

Original operating instructions EN

GLOW CUBE-200+



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1 Introduction

1.1 Product name and Item number

Product name: GLOW CUBE-200+
Item number: REF: 7205000001

1.2 Information on the manufacturer

Name: Mihm-Vogt GmbH & Co KG
Address: Friedrich-List-Strasse 8
76297 Stutensee-Blankenloch
E-Mail: info@mihm-vogt.com
Phone: +49 7244 / 70871-0

1.3 Limitation of liability

The contents of these operating instructions have been prepared in accordance with the applicable laws and standards.

The device has been developed according to the latest state of the art.



NOTE

The manufacturer accepts no liability for damage resulting from:

- ▶ Disregard/non-observance of the operating instructions.
- ▶ Intentional or grossly negligent misuse.
- ▶ Non-intended use
- ▶ Use of untrained personnel.
- ▶ Use of non-specialist staff (e.g. for maintenance work, etc.)
- ▶ Technical modifications to the device that have not been agreed with the manufacturer and approved by the manufacturer.
- ▶ Use of spare parts that have not been approved by the manufacturer.

1.4 Responsibility of the operator

The device is used in the commercial sector. The operator of the device is therefore subject to statutory occupational safety obligations. In addition to the safety instructions in this operating manual, the safety, accident prevention and environmental protection regulations applicable to the area of use of the device must be observed.

The following applies in particular:

- The operator must inform himself about the applicable health and safety regulations.
- The operator must ensure that all employees who work with the device have read and understood these operating instructions.
- In addition, he must train the personnel at regular intervals and inform them of any hazards that may arise when handling the device.
- The operator must provide the personnel with the necessary personal protective equipment.
- The operator must have all safety equipment checked regularly for functionality and completeness.

1.5 Documentation

Contents and structure of the operating instructions

These operating instructions are an integral part of the device. It contains hazard warnings, instructions and information on the correct and safe use of the device and must be available to every user for the entire service life of the device.

These operating instructions are intended for trained specialist personnel.

1.6 Symbols and notes

Labeling concept for integrated texts and for references.

The following note types are used:



DANGER

An imminent danger that could lead to serious bodily injury or death.



WARNING

A potentially dangerous situation that could lead to serious physical injury or death.



CAUTION

A potentially dangerous situation that could lead to minor bodily injury.



NOTE

A potentially harmful situation in which the product or an object in its vicinity could be damaged.

NOTE

Note/tip for easier operation.

If you have any questions, please contact the following service address:



Friedrich-List-Strasse 8
76297 Stutensee-Blankenloch
GERMANY
Phone: +49 (0) 7244 70871-99
service@mihm-vogt.de
www.mihm-vogt.com

1.7 Safety instructions

The safety instructions in this document are intended to prevent personal injury and damage to property and relate to the device documented here and its associated accessories.

Read and follow the instructions in this operating manual in order to operate the device safely.

Do not carry out any modifications or repairs to the device yourself.

As the operator, it is your duty to ensure that all safety instructions are observed and complied with and that all persons working on or with the device have read and understood these operating instructions in full. Ensure that the following work is only carried out by qualified specialist personnel:

- Installation and assembly
- Installation and connection
- Commissioning



WARNING

Risk of burns from hot surfaces!

- ▶ During operation of the device, hot surfaces are created which can cause burns on contact.
- ▶ Do not touch the housing or the oven door during operation.
- ▶ Do not reach into the heating chamber. It may still have a lot of residual heat from a previous heating process.
- ▶ Allow the device to cool down completely before carrying out maintenance, cleaning and repair work.
- ▶ Wear heat-resistant safety gloves when working on hot components.
- ▶ Use a suitable, sufficiently long removal tool to insert and remove annealing material.

1.8 Target group

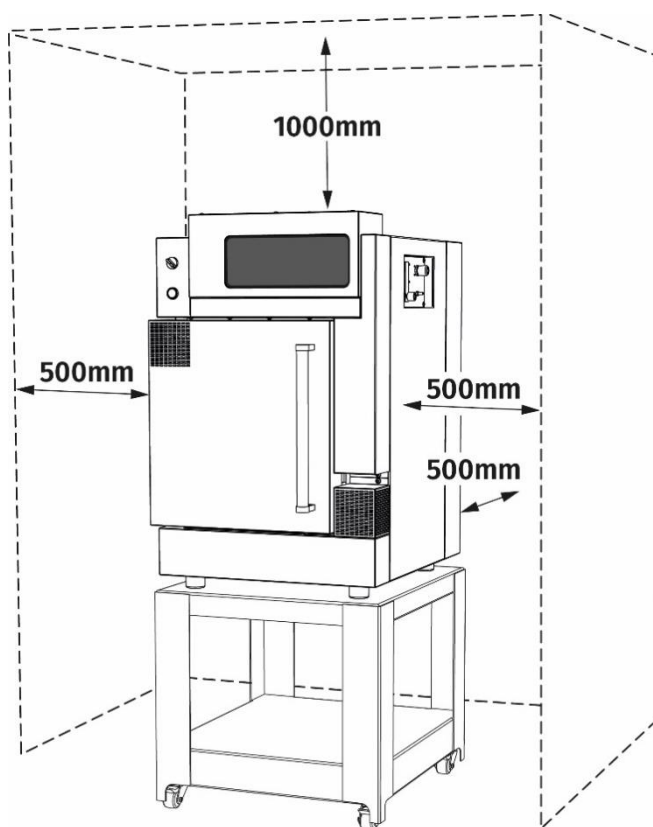
These operating instructions are intended for the following personnel:

- **Specialist for mechanical work**
Mechanical work may only be carried out by a specialist with suitable training. Specialists are persons who are familiar with the design, mechanical installation, commissioning, troubleshooting and maintenance of the product.
- **Specialist for electrical engineering work**
Due to their specialist training, knowledge and experience as well as knowledge of the relevant standards and regulations, qualified electricians are able to carry out work on electrical systems and independently recognize and avoid potential hazards. The qualified electrician is specially trained for the working environment in which they work and knows the relevant standards and regulations. They are qualified in the field of electrical engineering in accordance with the applicable national regulations.
- **Operator**
The user has been instructed by the general operator about the tasks assigned to him and the possible dangers of improper behavior. The user may only carry out tasks that go beyond normal operation if this is specified in these instructions and the general operator has expressly instructed him to do so.
- **Instructed person**
The instructed person has been demonstrably instructed by the general operator about the tasks assigned to him and the possible dangers of improper behavior.

1.9 Requirements for the installation on customer side

1.9.1 Mechanical and fire protection requirements

- The installation site (floor or table) must be level and suitable for a load that is at least equal to the device weight including accessories and filling, see 2.5.2 Technical data.
- The surfaces, materials, neighboring objects such as waste garbage cans etc. and the floor covering of the installation site must not be flammable (fire protection class A DIN 4102).
- Sufficient ventilation of the installation site must be ensured.
- To prevent heat build-up around the annealing furnace, minimum clearances of 500 mm all round and 1000 mm at the top are required.
- If the room height is too low, adequate heat protection must be installed at the top.
- There must be no flammable or combustible objects in the vicinity of the device.



DANGER

Fire hazard!

- ▶ Danger to life
- ▶ Fire and health hazard
- ▶ Sufficient ventilation must be ensured at the installation site in order to dissipate waste heat and any exhaust gases.

1.9.2 Electrical requirements

Connection to a separate electrical circuit with 3 phases and an electrical fuse with 16 A type B **without RCD** (other fuses depending on the country of use). Accessibility to the socket outlet must always be guaranteed.



DANGER

Caution - Danger from electric current!

- ▶ Work on the house and device electrics may only be carried out by qualified and authorized electricians!



NOTE

Danger of incorrect mains voltage.

- ▶ Damage to the device.
- ▶ Check the mains voltage before connecting and commissioning.
- ▶ Compare the mains voltage with the rating plate values.

1.9.3 Requirements for the compressed air supply

Compressed air supply with a pressure of 5 to max. 10 bar and a flow rate of at least 200 l/min.
Coupling connection: plug-in size NW7.

1.9.4 Requirements for the shielding gas supply

Pressure: 5 to max. 10 bar, flow rate: 0 l/min to 25 l/min.

1.10 Life cycles of the device

The device goes through the following life cycles:

- **Delivery**
Compare the completeness of the delivery with the delivery note immediately upon receipt. Inspect the delivery for transport damage immediately upon receipt. Notify the transport company and MIHM-VOGT GmbH & Co. KG immediately of any transport damage. Assembly, installation and commissioning must not be carried out if there is damage.
- **Transportation to the installation site**
Transportation must be carried out using a suitable industrial truck. The load must be prevented from slipping or tipping, see 1.16.1 and 3.
- **Storage**
The device must not be stored outdoors or in damp rooms, see 3.3.
- **Unpacking**
See separate unpacking instructions.
- **Assembly**
Installation may only be carried out by trained specialist personnel or authorized service partners, see 1.16.1 and 4.

- **Operation**
Manual loading and unloading of the oven.
Automatic process control, see 1.16.2 and 7.
- **Maintenance**
According to the maintenance schedule see 9.2.
- **Dismantling**
Dismantling may only be carried out by trained personnel or authorized service partners, see 1.16.4.
- **Waste disposal**
Proper disposal in accordance with the relevant legal regulations, see 1.16.4 and 3.4.2.

1.11 Intended use

The device is a chamber oven (annealing furnace) for commercial use in dental laboratories and in the metal industry. The device is designed for the heat treatment and debinding of metal parts. Only materials with a known melting point and known processing temperatures may be heat-treated in the device.



WARNING

- ▶ The use of explosive gases or mixtures is prohibited.
- ▶ Explosive gases or mixtures must also be prevented from forming during operation.
- ▶ The device does not have any safety technology for processes in which flammable or ignitable gas mixtures may be produced. The device does not comply with the safety requirements of the EN 1539 standard.
- ▶ The device expressly does not comply with the ATEX directive and must therefore not be used or operated in flammable or explosive atmospheres.
- ▶ Observe the labels and instructions on the packaging of the materials used and read the relevant safety data sheets.



CAUTION

Wrong service!

- ▶ No liability is accepted for damage caused by misuse, incorrect operation, incorrect connection or improper maintenance/repair by untrained personnel. Furthermore, all warranty services are excluded in such cases. If the appliance or power cable is damaged or no longer functions properly, the appliance must no longer be used. In this case, contact your service partner immediately.
- ▶ For your own safety and to ensure the longevity of your appliance, only use original spare parts.
In addition to the instructions in this operating manual, the regional regulations (e.g. accident prevention regulations), which the operator of the appliance must make available to users, also apply to the safe operation of the appliance.
- ▶ Clearly legible safety signs must be affixed at the operating site.

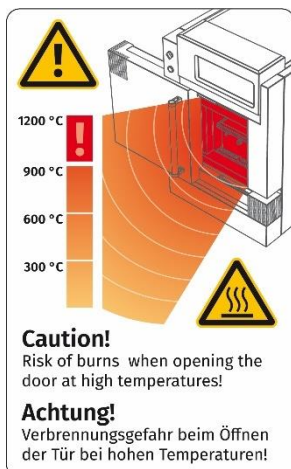
1.12 Foreseeable misuse

The device must not be used for purposes other than those for which it is intended. The following activities can lead to serious damage or misuse, represent a danger and must therefore be avoided under all circumstances:

- Switch on rapid cooling during the heating phase.
- Independent conversion or repair measures not authorized by the manufacturer.
- Installation or use of spare parts and products that have not been approved by the manufacturer.
- Operation of the device by untrained personnel.
- Operation of a damaged device.
- Failure to observe the safety instructions or accident prevention regulations.
- Use not in accordance with the Declaration of Conformity.

1.13 Signs on the device

The following signs are attached to the device:



DANGER

Risk of burning!

- ▶ If the oven door is opened briefly at high temperatures, there is a risk of burns.
- ▶ The higher the temperature, the greater the safety distance from the heating chamber must be.
- ▶ Be sure to wear personal protective equipment.



DANGER

Electrical energy!

Danger to life due to electric shock.

- ▶ Always unplug the appliance before opening it
- ▶ Do not touch live cables and components with wet hands.
- ▶ Observe the accident prevention regulations when handling electrical current.
- ▶ Only connect the device to a power supply that matches the specifications on the rating plate.



DANGER

Earthing point

- ▶ The earthing cable of the shielding gas box (SGBox) must always be connected to the earthing point on the shielding gas module, as the electrical energy of the SGBox is dissipated via the earthing cable!

1.14 Personal protective equipment



Protective gloves
Wear heat protection gloves



Safety shoes
Wear protective footwear



Safety goggles
Wear safety goggles



Respirator mask
Wear a respirator mask

1.15 Protective equipment

The device is disconnected from the power supply by the mains isolating switch.



1.16 Special safety instructions

1.16.1 Transportation, installation, commissioning

Observe the general accident prevention regulations for Germany! For other countries of use, the respective national accident prevention regulations apply.



DANGER

Risk of injury!

- ▶ Avoid slipping or tipping the device!
- ▶ Only lift and transport the device using suitable aids (e.g. lifting gear, fork lift, industrial truck).

1.16.2 Operation



DANGER

Danger from escaping gas!

Possible risk of explosion, fire and suffocation.

- ▶ The shielding gas and power supply must be disconnected and the gas cylinder closed before carrying out any work on the device.
- ▶ When handling argon, observe the national safety regulations TRGS 526 (chapter 5.2.11 "Compressed gas cylinders and fittings").



DANGER

Electrical energy!

Danger to life due to electric shock.

- ▶ Earthing point on the shielding gas module: The electrical energy of the shielding gas box is dissipated through the earthing cable, therefore always earth the shielding gas box.



CAUTION

Damage to the housing and the controller!

- ▶ If the oven door is left open for a long time (>5 min) at temperatures above 200 °C, the surfaces of the housing and controller may be damaged.



NOTE

Personal protective equipment must be worn when working on the device to prevent accidents and damage to health.

1.16.3 Cleaning, care and maintenance

The device housing may only be cleaned carefully and non-abrasively with a damp, lint-free cloth using aqueous, solvent-free cleaning agents.

Always remove cleaning agent residues completely.

The following device components must be treated with the correct cleaning agent:

Component:	Cleaning method / cleaning agent:
External housing:	Damp, lint-free cloth / solvent-free cleaner
Stainless steel oven door:	Lint-free cloth / stainless steel cleaner
Heating chamber:	Dry vacuum cleaner
Controller:	Damp, lint-free cloth / solvent-free cleaner



DANGER

Danger to life due to electric shock.

- ▶ Always switch off the appliance before cleaning (set the mains isolator switch to 0 = Off) and disconnect the mains plug.
- ▶ Never spill or spray water or cleaning fluids on the outside or inside of the appliance.
- ▶ Never clean the device with a high-pressure cleaner or wet vacuum cleaner.
- ▶ Dry the appliance completely before using it again.



NOTE

Damage to the heating!

- ▶ Ensure that the boiler room is not contaminated. The heater could be damaged.

1.16.4 Decommissioning, dismantling, disposal

Decommissioning and disassembly

Decommissioning can occur for two reasons:

- For commissioning at another operating site.
- With the aim of final disposal.

If the device is to be reinstalled at another location, the decommissioning must be well prepared. All components and mounting parts must be carefully dismantled, labeled and, if necessary, packed for transport. This ensures that all parts are correctly assigned and can be reassembled properly when the device is reinstalled at another location.

1. Switch the device off at the mains isolator switch (O = OFF)
2. Disconnect the device from the power supply.
3. Disconnect all connections (e.g. compressed air and shielding gas connection, etc.) from the device.

Waste disposal



WARNING

Release of harmful substances! When handling insulating materials, harmful substances may be released into the air we breathe.

- ▶ Personal protective equipment (respiratory protection) must be worn during disposal.



WARNING

Poisoning of the environment and groundwater due to inappropriate Disposal!

- ▶ When disposing of device parts and equipment, the regulations and directives of the legislator in the country of operation must be observed.

1. Separate the components of the device according to recyclable materials, hazardous materials and operating materials.
2. Dispose of the non-recyclable components of the device in accordance with the regulations and recycle the recyclable components.

1.17 Behavior in case of an emergency

- In case of an emergency, switch the main switch to the O = OFF/ON position and pull out the mains plug.
- Keep the oven door closed and allow the oven to cool down to room temperature.



NOTE

- ▶ In case of an emergency, set the mains isolator switch on the device to O = OFF.
- ▶ In an emergency, the device must be completely shut down by disconnecting the mains plug.
- ▶ To ensure quick shutdown in an emergency, the mains socket and the mains plug must always be easily accessible.

1.18 Duty of care of the operator

The device is used in the commercial sector. The operator of the device is therefore subject to the legal obligations to ensure occupational safety.

In addition to the safety instructions in these operating instructions, the safety, accident prevention and environmental protection regulations applicable to the area of use of the device must be observed.

The following applies in particular:

- The operator must inform himself about the applicable health and safety regulations.
- The operator must ensure that all employees who work with the device have read and understood these operating instructions.
- In addition, he must train the personnel at regular intervals and inform them of any hazards that may arise when handling the device.
- The operator must provide the personnel with the necessary protective equipment.
- The operator must have all safety equipment checked regularly for functionality and completeness.

1.19 Duty of care of the user

The user of the device must fulfill the following obligations to ensure safe operation:

- Read and follow the operating instructions and safety instructions.
- Check the device, in particular the mains cable and the heating chamber, for visible damage, report any damage immediately and not switch on the appliance if it is damaged.
- Keep the device and the workplace clean.
- Wear the necessary protective equipment.

1.20 Periodic inspections

The device must be serviced regularly to ensure safe operation:

- All maintenance work described in chapter 9.2 must be carried out by the operator.
- Maintenance that is not carried out or is carried out too late can lead to consequential damage to the device.

2 Product description

2.1 General function of the device

Annealing with and without shielding gas:

The device is used for the heat treatment of components that are manufactured using selective laser melting (SLM), for example. The component can be heat-treated in a shielding gas box (SGBox) using shielding gas (argon, nitrogen, ...) with a low oxygen content.

Annealing:

The device is used for the heat treatment of components whose metal structure must be annealed stress-free after the manufacturing process.

The appliance can also be used to heat metal parts for hardening or debinding.

After entering the heating parameters, manually closing the oven door and pressing the start button, the heat treatment process begins. After the heating program has been completed and the device has cooled down, the oven door is unlocked manually using a button and the door can be opened. The finished product or the shielding gas box with the product can be removed using a removal tool (see 7.4.2).

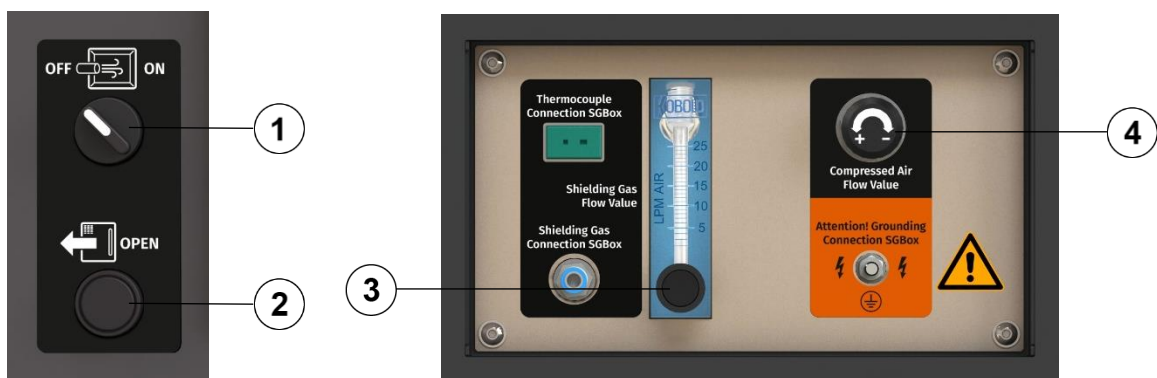
2.2 Components

The device has the following main assemblies:

- Program controller
- Heating chamber (HTC)
- Energy module
- Shielding gas module
- Oven door
- HTC rapid cooling

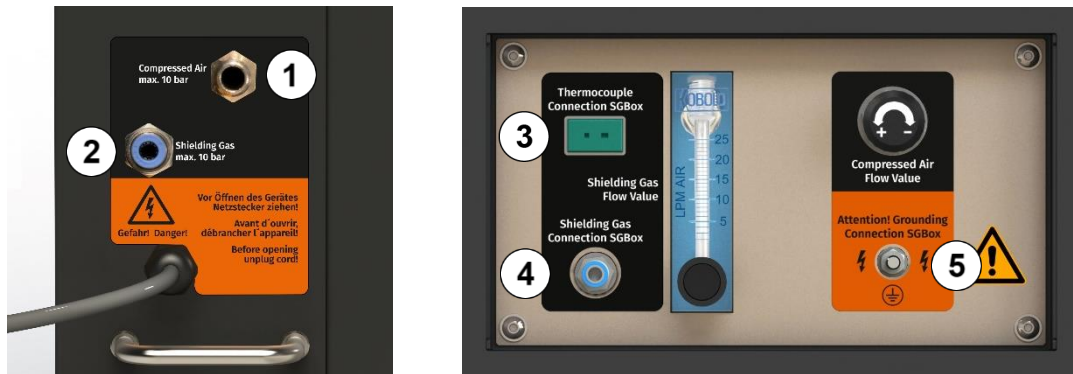
2.3 Control elements and their function

The device has the following control elements:



- 1 Switch “HTC rapid cooling”, activates the compressed air cooling of the HTC.
- 2 Push-button “door release”, opens the safety lock on the oven door.
- 3 Shielding gas flow regulator, regulates the volume of shielding gas.
- 4 Control valve for compressed air volume for HTC rapid cooling, regulation of the compressed air volume.

2.4 Connections on the device

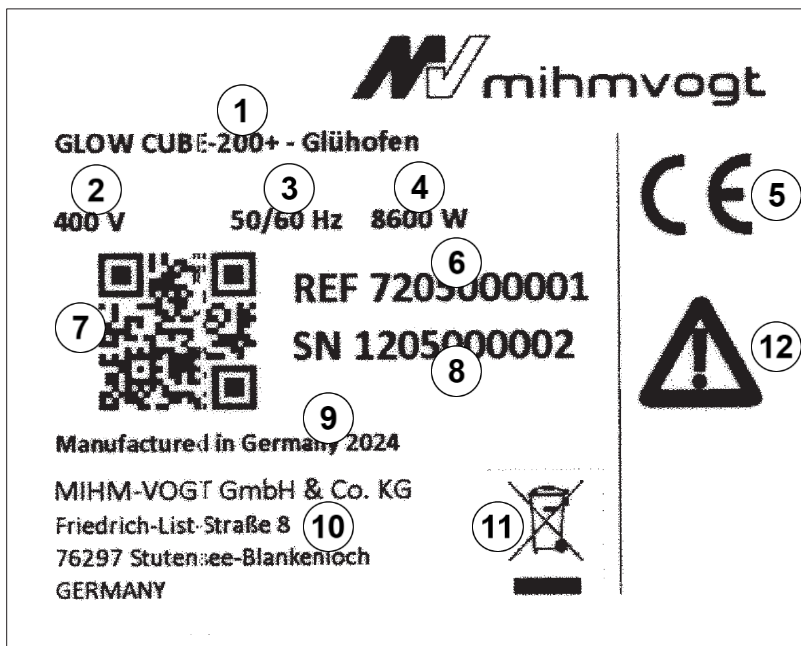


- 1 Compressed air inlet: Quick coupling NW7.
- 2 Shielding gas inlet: Socket for compressed air hose Ø 6mm.
- 3 Double-pole socket for thermocouple type K (SGBox).
- 4 Shielding gas outlet to the SGBox: Socket for compressed air hose Ø 6mm.
- 5 Earthing point: M6 thread (SW10).

2.5 Device data

2.5.1 Type plate

The type plate is located on the left-hand side of the appliance at the rear, above the mains isolating switch.



- | | | | |
|---|---------------------------|----|--|
| 1 | Designation - Device type | 8 | Serial number |
| 2 | Operating voltage | 9 | Country of manufacture and year of manufacture |
| 3 | Mains frequency | 10 | Manufacturer address |
| 4 | Performance | 11 | Disposal symbol |
| 5 | CE mark | 12 | Note symbol:
"Observe operating instructions and safety regulations." |
| 6 | Item number Mihm-Vogt | | |
| 7 | QR code | | |

2.5.2 Technical data

General information

Dimensions (W x D x H):	630 x 720 x 970 mm (incl. trolley H=1670 mm)
Heating chamber volume:	240 x 250 x 270 mm
Max. temperature:	1200 °C
Heating times with shielding gas box + 3 kg:	63 min
Heating times without shielding gas box:	53 min
Weight:	approx. 200 kg (incl. trolley approx. 250 kg)
Minimum distance around the device:	All-round: 500 mm / upwards: 1000 mm

Electrical connection values

Power supply:	400 V (± 10%) 3-phase
Frequency:	50/60 Hz
Max. Power consumption:	8.6 KW

Protection

On the device:	none
On-site:	Connection to a separate 3 phase circuit with 16 A type B without RCD. (other fuses according to the country of use)
Protection class:	IP 20 (protection against ingress of foreign bodies, but not against ingress of water)
Shielding gas:	Connection pressure: 5 bar - 10 bar Flow rate: 0 l/min - 25 l/min
Compressed air:	Connection pressure: 5 bar - 10 bar Flow rate: 0 l/min - 200 l/min

Operating conditions

Installation area:	Indoor use only (in dry rooms)
Temperature range:	+5 - +40 °C
Relative humidity:	Up to 31 °C: 80 %
Maximum humidity:	Up to 40 °C: 50 % no condensation
Geographical altitude:	Max. 3000 m above sea level
Degree of soiling:	2

2.6 Limitations for operation and storage

Limitations for operation:

- Maximum temperature: At working temperatures of 1150 °C or higher, increased wear of the heating chamber components is to be expected.
- If the power supply is insufficient, the device will not work or will not work properly.
- Improper loading of the oven may result in the appliance not working properly or the heating chamber being damaged.
- The maximum operating pressure for shielding gas is 10 bar.
- The minimum operating pressure for compressed air is 10 bar.

Limitations for storage:



NOTE

To prevent damage due to improper storage:

- ▶ Only store the device at temperatures between -40 °C and +70 °C.
- ▶ Always store the device in a dry and dust-free place.
- ▶ Avoid direct sunlight.
- ▶ Avoid mechanical shocks and vibrations.

3 Transportation, packaging and storage

3.1 Requirements for the executing personnel

Transportation and storage may only be carried out by trained personnel.

3.2 Lifting and transporting

The device may only be lifted and transported using a suitable forklift, industrial truck or a lifting crane. Use the 4 eyelets on the device for lifting with lifting gear.

3.3 Storage

The device may only be stored in closed rooms with a level and solid surface.

Furthermore, the following specifications must be met:

Parameter	Unit	Value
Max. temperature	[°C]	+70
Min. temperature	[°C]	-40
Humidity (range)	[%]	10-90
Air pressure (range)	[hPa]	500-1060

The following packaging symbols must also be observed for storage:



3.4 Packaging

The device is supplied in a wooden transport box (in accordance with IPPC-ISPM15 standard). The device is also wrapped in PE film.

3.4.1 Unpacking

Open the packaging at the points provided (see GLOW CUBE-200+ unpacking instructions).

3.4.2 Disposing of the packaging

Dispose of the packaging properly and in accordance with regulations. Observe the respective national or municipal regulations on the recycling of recyclable materials.

4 Installation and assembly

4.1 Requirements for the personnel carrying out the work

Installation and assembly may only be carried out by trained specialist personnel or an authorized service partner.

4.2 Requirements for the installation site

The device may only be installed in closed rooms with a level, solid and non-flammable surface; observe the requirements under 1.9.1.

4.3 Setting up the device

The device is supplied firmly bolted to its appliance trolley.

Carry out the following steps:

1. Place the device in its operating location.
2. Turn all four adjusting wheels on the castors to the right until the rubber buffers are firmly in contact with the floor and the device can no longer roll away and stands securely.
If necessary, align the device horizontally.



DANGER

Risk of injury from falling device!

- ▶ Ensure that the device stands stable!
- ▶ Make sure that the surface is clean and level and has sufficient load-bearing capacity.
- ▶ Observe the installation instructions under 1.9.1 and the operating conditions under 2.5.2.

5 Commissioning

5.1 Requirements for the personnel carrying out the work

Commissioning may only be carried out by trained specialist personnel or an authorized service partner.

5.2 Switching on the device

1. Insert the mains plug.
2. Set the mains isolator switch to I = ON.
3. Switch on the program controller with the main controller switch, I = ON/ON



5.3 Switching off the device

1. Use the main switch to switch off the program controller, O = OFF.
2. Set the mains isolator switch to O = OFF.



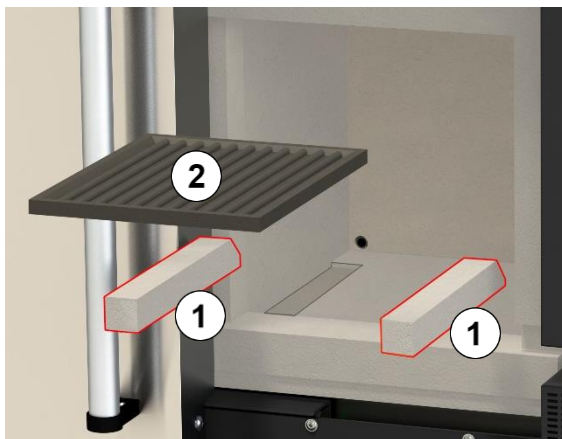
5.4 Authorizations

Only trained specialist personnel or an authorized service partner is authorized to commission the device.

5.5 Set up

5.5.1 Heating chamber

1. Open the oven door by pressing and holding the door release button and remove the transport lock.
2. Check the inside of the heating chamber for damage.
3. Insert the centering and spacer blocks (1) on the left and right into the recesses provided in the heating chamber.
4. Insert the ceramic insert plate (2) centrally into the heating chamber.



5.5.2 Compressed air supply

1. Connect the compressed air hose to the device.
2. Connect the compressed air hose to the in-house compressed air supply.



NOTE

Damage to the compressed air valve!

- Ensure that the operating pressure is not set above 10 bar.

5.5.3 Shielding gas supply

1. Connect the shielding gas hose to the appliance.
2. Connect the shielding gas hose to the shielding gas supply.



DANGER

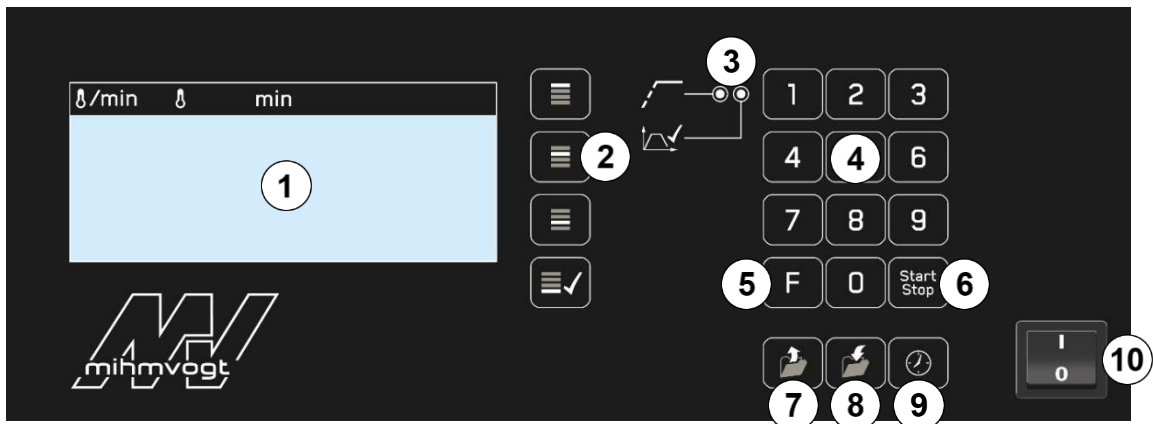
Danger from escaping gas!

Possible risk of explosion, fire and suffocation.

- ▶ The shielding gas and power supply must be disconnected and the gas supply closed before carrying out any work on the GLOW CUBE-200+ device.
- ▶ When handling shielding gas, observe the national safety regulations TRGS 526 (chapter 5.2.11 "Compressed gas cylinders and fittings").
- ▶ Check the gas pipes for leaks and secure seating.
- ▶ Protect on-site ducts and shafts from gas ingress.
- ▶ Ensure that the working environment is sufficiently ventilated.










6 Basic settings and system test

6.1 Description function buttons and display

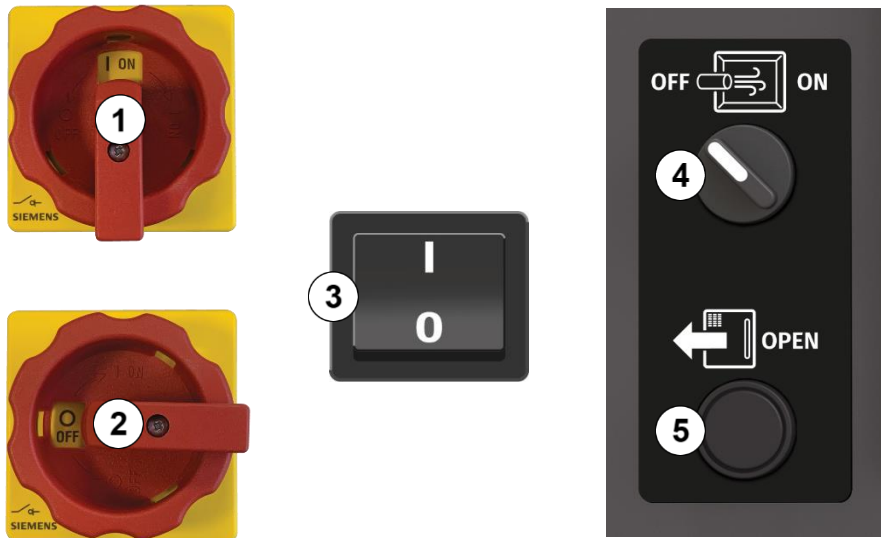


- 1 Display
- 2 "Select display line" buttons "Line 2-4" buttons and "Tick" button
- 3 Status LED (left: heating phase/ holding phase, right: end of program)
- 4 Numeric keypad
- 5 "F" button
- 6 "Start Stop" button
- 7 „Load program" button
- 8 „Save program" button
- 9 „Autostart timer" button
- 10 Controller Main switch

Switch and button functions:

-  Controller main switch ON/ON (I) / OFF/OFF (O) for switching the controller on/off.
-  "Line 4" button to select the respective display line (2-4).
-  Button "Select display line 1" or "Confirm" ("Tick" button).
-  "Enter numbers" button (numeric keypad) for entering numbers.
-  "Autostart timer" button for programming the timer.
-  "Start Stop" button to start and stop the process.
-  Press the "Save program" button to save a program.
-  Press the "Load program" button to call up a program from the memory.
-  "F" button to enter basic settings. In the "Save program" menu, letters of the alphabet can be selected using the "F" button.

6.1.1 Switching elements on the device



- 1 Mains isolator switch I = ON
- 2 Mains isolator switch O = OFF
- 3 Controller main switch I = ON, O = OFF
- 4 Manual rapid cooling HTC
- 5 Door locking button

6.1.2 Control panel shielding gas module

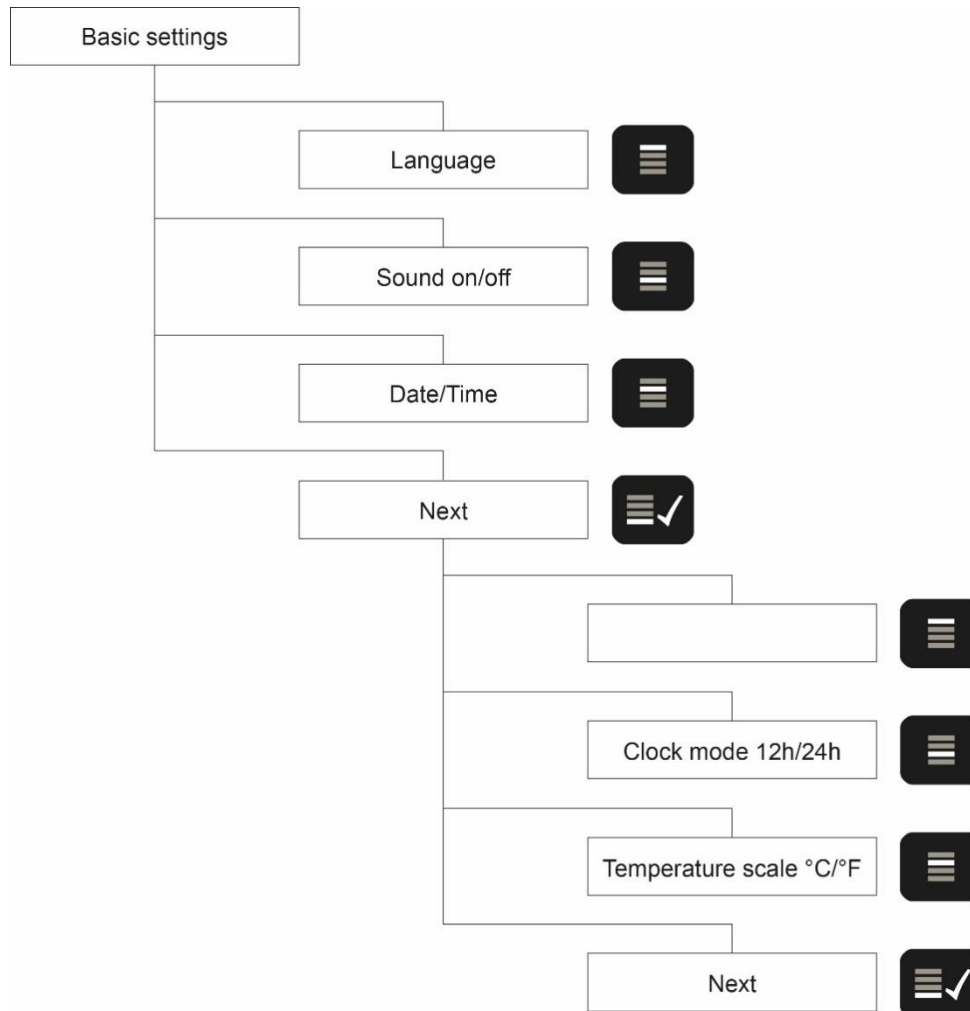


- 1 Connection type K Thermocouple for SGBox
- 2 SGBox shielding gas supply connection
- 3 Flow regulator shielding gas
- 4 Control valve compressed air rapid cooling HTC
- 5 Earthing point for SGBox

6.2 Basic settings program controller

During initial commissioning, the basic settings of the device must be entered on the controller; please refer to the separate instructions "GLOW CUBE-200+ basic settings".

The illustration shows the menu scheme for the basic settings:



6.3 System test of the basic functions

The device has a fixed program that tests the essential basic functions in a test run:

Requirements for the system test: Compressed air and shielding gas connection.

Basic functions in the test run: → Heating up → Valve debinding → Valve shielding gas → Valve compressed air



1. Switch on the device and the program controller:

l/min	l	min	
30	0	0	STNDBY 1
30	0	0	23°C
30	0	0	MO 08:16
STAGE 1-3			MO 08:16



2. Press the "Load program" button. The last program used is called up. Enter the number "21" using the numeric keypad or press and hold "Line 4" button until program position 21 is displayed; this is the fixed program "System test", which cannot be changed or deleted:



3. Press the "Line 2" button "YES" to confirm loading, the menu screen "System test READY 21" appears:



If you want to cancel loading, press the "Tick" button for "NO".



4. Press the "Start Stop" button to start the system test. (You can cancel the test by pressing the "Start Stop" button again).

A test run takes approx. 10 minutes. In order to recognize whether the individual basic functions are working properly, you must remain with the device during the system test and observe the functions on the display or acoustically (fan/relay).



After the heating has increased the temperature by 10° C-15° C, the "Debinding" menu screen appears automatically → The switching of the relay can be heard acoustically. (Display flashes for approx. 20 sec., left status LED flashes orange, temperature rises):



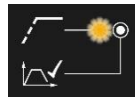
Once the "Debinding" test routine has been completed, the "Shielding gas" function is tested → The switching of the relay can be heard and the flow rate can be observed on the flow meter; here the desired value can be set (display flashes, left status LED flashes orange):



This is followed by fast cooling (refer to “Cooling”) → The switching of the relay or the inflowing compressed air can be heard (display flashes, left status LED flashes orange, temperature drops):



5. At the end of the system test, the function of the manual fast cooling is tested:



To test the HTC fast cooling, set the switch to ON. As long as the switch is in the ON position, compressed air flows into the heating chamber, which is audible. After a successful test, set the switch back to OFF and confirm the end of the test with the “Tick” button.



6. The right-hand status LED flashes green. Press the "START STOP" button to complete the system test (the right-hand status LED goes out and the display switches to the standby screen).



If there is a malfunction during the system test, the corresponding error menu screen appears. Please refer to the error code matrix in chapter 10 for the error description.

7 Operation

7.1 Requirements for the personnel carrying out the work

The device may only be operated by trained specialist personnel.

7.2 Notes on safe operation

- Check the device for damage before use.
- Every user must have carefully read and understood the operation instructions.
- In particular, the safety instructions during operation must be observed, see 1.7.
- Wear the recommended personal protective equipment.

7.3 Warning on the device

If the oven door is opened at over 300°C, a warning appears on the display:



7.4 Control elements

7.4.1 Program controller

The program controller is used to enter all parameters and control all processes.

7.4.2 Removal tool

The device is loaded and unloaded manually using the removal tool for the SGBox and the annealing plate. The heat shield at the removal tool protects your hands from excessive heat. Wearing heat-resistant gloves is recommended.



7.5 Workflows

7.5.1 Annealing without shielding gas

Start screen

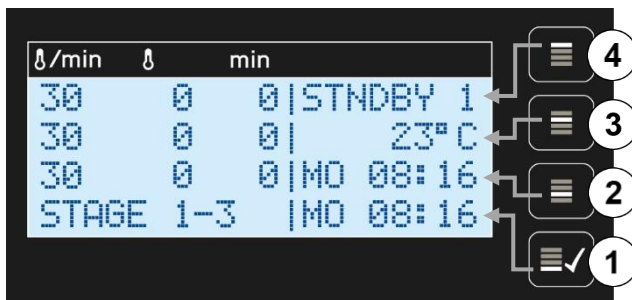


- 1 Manufacturer
- 2 Software version
- 3 Serial number of the device
- 4 Serial number of the program controller

Display functions



- 1 Heating rate in °C/min / °F/min
- 2 Set end temperature of the stage
- 3 Set holding time of the stage



- 1 Selection button for entering the parameters in line 1 or input confirmation ("Tick" button)
- 2 Selection button for entering the parameters in line 2 ("Line 2 button")
- 3 Selection button for entering the parameters in line 3 ("Line 3 button")
- 4 Selection button for entering the parameters in line 4 ("Line 4 button")

Programming



1. Plug in the mains plug, switch on the appliance at the mains isolator switch I = ON.



2. Switch on the controller main switch I = ON.
The start screen appears first, which changes to the standby screen after 2 seconds.

After initial start-up:

l/min	l	min	
MIHM - VOGT			
DO	30	0	0 STNDBY 1
OF	30	0	0 23°C
ST	30	0	0 MO 08:16
STAGE 1-3 MO 08:16			

After switching on again if a program has already been saved:

l/min	l	min	
MIHM - VOGT			
DO	30	0	0 STNDBY 1
OF	30	0	0 23°C
ST	30	0	0 MO 08:16
STAGE 1-3 NEXT			

After switching off during the process and switching on again:

l/min	l	min	
MIHM - VOGT			
DO	30	0	0 RUN 1
OF	30	440	0 783°C
ST	30	1200	60 MO 08:49
STAGE 1-3 MO 10:33			

Programming heating stages

The control system offers the option of programming processes with up to 9 stages.

As the display has 4 lines, a menu screen always shows 3 stages (ascending from bottom to top) and the currently visible stage range.



The "Tick" button can be used to scroll through the stages display. By pressing this button, the next stage appears and the lowest stage disappears. (1-3; 2-4; 3-5; 4-6; 5-7; 6-8; 7-9; 1-3; ...)



The desired stage can be selected for input using the respective line key, the cursor flashes at the beginning of each line. The preset "default values" (30 0 0) can now be changed using the numeric keypad.

l/min	l	min	
30	0	0	0 STNDBY 1
30	300	0	0
30	980	60	0
STAGE 1-3			

l/min	l	min	
30	300	0	0 STNDBY 1
30	980	60	0 23°C
25	1100	60	0 MO 08:16
STAGE 2-4 NEXT			

If no entry is made within one minute during programming, the cursor goes out and a signal tone sounds. The device is then in stand-by mode. To return to programming mode for the stage, simply press the desired line button again.



1. Press "Line 2" button (the cursor flashes at the beginning of the line at the "Heating speed" input field).



2. Enter the heating rate using the numeric keypad.
The minimum heating rate is 1 °C/min (2° F/min),
the maximum heating rate is 30 °C/min (86 °F/min).

If the desired input value only has one digit, you can start by entering a "0" (e.g. "05") or you can only enter the one-digit value (e.g. "5") and move the cursor to the next input field using the line key. If a two-digit value is entered, the cursor moves on automatically.



3. Now enter the 4-digit target temperature using the numeric keypad.
The following also applies here: If the target temperature only has 3 digits, start with a "0" and enter
Enter 4 digits or enter the desired 3-digit value and jump to the next input field using the line key.

NOTE

The maximum possible target temperature is 1200 °C.

- ▶ If a higher value is entered, the display automatically jumps to the maximum value of 1200 °C.



4. Now enter the 3-digit hold time using the numeric keypad.

NOTE

The maximum programmable hold time is 999 minutes.

- ▶ If 4 digits are entered, the last digit entered is ignored.



5. To program the other heating stages, repeat steps 1 - 4 after you have jumped to the next desired stage with the respective "Line" button.



6. Once the first 3 stages have been programmed, press the "Tick" button to go to the 4th stage; once this has been programmed, press the "Tick" button again to display the 5th stage, etc.

NOTE

If not all 9 stages are required for a program, make sure that the target temperature is set to "0" in the stages that are not required.

All stages for which the target temperature is set to "0" are ignored by the controller.

Save heating program

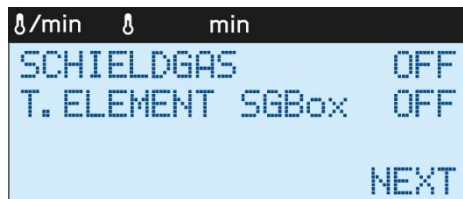
Up to 20 programs can be saved. All saved programs are retained even after the device is switched off.

The program is always saved under the program number under which it was previously loaded if the program number is not changed when saving.

Proceed as follows:



1. Press the "Save program" button.
2. The "Shielding gas / thermocouple SGBox" menu screen appears to select the "Switch on shielding gas or thermocouple in the shielding gas box" functions:



3. Press the "Tick" button "NEXT", the menu screen "Debind / F. Cooling" appears:



4. Press the "Tick" button "NEXT", the menu screen "Save 1 YES / NO" appears:



5. Press the "Line 2" button "YES", the program has now been saved.



6. If you want to cancel the saving process, press the "NO" "Tick" button.

Save heating program with name

To identify a specific heating program individually and clearly, it can be saved with a freely selectable name:



1. Press the "Save program" button.
The "Shielding gas / thermocouple SGBox" menu screen appears (see above).





2. Press the "Tick" button, the "Debinding / S. Cooling" menu screen appears (see above). Press the "Tick" button, the "Save program" menu screen appears.



3. Press the "F" (function) button to change the first letter of the desired program name. Press this button repeatedly to scroll through the alphabet from A to Z. Numbers can also be entered using the numeric keypad.



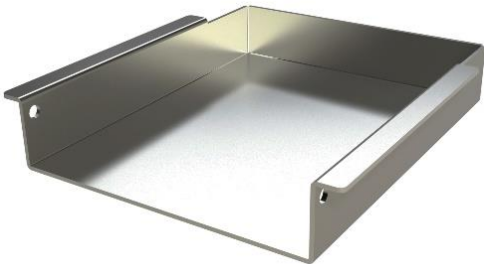
- 

4. Press the "Line 4" button to jump to the next letter. Proceed in the same way with the other letters of the name until the desired program name appears in full: The entire left-hand input field is available for naming, i.e. 4 lines with 11 letters each (44 letters in total). Press "Line 3" button to change the line. To jump to the next line, you can also press "Line 4" button 12 times.
- 

5. To save, confirm "YES" after naming with the "Line 2" button.

Information:

For the heat treatment of individual parts or several small parts, we recommend using the annealing plate art. no.: 8203000050 (optional accessory):



7.5.2 Annealing with shielding gas

In order to prevent the formation of oxides and thus surface contamination during the heat treatment of metal parts, annealing can be carried out in a shielding gas, i.e. in an oxygen-reduced atmosphere. Nitrogen or the noble gas argon, for example, are used for this purpose.

The use of argon from compressed gas cylinders is explained here as an example:

Using the compressed gas cylinder

Always use argon cylinders with a pressure gauge and a pressure reducer. The purity of argon must be at least 4.6 = 99.996 % by volume.

Using the SGBox

The process described below requires the use of the SGBox 100 or SGBox 200, see separate information sheet "Handling the shielding gas box".

Use of the annealing and hardening foil

The process described below requires the use of annealing and hardening foil, see separate information flyer "Handling the shielding gas box", chapter "Use of annealing and hardening foil".

Determining the fill level of the compressed gas cylinder

The fill level of the compressed gas cylinder can be determined on the pressure gauge: With a completely full argon compressed gas cylinder, 200 bar is displayed on the pressure gauge. If the pressure gauge only shows 100 bar, for example, the cylinder is still half full.

The recommended operating pressure is 7+/-1 bar.



NOTE

The operating pressure in the argon compressed gas cylinder must not fall below 4 bar, as the shielding gas valve no longer switches safely at a pressure below 4 bar.



WARNING

Danger due to escape of shielding gas!

- ▶ Close the pressurized gas cylinder after each process
- ▶ Ensure adequate ventilation of the work area.
- ▶ Regularly check the tightness of the protective gas system.



DANGER

Electrical energy! Danger to life due to electric shock.

- ▶ Earthing point on the shielding gas module: The electrical energy of the shielding gas box is dissipated through the earthing cable, therefore always earth the shielding gas box.



1. Switch on the device at the mains isolator switch and the controller at the controller main switch I = ON.



2. Press the „Load program“ button to load a program.



3. Press the "Save program" button, the "Shielding gas / thermocouple SGBox" menu screen appears:

l/min	l	min	
SHIELDGAS			OFF
T. ELEMENT	SGBox		OFF
			NEXT



4. Press the "Line 4" button to switch on the shielding gas function.

l/min	l	min	
SHIELDGAS			ON
T. ELEMENT	SGBox		OFF
			NEXT



NOTE

Annealing with shielding gas and thermocouple type K inside the SGBox see 7.6.1.

5. Press the "Tick" button to confirm the entries and go to the "Debinding / fast cooling HZK" menu screen. If desired, the respective "Debinding" and/or "Fast cooling" functions can be activated using the "Line 3" and "Line 4" buttons. Use the "Tick" button to go to "Next", the next menu screen appears.



l/min	l	min
DEBIND		OFF
F. COOLING HC		OFF
		NEXT

6. Shielding gas ON: To select the start temperature for shielding gas, press the "Line 3" button and change the "Default value" (50 °C) to the desired value using the numeric keypad. To select the stop temperature, press the "Line 2" button and change the "Default value" (50 °C) to the desired value using the numeric keypad.



l/min	l	min
SCHIELDGAS		ON
START		150° C
STOP		400° C
		NEXT

- Press the "Tick" button to save the values and the next menu screen appears.



7. Debinding ON: Press the "Line 3" button and change the "Default value" (50 °C) to the desired value using the numeric keypad. To select the stop temperature, press the "Line 2" button and change the "Default value" (700 °C) to the desired value using the numeric keypad.

l/min	l	min
DEBIND		ON
START		150° C
STOP		450° C
		NEXT

- Press the "Tick" button to save the values and the next menu screen appears.



8. Fast cooling ON: Press the "Line 3" button and change the "Default value" (1100 °C) to the desired value using the numeric keypad. To select the stop temperature, press the "Line 2" button and change the "Default value" (50 °C) to the desired value using the numeric keypad.

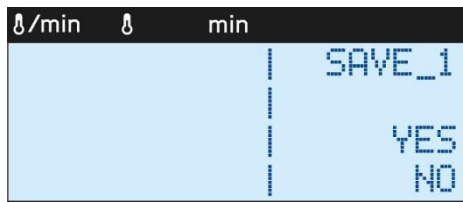
l/min	l	min
F. COOLING HC		ON
START		1000° C
STOP		300° C
		NEXT

- Press the "Tick" button to save the values and the next menu screen appears.





9. To switch to the "Program start" menu screen and save the program, press the "Line 2" "YES" or cancel the saving process with the "Tick" button "NO".

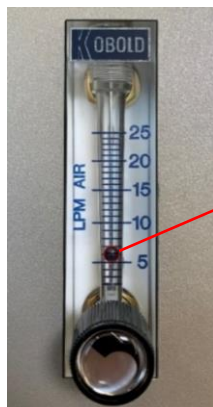


10. To start the program, press the "Start Stop" button: The sequence screen appears and the program starts. The temperature indicator on the display (line 3, right) shows the temperature change continuously.



Information:

- The shielding gas box (SGBox) must be prepared before starting the process. (See information sheet "Preparing the SGBox" and "Handling and using the annealing foil") Carefully insert the SGBox into the heating chamber so that it is centered in the heating chamber and does not touch the insulation or heating plates.
- Place the SGBox sufficiently deep in the heating chamber so that the shielding gas line does not collide with the door insulation.
- **Important:** Earth the SGBox, i.e. screw the earthing cable to the SGBox with the earthing point of the device.
- Close the door before starting the process!
- Connect the shielding gas supply to the quick coupling of the SGBox.
- Open the shielding gas valve on your shielding gas supply.
- Check the gas flow visually on the floating ball of the shielding gas regulator once the start temperature has been reached.
- If the preset flow rate value is not correct, it can now be adjusted on the shielding gas regulator, see illustration:



5 l/min

Example: To set the controller on the device shielding gas to a flow rate of 5 l/min: Turn the control until the lower edge of the floating ball touches the line marking of the set value.

7.5.3 Autostart timer function

The device can be programmed via an internal timer so that the currently loaded program starts automatically. You enter the desired completion time. The completion time is entered with the desired day of the week and the desired time.

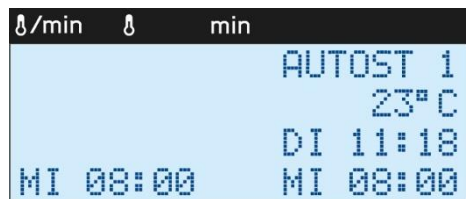
Proceed as follows:



1. Load the desired program.



2. Press the "Autostart timer" button. The "Autostart timer" menu screen appears.



3. Press the "Tick" button to enter the day of the week. Use the numeric keypad to set the days of the week (1 = Monday, 2 = Tuesday, 3 = Wednesday, etc.). After entry, the cursor jumps to the hours field.



4. Use the numeric keypad to set the hour. After entering two digits, the cursor jumps to the minutes field.



5. Use the numeric keypad to enter the minutes; after entering two digits, the programming is complete.

6. The start time is calculated and displayed automatically. The autostart timer is now activated. (1 = current time, 2 = set finish time, 3 = calculated start time)



7.5.4 Loading and renaming of saved programs

Load a heating program



1. Press the "Load program" button, the "Load program" menu screen appears. The controller loads the last program used.



2. Press the "Line 4" button to navigate through the program list (program positions 1-20). Select the desired program number (here 1).



3. Press the "Line 2" button "YES" to confirm loading, the standby screen appears:



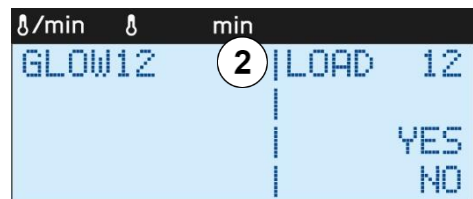
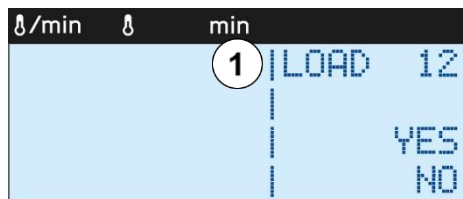
4. If you want to cancel loading, press the "NO" "Tick" button.

Save or rename program with program name



1. Load the program to be renamed (if it is not the last one used).

2. The program is displayed (1), if a name has already been assigned, this appears in the left-hand text field (2):



3. Press the "Save program" button and confirm twice with the "Tick" button to access the "Save program" menu screen.



4. Press the "F" button, the cursor now flashes on the first letter of the name (top left).



5. The "F" button can be used to change the letter, the numeric keypad can be used to enter numbers, the "Line 4" button can be used to select the next letter of the alphabet and the "Line 3"/"Line 2"/"Line 1"/"Tick" button can be used to select the next line.

The entire left-hand text field is available for the program name (4x11 letters or digits)



Note: The program position cannot be changed here.



6. Press "Line 2" button to confirm saving, the program is now saved with a new name under the specified program location.

7.6 Optional functions

7.6.1 Annealing with the type K thermocouple (in the SGBox)

Activation thermocouple type K:

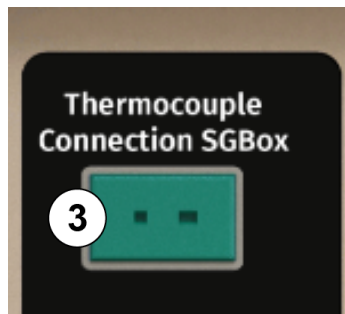
When annealing with shielding gas, the type K thermocouple can be used as an option. This enables a more precise temperature measurement within the SGBox. The device automatically switches to the type K thermocouple if this has been activated in the "Save" menu sequence with "Line 3" button:



As the temperature is controlled more precisely with a type K thermocouple inside the SGBox, the device automatically switches to the type K thermocouple in the SGBox from a temperature that is 5°C below the highest target temperature and uses this to regulate until the end of the process.

Use thermocouple type K:

1. Insert the type K thermocouple into the SGBox (1) and insert into the guide (2).
2. Insert the green plug into the 2-pin socket on the shielding gas module (3).




7.6.2 Add-on elements for equipment trolleys

Up to two add-on shelves (2x item no.: 8202100015) for equipment trolleys can be fitted to the right and left of the trolley (optional accessory):



8 Declaration of conformity



EC Declaration of Conformity in accordance with Machinery Directive 2006/42/EC Annex II 1.A

The manufacturer/distributor

MIHM-VOGT GmbH & Co. KG
Friedrich-List-Str. 8
76297 Stutensee, Germany
Tel.: +49 (0) 72 44/7 08 71-0
Fax: +49 (0) 72 44/7 08 71-20
E-mail: info@mihm-vogt.de

hereby declares that the following product:

GLOW CUBE-200 und GLOW CUBE-200+

Description:
This annealing furnaces is a high-temperature furnaces for commercial use in industry and dental laboratories for stress-free annealing of SLM printed parts.

complies with all relevant provisions of the above Directive and of the additional Directives applied (see below) – including all changes to these Directives that are valid at the time of this declaration.

The following additional EU Directives have been applied:
EMC Directive 2014/30/EC
RoHS Directive 2011/65/EU
The safety objectives of the Low Voltage Directive 2014/35/EC have been complied with.

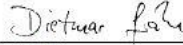
The following harmonised standards have been applied:

EN 61010-1:2010	Safety requirements for electrical equipment for measurement, control, and laboratory use – Part 1: General requirements (IEC 61010-1:2010)
EN 61010-2-010:2014	Safety requirements for electrical equipment for measurement, control, and laboratory use – Part 2-010: Particular requirements for laboratory equipment for the heating of materials (IEC 61010-2-010:2014)
EN 61326-1:2013	Electrical equipment for measurement, control and laboratory use – EMC requirements – Part 1: General requirements (IEC 61326-1:2013)
EN ISO 12100:2010	Safety of machinery - General principles for design - Risk assessment and risk reduction (ISO 12100:2010)

The following national or international standards (or parts/clauses thereof) and specifications have been applied: -

Name and signature of the person who is authorised to compile the technical documents:
Achim Apfel

Place: Stutensee
Date: 22.10.2024



(Signature)
Dietmar Gräbe

We declare conformity for the **GLOW CUBE-200+** device on the basis of the following standards:

- Safety: EN 61010-1:2010 and EN 61010-2-010:2014
- EMV: EN 61326-1:2013
- Risk assessment and risk reduction: EN ISO 12100:2010



RoHS conformity confirms that the device is low in harmful substances, i.e. that all legally applicable limit values are complied with. The device must not be carelessly thrown away, but must be disposed of in the recycling system, see 1.16.4.

9 Servicing and maintenance



DANGER

Electrical energy!

Danger to life due to electric shock.

- ▶ Work on electrical systems may only be carried out by qualified electricians.
- ▶ Before carrying out maintenance, cleaning and repair work, disconnect the power supply to the device and secure it against being switched on again.
- ▶ Do not touch live cables and components with wet hands.
- ▶ Observe the accident prevention regulations when handling electrical current.



WARNING

Hot surfaces!

Severe burns to the limbs.

- ▶ Always allow the device to cool down completely before carrying out maintenance, cleaning and repair work.
- ▶ Wear heat-resistant, heat-insulated safety gloves when working on hot components.



NOTE

- ▶ The operating instructions must be read and understood by every operator before working on the appliance.
- ▶ The operating instructions must be kept for the specified service life of the appliance.
- ▶ Wear personal protective equipment for all work on the device.



9.1 Requirements for the executing personnel

Maintenance and servicing may only be carried out by trained specialist personnel.

9.2 Maintenance schedule

Components:	Interval:	Responsible person:
Oven door lock	monthly	Operator
Cooling fan	before each application	Operator
Heating chamber interior	before each application	Operator
Heating chamber Interior vacuum	monthly	Operator

10 Faults and error messages



DANGER

Electrical energy!

Danger to life due to electric shock.

- ▶ Work on electrical systems may only be carried out by qualified electricians.
- ▶ Before carrying out installation, maintenance, cleaning and repair work, disconnect the power supply to the appliance and secure it against being switched on again.
- ▶ Do not touch live cables and components with wet hands.
- ▶ Observe the accident prevention regulations when handling electrical current.



WARNING

Hot surfaces!

Severe burns to the limbs.

- ▶ Do not touch the housing or the oven door during operation.
- ▶ Always allow the device to cool down completely before carrying out maintenance, cleaning and repair work.
- ▶ Wear heat-resistant, heat-insulated safety gloves when working on hot components.



NOTE

Material damage due to inadequate repairs to electrical cables!

Malfunctions and defective electrical components possible.

- ▶ Never repair defective cables or plugs, but replace them.

10.1 Malfunctions

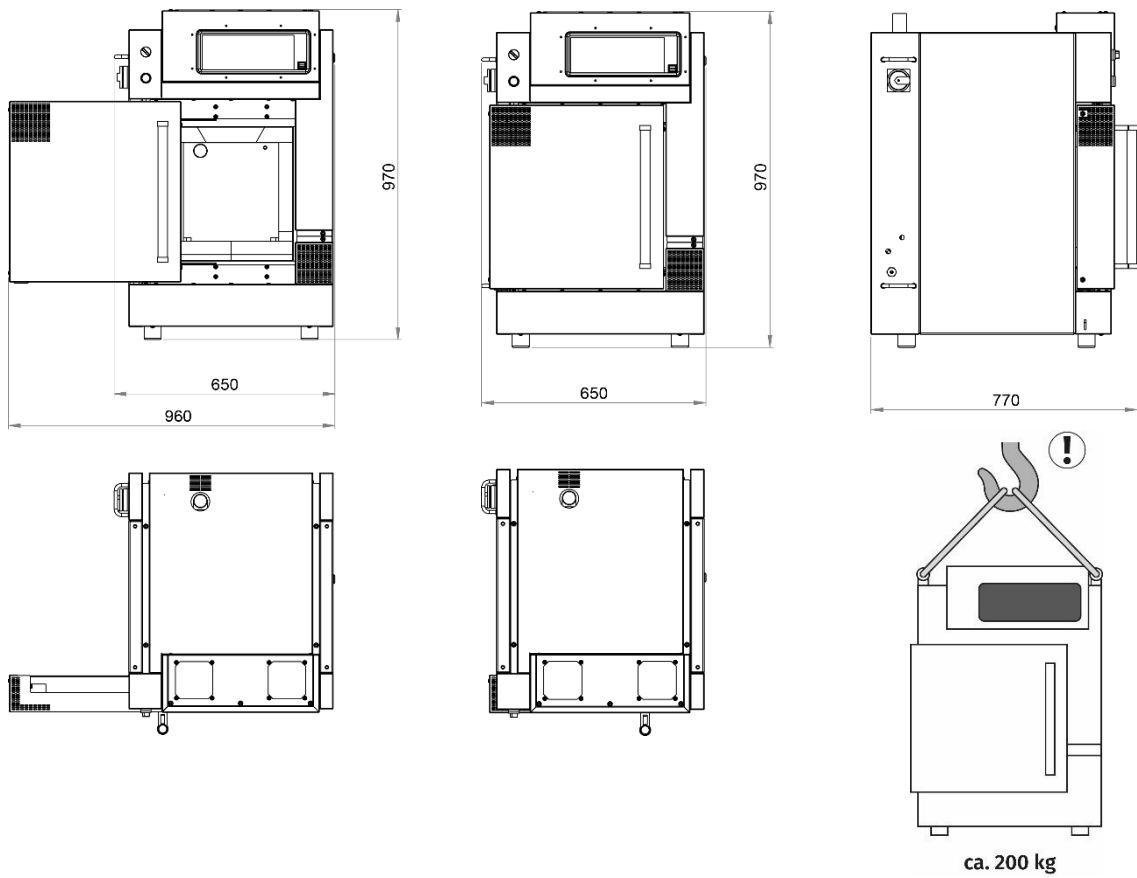
Malfunction	Possible cause	Troubleshooting	Responsibility
Wrong time / day	Time / day stored incorrectly in the controller	Set the time / day correctly	General operator
Wrong time / day	Time / day has been reset because the power supply to the RTC is interrupted / defective button cell on controller	Replace button cell (CR2032)	General operator
No indication on the display, status LED does not light up	No power supply available	Check the on-site fuse; check the appliance fuse; check the connecting cable; contact a qualified electrician if necessary	General operator
Door insulation damaged	Incorrect positioning of the SGBox	Replace door insulation; position SGBox correctly	General operator
Device does not start automatically	Power failure / interruption of the power supply	Check power supply for interruption; contact a qualified electrician if necessary	General operator
No indication on the display, status LED lights up briefly	Defective display	Replace program controller	General operator
Status LED flashes orange, but oven does not heat up	Defective heating	Check heating for continuity; contact a qualified electrician if necessary	General operator
Display: "Door open" when the door is closed	Limit switch defective or dirty; door jams and is not fully closed	Check limit switch; clean door guide	General operator

10.2 Error messages

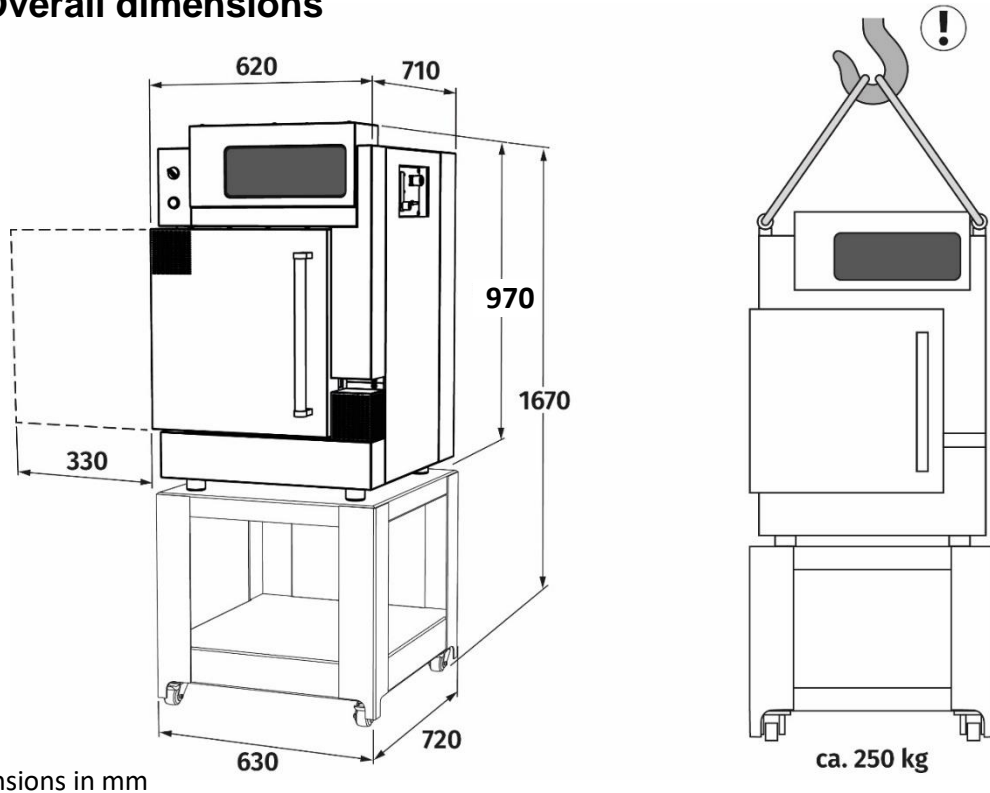
Error message	Possible cause	Troubleshooting	Responsibility
„Mains interruption" display	Mains interruption during the heating process for more than 10 seconds	Acknowledge with start/stop button; check power supply for interruption; contact a qualified electrician if necessary	General operator
Display: "Security shutdown." F71	Appliance temperature is over 1230°C	Switch off the appliance and allow to cool down. If the fault occurs repeatedly, contact the manufacturer	General operator
Display: "Sensor + <--> - " F43	Thermocouple connected incorrectly; thermocouple connection on program controller connected incorrectly; heating chamber is significantly colder than room temperature	Check the thermocouple connections on the thermocouple and program controller; Open the device door and allow the heating chamber to reach room temperature	General operator
Display: "Sensor closure" F40	Thermocouple defective or measuring input on program controller defective; abrupt change in temperature	Check the thermocouple in the heating chamber for damage; contact the manufacturer	General operator
Display: "Sensor breakage" F41	Thermocouple defective or measuring input on program controller defective	Check the thermocouple in the heating chamber for damage; contact the manufacturer	General operator
Display: "Thyristor defective" F30	Defective program controller; defective heating	Contact manufacturer; check heating for continuity; contact a qualified electrician if necessary	General operator
Display: "Heating chamber defective" F30	Temperature drops during the heating phase; defective heater	Contact manufacturer; check heating for continuity; contact a qualified electrician if necessary	General operator

11 Technical drawings

11.1 Device dimensions



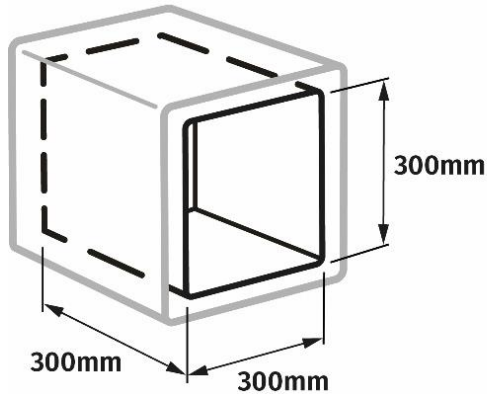
11.2 Overall dimensions



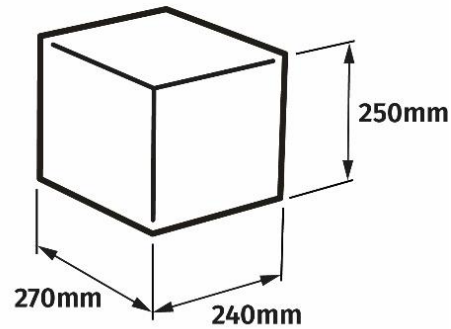
All dimensions in mm

11.3 Heating chamber dimensions

Inner volume of heating chamber



Useful Volume (material to be heated)



11.4 Usable space shielding gas box 100 / 200

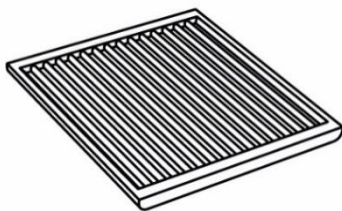


SGBox 100

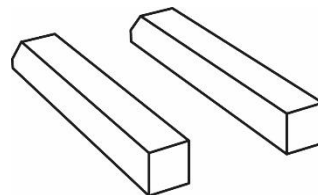


SGBox 200

11.5 Heating chamber accessories (scope of delivery)



1. Ceramic insert plate:
Place it in the center of the heating chamber, grooves upwards.



2. Centering and spacer stones:
Place the stones right and left in heating chamber in the troughs, align as shown.



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