Operating Instructions

Automatic Wedge Welder
Wedge It Multi
starting from 1V55

Serial number:	Typenschild klein
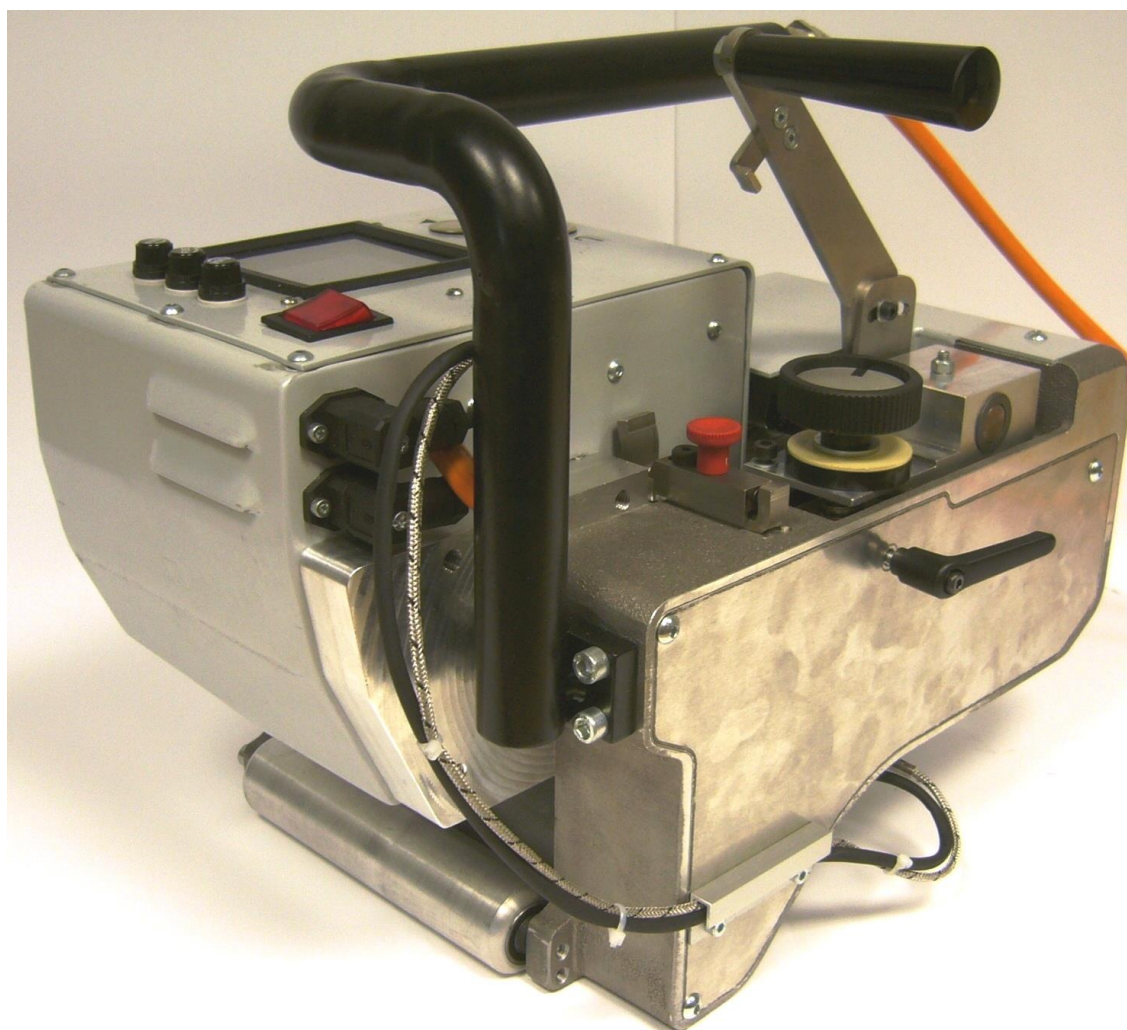
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Introduction

Wedge It Multi, developed and manufactured by MUNSCH Kunststoff-Schweißtechnik GmbH, is a machine with an own actuator, joining thermoplastic foils and similar materials by heat and pressure. The Wedge It Multi is developed for outdoor use, but may also be used indoor.

Attention

This machine is an electromechanical unit with moveable parts, operated by high pressure. Take care in using the Wedge It Multi, especially the moveable parts (no contact with clothes, hair, bodily parts).
Crushing hazard!!!

Contents

> **Note:** **These operating instructions must always be available to the machine operators.**
> **Make sure to read them carefully before placing the unit in service.**
> **<u>Very important!</u>**
> **Switch off the heating wedge whenever the unit is out of service for prolonged periods.**
> **This will prevent heating up of the machine due to radiating heat. Otherwise some machine components may develop high surface temperatures.**
> **Additional cooling of the heating wedge is <u>not allowed</u>**
> **(water, chilling agents or similar).**

Technical data:

Voltage	V	*230*
Frequency	HZ	*50/60*
Heating capacity	W	*2000*
Motor rating (brushless)	W	*100*
Temperature	°C	*Max. 450, infinitely variable*
Max. travel speed	m/min	*4.3, infinitely variable*
Max. welding pressure	N	*1200*
Dimensions LxWxH	mm	*380x300x320*
Weight	kg	*18.5*
Materials		*PE-HD, PE-LD, PE-C,PP,* *PVC (with stainless steel wedge)*
Material thicknesses	mm	*0.5-3.0*

Safety

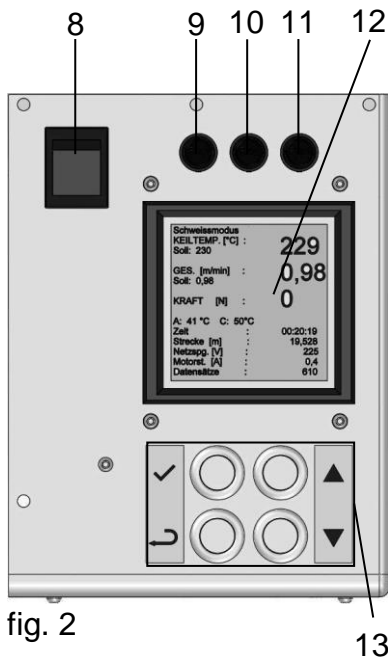|	
⚡	Danger to life when opening the unit due to exposure to live components. Disconnect the power supply (all poles) before opening the unit. A damaged connecting cable may cause fatal electrical shock. The rated voltage indicated on the unit type tag must match the mains voltage. If required, check with your electric utility.
🔥	Improper use of the welding unit poses a fire and explosion hazard, especially when working in the vicinity of flammable materials and explosive gases. Not suitable for use in explosion hazard areas!!!
♨	Risk of burns!!! Do not touch the heating wedge when hot. Always allow unit to cool down.
⏚	Protection Class I equipment Connect the unit only to power outlets equipped with a protective conductor. Each interruption of the protective conductor presents a hazard. Only use extension cables with the correct conductor cross-section and a protective conductor.
FI	FI switch required for personal protection.
👁	Unit may only be operated under observation. Heat may propagate to flammable materials outside the range of vision.
💧	Protect the unit from moisture and direct rainfall!

Product Description
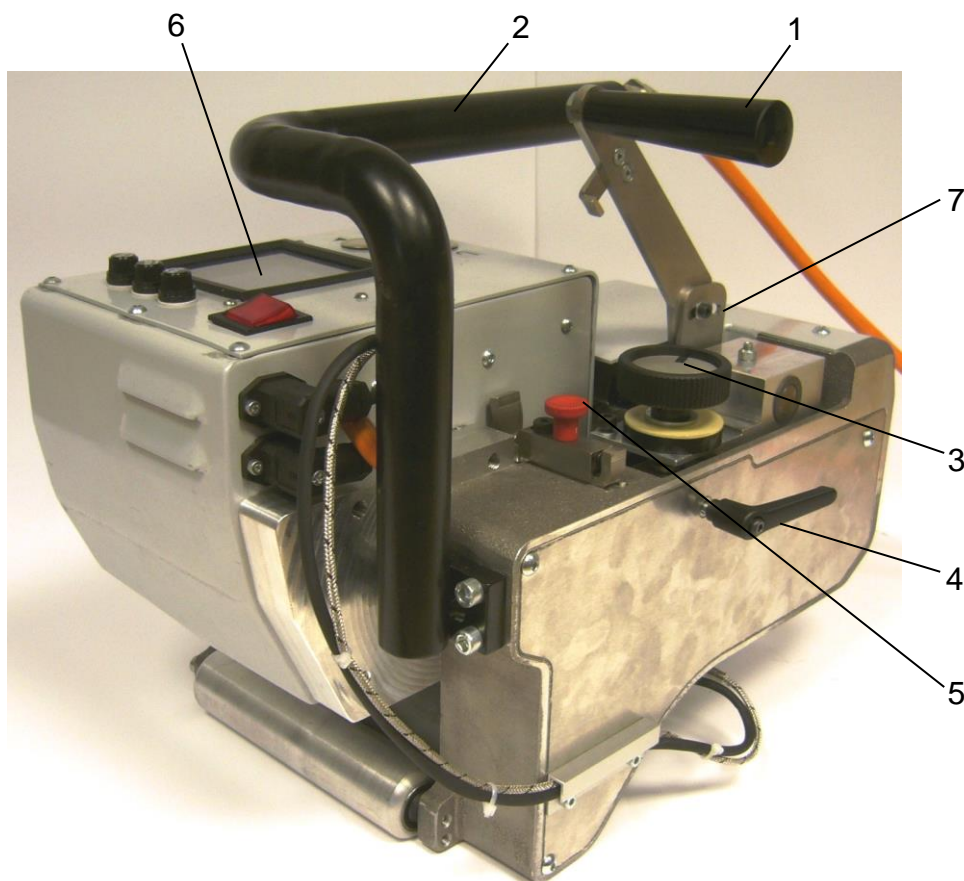
fig. 1

1 - Actuating lever

2 - Support bracket

3 - Adjusting wheel for fine-jacking force

4 - Locking lever for 3

5 - Locking bolt for actuating lever

6 - Front panel

7 - Adjusting for hot wedge position

Schweissmodus
KEILTEMP. [°C] :
Soll: 230   229
GES. [m/min] :   0,98
Soll: 0,98
KRAFT   [N]   :   0
A: 41 °C   C: 50°C
Zeit   :   00:20:19
Strecke [m]   :   19,528
Netzspg. [V]   :   225
Motorst. [A]   :   0,4
Datensätze   :   610

fig. 2

8 - Main switch

9 - Fuse for drive

10 - Fuse for front panel

11 - Fuse for heating element

12 - Display to show welding parameters

13 - Front panel

Welding direction

fig.3
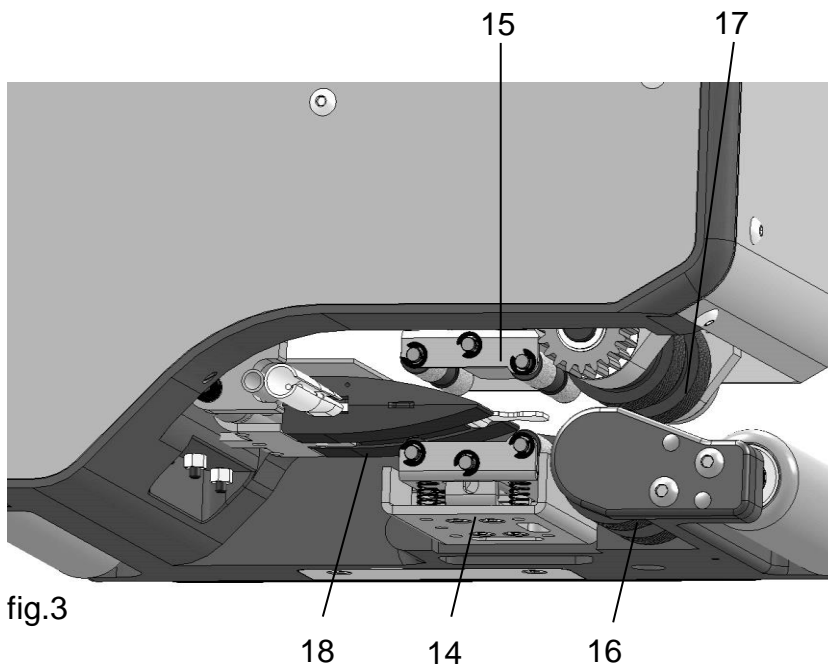
14 - Lower guide roller

15 - Upper guide roller

16 - Lower actuator roll

17 - Upper actuator roll

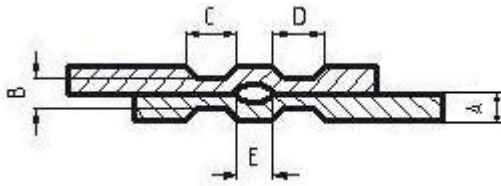18 - Hot wedge

Function

Overlap weld with air channel

fig. 4

The Wedge It Multi produces an overlap seam with a width of 50 mm (including air channel) at an overlap of approx. 130 mm.

(Other weld widths and welding seams without air channel are possible by using different hot wedges and pressure rolls.)

A: Sheet thickness

B: Thickness of weld seam

C: Part seam 1

D: Part seam 2

E: Air channel

Preparation of the Unit

A special preparation or configuration of the working unit is not absolutely necessary. Only the working temperature and the welding speed have to be adjusted and you have to do a test welding.

The joining pressure is created automatically with a spring packet by the machine.

Take a slat out of the test welding and check it (deep injection, continuity of the welding joint, fracture behaviour). After this test, please adjust temperature and welding speed.
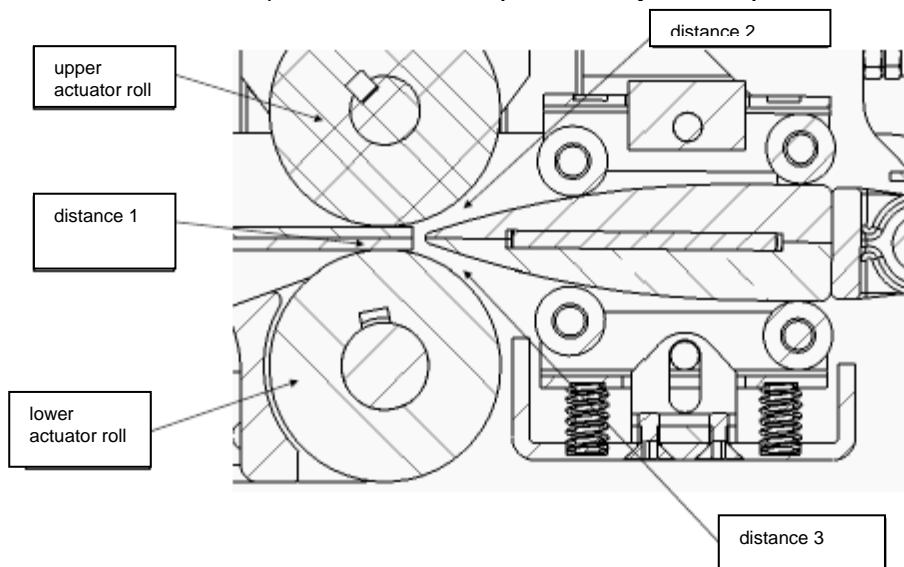

fig. 5

After changing the material thickness, the distance of the wedge to the actuator rolls has to be checked and adjusted.

Proceed as follows:

Please cut off two stripes of 50mm width and two stripes of 20mm width from the welding material.

Put the 50mm stripes between the rolls (distance 1).

Please make sure, that the material does not project too much into the machine. Otherwise it would get in contact with the wedge. Now close the machine by pushing the actuating lever (pos. 1, fig. 1), until it snaps into the locking bolt. Loosen the screw on the hot wedge positioning (pos. 7). By spinning the small bar, the position of the hot wedge may be changed.

Please check, whether the 20mm stripes now can easily get inserted above and below the hot wedge (distance 2 and 3).

Adjust the small bar until they can easily get inserted.

A too small distance to the hot wedge may cause an uneven, unstable welding.

ATTENTION!!!

If the distance between hot wedge and actuator rolls is too high, your welding will be of low quality.
If it is too low, the machine gets too high impact.

NOTE:

Before every welding procedure, check the machine for damages.
Check the actuator rolls and the hot wedge for pollution and remainders.
The welding joint must be clean in the area of the overlapping between the foils as well as above and below the foils.

When operating the unit with power supply from a generator set, make sure that the generating capacity is sufficient.

Attention!!
Never leave the unit unattended and never lay it down for prolonged periods with the heating current activated. This will cause unnecessary heat development and ultimately damage to the machine components.

Attention!!
Never allow the machine to run with the nip rollers locked in place and no material in the machine. This will destroy the nip rollers and the wedge assembly.

Menu guide

Activating the machine, the main menu appears on the display (fig. 7).
On the left hand the German version is shown, which is the standard set-up. To change the language, see chapter "Configuration".
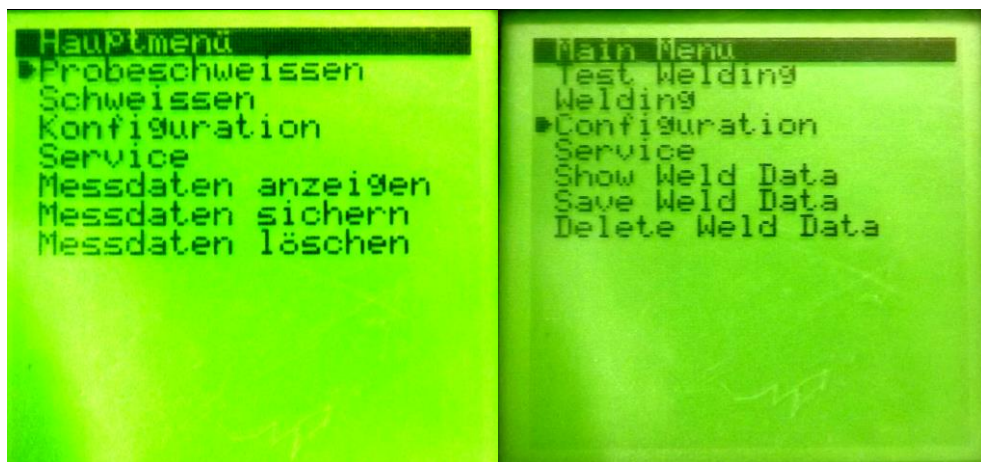

fig. 6

Menu items

Designation	Description
Test Welding	With this point of menu, you can make a test welding. Additionally you can make a temperature alignment.
Welding	With this point of menu, you make regular weldings
Show Weld Data	Only on machines with data pick up, shows measured data
Save Weld Data	Only on machines with data pick up, backups the measured data
Configuration	Saved by Code. Only for qualified personal.
Service	Saved by Code. Only for qualified personal.
Delete Weld Data	Saved by Code. Only for qualified personal.

Button functions

Button	Menu/Setting	Name	Description
	Menu	Up	Wandering upwards in the menu
	Value setting		Upscaling of a value
	Menu	Down	Wandering downwards in the menu
	Value setting		Downscaling of a value
	Menu	Back	Jumping back to the previous menu
	Value setting		Jumping back in the line
	Menu	OK	Confirming the choice
	Value setting		Jumping forward in the line

Configuration

Please select the menu item "Konfiguration" from the main menu (fig. 7) and confirm with "OK". Now you will be asked for a password.

Please change the password from "0000" to "8980" by pushing the "up" and "down" buttons and carry on to the next digit by confirming with "OK". You will not see any numbers but only stars. The numbers of each adjustable digit are sorted like the locker of a briefcase.

fig. 7

Proceed as follows:

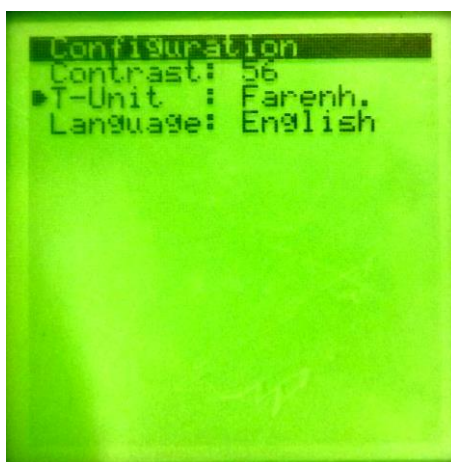| Old number	0		0		0		0	
Instruction	2x „Down"	OK	1x „Down"	OK	2x „Down"	OK	-	OK
New number	8		9		8		0	

fig. 8

Now the configuration menu appears where you can change the display contrast, the unit of temperature and the language of menu.

If you are working at low outdoor temperatures, it could be reasonable to higher the display contrast and if you are working at high outdoor temperatures, it should be lowered.

To change a value please select it and confirm with "OK". After having changed it please confirm again with "OK".

Return to the main menu by pressing "Back".

Menu item "Test Welding"

Select the menu item „Test Welding" in the main menu (fig. 7) with the cursor and the up-/down- buttons and confirm your choice with the "OK"-button.

The adjust menu "Test Welding" appears (fig. 8).

To align the temperature, choose "Adjust Temp. …" (page 12). After aligning the temperature please return to the menu "Test Welding".

With the cursor you have to select the value you would like to change. Confirm with OK and change the value on the designated position, using the up-/down-buttons.

fig. 9

Press the OK-Button, until you are at the beginning of the line again.
After the adjustment of the values, please select "Start Action…" and confirm with "OK".
The screen "Test Welding" appears (fig. 9).

After reaching the target temperature, the drive can be started (below „Data Sets" appears „Motor-Start – OK").
Press "OK" to start the drive.
You may also change the welding parameters during the welding procedure. See therefore chapter "Changing the welding parameters" (page 15).

fig. 10

These values are shown:

Value	Description
Weld temperature (setpoint / actual value)	The machine heats up to the setpoint and holds the temperature. The drive can only be started after reaching this temperature.
Speed (setpoint / actual value)	After the start of the drive the setpoint and the actual value of the welding speed are shown.
Force	After closing the machine, the used pressure is shown (only on machines with measurement of pressure)
Time	Passed time since the start of the drive
Distance	Passed distance
Voltage	Actual voltage
Data Sets	Shows the number of recorded datasets

Menu item „Adjust Temp. …"

It is recommendable to make a temperature alignment, if environmental conditions or the wedge material have considerably changed.
We suggest a daily temperature control.
Please make a temperature alignment, if the measurement and the shown value do not conform.

Proceed as followed:

Please select the menu item "Test Welding" in the main menu and set the designated temperature. Now choose the item "Adjust Temp…" and confirm with "OK".
The normal face of the menu "Test Welding" appears.
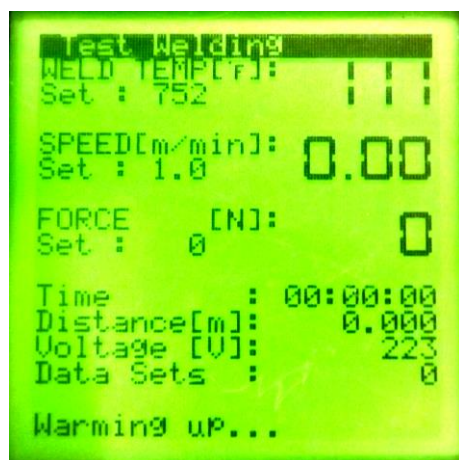
fig. 11

The hot wedge welder now heats up to the set temperature. After reaching the designated temperature, please control the shown temperature by measuring the temperature of the contact areas of the hot wedge with a surface sensor. Contact areas are the regions getting in contact with the sheets during the welding procedure.

fig. 12

The actual temperature gets adjustable by pushing the return-button.

Set the measured temperature by pushing the up-/down-buttons and confirm with "OK".
Please perform the temperature alignment a second time. The machine now generates a correcting coefficient and adjusts the controller.
Proceeding a second temperature alignment, the measured value should conform with the shown temperature.

Menu item „Welding"

Select the menu item "Welding" in the main menu (fig. 7) and confirm with „OK".
The adjust menu "Welding" (fig. 12) appears.

fig. 13

A number of values have appeared on the display. If you performed a test welding, the machine overtook the values for temperature and speed.
In other cases you can change them in the same way as described in "Test Welding".

Name, line, date and time (only on machines with data pick up)

Designation	Description
Name	Here you can enter the name of the construction site or of the worker. By pressing "Up"/"Down" you can set the letter or digit. [1] With "OK" you go one sign forward.
Index	Here, all of the welding joints are numbered. At every start of the machine, it increases the number (beginning at "1").
Date	Here you can see/set the actual date.
Time	Here you can see/set the actual time.

If all inputs are confirmed, change to the item "Start action", and confirm with "OK".

1) The characters are sorted as follows: a;…;z;A;…;Z;0;…;9;_
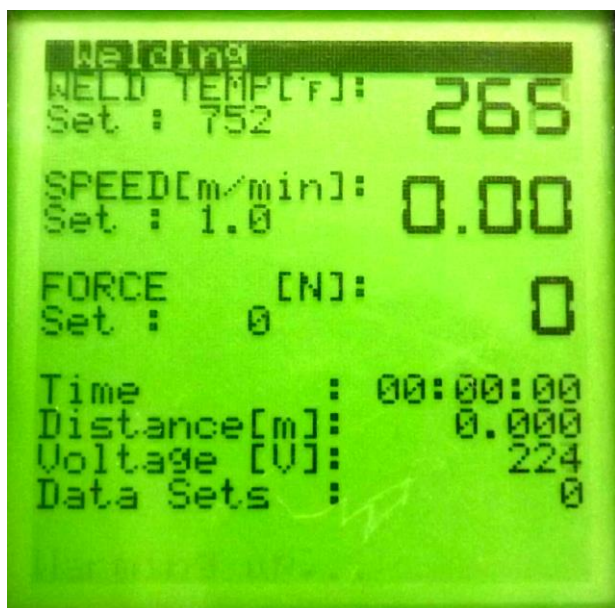
The screen „Welding" appears (fig. 13).

fig. 14

Reaching the setpoint-temperature, the drive can be started ("Warming up" changes to "Motor-Start – OK").

The screen looks the same way as at "Test welding".
All welding parameters may be observed and changed (if needed) during the welding procedure.
Please see "Changing the welding parameters during the welding procedure".

Leaving the tolerance of the temperature, the machine generates an audible signal.

Setting the geo membranes

The input of geo membranes works the same way like on other machines.
It is recommended to pull the actuating lever (fig. 1, pos. 1) until the end position.
The hot wedge will thereby be lifted and the insertion of the lower sheet gets simplified. Put the lower sheet from the left side to the right until the stop into the machine.
Afterwards you have to put the upper sheet from the right side to the left until the stop into the Wedge It Multi.
Start the drive and then push the actuating lever (fig. 1, pos. 1) until the snap in to the front.

The pressure- / actuator-rolls now press on the foil and the hot wedge is in position.
The welding procedure is started.

Changing the welding parameters during the welding procedure

It is possible to change the parameters of temperature and speed during the welding procedure. To change the setpoint-speed, please actuate shortly the up-/down-buttons. The speed changes in steps of 0.1m per minute. To change the setpoint-temperature, please push the "OK"-button and keep it down. Now actuate shortly the up-/down-buttons.

Attention!!! Keeping the up-/down-buttons down causes rapid changing of the speed value.

After the regulation, the display asks you to confirm the change. Therefore please push again the "OK"-button and keep it down. Now push the "Return"-button.
The machine has accepted the change of the set point.
Without confirmation, there may appear an error message (optically and acoustically), because the machine compares the old values with the new speed / temperature.

Notification for machines with data record:

By confirming the change of the parameter, the machine creates a new partially line with the new parameters, to avoid the appearance of an error message.

The new partially line is structured in the protocol as "linenumber.changenumber". In the head of the protocol are mentioned the changed parameters.

If you had to stop welding, you can reset the line number in the menu item "Welding" when you restart.
In the welding protocol, the new welding is differentiated from the old one by time and date.
To change the line number, please go to the menu item "Welding" and select the line by actuating the up-/down-buttons. Confirm with "OK". Now you can set your line number with the up-/down-buttons and confirm the change with "OK".

Backup and welding protocol

(only machines with data pick up)

Technical information

Backup-medium	Internal memory
Backup-medium for data backup	SD-flash memory
Maximum capacity of the SD-card	2 GB
Supported manufacturers	DeLOCK
Formatting	FAT 32
Maximum data-amount (at 5cm interval)	2500 km
File format	.txt

To be able to evaluate the measured data, you need Microsoft Office Excel 2003 or higher version.

Backup of measured data

Please insert the supplied SD-flash memory card as shown on the machine with power contacts to the top into the card reader, until it locks in.
Now choose in the main menu the item "Save Weld Data".

fig. 15

After the data backup you may remove the SD-flash memory card by pressing on it again.
Finally you may save the data on your PC or notebook.
Now you can convert, save and print the data with the on the flash memory card supplied evaluation software.
Please look to the following chapter "Creating a welding protocol".

Creating a welding protocol

After copying the data from the SD-flash memory card to the PC, you may look at it.
The measurements are structured as follows:

The single values are separated by commas (,).
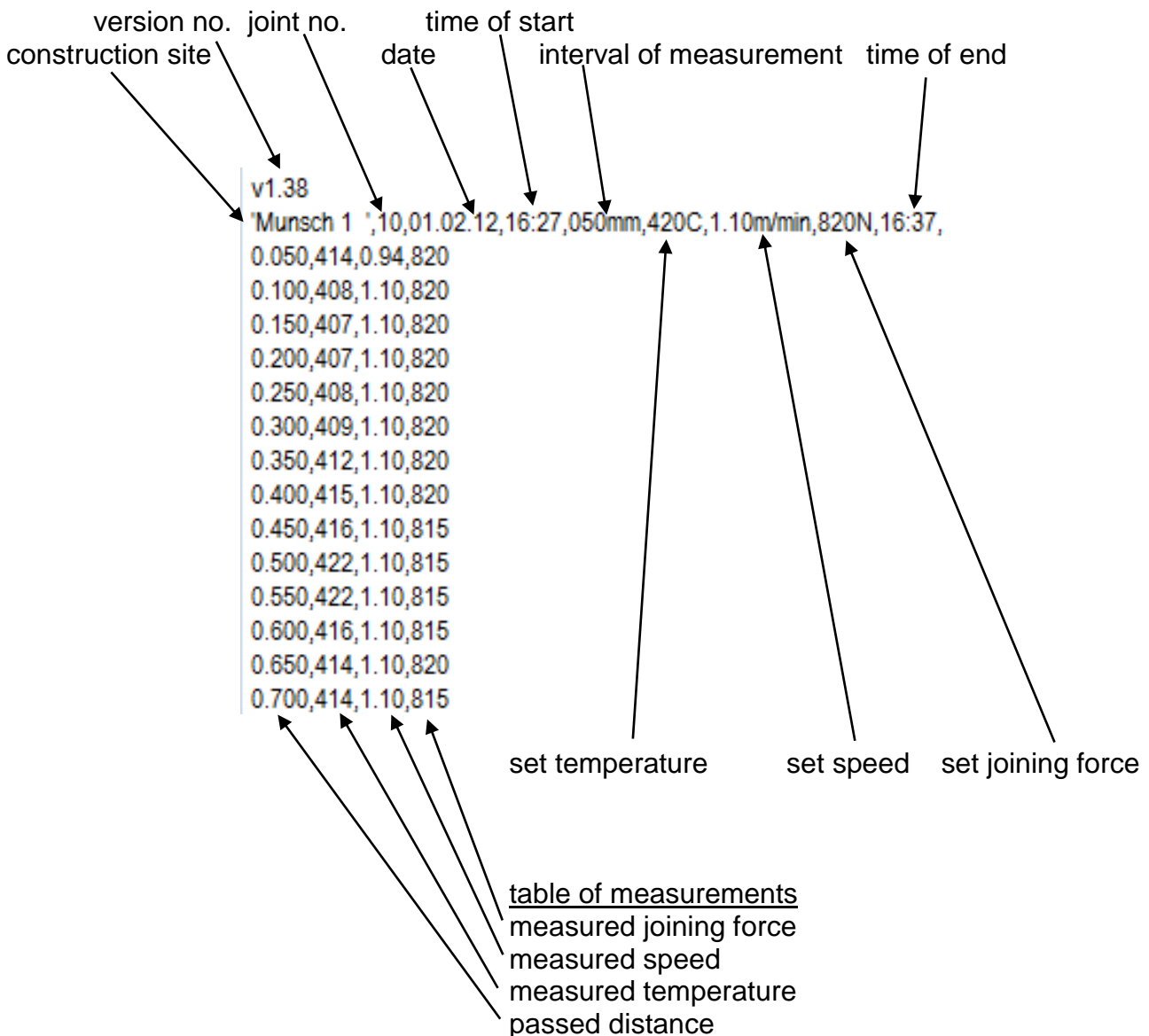
fig. 16

Creating the welding protocol

1. Please open the supplied evaluation software.

2. Click on (…) to choose the data.
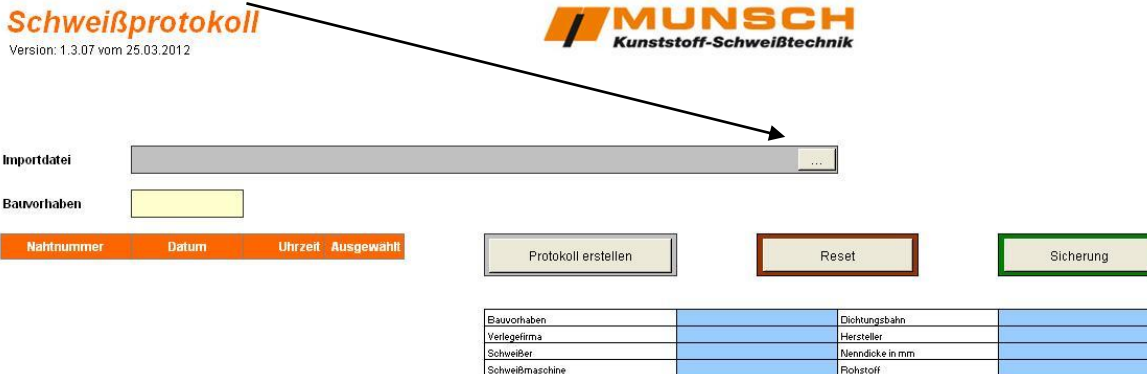
fig. 17

3. Select the file you wish to handle and click "Öffnen".
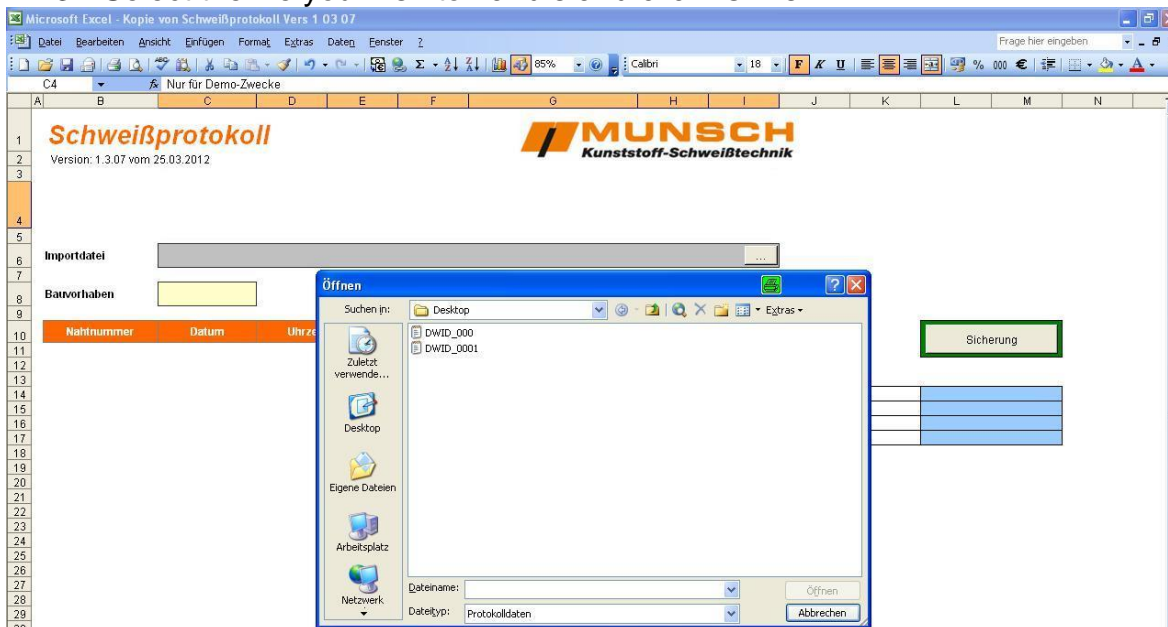
fig. 18

4. Select the construction site / data line. Therefore open the dropdown menu and select the designated line.
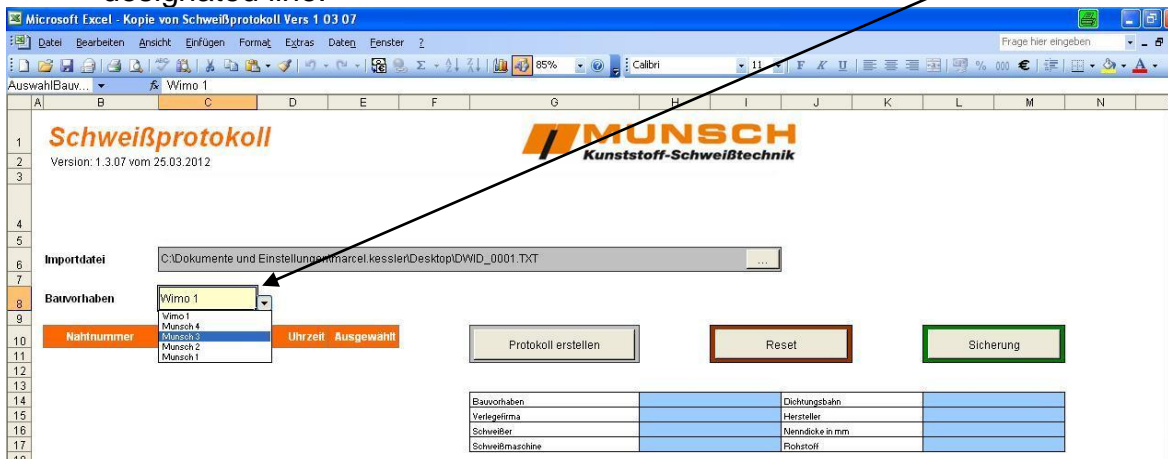
fig. 19

5. A list of all at this building site recorded welding joints appears. By setting or deleting of an "x" in the last column, single joints can be selected for the protocol.

fig. 20

6. Please fill in the blue highlighted gaps and save the protocol by a click on "Protokoll erstellen".
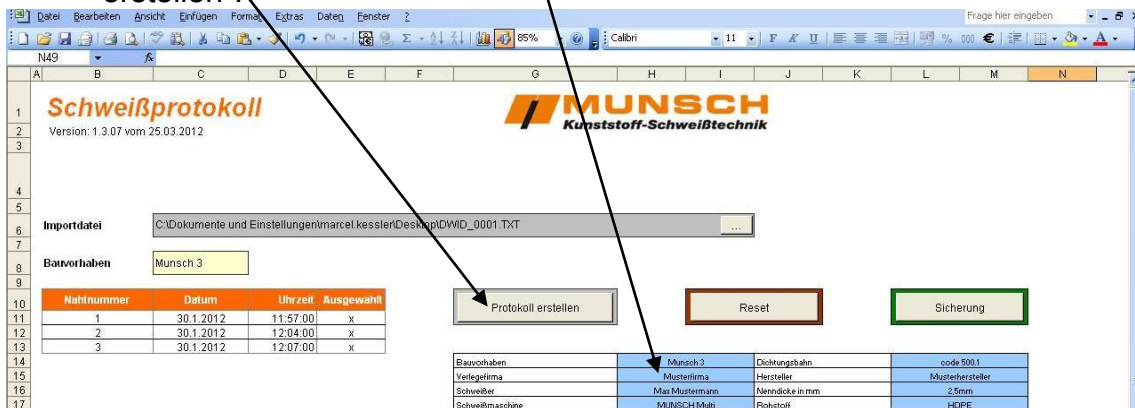
fig. 21

7. In the footer appears a number of tabs.
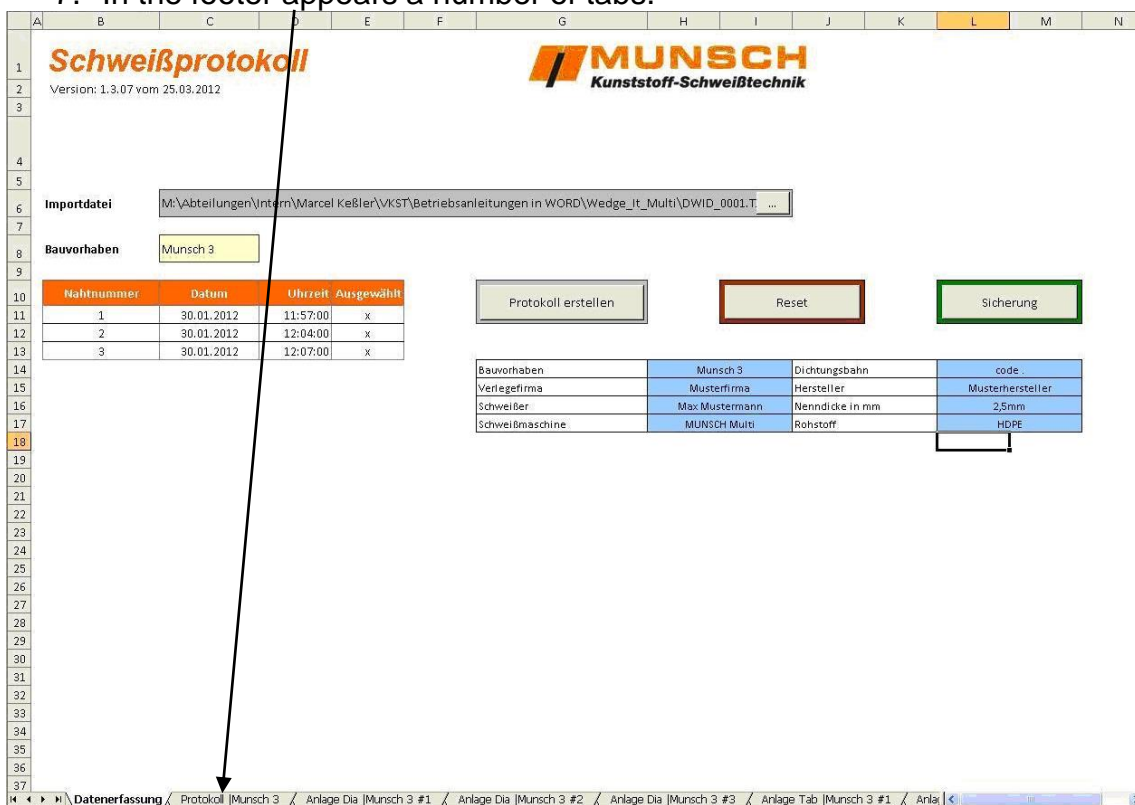
fig. 22

Protokoll: A protocol gets created with the inserted data and the sheet number in its head. After that exists the possibility to fill in the environmental conditions and the conditions of the welding sheets. After that follow the set values and measured values for maximum 4 welding joints. The blue areas at the bottom may be used for comments and signatures.

If you welded more than 4 joints, the software creates for every 4 joints a new sheet of welding protocol.

fig. 23

Anlage Dia: In this window you can see, specifically for every joint, the graphical evaluation. Mentioned are the trends of temperature, speed and pressure. Above these graphs, you'll find the head data of the welding protocol, the joint number, and the start- and end-time of the welding joint. Below the graphs, you'll see the maximums and minimums of the graphs.
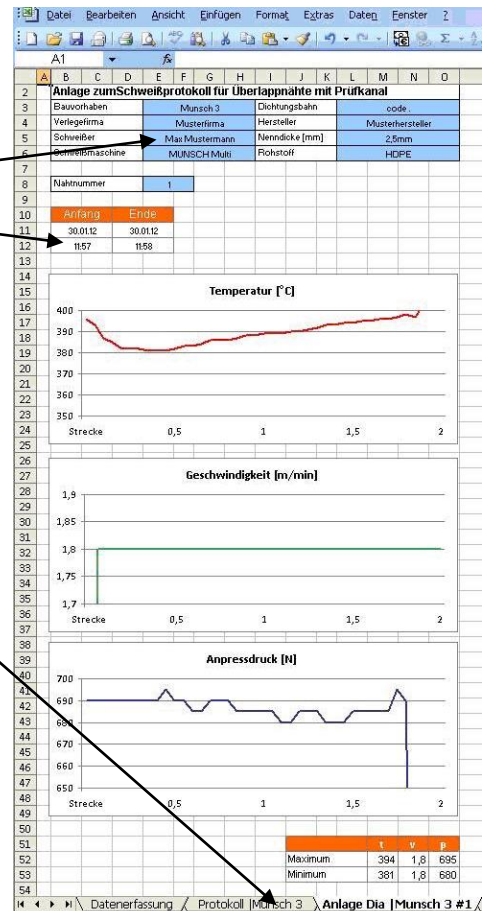

fig. 24

Anlage Tab: The window „Anlage Tab" shows you for each welding joint the measured data in figures. Above the lookup table is the head data of the welding protocol, the joint number, and the start- and end-time of the welding joint. Below the table, you'll find the maximums and minimums of the values.

fig. 25

Optional:

8. Click on „Sicherung", to backup the welding protocol and the graphs and tables to a secured file. You prevent an overwriting of your evaluated data.

fig. 26

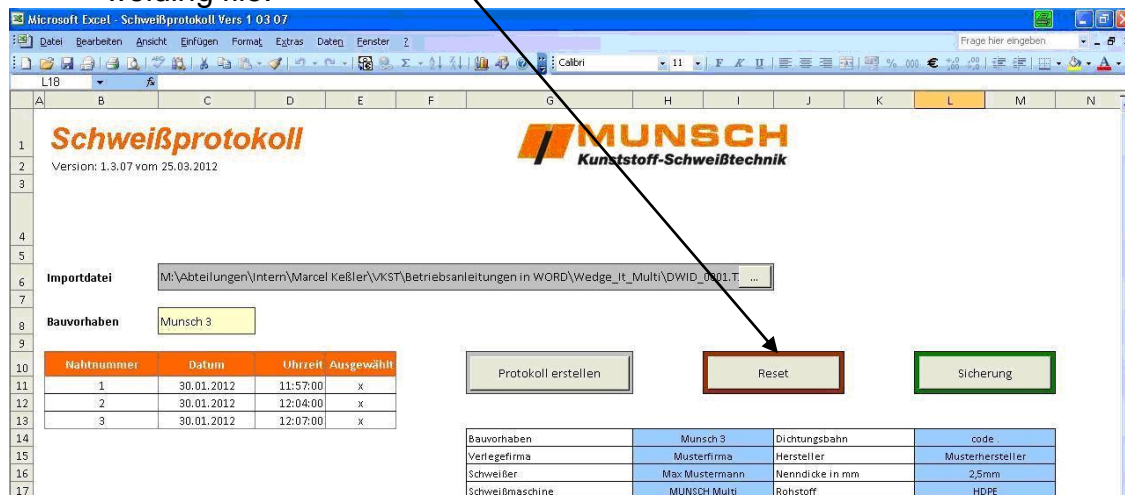9. By clicking on „Reset", you empty the window. Now you may load and evaluate a new welding file.

fig. 27

Deleting of measured data
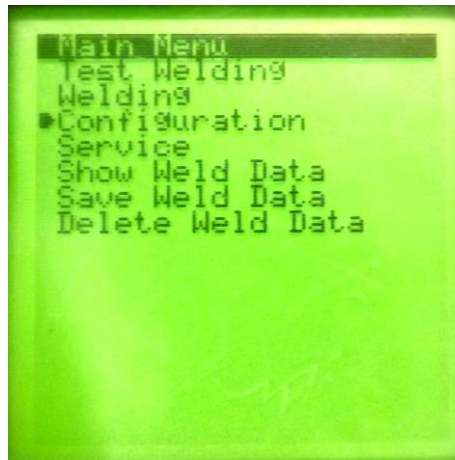
fig. 28

Please select "Delete Weld Data" from the main menu and confirm with "OK".
Now you will be asked for a password.
Please change the password from "0000" to "8980" by pushing the "up" and "down" buttons and carry on to the next digit by confirming with "OK". You will not see any numbers but only stars. The numbers of each adjustable digit are sorted like the locker of a briefcase.

fig. 29

Proceed as follows:

Old number	0		0		0		0	
Instruction	2x „Down"	OK	1x „Down"	OK	2x „Down"	OK	-	OK
New number	8		9		8		0	

Please confirm the now appearing questions for the deleting with "OK".

Service and Repair

Repairs shall be carried out exclusively by MUNSCH Kunststoff-Schweißtechnik GmbH. Any warranties for units which are no longer in the original condition shall be expressly excluded. The units may not be modified and/or changed in any way whatsoever. Any liability for damage resulting from improper use or normal wear and tear of the units shall be excluded.

Typenschild groß
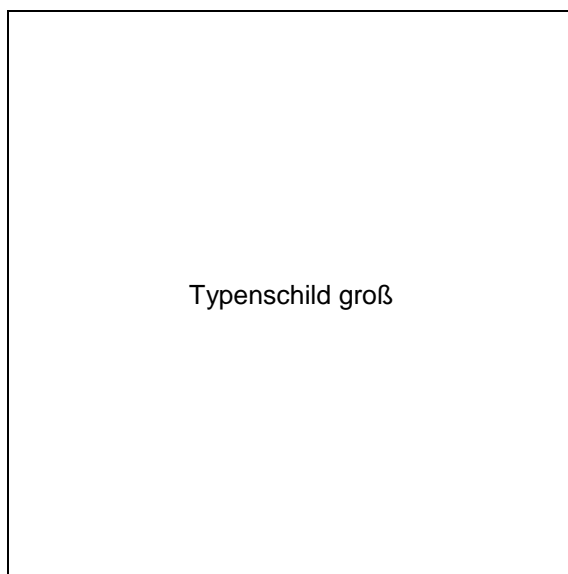
Date	Operating hours	Type of repair	Carried out by:

EG-Konformitätserklärung des Herstellers
nach der EG-Maschinenrichtlinie 2006/42/EG Anhang II, Nr. 1 A

EC-Declaration of Conformity by the Manufacturer
as defined by machinery directive 2006/42/EC, Annex II, No. 1 A

MUNSCH Kunststoff-Schweißtechnik GmbH
Im Staudchen
D-56235 Ransbach-Baumbach
Germany

Mr. Johann Dausenau,
Kunststoffschweißtechnik GmbH,
is authorised to compile the technical documentation.

We hereby declare that the wedge welders

Machine type:	Wedge welder	Wedge welder	Wedge welder	Wedge welder
Type designation:	WEDGE-IT-MICRO	WEDGE-IT	WEDGE-IT-LE	WEDGE-IT-MULTI

are in accordance with all relevant provisions of the EC Machinery Directive.

The following harmonised standards (or parts of these standards) were applied:

☒	EU Machinery Directive 2006/42/EC	☒	DIN EN 13732-1: 2008
☒	DIN EN ISO 12100: 2010	☐	

The wedge welders are in accordance with the following EC-directives:

☒	EU Low-Voltage Directive 73/23/EC	☒	EU EMC Directive 89/336/EC
☒	EN 60204-1 (VDE 0113 Part 1): 2011	☒	DIN EN 55014-1: 2012
☒	EN 61029-1 (VDE 0740 Part 500): 2010	☒	DIN EN 55014-2: 2009
☒	DIN EN 62638	☒	EN 61000-4-11:2004
☐		☐	

This industrial tool complies with the aforesaid standards insofar as it is used at the contractually agreed conditions. The operator is responsible for this.

In the event of any modifications to the machine/unit or use not as intended, this declaration becomes invalid unless the manufacturer's prior written approval has expressly been given.

Ransbach-Baumbach, 31.01.2013   Dipl.-Ing. Stefan Munsch
                                       Managing Director