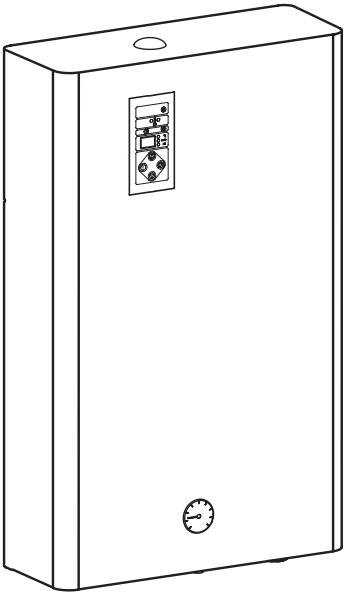
ELECTRIC CENTRAL HEATING FLOW BOILER



EKCO.T

Used product can’t be treated as general communal waste. Disassembled appliance has to be delivered to the collection point of electrical and electronic equipment for recycling. Appropriate utilisation of used product prevents potential negative environmental influences that may occur as a result of inappropriate handling of waste. In order to get more detailed information about recycling this product you should contact the local government unit, waste management service or the shop where this product has been purchased.

Safety instructions

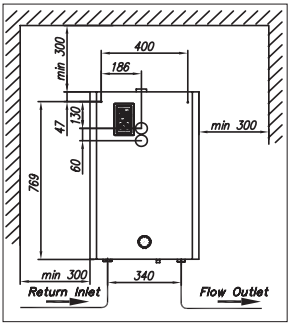
1. Read and strictly follow this installation and operating instructions to ensure a long life and reliable boiler operation.
2. An efficient electrical installation which has been completed in accordance with the binding norms of electric installation.
3. A wet central heating system equipped with appropriate expansion vessel made according to binding norms of hydraulic installation.
4. A wet central heating system must be flushed before boiler installation.
5. Do not install any barrier fittings (e.g. valves) on the outlet of the safety valve.
6. Boiler must not be installed in a humid place or in a place exposed to the danger of explosion.
7. Boiler installation and all electrical and hydraulic work must be performed by a qualified professional installer.
8. All installation work must be performed when the power and water supply is turned off.
9. Electric installation should be equipped with residual current protective devices and other solutions which will ensure disconnecting the heater from the source of power (intervals between all their poles should not be less than 3 mm).
10. Boiler is pre-set by the manufacturer to work with the central heating system. Change the factory settings („Extended Menu") to setup the boiler to work with DHW Cylinder.

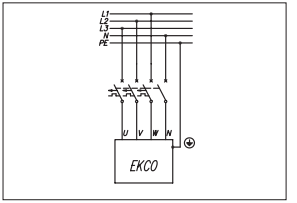
This appliance is not intended for use by persons (including children) with reduced physical, sensory or mental capabilities or lack of experience and knowledge, unless they have been given supervision or instruction concerning use of the appliance by a person responsible for their safety.

Children should be supervised to ensure that they do not play with the appliance.

Installation work

1. Hang the boiler up in a vertical position on fixing screws with inlet and outlet pipes to the bottom, maintaining clearances from the walls and the ceiling.
2. Connect the boiler to a central heating system equipped with cut-off valves.
3. Fill the central heating system with a treated water, that extends the life of the heating elements.
4. Vent the central heating system.
5. Connect a boiler to the electrical system.
6. Fix the room thermostat, in accordance with manual instruction.
7. Connect the room thermostat (by using two wires 2 x 0,35 mm^2) to the terminal of control panel (RP entry).
8. Once you have finished the above procedures, you can start the boiler. See the „Start-up" section.

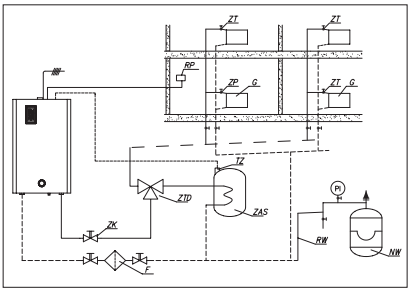




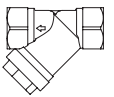
Boiler connection to the central heating system

PI - manometer
ZK - cut-off valve
RW - expansion pipe
NW - expansion vessel
ZT - thermostatic valve
ZP - passage valve
G - radiator
RP - room thermostat

boiler with cylinder
ZTD - three-way valve
ZAS - DHW Cylinder with a coil
TZ - cylinder temperature sensor or cylinder thermostat point of contact

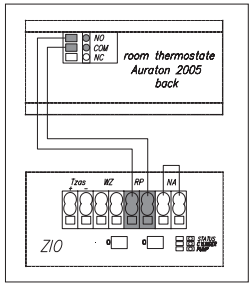


A magnetic filter must be installed on return pipe of central heating installation system (before boiler inlet). The filter must be installed in horizontal position, accordingly to flow direction (see arrow on the filter body), with the magnetic insert chamber to the bottom.



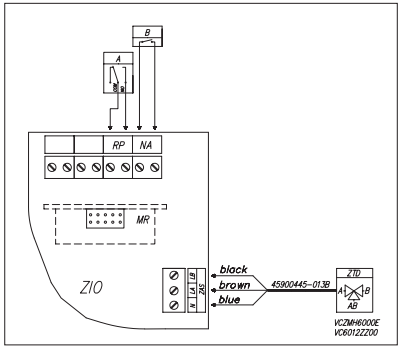
Connection of external appliances

ZTD - three-way valve with a servo-motor
ZAS - connection point of three-way valve
Tzas - connection point of water temp. sensor (in cylinder)
WE - 008 - KOSPEL water temp. sensor (in cylinder)
C - cylinder thermostat
A - Auraton 2005 room thermostate
B - master appliance
WZ - connection point of cylinder thermostat
RP - room thermostat connection point
NA - master appliance connection point
MR - radio module connection point



While applying other thermostat than Auraton 2005 make sure there is no voltage on its output!

Do not connect any voltage into RP, NA input! This can result in permanent ZIO module damage.



Room thermostat (RP input) – when the voltage free contact gets opened the boiler will stop heating. The input is responsible for boiler control depending on the room temperature.

Master appliance (NA input) – you can limit the power used, i.e. the boiler can be switched off while another appliance consumes electricity. To do it, an electrician should install in line an extra open contact to the NA connector (voltage free input), so that when a master appliance gets on, the contact will be opened the boiler switched off. When the NA contact gets opened, heating will get off and the pump stopped. The EKCO boiler may also work as second boiler. If it is so, the master boiler by opening the NA input will stop heating of EKCO. However, the mode of the three-way valve control stays on so a DHW cylinder is charged by the heat from the master boiler.

For advanced settings switch the control panel to standby mode (press and hold ⏻ button for 3 seconds) then press and hold ⏩, button, and press ⏻ shortly.
To select parameter press ⏩, ⏫ or ⏬ buttons enable you to change the value:

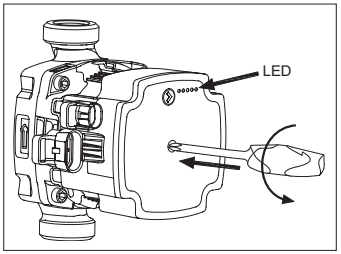
- working mode of pump – PA (automatic), Pr (manual – continuous duty of pump),
- max. number of active heating elements (settings is blocked)
- Operating characteristic of boiler:
  - (no) temperature control between 40 – 85°C,
  - (Po) temperature control between 20 – 60°C (co-operation with DHW Cylinder is not available),
- the way of display the outlet temperature of medium when the boiler works in winter mode.
  - (to) – displaying the outlet temperature from the boiler only
  - (t.o.) – displaying the outlet temperature from the boiler and from left and right heating box ,
- operation in cascade connection:
  - (r0) independent boiler operation, the boiler is not recognised by master sensor,
  - (r1) cascade operation,
- number of boiler that works in cascade. This parameter can only be changed when the boiler is set up to work in cascade.
  - (Ax) , x – number of boiler in cascade,
- temperature of medium which feed a DHW Cylinder (starting the DHW mode). This mode can be activated by setting the temperature of medium in the range between 50-85°C. Setting at 0°C will switch off the DHW mode..
- power of heating box (I indicator is on),
- maximum boiler power during the cylinder feeding (A, I indicators are on)

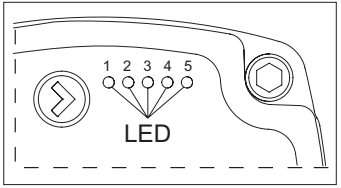
Press and hold ⏻ button to exit and save the settings..

Special start-up procedure (when the system is filled with an antifreeze solution)

A flow rate reading error may occur if you start-up the boiler at low ambient temperature. This error may occur because the physical properties of antifreeze solution. If the B indicator flickers and the cut-off valves are opened you have to close NA and RP contacts which will automatically start the special start-up procedure. As a result, the medium will be warmed up to temperature that enable you to read the flow rate correctly. The duration of procedure depends on both the installation capacity and the temperature inside the installation. When a control panel display (J) shows selected parameters alternately and marks („-”, „--”) it means that the procedure is started. The procedure will close automatically and the boiler will start normal operation once the minimal flow rate is reached.

Start up





1. Disconnect the NA contacts.
2. Set the pump on manual mode, see the „Advanced settings" section.
3. Switch the boiler on (press ⏻ button).
4. Check pump mode is set to the recommended factory setting (see Table Below). To do this press ⏻ button for no more than 2 seconds. The LED's should illuminate the current operating mode (see image).
5. In case the LED's are signaling a different operating mode from the recommended table below, set the appropriate mode according to the following instructions: press ⏻ button for longer than 2 seconds, but less than 10 seconds, the pump then enters programming mode. LEDs glow to indicate the current settings. To go to the other settings of the pump, in accordance with the table, you can enter the correct combination of glowing LEDs by pressing ⏻ if the LED combination is correct, by not pressing the button for 10 seconds the pump will remember this setting and will exit from programming mode.

   Note: holding ⏻ button for more than 10 seconds will lock the programming mode on the pump so no changes can be made. To re-enable programming of the pump settings hold ⏻ button again for more than 10 seconds.
6. Make sure that a proper flow through the boiler is reached (the „B" indicator is on with a constant light). The pump should self vent after a short time of running however, if necessary, vent the pump in the following way:

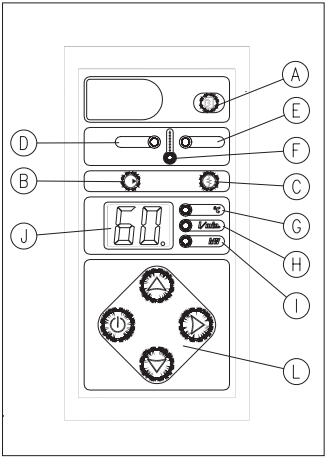
- close the isolating valve on the outlet,
- leave boiler running for 15-30 s.
- open the isolating valve,

7. Switch the boiler off (hold ⏻ button for 2 seconds).
8. Connect NA contact.
9. Set the pump on automatic mode, see „Advanced settings" section.
10. Switch the boiler on (press ⏻ button).
11. Set the temperature of the boiler to required temperature, see the „Operating" section.

In the case of blocking the pump impeller due to a long layover out of heating season and simultaneous non-compliance with the recommendation to leave the driver in this period in a parking mode, please restore proper movement of the impeller. To do this, please use PH2 screwdriver, press and turn the screw left, located in the middle of the front panel of the pump (picture on page number 7). The pump impeller should be unblocked then.

Rated power [kW]	Pump lifting height [m]	LED 1 red	LED 2 yellow	LED 3 yellow	LED 4 yellow	LED 5 yellow
	4	●	●			
	5	●	●		●	
	6	●	●		●	●
30 - 48	7	●	●			●

Control panel



A - DHW cylinder indicator
B - pump and flow indicator
C - heating on and room thermostat indicator
D - inlet temperature indicator
E - outlet temperature indicator
F - medium temperature setting indicator (for CH system)
G, H, I - physical units indicators
J - digital display
K - medium temperature setting indicator (for DHW)
L - push-buttons

The control panel consists of two working areas: the signalling area (elements: A-K) and control area (L). The user can select the following working modes:
- stand-by,
- winter (CH or CH + DHW heating),
- summer (DHW heating),

Stand-by mode

To set the stand-by mode press ⏻ and keep button for 2 seconds. Important: Do not cut power supply off between heating season. When the control panel is switched to „Stand-by" mode the control panel is off. In this mode the pump is activated every day for 15 minutes (what protects the boiler and the whole central heating installation from being blocked and silted up). The pump will run every day at the same time, it will be the time of the day when you switch it to the „Stand-by" mode e.g. if you set the pump on a „Stand-by" mode at 6 p.m. the timer will activate the pump everyday for 15 minutes starting at around 6 p.m.

Winter mode (CH or CH + DHW heating)

To set the winter mode press ⏻, (when you switch from „stand-by" to „winter" mode). The digital display shows the CH medium temperature. Indicator F is on when the controller is in the CH medium temp. setting mode. To set the temp. of CH medium value press △ or ▽. The temp. can be set between 40 – 85°C. To ensure smooth and economic boiler operation, the temperature of the medium has to be set in ac-

cordance with current weather conditions (outdoor temperature), taking into account the building parameters (e.g. compactness, insulation, windowing etc.). Optimum settings of the medium temperature can reduce the boiler operating costs.
When the boiler works in winter mode (C.H + DHW heating) the three way valve directs the heating medium to either central heating or feed cylinder circuit.
The priority is to heat the DHW Cylinder, at the same time the central heating circuit is off. When the boiler heats the DHW Cylinder the boiler power is limited to 1/3 of its nominal power. To change maximum boiler power (when the boiler heats the DHW Cylinder) an advanced unit settings must be adjusted. If the WE-008 sensor for cylinder water temperature control is applied (connected to the Tzas input on the ZIO board) you can change the water temperature setting in cylinder by using ▷ button. The digital display (J) will show the cylinder temp. setting. To set the temp. press △ or ▽ If the thermostat for cylinder temperature control is applied (connected to the WZ input on the ZIO board), the temperature setting on front panel is not available. You can set the temp. directly on the cylinder thermostat. You can read the following working parameters by pressing ▷ button.
A display shows (in sequence): inlet temp. (G,D,F indicators are on), outlet temp. (G,E,F indicators are on), medium flow rate through the boiler (H indicator is on), estimated power with which the boiler currently heats (I indicator is on). Pressing ▷ button again allows you to set the the temperature of CH medium. Pressing △▽ button (when you are in the parameters view mode) let you get back to the CH temperature setting mode.
Regardless of current work mode (setting, view) the "A" „B" and „C" indicator shows:

- A indicator is "on" - boiler works in DHW mode
- B indicator is "on" - pump is on, proper rate of medium flow through the boiler B indicator flickers when there is no flow or the rate of flow is too low (boiler is in emergency mode, heating elements are off)
- C indicator is "on" (green) - room thermostat sends a heating on signal, the required medium temp. has been reached
- C indicator is "on" (red light) - heating activation
- C indicator is "off " - room thermostat sends heating off signal, the required room temp. has been reached

Summer mode
To set the summer mode press ⏻, (when you switch from „Winter mode" to „Summer mode").
This mode is available if the boiler is enabled to co-operate with the DHW Cylinder. A heating medium is directed by three way valve to cylinder's coil only.
This mode should be used in time between the heating season. A water temp. in cylinder is shown only if the WE-008 sensor is applied (connected to the Tzas input on the ZIO board). You can change the water temperature setting in cylinder by using △ or ▽ button When a cylinder thermostat is applied (connected to the WZ input on the ZIO board), the temp. settings on panel control is not available and the digital display shows ' - - '. The temp. can be set by cylinder thermostat. The view of inlet and outlet temp, ,flow rate,power value and ▷ button is unactive. To switch to winter mode press ⏻ shortly.

Failures

symptom	reason	action
Control panel indicators are off	lack of boiler power supply	check parameters of the power network and fuses
		contact the seller
B indicator flickers	pump is blocked	Unblock the rotor of the pump by inserting a screwdriver into slot that is placed in front of the pump (as shown in the figure on page no.7). Push the screwdriver and turn in a random direction.
	medium doesn't circulate through the boiler - boiler is blocked	an air-bound of central heating system, vent the installation, pump and boiler
		check patency of central heating system, clean the filter
	a failure of pump's power supply	contact the seller
	a failure of pump or flow sensor	contact the seller
C indicator is off, room thermostat sends heat on signal	a failure of installation that connect a room thermostat	check installation
	a failure of electronic module	contact the seller
D indicator flickers	D indicator flickers a failure of inlet temp. sensor, boiler in emergency mode	contact the seller
E indicator flickers	a failure of outlet temp. sensor, heating is blocked	contact the seller
C indicator flickers when the master appliance doesn't work	a failure of installation that connects the master appliance	check installation
	a failure of electronic module	contact the seller
Boiler doesn't heat a cylinder	a failure of cylinder temp. sensor or thermostat	contact the seller, replace cylinder temp. sensor or thermostat
	a failure of three-way valve actuator	replace the actuator
	a failure of electronic module	contact the seller
J panel display shows " – " , – – ", B indicator flickers	medium temperature in the circuit is too low, medium flow rate reading error	wait until the start-up procedure is finished

Technical data

Max. pressure	MPa	0,3
Min. pressure	MPa	0,05
Outflowing water temp.	°C	40 ÷ 85
Max. water temp.	°C	100
Overall dimensions	mm	815 x 503 x 197
Weight	kg	~29
Water connection		G1"
Safety class		IP 21

Rated power consumption	kW	30	36	42	48
Rated voltage		400V~			
Rated current	A	3 x 43,3	3 x 52,0	3 x 60,6	3 x 69,3
Fuse rated current	A	50	63	80	
Min. connecting wires section	mm^2	5 x 10			5 x 16
Max. connecting wires section	mm^2	5 x 50			
The maximum allowed network impedance	Ω	0,14	0,09	0,035	0,03

Rated power consumption	kW	30	36	42	48
Rated voltage		380V~			
Rated current	A	3 x 45,6	3 x 54,7	3 x 63,8	3 x 72,9
Fuse rated current	A	50	63	80	
Min. connecting wires section	mm^2	5 x 10			5 x 16
Max. connecting wires section	mm^2	5 x 50			
The maximum allowed network impedance	Ω	0,14	0,09	0,035	0,03

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