SENKO
cookers and fireplaces

INSTRUCTION MANUAL

Central heating COOKERS

C-20 and C-30

SN-EN-09/13

Dear client, thank you for choosing a SENKO cooker !

This product was designed and manufactured to its minutest details in order to fulfill your every need for functionality and safety.

This *Instruction manual* will teach you to operate your cooker properly, so please read the manual carefully before using the cooker.

Senko management

Symbols used in this *INSTRUCTION MANUAL* :

- ATTENTION 
- WARNING 
- SAFETY 
- ADVICE AND RECOMMENDATIONS 

CONTENTS

1. GENERAL

Solid fuel central heating cookers without oven

- **E2320L C-20 inox lux**
- **E2320D C-20 inox lux**
- **E2330L C-30 inox lux**
- **E2330D C-30 inox lux**

are models from the SENKO cookers palette which can accommodate your needs in the best possible way. Therefore, we ask you to CAREFULLY READ THESE INSTRUCTIONS, which will help you to achieve the best possible results already during the initial use.

The manufacturer is not responsible for any consequences (people or animal injuries or property damages) **resulting from failure to comply with this *Manual*.** The cooker is hot during operation and **the use of protective heat insulated gloves is compulsory during handling**. Children and infirm individuals are not allowed to handle the cooker.

The external appearance of the cooker is shown on the first page of this Manual. Cooker principal parts are made of stainless steel boiler plates and castings of quality grey cast. The cookers are produced with flue gas connection point on the left or the right side. **When ordering the cooker or the spare parts, it is necessary to state its full designation**, for example: cooker E2320D C-20 inox lux; which means that the flue gas connection is on the right side, if the stove is observed frontally.

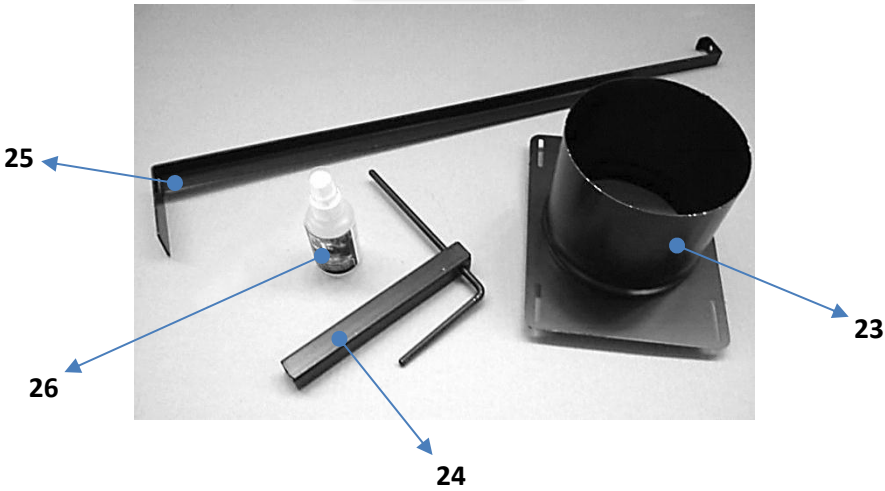
The cookers are manufactured and certified in accordance with the EN 12815 standard and comply with all the requirements set by this standard.

These SENKO cookers are intended **for cooking, space heating and central heating** !

The cooker is packaged in a EURO pallet. During transport, the cooker must be properly fastened in order to prevent tumbling or damages. **The standard delivered cooker set consists from**:

- cooker,
- instruction manual,
- chimney terminal extension (**23**),
- firing regime adjustment – grate lifting spanner (**24**),
- cooker cleaning tool (**25**),
- CF agent for removal of soot and grease from glass surfaces (**26**).

figure 1



CAUTION! The cooker weighs between 150 and 200 kg. Extra caution is necessary when unloading, transferring, moving and installing the cooker in order to avoid physical injury.

1.1. FUEL

The use of moist and low-calorie wood is not recommended. The **wood moisture must be lesser than 17%.** The energy content of moist wood is low, at approx. 2,3 kWh/kg and it greatly pollutes the door glass, as well as the chimney and the cooker.

Use only recommended fuel :

- **wood**: common beech, common hornbeam, oak, black locust
  ⇒ air dried for a minimum of 2 years
  ⇒ relative humidity 15-17%, energy content at approx. 4,2 kWh/kg
- **wood briquettes**: energy content at approx. 4,4 kWh/kg

1.2. FEEDING

- manually when necessary
- we recommend the **logs** to be of 50 x 50 mm **vertical cut**, up to 2/3 of the firebox length
- use smaller logs for a more intensive fire, and more massive logs to maintain fire
- **the minimum distance between the logs** must be 1 cm, the same distance of 1 cm applies for the briquettes
- it is **necessary to use protective heat insulated gloves** when adding fuel to the firebox
- protective heat insulated gloves must also be used when opening and closing firebox door and removing the ash box

1.3. CHIMNEY

The cooker is connected to the chimney via **130 mm diameter sliding rosette**. It is necessary to execute the connection of the rosette and the chimney tightly and impermeably. **If the cooker is separated from the chimney opening** (not recommended) the connection is made via **standard 130 mm diameter smoke venting pipe**.

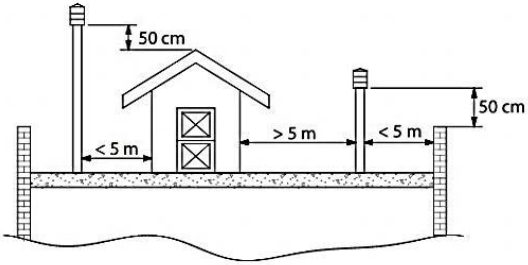
We also advise **to equip the chimney with solid material and possible condensation products collection chamber** and to install the chamber in question beneath the smoke channel inlet, in a manner which allows easy access and inspection via impermeable door.

1.3.1. CHIMNEY CAP

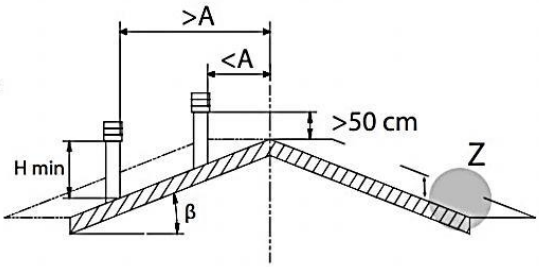
Chimney cap must fulfill the following prerequisites:

- **identical internal cross-section** to that of the chimney,
- operational **exit cross-section no less than the double inner cross-section of the chimney**,
- constructed **to prevent rain, snow, leaves and other foreign bodies from entering** the chimney,
- constructed **to enable expulsion of combustion products in case of wind** from any direction and incline,
- installed **to enable proper dispersion and dilution of combustion products outside the reflux zone** (backflow) because the counter pressure occurs here. Therefore, it is necessary to adhere to limitations listed in *figure 2*,
- **mechanical appliances for flue gases suction are not allowed**.

FLAT ROOF



PITCHED ROOF



Z=REFLUX ZONE

figure 2

Roof slope	Distance between the roof ridge and the chimney	Minimum chimney height (measured from the roof surface)
β	***A*, m**	**H_{min}, m**
15°	< 1,85	0,5 m above the roof ridge
	> 1,85	1 m from the roof
30°	< 1,5	0,5 m above the roof ridge
	> 1,5	1,3 m from the roof
45°	< 1,3	0,5 m above the roof ridge
	> 1,3	2 m from the roof
60°	< 1,2	0,5 m above the roof ridge
	> 1,2	2,6 m from the roof

1.3.2. CHIMNEY FUNCTION

Among all the meteorological and geographical factors that influence the chimney function (rain, fog, snow, insolation period, etc.) **the wind is most certainly the crucial one**. Apart from the pressure caused by the temperature difference between the flue gases and the outer chimney air, there is another type of pressure – **wind dynamic pressure.**

Ascending wind ALWAYS has the **effect of increasing the pressure**, i.e., **underpressure (flue draught)**, provided the chimney is properly installed. **Descending wind** ALWAYS has the **effect of decreasing the draught** ⇒ overpressure occurs. Apart from wind direction and velocity, chimney position in relation to the house roof and surrounding area is also important (*figure 3*).

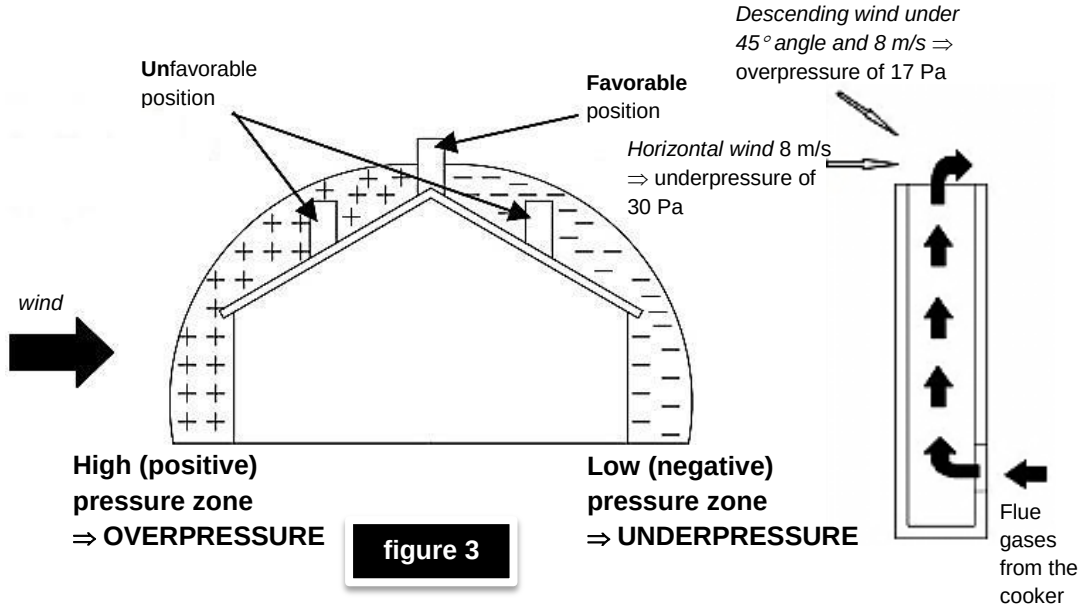
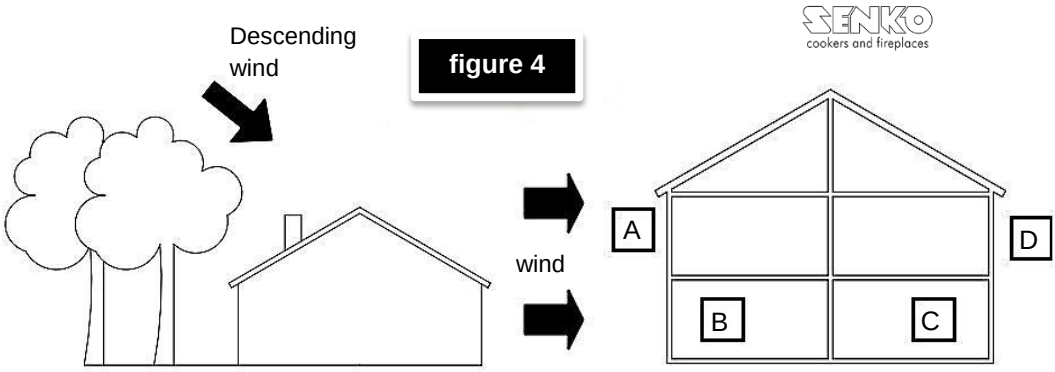


figure 3

The wind also influences the chimney function indirectly by creating areas of high (overpressure) and low (underpressure) pressure, both inside and outside the residential area (*figure 4*).

Pressure that facilitates chimney function can occur in rooms directly exposed to the wind (B), but it can also adversely affect the chimney through external pressure if the chimney is situated on the side exposed to wind (A). Contrary to that, underpressure can occur in lee rooms (C), adversely affecting functions of the chimney situated on the opposite side (D) from the wind direction.



A-B zones in overpressure
C-D zones in underpressure

1.4. INSULATION

The cooker is insulated in the boiler area towards the external surfaces with fire resistant rock wool, 20 mm thick. Other internal cooker parts are insulated with chamotte brick, 25 mm thick. Chamotte brick, 60x60 mm is used around the upper frame.

2. WARNINGS AND SAFETY

When connecting the cooker to the chimney and the central heating system, **adhere to national and European norms and local regulations**. Prior to use, verify with the local authorized chimney-sweeper whether **the cooker is properly connected to the chimney** (the chimney-sweeper must complete the installation report at the end of this *Manual*).

Special attention must be paid that there is enough air for combustion being supplied to the room cooker is installed in.

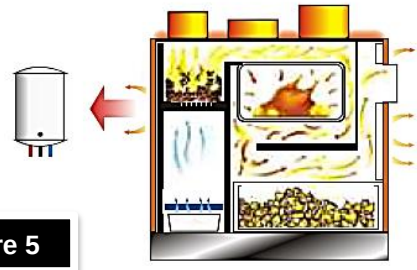
Prior to commencing the firing procedure, the cooker MUST **be connected to waterworks and central heating installation**. The procedure may only be executed by **an authorized expert** who completes the installation report at the end of this *Manual*.

3. TECHNICAL FEATURES

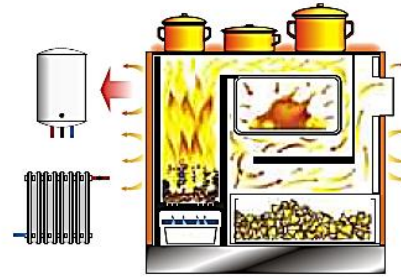
SENKO cookers C-20 and C-30 are very adjustable for instalment in small rooms or small objects, holiday houses and all other rooms where there's no need for baking yet there should be a cooking possibility. They are made of **stainless steel boiler plates and castings of quality grey casts**. The boiler is made of 5 mm thick boiler plate. The cooking plate (1) is made of 8 mm thick fireproof plate. Cooker interior is lined with chamotte and chamotte plates.

The ash box (14) is on the frontal side, at the bottom, just below the secondary air regulator (11) and boiler thermometer (6) which controls the boiler water temperature. Connections for the central heating system are on the rear side of the cooker.

Cooker **firebox** (8) can function as both **summer and winter** firebox, depending on the position of the firebox lower grate.



SUMMER FIREBOX
⇒ cooking and sanitary water heating



WINTER FIREBOX
⇒ cooking, sanitary water heating and radiators heating

figure 5

The following figures display the schematics of the cookers and their accompanying parts.

SCHEMATIC DISPLAY FOR *E2320 C-20* COOKER

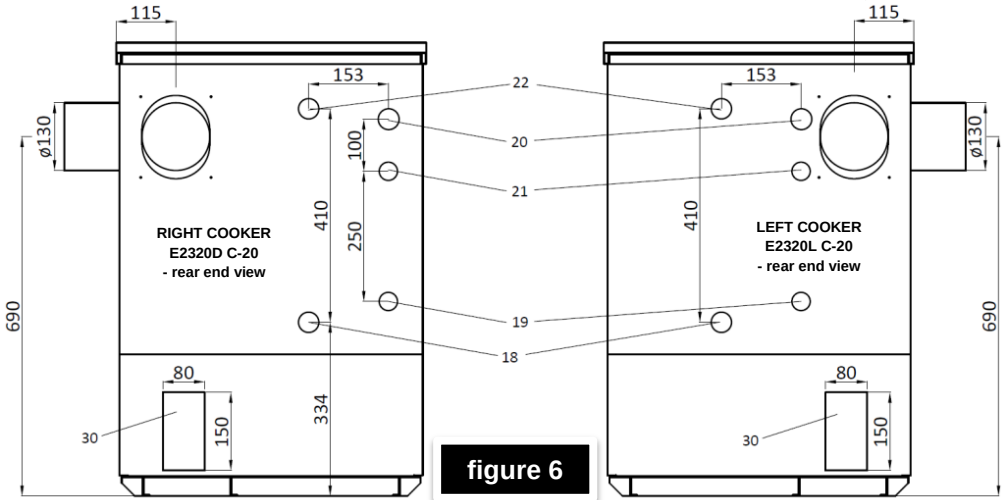
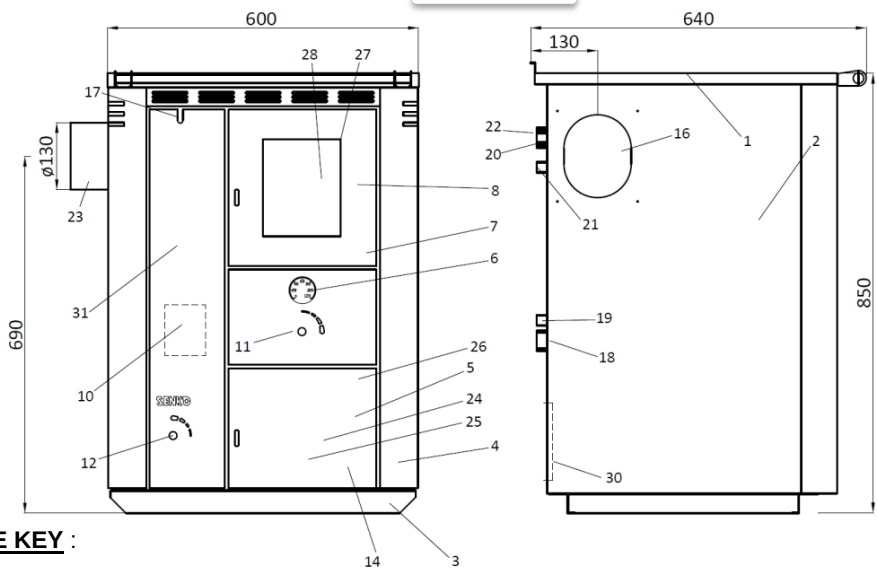


figure 6



THE KEY :

1. Cooking plate
2. Frame
3. Cooker base
4. Cooker housing
5. Lower door
6. Boiler thermometer
7. Boiler with base
8. Firebox door
10. Cleaning hatch lid
11. Secondary air regulator
12. Primary air automatic regulator
14. Ash box
16. Chimney connection point
17. Flue gas deflector
18. R1'' cold water connection point
19. R1/2'' inlet water connection point of the boiler thermal protection
20. R3/4'' two-way safety valve connection point of the boiler thermal protection (see *page 21*), i.e. boiler thermal protection safety valve probe (see *pgs. 22, 23* and *24*)
21. R1/2'' outlet water connection point of the boiler thermal protection
22. R1'' warm water connection point
23. Chimney connection point extension
24. Firing regime adjustment spanner
25. Cooker cleaning tool
26. CF agent for removal of soot and grease from glass surfaces
27. Door hinge bolt
28. Firebox door glass
30. Primary air inlet hatch
31. Decorative plate

SCHEMATIC DISPLAY FOR *E2330 C-30* COOKER

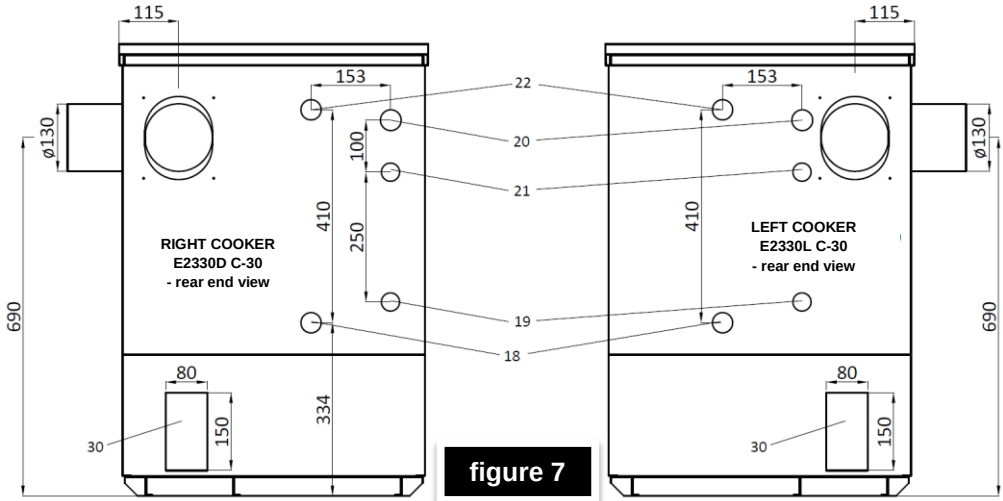
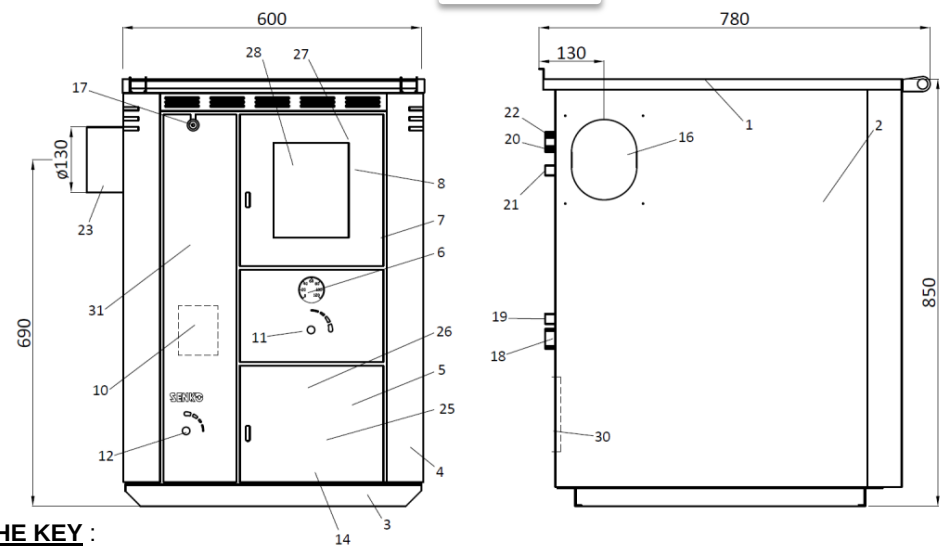


figure 7



THE KEY :

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25. Cooker cleaning tool
26. CF agent for removal of soot and grease from glass surfaces
27. Door hinge bolt
28. Firebox door glass
30. Primary air inlet hatch
31. Decorative plate

4. INSTALLATION

Once you have removed packaging from the cooker, it is necessary to **make a detailed inspection in order to determine any potential damages** that might have occurred during transport. Nay detected damages must instantly be reported to the manufacturer.

In places of any connection points on the cooker (water, thermal protection, chimney, air inlet), **inspection hatches must be installed for system maintenance and servicing purposes.**

4.1. POSITIONING

A spirit level must be used to place the cooker in a horizontal position with no incline. It is necessary to ensure **the minimum distance of the cooker from any flammable objects**; such as wood, chipboard, cork and similar. If the materials are easily combustible such as PVC, polyurethane and similar, the necessary safety distances need to be doubled.

The minimum distance from any flammable surfaces above and in front of the cooker is 800 mm, and 200 mm in all other directions.

When mounting the cooker on the floor made from easily combustible material (**wooden floors**), the cooker must be **mounted on an insulating noncombustible surface**, 60 mm thick. The surface must cover the layout area of 800 mm in front of the cooker and 400 mm in all other directions.

It is explicitly RECOMMENDED by the manufacturer to place the cooker as close as possible to the chimney hole, i.e. next to the chimney hole itself in order to avoid using an additional smoke uptake pipe. If the additional smoke uptake pipe is not used, maximum efficiency of the cooker, i.e. fuel is additionally assured!

4.2. CHIMNEY PREPARATION AND CONTROL

Prior to cooker mounting, it is necessary to check the chimney – the diameter, height, possible clogging or damages. The chimney must be **certified by an authorized local chimney-sweeper.** The effective **chimney height** must be **at least 5 meters** from the point of flue gases outlet (*figure 8b*).

Flue draught must be within parameters :

- for C-20 ⇒ 12 ± 2 Pa,
- for C-30 ⇒ 15 ± 2 Pa.

The chimney must be **at least 0,5 meters above the roof ridge. The minimum distance between the two connections on the same chimney must be 60 cm** (*figure 8d*).

Chimney diameter is chosen according to information provided by the chimney manufacturer – e.g., for flue draught of 15 Pa, the diameter is usually 160 mm.

The chimney must be smooth on the inside, well insulated and well fastened. All cleaning hatches must be well fastened. All gaskets must be regularly inspected and replaced when necessary.

4.3. CONNECTING TO CHIMNEY

When connecting the cooker to the chimney it is necessary to adhere to local, national and European regulations (norms) – **DIN 4705**.

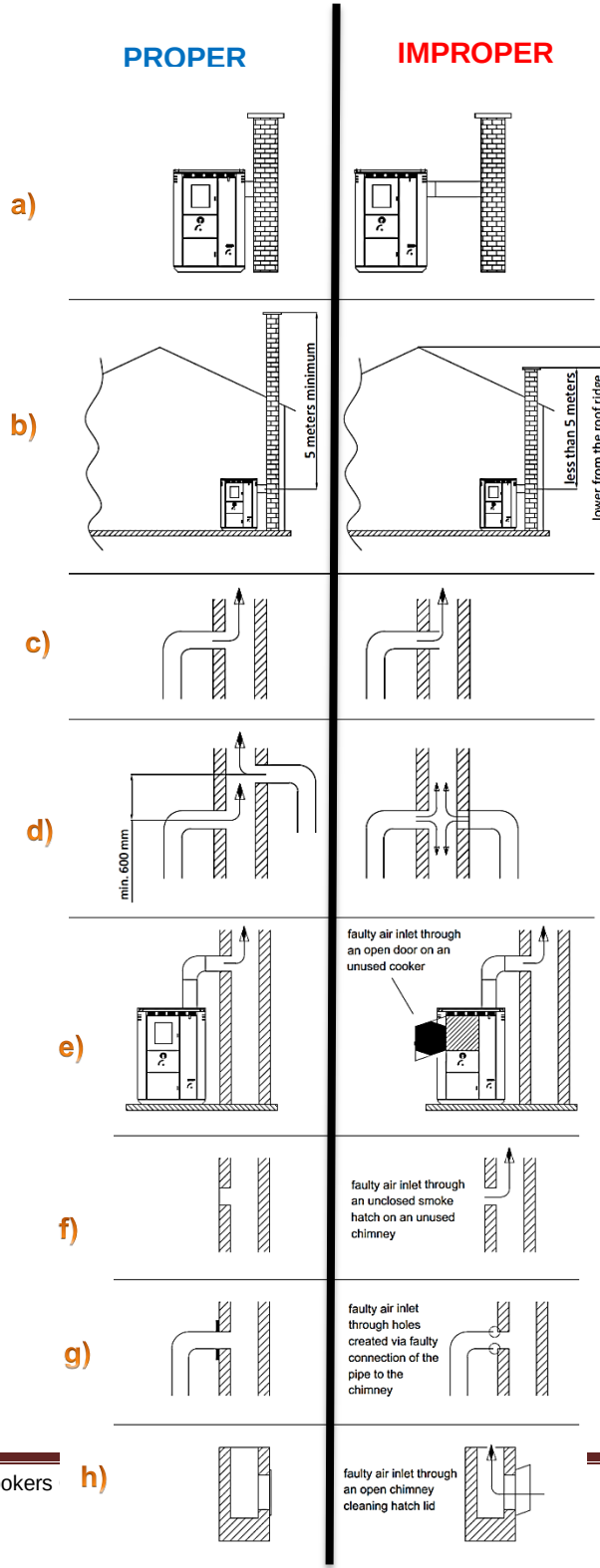
It is necessary to ensure that **the connection between the cooker and the chimney is executed tightly and impermeably**. Smoke outlet pipe must have **a suitable incline in cases where the cooker is removed from the chimney opening**.

Smoke outlet pipe must not penetrate into the chimney clear opening (*figure 8c*).

Differences between the proper and improper connection of the cooker to the chimney are displayed in the following figure.

figure 8

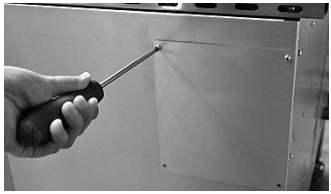
Differences between the proper and improper connection of the cooker to the chimney



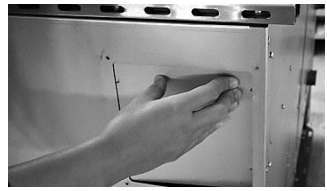
Connect the cooker to the chimney **using a sliding rosette, 130 mm** in diameter. Specially designed sliding rosette enables the adjustment of the chimney opening in tolerance of 1,5 cm upwards, i.e. downwards.

In case it is necessary to keep the cooker removed from the chimney opening, use the standard smoke outlet pipe, 130 mm in diameter. **It is not allowed to reduce the prescribed pipe diameters!**

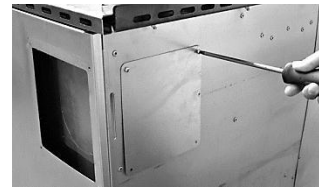
If the cooker is further removed from the chimney opening, it is connected via extension tube and an elbow. The extension **smoke inlet pipe must have an appropriate incline and must not exceed 125 cm in length**. The connection of the chimney and the smoke inlet pipe must be completely fastened!



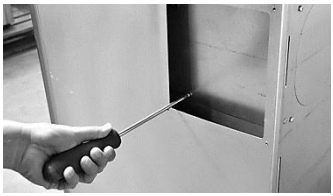
Remove the external protective lid with a screwdriver



Remove the sheet beneath the lid by pressing onto the weakest juncture

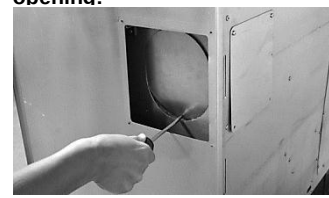


Mount the protective lid onto the remaining chimney opening!

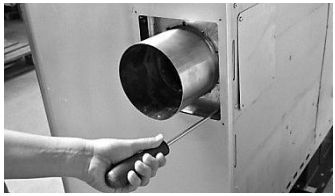


Remove the internal protective lid with a screwdriver

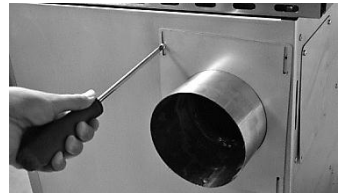
Remove the inner protective lid



Remove the sheet beneath the inner lid by pressing onto the weakest juncture



Install the sliding rosette by using bolts previously used to attach the inner protective lid



Install the external protective sheet by using bolts previously used to attach the external protective lid

figure 9

4.4. FRESH AIR VENTS

The room where the cooker is installed **must be provided with sufficient air inflow to ensure combustion**. The area must be regularly ventilated.

The fresh air vent must be situated **near the room floor** and allow the inflow of fresh air into the room. **The minimum dimension of the vent must be 6 cm^2 per kW of nominal power** (e.g. for 30 kW ⇒ 180 cm^2 ⇒ 10 x 18 cm vent).

A pipe can also be installed on the existing opening 150 x 80 mm (30) on the rear side of the cooker for the purpose of entering fresh outside air.

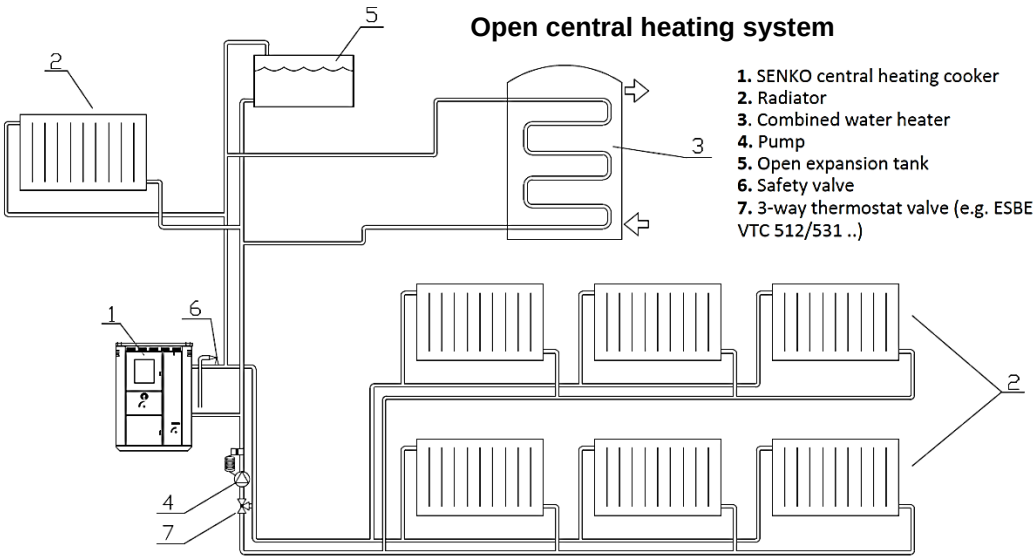
4.5. CENTRAL HEATING SYSTEM CONNECTION

Prior to commencing the firing procedure, the cooker must be connected to waterworks and central heating system and the boiler must be filled with water. **Continuous circulation of water through the boiler** must be ensured. The boiler must be well deaerated prior to operations commencement.

The pipe installation **must be executed in accordance with valid technical regulations** and DIN 4751 norm – part 1 for open systems and DIN 4751 – part 2 for closed systems, following **professional standards**, and **only by an authorized expert**.

It is not allowed to reduce the diameter of the pipe connecting the boiler to the heating installation connection point. Otherwise, the warranty will be void.

Prior to connecting the boiler to the heating installation, **the pipelines are to be thoroughly cleansed from potential filth sediments**. This prevents boiler overheating, system noise, pump malfunctions and mixing valve malfunctions. **The connection** to the heating system **is executed via union flat joint, with or without the mixing valve** onto an open or closed system.



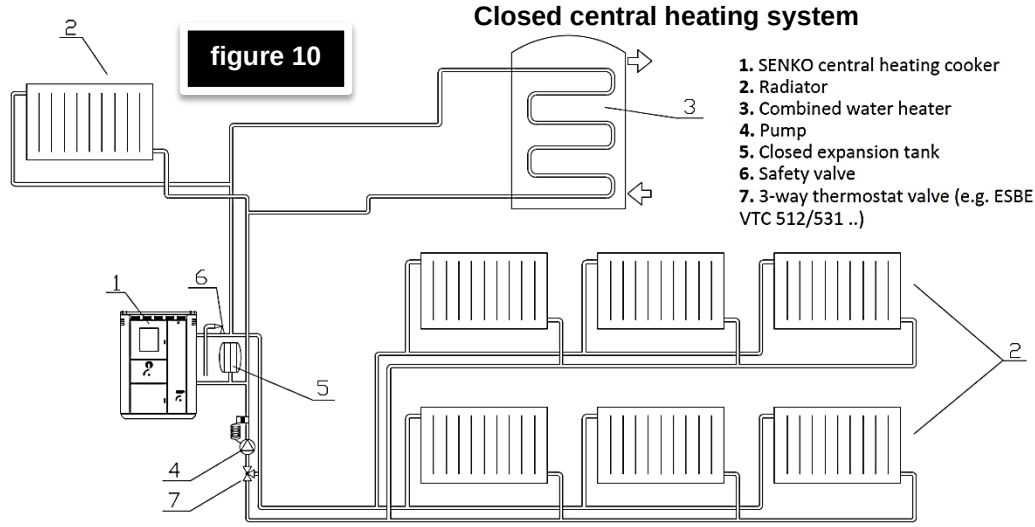


figure 10

Installation of an approved safety valve with opening overpressure set to 2,5 bar is mandatory in closed systems. Safety and expansion conduits must not have any kind of block elements.

It is necessary to **install the deaerating valve**. When filling the boiler and the radiator system it is necessary to open the mixing valve, if one had been installed; adequately deaerate the boiler and the heating system.

The mixing valve (**7** – *figure 10*) **maintains the boiler temperature at minimum the 60°C, thus preventing the boiler from condensation**. If one had not been installed, it is necessary to ensure firing conditions that will prevent boiler condensation. **Condensation may appear at the beginning of the firing process or due to insufficient feeding.**

Pipeline thermostat which activates the circulation pump must not be adjusted to values lower than 60°C !

4.5.1. COOKER THERMAL PROTECTION

When connecting the cooker to the central heating system it is **necessary to install the safety thermal valve.** It shall be installed on the **cooker rear side to R3/4'' connection point** – inner thread ⇒ see *figures 11-14*.

Water outlet into the sewer (or SW tank – sanitary water) is connected to connection point:

- **R3/4" (7)** - *figure 11* OR
- **R1/2" (7)** - *figure 12*, OR
- **R3/4" (8)** - *figure 13*.

The sensor (probe) **of the safety thermal valve** is connected to the **connection point (5)** ⇒ broken line in *figures 11-14*.

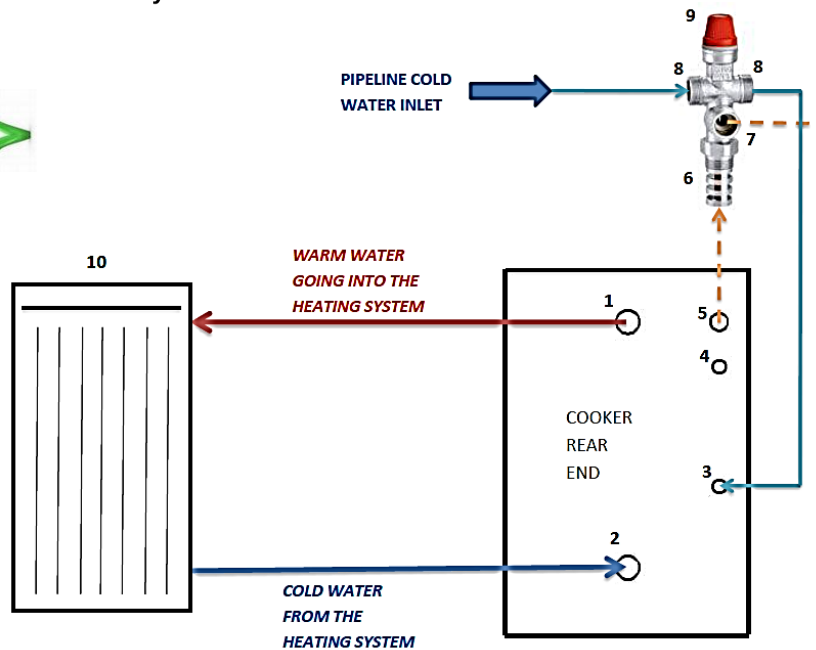
THE BOILER MUST NOT BE USED WHEN EMPTY OF WATER !

On the front side of the cooker is the **thermometer (6)** which indicates the boiler water temperature; which is an informative value. The central heating system must have its own separate **thermo-manometer**!

Connection schemes for central heating system are shown in the following figures. **Displayed schemes are for guidance only and do not have the project value!**

4.5.1.1. THERMAL TWO-WAY SAFETY VALVE

Orientational schematic for cooker connecting to a central heating system with a thermal two-way safety valve



THE KEY :

1 – R1'' warm water connection point
2 – R1'' cold water connection point
3 – R1/2'' inlet water connection point of the boiler thermal protection
4 – R1/2'' connection point CLOSE!
5 – R3/4'' safety valve connection point of the boiler thermal protection
6 – R3/4'' safety valve thermostatic element connection point
7 – R3/4'' outlet warm water connection point
8 – R3/4'' inlet cold water connection point
9 – thermal two-way safety valve
- CALEFFI 544501, REGULUS DBV1, HERMAN TDS1...
  ⇒ valve maximum operational pressure: 6 bar
  ⇒ maximum temperature valve can withstand: 120°C
  ⇒ maximum water flow with 1 bar pressure difference: 1,8 m^3/h at 110°C

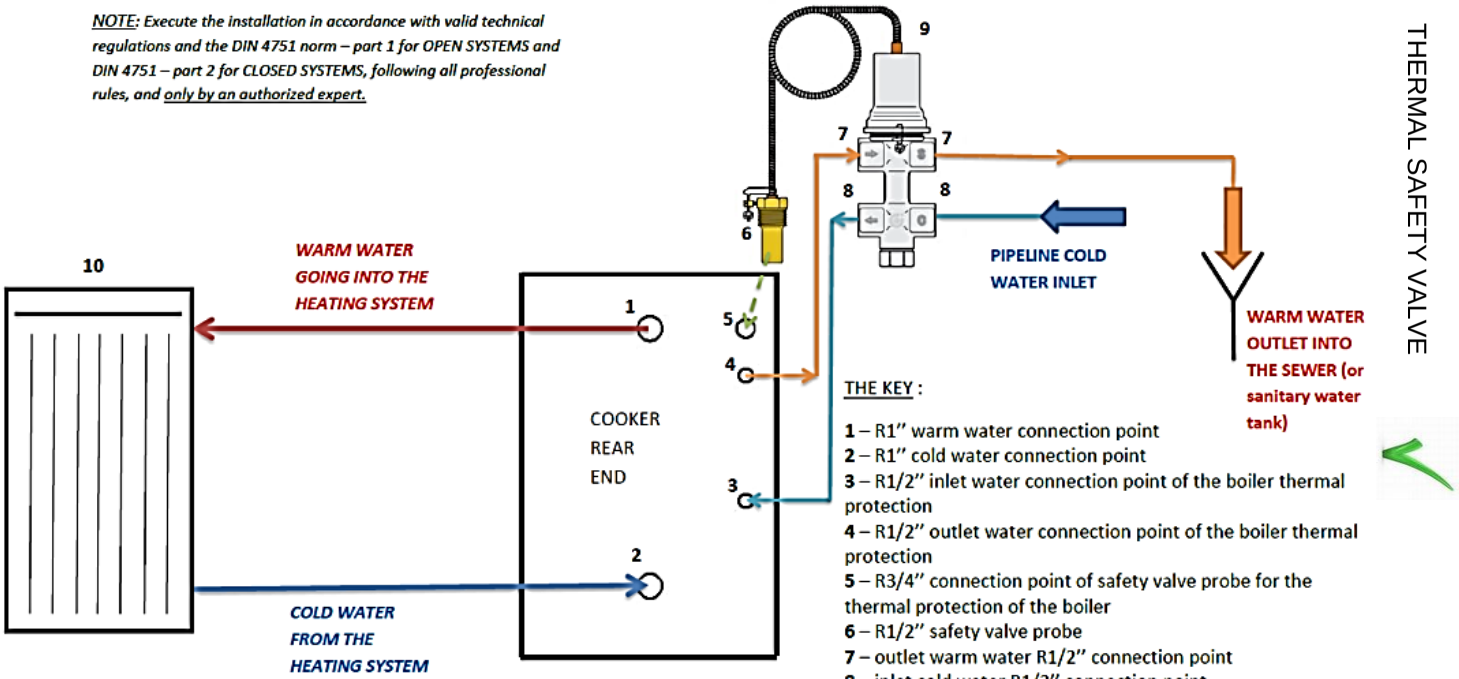
10 – heating system

NOTE: Execute the installation in accordance with valid technical regulations and the DIN 4751 norm – part 1 for OPEN SYSTEMS and DIN 4751 – part 2 for CLOSED SYSTEMS, following all professional rules, and only by an authorized expert.

figure 11

Orientational schematic for connecting the cooker to the central heating system with CALEFFI 544400 thermal safety valve

NOTE: Execute the installation in accordance with valid technical regulations and the DIN 4751 norm – part 1 for OPEN SYSTEMS and DIN 4751 – part 2 for CLOSED SYSTEMS, following all professional rules, and only by an authorized expert.



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2 – R1'' cold water connection point
3 – R1/2'' inlet water connection point of the boiler thermal protection
4 – R1/2'' outlet water connection point of the boiler thermal protection
5 – R3/4'' connection point of safety valve probe for the thermal protection of the boiler
6 – R1/2'' safety valve probe
7 – outlet warm water R1/2'' connection point
8 – inlet cold water R1/2'' connection point
9 – thermal safety valve CALEFFI 544400
⇒ valve maximum operational pressure: 6 bar
⇒ working temperature: 5-110°C
⇒ maximum water flow with 1 bar pressure difference: 1,6 m^3/h
10 – heating system

figure 12

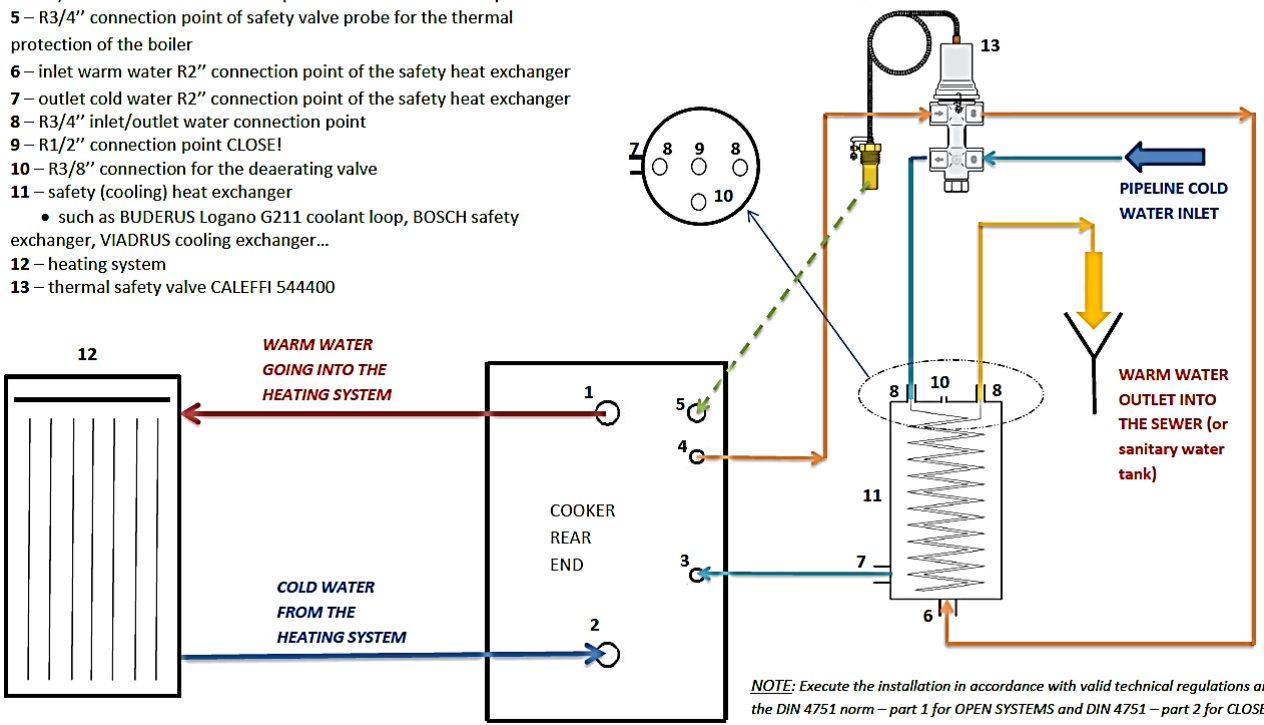
4.5.1.3. ANTI-FREEZING PROTECTION

THE KEY :

1 – R1'' warm water connection point
2 – R1'' cold water connection point
3 – R1/2'' inlet water connection point of the boiler thermal protection
4 – R1/2'' outlet water connection point of the boiler thermal protection
5 – R3/4'' connection point of safety valve probe for the thermal protection of the boiler
6 – inlet warm water R2'' connection point of the safety heat exchanger
7 – outlet cold water R2'' connection point of the safety heat exchanger
8 – R3/4'' inlet/outlet water connection point
9 – R1/2'' connection point CLOSE!
10 – R3/8'' connection for the deaerating valve
11 – safety (cooling) heat exchanger
- such as BUDERUS Logano G211 coolant loop, BOSCH safety exchanger, VIADRUS cooling exchanger...

12 – heating system
13 – thermal safety valve CALEFFI 544400

Orientational schematic for connecting the cooker to the central heating system with anti-freezing protection (antifreeze)



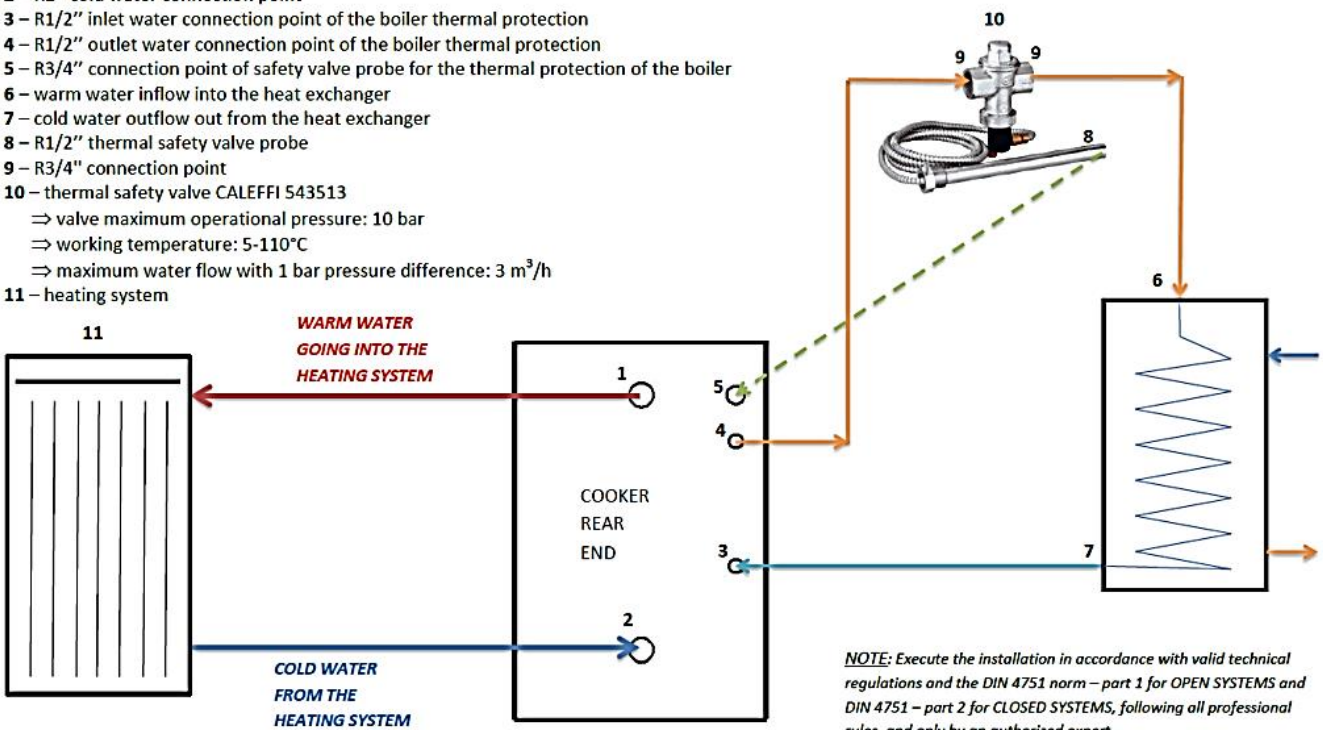
NOTE: Execute the installation in accordance with valid technical regulations and the DIN 4751 norm – part 1 for OPEN SYSTEMS and DIN 4751 – part 2 for CLOSED SYSTEMS, following all professional rules, and only by an authorized expert.

figure 13

Orientational schematic for connecting the cooker to the central heating system with a heat exchanger (buffer)

THE KEY :

1 – R1" warm water connection point
2 – R1" cold water connection point
3 – R1/2" inlet water connection point of the boiler thermal protection
4 – R1/2" outlet water connection point of the boiler thermal protection
5 – R3/4" connection point of safety valve probe for the thermal protection of the boiler
6 – warm water inflow into the heat exchanger
7 – cold water outflow out from the heat exchanger
8 – R1/2" thermal safety valve probe
9 – R3/4" connection point
10 – thermal safety valve CALEFFI 543513
⇒ valve maximum operational pressure: 10 bar
⇒ working temperature: 5-110°C
⇒ maximum water flow with 1 bar pressure difference: 3 m^3/h
11 – heating system



NOTE: Execute the installation in accordance with valid technical regulations and the DIN 4751 norm – part 1 for OPEN SYSTEMS and DIN 4751 – part 2 for CLOSED SYSTEMS, following all professional rules, and only by an authorized expert.

figure 14

4.5.2. INSTALLATION TESTING

Prior to initial firing it is necessary to check if the boiler and the entire heating system are filled with water and well deaerated. Also check if the smoke uptake pipe is properly fastened.

After initiation make sure:

- there is no leakage of any kind,
- that the entire installation is deaerated,
- that the water temperature in the boiler is increasing,
- that boiler operations do not result in condensation (“sweating”) in the chimney.

Repeat the entire inspection after several days of constant feeding!

Also, PRIOR TO INSTALLATION **activate the safety valve and check its proper functionality**.

4.5.3. RECEIVING AND MAINTAINING THE INSTALLATION

When receiving the installation, inspect the installation in its entirety with the contractor. **The contractor is obligated to provide basic information about the installation operations and indicate the position and function of the installation key components**. Also, the contractor is obligated to complete the installation report which can be found at the end of this *Manual* !

Deaerate the entire heating system after several days and refill it with water if necessary.

Inspection of installation working performance is to be executed at least once a year by an authorized maintenance technician. This will ensure safe working performance of the boiler, as well as economic and immaculate heating.

In case of installation faulty operation, contact your central heating installation contractor exclusively !

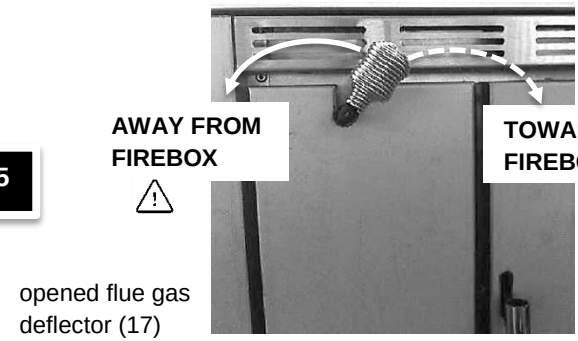
5. HANDLING THE PRODUCT

⇒ holding the cooker frame is **not allowed** while handling the appliance !

5.1. DIRECTING THE FLUE GAS

Flue gas deflector (17) accelerates the expulsion of flue gas from the cooker when this is necessary. It is primarily **used during initial stages of firing or when larger quantities of fuel are added** into the firebox.

figure 15



opened flue gas deflector (17)

closed flue gas deflector (17)

5.2. AIR ADJUSTMENT AND REGULATION

CHIMNEY

If the chimney is equipped with a vent damper, it must be adjusted to keep the **chimney flue draught within the limitations**:

- for C-20 ⇒ 12 ± 2 Pa,
- for C-30 ⇒ 15 ± 2 Pa.

PRIMARY AIR

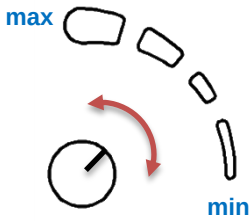


figure 16

Primary air is the air that flows directly through the firebox grate. There is an **automatic primary air regulator** (12) bellow the cleaning hatch lid (10). Its probe, which measures the temperature of the water in the boiler, is placed on the boiler frontal side under the lid which is housing the boiler thermometer.

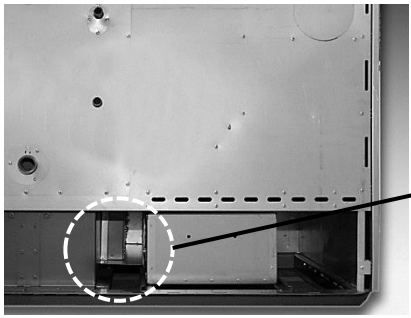
Turning the PVC wheel of the automatic regulator **regulates primary air flow**. Regulator is set in accordance with the desired boiler water temperature. The division ranges **from min** (minimum slit) **to max** (maximum slit):

- min ⇒ automatic regulator is closed and there is no primary air flow,
- max ⇒ primary air opening is completely open and the flow is at its maximum

There is a **rectangular connection point** for the **intake of external primary air** on the cooker rear side, onto which a rectangular pipe (30), dimensions **150x80 mm**, can be connected.

If necessary, the rectangular cross-section may be reduced and turned into a round opening (minimum diameter 100 mm). The connecting pipe or the reduction must be made out of non-flammable material (in accordance with DIN 4102-B1)

figure 17



primary air connection point (30) on the cooker rear end

SECONDARY AIR

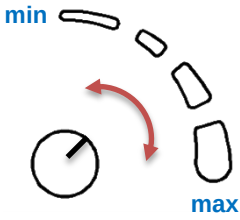


figure 18

Secondary air is the air that flows into the firebox to facilitate maximum combustion, reducing harmful substances to ashes and discharging flue gas with low capacity for pollution into the chimney.

Secondary air regulator (11) is placed on the cooker front side beneath the boiler thermometer (6).

Air flow is regulated identically as the primary air flow. **The regulator must be closed when initiating firing**. The regulator is to be open to the maximum 15 minutes upon commencement of firing.

5.3. FIREBOX GRATE

Cooker firing regimes differ during summer and winter (**winter and summer regime)** – *figure 5*. The regimes are determined by the position of the lower firebox grate.

In **C-30** cooker :

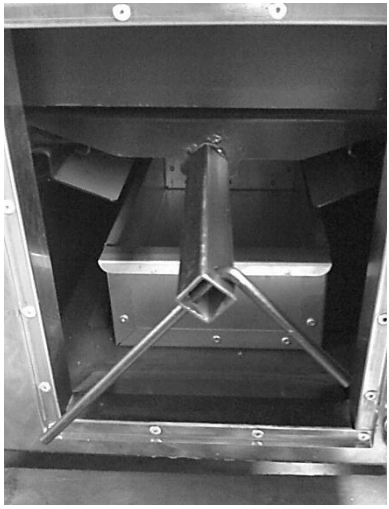
- summer regime – the grate is used in the upper firebox position,
- winter regime – the grate is manually placed into the lower firebox position.

In **C-20** cooker the grate is positioned via special mechanism :

- summer regime – the grate is elevated as necessary,
- winter regime – the grate is lowered.

Grate adjusting mechanism is placed in the lower door opening (5). Firing regime adjustment spanner (24) is used to elevate the grate. Once the grate has been placed in the desired position, the spanner must be removed from the mechanism; otherwise the lower door (5) cannot be closed.

figure 19



firing regime adjusting mechanism in C-20 cooker with regime adjustment spanner (24)

- **wide grate openings must be positioned facing upwards at all times to allow the ashes to fall down!**
- **grate lifting and lowering is executed ONLY when the cooker is cold!**

5.4. FIRING

5.4.1. PROCEDURE

Prior to every firing, follow the following procedure :

- if the chimney is equipped with a vent damper, open it completely,
- open the flue gas deflector (17) and set the automatic primary air regulator (12) to maximum,
- use the regulator (11) to close the secondary air flow,
- open the firebox door (8) (maximum door opening angle is 90°),
- put the kindle wood into the firebox and ignite it,
- close the firebox door (8),
- monitor flame progression through the firebox door,

- once the fire is in full flame, add wooden logs as necessary,
- use the regulator (11) to open the secondary air supply and close the flue gas deflector (17),
- regulate the fire intensity by regulating the volume of primary air via automatic regulator (12),
- **primary air MUST NEVER be supplied in any other manner when the automatic regulator (12) is used!**

WARNING! **Never use flammable liquids, such as petrol and similar to ignite the fire and always keep these and similar liquids away from your cooker.**

5.4.2. OPTIMUM USE VALUES

Primary air volume and chimney flue draught must be adjusted to levels that **prevent boiler water temperature from exceeding 85°C**.

Maximum quantity of fuel that can be accommodated in the firebox:

- 6 kg for C-20 cooker,
- 8 kg for C-30 cooker.

Adding fuel in regular intervals, in quantities of 2 to 4 kg, is recommended.

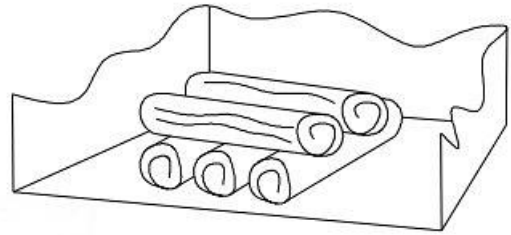
Cooker optimum values may be achieved only if the cooker nominal power was chosen in accordance with the rules of profession and object energetic efficiency.

5.4.3. ADDING FUEL

Apart from use of appropriate fuel and satisfactory chimney flue draught, the manner in which the cooker is fuelled **also influences the glass cleanness**.

We recommend only **one layer in each fuel refill** and, if possible, the **use of logs of length up to 2/3 of the firebox length**. There should be **a minimum distance of 1-2 cm between the logs.**

figure 20



Briquettes should be used in amount that only covers the firebox surface, also with a **minimum distance of 1-2 cm** between them.

WARNING! <u>New fuel quantities</u> should be <u>added</u> only on top of embers, i.e., not on the flames, but only <u>on top of embers (approx. 1 cm thick).</u>

Primary air automatic regulator (12) must be completely closed at least ten seconds before opening the firebox door (8) to prevent the breach of flue gases into the residential area.

The door must be opened slowly. After adding the fuel, close the door slowly. **Open the primary air automatic regulator (12) to decrease the time of fuel combustion**.

Once the fuel starts burning, adjust the primary air automatic regulator (12) to a desired position ⇒ in accordance with *chapter 5.2*.

Flue gas deflector (17) MUST BE opened <u>before opening the door</u> !

5.4.4. FEEDING IN TRANSITION PERIOD

During the transition period, i.e. **when outdoor temperatures are higher**, sudden increase in outdoor temperature can **cause chimney malfunction** (decreased chimney flue draught) resulting with not all flue gases being expelled into the atmosphere. It is therefore recommended to **use less fuel and smaller logs** during the transition period in order to achieve a more lively flame, as well as to **adjust the primary air volume** in order to improve the expulsion of flue gases from the chimney.

6. CLEANING

6.1. CLEANING THE COOKER

The cooker and the chimney must be regularly cleaned (at least once a month).

The ash box (14) and the box area must be cleaned on daily basis. Ash disposal is to be executed in environmentally acceptable manner and in accordance with safety procedures.

The glass (28) on the upper firebox door (8) should be cleaned as necessary using the soot and grease cleaning agent (26).

The agent is delivered with the cooker !v

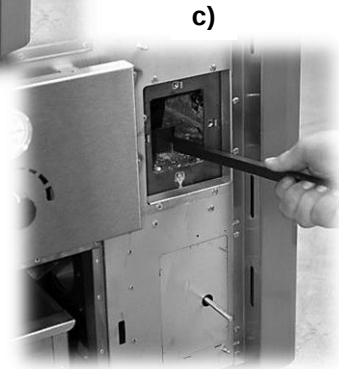
Cooker cleaning is to be performed only when the cooker is inactive and when it is cold !

6.2. CLEANING THE FLUE GAS CHANNEL

When cleaning the cooker's flue gas channel it is necessary to remove the **decorative plate** (31) ⇒ *figure 21a*. Following that, use the screwdriver to remove the protective lid (*figure 21b*). Clean and remove the soot and ashes from the cooker inside (*figure 21c*) using a scoop. After thorough cleaning, mount back the protective lid and cleaning hatch lid back into their positions.

a)

b)



c)

figure 21

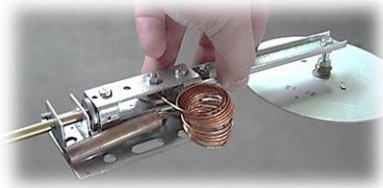
7. MAINTENANCE

Following years of use, the **chamotte insulation** (consumable material) suffers damage that must be repaired with chamotte putty or refractory concrete. After several first hours of feeding, smear the fireproof paint on the **upper plate** with a cloth imbued with edible oil.

Stainless material on the cookers is susceptible to slight colour change due to high temperatures. Stainless materials are to be maintained exclusively with stainless material maintenance agents in accordance with the manufacturer's instructions.

Handle securing bolt on upper and lower doors and **firebox door protective bolt** to be tightened if necessary.

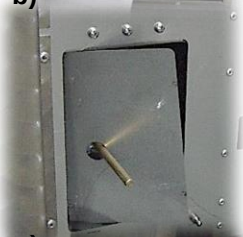
7.1. AUTOMATIC REGULATOR



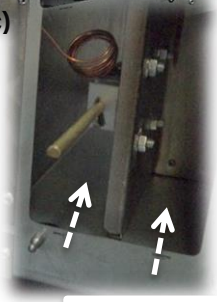
When replacing the automatic regulator, adhere to the following procedure:

a)

b)



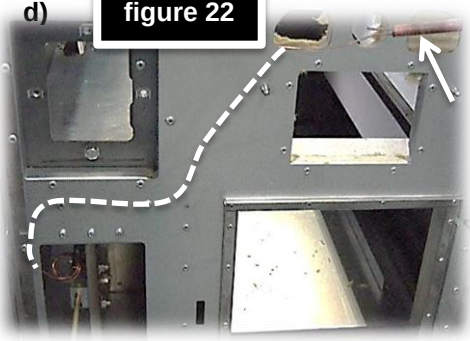
c)



- remove the secondary air regulator PVC wheel (11) by pulling it towards yourself,
- remove the lid beneath the upper door (8) by pulling towards yourself (*figure 22*),
- remove the automatic regulator PVC wheel (12) by pulling it towards yourself,
- remove the decorative plate (31) - *figure 21a*,
- press in the opening bellow the decorative plate next to the ash box (14) - *figure 22b*,
- use the screwdriver to remove the screws above the opening,
- use the wrench to remove the 4 M6 screws through the opening (*figure 22c*),
- pull the automatic regulator lid all the way back (*figure 22c* ⇒ broken pointers),
- after the automatic regulator has been released, it is necessary to pull the probe from the boiler,

figure 22

d)



- straighten the capillary that contains the probe and pull the capillary downwards through the opening above the automatic regulator on the inside of the cooker (*figure 22d*),
- **maximum allowed probe temperature is 90°C;** the warranty is void if the probe temperature exceeds the maximum value!

⇒ installation of a new regulator is executed by reversing the procedure, however, special attention must be placed on inserting the probe through the canal and into the boiler, **probe capillary must not have an angle equaling or exceeding 90° at any point, and all transitions must be executed in slight radius!**

7.2. FIRING REGIME SWITCH MECHANISM

Mechanism may become jammed during use due to solid ash debris, metal parts (i.e. nails), feeding with inappropriate fuels, exceeding the cooker nominal power. It is necessary to remove and clean the mechanism in those instances.

It is first necessary to check if only the grate is jammed. Remove the grate from the boiler and test the mechanism. If the mechanism cannot be launched at that point, it is necessary to remove and clean it.

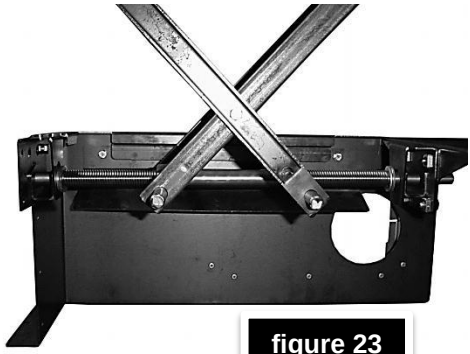


figure 23

Mechanism is removed by removing the protective sheet above the mechanism first and then by removing the 4 frontal screws, 4 rear-end screws and 2 screws on each, left and right sides, all using an OK10 wrench; and finally, by removing the entire mechanism (*figure 23*). The mechanism is cleaned from impurities and reassembled by reversing the procedure.

7.3. OLD COOKER DISPOSAL

Once the cooker is no longer fit for use it must be delivered to an authorized disposal service specialized in recycling this type of waste. **It is forbidden to dispose of the old cookers in the natural environment!**

7.4. SPARE PARTS

Only original spare parts by the manufacturer are to be used. Should non-original spare parts be used or should the repair be executed by an unauthorized individual, the warranty will be void.

8. MALFUNCTIONS / CAUSES / SOLUTIONS

PROBLEM	POSSIBLE CAUSE	SOLUTION
Firebox door glass is black and/or the firebox is smoky (black soot)	♦ insufficient flue draught (less than 10Pa) ♦ faulty regulation ♦ too much fuel in the firebox ♦ fuel too moist ♦ inadequate fuel ♦ excessive firebox temperature	⇨ check the connection of the cooker with the chimney and the chimney ⇨ study chapters 4.2 and 4.3. ⇨ study chapter 5.2. ⇨ reduce the fuel quantity ⇨ use fuel with less than 17% of relative moisture ⇨ use fuel as described in chapter 1.1. ⇨ reduce the fuel quantity and primary air volume and adjust chimney flue draught in accordance with chapter 5.2
There is noise from the boiler	♦ insufficient water level in the central heating system ♦ insufficient water pressure in the central heating system ♦ improper central heating installation ♦ during the summer period, the boiler is not connected to the water heating boiler ♦ the cooker is not placed in a horizontal position with the use of spirit level ♦ excessive velocity of water flow in the system	⇨ refill the central heating system with the necessary amount of water to achieve 2.5 bar pressure ⇨ increase water pressure to 2,5 bar ⇨ execute the central heating installation in accordance with professional standards and DIN 4751 norm - part 1 for open systems, i.e. 4751 – part 2 for closed systems ⇨ connect the boiler to water heater ⇨ mount the cooker as described in chapter 4.1. ⇨ reduce the water circulation velocity by adjusting the number of pump rotations
Insufficient flue draught in the chimney; black smoke expelled from the chimney	♦ chimney filled with soot ♦ cooker filled with soot ♦ chimney partially clogged or filled with soot ♦ fuel not sufficiently dry ♦ firebox cast grate turned in the wrong direction	⇨ clean the chimney ⇨ clean the cooker ⇨ unclog and clean the chimney ⇨ use fuel in accordance with chapter 1.1. ⇨ set the grate in accordance with chapter 5.3. ⇨ close the door ⇨ adjust the flue draught in

	♦ upper or lower door opened ♦ inadequate flue draught ♦ faulty regulation	accordance with chapter 4.2. ⇨ adjust the primary and secondary air in accordance with chapter 5.3.
Smoke coming out of the cooker	♦ cooker filled with soot ♦ chimney filled with soot ♦ fuel too moist ♦ low calorie fuel ♦ levels of fresh air in the room too low ♦ return water temperature too low ♦ firebox temperature too low ♦ chimney lower than 4.5 m ♦ chimney diameter smaller than the one prescribed	⇨ clean the cooker as described in chapter 6.1. ⇨ clean the chimney as described in chapter 6.2. ⇨ use fuel as described in chapter 1.1. ⇨ study chapter 4.4. ⇨ set the thermostat to activate the pump at temperatures over 60°C ⇨ increase the firebox temperature by increasing fuel quantity ⇨ adjust the chimney in accordance with chapters 4.2. and 4.3.
Water leaking from the boiler (boiler condensation)	♦ excessive water flow ♦ fuel too moist ♦ boiler damaged ♦ insufficient fuel quantity ♦ insufficient primary air volume	⇨ reduce the water flow ⇨ use fuel as described in chapter 1.1. ⇨ call an authorized maintenance technician ⇨ add more fuel to the firebox ⇨ increase primary air volume in accordance with chapter 5.2., check the functionality of the primary air automatic regulator
Cooking temperature too low	♦ insufficient or excessive chimney flue draught ♦ excessive primary air volume ♦ inadequate fuel ♦ too much fuel – combustion difficult ♦ flue gas deflector opened ♦ grate too low during summer period	⇨ adjust the chimney flue draught in accordance with chapter 4.2. ⇨ reduce primary air volume ⇨ use fuel as described in chapter 1.1. ⇨ add less fuel to the firebox ⇨ close the flue gas deflector ⇨ set the grate into the upper position (for C-30), i.e. set the height as desired (for C-20)
Cooking temperature too high	♦ excessive chimney flue draught ♦ inadequate fuel ♦ flue gas deflector closed ♦ grate too high during summer period	⇨ reduce the chimney flue draught in accordance with chapter 4.2. ⇨ use fuel as described in chapter 1.1. ⇨ open the flue gas deflector ⇨ lower the grate

Outlet boiler water does not reach the required temperature	♦ central heating system improperly dimensioned ♦ insufficient fuel quantity ♦ central heating system thermometer does not display the temperature properly	⇨ dimension the central heating system according to professional standards and DIN 4751 norm – part 1 for open systems, i.e. DIN 4751 – part 2 for closed systems ⇨ adjust the water flow in accordance with the boiler thermal possibilities ⇨ add more fuel to the firebox in accordance with chapter 5.4.2. ⇨ install functional and approved (moderate) thermometer
Raising or lowering the grate somewhat difficult	♦ non-combustible material debris between the grate and the boiler (nails and similar) ♦ malformed boiler	⇨ thoroughly clean the non-combustible material debris ⇨ call an authorized maintenance technician

9. TECHNICAL SUPPORT

Dear client,

If you were unable to find the solution to the malfunctions, that potentially developed while using your product, in the table above, please feel free to contact our complaint and support service :

- Tel: +385 (0)40 337 344
- Fax: +385 (0)40 337 906
- E-Mail: info@senko.hr

WE'D LIKE TO TAKE THIS OPPORTUNITY TO REMIND YOU WHAT YOU NEED TO POSSES WHEN CONTACTING OUR COMPLAINT AND SUPPORT SERVICE :

Before you contact us, prepare the following documents :

- **purchase receipt with the date of purchase**,
- **warranty** (at the back of this *Manual*),
- **written installation report** (at the back of this *Manual*),
- **Instruction manual**.

The documents listed above are necessary to ensure the quickest and clearest removal of the occurring malfunction!

10. TECHNICAL DATA

SENKO cooker		C-20	C-30
Nominal heat output, kW		25	35
Boiler, kW		20	23
Room, kW		5	12
Amount of water in boiler, L		20	28
Operating pressure (max), bar		3	
Operating temperature, °C		85	
Width, mm		600	
Depth, mm		640	780
Height, mm		850	
Weight, kg		154	180
Firebox opening (W × H), mm		200×260	
Firebox (W × D), mm		275×430	275×570
Firebox volume, dm^3		62,08	82,29
Fuel consumption, kg/h		7	9,5
Height of grate lifting, mm		175	165
Cooking plate (W × D), mm		475×445	475×585
Cooking plate area, m^2		0,211	0,277
Ash box, L		7,5	10,5
Flue gases exhaust, mm		∅ 130	
Flue gas temperature, °C		350	370
Required flue draught, Pa		12	16
CO in flue gases at 13% O_2, %		0,35	0,57
Flue gas mass flow rate, g/s		17	24,6
Efficiency, %		75	74
Regulation	Primary air	auto	
	Secondary air	manual	
Certified in accordance with EN norm		EN 12815	

- technical specification apply to wood and wooden briquettes used as fuel
- technical specifications are indicative and may vary as such. The manufacturer withholds the right to change any technical specification to further improve the products

11. TERMS OF WARRANTY

These warranty conditions are valid in all European countries, in which SENKO products are sold. The client addresses the manufacturer/dealer or the nearest authorized servicing agent for all complaints; providing the purchase receipt with the date of purchase, warranty and installation report in the process.

DURATION OF THE WARRANTY
Manufacturer SENKO d.o.o. provides a **2-year** warranty for its product, starting from the date of embedded boiler purchase. All other parts (thermometer, automatic regulator with the probe, regulation buttons, oven door hinges, fuel box guide bars) have a **6-months** warranty.
The manufacturer guarantees that the product was manufactured and certified according to the EN 12815 norm and that it complies with all the demands set by the norm. The user is obligated to adhere to the Instruction manual.

EXCEPTIONS
Exceptions are parts subject to wear such as chamotte and chamotte plates, cast grate, seals and glass panes.
Chamotte plates (changes in colour or cracks are dependent on the material and can never be completely ruled out). However, they do not impair the functioning of the appliance as long as the plates remain in the firebox.
Glass panes (breakage of glass because of external hazard, changes on the surface due to thermal influences such as fly-ash or soot at the surface of the glass).
Discolouring of paint due to overload of thermal strain.
Seals (e.g. hardening or breakage due to thermal or mechanical strain).
Surface coatings (frequent cleaning or cleaning with abrasive cleaning agents).
Castings and parts which are subject to high thermal stress such as firebox grate and cooking plate.

REPAIRS
Possible repairs within the warranty will be executed within 30 days from the date of product delivery to the manufacturer. Should the repairs not be executed within 30 days from the delivery to the manufacturer, the product will be replaced with a new one. The manufacturer will notify the client about the executed repairs. The client is obligated to take over the product within 5 days from the repair completion.

COSTS
The manufacturer does not defray any delivery and return costs.
Prior to commencement of repairs within the warranty (for damages caused by incorrect use, cooker transport and mounting), the manufacturer will notify the client about the repair price in written form. Once the client agrees, the manufacturer will execute the repairs and charge the client for the repairs.

SPARE PARTS
Original parts replaced within the warranty do not have to match the removed parts in external physical appearance, but they must match them in quality and functionality.

DISCLAIMER OF LIABILITY
Manufacturer cannot accept any liability for the loss or the damage of an appliance through theft, fire, vandalism or similar causes. Indirect or direct damage caused to the product, which is the result of improper transportation of the product, are excluded from the liability. We cannot accept any liability for damages caused by chemical or electrochemical effects (e.g. pollutants in the combustion air, water scale and similar) which are the result of improper installation of the product and violation of this Instruction manual.

The warranty is void if the user made alterations to the product without manufacturer's prior knowledge.
The warranty is valid if the installation was executed by an authorized professional and upon presenting the written installation report.

Possible disputes to be settled by the Court in Čakovec.

WARRANTY No. ☐

SOLID FUEL CENTRAL HEATING COOKER WITHOUT OVEN :

☐ **C-20/E2320L** ☐ **C-20/E2320D** ☐ **C-30/E2330L** ☐ **C-30/E2330D**

SERIAL NUMBER: _____

DATE OF MANUFACTURE: _____

STORE NAME
AND ADDRESS: _____

CLIENT NAME
AND ADDRESS: _____

DATE OF PURCHASE : _____

STORE STAMP AND
DEALER SIGNATURE: _____

Complaints within warranty – product information

Faulty product date of receipt : _____	Faulty product date of receipt : _____
Malfunction description (client) : _____ _____ _____	Malfunction description (client) : _____ _____ _____
Servicing agency comments : _____ _____	Servicing agency comments : _____ _____
Servicing completed on date : _____	Servicing completed on date : _____
Stamp and servicing technician signature : _____	Stamp and servicing technician signature : _____

COMPLETED BY THE CHIMNEY-SWEEPER

Chimney connection executed by the company :

Company/Business: _____ Person in charge: _____
stamp and signature

Street: _____ City: _____

Telephone: _____ Country: _____

Date: _____ Client signature: _____

Chimney
Type: ……
Dimensions (mm): ……
Height (m): ……..
Draught (Pa): ……
Flue gases exit temperature (°C): ……
Last inspection date: ……
Number of connections: ……..

Smoke venting pipe (if connected)
Cross-section (mm): ……
Length (m): ……
Number of elbows: ……....

COMPLETED BY THE CENTRAL HEATING INSTALLATION CONTRACTOR

Central heating system connection executed by the company :

Company/Business: _____ Person in charge: _____
stamp and signature

Street: _____ City: _____

Telephone: _____ Country: _____

Date: _____ Client signature: _____

Open system ☐ yes ☐ no
Closed system ☐ yes ☐ no
Connection execute in accordance with DIN 4751 ☐ yes ☐ no
Heated space volume (m^3): ……
Expansion tank volume (m^3): ……
Pump type: …….. Water flow (m^3/h): ……
Safety valve type: …….. Safety valve approved at …….bar
Water temperature (°C) ⇒ inlet: ……. ⇒ outlet: .....

CE

Senko d.o.o.
Vladimira Nazora 22, Štefanec
40 000 Čakovec, Republic of Croatia
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EN 12815:2001 / A1:2004 / AC:2007

Solid fuel central heating cookers without oven

	C-20	C-30
Minimum distance from flammable surfaces :	front 80 cm rear 20 cm sidebar 20 cm	
CO emission in flue gases (at 13% O_2) :	0,35 %	0,57 %
Maximum operational water pressure :	3 bar	
Flue gases temperature :	350 °C	370 °C
Heat output – water :	20 kW	23 kW
Heat output – space :	5 kW	12 kW
Efficiency :	75 %	74 %
Fuel type :	wood, wood briquettes	
Fuel consumption :	7 kg/h	9,5 kg/h
Certificate No:	E-30-00433-12	

Read and follow the Instruction manual. Use only recommended fuel.
Manufactured in the Republic of Croatia

DECLARATION OF CONFORMITY

This product is certified in accordance with the EN 12815. Test report number 30-11665/2 from June 29th, 2012.

The original product Certificate and Declaration of Conformity available upon request.

NOTES :

SENKO
cookers and fireplaces

Vladimira Nazora 22 • Štefanec

40000 ČAKOVEC - Croatia

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E-Mail: info@senko.hr

… THE SPIRIT OF TRADITION

IN MODERN FORMS FOR

A HEALTHY ENVIRONMENT.

You can find this Manual at http://en.senko.hr/

If you have any suggestions on how to improve this Manual or you have noticed any deficiency, feel free to contact us on tehnologija@senko.hr