

## Quick Start Guide

### Ashing Furnace

LV .../11  
LVT .../11

M01.1062K ENGLISCH

Original instructions

■ Made  
■ in  
■ Germany

[www.nabertherm.com](http://www.nabertherm.com)

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Bahnhofstrasse 20  
28865 Lilienthal  
Federal Republic of Germany

Reg: M01.1062K ENGLISCH  
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## 1 Foreword

Congratulations on choosing a Nabertherm laboratory ashing furnace. First-class workmanship and the use of high-quality materials combined with ease of operation make these furnaces reliable all-rounders for everyday laboratory work. This operating instructions summary will help you get to know your Nabertherm furnace. Remember that it is a short version of the operating instructions to give you an initial idea of the functions and features. Please read the operating instructions carefully before using your Nabertherm furnace for the first time.

You can obtain the operating instructions for the furnace via the following link or by scanning this QR code: Apps to scan QR codes can be downloaded from the corresponding sources (app stores).



<https://nabertherm.com/en/downloads/instructions>

Keep a printed or stored version for later use. You may also request a printed version of the operating instructions. Please contact us and state the furnace model and serial number (see type plate).

## 2 More information and tutorials



<https://nabertherm.com/de/downloads/video-tutorials>

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## 3 Defined Application

Ashing furnaces in the LV .../11 and LVT .../11 product lines are designed especially for ashing processes in laboratories at temperatures up to 1050 °C. Applications include loss on ignition (LOI) and the ashing of foods and plastics for subsequent substance analysis. A special fresh and exhaust air system ensures that the air in the furnace is replaced 6 times per minute from 550°C so that there is always sufficient oxygen for the ashing process.

The quantity of organic material, the product geometry and the duration of the ashing phase are important for the dynamics of ashing. These parameters must be designed so that the limit values are not exceeded. The limit values are the proportion by weight of organic substances (in g) of the charge and the weight loss rate (in g/min).

Model	LV(T) 3/11	LV(T) 5/11	LV(T) 9/11	LV(T) 15/11
Organic material <sup>1</sup>	5 g	10 g	15 g	25 g
Max. rate of weight loss <sup>2</sup>	0.2 g/min	0.3 g/min	1.1 g/min	1.2 g/min







<sup>1</sup>quantity per charge, <sup>2</sup>proportion of hydrocarbons




The heating rate is an important parameter to adjust processes. The ashing dynamics of many products are not linear. Therefore, it may be necessary to slow down the rate of heating during certain parts of the ashing process to comply with the intended limit values.

Refer to the complete operating instructions (Section 1) for more details about the safety concept of the furnace and a detailed description of the intended use.

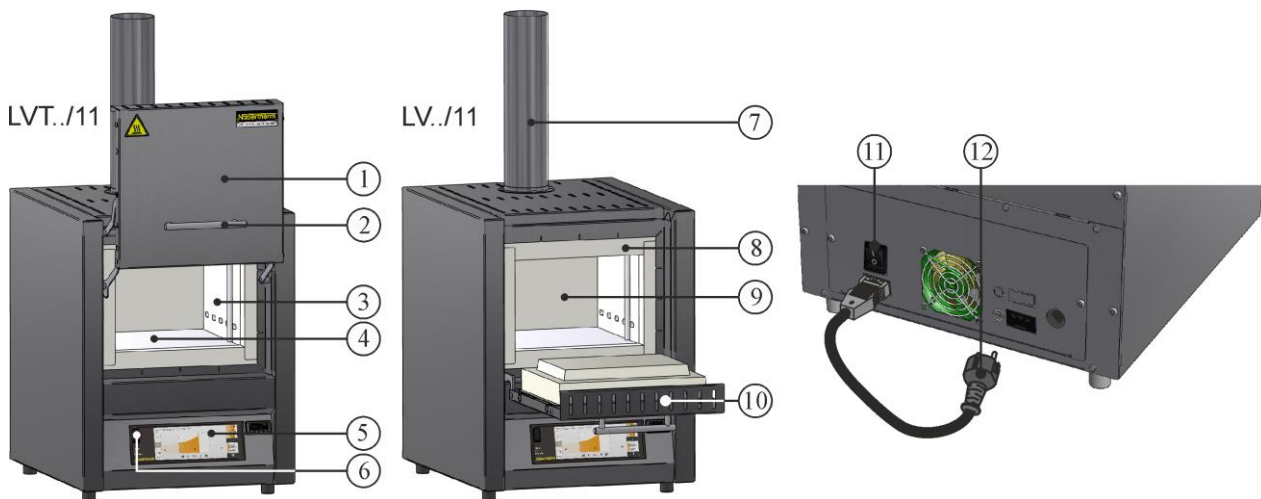
## 4 Safety precautions

Below is a list of safety precautions in the highest danger level, which, if not observed, may result in serious personal injury. A complete overview of all safety precautions can be found in the furnace operating instructions. Please read the operating instructions before initial start-up and use.

	<p><b>Danger of electric shock</b>  <b>Risk of fatal injury</b>            Work on the electrical equipment may be performed only by qualified electricians or by specialists authorized by Nabertherm.</p>
	<p>Before starting work, disconnect the plug.            Do not insert objects into openings in the furnace housing, exhaust holes or cooling slits of the switchgear or furnace.            Do not pour water or cleaning products over the furnace. A high-pressure cleaning device must also not be used.</p>
	<p><b>Warning – Electrical voltage!</b>            Warning of dangerous electric voltage.</p>
	<p><b>Risk of fire, danger to health</b>  <b>Risk of fatal injury</b>            Observe the installation conditions.            Adequate ventilation must be ensured at the installation location to remove exhaust heat and exhaust gases.</p>
	<p><b>Do not open when hot</b>            Opening the furnace when it is <b>above 200 °C (392 °F)</b> can cause burns.            No liability is assumed for damage to products or furnace.</p>
	<p><b>Exhaust duct, lid and furnace housing are hot when the furnace is in operation. Risk of burning.</b>            Do NOT touch the exhaust duct, lid or housing during operation.</p>

	<p><b>Risk of fire if using an extension cable. Risk of fatal injury</b></p> <p>For all furnace models with a plug-in connection, ensure that the distance between the circuit breaker and the power socket to which the furnace is connected is as short as possible.</p> <p>NO power board or extension cable is used between the power socket and the furnace.</p>
 	<p><b>For all furnace systems</b></p> <p>Operation with explosive gases or mixtures or the formation of explosive gases or mixtures during the process is not permitted.</p> <p>The concentration of organic gas quantities must never exceed 20% of the lower explosion limit (LEL) in the furnace. This requirement not only applies to normal operation, but also in particular to exceptional circumstances, such as process malfunctions (due to the breakdown of a unit, etc.). Ensure sufficient ventilation of the furnace.</p>

## 5 Components of the laboratory furnace



No.	Name	No.	Name
1	Lift door	7	Exhaust air system
2	Handle	8	Collar insulation
3	Insulation made from non-classified fiber material	9	Furnace chamber
4	Ceramic heating plates with integrated heating wire	10	Hinged door
5	Controller	11	Power switch with integrated fuse (for switching furnace on/off)
6	USB interface	12	Power plug with snap-in coupling (country-specific)

## 6 Transporting the furnace



### Note

Wear protective gloves when installing the furnace.  
The furnace should be transported by at least two people.

- When the furnace is delivered, check the transport packaging for possible damage. Remove straps from the transportation packaging.
- Compare the delivered items with the delivery note and the purchase order documents.
- Carefully lift the cardboard box. On the pallet, you will find a packaging unit for accessories (e.g., exhaust air duct, tile, power cable).
- To carry the furnace, place your hands at the sides beneath it and make sure that you have a firm grip. Lift the furnace from the pallet and carefully lower it at the location where it is to be installed.
- The packaging material inside and around the furnace must be removed completely. All packaging material can be recycled.

## 7 Requirements for the installation location

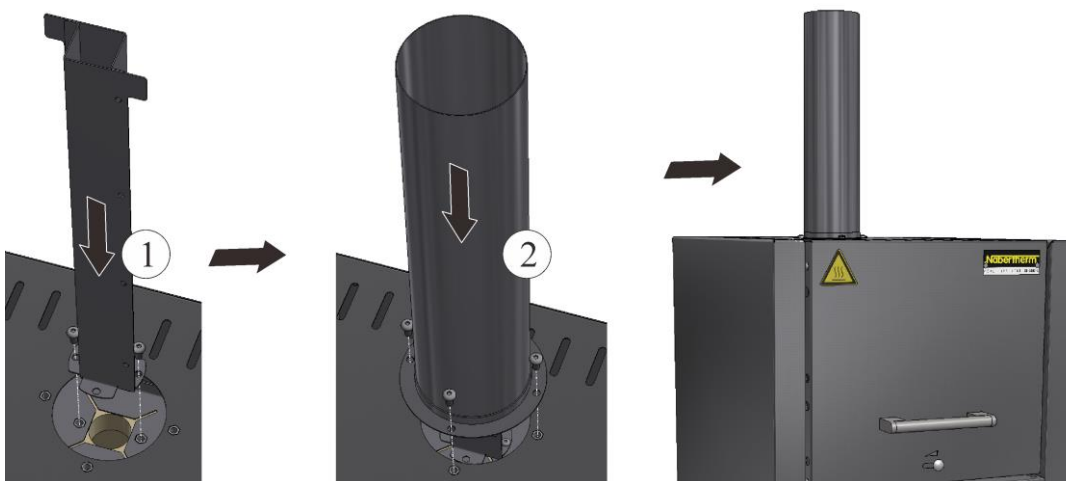
Install the furnace only in a dry room. Temperatures should be between +5 °C and +40 °C, with maximum 80% humidity. The surface (floor or bench) where the furnace is to be installed must be level so that the furnace stands upright. Place the furnace on a non-flammable surface. The load-bearing capacity of the bench must be suitable to take the weight of the furnace plus accessories.

Flammable materials must be kept at least 0.5 m from the furnace on all sides and at least 1 m above the furnace. In some cases, the distance must be greater due to local conditions. The minimum distance between the furnace and non-flammable materials may be reduced to 0.2 m at the sides. If the charge emits gases or vapors, ensure adequate ventilation at the installation site and/or a suitable exhaust gas venting system. The customer must provide a suitable extractor for exhaust air.

## 8 Assembly, Installation, and Connection

### Installing an exhaust gas pipe

To ensure an adequate flow of air, connect the supplied exhaust gas pipe before initial start-up of the furnace. To do this, attach the rectangular pipe to the inside of the furnace using the supplied screws. Then attach the round pipe to the outside of the furnace. Use the supplied screws.



### Installing the base plate and collecting pan (accessories)

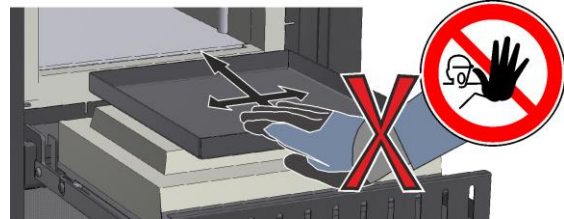
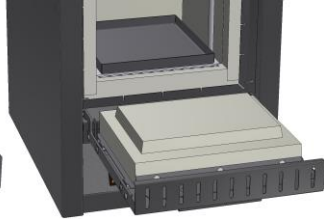
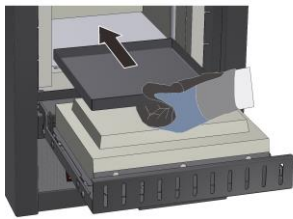
Before installing the accessories, make sure that the furnace has cooled to room temperature and that the base plate/collection pan are clean and dry.

To install the base plate/collection pan, open the furnace door and position it carefully in the middle of the base of the furnace and slide it to the back of the furnace. Make sure that you do not slide the base plate over the door insulation and that the door collar is not damaged. Then carefully close the furnace door.



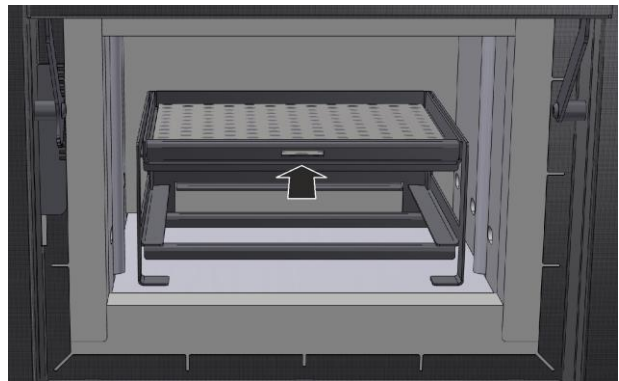
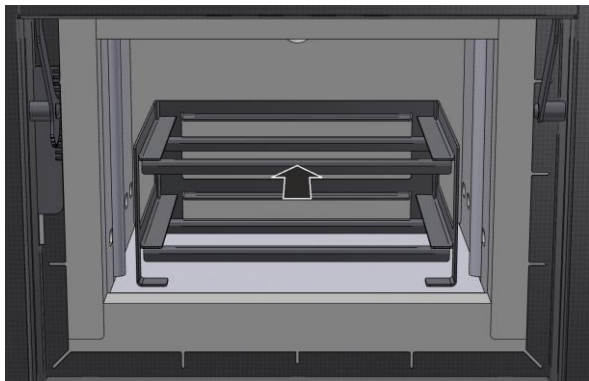
#### Warning

Do not place more than one base plate in the furnace as this could cause overheating which could damage or destroy the heating elements.

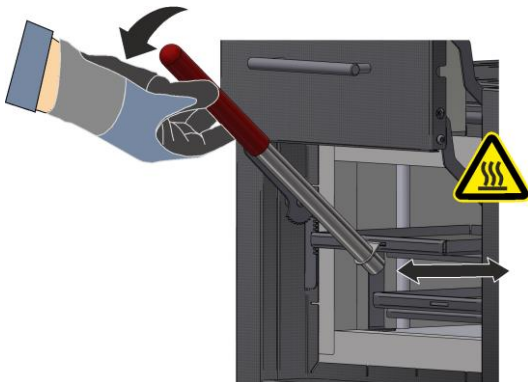


### Using the charging rack (accessory)

To simplify positioning, remove the trays from the rack and place the rack carefully in the middle of the furnace chamber. Place the charge on the trays and slide them fully into the rack.



A charging handle is supplied to insert and remove the trays which may be hot; hook this handle into the notch at the front of the tray.



**Note**

Make sure that the charging rack does not increase the maximum charge weight of the ashing furnace and remember that the maximum permitted temperature of 800 °C may not be exceeded.

## 9 Venting Exhaust Fumes

We recommend that you connect a pipe to the furnace to remove the exhaust gases.

A suitable metal exhaust gas pipe of NW 80 to NW 120 can be used to vent the gases. It must be attached facing upwards and be fixed to the wall or ceiling. Position the pipe in the middle above the exhaust flue of the furnace. The recommended distance is 80 mm – 100 mm. Do not attach the exhaust pipe directly onto the flue pipe.

## 10 Connecting the furnace to the power supply

**Nabertherm GmbH**

Bahnhofstr. 20, 28865 Lilienthal/Bremen, Germany


Tel +49 (04298) 922-0, Fax +49 (04298) 922-129

contact@nabertherm.de

www.nabertherm.com

**Nabertherm**  
MORE THAN HEAT 30-3000 °C

Made  
in  
Germany

LV 09/11/B510	SN 123456	2023
LV-151K2RN	1100 °C	 3,0 kW
-	240 V 1/N/PE~	-
-	max. 15,2 A	3,0 kW

The customer must provide the electrical power supply.

- The furnace must be installed according to its intended use. The power connection must correspond to the values on the furnace type plate.
- The power socket must be close to the furnace and be easily accessible.
- Do not use extension cables or power strips.
- The power cable must not be damaged. Do not place any objects on the power cable. Lay the cable in such a way that no one can stand on it or trip over it.
- Power cables may be replaced only with similar, approved cables.
- Ensure that the connection cable of the furnace is protected.

Plug the supplied power cable with snap-in coupling into the rear wall or side of the furnace. Then connect the power cable to the power supply. Use only an electric socket with suitable protective ground contact. Connect the power cable to the power supply. Testing of ground resistance (compliant with VDE 0100); also refer to the accident prevention regulations.



## 11 Initial Start-Up and Initial Heating

Before starting the furnace for the first time, allow it to acclimatize at its installation location for 24 hours. When the furnace is put into operation, the following safety information must also be observed to prevent injuries and damage to property.



- Make sure that the instructions and information in the operating manual and the controller instructions are observed and followed.
- Before starting the furnace for the first time, make sure that all tools, parts that do not belong in the furnace and transportation securing equipment have been removed.
- Before you switch on the furnace, make sure that you know what to do in case of faults or emergencies.

Before placing materials in the furnace, check whether they could harm or destroy the insulation or the heating elements. Materials that could damage the insulation include: alkalis, alkaline earths, metal vapors, metal oxides, chlorine compounds, phosphorous compounds, and halogens. **If applicable, read the labels and instructions on the packaging of materials that you use.**

Heat the furnace to dry out the insulation and to get a protective oxide coating on the heating elements, which will have a significant effect on the service life. There may be some unpleasant odors while the furnace is heating. This is due to binder being emitted from the insulation material. It is advisable to ventilate the room in which the furnace is located well during the first heating phase.

Heat the empty furnace **to 1050 °C in approx. 6 hours** and maintain this temperature for one hour. Then allow the furnace to cool to room temperature. The furnace is now ready for operation.

## 12 Operation

Switch on the controller		
Procedure	Display	Comments
Switch on the power switch		Set the power switch to “I”. (Power switch type varies according to design/furnace model)
The furnace status is displayed. After a few seconds, the temperature is displayed. The first time you switch on the furnace, a wizard is displayed that enables you to enter some basic settings, such as language.		Once the temperature is shown on the controller, the controller is ready for operation.



### Note

See the separate operating instructions for a description of how to enter temperatures and times and to “start” the furnace.

### 13 What to do in case of emergency

In case of unexpected events in the furnace (e.g., a lot of smoke, odors or fire), switch the furnace off immediately by disconnecting the power plug and keep the door closed. Wait until the furnace has cooled naturally to room temperature.

**The electrical socket must be accessible at all times when the furnace is operating.**



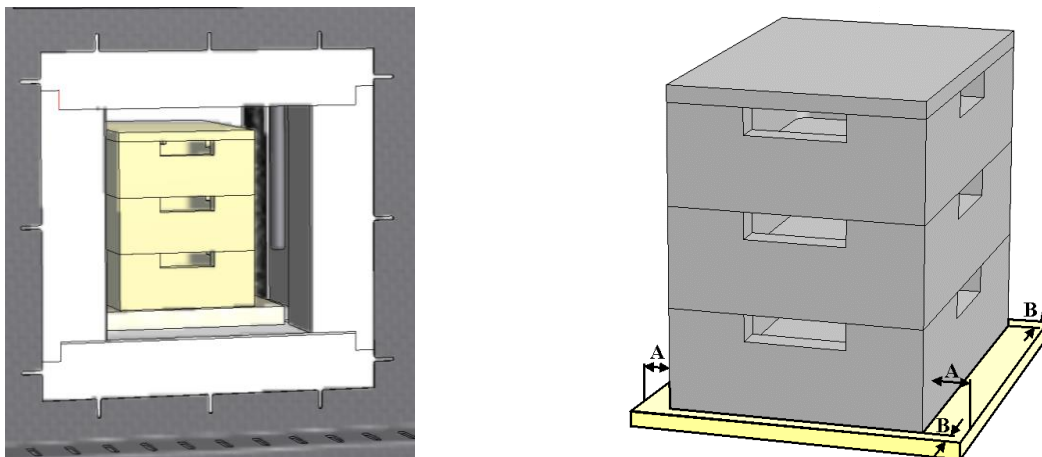
### 14 General Operation and Loading the Furnace

Operate the system only when all protective equipment and safety-related devices are present and functioning. Place only materials and substances whose properties are known in the furnace. Before starting the firing, clear the area around the furnace. Open and close the furnace door carefully. When loading the furnace, make sure that the door collar, the furnace insulation and the heating elements are not damaged. When the furnace has been loaded, close the door carefully so as not to damage the insulation. Make sure that the door is closed properly. To ensure even temperature distribution, leave space between the ware in the furnace and to the side walls.

Discoloration of stainless steel and cracks in the insulation/tiles caused by heat expansion have no effect whatsoever with regard to the functioning or quality of the furnace.

#### Stackable saggars (accessories)

Place the bottom sagger in the center of the base plate. Place other saggars and lids on top of this in the middle. When closing the furnace door, make sure that the door insulation does not push the sagger into the furnace chamber.



## 15 Cleaning products

To clean the furnace, it is important that the power plug is pulled out and that the furnace has cooled completely. Pay attention to the labeling and information on the cleaning product packaging.

Use commercial cleaning products that are either water-based or non-flammable and free of any solvents to clean the housing. Use a vacuum cleaner for the interior.

Wipe the surface with a damp, lint-free cloth. You may also use the following cleaning products:

Component and position	Cleaning product
Outer surfaces (frame)*	Use commercial cleaning products that are either water-based or non-flammable and free of any solvent*
Outer surfaces (stainless steel)	Stainless steel cleaner
Interior	Carefully clean with a vacuum cleaner (pay attention to the heating elements)
Insulation materials	Carefully clean with a vacuum cleaner (pay attention to the heating elements)
Door seal (if applicable)	Use commercial cleaning products that are either water-based or non-flammable and free of any solvent*
Instrument panel	Wipe the surface with a damp, lint-free cloth (e.g., glass cleaner)

\*You must ensure that the cleaning product does not damage the water-soluble, environmentally safe paint (test the product on an interior, concealed area).

Clean quickly to protect the surfaces. Remove the cleaning product completely from the surfaces by wiping them with a damp, lint-free cloth.



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**Headquarters:**

Nabertherm GmbH · Bahnhofstr. 20 · 28865 Lilienthal/Bremen, Germany · Tel +49 (4298) 922-0, Fax -129 · [contact@nabertherm.de](mailto:contact@nabertherm.de) · [www.nabertherm.com](http://www.nabertherm.com)

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