

## DESCRIPTION OF SYMBOLS

	<b>Danger!</b> Read the operating instructions to reduce the risk of injury.		<b>Caution!</b> Danger from electric shock.
	<b>Caution!</b> Wear special welder's gloves. Hot glowing particles may fly about while you are welding. Always wear special welding gloves to protect your hands and arms.		Do not store or use the equipment in wet conditions or in the rain. Use the equipment only indoors.
	<b>Danger!</b> An electric shock from the welding electrode can be fatal.		<b>Danger!</b> The inhaling of welding fumes can harm your health.
	<b>Danger!</b> Welding sparks can cause an explosion or fire.		<b>Danger!</b> Welding arc radiation can damage your eyes and injure your skin.
	<b>Danger!</b> Electromagnetic fields can disturb the operation of pacemakers.		

$\phi$	Electrode diameter [mm]	~ 50	Hz Alternating current and rated frequency value [Hz]
$I_n$	Rated welding current [A]	$U_0$	Rated idling voltage [V]
$t_w$	Average load time [s]	$U_1$	Line voltage [V]
$t_r$	Average reset time [s]	$I_{line}$	Highest rated value of the line current [A]
$I_{eff}$	Effective value of the highest line current [A]	IP 21 S	Protection type
	Line input; number of phases, the alternating current symbol and the rated frequency value	EN 60974-6	European standard for arc welding sets and welding power supplies with limited on time (Part 6).
	Highest welding time rated value in continuous mode $I_{L_{max}}$ (max) for highest welding current rated value at an ambient temperature of 20 °C over an uninterrupted time of 60 min, expressed in minutes and seconds.	---	Highest welding time rated value in intermittent mode $I_{L_{max}}$ for highest welding current rated value at an ambient temperature of 20 °C over an uninterrupted time of 60 min, expressed in minutes and seconds.
130 A / 23.2 V	Maximum welding current and the corresponding standardized operating voltage [A/V]		

## WELDING GUIDE

	$U_0=48V$	55A / 20.2V - 130A / 23.2V		
$\phi$ (mm)	2.0	2.5	3.2	3.2
$I_n$ (A)	55	80	115	130
$t_w$ (S)	254	134	75	63
$t_r$ (S)	581	568	666	663

## SERVICE INFORMATION

Please note that the following parts of this product are subject to normal or natural wear and that the following parts are therefore also required for use as consumables.

Category	Example
Wear parts*	
Consumables*	Welding electrodes
Missing parts	

\* Not necessarily included in the scope of delivery!

## SPARE PARTS

Spare parts can be ordered from the Special Orders Desk at your local Bunnings Warehouse or Homebase store.  
For further information, or any parts visit [www.ozito-diy.co.uk](http://www.ozito-diy.co.uk) or contact Ozito Customer Service:  
Great Britain: 0151 294 4488  
Ireland: 1850 882711  
E-mail: [info@ozito-diy.co.uk](mailto:info@ozito-diy.co.uk)

## TROUBLESHOOTING

PROBLEM	CAUSE	REMEDY
<b>GENERAL OPERATION</b>		
No Power	Power supply Circuit breaker tripped	Test supply with another product, avoid using extension leads. Check the ratings of the circuit breaker on the supply and other appliances connected to the circuit. The welder is a high power device and it is recommended that it be the only appliance on the circuit to ensure it has enough power to operate.
Difficulty starting arc	Earth clamp connection not adequate Welding technique	Check earth clamp has good connection to material being welded. Surface for clamp connection needs to be bare metal, remove rust or paint. Hold electrode at correct angle, practice on scrap material.
Welder cuts out	Thermal overload active	The thermal overload light on the front panel will be on and the welder will not operate until cooled down and the light goes out. This is normal in heavy welding, allow the welder to cool down.
<b>ARC WELDING</b>		
Poor welding	Incorrect or wet welding electrodes	Select electrode type to suit material, electrodes need to be dry.
Sticking welding electrode	Settings Material	Increase current to recommended Clean area being welded to bare metal
	Electrode type and size	Check the electrode type and size is appropriate for the material being used.
	Electrode damage	Replace with new welding rod
Excessive welding electrode consumption	Welding current setting too high Electrode size too small for material	Reduce welding current Change to larger electrode

## DECLARATION OF CONFORMITY

ISC GmbH · Eschenstraße 6 · D-94405 Landau/Isar

explains the following conformity according to EU directives and norms for the following product

**EU**

**Arc Welder AWG-964U (Ozito)**

2014/29/EU  
 2005/32/EC\_2009/125/EC  
 2014/35/EU  
 2006/28/EC  
 2014/30/EU  
 2014/32/EU  
 2014/53/EC  
 2014/68/EU  
 90/396/EC\_2009/142/EC  
 89/686/EC\_96/58/EC  
 2011/65/EU

2006/42/EC  
 Annex IV  
Notified Body:  
Reg. No.:

2000/14/EC\_2005/88/EC  
 Annex V  
 Annex VI  
Noise: measured  $L_{wa}$  = dB (A); guaranteed  $L_{wa}$  = dB (A)  
 $P = KW$ ;  $L_{p0} = cm$   
Notified Body:  
Emission No.:

**Standard references:**  
EN 60974-1; EN 60974-6; EN 60974-10

Landau/Isar, den 04.10.2017

Weichselgartner/General-Manager  
Dong/Product-Management

First CE: 17  
Art.-No.: 44.722.25 I.-No.: 11027  
Subject to change without notice

Archive-File/Record: NAPR017521  
Documents registrar: Alex Kuzi  
Wiesenweg 22, D-94405 Landau/Isar



For EU countries only

Never place any electric power tools in your household refuse.

To comply with European Directive 2012/19/EC concerning old electric and electronic equipment and its implementation in national laws, old electric power tools have to be separated from other waste and disposed of in an environment-friendly fashion, e.g. by taking to a recycling depot.

Recycling alternative to the return request.  
As an alternative to returning the equipment to the manufacturer, the owner of the electrical equipment must make sure that the equipment is properly disposed of if he no longer wants to keep the equipment. The old equipment can be returned to a suitable collection point that will dispose of the equipment in accordance with the national recycling and waste disposal regulations. This does not apply to any accessories or aids without electrical components supplied with the old equipment.

## ELECTRICAL SAFETY

**WARNING!** When using mains-powered tools, basic safety precautions, including the following, should always be followed to reduce risk of fire, electric shock, personal injury and material damage.  
Read the whole manual carefully and make sure you know how to switch the tool off in an emergency, before operating it.  
Save these instructions and other documents supplied with this tool for future reference.  
Before you connect the equipment to the mains supply make sure that the data on the rating plate are identical to the mains data.  
If the supply cord is damaged, it must be replaced by an electrician or a power tool repairer in order to avoid a hazard.

**Using an Extension Lead**  
Always use an approved extension lead suitable for the power input of this tool. Before use, inspect the extension lead for signs of damage, wear and ageing. Replace the extension lead if damaged or defective. When using an extension lead on a reel, always unwind the lead completely. Use of an extension lead not suitable for the power input of the tool or which is damaged or defective may result in a risk of fire and electric shock.

## GENERAL POWER TOOL SAFETY WARNINGS

- WARNING!** Read all safety warnings, instructions, illustrations and specifications provided with this power tool. Failure to follow the warnings and instructions may result in electric shock, fire and/or serious injury.  
Save all warnings and instructions for future reference. The term "power tool" in the warnings refers to your mains-operated (corded) power tool or battery-operated (cordless) power tool.
- Work area safety
    - Keep work area clean and well lit. Cluttered or dark areas invite accidents.
    - Do not operate power tools in explosive atmospheres, such as in the presence of flammable liquids, gases or dust. Power tools create sparks which may ignite the dust or fumes.
    - Keep children and bystanders away while operating a power tool. Distractions can cause you to lose control.
  - Electrical safety
    - Power tool plugs must match the outlet. Never modify the plug in any way. Do not use any adapter plugs with earthed (grounded) power tools. Unmodified plugs and matching outlets will reduce risk of electric shock.
    - Avoid body contact with earthed or grounded surfaces, such as pipes, radiators, ranges and refrigerators. There is an increased risk of electric shock if your body is earthed or grounded.
    - Do not expose power tools to rain or wet conditions. Water entering a power tool will increase the risk of electric shock.
    - Do not abuse the cord. Never use the cord for carrying, pulling or unplugging the power tool. Keep cord away from heat, oil, sharp edges or moving parts. Damaged or entangled cords increase the risk of electric shock.
    - When operating a power tool outdoors, use an extension cord suitable for outdoor use. Use of a cord suitable for outdoor use reduces the risk of electric shock.
    - If operating a power tool in a damp location is unavoidable, use a residual current device (RCD) protected supply. Use of an RCD reduces the risk of electric shock.
  - Personal safety
    - Stay alert, watch what you are doing and use common sense when operating a power tool. Do not use a power tool while you are tired or under the influence of drugs, alcohol or medication. A moment of inattention while operating power tools may result in serious personal injury.
    - Use personal protective equipment. Always wear eye protection. Protective equipment such as dust mask, non-skid safety shoes, hard hat, or hearing protection used for appropriate conditions will reduce personal injuries.
    - Prevent unintentional starting. Ensure the switch is in the off-position before connecting to power source and/or battery pack, picking up or carrying the tool. Carrying power tools with your finger on the switch or energising power tools that have the switch on invites accidents.
  - Remove any adjusting key or wrench before turning the power tool on. A wrench or a key left attached to a rotating part of the power tool may result in personal injury.
  - Do not overreach. Keep proper footing and balance at all times. This enables better control of the power tool in unexpected situations.
  - Dress properly. Do not wear loose clothing or jewellery. Keep your hair, clothing and gloves away from moving parts. Loose clothes, jewellery or long hair can be caught in moving parts.
  - If devices are provided for the connection of dust extraction and collection facilities, ensure these are connected and properly used. Use of dust collection can reduce dust-related hazards.
  - Do not let familiarity gained from frequent use of tools allow you to become complacent and ignore tool safety principles. A careless action can cause severe injury within a fraction of a second.
  - Power tool use and care
    - Do not force the power tool. Use the correct power tool for your application. The correct power tool will do the job better and safer at the rate for which it was designed.
    - Do not use the power tool if the switch does not turn it on and off. Any power tool that cannot be controlled with the switch is dangerous and must be repaired.
    - Disconnect the plug from the power source and/or remove the battery pack, if detachable, from the power tool before making any adjustments, changing accessories, or storing power tools. Such preventive safety measures reduce the risk of starting the power tool accidentally.
    - Store idle power tools out of the reach of children and do not allow persons unfamiliar with the power tool or these instructions to operate the power tool. Power tools are dangerous in the hands of untrained users.
    - Maintain power tools and accessories. Check for misalignment or binding of moving parts, breakage of parts and any other condition that may affect the power tool's operation. If damaged, have the power tool repaired before use. Many accidents are caused by poorly maintained power tools.
    - Keep cutting tools sharp and clean. Properly maintained cutting tools with sharp cutting edges are less likely to bind and are easier to control.
    - Use the power tool, accessories and tool bits etc. in accordance with these instructions, taking into account the working conditions and the work to be performed. Use of the power tool for operations different from those intended could result in a hazardous situation.
    - Keep handles and grasping surfaces dry, clean and free from oil and grease. Slippery handles and grasping surfaces do not allow for safe handling and control of the tool in unexpected situations.
  - Service
    - Have your power tool serviced by a qualified repair person using only identical replacement parts. This will ensure that the safety of the power tool is maintained.

## WELDER SAFETY WARNINGS

- Warning Information**  
Please note:  
Handling this system incorrectly may be hazardous for persons, animals and property. The user of this system is responsible for his/her own safety and for the safety of others. Read these operating instructions and follow all the regulations.  
Repairs and/or maintenance work may only be carried out by qualified personnel.  
Use only the welding cables supplied.  
Ensure that the appliance is looked after properly.  
To ensure that sufficient air can be drawn in through the ventilation slits, the appliance should not be constricted or placed next to a wall while it is operating. Make sure that the appliance is correctly connected to the mains supply. Do not subject the mains lead to any tensile stress. Unplug the appliance before you change its position.  
Check the condition of the welding cables, the burner and the earth terminals; wear an insulating mat and the live parts may result in dangerous conditions and reduce the quality of the welding work.  
Arc welding generates sparks, molten metal particles and smoke, so the following is required: Remove all inflammable substances and/or materials from the working area.  
Ensure that there is adequate ventilation.  
Do not weld on tanks, vessels or pipes that have contained inflammable liquids or gases. Avoid all direct contact with the welding circuit; the idling voltage between the burner and the earth terminal may be dangerous.  
Do not store or use the appliance in wet or damp conditions or in the rain.  
Protect your eyes with specially designed goggles (DIN level 9-10), which you can attach to the supplied safety shield. Wear gloves and dry safety clothing that are not contaminated by any oil or grease to ensure that your skin is not exposed to ultraviolet radiation from the arc.  
Do not use this welder to defrost pipes.  
If you stand the machine on a slope, take care that the machine does not topple.  
To avoid back injuries, take account of the weight of the equipment when you move it (see Technical Data).  
The mains connection at the point of use must have been installed by a professional and must comply with the relevant regulations and fuses.  
Make sure of your footing, particularly when working on ladders and platforms.
- Constricted and wet areas**  
When working in constricted, wet or hot areas, use insulating supports and intermediate layers as well as slip-on gloves made of leather or other non-conductive materials to insulate your body against the floor, walls, conductive parts of the machine and the like. If you use small welding transformers for welding in places with an increase electrical risk, for example in constricted areas with conductive walls, (tanks, pipes, etc.), in wet areas (which make work clothes wet) and in hot areas (perspiration on work clothes), the output voltage of the welding set when idling must not exceed 40V (effective value). Therefore, the appliance may not be used for these purposes because its output voltage is higher than this.
- Safety clothing**
- While working, the welder must protect his entire body from radiation and burns by wearing suitable clothing and a face guard.
  - Slip-on gloves made of a suitable material (leather) must be worn on both hands. They must be in perfect condition.
  - Suitable aprons must be worn to protect clothing from sparks and burns. A safety suit and, if necessary, head protection must be worn if required by the type of work in question, e.g. overhead welding.
  - The safety clothing used as well as all accessories must comply with the "Personal Safety Equipment" directive.
- Protection from radiation and burns**
- Provide information about the risk to eyes at the working site in the form of a poster with the wording "Caution - do not look at the flames". Workplaces are to be screened off wherever possible so that personnel in the vicinity are protected. Unauthorized persons are to be kept away from the welding work.
  - The walls in the immediate vicinity of stationary workplaces should not have a light color or a sheen. Windows up to head height are to be protected against radiation passing through them or reflecting off them, for example by coating them with a suitable paint. Do not store or use the equipment in wet conditions or in the rain. Use the equipment only indoors.

# ozito

## ARC WELDER

**130 Amp**  
**ORIGINAL INSTRUCTIONS**

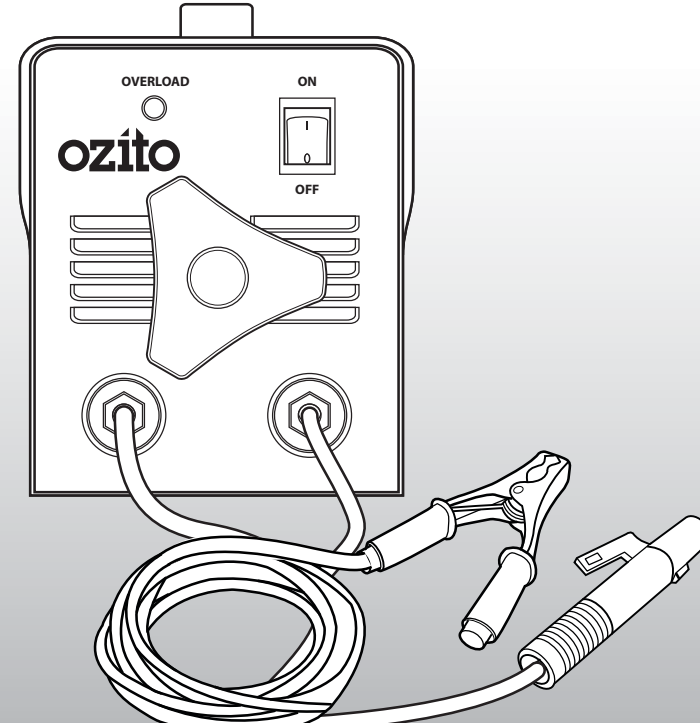
### SPECIFICATIONS

Input Voltage: 230V-50Hz  
Current Range: 55 - 130A  
Peak Current: 140A  
Max. No Load Voltage: 48V  
Duty Cycle: 10% @ 130A  
Electrode Size:  $\phi$ 2.0 - 3.2mm  
Weight: 13.5kg

[ozito-diy.co.uk](http://ozito-diy.co.uk)



**3 YEAR REPLACEMENT WARRANTY**



### WHAT'S IN THE BOX



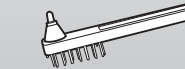
Arc Welder



Arc Electrode Holder



Earth Clamp



Wire Brush / Chipping Hammer



Welding Mask

AWG-964U

## WARRANTY

All of our products undergo strict quality checks to ensure that they reach you in perfect condition. In the unlikely event that your device develops a fault, please contact our service department at the address shown in this guarantee card. You can also contact us by telephone using the customer service number shown. Please note the following terms under which guarantee claims can be made:

1. These warranty terms regulate additional warranty services, which the manufacturer mentioned below promises to buyers of its new products in addition to their statutory guarantee claims are not affected by this guarantee. Our guarantee is free of charge to you.

2. The warranty services only covers defects due to material or manufacturing faults on a product which you have bought from the manufacturer mentioned below are limited to either the rectification of said defects on the product or the replacement of the product, whichever you prefer.

Please note that our devices are not designed for use in commercial, trade or professional applications. A guarantee contract will not be created if the device has been used by commercial, trade or industrial business or has been exposed to similar stresses during the guarantee period.

3. The following are not covered by our guarantee:  
- Damage to the device caused by a failure to follow the assembly instructions or due to incorrect installation, a failure to follow the operating instructions (for example connecting it to an incorrect mains voltage or current type) or a failure to follow the maintenance and safety instructions or by exposing the device to abnormal environmental conditions or by lack of care and maintenance.  
- Damage to the device caused by abuse or incorrect use (for example overloading the device or the use of unapproved tools or accessories), ingress of foreign bodies into the device (such as sand, stones or dust, transport damage), the use of force or damage caused by external forces (for example by dropping it).  
- Damage to the device or parts of the device caused by normal or natural wear or tear or by normal use of the device.

4. Your Product is guaranteed for a period of 36 months from the original date of purchase and is intended for DIY (Do It Yourself) use only. Warranty excludes consumable parts. Guarantee claims should be submitted before the end of the guarantee period within two weeks of the defect being noticed. No guarantee claims will be accepted after the end of the guarantee period. The original guarantee period remains applicable to the device even if repairs are carried out or parts are replaced. In such cases, the work performed or parts fitted will not result in an extension of the guarantee period, and no new guarantee will become active for the work performed or parts fitted. This also applies if an on-site service is used.

IN ORDER TO MAKE A CLAIM UNDER THIS WARRANTY YOU MUST RETURN THE PRODUCT TO THE PLACE OF PURCHASE WITH YOUR REGISTER RECEIPT.

Please refer to the restrictions of this warranty concerning wearing parts, consumables and missing parts as set out in the service information in these operating instructions.

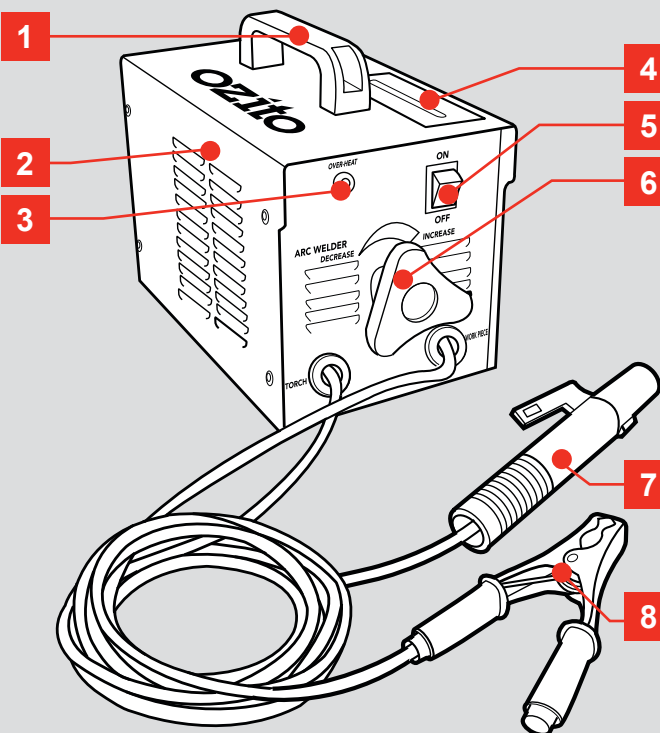
CUSTOMER SERVICE HELPLINE  
GB: 0151 294 4488  
IRL: 1850 882711  
[Ozito-diy.co.uk](http://Ozito-diy.co.uk)



# KNOW YOUR PRODUCT

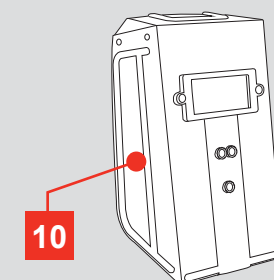
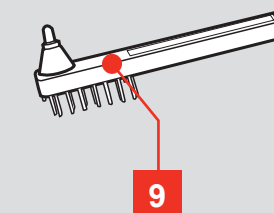
## ARC WELDER

- 1 Carry Handle
- 2 Internal Cooling Fan
- 3 Overload LED
- 4 Current Setting Gauge
- 5 On/Off Switch
- 6 Current Regulator Knob
- 7 Electrode Holder
- 8 Earth Clamp



## ACCESSORIES

- 9 Wire Brush / Chipping Hammer
- 10 Welding Mask



## ONLINE MANUAL

Scan this QR Code with your mobile device to take you to the online manual.



# SETUP & PREPARATION

## 1. BEFORE USE

### Items Supplied

Please check that the article is complete as specified in the scope of delivery. If parts are missing, please contact our service centre or the sales outlet where you made your purchase at the latest within 5 working days after purchasing the product and upon presentation of a valid bill of purchase. Also, refer to the warranty table in the service information at the end of the operating instructions.

- Open the packaging and take out the equipment with care.
- Remove the packaging material and any packaging and/or transportation braces (if available).
- Check to see if all items are supplied.
- Inspect the equipment and accessories for transport damage.
- If possible, please keep the packaging until the end of the guarantee period.

### Danger!

The equipment and packaging material are not toys. Do not let children play with plastic bags, foils or small parts. There is a danger of swallowing or suffocating!

### Proper Use

The machine is to be used only for its prescribed purpose. Any other use is deemed to be a case of misuse. The user / operator and not the manufacturer will be liable for any damage or injuries of any kind caused as a result of this.

The equipment is to be used only for its prescribed purpose. Any other use is deemed to be a case of misuse. The user / operator and not the manufacturer will be liable for any damage or injuries of any kind caused as a result of this.

Please note that our equipment has not been designed for use in commercial, trade or industrial applications. Our warranty will be voided if the machine is used in commercial, trade or industrial businesses or for equivalent purposes.

### Caution! Residual risks

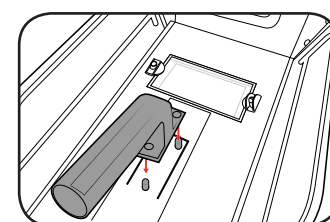
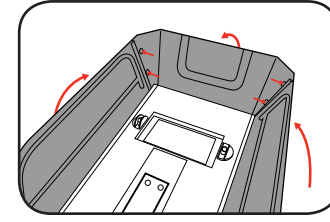
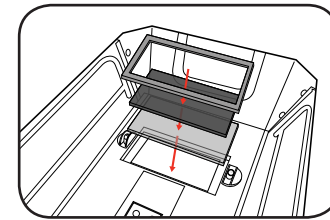
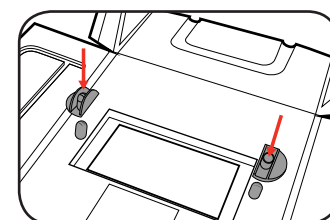
Even if you use this electric power tool in accordance with instructions, certain residual risks cannot be ruled out. The following hazards may arise in connection with the equipment's construction and layout:

1. Lung damage if no suitable protective dust mask is used.
2. Damage to hearing if no suitable ear protection is used.
3. Health damage caused by hand-arm vibrations if the equipment is used over a prolonged period or is not properly guided and maintained.

## 2. ASSEMBLY

### Fitting the Welding Screen

- 1 Insert the glass retaining pins into the holes from the outside of the mask and then fit the retaining clips from the inside. Rotate the clip to allow the glass to be inserted.
- 2 First insert the clear glass into the recess of the welding mask, followed by the dark safety glass and then the plastic frame. Rotate the retaining clips to lock in position.
- 3 Bend the sides and top of the welding mask inwards and clip together at the corners.
- 4 Insert the 3 screws into the handle mounting holes from the outside. Fit the handle onto the screws from inside the mask and then secure using the 3 nuts.

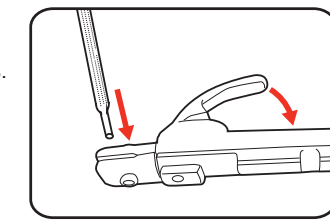


### Electrode Holder & Earth Clamp

**WARNING!** ENSURE THE TOOL IS SWITCHED OFF AND DISCONNECTED FROM THE POWER SUPPLY BEFORE PERFORMING ANY OF THE FOLLOWING STEPS.

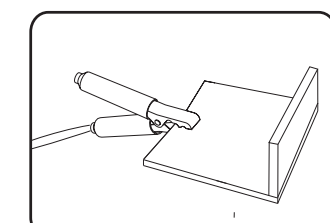
Before starting you will require a suitable Electrode according to the specific material type and thickness.

1. Install thin (uncoated) end of Electrode into the arc electrode holder.



**WARNING!** DO NOT TOUCH THE ELECTRODE WHILE THE WELDER IS ON.

2. Attach the Earth Clamp to the work piece ensuring area is free from paint or dirt so that there is a good electrical connection.



# OPERATION

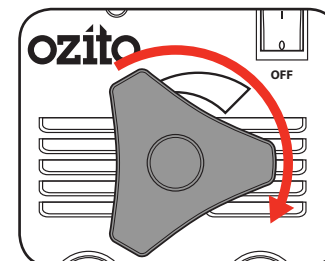
## 3. CONTROLS

**WARNING!** THE POWER SUPPLY FOR THIS PRODUCT SHOULD BE PROTECTED BY A RESIDUAL CURRENT DEVICE (RATED AT 30mA OR LESS). A RESIDUAL CURRENT DEVICE REDUCES THE RISK OF ELECTRIC SHOCK.

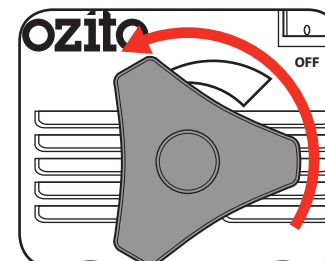
### Welding Current Control

The welding current can be increased or decreased by turning the welding current control knob. The welding current should be set according to the specific application and material.

1. To increase the welding current turn the current regulating knob in a clockwise direction.

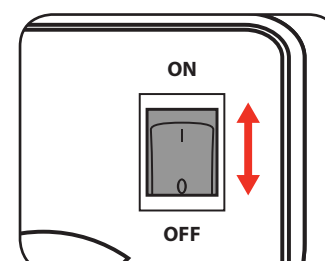


2. To decrease the welding current turn the current regulating knob in an anti-clockwise direction.



### On/Off Switch

To turn the welder on press the on/off switch to the On position ("I").



To turn the welder off press the on/off switch to the Off position ("0").

**Note:** The cooling fan will only operate when the welder is switched On ("I").

### Thermal Overload LED

When illuminated, wait for the LED to extinguish before resuming welding.

**Note:** This can occur in heavy use and does not indicate a fault.



## 4. ARC WELDING

### Preparation

Before welding ensure that:

- You have read and understand the safety section of this manual.
- There is sufficient ventilation, particularly at the front and rear of the unit.
- You have an adequate fire-fighting devices on hand.

**WARNING!** ENSURE ALL OIL, PETROL AND FLAMMABLE CONTAINERS HAVE BEEN REMOVED FROM WELDING AREA.

### Electrodes & Welding Current

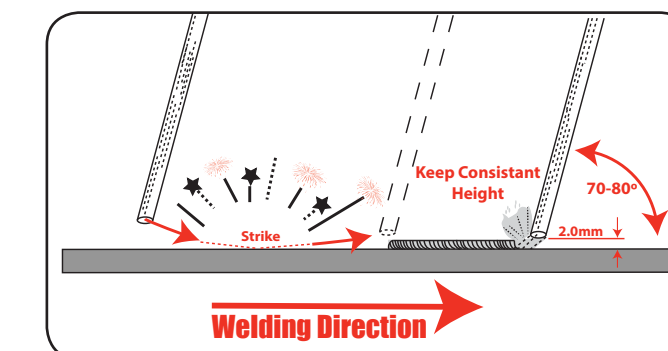
The welding current must be regulated in accordance with the diameter of the electrode and the thickness of the steel being used. This will vary with the type of electrodes and material you are using. Below is a guide suggesting suitable currents & thickness for welding steel.

Electrode Diameter	Welding Current (Amps)	Thickness of Steel
Ø2.0mm	55 - 75	1.5 - 2mm
Ø2.5mm	80 - 105	3 - 5mm
Ø3.2mm	105 - 130	4 - 6mm

### Striking the Arc

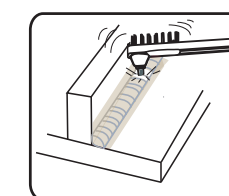
**WARNING!** ENSURE APPROVED PROTECTIVE CLOTHING AND WELDING HELMET/MASK IS WORN AT ALL TIMES TO PROTECT YOUR FACE AND EYES FROM ARC UV RADIATION AND SPARKS.

Lower the electrode slowly and proceed to strike the electrode tip against the desired join area on the work piece as if you are striking a match. As soon as you have the arc, try to maintain a distance from the work piece equal to the diameter of the electrode being used, eg Ø2.0mm electrode, 2.0mm gap.



### Slag

Slag is refuse left around the weld after welding, this should only be removed after the weld has cooled down and is no longer glowing. Face shield must be worn during removal of slag.

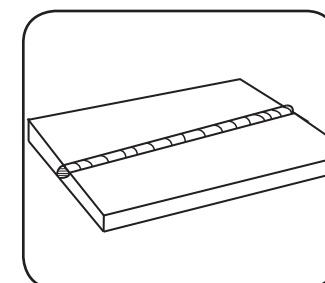


# ARC WELDING

## 5. WELDED JOINTS

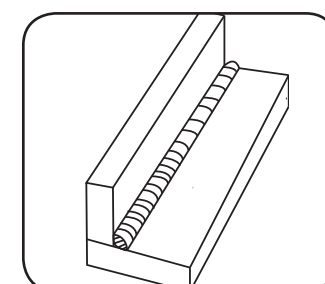
### Butt Joint

Is the joining of two pieces of material together along a single edge in a single plane. Two sheets of metal are laid side-by-side and joined together along a single joint.



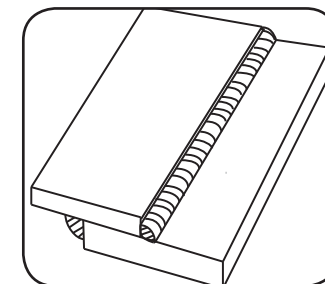
### Fillet Joint

Is a type of joint used for welding pieces or plates in which the angle between them varies from 0° to 180°. The edge of one plate is brought against the surface of another not in the same plane. The joint can be welded on one or both sides.



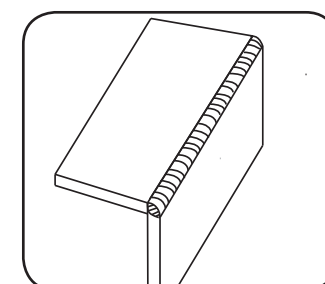
### Lap Joint

The edges of a plate are lapped one over the other and the edge of one is welded to the surface of the other.



### Corner Joint

A corner joint consists of two pieces of material joined at their edges to form an "L" shape.



## 6. WELDING PROPERTIES

### Arc Length

To strike the arc, the electrode should be gently scraped on the work until the arc is established. A simple rule for the proper arc length; it should be the shortest arc that gives a good surface to the weld. A very long arc produces a crackling or spluttering noise and the weld metal comes across in large, irregular blobs and gives a rough surface finish to the weld. A short arc is essential if a high quality weld is to be obtained but an excessively short arc will cause sticking of the electrode and result in poor quality welds.

### Electrode Angle

The angle that the electrode makes with the work is important to ensure a smooth, even transfer of metal. When welding in down hand, fillet, horizontal or overhead the angle of the electrode is generally between 5 and 15 degrees towards the direction of travel. When vertical up welding the angle of the electrode should be between 70 and 80 degrees to the work piece.

### Travel Speed

The electrode should be moved along in the direction of the joint being welded at a speed that will give the size of run required. At the same time, the electrode is fed downwards to keep the correct arc length at all times. Excessive travel speeds lead to poor fusion and lack of penetration. While too slow a rate of travel will frequently lead to arc instability, slag inclusions and poor mechanical properties.

### Electricity

The electricity flows through the electrode cable to the attached electrode. The electricity will not leave the electrode unless it touches an earthed object.

Electricity always finds the fastest path to the earth. When the earth cable clamp is connected to the metal work piece a direct earth connection is created back to the welder. When the electrode makes contact with the earthed work piece an arc is created. The electricity flows through the electrode, the metal work piece and then through the earth cable straight back to the welder.

### Earth Clamp

Prior to connecting the earth clamp it may be necessary to clean the surface of the work piece using the metal brush. Attach the earth clamp firmly to the work piece ensuring there is good metal to metal contact. Clamp it where it will not be in the way. This clamp provides an earth connection back to the welder. Always ensure the welder is disconnected from the power supply before attaching electrodes into the holder.

### Electrodes

Always store the electrodes in a dry place protecting them from moisture. Should electrodes become damp or moist, bake them in an oven at 200 - 250 °C for 2 hours. Unless the electrodes are vacuum packed, basic coated electrodes will always require such baking prior to use.

Metal arc welding electrodes consist of a core wire surrounded by a flux coating. The flux coating is applied to the core wire by an extrusion process. The coating on arc welding electrodes has a number of purposes:

- To provide a gaseous shield for the weld metal, and preserve it from contamination by the atmosphere whilst in a molten state.
- To give a steady arc by having 'arc stabilisers' present, which provide a bridge for current to flow across.
- To remove oxygen from the weld metal with 'deoxidised'.
- To provide a cleansing action on the work piece and a protective slag cover over the weld metal to prevent the formation of oxides while the metal is solidifying. The slag also helps to produce a bead of the desired contour.
- To introduce alloys into the weld deposits in special type electrodes.

## 7. IMPORTANT INFORMATION

### Thermal Overload

**IF YOUR WELDER OVERHEATS AND THE THERMAL OVERLOAD PROTECTION ENGAGES DO NOT TURN YOUR WELDER OFF AS THE FAN WILL ASSIST IN REDUCING THE COOLING TIME.**

All Welders have a feature called a duty cycle.

Duty cycle on a welder refers to the time in which the welder operates during normal welding.

A welder can only weld for a certain continuous period of time before it requires to cool down.

If the internal components of the welder should become hot the welder could overheat. If the welder overheats the Thermal Overload Protection feature will automatically shut down the welder.

**THIS CAN OCCUR IN HEAVY USE AND DOES NOT INDICATE A FAULT.**

The Welder will cease to weld and the Thermal Overload LED light will turn on. This LED indication light is just to inform you that your welder is becoming too hot and requires to cool down to protect the internal components of the welder. Do Not turn your welder Off as the welder has an internal cooling fan and this will assist your welder to cool down quicker. Reducing the cooling time will enable you to get back to your welding job quicker.

Depending on how many Amps or how heavy the welding you are doing the cooling time may take up to 10 Minutes for your welder to cool down so you can return to your welding job.