

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: 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. PLEASE KEEP INSTRUCTIONS SAFE FOR FUTURE USE.


1. SAFETY INSTRUCTIONS

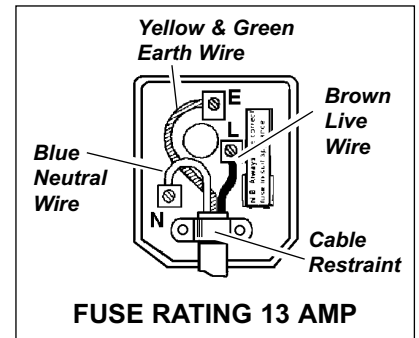
1.1. ELECTRICAL SAFETY

WARNING! It is the responsibility of the owner and the operator to read, understand and comply with the following:

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

- 1.1.1. The **Electricity at Work Act 1989** requires all portable electrical appliances, if used on business premises, to be tested by a qualified electrician, using a Portable Appliance Tester (PAT), at least once a year.
- 1.1.2. The **Health & Safety at Work Act 1974** makes owners of electrical appliances responsible for the safe condition of those appliances and the safety of the appliance operators. **If in any doubt about electrical safety, contact a qualified electrician.**
- 1.1.3. Ensure that the insulation on all cables and on the appliance is safe before connecting it to the power supply. See 1.1.1. and 1.1.2. and use a Portable Appliance Tester.
- 1.1.4. Ensure that cables are always protected against short circuit and overload.
- 1.1.5. Regularly inspect power supply cables and plugs for wear or damage and check all connections to ensure that none is loose.
- 1.1.6. **Important:** Ensure that the voltage marked on the appliance matches the power supply to be used and that the plug is fitted with the correct fuse - see fuse rating at right.
- 1.1.7. **DO NOT** pull or carry the appliance by the power cable.
- 1.1.8. **DO NOT** pull the plug from the socket by the cable.
- 1.1.9. **DO NOT** use worn or damaged cables, plugs or connectors. Immediately have any faulty item repaired or replaced by a qualified electrician. When a BS 1363/A UK 3 pin plug is damaged, cut the cable just above the plug and **dispose of the plug safely.** Fit a new plug according to the following instructions (UK only).
 - a) Connect the **GREEN/YELLOW** earth wire to the earth terminal 'E'.
 - b) Connect the **BROWN** live wire to the live terminal 'L'.
 - c) Connect the **BLUE** neutral wire to the neutral terminal 'N'.
 - d) **After wiring, check that there are no bare wires, that all wires have been correctly connected, that the cable outer insulation extends beyond the cable restraint and that the restraint is tight.**

Double insulated products, which are always marked with this symbol , are fitted with live (brown) and neutral (blue) wires only. To rewire, connect the wires as indicated above - **DO NOT** connect either wire to the earth terminal.
- 1.1.10. Products which require more than 13 amps are supplied without a plug. In this case you must contact a qualified electrician to ensure that a suitably rated supply is available. We recommend that you discuss the installation of an industrial round pin plug and socket with your electrician.
- 1.1.11. If an extension reel is used it should be fully unwound before connection. A reel with an RCD fitted is preferred since any appliance plugged into it will be protected. The cable core section is important and should be at least 1.5mm², but to be absolutely sure that the capacity of the reel is suitable for this product and for others which may be used in the other output sockets, we recommend the use of 2.5mm² section cable.



1.2 GENERAL SAFETY

WARNING: 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 recommended parts and accessories only. (Non recommended parts may be dangerous and will invalidate the warranty).
- ✓ Check the gas cup and contact tip and spray regularly with anti-spatter spray available from your Sealey dealer.
- Note: Read instructions 3.4.6. carefully.**
- ✓ Use an air hose to regularly blow out any dirt from the liner, and keep the welder clean for best and safest performance.
- ✓ Locate the welder in an adequate working area for its function, and ensure the area is well ventilated. Keep working area clean and tidy and free from unrelated materials. Also ensure the working area has adequate lighting.
- WARNING:** use a welding head shield to protect your eyes against ultraviolet rays given off by the electric arc, also wear safety welding gauntlets.
- ✓ Stand correctly keeping a good footing and balance, and ensure the floor is not slippery and wear non slip shoes.
- ✓ Remove ill fitting clothing, remove ties, watches, rings, and other loose jewellery, and contain long hair.
- ✗ DO NOT store gas cylinders in areas where temperature exceeds 50°C, and DO NOT puncture or damage the gas cylinder.
- ✗ DO NOT use the welder in damp or wet locations.
- DANGER!** DO NOT weld near inflammable materials, solids, liquids, or gases.
- ✗ DO NOT operate welder while under the influence of drugs, alcohol or intoxicating medication, or if fatigued.
- ✗ DO NOT operate the welder if it or its cables are damaged.
- ✗ DO NOT allow untrained persons to operate the welder, and keep children and unauthorised persons away from the working area.
- ✗ DO NOT pull the welder by the cable, or the torch, and DO NOT bend the torch.
- ✓ Turn voltage switch to "0" (off) when not in use and unplug from the mains power supply. Store welder in a safe, clean, dry, childproof area.

2. INTRODUCTION & SPECIFICATION

- 2.1. This Manual contains instructions to assist you in preparing your Mig Set for welding, together with information on maintenance, and trouble shooting. Read manual carefully in order to get the best results from your machine. These instructions are not intended to show you how to be an expert welder. It is with continued practice that you will achieve the desired results. Mig welding requires a steady hand, and time spent practising with scrap metal will be rewarded when you progress to an actual workpiece.
- 2.2. The MIG190 is a compact power source with integral wire feed which protects the wire from dust and dirt (especially in Body Shops). It is suitable for welding with either CO₂, Argon/CO₂ mix or Argon gas. The unit has a forced air cooling system to slow transformer heating in order to increase the duty cycle and a non live torch to prevent the risk of accidentally striking an arc. Your Mig is designed to operate with two diameters of welding wire, 0.6mm, & 0.8mm. (We recommend that 0.8mm wire is used for welding stainless steel and aluminium).

MODEL IS EQUIPPED WITH: ✓ Torch, ✓ Mini reel of 0.6mm wire, ✓ Argon/CO₂ regulator, ✓ Bull nose adaptor ✓ Gas hose.

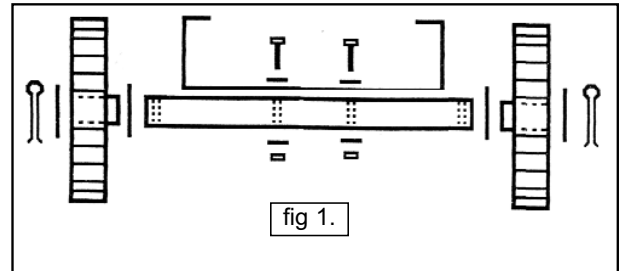
SPECIFICATION.	
Duty Cycle	.100% @ 35A
	.60% @ 80A
	.20% @ 110A
	.18% @ 120A
	.13% @ 155A
Power efficiency	4.5 KVA
Wire capacity	.15kg
Power input	.230V - 1ph
Weight	.61kg

3. ASSEMBLY

To fit the mains power plug see safety instructions (Chapter 1).

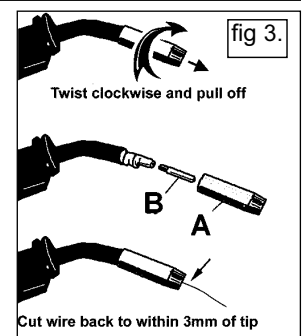
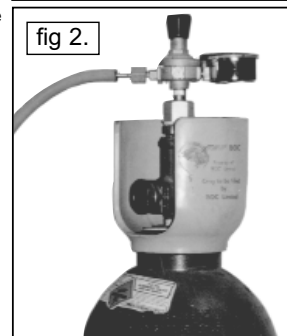
3.1. Wheel Assembly

- 3.1.1. Turn machine upside down and fit the front caster wheels using the bolts and washers provided.
- 3.1.2. Fit the rear wheels to the gas cylinder carrier using the nuts, bolts and washers provided, as shown in fig.1.



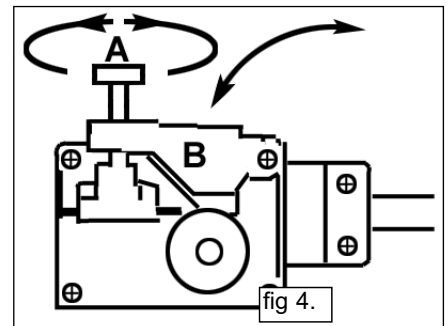
3.2. Connecting the gas cylinder

- 3.2.1. When using Argon or Argon mixtures, you will need to use the "bull nose adaptor". If you intend to use CO₂ gas the regulator will fit directly onto the cylinder. Fit the bull nose adaptor to the cylinder and tighten with a spanner.
- 3.2.2. Fit the gas regulator on the bull nose adaptor and connect it to the machine gas hose (fig.2).
- 3.2.3. Set the regulator flow rate to 5-8 litres/min depending on the material to be welded, and whether there are draughts which are strong enough to disturb the gas flow.



3.3. Fitting a reel of wire - Wire capacity: (Mild Steel). 5 - 15 kilos.

- 3.3.1. To fit a 5kg reel, remove the plastic split sleeve from the spindle. Push the reel of wire onto the spindle ensuring the locating pin engages in the hole in the reel and that the wire feeds off the top of the reel. Fit the plastic split sleeve ensuring the flange end is against the reel and that the sleeve is retained by the plastic clip on the centre spindle.
- 3.3.2. To fit a 15kg reel, remove the plastic split sleeve from the spindle. Push the reel of wire onto the spindle ensuring the locating pin engages in the hole in the reel and that the wire feeds off the top of the reel. Ensure that the reel is retained by the plastic clip on the centre spindle.
- 3.3.3. Remove the wire feed knob, fig.4.A and push the counter roller bracket fig.4.B upwards and away from the grooved drive roller.
- 3.3.4. Ensure that the correct size of drive roller is installed and that the roller is the right way round to drive the chosen wire diameter. Refer to section 6.1.
- 3.3.5. Release the wire from the top of the reel and keep a slight tension on it to prevent coils coming off the reel. Straighten the first 50mm of the wire and feed it into the flexible hose, fig.5.A over the grooved drive roller, fig.5.B and into the torch liner collet, fig.5.C.
- 3.3.6. Now hinge the counter roller bracket back down onto the wire and secure it by fitting the wire feed knob removed in paragraph 3.3.3. Turn the knob clockwise by 2 or 3 turns to exert medium pressure.
- 3.3.7. Before feeding the wire through to the torch remove the gas cup, fig.3.A and contact tip, fig.3.B from end of torch as follows:

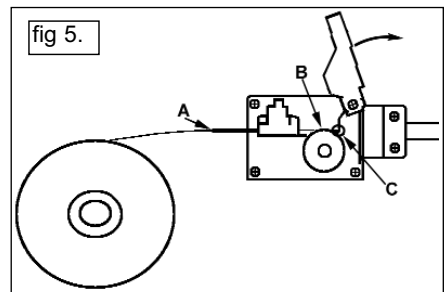


- a) Take torch in left hand with the torch tip facing to the right.
- b) Grasp gas cup firmly in your right hand.
- c) Turn gas cup **clockwise only** and pull cup out to the right.

☐ **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.
- 3.3.8. Check welder is switched off "0", 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 one.
- 3.3.9. Set the wire speed knob to approximately half full rate. Keeping the torch cable as straight as possible, press the torch switch. The wire will feed through the torch.

- 3.3.10. When wire has fed through, switch welder off, unplug from mains.
- a) Take torch in left hand and screw contact tip back into place feeding the wire through the centre hole. Cut the wire back to within 3mm of the tip.
- 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 the cup.



3.4. Setting wire tension

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

- 3.4.1. The wire tension mechanism should only apply sufficient tension to the wire to successfully drive it out of the torch. Too much tension will deform the wire causing wire feed problems and the possible blowing of a fuse on the printed circuit board. Too little tension will result in the wire driving unevenly or not at all. To test for the correct tension wear welding gloves and attempt to momentarily slow the wire down as it emerges from the torch. If the wire stops immediately the tension is too low. If the wire cannot be stopped the tension is too high. If the upper roller slows down as the wire is gripped then the tension is correct. **NOTE:** Torches and liners damaged as a result of incorrect wire tension settings are not covered by warranty.

☐ **WARNING!** When testing the wire tension as described above the wire emerging from the torch is live and should be directed away from the welding unit and any other metallic / conductive materials in the area. Welding gloves must be worn during this operation.

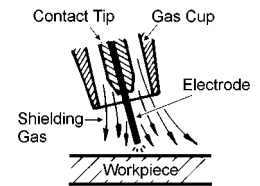
3.5. Setting up drive roller / access for maintenance.

- 3.5.1 The drive roller is reversible and has two drive grooves on it, one for 0.6mm wire and one for 0.8mm wire. When the roller is in place it is always the inside groove that accepts the welding wire. Each groove size is stamped onto the opposite face of the roller such that the size of the groove in use is visible.
- 3.5.2 To access the drive roller, first remove the wire feed knob and push the counter roller bracket upwards and away from the drive roller. Using a hex key, undo the screw in the roller, then pull it off the drive spindle and reverse it and/ or clean it as necessary. Secure the roller onto the drive spindle by tightening the screw in the roller.

4. WELDING PRINCIPLES & PREPARATION

4.1. Mig/Mag Welding.

A spool of welding wire is positioned on the welder's spool holder and automatically fed through an insulated liner in the torch to the tip. The torch assembly consists of a switch, liner, gas hose, and control cable. The switch activates the wire feed roller and the gas flow. Conversely, releasing the switch stops the wire feed and gas flow. The weld current is transferred to the electrode (the wire) from the contact tip at the end of the torch. A gas cup fits over the contact tip to direct the gas flow towards the weld ensuring that the arc welding process is shielded from oxidising air contaminants. The shielding gas also assists heating of the weld materials. The torch is connected to the positive side of a DC rectifier, and the negative clamp is attached to the workpiece.



4.2. Spot Welding.

Remove the gas cup and fit a spot welding gas cup (Sealey Part No 120/722150). Turn the voltage to the highest setting allowed by your machine. Drill a small hole in the top plate. Push the spot gas cup onto the material to be welded. 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 and hold it for 2 to 3 seconds. The wire will feed through during the allotted time and create the weld.

4.3. 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 YOU HAVE READ AND UNDERSTOOD THE ELECTRICAL SAFETY INSTRUCTIONS IN CHAPTER 1.

4.3.1. Connecting the Earth Lead

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.
- If welding a vehicle, disconnected or fit a "Electronic Circuit Protector" available from your Sealey dealer.

4.3.2. Wire feed switch controls the speed of the wire feed. In principle, the lower the amperage number the slower the wire speed.

4.3.3. To weld mild steel, CO2 gas is suitable for most tasks where spatter and the high build up of weld do not pose a problem.

To achieve a spatter free and flat weld however, **you must use an Argon/CO2 mixture.**

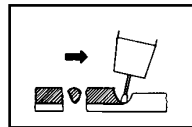
4.3.4. To weld aluminium use: ✓ Argon gas, ✓ 0.8mm contact tip (AK957), ✓ 0.8mm aluminium wire.

Note: Ensure you feed the wire through the correct sized groove in the feed roller (see 6.3).

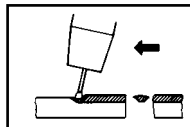
5. VARIOUS WELDING METHODS

The position of the torch, its angle and direction of travel in relation to the workpiece is essential for the appearance and quality of the weld.

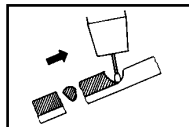
Illustrations demonstrate various positions and directions.



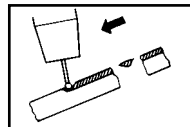
Rightward Welding



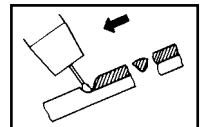
Leftward Welding



Vertical Rightward



Downward leftward



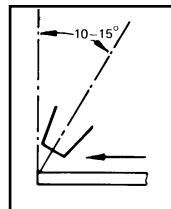
Down Rightward

Welding in general

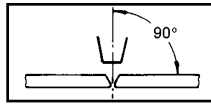
Welding with a long arc reduces penetration and widens the arc. This in turn results in more spatter.

A long welding arc can be appropriate for welding butt joints in thin materials.

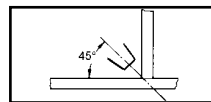
Welding with a short arc (at the same weld settings) results in greater penetration and a narrower weld and reduces the amount of spatter.



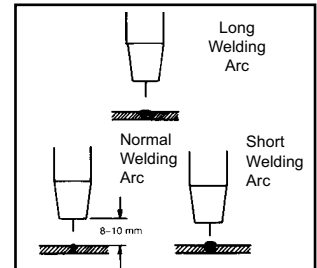
1. Direction of Welding



3. Butt Weld



3. Fillet Weld



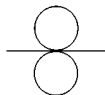
IMPORTANT: Should you have no welding experience, we recommend you seek training from an expert source to ensure your own personal health and safety. Good mig welding may be achieved only with continued supervised practice.

GUIDE TO RATINGS PLATE AND SYMBOLS (For actual ratings of your model refer to front panel.

For further clarification refer to British Standard EN 60974-1)

Single Phase Transformer and Rectifier ▼

International standard relating ▼ to moisture ingress.



Wire feed device / control

MIG/MAG welding symbol ▶

Indicates a welding powersource suitable for supplying power to welding operations carried out in an environment with increased hazard of electric shock. ▼



Rated maximum supply current ▶

Power efficiency ▶

Power factor ▶


INSULATION CLASS: H	PROTECTION: IP21					N°	ED
	COOLING: F	THERMAL PROTECTION			U ₂₀		
	1	2	3	4	5	190A Max.	
Duty Cycle ▶	ED%	100	60	20	18	13	%
Rated weld current ▶	I ₂	35	80	110	120	155	A
Conventional load voltage ▶	U ₂	16	18	21	22	24	V
Mains supply ▶	M1 / 50Hz						
	1	2	3	4	5		
Rated maximum supply current ▶	I ₁	3.5	4.5	10	18	23	A
Power efficiency ▶	PA _{KVA}	1.0	1.8	2.8	3.5	4.5	KVA
Power factor ▶	COS φ	0.87	0.89	0.90	0.91	0.92	

6. MAINTENANCE





- 6.1. **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 dust deposits. (See section 3.5)
- 6.2. **Torch** Protect the torch cable assembly from mechanical wear. Clean the liner from the machine forwards by using compressed air. If the liner is clogged it must be replaced.
- 6.3. **Turning or Changing the Feed Roller** There are two grooves on the feed roller, 0.6mm and 0.8mm. Always use the groove on the inside of the roller, (the groove furthest from you). (See section 3.5) **IMPORTANT:** Adjust the feed roller to the corresponding wire size.
- 6.4. **Contact Tip (to remove tip follow steps in 3.3.7. and to replace 3.3.10. a & b very carefully).** 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.
- 6.5. **The Gas Cup (Conical Nozzle) (to remove cup follow steps in 3.3.7. and to replace 3.3.10. a & b very carefully).** 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 available from your Sealey Dealer. We also recommend that you keep spare tips and gas cups in stock.
- 6.6. **Replacing the Liner**
Wind the wire back on to the spool and secure it. Unscrew the torch from the machine and undo the brass nut. The liner should now be visible. Pull it out and replace with a new one.

7. TROUBLESHOOTING

PROBLEM	POSSIBLE CAUSE	REMEDY (Numbers refer to chapter and item heading)
1. Power source stops	Overheating protection activated due to overload	Unit automatically resets when transformer has cooled (about 15 min).
2. No weld current, fuse blowing in 13amp plug	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.
4. Feed motor not working, lamp is on	Gear damaged or worn Motor defective	Replace gears. Replace motor (Contact service agent).
5. Wire does not feed, feed roller rotates	Pressure roller improperly adjusted Dirt, copper, dust, etc, have collection in torch liner Gas cup (Nozzle) defective Deformed wire	Adjust tension. (Chapter 3). Clean the liner from the machine forward. Use compressed air. If too much dirt, replace the liner. (Chapter 6). Replace gas cup (nozzle) and check tip. (Chapter 3). Check pressure roller tension & adjust if necessary (Chapter 3).
6. Wire feeds unevenly.	Dirt, etc, in liner Gas cup (Nozzle) or contact tip defective Gas cup (Nozzle) spattered Feed roller groove clogged Feed roller groove deformed Wrong tension	Clean the liner from the machine forward. Use compressed air. Replace gas cup (nozzle) or contact tip (Chapter 3). Clean or replace gas cup (nozzle). (Chapter 3). Clean feed roller. (Chapter 3). Replace feed roller. (Chapter 6). Adjust tension. (Chapter 3).
7. Unstable arc.	Incorrect settings Impurities in weld area Worn or defective gas cup (nozzle)	Use recommended settings. (Chapter 5). Clean or grind weld area. (Chapter 4). Replace gas cup (nozzle) and check tip. (Chapter 3).
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	Open gas cylinder, regulate gas flow. Clean or replace cup. (Chapter 3.). Screen off welding site or increase gas flow. Clean or grind. (Chapter 4). The distance from gas cup to workpiece should be 8-10mm and torch angle 60°. Check hoses, connections and torch assembly. Press the gas cup in correction position.
9. Wire sticking in contact tip or gas cup (nozzle)	Worn or defective gas cup (nozzle) Electrode deformed Wire speed too slow	Replace gas cup (nozzle). (Chapter 3). Check pressure roller tension. (Chapter 3). See recommendations for wire speed. (Chapter 4).
10. Irregular weld head	Torch incorrectly held Wire weaving in weld pool	Use torch angle 60°. (Chapter 5). Check pressure roller tension & adjust as needed. (Chapter 3).
11. Weld bead too narrow and raised	Weld current too high Weld speed too low	Increase voltage and wire speed. (Chapter 4). 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 voltage and wire speed. (Chapter 4). Move torch faster and weave less. Bring torch closer to workpiece.
13. Poor penetration	Weld current too high Arc too long	Increase voltage and wire speed. (Chapter 4). Bring torch closer to workpiece.
14. Excessive penetration	Weld current too high Weld speed too slow Incorrect distance of torch to workpiece	Decrease voltage and wire speed. (Chapter 4). Move torch faster. Torch distance should be 8-10mm. (Chapter 5).
15. Fuse blowing	Tension too great Gas cup contact tip clogged	Release tension. (Chapter 3.). Clean gas cup and contact tip. (Chapter 6).

<p>Model: MIG190 73.23/EEC Low Voltage Directive (S.I. 1994/3260) 89/336/EEC EMC Directive (S.I. 1992/2372 & Amendments).</p>	<p>Declaration of Conformity We, the sole importer into the UK, declare that the product listed below is in conformity with the following standards and directives.</p> <p>The construction file for this product is held by the Manufacturer and may be inspected by a national authority by contacting Jack Sealey Ltd</p> <p>Signed by Mark Sweetman  16th January 2003</p> <p>CE</p> <p>For Jack Sealey Ltd. Sole importer into the UK of Sealey as Power Welders</p>
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NOTE: It is our policy to continually improve products and as such we reserve the right to alter data, specifications and component parts without prior notice.
IMPORTANT: No liability is accepted for incorrect use of product. **WARRANTY:** Guarantee is 12 months from purchase date, proof of which will be required for any claim. **INFORMATION:** Call us for a copy of our latest catalogue on 01284 757525 and leave your full name and address including your postcode.

<p>SEALEY POWER WELDERS</p>	<p>Sole UK Distributor, Sealey Group, Bury St. Edmunds, Suffolk.</p>	 01284 757500	 01284 703534	 sales@sealey.co.uk	 www.sealey.co.uk
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