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TECHNICAL INSTRUCTIONS FOR ASSEMBLY, OPERATION AND MAINTENANCE OF ELECTRIC BOILER



EK CLASSIC EU

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1. Explanation of the symbols and safe work instructions

1.1. Introduction




These technical instructions contain important information about adequate assembly, commissioning, handling and maintenance of the device.

It is intended for **authorised installers, authorised service technicians and end-users** of the electro-boiler.

Please read and retain the instructions for future reference in case of need.

1.2. List of symbols with explanations

Warning symbols

	<p>RISK OF ELECTRIC SHOCK Risk of electric shock is presented by a lightning bolt arrow in a triangle warning symbol</p>
	<p>WARNING Warning symbol in the text is presented by the warning sign in a triangle</p>
	<p>IMPORTANT INFORMATION Important information for which there is no risk of injury or material damage</p>

Key words at the beginning of the safety notice denote the type of hazard and potential consequences if one does not comply with the measures for preventing hazard.

- **NOTE** indicates that there might be some material damage.
- **CAUTION** indicates that there might be minor or moderate bodily injuries.
- **WARNING** indicates that there might be severe or life-threatening bodily injuries.
- **DANGER** indicates that there might be life-threatening bodily injuries.

1.3. General boiler safe work instructions

General safety instructions

- ⚠ This device is not intended for use by persons with limited mental or psychophysical capabilities, as well as by inexperienced persons including children. Children above 8 may handle this device only if an adult is present or if they are instructed for safe handling and are aware of all hazards.
- ⚠ Non-compliance with the safe work instructions may result in severe injuries, death, material damage, and may jeopardise environment.

- ⚠ Before assembling the boiler, professional inspection and control testing of the electrical installation is required.
- ⚠ All works on the electrical installations should be performed by a competent and authorized person in accordance with the relevant regulations.
- ⚠ Commissioning, maintenance and repair may only be performed by an authorized service technician.
- ⚠ Ensure technical approval of the installation in accordance with the relevant regulations.

Danger due to compromising one's own safety in case of need, e.g. in case of fire

- ⚠ Never put yourself in a life-threatening situation. Your safety should always come first.

Damage due to errors in operating the boiler

- ⚠ Errors in operating the device may cause bodily injuries or material damage.
- ⚠ Ensure that only persons who are able to use this boiler adequately have access to it.
- ⚠ Errors in operating the boiler may cause injuries and/or damage to the installations.

Assembly and commissioning of the boiler

- ⚠ Assembly of the boiler should be carried out only by authorized service technician.
- ⚠ The commissioning of the boiler should always be performed only if there is appropriate pressure in the installation, while the working pressure must be in accordance with the data of the manufacturer. Do not close safety valves in any case, as the material damage that may be caused by high pressure will thus be avoided.
- ⚠ The boiler should be installed only in a room in which water cannot freeze.
- ⚠ Do not use or store flammable materials (paper, thinner, paint, etc.) near the boiler.
- ⚠ Maintain safe separation distance from the boiler, in accordance with the regulations in effect.

Life-threatening risk of electric shock

- ⚠ Electrical connection works should be done by authorised service technicians. Please comply with the connection scheme.
- ⚠ Prior to works on electrical installations, disconnect the power supply and ensure that it may not be accidentally connected again.
- ⚠ The device must not be assembled in damp premises.

Maintenance/check-up

- ⚠ We recommend that you sign a contract on inspection/maintenance with an expert company, so that the inspection and necessary maintenance of the device may be carried out once a year.

- ⚠ End-user of the boiler is responsible for ensuring that the heating installation is safe and environmentally friendly.
- ⚠ Adhere to the safe work instructions in the section

Spare parts

- ⚠ No liability shall be accepted for damage caused by use of spare parts which have not been delivered by the manufacturer.
- ⚠ Use only original spare parts.

Damage to the system as a result of freezing temperature

- ⚠ In case of freezing temperatures, protect the heating system from freezing. Heating water should be drained at the lowest point of the heating system.

Instructions for service technicians

- ⚠ Inform the end-users about the manner of work and maintenance of the boiler.
- ⚠ Warn the end-users that they must not make any changes or repairs on their own.
- ⚠ Ensure that the children do not use this boiler without supervision and not play with it.
- ⚠ Hand over boiler technical documentation to the end-user.

Environmental protection/Disposal of waste

- ⚠ Dispose of packaging in an environmentally friendly manner.
- ⚠ Dispose of the boiler in an environmentally friendly manner at a recycling spot.

Cleaning of the boiler

- ⚠ Clean the boiler on the outside with a damp cloth.

2. Information about the boiler

2.1. Description of the product

EK CLASSIC EU is produced with the following powers:
6kW, 9kW, 12kW, 16kW, 18kW, 21kW, 24kW, 27kW.

Electrical boiler model EK Classic EU is a modern block boiler (It is a fully packaged) intended for central heating systems.

Advantages of electric boilers: reliable heating, quiet work, not requiring a separate room for installation, small in size, low price, high level of operational safety, absence of chimney, no harmful emissions during operation (environmental protection). Smaller power boilers of up to 9kW may require Single Phase or Three Phase power supply, while boilers of greater power exclusively require Three Phase power supply.

In addition to classic elements of an electric boiler, the EK Classic EU electric boiler contains: expansion vessel, circulation pump, safety valve, filling and drainage tap, pressure switch, automatic air vent, thermomanometer, etc.

Heating elements are switched on through quiet contactors, therefore the boiler may be installed in a living area – there is no noise during operation.

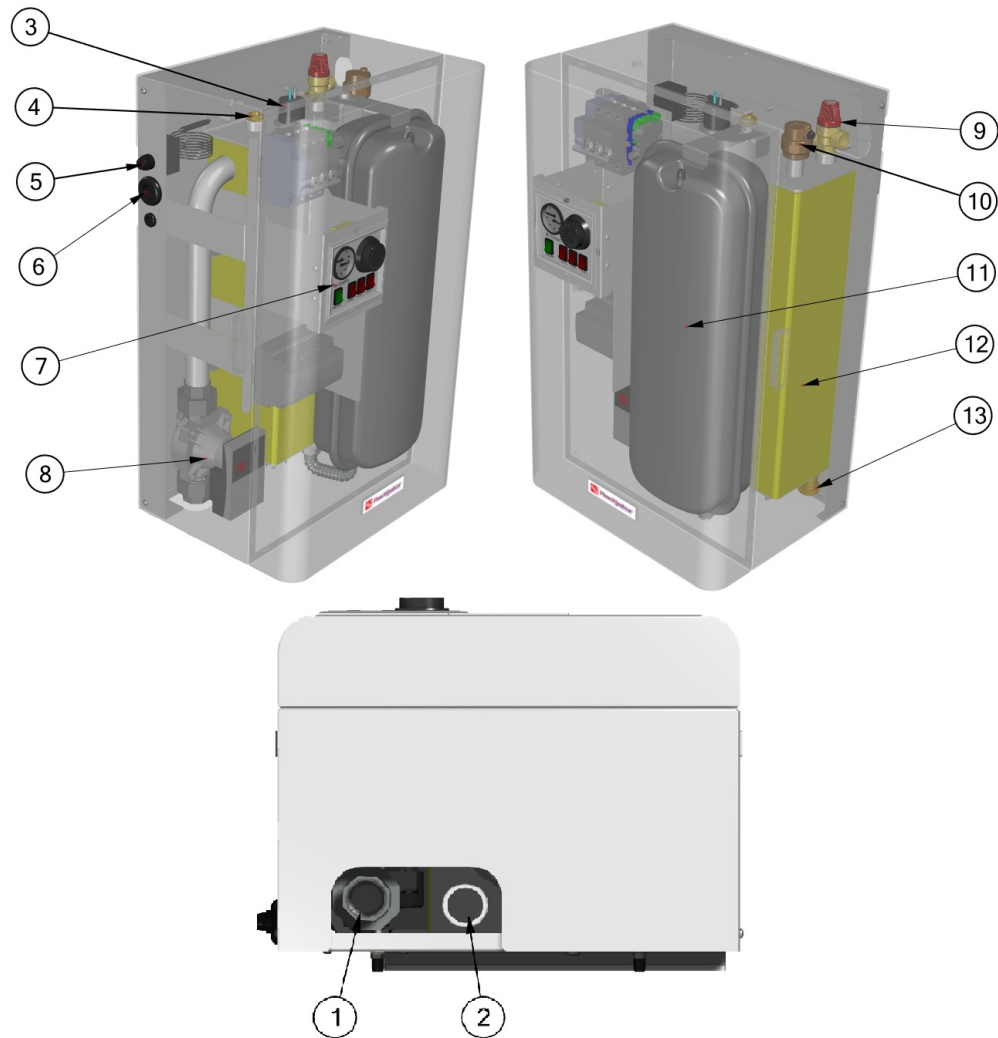
The device is equipped with a protective assembly unit which guarantees complete safety.

Boilers are also equipped with three-stage regulation thermostat and have a choice between three steps of power output, which provides maximum comfort to the users with minimum consumption.

The boiler may be installed as an integral part of the heating system, flat-contained central heating, and hybrid and accumulation systems.



Picture 1. Boiler overview: isometric view, front side, bottom side, top side



Picture 2. Boiler component

1. Hot water connection
2. Cold water connection
3. Pressure switch
4. Copper immersion for probes
5. STB-Safety thermostat
6. Set of grommets
7. Control table
8. Pump
9. Pressure safety valve
10. Automatic air vent
11. Expansion vessel
12. Exchanger-boiler body
13. Drain and filling tap

2.2. Electro – boiler models



It is important to emphasise that the boilers of 6kW and 9kW are produced in two versions, with Single Phase and Three Phase connector. The boilers with Single Phase connectors are EK 06 Classic MONO EU and EK 09 Classic MONO EU, boilers with Three Phase connectors are EK 06 Classic EU and EK 09 Classic EU. When purchasing the product, you should emphasise which connector you want. Subsequent “reconnections” are not approved by the manufacturer.

Boiler name	Power
EK 06 Classic	6 kW
EK 06 Classic MONO	6 kW
EK 09 Classic	9 kW
EK 09 Classic MONO	9 kW
EK 12 Classic	12 kW
EK 16 Classic	16 kW
EK 18 Classic	18 kW
EK 21 Classic	21 kW
EK 24 Classic	24 kW
EK 27 Classic	27 kW



Table 1. Electro-boiler models

2.3. Declaration of conformity

We declare that these boilers have been examined in accordance with the Directives 2014/35/EC (Low Voltage Directive - LVD) and 2014/30/EU (Electromagnetic Compatibility Directive - EMC).

2.4. Minimum separation distance and flammability of building materials

Minimum separation distance from inflammable materials may differ from country to country. Please adhere to the regulations on electrical installations and prescribed minimum distances in your country. The following table shows the classification of flammability of building materials as per DIN 4102.


Flammability of building materials		
A	Non-combustible	
A1	Non-combustible	Asbestos, stone, ceramic wall tiles, terracotta, plaster (without organic additives)
A2	Containing minor quantities of flammable additives (organic ingredients)	Gypsum-cardboard plates, base felt plates, glass fibres, plates of AKUMINE, ISOMINE RAYOLITE, LIGNOS, VELOX and HERACLITE
B - Flammable		
B1	Not easily flammable	Beech and oak wood, composite wood, felt, plates of HOBREX, VERSALITE and UMAKART
B2	Flammable	Pine wood, larch and spruce wood, veneered wood
B3	Easily flammable	asphalt, cardboard, cellulosic material, tar paper, particle board, cork, polyurethane, polystyrene, polyethylene, floor fibres

Table 2. Flammability of building materials as per DIN 4102

2.5. Tools, materials and auxiliary aids

For assembly and maintenance of the boiler, standard tools for doing thermo-technical, plumbing and electrical installations are required.

2.6. Antifreeze protection



Use additives which are permitted for heating installations

2.7. Waste disposal

- Dispose of the packaging in an environmentally friendly manner.
- Dispose of the components which should be replaced in an environmentally friendly manner.

2.8. Scope of delivery



During the delivery of the boiler, adhere to the following:

- Check whether the packaging is undamaged during delivery
- Check whether the delivery is complete.

Delivery Item	No. of units
Boiler	1
Assembly set	1
Instruction for use	1

2.9. Name plate

Standard plate of the boiler is located on the outside of the boiler and contains the following technical data: model, voltage, power, serial number, year of production.

	Radijator Inženjering DOO Živojina Lazića Solunca 6 Srbija email: radijator@radijator.rs www.radijator.rs
Model: EK 09 Classic EU	
Electric Density: 3N~400V 50Hz	
Power: 9kW	
 8 606015 690667 No: 501019005 Year: 2019	
<i>Do not remove the boiler front casing before the boiler is disconnected from the power supply. High voltage. Risk of electric shock. Read the technical manual before installing and using it.</i>	

	Radijator Inženjering DOO Živojina Lazića Solunca 6 Srbija email: radijator@radijator.rs www.radijator.rs
Model: EK 06 Classic MONO	
Električni napon: ~230V 50Hz	
Snaga: 6kW	
 8 606015 690292 No: 501018002 Godina: 2018	
<i>Ne skidati oplatu pre nego što se kotao isključi sa napajanja. Visok napon. Rizik od udara strujom. Obavezno pročitati tehničko uputstvo pre instaliranja i upotrebe.</i>	

2.10. Technical data






		Models									
		EK 06 Classic MONO EU	EK 06 Classic EU	EK 09 Classic MONO EU	EK 09 Classic EU	EK 12 Classic EU	EK 16 Classic EU	EK 18 Classic EU	EK 21 Classic EU	EK 24 Classic EU	EK 27 Classic EU
Power	kW	6	6	9	9	12	16	18	21	24	27
Number of levels of power		3	3	3	3	3	3	3	3	3	3
Division of levels of power		3x2	3x2	3x3	3x3	3x4	3x5,3	3x6	3x7	3x8	3x9
Main voltage	Vac	230	400	230	400	400	400	400	400	400	400
Built-in fuse	A	1x32	3x10	1x50	3x16	3x20	3x25	3x32	3x32	3x40	3x50
Min. cross-section of the connection cable	mm ²	3x6	5x2.5	3x10	5x2.5	5x4	5x4	5x6	5x6	5x10	5x10
Safety valve	bar	3									
Max allowable working pressure	bar	3									
Min allowable working pressure	bar	0.8									
Max. temperature of the water in boiler	°C	85									
Water volume in the boiler	lit.	12									
Volume of the expansion vessel	lit.	10									
Hot water connection	cola	1									
Cold water connection	cola	1									
Boiler dimensions	mm	640x400x290mm									
Handling		Manual									

Table 3. Technical data




NOTE: When purchasing the boiler of 6kW or 9kW, emphasise whether you want a model with Single Phase or Three Phase connection.


3. Transport of the boiler

	NOTE: Transport damage
	 Pay attention to transport instructions found on the packaging.
	 Use a suitable transport vehicle, e.g. a trolley with a tightening strap.
	 During the transport, the boiler must be in a lying position.
	 Avoid blows or collision with various objects.


- Put the packed boilers onto a trolley, if needed tie it with a tightening strap and transport it to the place where it will be installed.
- Take off the packaging additions.
- Remove the packaging and dispose of it in an environmentally friendly way.

4. Installation of the boiler

	<p>CAUTION: Incorrect installation of the boiler may cause injuries or material damage!</p>
	<p>⚠ Never install the boiler without the expansion vessel (AG) and safety valve.</p>
	<p>⚠ Use a suitable transport vehicle, e.g. a trolley with a tightening strap.</p>

	<p>NOTE: Material damage may be caused due to freezing</p>
	<p>⚠ The boiler should be installed only in a room which freezing will not occur.</p>




4.1. Caution when assembling the boiler

	<p>NOTE: Material damage may be caused for failure to adhere to the following instructions!</p>
	<p>⚠ Adhere to the instructions for the boiler and all installed components.</p>

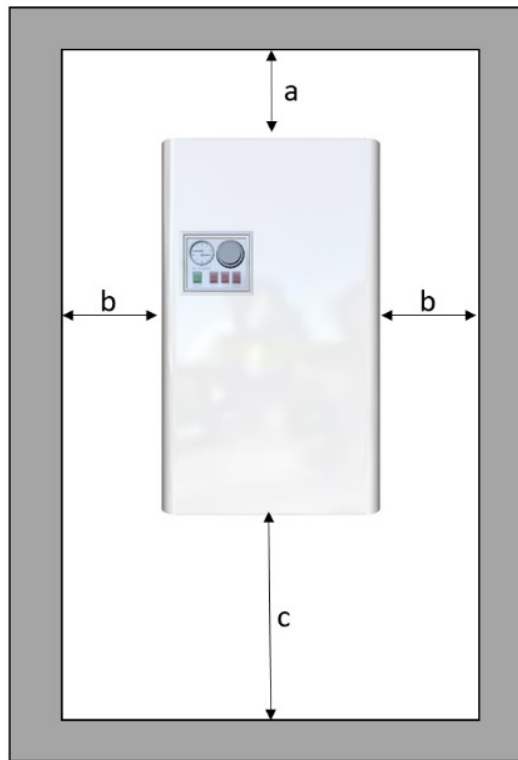
Prior to installing, pay attention to the following:

- All electrical connections, protection measures and fuses should be connected by a professional from the authorised service, complying with all the norms and regulations, as well as local regulations in effect.
- EK Classic boiler has a built-in automatic fuse, the characteristics of which are given in the Table 3: Technical data.
- Electrical connection must be linked as per the connection schemes.
- After the prescribed installation of the boiler, the ground wire should be connected.
- Prior to any works on the heating installations, the power supply should be disconnected.
- Unskilled and unauthorised attempts to connect under voltage may cause material damage on the boiler, which may further lead to dangerous electric shocks.

4.2. Clearance around the boiler to floor, wall and ceiling

	DANGER: Risk of fire due to flammable materials or liquids!
	 Do not store flammable materials or liquids in the vicinity of the boiler.
	 Inform the end-user about the regulations in effect relating to minimum clearance from easily flammable materials (more information in the table 2).

- Comply with the regulations on electrical installations and minimum clearance that are in effect in the relevant country.
- Mount the boiler on the wall in such a way that there remains free space, as shown in picture 3.



Picture 3. Minimum clearance after the assembly of the boiler

a=150mm;
b=60mm;
c=500mm

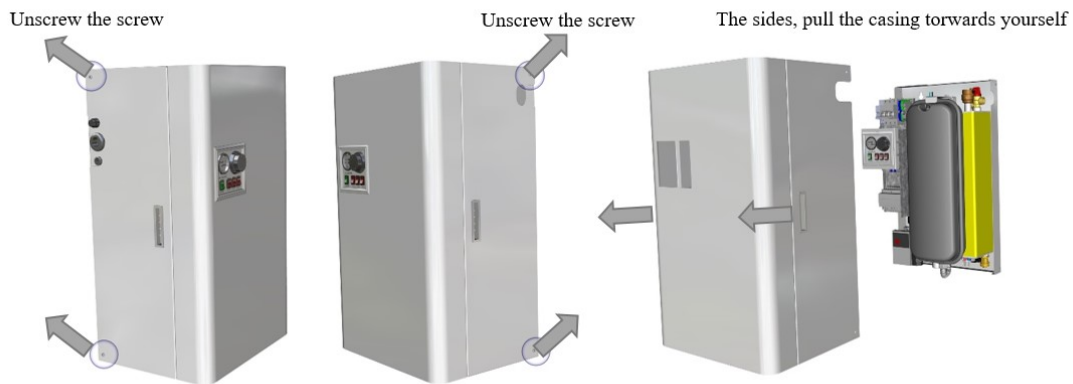
4.3. Removal of the boiler front casing



Prior to any intervention (removal of the casing), disconnect the boiler from the installation.

Boiler casing may be removed for easy handling and installation. Boiler removal is performed in the following way:

1. Unscrew the screws on the left side of cover, as shown in the picture.
2. Unscrew the screws on the right side of cover.
3. Remove the boiler front casing by easily pulling it towards yourself.





Picture 4. Opening of the boiler (removing the boiler front casing)

4.4. Assembly of the boiler



The boiler should be assembled on the wall in a vertical position.

The manufacturer is not responsible for the damaged caused as a result of unprofessional assembly.

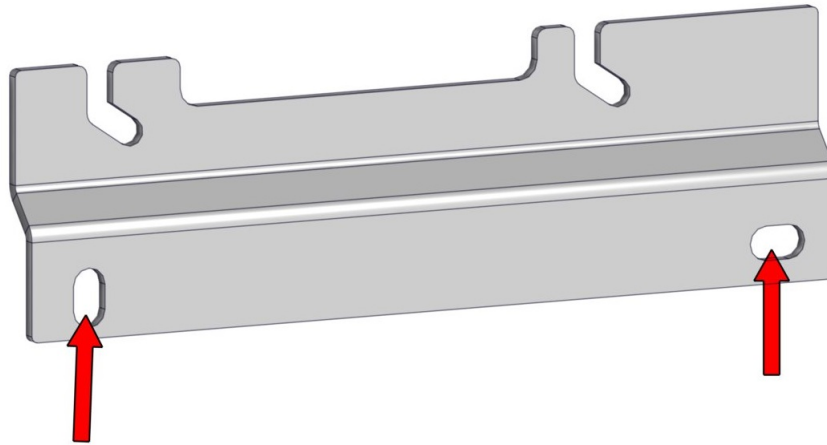
	NOTE: Material damage may be caused by inadequate assembly on the wall.
	 Adequate fastener tools should be used.

This section describes the assembly of the boiler on the wall.

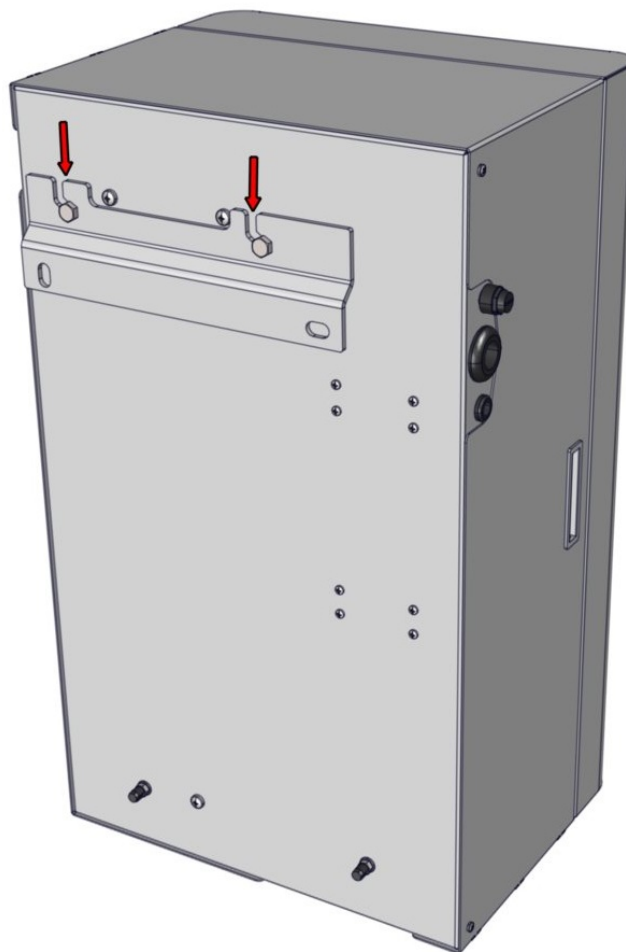
NOTE: The boiler must be assembled vertically on the wall.

For mounting the boiler on the wall, a steel bracket is used (Figure 5), which must be mounted on the wall with plastic plugs on the marked openings which are an integral part of the boiler delivery or with screws suitable for a non-standard type of wall.

Then carefully mount the boiler to the wall, tighten the screws on the back of the boiler if necessary.



Picture 5. Dimensions



Picture 6. Mounting the boiler to the bracket


5. Boiler hydraulic scheme


Heat pipes should be connected in the following manner:


- Connect the hot water connection to the connection 1, picture 2.
- Connect the cold water connection to the connection 2, picture 2.




Filling the boiler with heating water and testing welded joints and tightness:


Testing tightness should be carried out before commissioning the boiler.

	<p>DANGER: Injuries and/or material damage may be caused by exceeding pressure during testing tightness! High pressure may damage regulation and safety devices, as well as the cylinder itself.</p>
	<p>⚠ Fill the boiler up to the pressure that corresponds to the opening pressure of safety valve.</p>
	<p>⚠ Comply fully to the pressure of built-in components.</p>
	<p>⚠ After testing the tightness, open the valves again.</p>
	<p>⚠ Check whether all pressure regulators and installation safety elements work properly.</p>

	<p>DANGER: Health risks due to mixing the drinking water and water from heating installation.</p>
	<p>⚠ Comply with the existing regulations and norms related to avoiding mixing drinking water and water from heating installation.</p>
	<p>⚠ Comply with the norm EN1717.</p>

	<p>DANGER: Risk of fire due to flammable materials or liquids!</p>
	<p>⚠ Do not store flammable materials or liquids in the vicinity of the boiler.</p>
	<p>⚠ Inform the end-user about the regulations in effect relating to minimum clearance from easily flammable materials (more information in the table 2).</p>

	NOTE: Damage on installations caused by poor quality of water!
	 Depending on the water characteristics, there might be damages of corrosion or lime scale on the heating installations.
	 Comply with the requests relating to filling water as per VDI 2035, i.e. as per the design documentation and catalogue.

	NOTE: Material damage caused by temperature strain. If the boiler is filled in a warm state, thermal stress may lead to cracks. The boiler will start to leak.
	Fill the boiler only in cold state (the temperature of the flow may be maximum 40°C)

Check the pre-pressure of the expansion vessel.

- Open the filling and drainage tap.
- Slowly fill the boiler, while monitoring the pressure on the thermomanometer. When the working pressure has been reached, close the filling and drainage tap.
- Purge the boiler through air vent.
- Purge the installation through a valve on the radiator.
- Once the working pressure has been reduced by purging of air, the water in the system must be refilled.
- Test the tightness in accordance with the regulations in effect.
- Check whether all safety elements work properly.
- If the tightness has been tested and no leakage has been observed, regulate the right working pressure.
- Take off the hose from the filling and drainage tap.
- Note down the value of the working pressure and water quality in the instruction for use.

During the first filling or refilling or changing the water

- Comply with the request related to filling water

Purging and unblocking the heating pump

- Pump installed in this boiler has an automatic manner of purging, therefore, there is no need to undertake any actions to purge the pump.

When the heating pump is blocked, please do the following:

- If the pump gets blocked after a long period of inactivity, you should unscrew the front stopper and turn the camshaft using the screwdriver.
- Do this operation carefully to avoid the damage.

Purging the boiler and installation

- Through the screw on the air vent, carefully release the vent and purge the boiler. This vent is automatic, therefore, if the filling of the installation and the boiler is carried out properly, additional manual purging will not be necessary



The boiler may be installed as an integral part of the heating system installation, flat-contained central heating, hybrid and accumulation systems. Each of these systems requires limiting maximum temperature for safety reasons or limiting minimum temperature due to occurrence of condensation. Limiting maximum and minimum temperature may be achieved without changing factory installed thermostat, by installing a hook-shaped temperature limiter under the thermostat cover. Installation should be performed by a professional/authorised service technician.

5.1. Central heating

Limiting maximum temperature

Factory settings is 0-85°C for radiator heating

If You want application for the floor heating You must set on 0-50°C.

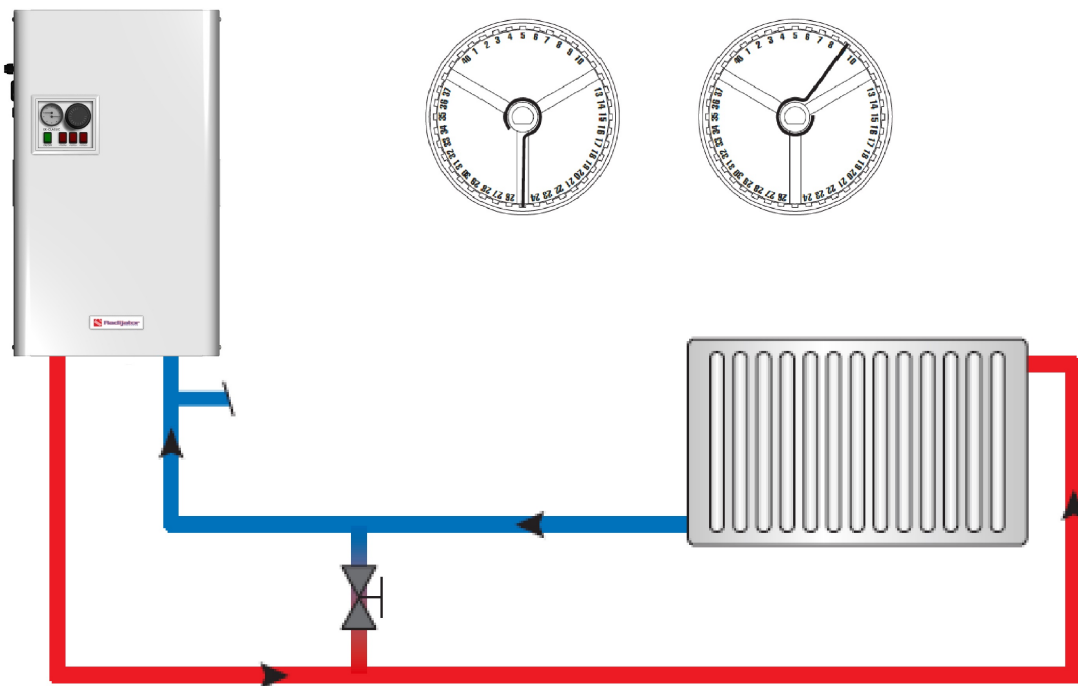


Figure 7. Hydraulic scheme of the central heating system

5.2. Hydraulic connection „Y“ plan

Limiting maximum temperature

Set the limiter as shown in the picture 60-85°C

Central heating +DHW: „Y“ plan

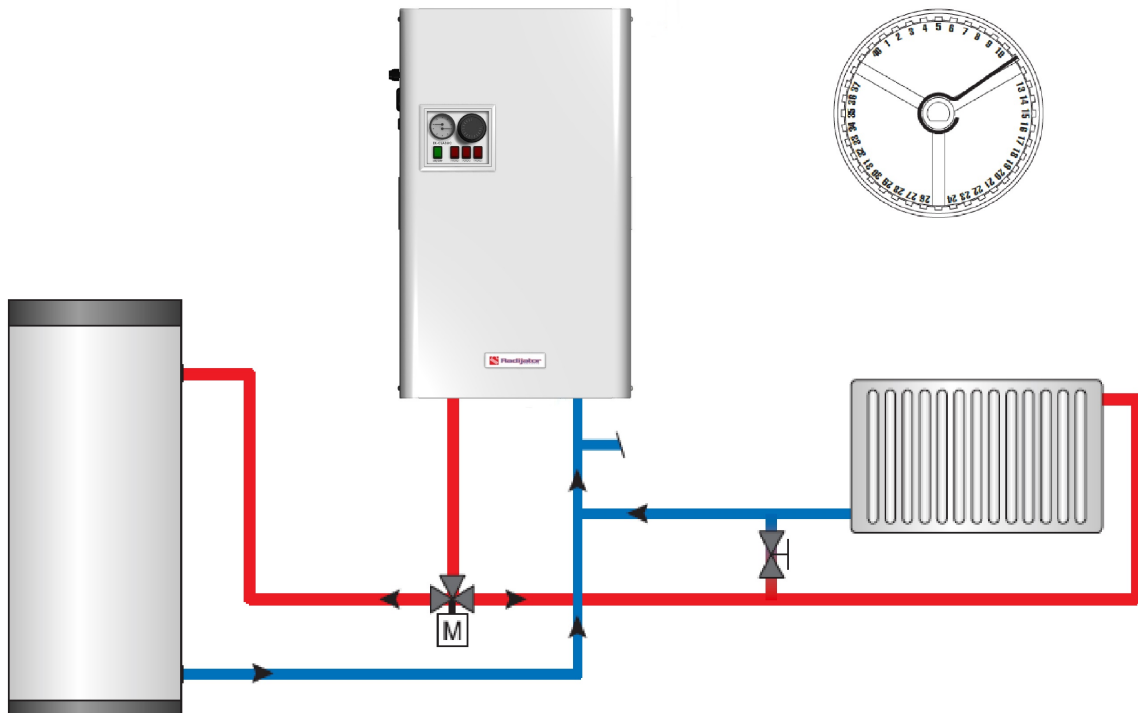


Figure 8. Hydraulic scheme the “Y” Plan

5.3. Hydraulic connection „S“ plan

Limiting maximum temperature

Set the limiter as shown in the picture 60-85°C

Central heating+DHW: “S” plan

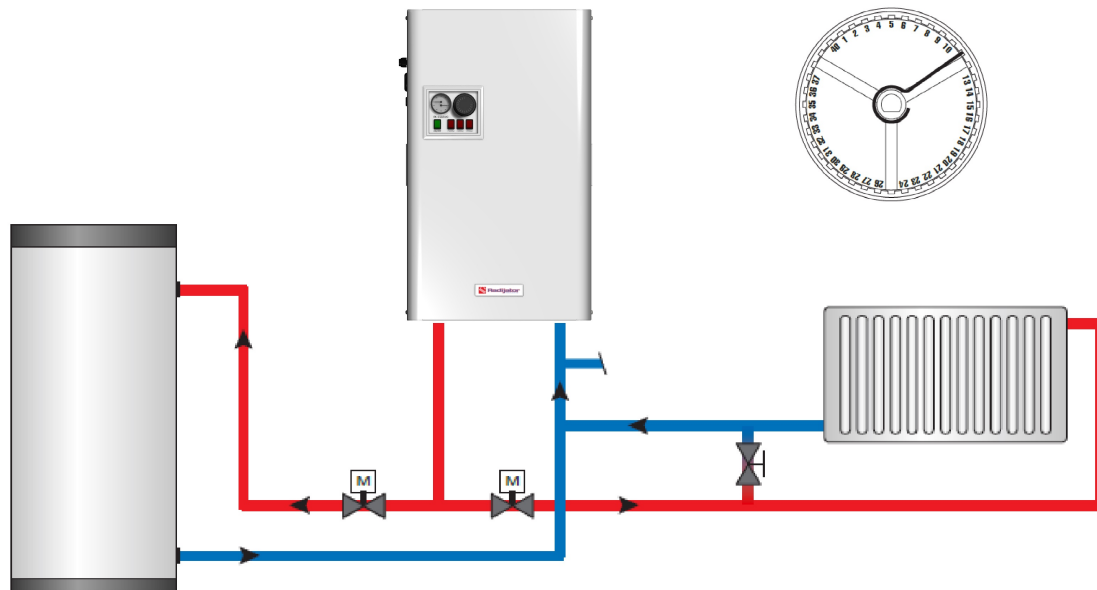




Figure 9 Hydraulic scheme the “S” Plan

6. Electrical wiring diagram

	<p>DANGER: Life-threatening risk of electric shock!</p>
	<p>⚠ Only qualified person can do the works on electric installations.</p>
	<p>⚠ Prior to opening the boiler, disconnect the power supply from all poles and ensure that it is not accidentally connected again.</p>
	<p>⚠ Comply with the regulations for installation.</p>

	<p>IMPORTANT INFORMATION:</p>
	<p>Electric boiler is connected to the permanent electrical installation as per the connection scheme and with a certain cross-section of voltage cable. Connection should be made via outer switch for separating poles with minimum distance between contacts of 3mm.</p> <p>During connecting the boiler to electrical installation, observe the connection schemes. Cables must have the prescribed cross-section, and the fuses must have the prescribed power.</p>
	<p>Models EK 06 Classic EU, EK 09 Classic EU, EK 12 Classic EU, EK 16 Classic EU, EK 18 Classic EU, EK 21 Classic EU, EK 24 Classic EU, EK 27 Classic EU may be connected to a Three Phase connection (3x400).</p> <p>Models EK 06 Classic MONO EU and EK 09 Classic MONO EU may also be connected to a Single Phase connection (1x230V).</p>

6.1. Position of electrical cable grommets in the boiler

This boiler is equipped with two sets of electrical cable grommets. A set of grommets consists of two rings of PG21 and PG11 in diameter, with the larger ring being intended for voltage cable, and the smaller ring for room thermostat.


6.2. Connecting the electric boiler to permanent electrical installation



The boiler is exclusively connected to permanent electrical installation according to the existing standards for electrical installations.

Connecting the boiler to permanent electrical installation must be performed through the device for power supply disconnection from the network which has a space between contacts of 3mm in all fields that provide complete disconnection under III category overvoltage conditions.

- Connection is carried out according to the connection scheme, with a certain cross-section of voltage cable.
- Instead of classic clamp for connecting voltage cable, the boiler contains three-way automatic switches in which the voltage cable is connected.
- The set of three-way automatic switches is supplemented by remote voltage relay, thus providing a safety assembly unit which, in addition to short-term over-current protection, also reacts to thermal overload (a signal from safety thermostat activates voltage relay) and, in the same moment, interrupts the power supply of all three phases to the boiler.
- In models EK 06 Classic MONO EU and EK 09 Classic MONO EU, phase conductor is connected to single-pole switch (L1).
- In models EK 06-27 Classic EU phase conductors are connected to three-way switch (L1, L2, L3).
- Neutral zero conductor is connected to the adequate clamp with the sign N. The clamp of the zero conductor is blue in colour.
- Grounding conductor should be connected to the clamp with the sign \perp . The clamp of the grounding conductor is green-yellow in colour.

	<p>ATTENTION! When connecting phase conductors it is mandatory to tighten well the screws in automatic switches in order to make as better link as possible between cable and clamps.</p> <p>DANGER! If the link between cable and clamp is not tight, there may be incontrollable heating of the switch and, eventually, result in breakdown.</p> <p>NOTE! Remote voltage relay is connected by the manufacturer and nothing is additionally connected to it.</p>
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- When connecting the voltage cable in the boiler, through any of the chosen set of grommets, carefully pull the cable to three-way automatic switches, taking care not to damage sets of cables inside the boiler.

- Room thermostat: connected on the bottom side onto auxiliary clamps marked as show in the in the picture 9. They are factory connected by a jumper and it is necessary to pull out the jumper and connect room thermostat.
- Wi-Fi switch, GSM switch, Honeywall, Master application: connected on the bottom side onto auxiliary clamps marked by numbers 2, 3, 4, 5 in the picture 7. They are factory connected by a jumper and it is necessary to pull out the jumper and connect room thermostat.
- After fill system with fluid and connecting the voltage cable and room thermostat, before closing the boiler, i.e. before assembly of the front cover, the set of switches and remote voltage relay should be lifted to ensure power supply in the boiler.

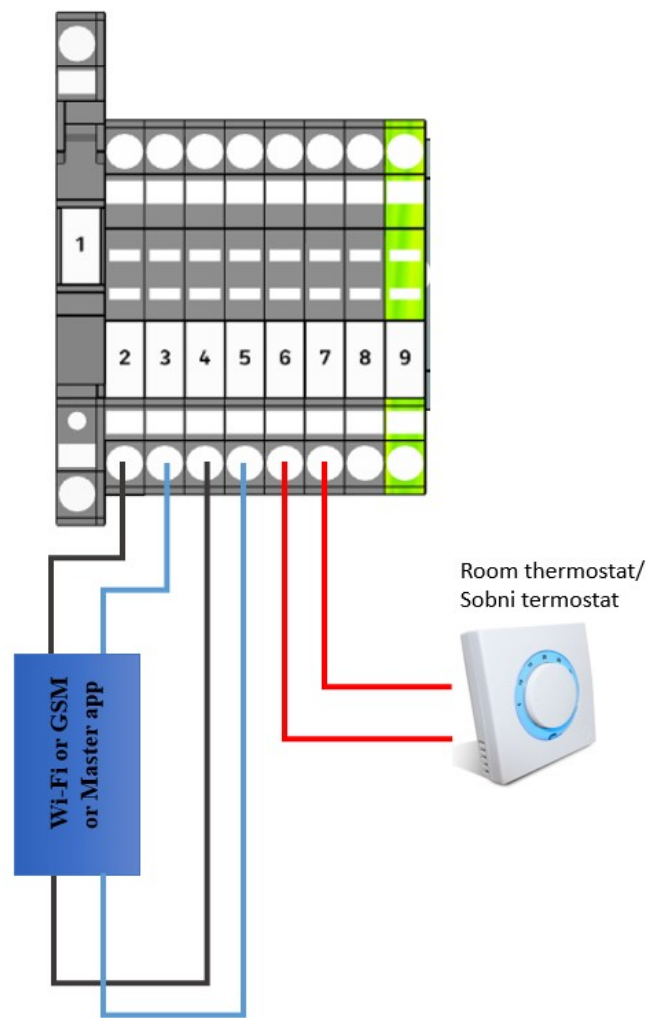
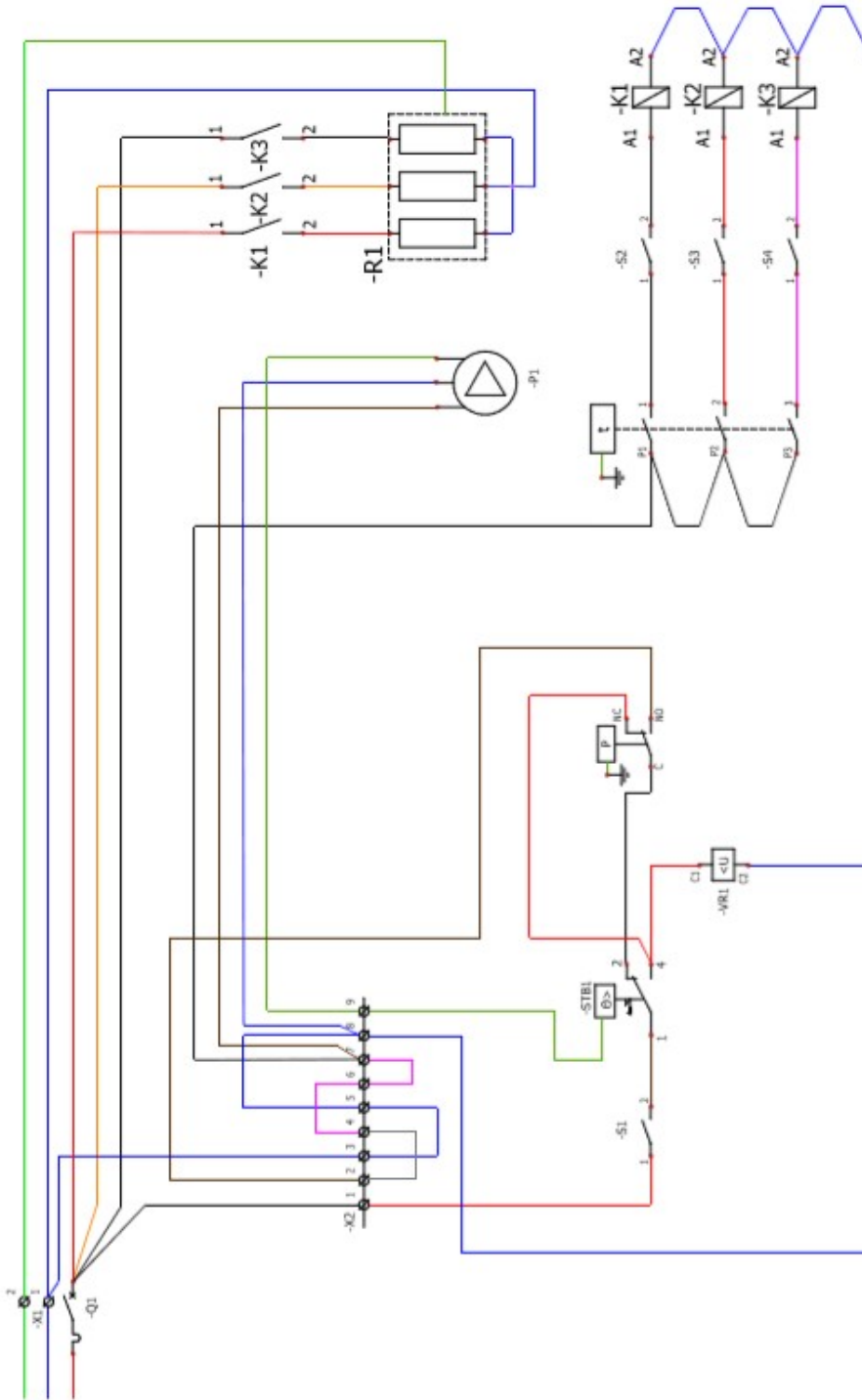
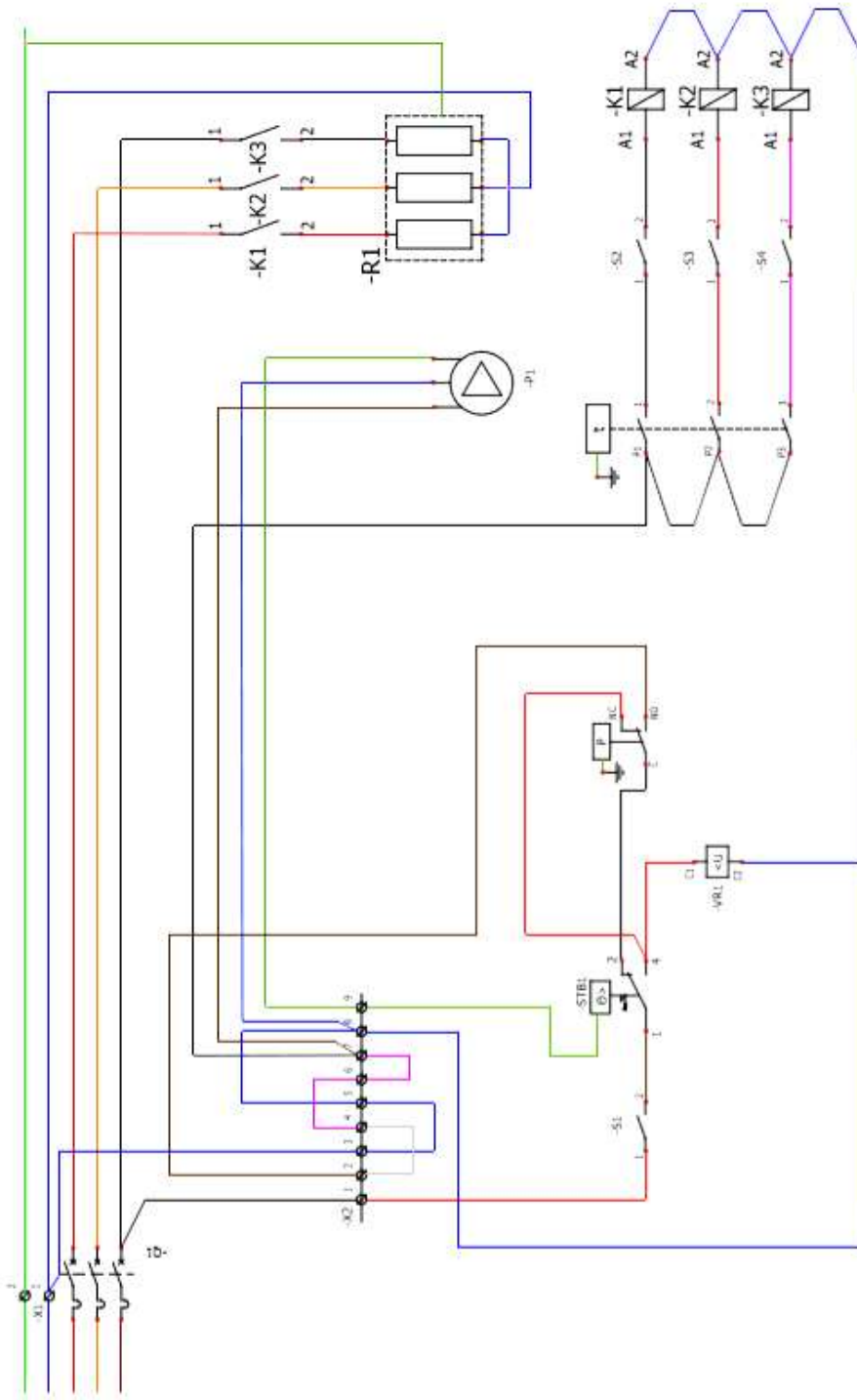


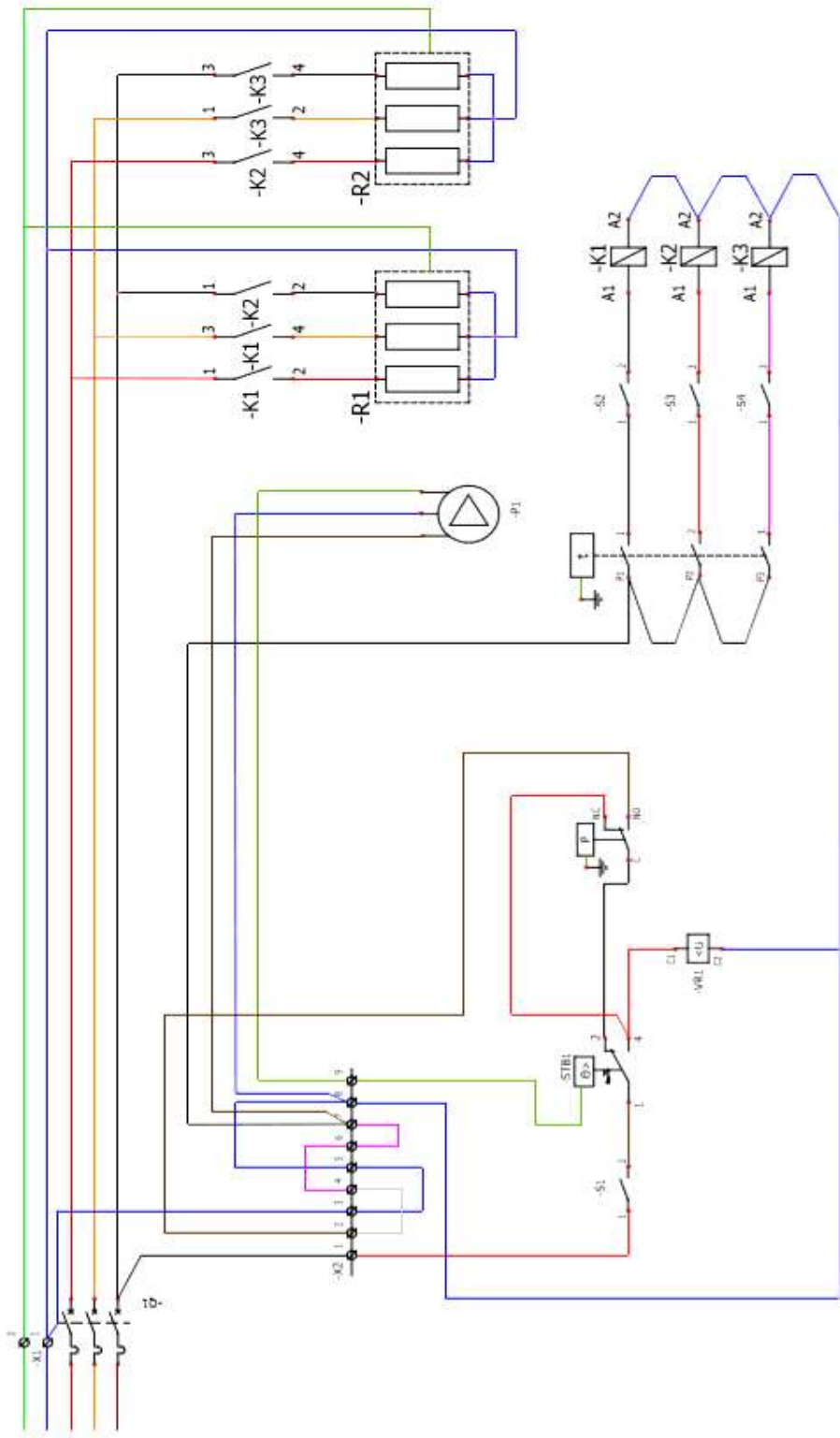
Figure 10. Wiring diagram for connecting of the room thermostat and/or masters applications



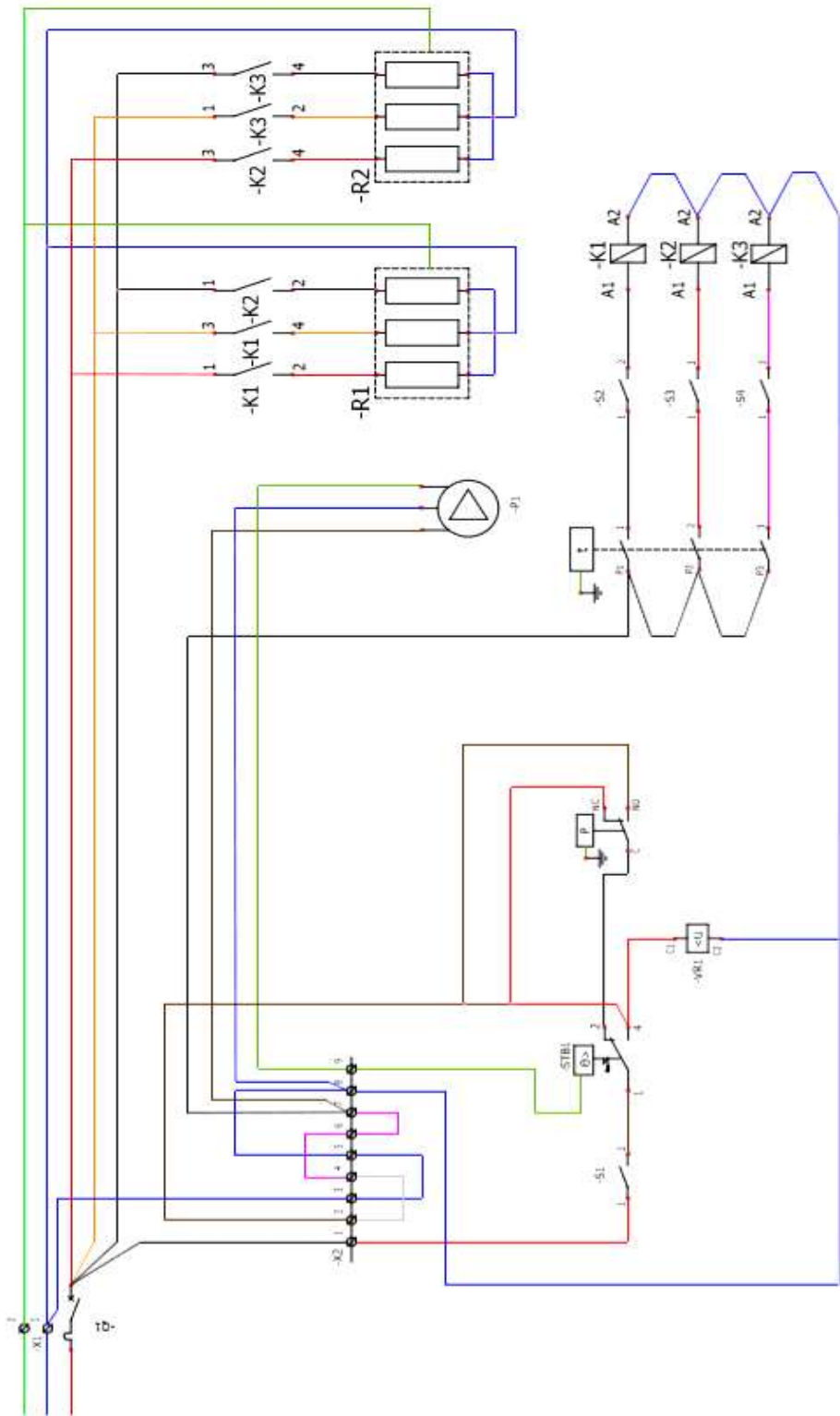
Picture 11. Electrical wiring diagram EK 06 Classic MONO EU



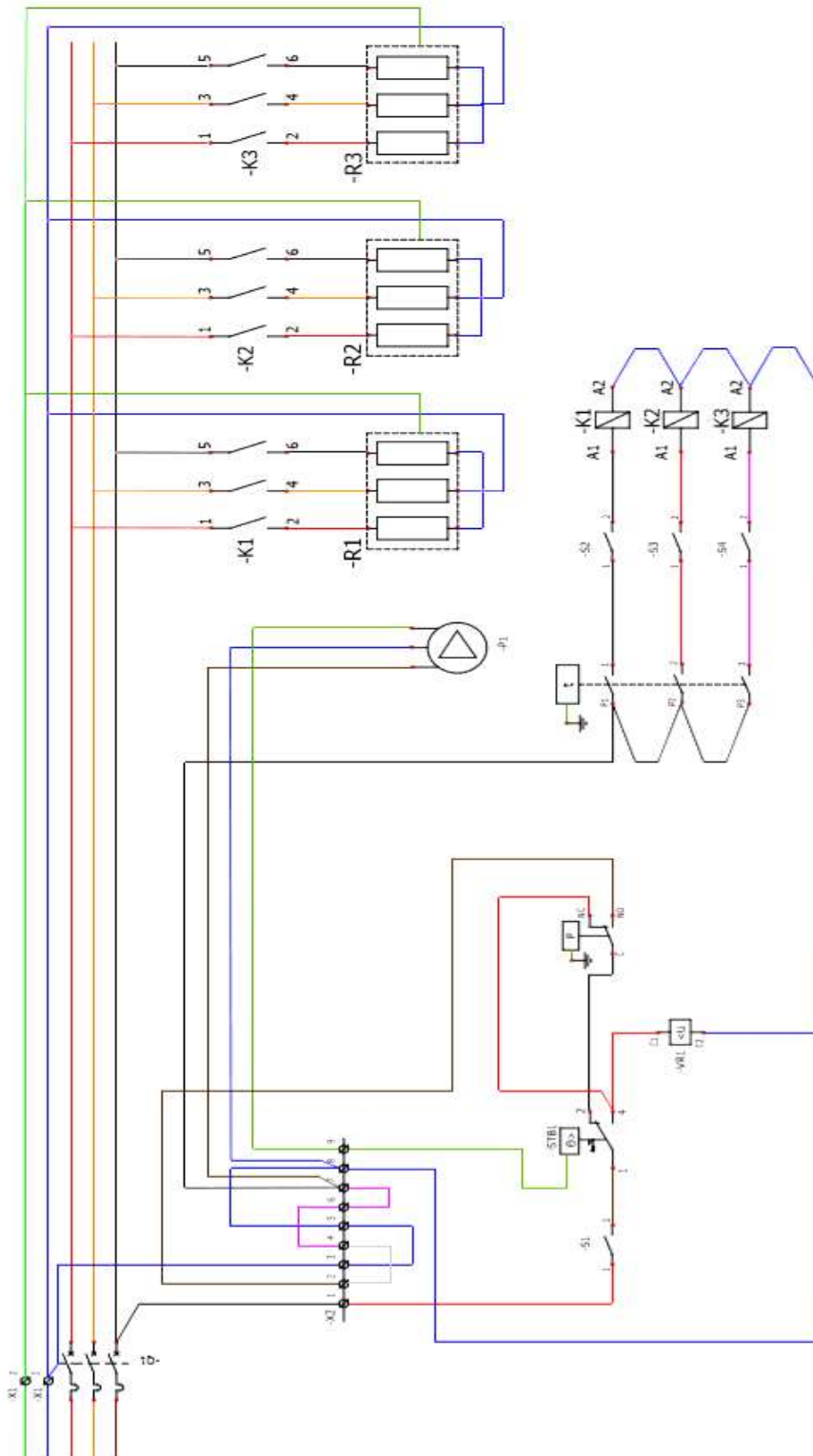
Picture 12. Electrical wiring diagram EK 06 Classic EU



Picture 13. Electrical wiring diagram EK 09 Classic EU, EK 12 Classic EU, EK 16 Classic EU



Picture 14. Electrical wiring diagram EK 09 Classic MONO EU

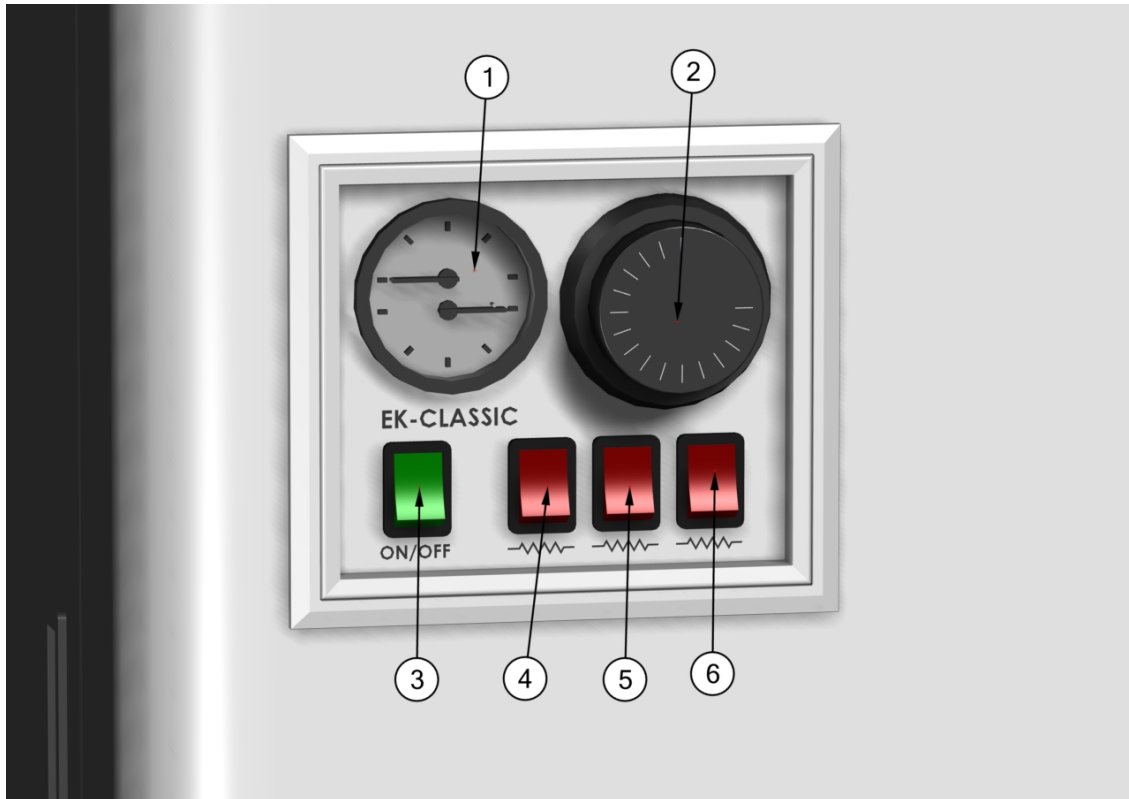


Picture 15. Electric wiring diagram EK 21 Classic EU, EK 24 Classic EU, EK 27 Classic EU

LEGEND:

Q1	Circuit breaker	EK 06 Classic EU: R1=3x2kW EK 09 Classic EU: R1=R2=3x1.5kW EK 12 Classic EU: R1=R2=3x2kW EK 16 Classic EU: R1=R2=3x2.667kW EK 18 Classic EU: R1=R2=R3=3x2kW EK 21 Classic EU: R1=R2=R3=3x2.33kW EK 24 Classic EU: R1=R2=R3=3x2.667kW EK 27 Classic EU: R1=R2=R3=3x3kW
VR1	Voltage release	
X1-1	Terminal Blocks - blue	
X1-2	Terminal Blocks - green	
X2-1	Fuse terminal block	
P1	Pump	
STB	Limit thermostat	
P	Pressure switch	
t	Control thermostat	
S1	ON/OFF Switch	
S2,S3,S4	Power selector switches	
K1,K2,K3	Relay	

7. Operating the boiler



Picture 16. Overview of used display

1. Thermomanometer
2. Three-stage regulation thermostat
3. Switch for turning on the electric boiler
4. Switch for choosing I rate of power input (1/3 of total power)
5. Switch for choosing II rate of power input (1/3 of total power)
6. Switch for choosing III rate of power input (1/3 of total power)

By turning on one of the switches I, II, III (**picture 16 – 4, 5, 6**), 1/3 of total power is used.

By turning on two of the three switches, (**picture 16 – 4, 5, 6**), 2/3 of total power are used.

By turning on all three switches (**picture 16 – 4, 5, 6**) total power of the boiler is used.

The following table shows the positions of switches and power output depending on the boiler model.

Position of switch				Rate of power output [kW]							
I	II	III	IV	EK Classic EU							
				06	09	12	16	18	21	24	27
●	●			2	3	4	5.33	6	7	8	9
●		●		2	3	4	5.33	6	7	8	9
●			●	2	3	4	5.33	6	7	8	9
●	●	●		4	6	8	10.67	12	14	16	18
●		●	●	4	6	8	10.67	12	14	16	18
●	●		●	4	6	8	10.67	12	14	16	18
●	●	●	●	6	9	12	16	18	21	24	27

Table 4. Selections of the boiler power rate

● Sign that **SWITCH (picture 16 - 3)** is in position ON.

● Sign that the switches for choosing the rate of power input (**picture 16 - 4, 5, 6**) are in position ON.

- I. universal switch – turning on the device, circulation pump and condition for turning on heating groups.
- II. the first group of heating elements: Turns on the first group of power (through working or room thermostat).
- III. the second group of heating elements: Turns on the second group of power (through working or room thermostat).
- IV. the third group of heating elements: Turns on the third group of power (through working or room thermostat).

Button of the working thermostat – it is used for the selection of temperature in the boiler. It is a three-stage thermostat which means that it turns on and off the heating groups one by one at a difference of 5°C. This gradual turning on and off of the heating groups eliminates electrical shocks and ensures precise maintenance of the set working temperature of the boiler and, thus, the efficient energy use.

8. Boiler commissioning

NOTE: First commissioning must be carried out by an expert – authorised service technician.

Before commissioning, check the tightness of the hydraulic network. All the valves in the network, including thermostat if any, must be in a position (open) which enables smooth water circulation through the boiler and pipe network. The pressure in the system must be within the limits prescribed by the Instruction.

Check whether the device is properly connected to the electrical network. Check whether all switches on the device are turned off (0), and the regulation thermostat is at the far-left position.

Turn on the fuses in the distribution cabinet of the house electrical wiring.

Turn on the main switch on the device. This switch turns on the circulation pump which works nonstop. If the circulation pump has not been turned on, check whether the pump impeller has been mechanically blocked. The check is performed by unscrewing the main central screw on the pump and turning the shaft of the impeller located under the central screw with the help of a screwdriver. If wi-fi module and room thermostat are installed, check that they are in position to allow heating.

At the beginning of a heating season, it is advisable to check the state of the circulation pump in the above-described way, since there is a possibility of mechanical blockage of the impeller as a result of months of inactivity and sediment accumulation from the pipe network in the pump.

If the room thermostat is connected on the boiler, it should also be turned on.

Select the power of the boiler by turning on the switches of the heating groups. Tables for the selection of power are given for each model separately in the instruction for use per models (power).


Set the boiler temperature by turning the working thermostat button. Range of temperature that may be set is from 10 to 85°C.

Efficient work of the boiler is reached at temperature from 50 to 70°C.

All boilers are equipped with three-stage thermostat which turns on and off the heating elements gradually at a difference of 5°C between each heating element.

Each boiler has a possibility of selection of three levels of working power, in three ways which enables equal usage of heating elements and disencumberment of the electrical installation.

9. Cleaning and maintenance of boiler

	<p>WARNING: Material damage caused by unprofessional maintenance! Insufficient or unprofessional maintenance of the boiler may result in damage or destruction of the boiler, as well as in the loss of guarantee.</p>
	<ul style="list-style-type: none"> ⚠ Ensure regular, comprehensive and professional maintenance of the heating installation. ⚠ Protect electrical components and working units from water and damp

Use only original spare parts of the manufacturer or those approved by the manufacturer. For damages resulting from the use of spare parts not delivered by the manufacturer, the manufacturer does not hold any liability.

The quantity of newly filled water is reduced in the first days after filling, as a result of heating. It, thus, creates airbags which obstruct the work of the heating installation.


Testing the working pressure


Working pressure of the new heating installation should be checked daily at the beginning. In case of need, fill up the heating installation with water and purge it.

Later, working pressure should be checked once a month. In case of need, fill up the heating installation with water and purge it.

- Test the working pressure. If the pressure drops under 1 bar, fill up the installation with water.
- Purge the heating installation.
- Check the working pressure again.

Fill up with water and purge the installation

	<p>WARNING: Material damage caused by temperature strain. If the heating installation is filled in a warm state with cold water, it may result in cracks.</p>
	<p>⚠ Heating installation should be filled only in cold state (temperature of the flow is maximum 40°C).</p>

	<p>WARNING: Material damage caused by frequent filling up of water!</p> <p>Due to frequent filling up of the heating installation with water, depending on the water characteristics the installation may be damaged by corrosion or lime scale.</p>
	<p>⚠ Tightness of the heating installation and functional operation of the expansion vessel should be tested.</p>

- Connect the hose to the filling and drainage tap.
- Fill the hose with water and set the connection of the hose of the filling and drainage tap.
- Tighten the hose with a hose clamp and open the filling and drainage tap.
- Slowly fill the heating installation. At the same time, monitor the pressure value on manometer.
- During the filling, purge the system.
- When the working pressure has been reached, close the filling and drainage tap.
- When the pressure value has been reduced by purging, the water must be filled up.
- Remove the hose from the filling and drainage tap.

10. Operating problems and solutions

1. Boiler is working, but the temperature is unsatisfactory?

- Boiler power is insufficient => Increase the power by selecting another group of heating elements.
- Selected temperature is insufficient => Increase the temperature on the regulation thermostat.
- There is excess air in the system => Purge the whole system.
- One of the heating elements is faulty => Call the repair service in order to do the replacement.
- The boiler does not have all three phases => Call a professional to check.

2. Heating is not functioning and the boiler shows a certain temperature?

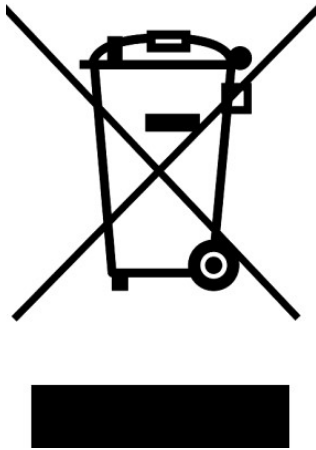
- A valve or coil in the system is closed and the flow disabled => Check the valves and open them if necessary.
- Ball valve on voltage/return line is closed => you must open the valves.
- Pump is not working or is blocked for some reason => Call a professional for repair.

3. Boiler is not working?

- Regulation thermostat has not been set => Set the desired temperature.
- Electric fuse is blown => Call an authorised service technician for replacement
- Switches for selection of power are turned off => Turn on the switches.
- Due to overheating, safety thermostat has tripped out => Call the authorised service technician for repair (reset)

11. Product disposal after use

Crossed-out “wheelie-bin” symbol on the label of this product means that the product should not be disposed of with other household waste. In order to prevent potential negative consequences for the environment and human health, please separate this product from other waste, so that it could be recycled in a way that is environmentally-friendly.



In accordance with the WEEE Directive 2012/19/EU (Waste Electrical and Electronic Equipment), Law on Environmental Protection (*Official Gazette of the Republic of Serbia, No.135/2004, 36/2009, 36/2009 – as amended, 72/2009 – as amended, 43/2011-* decision of the Constitutional Court and 14/2016), Law on Waste Management (*Official Gazette of the Republic of Serbia, No. 36/2009, 88/2010 and 14/2016*) and Rulebook on the list of electrical and electronic products, measures restricting or prohibiting the use of electric and electronic equipment containing hazardous substances, the manner and procedure for management of waste originating from electrical and electronic products (*Official Gazette of the RS, No. 99/2010*).

12. Designing manual

12.1. Systems to which the boiler may be connected

- All the systems for space heating that are designed for temperatures lower than 85°C.
- Closed heating systems.
- Systems in which there is a solid fuel boiler.



ATTENTION! When connecting a boiler to such a system, it is compulsory to pay attention that both pumps in the system push water in the same direction in order to prevent collision of flows.

Potential great hydraulic system strains, as well as cracking of some components.

- It may be used as a device for heating sanitary water in the accumulation boiler through the heat exchanger.
- It may also be used in certain technological processes on condition that there is no need for water temperature above 60°C.
- It must not be used for direct heating of sanitary water.

13. Warranty

1. Co. “Radiator Engineering” covers different warranty periods for different parts (as specified further on) only if the following conditions of the warranty are fulfilled:

- The boiler must be connected to the aforementioned hydraulic diagram from the Technical instructions;
- Wiring connection must be performed in accordance with the Technical Instructions;
- The user must comply with the stated instructions on use and maintenance of the boiler.

2. Warranty statement

We hereby declare:

- That the product has the prescribed and declared quality properties.
- We undertake, at the request of the buyer, if the request for repair is submitted in due time within the warranty period, to perform, at our expense, all repairs of failures so that the product works in accordance with the declared properties.
- That the product will work impeccably during the warranty period, if the instructions for use, operation and assembly are observed.
- That in the warranty period, we will be ready to remove all product failures and keep in stock all the necessary spare parts.
- The warranty period starts from the DAY OF PURCHASE AND LASTS for 60 MONTHS OR 72 MONTHS FROM THE DATE OF PRODUCTION (the date of production is on the sticker on the back of the boiler).
- The 60 MONTHS WARRANTY IS VALID ONLY IF THE BOILER IS REGULARLY SERVICED BY THE CENTRAL SERVICE OF CO. “Radiator Engineering”, within the period specified for the product (in the text below).
- The warranty is valid if the warranty card has been verified by the Seller, if the date of purchase has been entered and the attached bill presented. IT IS ALSO IMPORTANT TO HAVE THE ORDER FOR COMMISSIONING (certified by the Authorised Service).

3. Warranty period of 18 months applies to the following parts:

- Automatic switch; name: Acti 9 iC60
- Voltage relay; name: IMX + off
- Contactors; name: Acti 9 Ict

4. Warranty period of 24 months applies to the following parts:

- Electric boiler heating elements
- Expansion vessel

5. Warranty period does not apply:

- If a regular service is not performed after each heating season;
- For replacement of parts within regular annual maintenance in accordance with the instructions;
- In case of defects caused by the customer due to improper handling of the product;
- For mechanical defects made during transport and during use (solid objects);
- If the product has been installed improperly, contrary to the applicable regulations in this area;
- If it has been established that the hydraulic scheme has not been made according to the recommendations of the company "Radiator Engineering";
- If the customer was using the product over the declared properties and under normal circumstances.

6. The warranty period shall cease to be valid:

- If it has been established that the failures have been repaired by an unauthorized person or an unauthorized service.
- If the original parts were not used in the repair;
- When the warranty period expires.

7. When reporting failure, it is obligatory to provide the following information:

- Name and type of product,
- Date of purchase,
- Factory number of the boiler,
- A brief description of the failure, or shortcomings, The correct address and contact telephone, email.

8. Regular annual service

Regular service is performed at the end of every heating season in the period from 15th April to 31st August and is charged according to the set Price list of the company "Radiator Engineering DOO".