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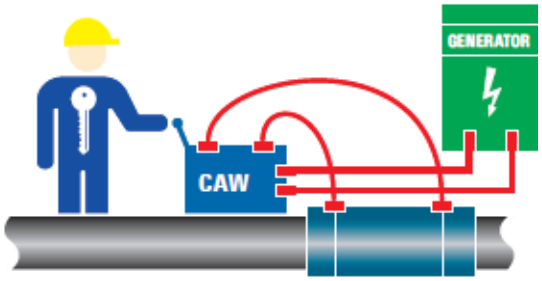
Rovanco Piping Systems

EWELCON

Welding Machine CAW05

Operating instructions



These installation instructions are designed only as an aid for trained personnel and does not replace proper training.

V EN 03.05.2021

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1. Technical data

Power supply: 230V 50Hz max. 3kVA
Initial fuse: 16A

Equipment grounding conductor must be connected properly!
Clear sinusoidal voltage is essential whenever the welding machine is powered by a generator!

General specifications:

- weight: approximately 18 kg:
- dimensions: 400x190x400 mm (H x W x L)

Initial value: max. 60V 44 A

2. Important safety information

Only use manufacturer-approved joints when operating this equipment. Operators must observe equipment technical data and this operating manual as well as use genuine spare-parts and accessories. Do not use this equipment for purposes not designated in this instruction manual. Improper use or handling releases the manufacturer of any and all liability.

To ensure that the internal safety features are fully enabled, ensure that the equipment is adequately grounded. The operator is responsible for ensuring that the joint connections do not fall off. Contact with the output terminal during welding procedures can lead to serious injury.

In addition to the operating and safety rules in this manual, the operator must observe all statutory and otherwise binding safety and environmental regulations. These regulations can, for example, pertain to the handling of hazardous sub-stances or the availability of/the wearing of protective gear.

Always check the operative features of all safety fixtures after servicing or maintenance.
The operator must ensure that mains supply is conform with the specifications listed under chapter 1.
All supply lines must match outlet terminal.
Only use the genuine spare parts listed in this manual.

Any form of manipulation or removal of protective features is prohibited. Equipment modifications, i.e. extensions and refitting, that could in any way affect the safety features are subject to prior understanding with BRUGG and require the manufacturer’s expressed written approval.

The manufacturer is responsible for product safety; with the acceptance of this unit particular responsibilities devolve upon the person or company in charge of operation.
The manufacturer monitors his product beyond delivery to the person or company in charge of operation. He can request information, in particular on safety aspects, from the latter.

The person or company in charge of operation must ensure that only authorized personnel operate the welding machine. He is responsible for the thorough and comprehensive training of all machine operators. This liability also pertains to general and occasional workers.

The spheres of responsibility pertaining to all operational procedures, in particular commissioning, operation, cleaning and maintenance must be distinctly de-fined and observed so that competencies are always understandably regulated.

The person or company in charge of operation must ensure that his personnel always operates the welding unit in accordance with this operating manual. He will provide the operators with all safety relevant resources stated in this manual. Danger signs are to be kept in a legible condition at all times.

The welding machine must be kept and operated in perfect condition. Maintenance intervals must be observed. The shop must be equipped with the tools required to carry out maintenance, service and repair procedures.

Should operational hazards or risks arise that have not been described in this manual, the person or company in charge of the operation of the welding machine undertakes to inform BRUGG of such hazards or risks.

The obligations of the person or company in charge of operation extend to operating personnel, to the extent that the latter is responsible to immediately inform superiors of defects that impair safety.
This operating manual must be available at the workplace at all times and in the respective national language(s).

Individual trade and indemnity associations also require the person or company in charge of operation to train those workers with a poor command of the national language in their native language. In this case the safety regulations and information contained in this manual must be translated into the respective language.

3. Functions

This welding machine is a computer-controlled high-performance power unit. The power released is calculated by a variety of measuring procedures and set automatically.

Before welding procedures begin the computer requests joint- and work-specific data that will be save for later documentation. This data have no influence on program execution or on the heating of the welding rod. All necessary sizes are measured or calculated during welding procedures. The power is then adjusted to the values read.

Under consideration of the maximum permissible current the heat conductor temperature is raised to the setpoint. The heat conductor then is kept at maximum temperature until the unit reaches the weld pool temperature. As soon as the weld pool temperature reaches the setpoint the power transfer is cut off.
In the course of welding the heat conductor and weld pool temperatures as well as welding time are stored for later analysis. The integrated memory chip can archive up to 500 welding operations. When the chip reaches its memory capacity it issues a warning that the processor will begin to overwrite the oldest data to accommodate new incoming data (FIFO overwrite memory).

The welding machine comes with Windows software for the analysis of the collected data. Welding data can be transferred from the CAW05 via a serial interface (COM/RS232) to an PC for further processing. Upon successful data transmission the allocated memory space can be reenabled.

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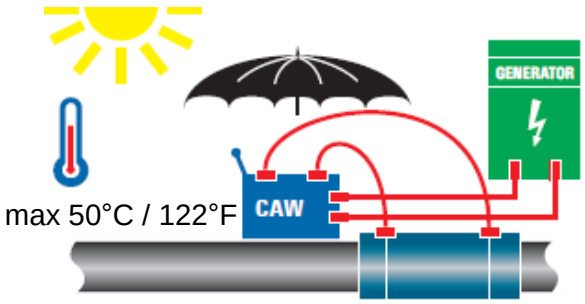
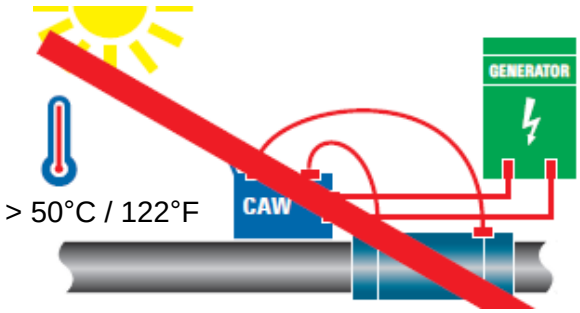
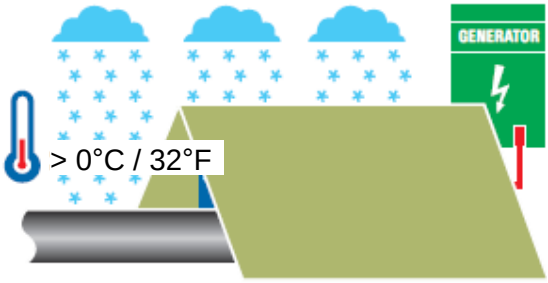
4. Guidelines about installation conditions



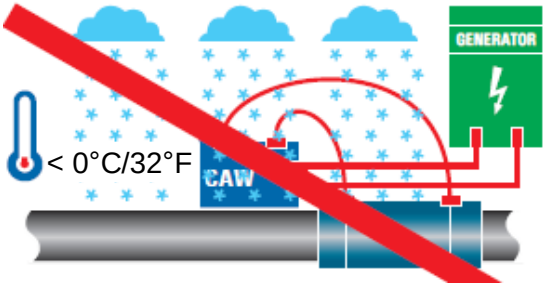
Avoid uneven heating of the casing pipe in the welding area by implementing appropriate measures (thermal insulation mats, umbrellas, tents).



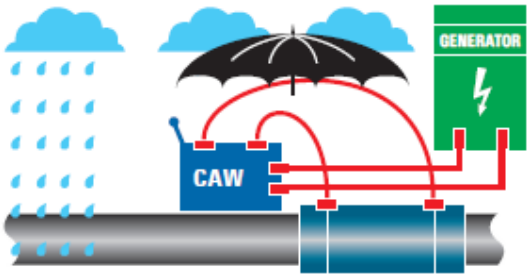
The welding unit will not start its operation if the joint/casing pipe temperature exceeds 50ºC/122 ºF!



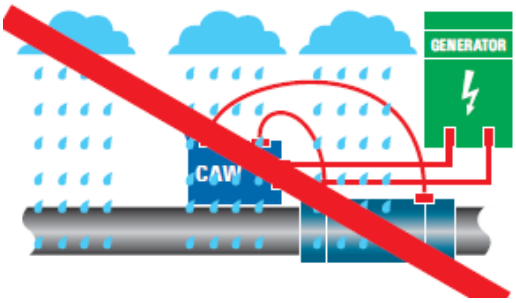
In conditions of negative temperatures, the welding area and the joint must be heated If ambient temperature drops below 0ºC / 32°F. The welding area must be protected against cold and wind in a heated tent.



Do not install EWELCON joints at temperatures below 0ºC / / 32°F!



The welding area and the joint itself must be at all times protected against moisture and precipitation.



It is forbidden to install EWELCON joints during rainfall, snowfall or hailstorm without properly securing the welding area.

5. Operation and controls

The connections for the power supply, joint and temperature sensor are accessed by opening the machine.

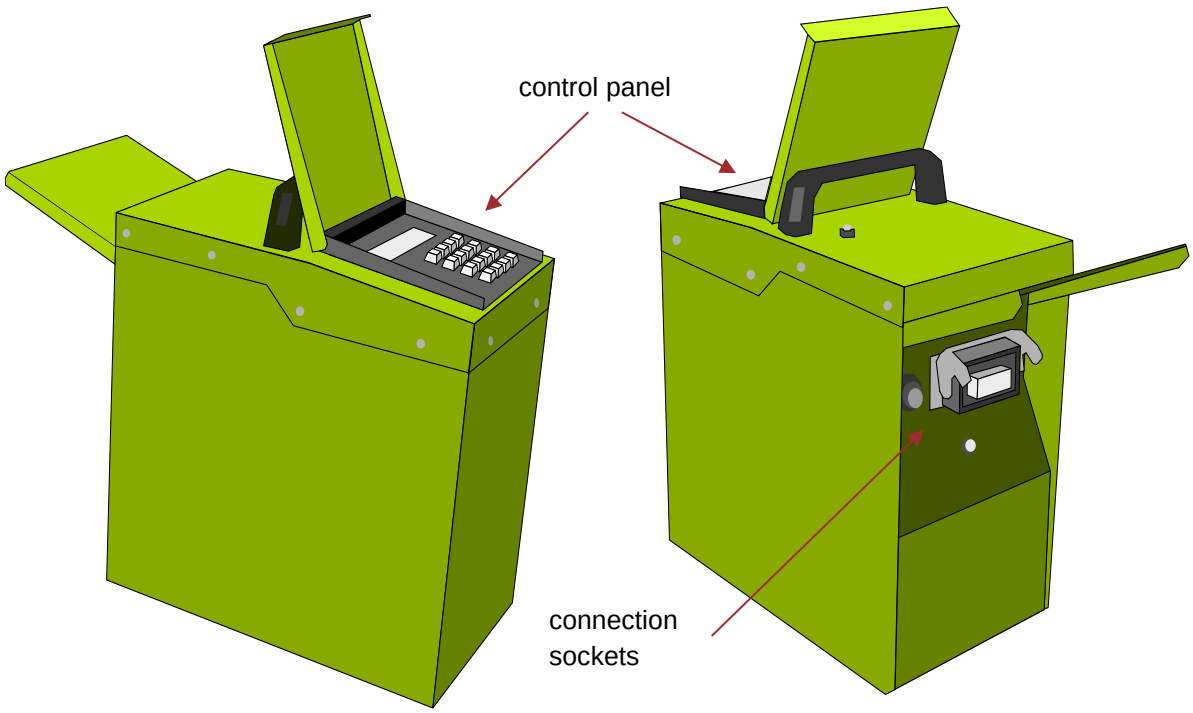


Figure 1. Welding machine CAW 05

The machine communicates with the operator via 16-key control panel and an LCD display. Information can be displayed in 5 languages: Polish, English, German, French and Italian. One may select language from the unit's menu.

Figure 2. Control panel and LCD display of CAW05

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6. Connecting the power

The welding machine should be connected to a power source that guarantees the following parameters:

Power supply: 230V 50Hz min. 3kVA
Initial fuse: 16A

Equipment grounding conductor must be connected properly!
Clear sinusoidal voltage is essential whenever the welding machine is powered by a generator!
We recommend using generators with current stabilization

After connecting the power supply to the welding machine it checks if the supplied voltage is kept within the proper range of 200 – 250 VAC. If this condition is not fulfilled, the machine displays the information about it and does not begin its work. The proper power supply enables the machine to go to the readiness stage

7. Connecting the welding machine to the joint

Connect the power cables to the welding machine and then secure the plug with the latch.
Bend the wires on the joint as it is shown (1), to improve the electric contact.
Attach the welding machine crocodile clips and the connectors of the thermal couple (3).
Remember that the crocodile clips must be placed on the inner side of the EWC joint (2).

Note: In the case of multi-section joints, the method of connecting the welding machine is described in the installation manual of the EWC joint.
The power cables must not hang on the copper connection wires of the joint. If necessary, attach them to the pipe with adhesive tape.

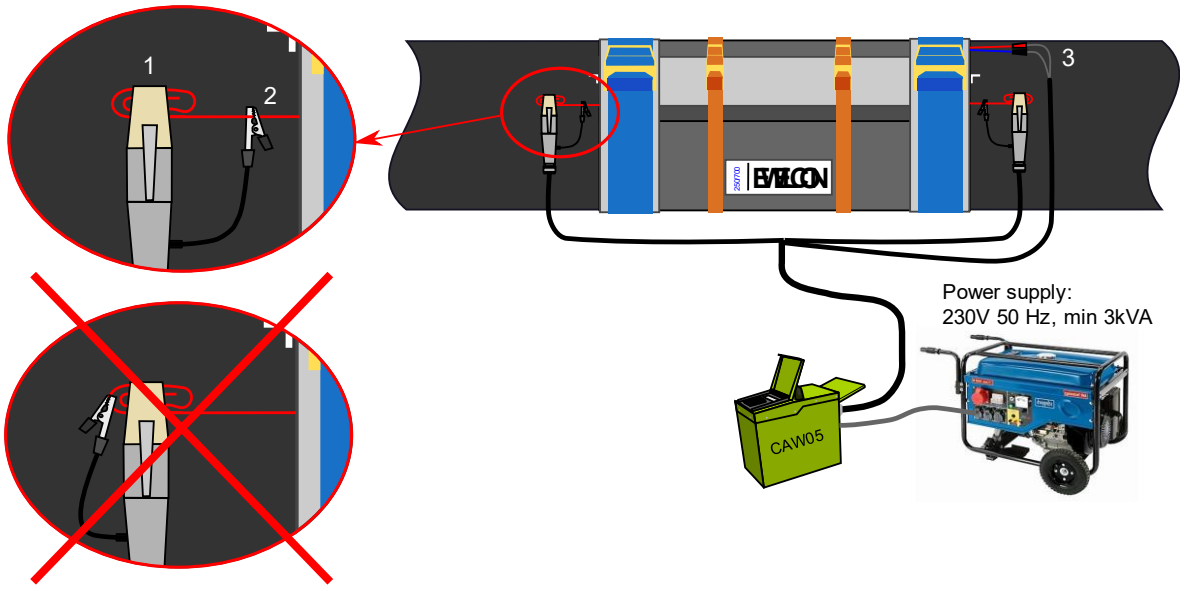

Figure 3. Connecting the welding machine to the joint

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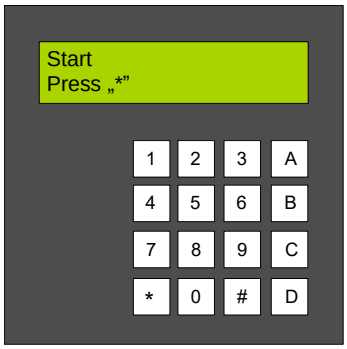
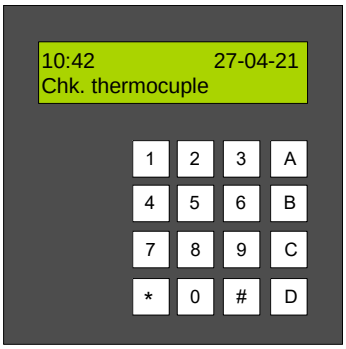
8. Welding machine operation, starting the welding process.



1. Press * to start the unit up

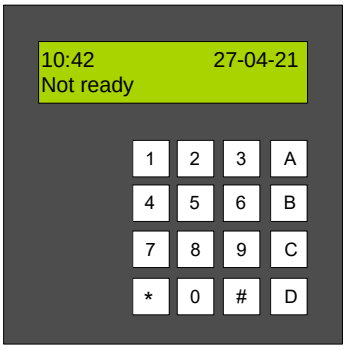
After 10 seconds from the start up, following messages may appear:



2. Check thermocouple

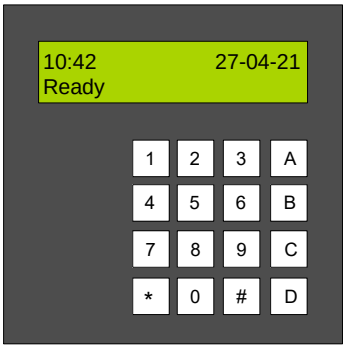
   No transition between the welding unit and the thermocouple or the thermocouple is broken.

   Check the thermocouple connection.



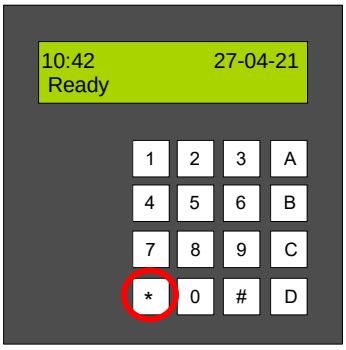
3. Not ready

   The joint temperature is below 0°C (32°F) or above 50°C (122°F).
   The joint must be warmed up / cooled down.



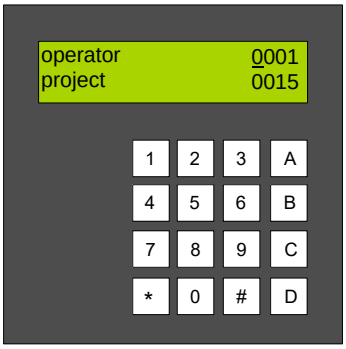
4. Ready

   Everything is ok. The welding process may begin.



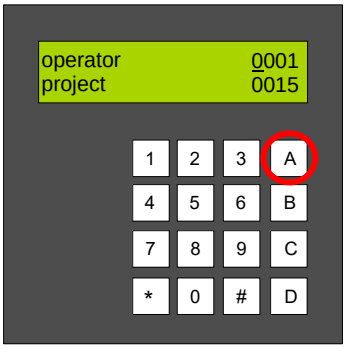
5. Press the button * to begin the welding process.

   Functional keys
   - A acceptance of the edition field
   - B return to the previous edition field
   - C cursor to the left by 1 spot
   - D cursor to the right by 1 spot
   - # abandon of changes and return
   - start (when active start)
   - 1,2,3,4,5,6 - described in chapter 9



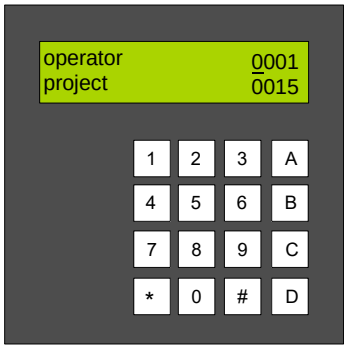
6. Enter the following statistical data:
   - number of the operator
   - number of the project
   - number of the joint
   - joint dia – the joint diameter
   - joint width – the joint width
   - Joint section – if Ø>400 mm

   Note: the entered statistical data do not influence the welding process.

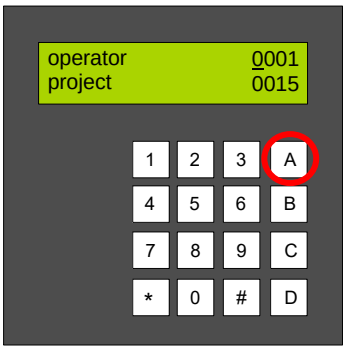


7. Press the button A to confirm the entered data.

   Note: At the beginning of a day all joint and building-site-specific data has to be entered into the machine. For all welding processes on the same day it is then only still necessary to specify the joint number and, if necessary, the welding section. All the other data only has to be confirmed with A- key and can be changed, if necessary, after pressing the C key.



8. After entering all the statistical data the unit displays all of them for verifying.



9. Press the buton **A** to confirm the data.

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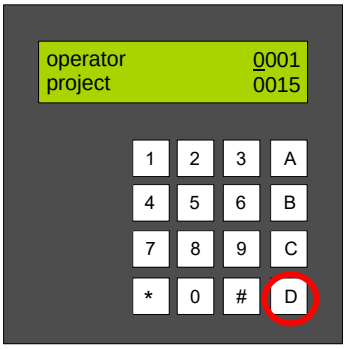
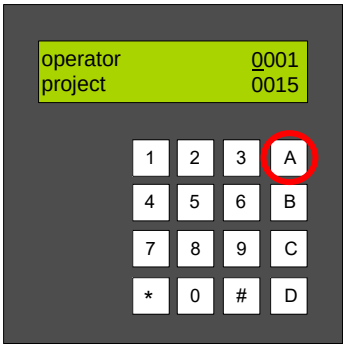
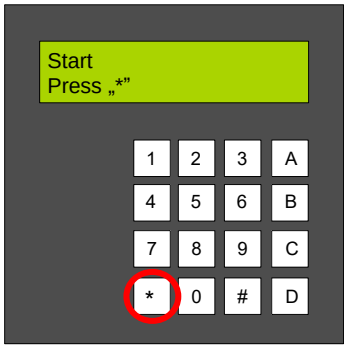


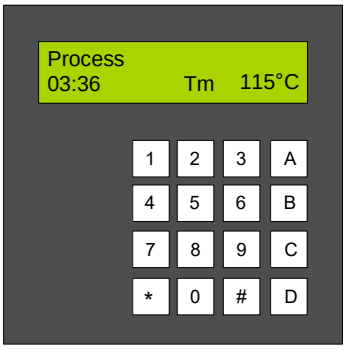
10. If any mistake is noticed, it can be corrected by pressing the button **D**.



11. Press the button **A** to confirm the entered data.

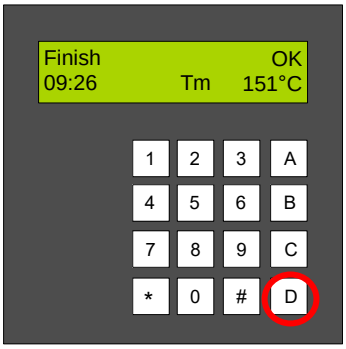


12. The unit is ready for welding process. Press ***



13. The process is running. One can read the time and the temperature of the joint on the display.

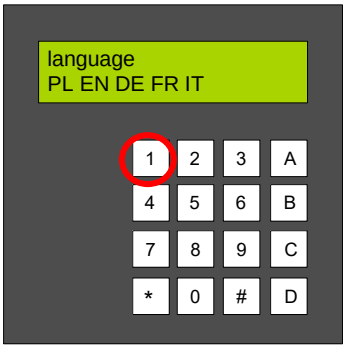
Note: if the welding process must be broken, press the button # and keep it pressed for 3 seconds.



14. If no errors occur, the process will end automatically, depending on weather conditions and joint parameters (after 5 to 15 minutes).

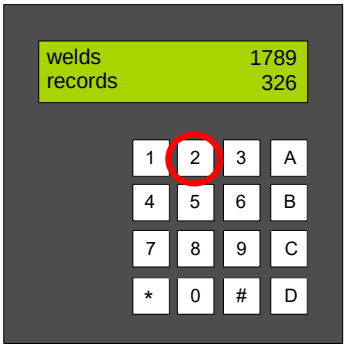
9. CAW 05 additional options

After turning the unit on one has an access to the following additional functions:



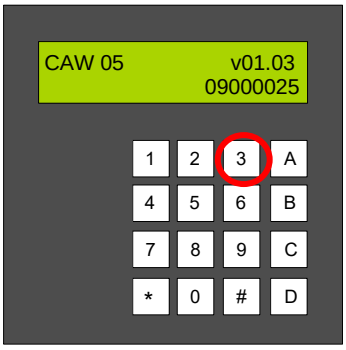
Button 1:

Change of language, one may select PL, EN, DE, FR, IT.



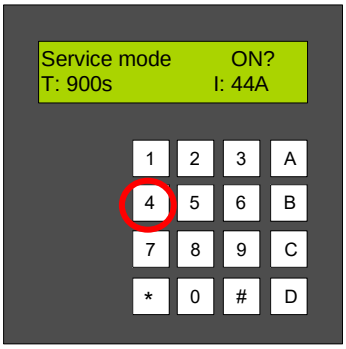
Button 2:

Information about number of welds done and number of records in the memory. Up to 500 records may be kept, afterwards the overwriting of the oldest begins.



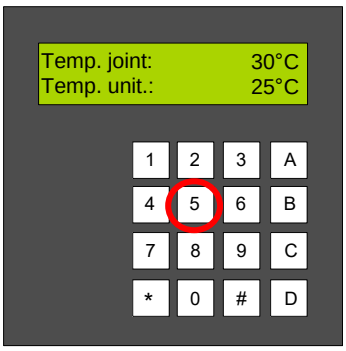
Button 3:

The serial number and the software version of the unit.



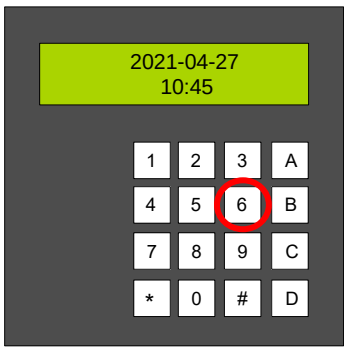
Button 4:

Service mode (password required).



Button 5:

Temperature of the joint and the unit.



Button 6:

Possibility of changing date and time.

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10. Error messages

If any errors occur before or during the welding proces, they are shown by numbers and shortened messages. These messages and their meanings are listed in the table below.

Error messages	code	Description
High mains volt.		Detected voltage > 250V during the start up of the machine. Continuation of the operation is not possible.
Low mains volt.		Detected voltage < 180V during the start up of the machine. Continuation of the operation is not possible.
Muff too cold		The sleeve's (joint's) temperature is too low. Welding process can't be begun.
Muff too hot		The sleeve's (joint's) temperature is too high. Welding process can't be begun.
Device too cold		The machine's temperature is too low. Welding process can't be begun.
Device too hot		The machine's temperature is too high. Welding process can't be begun.
chk.volt.measur.		Incorrect connection of measuring cables has been detected. Welding process can't be begun.
Muff too big		Measurement of the sleeve's resistance has shown too high values. Welding process can't be begun.
Muff too small		Measurement of the sleeve's resistance has shown too low values. Welding process can't be begun.
Cancled	10	The process has been interrupted by the operator.
process timeout (1)	11	The process has been stopped due to exceeding its time limit, the sleeve (joint) has not reached right temperature, welding incorrect.
chk.thermocouple	12	A wrong connection or lack of thermocouple has been detected. The process can't be continued.
Awaria pmr.temp.	13	A failure of the temperature measuring system has occurred. The process can't be begun or continued.
chk.volt.measur.	14	A break or short – circuit of the voltage measuring cables has occurred.
short-circuit	15	A short – circuit in the power supply circuit has occurred, the process can't be begun or continued.
break-circuit	16	A break in the power supply circuit has occurred, the process can't be begun or continued.
rectifier error	21 22 23 24	A failure of one of rectifiers. The process can't be continued. Failure codes: 21 – rectifier 1, 22 – rectifier 2, 23 – rectifier 3, 24 – rectifier 4.
cooling fans err	31 32 33 34	A failure of the cooling system of one of rectifiers has occurred. The process can't be continued. Failure codes: 31 – rectifier 1, 32 – rectifier 2, 33 – rectifier 3, 34 – rectifier 4.

(1) If the maximum welding time (error 11) is exceeded, the fitter / supervision inspector decides on the correctness of welding based on the following parameters:

a) The welding temperature (thermocouples) should exceed 130°C.
b) The organoleptic examination shows:
- traces of a properly cleaned pipe coat (the so-called suede surface of the pipe).
- no blisters on the joint mantle above the heating element.
- Joint tightness based on the leak test.

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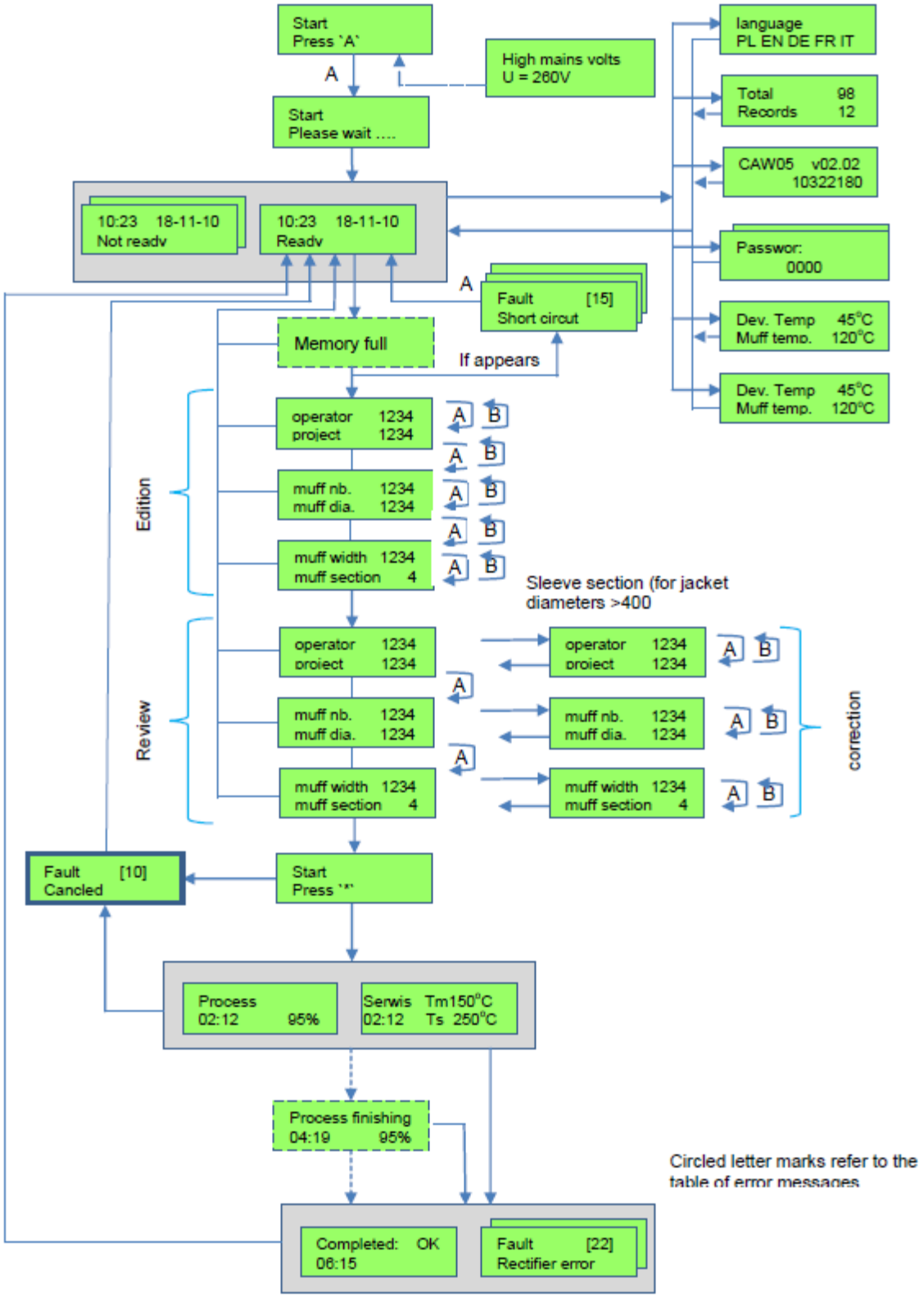
11. Scheme of operation of the welding machine



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12. Light signaling

The welding machine is equipped with two three – color signaling diodes. They are placed in different places of the machine's casing and they play the same roles.

White	machine's readiness
Red	machine's failure – look at the certain error message on the display
Green	welding process going on
Yellow	welding process finished, correct result
Blue	machine's readiness in the service mode

13. Sound signaling

Signal description:

Triple signal	failure during the process start up (wrong temperature, sleeve's resistance, break or short– circuit)
Short single	signal beginning of process, end of process (correct), data input's failure
Long single	signal welding process ended with failure

14. Transport and storage

The unit must be stored in a warm, dry area. Protect the unit against shock while in transport, e.g. non-slip foam-rubber pad. The machine must be properly se-cured at all times during transport (tension belts).

15. Decommissioning

The welding machine must be returned to BRUGG for proper decommissioning.