

**LEISTER**®

**ALLIED**  
POWER TOOLS

# WELDPLAST S4





Read the operating instructions carefully before starting the device and keep them for future reference.

## Leister WELDPLAST S4 Extrusion Welder

### Application

Welding PE and PP thermoplastics for applications in

- container engineering
- pipeline construction
- plastic fabrication
- landfill sites



### Warning



Opening the device is **extremely dangerous**, since live parts and connections are exposed. Remove the plug from the socket before opening the device. Electro-conductive material (e.g. PE-EL) may not be welded.



**Danger of fire and explosion** if the hand extruder is used incorrectly (e.g. overheating of material), particularly near combustible materials and explosive gases.



**Danger – can cause burns!** Do not touch bare metal parts and emerging material while hot. Allow the device to cool. Do not direct stream of hot air or emerging material towards people or animals.



Connect device to **power socket with protective earth conductor**. Any break in the protective earth conductor inside or outside the device is dangerous!  
**Only use extension cables with a protective earth conductor!**



### Caution



The **nominal voltage** indicated on the device must correspond to the mains voltage. If power failure occurs, the main switch and drive must be switched off (release locking device).



When using the device on building sites, a **residual current circuit breaker** is **essential for the safety** of persons there.



The device must **not be left unattended** when in use. Heat can reach combustible materials which are out of sight.  
The device may only be used by **trained personnel** or under their supervision. Children may not use the device under any circumstances.



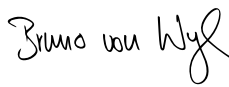
**Keep away from wet and damp areas.**

## Conformity

Leister Technologies AG, Galileo-Strasse 10, CH-6056 Kaegiswil/Switzerland confirms that this product in the version put into circulation by us, fulfils the requirements of the following EC directives.

Directives : 2006/42, 2014/30, 2014/35, 2011/65  
Harmonised standards EN 12100, EN 55014-1, EN 55014-2, EN 61000-6-2, EN 61000-3-2, EN 61000-3-3, EN 62233, EN 60335-1, EN 60335-2-45, EN 50581

Kaegiswil, 17.10.2017



Bruno von Wyl, CTO



Christoph Baumgartner, GM

## Disposal



Electrical equipment, accessories and packaging should be recycled in an environmentally friendly way. **For EU countries only:** Do not dispose of electrical equipment with household refuse!

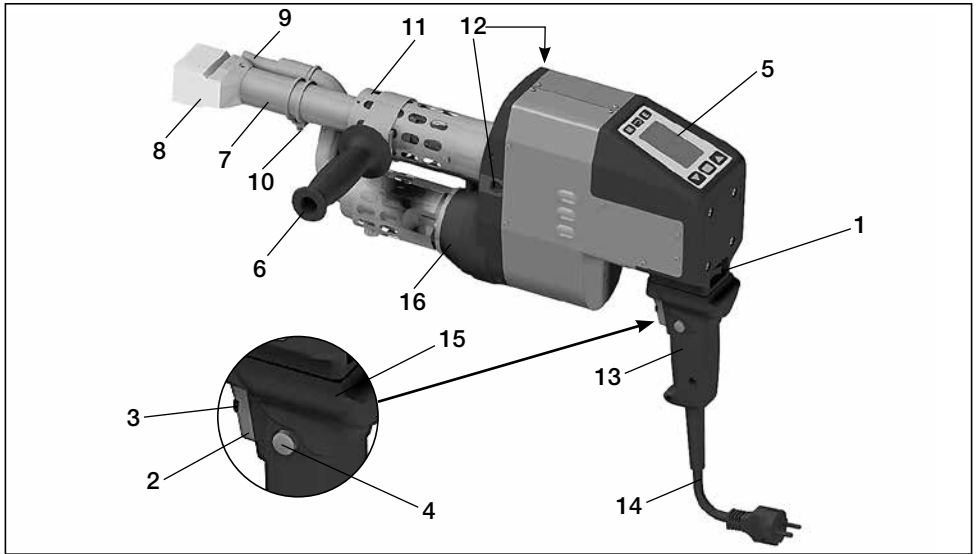
## Technical Data

Voltage	V~	230
Power consumption	W	3680
Frequency	Hz	50/60
Air volume (20°C)	l/min	ca. 400 with nozzle no. 2 (page 28)
Air temperature	°C	max. 350
Plasticizing temperature	°C	max. 260
Vibration acceleration	$a_h$ (m/s <sup>2</sup> )	<2.5 (K = 1.5m/s <sup>2</sup> )
Size L × W × H	mm (without welding shoe)	560 × 110 × 300
Weight	kg (without power supply cord)	8.7
Conformity mark		CE
Protection class I		⊕

	Ø3–Ø4 mm	Ø4–Ø5 mm
Welding rod mm (in accordance with DVS 2211)	Ø3 / Ø4 ± 0.3	Ø4 / Ø5 ± 0.3
Ø3; Welding output [kg/h] (average values at 50 Hz)	PE 1.5–2.2 / PP 1.4–1.9	
Ø4; Welding output [kg/h] (average values at 50 Hz)	PE 2.2–3.8 / PP 2.2–3.4	PE 1.5–2.2 / PP 1.4–1.9
Ø5; Welding output [kg/h] (average values at 50 Hz)		PE 2.2–3.8 / PP 2.2–3.4

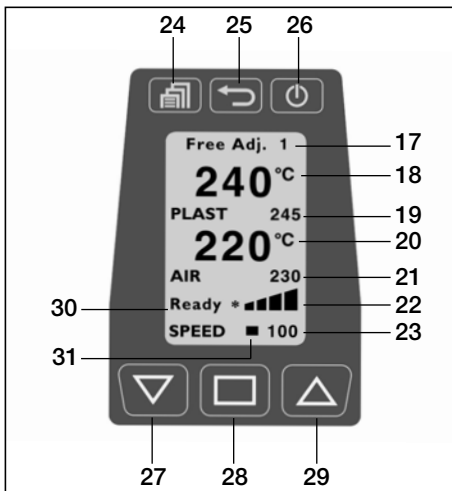
The right to make technical changes is reserved

## Description of tool



- |                       |                        |
|-----------------------|------------------------|
| 1 Main switch         | 9 Pre-heating nozzle   |
| 2 Motor on/off switch | 10 Tube clamp          |
| 3 Potentiometer       | 11 Protective tube     |
| 4 Locking device      | 12 Welding rod feeding |
| 5 Display             | 13 Tool handle         |
| 6 Handle              | 14 Power supply cord   |
| 7 Jacket heating      | 15 Hand protection     |
| 8 Welding shoe        | 16 Hot-air blower      |

## Operating unit



- |                           |
|---------------------------|
| 17 Welding program        |
| 18 Actual value plast     |
| 19 Set value plast        |
| 20 Actual value air       |
| 21 Set value air          |
| 22 Bar display            |
| 23 Welding output display |
| 24 Menu key               |
| 25 Back key               |
| 26 Enter key              |
| 27 Down key               |
| 28 Select key             |
| 29 Up key                 |
| 30 Status display         |
| 31 Cursor                 |

## Work environment / Safety



Before putting into operation, check **power supply cord (14)** and connector as well as extension cable for electrical and mechanical damages.

The hand extruder must not be used in areas where there is danger of explosion or flammable materials. Ensure a safe posture during work. The **power supply cord (14)** and the welding rod must be free to move and must not obstruct the user or third parties during work.

Hand-Extruder auf feuerfeste Unterlage stellen! Heisse Metallteile und Warmluftstrahl müssen genügend Abstand zu Unterlage und Wänden haben.

- For starting operation of the hand extruder and setting it down, Leister offers a comfortable **universal tool stand** with integrated hot-air hood and welding rod dereeler holder (see Accessories).

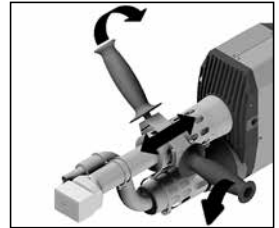


- In the case of interruptions to welding work, the drive motor can be switched off with the **motor on/off switch (2)**.
- Place the hand extruder with the handle appropriately positioned and tightened on a stable fireproof surface as illustrated.



## Adjusting the handle

- The clamp is loosened by turning the plastic handle counter-clockwise and the handle can be positioned in the ideal working position by sliding back or forwards.
- The handle can also be rotated for left/right handed users (see also Welding direction left / right)



## Power supply

- When using an extension cable, take care to ensure the minimal cable cross-section.
- Extension cables must be approved for the working environment (e.g. outdoors) and labelled accordingly.
- If a generator is used to supply electricity, the rated power of the generator must be 2x the rated power of the hand extruder.

Length [m]	Minimum cross-section (at ~230V) [mm <sup>2</sup> ]
Up to 19	2.5
20-50	4.0

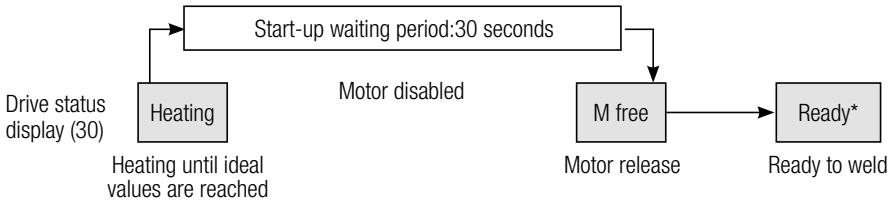


Connect tool to rated voltage.

Rated voltage stated on the device must correspond to line/mains voltage.

## Welding preparation

- The temperature control prevents the hand extruder from being started while it is cold.



- The device heats up to the last ideal temperature set directly after switching on the **main switch (1)**. When the ideal temperature is reached, a counter on the status display counts back from 30 seconds to zero. After this start-up process is complete, the device is ready to weld (status Ready\*). The hand extruder takes around 5 minutes to reach its temperature range.

### Software and menu guide

- The hand extruder Weldplast S4 is provided with a convenient user software, making work easier for the user. Tap lightly on the keys to operate them.

	Workspace functions	Menu selection functions
	Menu selection	Menu selection / Back to workspace
	Set contrast	Back to workspace (changes not saved!)
	Heating on/off	Select and back to workspace
	Change cursor position	Select
	Selected value [+]	Cursor up / Selected value [+]
	Selected value [-]	Cursor down / Selected value [-]

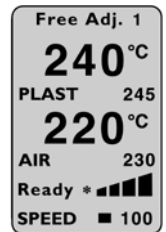
### Start window

- After turning on the hand extruder with the **main switch (1)**, the device name and current software version will be displayed for 3 seconds.



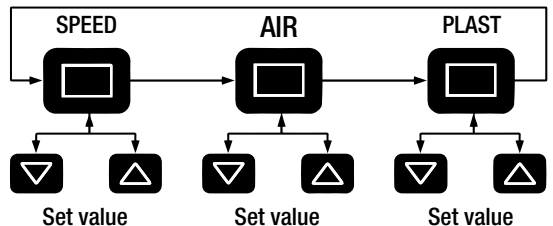
### Workspace

- The workspace shows the parameters which are currently set.



### Setting the parameters in the workspace

- The **cursor (31)** shows which parameters can be set. After the device is switched on, the cursor is situated on «SPEED». «AIR» or «PLAST» can be selected with the **Select key (28)** and their values can be changed using the **Up key (29)** or **Down key (27)**.



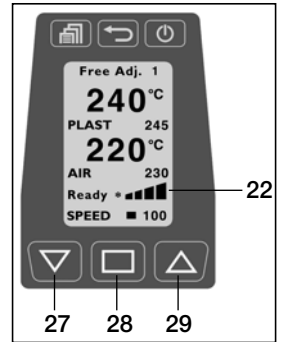
## Welding preparation

### Setting the welding output

- A variable welding output allows seam thickness and pre-heating times to be coordinated.
- Presetting on the display
  - Move the cursor to the «SPEED» position by pressing the **Select key (28)**.
  - Specify the maximum output value (30-100 %) using the **Up (29)** or **Down (27)** keys (displayed on the **drive display bars (22)**).

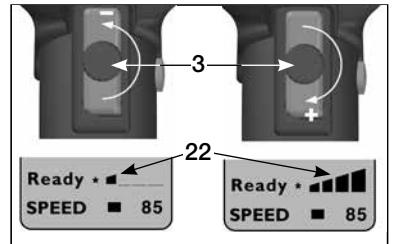
### Setting the PLAST and AIR temperatures

- Move the cursor to the «PLAST» or «AIR» position by pressing the **Select key (28)**.
- Set the temperature value by using the **Up (29)** or **Down (27)** key.



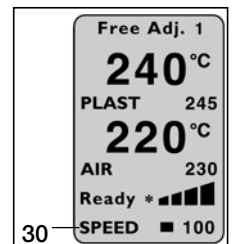
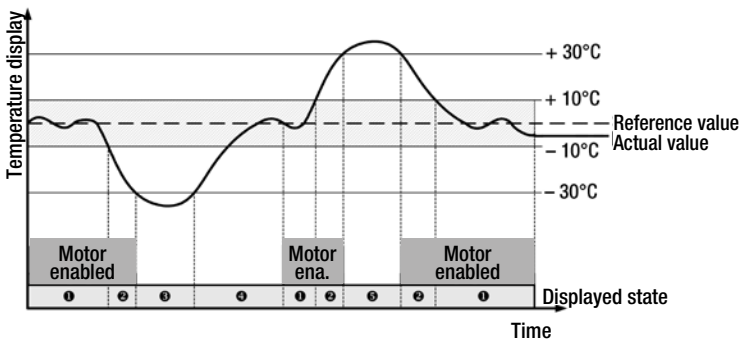
### Fine tuning during the welding proces

- By turning the **potentiometer (3)**, the welding output set can be reduced from the maximum value (e.g. 85) to the minimum (displayed on the **(22) display bars**).
- The plastized material throughput is also dependent on the welding rod thickness used. If the welding output is too high with the output display “30” and the potentiometer is set to “minimum”, the next smallest welding rod thickness must be selected.



### Monitoring the welding parameters

- The actual and ideal values of the AIR and PLAST temperatures are constantly monitored. If an actual value deviates from the relevant ideal value (value is outside the range of tolerance), this will be indicated by a change in status on the **status display (30)**. If necessary, the drive motor will be temporarily disabled until the welding parameters are back in the specified tolerance range. The possible status display and the ranges of tolerance are shown in the following graphic and table.



No	Status display	Status characteristics
①	Ready*	Ready to weld
②	M free	Divergence from welding parameters (plastics) > 10°C
③	Heating	Divergence from welding parameters (plastics) > -30°C, drive motor disabled
④	30s	Start-up waiting period of 30 sec., drive motor disabled
⑤	Too hot	Divergence from welding parameters (plastics) > +30°C, drive motor disabled

## Welding rod

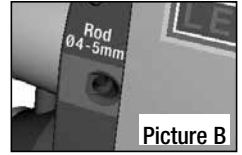
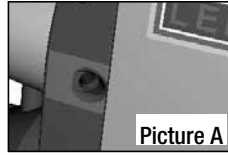


### Welding rod, PE / PP Ø 3 or Ø 4 mm

– Only use for the hand extruder without labeling (see **picture A**).

### Welding rod, PE / PP Ø 4 or Ø 5 mm

– Only use for the hand extruder with labeling (see **picture B**).



## Starting the welding process

- Fit the required **welding shoe (8)** according to the paragraph „Changing the welding shoe” (see page 27).
- Connect the hand extruder to the mains supply.
- Switch on the tool at the **main switch (1)**.
- Set the **potentiometer (3)** to max.
- Once the operating temperature is reached («READY\*» status), welding can begin.
- Activate the **motor on/off switch (2)**.
- Feed welding rod into the **welding rod opening (12)** (see chapter welding rod) and allow a small amount plastizised material to escape.
- The welding rod is automatically drawn in through the **welding rod opening (12)**. The rod should feed in without resistance.

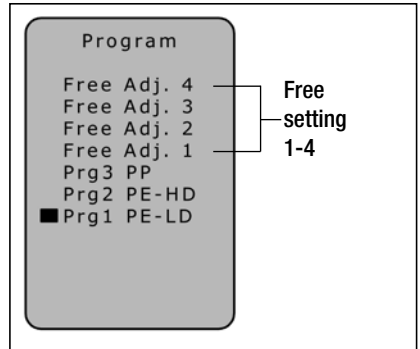
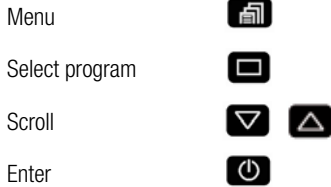


**CAUTION! Never insert into both welding rod openings simultaneously. Never operate the tool without welding rod.**

- Interrupt the passage of plastizised material with the **motor on/off switch (2)**.
- Direct the **pre-heating nozzle (9)** towards the welding zone.
- Preheat the welding zone with a fanning motion.
- Place the tool over the prepared welding zone and reactivate the **motor on/off switch (2)**.
- Carry out a test weld according to the welding instruction of the material manufacturer and national standards or guidelines.
- Check the test weld.
- Adjust the temperature setting and welding output as required (Seite 22).
- For a prolonged welding process, the **motor on/off switch (2)** can be kept in continuous operation by means of the **locking device (4)**.



## Welding parameters – Programming



- The hand extruder is suitable for the following types of thermoplastic: PP/PE-HD/PE-LD
- **Programs 1 – 3** include the relevant preset values, which can be adjusted during the course of the welding process.
- The adjustments are not saved!
- The free settings 1 - 4 are factory set and can be freely programmed. The parameters remain saved after the tool is switched off.

Welding program	Target PLAST [°C]	Target AIR [°C]
Free settings 1 – 4	230	260
Prg1 PE-LD	220	260
Prg2 PE-HD	230	260
Prg3 PP	230	260
Prg4 PVC	170	260

- The **welding program (17)** currently set is shown in the operating display.

## Switching off the tool

- Release the **locking device (4)** of the **motor on/off switch (2)** as applicable, and then let go of the **motor on/off switch (2)**. Remove welding material in the welding shoe in order that the welding shoe is not damaged with the next start.
- Switch off the heating with the **Standby / Enter key (26)**.
- Let the tool to cool down for approx. 5 min.
- Switch off at the **main switch (1)**.

## Additional settings




### Contrast setting

In unfavourable lighting conditions and with ambient temperature fluctuations, the contrast can be set by using the **Back key (25)**.

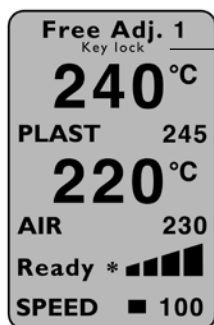
### Heating ON/OFF

During a longer period on standby, the heating for PLAST and AIR can be switched off using the **Standby/Enter key (26)**.

### Activate key lock

1. Menu 
2. Key lock 
3. Activating 




If the keypad is locked, 'key lock' will appear in the display.



Key lock activated

The lock is released as follows:

### Deactivate key lock

1. Back 
2. Reset 
3. Select 

The reset must be confirmed by pressing the Select key immediately!

## Menu guide

### Menu

Menu 

Selection  

Select 

### Functions

Selection  

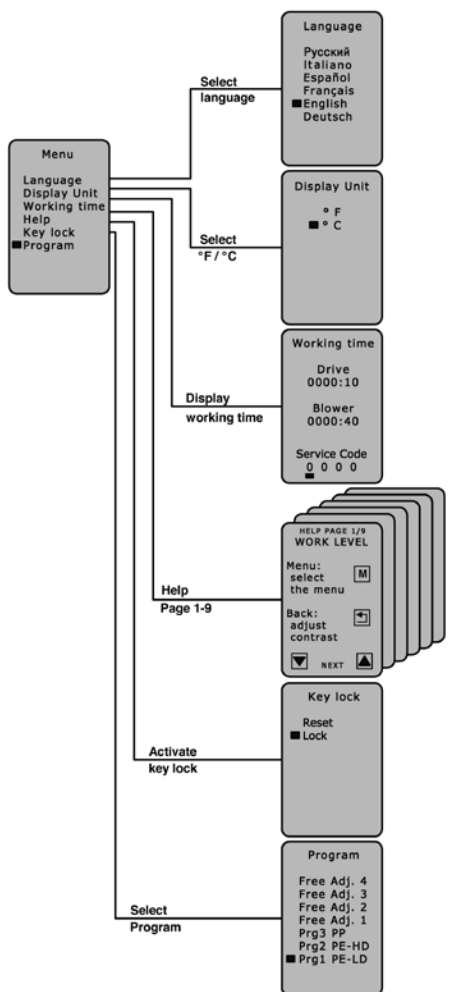
Select 

and Back

Back to

workspace

selection 



## Error messages

- An error occurring is shown in the **status display (30)** (e.g. **Err0 4** Motor is overheated).

### Display **ErrXX**

- When an error occurs, the heating units for AIR and PLAST, as well as the drive motor, are switched off immediately!
- Should this not take place, the tool must be disconnected from the mains supply immediately!

### Further procedure with status display (30) **ErrXX**

- Note down the error code
- Release the **locking device (4)** of the **motor on/off switch (2)** as applicable and then let go of the **motor on/off switch (2)**.
- Switch off the tool at the **main switch (1)**.
- Start using the tool again under supervision and ensure that the extruder is not overheated from the outside.
- Eject the remaining plastic from the screw if possible.
- Should the error reoccur, the tool should be sent to the Service Centre to be checked, specifying the error code.

### The following errors are recognised by the tool:

Display	Type of fault
<b>Err01</b>	Overheating of the air or defective temperature probe
<b>Err02</b>	Overheating of the plastic welding material or defective temperature probe
<b>Err04</b>	Overheating of the motor winding, motor is overheated
<b>Err08</b>	Overheating of the heating element, AIR or failure of the blower motor
<b>Err10</b>	Overheating of the electronics
<b>Err40</b>	Short circuit of the PLAST temperature probe

### Several errors can occur at once

- e.g. **Err02** and **Err04** Display: **Err06** !

### Further combinations are displayed with the letters A, B, C, D, E and F.

- e.g. **Err08** and **Err02** Display **Err0A** !

### Drive overheating protection

- If the drive is overheated by external influences or because the PLAST temperature is too low, the internal temperature protection of the drive switches off (see **Err04** )

### False start protection

- The drive motor is protected against autonomous starting following faults, **Err04** overheating. The message "Switch off motor" appears in the **display (5)** while the drive motor remains in the blocked state.
- After rectifying the fault and switching off the motor, **motor on/off switch (2)**, the message "Switch off motor" disappears from the **display (5)**. Work may then continue.

## Changing the welding shoe



Danger – can cause burns!



Only work with heat-resistant gloves.

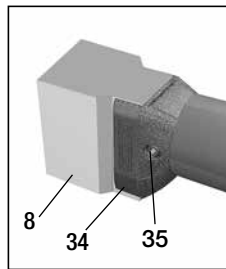
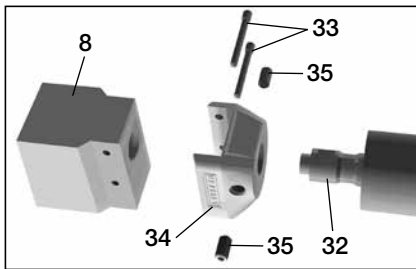
- The welding shoe must be changed while the device is still warm from operation.

### Disassembly

- Turn off the device while warm and disconnect from the power supply.
- Remove the **welding shoe (8)** with the **welding shoe holder (34)** by unfastening the **clamp screws (35)** from the **extruder nozzle (32)**.
- Every time the welding shoe is changed, clean the **extruder nozzle (32)** of welding residue and make sure that it is screwed in tightly.
- Remove **welding shoe (8)** from the **welding shoe holder (34)** by unfastening the **fastening screws (33)**.

### Assembly

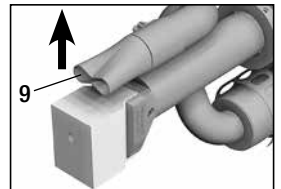
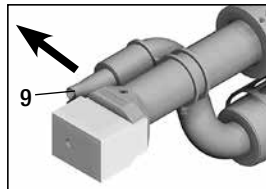
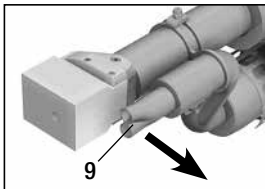
- Fasten a **welding shoe (8)**, appropriate to the welding seam, onto the **welding shoe holder (34)** with **fastening screws (33)**.
- The **welding shoe (8)** and **welding shoe holder (34)** must be tightened properly with the **clamp screws (35)**.



- 8 Welding shoe
- 32 Extruder nozzle
- 33 Fastening screw
- 34 Welding shoe holder
- 35 Clamp screw

### Welding direction

- Orientation of the **pre-heating nozzle (9)** for different welding directions



- With the standard hot-air tube the nozzle can be mounted either left or right.

- With the optional hot-air tube the nozzle is mounted on top.

## Pre-heating nozzles

- There are three different **pre-heating nozzles (9)** available according to the required welding seam width. The nozzle cross-sections comply with DVS guidelines.



## Replacing the pre-heating nozzles

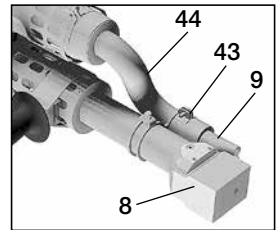


Danger – can cause burns!



Only work with heat-resistant gloves.

- To disassemble the **pre-heating nozzle (9)**, loosen the **clamping screw (43)** on the side and pull the **pre-heating nozzle (9)** off the **hot-air tube (44)**. To ensure no pre-heated air is lost, the nozzle is pushed on the **hot-air tube (44)** as far as it goes. Take care that the **pre-heating nozzle (9)** is parallel to the **nozzle shoe (8)**.



## Replacing the hot-air tube

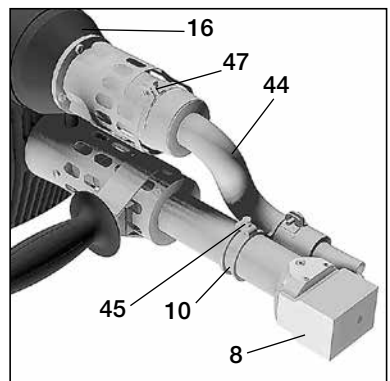


Danger – can cause burns!



Only work with heat-resistant gloves.

- To disassemble the **hot-air tube (44)**, firstly remove the **welding shoe (8)**. After loosening the countersunk **locating screw (45)** on the tube **clamp (10)** and the **clamping screw (47)** on the hot-air tube connector, the complete unit can be removed.
- **Assembly in the reverse sequence.**
- Do ensure no pre-heated air is lost when reassembling, the unit must be pushed on the **hot-air blower (16)** as far as possible.

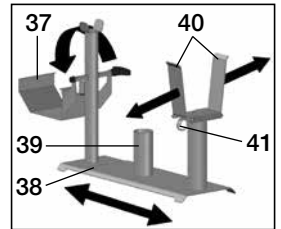


## Accessories

- For security and technical reasons, only Leister accessories may be used.

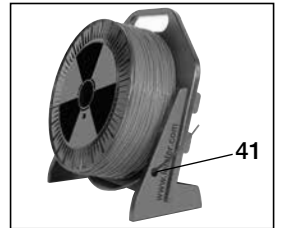
### Stand

- The universal tool stand can be used for the following extruder lines: Fusion 3; Weldplast S4; Weldplast S6
- The **hood (37)** is swivelled upwards for pre-heating the welding shoe.
- To adjust the stand, loosen the screws in the base and adjust the **base plates (38)** to the tool markings.
- The two **sliders (40)** allow the width to match the required tool.
- The **reel holder (39)** serves to hold the reels of welding rod  $\varnothing$  300 mm.
- To ensure optimal rod dispensing, the welding rod should be passed through the **eyelets (41)** provided.



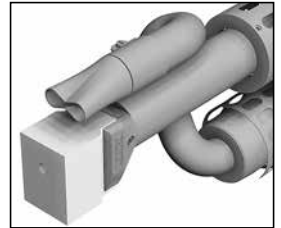
### Transportable welding rod de-reeler

- The de-reeler is designed for rolls of welding rod with  $\varnothing$  300 mm.
- To ensure that the filler rod is unwound as smoothly as possible, it should be fed through the specially designed **eyes (41)**.



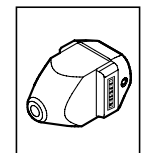
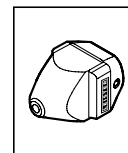
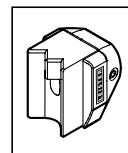
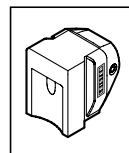
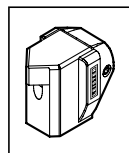
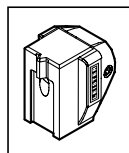
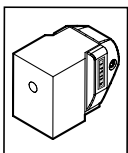
### Hot - air tube on top

- The hot air tube is especially suited for landfill sites.



### Welding shoe range (with external air duct)

- Leister Technologies AG offers the right welding shoes for all common types of seam in various sizes:



Blank

V Seam

Fillet weld

Overlap seam

Corner seam  
outside


Corner seam  
short

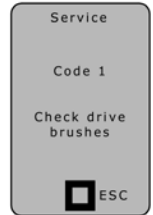
Corner seam  
long

## Maintenance

- Check **power supply cord (14)** and plug for electrical and mechanical damage.
- Clean the **extruder nozzle (32)** of welding residue every time the welding shoe is changed (Changing the welding shoe, page 27).

## Service and Repairs

- Repairs should only be carried out by authorised **Leister service points**. These guarantee a professional, reliable **repair service within 24** hours, using original replacement parts according to the circuit diagrams and replacement part lists.
- If a service message with the **service code 1** appears after the WELDPLAST S4 is turned on, the carbon level should be checked by an authorised Leister service point and, if necessary, the carbon brushes of the drive changed.
- The message can be hidden by pressing the **Select key (28)**  .
- The hand extruder may continue to be operated for a short time.
- If the carbon brushes are not exchanged in good time, the drive will operate until it reaches the mechanical carbon shut-off point. No error message will appear on the display, but the drive will no longer operate.



## Warranty

- For this tool, the guarantee or warranty rights granted by the relevant distributor/seller shall apply. In case of guarantee or warranty claims any manufacturing or workmanship defects will either be repaired or replaced by the distributor at its discretion. Warranty or guarantee rights have to be verified by an invoice or a delivery document. Heating elements shall be excluded from warranty or guarantee.
- Additional guarantee or warranty claims shall be excluded, subject to mandatory provisions of law.
- Warranty or guarantee shall not apply to defects caused by normal wear and tear, overload or improper handling.
- Warranty or guarantee claims will be rejected for tools that have been altered or changed by the purchaser.



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Your authorised Service Centre is:



**Allied Power Tools**

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