



HANDHELD MMA/ARC INVERTER WELDER 120A

MODEL NO: **MWH120I**

Thank you for purchasing a Sealey product. Manufactured to a high standard, this product will, if used according to these instructions, and properly maintained, give you years of trouble free performance.

IMPORTANT: PLEASE READ THESE INSTRUCTIONS CAREFULLY. NOTE THE SAFE OPERATIONAL REQUIREMENTS, WARNINGS & CAUTIONS. USE THE PRODUCT CORRECTLY AND WITH CARE FOR THE PURPOSE FOR WHICH IT IS INTENDED. FAILURE TO DO SO MAY CAUSE DAMAGE AND/OR PERSONAL INJURY AND WILL INVALIDATE THE WARRANTY. KEEP THESE INSTRUCTIONS SAFE FOR FUTURE USE.



Refer to instruction manual



Wear a welding mask



Wear protective gloves



Wear safety footwear



Wear protective clothing



Electrical shock hazard



Hot surfaces



Do not use in the vicinity of a pacemaker



Welding sparks can cause explosions or fire



Arc rays can burn eyes and injure skin



Breathing welding fumes can be hazardous to your health

1. SAFETY

1.1. ELECTRICAL SAFETY

- WARNING!** It is the user's responsibility to check the following:
- ✓ Check all electrical equipment and appliances to ensure that they are safe before using.
- ✓ Inspect power supply leads, plugs and all electrical connections for wear and damage.
- ✓ Ensure that the insulation on all cables and on the appliance is safe before connecting it to the power supply.
- ✗ **DO NOT** use worn or damaged cables, plugs or connectors.
- ✓ Ensure that any faulty item is repaired or replaced immediately by a Sealey qualified technician.
- ✓ If the cable or plug is damaged during use, switch off the electricity supply and remove from use.
- ✓ Sealey recommend that an RCD (Residual Current Device) is used with all electrical products.
- IMPORTANT:** Ensure that the voltage rating on the appliance suits the mains power supply.
- ✗ **DO NOT** pull or carry the appliance by the power cable.
- ✗ **DO NOT** pull the plug from the socket by the cable.

1.2. POWER CORDS

- WARNING!** When positioning the appliance, ensure the supply cord is not trapped or damaged. If the supply cord is damaged, it must be replaced by the manufacturer, its service agent or similarly qualified persons in order to avoid a hazard.

1.3. GENERAL SAFETY

1.3.1. OPERATOR SAFETY

- ✓ Operators must receive adequate training before using the inverter welder.
- ✓ Remove ill fitting clothing, remove ties, watches, rings and other loose jewellery and contain long hair.
- ✗ **DO NOT** operate the inverter welder while under the influence of drugs, alcohol or intoxicating medication, or if tired.
- ✓ Stand correctly keeping a good footing and balance, ensure that the floor is not slippery and wear non-slip shoes.
- ✓ Keep unauthorised persons away from the work area. Any persons working within the area must wear the same protective items.
- ✓ Avoid oily greasy clothing. A spark may ignite them.
- ✗ **DO NOT** touch the work piece close to the weld as it will be very hot. Allow to cool.
- ✗ **DO NOT** touch the electrode holder immediately after use. Allow the electrode holder to cool.
- ✓ Wear safety welding gauntlets.
- ✓ The ambient temperature range should be between -10°C and 40°C.
- ✓ Risk of electric shock: Electric shock from welding electrode can kill. **DO NOT** weld in the rain or snow. Wear dry insulating gloves.
- ✗ **DO NOT** touch electrode with bare hands. **DO NOT** wear wet or damaged gloves. Protect yourself from electric shock by insulating yourself from workpiece. **DO NOT** open the equipment enclosure.
- ✓ Use genuine parts and accessories only. Unapproved parts may be dangerous and will invalidate the warranty.
- ▲ **DANGER! DO NOT** weld near flammable materials, solids, liquids, or gases, and **DO NOT** weld containers or pipes which have held flammable materials or gases, liquids or solids. Avoid operating on materials cleaned with chlorinated solvents or near such solvents.
- ✗ **DO NOT** use power source for pipe thawing.
- ▲ **DANGER!** Vapours from chlorinated solvents (such as de-greasers) can be decomposed by the heat of the arc to form PHOSGENE, a highly toxic gas, and other lung and eye irritating products.
The ultraviolet (radiant) energy of the arc can also decompose trichloroethane and perchloroethylene vapours to form phosgene.
- ✗ **DO NOT** weld where solvent vapours can be drawn into the welding or cutting atmosphere or where the radiant energy can penetrate to atmospheres containing even minute amounts of trichloroethylene or perchloroethylene.
- ✓ Prevent dangerous conditions arising by providing adequate ventilation. **NEVER** ventilate with oxygen.
- ▲ **DANGER!** Lead-, cadmium-, zinc-, mercury- and beryllium-, bearing materials, when welded (or cut) may produce harmful concentrations of toxic fumes. Adequate local exhaust ventilation must be used, or each person in the area as well as the operator must wear an air-supplied respirator.

For beryllium, both must be used. Metals coated with or containing materials that emit toxic fumes should not be heated unless coating is removed from the work surface, the area is well ventilated, or the operator wears an air-supplied respirator.

✘ **DO NOT** work in an unventilated confined space. If necessary, wear an air-supplied respirator.

✓ When not in use store the inverter welder in a safe, dry, childproof area.

1.4. MOVEMENT AND PLACEMENT

✓ Always use the carry handle to transport the inverter welder.

1.4.1. CABLE CONNECTIONS

✓ Keep the inverter welder in good working order and condition. Take immediate action to repair or replace damaged parts.

✓ Ensure that there is no obstruction to the flow of clean, cool air and ensure that there are no conductive dusts, corrosive vapours or humidity which could enter the inverter welder and cause serious damage.

1.4.2. PROTECTION FROM ARC

☐ **WARNING!** Use welding head shield to protect eyes and avoid exposing skin to ultraviolet rays given off by electric arc. Looking at an arc momentarily with unprotected eyes (particularly a high intensity gas-shielded arc) can cause a retinal burn that may leave a permanent dark area in the field of vision.

✓ Before welding whilst wearing contact lenses, seek advice from your optician.

✓ Avoid unintentional contact with workpiece. Accidental or uncontrolled arcing on the electrode holder may be dangerous.

✘ **DO NOT** hit the electrode on the workpiece, this may damage the electrode and make strike-up difficult.

✓ Wear safety welding gauntlets.

1.4.3. WELDING ENVIRONMENT

✓ Locate the inverter welder in a suitable work area.

✓ Keep the work area clean and tidy and free from unrelated materials. Also ensure that the work area has adequate lighting.

✘ **DO NOT** get inverter welder wet or use in damp or wet locations or areas where there is condensation.

✓ First aid facilities and a qualified first aid person should be available during welding operations.

✓ For production welding, a separate room or enclosed bay should be provided. In open areas, surround the operation with low reflective, non-combustible screens or panels. Allow for free air circulation, particularly at floor level. Provide face shields for all persons who will be looking directly at the weld. Before starting to weld, make sure that screen or bay doors are closed.

✓ Always ensure that there is full free air circulating around the outer casing of the machine, and that the louvres are unobstructed.

1.4.4. FIRE HAZARD

☐ **WARNING!** Be aware that flying sparks or falling slag can pass through cracks, along pipes, through windows or doors, and through wall or floor openings, out of sight of the operator. Sparks and slag can fly 10m.

✘ **DO NOT** weld within 10 metres of combustible materials (including building construction materials).

✘ **DO NOT** weld adjacent to openings (concealed or visible) in floors or walls within 10m that can expose combustibles to sparks.

✘ **DO NOT** weld near to walls, ceilings, roofs or metal partitions where there are combustibles that can be ignited by radiant or conducted heat.

✓ Have suitable fire extinguishing equipment available and someone to use it during welding operations and for some time after welding ceases. After work is done, check that area is free of sparks, glowing embers, and flames.

1.4.5. PRODUCT CARE & MAINTENANCE

✘ **DO NOT** attempt to fit any unapproved electrode holder, components, or parts to the inverter welder unit.

✓ Keep the inverter welder clean for best and safest performance.

☐ **WARNING!** If the case is opened for maintenance or repair, wait 10-15 seconds after the unit is switched off for the capacitor to discharge.

2. INTRODUCTION

Handheld Inverter MMA/ARC Welder is an ultra-compact and lightweight unit weighing just 1.3kg making it ideal for use in tight areas where space is at a premium. Adjustable output current ranging from 20-120A, with a swivel knob for precise current control which is visible on a clear LED screen. Unit can ARC/MMA weld rutile electrodes from Ø1.6mm up to Ø3.2mm. Supplied with a 1.5m earth clamp in a compact storage case offering increased portability for the mobile technician. Featuring over current and overheat protection ensuring maximum performance and stability whilst keeping the user protected.

3. SPECIFICATION

Model No:	MWH120I
Fuse Rating:	13A
Plug Type:	3-Pin
Power Supply Cable Length:	2m
Welding Current:	20-120A
Duty Cycle:	15% @ 120A.
Absorbed Power:	4.8kW
Electrode Capacity:	Ø1.6-3.2mm
Supply:	230V 13A
Plug Type:	3-Pin
IP Rating:	IP21
Weight:	2.5kg



4. FUNCTIONS

Numbers refer to Contents illustrated on the right. Fig.1

1	Positive Electrode
2	Negative Electrode
3	Digital Display
4	Switch/Current Amp dial
5	VRD button. (Hold for 3sec)
6	Power Cable

5. OPERATION

- WARNING!** The machine includes power voltage compensation, allowing it to operate normally with voltage fluctuations of $\pm 15\%$ from the rated value. When using long cables, larger gauge cables are recommended to minimize voltage drop and maintain performance. Excessive cable length can affect power output, so using cables of the recommended length is advised.

5.1. PRE OPERATION

1. Ensure the machine's air intake is not blocked, as this would prevent proper cooling.

2. Connect the Electrode Holder

- Insert the electrode holder plug into either the "-" or "+" terminal, depending on the polarity you want.

- Tighten it clockwise.

3. Check the Work Clamp (Ground Clip)

- Confirm the ground clamp is securely attached to the workpiece (bare metal surface).

- Its plug should already be connected to the welder, typically to the opposite terminal of the electrode holder.

4. Choose the Right Polarity for Your Application

- DCEN (Electrode Negative) → Electrode holder in "-", work clamp in "+"

- DCEP (Electrode Positive) → Electrode holder in "+", work clamp in "-". Using the wrong polarity can cause arc instability, excessive spatter, or sticking. If such issues occur, switch the polarity.

5. Plug in the Machine

Ensure the machine is connected to a properly grounded mains supply. Since the grounding cable and clamp are already attached, no extra grounding step is needed.

5.2. OPERATION

1. Turn on the power switch. The display will show the set current, and the cooling fan will start.

2. Use the knobs to adjust the welding current and arc-striking force to match your welding requirements.

3. For MMA welding, the recommended current for a $\varnothing 2.5$ electrode is typically 70–90A.

4. The arc-striking adjustment knob fine-tunes arc performance, especially at low current settings. It works alongside the welding current knob to boost arc-starting power, providing a stronger and more stable arc independent of the main current setting.

- WARNING!** Before making any connections, ensure the power is completely turned off. Always connect the welding and ground cables to the machine first, making sure they are securely attached, and only then plug the machine into the power source.

- NOTES THAT SHOULD BE OBSERVED**

The inverter welder is equipped with protection circuits for over-voltage, over-current, and overheating. When voltage, output current, or machine temperature exceed the rated limits, the machine will automatically stop to prevent damage. Users must pay attention to the following:

To ensure safe operation, avoid overloading the machine by monitoring the maximum duty current and not exceeding the selected duty cycle. Prevent over-voltage by keeping power within the specified range, as the machine's voltage compensation circuit protects it but cannot prevent damage from excessive voltage. Always connect the grounding cable securely to the marked grounding screw using a cable of at least 6 mm² to avoid static electricity and leaks. If welding time exceeds the duty cycle, the machine will automatically shut down, indicated by a red light and temperature switch activation; **DO NOT** unplug it, allow the fan to cool the machine before resuming work.

6. RATING PLATE

- 6.1. The equipment should be connected to the mains supply according to these instructions. If interference occurs, it may be necessary to take additional precautions such as filtering of the mains supply. Consideration should also be given to shielding the supply cable of permanently installed equipment in metallic conduit or equivalent. This shielding should be connected to the power source so that good electrical contact is maintained between the conduit and the welding power source enclosure. (see fig.3).

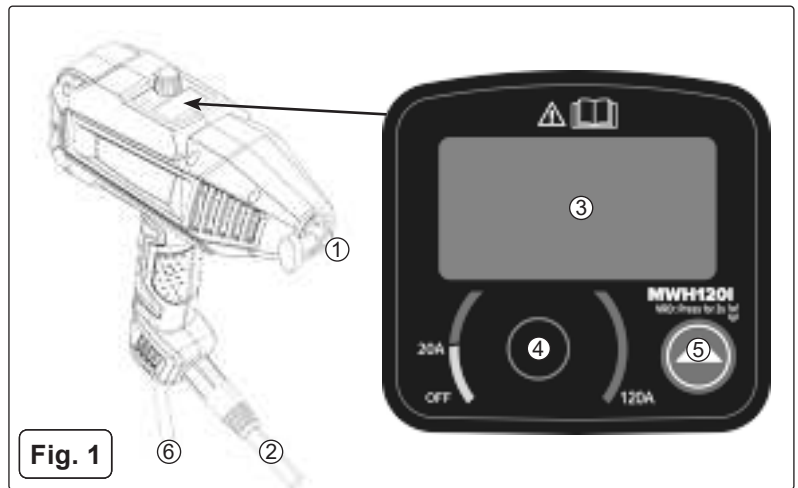


Fig. 1

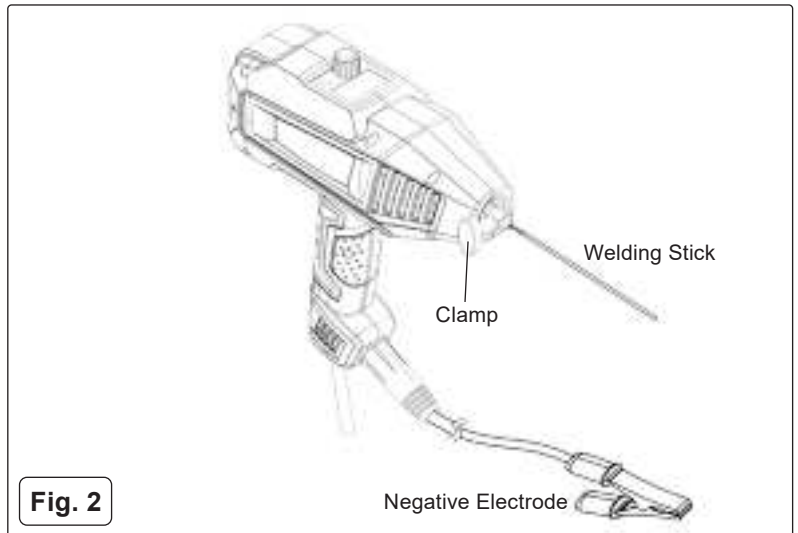


Fig. 2

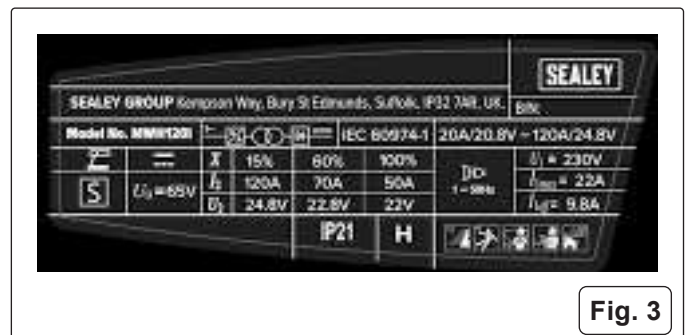


Fig. 3

- 6.1.1. The ratings plate on the inverter welder gives the following data:
- 6.1.2. Rating of internal protection provided by casing.
- 6.1.3. Symbol for power supply line: 1= Single-phase AC.
- 6.1.4. The symbol S on a welder indicates that the machine is designed for safe use in environments with an increased risk of electric shock.
- 6.1.5. IP21 rating on a welder indicates the level of protection its enclosure provides against solids and liquids.
The first digit, 2, means the welder is protected against solid objects larger than 12.5 mm, such as fingers or tools. The second digit, 1, indicates protection against vertically falling water drops, like light rain, when the unit is upright. This means the welder is suitable for indoor use in dry environments only.
- 6.1.6. The symbol H on a welder refers to the insulation class of its internal electrical components, indicating that the materials used can withstand temperatures up to 180°C (356°F).
- 6.2. MODEL NO**
- 6.2.1. Manufacturers Serial Number for welding machine identification.
- 6.2.2. The EUROPEAN standard relating to the safety and construction of arc welding machines.
- 6.2.3. Output. U_0 : Maximum no load voltage.
 I_2, U_2 : Current and corresponding normalised voltage that the welding machine can supply during welding. X: Welding ratio based on a 10 minute duty cycle. 30% indicates 3 minutes welding and 7 minutes rest, 100% indicates continuous welding. A/V-A/V: Shows the adjustment for the welding current (min - max) at the corresponding arc voltage.
- 6.3. POWER SUPPLY**
- U_1 : Alternating voltage and power supply frequency of welding machine.(Allowed limit $\pm 10\%$).
 $I_{1\max}$: Maximum current absorbed by the line.
 $I_{1\text{eff}}$: Effective current supplied.
- 6.4. ELECTROMAGNETIC COMPATIBILITY**
- 6.4.1. THIS EQUIPMENT IS IN CONFORMITY WITH THE EUROPEAN STANDARD ON THE ELECTROMAGNETIC COMPATIBILITY OF ARC WELDING EQUIPMENT AND SIMILAR PROCESSES (e.g. ARC AND PLASMA CUTTING).
- 6.5. PROTECTION AGAINST INTERFERENCE. (E.M.C.)**
- The emission limits in this standard may not, however, provide full protection against interference to radio and television reception when the equipment is used closer than 30m to the receiving antenna. In special cases, when highly susceptible apparatus is being used in close proximity, additional mitigation measures may have to be employed in order to reduce the electromagnetic emissions. At the same time there could occur some potential difficulties in having electromagnetic compatibility in a non-industrial environment (e.g. in residential areas). Therefore it is most important that the equipment is used and installed according to the following instructions.
- 6.6. INSTALLATION AND USE**
- The user is responsible for installing and using the equipment according to these instructions.
If electromagnetic disturbances are detected, then it shall be the responsibility of the user of the equipment to resolve the situation with the technical assistance of the supplier. In some cases this remedial action may be as simple as earthing the circuit (see Note).
In other cases it could involve constructing an electromagnetic screen, enclosing the welding power source and the work, complete with associated input filters. In all cases the electromagnetic disturbances shall be reduced to the point where they are no longer troublesome.
NOTE: The welding/cutting circuit may or may not be earthed for safety reasons. Changing the earthing arrangements should only be authorised by a person who is competent to assess whether the changes will increase the risk of injury, e.g. by allowing parallel welding/cutting circuit return paths which may damage the earth circuits of other equipment.
Further guidance is given in IEC 974-13 'Arc Welding Equipment - Installation and Use'.
- 6.7. ASSESSMENT OF AREA**
- Before installing the equipment the user shall make an assessment of potential electromechanical problems in the surrounding area. The size of the surrounding area to be considered will depend on the structure of the building and other activities that are taking place. The surrounding area may extend beyond the boundaries of the premises.
The following shall be taken into account:
- Other supply cables, control cables, signalling and telephone cables, above, below and adjacent to the welding equipment.
 - Radio and television transmitters and receivers.
 - Computer and other control equipment.
 - Safety critical equipment, e.g. security monitoring of industrial equipment.
 - The health of people in the vicinity, e.g. persons fitted with a pacemaker or hearing aid.
 - Equipment used for calibration or measurement.
 - The immunity of other equipment in the environment. The user shall ensure that other equipment being used in the environment is compatible. This may require additional protective measures.
 - The time of day that welding and other activities are to be carried out.
- 6.8. MAINTENANCE OF THE EQUIPMENT**
- The welding equipment should not be modified in any way except for those changes and adjustments covered in these instructions.

7. MAINTENANCE

- WARNING!** Before carrying out routine maintenance, switch off the welding and disconnect it from the mains power supply.
- WARNING!** If the welding machine is not functioning properly repairs should be carried out only and by authorised service engineers.
- 7.1. To maintain the inverter welding machine in good working condition, it's important to remove dust regularly using dry and clean compressed air. In environments with heavy smoke or pollution, this should be done daily. The air pressure must be within a safe range to avoid damaging internal components. Regularly inspect the internal circuitry to ensure cables are properly connected and connectors are tight, especially insert connectors. If any corrosion or looseness is found, clean and reconnect them securely. Always prevent water or steam from entering the machine; if moisture does get in, thoroughly dry the unit and check its insulation before use. If the welder will not be used for an extended period, store it in its original packaging in a dry, protected environment.
- 7.2. Keeping a maintenance log helps track service history and plan preventive care effectively.
- 7.3. Fittings, welding materials, environmental factors, and power supply can all affect welding quality and performance. Users should ensure that high-quality fittings and appropriate welding materials are used, maintain a stable and clean power supply, and work to improve the welding environment by minimizing dust, moisture, and other contaminants. Creating optimal working conditions helps achieve better welds, reduces equipment wear, and enhances overall safety and efficiency.

8. TROUBLESHOOTING

8.1. A. ARC-STRIKING IS DIFFICULT AND TENDS TO PAUSE:

To ensure stable arc-striking, use high-quality tungsten electrodes, as poor-quality electrodes can lead to weak or inconsistent arcs. Additionally, always keep electrodes dry, as moisture can cause arc instability and increase welding defects, reducing overall weld quality. If using an extra-long cable, it may result in a drop in output voltage, so it's recommended to shorten the cable to maintain proper arc performance.

8.2. B. OUTPUT CURRENT DOES NOT REACH RATED VALUE:

If the power supply voltage deviates from the rated specification, the welder's output current may not match the expected value. Specifically, when the input voltage is lower than the rated value, the maximum output current will also drop, preventing the welder from reaching its full performance capacity. Maintaining a stable and correct input voltage is essential for achieving the rated output.

8.3. C. CURRENT IS NOT STABLE DURING OPERATION:

Unstable welding current can result from fluctuations in the power supply voltage or electrical interference. Changes in the electric grid voltage can directly affect the welder's performance, while interference from other equipment connected to the same power network may also cause current instability. Ensuring a stable and clean power source can help maintain consistent welding output.

8.4. D. EXCESSIVE SPATTER DURING MMA WELDING:

Excessive spatter may occur if the welding current is too high for the diameter of the electrode being used. Additionally, incorrect polarity connection can cause unstable arcs and increased spatter. Under normal welding conditions, the electrode (stick) should be connected to the negative terminal, and the workpiece to the positive terminal. Reversing the polarity to the correct setup can help reduce spatter and improve weld quality.

Fault	Resolvable methods
Indicator light is off, fan not working, and no welding output:	If the power switch indicator is not lit, the fan is not operating, and there is no welding output, the machine may not be receiving power. First, check the power supply and ensure the plug is properly connected. Inspect the main power switch, fuses, and circuit breakers for damage or tripping. Also, check the internal power connections and wiring for any loose or burnt components. If everything appears normal but the machine still does not start, it may require professional inspection or repair.
If the power indicator is lit but the fan does not work and there is no welding output:	This suggests that while the machine is receiving power, there may be an internal fault preventing operation. This could be due to a malfunctioning cooling fan, a blown fuse, a faulty control board, or an issue with the output circuitry. It's important to turn off the machine and have it inspected by a qualified technician to diagnose and fix the problem, as running the welder without a working fan can lead to overheating and further damage.
If the fan is working but the welding current is unstable or fluctuates between low and high:	It could be caused by inconsistent power supply voltage, faulty internal components like the current regulator or control board, or electrical interference from other equipment. Checking the input voltage stability and inspecting internal circuitry for damaged parts or loose connections can help identify the issue. It's important to address this promptly, as unstable current can lead to poor weld quality and damage to the welder.
If the fan is working and no abnormal indicator is lit, but there is no welding output:	It could mean the machine is powered but the welding circuit isn't activating. Possible causes include a faulty trigger or torch switch, a blown internal fuse, or an issue with the output relay or contactor. It's also worth checking for loose or damaged connections between the control board and output terminals. Troubleshooting or professional service may be needed to identify and fix the problem.
If the fan is working but the abnormal indicator is lit and there is no welding output:	This usually means the welder has detected a fault or safety issue preventing operation. Common causes include overheating, internal component failure, or protection circuit activation. The abnormal indicator signals that the machine has entered a fault mode to protect itself. It's important to consult the welder's manual for specific error codes, allow the machine to cool if overheated, and if the problem persists, have it inspected and repaired by a qualified technician.



ENVIRONMENT PROTECTION

Recycle unwanted materials instead of disposing of them as waste. All tools, accessories and packaging should be sorted, taken to a recycling centre and disposed of in a manner which is compatible with the environment. When the product becomes completely unserviceable and requires disposal, drain any fluids (if applicable) into approved containers and dispose of the product and fluids according to local regulations.



WEEE REGULATIONS

Dispose of this product at the end of its working life in compliance with the EU Directive on Waste Electrical and Electronic Equipment (WEEE). When the product is no longer required, it must be disposed of in an environmentally protective way. Contact your local solid waste authority for recycling information.

Note: It is our policy to continually improve products and as such we reserve the right to alter data, specifications and component parts without prior notice.

Important: No Liability is accepted for incorrect use of this product.

Warranty: Guarantee is 12 months from purchase date, proof of which is required for any claim.

Jack Sealey Ltd t/a Sealey Group, Kempson Way, Suffolk Business Park, Bury St Edmunds, Suffolk, IP32 7AR UK
Jack Sealey (EU) Ltd t/a Sealey Group, Farnley Street, Carrickmacross, Co. Monaghan, A81 PK68 Ireland
Tel: 01284 757500 • Email: sales@sealey.co.uk • Web: www.sealey.co.uk