

Thank you for purchasing a Sealey inverter. 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: BEFORE USING THIS PRODUCT, PLEASE READ THE INSTRUCTIONS CAREFULLY. MAKE CAREFUL NOTE OF SAFETY INSTRUCTIONS, WARNINGS AND CAUTIONS. THIS PRODUCT SHOULD ONLY BE USED FOR ITS INTENDED PURPOSE. FAILURE TO DO SO MAY CAUSE DAMAGE AND/OR PERSONAL INJURY AND WILL INVALIDATE THE WARRANTY. RETAIN THESE INSTRUCTIONS FOR FUTURE USE.

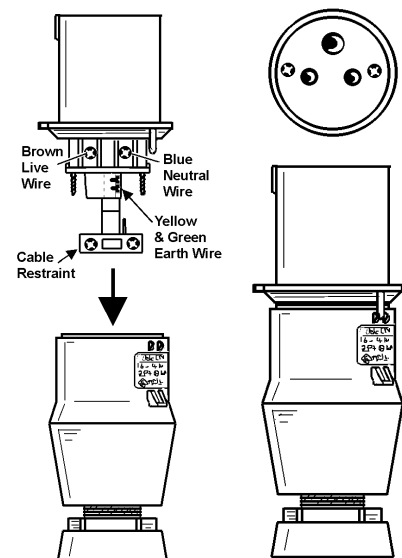
1. SAFETY INSTRUCTIONS

1.1. ELECTRICAL SAFETY

WARNING! Electrical installation of the inverter must only be carried out by a qualified electrician. Make sure that power supply cable is correctly connected to earth. It is the user's responsibility to read, understand and comply with the following:

You must check all electrical equipment and appliances before use, to ensure that they are safe. You must inspect power supply leads, plugs and all electrical connections for wear and damage. You must ensure the risk of electric shock is minimised by the installation of appropriate safety devices. An RCCB (Residual Current Circuit Breaker) should be incorporated in the main distribution board. We also recommend that an RCD (Residual Current Device) is used with all electrical products. It is particularly important to use an RCD together with portable products that are plugged into an electrical supply not protected by an RCCB. If in doubt consult a qualified electrician. You may obtain a Residual Current Device by contacting your Sealey dealer. **You must** also read and understand the following instructions concerning electrical safety.

- 1.1.1. The **Electricity At Work Act 1989** requires all portable electrical appliances, if used on business premises, to be tested by a qualified electrician, using a Portable Appliance Tester (PAT), at least once a year.
- 1.1.2. The **Health & Safety at Work Act 1974** makes owners of electrical appliances responsible for the safe condition of the appliance and the safety of the appliance operator. **If in any doubt about electrical safety, contact a qualified electrician.**
- 1.1.3. Ensure the insulation on all cables and the product itself is safe before connecting to the power supply. See 2.1.1. & 2.1.2. above and use a Portable Appliance Tester (PAT).
- 1.1.4. Ensure that cables are always protected against short circuit and overload.
- 1.1.5. Regularly inspect power supply, leads, plugs and all electrical connections for wear and damage, and power connections to ensure that none is loose.
- 1.1.6. **Important:** Ensure the voltage marked on the product is the same as the electrical power supply to be used.
- 1.1.7. DO NOT pull or carry the appliance by the power supply or output cables.
- 1.1.8. DO NOT pull power plug from socket by the power cable.
- 1.1.9. DO NOT use this product with an extension cable.
- 1.1.10. DO NOT use worn or damage leads, plugs or connections. Immediately replace or have repaired by a qualified electrician.
- 1.1.11. **Supply: 230Vac 1ph protected by a 16 amp delayed fuse or equivalent breaker, or 110Vac 1ph protected by a 25 amp delayed fuse or equivalent breaker.**
- 1.1.12. Fit a plug according to the following instructions (see diagram at right - 110V plug shown). **Ensure the unit is correctly earthed via a three-pin 110V 25A or 230V 32A plug (not supplied) to suit supply (see 1.1.11.).**



a) Connect the **GREEN/YELLOW earth wire to the earth terminal** .

b) Connect the **BROWN live wire to the live terminal 'L'**.

c) Connect the **BLUE neutral wire to the neutral terminal, unmarked.**

d) **After wiring, check that there are no bare wires, that all wires have been correctly connected, that the cable outer insulation extends past the cable restraint and that the restraint is tight.**

WARNING! Reminder, the electrical installation of the inverter must only be carried out by a qualified electrician. Make sure that power supply cable is correctly earthed.

WARNING! Be very cautious if using a generator to power the inverter. The generator must be self-regulating and stable with regard to voltage, wave form and frequency. The output must be greater than the power consumption of the inverter. If any of these requirements is not met the electronics within the inverter may be affected.

NOTE: The use of an unregulated generator may be dangerous and will invalidate the warranty on the inverter.

WARNING! The inverter may produce voltage surges in the mains supply which can damage other sensitive equipment (e.g. computers). To prevent this happening, it is recommended that the inverter is connected to a power supply that does not feed any sensitive equipment.

2.2. GENERAL SAFETY

DANGER! Direct contact with the inverter circuit or electrode is dangerous. You **MUST** unplug the inverter from the mains power supply before connecting or disconnecting cables or performing maintenance or service.

- ✓ Keep the inverter, cables, holder and clamps in good working order and condition and take immediate action to repair or replace damaged parts.
- ✓ Use recommended parts and accessories only. *Unapproved parts may be dangerous and will invalidate the warranty.*
- ✓ Only use the electrode holder provided with the system and ensure any replacement is of the same type.
- ✓ Use the inverter in a suitable work area. Ensure that the area has adequate ventilation as welding fumes are harmful. For enclosed areas we recommend the use of an air and smoke extraction system. If you are not able to provide adequate extraction and/or ventilation, wear a respirator suitable for protection against toxic fumes, smoke and gases.
- ✓ Ensure that there are no obstructions to the flow of clean, cool air and that there is no conductive dust, corrosive vapour or humidity which could enter the unit and cause serious damage.

- ❑ **WARNING:** Use a welding mask to protect your eyes and face and avoid exposing any skin to the ultraviolet rays given off by the electric arc. Always wear protective clothing, insulating gloves and shoes. Keep all protective items clean and undamaged.
- ✓ Keep unauthorised persons away from the work area. Any persons working within the area must wear the same protective items.
- ✓ Remove ill-fitting clothing before wearing protective clothing. Remove ties, watches, rings and other loose jewellery and contain long hair.
- ✓ Stand correctly keeping a good footing and balance and ensure that the floor is not slippery. Wear non-slip shoes.
- ✓ Ensure the workpiece is correctly secured before welding.
- ✓ Avoid unintentional contact with the workpiece. Accidental or uncontrolled striking of the arc may be dangerous.
- ✗ DO NOT use cables and electrode holder if the insulation is worn or connections are loose.
- ✗ DO NOT attempt to fit any unauthorised electrode holders or other components to the inverter.
- ✗ DO NOT weld surfaces that are painted, galvanic coated, oily or greasy.
- ✗ DO NOT use any metallic structure which is not part of the workpiece, other than the supporting work bench, as a substitute for the return cable of the welding current.
- ▲ **DANGER!** DO NOT weld near inflammable materials, solids, liquids, or gases. Remove all flammable materials such as waste rags etc.
- ✗ DO NOT weld containers or pipes which have held flammable materials or gases, liquids or solids. DO NOT weld materials that have been cleaned with chlorinated solvents (or near such solvents) as vapours from the arc action may be toxic.
- ✗ DO NOT operate inverter while under the influence of drugs, alcohol or intoxicating medication, or if tired.
- ✗ DO NOT use the inverter for a task it is not designed to perform.
- ✗ DO NOT operate the inverter if any parts are damaged or missing as this may cause failure and/or personal injury.
- ✗ DO NOT carry, or pull inverter by cables. DO NOT strain or bend cables. DO NOT stand on cables. Protect cables from sharp or abrasive items and from heat. Long lengths of slack must be gathered and neatly coiled. DO NOT place cables where they endanger others.
- ✗ DO NOT hold the workpiece in your hand.
- ✗ DO NOT get the inverter wet or use in damp or wet locations, or areas where there is condensation.
- ✗ DO NOT touch the workpiece close to the weld as it will be very hot. Allow to cool.
- ✗ DO NOT touch the electrode immediately after use. Allow to cool.
- ✓ When not in use store the unit in a safe, dry, childproof area.

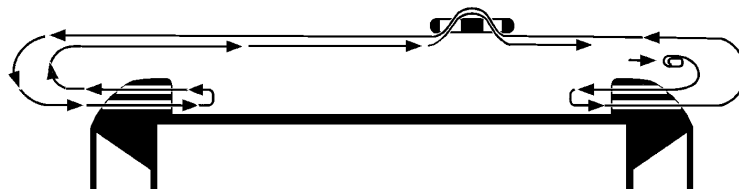
2. INTRODUCTION & SPECIFICATION

The MW145/DV is a dual voltage inverter, for manual arc welding, which automatically senses the supply voltage (230 or 110V) and adjusts accordingly, making it ideal for site applications. Suitable for ARC or TIG welding applications using scratch start method. Arc force circuitry makes the unit suitable for arc welding a wide variety of rods including rutile, basic and stainless from 1.6mm up to 3.2mm diameter. Fitted with Hot - Start system to counter electrode sticking during scratch start. Supplied without accessories - contact your Sealey dealer for details of available kits.

INPUT	OUTPUT	Rated voltage - 230V supply 20.2-25.2V
Supply voltage 230/110V - 1ph	No load voltage 85V	- 110V supply 20.2-24.0V
Max. effective current - 230V 12A	Current range - 230V supply 5 - 130A	Duty cycle 60% @ 85A
- 110V 22A	- 110V supply 5 - 100A	GENERAL
Delayed fuse - 230V T16A	Power output - 230V supply 3.3kW	Case protection IP23
- 110V T25A	- 110V supply 2.4kW	Weight 4.7kg

3. STRAP ASSEMBLY

If not already fitted, assemble the carrying strap as shown:



4. CONTROLS & DATA

- 4.1. **On/Off switch**
The On/Off switch is located at the rear of the inverter (fig. 1.1). When the switch is in the "O" position the inverter is turned off. When switched to the "I" position the inverter is turned on, and the front panel LED (fig. 2.1) will show green or orange depending upon whether the power supply is 230 or 110 volt, respectively.
- 4.2. **Welding current regulator**
The cutting current is regulated by a rotary knob (fig. 2.2). Note that there are two scales, use the one which corresponds with the supply voltage (110V or 230V). The current required depends upon the type of joint and the electrode diameter (fig. 3).
- 4.3. **Thermal protection & mains voltage fault LED**
The thermal and mains fault yellow LED (fig. 2.3) illuminates to indicate one of the following faults:
 - a) The inverter has overheated.
 - b) There has been a decrease or increase in the supply voltage to the inverter.
 In either case the control system will automatically deactivate the inverter. These faults are self-rectifying, and within a few seconds the system will re-set and the LED will go out. The inverter is then ready to be used again.

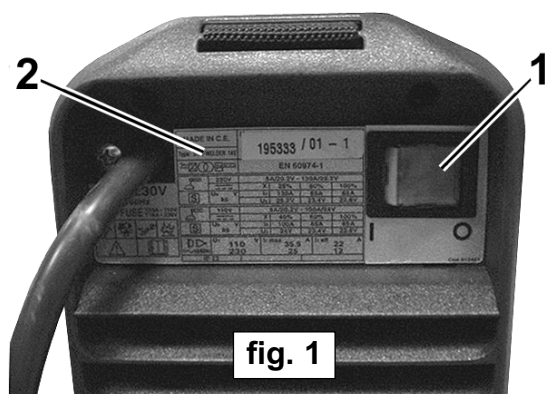


fig. 3

Electrode Diameter (mm)	Welding Current (A)	
	Min.	Max.
1.6	25	50
2.0	40	80
2.5	60	110
3.2	80	160

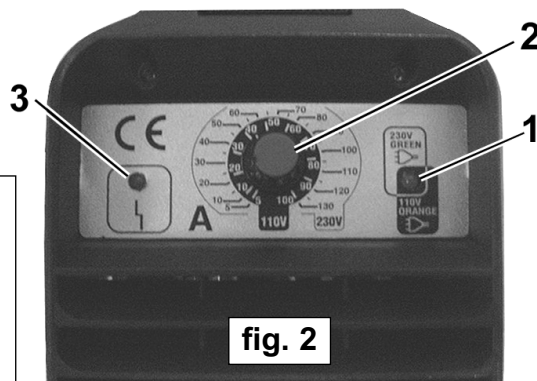

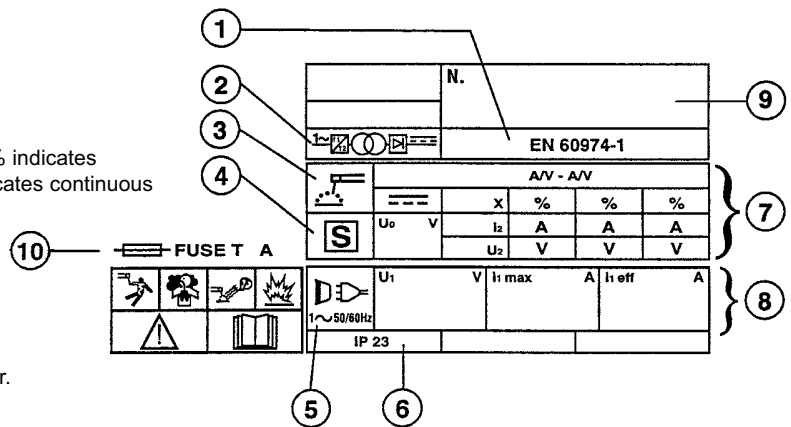


fig. 2

4.4. Ratings Plate

On the rear of the inverter is the ratings plate (fig. 1.2), giving the following data:

- 1 - The standard relating to the safety and construction of arc welding and associated equipment.
- 2 - Inverter-transformer-rectifier.
- 3 - Manual arc welding with covered electrode.
- 4 - S: Indicates that welding may be carried out in environments with a heightened risk of electric shock e.g. very close to large metallic objects).
- 5 - Single-phase AC supply.
- 6 - Rating of internal protection provided by casing.
- 7 - Output
 U_0 : Maximum open-circuit voltage.
 I_2, U_2 : Current and corresponding voltage.
 X: Welding ratio based on a 10 minute cycle. 30% indicates 3 minutes welding and 7 minutes rest, 100% indicates continuous welding. A/V-A/V: Welding current adjustment range and corresponding voltages.
- 8 - Mains Supply
 U_1 : Rated supply voltage and frequency.
 I_{max} : Maximum current.
 I_{eff} : Maximum effective current.
- 9 - Serial Number. Specifically identifies each inverter.
- 10 -  : Delayed fuse for supply protection.



5. OPERATING INSTRUCTIONS

WARNING! Before welding ensure that you read, understand and apply Section 1 safety instructions and that you have familiarised yourself with the controls. Ensure that the inverter is disconnected from the power supply before moving or before changing accessories. **IMPORTANT!** You must be familiar with the application, limitations and hazards of arc welding and if you have no welding experience you should seek expert training to ensure your safety and the quality of your welds.

- 5.1. **Work Area** Ensure that the work area has a good airflow and that there is no dust, smoke or gas present.
 - 5.1.1. Ensure that there is a minimum clearance of 500mm around the inverter and that there are no obstacles to prevent a cool air flow. Also check to ensure the front and rear louvres are not blocked.
 - 5.1.2. When moving the inverter disconnect the unit from the mains power supply and gather all cables safely.
- 5.2. **Connecting the electrode holder** Connect the holder cable plug to either the positive (+) or negative (-) dinse socket (fig. 1) as recommended on the electrode packaging. Note that most electrodes require to be connected to the positive (+) socket.
- 5.3. **Connecting the work clamp** Connect the work clamp cable plug to the dinse socket not used for the electrode.
 - 5.3.1. Connect the work clamp to the workpiece or to the supporting metal workbench, checking that there is good electrical contact. Caution: Ensure that there is good contact on oxidised or coated sheets.
 - 5.3.2. Make the connection as close to the welding area as possible.
 - 5.3.3. DO NOT use metal structures or objects to make the return contact, other than the workbench which is holding the workpiece. To do so may damage the inverter and will give a poor weld.

Note: To ensure good contact between dinse plugs and sockets always firmly twist plug clockwise.
- 5.4. **Set-up** Check that the work clamp is correctly clamped to the workpiece (see para. 7.3).
 - 5.4.1. Switch on the mains power supply and the inverter "On/Off" switch (switch to the "I" position).
 - 5.4.2. Set the current regulator control to suit the weld (see para. 6.2.).
- 5.5. **ARC Welding** Ensure that your eyes and face are protected by a welding mask and that all other skin is covered.
 - 5.5.1. Wipe the electrode tip on the workpiece, as if striking a match, to strike-up the arc. DO NOT hit the electrode onto the workpiece - this will damage the end of the electrode and make strike-up more difficult.
 - 5.5.2. As soon as the arc is struck maintain a distance above the workpiece equal to the diameter of the electrode.
 - 5.5.3. Move the electrode along the weld line keeping it at an angle of 20-30°.
 - 5.5.4. At the end of the weld run bring the electrode back to fill the weld crater and then quickly raise the electrode to extinguish the arc.
- 5.6. **TIG Welding** (Use optional accessory kit model No.INV/TIG. Not supplied with MW145/DV) Ensure that your eyes and face are protected by a welding mask. Set the required gas flow using the knob on the gas regulator. Set the welding current required. Wipe the electrode tip on the workpiece, as if striking a match, to strike-up the arc. DO NOT hit the electrode onto the workpiece - this will damage the end of the electrode and make strike-up more difficult. When the arc is established, form a molten pool on the workpiece, introduce the filler rod and proceed along the joint.

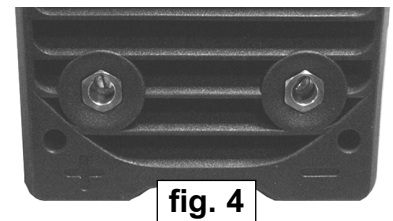


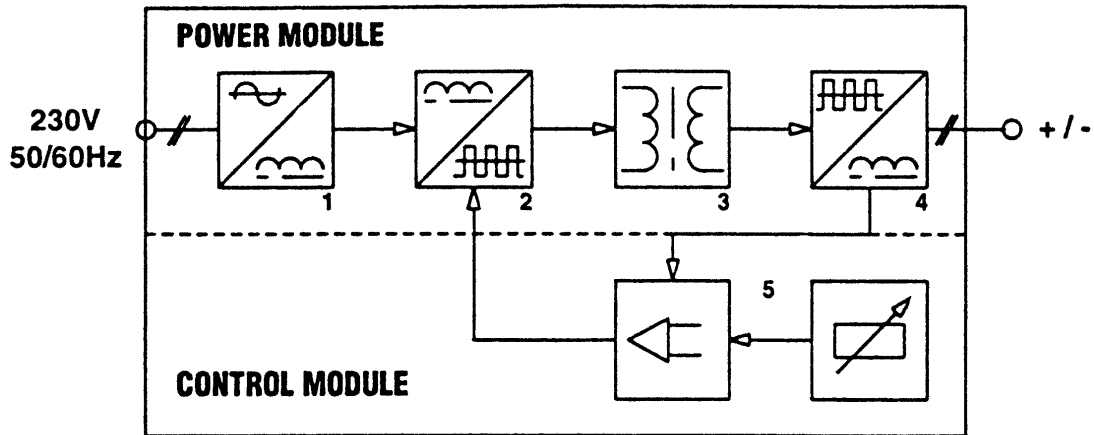
fig. 4

6. MAINTENANCE

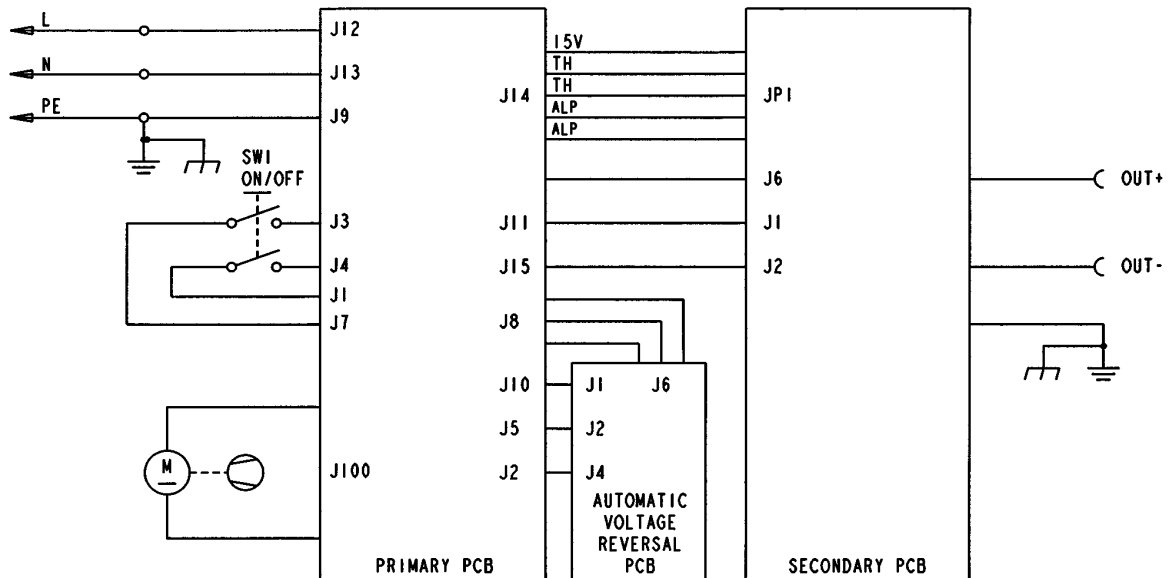
DANGER! Ensure inverter is disconnected from power supply before performing service or maintenance on any part of the unit, cables or clamps.

- 6.1. **Power unit**
 Service and maintenance of the inverter must only be undertaken by an authorised service agent.
 - 6.1.1. Keep the inverter clean by wiping with a soft cloth. Do not use abrasives.
 - 6.1.2. Periodically check to ensure the carrying strap is in good order and condition. If not replace it immediately.
 - 6.1.3. Ensure that the front and rear air vents are not blocked.
- 6.2. **Cables**
 - 6.2.1. Check to ensure cables are in good order and condition. If damaged contact your authorised service agent.
 - 6.2.2. Keep cables clean. Do not use solvents.

7. ELECTRICAL SCHEMATICS



- 1 - Single phase mains input, rectifier and condenser.
- 2 - Transistors and drivers switching bridge (IGBT). Converts rectified mains into high frequency (40kHz) AC and permits power regulation according to the current/voltage requirement of the weld.
- 3 - High frequency transformer adapts voltage and current to the values required and also isolates the mains from the welding circuit.
- 4 - Secondary rectifier bridge with inductance which changes the AC into a continuous current with a low wave-length.
- 5 - Electronics, which compare the value of the welding current against that selected by the operator and modulates it via the IGBT drivers. Also includes the safety system.



8. DECLARATION OF CONFORMITY

Declaration of Conformity We, the sole importer into the UK, declare that the product listed below is in conformity with the following standards and directives.

INVERTER SITE WELDER
Model: MW145/DV
 73/23/EEC Low Voltage Directive
 89/336/EEC EMC Directive



The construction file for this product is held by the Manufacturer and may be inspected, by a national authority, upon request to Jack Sealey Ltd.

Signed by Mark Sweetman

25th September 2001

For Jack Sealey Ltd. Sole importer into the UK of Sealey Power Welders.

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 equipment.

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

INFORMATION: For a copy of our latest catalogue and promotions call us on 01284 757525 and leave your full name and address, including postcode.



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