



INSTRUCTIONS FOR  
**ELECTRONIC POWERMIG**

MODEL: **ELECTROMIG 195.V3**



Thank you for purchasing a Sealey Welder. 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 OR PERSONAL INJURY, AND WILL INVALIDATE THE WARRANTY. RETAIN THESE INSTRUCTIONS FOR FUTURE USE.**

### 1. SAFETY INSTRUCTIONS

#### 1.1. ELECTRICAL SAFETY. **WARNING! It is the user's responsibility to read, understand and comply with 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 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 professional 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 a business premises, to be tested by a qualified Electrician at least once a year 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 qualified electrician.**
- 1.1.3. Ensure the insulation on all cables and the product itself is safe before connecting to the mains power supply. See 1.1.1. & 1.1.2. above and use 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, especially power connections, to ensure that none are loose.
- 1.1.6. **Important:** Ensure the voltage marked on the product is the same as the electrical power supply to be used, and check that plugs are fitted with correct capacity fuse.
- 1.1.7. DO NOT pull or carry the powered appliance by its power supply lead or 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. Immediately replace or have repaired by a qualified Electrician.
- 1.2. **MODEL ELECTROMIG 195.V3 HAS A CURRENT RATING OF 25AMPS AND THEREFORE REQUIRES TO BE CONNECTED TO A 30AMP SUPPLY. YOU MUST CONTACT A QUALIFIED ELECTRICIAN TO ENSURE A 30 AMP FUSED SUPPLY IS AVAILABLE. WE RECOMMEND YOU DISCUSS THE INSTALLATION OF AN INDUSTRIAL ROUND PIN PLUG & SOCKET WITH YOUR ELECTRICIAN.**

#### 1.3 GENERAL SAFETY

- ▲ **DANGER! unplug the welder from the mains power supply before performing maintenance or service.**
  - ✓ Keep the welder 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).*
  - ✓ Use an air hose to regularly blow out any dirt from the liner, and keep the welder clean for best and safest performance.
  - ✓ Check and spray the gas cup and contact tip regularly with anti-spatter spray available from your Sealey dealer.
  - ✓ Locate welder in adequate working area for its function. Ensure area has adequate ventilation as welding fumes are harmful.
  - ✓ Keep working area clean, tidy and free from unrelated materials. Also ensure the working area has adequate lighting, and that a fire extinguisher is at hand.
  - 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 welder.
  - ✓ Avoid unintentional contact with workpiece. Accidental or uncontrolled use of the torch may be dangerous and will wear the nozzle.
  - ✓ Keep non essential persons away from the working area. Any persons working within the area must use protective head shield and gloves.
  - ✓ Operators must receive adequate training before using the welder. The welder must only be operated under supervision.
  - ✓ Stand correctly keeping a good footing and balance, and ensure the floor is not slippery, and wear non-slip shoes.
  - ✓ Turn voltage switch to "0" or off when not in use.
  - x DO NOT operate the welder if it or its cables are damaged and DO NOT attempt to fit any non genuine torches, components, or parts to the welder unit.
  - x DO NOT get welder 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, 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.**
  - x DO NOT stand welder on a metal workbench, car bodywork or similar object.
  - x DO NOT touch any live metal parts of the torch or electrode while the machine is switched on.
  - x DO NOT pull the welder 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 endanger others.
  - x DO NOT touch the torch or workpiece immediately after welding as they will be very hot. Allow to cool.
  - x DO NOT operate welder while under the influence of drugs, alcohol or intoxicating medication, or if fatigued.
  - ✓ When not in use store the welder in a safe, dry, childproof area.
  - 1.4 **GAS SAFETY**
  - ✓ Store gas cylinders in a vertical position only and ensure the storage area is correctly secured.
  - x DO NOT store gas cylinders in areas where temperature exceeds 50°C. DO NOT use direct heat on a cylinder. Always keep gas cylinders cool.
  - x DO NOT attempt to repair or modify any part of a gas cylinder or valve, and DO NOT puncture or damage a cylinder.
  - x DO NOT obscure or remove any official labels from a cylinder. Always check the gas identity before use. Avoid getting gas cylinders oily or greasy.
  - x DO NOT try to lift or handle cylinder by its cap, guard or valve. Always keep caps and guards in place and close valve when not in use.
- The gas cylinder is heavy, use mechanical lifting equipment. Ensure the cylinder is correctly situated on the welder base stand and secured with chain.

## 2. INTRODUCTION & SPECIFICATIONS

**IMPORTANT :** These instructions contain information required to prepare your machine for welding, together with a maintenance and a trouble shooting section. If you have no previous experience the instructions are not intended to show you how to become a welder. Should you have no experience, we recommend that you seek training from an expert source. Mig welding is relatively easy to perform, but does require a steady hand and time practising under supervision with scrap metal as it is only with continued practice that you will achieve the desired results.

**INTRODUCTION :** The Electromig195.V3 is an advanced computer controlled Mig / Mag welder particularly suitable for bodyshop applications and will weld galvanised material, stainless steel, high stress sheet and aluminium as well as performing brazing. The unit is provided with an automatic torch with a centralised connector. As an optional extra a specialist torch with integral spool feed for improved aluminium welding is available. Once the welding properties in relation to wire size, gas type and material have been entered via the control panel, the wire feed rate is automatically adjusted by the built in microprocessor. The control panel has a three digit readout which monitors the power supply voltage as well as enabling the setting up of pre-gas time, wire feed rate up slope and wire burn back time. The unit comes with 0.8mm steel wire, non live torch and industrial Argon/CO<sub>2</sub> regulator and can be used with CO<sub>2</sub>, Argon or Argon mix gas and accept any bottle size. Suitable for connection to a 30amp supply.

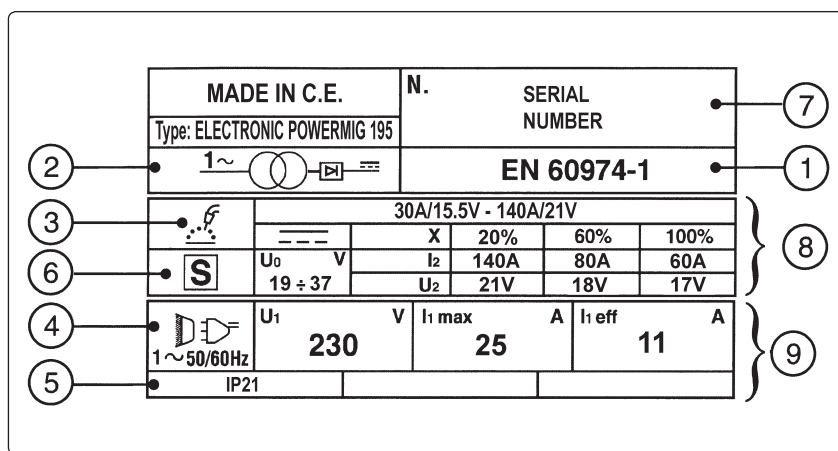
### SPECIFICATION : ELECTROMIG 195.V3

Output Range: .....	60-195 Amps	Power Supply: .....	230 Volt 1ph	Accepts bottle size .....	All
Duty Cycle: .....	20% @ 140A,	Cooling System: .....	Turbo Fan	Weight: .....	44.25 kg
.....	60% @ 80A, 100% @ 60A	Spot Welding: .....	Electronically controlled	Power selection .....	6 level rotary control
Power Efficiency: .....	5.75 kVA				

## 3. RATINGS PLATE SYMBOLS

Detailed technical data relative to the performance of the machine is located on the back panel plate. **Please note** that the ratings plate shown below is an example only intended to assist with the explanations of symbols. To determine the correct technical values of the machine in your possession, you must refer to the data plate.

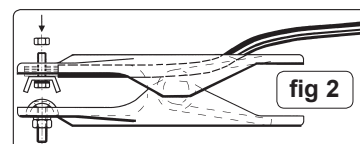
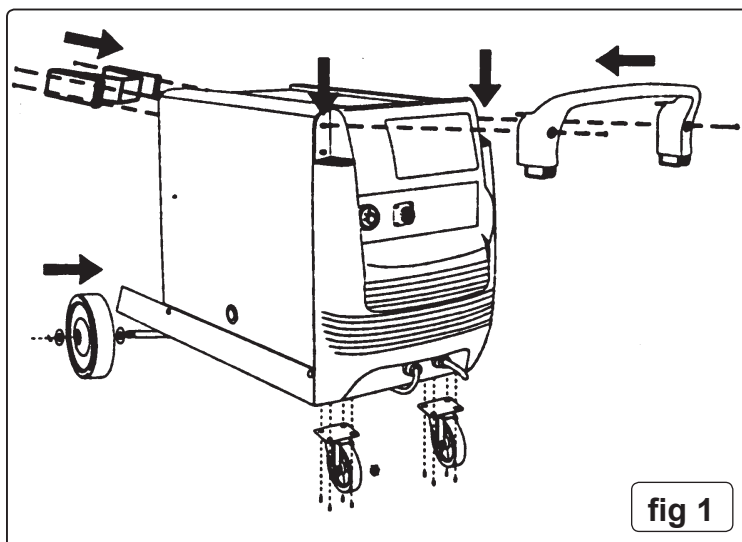
- 1 The EUROPEAN standard regarding safety and the construction of arc welding machines.
- 2 Symbol for the main internal parts of the welder : i.e. inverter - transformer - rectifier.
- 3 Symbol of planned welding procedure: i.e welding with a continuous flow of welding wire
- 4 Symbol for power supply line: monophase alternating voltage.
- 5 Case protection rating: IP21. Standard governing the required protection from water ingress and isolation of internal parts from persons and objects.
- 6 Symbol S: Indicates that welding operations may be carried out in areas with greater risk of electric shock (e.g. close to metal masses).
- 7 Serial Number : Refer to your particular machine
- 8 PERFORMANCE OF THE WELDING CIRCUIT:  
**U<sub>0</sub>** : Maximum voltage with no-load peak (welding circuit open)  
**12 / U<sub>2</sub>** : Current and corresponding voltage are normal [ U<sub>2</sub>=(20+0.04 I<sub>2</sub>) V ] and may be supplied from the machine during welding.  
**X** : Intermittent welding ratio: Indicates time during which machine can supply the corresponding current (same column). This is expressed in % on the basis of a 10min. cycle (e.g. 60% = 6 min of work, 4 min. break and so on).  
**A/V-AV** : Indicates the welding current adjustment range ( minimum - maximum ) at the corresponding arc voltage.



- 9 DATA REGARDING THE MAINS.  
**U<sub>1</sub>** : Alternating supply voltage of the machine. Allowed limits (±15%).  
**I<sub>1 max</sub>**: Maximum current consumed.  
**I<sub>1 eff</sub>**: Maximum effective current consumed. Value of delayed fuses for mains protection.

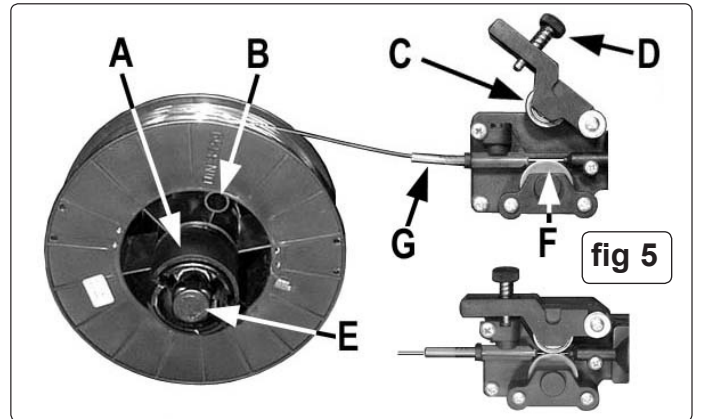
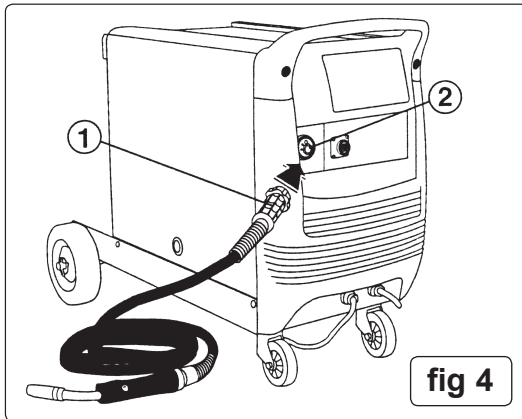
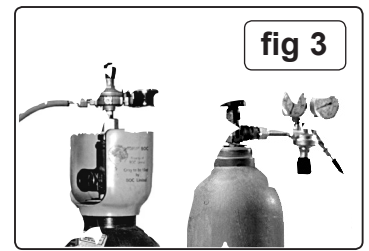
## 4. ASSEMBLY

- 4.0 For information on fitting of mains power plug see safety instructions. (Section 1.2)
- 4.1 Carefully remove outer carton and packing. Be very careful when removing the welding unit from the packing base as the unit is very heavy, we recommend that unpacking the base and wheel assembly is undertaken by two persons. Check the welder and contents. Should there be any damaged or missing parts contact your supplier immediately.
- 4.2 **WHEEL ASSEMBLY (fig 1).**  
Attach both front caster wheels to the underside of the casing as indicated to the right using the 8 screws provided.
- 4.3 Bolt the two top hat brackets to the underside of the bottle platform and pass the axle through them. Place a washer over either protruding end and slide a wheel onto either side and then another washer. Retain at either side by passing a split pin through the axle and bending the ends over.
- 4.4 **HANDLE ASSEMBLY (fig 1)**  
Push the handle downwards onto the top of the main front moulding ensuring that the small tags on the underside of the handle are engaged into the main moulding. Fix in place using two of the self tapping screws provided.
- 4.5 **BOTTLE BRACKET ASSEMBLY (fig 1)**  
Place the bottle bracket onto the rear face of the casing just beneath the lip of the top cover and fix in place with four self tapping screws.
- 4.6 **EARTH CLAMP (fig 2)**  
Connect the earth lead to the earth clamp as shown in fig 2.

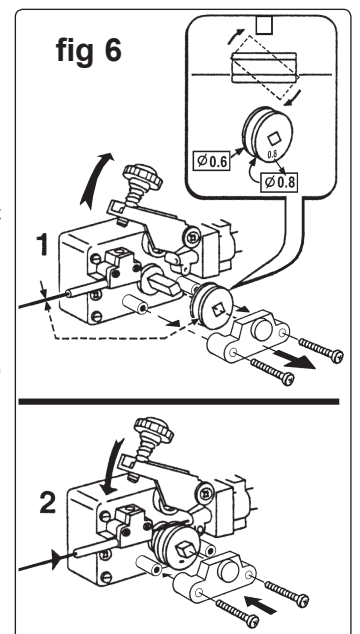


## 5. SETTING UP THE WELDER

- 5.1 **CONNECTING THE GAS CYLINDER.** Stand the gas cylinder on the base at the rear of the welder and secure with chain supplied. The welder can be transported with small and medium sized bottles only. **Do not transport the welder with a large bottle attached.**
- 5.2 Remove the protective cap from the new gas bottle and clean any dirt from the thread. Open the valve for a few seconds and allow a little gas to escape to remove any residual dirt or impurities. If using Argon or Argon mixtures, you will need to use the "bull nose adaptor" provided. If you intend to use CO2 gas the regulator will fit directly onto the cylinder. If using the bull nose, fit nose adaptor to the cylinder and tighten with a spanner.
- 5.3 Remove regulator from box (REG/MT) and screw it to the bull nose (or CO2 cylinder). Place the small jubilee clip over the rubber hose from the welder, connect the hose to the regulator "BP" output and secure with the jubilee clip (fig 3).
- 5.4 Set the regulator flow rate to 5 - 7 litres/min depending on the material to be welded, also taking into consideration any draughts which are strong enough to disturb the gas flow.
- 5.5 If the welder is to be stored for a long time always remove the flow regulator.



- 5.6 **TORCH "Euro Connection".** ( See fig.4 ) Your welder is fitted with a "Euro Connection" quick release torch. Simply line the pins in the torch connector (1) up with appropriate holes on the front panel connector (2) and push in and tighten the locking nut.
- 5.7 **FIT A REEL OF WIRE.** ( See fig.5 ) MAKE SURE THAT THE WIRE FEED ROLLERS, THE WIRE GUIDE HOSE AND THE CONTACT TIP OF THE TORCH MATCH THE DIAMETER AND TYPE OF WIRE TO BE USED AND ENSURE THAT THESE PARTS ARE FITTED CORRECTLY.
- 5.8 **Setting up the wire feed rollers.** ( See fig.6 ) If you change the size or type of wire you are using you will have to change or reverse the wire feed roller so that the groove in the roller matches the size of wire passing through it. Remove the screws from the lower roller support as shown in fig.6 - 1 and remove the roller from the square shaft. The size of each groove is stamped on the adjacent face of the roller. Replace the roller on the shaft so that the size you require can be seen on the front face. Replace the roller support as shown in fig.6 - 2.
- 5.9 **Ensure the welder is unplugged from the mains power.** The welder is supplied with a mini spool of wire, but will accept up to 15kg spools without modification. Open the side of the unit, remove the spacer from the holder (A) and push the reel of wire over the plastic end springs and onto the main spindle ensuring that the spool rotates clockwise with the wire drawing off the reel from the top. Large spools of wire have a guide hole (B) which must be pushed onto the plastic pin located at the back end of the reel spindle. When large reel has been located on this pin, push the spacer (A) back onto the spindle to keep reel pushed onto the pin (spacer cut out to face the wire reel). The pin will stop large reels of wire from free wheeling around the spindle.
- 5.10 Undo the wire tensioning screw (D) and raise the wire feed tension arm to the vertical position.
- 5.11 Straighten about 40-50mm of spool wire (do not allow wire to uncoil). Round the end of the wire off ensuring any burrs or sharp points are removed, and gently push wire through plastic guide (G) and through the 0.6mm or 0.8mm roller groove (F) and through to the torch. Note: Burrs or sharp points at wire tip may damage the liner.
- 5.12 Return the wire feed tension arm to the closed position and secure with the wire lock screw (D). Turn the screw through half its adjustment range so that the wire feed pressure roller (C) exerts medium pressure on the wire.
- 5.13 Remove gas cup (fig.7a) and contact tip (b) from end of torch as follows:
- 5.14 **FEED WIRE THROUGH TO THE TORCH.**



- a) Take torch in left hand with the torch tip facing to the right.  
b) Grasp gas cup firmly in your right hand. ( Cup is a friction fit.)  
c) Turn gas cup **clockwise only** (fig 7) and pull cup out to the right.  
d) Unscrew the copper contact tip (right hand thread) to remove.
- WARNING!** do not turn gas cup anti-clockwise, as this will damage the internal spring.
- 5.15 Check welder is switched off "0", and that the earth clamp is isolated and away from the torch tip. Connect the welder to the mains power supply and set the voltage switch to "1".
- 5.16 The wire speed is automatically controlled by the welder. Keep the torch cable as straight as possible and press the torch switch to feed wire through the torch.
- WARNING!** When testing the wire feed do not allow the wire to come into contact with the workpiece or earthing connection as this would inadvertently strike the arc causing potential injury. To avoid mechanical injury do not direct the wire at yourself or any other persons.

- 5.17 When wire has fed through, switch welder off, unplug from mains.  
5.18 Take torch in left hand and screw contact tip back into place as follow:  
5.19 Grasp gas cup in right hand, push onto torch head and turn **clockwise only**.

### 5.20 SETTING WIRE TENSION.

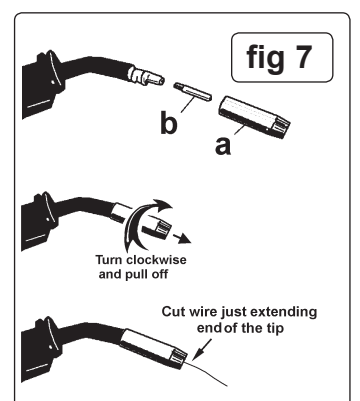
**IMPORTANT:** You must set the correct tension, too little or too much tension will cause problematic wire feed and result in poor welding.

- 5.21 Tension between rollers is checked by slowing down the wire between your fingers. If top feed roller skids the tension is correct. Use as low a tension as possible, too high a tension will deform wire and result in a blown fuse on the printed circuit board. Adjust tension by turning knob (fig.5 - D).

### 5.22 CLUTCH ADJUSTMENT

It is essential that the clutch is adjusted correctly. Depress the torch switch and release quickly. If spool overruns it indicates that the clutch is too loose. Tighten the clutch (located in the centre of the wire spool spindle ( fig.5 - E ), and test the machine as above until the wire stops over running.

**WARNING!** DO NOT over tighten the clutch as this will cause wire feed problems.





## 6. CONTROL PANEL

**SELECT WELDING MATERIAL.** Select from: **Fe** (Ferrous metals), **Ss** (Stainless steel), **Al** (Aluminium), **CuSi** (copper silicon alloy) or **CuAl** (copper aluminium alloy)

**SELECT GAS.** Select from : **CO<sub>2</sub>** (Carbon dioxide), **ArCO<sub>2</sub>** (Argon / Carb.dioxide), **ArO<sub>2</sub>** (Argon / Oxygen), **Ar** (Argon)

**OVERLOAD INDICATOR.** L.E.D lights up to indicate power has been cut off due to overheating. Readout shows message 'ALL thr'. The system will reset automatically after the welder has cooled down.

**SUPPLY VOLTAGE STATE.** L.E.Ds indicate the state of power supply voltage.

**Left hand LED on** indicates *low* mains supply voltage.

**Middle LED on** shows mains supply voltage is *normal*.

**Right hand LED on** shows mains voltage is too *high*.

**LED 'on'** means that the main readout is showing the WELDING CURRENT.

**LED 'intermittent flashing'** means readout is showing

WIRE FEED RATE UP SLOPE in programming mode.

**LED 'on'** means main readout is showing the WIRE FEED RATE.

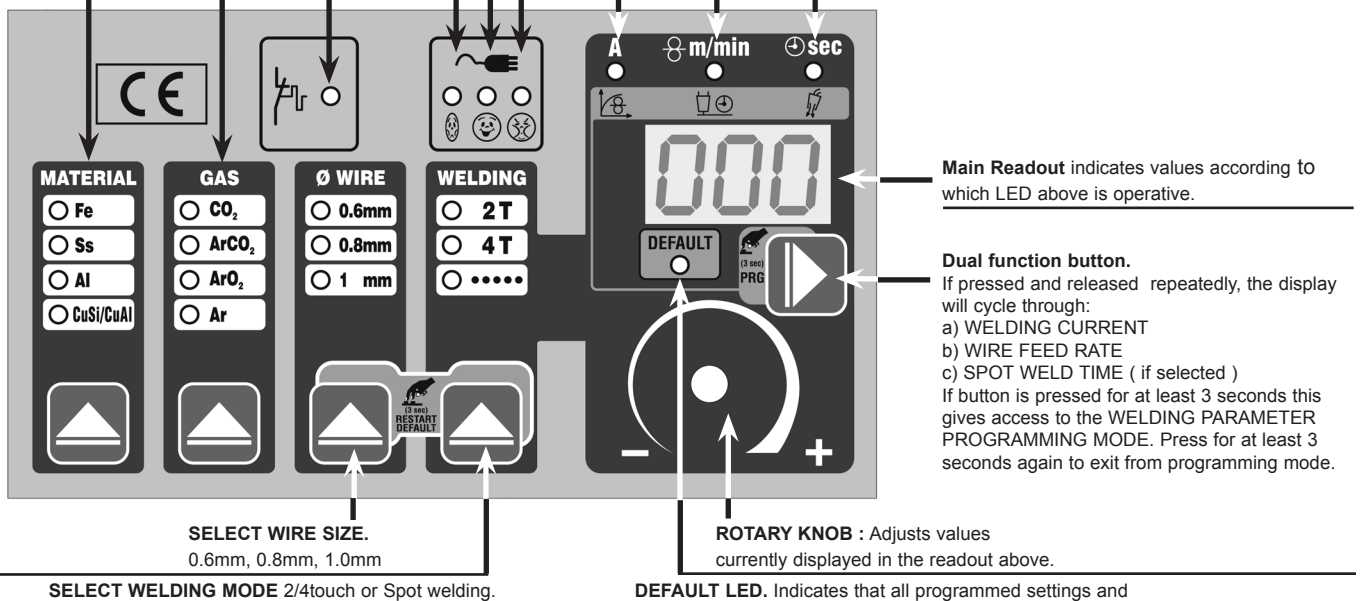
**LED 'intermittent flashing'** means main display is showing

WIRE BURN BACK TIME in programming mode.

**LED 'on'** means readout is showing SPOT WELDING TIME

**LED 'intermittent flashing'** means readout is showing

PRE-GAS TIME in programming mode.

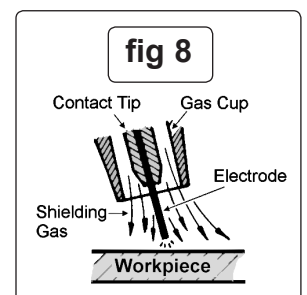


## 7. PROGRAMMING

- 7.0 To enter programming mode hold down the dual function button below the display for at least 3 seconds. You now have access to 3 further parameters as shown below. A single press of the button will change the display to the next parameter. Keep pressing the button until you reach the parameter you wish to adjust.
- 7.1 **WIRE FEED RATE UP SLOPE.** The wire feed motor start up can be adjusted from 'slow' to instantaneous. Adjust the values 'r\_1' to 'r\_9' using the rotary knob. When the readout shows a value of 'r\_1' this represents the slowest start up. When the readout shows 'nor' there is no up slope applied and the wire feed motor reaches its normal working speed immediately. To return to the factory default value press the WIRE and WELDING buttons simultaneously for 3 seconds.
- 7.2 **WIRE BURN BACK TIME.** Adjust the timing between 0.00 and 1.0 secs. using the rotary knob. To return to the factory default value press the WIRE and WELDING buttons simultaneously for 3 seconds.
- 7.3 **PRE-GAS TIME.** Adjust the timing between 0.00 and 3.0 secs. using the rotary knob. To return to the factory default value press the WIRE and WELDING buttons simultaneously for 3 seconds.
- 7.4 To exit the programming mode at any time press the dual function button below the readout for at least 3 seconds.
- 7.5 **RESETTING ALL PARAMETERS TO THE DEFAULT VALUES.** If the WELDING and WIRE buttons are pressed simultaneously, all programming parameters and the wire feed rate are returned to the factory settings.

## 8. WELDING PRINCIPLES

- 8.1 **Mig/Mag welding. (See fig 8)** A spool of welding wire is placed on spool holder and automatically fed through an insulated liner in the torch to its tip. The torch consist of a switch, liner, gas hose, and control cable. The switch activates the wire feed roller and the gas flow. Releasing the switch stops wire feed and gas flow. The weld current is transferred to the electrode (the wire) from the contact tip at the torch end. The wire speed will be automatically adjusted according to power output. ( The wire speed can also be manually adjusted. ) The higher the current the faster the wire speed. A gas cup fits over the contact tip to direct gas flow towards the weld ensuring the arc welding process is shielded from oxidising air contamination (fig 8). The shielding gas also assists heating of the weld. The torch is connected to the positive side of a DC rectifier, and negative clamp is attached to the workpiece.
- 8.2 **Gas types and their use.**  
Welding mild steel with CO<sub>2</sub> gas is appropriate for most welding tasks where spatter and high build up of weld do not pose a problem. To achieve a spatter free and flat weld however, you must use an Argon/CO<sub>2</sub> mixture.  
To weld aluminium use: ✓ Argon gas or Argon-Helium mixture, ✓ 0.8mm Contact Tip, ✓ 0.8mm Aluminium Wire
- 8.3 **Aluminium Welding.** Argon or an Argon-Helium mixture should be used for shielding. The wire used must have the same characteristics as the material to be welded. Always use an alloy wire (i.e. aluminium/silicon); DO NOT use pure aluminium wire. A problem you may experience when aluminium MIG welding is in pulling the wire for the whole length of the torch, as aluminium has poor mechanical characteristics. The smaller the diameter of wire the more difficult the wire feed may be. To overcome this problem, replace the torch guide hose with a Teflon guide hose. To withdraw the hose loosen screws at the end of the torch. Use a contact tip suitable for aluminium. Replace the wire puller rollers with aluminium compatible rollers. Replace the steel guide hose for wire feed with a Teflon guide hose. Alternatively a spool gun for welding aluminium is available as an optional extra. A small reel of aluminium wire is directly mounted onto the torch itself which eliminates the need for a long liner. Contact your local Sealey dealer for information.

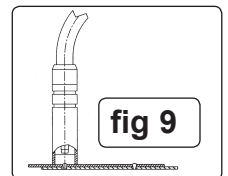


- 8.4 **Brazing.** Brazing is a process for joining similar or dissimilar metals using a filler metal that typically contains a base of copper combined with silver, nickel, zinc or phosphorous. Brazing covers a temperature range of 900OF - 2200OF (470OC - 1190OC). Brazing differs from welding in that brazing does not melt the base metals, therefore brazing temperatures are lower than the melting points of the base metals. For the same reason, brazing is a superior choice in joining dissimilar metals. Brazed joints are strong. A properly made joint (like a welded joint) will in many cases be as strong or stronger than the base metals being joined. Typically brazing is employed in manufacturing compressors, diesel engine circulation tubes, mining tools, plumbing fixtures, jewelry, musical instruments, refrigerators, condensers etc.

**NOTE: We recommend that you obtain specialist advice from your local supplier of welding/brazing materials on the correct choice of wire and gas for the particular brazing task you wish to perform. If you have not performed Mig Brazing before we also recommend that you seek advice from your local training establishment on the required technique and setting of welding parameters.**

## 9. WELDING PROCESS

- **WARNING: Use welding head shield to protect eyes and avoid exposing skin to ultraviolet rays given off by electric arc. Wear safety welding gauntlets.**  
Should you have no welding experience, we recommend you seek training from an expert source to ensure your health and safety. You must familiarise yourself with welding applications and limitations, and specific potential hazards peculiar to welding. Good MIG/MAG welding may only be achieved with continued, supervised practice.
- 9.0 **IMPORTANT.** *If welding a car, disconnect the battery or fit an electronic circuit protector. Ensure you read and understand the the safety instructions in Section 1. If difficult welds are to be performed and the welding parameters are unknown, it is advisable to carry out several trial runs on test pieces in order to determine the right welding current and gas flow.*
- 9.1 **Connect the earth clamp to the workpiece.** To ensure a complete circuit, the earth lead must be securely attached to the work piece that is to be welded. Best connection is obtained by grinding the point of contact on the workpiece before connecting clamp to the workpiece. The weld area must also be free of paint, rust, grease, etc.
- 9.2 **Turn on the gas.** Adjust the regulator to a flow of 5 - 7 litres/min depending on the material to be welded
- 9.3 **Switch on the welder** using the rotary power switch below the main control panel. In general current settings 3,4,5 & 6 are for average thickness welding and current settings 1 & 2 are for reduced thickness welding.
- 9.4 **Set the controls.**  
**MATERIAL.** Select the type of material by repeatedly pressing the MATERIAL button until the LED next to your choice lights up.  
**GAS.** Select the type of gas by repeatedly pressing the GAS button until the LED next to your choice lights up.  
**WIRE.** Select the diameter of wire by repeatedly pressing the WIRE button until the LED next to your choice lights up.
- 9.5 The readout will show the current programmed for welding. By pressing the dual function button the readout will display the factory set wire feed rate. Under these conditions the DEFAULT LED will be illuminated. The wire feed rate can still be altered by turning the rotational knob below the readout and the DEFAULT LED will go out.
- 9.6 **Select welding mode.** (2T) Two touch weld cycle. (4T) Four touch weld cycle. Spot Welding ●●●●●. (See below for explanations.)
- 9.7 **Commence welding** by pressing the torch button. During welding the actual welding current will be shown on the readout.
- 9.8 It is possible to alter the wire feed rate during welding just by turning the rotational knob. As you do this the readout will display the wire feed setting and then revert to displaying the current as soon as the knob stops moving.
- 9.9 Under critical conditions the wire diameter LED will flash.
- 9.10 When switched off the welder will memorise the parameters selected at the time.
- 9.11 **TORCH DUAL FUNCTION PUSH BUTTON.** The torch push button can control the switching of the power in two different modes depending on your welding requirements. These modes are selected using the 'WELDING' push button on the front panel. ( See Section 6. )
- 9.12 **(2T) Two touch weld cycle.** In this mode the push button is pressed and held down to strike the arc and to continue welding. When the end of the weld is reached the push button is released and the arc is switched off.
- 9.13 **(4T) Four touch weld cycle.** This mode allows you to complete long welds without having to continuously hold down the torch button and affords a degree of control over the weld current using the torch button. ( See Rapid Touch Function ). The push button is first held down which strikes the arc and then provides power at a base current level as long as the button continues to be held down. Once the push button is released the current rises to the level set by the welding current control and stays at this level even though the push button has been released. If the button is then pressed and held down again the current will decrease to the base level and remain there whilst the button is held. When the button is released the current is turned off.
- 9.14 **Rapid touch function.** This function is available in four touch mode only. During the course of welding at the current you have set ( with the torch button released ) the current can be made to dip down towards base current and back again by momentarily pressing and releasing the torch button. This function can be used as a sequence of rapid presses which can help to control heat and penetration during difficult welds. At the end of a rapid sequence of presses when the button is released, the current will remain at the weld current set and the welder will continue to function as previously described in four touch mode.
- 9.15 **Spot Welding ●●●●●.** Remove the gas cup and fit a spot welding gas cup. Select spot welding by pressing the welding mode button. Press the dual function button below the readout until the spot welding LED lights up above the readout. Set the spot weld duration according to the thickness of the metal sheets using the rotational knob . Drill a small hole in the top workpiece. Push the spot gascup onto the material to be welded (fig 9). The castellations on the cup keep it the correct distance from the weld pool and allow you to push the two pieces being welded together. Press the torch trigger to commence welding. The wire will feed through during the allotted time and welding will stop automatically.



## 10. MAINTENANCE

- **WARNING! Ensure the unit is disconnected from the mains power supply before performing any maintenance or service.**
- 10.1 Regularly check all welding cables and secondary terminals to ensure they are in good order and connected correctly, also check during welding to ensure they are not overheating.
- 10.2. Check that the gas hose connections are tight and that there are no gas leaks.
- 10.3. Regularly inspect the machine interior according to the frequency of use and dust in the working area. When removing dust from transformer, choke tap and rectifier always use dry air of not more than 10bars.  
**NOTE:** Care must be taken NOT to direct compressed air towards the control modules, which may be cleaned with a soft brush.
- 10.4. **Wire feed unit.** Check the wire feed unit at regular intervals. The feed roller wire guide plays an important part in obtaining consistent results. Poor wire feeding affects welding. Clean the rollers weekly, especially the feed roller groove, removing all metallic dust deposits.
- 10.5. **Changing Wire Feed Roller IMPORTANT:** ( Refer to section 5.8 ) Make sure that the wire feed rollers, The wire guide hose and the contact tip of the torch match the diameter and type of wire to be used and ensure that these parts are fitted correctly..
- 10.6. **Torch.** ( Check condition at least once a day )  
Protect torch cable assembly from mechanical wear. Clean liner from the machine forwards by using compressed air. If the liner is clogged it must be replaced.
- 10.7. **Contact Tip.**The contact tip is a consumable item and must be replaced when the hole becomes enlarged or oval. The contact tip **MUST** be kept free from spatter to ensure an unimpeded flow of gas.

- 10.8. Gas Cup.** The gas cup must also be kept clean and free from spatter. Build up of spatter inside the gas cup can cause a short circuit at the contact tip which will result in either the fuse blowing on the printed circuit card, or expensive machine repairs. To keep the contact tip free from spatter, we recommend the use of Sealey anti-spatter spray (MIG/722307) available from your Sealey Dealer.
- 10.9. Changing Fuses.** The fuse is located on the auxiliary transformer and is mainly blown for the following reasons:  
 ✓ Spatter collecting in the gas cup, causing contact tip to short circuit. ✓ Wire tension is too great. ✓ A sudden surge of current.

## 11. TROUBLESHOOTING

PROBLEM	POSSIBLE CAUSE	REMEDY <i>(Numbers refer to chapter and item heading)</i>
1. Power source stops	Overheating protection activated due to overload	Protection automatically resets when transformer has cooled (about 15 min).
2. No weld current, fuses blowing.	Rectifier blown	Replace rectifier.
3. No weld current	Bad connection between clamp & workpiece Break in earth lead Break in torch lead	Clean or grind contact surface and weld area. Repair or replace earth lead. Repair or replace torch, lead.
4. Feed motor not working.	Fuse blown Gear damaged or worn Motor defective	Replace fuse. Replace gears. Replace motor (Contact service agent).
5. Wire does not feed, feed roller rotates	Pressure roller incorrectly adjusted Dirt, copper, dust, etc, have collected in torch liner  Gas cup (Nozzle) or tip defective. Deformed wire	Adjust tension. Clean the liner from the machine forward. Use compressed air. If too much dirt, replace the liner. Replace gas cup (nozzle) and/or tip. . Check roller tension and adjust it if necessary.
6. Wire feeds unevenly.	Dirt, etc, in liner Gas cup (Nozzle) or Tip defective Gas cup (Nozzle) spattered Feed roller groove clogged Feed roller groove deformed Pressure roller tension too slight.	Clean the liner from the machine forward. Use compressed air. Replace gas cup (nozzle) and/or tip. Clean or replace gas cup (nozzle). Clean feed roller. Replace feed roller. Adjust tension.
7. Unstable arc.	Incompatible settings Impurities in weld area Worn or defective gas cup (nozzle)	Check settings. Clean and/or grind workpiece. Replace gas cup (nozzle).
8. Porous weld	No gas Gas cup clogged Draft blowing away shielding gas Rusty or dirty joints Torch too far from or at wrong angle to work  Gas leak Dirty Workpiece	Open gas cylinder, regulate gas flow. Clean or replace cup. Screen off welding site or increase gas flow. Clean or grind the workpiece. The distance from gas cup to workpiece should be 8-10mm See chapter 4 for angle. Check contact tip and nozzle. Check hoses, connections and torch assembly.. Press the gas cup into correct position.
9. Electrode sticking in gas cup (nozzle)	Worn or defective gas cup (nozzle) Electrode deformed Wire speed too slow	Replace gas cup (nozzle). Check roller tension.. See recommendations for wire speed.
10. Irregular weld head	Torch incorrectly held Wire weaving in weld pool	Use correct torch angle. Check roller tension and adjust as needed.
11. Weld bead too narrow and raised	Weld current too high Weld speed too low	Increase power and wire speed. Move torch slower and weave a little more.
12. Weld bead too wide	Weld current too high Weld speed too low Arc too long	Decrease power and wire speed. Move torch faster and weave less. Bring torch closer to workpiece.
13. Poor penetration	Weld current too high Arc too long	Increase power and wire speed. Bring torch closer to workpiece.
14. Excessive penetration	Weld current too high weld speed too slow incorrect distance of torch to workpiece	Decrease power and wire speed. Move torch faster. Torch distance should be 8-10mm.
15. Fuse blowing	Tension too great Gas cup contact tip clogged	Release tension. (Chapter 3). Clean gas cup and contact tip. (Chapter 5).
16. Coils of wire on reel overlap, or wire is oxidised. Coils break or fall under wheel.	Tension too loose or tight. Coil damaged or wire twisted.	Reset tension. Change wire reel.
17. Wire runs through torch but there is no welding current.	Defective contactor. Worn contacts of contactor regulator. Regulation switch problem Faulty rectifier.  Fault on electronic circuit of contactor. Work cable not connected correctly.	Check coil ends, change coil if necessary. Check, clean contacts, change if oxidation is present. Check secondary voltage for each switch setting. Disconnect rectifier from secondary, check each diode goes one way only. If not change rectifier. Change control module. Connect work clamp directly to workpiece. Check wire is in good condition and making good contact with clamp.

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