

Operating Manual

Test and Simulation Equipment

for quality control, research and production

Premium-Line



111



Rev. 1.10



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1 Preface

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1.1 Notes to the Document

This operating manual is a behaviour guide of the manufacturer for the operator of the unit and all persons being engaged in installation, operation, maintenance and repair.

The photographs in this manual might deviate from the conditions at your unit.

1.1.1 Symbols in the Text

The unit is designed according to the state of the art ensuring operating safety. Nevertheless, dangers might arise due the construction, which cannot be excluded.

The following expressions, which are used in this operating manual, shall indicate dangers when handling the unit or they shall give information for unit handling.

DANGER

Warning of injuries with fatal consequences.

Non-observance of the warning might result in severe health damages including death.

→ The arrow indicates a protective measure you should take to avert the danger.

WARNING

Warning of severe injury.

Non-observance of the warning might result in severe health damages.

→ The arrow indicates a protective measure you should take to avert the danger.

Warning of injury.

Non-observance of the warning might result in minor and moderate health damages.

➔ The arrow indicates a protective measure you should take to avert the danger.



NOTE

Warning of property damage.

Non-observance of the warning might result in considerable damage of the unit or of its environment.

→ The arrow indicates a protective measure you should take to avert the danger.

HINT

Further useful information.

Furthermore, this operating manual contains safety signs according to DIN 4844 and BGV A8 (Implementation of the EC Regulation 2006/42/EC).

1.2 Obligations of the Operator

The unit is designed according to the state of the art ensuring operating safety. Nevertheless, dangers might arise from the unit, or it might be damaged.

Therefore, the operator shall ensure the following:

- Any person, who is engaged in operation, maintenance or repair of the unit, must be informed concerning potential hazardous characteristics of the tested materials and must be instructed concerning preventive measures for danger prevention.
- Any person, who is engaged in installation, operation, maintenance or repair of the unit, must be familiar with the safety devices of the unit and must be informed of the behaviour in case of hazardous incidents.
- Any person, who is engaged in installation, operation, maintenance or repair of the unit, must wear personal protective equipment (safety glasses, tight-fitting protective clothing, safety shoes, safety gloves, respirator mask etc.).
- Any person, who is engaged in installation, operation, maintenance or repair of the unit, must have read and understood the relevant parts of the operating manual.
- For option CO₂ Gassing: Execution of a risk assessment for the installation place and implementation of the measures resulting from it (such as installation of a gas warning system or of a gas ventilation system).
- For option CO₂ Gassing: All persons, who are engaged in installation, operation, maintenance or repair of the unit are familiar with the company safety regulations and with the national regulations concerning the handling of CO₂.
- For option CO₂ Gassing and displacement of the unit: Either displace the unit together with the CO₂ gas bottle or loosen all connections to the unit to avoid dropping of the CO₂ gas bottle or damage of hoses or cables.
- The operating manual must always be readily available.
- Only persons shall be allowed to operate the unit, who are familiar with the basic regulations for work safety and accident prevention, who are instructed in handling the unit and who are authorized for the corresponding task.
- All processes, competences and responsibilities in the area of the unit must be unambiguously determined.
- Security-conscious working of the personal must be checked regularly.



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- All safety devices must be fully functionally.
- The unit and the entire work area must always be clean and tidy.
- Test animals must be fed and sufficient fresh air (option: fresh air rosette) must be available.
- Test animals must be kept safely in a cage.
- Units being connected to the test room socket must be released for the maximum temperature and humidity range.
- Never use the unit with missing test room socket cover.
- The unit with the option lighting should never be used without fluorescent lamps to prevent penetration of humidity.
- The unit with the option lighting should always be used with holder top parts and gaskets, which are appropriate for the diameter of the fluorescent lamps.
- For removable lighting units, the socket cover must be closed in a way that humidity penetration is prevented.
- Units, which are used for microbiological or bacterial tests etc., shall not be used for storage of food.
- Batches, which have been tested in the unit, must be disposed professionally.
- All maintenance/inspection tasks must be executed according to the scheduled time intervals.
- Modifications, addition or conversion of the unit are not allowed without prior approval of the manufacturer. This applies also to modifications of the software of the programmable control systems.
- Only use original RUMED [®] spare parts for repair.
- All national laws and regulations, the national safety regulations and laws and the company safety regulations and laws, the Ordinance on Industrial Safety and Health (BetrSichV) etc., which are applicable for the unit, including those, which are not expressly mentioned herein, must be observed.

In case of doubt or further questions, please address to "Rubarth Apparate GmbH".



2 EC Declaration of Conformity

Die RUMED Rubarth A aufgeführte Maschine o 2006/42/EG einhält:	pparate GmbH als Hersteller erklärt hiermit, dass die nachfolgend lie grundlegenden Anforderungen der EG-Maschinenrichtlinie
• Hersteller:	RUMED Rubarth Apparate GmbH Mergenthalerstr. 8 DE 20880 Lostzon
Maschine / Typ:Seriennummer:	P 210, P 350, P 530, P 850, P 1060, P 1700 siehe Typenschild
Bei einer mit uns nicht Gültigkeit.	abgestimmten Änderung der Maschine verliert diese Erklärung ihre
Angewandte harmonisi	erte Normen der Maschinenrichtlinie 2006/42/EG:
 ISO 12100 Allg EN 349:1993 Min ISO 13857 Sicl obe 	emeine Gestaltungsleitsätze destabstände zur Vermeidung des Quetschens von Körperteilen herheitsabstände gegen das Erreichen von Gefährdungsbereichen mit den ren und unteren Gliedmaßen
Angewandte harmonisi	erte Normen der mitgeltenden Niederspg Richtlinie 2014/34/EU:
• EN 60204-1 Elekt	trische Ausrüstung von Maschinen
Angewandte harmonisi	erte Normen der der mitgeltenden EMV- Richtlinie 2014/30/EU:
 EN 61000-6-2 Sto EN 61000-6-4 Sto 	brestigkeit für Industriebereiche Braussendung für Industriebereiche
Bevollmächtigter für die	e Technische Dokumentation ist der Hersteller selbst.
Jahr der Anbringung de	es CE-Kennzeichens: 2017
Laatzen, 28.06.2017 Ort, Datum	RUMED the Ruberth Apparate Uniter Schrift
	Mergenthalerstr. 8 Tel. 0511.86 65 99-80 D-30880 Laatzen Fax 0511.86 65 99-99



3 Information Concerning the Unit

NOTE

Property Damage!

Metal objects, which are placed on or in the unit and which do not consist of stainless steel, might damage the stainless-steel surfaces of the unit due to formation of extraneous rust. → Never place metal objects, which do not consist of stainless steel, on or in the unit.

3.1 Nameplate

The nameplate is located at the bottom side of the blue switchboard in the door frame, directly near the door contact switch.





3.2 Delivery Scope

See packing list on the packaging or on the unit door.





3.3 Overview







4 Safety

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The operator is responsible for the safe use of the unit. The following must be observed:

- Observation of the general, national safety regulations and the company safety regulations.
- Application is only allowed, if the unit is in faultless condition.
- All warnings and safety instructions at the unit must be observed.
- All safety measures, which possibly might result from the specimen, must be observed.
- Potential danger resulting from the specimen must be observed.

4.1 Appropriate Application

The test and simulation equipment shall exclusively be used for temperature, climatic and photo stability tests or for cultivation of test plants and breeding of test animals.

Any other application is considered as misuse.

4.2 Inappropriate Application

The unit shall exclusively be used for the tasks mentioned in chapter 4.1.

Any other application or use beyond this purpose is considered as misuse. Rubarth Apparate GmbH is not liable for body injury and/or property damage resulting from improper use of the unit.

The following is regarded as improper use:

- Working with explosive material.
- Installation of the unit in explosive areas.
- Connection of defective auxiliary equipment at the test room socket.
- Connection of equipment with a current consumption exceeding 2 A at the test room socket.
- Use of specimen, which are leaving dust in the unit.
- Use of specimen being corrosive.
- Use of specimen dissipating heat (for instance by chemical reaction).
- Supply of external energy to the specimen in the test room.
 (This energy supply cannot be switched-off automatically by the control in case of a hazardous incident).



4.3 Warning Signs and Mandatory Signs

Dangerous areas at the unit are marked with warning signs according to DIN 4844 and BGV A8.

Mandatory signs at the unit indicate necessary actions to be taken.

Warning signs, mandatory signs and other information signs at the unit must always be clearly legible. Illegible or damaged warning signs must be replaced immediately.

The following warning signs, mandatory signs and information signs are attached to the unit.

Symbol	Meaning	Example
4	Warning of dangerous electrical voltage	Cover Switch Cabinet
	Warning of hot surfaces	 Heated condensate collecting pan Switchboard above the test room door (with optional extension of the temperature range to +80 °C)
	Warning of low temperature/cold	 Switchboard above the test room door (with optional extension of the temperature range to -20 °C/-30 °C)
	Warning of optical radiation	 Switchboard above the test room door (optionally for special UV lighting)
	Warning of danger of CO ₂ suffocation	 Switchboard above the test room door with option CO₂ gassing
	Do not drive underneath with lift truck	 Switchboard above the test room door with option "Condensate collecting pan" or "Heated condensate collecting pan"
	Withdraw mains plug	Cover of switch cabinetOption lateral lighting
	Wear eye protection	Test room door (with UV lighting)
Max. 25 kg	Maximum load of the shelves	Test room shelf single frame
Max. 50 kg	Maximum load of the shelves	 Test room shelf double frame (option)
\odot	Test room socket	Test room socket (option)
•	Socket evaporation humidifier	Humidifier socket (option)



5 Storage

NOTE

Property Damage!

Metal objects, which are placed on or in the unit and which do not consist of stainless steel, might damage the stainless-steel surfaces of the unit due to formation of extraneous rust.
→ Never place metal objects, which do not consist of stainless steel, on or in the unit.

Observe the following for storage of the unit:

- Always store the unit in a closed building.
- Protect the unit from humidity.
- Storage temperature from +10 °C to +30 °C
- No direct sun radiation.
- No condensation.
- Low-dust environment.



6 Technical Data

The technical data of your unit can be drawn from the nameplate. See page 11.

Туре	P 210	P 350	P 530		
Test room					
Volume	210 I	350 I	530 I		
Standard min. temperature	0 °C	0 °C	0 °C		
Standard max. temperature	+50 °C	+50 °C	+50 °C		
Temperature deviation in time	±0,5 °C	±0,5 °C	±0,5 °C		
Height	600 mm	990 mm	1500 mm		
Width	610 mm	610 mm	610 mm		
Depth	585 mm	585 mm	585 mm		
Number of shelves (standard delivery scope)	2	3	3		
Maximum load per shelf	25 kg	25 kg	25 kg		
Unit					
Height	1180 mm	1600 mm	2105 mm		
Width	730 mm	730 mm	730 mm		
Depth	820 mm	820 mm	820 mm		
Electrical connection	230 V/50 Hz	230 V/50 Hz	230 V/50 Hz		
Net weight of the standard unit	80 kg	125 kg	160 kg		
Options	Options				
Additional shelf (max. 25 kg)	P0210-01	P0350-01	P0530-01		
Shelf of the standard delivery scope in reinforced execution (surface load 50 kg)	P0210-02	P0350-02	P0530-02		
Additional shelf, reinforced (max. 50 kg per shelf)	P0210-03	P0350-03	P0530-03		
Glazed door with pane heating	P0210-04	P0350-04	P0530-04		
Internal glass door	P0210-05	P0350-05	P0530-05		
Minimum temperature -20 °C	P0210-06	P0350-06	P0530-06		
Minimum temperature -30 °C	P0210-07	P0350-07	P0530-07		
Maximum temperature +80 °C	P0210-08	P0350-08	P0530-08		
Speed of temperature change 2 °C/min in the working range of 0 to 80 °C	P0210-09	P0350-09	P0530-09		
Stainless-steel plate evaporator	-	P0350-10	P0530-10		
Water-cooled refrigerating machine	-	-	P0530-11		
Direct water cooling at limited temperature/humidity range	-	-	P0530-12		
Execution 110 V/60 Hz	P0210-13	P0350-13	P0530-13		



Туре	P 850	P 1060	P 1700		
Test room					
Volume	850 I	1060 I	1700 I		
Standard min. temperature	0 °C	0°C	0 °C		
Standard max. temperature	+50 °C	+50 °C	+50 °C		
Temperature deviation in time	±0,5 °C	±0,5 °C	±0,5 °C		
Height	1500 mm	1500 mm	1500 mm		
Width	610 mm	2 × 610 mm	2 × 610 mm		
Depth	935 mm	585 mm	935 mm		
Number of shelves (standard delivery scope)	3	6	6		
Maximum load per shelf	25 kg	25 kg	25 kg		
Unit					
Height	2105 mm	2105 mm	2105 mm		
Width	730 mm	1460 mm	1460 mm		
Depth	1170 mm	820 mm	1170 mm		
Electric connection	230 V/50 Hz	230 V/50 Hz	230 V/50 Hz		
Net weight of the standard unit	200 kg	260 kg	350 kg		
Options	Options				
Additional shelf (max. 25 kg)	P0850-01	P1060-01	P1700-01		
Shelf of the standard delivery scope in reinforced execution (surface load 50 kg)	P0850-02	P1060-02	P1700-02		
Additional shelf, reinforced (max. 50 kg per shelf)	P0850-03	P1060-03	P1700-03		
Glazed door with pane heating	P0850-04	P1060-04	P1700-04		
Internal glass door	P0850-05	P1060-05	P1700-05		
Minimum temperature -20 °C	P0850-06	P1060-06	P1700-06		
Minimum temperature -30 °C	P0850-07	P1060-07	P1700-07		
Maximum temperature +80 °C	P0850-08	P1060-08	P1700-08		
Speed of temperature change 2 °C/min in the working range of 0 to 80 °C	-	P1060-09	-		
Stainless-steel plate evaporator	P0850-10	P1060-10	P1700-10		
Water-cooled refrigerating machine	P0850-11	P1060-11	P1700-11		
Direct water cooling at limited temperature/humidity range	P0850-12	P1060-12	P1700-12		
Execution 110 V/60 Hz	P0850-13	P1060-13	P1700-13		



7 Installation, Set-up, Connection

NOTE

Property Damage!

Metal objects, which are placed on or in the unit and which do not consist of stainless steel, might damage the stainless-steel surfaces of the unit due to formation of extraneous rust. → Never place metal objects, which do not consist of stainless steel, on or in the unit.

HINT

Attachment parts should be installed at the installation place! If required due to space constraints, the lighting (*see page 38*) and the humidification must be removed before moving the unit to the installation place.

7.1 Installation

Observe the following for installation of the test and simulation equipment:

- No direct sun radiation.
- Radiators or other sources of heat should not be located nearby.
- Ambient temperature < +30 °C.
- Distance of the unit rear to the wall: minimum 10 cm.
- The floor must be level and horizontal.
- In case of units with steering rollers:
 - Turn the steering rollers to the front.
 - Lock the brake.

Transporting the equipment:

CAUTION

Risk of injury due to dropping equipment!

The centre of gravity of the equipment is very high due to the refrigerating machine at the top. → Avoid tilting of the equipment.

→ Consider the high centre of gravity when moving the equipment.

NOTE

Property Damage!

When tilting the test and simulation equipment during transport, oil might flow from the refrigerating machine into the evaporator, which results in damage of the latter during operation.

→ After transport, the equipment should be switched-on only after four hours in upright position.



- **1.** Empty the unit, if required. Only move the empty unit!
- 2. Loosen all connections (cables, Ethernet connection, mains plug, equipotential bonding etc.), if required.

NOTE

Property Damage of the Condensate **Collecting Pans!**

When lifting the test and simulation equipment by means of a lift truck, the condensate collecting pans, which are installed below the unit, might be damaged.

→ If required, remove the condensate collecting pans below the unit prior to transport.



Property Damage of the Condensate **Drain Valves!**

When lifting the unit by means of a lift truck, the condensate drain valves below the unit might be damaged.

- → Check the position of the condensate drain valves prior to driving the lift truck underneath the unit.
- → Lift the unit without damaging the condensate drain valves.



NOTE

Cushion your lift truck to prevent damage of the unit surface.

Lift the unit by means of a lift truck and 3. move it to the installation place.









Levelling the unit:

NOTE

The test and simulation equipment might tilt!

Units with steering rollers might tilt forward, when the steering rollers are positioned to inside and the door is open!

- → Turn the steering rollers to the front.
- ➔ Do not lean on the opened door.

NOTE

Property Damage of the Condensate Collecting Pans!

When lifting the test and simulation equipment by means of a lift truck, the condensate collecting pans, which are installed below the unit, might be damaged.

➔ If required, remove the condensate collecting pans below the unit.



NOTE

Property Damage of the Condensate Drain Valves!

When lifting the unit by means of a lift truck, the condensate drain valves below the unit might be damaged.

- Check the position of the condensate drain valves prior to driving the lift truck underneath the unit.
- → Lift the unit without damaging the condensate drain valves.



- 1. Check the levelling in both directions using a spirit level.
- **2.** Lift the unit by means of a lift truck and adjust the continuously adjustable feet.
- **3.** Lower the unit and check the levelling using a spirit level.
- **4.** Repeat the procedure until the levelling is correct.

NOTE

Door limit switches do not work!

The function of the door limit switches is not ensured, if the unit is not levelled correctly.

→ Observe, that the gap between the upper edge of the door and the switchboard is even, particularly in case of double-door units.





7.2 Set-up

7.2.1 Installation of the Condensate Drain Valves (Option)

1. Screw the condensate drain valves from the unit rear to the condensate drain sockets below the unit.



7.2.2 Installation of the Shelves

How to install the shelves:

- 1. Withdraw shelves and mounting clips from the test room.
- 2. Determine the position of the shelves.
- **3.** Insert the upper hook of the mounting clip into the fastening rail.





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- **5.** Fasten the fastening clips in the fastening rails in the same height. Numbers facilitate the positioning of the fastening clips in the same height.
- **6.** Remove the protective cushions from the shelves.
- 7. Insert the shelves into the fastening clips.

Double wire ahead.

Pegs at the fastening clips prevent the shelves from dropping when withdrawing them.

For removal, the shelf must be lifted.

The carrying capacity of the shelves (single frame) is a maximum of 25 kg surface load.

The carrying capacity of the reinforced shelves (double frame) is a maximum of 50 kg surface load.











7.2.3 Tubular Port

The tubular port can be used to lead cables, measuring lines, hoses, tubes etc. into the test room.



7.2.4 Adaptation of the Closing Plug to the Tubular Port (Option)

For gas-tight leading of the cables, tubes etc. in different sizes through the tubular port into the test room, the closing plug must be adapted.

Adaptation of the closing plug is possible in the range of 4 mm to 23 mm.

How to adapt the closing plug:

- 1. Loosen the four Allen screws from the closing plug.
- 2. Withdraw the closing plug from the tubular port.



3. Open the closing plug.



4. Remove the rubber pads from both sides of the closing plug according to the required aperture diameter.

- **5.** Insert the cable between the two sides of the closing plug.
- **6.** Insert the closing plug into the tubular port.
- **7.** Tighten the four Allen screws. The closing plug will be compressed, and the tubular port is sealed.



7.2.5 Setting the Fresh Air Rosettes (Option)

How to set the fresh air rosettes:

1. Continuously adjust the air flow rate at the fresh air rosettes (top and bottom).

HINT

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An air exchange with the installation room by natural convection is only possible, if both fresh air rosettes are open.





7.2.6 Test Room Socket (Option)

The test room socket, which is protected by a FI fuse, can be programmed via the control (on/off). See page 57 ff.

Current consumption of the connected unit: max. 2 A.

The test room socket is marked with the shown label.



Never connect an evaporation humidifier to this socket!



HINT

Prerequisite for the use of the advantages of the programmable switching-on times of the socket is, that the connected units are able to start automatically with switched-on power supply.

7.2.7 Installation of the Ultrasonic Humidification (Option)

How to install the ultrasonic humidification:

- 1. Actuate the locking brakes of the mobile test and simulation cabinet.
- **2.** Remove the humidifier from the cardboard box in the test room.





3. Fasten the humidifier to the test and simulation cabinet by pressing the four clips.







- **4.** Insert the humidifier inlet hose (A) (held by magnetic force).
- 5. Insert the humidifier outlet hose (B) (held by magnetic force).

 Connect the water supply. The engagement must be audible. If the connection does not engage, the self-locking coupling will not release the water flow.



7. Connect the power supply (C) and lock it (D).

Property Damage of the Humidification!

Always use demineralized water for the humidification. Otherwise, it might be damaged.

→ Only supply demineralized water to the humidifier with a conductivity of <5 µS/cm.</p>

If demineralized water is already available on site:

 Connect the external water connection (E) (max. 5 bar).

HINT

If a water connection with demineralized water is not available:

- If required, connect the ion exchanger. *See page 30.*
- If required, connect the water canister. *See page 31.*

7.2.8 Connecting the Ion Exchanger (Option)

If only drinking water is available on site for humidification, an ion exchanger must be interconnected.

How to connect the ion exchanger:

- 1. Install the ion exchanger using two screws at the corresponding place (A).
- 2. Make the hose connection between the ion exchanger and the test and simulation unit using the provided short hose (B).
- Make the external water connection to the customer's drinking water connection using the provided hose, 2 m (C).

Connection dimension: ³/₄" external thread Drinking water connection: max. 5 bar, with stop valve.







7.2.9 Connecting the Water Canister (Option)

DANGER

Warning of dangerous electrical voltage!

When filling the canister, water might flow through the cover into the switch cabinet.

→ Ensure, that no water arrives at the cover and flows into the electrical system when filling the canister.

NOTE

Property Damage of the Unit!

If a water canister, which is placed on the unit, leaks, water will flow into electrical system of the unit resulting in property damage.

- → Never place a water canister on the unit.
- → Always put the water canister in the provided holder.

NOTE

Property Damage of the Humidification!

Always use demineralized water for the humidification. Otherwise, it might be damaged.

→ Only supply demineralized water to the humidifier with a conductivity of <5 µS/cm.</p>

NOTE

Property Damage of the Humidification!

If the humidifier is not supplied with demineralized water for a longer period, the solenoid valve of the humidifier will be damaged.

→ Regularly check the level of the water canister and refill demineralized water, if required.

How to connect the water canister:

- 1. Slightly loosen the pre-assembled screws for the holder of the water canister in the upper area of the right side panel.
- 2. Insert the holder of the water canister.





3. Screw the stop valve on the water canister.

Check, if the seat of the gasket is correct.

- Rinse the water canister several times with demineralized water with a conductivity of <5 μS/cm.
- **5.** Fill demineralized water with a conductivity of <5 μS/cm into the water canister.
- 6. Place the water canister into the holder with the water cock directed to the rear.
- 7. Make the hose connection (A) between the water canister and the test and simulation equipment. Do not kink the hose connection!
- 8. Open the ventilation (B) at the canister.
- **9.** Open the water cock (C) at the canister and check the water flow.

If the water does not flow out of the canister, the system must be bled:

- **10.** Make a water collecting tray available.
- **11.** Open the self-locking coupling (D) of the water connection by pressing the key.

12. Withdraw the hose from the connecting piece by pressing the retaining ring (E) at the humidifier.









- **13.** Place the hose end into the collecting tray.
- **14.** Close the coupling. The engagement of the coupling must be audible.
- The system will be bled.
- **15.** If water escapes when opening the self-locking coupling, stop the flow.
- 16. Reconnect the hose.Push the hose into the connecting piece as far as possible.After that, withdraw it slightly in order to position the retaining ring to the front.
- **17.** Close the coupling. The engagement of the coupling must be audible.







7.2.10 Installation of the Condensate Collecting Pan (Option)

How to install a condensate collecting pan:

HINT

Install the condensate collecting pan at the final installation place and after levelling of the unit. After the installation, the unit cannot be lifted anymore with a lift truck. Otherwise, the rails for the condensate collecting pan would be damaged.

1. Fasten the rails by pressing the six clips below the test and simulation cabinet.



2. Move the condensate collecting pan or the heated condensate collecting pan with the moulded recess to the front on the rails underneath the unit to the limit stop.





3. Heated condensate collecting pans require connection (A) and locking (B) of the power supply at the unit rear.



7.2.11 Connection and Setting of the Evaporation Humidification (Option)

How to connect the evaporation humidification:

- Place the evaporation humidifier on the floor of the test room. The evaporation humidifier must stand evenly to ensure proper functioning of the spring-loaded contact of the low liquid level control at the bottom side.
- **2.** Adapt the cable length of the evaporation humidifier, if required.
 - A. Turn the evaporation humidifier.
 - B. Open the cable fixing device.
 - C. Adapt the cable length by winding or unwinding.
 - D. Push the cable into the bushing.
 - E. Close the cable fixing device.







Connect the water hose of the evaporation humidifier to the water hose in the test room.
 The engagement of the self-locking

The engagement of the self-locking coupling must be audible.

HINT

If the evaporation humidifier is filled by hand, the hose connection should not be made to avoid an overflow at the level controller on the unit left.

4. Connect the mains plug of the evaporation humidifier to the humidifier socket (left side) in the test room.

The humidifier socket is marked with the shown label.



HINT

Proper functioning of the evaporation humidifier is only ensured, if it is connected to the humidifier socket. Since only this socket is switched-on and -off by the humidity control.

- 5. Connect the water supply of the unit at the unit left to the inlet (A) of the level controller
- Connect the water overflow pipe (B) of the level controller to the water drain of the customer using a kink-proof hose.

HINT

The water supply must run permanently "drop by drop".

The water drain must be sufficient to drain overflowing water.






How to set the level controller:

- 1. Move the water overflow pipe (B) in the rubber grommet (C) to set the water level in the evaporation humidifier.
- Water overflow pipe upwards: higher water level in the evaporation humidifier.
- Water overflow pipe downwards: lower water level in the evaporation humidifier.





HINT

The evaporation humidifier must at least be filled to a level, that the contact of the low liquid level at the bottom side is released. The release of the contact is audible.

If the contact is not released, the evaporation humidifier will not be heated.



7.2.12 Removal of the Lighting Units Being Retractable to the Side (Option)

Removal of the lateral lighting units (lighting boxes), if the installation opening is too small:

DANGER

Warning of dangerous electrical voltage!

When working with live parts, dangerous electrical shocks are possible.

- → Withdraw the mains plug prior to the removal of the lighting boxes.
- **1.** Withdraw the mains plug.
- 2. Remove the transport lock (A) from the lock.
- 3. Open the locking device using key (B).
- 4. Open the lighting box.



5. Withdraw the electrical connection plug from above.





6. Loosen and remove the rod guide (top/bottom) by turning it anticlockwise. Mark the washers to be able to reinsert them at the same position when mounting.

NOTE

Property Damage of the Lighting!

When loosening the hinges, the lighting box might drop and tilt over.

- → Always ask a second person to assist with loosening the hinges.
- Protect the lighting box from dropping and tilting over prior to loosening the hinges.
- 7. Only loosen the upper hinge (Allen 4 mm).

(Loosening of the middle and lower hinges is not required.)

NOTE

Property Damage of the Lighting!

When lifting the lighting boxes at the fluorescent lamps or at the holders, they will be damaged.

- → Always lift the lighting boxes at the metallic housing.
- 8. Remove the lighting box from above.
- **9.** Protect the lighting box from slipping and tilting.





7.2.13 Installation of the Lighting Units Being Retractable to the Side (Option)

How to install the lateral lighting units (lighting boxes):

Warning of dangerous electrical voltage!

When working with live parts, dangerous electrical shocks are possible.
 → Withdraw the mains plug prior to the installation of the lighting boxes.

NOTE

Property Damage of the Lighting!

During installation, the lighting box might drop and tilt over.

- → Always ask a second person to assist with the installation of the lighting box.
- ➔ Protect the lighting box from dropping and tilting over, as long as it is not tightly screwed.

NOTE

Property Damage of the Lighting!

When lifting the lighting boxes at the fluorescent lamps or at the holders, they will be damaged.

- → Always lift the lighting boxes at the metallic housing.
- **1.** Insert the lighting boxes.
- **2.** Screw the upper hinge down (Allen 4 mm).
- **3.** Screw the upper and lower rod guide down, tighten and align them. Insert the washers.

For alignment, the hole in the rod guide must be aligned vertically.







4. Insert the electrical connection plug from above.



- **5.** Close and lock the lighting box. During this, push the lighting box slightly against the cabinet to overcome the resistance of the gasket.
- 6. Connect the mains plug.



7.3 Connection

 Connect the mains plug to an individually protected (16 A) Schuko socket being duly earthed. (230 V, 50 Hz; country-specific deviations are possible). Observe the electrical data on the nameplate (position of the nameplate, see page 11).

HINT

Use an individually protected circuit (16 A) for each unit.

For option humidity:

1. Water Connection

If a supply with demineralized water exists:

Connect the external water connection directly to the stop valve. Conductivity: <5 µS/cm. Pressure: 1-3 bar.

Check the tightness!

Unit with Ion Exchanger:

Connect the external water connection to the drinking water connection of the customer using the provided hose 2 m. Connection dimension: ³/₄" external thread Drinking water connection: max. 5 bar, with stop valve.

Check the tightness!





Unit with evaporation humidification:

Connect the water supply of the unit at the unit left to the inlet (A) of the level controller

Connect the water overflow pipe (B) of the level controller to the water drain of the customer using a kink-proof hose.

Imperatively check the drain for proper functioning.

Check the tightness!



When using a water canister: See page 31.



Unit with CO₂ Gassing:

NOTE

Observe the company regulations and the national regulations concerning the handling of CO_2 .

Connect the CO_2 gassing unit on the unit's rear.

Components of the CO₂ gassing unit:

- A. Pressure gauge working pressure
- B. Pressure gauge gas bottle pressure
- C. Pressure controller working pressure
- D. Solenoid valve
- E. Shut-off valve and fine control valve
- F. CO₂ connection with self-locking coupling
- G. Power supply
- H. Tool





- 1. Close the pressure controller working pressure (C) completely (turn it anticlockwise).
- Install the gas bottle and protect it from dropping. (The gas bottle is not included in the standard delivery of the unit.)
- **3.** Ensure, that the sealing ring in the cap nut of the CO₂ gassing unit is undamaged.
- 4. Push the tool (H) on the cap nut.
- **5.** Screw the CO₂ gassing unit to the gas bottle using the cap nut
- 6. Tighten the cap nut with the tool.
- 7. Check the tightness.

Check the tightness using leak spray. If leak spray is not available:

- Slowly open the shut-off valve (I) of the gas bottle (by approx. one rotation).
 - The pressure gauge gas bottle pressure (B) shows the unthrottled pressure in the gas bottle.
- Set a working pressure at the pressure controller working pressure (C).
 - The working pressure is indicated at the pressure gauge working pressure (A).
- Close the shut-off valve of the gas bottle.
- The indicated working pressure must be kept for at least 2 hours.





8. Connect the power supply at the unit's rear (J) and lock it (K).



 Connect the CO₂ connection at the unit's rear. The engagement of the self-locking coupling must be audible.





- **10.** Slowly open the shut-off valve of the gas bottle (by approx. one rotation).
- The pressure gauge gas bottle (B) shows the unthrottled pressure in the gas bottle.
- **11.** Set the working pressure (C) at the pressure controller working pressure.
- The working pressure is indicated at the (A) pressure gauge working pressure.
 Working pressure: approx. 1.5 bar

Set the required CO₂ flow quantity at the fine control valve as follows:

- **12.** Carefully close the fine control valve clockwise.
- **13.** After that, open the fine control valve anticlockwise by half a rotation.

NOTE

Always close the shut-off value of the CO_2 gas bottle, if CO_2 is not required.





8 Control and Display Elements

8.1 Control – CONTROL2015 touch

7" Colour Touchscreen Display

All entries and programming are effected via touchscreen.

The display shows messages and failures, and documentation functions are made available by means of the integrated recorder and the logbook.

Information concerning operation, see page 53.





9

Switching on, Switching off, Shutdown

NOTE

Property Damage!

If the test and simulation unit is switched-on and plastic packing material is in the test room, it might melt during a heating process, thus damaging the test room.

- → Empty the test room prior to switching on!
- Kind of current (alternating current) and voltage at the place of installation must coincide with the data on the nameplate of the appliance. See page 11.
- Connection is to be made via an individually protected (16 A) Schuko socket being duly earthed.



9.1 Switching on

NOTE

Property Damage!

When tilting the test and simulation equipment during transport, oil might flow from the refrigerating machine into the evaporator, which results in damage of the latter during operation.

→ After transport, the equipment should be switched-on only after four hours in upright position.

NOTE

Property Damage!

If the unit is switched-on and there is no water in the humidifier, it will be damaged.

- → The unit should only be switched-on, when the humidifier is filled with water.
- 1. Ensure, that the humidifier is filled with water and ensure the continuous supply with demineralized water.
- **2.** Connect the test and simulation equipment to an individually protected Schuko socket being duly earthed.

The control boots up. The blue LED on the right below the touchscreen lights up for a short moment.

This process might take some seconds. The

RUMED logo is displayed.

The blue LED will extinguish.

The control screen "Main Menu" is displayed. See page 57.

3. Check time and date (see header of the control screens) and set them, if required. *See page 56.*

HINT

Setting of date and time is imperatively required. Otherwise, the recorder records, the logbook entries, the messages and the alarms will be sorted in the wrong chronological order.

Information concerning login and creation of programs, see page 53 ff.

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9.2 Switching off

- **1.** Switch the control off.
- 2. (With option: CO₂ gassing) Close the shut-off valve of the CO₂ gas bottle.
- 3. Withdraw the mains plug from the socket.

9.3 Shutdown

NOTE

Property Damage!

Metal objects, which are placed on or in the unit and which do not consist of stainless steel, might damage the stainless-steel surfaces of the unit due to formation of extraneous rust. → Never place metal objects, which do not consist of stainless steel, on or in the unit.

If the unit shall be switched-off or shut down for a longer period, the residual humidity must be removed from the unit.

How to remove the residual humidity from the unit:

- 1. Remove the specimen.
- **2.** Switch the humidity off.
- 3. If required, remove the evaporation humidifier, empty and clean it.
- 4. Heat the unit up to maximum temperature.
- Keep the temperature for one hour. If required, remove the ice from the condensate collecting pan in the rear lower area of the test room from time to time to accelerate the drying.
- 6. Open the door for approx. 2 min.
- 7. Check the test room for humidity, particularly the condensate collecting pan.
- 8. If required, heat again up and open the door until the test room is dry.
- 9. Withdraw the mains plug.
- **10.** Cleaning the unit, see page 93.
- **11.** Leave the door slightly open.

For option humidity:

- **12.** If existing: Empty and clean the water canister.
- **13.** If existing: Empty the ion exchanger.



- **14.** Empty the humidifier.
 - A. Hold the collecting vessel below the drain screw.
 - B. Open the drain screw anticlockwise.
 - C. Let the water drain off.
 - D. Close the drain screw.
- 15. Empty the hoses.



10 Control

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10.1 Basics of the Control

In delivery state of the unit and when the control is switched-on, a user "log-in" is logged in. This user has full authorization for changes and settings of the control.

The user management of the unit allows to assign different authorizations to different users. Further details concerning the set-up of the user management, *see page 83*.

10.1.1 General Information Concerning the Operating and Control Unit

The unit is controlled by means of the operating and control unit CONTROL2015 *touch*. All required settings can be made by means of the operating and control unit.

All entries are made by contacting the touchscreen with a fingertip or an input pen, which is appropriate for touch-sensitive user interfaces.



NOTE

Property Damage of the Touchscreen!

If pointed, sharp or acid-covered objects are used for the touchscreen, irreparable damage of the surface might result.

- → Always use your fingers or a suitable input pen for the touchscreen.
- ➔ Protective films for the touchscreen are available. The film prevents scratches and soiling of the screen. A protective film should always be glued on the screen.



10.1.2 Entry of Text and Numerical Values

According to requirement, the corresponding screen keyboard for the entry of text or numerical values is displayed.

Select Character —	+9	%°		1	-	2		3		4		5		6		7		3	9		0		
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elect Language —			1												1						4		

- For entries, such as parameter values, text etc., a screen keyboard will be displayed after touching the corresponding input field.
- Parameter values can be changed by means of the arrow keys (A) or via a numeric keypad (B) after touching the parameter value.
- When the entry is finished, and the button ENTER or ACKNOWLEDGE had been touched, the screen keypad will disappear.



 Entries beyond a defined plausibility range will not be accepted by the control.

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10.1.3 Header of the Control Screens

The header is identical in many control screens.

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ltem			Description
А	Control screen MAIN MENU is disp	blayed	See page 57
В	Previous control screen is displaye	d	
С	 Name of the present control scr Display of messages and alarm 	een or s	
D	Display of current date and time		
E	 Button: Control screen USER L Display: Logged-in user is displa Horn is switched-on or switched 	OGIN is displayed or ayed or I-off	See page 85

10.1.4 Display of Messages and Alarms

Messages and alarms are displayed in the header of the control screens.

Messages

Messages and alarms are displayed in the header of the control screens.

When touching the button, the control screen "Logbook" will be displayed. See page 80.



Alarms

Alarms are displayed in red in the header of the control screens.



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When touching the button, a pop-up window with detailed information will be displayed.

Alarm messages will disappear, as soon as the values are again within the alarm limits.

The audible alarm can be switched-off by touching the button "Horn off", provided it is allowed by the user rights.

10.1.5 Setting Date and Time

- 1. Switch on the unit, see page 50.
- Control screen "Main Menu" is displayed.
- 2. Touch date and time in the header.
- A pop-up window for entry of the date is displayed.
- 3. Enter the current date and time.
- 4. Acknowledge the entry.

HINT

Setting of date and time is imperatively required. Otherwise, the recorder records, the logbook entries, the messages and the alarms will be sorted in the wrong chronological order.







10.2 Main Menu

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P Pr	ogramme	■ ■ Schreiber	:=10	aBuch	# [#] Finstellungen	

ltem		Description
А	Header of the control screens	See page 55
В	Overview of the adjustable parameters.Touch to change a parameter value.Arrow keys to call further parameters	
С	Control screen "Programs" is displayed.	See page 59
D	Control screen "Recorder" is displayed.	See page 78
Е	Control screen "Logbook" is displayed.	See page 80
F	Control screen "Settings" is displayed.	See page 81
G	 Setpoint or program name. Setpoint: The test and simulation unit operates with fixed parameter values: 	
Н	Changing the display disposition	See page 58



10.2.1 Main Menu - Changing the Display Disposition

When touching the eye symbol in a control screen, a pull-down menu is displayed.



In the pull-down menu, tick the parameters, which shall be displayed on the first page and acknowledge by touching OK.

At least two and a maximum of five parameters can be displayed on the first page.

Further parameters might be displayed on the following pages.

The arrow keys on the left screen margin are used to call further pages.



10 Control

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10.3 Programs

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А	Header of the control screens			See page	e 55
В	 Overview of the entered program Name of the program Type of the program Day Program Week Program Process time Program chain Action Start (triangle) Stop (square) 	s with		See page	e 75
С	Arrow keys for scrolling the progr	am list.			
D	 Selection of the program to be crucicle Day Program Week Program Process time Program chain (linking crucicle) 	eated. If existing programs for I	onger		
Е	Copy a marked program.				
F	Edit a marked program.				
G	Delete a marked program.				



10.3.1 Creating a Day Program

- 1. Switch on the unit, see page 50.
- Control screen "Main Menu" is displayed.
- 2. Touch the button PROGRAMS.

- Control screen "Programs" is displayed.
- 3. Touch the button NEW.
- List of program types is displayed.
- 4. Touch the button DAY PROGRAM.
- Control screen "Name Day Program" is displayed.
- Enter the program name. Use only alphanumerical characters (no special characters)! The program name is also the file name. So, the restrictions for the name are identical.
- 6. Touch the button SAVE.
- Control screen "Day Program" is displayed.
- 7. Touch the button ADD PARAMETER.



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- List of programmable parameters is displayed.
- **8.** Mark the parameters, which shall be used in the program.

Parameter temperature is always active.

- 9. Touch the button OK.
- Programmable parameters are displayed.
- **10.** If desired, tick the checkbox PROTECTION.

HINT

With activated user management, a protected program can only be modified by the creator.

- **11.** Touch the parameter, which shall be set.
- Control screen "Edit Day Program" is displayed.
- **12.** Enter the time at which the parameter shall be achieved.
- **13.** Enter the parameter value for the time.

HINT

Touch the day time or the parameter to change the entry.

HINT

If the option multi-channel light control is used and the light levels shall be dimmed differently, the weakest luminous intensity must be set for the highest level and the further luminous intensities must be set downwards increasingly.







- 14. Touch the button INSERT ROW to insert a new program row.
 - The new program row is always inserted below the row, which had been marked when touching INSERT ROW.
 - The new program row always contains the parameter values of the previous row.
 - Edit the parameter values after touching.
 - The time can only be changed in time intervals between the previous and the following program row.

If the time of a program row shall be changed and also all following program rows shall be changed similarly:

- A. Touch the button MOVE TIMES.
- B. Change the time.
- C. Touch the button ACKNOWLEDGE.

The time values will be changed.

If the data for all parameters had been entered and the program is complete:

15. Touch the button SAVE and again the button SAVE in the pop-up window.

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16. Touch the button PREVIEW to check the created program.



- Control screen "Preview" is displayed.
- **17.** Check the time values and parameter values.





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Wochenprogramm

10.3.2 Creating a Week Program

- 1. Switch-on the unit, see page 50.
- Control screen "Main Menu" is displayed.
- **2.** Touch the button PROGRAMS.

- Control screen "Programs" is displayed.
- 3. Touch the button NEW.

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List of program types is displayed.

Touch the button WEEK PROGRAM.

- Control screen "Name Week Program" is displayed.
 5. Enter the program name.
- Use only alphanumerical characters (no special characters)!
 The program name is also the file name. So, the restrictions for the name are identical.
- 6. Touch the button SAVE.
- Control screen "Week Program" is displayed.
- 7. Touch the button ADD PARAMETER.





- List of programmable parameters is displayed.
- 8. Mark the parameters, which shall be used in the program.

Parameter temperature is always active.

- 9. Touch the button OK.
- Programmable parameters are displayed.
- **10.** If desired, tick the checkbox PROTECTION.

HINT

With activated user management, a protected program can only be modified by the creator.

- **11.** Touch the parameter, which shall be set.
- Control screen "Edit Week Program" is displayed.
- **12.** Enter the day on which the parameter value shall be achieved.
- **13.** Enter the time at which the parameter shall be achieved.
- **14.** Enter the parameter value for the day and the day time.

HINT

Touch the day time or the parameter to change the entry.

HINT

If the option multi-channel light control is used and the light levels shall be dimmed differently, the weakest luminous intensity must be set for the highest level and the further luminous intensities must be set downwards increasingly.







- **15.** Touch the button INSERT ROW to insert a new program row.
 - The new program row is always inserted below the row, which had been marked when touching INSERT ROW.
 - The new program row always contains the parameter values of the previous row.
 - Edit the parameter values after touching.
 - The time can only be changed in time intervals between the previous and the following program row.

If the time of a program row shall be changed and also all following program rows shall be changed similarly:

- A. Touch the button MOVE TIMES.
- B. Change the time.
- C. Touch the button ACKNOWLEDGE.

The time values will be changed.

If the data for all parameters had been entered and the program is complete:

16. Touch the button SAVE and again the button SAVE in the pop-up window.

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17. Touch the button PREVIEW to check the created program.



- Control screen "Preview" is displayed.
- **18.** Check the time values and parameter values.



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10.3.3 Creating the Process Time Program

1. Switch on the unit, see page 50.

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- Control screen "Main Menu" is displayed.
- 2. Touch the button PROGRAMS.

- Control screen "Programs" is displayed.
- 3. Touch the button NEW.



- List of program types is displayed.
- 4. Touch the button PROCESS TIME.



- Enter the program name. Use only alphanumerical characters (no special characters)! The program name is also the file name. So, the restrictions for the name are identical.
- 6. Touch the button SAVE.
- Control screen "Process Time" is displayed.
- 7. Touch the button ADD PARAMETER.



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- List of programmable parameters is displayed.
- 8. Mark the parameters, which shall be used in the program.

Parameter temperature is always active.

- 9. Touch the button OK.
- Programmable parameters are displayed.
- **10.** If desired, tick the checkbox PROTECTION.

HINT

With activated user management, a protected program can only be modified by the creator.

- **11.** Define the number of cycles (A).
- **12.** Define the behaviour of the control after the end of the process time (B).
- **13.** Switch on or off the end signal (C).
- **14.** Touch the parameter, which shall be set (D).
- Control screen "Edit Process Time" is displayed.
- **15.** Enter the day on which the parameter value shall be achieved.
- **16.** Enter the time at which the parameter shall be achieved.
- **17.** Enter the parameter value for the day and the day time.

HINT

Touch the day time or the parameter to change the entry.









- **18.** Touch the button INSERT ROW to insert a new program row.
 - The new program row is always inserted below the row, which had been marked when touching INSERT ROW.
 - The new program row always contains the parameter values of the previous row.
 - Edit the parameter values after touching.
 - The time can only be changed in time intervals between the previous and the following program row.

If the time of a program row shall be changed and also all following program rows shall be changed similarly:

- A. Touch the button MOVE TIMES.
- B. Change the time.
- C. Touch the button ACKNOWLEDGE.

The time values will be changed.

If the data for all parameters had been entered and the program is complete:

19. Touch the button SAVE and again the button SAVE in the pop-up window.

	Pro	zess	zeit				16.01	.2014	12:	03:30		Erwin I	Mülle	er 🚺
Vire	en							erste	llt von	Erwin M	tüller a	am 16.01	.2014	+
4	0 0	ł	°C	*	%	÷.	%.	*	%	\odot	on			
Nr.	Tag		Uhra	zeit (h)		Soll	wert T	emp	eratur	(°C)			
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	Prozes	szeit	16.01.2014 12:03:30	Erwin Müller 🚺
Viren erstellt von Erwin Müller am 16.01.2014 +				
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Nr.	Тад	Uhrzeit (h)	Sollwert Temperatur (°C)
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2	2	21:00	12.0	<u>k</u> ≣ + ∎
3				
4				
5				
		Vorschau	Abbrechen	Speichern



20. Touch the button PREVIEW to check the created program.



- Control screen "Preview" is displayed.
- **21.** Check the time values and parameter values.

\square Programme 16.01.2014 12:03:30 Erwin Müller (1) Bazillen - * % * % % 4. 14:00 80 100 °C % -20 -0 Stunde

10.3.4 Creating a Real-Time Program

- 1. Creating a process time program, see page 68.
- 2. Start the program, see page 76 and define a start time.



10.3.5 Creating a Program Chain

A program chain executes a series of programs (day program, week program, process time) in a defined manner.

The corresponding programs for the program chain must have been already created.

- Creating a day program, see page 60.
- Creating a week program, see page 64.
- Creating a process time, see page 68.
- 1. Switch on the unit, see page 50.
- Control screen "Main Menu" is displayed.
- **2.** Touch the button PROGRAMS.



- Control screen "Programs" is displayed.
- 3. Touch the button NEW.



- List of program types is displayed.
- 4. Touch the button PROCESS CHAIN.




- Control screen "Name Process Chain" is displayed.
- 5. Enter the program name.
- 6. Touch the button SAVE.
- 7. If desired, tick the checkbox PROTECTION.

HINT

A protected program can only be modified by the creator.

- 8. Define the number of cycles (A).
- **9.** Define the behaviour of the control after The end of the process time (B).
- **10.** Switch on or off the end signal (C).
- **11.** Touch the chain symbol (D).
- Control screen "Edit Program Chain" is displayed.
- **12.** Touch the field "Program" in the first row.











- Control screen "Select Program" is displayed.
- **13.** Touch the desired program.
- 14. Touch the button ACKNOWLEDGE.
- Control screen "Edit Program Chain" is displayed.
- **15.** Enter the number of repetitions of the program.
- **16.** Touch the button INSERT ROW to insert a new program row and to add a further program to the program chain.

Erwin Müller (1) 16.01.2014 12:03:30 erstellt von Frwin Müller am 16.01.2014 Kette 01 • S Name Art Vorschau Bazillen Test 🔒 🌘 a Bakterien Wochenprogramm 9 Programmkette 16.01.2014 12:03:30 Erwin Müller (1 r am 16.01.2014 Kette 01 von Frwin Mil ***** 🗇 Nr. Programm Art Wiederholungen 1 Bazillen Test Tagesprogramm + m 1 x 2 3 4 5 Abbi $\bigcirc \leftarrow$ Programmkette 16.01.2014 12:03:30 Erwin Müller ① erstellt von Erwin Müller am 16.01.2014 Kette 01 of (1) Wiederholungen Nr. Programm Art 1 Bazillen Test Tagesprogramm (1 x 2 3 4 5 АЬЫ $\bigcirc \leftarrow$ Programmkette 16.01.2014 12:03:30 Erwin Müller (1) ler am 16.01.2014 erstellt von Erwin Mül Kette 01 ۰. 9 Nr. Programm Art Wiederholungen Bazillen Test 1 Tagesprogramm 1 x 2 1 x M Bakterien Wochenprogramm 3 4

If the program is complete:

17. Touch the button SAVE and again the button SAVE in the pop-up window.



10.3.6 Preview





Erwin Müller (1)

Festwert 💿

16.01.2014 12:03:30

10.3.7 Program Start

1. Switch on the unit, see page 50.

 \cap

- Control screen "Main Menu" is displayed.
- **2.** Touch the button PROGRAMS.

- Control screen "Programs" is displayed.
- **3.** Touch the button (START) ►.



- 4. Touch the button OK to start the program immediately or tick the checkbox DEFINE START TIME to start the program later.
- Pop-up window will be extended by the date entry.
- 5. Enter the start time.
- 6. Touch the button OK.



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10.3.8 Program Stop

1. Touch the button PROGRAM in the control screen "Main Menu".



- Control screen "Programs" is displayed.
- 2. Touch the button (STOP) in the row of the executed program.
- The program will be stopped.
- Pop-up window is displayed.
- **3.** Touch the button STOP to stop the program immediately.



10.4 Recorder



- The period depends on the selection of the overview period (D) and starts with the beginning of the selected period (such as calendar week) or from the end of the last period, which had been signed, until the current time.
 The signed period is marked with a signature symbol and a
- The signed period is marked with a signature symbol and a blue dashed line at the bottom of the overview area (C).



Selection Recorder Display

		•	Juli 2015	•		Heute
Montag	Dienstag	Mittwoch	Donnerstag	Freitag	Samstag	Sonntag
29	30	31	01	02	03	04
05	06	07	08	09	10	11
12	13	14	15	16	17	18
19	20	21	22	23	24	25
26	27	28	29	30	31	01

ltem		Description
А	Header of the control screens	See page 55
В	 Calendar overview for selection of the overview period for the recorder. Light blue: selected days Grey: Days without recorder data 	
С	Selection of the overview period	
D	 Display of the overview period Arrow keys: Scrolls forward or scrolls back for selected period (hour, ¹/₂ day etc.). 	
E	 Creating a signature A user with the corresponding user rights can assign a signature to a period. The period depends on the selection of the overview period (D) and starts with the beginning of the selected period (such as calendar week) or from the end of the last period, which had been signed, until the current time. 	



10.5 Logbook

Г

		16.07.2015 17:03:30	trey (
	Datum	Meldung	Alle V
	16.07.2015 08:04:23 Uhr	Tür geöffnet	Hinweis
	16.07.2015 08:05:34 Uhr	Tür geschlossen	Hinweis
	16.07.2015 08:30:02 Uhr	Tür geöffnet	Hinweis
в –	16.07.2015 08:32:21 Uhr	- Tür geschlossen	Hinweis
	▼ 16.07.2015 14:02:45 Uhr	Innenraum wurde gereinigt. (frey)	Kommentar
	16.07.2015 16:59:29 Uhr	Tür geöffnet	Hinweis
	16.07.2015 17:00:29 Uhr	- Tür geschlossen	Hinweis
_			
m			Description
Н	and or of the control -		
	eader of the most	creens	See page 55
•	 Proverview of the messa Date Message or comments Comments can be touching the presence of the overview can be touching the presence of the overview can be touching the touching	ages in a selected period with ent text be displayed completely or reduced by ceding triangle. In be filtered according to message type filter symbol.	See page 55
• •	 Proverview of the messa Date Message or comments Comments can be touching the pressage type The overview can be touching the strong t	ages in a selected period with ent text be displayed completely or reduced by ceding triangle. In be filtered according to message type filter symbol. g the message overview.	See page 55
 A A A B C A A B B C A B C A B C A A	 Proverview of the messa Date Message or comments can labeled to uching the pressage type The overview can by touching the start performed to the st	ages in a selected period with ent text be displayed completely or reduced by ceding triangle. In be filtered according to message type filter symbol. g the message overview. oint of the interval with messages to	See page 55
C A C S D S d	 Proverview of the messa Date Message or comments can labeled to uching the pressage type The overview can by touching the start performed to the st	ages in a selected period with ent text be displayed completely or reduced by ceding triangle. In be filtered according to message type filter symbol. g the message overview. oint of the interval with messages to bint of the interval with messages to be	See page 55



10.6 Settings

A	Einstellungen	27.05.2016 15	5:28:30 L	.ogin Q
В	- i	Reputrementung	Konfiguratio	—— F
	Systemmormation	Bendizerverwaltung	Komgulau	
С	-	Systemdiagnose	IO Erweiterur	en E
				D
Item				Description
А	Header of the control scree	ns		See page 55
В	Control screen "System Info	ormation" is displayed.		
С	Control screen "User Mana	gement" is displayed.		See page 82
D	Control screen "System DiaOnly for service personn	ignostics" is displayed. iel.		
Е	Control screen "I/0 Extensio Only for service personn	ons" is displayed. iel.		
F	Control screen "ConfigurationOnly for service personn	on" is displayed. iel.		



10.6.1 User Management

A	Benutzerve	rwaitung 16.0	7.2015 15:06:40	/	LogIn (1)	
	Benutzer ID	Vorname/Name	Funktion	Status	Erstellt am	
	b lume	Anna Blume	Laborant	neu	01.08.2014	
	= fernandez	Sylvia Fernadez	Laborant	gesperrt	28.08.2014	
D	klose	Richard Klose	QT	inaktiv	02.02.2015	
В	wimmer	Erwin Wimmer	Leitung	aktiv	20.05.2015	
	= frey	Otto Frey	Laborant	aktiv	19.06.2015	
C	V A	Neu	Copy	-	Edit	F
	V A	Neu	Сору			— r c
em	loader of the control	0010000			Descrip	tion
					See pag	Je 55
•	Language (visuali language of the us User ID Name Function (free inpu Status – new – blocked – active – inactive Creation date	zation is displayed in t ser) ut)	he correspon	ding		
C A	rrow keys for scrollin	ng the user overview.				
D C	creating a new user.				See pag	je 87
E C	Copy a marked user. Users with identica created quickly.	al or similar settings a	nd rights can	be		
с с	dit the marked upor					



10.7 Set-up of the User Management

HINT

Be aware, that activation of the user management results in storage of personal data. Consult your data protection supervisor and include the appliance in the list of processing activities.

HINT

For the set-up of the user management, a coherent concept concerning the users and their rights is required, which should be made before.

If a user had been created, it cannot be deleted anymore!

If you need help in the set-up of the user management, please address to Rubarth Apparate GmbH.

User Login

- 1. Ask Rubarth Apparate GmbH for the user name and the corresponding password being required for the set-up of the user management.
- 2. Switch on the unit, see page 50.
- 3. Touch the button LOGIN.



Anmelden als

- Control screen "User Login" is displayed.
- 4. Touch the button LOG-IN NAME.

- Entry screen for the user is displayed.
- 5. Enter the user, which had been stated by Rubarth Apparate GmbH.
- 6. Touch the button CONTINUE.



Hupe aus



- Entry screen for the password is displayed.
- **7.** Enter the password, which had been stated by Rubarth Apparate GmbH.
- 8. Touch the button LOGIN.
- The information concerning the password modification is displayed.
- 9. Touch the button OK.



ein neues
-

- Entry screen for the new password is displayed.
- **10.** Enter the new password.
- 11. Touch the button SET.
- **12.** Repeat the entered password.
- Confirmation is displayed.
- 13. Touch the button OK.

The set-up is finished and user accounts can be defined.

HINT

The system administrator and the users are responsible for the administration of their entered passwords!

HINT

After that, all rights for modifications and settings of the user "Login" must be cancelled, which only shall be executed by the logged-in users.

It is recommended to retain the right to switch off the horn.







10.8 User Login

А	User Login DA H	lupe aus
B C D E	Image: Constraint of the second state Bediener Anmelden als Image: Constraint of the second state Image: Constraint of the second state <	g fortfahren - F
Itom		Description
ltem		Description
ltem A	Header of the control screens	Description See page 55
Item A B	 Header of the control screens The existing users are displayed and can be selected. Control screen "User LOGIN" for entry of the password is displayed. After entry of the password, the control screen "User" is displayed. Disabled users are shown greyed and have the symbol of a lock. 	DescriptionSee page 55See page 86
R A B C	 Header of the control screens The existing users are displayed and can be selected. Control screen "User LOGIN" for entry of the password is displayed. After entry of the password, the control screen "User" is displayed. Disabled users are shown greyed and have the symbol of a lock. Log in with user ID and password. 	Description See page 55 See page 86
C D	 Header of the control screens The existing users are displayed and can be selected. Control screen "User LOGIN" for entry of the password is displayed. After entry of the password, the control screen "User" is displayed. Disabled users are shown greyed and have the symbol of a lock. Log in with user ID and password. Control is switched-off. 	Description See page 55 See page 86
R A B C D E	 Header of the control screens The existing users are displayed and can be selected. Control screen "User LOGIN" for entry of the password is displayed. After entry of the password, the control screen "User" is displayed. Disabled users are shown greyed and have the symbol of a lock. Log in with user ID and password. Control is switched-off. Language is changed. 	Description See page 55 See page 86



10.9 User





10.10 User Creation

HINT

If the new user shall get identical or similar settings and rights as an existing user, call the control screen "User Management" and copy the existing user (touch the button COPY). The user will be saved with new user ID.

- 1. Switch on the unit, see page 50.
- **2.** Touch the button LOGIN.



- Control screen "User" is displayed.
- 4. Touch the button CONTINUE.

- Control screen "Main Menu" is displayed.
- 5. Touch the button SETTINGS.









- Control screen "Settings" is displayed:
- 6. Touch the button USER MANAGEMENT.



- Control screen "User Management"
 is displayed.
- 7. Touch the button NEW.

HINT

If the new user shall get identical or similar settings and rights as an existing user, mark it and touch the button COPY.

- Control screen "Edit User" is displayed.
- 8. Enter the user data.
- 9. Change to the screen "User Rights".
- Control screen "User Rights" is displayed.
- **10.** Tick the checkboxes for the user rights to be selected or deselected.
- **11.** Touch the button SAVE.
- The new user is entered.



10.11 Changing User Rights

- 1. Switch on the unit, see page 50.
- 2. Touch the button LOGIN.

3. Log-in as user with the corresponding rights.

- Control screen "User" is displayed.
- 4. Touch the button CONTINUE.
- Control screen "Main Menu" is displayed.
- 5. Touch the button SETTINGS.
- Control screen "Settings" is displayed:
- 6. Touch the button USER MANAGEMENT.





- Control screen "User Management" is displayed.
- 7. Mark the user whose rights shall be changed.
- 8. Touch the button EDIT.
- Control screen "Edit User" is displayed.
- 9. Change to the screen "User Rights".
- Control screen "User Rights" is displayed.
- **10.** Tick the checkboxes for the user rights to be selected or deselected.
- **11.** Touch the button SAVE.
- The user rights are changed.

Benutzerverv	waltung	16.07.201	5 15:06:40		LogIn 👤
Benutzer ID	Vorname/Name		Funktion	Status	Erstellt am
blume	Anna Blume		Laborant	neu	01.08.2014
fernandez	Sylvia Fernado	ez	Laborant	gesperrt	28.08.2014
klose	Richard Klose		OT.	inaktiv	02.02.2015
wimmer	Erwin Wimme	er	Leitung	aktiv	20.05.2015
frey	Otto Frey		Laborant	aktiv	19.06.2015
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Vername/blame		neu			
vonane/wane		Kommer	itar		
Sprache					
de					
Funktion					
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	/	Abbrechen		Speich	iem
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Gerät ein-/auschalten		Signatur	erstellen		
Sollwerte einstellen		Turprogr	amm einstelle	en	
Homescreen anordnen		Störmeld	ekontakt und	Alarme	
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			ounder et	in the second	

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11 Maintenance

DANGER

Danger to life due to electrical current!

The unit is operated with 230 V, 50 Hz.

→ De-energize the unit completely and protect it from unintentional restart prior to any work at electrical components.

DANGER

With option CO₂ gassing: Danger of suffocation!

If the CO_2 concentration in the unit is high, there is the risk of suffocation when entering the unit.

 \rightarrow Interrupt the CO₂ supply prior to any work in the unit and ventilate the unit.

NOTE

Property Damage!

Metal objects, which are placed on or in the unit and which do not consist of stainless steel, might damage the stainless-steel surfaces of the unit due to formation of extraneous rust. → Never place metal objects, which do not consist of stainless steel, on or in the unit.

11.1 Maintenance Table

No.	Maintenance Task	Interval	Remark
1	Refill the water canister.	As required, at least once a week.	Rinse occasionally.
2	Changing the Ion Exchanger Cartridge	lf conductivity <20 μS/cm.	See page 99
3	Cleaning the evaporation humidifier	As required	See page 98
4	Cleaning and maintenance of the ultrasonic humidifier.	Every 6 months	Only by service personnel. Operational check after cleaning. <i>See page 97</i> .
5	Defrosting the unit	As required	Never use sharp objects for removal of ice. See page 93.
6	Cleaning the unit	As required	See page 93
7	Empty and clean the condensate collecting pan.	As required, at least once a week.	



No.	Maintenance Task	Interval	Remark
8	Empty and clean the heated condensate collecting pan.	Once a year	CAUTION Risk of burning! In case of the condensate collecting pan with evaporation function there is a risk of burning the hands when removing the condensate collecting pan. Wear heat-resistant safety gloves.
9	Aspiration of the fan grill	As required, at least every 6 months.	See page 93
10	Clean the water canister	As required	
11	With option CO_2 gassing: Changing the CO_2 gas bottle	As required	See page 100
12	Change the fluorescent lamps.	10.000 hours	Never use the unit without fluorescent lamps! After replacement, the fluorescent lamps must be burnt-in for 100 hours with 100 % luminous intensity.
13	Checking the door gasket	Once a year	Door gasket must be undamaged and sit perfectly.



11.2 Maintenance Tasks

11.2.1 Aspiration of the fan grill

Risk of injury at the fan grill!

When cleaning the fan grill take care to avoid cutting your hands at the sharp-edged lamellae.

→ Wear safety gloves when cleaning the lamellae with the hands.

NOTE

Property damage of the fan grill!

When aspirating the fan grill, the lamellae might be damaged.

- → Never press the vacuum cleaner nozzle against the lamellae.
- **1.** Aspirate the fan grill using a vacuum cleaner or clean it by hand using a smooth brush.



11.2.2 Defrosting the unit

NOTE

Damage of the Unit!

If sharp objects are used for removal of ice, the unit might be damaged. → Never use sharp objects for removal of ice.

- **1.** Remove the specimen.
- 2. Switch the humidity off.
- 3. Empty and clean the evaporation humidifier. See page 98.
- 4. Heat the unit up to maximum temperature.
- Keep the temperature for one hour. If required, remove the ice from the condensate collecting pan in the rear lower area of the test room from time to time to accelerate the drying.
- 6. Open the door for approx. 2 min.
- 7. Check the test room for humidity, particularly the condensate collecting pan.
- 8. If required, heat again up and open the door until the test room is dry.
- 9. Clean the unit after defrosting. See page 93.
- **10.** Set the temperature controller to the desired temperature.



11.2.3 Cleaning the unit

WARNING

Warning of hot surfaces!

Risk of burning when cleaning the test room of units with extension of the temperature range to +80 $^{\circ}$ C.

➔ Ensure that the test room temperature is below 30 °C prior to cleaning.

NOTE

Damage of the Unit!

Never use steel wool to clean the unit. Otherwise the stainless-steel surface is damaged, which results in corrosion.

- → Never use steel wool to clean the unit.
- → Stubborn soiling can be removed with a cleaning fleece. Carefully check the suitability of the cleaning fleece.

HINT

Use demineralized water for cleaning to avoid dry stains.

HINT

Polished stainless-steel surfaces must always be cleaned in direction of the polishing.

- **1.** Remove the specimen and the shelves.
- **2.** Clean the shelves, the surfaces in the test room and the outer surfaces of the unit using a damp cloth.

Removal of Extraneous Rust

 Insignificant, surficial stains: Remove them with commercial mild cleansing milk or polishing agent (containing calcium carbonate with additional surface-active substances). Household cleaning agents for stainless steel on basis of citric acid are also suitable.

WARNING

Risk of injury by etching material!

Risk of injury when using etching material!

- → Observe the manufacturers specifications and the regulations for industrial safety and environmental protection.
- ➔ Wear protective clothing.
- Moderate rust-like soiling:
 - Use phosphoric acid cleaners for removal. Proceed carefully to avoid undesirable changes of the surface.

If small tramp iron particles have already penetrated the surface, they can also be removed by means of diluted nitric acid.



11.2.4 Dismantling and Cleaning the Condensate Drain Valves (Option)

Condensate drain valves must be dismantled and cleaned once a year. If required, replace the floating ball.

Observe the correct seat of the O-ring when assembling the condensate drain valve.

1. Unscrew the condensate drain valve below the unit.



2. Unscrew the condensate drain valve.



- **3.** Clean the ball of the condensate drain valve or replace it, if required.
- 4. Insert the cleaned or new ball.





- **5.** Screw the condensate drain valve together.
- **6.** Check the function of the condensate drain valve:
 - Fill water into the condensate drain valve.
 - The ball must float.
 - The water is drained until the ball drops and closes the drain.
- 7. Insert the condensate drain valve below the unit and tighten the screws.

The maintenance of the condensate drain valve is finished.







11.2.5 Checking the humidifier function

1. Lift and hold the door limit switch by means of a credit card.



2. Open the door.

The door limit switch should not open and activate the door program!

Fog must escape in intervals from the humidity blow-in pipe next to the fan.

HINT

Units with two doors (P 1060 and P 1700) are equipped with two humidifiers. The function of both humidifiers must be checked.

HINT

This check of the humidifier function might generate an alarm message "Low humidity" at the control.

The horn must be switched-off and a comment must be entered into the logbook.

If no fog is produced:

- **3.** Close the door after having executed the check.
- Check the water supply and clean the humidifier, if required. Cleaning of the humidifier should be performed only by authorized service personnel of Rubarth Apparate GmbH.
- 5. Repeat the check.





11.2.6 Cleaning the evaporation humidifier

Caution! Risk of burning!

The water in the evaporation humidifier might have temperatures up to 70 °C. Risk of scalding!

- ➔ Withdraw the mains plug of the evaporation humidifier.
- → Let the water and the evaporation humidifier cool down.
- 1. Remove the mains plug of the evaporation humidifier from the socket.
- 2. Let the water and evaporation humidifier cool down.
- **3.** Loosen the hose connection from the self-locking coupling.
- **4.** Remove the evaporation humidifier from the test room.
- **5.** Turn the lid of the evaporation humidifier in direction of the arrow and remove it.
- **6.** Empty and clean the evaporation humidifier.
- 7. Insert the lid and tighten it.
- **8.** Place the evaporation humidifier evenly on the floor of the test room.
- 9. Connect the water hose of the evaporation humidifier to the water hose in the test room.The engagement of the self-locking coupling must be audible.
- **10.** Connect the mains plug of the evaporation humidifier to the humidifier socket (left side) in the test room (see labelling).







11.2.7 Changing the Ion Exchanger Cartridge

- 1. Close the water supply.
- 2. Make a water collecting tray available.
- **3.** Release pressure, for instance by loosening the hose at the inlet of the ion exchanger.

Collect the water in the collecting tray.

- Remove the blue sleeve of the ion exchanger (B). Use tool (F), if required. When unscrewing the blue sleeve of the ion exchanger by hand, hold the sleeve in the lower area and turn it.
- 5. Check, if the seal (E) at the old ion exchanger cartridge is still present, or if it is still on the shaft of the black support (A).

Remove it from there.

- **6.** Empty the residual water from the sleeve of the ion exchanger.
- 7. Check the seal (D).
- 8. Check the gasket (E) at the new ion exchanger cartridge (C).
- **9.** Insert the ion exchanger cartridge into the sleeve of the ion exchanger.
- 10. Fasten it.

HINT

Spare cartridges must always be stored in the original packaging in a dark, cool and dry place for no longer than 12 months.

HINT

Use the corresponding tool (F) to loosen the blue sleeve of the ion exchanger.

Push the tool from below as far as possible upwards above the sleeve of the ion exchanger and loosen the sleeve of the ion exchanger.







11.2.8 Changing the CO₂ Gas Bottle

As soon as the indicator of the pressure gauge gas bottle pressure (C) is within the red area, the CO_2 gas bottle must be replaced.

- 1. Close the pressure (C) controller working pressure completely (turn it anticlockwise).
- The pressure gauge working pressure (A) shows 0 bar.
- 2. Close the shut-off valve (E) of the CO₂ gas bottle.
- The pressure gauge gas bottle pressure (B) shows
 0 bar
- 3. Loosen the cap nut using the tool (D).
- **4.** Remove the CO₂ gassing unit from the "old" gas bottle.
- **5.** Remove the sealing ring at the connection to the CO_2 gas bottle.
- Remove the customer's protection of the CO₂ gas bottle and remove the "old" CO₂ gas bottle.
- **7.** Install the new CO₂ gas bottle and protect it from dropping.
- **8.** Insert the sealing ring at the connection of the new gas bottle.
- 9. Push the tool (D) on the cap nut.
- **10.** Screw the CO₂ gassing unit to the CO₂ gas bottle using the cap nut.
- **11.** Check the tightness.

HINT

Check the tightness using leak spray. If leak spray is not available:

- Slowly open the shut-off valve of the gas bottle (by approx. one rotation).
 - The pressure gauge gas bottle pressure shows the unthrottled pressure in the gas bottle.
- Set a working pressure at the pressure controller working pressure.
 - The working pressure is indicated at the pressure gauge working pressure.
- Close the shut-off valve of the gas bottle.
- The indicated working pressure must be kept for at least 2 hours.



D



- **12.** Slowly open the shut-off value of the CO_2 gas bottle (by approx. one rotation).
- The pressure gauge gas bottle pressure shows the unthrottled pressure in the CO₂ gas bottle.
- **13.** Set the working pressure (C) at the pressure controller working pressure.
- The working pressure is indicated at the pressure gauge working pressure (A). Working pressure: approx. 1.5 bar

NOTE

Always close the shut-off value of the CO_2 gas bottle, if CO_2 is not required.



12 Service

In case of a service enquiry by means of our questionnaire

(www.rumed.de/serviceanfrage/),

please enter always the unit type (1) and the serial number (2) into the enquiry form. These details are indicated on the nameplate of your unit.

The nameplate is located at the bottom side of the blue switchboard in the door frame, directly near the door contact switch.

ype P	XXX	r. YYM	M/XX	Model	XXXX
XX	kW	XXX	Volt	XX A	XX Hz
Cältemittel X	XXX Fi	illgewicht XX	X kg Admi overp	etriebsüberdruck ssible working pressure	XX bar



HINT

Fault diagnosis is facilitated, if you send us

- an error description, which is as detailed as possible, including photographs,
- the logbook file and the alarm messages,
- the recorder records with the corresponding time interval before and after the error.

13 Disposal

Rubarth Apparate GmbH

RU

Please observe the country-specific laws and regulations for disposal of the unit.

Particularly observe the following for disposal of the unit:

- Refrigerants, fluorescent lamps, oil and storage batteries must be disposed properly.
- Component parts of the unit must be cleaned and must be collected separately as metal scrap and electronic scrap.
- Possibly decontaminated and disinfected metallic components must be disposed as scrap metal.
- Possibly decontaminated and disinfected electrical components must be disposed as electronic scrap.
- For vendor parts, the disposal instructions of the corresponding manufacturer are valid.

HINT

On the customer's request and after thorough cleaning by the customer, all components can be removed, transported and disposed properly by the technicians of Rubarth Apparate GmbH with invoicing of the expenses.





14 Technical Annex

14.1 Calculating the Escaping CO₂ Gas Volume

The following is an example for calculation of the CO_2 concentration with complete emptying of a gas bottle.

All numerical values are examples.

- Limit value: maximum 0.5 % CO₂
- Gas volume CO₂: 0.55 m³/kg (observe the indications of the gas supplier)
- Filling factor gas bottle CO₂: 0.75 kg/L (observe the indications of the gas supplier)
- Volume (W × L × H): 4 m × 5 m × 2.50 m = 50 m³

Approximate calculation of the CO_2 concentration in the room air after complete emptying of a gas bottle:

Bottle filling weight in kg \times 0.55 m³/kg \times 100 % Volume in m³

With 50 m³ room air and a 10 kg gas bottle the following results:

 $\frac{10 \text{ kg} \times 0.55 \text{ m}^{3}/\text{kg}}{50 \text{ m}^{3}} \times 100 \% = 11 \%$

A gas concentration of 11 % is a considerable exceedance.



Imprint

Rubarth Apparate GmbH Mergenthalerstr. 8 D-30880 Laatzen/GERMANY

Phone: +49 511 866599 80 Telefax: +49 511 866599 99 E-Mail: info@rumed.de www.rumed.de

