Operating Instructions

Heatable RCB Container Type I

(heatable metal IBC)

1 Foreword

The operating instructions contained in this manual must be followed for

- Transport
- Commissioning
- Handling
- Maintenance
- Repairs
- Scheduled Safety Checks.

Before working on the container, all technicians, operators and service personnel must have read and understood this manual.

For all work and operations, the relevant safety guidelines and requirements contained in national directives and regulations and must be carried out (e.g. industrial safety regulations and currently valid accident prevention guidelines) must be followed at all times.

The container may only be operated by specialist personnel with the appropriate training and instruction. Maintenance and/or repairs may only be carried out by authorized personnel (see also TRBS 1112 - Maintenance).

Only original replacement parts may be used.

These operating instructions are valid for:

Type	Model	Year of manufacture
Heatable RCB container	i90600014	from 2014

Manufacturer: **SCHÄFER-SUDEX, s.r.o.**

Podolí 5

584 01 Ledeč nad Sázavou

Czech Republic

Version of this document: **BA-88-003-02**

Index: **02**

Date: **15.11.2013**

2 Table of Contents

3 EC Declaration of Conformity

In accordance with the EC Low Voltage Directive 2006/95/EG, appendix III B; dated 12.12. 2006

We hereby declare that the product designated below conforms with the essential health and safety requirements of the EC Low Voltage Directive in design, construction and the version marketed by us.

Any modifications to the product without our prior agreement will render this declaration invalid.

Manufacturer: **SCHÄFER-SUDEX s.r.o.**
Podolí 5
584 01 Ledeč nad Sázavou
Czech Republic

Description of the Electrical Equipment

Function:	IBC bulk packaging container with electric heating for the transport of hazardous liquid substances
Type/Model:	RCB Type I
Serial number:	see type plate
Year of manufacturer:	see type plate

We hereby declare compliance with other guidelines/directives which also apply to this product:

EMC Directive (2004/108/EC) from 15th. December 2004

Applied harmonised standards, in particular:

EN 60519-1:2011

Safety in electroheat installations - part 1: General requirements

EN 60519-10:2005

Safety in electroheat installations - part 10: Particular requirements for electrical resistance trace heating systems for industrial and commercial applications

Year of CE label award: 0013

Neunkirchen, 5th. December 2013

p.p. Christof Ermert

4 Safety Instructions

4.1 Explanation of signs and symbols

DANGER	
	**Indicates an immediate danger or hazard.** **Failure to comply with this instruction can lead to serious injury (invalidity) or even death.**

WARNING	
	**Indicates a potentially dangerous situation.** **Failure to comply with this instruction can lead to serious injury (invalidity) or even death.**

CAUTION	
	**Indicates a low-risk situation that could pose a danger or hazard.** **Failure to comply with the information can lead to minor or moderate injury or damage to equipment and property.**

PLEASE NOTE	
	**Indicates general information, useful tips for users and working recommendations which have no influence on the health and safety of operating staff.**

Prohibiting signs

	**Do not use spray water. This can cause short circuits !**

Warning signs

	**Caution, hot surface. Risk of burns !**
	**Caution, high voltage !**

Information signs

	**Always wear protective gloves**
	**Read the instruction manual**

4.2 Basic Safety Instructions

This operating instruction manual serves as the basis for using and operating the heatable RCB safely. This manual, and in particular the safety instructions, must be observed at all times by all people working on or with the heatable RCB container. In addition, all rules and regulations for accident prevention which apply at the place the container is used, as well as all national directives (e.g. industrial safety regulations) must be complied with.

It is advisable to keep a copy of this instruction manual at all places where this container is being used.

4.3 Intended Use

The RCB container may be used for the **transportation** of hazardous goods, in accordance with the approval certificate no. D/BAM 12408/31A:

- May be used for dangerous liquid goods in packing groups II or III
- Max. density of filling substances: **2.0 kg/l**

The relevant marking for the approved type is attached to the container.

u n 31A/Y.. ../D/BAM 12408-SCHÄFER/4508/*

Besides this, the RCB container may be used for **maintaining the temperature** of goods, which, below the permissible temperature limit of up to 120°C,

- do not release any health damaging substances,
- cannot form an explosive atmosphere and
- are not flammable.

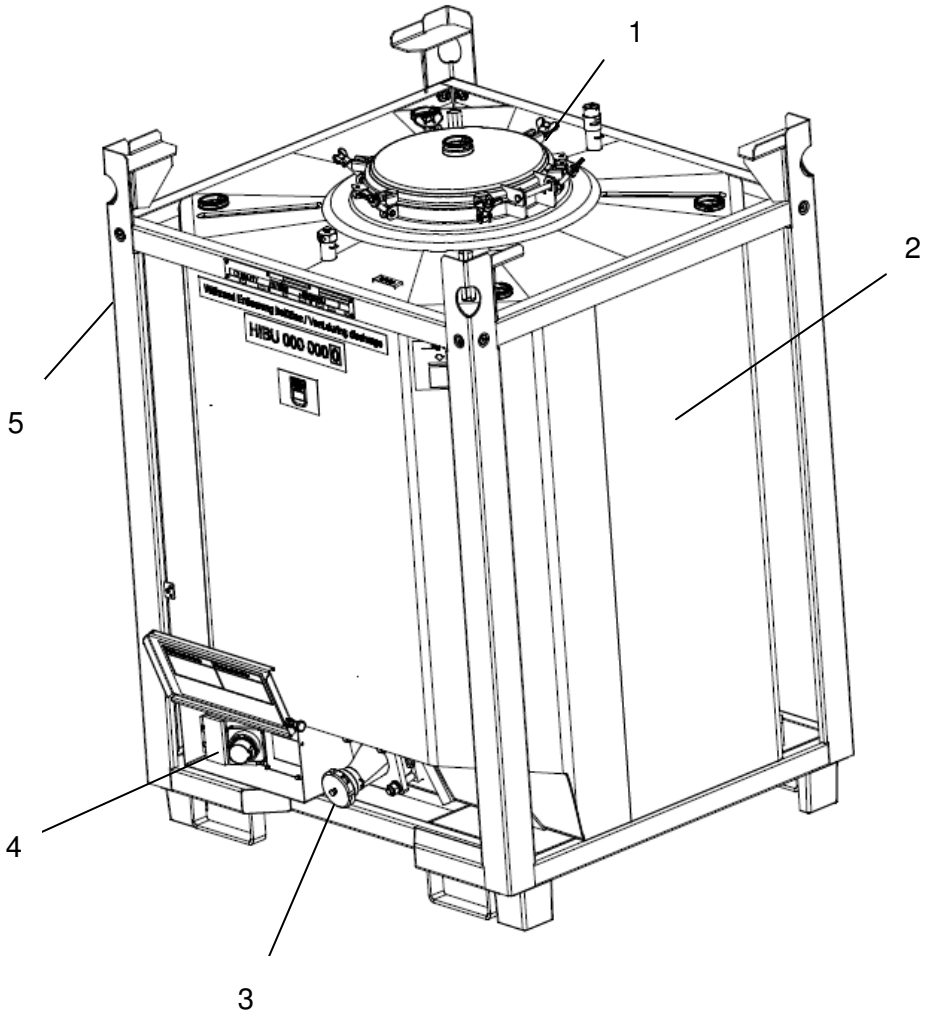
During use, nationally valid MAK values (maximum workplace concentration) may not be exceeded.

DANGER	
	**Use for any other purpose is not intended and can lead to fire or explosion or the release of inadmissibly high levels of health damaging substances.**
	**Temperature maintenance function must not be switched on during transport. This does not correspond to proper use!**

5 Technical Description

5.1 Construction

1.	Cover	DN 400 screwed cover
2.	Inner / Insulated container:	Stainless steel 1.4301
3.	Drain valve:	see technical description
4.	Heating controller:	Störk 900350.029
5.	Frame:	Stainless steel 1.4301

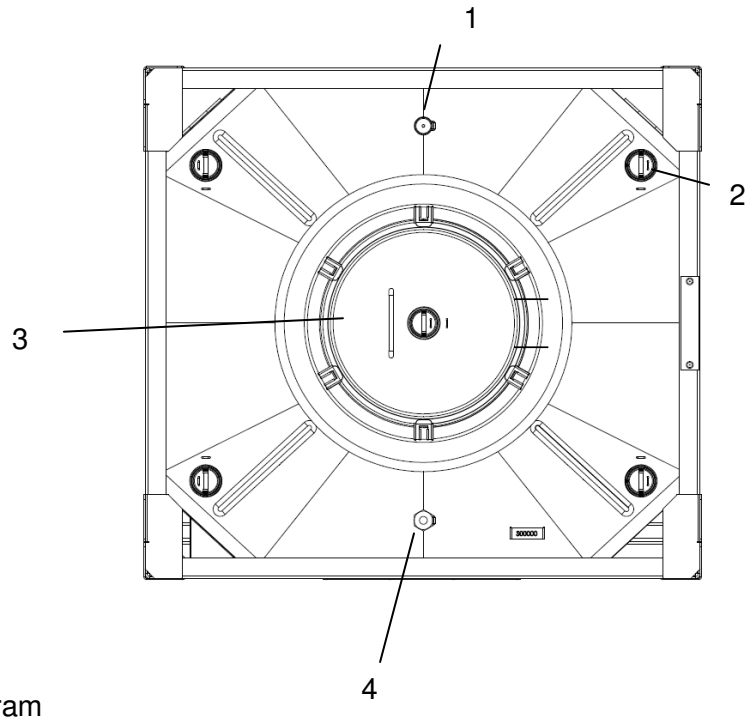


5.2 Technical Data

General:	The precise technical data can be taken from the technical specifications in the appendix.
Description:	SCHÄFER Heatable RCB Container (referred to as "container" in the instructions)
Dimensions: (L/B/H):	1200 mm x 1100 mm x 1670 mm
Empty weight:	(see type plate)
Total permissible weight:	(see type plate)
Design type approval no.:	31A /Y/XXXX/D/ BAM 12408–SCHÄFER/4508

5.3 Ventilation

1. Safety valve
2. Perlite - filler hole
3. Screw cover
4. Blind nut



Principle diagram

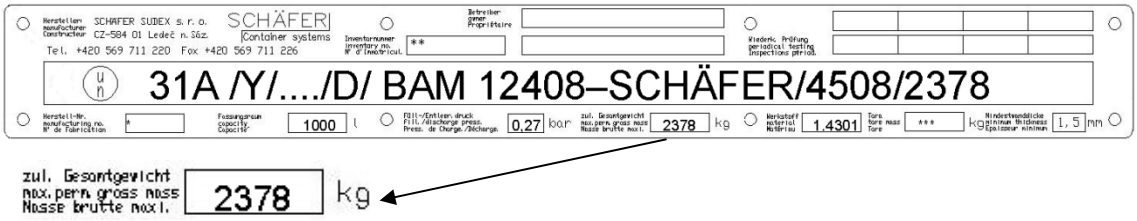
5.4 Heating Device

Type:	ITW
Capacity:	2,000 W / 230 V
Heater circuits:	1
Max. temperature:	120 °C
Max. permissible heating band temperature:	245 °C
Temperature sensors:	2 x PT 100 (1 x temperature regulator, attached to container, 1 x safety regulator(??), attached to heating cable)
Temperature controller:	ST552-Glas
Line safety switch:	2 A fuse rating
Power contactor:	max. 20 A
Operating hour counter	Integrated into controller
Data logger function:	Integrated into controller
Wall-mounted inlet:	CEE plug incl. FI protection

6 Transport

Before transporting the container, the following preparations must be made:

- Disconnect the container from the electric power source
- Close all covers and openings and ensure they are water tight.
- Select suitable lifting equipment (crane, forklift) with sufficient load bearing capacity. The maximum permissible total weight can be seen on the type plate.
  Example of a type plate for a total weight of 2,378 kg:



- Crane transport requires the use of suitable and approved crane slings. Always use all 4 hooks to prevent the container from tilting.
- For transport with materials handling equipment (e.g. forklift trucks), the container has two fork guides. Additional fixing may be required to prevent the container slipping forwards.
- Never walk underneath a raised load (a container) or work on a raised load without attaching additional secure supports.

For transport and storage, only one container may be stacked on top of another. When transporting containers, it is essential to use appropriate load securing equipment.

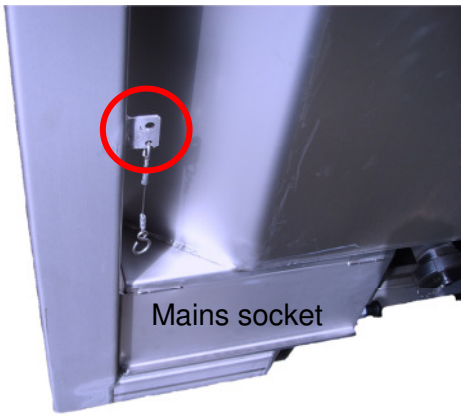
After transport, the container must undergo a visual inspection before further use to check for damage that may have occurred during transport.

Damaged containers must be repaired before they can be used again.

7 Commissioning

When in operation for filling, emptying or temperature regulation, the container must be connected to a potential equalization bar to prevent electrostatic charges being generated.

For this purpose, there is a connection point for the potential equalization bar on the frame just above the mains socket.



7.1 Filling the Container

- The butterfly valve on the bottom must be closed!
- Open the cover.
- If the filling process takes place in an enclosed system, always ensure pressure equalisation is carried out
- Fill the product into the container

CAUTION	
	**When filling pre-heated media, or when media are being heated up, the external surfaces of the container can reach temperatures that can cause burns.**
	**Parameter errors or control system malfunctions can lead to the heating band inside the heatable container reaching temperatures of up to 245 °C. If this occurs, the temperature of the external surfaces can reach approx. 85 °C. Skin contact with the hot surfaces can lead to burns!**

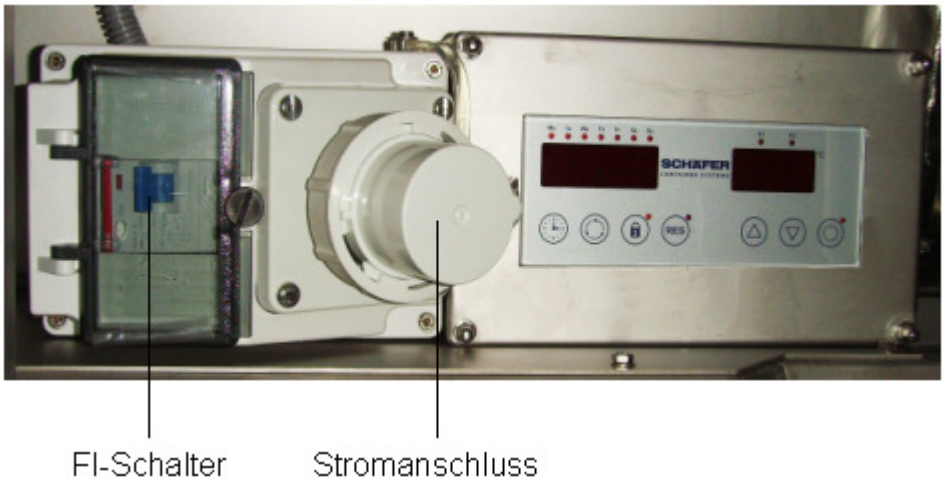
PLEASE NOTE	
	**Protective gloves must always be worn when working with the container.**

7.2 Connecting to the electric power source

To operate the container, an external power source is required. Please compare the supply voltage details on the manufacturer's data plate with the local electricity supply before connecting the container. The container may only be connected to the mains, when all personal and fire protection measures have been implemented at the power supply source.

Rated voltage:	230 V AC ± 10% AC, 50 / 60 Hz,
max. fuse rating (supply line):	16 A gG/gL, B, C or K
Power cable:	heavy rubber sheathed
	H07RN-F 3G2.5 or same standard,

7.2.1 Connection point for external power supply



To connect the container to the mains, unscrew and remove the screw cap (bayonet system) and insert the mains cable plug into the container socket.

For additional protection, a residual current circuit breaker (F1 switch) is also available next to the power connection. This serves to raise the maximum protection level in supply sources without any residual current devices.

Once a month, a qualified electrician or an appropriately instructed person must check whether the RCCB is functioning properly, using the appropriate testing devices. (Implementing regulation for BVG (German trade association) A3, parag. 5, sec. 1, no. 2).

The user must check the correct function of the RCCB every working day by pressing the test button. (Implementing regulation for BVG (German trade association) A3, parag. 5, sec. 1, no. 2)

Operation of the container without an effective residual current device (rated residual current ≤ 30 mA) is not permitted!

7.3 Equipotential bonding

To protect the electrical equipment from lightening and overvoltage and to prevent the risk of ignition from electrostatic discharges in explosion zones, **all conductive components must be connected to each other and to the protective conductor of the electrical installation.**

The temperature controller complies with overvoltage category II.

7.4 Temperature controller settings

For maintaining the temperature of materials inside, the container has a temperature controller with an operating hour counter and a data logger function.

Parameterization of the controller, which is installed to the right of the mains connection, is carried out using the buttons on the mineral glass touch panel below the LED display.

Touch panel:

1 2 3 4 6 7 8 Button numbers

7.4.1 Setting date and time

Before specific parameterization of the temperature controller, date and time settings should be carried out first:

If no buttons are pressed for a period of more than one minute during the setting process, the device will exit the setting mode, without saving any of the values set up to that point.

The same thing happens when the  button is touched during the setting process.

Setting the date and time:

Button	**Action**	**Result**
	Press for 3 seconds	The year starts blinking
 or 	Set the **year**	
	Press briefly	Year is saved and the month starts blinking
 oder 	Set the **month**	
	Press briefly	Month is saved and the day starts blinking
 or 	Set the **day**	
	Press briefly	Day is saved and the hour starts blinking
 or 	Set **hours**	
	Press briefly	Hour is saved and the minute starts blinking

Button	Action	Result
 or 	**Set** minutes	
	Press briefly	Time display stops blinking, weekdays are shown and the semi-colon starts blinking

PLEASE NOTE	
	**In normal operation, the power supply for the week timer is taken from the connected mains supply. In this mode, the clock display shows the current time of day. In the event of a power failure, all displays, including the clock, will go off.** **The timer, however, continues running in the background with help. This means the set time will not be lost if there is a power failure. Depending on the ambient temperature, the power reserve will last for 5 - 10 years.** **The weekday is always determined from the set date.** **Changing between Summer and Winter time occurs automatically in accordance with Central European time. The month of the change in Autumn must be set correctly in the parameterization process.**

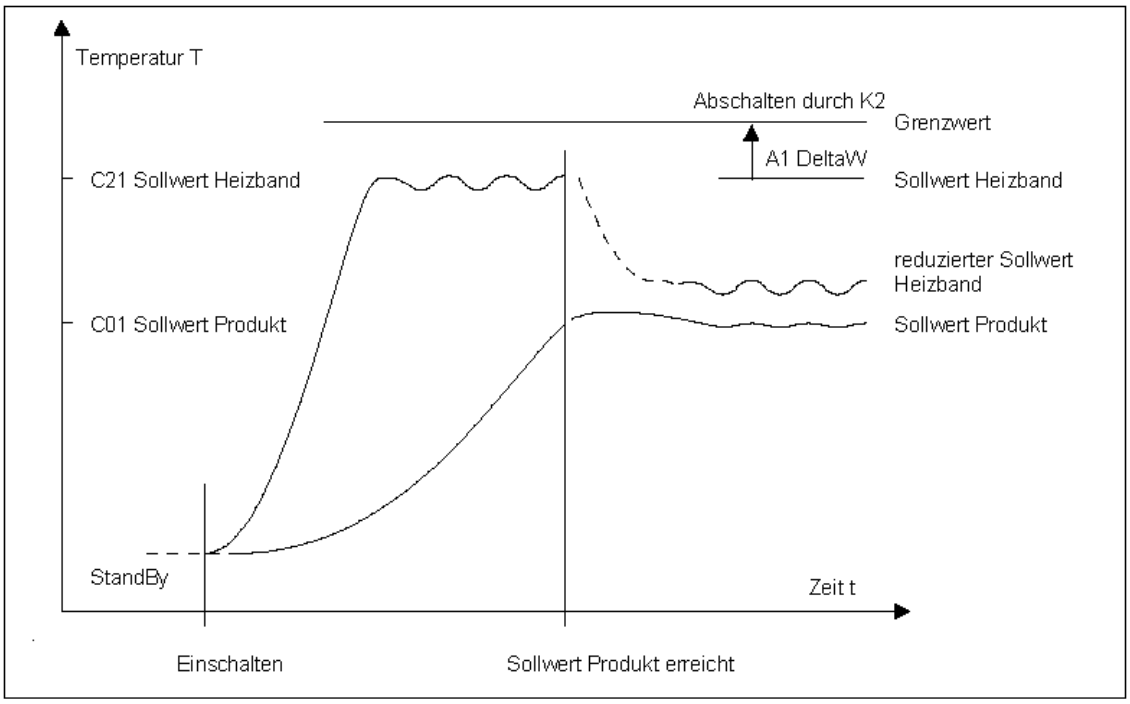
7.4.2 Temperature settings

WARNING	
	**Before changing the temperature parameter settings, check the permissible application for the product being used!**

PLEASE NOTE	
	**A high heating band temperature reduces the heating phases, but can also quickly cause damage to the product.** **Always use an individual list containing the key parameters that need to be set for each product.**

DANGER	
	**Once the mains plug has been connected, the heater may already be in operation, so never insert the plug without immediately setting the C21 and C01 temperature values for the product!** **Incorrect settings can cause fire or lead to dangerous substances being released!**

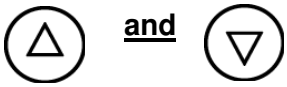
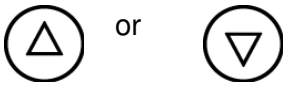
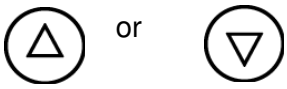
7.4.3 Control mode



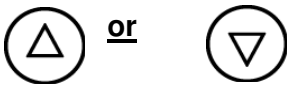
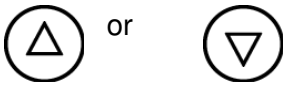
Recording data

The controller has a data recording function, which records all temperature target and actual values, as well as any alarm messages. The data are recorded in 2-minute cycles. After about one year, the oldest readings are overwritten. The recorded values can be imported via the RS485 interface.

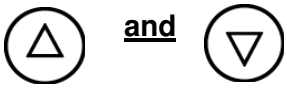
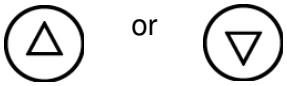
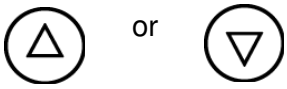
7.4.3.1 Setting the heating band temperature [C21]

Button	Action	Result
 **and**	**Press simultaneously for 3 seconds**	The left display shows „Adr:“, the right display shows the current value
 or	Change to parameter "USr"	The left display shows "USr:"
	Press to change to parameter C21	C21
	Press once more	Parameter starts blinking
 or	**Set the heating band temperature**	
 Press within 4 secs. to cancel **or**		Cancel, setting is not accepted!
	Press or wait 30 s. Then the setting will be saved automatically	Setting is accepted
	Press or wait 60 secs. until the controller switches back to initial status	Initial status

7.4.3.2 Setting the product temperature [C01]

Button	Action	Result
 **or**	**touch**	Display shows current setpoint blinking **C01 (= product setpoint)**
 or	Press and hold to change set-point	
 Press within 4 secs. to cancel **or**	If no buttons are pressed for 4 seconds, the set value will be saved	Setpoint for product tem-perature is set.

7.4.3.3 Setting the mains frequency [H1]

Button	Action	Result
 **and**	**Press simultaneously for 3 seconds**	The left display shows "Adr:", the right display shows the current value
 or	Change to the parameter "USr"	The left display shows "USr:"
	Press to change to the parame-ter H1	H1
	Press once more	Parameter starts blinking
 or	**Set mains frequency**	0: 50Hz 1: 60Hz
 Press within 4 secs. to cancel **or**		Cancel, setting is not saved!
	Press or wait 30 s. Then the set-ting will be saved automatically	Setting is saved

Button	Action	Result
RES.F	Press or wait 60 secs. until the controller switches back to initial status	Initial status

7.4.3.4 Setting the week timer [r1, r11- r53]

Button	Action	Result
△ **and** ▽	**Press simultaneously for 3 seconds**	The left display shows "Adr:", the right display shows the current value
△ or ▽	Change to the parameter "USr"	The left display shows "USr:"
⟳	Press to change to the parameter from the parameter table	See parameter table
⟳	Press once more	Parameter starts blinking
△ or ▽	**Set the setting range**	See parameter table
RES. Press within 4 secs. to cancel **or**		Cancel, setting is not saved!
⟳	Press or wait 30 s. Then the setting will be saved automatically	Setting is saved
RES.	Press or wait 60 secs. until the controller switches back to initial status	Initial status

Parameter table

Parameter	Description of function	Setting range
r1	On / Off	0: switched off 1: switched on
r11 **r21** **r31** **r41** **r51**	1. Switch function 2. Switch function 3. Switch function 4. Switch function 5. Switch function	0: No function 1: Request defrosting 2: Night time increase/decrease on 3: Night time increase/decrease off
r12 **r22** **r32** **r42** **r52**	Weekly programme r11 / r21 / r31 / r41 / r51	0: Mon - Son (daily) 1: Mon - Fri (work days) 2: Mon - Sat 3: Sat - Son (weekend) 4: Mon 5: Tue 6: Wed 7: Thurs 8: Fri 9: Sat 10: Son
r13 **r23** **r33** **r43** **r53**	Switching time for r11 / r21 / r31 / r41 / r51	0:00….23:59

7.4.4 Further parameter settings

For further specific parameter settings, please refer to the operating instructions delivered with the temperature controller, order no. 900350.029 or consult our service professionals.

7.4.5 Switching controller on and off

Pressing the  button for at least 4 seconds will switch the controller on and off.

Then, the plug must be removed from the mains socket to ensure the controller is completely disconnected from the electric power source to prevent unintentional operation.

7.5 Normal operation

After parameterization of the temperature controller has been completed, the heating is already in operation (insofar as this is permitted by the set parameters)

7.6 Fault messages on the temperature controller

The fault messages for the temperature controller can be taken from the separate operating instructions for the device itself. Should several faults occur, the messages will be displayed one after another.

Po	Display	Cause	Remedy
1		Operating hour counter run down. (Parameter ), service requested	
2		Temperature on heat band is too high	Switch off the heat band using K2
3		Error: short circuit in temperature sensor F1	Controller is switched off. Check the sensor.
4		Error: temperature sensor F1 defective - wire broken	Controller is switched off. Check the sensor.
5		Error: short circuit in temperature sensor F2	Controller still operating. Check the sensor. Switch off the heater until error has been remedied.
6		Error: temperature sensor F2 defective - wire broken	Controller still operating. Check the sensor. Switch off the heater until error has been remedied.
7		Time not set correctly	Set time again
8		Error during self-test	Repair
9		Error in parameter memory	Check parameters

7.7 Trouble shooting

The following table can be used to provide assistance in trouble shooting activities.

Pos.	Display	Cause	Remedy
1	Plug is connected, main switch ON, **Controller shows no display**	No mains power, or voltage too high Residual current circuit breaker FA1 is switched off or has activated	Disconnect the mains plug, check voltage at power supply. Switch residual current circuit breaker back on
2	Residual current circuit breaker "ON", **LEDs "K1" and "K2“ are lit up but the product is not being heated up.**	Heater not enabled by the relays	Error at K1 or K2 contacts prevent heater being enabled. Consult manufacturer's service.

You can also contact our SERVICE for all other technical malfunctions on the container.

8 Maintenance instructions

8.1 Maintenance tasks during operation

It is the responsibility of the operator to check the container for safety (acc. to ADR) at regular intervals. To do so, the currently valid national regulations in each country, such as industrial safety regulations, product safety laws and ADR, must be observed.

In the event of an accident with a container (e.g. damage by forklift, falling from a lorry, etc.) an unscheduled inspection as prescribed by ADR must be carried out.

In addition, the manufacturer recommends the following maintenance/inspections be carried out before commissioning.

Who	When	What	How
Operator	Before use	Check whether the cone or cones on the safety valve can be moved, and whether there is any damage and/or contamination.	By hand visually
Operator	Before use	Check visually for any damage or contamination internally and externally. There must not be any damage or visual changes (e.g. corrosion).	visually
Operator	After each use during cleaning	Check all seals for traces of wear. There must be no damage to any seals or connecting elements from the container to the connectors, which may cause any leakage.	visually

Maintenance work may only be carried out by a suitably trained and qualified employee (Refer to Basic Safety Instructions, section 4.2).

INSPECTION – Safety valve	
	**Inspection procedure for the safety valve can be taken from the technical documentation supplied with the valve in use.**

CLEANING – dependent on medium

	**If the container has been used for media which are likely to be sticky or result in decomposition and consequently require more intensive cleaning, or for media which may pose a not clearly determinable risk of corrosion to the container and its connections, the operator is responsible for reducing the cleaning intervals accordingly.**

8.2 Replacement parts

Replacement parts (here: original replacement parts) can be obtained directly from the manufacturer, using the descriptions in the replacement parts list, as long as it concerns a 1:1 exchange. If these parts can no longer be supplied, further clearance from the manufacturer is required for the use of other parts (see 9.1).

8.3 Maintaining the container in good working condition

Besides the regular maintenance and inspection tasks at scheduled times, the operator must also ensure the container is kept in good working condition at all times.

If the container shows clear signs of damage or unexpected conditions, they must be remedied or examined immediately.

DANGER	
	**The container must not be operated until the fault has been remedied by a qualified person.**

PROVISIONAL SOLUTIONS ARE NOT PERMITTED	
	**Continuing to operate the container "provisionally" by bridging safety or monitoring devices is strictly forbidden.**

8.4 Scheduled safety tests

The operator has to test the container, or have it tested, for safety at regular intervals according to the national laws, directives and regulations currently valid in each country.

In Germany, testing is based on the industrial safety regulations (BetrSichV, §10) or the BGV A3.

This test can be carried out in accordance with the relevant legal provisions by the manufacturer or another appropriately qualified person.

The scope of the test must at least cover the following areas:

- Electrical safety
  Proof of cut-off conditions in the event of malfunction
  Insulation resistance measurements
  Consistency of earth connections
  Testing residual current devices (RCDs)

- Functional safety
  Check effectiveness of thermal overload switches (product and heater)

- Mechanical safety
  Damage to frame, seals and closures, transport frame

- All warning and information signs are complete

- All inspections and tests for metal IBCs prescribed by the ADR

9 Repairs

Repairs may only be carried out when the container is switched off and the electrical equipment is disconnected from the power supply. The container must also be empty and clean.

WARNING	
	**Repairs carried out improperly or negligently (e.g. without original parts) can lead directly to the risk of accidents.** **In such cases, the warranty is rendered null and void.**

9.1 Original replacement parts

Only **original replacement parts** from the manufacturer **SCHÄFER-SUDEX** may be used.

In this event, the declaration of Conformity will continue to be valid.

9.2 Qualified personnel

In order to guarantee the safety of the container, repair work may only be performed by our SERVICE personnel.

9.3 Testing after repair

After repairs, the container must be tested to ensure it is in a safe condition, before it is put back into operation. The scope of the testing is dependent on the work carried out and is determined by the qualified and authorized person.

10 Residual risks

10.1 Risk of explosion

Failure to comply with the operating instruction by filling the container with unauthorized substances can lead to the risk of fire or explosion!

10.2 Risk caused by inadequate / lack of maintenance

Only through regular maintenance can signs of wear (such as leaking closures, damaged leaking housings) be recognized in time and dangerous component failure be prevented.

10.3 Risk caused by failure to comply with safety instructions

Any failure to comply with the safety instructions contained in this operating manual or the manuals of any installed components can lead to dangerous operating conditions for the container, up to and including the risk of fire or explosion.

WARNING	
	**Any improper use of the container can lead directly to the risk of accidents and falls outside the definition of intended use.** **In this event, the Declaration of Conformity is rendered null and void.**

11 Disposal

Empty, cleaned containers can be disposed of completely through the manufacturer **SCHÄFER-SUDEX**.

After being cleaned, metallic and electrical components, as well as plastics, can also be disposed of through an appropriate recycling enterprise.

12 List of applicable documents contained in the appendix

	Included in delivery	
	Yes	No
Order-related technical specifications		
Operating instructions for the temperature controller		
Replacement parts list with relevant order numbers		
Order-related container drawing		
Order-related type plate drawing		
Technical data sheet for the safety valve		
Certificate of construction and pressure tests		
Cleaning certificate		
Food compatibility certification		

Date

Signature final inspection

Contact

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