Ersa DIGITAL 2000 A

Lötstation/Soldering Station

Bedienungsanleitung/

Operation Manual

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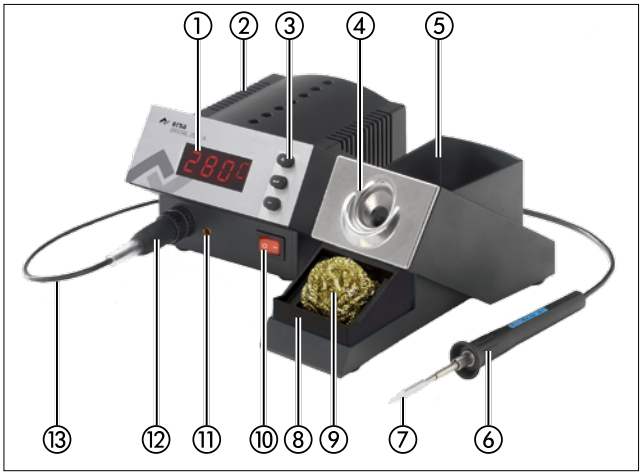
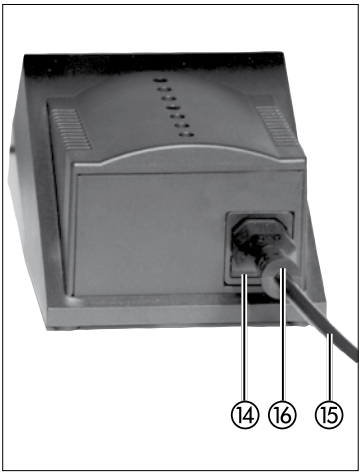




① Anzeige	① Display
② Versorgungseinheit	② Supply unit
③ Bedienungstasten	③ Control buttons
④ Ablageständer	④ Holder
⑤ Spitzenmagazin	⑤ Tip magazine
⑥ Lötwerkzeug	⑥ Soldering tool
⑦ Lötspitze	⑦ Soldering tip
⑧ Schwammbehälter	⑧ Sponge bin
⑨ Trockenreiniger	⑨ Dry sponge
⑩ Netzschalter	⑩ Power switch
⑪ Potentialausgleichsbuchse	⑪ Potential equalization jack
⑫ Steckverbinder Lötkolben	⑫ Soldering iron plug
⑬ Anschlussleitung Lötkolben	⑬ Soldering iron connecting cable
⑭ Sicherung/Sicherungshalter	⑭ Fuse/fuse holder
⑮ Netzanschlußleitung	⑮ Power cord
⑯ Netzanschlußstecker	⑯ Power plug

1. Introduction

We appreciate your decision to purchase this high-quality soldering station. The DIGITAL 2000 A from Ersa is a top-of-the-line micro-processor-controlled soldering station. It is designed for use in industrial production, repairs and in laboratories.

1.1 Supply Unit

The use of a microprocessor facilitates operation and sets new standards for the functions available at the soldering station. Five independent tool settings can be made and saved by means of a simple menu guide.

The DIGITAL 2000 A can be operated with various soldering tools. Besides the universal soldering irons, POWER TOOL and TECH TOOL, the fine-pitch soldering iron MICRO TOOL and the CHIP TOOL can be connected to the station for processing SMCs. The optionally connectable X-TOOL desoldering iron rounds off our range of tools. The soldering station can be used for simple temperature measurements when a temperature sensor is connected as tool (Pr5).

A wide variety of functions, high speed and control precision make this soldering station especially suitable for manufacturing processes subject to stringent quality requirements.

Equipment features:

- Antistatic design
- Potential equalisation
- Full-wave control
- 24 V small voltage for soldering irons
- VDE-GS, CE, VDE-EMC marks of conformity

1.2 Soldering and Desoldering Tools

TECH TOOL

The TECH TOOL is a heavy-duty, universally applicable tool for performing most soldering tasks. Its applications range from especially fine-pitch soldering (SMD technology) to soldering with major heat requirements (cables, connectors, switches, etc.). The soldering tips can be exchanged even when hot, without the assistance of other tools.

MICRO TOOL

This soldering tool is designed primarily for SMT components. The slender form and fine-pitch tips make the tool especially suitable for precision work.

CHIP TOOL

The CHIP TOOL is designed for desoldering SMT components. Ersa provides an extensive range of tips for this tool, for desoldering all current components from 0201 to PLCC 84.

POWER TOOL

The POWER TOOL is an extremely sturdy soldering iron with high thermal output. The tool is superbly suited for soldering switches, cables and connectors, and for all soldering operations with major heat requirements.

X-TOOL

The X-TOOL is a heavy-duty tool for the conventional desoldering of components. By simply exchanging the desoldering tips, you can quickly adapt the X-TOOL to any desoldering task. For further information on working with the X-TOOL, please consult the "Ersa X-TOOL" Operating Instructions (3BA00023-00).

2. Technical Data

DIG 203 A electronics station	
Designation	**Value**
Supply voltage	230 V~, 50-60 Hz
Secondary voltage	24 V~
Output	80 W
Control technology	SENSOTRONIC with digital PID behavior
Temperature range	continuous 50 °C – 450 °C/122 °F – 842 °F
Function display	4-character LED display with menu control
Cable	2 m PVC with device socket
Fuse	400 mA, delayed-action
Design	antistatic according to MIL-SPEC/ESA standard

Soldering iron POWER TOOL	
Designation	**Value**
Voltage	24 V~
Output	105 W/280 °C (536 °F) – 80 W/350 °C (662 °F)
Heat up rating	290 W
Heat up time	approx. 40 s (auf 280 °C/536 °F)
Weight (without cable)	approx. 50 g
Cable	1.5 m ultra-flexible, heat-resistant, antistatic
Design	antistatic according to MIL-SPEC/ESA standard

Soldering iron TECH TOOL	
Designation	**Value**
Voltage	24 V~
Output	70 W/280 °C (536 °F) – 60 W/350 °C (662 °F)
Heat up rating	130 W
Heat up time	approx. 12 s (auf 280°C)
Weight (without cable)	approx. 50 g
Cable	1.5 m ultra-flexible, heat-resistant, antistatic
Design	antistatic according to MIL-SPEC/ESA standard

Soldering iron MICRO TOOL	
Designation	**Value**
Voltage	24 V~
Output	30 W/280 °C (536 °F) – 20 W/350 °C (662 °F)
Heat up rating	65 W
Heat up time	approx. 50 s (auf 280°C)
Weight (without cable)	approx. 50 g
Cable	1.2 m ultra-flexible, heat-resistant, antistatic
Design	antistatic according to MIL-SPEC/ESA standard

Desoldering pincette CHIP TOOL	
Designation	**Value**
Voltage	24 V~
Output	2 x 30 W/280 °C (536 °F) – 2 x 20 W/350 °C (662 °F)
Heat up rating	130 W
Heat up time	tip-dependent
Weight (without cable)	approx. 75 g
Cable	1.2 m ultra-flexible, heat-resistant, antistatic
Design	antistatic according to MIL-SPEC/ESA standard

Desoldering device X-TOOL	
Designation	**Value**
Voltage	24 V~
Leistung	2 x 30 W/280 °C (536 °F) – 2 x 20 W/350 °C (662 °F)
Heat up rating	260 W
Heat up time	spitzenabhängig
Weight (incl. cable and tip)	ca. 240 g
Heating elements	2, 60 W each (at 350° C/662° F)
Temperature measurement	Ni-CrNi thermocouple
Starting vacuum	up to 800 mbar
Weg Griff-Entlötspitze	approx. 70 mm
Design	antistatic according to MIL-SPEC/ESA standard

Temperatur sensor	
Designation	**Value**
Temperature measurement	FE-CuNi thermocouple (type J)
Measuring range (room temperature)	J-type: 50 – 500 °C (122 – 932 °F)
Measuring accuracy ex works	< 1 % ± 1 °C

3. Safety instructions

Before commissioning, be sure to note the enclosed safety information.

4. Starting operation

4.1 Before Commissioning

Please check that the contents of the package are complete. Contents:

- Supply unit
- Mains lead
- Soldering tool with soldering or desoldering tip
- Holder with dry sponge
- These Operating Instructions,
- Safety Information
- With X-TOOL: X-TOOL Operating Instructions (3BA00023-00)

Should the above components be damaged or incomplete, please contact your supplier.

Important!
The soldering tip is heated up to 450°C (842°F). Remove any combustible objects, fluids and gasses from the operating area of the soldering iron. Do not allow the soldering tip to come into contact with the skin or sensitive material. When not using the soldering tool, always place it in the holder.

Observe the following points for safe and long-lasting use of the soldering tool and soldering tip:

- Do not strike the soldering iron against hard objects, as the ceramic heating element is fragile. Do not knock off tin.
- Before using the soldering iron, check whether the soldering tip is correctly mounted (TECH TOOL: tighten knurled nut. POWER TOOL: hook in spring. MICRO TOOL and CHIP TOOL: insert tips up to stop).
- Before soldering, pierce the tip into the dry sponge.
- Do not pierce the tip into the dry sponge after soldering.
- Never use the soldering iron without a tip.
-

Only when using the desoldering pincette:

- Set force limiter, so that the arms do not bend when gripping the component. Excessive bending can damage the heating element.
-

Further information see chapter 5.

4.2 Switching On for the First Time

Please read through these Operating Instructions completely before commissioning.

Procedure for commissioning:

- Check whether the mains voltage matches the value specified on the nameplate.
- Set mains switch to 0.
- Insert mains lead in the mains connection socket at the back of the device.
- Put the dry sponge into the sponge container of the holder.
- Connect soldering tool to the supply unit and place in holder.
- Insert mains plug in the socket.
- Switch on device (set mains switch to I).
- The soldering station is now ready for operation.

After the display test has been run through (all display elements briefly light up simultaneously), the actual temperature of the soldering tip is displayed. You can now work with the soldering station.

4.3 Instructions for soldering

- The soldering joints must always be clean and grease-free.
- Soldering times should be as short as possible, but the soldering joint must be sufficiently and uniformly warmed in order to ensure a good soldering connection.
- Before soldering, lightly pierce the soldering tip into the dry sponge so that it again has a metallic shine. This helps keep the soldering joint from being contaminated by oxidized solder or burnt flux.
- Heat the soldering joint by bringing it in equal contact with the pad and component connection.
- Add solder wire (e.g. Ersa Sn95,5Ag3,8Cu0,7 solder wire with flux core according to EN 29454).
- Repeat soldering procedure.
- From time to time, pierce the soldering tip into the dry sponge. Dirty soldering tips lengthen soldering times.
- Do not clean the soldering tip after the last soldering operation. The residual solder protects the soldering tip from oxidation.

You can receive a detailed process description ‚Fine-Pitch Installation' free of charge upon request from Ersa.

4.4 Instructions for desoldering using CHIP TOOL

- Using a small brush, wet the clean and grease-free soldering joints of the components to be desoldered with flux.
- Take the CHIP TOOL from the soldering iron holder.
- Before soldering, lightly pierce the desoldering inserts on the dry sponge so that they again have a metallic shine. This will prevent oxidized solder or burnt flux residue from contaminating the soldering joint. Lightly wet with new solder in order to achieve a good heat transfer between the desoldering inserts and the component pins.

Note:
In order to prevent the desoldering inserts from becoming passive after the cleaning process, they must be wetted by immediate desoldering or by again tin-coating them with solder wire. Passive desoldering inserts result in longer desoldering times.

- Place the open desoldering CHIP TOOL on the component to be desoldered and close them slightly in order to establish sufficient thermal contact with the soldering joints.
- After melting the solder, remove the component from the printed-circuit board and place it on a heat-resistant pad. Wipe small components on a viscose sponge.

Caution:
In the case of components bonded with adhesive, do not forcefully twist them as this could damage the ceramic heater. Apply heat to the component until the adhesive is softened and the component can easily be removed.

- Replace the CHIP TOOL in the soldering iron holder when not in use.

You can receive a detailed process description ‘SMD Removal‘ free of charge upon request from Ersa.

5. Functional description

5.1 The Programs

The DIGITAL 2000 A has five independent programs. The settings for the different (soldering) tools are saved in these programs and can be changed by the user. By calling up a program, you can quickly convert the station to another soldering tool or adapt the station to different soldering tasks.

Table 1: Program-Tool Assignment	
Program	**Tool**
Pr 1	MICRO TOOL
Pr 2	TECH TOOL/X-TOOL
Pr 3	POWER TOOL
Pr 4	CHIP TOOL
Pr 5	Temperature sensor

The individual tools are specifically linked to the respective programs according to Table 1. The station automatically recognizes when a particular tool is connected and shifts to the program with the settings stored for that tool. The settings then take effect immediately. No temperatures or parameters therefore need to be reset at the station.

The program is only changed automatically when the tool is changed. The programs 1-4 can be changed manually with the keys (+) and (-). Program 5 can only be called when a temperature sensor is connected. As long as a temperature sensor is connected the programs 1-4 cannot be started.

The factory settings apply as long as no setpoints or parameters are entered. The following sections describe how to change the settings.

Using the Ersa Tool Selector
The Ersa Tool Selector allows four different soldering and desoldering tools to be used alternately at the DIGITAL 2000 A. When the Tool Selector is switched, the DIGITAL 2000 A recognizes the given tool and automatically shifts the program. The DIGITAL 2000 A is therefore ideally suited for use of the Tool Selector.

5.1.1 Program Selection

A program is selected according to the following flow chart (see fig. 2: Program selection flow chart)

5.1.2 Description of the Flow Chart

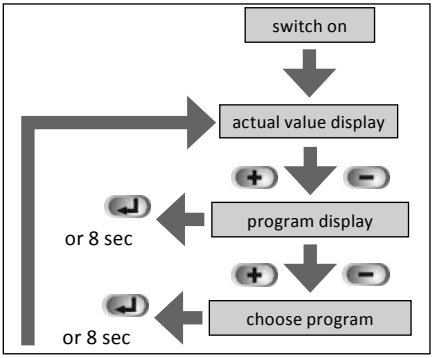


Figure 2

By pressing the (+) and (-) keys, the user moves from the actual value display to the program display. These keys can also be used to select the requested program (Pr1 to Pr4) when there is no temperature sensor connected as a tool. The user can return to the actual value display by pressing the ENTER key. The parameters of the set program are immediately loaded and active. If the ENTER key is not pressed, the station automatically jumps back to the actual value display after 8 s.
In this case, too, the parameters of the set program are loaded and take effect immediately.

5.2 The Menu System

Figure 3

The operating concept of the DIGITAL 2000 A allows you easily to use all setting options by means of only three control buttons. All programs are set in the same way. Once the parameters have been entered for a program, the station can be quickly converted for different, frequently recurring soldering operations by simply changing the program. Elaborate changes of the individual parameters are not required.

Table 2: Symbol - menu item assignment

Symbol	Menu item
	Set temperature point
	Set unit (UNIT)
	Set standby time
	Tip Offset
	Calibration
	Energz
	Set password

For setting a program, the latter must first be preset as described in section 5.1. All of the following setpoint and parameter changes now refer to this program. The menu is operated via the 3 keys +, - and ENTER.

Settings are automatically saved and take effect immediately. After 8 seconds, the station switches automatically to the actual value display (temperature display) (Figure 3). This view always shows the current soldering tip temperature (three digits) and (as the 4th character) the unit of temperature: C (Celsius) or F (Fahrenheit). To assist your navigation within the menu structure, a symbol corresponding to the menu item always flashes in the fourth position of the display.

5.2.1 Parameter Setting

Figure 4 shows the flow chart for parameter setting.

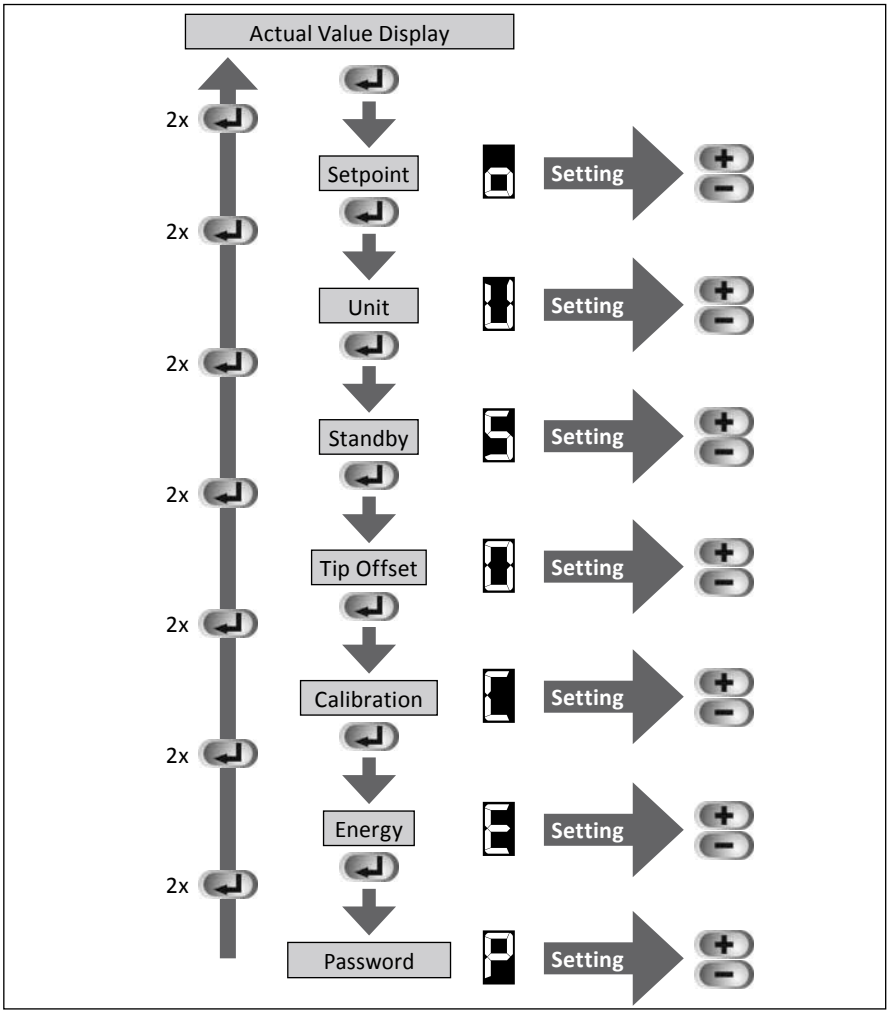


Figure 4

5.2.2 Description of the Flow Chart

Starting from the actual value display, the next menu point in each case is reached via the ENTER key. The sequence of menu items (parameter settings) is shown in the flow chart in Figure 4. Each parameter setting is carried out via the (+) and (-) keys. You can jump back to the actual value display from any menu item by double-clicking (pressing twice) the ENTER key.

The symbol for the given menu item flashes in the fourth position. If no input is made within 8 seconds, the station returns to the actual value display. All parameter settings are saved and take effect immediately.

5.2.3 Abbreviated Procedure

The double-click function has been integrated for easier parameter setting. Once you have carried out a parameter setting within the flow chart (see Figure 4), you can return to the actual value display by double-clicking (pressing twice) the ENTER key. By again double-clicking in the actual value display, you can now follow a branch from the last selected menu item. Running through the entire menu is not necessary

5.3 Description of the Functions

5.3.1 Setpoint Function ( )

The desired soldering tip temperature setpoint is set in the first menu item (see flow chart in Figure 4) by means of the (+) and (-) keys. The different soldering irons have different temperature ranges. These ranges are specified in Table 3. The set value adjustment does not have any function with the temperature sensor.

Table 3: Temperature ranges of the individual soldering irons

Tool	Lower temperature bound	Upper temperature bound
TECH TOOL	50 °C/120 °F	450 °C/850 °F
POWER TOOL	50 °C/120 °F	450 °C/850 °F
X-TOOL	50 °C/120 °F	450 °C/850 °F
MICRO TOOL	150 °C/300 °F	450 °C/850 °F
CHIP TOOL	150 °C/300 °F	450 °C/850 °F

5.3.2 Temperature Unit Function (U)

This function serves to set the desired temperature unit (°C or °F) via the (+) and (-) keys.

Note:
If the station is protected by a password, the parameters only can be changed by entering the correct password. (see chapter 5.3.7 Password Function)

5.3.3 Standby Function ( )

This function switches the soldering station to a state of readiness if it has not been used over a preset period of time. The purpose of this function is to protect the soldering tip and to reduce energy consumption. In standby, the soldering tip temperature is lowered to 200°C (390°F). The standby time is set in minute increments. The setting range is 0 – 60 min, with an input of 0 disabling the standby function.

When the station enters standby mode, the display starts to flash. When an arbitrary key is pressed, the station returns to the normal mode. For soldering irons with SENSOTRON-IC, cleaning the tip on the dry sponge can also enforce the switch over to normal mode. By wiping the soldering tip, the station recognizes an abrupt temperature reduction and switches back to normal mode. This function works best for certain soldering tips of all mass. Heavy mass tips will often not be sufficiently cooled during cleaning to reset the station into normal mode.

You should switch off the standby function when working with small soldering spots. In such cases, the heat emission at the soldering tip may be too low for soldering to be registered. The station would then undesirably lower the soldering temperature to the standby temperature.

Restrictions of the standby function:
The standby function is not restricted with the TECH TOOL, the X-TOOL and the POWER TOOL. On the other hand, the time characteristics of the MICRO TOOL and the CHIP TOOL do not allow reliable recognition of an operation. For this reason, with these two tools the soldering station always switches to standby mode after the standby time has passed.

5.3.4 Tip Offset Function ( )

The temperature characteristics of the soldering tips vary depending on their masses and geometrical forms.

The Tip Offset serves to adapt the temperature measurement to the given soldering tip or to the given thermocouple type of the temperature sensor. The soldering tips used are set in the form of numbers. Since the station automatically recognizes the connected soldering iron, the station can identify the complete combination of iron and tip on the basis of the selected number. In this way, temperature recording and control can be optimally adapted. All Tip Offset numbers, from 1 to the max. limit of the connected tool, can be adjusted (see tables 4-7c).

Table 4:

Tip Offset numbers

CHIP TOOL

Tip	Number
422 ED	1
422 FD3	2
422 FD1	3
422 FD4	4
422 FD2	5
422 FD5	6
422 FD6	7
422 FD7	8
422 FD8	9
422 FD9	10
422 QD5	11
422 QD!	12
422 QD6	13
422 QD3	14
422 QD4	15
422 QD2	16
422 QD7	17
422 QD8	18
422 QD9	19
422 QD10	20
422 RD1	21
422 RD2	22
422 RD3	23
422 SD	24
422 MD	25

Table 5:

Tip Offset numbers

MICRO TOOL

Tip	Number
212 BD	1
212 CD	1
212 ED	1
212 KD	1
212 MS	1
212 SD	1

Table 6:

Tip Offset numbers

TECH TOOL

Tip	Number
612 SD	1
612 UD	1
612 BD	1
612 AD	1
612 KD	1
612 ED	1
612 GD	1
612 CD	1
612 TW	1
612 MD	1
612 JD	1
612 ID	1
612 FD	1
612 ZD	1
X-TOOL	2

Table 7a:

Tip Offset numbers

POWER TOOL

Tip	Number
832 UD	1
832 SD	1
832 BD	1
832 KD	1
832 CD	1
832 ED	1
832 PW	1
832 VD	2
832 GD	2
832 MD	2
832 LD	2
832 OD	2
832 C8	2
832 C16	2
832 C18	2
832 C20/7,62	2
832 C20/12,7	2
832 MD03	2
832 QD01... 832 QD09	2
832 ZD	3
832 HD	3
832 DD	3
832FD	3
832 TD	3
832 ND	3
832 WD	3
832 RD	3
832 YD	3
832 MD02	3
832 QD12	3
832 QD13	3
832 AD	4
832 QD10	4
832 QD11	4

Table 7b:

Tip Offset numbers

POWER TOOL

Tip	Number
842 UD	1
842 SD	1
842 KD	1
842 BD	3
842 CD	3
842 ED	3
842 YD	4
842 ID	4
842 JD	4

Use of the X-TOOL>

The X-TOOL has the same design as a TECH TOOL. It is therefore also identified by the station as a TECH TOOL. Since the control characteristics of the X-TOOL differs from those of the TECH TOOL, however, the control system must be adapted. This adaptation is made via the Tip Offset number (see Table 6).

Note:

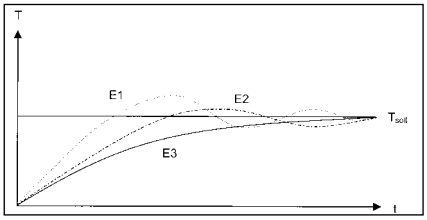
If the station has been operated with an X-TOOL, the Tip Offset must be changed according to Table 6 before a TECH TOOL can be connected. The TECH TOOL can otherwise not be optimally controlled. For further information on using the X-TOOL, please consult the "Ersa X-TOOL" Operating Instructions (3BA00023-00).

5.3.5 Calibration Function ( )

This function serves to calibrate the soldering tip temperature. It allows the display value to be adjusted to the actual tip temperature. The adjustable calibration range is ± 50°C (± 120°F). The precise procedure for calibration is described in section 5.8.

5.3.6 Energy Function ( )

The energy function allows the user to influence the control characteristics of the station, so that heating and re-heating by the station can be adapted to the given area of application. Three settings (values 1-3) are possible with POWER TOOL and TECH TOOL. Due to the different function mode of the remaining tools, these settings are not possible for those tools. They operate with constant control parameters instead.



E1: Minimum re-heating characteristics. For soldering operations with low heat requirements.
E2: Stronger re-heating characteristics. For soldering operations with increased heat requirements.
E3: Maximum re-heating characteristics. For soldering operations with very high heat requirements

Figure 5: Control characteristics of the individual energy values (schematic)

5.3.7 Password Function (⛽)

By means of the password function, the station can be protected against accidental or unauthorized parameter changes. The password can be entered in the form of a number between 0 and 999. The value 0 (display: 000) indicates that the password function is disabled. After a sequence of digits has been entered and confirmed by pressing the ENTER key, three dashes (- - -) are displayed. The station is password-protected as of this point in time. All settings can still be viewed.

To disable the password function, the three dashes (- - -) are displayed again in the corresponding menu. The password must now be entered and confirmed with the ENTER key. If the password is correct, then the three zeros (000) are again displayed; the dashes remain displayed in the event of an error.

The password is the same for all programs, e.g. it is independent of the preset program. A program choice (manual/Tool selector) is also possible with an activated password.

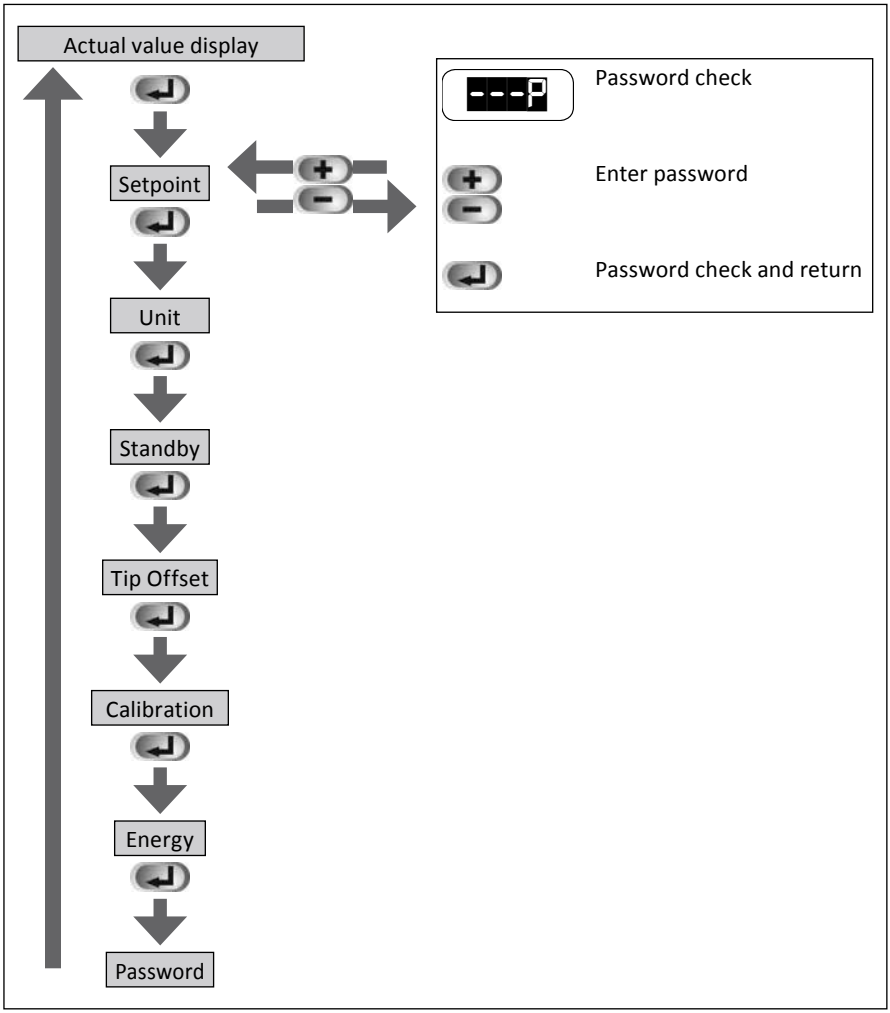
If the user wants to change a parameter at a password protected station, the station must be unblocked by the password. The display changes immediately to enter password by the (+)/(-) keys. Then the password can be entered with the (+)/(-) keys and can be confirmed by ENTER key. The station checks the password and returns to the parameter.

If no password is adjusted by the user, the station resets automatically to the actual value display after 8 seconds.

If the password was not entered correctly, the parameter cannot be changed. The password check is indicated again via (+)/(-) keys. The check can be stopped and changed to the next parameter by the ENTER key. If the password was entered correctly, the parameter can be adjusted via the (+)/(-) keys. The input can be ended and changed to the next parameter with the ENTER key. The unblocking of the station still remains for 30 seconds after the last key activity so that for the following parameter changes the password does not have to be entered again. If no function key is pressed within 30 seconds, the unblocking expires and the password must be entered again at the next parameter set.

If the password protection should be active again after an input before expiry of 30 seconds, the station must be turned off for a short time or the existing password has to be changed.

Note:
If the user does not know the password anymore, the station can be reset to the factory pre-settings. Through it, all parameters and the password adjusted by the user are deleted! (see chapter 5.5/5.6)



5.4 Changing Soldering Tips

The soldering or desoldering tip must be changed when worn or when another tip form is desired.

Important!
Operate all soldering tools only briefly without soldering tips!

TECH TOOL:
The soldering tip can also be changed without a tool when hot.

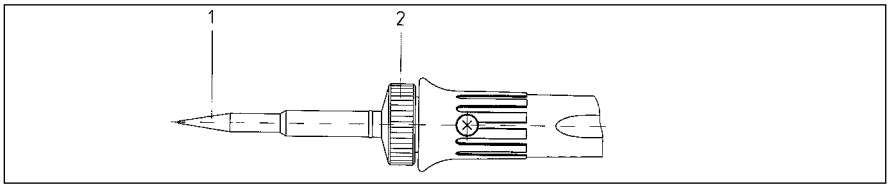


Figure 6

- Loosen the soldering tip (pos. 1/fig. 6) by turning the knurled nut (pos. 2/fig. 6) counter-clockwise.
- Remove the tip and place in holder or on a fire-proof support.
- Then screw on new tip by appropriately turning the knurled nut clockwise.

X-TOOL:
The desoldering tip can be changed by means of the tip holder attached to the tool holder. When changing the desoldering tip, proceed as described in the "Ersa X-TOOL" Operating Instructions (3BA00023-00).

POWER TOOL
The soldering tip can also be replaced when hot by means of flat-nosed pliers.

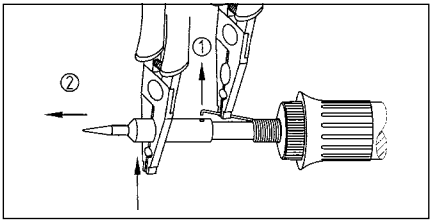


Figure 7

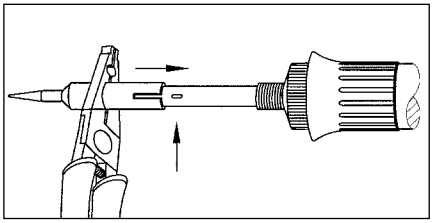


Figure 8

- Lift spring hook out of tip hole (pos. 1/fig. 7) and pull off the tip using the flat-nosed pliers (pos. 2/fig. 7).
- Set aside the hot soldering tip on a fireproof support or in the holder.
- Attach new tip; when sliding on the tip make sure that the knob of the heating element lies in the slot of the tip (fig. 8). This positions the tip and prevents turning.
- Anchor spring hook in the tip hole again.

To obtain good electrical and thermal conductivity, occasionally remove the soldering tip and clean the heating element shaft with a brass brush.

Changing the soldering tips and desoldering inserts

The soldering tip and/or the desoldering inserts must be changed if they are worn, or if a different form of soldering tip or insert is desired. The soldering tip/desoldering inserts can also be changed when hot:

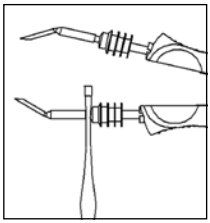


Figure 9a

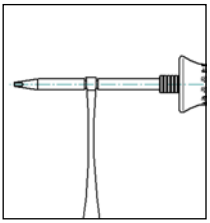


Figure 9b

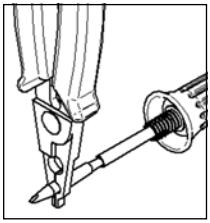


Figure 10


Figure 11

- Switch the soldering station off, since the heating elements may reach temperatures of 800 °C without soldering/desoldering insert.
- Grip the soldering bit/desoldering insert with tip change tweezers and pull it carefully forwards and off (fig. 9a + 9b).
- Place the hot soldering/desoldering tip a fire-resistant base. Therefore we re-commend our special holder SH 03 (fig. 11).
- Use the tip change tweezers to push the other soldering tip/desoldering inserts up against the spring clamping force until the limit stop is reached, and align.
- When changing desoldering inserts only: Use the knurled screw to set the power limit. (see chapter 5.5)
- Switch the soldering station on.

Note:

The tip exchanger 3ZT00164 is available as an option.

Adjusting the desoldering inserts on the CHIP TOOL

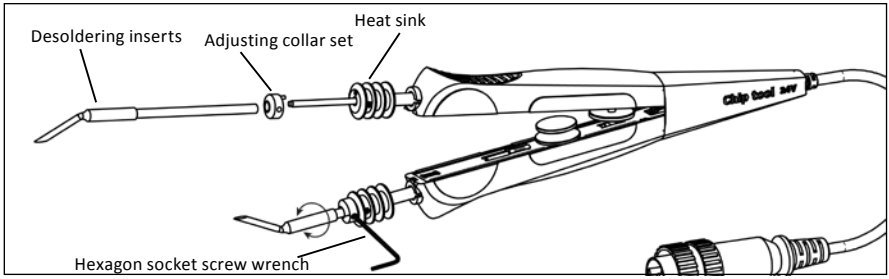


Figure 12

- Push up the adjusting collar set on the desoldering insert, and then connect it to the CHIP TOOL. The retaining pin on the adjusting collar set must engage with the heat sink on the CHIP TOOL.
- Align desoldering inserts then fasten the adjusting collar set using the hexagon socket screw wrench supplied.

Attention!
Overtightening the retaining screws may damage the heating element.

Note:
We recommend buying additional adjusting collar sets when the inserts are changed frequently. Order no.: E 045600 (optional).

5.5 Adapting to the component size

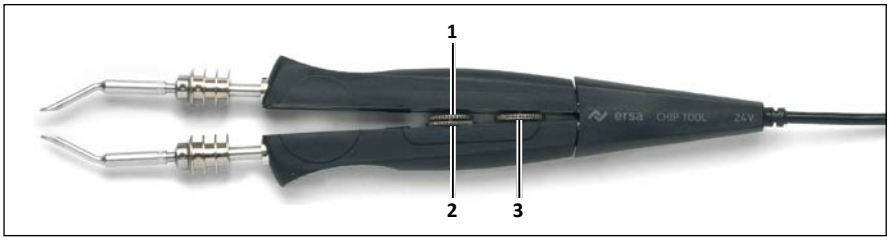


Figure 13

The limit position for the force-limitation device in the CHIP TOOL is adjusted using the knurled head screw 1 (Fig. 13). When making this adjustment, be sure that when the tool is closed, the desoldering inserts only touch one another and do not bend.

Then fasten knurled nut 2. This counters knurled head screw 1 and thus prevents self-adjustment of the force-limitation device. The opening angle of the CHIP TOOL may be adjusted using knurled head screw 3. This function is extremely useful for working with densely-populated printed circuit boards.

Note:
When not using the CHIP TOOL for a long period of time, please open the angle to its widest position using the knurled head screw 3. Failure to do so will result in a slight weakening of the spring mechanism.

5.6 Factory Pre-Settings

The following is a list of the factory pre-settings for the individual programs.

Table 8: Factory pre-settings				
Program	**Pr1**	**Pr2**	**Pr3**	**Pr4**
Setpoint	285	325	360	385
Unit	°C	°C	°C	°C
Standby (min)	0	0	0	0
Tip Offset	1	1	1	1
Calibration	0	0	0	0
Energy	1	3	3	1
Tool	MICRO TOOL	TECH TOOL	POWER TOOL	CHIP TOOL

Other settings:
Program Pr1
Password = 0 (disabled)
The station can be reset to the above factory settings. To this end, first switch off the station. Now press the ENTER key. While keeping this key pressed, keep the station switched on until the display test is concluded (all segments light up briefly)

5.7 Resetting the Password

In the event that a password is forgotten, it can be deleted as described in section 5.5. All parameters set by the user are then also lost.

5.8 Working with sensitive components

Many components may be damaged by electrostatic discharge (please observe the warnings on the packaging or ask the manufacturer or supplier). These components can be protected by an ESD-secure workplace. The soldering station can be easily integrated into such an environment. The soldering tip can be connected at high resistance (220 kΩ) to the conductive workbase via the potential equalization jack (no. 1/fig. 14).

The soldering station has complete antistatic protection and also meets the requirements of the American military standard. The soldering tips are default hard grounded.

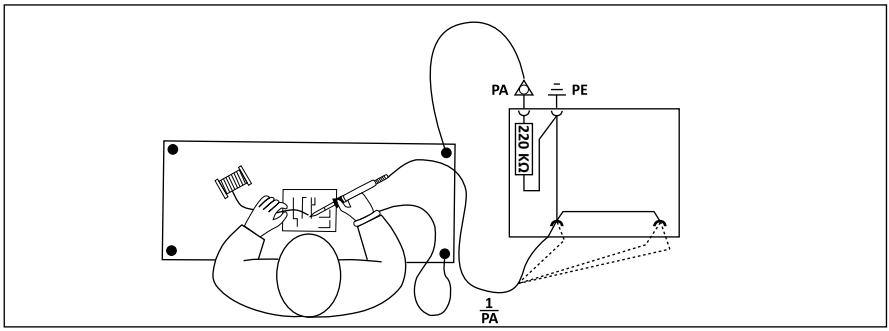


Figure 14

5.9 Calibrating the soldering station

Two calibrating functions are in principle available on the DIGITAL 2000 A. The two functions were already mentioned in sections 5.3.4: Tip Offset Function (▮) and 5.3.5: Calibration Function (▮).

To calibrate the soldering station correctly, you must proceed as follows:
First, enter the tip used on the tool (see chap. 5.3.4 Tip Offset Function (▮). The station will then be able to determine, control and display the correct tip temperature. If the Tip Offset is not correctly specified, the soldering can become prematurely unusable. The calibration function (see chap. 5.3.5 Calibration Function (▮) brings the actual tip temperature into exact correspondence with the displayed temperature.

When calibrating, you must proceed as follows:

- Enter the desired temperature setpoint (see chap. 5.3.1 Setpoint Function ( ).
- Set the Tip Offset of the tip used (see chap. 5.3.4 Tip Offset Function ( ) .
- In the menu item "Calibration", set the value to 0 by means of the (+) and (-) keys.
- Return to the actual value display and wait until the displayed temperature stabilizes.
- Determine the temperature of the soldering tip using a calibrated gauge (e.g. Ersa DTM 100).
- Compare the two display values.
- Compute the temperature difference, with
  $\Delta T = T_{DIGITAL\ 2000A} - T_{gauge}$
- Set the computed temperature difference ΔT (with sign) in the menu item "Calibration" by means of the (+) and (-) keys.

Note:
To avoid measurement errors, ensure calm air conditions.

5.10 Actual temperature (°C/°F)

Provided that no operating mode has been chosen the actual temperature of the soldering tip or temperature sensor is displayed on the soldering station.
The first digit's decimal point (fig. 15) indicates the operating status of the heating element. As long as this point shines, the heating element is triggered.

Figure 15

The fourth digit of the LED display indicates the selected temperature unit (°C/°F). If °F has been selected, and the actual temperature rises above 999, the fourth digit of the LED is used to fully display the temperature.

Stand-by mode
In the stand-by operating mode a flashing actual temperature display indicates that the soldering station adjusts the soldering iron's stand-by temperature to 200°C/390°F. To quit this operating mode press any key so that the soldering iron's tip temperature is adjusted to the set value (also see item 5.3.3 stand-by function).

No Tool

Figure 16

Fig. 16 shows what the display looks like when there is no tool connected to the soldering station

Figure 17

Insufficient temperature

The temperature measured by the temperature sensor is about cold junction temperature (approx. room temperature). The character string is displayed (Fig. 17) until the temperature of the sensor has risen sufficiently above cold junction temperature.

6. Error Diagnosis and Troubleshooting

6.1 General Errors

If the soldering station does not operate as expected, check the following items:

- Is main voltage present? (Correctly connect the mains lead to the device and socket.)
- Is the fuse defective? Note that a defective fuse may also indicate a deeper cause of error. Simply changing the fuse therefore generally does not suffice.
- Is the soldering iron correctly connected to the supply unit?

If the soldering tip does not become hot after the above items have been checked, you can use an ohmmeter to check the heat resistance and the temperature sensor for conduction (Figure 18).

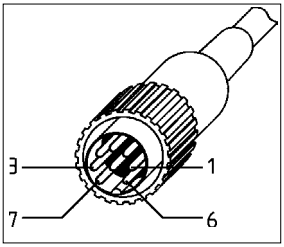


Abbildung 18

Continuity check for TECH TOOL, POWER TOOL und X-TOOL heating element

The continuity resistance between measuring points 1 and 6 should be between less than 6 Ohm (at cool soldering iron). In the event of interruption, the heating element is to be replaced (see left).

Continuity check for thermocouple

There should be less than 25 Ohm continuity resistance between measuring points 7 and 3. If the continuity resistance is higher, the tool must be repaired.

Continuity check for MICRO TOOL and CHIP TOOL

The continuity resistance between measuring points 1 and 6 should be between 8 Ohm (at low temperature) and 25 Ohm (at max. temperature).

Parameter changes not possible

If the station is protected by a password, the parameters only can be changed by entering the correct password. (see chapter 5.3.7 Password Function).

6.2 Error Messages

The DIGITAL 2000 A carries out an automatic error diagnosis. The result of a diagnosis is outputted as an error code. The string ‚Err' then appears as the first three characters of the display. At the same time, the error code is displayed as the fourth character. The error codes are listed in Table 9. Error messages may also be confirmed with the control buttons.

Table 9: Error Codes of the DIGITAL 2000 A

Display	Description of error	Measures
Err2	Calibration values damaged	Return station for repairs.
Err4	Sensor cold junction temperature/cable defective.	Return tool for repairs.
Err6	Tool cannot be identified.	Return tool for repairs.
Err7	Thermo-sensor/cable defective/overheated.	Return tool for repairs.
Err8	Heating element/cable defective/overheated.	Return tool for repairs.
Err9	Set parameter damaged.	Reset station.

6.3 Other Errors

Other errors may also occur, indicating possible defects in the soldering tool.
These errors are:

- The station permanently displays only the room temperature. In this case, there is a defect in the heating element or cable with thermocouple-controlled soldering irons (POWER TOOL, TECH TOOL).
- The station permanently displays an actual temperature that is too high. This error can occur during operation of CHIP TOOL. In this case, switch off the station and replace the tool with an intact one.

6.4 Changing the Heating Element

Before changing a heating element, switch off the device at the mains switch and pull the connecting plug of the soldering tool. Allow the device to cool for a few minutes.

TECH TOOL

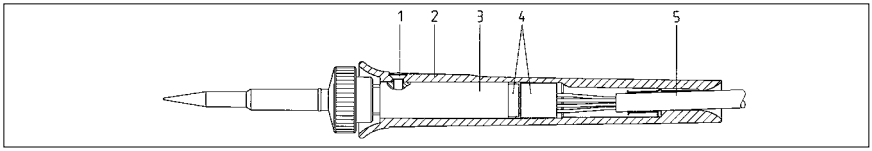


Abbildung 19

- Unscrew handle mounting screw (pos. 1/fig. 19).
- Pull off handle (pos. 2/fig. 19).
- Disconnect plug connection (pos. 4/fig. 19) between heating element and cable.
- Replace heating head (pos. 3/fig. 19).
- Restore plug connection (pos. 4/fig. 19) between heating element and cable.
- Push handle (pos. 2/fig. 19) onto heating head (pos.3/fig. 19).
- Screw in handle mounting screw (pos. 1/fig. 19).

CHIP TOOL – Dismantling steps

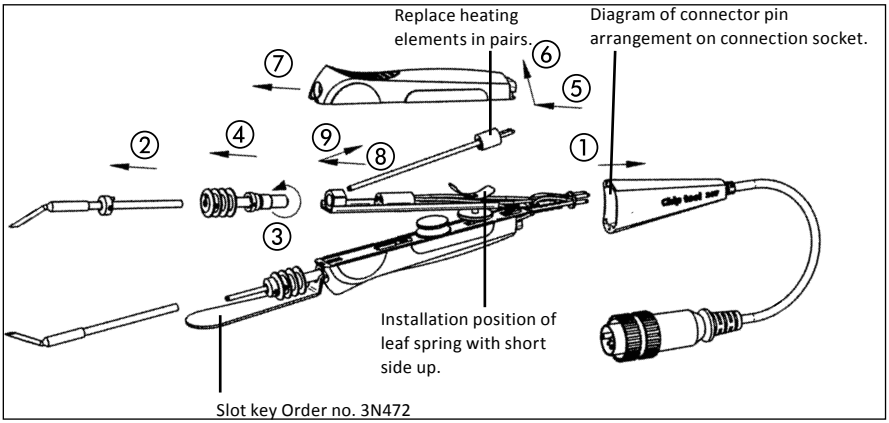


Figure 20

CHIP TOOL – Changing the heating element

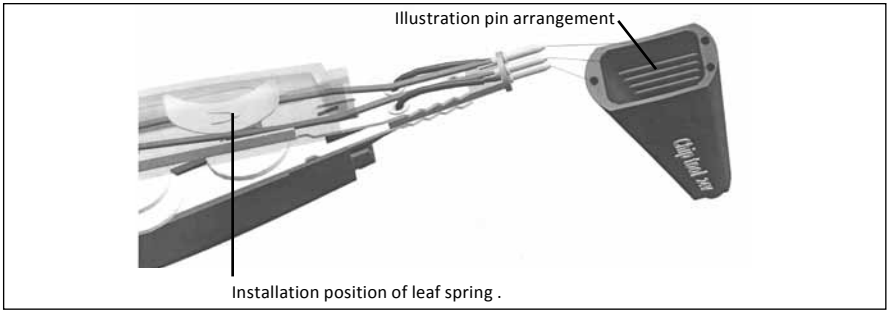


Figure 21

Switch off the soldering station and carefully pull off the connecting sleeve in the direction of the arrow (1). Pull off the de-soldering insert as described under point 5.3 (2). Unscrew the tip receptacle with the slot key (3N472) counterclockwise (3) and remove in the direction of the arrow. Push the handle approximately 2 cm in the direction of the arrow (5). Lift the hook out of the bearing plate from behind (6) and remove in the direction of the arrow (7). Pull the heating element out of the plug contact (8) and remove diagonally in the direction of the arrow (9).

- Only replace heating elements (042100J) in pairs.
- Assemble in the reverse sequence.
- Note the install position of the leaf springs – the short side is in the direction of the plug connection.
- The points on the lower side of the connection sleeve indicate the pin arrangement for plugging in.

POWER TOOL

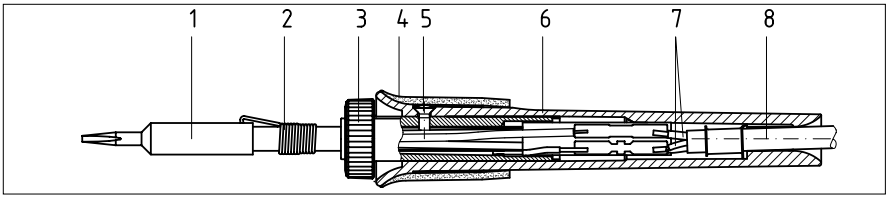


Figure 22

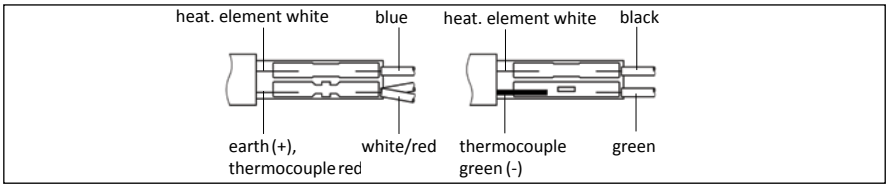


Figure 23

- Detach soldering iron from the station.
- Pull off cooled tip (pos. 1/fig. 22) and tip mount (pos. 2/fig. 22) from the heating element. Pull off handle pad (pos. 4/fig. 22).
- Unscrew handle mounting screw (pos. 5/fig. 22).
- Pull off handle (pos. 6/fig. 22).
- Disconnect soldering connection between the heating element (pos. 3/fig. 22) and the connecting wire (pos. 7/fig. 22).
- Change the heating element (pos. 3/fig.22) or connecting lead (pos. 8/fig. 22).
- Restore soldering connection between the heating element and the connecting wire (fig. 23).
- Assemble in reverse order.

X-TOOL

When changing the heating elements, proceed as described in the "Ersa X-TOOL" Operating Instructions (3BA00023-00).

7. Maintenance and Servicing

7.1 Important care jobs

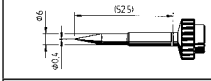
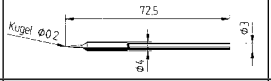
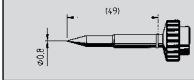
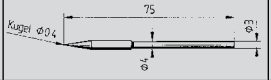
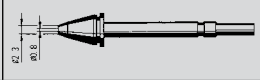
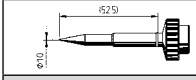
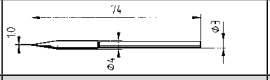
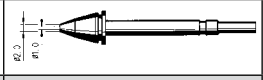
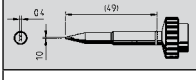
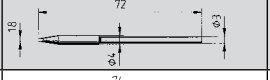
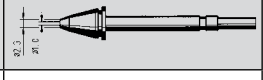
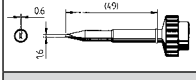
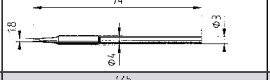
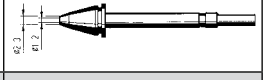
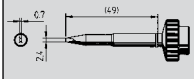
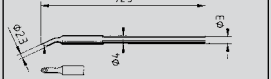
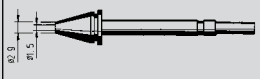
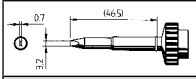
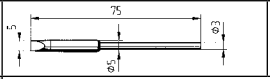
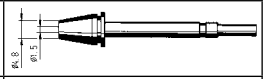
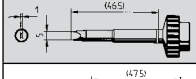
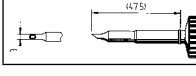
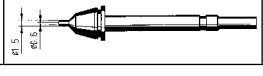
Note:

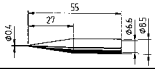
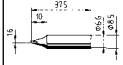
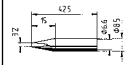
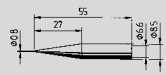
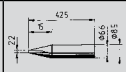
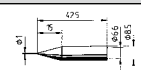
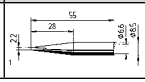
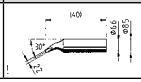
Only use genuine Ersa consumables and spare parts in order to ensure reliable function and to maintain the unit‘s warranty.

- Make sure that the soldering/desoldering tip is always tinned.
- If required, pierce the soldering/desoldering tip into the dry sponge prior to desoldering in order to remove used solder and flux residue.
- To obtain good electrical and thermal conductivity, occasionally remove the soldering tip and clean the heating element shaft with a brass brush.
- Make certain that the effectiveness of the ventilation holes is not impaired by a build-up of dust.

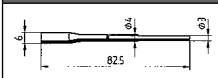
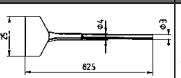
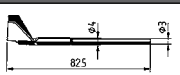
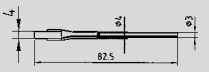
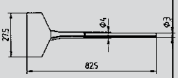
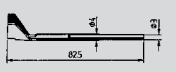
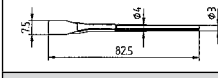
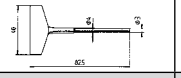
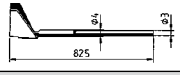
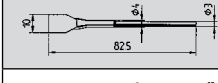
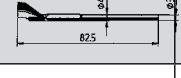
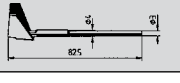
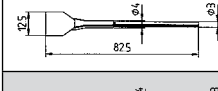
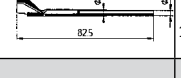
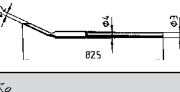
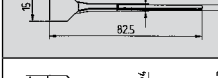
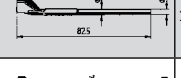
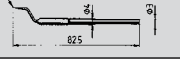
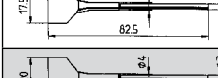
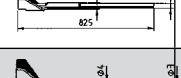
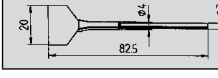
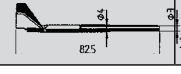
8. Replacement Parts and Ordering Information

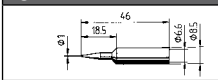
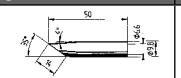
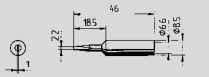
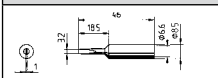
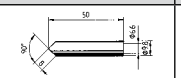
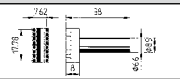
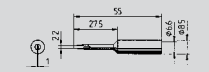
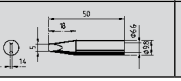
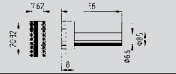
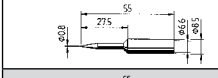
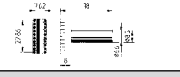
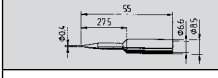
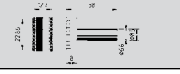
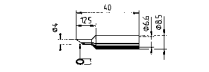
Designation	Order-No.
Stations	
DIGITAL 2000 A electronic station, 80 W, antistatic, compl. with soldering iron POWER TOOL	0DIG 20 A 84
DIGITAL 2000 A electronic station, 80 W, antistatic, compl. with soldering iron TECH TOOL	0DIG 20 A 64
DIGITAL 2000 A electronic station, 80 W, antistatic, compl. with soldering iron MICRO TOOL	0DIG 20 A 27
DIGITAL 2000 A electronic station, 80 W, antistatic, compl. with CHIP TOOL	0DIG 20 A 45
DIGITAL 2000 A electronic station, 80 W, antistatic, compl. with desoldering device X-TOOL	0DIG 20 A XT
Single parts	
DIGITAL 2000 A electronic station, 230/24 V, 80 W, antistatic	0DIG 203 A
Compressor unit for X-TOOL, antistatic	0CU 103 A
POWER TOOL soldering iron, 24 V, 80 W, antistatic with tip 842 CD	0840 CDJ
TECH TOOL soldering iron, 24 V, 60 W, antistatic with tip 612 AD	0640 ADJ
MICRO TOOL soldering iron, 24 V, 20 W, antistatic with tip 212 BD	0270 BDJ
Desoldering Pincette CHIP TOOL, 24 V, 2 x 20 W, antistatic, with tips 422 MD	0450 MDJ
X-TOOL desoldering iron, 24 V, antistatic, with desoldering tip 722 ED12	0720 ENJ
Holder for POWER TOOL, TECH TOOL or MICRO TOOL	0A 42
Holder for CHIP TOOL	0A 43
Holder for X-TOOL	0A 44
Tip changing tool	3ZT00164
Soldering/desoldering tip holder, comp. with 4 type 212 soldering tips & 8 type 422 tip sets	0SMD 8012
Replacement parts	
Heating element for POWER TOOL, 24 V, 80 W	084100J
Heating element forTECH TOOL, 24 V, 60 W	064100J
Heating element forMICRO TOOL, 24 V, 20 W	021100J
Heating elements (pair) for desoldering pincette CHIP TOOL, 24 V, 20 W	042100J
Heater insert for X-TOOL with thermocouple	072100J011
Heater insert for X-TOOL without thermocouple	072100J012
Viscose sponge for holder	0003B
Dry sponge for holder	0008M/SB
For other single parts for the X-TOOL, see the "Ersa X-TOOL" Operating Instructions (3BA00023-00).	

TECH TOOL ERSADUR soldering tips		MICRO TOOL ERSADUR soldering tips		X-TOOL ERSADUR desoldering tips	
Figure	**Order No.**	**Figure**	**Order No.**	**Figure**	**Order No.**
	0612 SD*		0212 SD*		0722 EN 0818
	0612 UD		0212 BD*		0722 EN 0823
	0612 BD		0212 CD		0722 EN 1020
	0612 CD		0212 ED		0722 EN 1023
	0612 AD		0212 KD		0722 EN 1223
	0612 KD		0212 MS		0722 EN 1529
	0612 ED		0212 VD		0722 EN 1548
	0612 GD				0722 EN 0615 S
	0612 TW				0722 EN 1018 S

POWER TOOL ERSADUR soldering tips					
Figure	**Order No.**	**Figure**	**Order No.**	**Figure**	**Order No.**
	0842 UD*		0842 YD		0842 ED
	0842 SD		0842 CD		0842 ID
	0842 BD		0842 KD		0842 JD

Consideration! Before you start to solder please remove the hose protection nozzle. More soldering tips upon request!

Desoldering pincette CHIP TOOL/ Desoldering inserts					
Figure	**Order No.**	**Figure**	**Order No.**	**Figure**	**Order No.**
	0422 ED 6 mm/SOIC 8		0422 FD7 25 mm/SOIC 40		0422 QD4 20 mm/ PLCC 52
	0422 FD10 4 mm/SOIC 16		0422 FD8 27,5 mm		0422 RD1 22,5x16,5 mm/ QFP 100
	0422 FD3 7,5 mm/SOIC 12/ SOT 23		0422 FD9 40 mm		0422 QD2 25 mm/ PLCC 68
	0422 FD1 10 mm/SOIC 16		0422 QD5 10 mm/PLCC 20		0422 QD7 30 mm/ PLCC 84
	0422 FD4 12,5 mm/SOIC 20		0422 QD1 12,5 mm/PLCC 28		0422 MD MELF/ MINIMELF
	0422 FD2 15 mm/SOIC 24		0422 QD6 15 mm/QFP, TQFP, TTQFP 80T25		0422 SD MICROMELF
	0422 FD5 17,5 mm/SOIC 28		0422 RD2 15 x12,5 mm/ PLCC 32		
	0422 FD6 20 mm/SOIC 32		0422 QD3 17,5 mm/PLCC 48		

POWER TOOL ERSADUR soldering tips		Reinforced soldering tips ERSADUR		IC desoldering inserts	
Figure	**Order No.**	**Figure**	**Order No.**	**Figure**	**Order No.**
	0832 BD		0832 GD		0832 C8/ 7,62
	0832 CD		0832 LD		0832 C14/ 7,62
	0832 ED		0832 MD		0832 C16/ 7,62
	0832 KD		0832 VD		0832 C18/ 7,62
	0832 SD				0832 C20/ 7,62
	0832 UD*				0832 C20/ 12,7
	0832 PW				

* ***Consideration! Before you start to solder please remove the hose protection nozzle. More soldering tips upon request!***

9. Warranty

Ersa has produced these Operating Instructions with the utmost care. Nevertheless, we cannot provide any guarantee for the content, completeness or quality of the information contained in this manual. The content is being continually updated and adapted to current conditions. All the data contained in these Operating Instructions, including specifications of products and procedures, have been obtained by us in good conscience and using the latest technical equipment. These specifications are provided without obligation and do not discharge the user from the responsibility of conducting an inspection before using the device. We accept no responsibility for violations of the industrial property rights of third parties or for applications and procedures that we have not previously expressly approved in writing. We reserve the right to make technical changes in the interest of product improvement. Within the bounds of legal possibility, liability for direct damage, consequential damage and third party damage resulting from the acquisition of this product is excluded.

Heating elements and soldering and desoldering tips are wearing parts not covered by the warranty. Deficiencies related to materials or manufacture as well as the proof of purchase must be indicated and confirmed before returning the goods, and this information included in the return shipment.

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