



# Operating Instructions

## RBK ILS PROCESSOR MK 4 TE P/N 529535-2

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- The original operating instructions were written in German.

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# 1 Revision history

Rev.	Date	Description	Software Level	Name
Issue A	01.05.2016	First version	1.0.0.0	Martin Lipp
Issue B	13.12.2017	Update	1.2.4.9	Martin Lipp

*Tab. 1 : Revision history*



## 2 Introduction

In this section, the following information is to be found:

Section	Subject	Page
2.1	About these operating instructions	7
2.2	Signs and symbols in this operating manual	7
2.3	Abbreviations	8

### 2.1 About these operating instructions

This operating manual describes the use and operation of the processor, as well as the necessary measures to be taken for its maintenance.

For this reason, anybody commissioned to work on or with the processor must be familiar with this manual and pay attention to its instructions.

This operating manual must be kept to hand by the processor at all times.

The machine owner/user is obliged to supplement these operating instructions with instructions in line with existing national regulations for the prevention of accidents and environmental protection.

This operating manual applies to RBK-ILS Processor MK4 manufactured by TE Connectivity (TE).

#### Warranty claims, liability

TE Connectivity accepts no liability for any damage or loss arising from failure to heed information displayed on the processor or contained in the operating manual.

TE is excluded from all liability for damage resulting from arbitrary modifications of the processor which depart from the instructions contained in this manual.

#### Service

For technical support, please contact the Customer Support department. Further information can be found in section 17 Customer service address, page 135.

### 2.2 Signs and symbols in this operating manual

The signs and symbols set out in this section are used in the rest of the manual.


#### 2.2.1 Mark-ups employed

In order to increase this manual's legibility, the following particular notation is used:

Mark-up	Function
■	Indicates enumerations.
☞	Indicates an instruction.
✓	Indicates a result.
<b>Bold</b>	Indicates a <b>proper noun</b> in an instruction.
<b><i>Bold + Italic</i></b>	Indicates a <b><i>proper name</i></b> in a result.

Tab. 2 : Mark-up elements and their function

## 2.2.2 Notes

	General note on operation or use. Failure to observe this information can result in problems during operation.
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## 2.2.3 Safety instructions

Where necessary, particular safety instructions are given. Further information can be found in section 3 General notes on safety, page 9.

## 2.3 Abbreviations

Abbreviation	Meaning
GC	General control
PCB	Printed circuit board
PN	Product number
RoHS	Restriction on the use of certain hazardous substances in electric and electronic devices
V AC	AC voltage
V DC	DC voltage

Tab. 3: Abbreviations

### 3 General notes on safety

In this section, the following information is to be found:

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3.1	Intended use	9
3.2	Proper use with accessories	10
3.3	Improper use	10
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The processor has been manufactured according to current industry standards and recognised safety rules.

Nonetheless, a risk of physical and material damage exists if the following general safety instructions and warnings preceding the instructions in these operating instructions are not followed.

#### Finding information about RoHS

Information on the occurrence and location of substances subject to RoHS (Restriction on Hazardous Substances) guidelines can be found on the following website:

<http://www.te.com/usa-en/utilities/product-compliance.html>

- ➔ Click on the entry field underneath **Test Product Compliance and Request Statements of Compliance (SoCs)** and enter the relevant item numbers.
- ➔ Click on the entry field underneath **Product Compliance** and enter the relevant item numbers.
- ➔ Click on the **Search** button.
- ✓ *The search results will be displayed.*

#### 3.1 Intended use

All products and all other parts delivered with them are intended solely for the uses described in this manual.

It is also necessary to pay attention to the technical information and the identification label.

Proper use should be understood to include following the manual and observance of inspection and maintenance requirements.

In the manual, it has not been possible to take into account situations arising from particular local conditions or applications that are unknown to TE.

In such a case, the operator must ensure safe operation by keeping the processor shut down until, in co-ordination with TE or other competent bodies, measures for safe operations can be agreed upon or implemented.

The processor is a semi-automatic device. TE and other manufacturers' heat shrink tubing products are shrunk, by means of an infra-red procedure, to ultrasound-welded or crimped splices.

The processor is intended both for isolated use and for application with ultrasonic welders (Schunk, Telsonic), and is then positioned next to the welding head.

**The processor is to be operated by a single person.**

### 3.2 Proper use with accessories

The processor can be equipped with accessories for working with various products.

The processor is delivered without accessories.

If an accessory part is required, observe the processing specifications for the corresponding accessory. These give specific information regarding the accessory's use. Read this information before using accessory parts with the processor.

Accessories	PN	Application
CLTEQ-UHI-250A-1-PRB	288869-000	UHI temperature calibration probe
RBK ILS MK4 INTERNAL AIR COOL KIT	5-529538-0	Air cooling for stub splice fixture
RBK-ILS-PROC-STUB-SP-FX	981721-000	Mount for installation of stub splice tubing

Tab. 4: Accessories

### 3.3 Improper use

Applications other than those mentioned in the 'Proper Use' section or those described in this manual or any further application, counts as improper use. Further information can be found in section 3.1 Intended use, page 9.

TE shall not be held liable for any damage or loss resulting from these. The risk lies solely with the user or operator.

Any arbitrary modifications made to the processor will lead to loss of warranty.

### 3.4 Foreseeable abuse

The processor may be used only for the purpose described above. Use for any other purpose is considered improper and is deemed as misuse. Further information can be found in section 3.1 Intended use, page 9.

This applies in particular to:

- The processing of heat-shrinkable tubing of improper size,
- The processing of larger products than those for which the use of the processor is intended,
- The processing of products other than heat-shrinkable tubing
- The use of the processor for heating foodstuffs or products other than those recommended by TE.

### 3.5 Warnings

The signs and symbols set out in this section are used in these operating instructions.

### Hazard

DANGER!	
	<p><b>Type of hazard</b> Cause</p> <ul style="list-style-type: none"> <li>■ Measures for averting hazards</li> </ul>


'Hazard' or 'Danger' indicates an imminently dangerous situation which, if not averted, can result in fatality or serious (irreversible) injuries.

### Warning

WARNING!	
	<p><b>Type of hazard</b> Cause</p> <ul style="list-style-type: none"> <li>■ Measures for averting hazards</li> </ul>


'Warning!' indicates a potentially dangerous situation which, if not averted, can result in fatality or serious (irreversible) injuries.

### Caution

CAUTION!	
	<p><b>Type of hazard</b> Cause</p> <ul style="list-style-type: none"> <li>■ Measures for averting hazards</li> </ul>

"Caution" indicates a potentially dangerous situation which, if not averted, can result in minor or mildly serious (reversible) injuries.


### Attention



ATTENTION!	
	<p><b>Type of hazard</b> Cause</p> <ul style="list-style-type: none"> <li>■ Measures for averting hazards</li> </ul>

"Attention" indicates information or recommendations which can refer directly or indirectly to the safety of persons or material damage.

## 3.5.1 Safety signs (type-specific)





The following safety signs are used in this manual and in the processor's operational environment in order to warn the operator of hazards:

	<p><b>General warning</b> This warning sign accompanies specific activities subject to various hazards.</p>
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	<p><b>Danger of electricity, electric shock</b> This warning sign accompanies specific activities where there is a risk of electric shock, possibly with fatal consequences.</p>
	<p><b>Warning of burning injuries from hot surfaces</b> This warning sign accompanies specific activities where there is a risk of injury by burning due to the processor.</p>



### 3.5.2 Mandatory safety signs

The following safety signs are used in this manual and in the processor's operational environment in order to indicate to the user the wearing of personal protective equipment.

	<p><b>See the operating manual</b> The described object (processor) may be used only when the user has, with the manual's help, become familiar with its characteristics.</p>
	<p><b>See sections in the manual</b> The described object (processor) may be opened only when the user has become familiar with sections 12, 13 and 14 of the operating manual.</p>
	<p><b>Wear protective gloves</b> If safety gloves are to be worn due to a risk of injury, this is to be indicated. The use of safety gloves must be regulated in the operating manual, since there is certain work for which safety gloves must not be worn.</p>
	<p><b>Remove plug from mains</b> Before repair, maintenance or cleaning work, turn off the processor and remove the plug from the mains.</p>

### 3.5.3 Prohibition signs

The following prohibition signs are used in the operating manual and the operational environment of the processor in order to warn the operator against hazards:

	<p><b>Risk of entrapment</b> This prohibition sign accompanies specific activities where there is a risk of hands being trapped, entangled or injured in other ways.</p>
	<p><b>No high-voltage current</b> Do not connect the processor to voltage sources greater than 250 V DC.</p>

## 3.6 The operator's duties

The operator is in charge of the processor. This means bearing the operator's responsibility and being subject to industrial safety regulations. The operator is obliged to keep to the laws, regulations, directives and standards that they set down. From this arise, for the operator, certain legal, corporate and personal obligations, such as:

- The operator undertakes legal responsibility for the consequences of any culpable breach of duty.

- The operator is responsible for the administration and keeping secret of passwords.
- The operator must ensure that the working environment around the processor is kept clear. A clean and tidy working area produces safety.
- The operator must make sure that inspection and maintenance requirements are adhered to.
- The operator must make sure that the personnel is informed before special or maintenance procedures are carried out.
- The operator must allow the system to be tested periodically by qualified health and safety professionals according to locally or regionally established regulations. The results must be recorded in an inspection report.
- The operator is also required to provide supplements to the operating manual in the form of further operating instructions, which take into account any local regulations that are in force, such as for:
  - Provisions for the prevention of accidents
  - Waste disposal legislation
  - Protective equipment and maintenance
  - Disposal
  - Environmental protection
  - Instructions for emergencies
  - Advice for handling dangerous materials
- The operator must make sure that the following tests are carried out:
  - The testing of the processor for operating safety
  - Functional tests of safety devices
  - All tests dictated by the maintenance plan
- The operator must ensure that a copy of the manual is kept to hand at the processor at all times.
- The operator must ensure that the processor is readily accessible.
- The operator must ensure that no access is allowed to unauthorised persons.
- The operator must ensure that the personnel has read, understood and shall follow the operating manual.
- The operator must ensure that all personnel working with the processor are trained in accordance with their tasks.
- The operator must ensure that all safety regulations, safety directives and safety instructions are adhered to, particularly if the processor is being made to work in combination with (an)other machine(s).
- The operator must ensure that safeguards and codes of conduct have been stipulated with the responsible persons.
- The operator must set down clear responsibilities for specific activities in operating the processor. In activities that have a particular bearing on safety, particular duties must be assigned clearly.
- The operator must enforce the wearing of protective clothing (e.g. protective gloves) by the personnel, in so far as the personnel's health requires it.
- The operator is responsible for handling the products to be processed.
- The operator is responsible for the application of additional equipment and utility services. The corresponding safety regulations must be adhered to

### 3.7 Personnel qualification

The processor may be used only by fully-trained and qualified personnel.

The operator is responsible for ensuring that every person who works with the processor has been given rigorous instruction by means of the present operating manual.

The operator is also responsible for the training of operating personnel, which must include the following:

- Application
- Hazards
- Safety regulations
- Function
- Operation

To ensure that instruction has been understood, training must be provided in the language of operating personnel.

Necessary personnel qualification	
<b>Delivery Set-up</b>	Technically-skilled persons who are also speakers of the respective national language, German or English.
<b>Operation</b>	Technically-skilled persons and trained and qualified persons.
<b>Troubleshooting Maintenance Repair</b>	Technically-skilled persons who are also speakers of German or English.

Tab. 5: Personnel qualification

### 3.8 Safety devices

The processor's protective and safety devices serve to protect the operating and maintenance personnel and third parties against most hazards that are likely to arise when handling or operating the processor.

Nevertheless, certain safety measures must be taken on the part of the operating or maintenance personnel, in order to avoid injuries or damage to the machine.

The processor is equipped with a main switch with an emergency stop function and two-hand actuation.

#### 3.8.1 Main switch with emergency stop function

For protection against hazardous situations, the processor is equipped with a main switch that has an emergency switching off function.

The main switch with its emergency switching off function is to be found on the right-hand side of the processor.

Applying the main switch and emergency switching off function can in some cases lead to damage to the product and / or contamination.

The use of the main switch and the emergency switching off function must always be guaranteed. Technical inspections must be undertaken regularly according to the relevant regulations in force.





Fig. 1 : Main Switch with Emergency Stop Function

#### Turning off the processor in an emergency

- ➔ Turn the main switch with emergency stop function to position **0 OFF** (fig. 1).
- ✓ *If the heating chamber is in the forward position, it will immediately move backwards and eject the splice it is processing. Power to the processor is then cut off.*

#### Resuming normal operation

- ➔ Turn the main switch with emergency stop function to position **1 ON**.
- ✓ *The processor is ready for operation.*

### 3.8.2 Two-hand actuator

For protection against hazardous situations, the processor is equipped with a two-hand release. This prevents the operator from being able to reach into the heating chamber during a process cycle.

The two-hand release consists of two buttons (1). These are found on the left and right sides, next to the heating chamber.

Pressing both buttons (1) simultaneously sets off a process cycle. When pressed simultaneously again on the forward operation the heater carrier will return automatically to rear/home position. To

interrupt the processing as described, enable the Interrupt Cycle function. Further information can be found in Tab. 19 : Labels and functions on the **Settings** display, page 43.



Fig. 2 : Two-hand actuator

### 3.9 Work areas/Danger zone

The processor is intended for installation and operation in an industrial environment. An appropriate work-area is a smooth and level surface, for example on a stable workbench. The processor should be set at a height within easy reach of the operating personnel. However, it should not be used near explosive or flammable materials or in a location where it would be subject to moisture.

When the processor is running, make sure that enough space is left around the cooling fan intake for adequate ventilation, and that a clear space of at least 75mm is maintained in front of the output grilles.

### 3.10 Safety measures

#### 3.10.1 General

- The processor may be used only for its intended purpose. The respective processing specification must be observed.
- The processor may be used only by trained and authorised personnel.
- The responsibilities of the personnel for operation, maintenance and upkeep are to be set out clearly by the processor's owner or operator and complied with.

### 3.10.2 Electrical safety

- The processor's electrical connections must correspond to local norms and regulations.
- Touching any component under electrical tension can lead to severe electric shocks, burn injuries, paralyses, cardiac arrest and death.
- Use the processor only when all covers or panels are securely in place. If the processor is used without covers, potentially hazardous voltages will be exposed.
- The processor's electrical input has double-pole fusing (phase and neutral) and must be connected to an earthed electrical supply.
- The power supply must be protected by a 30mA residual current device.
- Use only specified fuse types as ratings.
- The processor is designed for operation from a 230V 50Hz power supply and is supplied with a 2 m-long power cable.
- Do not carry out any flash tests. This might damage the processor's protection circuits.
- During insulation resistance tests, the value of 250 V DC must not be exceeded; otherwise there is the risk of damage to the processor's protection circuits.
- Electrical safety checks are described in section 13.2.1 Carry out safety checks, page 93. Do not use Portable Appliance Testers (PAT) to test insulation resistance; doing so causes damage to the processor.
- Installations in the UK must be fitted with a 13A plug in accordance with BS1363 (green/yellow - earth; blue - neutral; brown - line) containing a 5A fuse in accordance with BS1362.

### 3.10.3 Safety measures for commissioning

- The processor must be set up and operated only in technically sound condition and with full awareness of its safety aspects and potential hazards.
- Housings and covers in particular must only be removed by qualified personnel.

### 3.10.4 Safety measures for transport and installation

- Transport of the processor is allowed only in its original packing.
- Any defects found after delivery are to be made known immediately in writing to the transportation company and to TE. If defects have been found in the processor, it must not be put into operation.

### 3.10.5 Safety measures for operation

- Do not leave the processor unattended during the process cycle.
- Jamming of the operating mechanism may prevent the automatic retraction of the heating chamber. If this happens, the processor heating turns itself off automatically. Further information can be found in section 10.5 What to do in the event of an emergency, page 68.
- The processor must be operated in accordance with safe working practices.
- The processor must be used only in technically sound condition and with full awareness of its safety aspects and potential hazards.
- The processor may be operated only if it is in a complete condition and in full working order.
- Do not operate the machine while wearing loose clothing or jewellery or hair long or untied; these might become caught in the processor's components,

- Work with care!
- If defects in the processor are to be assessed, work must be stopped and the fault repaired before operation is resumed.
- Only one person must use the processor at any one time.
- Only trained personnel may operate the processor.

### 3.10.6 Safety measures for upkeep, maintenance and repair

- The processor must be allowed to cool down before upkeep, maintenance or repair works are carried out.
- When carrying out upkeep work, maintenance or repairs, always follow the instructions in this manual or consult TE if you require advice. Records should be kept of the processor's maintenance and upkeep.
- Turn off the entire energy supply (electricity, compressed air, etc.) before all cleaning, maintenance or repair work.
- The energy supply should be protected against accidental switch-on (for instance, the main switch should be padlocked).
- Use only replacement parts approved by TE. If the mains (utility) power supply cord is damaged it must be replaced only by a special cord or assembly available from the supplier or its agent.
- Upkeep, maintenance and repair work may be carried out only by technicians qualified in the relevant area.
- The processor incorporates a capacitor for the automatic retraction of the heating chamber. Before all maintenance and repair, the normal precautionary measures for discharging surplus energy must be put into practice.
- After the completion of repairs or the replacement of components, the relevant safety checks must be carried out. Further information can be found in section 13.2.1 Carry out safety checks, page 93.

### 3.10.7 Safety measures for troubleshooting

- Fault rectification may be carried out only by technicians qualified in the relevant area.

## 4 Layout

In this section, the following information is to be found:

Section	Subject	Page
4.1	Layout: front view	19
4.2	Layout: rear view	20

### 4.1 Layout: front view



Fig. 3 : Processor — front view

Item	Designation	Item	Designation
1	Touch-enabled screen	5	Release lever
2	Main Switch with Emergency Stop Function	6	Gripper
3	Two-hand actuator	7	Heating chamber
4	Calibration socket		

Tab. 6 : Components of the processor, front view

## 4.2 Layout: rear view

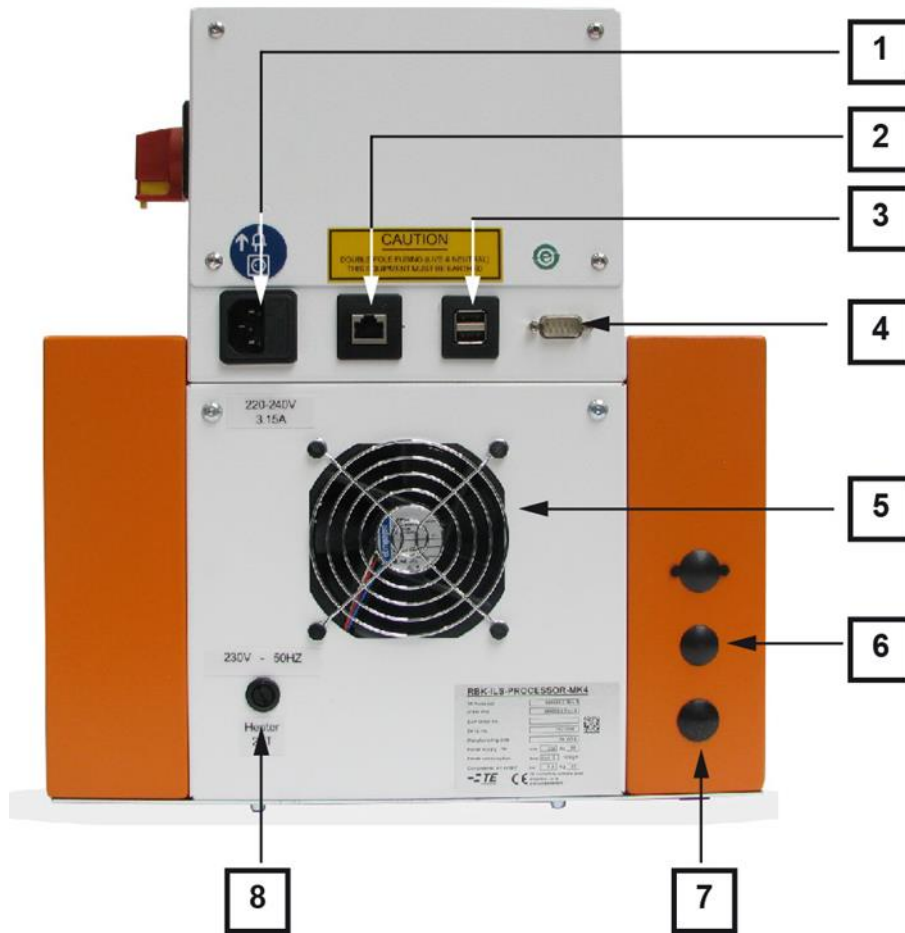


Fig. 4 : Processor — rear view

Item	Designation	Item	Designation
1	Power input socket	5	Cooling Fan
2	Ethernet connection	6	Connection for compressed air input
3	USB connection	7	Connection for compressed air output
4	RS232 Connector	8	Heater fuse

Tab. 7 : Components of the processor, rear view


## 5 Functional description

### Preparations

The processor's heating chamber can accommodate ILS and QSZH products of sizes from 1 to 3A and features electrically-heated quartz gas elements, which provide a heat source of up to 600°C.

The processor's touch screen is used to select or set up a process for a product. This process takes into account the time, temperature and size required for processing the product.

The product to be shrunk is placed onto the cable harness and moved with the grippers into the processor's heating chamber. The beginning of the processing procedure is prevented until the temperature is within 10°C of the intended operating temperature.

	We recommend 500°C as a set maximum temperature.
---	--

### Processing

When the operating temperature has been reached, the processing operation can be initiated. To do this, the left and right buttons of the two-hand release must be pressed simultaneously.

The heating chamber then moves forward until it encloses the splice. It remains in that position for the set time, after which it returns to the rest position and ejects the cable harness with the shrunk product.

In the event of a power cut, the heating chamber is retracted back to the rear rest position.

## 6 Specifications

In this section, the following information is to be found:

Section	Subject	Page
6.1	Rating plate	22
6.2	Machine data	22
6.3	Product/performance data	23
6.4	Operating/ambient conditions	23
6.5	Connection data	23

### 6.1 Rating plate

In figure 5 the RBK-ILS MK4 processor name plate is depicted and explained.



Fig. 5 : Rating plate

Item	Designation	Item	Designation
1	Part-No.	6	Power frequency
2	order number	7	Mains voltage
3	SAP order number	8	Power consumption
4	Serial number	9	Operating pressure
5	Date of manufacture	10	Weight

Tab. 8 : Rating plate

### 6.2 Machine data

Processor	Value and unit
Dimensions	335 x 415 x 375 (W x D x H) mm
Weight	22 kg
Noise level	Max. 80 decibels (cyclical, at distance of 1m)

Tab. 9 : Machine data



### 6.3 Product/performance data

Processor	Value and unit
Typical machine cycle times for ILS 125 products for a typical series of automotive splices. Installation with a QSZH product can, under certain conditions, produce a result more quickly than with an ILS 125 product.	Range: 0.1 to 99.9 s. Typically, between 2 and 34 seconds, depending on cable diameter and the number of cables used.
Product Range	RBK ILS 125/QSZH tubing sizes 1 to 3A, RBK-ILS-85 sizes 6/1 to 12/3 up to max. 65 mm length (other Raychem / TE products with TE service / support can be discussed). For tubing with a length from 65-80 mm use TE-PN E43648-000 (10 mm wider element)

Tab. 10 : Product/performance data

### 6.4 Operating/ambient conditions

Processor	Value and unit
Operating Temperature Range	200°C – max. 600°C (with precision to $\pm 1^\circ\text{C}$ of the intended temperature) 500°C Recommended

Tab. 11 : Operating/ambient conditions

### 6.5 Connection data

Processor	Value and unit
Power supply	230 V AC – 50 Hz
Power consumption	A maximum of 1.7 A
Mains Fuses	2 x 230 V – 3.15 A T (surge protection), Phase and neutral
Power Failure Protection	Energy buffer (enabling the automatic retraction of the heating chamber)
Motor Internal Protection Device (proximity switch)	30 V release with 1.1 to 2.2 A permanently < 30 s. Resetting after power cut: 1 min
1 x RS232 Interface	Customer interface
2 x USB	Customer interface
1 x Ethernet	Customer interface


Tab. 12 : Connection data information

## 7 Delivery


In this section, the following information is to be found:

Section	Subject	Page
7.1	Transporting the processor	24
7.2	Unpacking/Receipt	25
7.3	Transporting the processor <b>once unpacked</b>	25
7.4	Internal transportation of the processor	25
7.5	(Intermediate) Storage of the processor	26

### 7.1 Transporting the processor

ATTENTION!	
	<p><b>Defects in the processor caused by improper transport or inappropriate storage.</b></p> <ul style="list-style-type: none"> <li>■ When transporting and storage the processor, make sure is it is given suitable packaging.</li> </ul>

Transport of the processor is allowed only in its original packing.

	Keep the original packaging safe.
---	-----------------------------------

#### Reasonable loads

The table below can be used as a guide for lifting and carrying reasonable loads.

	Reasonable load in kg lifting and carrying frequency			
	Occasional*		More frequently**	
Age	Women	Men	Women	Men
15 to 18 years	15	35	10	20
19 to 45 years	15	55	10	30
older than 45 years	15	45	10	25

Tab. 13 : Reasonable loads


Recommendation of the German Minister of Labour and Social Affairs, published in the German Federal Labour Law Gazette 1981/11, p. 96):

- \* By "Occasional" is meant: Lifting and carrying a load up to once per hour over a transport distance up to maximum 4 steps
- \*\* By "More frequently" is meant: Lifting and carrying a load at least twice per hour over a transport distance of 5 steps and more

## 7.2 Unpacking/Receipt

### 7.2.1 Unpacking the processor

- Remove the processor from its packaging.
- Retain the original packaging for any subsequent shipping and storage of the processor.

	The serial number on machine must match the serial number on the packaging.
---	---

### 7.2.2 Carry out a consignment check

#### Scope of Delivery


The scope of delivery of the processor includes:

- 1 x RBK-ILS Processor MK4
- 1 x 2m power cable
- 1 x operating manual
- 1 x packaging unit (dispatch box)
- CE certificate

- Make sure that the consignment is complete by comparing it with the delivery papers.
- If defects are found on the processor or if parts are missing, inform the transportation firm and TE straightaway.

The processor has been thoroughly tested at the factory, both during and after assembly. Before it was packed up and dispatched, the processor was subjected to a number of final tests to ensure that it functions perfectly.

## 7.3 Transporting the processor once unpacked

ATTENTION!	
	<p><b>Defects in the processor caused by improper transport.</b></p> <ul style="list-style-type: none"> <li>■ Processors that have already been commissioned, should be switched off and cleared out before they are transported.</li> <li>■ When transporting the processor, handle it carefully at all times.</li> </ul>

## 7.4 Internal transportation of the processor

Before carrying out internal transport of the processor, in other words, when the processor has already been set up, the following tasks must be carried out:

#### Switching off the processor

- Turn the main switch with its emergency switching off function to 0.

- ➔ Secure the main switch with emergency switching off function against switch-on with a key through the securing clamp. Clearing the processor
- ➔ Take out any products still inside the processor.
- ➔ Remove external connections, e.g. electricity or compressed air.
- ➔ Transport the processor to its new location.

## 7.5 (Intermediate) Storage of the processor

If the processor is not to be installed straightaway, it must be stored, in the long or short term, in a suitable location.


The machine should preferably be stored, whether in long or short term, in the packaging in which it was transported. The ground should be level and dry.

Keep the original packaging as warranty issues only will be accepted if the machine will be returned in its original safety-cover and carton!

## 8 Set-up

In this section, the following information is to be found:

Section	Subject	Page
8.1	Setting up the processor	27
8.2	Connecting the processor	27
8.3	Putting the processor into operation	28

	Before you set to work with the processor, please read the safety instructions in section 3 General notes on safety, page 9. Make sure that you have understood the safety information.
---	---

### 8.1 Setting up the processor


#### Requirements for the site of installation

- Ensure an adequate bench height. The height of the bench depends upon the build and height of the operator.
- Make sure that the working surface is strong enough to bear the processor's weight.
- Make sure that the work area is well-lit.


#### Setting up the processor

- Place the processor on the workbench.
- Make sure that a gap of at least 75mm is left between the cooling fan and the wall.

### 8.2 Connecting the processor

CAUTION!	
	<p><b>Trip hazard posed by poorly-laid cable</b> Poorly-laid cable can pose a trip hazard.</p> <ul style="list-style-type: none"> <li>■ Lay the cable carefully so that it does not become a hazard.</li> </ul>

The processor is designed for operation from a 230V 50Hz power supply. The power supply to the processor must be protected by a 30mA residual current device. Power connections for the processor must conform to local norms and regulations.

	Installations in the UK must be fitted with a 13A plug in accordance with BS1363 (green/yellow - earth; blue - neutral; brown - line) containing a 5A fuse in accordance with BS1362.
---	---



Installations in North America are optimal using 240 VAC (L-L or L-N) mains power (1 PH, 60 Hz.). Installations where only 120 VAC or 120/208 VAC are available should use an appropriate step-up transformer, such as Hammond Manufacturing model 176E. Note that direct connection to 208 VAC is possible but may cause nuisance heater control errors.

- ➔ Connect the power cable to the processor's mains input socket and to the mains socket.

## 8.3 Putting the processor into operation



Fig. 6 : Main Switch with Emergency Stop Function

- ➔ Turn the main switch with emergency switching off function to position **1 ON**.
- ✓ *The processor is switched on and the operating software is booted up.*



A few minutes may be required before the operating system and visualisation on the screen are ready. The processor is delivered with one user of "Maintenance" status and the standard password "**0000**", so that the processor can be logged into.

- ➔ Select the user named **MAINT** in the list of IDs/levels.
- ✓ *The selected user is displayed in the **Operator ID** field.*

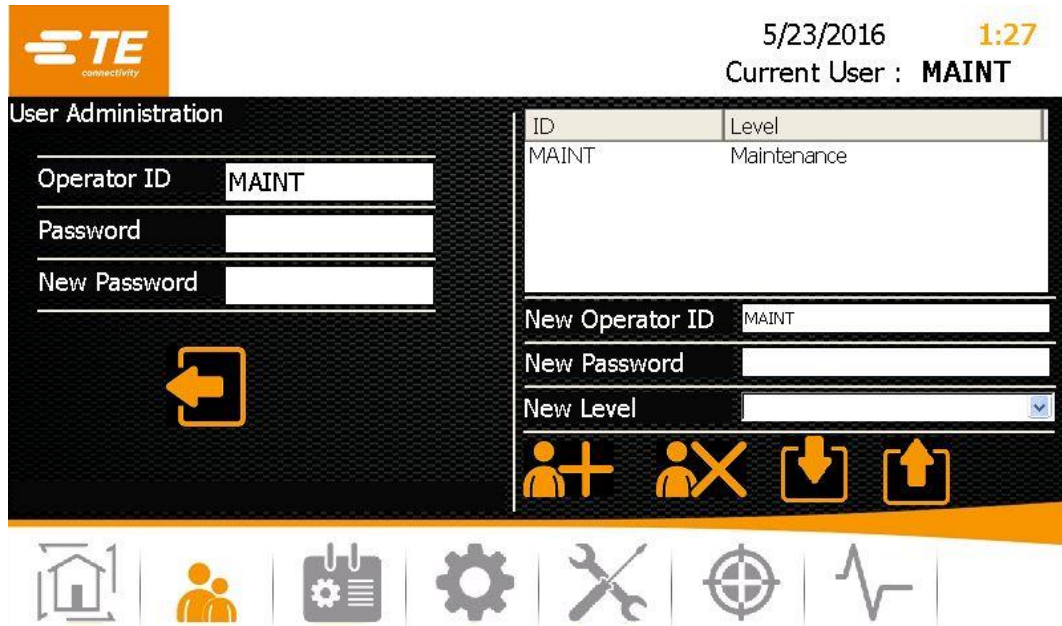


Fig. 7 : Logging into the system

- ➔ Tap in the **Password** field.
- ✓ A keyboard appears.

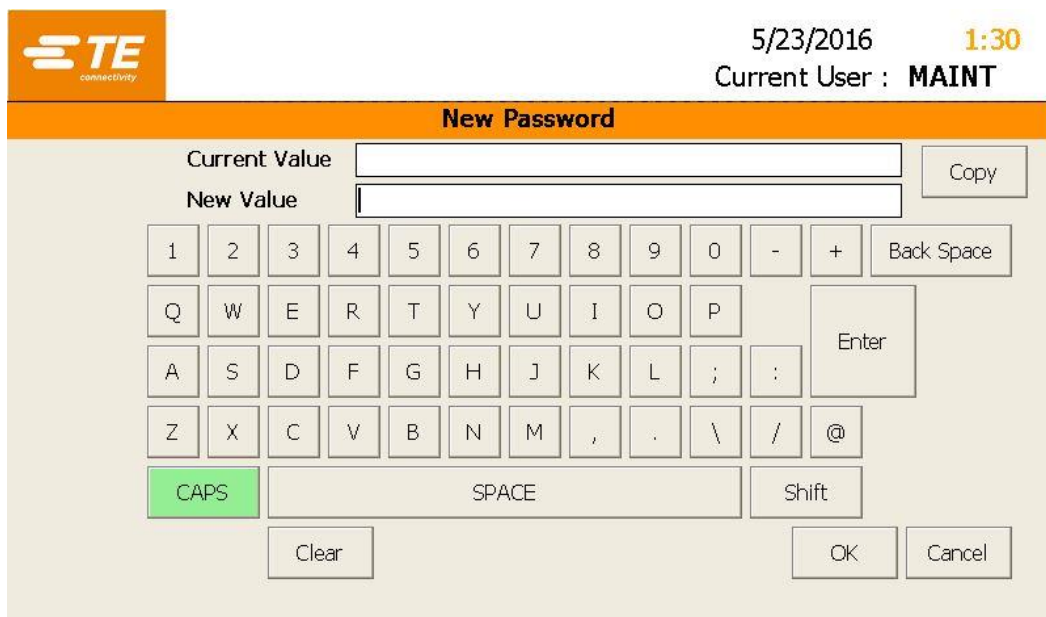


Fig. 8 : Keyboard

- ➔ Enter the password **0000** in the **New Value** field, and tap **OK**.
- ✓ Your password input is adopted, and you are returned to the **User Administration** display.



Fig. 9 : Logging on with entered password

- ➔ Tap the  button to log on.
- ✓ The message **Login Successful** is displayed, and you have logged onto the system.



## 9 Software

In this section, the following information is to be found:

Section	Subject	Page
9.1	User interface	33
9.2	Logging into the system	34
9.3	Show current process	35
9.4	Edit processes	36
9.5	Change settings	41
9.6	Manage users	49
9.7	Display processor history	52
9.8	Prepare the heating chamber to be changed.	54
9.9	Calibrate heating chamber	57

The software serves as the processor's central control unit. With this you can set the procedures for product processing.

The software is operated via a touch screen. In the navigation bar, different displays can be brought up. Different configurations and commands are possible in each display

### Authorisation scheme

The software follows an authorisation scheme of three stages. According to each level of authorisation, there are different rights of access to displays, settings and commands in the software.

The authorisation scheme has the following levels:

- 'Operator'
- 'ProcessEngineer'
- 'Maintenance'

Access right	Operator	ProcessEngineer	Maintenance
Logging into the system	X	X	X
Show current process	X	X	X
Select process	X	X	X
Set up process	-	X	X
Run process	X	X	X
Delete process	-	X	X
Change settings	-	-	X
Change network settings	-	-	X
Change regional settings	-	-	X
Change heating chamber settings	-	-	X
Set up user	-	X	X
Delete user	-	X	X
Import user	-	-	X
Export user	-	-	X
Show processor history	-	-	X
Calibrate heating chamber	-	-	X
Change heating chamber	-	-	X

Tab. 14: Authorisation scheme

## 9.1 User interface

The user interface consists of three main areas.

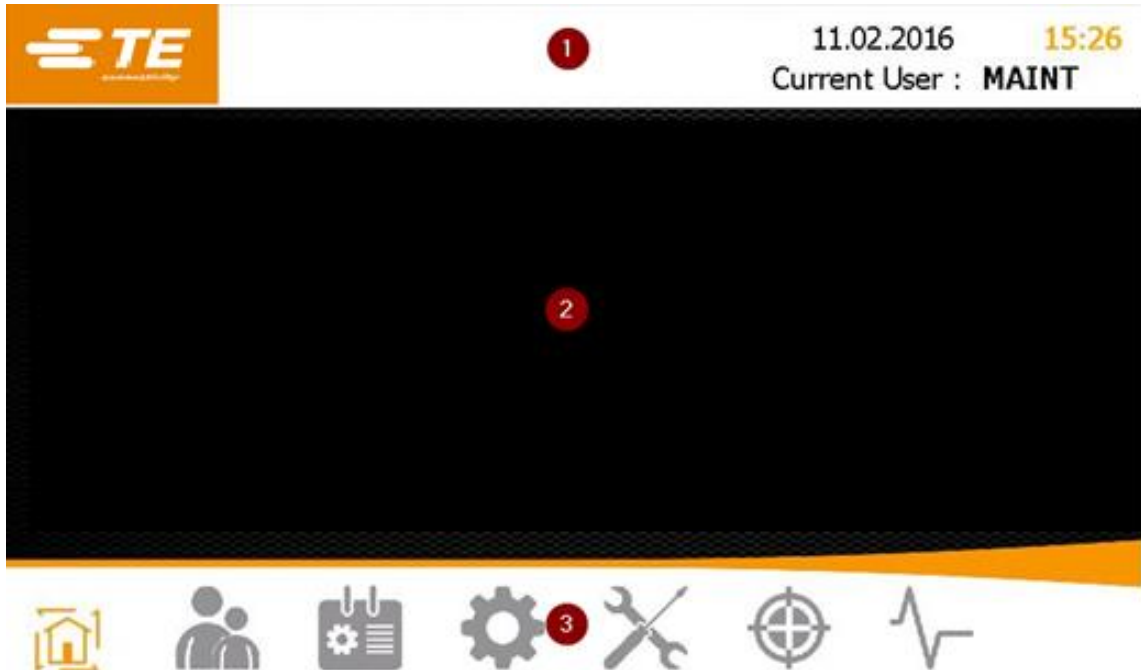









Fig. 10 : User interface fields

In the upper area (1) is shown the date, time and the user currently logged in.

In the middle field (2) you will see content depending on the selected display.

In the lowest field (3) is the navigation bar. This is used to activate different displays.

Icon	Description
	<b>Home</b> display Show process parameters
	<b>User Administration</b> display Log in and manage users
	<b>Process Selection</b> display Run processes
	<b>Settings</b> display Modify the processor's settings
	<b>Heater Replacement</b> display Prepare the heating chamber to be changed.
	<b>Heater Calibration</b> display Calibrate the heating chamber
	<b>Diagnosis</b> display Show the processor's status

Tab. 15 : Navigation bar icons

## 9.2 Logging into the system

- ➔ Select your user-name from the list of IDs.
- ✓ The selected user is displayed in the **Operator ID** field.



Fig. 11 : Logging into the system

- ➔ Tap in the **Password** field.
- ✓ A keyboard appears.

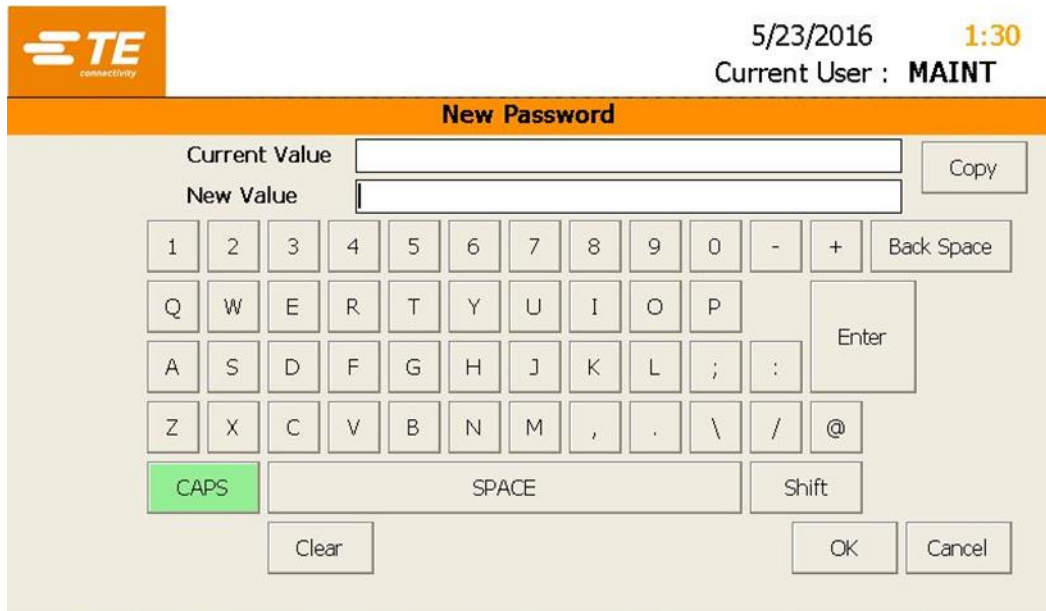



Fig. 12 : Keyboard

- ➔ Enter your password into the **New Value** field, and tap **OK**.
- ✓ Your password input is adopted, and you are returned to the **User Administration** display.



Fig. 13 : Logging on with entered password

- ➔ Tap the  button to log on.
- ✓ The message **Login Successful** is displayed, and you have logged onto the system.

	You can log out of the system. Further information can be found in section 9.6.2 Log off users, page 51.
---	--

### 9.3 Show current process

To shrink a product, select a procedure for the desired process. Further information can be found in section 9.4.2 Select process, page 38.


In the  **Home** display you will see the selected process and its associated pre-set process parameters. Switch to this display to process a product.




Fig. 14 : Home display

Designation	Function
Reference	Customised product identification is displayed.
Name	The name of the selected process is displayed.
Qty	The number of times the process will be repeated is displayed.
Process Time Remaining	The time taken by the process is displayed in seconds. When the process time reaches 0 seconds, the processor ejects the finished product.
Actual Temperature	The processor's current operating temperature is indicated. When the operating temperature is reached, the field displays green.
Set Point Temperature	The intended operating temperature is displayed.
Image	The selected product image and name are displayed.

Tab. 16 : Labels and functions on the Home display

## 9.4 Edit processes

To shrink a product, it is necessary to give different parameters (such as operating temperature). The parameters differ according to each product. So that parameters do not have to be entered again for every product, they are saved.

The following options are given in the  **Process Selection** display:

- Set up process manually
- Select process
- Set up process with barcode scanner
- Edit process
- Delete process



Fig. 15 : **Process Selection** display

Designation	Function
Temperature	The operating temperature for the selected process is displayed.
Reference	Customised product identification is displayed.
Qty	Enter number of times for the process to be carried out
	Select process
	Set up process with barcode scanner
	Set up process with barcode scanner (custom code) The code must first be unlocked. Further information can be found in section 9.5 Change settings, page 41.
	Set up process manually
	Edit process
	Delete process
List	The processes are displayed.
Image	The selected product and product name are displayed, if an image is available.

Tab. 17 : **Labels and functions on the Process Selection** display

### 9.4.1 Set up process manually

**Note:** You must have the authorisation level of 'ProcessEngineer' or 'Maintenance'.







- Tap the  button to switch to the **Process Selection** display.
- Tap the  button to set up a new process.
- ✓ *The **Manual Process Selection** display appears.*





Fig. 16 : **Manual Process Selection** display

- Enter the following information:
  - Into the **Name** field, the process name.
  - Into the **Temperature** field, the operating temperature.
  - Into the **Reference** field, the customized product designation.
  - Into the **Time** field, the processing time from 1 to 60 seconds.
  - Into the **Product** field, a name. Alternatively, select a product image from the drop-down menu below to obtain a displayed picture.

	Tap on the  button to delete the entered information.
---	--

- Tap the  button to add the process to the process list. The message **Product Added** is displayed.
- Tap the  button to save the process.
- ✓ *The **Process Selection** display appears and the newly set-up process is displayed.*

	Tap the  button to go back a level.
---	--

## 9.4.2 Select process

- Tap the  button to switch to the **Process Selection** display.
- Select a process from the list and tap the  button to select the desired process.




✓ The **Home** display appears and the selected process is displayed.



You can now begin to process the product. Further information can be found in section 10.3 Carry out operating cycle, page 66.

### 9.4.3 Set up process with barcode scanner

**Note:** You must have an authorisation

- Of level: 'Process Engineer' or 'Maintenance'.
- Barcode scanner
- Barcode creation software
- Barcode on product

	<p>When using the barcode function, choose the language and keyboard format. Further information can be found in section 9.5.4 Change regional settings, page 46.</p> <p>Make sure that the barcode scanner “language” is set equal to the keyboard language you’re writing the barcodes with!</p>
---	--

- ➡ Tap the  button to switch to the **Process Selection** display.
- ➡ Tap the  button to set up a new process with the barcode scanner.
- ✓ A green button appears. The barcode scanner is activated.

**Note:** Click in the green-highlighted field to activate it.

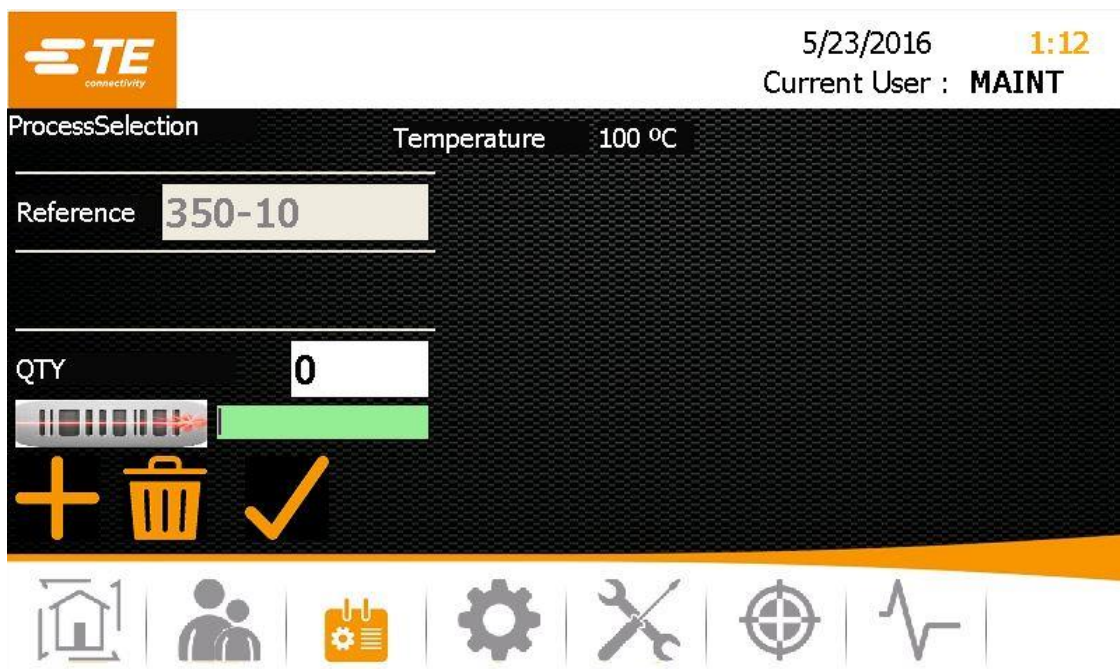





Fig. 17 : **Process Selection** display with activated barcode scanner


- ➡ Scan the product's barcode.

- Tap the  button to add the process to the process list. The message **Product Added** is displayed.
- ✓ The **Home** display appears and the selected process is displayed.

 Tap the  button to go back a level.

You can now begin to process the product. Further information can be found in section 10.3 Carry out operating cycle, page 66.

### Barcode allocation

 Suitable software for creating barcodes can be found on the Internet.

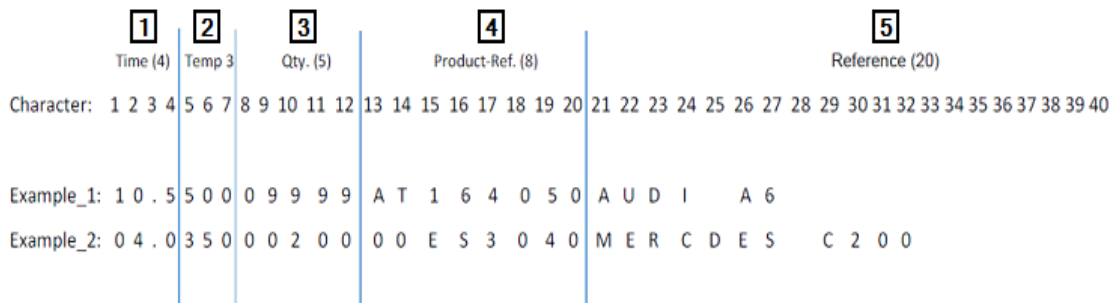



Fig. 18 : Barcode allocation

Item	Designation
1	<b>Time</b> field The processing time is entered at points 1-4.
2	<b>Temp</b> field At points 5 – 7 is entered the operating temperature.
3	<b>Qty</b> field At points 8 – 12 is entered the number of times that the process is carried out.
4	<b>Product-Ref</b> field At points 13 – 20 is entered the customized product designation.
5	<b>Reference</b> field At points 21 – 40 is entered the reference.

Tab. 18 : Barcode allocation

 If the maximum number of digits in a field is not required, the entry must be made up with a **0** at the beginning.

Example 1 in Fig. 18 contains the following process information:

Processing Time 10.5 s

Operating Temperature: 500°C



Number of times process carried out: 9999

Customised information: AT164050

Reference: AUDI A6



#### 9.4.4 Edit process

**Note:** You must have the authorisation level of 'ProcessEngineer' or 'Maintenance'.

- ➔ Tap the  button to switch to the **Process Selection** display.
- ➔ Select a process from the list and tap the  button to select the desired process.
- ✓ *The selected process appears, and you can carry out the desired changes. Further information can be found in section 9.4.1 Set up process manually, page 37.*

#### 9.4.5 Delete process

**Note:** You must have the authorisation level of 'ProcessEngineer' or 'Maintenance'.

- ➔ Tap the  button to switch to the **Process Selection** display.
- ➔ Select a process from the list and tap the  button to select the desired process.
- ✓ *The selected process has been deleted.*

### 9.5 Change settings

**Note:** You must have an authorisation level of 'Maintenance'.

You can customise the processor's basic settings according to your own methods of work. For instance, you might wish to set the operating temperature in °F rather than in °C. If you have several processors in use, settings can be imported and exported.

The following options are given in the  **Settings** display:

- Change general settings
- Import or export settings with USB memory-stick
- Import or export settings with PC
- Change network settings
- Change regional settings
- Change heating chamber settings

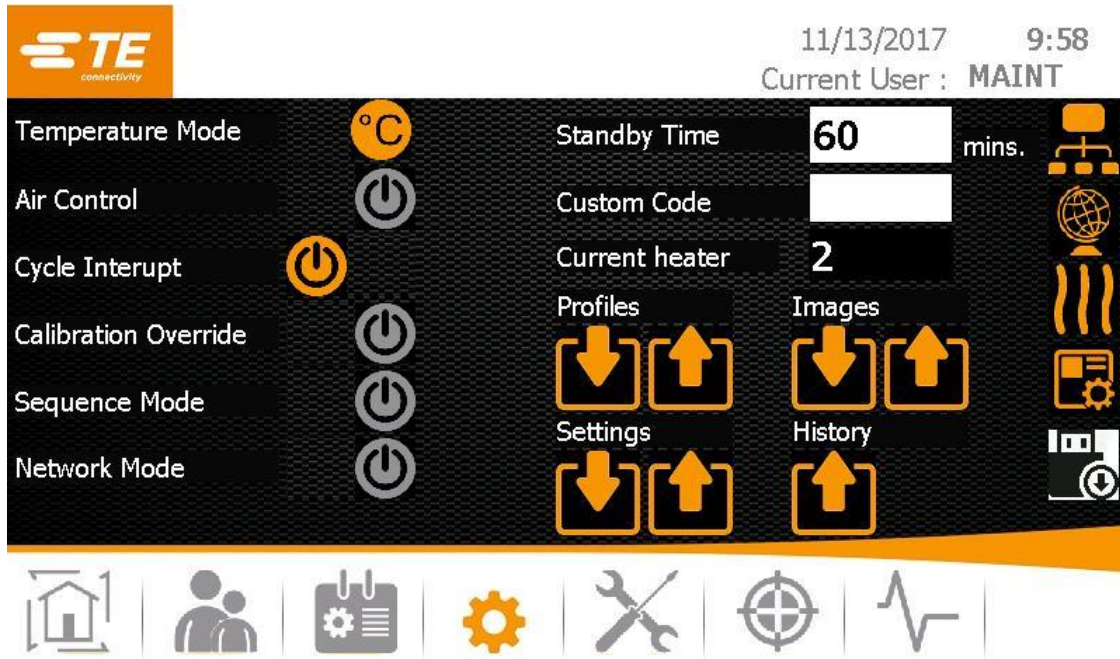









Fig. 19 : **Settings** display

Designation	Function			
Temperature mode	Display the temperature for a process in degrees centigrade (°C) or degrees Fahrenheit (°F)			
Air control	If the RBK-ILS-Proc-Air-Cool-Kit is connected, the compressed air setting must be activated (orange).			
Interrupt cycle	Turn on the option for manual cancellation of a process (orange) or off (grey)			
	<table border="1"> <tr> <td>Enabled</td> <td>Product processing can be interrupted by pressing the two-hand release.</td> </tr> <tr> <td>Disabled</td> <td>Product processing cannot be interrupted by pressing the two-hand release.</td> </tr> </table>	Enabled	Product processing can be interrupted by pressing the two-hand release.	Disabled
Enabled	Product processing can be interrupted by pressing the two-hand release.			
Disabled	Product processing cannot be interrupted by pressing the two-hand release.			
Calibration Override	Calibration request: turn on (orange) or off (grey)			
Sequence mode	Set up new sequences: turn on (orange) or off (grey)			
Network mode	Network mode: turn on (orange) or off (grey)			
	<table border="1"> <tr> <td>Enabled</td> <td>Transmit data via Ethernet.</td> </tr> <tr> <td>Disabled</td> <td>Transmit data via USB memory-stick.</td> </tr> </table>	Enabled	Transmit data via Ethernet.	Disabled
Enabled	Transmit data via Ethernet.			
Disabled	Transmit data via USB memory-stick.			
Stand-by time	Time in minutes after which the processor switches to stand-by mode. In stand-by, no power is supplied to the heater, fan and motor circuits. The processor remains switched on.			
Customer code	Enter unlock code "Custom Barcode"			
Current heater	Currently selected heating element			
Profiles	Import or export process profiles			
Settings	Import or export settings. Customer specific images can be uploaded now.			
Images	Import or export images			
History	Export diagnoses			
	Change network settings			
	Change regional settings			
	Change heating chamber settings			
	Delete customer specific pictures			
	Delete USB-Cache (Only when USB devices are no longer recognized) When the button is pressed, no USB device may be inserted.			

Tab. 19 : Labels and functions on the **Settings** display



	Save your changes to the settings  .
---	---

## 9.5.1 Import or export settings with USB memory-stick.

**Note:** You must have an authorisation level of 'Maintenance'. The network mode must be off (grey).



### Import settings with a USB memory-stick

**Note:** Make sure that the „Networking mode“ is set to “OFF” before importing.

- ➔ Tap the  button to switch to the **Settings** display.
- ➔ On the back of the processor, insert a USB memory stick into the slot provided.
- ➔ In the **Settings** display, tap the  button to import the data.
- ✓ *All data have been imported to the processor and are available to you straightaway.*

### Export settings with USB memory-stick.

**Note:** Make sure that the „Networking mode“ is set to “OFF” before exporting.


- ➔ Tap the  button to switch to the **Settings** display.
- ➔ On the back of the processor, insert a USB memory stick into the slot provided.
- ➔ In the **Settings** display, tap the  button to export the data.
- ✓ *All data have been saved to the USB memory-stick. You can now import them into another MK4 processor.*

## 9.5.2 Import or export PC settings

### Requirements:

- You must have an authorisation level of 'Maintenance'. The network mode must be switched on (orange).
- You have downloaded the FileZilla client from the developer homepage (<https://filezilla-project.org/>) and installed it on your PC.

### Import or export PC settings

- ➔ Connect the PC to the processor with an Ethernet cable.
- ➔ Tap the button  to switch to the **Settings** display.
- ➔ In the network settings, turn on **DHCP** (orange) in order to obtain an IP address from the server. Further information can be found in section 9.5.2 Change network settings, page 45.
- ➔ Start the FileZilla client on your PC and establish a connection to the processor:

Setting	Value
Server	Current IP address of processor.
Username	AT
Password	21036
Port	21



- ➔ Move the modified data into the folder provided by dragging and dropping.
- ➔ You will find the relevant data in the machine under C:/RBK:

Setting	Path
Error Reports and Factory Data Capture	C:/RBK/EventLog
Recorded processes	C:/RBK/Operations
Parameter	C:/RBK/ProcessParameters/XML
Product Images	C:/RBK/ProcessParameters/Images
Machine Settings and User	C:/RBK/Settings

- ✓ *The data is imported into or exported from the processor. The current data are only available after the respective import or export button has been activated on the RBK-MK4.*

### 9.5.3 Change network settings

**Note:** You must have an authorisation level of 'Maintenance'.

- ➔ Tap the  button to switch to the **Settings** display.
- ➔ Tap the  button to go back a level.
- ✓ *The **Manual Process Selection** display appears.*

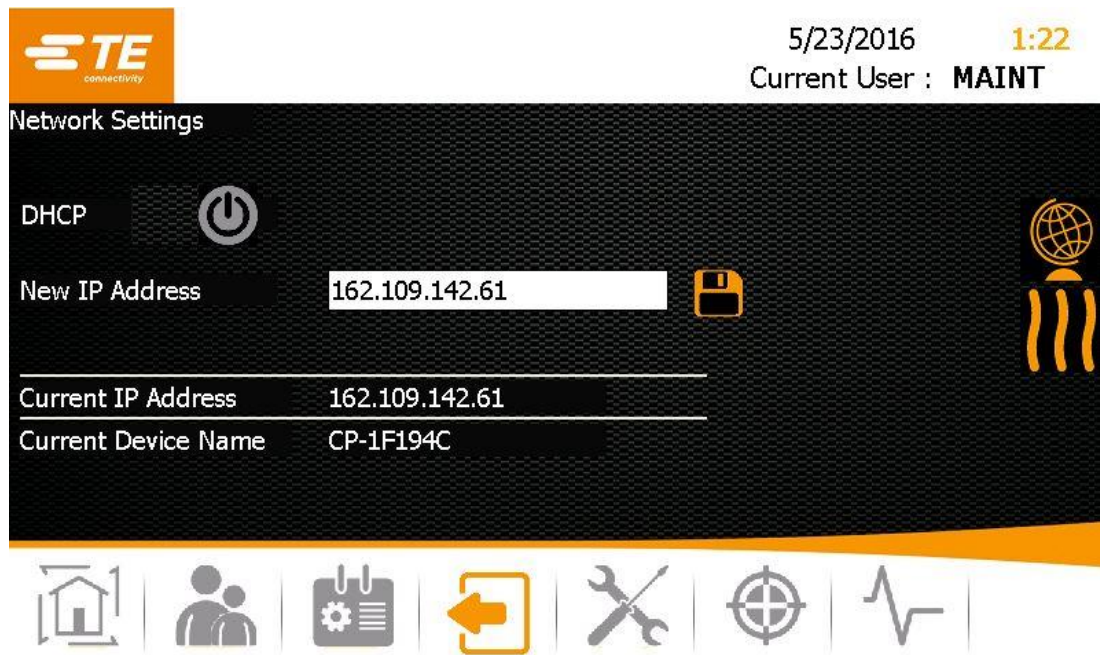






Fig. 20 : **Network Settings** display

- ➔ Turn on **DHCP** (orange) in order to obtain an IP address from the server.
- ➔ Alternatively, enter a new IP address into the **New IP Address** field.



	The IP address entered into the processor must match that on the PC. Only the last three digits may differ.
---	---

- Tap the  button to save the changes.
- ✓ *The newly-assigned IP address is displayed in the **Current IP Address** field.*

	Tap the  button to go back a level.
---	--

## 9.5.4 Change regional settings

**Note:** You must have an authorisation level of 'Maintenance'.

- Tap the  button to switch to the **Settings** display.
- Tap the button to go back to the regional settings .
- ✓ *The **Regional Settings** display appears.*

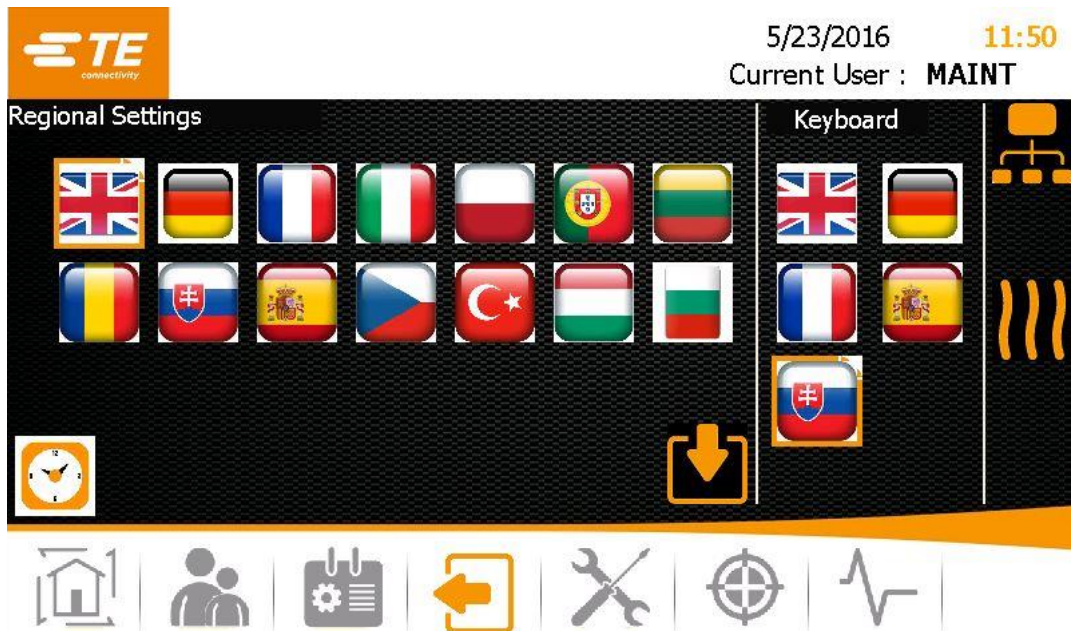


Fig. 21 : **Regional Settings** display

- To edit language settings, select the desired flag in the **Regional Settings** area.
- To configure the processor's keyboard to the desired language, tap the required flag in the **Keyboard** area.
- Tap on the clock to modify the time and date.
- ✓ *A new window appears.*



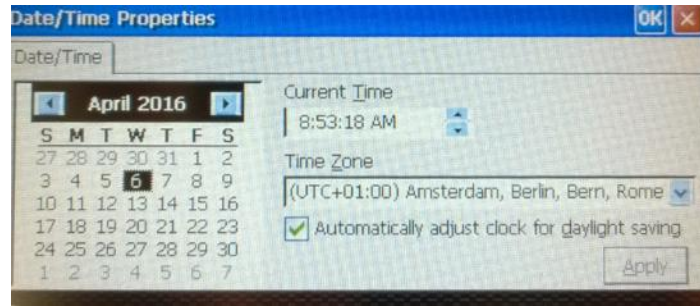





Fig. 22 : **Date/Time Properties** display



- ➔ Select the date from the calendar.
- ➔ Tap the hours, minutes and seconds in the **Current Time** field and use the arrows to modify them.
- ➔ Select your time zone in the **Time Zone** field using the drop-down menu.
- ➔ Tap the **Apply** button to save the changes.
- ➔ Tap the **OK** button to close the display.
- ✓ *The desired language settings are applied immediately to all displays and your keyboard. The time and date are refreshed.*

	Tap the  button to go back a level.
---	--

### 9.5.5 Change heating chamber settings

	We recommend that the heating chamber settings should be changed only after consultation with the manufacturer. Further information can be found in section 17 Customer service address, page 135.
---	--

**Note:** You must have an authorisation level of 'Maintenance'.

- ➔ Tap the  button to switch to the **Settings** display.
- ➔ Tap the  button to go to the heating chamber settings.
- ✓ *The **Heater Settings** display appears.*

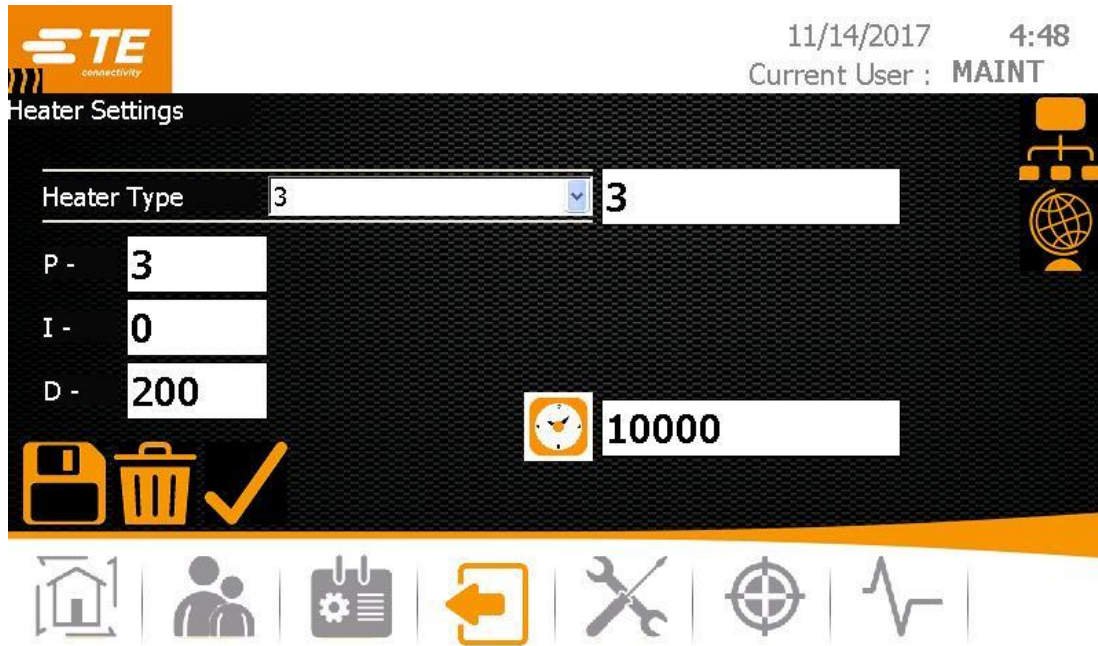









Fig. 23 : **Heater Settings** display

- In the **Heater Type** field, select the desired type from the drop-down menu. The following options are available:
  - P** - Choosing this option will prevent you from determining further settings.
  - Empty** - if you choose this option, you can edit the values for proportional, integral and differential shares of the PID controller and therefore influence the control characteristics of the temperature sensors in the heating chamber. Enter a name into the **Heater Type** field.
- Tap the  button to confirm the selected setting for the heating chamber. The message **Heater** is displayed
- Tap the  button to save the heating chamber settings. The message **Save Successfully** is displayed.
- In the input box  , enter the number of production cycles after which a calibration request has to be triggered. The number of production cycles after which a calibration must be triggered can be increased up to 40000 cycles after the first calibration has been done.
- ✓ *The heating chamber settings have been changed.*

	Tap the  button to go back a level.
---	--

## 9.5.6 Delete customer specific images

- Tap the button  to switch to the **Settings** display.
- Tap the button  to go to the **Image Management**.
- ✓ *The **Image Management** display appears:*

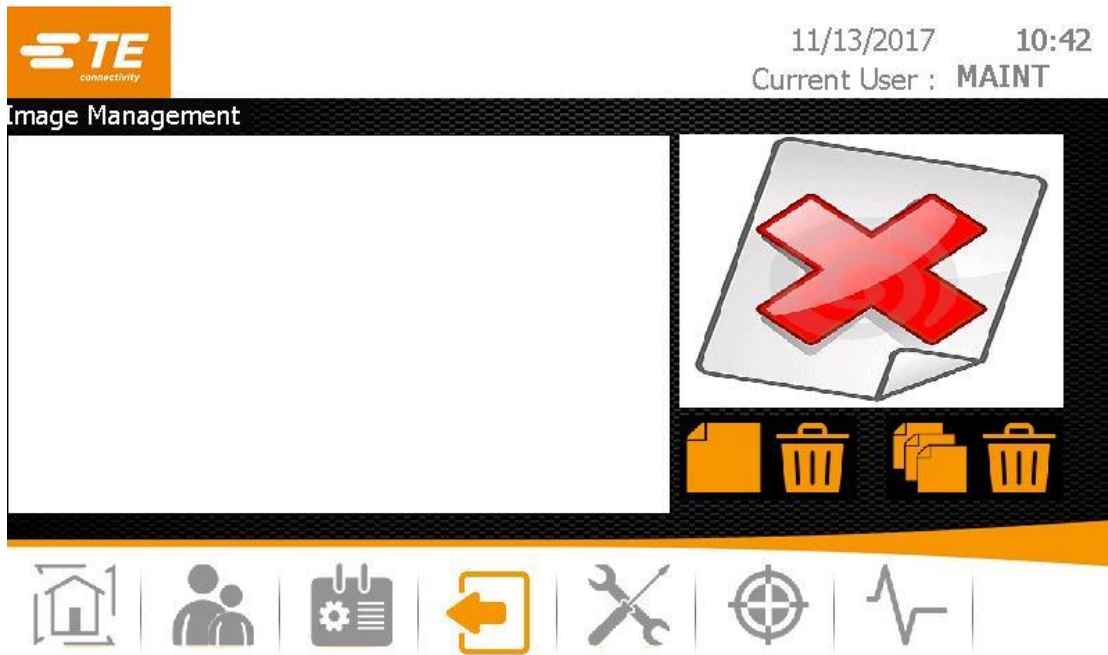






Fig. 24 : **Image Management** display

- ➔ Tap the  button to delete individual custom images.
- ➔ Tap the  button to delete all custom images.
- ➔ Tap the  button to go back a level.

## 9.6 Manage users

The following options are given in the  **User Administration** display:

- Change a user's password
- Log off users
- Set up user
- Delete user
- Import user
- Export user

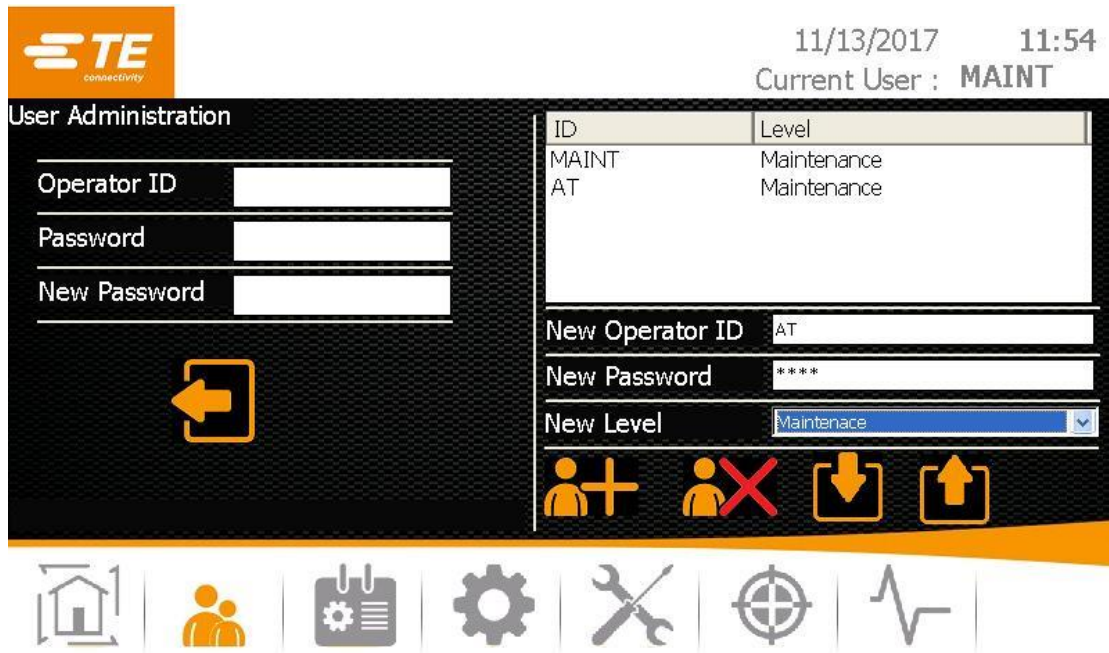









Fig. 25 : **User Administration** display

Designation	Function
Operator ID	Choose an Operator ID from the ID list; this is then displayed in the field. By tapping in the field, the name of an Operator ID can be entered manually.
Password	Enter password
New password	Enter new password
	Log off users
ID list	User IDs and their assigned level is displayed
New Operator ID	Enter new user-name
New password	Enter new password
New level	Select new level via drop-down menu
	Set up user
	Delete user
	Import user
	Export user



Tab. 20 : *Labels and functions of the **User Administration** display*

### 9.6.1 Change a user's password


- ➔ Tap the  button to switch to the **User Administration** display.
- ➔ Select your user-name in the ID list

- ➔ Tap the **Password** field.
- ✓ *A keyboard appears.*
- ➔ Enter your old password into the **New Value** field, and tap **OK**.
- ➔ Tap the **New Password** field.
- ✓ *A keyboard appears.*
- ➔ Enter your new password into the **New Value** field, and tap **OK**.
- ➔ Tap the  button.
- ✓ *Your password has been changed.*



## 9.6.2 Log off users

- ➔ Tap the  button to switch to the **User Administration** display.
- ➔ Tap the button to  log off.
- ✓ *You have been logged off.*

## 9.6.3 Set up user



	You can only set up users with a lower authorisation level than your own. Only a user of 'Maintenance' level can set up another user of 'Maintenance' level.
--	--

**Note:** You must have the authorisation level of 'ProcessEngineer' or 'Maintenance'.


- ➔ Tap the  button to switch to the **User Administration** display.
- ➔ Enter the following information:
  - In the **New Operator ID** a user name with a length of 1 to 10 characters.
  - In the **New Password**, the user's password.
  - In the **New Level**, choose the level from the drop-down menu.
- ➔ Tap the  button to add the new user.
- ✓ *The newly set-up user appears in the ID list, and the message **User Added** is displayed.*

## 9.6.4 Delete user

**Note:** You must have an authorisation level of 'Maintenance'.



- ➔ Tap the  button to switch to the **User Administration** display.
- ➔ Select a user from the ID list and tap the  button to delete the selected user.
- ✓ *The selected user has been deleted. The message **User Deleted** is displayed.*

## 9.6.5 Import users from USB memory-stick

	All locally-saved users are overwritten when users are imported.
---	--

**Note:** You must have an authorisation level of 'Maintenance'. In the **Settings** display the network mode is switched off (grey).



**Note:** Make sure that the „Networking mode“ is set to “OFF” before importing.

- ➔ Tap the  button to switch to the **User Administration** display.
- ➔ On the back of the processor, insert a USB memory stick into the slot provided.
- ➔ Tap the  button to import users.
- ✓ *The users have been imported to the processor and are available to you straightaway.*

## 9.6.6 Export users to USB memory-stick

**Note:** You must have an authorisation level of 'Maintenance'. In the **Settings** display the network mode is switched off (grey).


**Note:** Make sure that the „Networking mode“ is set to “OFF” before exporting.

- ➔ Tap the  button to switch to the **User Administration** display.
- ➔ On the back of the processor, insert a USB memory stick into the slot provided.
- ➔ Tap the  button to export data.
- ✓ *The users have been saved to the USB memory-stick. You can now import them into another processor.*

## 9.7 Display processor history

**Note:** You must have an authorisation level of 'Maintenance'.

In the processor history you can see the total number of processes carried out. You can also see here the software version currently installed and the processor's log. In the log you can see, for instance, the date and time at which users were deleted.

The following options are given in the  **Diagnosis** display:

- Reset cycles to zero
- Update software

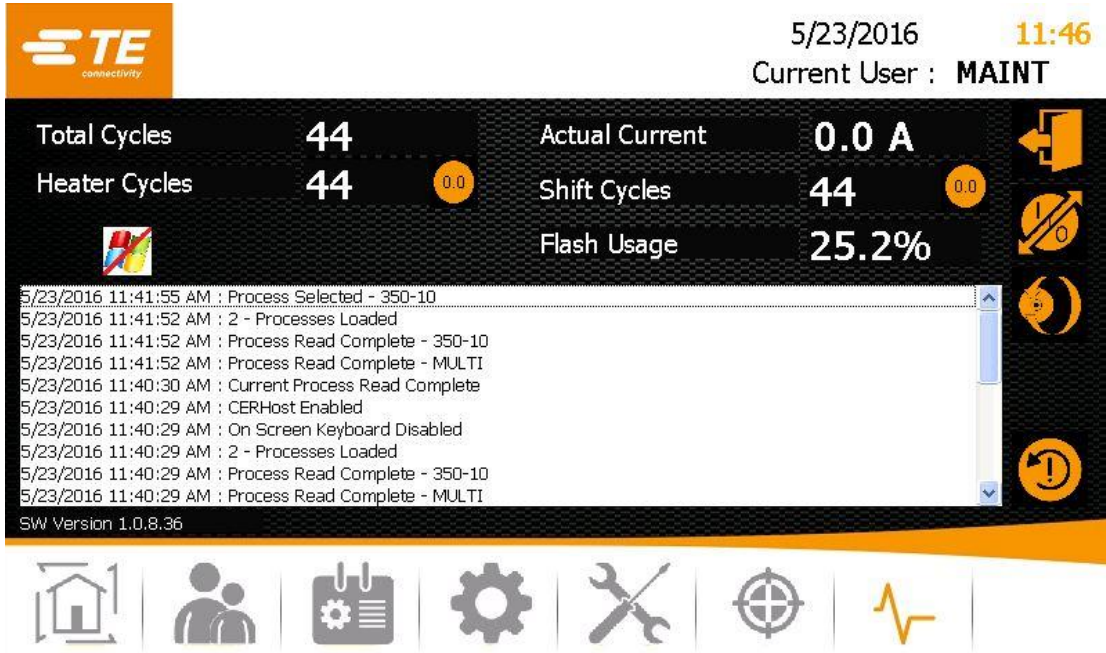


Fig. 26 : **Diagnosis** display

Designation	Function
Total Cycles	The overall number of processes completed with the processor is displayed.
Heater Cycles	The number of heating chamber cycles carried out is displayed.
	Reset the process cycles to zero
Actual Current	The current power consumption in amperes is displayed.
Shift cycles	The number of work cycles completed on a single working day is displayed.
Flash usage	The current memory usage is displayed by percentage.
	Only available for employees of TE
	Only available for employees of TE
	Update software
	Delete processor history

Tab. 21 : Labels and functions of the **Diagnosis** display

### 9.7.1 Reset cycles to zero

**Note:** You must have an authorisation level of 'Maintenance'.

- ➔ Tap the button to switch to the **Diagnosis** display.
- ➔ Tap the display, to reset the cycles to zero.
- ✓ *The cycles were reset to zero.*

## 9.7.2 Update software (very important!)

**Note:** You must have an authorisation level of 'Maintenance'. In the **Settings** display the network mode is switched off (grey).



- Tap the  button to switch to the **Diagnosis** display.
- At the rear of the processor, enter a USB memory-stick containing the new software into the slot provided.



Fig. 27 : USB memory-stick

- In the **Diagnosis** display, tap button  to update the software.
- Tap button **Update.exe**.

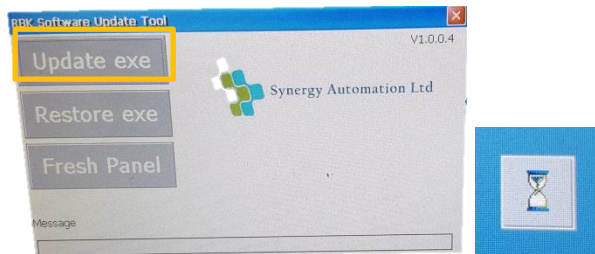


Fig. 28 : **RBK Software Update Tool** display

- ✓ *The processor's software is updated. You can check the software level saved in section 9.7 Display processor history, page 52.*

## 9.8 Prepare the heating chamber to be changed.


**Note:** You must have an authorisation level of 'Maintenance'.

You may wish to change the heating chamber for reasons of processor maintenance or in the event of a defect. In order to do this, it is necessary to carry out certain preparations. The heating chamber should cool down. It then moves into position to be changed. You can interrupt the preparation for heating chamber exchange at any time.







Fig. 29 : **Heater Replacement** display

Designation	Function
	Start button, to prepare the heating chamber for exchange.
Actual Temperature	The current temperature of the heating chamber is displayed.

Tab. 22 : Labels and functions of the **Heater Replacement** display

### Prepare heating chamber exchange

- ➔ Tap the  button to switch to the **Heater Replacement** display.
- ➔ Tap the **Start** button to prepare the heating chamber for exchange.
- ✓ *The heating chamber begins to cool down, and the message **Heater Cooling** is displayed.*

	This can take several minutes.
---	--------------------------------

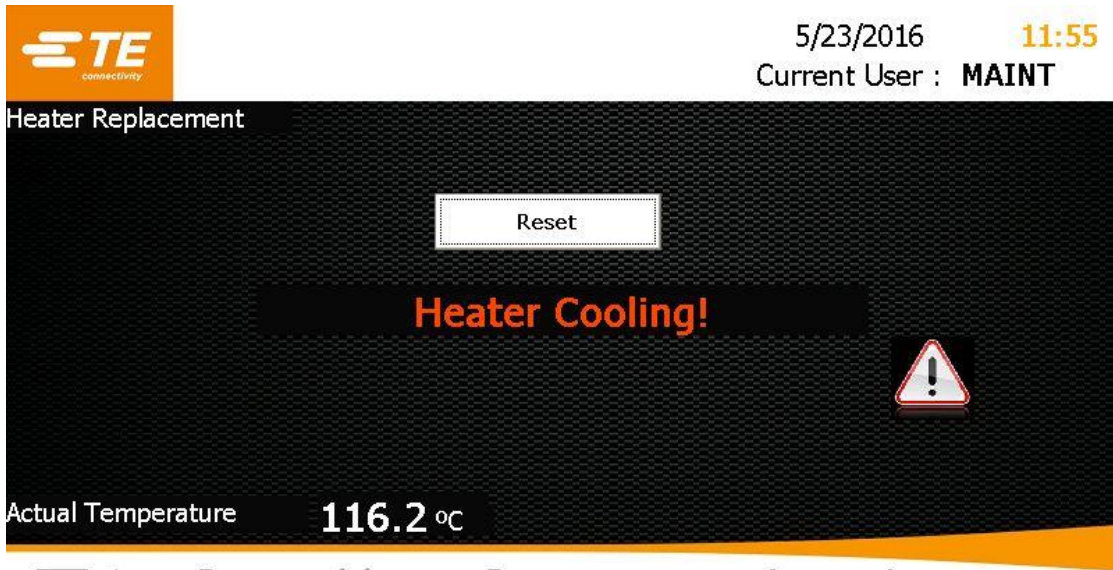


Fig. 30 : *Heater Cooling* display

- ➔ Tap the **Reset** button to cancel the preparation for the heating chamber exchange.
- ✓ When the heating chamber has cooled down, the message **Press Two Buttons** appears.

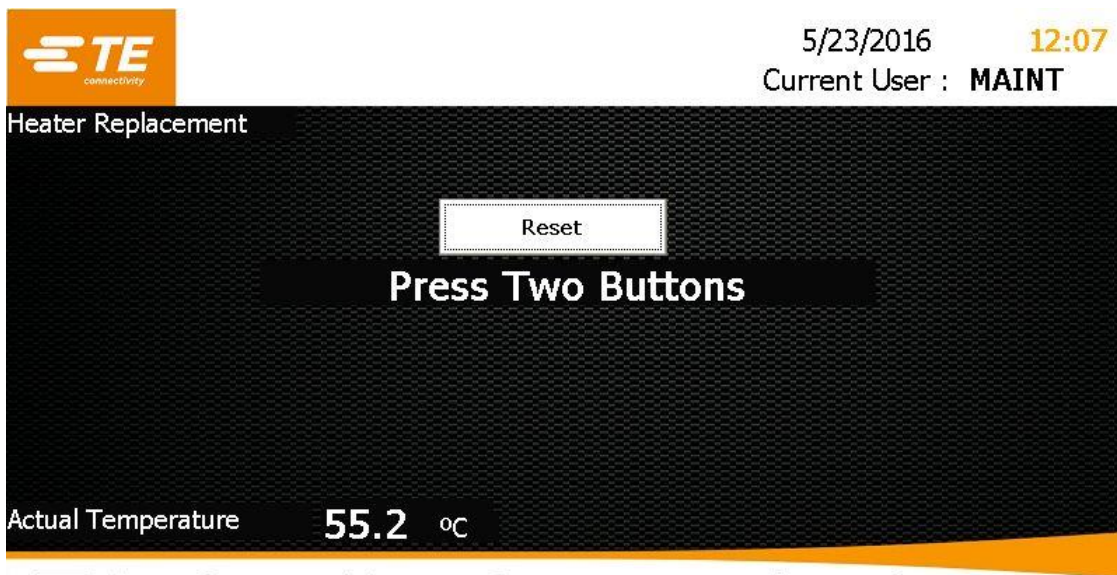


Fig. 31 : *Press Two Buttons* display

- ➔ Press the two-hand release (green) on the processor.

- ✓ The heating chamber moves forward and remains in that position.

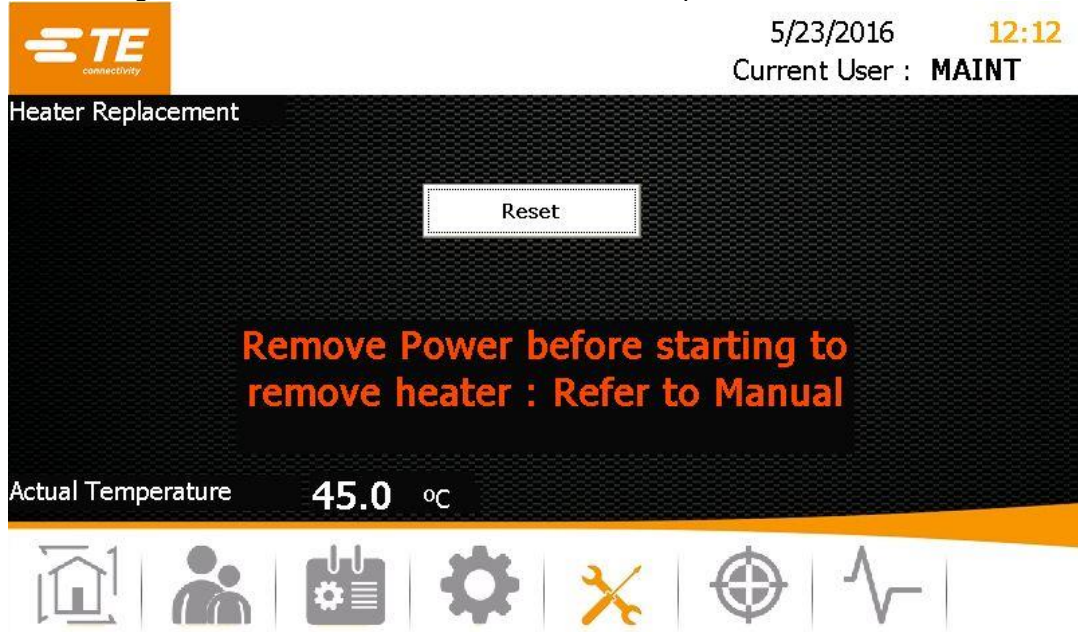


Fig. 32 : **Remove Power** display

- ➔ Switch off the processor in order to change the heating chamber.
- ✓ You can now exchange the heating chamber.

	<p>Further information regarding exchanging of the heating chamber can be found in section 14.1.2 Change heating chamber, page 101.</p> <p>After the heating chamber has been exchanged, calibration is required. Further information can be found in section 9.9 Calibrate heating chamber, page 57.</p>
--	---

## 9.9 Calibrate heating chamber

**Note:** You must have an authorisation level of 'Maintenance'.

The heating chamber must be calibrated whenever the following conditions apply:

- After exchange of the heating chamber
- After a long period of non-use
- If the processor displays a relevant message

CAUTION!	
	<p><b>Burn hazard due to hot surfaces</b></p> <p>After calibration of the heating chamber, the hot UHI probe is ejected from the processor.</p> <ul style="list-style-type: none"> <li>■ During calibration, hold the UHI probe at one end, outside the processor.</li> <li>■ Place the hot UHI probe carefully in a safe place.</li> </ul>

## Calibration process

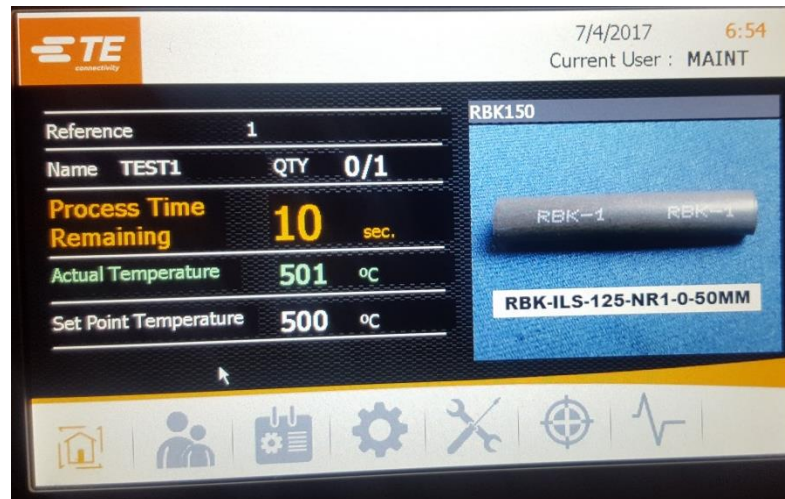



Fig. 33 : Home display

- ➔ Tap the  button to switch to the **Heater Calibration** display.

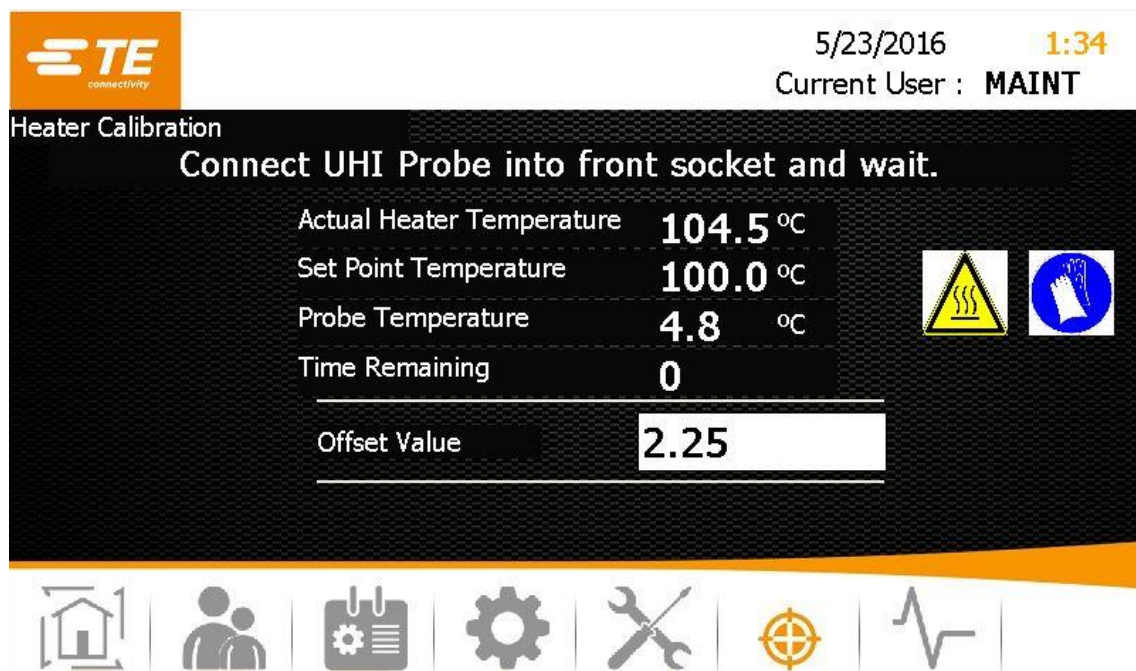



Fig. 34 : Connect UHI Probe into socket and wait display

- ➔ Connect the UHI probe to the processor via the calibration socket on the processor's front panel and insert the calibration probe into the RBK-MK4.
- ✓ In the **Heater Calibration** display, the temperature of the UHI probe in the **Probe Temperature** field is displayed. The temperature of the UHI probe must lie between 20°C und 26°C. 23°C is the ideal temperature.

	In order to bring the UHI probe down to the required temperature, place the UHI probe into a vessel of water and leave it there to cool. Afterwards, dry the UHI probe off.
---	---

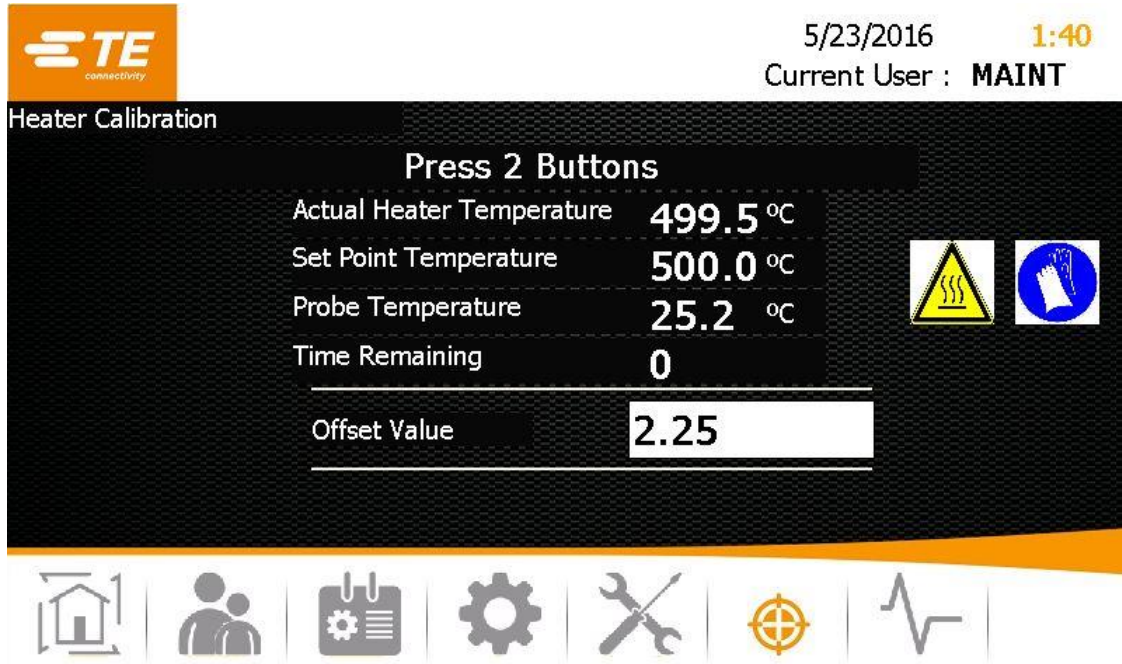


Fig. 35 : **Press Two Buttons** display

- ➔ Press the two-hand release (green) on the processor.
- ✓ The heater carriage moves forward and the timer starts for calibration in front position.

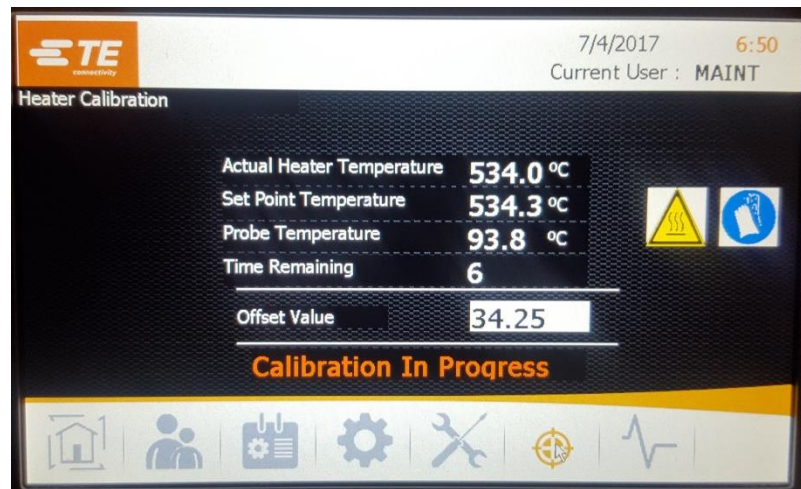


Fig. 36 : **Calibration In Progress** display

- ✓ The UHI ejects from processor at timeout (Do not unplug UHI). The timer starts on screen to complete calibration process. If actual UHI temperature is within the expected UHI temperature +/- 5°C the calibration is complete.

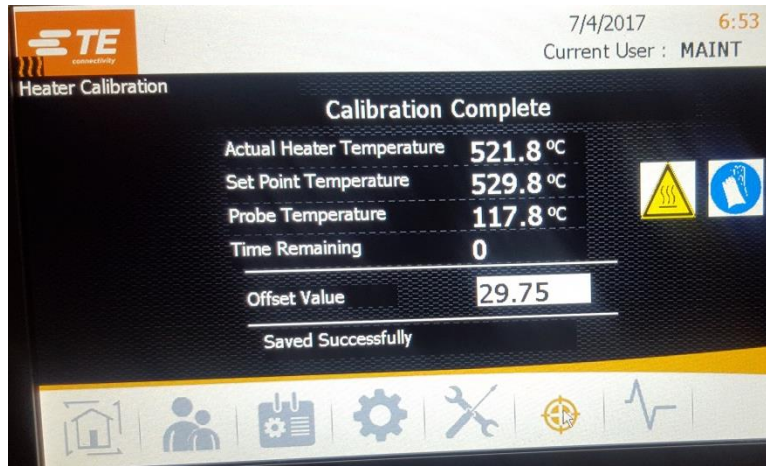


Fig. 37 : **Calibration Complete** display

- ✓ When the calibration is completed the screen will return to the process page as shown below.
- ➡ Unplug the UHI.

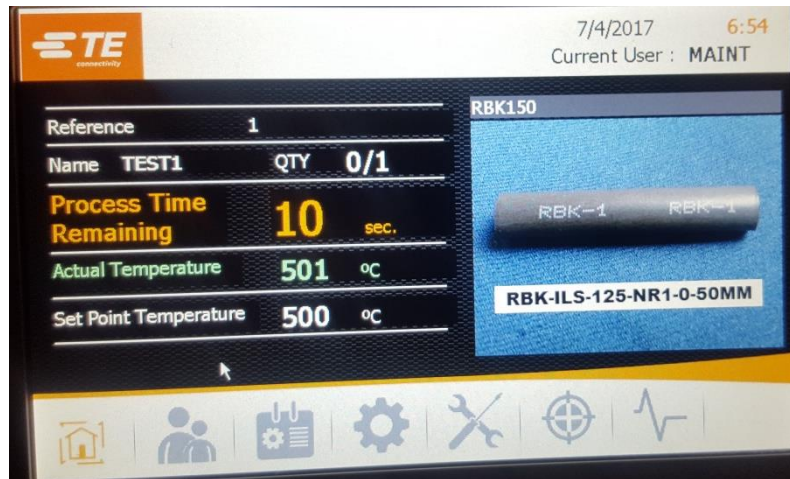


Fig. 38 : **Home** display

- ✓ The Calibration process needs to be continued if the actual UHI temperature is NOT within the expected UHI temperature +/- 5°C and does not return to the process page.

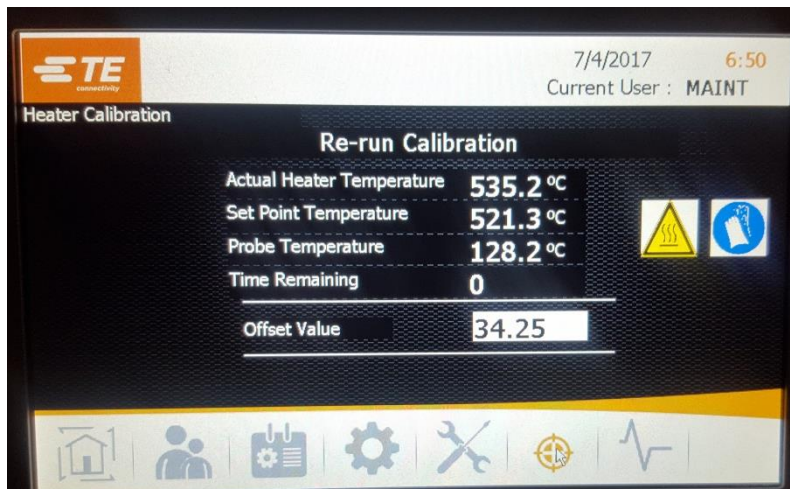


Fig. 39 : **Re-run Calibration** display

- ✓ DO NOT Unplug UHI until the **orange tick** has appeared on the screen.

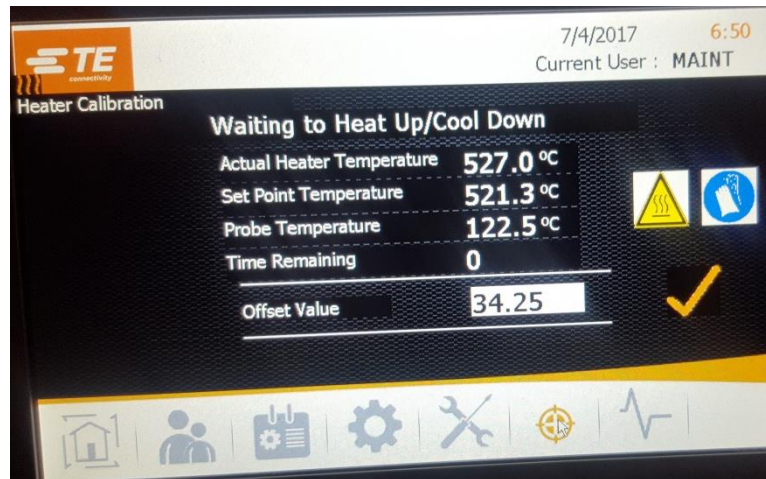



Fig. 40 : **Waiting to Heat Up/Cool Down** display


- ➔ Unplug the UHI probe. Warm/Cool Calibration T/C (20°C-26°C). Pull out the UHI probe.
- ➔ Connect UHI.
- ✓ *The orange Tick disappears*
- ➔ Repeat Calibration has explained above. (Load UHI. Press two Buttons.). Calibration can take up-to four cycles as the RBK4 re- calculates the offset.
- ➔ At the appropriate time the thermocouple can be removed for cooling. There is no time limit on how long the probe is out of the RBK. When the probe is re fitted the orange, tick disappears and the process can continue until completed.
- ➔ After four cycles the and calibration is not achieved the message “replace Heater” will be displayed.

	There are no negative offset values on the screen only positive. The total value is 90.
---	---

## 10 Operation

In this section, the following information is to be found:

Section	Subject	Page
10.1	Preconditions	62
10.2	Defining operating modes	62
10.3	Carry out operating cycle	66
10.4	Switching off the processor	67
10.5	What to do in the event of an emergency	68

	Before you set to work with the processor, please read the safety instructions in section 3 General notes on safety, page 9. Make sure that you have understood the safety information.
---	---

### 10.1 Preconditions

The following should be tested before operation:

- The electricity supply is connected.
- The compressed air supply is connected (optional).
- The machine is in a clean and working condition.

### 10.2 Defining operating modes

The processor can be used in any of the following modes:

- In local mode
- In sequence mode
- In remote mode

#### 10.2.1 Working in local mode

This mode is suitable for single-unit production. The selected process will be carried out only once.

- ➡ In the **Process Selection** display, select and begin a process.
- ✓ *The **Home** display appears and the selected process is displayed.*
- ➡ On the **Home** display, when the operating temperature displayed in the **Actual Temperature** shows green, press the two-hand release on the processor.
- ✓ *The product is shrunk and then ejected.*

#### 10.2.2 Working in sequence mode

This mode is suitable for production in series. The selected process is carried out for several products. When the sequence has reached the desired value, it begins again at the first step.

- ➡ Select a process in the **Process Selection** menu.
- ➡ Tap on the **Qty** field and enter the desired number for the process to be carried out.




- ➔ Begin the process.
- ✓ *The **Home** display appears and the selected process is displayed.*
- ➔ On the **Home** display, when the operating temperature displayed in the **Actual Temperature** shows green, press the two-hand release on the processor.
- ✓ *The product is shrunk and then ejected. The number in the **Qty** field is increased by 1.*

### 10.2.3 Work in remote control mode with a PC

The remote operating mode allows the processor to be controlled by external devices, such as an industrial computer.

**Note:** You must have an authorisation level of 'Maintenance'. In the **Settings** display the network mode is switched on (orange).

- ➔ Connect the PC to the processor with an Ethernet cable.
- ➔ Tap the  button to switch to the **Settings** display.
- ➔ In the network settings, turn on **DHCP** (orange) in order to obtain an IP address from the server. Further information can be found in section 9.5.2 Import or export PC settings, page 44.
- ➔ Download the programme **CERHOST** from the Internet and install it.
- ➔ Open the **programme**.
- ✓ *The programme appears.*

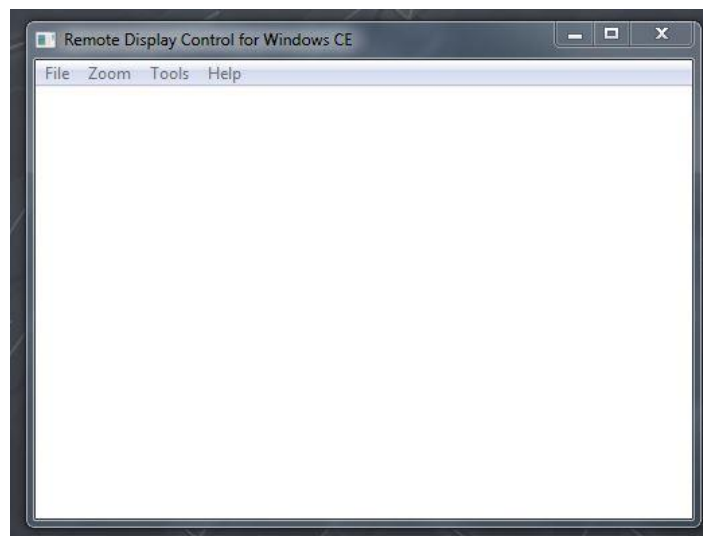


Fig. 41 : The **CERHOST** programme

- ➔ Click **File** and select the option **Connect**.
- ➔ Enter the processor's IP address in the **Hostname** field.

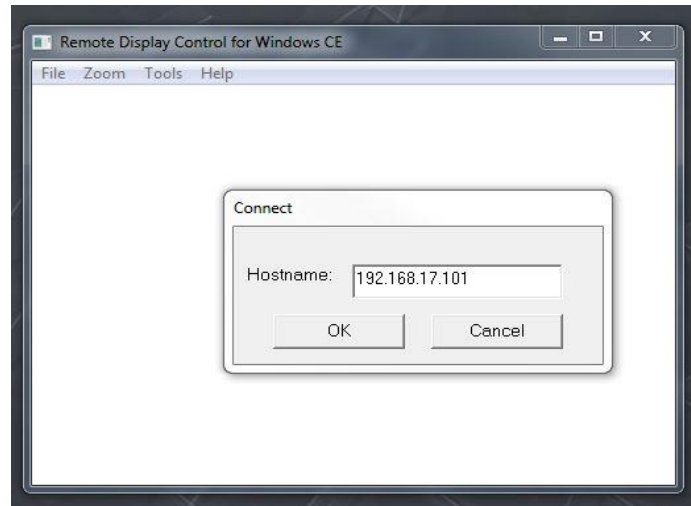


Fig. 42 : The processor's IP address in the **Hostname** field.

- ✓ The processor is now connected to the PC. The current display on the processor's screen is shown on your PC screen. You can now control the processor remotely.

#### 10.2.4 Working in remote mode with the RS232 interface

The remote operating mode allows the processor to be controlled by external devices, such as an ultrasonic welding device.


Remote operation takes place via the RS232 communication interface, and through an RS232 cable connected to the external device. The set parameters are saved to memory even after the processor is switched off. **Make sure that the RS-232-cable is a straight one (1:1) and not a crossed one.**

##### RS232 Data Format

All data is transmitted in ASCII form. This data format uses 8 data bits, 1 stop bit, no parity at 9600 baud, Full duplex transmitter/receiver; RTS/CTS is inactive. The processor recognises the following fourteen-byte information packet structure.

BYTE	Function
BYTE 1	Start of Header (SOH) (always ASCII 01h)
BYTE 2	10's of seconds (ASCII 30h to 39h (1 to 9))
BYTE 3	1's of seconds (ASCII 30h to 39h (1 to 9))
BYTE 4	Always a decimal point (ASCII 2Eh)
BYTE 5	0.1's of seconds (ASCII 30h to 39h (1 to 9))
BYTE 6	Always a NULL (always ASCII 00h)
BYTE 7	Product size code (ASCII numeric – any character)
BYTE 8	Product size code (ASCII numeric – any character)
BYTE 9	°C (hundreds)
BYTE 10	°C (tens)
BYTE 11	°C (one)
BYTE 12	Checksum high hex nibble (ASCII value 0–9 A–F) F)
BYTE 13	Checksum low hex nibble (ASCII value 0–9 A–F)
BYTE 14	End of transmission (EOT) (always ASCII 04h)

Tab. 23 : RS232 Data Format

	<i>The checksum hex (A-F) must be in ASCII lower case.</i>
---	--

The processor will ignore all RS232 data until an SOH character is recognised. On receipt of an SOH, 10 additional characters or an EOT character is sought. For each character received (including the SOH) the longitudinal addition (checksum) is maintained up to and including byte 11. Overflow of the checksum beyond a byte boundary is discarded; This single byte checksum is converted to two ASCII characters and compared with bytes 12 and 13 of the received packet.

The processor responds 100ms after receipt of the above data packet with either a single ACK (acknowledgement) (ASCII 06h) or an NAK (not acknowledgement) (ASCII 15h) character. An ACK response will occur providing the following verifications are met:








- The checksum Byte compares.
- The frame format corresponds to the format defined above (i.e. the decimal point and the null characters are in the correct place and the expected numeric values represented by ASCII 3039 are available).

Failure to meet these requirements results in an NAK response from the processor.

The only exception, that is left unchecked, is the product size value.

The two ASCII values designated product size are unchecked as part of the receive protocol, other than being included in the checksum calculation (i.e. any data received in these positions will not result in an NAK response

## 10.3 Carry out operating cycle

WARNING!	
	<p><b>Fire due to overheating</b></p> <p>If a product overheats, a fire can be the result, and can produce dangerous smoke and fumes.</p> <ul style="list-style-type: none"> <li>■ Pay attention to the product's safety data sheet.</li> <li>■ Turn the main switch with its emergency stop function.</li> <li>■ Do not overheat the product.</li> </ul>
WARNING!	
	<p><b>Breathing difficulties / suffocation due to hazardous fumes.</b></p> <p>Depending on the product, harmful fumes can be produced during the shrinking procedure.</p> <ul style="list-style-type: none"> <li>■ Pay attention to the product's safety data sheet.</li> <li>■ The working area should be well-ventilated.</li> <li>■ If necessary, install an air extraction system.</li> </ul>
WARNING!	
	<p><b>Danger of entrapment from the closing movement of the heating elements.</b></p> <p>The slide rails close the heating elements up in a forward motion. There is a danger of entrapment from this closing movement or the shift forwards.</p> <ul style="list-style-type: none"> <li>■ Operators must not put their hands near the heating chamber.</li> </ul>
CAUTION!	
	<p><b>Risk of burn injuries from ejected cable splices.</b></p> <p>Cable splices ejected after shrinking processes are very hot.</p> <ul style="list-style-type: none"> <li>■ Handle ejected cable splices only at their ends.</li> <li>■ Wear gloves.</li> </ul>
CAUTION!	
	<p><b>Risk of injury from loose hair or clothing.</b></p> <p>Hair and loose clothing must not come into contact with the machine.</p> <ul style="list-style-type: none"> <li>■ Wear only tight clothing when operating the processor.</li> </ul>
	<p><b>Wear protective gloves</b></p> <p>We recommend the wearing of protective gloves while operating the processor.</p>
	<p>The processor may be operated only by a single person.</p>

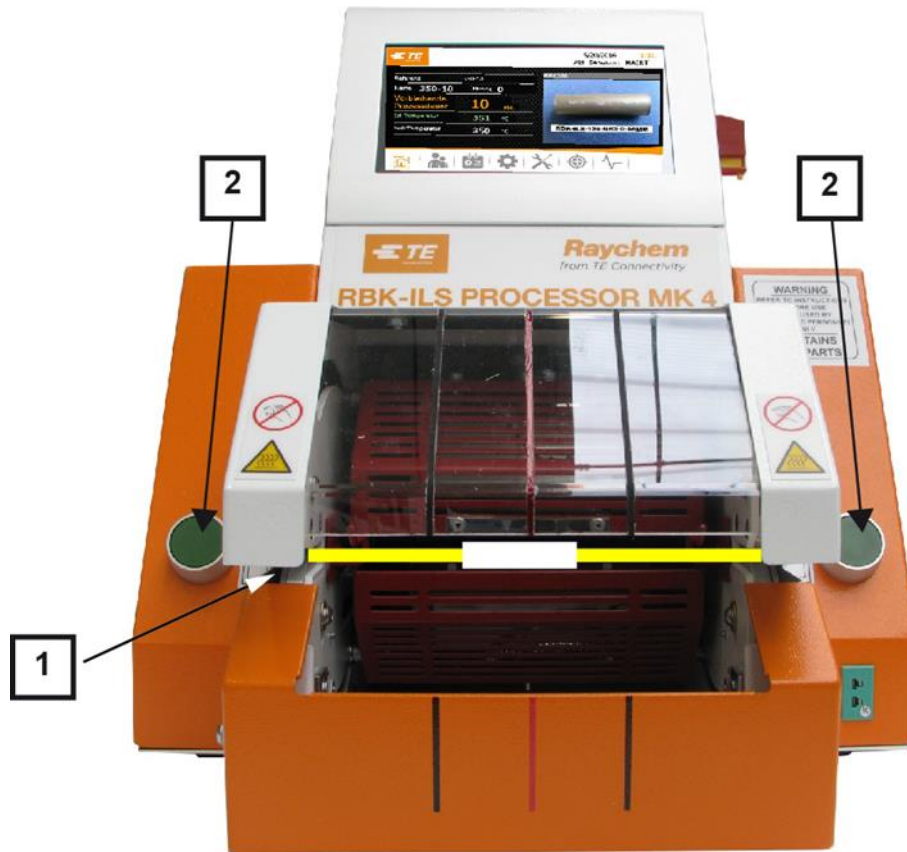




Fig. 43 : Carry out operating cycle

- ➔ Select product in the right size for the splice and place it over the splice to be processed.
- ➔ Lay the cable harness in the processor's gripper (1).  
Align the center of the splice and product ends with the guide markers on the Perspex shield.
- ➔ On the **Home** display, when the operating temperature displayed in the **Actual Temperature** shows green, press the two-hand release (2) on the processor.
- ➔ Check whether the time display in the **Process Time Remaining** field is counting down.
- ✓ *When the timer reaches zero, the heater will move backwards and the processed splice will be ejected.*

## 10.4 Switching off the processor


ATTENTION!	
	<p><b>Not shutting the heating chamber down properly will shorten its service life.</b> Improper switching off of the processor has an adverse effect on the heating chamber's service life.</p> <ul style="list-style-type: none"> <li>■ Switch off the processor with the proper procedure.</li> </ul>

- ➔ Tap the  button and hold it down for 4 seconds.
- ✓ *The buttons **Shut Down** and **Abort** appear.*
- ➔ Tap the **Shut Down** button to shut the processor down. Alternatively, tap the **Abort** button to cancel the process.

- ✓ The heating chamber begins to cool down, and the message **Heater Cooling! Do Not Power Off** is displayed.




Tab. 24 : **Shut-down** display

	This can take several minutes.
---	--------------------------------


- ➡ When the heating chamber has cooled down, the message **OK To Power OFF** appears. Turn the main switch with emergency stop function to position **0 OFF**.
- ✓ The processor is switched off.


## 10.5 What to do in the event of an emergency

	<p><b>Wear protective gloves</b></p> <p>We recommend the wearing of protective gloves while operating the processor.</p>
---	--

In emergencies or cases of immediate danger, the processor must be shut down straightaway. This can be done through the main switch with its emergency stop function.

### 10.5.1 Fire in the heating chamber

WARNING!	
	<p><b>Breathing difficulties / suffocation due to hazardous fumes.</b> Depending on the product, harmful fumes can be produced during the shrinking procedure.</p> <ul style="list-style-type: none"> <li>■ Pay attention to the product's safety data sheet.</li> <li>■ The working area should be well-ventilated.</li> <li>■ If necessary, install an air extraction system.</li> </ul>


CAUTION!	
	<p><b>Risk of burn injuries from ejected cable splices.</b> Cable splices ejected after shrinking processes are very hot.</p> <ul style="list-style-type: none"> <li>■ Handle ejected cable splices only at their ends.</li> <li>■ Wear gloves.</li> </ul>

If a fire starts in the heating chamber, the following procedure should be adopted:

- ➡ Turn the main switch with emergency stop function to position **0 OFF**.
- ✓ *If the heating chamber is in the forward position, it will immediately move into the rear position and eject the splice it is processing.*
- ➡ Extinguish the fire by the proper use of a CO<sub>2</sub> fire extinguisher.
- ➡ Handle the splice and cable carefully, since the splice nugget or cable can be hot.
- ➡ Dispose of the spliced joint and/or of the cable in a metal container which does not already contain combustible material.

In rare cases it can happen that the heating chamber does not retract when the main switch and emergency stop function are pressed. In this case the heating chamber must be detached. Further information can be found in section 10.5.2 Detaching the heating chamber in an emergency, page 69.

### 10.5.2 Detaching the heating chamber in an emergency

WARNING!	
	<p><b>Inadvertent or unexpected start-up.</b> There is the hazard of the processor starting up during maintenance or upkeep work, e.g. from the capacitor belonging to the automatic retraction unit.</p> <ul style="list-style-type: none"> <li>■ Before modifying, cleaning or fault inspection, secure the processor's mains isolator (main switch) against inadvertent re-activation.</li> <li>■ Pull out the processor's power plug.</li> <li>■ Carry out safety measures for the discharge of surplus energy.</li> <li>■ Allow the processor to cool down.</li> </ul>

**WARNING!**



**Risk of burn injuries through malfunction.**

The slide rails of the heating element lock up in forward movement.

- Turn the processor off via the main switch with its emergency stop function.

**CAUTION!**



**Burn hazard due to hot surfaces.**

The processor becomes hot during operation.

- Allow the processor to cool down.

If the heating chamber does not retract during an emergency even if the main switch and emergency stop function are pressed, the heating chamber must be detached manually.

- ➔ Press the guard of the lower heating chamber (1) backwards until the heating chamber is unlatched.






Fig. 44 : Moving the lower heating chamber manually



- ➔ Press the releasing levers down and extract the splice.



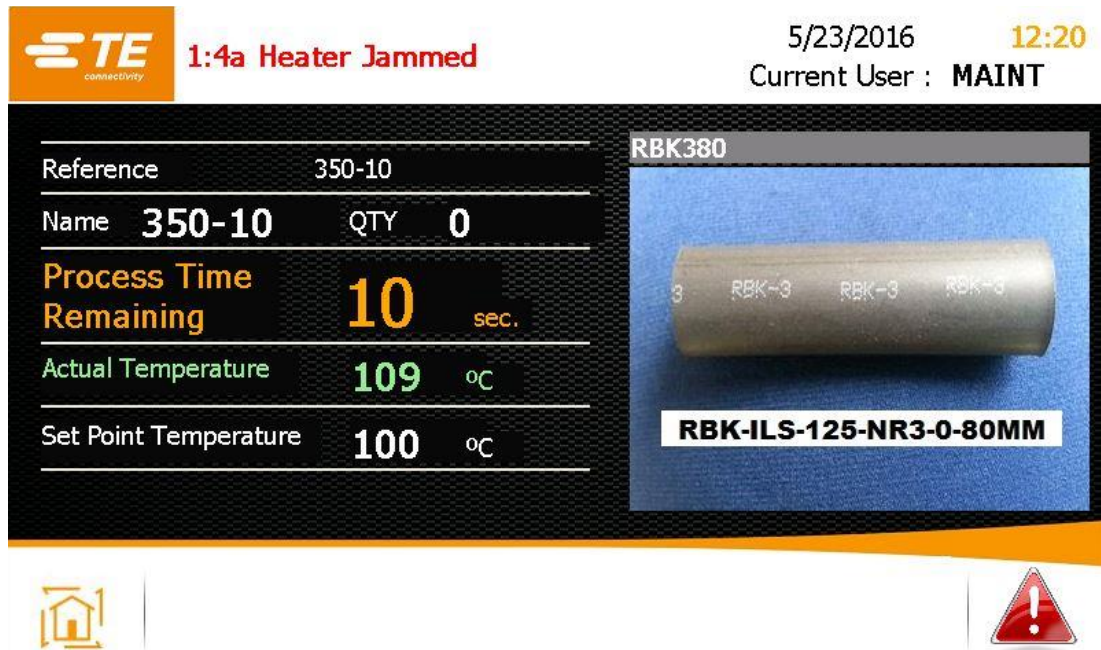
Fig. 45 : Manual splice release

### 10.5.3 Blocked heating chamber

WARNING!	
	<p><b>Inadvertent or unexpected start-up.</b> There is the hazard of the processor starting up during maintenance or upkeep work.</p> <ul style="list-style-type: none"> <li>■ Before modifying, cleaning or fault inspection, secure the processor's mains isolator (main switch) against inadvertent re-activation.</li> <li>■ Pull out the processor's power plug.</li> <li>■ Allow the processor to cool down.</li> </ul>

CAUTION!	
	<p><b>Burn hazard due to hot surfaces.</b> The processor becomes hot during operation.</p> <ul style="list-style-type: none"> <li>■ Allow the processor to cool down.</li> </ul>
	<p><b>Wear protective gloves</b> We recommend the wearing of protective gloves while operating the processor.</p>

If the heating chamber is stuck, a warning triangle  appears in the navigation bar, and the error message **1:4a Heater Jammed** is displayed in the upper area of the screen. The energy supply between motor and heating chamber is interrupted automatically.



The screenshot shows the TE connectivity interface with the following details:

- TE connectivity logo** in the top left.
- 1:4a Heater Jammed** error message in red text.
- Date: **5/23/2016** and Time: **12:20** in the top right.
- Current User: **MAINT** in the top right.
- Reference**: 350-10
- Name**: 350-10, **QTY**: 0
- Process Time Remaining**: 10 sec.
- Actual Temperature**: 109 °C
- Set Point Temperature**: 100 °C
- RBK380** component image with a label **RBK-ILS-125-NR3-0-80MM**.
- Navigation icons: Home (house icon) and Warning (red triangle with exclamation mark).

Fig. 46 : Error Message

- ➔ Wait until the temperature is cooled down to ambient temperature.
- ➔ Push and pull the guard of the heating chamber backwards and forwards, until the heating chamber can be moved freely.
- ➔ Click on the red triangle to remove the error message. The heaters begin to heat-up again.



Fig. 47 : Moving the lower heating chamber manually

- ➔ Press the guard of the lower heating chamber (1) backwards until the heating chamber is unlatched.
- ➔ Tap the warning triangle to resolve the fault.
- ✓ In the upper area of the screen the following message appears: **3: Press 2 Buttons to move Heater.**




Fig. 48 : Fixing the fault

- ➡ Press the two-hand release.
- ✓ *The heating chamber moves into the forward position and then backwards into the rear position.*
- ✓ *The blockage has been cleared and work can continue.*

# 11 Troubleshooting

In this section, the following information is to be found:

Section	Subject	Page
11.1	Rectifying faults	75
11.2	Fault reports on the screen	75
11.3	Overview of error reports and how to handle them	75
11.4	Overview of faults and how to rectify them	80

	<p>The procedures described in this section may be undertaken only by suitably qualified technicians. After the completion of repairs or the replacement of components, the relevant safety checks must be carried out. Further information can be found in section 13.2.1 Carry out safety checks, page 93.</p>
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## 11.1 Rectifying faults

Faults are events that interrupt operation and production and can lead to faulty products or damage to the processor.

## 11.2 Fault reports on the screen


Faults can occur during the processor's operation. The fault is displayed on the screen in the form of an error report with a fault number and message:



**15: Heater Calibration Required - Call Engineering Support**



Fig. 49 : Error Message

## 11.3 Overview of error reports and how to handle them

WARNING!	
	<p><b>Inadvertent or unexpected start-up.</b></p> <p>There is the hazard of the processor starting up during maintenance or upkeep work, e.g. from the capacitor belonging to the automatic retraction unit.</p> <ul style="list-style-type: none"> <li>■ Before modifying, cleaning or fault inspection, secure the processor's mains isolator (main switch) against inadvertent re-activation.</li> <li>■ Pull out the processor's power plug.</li> <li>■ Carry out safety measures for the discharge of surplus energy.</li> <li>■ Allow the processor to cool down.</li> </ul>

CAUTION!	
	<p><b>Burn hazard due to hot surfaces.</b> The processor becomes hot during operation.</p> <ul style="list-style-type: none"> <li>■ Allow the processor to cool down.</li> </ul>
	<p><b>Wear protective gloves</b> We recommend the wearing of protective gloves while operating the processor.</p>

In total there are 17 error reports. The following table will help you to identify the fault. Information regarding the replacement of components can be found in section 14.1 Repair and replace replacement and wearing parts, page 99.

Error number and message	Possible cause	Solution
1: Heater Jammed - Call Engineering Support	Mechanical blockage	The proximity switch monitors the motor. Check the proximity switch. Further information can be found in section 14.1.1 Performance protection device , page 100.
2: Heater Jam - Call Engineering Support	Heating chamber not in the initial position	Shut down the processor and push the lower slide rails into the rear position.
3: Rotor 2 in home position	Heating chamber not in the initial position	Press the two-hand release. Alternatively, shut down the processor and push the lower slide rails into the rear position.
		Check that the rear proximity sensor is working.
		Check the sensor's distance and the position of the sensor.
4: Heater Motor Drive Fault - Call Engineering Support	No 24 V DC power supply to the motor	Test the electrical supply to the motor by pressing the two-hand release.
	Wiring fault in the motor	Change the wiring. Further information can be found in section 14.1.5 Replace motor module , page 108.
	Fault in driver circuitry or PCB (circuit board)	Change the PCB. Further information can be found in section 14.1.7 Replacing the circuit board (PCB controller), page 116.
	Motor Failure	Exchange the motor. Further information can be found in section 14.1.5 Replace motor module , page 108.
5: Motor Control Error - Call Engineering Support	No 24 V DC power supply to the motor	Switch the processor off and then on again. Check whether the fault has been fixed.
		Check that both indicator lights on the safety relay are lit when the two-hand release is pressed.
		Change the PCB. Further information can be found in section 14.1.7 Replacing the circuit board (PCB controller), page 116.
6: Front Sensor Failure - Call Engineering Support	Check sensor distance	Re-adjust the sensor. Further information can be found in section 14.1.3 Adjust proximity switch, page 104.
	Sensor fault	If the sensor is not lit, change the sensor. Further information can be found in section 14.1.4 Replace proximity switch, page 107.
	Check the cabling	Remove the faulty wiring. Further information can be found in section 14.1.4 Replace proximity switch, page 107.
	Faulty connections	Check the connections between the sensor clamp and the PCB.
	Check for obstacles	Remove the obstacles.

Error number and message	Possible cause	Solution
7: Home Sensor Failure - Call Engineering Support	Check sensor distance	Re-adjust the sensor. Further information can be found in section 14.1.3 Adjust proximity switch, page 104.
	Sensor fault	If the sensor is not lit, change the sensor. Further information can be found in section 14.1.4 Replace proximity switch, page 107.
	Check the cabling	Remove the faulty wiring. Further information can be found in section 14.1.4 Replace proximity switch, page 107.
	Faulty connections	Check the connections between the sensor clamp and the PCB.
	Check for obstacles	Remove the obstacles.
8: Fan Failure Detected - Call Engineering Support	No DC connection to the cooling fan	Check the wiring to the cooling fan.
	Cooling fan fault	Change the cooling fan. Further information can be found in section 14.1.6 Replacing the cooling fan, page 115.
9: Check Heater Fuse and Heater - Call Engineering Support	Fuse fault	Replace the fuse (240 V DC; 2 A).
	Open circuit in the heating element	Check the resistance of the heater element assembly at the terminal block at the rear of the heat chamber. The resistance should lie between 100 and 200 ohms.
	Wiring fault	Check the connection between the live and neutral cable in the socket and the PCB power switching.
10: Heater Control Fault - Call Engineering Support	Communication fault	Switch the processor off and then on again.
	PCB fault	Change the PCB. Further information can be found in section 14.1.7 Replacing the circuit board (PCB controller), page 116.
11: Heater Over Temperature - Call Engineering Support	Heating element fault in heating chamber	Change the heating chamber. Further information can be found in section 14.1.2 Change heating chamber, page 101.
	Jam in cooling fan	Check that there is a sufficient gap between the processor's parts and the cooling fan.
	Cooling fan does not work	See error number 8.
12: Thermocouple Open Circuit - Call Engineering Support	Heating element connection fault	Check the resistance of the thermocouple at wire 17 and 18, at pins 1 and 2. The resistance of the thermocouple should be approximately 2 ohms. If the resistance is shown as infinite, the thermocouple is defective. Change the compensating cable or the entire heating chamber.



Error number and message	Possible cause	Solution
	Thermocouple compensating cable fault	Change the compensating cable. Further information can be found in section 14.1.9 Replacing the thermocouple compensating cable, page 119.
	PCB fault	Change the PCB. Further information can be found in section 14.1.7 Replacing the circuit board (PCB controller), page 116.
13: Thermocouple Short Circuit - Call Engineering Support	Thermocouple compensating cable fault	Change the compensating cable. Further information can be found in section 14.1.9 Replacing the thermocouple compensating cable, page 119.
	Short circuit in heating chamber	Change the heating chamber. Further information can be found in section 14.1.2 Change heating chamber, page 101.
	PID-controller configured incorrectly.	Reset the PID controller to its factory settings. Further information can be found in section 9.5.5 Change heating chamber settings, page 47.
14: Communication Lost with I/O Card - Call Engineering Support	Bad connection with the PCB	Check the connection with the PCB.
	PCB fault	Change the PCB. Further information can be found in section 14.1.7 Replacing the circuit board (PCB controller), page 116.
15: Heater Calibration Required - Call Engineering Support	Calibration of heating chamber required	Calibrate the heating chamber. Further information can be found in section 9.9 Calibrate heating chamber, page 57.
16: Slave Communication Error - Call Engineering Support	The connection to the welder is defective	Check communication between software and welder. Check the welder's error report.
17: Mains Fail - Call Engineering Support	Check input voltage	The input voltage must lie within the range 209-250 V AC (alternating current).
	Main fuse fault	Change the main fuse. (3.15 AMP S506 Series Time delay)
	Check the operation of the main switch.	Change the main switch. (3LD22500TK13 Siemens)

Tab. 25: Error reports and how to rectify them

## 11.4 Overview of faults and how to rectify them

### WARNING!



#### Inadvertent or unexpected start-up.

There is the hazard of the processor starting up during maintenance or upkeep work, e.g. from the capacitor belonging to the automatic retraction unit.

- Before modifying, cleaning or fault inspection, secure the processor's mains isolator (main switch) against inadvertent re-activation.
- Pull out the processor's power plug.
- Carry out safety measures for the discharge of surplus energy.
- Allow the processor to cool down.

### CAUTION!



#### Burn hazard due to hot surfaces.

The processor becomes hot during operation.


- Allow the processor to cool down.



#### Wear protective gloves

We recommend the wearing of protective gloves while operating the processor.

Problem	Possible cause	Verification	Solution
The heating chamber moves forward and returns straightaway to the rear position.	<b>Load</b> proximity sensor in <b>OFF</b> position or faulty. It is also possible that the heating chamber is in the wrong position.	Check that the <b>Load</b> sensor's internal LED is lit.	Re-adjust the sensor's position. Further information can be found in section 14.1.3 Adjust proximity switch, page 104. If necessary, change the sensor. Further information can be found in section 14.1.4 Replace proximity switch, page 107.
The heating chamber does not move when the two-hand release is pressed.	Heating chamber not in rear position.	Check the position of the heating chamber. Check the heating chamber for blockages.	Remove the blockages. Press the two-hand release to move the heating chamber into the rear position.
	<b>Home</b> sensor on <b>OFF</b> position or faulty.	Check the sensor's distance and position The sensor's LED should be lit. Check the wiring and connections.	Re-adjust the sensor's position. If necessary, change the sensor. Further information can be found in section 14.1.4 Replace proximity switch, page 107. Rectify the wiring fault
	Safety relay fault.	When you press the two-hand release, both indicator lamps should be lit. Check the wiring and connections. Check the DC input to the PCB.	Change the safety relay. Further information can be found in section 14.1.8 Replacing the safety relay, page 118.
	PCB relay fault.	When you press the two-hand release, both indicator lamps should be lit. The PCB relay does not work.	Check the wiring and connections. Change the PCB. Further information can be found in section 14.1.7 Replacing the circuit board (PCB controller), page 116.
The processor is overheating. The covers and guards are too hot.	The shut-down process is not launched.	Switch the processor off via the touch screen. The cooling fan goes on running until 99 °C is reached. Now turn the main switch to <b>0 OFF</b> .	Make sure that the shut-down procedure has been carried out properly. Further information can be found in section 10.4 Switching off the processor, page 67.

Problem	Possible cause	Verification	Solution
The heating chamber does not move when the two-hand release is pressed.	Actual temperature outside set temperature band.	If the actual temperature lies within the temperature limits, the <b>Actual Temperature</b> field in the <b>Home</b> display is lit up in green.	Reset the temperature limits to their factory settings.
The touch screen does not come on when the main switch is turned to position <b>1 ON</b> .	No mains voltage.	Check the main fuse for faults.	Change the main fuse. (3.15 AMP S506 Series Time delay)
	Connection to PCB faulty or touch screen not properly connected.	Check the electricity supply for faults. Check the 24 VDC connection to the PCB at J32/J33 pins 1 and 2 and J65 pins 4 and 5.	Check the wiring for faults and replace these if necessary. Further information can be found in section 14.1.10 Replacing the touch-screen, page 121.
	The PCB is faulty.	No 24 V DC power supply to Pin J32	Change the PCB. Further information can be found in section 14.1.7 Replacing the circuit board (PCB controller), page 116.
	The touch-screen is faulty.	24 VDC power supply on pin J65 4 and 5 is available but screen is blank.	Change the touch screen. Further information can be found in section 14.1.10 Replacing the touch-screen, page 121.
Internal or external cooling is not working. 	Inflowing air pressure is too low.	A minimum air pressure of 3.5 bars is required.	
	No 24 V DC power supply to the spool.	Check pins J18/J20 1 and 2 for the power supply to the PCB.	Change the PCB. Further information can be found in section 14.1.7 Replacing the circuit board (PCB controller), page 116.
	No 24 V DC power supply to the spool.	Check the connection to at pin J41 to the spool valve.	Check the wiring for faults. Replace the wiring (KMYZ-9-24-2.5).
	Spool or spool valve are faulty.	The light on the proximity sensor is lit.	Replace spool or the spool valve.

Tab. 26 : Faults and how to rectify them

When an internal cooling fan is connected to the processor, both sensor lights (1) and (2) are lit. The cooling fan cools the processor with a constant stream of air. When you begin a shrinking process, the supply of cool air is interrupted. As soon as the heating chamber returns to the rear position, the cooling fan is turned on again.

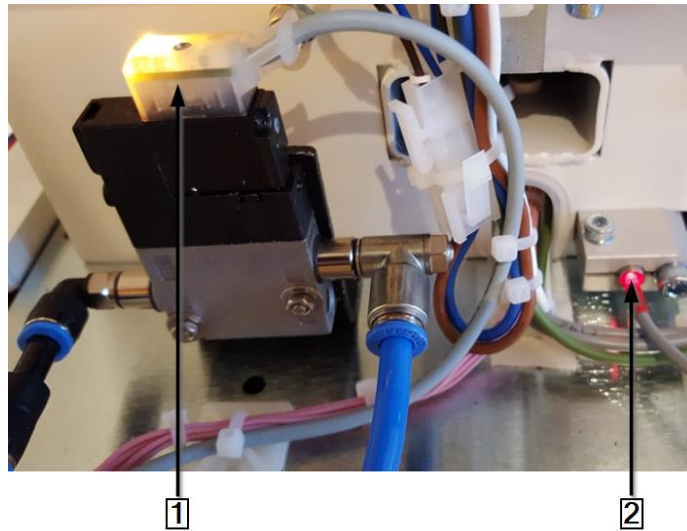


Fig. 50 : Internal cooling fan on the rear proximity switch

Item	Designation
1	The sensor indicator on the internal valve lights up
2	The sensor light on the rear proximity switch is lit

Tab. 27 : Internal cooling fan on the rear approximation sensor

<b>i</b>	The installation of a cooling fan is optional.
----------	--

## 12 Access to components

In order to be able to carry out maintenance and repair work, as well as the exchange of replacement and wearing parts, access to components must be facilitated. The casing can be dismantled completely.

In this section, the following information is to be found:

Section	Subject	Page
12.1	Remove side walls	85
12.2	Remove the heating side wall beneath and the front panel	86
12.3	Remove the heating wall above	87
12.4	Remove the touch screen covering	88
12.5	Remove the bottom rear wall	89
12.6	Remove the top rear wall	91



The procedures described in this section may be undertaken only by suitably qualified technicians. After the completion of repairs or the replacement of components, the relevant safety checks must be carried out. Further information can be found in section 13.2.1 Carry out safety checks, page 93.

### WARNING!



#### Inadvertent or unexpected start-up.

There is the hazard of the processor starting up during maintenance or upkeep work, e.g. from the capacitor belonging to the automatic retraction unit.

- Before modifying, cleaning or fault inspection, secure the processor's mains isolator (main switch) against inadvertent re-activation.
- Pull out the processor's power plug.
- Carry out safety measures for the discharge of surplus energy.
- Allow the processor to cool down.



You will require Allen keys of sizes 2.5 mm, 3 mm and 4 mm.

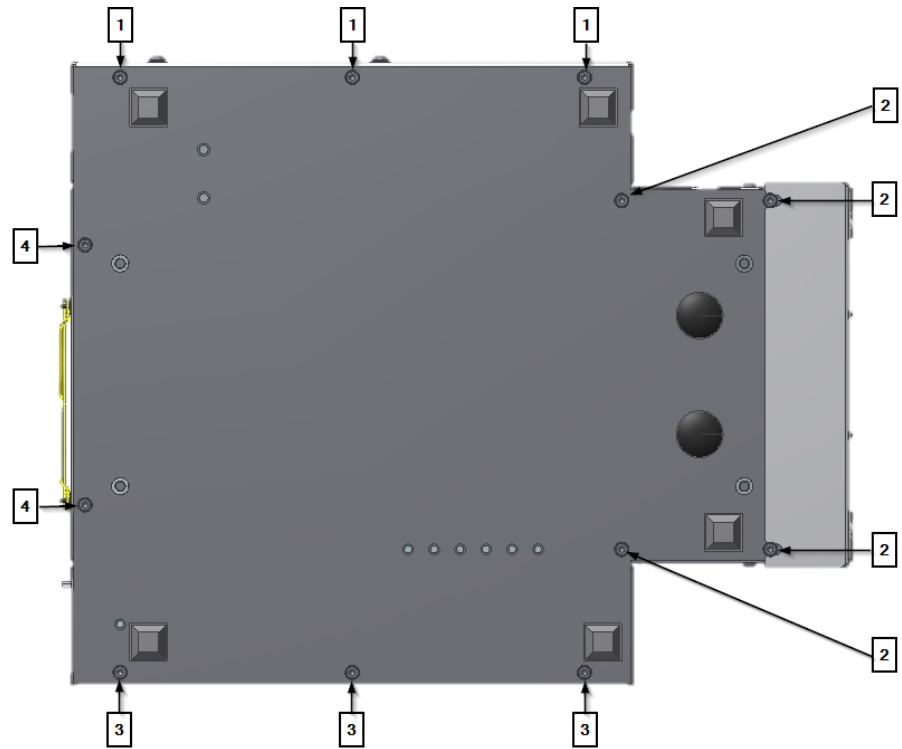


Fig. 51 : Base Securing Screws

Item	Designation
1	Lower fixing screws - left-hand wall and front panel
2	Lower fixing screws - left- and right-hand heating wall and front panel
3	Lower fixing screws - left-hand wall and front panel
4	Lower fixing screws - rear panel

Tab. 28 : Position of the fixing screws

## 12.1 Remove side walls

- ➡ In each case remove the lower three (2) and the upper two (1) fixing screws in order to remove the side wall.



Fig. 52 : Side wall, right

Item	Designation
1	Upper fixing screws of the right-hand side wall
2	Lower fixing screws of the right-hand side wall

Tab. 29 : Position of the side wall, right

## 12.2 Remove the heating side wall beneath and the front panel

- ➔ Remove the lower four fixing screws (1) and (2), in order to remove the front sheet and heating side walls.





Fig. 53 : Heating side wall beneath and the front panel

Item	Designation
1	Fixing screws of the front panel
2	Fixing screws of the right-hand heating side wall

Tab. 30 : Position of the heating side wall beneath and front panel

## 12.3 Remove the heating wall above

- ➡ In each case, remove the upper fixing screws (1), in order to remove the heating wall.



Fig. 54 : Heating wall, above

Item	Designation
1	Fixing screws of the heating wall above

Tab. 31 : Position of the heating wall, above

## 12.4 Remove the touch screen covering

**Note:** Both side walls must be removed before the touch-screen cover can be removed.

- In each case, remove the two fixing screws (1) on the sides in order to remove the touch screen.

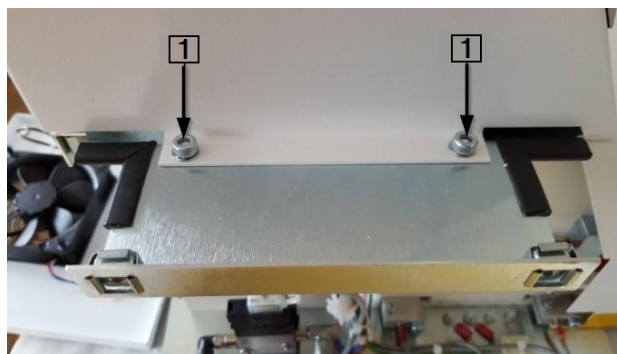


Fig. 55 : Touch screen covering

Item	Designation
1	Fixing screws of the touch screen covering

Tab. 32 : Position of the touch screen covering

- Remove the cable connections **J22, J45, J35, J32, J49** (1) to the PCB controller to remove the touch screen. Make sure that your body/hand is earthed before touching the PCB.

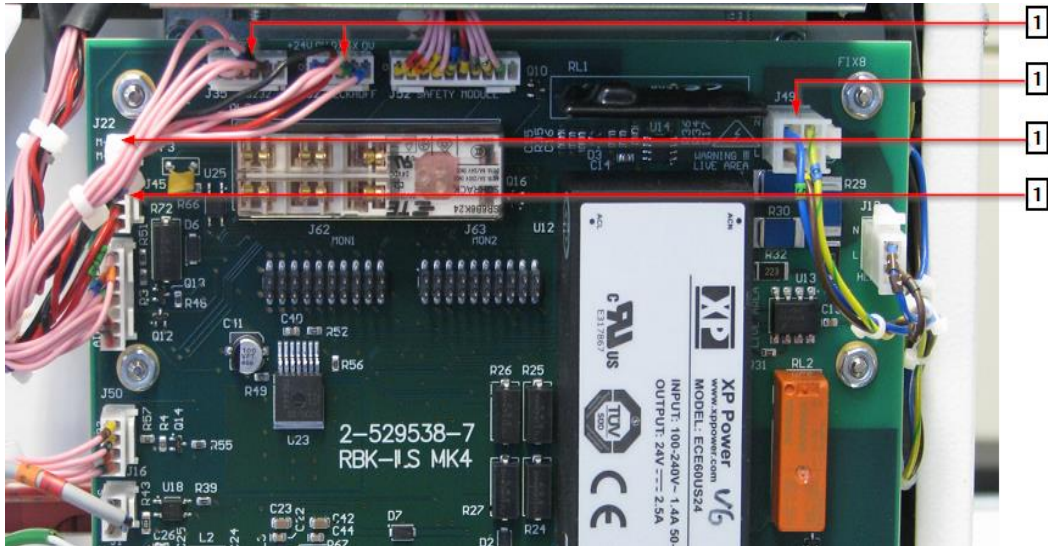


Fig. 56 : Cable connections to the PCB controller

Item	Designation
1	Cable connections

Tab. 33 : Position of the cable connections

- ➡ If required, unlock the tie-wraps (1) between the processor and the cable harnesses.



Fig. 57 : Tie-wrap connection on the processor

Item	Designation
1	Tie-wraps on the processor

Tab. 34 : Tie-wraps

## 12.5 Remove the bottom rear wall

- ➡ Remove the lower two (2) and the upper two (1) fixing screws in order to remove the rear wall.



Fig. 58 : Bottom rear wall

Item	Designation
1	Upper fixing screws of the right-hand side wall below
2	Upper fixing screws of the bottom rear wall

Tab. 35 : Position of the bottom rear wall

## 12.6 Remove the top rear wall

- ➔ Remove the four fixing screws (1) to remove the top rear wall.



Fig. 59 : Rear wall, top

Item	Designation
1	Fixing screws of the top rear wall

Tab. 36 : Position of rear wall, top

## 13 Maintenance

In this section, the following information is to be found:


Section	Subject	Page
13.1	Overview of maintenance tasks	92
13.2	Maintenance activities	92


### 13.1 Overview of maintenance tasks

Component	Maintenance work	Interval
Processor	Carry out safety checks	yearly
	Clean processor	weekly
Cooling Fan	Check the operation of the cooling fan	weekly
Gripper	Check the operation of the gripper and for wear and tear	weekly
Release lever	Check operation of release lever	weekly
Heating chamber	Calibrate the temperature of the heating chamber	<ul style="list-style-type: none"> <li>■ monthly</li> <li>■ after any long period of non-use of the processor</li> <li>■ after replacement of the heating chamber</li> </ul>

Tab. 37 : Maintenance list

### 13.2 Maintenance activities

	The procedures described in this section may be undertaken only by suitably qualified technicians. After the completion of repairs or the replacement of components, the relevant safety checks must be carried out. Further information can be found in section 13.2.1 Carry out safety checks, page 93.
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DANGER!	
	<p><b>Electric shock from live parts</b></p> <p>Hazard and danger of death from contact with live parts.</p> <ul style="list-style-type: none"> <li>■ Pull the plug out from the mains before opening the covers.</li> <li>■ Use tools only to remove the mechanical covers.</li> </ul>

**WARNING!**



**Inadvertent or unexpected start-up.**

There is the hazard of the processor starting up during maintenance or upkeep work, e.g. from the capacitor belonging to the automatic retraction unit.

- Before modifying, cleaning or fault inspection, secure the processor's mains isolator (main switch) against inadvertent re-activation.
- Pull out the processor's power plug.
- Carry out safety measures for the discharge of surplus energy.
- Allow the processor to cool down.

**13.2.1 Carry out safety checks**

**ATTENTION!**



**Damage to the processor from testing insulation resistance with Portable Appliance Tester (PAT).**

- Do not use a Portable Appliance Tester for testing insulation resistance.
- Follow the literature supplied by the Portable Appliance Tester's manufacturer.

- ➔ Remove the right-hand side wall. Further information can be found in section 12.1 Remove side walls, page 85.
- ➔ Make sure that all screws on the inside of the cover are securely fastened.
- ➔ Make sure that all nuts on the inside of the cover, the heating chamber and the earth connection (1) are securely fastened.

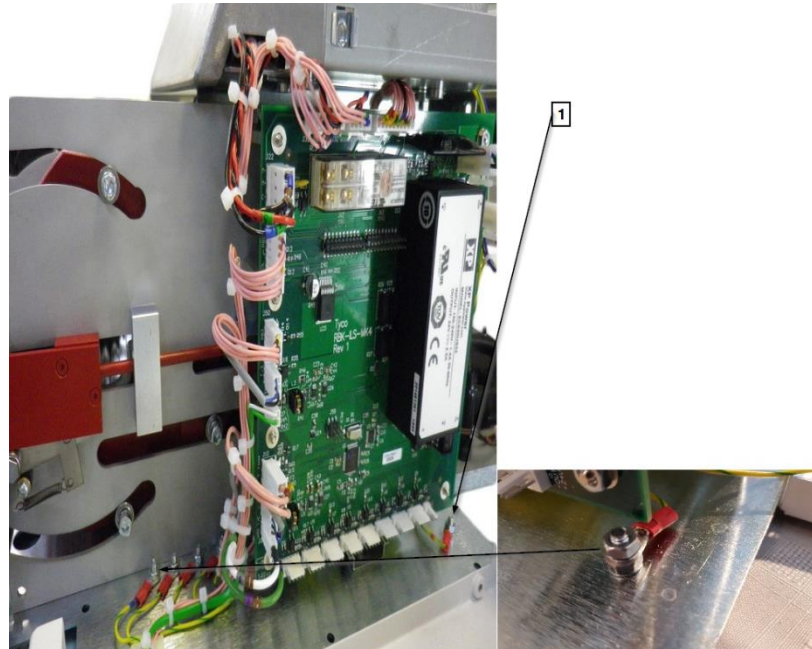


Fig. 60 : Earth connection

Item	Designation
1	Earth connection input

Tab. 38 : Electrical Safety Checks

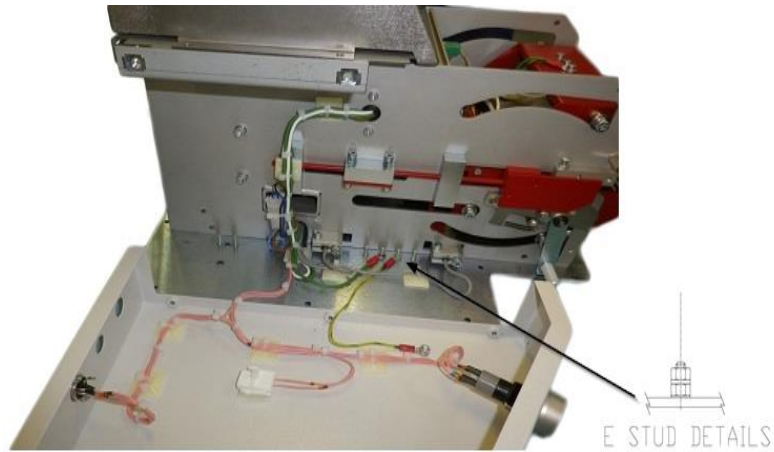


Fig. 61 : Earth connection to casing

- ➔ Connect the PAT to the network electrical supply and select **ERDSCHLUSS, 10A**.
- ➔ Apply the PAT in the tests set out below, one after the other:
- ➔ Press **TEST** for 10 seconds and make sure that, during these 10 seconds, resistance remains less than 0.225Ω.

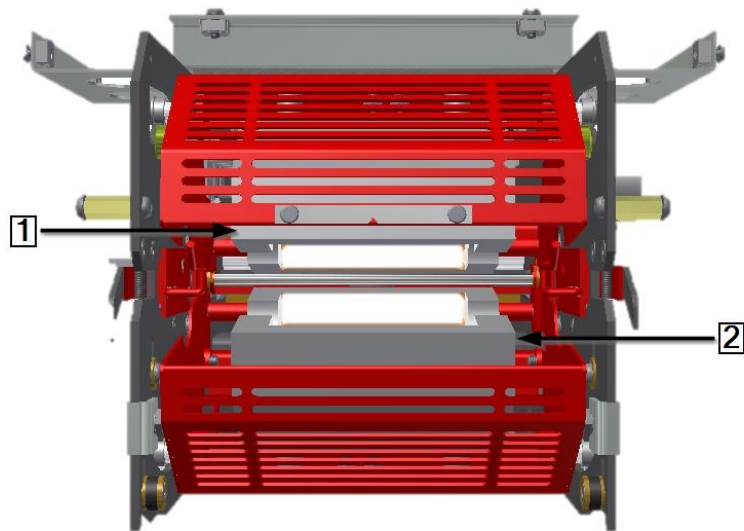


Fig. 62 : Heater Element Test Points

Item	Designation
1	Top heating element
2	Bottom heating element

Tab. 39 : Heating chamber



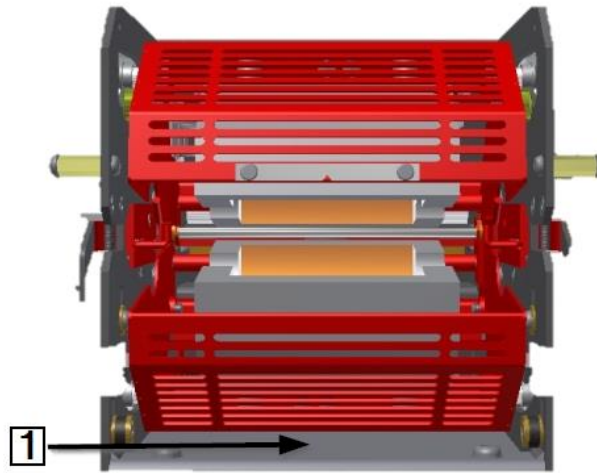


Fig. 63 : Test points on the base of the heating chamber

Item	Designation
1	Base of the heating chamber, access to the front of the processor.

Tab. 40 : Base of the heating chamber

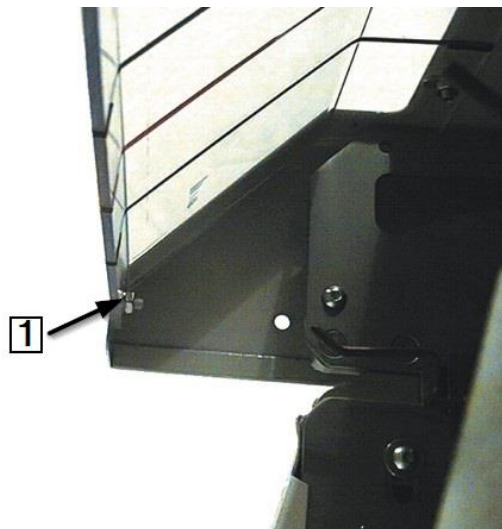



Fig. 64 : Test points on the heating chamber's acrylic glass casing

Item	Designation
1	Stud securing acrylic glass casing of the heating chamber

Tab. 41 : The heating chamber's acrylic glass casing

### 13.2.2 Clean processor

	<p>Do not use solvents, aggressive cleaning agents or high-pressure cleaners. Do not use caustic cleaning agents, scourers or hard objects which could produce scratches.</p>
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- Turn off the processor and disconnect it from the mains power supply.
- Clean the processor with a slightly damp lint-free cloth.
- Clean the processor with water only or, if required, only mild cleaning agents.

### 13.2.3 Check the operation of the cooling fan

- Switch the processor on and select a process.
- Check that the cooling fan (1) switches on when the processor reaches a temperature of 200°C, and that air flows through the ventilation panel on the rear wall.
- Check that a gap of at least 75mm is maintained between cooling fan and wall.
- Check that the cooling fan is not jammed.



Fig. 65 : Cooling Fan

Item	Designation
1	Cooling Fan

Tab. 42 : Cooling fan on the processor

### 13.2.4 Check the operation of the gripper and for wear and tear

- Check that the gripper (1) is working properly and examine it for signs of wear.

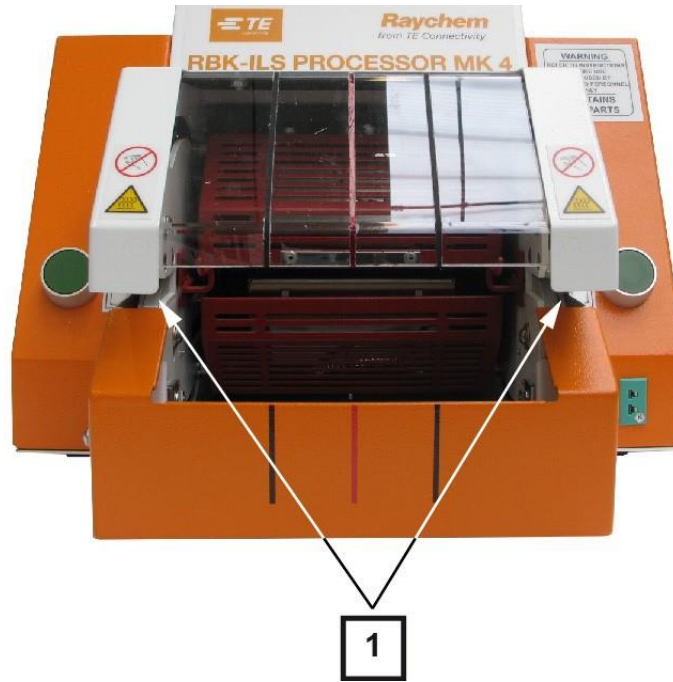


Fig. 66 : Gripper

Item	Designation
1	Gripper

Tab. 43 : Gripper on the processor

### 13.2.5 Check operation of release lever

- ➔ Check that the release levers (1) operate freely.



Fig. 67 : Release lever

Item	Designation
1	Release lever

Tab. 44 : Releasing lever on the processor

### 13.2.6 Calibrate the temperature of the heating chamber

- ➔ Calibrate the temperature of the heating chamber before the processor is used for the first time, if necessary. Further information can be found in section 9.9 Calibrate heating chamber, page 57.

The following tools are required to calibrate the heating chamber:

Designation	PN	Description
RBK-TEMP-CAL-KIT-UHI	A12192-000	Temperature calibration kit containing meter, UHI probe and cable
CLT-Equip-UHI-250A-1-PRB	288869-000	Standard UHI temperature calibration probe
CLTEQ-UHI250-EXT-CABL	952687-000	Extension cable

Tab. 45 : Calibration instruments

## 14 Repair/ exchange of replacement parts and wearing parts

In this section, the following information is to be found:

Section	Subject	Page
14.1	Repair and replace replacement and wearing parts	99
14.2	RBK-ILS-PROC-STUB-SP-FIX accessory	124
14.3	Replacement and wearing parts	127



The procedures described in this section may be undertaken only by suitably qualified technicians. After the completion of repairs or the replacement of components, the relevant safety checks must be carried out. Further information can be found in section 13.2.1 Carry out safety checks, page 93.

### 14.1 Repair and replace replacement and wearing parts

#### DANGER!



#### Electric shock from live parts

Hazard and danger of death from contact with live parts.

- Pull the plug out from the mains before opening the covers.
- Use tools only to remove the mechanical covers.

#### WARNING!



#### Inadvertent or unexpected start-up.

There is the hazard of the processor starting up during maintenance or upkeep work, e.g. from the capacitor belonging to the automatic retraction unit.

- Before modifying, cleaning or fault inspection, secure the processor's mains isolator (main switch) against inadvertent re-activation.
- Pull out the processor's power plug.
- Carry out safety measures for the discharge of surplus energy.
- Allow the processor to cool down.

### 14.1.1 Performance protection device



Fig. 68 : Performance protection device

Item	Designation	Data
1	3.15 T AMP S506 mains fuses	2 x 240 V, 3.15 A fine-wire fuse
2	240 V 2 A T heating fuse	240 V, 2 A fine-wire fuse

Tab. 46 : Performance protection device

#### External fuses

The processor is protected by three external fuses which are attached to the rear of the processor.

#### Internal fuses


2 proximity switch protective devices are assembled on the PCB controller. The proximity switch protective devices protect the 24-V DC supply for the PCB control and the processor's motor.


Both proximity switches are reset automatically after activating, when the processor is disconnected from the alternating current.


## 14.1.2 Change heating chamber

To replace the heating chamber, change first the top and then the bottom heating element. Then detach the electrical and heating connections in order to remove the heating element.

**Note:** You must have prepared the heating chamber replacement process. Further information can be found in section 9.8 Prepare the heating chamber to be changed., page 54.

	The two heater elements are mounted within a protective cage. You must always replace the heating elements in pairs.
---	--

WARNING!	
	<p><b>Inadvertent or unexpected start-up.</b></p> <p>There is the hazard of the processor starting up during maintenance or repair work.</p> <ul style="list-style-type: none"> <li>■ Before modifying, cleaning or fault inspection, secure the processor's mains isolator (main switch) against inadvertent re-activation.</li> <li>■ Pull out the processor's power plug.</li> </ul>

CAUTION!	
	<p><b>Burn hazard due to hot surfaces.</b></p> <p>The processor becomes hot during operation.</p> <ul style="list-style-type: none"> <li>■ Allow the heating chamber to cool down to ambient temperature.</li> </ul>

### Replacing the top heating element

- ➔ Remove the side walls. Further information can be found in section 12.1 Remove side walls, page 85.
- ➔ Remove the bottom heating side walls and the front panel. Further information can be found in section 12.2 Remove the heating side wall beneath and the front panel, page 86.
- ➔ Remove the top heating wall. Further information can be found in section 12.3 Remove the heating wall above, page 87.
- ➔ Pull the heating chamber into the forward position to remove the heating chamber.
- ➔ Push and pull the heating chamber backwards and forwards, until it is completely forward. See description in Fig. 61 , page 101.
- ➔ Remove the bearing screw (1) and dismantle the bearing module around the bearing screw (1).

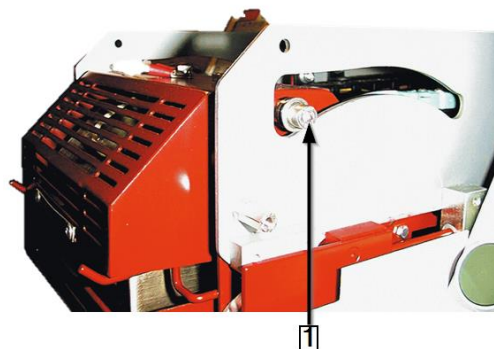


Fig. 69 : Heating element bearing screw

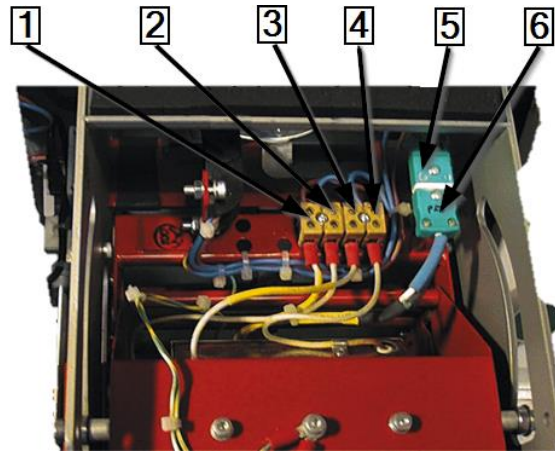


Fig. 70 : Electrical and thermal connections

Item	Designation
1	Bottom heating element
2	Bottom heating element
3	Top heating element
4	Top heating element
5	Thermocouple J-socket
6	Thermocouple J-plug

Tab. 47 : Electrical and thermal connections

- ➔ Unplug the electrical connections of the top (3), (4) and bottom (1), (2) heating elements.
- ➔ Remove the cover of heating thermocouple (5) and (6).
- ➔ Disconnect the plug (6) from the socket (5). Pay attention to the cable's polarity (white / green).

<b>i</b>	Only one thermocouple is attached to the bottom heating element. It cannot be replaced in isolation.
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- ➔ Remove the 4 fixing screws of the top heating element.

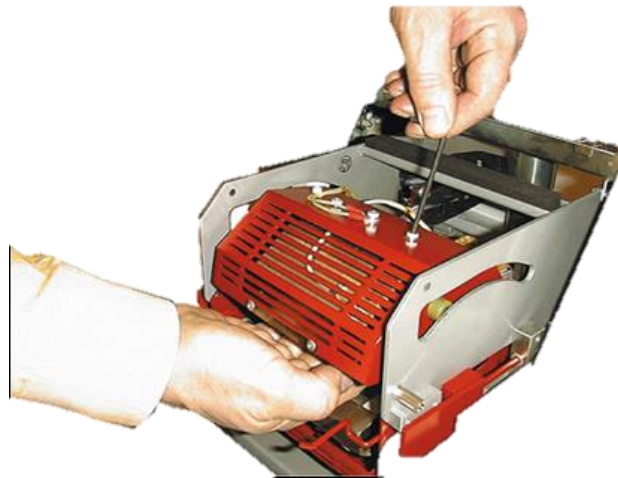


Fig. 71 : Heater Removal





Support the top heater element while removing the screws.

- ➔ Remove the top heating element from the guard.
- ✓ *You have removed the top heating element. To install the top heating element, you must carry out the same procedure in reverse. You will then have replaced the top heating element.*



When replacing, make sure that the earth cable is connected and that the tie-wraps are attached.

### Replacing the bottom heating element

**Note:** The electrical connections of the top and bottom heating elements are disconnected from the processor.

- ➔ Remove the two washers on the base (1) to gain access to the 2 fixing screws belonging to the bottom heating element (2).
- ➔ Remove the 2 fixing screws of the bottom heating element (2).

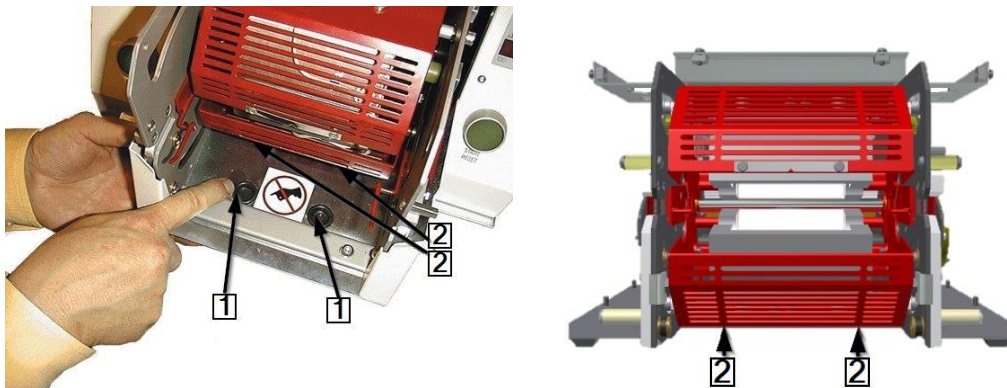


Fig. 72 : Gaining access to the lower fixing screws

Item	Designation
1	Base plate washers
2	Fixing screws of the bottom heating element


Tab. 48 : Position of the lower fixing screws

- ➔ Remove the 2 fixing screws of the bottom heating element (2).
- ➔ Replace the bottom heating element.
- ➔ Join up all electrical and thermal connections of the top and bottom heating elements. See Fig. 70 : Electrical and thermal connections, page 102.
- ➔ Move the heating chamber to the rear position.




Fig. 73 : Heating chamber in the rear position


- ✓ You have now removed the bottom heating element for the installation of the bottom heating element, you must carry out the procedure in the reverse order. You will then have replaced the bottom heating element.

	<p>Ensure, during the installation of the bottom heating element, that the cables are attached to the thermocouple connector with the correct polarity (white/green). Ensure, during the installation of the bottom heating element, that the earth wire is connected and the tie-wraps are installed.</p>
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After the replacement of the heating chamber has been completed, the heating chamber must be calibrated. Further information can be found in section 9.9 Calibrate heating chamber, page 57.

### 14.1.3 Adjust proximity switch

<b>DANGER!</b>	
	<p><b>Electric shock from live parts</b> Hazard and danger of death from contact with live parts.</p> <ul style="list-style-type: none"> <li>■ Pull the plug out from the mains before opening the covers.</li> <li>■ Use tools only to remove the mechanical covers.</li> </ul>

<b>WARNING!</b>	
	<p><b>Inadvertent or unexpected start-up.</b> There is the hazard of the processor starting up during maintenance or repair work.</p> <ul style="list-style-type: none"> <li>■ Before modifying, cleaning or fault inspection, secure the processor's mains isolator (main switch) against inadvertent re-activation.</li> <li>■ Pull out the processor's power plug.</li> </ul>

- ➔ Remove the side walls. Further information can be found in section 12.1 Remove side walls, page 85.
- ➔ Remove the bottom heating side walls and the front panel. Further information can be found in section 12.2 Remove the heating side wall beneath and the front panel, page 86.
- ➔ Remove the top heating wall. Further information can be found in section 12.3 Remove the heating wall above, page 87.
- ➔ When the electricity is switched on, there is a mains voltage of 24 V DC.

Isolate the motor by disconnecting the plug connectors **J22** (1) and **J45** (2) from the PCB controller. Further information can be found in section 19.1 Connections to the PCB controller, page 137.

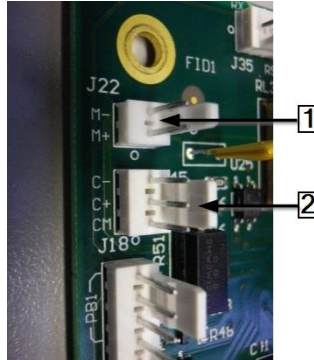


Fig. 74 : J22 and J45 plug-in connectors

- Reconnect the electrical supply and switch the processor on.
- Find the short, vertical red tab on the bottom left-hand side of the heating chamber.
- In the measuring position, the distance between this vertical red tab (1) and the front panel of the proximity switch (2) should be 1.5mm. The sensor light (3) must be lit.

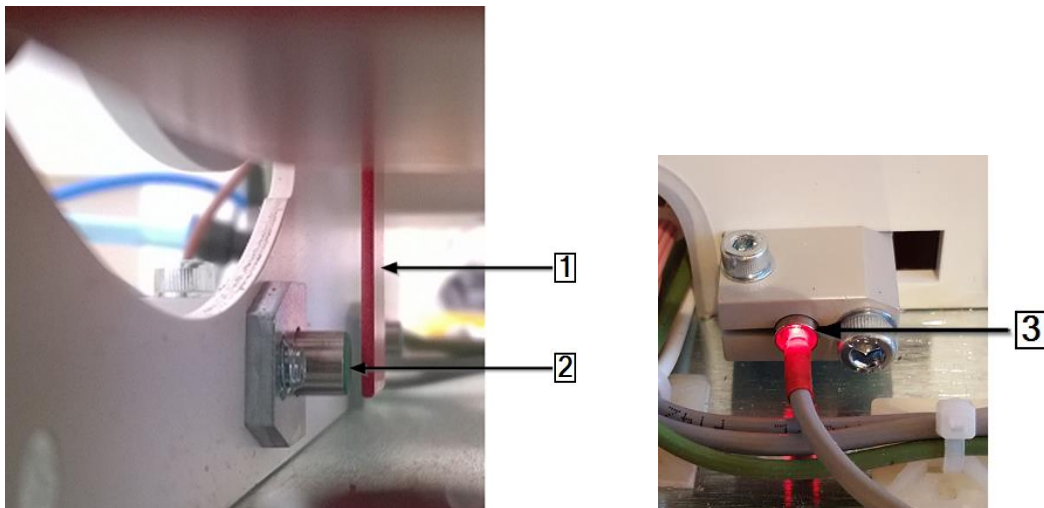


Fig. 75 : Vertical red tab on the heating chamber and sensor light

- Pull the heating chamber down, to adjust the distance from the **Load Sensor**.
- Push the heating chamber upwards to adjust the distance from the **Home-Sensor**.



Fig. 76 : Heating chamber distance

### Adjust the proximity switch (Load sensor)

- Pull the heating chamber forwards, until it is at 5° underneath the **middle center** position.
- Set the gap between the front of the proximity switch and the vertical red tab (1) by loosening the lateral clamping screw and sliding the switch in or out.
- If necessary, loosen the clamping screw of the switch mounting block (3) to move the switch into the correct position.

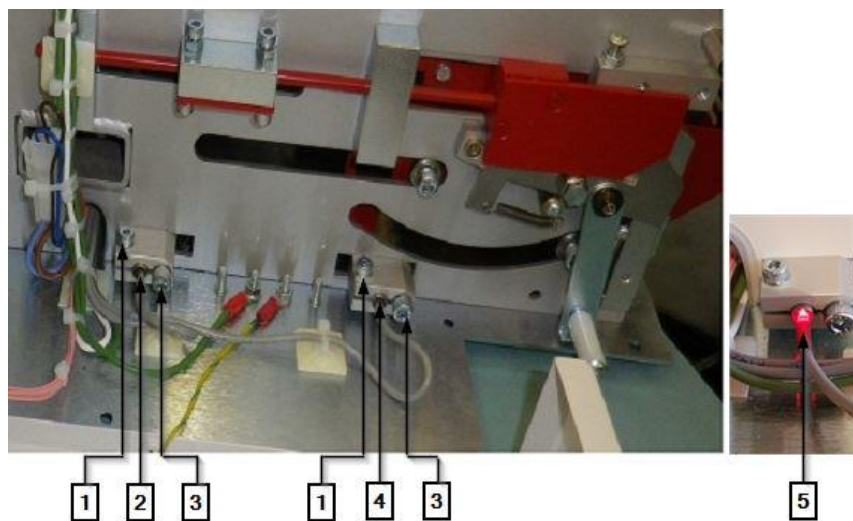


Fig. 77 : Proximity Switch Mounting


Item	Designation
1	Lateral Clamping Screw
2	Rear Proximity Switch (Home)
3	Mounting Block Clamping Screw
4	Forward Proximity Switch (Load)
5	The sensor light is lit if the proximity switch is missing

Tab. 49 : Proximity Switch Mounting


- ➔ Turn off the processor and disconnect it from the mains power supply.
- ➔ Plug in the connectors **J22** and **J45** and re-attach all covers to the processor.
- ✓ *You have now replaced the front proximity switch.*


#### Adjusting the rear proximity switch (Home sensor)

- ➔ Push the heating chamber back into the rear position.
- ➔ Set the gap between the front of the proximity switch and the vertical red tab (1) by loosening the lateral clamping screw and sliding the switch in or out.
- ➔ If necessary, loosen the clamping screw of the switch mounting block (3) to move the switch into the correct position.
- ➔ Turn off the processor and disconnect it from the mains power supply.
- ➔ Plug in the connectors **J22** and **J45** and re-attach all covers to the processor.
- ✓ *You have now replaced the rear proximity switch.*

	If you log onto the system and an error report is displayed such as <b>Front Sensor Failure - Call Engineering Support</b> , tap the warning triangle to return the processor to the home screen.
---	---

### 14.1.4 Replace proximity switch

DANGER!	
	<p><b>Electric shock from live parts</b> Hazard and danger of death from contact with live parts.</p> <ul style="list-style-type: none"> <li>■ Pull the plug out from the mains before opening the covers.</li> <li>■ Use tools only to remove the mechanical covers.</li> </ul>

WARNING!	
	<p><b>Inadvertent or unexpected start-up.</b> There is the hazard of the processor starting up during maintenance or repair work.</p> <ul style="list-style-type: none"> <li>■ Before modifying, cleaning or fault inspection, secure the processor's mains isolator (main switch) against inadvertent re-activation.</li> <li>■ Pull out the processor's power plug.</li> </ul>

- ➔ Loosen the clamping screw (3) (Fig. 69, page 106) and the mounting block, and pull out the proximity switch.
- ➔ Disconnect the plug connectors **J14** (1) and **J16** (2) from the PCB controller.
- ➔ Pull the cover of the electric clamp off the proximity switch.
- ➔ Insert the new proximity switch into the mounting block.
- ➔ Feed the proximity switch cable through the channel to the PCB controller.
- ➔ Re-attach the connectors **J14** (1) and **J16** (2).

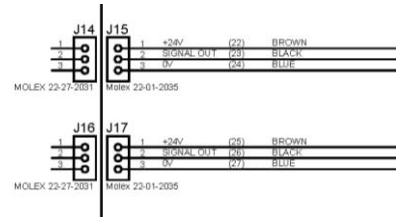
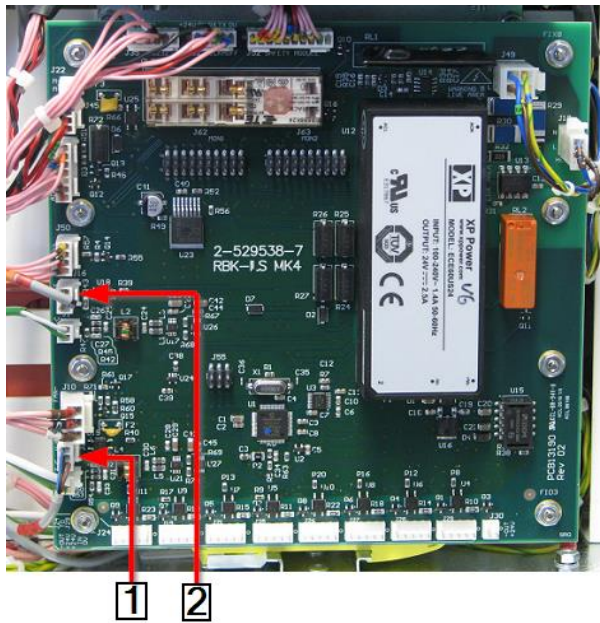


Fig. 78 : Proximity switch plug-in connectors

Item	Designation
1	Rear proximity switch (Home Sensor) J14
2	Front proximity switch (Load sensor) J16

Tab. 50 : Proximity switch plug-in connectors

- ➔ Use the tie-wraps to fix the proximity switch cable.
- ➔ Adjust the proximity switch. Further information can be found in section 14.1.3 Adjust proximity switch, page 104.
- ✓ You have now replaced the front proximity switch.

	If you log onto the system and an error report is displayed, tap the warning triangle to return the processor to the home screen.
--	---

### 14.1.5 Replace motor module

<b>DANGER!</b>	
	<p><b>Electric shock from live parts</b> Hazard and danger of death from contact with live parts.</p> <ul style="list-style-type: none"> <li>■ Pull the plug out from the mains before opening the covers.</li> <li>■ Use tools only to remove the mechanical covers.</li> </ul>

**WARNING!**



**Inadvertent or unexpected start-up.**

There is the hazard of the processor starting up during maintenance or repair work.

- Before modifying, cleaning or fault inspection, secure the processor's mains isolator (main switch) against inadvertent re-activation.
- Pull out the processor's power plug.

**Dismantle motor**

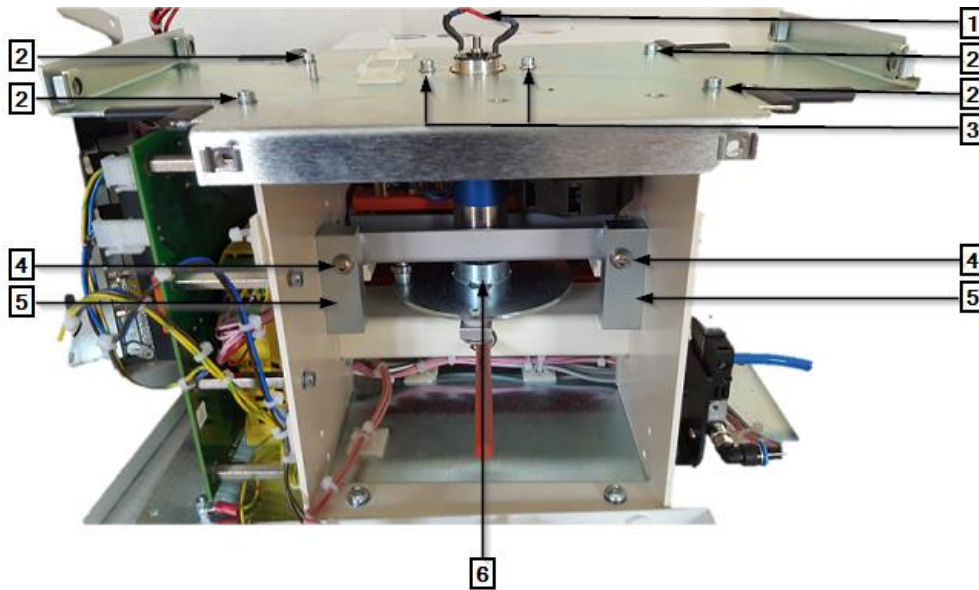


Fig. 79 : Motor module without coverings (view from rear)

Item	Designation
1	Electrical motor connections
2	Fixing screws of the cover plate
3	Fixing screws on the motor mount
4	Motor Position Adjustment Screws
5	Motor Mounting Blocks
6	Motor Crank Arm

Tab. 51 : Motor module

- ➡ Remove all coverings from the processor before dismantling the motor. Further information can be found in section 12 Access to components, page 84.
- ➡ Remove the 2 fixing screws (1) on the capacitor holder.

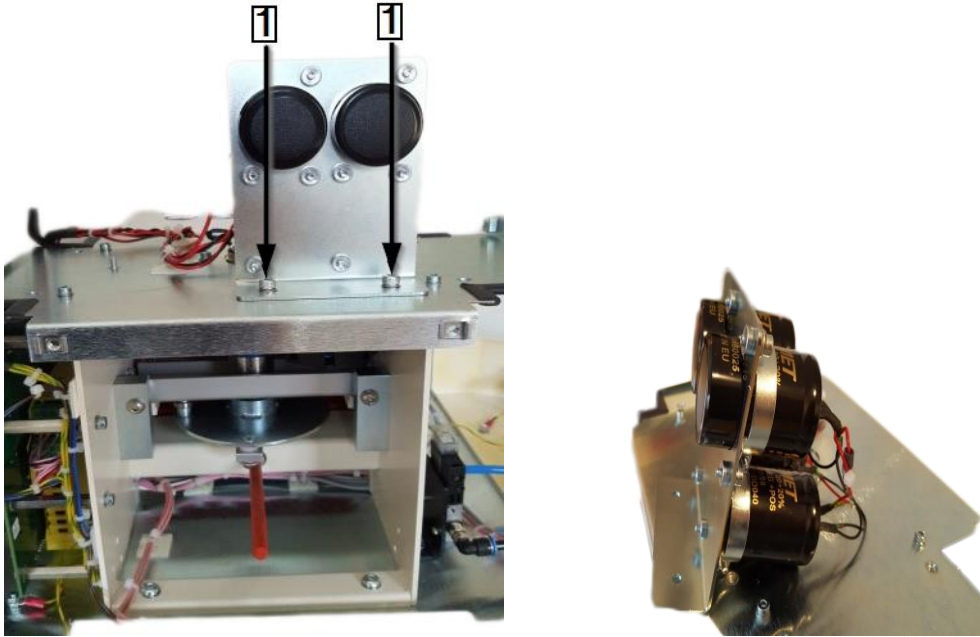


Fig. 80 : Capacitor

- ➔ Unlock the tie-wraps between the processor and the capacitor. For the following description, see Fig. 79 : Motor module without coverings (view from rear), page109.



Fig. 81 : Tie-wraps on the capacitor

- ➔ Loosen the 2 fixing screws on the motor mount (3). Do not remove them.
- ➔ Loosen the solder joints of the red and black cables on the electric motor connectors (1).

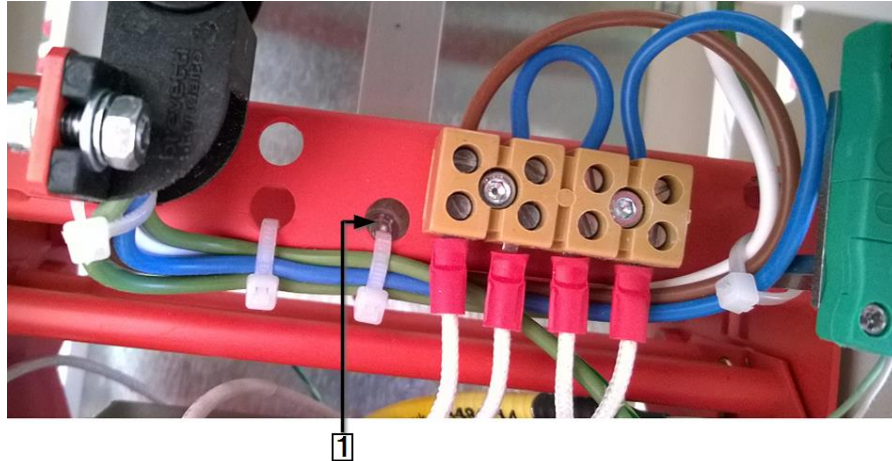


Fig. 82 : Electrical motor connections

- ➔ Remove the 4 fixing screws on the cover plate (2) and take these carefully out of the processor's frame.
- ➔ Rotate the motor disc (6) to bring the heating chamber into the forward **Load** position.

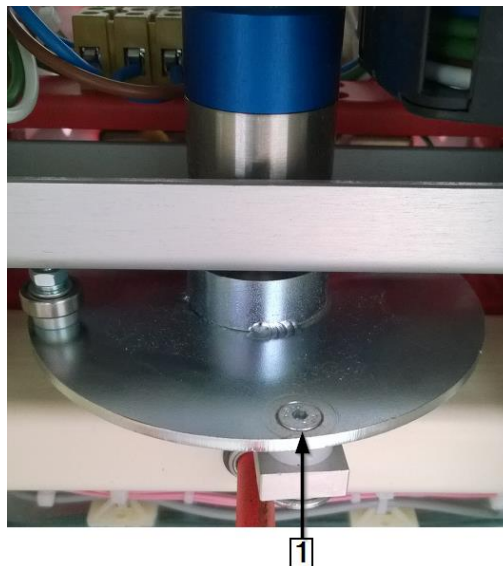


- ➔ Take out the fixing screws of the front pivot of the motor crank (1). The resulting opening will give you enough access.



*Fig. 83 : Access to the front pivot of the motor crank*

- ➔ For the following description, see Fig. 85 : Motor module (view from front), page 112. Loosen the M6x40 securing nuts (2) on the adjustment screws in the motor mounting blocks (3) and remove the adjustment screws.
- ➔ Loosen the 2 fixing screws (4) which fastens the base of the motor module.
- ➔ Lift the base out and remove the motor module from the processor.
- ➔ Remove the rear pivot of the motor crank disc (1) (see below) from the crank disc.



*Fig. 84 : Rear pivot of the motor crank disc*

- ✓ You have dismantled the motor module.

### Fitting the motor

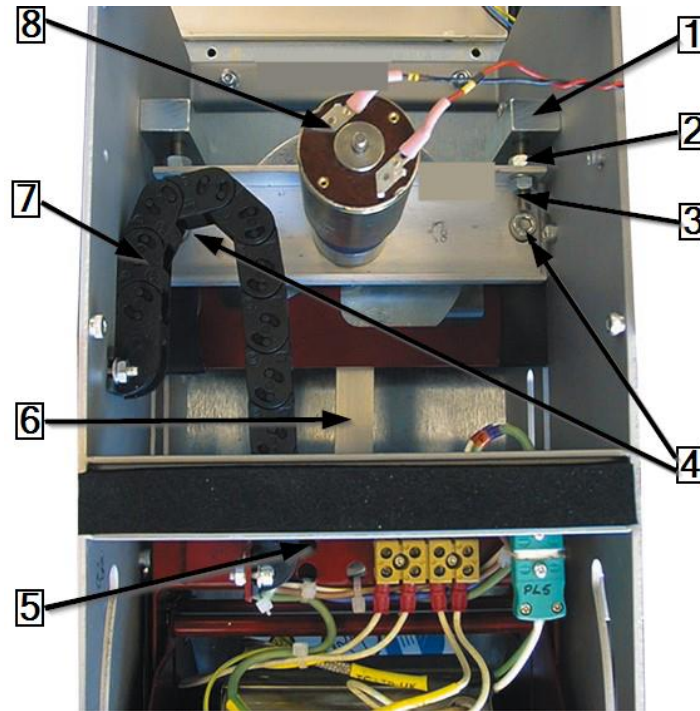


Fig. 85 : Motor module (view from front)

Item	Designation
1	Motor Mounting Blocks
2	M6x40 safety nuts
3	Motor Position Adjustment Screws
4	Fixing screws of the motor base
5	Access opening to front pivot
6	Motor Crank Arm
7	Cable Chain
8	Electrical motor connections

Tab. 52 : Motor module (view from front)

- Fit the rear motor crank arm pivot pin (6) to the motor module crank disk. Secure the locking screw with an adhesive, e.g. Loctite 222.
- Position the base of the motor module onto the frame. Tighten the fixing screws of the base (4) tightly by hand.
- Fit the M6x40 motor position adjustment screws (3) and locking nuts loosely (2) through the motor mounting blocks (1) and base.
- Push the heating chamber into the forward **Load** position.
- Screw on the fixing screws of the front pivot of the motor crank on the heating chamber and secure the locking screw with a glue, e.g. Loctite 222.
- Rotate the motor disc (6) to bring the heating chamber into the rear **Home** position. The motor crank disc must be in the top center.

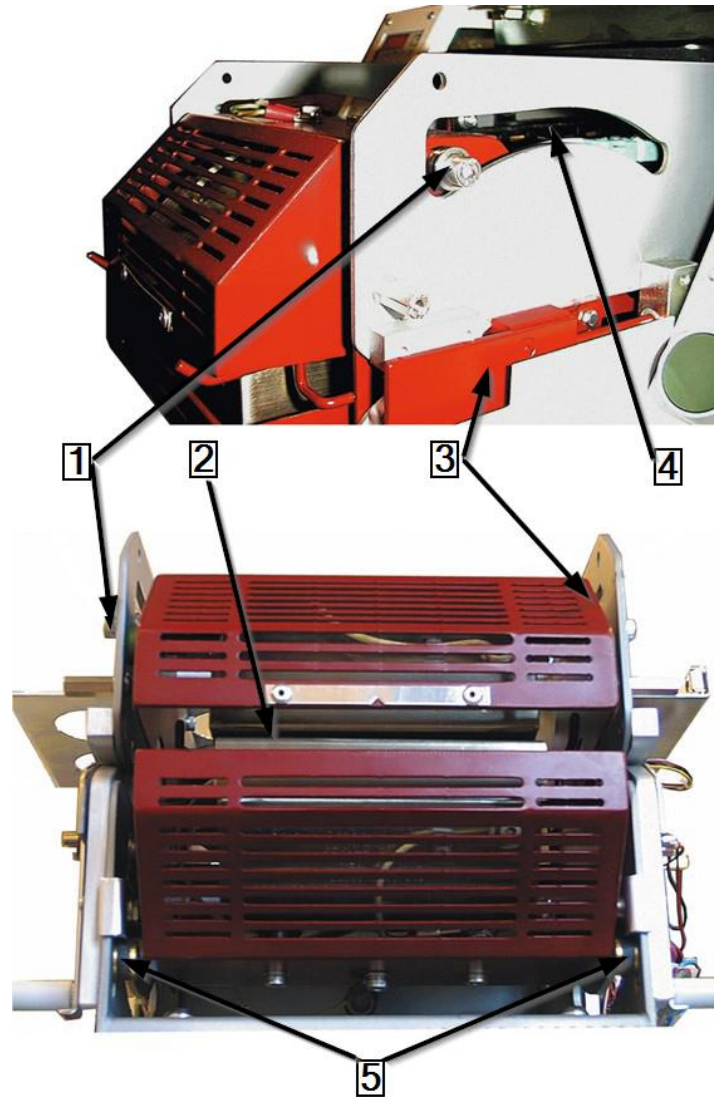


Fig. 86 : Adjusting the heater carrier assembly (shown in forward position)

Item	Designation
1	Upper Bearing
2	Heater Chamber Jaw Gap
3	Heater carrier module
4	Chassis Bearing slots
5	Lower Bearing

Tab. 53 : Heater carrier module

- ➔ Adjust the motor assembly until the top (1) and bottom (5) bearings on the heater carrier module (3) are approximately 2 to 3mm from the rear of the chassis bearing slots (4).
- ➔ Tighten the M6×40 safety nuts firmly by hand.
- ➔ Rotate the motor crank until the heater carrier assembly (3) is in the forward **Load** position.
- ➔ Check that the gaps from the upper (1) and lower (5) bearings to the forward chassis bearing slots (4) are equal left and right. The distance should be approx. 2 to 3mm.
- ➔ Move the heater carrier to the **Home** or **Load** positions as required.

- ➔ Fix the motor positioning screws tightly, so that the distances between the front left and right screws match the corresponding screws at the rear.

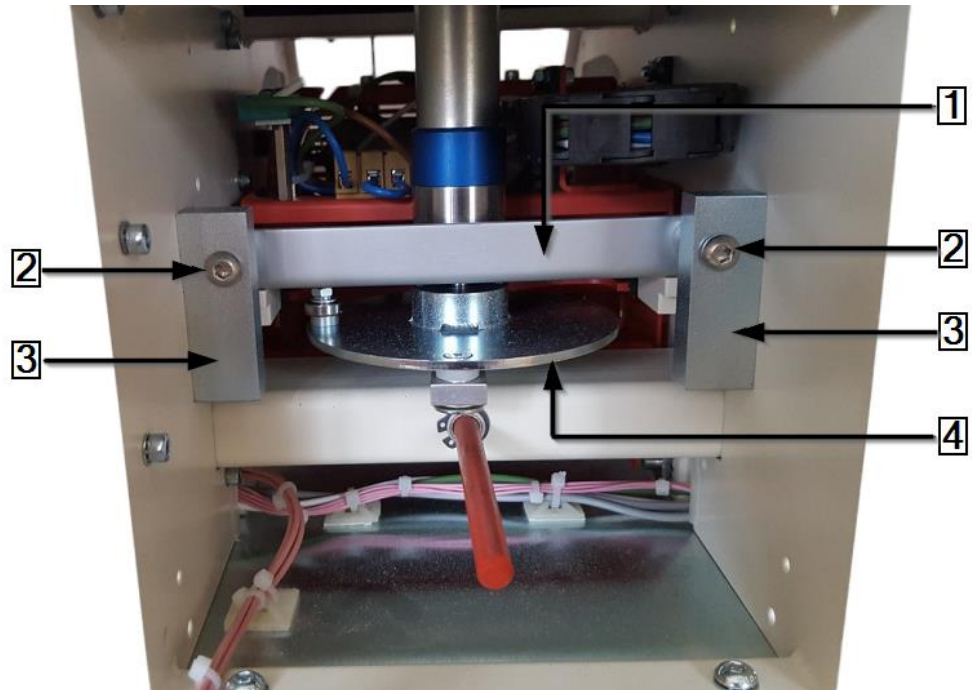


Fig. 87 : Motor Assembly Position Adjustment (viewed from rear)


Item	Designation
1	Motor Base
2	Motor Position Adjustment Screws
3	Motor Mounting Blocks
4	Motor Assembly Crank Disk


Tab. 54 : Motor module (view from rear)

- ➔ Check that the heater chamber jaw gap is parallel to the heating chamber in the **Load** position. If required, adjust the motor positioning screws (2).
- ➔ Tighten the M6×40 motor positioning screws (2) and the safety nuts on base (1) of the motor module firmly.
- ➔ Fit and fasten the covering plate.
- ➔ Position and tighten the fixing screws to the motor mount. See Fig. 79 :Motor module without coverings (view from rear), page 109.
- ➔ Solder the red and black cable to the valve motor electric connectors and insulate them with the protective coating.
- ➔ Re-attach all covers to the processor.
- ✓ You have installed the motor parts.

<b>i</b>	If you log onto the system and an error report is displayed, tap the warning triangle to return the processor to the home screen.
----------	---

### 14.1.6 Replacing the cooling fan

DANGER!	
	<p><b>Electric shock from live parts</b> Hazard and danger of death from contact with live parts.</p> <ul style="list-style-type: none"> <li>■ Pull the plug out from the mains before opening the covers.</li> <li>■ Use tools only to remove the mechanical covers.</li> </ul>

WARNING!	
	<p><b>Inadvertent or unexpected start-up.</b> There is the hazard of the processor starting up during maintenance or repair work.</p> <ul style="list-style-type: none"> <li>■ Before modifying, cleaning or fault inspection, secure the processor's mains isolator (main switch) against inadvertent re-activation.</li> <li>■ Pull out the processor's power plug.</li> </ul>

- ➔ Remove the right-hand side wall. Further information can be found in section 12.1 Remove side walls, page 85.
- ➔ Remove the top and bottom rear walls. Further information can be found in section 12.5 Remove the bottom rear wall, page 89 and in chapter 12.6 Remove the top rear wall, page 91.
- ➔ Locate the cooling fan's electric cable and unlock the tie-wraps between the processor and the cooling fan.
- ➔ Disconnect the plug.

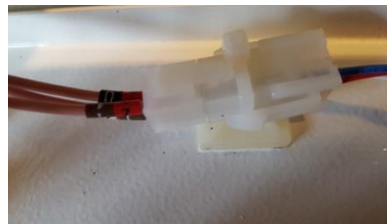



Fig. 88 : Cooling fan plug

Note the alignment of the cooling fan: Red cable to the + terminal, black cable to the – terminal.

	<p>The label indicates direction of air movement and rotation.</p>
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- ➔ Remove the cooling fan and the wire guard from the top covering and sever the rubber seal (1).

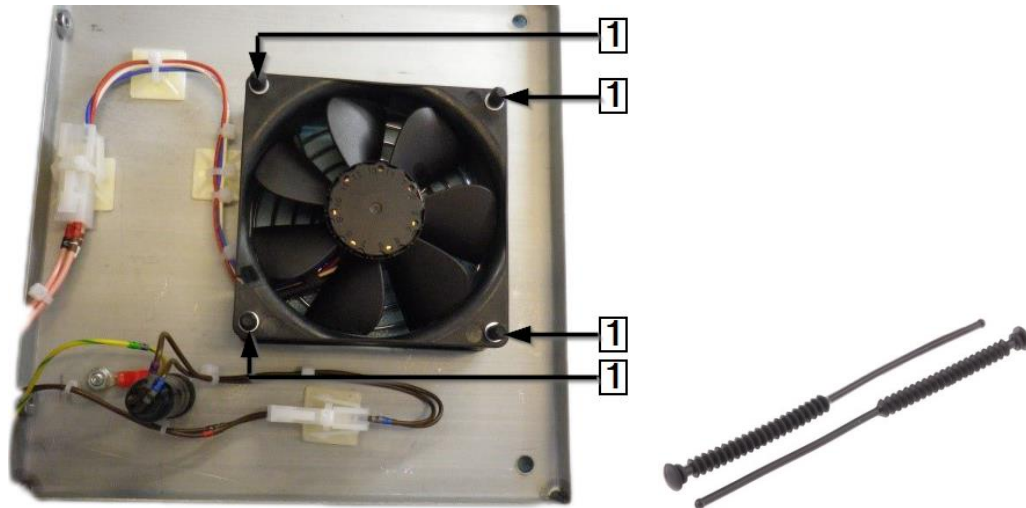


Fig. 89 : Cooling fan with rubber seals

Item	Designation
1	Rubber seals

Tab. 55 : Cooling Fan

- ✓ You have removed the cooling fan. To install the cooling fan, you must carry out the same procedure in reverse. You will have replaced the cooling fan.

	<p>To install the cooling fan, new rubber seals are required. (M4 seating ring x 4 und M3 seating ring x 4). These offer protection against shock and vibration. Make sure that the cooling fan's alignment corresponds to your previously-noted alignment.</p> <p>Make sure that the air movement is from front to rear of the processor.</p>
--	--

### 14.1.7 Replacing the circuit board (PCB controller)

**DANGER!**

	<p><b>Electric shock from live parts</b> Hazard and danger of death from contact with live parts.</p> <ul style="list-style-type: none"> <li>■ Pull the plug out from the mains before opening the covers.</li> <li>■ Use tools only to remove the mechanical covers.</li> </ul>
--	--

**WARNING!**

	<p><b>Inadvertent or unexpected start-up.</b> There is the hazard of the processor starting up during maintenance or repair work.</p> <ul style="list-style-type: none"> <li>■ Before modifying, cleaning or fault inspection, secure the processor's mains isolator (main switch) against inadvertent re-activation.</li> <li>■ Pull out the processor's power plug.</li> </ul>
--	--

**ATTENTION!**



**The PCB is sensitive to static charges.**

The Controller PCB contains devices sensitive to static charges. Special handling techniques must be observed, e.g. **the wearing of a wrist strap connected to earth via 1 MΩ resistor.**

- ➔ Remove the right-hand side wall. Further information can be found in section 12.1 Remove side walls, page 85.

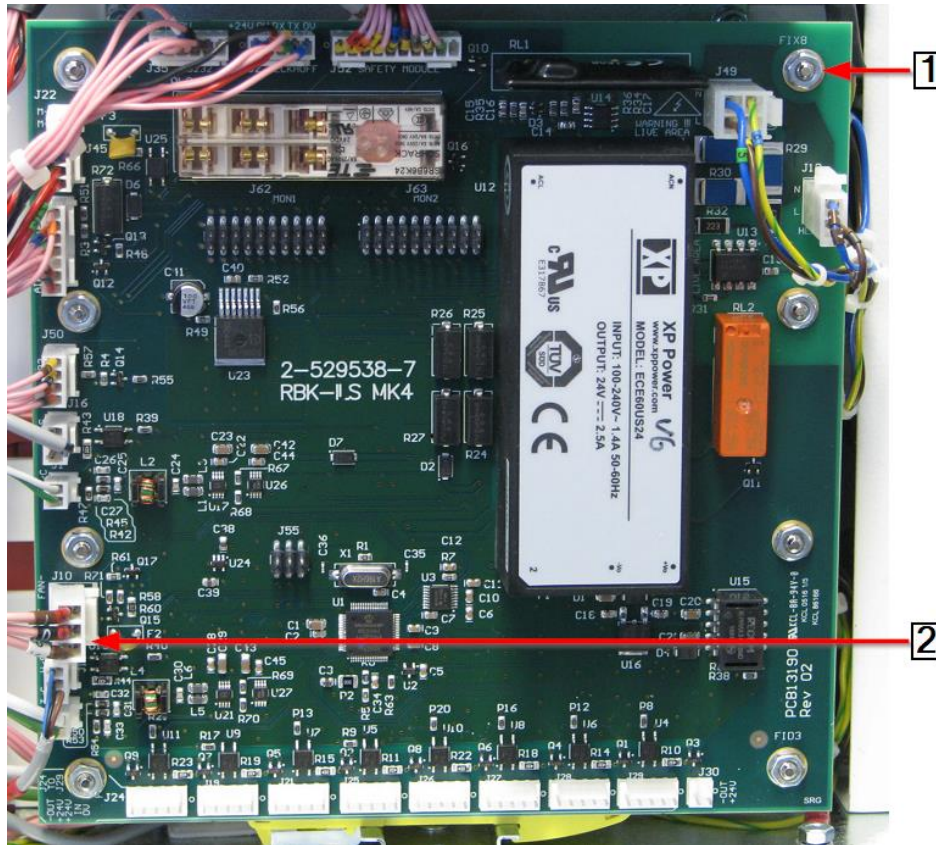


Fig. 90 : PCB controller

Item	Designation
1	Fixing nuts and fixing pins
2	12 plug-in connectors and 2 electric connections


Tab. 56 : PCB controller


- ➔ Disconnect the 12 plug connectors and the 2 electric connections (2) from the PCB controller.
- ➔ Remove the 8 fastening nuts (1) on the PCB controller.
- ➔ Remove the PCB controller from the fastening pins (1).
- ✓ *You have removed the PCB controller. To install the PCB controller, you must carry out the same procedure in reverse. You will have replaced the PCB controller.*



Before returning the processor to operation, calibrate it in order to adjust the temperature-offset value. Further information can be found in section 9.9 Calibrate heating chamber, page 57.

### 14.1.8 Replacing the safety relay

DANGER!	
	<p><b>Electric shock from live parts</b> Hazard and danger of death from contact with live parts.</p> <ul style="list-style-type: none"> <li>■ Pull the plug out from the mains before opening the covers.</li> <li>■ Use tools only to remove the mechanical covers.</li> </ul>

WARNING!	
	<p><b>Inadvertent or unexpected start-up.</b> There is the hazard of the processor starting up during maintenance or repair work.</p> <ul style="list-style-type: none"> <li>■ Before modifying, cleaning or fault inspection, secure the processor's mains isolator (main switch) against inadvertent re-activation.</li> <li>■ Pull out the processor's power plug.</li> </ul>

- ➔ Remove the right-hand side wall. Further information can be found in section 12.1 Remove side walls, page 85.
- ➔ Remove the PCB controller. Further information can be found in section 14.1.7 Replacing the circuit board (PCB controller), page 116.

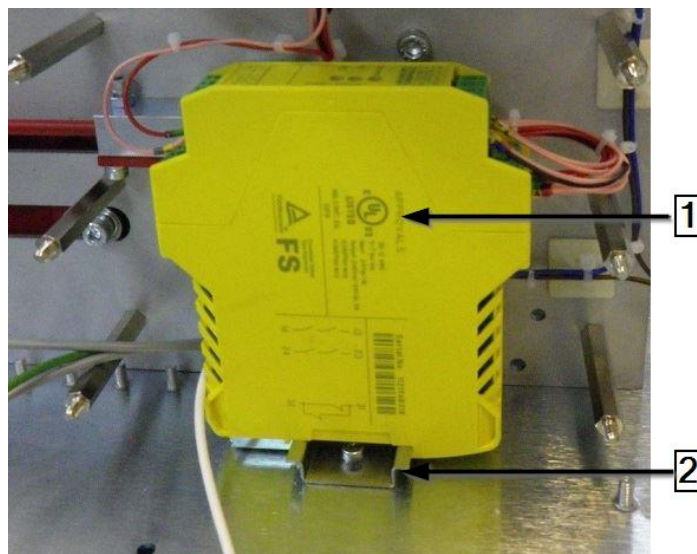


Fig. 91 : Safety Relays

Item	Designation
1	Safety Relays
2	DIN rail


Tab. 57 : Safety Relays


- ➔ Remove the safety relay from the DIN rail (2)
- ➔ Remove the safety relay's wire connection and connect it to the new safety relay (1).
- ➔ Attach the new safety relay (1) to the DIN rail (2).
- ➔ Screw the PCB controller onto the processor again. Further information can be found in section 14.1.7 Replacing the circuit board (PCB controller), page 116.



- ➔ Re-attach all covers to the processor.
- ✓ *You have replaced the safety relay.*

### 14.1.9 Replacing the thermocouple compensating cable

DANGER!	
	<p><b>Electric shock from live parts</b> Hazard and danger of death from contact with live parts.</p> <ul style="list-style-type: none"> <li>■ Pull the plug out from the mains before opening the covers.</li> <li>■ Use tools only to remove the mechanical covers.</li> </ul>

WARNING!	
	<p><b>Inadvertent or unexpected start-up.</b> There is the hazard of the processor starting up during maintenance or repair work.</p> <ul style="list-style-type: none"> <li>■ Before modifying, cleaning or fault inspection, secure the processor's mains isolator (main switch) against inadvertent re-activation.</li> <li>■ Pull out the processor's power plug.</li> </ul>

- ➔ Remove the side walls. Further information can be found in section 12.1 Remove side walls, page 85.
- ➔ Remove the bottom heating side walls and the front panel. Further information can be found in section 12.2 Remove the heating side wall beneath and the front panel, page 86.
- ➔ Remove the top heating wall. Further information can be found in section 12.3 Remove the heating wall above, page 87.
- ➔ Remove the touch-screen cover and the touch-screen itself. Further information can be found in section 12.4 Remove the touch screen covering, page 88.
- ➔ Rotate the motor disc to bring the heating chamber into the forward **Load** position.
- ➔ Disconnect both halves of the thermocouple plug and cable from the socket. In doing so, pay attention to the cable's polarity (white / green), so that it can be replaced in exactly the same position.

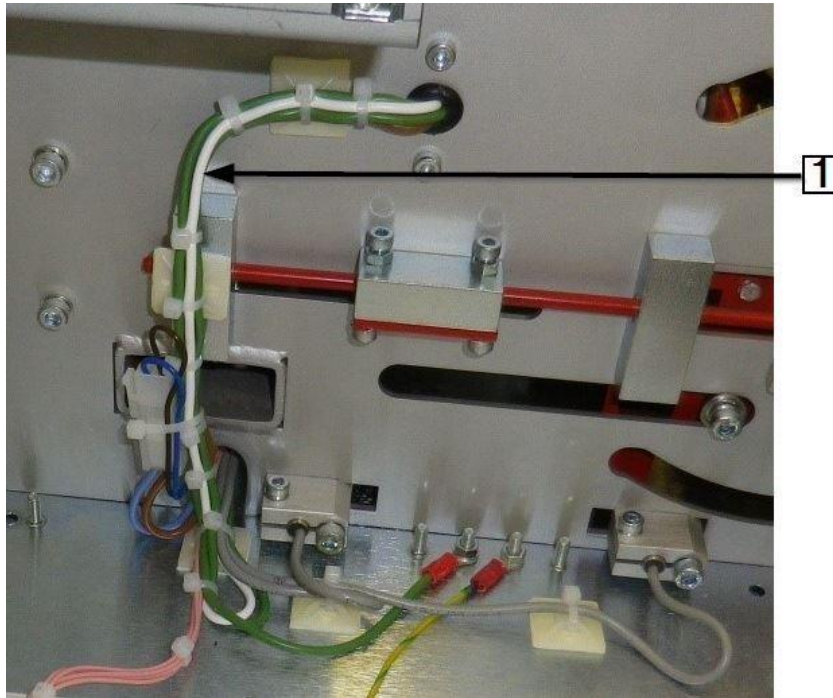


Fig. 92 : White and green thermocouple compensating cable.

Item	Designation
1	Thermocouple compensating cable with white and green polarity.

Tab. 58 : Thermocouple Compensating Cable

- ➔ Follow the course of the thermocouple compensating cable from the thermocouple to the **J2** plug connector on the PCB controller.



Fig. 93 : Thermocouple compensating cable on the PCB controller


- ➔ Remove the defective cable from the cable harness and connect the new cable with the cable harness.
- ➔ Make the relevant connections at both ends, ensuring the correct polarity in doing so.

<b>i</b>	Make sure that no tie-wraps are left in the cable chain.
----------	--


- ➔ Re-attach all covers to the processor.
- ✓ You have replaced the thermocouple compensating cable.

### 14.1.10 Replacing the touch-screen

**DANGER!**

	<p><b>Electric shock from live parts</b> Hazard and danger of death from contact with live parts.</p> <ul style="list-style-type: none"> <li>■ Pull the plug out from the mains before opening the covers.</li> <li>■ Use tools only to remove the mechanical covers.</li> </ul>
---	--

**WARNING!**

	<p><b>Inadvertent or unexpected start-up.</b> There is the hazard of the processor starting up during maintenance or repair work.</p> <ul style="list-style-type: none"> <li>■ Before modifying, cleaning or fault inspection, secure the processor's mains isolator (main switch) against inadvertent re-activation.</li> <li>■ Pull out the processor's power plug.</li> </ul>
---	--

- ➔ Remove the side walls. Further information can be found in section 12.1 Remove side walls, page 85.
- ➔ Remove the touch-screen cover and the touch-screen itself. Further information can be found in section 12.4 Remove the touch screen covering, page 88.
- ➔ Remove the top back panel. Further information can be found in section 12.6 Remove the top rear wall, page 91.
- ➔ Disconnect the rear cable connections (1) to remove the touch-screen.

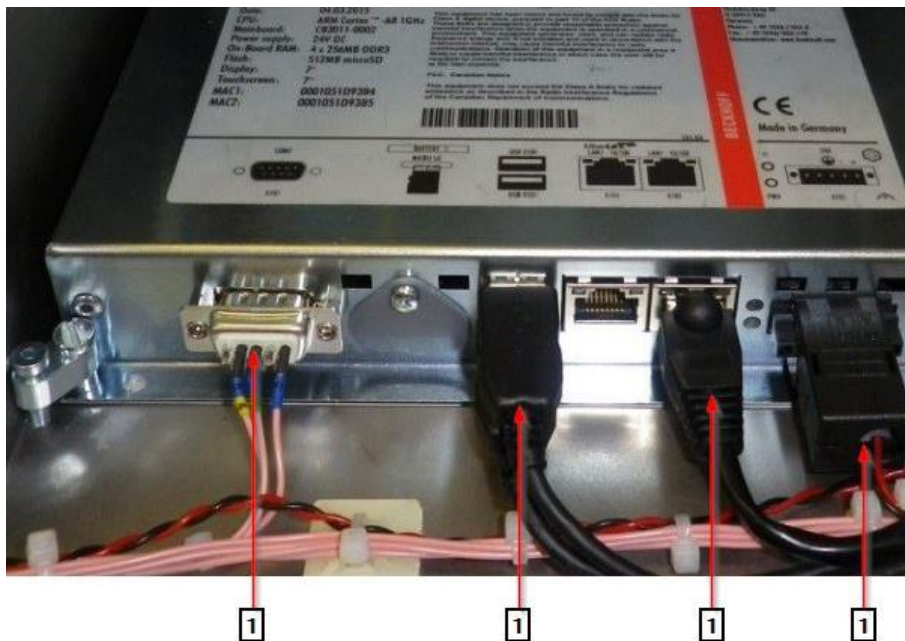


Fig. 94 : Touch-enabled screen

Item	Designation
1	Cable connections on the Touch screen

Tab. 59 : Touch-enabled screen

- ➔ Remove the 4 clamping screws (1) on the touch screen.




Fig. 95 : Clamping screw on the touch screen


Item	Designation
1	Clamping screw on the touch-screen


Tab. 60 : Clamping screw on the touch-screen

- ✓ You have removed the touch-screen. To install the touch-screen, you must carry out the same procedure in reverse. You will have replaced the touch-screen.

	The new touch-screen will be delivered with the software installed.
--	---

### 14.1.11 Replace the power connection socket

DANGER!	
	<p><b>Electric shock from live parts</b> Hazard and danger of death from contact with live parts.</p> <ul style="list-style-type: none"> <li>■ Pull the plug out from the mains before opening the covers.</li> <li>■ Use tools only to remove the mechanical covers.</li> </ul>

WARNING!	
	<p><b>Inadvertent or unexpected start-up.</b> There is the hazard of the processor starting up during maintenance or repair work.</p> <ul style="list-style-type: none"> <li>■ Before modifying, cleaning or fault inspection, secure the processor's mains isolator (main switch) against inadvertent re-activation.</li> <li>■ Pull out the processor's power plug.</li> </ul>

- ➡ Remove the top back panel. Further information can be found in section 12.6 Remove the top rear wall, page 91.
- ➡ Disconnect the brown live wire (1), the blue neutral conductor (2) and the green and yellow earth wire (3) from the power unit connection socket by pulling out the plug.

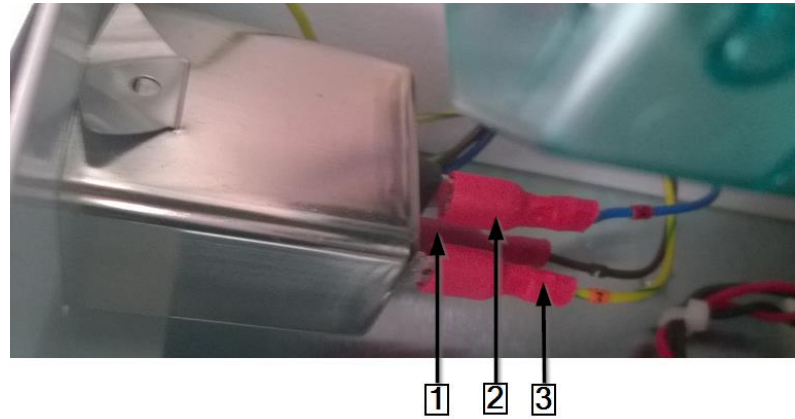


Fig. 96 : Plug connectors on the power unit connectors socket

Item	Designation
1	Brown live wire
2	Blue neutral conductor
3	Green and yellow earth wire

Tab. 61 : Plug connectors on the power unit connectors socket

<b>i</b>	During the subsequent re-installation process, make sure that the live wire, neutral conductor and protective earth are connected correctly to their respective terminals.
----------	--

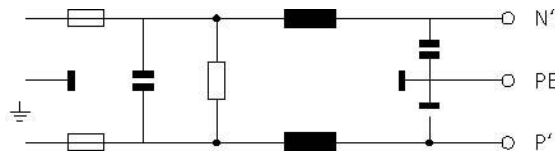


Fig. 97 : Circuit diagram for the power unit connection socket

- ➔ Disconnect the power unit connection socket by pressing down the upper edge of the power unit connection socket (1).

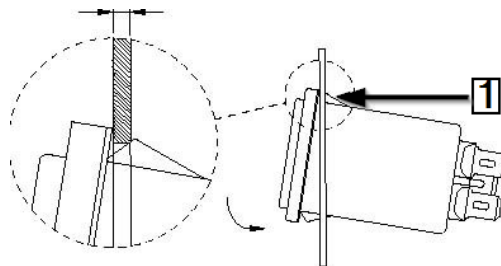


Fig. 98 : Power unit connection socket

Item	Designation
1	Top edge of the power unit connection socket

Tab. 62 : Power unit connection socket

- ✓ You have removed the power unit connection socket. To install the power unit connection socket, you must carry out the same procedure in reverse. You will have exchanged the power unit connection socket.

## 14.2 RBK-ILS-PROC-STUB-SP-FIX accessory

This accessory is a stub splice fixture TE-PN 981721-000. Also available as left-hand version: TE-PN 7-529533-1. The air-cooled RBK-ILS-Proc-Air-Cool-Kit can also optionally be attached, so as to cool the heat-shrinkable tubing by air.

<b>i</b>	The air cooling for stub splice fixture 5-529538-0 needs to be ordered and fitted for the RBK-ILS-Proc-Air-Cool-Kit.
----------	--

The stub splice fixture supports you in the installation of the following products:

- TE/Raychem splice stub sealing products.
- Heat-shrinkable tubing on ring terminals for insulation and sealing.

<b>i</b>	Tooling sets for ring terminals and other applications may be ordered separately.
----------	---

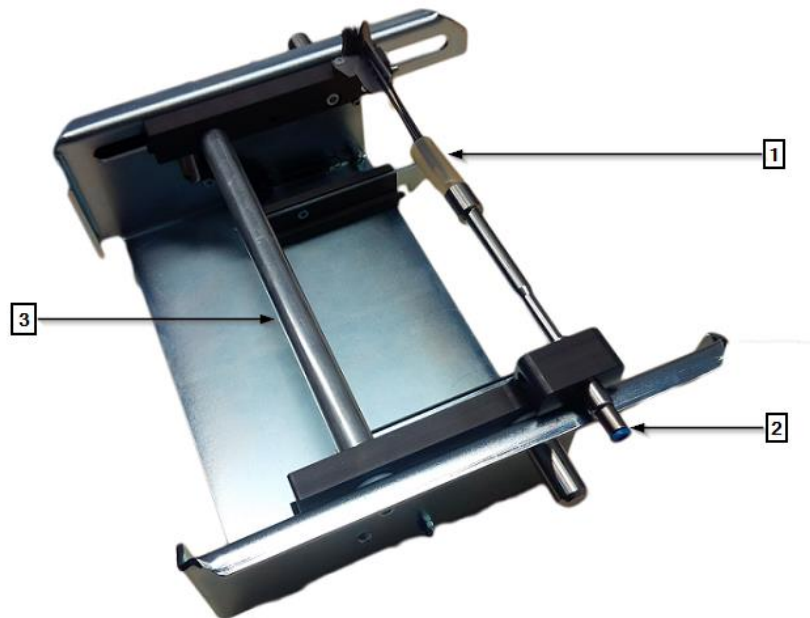


Fig. 99 : RBK-ILS-PROC-STUB-SP-FIX

Item	Designation
1	Cable with end-spliced product
2	Air valve
3	Slide

Tab. 63 : Fitting the RBK-ILS-PROC-STUB-SP-FIX accessory

## 14.2.1 Fitting the RBK-ILS-PROC-STUB-SP-FIX accessory

### DANGER!



#### Electric shock from live parts

Hazard and danger of death from contact with live parts.

- Pull the plug out from the mains before opening the covers.
- Use tools only to remove the mechanical covers.

### WARNING!



#### Inadvertent or unexpected start-up.

There is the hazard of the processor starting up during maintenance or repair work.

- Before modifying, cleaning or fault inspection, secure the processor's mains isolator (main switch) against inadvertent re-activation.
- Pull out the processor's power plug.

- ➔ Remove the bottom heating front panel. Further information can be found in section 12.2 Remove the heating side wall beneath and the front panel, page 86.
- ➔ Screw the accessory's adaptor plate with the 2 fixing screws (1) to the processor.

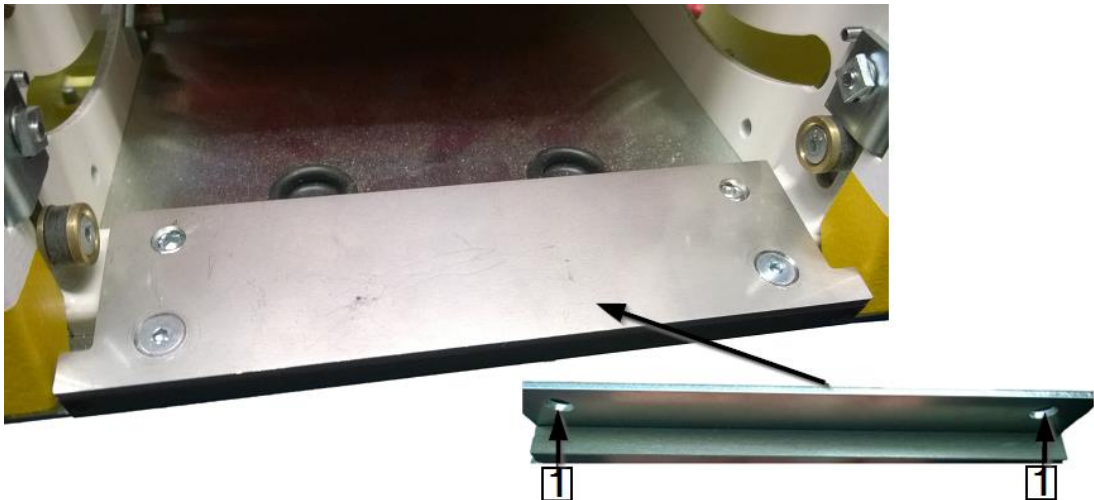


Fig. 100 : Adaptor plate on the processor

- ➔ Push the accessory into the opening in the heating chamber, until you hear a click.



Fig. 101 : Processor with accessory

✓ You have fitted the accessory.

### 14.2.2 Starting an operating cycle with the RBK-ILS-PROC-STUB-SP-FIX accessory

For the following description, see Fig. 99 :RBK-ILS-PROC-STUB-SP-FIX, page 124.

- ➞ Select the required end splice attachment and fix it to the air pressure valve.
- ➞ Connect the cable to the end splice product (1) on the air pressure valve (2).
- ➞ Push the rails (3) of the accessory, with the cable and end splice product, into the heating chamber, until you hear a click.
- ➞ Press the two-hand release.
- ✓ After the product has been shrunk, the slide is loosened automatically and emerges with the finished product.



If the slide does not emerge automatically, press the releasing levers on the processor.

### 14.2.3 Electromagnetic safeguarding for external devices

If an external device is connected to the air cooling socket or RS232 connector, these must be safeguarded with a ferrite core at the connecting cable.

- ➞ Fix the ferrite core with a cable loop.




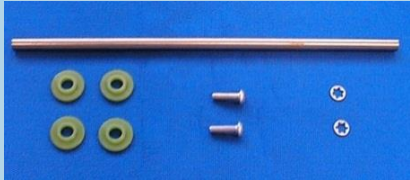



Fig. 102 : Cable loop on the ferrite core



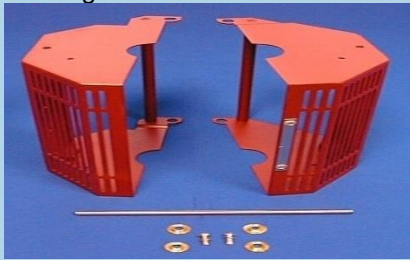





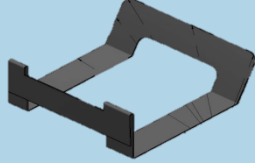


## 14.3 Replacement and wearing parts

 Product name	Description	Part-No.	Supplier
RBK-Proc-Mk4-Processor		529535-2	TE
RBK-ILS-Mk3/4-VIEW-WINDOW	Replacement lockable cover window 	496043-000	TE
RBK-ILS-MK4-PROX-SW Change	Replacement front and back proximity sensor	1-529538-9 2-529538-0	TE
RBK-ILS-MK2/3/4-HTR-PIVT-ASSY	Replacement heater pivot module 	014395-000	TE
RBK-ILS-MK2/3/4-BEAR-REP-KIT	Heater chamber replacement bearing kit 	870779-000	TE

 Product name	Description	Part-No.	Supplier
RBK-ILS-MK2/3/4-EJECT-BL-SET	Replacement ejection bell set 	690523-000	TE
RBK-ILS-MK2/3/4-ELEM-ASSY	Replacement heating element 	342551-000	TE
RBK-ILS-Proc-ELEM-Type4	10 mm wider heating element for tubing up to 80 mm length	43648-000	TE
RBK-ILS-MK4 Fan kit	Replacement cooling fan 	4-529538-0	TE
RBK-ILS-MK2/3/4-MECH-REP-KIT	Mechanical repair kit 	883491-000	TE

 Product name	Description	Part-No.	Supplier
RBK-ILS-MK4-MOTOR-ASSY	Replacement motor 	3-529538-7	TE
RBK-ILS-MK4 PCB	PCB controller 	2-529538-7	TE
BK-ILS-MK2/3/4-EL-COVR-ASSY	Heating element cover 	478274-000	TE

 Product name	Description	Part-No.	Supplier
RBK-ILS-Mk2/3/4-EJ-Bush-Kit	Ejector bush kit 	F20689-000	TE
RBK-ILS-MK2/3/4-PROC-PIN-BLOC-REP	2 movable clamp blocks. Both are fitted with mounting bolts for springs. 	924745-000	TE
Support Plate	Collection device for the finished sealed splices 	9-1481259-7	TE

Tab. 64 : Spare parts

Designation	Description	Part-No.
IEC connector filter	IEC input plug and fuse assembly + filter	2256720-1
T3.15 A * mains fuses	Mains input fuses x 2 - Rear panel mains connector	2-547565-3
230 V T2 A * heating fuses	Heating element fuse - Rear panel	2-547565-1
Main power switch	230 V main switch with emergency stop function.	2168274-1
Two-hand actuator	Switch Push Button	537234-1
RBK-ILS-Proc-Termfix-08mm	stub splice adaptor	049857-000
RBK-ILS-PROC-STUB-SP-FIX	Shrinkage tube support (right)	981721-000
RBK-ILS-PROC STUB SPLICE FIXTURE LH	Shrinkage tube support (left)	1-529533-7
Safety Relays	PSR-SCP- 24UC/THC4/2X1/1X2	2256042-1
RBK ILS MK4 INTERNAL AIR COOL KIT	Air cooling for stub splice fixture	5-529538-0
PC panel	Touch screen with required software	537233-1

Tab. 65 : Spare parts

\* Use only fuses that conform to BS4265 or IEC127.

## 15 Shutting down the machine

In this section, the following information is to be found:

Section	Subject	Page
15.1	Taking the processor out of operation	133
15.2	Storage	133

### 15.1 Taking the processor out of operation

- ➔ Turn off the processor.
- ➔ Turn the main switch with its emergency stop function to position **0 OFF**.
- ➔ Disconnect the mains supply.
- ➔ Clean the processor.
- ➔ Disassemble the accessories (optional).
- ✓ *The machine has now been put out of operation.*

### 15.2 Storage

If you remove the processor from operation, it must be stored in an appropriate place. The ground should be level and dry. Pack the processor into its original packaging.

## 16 Disposal

Dispose of the processor according to the local regulations in force, e.g. by specialised disposal, electrical waste or recyclable waste.

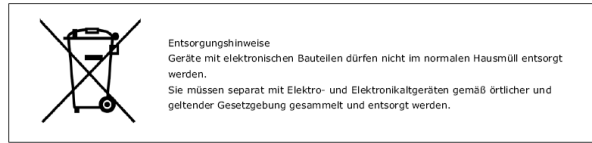


Fig. 103 : Electrical waste symbol

The symbol on the product or in the operating instructions indicates that it must not be disposed of along with other waste.

It must be taken to a suitable recycling facility to enable salvage and recycling.

### WEEE Directive

In accordance with the WEEE Directive, TE Connectivity supports the recycling, salvage and re-use of waste electrical and electronic equipment.

Relevant information can be found on the following website:

<http://www.te.com/usa-en/search.html?q=E-waste%2BRecycling&type=information>



## 17 Customer service address

### EMEA Service Hotline

Please contact us for service enquiries or technical support:

Monday - Thursday      8 am - 4 pm  
Friday                      8 am - 2 pm  
Tel.                        +49 (0) 6151 607 – 1518  
E-mail                    [TEFE1@TE.COM](mailto:TEFE1@TE.COM) (EMEA Customer Support)

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TE Connectivity Germany GmbH  
c/o Schenck Technologie- und Industriepark GmbH  
Landwehrstr. 55 / Gebäude 83  
64293 Darmstadt  
Germany

Further information and contacts can be found online at:  
<http://tooling.te.com/europe>

Our EMEA Service Hotline offers the following services:

- Support from a customer service technician for:
  - Set-up
  - Maintenance
  - Repair
  - Matters regarding service contracts
- Support with requirement or identification of replacement parts
- Provision of technical documentation for TE processing equipment

When calling, please have the following information to hand:

- Name of the processor
- TE part number
- Serial number
- Year commissioned / year manufactured

Enquiries relating to ordering replacement parts and technical enquiries:

- For general orders of replacement parts and related enquiries regarding prices and delivery times, please contact your local TE sales specialist or the distributor directly.
- For all technical enquiries regarding TE connectors, please contact our Product Information Centre.  
<http://www.te.com/support-center>



Please note that the staff of our EMEA service hotline can speak English and German.



## 18 Declaration of conformity

The original declaration of conformity was dispatched together with the machine delivery note and invoice.

## 19 Appendix

In this section you will find the following information:

Section	Subject	Page
19.1	Connections to the PCB controller	137
19.2	Electric circuit diagram of the processor	138

### 19.1 Connections to the PCB controller

#### Connections to the PCB controller

Cable harness / Connector	PCB connection	Outlet
J23	J22	24 V DC motor drive
J46	J45	Back-up capacitor for the automatic retraction of heating chambers
J20	J18	Internal and external air cooling / left start switch
J51	J50	Start switch
J17	J16	Front proximity switch (Load sensor)
J4	J1	Calibrate thermocouple
J11	J10	Cooling fan with 24 V DC tacho signal
J15	J14	Rear proximity switch (Home Sensor) J14
J3	J2	Heating chamber thermocouple

Tab. 66 : J-number code of the PCB code from top left down

Cable harness / Connector	PCB connection	Outlet
J36	J35	External RS232 Interface
J33	J32	Touch-enabled screen
J53	J52	Safety Relays
J48	J49	230 V AC power supply

Tab. 67 : J-number code of the PCB controller from top left to right


Cable harness / Connector	PCB connection	Outlet
J13	J12	Heating chamber

Tab. 68 : J-number code of the PCB controller from top right down

Cable harness / Connector	PCB connection	Outlet
-	J24	No Connection
-	J19	
-	J21	
-	J25	
-	J26	
-	J27	
-	J28	
-	J29	
-	J30	

Tab. 69 : J-number code of the PCB controller from bottom left to right

## 19.2 Electric circuit diagram of the processor

	The electric circuit diagram for the processor can be obtained on request from customer service. Further information can be found in section 17 Customer service address, page 135.
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