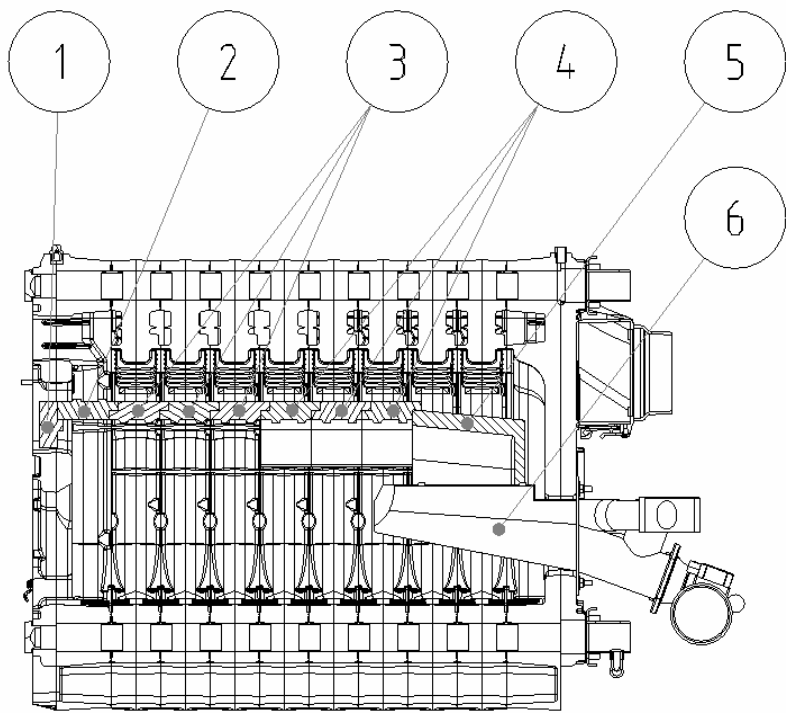
Picture no. 12 Ceramic plates shape

Tab. no. 3 Number of ceramic plates for individual sizes of boilers

Boiler size	5 sections	10 sections
Ceramic plate central with risers	0	3
Ceramic plate central	2	3
Ceramic plate outer	1	1
Ceramic plate frontal	1	1



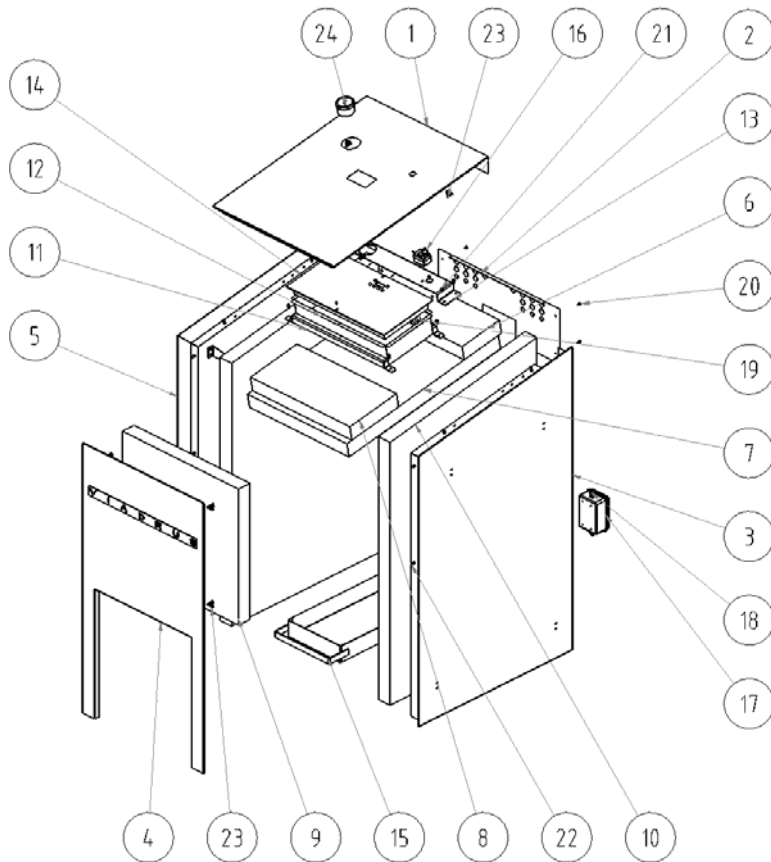
Picture no. 13 Ceramic plates mounted in 5 sectional boiler drum



- 1 – ceramic plate outer
- 2 – ceramic plate frontal
- 3 – ceramic plate central
- 4 – ceramic plate central with risers
- 5 – ceramic arch
- 6 – combustion chamber

Picture no. 14. Ceramic plates mounted in 10 sectional boiler drum

6.3 Shell and regulator assembly

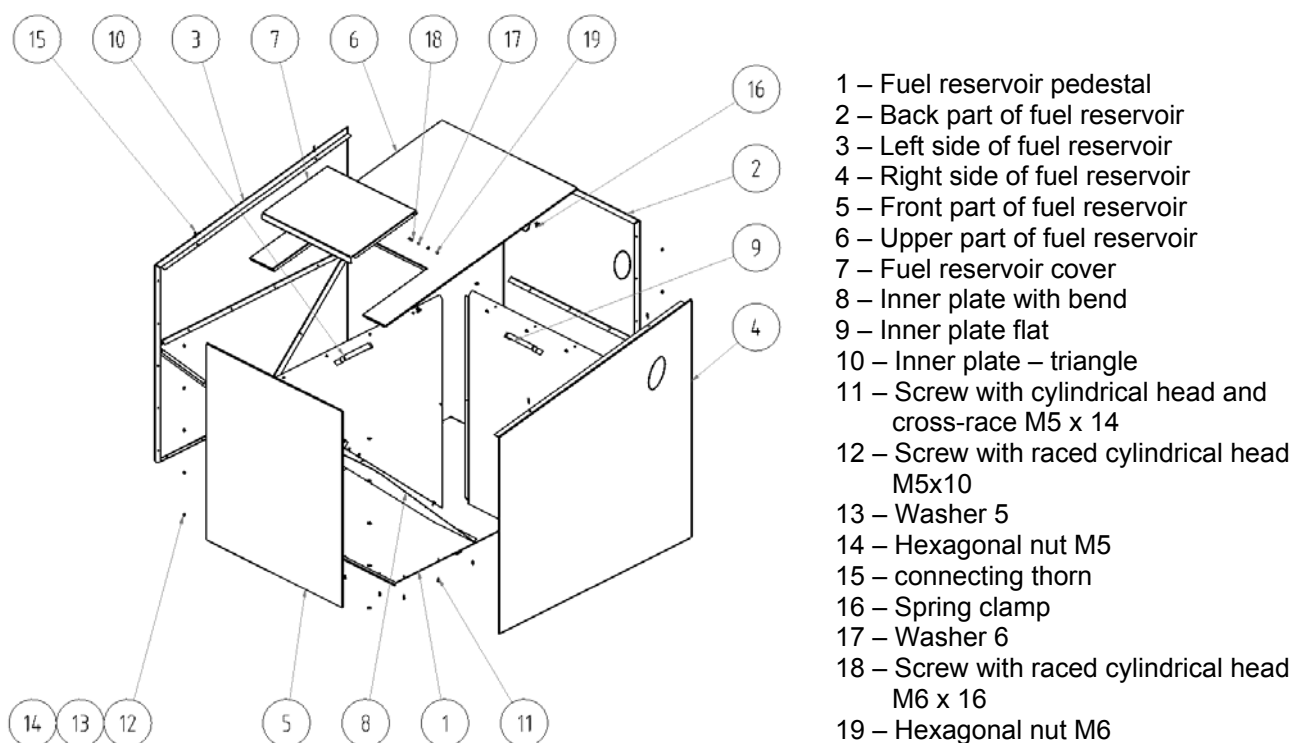


- 1 – upper part of shell
- 2 – back part of shell
- 3 – right side part of shell
- 4 – front part of shell
- 5 – left side part of shell
- 6 – insulation of back upper part of boiler
- 7 – insulation of upper part of boiler
- 8 – insulation of front upper part of boiler
- 9 – insulation of front shell part
- 10 – insulation of side shell part
- 11 – regulator AREKO 10 bracket
- 12 – regulator AREKO 10 cover
- 13 – thermomanometer bracket
- 14 – regulator AREKO 10
- 15 – ash tray
- 16 – safety thermostat
- 17 – distributing box ABB
- 18 – entry bush PG 9
- 19 – bushing
- 20 – screw for metal 4,2 x 9,5
- 21 – screw M5 x 10
- 22 – connecting thron
- 23 – spring hold
- 24 – thermomanometer

Picture no. 15 Shells and regulator assembly

1. Take the shells out of cardboard.
2. Fasten the connecting thorns (22) to the appropriate openings of side part of shell (both front openings, on upper side of outer opening).
3. Insert the insulation to the side parts of shell (3+10, 5+10). Ease the bottom anchor bolts, put the brackets of side parts of shell. Insert the front brackets among the washers with nuts and the body of front section, the back brackets insert directly on anchor bolts. Set the supporting trims of shells on anchor bolts by rising up. Nuts of bottom anchor bolts appropriately tighten.
4. Insert the spring holds (23) to the front and upper part of shell (4 and 1).
5. Force down the front part of shell on side parts and through the use of screws (20) fasten the back part of shell (2). Insert the appropriate quantity of bushing into the back part of shell.
6. Put the upper insulation (7) on the boiler. By use of screws, fasten the brackets (11 and 13) to the side parts of shell. The thermomanometer opening (the bigger one with cog) should be placed on the left side. Put on the boiler the front and back insulation (8 and 6).
7. To the thermomanometer bracket screw up by using screws (21) the safety thermostat (16) and insert the thermomanometer itself. The safety thermostat capillar insert to the well in the upper middle part of boiler section, thermomanometer sensor screw down to the back valve or manometer in the rear section of boiler drum. The sensors in the well fasten by spring.
8. Carry out the regulator AREKO 10 connection according to the manual for regulator AREKO 10 operation.
9. Put the upper part of shell on the side parts.
10. Regulator AREKO and sensors mounting according to electrical scheme (see chapter 6.6)

6.4 Fuel reservoir assembly



Picture no. 16 Fuel reservoir assembly

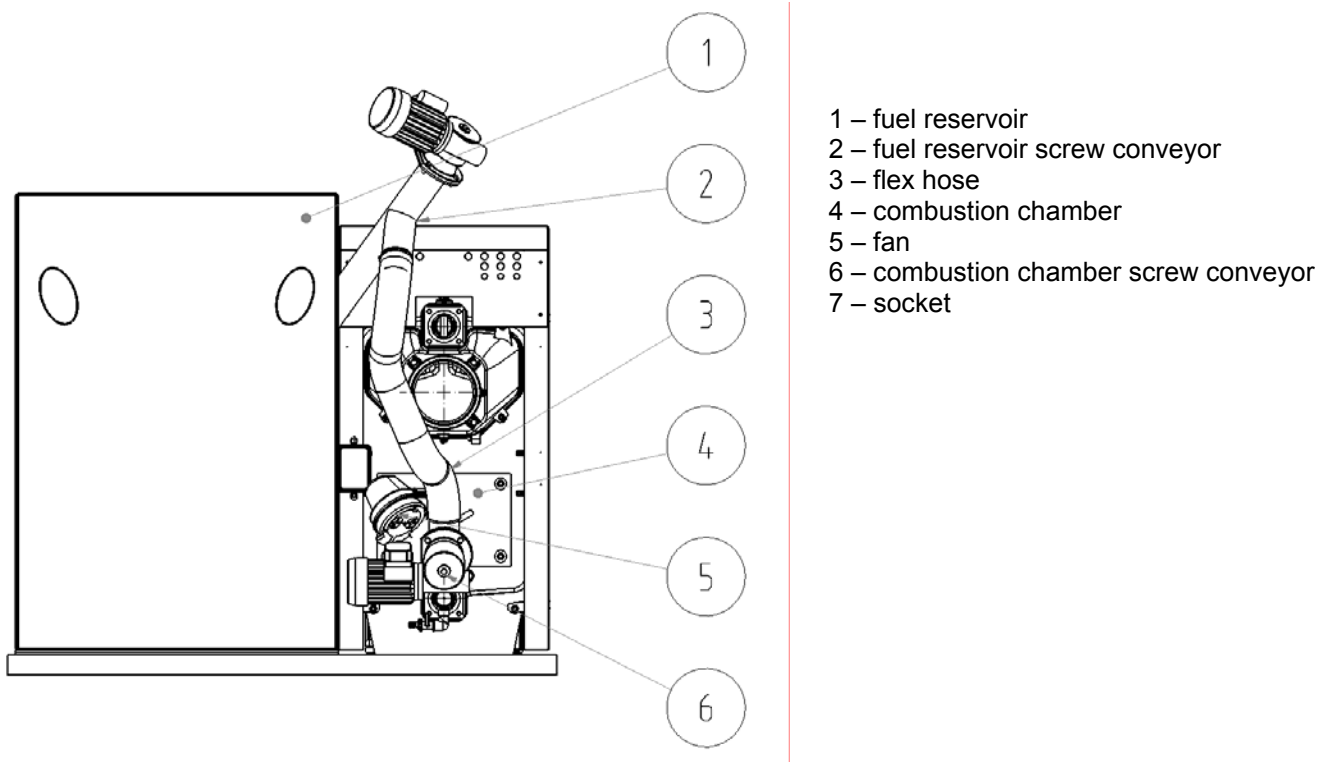
1. According to the position of fuel reservoir break out the opening for screw conveyor – in one of side part (5 sections) or in the rear part (for 10 sections). The opening must be on the side of the boiler
2. Gradually screw down the front part (5), left and right side part (3,4) and rear part (2) to the pedestal (1) by using nuts M5x14 (11). The walls must be connected by nuts M5 x 10 with washers and nuts.
3. According to the selected option of lay-out boiler-fuel reservoir, insert and by using screws M5 x 14 (11) screw down the inner plates of fuel reservoir in the sequence: bend (8), flat (9), triangle (10). The aim is to place the part „triangle“ on the side of boiler
4. Upper part (6) connect with cover (7) using screws M6 x 16 (18), washers (17) and nuts M6 (19).
5. Screw down the connecting thorns to the side parts. Insert the spring clamps (16) into the upper part.
6. Cover up the fuel reservoir by ready-made upper part.

6.5 Fuel transport lines assembly

1. Position the fuel reservoir on the required place next to the boiler (see picture no. 3 and 6). Insert through an opening in the fuel reservoir side a set of fuel reservoir screw conveyor. Connect the combustion chamber screw conveyor with fuel reservoir screw conveyor through a flex hose and secure the both ends by the sleeves against slippage. (see picture nr. 17).

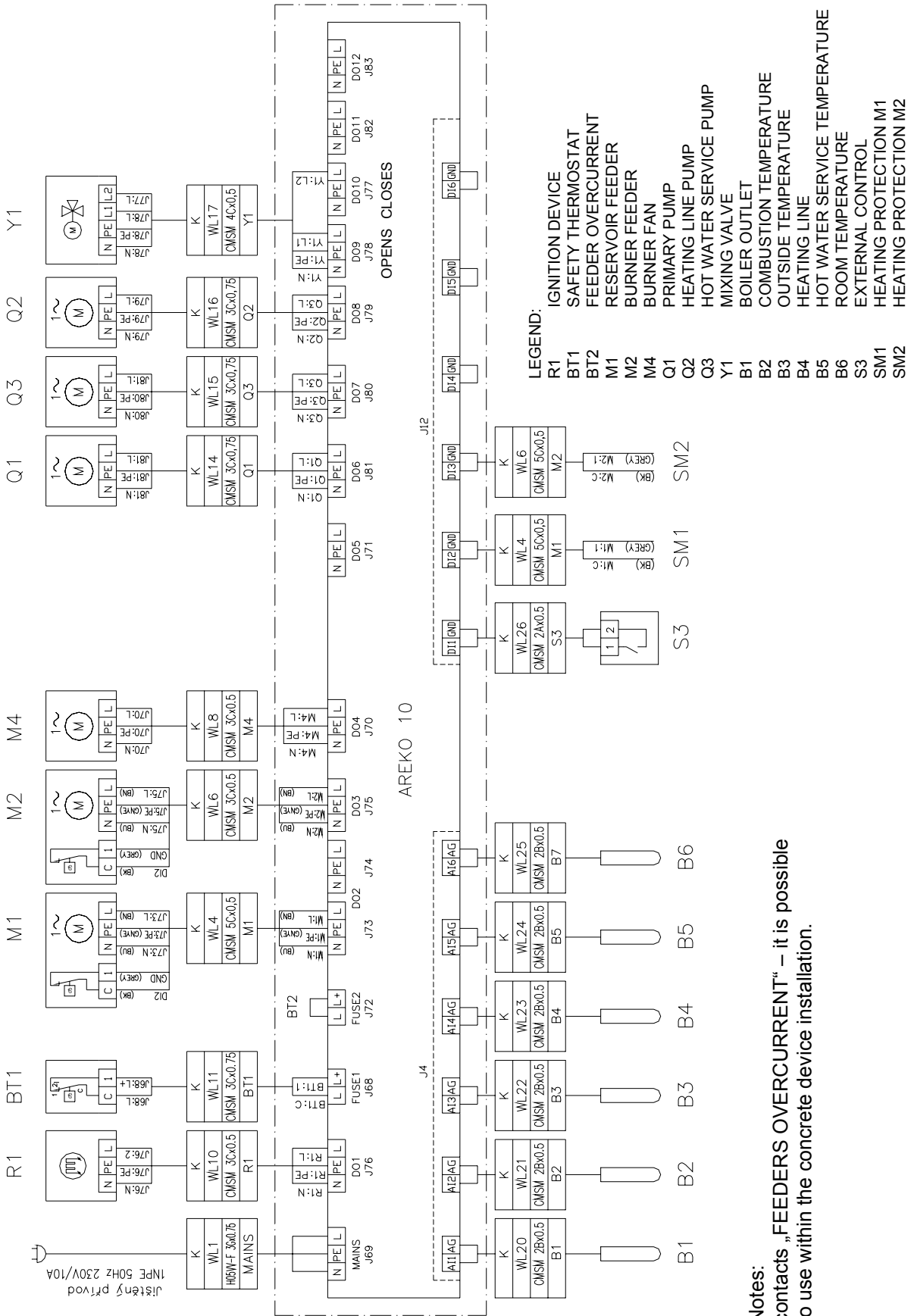
ATTENTION! The fuel reservoir screw conveyor must be mounted in a way making sure that there is a sufficient gradient of flex hose against the pellets falling freely on the combustion chamber screw conveyor without stopping the hoses with pellets.

2. Mount the combustion air ventilator on the combustion chamber sleeve with the choke valve screwed ahead on the ventilator suction side. In order to prevent the ventilator from movement we recommend at the assembly to bore together the ventilator with the sleeve and secure it with a bolt (or rivet).
3. To carry out the electric interconnection of engines and ventilator with regulator see electrical scheme.



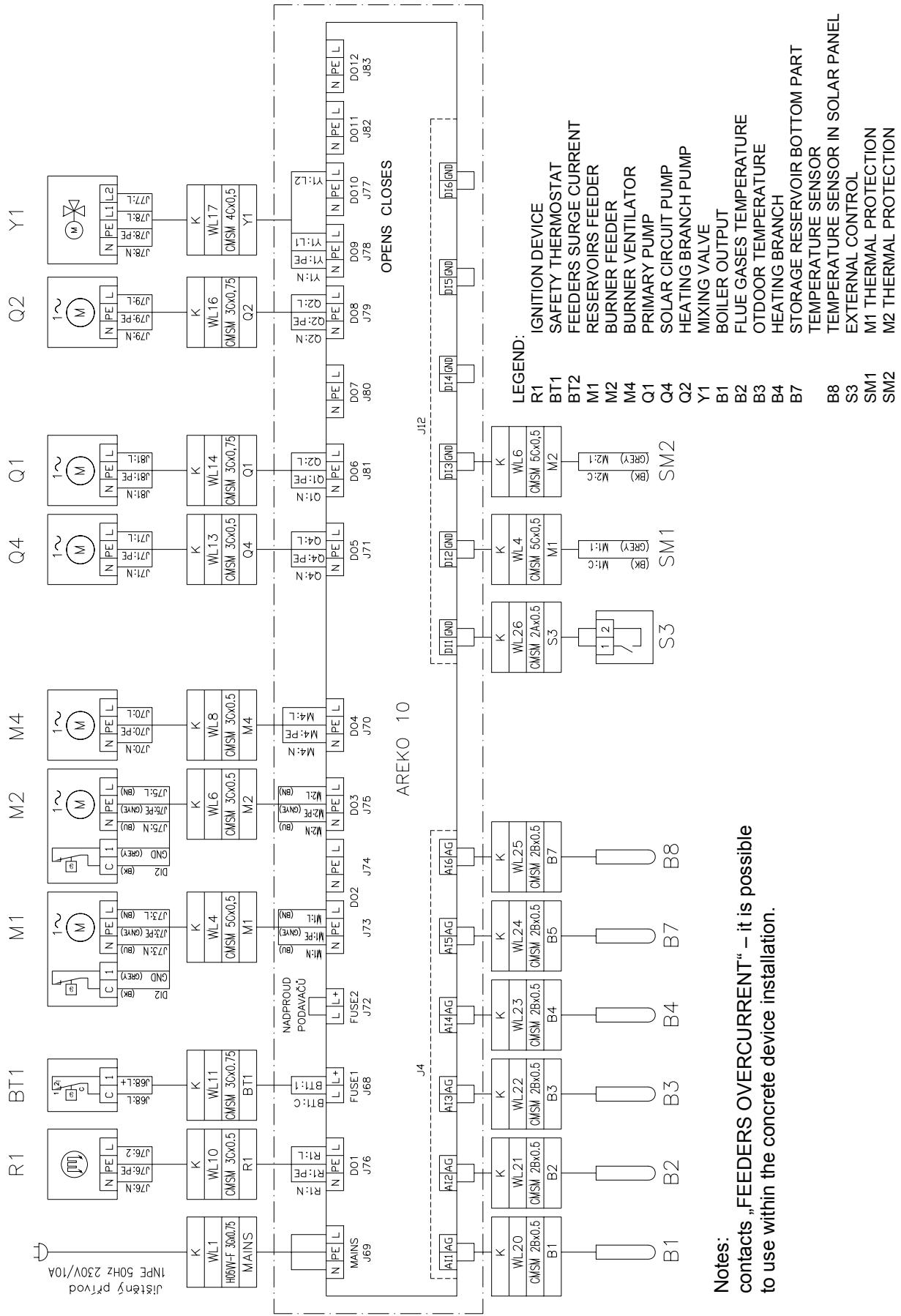
Picture no. 17 VIADRUS HERCULES ECO transport line assembly

6.6 Electrical scheme



Notes:
 contacts "FEEDERS OVERCURRENT" – it is possible to use within the concrete device installation.

Connection scheme of HERCULES ECO-HWS (HEATING CIRCUIT + HOT WATER SERVICE)



**Connection scheme of HERCULES ECO-SOLAR
(HEATING CIRCUIT + SOLAR)**

Notes:
contacts „FEEDERS OVERCURRENT“ – it is possible
to use within the concrete device installation.

6.7 Filling the heating system with water

Water for boiler and heating system filling must be clear and colourless, without any suspended materials, oil and aggressive chemicals. Its hardness must correspond to ČSN 07 7401 and it is necessary in case that the water hardness doesn't comply water must be treated. Even heating the water with a higher hardness several times does not prevent the soils from getting precipitated on the boiler drum walls. **Precipitation of calcite reduces at given point the passage of heat from the metal to water by 10 %.**

The heating systems with open expansion reservoir allow the direct contact between heating water and atmosphere. During the heating season the expanding water in the reservoir absorbs the oxygen which increases the corrosion effect and at the same time lot of water gets evaporated. It can be replenished by treated water according to ČSN 07 740.

The heating system must be properly rinsed in order to wash out all impurities

During the heating season the water volume in the heating system must be kept constant. When refilling the heating system by water it has to be prevented from air intake. Water from boiler and heating system must never be discharged or taken for usage except for the most cases like repairs, ect. Water discharge and filling with new water increases the danger of corrosion and scaling.

If it is necessary to refill the heating system with water, we only do this when the boiler is cold in order to prevent the cast-iron boiler drum from getting damaged.

After the filling up the boiler and heating system check all joints and the heating system for their tightness.

The assembly completion and stoking test accomplishment must be recorded in „Guarantee certificate“

7. Commissioning – instructions for contracting service organization

Boiler commissioning can be only done by contracting service organization authorized to do this activity.

7.1 Verification activities before commissioning

Before boilers commissioning there must be checked:

- a) Heating system filling with water (thermomanometer check)
- b) Heating system tightness
- c) Connection to the chimney – must be approved by a chimney firm
- d) Connection to the electricity network – must be approved by an authorized firm

The sockets are connected in a way making sure that the protection plug is at the top and phase conductor is connected to the left tube when viewed from the front. The same applies to the double sockets.

7.2 Boiler commissioning

1. Set the parameters of AREKO 10 regulator (see AREKO 10 operation manual) and check the correct function of feeders, lighter and ventilator. Set the fan flap according to the required fan delivery (see. tab. no. 4, 5)
2. Fire the boiler (see chap. 8.2.).
3. Bring the boiler to the necessary operating temperature. Recommended temperature of output heating water is between 60 and 80 °C.
4. Check again visually the boiler tightness.
5. Carry out the stoking test according to the relevant standards (see the Guarantee certificate).
6. Acquaint the user with boiler operation (see chap. 8).
7. Make a record in the Guarantee certificate.

8. Boiler attendance by user

8.1 Boiler output setting

- 1.) Select the boiler output in [kW] that with you want to operate the boiler. According to table no. 4 determine the shifts for a given output and set the parameters according to AREKO 10 regulator manual.
- 2.) To this output appertain:
 - Fuel feeding time – **P130** (service engineer sets at startup) – time of fuel feeder operation
 - Total time between two feeders swith-on – **b900 (P110** – service engineer sets it at startup)

Note: The feeders do not swith in the terms of current rusht elimination at the same time. This delay is set up by parameter **P140** (delay of concurrent feeder switching), service engineer sets at startup. 0,5 sec. is recommended. Time for running-out the turner feeder **P120** is setup by service engineer at startup.

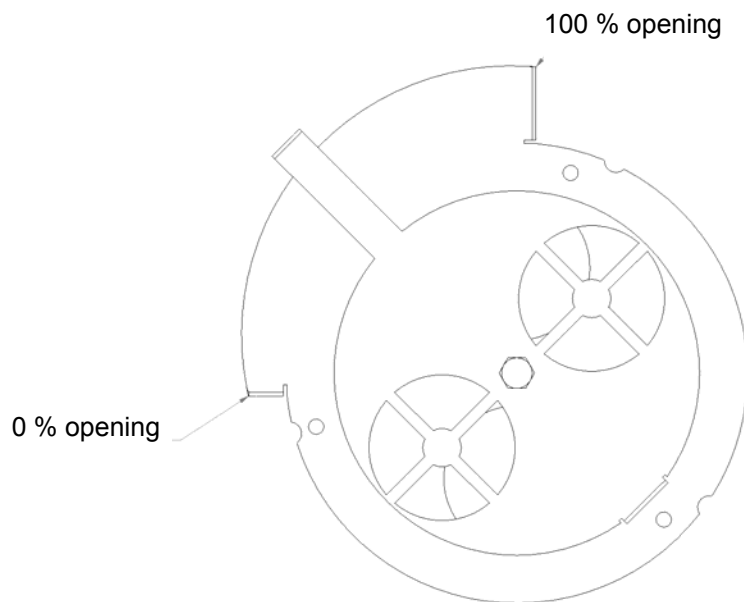
Choke valve

The volume of dosed combustion air can be regulated at AREKO 10 regulator by a choke valve on ventilator. This volume depends on the fuel quantity. Generally it applies: the higher the heating power (depending on the type of fuel, granularity, moisture, quality, ect.), the smaller the need of supplied air.

After adjustment of combustion air tighten the screw so that it would not be spontaneously unscrewed.

There is the strangling flap on the picture no. 16. 100 % opening of strangling flap answers to adjustment of top shade s arrow on picture no. 10.

The optimal air supply regulation is depending on flue gases temperature. Under the common operation (the boiler isn't enormously clogged with fly ash and tar) at the nominal output of 5 sectional size (24 kW) the flue gases temperature should not exceed the limi 170 °C, at the nominal output of 10 sectional size (42 kW) this limit is 142 °C. In the contrary it is necessary to choke the supplied air volume.



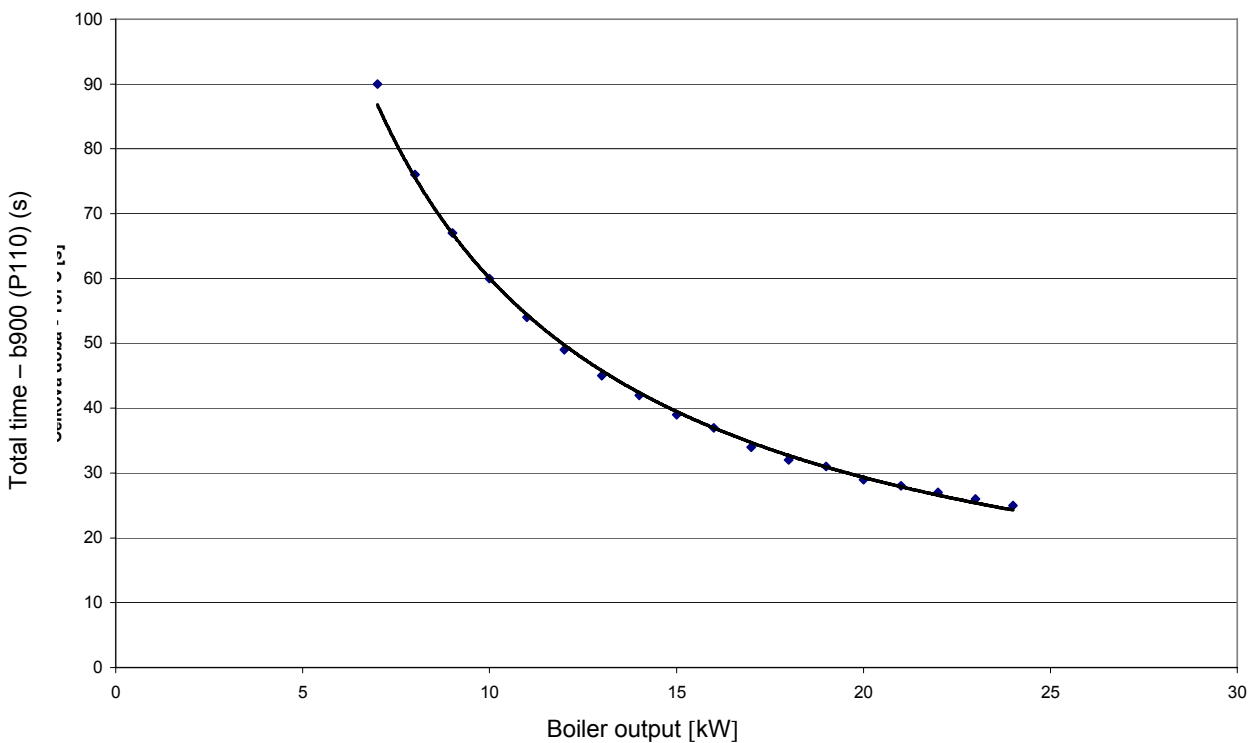
Picture no. 18 Strangling flap of the fan

In the following tables (tab. no. 4 and tab. no. 5) there are stated only orientation values and are valid only for tested fuel.

Tested fuel: pellets Ø8 mm
Heating power cca 16,4 MJ/kg

Tab. no. 4 Boiler output adjustment - VIADRUS HERCULES ECO – 5 sections

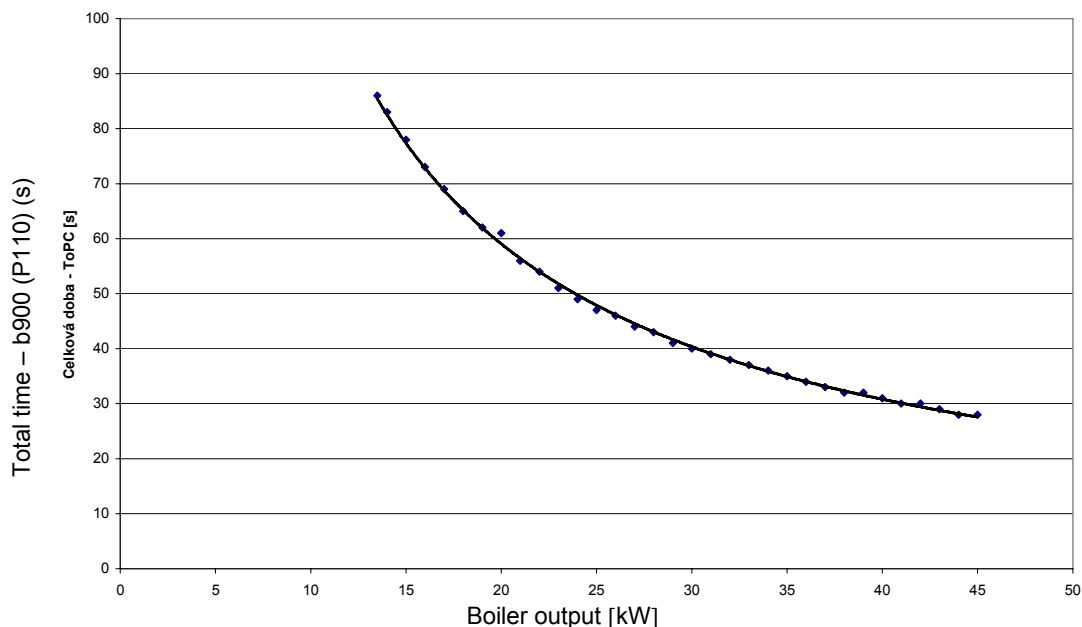
Boiler output [kW]	Time for fuel feeding P130 [s]	Total time b900 (P110) [s]	Quantity of combustion air [%]
7	5	90	30 %
8	5	76	25 %
9	5	67	20 %
10	5	60	35 %
11	5	54	40 %
12	5	49	45 %
13	5	45	50 %
14	5	42	50 %
15	5	39	55 %
16	5	37	60 %
17	5	34	65 %
18	5	32	70 %
19	5	31	70 %
20	5	29	75 %
21	5	28	80 %
22	5	27	85 %
23	5	26	85 %
24	5	25	90 %



Picture no. 19. Diagram of dependence of boiler output on one cycle total time at an equal time for fuel feeding (5 s) for boiler VIADRUS HERCULES ECO - 5 sections

Tab. no. 5 Boiler output adjustment - VIADRUS HERCULES ECO – 10 sections

Boiler output [kW]	Time for fuel feeding P130 [s]	Time for b900 (P110) [s]	Quantity of combustion air [%]
13,5	10	85	10 %
14	10	83	10 %
15	10	80	15 %
16	10	77	15 %
17	10	74	20 %
18	10	71	20 %
19	10	68	25 %
20	10	65	25 %
21	10	62	30 %
22	10	61	30 %
23	10	57	35 %
24	10	54	35 %
25	10	52	40 %
26	10	50	40 %
27	10	48	45 %
28	10	46	45 %
29	10	44	50 %
30	10	42	50 %
31	10	40	55 %
32	10	39	60 %
33	10	37	65 %
34	10	36	70 %
35	10	34	75 %
36	10	33	80 %
37	10	32	80 %
38	10	31	85 %
39	10	30	85 %
40	10	29	90%
41	10	29	90 %
42	10	28	95 %



Picture no. 20. Diagram of dependence of boiler output on one cycle total time at an equal time for fuel feeding (10 s) for boiler VIADRUS HERCULES ECO - 10 sections

! Important notice:

Stated values change in dependence on type, quality and moisture of used pellets. Therefore it may be necessary some corrections during adjustment of feeding cycle (rate of time for fuel feeding and time of fuel afterburning). E. g. if it will appear on the fire grate and in the ash-pan the unburnt pieces of fuel, it is evident that the fuel feeding speed is higher than the burning speed and it is necessary to decrease the feeding cycle.

8.2 Boiler firing

1. Check the water volume in the heating system.
2. Check, whether the closing valves between the boiler and heating system are open.
3. Check the circulating pump functionality.
4. Clean the combustion chamber, firing chamber and the ash-pan.
5. Check the correct way of mounting the ceramic plates in the combustion chamber and the ceramic cover of combustion chamber.
6. Fill the fuel reservoir with prescribed fuel.
7. Manual boiler commissioning:
 - In the regulator menu choose the Manual operation (**b800**), confirm with pushbutton **[ENT]**.
 - At active manual control „1234“ flash on terminal (burner feeder, reservoir feeder, ventilator, lighter). Retouching of these pushbuttons [**←**], [**↑**], [**↓**], [**→**] we switch on and switch off single above-mentioned feeders, ventilator and fighter. The luminous point under the number signalizes switching on.
 - Switch the ventilator on for cca 40 sec. – for chamber aerating.
 - After the fuel burning up (the pellets exceed approx. 5 cm behind the lighter outlet tube) switch off both device.
 - Leave the ventilator switched on and switch the fighter on.
 - After burning the fuel up switch the fighter off.
 - We wait about 5 minutes in order that the combustion products temperature is sufficient.
 - Pushing the button **[ESC]** we return to basic menu of the regulator.
 - Press [**←**] (0001 is flashing), confirm with pushbutton **[ENT]** and regulator will start working in automatic operation.

In case that the ignition device is break-down or it is not installed in the boiler, place the fuel for kindling

(e. g. paper, sawdust, PEPO, solid alcohol or another material designed for this purpose), light it and leave it to flame out (cca 1 – 2 min). Afterwards add with shovel on burning kindling the small amount of pellets and switch on the ventilator and let burn the pellets up. Then switch off the ventilator and with pressing the pushbutton ESC return to basic menu of the regulator. Press pushbutton [**←**] (0001 is flashing), confirm with pushbutton **[ENT]** and regulator will start working in automatic operation.

Automatic boiler commissioning:

Both fuel feeders are empty:

- The regulator transports fuel into the burner according to setting. It makes ignition and then it will come to controlled mode automatically.

Empty burner feeder:

- Press in the direct selection pushbutton [**←**] (0001 is flashing) and confirm with pushbutton **[ENT]**.
- The regulator transports fuel into the burner according to setting. It makes ignition and then it will come to controlled mode automatically.

ATTENTION – this operation is possible to switch off after startup only by resetting the regulator!!!
(In menu „b“ we find the rEst parameter by means of arrows and confirm by key **[ENT]**)

8.3 Boiler operation

Working of the boiler works automatically, according to setting parameters of the regulator.

In **SUMMER** boiler regime only HSW is heated (the mixing valve of the heating sub-circuit is closed, the heating sub-circuit circulation pump is switched off and the regulator ensures regular start of the pump and three-way valve in an interval according to the set **P240** parameter.

According to **P1M0** parameter (independently for **SUMMER** and **WINTER** regime) the burner after it has achieved the required temperature in the storage reservoir comes over either to **SHUTDOWN** phase (if the **P1M0** parameter = 0), or to **ATTENUATION** phase (if the **P1M0** parameter = 255). If the parameter value is between 1 and 254 then the burner comes over to **ATTENUATION** phase for the time set by this parameter and after this period expiration to **SHUTDOWN** phase. If the temperature in the storage reservoir drops below the required value the burner comes over back to **HEATING** phase and in case the boiler has been shut down in the way described above the automatic **IGNITION** is done prior the **HEATING** phase.

In case the boiler hasn't a functional igniter it is necessary to set **P1M0** parameter to 255 (due to the selection of permanent attenuation without the transition to shut-down) value and carry out the boiler ignition by means of another heat source using the manual control of feeders and ventilator and then - after the flue gases have achieved the sufficient temperature- activate the regulation by a direct choice.

The burner run is limited by **P1n0** parameter- maximum number of ignition cycles. In case the number of ignition cycles during the last 24 hours exceeds this parameter then after the required temperature in the storage reservoir has been achieved the burner always comes over to a permanent inhibition regardless the **P1n0** parameter setting.

In case of exceeding the critical output water temperature, the safety thermostat gets into operation, which switches off the fuel conveyor and fan, independently of regulator. The pump remains in function.

The regulator in operation displays in three-seconds intervals subsequently:

- **In regulation mode:** time, boiler status, requested temperature, actual temperature.
- **In attenuation mode:** time, boiler status, actual temperature.
- **In shut-down mode:** time, boiler status, actual temperature.
- **In the idle mode (after the end of shutdown regime or a breakdown confirmation):** time

The regulator displays an actual boiler status by the following codes:

t110	attenuation mode selected from direct choice ([↑] [ENT])
t210	phase - attenuation in regulation mode
t220	phase – heating in regulation mode
t230	phase – shut-down in regulation mode
t240	phase – waiting for temperature drop of the boiler for first ignition in regulation mode
t300	shut-down mode selected from direct choice ([↓] [ENT])
t400	phase – fuel transport in regulation mode
t410	phase – ignition in regulation mode
8 xx	required temperature
9 xx	actual temperature
C110	summer operation
C120	winter operation
Pr 1	warning – high temperature of flue gases – clogged heat exchanger

If the boiler is in standby mode (after switching on electric network or after decommissioning) nonflashing actual time is displayed on.

The fault messages are stated in the Manual for regulator AREKO 10 operation.

At electric energy failure, long-term or short-term, the regulator AREKO 10 will provide ignition without any fuel supply (the ventilator is running). If the flue gases sensor does not detect the sufficient required min. temperature of flue gases within the required time (see parameter **P1F0**), AREKO 10 regulator carries out the ignition including filling the burner with fuel. This ignition is carried out in the number of set cycles (**P1E0**). When it does not come to detaching the sufficient temperature of the combustion, the regulator will display **Er.09** (ignition error). The service must come to the boiler and find a cause of failure out.

8.4 Boiler shut-down

It is possible to shut-down the boiler with pressing the pushbutton [↓] (0003 is flashing) and confirm with pushbutton [ENT]. The boiler will make burning up all fuel in the burner – see the Manual for regulator AREKO 10 operation.

8.5 Regulator AREKO 10

The regulator is placed on brackets under the upper part of boiler shell. The front panel (terminal) is made of 6 buttons and 4-figure display device and the cover is extrusion membrane.

Regulator is started-up in the moment of connection to supply voltage.

In case of urgency to break the actual operation, which is programmably time-dependent (e. g. to break ignition), reset the regulator, after which the regulator gets to initialization.

We reset the regulator by searching out **rESt** parameter in menu „b“ by means of arrows and we confirm it by key [ENT].

If required all parameters can be actually changed also during the operation of the regulator. (Parameters are protected for an expert by the password in menu „P“)

We return the regulator to parameters preset by production (Setting by production) as follows:

1. Disconnect regulator supply.
2. Press pushbuttons [ESC], [←], [→] at the same time.
3. Connect regulator supply.
4. There is displayed „rtC“, „CrC1“, „CrC2“, „rEin“ subsequently.
5. When „rEin“ is displayed leave hold of the pressed keys and press the key [ENT].
6. „LoAd“ will be displayed. That means that regulator production adjustment is recording.
7. The time of recording the production setting of regulator is min. 3 minutes.
8. Then it follows a version displaying **Axxx** (xxx – version). Further a number of regulator switching on is displayed (1).
9. Now the regulators is set in production setting.

Recommendation: This operation should be carried out by a professional service worker or by the user under his supervision.

ATTENTION:

While setting up the time-parameters it is necessary to attend to the basic time unit, in which is the parameter set up.

9. IMPORTANT NOTES

- The boiler only can be used for the purpose that it is destined for.
- Boiler can only be operated by adult persons who became acquainted with this operation manual. It is inadmissible to keep childre without and adult person by the boiler, which is in operation.
- The boiler is not destined for the use by persons (incl. children) whose physical, sensual or mental disability or lack of experience and knowledge prevent them from a safe use of the appliance unless they are supervised or if they were not instructed on the use of appliance by a person responsible for their safety.
- Children should be supervised in order to ensure that they do not play with the appliance.
- In case there has occured the danger of combustible vapours or gases development and their penetration into the boiler room or at works with temporarily developed fire or explosion danger (floor gluing works, painting works using the flammable paints, etc.) boiler must be shut down long enough before the works start.
- We check visually the fuel transport into the combustion chamber. There is a dange of injury caused by rotating screw shaft.
- It is forbidden to use flammable liquids (petrol, oil, heating oil and others) for firing up the VIADRUS HERCULES ECO boiler.

- It is possible to check the combustion process by keeping the door ajar. This method is connected with a higher danger of sparks flying out into the boiler room. Immediately after having checked the combustion process visually the door must be shut properly.
- It is forbidden to overheat the VIADRUS HERCULES ECO boiler in any possible way.
- It is forbidden to put any objects made of flammable material on boiler and withing a distance smaller that the safe distance from it
- Shen removing the ashes from the boiler there must not be put any flammable materials within minimum 1500 mm distance from the boiler. The ash must be collected in non-combustible and covered container.
- When operating the boilers at the temperature below 60 °C the cast-iron heat exchanger gets bedewed which initiates so-called low-temperature corrosion reducing the boiler service life. Therefore we recommend to operate the boiler at the temperature 60 °C and higher.
- After the heating season termination the user is obliged to clean the boiler properly, incl. The flue gas ducting the smoke adapter. The graphite grease is to be used for lubrication of swivel pins, smoke flap mechanism and other movable parts in the boiler. The boiler room must be kept clean and dry.
- It is forbidden to interfere the boiler structure and the boiler electric installation.
- **WARNING!** A poor quality of fuel can markedly negatively affect the boiler output and emission parameters

10. Maintenance by user

- 1.) It is necessary to be particular about a timely fuel refilling. A small amount of fuel left in the reservoir, it must be refilled immediately in order to avoid the secondary air suction, eventually the container smoke.
Pay attention to a correct cover closure on the fuel reservoir!
- 2.) Remove regularly the ashes from the combustion chamber and ash-pan. Use the protective gloves when discharging the ash-pan.
- 3.) The boiler cleaning frequency depends on the fuel quantity. Cleaning must be done in 3 – 4 week intervals in case of pellets that don't exceed 0,5 % ashes. The pellets with ash content 1,5 % and higher will cause that boiler must be checked and cleaned once a week, if needed also more often. To clean the boiler means to remove ash or deposits from the boiler body (combustion chamber, flue gases ways, etc.). The heat transfer surfaces become clogged up which affects the heat transfer thus the boiler efficiency. It is also necessary to check the combustion chamber itself – the combustion air nozzles and combustion chamber ceramic arch. Possible deposits must be carefully removed.
- 4.) Above the combustion chamber there are positioned the fireproof ceramic plates. We recommend to remove regularly the fly-ash deposits on the plates surface.
- 5.) The boiler must be shut down minimum 1 hour before cleaning (including the electric disconnection).
- 6.) **We recommend** to clean ocassionaly the **external** surfaces of the screw conveyors and fan. (**The operators must not remove the covers from the fan or to interfere in any other way with these units. This can only do a competent service worker.**) The cleaning must be done using a dry brush. The boiler must be disconnected from electricity supply while being cleaned.
- 7.) After the cleaning or after any manipulation with fuel reservoir screw conveyor please check the correct flex-hose attachment at both its ends by means of SK tapes.
- 8.) In order to keep a slight overpressure in the combustion chamber during the fan operation, we pay attention to a perfect tightness of boiler (stoking door, ash door, smoke adapter cleaning cover, etc.)
- 9.) The manufacturer fill standardly the worm-gear units with synthetic oil, therefore their further maintenance isn't necessary.

11. Product liquidation instructions after service life

ŽDB GROUP a.s., is contractual partner of firm EKO – KOM a.s. with client number EK – F0060715. The packages comply with EN 13427.

By reason that the product is made of common metal materials, its individual components is recommended to be disposed as follows:

- the boiler drum (grey cast-iron) - through a firm dealing with waste collection and disposal
- piping, shell - through a firm dealing with waste collection and disposal
- other metal parts - through a firm dealing with waste collection and disposal
- IZOBREX insulation material - into the common waste
- ROTAFLEX SUPER insulation material - into the common waste

We recommend to dispose the packages in the following way:

- plastic foil, cardboard cover, use a salvage point
- metal strapping tape, use a salvage point
- wooden base, is designated for a single usage and no longer can be used as a product. Its disposal is subject to Act. 477/2001 Sb. a 185/2001 Coll.as amended.

In case that the product has lost its manufacture qualities there can be taken the advantage of product taking back (if this is established), in case that the originator has declared that this is a waste and it must be handled according to the valid legislation of the relevant country.

12. Guarantee and liability for defects

ŽDB GROUP a.s., a VIADRUS division provides the guarantee:

- For boilers 24 months after the boiler putting into operation, but maximum 30 months after the date it was dispatched from the manufacturing factory.
- For boiler drum 5 years after the date its dispatch from the manufacturing factory.

The user is obliged to entrust an **assembly firm** with the boiler installation, and a **special contracting service company accredited** by the boiler manufacturer ŽDB GROUP, a. s., **VIADRUS** division, with its commissioning and defects elimination in case they exceed the framework of chap. 8 and 10.

If the boiler is operated in compliance with instructions stated in this „Boiler operation and installation manual“, it doesn't need any special service interventions.

„VIADRUS HERCULES ECO boiler quality and completeness certificate“ serves after having been filled in by a contracting service organization as the „Guarantee certificate“.

In case of complaint of boiler shells it is necessary to make claim in original package, otherwise the seller reserves the right to refuse the complaint.

The user is obliged to service the boiler regularly – see chap. 10.

In case that the above mentioned instructions aren't observed, the guarantee provided by the manufacturer will be repudiated.

Every defect must be announced immediately after it has been discovered, this in a written form and telephone agreement.

The guarantee does not apply to:

- **faults caused by improper assembly and improper attendance of the product and faults caused by improper maintenance see chap. 10**
- **faults and damage caused by failure to observe water quality in heating system see chap. no. 5.1 and 6.6 or by using the anti-freeze mixture**
- **faults caused by failure to observe instructions stated in this manual**
- **the product damaged during transport or by other mechanical way**
- **defect caused by an inconvenient way of storing**
- **faults caused by boiler operation with unspecified fuel**

The manufacturer reserves the right of changes made within the product innovation that needn't be included in this manual.

Information for customer

Packaging edentification	Assessment reference
PE Plastic sacks, folie, corrugaled board, iron and plastic fix line	

Identification od principál materials used. Paper, Polyethylene, iron, wood

Part 1: Summary of assessment

Standard/Report	Assessment requirement	Claim	Note
1.1 Prevention by source reduction		YES	
1.2 Heavy metals and	ensure below maximum permitted levels for components (CR 13695-1:2000)	YES	
1.3 Other noxious/hazardous substances	ensure in compliance with (CR 13695-2:2002, EN 13428:2000)	YES	
2 Reuse	ensure reusability in all terms of the standard for the functional packaging unit (EN 13429:2000)	NO	
3.1 Recovery by material recycling	ensure recyclability in all term sof the standard for the functional packaging unit (EN 13430:2000)	YES	
3.2 Recovery in the form of energy	ensure that calorific gain is achievable for the functional packaging unit (EN 13431:2000)	YES	Iron - NO
3.3 Recovery by composting	ensure compost ability in all terms of the standard for the functional packaging unit (EN 13432:2000)	NO	

NOTE Conformity with EN 13427 requires affirmative responses to sections 1.1; 1.2; 1.3 and to at least one of 3.1; 3.2; 3.3. In addition, where a claim of reuse is made section 2 should also record affirmative responses.

Part 2: Statement of conformity

In the light of the assessment results recorded in part I above, this packaging is claimed to comply with the requirements of EN 13427:2000.

Guarantee certificate and Quality and completeness certificate VIADRUS HERCULES ECO boiler

Boiler serial number Boiler output

User (Surname, name)

Adress (street, town, postcode)

Telephone/Fax

Boiler complies with requirements:
EN 303-5 Heating boilers – Part 5: Heating boilers for solid fuele, hand and automatically stocked, nominal heat output of up to 300 kW – Terminology, requirements, testing and marking.

ŽDB GROUP a.s., a VIADRUS division provides the guarantee:

- For boilers 24 months after the boiler putting into operation, but maximum 30 months after the date it was dispatched from the manufacturing factory.
- For boiler drum 5 years after the date its dispatch from the manufacturing factory.

Adjustment according to the operation and installation manual will be carried out by a contracting service organization.

The completeness including the standard accessories and output set according to „Operation and installation manual“ is guaranteed by manufacturer through the contracting service organization.

The guarantee certificate isn't valid without having been filled in.

Measured values	Numeric value
Chimney draught (kPa)	
Flue gases temperature (°C)	

The user confirms that:

- the boiler adjusted by the contracting service organization didn't show any defect during the stoking test
- he received the „Operation and installation manual“ with properly filled in guarantee certificate and Quality certificate
- he was made acquainted with boiler operation and maintenance

.....

Date of production	Manufacturer's stamp	Checked by (signature)
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.....

Installation date	Assembly firma (stamp, signature)	User's signature
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.....

Boiler commissioning date	Contracting service organization (stamp, signature)	User's signature
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Annex to the guarantee certificate for customer- the user

Record of accomplished guarantee and post-guarantee repairs and regular product checks			
Record date	Carried out activity	Contracting service organization (stamp, signature)	Customer's signature

Guarantee certificate and Quality and completeness certificate VIADRUS HERCULES ECO boiler

Boiler serial number Boiler output

User (Surname, name)

Address (street, town, postcode)

Telephone/Fax

Boiler complies with requirements:

EN 303-5 Heating boilers – Part 5: Heating boilers for solid fuel, hand and automatically stocked, nominal heat output of up to 300 kW – Terminology, requirements, testing and marking.

ŽDB GROUP a.s., a VIADRUS division provides the guarantee:

- For boilers 24 months after the boiler putting into operation, but maximum 30 months after the date it was dispatched from the manufacturing factory.
- For boiler drum 5 years after the date its dispatch from the manufacturing factory.

Adjustment according to the operation and installation manual will be carried out by a contracting service organization.

The completeness including the standard accessories and output set according to „Operation and installation manual“ is guaranteed by manufacturer through the contracting service organization.

The guarantee certificate isn't valid without having been filled in.

Measured values	Numeric value
Chimney draught (kPa)	
Flue gases temperature (°C)	

The user confirms that:

- the boiler adjusted by the contracting service organization didn't show any defect during the stoking test
- he received the „Operation and installation manual“ with properly filled in guarantee certificate and Quality certificate
- he was made acquainted with boiler operation and maintenance

..... Date of production Manufacturer's stamp Checked by (signature)
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..... Installation date Assembly firma (stamp, signature) User's signature
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..... Boiler commissioning date Contracting service organization (stamp, signature) User's signature
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Guarantee certificate and Quality and completeness certificate VIADRUS HERCULES ECO boiler

Boiler serial number Boiler output

User (Surname, name)

Address (street, town, postcode)

Telephone/Fax

Boiler complies with requirements:

EN 303-5 Heating boilers – Part 5: Heating boilers for solid fuel, hand and automatically stocked, nominal heat output of up to 300 kW – Terminology, requirements, testing and marking.

ŽDB GROUP a.s., a VIADRUS division provides the guarantee:

- For boilers 24 months after the boiler putting into operation, but maximum 30 months after the date it was dispatched from the manufacturing factory.
- For boiler drum 5 years after the date its dispatch from the manufacturing factory.

Adjustment according to the operation and installation manual will be carried out by a contracting service organization.

The completeness including the standard accessories and output set according to „Operation and installation manual“ is guaranteed by manufacturer through the contracting service organization.

The guarantee certificate isn't valid without having been filled in.

Measured values	Numeric value
Chimney draught (kPa)	
Flue gases temperature (°C)	

The user confirms that:

- the boiler adjusted by the contracting service organization didn't show any defect during the stoking test
- he received the „Operation and installation manual“ with properly filled in guarantee certificate and Quality certificate
- he was made acquainted with boiler operation and maintenance

.....
Date of production Manufacturer's stamp Checked by (signature)

.....
Installation date Assembly firma (stamp, signature) User's signature

.....
Boiler commissioning date Contracting service organization (stamp, signature) User's signature

VIADRUS

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