



INSTRUCTIONS FOR:

TIG/MMA INVERTER WELDERS

160A, 180A, 200A 230V

MODEL NOS: **TIG160S.V2, TIG180S.V2, TIG200S.V2**

Thank you for purchasing a Sealey product. Manufactured to a high standard, this product will, if used according to these instructions and maintained properly, 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 protective gloves



Warning:
Fumes & Gases



Warning:
Electric Shock



Warning:
Fire Risk



Warning:
Arc Rays



Warning:
Magnetic Fields

1. SAFETY

1.1 ELECTRICAL SAFETY.

WARNING! It is the user's responsibility to check the following: **You must** check all electrical equipment and appliances to ensure they are safe before using. **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 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 competent 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 competent person on a regular basis by using a Portable Appliance Tester (PAT).
- 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 competent electrician.**
- 1.1.3 Ensure the insulation on all cables and product itself is safe before connecting to mains power supply. See 1.1.1. use a Portable Appliance Tester (PAT).
- 1.1.4 Ensure that cables are always protected against short circuit and overload.
- 1.1.5 Check power supply, leads, plugs and all electrical connections regularly for wear or damage, especially power connections to ensure none is loose.
- 1.1.6 Check the voltage marked on the product is the same as the electrical power supply to be used. Check fused plugs are fitted with correct capacity fuse.
- 1.1.7 **DO NOT** pull or carry the powered appliance by its power supply lead. Products such as inverters must not be pulled or carried by their output cables.
- 1.1.8 **DO NOT** pull power plugs from sockets by the power cable.
- 1.1.9 **DO NOT** use worn or damage leads, plugs or connections. Replace or have repaired immediately by competent persons. In case of damage, cut off and fit a new plug
- 1.1.10 **NO plug is fitted to this machine. Whilst it is possible to perform TIG welding at lower power settings using a 13Amp mains source, ordinary ARC welding (without gas) and TIG welding at higher power settings will require the machine to be connected to a 30A supply either by direct wiring into your mains circuit or by fitting an industrial round pin plug & socket for more flexible usage. In either case we recommend you contact a competent electrician to assess your existing wiring installation and follow the recommendations in full. Particular attention should be paid to the provision of adequate fuses on the mains circuit and to the earthing of the machine.**

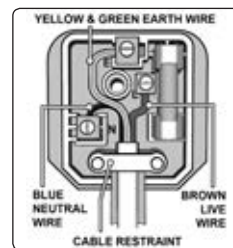
If a 13A power source is used wire the plug as shown to the right.

- a) **WARNING!** Ensure the unit is correctly earthed via a three-pin plug.
 - b) Connect the Yellow/Green earth wire to the earth terminal 'E'.
 - c) Connect the Brown live wire to live terminal 'L'.
 - d) Connect the Blue neutral wire to the neutral terminal 'N'.
- WARNING!** Be very cautious if using a generator to power the Inverter. The generator must be self regulating and stable with regard to voltage, waveform 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 avoid this happening it is recommended that the Inverter is connected to a power supply that does not feed any sensitive equipment.

1.2 GENERAL SAFETY

▲ DANGER! Unplug the inverter from the mains power supply before connecting or disconnecting cables or performing maintenance or service. Direct contact with the inverter circuit is dangerous.

- ✓ Keep the inverter and cables in good working order and condition. (Take immediate action to repair or replace damaged parts).
- ✓ Use genuine parts and accessories only. (Non recommended parts may be dangerous and will invalidate the warranty).
- ✓ Locate inverter in an adequate working area for its function. Ensure area has adequate ventilation as welding fumes are harmful.
- WARNING!** If it is necessary for you to assemble the work clamp cable, ensure that sufficient copper strands are exposed and turned back to make full contact within the dinse plug to ensure a good electrical contact. Loose connection will cause overheating, rapid deterioration and loss in efficiency.
- ✓ Ensure there is no obstruction to the flow of clean cool air through the ventilation apertures and ensure there are no conductive dusts, corrosive vapours or humidity which could enter the inverter and cause serious damage.
- ✓ Keep working area clean and tidy and free from unrelated materials. Also ensure the working area has adequate lighting.



RECOMMENDED FUSE

RATING 13AMP:

TO GAIN MAXIMUM OUTPUT THE
INVERTER MUST BE CONNECTED
TO A 30AMP SUPPLY

- ❑ **WARNING! Use welding head shield to protect eyes and avoid exposing skin to ultraviolet rays given off by electric arc. Wear safety welding gauntlets.**
- ✓ Remove ill fitting clothing, remove ties, watches, rings, and other loose jewellery, and contain long hair.
- ✓ Ensure the workpiece is correctly secured before operating the inverter.
- ✓ Avoid unintentional contact with workpiece. Accidental or uncontrolled switching on of the torch may be dangerous and will cause the nozzle to wear.
- ✓ Keep unauthorised persons away from the working area, and any persons working within the area must wear the same protective items as the user.
- ✓ Operators must receive adequate training before using the inverter. The inverter must only be operated under supervision.
- ✓ Stand correctly keeping a good footing and balance, ensure the floor is not slippery, and wear non-slip shoes.
- ❑ **WARNING! When unit is switched off wait for 15 seconds whilst capacitors discharge before opening the case.**
- ✓ Turn voltage switch to "0" (off) when not in use.
- ✗ **DO NOT** operate the inverter if it or its cables are damaged.
- ✗ **DO NOT** use welding cables over 10m in length. (Cables should be as short as possible).
- ✗ **DO NOT** attempt to fit any non genuine torches, components, or parts to the inverter unit. To do so may cause damage and will invalidate the warranty.
- ✗ **DO NOT** use any metallic structure which is not part of the work piece as a substitute for the return cable. This may jeopardise results and may be dangerous. *Exception:* Metallic work bench, but connect as near to weld as possible.
- ✗ **DO NOT** hit the electrode on the workpiece, this may damage the electrode and make strike-up difficult.
- ✗ **DO NOT** get inverter wet or use in damp or wet locations or areas where there is condensation.
- ▲ **DANGER! DO NOT weld near inflammable materials, solids, liquids, or gases.**
- ✗ **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** pull the inverter by the cable, or the torch, and **DO NOT** bend or strain cables, protect from sharp or abrasive items, and **DO NOT** stand on cables or leads. Protect from heat. Long lengths of slack must be gathered & neatly coiled. **DO NOT** place cables where they may cause a hazard.
- ✗ **DO NOT** touch the workpiece close to the weld as it will be very hot. Allow to cool.
- ✗ **DO NOT** touch the torch immediately after use. Allow the torch to cool.
- ✗ **DO NOT** operate inverter while under the influence of drugs, alcohol or intoxicating medication, or if fatigued.
- ✓ When not in use store the inverter in a safe, dry, childproof area.

2. INTRODUCTION

Lightweight, powerful and incredibly versatile. Inverters offer many advantages over traditional transformer type welders. Inverters use high quality state-of-the-art technology for the perfect weld. For example, TIG160S will produce up to 160Amps at 20% duty cycle whereas a conventional 160Amp welder would have a duty cycle of around 10%. 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. Features high frequency starts enabling operations to start smoothly and efficiently. Supplied with TIG accessories.

3. SPECIFICATION

Model No:	TIG160S.V2	TIG180S.V2	TIG200S.V2
Power Input:	5-160A	5-180A	5-200A
Duty Cycle:			
20% @	160A	180A	200A
60% @	92A	104A	115A
100% @	72A	80A	89A
Electrode Capacity:	Ø 1.6 - 3.2mm	Ø 1.6 - 3.2mm	Ø 1.6 - 3.2mm
Absorbed Power:	6.7kW	7.6kW	8.8kW
Supply:	230Vac	230Vac	230Vac
Protection:	IP21S	IP21S	IP21S
Weight:	12.5kg	12.7kg	13kg
Accessories:			
Arc Accessory Kit:	MMA01	MMMA01	MMA01
TIG Torch:	TIG11S	TIG12S	TIG12S

4. OPERATION



fig.1

Key to fig.1:

- 1: Gas Outlet
- 2: Torch Control Connection
- 3: Negative Socket
- 4: Positive Socket

Key to fig.2:

- 1: Welding Mode Selector Switch
- 2: DC/Pulse Selector Switch
- 3: 2/4 Step Selector Switch
- 4: Digital Display
- 5: Parameter Setting Control (Push to select parameter, rotate to adjust)
- 6: Power On Indicator
- 7: Overheat Indicator
- 8: Over/under Voltage Indicator

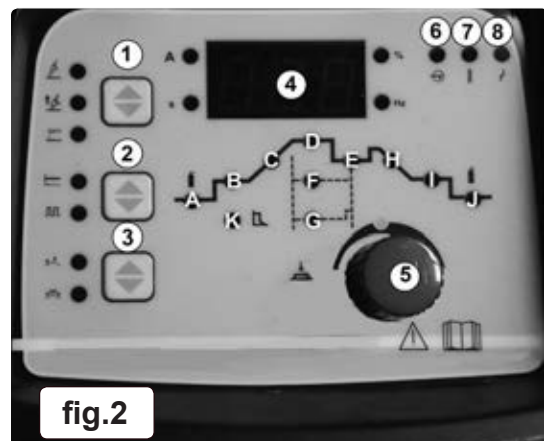


fig.2


4.1. LEAD CONNECTION

MMA Mode: Connect the electrode holder to the Positive (+) connector (fig.1.4) and the earth lead to the Negative (-) connector (fig.1.3).
TIG Mode: Connect the earth clamp to the Positive (+) connector and the TIG torch to the negative (-) connector.



4.2. GAS CONNECTION

- 4.2.1. Using the clear tubing supplied connect the regulator to the gas inlet on the back of the inverter and gas outlet on the front (fig.1.1). Secure the tubing on each connector by using the worm drive clamps supplied.
- 4.2.2. Open the regulator before opening the cylinder valve. Test for leaks.
- 4.2.3. Set the gas flow to suit the welding parameters required.
- 4.2.4. If necessary the gas flow can be adjusted during welding using the regulator knob.
- 4.3. If using the optional torch kit, connect the control lead of the torch assembly to the torch control connection (fig.1.2).



4.4. MMA: DC STICK ARC WELDING

- 4.4.1. Using the Up and Down keys, set the welding mode selector (fig.2.1) to  , the welding current may be adjusted by means of the adjustment knob (fig.2.5).
- 4.4.2. The hot start current (fig.3.B) and arc force current only (fig.3.K) can be adjusted in this mode to match the material being welded. To select the parameter push the parameter setting control to cycle between functions. The value may be adjusted by using the adjustment knob (fig.2.1).The values are displayed on the digital display. (fig.2.4)

4.5. DC TIG WELDING

- 4.5.1. Using the Up and Down keys, set the welding mode selector (fig.2.1) to  for high frequency start or  for lift start.
- 4.5.2. The pre-flow time (fig.2.A), welding current (fig.2.D) and gas delay time indicator (fig.2.J) may be adjusted in this mode.
- 4.5.3. To select the parameter press the parameter setting control to cycle between functions. The value may be adjusted rotating the setting control (fig.2.5).
- 4.5.4. 2 or 4 touch trigger control may be selected by using the trigger mode selector (fig.2.3).
2 touch allows the power to be applied whilst the trigger is pressed.
4 touch latches the trigger until the pressed for a second time.
The 4 touch mode is useful for long runs of weld, saving operator fatigue and allowing a steadier weld. In this mode the power will be applied until the selected down slope time has elapsed.

4.6. DC PULSE TIG WELDING

- 4.6.1. Using the Up and Down keys, set the welding mode selector (fig.2.91) to  for high frequency start or  for lift start.
- 4.6.2. Select the pulse function at fig.2.2.
- 4.6.2. The pre-flow time (fig.2.A), pulse peak current (fig.2.D), pulse width (fig.2.F), pulse frequency (fig.2.G), pulse background current (fig.2.G) and gas delay time (fig.2.J) may all be adjusted in this mode.
- 4.6.3. To select the parameter press the parameter setting control to cycle between functions. The value may be adjusted by rotating the setting control (fig.2.5).

4.7. STATUS WARNING LIGHTS

- 4.7.1. Power Indicator (fig.2.6). Indicator illuminated when switched on.
- 4.7.2. Overheat Indicator (fig.1.7). Illuminated when machine is overheated. In this condition the machine will shut down until the temperature falls to acceptable limits.
- 4.7.2. Over/under voltage. Indicates that the supply voltage is outside the required parameters.

5. MAINTENANCE

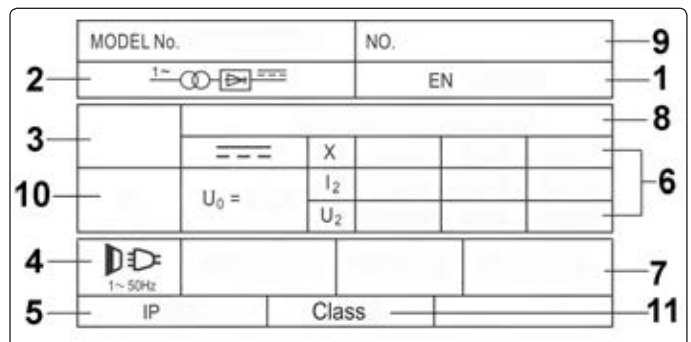
▲ DANGER! Unplug the inverter from the mains power supply before connecting or disconnecting cables, performing maintenance or service. Direct contact with the inverter circuit is dangerous.

- 5.1. To avoid a build up of dust inside the machine which may block or restrict the ventilation system, periodically remove the covers and remove the dust with a low pressure air jet or vacuum cleaner. Replace covers immediately. Under no circumstances should the machine be operated with the covers removed.
- 5.2. TORCH. Avoid resting the torch and its associated cable on any hot surfaces. If the insulation is damaged in any way the torch must not be used.
- 5.3. Periodically check the condition of the gas tubing and the connections.

6. RATINGS PLATE SYMBOLS

On the rear of the inverter is the ratings plate, giving the following data:

- 1 - The BS/EU standard relating to the safety and construction of arc welding and associated equipment.
- 2 - Inverter-transformer-rectifier symbols.
- 3 - Symbol indicating welding processes available.
- 4 - Symbol for Single-phase AC supply.
- 5 - Rating of internal protection provided by casing.
- 6 - Output
 U_0 : Maximum open-circuit voltage.
 I_2, U_2 : Current and corresponding voltage.
X: Welding ratio based on a 10 minute cycle.
20% indicates 2 minutes welding and 8 minutes rest,
100% would indicate continuous welding.
- 7 - Mains Supply U_1 : Rated supply voltage and frequency.
 I_{1max} : Maximum current. I_{1eff} : Maximum effective current.
- 8 - A/V - A/V: Welding current adjustment range and corresponding voltages.
- 9 - Serial Number. Specifically identifies each welder.
- 10- Symbol for welding power sources which are suitable for supplying power to welding operations carried out in an environment with increased risk of electric shock (if applicable).
- 11- Insulation Class.





Environmental 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 off any fluids (if applicable) into approved containers and dispose of the product and the 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.

Parts support is available for this product. To obtain a parts listing and/or diagram, please log on to www.sealey.co.uk, email sales@sealey.co.uk or telephone 01284 757500.

NOTE: It is our policy to improve products continually 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 will be required for any claim.



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