

# Centrometal

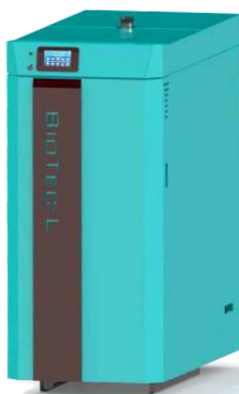
## HEATING TECHNIQUE

Centrometal d.o.o. - Glavna 12, 40306 Macinec, Croatia, tel: +385 40 372 600, fax: +385 40 372 611



### Technical instructions

using **REGULATION** of  
hot water boiler BioTec-L



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

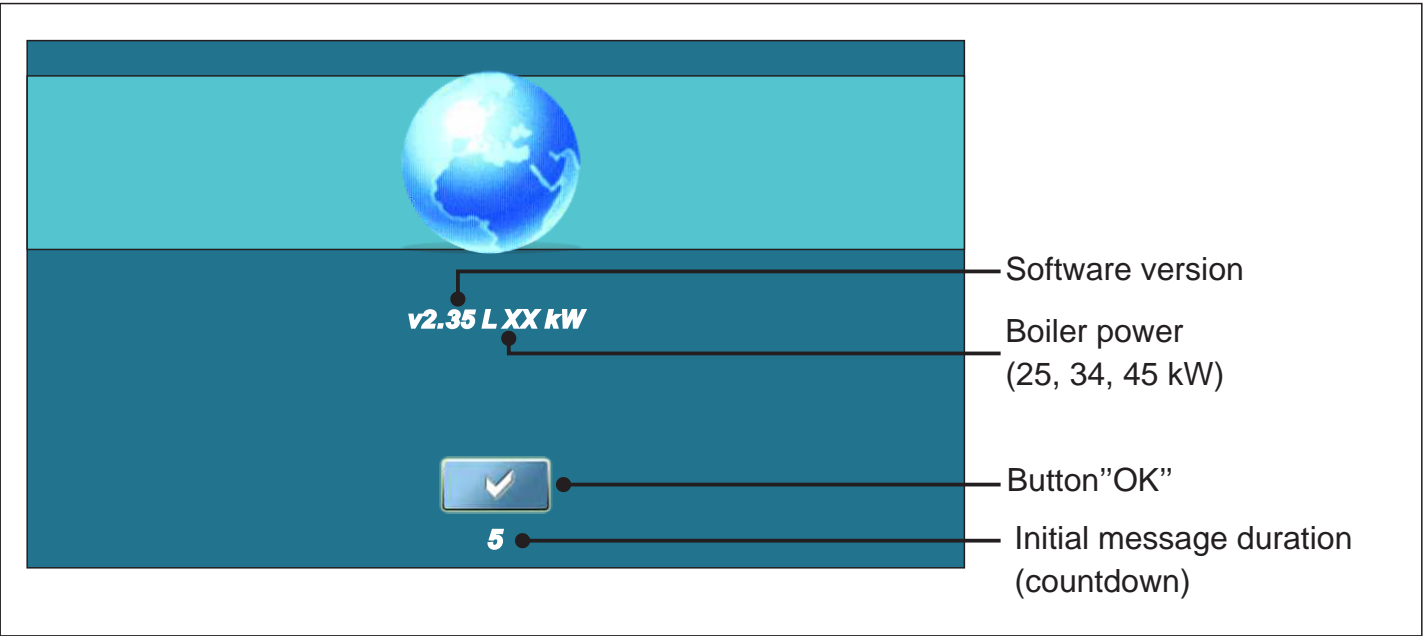
## BioTec-L

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).



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".

  
Temperature

  
History

  
File

  
Operation

  
Date & Time

  
Display

  
Info

  
Glow

  
Installation

  
Cleaning

02:11





OFF





Time


Display selection:  
Main menu / work


Boiler operation display :  
graphic / numeric


State of the current  
boiler status

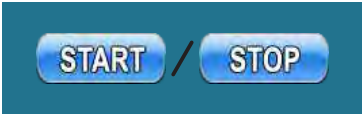
Start/stop boiler


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"

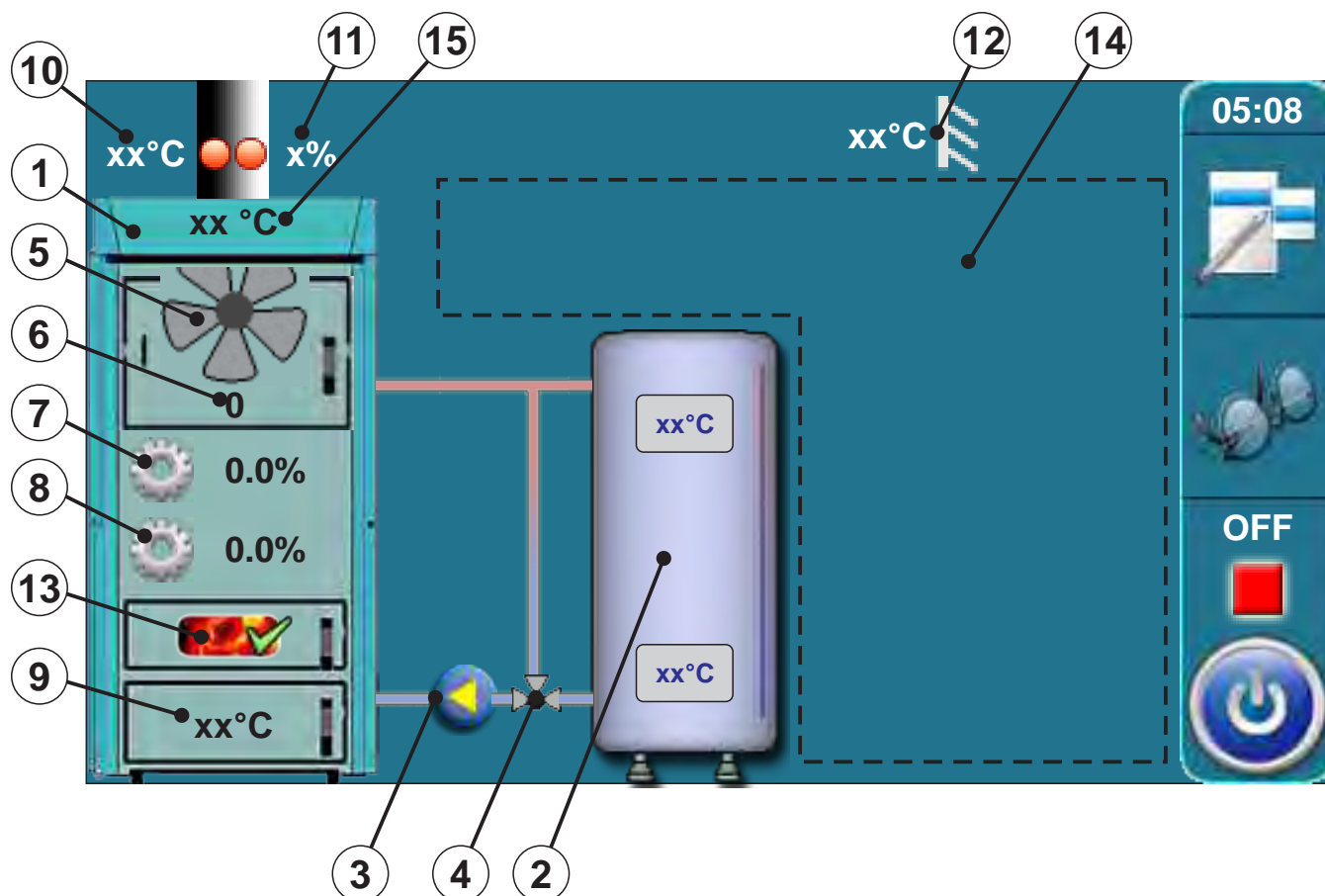
  
Button "INFORMATION"

  
Button "NEXT SCREEN"

  
Button "COPY"

  
Button "PASTE"

## SYMBOLS

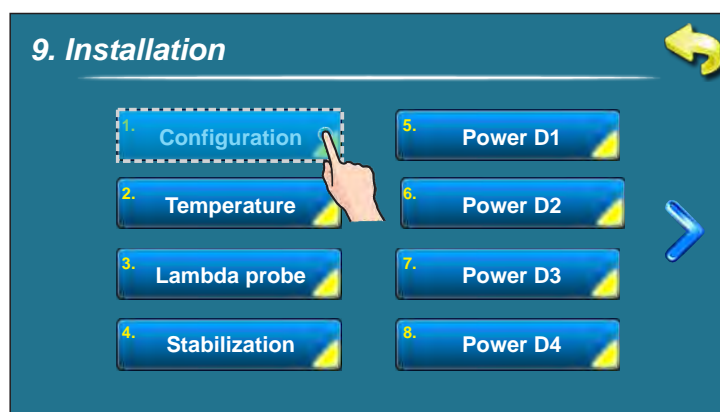


- |   |  |
|---|--|
| 1 - Boiler BioTec-L   | 9 - Combustion chamber temperature                                       |
| 2 - Buffer tank   | 10 - Flue gas temperature sensor   |
| 3 - Boiler pump P1  | 11 - The percentage of oxygen in the flue gases                          |
| 4 - 3-way thermic valve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

## 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 pressing "Enter" button.



In installation menu press "Configuration" button to enter into «Configuration» menu.

### Configuration menu:

9.1.1. Configuration

Radiator h. Corrector

Floor h. Room thermo.

✓

9.1.1. Configuration

Motor drive Protection valve

DHW 2.Heating Cir.

✓

9.1.1. Configuration

Protection valve 2.Circ. Room t.

2.Heating Cir.

✓

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)

9.1.1. Configuration

Choosing this configuration, you should set 3-way valve time!

OK

Valve time

120 120 sec

7 8 9 ± C ✓

4 5 6 , i ↑

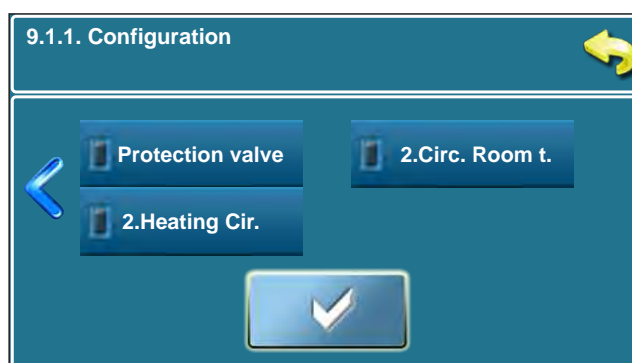
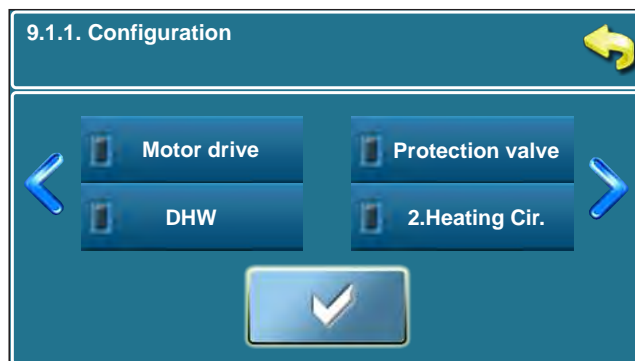
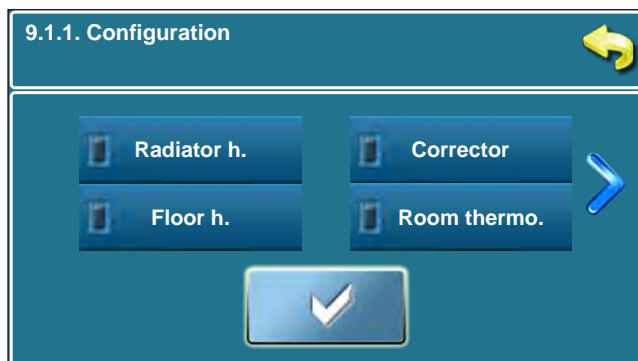
1 2 3 0 ← ↓ →

## GENERAL CONNECTION SCHEMES CONFIGURATION

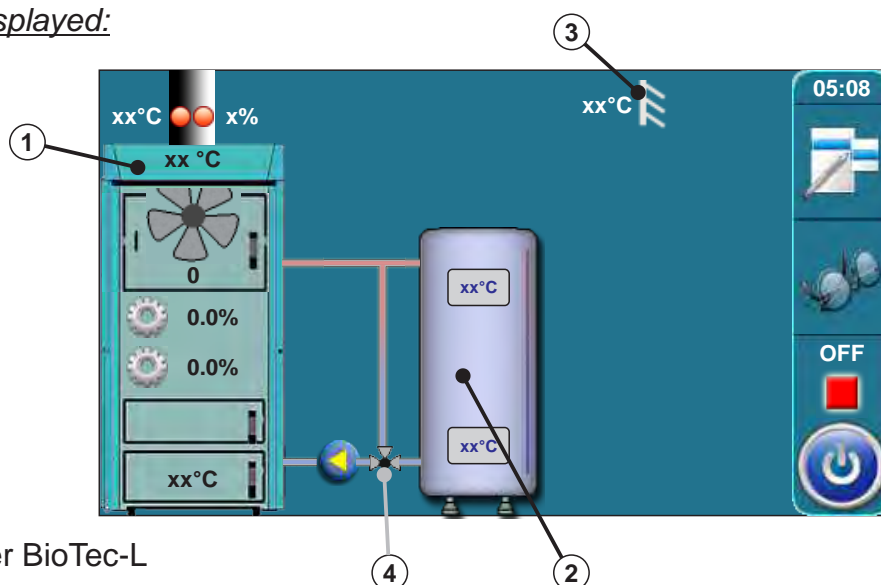
In "Technical instructions for installation of hot water boiler BioTec-L" are showned general connection schemes.

### Configuration 1: (Basic configuration)

On this configuration all compontents are unselected.



On display is displayed:



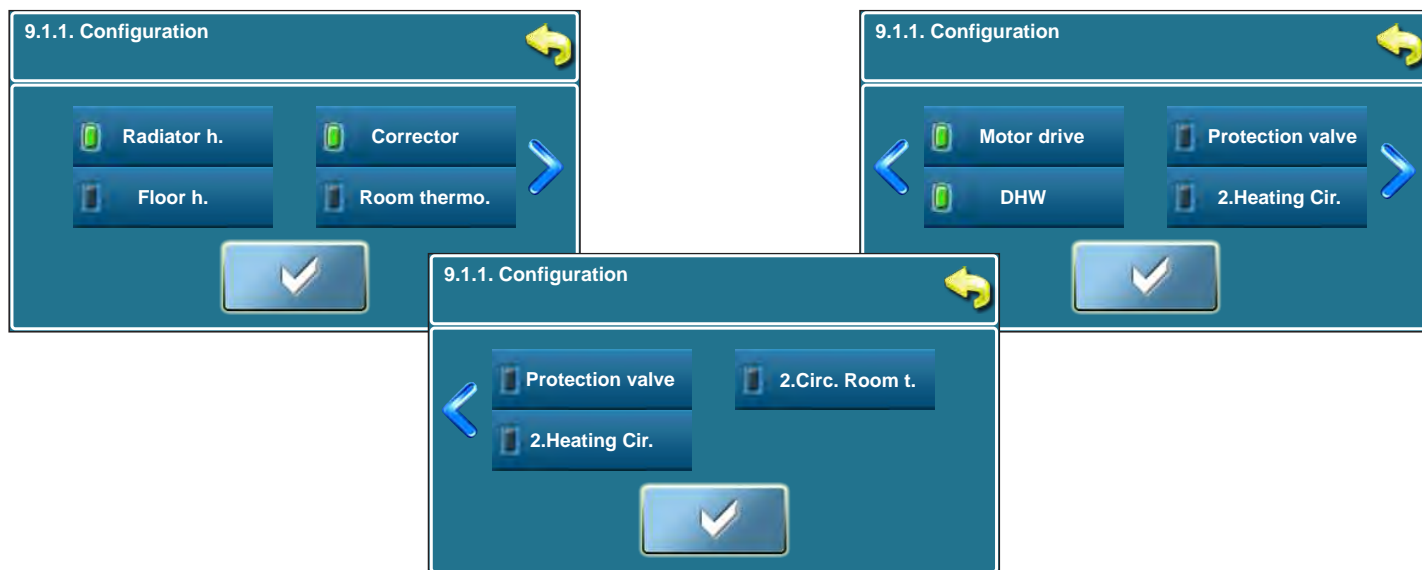
- 1 - Boiler BioTec-L
- 2 - Buffer tank
- 3 - Outer temperature sensor
- 4 - Return flow protection by 3-way thermostatic valve (60°C)  
VTC 531 (60°C), LTC 141 (60°C) or laddomat 21 (63°C)

## Configuration 2

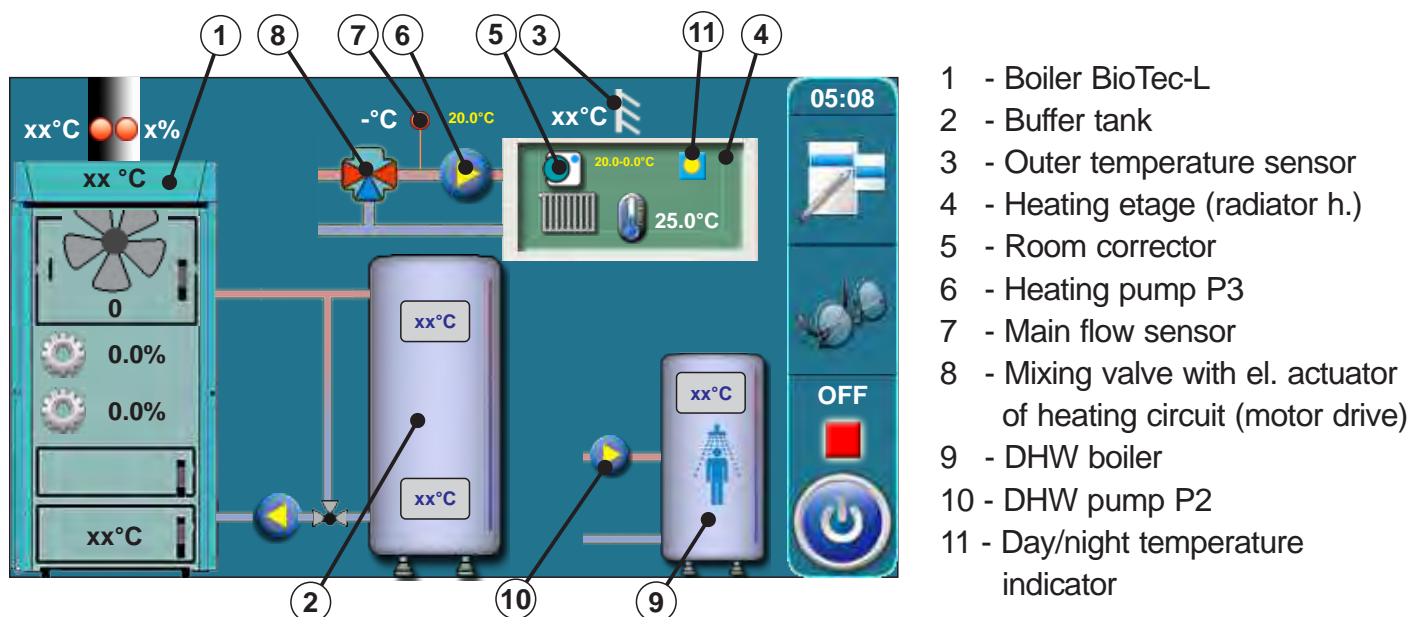
### Configuration 2 is from scheme 4 and scheme 5 from "Technical instructions for installation of hot water boiler BioTec-L"

In this configuration the following components are selected:

- radiator heating, corrector, motor drive (heating circuit), DHW (domestic hot water)

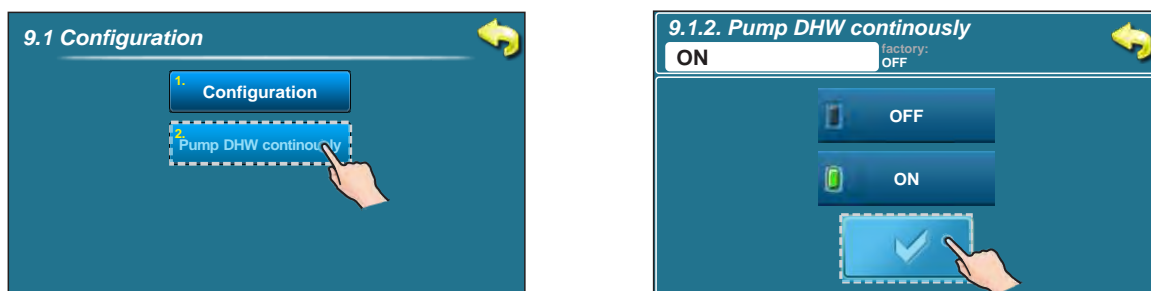


On display is displayed:



- 1 - Boiler BioTec-L
- 2 - Buffer tank
- 3 - Outer temperature sensor
- 4 - Heating etage (radiator h.)
- 5 - Room corrector
- 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

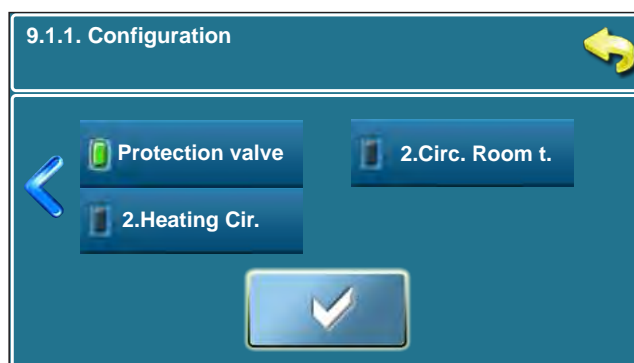
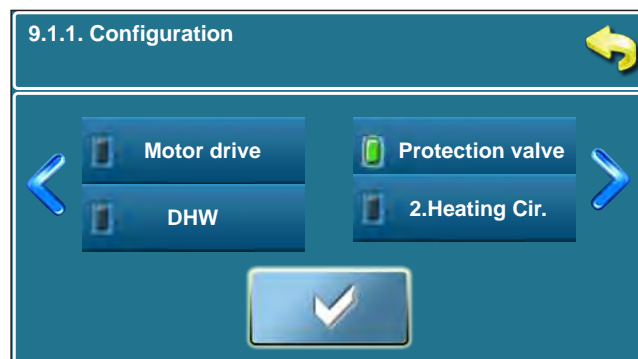
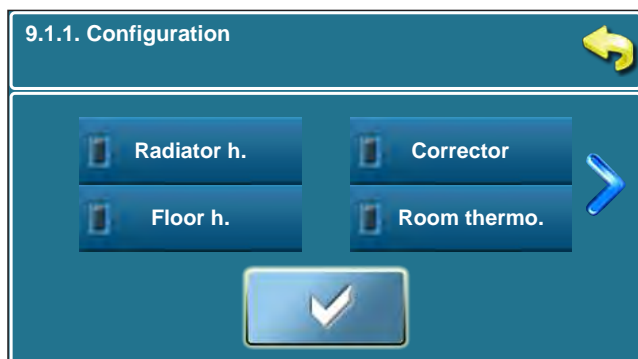
In this configuration, on the previous screen, a new button is displayed (Pump DHW continuously)



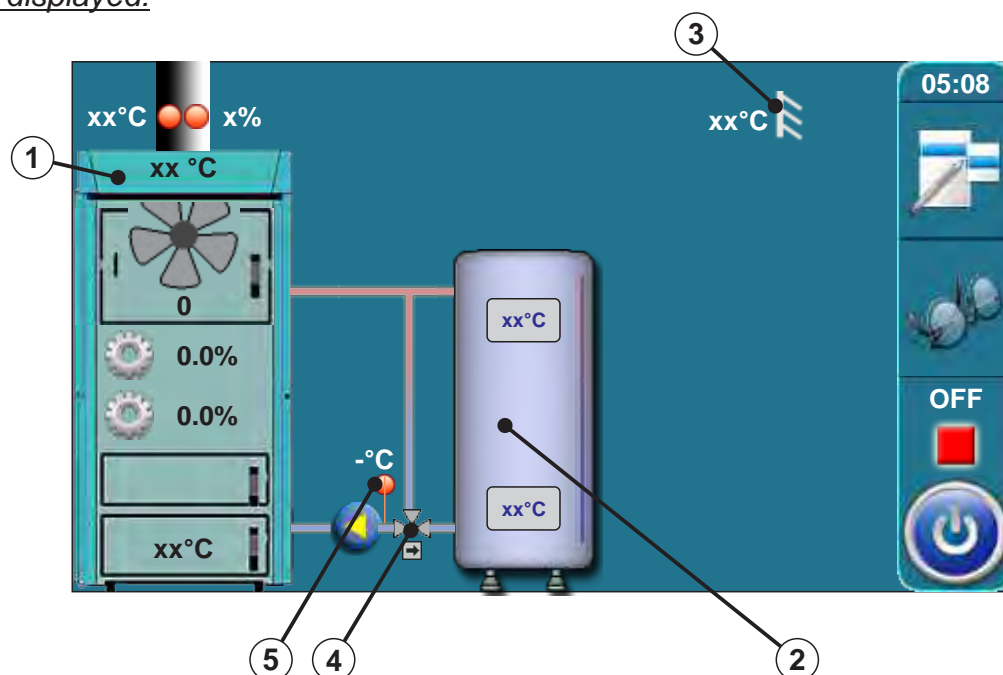
When DHW sensor (ERROR 1) occurs, regulation cannot automatically turn "ON/OFF" DHW pump. For intervention work serviceman can turn "ON"/"OFF" DHW pump manually. In this case, the pump DHW work all the time until serviceman manually turn it "OFF".

**Configuration 3 is from scheme 6 from "Technical 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:

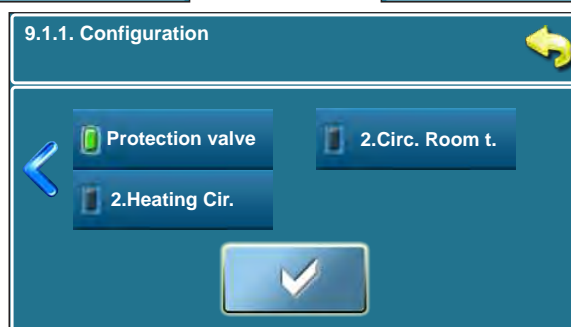
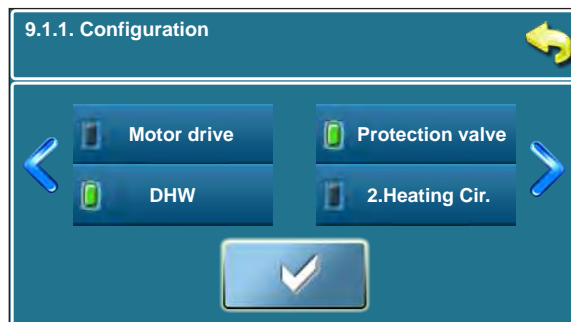
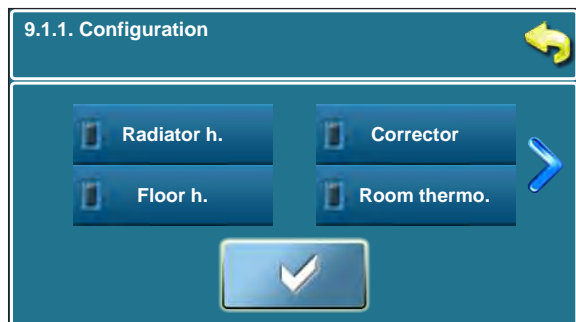


- |                              |   |
|------------------------------|---|
| 1 - Boiler BioTec-L          | 4 - Mixing valve with el. actuator          |
| 2 - Buffer tank              | (return flow protection) (protection valve) |
| 3 - Outer temperature sensor | 5 - Return flow sensor           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

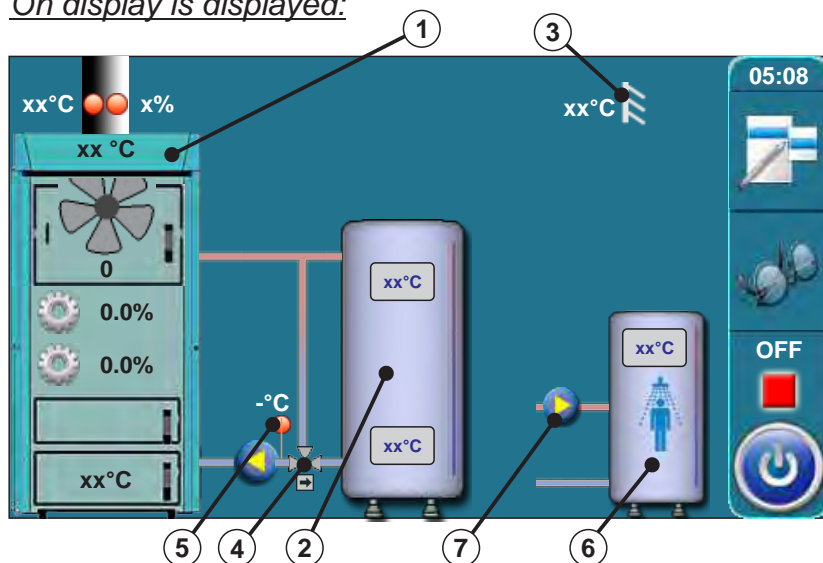
## Configuration 4

**Configuration 4** is from scheme 7 from "Technical 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)

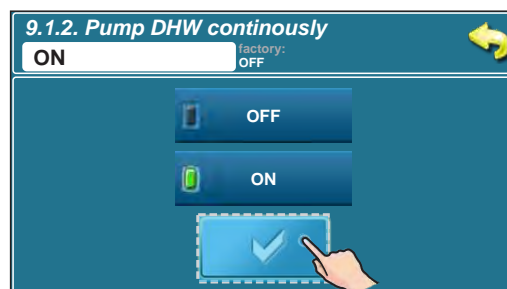
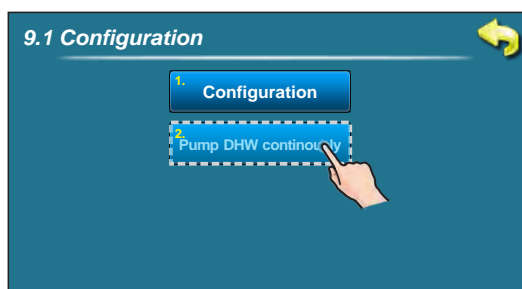


On display is displayed:



- 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

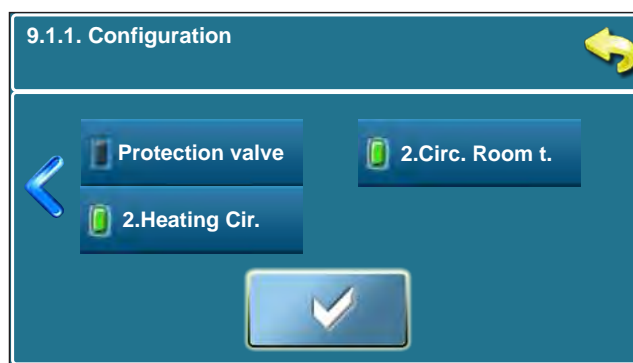
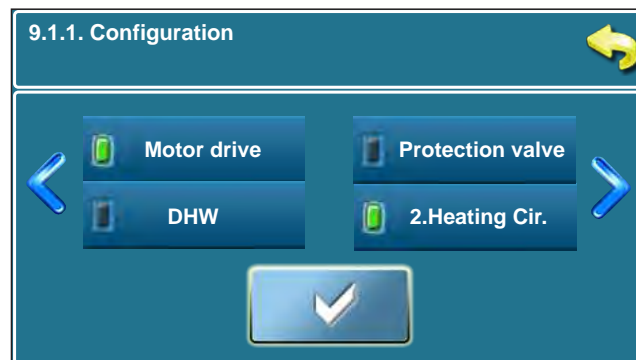
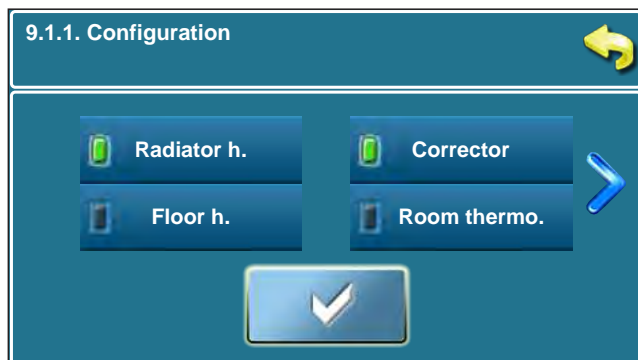
In this configuration, on the previous screen, a new button is displayed (Pump DHW continuously)



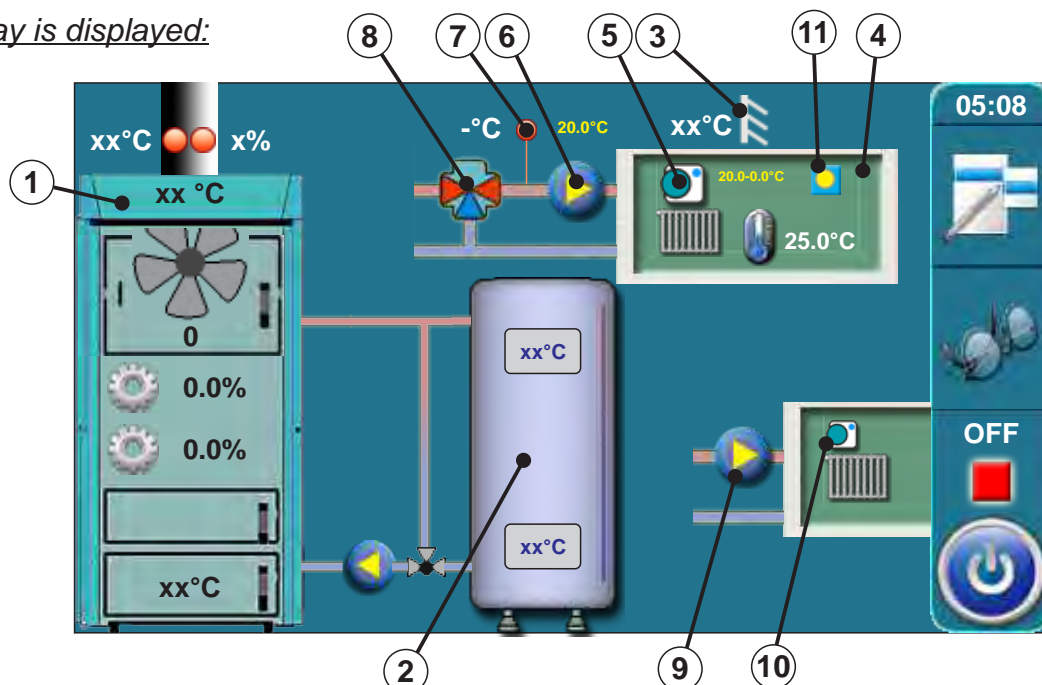
When DHW sensor (ERROR 1) occurs, regulation cannot automatically turn "ON/OFF" DHW pump. For intervention work serviceman can turn "ON"/"OFF" DHW pump manually. In this case, the pump DHW work all the time until serviceman manually turn it "OFF".

**Configuration 5 is from scheme 8 and 9 from "Technical 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:

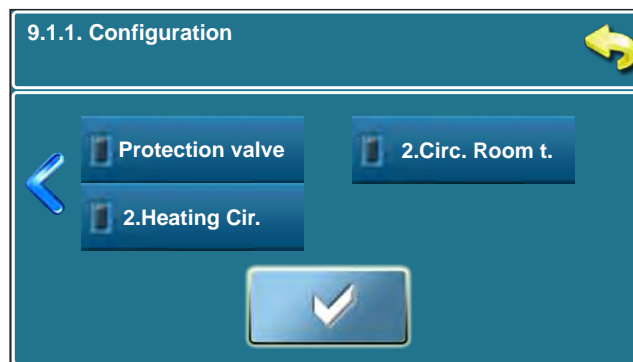
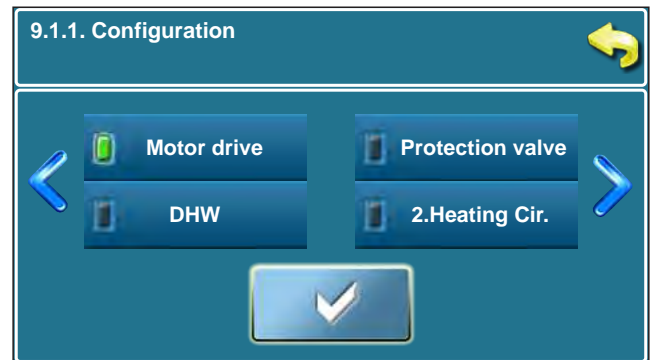
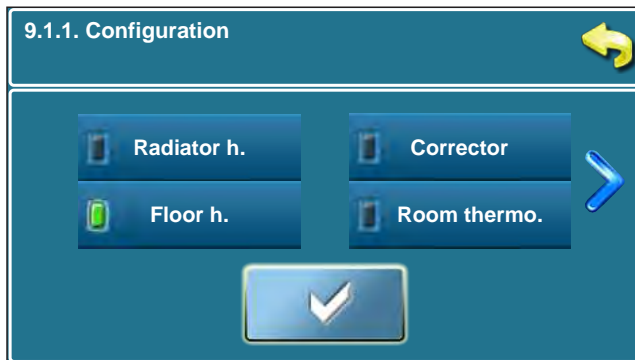


- |                                 |   |                                      |
|---------------------------------|---|--------------------------------------|
| 1 - Boiler BioTec-L             | 6 - Heating pump P3 (circuit 1)                                     | 9 - Heating pump (circuit 2)      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

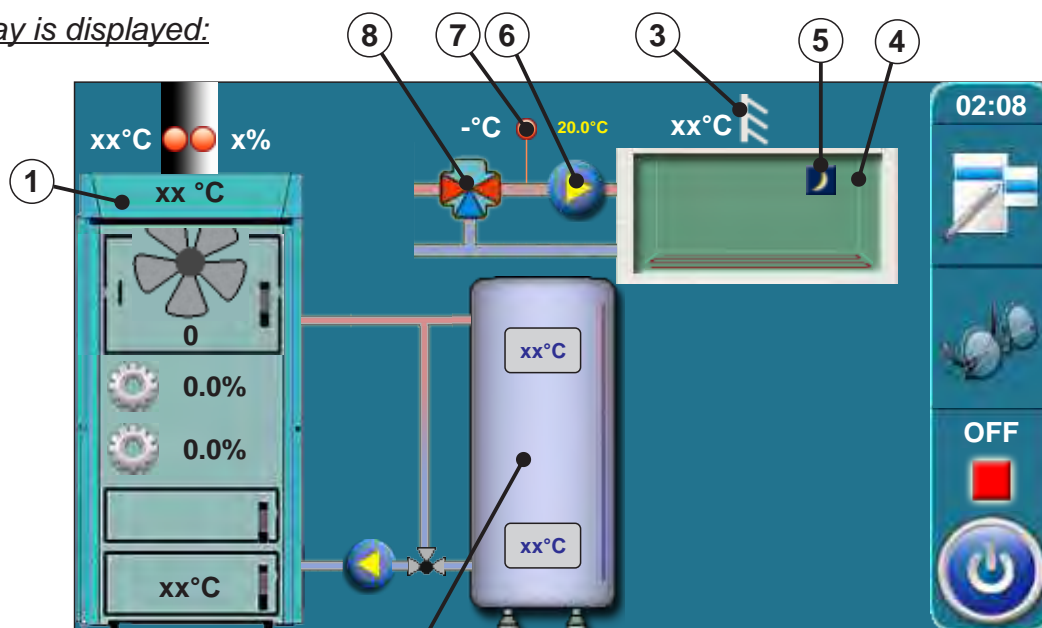
## Configuration 6

In this configuration the following components are selected:

- floor heating
- motor drive (heating circuit)

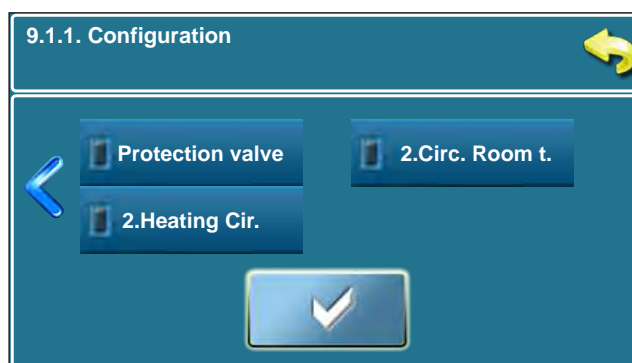
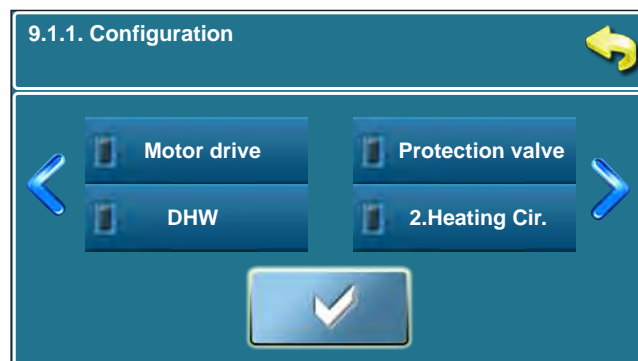
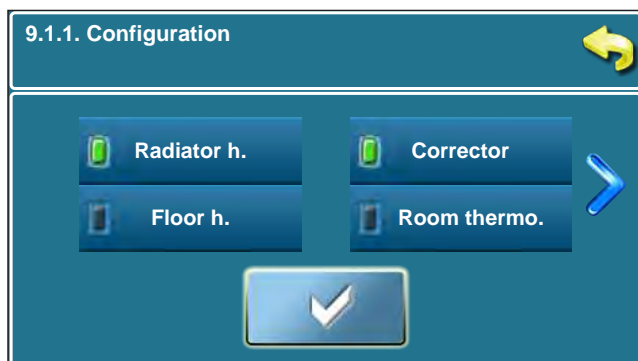


On display is displayed:

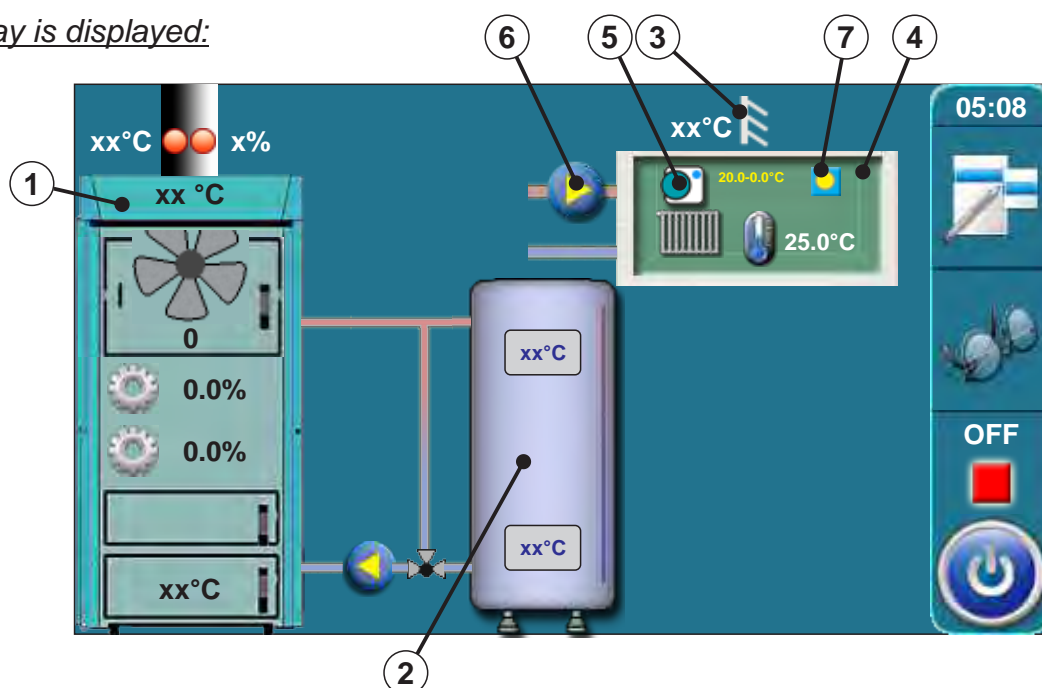


- |                                     |   |
|-------------------------------------|---|
| 1 - Boiler BioTec-L                 | 6 - Heating pump P3   |
| 2 - Buffer tank                     | 7 - Main flow temperature sensor                                    |
| 3 - Outer temperature sensor      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

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

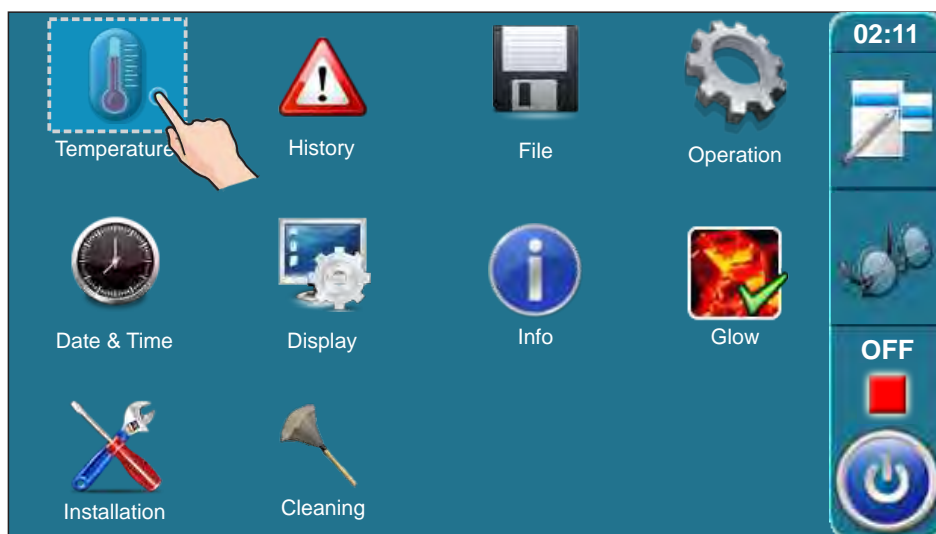


On display is displayed:

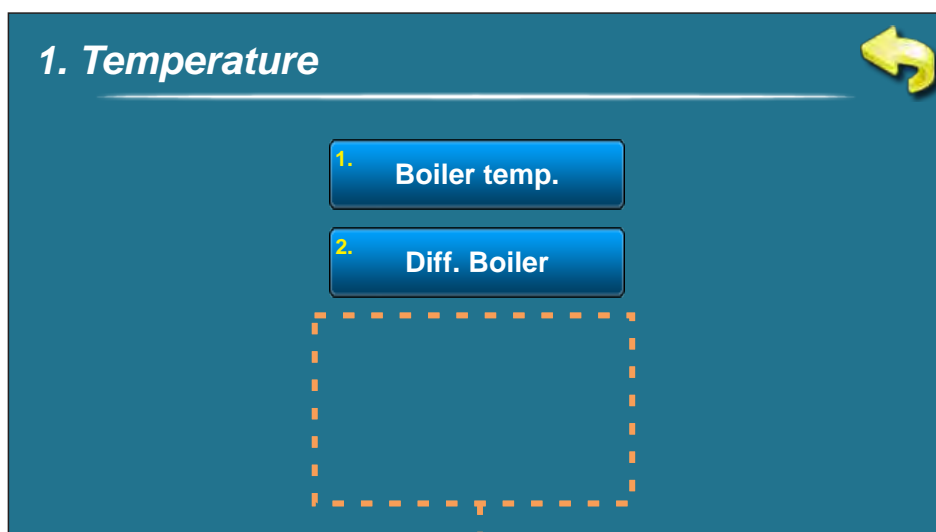


- |                                 |                                     |
|---------------------------------|-------------------------------------|
| 1 - Boiler BioTec-L             | 6 - Heating pump P3                 |
| 2 - Buffer tank                 | 7 - Day/night temperature indicator |
| 3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

## 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

## 1.1 BOILER TEMPERATURE

**1. Temperature**

1. Boiler temp.

2. Diff. Boiler

3. Min buf.tank temp.

4. DHW temp.

5. Differential of DHW

6. Heating circuit M.D.

**1.1 Boiler temp.**

85

85 °C

7 8 9 ±

4 5 6 ,

1 2 3 0

C ✓

i ↑

← ↓ →

**Possible selection:**

- factory: 85 °C
- Minimum: 75 °C
- Maximum: 90 °C

The possibility of setting boiler working temperature

## 1.2 DIFFERENTIAL OF BOILER TEMPERATURE

**1. Temperature**

1. Boiler temp.

2. Diff. Boiler

3. Min buf.tank temp.

4. DHW temp.

5. Differential of DHW

6. Heating circuit M.D.

**1.2 Diff. Boiler**

5

5 °C

7 8 9 ±

4 5 6 ,

1 2 3 0

C ✓

i ↑

← ↓ →

**Possible selection:**

- factory: 5 °C
- Minimum: 5 °C
- Maximum: 7 °C

The possibility of setting differential of boiler temperature.

## 1.3 MINIMUM BUFFER TANK TEMPERATURE

**1. Temperature**

1. Boiler temp.

2. Diff. Boiler

3. Min buf.tank temp.

4. DHW temp.

5. Differential of DHW

6. Heating circuit M.D.

**1.3. Min buf.tank temp.**

20

20 °C

7 8 9 ±

4 5 6 ,

1 2 3 0

C ✓

i ↑

← ↓ →

**Possible selection:**

- factory: 20 °C
- Minimum: 5 °C
- Maximum: 64 °C

The possibility of setting minimum buffer tank temperature


## 1.4 DOMESTIC HOT WATER TEMPERATURE

**1. Temperature**


1. Boiler temp.

2. Diff. Boiler

3. Min buf.tank temp.

4. DHW temp. 

5. Differential of DHW

6. Heating circuit M.D. 

**1.4 DHW temp.**

°C

7 8 9 ±

4 5 6 ,

1 2 3 0

C

i

← ↓ →

✓

↑

↓

← ↓ →

**Possible selection:**

- factory: 50 °C
- Minimum: 40 °C
- Maximum: 80 °C

The possibility of setting domestic hot water temperature.

## 1.5 DOMESTIC HOT WATER DIFFERENCE


**1. Temperature**


1. Boiler temp.

2. Diff. Boiler

3. Min buf.tank temp.

4. DHW temp.

5. Differential of DHW 

6. Heating circuit M.D. 

**1.5 Differential of DHW**

°C

7 8 9 ±

4 5 6 ,

1 2 3 0

C

i

← ↓ →

✓

↑

↓

← ↓ →

**Possible selection:**

- factory: 5 °C
- Minimum: 4 °C
- Maximum: 40 °C

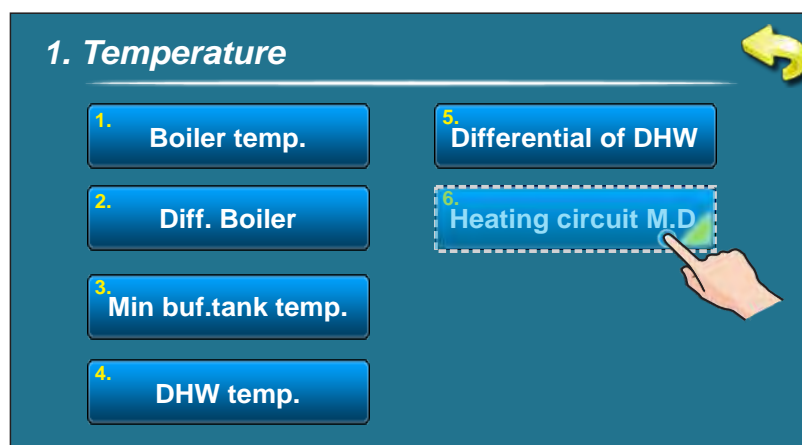
The possibility of setting domestic hot water difference.

16

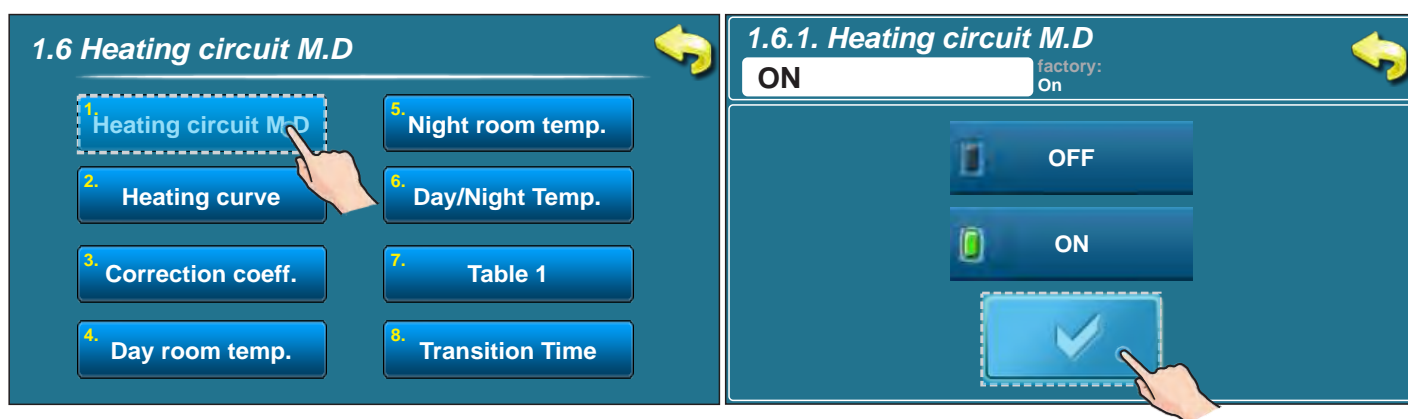
Technical instructions REGULATION BioTec-L

## 1.6 TEMPERATURES IN HEATING CIRCUIT MOTOR DRIVE

This option is only available when configuration contains motor drive.



### 1.6.1 HEATING CIRCUIT MOTOR DRIVE



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

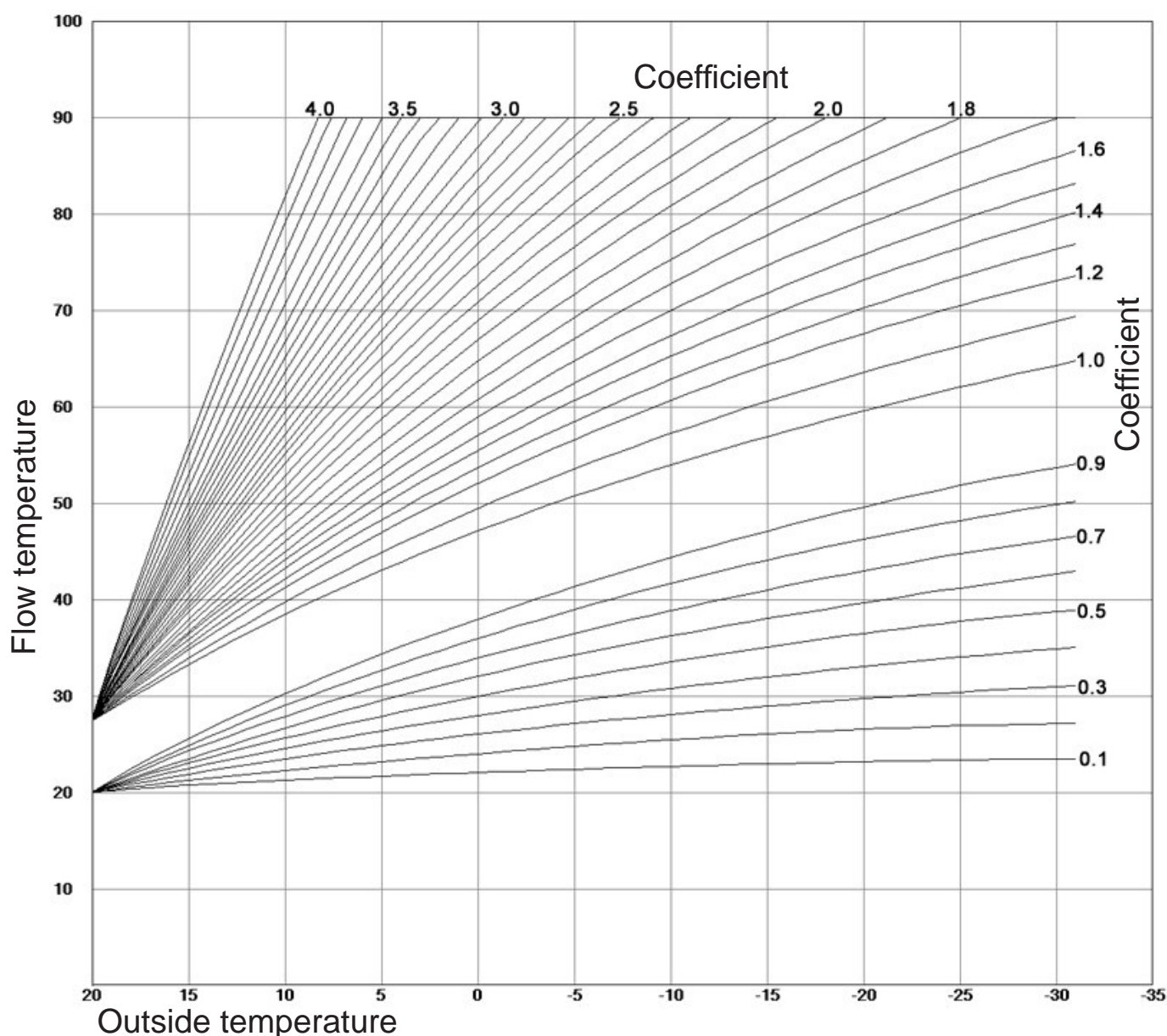
By using this option "heating circuit M.D" can be turned off/on.

### 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 tempearature.



### 1.6.3 CORRECTION COEFFICIENT

**1.6 Heating circuit M.D**

1. Heating circuit M.D

2. Heating curve

3. Correction coeff.

4. Day room temp.

5. Night room temp.

6. Day/Night Temp.

7. Table 1

8. Transition Time

**1.6.3 Correction coeff.**

1.0

1.0

7

8

9

±

C

✓

4

5

6

,

i

↑

⚙️

1

2

3

0

←

↓

→

**Possible selection:**

- Factory: 1.0
- Minimum: 0,1
- Maximum: 5,0

This parameter determines coefficient of room corrector influence. If is moved 1 step on the room corrector scale, how many degrees will be changed in regulation.

## 1.6.4 VALUE OF DAY ROOM TEMPERATURE

**1.6 Heating circuit M.D**

1. Heating circuit M.D	5. Night room temp.
2. Heating curve	6. Day/Night Temp.
3. Correction coeff.	7. Table 1
4. Day room temp.	8. Transition Time

**1.6.4 Day room temp.**

20.0 20.0 °C

7	8	9	±	C	✓		
4	5	6	,			i	↑
1	2	3	0			←	↓
					→		

**Possible selection:**

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

This parameter determines the value of day room temperature.

## 1.6.5 VALUE OF NIGHT ROOM TEMPERATURE

**1.6 Heating circuit M.D**

1. Heating circuit M.D	5. Night room temp.
2. Heating curve	6. Day/Night Temp.
3. Correction coeff.	7. Table 1
4. Day room temp.	8. Transition Time

**1.6.5 Night room temp.**

20.0 20.0 °C

7	8	9	±	C	✓		
4	5	6	,			i	↑
1	2	3	0			←	↓
					→		

**Possible selection:**

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

This parameter determines the value of night room temperature.

## 1.6.6 DAY/NIGHT TEMPERATURE CHOICE

**1.6 Heating circuit M.D**

1. Heating circuit M.D	5. Night room temp.
2. Heating curve	6. Day/Night Temp.
3. Correction coeff.	7. Table 1
4. Day room temp.	8. Transition Time

**1.6.6 Day/Night Temp.**

Factory: Day Temp.

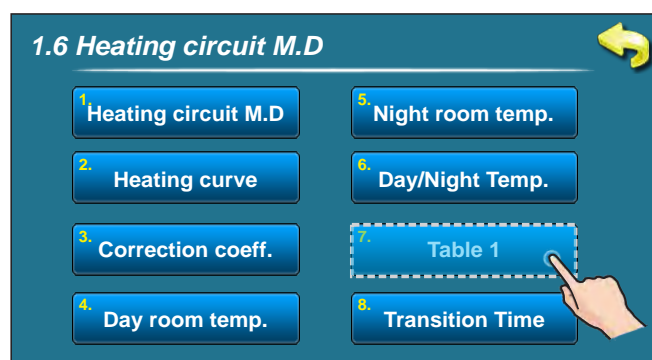
Day Temp.	Table
Night Temp.	

✓

**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.

### 1.6.7 DAY/NIGHT TEMPERATURE TABLE



1. circuit - Table 1

	MON	TUE	WED	THU	FRI	SAT	SUN
☀	06:00	06:00	06:00	06:00	06:00	05:00	06:00
🌙	22:00	22:00	22:00	22:00	22:00	10:00	22:00
☀							
🌙							
☀						14:00	
🌙						23:00	

☀ Day temperature

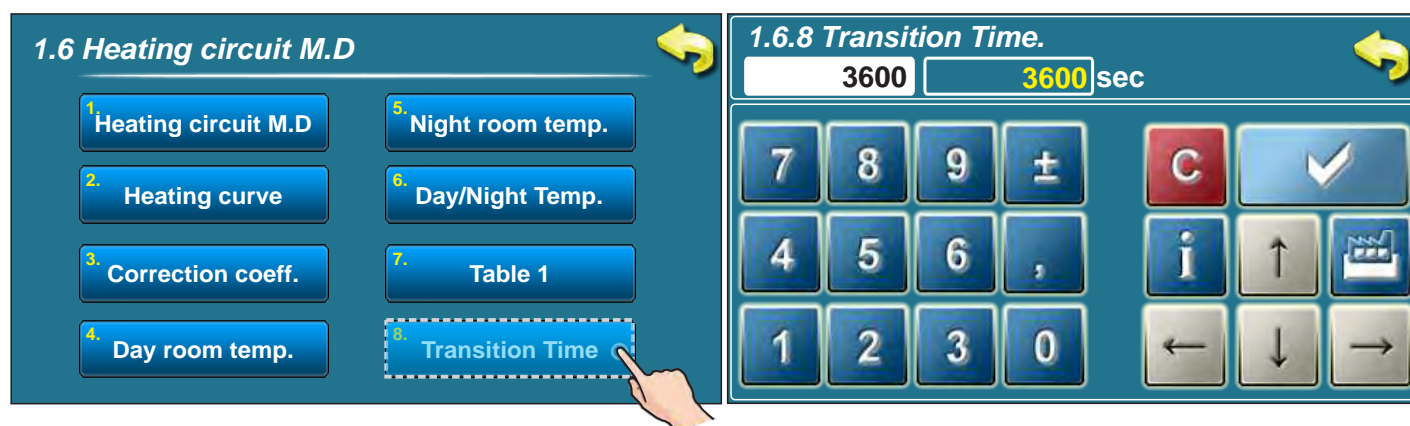
🌙 Night temperature

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.

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



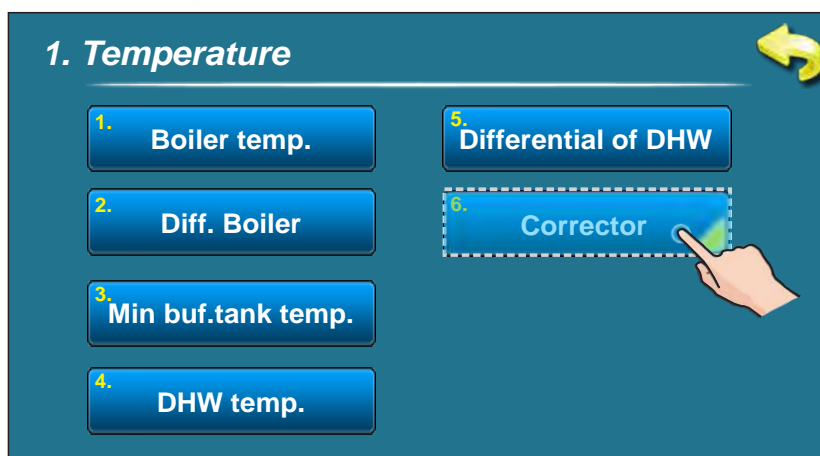
**Possible selection:** - factory: **3600sec**  
 - Minimum: 0 sec  
 - Maximum: 18000 sec

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.

## 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).



### 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.

### 1.7.2 VALUE OF NIGHT ROOM TEMPERATURE

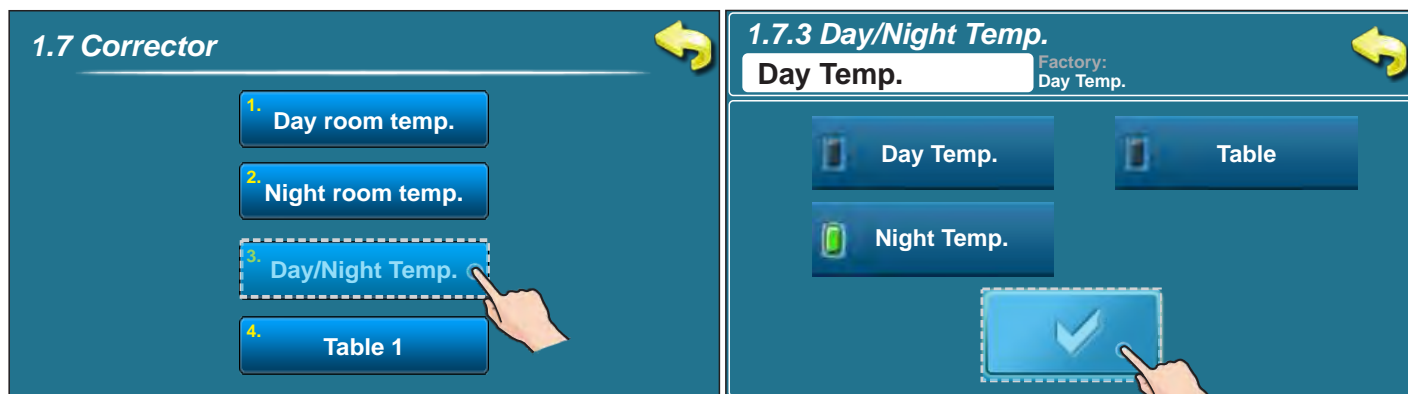


**Possible selection:**

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

This parameter determines the value of night room temperature.

### 1.7.3 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.)

### 1.7.4 DAY/NIGHT TEMPERATURE TABLE

1. circuit - Table 1							
	MON	TUE	WED	THU	FRI	SAT	SUN
	06:00	06:00	06:00	06:00	06:00	05:00	06:00
	22:00	22:00	22:00	22:00	22:00	10:00	22:00
						14:00	
						23:00	

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.

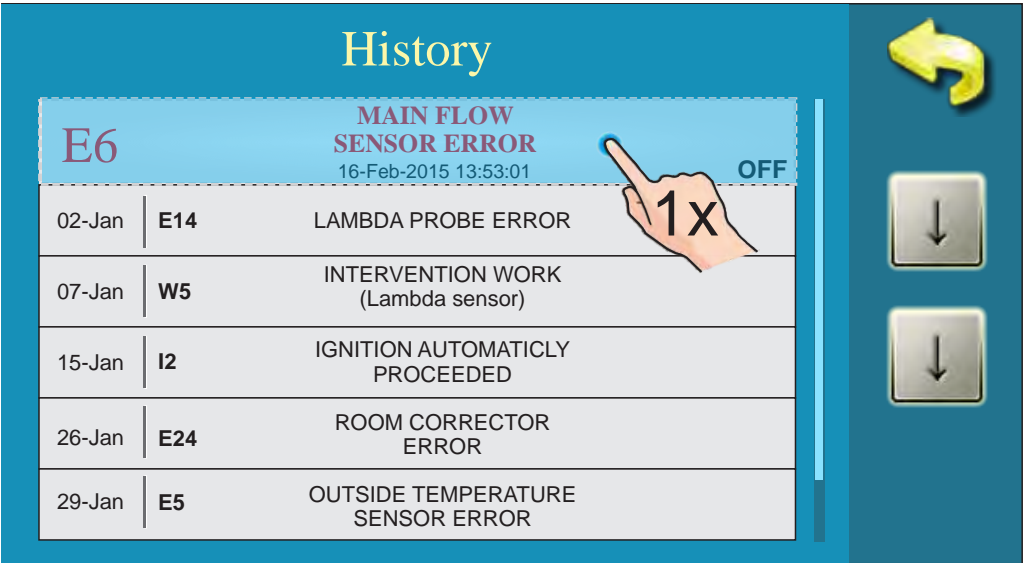
2. HISTORY



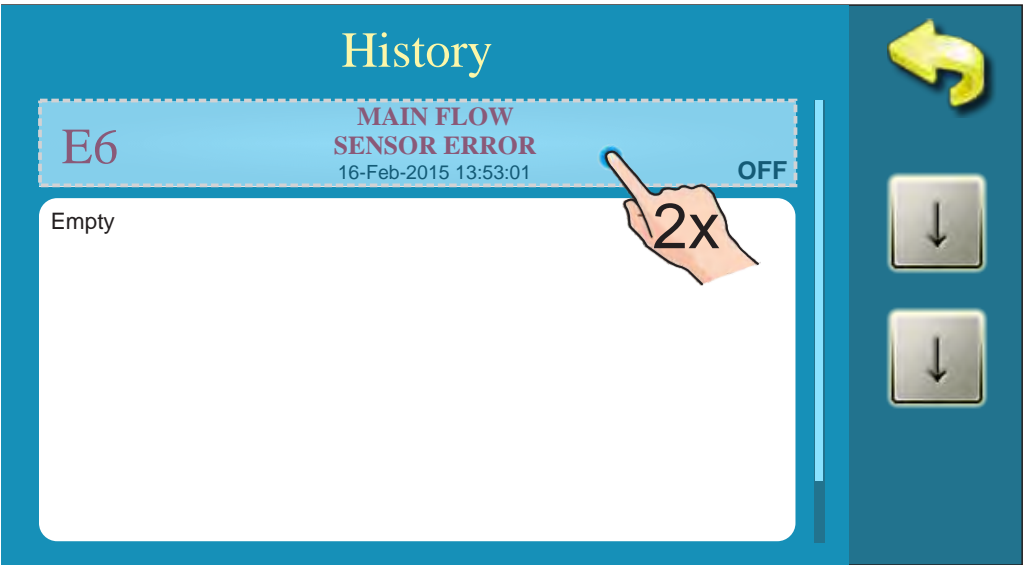
By pressing this option on the main screen you will see Errors/warnings/ informations list used in order to have an insight into the errors/warnings/ informations that have occurred.

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

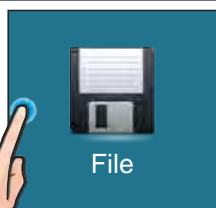
The first press on the field error/warning/information field is indicated, in addition to see and date generated errors/warnings/information



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".



### 3. FILE



**3. FILE:** By pressing this option on the main screen you will see menu with:

- 3.1. LOAD FACTORY
- 3.2. SAVE
- 3.3. LOAD

#### 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.

#### 3.2. SAVE

After pressing "SAVE" you will see a 3 slots to save data (Memory 1, 2, 3). Pressing to one of this three buttons you will see 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. LOAD

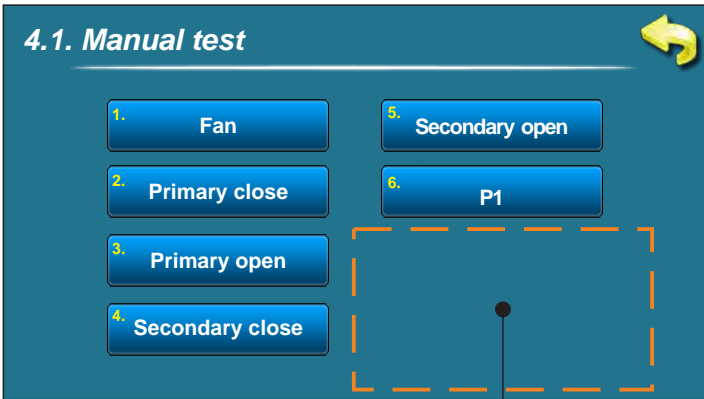
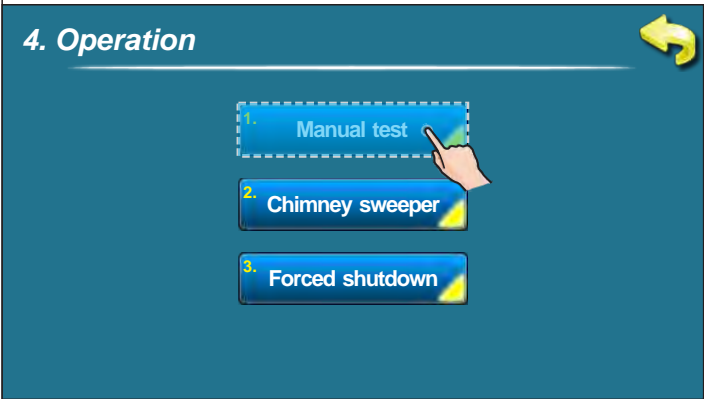
After pressing "LOAD" you will see "LOAD SAVED SETTINGS?". Pressing button "OK" saved settings (saved in option SAVE) will be loaded. Pressing the "BACK" will return to the previous menu.

4. OPERATION

4.1 MANUAL TEST



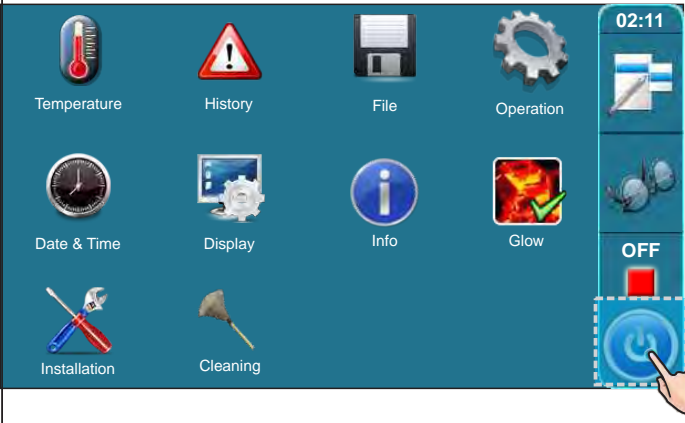
To enter in **Operation** menu press "Operation" button.



Parts in this section depend about heating configuration



To be able to use manual test, you must first turn "OFF" the boiler in the usual way by pressing button  and then STOP.



## 4.3 FORCED SHUTDOWN

This option is used to forced stop all processes.

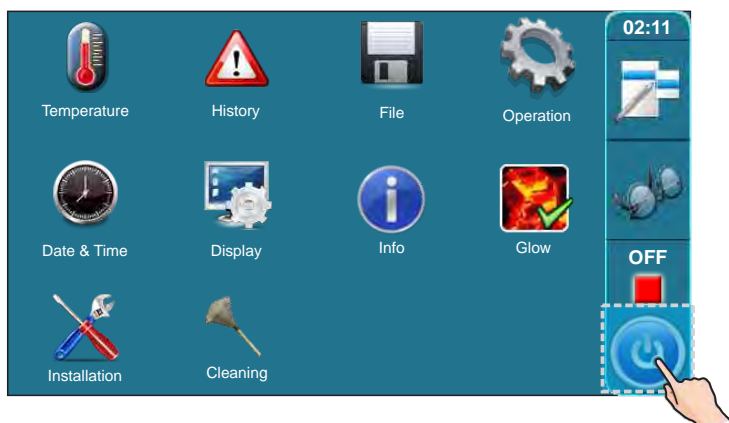
First must be pressed the ON/OFF button to put the boiler in shutdown procedure and then "forced shutdown" button. All processes are stopped.



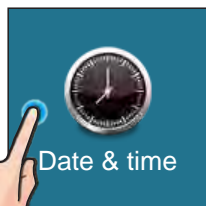
**Option "FORCED SHUTDOWN" is not usual procedure for turning OFF the boiler**



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

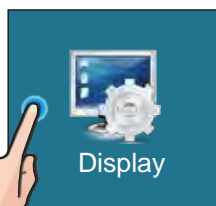


## 5. DATE AND TIME



By pressing this option on the main screen you can set the 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/informations (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.

## 6. DISPLAY



**6. Display:** By pressing this option on the main screen you will see menu with:

- 6.1. Screensaver
- 6.2. Language selection
- 6.3. Init. message time

### 6.1. SCREENSAVER

**Possible selection:**

**Default: 600 seconds**

Minimum: 10 seconds

Maksimum: 3600 seconds

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.

### 6.2. LANGUAGE SELECTION

**Possible selection**

OFF

ON (default)

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 (duration of this screen can be adjusted in Section x.x.).

### 6.3. INITIAL MESSAGE TIME

**Possible selection:**

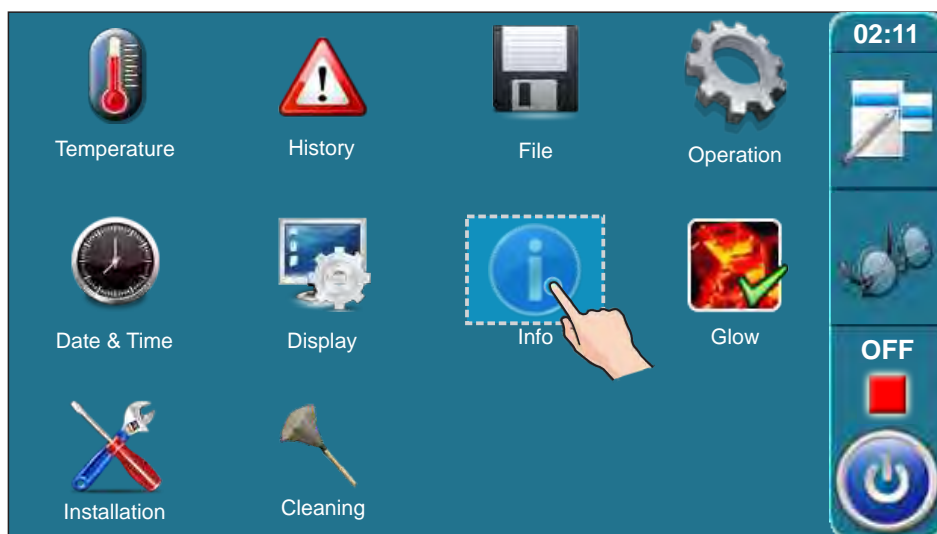
**Default: 5 seconds**

Minimum: 0 seconds

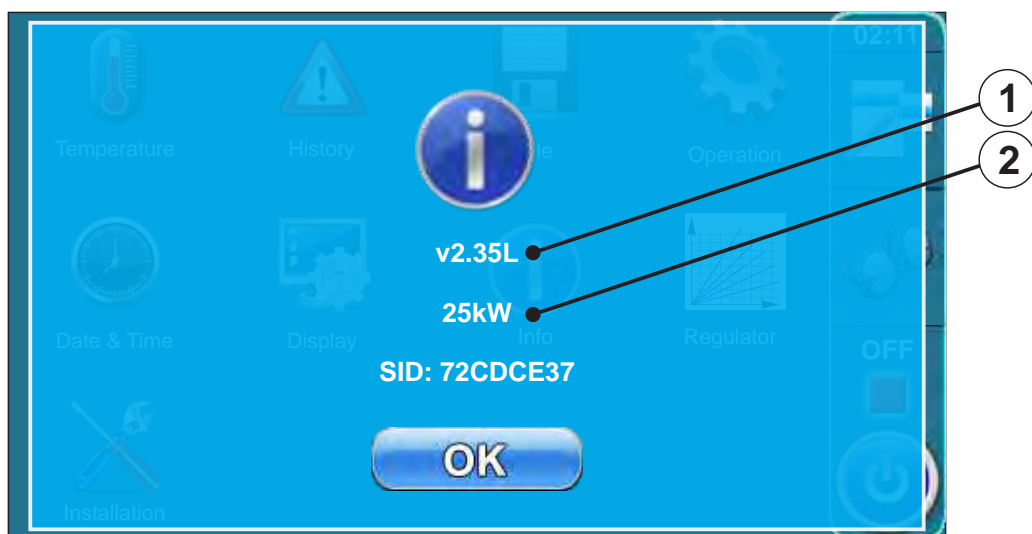
Maksimum: 20 seconds

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 7.2.) Is set to'OFF'.

## 7. INFO

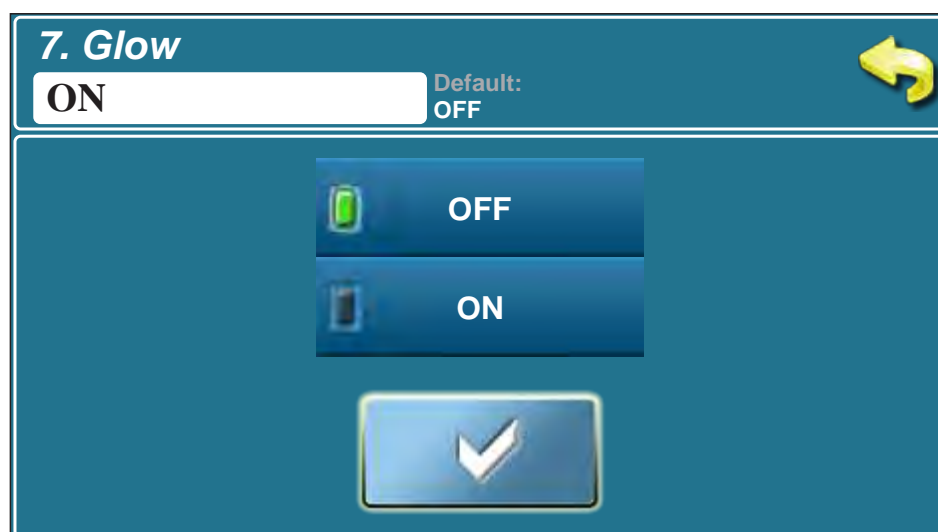
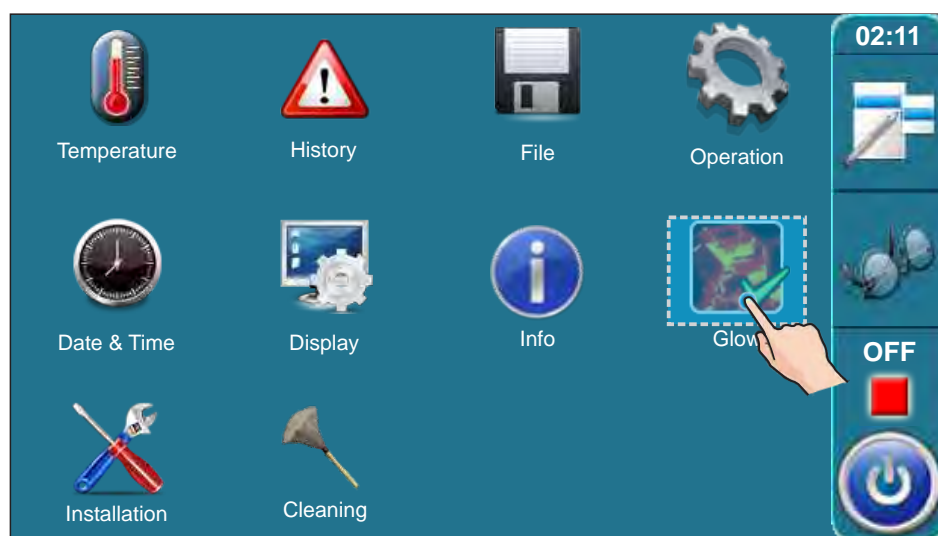


To view informations about boiler and software press **Info** button.



- ① - Software version
- ② - Boiler power

## 8. GLOW



In menu "Glow" option for glow maintenance can be turned on or of.

ENABLED OPTION GLOW: when, on fuel load storage, remain only glow, boiler can maintain remain glow for max 12h, depend about heating requirement

## 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 a 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!**

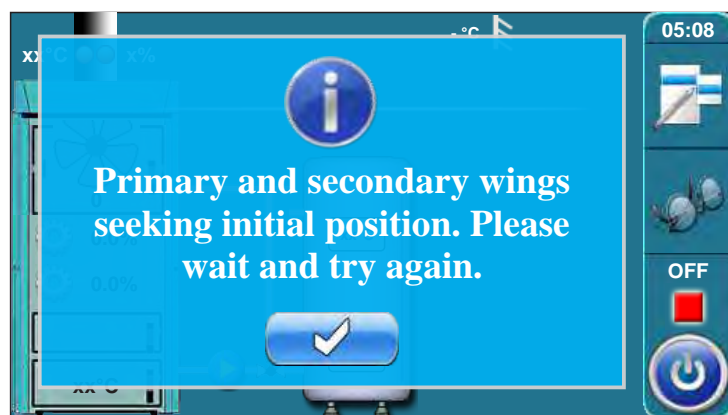
### IGNITION PHASE:

- 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:**

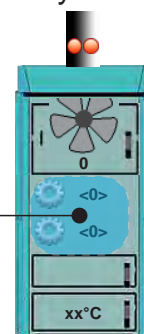


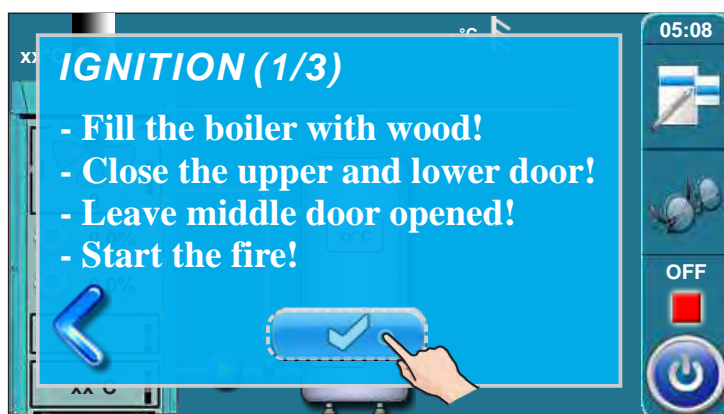
- press button for boiler start
- on display will be displayed window for boiler start
- press "OK" button



- 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 crumpled paper (use enough crumpled paper to cover fine chopped wood) (detail B)

- place the wood logs on crumpled paper

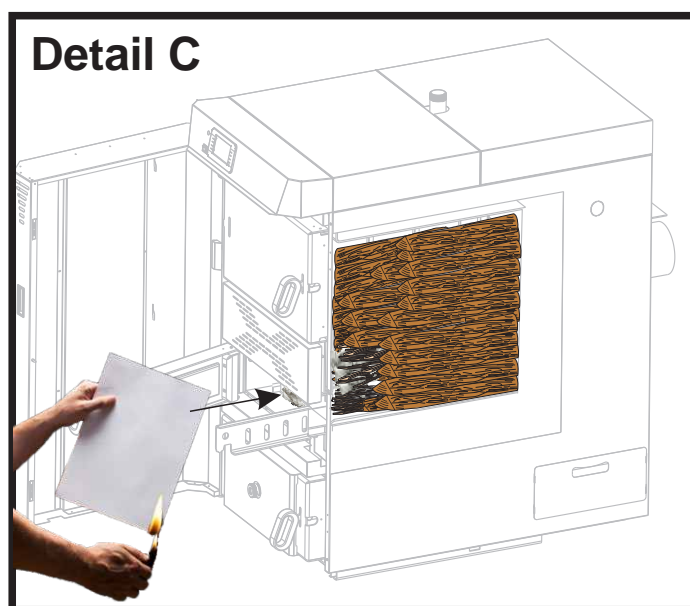
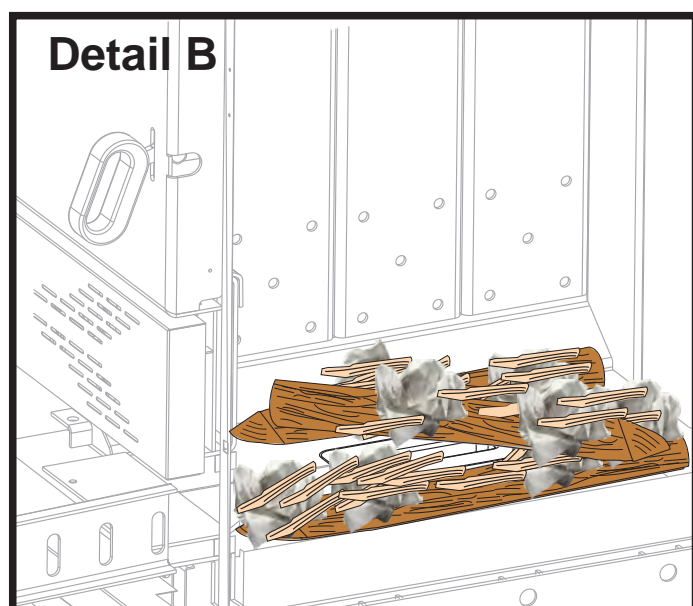
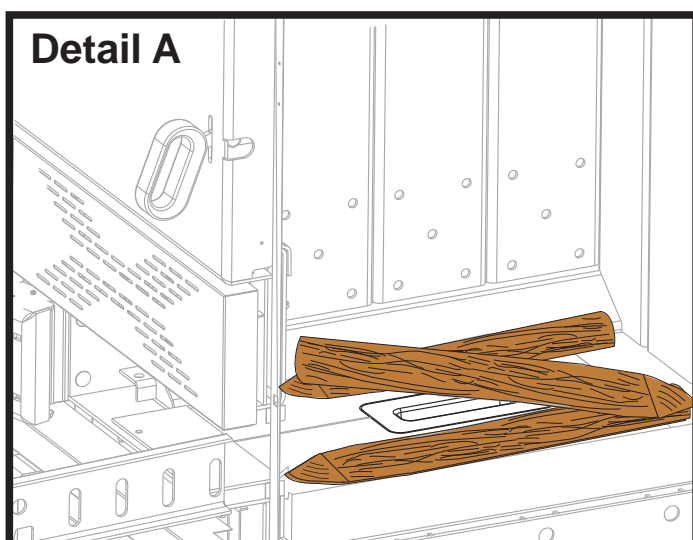
- fill the fuel loading chamber with wood logs (detail C)

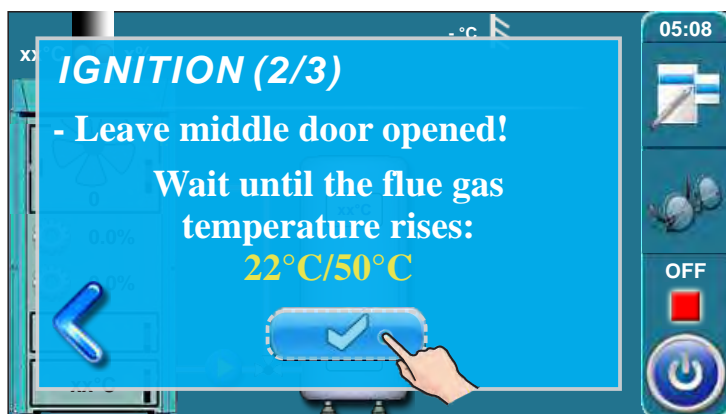
- close upper and lower doors

- leave middle door opened

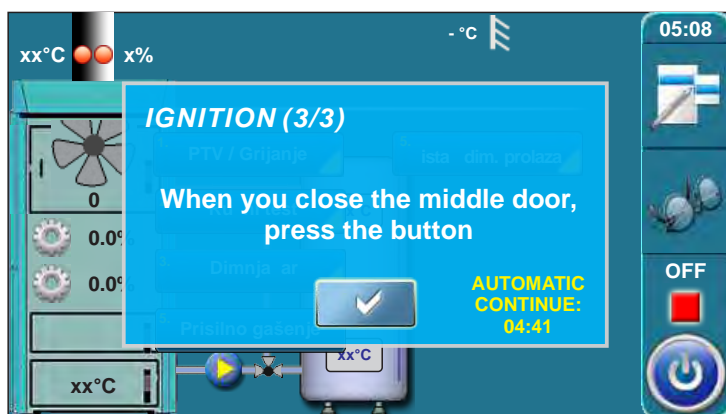
- ignite the fire through middle boiler door (detail C)

- press "enter" button





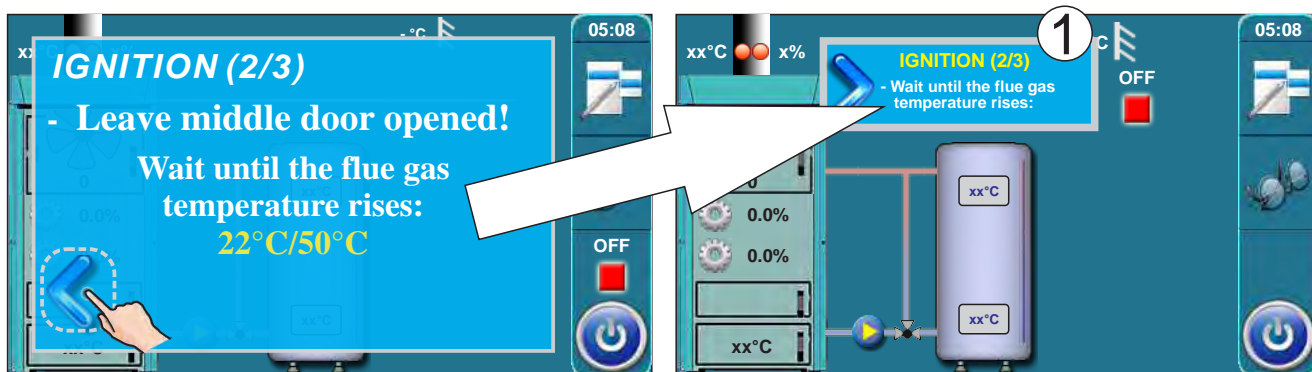
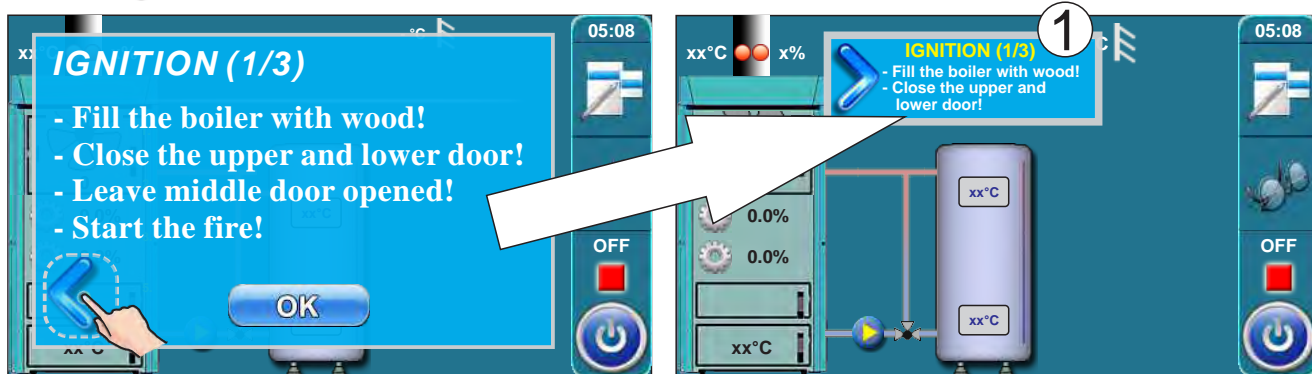
- on display is displayed message "IGNITION 2/3"
- on this step is necessary to wait until flue gas temperature rise 50°C
- middle boiler door must be opened all time
- when is flue gas temperature higher than 50°C press "enter" button



- 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 necessary 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.



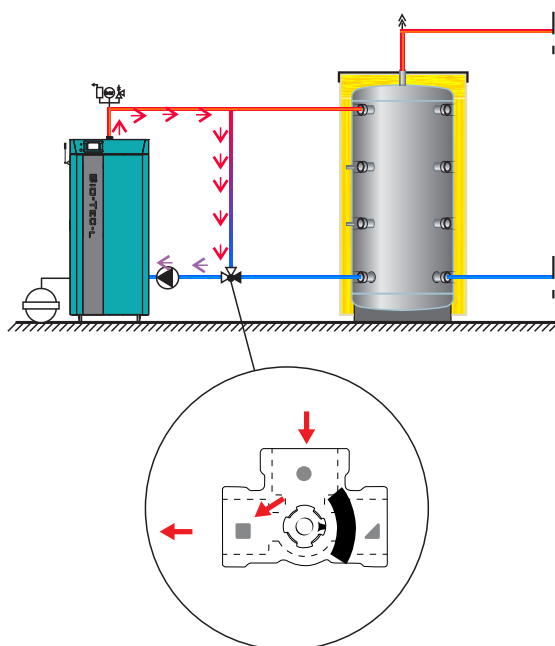
## 3-WAY MIXING VALVE WITH EL. ACTUATOR (RETURN FLOW PROTECTION) (PROTECTION VALVE)

3-way mixing valve must be installed according to the next steps:

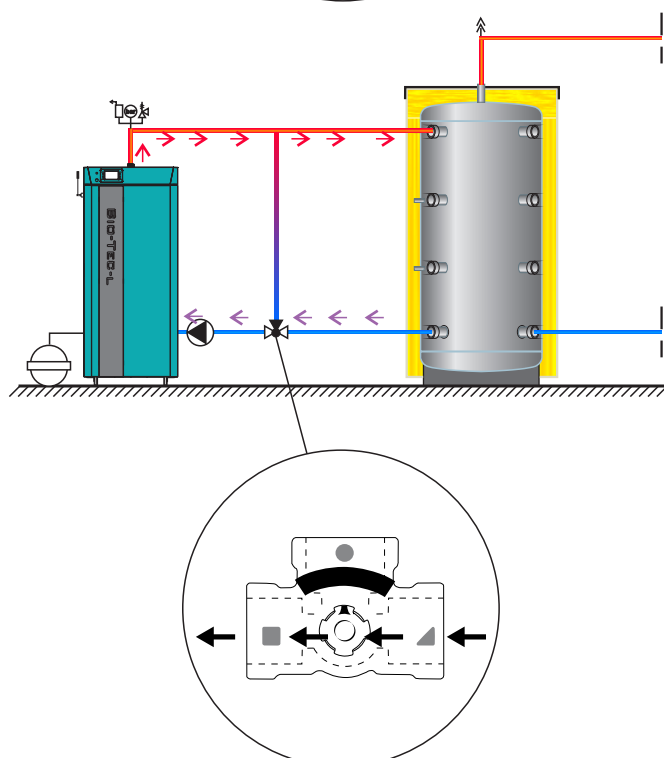
- when is pressed button "Valve closing" in manual test valve must closed entry from accumulation tank (see Case 1)
- when is pressed button "Valve opening" in manual test valve must open entry from accumulation tank and close bypass (see Case 2)
- depend on el. actuator type is necessary to input valve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

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

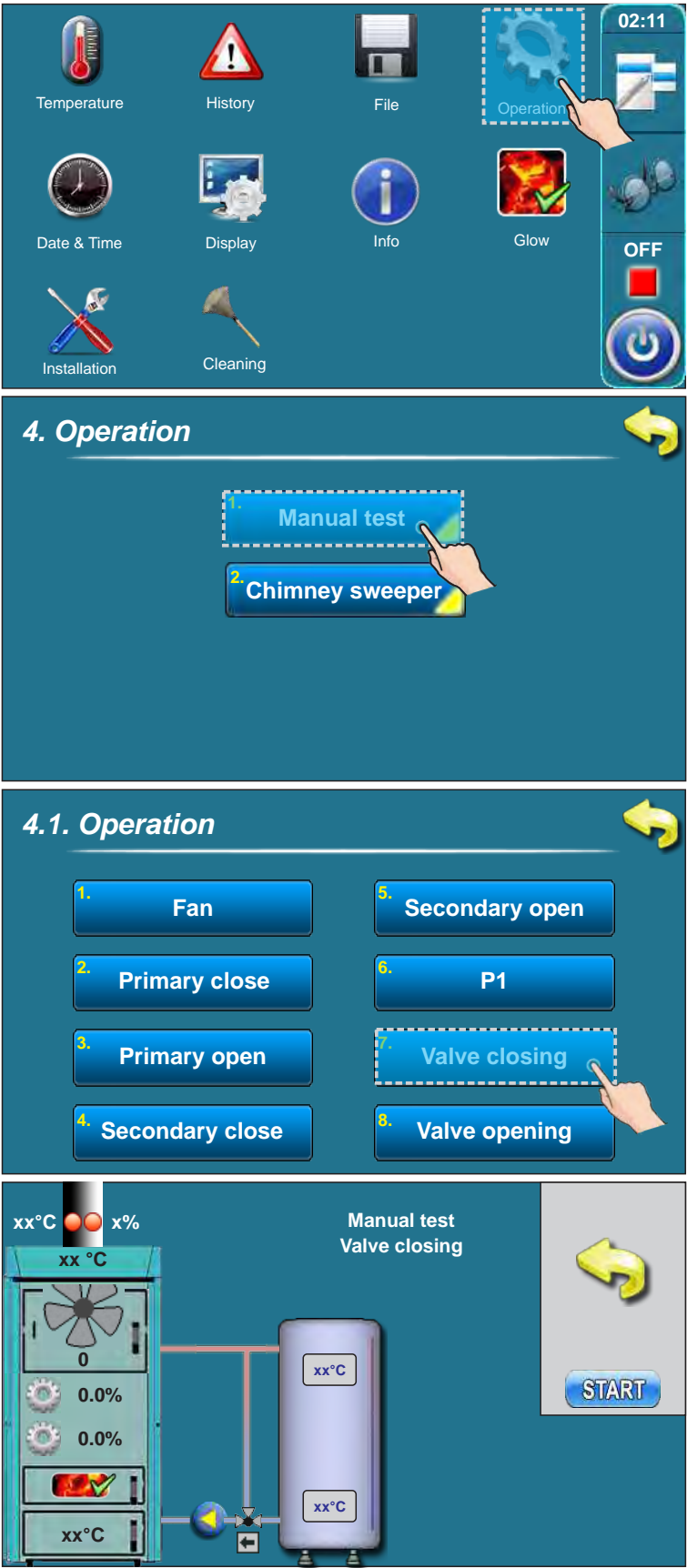
**Case 1. Valve is 100% closed**



**Case 2. Valve is 100% open**

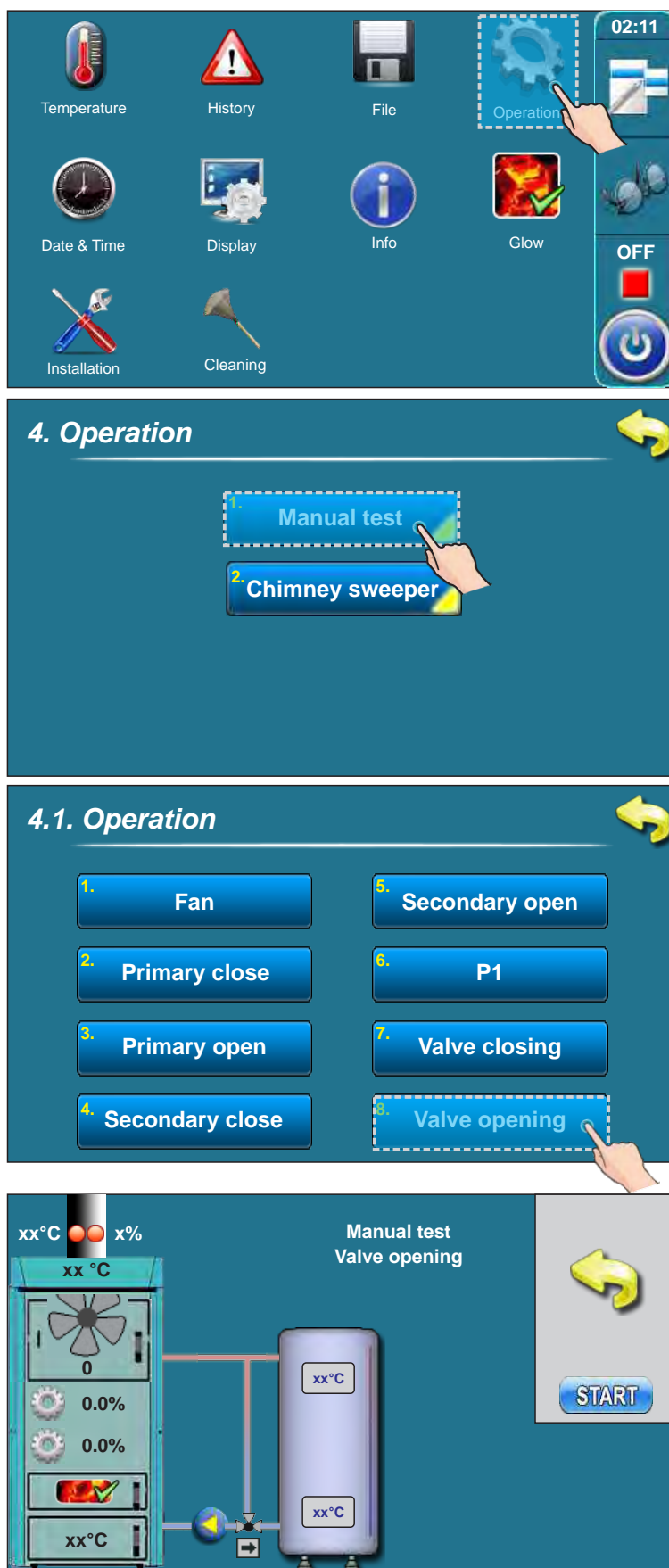


MANUAL TEST (VALVE CLOSING)



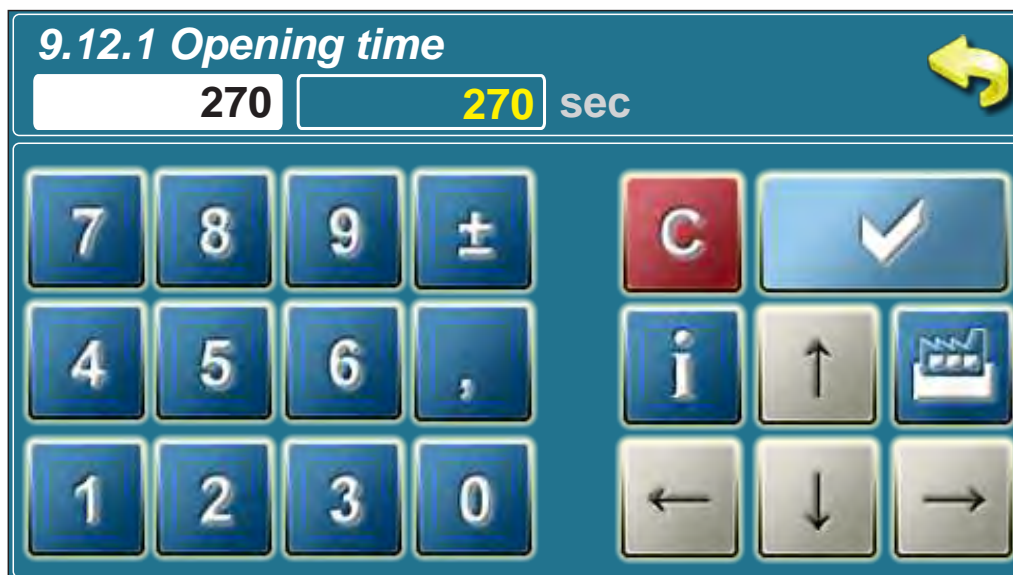
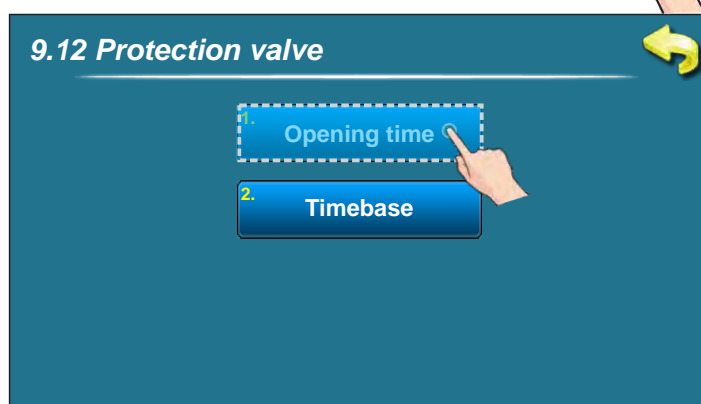
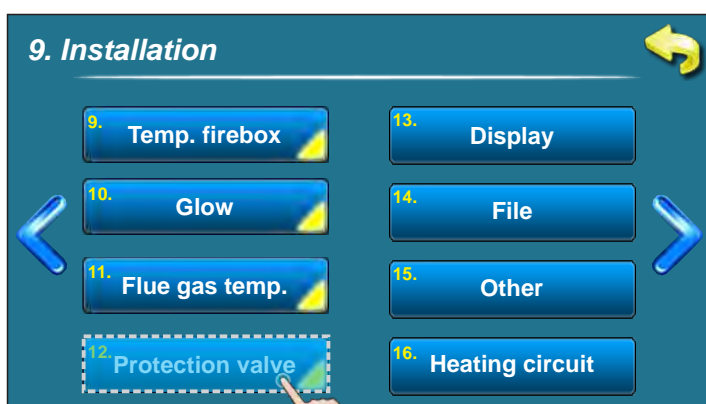
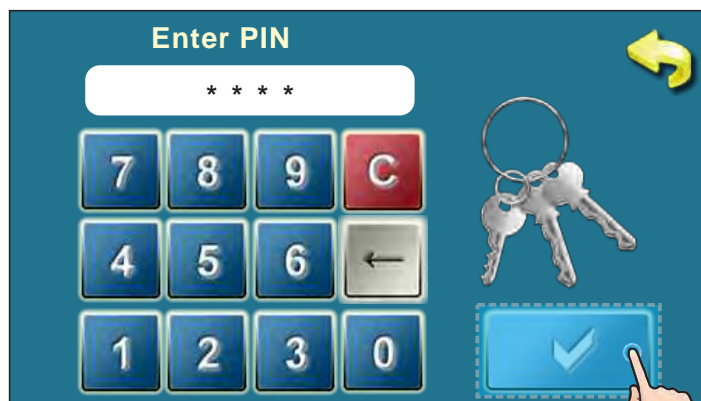
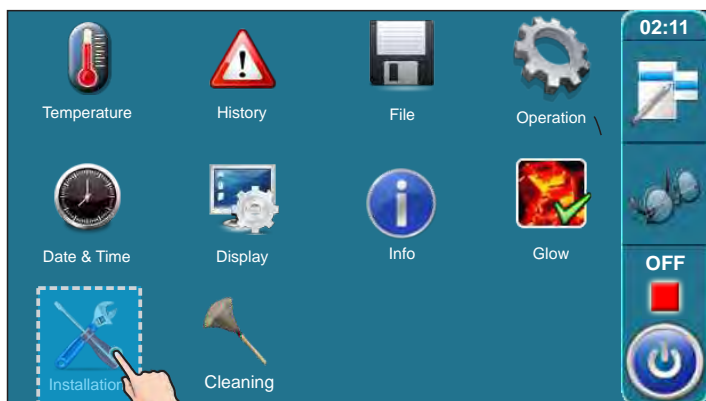
After test, valve must be completely closed (like as shown in Case 1).

## MANUAL TEST (VALVE OPENING)



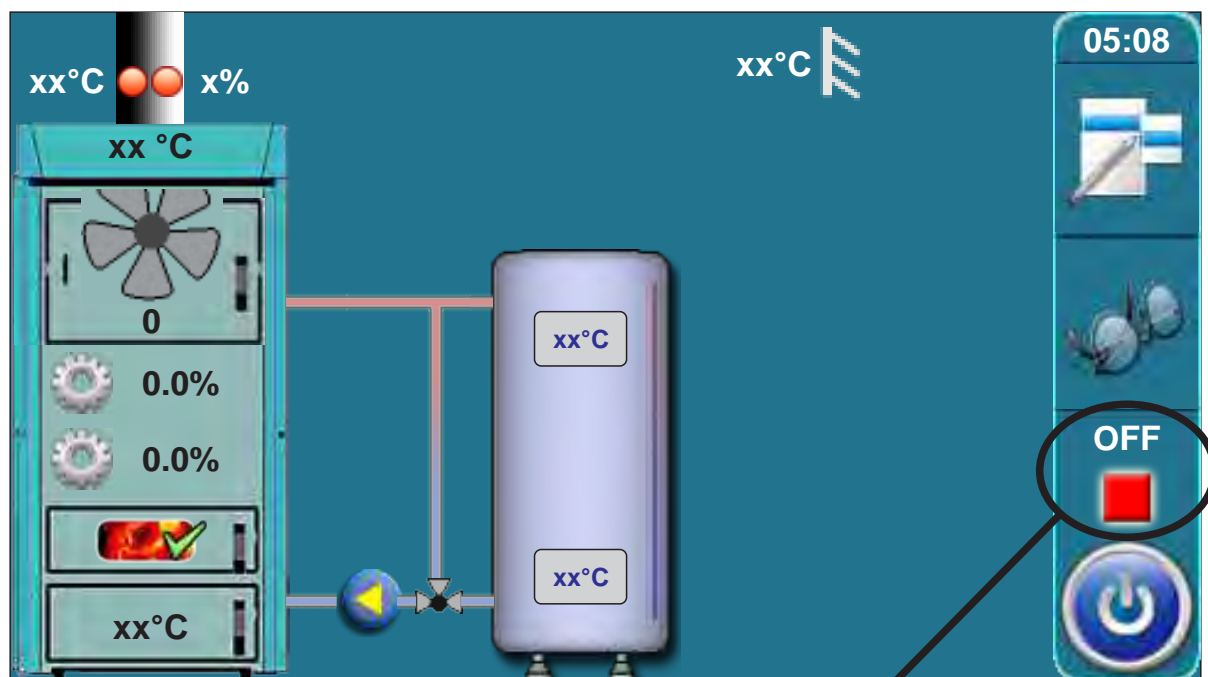
After test, valve must be completely opened (like as shown in Case 2).

## OPENING TIME (authorized persons only)



In this step is necessary to input el. actuator opening time (labeled on el. actuator by manufacturer. This step is crucial for proper operation of el. actuator.

## OPERATION PHASES (SHOWN ON THE SCREEN)



Operation phases

Operation phase	Description
<b>OFF</b>	The boiler is switched off (standby boiler until the next start).
<b>S0</b>	<ul style="list-style-type: none"> <li>- The message on the screen: "IGNITION 1/3".</li> <li>- Fan works on max. speed</li> <li>- Primary / secondary is positioning themselves.</li> <li>- 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 than 50 ° C at the time of starting the operation of the boiler phase "S0" does not appear on the screen (automatically skipped).</li> </ul>

Operation phase	Description
<b>S1</b>	<ul style="list-style-type: none"><li>- The message on the screen: "IGNITION 2/3".</li><li>- Fan works on max. speed</li><li>- Primary / secondary is positioning themselves.</li><li>- Waiting for the Tdp &gt; 50°C.</li></ul> <p><b>When Tdp &gt; 50°C:</b></p> <ul style="list-style-type: none"><li>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".</li><li>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.</li></ul> <p><b>Exceptions:</b></p> <ul style="list-style-type: none"><li>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".</li><li>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 the manual message confirmation while automatically is not possible.</li></ul>
<b>SP1</b>	<ul style="list-style-type: none"><li>- Setting the start position primary / secondary is necessary for the next phase "SP2".</li><li>- When the primary / secondary are adjusted boiler goes into a phase "SP2",</li><li>- If the required position of primary / secondary had been set earlier, this phase "SP1" doesn't appear on the screen).</li></ul>

Operation phase	Description
<b>SP2</b>	<ul style="list-style-type: none"> <li>- The time of duration this stage "SP2" is factory defined.</li> <li>- 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.</li> </ul>
<b>SD4</b>	<ul style="list-style-type: none"> <li>- Set the power blades D4</li> <li>- If the required position primary / secondary had been earlier set this state "SD4" does not appear on the screen.</li> </ul>
<b>Dx</b>	<ul style="list-style-type: none"> <li>- Stage "DX" is the common name for operation phases of the boiler on "D4", "D3", "D2", "D1".</li> <li>- 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.</li> </ul>
<b>DOP0</b> (understage)	<ul style="list-style-type: none"> <li>- Indicate that the upper boiler door is opened.</li> </ul>
<b>DIF1</b>	<ul style="list-style-type: none"> <li>- 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 (<math>T_{dp} &gt; 300\text{ }^{\circ}\text{C}</math>).</li> </ul>
<b>DIF2</b>	<ul style="list-style-type: none"> <li>- The boiler wait that the temperature in boiler drops to the set temperature of the boiler reduced by set differential.</li> </ul>
<b>DIF3</b>	<ul style="list-style-type: none"> <li>- Blowout while boiler is waiting that temperature in boiler drops to the set temperature of the boiler reduced by set differential.</li> </ul>
<b>DIF4</b>	<ul style="list-style-type: none"> <li>- Start boiler-setting primary / secondary, after the boiler temperature dropped to the set temperature of the boiler reduced by set differential.</li> </ul>

## Operation phases

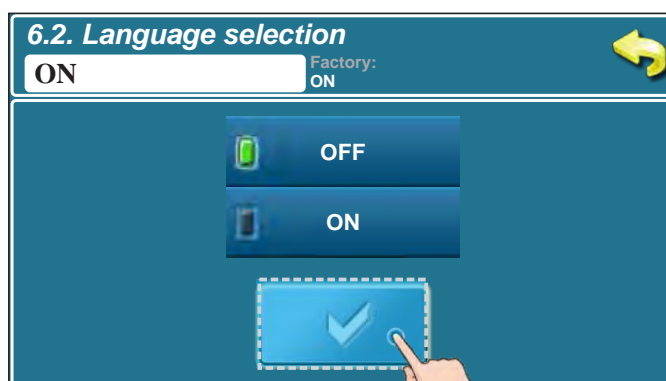
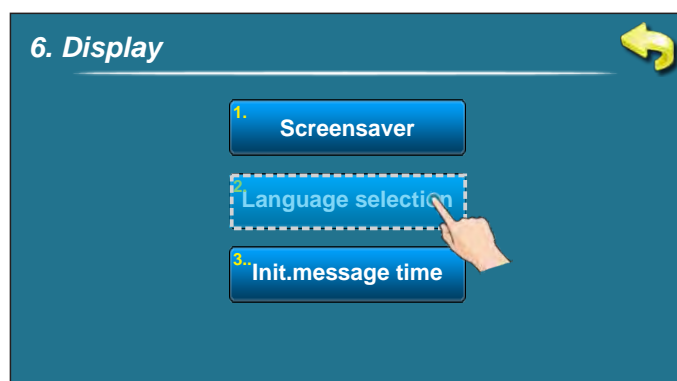
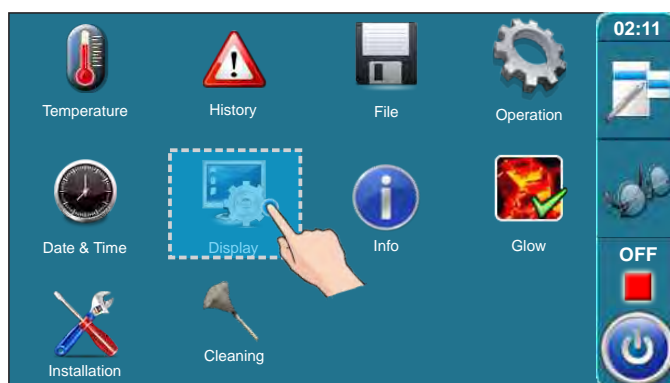
Operation phase	Description
<b>GLW1</b>	- Shutting down the boiler for keeping the glow.
<b>GLW2</b>	- Phase of keeping the glow.
<b>GLW3</b>	- Glow blowout in phase of keeping the glow.
<b>GLW4</b>	- Start a new filling, set the primary / secondary.
<b>OFF1</b>	- Shutting down after which the boiler goes into phase „OFF“.
<b>PF-xxxx</b>	<ul style="list-style-type: none"> <li>- xxxx: Is any phase described above (for example PF-GLW2)</li> <li>- Appears after a power off/power in if there was a power failure.</li> <li>- The prefix "PF" disappears with new start of the boiler or by using option "forced shut down"</li> </ul>
<b>PF-ON</b>	- 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.



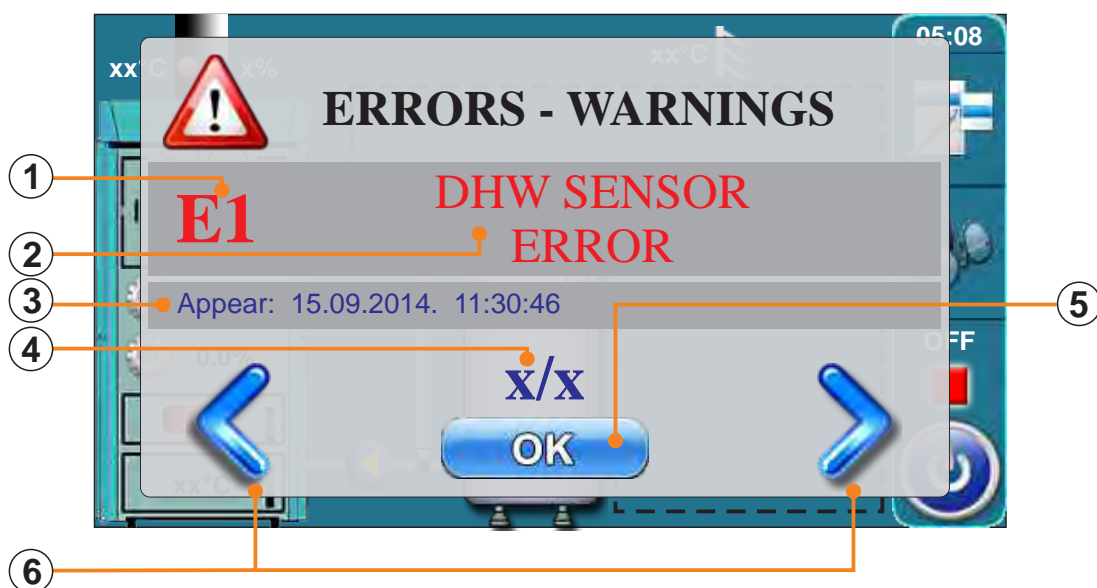
### IMPORTANT!

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

For turning off the "language selection option" follow steps below:



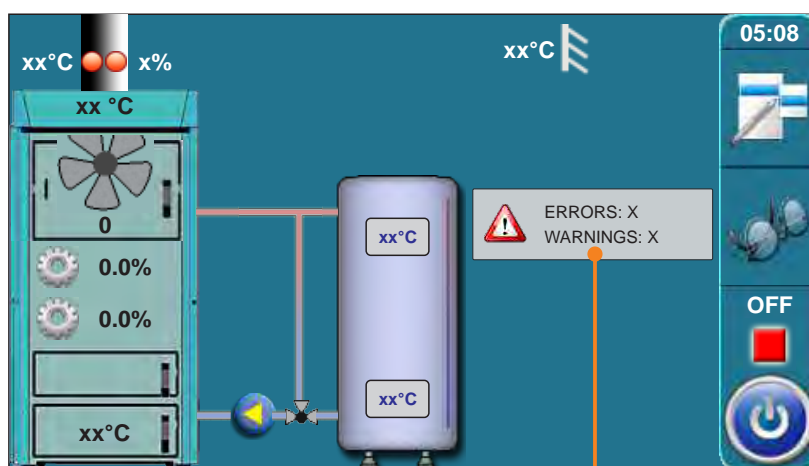
## ERROR/WARNING ON THE MAIN SCREEN



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

- 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

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



Minimized window on main display



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

## LIST AND ELIMINATION OF ERRORS / WARNINGS / INFORMATIONS

### ERROR E1

Error	Boiler status
DHW SENSOR	Intervention mode
<b>Causes</b> Error in temperature sensor in sanitary water tank.	
<b>What to do?</b> 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 DHW tank will be showned „-°C”. <b>Intervention mode:</b> Boiler work to content heating demand but boiler has reduced possibilities. If upper instructions didn't help <b>call service man.</b>	

### ERROR E2

Error	Boiler status
BUFFER TANK SENSOR ERROR (UP)	Boiler work normally
<b>Causes</b> Error in buffer tank sensor (up).	
<b>What to do?</b> 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 (up) will be shown „-°C” and the request for AKU-tank temperature will not working. If upper instructions didn't help <b>call service man.</b>	

### ERROR E3

Error	Boiler status
BUFFER TANK SENSOR ERROR (DOWN)	Intervention mode
<b>Causes</b> Error in buffer tank sensor (down).	
<b>What to do?</b> 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. <b>Intervention mode:</b> Boiler work to content heating demand but boiler has reduced possibilities. If upper instructions didn't help <b>call service man.</b>	

### ERROR E4

Error	Boiler status
FLUE GAS SENSOR ERROR	Intervention mode

#### 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 showed information about error. Instead flue gas temperature will be showed „-°C”.

**Intervention mode:** Boiler work to content heating demand but boiler has reduced possibilities. If upper instructions didn't help **call service man.**



#### WARNING!!!

If is this error present it is necessary to hold open middle boiler door during ignition phase (as much is necessary for good ignition (no longer)).

**DON'T OPEN MIDDLE BOILER DOOR DURING BOILER WORK!!**

### ERROR E5

Error	Boiler status
OUTSIDE TEMPERATURE SENSOR ERROR	Boiler work normally

#### Causes

Error on outer 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 showed information about error. Instead outer temperature will be showed „-°C”.

If is configured configuration with motor drive in heating circuit system can't work toward heating curve because don't have information about outer temperature.  
In other configuration boiler work normally except displaying outer temperature.

**ERROR E6**

Error	Boiler status
MAIN FLOW SENSOR ERROR	Boiler work normally (depend about config.)

**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**.

- If is configuret configuration with motor drive in heating circuit system will not work!!
- In other configurations system work normally except displaying main flow temperature.

**ERROR E7**

Error	Boiler status
RETURN FLOW SENSOR ERROR	Boiler go to extinction phase

**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 will not be resolved. If upper instructions didn't help **call service man**.

**ERROR E8**

Error	Boiler status
BOILER SENSOR ERROR	Boiler go to extinction phase

**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

**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 go to extinction phase

#### Causes

Invalid fan or rpm counter.

#### What to do?

Check if is rpm counter placed, check possible damages on rpm counter or on cables, check contacts on connectors.

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.**

### ERROR E14

Error	Boiler status
LAMBDA PROBE ERROR	Intervention mode

Press „OK” button to confirm error. Boiler will continue with work but on main screen will be showed information about error.

**Intervention mode:** Boiler work to content heating demand but boiler has reduced possibilities.  
**Call service man.**

### ERROR E17

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

Error	Boiler status
SENSOR REG. 1+ CIRCUIT	

#### 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 REG. 1+ CIRCUIT	

#### 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.

If upper instructions didn't help **call service man.**

### ERROR E19

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

Error	Boiler status
SENSOR REG. 2+ CIRCUIT	
<b>Causes</b> Error on flow temperature sensor of 2+ heating circuit (on regulator CM2K)	
<b>What to do?</b> Check sensor position, check damages of sensor and cables, check contacts on connectors.	
If upper instructions didn't help <b>call service man.</b>	

### ERROR E20

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

Error	Boiler status
CORRECTOR REG. 2+ CIRCUIT	
<b>Causes</b> Error on room corrector of 2+ heating circuit (CM2K regulator), bad corrector connection to the CM2K or room corrector failure.	
<b>What to do?</b> Check damages of corrector and cables, check contacts on connectors.	
If upper instructions didn't help <b>call service man.</b>	

### ERROR E21

Error	Boiler status
FIREBOX SENSOR	Intervention mode
Press „OK” button to confirm error. Boiler will continue with work but on main screen will be showed information about error. <b>Intervention mode:</b> Boiler work to content heating demand but boiler has reduced possibilities. <b>Call service man.</b>	

### ERROR E23

Error	Boiler status
IGNITION ERROR, TRY AGAIN!	OFF (Boiler operation phase)
<b>Causes</b> 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.	
<b>What to do?</b> 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.	

**ERROR E24**

Error	Boiler status
ROOM CORRECTOR ERROR	
<b>Causes</b> Interruption in electric cables between room corrector and boiler, bad connection to the boiler or room corrector failure.	
<b>What to do?</b> Check electric cables between the room corrector and boiler, and connection to the boiler.  If upper instructions didn't help <b>call service man.</b>	

**ERROR E25**

Error	Boiler status
FAN is OFF, flue gas temp too high, Close the upper door!	OFF (Boiler operation phase)
<b>Causes</b> Too high flue gas temperature with the open upper boiler door.	
<b>What to do?</b> Close the upper door and restart the boiler (load fuel if necessary).	

**ERROR E26**

Error	Boiler status
FIREBOX SENSOR DISCONNECTED	Intervention mode
Press „OK” button to confirm error. Boiler will continue with work but on main screen will be shown information about error. <b>Intervention mode:</b> Boiler work to content heating demand but boiler has reduced possibilities. <b>Call service man.</b>	

**For errors below call service man!**

<b>ERROR E12</b>	COMMUNICATION ERROR WITH MOTHERBOARD
<b>ERROR E13</b>	COMMUNICATION ERROR WITH SENSOR BOARD
<b>ERROR E16</b>	COMMUNICATION ERROR WITH CMREG

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

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

# 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 - OFF during 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 occurred 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).



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Company Centrometal d.o.o. assumes no responsibility for possible inaccuracies in this book originated typographical errors or rewriting, all the pictures and diagrams are principal and it is necessary to adjust each actual situation on the field, in any case the company reserves the right to enter their own products such modifications as considered necessary.

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**HEATING TECHNIQUE**

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