Centrometal

HEATING TECHNIQUE

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ENG

Technical instructions

CE

Description and using of boiler control unit

WiFi READY

THE FIRST START-UP MUST BE DONE BY AUTHORIZED PERSON OTHERWISE PRODUCT WARRANTY IS NOT VALID.

BioTec-L

TU-R-BT-L-01-2024-v2.46-ENG

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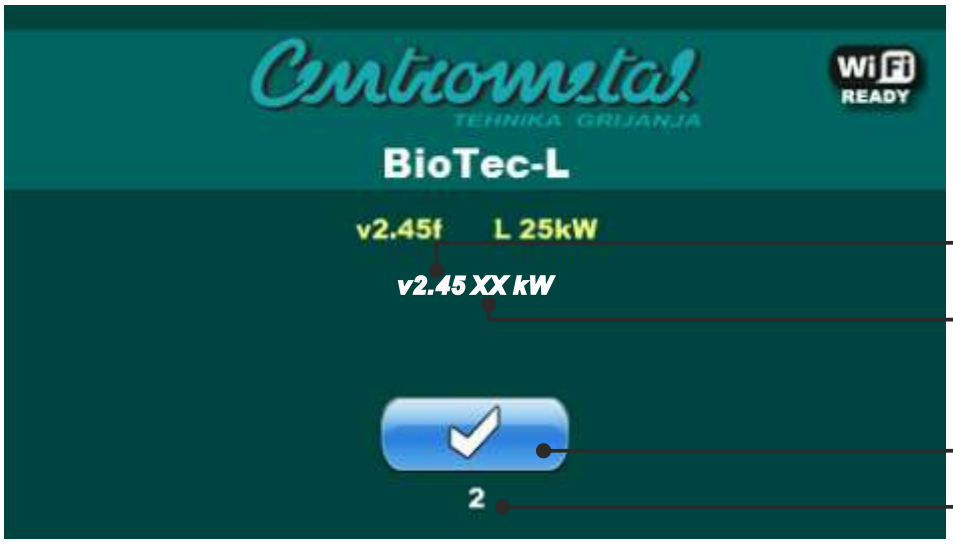
1.0. DESCRIPTION

1.1. SWITCHING ON

After turning on the main switch, screen will display language selection menu and software version.
To select the language, press the flag of language you want.

If the language selection is "disabled" (display > language sel > disabled), initial message wil appear in the screen as long as the set in the menu "Welcome time" (display > welcome time).



When turning the main switch the screen should not be pressed (by finger...). If the screen when you turn the main switch is pressed (on the screen labeled "Firmware update") regulation is in "software update" that can be used by authorized personnel only. If this happens, it is necessary to turn off the main switch and restarted without any pressure on the display.

1.2. MAIN MENU

The main menu is used to select the desired submenu. To select a specific menu you must press the appropriate icon on the screen. To switch between the ''Main menu'' and ''Boiler working display'' press the button ''Display selection''. To switch between graphic and numeric display of the boiler using press ''Boiler operation display''.

1.3. BUTTONS

Button ''**ON / OFF**''
options: on / off boiler operation''

Button ''**OK**''

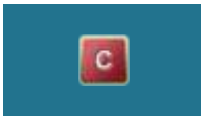
Button ''**DISPLAY SELECTION**''
options: main menu / work

Button ''**START**''/''**STOP**''

Button ''**BOILER OPERATION DISPLAY**''
options: graphic / numeric

Navigation buttons:
''**LEFT**'', ''**RIGHT**'', ''**UP**'', ''**DOWN**''

Button ''**ENTER**''



Button ''**DELETE**''

Button ''**BACK**''

Button ''**FACTORY SETTINGS**''

Button ''**PREVIOUS SCREEN**''

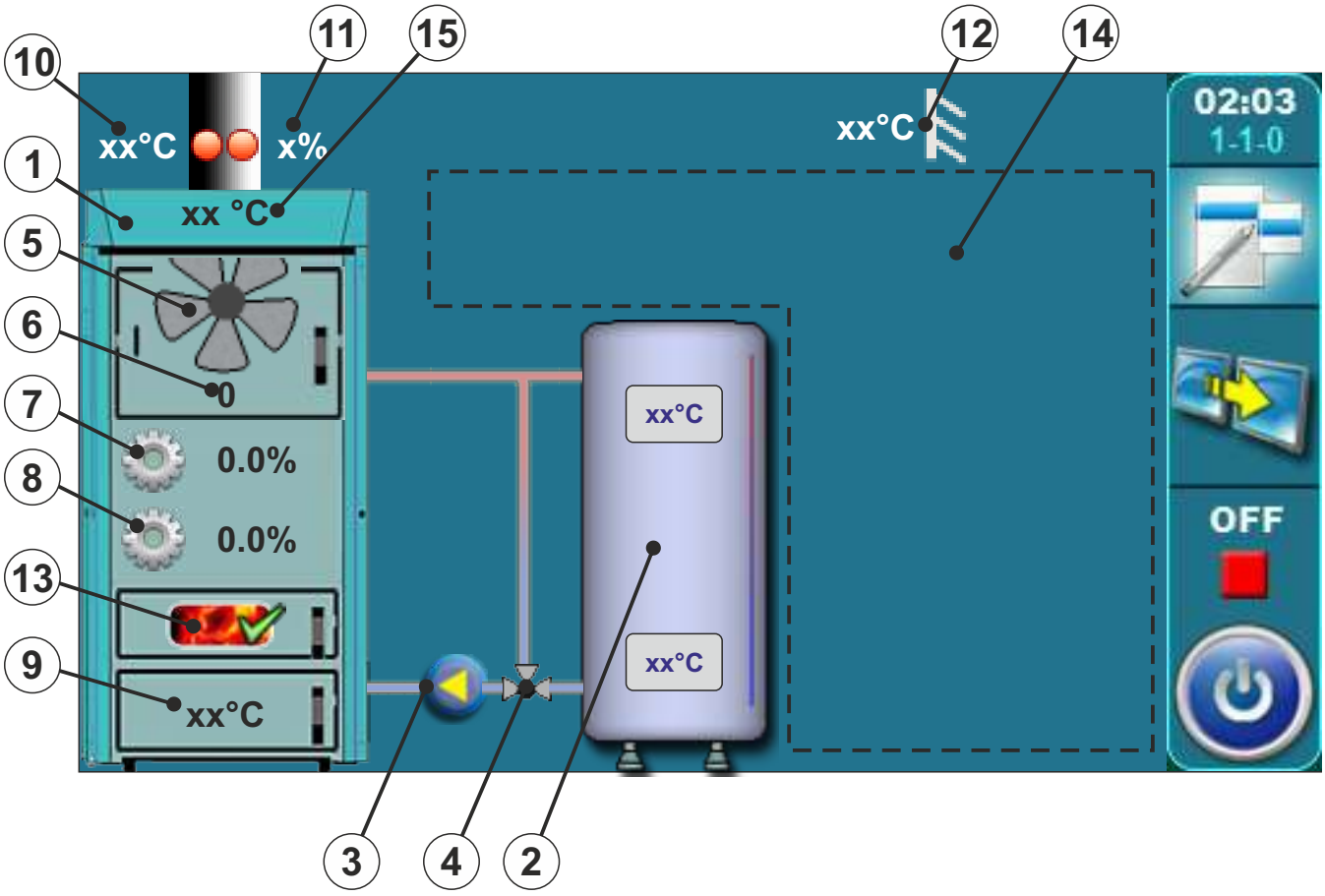
Button ''**INFORMATION**''

Button ''**NEXT SCREEN**''

Button ''**COPY**''

Button ''**PASTE**''

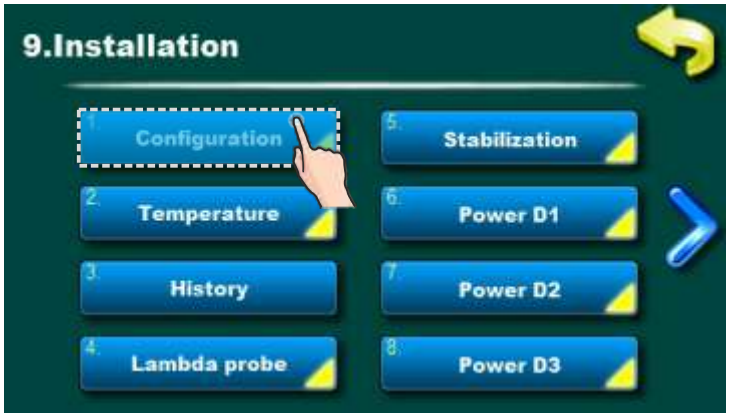
1.4. SYMBOLS



1 - Boiler BioTec-L
2 - Buffer tank
3 - Boiler pump P1
4 - 3-way thermic valve or 3-way mixing valve with motor drive (protection valve)
5 - Symbol of fan operation (when working, symbol is turning)
6 - Fan speed (rpm)
7 - Curent position of primary air actuator
8 - Current position of secondary air actuator
9 - Combustion chamber temperature
10 - Flue gas temperature sensor
11 - The percentage of oxygen in the flue gases
12 - Outer temperature sensor
13 - Glow indicator (if enabled)
14 - The symbol in this section depend ont the selected configuration
15 - Boiler temperature

2.0 CONFIGURATION (authorized persons only)

For entry into Configuration menu press ”Installation“ button. When you press ”Installation“ button control unit ask for PIN. Enter PIN and confirm it by presing “Enter“ button.



In installation menu press ”Configuration“ button to enter into ”Configuration“ menu.

Configuration menu:

Configure the system by selecting installed components! Some components exclude others (eg. you can choose radiator heating or floor heating, not both of them), some components can be selected only with another component (eg. room thermostat can be selected only if you select radiator h. or floor h., if you don't select this component room thermostat can't be selected).

When the configuration contains motor drive, you need to enter VALVE TIME. This parameter defines how many seconds is required for mixing valve opening/closing.

THIS NUMBER MUST CORRESPOND EXACTLY TO THE TIME IT TAKES THE MOTOR DRIVE TO OPEN THE VALVE (DEPENDS ON THE TYPE OF MOTOR)

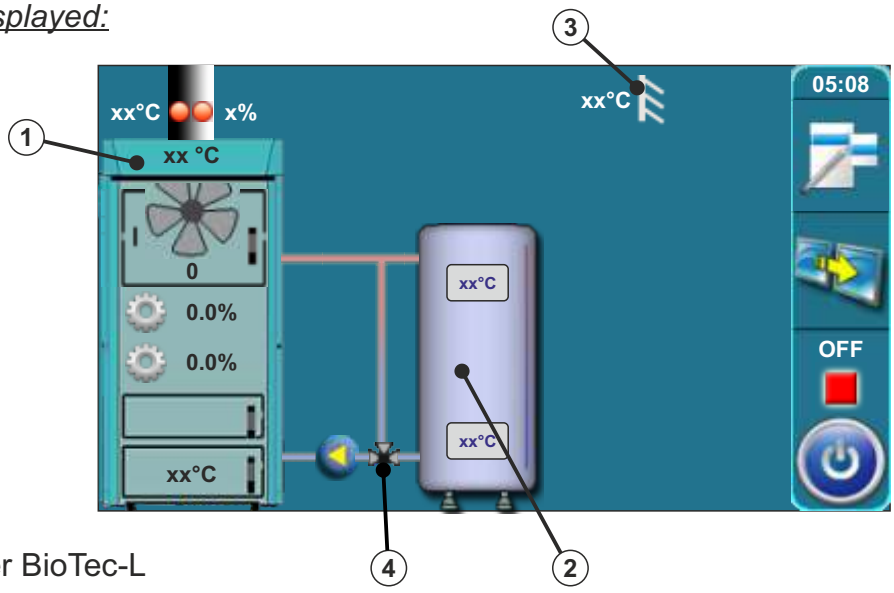
2.1 GENERAL CONNECTION SCHEMES CONFIGURATION

In ”Tecnical instructions for installation of hot water boiler BioTec-L” are showned general connection schemes. The following instructions show which configuration corresponds to which scheme.

Configuration 1: (Basic configuration)

On this configuration all compontents are unselected.

On display is displayed:

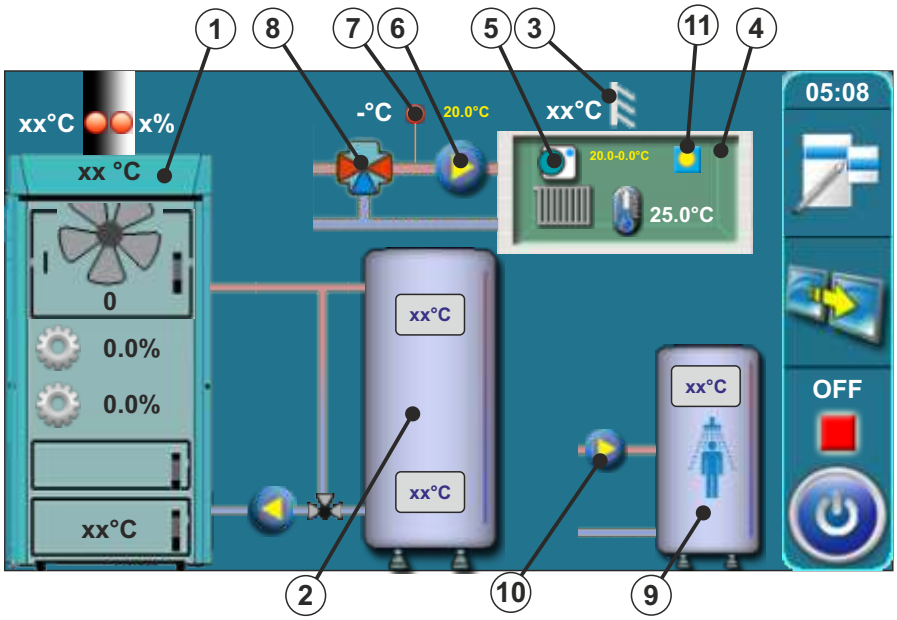


1 - Boiler BioTec-L
2 - Buffer tank
3 - Outer temperature sensor
4 - Return flow protection by 3-way termostatic valve (60°C)
VTC 531 (60°C), LTC 261/271 (60°C) or laddomat 21 (63°C)

Configuration 2 is from scheme 4 and scheme 5 from ”Tecnical instructions for installation of hot water boiler BioTec-L”

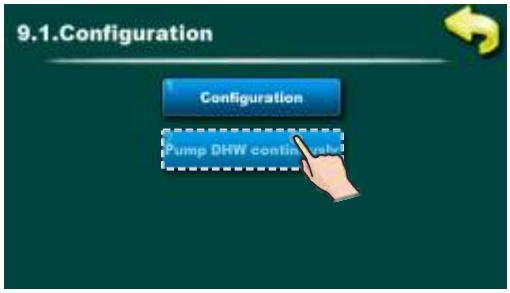
In this configuration the following components are selected:
- radiator heating, corrector, motor drive (heating circuit), DHW (domestic hot water)

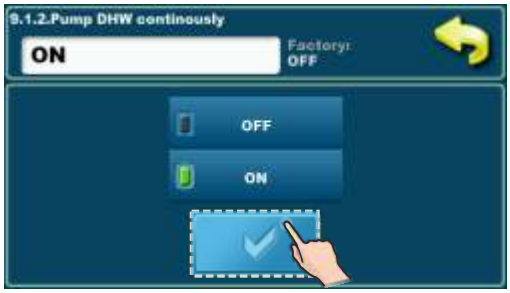
On display is displayed:



1 - Boiler BioTec-L
2 - Buffer tank
3 - Outer temperature sensor
4 - Heating etage (radiator h.)
5 - Room corrector (CSK)
6 - Heating pump P3
7 - Main flow sensor
8 - Mixing valve with el. actuator of heating circuit (motor drive)
9 - DHW boiler
10 - DHW pump P2
11 - Day/night temperature indicator

In this configuration, on the previous screen, a new button is displayed (Pump DHW continously)



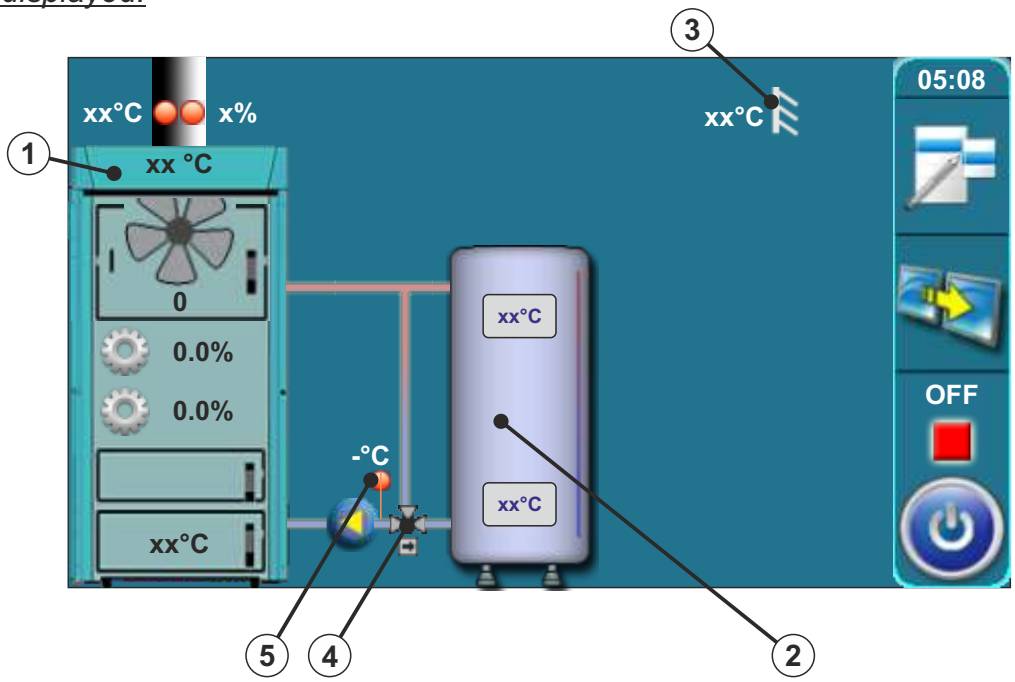


When DHW sensor (ERROR 1) occurs, regulation cannot automatically turn ”ON/OFF“ DHW pump. For intervention work serviceman can turn ”ON“/“OFF“ DHW pump manually. In this case, the pump DHW work all the time until serviceman manually turn it ”OFF“.

Configuration 3 is from scheme 6 from ”Tecnical instructions for installation of hot water boiler BioTec-L”

In this configuration the following components are selected: - protection valve (return flow protection)

On display is displayed:

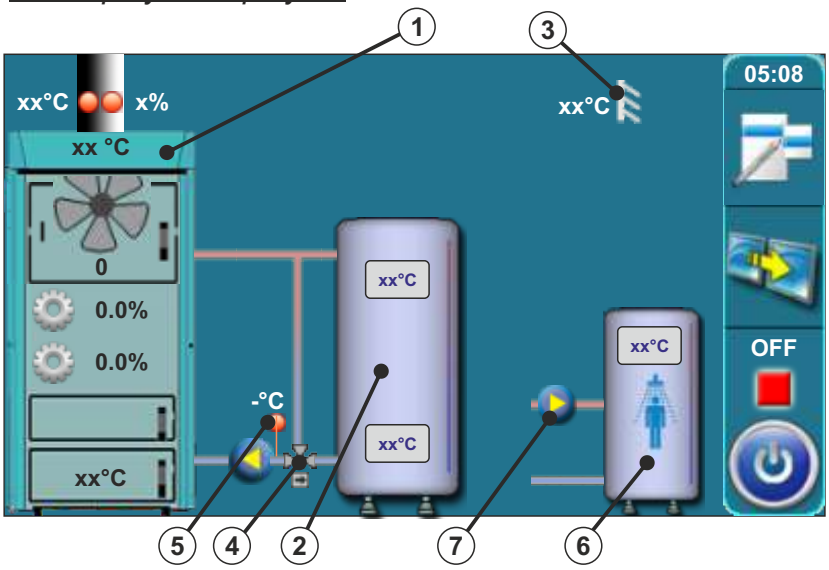


1 - Boiler BioTec-L
2 - Buffer tank
3 - Outer temperature sensor
4 - Mixing valve with el. actuator (return flow protection) (protection valve)
5 - Return flow sensor

Configuration 4 is from scheme 7 from ”Tecnical instructions for installation of hot water boiler BioTec-L”.

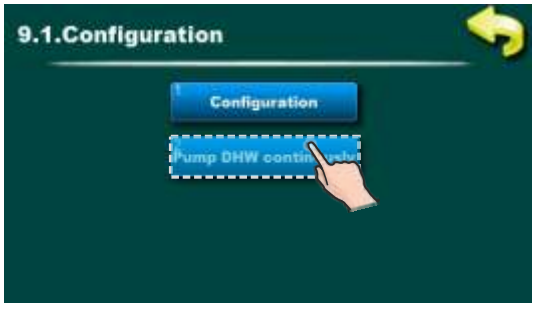
In this configuration the following components are selected: - protection valve (return flow protection)
- DHW (domestic hot water)

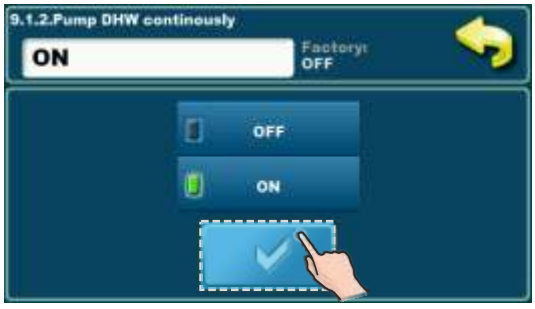
On display is displayed:



1 - Boiler BioTec-L
2 - Buffer tank
3 - Outer temperature sensor
4 - Mixing valve with
el. actuator
(return flow protection)
(protection valve)
5 - Return flow sensor
6 - DHW tank
7 - DHW pump

In this configuration, on the previous screen, a new button is displayed (Pump DHW continously)



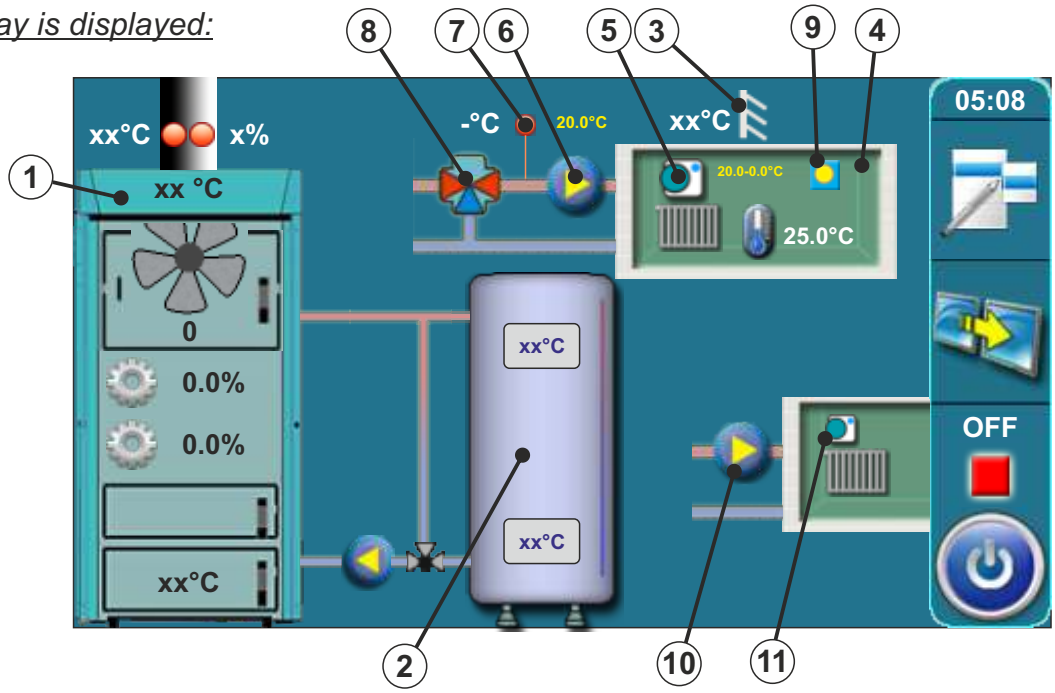


When DHW sensor (ERROR 1) occurs, regulation cannot automatically turn ”ON/OFF“ DHW pump. For intervention work serviceman can turn ”ON“/”OFF“ DHW pump manually. In this case, the pump DHW work all the time until serviceman manually turn it ”OFF“.

Configuration 5 is from scheme 8 and 9 from ”Tecnical instructions for installation of hot water boiler BioTec-L”.

In this configuration the following components are selected:
radiator heating, corrector, motor drive (heating circuit), 2.Heating Circuit, 2.Circuit room thermostat

On display is displayed:

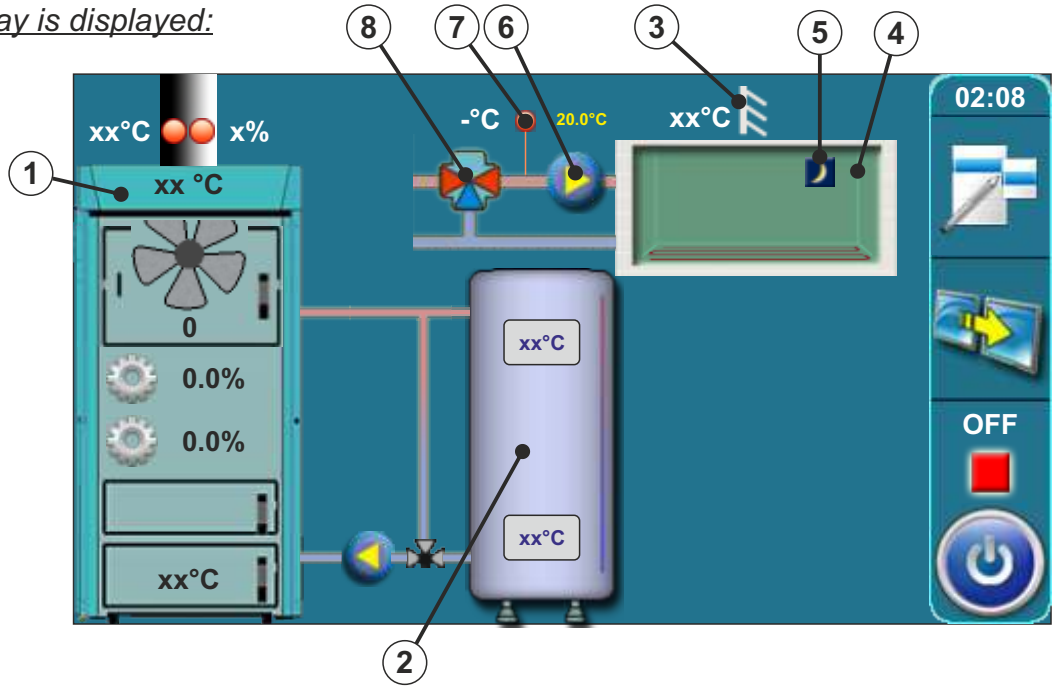


1 - Boiler BioTec-L
2 - Buffer tank
3 - Outer temperature sensor
4 - Heating etage (radiator h.)
5 - Room corrector (CSK)
6 - Heating pump P3 (circuit 1)
7 - Main flow sensor
8 - Mixing valve with el. actuator of heating circuit (motor drive)
9 - Day/night temperature indicator
10 - Heating pump (circuit 2)
11 - Room thermostat (circuit 2)

Configuration 6

In this configuration the following components are selected: - floor heating
- motor drive (heating circuit)

On display is displayed:

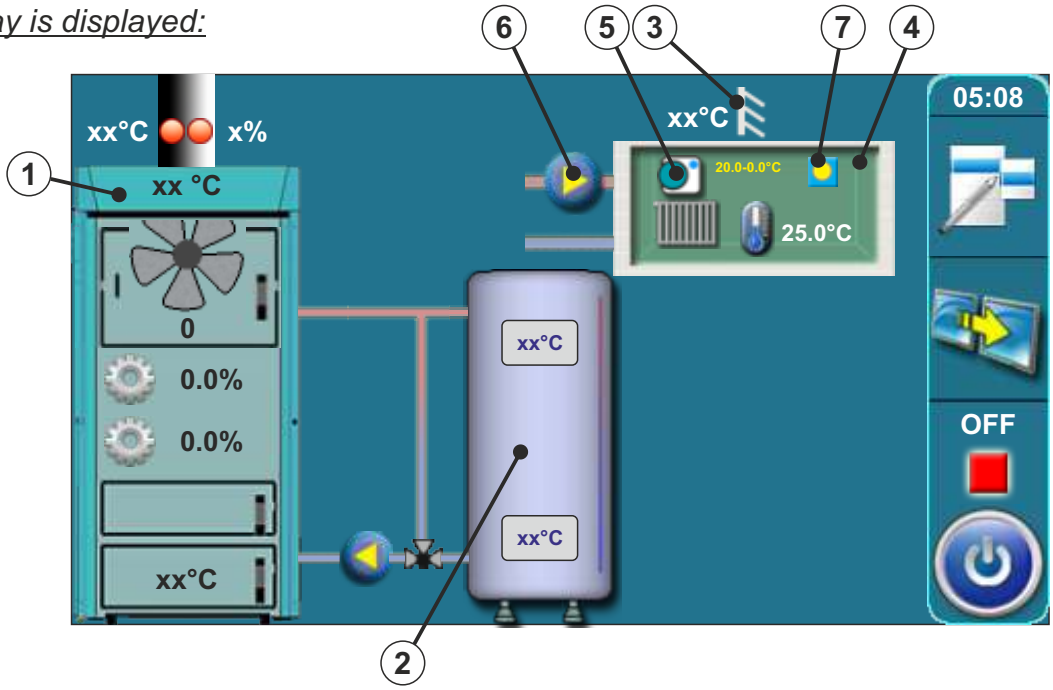


1 - Boiler BioTec-L
2 - Buffer tank
3 - Outer temperature sensor
4 - Heating etage (floor h.)
5 - Day/night temperature indicator
6 - Heating pump P3
7 - Main flow temperature sensor
8 - Mixing valve with el. actuator of heating circuit (motor drive)

Configuration 7

In this configuration the following components are selected: - radiator heating
- room corrector

On display is displayed:

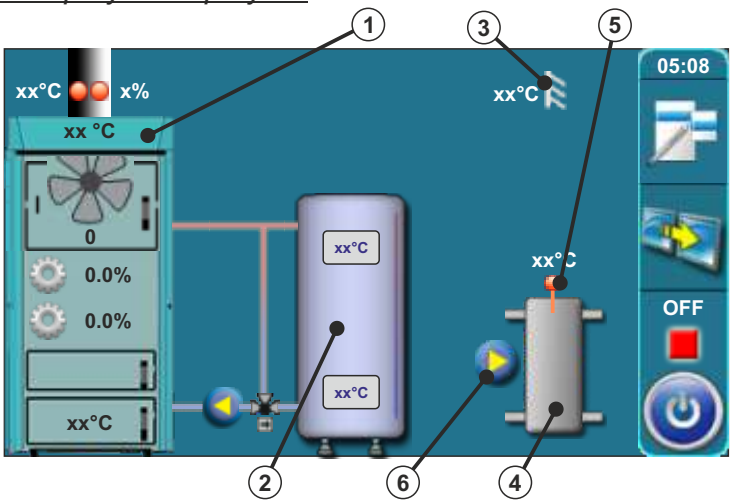


1 - Boiler BioTec-L
2 - Buffer tank
3 - Outer temperature sensor
4 - Heating etage (radiator h.)
5 - Room corrector (CSK)
6 - Heating pump P3
7 - Day/night temperature indicator

Configuration 8

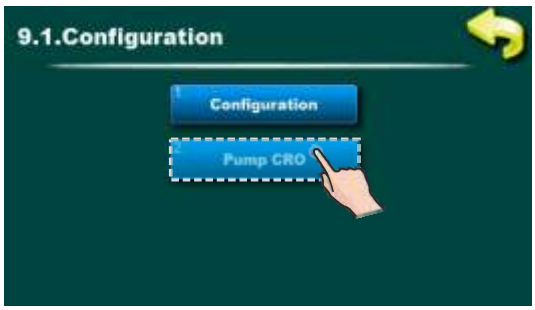
In this configuration the following components are selected: - BUF-CRO

On display is displayed:



1 - Boiler BioTec-L
2 - Buffer tank
3 - Outer temperature sensor
4 - Hydraulic crossover
5 - Hydraulic crossover sensor
6 - Hydraulic crossover pump

In this configuration, on the previous screen, a new button is displayed (Pump CRO)



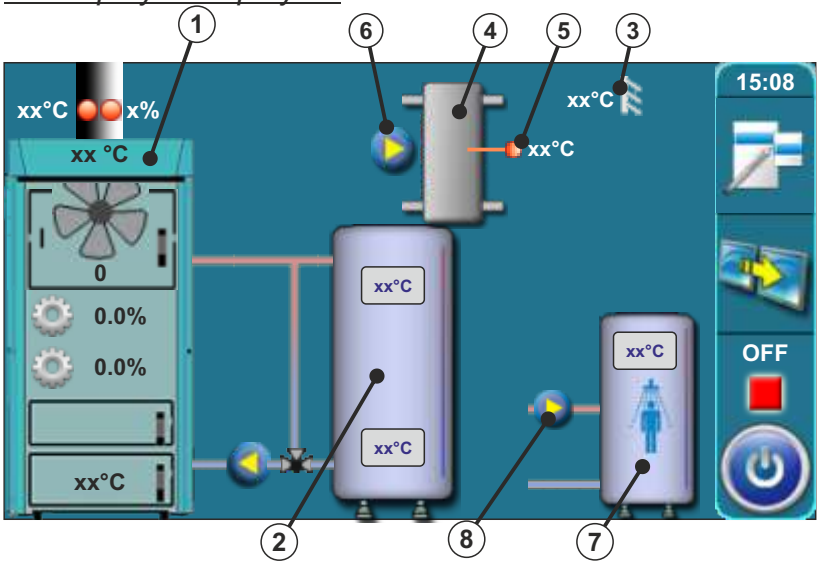
Request – Pump BUF-CRO (6) (P2 or P3, depends on the configuration) works if there is a request for a pump controlled by the boiler, a CM2K module or a request for a DHW pump and if the condition Tbuf > Tbuf_min is met . If required, the BUF-CRO pump can be activated to run continuously (for example against freezing) in menu *4. Operation -> 4.6.Pump CRO Const*

Maintenance – Pump BUF-CRO (6) (P2 or P3, depends on the configuration) runs continuously when the condition Tbuf> Tcro_min + 5 °C is met (this option is used when the regulation does not recognize the requirement of the heating circuits, ie when CM2K or DHW control via the boiler regulation is not used). In menu *1. Temperature* the minimum temperature of the hydraulic crossover switch can be set *1.4. Min. Temp. CRO.* If required, the BUF-CRO pump can be activated to run continuously (for example against freezing) in menu *4. Operation -> 4.6.Pump CRO Const*

Configuration 9 is from scheme 11 from ”Tecnical instructions for installation of hot water boiler BioTec-L”.

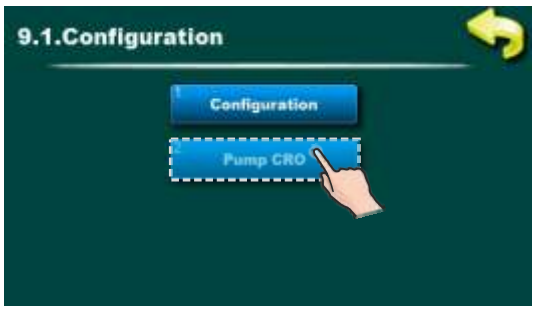
In this configuration the following components are selected: - BUF-CRO (hydraulic crossover)
- DHW (domestic hot water)

On display is displayed:



1 - Boiler BioTec-L
2 - Buffer tank
3 - Outer temperature sensor
4 - Hydraulic crossover
5 - Hydraulic crossover sensor
6 - Hydraulic crossover pump
7 - DHW tank
8 - DHW pump

In this configuration, on the previous screen, a new button is displayed (Pump CRO)



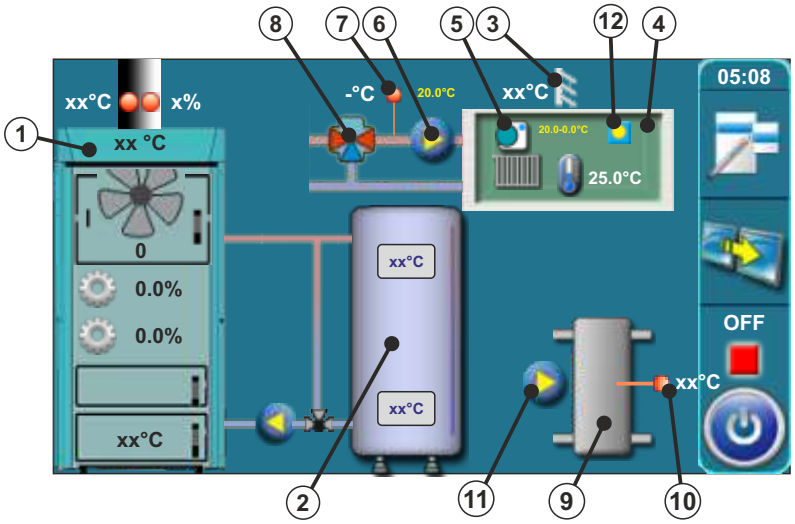
Request – Pump BUF-CRO (6) (P2 or P3, depends on the configuration) works if there is a request for a pump controlled by the boiler, a CM2K module or a request for a DHW pump and if the condition Tbuf > Tbuf_min is met . If required, the BUF-CRO pump can be activated to run continuously (for example against freezing) in menu *4. Operation -> 4.6.Pump CRO Const*

Maintenance – Pump BUF-CRO (6) (P2 or P3, depends on the configuration) runs continuously when the condition Tbuf> Tcro_min + 5 °C is met (this option is used when the regulation does not recognize the requirement of the heating circuits, ie when CM2K or DHW control via the boiler regulation is not used). In menu *1. Temperature* the minimum temperature of the hydraulic crossover switch can be set *1.4. Min. Temp. CRO.* If required, the BUF-CRO pump can be activated to run continuously (for example against freezing) in menu *4. Operation -> 4.6.Pump CRO Const*

Configuration 10 is from scheme 12 from ”Tecnical instructions for installation of hot water boiler BioTec-L”.

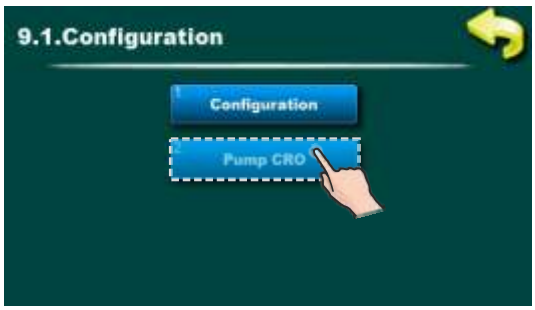
In this configuration the following components are selected:
- BUF-CRO (hydraulic crossover)
- Radiator heating
- Corrector
- Motor drive

On display is displayed:



1 - Boiler BioTec-L
2 - Buffer tank
3 - Outer temperature sensor
4 - Heating etage (radiator h.)
5 - Room corrector (CSK)
6 - Heating pump P3
7 - Main flow temperature sensor
8 - Mixing valve with motor drive
9 - Hydraulic crossover
10 - Hydraulic crossover sensor
11 - Hydraulic crossover pump P2
12 - Day/night temperature indicator

In this configuration, on the previous screen, a new button is displayed (Pump CRO)



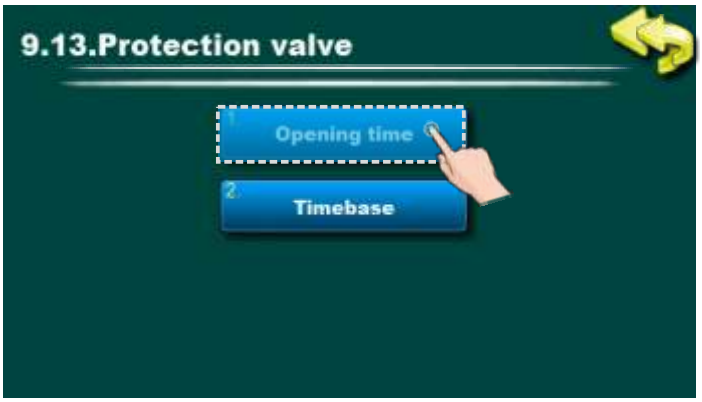
Request – Pump BUF-CRO (6) (P2 or P3, depends on the configuration) works if there is a request for a pump controlled by the boiler, a CM2K module or a request for a DHW pump and if the condition Tbuf > Tbuf_min is met . If required, the BUF-CRO pump can be activated to run continuously (for example against freezing) in menu *4. Operation -> 4.6.Pump CRO Const*

Maintenance – Pump BUF-CRO (6) (P2 or P3, depends on the configuration) runs continuously when the condition Tbuf> Tcro_min + 5 °C is met (this option is used when the regulation does not recognize the requirement of the heating circuits, ie when CM2K or DHW control via the boiler regulation is not used). In menu *1. Temperature* the minimum temperature of the hydraulic crossover switch can be set *1.4. Min. Temp. CRO.* If required, the BUF-CRO pump can be activated to run continuously (for example against freezing) in menu *4. Operation -> 4.6.Pump CRO Const*

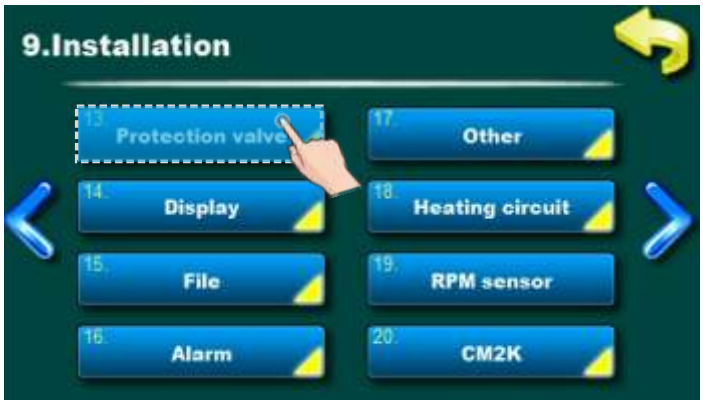
2.1.1. MOTOR DRIVE OPENING TIME (only for authorized persons)

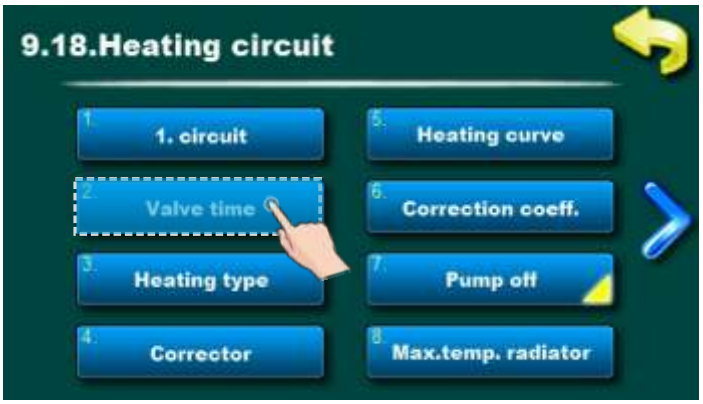
After selecting any option with motor drive (protection valve or motor drive) boiler control unit always automatically go to option for adjusting time for opening / closing of mixing valve. It's neccessary to input opening time of mixing valve (protection valve or motor drive)(marked on motor drive from manufactorer). This step are crucial for properly work of mixing valve and motor drive. If you not sure in opening time of valve (protection valve or motor drive) then is neccessary to go in manual test (see point 3.4.1. in this technical manuals) and measure how long is neccessary to valve for open / close (for detailed description of protection valve see point 3.4.1.1. „Protection valve" in this technical manuals). Valve opening time (protection valve or motor drive) can be done and in „Installation" menu and only authorized serviceman can input that parameter. Descrtiption of opening time manual input of protection valve see in point 2.1.1.1, for motor drive see point 2.1.1.2. in this technical manuals.

2.1.1.1. PROTECTION VALVE - OPENING TIME



2.1.1.1. OPENING TIME - Motor drive

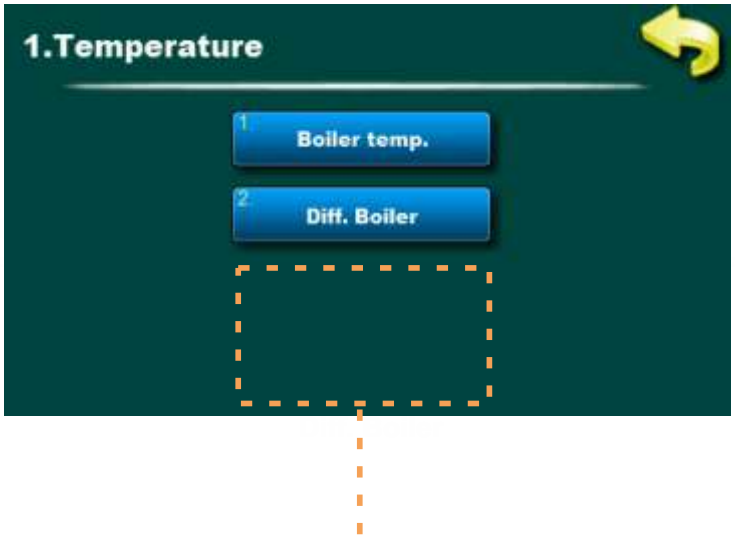




3.0. MAIN MENU DESCRIPTION

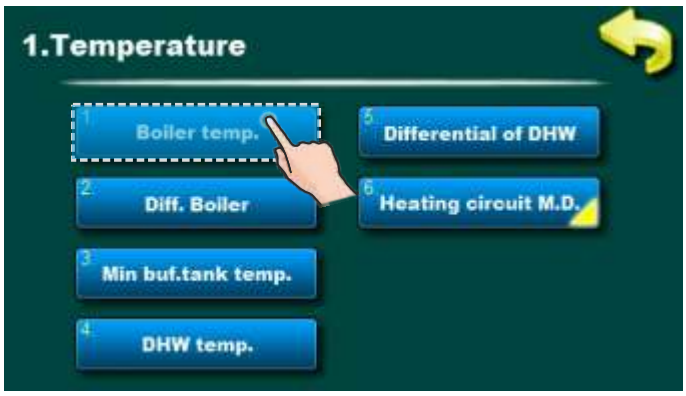
3.1. TEMPERATURES

To enter in **Temperature** menu press "Temperature" button. Content of this menu depends on selected configuration.



Items located within this framework depends on the selected configuration

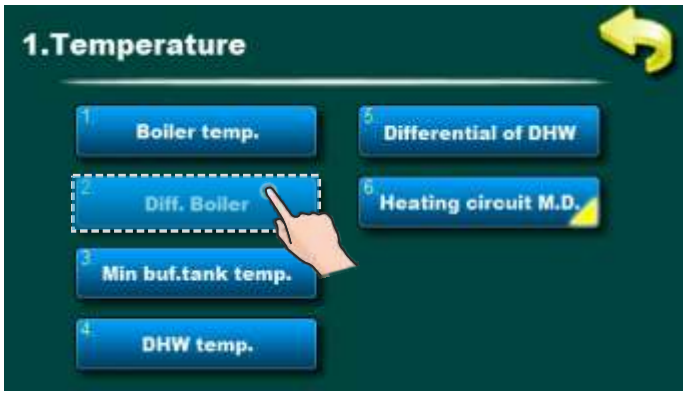
3.1.1. BOILER TEMPERATURE



Possible selection: - factory: **85 °C**
- Minimum: 75 °C
- Maximum: 90 °C

After reaching the selected boiler temperature, the boiler enters the phase DIF1 (reduction of the fan speed) after which the fan is switched off, ie the boiler.

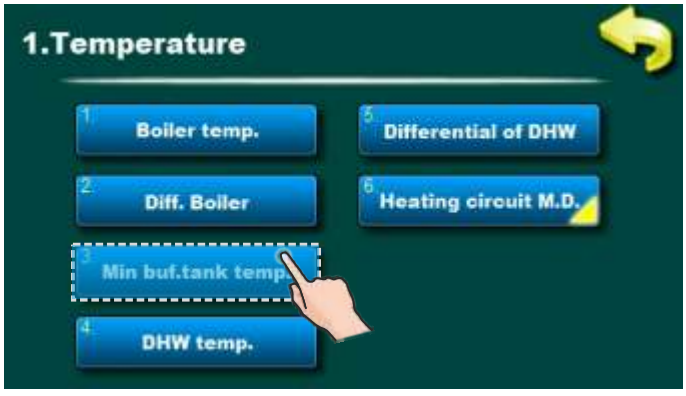
3.1.2. DIFFERENTIAL OF BOILER TEMPERATURE



Possible selection: - factory: **5 °C**
- Minimum: 5 °C
- Maximum: 7 °C

After the temperature in the boiler drops by the set difference, the boiler enters the DIF4 phase (setting the primary and secondary air openings) and then goes into the boiler operation phase (depending on the temperature and the degree of modulation).

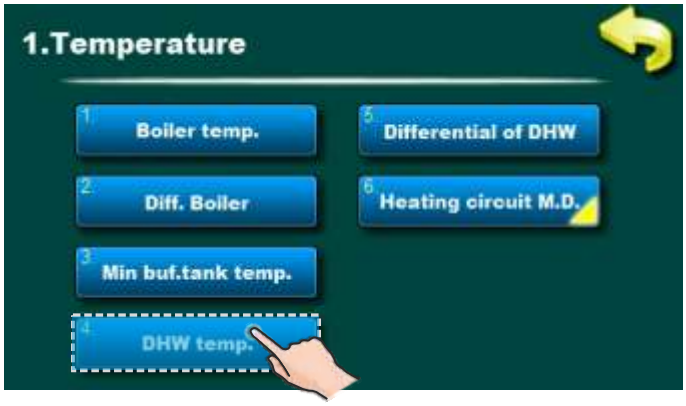
3.1.3. MINIMUM BUFFER TANK TEMPERATURE



Possible selection: - factory: **20 °C**
- Minimum: 5 °C
- Maximum: 64 °C

After reaching the set temperature on the upper tank sensor, the control switches off all connected control pumps or connected modules (CM2K) located behind the storage tank to maintain the minimum set temperature in the storage tank. This minimum temperature does not affect the operation of the DHW pump (if it is connected to the boiler regulation).

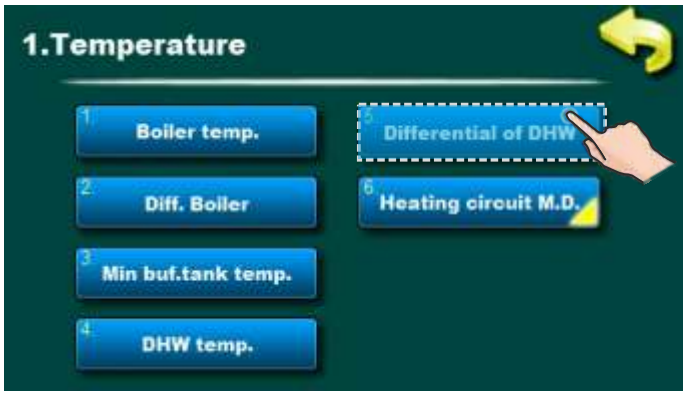
3.1.4. DOMESTIC HOT WATER TEMPERATURE



Possible selection: - factory: **50 °C** - Minimum: 40 °C - Maximum: 80 °C

In order for the DHW pump to work, the temperature in the storage tank must be at least 5 ° C higher than the measured temperature in the DHW tank.

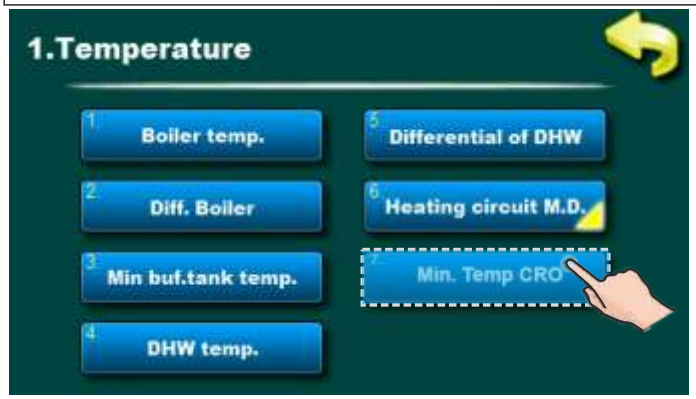
3.1.5. DOMESTIC HOT WATER DIFFERENCE



Possible selection: - factory: **5 °C** - Minimum: 4 °C - Maximum: 40 °C

When the temperature in the DHW tank drops by the set difference, and if the temperature in the storage tank on the upper sensor is at least 5 ° C higher than the measured temperature in the DHW tank, the DHW pump starts.

3.1.*. MIN TEMP CRO (used only when CRO pump settings are set to "maintenance")



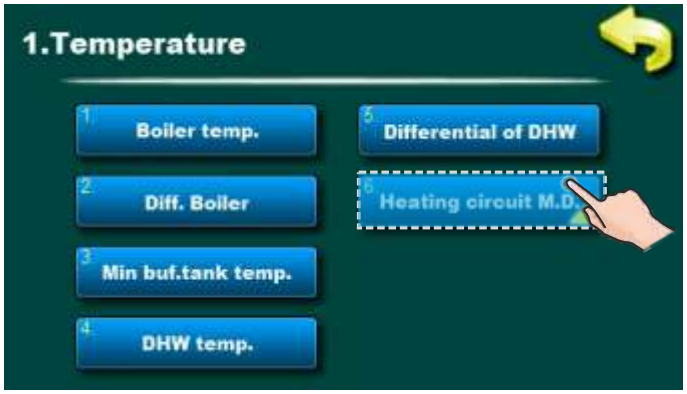
Possible selection: - factory: **20 °C** - Minimum: 5 °C - Maximum: 85 °C

The BUF-CRO pump always runs if the storage tank temperature is higher than the minimum CRO (hydraulic crossover) temperature + 5 ° C.

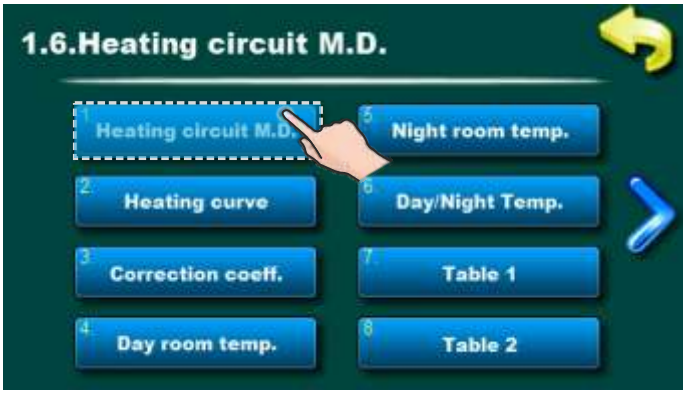
This option appears in the configuration with a hydraulic crossover (BUF-CRO) only when the hydraulic crossover pump setting is set to "Maintenance".

3.1.6. TEMPERATURES IN HEATING CIRCUIT MOTOR DRIVE

This option is only available when configuration contains motor drive.



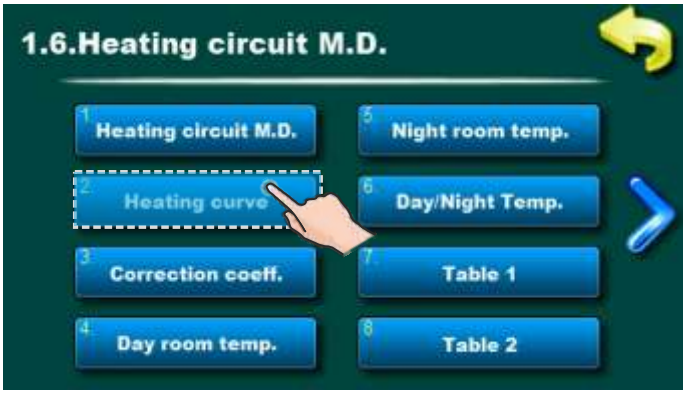
3.1.6.1. HEATING CIRCUIT MOTOR DRIVE

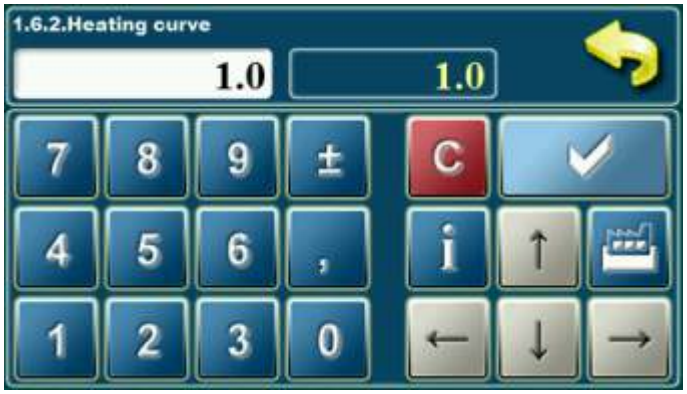


Possible selection: - factory: **ON**
- OFF, ON

By using this option ”heating circuit M.D“ can be turned off/on.

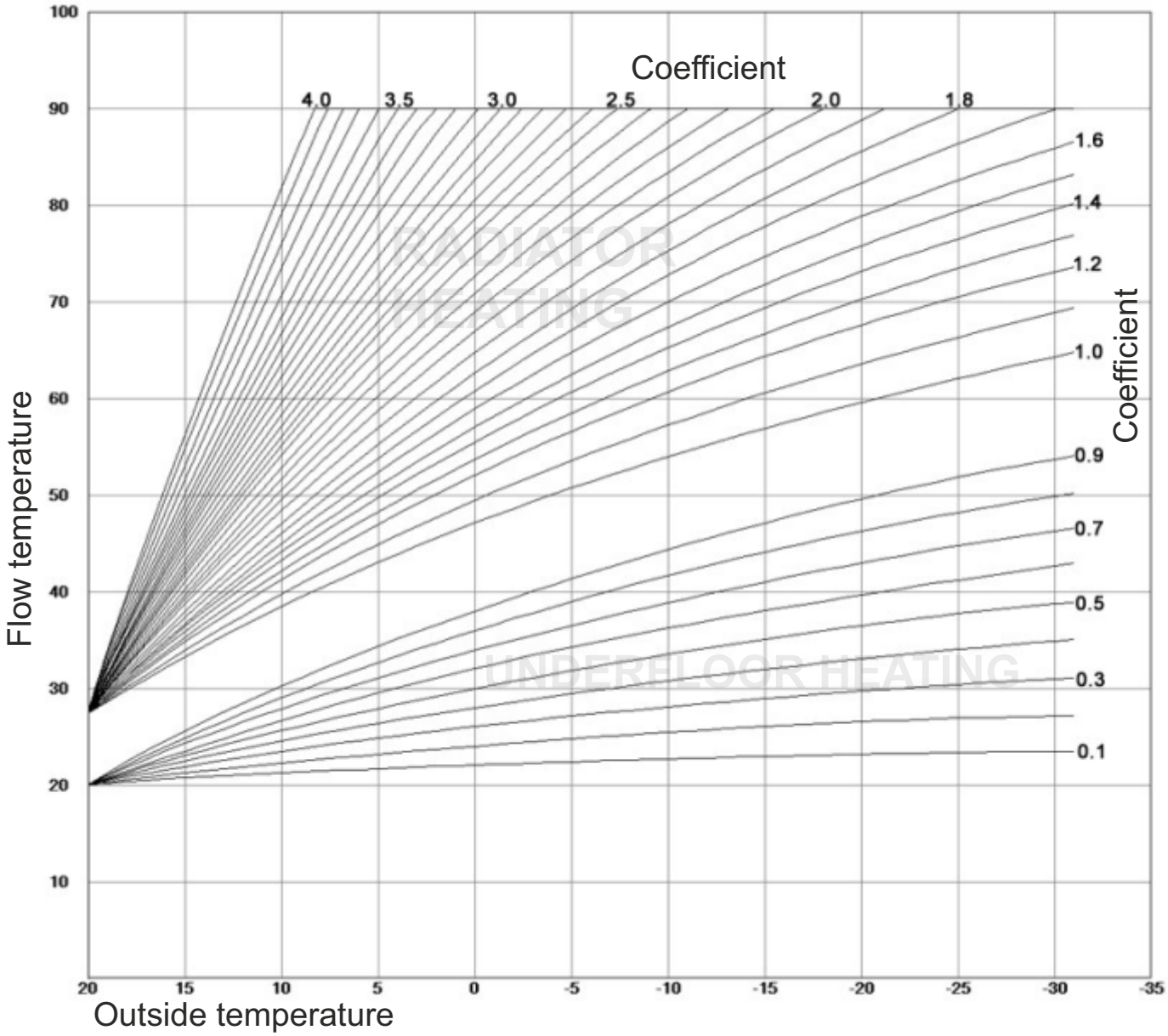
3.1.6.2. HEATING CURVE



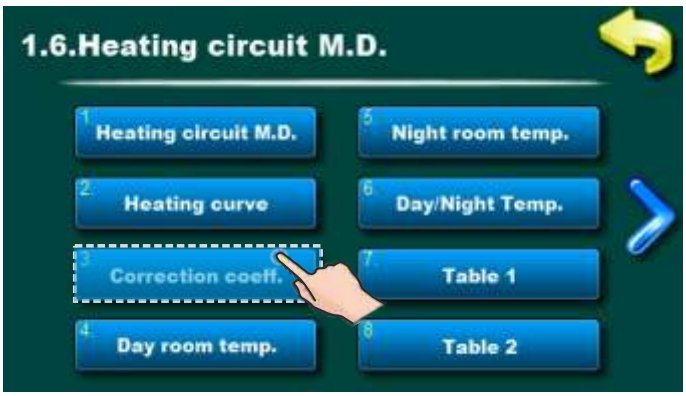


Possible selection - Factory: **1,0**
- Minimum: 0,1
- Maximum: 4,0

This parameter determine the coefficient of the heating curve. The regulation calculate required flow temperature according to the heating curve and outside temperature to achieve the desired room temperature.



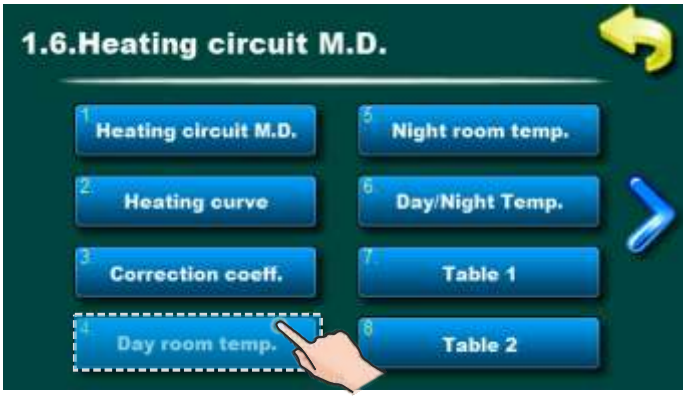
3.1.6.3. CORRECTION COEFFICIENT



Possible selection: - Factory: **1.0**
- Minimum: 0,1
- Maximum: 5,0

This parameter determines coefficient of room corrector influence. Room corrector will have more impact on the calculated required flow temperature when this parameter is bigger.

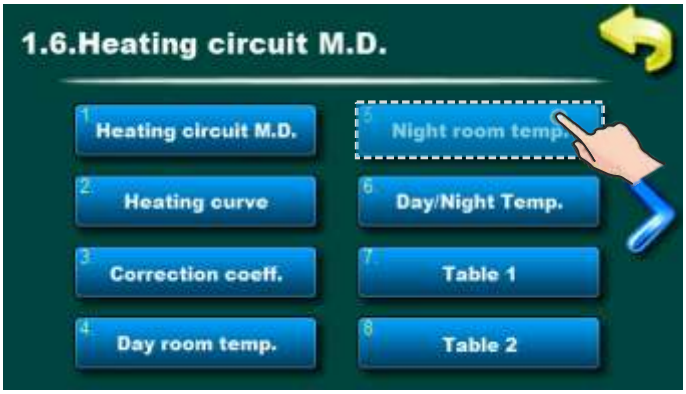
3.1.6.4. VALUE OF DAY ROOM TEMPERATURE



Possible selection: - factory: **20,0°C**
- Minimum: 5°C
- Maximum: 30,0°C

This parameter determines the value of day room temperature.

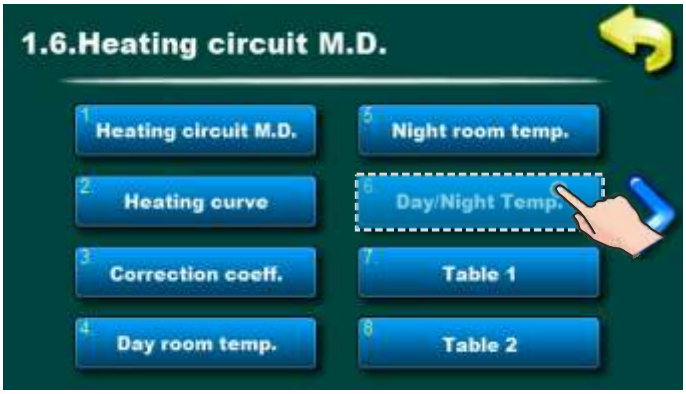
3.1.6.5. VALUE OF NIGHT ROOM TEMPERATURE



Possible selection: - factory: **20,0°C**
- Minimum: 5°C
- Maximum: 30,0°C

This parameter determines the value of night room temperature.

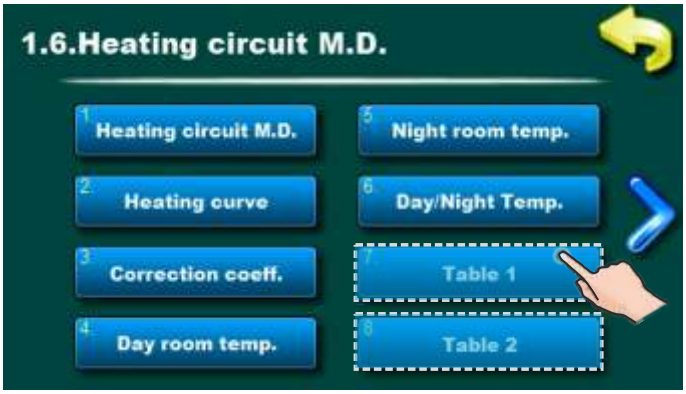
3.1.6.6. DAY/NIGHT TEMPERATURE CHOICE

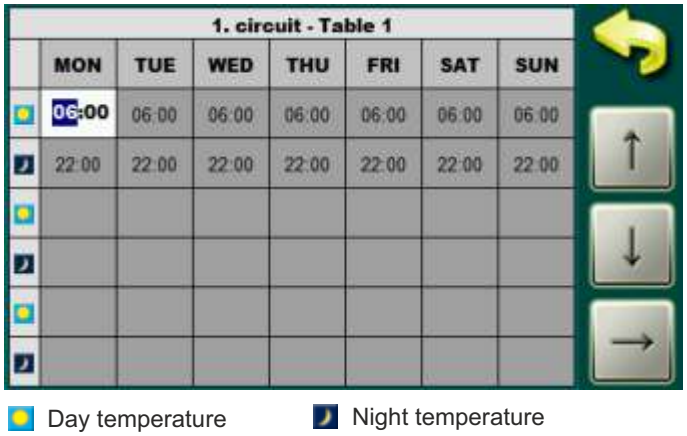


Possible selection: - factory: **Day temperature**
Day temperature, Night temperature, Table

This option enables you to choose type of desired temperature (day, night or table.) In next page you can see how to fill a table.

3.1.6.7. DAY/NIGHT TEMPERATURE TABLE 1/2





Day temperature Night temperature

Each cell marks the beginning of some type (day/night) of selected room temperature. According to this table every day from monday at 06:00 am is activated day room temperature, until 22:00 pm when is activated night room temperature until tuesday, when at 06:00 am is again activated day room temperature. On saturday, the day temperature is activated at 05:00 am and works until 10:00 am when is switched to night temperature. At 14:00 pm is again activated day room temperature up to 23:00 pm when is again switched to night temperature. When passed one cycle (week) circle starts again from the beginning. The values of a day/night room temperature can be selected as is described in previous pages.

3.1.6.8. TRANSITION TIME (is used only when the configuration doesn't contain room corrector)

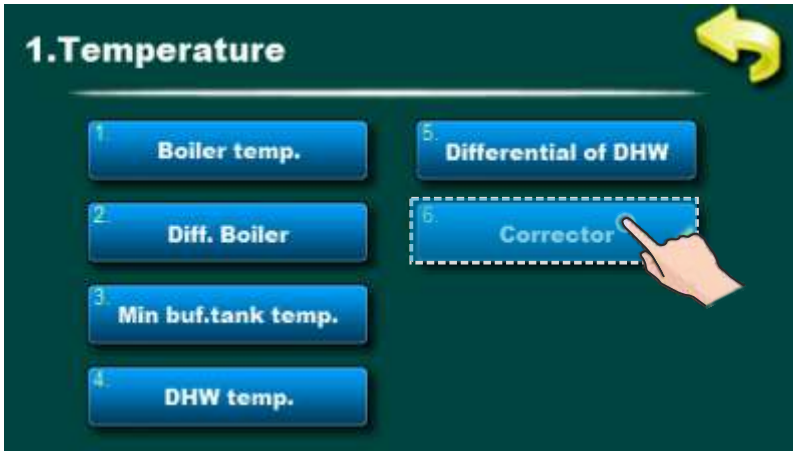
Possible selection: - factory: **3600sec**
- Minimum: 0 sec
- Maximum: 18000 sec

This parameter is used only when configuration doesn't contain room corrector, because regulation doesn't have information of room temperature.

This parameter is time which is presumed that the system will achieve a given room temperature in a transition from day to night mode, and vice versa. So, this is time in which will "flow temperature" be optimally adjusted to achieve quick transition.

3.1.7. CORRECTOR

This option is only available when the selected components are from configuration 7 (selected corrector, floor or radiator heating, motor drive is **not** selected.



3.1.7.1. VALUE OF DAY ROOM TEMPERATURE

Possible selection: - factory: **20,0°C**
- Minimum: 5°C
- Maximum: 30,0°C

This parameter determines the value of day room temperature.

3.1.7.2. VALUE OF NIGHT ROOM TEMPERATURE

Possible selection: - factory: **20,0°C**
- Minimum: 5°C
- Maximum: 30,0°C

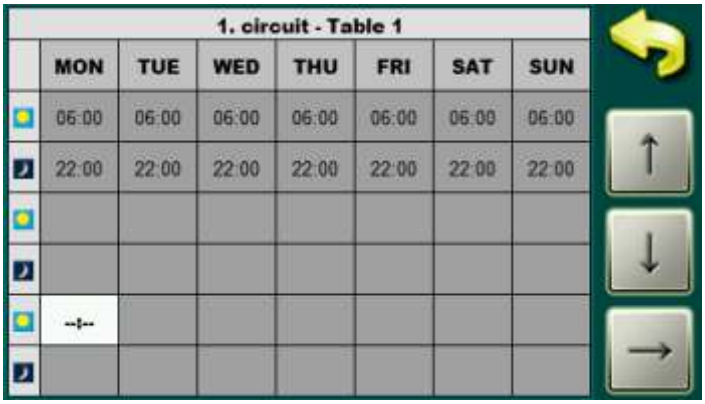
This parameter determines the value of night room temperature.

3.1.7.3. DAY/NIGHT TEMPERATURE CHOICE

Possible selection: - factory: **Day temperature**; Day temperature, Night temperature, Table 1/2

This option enables you to choose type of desired temperature (day, night or table.)

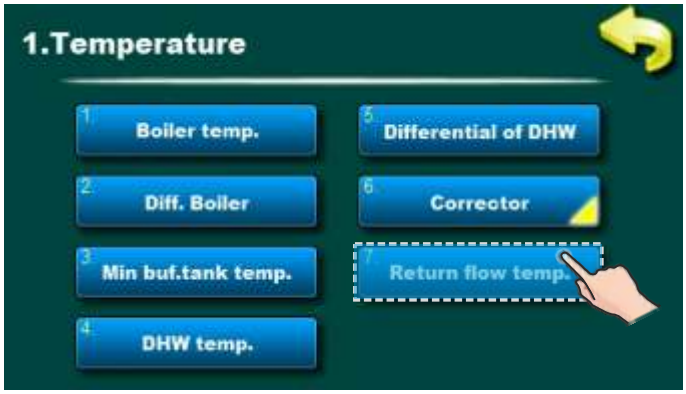
3.1.7.4. DAY/NIGHT TEMPERATURE TABLE



Day temperature Night temperature

Each cell marks the beginning of some type (day/night) of selected room temperature. According to this table every day from monday at 06:00 am is activated day room temperature, until 22:00 pm when is activated night room temperature until tuesday, when at 06:00 am is again activated day room temperature. On saturday, the day temperature is activated at 05:00 am and works until 10:00 am when is switched to night temperature. At 14:00 pm is again activated day room temperature up to 23:00 pm when is again switched to night temperature. When passed one cycle (week) circle starts again from the beginning. The values of a day/night room temperature can be selected as is described in previous pages.

3.1.*. RETURN FLOW TEMPERATURE



Possible selection: - factory: **60,0°C** - Minimum: 60°C - Maximum: 70,0°C

This option is only visible in the selected Configurations 3 and 4, ie when the Safety valve with or without DHW is selected. This parameter can be used to set the desired boiler return temperature, but never below 60 °C.

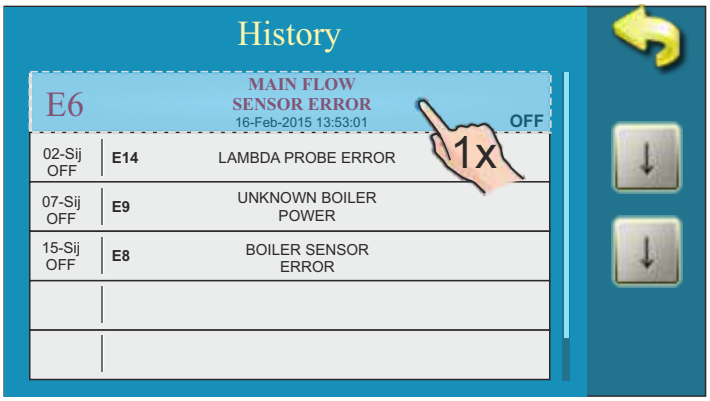
3.2. HISTORY

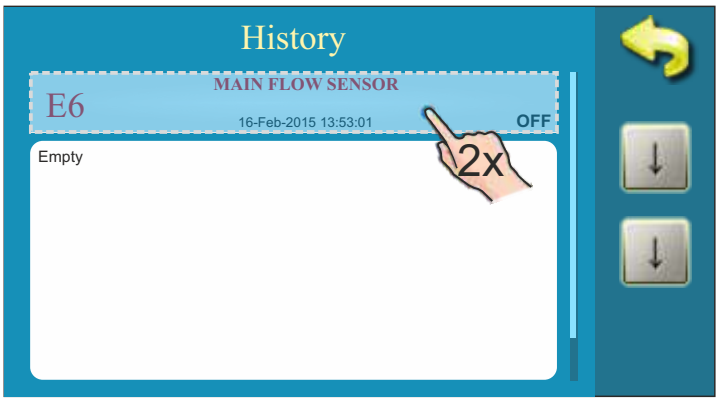
By pressing on „History” button will be opened menu for choosing history list. It can be choosen between error list and warning list. Informations history are placed with error list.

Written is: - time of occurrence errors/ warnings/ informations
- error/warning/information code
- description of the error/warning/information.

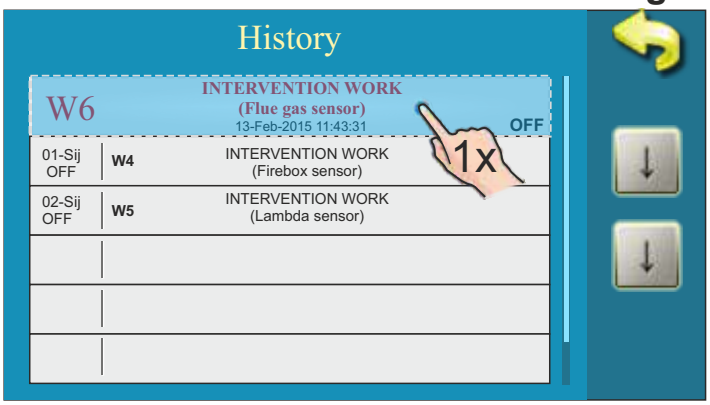
Error = E, Warning = W, Information = I.
The first press on the field error/warning/information field is indicated, in addition to see and date generated errors/warnings/information. The second press on the selected error/warning/information, prints a detailed description of the error/warnings/information and corrective action errors/warnings/ information. If for some error/warning/information there is no description on current software version, on the screen will be displayed ”empty“.

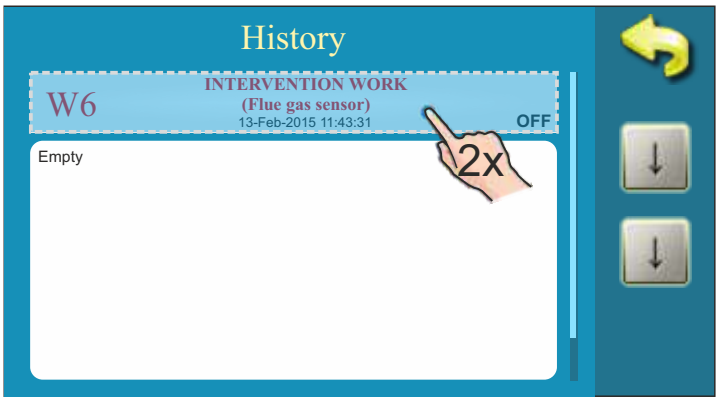
Error list





Warning list





3.3. FILE

By pressing this option on the main screen you will see menu with:

3.1. LOAD FACTORY
3.* LOAD SERVICE
3.2. SAVE
3.3. LOAD

3.3.1. LOAD FACTORY

After pressing "LOAD FACTORY" you will see a message "LOAD FACTORY SETTINGS?". Pressing button "OK" will load the default settings of regulation. Pressing the" BACK" will return to the previous menu.

3.3.*. LOAD SERVICE

After pressing the "LOAD SERVICE" button, the message "LOAD SERVICE SETTINGS?" will appear. Pressing the "OK" button will load the settings saved by the service technician in the "Installation" service menu. IMPORTANT: All preset settings will be set to service settings. Pressing the "BACK" button returns to the previous menu.

3.3.2. SAVE

After pressing "SAVE" you will see a 3 slots to save data (Memory 1, 2, 3). Presing to one of this three buttons you will se message "SAVE CURRENT SETTINGS?". Pressing button "OK" the current setting of regulation will be saved in memory. Pressing the "BACK" will return to the previous menu.

3.3.3. LOAD

After pressing "LOAD'' you will see "LOAD SAVED SETTINGS?". Pressing button "OK" saved settings (saved in option SAVE) will be loaded. Pressing the "BACK" will return to the previous menu.

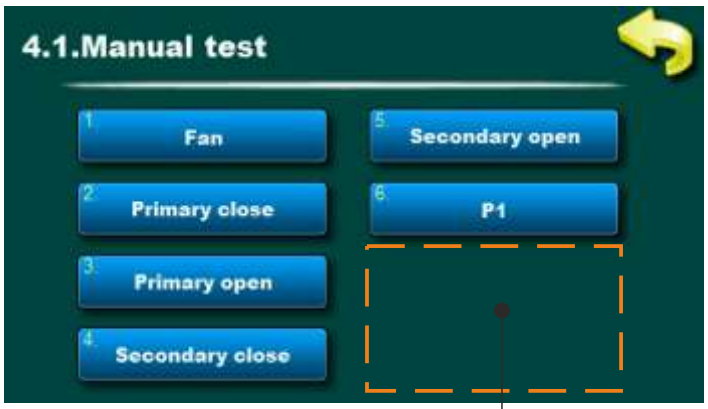
3.4. OPERATION

3.4.1. MANUAL TEST

Manual test is option which provide testing all parts of boiler and central heating system how could be checked it functionality.

To be able to use manual test, you must first turn ”OFF“ the boiler in the usual way by pressing button (if is not switched off) and then „STOP”:

To enter in **Operation** menu press ”Operation” button.



Parts in this section depend about heating configuration

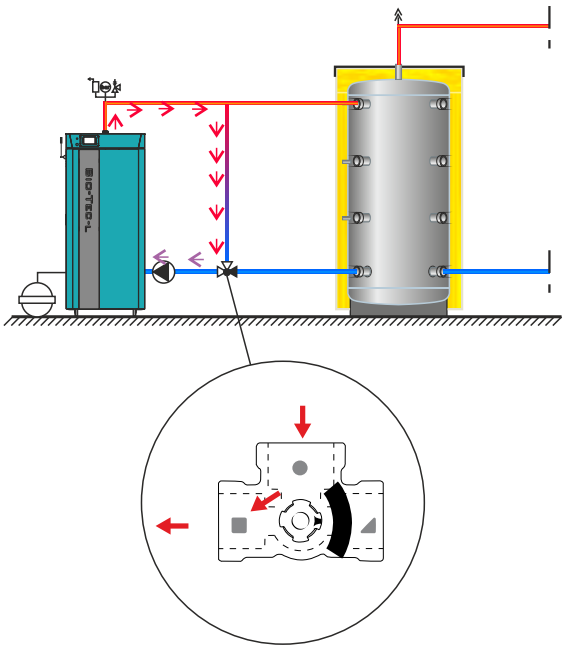
3.4.1.1. PROTECTION VALVE(if is selected in configuration menu)

If, in menu „Configuration“, is selected protection valve is necessary, with manual test, check if is protected valve properly installed and if is functional.

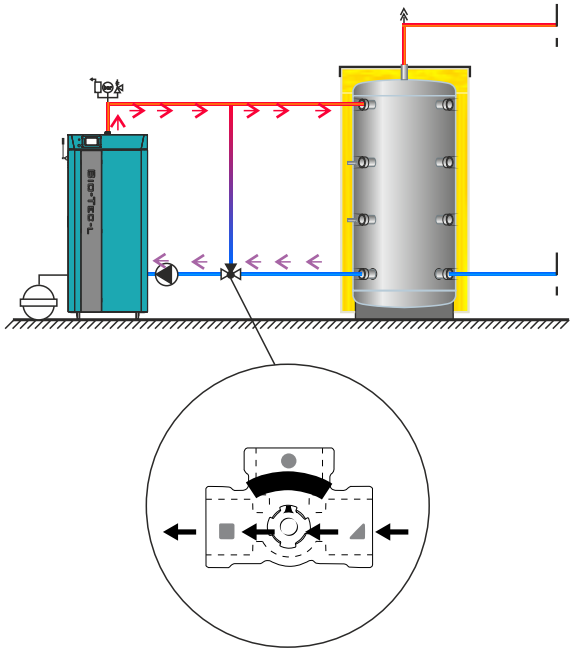
Protection valve must be installed according to the next steps::

- when is presed button ”Valve closing” in manual test valve must closed entry from accumulation tank (see Case 1)
- when is pressed button ”Valve opening” in manual test valve must open entry from accumulation tank and close bypass (see Case 2)
- depend on el. actuator type is neccessary to input valve opening time on installation menu

In below of this technical instruction see how to make manual test of protection valve



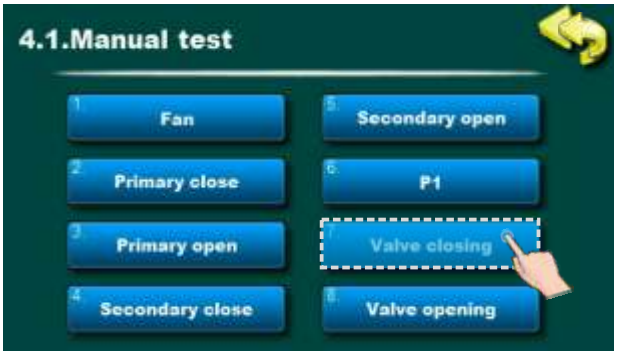
Case 1. Valve is 100% closed

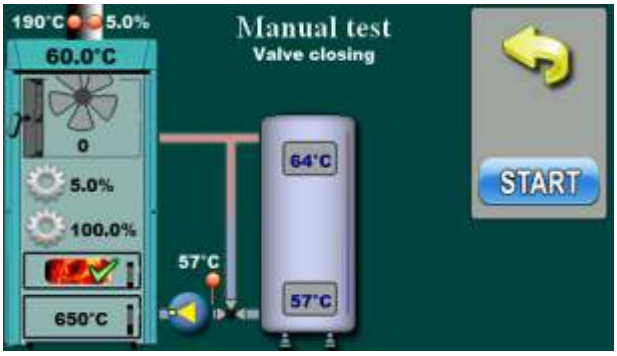


Case 2. Valve is 100% opened

For manual test of protection valve is necessary to go in „Operation menu“ and press „Manual test“ button. After that we will see components which we have installed on boiler and central heating system.

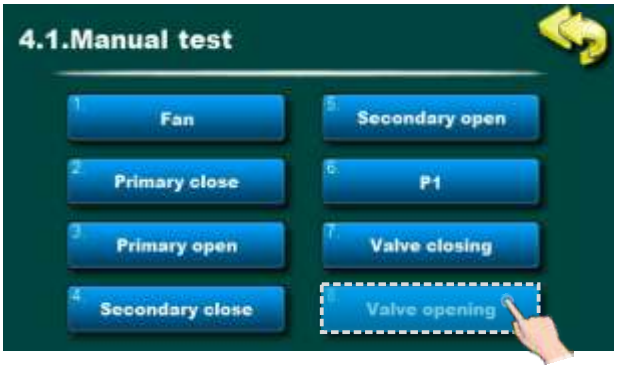
Protection valve closing

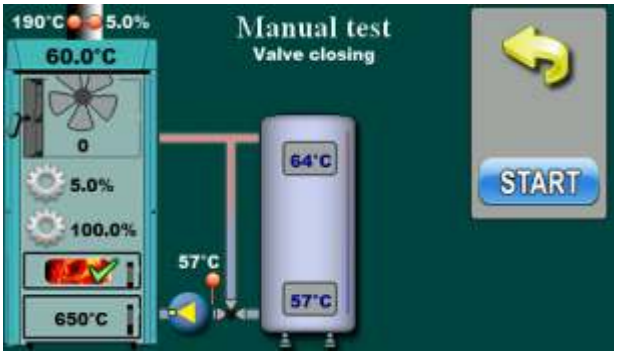




After test, valve must be completely closed (like as shown in Case 1).

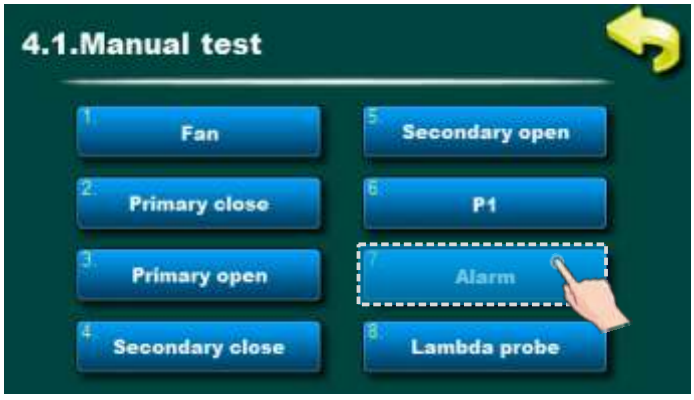
Protection valve opening

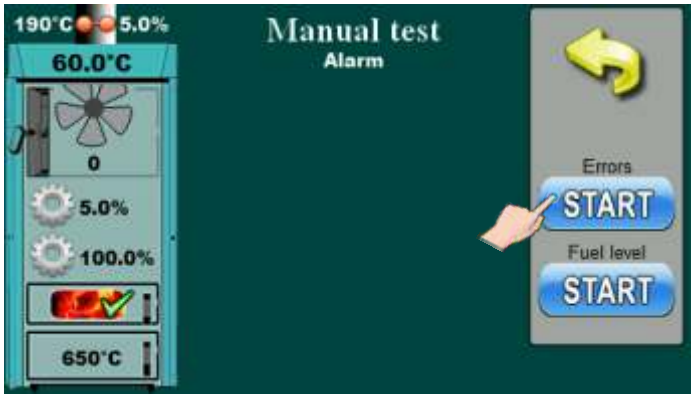




After test, valve must be completely opened (like as shown in Case 2).

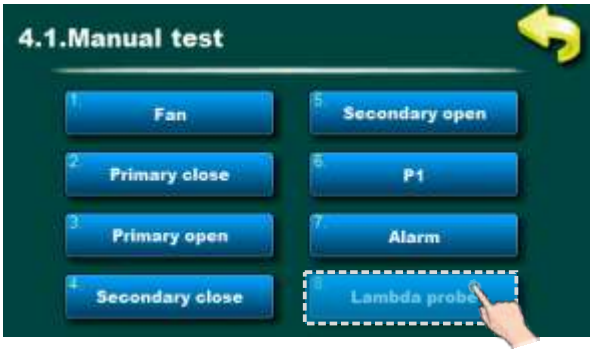
3.4.1.2. ALARM (if selected in the configuration)

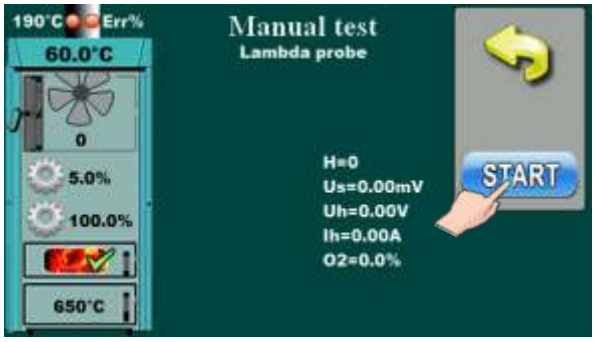




If they are in the menu "9. Installation -> PIN -> 9.16. Alarm" set outputs for Alarms, by manual test it is necessary to check whether the alarm outputs are correctly configured and correctly connected to the alarm device (as a CAL).

3.4.1.3. LAMBDA





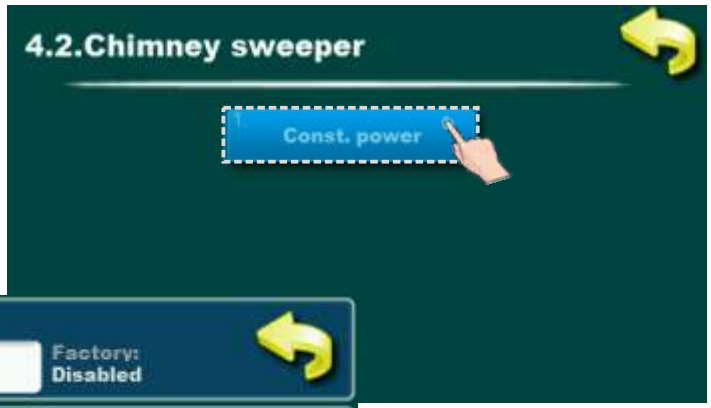
This option allows checking the operation of the lambda probe. Before activating this option you need to:
- make sure that the boiler room is ventilated (not smoked) (otherwise the result of this test lambda probe will not be accurate (the wrong information on the control screen will be displayed))
- all boiler doors are open

Entering this option, you need to press the "START" button and wait for the control Unit to do a lambda probe test.
The test result can be written „ ✓ “ (green) or „ ✗ “ (red) . If „ ✓ “ is printed the lambda probe works correctly and you have successfully completed the lambda probe test. If „ ✗ “ is displayed, you must repeat the test with additional preparations to perform this test. Press the " STOP " button.

If „ ✗ “ was written perform additional actions before repeating the test:
- remove the upper boiler cover to ensure that fresh air enters the chimney from the room and does not smoke from the boiler or chimney. Press the 'START' button and wait for the control unit to perform the lambda probe test. The test result can be written „ ✓ “ or „ ✗ “. If „ ✓ “ is printed the lambda probe works correctly and you have successfully completed the lambda probe test. If „ ✗ “ , is displayed and you are sure that you have followed all of the above procedures, call an authorized service technician for the test.

3.4.2. CHIMNEY SWEEPER

This option allows the flue gas measurement at boiler nominal power (D4).

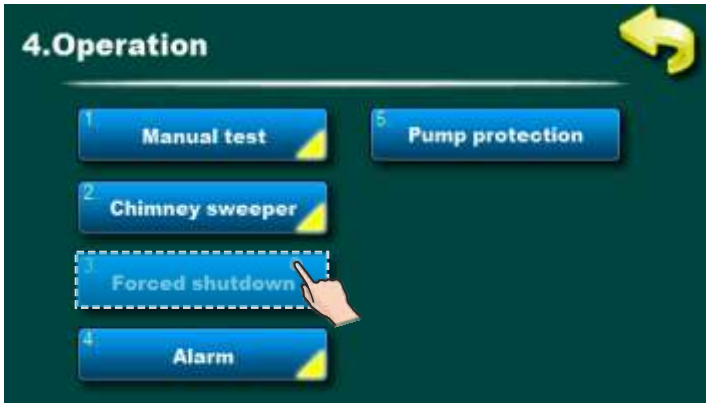


3.4.3. FORCED SHUTDOWN

This option is used to forced stop all processes.
First must be pressed the ON/OFF button to put the boiler in shutdown procedure and then "forced shutdown" button. All processes are stopped.

IMPORTANT! To be able to stop all processes, you must first turn off the boiler in the usual way by pressing and then STOP.

Option ”FORCED SHUTDOWN“ is not usual procedure for turning OFF the boiler



3.4.4. ALARM (CAL-additional equipment)

This option is used for error report by speaker or lamp to living area. It's neccessary to buy light or sound alarm „CAL" which can be installed only by authorized person (before using of alarm is neccessary to configure it in „Installation" menu whoose access have only authorized persons by entering PIN).

It's possible to choose in which way will be control unit alert user about error or low fuel level. Pause is time which will be pass before control unit again send signal about error / warning.

Shortcut for disabling speaker for low fuel level warning*

*
By pressing this button user can disable/enable the fuel level warning sound from the speaker. (It refers only to warning about the low fuel level in the tank when speaker is selected as connected device). If only lamp is connected and selected as connected device, this shortcut is not displayed.

When speaker is disabled, this symbol becomes 

3.4.4.1. ERRORS

Possible selection:
Factory: OFF
Off, Continous, Fast 1 time, Fast 3 times, Slow 1 time, Slow 3 time, Table

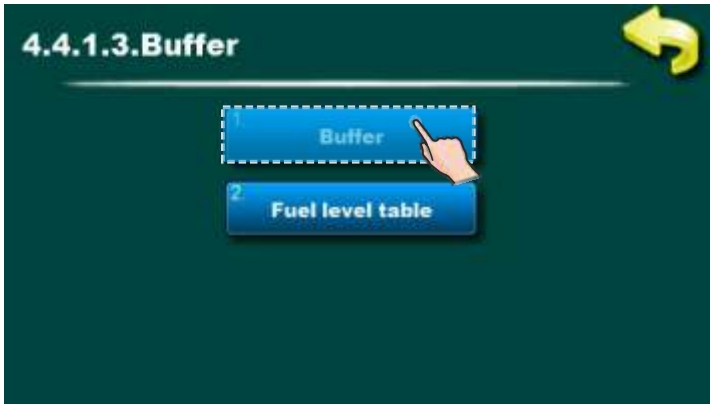
This parameter determines whether the output 1 errors occur. By selecting certain types of signals will be activated in the selected signal format.

3.4.4.2. FUEL LEVEL

Possbile selection:
Factory: OFF
Off, Continous, Fast 1 time, Fast 3 times, Slow 1 time, Slow 3 time, Table

This parameter determines whether the output 1 fuel level warning occur. By selecting certain types of signals will be activated in the selected signal format.

3.4.4.3. BUFFER TANK (buffer tank low temperature)

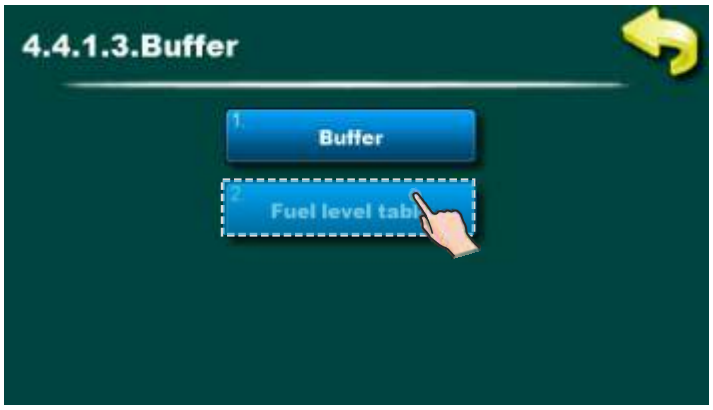


Possible selection:

Factory: OFF

Off, Continous, Fast 1 time, Fast 3 times, Slow 1 time, Slow 3 time, Table

This parameter define whether will it output 1 report warning for low temperature in buffer tank. This option don't allow setting of his own table for signal type in different time of day, but adjusted table for fuel level warning can be used. For using table for low temperature in buffer tank is neccessary to activate table for fuel level (see Figure below).



3.4.4.4. DELAY

Possible selection:
Factory: 20 sec
Min.: 5 sec
Max.: 3600 sec

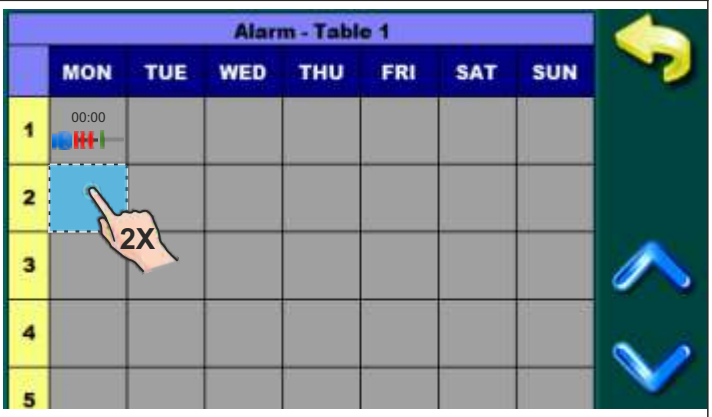
This parameter define after how long will be again activate error / warning of fuel level / low temperature of buffer tank **(this parameter doesn't work if is selected continous signal**).

3.4.4.5. TABLE

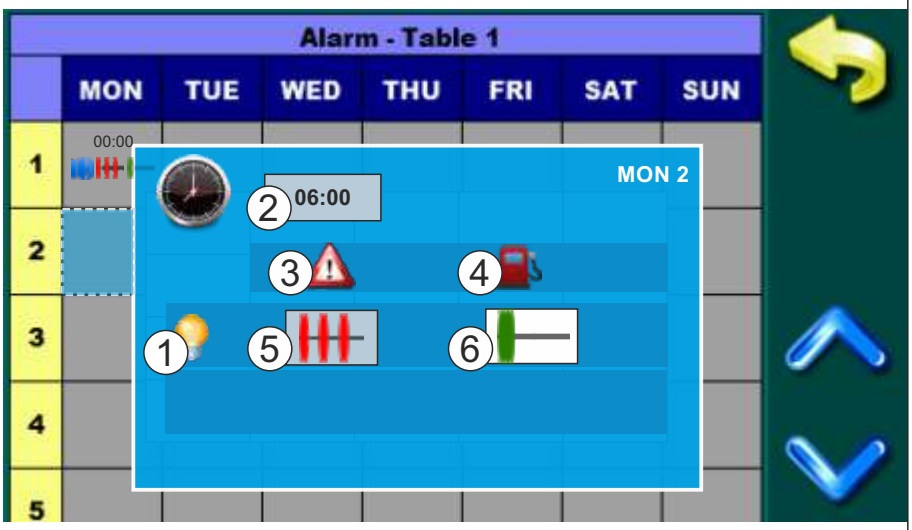
Factory: Table 1
Table 1, Table 2, Table 3

With this parameter we select the table according to which we want the alarm outputs to work. Automatically change or turn off the signal at a specified time. The type of error signal and fuel level warning can also be set in each table. The table will be operational only if in point 4.4.1.1. or 4.4.2.1 (Output 1 or Output 2) "Table" alarm notification mode selected.

3.4.4.6. TABLE 1



1. Type of alarm alert
   - Lamp
   - Speaker
2. Time
3. Symbol for alarm of boiler errors
4. Symbol for alarm of fuel level warning
5. Signal type of boiler erros alarm
6. Signal type of fuel level warning



Setting values on table 1
Using the table to turn on or of and change type of signal for alarm or low fuel level warning at different times and days. When you enter the editing table, it is necessary to press 2 times the desired box (day) and then opens a new window where you can turn on and off, set signal type for boiler error, fuel level warning and the time at which the selected signal type takes effect. Eg. to change the time, it is necessary to press the box with time. When pressed on the box with time, its background becomes white and then it is possible to change the parameters by pressing the "up" and "down" (↑ ↓). It is possible to specify the type of signal 16 changes per day.

On the next page are described all symbols for types of signal. In the same way, you can fill table 2 (table 3 is not used).

The type of connected device (lamp or speaker) can be set only in installation menu, only by an authorized person.

3.4.5. PUMP PROTECTION

This option enables protection of the pumps/valves from blocking during long stand-still (usually during summer season when heating is off).
Enabling this option and setting the maximum idle time of the output to the pumps / valves can only be done by an authorized person under the menu **9. Installation -> PIN-> 9.17.2. Pump protection.**
Factory this option is enabled and max. stand-still time of outputs is set to 48 hours. According to this setting, any pump/valve output that is not activated in 48 hour, it will be activated for duration of 60 seconds. When certain output is activated it's stand-still time is reset.

3.4.6. INTERNET SUPERVISION - avaible only from firmwaree version "v2.45"

IMPORTANT NOTES

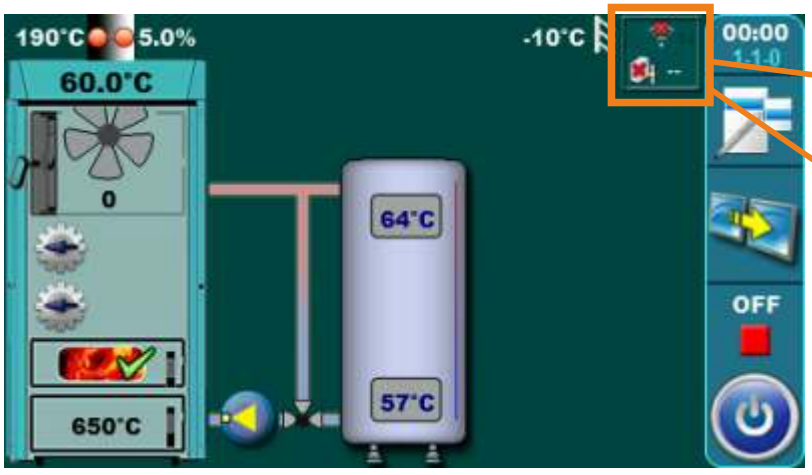
CM WiFi-box requires active DHCP server of Access Point (e.g. router) because manual setting of network parameters is not possible. For more informations contact administrator of your home network.

To be able to use Cm WiFi box on BioTec-L boiler, minimum required firmware versions of the boiler regulation must be: v2.45.
Boiler version is displayed in the "INFO" menu.
If there is older firmware version, it must be updated to be able to use Cm WiFi box.
For firmware update please contact authorized serviceman.

For detailed configuration of the Cm WiFi box please refer to the Cm WiFi box manual received with the Cm WiFi box.

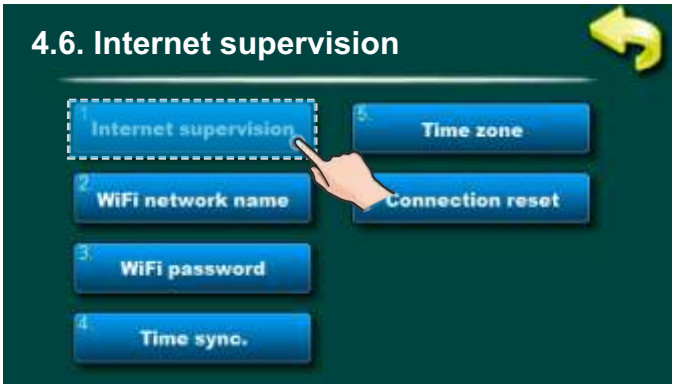
This option is used to set the regulation to connect boiler to the internet through local Wi-Fi network.
This option is used to change internet supervision settings.
This option is only visible if "Cm WiFi box" is connected to the boiler regulation by UTP cable.

When "Cm WiFi box" is connected to the boiler and internet supervision is enabled, a new icon appears on the main screen showing the status of internet supervision.



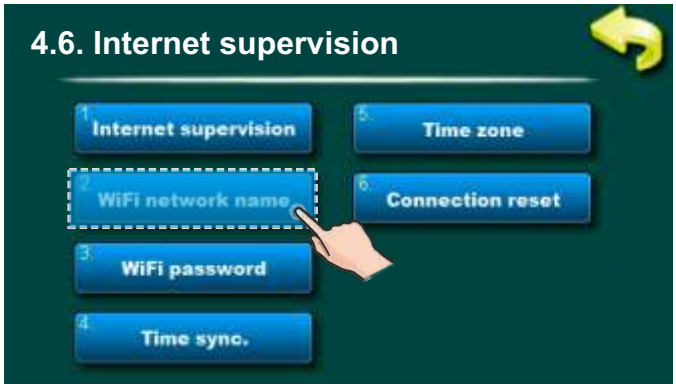
Regulation is connected with web portal (internet supervision is possible)

Regulation is not connected with web portal (internet supervision is not possible)

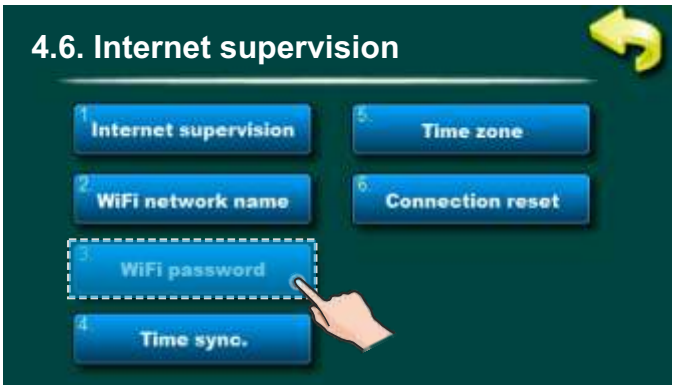


Factory: Supervision + control
OFF, Supervision, Supervision + control

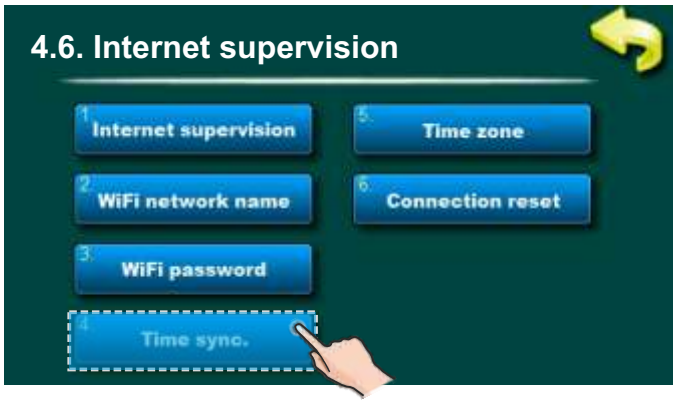
This option is used to set and enable/disable internet supervision.



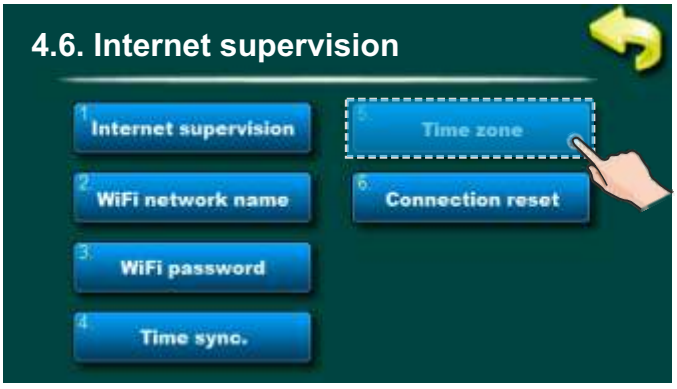
This option allows you to enter the name of WiFi home network to which you want to connect the "Cm WiFi box" and the boiler. You must enter exact WiFi network name or else boiler will not able to connect to the WiFI network.



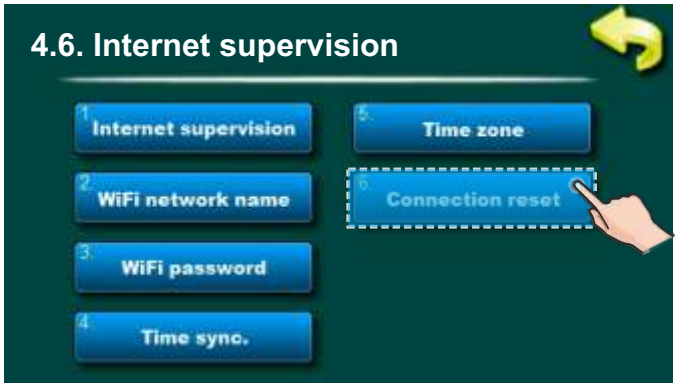
This option allows you to enter a password for your home Wi-Fi network. You must enter exact password or else boiler will not be able to connect to the WiFi network.



This option allows boiler time synchronization with web server time (internet time).



This option allows you to set the time zone if the boiler is in a different time zone than the web portal server. (this option must be set if you enable "Time syncronisation option")



This option allows you to reset connection with home network.

3.4.7. CSK-TOUCH (ADDITIONAL EQUIPMENT) - only for authorized service technicians - possible from the software version "v2.46"

The CSK-Touch digital room corrector enables room temperature control and the heating circuit is switched ON and OFF according to the set room temperature and schedules. In addition to measuring and correcting the room temperature, this room corrector allows you to set the min. accumulation (buffer) tank temperatures and boiler and domestic hot water (DHW) temperatures if any, and setting of schedules for the heating circuit.

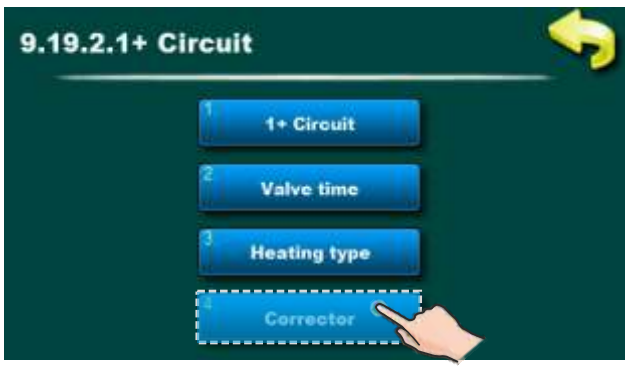
CSK-Touch can be connected directly to BioTec-L boilers only via the CM WiFi box or via a router using the CM WiFi box. Wire connection directly to the boiler is not possible.

When connected directly to the boiler, the "Circuit 0" must be selected when configuring the heating circuit on the CSK-Touch

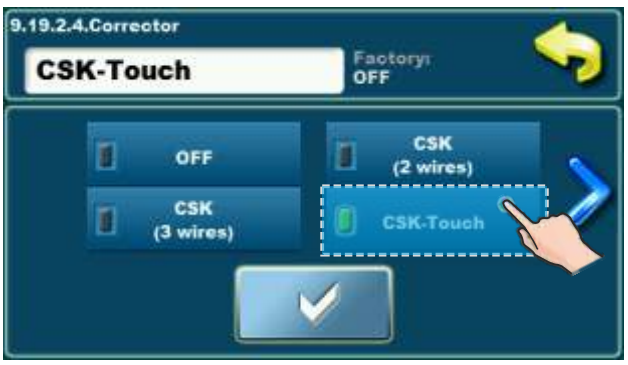
The digital room corrector can be connected to BioTec-L via a CM2K module (if any). The connection to CM2K can be: wired (2 wires), wireless via a CM WiFi box or via a home router. For more details on how to connect the CSK-Touch, see "Technical instructions for installation, use and maintenance CSK-Touch digital room corrector".

To configure the CSK-Touch corrector, it is necessary to configure the heating mixing circuits (on the boiler and/or CM2K module), which must be done by an authorized service technician (by entering the PIN in the Installation menu.)

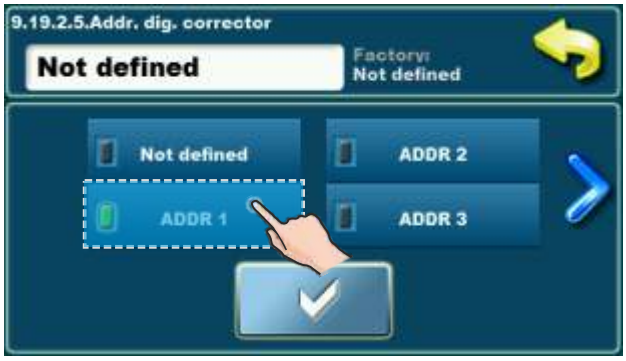
In menu 9, when configuring an individual heating circuit in the *"Corrector"* menu, it is necessary to select *"CSK-Touch"* and select its unique address in the *"Addr. dig. corrector"* menu.



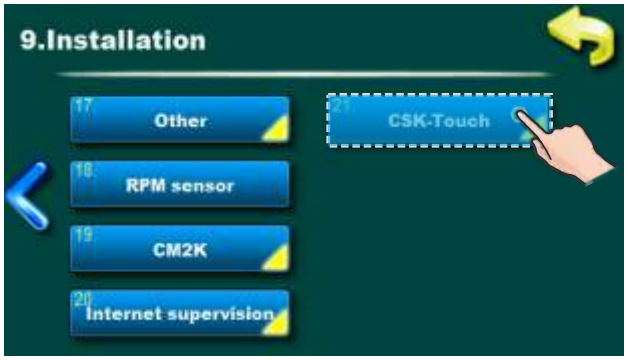
Enable the corrector in the heating circuit



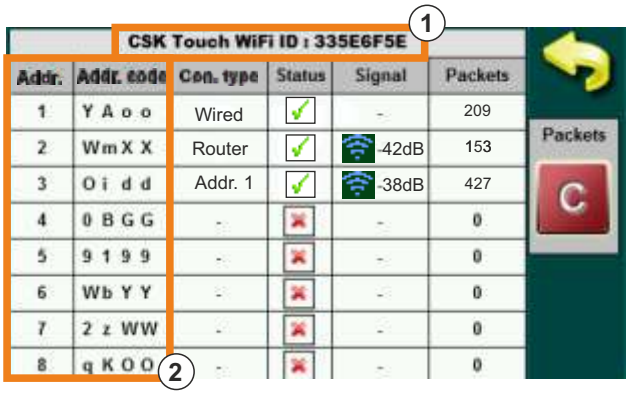
Select the type of corrector used



Select a unique address dig. corrector



After configuring the heating circuits on the CM2K module, it is necessary to open the INFO menu in the CSK-Touch menu and copy/remeber the CSK-Touch WiFi ID (1) and Address Codes (2) (depending on the number of installed correctors) that need to be entered in each CSK -Touch when configuring it.



According to the user's wishes, certain actions that are factory-enabled for all digital room correctors can be disabled on an individual digital room corrector.

For each corrector can be enabled / disabled:

- CSK-Touch view configuration
- Boiler temperature
- Circuit 0...Circuit 8.

For details see instructions: **Technical instructions** for installation, use and maintenance **CSK-Touch** digital room corrector

3.5. DATE AND TIME

This option is used to set the date and time. It is necessary for starting times, and the recording of errors / warnings (for the occurrence of errors / warnings, remembers the date and time of occurrence). After setting the date and time it is necessary to press the "CONFIRM" for saving date and time. If there is a significant clock delay or clock setting at 00:00 or the date on 1.1.2000. It is necessary to replace the battery on the back of the display (battery type CR 1220). The clock could be faster/slower (the shift could be 2-3 minutes per month), which is considered normal and we recommend that you adjust it periodically.

3.6. DISPLAY

3.6.1. SCREENSAVER - TIME

Possible selection: - **default: 600 sec** - Minimum: 10 sec - Maximum: 3600 sec

If at some time nothing was pressed on the screen, the screensaver will turn on, to prevent damage on the screen. Once you touch the screen, the screensaver will turn of.

3.6.1.2. SCREENSAVER - HOLD ON

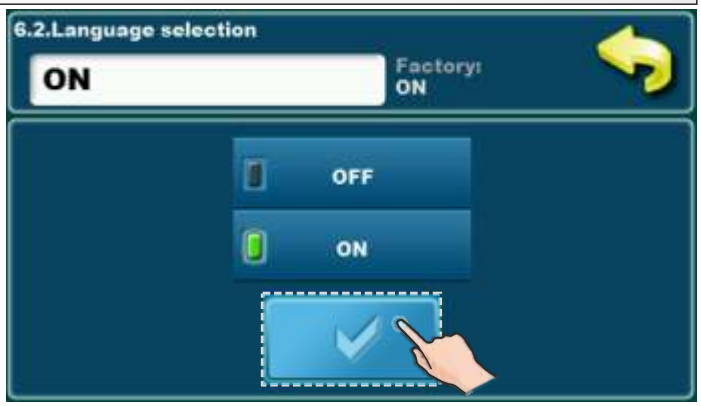
Possible selection: - Factory: **Errors and warnings**
- Errors and warnings, Errors, Never

- **Errors and warnings:**
When an error or warning occurs, the screen saver does not work, or never activates, or if it has been active, it stops working.

- **Errors**:
When an error occurs, the screen saver does not work or is never activated, or if it has been active it interrupts. When a warning appears, the screen saver works. If a warning has occurred during the operation of the screen saver, the screen saver stops working until the new time expires, and then works again until the next change.

- Never:
The screen saver always works, but stops working if there is a change in the number of errors or warnings, and is reactivated after the next change.

3.6.2. LANGUAGE SELECTION



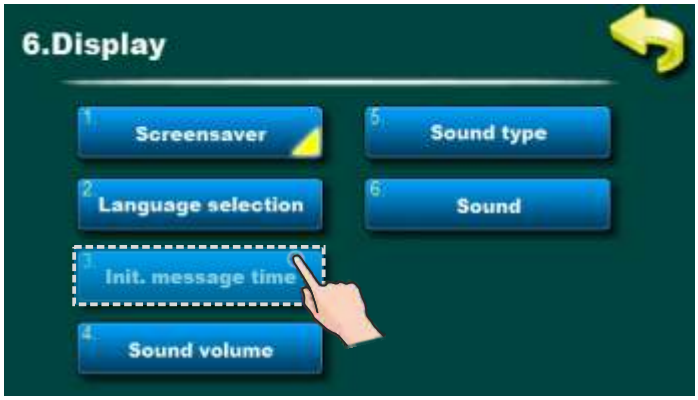
Possible selection: - factory: **ON**
ON, OFF

This option enables or disables screen with the choice of language regulation when you turn-on main switch. If is marked "OFF", after turning-on the main switch, it will be set on before selected language and after some time, display will show the work display of the boiler.

IMPORTANT!

Automatically resume boiler operation after the disappearance of electric power (PF phases) is not possible if language selection option is turned on.

3.6.3. INITIAL MESSAGE TIME



Possible selection: - factory: **5 sec**
- Minimum: 0 sec
- Maximum: 20 sec

This option is used to set the desired duration of the initial message after turning on the main switch. This option is only available if the option" LANGUAGE SELECTION" (point 6.2.) Is set to“OFF".

3.6.4. SOUND VOLUME

Possible selection: - Factory: **Volume 3**
- OFF, Volume 1, Vplume 2, Volume 3

3.6.5. SOUND TYPE

Possible selection: - Factory: **Type 3**
- Type 1, Type 2, Type 3, Type 4, Type 5, Type 6, Type 7, Type 8, Type 9, Type 10

3.6.6. SOUND

Possible selection: Display, ERRORS, WARNINGS; **Factory:** Display, ERRORS, WARNINGS;
This option is used to turn ON / OFF the regulation sound for Display, ERRORS, WARNINGS.
Note: If "OFF" is selected under "Sound volume", the listed options will be disabled for selection.

3.7. INFO

To view informations about boiler and software press I**nfo** button.

(1) - Software version

(2) - Boiler power

3.8. GLOW

In the **Glow** option, the glow maintenance can be OFF or ON.

The *Glow* option keeps the glow in the upper boiler furnace (switches OFF the boiler fan a little earlier than in the non-glow maintenance option) so that the next time you can continue working with the newly added fuel faster, without the need for a new ignition.
How to work with the *Glow* option: after the fire is made for the first time and the boiler starts working, if we want to continue with the boiler, we turn on the *Glow* option, which can maintain the grill for the next fire (up to max 8 hours if we use dry, hard wood). If you want to continue heating during this glow maintenance time (GLW operation phase,), add a little fine wood to the grill and new wood in the upper firebox and press the NEW FILLING button. In the glow maintenance phase (GLW…), the boiler fan lights up every hour to ignite the glow in the upper furnace. When we want to clean the boiler, it is advisable to turn off the *Glow* option so that the wood burns completely and as little ash as possible for cleaning remains in the firebox.

3.9. INSTALLATION

This menu can use only authorized persons. For entry in „Installation“ menu is necessary to input pin.

3.10. CLEANING

Using of „Cleaning” option are detailed described in „Technical instructions for installation of hot water boiler and additional equipment”, point 9 „Cleaning and maintenance of boiler” (Cleaning interval / Before every ingition).

3.11. CM2K

This option is only visible if it is activated in "Installation men."Access to the Installation menu has only authorized person (by entering PIN)". For more informations about this menu see ”Technical instructions, Module for control of two heating circuits (CM2K)“.

4.0. USING

4.1. PUMP P1 WORKING CONDITIONS (PUMP BETWEEN BOILER AND ACCUMULATION TANK)

Pump P1 work:

- when is boiler on ignition phase, work phase, extinction phase or accumulation tank sensor (down) is in error (E3) with boiler temperature higher than 65°C.
- when boiler is not in ignition phase, working phase or extinction phase but boiler temperature is higher than (Tbuf_down+3)°C or boiler temperature is higher than 90°C.

4.2. IGNITION

Boiler must not be used in flammable and explosive environment. It must not be used by children or disabled persons (either physically or mentally), as well as by person without knowledge or experience, unless they are under control or trained by s person responsible for their safety. Children must be supervised in the vicinity of the product. Protective gloves must be used!

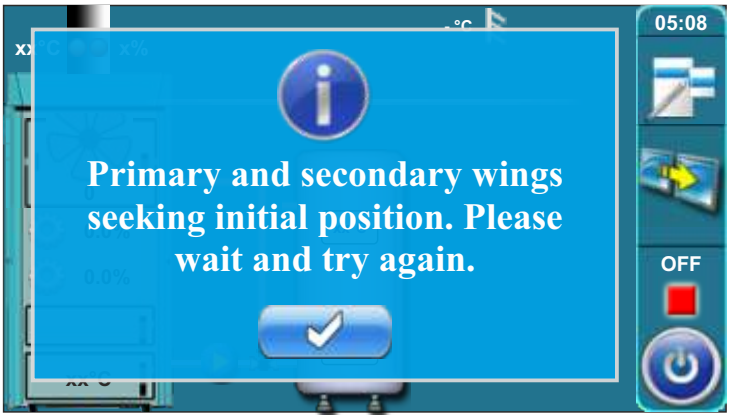
Protective gloves must be used!

IGNITION PHASE:

- Open upper and middle boiler doors (see pages 4 i 5 in “Technical instructions for installation of hot water boiler BioTec-L”)

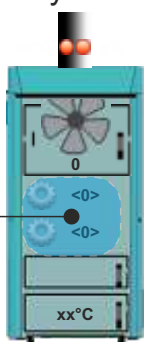
Follow these steps for succesfull igniton phase:

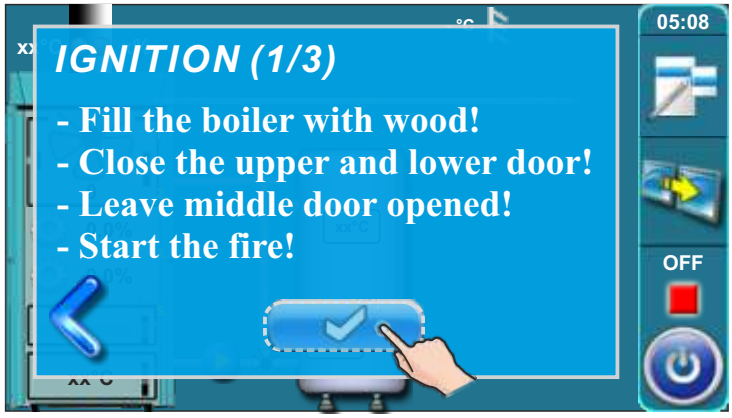
- press button for boiler start
- on display will be displayed window for boiler start
- press ”OK” button



- if this message is shown on display than wait for primary and secondary air actuators
- primary and secondary air is ready for work when indicator stop blinking

Primary and secondary air indicators.





- on display is displayed message "IGNITION 1/3"

- cover the refractory stone with one row of wood logs (be careful to not plug hole on refractory stone (detail A)

- cover the wood logs with fine chopped wood (use enough fine chopped wood to cover wood logs below)
- height of fine chopped wood layer must conform a approx. height of first row of wood logs
- cover the fine chopped wood with crumped paper (use enough crumpled paper to cover fine chopped wood) (detail B)

- place the wood logs on crumpled paper

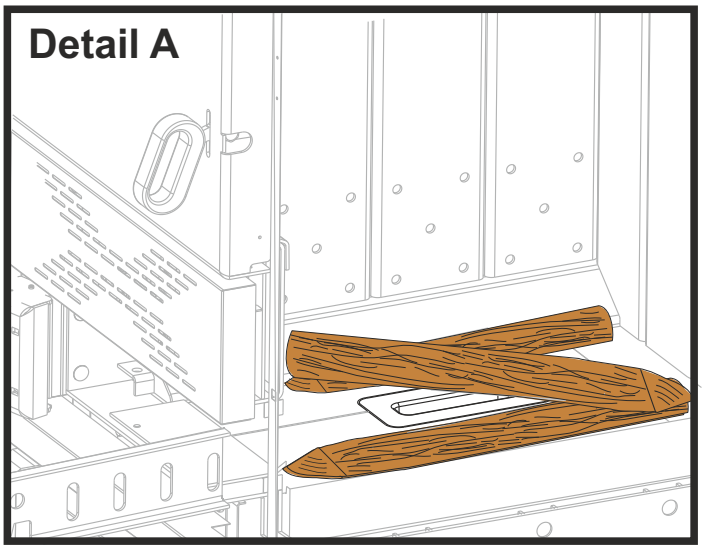
- fill the fuel loading chamber with wood logs (detail C)

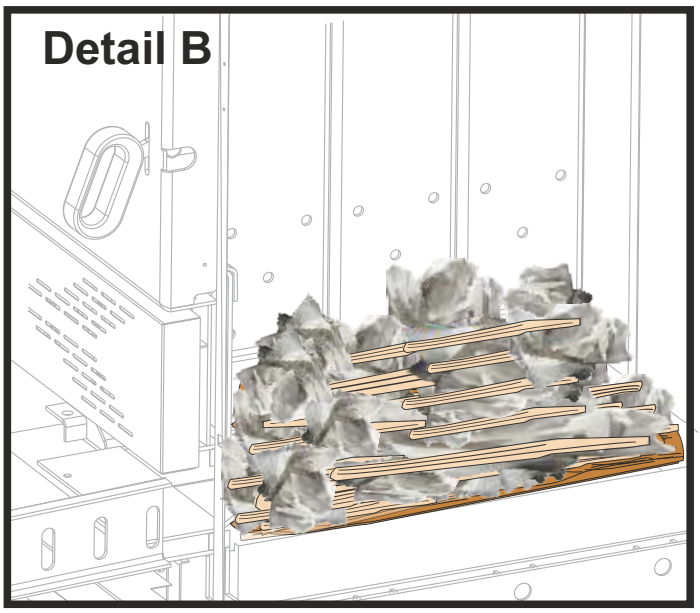
- close upper and lower doors

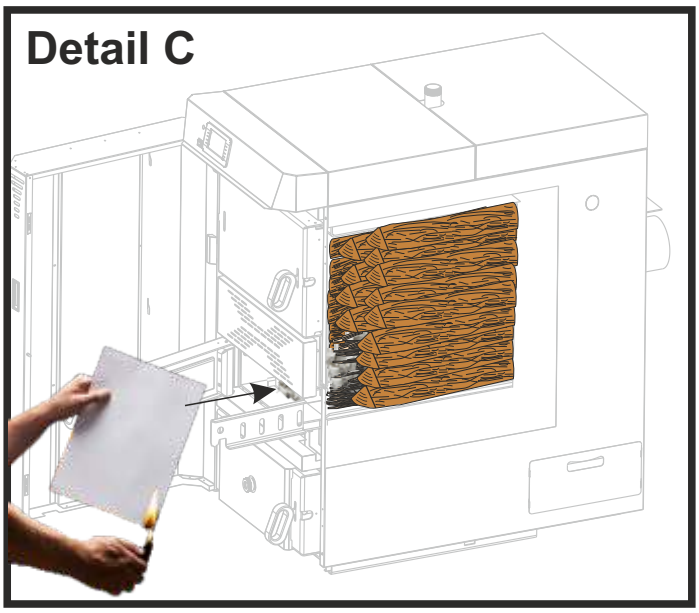
- leave middle door opened

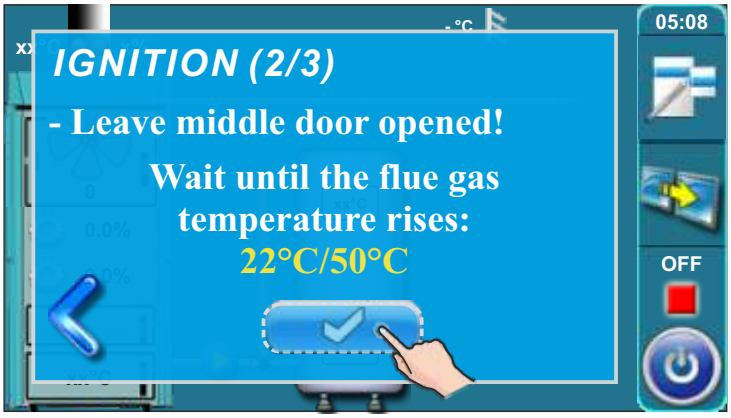
- ignite the fire throuh middle boiler door (detail C)

- press ”enter“ button

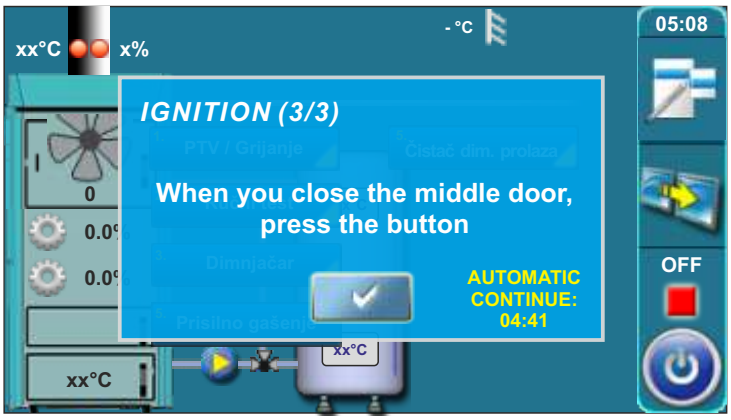








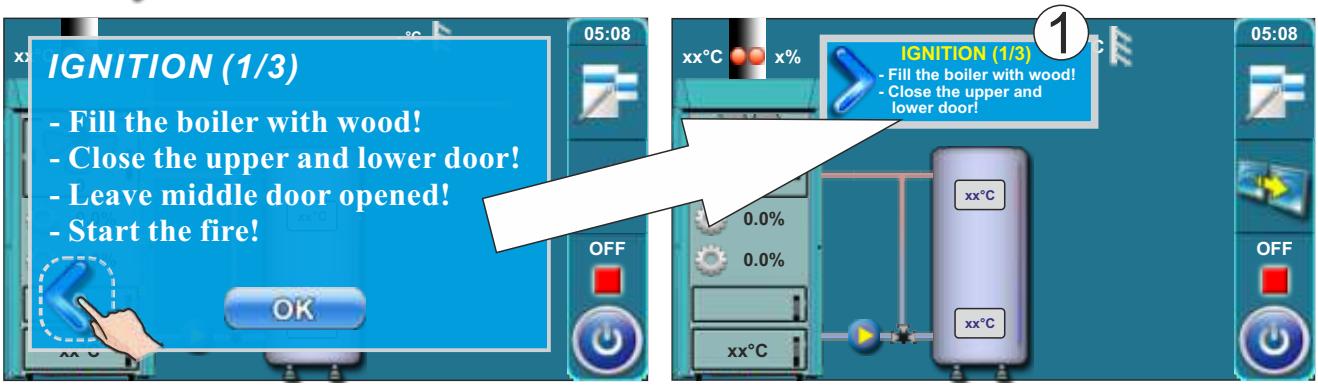
- on display is displayed message "IGNITION 2/3"
- on this step is neccessary to wait until flue gas temperature raise 50°C
- middle boiler door must be opened all time
- when is flue gas temperature higher than 50°C press ”enter“ button

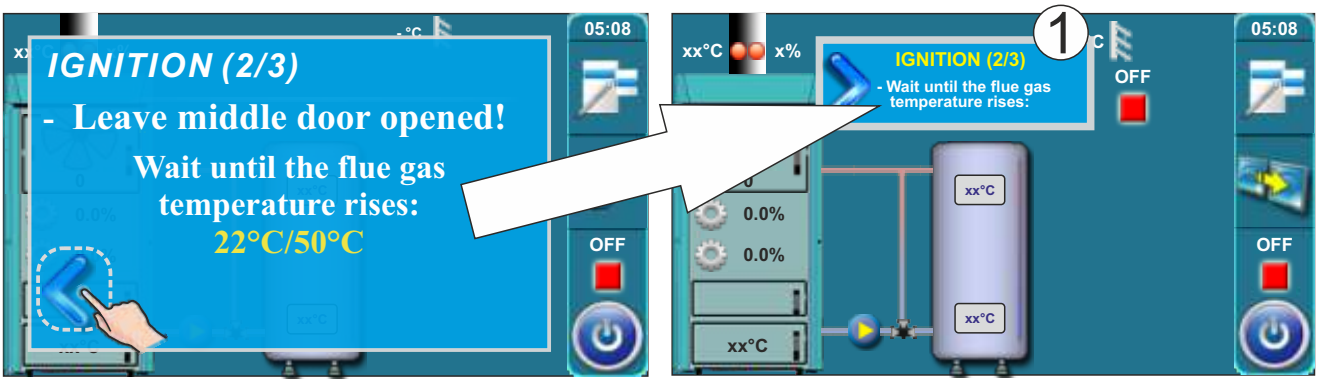


- on display is displayed message "IGNITION 3/3"
- close middle boiler door
- press ”enter” button
- if you don’t press ”enter” button boiler will be automatic continue when counter count to zero (automatic continue)

Additional:

During ignition phase is possible to see main display. It is neccessary to press button. Because ignition phase is on proces, display will be displayed current ignition step to (1). By pressing button we return to full preview of ignition phase.





4.3. REFILLING

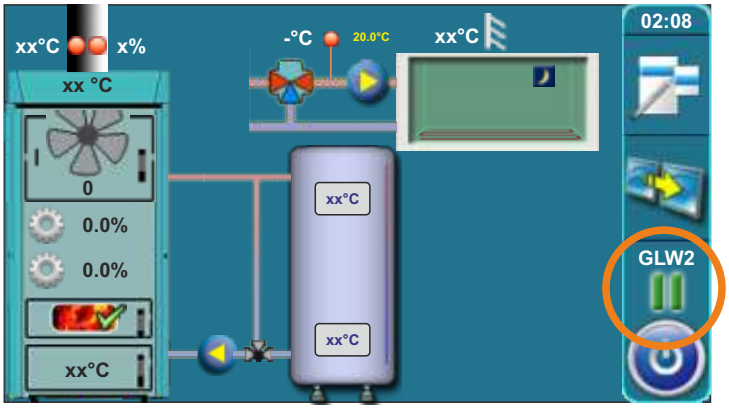
Boiler must not be used in flammable and explosive environment. It must not be used by children or disabled persons (either physically or mentally), as well as by person without knowledge or experience, unless they are under control or trained by s person responsible for their safety. Children must be supervised in the vicinity of the product. Protective gloves must be used!

Protective gloves must be used!

PHASE OF REFILLING FUEL LOADING CHAMBER:

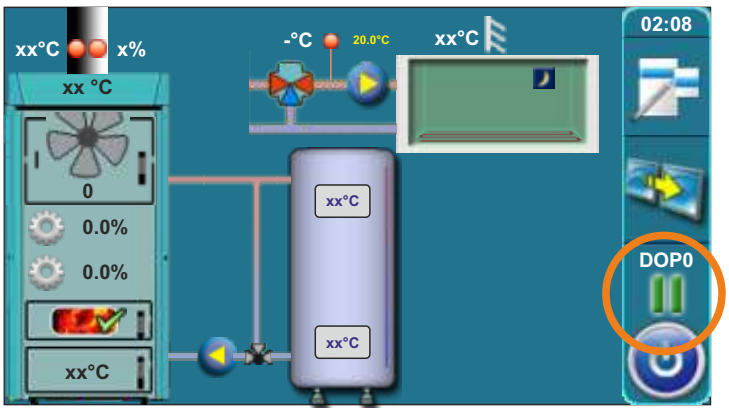
For successful refilling of the fuel loading chamber follow the next steps:

1.



When on display is displaying boiler operating phase „GLW2" that is mean the boiler have spent all the fuel and it's remaining only glow in the fuel loading chamber.

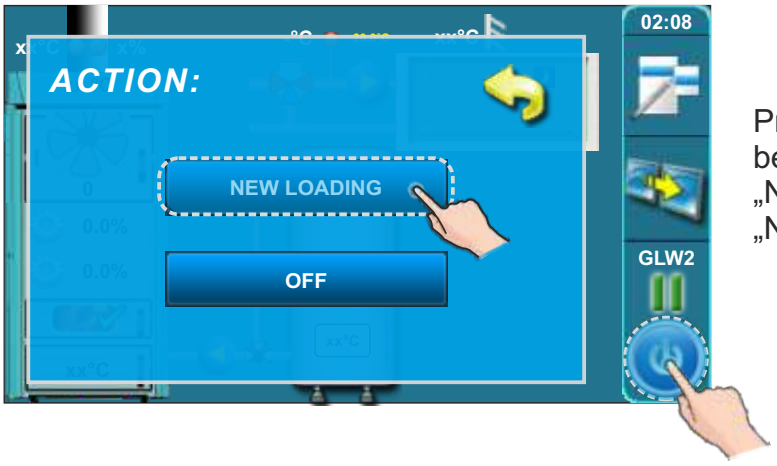
In this step is neccessary to open upper boiler door and check if it glow quality good enough for firing continue and refilling wood loading chamber or it is necessary to go on ignition phase again.



When you open upper boiler door (see pages 4 i 5 in "Technical instructions for installation of hot water boiler BioTec-L") than is displayed boiler operation phase „DOP0".

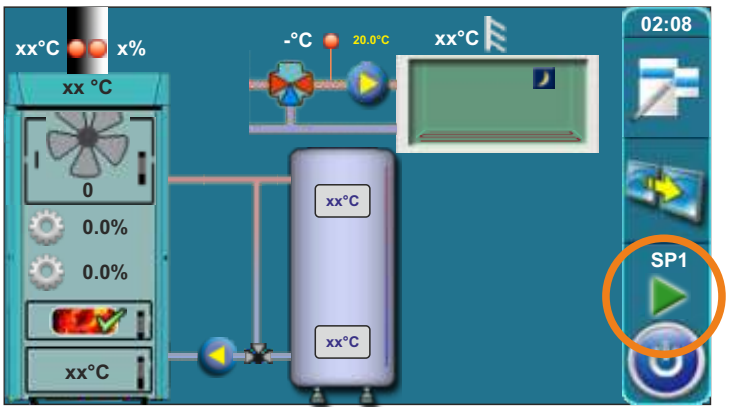
If you estimate that the glow is good enough for refilling wood load chamber with fuel it's neccessary to folow next steps. If you estimate that the glow is not good enough for refilling wood load chamber follow steps in point „Procedure if glow is not enough good". After glow checking is neccessary to close upper boiler door.

2.



Press button „START / STOP“, on display will be displayed window with offered options „NEW LOADING“ and „OFF“. Press button „NEW LOADING“.

3.



On display is displaying boiler operating phase „SP1".

Description of the refilling wood loading chamber:

- open upper boiler door (see pages 4 and 5 in “Technical instructions for installation of hot water boiler BioTec-L”)

- align the glow with scraper

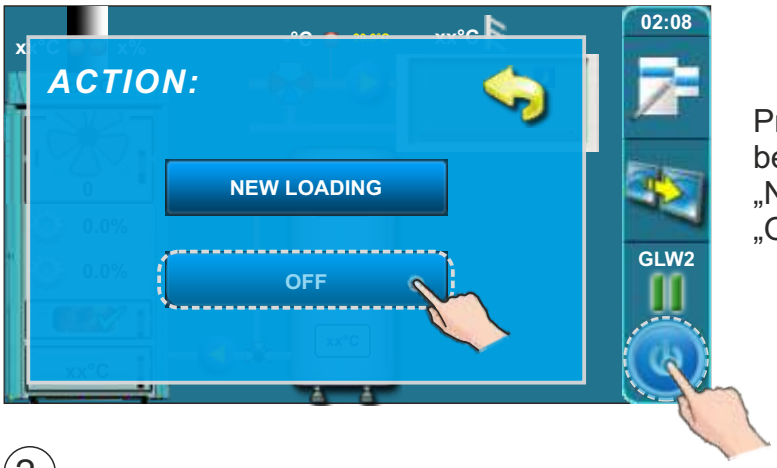
- based on estimates of glow quality and amount of glow put more or less dry thin wood (depend about estimate) and after that fill the wood loading chamber with wood

- close upper boiler door (see pages 4 and 5 in “Technical instructions for installation of hot water boiler BioTec-L”)

PROCEDURE IF GLOW IS NOT ENOUGH GOOD

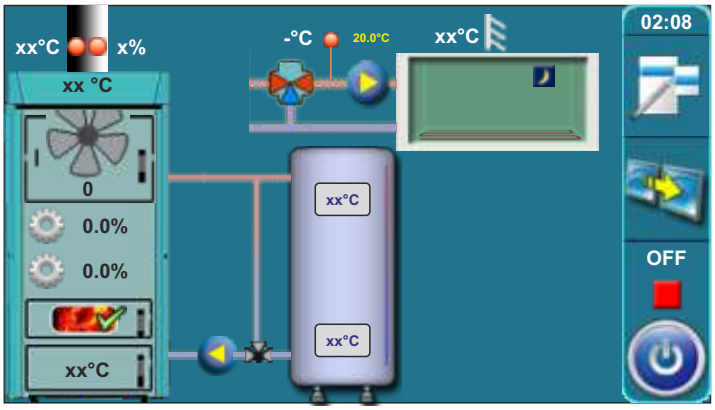
If glow is not enough good for fuel refilling folow the next steps:

1.



Press button „START / STOP“, on display will be displayed window with offered options „NEW LOADING“ and „OFF“. Press button „OFF.

2.

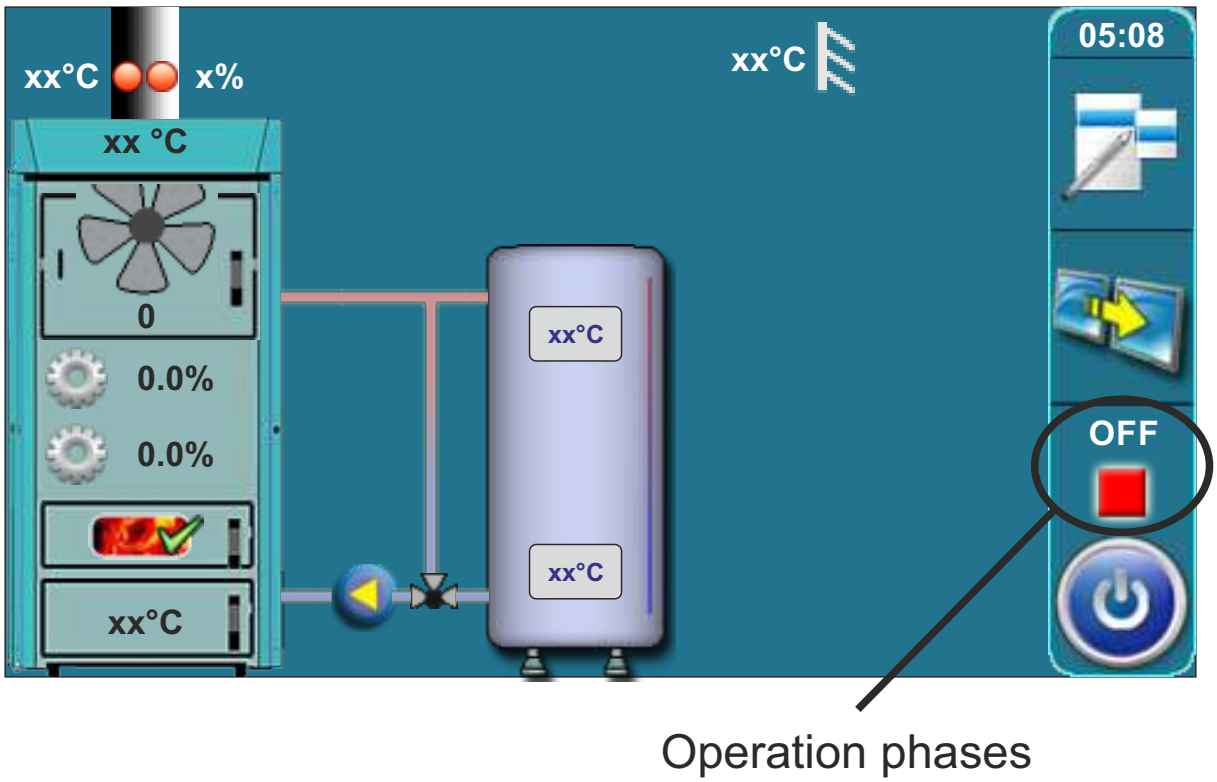


Wait until on display is displayed boiler operating phase „OFF”.

3.

Go to the ignition phase like is described in point „IGNITION” in this technical instructions.

5.0. OPERATION PHASES (SHOWN ON THE SCREEN)



Operation phase	Description
OFF	The boiler is switched off (standby boiler until the next start).
S0	- The message on the screen: "IGNITION 1/3". - Fan works on max. speed - Primary / secondary is positioning themselves. - The process continues to the next phase "S1" after the user confirms the message or automatically if the Tdp (flue gas temperature) is higher than 50 ° C. If Tdp is higher then 50 ° C at the time of starting the operation of the boiler phase "S0" does not appear on the screen (automatically skipped).

Operation phase	Description
S1	- The message on the screen: "IGNITION 2/3". - Fan works on max. speed - Primary / secondary is positioning themselves. - Waiting for the Tdp> 50°C. **When Tdp> 50°C:** a) The user can confirm the message "IGNITION 2/3" then screen will show the message "IGNITION 3/3" which user also can confirm which exceeds the boiler in the next phase "SP1" or "Sp2". b) If the user didn't confirm the message "IGNITION 2/3" or didn't confirm message "IGNITION 3/3" boiler will after 5 minutes automatically switch to the next phase "SP1" and on the screen remains message "IGNITION 3/3" with the inscription "automatic continuation". This message remains on the screen until the confirmation by the user but has no effect on the operation of the boiler. **Exceptions:** 1. If upper boiler door is opened, there is no possibility of manual confirmation of the message "IGNITION 2/3" either is not possible to automatically move to the next message "IGNITION 3/3". Closing the upper boiler door, boiler moves to above described (normal) procedure phase "S1". 2. If upper boiler door is opened when on the screen is displayed message "IGNITION 3/3" move to the next stage ("SP1") or "SP2" is only possible by using manual message confirmation while automatically is not possible.
SP1	- Setting the start position primary / secondary is necessary for the next phase "SP2". - When the primary / secondary are adjusted boiler goes into a phase "SP2". - If the required position of primary / secondary had been set earlier, this phase "SP1" doesn't appear on the screen).
SP2	- The time of duration this stage "SP2" is factory defined. - Before the end of this stage regulation based on the measured parameters of the boiler operation allows the transition to the next phase "SD4" ("DX") or otherwise records information in history and extends this state "SP2" for factory defined time period after which repeats the comparison of the measured and the required parameters and allow you to move to the next stage "SD4" ("DX") or if the conditions are not satisfy writes an error and stops the operation of the boiler.

Operation phase	Description
SD4	- Set the power blades D4 - If the required position primary / secondary had been earlier set this state "SD4"does not appear on the screen.
Dx	- Stage "DX" is the common name for operation phases of the boiler on “D4","D3","D2","D1". - phase “DX” doesn’t appear displayed on the screen but is displayed one of the operation of the boiler “D4", "D3", "D2", "D1" which depends about boiler modulation phase. - These conditions are becoming current when the following conditions are met:: Tboiler =<(Tboiler_set – 4) => D4 Tboiler =(Tboiler_set – 3) => D3 Tboiler =(Tboiler_set – 2) => D2 Tboiler =(Tboiler_set – 1) => D1 Tboiler >=(Tboiler_set – 0) => extinction
DOP0 (understage)	- Indicate that the upper boiler door is opened.
DIF1	- Turning off the boiler either due to reaching the set temperature of the boiler, too low combustion chamber temperature or too high flue gas temperature (Tdp>300 °C).
DIF2	- The boiler wait that the temperature in boiler drops to the set temperature of the boiler reduced by set differential.
DIF3	- Blowout while boiler is waiting that temperature in boiler drops to the settemperature of the boiler reduced by set differential.
DIF4	- Start boiler-setting primary / secondary, after the boiler temperature dropped to the set temperature of the boiler reduced by set differential.
GLW1	- Shutting down the boiler for keeping the glow.
GLW2	- Phase of keeping the glow.
GLW3	- Glow blowout in phase of keeping the glow.
GLW4	- Start a new filling, set the primary / secondary.
OFF1	- Shutting down after which the boiler goes into phase „OFF“.
PF-xxxx	- xxxx: Is any phase described above (for example PF-GLW2) - Appears after a power off/power in if there was a power failure. - The prefix "PF" disappears with new start of the boiler or by using option "forced shut down"
PF-ON	- This stage is printed during zeroing primary / secondary and after a power switch off / switch on. It indicates that after zeroing primary / secondary boiler automatically start again.

IMPORTANT!

Automatically resume boiler operation after the disappearance of electric power (PF phases) is not possible if language selection option is turned on. For disabling option „Language selection“ see point 3.6.2. „Language selection“.

5.1. BOILER OFF CONDITIONS

The boiler (fan) is switched off when the conditions for that are created in the boiler. The conditions for extinguishing the boiler depend on its rated power and flue gas temperature (Tfg), combustion temperature (Tfirebox) and percentage of oxygen (O2).

Boiler shutdown conditions when *Glow maintenance* is <u>not enabled</u>:
When all the following parameters are met, for a minimum of 10min., the boiler is switched OFF:

- 25kW = Tfg < Tboiler-10°C or min. 50°C / Tfir < 100°C / O2 > 16%
- 34kW = Tfg < Tboiler-10°C or min. 50°C / Tfir < 100°C / O2 > 16%
- 45kW = Tfg < Tboiler-10°C or min. 50°C / Tfir < 100°C / O2 > 16%

The second condition for shutting down the boiler is when all the following parameters are met, a minimum of 60 minutes:

- 25kW = Tfir < 100°C / O2 > 20%
- 34kW = Tfir < 100°C / O2 > 20%
- 45kW = Tfir < 100°C / O2 > 20%

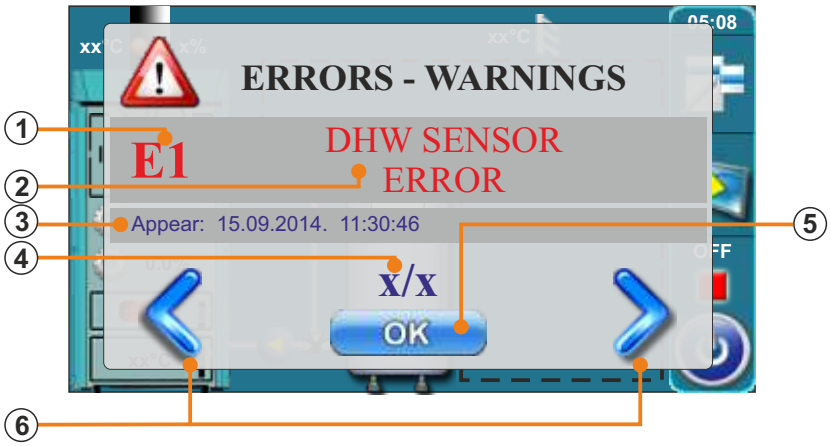
Boiler shutdown conditions when Glow maintenance is <u>enabled</u>:

When all the following parameters are met, the boiler is in GLOW mode, for a minimum of 2 minutes, the boiler is switched off:

- 25kW = Tfg < 140°C / Tfir < 200°C / O2 > 14%
- 34kW = Tfg < 140°C / Tfir < 250°C / O2 > 14%
- 45kW = Tfg < 140°C / Tfir < 300°C / O2 > 14%

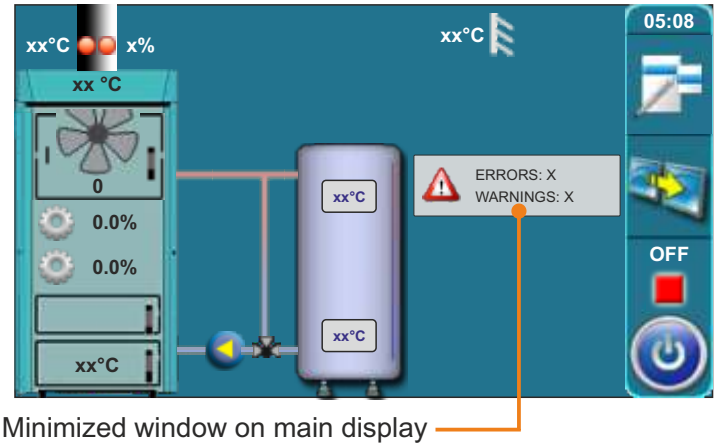
IMPORTANT: For the first 60 minutes, the boiler regulation does not follow the boiler shut-off parameters and also after each opening of the upper door!

6.0. ERROR/WARNING ON THE MAIN SCREEN



1. Error / Warning / Information code
2. Error / Warning / Information name
3. Date and time of error / warning / information occurrence
4. Number of errors / warnings / informations
5. „OK” button
6. Buttons for scrolling through errors / warning / informations

When the error/warning still present, error/warning name and code is painted red, and when error/warning is resolved, text turns green



Minimized window on main display

By pressing „OK” button error window will be minimized and showned on main display.

All errors/warnings are recorded in history (see point 2.History)

6.1. LIST AND ELIMINATION OF ERRORS / WARNINGS / INFORMATIONS

ERROR E1

Error	Boiler status
DHW SENSOR	DHW pump (P2) doesn't work.

Possible causes
Interruption on el. connections between sensor and boiler, connection to the boiler or DHW sensor is invalid.

What to do?
Check if the sensor is properly installed, check possible damages on sensor or cables, check contacts on connectors.
Press “OK” button to confirm that you see error. Boiler work normally, DHW pump (P2) doesn’t work, on display will be displayed notification about error. Instead DHW temperature on display will be displayed “-“. Call authorized service man. Service man can, temporarily until he solve the problem, turn on DHW pump manually (see page 9, point “9.1.2. DHW Pump continuously”). In that case DHW pump will be work continuously until you turn off it. This options is intended only like a help for case when, because of unknown DHW boiler temperature, control unit can't automatically lead DHW pump.

ERROR E2

Error	Boiler status
BUFFER TANK SENSOR ERROR (UP)	Boiler work normally

Possible causes
Error in buffer tank sensor (up).

What to do?
Check sensor position, check damages of sensor and cables, check contacts on connectors. Press „OK” button to confirm error. Boiler will continue with work but on main screen will be showned information about error. Error should be removed but boiler works. Instead temperature, on buffer tank (up) will be shown „-°C” and the request for BUF-tank temperature will not working.

ERROR E3

Error	Boiler status
BUFFER TANK SENSOR ERROR (DOWN)	Intervention mode

Intervention mode: Boiler work in a way that fulfill need for heating but possibilities are significant smaller.

Possible causes
Error in buffer tank sensor (down).

What to do?
Check sensor position, check damages of sensor and cables, check contacts on connectors. Press „OK” button to confirm error. Boiler will continue with work but on main screen will be showned information about error. Instead temperature, on buffer tank (down) will be shown „-°C” and pump P1 works whenever the temperature in the boiler exceeds 65°C.

ERROR E4

Error	Boiler status
FLUE GAS SENSOR ERROR	Intervention mode

Intervention mode: Boiler work to content heating demand but boler has reduced possibilities.

Possible causes:
Error on flue gas sensor.

What to do?
Check sensor position, check damages of sensor and cables, check contacts on connectors. Press „OK" button to confirm error. Boiler will continue with work but on main screen will be showned information about error. Instead flue gas temperature will be showned „-°C".

WARNING!
If is this error present it is neccesary to hold open middle boiler door during ignition phase (as much is necessary for good iginition (no longer)).
DON'T OPEN MIDDLE BOILER DOOR DURING BOILER WORK!

ERROR E5

Error	Boiler status
OUTSIDE TEMPERATURE SENSOR ERROR	Boiler work normally. Status of heating circuit depends on the configuration. (see below description of "case 1" and "Case 2")

Case 1: If is selected configuration of heating circuit with motor drive and / or exist additional heating circuit(s) 1+ and / or 2+, this heating circuits will not work!
Case 2: In other configurations heating circuit(s) work normally, on display is, instead outer temperature, are displayed "-".

Possible causes:
Interruption on el. connections between sensor and boiler, connection to the boiler or outside temperature sensor is invalid.

What to do?
Check sensor position, check damages of sensor and cables, check contacts on connectors. Press „OK" button to confirm error. Boiler will continue with work but on main screen will be showned information about error. Instead outer temperature will be showned „-°C".
If upper instructions didn't help **call service man.**

ERROR E6

Error	Boiler status
MAIN FLOW SENSOR ERROR	Boiler work normally. Status of heating circuit depends on the configuration. (see below description of "case 1" and "Case 2")

Case 1: If is selected configuration of heating circuit with motor drive, this heating circuit will not work!
Slučaj 2: In other configurations heating circuit work normally, on display is, instead outer temperature, are displayed "-".

Possible causes:
Error on main flow sensor.

What to do?
Check sensor position, check damages of sensor and cables, check contacts on connectors. Press „OK" button to confirm error. Boiler will continue with work but on main screen will be showned information about error. Instead main flow temperature will be showned „-°C".
If upper instructions didn't help **call service man.**

ERROR E7

Error	Boiler status
RETURN FLOW SENSOR ERROR	Boiler goes to phase "OFF"

Possible causes:
Error on return flow sensor.

What to do?
Check sensor position, check damages of sensor and cables, check contacts on connectors. When boiler show this error boiler go to extinction phase and can't be started until error isn't resolved. If upper instructions didn't help **call service man.**

ERROR E8

Error	Boiler status
BOILER SENSOR ERROR	Boiler goes to phase "OFF"

Possible causes:
Error on boiler sensor.

What to do?
Check sensor position, check damages of sensor and cables, check contacts on connectors. When boiler show this error boiler go to extinction phase and can't be started until error will not be resolved. If upper instructions didn't help **call service man.**

ERROR E9

Error	Boiler status
UNKNOWN BOILER POWER	Boiler can't be started

Possible causes:
Key for power loading are not inserted or it is not recognized.

What to do?
CALL SERVICE MAN!

ERROR E10

Error	Boiler status
FAN ERROR	Boiler goes to phase "OFF"

Possible causes:
Invalid fan or rpm counter (integrated in fan housing) or safety thermostat is interrupt el. supply to fan because of too high temperature in the boiler.

What to do?
Check if is rpm counter placed, check possible damages on rpm counter or on cables, check contacts on connectors. Check if the safety thermostat (STB) turn of fan (see point "7.0. Boiler interrupt"). When boiler show this error boiler go to extinction phase.
Boiler can be started but if error shown again boiler go to extinction phase again.
If upper instructions didn't help **call service man.**
Authorized serviceman have possibility to enable boiler for „intervention work" if he figure problem in rpm counter. He can switch of rpm counter, in that case boiler will be work with fan max. rpm (see point 7.3).

ERROR E14

Error	Boiler status
LAMBDA PROBE ERROR	Intervention mode

Intervention mode: Boiler work to content heating demand but boiler has reduced possibilities.

Possible causes:
Interruption in el. connections between boiler and lambda probe or lambda probe is invalid.

What to do?
Press „OK" button to confirm error. Boiler will continue with work but on main screen will be showned information about error. **Call service man.**

ERROR E17

(May occur only when installation contain CM2K (additional equipment)).

Error	Boiler status
SENSOR CM2K 1+ CIRCUIT	Pump of 1+ heating circuit doesn't work. Boiler work normally.

Possible causes:
Error on flow temperature sensor of 1+ heating circuit (on regulator CM2K)

What to do?
Check sensor position, check damages of sensor and cables, check contacts on connectors.
If upper instructions didn’t help **call service man.**

ERROR E18

(May occur only when installation contain CM2K (additional equipment)).

Error	Boiler status
CORRECTOR CM2K 1+ CIRCUIT	Pump of 1+ heating circuit work in intervention mode by heating curve. Boiler work normally.

Possible causes:
Error on room corrector of 1+ heating circuit (CM2K regulator), bad corrector connection to the CM2K or room corrector failure.

What to do?
Check damages of corrector and cables, check contacts on connectors.
Press “OK” for confirmation that you see error. Boiler will be work, on main screen will be displayed notification about error. Pump of 1+ heating curve work by heating curve. Pump of 1+ heating curve work in intervention mode that fulfill need for heating but error of room corrector on 1+ heating circuit must be solved.
If upper instructions didn’t help **call service man.**

ERROR E19

(May occur only when installation contain CM2K (additional equipment)).

Error	Boiler status
SENSOR CM2K 2+ CIRCUIT	Pump of 2+ heating circuit doesn't work. Boiler work normally.

Possible causes:
Error on flow temperature sensor of 2+ heating circuit (on regulator CM2K)

What to do?
Check sensor position, check damages of sensor and cables, check contacts on connectors.
If upper instructions didn’t help **call service man.**

ERROR E20

(May occur only when installation contain CM2K (additional equipment)).

Error	Boiler status
CORRECTOR CM2K 2+ CIRCUIT	Pump of 2+ heating circuit work in intervention mode by heating curve. Boiler work normally.

Possible causes:
Error on room corrector of 1+ heating circuit (CM2K regulator), bad corrector connection to the CM2K or room corrector failure.

What to do?
Check damages of corrector and cables, check contacts on connectors.
Press “OK” for confirmation that you see error. Boiler will be work, on main screen will be displayed notification about error. Pump of 2+ heating curve work by heating curve.
Pump of 2+ heating curve work in intervention mode that fulfill need for heating but error of room corrector on 2+ heating circuit must be solved.
If upper instructions didn’t help **call service man.**

ERROR E21

Error	Boiler status
FIREBOX SENSOR	Intervention mode

Intervention mode: Boiler work to content heating demand but boler has reduced possibilities.

Possible causes:
Interchanged wirings of sensor when is it connected to the boiler (case when with real increasing temperature in the firebox displayed temperature decreasing to the -50°C when is error showing) or sensor is invalid and it measure not logical temperature values.

What to do?
Press „OK” button to confirm error. Boiler will continue with work but on main screen will be showned information about error. **Call service man.**

ERROR E24

Error	Boiler status
ROOM CORRECTOR ERROR	Boiler work normally. Status of heating circuit depend about configuration (below see description „Case 1“ and „Case 2“).

Case 1. Heating circuit managed by control unit which contain motor drive (motor drive is selected in configuration menu).
Leading of this heating circuit automatically go in work leading by outer temperature.

Case 2. Heating circuit managed by control unit which not contain motor drive (motor drive is not selected in configuration menu).
Pump (P3) in this heating circuits stops with work.

Possible causes:
Interruption on el. connections between room corrector and boiler, connection to the boiler or room corrector is invalid.

What to do?
Check el. connections between room corrector and boiler and connections to the boiler. If you can't eliminate error, call service man.
If, in Case 2, authorized service man for some reason is not able to solve a problem immediately he can temporarily (just as intervention measure for establish some kind of heating) in configuration disable room corrector and error will be disappear, heating pump P3 will be always work and only condition “minimal temperature of accumulation tank” can stop it.
Press “OK” button to confirm that you see error, notification about error will be in minimalized window.

ERROR E26

Error	Boiler status
FIREBOX SENSOR DISCONNECTED	Intervention mode

Intervention mode: Boiler work to content heating demand but boler has reduced possibilities.

Possible causes:
Interruption on el. connections between firebox sensor and boiler or bad connection to the boiler

What to do?
Press „OK” button to confirm error. Boiler will continue with work but on main screen will be showned information about error. **Call service man.**

ERROR E27

Error	Boiler status
HYDRA. SWITCH SENSOR ERROR	Boiler work normally. Regulation of the boiler takes hydraulic crossover temperature lower than any measured temperature in the system.

Possible causes:
Interruption on el. connections between room corrector and boiler, connection to the boiler or hydraulic crossover sensor is invalid.

What to do?
Press „OK" button to confirm error. Boiler will continue with work but on main screen will be showned information about error. **Call service man.**

ERROR E29

Error	Boiler status
COMMUNICATION ERROR WITH WIFI	Boiler work normally.

Possible causes:
Problem with UTP cable or its connections with electric boards.

What to do?
The problem occurs in the work of additional equipment for internet supervision (WiFi). Check if UTP cabel is damaged and also check contacts on connectors. Press the "OK" button to confirm that you saw the error. The boiler will operate, but on the main screen will be displayed information about error. The error should be removed.

For errors below call service man!

ERROR E12	COMMUNICATION ERROR WITH MOTHERBOARD
ERROR E13	COMMUNICATION ERROR WITH SENSOR BOARD
ERROR E16	COMMUNICATION ERROR WITH CM2K (1+&2+)

Warnings

(displayed on the screen and recorded in history)

W1 - Factory settings loaded

W2 - Flue gas temp. high, close the upper door!

W3 - Fan protection
Appear always when fan decrease rotating speed or if turning "OFF" itself because of high flue gas temperature.

W4 - Intervention work (Firebox sensor)
The boiler operates without using the firebox sensor

W5 - Intervention work (lambda probe)
The boiler operates without using the lambda probe

W6 - Intervention work (flue gas sensor)
The boiler operates without using the flue gas sensor

W7 - Intervention work (RPM sensor)
The boiler operates without using the RPM (rotates per minute) sensor

W8 - Ignition error, try again!
Bad ignition, too damp wood, non-closed middle or lower door, non-closed side covers for cleaning or rear top cover for cleaning), impassable flue pipe from the fan to the chimney, blocked passes for the primary or secondary air between the upper and middle boiler door. Check and close the insufficiently sealed openings and if necessary fill and start the boiler again, if you don't help these actions, call an authorized service to check primary / secondary openings.

W9 - Fan is off, flue gas temp. too high, Close the upper door!
Too high flue gas temperature with the open upper boiler door. Close the uper door and restart the boiler (load fuel if necessary).

W10 - Low return temperature
It can occur only if the configuration contain "Protection valve". The boiler will resume normal work (the cause should be removed because boiler condensation will occur and flue passes will clog up). The problem may be with 3-way mixing valve (protection valve) / motor drive / sensor of return flow temperature.

W11 - Out of fuel

W12 - Low buffer temperature
The temperature accumulation tank is lower than the desired which allow pump work.

Informations

(recorded in history)

I1 - OFF during ignition
Recorded into history whenever the boiler goes into shutdown phase due to reaching the set temperature of the boiler or too high flue gas temperature during phase S1 (ignition phase).

I2 - ignition automaticly proceeded
The boiler is after 5 minutes since the flue gas temperature reached 50 °C in operation phase S1 continued to work in stabilization phase (SP1,SP2).

I3 - bad ignition
Measured parameters of combustion in the boiler during ignition/stabilization were bad but still continued to work in conditions of work (DX) and the possible bad combustion of wood and the rest of unburned wood at the end of the operation (OFF).

I4 - OFFduring stabilization
Recorded into history whenever the boiler goes into shutdown phase due to reaching the set temperature of the boiler or too high flue gas temperature during phases SP1,SP2 (stabilization phases)

I5 - power up (power down)
Return power (230 V) after electric failure during boiler operation.

I6 - glow after power up
End of the boiler operation with "turned on" option "glow" when in the process of work occured electric failure (230 V).

I7 - "OFF" after power up
End of the boiler operation when in the process of work occurred electric failure (230 V).

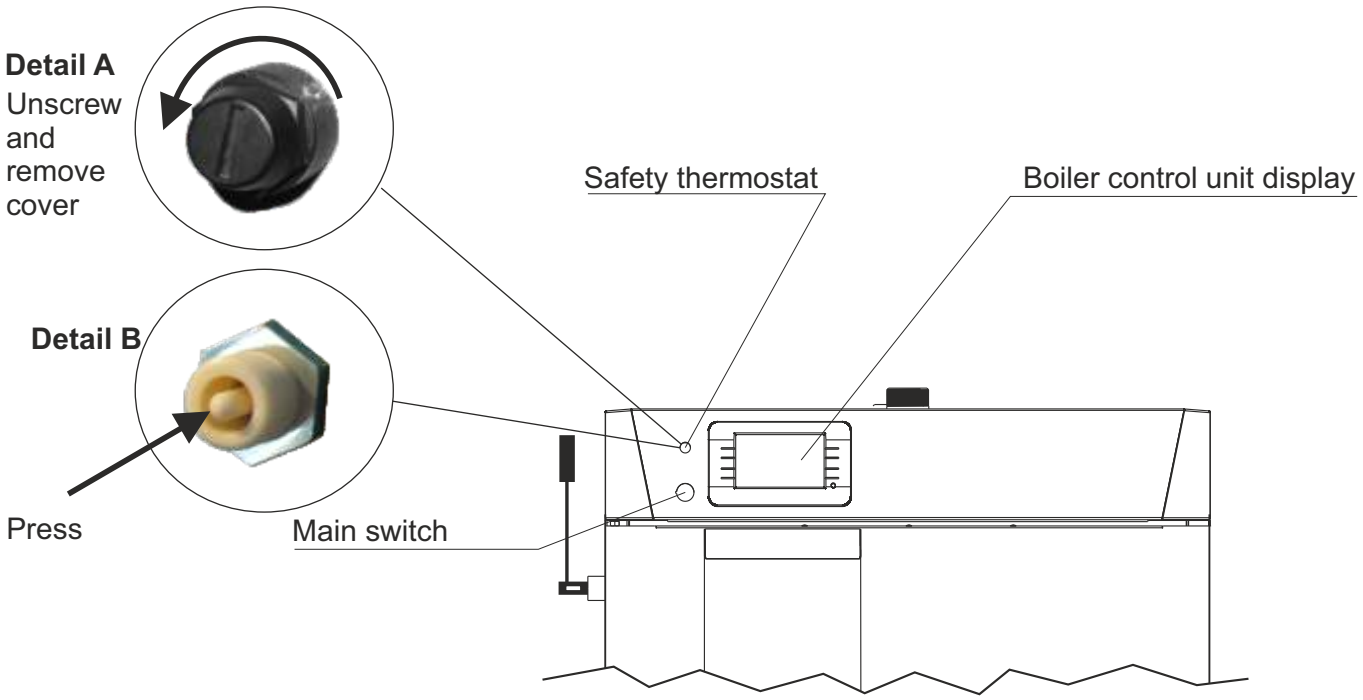
7.0. BOILER INTERRUPTION

7.1. SAFETY THERMOSTAT

Safety thermostat interrupt work of fan if boiler temperature cross max. permitted temperature (110°C – 9°C).
On boiler display will be displayed fan error (E10), boiler will be work like is described in error E10.
For safety thermostat (STB) re-start is necessary to do next things:

- Wait until boiler temperate is lower than 70°C.
- Unscrew and remove safety thermostat cover (detail A).
- Press button for safety thermostat re-start (detail B).
- After pressing button for re-start safety thermostat error will be removed and boiler will be ready for work.
- Boiler start must be done like is described in point “4.2. Ignition”. It's necessary to give more attention on boiler work especially filling accumulation tank with energy. If you have the same problem in first next firing or the problem persist in next firings, please take advice from authorized service man.

Figure - Safety thermostat

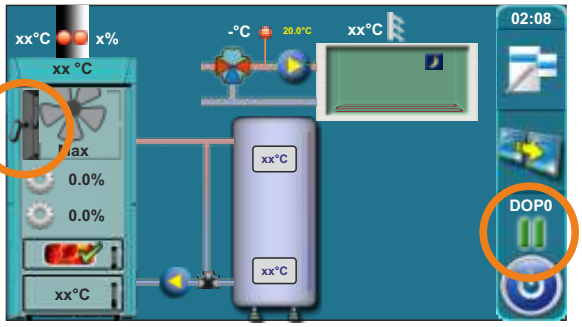


ATTENTION!

If safety thermostat persist turning off ventilator call authorized service man.

7.2. BOILER WORK IN PHASE "DOP0" AND THE UPPER DOOR OF THE BOILER IS CLOSED_improper operation of the boiler

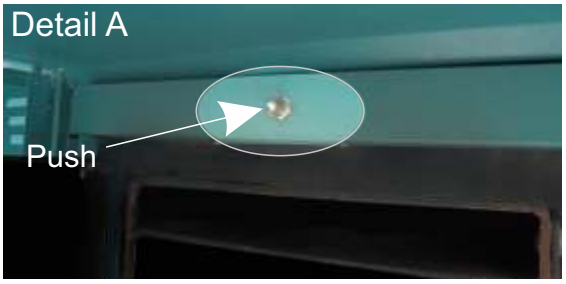
Boiler status:
Upper door of the boiler is closed, and boiler work in phase "DOP0" and on screen are displayed opened upper boiler door.



Possible causes:
The problem is with the work of the microswitch above the upper boiler door. The problem may occur due getting round ”L-profile“ built on the upper boiler door or microswitch failure, interruption on el. connections between boiler and microswitch / or electronic board.

What to do?

1. Open upper boiler door, press and hold microswitch button (detail A). At the same time check if the screen has written another phase instead "DOP0". After verification release button. If it was written another phase instead "DOP0" it has been proven that all el.elements correct, but there has been getting round L-profile built on top boiler door, which serves to sufficiently push microswitch button when the upper boiler door closed. Adjust ”L-profile“ mounted on upper boiler so that for closed upper boiler door on the screen is displayed another phase instead "DOP0".



2. If in point 1. has not been established that all electric. elements are correct (the display shows DOP0 although the microswitch button is pressed) call authorized service.
Authorized service will shut down boiler, disconnect it from the power supply (by removing the plug from the socket), check visual condition el. wires between the microswitch and connectors on the electric board board and estimate whether the problem is in microswitch or elsewhere.

7.3. RPM SENSOR SWITCHING OFF (authorized person only)

This option is used for enable of intervention boiler work if is RPM sensor broken. When is RPM sensor switched off, fan will be work on max. rpm.

8.0. THE PRINCIPLE OF OPERATION OF THE P1 PUMP

PUMP P1 (Factory settings):

1. Tb1<65°C, P1 does not work
2. Tb1>90°C, P1 always work
3. Tb1>65°C
3a. BOILER FAN WORKS,
P1 works unless the conditions below are met:
Tb1<(Tbuf_up+ 3) and Tfir1< (Tfirebox_P1) and Tb1< (Tboiler_P1) and Tfgf1<Tfir1
3b. BOILER FAN DOES NOT WORK,
P1 WORK:
Tb1> (Tbuf_up + 3)°C

Legend:
Tb1 – measured boiler temperature
Tbuf_up – measured buffer tank temperature_up
Tfir1 – measured temperature in the boiler firebox
Tfgf1- measured flue gas temperature
Installation/Other/Pump P1/Running limitation:
- ON/OFF, Factory: **ON**
- Tfirebox-P1, Factory: 110°C, choice: 90-130°C
- Tboiler-P1, Factory: 86°C, choice: 80-90°C
Installation/Other/Pump P1/BUF sensor:
- BUF sen. up, Factory: **ENABLED**
- BUF sen. down, Factory: Disabled

Notes

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