

User's Manual

SP 250-S V3 High Purity IR Welding Tool



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The machine has to be operated exclusively with a power supply line equipped with a protective grounding conductor, as a power supply without this safety element may cause severe machine damage. If the machine is operated through a power supply without a grounding conductor, this will void any and all warranty under which the product may be.

1 Introduction

Dear Customer:

Thank you very much for purchasing our product. We are confident that it will meet your expectations.

The development, manufacture, and check of the infrared welding machine has been guided by our concern to offer a unit characterized by superior operation safety and user-friendliness. The unit was manufactured and checked according to the most recent standards as they are applied, and bearing ergonomic aspects in mind.

To ensure maximum operation safety, please conform to the appropriate messages in this booklet and the regulations for the prevention of accidents. Carefully read the User's Manual to avoid damage to the machine or hardware in its environment as well as injury.

This manual is applicable to the following machines:
agru SP 250-S V 3

Thank you.

2 Safety Messages

This User's Manual contains important instructions for operating the infrared welding machine agru SP 250-S V 3 safely. Every person who operates the machine will have to conform to the instructions of this manual.

The machine has been developed and checked with respect to welding agru materials. For welding other makes, no experiential data are available and/or no liability or warranty can be assumed for the fitness and the reliable operation of the machine.

2.1 The User's Manual

The User's Manual is presented according to sections which explain the different functions of the machine. All rights, in particular the right to copy or reproduce (in print or electronic form) and distribute as well as to translate, are reserved and subject to prior written authorization by agru Kunststofftechnik.

2.2 Explaining Icons

The following expressions and icons are used in this User's Manual to refer to safety-related issues:



This icon indicates that non-compliance may result in a hazardous situation that possibly causes bodily injury or material damage.



This icon indicates important messages related to the correct use of the machine. Non-compliance may cause problems of operation and damage to the machine.



This icon indicates tips and useful information for using the machine more efficiently and more economically.

2.3 Safety Messages and Information on Residual Risks

Protect the power supply cord from cutting edges. Have an authorized service shop replace damaged cables or lines immediately.

The machine has to be operated with a 400 V, 50/60 Hz power supply with safety fuse or breaker of 32 A maximum. If power is connected through a power line manifold, the power supply has to feature an earth-leakage circuit breaker.

The length of the power supply cord must not exceed 10 m (30 feet) from the circuit breaker.



Caution

Parts Under Power

After opening the machine or removing the cover, parts of it are accessible that may be under power. The machine may be opened exclusively by an authorized service shop.



Caution

Pipe Facing Tool

Start the pipe facing tool only when it is in its working position. When facing pipes, do not wear jewelery if needed, wear a hair snood or net. It is forbidden to remove shaving from the machine while the facing process is running. Make sure nobody is present in this danger zone.



Caution

Heating Plate and Heating Plate Housing

When working with the machine, be extremely cautious while the heating plate is operating. Since the plate and its housing guard present a very high temperature during the welding process, it must not be operated if unobserved, and sufficient distance to combustible materials in its surroundings has to be ensured. Do not touch the heating plate or the plate housing. **The safety alerts affixed to it have to be complied with strictly.**



Caution

Danger of Bruises and Injury

Do not remain in the danger zone while the machine opens or closes and be sure not to have your hands between the moving and the fixed parts of the machine.



Caution

Acceptable Work Conditions

The work zone has to be clean and has to have proper lighting. It is dangerous to operate in a humid environment or close to flammable liquids. In regard of this, acceptable work conditions have to be ensured (e.g., sufficient distance between the machine and other functional areas of the workshop).



Important

Power Supply Only through Line with Protective Grounding Conductor

The machine has to be operated exclusively with a power supply line equipped with a protective grounding conductor, as a power supply without this safety element may cause severe machine damage. **If the machine is operated through a power supply without a grounding conductor, this will void any and all warranty under which the product may be.**



Important

Power Only to Operational Machine

Power must never be applied to the machine before it is completely installed and ready for operation.



Important

No Foreign Bodies in Work Area

The machine must never be used if there are foreign bodies or objects obstructing the smooth movement of movable machine parts in the work area.



User's Manual

The User's Manual has to be available at any time on the site where the machine is used. If the User's Manual should come to be incomplete or illegible replace it without delay. Feel free to contact us for assistance.

2.4 User/Operator Obligations

- The machine may be operated exclusively by persons who are familiar with the applicable rules, the guidelines for the prevention of accidents, and the User's Manual.
- The machine may be operated only when observed. Only persons who were properly trained by agru or another, authorized organization and whose training was acknowledged by the appropriate certificates are allowed to operate and observe the machine. Other persons must neither operate nor observe it.
- The operating/owning organization engages to check at reasonable intervals if the machine is operated by the users with the intended use and under proper guidelines of safe work.
- The machine must never be operated if not in proper state of repair. Before welding, the user is required to make sure that the state of the machine is in order.
- The user has to make sure that only one person is present in the zone where the machine is operating.

2.5 Worksite Description

- The conditions have to fully ensure that the machine cannot slide.
- Worksite access limitations have to be provided. Appropriate equipment to achieve this can be requested from a service point or the selling entity.
- The machine has to be positioned so it will not be exposed to draughts. When used in clean rooms, do not position it directly below any air inlets (laminar flow).

2.6 Warranty

Warranty claims may be raised only if the conditions for warranty given in agru Kunststofftechnik's General Terms and Conditions of Sale and Shipment obtain. Furthermore, the provisions and instructions contained in the User's Manual have to have been respected.



The term of warranty under which the welding machine is shipped is 12 months:

- from the date of purchase, if machine bought as new machine;
- from the date of first use, if machine used independently of purchase (e.g. when lent) or not bought as new machine.

2.7 Transport and Storage

During transport, the machine must be at all times in the transport box it is shipped in.



Important

All transport locks must be engaged during transport at all times (see at the beginning of Sect. 4).

The transport box should also be used to store the machine. The machine has to be stored in a dry location, be clean or has to be cleaned, and be locked against unwanted operation.



Caution

The weight of the machine is 815 kg (1793 lbs). Because of this heavy weight, transporting the machine or moving it on site requires appropriate hoisting tools.

2.8 Identifying the Machine

Each machine is identified by a name plate. It shows the machine model (“Typ”), its year of manufacture (“Baujahr”), the serial number (“Geräte-Nr.”), the rated power (“Netz”), and the manufacturer (“Lizenzhersteller”).

Infrarot-Stumpfschweißmaschine	
Typ	agru SP 250-S V 3
Geräte-Nr.	25318076
Netz	3Ph/PE 400V 50Hz 8500W
Gewicht	815kg Baujahr: 2018
Lizenzhersteller	HÜRNER Schweißtechnik GmbH
	Nieder-Ohmner Str. 26
	D - 32325 Mücke

3 Product Description and Principles of Operation

3.1 Intended Use

The agru SP 250-S V 3 Welding Machine is designed exclusively for welding plastic pipes and fittings using the infrared welding technique (butt welding without contact).

Typ agru SP 250-S V 3

Exklusives Produkt der Fa.
agru Kunststofftechnik GmbH
Ing.-Pesendorfer-Str. 31
A - 4540 Bad Hall
Tel. +43 7258 790 3503
Fax +43 7258 790 3852

Only the welding parameters shown on the touchscreen display (preset by the manufacturer or defined by the user) can be selected for a welding operation. Any modification of the welding parameters contained in the control software is strictly prohibited.

The notion of intended use also includes compliance with the instructions provided in the User’s Manual.



Important

The manufacturer can in no circumstances be held liable for damage or consequential damage that occurs as a result of the non-compliance with the procedures described in the User’s Manual, the modification of the manufacturer-programmed welding parameters, or non-intended use. Any such deviation or modification will void any and all warranties under which the product may be.

3.2 Machine Description

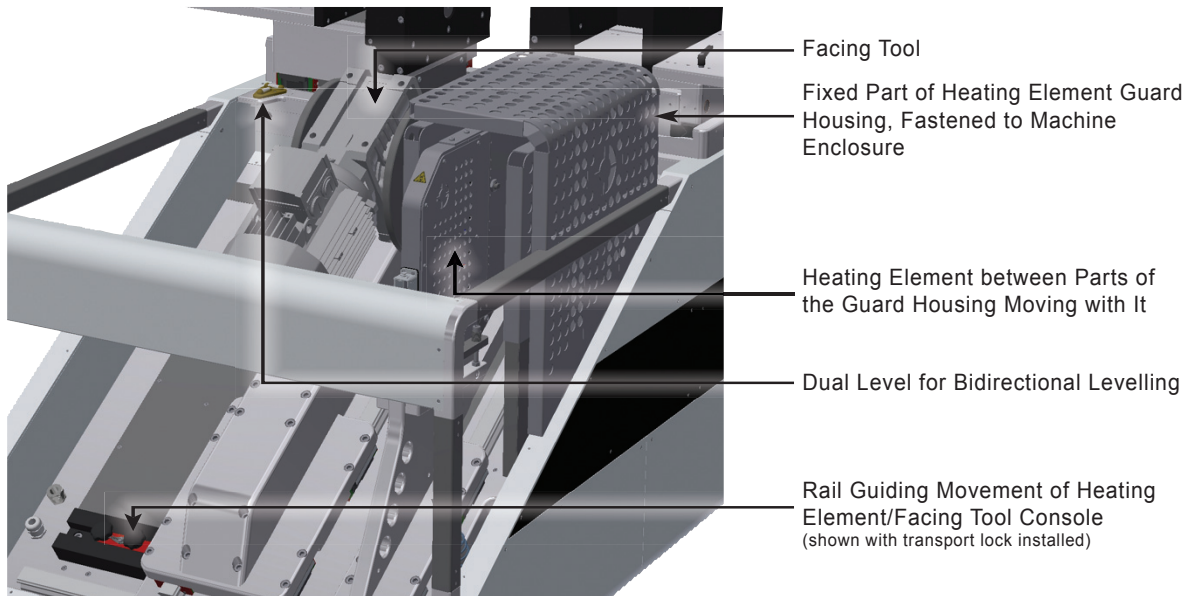
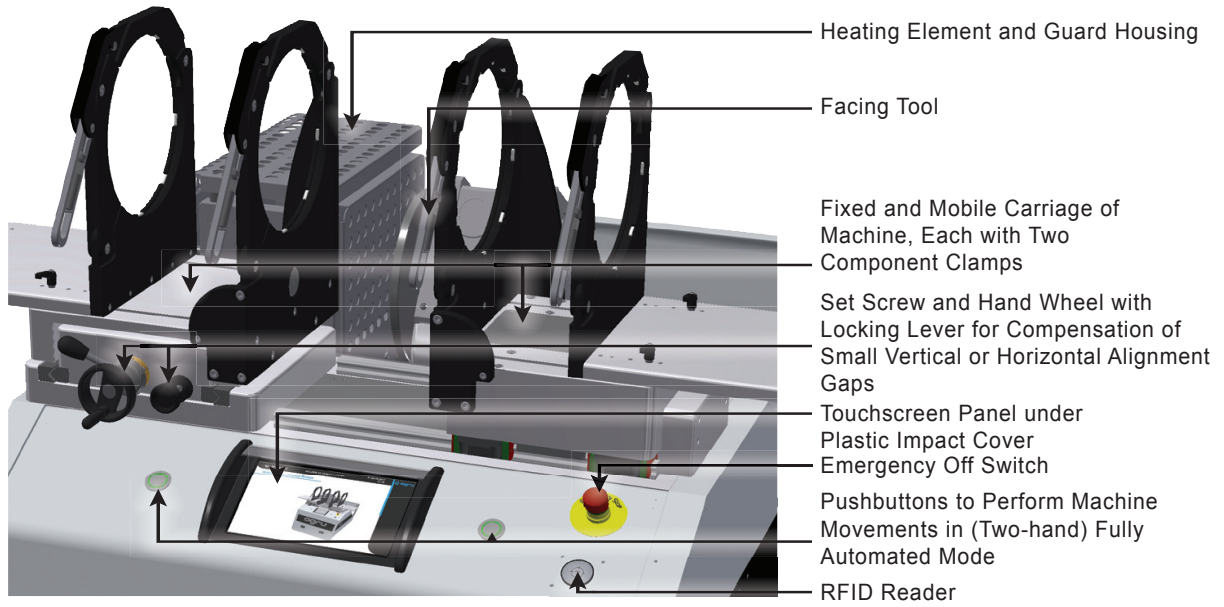
The machine can be used as an in-shop installation, and with anodized aluminum components, it is also suited for clean room applications. The machine enables users to enter the data that are relevant for the welding process and for the traceability of the welded joint. From the entered welding parameters, it calculates the applicable forces and temperatures and controls the welding process automatically.

The machine is designed, manufactured, and equipped in such a way that there is little need for the user to influence upon the process.

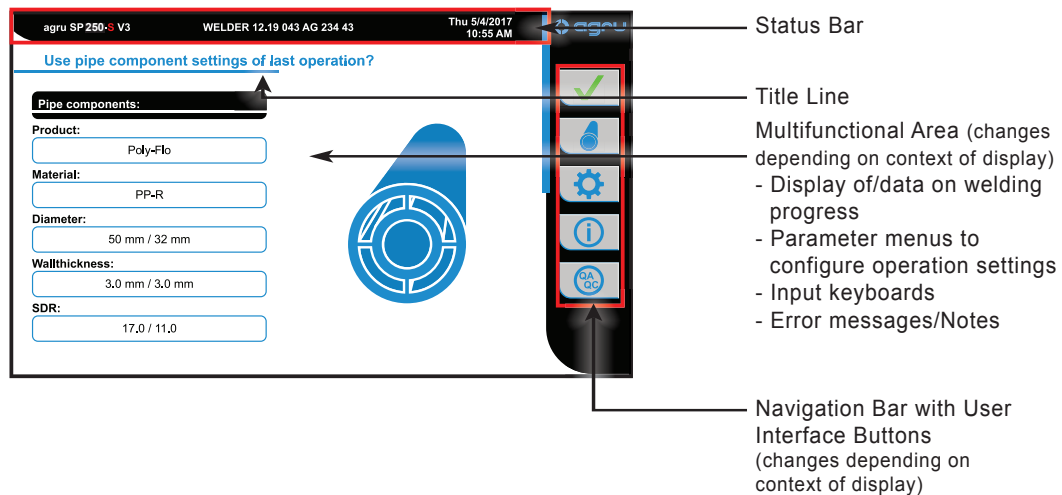
All welding and traceability data are entered either directly on a touchscreen panel or read from a transponder card by the RFID reader. The welding process is monitored in its entirety and saved to a welding report. All welding reports can be downloaded to a USB stick as an abstract, an extended report or as an AGRU WELD NET database file.

Using the menus displayed on the touchscreen, the machine can be customized to the application in hand (see section 4.2, Configuring the Machine).

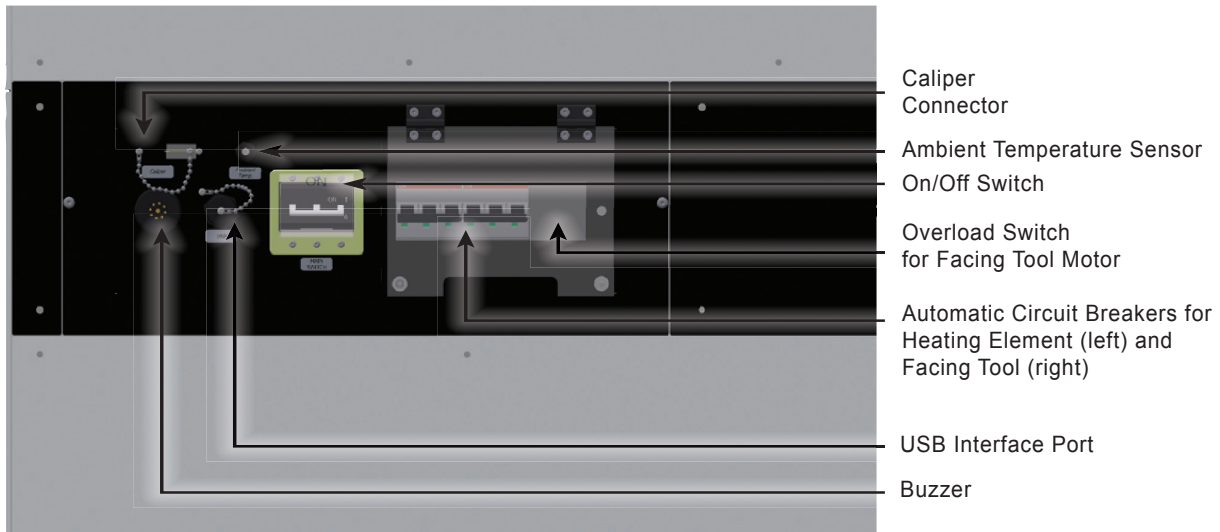
3.2.1 Component Overview



3.2.2 Touchscreen / Control Panel



3.2.3 Ports and Switches



3.2.4 Specifications

agru SP 250-S V 3	
Power Characteristics	
Voltage	3 ph / PE, 400 V AC ± 10 %
Frequency	50/60 Hz
Total Rated Power	8.50 kW
Heating Element	6.10 kW
Facing Tool	0.75 kW
Welding Operation Specs	
Welding Force	3500 N
Speed of Facing Tool	approx. 24 rpm
Ambient Temperature (operation)	+ 10°C to + 40°C (50°F to 104°F)
Ambient Temperature (storage)	- 5°C to + 50°C (23°F to 122°F)
Operating Range	Diameter 110 - 250 mm (4-1/3" - 9-7/8")
Dimensions and Weight	
Dimensions (W x D x H)	
Mach. in the transport box (closed)	1150 x 1600 x 1530 mm (45 ⁵ / ₁₆ " x 63" x 60 ¹ / ₄ ")
Machine in the transport box (open)	1110 x 1550 x 1400 mm (43 ⁷ / ₃₂ " x 61 ¹ / ₃₂ " x 55 ¹ / ₈ ")
Machine only	1040 x 1460 x 1355 mm (40 ⁵ / ₁₆ " x 57 ¹ / ₂ " x 53 ¹¹ / ₃₂ ")
Weight	
Mach. in the transport box (closed)	945 kg (2079 U.S. lbs.)
Machine in the transport box (open)	892 kg (1962 U.S. lbs.)
Machine only	815 kg (1793 U.S. lbs.)
Maximum Carriage Stroke	approx. 255 mm (10 ³ / ₆₄ ")



The overall height of the machine, no matter whether on the palette or machine only, is comparatively variable inasmuch as it depends on how far the support legs of the machine are screwed in or out.



Important

The power supply connection is designed as a 3-phase plus earth ground connection. No neutral conductor is needed. The power supply connection should be rated at 32 amps and should be wired with an automatic safety switch of 32 amps medium-slow blow. The conductor section of the power supply connection should be minimum 4 sq. mm.



Important

For the connection to mains power an approved CEE plug and outlet have to be used and wired according to the specifications quoted above. Compare also the photograph as well as its legend and explanations below.



If the power supply is equipped with an earth-leakage circuit breaker, this circuit breaker may be triggered falsely, without actual intensity differential.

Info



1. CEE Power Outlet 32 A
2. CEE Power Plug 32 A with integrated phase inverter
3. Contact Socket for Phase 3 (L3)
4. Contact Socket for Neutral (not needed with SP 250-S)
5. Contact Socket for Earth Ground (PE); a little thicker than the other sockets
6. Contact Socket for Phase 1 (L1)
7. Contact Socket for Phase 2 (L2)
8. Contact Pin for Phase 3 (L3)
9. Contact Pin for Neutral (not needed with SP 250-S)
10. Contact Pin for Earth Ground (PE); a little thicker than the other pins
11. Contact Pin for Phase 1 (L1)
12. Contact Pin for Phase 2 (L2)

Prior to starting to first use the machine, the power supply connection has to be verified. Across any two phases (L1-L2, L2-L3, L1-L3) a voltage of 400 V AC \pm 10 % has to be found. If a neutral is wired to the same power supply socket, across any of the three phases and the neutral, a voltage of 230 V AC has to be found. These measurement can be made with any common voltmeter for alternating current voltages.

If connected appliances are equipped with a motor requiring 3-phase alternating current supply, as is the case with the SP 250-S, the rotating field of the machine has to have the proper direction. The SP 250-S checks this and if the rotation is incorrect, a “Power Supply Error” message is displayed. To change the direction of the rotation of the field, the phase inverter in the plug can be used. Two of its contact pins are placed on a grey turning disk. A flathead screddriver can be used to turn this disk, thereby inverting the positions of the two pins, which in turn inverts the rotation of the field.

3.3 Welding Process Overview

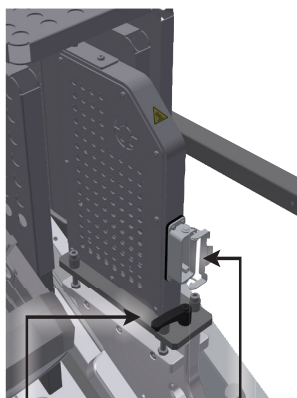
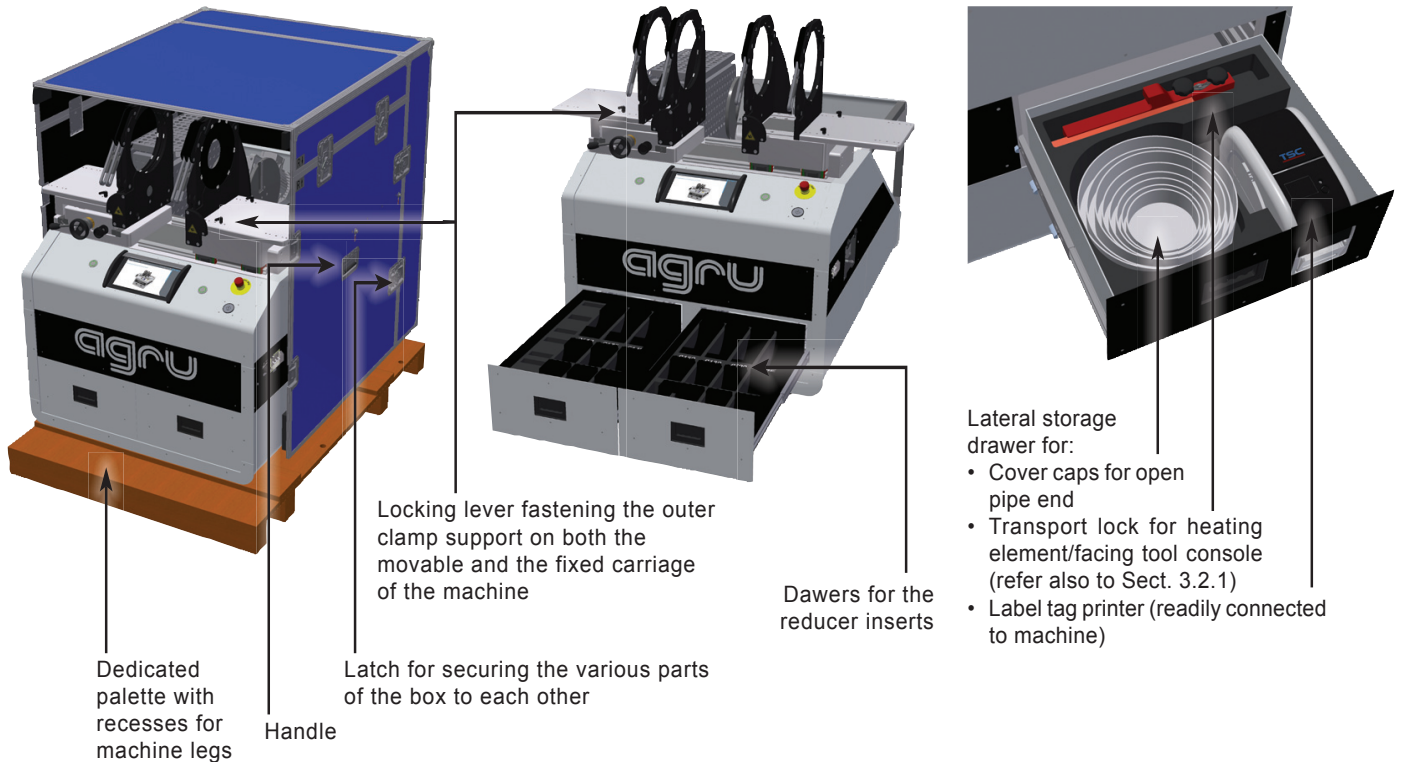
The welding process is performed as follows:

- Components are clamped into the frame; depending on the form of the component to be welded, this may mean that the outer clamps have to be re-adjusted or that reducer inserts have to be inserted.
- Pipe ends are worked using the facing tool until the machine indicates facing completed, to be confirmed on the touchscreen; then removal of chips and shavings (vacuum cleaner recommended).
- Pipe alignment is checked and confirmed on the touchscreen.
- Automatic insertion of the heating element; when inserting it, the heating element has to be clean.
- After it was inserted, the pipe in the movable carriage closes in automatically at the predefined force on the one in the fixed carriage, thereby also aligning the heating element exactly in-between the butts, which are then heated to the predefined temperature.
- The following steps in the process are performed in a fully automated fashion by the welding system:
 - After the full heating time, the heating element is removed.
 - For the fusion stage, the movable carriage closes back in.
 - The fusion force is applied as a linear force increase.
 - The new joint then cools down at the predefined force.
- After the cooling time is over, the force is automatically removed from the carriages and the pipe or fitting can be taken out of it.
- The user enters an assessment of the quality of the joint, possibly after measuring the bead with the optional electronic caliper.

4 Operation

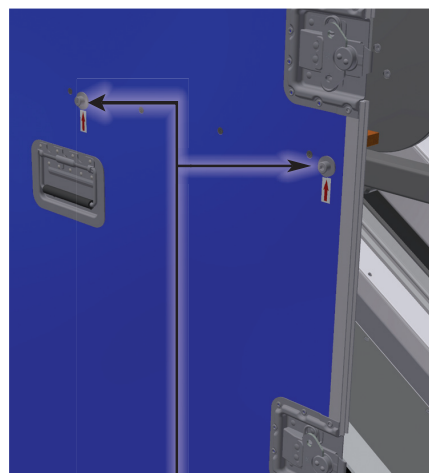
Before putting the machine into operation, review the transport locks and the way the machine is set into the the transport box and on the dedicated palette matched to it. Whenever the machine is moved or shipped, it has to be set into this box and all locks and auxiliaries have to be engaged. The figures below help with understanding the transport helpers.

After the figures, you will find a description of how to **stow** the machine safely at the end of work. Taking the machine out of the box and putting it into operation — including first check-out after delivery — will be done by performing the same steps in reverse order.

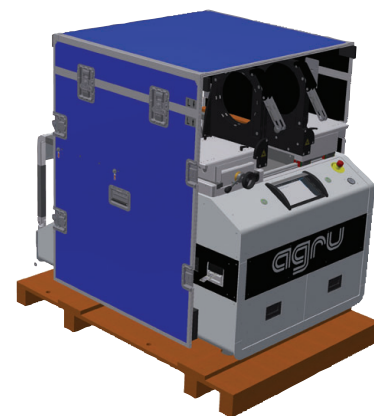


Locking lever for heating element

Power supply connector of the heating element with fastening clip; the fastening clip should always be, and has to be, engaged during operation



Fastening screw for machine when in box (secures lateral panel to square pipe in prepared hole, on both sides of machine)



Machine in partly (dis-) assembled box (see below for details on protocol to assemble or disassemble box)



Important

The locking levers for the heating element and the outer support of the pipe clamps are also used as transport locks. They lock/unlock themselves according to the principle of a ratchet screwdriver: to turn the lever back without engaging the thread, lift it slightly. During transport all levers have to be in the locked position. Those for the **clamp supports must be in the locked position** during work as well, when the supports were properly positioned. The one for the **heating element, however, must be in the unblocked position** when the machine is in service.



Important

When the printer is moved or shipped, the roll of labels in the printer has to be removed.



Important

To install the transport lock for the console carrying the facing tool and the heating element, the machine has to be switched off and the console has to sit as far to the right (looking on the machine from behind) as it will go.



Info

When installing the reducer inserts, place the narrower inserts into the inner clamps, the broader inserts, into the outer clamps. The insertion and the removal of the inserts is performed **without any tools** and the reducers are secured to the clamps by the force of the magnets only.



Info

The transport box is composed of several panels that can be “folded together” to save space. When the front and the back are secured to each other using the latches, they form a storage cabinet into which all other panels can be placed.

Stowing the Machine in the Transport Box

- Switch the machine off, clean it, and remove any add-on accessories and cables and put them securely away.
- Take the reducers out of the clamps and put them into the drawer provided to this end.
- Install and lock the transport locks (heating element, console carrying the facing tool and heating element) (see drawings at the beginning of this section for reference).
- Unlock the locking levers for the outer clamp supports, slide the clamps/support towards the center, and retighten all four the locking levers.
- Unplug the power cord in and, e.g. using a Velcro strap, stow it securely.
- Place the machine on its dedicated palette, so its legs stands in the recesses of the palette.
- Install both lateral panels of the transport box, placing the square wooden blocks onto the side frame of the machine and securing them to it with the screws in the prepared holes (see drawings at the beginning of this section for reference).
- Install the lid of the box, placing it onto both lateral panels and securing it to them with the latches.
- Install the front and back panel of the box and secure them to both lateral panels with the latches.

4.1 Check-out, Turning on, Selecting the Display Language

Place the machine on a level surface where it cannot slide, at a distance to other areas in the workshop, especially to those in which combustible materials are used, that is sufficient in order for the heating element temperature of up to 500°C (930°F) not to be hazardous. When starting the machine up, remove the transport locks before applying power to the machine if it was transported before start-up and the locks were engaged. The transport lock for the console with the heating element and

the facing tool can be placed into a storage compartment in the drawer in the side of the machine (see Sect. 3.2.1 and at the beginning of this section). Furthermore, if the electronic caliper and the label tag printer are planned to be used later on, connect them to the machine before the first welding operation.

While checking it out, adjust the machine for perfect horizontality in the left/right and the front/back dimensions using its length-adjustable support legs. This is helped by the dual level installed on the machine body.

Depending on the piece that is going to be welded, the outer clamps may have to be repositioned or removed. To do so, loosen the locking bolts and either remove the clamp or re-adjust it and secure it by tightening the locking bolts again. The carrying plate of the outer clamps on both sides are interchangeable. If you install the one normally on the right on the left-hand carriage of the machine and vice versa, you increase the distance between both clamps on both sides of the machine.

If the diameter of the pieces to be welded is smaller than the clamp, insert the reducer inserts. This can be done without using any tools since the inserts are fastened in the clamps by magnetic attraction.



Important Pipe clamps and reducer inserts have to be clean or must be cleaned before welding starts. To insert or remove the inserts, do not use heavy tools (hammer, wrench). They may damage the inserts and the magnets.



Important Make sure that all parts to be jointed are dual-clamped and/or appropriately supported.



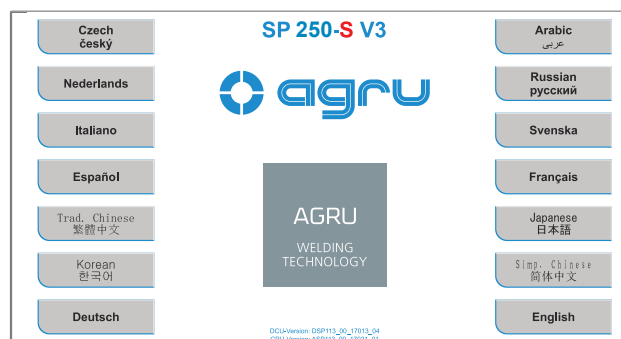
Important The surfaces of the heating plate have to be free of grease and clean, or they have to be cleaned. Clean the heating element only when it is cold. Refer to a service point for detailed information on the procedures for cleaning the heating element.



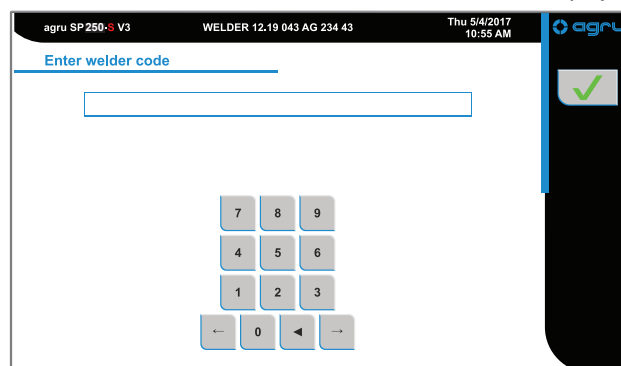
Important Make sure all connectors are tight in their sockets and make sure that the machine is operated only if the conditions for safe and intended use are met (see also section 2).

After preparing the machine for welding and connecting the power supply cord to mains power, the machine is turned on using the On/Off switch. The welcome screen, as reproduced in Display 1, appears on the touchscreen panel. Touch the appropriate button to select the display language that the machine will use. If needed, the system clock will then have to be set, in which case the relevant screen is displayed (see Display 26).


The machine then takes the user to the welder code input screen. Without a valid welder identification code, it is impossible to start welding processes on the machine. The next automatic step at power-up, after welder code input, is the zeroing of the movements. Without successful zero point of reference calibration, the heating element will not heat up for welding.



Display 1



Display 2

Enter the welder identification code by typing it on the touchscreen and saving it to memory by touching the  button. If a transponder card for the welder code is available, you can also read it from it by RFID.



Info

With the exception of the welding parameters (see Sect. 4.4) and the customized parameter sets, all inputs for which a transponder card is available can be entered by holding the card in front of the RFID reader.



Important

Entering data on the touchscreen must always be performed with the bare finger. Using objects (ballpoint pens, screwdrivers, etc.) may cause unrecoverable damage to the surface of the touchscreen.



Info

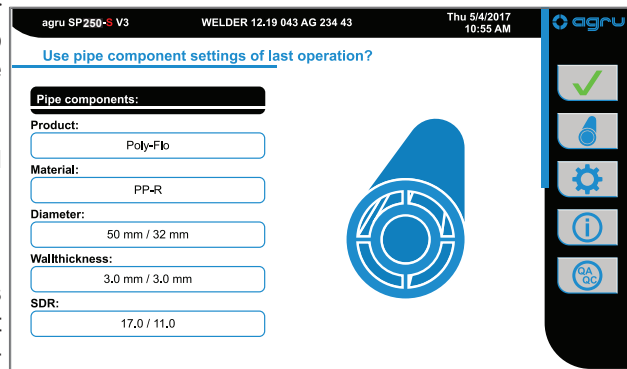
Depending on the software version installed in your machine, some screens may differ slightly on your machine from the reproductions in this manual.

After welder code input and zero point calibration, the machine displays the first input screen of the welding process proper (see Display 3). In this display, it is possible to start the welding process and to customize the configuration of the machine.

The welder will enter all settings and perform all control actions on the touchscreen panel.






4.2 Configuring the Machine


In the first input screen of the welding process proper (Display 3), the parameters of the last welding are shown (product/component, material, diameter, wall thickness, and SDR value of the processed component). Furthermore, the status bar at the top of the screen shows the date, time of day, and also the registered welder and the machine identification.



Display 3


In Display 3, the welder has the possibility to:




- immediately start a welding process that will be performed with the same welding parameters as the previous welding (touch the  button and move on to section 4.7);
- enter new component-related and traceability data for the next welding (touch the  button and move on to sections 4.4, 4.5);
- change the machine settings in the configuration menu (touch the  button);
- display information on the welding system itself and its maintenance/service status (touch the  button and see Sect 6.1 for reference);
- view the operator's guidelines for the jointing of thermoplastic components (touch the  button; see Display 4 for reference);
- lock the machine against unwanted manipulation by holding down both pushbuttons starting machine movements until the welder code input screen appears and a valid welder code is required to unlock the machine;
- enter a new welder code by holding a transponder card into the read range of the RFID reader.
















To access the configuration menu, press the  button. Some options of the menu are protected





Display 4

by a code called selection code. Therefore, when browsing from one page to the next in the menu, you may be prompted to enter this code in a screen resembling Display 2, where it has then to be confirmed by the  button. The menu has the items listed in the following table.


In the menu, the  button depicted at an option means that touching it will open a submenu in which the configuration itself can be customized. For functions that the user can enable or disable at their own discretion, the  (on) and  (off) buttons indicate the current status. Touching the button will toggle the function from one to the other state. Use the arrow buttons pointing to the left and to the right to move back to the previous or on to the next page of the menu.


Designation	Setting	Description / Data to be entered
Report View		In a sub-menu, a welding operation can be selected in a list to display the report recorded of that operation. From this screen, it is also possible to print a label tag for this welding once again (see section 5.2).
Select Number of Labels		In a sub-menu, the number of label tags (0 - 3) to be printed after welding for purposes of identification, can be selected.
Select Unit of Length		In a sub-menu, the unit of length used for displaying welding data can be selected: millimeters or inches.
Select Temperature Unit		In a sub-menu, the temperature unit used for displaying welding data can be selected: centigrade or degrees Fahrenheit.
Buzzer	 	if ON: The audible signal that validates certain steps in the process is turned on; if OFF: At the end of the respective steps no signal can be heard.
Set Volume of Buzzer		In a sub-menu, the volume of the audible signal that the machine emits to validate the execution of a given step in the process can be set.
Automatic Heating		In a sub-menu, a time, for instance on the following morning, can be pre-set when the heating element will start heating up automatically (see sub-section 6.2).
New Report View	 	if ON: The Report View option of the menu calls an extended and more powerful report view, which allows in-depth assessment and analysis (this report view requires entering a Supervisor Code that authorized persons, e. g. a project manager, can set and enter themselves); if OFF: The Report View option of the menu calls the standard, less detailed report view of welding operations (this report view is also displayed if the option is enabled, but the entered access code for the new, extended report review is entered incorrectly).
Bead Dimensions	 	if ON: At the end of the welding process, the machine requires the welder to measure the dimensions of the welding bead with the electronic caliper as an assessment of the quality of the joint (see Sect. 4.7.9); if OFF: At the end of the welding process, the machine only requests a visual check of the bead by the welder. <i>The functionality will be disabled automatically during a welding operation, even when it is enabled in the menu, if no bead dimensions exist in memory for reference for the parameters of that particular welding operation.</i>
Bead Force while Welding	 	if ON: During welding, the diagram depicted on the screen represents the force exercised on the welding bead (i. e., for instance, no force in the heating stage, as the applied force is not exercised on the bead); if OFF: The force depicted by the diagram in the course of the welding process is the value exercised on the force transducer.
Select Language		In a sub-menu, the display language of the machine can be selected (see Display 1 for reference).






Two-hand Operation		if ON: Steps of the process where machine parts move have to be carried out—excepting a few special cases—by holding down both the left-hand and right-hand confirmation pushbuttons of the machine for the full step duration (see Sect. 4.3 for details); if OFF: Steps involving moving parts can be started using the two control pushbuttons, but will be performed automatically by the machine after they were started with the pushbuttons.
Label with QR Code		if ON: The label tag(s) printed at the end of the welding process feature(s) a QR code that includes data that allow the ready identification of a particular joint; if OFF: The label tag(s) have all the data on the welding process, but no QR code.



If two-hand operation is disabled, there is increased danger of injury caused by moving parts of the machine.

Caution While the configuration menu is being displayed, two more buttons can be seen in the navigation bar at the right-hand edge of the screen. The  button gives access to the system settings of the welding machine. They are meant for specialized staff supposed to set up, service or, if failed, repair the machine; therefore, they are not described in this booklet.

Just as the system settings, the extended operation settings of the welding system, which can be accessed by touching the  button, are protected by a second access code, which will be disclosed only to supervising staff with the operator. The parameters below can be customized in the extended set of settings after entering that code.

Designation	Setting	Description / Data to be entered
Memory Control		if ON: The machine refuses further welding operations when the memory is full; if OFF: The machine overwrites the oldest report when the memory is full.
Set Date/Time		In a sub-menu, date and time can be set, provided no service of the machine is currently due.
Delete Reports		In a sub-menu, it is possible to delete all welding reports currently in memory; the reports will be deleted only after another two safety warnings were confirmed.
Enter Additional Parameters		In a sub-menu, the characteristic welding parameters can be defined for product/materials that are not available in the control software.
Enter Inventory Number		In a sub-menu, the identifier can be entered by which the machine has been entered in the inventory of its operator.

4.3 Fully Automatic and Semi-automatic Operation

The Two-hand Operation option in the configuration menu allows setting the machine to the fully automatic or to the semi-automatic operation mode (see also at the end of the first table in Sect. 4.2).

With two-hand operation enabled, the machine indeed performs all movements of the movable parts during component facing, alignment offset check, and the welding process proper autonomatically, but only if the user holds down both pushbuttons starting such movements for the entire duration of the particular movement. Insofar the system is in semi-automatic mode. For it suspends the ongoing action as soon as the user releases one or both pushbuttons.

With two-hand operation disabled, the machine is in the fully automatic mode. The pushbuttons next to the touchscreen just start the respective next movement and need not be held down. With few exceptions, no further action on the user's part is needed in the course of the process.



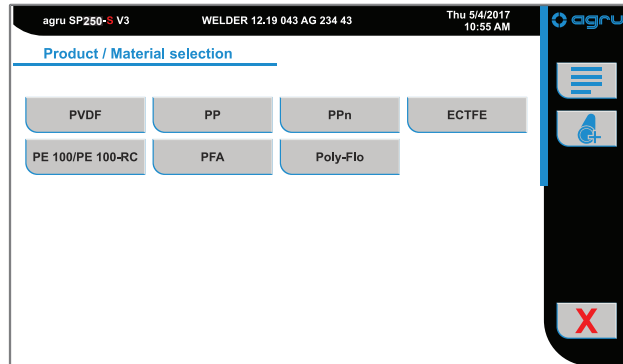
Whenever the user is required to start and/or carry through with a movement of a movable machine part by pressing or holding down the pushbuttons on both sides of the touchscreen that start machine movements, these pushbuttons will flash.

4.4 Changing Key Parameters of the Welding

In the welding-individual start screen (see Display 3), it is possible to change the specific parameters for the particular joint to be made. To do so, touch the button. A first selection screen is then displayed on the touchscreen panel (see Display 5).



The first selection screen comprises both component materials, such as PVDF or PP, and products, such as “Poly-Flo” (a dual-wall pipe). A product is a parameter set of technical welding data either in memory ex works or user-defined (see Sect. 4.6 for reference); one of the parameters of the set is the component material. In user-defined parameter sets, the product name is at the user's discretion. If one product has several thermoplastic materials for which welding parameters exist in memory, after selecting that product the user is prompted to select the material used in the upcoming welding operation. If there is only one material for it, the machine moves on to the diameter selection screen, just as after the selection of a material rather than a product on the first selection screen.



Display 5

To select a product or a component material, touch the appropriate button on the screen. Analogous screens will follow that allow selecting, for the component that is going to be welded, its diameter, its wall thickness, and its SDR value. After every selection made, the machine switches to the next selection screen.

Standard products/materials can be selected on those screens. Furthermore, the machine enables the jointing of additional products/materials, i. e., additional parameter sets of characteristic welding data which are either defined as additional parameter sets ex works before the machine ships or set up by the user themselves (see Sect. 4.6).

Additional parameter sets are under an access code that has to be entered and confirmed by touching the button, as soon as they are accessed using the button. To whom this code is disclosed is at the machine operator's discretion.

The Product/Material or Material selection screens will always be show, even if there is only one material or product in memory. All other selection screen appear only when a selection is actually possible. If, e. g., there is only one diameter in memory for a given material, no diameter selection screen will be displayed.




Important


The machine must be used only for the materials, diameters, and thicknesses in the screens of (standard or additional) parameter sets. The manufacturer is in no event liable for damage or consequential damage that occurs as a result of deviations from them or of modifications or attempted modifications to the control software. Furthermore, this will cancel any claims to warranty expressed for the machine. To make a parameter set available on the screen, it has to be entered previously with all its technical data for welding in the configuration menu.






Welding PFA component is subject to a valid license for this material. Therefore, without a valid license in memory, PFA will neither appear as an ex-works nor as an additional parameter set. The license key is disclosed upon request by an authorized entity and can then be entered in the system settings of the machine (see Sect. 4.2 for reference).

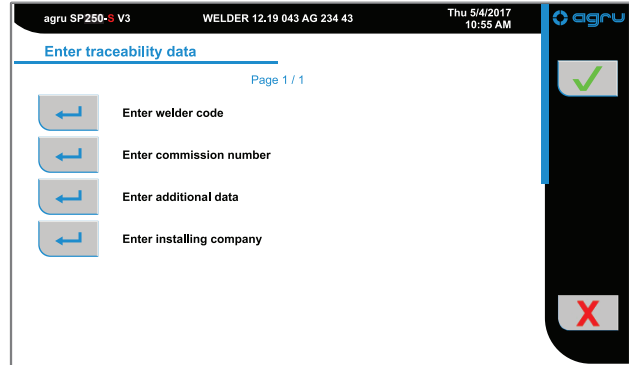
4.5 Entering Traceability Data for the Joint

On the screens that allow changing the technical parameters for the upcoming welding operation, by touching the  button, it is possible to access the traceability data for the joint and change them as needed (see Display 6).

Independently of accessing them by touching the  key, the welder identification code has to be entered after switching the machine on (see Sect. 4.1 and Display 2), as no welding operation is allowed without a valid welder code.

The machine displays a menu that allows selecting the traceability information to be changed (see Display 6). You can confirm all current data—those from the previous welding—by simply touching the  button.

Change any data that require modification by touching the  key at the appropriate menu option. Depending on the kind of data you want to change, the machine displays either a numeric keypad (see Display 2) or an alphanumeric keyboard (see Display 7). To confirm and save your data input to memory on the data input screen, touch the  button.



Display 6





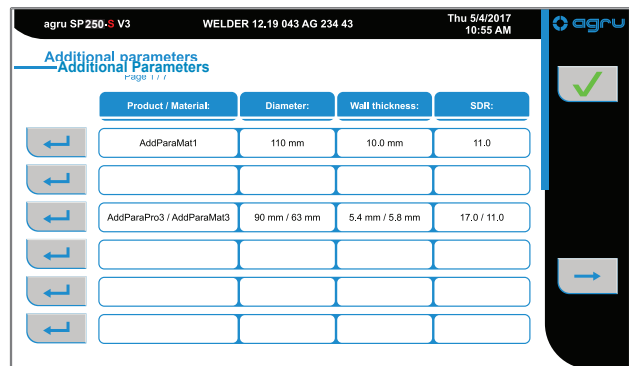
Display 7

4.6 Definition of Welding Parameters for Additional Materials


The extended set of settings in configuration menu (see section 4.2) has an option “Enter Additional Parameters,” which allows defining the technical data the machine should use when welding materials not currently available in system memory.

If no additional, operator-defined welding parameter set has been saved to system memory, the screen for the product name appears to start the input of a full parameter set (see below). If there are, the parameter set overview (Display 8) shows and presents them line by line (in the example the products “AddParaMat1” and “AddParaPro3”).

Using the  button to the left of an entry in the additional welding parameter overview, open the menu by which you can manage the additional parameter sets. It offers re-entering the parameter set just selected from the start, editing its parameters, deleting it, and deleting all additional parameter sets. Select the desired option, again, by touching the  button next to it.



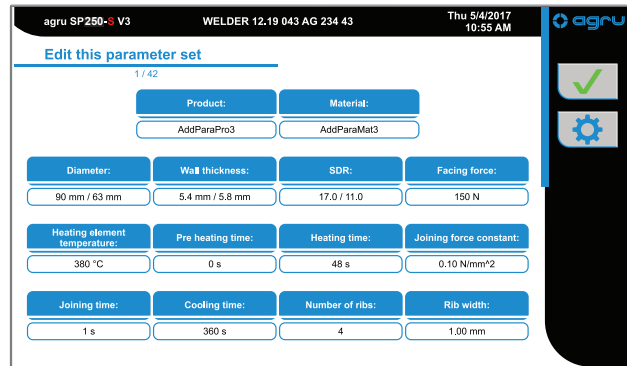
Display 8

Instead of the menu, a screen that allows entering the product name to be saved to the new parameter set is shown if the  button next to a blank line was touched. After this, in a series of individual screens enter

all welding parameters that the parameter set should hold and set on/off values such as whether or not the components have to be aligned before facing, to the desired state using the toggle switch. Confirm every value by touching the button, which makes the machine move on to the next screen.

Starting from the management menu, the re-enter parameter set option has the same effect, except the individual input screens are not blank. They will hold the values currently set for the parameter set that was previously selected in the overview by touching the button next to it.

Selecting the edit parameter set option in the management menu will show a table-style overview of the previously selected parameter set (see Display 9). The individual parameters shown here depend on which on/off values are set to on in that parameter set. The menu-like overview of the on/off values of the set, in which they can be enabled and disabled, is accessible by the button. The individual parameter values can be edited after touching the value itself in the table, thereby opening an input screen for that value. When editing parameter sets, too, every change has to be confirmed by the button.



Display 9

Both kinds of deletion in the additional parameter management menu — deletion of the welding parameter set previously selected in the overview list and deletion of all additional welding parameters — require the subsequent confirmation of two warning messages.



Info

If the product/material that was used in the last welding operation is deleted, the product/material selection screen (refer to Sect. 4.4) opens automatically upon closing the parameter set management, then the configuration menu, and a new product/material has to be selected.

4.7 Welding Process



Important

The welding machine operates in fully or semi-automatic mode, depending on the state of the Two-hand Operation option of the configuration menu (see Sect. 4.3 for a detailed description). Keep in mind that in semi-automatic mode, when the machine performs process steps involving movement of one of its movable parts, both pushbuttons starting a movement, left and right of the touchscreen have to be held down during that movement.

4.7.1 Facing the Component Butts, with or without Prior Alignment of the Components

When the button was touched in the start screen (Display 3), the welding starts either by the step of loading and aligning the components or right away by facing their butts, if required after installing reducers.




Important

Make sure that all parts to be jointed are dual-clamped and/or appropriately supported.

The load and align step is meant to have the welder perform a preliminary adjustment of the position of the components in the clamps in cases where successful facing and jointing will require precision placement of the components prior to facing. For the management of the welding process this step means that the user is prompted to load and align the components and to confirm this by touching the button. To make this screen

appear, the load and align step has to be required by the parameter set that defines the ongoing welding operation (refer to Sect. 4.6).


After the alignment confirmation or, if disabled, immediately, the facing process starts, according to the various on-screen instructions, by moving the facing tool to its so-called Position 1 and —unless performed previously for a preliminary alignment— the insertion of the components to be jointed into the clamps.

After clamping the components, the welder can use the plus and minus buttons to adjust the facing distance — total and left-hand side — the movable carriage should travel during the facing process, if it should be different from the preset displayed on the screen. After a change of the facing road, you have to re-clamp in the pipes. Then confirm the components being clamped by touching ,

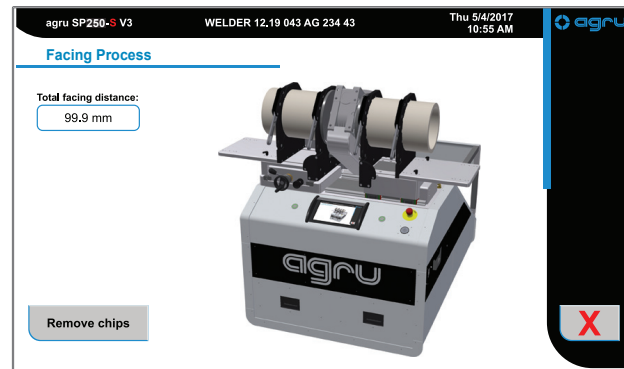
and the machine prompts you to move the carriage apart and advance the facing tool in its so-called Position 2, each of which is done either by pressing (two-hand operation off) or by holding down (two-hand operation on) both pushbuttons that start movements. When the rotating facing disks are close to the component butts, the pushbuttons may be released. From then on, facing continues fully automatically.




Display 10

The facing process can be suspended while it is running, by touching the “Remove chips” button (see Display 11). This will move the carriage away from the facing tool and stop the facing tool. A screen prompting you to remove the facing chips is shown and has to be confirmed by pressing  in order for you to be able to go on facing.

At the end of the facing process, it is mandatory to remove any facing chips and shavings, but **without touching at all the surface on which the components will be plasticized and joint.** Therefore, a vacuum cleaner is recommended for this process step.



Display 11

When the component butts are faced, the machine moves the carriages apart and retract the facing tool to the back (if two-hand operation is on, the user has to hold down both pushbuttons starting movements for the facing tool to be moved back). Visually check the components. Touch the  button in the navigation bar if the facing outcome is o.k. If it is poor, repeat the process by touching the “Repeat Facing” button. To face the butts once again, in most cases the components have to be re-adjusted in the clamps.



Important

A set of technical welding parameter may define both the load and align step before facing and the facing process itself as enabled or disabled. In other words, a parameter set may put together without facing and without previous loading and aligning. Still, even when a parameter set without facing process is applicable, the movements of the facing tool have to be performed. In that case, their purpose is only the detection of the reference points for all movements of movable parts.



Info

When facing is successfully finished, do not touch the components anymore with your bare hands. Resulting fatty layers on them would jeopardize the quality of the joint.

4.7.2 Checking Pipe Alignment

When the component butts are level to satisfaction, it has to be checked if they align properly to each other or if there is an offset. Similar to facing, the touchscreen tells the welder that this is the next step, and the carriage must be closed in using the two-hand pushbuttons that start machine movements. On the screen, the “Repeat Facing” button also appears.

A small offset between the components can be readjusted using the set screw and hand wheel located at the front of the machine (see Sect. 3.2). If the alignment offset is too large, or if there is too large or too uneven a distance between the pipe butts, touch the “Repeat Facing” button to re-align the components in the clamps and restart the facing process. **Repeating the facing process is required, too**, when an existing vertical offset is small enough to allow its leveling using the set controls, but still requires the components to be re-aligned in the clamps after the vertical correction.

If you decide to repeat facing after the alignment check in a welding process in which the components were loaded and preliminarily aligned at the beginning, the repeated facing process will again start by the load and align step (refer to Sect. 4.7.1).

If the components align properly, confirm by touching the button to start the welding process. The machine asks to close the butts opposite the heating element with caps; confirm this by . Without end caps, the temperature difference between the welded and the open butt may cause a suction effect, which would cool the bead, thereby adversely affecting the quality of the welded joint. After the confirmation that they caps have been installed, the machine move the carriage apart.

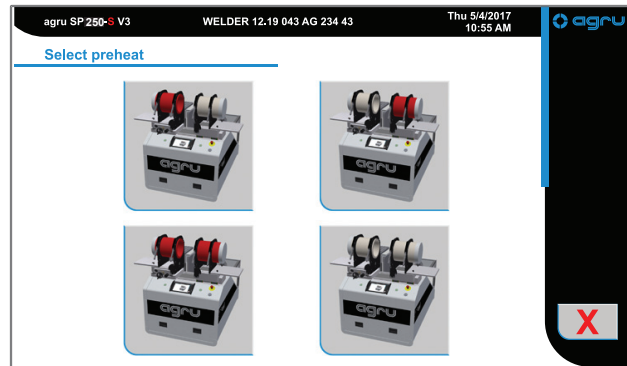


Display 12

4.7.3 Pre-heating the Pipe Butts and Inserting the Heating Element

After the installation of the end caps on the components, the machine tells the welder to start the welding process. This includes moving the carriage apart and, simultaneously, the heating element to the right, then forward to in-between the components. All these movements are performed using the two-hand pushbuttons (press if two-hand operation off, hold down if two-hand operation on). Even with two-hand operation enabled, the pushbuttons on both sides of the screen can be released when they are completed. From that moment, the welding process will go on fully automatically.

If the previously selected welding parameter set comprises a value for pre-heating the component butts, prior to starting the welding process the kind of pre-heating has to be selected: one side, both sides or without any pre-heating. The selection is made on the next screen by touching the drawing that represents the desired type of pre-heating (see Display 13): red color indicates the component that will be pre-heated. To start a welding process without pre-heating, simply pressing or holding down the pushbuttons starting machine part movements, as described in the previous paragraph, is also sufficient.



Display 13

On this as on any other screen the button in the navigation bar can be used to cancel the entire welding process.



If in the control software, the pre-heating time is set to 0 seconds, the machine will skip pre-heating and not display the relevant selection screen.




Important

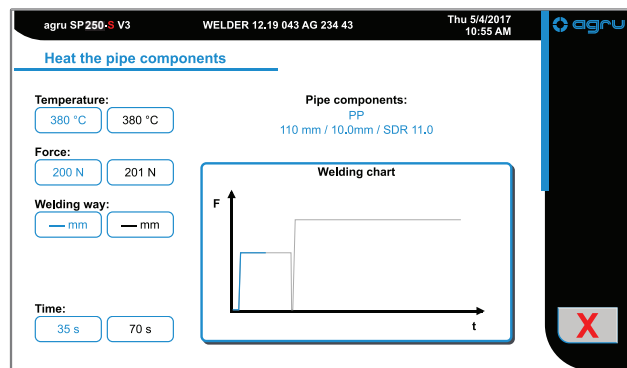
Pre-heating is meant for mechanically produced fittings. If it is used for other applications or fittings, no warranty for a correct joint and no liability for any immediate or consequential damage are assumed.

From the start of the welding process, with or without pre-heating, the machine controls and monitors constantly the temperature of the heating plate and the forces and times to be observed in its various stages. Nominal values and tolerance ranges are defined by the parameters for the welding operation previously entered or confirmed. If a value is not within the applicable tolerance thresholds, the machine shows an error message to this effect and the welding process is aborted.

4.7.4 Heating Stage

In the first welding phase, the components close in on the heating element with the defined heating force and are thereby warmed. During the entire duration of the heating phase, they continue to soak heat from the heating element without touching it.


On the touchscreen, the welding progress diagram indicates in which phase the welding currently is (blue line). In case of malfunction, the welding process can be aborted by touching the  button, or it is aborted automatically by the machine.

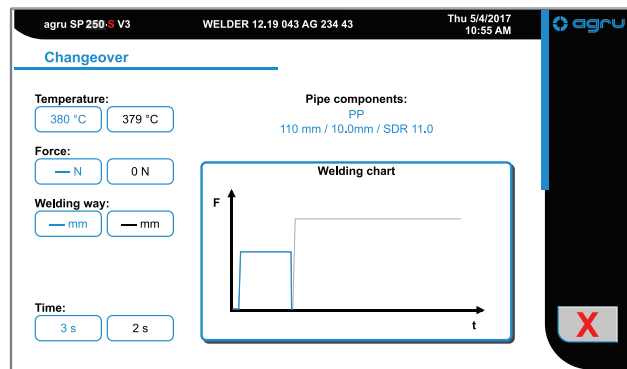


Display 14

4.7.5 Change-over Stage

At the end of the heat-soaking phase the carriages are moved apart automatically. The heating element is removed from in-between the components, and the carriages close in again; both actions occur automatically. The welding progress diagram on the touchscreen indicates in which phase the welding currently is (see Display 15).

The welder has to monitor the change-over and must abort welding by touching , in case a malfunction occurs.



Display 15


4.7.6 Joining Stage

In the joining phase (or, fusion phase) the machine increases the applied force to the computed fusion force in accordance with the force ramp defined for the weld. This phase is also indicated on the touchscreen panel.

4.7.7 Cooling Phase

When the full joining force is reached, the machine moves on automatically to the cooling phase (see Display 16). During cooling, the applied joining force is constantly monitored.

4.7.8 End of Welding

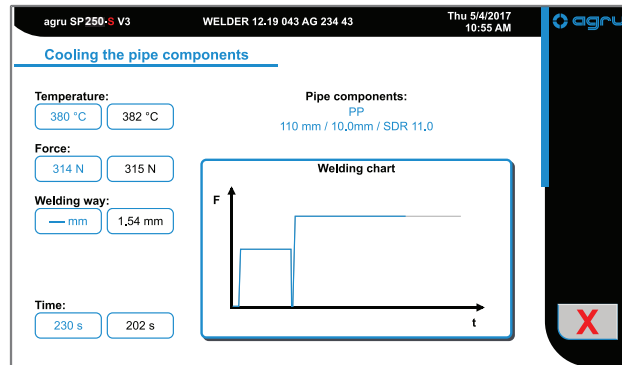
After a successful welding operation, which can also be recognized in the welding chart, the applied force is removed from the components, and the machine prompts the user to remove the new joint from the clamps. Its removal has to be confirmed by touching the  button. However,

before the new joint can be considered done, it has to be assessed by a visual check (see Sect. 4.7.9 for reference).

4.7.9 Assessing the Joint by a Visual Check at the End of Welding

At the end of the welding process, the machine displays an overview of some welding and traceability data that will be saved to the report (see Display 17 for reference), and asks the welder to visually check the quality of the joint.

In case the welder's assessment by observation finds that the weld is of poor quality, although the machine did not alert to any welding error, he must manually classify the welding result as poor by touching the **X** button. This causes the machine to mark the joint as poor rather than good in the welding report. Pressing the **✓** button at the visual check will declare the joint in order.

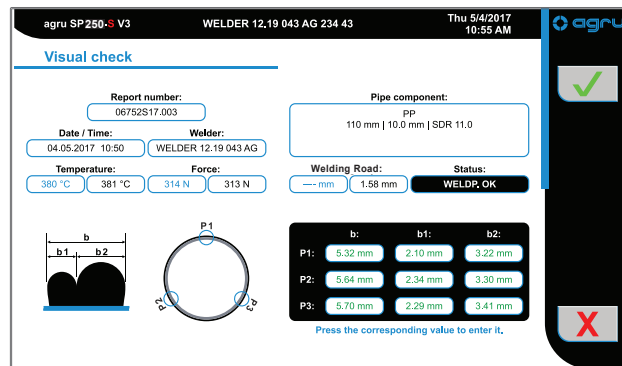


Display 16

Using joints identified as flawed is prohibited, no matter

whether the machine detected an error in the course of the welding or the welder declared it flawed upon visual check. If a label tag is printed of that welding operation, the joint will be characterized as flawed on that label.

If the Bead Dimension option is enabled in the Configuration Menu, the visual check at the end of welding is completed by measuring the size of the welding bead, as an additional indicator of the quality of the joint (see Display 17). On this display, the welder will enter the width of the bead as measured with the electronic caliper into the fields of the lines P1 - P3 in the lower right portion of the screen, after having touched the respective field: total bead width b or partial bead width b1 or b2. All these data and input fields are not displayed if the Bead Dimension option is disabled and/or if no nominal dimensions for the bead are defined in the parameter set for the ongoing welding operation. The visual check will then be the simple one described above.



Display 17



Info



Just as any accessory, to ensure proper function, the electronic caliper—which is not included in the standard delivery, but available optionally—has to be connected to the connector in the lateral panel of the machine (see Sect. 3.2.3) **before** the welding process.

For every measuring point around the circumference, P1, P2 or P3, touch the field representing the value to be measured: total bead b or partial bead b1 or partial bead b2. An input screen pops up. Then measure the width of the selected bead with the electronic caliper, to send the data to the machine. In case of failure, keep the caliper in position or hold it to the component once again. When the value is displayed in the input screen press **✓**. The input screen closes and the value appears in the previously touched field of the visual check management screen.

Fill in two of the fields of every line on the display, i. e. every measuring point P1 - P3. The machine computes the value of the third field. Both the nine fields in the lower right and the three measuring point representations in the lower left part of the screen indicate what the measured values mean. Red figures in a field mean that the value in it is a bead

width that is out of tolerance, green figures mean that it is within tolerance. Indications in another color mean that it is within tolerance, but that further values have still to be entered.



If bead measuring is part of the visual check, the joint can be declared o. k. with the  button only when all nine measured values are green on the display. If not, the machine accepts only the  button. The joint will then be recorded as flawed.

Provided the component butts were in contact at all in the course of the welding, the first thing that happens after an error during the fusion or cooling stage is the printing of a label tag identifying the error. In all other cases, including those where a joint is declared flawed by the visual check, the welding process moves always on to that check.

4.8 Aborted Welding Process

All welding-relevant data are constantly monitored while the welding process is running. If one or more of the parameters are out of tolerance and the machine cannot adjust them, the welding process is aborted after a given period of time.

The error that made the welding abort is displayed on the screen (see Display 18)

The errors listed in the following table can be displayed. Along with data on the status of the past welding and the joint that is its outcome, some of these errors, if occurring in the welding process, are encoded as a binary figure and written to the welding report that can be reviewed in memory (see Sect. 5.2) and to the label tag that can be printed and reprinted of that joint. See Sect. 4.9 for more details.



Display 18

Type of Error	Description
a. Data Input	
Input Error	Error while entering data on the touchscreen. The error message specifies whether an input is too short or too long, an entered value too high or too low.
Code Error	Error while reading data from a transponder card.
No Valid Data Found	At a selection, an option was chosen for which not all required data exist in memory, e. g., when a material that can be processed was selected for which not all welding parameters have been defined.
Computed Force Too High	The welding parameters set for an additional parameter set result in a computed welding force for a jointing operation that is too high.
b. System	
RTC Defective	The internal real-time clock of the machine is defective; re-set the clock in the configuration menu. When the machine is switched on with defective clock, the set-clock screen pops up automatically.
System Error	Malfunction in the control system of the machine; power to the machine has to be turned off and unplugged immediately, and the machine has to be sent to the manufacturer or an authorized service point for check and repair.

Type of Error	Description
Fuse Heating Element Off	The mains power fuse (automatic circuit breakers) for the heating element is/has switched itself off. If the machine is used for welding (the error message will show just before the welding process proper), the overheating cut-out protection will not be available.
Mains Power Supply Faulty	To be able to use the machine, a qualified person has to check and correct the connection to mains power. Possible conditions causing this error include incorrect phase sequence (rotary field), over- or undervoltage, and phase fault or failure
Power Supply Voltage Too High Too Low	The mains voltage to which the machine is connected is out of the acceptable tolerance; welding is not possible.
No Label Printer Connected	The label tag printer connected to the machine is not ready (no communication, faulty cable or bad configuration).
No Reports in Memory	The transfer of welding reports has failed because the system memory does not hold any report.
Info - Maintenance Due	The recommended service interval for the machine is over. It should be sent to the manufacturer or an authorized service point for scheduled maintenance and service.
Heating Cartridge Defective	A cartridge in the indicated zone of the heating element has failed and needs check and, possibly, replacement. While this error does not appear during the welding process, a weak or failing heating cartridge may be the cause of other errors appearing while the machine is welding.
Servo-motor Not Found	The control software was unable to connect with the indicated servo-motor.
c. Welding Process	
Automated Welding Mode	The welding process will be performed in the fully automatic welding mode, i. e., with disabled two-hand operation (see Sect. 4.3 for reference).
Ambient Temperature Too High Too Low	The ambient temperature is out of the acceptable range from 10°C through to 40°C; welding is not possible.
Error Ambient Temperature Sensor	A malfunction of the sensor prevents it from measuring reliable temperature values.
Error Distance Travelled Melt Loss Too Long Melt Loss Too Short	The stroke of the carriage (at facing, alignment check, or jointing) does not correspond to the expected distance it should travel; welding has to be repeated.
Welding Force Too High Welding Force Too Low	The applied force is out of tolerance; welding has to be repeated.
Motion Force Too High	The minimum force, needed to set the carriage in motion, is too high; no welding operation is possible.
Current Limit Servo-motor Reached	The movable part driven by the indicated servo-motor does not move smoothly and has resulted in the motor drawing more current than expected.
Change-over Time Expired	The change-over from heating to jointing has taken too long; the welding process has to be repeated.
Power Supply Failure	In the course of the last welding operation, a power supply failure occurred; welding has to be repeated.
Aborted by User	The user has cancelled the whole welding process by touching the cancel button (the red "X") while one of its stages was in progress,
Emergency Stop	The welder has turned the machine off using the Emergency Stop switch. If this was done because of a malfunction of the machine, it must not be turned on again, unless it is beyond doubt that it works properly.

Type of Error	Description
Maximum Heating Element Temperature Exceeded	The absolute temperature maximum of the heating element was exceeded. The welding operation cannot be considered in order.
Heating Element Temperature Too High Too Low	The temperature is out of tolerance and cannot be adjusted; as long as this error is not cleared, welding or repeating a welding operation is not possible.
Error at Visual Check	The new joint was declared poor by the user at the visual check at the end of the welding process (see Sect. 4.7.9 for more details).

4.9 Indication of Joint Status and Possible Errors on the Tag

The status of the joint and possible errors during jointing are indicated on the printed label tag and in the report saved to memory that can be viewed (see Sect. 5.2), in the form of an abbreviation or a binary figure.

The abbreviation “WELDP. OK” tells you that the welding process was completed correctly. If the letters “PH” precede this expression, pre-heating feature was enabled for that welding process.

Instead of the “OK” message, the tag and the report that can be viewed may tell you that something went wrong, by an eight-digit binary figure. The relevant meaning of the binary figure can be seen with the help of the code table below.

For instance, if a label tag says, “00010000,” an error in the pre-heating stage of the process occurred. For that bit is set to “1” which represents an error in the pre-heating stage. The bits are assigned to the following statuses and errors.

Bit	Fehler or Status	Binary-encoded Code
0	Error by Visual Check	0000 0001
1	Error Heating Element Motor or Position	0000 0010
2	Error Because of Power Supply Failure	0000 0100
3	Error Carriage Movement During Welding	0000 1000
4	Error Pre-heating	0001 0000
5	Emergency Off or Manual Stop of Welding Process	0010 0000
6	Error Heating Element Temperature	0100 0000
7	Error Joining Force	1000 0000
-	Welding Process o.k.	WELDP. OK
-	Welding Process with Pre-heating o.k.	PH-WELDP. OK



Important

In the case of a flawed welding process, bit 4 may be the only one set to “1” or along with another bit. If only bit 4 is set (0001 0000), this indicates a pre-heating error. If it is set alongside another bit (e. g., 0001 0100), it is for information only and tells you that this was a process with pre-heating; the error identified by the other bit is the relevant one (in this example, then, it is an error because of a power supply failure in a welding process in which the pre-heating feature was used).



Important

Using joints identified as flawed is prohibited, no matter whether the machine detected an error in the course of the welding or the welder declared it flawed upon visual check. If a label tag is printed of that welding operation, the joint will be characterized as flawed on that label.

5 Printing Pipe Labels and Downloading Welding Reports

The machine is equipped with USB A interface that gives you the opportunity to connect the tag printer or, if permitted, a USB stick.



Info

The download of welding reports via a wireless Bluetooth connection is possible too. As opposed to what is described below for a USB connection, report download will always include all reports in memory. An app running on the Bluetooth-enabled target device (e. g., a smartphone, a tablet computer) sets up and manages the connection between the welding system and the target device and runs the relevant data exchanges (see manual of that app).

5.1 Downloading Welding Reports to a USB Stick

When a USB stick is connected to the interface port while the standard data screen (see Display 3) is showing, the machine displays the menu in which the file type can be selected that is going to be used for downloading the reports (Display 19): use the button at the desired file format to select it and move on to the next input screen.

After the selection of the file format for download, a similar screen appears and offers five options of what exactly will be downloaded:

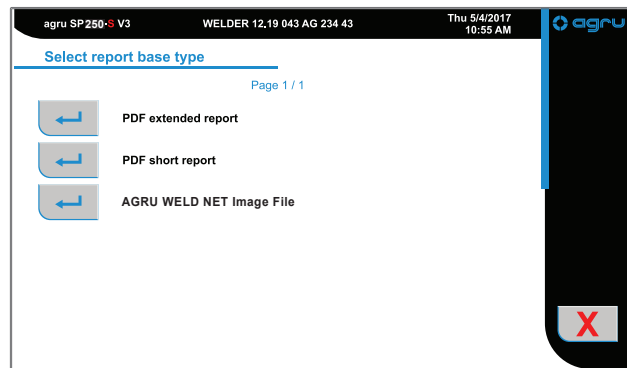
- all reports in memory (i. e., since the reports were last deleted)
- the reports that belong to a certain commission or project
- the reports of operations performed by a certain welder
- all reports in a certain range of dates
- all reports in a certain range of reports/report numbers

When an report type transfer that does not send all, but only certain reports to the stick was selected, the operator has to define the desired filter on the next screen. Either they browse through the reports in system memory to select the desired commission (see Display 20) or desired welder. Or he enters the start and the end of the desired date range or report range, of which the reports should be downloaded. Whatever the selected option, the input screen that appears adapts to the input currently needed to enter the desired restriction of reports to download. All inputs have to be confirmed by touching the button.

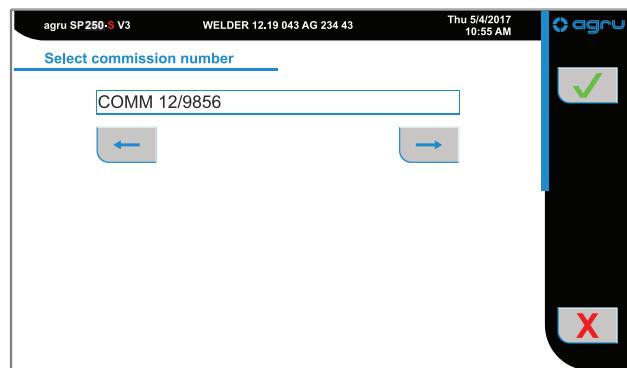
After successful download, the machine displays a message telling the welder that the process was o.k.

5.2 Showing Reports in Memory, Printing Pipe Label Tags

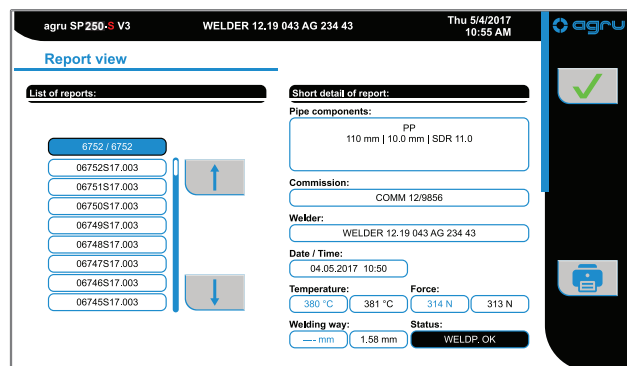
Using the appropriate option of the configuration menu (see section 4.3), it is possible to display on the screen the welding reports saved to memory. A screen like Display 21 appears. The "Status" field reads "WELD P. OK" if no error occurred, and contains the acronym "PH - WELD P. OK" (for



Display 19




Display 20



Display 21

„Pre-Heat“) if the welding operation was performed with the pre-heating feature.

Near the left edge of the Report View screen, you will find a list of all welding reports currently in memory. Above this list, the number of the selected report is given (before the slash), along with the total number of reports in memory (after the slash). To move the selection bar through the list, touch the scrollbar arrows to the right of the list. The longer you touch them, the faster the bar moves. The data from the selected report will populate the fields on the right after it was selected by the bar.

To reprint an extra tag of this welding operation in order to identify the component, touch the  button.





A label tag printed from the report review is identified as a copy by the abbreviation “CPY.” Only labels printed right after the welding operation (see Sect. 4.7.8, 4.7.9) are printed with an incremented number that identifies them as “originals” — if this term may be used. The number of tags that should then be printed is defined in the configuration menu (see Sect. 4.2).

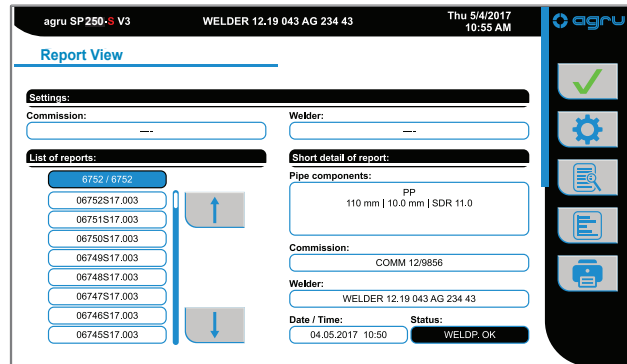
Printing label tags is possible only when the tag printer is connected to the USB A port of the machine. If this is not the case, an error is displayed. The printer can still be connected when the error message is showing; the machine recognizes this, the error disappears from the screen, and the printing process starts.

5.3 Using the Extended Report Viewer

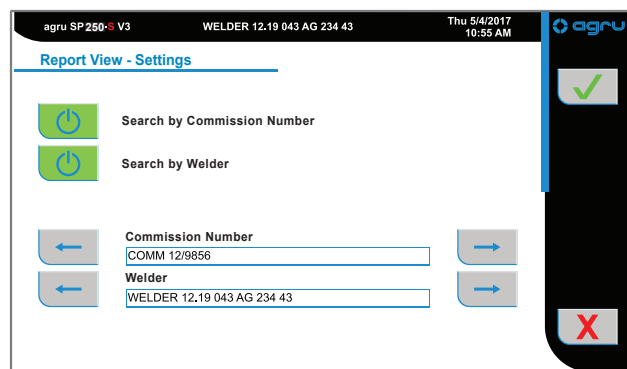
If the “New Report View” option is enabled in the configuration menu, selecting the “Report View” option of the menu (see Sect. 4.2) will first display an access code input screen and, after the correct code was entered, a report view with more powerful functionalities. If the entered code is incorrect, the “leaner” report view described in Sect. 5.2 will be displayed.

This extended report view (see Display 22) is very similar to the standard view, in its initial screen even presents less data from a report selected in the list of reports, but features the view filters by “Commission” and by “Welder” in the upper portion of the screen and additional function buttons in the navigation bar. The process of selecting a given welding report in the list on the left and of printing a copy of the label tag for that weld by touching the  button are the same as in the standard report view (see Sect. 5.2).

In the report view settings, which can be defined after touching the  button, the view filters can be set, thus restricting the list to the reports of a certain project/commission and/or welder. In the settings (Display 23), the “Search by Commission Number” and/or “Search by Welder” can be enabled as a filter.




Display 22




Display 23


If the button next to “Search by Welder” is green, i. e., the functionality is enabled, the cursor keys at “Welder” call the previous or next welding report written by another welder. Analogously, if “Search by Commission Number” is green/on, the previous or next report not belonging to the same project will be shown in the Commission Number field. This allows

selecting a certain project/commission and/or a certain welder, and when the  button is touched, the machine returns to the previous screen and displays in the list only the reports that belong to the selected commission and/or the reports that were saved by the selected welder. If the respective filter is not enabled in the upper part of the screen the cursor keys at the criterion in the lower part will not allow “filtered” browsing through the reports.


To disable a previously enabled filter of the list of reports, open the settings too. By touching it, switch the button next to the filter the list should no longer have from green to gray (disabled). Then the list of reports (see Display 22) will no longer restrict the view to the reports matching that filter criterion.


5.3.1 Viewing the Full Welding Report

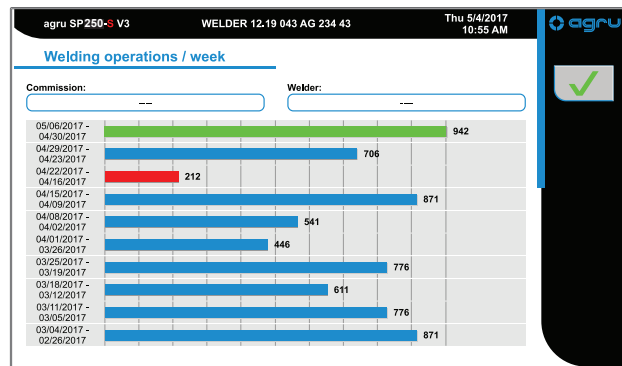
The full welding report can be viewed after touching the  button in the extended report viewer. From the ambient temperature during the welding operation to the assessment by visual check, taking in all force and time values measured in the process and the previously entered traceability data, this detailed view of the report feature every single technical information that is relevant for the joint.

Touching the  button in the navigation bar of the detailed report view will open the screen on which the information on the welding bead can be viewed if the measurement of the welding bead dimensions was enabled in that jointing operation (see Sect. 4.7.9).

5.3.2 Ongoing Job Reporting Scheme and Statistical Overview

Since all welding operations are recorded at any rate in an ongoing approach, a statistical overview of the welding operation is available. To open it, touch the  button in the extended report viewer (Display 22).

The next screen is a menu allowing to select whether the number of weldings per week, with components of a certain diameter, material, with error/malfunction, or the standard statistics with number of flawed and proper weldings and total number of welding operations with the machine and currently in memory will be displayed. To select the desired menu option, touch the  button next to it.



Display 24

The statistical overview is presented as a bar chart, where the extreme values are color-coded.


The view filters of the extended report viewer can be used (see at the beginning of Sect. 5.3 above). If they are used, the project/commission and/or welder for which the number of weldings by a given criterion is displayed in the bar chart, are the ones previously set in the settings of the report viewer.

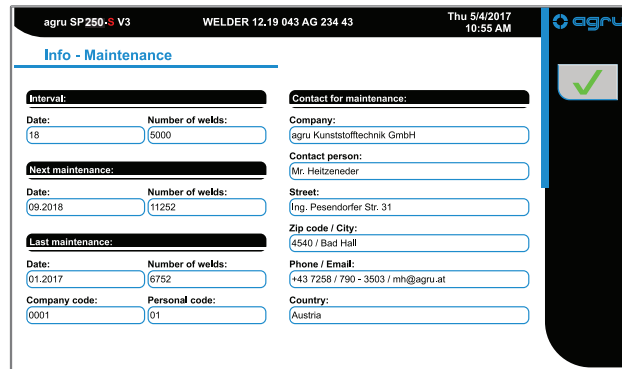
5.4 Deleting Reports from Memory

To delete the reports stored in memory, use the appropriate option in the extended set of parameters in the configuration menu (see Sect. 4.2). Upon touching this button, two safety warnings asking if you really want to delete them appear on the screen and have to be confirmed to effectively delete the reports currently in memory.

6 System Data

6.1 System and Maintenance Information

The standard screen (Display 3) allows access to system data (control software version, service and maintenance contact, etc.), which may be requested by the manufacturer or seller in case of malfunctions, as well as to information on the last and next preventative maintenance of the machine. To access these data, touch the  button.



agru SP250-S V3 WELDER 12.19 043 AG 234 43 Thu 5/4/2017 10:55 AM

Info - Maintenance

Interval: Date: 18 Number of welds: 5000

Next maintenance: Date: 09.2018 Number of welds: 11252

Last maintenance: Date: 01.2017 Number of welds: 6752

Contact for maintenance: Company: agru Kunststofftechnik GmbH
Contact person: Mr. Heitzeneider
Street: Ing. Pesendorfer Str. 31
Zip code / City: 4540 / Bad Hall
Phone / Email: +43 7258 / 790 - 3503 / mh@agru.at
Country: Austria

Display 25

6.2 Enabling Automatic Heating

When the “Automatic Heating” sub-menu was selected in the configuration menu (see sub-section 4.2), the screen shows what is reproduced in Display 26.

This feature allows programming a date and time-of-day when the heating element must start heating up. This gives you the possibility, e.g., to enter this evening a time for the following morning and, then, to start welding right after arriving at the worksite instead of waiting for the heating element to reach the appropriate temperature.

For the automatic heating feature to work, the welding machine has to be connected to the power supply and be switched on all the time from pre-programming a time-of-day to the start of heating. Both power supply failure and switching the machine off result in loss of the preset time.



agru SP250-S V3 WELDER 12.19 043 AG 234 43 Thu 5/4/2017 10:55 AM


Automatic heating




04.05.2017 10:57

Format of Date / Time: dd.MM.yyyy HH:mm

7 8 9
4 5 6
1 2 3
- 0 -



Display 26

Enter the desired date and time-of-day on the keypad (after each input, the machine moves on to the next field automatically), then touch the  button. This button shows the current status of the automatic heating: gray = disabled, green = enabled.

 **Important** Enabling the automatic heating feature should be the last action before you leave the worksite. For it causes the power supply to the heating element to be stopped and it cools down. Whilst it is possible to quit the automatic heating setting screen by touching the  button and do other jobs at the machine, when the status button is set to  (on), no more welding operations are possible.

If automatic heating is neither canceled nor disabled, it makes sure that the heating element starts heating at the preset time-of-day and switches itself off when doing so.



If a welding operation with a longer duration is the last one before the end of the workday, power supply to the heating element can be kept alive until that welding is finished. This requires to program the automatic heating with the desired date and time for heating, but then to touch rather than the  button, the  button to enable it (both buttons will then turn green). If the automatic heating feature is enabled in this manner, the machine allows for another welding operation, to be started immediately after this, and cuts power to the heating element only at the end of its heating stage. It is thus possible in case of a relative long jointing operation as the last one of the workday, to leave the worksite early,

provided no other work instructions or occupational safety rules prohibit this.

6.3 Service and Repair

As the machine is used in applications that are sensitive to safety considerations, it may be serviced and repaired only on our premises or by partners who were specifically trained and authorized. Thus, constantly high standards of operation quality and safety are maintained.



Important

Non-compliance with this provision will dispense the manufacturer from any warranty and liability claims for the unit and any consequential damage.

All machines that are new or newly programmed during maintenance or upon request is wished are shipped with the most recent software version.



At the date of shipment, the service and maintenance interval is set to 18 months or 2000 welding operations (different in some markets), whichever comes first.

7 Service and Repair Contact

Asahi/America, Inc.
655 Andover St., Lawrence,
MA 1-800-343-3618
asahi@asahi-america.com



We reserve the right to change technical specifications of the unit without prior notice.

7.1 Manufacturer Warranty

The warranty assumed by the licensed manufacturer is effective, on principle, for 1 year or up to 2000 welded joints. Claims for warranty may only be raised if the default parameters present in memory at delivery are/were used for welding and if the nominal temperature is/was lower than or equal to 510°C (950°F).

7.2 Technical Documentation

Wiring diagrams, computer-assisted designs and further technical literatures, as complements or more in depth, will be provided by agru Kunststofftechnik upon request at the address given above.

7.3 Risk Assessment

A risk assessment under the provisions of the so-called machinery directive 2006/42/EC was conducted for the machine by a qualified person entitled to the performance of such an assessment.

TOOL DEPARTMENT CONTACTS

Equipment Rental

Rental Equipment Manager

781-388-4618

toolmanager@asahi-america.com

Rental Administration, Billing & Returns

781-388-4623

toolrental@asahi-america.com

Field Technician/Onsite Training

Field Training

617-480-7071

info@asahi-america.com

Technical Service

High Purity, Double Wall or Industrial Piping

781-321-5409

pipe@asahi-america.com

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