

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: 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. THE SPOOL GUN SHOULD ONLY BE USED WITH THE SEALEY ELECTROMIG 195 WELDER FOR WHICH IT IS DESIGNED. AS WELL AS READING THESE INSTRUCTIONS THE USER SHOULD RE-READ AND UNDERSTAND THE INSTRUCTIONS ORIGINALLY SUPPLIED WITH THE WELDER.

1.2. **ELECTRICAL SAFETY**  **WARNING! It is the owner'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. **You must** also read and understand the following instructions concerning electrical safety.

1.2.1. 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.

1.2.2. 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.**

1.2.3. Ensure the insulation on all cables and the product itself is safe before connecting to the welder.

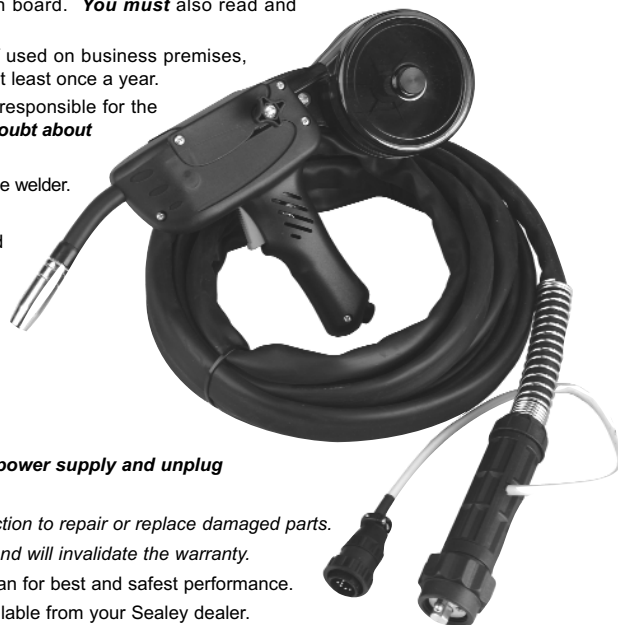
1.2.4. Ensure that cables are always protected against short circuit and overload.

1.2.5. Regularly inspect power supply, leads, plugs and all electrical connections for wear and damage, especially power connections, to ensure that none is loose.

1.2.6. DO NOT pull or carry the gun by the power supply lead or cable.

1.2.7. DO NOT pull power plugs from sockets by the power cable.

1.2.8. DO NOT use worn or damaged leads, plugs or connections. Immediately replace or have repaired by a qualified electrician.



### 1.3. GENERAL SAFETY

**▲ DANGER! Unplug the welder (to which the gun is attached) from the mains power supply and unplug the gun from the welder before performing maintenance or service.**

✓ Keep the gun and cables in good working order and condition. *Take immediate action to repair or replace damaged parts.*

✓ Use genuine parts and accessories only. *Unauthorised 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 gun 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 gun and welder in a suitable work area. Ensure that the area has adequate ventilation, as welding fumes are harmful.

✓ Keep work area clean, tidy and free from unrelated materials. Also ensure that the work area has adequate lighting and that a fire extinguisher is to hand.

**WARNING! Use a welding head shield to protect eyes and avoid exposing skin to ultraviolet rays given off by the 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 gun.

✓ Avoid unintentional contact with workpiece. Accidental or uncontrolled use of the gun may be dangerous and will wear the nozzle.

✓ Keep non-essential persons away from the work area. Any persons working within the area must use protective head shield and gloves.

✓ Operators must receive adequate training before using the gun and welder. The gun and 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.

✓ When the gun is not in use, turn voltage switch on the welder to "0" or Off.

x DO NOT operate the gun or welder if it or its cables are damaged and DO NOT attempt to fit any unapproved parts to the gun or welder unit.

x DO NOT get the gun or 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 inflammable materials. Avoid welding metals which have been cleaned with chlorinated solvents, or near such solvents.**

x DO NOT stand the gun or 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 welder is switched on.

x DO NOT pull the gun or welder by the cable, 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 and neatly coiled. DO NOT place cables where they endanger others.

x DO NOT touch the gun or workpiece immediately after welding as they will be very hot. Allow to cool.

x DO NOT operate the gun or welder while tired or if under the influence of drugs, alcohol or intoxicating medication.

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

### 1.4. GAS SAFETY

✓ Store gas cylinders in a vertical position only and ensure that the storage area is correctly secured.

x DO NOT store gas cylinders in areas where the 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 cylinder labels. Always check the gas identity before use. Avoid getting gas cylinders oily or greasy.

x DO NOT try to lift or handle a cylinder by the 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 that the cylinder is correctly situated on the welder base stand and secured with chain.

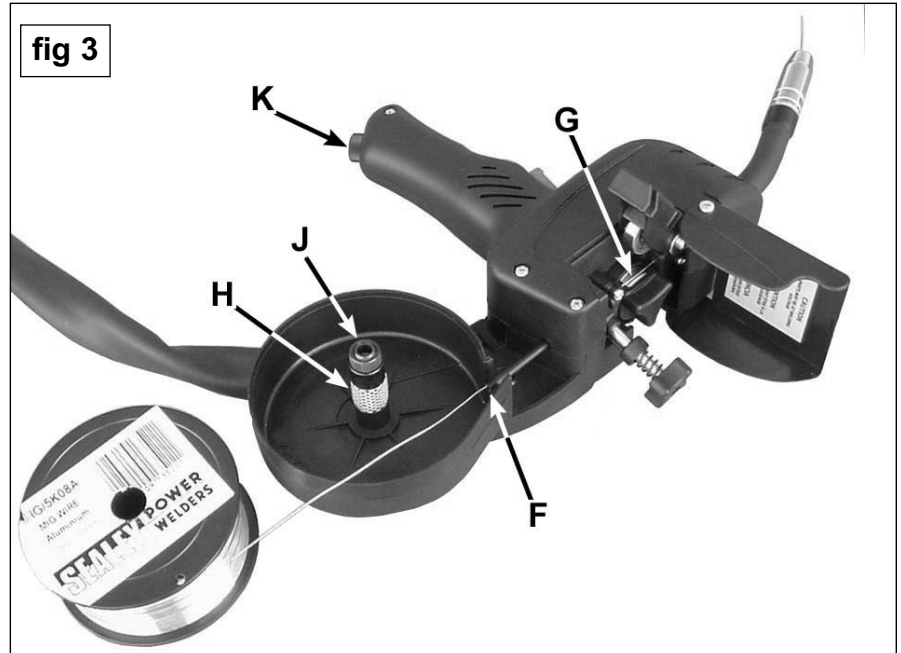
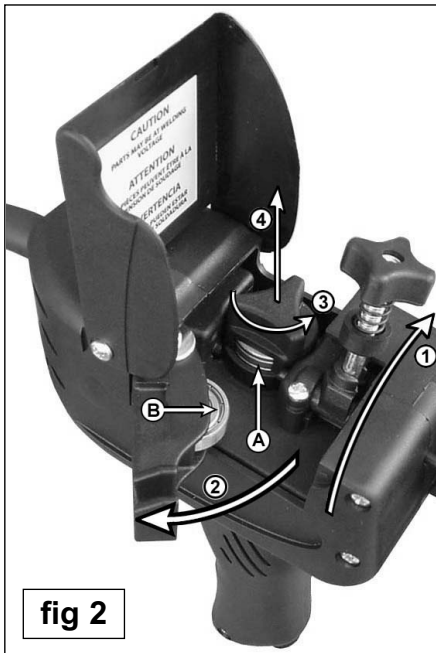
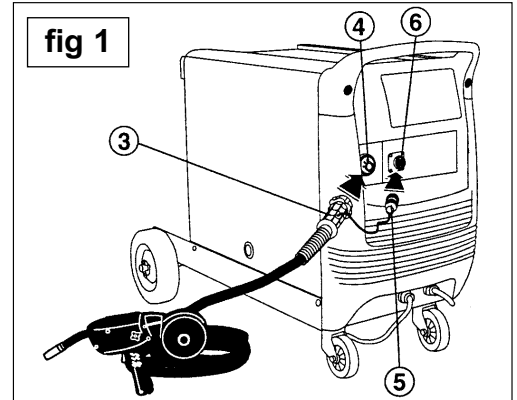
## 2. INTRODUCTION

**IMPORTANT :** These instructions contain information you require to prepare your spool gun for welding, together with maintenance and a trouble shooting section. The instructions are not intended to show you how to become a welder. If 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 practise under supervision on scrap metal as it is only with practice that you will achieve the desired results.

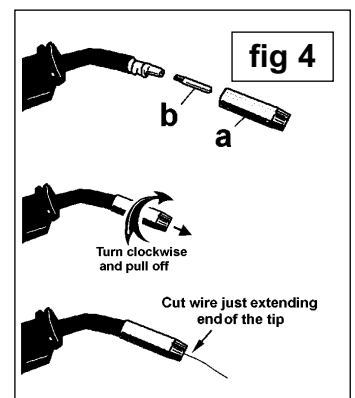
**INTRODUCTION :** The Spool Gun (model no.120/802407) is specifically designed for use with the Sealey Electromig195 when welding aluminium and takes full advantage of the microprocessor controlled facilities of that welder. Once the welding properties in relation to wire size, gas type and material have been entered via the control panel, the wire feed rate is automatically adjusted by the built in microprocessor. The Spool Gun has an integral wire feed drive and a minimum length wire feed path compared to an ordinary torch, thus providing a consistently reliable way of welding aluminium. The gun is light in weight, well balanced and has an on-gun wire feed control for fine adjustments during the welding process.

## 3. SETTING UP THE SPOOL GUN

- 3.0. THE SPOOL GUN SHOULD ONLY BE USED WITH THE SEALEY ELECTROMIG 195 WELDER FOR WHICH IT IS DESIGNED. AS WELL AS READING THESE INSTRUCTIONS THE USER SHOULD RE-READ AND UNDERSTAND THE INSTRUCTIONS ORIGINALLY SUPPLIED WITH THE WELDER.
- 3.1. **GAS SUPPLY.** For welding aluminium use an Argon gas or Argo-Helium mixture. Set the regulator flow rate to 5 - 7 litres/min taking into consideration any draughts which are strong enough to disturb the gas flow. (For information on mounting the gas bottle, attaching the regulator and making the gas connection, refer to the instructions supplied with Electromig195).
- 3.2. **SPOOL GUN CONNECTIONS. (See fig1)** Your spool gun is fitted with a "Euro Connection" quick release connector (3). Line up the pins in the torch connector (3) with appropriate holes on the front panel connector (4), push in and tighten the locking nut. The additional 'control' connector (5) should be attached to the socket (6) on the front panel. The ring that encloses the pins has several ribs around its outer face. Identify the thickest rib and present this to the socket in the '12 o'clock' position. Push the plug home and tighten the locking nut.



- 3.3. **FITTING A REEL OF WIRE. (See fig.3)** MAKE SURE THAT THE WIRE FEED ROLLERS, THE WIRE GUIDE HOSE AND THE CONTACT TIP OF THE SPOOL GUN MATCH THE DIAMETER AND TYPE OF WIRE TO BE USED AND ENSURE THAT THESE PARTS ARE FITTED CORRECTLY. The wire used must have the same characteristics as the material to be welded. Always use an alloy wire (i.e. aluminium/silicium); DO NOT use pure aluminium wire.
- 3.4. First remove the circular tinted plastic cover from the spool holder by undoing the central knurled retainer nut.
- 3.5. Remove the gas cup and torch tip as described below (fig.4).  
 a) Take gun/torch in left hand with the torch tip facing to the right.  
 b) Grasp gas cup 'a' firmly in your right hand. (Cup is a friction fit.)  
 c) Turn gas cup clockwise only and pull cup out to the right.  
 d) Unscrew the copper contact tip 'b' (right hand thread) to remove.  
**⚠ WARNING!** do not turn gas cup anti-clockwise, as this will damage the internal spring.
- 3.6. Open the hinged wire feed cover on the top of the gun body (see fig.5). Reduce the tension on the pressure roller bracket (D) by partially unscrewing the tension knob (E) anticlockwise and slide the retaining arm out of the bracket and into the vertical position (see 1 in fig.2). Hinge the pressure roller bracket out sideways (see 2 in fig.2) to reveal the grooved feed roller (A).
- 3.7. Place the gun on its side on a flat clean surface with the wire reel spindle facing upwards (see fig.3).
- 3.8. Release the end of the wire from the new reel and ensure that the end is cleanly cut and free from burrs. Straighten the first 50/100 mm of the wire and place the wire reel on the surface next to the spool holder as shown in fig.3. (It is easier to feed the wire through the gun first and then place the reel onto the spindle.)
- 3.9. Feed the end of the wire into the flexible black plastic guide hose (see F in fig.3) and push it through until it appears next to the feed roller (G). Guide the end of the wire into the red liner adjacent to the feed roller and continue to push the wire through until it comes out of the gun/torch end.
- 3.10. Lift the wire reel and at the same time take up any slack by pulling the wire at the torch end and push the reel over the spindle (H). Take care not to let the wire uncoil from the reel in loops.
- 3.11. Replace the gas cup and tip as follows: Take torch in left hand and screw contact tip back into place.
- 3.12. Grasp gas cup in right hand, push onto torch head and turn clockwise only.



- 3.13. Check that the wire is properly seated in its groove in the feed roller and then swing the counter roller bracket inwards to make contact with the wire (see D in fig.5).
- 3.14. Swing the wire tension retaining arm downwards and back into the 'U' shaped slot in the counter roller bracket. Turn the wire tension knob clockwise by about 4 turns to apply medium pressure/tension (see E in fig.5)
- 3.15. Close the wire feed cover.
- 3.16. Switch on welder to power level 1 and pull the gun trigger to test that the wire is feeding properly.  
**⚠ 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.**
- 3.17. The wire speed is automatically controlled by the welder but can be adjusted locally by turning the potentiometer protruding from the bottom of the gun handle (see K in fig.3).
- 3.18. Adjust the wire feed tension and clutch pressure if necessary. When the wire is feeding correctly turn off the power and disconnect the welder from the mains supply until it is required.
- 3.19. **CLUTCH ADJUSTMENT.** It is essential that the clutch is adjusted correctly. Depress the gun/torch switch and release it quickly. If the spool overruns it indicates that the clutch is too loose. At the end of the wire reel spindle is a knurled ring (see J in fig.3) that adjusts the 'clutch pressure'. When this ring is turned clockwise the flexible plastic tubing (H) below it 'swells' and grips the inside of the reel. Continue to tighten the clutch ring until a slight braking pressure is felt when the wire is pulled. Test again and re-adjust if necessary until the reel ceases to overrun. **DO NOT over tighten the clutch as this will cause wire feed problems.**
- 3.20. **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.
- 3.21. 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 'E' (see fig.5).
- 3.22. **CHANGING THE SIZE AND TYPE OF WIRE (See fig.2).** When changing the size and type of wire it will be necessary to change or reverse the wire feed roller so that the groove in the roller matches the size of wire being used and is compatible with the type of wire being used. (Also ensure that you are using a compatible torch tip).
- 3.23. Open the wire feed cover. Loosen the wire tension knob and swing the retaining arm upwards.(1)
- 3.24. Move wire tension bracket outwards (2) to reveal the grooved wire feed roller (A).
- 3.25. Take hold of the triangular knob on top of the wire feed roller. Turn it through approximately 90° anticlockwise until it stops (3) and then pull it upwards and off the feed roller (4).
- 3.26. Change or reverse the roller to suit the wire type and diameter you wish to use. When in place it is the uppermost groove in the roller which drives the wire.
- 3.27. Replace the roller retainer. As you push it down onto the shaft and roller the 'wings' at the base of the retainer should be aligned side to side on the gun and the aperture through which the roller protrudes should be facing to the back of the gun. When the retainer is seated down into the casing turn it clockwise through approximately 90° until it stops. The wire feed roller should then be visible in the side of the retainer adjacent to the wire feed path. If the roller is not visible, remove the retainer, turn it through 180° and replace it.

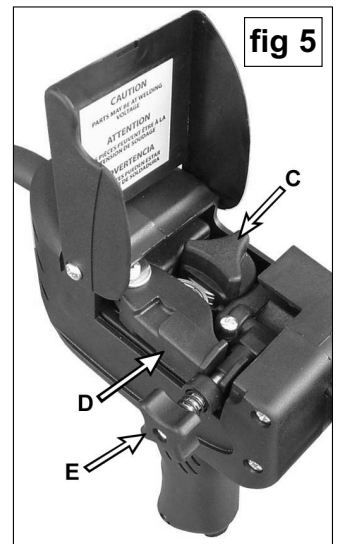


fig 5

#### 4. WELDING PRINCIPLES

- 4.1. **Mig/Mag welding (see fig 6).** The gun consists of a spool holder, switch, liner, gas hose and wire feed system. A spool of welding wire is placed into the spool holder and is automatically fed through to the torch tip. 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 6). The shielding gas also assists heating of the weld. The torch is connected to the positive side of a DC rectifier and the negative clamp is attached to the workpiece.

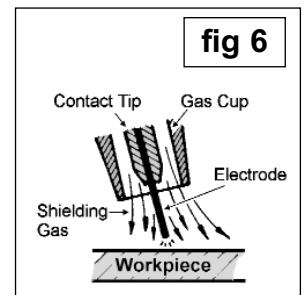


fig 6

#### 5. 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.** If 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, limitations and hazards. Good MIG/MAG welding may only be achieved with continued, supervised practice.
- 5.1. **IMPORTANT.** If welding a car, disconnect the battery or fit an electronic circuit protector. Ensure you read and understand 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.
- 5.2. **Connect the earth clamp to the workpiece.** To ensure a complete circuit, the earth lead must be securely attached to the workpiece 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.
- 5.3. **Turn on the gas.** Adjust the regulator to a flow of 5 - 7 litres/min depending on the material to be welded.
- 5.4. **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.
- 5.5. **Set the main welding parameters.**  
**MATERIAL.** Select aluminium by repeatedly pressing the MATERIAL button until the LED next to **Al** 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.
- 5.6. The read-out on the control panel will normally be showing the *current* programmed for welding. By pressing the dual function button the read-out will display the factory set wire feed rate. Under these conditions the DEFAULT LED will be illuminated. The wire feed rate can be altered by using the potentiometer on the gun handle or the rotational knob below the read-out. The DEFAULT LED will then go out.
- 5.7. **Commence welding** by pressing the trigger. During welding the actual welding *current* will be shown on the read-out.
- 5.8. It is possible to adjust the wire feed rate during welding by using the knurled knob at the base of the handle. As you do this the read-out will display the wire feed setting and then revert to displaying the current as soon as the knob stops moving.
- 5.9. Under critical conditions the wire diameter LED will flash.
- 5.10. When switched off the welder will memorise the parameters selected at the time.
- 5.11. **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 read-out until the spot welding LED lights up above the read-out. 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 gas cup onto the material to be welded (fig 7). 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.
- 5.12. **Programmable parameters.** The following additional parameters can be programmed on the welder:-  
WIRE FEED RATE UP-SLOPE / WIRE BURN-BACK TIME / PRE-GAS TIME. Refer to your Electromig195 manual for further information.

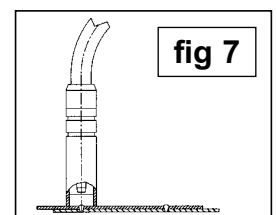


fig 7

## 6. MAINTENANCE

**WARNING!** Disconnect the welder from the mains power supply and then disconnect the Spool Gun from the welder before performing any maintenance or service operations.

- 6.1. Remember to maintain the welder in peak condition as the performance of the spool gun will be affected by the condition of the welder.
- 6.2. Protect Spool Gun cable assembly from mechanical wear. Regularly check the cables and plugs to ensure they are not damaged and also check during welding to ensure that they are not overheating.
- 6.3. **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. Whilst the feed roller is removed blow compressed air through the wire path to remove any debris.
- 6.4. **Changing Wire Feed Roller IMPORTANT:** (Refer to section 3.21) 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.
- 6.5. **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.
- 6.6. **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.

## 7. TROUBLESHOOTING

PROBLEM	POSSIBLE CAUSE	REMEDY
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 gun lead.	Clean or grind contact surface and weld area. Repair or replace earth lead. Repair or replace gun, 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 gun liner. Gas cup (nozzle) or tip defective. Deformed wire.	Adjust tension. Clean the liner using compressed air. If too much dirt, replace the swan neck. Replace gas cup (nozzle) and/or tip. Check roller tension and adjust it if necessary.
6. Wire feeds unevenly.	Dirt, etc, guide hose/swan neck. 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 guide hose/swan neck using 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. Check hoses, connections and torch assembly. Clean.
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 bead.	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 gun 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 gun faster and weave less. Bring gun closer to workpiece.
13. Poor penetration.	Weld current too high. Arc too long.	Increase power and wire speed. Bring gun 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 gun faster. Torch distance should be 8-10mm.
15. Fuse blowing.	Tension too great. Gas cup contact tip clogged.	Release tension (see Section 3). Clean gas cup and contact tip (see Section 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 gun 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.

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

**SPOOL GUN**  
**Models MIG/SGT15 & MIG/SGT15/12**  
 73/23/EEC Low Voltage Directive  
 89/336/EEC EMC Directive



The construction files for these products are held by the Manufacturer and may be inspected, by a national authority, upon request to Jack Sealey Ltd.

Signed by Mark Sweetman

19th November 2002

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