

Calder Griffon®

Electrofusion Welding Unit
Operator Instruction Manual

Revision: 09-04-2019

Software Version: 2.21 onwards



Caldertech
making the right connections

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Note:

Actual accessory sizes which can be welded cannot be confirmed without knowing the resistance of the heating element inside the accessory, this information is available from the accessory manufacturer only.

Specifications.

Operating mode	Bar Code Entry ⁽¹⁾
	Fusamatic™ Time Entry ⁽²⁾
	Manual Time Entry
Weld Record memory capacity	2000 weld records
Weld Record download	USB flash disk
Languages	Symbolic (some English)
Display	Alphanumeric with backlight
Input voltage	110 V ac (95 to 150V) or 230 V ac (195 to 270V)
Input frequency	50 Hz (37 to 62Hz)
Input current	1 A to 30 A for 110V variant or 1 A to 16 A for 230V variant
Input power	110 VA to 3300 VA (apparent) 110V variant or 230 VA to 3680 VA (apparent) 230V variant
Power factor	0.72 (apparent)
Duty cycle	30%
Output voltage	8 to 48V ac rms 39.5V ac rms (default in Fusamatic mode)
Output stability	+/- 1.5% of welding voltage
Output current	1 A ac rms to 30 A ac rms (continuous) 60 A ac rms (peak)
Output power	40 W to 1200 W (30% duty) 2400 W (peak) ³ 39.5 W to 1185 W (30% duty-in Fusamatic mode) ⁴
Welding time	3 to 500 seconds
Operating temperature	-20°C to +50°C
Weight / dimensions	9.85kg ⁽⁵⁾ / 37 x 32 x 21cm
Protection level / class	IP54 ⁽⁶⁾ / Class I
Cooling	Continuous forced cooling

¹ Barcode time entry only active when barcode reader is connected.

² Fusamatic™ time entry only active with welding units fitted with Fusamatic output leads.

³ Based on an output voltage of 40V a.c rms.

⁴ Based on the fixed Fusamatic output voltage of 39.5V a.c rms.

⁵ Including leads, carry bag and accessories.

⁶ Electronics compartment only.

Start-up information and screens.

When the welding unit is first turned on the welding unit performs a number of initial measurements and tests. The following information will be displayed during this period.

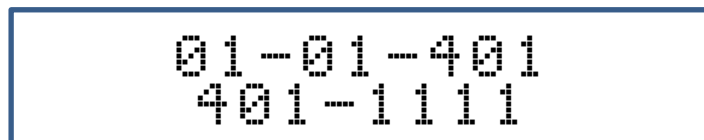
Screen 1. Model and version of software running.



If the previous weld was ended due to a loss of supply then, the screen below will be shown. Press the Green button to continue.



Screen 2. Product code (line 1) and serial number (line 2).



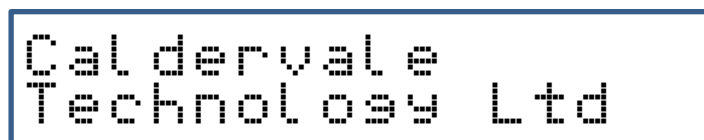
Note:

If Caldersafe or Bluebox and Quick-Start is enabled the program will jump to screen 4.

If a USB Pendrive is connected and Quick-Start is enabled the program will jump to screen 8.

If Quick-Start is enabled with none of the above the program will jump to screen 14.

Screen 3. Owner name.



Screen 4. Caldersafe or Bluebox Bluetooth data transfer activated.

If Caldersafe data transfer is activated, then the screen below is shown.



If Bluebox data transfer is activated, then the screen below is shown.



If Bluebox data transfer and Smartscan barcode reader is activated, then the screen below is shown.



Screen 5. Supply voltage and supply frequency.

The supply voltage and frequency are measured and checked against the supply limits which are:

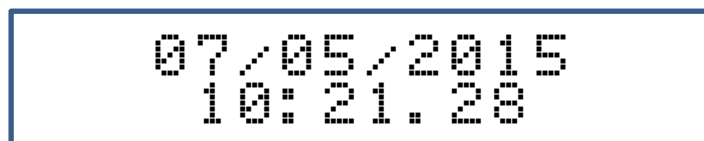
For 230V units - 195V - 270V a.c; 37 - 62Hz

For 110V units - 95V - 150V a.c; 37 - 62Hz

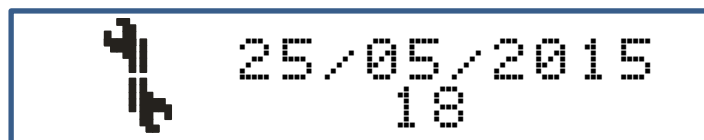


If the supply measurement is outside the limits the error code will be displayed on line 2 (refer to the error codes on page 19).

Screen 6. Current date and time.



Screen 7. Calibration expiry date.



The calibration expiry date is shown on line 1. If the calibration expiry date has less than one month remaining, then the number of days left before the calibration period expires is shown on line 2. If the calibration period has elapsed, then the text "Expired!" will be displayed on line 2.

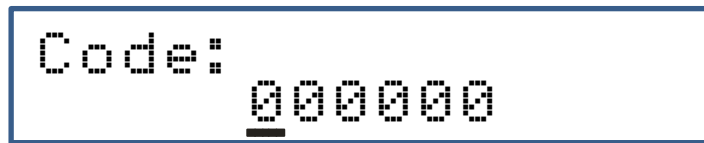
Screen 8. Weld record memory capacity remaining.



The used memory capacity of the weld record storage is shown as a percentage; the welding unit can store up to 2000 weld records.

If 100% of the storage capacity has been used, then the download prompt screen will be shown (refer to downloading weld records on page 16).

Once the download has completed the screen below will be displayed:



Enter the erase weld record data code refer to the supervisor instruction manual for the erase code or seek advice from your supervisor.
The weld record data erasing sequence takes approximately 30 seconds to complete after which the welding unit program will reset.

Screen 9. Outside air temperature.



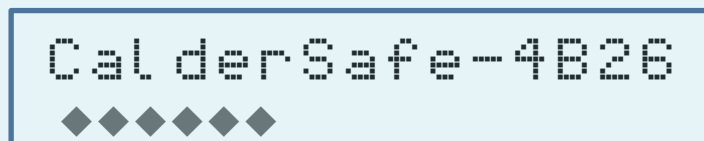
The outside air temperature is measured and checked against the working temperature limits which are:
-20 to +50°C

Screen 10. Transformer temperature.



If the transformer inside the welding unit has become too hot the welding unit will stop displaying the screen above. Only when the transformer has returned to a working temperature will the screen clear.

Screen 11. Bluetooth connection.



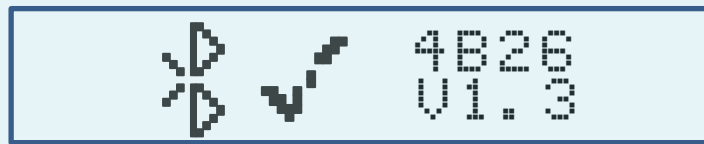
If CalderSafe data transfer is active the Bluetooth module name will be shown.



If Bluebox data transfer is active the Bluetooth module name will be shown. During this time the welding unit will try to establish a Bluetooth connection.

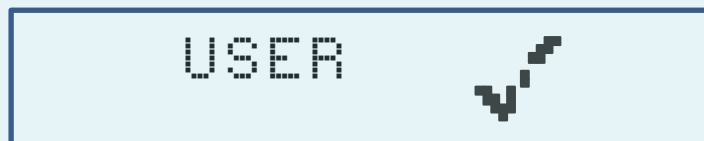
During this time the welding unit will try to establish a Bluetooth connection. Pair your phone with the device name shown on the screen.

Screen 12. Bluetooth connection found.



If either the Caldersafe or Bluebox Bluetooth data transfer is active and a Bluetooth connection is established this screen will be shown indicating the Bluetooth module number and the software version of the mobile application.

Screen 13. User automatically retrieved from the mobile application.

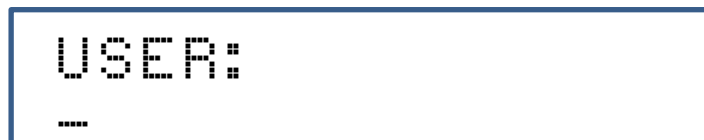


If either the Caldersafe or Bluebox Bluetooth data transfer is active and connected the user name is automatically retrieved from the mobile application and saved within the welding unit.
Screen 15 on page 8 is shown next.

Screen 14. Entering the user name.

Note:

If O-L-R (operator, location and reference) option is disabled the program will jump to screen 17.



Use the ↑ and ↓ arrows to select a character
Pressing the green button moves the cursor one place to the right.
Pressing the red button moves the cursor one place to the left.
Press and hold the green button to exit the screen, release the green button when the screen goes blank.

Note:

If the welding badge options are enabled the screen below will be displayed, scan a valid Caldervale or ISO operator welding badge.



If the welding badge is valid the screen below will be shown.



Screen 15. Entering the location.



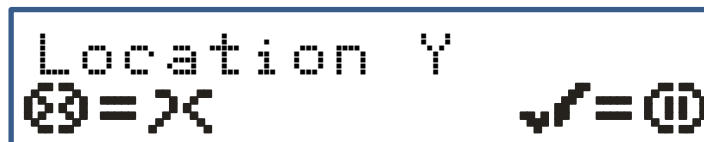
Use the ↑ and ↓ arrows to select a character
Pressing the green button moves the cursor one place to the right.
Pressing the red button moves the cursor one place to the left. Press and hold the green button to exit the screen, release the green button when the screen goes blank.

Note:

If the Scan Location option is enabled the screen below will be displayed, scan a valid location barcode.

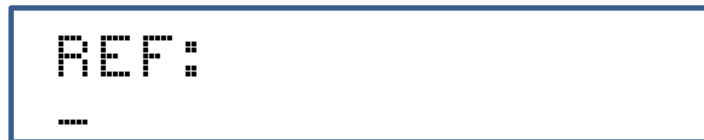


If the location barcode is valid the screen below will be shown.



Press the green button to accept or the red button to re-scan.

Screen 16. Entering the reference.



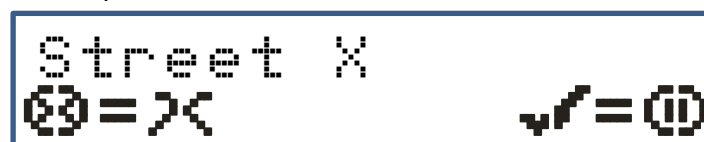
Use the ↑ and ↓ arrows to select a character
Pressing the green button moves the cursor one place to the right.
Pressing the red button moves the cursor one place to the left.
Press and hold the green button to exit the screen, release the green button when the screen goes blank.

Note:

If the Scan Reference option is enabled the screen below will be displayed, scan a valid location barcode.



If the location barcode is valid the screen below will be shown. Press the green button to accept or the red button to re-scan.



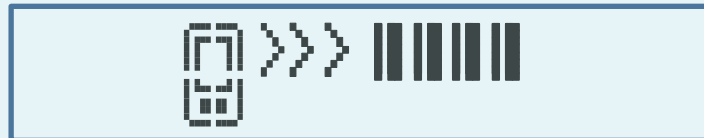
Screen 17. Connect the accessory (fitting).



If an accessory (or fitting) is not connected the screen above will be shown until a connection is made.

Screen 18. Smartscan barcode scanner.

Note: If Smartscan is not active this screen is not shown. The program will go to screen 20.



If either the Smartscan mobile barcode reader is active the screen displayed above prompts the user to scan the fitting barcodes using the mobile application. Follow the mobile application instructions whilst scanning the barcodes, when the barcodes have been accepted the Smartform process (screen 19) will be displayed if activated otherwise the take photograph process will be activated. Go to screen 29 on page 14.

Screen 19. Smartform

Note: If Smartform is not active the following two screens are not shown. The program will go to screen 29 on page 14.



Complete the Smartform fields on the mobile application the take photograph process will be activated. Go to screen 29 on page 14.

Screen 20. Reading the accessory (fitting) traceability barcode information.

Note:

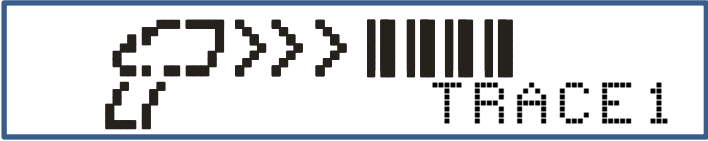
If a barcode reader is not connected the program will go to screen 23 on page 12. Screens 20 to 22 are only shown when a barcode reader is detected.

If the Scan Mode option is enabled and with no barcode reader connected the screen below will be displayed until a barcode reader is detected.



Note:

If the Trace option is disabled the program will jump to screen 21.



Note:

If the One-Trace option is enabled the program will jump to screen 21.



The option to scan up to three traceability barcodes is permitted. If no traceability barcode is to be scanned press the green button to continue. After each traceability barcode is scanned the option to exit this stage is available by pressing the green button, otherwise scan the next traceability barcode.

Screen 21. Reading the accessory (fitting) welding barcode information.



Next the prompt to scan the welding information barcode is shown.

Note: If the barcode information is incorrect the welding unit will display the following screen for 3 seconds showing that there was an error before returning to displaying screen 21 above.

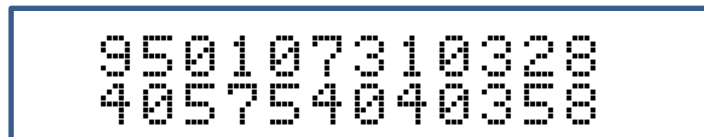


If the error persists either due to a damaged barcode label or a fault with the barcode reader press the green button which will show the display below allowing the digits on the welding barcode to be manually entered. Use the \uparrow and \downarrow buttons to select each digit and press the green and red buttons to move the cursor. Enter the first 12 digits of the barcode on the top line.



```
950107310000
```

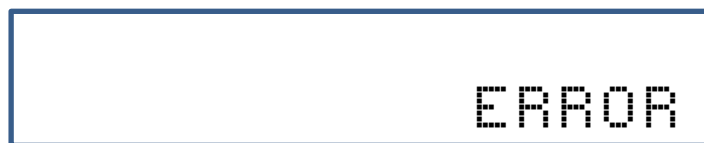
Enter the last 12 digits of the barcode on the bottom line.



```
950107310328
405754040358
```

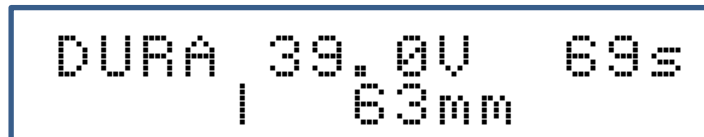
When all the numbers have been entered the welding unit will check that the information is correct.

If the entered number is incorrect the display below will be shown and the program will return to screen 21 on page 10.



```
ERROR
```

Screen 22. Accessory (fitting) welding barcode information.



```
DURA 39.0V 69s
| 63mm
```

When the welding information barcode is successfully read the welding information barcode is shown.

The information displayed is the accessory (fitting) manufacturer, the welding voltage, the welding time, the accessory (fitting) type and the size.

Go to screen 30 on page 14.

Note: If the measured resistance value is outside of the accessory (fitting) resistance limits read from the barcode the welding unit will display the screen below, showing the upper and lower resistance limit values on the top line of the display with the measured resistance value displayed on the right on line 2. The resistance is re-measured up to 20 times if the error is still present the program goes back to screen 17 on page 8, pressing the red button during the re-measuring process will stop the measuring process and return the program back to screen 17 on page 9.



```
0.81Ω          0.31Ω
1.02Ω          ERROR
```

Screen 23. Reading the Fusamatic accessory (fitting) welding time.

Note: If the welding unit is not fitted with a Fusamatic output lead or a Fusamatic accessory (fitting) is not connected the program will go to screen 24. Screen 23 is only shown when a Fusamatic accessory is detected.



If a Fusamatic accessory (fitting) is recognised, then the welding time of the accessory (fitting) will be shown.

The welding voltage in this mode of operation is fixed at 39.5V a.c.

Go to screen 27 on page 13.

Screen 24. Entering the accessory (fitting) welding voltage.

Note: If a barcode reader is not detected (connected) or the welding unit is not fitted with a Fusamatic output lead or a Fusamatic accessory (fitting) is not connected the program will enter the manual entry option.

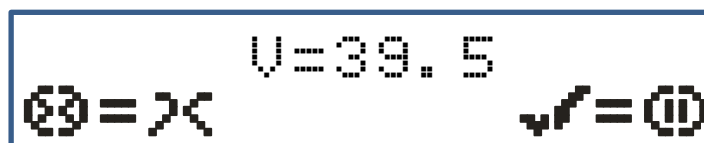


The default welding voltage of 39.5V is shown as above.

By pressing the ↑ and ↓ buttons a welding voltage from 8 to 48 volts can be selected.

When the welding voltage has been selected press the green button.

Screen 25. Confirming the accessory (fitting) welding voltage.



The next screen allows the user to confirm the selected welding voltage by pressing the green button.

Pressing the red button gives the user the option to re-select the welding voltage where, screen 24 will be displayed again.

Screen 26. Entering the accessory (fitting) welding time.



The minimum welding time of 3 seconds is shown as above. The cursor is displayed under the left most digit, by pressing the ↑ and ↓ buttons the digit’s value can be changed from 0 through to 9, when the required digit has been selected press the green button. The cursor will advance one place to the right, again repeat the above process until the welding time displayed is the same as the welding time marked on the accessory (fitting).

Note: the maximum welding time is limited to 500 seconds.

Screen 27. Entering the accessory (fitting) cooling time.



The accessory (fitting) cooling time entry screen in minutes is shown. The cursor is displayed under the left most digit, by pressing the ↑ and ↓ buttons the digit’s value can be changed from 0 through to 9, when the required digit has been selected press the green button. The cursor will advance one place to the right, again repeat the above process until the cooling time displayed is the same as the cooling time marked on the accessory (fitting).

Screen 28. Confirming the accessory (fitting) cooling time.



The next screen allows the user to confirm the selected cooling time by pressing the green button.

Pressing the red button gives the user the option to re-select the cooling time where, screen 27 will be displayed again.

Screen 29. Taking the photograph of the prepared joint.



If either the Caldersafe or Bluebox Bluetooth data transfer is active and connected the screen displayed above prompts the user to take a photograph/s of the prepared joint to be welded.

Follow the mobile application instructions whilst taking the photograph/s, when the photograph/s have been accepted the welding process will begin automatically.

Go to screen 31.

Note: If the camera icon on the mobile application is not active press and hold down the red button for 10 seconds to reset the communication between the welding unit and the mobile application.

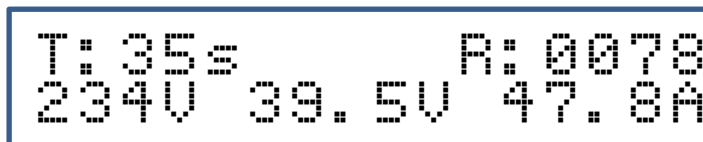
Screen 30. Welding in progress information.



The entered welding information is now displayed showing the entered welding time, cooling time, welding voltage and weld record number.

Press the green button to begin the welding process.

Screen 31. Welding in progress information.



During the welding process the welding unit continuously monitors the parameters of the weld. Displaying the supply voltage, the welding voltage and the welding current and the welding time remaining as well as the current weld record number.

Screen 32. Accessory (fitting) cooling time count screen.



When the welding process has been completed without errors the accessory (fitting) cooling time count screen above is shown.

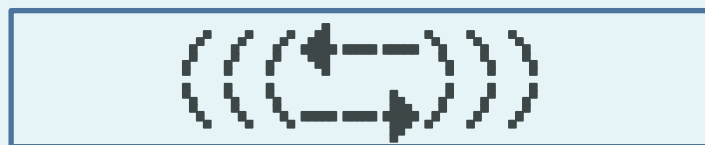
The time will count down from the value entered at screen 27 on page 13 or if no cooling time was entered the cooling time will count up from zero until the output lead is removed from the accessory (fitting).

Screen 33. Disconnect the accessory (fitting) screen.



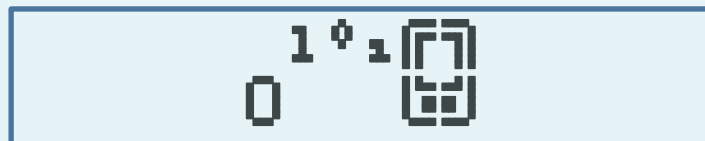
When the cooling time has elapsed or has reached 99 minutes in the case of no cooling time being entered then the screen above is shown until the output lead is removed from the accessory (fitting).

Screen 34 & 35. Uploading the weld record.



If either the Caldersafe or Bluebox Bluetooth data transfer is active this screen will be shown.

During this time the welding unit will try to establish a Bluetooth connection.



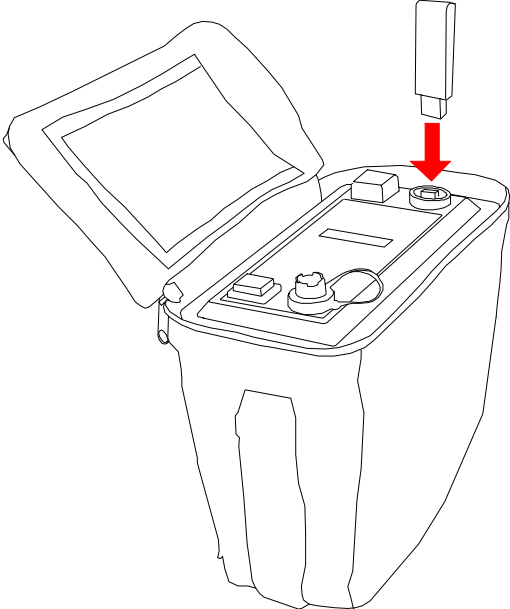
When a Bluetooth connection is established the weld record will be automatically uploaded.

Note: If the welding unit is not disconnected from the power source the process will repeat from screen 17 on page 9.

Note: If the welding unit is disconnected from the power source the process will repeat from screen 1 on page 4.

Downloading the weld records.

To activate the record download, switch off the welding unit and insert the memory stick into the USB port located on the top of the welding unit.



Switch the welding unit on and wait until the screen below is displayed.

Screen 1. Downloading weld records screen.



When the download is complete the remove memory stick screen is displayed.

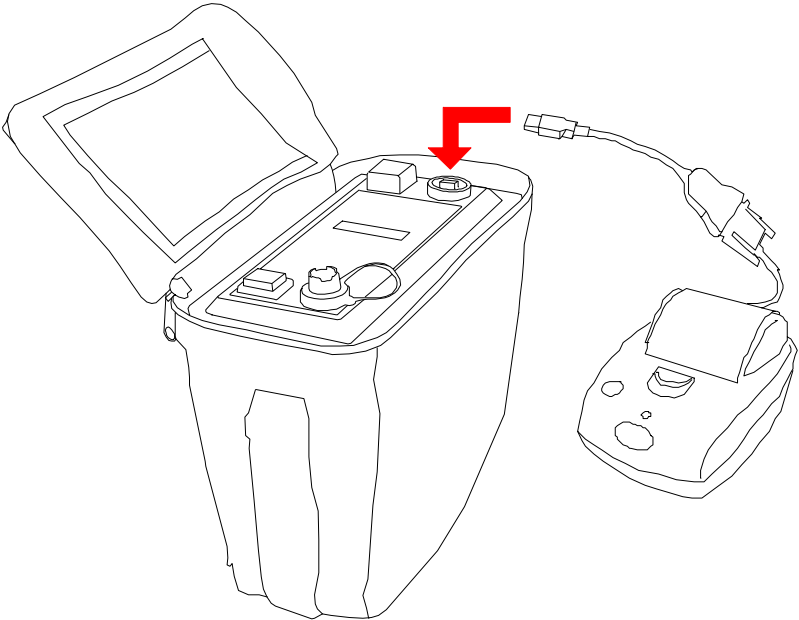
Screen 2. Remove the memory stick screen.



When the download is complete the remove memory stick screen is displayed.

Printing the weld records.

To activate the record printing function, switch off the welding unit and insert the printer lead into the USB port located on the top of the welding unit. Switch the printer on.



Switch the welding unit on, when the printer is detected the screen below is displayed.

Screen 1. Print the last joint record.

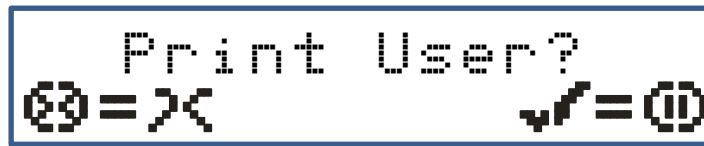


The print last joint record option is now displayed.
Press the green button to begin printing the last joint record.
Press the red button to go to the next option.



The display will show the printing screen below during the print process.

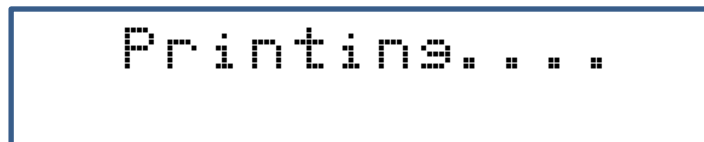
Screen 2. Print joint records by user.



The print joint record by user option is now displayed.
Press the green button to select the print joint records by user name.
Press the red button to go back to the print last joint record option.



The last entered user name will be displayed on the top line of the display.
Press the ↑ button to select the next user name.
Press the green button to begin printing the joint records which relate to the user name selected.
Press the red button to go back to the print last joint record option.



The display will show the printing screen during the print process.
To exit the print function, disconnect the printer and press the red button.

Error codes.

- E01** Supply voltage level too low.
- E02** Supply voltage level too high.
- E03** Supply frequency level less than 40Hz.
- E04** Supply frequency level greater than 60Hz.
- E05** Output voltage < 1.5% of the welding voltage for 6 seconds continuously.
- E06** Output voltage > 1.5% of the welding voltage for 6 seconds continuously.
- E07** Output voltage > 6% of the welding voltage for 4 seconds continuously.
- E08** Accessory (fitting) disconnected during welding cycle.
- E09** Output current less than 0.5 amps for 4 seconds continuously.
- E10** Reserved.
- E11** Stop button pressed during welding cycle.
- E12** Reserved.
- E13** Reserved.
- E14** Reserved.
- E15** Reserved.
- E16** Reserved.
- E17** Output current increased by +10% for 4 seconds continuously.
- E18** Ambient air temperature level less than -20°C.
- E19** Ambient air temperature level greater than +50°C.
- E20** Transformer temperature level greater than +80°C.
- E127** Loss of supply power.

Warnings.

Risk of explosion!

This equipment is not to be used in a gaseous atmosphere.

Caution.

Risk of electric shock! Do not open.

Caution.

To avoid damage to the welding unit do not interrupt the input supply or disconnect the output lead from the welding unit or fitting during a welding cycle.

Caution.

To avoid damage to the welding unit do not start a generator with the welding unit connected.

Allow a minimum of 10 seconds after starting the generator before connecting the welding unit, to allow for the generator output to stabilise.

Certificate of conformity.

This product has been manufactured in accordance with the following directives:

- **73/23/EEC Low voltage – Electrical Equipment (Safety) Regulations.**
- **2002/95/EC Restriction of the use of Certain Hazardous Substances in Electrical and Electronic Equipment Regulations.**
- **2002/96/EC Waste Electrical and Electronic Equipment (WEEE) Directive.**

This product has been manufactured to meet the following standards:

- **ISO 12176-2 Equipment for fusion jointing polyethylene systems. Part 2 : Electrofusion.**
- **BS 7540-1,2 & 3:2005, BS 7671:2001, BS 7919:2001, BS EN 1555-3:2002,**
- **BS EN 60068-2:1993, BS EN 60204-1:2004, BS EN 60309-2:1999,**
- **BS EN 60529:1992, BS EN 60947-1:2004, BS EN 61558-1:1998,**
- **BS EN 61558-2 & 23:2001, BS EN 62262:2002**



This product conforms to the RoHS directive.

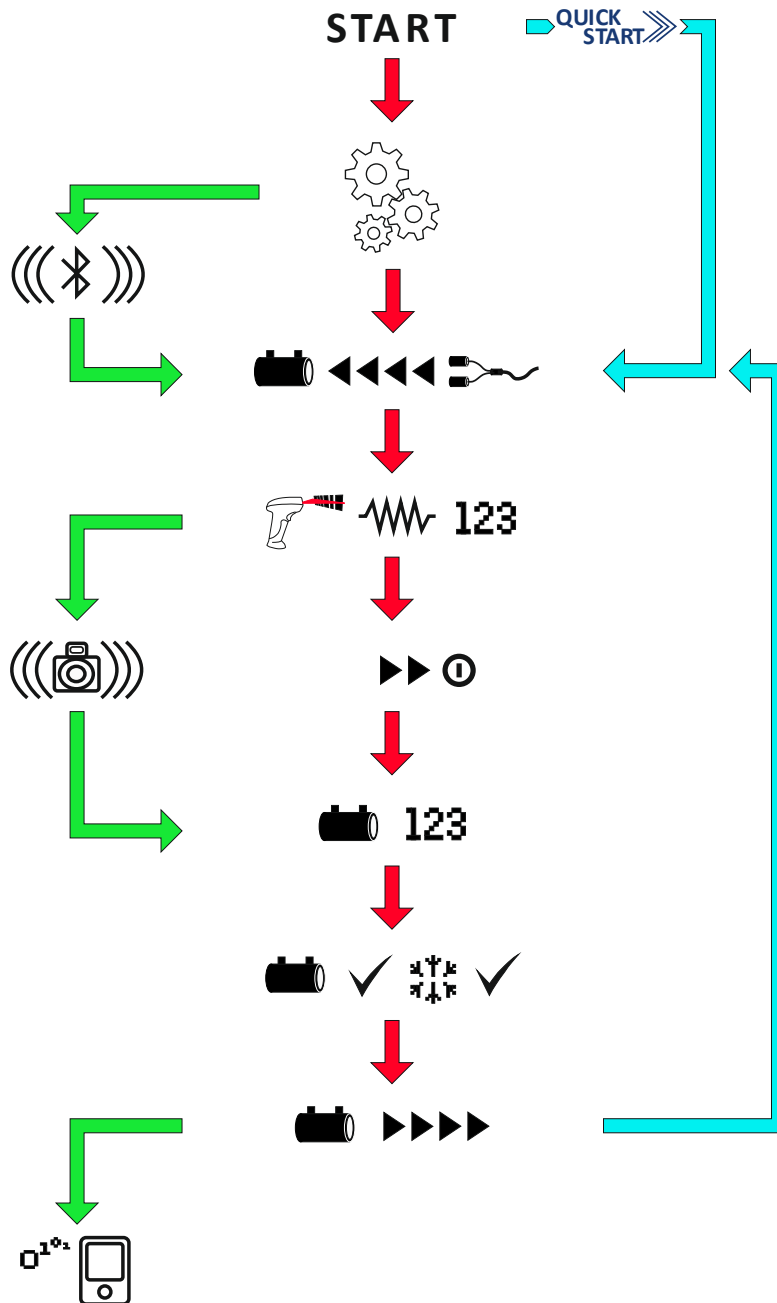


Not to be disposed of in domestic waste.
Contact Caldervale Technology Limited or your local authority for the disposal of this product.

Notes:

Notes:

Notes:



Manufactured in the U.K by
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