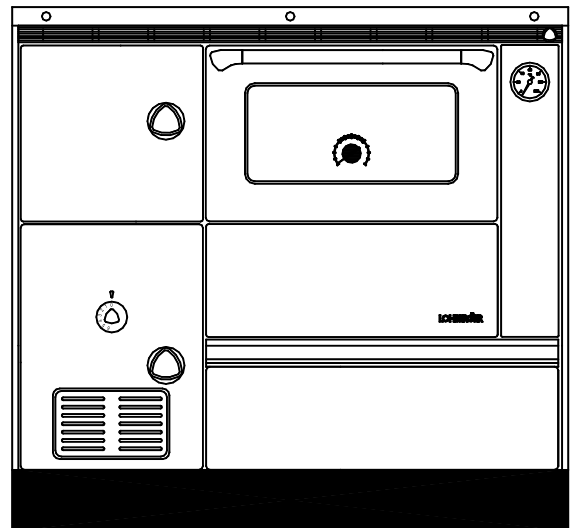


# LOHBERGER®

## Installation and Operating Instructions Central Heating Stoves

Some installation advice given in this instruction manual would, if followed, result in an installation that may not meet UK building regulations. A supplementary instruction manual is provided to give correct advice for installations and use within the UK.

ZEH 55.4  
ZEH 90.4  
ZEH 110.4



# General Information

## Customer Service or Spare Parts Requirements

### Austria (Head Office)

Lohberger Heiz u. Kochgeräte Technologie GmbH  
Landstrasse 19  
A-5231 Schalchen

Telephone: +43 (0) 7742/ 5211-199  
Telefax: +43 (0) 7742/ 58765-199  
E-mail: service@lohberger.com

Our office hours are:

Monday to Thursday: from 07.30 a.m. until 12.00 noon / from 1.00 p.m. until 5.00 p.m.  
Friday: from 0730 a.m. until 1200 noon

Outside of office hours, please let us know your needs by fax or e-mail.

### Please note:

So that our Customer Service can prepare repairs and spare parts deliveries thoroughly, we require the following information when you request services from us:

1. Your exact address
2. Your telephone and fax number (if available)
3. The exact appliance designation
4. When can our Customer Service call on you?
5. The purchase date
6. An exact description of the problem or the type of service you are requesting

Please have your bill ready at hand

In this way you help us to save time and money and also to serve you more efficiently.

### A Tip:

Before setting up and connecting your appliance, write the information on the type plate in the following table!

Stove type:	.....
Factory number:	.....
Nominal heat output in kW with wood/ coal:	.....
Radiant heat output in kW with wood/ coal:	.....
Required feed pressure in mbar:	.....
Flue connection: (left/ right top-back-side)	.....
Colour:	.....

### Important:

Please read the information in this manual carefully before you start up your stove for the first time. You will find important information for your safety, for the use, care and maintenance of the appliance, so that you can enjoy your appliance for a long time.

Should a malfunction occur at some time, please read our Chapter "Malfunction-Causes-Solutions" first. Smaller malfunctions can often be resolved on your own, thereby saving needless service costs.

Keep these instructions in a safe place. Should they be lost, we will be happy to send you a new copy. Your locally responsible chimney sweep master should be informed before connecting the stove to the chimney.

There is no claim to completeness of the data. We assume no liability. Subject to technical alterations, setting and printing errors!

# The LOHBERGER Warranty

These warranty conditions are valid in all European countries, in which LOHBERGER stoves are sold. Warranty claims are generally to be directed to your local LOHBERGER dealer, or the dealer from whom you bought the appliance, respectively.

## DURATION OF THE WARRANTY

In principle, LOHBERGER grants a 3-year full warranty on verifiable material or factory defects on every appliance. Warranty expires in any case after five years following the manufacture of the appliance. Certain restrictions apply to some models and parts: for appliances with central heating insert the warranty depends either on the expert installation of a return elevation or the installation of a valve cabinet (AME.4).

## EXCEPTIONS

Exceptions are only parts subject to wear such as fireclay, which is normal for an appliance used for heating.

**Possibly occurring** changes in colour or expansion cracks in the fireclay 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 fireclay remains in the firebox.

**Glass panes** (breakage of glass because of external hazard, changes on the surface due to thermal influences such as sintered fly-ash or soot at the surface of the viewing window)

**Discolouring** of paint due to overload or 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** which are subject to high thermal stress such as the JETFIRE flame bundling plate and grate.

## START OF WARRANTY

The start of warranty is the time the appliance is handed over. Please keep this user manual as well as the warranty card with the invoice in a safe place at all times. A prerequisite of our warranty obligation is that the appliance has been installed and connected according to our instructions and the applicable EN/DIN /Austrian standards and has been operated and expertly maintained according to our instructions.

## REPAIRS

We will carefully check your appliance and establish whether the warranty claim is justified. If yes, we will decide in which way the defect should be repaired. In the event of a repair we ensure expert performance on location or in our works. This does not affect the start of warranty determined by the handover; if it is necessary to replace the appliance, the warranty period starts anew. If you send in your appliance for repair please enclose your warranty certificate and proof of purchase.

## COSTS

Für die Dauer der Garantie übernimmt Lohberger sämtliche Kosten. Wenn wir entscheiden, dass die Reparatur Ihres Gerätes zweckmäßigerweise in unserem Werk stattfinden soll, dann gehen die Transportkosten sowie die Verantwortung für den Transport zu Ihren Lasten.

## LIABILITY EXCLUSION

We cannot accept any liability for the loss or the damage of an appliance through theft, fire, vandalism or similar causes. Indirect or direct damages caused by a supplied appliance or resulting upon the delivery of an appliance are excluded from the liability unless the delivery was performed by LOHBERGER or by a transport company commissioned by LOHBERGER. We cannot accept any liability for damages caused by chemical or electrochemical effects (e.g. pollutants in the combustion air, condition of heating water not VDI-compliant – e.g.: "lime deposit", etc.) or as a result of installation not corresponding to the rules of engineering or the LOHBERGER documentation. We will accept liability for visible paint and enamel damages due to manufacturing defects only if such defects are brought to our attention in writing within 14 days following the handover of the appliance.

**Changes to or intervention in the appliance through persons not authorized by us to do so will invalidate our warranty obligation. Setting up and conversion work are subject to billing.**

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# Foreword

You have selected a product made by LOHBERGER and therefore Austrian quality. We congratulate you on your choice.

LOHBERGER in Schalchen, Austria, has been making a wide variety of appliances for more than 70 years.

These appliances are manufactured in traditional high quality, in a timeless, appealing style and colouration, with economical and environment-friendly heating technology, and a high measure of operating comfort.

## Important Notes

Please note that every appliance can only function properly if it is handled correctly and cared for. Following a few important rules is prerequisite to a superior reliability, cost-effectiveness, low-polluting combustion and long life. These are:

- A professional, proper installation
- Appropriate handling, abiding by the instructions in the Instructions Manual
- Use of the correct fuels of a sufficient quality and dryness.
- Regular maintenance and care
- Running the central heating stove only with a load balance reservoir (min. 500 litres)
- Operating the central heating stoves with a return by-pass temperature valve (thermal valve, motor-controlled mixing valve, 4-way mixing valve). Damage ascribable to the lack of a return by-pass temperature valve are excluded from the warranty! Examples of this can be found at the end of these directions.

## Safety Instructions

### During Assembly and Operation

---

- When assembling the stove, work with the operating instructions and observe the individual points.
- Take the safety clearances into account when assembling the stove.
- Check the tightness of the stove pipe connection.
- Inspect the stove for damage (safety glass).
- Take care that never more wood is laid on than is required for the nominal heat output (ca. 1-1.2 kg)
- When stoking the fire, open the door slowly, let the exhaust gases be drawn off first. That way you can avoid the exhaust gases escaping into the room. Always use insulated gloves to prevent burn injuries.
- Please remember that some components of the stove (flue pipe, working door, etc.) get hot during heating and represent a danger of burns. Be especially vigilant that small children are never in any danger!
- Don't seal off the stove during heating, there is danger of deflagration.

## Cooking Surface

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- Overheated greases and oils can be self-igniting, prepare all dishes requiring greases and oils, for example, chips, only under constant supervision. Never try to put out grease or oil fires with water! Cover the pot with a lid and pull it from the hot burner.
- Don't place any aluminium foil or plastics on the cooking surface.
- Don't put any combustible or flammable objects on the cooking surface that can pose a danger when the appliance is put into operation.

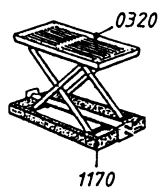
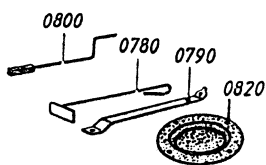
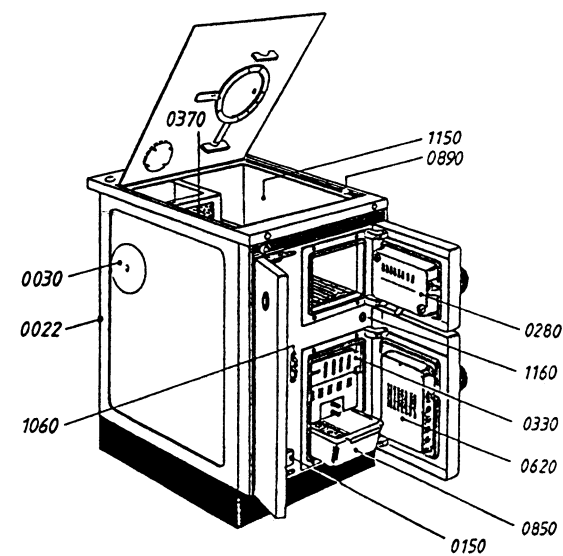
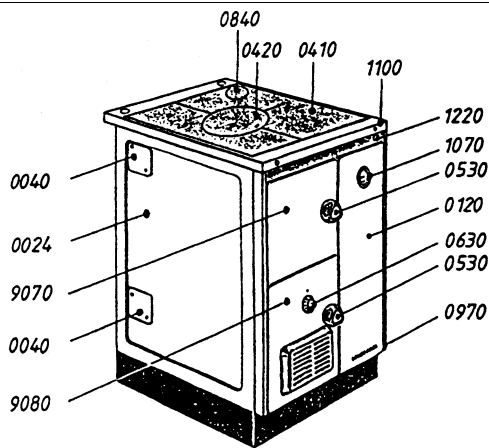
## Oven

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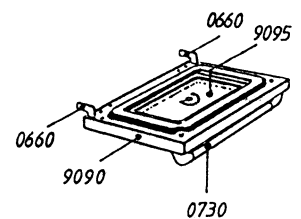
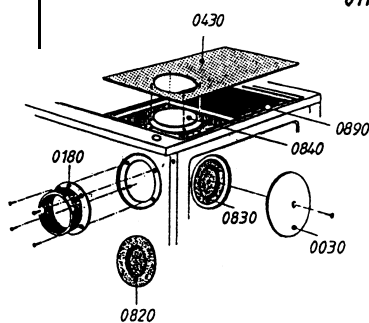
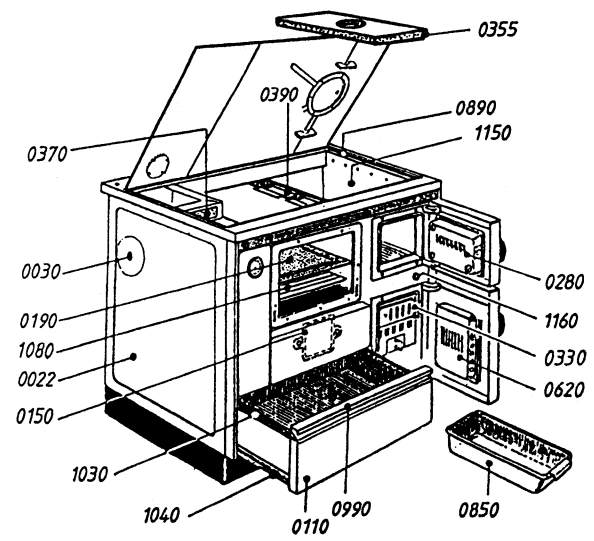
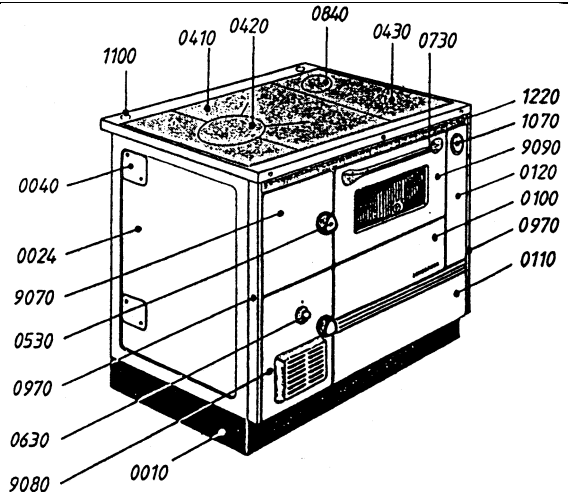
- There is danger of burn injuries when working with the hot oven! Use potholders, insulated mitts or similar.
- Don't store any objects in the oven that can pose a danger when the appliance is put into operation.
- Use caution when opening the oven door. Do not bend over the open oven door immediately. When opening the oven door, a surge of hot air or steam escapes from the opening.
- Always make sure the oven door is completely closed when using it to prepare food.

# Appliance Description

## ZEH 55



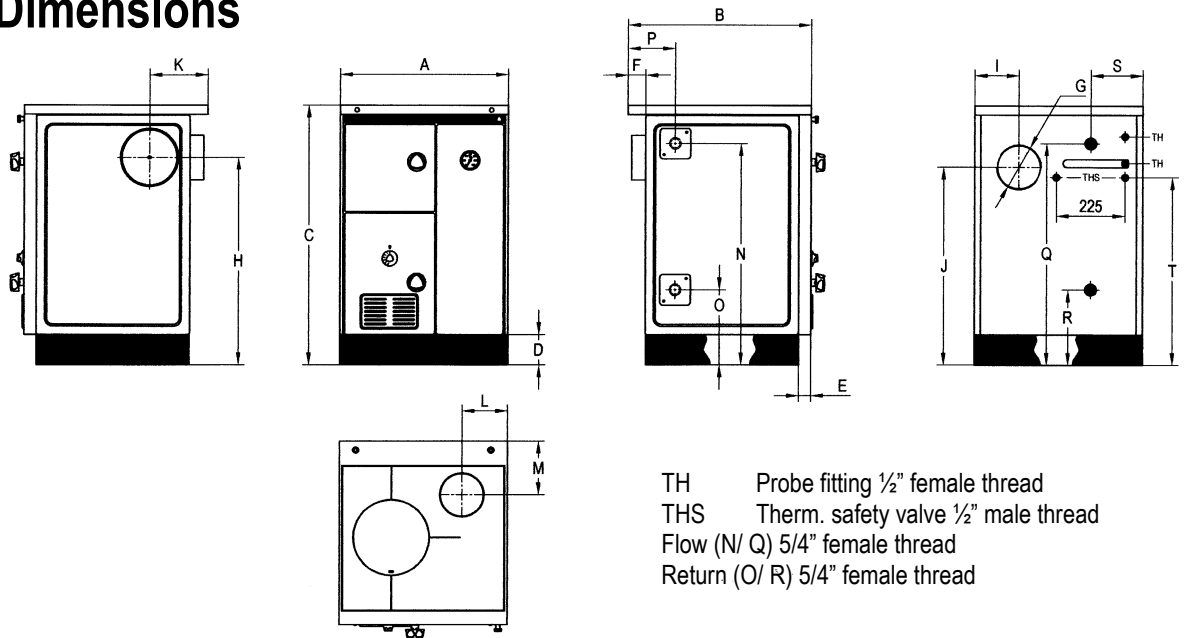
## ZEH 90/ 110



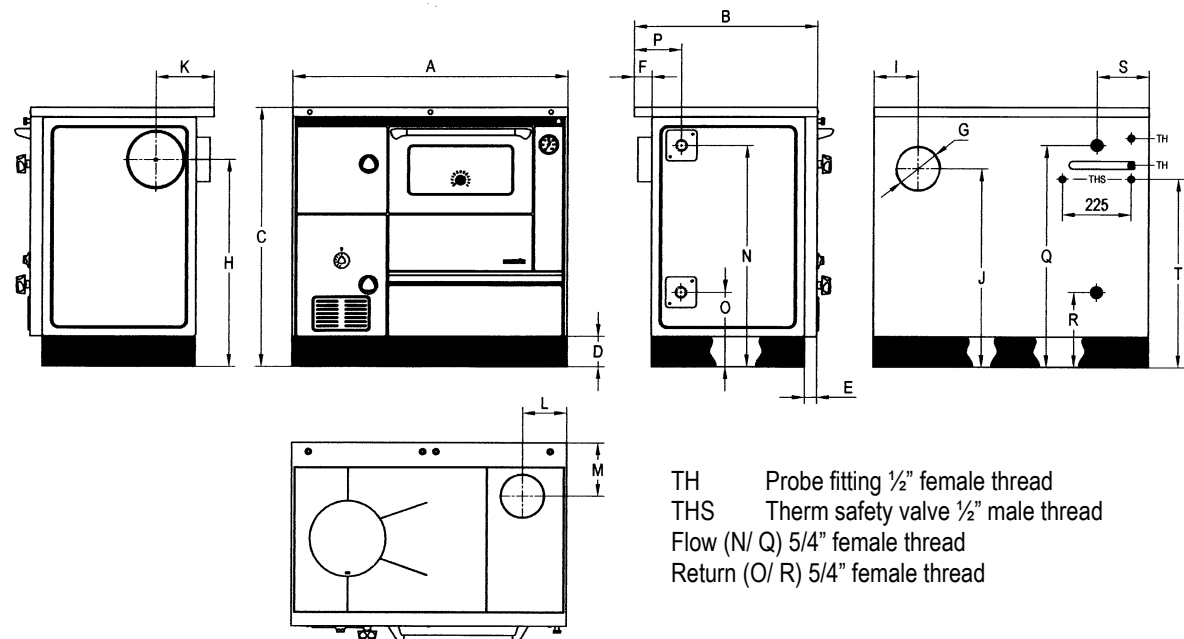
- |  |                                    |                                   |
|--|------------------------------------|-----------------------------------|
| 0010 Base                                    | 0410 Steel cooking plate           | 0970 Stove edging strip           |
| 0022 Side panel (with flue con.)             | 0420 Burner cover                  | 0980 Decorative trim              |
| 0024 Side panel (with flow/return)           | 0430 Water insert cover plate      | 1030 Wood storage drawer          |
| 0030 Cover (enamelled)                       | 0530 Knob                          | 1040 Drawer rail                  |
| 0040 Cover flow/return                       | 0590 Secondary air lever           | 1060 Ball latch                   |
| 0100 Cleaning access panel                   | 0610 Control                       | 1070 Thermometer                  |
| 0110 Wood drawer panel                       | 0620 Control switch housing        | 1080 Oven grid shelf              |
| 0120 Side panel                              | 0630 Knob for primary air control  | 1100 Stove frame compl.           |
| 0130 Oven                                    | 0660 Oven hinge                    | 1150 Heating element, compl.      |
| 0150 Cleaning access cover                   | 0730 Oven door handle              | 1160 Air bleed cock               |
| 0180 Flue connection piece                   | 0780 Ash scraper                   | 1170 Adjustable grate, compl.     |
| 0190 Oven plain shelf                        | 0790 All-purpose wrench            | 1220 Damper control knob          |
| 0280 Firebox door protection                 | 0800 Grate crank                   | 9070 Firebox door compl.          |
| 0320 Grate                                   | 0820 Cover with centre hole        | 9080 Ash door complete            |
| 0330 Front grate                             | 0830 Cover w/o centre hole         | 9090 Oven door compl.             |
| 0355 Flame bundling plate                    | 0840 Cover for steel cooking plate | 9095 Oven viewing glass, complete |
| 0370 Damper                                  | 0850 Ash pan                       |                                   |
| 0390 Heating gas baffles, heating gas plates | 0890 Burner rope seals             |                                   |

# Appliance Dimensions

ZEH 55



ZEH 90/ 110



(all measurements in mm)

		ZEH 55	ZEH 90	ZEH 110
<b>Width</b>	Code: A	550	900	1100
<b>Depth</b>	B	600	600	600
<b>Height</b>	C	850	850	850
<b>Base height</b>	D	100	100	100
<b>Base recess</b>	E	40	40	40
<b>Stove frame overhang</b>	F	60	60	60
<b>Flue connection diameter</b>	G	145	145	160
<b>Flue connection rear</b>	Height	H	650	680
	Clearance to side	I	145	120
<b>Flue connection side</b>	Height	J	650	680
	Clearance to wall	K	205	190
<b>Flue connection top</b>	Clearance to side	L	145	165
	Clearance to wall	M	175	175
<b>Heating connection side</b>	Height Flow	N	727	727
	Height Return	O	247	247
	Clearance to wall	P	155	155
<b>Heating connection rear</b>	Height Flow	Q	727	727
	Height Return	R	247	247
	Clearance to side	S	170	170
<b>Connections Therm. Safety valve</b>	Height	T	617	617

# Technical Data

			ZEH 55.4	ZEH 90.4	ZEH 110.4
<b>Working door opening</b>	Width x height	mm	209 x 154	209 x 154	209 x 154
	Width x depth	mm	235 x 403	235 x 403	235 x 403
<b>Charge cavity</b>	Height (grate top / bottom)	mm	270 / 420	270 / 420	270 / 420
	width x height x depth	mm	-	400 x 220 x 435	400 x 220 x 435
<b>Steel cooking plate</b>	width x depth (Part 1)	mm	536 x 473	627 x 473	772 x 473
	width x depth (Part 2)	mm	-	256 x 473	311 x 473
	cooking surface	m <sup>2</sup>	0,25	0,42	0,51
<b>Heating boiler</b>	water capacity	litres	22	18	24
<b>Ash pan</b>	capacity	litres	5	5	5
<b>Fuel storage drawer</b>	capacity	litres	-	32	47
<b>Oven plain shelf</b>	Width x depth	mm	-	399 x 420	399 x 420
<b>Oven grid shelf</b>	Width x depth	mm	-	399 x 399	399 x 399
<b>Weight</b>	Stove without crate	kg	209	246	301
	Stove with crate	kg	218	258	316

## Output Specifications

Data for chimney calculation according to DIN 4705)

<b>Nominal heat output total</b>	Wood	kW	19	20	21
<b>Nominal heat output</b>	Room	kW	4	5,9	5,5
	Boiler	kW	15	13,8	15,5
<b>Flue gas temperature</b>	Wood	°C	290	246	246
<b>Flue gas mass flow rate</b>	Wood	g/s	15,7	15,7	15,7
<b>Required feed pressure</b>	at nominal heat output	mbar	0,18	0,20	0,20
<b>Operating pressure</b>	Max	bar	3	3	3
<b>Operating temperature</b>	Max	°C	95	95	95

## General Instructions

Please note that every appliance can only function properly if it is handled correctly and cared for. Following a few important rules is prerequisite to a superior reliability, cost-effectiveness, low-polluting combustion and long life. These are as follows:

- The stove must be assembled and connected by a qualified heating specialist and meet the requirements of the valid regulations and provisions applying to the respective installation site. Following the instructions in the Installation and Operating Instructions and having the locally responsible chimney sweep on hand to evaluate the construction or technical conditions.
- When operating the appliance and during heating operation, the directions in the Instructions Manual must be followed closely and correctly. Especially the instructions regarding safety and environmental protection are to be carefully observed.
- Preferred fuel types are ecological, high-quality and dry. See "Fuels" on page 14.
- Every stove requires a certain basic care at regular intervals. Should this not be observed, the likelihood of malfunctions, breakdowns and damage increases automatically and results in annoyance and expense. Parts subject to wear (e.g. seals) or high thermal stress (brick clay, cast parts), or broken stove parts are to be renewed or replaced, respectively, as soon as possible.
- Heat at low output temperatures in the first 2-3 days. That way the brick lining of the stove will dry out gradually and last longer! If the heating operation is run at a high output during the first few days, it

is possible that the brick clay lining will crack. This, however, doesn't impair the functioning of the stove.

- Open the damper only for the heating-up phase. Keep the firebox and ash pan doors closed tightly at all times. Avoid overheating the stove, (e.g.: red-hot, glowing steel cooking plate). Damages caused in this manner are not covered by the warranty!
- **Always ensure that there is an adequate supply of fresh air in the room in which the stove is located!**  
An air exchange of at least 0.8 times per hour by means of a permanent and secure ventilation of the room must be ensured.

In the case of tightly closing windows and doors or when other appliances that extract air, such as an exhaust hood, a clothes dryer, a ventilator, or similar, are in the same room in which the stove is located, then it might be necessary to supply combustion air from outside.

If in doubt, consult your chimney sweep!

# Assembly and Connection

It must be ensured that there is enough clearance between all parts of the stove and combustible objects (wood panelling, furniture, curtains, and similar). If there is a wood or synthetic floor, or wall-to-wall carpeting, then a fireproof floor shield made of steel, copper or another non-combustible material must be used.

In case of an instalment attached or adjacent to combustible materials or in a kitchen unit, then a fire barrier with min. 50mm (Lohberger BSE 50mm) must be provided.

Also when installing the flue pipe, the minimum clearances to combustible materials required by fire police must be observed.

Ensure a level and vibration-free positioning of the stove.

Choose the best flue connection on the stove (rear, side or top) and seal off the unused flue connections tightly.

## Flue Connection

A trouble-free and economical functioning is ensured when all factors for a thorough combustion are on hand:

### a) The Chimney

The design and condition of the chimney must conform to the regulations valid for the installation location and are to be inspected for defects and flaws before the stove is connected.

The effective chimney height from the cooking plate to the chimney outlet must be at least 5 m. If the height is less, the stove must be connected by a vertical flue pipe that is at least 1 m long. A connection to a chimney with an effective height of less than 4 m is not advisable. The chimney should have a unvarying square or round inner diameter and be insulated against cooling.

Chimneys made of pre-fabricated assembly units should be preferred.

The assessment of the chimney is to ensue according to DIN 4705 Parts 1 and 2, and Part 3 if it used by more than one device.

It is absolutely necessary to consult your locally responsible chimney sweep regarding questions of this nature.

### b) Connection Stove - Chimney

The flue pipe is the connection between stove and chimney. When it is being installed, the following should also be observed:

The diameter of the flue pipe may not decrease toward the chimney side, the pipe may not project into the chimney.

Vertically positioned pipes may not be longer than 125 cm if they are not insulated.

Horizontal flue pipe lengths may not be longer than 100 cm without a vertically connected pipe before it. The flue pipe may not descend toward the chimney, but must incline slightly upward toward the chimney.

The entire connection between the stove and the chimney must be stable and close fitting. The bond with the masonry of the chimney must be especially durable and tight.

### c) The required feed pressure ("chimney draw")

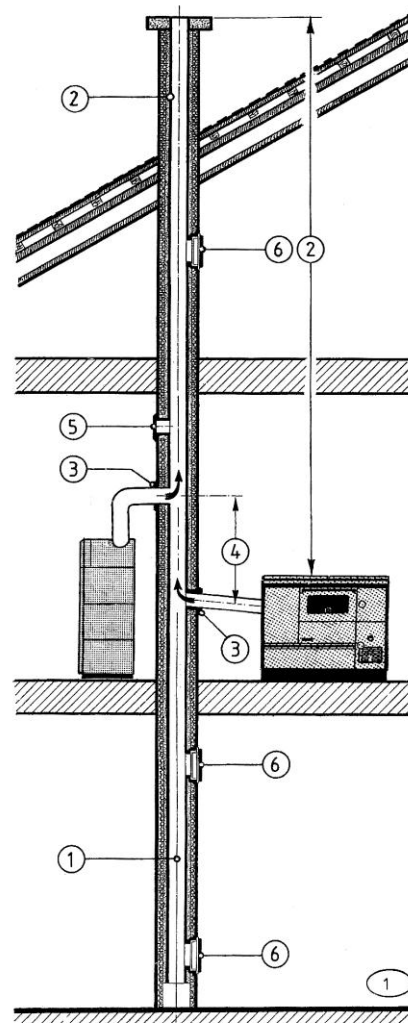
The feed pressure required for your stove is listed in the table „Technical Data“ on page 7 and can be found on the type plate of the stove.

Too low a feed pressure would lead to an incomplete combustion and increased soot and tar formation in the stove and chimney.

Too high a feed pressure would accelerate the combustion, cause high flue gas temperatures (damaging the appliance) and greatly increase the fuel consumption.

## Schematic View Flue Connection

1. Proper condition of the chimney: Through good thermal insulation, smooth interior surface, tightness.
2. Correct dimensioning of the chimney: Cross-section and effective height must be calculated according to the intended fuels and heat stress.
3. Proper connection of the flue pipe: Tight fit, no cross-section contraction, slight upward inclination toward the chimney, no projection into the chimney.
4. When the chimney is used by more than one appliance: Observe the minimum distance of 60 cm.
5. Unused connection openings are to be sealed off with sealing covers.
6. Sweeping and cleaning accesses, mainly located in cellars or garret storeys, are to be kept closed at all times. Check the seals from time to time, renew when necessary!



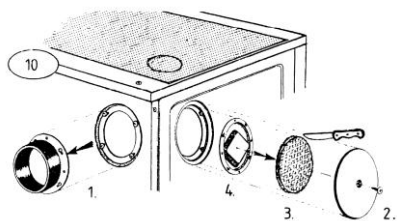


## Flue Connection Conversion

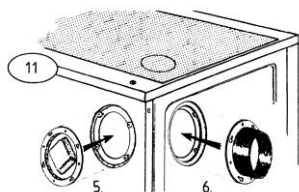
The series stoves are delivered with a screwed-on flue connecting piece in the back panel and can be directly connected to the chimney through an appropriate connecting pipe.

### Changing the flue connection to the side

1. Remove flue connecting piece from the rear panel
2. Screw off outer cover from the side panel
3. Cut out insulation material
4. Screw off inner cover

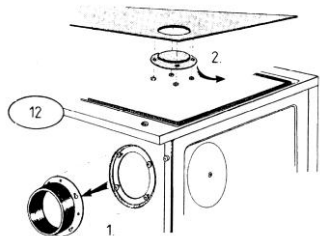


5. Screw the included cover (without centre hole) onto the rear panel
6. Screw the flue connecting piece onto the side

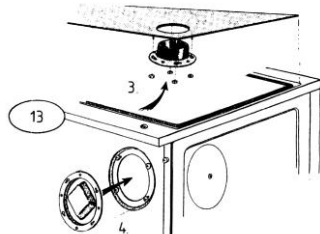


### Changing the flue connection to the top

1. Remove flue connecting piece from the rear panel
2. Screw off the cover on the cooking plate



3. Screw the flue connecting piece onto the cooking plate
4. Screw included cover (without centre hole) onto the rear panel



# Description of the Stove Components and Options

## Heating Installation Connection

The boiler is suitable and approved as a heat generator for warm water heating installations with a flow temperature up to 95°C and a permissible excess operating pressure of 3 bar.

In „closed systems“ a thermal safety valve must be attached as security against excess temperature.

The relevant connection is located on the back panel of the stove (1/2" male thread). Follow the manufacturer's instructions when installing.

We recommend using our control box type AME for the „closed system“ version. This control box which is only 40 cm wide, contains all instruments you need for operating and regulating the heating system.

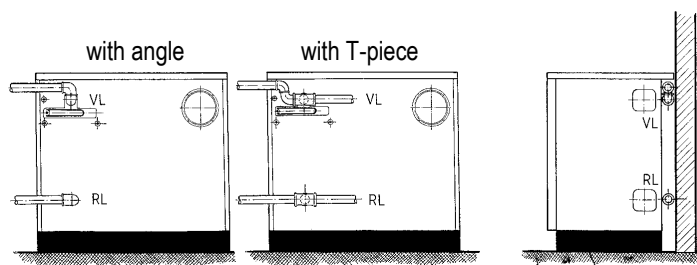
The safety valves used during installation must be approved (mark of conformity letter "H"! ). Their drainage capacity must correspond to the maximum nominal heat output of the boiler.

### Further points to be observed:

- Heating room guidelines,
- National building codes,
- Local building codes,
- Commercial and fire police regulations,
- Environmental protection regulations,
- Regulations of the local power supply company.

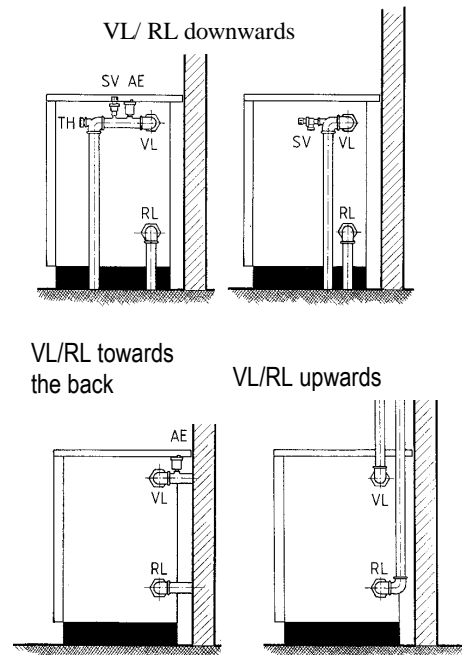
A trial run must be carried out after completion of the connecting work, during which all control and security instruments are to be adjusted and checked for proper functioning. The assembly, installation, fine-tuning and initial operation with the trial run must be carried out according to the Installation and Operations Instructions by a qualified heating professional! Only then can it be guaranteed that the appliance functions flawlessly. If any damage occurs through omission of any the above points, all warranty claims become null and void.

## Connection Possibility at the Back



- VL = flow
- RL = return
- AE = automatic bleeding
- SV = safety valve
- TH = probe fitting

## Connection Possibility at the Side

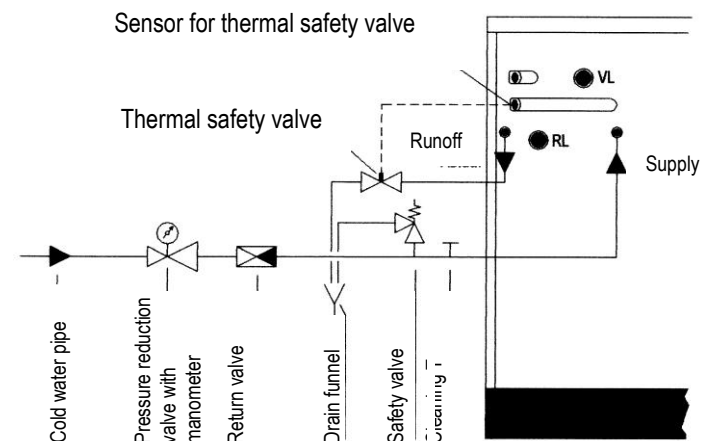


## Connection for Thermal Safety Valve

The heat exchanger serves to protect the stove from overheating during a pump standstill and may not be used for preparing water for domestic use! The safety mechanisms must still be accessible after the installation. The runoff must be visible for checking the proper functioning of the thermal safety valve, therefore use the runoff funnel!

A function check of the thermal safety valve must be carried out at least once a year. To do this, the red cap must be pressed against the valve and water must flow into the runoff funnel. Should the thermal safety valve drip, then the seal and valve seat must be cleaned.

The calcification status of the safety devices must also be checked at least once a year.



The ÖNORM B 8131 regulations must be observed when connecting the thermal safety valve.

## Stove Cover (Optional)

The stove cover serves to cover the cooking surface when the stove is not in use. In this case the flue connection must be connected at the rear or sides (not at the top!). The stove cover is attached by inserting its two hinge pins into the hinge fittings on the stove frame back. The stove cover may not be closed while the stove is in operation!

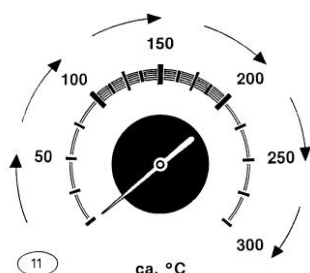
## Insulation Cover (Optional)

The insulation cover is for covering the cooking surface of central heating stoves during operation. When closed, it reduces the amount of radiant heat the stove gives off into the room it is standing in. In this case the adjustable rack must be in the lowest position. The maximum filling height up to the lower edge of the firebox door must be adhered to. Please observe the charge quantity for the different fuels for nominal output according to the table on page 16!

The inside of the stove insulation cover has a special heat-deflecting surface coating. When caring for or cleaning, use only gentle (non-alkaline) cleaning agents and no abrasive cleaning utensils. Grease splashes or similar spots should be wiped off with a damp cloth. Don't let them dry up!

## Oven Thermometer (ZEH 90-110)

The thermometer in the viewing glass of the oven door has a reading range of approximately 20 – 300 degrees C. The temperature marks are approximations for baking and broiling/roasting and can deviate slightly from case to case.



## Oven (ZEH 90-110)

The oven has 2 shelf positions and, depending on the stove type, is equipped with a plain shelf and oven grid shelf. It is fully enamelled inside and therefore easy to clean. See instructions for this on page 14. After cleaning, the oven door should be left open a few minutes for airing. The oven must absolutely be pre-heated for baking and broiling/roasting.

A brisk fire is required to maintain an oven temperature of around 250 degrees C. Dry, seasoned beech wood is very well suited to this purpose.

## Oven Door (ZEH 90-110)

The oven door can be completely removed. This is advantageous for a thorough cleaning of the oven. To cool the oven, the door can be set at a 75-degree angle. To do this, open the door, push the metal clips on the door hinges upwards and close the door to the limit stop.

### Unhinging the Oven Door

1. Open the oven door
  2. Push up the clips
  3. Close oven door to 5mm
  4. Lift slightly from this position
  5. and pull away and down
- 

### Hanging the Oven Door Back on its Hinges

1. Insert the hinges into the appropriate openings
  2. Open the door slowly and press the clips
  3. Arrest with a jerk
  4. Close the door and check the correct fit!
-

# Operating the Stove

## Damper

The damper is operated by the knob located in the decorative trim (under the stove frame and opposite the firebox door).

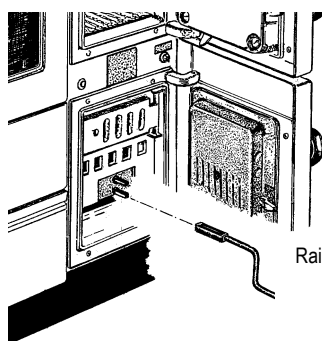
Pulling out the knob opens the damper, the heating gases then take the shortest route to the flue pipe. This position may only be selected during the heating-up phase. The damper must be re-closed a few minutes after heating up! When it is closed, the heating gases first circulate around the oven and then escape to the flue.

Note: An open damper does not result in increased baking strength. In this case the heating gases only brush over the oven surface. In addition, a longer opening of the damper can lead to overheating and therefore to damages to the stove, which are excluded from the warranty.

## Grate

The adjustable grate (22.5 x 39 cm) is in use in all ZEH stoves. The adjustable grate makes any desired filling cavity height setting possible. The adjustable grate is controlled with the grate crank, which is placed over the lower square-head stud located above the ash pan. Clockwise turning raises the grate. The top grate setting is mainly suitable for cooking and baking, whereby heat output to the heating system is low. Counter-clockwise turning lowers the grate.

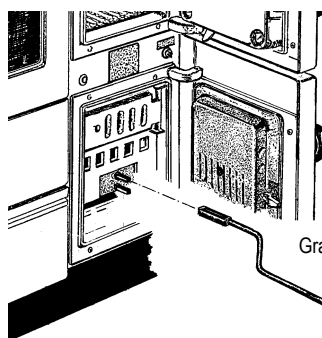
At the lowest setting, maximum heat output goes to the heating system, the cooking performance is adequate, and the baking/roasting performance is lower.



Raising and lowering the grate

## Grate Riddling

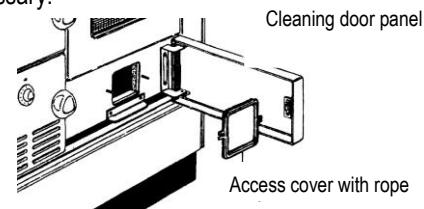
Removing the ash from the grate takes place from the ash pan cavity side with the grate crank. To do this the grate crank is fitted over the upper square-head stud and turned in any direction. If the grate air vents are heavily clogged or caked with ash or other combustion residues, the grate should be completely removed and cleaned.



Grate Riddling

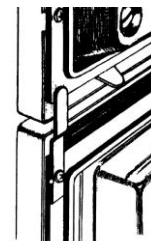
## Cleaning Opening

The cleaning door panel is secured by a ball latch and swings open. The access cover behind it is fastened to the stove front with 2 wing nuts and should be removed to clean the heating flues/draws. Before replacing the cover, check the rope seal of the access cover and replace when necessary.



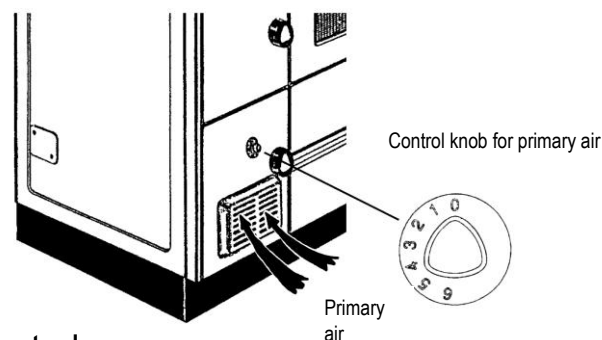
## Ash Door Safety Device

A bracket is mounted on the inside of the ash door. This means that the ash door can only be opened in connection with the firebox door. This prevents accidental overheating of the stove. For this reason this bracket may not be removed!



## Primary Air Control

The amount of combustion air intake and thus the heat output is controlled by the primary air control. It is operated with the control knob on the ash door. In the 0 position the air regulator flap is closed, in every other position (1-6) open to varying degrees. Regular emptying of the ash pan is important, because, for example, a mound of ashes reaching to the grate obstructs the primary air feed.



## Air control

To ensure that you have many years of pleasure with your stove, all appliances are equipped with an automatic temperature limiter as standard. This serves to "limit" the combustion air flow rate. However, this has only a limited effect on the output. It is definitely not suitable for compensating excessive fuel charges. A certain amount of fuel will require a certain amount of oxygen for optimum combustion. If the wood is supplied with a lesser quantity of air than is required for clean and efficient combustion, less energy is generated in the appliance (the appliance largely protected from overheating) – the unutilised "wood gas" however escapes through the chimney; the result: low efficiency and high environmental load. Remedy: charge the stove only up to the recommended fuel level.

The air entering the fire chamber from below through the grate is responsible for the output since it generates the basic heat resulting in "wood gasification". Rule of thumb: lots of air from below means lots of combustible wood gas (controllable with the help of the lower rotary knobs on the front). This wood gas is cleanly and efficiently burnt at approximately 950 °C by means of preheated secondary air (JETIFIRE combustion technology). The secondary air (situated above the firebox door and behind the decorative trim) enters the combustion chamber

through openings in the fire compartment rear wall and from below and above along the fire compartment door over the fuel into the combustion chamber.

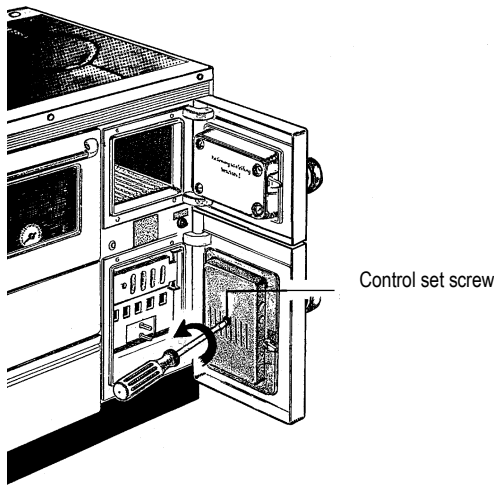
The exact mixing of the wood gas with hot secondary air ensures optimum combustion – and connected with this, excellent fuel utilisation. The environment will be grateful!

## Control Set Screw

A change in the air intake cross section can be achieved with the control set screw located on the inside of the ash door.

A professional should do this fine-tuning, as several factors must work together to attain an optimum burning process. Screwing in the set screw (about 2 mm), the intake cross section is reduced and a slower, more economical combustion results.

When the set screw is screwed out (about 10 mm), the cross section is increased, so that a faster combustion results. Care should be taken that an over-firing doesn't occur. The draw rate of the chimney can't be influenced with the control set screw!



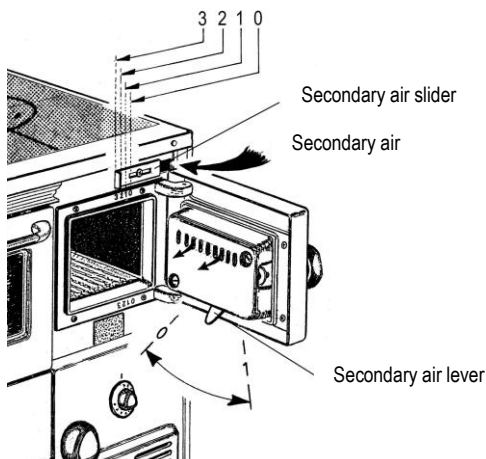
## Secondary Air Control

The addition of secondary air (flowing combustion air from the top, above the fuel) results in a combustion that is attuned to the fuel being used and in low-polluting emissions.

The secondary air intake is regulated by the secondary air slider, which is situated above the firebox door and behind the decorative trim. The relevant marks 3-2-1-0 are on the top of the firebox doorframe.

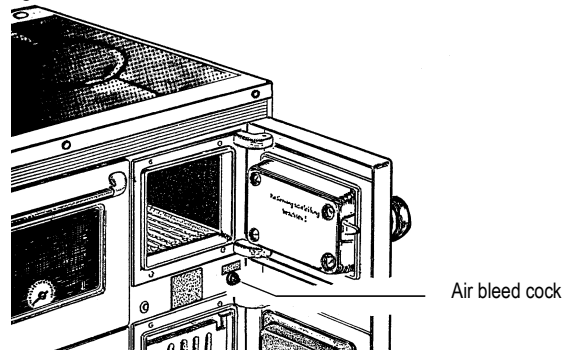
Slider position 1 : Required when burning coal or coke.  
 Slider position 2 : For wood burning at partial load operation.  
 Slider position 3 : Max. air intake for wood burning and nominal output operation.

Setting the secondary air lever on the inside of the firebox door is to be undertaken as with the secondary air slider, whereby here the lever position 1 corresponds to the slider position 3 above.



## Air Bleed Cock

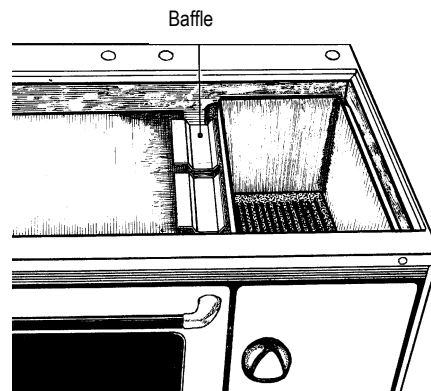
The air bleed cock is located on the front panel between the firebox and ash pan doors. To bleed the air from the stove correctly, a repeated de-airing procedure is necessary, as the vent connection leads approx. 20 cm upwards and is filled with water. This water must first run off during bleeding.



## Baffles

In stoves with an oven (ZEH 90/ 110) there are two baffles installed under the cooking plate, between the oven and the heating element. They direct the heating gases to increased circulation around the oven, resulting in an even distribution of the temperature.

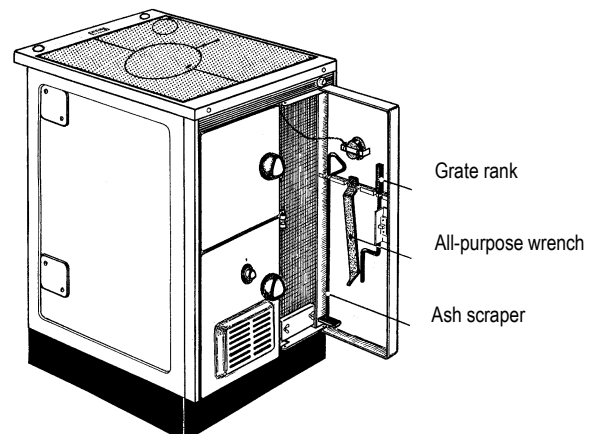
Care should be taken that the baffles are correctly replaced after cleaning.



## Cleaning and Operating Tools

Cleaning and operating tools are located inside the swinging side panel of model ZEH 55 and in the storage drawer of the stove in models ZEH 90/ 110.

ZEH 55



# Fuels

## Suitable Fuels

### Firewood

Billet wood should have a maximum water content of 30% of the dry weight, a length of 1/3 m and be chopped or split into smaller pieces. This way they catch fire easily and produce a higher heat output than the same volume of large logs. Roofed over and stored outdoors, whitewood, pine or alder wood should be seasoned a good 2 years, hardwoods even 3 years.

Gross calorific value of air-seasoned soft woods: 3.19 kWh/ kg

Gross calorific value of air-seasoned hardwoods: 4.16 kWh/ kg

The significance of the water content in wood in regard to the gross calorific value is shown in the following table:

Wood storage	Water content %	Calorific value kWh/kg
Freshly felled wood	50	2,32
Stored over winter	40	2,66
Stored over summer	18-25	3,36
Air-seasoned	15-20	4,16
Seasoned several years	10-15	4,63

### Charcoal Briquettes

The water content of charcoal briquettes is very low, the combustion is very rapid.

Calorific value of charcoal: 4.40 kWh/ kg

## Unsuitable Fuels

Damp wood, bark waste, sawdust, wood chips.

Use brushwood, wood wool, wood shavings, paper or cardboard only in very small amounts to kindle a fire.

The burning of such fuels results in significant pollutant emissions, large amounts of ash, and the heat output is comparatively low.

## Prohibited Fuels

Surface-treated wood (veneered, painted, impregnated, etc.), particleboard, rubbish of any kind (packaging waste), synthetics, newspapers, rubber, leather, textiles, etc.

Burning these types of materials burdens the environment seriously and is forbidden by the lawmakers.

Furthermore, damage to the stove and chimney can occur.

**In this case every warranty is rendered null and void!**

# Operating the Stove for the First Time

After completion of the assembly and connecting work and prior to the start-up, a few measures must still be taken:

- Depending on the stove type and outfitting, stove parts, accessories, cleaning and operating tools are stored in the interior of the stove and must be removed before the first operation.
- Avoid overheating the stove or making the cooking plate glow red-hot.
- Take care that there is a 2mm gap between the steel cooking plate and the stove frame, otherwise a discolouration of the stainless steel stove frame can take place!
- Oxygen-rich fresh air is important for an optimum burning process. Therefore aerate the room well before starting the fire.
- Take care that the heating installation is ready to function (water level, water pressure, temperature, control instruments, safety devices, ...) before every start-up!

After you have familiarised yourself with the operating procedures for the stove, the first operation can begin.

## Heating Up Phase

Open the damper

Turn the primary air control to position 6

Open the firebox door

Set secondary air slider to 0

Crank the grate to the desired position

Place 2-3 small wood splints on the grate

Spread wood wool or wood chips over them

Crumple a little newspaper and place on top

Light

Close the firebox door

Let the wood burn briskly

Close the damper

Add 2 wood billets

Turn primary air control back to position 2 – 3

Adjust the secondary air slider or lever, depending on the fuel type being used

## Adding Fuel

When adding fuel (stoking) we recommend:

Shorter intervals (every 30 – 50 minutes) and smaller amounts. In this way the nominal output is reached, with a lower pollutant emission and superior efficiency.

**Observe the maximum filling height up to the lower edge of the firebox door!**

## Intake Air Settings

The following table shows the recommended intake air settings (after the operating temperature is reached).

Fuel	Partial Load (Draw rate 0,09-0,12 mbar)		Rated Load (Draw rate 0,18-0,20 mbar)	
	Primary	Secondary	Primary	Secondary
Whitewood air-seasoned	3	2	4	3
Beech wood air-seasoned	3	2	4	3

## Standard Values for Fuel Charge and Burn Time

The following table shows the recommended charges for the nominal heat output.

Firing method	Charge	Burn time	Heat output
Flat firing at highest grate setting	2-3 Wood billets 3 kg	ca. 35 min.	Nominal output
Full firing at lowest grate setting	4-5 Wood billets ca. 6 kg	ca. 1,5 hr.	Nominal output

## Combustion

The heating gases are vigorously mixed with the incoming hot secondary air and burn through the flame bundling plate opening in a swirling pattern. The concentrated flames or flame bundling, respectively, cause high temperatures in the firebox ("Hot firebox") and result in greatly reduced emission values (CO emissions reduced by 90%!) at a shortened heating up phase with longer stoking intervals and to a more effective fuel utilisation (84% fuel utilisation means lower heating costs).

## Maintenance and Care

Regular maintenance and care are especially important for the stove's operating safety, cost-efficiency and value preservation. It should be thoroughly cleaned at least 3 x a year. When use is frequent or inferior fuel is used, then correspondingly more often!

- Remove and clean the cooking plate, especially the underside with a wire brush.
- Flame-bundling plate: Take out the plate and clean by brushing it off.
- Remove grate and brush off. Free clogged air vents.
- Detach flue pipe(s) and sweep out.
- Scrape the firebox walls and gas shaft with the ash scraper.
- Brush off damper and holders and check the proper functioning.
- Remove and empty ash pan. Sweep out the ash pan cavity.
- After removing the cleaning access door, scrape off the reachable heating gas draws with the ash scraper.
- Check rope seals on the burners and access cover, replace if needed.
- Clean the secondary air vents on the protective firebox door plate with a wire brush.
- When cleaning the chrome, anodised or enamel surfaces, use only gentle (non-alkaline) cleaning agents and no abrasive cleaning utensils. The same is valid for cleaning the oven.
- When replacing the different stove parts (flue pipe, cooking plate, grate, flame-bundling plate, access door, ash pan), make sure of their correct positioning or tightness.
- When replacing the cooking plate, make sure there is a 2 mm wide gap on every side!

## Steel Cooking Plate

### Directions for Caring for and Preserving the Cooking Plate

The bright polished steel cooking plate was oiled before packing for protection from corrosion.

### First Heating

The applied corrosion protection should be wiped off the cooking plate before the first heating. Open a window during the first heating, as the applied corrosion protection develops an unpleasant but harmless smoke and odour for a short time.

At the same time, a discolouration typical for steel when subjected to heat occurs on the cooking plate in the area from the hottest place toward the edge. This discolouration will become more even with every further heating!

### Cleaning

The best time to clean the cooking plate when it is still warm after heating.

It can be cleaned with commercial powder or fluid scouring agents or the cleaning agent especially for steel cooking plates (Order No. 28999050). Stubborn baked-on residues can be removed with pot scourers or steel wool. Rust spots can only be removed with a wire brush or coarse sand paper.

Afterwards, wipe the cooking plate with a damp cloth and let it dry.

This is, of course, fastest while the stove is still warm.

Finally, grease lightly.

Don't leave any pots or pans on the cold cooking plate. These form „rust rings“ that are difficult to remove!

### Preservation

Should the stove be left unused for a longer time, then it is advisable to grease the cooking plate with acid-free oil or some margarine after cleaning. Naturally, it should be wiped off the cooking plate again just before the next use!

If you follow these instructions, you prevent rust and spot formation on the cooking plate, and the stove keeps its good appearance.

Take care that the expansion gaps are always kept clear of encrusted deposits, so that the plate can expand when subjected to heat. Burned-on food or fuel residues in the gaps can cause the steel cooking plate to warp.

### Where Can the Cleaning Agents be Bought?

Stahlfix, Sidol Spezial and Collo profi are available in, for example, department stores (electrical appliance section), electrical appliance shops, chemist's shops, supermarkets and in shops specialising in kitchens.

# Malfunction – Cause - Solution

A combination of factors is required for a trouble-free operation of the stove:

**Stove:** Correct assembly, connection and start-up.

**Handling and Care:** Regular cleaning of the stove, flue pipe and chimney, according to the instructions in the Instructions Manual.

**Chimney:** Correct dimensioning, flawless condition.

**Fuel:** Use of the recommended types of fuel of an adequate quality and dryness.

**Weather conditions:** No downdraft in the chimney.

The following list contains possible problems, their causes and the possible remedies:

Malfunction	Possible Cause	Solution
<b>Grate riddling is jammed</b>	Ash or combustion residues are jammed in the adjustable grate mechanism:	Take out the adjustable grate and clean it.
	Ash pan is overfull, ash is piled up to the grate:	Empty ash pan, clean the firebox and ash pan cavity.
<b>Smoke escaping during heating up</b>	Chimney is still cold or there is stale air in the chimney:	Light a crumpled wad of paper in the stove or chimney and let it burn completely.
	Smoke-intensive, too damp or inferior fuel is being used:	See chapter "Fuels" on page 15.
	Heating gas draws, connection pipes or chimney is very sooty or displaced:	As soon as possible, clean the stove and connection pipes thoroughly, have the chimney swept.
	Damper is not open	Open damper
<b>Temperature is too low (Stove isn't heating properly)</b>	When the flue connection was changed, the original opening was not, or not tightly, sealed off:	Screw the cover on tightly
	Wrong intake air setting (too low, air setting not adjusted to the fuel being used):	See table "Intake Air Settings" on page 15.
	Wrong, too damp or inferior fuel is being used:	See chapter "Fuels" on page 15.
	A too low draw rate in the chimney, frequent occurrence of stale air in the chimney due to weather conditions:	Have the local chimney sweep examine the chimney in regard to dimensions, condition, tightness.
	Leaks at the connection between stove and chimney, pipe end is not cleanly integrated with the chimney:	Detach the connection, remove loose mortar, fix the pipe end into the wall, fit the connection pipes in the end pipe with rope sealing.
	Connecting pipes are crooked or fit together poorly:	Detach the connection, and replace properly re-aligned or correctly fit together.
	Stove, connecting pipes or chimney are heavily sooted or coated:	Thoroughly clean the firebox, ash cavity, heating gas draws and connecting pipes. Have the chimney swept.
	Open cleaning access opening (cover not screwed on after last cleaning):	Screw on the access cover.
<b>Temperature is too high (Danger of overheating)</b>	Steel cooking plate isn't in proper position.	Re-position correctly, there must be a 2 mm gap between the plate and frame on all sides.
	Output control is defective.	Replace the defective output control.
	Wrong intake air settings (too high, setting not adjusted to fuel being used):	See table "Intake Air Settings" on page 15
	Open firebox and ash door:	Close doors immediately.
<b>Steel cooking plate is rusting</b>	A too high draw rate in the chimney.	Ask your chimney sweep, possibly install in a flue damper.
	Output control at the ash door is defective:	Replace the defective control.
	Wrong fuel is being used:	See chapter "Fuels" on page 15
<b>Secondary air plates or JetFire plate is defective</b>	When there is a film of soot over the entire cooking surface, the humidity in the ambient air can be the cause (steam from the water insert, cooking steam)	Sand the surface and grease with an alkali-free grease
	Rust spots, rust rings come from overflowing pots, food remnants, wet crockery and similar.	After cooking wipe off the cooking surface and grease it, sand off the rust spots. Don't use the cooking surface as a storage shelf. See chapter "Stoves with steel cooking plate" on page 15.
<b>Oven viewing glass is clouded</b>	Max. charge level not observed	Max. fill height is up to bottom edge of the fire door!
	Wrong secondary air setting (no secondary air with wood fuel)	See table "Intake Air Settings" on page 15
<b>Oven viewing glass is clouded</b>	Overheating of the stove.	See Malfunction: "Temperature is too high, un hinge the oven door, remove the viewing glass, remove the sealing frame, clean the glass panes.
	Defective seal	Replace sealing frame or viewing glass completely.



# Examples of Various Installations

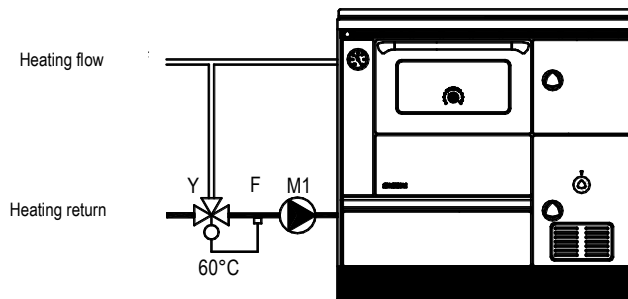
The following pages show schematic diagrams of different system designs. Stop devices, vents and safety devices are not shown. These diagrams are to be understood purely as examples and thus are no substitute for an exact planning, which takes customer-side requirements or hydraulic and safety specification requirements, respectively into account.

## Return By-Pass Temperature Valve

Too low operating temperatures, i.e. flow and return temperatures that are too low, have a significant detrimental influence on the life of the heating stove.

When the water dew point is not attained, condensation water, with more or less aggressive chemical components that accelerate corrosion, forms on the surface of the heating boiler. Therefore care must be taken that the return temperature of the heating boiler does not drop below 60°C during continuous running.

Temperatures falling below the dew point primarily occurs in low-temperature heating installations (return temperatures down to below 25°C), in installations without a mixer, in the case of extreme light load operation during changes in season and in constant light load operation caused by a stove that is dimensioned too large.



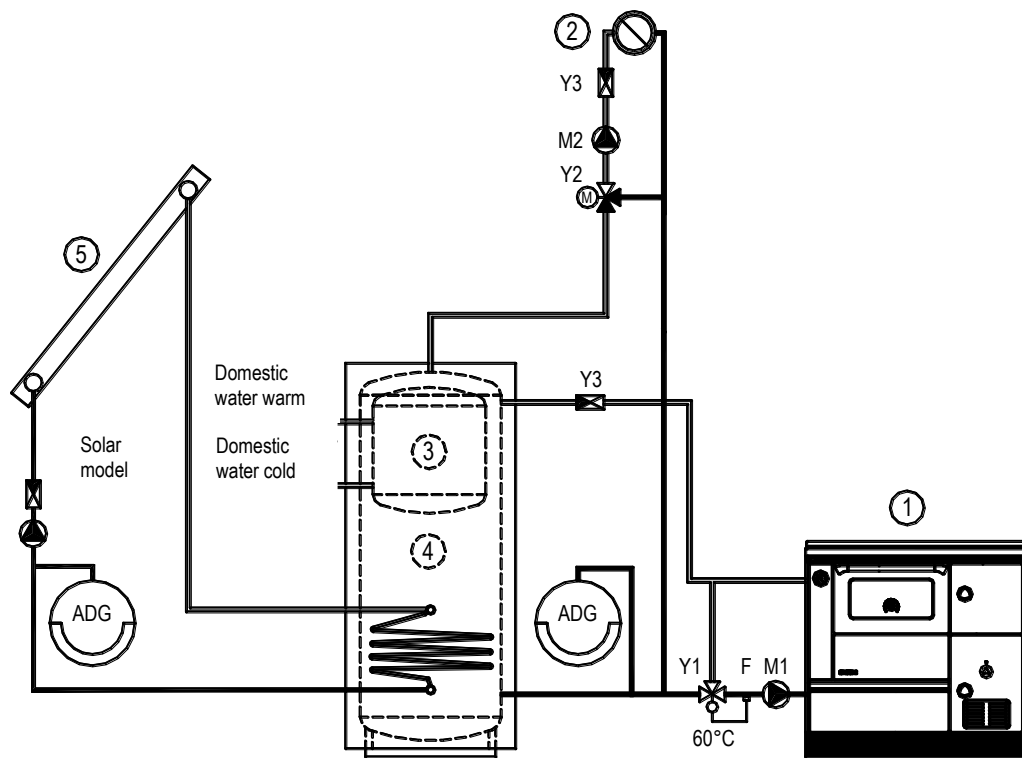
Y 3-way thermostat valve (e.g. Overtop)  
Setting range 40-70°C  
Set to 60°C, the return temperature is kept at 60°C.

M Circulation pump for filling the load balance storage tank

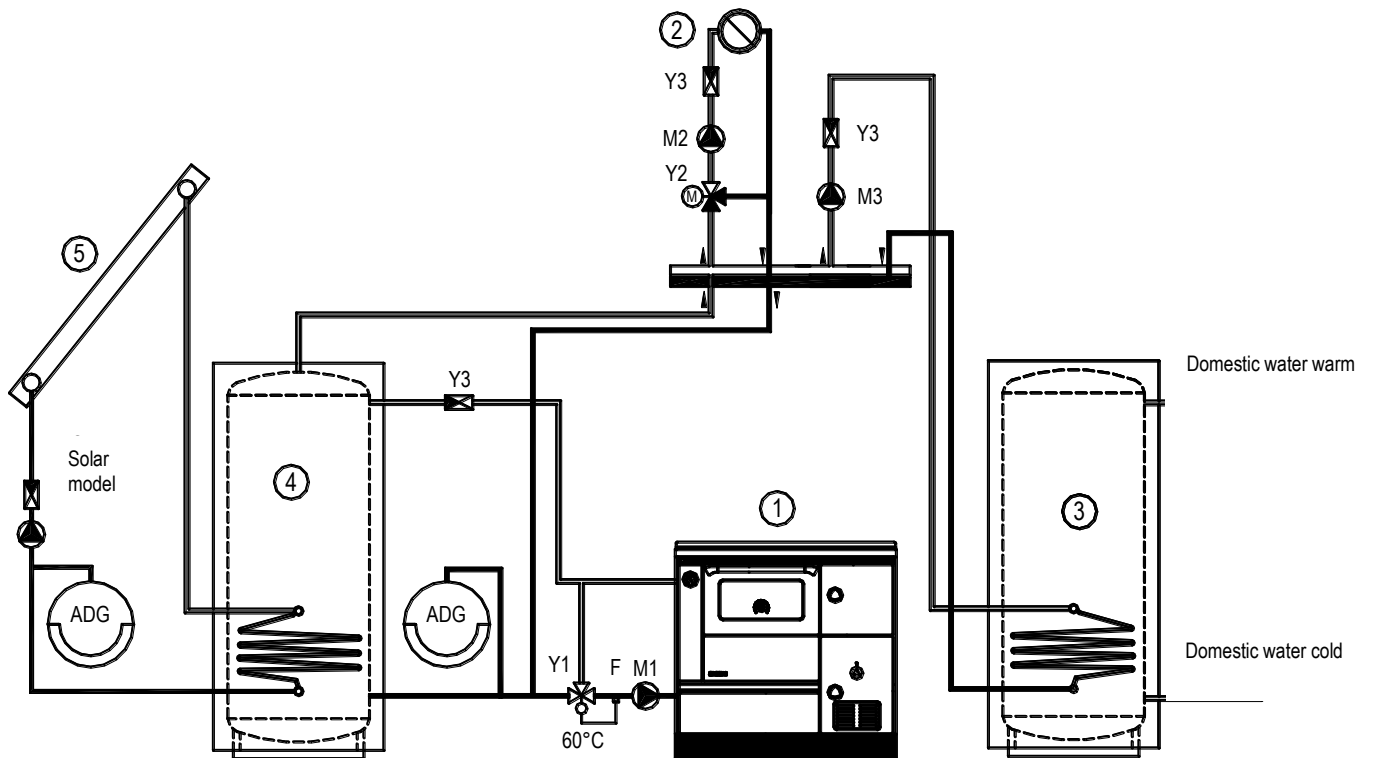
## Legend for the Following Hydraulic Diagrams

1	Central heating stove ZEH	Y1	3-way thermal valve	M1	Buffer reservoir pump
2	Heating loop	Y2	Motor mixing organ heating loop	M2	Heating loop pump
3	Boiler	Y3	Return valve or flap	M3	Boiler filling pump
4	Buffer reservoir				
5	Solar model				
ADG	Expansion tank	F	Temperature sensor		

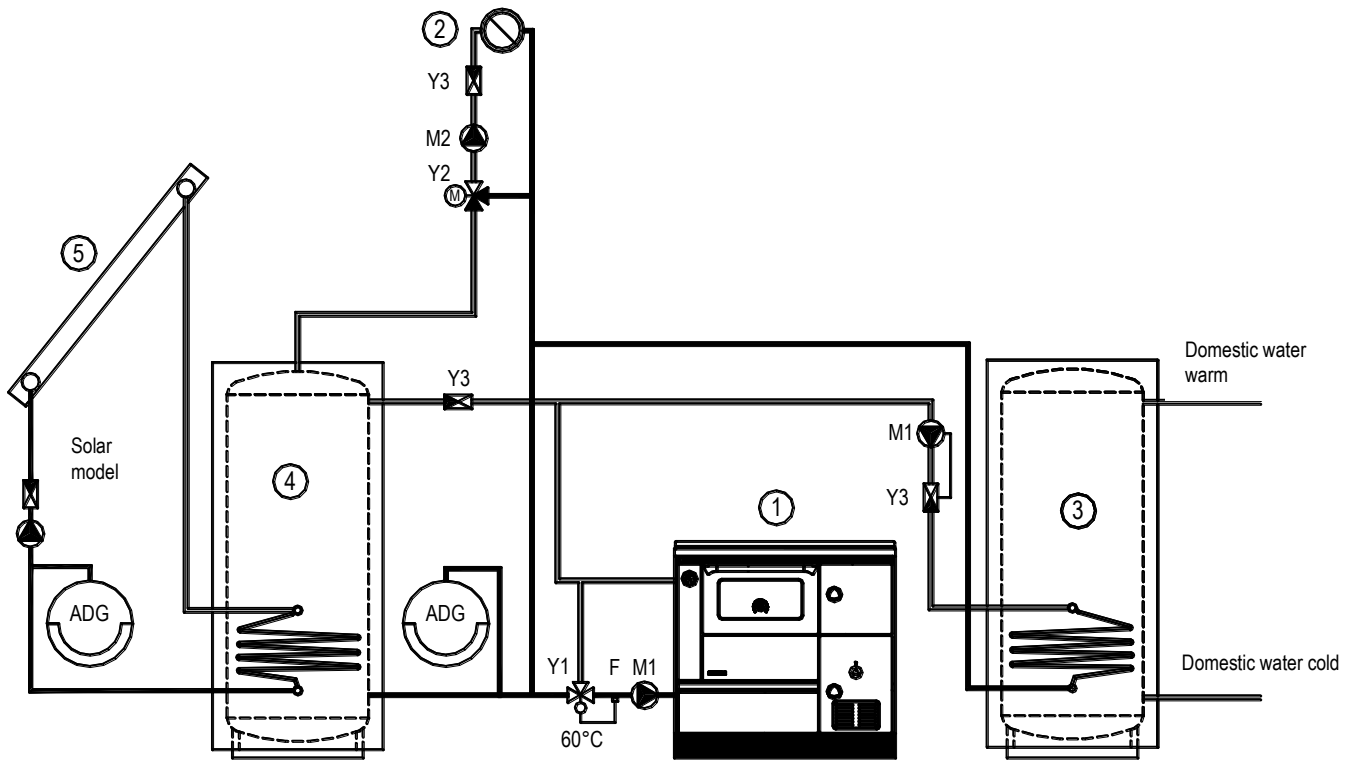
## Central Heating Stove with Buffer Reservoir and Integrated Boiler



## Central Heating Stove with Buffer Reservoir and Boiler (is filled from the buffer reservoir)



# Central Heating Stove with Buffer Storage and Boiler (is filled from the boiler)



**Assembly and Operating Instructions**  
Central Heating Stoves ZEH

Article No.: 54001135

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