TIG/MMA INVERTER WELDER 130AMP 230V/160AMP 230V

MODEL NO: **TIG130,TIG160**

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 instructions


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 responsibility of the owner and the operator to read, understand and comply with the following: You must check all electrical products, before use, to ensure that they are safe. You must inspect power cables, plugs, sockets and any other connectors for wear or damage. You must ensure that the risk of electric shock is minimised by the installation of appropriate safety devices. A Residual Current Circuit Breaker (RCCB) should be incorporated in the main distribution board. We also recommend that a Residual Current Device (RCD) is used. It is particularly important to use an RCD with portable products that are plugged into a supply which is not protected by an RCCB. If in any doubt consult a qualified electrician. You may obtain a Residual Current Device by contacting your Sealey stockist. You must also read and understand the following instructions concerning electrical safety.

1.1.1. The Electricity at Work Act 1989 requires that all portable electrical appliances, if used on business premises, are 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 those appliances and the safety of the appliance operators. If in any doubt about electrical safety, contact a qualified electrician.

✓ Ensure that the insulation of all cables on the appliance is safe before connecting it to the power supply. See 1.1.1. and 1.1.2. and use a Portable Appliance Tester.

✓ Ensure that cables are always protected against short circuit and overload.

✓ Regularly inspect power supply cables and plugs for wear or damage and check all connections to ensure that none is loose.

✓ Ensure that the voltage marked on the appliance matches the power supply to be used.

× **DO NOT** pull or carry the appliance by the power cable.

× **DO NOT** pull the plug from the socket by the cable.

× **DO NOT** use worn or damaged cables, plugs or connectors. Have any faulty item repaired or replaced immediately by a qualified electrician.

1.1.3. We recommend connection to a supply with a type C breaker. If in doubt you must contact a qualified electrician to ensure that a suitably rated supply is available.

❑ **WARNING!** Be very cautious if using a petrol or diesel generator. The generator must be stable with regard to frequency (H3), voltage and wave form. The output must be higher than the power (kVA) of the inverter. The generator must also be self regulating. If any A.M. feature is not respected the working of the regulation card may be affected.
Use of a generator without a regulator may be dangerous and will invalidate your inverter warranty.

1.2. GENERAL SAFETY

1.2.1. **OPERATOR SAFETY**

✓ Operators must receive adequate training before using the inverter.

✓ Remove ill fitting clothing, remove ties, watches, rings and other loose jewellery and contain long hair.

× **DO NOT** operate the inverter 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.

❑ **WARNING!** The magnetic fields created by high currents may affect the operation of pacemakers. Wearers of vital electronic equipment or those who have metallic surgical implants should consult their Doctor before using equipment.

1.2.2. **CABLE CONNECTIONS**

✓ Keep the inverter and cables 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 and cause serious damage.

× **DO NOT** weld containers or pipes which have held flammable materials - gases, liquids or solids.

▲ **DANGER!** Avoid welding on materials cleaned with chlorinated solvents or near such solvents. 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 trichloroethylene 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.

❑ **WARNING!:** Generator engine exhaust must be vented to the outside air. Carbon monoxide can kill.

1.2.3. **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.

1.2.4. **WELDING ENVIRONMENT.**

✓ Locate the inverter 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 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.

1.2.5. **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.

1.2.6. **PRODUCT CARE & MAINTENANCE**

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

✓ Keep the inverter 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

Lightweight, powerful and incredibly versatile. Inverters offer many advantages over traditional transformer type welders. These units use high quality state-of-the-art technology for the perfect weld. For example, Fan-cooled DC power supply for TIG and arc welding applications. Suitable for welding steel, stainless steel, copper, nickel, titanium and their alloys. Outer case manufactured from pressed steel with a powder coated finish for extra corrosion resistance. Ideal for the mobile technician or applications where the power unit needs to be taken to the job. Supplied with MMA/TIG accessories.

3. SPECIFICATION

Model No:	TIG130	TIG160
Power Output:	20-130A	20-160A
Duty Cycle:	20% @ 130A, 60% @ 75A, 100% @ 60A	20% @ 160A 60% @ 90A100% @ 70A
Electrode Capacity:	Ø1.6-3.2mm	Ø1.6-4.0mm
Absorbed Power:	4.25kW	5.1kW
Supply:	230V*	230V*
Protection:	IP21S	IP21S
Accessories:		
Electrode Holder (Included):	Yes	Yes
TIG Welding Torch (Included):	Yes	Yes

*To achieve maximum power a 16A supply may be required.

1 Power
2 Overheat indicator
3 Potentiometer
4 TIG/MMA mode
5 Positive terminal
6 Negative terminal
7 TIG torch terminal
8 Gas outlet

fig.1

fig.1A

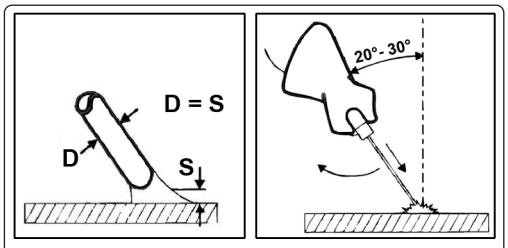


fig.2

4. OPERATION

- ❑ **WARNING!** Ensure that the inverter is not plugged into the mains power supply before connecting or disconnecting cables.
  For electrical installation, see Safety Instructions (Section 1).
- ❑ **WARNING!** Failure to follow the electrical safety instructions may affect the operating performance and could damage the built-in safety system which, in turn, could result in personal injury or fatality and will invalidate the warranty.
- ❑ **WARNING!** Cable connectors must be turned into the quick plugs fully to ensure a good electrical contact. Loose connections will cause overheating, rapid deterioration and loss in efficiency.
- ❑ **DO NOT** use welding cables over 10m in length. With the exception of a metallic workbench **DO NOT** connect the return cable to any metallic structure which is not part of the workpiece, as this will jeopardise weld quality and may be dangerous.

4.1. **TIG WELDING SET UP**

4.1.1. TIG mode switch position selected.

4.1.2. Earth cable plugged to POSITIVE + terminal.

4.1.3. TIG torch cable plugged into TIG torch terminal.

4.1.4. Gas pipe connected to gas outlet and gas bottle connected to gas inlet on back of machine.

4.2. **ARC WELDING SET UP**

4.3. **WELDING CABLE "ELECTRODE HOLDER" CONNECTION**

4.3.1. Before connecting cables it is important to refer to the electrode manufacturer's instructions on the electrode packaging which will indicate the correct polarity connection for the electrode, together with the most suitable current to use.

4.3.2. MMA mode switch position selected.

4.3.3. Electrode Holder connected to the POSITIVE + terminal (fig.1).

4.3.4. The WORK CLAMP cable is connected to the NEGATIVE - terminal. The clamp is connected to:
a) The work piece, or
b) A metallic work bench. The connection must be as close to the proposed weld as possible.

4.4. **ARC WELDING**

- ❑ **WARNING!** Ensure that you read, understand and follow the safety instructions. Place the welding mask in front of your face before striking the arc.
- ❑ **WARNING!** Hot metal such as electrode stubs and workpieces should never be handled without gloves.

4.4.1. Strike the electrode tip on the workpiece as if you were striking a match.

- ❑ **WARNING! DO NOT** hit the electrode on the workpiece, as this may damage the electrode.

4.4.2. As soon as the arc is struck, maintain a distance from the workpiece equal to the diameter of the electrode. Keep this distance as constant as possible for the duration of the weld. As you advance along the workpiece the angle of the electrode must be maintained at between 20º and 30º. See fig.2.

4.4.3. At the finish of the weld, bring the end of the electrode backward in order to fill the weld crater and then quickly lift the electrode from the weld pool to extinguish the arc

4.5. **ELECTRODES**

4.6. The welding current must be regulated according to the diameter of the electrode in use and the type of joint to be welded. See diameter/current chart below.

Electrode Ømm	Minimum Welding Current Amps	Maximum Welding Current Amps
1.6	40	50
2.0	40	80
2.5	60	110
3.2	80	130
4.0	120	160
5.0	160	210

5. MAINTENANCE

- ❑ **WARNING!** Before carrying out routine maintenance, switch off the welder 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.
- ❑ **WARNING!** Before removing the welding machine panels switch off the machine and disconnect it from the mains power supply. Wait 10-15 seconds after the unit is switched off for the capacitor to discharge.

5.1. Periodically remove the casing and, with a low pressure air flow (max 1bar or 15psi),remove dust from inside the machine.

× **DO NOT** direct compressed air onto the electronic circuit boards, these should be cleaned with a very soft brush.

5.2. Ensure that all electrical connections are tight and check the wiring for damage to the insulation.

5.3. Ensure that the casing is correctly replaced and secured before attempting to use the inverter.

5.4. Keep the outside of the machine clean by wiping with a soft, dry cloth.

5.5. For any other service or maintenance, contact your local Sealey service agent.

5.6. Put the machine into the original packing in dry location if it is not to be used for a long time.

6. TROUBLESHOOTING

6.1. If you have a problem with the inverter, check to ensure that the following are correct:

6.1.1. Check that the welding current is suitable for the diameter and type of electrode being used.

6.1.2. When the mains switch is on, check that the power lamp is on (fig.1A). If this is not the case then there may be a mains supply problem.

6.1.3. Check the overheat indicator (fig.1A) - has the thermal cut-out activated? This indicates either an over or under voltage or short circuit. If the thermal interrupter has activated, wait for the machine to cool down before restarting.

6.1.4. Ensure that you are using the correct supply voltage.

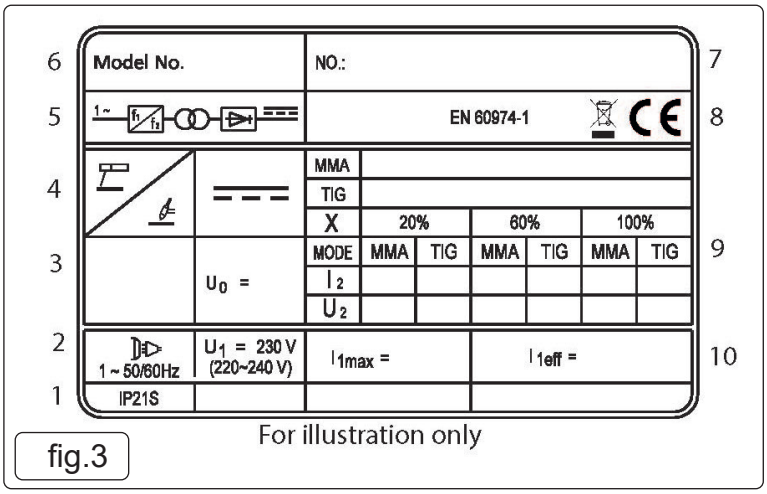
6.1.5. Check the machine output and ensure there is nothing causing a short-circuit.

6.1.6. Check that all circuit connections are correct. In particular check that the work clamp is correctly attached to the workpiece. Ensure that there is no grease, paint etc. on the surface.

7. RATING PLATE

The ratings plate on the inverter gives the following data:

1. Rating of internal protection provided by casing.
2. Symbol for power supply line: 1= Single-phase AC.
3. Indicates that welding may be carried out in environments with a heightened risk of electric shock eg very close to large metallic objects.
4. Welding procedure: manual arc welding with covered electrode
5. Symbol for internal structure of the welding machine.
6. Model No.
7. Manufacturers Serial Number for welding machine identification.
8. The EUROPEAN standard relating to the safety and construction of arc welding machines.
9. 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 of adjustment for the welding current (min - max) at the corresponding arc voltage.
10. Power Supply
    U_1: Alternating voltage and power supply frequency of welding machine.(allowed limit ± 10%)
    $I_{1\,max}$: Maximum current absorbed by the line.
    $I_{1\,eff}$: Effective current supplied.



For illustration only

fig.3

8. ELECTROMAGNETIC COMPATIBILITY

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)

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.

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.

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.

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.

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