

ROMA INSULATION SYSTEMS

# Environmental simulation and test chambers

Customized to your exact specifications



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## Assembly and operating instructions

Version 1.5

08/2019



SO EVERYTHING FITS. **ROMA**

## Imprint

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## Document info for operating instructions

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## Change history for operating instructions

Version	Author	Date	Description
1.0	Hitzler, Zwibel	07/2018	Original version
1.1	Zwibel	10/2018	Editorial revision
1.2	Zwibel	11/2018	"4.4.1 Safety instructions" reviewed
1.3	Zwibel	04/2019	Further applicable documents
1.4	Zwibel	05/2019	4.3 Transportation
1.5	Hitzler	08/2019	Further applicable documents; Individualization removed; „2 Technical data and product description“

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# 1 Instructions and use

## 1.1 To the user of this manual

Read the entire installation and operating instructions carefully before installing the product, commissioning it for the first time, modifying it, completing it or maintaining it. The manual should make it easier for you to become familiar with the product and use it in applications in the intended way. The manual contains important information on safe and proper transportation and operation as well as on installation of the product. Observing this information will help to avoid dangers, reduce repair costs and downtime, and increase reliability and service life.

Always keep the manual easily accessible at the location where the product is in use. In addition to these instructions, general, statutory and other binding regulations on accident prevention and environmental protection must be observed and enforced.

Because of the different layouts and sizes of the housings, illustrations in these instructions may vary slightly from the actual view. However, function and operation are identical.

## 1.2 Legal information

These operating instructions contain the information required for the intended use, correct installation, commissioning and operation as well as maintenance of the housing. Knowing and following the instructions in this manual are the prerequisite for using the product free of danger and for safe operation and maintenance.





These operating instructions apply exclusively to the housing. For the final product, operators must develop their own operating instructions.

These operating instructions cannot take every conceivable application into account. Should you require further information or should special problems occur which are not dealt with in sufficient detail in these operating instructions, please request the required information from your specialist dealer or directly from Romakowski GmbH & Co. KG. In addition, we advise that the operating instructions have no legal effects for any earlier or existing agreements, commitments and promises, or other legal relationships regardless of their type or nature.




### 1.3 Explanation of symbols and instructions

In these operating instructions, the following harmonized terminology and symbols will be used to refer to dangerous situations in accordance with ANSI Z535.6.

#### 1.3.1 Warning levels

Sign	Meaning
	Indicates the presence of an imminent threat of serious injury or death.
	Indicates a potentially hazardous situation that could result in serious injury or death.
	Indicates a potentially hazardous situation that could result in minor injuries. It also provides a warning of possible property damage.
	This symbol is used for information regarding installation, operation, maintenance or repairs that are important but not dangerous.

#### 1.3.2 Safety signs/symbols

Sign	Meaning
	Warning of crushing in doors and moving parts
	Warning of cuts from attachments and internal components
	Electric voltage warning symbol

### 1.3.3 Nameplate

The nameplate is attached to a walk-through leaf of the door unit, on the front side below the uppermost hinge (see example illustration).

ROMA DÄMM-SYSTEME	
Herdweg 31	
D-86647 Buttenwiesen	
Order: XXXXXXXX	Year: XXXX
Specifications:	
Temperature range: -xxx°C / +xxx°C	
Pressure difference: +/- xxx Pa	

### 1.4 Target group

The target group of this operating manual are all persons who install, maintain and operate the housing.

#### IMPORTANT INSTRUCTIONS

- Read these instructions carefully before installing, commissioning or carrying out maintenance on the housing. Keep these instructions nearby for later reference! If you make the equipment available to other people to use, provide them with these instructions, too.
- Personnel responsible for operating the product must have read the instructions before commencing work, especially "3 Safety" on page 10. This is especially the case for staff who only work on the product occasionally, for example setting it up or maintaining it.

### 1.5 Further documents

#### IMPORTANT NOTICE

- Observe all additional documents provided during installation, commissioning, and maintenance (order confirmation, delivery note, technical data sheets, diagrams/schedules, etc.).



## 2 Note on further applicable documents

Romakowski GmbH & Co. KG is a manufacturer of customer-specific housing solutions for test chambers that comply with the most rigorous requirements. The sandwich elements manufactured for this purpose have a wide variety of structural forms and surface coatings, which are sealed gas-tight on the inside and diffusion-proof on the outside. Each housing is tailored to individual, customer-specific requirements. Examples of applications are environmental simulations or airbag tests.

Technical specifications, scope of delivery and diagrams/schedules vary according to customer requirements. For details about your system, please refer to the information in the documentation supplied, the order and the delivery note. All values and instructions in these documents must be observed.

## 3 Safety

This chapter contains important basic information for the correct and safe handling of the product. Read it carefully before you start working. All other chapters may also contain warnings relevant to sections or actions.

### 3.1 Product liability

The required protection of the product may be impaired in the following cases. Liability for the housing then passes to the operator.

- The housing is not operated and used in accordance with the operating instructions.
- The housing is used for purposes other than the intended ones.
- The state of the housing at the time of delivery is altered or unauthorized operating or structural modifications are carried out.
- The housing is not maintained and cleaned according to specifications.

### 3.2 Exclusion of liability

The manufacturer assumes no liability for personal injury or property damage caused by failure to observe the safety instructions and instructions in the manual.

### 3.3 Warranty

The manufacturer warrants that the product delivered is free from defects in materials and workmanship and undertakes to repair or replace any defective parts free of charge.

The period of limitation for warranty claims is stated in our General Terms of Sale and Delivery. Provisions deviating from this may be agreed upon in writing in the delivery contract. This excludes parts subject to wear.

Spare parts must comply with the technical requirements specified by the manufacturer. This is always guaranteed in the case of original spare parts. Use of other than original spare parts will result in loss of warranty for the product.

### 3.4 Intended use and improper use

The housing is built in accordance with state-of-the-art technology and recognized safety regulations. However, danger to life and limb of the user or third parties or impairment of the functioning of the product or other property may arise during operation.

The product is a housing for the construction of test chambers. Examples of applications are environmental simulations or airbag tests. The enclosure is custom designed and manufactured for the media and areas of application described in "2 Technical data and product description" on page 9. Any other or additional use constitutes improper use. The manufacturer is not liable for damage resulting from such use. The risk is borne solely by the operator.

#### IMPORTANT INSTRUCTIONS

- Operate the housing only in a technically flawless, fully maintained condition.
- Eliminate faults, in particular any that could impair safety.
- Intended use also includes observing the specified installation and operating instructions and maintaining inspection, cleaning, and maintenance conditions.

### 3.5 General safety instructions

#### DANGER

- Romakowski GmbH & Co. KG is only responsible for the safety-related properties of the housing if maintenance and repairs are carried out by qualified electricians or authorized specialist personnel and if, in the event of failure, components that affect the safety of the device are replaced using original spare parts
- The housing may only be operated with original accessories from Romakowski GmbH & Co. KG or accessories from other suppliers approved by Romakowski GmbH & Co. KG. The operator assumes responsibility in the event of use of unauthorized accessories.

### 3.6 Product-specific safety instructions

#### **⚠ CAUTION**

The operator must ensure that only testing media which are compatible with the material installed ("2 Technical data and product description" on page 9) are used.

Romakowski GmbH & Co. KG assumes no liability for any damage caused by the use of any other materials.

#### **NOTICE**

Further safety instructions can be found in the service/operating instructions of the operators.

### 3.7 Requirements for operating and maintenance personnel

#### **IMPORTANT INSTRUCTIONS**

- The housing may only be operated and maintained by persons who have been specifically instructed on and trained for these tasks. All trained personnel must be familiar with all the functional processes and operating activities of their assigned work area.
- Operators must be adequately trained in the use, adjustment, and operation of the product.
- Allow personnel undergoing training or instruction or being introduced to the machine, or those involved in general training to use the machine only while under the continuous supervision of a person who is experienced with the machine.
- The machine may only be operated by a person who has reached the legal minimum age.
- The obligatory personal protective equipment, such as protective gloves, protective footwear or safety goggles, must be worn!
- Safety instructions regarding assessment of risk to the operator must be followed.

## 4 Delivery, transport and assembly

### 4.1 Inspection upon receipt

#### IMPORTANT INSTRUCTIONS

- A careful visual inspection must be carried out when goods are accepted. Immediately after unpacking them, using the delivery note check the product and any optional accessories for completeness and possible shipping damage.
- Declare any damage or missing accessories immediately on the transport documents and send these to the Romakowski GmbH & Co. KG without delay. In the event of discrepancies in the scope of delivery or damage, do not commence operation of the housing.
- If the equipment is initially to be stored after delivery: Observe the storage conditions in "7.2 Storage conditions" on page 34.

### 4.2 Packaging/protective foil

The housing is packed in special protective foil and to avoid damage may only be unpacked after transport at the place where it is to be installed.

The door elements are completely assembled. Assembly components and accessories are packed separately and enclosed. Remove all transport safety devices, packaging and adhesives in and on the device and on the doors from the interior.

Dispose of the packaging material (cardboard, wood, foil) in accordance with the legal requirements for such material in your country.

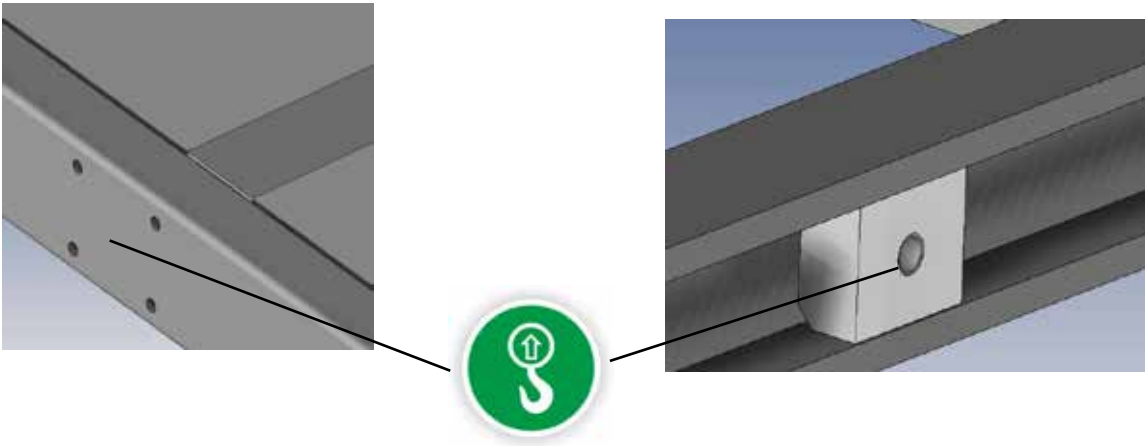
#### IMPORTANT INSTRUCTIONS

- If the housing is to be stored for a long time, the packaging and protective foil must be removed promptly and without leaving residue in order to prevent damage caused by condensation.
- Three months after delivery at the latest, the protective foil can no longer be removed without residue, because the adhesive is not UV-resistant.

### 4.3 Transportation

Safe transport of the housing is ensured via an integrated steel frame on which screw connection points for customer-supplied attachment points should be provided (see sample illustrations).

When using a forklift or lifting truck to move the chamber, only do so using the steel frame. Avoid damaging the chamber shell.



#### IMPORTANT NOTICE

Only the screw connection and attachment points may be used for lifting and transporting the chambers. The positions of the screw connection and attachment points can be found in the other applicable documents (drawings).

### 4.3.1 Safety instructions

#### **⚠ CAUTION**

##### **Sliding or tilting the housing**

##### **Risk of damage to the device**

##### **Risk of injury by lifting heavy loads**

- Designate personnel authorized to issue instructions for transportation of the equipment.
  - Use suitable lifting equipment for storing the housing (technical aids such as forklift trucks, transverse bars).
  - Use only the designated attachment points.
  - Transport only on level surfaces.
  - Do not lift or transport the housing by means of door handles, the door, or the lower housing cover.
  - Do not lift the housing by hand.
  - Transport the housing in an upright position.
-

## 4.4 Assembly

### 4.4.1 Safety instructions

#### **⚠ CAUTION**

- If an inspection is necessary on-site or in connection with assembly, structural protection, additional reinforcement and suitable protective measures against a possible fall of the user are to be carried out.
- Maximum floor/ceiling load 100 kg (one employee + tools)!

### 4.4.2 Installation site requirements

#### **Floor properties**

The housing may only be installed on a firm, horizontal, smooth, non-flammable base with stable temperature conditions. The floor of the installation site must have sufficient load capacity, and be rigid and level. If the ground is not level or the surface is uneven, the differences must be compensated by suitable base material.

#### **IMPORTANT NOTICE**

The flatness tolerances in DIN 18202 Table 3 line 4 must be observed.



## Ventilation and climate

The housing is designed for operation in a protected space. For erection and operation out-of-doors, suitable wind and weather protection must be provided. The space in which the enclosure is installed must be dry, well ventilated and vented. Protection against direct sunlight and other weather conditions must be available.

The environmental simulation and test chamber requires a minimum distance from the surrounding environment. Refer to the technical data for individual dimensions.

### CAUTION

#### **Danger of overheating.**

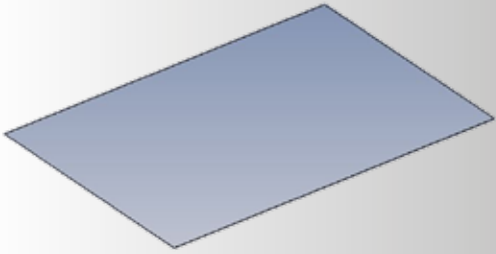
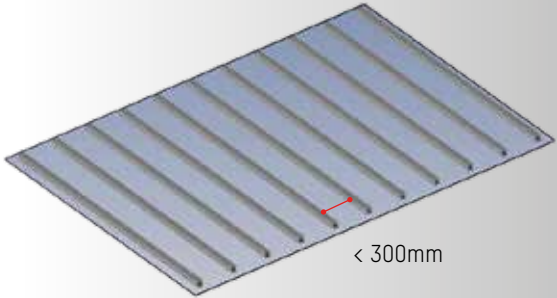
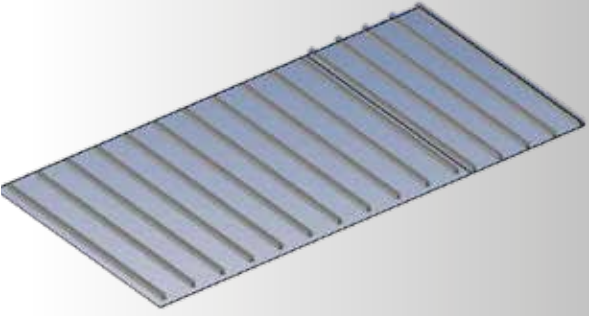
#### **Risk of damage to the housing**

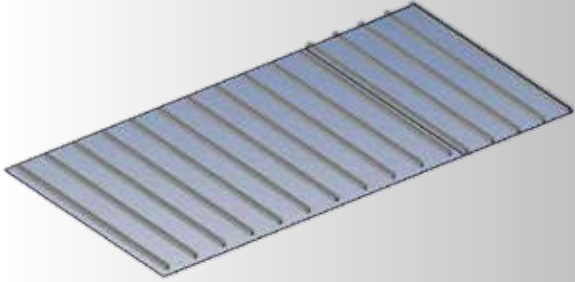
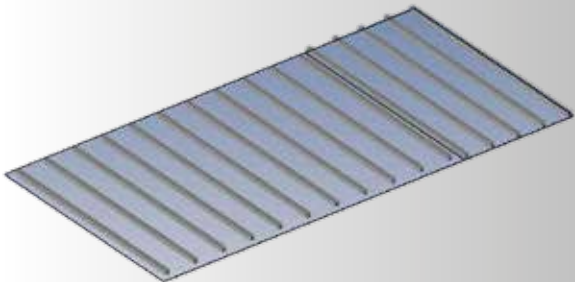
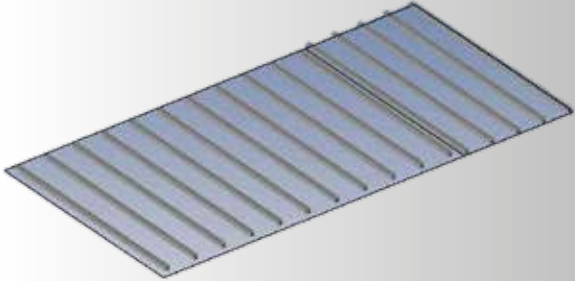
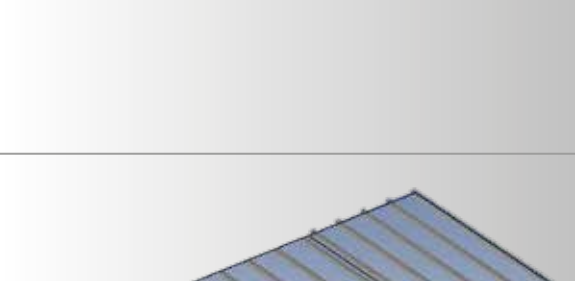
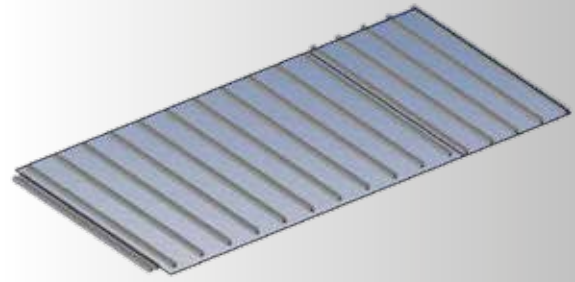
- Do not install the housing in an unventilated niche. Ensure that there is sufficient ventilation to guarantee dissipation of heat.
- The housing requires adequate space from walls where it is set up due to, among other factors, expansion and changes of temperature. To guarantee adequate circulation of air the distance from walls must be at least 5cm. If this is not the case, our specialists will be happy to suggest alternative solutions (e.g., ventilation with dry purge air).
- The floor of the installation site must be capable of supporting the housing.
- Do not connect the housing to walls or other installations.
- Ensure that the load is evenly distributed.
- Observe the temperature limits specified in the technical data.

### 4.4.3 Ventilation

As standard, aluminum square 40/2 tubes are supplied for underfloor ventilation. These must be designed before installation or assembly at the installation site.

Procedure:

<p><b>1</b></p>	<p>Mark the installation site of the housing, for example with a chalk line, adhesive tape or an appropriate color.</p>	
<p><b>2</b></p>	<p>Space the ventilation tubes at a distance from each other as shown in the drawing. The distance between the ventilation tubes must be less than 300mm.</p>	
<p><b>3</b></p>	<p>Ventilation tubes that are laid under the housing are 130mm shorter than the external dimensions of the housing.</p> <p>Maintain a 65mm edge distance.</p>	

<p><b>4</b></p>	<p>Ventilation tubes placed under the area of the overhanging steel frame are 10mm shorter than the external dimensions.</p> <p>Maintain a distance of 5mm along the circumference.</p>	
<p><b>5</b></p>	<p>Determine the highest point of the ventilation tubes and align all tubes with the highest point (with a measuring tool such as a mechanic's level).</p>	
<p><b>6</b></p>	<p>Place suitable base backing materials under the ventilation profiles that are not fully supported.</p> <p>Pressure and water resistant slabs are appropriate as base material.</p> <p>Spaces between the supporting materials should not be larger than the spaces between the tubes (max. 300mm).</p>	
<p><b>7</b></p>	<p>Secure the support points against slipping with a suitable adhesive such as OttoColl M500 adhesive sealant.</p>	
<p><b>8</b></p>	<p>For housings containing doors with a slide seal, additional ventilation tubes must be laid below the threshold.</p>	

#### 4.4.4 Installation of components

Extension of the housing by means of additions is permitted. However, extensions may only be attached at the positions authorized and defined by Romakowski GmbH & Co. KG.

### 4.5 Door

The door system is delivered completely pre-assembled and pre-adjusted. Based on the factory adjustment, the door should be easy to open and close and achieve the desired contact pressure on the frame and bottom seal to ensure optimum sealing.

#### 4.5.1 Safety instructions

##### **IMPORTANT INSTRUCTIONS**

- The law requires that the possibility of escape from the housing must always be guaranteed. This means that it must be possible to open the door from the inside with a door handle even when the door is locked (from the outside).
- In general, when installing the door the escape route must be borne in mind. Installing door fittings without an emergency opening mechanism is not permitted.
- Sliding doors do not have an emergency escape. If a sliding door is installed in a housing, an entry door must be installed alongside it.

## 4.5.2 Door adjustments

### IMPORTANT NOTICE

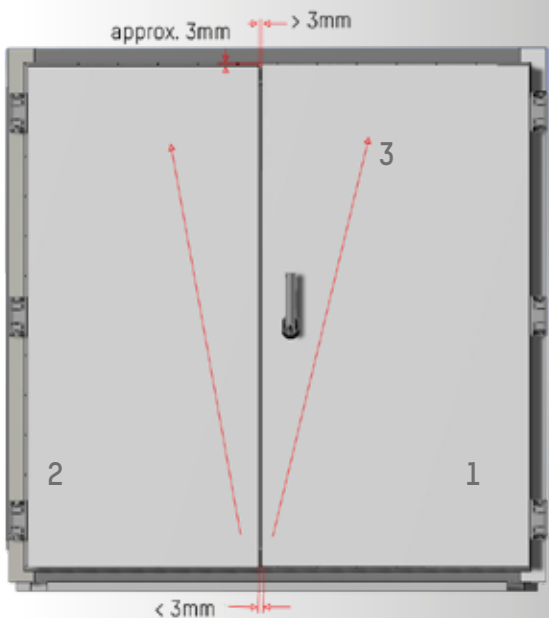
Check the door before starting to use it.

Door adjustments are mandatory when:

- The door sticks.
- The door leaks.

Door adjustments may be necessary when:

- Clearances do not match.
- After transportation.
- After installation.

<h1>1</h1>	<p><b>Checking clearances</b></p> <p>First, check the clearances between the door leaf and outside frame.</p> <p>The gap between the leaves is slightly V-shaped (3). The upper clearance should be about 3mm larger than the lower clearance.</p> <p>The walk-through leaf (1) is about 3mm higher than the non-active, fixed leaf (2).</p>	
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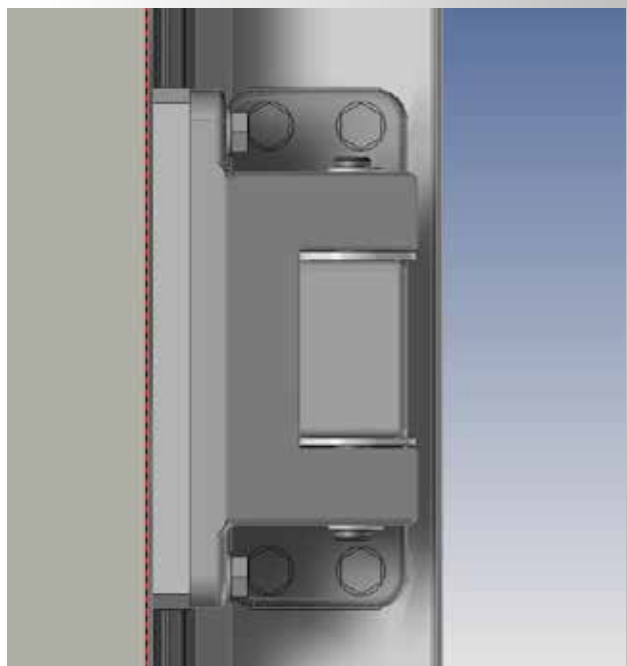
## 2


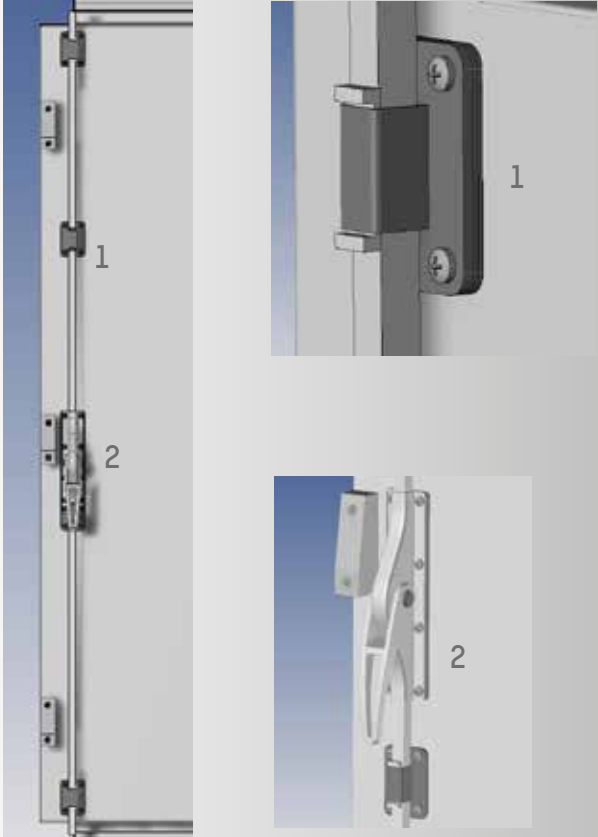
### Adjusting the door

#### Adjustment of inclination (point where the leaves of the door contact each other)

Adjust the inclination of the door leaves by removing or adding filler strip between the door leaf and the hinge.

- Adjustment is only done on one strip at a time. The door must be locked and additionally secured and supported.
- Only the screws of the respective filler strip being adjusted should be opened and fastened again immediately after being worked on (replacement).
- The maximum tightening torque per screw is 25Nm.

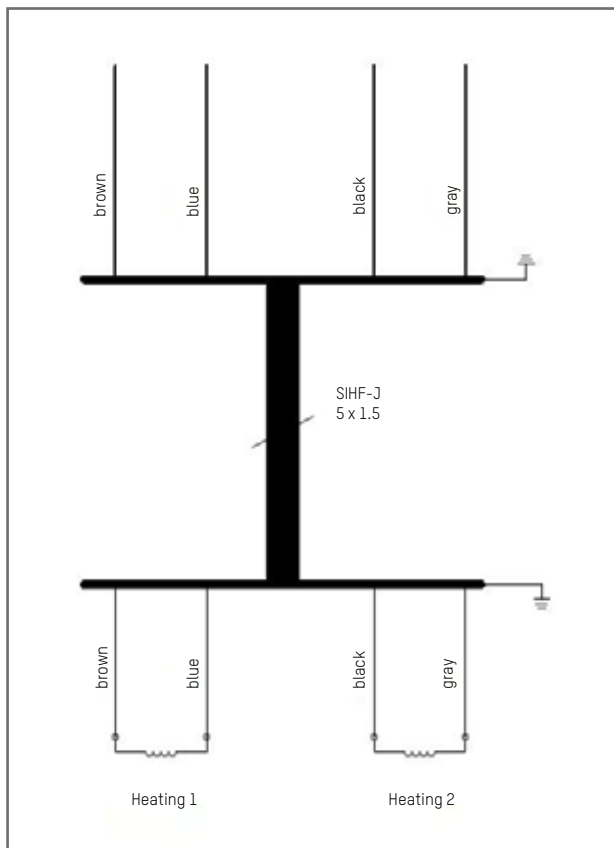


<h1>3</h1>	<p><b>Adjustment of "door closure" (contact pressure)</b></p> <p>The contact pressure must be adjusted in order to ensure an optimal seal.</p> <p>The contact pressure of the leaves on the door frame can be adjusted by means of several components.</p>	
	<p>If there is a leak in the fixed leaf or at the point where the two leaves meet, the contact pressure can be increased by removing the strips on the shoot bolt (2) and its guides (1).</p> <p>If there is a leak in the walk-through leaf, washers of the three-point lock must be removed accordingly.</p>	

<b>4</b>	<b>Height adjustment</b>  Adjustment of the height of the doors is not possible.	
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## 4.6 Connection diagram for heating



### IMPORTANT NOTICE

- Heating circuit 2 is optional. Whether a housing has a second heating circuit is specified in the supplied documentation/drawings.
- Electrical connections may only be carried out by a trained and instructed electrician.

Description	Setting/Value
Connection heating 1	Brown-blue
Connection heating 2 (reserve, optional)	Black-gray
Voltage	230 V/50 Hz

## 5 Commissioning

### 5.1 Before Commissioning

Procedure:

<b>1</b>	Remove all protective film.
<b>2</b>	Carry out general visual inspection.
<b>3</b>	Carry out basic cleaning in accordance with the schedule in "6.3.1 Cleaning schedule" on page 30.
<b>4</b>	Initial test according to „6.2.1 Maintenance schedule“ on page 29 .
<b>5</b>	Carry out a function test: <ul style="list-style-type: none"> <li>■ Heating systems must be intact (resistance measurements, test heating of components).</li> <li>■ Maintenance joints must be intact (visual inspection).</li> <li>■ Weld seams must be intact (visual inspection).</li> </ul>
<b>6</b>	Checking door: <ul style="list-style-type: none"> <li>■ Ensure that the emergency opening in the door works from the inside as required.</li> <li>■ Check the diagonal measurements of the door frame. The diagonal measurements must be identical. Deviation of +/- 2mm is permissible.</li> <li>■ Check all functional and gap measurements of the door.</li> <li>■ Check the contact pressure of the frame seal and floor seal.</li> </ul>
<b>7</b>	Checking door: <ul style="list-style-type: none"> <li>■ Ensure that the emergency opening in the door works from the inside as required.</li> <li>■ Check the diagonal measurements of the door frame. The diagonal measurements must be identical. Deviation of +/- 1mm is permissible.</li> <li>■ Check all functional and gap measurements of the door.</li> <li>■ Check the contact pressure of the frame seal and floor seal.</li> </ul>

## 5.2 During operation

### WARNING

#### **Risk of injury**

- During operation, no-one is permitted to be in the interior of the housing.
- The housing should not be exposed to vibrations.

### CAUTION

#### **Danger of implosion**

#### **Damaging the housing**

- Do not open the housing/the doors during operation.
- If the doors or housing are opened [during operation], it is the operator's responsibility to install suitable technology for pressure compensation and to delay switching on.

## 6 Maintenance

This chapter contains important instructions on maintenance work that must be carried out at regular intervals. No warranty is provided in the event of improper use or carrying out of maintenance work by unauthorized persons.

### IMPORTANT NOTICE

All cleaning and maintenance work must be documented.

#### 6.1 Safety instructions

#### ⚠ WARNING



##### High voltage.

##### Danger of electric shock

- During maintenance, cleaning and repair, switch off the electricity supply to the housing and secure it against being switched back on.
- Work on the electrical equipment of the housing may only be carried out by a qualified electrician or by a trained person under the direction and supervision of a qualified electrician in accordance with electrical engineering regulations.

#### ⚠ CAUTION

##### Danger of injury resulting from improper handling.

- Inform operating personnel of maintenance and repair work in advance. Nominate the person in charge.
- Never carry out maintenance or repair work under conditions of suspended or unsecured loads.
- Remove any product residue or remnants from the environmental simulation and the test chamber prior to maintenance and repair work!
- Proceed according to operating instructions when restarting after maintenance and repair work. If it is necessary to remove safety devices when setting up, servicing and repairing the machine, these must be reassembled immediately upon completion of the servicing and repair work and checked for correct functioning.
- Spare parts must comply with the technical requirements specified by the manufacturer. Using genuine spare parts always ensures this. The use of parts other than original spare parts will result in loss of warranty for the system!

## 6.2 Maintenance

### 6.2.1 Maintenance schedule

#### IMPORTANT NOTICE

The maintenance intervals for the housing must be determined by the operator depending on the operating parameters and degree of utilization.

Description	Frequency	Method	Measures
Silicone joints	before commissioning and then every three months	Visual inspection for cracks, leaks, detachments	See "6.4 Faults"
Interior chamber weld seams	before commissioning and then every three months	Visual inspection for cracks and leaks	See "6.4 Faults"
Door	before commissioning and then every three months	Functional test	Clean moving parts and lubricate
Door heater	before commissioning and then monthly	Temperature control door frame (contact surface of door seal rubber)	Clean the contact surface
Interior chamber drain	before commissioning and after each test cycle	Visual inspection for blockage	Clean according to the cleaning schedule (see "6.3.1 Cleaning schedule")
Door seal	before commissioning and then monthly	<ul style="list-style-type: none"> <li>■ Visual check for cracks</li> <li>■ Check bonding</li> <li>■ Check contact surfaces</li> </ul>	<ul style="list-style-type: none"> <li>■ Clean according to the cleaning schedule (see "6.3.1 Cleaning schedule")</li> <li>■ Silicone maintenance products</li> </ul>

## 6.3 Cleaning

### 6.3.1 Cleaning schedule

The frequency of cleaning for the interior and exterior of the housing must be specified by the operator. This depends on the environmental conditions, the materials being processed and how intensively the housing is used.

#### IMPORTANT INSTRUCTIONS

- All materials used should be cleaned and maintained in accordance with their properties.
- Do not use scouring agents to clean the interior or exterior of the housing.
- Clean both the interior and exterior of the housing after every test cycle.
- Cleaning agents should be used in standard dilution and should never be used in concentrated form. The use of active cleaning agents containing active chlorine or cellulose dilutions is generally prohibited.
- Cleaning agents should be rinsed off with clear water to ensure that surfaces dry without any residue. Avoid standing moisture.

Description	Frequency	Measures
External housing and sheet metal parts	before commissioning and then monthly	Hot water, multipurpose cleaner, microfiber cloth
Outside upper door part	before commissioning and after each test cycle	Hot water, multipurpose cleaner, microfiber cloth
Glass panes, door lite	before commissioning and after each test cycle	Glass cleaner, water, microfiber cloth
Housing interior	before commissioning and after each test cycle	Stainless steel cleaner, water, brush, microfiber cloth
Housing floor, gutters	before commissioning and after each test cycle	Broom, stainless steel cleaner, water, microfiber cloth
Door and door frame	before commissioning and after each test cycle	Stainless steel cleaner, water, brush, microfiber cloth
Door seal	before commissioning and after each test cycle	Silicone cleaner, warm water

### 6.3.2 Seals

All seals and connections are defined as part of the joints requiring maintenance according to DIN 52 460, and are to be maintained accordingly. All joints which are exposed to strong chemical and/or physical influences are defined as joints requiring maintenance, and their sealants must be checked at regular intervals and, if necessary, renewed in order to avoid consequential damage.

## 6.4 Faults

Problem description	Possible cause	How to check	Measures
Door leaking	Door seal defective or permanently deformed	Visual inspection of the door seal for damage and deformation in the sealing cross-section	Replacement of seal by manufacturer
	Door not correctly adjusted	Check clearances (see "4.5.2 Door adjustments")	Adjust the door (see "4.5.2 Door adjustments")
		Check the contact pressure of the door leaf with the door frame (see "4.5.2 Door adjustments")	
	Door frame warped, door seal no longer resting on frame	Measure the diagonal dimension of the door frame (may not deviate by +/- 1mm).	Check the base (see "4.4.2 Installation site requirements")
		Check horizontal position of the cell (mechanic's level)	Level the chamber again (see "4.4.3 Ventilation")
Door leaf uneven or deformed, door seal no longer resting on frame	Check flatness of door leaf with a straightedge (deviation max 1mm)	Have door leaf replaced by manufacturer	
Housing leaks, water is dripping from the floor or walls	Maintenance joints on the housing are leaking	Visual inspection of maintenance joints for cracks and damage	Have maintenance joints replaced by manufacturer
	Weld seams inside the chamber leaking or cracked	Optical inspection of welds for cracks and damage	Have welds repaired by manufacturer

Problem description	Possible cause	How to check	Measures
Ice forms on the door frame, or door freezes shut	The door frames are not warmed up by heater	Manual inspection of the door frame for heating	See the following points
	The door heating is now connected to power supply	Check electrical connection (see "4.6 Connection diagram for heating")	Connect heating to power supply (see "4.6 Connection diagram for heating")
	The heating is connected to the power supply, but the supply line has no electricity	Have supply line and fuses checked by a qualified electrician	Have supply line and fuses repaired by a qualified electrician (see "4.6 Connection diagram for heating")
	The heating is out of order	Have the heater resistance checked by a qualified electrician	Have heating 2 (optional) connected by a qualified electrician (see "4.6 Connection diagram for heating")  If there is no secondary heating circuit, have the heater replaced by the manufacturer
Door opens on its own	Ice has collected in the floor bush of the drive bolt	Check the floor bush for water, moisture or icing	Remove water
	Strong vibration during operation that transfers to the housing or door	Check the door leaf by hand for vibration during operation	No vibration is allowed
	Defective door locking mechanism (drive bolt, etc.)	Visual inspection of the entire locking mechanism	Replace defective parts
If a window is installed, the window fogs up or becomes opaque	Multiple glazing of the pane is defective, condensation is forming in the spaces between layers	When panes are cleaned, the condensation cannot be wiped off	Replace the pane
Pane broken in installed window	Stress forces in the pane	Visual check	Replace the pane
	Pane was installed with stress imposed	Check the screw connection of the pressure frame	Replace the pane



Problem description	Possible cause	How to check	Measures
Interior of the housing corroded	Media used not suitable for material inside the chamber	Check the data sheet or consult with the manufacturer about material compatibility	Make sure that all media used and their by-products are compatible with the material.
	Cleaning not carried out (see "6.3.1 Cleaning schedule")	Check cleaning protocol	Clean the chamber (see "6.3.1 Cleaning schedule")
Exterior of housing corroded	Ventilation of the system is not adequate (see "4.4.2 Installation site requirements")	Check the minimum distance to the building.  Check for condensation on the outer shell of housing	Correct the distance (see "4.4.2 Installation site requirements")
	System is in a corrosive room climate	Check if condensation is collecting on the housing surface.	Ventilation with dry purge air  Create a neutral indoor climate.

## 7 Decommissioning

### 7.1 Storage/transport

For the procedure, see "4.3 Transportation" on page 14.

### 7.2 Storage conditions

- To keep individual system parts from becoming corroded, the storage site must be cool and dry.
- No test media may be inside the housing.
- The housing must be clean.
- Pack the system parts in such a way that they cannot be damaged by external influences during the period of storage.
- Secure the system parts against unintended tipping and instability.

### 7.3 Disposal

Disposal of the housing (also parts of the system, operating equipment) must be carried out in accordance with local disposal regulations as well as in compliance with environmental protection laws in the country of installation.

#### IMPORTANT INSTRUCTIONS

- Dispose of packaging material in accordance with normal regulations in the country involved. Packages, plastic protective packaging material, and preservative substances must be disposed of separately and properly.
- If the plant has reached the end of its useful life, care must be taken to dispose of it in a safe and professional manner, especially in the case of environmentally harmful parts or substances.
- Because of the risk of possible environmental pollution, have the system disposed of by a licensed specialist company!

## 8 Service and support

Please contact your direct supplier if you have any questions about the product.

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