ENG

General Installation and Operation Manual for the STORCH SIC 700 intelligent combustion regulation

SIC 700 may be operated only in compliance with this manual!
Any unauthorized modifications of SIC 700 are not permitted!
All local regulations, including regulations related to national and European norms for this type of appliance, must be observed during the assembly of SIC 700.
Keep this manual in a safe place so that you can refer to it at the beginning of each heating season.

1. Introduction

SIC 700 is a state-of-the-art electronic device that, together with your fireplace stove, maximizes the efficiency of the combustion process. **SIC 700** is designed and adjusted directly to your fireplace stove from our many years of experience and results of measuring the combustion process in fireplace stoves.

SIC 700 optimizes combustion in the furnace and thus ensures economical and environmentally friendly fuel combustion. At the same time, it ensures more uniform, longer heating of the area after each stoking. This also has a positive effect on the hygiene of the heated area.

SIC 700 increases your personal comfort.

SIC 700 reduces the risk of overheating in the fireplace stove and consequently of the heated area. This means safer operation of the fireplace stove, especially in low-energy houses, and increases the service life of the fireplace stove.

SIC 700 is managed by a control unit that compares current combustion with a combustion optimization program and according to this assessment regulates the amount of air supplied to the combustion process.

Advantages of intelligent regulation

- regulates and optimizes the combustion process
- prolongs the combustion process and stoking intervals
- reduces fuel consumption
- prevents overheating of the fireplace stove
- improves area hygiene
- improves heat comfort of the area
- increases heating safety
- prolongs the service life of the fireplace stove
- increases the efficiency of the fireplace stove
- provides acoustic and optical indication of the suitable moment for stoking.

Functions of intelligent regulation

- regulates the amount of air supplied to the furnace depending on the furnace temperature
- provides acoustic and optical indication at the end of active combustion and the beginning of the heat radiation process
- the user is thus informed of the suitable time for further stoking
- allows regulation of combustion in the furnace to be set
- provides acoustic and optical indication if the fire dies after starting
- improves heat comfort of the area
- increases heating safety
- prolongs the service life of the fireplace stove

2. Romotop STORCH automatic regulator parameters

Technical parameters

- Power supply: 230V AC +/-15%
- Power input: approximately 3.0VA
- Inputs: 1 analog – temperature sensor
  1 logic command - door switch
  1 power input (24V AC 500mA)
- Outputs: 1 servomotor control (24V AV/DC, 1VA)
  1 acoustic – indicators when stoking is required
  1 optical – temperature indication via LEDs

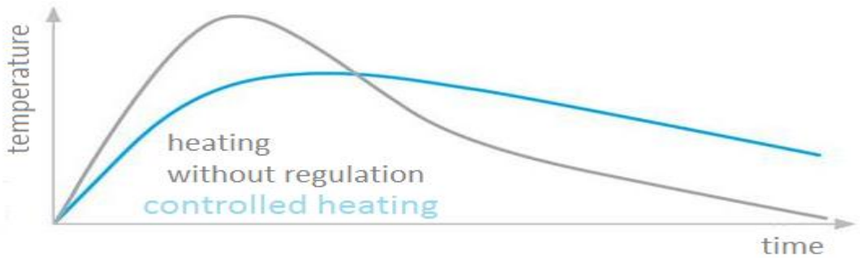
Parameters of the central unit

- Total dimensions: 133x69x30 mm
- Weight: 100g
- Installation: the unit is designed to be installed into the fireplace stove body in the location designated by the stove manufacturer
- Connecting conductor: part of the power supply transformer
- For connecting individual conductors, please see the wiring diagram
- Rated pulse voltage: category II
- Degree of fouling: 1 /dry, non-conducting/
- Operating temperature: 0 to 50°C
- Storage temperature: -10 to +60°C

3. Description of the regulation process

After heating in the fireplace stove, the regulation process is started using the door switch that controls automatic regulation. The system assesses the temperature in the combustion chamber from the beginning of the combustion process. Based on this value, the central unit evaluates the state of combustion in the combustion chamber and optimizes the amount of air supplied in the combustion process. The central unit also optimizes the combustion process from information about whether the fire is being started or whether it is the end of the combustion process. Every time the feeding door is opened during the combustion process, the central unit re-evaluates and optimizes the burning process based on the current circumstances of the interrupted combustion cycle. At the end of the combustion cycle, an acoustic indicator informs the user that the stove should be stoked and a new combustion cycle started. The combustion process is indicated by LEDs installed on the front of the fireplace stove drawer (see the **Operation** chapter for the color spectrum).

Graph of the dependence of temperature and time in regulated and non-regulated combustion

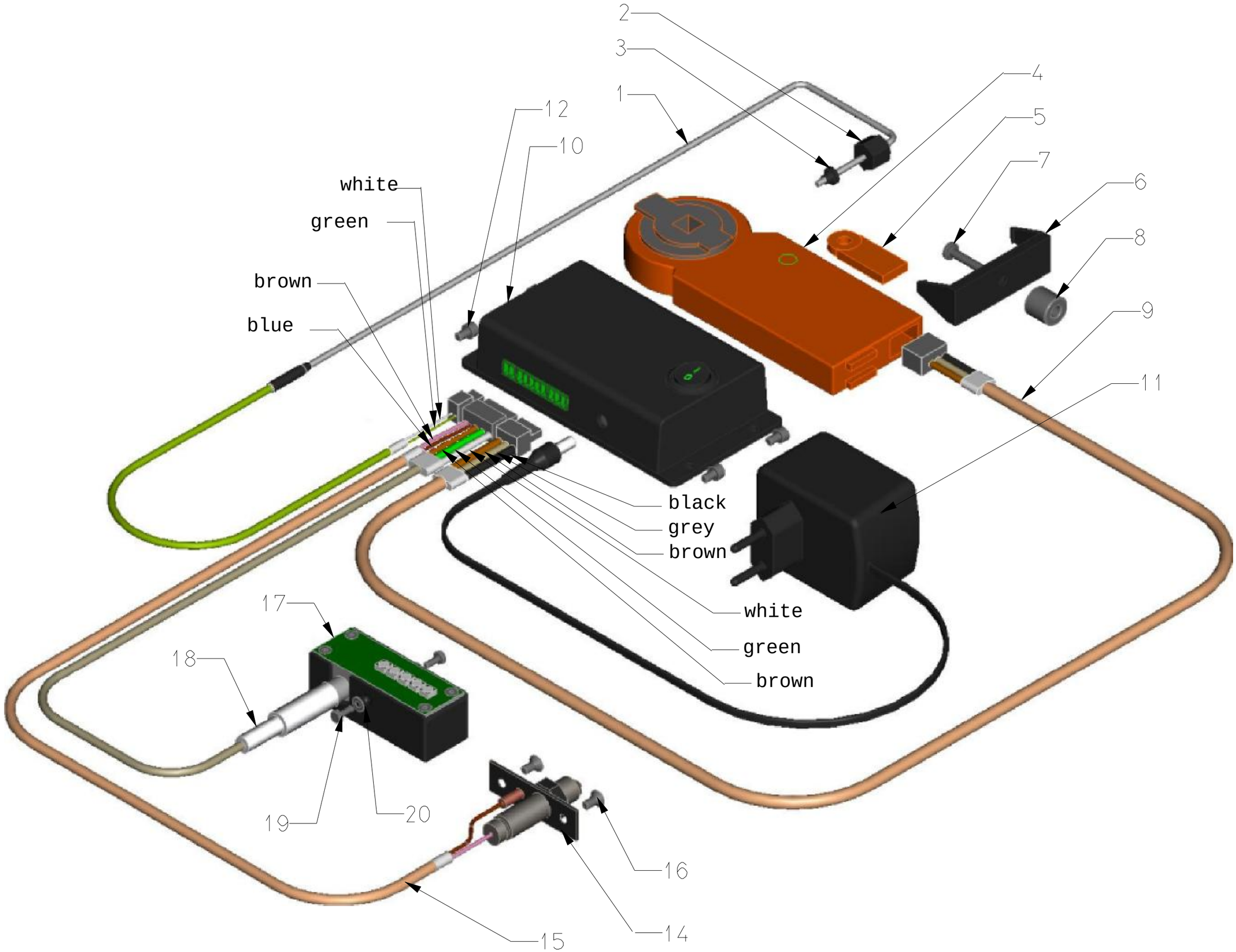


4. Safety regulations

- The device must not be used in rooms that are exposed to flammable or explosive chemicals, dust, gases or vapors.
- **SIC 700** fireplace insert can only be connected to an alternating current power point with a voltage of 230V/50Hz.
- All electrical work for connection and installation must be executed in accordance with relevant valid national and regional standards and regulations, and in compliance with the provisions of the local electricity supplier.
- Electrical installation, placement into operation, maintenance and repairs of electrical components may only be carried out by a qualified specialist according to this manual.
- The power supply cable may only be replaced by the manufacturer, their maintenance engineer or a person with similar qualifications.
- The power supply cable may only be replaced using a cable with the same type of insulation, i.e. with the same or a higher heat resistance and corresponding conductor diameter.
- The electrical device is delivered as an accessory to **STORCH** fireplace stoves and must not be damaged in any way.
- During installation of **SIC 700**, repair, or replacement of electric parts, the equipment must be disconnected from the electric mains.
- This device is not designed for use by persons (incl. children) whose physical, sensory, or mental disability, lack of experience or knowledge prevents them from using the equipment safely, unless they are under supervision or unless they have been instructed by the person responsible for their safety in how to use the device safely.
- Children must be kept under supervision to ensure they do not play with the device.
- Voltage fluctuations of more than 10% may damage the electric components of the fireplace insert, therefore we recommend installation of suitable voltage surge protection.
- **Defects caused by incorrect connection to the mains are not covered by the warranty.**

5. List of components and electrical wiring diagram

1.	temperature sensor	1x
2.	M10 swivel nut	1x
3.	sensor securing loop (sensor case)	1x
4.	servomotor	1x
5.	magnetic key	1x
6.	servomotor plastic clamp	1x
7.	M4x20 screw	1x
8.	servomotor distance washer	1x
9.	servomotor cable	1x
10.	central unit	1x
11.	power supply transformer	1x
12.	M4x6 screw	4x
13.	hex key for door switch 1.5	1x
14.	door switch (switch, board, M12 nut)	1x
15.	door switch cable	1x
16.	M4x8 screw	1x
17.	LED display	1x
18.	LED display cable	1x
19.	M3x8 screw	2x
20.	3x2 washer	2x


2
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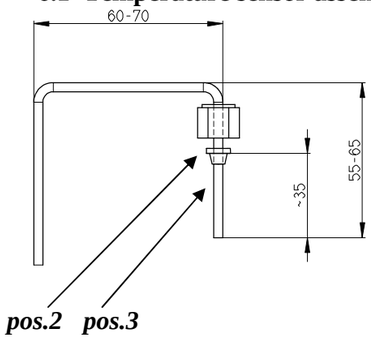
6. Installation and assembly regulations

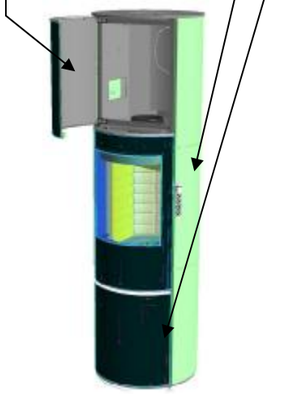
6.1 Temperature sensor assembly



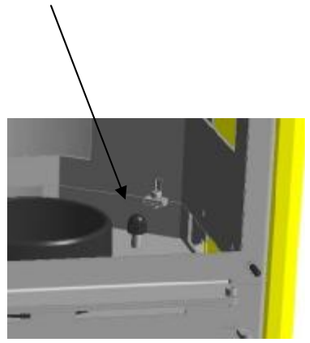
Adjust the end position of the sensor (***1***) as per the dimensions on the diagram. Mark the location of the sensor case approximately 35 mm from the sensor end.

Gradually mount:
- swivel nut ***(2)***
- sensor case ***(3)***

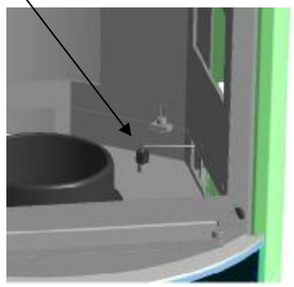
Open the accumulation door.
Remove the bottom drawer.
Remove tiles.



Remove the sealing.

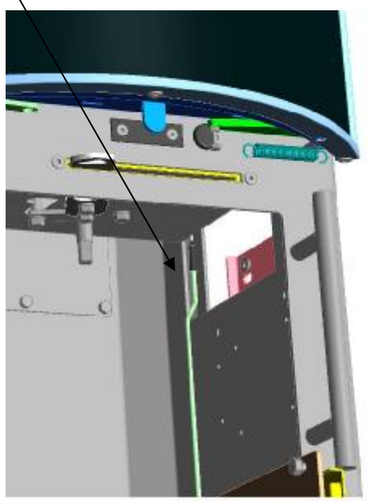


Insert the temperature sensor into the coupling up to the marked depth.
Screw and tighten the M10 swivel nut.

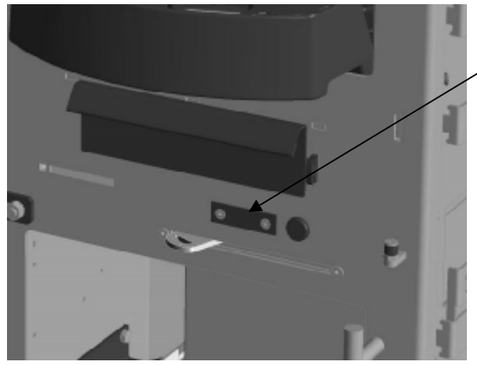


Lead the temperature sensor down along the area between the body and tiles.

Insert the temperature sensor cable into the space under the ash pan via the hole in the body.

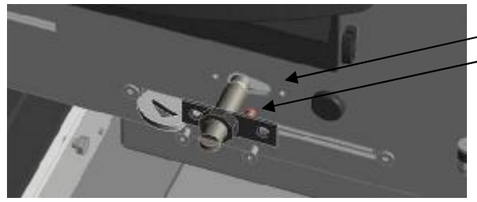


6.2 Door switch assembly



Open the feeding door.
Remove the cover under the ash pan.

Feed the switch cable ***(15)*** via the uncovered hole.

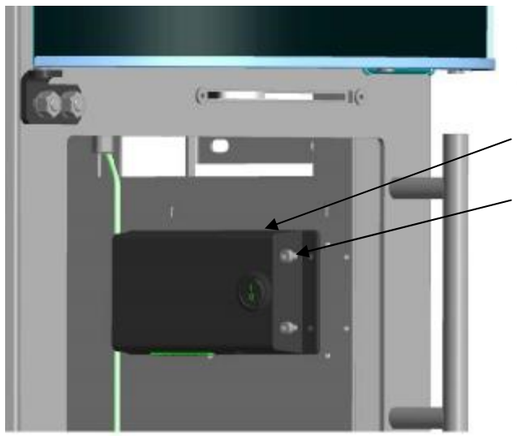


Insert switch ***(14)*** into the opening in the body.
Screw in the switch using M4x8 screws ***(16).***
Adjust the door switch so that when the door is closed the central contact moves by at least 3 mm.

<u>Adjusting the door switch:</u>

1. Open the feeding door.
2. Release the M12 nut
3. Turn (unscrew) the door switch body to achieve the required position.
4. Tighten the M12 nut.
5. Check the function when the feeding door is closed.
6. When necessary, repeat steps 1 to 5.

6.3 Assembly of the central unit

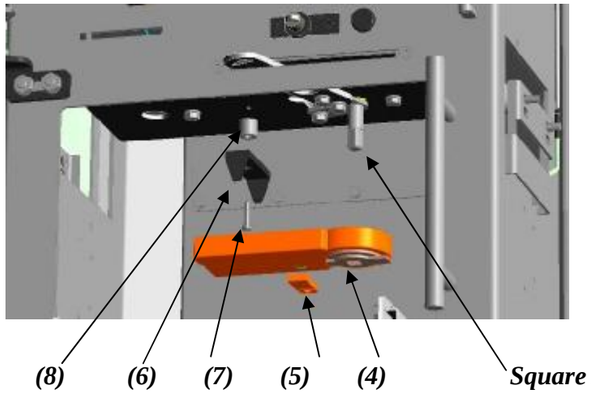


Screw the Central Unit ***(10)*** onto the body under the ash pan using M4x6 screws ***(12)*** using the prefabricated M4 holes on the fireplace stove body.

(10)

(12)

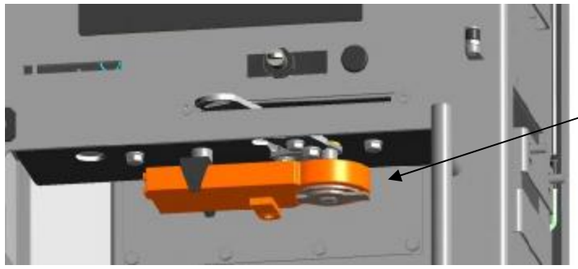
6.4 Servomotor assembly



1. Install the magnetic key ***(5)*** onto the servomotor ***(4).***

2. Fasten the plastic clamp of the servomotor ***(6)*** from below into the area under the ash pan using the M4x20 screw ***(7)*** and servomotor distance washer (***8)*** onto the body using the prefabricated M4 opening.

3. Install the servomotor to the square lever controlling the air intake and lock it into the fastened plastic clamp.

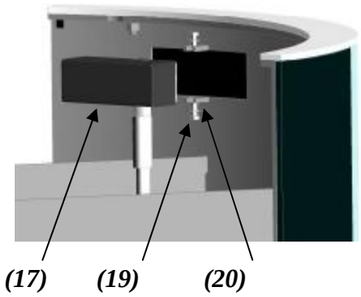


4. Remove from the servomotor ***(4)*** the plastic stoppers setting its position.

5. Move the air control lever left to the closed position and return one position setting stopper back to the servomotor ***(4).***

6. Move the air control lever right to the opened position and return the other position setting stopper back to the servomotor ***(4).***

6.5 Assembly of LED display

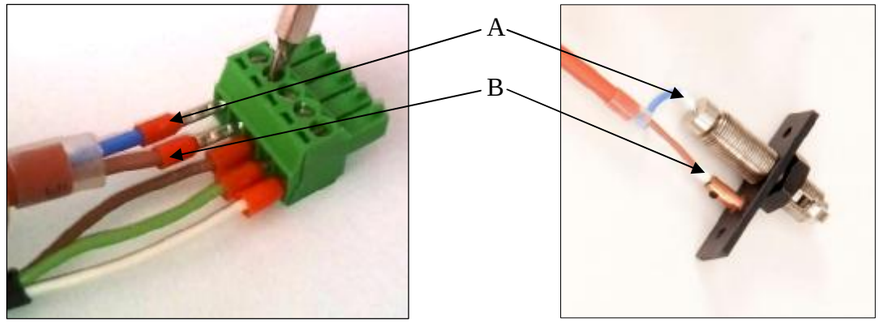


The inside face of the bottom drawer includes a prefabricated opening for mounting the LED display. There are two points of attachment for the LED display with M3x8 screws.

Insert the LED display ***(17)*** into the opening so that LEDs (printed circuit with LEDs) are inside.
Secure with two M3x8 screws ***(19)*** and washers ***(20)*** onto the attachment points.

6.6 Cables

Connect the free ends of the door switch cable ***(15)*** to the plug attached to the LED display cable ***(18)*** while maintaining the correct polarity (see pictures).



Connect individual components with corresponding cables. See diagram in section 5, **List of components and electrical wiring diagram.**

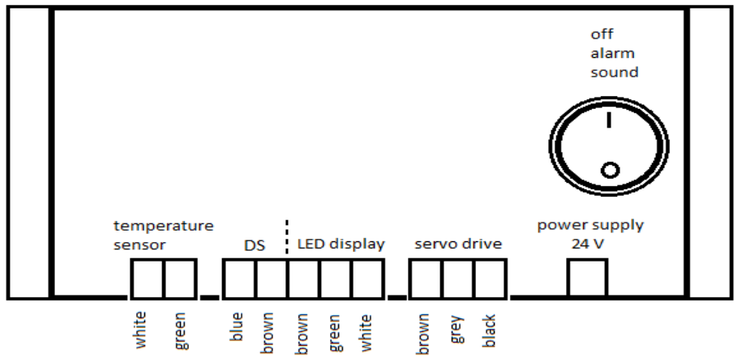


Diagram of the central unit with color identification of connected conductors.

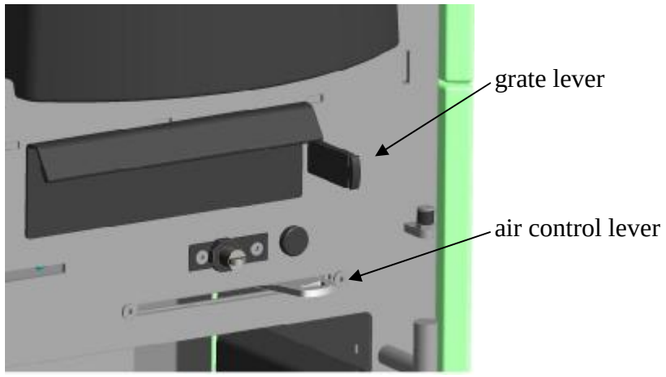
7. Description of indicators

When the door is opened, a green light activates. After the time limit expires, an orange light activates and as the temperature increases it will turn completely to red once the maximum theoretical temperature of the furnace has been achieved. The color will gradually fade back to orange in descending order of stages. During the heating process, the green light will start to flash until the door is opened or the end of regulation is achieved.

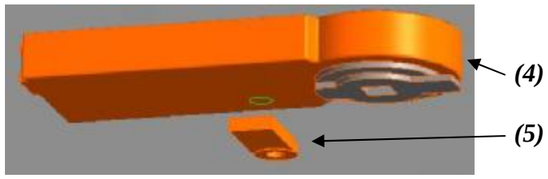
Regulation start or reset - green
burning ↑ - orange
max. furnace temperature - red
burning ↓ - orange
heating process - green flashing in 2s intervals
end of regulation - off
manual regulation - not available
defective temperature sensor - red flashing in 2s intervals
defective condition - fire not started - red flashing in 0.5s intervals

8. Operation manual

1. Check that all components are connected.
2. Move the air control lever completely right to the open position.
3. **Pull up the grate lever, otherwise there is no air intake to the furnace.**

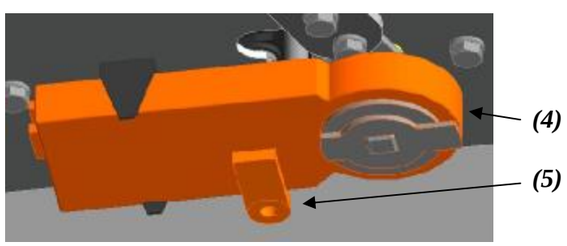


4. Remove the magnetic key ***(5)*** from the servomotor ***(4)***.



5. Connect **STORCH** Automatic Combustion Regulation to a socket.
6. Turn the switch on the central unit ***(10)*** to position **I.**
7. Open the feeding door (LED indicator ***(17)*** turns green).
8. Start the fire and close the door.
9. Regulation begins in accordance with the configured mode.
10. Within 5 minutes of acoustic indication, stoke firewood for a new burning cycle, otherwise burning will end.
11. 5 minutes after the end of the burning cycle, air suction will open to maximum for three minutes to aerate the combustion chamber. After that, suction will close again until a new burning cycle is started by rekindling the fire.

During a power outage, or if automatic regulation on the central unit is turned off, or the system is disconnected from the power network, always immediately attach the magnetic key (5) to the servomotor (4) in order to enable manual combustion regulation using the air intake control lever.



Outside the heating season, we recommend disconnecting the regulator from the power network.

9. Troubleshooting

The draft through the stove is very weak:
- is the chimney or exhaust pipe properly sealed?
- is the chimney correctly calculated?
- is the temperature too high, and is the chimney correctly insulated?
- is there an open door from a different stove connected to the same chimney?
- did you choose the right regulation program?

The room is not heating up:
- is the furnace set to a sufficient temperature?
- is the exhaust pipe blocked?
- is the draft through the chimney too weak?
- is the wood or fuel wet?
- did you choose the right regulation program?

Grate damage, creation of impurities:
- the fireplace stove has been overheated.
- the ash pan has not been properly emptied.

10. Service configuration

Furnace configuration may only be performed by a STORCH service technician or a person authorized and trained by this technician. Any modifications performed by anyone else will void all guarantee claims!

Furnace	program			
	standard 1	standard 2	standard 3	standard 4
A	0000	0001	0011	0111
B	0100	0101	0110	0010
C	1000	1100	1110	1111
D	1001	1010	1011	1101

Program: **0 1 0 0**

11. Description of modes

FURNACE:

A – regulation temperature on the sensor achieved at 275°C

B – regulation temperature on the sensor achieved at 285°C

C – regulation temperature on the sensor achieved at 295°C

D – regulation temperature on the sensor achieved at 305°C

Description: four regulation temperatures can be set for installation of the stove in different rooms in order to prevent overheating of these rooms.

PROGRAM:

Standard 1 – for chimney draft of 10Pa

Standard 2 – for chimney draft of 12Pa

Standard 3 – for chimney draft of > 15Pa

Standard 4 – for chimney draft of < 8Pa

*Description: individual programs have different burning processes depending on the chimney draft. **Standard 1 and 2** are similar, with only a small difference according to the type of fuel. **Standard 3** is rather slow with inhibited burning and is suitable for regulation of stoves connected to a chimney with a stronger draft. **Standard 4** starts faster with energetic burning and is suitable for regulation of stoves connected to a chimney with a weaker draft.*