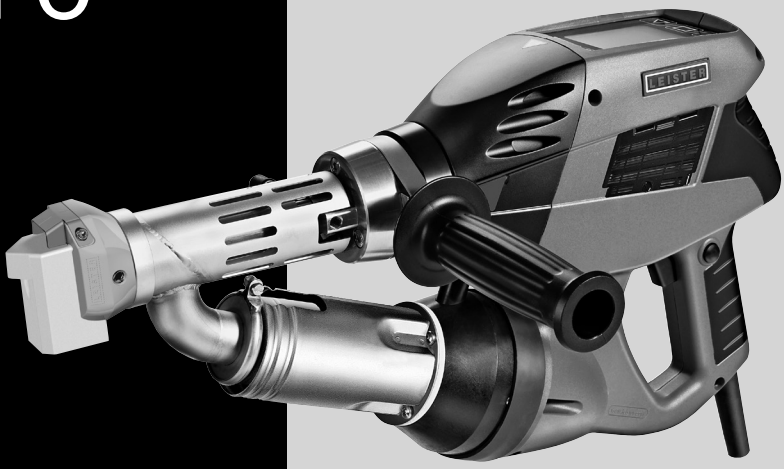
LEISTER®

ALLIED POWER TOOLS

# WELDPLAST
# S2
# S2 - PVC
# S2 - TPO



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

# Leister WELDPLAST S2 / S2-PVC / S2-TPO Hand Extruder

## Application

Extrusion welding of the following materials:

| | |
|---|---|
| WELDPLAST S2 | PP / PE-HD / PE-LD |
| WELDPLAST S2-PVC | PP / PE-HD / PE-LD / PVC-U |
| WELDPLAST S2-TPO | PP / PE-HD / PE-LD / TPO |

Other materials on enquiry

The hand extruder corresponds to the DVS standard 2207–4.

**DVS:** Deutscher Verband für Schweisstechnik (German Association for Welding Technology)

## Warning

**Hazardous voltage, danger to life**
There is a danger to life from electric shock due to electrical voltage. The extruder must therefore only be connected to sockets and extension cables with a protective earth conductor. Protect the extruder from moisture and wet conditions. Before starting the device, check the power cord, the plug and the extension cable for electrical and mechanical damage. The extruder may only be opened by instructed, qualified personnel.

**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.

## 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.

## Conformity

**EU Declaration of Conformity**

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

Directives: 2006/42/EC, 2014/30/EU, 2011/65/EU

Harmonised standards: EN ISO 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 IEC 63000

Kaegiswil, 04/15/2021

Bruno von Wyl, CTO

Christoph Baumgartner, GM

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**UK Declaration of Conformity**

**Leister Technologies AG, Galileo-Strasse 10, 6056 Kaegiswil, Switzerland** confirms that this product in the version put into circulation by us, fulfils the requirements of the following UK Statutory Instruments.

UK Statutory Instruments: 2008 No. 1597, 2016 No. 1091, 2012 No. 3032

Harmonised standards: EN ISO 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 IEC 63000

Kaegiswil, 03/31/2021

Bruno von Wyl, CTO

Christoph Baumgartner, GM

## Disposal

**Do not dispose of electrical equipment with household refuse.**

Electrical appliances, accessories and packaging should be recycled in an environmentally friendly manner. When you are disposing of our products, please observe the national and local regulations.

## Technical Data

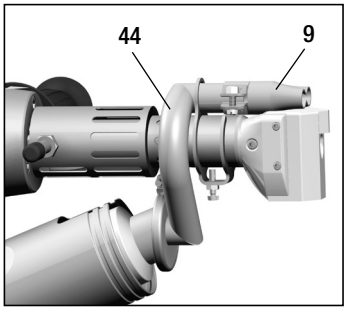
| | | | |
|---|---|---|---|
| **Voltage** | **V~** | 230 | 200 |
| **Power consumption** | **W** | 3000 | 2400 |
| **Frequency** | **Hz** | 50/60 | |
| **Air volume (20 °C)** | **l/min** | 300 | |
| **Air temperature** | **°C** | max. 350 | |
| **Plasticizing temperature** | **°C** | max. 260 | |
| **Output (Ø 3 mm)** | **kg/h** | PE 0.6 – 1.3 | PP 0.5 – 1.2 *PVC-U 0.9 – 1.7 (average values at 50 Hz) |
| **Output (Ø 4 mm)** | **kg/h** | PE 1.0 – 2.0 | PP 0.9 – 2.0 *PVC-U 1.5 – 2.7 (average values at 50 Hz) |
| **Filler rod** | **mm** | Ø 3 / Ø 4 | |
| **Vibration acceleration** | **ah (m/s²)** | < 2.5 (K = 1.5 m/s²) | |
| **Dimensions L × B × H** | **mm** | 450 × 98 × 260 (without welding shoe) | |
| **Weight** | **kg** | 5.8 (without power cable) | |
| **Conformity mark** | | CE | CE |
| **Protection class I** | | ⏚ | ⏚ |

*** WELDPLAST S2-PVC**

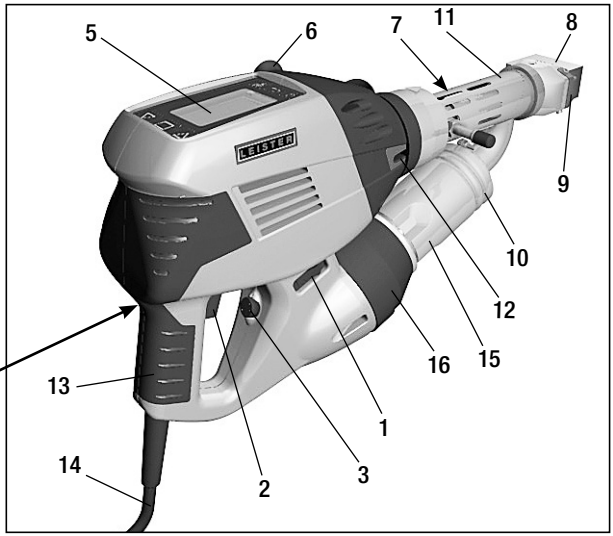
**The right to make technical changes is reserved**

## Device Description

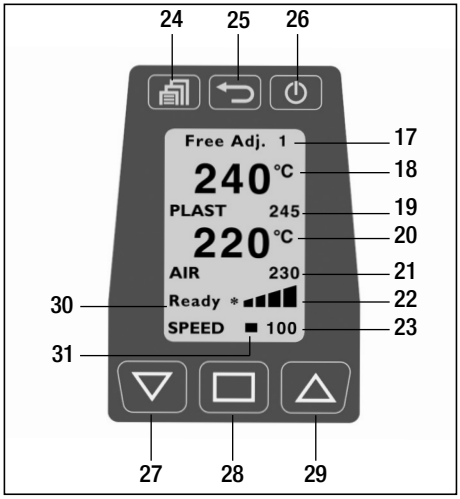
**With external air duct**




**With integrated air duct**




**1** Main switch
**2** On/off switch for drive
**3** Potentiometer
**4** Drive locking device
**5** Display
**6** Guide handle
**7** Jacket heating
**8** Welding shoe
**9** Pre-heating nozzle
**10** Pipe clip
**11** Protection tube
**12** Filler rod insertion point
**13** Device grip
**14** Power supply cord
**15** Heating element protection tube
**16** Hot air blower (brushless)
**44** External hot air duct




**Operating unit**

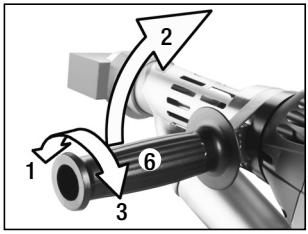
**17** Welding program
**18** Actual value - plastic
**19** Ideal value - plastic
**20** Actual value - air
**21** Ideal value - air
**22** Drive display bars
**23** Output display
**24** Menu key
**25** Back key
**26** Standby/Enter key
**27** Down key
**28** Select key
**29** Up key
**30** Drive status display
**31** Cursor

## Work environment/Safety

**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 cable and filler rod must be free to move and must not obstruct the user or third parties during work.**

**Place hand extruder on a fire resistant base. Hot metal parts and hot streams of air must be kept at a safe distance from the base and walls.**

### Setting the guide handle




1. Loosen clamp by turning the **guide handle (6)** anti-clockwise
2. Move the **guide handle (6)** into the desired operating position
3. Tighten clamp again by turning **guide handle (6)** clockwise

### Workplace

Leister provides a **universal stand** for commissioning and holding the hand extruder.

When not welding, the drive should be switched off with the **drive on/off switch (2)**.

Place the hand extruder with correspondingly set and firmly tightened handle on a stable, fireproof base as shown in the illustration.

## Extension cables

Ensure the minimum cross-section when using extension cables:

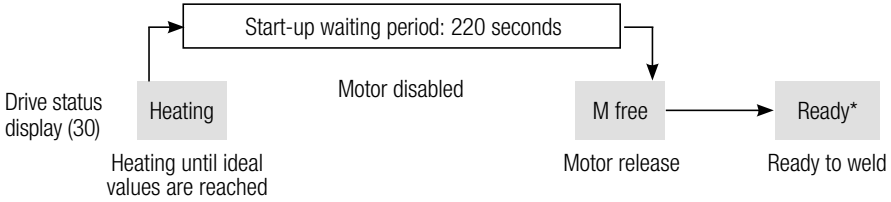
The extension cable must be approved for the site of use (e.g. in the open air) and marked correspondingly.

When using a power unit for power supply, its nominal power rating is: 2 × nominal power rating of the hand extruder.

| **Length** [m] | **Minimum cross-section (at 230V~)** [$mm^2$] |
|---|---|
| Up to 19 | 2.5 |
| 20 – 50 | 4.0 |

## 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 220 seconds to zero. After this start-up process is complete, the device is ready to weld (status Ready*). The hand extruder takes around 6 minutes to reach its temperature range.
If the power is only turned off for a short time, the start-up process does not need to be repeated.

### Software and menu guide

The hand extruder Weldplast S2 is provided with a convenient user software, making work easier for the user. Tap lightly on the keys to operate them.

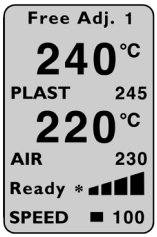
| | Workspace functions | Menu selection functions |
|---|---|---|
| | Menu selection | Menu selection / Back to workspace |
| | Set contrast | Back to workspace (changes not saved!) |
| | Heating on/off | Select and back to workspace |
| | Change cursor position | Select |
| | Selected value [+] | Cursor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

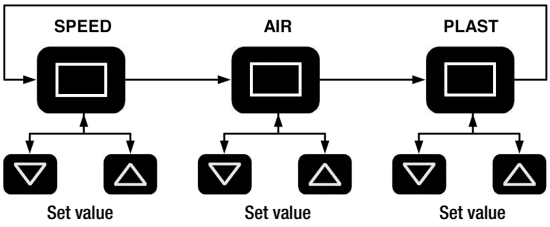

### Workspace

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)**.



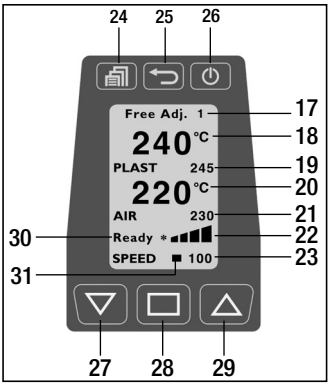
## Welding preparation

### Setting the output volume

The output volume and the pre-heating time can be coordinated with each other according to the type of seam.

- 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)**).
- Precise adjustment during the welding process
  - The output volume can be reduced from the maximum set value (e.g. 85%) to the minimum by turning the **potentiometer (3)**.

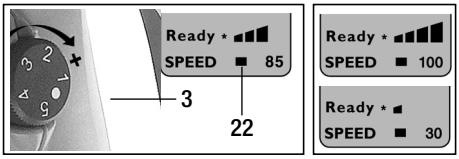
The output volume is dependent on the size of filler rod used. If the output is too large when the output display is set to «30» and the potentiometer to «Minimum», the filler rod must be changed to the next size down.




### Setting the PLAST and AIR temperatures

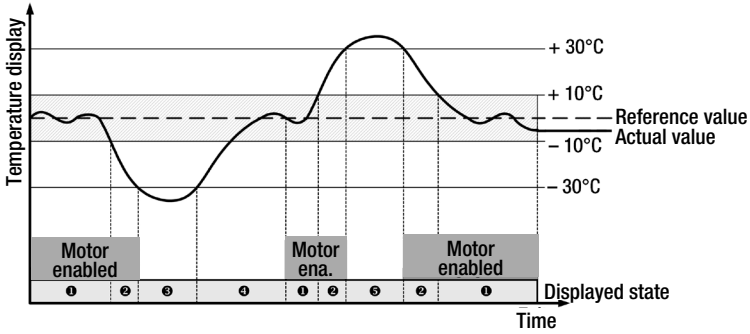
- Move the cursor to the «**PLAST**» or «**AIR**» position by pressing the **Select key (28)**.
- Set the temperature value by using the **Up (29)** or **Down (27)** key.

Example




### 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 |
|---|---|---|
| ❶ | Ready* | Ready to weld |
| ❷ | M free | Divergence from welding parameters (plastic) > 10°C |
| ❸ | Heating | Divergence from welding parameters (plastic) > – 30°C, drive motor disabled |
| ❹ | 30s | Start-up waiting period of 30 sec., drive motor disabled |
| ❺ | Too hot | Divergence from welding parameters > + 30°C, drive motor disabled |

## Starting the welding process

- Fit the appropriate **welding shoe (8)** according to requirements.
- Set **potentiometer (3)** to max.
- When the operating temperature has been reached (Status Ready*), welding can begin.
- Press **on/off switch for the drive (2).**
- Feed filler rod with a diameter of 3 or 4 mm into the **filler rod insertion point (12).**
- The filler rod will be automatically pulled through the **filler rod insertion point (12)**. The rod feed must take place without resistance.

**WARNING!**
**Always operate device with filler rod, but never feed filler rod into both filler rod insertion points at the same time.**

- Pause the delivery of material with the **on/off switch for the drive (2).**
- Direct the **pre-heating nozzle (9)** onto the area to be welded.
- Warm the area to be welded with oscillating movements.
- Attach the device to the prepared welding area and press the **drive on/off switch (2)** again.
- Carry out a test weld according to the welding instruction of the material manufacturer and national standards or guidelines.
- Check the test weld.
- Adjust temperature settings and output amount according to requirements.
- During a longer period of welding, the **on/off switch for the drive (2)** can be kept in continuous operation using the **drive locking device (4).**

## WELDPLAST S2 - PVC

- PVC-U may only be processed in the PVC-U menu. WARNING: Only use PVC-U (not PVC-C).
- To prevent corrosion, if the machine is not going to be used for a longer period of time (more than 2 days) it is recommended to fill it with HD-PE.

## Welding parameters

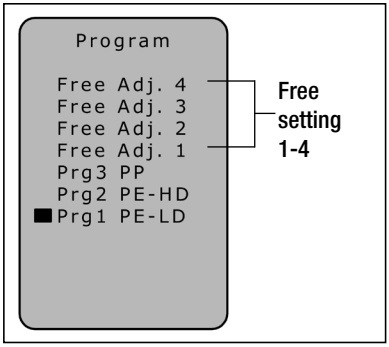
Menu

Select program

Selection

Enter

Program: the display of the materials may vary according to the machine and software versions.




**Programs 1-3** are provided with preset parameters which can be adjusted during the welding process. The adjustments are not saved!

The free settings 1-4 are preset in the factory and can be programmed freely. The parameters are saved even after the device has been switched off.

| Welding program | Ideal PLAST [°C] | Ideal AIR [°C] |
|---|---|---|
| Free set 1 – 4 | 230 | 260 |
| Prg1 PE-LD | 220 | 260 |
| Prg2 PE-HD | 230 | 260 |
| Prg3 PP | 240 | 260 |
| Prg0 PVC-U | 200 | 300 |

The **welding program (17)** which is currently set can be seen in the workspace.
The display of the materials may vary according to the machine and software versions.

**Setting the output volume**

- Move the cursor to the «SPEED» position by pressing the **Select key (28).**
- Set the output value (30-100 %) by using the **Up (29)** or **Down (27)** key.

**Setting the PLAST and AIR temperature**

- 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.

## Turning the device off

- Release **drive locking device (4)** and let go of the **on/off switch for the drive (2)**
  Remove welding material in the welding shoe, so that the welding shoe will not be damaged the next time the device is started up.
- Turn off the heating with the **Standby/Enter key (26).**
- Allow device to cool down for approx. 5 minutes.
- Turn off **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)**.

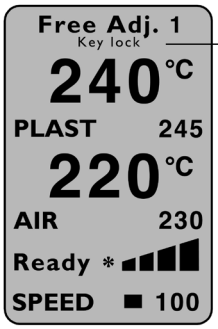
### Heating ON/OFF

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

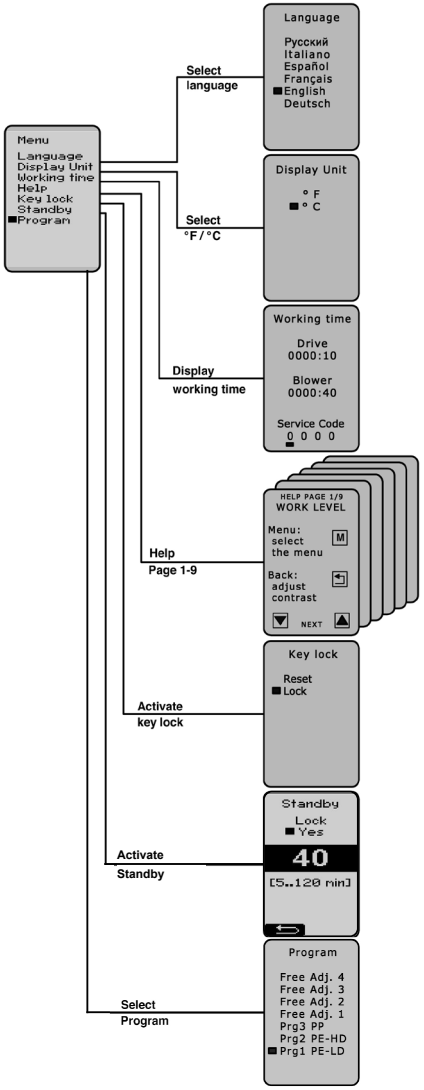
Select

**Functions**

Selection

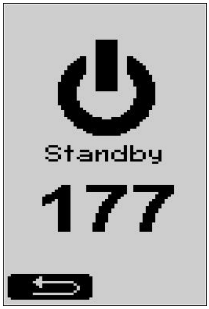
Select and Back

Back to workspace selection



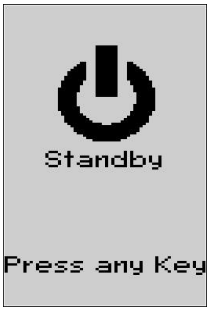
## Standby

If the drive of the extruder is switched off and no key input is made for a certain time, the cool down mode starts automatically after the standby time has elapsed.




The cooling process is initiated.

If any key is pressed before the countdown has elapsed in standby mode (180 seconds), the display returns to the initial state.




If no key is pressed during the countdown, the cool down mode starts. Pressing any key heats up the extruder again and the work display switches to Work mode.

### Setting the standby time

This menu is used to activate and set the standby time.

Press the ▭ key to switch standby on or off.

Press the ▽ and △ keys to set the time from 5-120 minutes.

The factory setting is 40 minutes.

Press the ⮌ key to return to Work mode.

## Error messages

If an error occurs, this will be shown in the **status display (30)** (e.g. Err04 Motor overheated).

### Display ErrXX

If an error occurs, the heating for AIR and PLAST and the drive motor will be switched off immediately.
If this does not happen, the device should be disconnected from the power supply immediately!.

### How to proceed with the status display of the drive (30) ErrXX

- Note error code.
- Release **drive locking device (4)** and let go of the **on/off switch for the drive (2)**.
- Turn off **main switch (1).**
- Operate the device again, monitoring it carefully, and make sure that the hand extruder is not being overheated from external sources.
- If possible, expel the plastic remaining in the screw.
- If the error occurs again, the device should be sent to the service point for inspection, with a note of the error code.

The following errors are recognised by the device:

| Display | Type of error |
|---|---|
| Err01 | Air temperature too high or defective temperature sensor |
| Err02 | Plastic temperature too high or defective temperature sensor |
| Err04 | Engine coil temperature too high, motor has overheated |
| Err08 | Heating element AIR temperature too high or blower motor has failed |
| Err10 | Electronics temperature too high |
| Err40 | Short circuit in PLAST temperature sensor |

If several errors occur simultaneously, e.g. Err02 and Err04, Err06 will be displayed.

Further combinations are shown with the letters A, B, C, D, E and F, e.g. Err08 and Err02 Display Err0A.

### Overheating protection for the drive

If the drive is overheated by external influences or a PLAST temperature which is too low, the internal protection against excessive temperatures will turn the drive off (see Err04).

### Accidental start-up protection for the drive

The drive motor is protected against accidental start-up after errors, e.g. overheating Err04. The message «Switch off drive» appears in the **display (5)** while the drive motor is disabled. After correcting the error and switching off the drive (release **drive locking device (4)** and let go of the **on/off switch for the drive (2)**), the message «Switch off drive» will disappear in the **Display (5)**. Welding may continue.

## Replacing accessories

**Danger – can cause burns!**

**Only work with heat-resistant gloves.**

## Changing the welding shoe

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).**

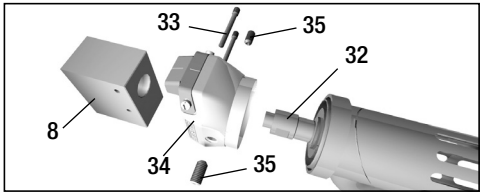
– Every time the welding shoe is changed, clean the **extruder nozzle (32)** of welding residue and make sure that it is screwed in tightly.

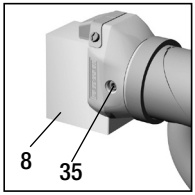
– Remove **welding shoe (8)** from the **welding shoe holder (34)** by unfastening the **fastening screws (33).**

### 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).**

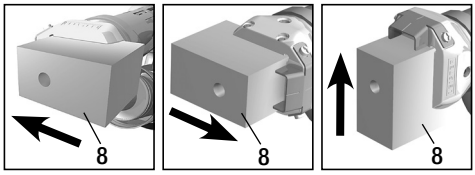



**8** Welding shoe
**32** Extruder nozzle
**33** Fastening screw
**34** Welding shoe holder
**35** Clamp screw

## Welding direction

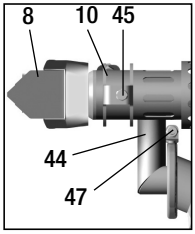
The **welding shoe (8)** can be turned infinitely to the desired welding direction by loosening the **clamp screws (35)**.
The **clamp screws (35)** must be tightened well again afterwards.




## Changing the hot air duct

To disassemble the **hot air duct (44)**, first remove the **welding shoe (8)**. After loosening the locked **fastening screw (45)** on the **pipe clip (10)** and the **clamp screw (47)** on the hot air duct connector, the entire unit can be pulled out.

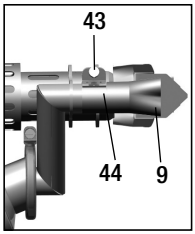
Assembly in reverse order.



## Changing the pre-heating nozzle

Disassembly: For the **pre-heating nozzle (9)**, **unscrew clamp screw (43)** and pull **pre-heating nozzle (9)** off the **hot air duct (44)**.

Assembly: Push **pre-heating nozzle (9)** onto the **hot air duct (44)**. Make sure that it is aligned parallel to the nozzle shoe. Tighten **clamp screw (43)**.




## Pre-heating nozzles for extruders with external air duct

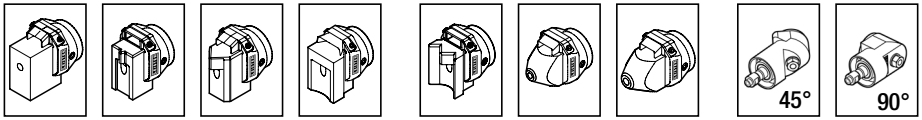
Three different **pre-heating nozzles (9)** corresponding to the weld seam width are available. The nozzle cross sections correspond to the DVS guidelines.

| **Nozzle 1** | **Nozzle 2** | **Nozzle 3** |
|---|---|---|
| Seam width to 15 mm | Seam width 16 to 20 mm | Seam width 21 to 40 mm |

## Welding shoe range

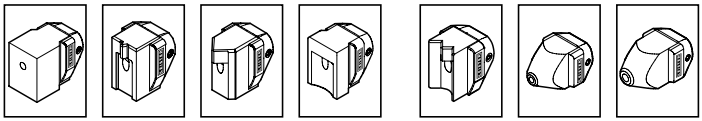
Leister Technologies AG offers the right welding shoes for all common types of seam in various sizes:

**WELDPLAST S2 / WELDPLAST S2-TPO with integrated air duct**




Blank | V Seam | Fillet weld | Overlap seam | Corner seam outside | Corner seam short | Corner seam long | Angled adapter

**WELDPLAST S2 / WELDPLAST S2-PVC with external air duct**



Blank | V Seam | Fillet weld | Overlap seam | Corner seam outside | Corner seam short | Corner seam long

## Accessories

Only **Leister accessories** may be used.

**Stand**

**Transportable welding rod de-reeler**

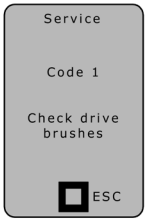
- The de-reeler is designed for rolls of welding rod with Ø 300 mm.
- To ensure that the filler rod is unwound as smoothly as possible, it should be fed through the specially designed **eyes (41)**.


## 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.

## 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 S2 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.

Your authorised Service Centre is:

**Allied Power Tools**
12/ 76 Rushdale St, Knoxfield VIC 3180 Australia
T: + 61 3 9764 2911
E: sales@alliedpowertools.com.au
W: www.alliedpowertools.com.au