Operation manual

Reflow soldering system
Batch oven RP6

Year of manufacturing:

Serial number:

Keep this manual for a later use.

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Preface

Dear User,
this operation manual has been written for the authorized user. Basic knowledge in SMD soldering methods are assumed.
This operation manual contains important information on how to operate your Reflow-System properly and safely.
By reading this manual you help to avoid dangers, reduce repair costs and downtimes as well as raise the dependability and life time of the system.

It is absolutely necessary that you read this operation manual prior to operate the soldering system. Use the soldering system only in proper condition, according to the intended use, safety- and danger conscious, and under consideration of all information provided in this operation manual.

This operation manual contains rules and guidelines regarding the intended use of the soldering system. Only the absolute compliance with these instructions is considered to be the intended use. The operator is liable for any risks arising from other utilization or application of the system than the one it is intended for.

Take care for the instructions in the manual when connecting the system. You will avoid damage of single components by this way.
The soldering system has been developed and constructed according to the latest technology. It was tested for proper functioning prior to delivery. Nevertheless, if not operated according to the intended use, danger of life for users or third parties or damage at the soldering system itself might arise.

The SEF Roboter GmbH reserves all rights of the product and the documentation regarding publication, adaptation and usage as long as they don't touch the rights of third parties.

For further questions regarding the soldering system or to order spare parts, please contact us.

You can reach us under:

SEF Roboter GmbH
Kringelsburg **Telefon:** **0049 (0)4136 / 909-0**
D-21379 Scharnebeck **Telefax:** **0049 (0)4136 / 909-22**

1.0 Preface

Intended use

The soldering system is designed only for the following jobs:

- Curing chip adhesive, soldering circuit boards with SMD components and component qualification.

Any other use is considered to be not according to the intention and therefore improper.

Modifications and changings without authority are not allowed. All consequences arising from improper use will be charged to the user.

Please pay attention to the following:

- The intended use includes the compliance with the required installation and operation conditions, the EMC-notes as well as with the disposal measures.

- Only qualified, authorized, and trained persons are allowed to work at and with the soldering system. Each person, conducting the transportation or any work at or with the soldering system should have read and understood the appropriate parts of this operation manual and especially the chapter „Safety instructions“. Additionally the operator has to inform the staff about possible dangers.

- The operator has to assure himself that all persons working with the soldering system understood this operation manual.

- One copy of this operating manual has to be kept permanently and easily accessible at the place of operation of the soldering system.

1.0 Preface

About this operation manual

This manual should explain the installation, start of operation and maintenance of the system and should help you with the work at the system. Therefore we have devided the manual in different chapters.

- **Chapter 1: Preface**
  This chapter informs you about the intended use.
- **Chapter 2: Safety Instructions**
  Safety is a must. In this chapter you will find important information on safe handling of the system and what you should observe in the system's environment. You will also find information about the disposal of the system.
- **Chapter 3: Warranty**
  In this chapter you will find information about the content of warranty, caveat emptor as well as about rights of use and liability.
- **Chapter 4: Technical data**
  In this chapter you will find the technical data of the system.
- **Chapter 5: Transport and installation**
  In this chapter we show you how to install and connect the system.
- **Chapter 6: Functional description and start-up**
  In this chapter we explain the function of the batch oven, how to install the "Resy" software and how you can start-up the oven.
- **Chapter 7: Profile management**
  Here you will find a general explanation about soldering profiles and how you can create and change soldering profiles with the Resy software.
- **Chapter 8: Production**
  Here you will find information how to use the system during production.

- **Chapter 9: Maintenance and service**
  In this chapter you will find the working steps how to clean and maintain the batch oven. Additionally we show you how to exchange defective components in case of damage.
- **Chapter 10: Schematic diagram**
  In this chapter you will find the schematic diagrams of the system.
- **Chapter 11: Options and spare parts**
  Here you will find an overview about the possible options and spare parts respectively, their functions and a description of the standard installed options.
- **Chapter 12: Notes**
  This chapter is for your personal notes.

1.0 Preface

Special hints and conventions

For an easier reading and searching inside this manual we have marked some text parts especially:

!	To be found before explanations, information regarding better handling of the system or before cross references referring to other text passages in this operation manual.
◆	Listings following this rhombus are general listings.
▌	Listings following this rectangle are working or operating steps to be conducted in the described order.
<Key>	These figures mark switches or keys.
[Display]	These figures mark display elements.

At the beginning of this manual and of each chapter you will find a table of contents which will help you to find special subjects.

1.0 Preface

2.0 Safety instructions

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2.0 Safety instructions

2.0 Safety instructions

General instructions

This manual is used for the intended and secure work at and with the soldering system.

This system has been designed and constructed according to the latest technology. However, there is a risk of danger if the system is used improperly or not according to the instructions.

The SEF Roboter GmbH indicates to assume no liability for damages or breakdowns which are caused by the non-observance of this manual.

No completeness is claimed with these safety instructions. For questions or problems please contact the company SEF Roboter GmbH.

Each person, working with this system, should have read and understood the complete operation manual and especially this chapter.
Safety instructions provide safety at work and accident prevention.

Always follow the safety instructions!

Therefore, keep this operation manual near the system easily accessible.
To protect you and your colleagues from possible damage your attentive cooperation is required.
Operate this system carefully and safety-consciously.

Not only the safety instructions in this chapter have to be followed but also the special safety instructions in the other chapters.

2.0 Safety instructions

Symbol and hint explanation

The following warning and hint symbols are used to call attention to text parts with safety instructions. Memorise these symbols and there meanings.

Prohibitory sign

Prohibitory sign: Safety sign that prohibits a behaviour which can cause danger. The non-observance of this instruction could cause serious injuries and/or death.

Warning sign

This warning sign indicates the necessity of a higher attention during the work at or with the system. Incorrect- or non-observance of this warning can cause injuries at persons, death or damages at the system.

Recommendation sign

This sign is used to call attention to a special feature. The observance of this hint normally means an ease of work or a reference to another chapter.

Hint

Will be found before explanations, advices for a better handling of the system or references to other text parts in this manual.

2.0 Safety instructions

Definitions

Remaining risks

Remaining risks are not obvious risks caused by the system. Even though the system has been designed and constructed according to the latest technology and the generally accepted rules regarding technical safety, risks for the life or physical condition of the user or third parties respectively impairment of the system or other material assets, can not be completely excluded, even if the system is used properly.
Therefore, operate the system only in perfect technical condition, intended and safety-conscious according to this manual! Breakdowns, which can impact the safety, should be fixed immediately by authorized service staff.

Owner

Owner is each natural or legal person who has bought the system.

Operator

Operator is each natural or legal person who uses the system itself or in whose commission it is used.

The operator respectively his safety representative must assure,

- that all relevant regulations, instructions and laws are kept,
- that only qualified staff works at and with the system,
- that the manual is available for the staff during the respective work,
- that not qualified staff is not allowed to work at and with the system,
- that service staff is authorized due to a specific training.

Skilled and qualified operation and service staff

Skilled, qualified and briefed are persons who have sufficient knowledge about the function and the operation of the system due to their technical education, experience and specific training. These persons must be also familiar with relevant work safety and accident prevention provisions as well as with the generally accepted rules of technique. Only these persons are allowed to operate the system.

2.0 Safety instructions

Accident prevention regulations

Accident prevention Regulations must be followed.
Familiarize yourself with the accident prevention regulations and other international safety regulations valid in your country.

We escpecially refer to the following accident prevention rules, to prevent yourself and others from damage.

UVV “Basics of prevention" (BGV A1)
UVV "Electrical installations and equipment" (BGV A3)
UVV “Safety and health protection marking at the working place” (BGV A8)

Further guidelines:
BGR 189 "Use of protective clothes"
BGR 500 "Operation of equipment"
BGI 503 "Instructions for first aid"

Please observe also the following regulations:
Connection conditions of national and international power plants
- Safety regulations VDE
- Safety regulations IEC

2.0 Safety instructions

What you should know about assembly and operation

This manual contains numerous danger and safety hints, which are also valid for applications and for the use of additional equipment.

The technical properties of the system and the specifications of all components are described in detail in this manual.

Due to an improper or not intended use of the system could arise

- danger for life and physical condition
- danger for the system and other material assets
- danger for the efficient work of the soldering system or the user..

The owner is obliged to initiate measures to ensure that the system is operated in safe and functioning condition only.

The system has to be operated by authorized and trained staff only.

Service and maintenance work should be only done by authorized staff.

The staff should be in a good health and must not have taken any medication or other agents decreasing the reaction time while working at or with the system.

The operator should assure the cleanness and the clearness of the working place and the system’s environment by respective instructions and controls.

2.0 Safety instructions

All users should help to ensure that only authorized staff works at and with the system.
Any mode of operation which impacts the person safety must be refrained. In case of any failure which poses a danger for the staff, the system or the environment, the system must be switched off immediately by the main switch or by the emergency-stop.
The system should be started again not before the cause of the failure is eliminated and there is no more danger for the staff, the system and the environment. The users are obliged to inform the operator or his representative about any arising changings which impact the safety or which assume this.

Only original spare parts must be used.

Reference to other suppliers

Read also the manuals of external devices.

Any person concerned with the installation, operation, maintenance and service of the system and of the external devices must have read and understood the manuals required by the manufacturers, especially the chapter “safety”.

These manuals are very important. They contain switch-off procedures and other safety instructions for the protection of the user. They must be observed especially for all work which affects the installation, operation, movement, modification, maintenance and service.

Take special care of the safety and processing instructions of the solder paste and chip adhesive manufacturer.

Solder and chip glue vapours are harmful. Connect the soldering system with your internal exhaust air system or with an air washer system. Never let soldering vapours escape into the production area.

2.0 Safety instructions

The responsibility for the operation and all other work in the direct environment must be stipulated clearly by the operator and must be observed to avoid unclear competences with regard of safety.

Provisions

If the system will be integrated in a complete production line, this line must be proven according to the observance of user safety provisions, provisions for the general accident prevention and provisions of the professional association.

Safety indoctrination

The staff which is assigned to operate the system must be instructed about the form and the range of the work as well as about possible dangers.
The indoctrination can be done by a safety representative of the operator and/or within a training.

The staff which is assigned to work at the system should be instructed about the observance of safety instructions and hints regularly (at least once a year). Indoctrinations should be done additionally after special incidents or technical changings.

Technical connection conditions

The required technical connection conditions regarding conductor cross-section, fuse protection, voltage and frequency must be observed.
The respective provisions of the responsible energy supply company must be observed.

Take care that nobody can step on or stumble across passed cables, hoses or other connections.

Daily start of operation and automatic operation

WARNING: All persons who work with the system must wear protective clothes. The operator is responsible that personal protective clothes is worn according to the device safety laws. The valid accident prevention provisions give information for which work and working places respectively, personal protective clothes must be worn.

For example: **Heat resistant gloves** for work at the hot heating chamber and tight fitting clothes.

The provisions of the professional association must be observed additionally.

Don't eat and drink at the working place while working with solder paste or chip adhesive.

Before starting the system for daily operation, all protective devices and other protective measures must be checked for function and completeness.
All system elements must be checked for foreign bodies.
During operation always observe the safety provisions. Modifications at the protective devices or other protective measures are not allowed.

Failures

During failures switch off the complete system. Secure the system against unintended restart until the failure is eliminated so that no persons or materials are in danger. Make notes about the failures, their reason and their elimination.

Keep the operation location and the operation corridors free of thumble points, e.g. no cables crossing the corridor.

Optical signals

During the misoperations "hood opened", "emrgency-stop pressed" and "temperature too high" an error message will be displayed on the screen under the safety status. The machine status will change to "0". The red light shows the status "not ready".

2.0 Safety instructions

The operator can adjust curing and soldering profiles by himself. Thereby the temperature inside the heating chamber can be up to 500°C. Don't grasp in the heating chamber when drawer is opened. In case of burns contact physician immediately.

Don't touch inside the moving drawer. There is danger of jamming.

The batch oven meets the requirements of the **UVV VBG 5** when observing the safety distances and the working areas.

working areas

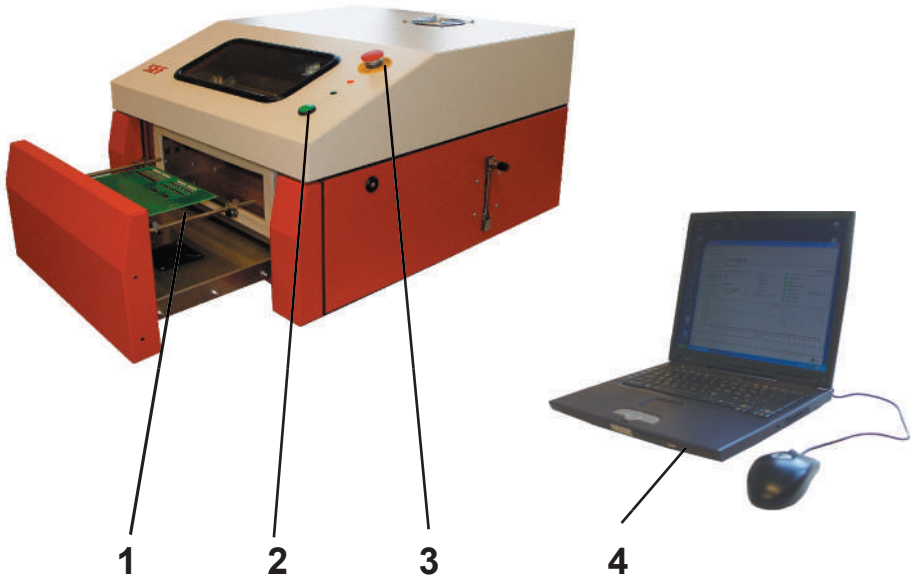
The working areas at the batch oven are defined as follows:

1 Charging /dischaging zone

2 Process key

3 Emergency-stop switch

4 Operation and programming via PC / Laptop (not included in the delivery)



Maintenance and service

During maintenance and service work at the system observe always the following safety rules

- Isolation
- Secure against restart
- Check if system is volt-free
- Cover nearby parts which are not volt-free

WARNING: Some parts of the system can reach operation temperatures which can cause burns. Don't work at the system before these parts have cooled down.

Before starting any maintenance or service work the system must be switched off and secured against unintended restart.

Danger of violent pressure and risk of injury While working at the system with opened hood, the hood support must be set up to avoid unintended lowering of the hood.

Generally it is not allowed to dismount any safety installations or to set them out of order. Otherwise there is threat to life or physical condition like burns or crushes.

If a dismounting of safety installations during maintenance and service work is not avoidable, the system must be set of operation by observance of the instructions in this manual, especially of the instructions which are marked with the warning symbol, and must be secured against restart. Immediately after finishing the maintenance and service work, the safety installations and EMC protection measures must be mounted again and checked for function.

2.0 Safety instructions

Safety marking

The following safety symbols are fixed at and in the system. They are warning signs and have to be observed.

This is the warning sign for high voltage.

This sign warns of high temperatures and danger of burns.

This sign warns of danger of crushes in the feeding and discharging zone.

The colour markings of the danger areas at the floor as well as the signs inside the system must correspond to the valid guidelines.

It is not allowed to:
Remove any warning signs, safety symbols or marking signs or to constrain their clear recognizability.

Used norms

Basic for the mechanical and electrical construction and design of the following described controller are:

- EC machinery directive 98/37/EC with its addendums and related norms.

For the electrical part of the system is additionally valid:

- EC low voltage directive (73/23/EEC).
- Directive of electromagnetic compatibility (89/336/EEC).

The following harmonized norms were observed for the design of the batch oven:

EN 12100-1	Safety of machines - Basic concepts, general principles for design Part 1: Basic terminology, methodology
EN 12100-2	Safety of machines - Basic concepts, general principles for design Part 2: Technical principles
EN 60204-1	Safety of machines - Electrical equipment of machines. Part 1: General requirements
EN 418	Safety of machines - Emergency-stop equipment, functional aspects, principles for design
EN 563	Safety of machines - Temperatures of tangible surfaces - Ergonomics data to establish temperature limit values for hot surfaces
EN 60519-1	Safety in electroheat installations Part 1: general requirements
EN 60519-2	Safety in electroheat installations Part 2: Particular requirements for resistance heating equipment
EN 61000-6-2	Electromagnetic compatibility - Generic standards Immunity for industrial environments
EN 61000-6-4	Electromagnetic compatibility - Generic standards Emission standard for industrial environments Part 1: General requirements.
EN 1050	Sicherheit von Maschinen - Principles for risk assessment

Observe and follow the mentioned norms for installation, start-up, programming and operation as well as maintenance and service.

2.0 Safety instructions

Safety measures for operator and user

If using required operating materials, which are stated as aggressive or toxic, appropriate safety clothes must be worn. Maintenance cycles must be observed according to the instructions in the manual of the manufacturer.

The system must not be equipped or operated with products of foreign manufacturers, which use is not clearly allowed by the manufacturer.

Take care, that the system is protected against vibrations, ingressing dirt and water. Damages could arise not only at the system but also for the environment.

Disposal instructions

The system contains materials and operating supplies that might harm the environment when disposed of.
The operator is responsible that these materials and substances are disposed of in compliance with the relevant legal regulations.

The following applies to Germany:
How these substances and materials must be disposed, is regulated by federal and provincial law.
Especially obligatory surveyed substances and material will not always be disposed of by the local authorities. In these cases the operator is obligated to dispose of the materials by himself in compliance with the relevant legal regulations.

Special hints

! *Please consult your environmental protection agency for further information on proper disposal of these substances.*

- Keep the original packaging for later use, e.g. sending it back to the manufacturer..
- Ensure proper disposal of electronic boards according to the law.
- Vapourised residues of the solder paste and the chip adhesive may stitch on the heating chamber and the conveyor system. Ask the manufacturer of these if a special disposal is required before disposing the parts with the common metal salvaging.

3.0 Warranty

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3.0 Warranty

3.0 Warranty

Warranty

The SEF Roboter GmbH hereby grants the customer the right to non-exclusive, non-transferable utilization of the hardware and software (in the following referred to as the “product”) supplied to the customer in accordance with the following provisions:

Rights of use

- The utilization rights entitle the customer to use the product and the documents which are necessary for its use.

- The SEF Roboter GmbH is holder of all development rights which it has placed at the system. The customer may produce a backup copy for data protection purposes. SEF Roboter GmbH reserves the rights especially for publication, processing and exploitation related to the product and the documentation as long as they don’t touch the rights of third parties.

- The warranty applies **ex-works SEF Roboter GmbH**, 21379 Scharnebeck and is valid subject to the provisions of our “General terms and conditions”. We will carry out repairs free of charge within a period of 18 months, max. 6000 operation hours after free return of the product. The warranty begins with the day of delivery. Within the warranty period, we will remedy all product malfunctions which are the result of defective workmanship free of charge, subject to the condition that the system is operated with the specified capacity and is maintained properly. The warranty does not include consumables and wearing parts or defects or malfunctions resulting from incorrect handling or improper operation. The warranty claim will expire if the product or parts of it have been opened or modified by an unauthorized person, if the product type sticker has been removed/changed or if the entries on the warranty paper have been changed or made illegible.

3.0 Warranty

Reshipment

- Please send us the product or parts of it CIP Scharnebeck in original or equivalent packing and with filled out reshipment papers and an informative error description..

Liability

- SEF Roboter GmbH does not assume any liability for fault-free functioning of the product or the accuracy of the parameters.

Modifications or improvements of the product

- The SEF Roboter GmbH reserves the right to make modifications or improvements at the product at its sole discretion. However the SEF Roboter GmbH is not obliged to make these modifications or improvements available unrequested and free of charge.

Special restrictions

- It is prohibited to copy or otherwise reproduce the product and the written documents either in whole or in part in their original or modified form. It is prohibited to modify the delivered product or parts of it.

Assignment of the rights of use

- Due to ongoing product support the manufacturer must be informed about present, rental, letting or sale of the product. Otherwise the warranty claim will expire. The rights of use are subject to the law of the Federal Republic of Germany.

General regulations

- The general terms and conditions of the SEF Roboter GmbH apply. The place of jurisdiction and place of fulfilment is Lüneburg.

Caveat emptor

- Wearing parts are excluded from the warranty.
- Damages which are caused by the non-observance of maintenance work are excluded from the warranty, too.

4.0 Technical Data

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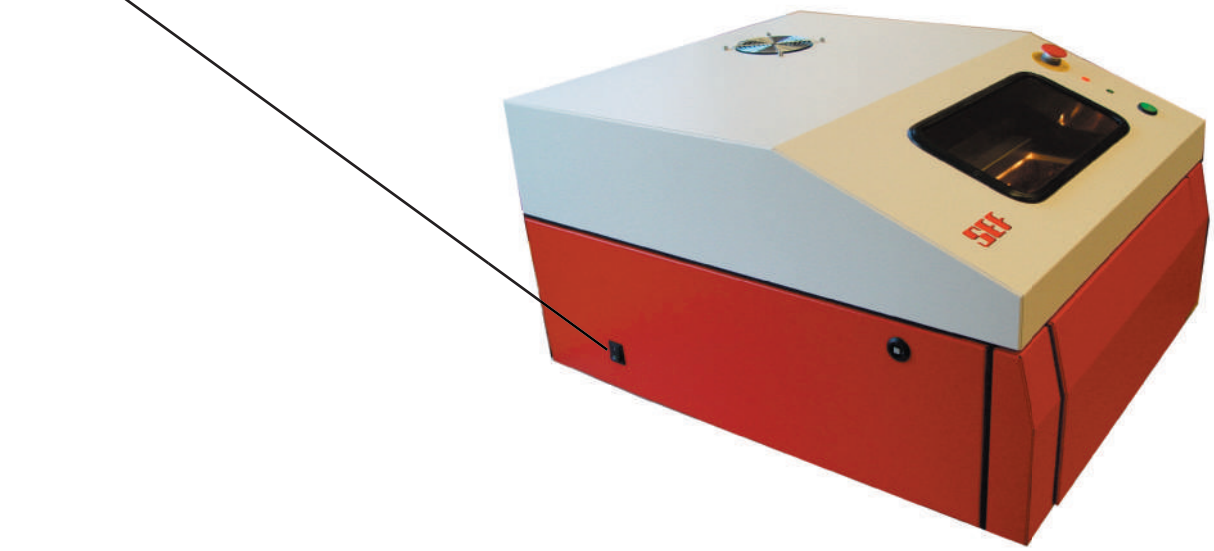
Technical Data

Depth:	750 mm	**Dimensions**
Width:	650 mm	
Height:	440 mm	
Depth with opened drawer:	1000 mm	
Weight (without options):	50 kg	
Varnish:	RAL 7001/7047	
Electrical connection:	230VAC/N/PE 50 Hz	**Electrical connection values**
Nominal power (soldering):	3,5 KW	
Power consumption in standby-status (100°C):	500 W	
PCB size:		**PCB data**
minimum size:	10 x 10 mm	
maximum size:	200 x 300 mm	
maximum height:	40 mm (incl. support)	
Maximum reflow temperature:	280 - 300 °C	**Characteristics**
PCB cooling:	2 ventilators, continuously variable	
Medium process time:	5-8 min (depending on soldering profile)	
Continuous sound pressure level:	< 70dB(A)	**Emission values**
Exhaust air values *(fan is integrated)*:	approx. 50 m^3/h	
	The emissions depend on the used solder pastes and chip adhesives.	
Air recirculation:	approx. 60 m^3/h	
Exhaust air socket:	Connection Ø 60 mm	
Control via PC or Laptop with USB interface		**PC system requirements**
Interfaces:	1 x USB 1.1 *(12 MBit/s)*	
CPU:	Pentium IV *or equivalent*	
RAM:	512 MB required	
Operating system:	Win 2000, XP, Vista	
Graphic board:	Standard	
Display:	min. 15", better 17" resolution min. 1024 * 768dpi	

4.0 Technical Data

(1) Main switch (2) Process key (3) Emergency-stop switch



4.0 Technical Data

Installation

This quick reference guide is for the skilled user and shows in very short steps how to install and operate the system. You will find the detailed description in the respective chapters of this operating manual. For cleaning and maintenance please read in the respective chapter directly.

Unpacking and installation

Attention, danger of injury
The system weight is approx. 50 kg. Lift the system with **min. 2 persons** out of the packing. Otherwise there is danger of injuries.

- Remove the packing of the soldering system carefully.
- Place the system at the final manufacturing area.

Attention, danger of life
Don't mount and connect the soldering system in case of recognisable damages. **The damage could cause danger for your life.**

The soldering system is designed as a desk model. The table must be stable and capable of the weight of the soldering system. We recommend to use a table which is a little bit longer so that you have an additional place of deposit.

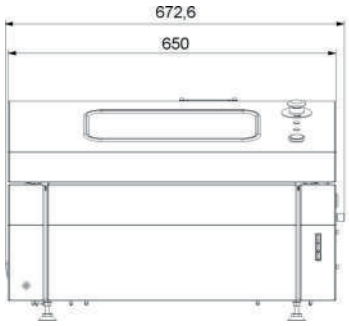
Working table

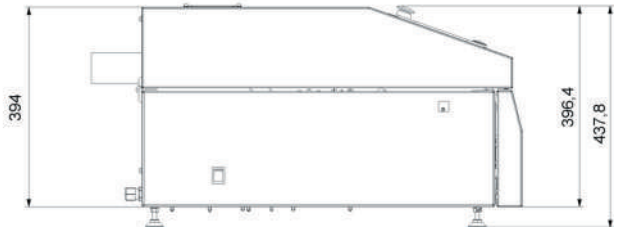
Attention, risk of breakage
The soldering system has a weight of approx. **50 kg**. The table must cover at least the outer dimensions of the system and must be capable of the weight.

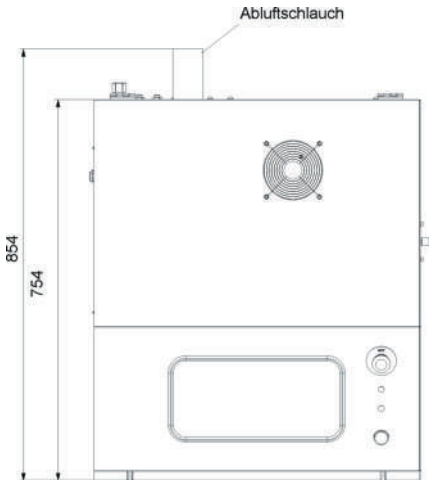
Attention, danger of injuries
The soldering system has a weight of approx. **50 kg**. Lift the system with at least two persons on the table. Take care that the table is not waggling.

4.0 Technical Data

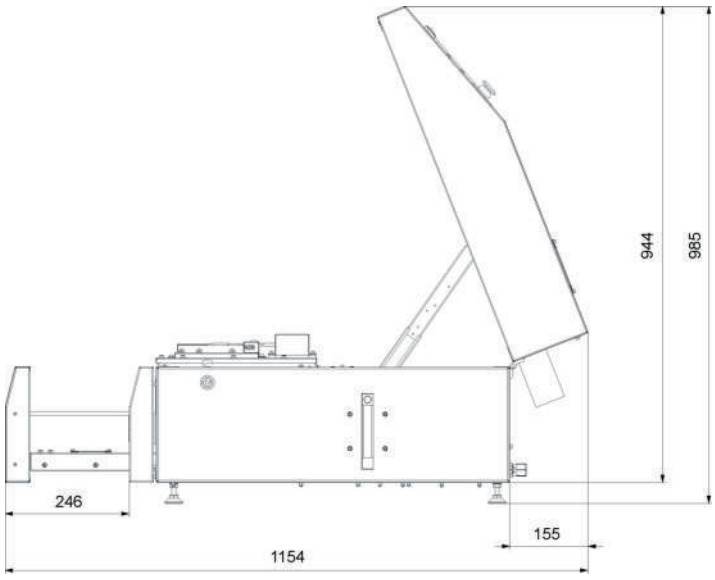
Dimensions of the soldering system







Dimensions of the soldering system with opened hood



All dimensions in millimeter (mm)

4.0 Technical Data

The soldering system is delivered in assembled status. There is only little installation and connection work to do.

- Provide mains connection 230VAC/N/PE 50 Hz
- Connect exhaust hose
- Connect PC and install Resy software

Mains supply

Attention danger
Take care that the mains power supply and the fuse correspond to the connection values. The power supply for the batch oven must be fused with 16A seperately. Don't connect any other devices to this electric circuit. Otherwise you could cause damage to property and to persons.

- Connect the mains plug with the 230V socket.

Exhaust connection

Attention, danger
Soldering and adhesive vapours in perpetuity are unhealthy. Please observe the safety and processing instructions of the solder paste and chip adhesive manufacturer implicitly.
Connect the system with your company internal exhaust air system or with an air-washer station. Don’t let the solder vapours escape in the production area.

On the rear side of the system you will find an exhaust air socket (diameter 60 mm) to drain the soldering vapours.

- Connect these exhaust air socket with your company internal exhaust air system. An exhaust ventilator is already integrated in the batch oven.

4.0 Technical Data

Interfaces

The soldering system is equipped with an USB interface.

- Install the provided Resy software on a PC or laptop and connect it with the USB interface.

Main switch

The system will be switched on and off with the main switch on the left side of the machine centrally.

- Switch the main switch **(1)** to position **"ON"** for switching on the system. Switch the main switch to position **"OFF"** for switching off the system.

Operation of the system

The operation of the oven takes place via PC or notebook. The provided PC software offers at a glance all relevant information like oven status, explorer window for the selection of created profiles and a graphical display of the set temperature profiles.

Creation of profiles

The creation of the profiles takes place via a user-defined number of data points. For each data point you can adjust the temperature and the time so that a large number of profile variations is possible. Since it is possible to adjust the set profiles for the two IR heater fields (top front and rear) and the two radiators (sidewise left and right) seperately, an adjustment of the square profile to different PCB assemblies is also possible.

Integrated temperature profiler

The RP 6 has an integrated temperature profiler with 3 channels. The sockets for the connection are accessible at the front side of the oven. With the help of the provided thermocouple sensors the actual temperature profiles on the PCB can be measured and faded in the production window additionally. This allows an optimal comparison between set profiles and real profiles on the PCB.

4.0 Technical Data

Final checkup

Before you switch the system on and work with it you should proceed the following final checks and be able to answer all questions with **“Yes”**:

- Did you read and understand the chapter “2.0 Safety instructions” in this manual?
- Did you remove all packing materials from the soldering system?
- Is the soldering system standing on a table according to the weight of the oven?
- Is the table capable of the dimensions of the system?
- Did you connect the exhaust air sockets to your internal exhaust air system and did you check the connection?
- Does the mains voltage value which is set at the system correspond with your internal mains supply?
- The oven's mains supply must be fused with 16A seperately. Do your internal fuses meet this requirement of the system?
- Are no further devices connected to this electric circuit?
- Did you connect the mains plug with the socket?
- Did you connect a PC or notebook with installed Resy software with the soldering system via USB interface?

Were you able to answer all questions with **“Yes”** then go on with the chapter “Start-up and operation conditions”.

If you were not able to answer all questions with **“Yes”** then read this chapter and the chapter “2.0 Safety instructions” attentively again and check again all instructions.

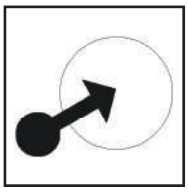
Disassembly of the soldering system

Take care of the following instructions if it is necessary to disassemble the soldering system, for example to move it to another place or for disposal.

Disconnect mains supply

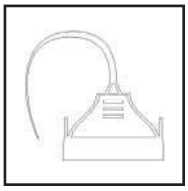
- Turn the main switch to “Off”
- Disconnect the mains plug.

Exhaust connection



- Loosen and remove the clamp of the exhaust air hose.
- Remove the hose from the exhaust air socket of the soldering system.

Interface



- Disconnect the USB cable from the soldering system.

- Now you can remove the soldering system from the table.

Attention, danger of injuries
The soldering system has a weight of approx. **50 kg**.
Lift the system with at least **two persons** from the table.
Otherwise there is danger of injuries

Regarding assembly of the soldering system at another place, please refer to the sections "Installation" und "Connection" in this chapter.

Please observe the section "disposal" in chapter "2.0 Safety instructions" regarding the disposal of the soldering system.

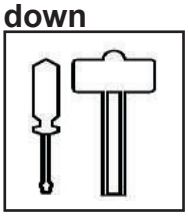
4.0 Technical Data

Preservation and storage of the soldering system

To prepare the system for vacation time or for prolonged outof-operation periods please observe the following:

- Turn the system off with the main switch.
- Clean the system as described in the chapter “Cleaning and maintenance”.

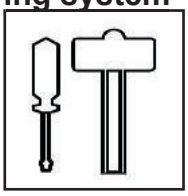
Preparation of the soldering system for vacation close-down



If you won’t operate the system for a prolonged period, please note the following:

- Clean the system as described in the chapter “Cleaning and maintenance”.
- Store the system at a dry and dust-free location.
- No other preservation methods are required for the storage.

Preservation of the soldering system



5.0 Transport and assembly

Table of content

5.0 Transport and assembly

Safety instructions for assembly and disassembly

Only qualified, instructed and briefed staff is allowed to assemble and disassemble the batch oven. For all work concerning assembly, disassembly, initial operation, movement and adjustment the instructions of this manual must be observed.

Only staff specialised in electronics is allowed to work at the controller. Only original spare parts and fuses with the required amperage must be used.

The system or additional installations must be set volt-free before making any assembly or disassembly work. After the electrical assembly all used safety devices and EMC protection measures must be checked for function.

Generally it is not allowed to dismount any safety devices or to set them out of operation. If the dismounting of safety devices is necessary for assembly or initial operation they have mounted again immediately after this work is finished.

Anybody who is changing or dismounting safety devices of the curing oven, is acting grossly negligent and against the guidelines of the professional association. In case of damages to persons or property, the manufacturer and the professional association will assume no liability. The assembly of any additional devices is only allowed after written acceptance of the manufacturer.

For damages to property in consequence of dismounted EMC protection measures the warranty claim will expire.

5.0 Transport and assembly

Transport instructions

The system is delivered by a forwarding agent in assembled conditions in a special packaging.

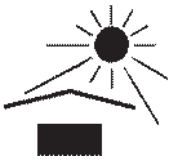
Please note the instructions at the packaging.

Point to fix a chain or a rope at the packaging.

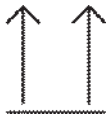
Indication of center of gravity of packaging

Caution, fragile. Don’t topple or tilt over.

Attention, do not use hand hooks.



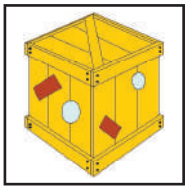
Protect from direct sunlight.



This side up. Transport only with this side up (arrows point upwards).

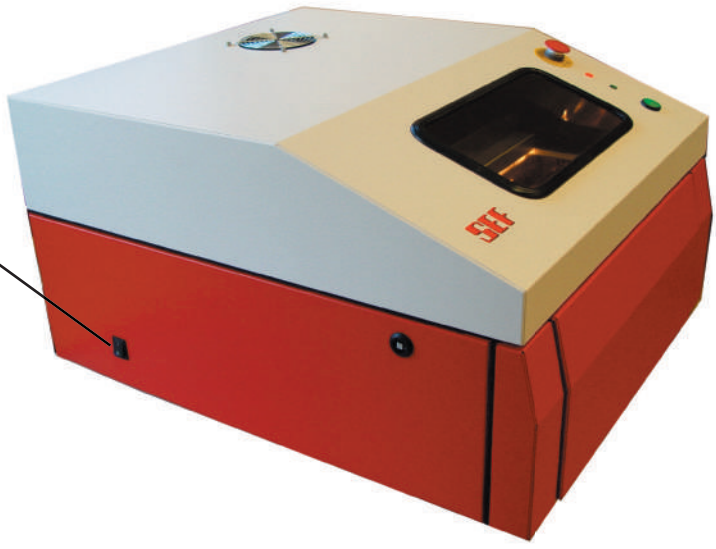
For transportation or service please keep the packing.

Transport instructions on the packing



5.0 Transport and assembly

(1) Main switch (2) Process key (3) Emergenc-stop switch



5.0 Transport and assembly

Unpacking and checking scope of delivery

Scope of delivery

You have received the soldering system RP 6 with the respective operation software RESY. The delivery follows in assembled status and in a special packing. For scope of delivery and possible additional deliveries please refer to the delivery note.

Unpacking the system

- Open the packing carefully.

Attention, danger of injuries
The system has a weight of approx. **50 kg**. Lift the system with at least 2 persons out of the packing. Otherwise there is danger of injuries.

What to do in case of damage

- Check the packing immediately together with the forwarding agent for possible transportation damages.
- If there is any transportation damage, document the extent of damage on the delivery note.
- Contact the SEF Roboter GmbH and the transportation insurance company immediately.

Attention, danger of life
Do not assemble the system and do not connect it to the power supply if any damages are recognizable. **Due to the damage there could be danger to your life**.

Check scope of delivery

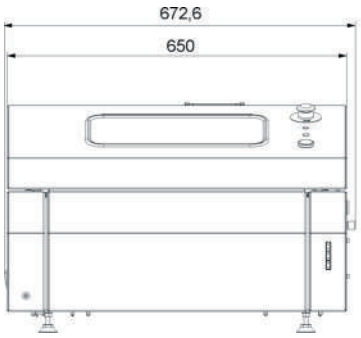
- Make sure the content correspond to the statements made on the delivery note. If delivery and delivery note do not correspond, please contact the SEF Roboter GmbH immediately.

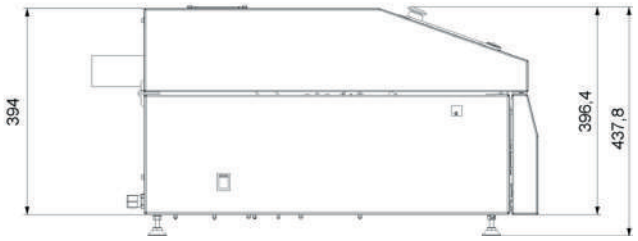
Keep the packing for transportation and service.

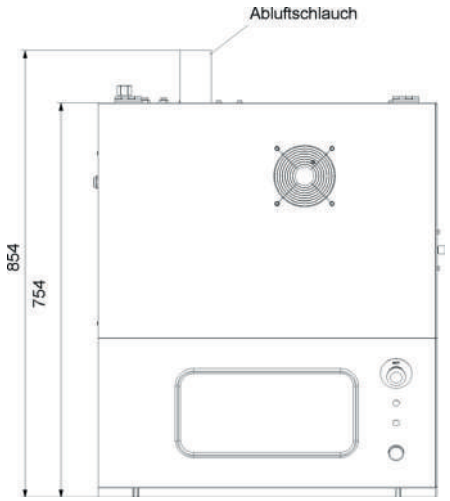
- After having unpacked the system and ensured yourself about the perfect conditions as well as about the correct and complete delivery, you can start to install the system.

5.0 Transport and assembly

Dimensions and data of the solde-ring system batch oven RP 6

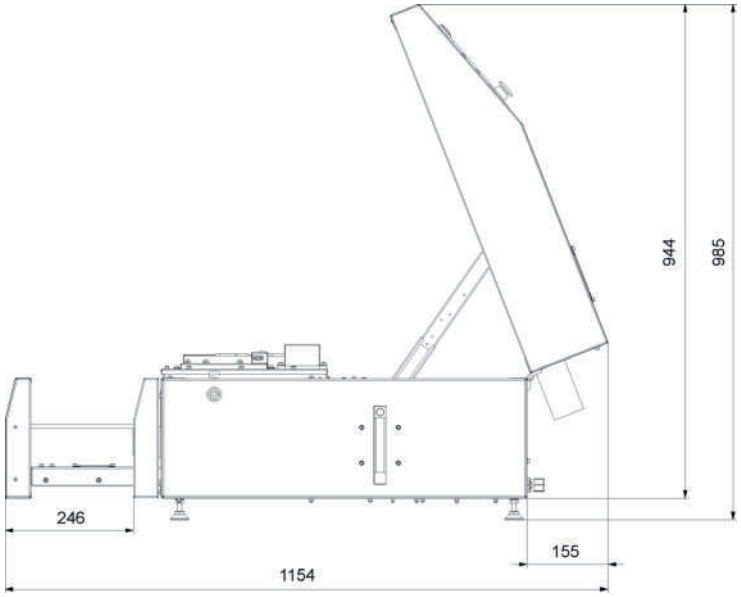






System data	
Dimensions:	750 x 650 x 440mm DxWxH
Depth (with opened drawer):	1000mm
Weight:	50 kg
Min. PCB size	10 x 10 mm
Max. PCB size	200 x 300 mm
Varnish	RAL 7001/7047
Max. reflow temperature	280° - 300°C
PCB cooling	2 ventilators, continuously adjustable
Contin. noise pressure level	< 70dB (A)
Power supply	
Connection value:	230 V/N/PE
Nominal power:	3,5 KW
Power standby(100°C):	approx. 500 W
Media supply exhaust air	
Exhaust hose socket:	Connection Ø 60 mm
Exhaust air volume	max. 40 m³/h

Dimensions of the soldering system with opened hood and drawer



All dimensions in millimeter (mm)

5.0 Transport and assembly

Installation of the soldering system

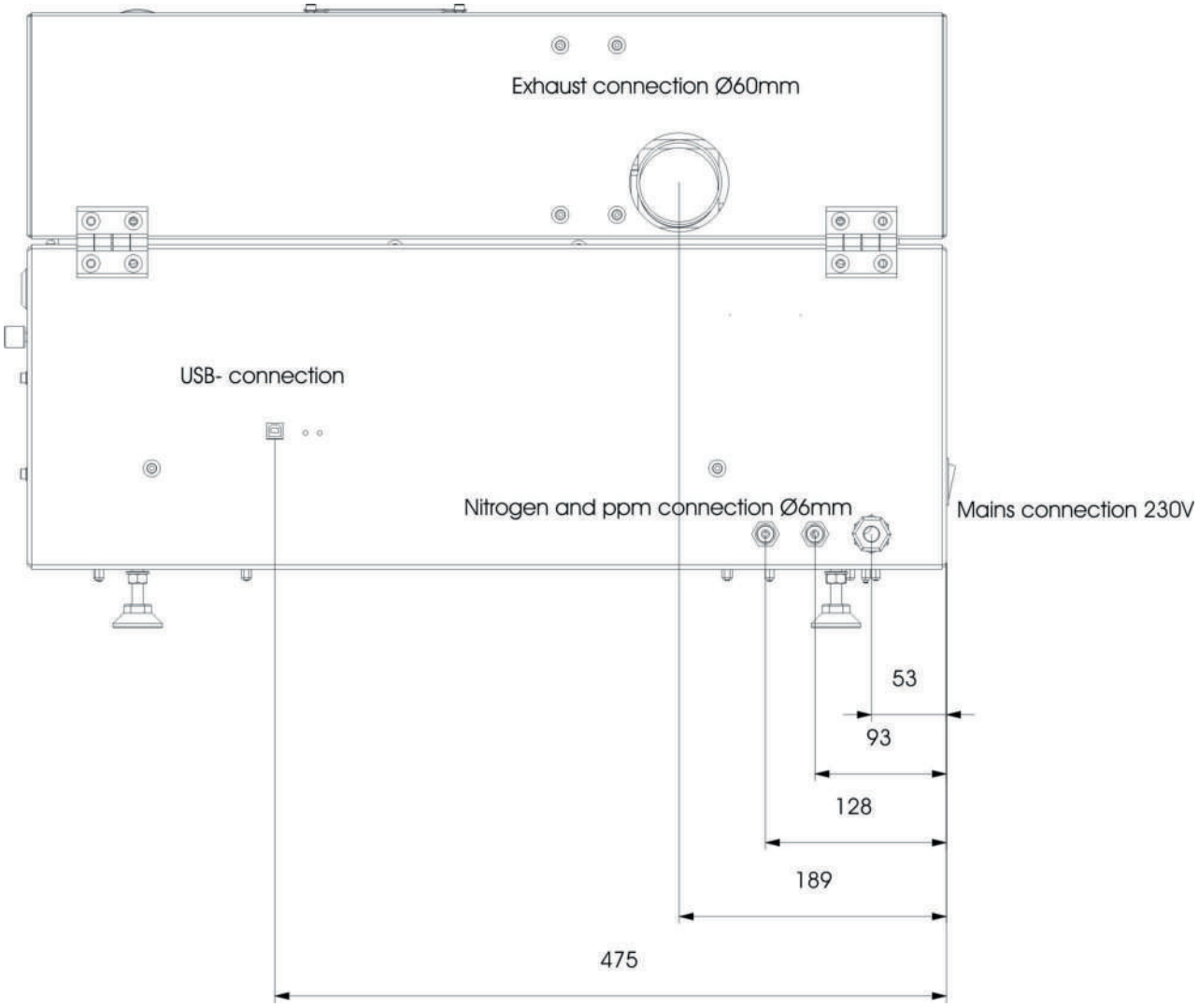
The soldering system is designed as a desk model. The table must be stable and capable of the weight of the soldering system. We recommend to use a table which is a little bit longer so that you have an additional place of deposit.

Attention, risk of breakage
The soldering system has a weight of approx. **50 kg**. The table must cover at least the outer dimensions of the system and must be capable of the weight.

Attention, danger of injuries
The soldering system has a weight of approx. **50 kg**. Lift the system with at least two persons on the table. Take care that the table is not waggling.

The necessary connection work will be explained on the following pages.

5.0 Transport and assembly



5.0 Transport and assembly

Connect the soldering system

The soldering system is delivered in assembled status. There is only little installation and connection work to do.

- Provide mains connection 230VAC/N/PE 50 Hz
- Connect exhaust hose
- Connect PC and install Resy software

Attention danger
Take care that the mains power supply and the fuse correspond to the connection values. The power supply for the batch oven must be fused with 16A seperately. Don't connect any other devices to this electric circuit. Otherwise you could cause damage to property and to persons.

Mains supply

- Connect the mains plug with the 230V socket.

Attention, danger
Soldering and adhesive vapours in perpetuity are unhealthy. Please observe the safety and processing instructions of the solder paste and chip adhesive manufacturer implicitly.
Connect the system with your company internal exhaust air system or with an air-washer station. Don’t let the solder vapours escape in the production area.

Exhaust air connection

On the rear side of the system you will find an exhaust air socket (diameter 60 mm) to drain the soldering vapours.

- Connect these exhaust air socket with your company internal exhaust air system. An exhaust ventilator is already integrated in the batch oven.

5.0 Transport and assembly

Connect the soldering system

Operation of the system

The operation of the oven takes place via PC or notebook. The provided PC software offers at a glance all relevant information like oven status, explorer window for the selection of created profiles and a graphical display of the set temperature profiles.

Interfaces

The soldering system is equipped with an USB interface, connector tybe B.

- Install the provided Resy software on a PC or laptop and connect it with the USB interface with an USB 2.0 cable (Connector type A and connector type B).

Main switch

The system will be switched on and off with the main switch on the left side of the machine centrally.

- Switch the main switch **(1)** to position **"ON"** for switching on the system. Switch the main switch to position **"OFF"** for switching off the system.

Creation of profiles

The creation of the profiles takes place via a user-defined number of data points. For each data point you can adjust the temperature and the time so that a large number of profile variations is possible. Since it is possible to adjust the set profiles for the two IR heater fields (top front and rear) and the two radiators (sidewise left and right) seperately, an adjustment of the square profile to different PCB assemblies is also possible.

Integrated temperature profiler

The RP 6 has an integrated temperature profiler with 3 channels. The sockets for the connection are accessible at the front side of the oven. With the help of the provided thermocouple sensors the actual temperature profiles on the PCB can be measured and faded in the production window additionally. This allows an optimal comparison between set profiles and real profiles on the PCB.

5.0 Transport and assembly

Final checkup

Before you switch the system on and work with it you should proceed the following final checks and be able to answer all questions with **“Yes”**:

- Did you read and understand the chapter “2.0 Safety instructions” in this manual?
- Did you remove all packing materials from the soldering system?
- Is the soldering system standing on a table according to the weight of the oven?
- Is the table capable of the dimensions of the system?
- Did you connect the exhaust air sockets to your internal exhaust air system and did you check the connection?
- Does the mains voltage value which is set at the system correspond with your internal mains supply?
- The oven's mains supply must be fused with 16A seperately. Do your internal fuses meet this requirement of the system?
- Are no further devices connected to this electric circuit?
- Did you connect the mains plug with the socket?
- Did you connect a PC or notebook with installed Resy software with the soldering system via USB interface?

Were you able to answer all questions with **“Yes”** then go on with the chapter “Start-up and operation conditions”.

If you were not able to answer all questions with **“Yes”** then read this chapter and the chapter “2.0 Safety instructions” attentively again and check again all instructions.

5.0 Transport and assembly