ACT 3

(Automatic 40v welding unit)

Operating manual

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Operating Controls

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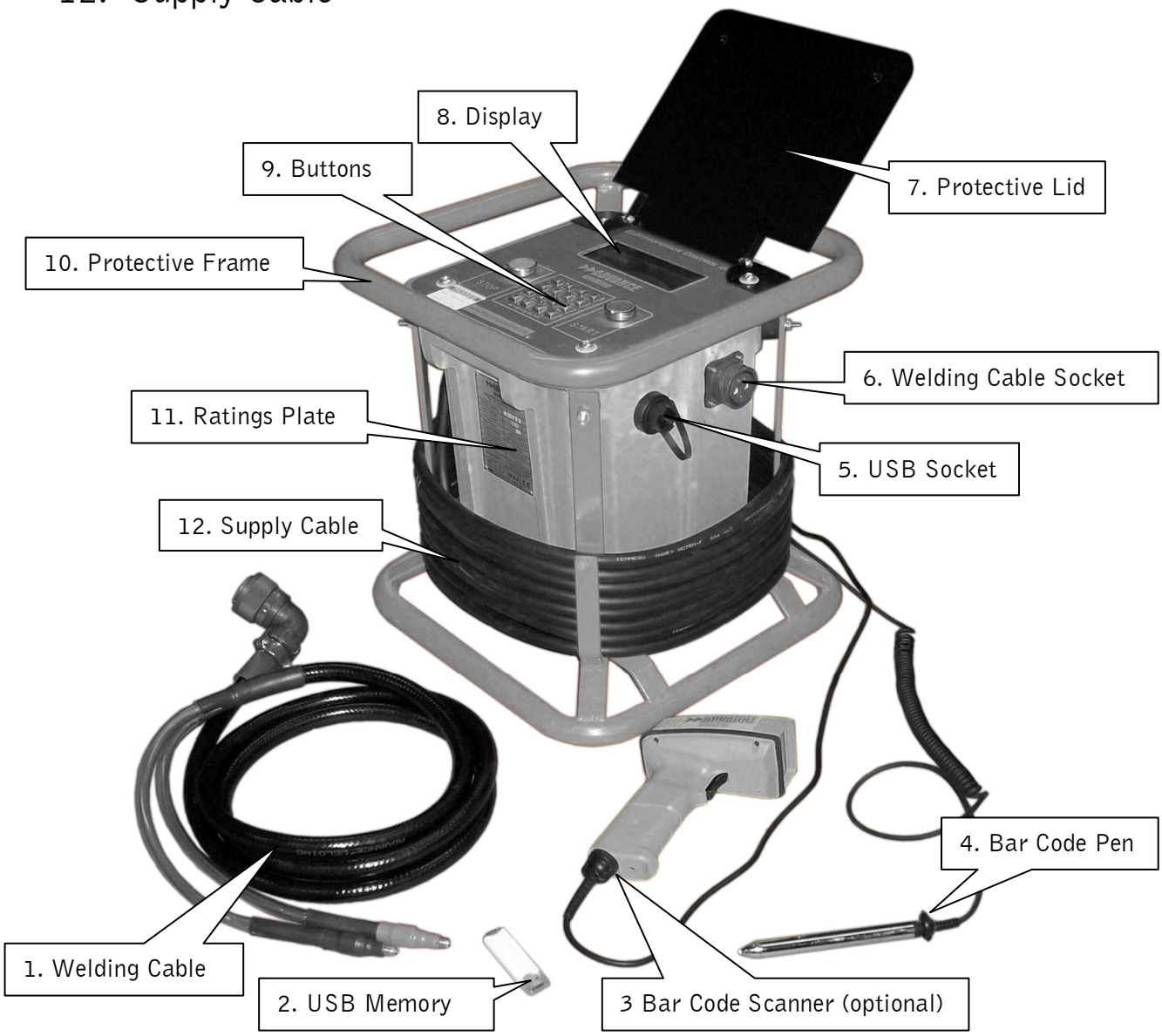


Safety Notes

- **RISK OF EXPLOSION! This welding unit must not be used in a gaseous atmosphere.**
- **RISK OF ELECTRIC SHOCK! Do not open. No user serviceable parts inside.**
- Before using, always visually inspect the unit to see that the cables and connectors are not worn or damaged. Replace the damaged part before welding.
- Switch off and remove the plug from the mains before adjusting, cleaning, or if the cables are entangled and before leaving the equipment unattended for any period.
- To avoid damaging the unit, do not interrupt the supply voltage or disconnect the welding cable, while the unit is welding a fitting.
- Do not lift or pull the equipment by its cables.
- Do not disconnect the welding cables by pulling on them, always pull off the connectors from the fitting.
- Do not start a weld without the pipe correctly inserted into the fitting.
- Do not touch the fitting while welding.
- Do not weld in the rain or leave the equipment outdoors whilst it is raining.
- Weld only in daylight or in good artificial light.
- The operator is responsible for accidents or hazards occurring to other people or their property while using this equipment. Keep the work area safe!
- Keep bystanders a safe distance away from the machine while welding.
- Never allow people unfamiliar with these instructions to use the welding unit.

Product Specification

Operating Type:	Controlled voltage.
Operating Modes:	Manual, Fusamatic[#1], Bar Code
Operating Languages:	English, French, Dutch, Polish, Russian. (others on request)
Operating Temperature:	-10°C to +40°C [#2]
Welding Voltage:	8 to 48 V ac (39,5 V)
Welding Current:	1 to 65 A ac (true rms) (100 A short term)
Welding Power:	8 VA to 3120 VA
Welding Time:	1 to 3600 seconds
Apparent Power Factor:	0.15 to 0.92
Supply Voltage: [#3]	110 V ac (+/- 20%) 40 to 60 Hz
Supply Current: [#3]	1 to 30 A ac (true rms)
Supply Power: [#3]	3,500 W (peak at 0.15 APF)
Supply Voltage: [#4]	230 V ac (+/- 20%) 40 to 60 Hz
Supply Current: [#4]	1 to 15 A ac (true rms)
Supply Power: [#4]	3,500 W (peak at 0.15 APF)
Supply Protection:	Class 1 – Earthed
Data log memory:	2048 welds
Data download/upload:	USB flash memory drive
Weight:	28 kg
Size:	38 cm x 38 cm x 39 cm
Protection Level:	IP65

[#1] Fusamatic is a welding system owned by The Fusion Group PLC.

[#2] An extended temperature unit is available with limits -40°C to +50°C.

[#3] [#4] The unit is available in either 110v or 230v operation.

Advance Welding has a policy of continuously improving product design, and as such reserve the right to change specification of its products without prior notice and with impunity.

Intended Use

This equipment is intended to weld constant voltage electrofusion fittings suitable for low, medium and high pressure pipe work systems.

This welding unit has been approved in the UK by Transco to the standard T/SP/ECE/1 2005 'Specification for Electrofusion Control Boxes', and is approved for use on all UK gas distribution networks.

This welding unit complies with the UK Water Industry Specification WIS 04-32-08 'Specifications for the fusion jointing of polyethylene pressure pipeline systems using PE80 and PE100 materials', and is suitable for use on all UK water distribution networks.

This welding unit has been designed to comply with the International Organization for Standardization standard ISO12176-2:2000 "Plastic pipes and fittings, equipment for fusion jointing polyethylene systems , part 2, electrofusion", and can weld all bar coded fittings including extended traceability codes.

Introduction

This manual gives instructions on the correct assembly and safe use of your welding unit. It is important that you read these instructions carefully, and keep these instructions for the life of the unit.

This manual **does not** detail the specific welding procedure for the fittings: scraping, clamping and assembly of joints. For this information you must contact the manufacturer of the fittings.

Delivered Items

Carefully remove the welding unit from its packaging and check that you have the following items:

- Welding unit.
- Welding cable.
- USB flash memory drive.
- Bar code pen reader.

When parts are missing or damaged, please contact your dealer.

Electrical Safety

WARNING! Switch off and remove the plug from the mains before adjusting, cleaning or if the cable is cut, damaged or entangled.

This welding unit is Class 1 and requires an earthed (grounded) connection. An earth spike must be used with generators.

This unit is supplied in either 110 volt or 230 volt operation. **Check the rating plate on the side of the unit for the correct supply voltage.**

The power source must be capable of providing 3500 Watts.

Extension cables should only be used if they comply with the H07RNF harmonized standard. They must be fitted with connectors to the BS EN 60309-2 standard. All cables must be unwound from the reel to stop inductive heating effects. The cable dimensions should be as follows:

110 Volt operation	230 Volt operation
Up to 63mm diameter 2.5mm^2 cable = 30m	Up to 63mm diameter 1.5mm^2 cable = 40m
Up to 180mm diameter 2.5mm^2 cable = 20m	Up to 180mm diameter 1.5mm^2 cable = 25m
Over 180mm diameter 4.0mm^2 cable = 10m	Over 180mm diameter 2.5mm^2 cable = 20m

It is recommended for increased electrical safety to use a Residual Current Device (RCD) with a tripping current of not more than 30 mA. Always check your RCD every time you use it.

The supply cable must be inspected for signs of damage before each use and the equipment may only be used if in perfect condition. Damaged cables must be replaced by an approved service agent.

This equipment is classified as "Portable for use on industrial applications", and must undergo a formal electrical safety check (Portable Appliance Test) as per local regulations.

Using the equipment

This welding unit takes the ambient temperature into account when calculating the energy required to weld the fitting. It must therefore be allowed to reach ambient temperature before use and must be at the same temperature as the fitting to be welded.

Prepare and clamp the pipe and fittings inline with the manufacturers recommendations.

Connect the welding cable to the unit and the fitting to be welded. Connect the supply cable to the correct supply voltage and switch the unit on.

The screen will show a welcome message along with the software version and date. The owner details are then shown

The main menu is now shown on the display. During operation, except while welding, pressing the star key on the keypad will jump back to this menu.

Notes:

The operation of the unit can be customised by turning welding modes on and off, along with some features like the cooling time and data logging. This manual details all available modes and features. For information on how to customise the welding unit see the "Set Up" section later on in this manual.

The welding unit is fitted with an alpha-numeric keypad, which is used by the operator to input data. Down the right hand side there are four Quick-Keys, A B C D. These act as quick shortcut keys, their function being prompted on the screen.

When entering data, letters and numbers can be selected by repeatedly pressing the same key, e.g. A B C 2 A B C 2 . After a short pause the cursor will move to the next position. Special characters and spaces can be selected by pressing the 1 or 0 keys. (This is the same method used for text with mobile cell phones.) Pressing the B Quick-Key will step Back one position. Pressing the C Quick-Key will Clear the input field.

Data Log Memory (Optional)

The unit can record information about the weld, along with the date and time, and additional operator entered information.

It is possible to enter three pieces of information to identify the weld. The first is the Operator's Name, the second is the Location where the weld is being done, and the third is an Information field for more details.

The display will show all three pieces of information:

Pressing the B Quick-key will select the 'Operator Name' and allow changes to be made. Enter the required information and press the A Quick-key to accept it.

Pressing the C Quick-key will select the 'Location' and allow changes to be made. Enter the required information and press the A Quick-key to accept it.

Pressing the D Quick-key will select the 'Information Field' and allow changes to be made. Enter the required information and press the A Quick-key to accept it.

When all the information has been entered, press the A Quick-key to accept it.

This information will be saved when the weld has been completed, and will be prompted the next time a new weld is carried out.

The display will also ask if the pipe/fitting has been scraped and clamped. Select yes or no using the Quick-Keys. This information will be saved on the data log memory.

The unit can save 2048 welds in memory. When the memory is full, it will be overwritten from the beginning in blocks of 24 welds. This will allow the last 2000 welds to be held in memory.

An optional "lifetime weld memory" feature is available. This uses an SD memory card fitted internally that records every weld carried out by the unit. This is designed as a backup device and can only be downloaded by an approved service agent.

Manual Welding (Optional)

This mode of operation is designed to weld all fittings in manual mode.

From the main menu:
Press the **A** Quick-Key to select manual welding, then:

Press the **A** Quick-Key to weld with data logging OFF.
Press the **B** Quick-Key to weld with data logging ON.

The display will ask for the welding cable to be connected to the fitting. When this has been done it will show the data logging options (if selected). Enter the information as required.

The display will now prompt for the welding time and voltage to be entered. Press the **C** Quick-key to select the welding time. Enter this from the numbered keypad, e.g. 100. This can be between 1 second and 3600 seconds. Press the **A** Quick-key to accept the new time.

(Optional voltage select) Press the **D** Quick-key to select the welding voltage. Enter this from the numbered keypad, e.g. 26. This can be between 8 volts and 48 volts. A default option of 39,5 is available. Press the **A** Quick-key to accept the new voltage.

When the correct time and voltage have been selected, press the **A** Quick-key to accept them. The display will now ask for the **START** button to be pressed. Press Start to begin welding.

During the weld, the display will show the set welding time, the remaining welding time, the set welding voltage and the welding power generated in the fitting. The unit will also monitor the welding to make sure it does not go out of limits. Any faults that are detected will terminate the welding and cause an error message to be displayed. These are listed later on in this manual.

(Optional cooling time) At the end of the weld the cooling time will be shown. This counts upwards from zero and will continue until stopped by the operator. This is shown as an aid to the operator to allow them to know how long it was since the weld finished. Press any key to continue.

The display will ask for the welding cable to be disconnected from the fitting. Doing this will reset the unit back to the welding menu.

Fusamatic Welding (Optional)

This mode of operation is designed to weld the fully automatic "Fusamatic" fittings, manufactured and sold by The Fusion Group.

From the main menu:
Press the **B** Quick-Key to select automatic welding.
Press the **A** Quick-Key to select Fusamatic welding.

Press the **A** Quick-Key to weld with data logging OFF.
Press the **B** Quick-Key to weld with data logging ON.

The display will ask for the welding cable to be connected to the fitting. Make sure that the red lead end is attached to the red terminal on the Fusamatic fitting and the black lead end to the other.

When this has been done it will show the data logging options (if selected). Enter the information as required. The unit will now read the fitting and set the welding time accordingly. This will be displayed.

Press **Start** to begin welding.

During the weld, the display will show the set welding time, the remaining welding time, the set welding voltage and the welding power generated in the fitting. The unit will also monitor the welding to make sure it does not go out of limits. Any faults that are detected will terminate the welding and cause an error message to be displayed. These are listed later on in this manual.

(Optional cooling time) At the end of the weld the cooling time will be shown. This counts upwards from zero and will continue until stopped by the operator. This is shown as an aid to the operator to allow them to know how long it was since the weld finished. Press any key to continue.

The display will ask for the welding cable to be disconnected from the fitting. Doing this will reset the unit back to the welding menu.

Bar Code Welding (Optional)

This mode of operation is designed to weld bar coded fittings in fully automatic mode. Make sure that the bar code pen or (optional) bar code scanner is connected to the USB socket on the unit.

From the main menu:
Press the **B** Quick-Key to select automatic welding.
Press the **D** Quick-Key to select Bar Code welding.

Press the **A** Quick-Key to weld with data logging OFF.
Press the **B** Quick-Key to weld with data logging ON.

The display will ask for the welding cable to be connected to the fitting. When this has been done it will show the data logging options (if selected). Enter the information as required.

(Optional extended traceability) If selected, the unit will prompt for the extended traceability codes to be read from the fitting. Up to five codes can be read from fittings, pipes and accessories. When complete, press the **A** Quick-Key to continue.

The display will ask for the fusion bar code to be read. When this has been done the display will show the set welding parameters.

Press **Start** to begin welding. During the weld, the display will show the set welding time, the remaining welding time, the set welding voltage and the welding power generated in the fitting. The unit will also monitor the welding to make sure it does not go out of limits. Any faults that are detected will terminate the welding and cause an error message to be displayed. These are listed later on in this manual.

(Optional cooling time) At the end of the weld the cooling time will be shown. This counts upwards from zero and will continue until stopped by the operator. This is shown as an aid to the operator to allow them to know how long it was since the weld finished. Press any key to continue.

The display will ask for the welding cable to be disconnected from the fitting. Doing this will reset the unit back to the welding menu.

Fusion Operator Badge (Optional)

To allow full traceability of the operator, and stop untrained people using the equipment, an Operator Badge system is available.

Using an approved training centre, the operator is trained on the correct use of the equipment and then issued with an operator badge that has his details encoded on it. When the welding unit is switched on, the operator badge must be read with the bar code pen (or scanner) to unlock the unit and allow welding to take place. Details from the operator badge are recorded in the data log memory.

Three standard modes of operation are available:

1. Every Day.

The first time the welding unit is used every day, the operator badge must be read. This will unlock the unit for use all day and will then automatically relock at midnight (even if the unit is not powered on). It can also be relocked by reading the operator badge again.

2. Every Power.

Every time the welding unit is switched on, the operator badge must be read to unlock the unit. It will remain unlocked until switched off.

3. Every Weld.

Every time a weld is carried out, the operator badge must be read to unlock the unit. This is required even if the unit is not powered off.

To activate these modes of operation, please contact your approved service agent.

Friatec Fittings.

This unit is approved to weld the Frialen Large Diameter couplers, manufactured by Friatec, only when used with the Friatec Operator Badge system.

To maintain the Friatec warranty, the installer must be trained by an authorised agent and be issued with a Friatec Operator Badge. Only trained operators should install these fittings.

GPS Location (Optional)

The welding unit has the ability to record the GPS satellite location of the weld. This is stored as Northings and Eastings and entered into the data log along with an optional depth.

Using a hand held GPS device, the location of the weld can be found, then this is entered into the data log memory along with the operator name, location and information

To activate these modes of operation, please contact your approved service agent.

Extreme Low Temperature Operation (Optional)

The welding unit has an extended temperature range option, which allows it to work down to -40°C. This unit has special supply and welding cables that remain flexible at extremely low temperatures. It also has an internal case heater to warm the electronics to an acceptable working temperature.

When the temperature inside the unit is below -15°C, the following operation will apply:

Plug the welding unit into the correct supply voltage and switch it on.

The internal case heater will switch on and an indicator light will show on the lid next to the display.

When the internal temperature warms to the correct level, the case heater will switch off, the indicator light will switch off and the electronics will switch on.

The operation of the unit is now as previously described.

Extended temperature range facility is a factory-fitted option and must be requested when ordering the product from you supplier.

Downloading the Weld Memory

The data log memory is downloaded by using an 'industry standard' USB flash memory device. The data can be encrypted for protection, to stop unauthorised alteration of the information.

A data download manager is available free of charge and is supplied on the USB memory device with the welding unit. This allows the encrypted data to be read, filtered, printed and saved. It also allows the data to be saved as an encrypted file or as a Microsoft Excel spreadsheet.

Plug the USB flash memory drive into the USB connector on the side of the welding unit.

From the main menu:

Press the **D** Quick-Key to select options.

Press the **A** Quick-Key to select download data.

Confirm that you want to download the data. The display will show that it is "Enumerating the device". While this is showing, the unit is initialising the memory drive. The data will now be downloaded.

The display will ask if you want to reset the data log memory. Select yes or no then disconnect the memory drive when prompted to do so.

The data can be download as either an encrypted PFD file, or as a plain text XLS file. To change the setting please contact your approved service centre.

Upgrading the Operating Software

The operating software can be upgraded through the external USB connector. New software is loaded onto a USB memory drive then flashed into the welding unit using a password code. This allows the software to be upgraded without opening up the unit or changing the memory chip.

Software upgrade must be carried out by an approved service agent, and are emailed from the manufacturer.

Set Up Options

From the main menu:

Press the **D** Quick-Key to select options.

From here the time can be set by the operator. Other changes can be made, however, these are password protected and must be carried out by an approved service agent.

The following options are available:

Date.

The date can be set.

Display Language.

Available languages can be selected and set.

Modes of Operation.

Manual: On/Off, Cooling time On/Off, Data logging On/Off, Variable voltage On/Off.

Fusamatic: On/Off, Cooling time On/Off, Data logging On/Off.

Bar Code: On/Off, Cooling time On/Off, Data logging On/Off, Extended traceability codes On/Off.

Calibration Period.

The calibration period can be set between 1 month and 99 months (or turned off). For 28 days prior to the calibration expiry date, the unit will prompt that the calibration is due and will count down the remaining days. When the calibration has expired, it can be set to warn the operator or lock the unit.

Owner Details.

The owner details, shown when the unit is first switched on, can be entered or changed.

Download Format.

The format of the data log download can be changed from protected PFD to plain text XLS.

Hidden Data Download.

Even when data logging is not selected for a weld, details are still recorded but then hidden from the normal data download, and not selected when the data is downloaded to a USB memory disk. To aid fault finding, all welds carried out including those "not logged" can be downloaded.

Lifetime Weld Memory.

(Optional hardware) The entire weld memory for the lifetime of the welding unit is stored in an internal SD memory card. This can be downloaded as an archive of all welds carried out.

Purchase Date.

The date the unit was sold to the customer can be set and viewed. This allows more accurate record keeping.

Warranty Period.

The date the unit was first used can be viewed. This allows accurate control of the warranty period.

Clear Data Log.

The data log memory can be cleared by entering a password.

Information

Information about the welding unit can be viewed from the options menu. Select more options and then enter the password **A I N F** followed by the **A** Quick-Key.

The serial number and part number of the unit are shown. The calibration date and calibration period are also shown. Press the **A** Quick-Key and the following weld counters are shown: Total weld count, weld count at last calibration, welds done since last calibration.

Fault Finding

During operation, the welding unit monitors all aspects of its operation. If a fault occurs then an error message will be shown.

0: Weld OK

No Fault, weld completed OK.

1: Stuck button on start up

This fault shows when the power is first switched on. Either the Stop, Start, or a keypad button is stuck in. Free the button to clear the fault.

2: Output fault before weld start

This fault shows when the power is first switched on. The unit will check the output terminals to make sure no voltage is present when first switched on. If this fault happens then the internal power relays have stuck in the closed position. The unit will need to be returned for service.

3: Toroid thermal switch tripped

This fault happens when the toroidal transformer becomes too hot. This will happen if the unit is used for a long period of time on large fittings. Let the unit cool down and the fault will clear. If this happens when the unit is cold, then there could be a bad connection on one of the internal plugs. In this case, the unit will need to be returned for repair.

4: No calibration

This fault happens when the unit has no calibration. This will normally not show, and if the unit has been calibrated, would be caused by a fault with the internal memory. Return the unit for service.

5: Case temperature sensor fault (if fitted)

Some units have a case temperature sensor fitted to switch the unit off if the electronics become too hot. This fault will show if the sensor is faulty. Return the unit for service.

6: Case temperature out of limits (if fitted)

Some units have a case temperature sensor fitted to switch the unit off if the electronics become too hot. This fault will show if the temperature is too hot. Let the unit cool down.

7: Ambient temperature less than -40°C.

The unit has detected that the ambient temperature is very cold or the sensor has broken. If the temperature is not below -40°C then the unit will need to be returned to a service agent for repair.

8: Ambient temperature more than +600°C.

The unit has detected that the ambient temperature sensor has broken or a wire has gone open circuit. The unit must be returned to a service agent for repair.

10: Low supply frequency <40Hz

The unit has detected that the supply frequency is below 40 Hz. This will normally be caused by a poor quality generator. If this fault happens then check the supply or change the generator.

11: High supply frequency >70Hz

The unit has detected that the supply frequency is above 70 Hz. This will normally be caused by a poor quality generator. If this fault happens then check the supply or change the generator.

12: High supply voltage >140v (or 280v with a 220v supply)

The unit has detected that the supply voltage is more than 140 volts (280 volts with a nominal 220v supply). Check the supply voltage and if necessary use a different generator.

13: Low supply voltage <95v (or 190v with a 220v supply)

This fault can be caused by a few problems. It could be that the generator is running slowly and so the supply voltage is low. Try speeding the generator up or use a different generator.

It could also be caused by a generator that is too small. If a large fitting is welded, then a large amount of power will be needed from the generator. If it can not supply this power then it will stall and the voltage will drop away. Check that the generator is the correct size, if needs be try another generator.

It could be caused by the use of long extension leads. If a large fitting is welded then a high current will be taken from the supply. If extension leads are used, there will be a volts drop down the lead making the unit sense a low supply voltage. Try not to use extension leads with the unit. If you have to then use just 10 meters of 4.0mm^2 cable, the same size fitted to the unit.

14: Relay failed to latch on weld start

This fault could happen when the start button is pressed. If the main power relays do not operate correctly then this fault will be shown. The unit needs to be returned for service.

20: Low output volts (-1.25%)

This fault will happen if the output voltage is 1.25% lower than the set point for more than 3 seconds. This can be caused by a generator that is not big enough to supply the required power to the fitting. Check the size of the generator and if needs be try another generator. It can also be caused by using long extension leads with the unit. It is recommended that only 10 meters of extension are used, and the cable should be the same thickness as the input lead on the unit (4.0mm^2).

21: High output volts (+1.25%)

This fault will happen if the output voltage is 1.25% higher than the set point for more than 3 seconds. It will normally be caused by a poor quality generator with the supply voltage fluctuating. Try a different generator.

22: Excess output volts (+6.25%)

This fault will happen if the welding voltage is 6.25% more than the set point for more than 2 seconds. This fault is normally caused by a fault within the unit, a short circuit triac. The unit must be returned for service.

23: Low output current (<2.5A)

This fault will happen if the welding current is below 2.5 amps for more than 3 seconds. It can be caused by a faulty fitting. Try another fitting. If this doesn't clear the fault then there is a problem inside the unit and it must be returned for repair.

24: Shorted turn detected in fitting.

While welding, the unit has detected a sharp increase in welding current. This is normally caused by a shorted turn happening in the fitting. (An increase OF 10%). If this happens then it is most likely a faulty fitting. This must be replaced. If the fault persists then it could be a fault within the unit.

25: User stop button pressed

The operator has pressed the stop button.

26: Relay unlatched

During welding, if the main power relay disconnects then this fault will be shown. It could be caused by the unit being knocked or a temporary dip in the power supply. If the fault persists then the unit should be returned for repair.

27: Fitting open circuit

This fault is shown if the output lead disconnects from the fitting while welding. Follow the guidelines from the fitting manufacturer, reconnect the lead and try welding again.

30: Bar Code Mode: No fitting connected

This fault is shown if the output lead is not connected to a fitting when a bar code is read. Connect the fitting.

31: Bar Code Mode: Ohms error

This fault is shown if the connected fitting resistance is different from that coded into the bar code. Try another fitting.

40: Bar Code Invalid: Temperature Compensation.

Digits 22 and 23 of the bar code have been decoded incorrectly.

41: Bar Code Invalid: Resistance Coefficient.

Digit 18 of the bar code has been decoded incorrectly.

42: Bar Code Invalid: Welding Voltage.

Digits 13 and 14 of the bar code have been decoded incorrectly.

43: Bar Code Invalid: Regulation Mode.

Digit 12 of the bar code has been decoded incorrectly.

44: Bar Code Invalid: Fitting Size.

Digits 9, 10 and 11 of the bar code have been decoded incorrectly.

45: Bar Code Invalid: Cooling Time.

Digit 7 of the bar code has been decoded incorrectly.

46: Bar Code Invalid: Fusion Cycle Type.

Digit 5 of the bar code has been decoded incorrectly.

47: Bar Code Invalid: Energy Correction.

Digit 3 of the bar code has been decoded incorrectly.

48: Bar Code Invalid: Component Type.

Digits 1 and 2 of the bar code have been decoded incorrectly.

49: Bar Code Invalid: Check Digit.

Digit 24 of the bar code has been decoded incorrectly.

50: USB Memory: Disc full.

This fault will happen if the USB flash memory pen is full. Delete some files from the device.

51: USB Memory: File allocation table full.

This will happen if the USB flash memory pen's file structure becomes fragmented. Follow the instructions with Windows to defragment the memory pen.

52: USB Memory: File not found.

When performing a software upgrade, the required file was not found on the memory drive. Reload the upgrade files onto the memory drive.

127: Power off failure.

If the power is turned off while the unit is welding, this fault will be recorded to the datalog.

Maintenance

Regularly check for obvious defects such as loose or damaged cables and connectors. Look for warn components and broken covers or housings.

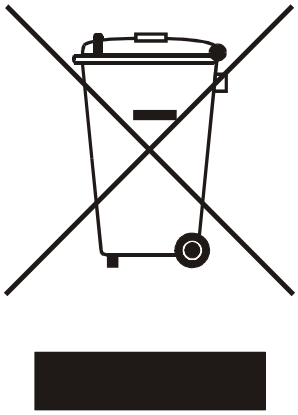
There are no user serviceable parts inside the unit. It should be returned to an approved service agent for repair and calibration.

It is recommended that the unit is calibrated every twelve months.

After use, clean the outside of the unit with a soft brush or cloth. Carefully wind up and store the cables around the frame in the location provided.

Disposal

The equipment and packaging should be sorted for environmentally friendly recycling.



DO NOT DISPOSE OF THIS EQUIPMENT INTO HOUSEHOLD WASTE !

According to the European Directive 2002/96/EC Waste Electrical and Electronic Equipment (WEEE), when no longer suitable for use, this equipment must be separately collected and sent for recycling.

According to the European Directive 2005/95/EC Restriction of Hazardous Substances (RoHS), this equipment does not contain more than the agreed levels of lead, cadmium, mercury, hexavalent chromium, polybrominated biphenyl (PBB) and polybrominated diphenyl ether (PBDE) flame retardants.

Calibration and Warranty

This welding unit has been manufactured, inspected and tested in accordance with the quality control systems in place at Advance Welding.

This welding unit has been calibrated using equipment that is traceable to national and international standards, through a NAMAS accredited laboratory. NAMAS (National Accreditation of Measurement and Sampling) is a service of UKAS (United Kingdom Accreditation Service).

This welding unit has a TWELVE month calibration and warranty period, active from the first use of the unit by the end user customer.

Conditions of Warranty:

This warranty covers only those defects to the product which arise from normal use of the product, and will become invalid if any of the following apply:

- Failure to follow the operating instructions.
- Improper or inadequate maintenance.
- Unauthorised modification.
- Misuse or any use not in accordance with the operating manual or good industry practice.
- Physical abuse of the product.
- Operation outside the products specifications.
- Improper site preparation or site maintenance.
- Faulty pipe or fitting.

Extent of Warranty:

Subject to the conditions and limitations of warranty; Advance Welding warrants that its electrical products will be free from defects in materials and workmanship for a period of twelve months, and its mechanical products for six months, from the date of purchase by the end-user customer.

If during this period, notice of a defect which is covered by this warranty is received, then Advance Welding will either repair or replace the product at its option. Any replacement product will have functionality at least equal to that of the product being replaced, and will in our opinion, perform consistently with its age and usage.

Unless otherwise agreed, all warranty work will be carried out by Advance Welding or an authorised and approved service facility.

Customers will prepay all shipping charges for products returned under warranty, and Advance Welding will charge for return of the products back to the customer.

This warranty statement gives the customer specific legal rights. The customer may also have other rights which vary from country to country in the world.

Limitations of Warranty:

Advance Welding does not warrant the operation of any product to be uninterrupted or error free.

Advance Welding specifically disclaims the implied warranties of satisfactory quality and fitness for a particular purpose.

Advance Welding makes no other warranty of any kind, whether express or implied, with respect to its products.

To the extent that this warranty statement is inconsistent with the law of the locality where the customer uses the product, this warranty statement shall be deemed modified by the minimum necessary to be consistent with such local law.

To the extent allowed by local law, the remedies provided in this warranty statement are the customer's sole and exclusive remedies.

This equipment has been designed for use with the range of fittings and pipe available at the time of its design and development. Advance Welding can accept NO liability for the equipments ability or otherwise to be used with new or different fittings or pipe that subsequently appear in the market place.

This equipment is not intrinsically safe and must not be used in a gaseous or explosive atmosphere. Advance Welding can accept NO liability if the equipment is used in these circumstances.

Declaration of Conformity

CE

This welding unit has been designed to comply with the harmonised standards under the "New Approach" directives, and has been CE marked accordingly.

The applicable standards are:

89/336/EEC	Electromagnetic compatibility
73/23/EEC	Low voltage equipment
98/37/EC	Machinery safety

More detailed information is available on our web site at www.ElectrofusionWelding.com

On behalf of
Advance Welding: *K.M.Wilkinson.*

Service and Repair

Manufactured in the UK by:

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Quick Start Guide

- Prepare the pipe and fitting according to the manufacturer's specification.
- Unwind all cables from the welding unit.
- Connect the welding cable to the fitting.
- Connect the supply cable to the correct voltage and switch it on.
- The unit will power up and go to the main menu.
- Press the B Quick-key to select Automatic welding.
- Press the D Quick key to select Bar Code welding.
- If the unit is set to data log, enter the details as shown on the screen.
- Read the bar code on the fitting with the pen/scanner.
- Press the Start button.
- The time will count down to zero as the fitting is being welded. Any faults will be indicated on the display.
- At the end of the weld, disconnect the welding cable to reset the unit.
- Press the Star key to return to the main menu if required.