

# SEALEY

## 100A NO-GAS MIG WELDER

MODEL NO: MIGHTYMIG100.V3

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.



Refer to instruction manual



Wear a welding mask



Wear protective gloves



Warning! Electricity Shock hazard



Warning! Keep away from rain



Caution required



Arc rays can burn eyes and injure skin



Electric shock from welding electrodes can kill



Breathing welding fumes can be hazardous to your health



Electromagnetic fields can cause pacemaker malfunction

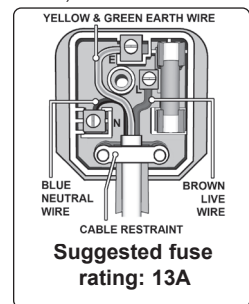


Welding sparks can cause explosions or fire

## 1. SAFETY

### 1.1. ELECTRICAL SAFETY

- ❑ **WARNING!** It is the user's responsibility to read, understand and comply with the following:
- 1.1.1. 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 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.
- 1.1.2. 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 regular intervals.
- 1.1.3. 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.
- 1.1.4. 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 a Portable Appliance Tester (PAT).
- 1.1.5. Ensure that cables are always protected against short circuit and overload.
- 1.1.6. Regularly inspect power supply leads, plugs and all electrical connections for wear and damage. Inspect power connections to ensure that none is loose.
  - 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 the correct capacity fuse. A 13 amp plug may require a fuse smaller than 13 amps for certain products, see fuse rating at right.
  - ✗ **DO NOT** pull or carry the powered appliance by its power supply lead.
  - ✗ **DO NOT** pull power plugs from sockets by the power cable.
  - ✗ **DO NOT** use worn or damaged leads, plugs or connections. Immediately replace or have repaired by a qualified electrician. A U.K. 3 pin plug must be fitted according to the following instructions. (UK only - see diagram at right).
    - Ensure the unit is correctly earthed via a three-pin plug.
    - a) Connect the green/yellow earth wire to the earth terminal.
    - b) Connect the brown live wire to live terminal.
    - c) Connect the blue neutral wire to the neutral terminal.
    - d) After wiring, check that there are no bare wires, that all wires have been correctly connected, that the cable external insulation extends beyond the cable restraint and that the restraint is tight.
- 1.1.7. Cable extension reels. When a cable extension reel is used it should be fully unwound before connection. A cable reel with an RCD fitted is recommended since any product which is plugged into the cable reel will be protected. The section of the cable on the cable reel is important and should be at least 1.5mm<sup>2</sup>, but to be absolutely sure that the capacity of the cable is suitable for this product and for others that may be used in the other output sockets, we recommend the use of 2.5mm<sup>2</sup> section cable.
  - ❑ **WARNING!** Be very cautious if using a generator to power the welder. The generator must be self-regulating and stable with regard to voltage, wave form and frequency. The output must be greater than the power consumption of the welder. If any of these requirements is not met the electronics within the welder may be affected.



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

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

**IMPORTANT! If using welder to full capacity, we recommend a 16amp supply. We recommend you discuss the installation of a 16amp industrial round pin plug and socket with your electrician.**

## 1.2. 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. Unapproved 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 stockist.
- ✓ Locate 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 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 welding.
- ✓ Avoid unintentional contact with the workpiece. Accidental or uncontrolled use of the torch may be dangerous and will wear the nozzle.
- ✓ Keep unauthorised persons away from the work area. Any persons working within the area must wear a protective head shield and gloves.
- ✓ Operators must receive adequate training before using the welder.
- ✓ Stand correctly keeping a good footing and balance, ensure the floor is not slippery and wear non-slip shoes.
- ✗ **DO NOT** operate the welder if it or the cables are damaged and **DO NOT** attempt to fit any unapproved torches or other components to the welder.
- ✗ **DO NOT** get welder wet or use in damp or wet locations or areas where there is condensation.
- ▲ **DANGER! DO NOT weld near flammable solids, liquids or gases and DO NOT weld containers or pipes which have held flammable materials. Avoid welding materials which have been cleaned with chlorinated solvents or welding near such solvents.**
- ✗ **DO NOT** stand welder on a metal workbench, car bodywork or similar.
- ✗ **DO NOT** touch any live metal parts of the torch or electrode while the machine is switched on.
- ✗ **DO NOT** pull the welder by the cable, or the torch. Protect cables from sharp or abrasive items. **DO NOT** bend, strain or 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.
- ✗ **DO NOT** touch the torch or workpiece immediately after welding as they will be very hot. Allow to cool.
- ✗ **DO NOT** operate welder while under the influence of drugs, alcohol or intoxicating medication, or if tired.
- ✓ When not in use store the welder in a safe, dry, childproof area.

## 2. INTRODUCTION

**IMPORTANT:** These instructions contain the information you require to prepare your machine for welding, together with a maintenance and a troubleshooting section. The instructions are not intended to teach you how to weld. If you have no experience, we recommend that you seek training from an expert source. MIG welding is relatively easy, but does require a steady hand and supervised practice on scrap metal, as it is only with continued practice that you will achieve the desired results.

Heavy-duty high output transformer and forced-air cooling to maximize duty cycle performance. Supplied with comfort grip non-live torch, 1.8m earth cable, 0.45kg flux cored wire and 1mm contact tip. Suitable for no-gas operation only. For use with flux-cored wire.

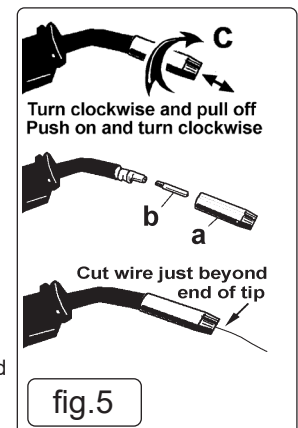
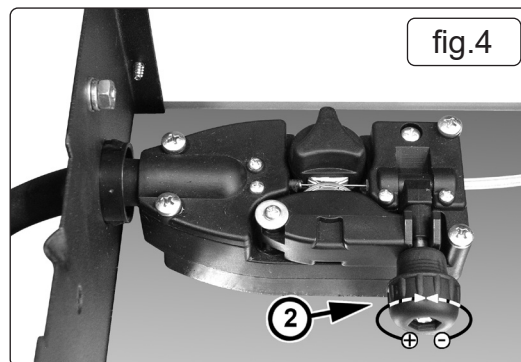
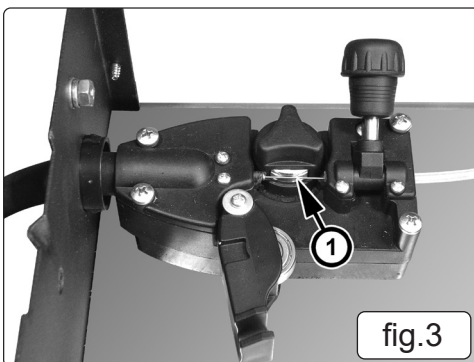
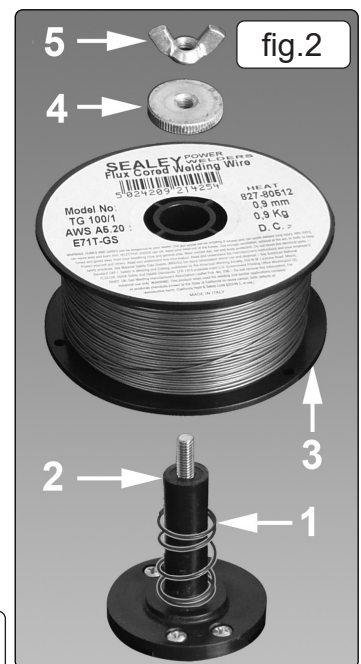
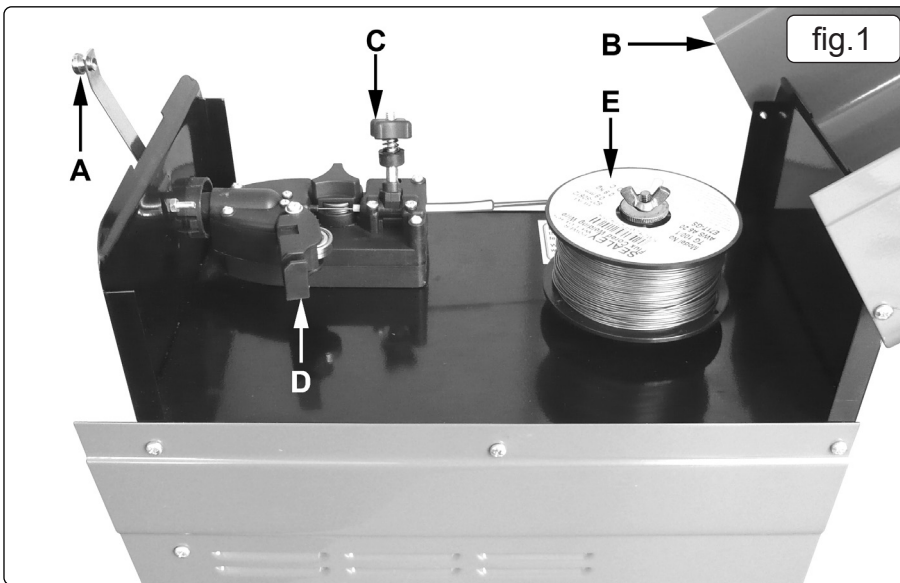
## 3. SPECIFICATION

**Model No:** ..... **MIGHTYMIG100.V3**  
**Welding Current:**..... 55-100A  
**Wire Capacity:** ..... 0.9kg Gasless only  
**Duty Cycle:**..... 60% @ 55A, 20% @ 90A  
**Cooling System:** ..... Forced Air  
**Gas Type:** .....n/a  
**Torch:**..... 1.8m Non-Live  
**Supply:** ..... 230V  
**Absorbed Power:**..... 3kW  
**Case Size:** ..... Compact  
**Gasless Consumables:** .....  
**Flux Cored Wire (0.9kg x Ø0.9mm):**.....TG100/1  
**Replacement Tips 1mm (Pack of 5):** .....TG100/2  
**Note:**..... For use with 0.9kg Gasless Wire Reels only.

## 4. ASSEMBLY

- 4.1. **FIT HANDLE:** Slide handle onto top cover. Secure with screw (19), see Parts Diagram.
- 4.2. **FIT COVER LOCKING SPRING:** Fix Cover Locking Spring (8), see Parts Diagram, to top of front panel. Use screw, washer and spring washer supplied. See also fig.1.A.
- 4.3. **FITTING A REEL OF WIRE**
  - 4.3.1. Depress the silver button in the front of the handle and open the top compartment. See A & B in fig.1. The welder is supplied with a mini spool containing 0.45kg of flux cored wire.
  - 4.3.2. Referring to fig.2, rotate the butterfly nut (5) anti-clockwise and remove it from the threaded spindle together with the pressure disc (4). Leave the spring (1) on the spindle (2).
  - 4.3.3. Place the wire reel (3) over the spindle and down onto the spring ensuring that the wire will withdraw from the spool in a forwards direction and on the same side of the compartment as the wire feed unit.

- 4.3.4. Push lightly down on the top of the reel of wire and screw the pressure disc (4) onto the end of the spindle and down onto the top of the wire reel. The reel take off pressure should be set to provide a mild braking effect to prevent overrun where loose coils of wire form on the reel. **DO NOT** over tighten the pressure disc as too much braking will conflict with the wire tension set on the wire drive unit.
- 4.3.5. Lock the position of the pressure disc by screwing the butterfly nut (5) down on top of it.
- 4.3.6. Referring to fig.1 turn the knob on the wire lock screw (C) anti-clockwise and lift it up and away from the pressure roller moulding.
- 4.3.7. Swing the pressure roller moulding (D) away from the drive roller.
- 4.3.8. Release the wire from the spool (**DO NOT** allow wire to uncoil) and straighten 40-50mm of wire and gently push through the flexible plastic guide and through the 0.9mm feed roller groove (fig.3.1) and into the torch liner.



- 4.3.9. Referring to fig.4, move the pressure roller moulding back round onto the grooved drive wheel and swing down the wire lock screw to lock it in place. See section 4.3 regarding wire tension.
- 4.3.10. **Feeding the wire through to the torch.** (See fig.5) Remove gas cup (a) and contact tip (b) from end of torch as follows:
  - a) Take torch in left hand with the torch tip facing to the right.
  - b) Grasp gas cup firmly in your right hand.
  - c) Turn gas cup clockwise only and pull cup out to the right.
  - WARNING! DO NOT** turn gas cup anti-clockwise, as this will damage internal spring.
  - d) Unscrew the copper contact tip (right hand thread) to remove.
- 4.3.11. Check welder is switched OFF and that the earth clamp is away from the torch tip. Connect the welder to the mains power supply and set the voltage switch to MIN.
- 4.3.12. Set the wire speed knob to position 5 or 6. Keeping the torch cable as straight as possible and press the torch switch. The wire will feed through the torch.
- 4.3.13. When wire has fed through, switch welder off, **unplug from mains.**
  - a) Take torch in left hand, slide the contact tip over the wire and screw it back into place.
  - b) Grasp gas cup in right hand, push onto torch head and turn clockwise only.
  - WARNING! DO NOT** turn gas cup anti-clockwise, as this will damage internal spring.
  - c) Cut wire so that it is just protruding from the cup.
- 4.4. **SETTING WIRE TENSION**  
**IMPORTANT:** You must set the correct tension, too little or too much tension will cause problematic wire feed and result in a poor weld.
  - 4.4.1. Correct tension between the rollers is checked by slowing down the wire between gloved fingers. If the pressure roller skids the tension is correct. Try to use the lowest tension possible as too high a tension will deform the wire. When you have completed welding allow the welder to cool before storing in a safe, dry place. Note: Damaged torches and cables are not covered under warranty.

## 5. WELDING PRINCIPLES

**IMPORTANT:** These instructions are not intended to teach you how to weld. If you have no experience, we recommend that you seek training from an expert source. MIG welding is relatively easy, but does require a steady hand and supervised practice on scrap metal, as it is only with continued practice that you will achieve the desired results.

### 5.1. MIG/MAG WELDING

5.1.1. Welding wire is automatically fed through an insulated liner to the tip of the torch. The torch consists of a switch, liner, and control cable. The switch activates the wire feed roller. Releasing the switch stops wire feed. The weld current is transferred to the electrode (the wire) from the contact tip at the torch end. The current to the electrode is set using the rocker switch on the front of the control panel. Wire speed must be adjusted according to current output using the rotary control positioned to the left of the control panel. The higher the current the faster the wire speed.

### 5.2. PREPARATION FOR WELDING

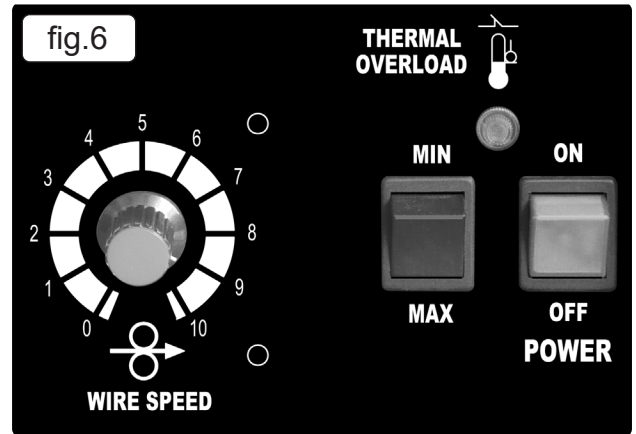
**IMPORTANT! BEFORE YOU COMMENCE, MAKE SURE THE MACHINE IS SWITCHED OFF AT THE MAINS. IF WELDING A CAR, DISCONNECT THE BATTERY OR FIT AN ELECTRONIC CIRCUIT PROTECTOR. ENSURE THAT YOU READ, UNDERSTAND AND APPLY THE SAFETY INSTRUCTIONS IN SECTION 1.**

5.2.1. To ensure a complete circuit, the negative lead must be securely attached to the workpiece close to the weld area. Best connection is obtained by grinding the point of contact on the workpiece before connecting the clamp.

5.2.2. The weld area must be free of paint, rust, grease, etc.

### 5.3. THERMAL PROTECTION, see fig.6

5.3.1. Should the welder become overheated due to prolonged use beyond the stated duty cycle the thermal protection will cause the welder to cut out and the orange light on the front panel will illuminate. Wait for fifteen minutes for the welder to cool down at which time it will reconnect automatically.



## 6. RATINGS PLATE

On the front panel of the welder 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 - Single phase transformer.
- 3 - Symbol indicates welding with a continuous flow of welding wire.
- 4 - Symbol for Single-phase AC supply.
- 5 - Rating of internal protection provided by casing.
- 6 - Output U0 Rated minimum and maximum no load voltage.  
I2, U2 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 U1 Rated supply voltage and frequency.  
I1max Maximum current.  
I1eff Maximum effective current.
- 8 - Welding current range.
- 9 - Serial Number. Specifically identifies each welder.

MIGHTYMIG100		Serial No.		9
1~  1~		EN 60974-1: 2012		1
3	~ 50Hz	Welding Current Range: 55A ---- 100A		8
		X	20% 60%	
6	S U <sub>0</sub> = 24-32V	I <sub>2</sub>	90A 55A	6
		U <sub>2</sub>	18.5V 16.75V	
4	U <sub>1</sub> = 230V	I <sub>1max</sub> = 13 A	I <sub>1eff</sub> = 5.8 A	7
5	IP21S			

## 7. MAINTENANCE

▲ **DANGER! Unplug the welder from the mains power supply before performing maintenance or service.**

### 7.1. WIRE FEED UNIT

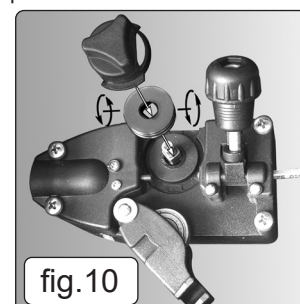
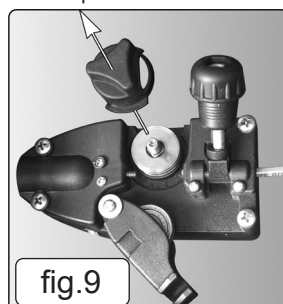
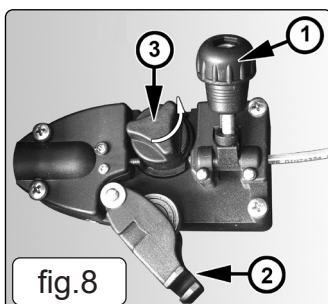
7.1.1. Check the wire feed unit at regular intervals. The feed roller wire guide plays an important part in obtaining consistent results. Poor wire feed affects the weld. Clean the rollers weekly, especially the feed roller groove, removing all dust deposits.

### 7.2. TORCH

7.2.1. Protect the torch cable assembly from mechanical wear. Clean the liner from the machine forwards by using compressed air. If the liner is blocked it must be replaced.

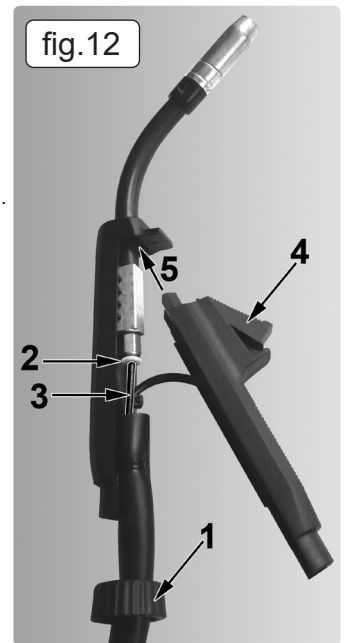
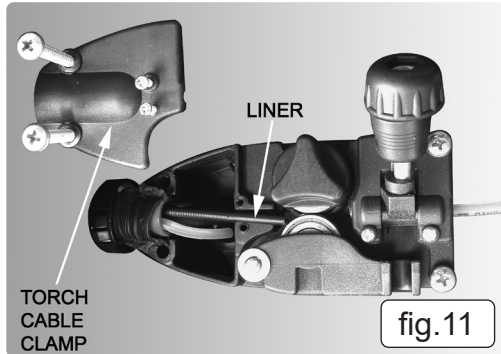
### 7.3. TURNING FEED ROLLER IMPORTANT: TURN THE FEED ROLLER TO SUIT THE WIRE SIZE.

7.3.1. There are two grooves on the feed roller, 0.6mm and 0.9mm. Always have the groove that is being used on the outside of the roller (nearest to you). To turn the feed roller first loosen the wire tension knob and move it into its up position (see fig.8-1) then move the tensioning roller assembly to its down position (see fig.8-2). Take hold of the triangular knob on the roller retainer and rotate it 90° anticlockwise to release it as shown in fig.8.3. Now pull the roller retainer off the drive spindle to reveal the roller as shown in fig.9.





- 7.3.2. Pull the roller off the drive spindle, flip it over and put it back on the drive spindle. (See fig.10) The groove size you require should now be visible on the face of the roller. Push the roller retainer back onto the drive spindle with the opening facing right. Ensure that the flanges at the base of the retainer, seat fully into the circular recess in the main moulding and then rotate the retainer through 90° to lock it in place.
- 7.4. CONTACT TIP** (to remove tip follow steps in 4.3.10.):
- 7.4.1. The contact tip is a consumable item and must be replaced when the bore becomes enlarged or oval. The contact tip **MUST** be kept free from spatter.
- 7.5. GAS CUP** (to remove cup follow steps in 4.3.10.):
- 7.5.1. 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 expensive machine repairs. To keep the contact tip free from spatter, we recommend the use of anti-spatter spray (MIG/722308) available from your Sealey stockist.
- 7.6. REPLACING WIRE LINER**
- 7.6.1. A worn or damaged wire liner will seriously affect the performance of the welder and should be immediately replaced. First wind the wire back onto the spool and secure it. Remove the four screws securing the torch cable clamp to the wire feed unit (fig.11) and take off the clamp.
- 7.6.2. Open the torch case by gripping the torch with one hand and turning the grooved ring at the base of the torch anticlockwise until it stops, then pull it off the torch onto the torch cable. See fig.12-1.
- 7.6.3. Take hold of the back end of the moulding which contains the switch and pull it outwards and downwards to release it from the other moulding as shown in fig.12.
- 7.6.4. Push the liner lock ring (2) firmly towards the brass nut and withdraw the liner from the nut. With the torch cable as straight as possible pull the liner from the torch cable.
- 7.6.5. Insert the new liner into the torch cable and secure it in the wire drive unit by replacing the torch cable clamp. See fig.11. Insert the other end of the liner through the locking ring and fully into the brass nut in the torch head, see 2 in fig.12.
- 7.6.6. Check that the torch inner parts are properly seated in their respective mouldings then close the torch by inserting the tongue on the switch moulding (fig.12-5) into the slot at the front of the other moulding. Swing the switch moulding downwards and forwards until both parts have closed around the torch cable. Slide the ribbed ring (fig.12-1) onto the end of the torch handle and turn it clockwise to lock.



## 8. TROUBLESHOOTING

PROBLEM	POSSIBLE CAUSE	REMEDY
Weld current interrupted	Overheating protection activated due to overload	Protection automatically resets when transformer has cooled (approx. 15 min)
No weld current	Rectifier blown	Replace rectifier
No weld current	Bad connection between clamp and workpiece	Clean or grind contact surface and weld area
	Break in earth lead	Repair or replace earth lead
	Break in torch lead	Repair or replace
Feed motor not working	Gear damaged or worn	Replace gears
	Motor defective	Replace motor (Contact service agent)
Wire does not feed, feed roller rotates	Pressure roller improperly adjusted	Adjust tension
	Dirt, copper, dust, etc. have collected in torch liner	Clean the liner from the machine forward. Use compressed air.
	Gas cup (nozzle) or tip defective	Replace gas cup (nozzle) and/or tip. Check roller tension (Section 3)
	Deformed wire	Adjust roller tension
Wire feeds unevenly	Dirt, etc. in liner	Clean the liner from the machine forward using compressed air
	Gas cup (nozzle) or tip defective	Replace gas cup (nozzle) and/or tip
	Gas cup (nozzle) spattered	Clean or replace gas cup (nozzle)
	Feed roller groove clogged	Clean feed roller
	Feed roller groove deformed	Replace feed roller
	Pressure roller tension incorrect	Adjust tension

Unstable arc	Incorrect settings	Check settings
	Impurities in weld area	Clean and/or grind workpiece
	Worn or defective gas cup (nozzle)	Replace gas cup (nozzle)
Porous weld	Rusty/dirty joints	Clean or grind the workpiece
	Torch too far from, or at wrong angle to, workpiece	Gas cup to workpiece should be 8-10mm. Torch angle approx 75°
Wire sticking in gas cup (nozzle)	Worn or defective gas cup (nozzle)	Replace gas cup (nozzle)
	Wire deformed	Check roller tension
	Wire speed too slow	Increase wire speed
Irregular weld head	Torch incorrectly held	Use correct torch angle
	Wire weaving in weld pool	Check roller tension and adjust
Weld bead too narrow and raised	Weld current too low	Increase power and wire speed
	Weld speed too fast	Move torch slower and weave a little more
Weld bead too wide	Weld current too high	Increase power and wire speed
	Weld speed too slow	Move torch faster and weave less
Poor penetration	Weld current too low	Increase current and wire speed
	Arc too long	Bring torch closer to workpiece
Excessive penetration	Weld current too high	Decrease current and wire speed
	Weld speed too slow	Move torch faster
	Incorrect distance of torch to workpiece	Torch distance should be 8-10mm



#### 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.



#### 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. Please note that other versions of this product are available. If you require documentation for alternative versions, please email or call our technical team on [technical@sealey.co.uk](mailto:technical@sealey.co.uk) or 01284 757505.

**Important:** No Liability is accepted for incorrect use of this product.

**Warranty:** Lifetime guarantee on Transformer - Comprises 1 year unconditional parts and labour on all parts, followed by a lifetime guarantee (parts and labour) conditional on registering your purchase with us online at [www.sealey.co.uk](http://www.sealey.co.uk).

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