

HR 550

Rework-System



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Table of contents

1	Introduction.....	7
1.1	Product information.....	8
1.1.1	General information about the product.....	8
1.1.2	Intended use.....	8
1.1.3	Retrofitting, changes.....	8
1.1.4	Warranty.....	8
1.2	Information about this manual.....	9
1.2.1	Pictogram and symbol explanations.....	10
1.2.1.1	Prevailing term definitions in this instruction manual.....	11
1.2.1.2	Warnings.....	12
1.2.1.3	Rule notices.....	13
1.2.1.4	Prohibition notices.....	14
1.2.2	Target readers group.....	15
1.2.3	Copyright, liability.....	15
2	Technical data.....	17
2.1	General data.....	18
2.2	Electrical connection.....	18
2.3	Heating system.....	18
2.4	Axis system.....	19
2.5	Cameras.....	19
2.6	Printed circuit boards and components.....	19
2.7	PC system requirements.....	19
2.8	Ambient conditions.....	19
2.9	Options.....	20
3	For your safety.....	23
3.1	General safety instructions.....	24
3.1.1	Nationally valid safety and accident prevention regulations.....	24
3.1.2	Fire protection.....	24
3.1.3	Handling substances that are hazardous to the environment and health.....	24
3.2	Subject-related safety instructions.....	25
3.2.1	Dealing with electrical equipment.....	25
3.2.2	Dealing with process materials and substances.....	25
3.3	Safety instructions for certain operating phases.....	26
3.4	Safety instructions for maintenance, service, specific work, troubleshooting.....	27
3.5	Safety instructions for certain machine and system parts.....	28
3.5.1	Hot device.....	28
3.5.2	Laser equipment.....	28
3.5.3	Using a solder fume extractor, plug available.....	28
3.6	Retrofitting and changes.....	28
4	Transport, installation, storage, disposal.....	29
4.1	Information concerning machine transport and storage.....	30
4.2	Information on how to unpack the machine.....	30
4.3	Packaging with TIP n TELL indicator.....	30
4.4	Scope of delivery.....	31
4.5	Unpacking, setting up and connecting the Rework System.....	32
4.5.1	Unpacking.....	32
4.5.2	Set up.....	33
4.5.2.1	Remove the vision box transport lock.....	34



4.5.3	Connecting the machine	35
4.5.4	Assembling an RPC camera (optional)	37
4.5.5	Assembling an Accu-TC holder and an air baffle	39
4.5.6	Insert the heating head.....	41
4.5.7	Screwing on a soldering nozzle and then removing the transport lock.....	42
4.5.8	Connect the signal cable of the optional residual solder sucker Scavenger.....	44
4.6	Prepare the Rework System for delivery.....	47
4.7	Disposal	50
5	Commissioning	51
5.1	Setting up the Rework PC.....	52
5.2	Configure the Netgear switch.....	54
5.3	Install the HRSoft 2 program	55
5.4	Performing functions [Start Setup] and [Pixel Shift adjustment]	56
6	Function description	59
6.1	Read this first!	60
6.1.1	Target readers group	60
6.1.2	Safety instructions for certain operating phases	60
6.1.3	Supplementary documents.....	61
6.1.4	ESD-hazardous components	61
6.2	Overview of the machine parts	62
6.3	Switching on the Rework system and starting HRSoft 2	65
6.4	The top bar in the HRSoft 2 program	65
6.5	The Tabulator [Rework].....	67
6.5.1	[Rework] tabulator overview	67
6.5.2	Use of the soldering profile in the [Rework] tabulator	69
6.5.2.1	Working with soldering profiles in the tabulator [Rework]	69
6.5.3	The parameter bar on the right-hand side with five tabs.....	70
6.5.3.1	The three right tabulators.....	70
6.5.3.2	The [Information] tabulator under the [Rework] tabulator	70
6.5.3.3	The [Heating setting] tabulator under the [Rework] tabulator	73
6.5.3.4	The tabulator with the small arrow key (Image processing) under the [Rework] tabulator	75
6.5.4	The chart in the [Rework] tabulator	77
6.5.4.1	Adjust the heating curves	77
6.5.5	The process steps of [process automation]	78
6.6	The [Archive] tabulator	80
6.6.1	The [Show chart] button.....	81
6.7	The [user management] tabulator	83
6.8	Acquiring, editing and saving soldering profiles in the [Profile management] tab	85
6.8.1	Overview of the [Profile management] tabulator	85
6.8.2	Create, copy, delete and save soldering profiles in the [Profile management] tabulator.....	86
6.8.3	The parameter bar on the right-hand side with five tabs.....	89
6.8.3.1	The [Information] tabulator under the [User management] tabulator	89
6.8.3.2	The [Heating setting] tabulator under the [Profile management] tabulator.....	92
6.8.3.3	The tab with the arrow button [More] under the [Profile management] tab.....	94
6.9	The chart in the [Profile management] tabulator	96
6.10	The heating curves in the chart in the [Profile Management] tab	96
6.11	The [Process automation] buttons under the [Profile management] tabulator	98
6.12	The [Administration] tab with four dialogue windows	99
6.12.1	The dialog [HRSoft 2 settings].....	99
6.12.2	The [Chart settings] dialog	101



6.12.3	The [device settings] dialog	102
6.12.3.1	The button [Start maintenance mode]	105
6.12.3.2	The [Pixel shift adjustment] button	109
6.13	The [Manual Mode].....	113
6.14	The display and switch row top right	115
6.15	Switching off the Rework System	117
6.16	Use the optional tape feeder	118
7	Tutorial – Soldering or unsoldering a component	121
7.1	Insert the PCB.....	121
7.2	Replacing the soldering nozzle	122
7.3	Position a thermocouple	127
7.4	Shielding heat sensitive components.....	128
7.5	Activate a soldering profile and prepare the soldering process.....	130
7.6	Start the process and work with the assistant.	131
7.7	Task 1 “Alignment”	133
7.8	Task 2 “Desoldering”	134
7.9	Task 3 “Deposit”	136
7.10	Task 4 “Preparation”	138
7.11	Work step 4 for “Cleaning” with the optional residual solder sucker	140
7.12	Task 5 “Alignment”	144
7.13	Task 6 “Inspection”	146
7.14	Task 7 “Soldering”	148
7.15	Task 8 “Inspection”	150
7.16	Task 9 “Complete”	152
8	Service and maintenance	153
8.1	Maintenance table	154
8.2	Check the rework system on a weekly basis for any dirt or damages.....	154
8.3	Lubricating the worm gear of the pipette hub every six months.....	155
8.4	Change the heating head	157
8.5	Performing a HRSoft 2 update.....	158
9	Spare and wear parts	159
9.1	Read this first!	160
9.1.1	Target readers, permitted spare parts.....	160
9.2	Nameplate and machine number.....	160
9.3	Spare parts	161
10	Annex	164
10.1	EC Declaration of Conformity	164



1 Introduction

- 1.1 Product information 8
 - 1.1.1 General information about the product 8
 - 1.1.2 Intended use 8
 - 1.1.3 Retrofitting, changes..... 8
 - 1.1.4 Warranty..... 8
- 1.2 Information about this manual 9
 - 1.2.1 Pictogram and symbol explanations 10
 - 1.2.1.1 Prevailing term definitions in this instruction manual..... 11
 - 1.2.1.2 Warnings..... 12
 - 1.2.1.3 Rule notices 13
 - 1.2.1.4 Prohibition notices..... 14
 - 1.2.2 Target readers group 15
 - 1.2.3 Copyright, liability 15



1.1 Product information

1.1.1 General information about the product

This operating manual is universally valid for Ersä Hybrid-Rework-System of the HR 550 series.

1.1.2 Intended use

The machine is a state-of-the-art product that has been designed and manufactured according to recognised safety-related rules. However, the machine may pose residual hazards especially when it is used improperly and operated or serviced by untrained personnel. The HR 550 rework system is designed for industrial indoor use. The machine may be used exclusively for soldering and unsoldering electronic components on PCBs. Any other or further use is considered improper. The manufacturer/supplier declines any liability for any damages that may arise as a result of such use. Proper use also includes compliance with the operating instructions as well as safety notices.

1.1.3 Retrofitting, changes

Unauthorised conversions, changes to hardware and software and additional software installations are not permitted and exclude any liability or warranty on the manufacturer's / supplier's part for any resulting damage. The machine is designed exclusively for industrial use only. In principle, no private use is allowed.

1.1.4 Warranty

The warranty period shall comply with the contractual provisions set forth in the currently valid general sales, delivery and payment terms of Ersä GmbH & Co. KG. Ersä GmbH & Co. KG can only provide warranty if the appliance is returned in its original packaging.

Improperly using the appliance and tampering will invalidate any warranty and liability claims from the buyer against the manufacturer.

To the extent permitted by law, liability for direct damage, consequential damage and third-party damage resulting from the purchase of this product is excluded.

The heating elements are subject to wear and are excluded from the warranty.



1.2 Information about this manual

For your safety

ERSA products are developed, manufactured and tested in compliance with the basic safety requirements.

Nevertheless, residual risks still exist!

For this reason, please read these operating instructions before operating the machine for the first time. The instructions manual helps you master all the functions and use them optimally.

DANGER

Hazards caused by the improper operation of the machine!



- ✓ Observe the operating instructions!
- a) Any person involved in the installation, commissioning, operation and/or maintenance of the machine must have read and understood the contents of chapter "Safety instructions", as well as the chapters which are relevant for the specific activity!
- b) The operator is advised to have this confirmed in writing!
- c) In addition, for the machine operation, local safety and accident prevention regulations must also be complied with!
- d) Always keep these instructions near the machine, in a place accessible to all users at any time!



1.2.1 Pictogram and symbol explanations

Pictograms are used to identify dangers, both in this instruction manual and on the machine.

Specific information or requirements and prohibitions for the prevention of personal injury or property damage are shown in the manual with a pictogram, and are complemented in the text by **hierarchically graded, signal words in bold print**:



DANGER

It describes an *immediately threatening danger*

If not avoided, death, serious injury or material damage can result.

- a) Measures are described in the following text to avert the danger.



WARNING

It indicates a *potentially threatening danger*

If not avoided, death, serious injury or material damage can result.

- a) Measures are described in the following text to avert the danger.



CAUTION

It indicates a *potentially threatening danger*

If not avoided, death, serious injury or material damage can result.

- a) Measures are described in the following text to avert a danger.



NOTE

The hereinafter highlighted text passages contain explanations, further information or tips.



1.2.1.1 Prevailing term definitions in this instruction manual

In addition to the pictograms described above, we use the following symbols and notations:

Safety instructions

✓ This symbol means: **Prerequisite** to avert a danger.

a) This symbol means: **Measures** to avert a danger.

An example:



NOTE

Machine malfunctions caused by improper maintenance!

✓ Shorten service intervals, if necessary!

a) Service intervals in this manual refer to single shift operation! They are to be shortened accordingly for multi-shift operation!

Operating instructions

the operating instructions contain:

- references to the measures to be adopted

or

- instructions to be followed by all means.

The operating instructions are structured as follows:

✓ this symbol means: **prerequisite** for the implementation of a measure **or**

✓ **aim** of a measure.

a) This symbol means: **description** of a measure.

⇒ This symbol means: **intermediate result**.

⇒ This symbol means: **result**.

An example: pressure adjustment

✓ Remove the cover panel.

a) Adjust the (A) regulator air pressure to 2.5 bar.

⇒ The symbol on the screen turns green.

b) Reinstall the cover panel.

⇒ The air pressure has been properly set.



1.2.1.2 Warnings

We use the following pictograms for warnings:



WARNING

Dangerous electrical voltage! Danger of electrocution!



WARNING

Hot surfaces, hot gases! Burn hazard!



WARNING

Laser beam! Risk of retinal burns!



WARNING

Risk of injury! Hand injury risk!



1.2.1.3 Rule notices



NOTE

Read the operating instructions!



NOTE

Wear protective goggles!



NOTE

Disconnect power!



NOTE

ESD-hazardous components!



1.2.1.4 Prohibition notices

We use the following pictograms for prohibition notices:





1.2.2 Target readers group

These instructions are intended for people who use, adjust, operate or service the machine.



DANGER

Personal injury or material damage due to inadequate maintenance and improper operation of the machine!

✓ Use only qualified personnel!

- a) The machine transport, assembly, connection, commissioning, operation or maintenance by people who are not sufficiently qualified and informed can cause severe damage to the machine or damage to people.
- b) Such work may therefore only be performed by properly trained personnel! This personnel must be able to recognize the hazards that can be caused by the system mechanical, electrical or electronic equipment.
- c) The people who carry out such work must know and have understood the contents of these instructions.
- d) Any person involved in the installation, commissioning, operation and/or maintenance of the machine must have read and understood the contents of the "Safety instructions" chapter, as well as the chapters which are relevant for the specific activity!

1.2.3 Copyright, liability

Ersa has written these operating instructions with great care. However, no guarantee can be given as to the content, completeness and quality of the information provided in this manual. The content is continually updated and adapted to current conditions.

All the data published in these operating instructions, including the information provided about products and procedures, was identified by us to the best of our knowledge and ability, and using the most modern technical aids. These specifications are non-binding and for information only; they do not relieve users from the responsibility to carry out their own checks before operating the equipment. We accept no liability for any infringement of third party rights for applications and procedures without prior express written confirmation. We reserve the right to make technical changes with the intention of improving the product.

To the extent permitted by law, liability for direct, consequential and indirect damage resulting from the purchase of this product is ruled out. All rights reserved.

These operating instructions, or any parts thereof, may not be reproduced, modified, transferred or translated into another language without the written permission of ERSA GmbH & Co. KG!



NOTE

The original operating instructions were drawn up in the [German] language

The original operating instructions in German are contained in the [\\ERSA\\product_data\\049\\] folder on the drive of your machine PC. All other available languages are translations of the original operating instructions. Should any discrepancies occur in the translated text, consult the original operating instructions (German) for clarification or contact the machine manufacturer.





2 Technical data

2.1	General data.....	18
2.2	Electrical connection	18
2.3	Heating system	18
2.4	Axis system	19
2.5	Cameras.....	19
2.6	Printed circuit boards and components	19
2.7	PC system requirements	19
2.8	Ambient conditions	19
2.9	Options	20



2.1 General data

Description	
Width (mm)	573
Depth (mm)	765
Height (mm)	545 / 747, heating head bottom/top
Weight (kg)	76

2.2 Electrical connection



Fig. 1: Plug CEE 16 A, blue

Designation	
Mains voltage 3-wire system (V)	1 x 230 V
Voltage tolerance (%)	± 10
Mains frequency (Hz)	50 - 60
Fuse (A)	16
Power consumption (kW)	3,68
Connection	CEE 16 A

2.3 Heating system

Bottom heater

Designation	
Heating type	Ceramic infrared heaters, medium wave
Dimensions of the lamp cartridge (width x depth, mm)	390 x 270
Number of heating zones	3
Rated power (kW) at 230 V	2.4 (3 x 0.8)

Top heater

Designation	
Heating type	Hybrid heater, infrared heater in ceramic housing, medium wave, with hot air
Component handling	Integrated, motorized pipette
Dimensions (width x depth, mm)	80 x 80
Rated power (kW) at 230 V	0.9 hot air and 0.9 infrared
Aperture (mm)	30 x 30 / 45 x 45

Temperature sensors

Designation	
Sensor type	Non-contact infrared sensor (pyrometer), digital
Additional inputs for Type-K-thermocouples*	3



*An AccuTC is included in delivery.

2.4 Axis system

Description	
Type	Precision guide with multiphase motors
Axes	Z heating head, Z pipette
Position accuracy (µm)	± 25
Nozzle diameter (mm)	5 and 10

2.5 Cameras

Visionbox pick-and-place camera

Designation	
Type	Colour camera
Resolution (Mpixel)	5
Interface	GigE
Lighting	LED, dimmable
Laser pointer	Laser Class 2

2.6 Printed circuit boards and components

Description	
PCB cooling from below	Blower
Max. PCB size (width x depth, mm)	400 x 300 (15.7" x 11.8")
Min. PCB size (width x depth, mm)	20 x 20 (0.8" x 0.8")
Max. PCB thickness (mm)	10 (0.4")
Max. PCB mass (kg)	3
Min. component dimensions (mm)	01005
Max. component dimensions (mm)	70 x 70 (2.7" x 2.7")
Type operating distance above (mm)	30 – 60 (1.2" x 2.4") to top heating 35 (1.4") to bottom heating
Clearance below (mm)	35 (1.4")

2.7 PC system requirements

HR 550 and HR 550XL rework systems operate with a PC screen resolution of 1920 x 1200.

Please find the required PC configuration for your rework system in the PDF document

[3BA00212_PC-Setup-Recommendation_Ersa-IRSoft-HRSoft-ImageDoc.pdf].

This document is located on the Ersa Rework USB stick (3BA000149).

2.8 Ambient conditions

Description	
Ambient temperature (°C)	18...26, constant
Air humidity (% , non-condensing)	40...60



2.9 Options

The following positions are available as options (i.e. they are not included in the scope of delivery):

	Designation	Part No.
	Nozzle Ø 1 mm, metallic *	OHR5520-05010
	Nozzle Ø 2 mm, metallic *	OHR5520-10020
	Nozzle Ø 3.3 mm with silicone cup Ø 2 mm **	OHR5520-20033
	Nozzle Ø 0,3/0,2 mm od/id *	OHR5520-02003
	Nozzle Ø 0.35/0.25 mm od/id *	OHR5520-02503 5B
	Nozzle Ø 0,6/0,5 mm od/id *	OHR5520-05006
	Nozzle Ø 0,7/0,6 mm od/id *	OHR5520-06007
	Component filter for all nozzles, 10 pieces***	OHR5521/10
	RPC camera	OHR510
	Dip & Print station	OPR100



	Designation	Part No.
	Dip stencil 40 x 40, 0.3 mm	OPR100-D001
	Dip stencil 40 x 40, 0.1 mm	OPR100-D004
	PCB holder frame large	OHR554L
	Board holder	OPH100
	Holder for asymmetrical PCBs	OHR655
	AccuTC 2.0 thermocouple	OHR645
	K-type thermocouple wire with plug	OIR4510-02
	Tape feeder HR 550	OHR550-TF

* Metal, durable, it can last several months to years. Cleaning with isopropanol. Handle with care.

** Nozzle made of metal, durable. Replace silicone suction cups after 10-30 soldering processes.

The following devices may be connected to the HR 550. They may be controlled with the HR 550:

	Designation	Part No.
	Fume extraction Erska EASY ARM 1 (Volume flow rate 110 m ³ /h)	OCA10-001



	Designation	Part No.
	Fume extraction Ersa EASY ARM 2 (Volume flow rate 2 x 110 m ³ /h)	0CA-10-002
	Interface cable to fume extraction unit, 2 m	3CA10-2005
	Solder removal module Scavenger	0SC550



3 For your safety

- 3.1 General safety instructions 24
 - 3.1.1 Nationally valid safety and accident prevention regulations..... 24
 - 3.1.2 Fire protection 24
 - 3.1.3 Handling substances that are hazardous to the environment and health 24
- 3.2 Subject-related safety instructions..... 25
 - 3.2.1 Dealing with electrical equipment 25
 - 3.2.2 Dealing with process materials and substances 25
- 3.3 Safety instructions for certain operating phases..... 26
- 3.4 Safety instructions for maintenance, service, specific work, troubleshooting..... 27
- 3.5 Safety instructions for certain machine and system parts 28
 - 3.5.1 Hot device 28
 - 3.5.2 Laser equipment 28
 - 3.5.3 Using a solder fume extractor, plug available 28
- 3.6 Retrofitting and changes 28



3.1 General safety instructions

3.1.1 Nationally valid safety and accident prevention regulations

For any work performed on the machine itself or on its electric or pneumatic equipment, locally applicable accident prevention, safety and environmental protection regulations are to be observed.

3.1.2 Fire protection



NOTE

Observe the rules! Risk of fire!

- a) Have the fire protection system assessed at the installation site!
- b) Take the necessary measures provided for by the applicable laws and regulations!

3.1.3 Handling substances that are hazardous to the environment and health



NOTE

Handling substances hazardous to health

Personal injury due to poisoning, irritation or allergic reactions.

- a) When handling flux materials, solder pastes, adhesives or other chemical substances, please adhere to the manufacturer's safety instructions, in particular the permissible temperatures during use.
- b) Read the safety data sheets provided by the product manufacturers. Also adhere to the instructions on wearing protective clothing and respiratory protection!



⚠ CAUTION

Handling substances hazardous to the environment

- a) Do not allow auxiliary substances such as flux material and solder pastes, solders, operating materials, oils and greases to get into the soil or the sewage system!
- b) Dispose of cleaning agents, cleaning cloths, condensates, dust and dirty filters in an environmentally friendly manner!
- c) Comply with the locally applicable waste disposal regulations!
- d) Follow the safety data sheets provided by the product manufacturers!



3.2 Subject-related safety instructions

3.2.1 Dealing with electrical equipment



DANGER

Dangerous electrical voltage!

Serious injury or death from electric shock!

- ✓ Work on the electrical system or the machine electrical devices must be undertaken only by a skilled electrician or by properly trained people under the supervision and guidance of a skilled electrician in accordance with the electro-technical rules.
- a) Before opening any housing parts, remove plug from mains!
- b) Use only original fuses with the specified current rating.
- c) Use only insulated tools.
- d) In case of faults in the power supply, switch off the system immediately.

3.2.2 Dealing with process materials and substances



CAUTION

Irritating substances!

Personal injury or property damage when dealing with oils, greases, chemicals!

- a) Read the rules applicable to the product safety data sheets before use!



DANGER

Hot supplies, hot excipients, liquid metal!

Risk of burns when dealing with fuels, additives and liquid metal!

- a) Be aware of the in-house provision for protective clothing!
- b) Work on the hot machine must only be carried out by trained and qualified personnel!



DANGER

Substances hazardous to health!

Risk of poisoning by inhalation or ingestion!

- a) Flux fumes are produced during soldering. These are harmful to health. Do not eat, drink or smoke in places where soldering is carried out!
- b) Traces of lead from the soldering adhering to a person's hands may access the human organism via food or cigarettes (health hazard). After touching solder, clean your hands thoroughly!



⚠ CAUTION

toxic fumes!

Risk of poisoning by inhalation!

- a) During soldering, gas emissions arise from the module or from the solder paste used. These gas emissions are harmful.
- b) With respect to respiratory protection, the operator must observe the processing instructions specified in the safety data sheets of the solder pastes and fluxes used!



⚠ CAUTION

Suffocation hazard! Deal with the nitrogen system safely!

- ✓ By enriching nitrogen, oxygen can be displaced in the breathing air. Nitrogen cannot be sensed by odour.
- a) Therefore, ventilate the work area regularly or ensure air exchange!
- b) If the applicable Workplace ordinance regarding air exchange is complied with and nitrogen is used only in small amounts due to the type of system and application, there is no danger associated with nitrogen.

3.3 Safety instructions for certain operating phases



⚠ WARNING

Death or serious injury due to flammable substances! Risk of fire and explosion due to overheating!

- a) Do not leave the machine unattended when switched on!
- b) The heating of highly flammable or explosive substances is prohibited!
- c) The Rework system is not approved for operation in potentially explosive atmospheres.



⚠ DANGER

Risk of injury due to moving machine parts!

After starting automatic processes, machine parts move. No body parts or foreign objects may be present in the working area of these machine parts.

- a) Do not interfere with the movement range of the machine during automatic processes!



⚠ DANGER

Health damage due to smoke

- a) In case of smoke formation or unusual odour development, switch off the rework system immediately and ventilate the room sufficiently!
- b) The room may only be re-entered when the air is smoke-free.
- c) To avoid smoke development:
 - ⇒ Follow the operating procedure specified in the operating instructions
 - ⇒ Regularly check the rework system for damage
 - ⇒ Keep the rework system clean



3.4 Safety instructions for maintenance, service, specific work, troubleshooting



WARNING

The machine malfunctioning is possible!

Personal injury or property damage due to improper commissioning or incorrect operation of the machine!

- ✓ Commissioning must be performed by trained and qualified staff only.
- a) Inspect the machine for visible defects!
- b) Check all safety devices for proper operation!
- c) Wear suitable protective clothing for all types of work!
- d) During commissioning, ensure switching on and off processes and monitoring directions are in accordance with the operating instruction manual!



NOTE

Disposal

- a) Provide safe and environmentally friendly disposal of packaging materials!



3.5 Safety instructions for certain machine and system parts

3.5.1 Hot device



CAUTION

Risk of burns from hot surfaces!

- a) Touching the device surfaces may cause burns!

All heated machine parts as well as the surrounding housing parts and product support frame, the circuit board and the components become hot even during warm-up to the process temperature [Tinit]!

Parts become strongly heated during the soldering process!

3.5.2 Laser equipment



DANGER

Laser beam! Risk of injury due to retinal burns

- a) Do not stare into the laser beam!
- b) Do not point the laser beam at other people! Reflecting surfaces under the laser generate reflections!
- c) Class 2 laser according to DIN EN 60825-1:2008-5, $P < 1 \text{ mW}$, $\lambda = 650 \text{ nm}$

3.5.3 Using a solder fume extractor, plug available



NOTE

Use the soldering fume extraction system!

Solder fumes are hazardous to health. For this reason, a soldering fume extraction system should always be used. As regards the type of soldering fume extraction system, we recommend using the Ersa "Easy Arm" with prefilter, HEPA, particle filter and activated carbon filter. The device is equipped with a suitable connection for the soldering fume extraction system. The soldering fume extraction system prevents the device from accumulating dirt quickly.

3.6 Retrofitting and changes

Any unauthorised alterations and/or changes that may affect the machine safety are prohibited and relieve the manufacturer / supplier of any liability for any resulting damages.



WARNING

Personal injury or property damage and environmental damage caused by the machine defective condition!

- ✓ So, please always make sure that retrofitting or modifying the machine does not pose any problem:
- a) Prior to making any changes to the machine, or altering its parameters, contact the machine manufacturer!



4 Transport, installation, storage, disposal

4.1	Information concerning machine transport and storage	30
4.2	Information on how to unpack the machine.....	30
4.3	Packaging with TIP n TELL indicator	30
4.4	Scope of delivery	31
4.5	Unpacking, setting up and connecting the Rework System	32
4.5.1	Unpacking	32
4.5.2	Set up	33
4.5.2.1	Remove the vision box transport lock	34
4.5.3	Connecting the machine	35
4.5.4	Assembling an RPC camera (optional)	37
4.5.5	Assembling an Accu-TC holder and an air baffle	39
4.5.6	Insert the heating head.....	41
4.5.7	Screwing on a soldering nozzle and then removing the transport lock.....	42
4.5.8	Connect the signal cable of the optional residual solder sucker Scavenger	44
4.6	Prepare the Rework System for delivery.....	47
4.7	Disposal	50



4.1 Information concerning machine transport and storage

CAUTION

Material damage is possible!



- ✓ The machine is supplied in a sturdy carton on a pallet. Damage caused by improper storage or improper transportation is not covered by warranty!
- a) Always transport or store the machine in a box on a pallet!
- b) During the machine transport, avoid any jerky movement, abrupt setting-down or bumping!
- c) During storage, protect the machine from weather conditions (moisture, humidity, sea air, fog)! If required, provide the machine with dehumidifying agent and air tight packaging!

4.2 Information on how to unpack the machine

CAUTION

Risk of injury!



- a) To unpack always use proper tools!
- b) Use suitable protective clothing!

NOTE

Disposal



- a) Provide safe and environmentally friendly disposal of packaging materials!

NOTE

Find out and ascertain any transport damage



- a) Inspect the machine for any transport damage immediately after unpacking it.
- b) Immediately notify the forwarder any transport damage.

4.3 Packaging with TIP n TELL indicator



Fig. 2: Indicator not coloured

- ✓ To check a package equipped with TIP n TELL tilt indicator:
 - a) check all the TIP n TELL stickers available.
 - b) If the indicator is not coloured, this means that: the machine was properly transported.
 - c) If the indicator has turned blue, this means that: during transport the machine was excessively tilted.
 - d) If the indicator has turned blue, this must be specified in the consignment note!



4.4 Scope of delivery



NOTE

Is delivery not complete or are there any damaged parts?

Check the delivery for completeness. If any items are missing or damaged, contact the supplier!

Number	Designation	Part No.
1	HR 550	0HR550
1	PCB holder HR 500	0HR554
1	Thermocouple mount V2	0HR641
1	AccuTC thermocouple without fixture *	0IR6500-37
1	Open-end wrench SW9	316569
1	Knurled wrench SW9	316590
1	RJ45 patch cable, 2.0 m	315664
1	Nozzle Ø 10 mm with silicone cup Ø 8 mm **	0HR5520-80100
1	Nozzle Ø 5 mm with silicone cup Ø 3.5 mm **	0HR5520-35050
1	Air deflector 30 x 30 mm	0HR5530-001
1	Air deflector 45 x 45 mm	0HR5530-002
1	Basic plate claibration target	320415
1	Calibration target 12 x 0,5 mm, blank	344244
1	Calibration target 12 x 0,3 mm, lasered	320010
1	USB flash drive Rework	3BA00149
1	Operating manual HR 550	3BA00233

* Durable metallic thermocouple. Cleaning with isopropanol. Do not bend. Shelf life lasting months to years.

** Nozzle made of metal, durable. Replace silicone suction cups after 10-30 soldering processes.

Available options:

Please also read paragraph [Options](#) [► 20].



4.5 Unpacking, setting up and connecting the Rework System

4.5.1 Unpacking

✓ Two people are required to lift the rework system:

a) The rework system is shipped to the point of installation in a box on a pallet.



Fig. 3: Open package

1	Cushioning material	4	HR 550
2	Fastening position for the heating head	5	Accessories, packed
3	Heating head, packed		

b) Open the fastening tape of the packaging using scissors.

c) Remove the top of the box.

d) Remove the upper foam packaging material.

e) Remove the boxes with the heating head (3) and the accessories (5).

✓ Should the packaging material be disposed of or stored for future use?

a) We recommend storing the packaging material for future use.

⇒ Only with this packaging material is it possible to pack, store and transport the HR 550 under conditions of safety!



4.5.2 Set up



WARNING

Fire hazard, hazard due to heat accumulation!

Personal or material damage is possible!

- a) Above, behind and next to the machine there must be no furniture (shelves, cabinets) or flammable products!
- b) The distance to the walls must be at least 10 cm.



Fig. 4: Lifting points

- a) Have two people grab the rework system from the lifting points (1) and remove it from the box. The weight of the device is ca. 75 Kg.
 - b) Place the rework system on the left of the table. In this way, the PC monitor, keyboard, mouse and work area will be on the right. The work table must meet the following requirements:
 - ⇒ The tabletop must be at least 600 mm wide and 900 mm deep. Breadthways it is also necessary to make room for the PC keyboard and screen.
 - ⇒ The table must be stable, level and designed to withstand a weight of at least 80 Kg. A vibration-free location improves the performance level of the rework system.
 - ⇒ Install the rework system in a point in which it is not exposed to draught!
 - ⇒ If the illumination of the work station is too bright, the camera may not work properly.
- ✓ Align the rework system:



- a) Make sure that the surface is horizontal and that the weight is evenly distributed among the machine feet!
- b) Please observe the following points:
 - ⇒ If during transport the device is exposed to strong temperature oscillations, allow it to adjust to room temperature for several hours before commissioning!
 - ⇒ The device must not be exposed to quick temperature changes!
 - ⇒ The point of installation must not be exposed to draught! Do not position the device close to ventilation shafts or air conditioning devices!
 - ⇒ In order to avoid problems while positioning the components, no strong extraneous light (e.g. sun rays or ceiling spotlight) must shine in the camera visual range!

4.5.2.1 Remove the vision box transport lock

- a) Using a #3 Allen wrench, remove the transport locking screw of the vision box on the right side of the housing.
- b) Store the transport locking screw for future use, should the device be transported again in the future.



Insert the screw again in case during transport the rework system is not placed horizontally.



4.5.3 Connecting the machine

✓ Connecting the machine:

a) remove all accessories from packaging, unwrap them and lay them out.



Fig. 5: HR 550 rear side

1	Eight Ethernet ports. For connection ports, see the sticker on the equipment housing	4	Connection for optional RPC camera lighting
2	Nameplate	5	Power cable
3	Connection for the optional solder fume extractor PLC	6	Fuse

- b) Make sure that the main switch on the front of the machine is in the OFF position.
- c) Compare the local line voltage and the mains frequency with the specifications on the nameplate (2) of the machine.
- d) If the RPC camera is already preassembled, plug the lighting cable of the camera into the connector (4). Secure the plug with the coupling nut. Plug the Ethernet cable to connect the camera to the rework system into socket # 2.
- e) If fume extractor "Ersa Easy Arm" is available, plug the modular cable (RJ-12, 2 m, order no. 317096) to the soldering station into socket (3). The fume extractor switches on automatically at working temperatures above 120° C.
- f) To get connected to the PC, plug the Ethernet cable into socket 5.
- g) When connecting the HR 550 to a company network, plug the relevant connecting cable into socket 6.
- h) Plug the mains plug (5) into the outlet.



NOTE

Use the soldering fume extraction system!

Solder fumes are hazardous to health. For this reason, a soldering fume extraction system should always be used. As regards the type of soldering fume extraction system, we recommend using the Ersa “Easy Arm” with prefilter, HEPA, particle filter and activated carbon filter. The device is equipped with a suitable connection for the soldering fume extraction system. The soldering fume extraction system prevents the device from accumulating dirt quickly.



4.5.4 Assembling an RPC camera (optional)

✓ If you have acquired the option [RPC camera]:

a) Make sure that all parts are complete (see following image):

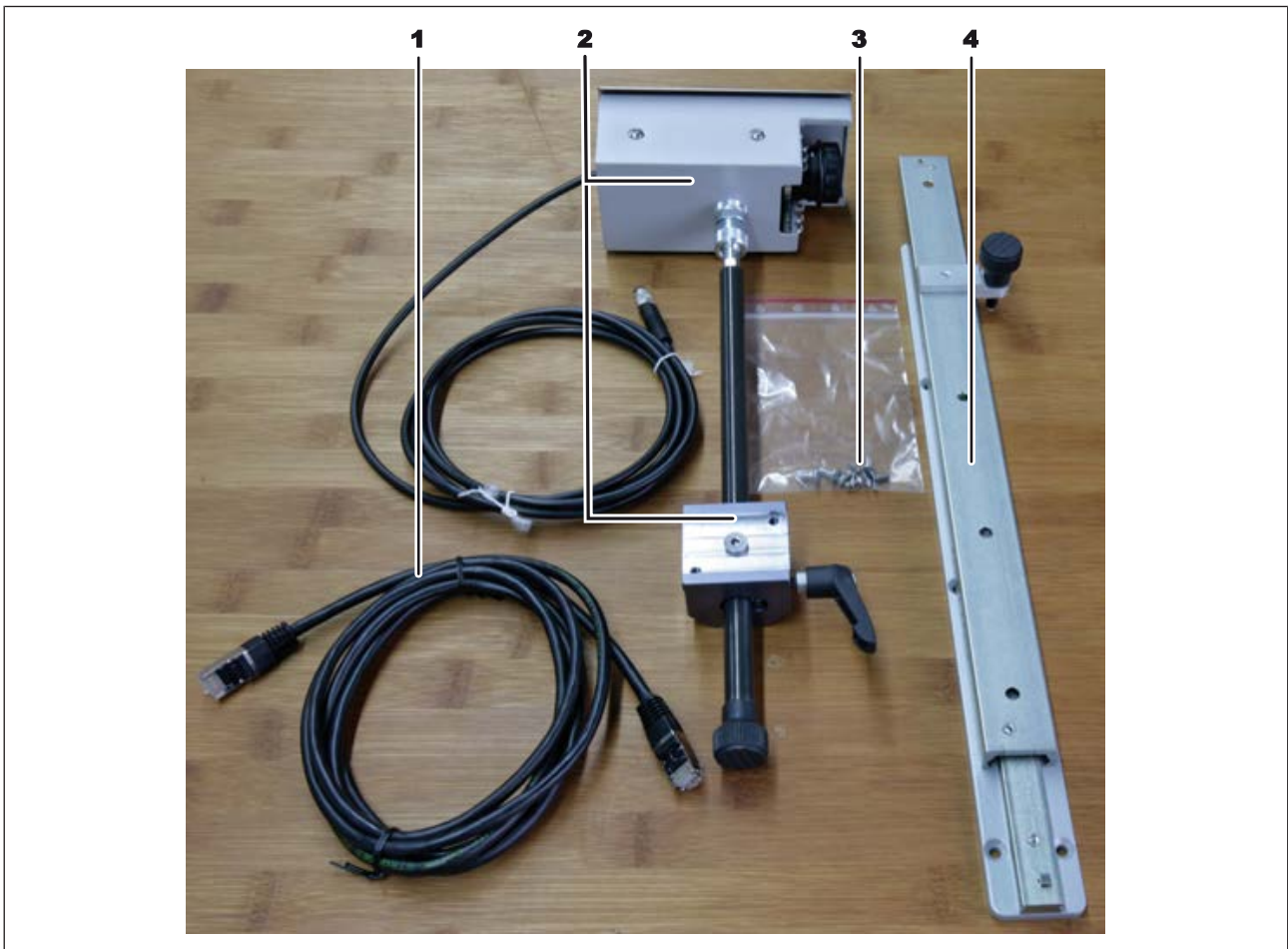


Fig. 6: Single parts of the RPC camera

1	RJ45 patch cable, 2.0 m	3	Counter sunk screw V2A DIN 7991
2	RPC camera with adjustment	4	Telescopic rail with spacer plate

b) Assemble the camera. To do so, fasten the screw of the camera holder (6) to the telescopic bar (see following figure):

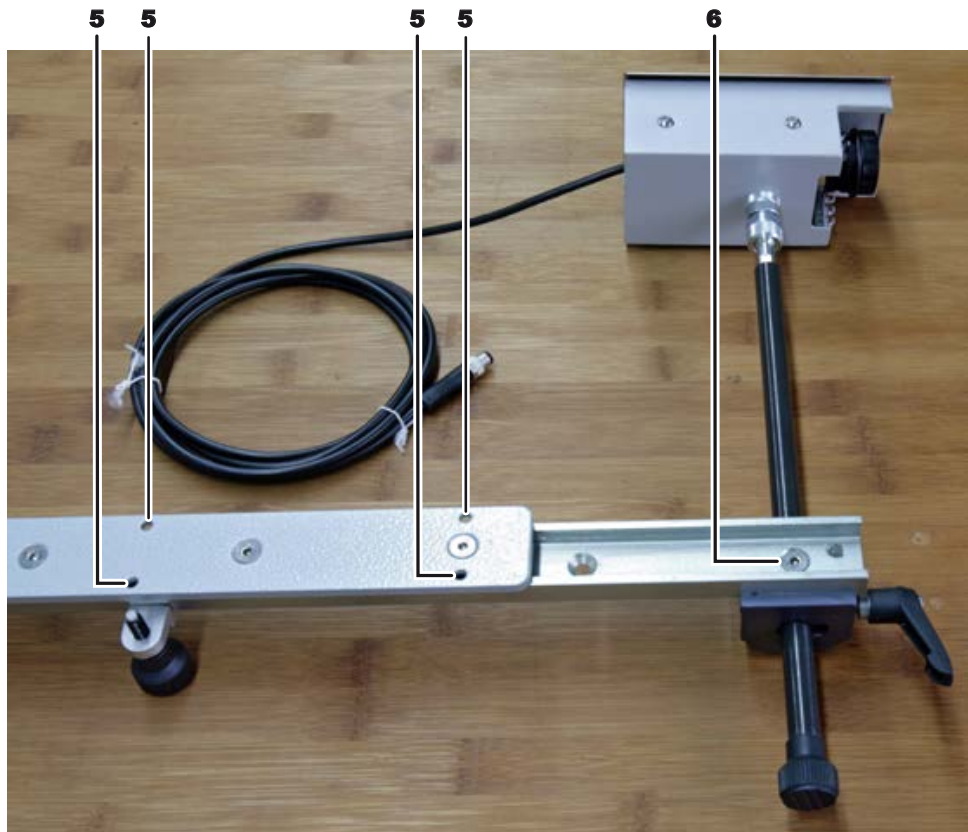


Fig. 7: Assembled RPC camera

c) Install RPC camera with the six screws (3) using the bores (5) on the left side of the Rework System (see following example figure).



Fig. 8: Installed RPC camera, example figure

d) Connect the Ethernet cable and the LED lighting cable to the Rework System.
As to this, please read the Connecting the machine [► 35] chapter.



4.5.5 Assembling an Accu-TC holder and an air baffle

To avoid damage, only insulated thermocouples may be used.

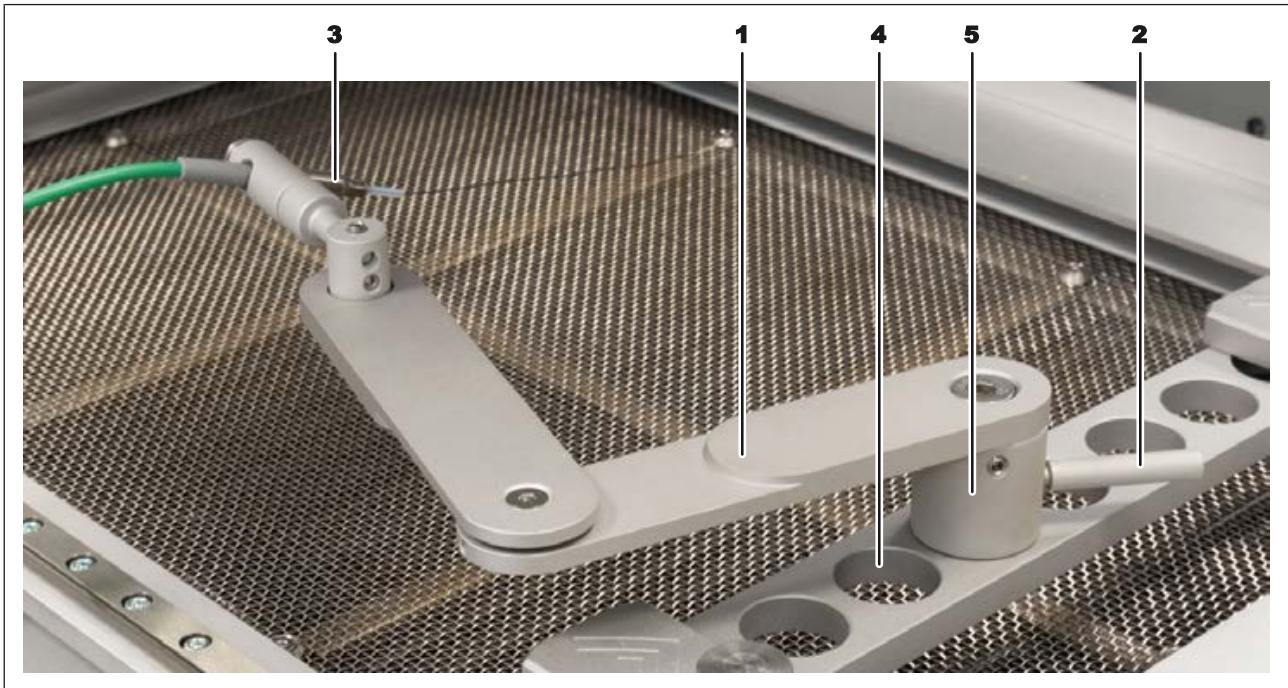


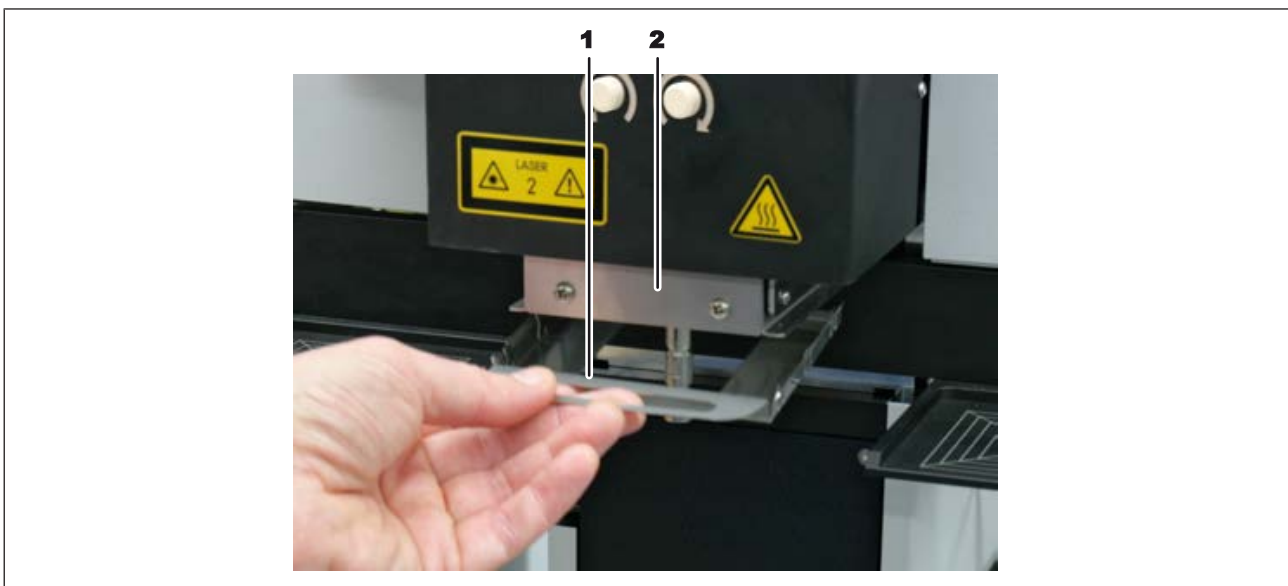
Fig. 9: Accu-TC holder

✓ Mount the Accu-TC holder:

- a) You can mount the holder in any bore (4) of the PCB holder. To do so, insert the cylinder (5) in a bore and lock it with the lever (2).
- b) Connect the AccuTC thermocouple without fixture (Item 0IR6500-37) (3) to the socket [TC1].
- c) Mount the thermocouple (3) as indicated in the figure.

Depending on their opening size, air baffles reduce the heated surface and contribute to reducing the thermal stress around the soldering area.

To avoid material damage, when fitting air baffles, make sure that the air baffle does not touch the pipette and the soldering nozzle.



- a) Select an air baffle.



- b) Hook the rear lugs of the air baffle (1) onto the lower plate of the heating head (2) from behind. Then press the air baffle upwards at the front.



4.5.6 Insert the heating head

- a) Push the release lever on the upper side of the heating head on the pin. You can find the release lever in the accessories box.



Fig. 10: Use the release lever

- b) Place the heating head on both lower supports (see the arrow in the figure on the left).

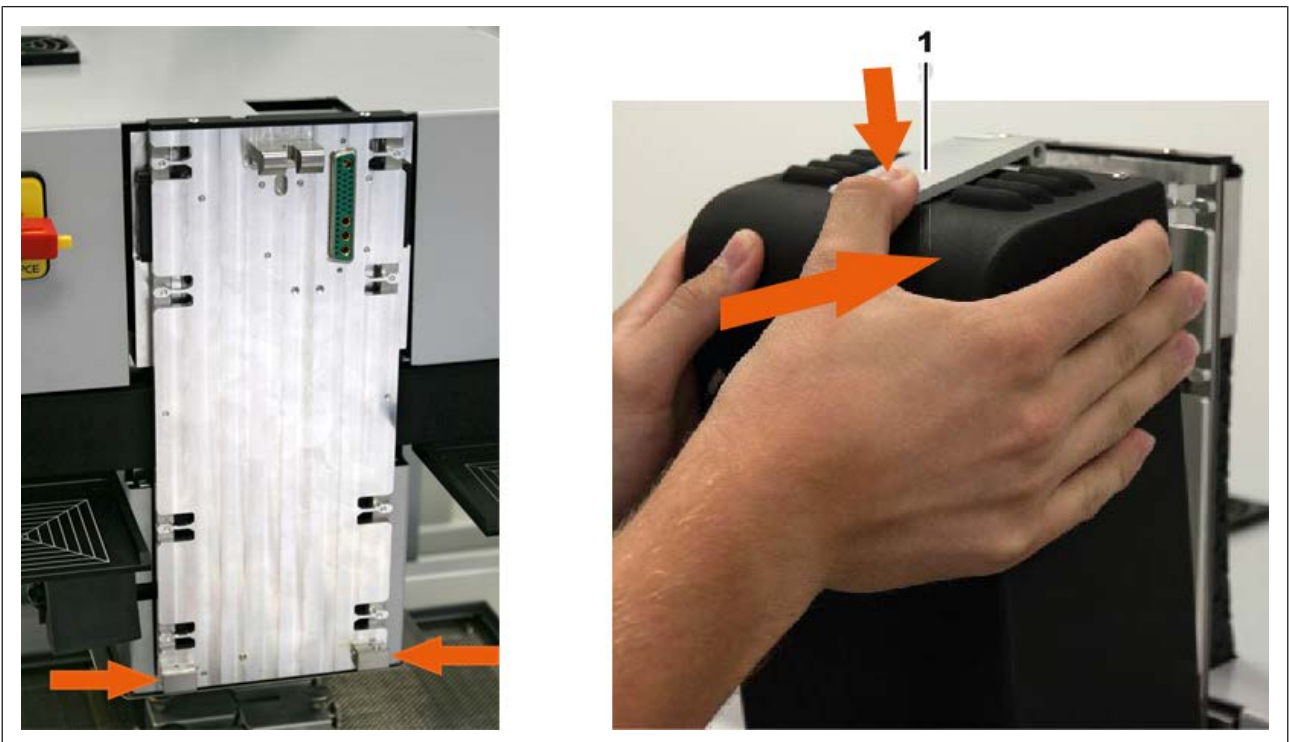


Fig. 11: Use the heating head with its suspension bracket

- c) Hold the heating head tight with both hands and keep the release lever pressed with a finger on the top of the heating head. Press the heating head on the top of the device (see arrow in the figure on the right) until it is locked in place.
- d) No pipette is screwed on the heating head yet. You can find the pipettes in the accessories box.



NOTE

Hazard of material damage! Do not lift the heating head by hand!

- a) Always adjust the heating head to the desired height using the motorized height adjustment!

4.5.7 Screwing on a soldering nozzle and then removing the transport lock

Before start-up, a soldering nozzle must be screwed to the pipette (heating head underside). To do so, use one of the included soldering nozzles. Always select the largest possible soldering nozzle for the component. The soldering nozzle has been fitted to the pipette. With regard to this, please read Chapter [Overview of the machine parts](#) [▶ 62].

After unpacking the Rework system, you will see that a transport lock is fitted under the heating head. It supports the pipette retention mechanism to prevent any damage from external forces. When attaching and removing soldering nozzles, the transport lock must be applied to the pipette to compensate for the resulting strain on the pipette retention mechanism. Otherwise material damage will occur! After attaching or changing a soldering nozzle, unscrew the transport lock again.

The transport lock consists of the following parts:

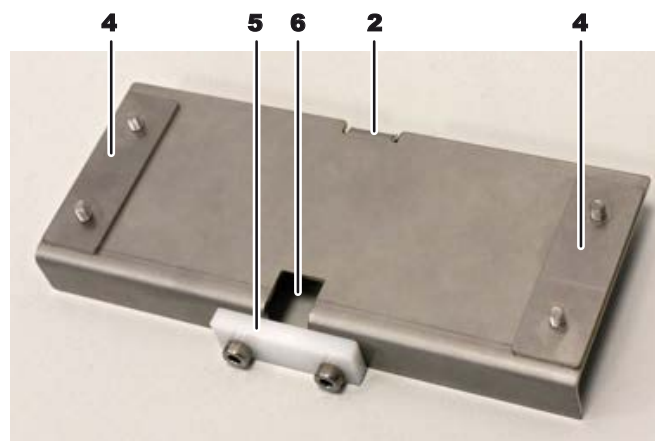


Fig. 12: The transport lock in the removed state

2	Handle of the transport lock.	5	Plastic clamping piece, screwed twice. Not needed for nozzle change. Only used to secure the pipette when shipping the rework system
4	Two fixing strips, each screwed twice	6	Pipette recess

The transport lock when fitted:

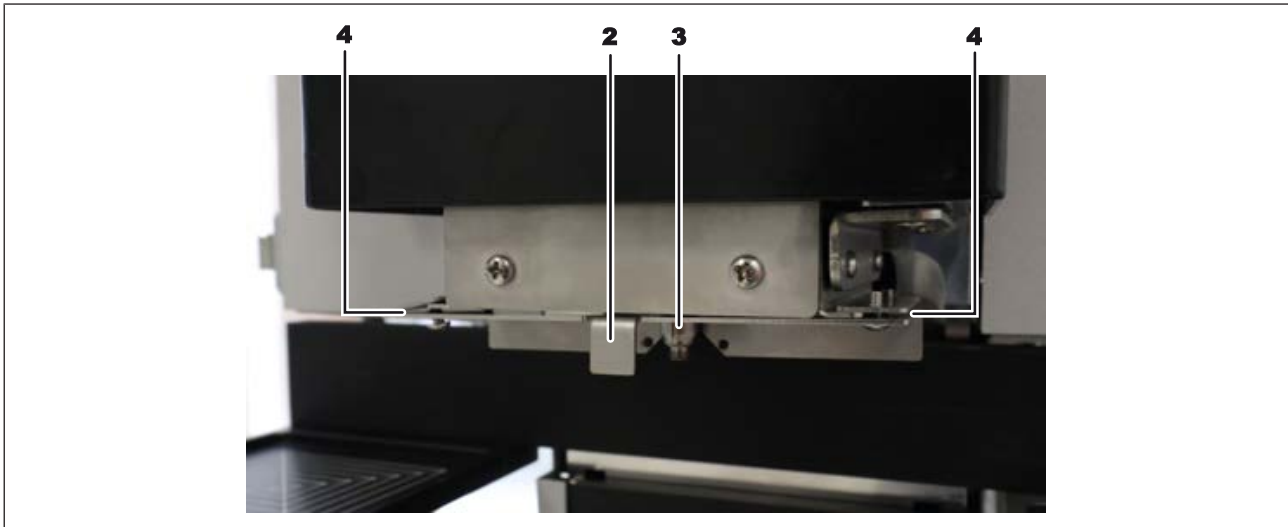


Fig. 13: The transport lock when fitted

- The transport lock is fastened to the heating head with two fixing strips (4)
 - (2) Handle of the transport lock
 - (3) Pipette (approx. 1 cm from the heating head), still with no soldering nozzle fitted.
- a) Fit the soldering nozzle to the pipette and tighten it very slightly by hand.
 - b) Unscrew the plastic clamping piece (5) with a size 2 Allen key. When replacing soldering nozzles, you will not need this clamping piece during transport lock application. Store the clamping piece and any associated screws so as to be able to screw it back to the transport lock should the Rework system be subsequently carried or shipped.
 - c) Use the Allen key to loosen the two fixing strips (4), but do not unscrew them.
 - d) Pull the transport lock off the heating head to the front and put it down. Leave the fastening strips (4) screwed on.

Whenever attaching and removing soldering nozzles, the transport lock must be applied to the pipette to compensate for the resulting strain on the pipette retention mechanism. With regard to this, please read Chapter [Replacing the soldering nozzle](#) [► 122].

With regard to this, please also read Chapter [Spare parts](#) [► 161] where you can find a list of available pipettes.



4.5.8 Connect the signal cable of the optional residual solder sucker Scavenger

If you retrofit the Rework system with the residual solder sucker Scavenger, the Scavenger signal cable must be connected to the distributor board as described here. The work described here is to be carried out after installing the residual solder sucker.

The following tools are needed:

- 2.5 mm Allen keys
- Crimping tool with IDC function for MAS-CON® female multipoint connectors with a 2.54 mm grid dimension



Fig. 14: Crimping tool for pressing in the cables for MAS-CON® female multipoint connectors with a 2.54 mm grid dimension.

- 5 cable ties

The cable is inserted into the opening on the drag chain by the residual solder sucker. The figure shows the cable length needed outside the housing to ensure the swivelling movement of the residual solder sucker.



Fig. 15: Cable routing outside the housing, picture after assembly completion.



⚠ DANGER

Hazard due to electrical voltage when opening the Rework system!

Death or serious injuries due to electric shock!



- a) Work on electrical systems or equipment may only be carried out by a qualified electrician or by people trained in electrical engineering under the direction and supervision of a skilled electrician, in accordance with electrotechnical regulations.
 - b) Before any work is performed by a skilled electrician on the electrical cabinet, the Rework system must be disconnected from the mains!
-
- a) Before starting work, switch off the Rework system and disconnect it from the mains - risk of electric shock!
 - b) Use the Allen key on one side of the Rework system to loosen the four screws around the housing - see arrows in the following figure on the left.
 - c) Also loosen the four screws on the other side of the housing.

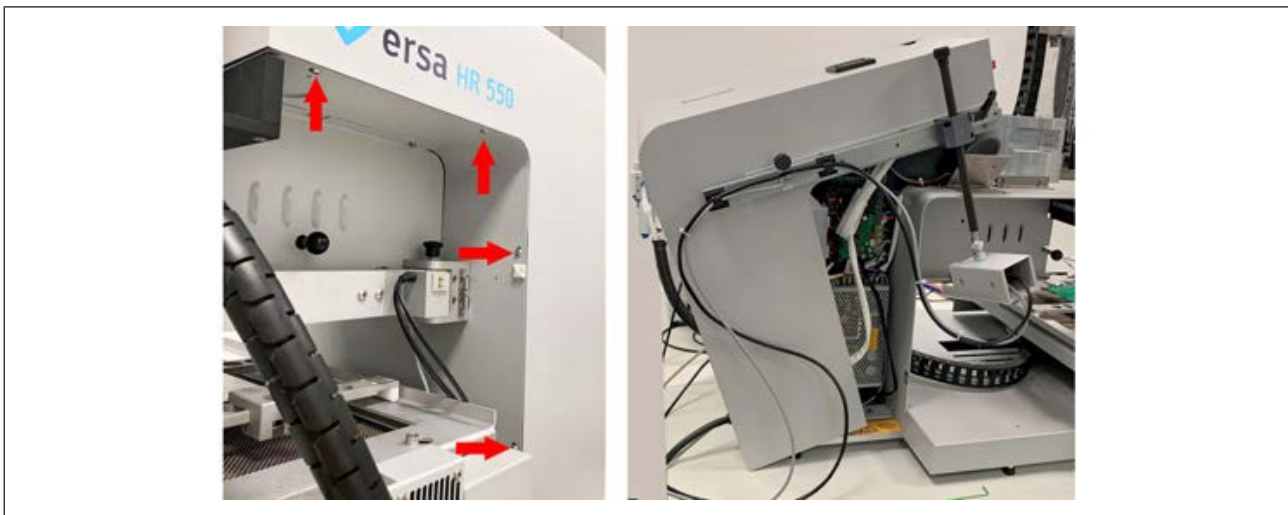


Fig. 16: Loosen four screws on each side and open the housing from the back

- d) Carefully open the housing from the back - see figure on the right.
- e) Keep the housing open by placing an object underneath, in the front area.
- f) Identify the PCB for the connection - see following figure on the left.
- g) Carefully pull the plug-in connector, marked in the middle and on the right in the following figure, from the connection strip by jerking it.
- h) If the existing cables on the PCB prevent access to the plug-in connector, they must be carefully lifted.

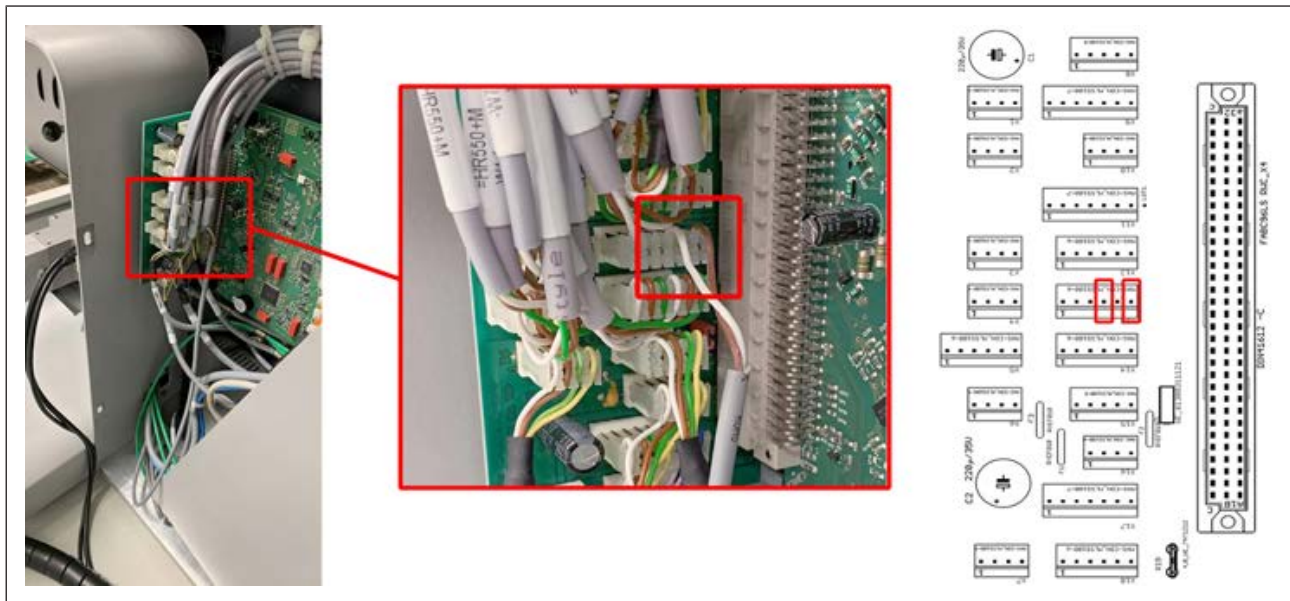


Fig. 17: Left picture: Distribution board, see middle picture: Connector strip with the newly connected cables of the Scavenger, see picture on the right: Pins 4 and 6 are connected

The two cable ends (white and brown) are connected to this plug-in connector. The figure above shows the white connected cables (on pin 4) and the brown ones (on pin 6) in the middle enlarged photo.

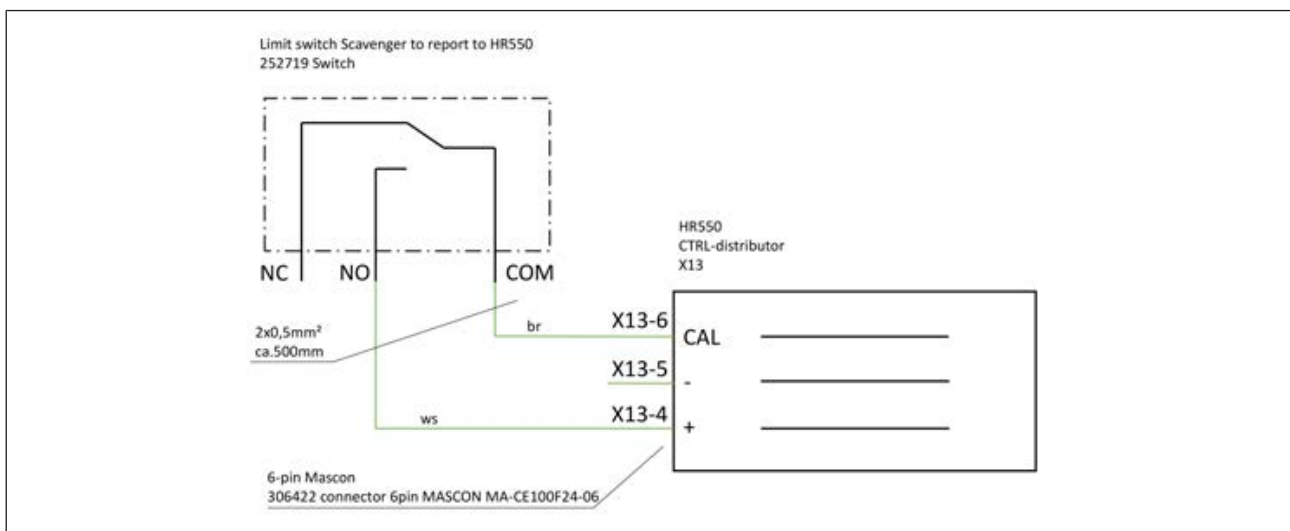


Fig. 18: Wiring diagram

- The two cables must be pressed onto pins 4 (white) and 6 (brown) in the plug-in connector as described below. The cables do not have to be stripped.
- If necessary for better accessibility, the cables already present on the plug-in connector can be carefully pulled out of the strain relief - see the following example figure.

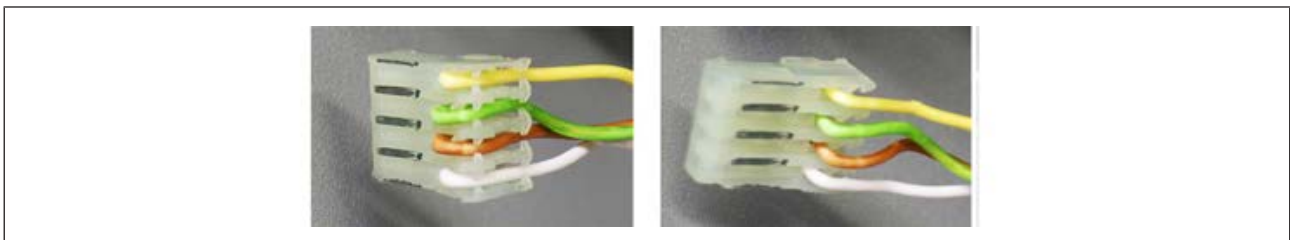


Fig. 19: Example figure. Left: Cable pressed into the strain relief. Right: Cable loose.



- c) Align the black side of the connector pins upwards.
- d) Align the desired pin in the crimping tool, as shown in the example figure on the left.



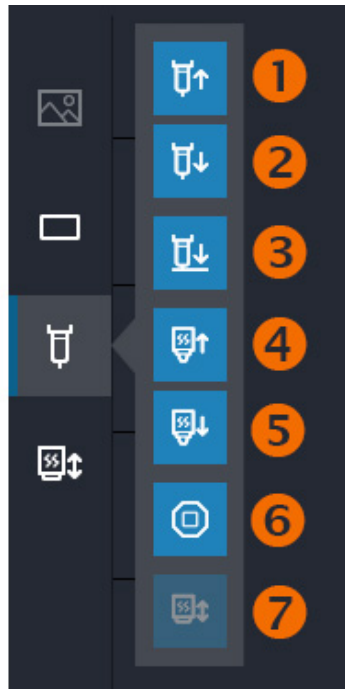
Fig. 20: Example figure. Left: Insertion of the plug-in connector into the crimping tool. Right: Run the cable into the connector pin from above and press the cable in.

- e) Run the cable in the corresponding colour into the opening of the plug-in connector from above, until it is flush with the plug-in connector at the bottom - example figure on the right.
 - f) Hold the cable in position and press the cable in.
 - g) Check the result.
 - h) Align the connector pin for the second cable in the crimping tool.
 - i) Press the second cable in.
 - j) Check the result.
 - k) Press all cables into the strain relief of the plug-in connector.
 - l) Plug the plug-in connector back into the connector strip.
 - m) Fasten the newly inserted cable to the existing cable harness with cable ties. Make sure there is sufficient cable length outside the housing to ensure the swivelling movement of the residual solder extraction.
 - n) Screw the housing back on with eight screws.
- ⇒ The process has now been completed.

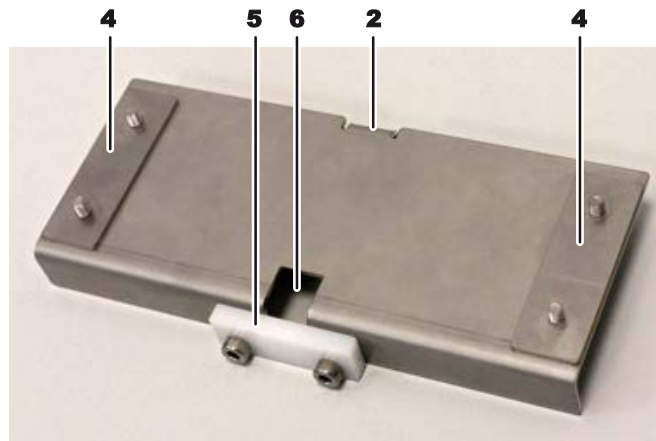
4.6 Prepare the Rework System for delivery.

Before the rework system is switched off before shipping, the following work must be carried out:

- a) In the tab [Administration] open the dialogue [Device settings]. Click on the [Move to transport position] button.
 - ⇒ The heating head is moved to the lowest position.
- b) Pass to the tab [Rework] and click the button [Manual mode].
- c) Open the button menu for the heating head and pipette motor runs.



- ⇒ In this heating head position, the pipette cannot be moved downwards using the button (2) for safety reasons.
- d) Move the pipette one centimeter out of the heating head as follows:
 - ⇒ If the soldering nozzle is still screwed onto the pipette, do not remove it now. Only when the transport lock has been installed.
 - ⇒ The button (6) stops all machine movements.
- e) Click the button (3) to move the pipette/nozzle to contact.
 - ⇒ The pipette moves slowly downwards until resistance is detected.
- f) When the pipette has moved one centimeter out of the heating head, click the button (6) to stop the machine movement.
- g) If necessary, click button (3) and then button (6) again to move the pipette further down.
- h) If necessary, click the button (1) to move the pipette upwards.
- i) Turn the pipette using the buttons on the heating head to align the wrench flats of the pipette at a 90° angle and screw on the transport lock. As to this, please read the chapter [Replacing the soldering nozzle](#) [▶ 122].
- j) When shipping the rework system, the white plastic clamp (5) must be screwed onto the transport lock.



- k) Attach the transport lock as described in the chapter [Replacing the soldering nozzle](#) [► 122]! Before attaching the transport lock, loosely screw the plastic clamping part with one of the two screws.
- l) After attaching the transport lock, tighten the plastic clamp with both screws.
- m) Turn off the rework system. As to this, please read the chapter [Switching off the Rework System](#) [► 117].
- n) Remove the heating head and pack it separately. As to this, please read the chapter [Change the heating head](#) [► 157].
- o) Place the rework system in the original packaging with two people. Place the heating head in the packaging.

Also see

- 📄 Spare parts [► 161]



4.7 Disposal



⚠ CAUTION

Disposal

- ✓ Solder waste is hazardous waste and must not be disposed of together with domestic waste.
- a) Provide safe and environmentally friendly disposal of packaging materials!
- b) Make sure that all process materials and replacement parts are disposed of in a safe and environmentally friendly way!

In accordance with Directive 2008/98/EC on waste and Directive 2002/96/EC on waste electrical and electronic equipment, we recommend the following procedure:

- ✓ To prepare the machine for disposal:
 - a) Have the machine disconnected from all utility services by a specialised technician:
 - ⇒ Electrical power supply
 - ⇒ Computer network
 - ⇒ Only when all this work has been performed may the disposal of the machine be started.
- ✓ If professional scrapping is not possible in the user's premises:
 - a) Contact a certified waste management company.

Waste prevention has priority over waste disposal!

Many parts of the machine can be used again. Only when reuse is not possible, should these parts be recycled.

The machine can contain the following substances or devices:

Electronic and electrical equipment	Computer, electronic controls, relays, monitors, cameras, sensors, meters, motors, preheater modules
Plastics	Cables and caterpillars, hoses, heat insulation, sensors
Metals	Steel, copper, aluminum, brass, gold, lead, tin, silver
Glass, ceramics	Preheater modules, screens

NOTE

Disposal of electrical equipment

Notes on waste disposal acc. to the directive 2012/19/EU of the European Parliament and the Committee from 4th of July 2012 for used electric and electronic appliances:

Products marked with a crossed out waste bin must not be disposed of together with unsorted domestic waste. The municipalities established special collecting points for this type of waste. Please consult your council and ask for available possibilities for the separated collection of old appliances. You thereby contribute to the reuse or other forms of use of old appliances, with the aim of protecting the environment and human health.

Follow the operating/safety instructions for the correct disposal of the packaging, which should be kept until the end of their useful life.





5 Commissioning

5.1	Setting up the Rework PC.....	52
5.2	Configure the Netgear switch.....	54
5.3	Install the HRSoft 2 program.	55
5.4	Performing functions [Start Setup] and [Pixel Shift adjustment]	56



5.1 Setting up the Rework PC

Only use these instructions for the initial installation. For an HRSoft 2 update, read the instructions. [Performing a HRSoft 2 update](#) [► 158]

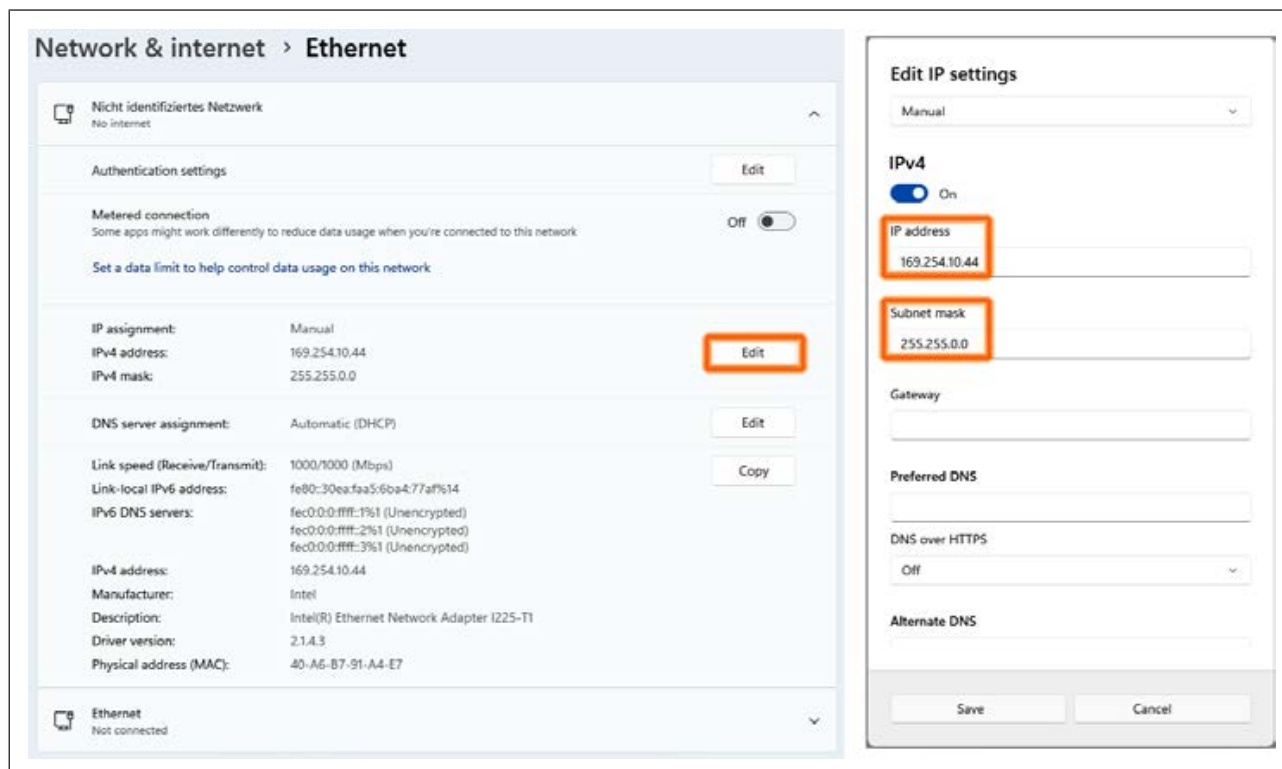
- For the PC configuration required for your Rework system, please refer to PDF document "3BA00212_PC configuration recommendation_Ersa-IRSOFT-HRSoft-ImageDoc". This document can be found on the Ersa Rework USB stick (item no. 3BA000149) from the accessory pack.
You will also need the Rework USB stick to install the Rework system software "HRSoft 2" and to install device drivers.

Requirements:

- A network card must be installed in the PC. Ersa recommends an Intel® network card.
- Network connection from the Rework system to the PC and, if required, to the company network.
- The Rework system must be ready for operation. As to this, please read the corresponding chapters in the operating instructions. Please do so to be on the safe side!
- a) Switch on first the Rework System and then the PC. As to this, please read the following chapter.
- b) Have a user with administrator rights get logged in.
- c) Perform all Windows updates.
- d) Insert the "USB stick Rework" with operating instructions and software into a USB port on the PC. Copy the whole contents of the USB stick to any folder on drive C:.
- e) Open the "Software/Driver" folder there, then the "ImagingSource Camera driver" folder. This is where the camera drivers are located.
- Double-click to install the drivers "GigEcam_Versions-Nr._setup.exe" and "setup_icapture_XXX.exe". Answer any queries with Yes. Do not change the settings.

Entering the IP address

- a) Right-click on the Windows button and select the "Network and Internet" menu item
- b) Click on the "Ethernet" field



- c) Click the "Edit" button in the "IP" range
- d) Switch on IP V4
- e) In line "IP address": 169.254.10.44
- f) In line "Subnet mask": 255.255.255.0
- g) Click the "Save" button

Configuring the "Jumbo Packet" network property

- a) Right-click on the Windows button and select the "Device Manager" menu item
- b) Open the "Network adapter" menu item
- c) Double-click on the "Ethernet adapter" menu item
- d) Select the "Advanced" tab.

If you have an Intel®-Ethernet card, scroll to the "Jumbo Packet" property. Depending on the manufacturer of the network card, the designation may vary slightly.

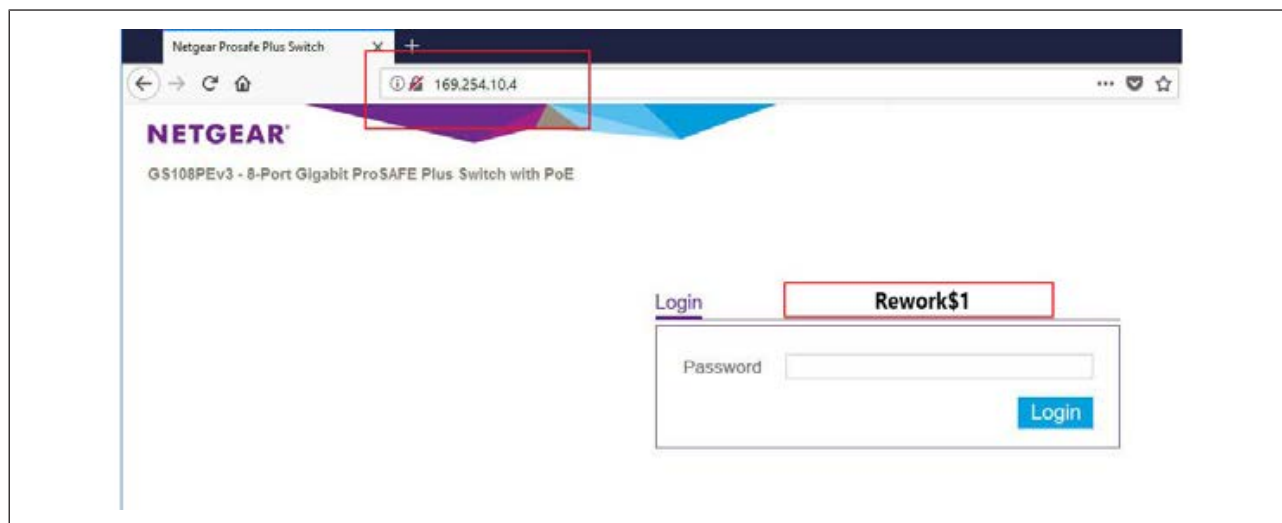
- a) Select the highest value (9014 Byte) in the "Value" menu
- b) Close all windows with "Save / OK"



5.2 Configure the Netgear switch

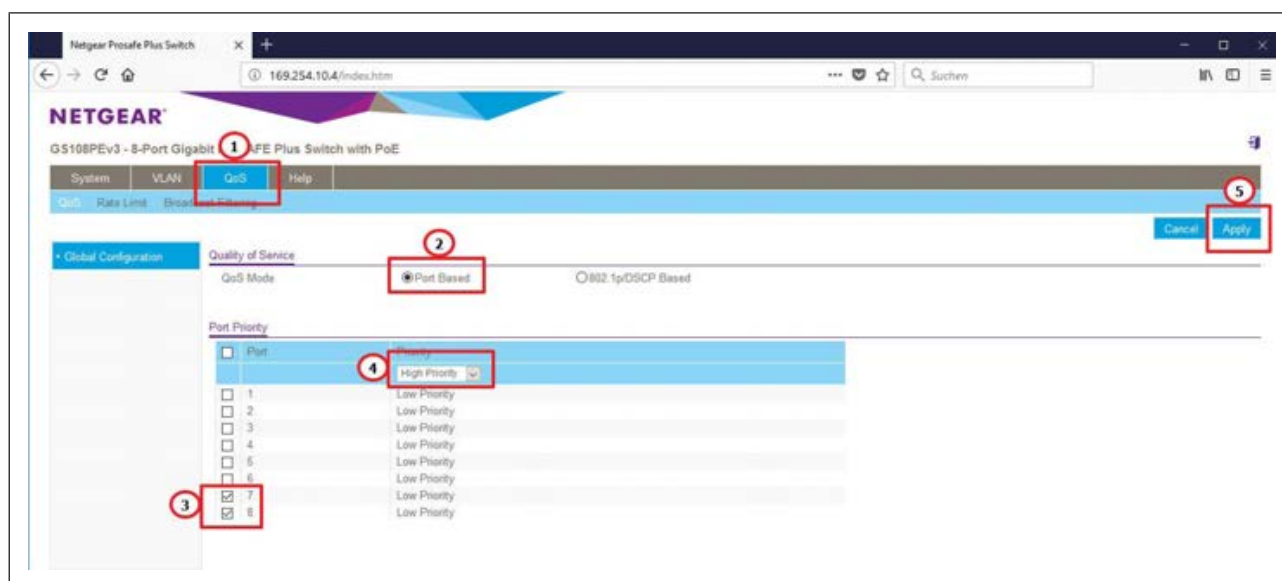
a) Open a web browser and enter the following IP address: 169.254.10.4. Press the Enter key.

⇒ The Netgear user interface appears.



b) In the "Login" window, enter "Rework\$1" and click the "Login" button.

⇒ The following dialog appears:



c) The settings must correspond to the display in the dialog:

d) Select the "QoS" tab.

e) Under "Quality of Service" select the option field "Port based".

f) Under "Port Priority" select ports 7 and 8.

g) Select "high priority" from the drop-down menu.

h) Click the "Apply" button to confirm all entries.

i) Turn the rework system off and on again.



5.3 Install the HRSoft 2 program.

- a) In the HRSoft2_xxx folder, locate the HRSoft 2 installer “setup.exe.” Open this file by double-clicking. Follow the instructions and confirm the dialogs with OK/Next.



5.4 Performing functions [Start Setup] and [Pixel Shift adjustment]

With the HRSoft 2 program you control the rework system and the rework processes. To set up the rework system, run the functions [Start device setup] and [Adjust pixel shift].

Also run the two functions [Start device setup] and [Adjust pixel shift] always by:

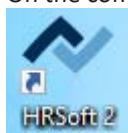
- after any new installation of the rework system
- after a new installation of HRSoft 2
- after replacing the heating head
- after the Rework System has been moved to a different location.

When you first launch HRSoft 2, you are logged in as administrator. This is required in order to execute [Start device setup] and [Adjust pixel shift].

The [Username] and also the [Password] are “Admin”, consider capitalization.

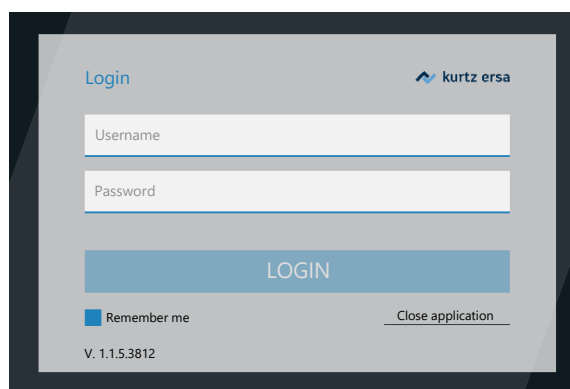
If the administrator changes [Password] or creates a new [Username], do not forget the passwords or write them down and keep them in a safe place. With regard to this, please read the chapter [The \[user management\] tabulator \[► 83\]](#) as well.

- a) On the computer desktop, double-click on the shortcut icon [HRSoft 2]



- b) In the window [Login], enter the administrator name and password.

Info: There are two categories of users: “Administrator” and “Standard user”. Depending on the user name and password entered, you will be assigned to one of these two categories. With regard to this, please read the chapter [The \[user management\] tabulator \[► 83\]](#) as well.



If you select the checkbox [Remember me], your username will already be entered the next time you log in.

- a) Confirm the entries with the Enter key or the button [LOGIN].
HRSoft 2 starts in administrator mode and opens the tab [Rework].

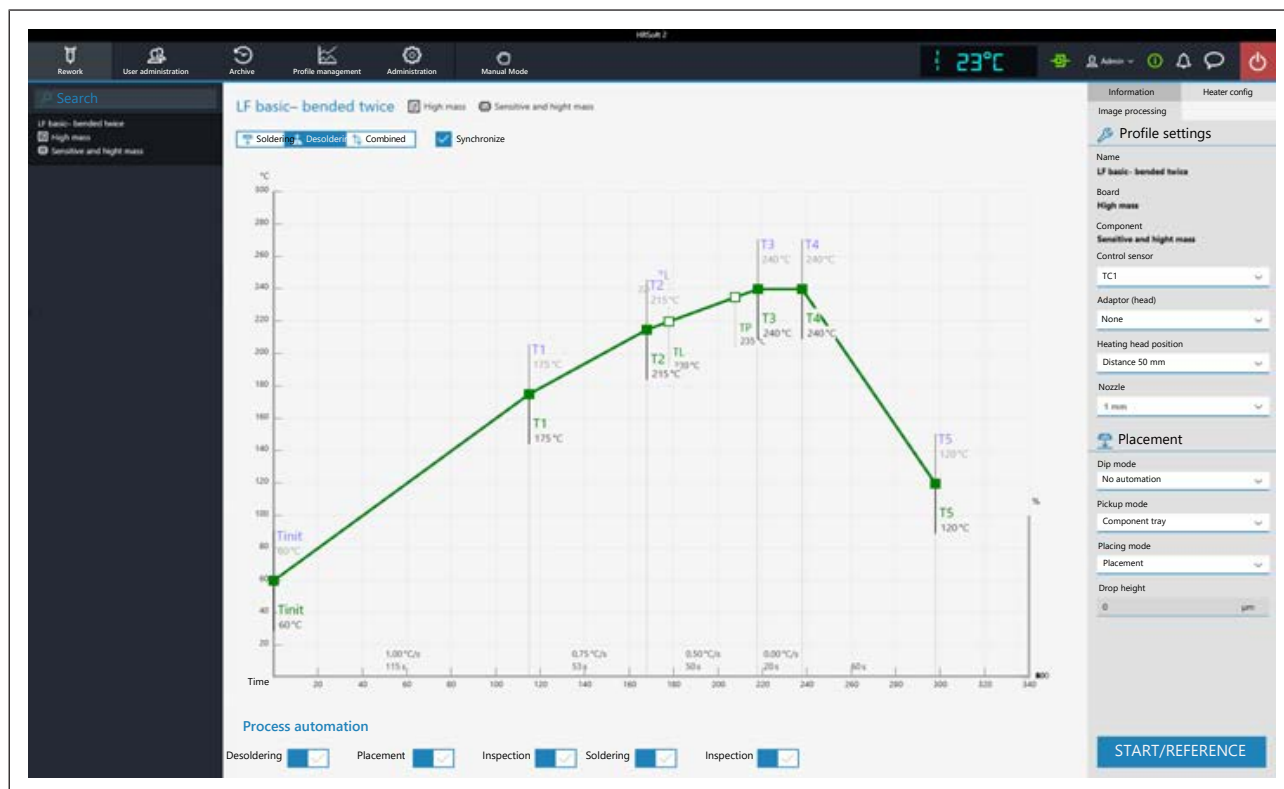


Fig. 21: Tab [Rework] in the administrator view. Example figure:

- b) In the header, select the tab [Administration].
- c) In the left menu bar, select the menu item [Device settings].

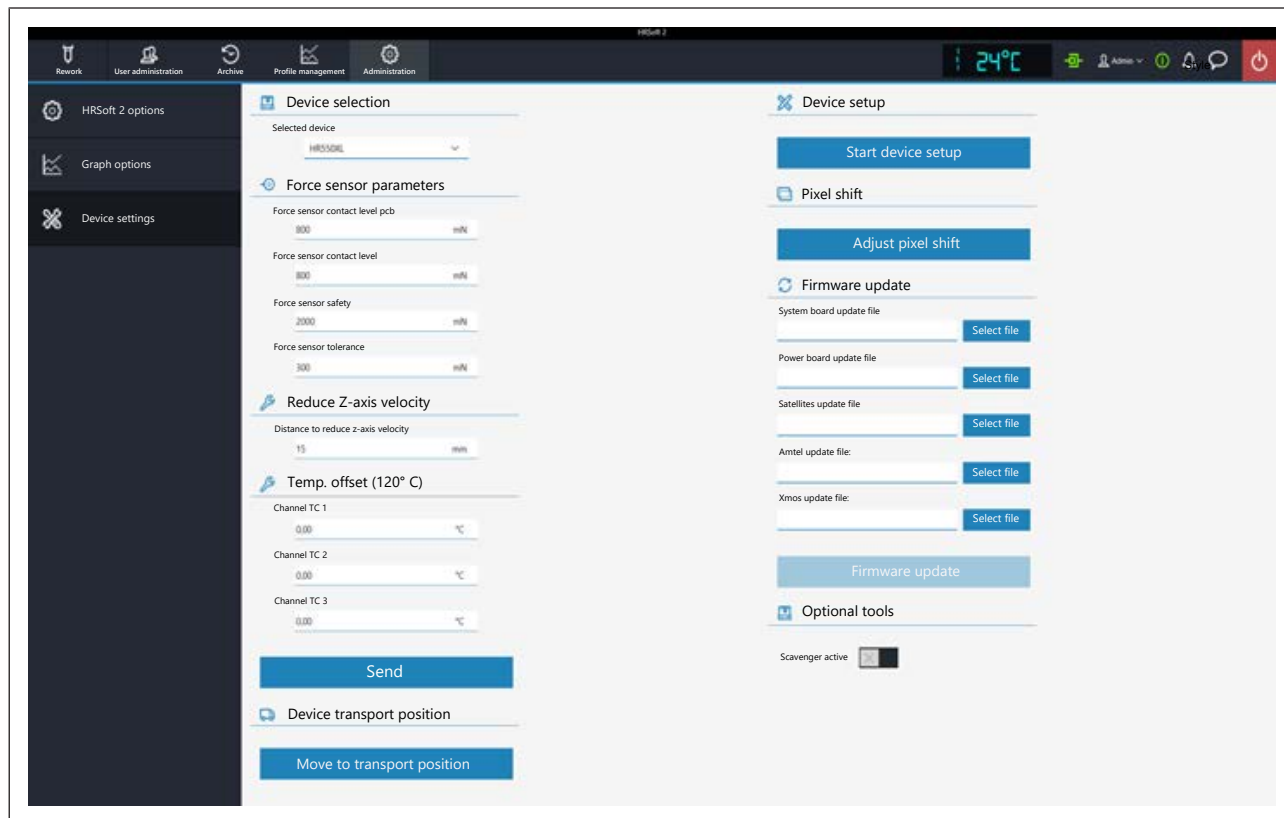


Fig. 22: Device settings

- d) Now execute the two functions in the right column. Run [Start device setup] first. Read the description [The button \[Start maintenance mode\]](#) [▶ 105].



e) Then run the function [Adjust pixel shift]. Read the description The [Pixel shift adjustment] button [▶ 109].

⇒ The process has now been successfully completed.



6 Function description

6.1	Read this first!	60
6.1.1	Target readers group	60
6.1.2	Safety instructions for certain operating phases	60
6.1.3	Supplementary documents	61
6.1.4	ESD-hazardous components	61
6.2	Overview of the machine parts	62
6.3	Switching on the Rework system and starting HRSoft 2	65
6.4	The top bar in the HRSoft 2 program	65
6.5	The Tabulator [Rework]	67
6.5.1	[Rework] tabulator overview	67
6.5.2	Use of the soldering profile in the [Rework] tabulator	69
6.5.2.1	Working with soldering profiles in the tabulator [Rework]	69
6.5.3	The parameter bar on the right-hand side with five tabs	70
6.5.3.1	The three right tabulators	70
6.5.3.2	The [Information] tabulator under the [Rework] tabulator	70
6.5.3.3	The [Heating setting] tabulator under the [Rework] tabulator	73
6.5.3.4	The tabulator with the small arrow key (Image processing) under the [Rework] tabulator	75
6.5.4	The chart in the [Rework] tabulator	77
6.5.4.1	Adjust the heating curves	77
6.5.5	The process steps of [process automation]	78
6.6	The [Archive] tabulator	80
6.6.1	The [Show chart] button	81
6.7	The [user management] tabulator	83
6.8	Acquiring, editing and saving soldering profiles in the [Profile management] tab	85
6.8.1	Overview of the [Profile management] tabulator	85
6.8.2	Create, copy, delete and save soldering profiles in the [Profile management] tabulator	86
6.8.3	The parameter bar on the right-hand side with five tabs	89
6.8.3.1	The [Information] tabulator under the [User management] tabulator	89
6.8.3.2	The [Heating setting] tabulator under the [Profile management] tabulator	92
6.8.3.3	The tab with the arrow button [More] under the [Profile management] tab	94
6.9	The chart in the [Profile management] tabulator	96
6.10	The heating curves in the chart in the [Profile Management] tab	96
6.11	The [Process automation] buttons under the [Profile management] tabulator	98
6.12	The [Administration] tab with four dialogue windows	99
6.12.1	The dialog [HRSoft 2 settings]	99
6.12.2	The [Chart settings] dialog	101
6.12.3	The [device settings] dialog	102
6.12.3.1	The button [Start maintenance mode]	105
6.12.3.2	The [Pixel shift adjustment] button	109
6.13	The [Manual Mode]	113
6.14	The display and switch row top right	115
6.15	Switching off the Rework System	117
6.16	Use the optional tape feeder	118



6.1 Read this first!

6.1.1 Target readers group

These instructions are intended for people who use, adjust, operate or service the machine.



DANGER

Personal injury or material damage due to inadequate maintenance and improper operation of the machine!

✓ Use only qualified personnel!

- a) The machine transport, assembly, connection, commissioning, operation or maintenance by people who are not sufficiently qualified and informed can cause severe damage to the machine or damage to people.
- b) Such work may therefore only be performed by properly trained personnel! This personnel must be able to recognize the hazards that can be caused by the system mechanical, electrical or electronic equipment.
- c) The people who carry out such work must know and have understood the contents of these instructions.
- d) Any person involved in the installation, commissioning, operation and/or maintenance of the machine must have read and understood the contents of the "Safety instructions" chapter, as well as the chapters which are relevant for the specific activity!

6.1.2 Safety instructions for certain operating phases



WARNING

Death or serious injury due to flammable substances! Risk of fire and explosion due to overheating!

- a) Do not leave the machine unattended when switched on!
- b) The heating of highly flammable or explosive substances is prohibited!
- c) The Rework system is not approved for operation in potentially explosive atmospheres.



DANGER

Risk of injury due to moving machine parts!

After starting automatic processes, machine parts move. No body parts or foreign objects may be present in the working area of these machine parts.

- a) Do not interfere with the movement range of the machine during automatic processes!



DANGER

Health damage due to smoke

- a) In case of smoke formation or unusual odour development, switch off the rework system immediately and ventilate the room sufficiently!
- b) The room may only be re-entered when the air is smoke-free.
- c) To avoid smoke development:
 - ⇒ Follow the operating procedure specified in the operating instructions
 - ⇒ Regularly check the rework system for damage
 - ⇒ Keep the rework system clean

6.1.3 Supplementary documents



NOTE

Supplementary documents

Additional documentation or service instructions are available for the single modules of the machine. These documents are available on data carrier [USB flash drive Re-work], which is included in the scope of delivery. Check there if you cannot find exhaustive information about a specific topic in this instruction manual.

6.1.4 ESD-hazardous components



NOTE

ESD sensitive components!

Electronic components may be damaged by electrostatic discharges. Please observe the warnings on the packaging or contact the manufacturer or supplier. To protect these components, the system should be placed in an electrostatic protected area (ESD = electrostatic discharge).

The HR 550 can be easily integrated in environments of this kind. Using one of the front buttons, the user can connect for example an ESD wristband. The housing of the HR 550 is connect via power cord to the earth wire of the supply network.

When handling the device, observe all general safety measures normally required for ESD sensitive components.



6.2 Overview of the machine parts

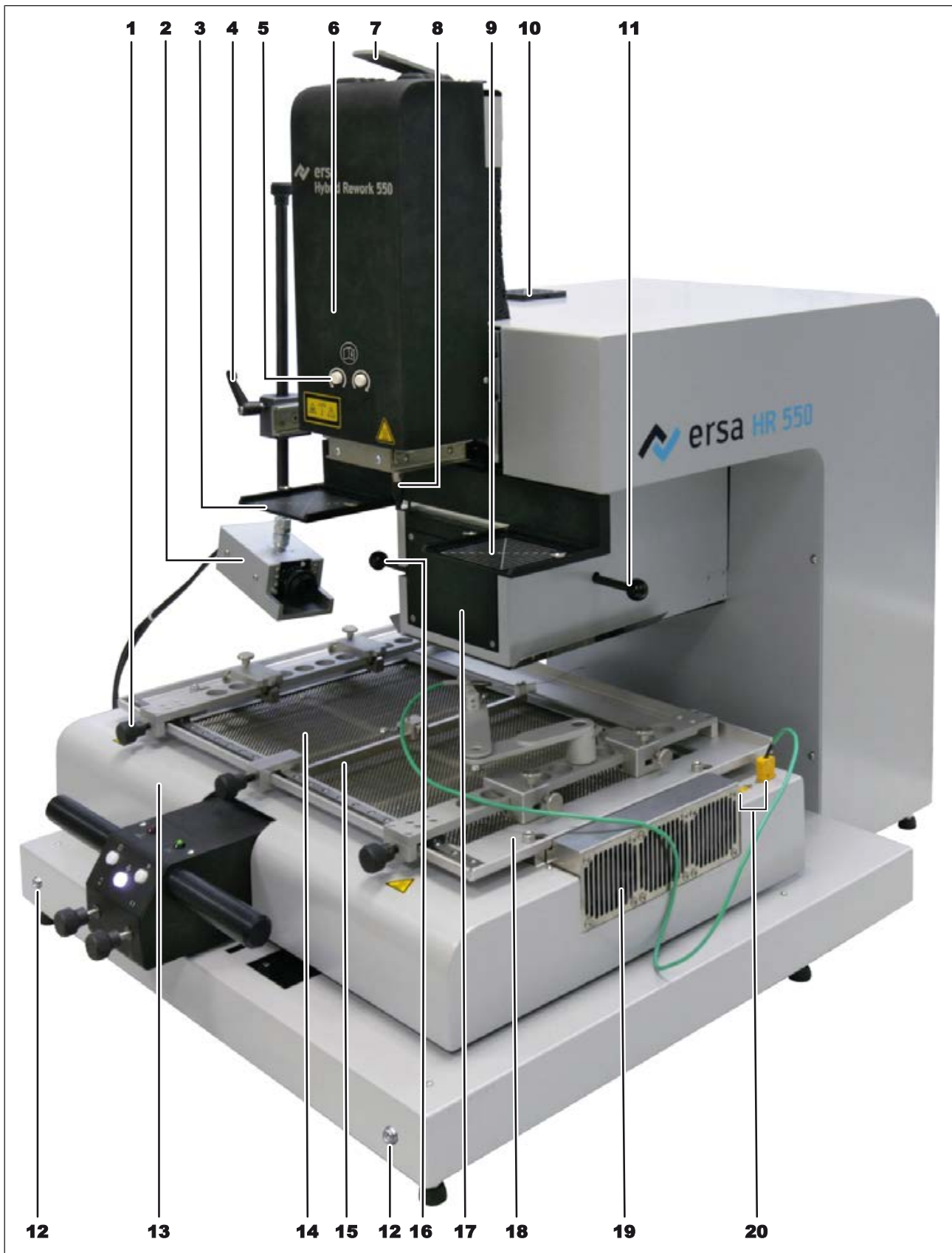


Fig. 23: Overview of the machine components



1	Locking screw of the PCB holder	11	Lever for toggling between normal view (lever out) and zoom / telephoto (lever in) in the vision box
2	RPC camera, optional. 2.3 Mpix.	12	Connections for ESD wristband
3	Left component tray, also for dip & print template	13	Cross table
4	Locking lever for component camera	14	Lower heating with 3 heating zones
5	Button for rotating the pipette (8), clockwise and counterclockwise. Rotation angle and speed can be selected using key functions.	15	PCB support
6	Heating head with motorised height adjustment	16	Lever for inserting/removing the vision box
7	Release lever for removing the heating head	17	Vision box, includes component camera and PCB camera
8	Pipette with motorised height adjustment and tactile sensor.	18	PCB holder
9	Right component tray, also for dip & print template	19	Fan for post-soldering cooling
10	Cooling blower with service hatch for biannual lubrication	20	Connection sockets for thermocouples 1 and 2

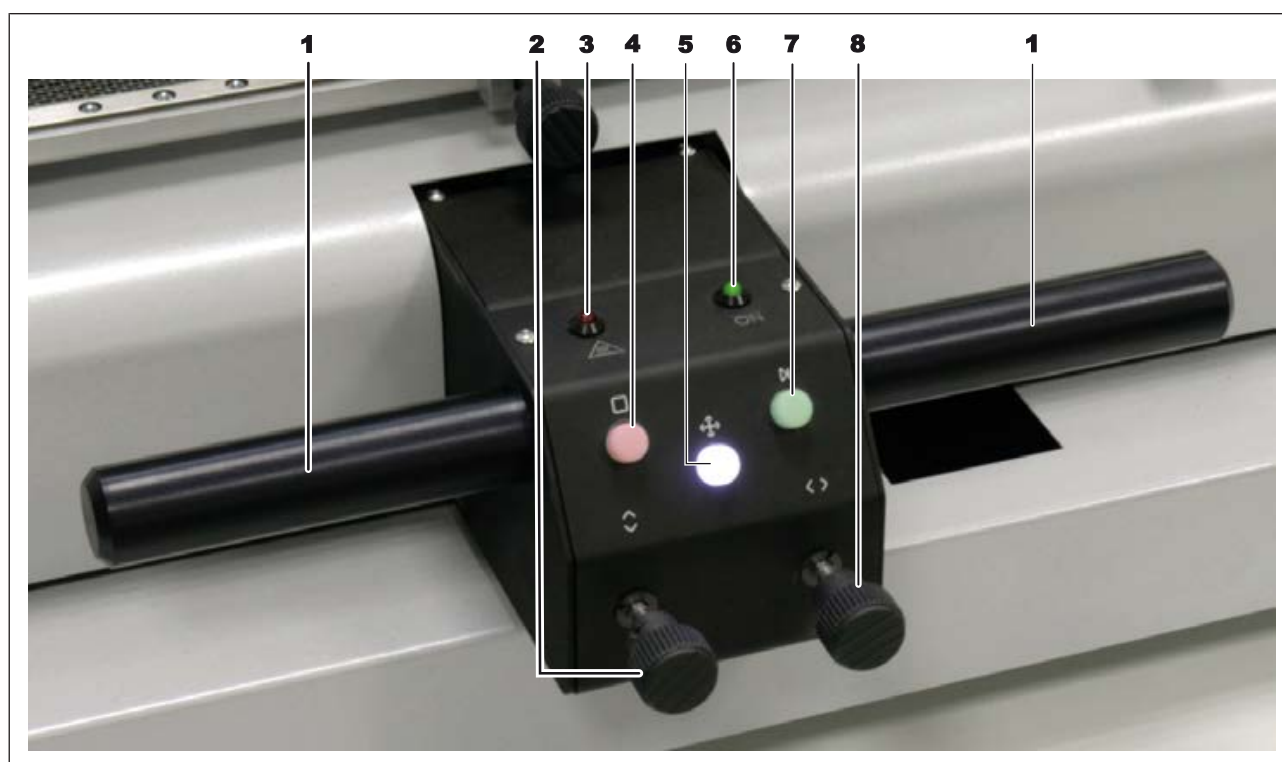


Fig. 24: Control panel

1	Handles for shifting the cross table in case the unlock button is used (No. 5).	5	White illuminated unlock button for releasing the cross table. If held down it allows the user to position the PCB quickly.
2	Adjusting screws for positioning the board with high precision in Y direction.	6	The green light signals that the machine is on.
3	Red warning light: Caution, hot machine parts! It remains on even with machine switched off.	7	Green next button. To move to the next task.
4	Red cancel button to stop the task immediately.	8	Adjusting screws for positioning the board with high precision in X direction.



⚠ WARNING

Risk of fire or damage to machine parts or the PCB due to components and PCBs being heated!

- a) Do not leave the machine unattended when switched on!



⚠ CAUTION

Risk of burning due to heated machine parts and PCB!

All heated machine parts as well as the surrounding housing parts and product support frame, the circuit board and the components become hot even during warm-up to the process temperature [Tinit]!

Parts are particularly hot during the soldering process! After the soldering process, wait until the device and the PCB have cooled down and reached non-hazardous temperatures!



⚠ DANGER

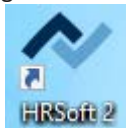
Laser beam! Risk of injury due to retinal burns

- a) Do not stare into the laser beam!
- b) Do not point the laser beam at other people! Reflecting surfaces under the laser generate reflections!
- c) Class 2 laser according to DIN EN 60825-1:2008-5, $P < 1 \text{ mW}$, $\lambda = 650 \text{ nm}$



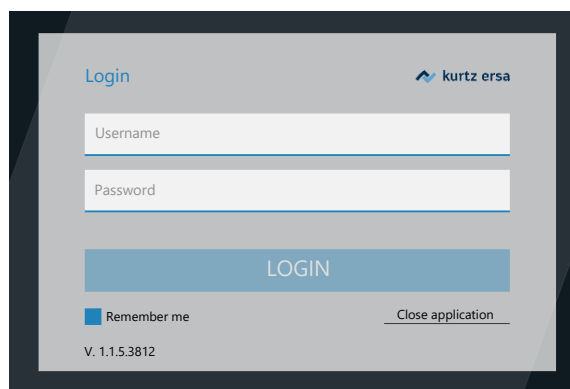
6.3 Switching on the Rework system and starting HRSoft 2

- ✓ To switch HR 550 on, proceed as follows:
 - a) Switch on the PC
 - b) Use the main switch to switch on the HR 550 unit
 - c) Start program HRSoft 2 on the PC. To do so, click on link [HRSoft 2] on the



desktop.

- d) Window [Login] will be displayed on the computer monitor.



- e) Enter your Username and Password into the edit fields and press the enter key. If you highlight the [Remember me] button, your Username will be already recorded the next time you log in.
 - ⇒ The HRSoft 2 program will open in tab [Rework] and, depending on the password level, in mode [Administrator] or [Standard user].
 - ⇒ If the network connection icon next to the temperature display turns green, the connection between the rework system and the PC is established.



6.4 The top bar in the HRSoft 2 program

All the functions of the HRSoft 2 program can be accessed via the top bar. On the left are the tabs for operating the Rework system, on the right the higher-level buttons and displays.



- Tab [Rework]:
This is where the Rework processes are carried out. Changes to the specified soldering profiles are possible here, but cannot be saved. Standard users can only use the default soldering profiles but cannot edit them. Almost identical structure as Tab [Profile management]. As to this, please read Chapter Overview of the tab [Rework].



- Tab [User administration]:
Create, edit, save or delete users with their user rights. Only visible to users with administrator rights. As to this, please read Chapter [The \[user management\] tabulator](#) [► 83].
- Tab [Archive]:
Display the Rework processes carried out for analysis. As to this, please read Chapter [The \[Archive\] tabulator](#).
- Tab [Profile management]:
Create, change, copy, save and delete soldering profiles. Almost identical structure as Tab [Rework], but with all rights to manage the soldering profiles. Not visible to standard users. As to this, please read Chapter [Overview of the \[Profile management\] tab](#).
- Tab [Administration]:
Defining the program parameters of HRSoft 2 (e.g. system language, database, etc.), chart display (e.g. colour display), program management (e.g. updates), device settings (contact force, temperature offset, device set-up and adjustment) and firmware updates. Not visible to standard users. Power users only have access to some functions in the dialog [Device settings].
- Tab [Manual mode]:
Show the button bar [Manual mode], only visible in tab [Rework]. ReworkWith the 0582 buttons, you can move the heating head and the pipette at any time, and switch on/off the Rework System functions that can be manually controlled (e.g. motor movements, cooling, etc.). Standard users have a limited range of functions. As to this, please read Chapter [The \[Manual Mode\]](#).
- Display and button row on the right:
Temperature display, network display, user name and system state. As to this, please read Chapter [The display and switch row top right](#) [► 115].



6.5 The Tabulator [Rework]

6.5.1 [Rework] tabulator overview

After HRSoft 2 is started, the tabulator [Rework] appears. In the dialog [Rework] you can start and carry out the soldering processes. This dialog is divided into the following areas:

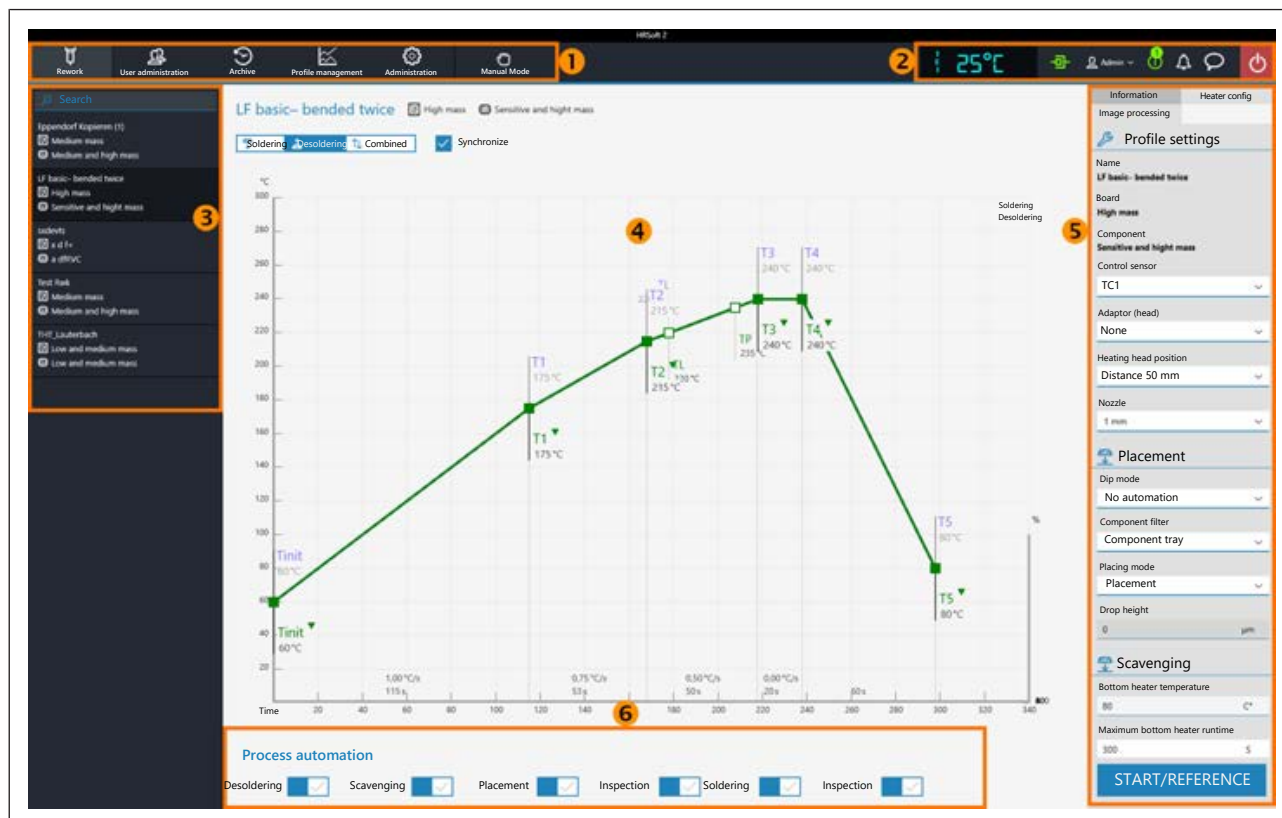


Fig. 25: Areas in the tabulator Rework

1	Tabulator bar. To recall the tabulators and the [Manual mode]	2	Displays and buttons for recalling the dialogs, from the left to the right: – Display of the temperature of the relevant temperature sensor – Display icon green = Network connection active; red = No connection – Button “User name” for changing user – Button for recalling the [System state] – Button for closing HRSoft 2. For more information, please read the chapter The display and switch row top right [115] .
3	Selecting a soldering profile. Search by profile name possible. Switch to tab [Profile management] to create and save soldering profiles. For more information, please read the chapter Create, copy, delete and save soldering profiles in the [Profile management] tabulator [86] .	4	Chart with soldering curves. Display of the soldering process with soldering curves for soldering and unsoldering. If any changes are made here to the soldering process, these will be applied but not saved. If you pass from the tabulator [Rework] to a different one, all changes to the soldering profile will be lost. For more information, please read the chapter The chart in the [Rework] tabulator [77] .



5	Parameter bar with tabs [Information] and [Heater config] and small arrow key to open the dialog [Image processing]. The rework process may be started only here, with the button [Start]. For more information, please read the chapter <u>The parameter bar on the right-hand side with five tabs</u> [► 70].	6	Workflow bar for determining the process steps (from the left to the right). If any changes are made here to the process, these will be applied but not saved. If you pass from the tabulator [Rework] to a different one, all changes to the soldering profile will be lost. As to this, please read Chapter <u>The process steps of [process automation]</u> [► 78].
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You also have access to the tabs [Archive], [User administration], [Profile management], [Administration] and the button [Manual mode].

The functions of the tab [Rework] largely correspond to those of the tabulator [Profile management]. For the description of the tab [Profile management] read the chapter Acquiring, editing and saving soldering profiles in the [Profile management] tab [► 85].

Only a user logged in as “Administrator” may access all functions. If you are logged in as “standard user”, you cannot save the changes nor view the tab [Profile management].

The tab [Rework] also contains the button [Start/Reference], which starts the rework process. With respect to this, please read also the chapter Tutorial – Soldering or unsoldering a component [► 121].

The functions of the tab [Rework] are described in detail in the following chapter.



6.5.2 Use of the soldering profile in the [Rework] tabulator

A soldering profile (4) is a file in which the whole soldering process is saved along with the relevant parameter settings. In the tabulator [Profile management] you may create, edit, copy, delete and save new soldering profiles.

The soldering parameters and other specifications may also be edited and the used in this dialog [Rework]. But here such changes cannot be saved. To permanently create, edit, copy, delete and save a lot profile you have to go to the tab [Profile management].

The soldering processes are always started in the [Rework].

6.5.2.1 Working with soldering profiles in the tabulator [Rework]

In the Soldering Profile Selection (4) range, select a soldering profile from the list of saved soldering profiles. Use input field [Search] to search in the soldering profile names. The soldering profiles are created, changed, and saved in tab [Profile management].

The work steps for this soldering profile are displayed under the chart in range [Process automation]. In the chart range (5), you can set the time and temperature curve for soldering or desoldering. All parameters of the soldering profile can be changed in the parameter bar (6). Changes in tab [Rework] cannot be saved.

Soldering profiles can be created and changed permanently by the administrator in tab [Profile management].



6.5.3 The parameter bar on the right-hand side with five tabs

All specific parameters of the Rework process are set in the tabs of the parameter bar on the right-hand side. The functions in tab [Rework] correspond to the five tabs of the parameter bar in tab [Profile management], with the following exceptions:

- Each of the tabs under [Rework] contains button [START/REFERENCE].
Make sure that all settings are correct before starting the Rework process. The implementation of the Rework process is described as an example in Chapter "[Tutorial – Soldering or unsoldering a component](#) [[▶ 121](#)]".
- Use tab [Image processing] to set the [Pindetection camera light intensity].
Use tab [Profile management], this tab bears the [More] designation and offers the opportunity to import additional information, such as an image and text.
Under [More], users can also be assigned to soldering profiles.

Changes in tab [Rework] are accepted, but cannot be saved. If you leave this tab, all changes will be lost. The soldering profiles are determined in tab [Profile management].

6.5.3.1 The three right tabulators

The field (5) on the right contains the two [Information] and [Heater config] tabs as well as a small arrow button to open the [Image processing] tab.

Select the [Information] tab if you want to make changes to the soldering profile parameters. With regard to this, please also read Chapter [The \[Information\] tabulator under the \[Rework\] tabulator](#) [[▶ 70](#)]).

Select the [Heater config] tab if you want to make changes to the heaters. With regard to this, please also read Chapter [The \[Heating setting\] tabulator under the \[Rework\] tabulator](#) [[▶ 73](#)].

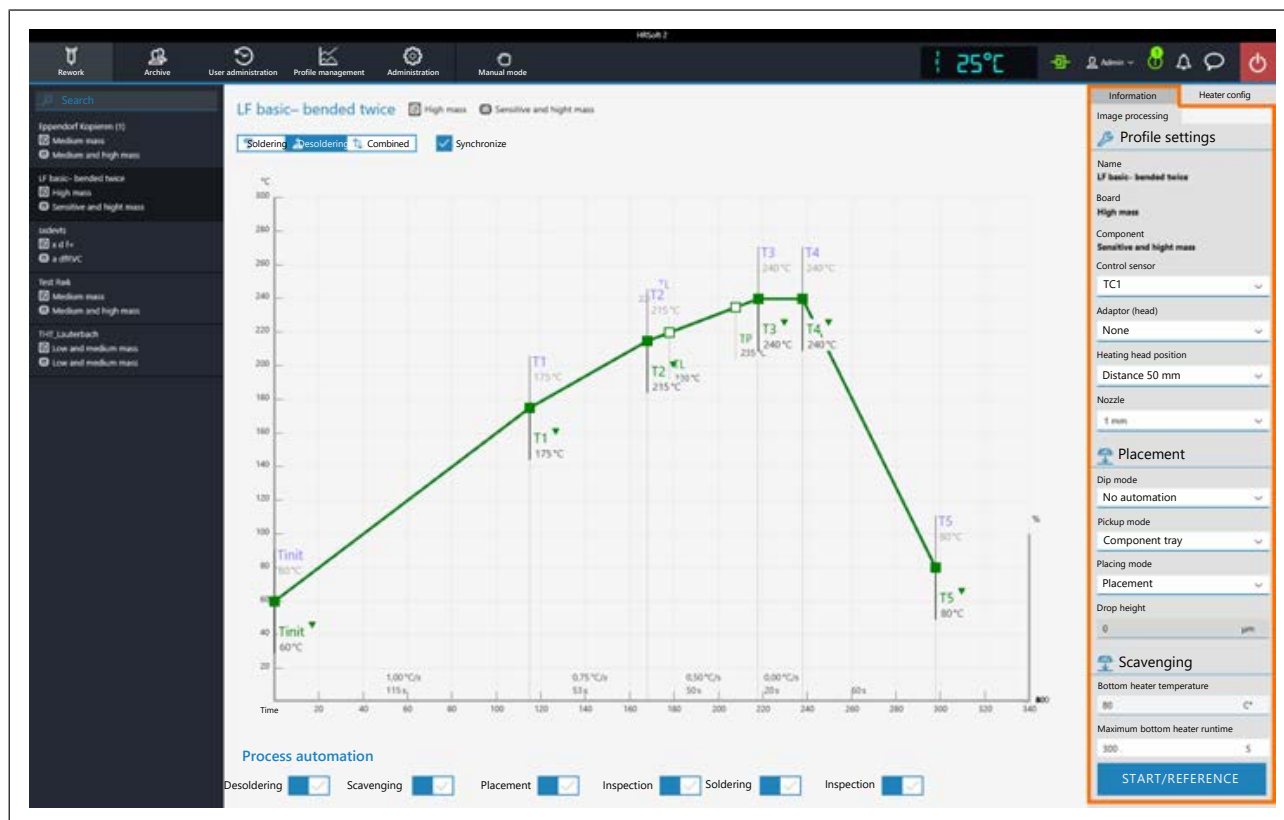
Click on the small arrow button on the right if you want to make image processing changes. With regard to this, please also read Chapter [The tabulator with the small arrow key \(Image processing\) under the \[Rework\] tabulator](#) [[▶ 75](#)].

6.5.3.2 The [Information] tabulator under the [Rework] tabulator

In this tab, the soldering profile is selected and the rework process is started.

The heating curves in the centre of the screen may be changed. For more information, please read also the chapter [The chart in the \[Rework\] tabulator](#) [[▶ 77](#)]. The buttons in the line [Process automation] (6) can also be changed at any time. Please also read the chapter [The process steps of \[process automation\]](#) [[▶ 78](#)]. With these buttons you can activate or deactivate process steps.

The following applies to all changes made in tabulator[Rework]: the changes are applied but cannot be saved. If you switch from tabulator [Rework] to another, all changes will be lost.



The parameters in tabulator [Information]

In the range [Profile settings]

The parameters are set in the tab [Profile management]. The following parameters may be edited here in the tab [Information] :

- [Control sensor]: Selection of the temperature sensor that controls the soldering process based on its temperature measurements. IRS [IRS] (infrared sensor), [TC1] (thermocouple 1) or [TC2]. The currently measured temperature of the selected sensor is displayed in area (2). The IRS is not suitable for shiny or reflecting surfaces, nor in case of very small boards.
- [Adaptor (head)]: adapter used (air baffle). No function; used only for saving information.
- [Heating head position]: Determine soldering distance from the PCB, from 30 mm to 70 mm.



NOTE

Hazard of material damage! Do not lift the heating head by hand!

- Always adjust the heating head to the desired height using the motorized height adjustment!

- [Lens]: Objective used. No function; used only for saving information.
- [pipette]: Pipette used. No function; used only for saving information.

In the range [Placement]:

- [Dip mode]: You may choose among three soldering methods:
 - [No automation]: Normal soldering, without flux material dip and without using a component coated with flux. The component is picked from the component tray, aligned and put in soldering position.



- [Auto. Dip]: The dip template prepared with flux material must be placed on a component tray. The component is lifted from the other component tray and dipped in the flux material of the dip template, aligned and put in soldering position.
- [Auto. Print]: The print template prepared with the component coated with flux must be placed on a component tray. The component is picked from the print template, aligned and put in soldering position.
- [Placing mode]: For soldering. [Placement]: The component is deposited with the aid of the contact sensor, or [Drop]: The component on the PCB is discarded.
- [Drop height]: For soldering. Height over the PCB at which the component on the PCB is discarded. Can only be changed if parameter [Drop] is selected.

In the range [Scavenging]:

Parameters for the optional residual solder extraction. Also read the operating instructions of the residual solder extraction. Only operate the solder residue extraction system if all instructions in the operating manual are observed! The optional residual solder extraction must first be integrated with the function [Scavenger active] in dialogue [Device settings] under the tab [Administration] into the rework program HRSoft 2. This activates the display of the work step [Scavenging], for using the residual solder extraction after the work step [Desoldering]. As to this, please read Chapter [The process steps of \[process automation\]](#) [► 78].

The button [Scavenging] activates the display of the area [Scavenging].

The parameter settings for cleaning can be defined, like all other parameters, under the tab [Profile management] and saved in the soldering profile. For more information, please read the chapter [The \[Information\] tabulator under the \[User management\] tabulator](#) [► 89].

- a) Activate the area [Scavenging] when using the optional residual solder extraction Scavenger with the button of the work step [Scavenging].
- [Bottom heater temperature]: Temperature maintained by the bottom heater during cleaning.
- [Placing mode]: Maximum heating time of the bottom heater during cleaning. For safety reasons, the bottom heating switches off after this time, even if the swivel arm of the residual solder extraction is not swung back into the basic position.

Start the rework process or perform a reference run

At the bottom right is the button [Start/Reference], which starts the rework process. Ensure that you have made all the settings correctly and selected the desired work steps before starting the rework process. The implementation of a soldering process is shown as an example in the chapter [Tutorial – Soldering or unsoldering a component](#) [► 121] described.

If you only want to perform a reference run of the rework system, any work step must be selected. Click [Start/Reference] and cancel the process after completing the reference run.

The correct soldering profile settings should first be set in the tab [Profile management] and then saved as a soldering profile. Only possible as user “Administrator”. For more information, please read the chapter [The \[Information\] tabulator under the \[User management\] tabulator](#) [► 89].

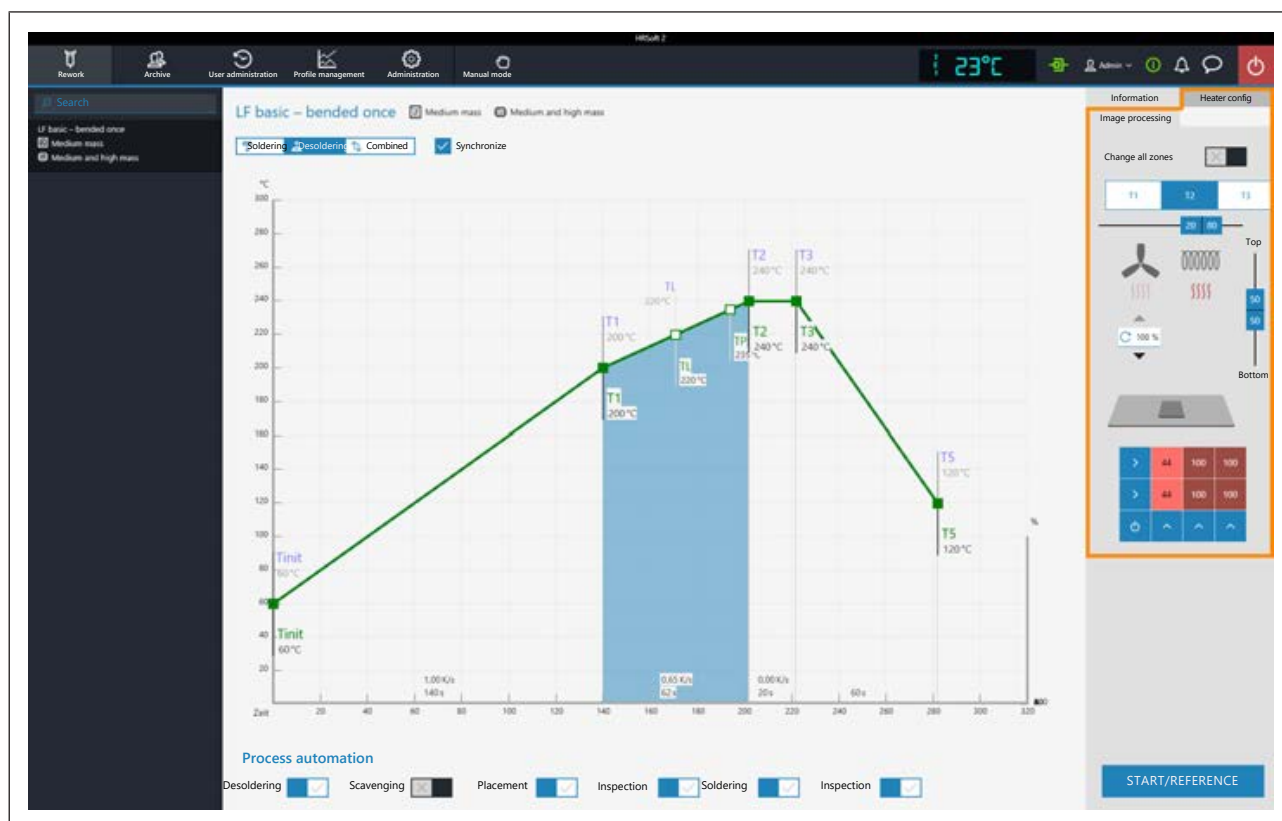


6.5.3.3 The [Heating setting] tabulator under the [Rework] tabulator

When tabulator [Heater config] is selected, the chart (4) with the heating curves is displayed in the centre of the screen, with the row of buttons for [Process automation] (6) displayed below it.

The heating curves in the centre of the screen may be changed. For more information, please read the chapter [The chart in the \[Rework\] tabulator](#) [▶ 77]. You can change at any time the buttons in the line [Process automation] (6) at the bottom. Please also read the chapter [The process steps of \[process automation\]](#) [▶ 78]. With these buttons you can activate or deactivate process steps.

The following applies to all changes made in tabulator[Rework]: the changes are applied but cannot be saved. If you switch from tabulator [Rework] to another, all changes will be lost.



If you want to change the heating settings defined in the soldering profile, you must choose the [Combined] and use the buttons [Soldering] or [Desoldering]. Buttons [Soldering] or [Desoldering] may each contain their own heating curve, including detailed heating settings, or the heating curve can be identical for both soldering processes when button [Synchronize] is selected. The button [Synchronize] adjusts the unsoldering heating curve to the soldering heating curve. The heating settings displayed are valid for the selected soldering curve.

The parameters in tabulator [Heater config]

[Change all zones]: If this button is selected, all heating phases [Tinit] up to T4 in tab [Heater config] and in the chart (4) will be displayed in blue. The parameters in the tab [Heater config] now apply to all heating phases. The button [Change all zones] is deselected, you can assign different heating parameters to each of the four heating phases.

The following parameters may be edited here in the tab [Heater config] :



- Buttons T1 – T4: Selecting the heating phase to define the corresponding heating parameter. In order to select the relevant button, you may click on the heating phase in the chart.
- Horizontal controller: Distribution of the upper heating in % between hot-air heating (fan symbol) and infrared heating (heating element symbol). Infrared heating is not suitable for heating shiny surfaces.
- Input field with round arrow under the fan logo: hot-air blower speed. Configure the blower speed with the small triangle-shaped buttons or select the blower value and overwrite it. 100 % = maximum blower speed. A higher blower value results in a somewhat reduced energy of the hot air.
- Vertical controller (top - bottom): Upper/lower heating performance ratio expressed as a percentage. Adjust the performance ratio according to the heat requirements of your soldering process.
- Three input fields (%) lower heating: The lower heating is divided into three areas, i.e. left, centre and right. Configure the area based on the heat requirements with the small triangle-shaped buttons under the input field or select the heat value and overwrite it. In case of large PCBs, make sure that the entire board is heated, so as to avoid delays.

Please remember that the components should not be heated as quickly as possible: in fact, only a slow heating process can ensure an even temperature distribution. This will ensure a safe process.

At the bottom right is the button [Start] which starts the rework process. Before starting the rework process, make sure that all settings are correct. The implementation of a soldering process is shown as an example in the chapter [Tutorial – Soldering or unsoldering a component](#) [► 121] described.

The correct soldering profile settings should be defined beforehand in tabulator [Profile management]. Only possible as user “Administrator”. For more information, please read the chapter [The \[Heating setting\] tabulator under the \[Rework\] tabulator](#) [► 73].

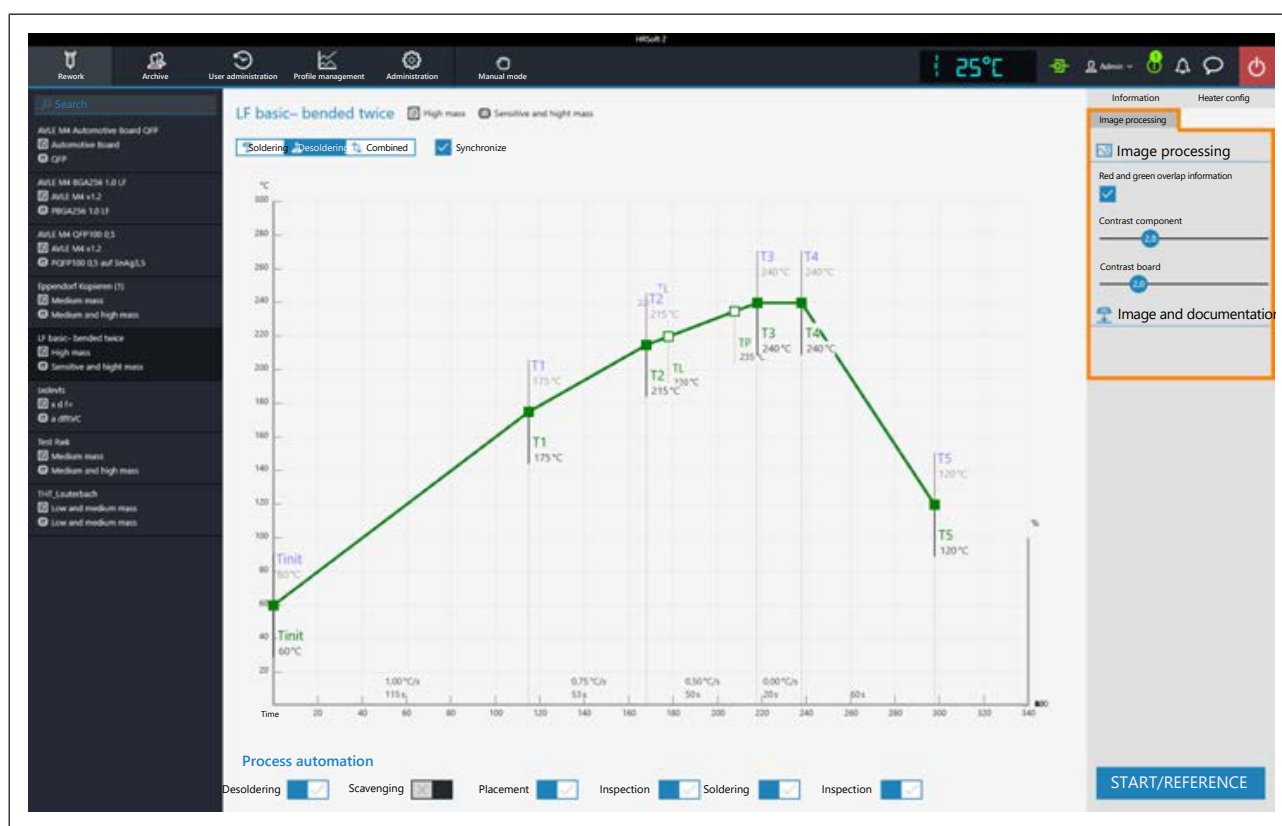


6.5.3.4 The tabulator with the small arrow key (Image processing) under the [Rework] tabulator

If you click on the arrow key, the button [Image processing] will be displayed. Click on this button to open the tab [Image processing]. Here, the chart (4) with the heating curves is displayed in the centre of the screen, with the row of buttons for the [Process automation] (6) displayed below it.

The heating curves in the centre of the screen may be changed. For more information, please read the chapter [The chart in the \[Rework\] tabulator](#) [77]. The buttons in the line [Process automation] (6) can also be changed at any time. Please also read the chapter [The process steps of \[process automation\]](#) [78]. With these buttons you can activate or deactivate process steps.

The following applies to all changes made in tabulator[Rework]: the changes are applied but cannot be saved. If you switch from tabulator [Rework] to another, all changes will be lost.



The parameters in tabulator [Image processing]

[Red and green overlap information]: If activated, in the camera overlay image the board will be displayed in green and the component in red. The parts of the two overlapping image planes (board and component) will be displayed in blue. If deactivated, the camera image will be displayed in grey.

[Contrast component]: If the button [Red and green overlap information] is activated, you can adjust the contrast value for the component displayed in red.

[Contrast board]: If the button [Red and green overlap information] button is activated, you can adjust the contrast value for the board displayed in green.

At the bottom right is the button [Start], which starts the rework process. Before starting the rework process, make sure that all settings are correct. The implementation of a soldering process is shown as an example in the chapter [Tutorial – Soldering or unsoldering a component](#) [121] described.



The correct soldering profile settings should be defined beforehand in tabulator [Profile management]. Only possible as user “Administrator”. For more information, please read the chapter The tab with the arrow button [More] under the [Profile management] tab [► 94].



6.5.4 The chart in the [Rework] tabulator

When calling up tab [Profile settings], chart (4) with the heating curves will be displayed in the middle of the screen and, below, the button row for the [Process automation] (6). The heating curves and the button for [Process automation] can be changed here.

For all changes that are made in tab [Rework], the following applies: changes are accepted but cannot be saved. If you switch from tab [Rework] to another tab, all changes will be lost.



The following buttons are available:

- [Soldering]: The soldering blue heating curve is highlighted in the chart. The soldering blue heating curve can be changed and tab [Heater config] can be set for soldering.
- [Desoldering]: the desoldering green heating curve will be highlighted in the chart. The desoldering red heating curve can be changed and tab [Heater config] can be set for desoldering.
- [Combined]: The heating curves of the soldering and desoldering temperature are highlighted in the chart. The complete soldering process is displayed. The heating curves cannot be changed and tab [Heater config] is inaccessible. If you want to change the heating settings specified in the soldering profile, deselect button [Combined] and, instead, select buttons [Soldering] or [Desoldering].
- [Synchronize]: changes the desoldering heating curve into the soldering one. Both heating curves will be congruent. In this condition, the changes made to the chart and heater settings will affect both heating curves.

6.5.4.1 Adjust the heating curves

- Change temperature and heat phase duration at the same time:
Click on one of the points [Tinit], T1, T2... on the heating curve and hold the mouse button down until the temperature indicated there is displayed in bold. Now move the point by holding down the mouse button.



- Change the temperature:
At the point you want to change, click on the temperature displayed there. Enter the desired temperature or use the keys “Arrow up” and “Arrow down” in order to change the temperature value.
- Change the heating output:
Click on the value of the heating output (°C/s) that you want to change in the heating phase. Enter the desired value. The maximum heating power is 2.5 K/s (2.5 °C/s).
You can switch the displayed unit of heating power between K/s and °C/s in tabulator [Administration].
- Change the heating phase duration:
Click on the value of the time (s) to be changed in the heating phase. Enter the desired duration (in seconds) or use the ‘Up Arrow’ and ‘Down Arrow’ buttons to change the duration.
- Change [TP (°C)] (pipette temperature):
Click the temperature value of [TP (°C)]. Enter the desired temperature to start pipette lifting or use the up and down arrow keys to [TP (°C)] to change.
- Change [TL (°C)] (liquid temperature):
Click the temperature value of [TL (°C)]. Enter the liquidus temperature or use the up and down arrow keys to change the number [TL (°C)].

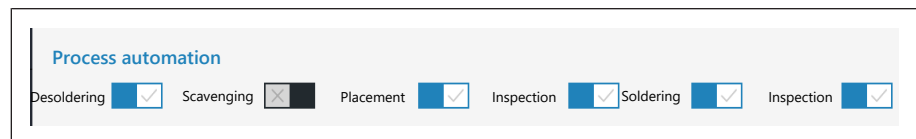
Please remember that the components should not be heated as quickly as possible: in fact, only a slower heating process can ensure an even temperature distribution. This will ensure a safe process.

At the bottom right is the button [START/REFERENCE], which starts the rework process. Before starting the rework process, make sure that all settings are correct. The implementation of a soldering process is shown as an example in the chapter Tutorial – Soldering or desoldering a component described.

The correct soldering profile settings should be defined beforehand in tabulator [Profile management]. Only possible as user “Administrator”. For more information, please read the chapter The heating curves in the chart in the [Profile Management] tab [96].

6.5.5 The process steps of [process automation]

Under the chart is the [Process automation] range of buttons.



These buttons activate or deactivate the process steps. The process sequence starts on the left and carries out the selected process steps to the right.

- [Desoldering]: desoldering a component.
- [Scavenging]: Enable/disable the [Scavenging]. Only use this button when using the optional Scavenger SC 600 residual solder sucker. The option can be enabled in the [Device settings] dialog under the [Administration] tab. Use tab [Information] under [Rework] to set the cleaning parameters.
As to this, please also read the operating instructions for the residual solder sucker SC 600 Scavenger.
- [Placement]: placing a component in the soldering position. Place the component on the component tray.
- [Inspection]: checking the position of the arranged component with the Rework System optical instruments.



- [Soldering]: soldering a positioned component.
- [Inspection]: Final check of the soldering result with the optical instruments of the Rework System.

How to perform a soldering process is exemplified in Chapter Tutorial – Soldering or desoldering a component .

The correct soldering profile settings are to be determined under [Profile management]. This is only possible as an "administrator" or "power user".



6.6 The [Archive] tabulator

All started as well as aborted processes are saved in the archive as graphical charts with all set soldering parameters. These processes are listed in tab [Archive].

Tracking ID	Date	User	Profile name	Board	Component
	12/13/2016 3:28:00 PM	Admin	Test 4	Low and medium mass	Low and medium mass
	12/12/2016 1:45:37 PM	Admin	Test 4	Low and medium mass	Low and medium mass
	12/12/2016 1:40:09 PM	Admin	Test 4	Low and medium mass	Low and medium mass
	12/12/2016 12:36:02 PM	Admin	Test 4	Low and medium mass	Low and medium mass
	12/12/2016 12:30:12 PM	Admin	Test 4	Low and medium mass	Low and medium mass
	12/12/2016 11:43:47 AM	Admin	Test 4	Low and medium mass	Low and medium mass
	12/12/2016 11:35:52 AM	Admin	Test 4	Low and medium mass	Low and medium mass
	12/12/2016 11:34:54 AM	Admin	Test 4	Low and medium mass	Low and medium mass
	12/12/2016 11:29:51 AM	Admin	Test 4	Low and medium mass	Low and medium mass
	12/12/2016 11:15:26 AM	Admin	Test 4	Low and medium mass	Low and medium mass
	12/12/2016 11:12:27 AM	Admin	Test 4	Low and medium mass	Low and medium mass
	12/12/2016 11:10:46 AM	Admin	Test 4	Low and medium mass	Low and medium mass
	12/12/2016 11:06:58 AM	Admin	Test 4	Low and medium mass	Low and medium mass
	12/12/2016 10:55:04 AM	Admin	Test 4	Low and medium mass	Low and medium mass
	12/12/2016 10:47:05 AM	Admin	Test 4	Low and medium mass	Low and medium mass
	12/12/2016 10:42:52 AM	Admin	Test 4	Low and medium mass	Low and medium mass
	12/12/2016 10:39:59 AM	Admin	Test 4	Low and medium mass	Low and medium mass
	12/12/2016 10:34:29 AM	Admin	Test 4	Low and medium mass	Low and medium mass

Process automation

Desoldering ☐ Placement ☐ Inspection ☐ Soldering ☐ Inspection ☐

Profile Init Temp (°C)
80

Max Temperature (°C)
200

TL (°C)
217

TP (°C)
190

Lens
Lens25X33

pipette
Pipette1

In table [Archive], click on a process record to display the soldering profile details and the corresponding chart. The graphical elements of the chart can be exported as image files. The following functions are available in the [Archive]:

- [Search]: Search for letter sequences within the whole table contents. The search will automatically start after entering the first character.
- Button [View chart]: The highlighted chart will be displayed. For more information, see below in Chapter [View chart]. Charts that have no temperature record cannot be displayed.
- [from:]/[to:]: filtering processes by date.

The greyed-out column on the right shows further details of the highlighted process:

- [Profil Init Temp (°C)]: Temperature from which the process record begins.
- [Max Temperature (°C)]: Highest measured temperature in the soldering process.
- [TL (°C)]: Liquidus temperature entered for the process. No function, freely adjustable in the chart.
- [TP (°C)]: Only when desoldering. Pipette temperature at which the pipette moves to the component to lift it.
- [Lens]: Lens used in the process. Without function, can be freely adjusted in the chart.
- [pipette]: Pipette specified in the process. Without function, can be freely adjusted in the chart.

Range [Process automation] under the table shows the process steps adopted.



6.6.1 The [Show chart] button

The archived chart of the highlighted soldering process can be called up via the [View chart] button.



Fig. 26: Example for a chart

[Soldering] or [Desoldering]: Indicates whether the chart represents the soldering or desoldering process. If both methods were used in the process, these buttons can be used to change the view.

[CSV export]: Exports the recorded soldering profile data in the data format *.zip. This ZIP file contains extensive data in three data formats:

- In *.PDF format. This PDF file is displayed on screen immediately after export.
- In *.CSV format (comma-separated values), e.g. for further processing in Microsoft Excel™.
- In *.HRS2 format.

The storage path is: C:\program data\Ersa GmbH & Co. KG\HRSoft2\Temp

- i (Information) button on key: Display/hide the key. The chart lines shown may be selected in the [Heater config] tab.
- Plus button on chart key: To display a vertical measuring line to display values of the chart at any time on the time scale (X direction). The values are displayed at the intersection of the lines. Move the line with the mouse. It is possible to add further measuring lines.

The values displayed on the left of the line are temperature values. The left Y scale of the chart with temperature values applies to them. The values to the right of the line are variables. The right Y scale of the chart with up to 100% percentages applies to them.

- Trash button on chart key: Delete the selected measuring line.

Tab [Information]: Display of the soldering process parameters.



Tab [Heater config]: Control of the chart display. If activated during the soldering process, the displayed chart lines can be selected in the [Show] column.

If for the soldering process in the [Change all zones] function has been switched off, the single heating phases T1, T2 can be clicked on and shown.

- [Device info] tab: Display of basic information about the device and software versions.
- Tab [Image processing]: Display of image processing settings.

The X button to close the chart is located on the top right of the chart.



6.7 The [user management] tabulator

HRSoft 2 offers three user classes: **Administrator**, **Power user** and **Standard user**. The respective user class is determined when the program is started by entering the user name and password into dialog [Login].

Permissions:

- **Administrator:** Full access to all functions.
- **Power users:** Access to all functions except tab [User administration] and lack of most functions in tab [Administration]. Three menu items are available in tab [Device settings].
- **Standard user:** Access to the assigned soldering profiles. No option to save changes.

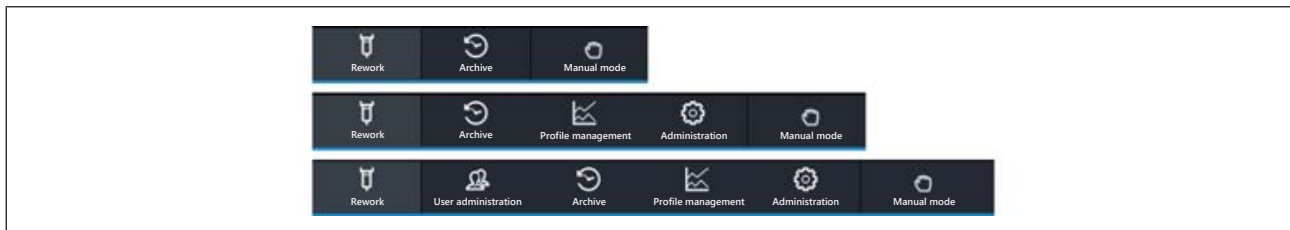


Fig. 27: Menu scopes for the standard user, power user and administrator (in tab [Rework])

User change:

To change the user, click on the logged-in user name in the top right-hand corner and select [Logout]. Then log in with the login details of the new user.

Assign users to the soldering profiles:

Switch to tab [Profile management] and select tab [More]. The assignment of soldering profiles allows users to use them in the [Rework]. As to this, please also read Chapter The tab [More].



The functions of [User administration]

- **To add users:** Click on [New User] to acquire a new line for a new user. Enter all the required parameters into the grey column on the right. Red warning triangles indicate missing information. Assign a user class to the user. User name and password must be entered in the login dialog when starting the program. Make a note of the password in a safe place.
- **To copy users:** Select a user and click on [Duplicate] to acquire a copy of this user. Enter the required parameters for the new user in the grey column on the right.
- **To archive soldering processes:** Activate option [Auto-archiving] to automatically save all soldering processes for the selected user in the archive. Started and cancelled processes are saved as a graphic with all soldering parameters in the archive. As to this, please also read Chapter The [Archive] tabulator.
- **To delete users:** Select the user to be deleted. A red recycle bin button appears in the user line. Click on the button to delete the user.

Info: The list of users is for display purposes only and cannot be edited. Click on a user in the list to display the associated information in the grey column on the right. The assigned soldering profiles are displayed at the bottom right.



6.8 Acquiring, editing and saving soldering profiles in the [Profile management] tab

6.8.1 Overview of the [Profile management] tabulator

In the tabulator [Profile management], if you are logged in as administrator, you may create edit, copy, delete and save new soldering profiles. If you are logged in as a standard user, this tabulator is not available. The tab [Profile management] corresponds in large part to the contents of the tab [Rework], in which you can also make changes to the soldering profile but cannot save them. In the tabulator [Rework] you can start and control the soldering processes. For the description of the tab [Rework] read the chapter [The Tabulator \[Rework\]](#) [▶ 67].

The dialog [Profile management] is divided into the following areas:

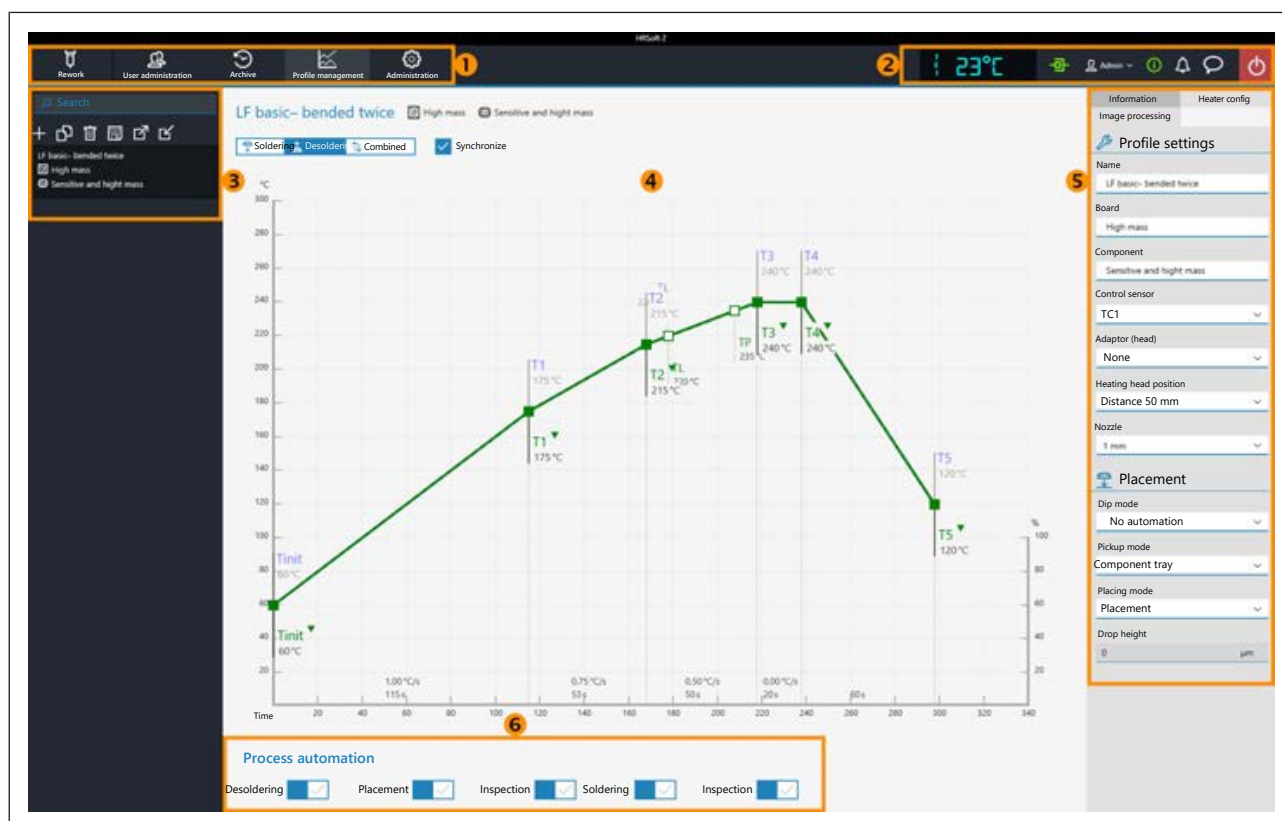


Fig. 28: Areas in the tabulator Profile management

1	Tabulator bar. To recall the tabulators and the [Manual mode]	2 Displays and buttons for recalling the dialogs, from the left to the right: – Display of the temperature of the relevant temperature sensor – Display icon green = Network connection active; red = No connection – Button “User name” for changing user – Button for recalling the [System state] Button for closing HRSoft 2. For more information, please read the chapter The display and switch row top right [▶ 115].
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3	Selecting a soldering profile. Search by profile name possible. The buttons on top, from the left to the right, allow you to: – Create a new soldering profile – Copy a selected soldering profile – Delete a selected soldering profile – Save a selected soldering profile For more information, please read the chapter Create, copy, delete and save soldering profiles in the [Profile management] tabulator [▶ 86].	4	Chart / soldering curves. Display of the soldering process with soldering curves for soldering and unsoldering. The soldering curves may be changed on the relevant curve points. For more information, please read the chapter The chart in the [Profile management] tabulator [▶ 96].
5	Parameter bar with tabs [Information] and [Heater config] and small arrow key to open the dialog [Image processing]. For more information, please read the chapter The parameter bar on the right-hand side with five tabs [▶ 89].	6	Workflow bar for determining the process steps (from the left to the right). Please also read the chapter The [Process automation] buttons under the [Profile management] tabulator [▶ 98].

The functions of the tab [Profile management] largely correspond to those of the tab [Rework]. For the description of the tab [Rework] read the chapter [\[Rework\] tabulator overview](#) [▶ 67].

You also have access to the tabs [Archive], [User administration], [Profile management], [Administration] and the button [Manual mode].

The functions of the tab [Profile management] are described in detail in the following chapter.

6.8.2 Create, copy, delete and save soldering profiles in the [Profile management] tabulator

A soldering profile is a file in which the whole soldering process is defined. With the list of soldering profiles, you may execute the following functions using the four buttons (from the left to the right):



Plus symbol = Create a new soldering profile

Duplicate file = Duplicate a selected soldering profile

Recycle bin = Delete a selected soldering profile

Floppy disk = Save a selected soldering profile

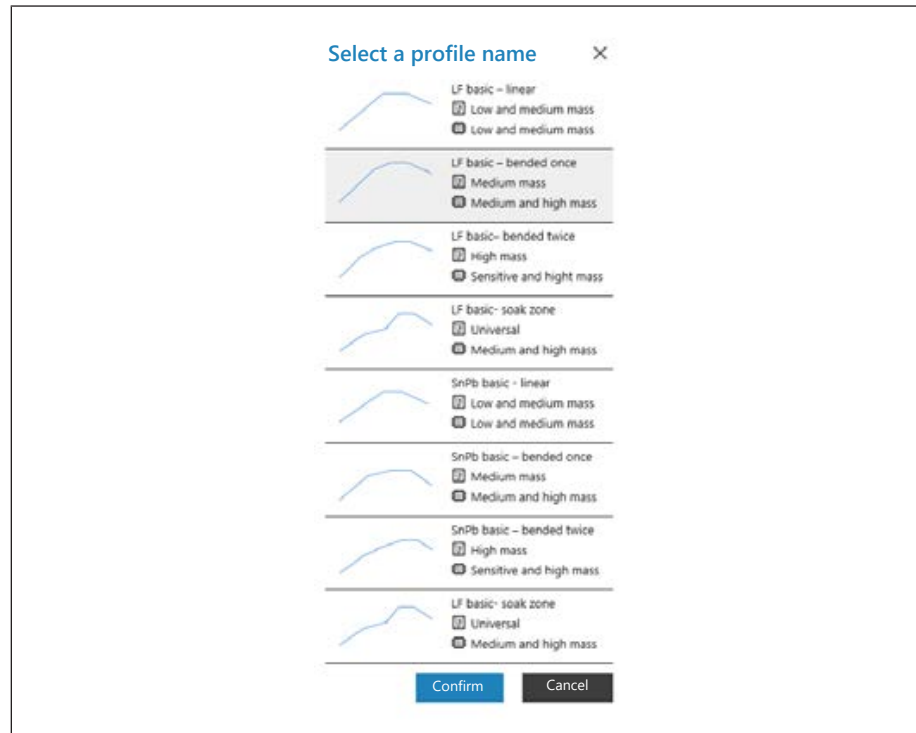
In the [Search] input field you may search the relevant profile names. The search begins automatically as soon as the first characters have been entered. All existing matches are marked in colour.

The soldering profiles have two rows for the definition of the PCB  and of the component . In these rows you may enter the relevant properties, such as board thickness, high/low component mass and unleaded/leaded solder.

Create a new soldering profile

a) Click on the “plus symbol” on the soldering profile list.

⇒ The [Select a profile name] window opens.



b) Among the eight templates available, select the profile template that best matches your new soldering profile and click on [Confirm]. The available templates have been defined based on actual applications. They show the temperature profile as a curve, while the two rows after the soldering profile name define the properties of the PCB  and of the component . If necessary, you may then adjust the selected profile template to your specific soldering process. With regard to this, please also read the [The \[Information\] tabulator](#) under the [\[User management\] tabulator](#) [▶ 89]chapter.

⇒ Row 1: Soldering profile names. The soldering templates are always identified as “basic”.

“LF” means “lead free”.

“SnPB” means tin-lead.

“linear” indicates a uniform heating-up phase.

“bended once” indicates a heating-up curve with one bend.

“bended twice” indicates a heating-up curve with two bends.

“soak zone” indicates a heating phase with reduced heat from T1 to T2, for the activation of the flux material.

⇒ Row 2: PCB name . This is defined by default when selecting the profile template. The templates are named “Low and medium mass” for low to medium PCB mass, “Medium mass” for medium PCB mass and “High mass” for high PCB mass, while “Universal” is suitable for all types of PCB. If you want, you may rename the PCBs.

⇒ Row 3: Component name . This is defined by default when selecting the profile template. The templates are named “Low and medium mass” for low to medium component mass, “Medium and high mass” for medium to high component mass and “Sensitive and high mass” in case of high-mass or sensitive components. If you want, you may rename the components.

c) Click on the [Confirm] button.

⇒ The new profile is added at the end of the profile list.

d) Save the profile with the “floppy disk” button on the soldering profile list.



⇒ Change the new profile based on your specific needs. With regard to this, please also read the The [Information] tabulator under the [User management] tabulator [▶ 89]chapter.

Copy a soldering profile

a) In the soldering profile list, click on the soldering profile you wish to copy.

b) Click on the “duplicate file” button on the soldering profile list.

⇒ The copied profile will now appear at the end of the profile list. Change the profile based on your specific needs. With regard to this, please also read the The [Information] tabulator under the [User management] tabulator [▶ 89]chapter.

Delete a soldering profile

a) In the soldering profile list, click on the soldering profile you wish to delete.

b) Click on the “recycle bin” button on the soldering profile list.

⇒ The soldering profile was deleted.

Save a soldering profile

a) In the soldering profile list, click on the soldering profile you wish to save.

b) Click on the “floppy disk” button on the soldering profile list.

⇒ The copied profile was saved.



6.8.3 The parameter bar on the right-hand side with five tabs

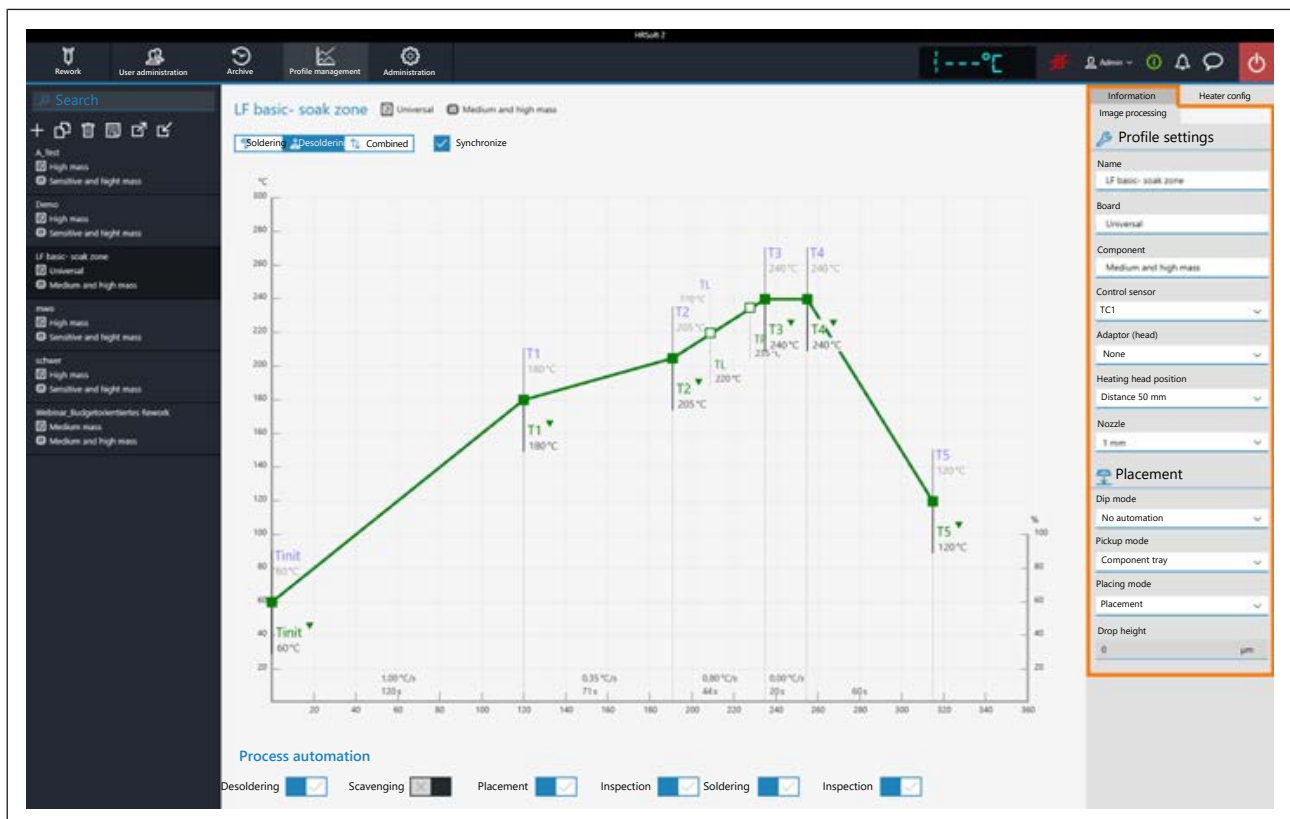
All specific parameters of the Rework process are set in the tabs of the parameter bar on the right-hand side. The functions in tab [Rework] correspond to the five tabs of the parameter bar in tab [Profile management], with the following exceptions:

- Each of the tabs under [Rework] contains button [START/REFERENCE].
Make sure that all settings are correct before starting the Rework process. The implementation of the Rework process is described as an example in Chapter "Tutorial – Soldering or unsoldering a component [▶ 121]".
- Use tab [Image processing] to set the [Pindetection camera light intensity].
Use tab [Profile management], this tab bears the [More] designation and offers the opportunity to import additional information, such as an image and text.
Under [More], users can also be assigned to soldering profiles.

Changes in tab [Rework] are accepted, but cannot be saved. If you leave this tab, all changes will be lost. The soldering profiles are determined in tab [Profile management].

6.8.3.1 The [Information] tabulator under the [User management] tabulator

The heating curves in the centre of the screen may be changed. The buttons in the line [Process automation] (6) can also be changed at any time. With these buttons you can activate or deactivate process steps.



The parameters in tabulator [Information]

The following parameters may be edited here in the tab [Information] :

In the range[Profile settings]:

- [Name]: This is defined by default when selecting the profile template. If you want, you may rename the items. Please also read the chapter Create, copy, delete and save soldering profiles in the [Profile management] tabulator [▶ 86].



The profile templates are always labeled “basic.”

“LF” means “lead free”.

“SnPB” means tin-lead.

“linear” indicates a uniform heating-up phase.

“bended once” indicates a heating-up curve with one bend.

“bended twice” indicates a heating-up curve with two bends.

“soak zone” indicates a heating phase with reduced heat from T1 to T2, for the activation of the flux material.

- [Board]: This is defined by default when selecting the profile template (). The templates are named “Low and medium mass” for low to medium PCB mass, “Medium mass” for medium PCB mass and “High mass” for high PCB mass, while “Universal” is suitable for all types of PCB. If you want, you may rename the PCBs.
- [Component]: This is defined by default when selecting the profile template (). The templates are named “Low and medium mass” for low to medium component mass, “Medium and high mass” for medium to high component mass and “Sensitive and high mass” in case of high-mass or sensitive components. If you want, you may rename the components.
- [Control sensor]: Selection of the temperature sensor that controls the soldering process based on its temperature measurements. IRS [IRS] (infrared sensor), [TC1] (thermocouple 1) or [TC2]. The currently measured temperature of the selected sensor is displayed in area (2). The IRS is not suitable for shiny or reflecting surfaces, nor in case of very small boards.
- [Adaptor (head)]: adapter used (air baffle). No function; used only for saving information.
- [Heating head position]: Determine soldering distance from the PCB, from 30 mm to 70 mm.



NOTE

Hazard of material damage! Do not lift the heating head by hand!

- a) Always adjust the heating head to the desired height using the motorized height adjustment!

- [Lens]: Objective used. No function; used only for saving information.
- [pipette]: Pipette used. No function; used only for saving information.

In the range[Placement]:

- [Dip mode]: You may choose among three soldering methods:
 - [No automation]: Normal soldering, without flux material dip and without using a component coated with flux. The component is picked from the component tray, aligned and put in soldering position.
 - [Auto. Dip]: The dip template prepared with flux material must be placed on a component tray. The component is lifted from the other component tray and dipped in the flux material of the dip template, aligned and put in soldering position.
 - [Auto. Print]: The print template prepared with the component coated with flux must be placed on a component tray. The component is picked from the print template, aligned and put in soldering position.
- [Placing mode]: For soldering [Placement]: The component is deposited with the aid of the contact sensor, or [Drop]: The component on the PCB is discarded.
- [Drop height]: For soldering: Height over the PCB at which the component on the PCB is discarded. Can only be changed if parameter [Drop] is selected.



In the range[Scavenging]:

For editing the parameters for the optional residual solder extraction.

Also read the operating instructions of the residual solder extraction. Only operate the solder residue extraction system if all instructions in the operating manual are observed! The optional residual solder extraction must first be integrated with the function [Scavenger active] in dialogue [Device settings] under the tab [Administration] into the rework program HRSoft 2. This activates the display of the work step [Scavenging] for using the residual solder extraction after the work step [Desoldering]. As to this, please read Chapter [The process steps of \[process automation\]](#) [► 78].

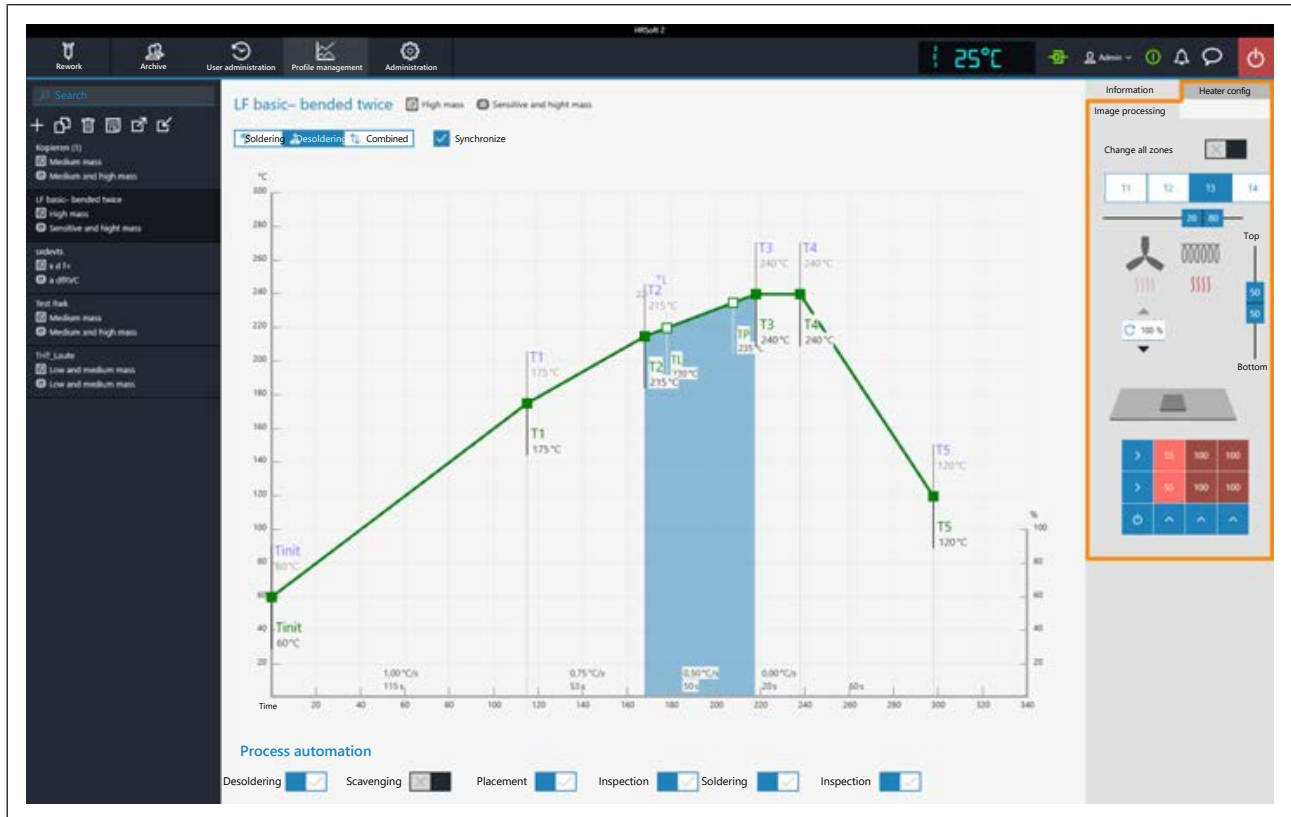
- a) Activate the area [Scavenging] when using the optional residual solder extraction Scavenger with the button of the work step [Scavenging].
- [Bottom heater temperature]: Temperature maintained by the bottom heater during cleaning.
- [Placing mode]: Maximum heating time of the bottom heater during cleaning. For safety reasons, the bottom heating switches off after this time, even if the swivel arm of the residual solder extraction is not swung back into the basic position.

To temporarily change the soldering profile parameters and to start the rework process as well as to perform a reference run, read the chapter [The \[Information\] tabulator under the \[Rework\] tabulator](#) [► 70].



6.8.3.2 The [Heating setting] tabulator under the [Profile management] tabulator

The heating curves in the centre of the screen may be changed. The buttons in the line [Process automation] (6) can also be changed at any time. With these buttons you can activate or deactivate process steps.



If you want to change the heating settings defined in the soldering profile, you must choose the [Combined] and use the buttons [Soldering] or [Desoldering]. The buttons [Soldering] or [Desoldering] can each contain its own heating curve including detailed heating settings or are available when the button [Synchronize] is identical for both soldering processes. The button [Synchronize] sets the unsoldering heating curve to the soldering heating curve. The heating settings displayed are valid for the selected soldering curve.

The parameters in tabulator [Heater config]

[Change all zones]: If this button is selected, all heating phases [Tinit] up to T4 in tab [Heater config] and in the chart (4) will be displayed in blue. The parameters in the tab [Heater config] now apply to all heating phases. The button [Change all zones] is deselected, you can assign different heating parameters to each of the four heating phases.

The following parameters may be edited here in the tab [Heater config] :

- Buttons T1 – T4: Selecting the heating phase to define the corresponding heating parameter. In order to select the relevant button, you may click on a heating phase in the chart.
- Horizontal controller: Distribution of the upper heating in % between hot-air heating (fan symbol) and infrared heating (heating element symbol). Infrared heating is not suitable for heating shiny surfaces.
- Input field with round arrow under the fan logo: hot-air blower speed. Configure the blower speed with the small triangle-shaped buttons or select the blower value and overwrite it. 100 % = maximum blower speed. A higher blower value results in a somewhat reduced energy of the hot air.



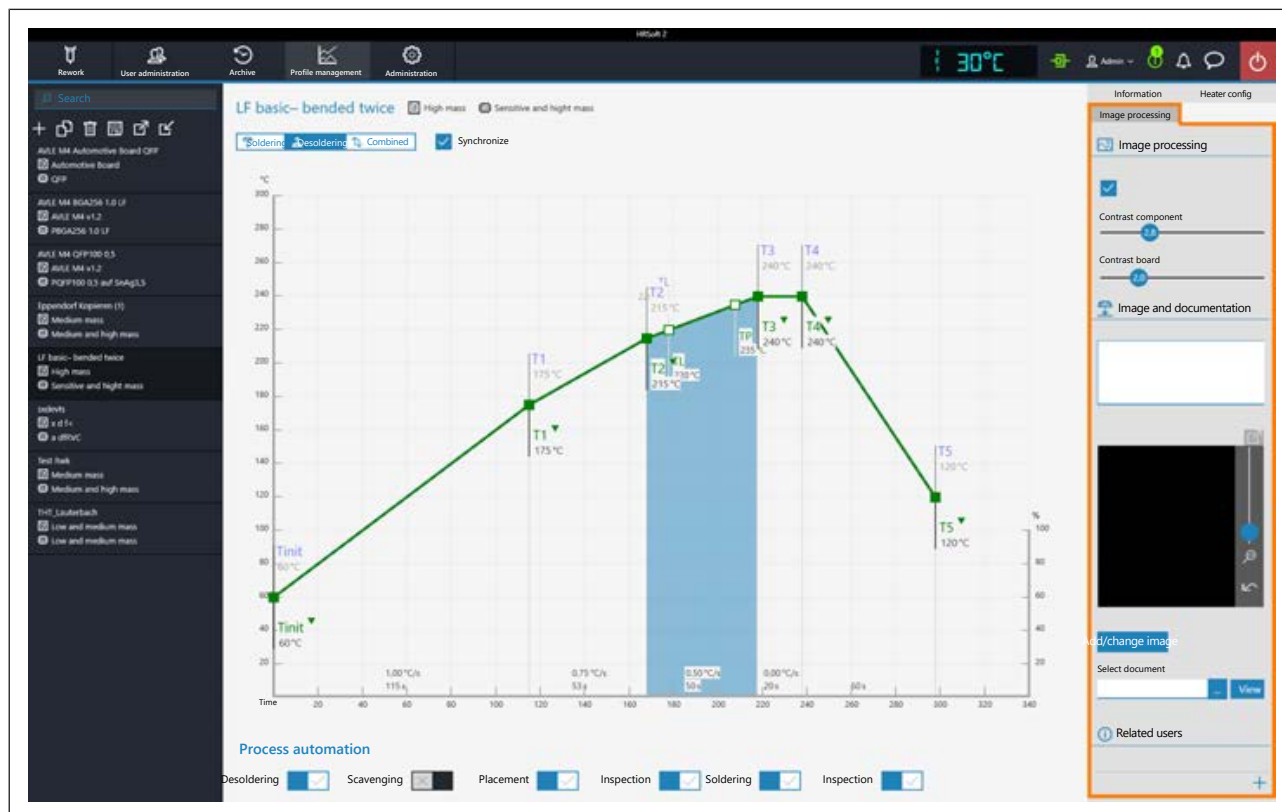
- Vertical controller (top - bottom): Upper/lower heating performance ratio expressed as a percentage. Adjust the performance ratio according to the heat requirements of your soldering process.
- Two input fields above the bottom heating matrix field: Control of the heating energy for the two heating zones in the bottom heating matrix field.
- Bottom heating matrix field: it is divided into two adjustable zones left and right.
Change the heating energy of a heating zone between 0% and 100%: Click on a number in the heating zone and overwrite the value. The darker a field is displayed, the higher the set temperature.
The two blue arrow fields below the heating zones switch the individual heating zones on or off.

Please remember that the components should not be heated as quickly as possible: in fact, only a slow heating process can ensure an even temperature distribution. This will ensure a safe process.

To temporarily change the heating parameters, read the chapter [The \[Heating setting\] tabulator under the \[Rework\] tabulator](#) [► 73].



6.8.3.3 The tab with the arrow button [More] under the [Profile management] tab



In range [Image processing]

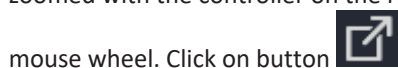
[Red and green overlap information]: if enabled, the board is displayed in green and the component in red in the camera overlay image. The overlapping parts of the two image planes, the board and the component, are displayed in blue. If disabled, the camera image will be displayed in grey.

[Contrast component]: If the [Red and green overlap information] button is enabled, adjustment of the contrast value for the component shown in red.

[Contrast board]: If the [Red and green overlap information] button is enabled, adjustment of the contrast value for the board shown in green.

In range [Image and documentation]:

- [Comment]: Field for entering info to be stored for the users of this soldering profile.
- [Image]: Click on button [Add/change image] to add a picture that can serve as useful info for the user of this soldering profile. The camera image can be zoomed with the controller on the right of the camera image or with the



to activate the full screen mode.

- [Add/change image]: Add a picture that can serve as useful info for the user of this soldering profile.
- [Select document]: Click the button with the three dots to integrate the soldering profile with a PDF file containing info on the soldering profile.
- [View]: Display of the soldering profile PDF file.



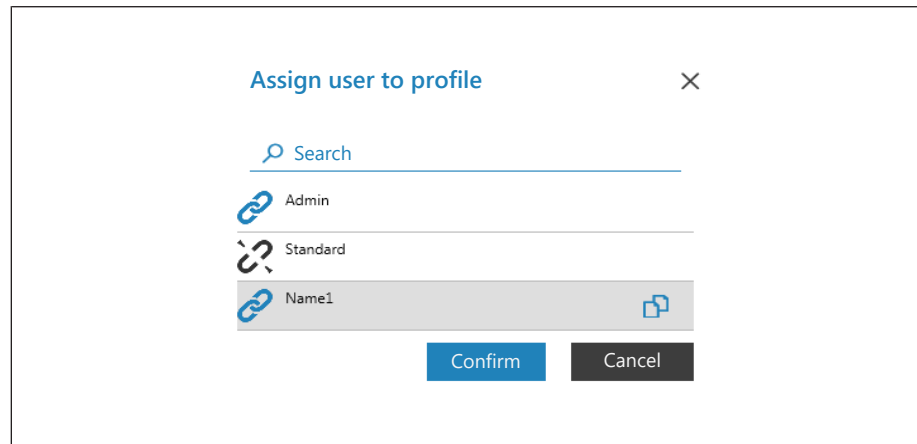
In range [Related users]:

List of users, who can see and use this soldering profile in tab [Rework]. This assignment may only be made here.

Assigning a user to the soldering profile

a) Click on the “plus” sign.

⇒ Dialog [Assign user to profile] will be displayed.



b) Click on the user that you would like to assign. This one has an open pipe character.

c) Click on the pipe character.

⇒ The pipe character is now closed.

d) Click on [Confirm].

⇒ A user has been assigned to the soldering profile. Also use dialog [Assign user to profile] to assign or remove other users by clicking on the chain icon.

Deleting a user from a soldering profile

a) Click on the user name you want to delete in the tab with the small arrow button.

b) Move the mouse over the user name to be deleted.

⇒ A red trash icon will appear behind the user name.

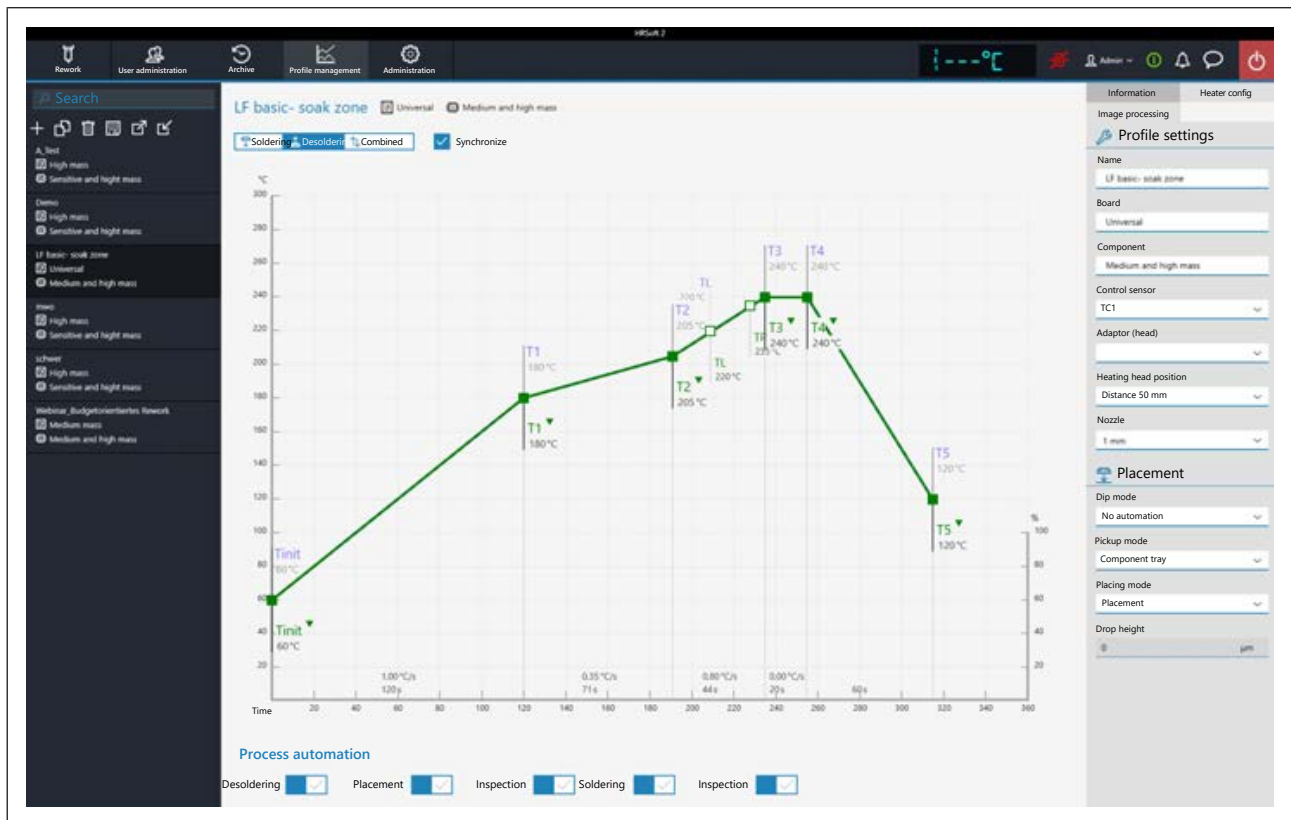
c) Click on the trash icon.

⇒ A user has been removed from the soldering profile.



6.9 The chart in the [Profile management] tabulator

Under tab [Profile settings], chart (4) with the heating curves will be displayed in the middle of the screen and, below, the button row for the [Process automation] (6). The heating curves can be changed here.



The following buttons are available:

- [Soldering]: The soldering blue heating curve is highlighted in the chart. The soldering blue heating curve can be changed and tab [Heater config] can be set for soldering
- [Desoldering]: The desoldering heating curve is highlighted in green in the chart. The desoldering red heating curve can be changed and tab [Heater config] can be set for desoldering.
- [Combined]: The heating curves of the soldering and desoldering temperature are highlighted in the chart. The complete soldering process is displayed. The heating curves cannot be changed and tab [Heater config] is locked. If you want to change the heating settings specified in the soldering profile, deselect button [Combined] and instead select button [Soldering] or [Desoldering].
- [Synchronize]: changes the desoldering heating curve to the soldering one. Both heating curves will be congruent. In this condition, the changes made to the chart and heater settings will affect both heating curves.

6.10 The heating curves in the chart in the [Profile Management] tab

A heating curve is divided into the five steps "Tinit – T1", "T1 – T2" etc. You may assign a specific temperature and time profile to each of these steps.

- [Tinit] = Temperature from which the process is displayed.
- Heating phase [Tinit] – T1, T1 – T2 and T2 – T3: Heating-up phases that allow for different configurations. The heating phases of the soldering and unsoldering process may differ starting from T2.



- Heating phase T3 – T4: Hottest phase with constant temperature. The two values should always be identical: T3 = T4. At T4, the heatings turn off, and in case of unsoldering the component is picked up.
- Cooling phase T4 – T5: Cooling process after soldering. The cooler ventilation starts at T4 and cools until the selected T5 temperature is reached.
- TL = liquidus temperature, at which the solder becomes liquid. No function; however, you can mark this temperature.
- TP = only in case of unsoldering. Temperature at which the pipette moves to the component to lift it. The component is lifted from T4.

Changing the heating curves

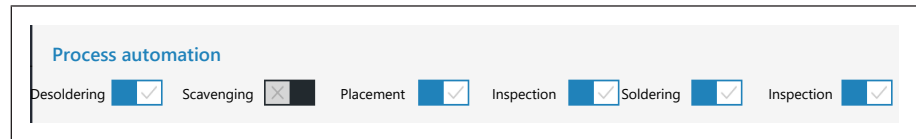
- Change temperature and heat phase duration at the first time: Click on one of the points [Tinit] – T5 on the heating curve and hold the mouse button down until the temperature is displayed in bold. Now move the point while keeping the mouse button pressed.
- Change the temperature: In the point to be changed on the heating curve, click on the relevant temperature. Enter the desired temperature or use the keys “Arrow up” and “Arrow down” in order to change the temperature.
- Change the heating power: In the heating phase below, click on the heating power to be modified and enter the new value. The maximum heating power is 2.5 K/s (2.5 °C/s). In the [Administration] tabulator you may change the heating power unit by toggling between K/s and °C/s.
- Change the heating phase duration: In the heating phase below click on the time to be modified and enter the desired duration (in seconds) or use the keys “Arrow up” and “Arrow down” in order to change the duration.
- [TL (°C)] tabulator: Click on the temperature value of [TL (°C)] and enter the new liquidus temperature or use the keys “Arrow up” and “Arrow down” in order to change this temperature.
- [TP (°C)] tabulator: Click on the temperature value of [TP (°C)] and enter the new pipette temperature or use the keys “Arrow up” and “Arrow down” in order to change the temperature.

Please remember that the components should not be heated as quickly as possible: in fact, only a slower heating process can ensure an even temperature distribution. This will ensure a safe process



6.11 The [Process automation] buttons under the [Profile management] tabulator

Under the chart you can find the button row [Process automation] (6). With these buttons you can activate or deactivate process steps. The process starts with the first process on the left and executes the selected process steps one after the other from the left to the right.



- [Desoldering]: Unsolder a component.
- [Scavenging]: Switching the work step on/off [Scavenging]. This button after the [Desoldering] is only activated when using the optional residual solder extraction Scavenger. The option is activated in the dialog [Device settings] under the tab [Administration]. In the tab [Information] under the tab [Rework] the cleaning parameters are set. Also read the operating instructions of the residual solder extraction.
- [Placement]: Placing a component in the soldering position. To do so, place the component on the component tray.
- [Inspection]: Check the position of the component with the vision box.
- [Soldering]: Soldering the component.
- [Inspection]: Final check of the soldering results with the vision box.

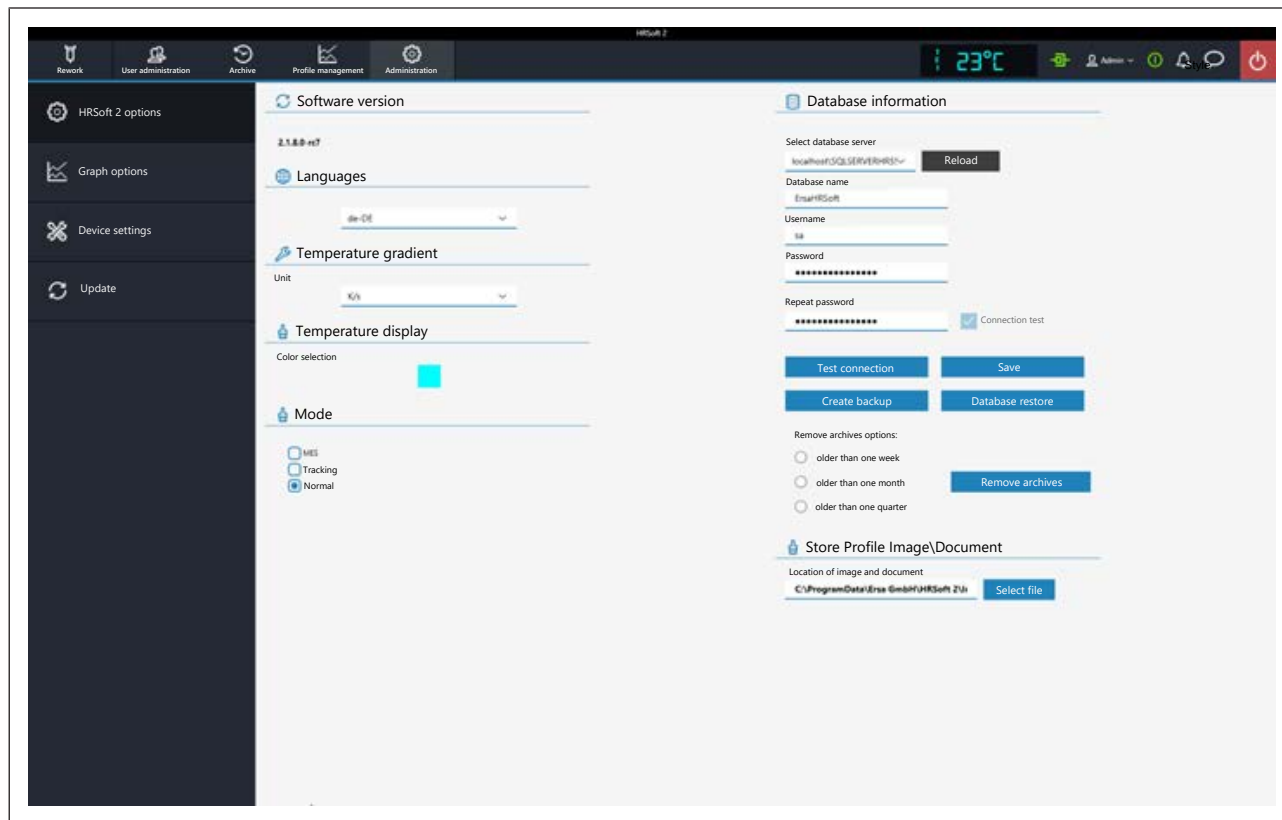
The implementation of a soldering process is shown as an example in the chapter [Tutorial – Soldering or unsoldering a component](#) [▶ 121] described.



6.12 The [Administration] tab with four dialogue windows

6.12.1 The dialog [HRSoft 2 settings]

In the dialog [HRSoft 2 options] you may access different default setting of the HR-Soft 2 program.



[Software version]

The software version of HRSoft2.

[Languages]

[System language] - Change the user interface language.

[Gain unit selection]

[Selected gain unit] - Display of the unit in the chart as Kelvin per second or Celsius per second.

[Temperature display]

[Color selection] - Colour of the temperature indication in the right upper corner. Click on the coloured square to view all available colours.

[Pixel shift]

IMPORTANT: Do not edit these parameters here!

The pixel shift values are determined by executing function [Adjust pixel shift]. Run the function [Adjust pixel shift] always by:

- after any new installation of the rework system
- after a new installation of HRSoft 2
- after replacing the heating head



- after the Rework System has been moved to a different location.

Read the chapter [The \[Pixel shift adjustment\] button](#) [► 109].

[Select Mode]

Do not use

[Database information]

In the database, you will find also user profiles and soldering processes. In the area [Database information] (see description of the following function) it is necessary to enter the correct parameters to access the database.

- [Select database server]: Path to the database. Click the button [Reload] to specify the correct path.
- [Database name]: Selected path to the database.
- [Username]: Assign the user name you prefer.
- [Password]: Password for ensuring access to the network.
- [Repeat password]: Password for ensuring access to the network.
- [Connection test]: Click on the button [Test connection]. When the system is connected to the database, here a tick symbol appears.
- The button [Test connection]: Click on this button to check. When the connection to the database is established, a tick appears in the checkbox [Connection test].
- The button [Save]: Save the database settings.

The button [Create backup]: The database is being backed up. The database contains, for example, the soldering profiles, the archive and system settings. A file with the file extension *.bak is created. Use this function to transfer the database data to another computer.

The button [Database restore]: A backed up database (file extension *.bak) can be read. For database recovery, e.g. after a new installation.

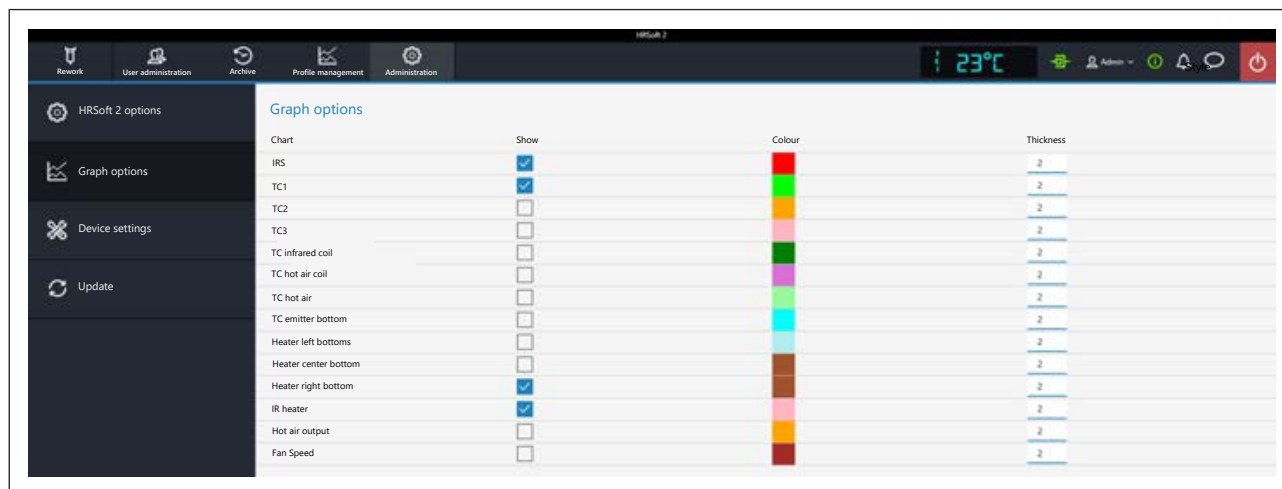
Also see

-  The [device settings] dialog [► 102]



6.12.2 The [Chart settings] dialog

In the dialog [Graph options] you may access different default setting of the chart.



You may access the following parameters:

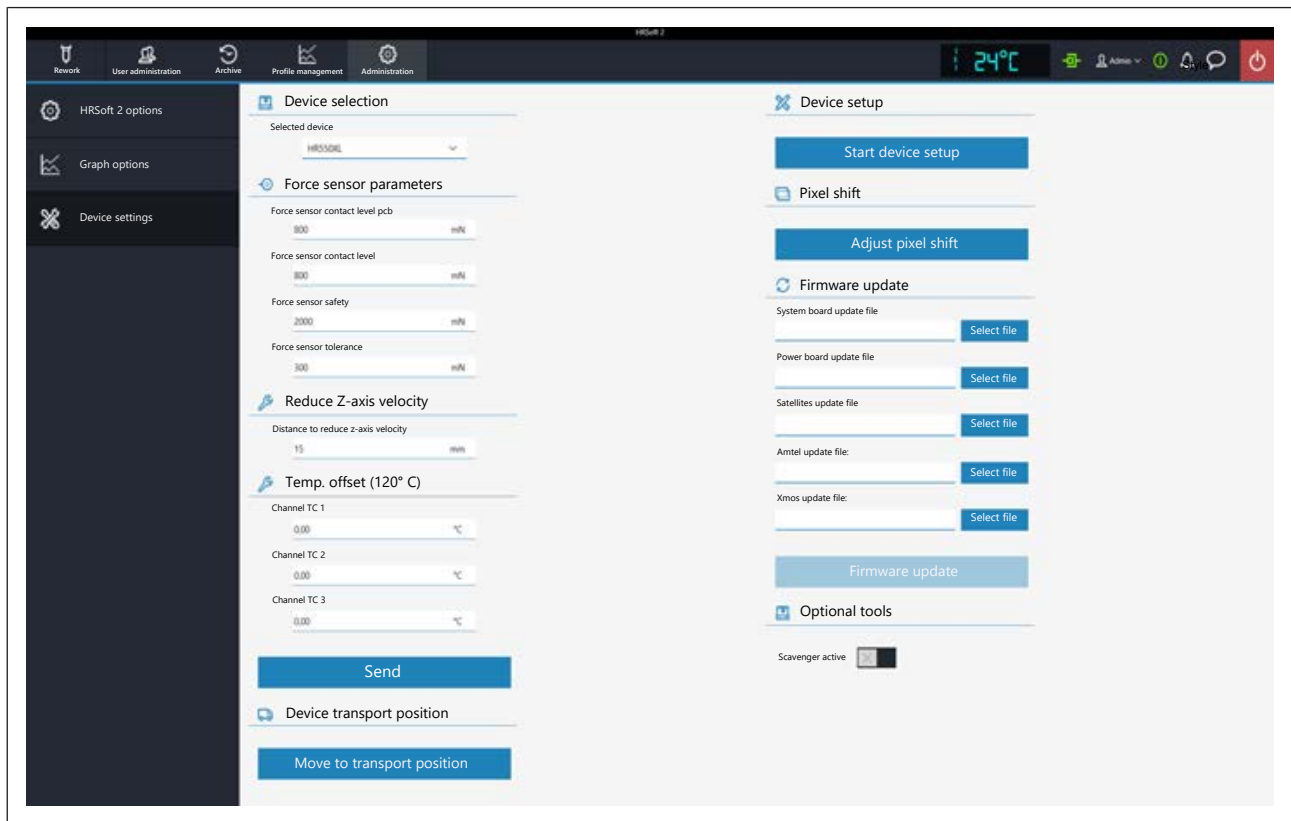
In the table [Graph options] you specify which colors the measurement curves in the chart have. The measurement curves can also be shown/hidden during the on-going soldering process.

- Column [Show]: Show-/hide the measurement curve.
- Column [Colour]: Colour of the measurement curve. Click on the coloured square to view all available colours.



6.12.3 The [device settings] dialog

Use dialog [Device settings] to access various pre-settings for the Rework system.



[Device selection]

[Selected device]: to select your Rework system.

[Force sensor parameters]

Set the contact sensors of the placing head pipette. Only change values if the resulting effects are known. Editing these values may cause the pipette to exert too much or too little force.

Info: The contact force of the soldering nozzle is controlled automatically and cannot be changed.

- [Force sensor contact level pcb]: contact force on PCB, component and glass plate where the pipette movement stops.
- [Force sensor contact level]: contact force during dipping at which the dipping movement stops.
- [Force sensor safety]: contact force stopping the movement during the pipette fast drive. Do not change these values!
- [Force sensor tolerance]: Force specification of the hysteresis for pipette drive. Do not change these values!

Reduce Z-axis velocity]

- [Distance to reduce z-axis velocity]: For the last few millimetres before the contact point, the pipette must switch to slowed contact movement. The 0 value corresponds to the PCB surface.
 - a) Enter the distance in millimetres at which to switch to slowed contact movement. For tall components, the distance must be higher.



[Temp. offset (120° C)]

- [Channel TC 1] up to [Channel TC 3]: to enter correction values if the temperature readings of the thermocouples differ from the real temperatures.
 - a) Measure the thermocouples with an external calibration tool at 120°C.
 - b) Enter the values of the detected temperature differences (negative minus sign before them) into input fields from [Channel TC 1] up to [Channel TC 3] to offset them.
 - c) Then click on button [Send].
- ⇒ The correction values have been adopted and the Rework System will display the calibrated values of the temperature sensors.

[Device transport position]

Button [Move to transport position]: IMPORTANT: To avoid any transport damage, move the heating head to a safe position using button [Move to transport position] before carrying the Rework System to another location!

[Device setup]

Process [Start device setup] is run being guided by an assistant, similar to the wizard guiding you through the soldering process. The process is described in Chapter [The button \[Start maintenance mode\] \[► 105\]](#) . Always perform function [Pixel shift]:

- whenever reinstalling the Rework System
- after updating HRSoft 2
- after replacing the heating head
- after relocating the unit.

Info: To fully set up the Rework system after changing the heating head or relocating the system, also run the function associated with button [Adjust pixel shift] here in this dialog. As to this, please read Chapter [The \[Pixel shift adjustment\] button \[► 109\]](#).

[Adjust pixel shift]

Process [Adjust pixel shift] is run being guided by an assistant, similar to the wizard guiding you through the soldering process. The process is described in Chapter [The \[Pixel shift adjustment\] button \[► 109\]](#) .

Info: To fully set up the Rework system after changing the heating head or relocating the system, also run the function associated with button [Start device setup] here in this dialog. As to this, please read Chapter [The button \[Start maintenance mode\] \[► 105\]](#).

[Firmware update]

- [System board update file]: To refresh the system board firmware, click on button [Open] and select the new system board firmware with file extension *.bin. Then click on button [Firmware update]. The system board firmware has been updated.

Normally, you will realize a firmware update is needed via a bell icon being shown in the display and button bar on the top right. A number of the required firmware updates will appear on the bell icon. Click on the bell icon and start the update, which will be run automatically.
- [Power board update file]: to refresh the Powerboard firmware, click on button [Open] and select the new Powerboard firmware with file extension *.bin. Then click on button [Firmware update]. The PowerBoard firmware has been updated.



Normally, you will realize a firmware update is needed via a bell icon being shown in the display and button bar on the top right. A number of the required firmware updates will appear on the bell icon. Click on the bell icon and start the update, which will be run automatically.

- [Satellites update file]: to refresh the heating head's and lower heating's firmware, click on button [Open] and select the new satellite firmware with file extension *.bin. Then click on button [Firmware update]. The Satellite firmware has been updated.

Normally, you will realize a firmware update is needed via a bell icon being shown in the display and button bar on the top right. A number of the required firmware updates will appear on the bell icon. Click on the bell icon and start the update, which will be run automatically.

- [Amtel update file:]: only execute if specified by the Ersä service.
- [Xmos update file:]: only execute if specified by the Ersä service.
- Button [Firmware update]: to start updating the firmware. The version of the installed firmware is displayed in dialog [Motion control information]. As to this, please read Chapter [The display and switch row top right](#) [► 115].

[Optional tools]

- [Scavenger active]: activate only when using the optional Scavenger residual solder sucker. When using Scavenger, activate work step [851]. Scavenging As to this, please read Chapter [The \[Process automation\] buttons under the \[Profile management\] tabulator](#) [► 98]. Read the relevant operating instructions before starting up the Scavenger residual solder sucker.



6.12.3.1 The button [Start maintenance mode]

Always perform function [Start device setup] to redefine the heating head positions:

- after reinstalling the Rework system
- after reinstalling HRSoft 2
- after replacing a heating head
- after relocating the Rework System.

You need the black square plate (320415, limiter) and the round calibration target (344244, blank). Process [Start device setup] runs guided by a wizard, similar to the Assistant helping you through the soldering process.

Use a nozzle size 5 or 10 included in the scope of delivery for this process. As to this, please also read Chapter [Replacing the soldering nozzle](#) [▶ 122].

Info: To fully set up the Rework system after changing the heating head or relocating the system, also run the function associated with the [Adjust pixel shift] button in the [Device settings] dialog. As to this, please read Chapter [The \[Pixel shift adjustment\] button](#) [▶ 109].



CAUTION

Risk of burns from hot surfaces!

a) Touching the device surfaces may cause burns!

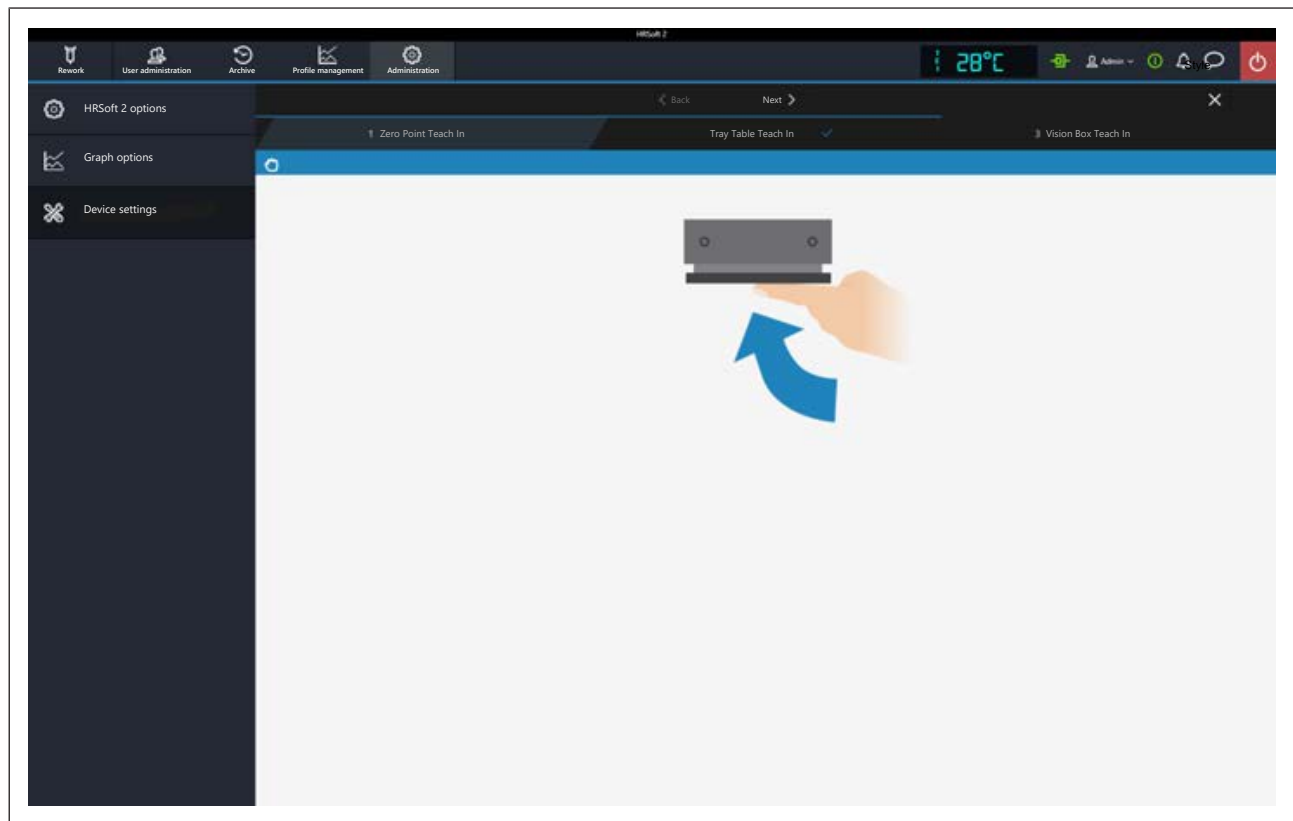
a) Push the lever to switch between normal view and the telephoto lens of the Visionbox through to the tele-position. As to this, please also read Chapter [Overview of the machine parts](#) [▶ 62], no. 11.

b) Click on button [Start device setup].

⇒ The device first carries out a reference run of the pipette and the heating head.

⇒ The Assistant for the soldering head height's maintenance mode is started. The information line above the diagram describes the work steps to be performed.

⇒ You will be asked to hold the square black plate included in the calibration kit under the heating head.



Alternatively, you can use any flat, inflexible object.

- a) Remove any inserted air baffle.
- b) Hold the plate perfectly horizontal and flush with the underside of the heating element.



- c) Keep holding the plate steady and go on to the next work step. This can be done either by pressing the green light button on the control panel, or by clicking on the [Next] button in the upper window range.

⇒ The suction pipette comes into contact with the plate, and the height is learnt.

- a) When the Assistant prompts you, remove the plate.
- b) Go on to the next work step.



c) Clamp the black square plate to the PCB holder. Lock it with four holders and firmly screw the PCB clamps to bring the plate to a precise height position. Place the plate under the nozzle. If necessary, move the cross table while holding down the white light button on the control panel.

d) Go on to the next work step.

⇒ The nozzle comes into contact with the black plate and learns the height.

a) Go on to the next work step.



DANGER

Laser beam! Risk of injury due to retinal burns

a) Do not stare into the laser beam!

b) Do not point the laser beam at other people! Reflecting surfaces under the laser generate reflections!

c) Class 2 laser according to DIN EN 60825-1:2008-5, $P < 1 \text{ mW}$, $\lambda = 650 \text{ nm}$

The position laser switches on.

a) Slide the component tray under the nozzle.

b) Go on to the next work step.

⇒ The pipette comes into contact the component tray.

a) Place the calibration target exactly in the middle of the component tray.

b) Go on to the next work step.

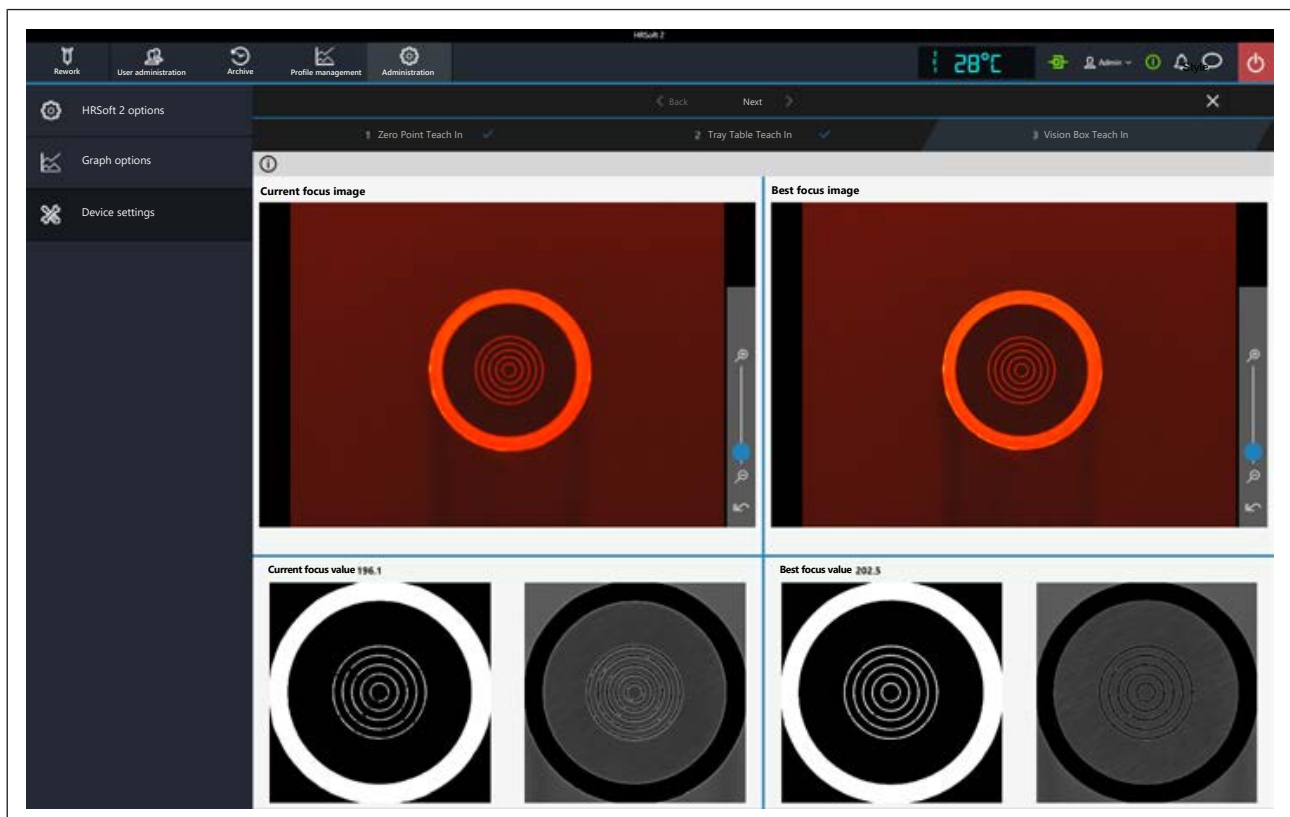
⇒ The pipette picks up the calibration target.

a) Slide the component tray sideways.

b) Push the lever in to switch to the Visionbox.

c) Pull out the Visionbox.

⇒ Autofocus is calculated.





- a) Wait for this window to close.
 - b) Push the Visionbox back in place.
 - c) The focusing small plate is put down.
- ⇒ Maintenance mode has come to an end and the result has been saved.



6.12.3.2 The [Pixel shift adjustment] button

Always execute the function [Adjust pixel shift] for the redefinition of the heating head positions:

- after any new installation of the rework system
- after a new installation of HRSoft 2
- after replacing the heating head
- after the Rework System has been moved to a different location.
- You will need the black square plate (320415, limiter) and the round calibration target (344244, blank). The process [Start device setup] is guided by an assistant similar to the assistant that guides you through the soldering process.

For this process, use one of the nozzles provided, of size 5 or 10. As to this, please also read Chapter [Replacing the soldering nozzle](#) [► 122].

Note: in order to fully configure the Rework System after a new installation, heating head change or change of location, you must also execute the button function [Start device setup] in the dialog [Device settings]. As to this, read the chapter [The button \[Start maintenance mode\]](#) [► 105].



CAUTION

Risk of burns from hot surfaces!

- a) Touching the device surfaces may cause burns!

a) Slide in the normal view/telephoto toggling lever of the vision box and set it to the telephoto position. Please also about this read the chapter [Overview of the machine parts](#) [► 62], No. 11.

b) Click on the button [Adjust pixel shift].

⇒ The device will first start a referencing cycle for the pipette and heating head.

⇒ The pixel shift adjustment assistant is launched. In the information row over the graph you will find a description of the required tasks.



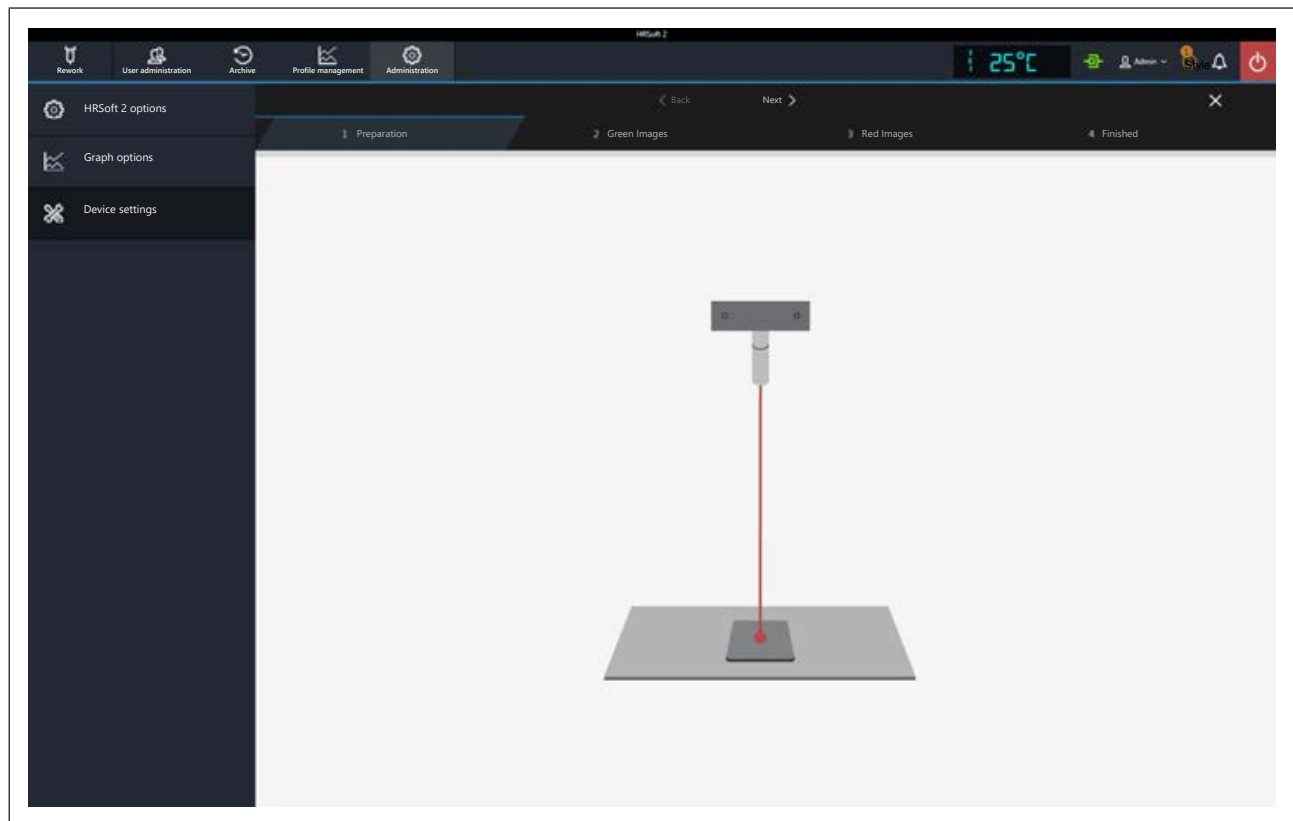
DANGER

Laser beam! Risk of injury due to retinal burns

a) Do not stare into the laser beam!

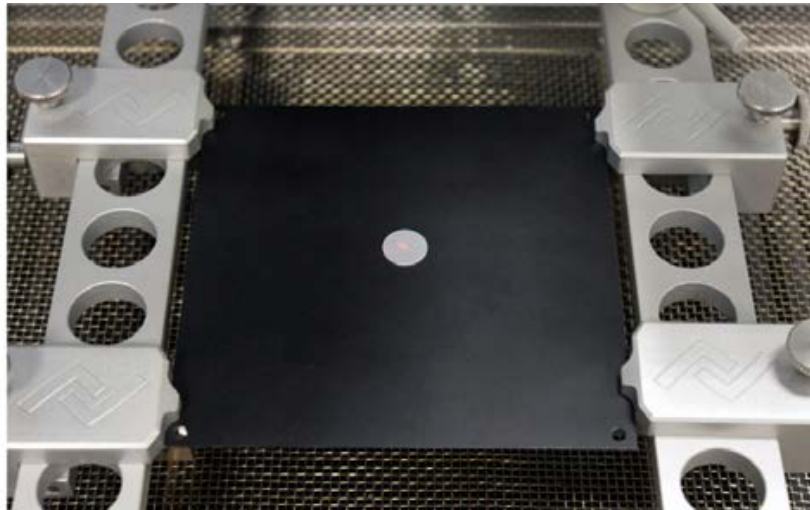
b) Do not point the laser beam at other people! Reflecting surfaces under the laser generate reflections!

c) Class 2 laser according to DIN EN 60825-1:2008-5, $P < 1 \text{ mW}$, $\lambda = 650 \text{ nm}$



The position laser is switched on.

- a) Clamp the black square plate into the PCB holder. Fix it with four brackets and screw the PCB clamps tight to bring the board into an exact height position. Place the plate under the nozzle. If necessary, move the cross table while holding down the white illuminated button on the control panel.

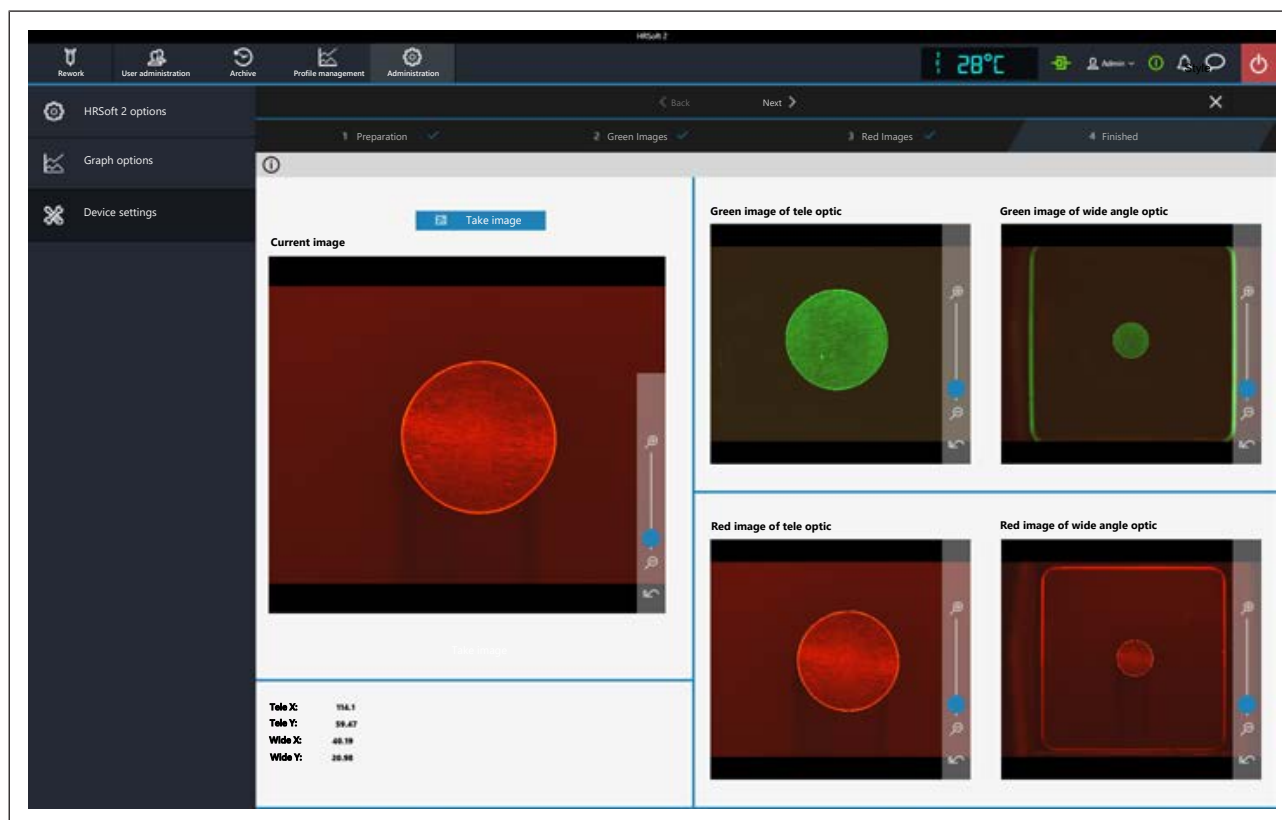


- b) Place the calibration target on the black plate so that the laser is exactly in the center.
- c) Move on to the next task. This is done either by pressing the green button on the control unit or by clicking on the button [Next] in the upper window area.
- d) Remove the vision box.
⇒ A dialog appears, with which four pictures may be taken.
- a) Click on the button [Take image].



- ⇒ The first picture of the small focussing plate is taken.
 - a) Move on to the next task.
 - b) Pull out the lever to switch between wide-angle view and telephoto lens (wide-angle view).
 - c) Move on to the next task.
 - d) Click on the button [Take image].
 - e) Move on to the next task.
 - f) Slide the vision box in.
- ⇒ The pipette lifts the small focusing plate.
 - a) Remove the vision box.
 - b) Click on the button [Take image].
 - c) Move on to the next task.
 - d) Push the lever in to switch between wide-angle view and telephoto lens (telephoto position).
 - e) Move on to the next task.
 - f) Click on the button [Take image].
 - g) Move on to the next task.
 - h) Slide the vision box in.
- ⇒ The pixel shift is calculated.

The four values for wide-angle and telephoto are displayed.



- a) Move on to the next task.
- b) Bring a component tray under the heating head.
- ⇒ The small focussing plate is deposited on it.
- a) Bring the component trays in the middle



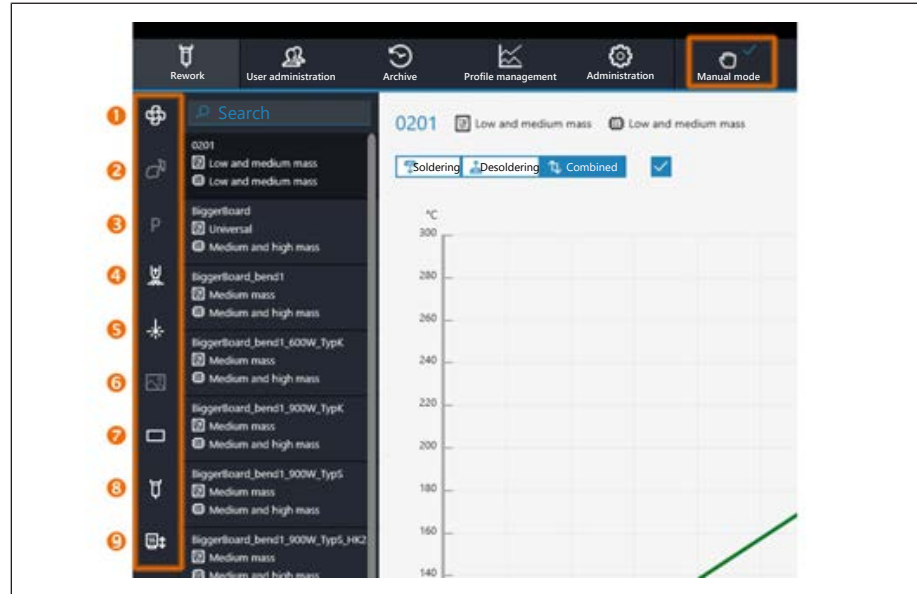
⇒ The pixel shift adjustment is completed and the results have been saved.



6.13 The [Manual Mode]

Use button [Manual mode] to display and hide, in tab [Rework] button column [Manual mode].

By moving the mouse over one of these buttons, a describing tool tip will be displayed.



The buttons allow the following functions to be switched on and off at any time:

1: Switching on/off the cooling fan.

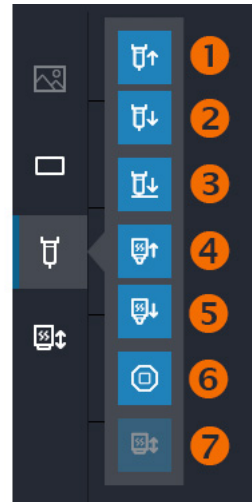


⚠ DANGER

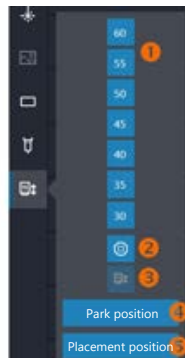
Laser beam! Risk of injury due to retinal burns

- a) Do not stare into the laser beam!
- b) Do not point the laser beam at other people! Reflecting surfaces under the laser generate reflections!
- c) Class 2 laser according to DIN EN 60825-1:2008-5, $P < 1 \text{ mW}$, $\lambda = 650 \text{ nm}$

- 2: No function.
- 3: Move the heating head to the park position.
- 4: Switching on/off the pipette vacuum.
- 5: Switching on/off the pick-and-place laser.
- 6: Take a picture. A screenshot in data format *.bmp will be saved in folder C:\Users\Ersa\AppData\Roaming\Ersa\HR550\CapturedImages gespeichert.
- 7: Vision Box lighting. Opens a submenu for selection: above red component camera, below green PCB camera.
- 8: Opens a submenu with further buttons. Free motor run for starting any position of the heating head and of the pipette:



- 1. The pipette will move up as long as the mouse button is pressed.
- 2. The pipette will move up as long as the mouse button is pressed.
- 3. The pipette will move down to the contact.
- 4. The heating head will move up as long as the mouse button is pressed.
- 5. The heating head will move down as long as the mouse button is pressed.
- 6. Stops the machine movement.
- 7. Referencing the Rework system.
- 9. Heating head approaching fixed positions. Opens a submenu with further buttons:

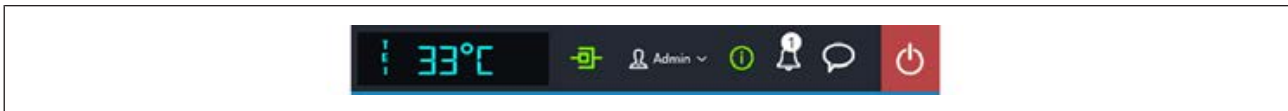


- 1. Buttons 60, 55, 50 ... 30 move the heating head to the selected height, values in millimetres.
- 2. Stops the machine movement.
- 3. Referencing the Rework system.
- 4: Button [Parking position] moves the heating head to the highest position.
- 5. Button [Placement position] moves the heating head to a 60 mm position.

For details about the machine parts, please also read Chapter [Overview of the machine parts](#) [► 62].



6.14 The display and switch row top right



The displays and switches from left to right:

- Blue digital display, far left: Name of the selected temperature sensor and the current temperature measured with it.
- Display of the network connection between PC and rework system. Green = network connection, red = no network connection.
- Display of the active user and drop-down menu item [Logout] to log in another user. As to this, please read Chapter [The \[user management\] tabulator](#) [83].
- [i] button to call up the [System state] dialog with extensive status information on the single Rework system components. The [System state] dialog can give valuable information on the state of the displayed machine elements at any time.

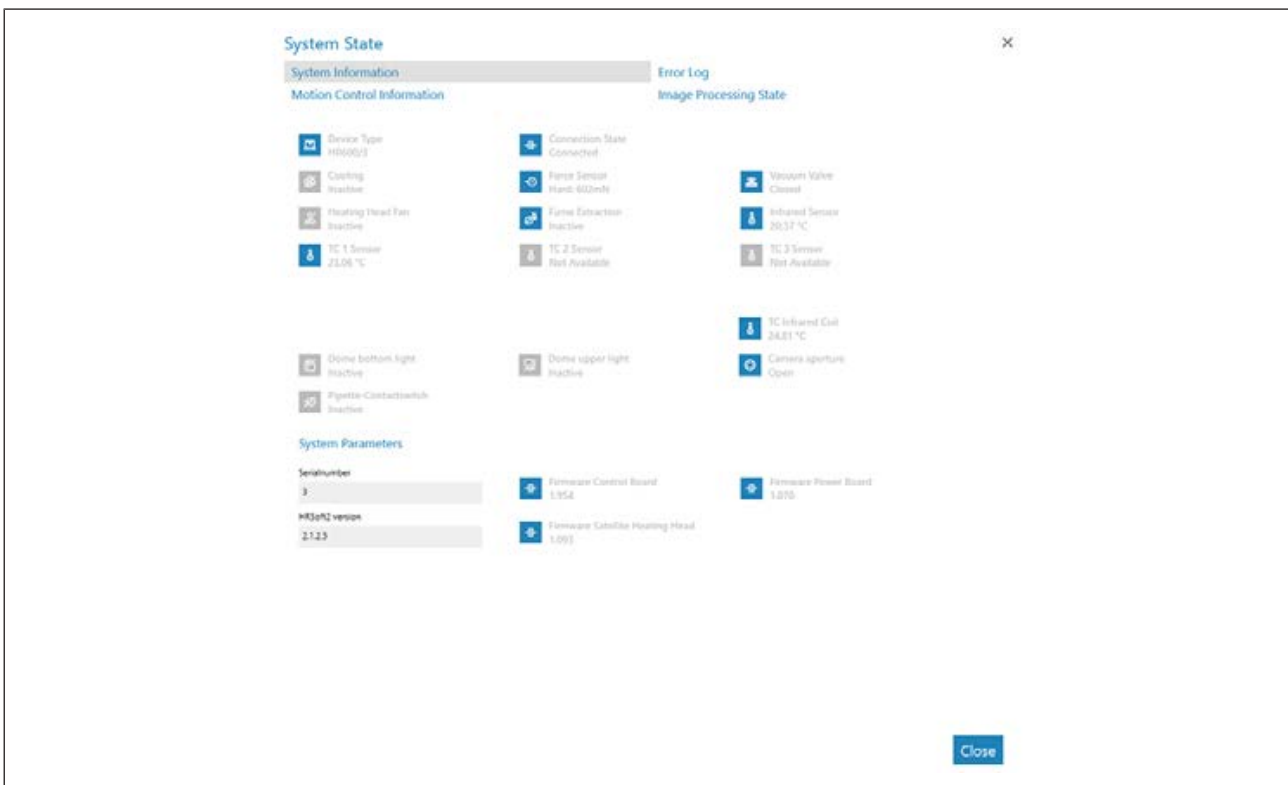


Fig. 29: Example of the start page [System information] in the [System state] range

The [System state] information page shows the four buttons [System information], [Error log], [Motion control information] and [Image processing state].

a) Click on a button to call up the overview of the corresponding area.

⇒ Parameters shown in blue are currently active.

Range [System information]

- At the top: Display of the states of the basic Rework System components.
- Below [System Parameters]: Current levels of the installed HRSof2 version and firmware



Range [Error log]

List of accumulated error messages with date and descriptions. The new errors are highlighted in the [Active] column.

- a) If the causes of the active errors have been cleared, highlight these errors and deactivate them by clicking on the [Confirm] button.
- b) Use the table with the [Severity filter] menu to sort the errors by type.

Range [Motion control information]

- [Top heater]: States of the heating head components and firmware versions.
- [Table]: Only in case of Rework Systems of the 600 series. State of the components and firmware versions of the bottom heatings.
- [Placer head]: Only in case of Rework Systems of the 600 series. States of the placing head components and firmware versions.

Range [Image processing state]

- Left column: State of the top camera components when the camera is active.
- Right column: State of the optional RPC camera components when the camera is active:

The bell icon

indicates whether there are firmware updates for the Rework System. The number in the circle indicates the number of firmware updates.

- a) When a firmware update is displayed, click on the bell icon.
 - ⇒ A window will appear with info about the update.
- b) To perform the update, click on the [Update] button.

As to this, please also read Chapter The dialogue [Update].

The speech balloon button

Selection menu for problem reports, suggestions for improvement or general feed-back to the manufacturer Erska GmbH & Co. KG.

- Problem menu item: Calls up a dialog to inform Erska of a problem that has occurred with the Rework system.
- Suggestion menu item: Calls up a dialogue to inform Erska of a suggestion for improving the Rework system.
- Feedback menu item: Calls up a dialog to provide Erska with positive or negative feedback on the Rework system.

Red button to the far right

- Closes the HRSoft 2 program.



6.15 Switching off the Rework System

- ✓ Turn off the Rework System:
 - a) Quit the HRSoft 2 program by clicking on the red closing button in the right upper corner.
 - b) If the HRS file has been changed, you will be asked whether you want to save the changes.
 - c) Switch off the rework system at the main switch.
 - d) Shut down the PC.

- ✓ If the Rework System is to be transported internally to another location:
- ✓ Before switching off:
 - a) In the tab [Administration] open the dialogue [Device settings]. Click on the [Move to transport position] button.
 - ⇒ The heating head is moved to the lowest position.

- ✓ If the Rework System is to be sent:
 - a) For more information, please read the chapter Prepare the Rework System for delivery. [▶ 47].
 - b) Use the original packaging for shipping.

- ✓ After relocating the Rework System, two functions must be performed:
 - a) The function [Start device setup]. As to this, read the chapter The button [Start maintenance mode] [▶ 105].
 - b) The function [Adjust pixel shift]. Read the chapter The [Pixel shift adjustment] button [▶ 109].



6.16 Use the optional tape feeder

The optional tape feeder (part number 0HR550-TF) provides components to the re-work system individually in component belts. Up to six component belts can be fed into the guide rails of the tape feeder.

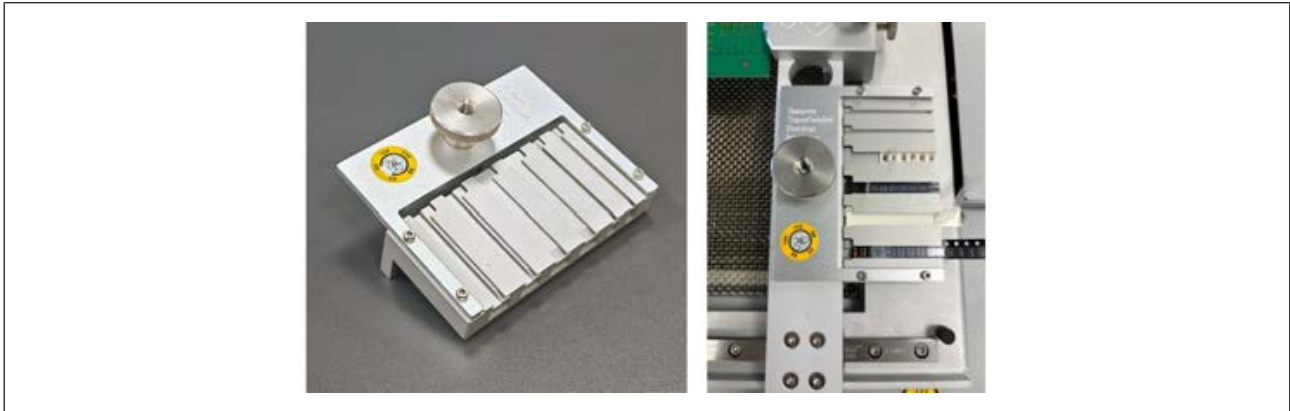


Fig. 30: Left: Tapefeeder. Right: Tape feeder mounted on the circuit board holder. Tape feeder mounted on the circuit board frame, several component belts are inserted.

The following belt types can be supplied:

2 x belt width 4 mm, pocket width 1.5 mm, depth 0.5 mm

4 x belt width 8 mm, pocket width 3.5 mm, depth 2 mm for the two inner guide rails, depth 3.5 mm for the two outer guide rails

There are two methods available:

- Solder components from the component belt into the residual solder
- Dip components from the component belt into solder paste for soldering

Use only flux gel. With liquid flux the required adhesion is not available.

Equip the tape feeder and mount the PCB holder

CAUTION

Risk of burning due to heated machine parts and PCB!

All heated machine parts as well as the surrounding housing parts and product support frame, the circuit board and the components become hot even during warm-up to the process temperature [Tinit]!

Parts are particularly hot during the soldering process! After the soldering process, wait until the device and the PCB have cooled down and reached non-hazardous temperatures!



CAUTION

Risk of burns from hot tape feeder!

After the component has been picked up by the nozzle, immediately remove the tape feeder from the circuit board frame!

To avoid overheating, never leave the tape feeder on the circuit board frame while the thermal process is running!





NOTE

Risk of material damage due to overheating!

Material damage to components due to heating is possible! Always remove the tape feeder from the circuit board frame before the thermal process begins!

- ✓ The matching nozzle is attached to the rework system. Use the largest nozzle possible for the intended component.
- ✓ The tape feeder is removed from the circuit board frame.
 - a) Before inserting a component tape into the tape feeder, use tweezers to lift the protective film on the left side of the component tape. Proceed carefully to avoid losing the components in the component belt.
 - b) Insert the component belt into a tape guide. Only insert the component belts into the tape feeder far enough so that they do not get caught underneath when the tape feeder is mounted on the circuit board frame.
 - c) Attach the tape feeder to a hole on the circuit board holder using the quick-release system. Then tighten the locking screw. You can choose the position freely. However, the component in the tape feeder must be accessible to the nozzle.

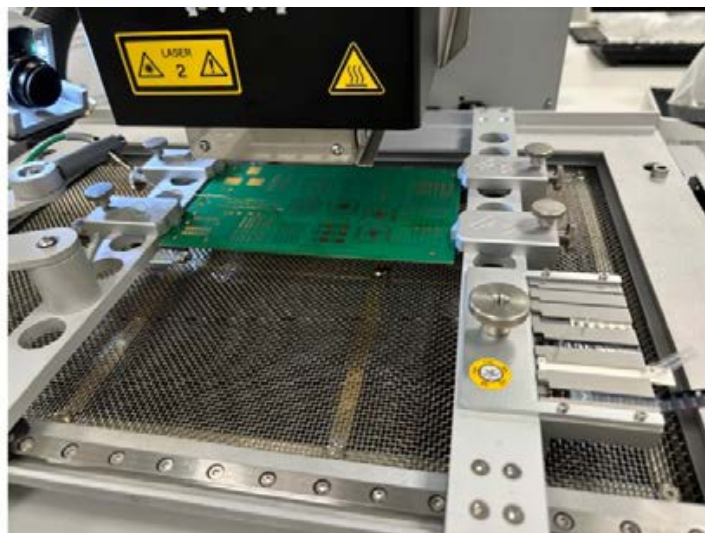
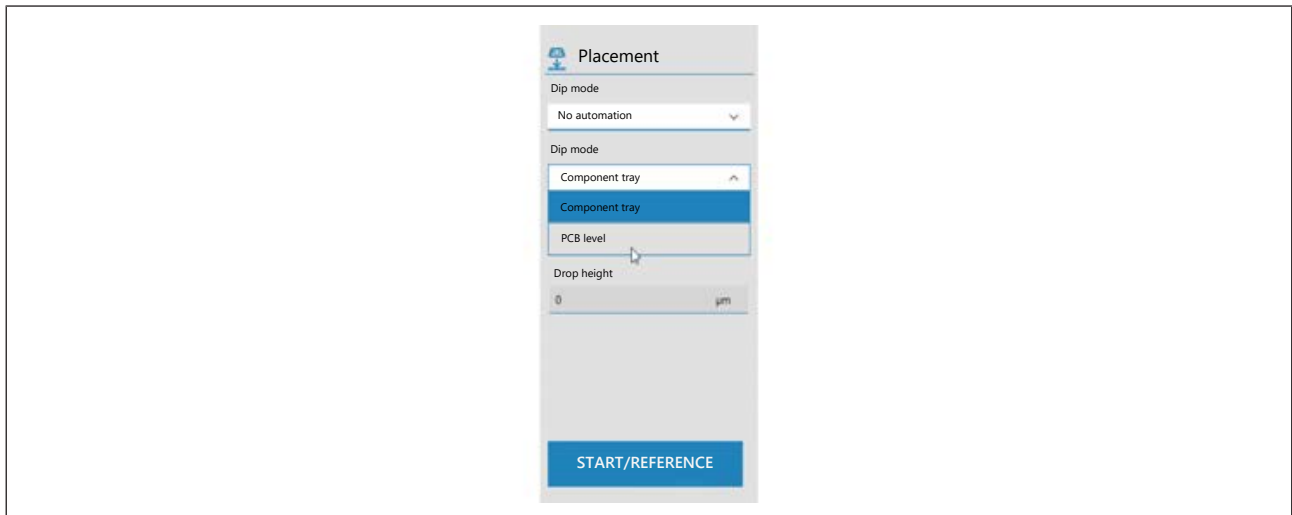


Fig. 31: Example figure: Tape feeder attached to the circuit board frame

Soldering a component using the tape feeder

To change the component position to the tape feeder in the menu [Placement], [Pickup mode] choose the function [PCB level].



The software wizard will guide you through the steps of the soldering process. To avoid overheating, never leave the tape feeder on the circuit board frame while the thermal process is running!

Info: The temperature indicator on the tape feeder shows when it has overheated and exceeded 88 °C (190 °F).



7 Tutorial – Soldering or unsoldering a component

This tutorial describes, as an example, the desoldering and soldering process as well as the step-by-step work through the entire rework process in the software wizard.

Please also read the detailed descriptions of the tabs, menus and commands used here and the associated warnings starting in Chapter 6.

7.1 Insert the PCB

NOTE

ESD sensitive components!



Electronic components may be damaged by electrostatic discharges. Please observe the warnings on the packaging or contact the manufacturer or supplier. To protect these components, the system should be placed in an electrostatic protected area (ESD = electrostatic discharge).

The HR 550 can be easily integrated in environments of this kind. Using one of the front buttons, the user can connect for example an ESD wristband. The housing of the HR 550 is connect via power cord to the earth wire of the supply network.

When handling the device, observe all general safety measures normally required for ESD sensitive components.

CAUTION



Material damage caused by overtightening the PCB holder!

Tighten all screws just enough to ensure that the PCB is securely fixed. Excessively high tightening torques can cause damage to threads and circuit boards!

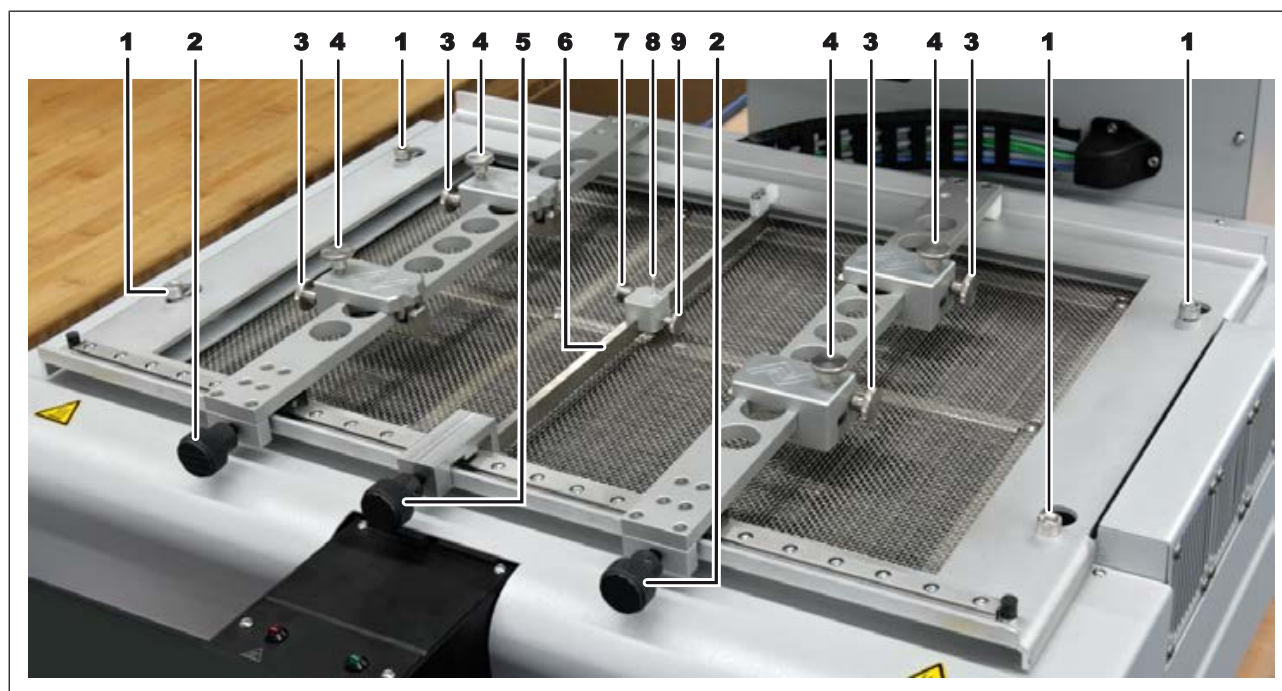


Fig. 32: PCB frame details

Info: The PCB frame can be removed by loosening the four retaining screws (1). This allows using several frames for replacement.

✓ Insert a PCB:



- a) Ensure electrostatic discharge protection.
- b) Hold down the white unlock key on the control panel while pulling the cross table forward until the PCB frame can be easily accessed.
- c) Loosen both knurled thumb screws (2) on the retaining rails.
- d) Adjust the distance of both rails to approximately the width of the PCB.
- e) Loosen the knurled thumb screws (3) on all four PCB holders.
- f) Adjust the PCB holders distance to the PCB size. Also take any components in the way into account.
- g) Tighten the four knurled screws (3).
- h) Release the PCB clamp on the knurled screws (4).
- i) If necessary, use the center support (6). Lock the center support with the knurled screw (5). Use the screw (9) to lock the support pin of the center support in position. The support pin is spring-mounted. Use the screw (7) to lock the spring.
- j) Insert the PCB.
- k) Adjust the PCB holders to the PCB width.
- l) Tighten the PCB clamp with the knurled screws (4).
- m) Position the PCB to achieve the best possible performance of the bottom heating.
- n) Tighten both knurled screws (2).
- ⇒ You can now position the thermocouple. As to this, please also read Chapter [Position a thermocouple](#) [▶ 127].
- a) Now position the cross table so that the component being processed lies exactly below the pipette.

7.2 Replacing the soldering nozzle

Always select the largest possible soldering nozzle for the component. If necessary, change the soldering nozzle as described below:

The transport lock supports the pipette retention mechanism and prevents damage from external forces. When attaching and removing soldering nozzles, the transport lock must be applied to the pipette to compensate for the resulting strain on the pipette retention mechanism. Otherwise material damage will occur! After attaching or changing a soldering nozzle, unscrew the transport lock again.



CAUTION

Risk of burns from hot surfaces!

- a) Touching the device surfaces may cause burns!
- a) Wait for the heating head to cool down.

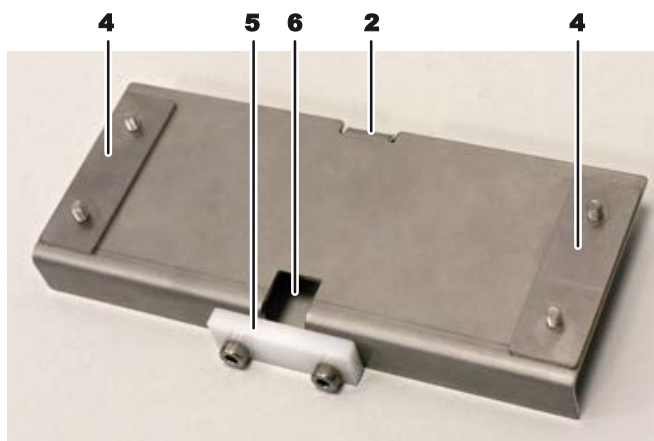


Fig. 33: The transport lock in the removed state. The plastic part (5) is not required.

The transport lock consists of the following parts:

- (2) Handle of the transport lock
- (4) Two fixing strips, each bolted twice
- a) (5) Plastic clamping piece, screwed twice. Not needed for nozzle change. Store the clamping piece and any associated screws so as to be able to screw it back to the transport lock should the Rework system be subsequently carried or shipped.
- (6) Pipette recess
- a) Use button [Manual mode] in tab Rework to call up button column Manual mode .
By moving the mouse over one of these buttons, a describing tool tip will be displayed.

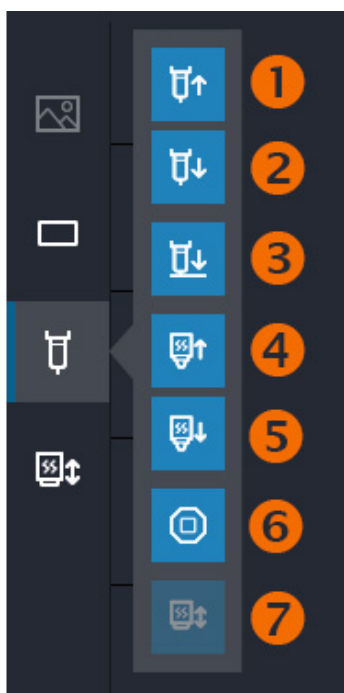


Fig. 34: Manual mode buttons

Button 1: The pipette will move up as long as the mouse button is pressed.



Button 2: The pipette will move down as long as the mouse button is pressed. This button does not work when the heating head is in the lowest position. In this case, use button (4) to move the heating head a little up.

- a) Move the pipette about 1 cm out of the heating head, see the following picture.

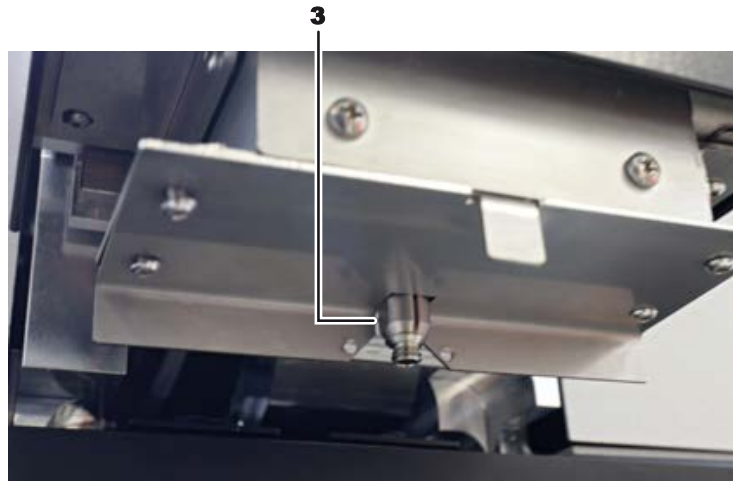


Fig. 35: The extended pipette (3) in the position for changing the nozzle. The picture shows the pipette without the nozzle screwed on. The transport lock is attached.

The pipette is not completely round at its lower end. It has two opposite spanner flats for the transport lock to lock the pipette. To do so, the spanner flats must be aligned exactly at a 90-degree angle, otherwise material damage will occur when the transport lock is applied!

To exactly align the spanner flats of the pipette at a 90-degree angle:

- a) Now use the rotation keys on the heating head to turn the pipette so that the two spanner flats of the pipette are exactly aligned at a 90-degree angle. In doing so, the pipette can be secured in the recess of the transport lock.
- b) Inspect the pipette closely to check the set angle and the movement performed.
- Method 1: Press and hold a rotation key continuously.
The rotation speed will increase slowly. Maximum rotation speed will be reached after approx. 30 s.
 - Method 2: Press a rotation key once. Each time the button is pressed, the pipette will be rotated by a specified degree.
The degree of rotation can be set to one of five rotation levels beforehand. The standard angle degree after switching on the Rework system is 0.5° (level 2).
 - Level 1: Rotation by 0.25°
 - Level 2: Rotation by 0.5° (default value)
 - Level 3: Rotation by 0.75°
 - Level 4: Rotation by 1°
 - Level 5: Rotation by 1.25°

To change the rotation by one step, proceed as follows:

- a) First switch to programming mode: press both rotation keys for one second.



- ⇒ After this second, the pipette will rotate a little counterclockwise and then clockwise (wave motion) to indicate that it has entered the programming mode.
- b) Now change the angle degree:
 - press the right-hand key once to switch to the next higher level.
 - To switch to the next lower level, press the left-hand key once.
 - ⇒ The programming mode has now been exited and the angle degree changed by 1 level. It will remain set as default until the Rework system is turned off.
 - ⇒ If necessary, change the angle degree to the next level.
 - ⇒ If the level falls below level 1, or level 5 is exceeded, the pipette will perform a double wave motion to indicate that the lowest/highest level has already been set. The level remains unchanged.
- ✓ When the angle of the pipette spanner flats has been exactly set via the rotation keys, attach the transport lock to the heating head:
 - a) Use an Allen key size 2 to loosen the two fastening strips (4), but do not unscrew them.
 - b) Attach the transport lock to the heating head from the front. In doing so, do not exert any pressure on the pipette!
 - c) Slightly screw on the two fixing strips (4) so that the transport lock will no longer move under stress (see following picture).
If the pipette does not slide into the pipette recess (6, upper picture), the angle of the spanner flats on the pipette has not been correctly set. Rotate the pipette to the exact angle via the rotation keys as described above, otherwise material damage will occur!

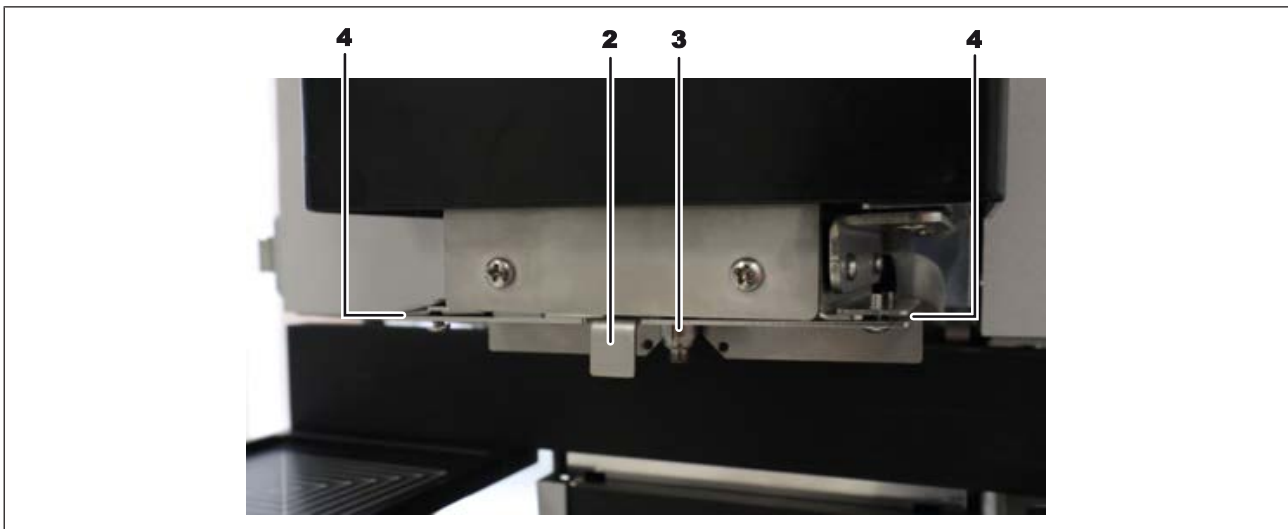


Fig. 36: The transport lock screwed under the heater head

- d) Once the transport lock has been fitted, unscrew the soldering nozzle from the pipette turning it by hand clockwise. If the pipette was manually screwed on too tightly, use the supplied SW9 spanner to unscrew it. Do not allow any lateral forces to act on the pipette axis.
- e) Manually screw the desired soldering nozzle onto the pipette and very slightly tighten it always by hand.
- f) Loosen the two fixing strips of the transport lock, but do not unscrew them.
- g) Pull the transport lock off the heating head to the front and put it down. Leave the fastening strips screwed on.
- h) Set the transport lock aside for later solder nozzle changes.



⇒ The process has now been completed.

With regard to this, please also read Chapter [Spare parts](#) [▶ 161] where you can find a list of available pipettes.



7.3 Position a thermocouple

The correct positioning of the thermocouple is crucial for precise temperature monitoring of the soldering process. To avoid damage, only insulated thermocouples may be used. For accurate measurements, the thermocouple should be in contact with conductive areas such as circuit tracks or ground planes. When using a non-insulated thermocouple, it is important to ensure that the uninsulated parts do not come into contact with the PCB support system or conductive parts of the PCB, as this may distort the temperature measurement.

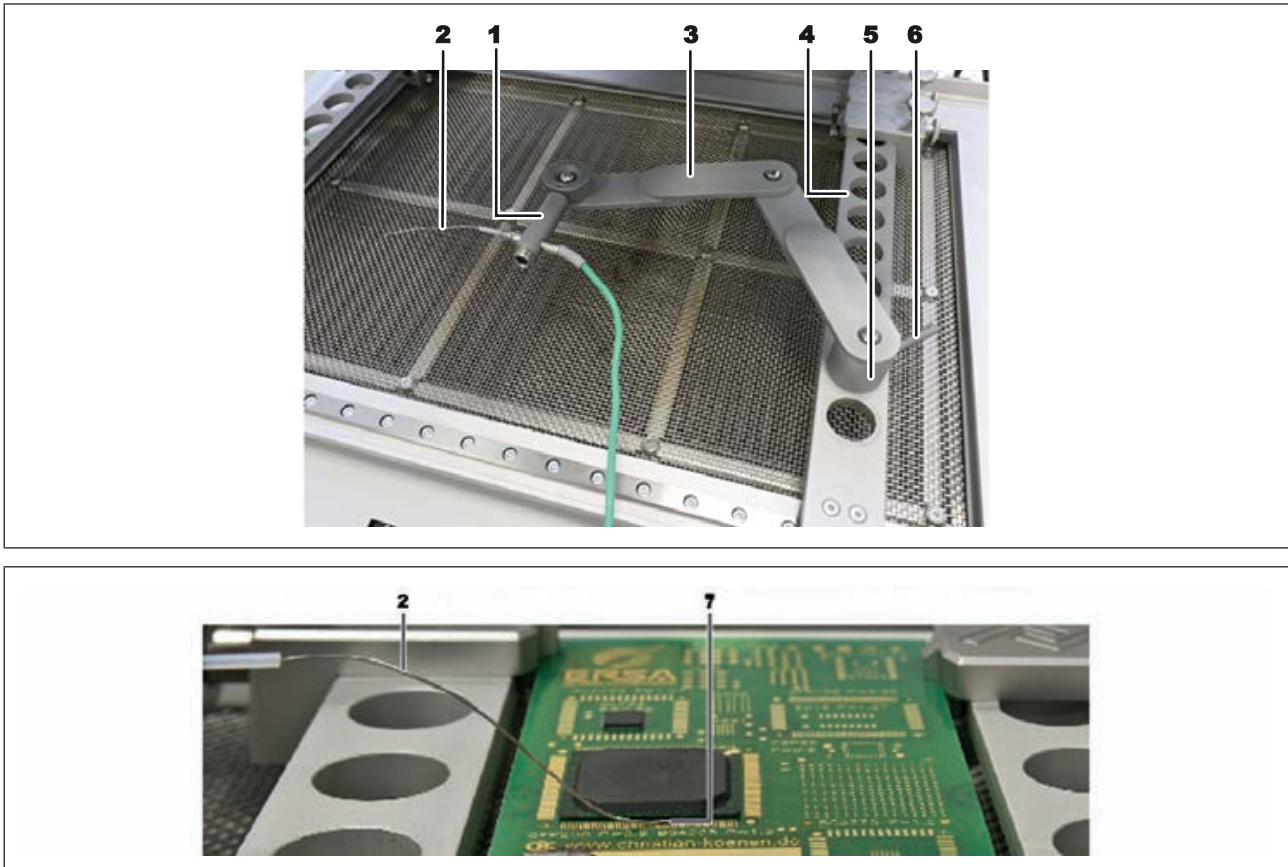
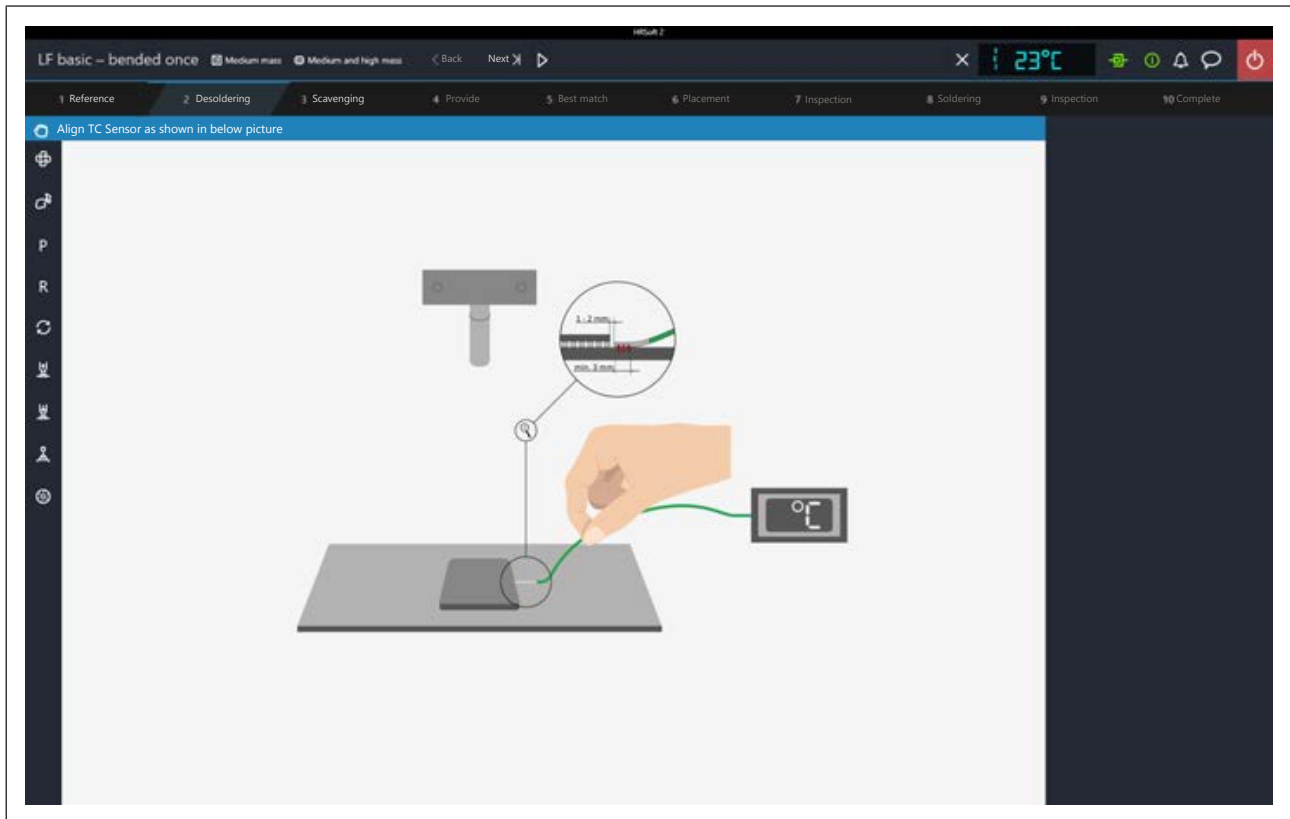


Fig. 37: Example images: above assembly of thermocouple holder, below placing thermocouple

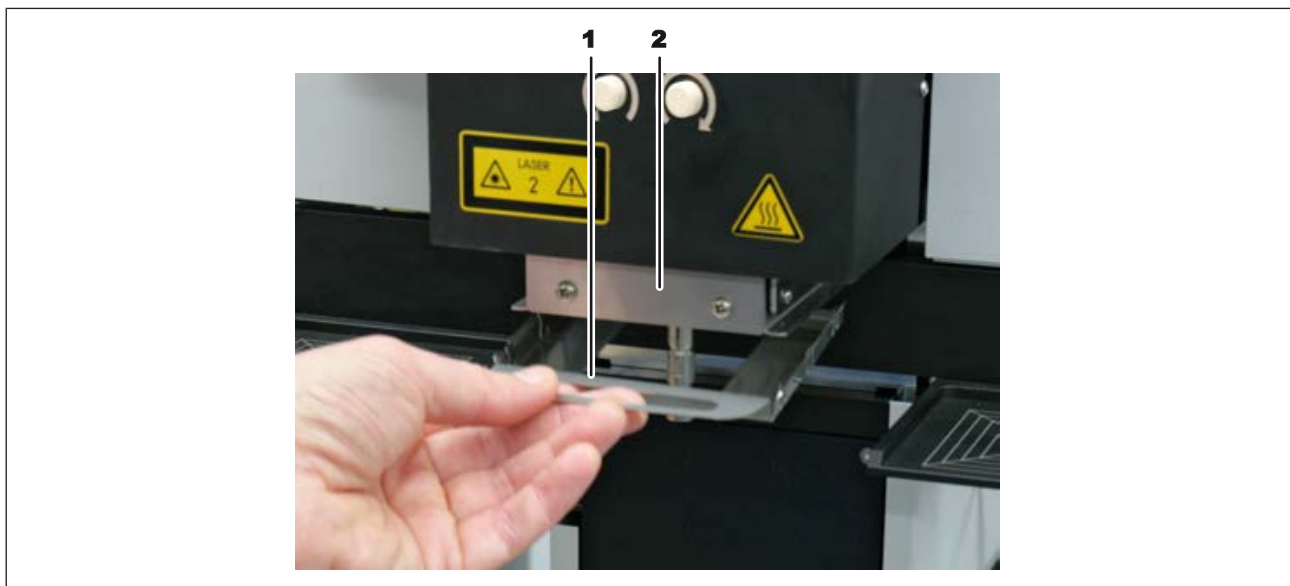
- a) Bend the tip of the thermocouple wire precisely so that only the front three millimeters (120 mils) of the wire can rest on the circuit board.
- b) Slide the thermocouple (2) into the holder (1) and secure it with a 5 mm Allen key.
- c) Insert the holder (3/5) in one of the bores (4).
- d) Clamp the holder with the lever (6).
- e) Connect the plug of the thermocouple to the socket [TC1].
- f) Set the holder (1) in such a way that the end of the thermocouple (7) can be placed very close to the component.
- g) Observe the exact placement specifications for the thermocouple in the illustration of the corresponding work step.



- 3 mm (120 mils) of the thermocouple tip must be in contact.
- 1.5 mm (60 mils) distance from the component or the edge of the cleaning surface.

The currently measured temperature of the selected thermocouple is displayed in the top right-hand corner of HRSoft 2.

7.4 Shielding heat sensitive components



- a) Use reflective strip and/or an adequate air deflector for shielding purposes.
- b) To avoid material damage when installing air baffles, make sure that the air baffle does not touch the pipette and the soldering nozzle.



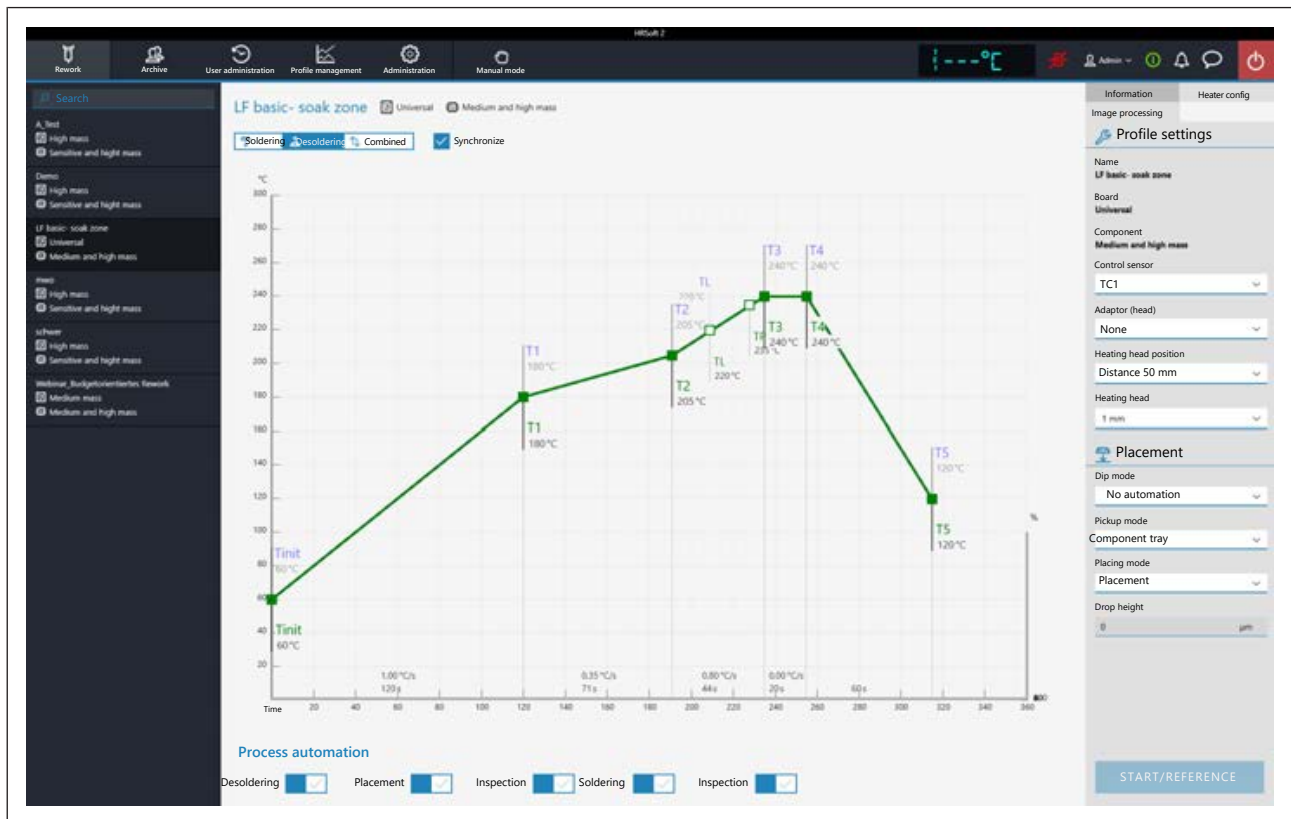
- c) Fit the back lugs of the air baffle (1) into the bottom plate of the heating head (2) from behind. Then press the air baffle upwards on its front side.



7.5 Activate a soldering profile and prepare the soldering process

Open tab [Rework]. The available soldering profiles are listed in the left column. With regard to this, please also read Chapter [Use of the soldering profile in the \[Rework\] tabulator](#) [▶ 69].

Notes: If any change is made in tab [Rework], they cannot be saved. With regard to this, please also read Chapter [The Tabulator \[Rework\]](#) [▶ 67] and the following ones. Only the administrator may save soldering profiles. With regard to this, please also read Chapter [Acquiring, editing and saving soldering profiles in the \[Profile management\] tab](#) [▶ 85] and the following ones. Likewise, only the administrator can assign soldering profiles to the standard user, who can then select them in tab [Rework]. With regard to this, please also read Chapter [The tab with the arrow button \[More\] under the \[Profile management\] tab](#) [▶ 94].



Click on the desired soldering profile to activate it. You can now work with this profile.

Use buttons [Process automation] to enable the desired process steps in the bottom field. The process starts from the left with the first activated process and is carried on to the right by performing the various process steps. With regard to this, please also read Chapter [The process steps of \[process automation\]](#) [▶ 78].

In the tab line, click on button [Manual mode] to display, in the left window area, the buttons for manually controlling machine functions such as: pick-and-place laser, pipette vacuum, heating head procedure, etc. With regard to this, please also read Chapter [The \[Manual Mode\]](#) [▶ 113].

Check all the soldering profile settings, consisting of the chart, the buttons [Process automation] and the three tabs [Information], [Heater config] and the tab with the small arrow button (Image processing). If necessary, make corrections.



7.6 Start the process and work with the assistant.

CAUTION



Risk of burning due to heated machine parts and PCB!

All heated machine parts as well as the surrounding housing parts and product support frame, the circuit board and the components become hot even during warm-up to the process temperature [Tinit]!

Parts are particularly hot during the soldering process! After the soldering process, wait until the device and the PCB have cooled down and reached non-hazardous temperatures!

NOTE



Use the soldering fume extraction system!

Solder fumes are hazardous to health. For this reason, a soldering fume extraction system should always be used. As regards the type of soldering fume extraction system, we recommend using the Ersä “Easy Arm” with prefilter, HEPA, particle filter and activated carbon filter. The device is equipped with a suitable connection for the soldering fume extraction system. The soldering fume extraction system prevents the device from accumulating dirt quickly.

In what follows, the entire soldering process is described along with all relevant steps. These include unsoldering, Placement the new component, Inspection the position of the new component, Soldering and finally Inspection.

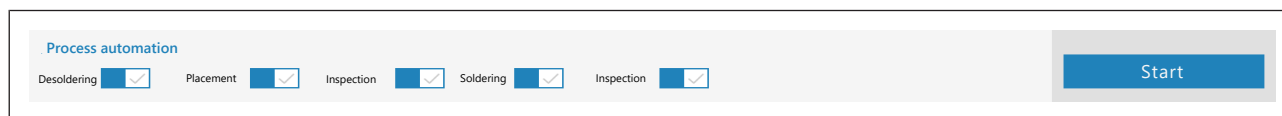
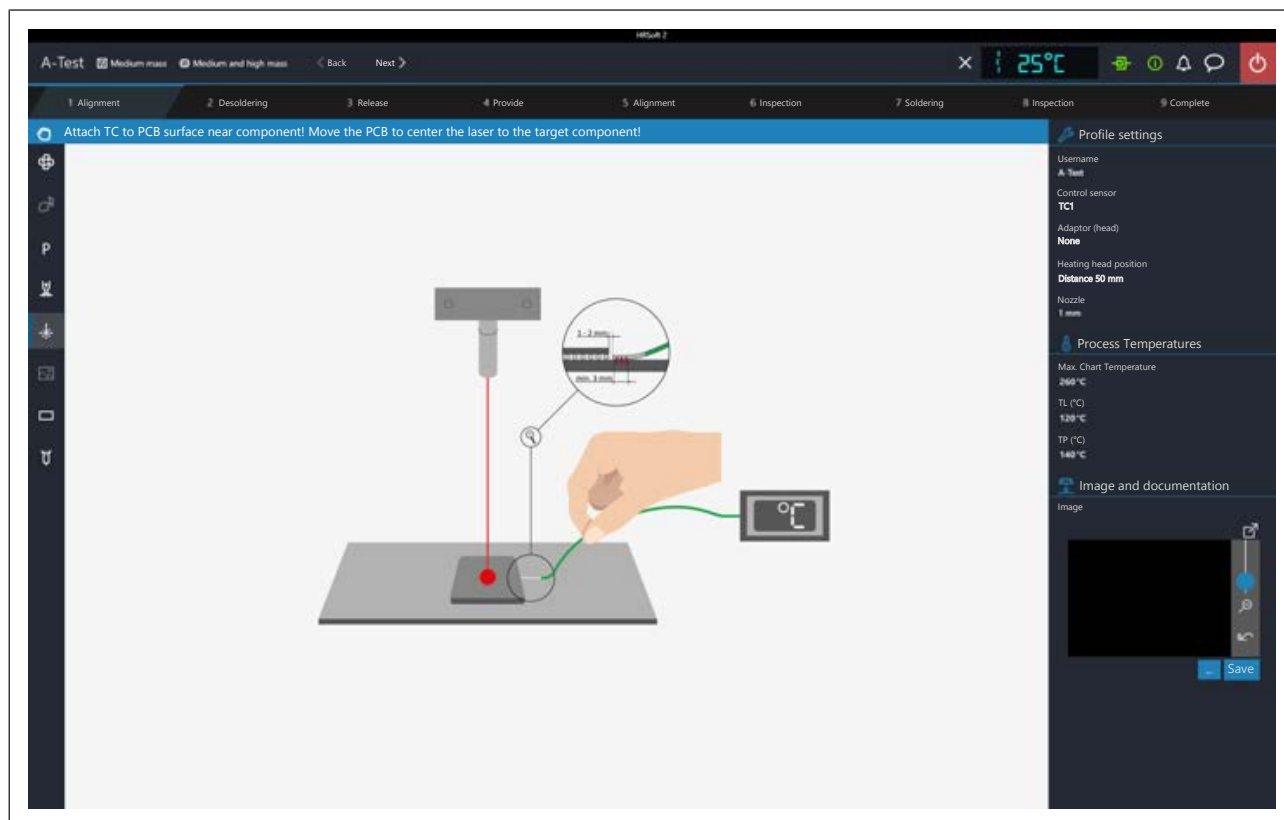


Fig. 38: All five steps are activated

a) Click on the [Start] button.

- ⇒ The Wizard starts and executes the various steps divided into several tasks. Perform all activities as required by the assistant.



In the information row over the graph you will find a description of the required tasks. In the dark area on the right you may view the most important process parameters.



7.7 Task 1 “Alignment”

The device will first start a referencing cycle for the pipette and heating head.



DANGER

Laser beam! Risk of injury due to retinal burns

- a) Do not stare into the laser beam!
- b) Do not point the laser beam at other people! Reflecting surfaces under the laser generate reflections!
- c) Class 2 laser according to DIN EN 60825-1:2008-5, $P < 1 \text{ mW}$, $\lambda = 650 \text{ nm}$

- ✓ The position laser is switched on. You will be asked to achieve a perfectly centred working position with the aid of the laser.
- a) Move the cross table while holding down the white illuminated unlock button on the control panel, for rough positioning. Then use the two adjusting screws on the control panel for fine positioning. The right screw changes the X direction, while the left adjusting screw changes the Y direction. With regard to this, please also read the [Overview of the machine parts](#) [► 62]chapter.
 - ⇒ Now the temperature sensor must be applied. This step is skipped if in the soldering profile the infrared sensor is selected as the temperature sensor. The infrared sensor is not suitable for shiny or reflecting surfaces.
- b) Set the holder of the temperature sensor in such a way that the end of the thermocouple can be placed very close to the component. Bend the end of the thermal element into shape, so that the front of the wire for the first three millimetres is very close to the component on the PCB. In order to achieve exact values, the thermocouple should be in contact with the trace areas, e.g. to trace or earth. With regard to this, please also read the [Position a thermocouple](#) [► 127]chapter.
 - ⇒ You may connect further optional temperature sensors in order to receive additional temperature information, for instance regarding adjacent components or PCB bottom.
 - ⇒ Once the cross table and the temperature sensor have been exactly positioned, move on to the next task.
- c) You may either press the green button on the control panel or click on the “Next” button in the upper window area.

To cancel the soldering process, you can press at any time the red illuminated button on the control panel or click on the button with the white “X” in the upper window area.

 - ⇒ The selected unsoldering process starts and in the chart you may observe the process. At the end, the pipette lifts the the unsoldered component from the PCB.
- d) Move on to the next task.



7.8 Task 2 “Desoldering”

CAUTION

Risk of burning due to heated machine parts and PCB!



All heated machine parts as well as the surrounding housing parts and product support frame, the circuit board and the components become hot even during warm-up to the process temperature [Tinit]!

Parts are particularly hot during the soldering process! After the soldering process, wait until the device and the PCB have cooled down and reached non-hazardous temperatures!

NOTE

Use the soldering fume extraction system!



Solder fumes are hazardous to health. For this reason, a soldering fume extraction system should always be used. As regards the type of soldering fume extraction system, we recommend using the Erska “Easy Arm” with prefilter, HEPA, particle filter and activated carbon filter. The device is equipped with a suitable connection for the soldering fume extraction system. The soldering fume extraction system prevents the device from accumulating dirt quickly.

The desoldering process is performed.

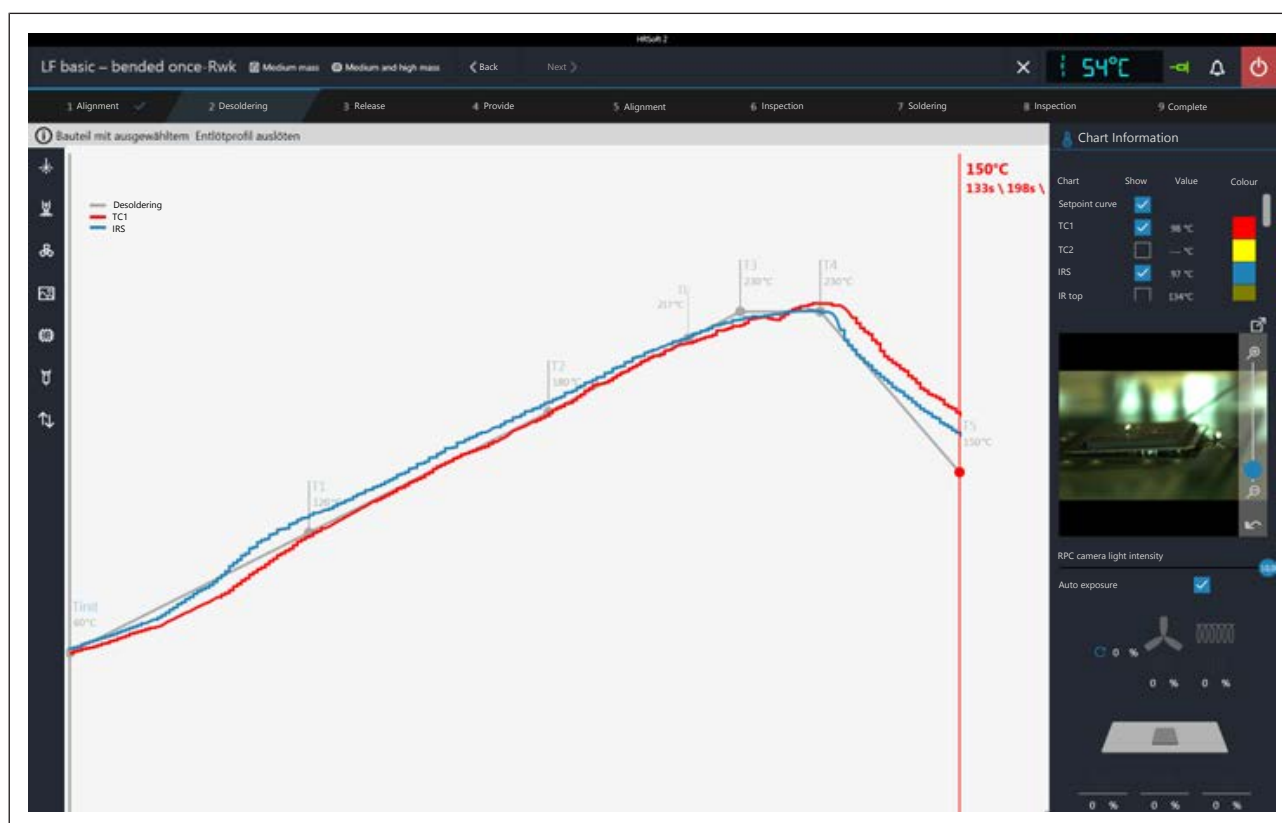


Chart information

- Column [Show]: display/hide the measuring curves.
- Column [Colour]: colour of the measuring curve. Click the coloured square to see all available colours.



RPC Camera Live Image

- a) Adjust the ideal process observation angle through the retainer system of the optional RPC camera. The camera may not be found in the movement area of moving machine parts. The camera lens has a rubber ring in its front part for adjusting the focus. Move the rubber ring carefully with your finger to achieve the ideal focus point. Note: do not change the aperture setting of the camera lens. Should the lens screw loosen, clamp it back with aperture value 8.
- b) The camera image can be zoomed with the controller on the right of the camera image or with the mouse wheel.
 - [RPC camera light intensity]: controls the camera lighting.
 - [Auto exposure]: When activated, the brightness of the image is automatically adjusted after changing the camera lighting or ambient light.



Click the button  to switch the live image to full-screen display. The zoom controller allows further zooming. Use the left mouse button to move the image section. Close the full-screen display by clicking the small red circle button in the upper right corner.

Heating information

The lower field shows the updated status of the heating elements and hot air blower.

- a) When the soldering process ends, go to the next step.



7.9 Task 3 “Deposit”

If you want to solder a new component on the soldering point, clean it of any residual solder.

- a) If the optional Scavenger residual solder sucker is used, refer to the [851] work step, that is included after the [Desoldering] work step. Scavenging As to this, please read the description under Work step 4 for “Cleaning” with the optional residual solder sucker [▶ 140]

CAUTION

Risk of burning due to heated machine parts and PCB!

All heated machine parts as well as the surrounding housing parts and product support frame, the circuit board and the components become hot even during warm-up to the process temperature [Tinit]!

Parts are particularly hot during the soldering process! After the soldering process, wait until the device and the PCB have cooled down and reached non-hazardous temperatures!



- a) Distribute a small amount of viscous, non-volatile flux material on the residual solder points.
- b) Remove any residual solder with a suitable tool,
 - ⇒ e.g. with the following solder tips: PowerWell 0102WDLF23/SB (small), 0102ADLF40/SB (medium) or 0102ZDLF150/SB (large).
- c) e.g. with the Scavenger residual solder sucker available for your Rework system. The Rework system can be reconditioned with it. As to this, please read the description in Chapter



Fig. 39: Available as optional: Scavenger residual solder sucker



- d) Remove flux residue with Ersä Flux Remover (OFR200).
- e) Dry the solder joints with a clean, lint-free cloth.
- f) Place and properly align the soldered component on the component tray.



7.10 Task 4 "Preparation"

If you selected the dip mode [No automation] (soldering without flux material dip and without component with solder paste in the print template):

- a) With the aid of the laser, position the component to be soldered in the middle and properly align it on a component tray. Then the component is lifted from the component tray. Then the component must be aligned and placed in soldering position.

If you selected the dip mode [Auto. Dip], e.g. for QFN components:

- a) With the aid of the laser, position the component to be soldered in the middle and properly align it on a component tray.
- b) With the doctor blade apply flux material gel in the dip template and place the dip template into the other component tray.

Then the component is taken from the component tray and dipped in the flux material of the dip template. Then the component must be aligned and placed in soldering position.



Fig. 40: Dip template covered in flux material on the component tray

- a) After applying flux material gel with the doctor blade in the dip template, place the dip template in the other component tray.

If you selected the print mode [Auto. Print]:

- a) With the doctor blade, apply solder paste on the bottom of the component.
- b) Place the print template in a component tray and make sure it is correctly aligned with the component.

The component is lifted by the print template. Then the component must be aligned and placed in unsoldering position.

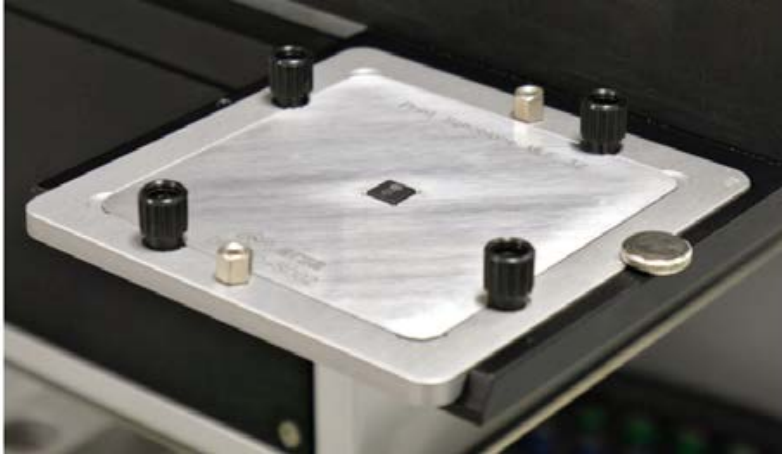


Fig. 41: Component covered in solder paste in the print template on the component tray



7.11 Work step 4 for “Cleaning” with the optional residual solder sucker

Integrating the optional residual solder sucker into the Rework program HRSoft 2

a) Activate the [871] function in the [Device settings] dialog, under the [Administration] tab. Scavenger active As to this, please also read Chapter [The \[device settings\] dialog](#) [▶ 102].

⇒ In [Process automation], [Scavenging] is included as a second work step.

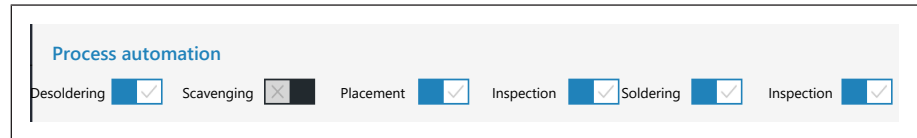
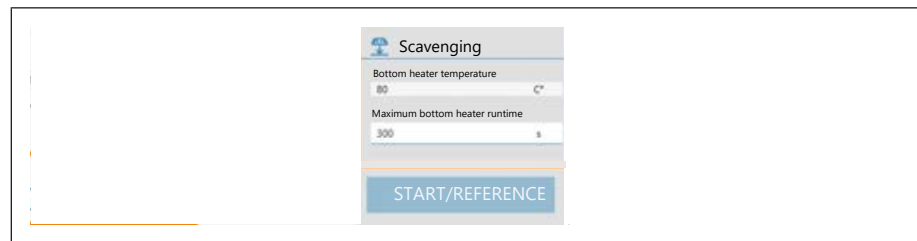


Fig. 42: Work step 2 “Cleaning”

b) Activate the [Scavenging] work step.

⇒ The [851] range is included under the [Profile management] tab, at the bottom of the [Information] tab. Scavenging



- [Bottom heater temperature]: temperature that is kept while cleaning the bottom heating. This is the suitable temperature for cleaning.
- [Placing mode]: Maximum heating time of the bottom heating during cleaning. For safety reasons, the bottom heating will switch off after this time, even if the swing arm of the residual solder sucker has not been swung back into its normal position.

Working with the optional residual solder sucker



⚠ CAUTION

Burn hazard due to the hot suction nozzle and hot air!

The suction nozzle is heated immediately after switch-on with hot air flowing out! Also the parts bearing the suction nozzle can be very hot!



NOTE

Risk of material damage!

Never operate the residual solder sucker without switching on the air blower! The air blower must always be switched on to avoid damaging the heating! An air sucker/blower is particularly required at temperatures above 100 °C.



NOTE

Risk of material damage!

Do not leave the suction head over a PCB for too long to prevent the PCB from delaminating/burning!



NOTE

Use the soldering fume extraction system!

Solder fumes are hazardous to health. For this reason, a soldering fume extraction system should always be used. As regards the type of soldering fume extraction system, we recommend using the Ersä “Easy Arm” with prefilter, HEPA, particle filter and activated carbon filter. The device is equipped with a suitable connection for the soldering fume extraction system. The soldering fume extraction system prevents the device from accumulating dirt quickly.



CAUTION

Risk of burning due to heated machine parts and PCB!

All heated machine parts as well as the surrounding housing parts and product support frame, the circuit board and the components become hot even during warm-up to the process temperature [Tinit]!

Parts are particularly hot during the soldering process! After the soldering process, wait until the device and the PCB have cooled down and reached non-hazardous temperatures!

As to this, please also read the operating instructions for the residual solder sucker. Only operate the residual solder sucker if all specifications in the relevant operating instructions have been complied with!

Proceed with cleaning as described in the residual solder sucker operating instructions.

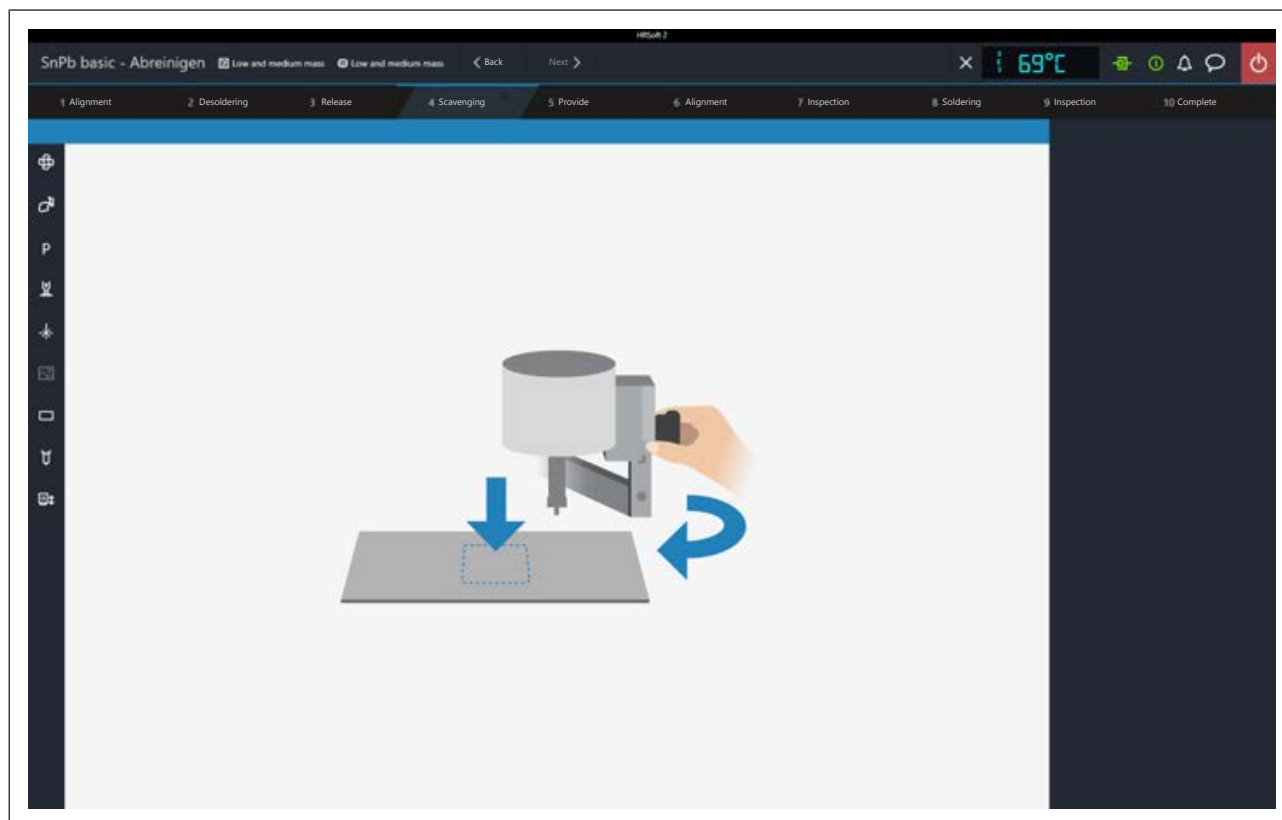


NOTE

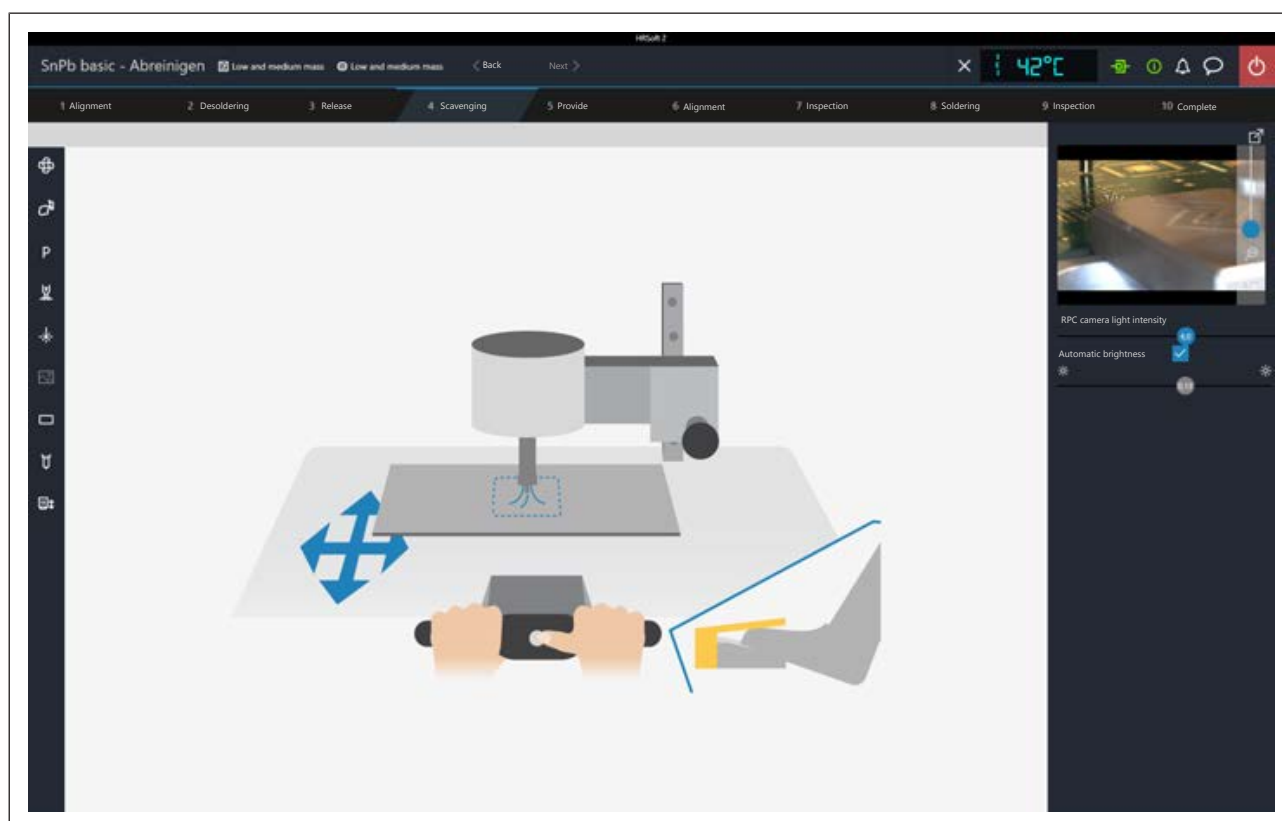
Risk of material damage!

Always snap the nozzle block into the upper position when it is swung under the heating head! In the lower position, the suction nozzle can hit the PCB or other components!

As shown in the first dialog in [Scavenging] work step 4, swing the suction arm towards the suction point.



The second dialog in [Scavenging] work step 4 will now indicate that cleaning can be started.



a) Once all preparations have been made, vacuum the residual solder as described in the residual solder sucker operating instructions.

All other activities are also described in the residual solder sucker operating instructions.

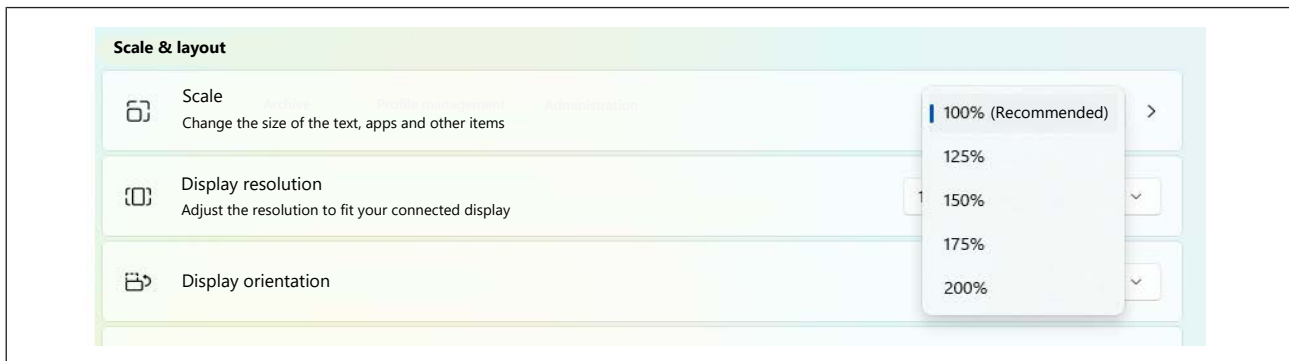


a) When cleaning is over, go to the next step.



7.12 Task 5 “Alignment”

a) Ensure that the Windows screen display scaling is set to 100%.



a) Align the component perfectly with the board as indicated in the live image.

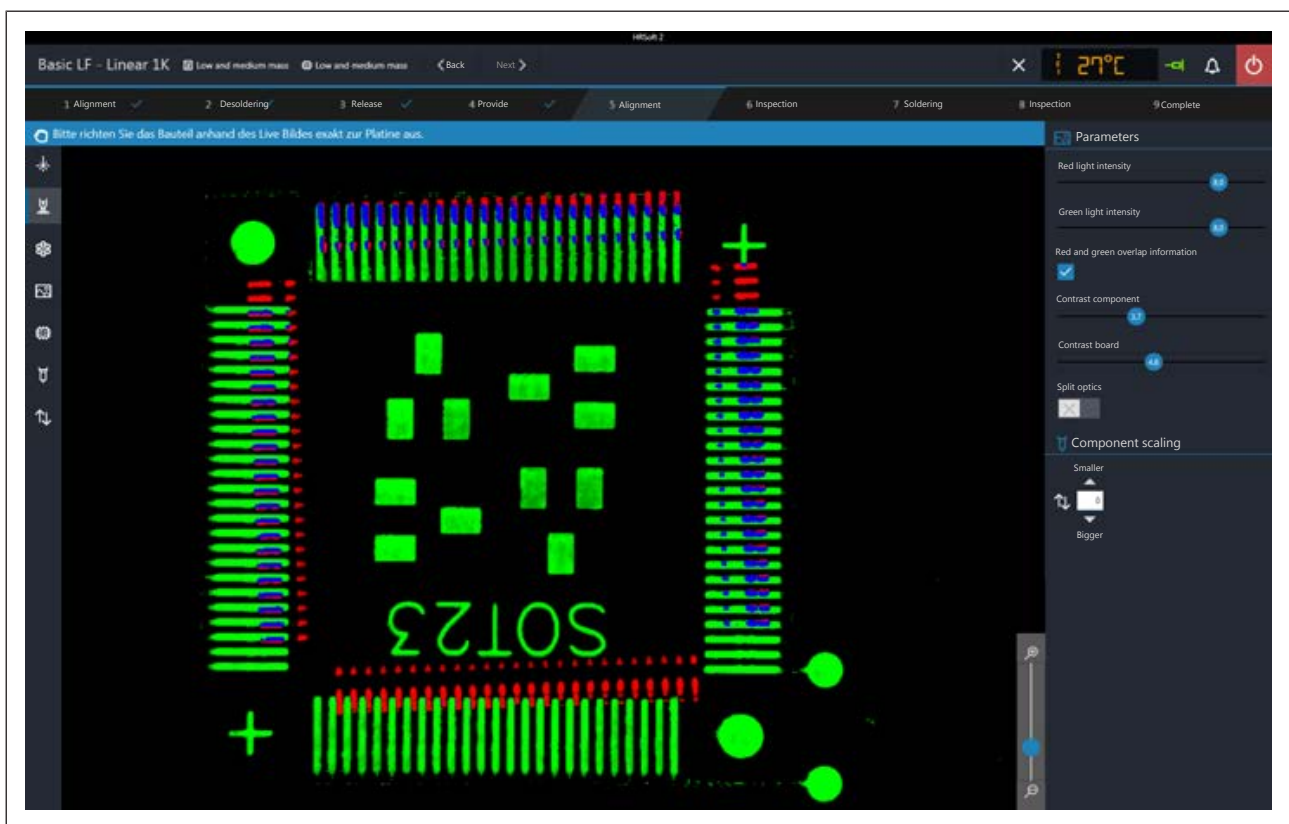


Fig. 43: Component before correcting its position

- b) You may use the normal view/telephoto toggling lever of the vision box. Please also about this read the chapter [Overview of the machine parts](#) [► 62], No. 11.
 - c) Activate the button [Show red and green overlay] to see the overlapping parts of the green platinum representation and the red component representation in blue.
 - d) Use the four intensity and contrast controllers to optimise the image quality.
 - e) With the controller at the bottom on the right, you may adjust the vision box zoom.
- First, correct the component rotation using the relevant rotary button. Please also read the chapter [Overview of the machine parts](#) [► 62], No. 5



- Then correct the display of the component size with the small arrow key and with the [Component scaling]. Arrow up/smaller = reduce red component image. After making the correction, wait for the pipette motor to implement the change.
 - Correct the PCB position with the two adjusting screws on the control panel. The right screw changes the X direction, while the left adjusting screw changes the Y direction. Please also read the chapter [Overview of the machine parts](#) [► 62], No. 2 and No. 8 on the control panel.
- a) For instance, in case of large components, in order to enlarge the comparison display of widely separated image areas click on the [Split optics]. Now click four times with the small blue rectangle on the four points that you wish to enlarge.

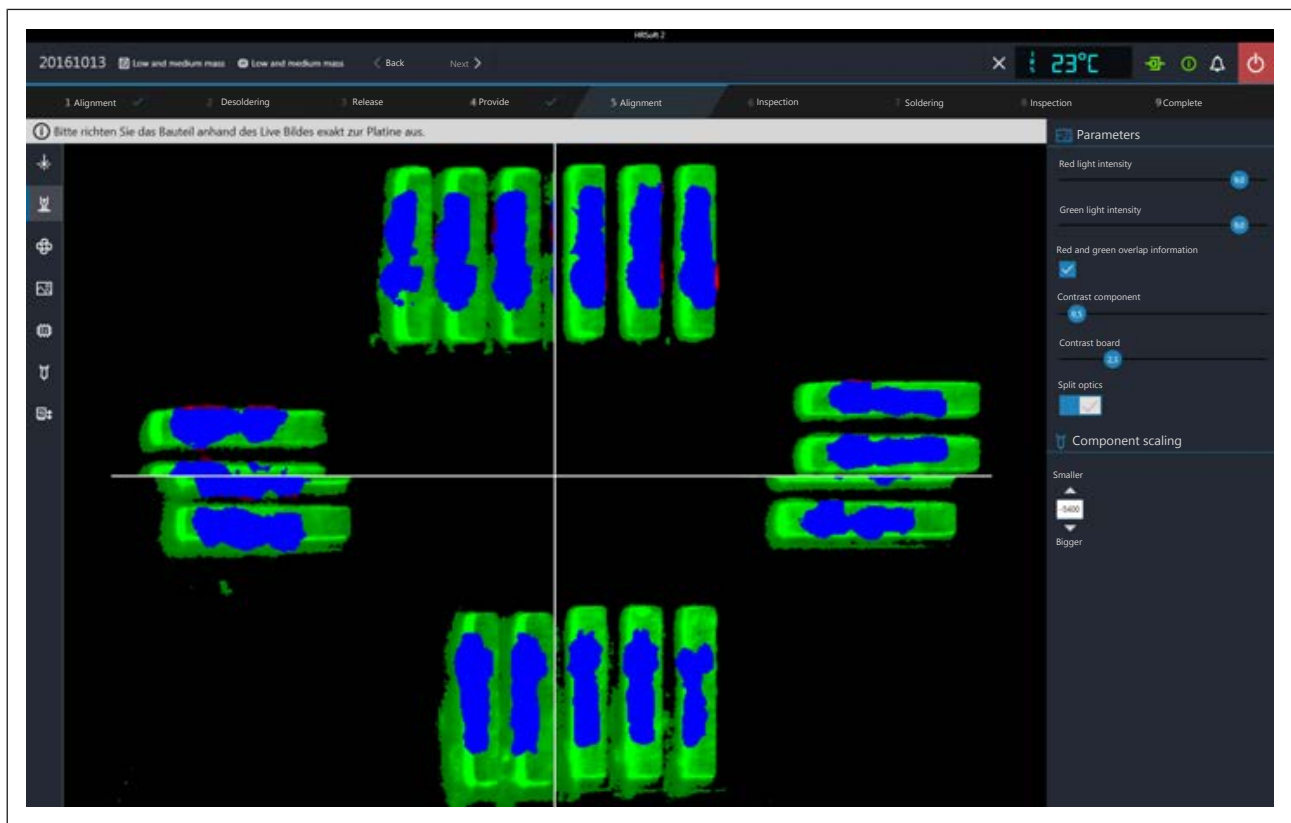


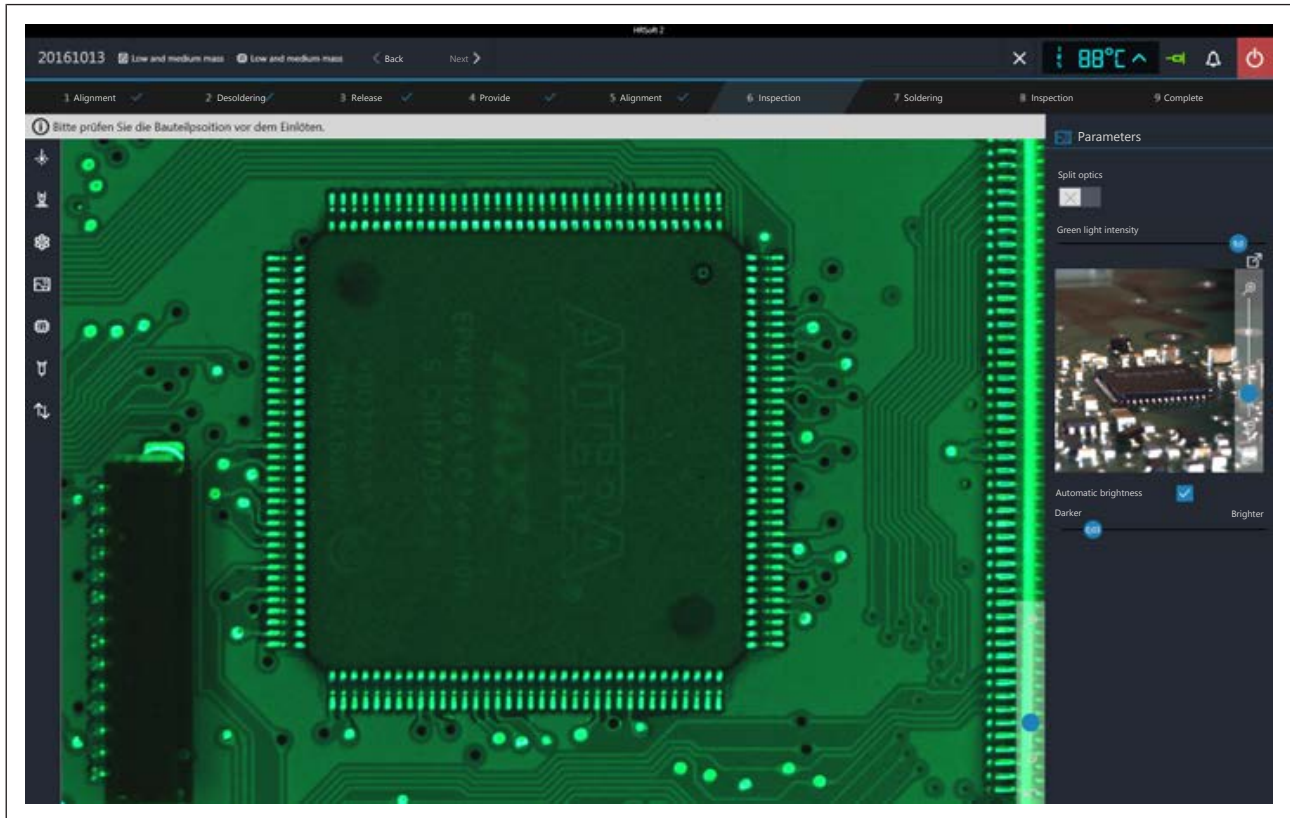
Fig. 44: Split screen view with simultaneous display of the four corners of a large component

- b) If necessary, even in this case adjust the angle compensation before correcting the position.
 - c) If the component is coextensive with the soldering point, push back the vision box and move on to the next task.
- ⇒ The component is deposited on the board.



7.13 Task 6 “Inspection”

a) Check the position of the component based on the displayed live image.



b) You can use the lever to switch between normal view and the telephoto lens of the Vision box. With regard to this, please also read Chapter [Overview of the machine parts](#) [► 62], no. 11.

c) For example, in case of large components, in order to see an enlarged comparison of widely spaced image areas, click on button [Split optics]. Now click four times with the small blue rectangle on the four points that you want to see enlarged.

⇒ A split screen view will be displayed.

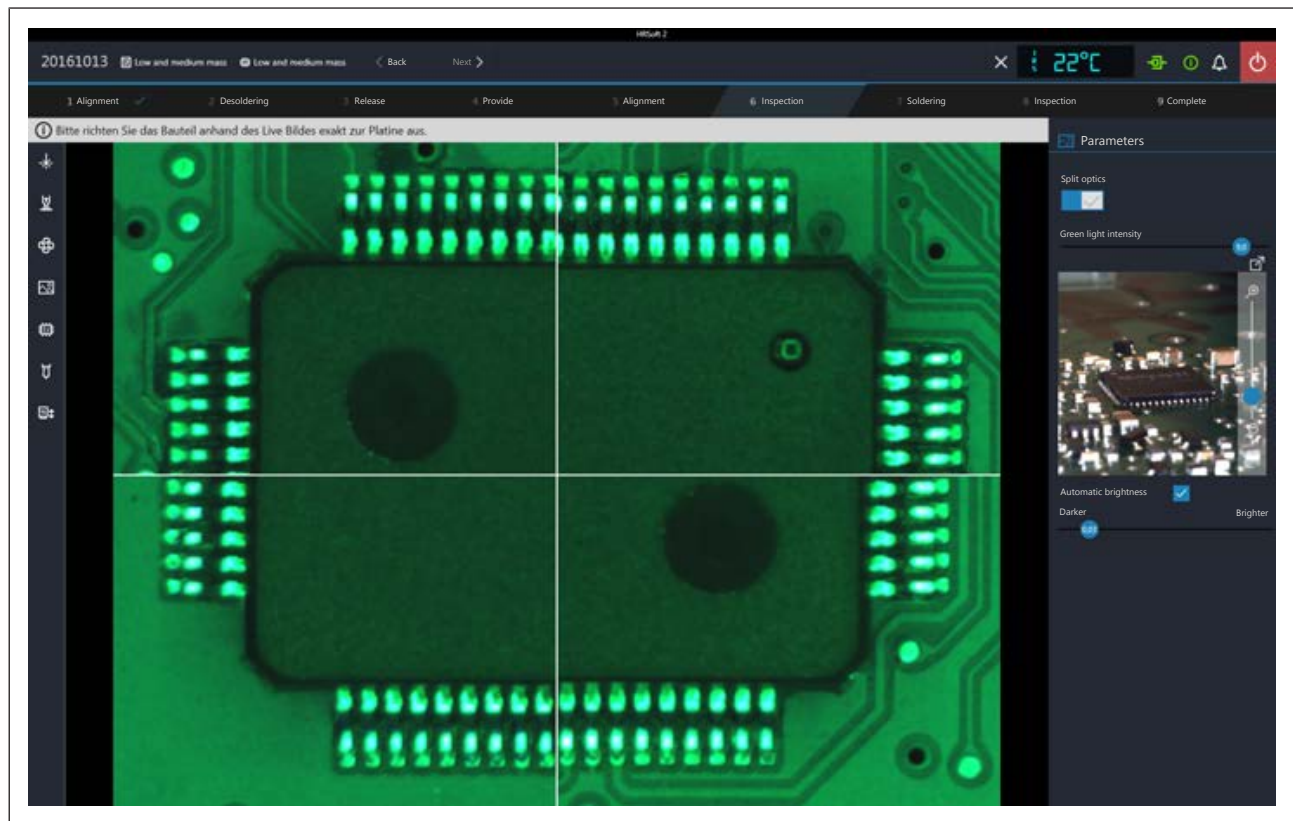


Fig. 45: Split screen view with simultaneous display of the four corners of a large component

- a) You can zoom the Vision box image using the controller on the bottom right of the camera image.
 - Green light intensity: Checks the brightness of the green PCB lighting.
 - Automatic brightness: When activated, the RPC camera image is automatically adjusted after changing the camera lighting brightness or ambient light.
 - Darker/Brighter: Checks the RPC camera lighting
- a) Click on the button  to switch to the live image of the RPC camera in full-screen display. The zoom controller allows further zooming. Use the left mouse button to move the image section. Close the full-screen display by clicking on the blue circle button in the upper right corner.
- b) When the component is correctly positioned, slide the Vision box backward and follow the instructions in the following steps.



7.14 Task 7 “Soldering”

⚠ CAUTION



Risk of burning due to heated machine parts and PCB!

All heated machine parts as well as the surrounding housing parts and product support frame, the circuit board and the components become hot even during warm-up to the process temperature [Tinit]!

Parts are particularly hot during the soldering process! After the soldering process, wait until the device and the PCB have cooled down and reached non-hazardous temperatures!

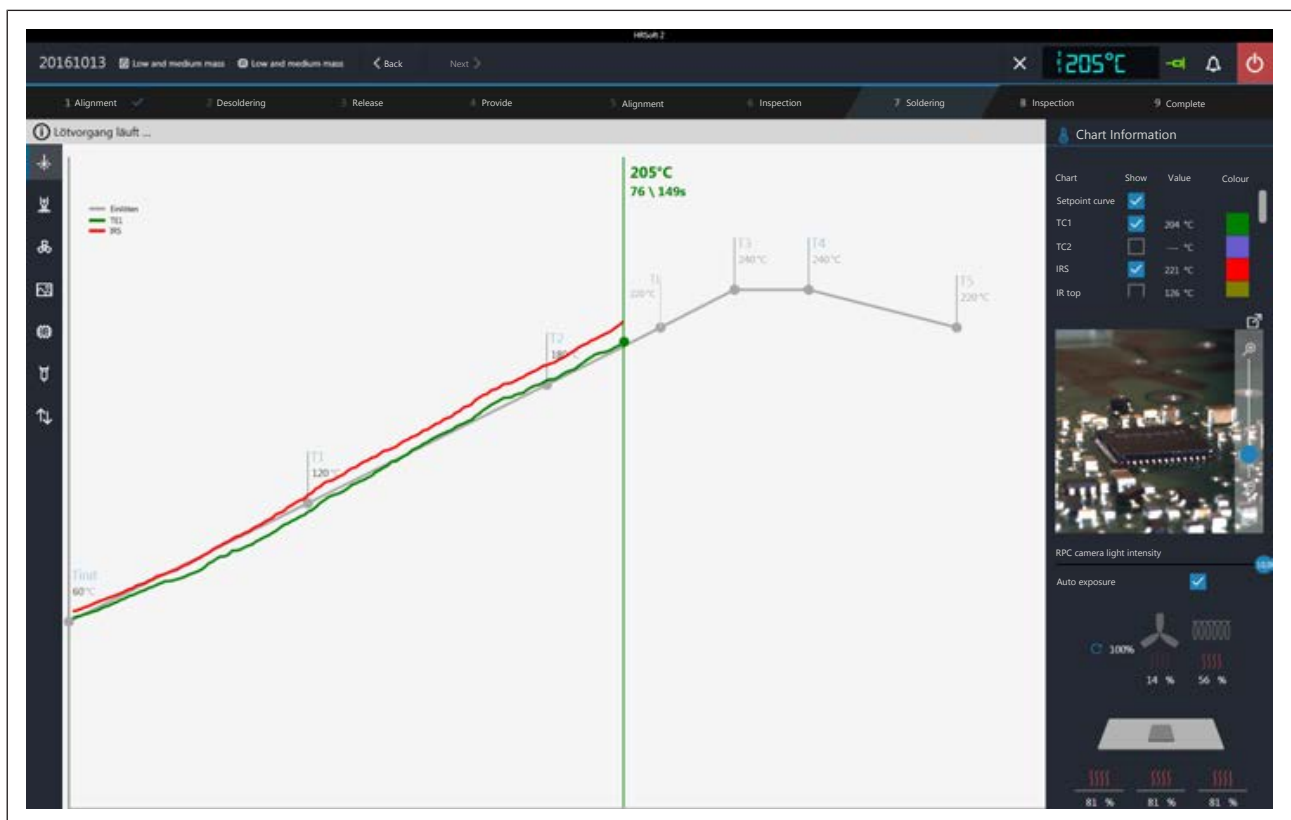
NOTE



Use the soldering fume extraction system!

Solder fumes are hazardous to health. For this reason, a soldering fume extraction system should always be used. As regards the type of soldering fume extraction system, we recommend using the Ersa “Easy Arm” with prefilter, HEPA, particle filter and activated carbon filter. The device is equipped with a suitable connection for the soldering fume extraction system. The soldering fume extraction system prevents the device from accumulating dirt quickly.

The soldering process is carried out.



Information chart

- Column [Show]: Show/hide the measurement curves.
- Column [Colour]: Colour of the measurement curve. Click on the coloured square to view all available colours.



RPC camera live

- a) On the support system of the RPC camera, set the ideal angle for monitoring the process. The camera must not be located within the operating range of the component trays. On the front of the camera objective, you will find a rubber ring to set the focus. Move the rubber ring carefully with a finger to focus the camera as accurately as possible. Note: do not change the setting of the objective aperture. If the locating screw of the aperture has opened, close it with aperture value of 8.
- b) With the right controller, you may adjust the camera zoom.
 - [RPC camera light intensity]: Camera illumination controller.
 - [Auto exposure]: If activated, the brightness of the image is automatically adjusted as the camera illumination is changed.



Click on the button  to view the live image in full-screen mode. You may zoom in even more using the zoom controller. With the left mouse button you can relocate the image detail. Close the full-screen view by clicking on the red button in the right upper corner.

Heating information

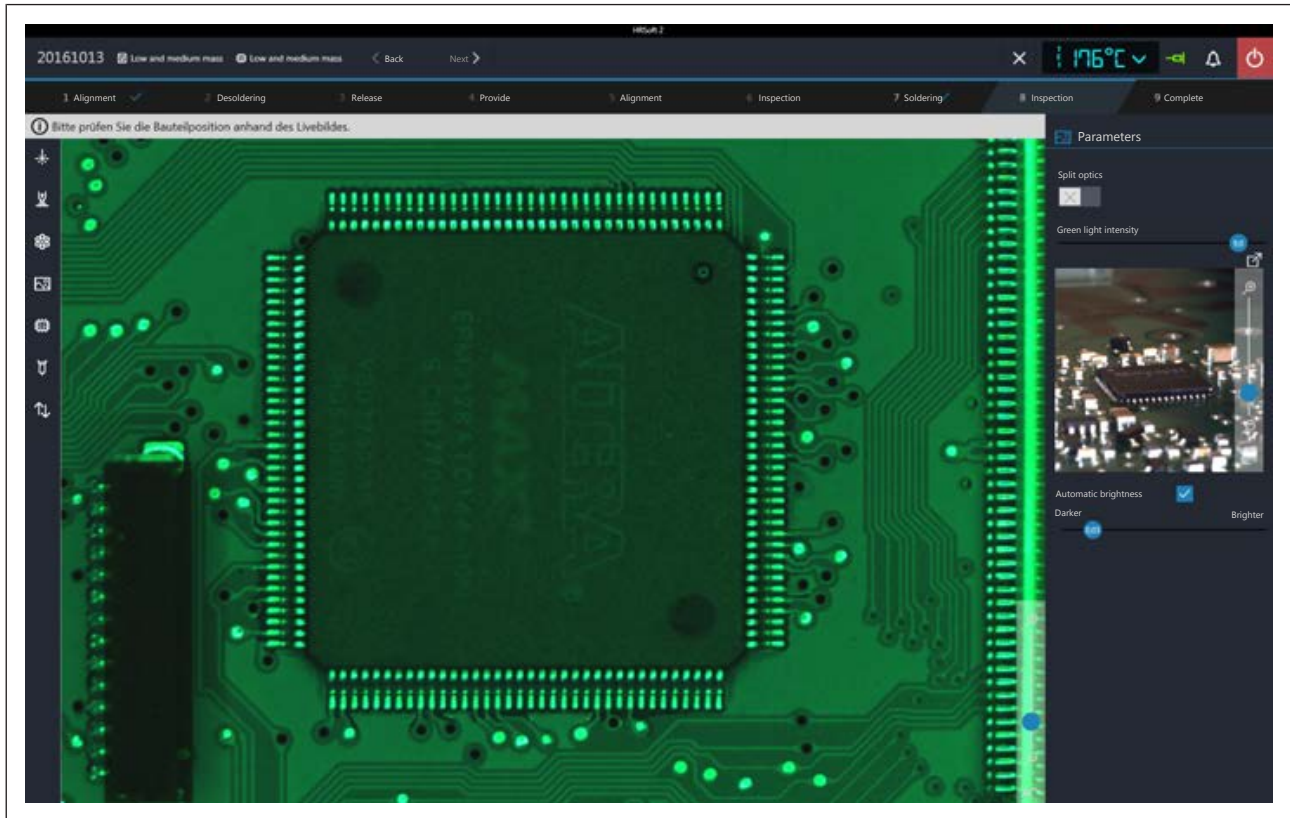
In the lower area, the current status of the thermocouples and blower elements is displayed.

- a) When the soldering process is over, move on to the next task.



7.15 Task 8 “Inspection”

a) Check the position of the component based on the live image.



b) You may use the normal view/telephoto toggling lever of the vision box. Please also about this read the chapter [Overview of the machine parts](#) [► 62], No. 11.

c) For instance, in case of large components, in order to view the comparison display of widely separated image areas click on the [Split optics]. Now click four times with the small blue rectangle on the four points that you wish to enlarge.

⇒ The split screen view appears.

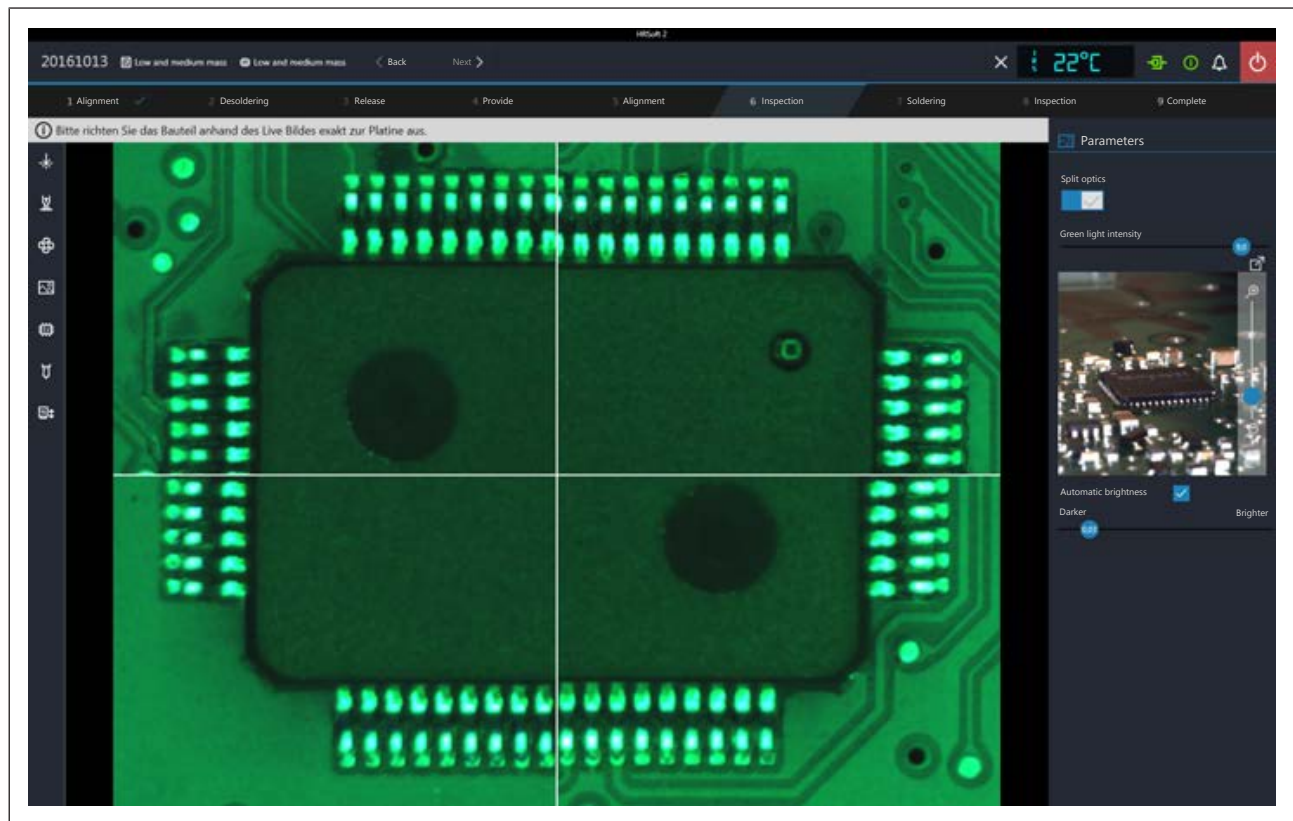


Fig. 46: Split screen view with simultaneous display of the four corners of a large component

- a) With the controller at the bottom on the right, you may adjust the vision box zoom.
 - Green light intensityas follows: To adjust the intensity of the green PCB illumination.
 - Automatic brightnessas follows: If activated, the image of the RPC camera is automatically adjusted as the camera illumination intensity or ambient light is changed.
 - Darker/Brighter: To adjust the illumination of the RPC camera
- a) Click on the button  to view the live image of the RPC camera in full-screen mode. You may zoom in even more using the zoom controller. With the left mouse button you can relocate the image detail. Close the full-screen view by clicking on the small red button in the right upper corner.
- b) Once the component is properly positioned, slide the vision box back in.



7.16 Task 9 “Complete”

The soldering process is completed. You have the following options:

- Repeat the process: The whole soldering process is repeated once
- Select profile: With this option you may cancel the soldering process and switch to another soldering profile.



8 Service and maintenance

8.1	Maintenance table	154
8.2	Check the rework system on a weekly basis for any dirt or damages.....	154
8.3	Lubricating the worm gear of the pipette hub every six months.....	155
8.4	Change the heating head	157
8.5	Performing a HRSoft 2 update.....	158



8.1 Maintenance table

	Duration	Further information	
Weekly	5 Min	<u>8.2</u>	<u>Check the rework system on a weekly basis for any dirt or damages.</u>
Semi-annually	10 min	<u>8.3</u>	<u>Lubricating the worm gear of the pipette hub every six months</u>
When required	2 min	<u>8.4</u>	<u>Change the heating head</u>

8.2 Check the rework system on a weekly basis for any dirt or damages.

Check the following machine parts on a weekly basis for any dirt or damages. If you spot any dirt, remove it as indicated. During cleaning never scrub the machine and never work with hard or sharp-edged objects!

Before performing any cleaning or maintenance operation, turn off the rework system from the main switch!

DANGER

Dangerous electrical voltage during maintenance work!

Risk of death or severe injuries due to electrocution!

- a) Only carry out the maintenance work specified here as described here!
- b) Before performing maintenance work inside the rework system, switch off the Rework System at the main switch!
- c) Work on the electrical system must be undertaken only by a skilled electrician or by properly trained people under the supervision and guidance of a skilled electrician in accordance with the electro-technical rules. Before the electrician carries out any work, disconnect the Rework System from the power supply!



CAUTION

Risk of burning due to heated machine parts and PCB!

All heated machine parts as well as the surrounding housing parts and product support frame, the circuit board and the components become hot even during warm-up to the process temperature [Tinit]!

Parts are particularly hot during the soldering process! After the soldering process, wait until the device and the PCB have cooled down and reached non-hazardous temperatures!



Upper and lower glasses of the vision box:

- a) Remove the vision box.
- b) Clean the dirty glass plates with a lint-free cloth and a commercially available glass cleaner.

Component trays:

- a) Clean the dirty component trays with a lint-free cloth.
 - ⇒ In case of heavy dirt with flux material or solder paste: Use a cleaning agent recommended by the flux material or solder paste manufacturer.



Mirror plates under the RPC camera and under the vision box:

- a) Bring the RPC camera and the cross table to a suitable position.
- b) Clean the dirty mirror plates with a lint-free cloth and a commercially available glass cleaner.
 - ⇒ In case of heavy dirt with flux material or solder paste: Use a cleaning agent recommended by the flux material or solder paste manufacturer.

Housing parts:

- a) Clean all the dirty housing parts with a soft, lint-free cloth and a household detergent.
- ✓ PCB holder plane parallelism check:
 - a) If bent, straighten or replace it.

Heating head ceramic check:

- a) Check the ceramic at the bottom of the heating head for any flaws or deformations; further, check the heating coils in the ceramic for any flaws. Replace in case of damages.

Filter mat of the housing blower:

- a) Clean any dirty filter mats. Replace the filter mat when it becomes clogged.



Fig. 47: 1 housing blower

8.3 Lubricating the worm gear of the pipette hub every six months

Every 6 months lubricate the worm gear of the pipette hub. Switch off the Rework System via the main switch before any cleaning and maintenance work!

Required material:

- 2 Allen keys
- Lubricating grease Klüber Micolube GL 261



Fig. 48: 1 inspection flap

- a) Switch off the Rework System.
- b) Remove one screw from the inspection opening with the Allen key and loosen the other screw.



NOTE

For lubrication, a thin film of grease is enough!

If the drive components are excessively lubricated, they get dirty very quickly. Clean dirty drive components before lubrication!

- a) Use a grease brush to sparingly apply grease to the worm gear.
- b) Screw the maintenance flap back on.



8.4 Change the heating head



⚠ CAUTION

Risk of burning due to heated machine parts and PCB!

All heated machine parts as well as the surrounding housing parts and product support frame, the circuit board and the components become hot even during warm-up to the process temperature [Tinit]!

Parts are particularly hot during the soldering process! After the soldering process, wait until the device and the PCB have cooled down and reached non-hazardous temperatures!

If you have several heating heads, you may change them:

- a) Close HRSoft 2.
- b) Turn off the rework system.
- c) Allow the heating head to cool down.
- d) If the release lever is not available on the top of the heating head, use the suspension bracket (see figure, No. 1).
- e) Hold the heating head tight with both hands and keep the release lever pressed with a finger on the top of the heating head. In the upper area, pull the heating head forward (see the arrows in the figure) until it disengages.

Position the other heating head:

- a) Place the heating head on both lower supports (see the arrows in the figure).



Fig. 49: Unlock and remove the heating head.



Fig. 50: Heating head suspension bracket, the arrows indicate the supports

- b) Press the upper part of the heating head to the device until the upper lock is engaged.
 - c) Turn on the rework system.
 - d) Start HRSoft 2.
 - e) Always execute the function [Start device setup]. With regard to this, please read the [The button \[Start maintenance mode\]](#) [► 105]chapter.
 - f) Always execute the function [Adjust pixel shift]. With regard to this, please read the [The \[Pixel shift adjustment\] button](#) [► 109]chapter.
- ⇒ The rework system is ready for operation.



8.5 Performing a HRSoft 2 update

This chapter describes how to update an installed HRSoft 2 version to a newer version.

- a) The installed version number is shown by the Rework System in the [HRSoft 2 options] dialog under the [Administration] tab.

Download the update package

- a) from Ersa website www.ersa.com Select the "Login" function from the drop-down menu at the top left.
- b) Log in with your e-mail address and password for the members area.
- c) Go to 6.2.3 (Software / Rework) HRSoft 2.
- d) Compare the HRSoft 2 version number offered with the installed version.
- e) Download the software package and save it on the Rework system PC under: C:\ProgramData\ErsaGmbH\HRSoft 2\Firmware.
⇒ The "ProgramData" directory is only visible if the "Indicators/Hidden Items" function is activated in File Explorer.
- f) Extract the ZIP file in this directory.
- g) Open and read the "HRSoft2_Liesmich" file.

Backing up the HRSoft 2 database

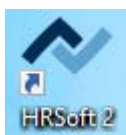
- a) Go to the downloaded file "databaseBackup.bat" in the directory \HRSoft2_Setup_v2-1-5-2\Tools\Bat.
- b) Start "databaseBackup.bat".
⇒ A backup copy of the existing HRSoft 2 database is created.
- c) Make sure that the backed up database is located in directory C:\ProgramData\Ersa GmbH & Co. KG\HRSoft 2

\DB_Backups. **Uninstalling the outdated**

- a) Switch off the Rework System.
- b) Click the **HRSoft 2 version** Windows Start button once and enter "Programs" in the input field.
- c) Click on "Add or remove programs" in the Windows Start menu.
- d) Select and uninstall the "HRSoft 2" program in the "Apps & Features" window.

Installing the new HRSoft 2 version

- a) In the C:\ProgramData\ErsaGmbH\HRSoft 2\Firmware directory launch the "setup.exe" file.
- b) Follow the instructions and confirm dialogues with OK/Continue.
- c) Once installation has been completed, start the HRSoft 2 program by double-clicking the program icon on the desktop.
- d) Switch on the Rework system.
- e) Check if there is a connection between the Rework system and the PC. The "Connection" icon on the right of the temperature indicator must be green.
- f) If further firmware updates of single modules of the Rework system are required, carry them out in the [Device settings] dialog under the [Administration] tab. As to this, please read Chapter [The \[device settings\] dialog](#) [102].





9 Spare and wear parts

9.1 Read this first! 160

9.1.1 Target readers, permitted spare parts..... 160

9.2 Nameplate and machine number..... 160

9.3 Spare parts 161



9.1 Read this first!

9.1.1 Target readers, permitted spare parts

WARNING

Machine malfunctioning is possible!

Personal injury or material damage due to the machine inadequate maintenance and improper operation!

- ✓ Maintenance work must be performed by trained and qualified staff only.
- ✓ Carry out the maintenance and inspection activities recommended in this instruction manual.



- a) First, read the section "Safety instructions"!
- b) Comply with the specified maintenance intervals!
- c) Wear suitable protective clothing for all types of work! Also, check personal protective equipment for cleanliness and functional efficiency! Do not use damaged protective equipment, replace it with new items!
- d) Use spare parts, replacement parts and wear parts exclusively authorized by the machine manufacturer!
- e) Thoroughly clean the machine before starting work!
- f) Re-tighten loosened screws after completion of maintenance! Install safety devices and check for their proper operation!
- g) Dispose of operating and auxiliary materials, cleaning agents, and replacement parts properly and in an environmentally-friendly manner!

9.2 Nameplate and machine number



NOTE

Important note

When ordering spare parts always specify the machine number. This number is printed on the nameplate (see illustration above). The nameplate contains other important information about the machine such as machine type, electric power rating, conformity marking and disposal data.





9.3 Spare parts

	Name	Item number
	Silicone nipple 2.0 for 3.3 mm nozzle *	0HR5520-20
	Silicone nipple 3.5 for 5.0 mm nozzle *	0HR5520-35
	Silicone nipple 8.5 for 10 mm nozzle *	0HR5520-80
	Basic plate calibration target	320415
	Switch PoE	295847
	Power supply	3ET00370
	Membrane pump	3VAPU011
	3/2 directional valve	119765
	Fan bottom heating	313959



	Name	Item number
	Rework powerboard	297445
	Rework controllerboard	285856
	Stepper motor controller	297444

* Elastic silicone. Average service life 10-30 soldering processes.
As to this, please also read Chapter [Options](#) [► 20].





10 Annex

10.1 EC Declaration of Conformity

Also see

 CE Declaration of Conformity HR 500 [► 165]

EU Declaration of Conformity

Ersa GmbH, Leonhard-Karl-Str. 24, D-97877 Wertheim

EU Declaration of Conformity as defined by:

- EU Machinery directive 2006/42/EC (version 2006)
- EU EMC Directive 2014/30/EC (version 2014)

We herewith declare that the product

Designation: Reworksystem

Type: HR 550

in the delivered model satisfies the above-named EU directives and DIN EN standards listed below:

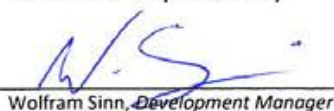
Richtlinie/Norm	Titel	Ausgabe
DIN EN 82079-1	Preparation of instructions – Structuring, content and presentation	2013-06
DIN EN 12100	Safety of machinery - Basic concepts, risk assessment and risk reduction	2011-03
DIN EN ISO 13732-1	Ergonomics of the thermal environment - Methods for the assessment of human responses to contact with surfaces - Part 1: Hot surfaces	2008
DIN EN 13849-1	Safety of machinery - Safety-related parts of control systems - Part 1: General principles for design	2016-06
DIN EN 61000-6-4	Industrial equipment - Electromagnetic disturbance characteristics	2007+A1:2011
DIN EN 55011	Industrial scientific and medical (ISM) radio-frequency equipment - Electromagnetic disturbance characteristics - Limits and methods of measurement	2018-05
DIN EN 60204-1	Safety of machinery - Electrical equipment of machines - Part 1: General requirements	2007-06
DIN EN 61000-3-2	Electromagnetic compatibility (EMC) - Part 3-2: Limits - Limits for harmonic current emissions (equipment input current ≤ 16 A per phase)	2014
DIN EN 61000-3-3	Electromagnetic compatibility (EMC) - Part 3-3: Limits - Limitation of voltage changes, voltage fluctuations and flicker in public low-voltage supply systems, for equipment with rated current ≤ 16 A	2013
DIN EN 61000-6-2	Electromagnetic compatibility (EMC) - Part 6-2: Generic standards: Immunity for industrial environments	2005

Authorized for machine documentation: Ersa GmbH, Manager Mechanical Design Tools.

This declaration is rendered invalid if the machine is modified without our prior approval.

Wertheim, 2018-10-24

Technical responsibility



Wolfram Sinn, Development Manager

Legally binding signature



Ralph Knecht, General Manager