

# Clarke®



WARNING: A suitable welding headshield must be worn during use  
WARNING: Read these instructions before using the machine

## 160 AMP ARC WELDER

MODEL NO: EASIARC 165

PART NO: 6010982

## OPERATION & MAINTENANCE INSTRUCTIONS

UK  
CA | CE



ORIGINAL INSTRUCTIONS

DL0422 ISS 6

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## INTRODUCTION

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Thank you for purchasing this CLARKE Welder.

Before attempting to operate the machine, it is essential that you read this manual thoroughly and carefully follow all instructions given. In doing so you will ensure the safety of yourself and that of others around you, and you can also look forward to the welder giving you long and satisfactory service.

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## GUARANTEE

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This CLARKE product is guaranteed against faulty manufacture for a period of 12 months from the date of purchase. Please keep your receipt as proof of purchase.

This guarantee is invalid if the product is found to have been abused or tampered with in any way, or not used for the purpose for which it was intended.

Faulty goods should be returned to their place of purchase, no product can be returned to us without prior permission.

This guarantee does not effect your statutory rights.

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## ENVIRONMENTAL PROTECTION

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Do not dispose of this product with general household waste. All tools, accessories and packaging should be sorted, taken to a recycling centre and disposed of according to the laws governing Waste Electrical and Electronic Equipment.

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# GENERAL SAFETY INSTRUCTIONS

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**WARNING: WHEN USING ELECTRICAL TOOLS, BASIC SAFETY PRECAUTIONS SHOULD ALWAYS BE FOLLOWED TO REDUCE THE RISK OF FIRE, ELECTRIC SHOCK AND PERSONAL INJURY.**

**WARNING: READ ALL THESE INSTRUCTIONS BEFORE ATTEMPTING TO OPERATE THIS PRODUCT AND KEEP THESE INSTRUCTIONS IN A SAFE PLACE.**

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## **ELECTRIC SHOCK**

- Remove the plug from the socket and wait 5 minutes to allow the capacitors to discharge before carrying out servicing or maintenance.
- Do not touch live electrical parts.
- Never use electrode holders or cables which are damaged.
- Keep the working environment, equipment, cables and clothing free from grease, oil, moisture and dirt.
- Ensure the welding machine has been correctly earthed.
- The operator must be insulated from the floor and work bench, using a dry insulation mat.
- Always ensure a second person is present in case of accident.
- Never change electrodes with bare hands or damp gloves.
- Keep welding cables away from power cables.
- Regularly inspect the condition of the cables for signs of damage.
- Remove the plug from the mains socket when not in use, do not leave the machine unattended.
- Ensure the earth clamp is secured to bare metal adjacent to the weld seam, and when not in use, is insulated for safety. - Keep all equipment well maintained.
- The operator shall prevent gas cylinders in the vicinity of the workpiece from becoming part of the welding circuit.

## **FUMES & GASES**

- The welding process generates hazardous fumes as a by-product. Inhalation of these fumes is hazardous to health.
- Keep your head away from the weld to avoid breathing the fumes.
- If welding in confined spaces, ensure adequate ventilation and use a fume extractor.
- By-products of welding can react to create a toxic/explosive environment.

## **FIRE OR EXPLOSION**

Welding can cause fire and explosions. Precautions should be taken to prevent these hazards.

- Before starting work ensure the area is clear of flammable materials.
- Move any combustible materials to a safe distance, especially substances likely to generate a dangerous vapour.
- The welding arc can cause serious burns. Avoid contact with the skin.
- Sparks and molten metal are ejected during welding. Take precautions to prevent fire.
- Sparks and molten metal can pass through gaps. Be aware that fire can start out of sight.
- Do not weld pressurised containers, or containers containing flammable vapours e.g. fuel tanks.
- Always have appropriate fire fighting equipment to hand suitable for use in electrical environments.
- Avoid carrying any fuels with you e.g. cigarette lighters or matches.

## **PERSONAL PROTECTION**

- The body should be protected by suitable clothing.
- The use of neck protection may be necessary against reflected radiation.
- Arc welding machines generate a magnetic field which is detrimental to pacemakers. Consult your doctor before going near active welding equipment/operations.
- The UV and IR radiation generated by welding is highly damaging to the eyes, causing burns. This can also affect the skin.
- Always use a suitable welding shield equipped with appropriate protective filters.
- Where there are pedestrians and traffic, ensure a protective screen is used to avoid accidental arc glare.
- Do not weld in the vicinity of children or animals and ensure no one is looking before striking an arc.
- Wear hearing protection if required.
- Allow the weld time to cool. Hot metal should never be handled without gloves.
- Take care when adjusting or maintaining the torch, make sure it has had time to cool sufficiently and the welder is disconnected from the mains supply.
- First aid facilities and a qualified first aid person should be available unless medical facilities are close by, for immediate treatment of flash burns of the eyes and for skin burns.
- A hard hat should be worn when others are working overhead.

- Flammable hair sprays/gels should not be used by persons intending to weld or cut.

## **PROTECTIVE CLOTHING**

- Wear gauntlet gloves designed for use in welding.
- Wear an apron and protective shoes.
- Wear cuffless trousers to avoid entry of sparks and slag.
- Avoid oily, greasy clothing.
- Protective head and shoulder coverings should be worn when overhead welding.
- Wear a welding headshield with appropriate filter lenses or plates (protected by clear glass). This is a MUST for welding (and chipping) to protect the eyes from radiant energy and splatter. Replace cover glass when broken, pitted, or splattered.

**NOTE: ALL protective wear inc. masks & head shields MUST comply with PPE Directive 89/686/EEC**

## **ADDITIONAL SAFETY PRECAUTIONS FOR ARC WELDERS**

- NEVER attempt to remove any of the exterior panels unless the machine is disconnected from the power supply.
- NEVER use the machine with any of the panels removed.
- NEVER attempt any electrical or mechanical repair unless you are a qualified technician. If you have a problem with the machine contact your local CLARKE dealer.
- NEVER use or store in a wet/damp environment. DO NOT EXPOSE TO RAIN.
- NEVER allow children or animals in the vicinity of a welding operation.
- ALWAYS remove all flammable materials from the welding area.
- ALWAYS ensure that there is full free air circulating around the outer casing of the machine, and that the louvres are unobstructed.
- Welding arc can seriously damage your eyes. Both the operator and any spectators should always use a proper welding face shield or helmet, with suitable filter lenses. Proper gloves and working clothes should be worn at all times.
- ALWAYS wear a pair of safety spectacles/goggles when chipping away slag after welding,. Remember, ordinary eye glasses are not safety glasses.
- ALWAYS ensure there is adequate ventilation or extraction in the work area, as the welding process gives off toxic fumes.
- ALWAYS ensure there is a fire extinguisher on hand.
- ALWAYS ensure that a medical supply is on hand, and that treatment for burns is available.

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## SAFETY SYMBOLS

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|                                                                                   |                                                    |                                                                                   |                        |
|-----------------------------------------------------------------------------------|----------------------------------------------------|-----------------------------------------------------------------------------------|------------------------|
|  | Read this instruction booklet carefully before use |  | Do not expose to rain. |
|  | Wear protective gloves                             |  | Wear eye protection    |
|  | Wear a dust mask                                   |                                                                                   |                        |

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## UNPACKING

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Any damage or deficiency should be reported to your CLARKE dealer immediately.

The components include the following:

- 1 x 160 Amp AC Arc Welder
- 1 x Combination Wire Brush & Hammer
- 1 x Face Shield

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## ACCESSORIES

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The following are some of the accessories available from your CLARKE dealer. Please quote the part numbers shown below:

| DESCRIPTION                           | PART NUMBER |
|---------------------------------------|-------------|
| CWH6 Arc Activated Welding Headshield | 6000671     |
| 2 mm Welding Electrodes               | 3050555     |
| 2.5 mm Welding Electrodes             | 3050560     |
| 3.2 mm Welding Electrodes             | 3050565     |

## ELECTRICAL CONNECTIONS



**WARNING: READ THESE ELECTRICAL SAFETY INSTRUCTIONS THOROUGHLY BEFORE CONNECTING THE PRODUCT TO THE SUPPLY.**

**WARNING: NEVER FIT A STANDARD 230V, 13AMP (BS1363) PLUG TO THESE MACHINES**

Connect the mains lead to a suitably fused 230 Volt (50Hz) electrical supply. The fuse rating should be suitable to the current drawn by this unit, see the rating plate for details. For a full explanation of the rating plate, see page 13.



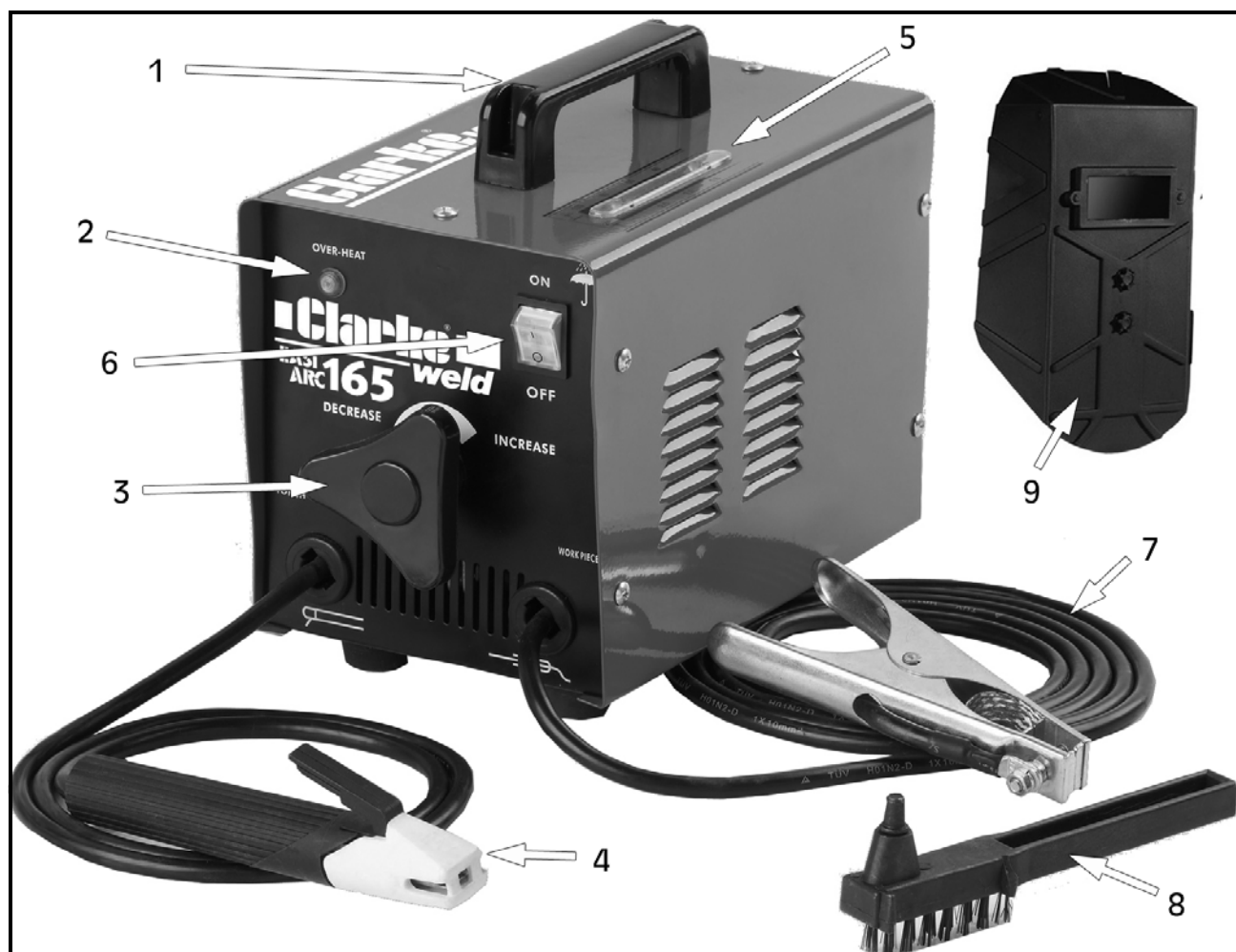
**WARNING! The wires in the power cable of this product are coloured in accordance with the following code:**

**Blue = Neutral      Brown = Live      Yellow and Green = Earth**

If the colours of the wires in the power cable of this product do not correspond with the markings on the terminals of your plug, proceed as follows.

- The wire which is coloured **Blue** must be connected to the terminal which is marked **N** or coloured **Black**.
- The wire which is coloured **Brown** must be connected to the terminal which is marked **L** or coloured **Red**.
- The wire which is coloured **Yellow and Green** must be connected to the terminal which is marked **E** or  or coloured **Green**.

## OVERVIEW



| NO | DESCRIPTION                    | NO | DESCRIPTION                   |
|----|--------------------------------|----|-------------------------------|
| 1  | Handle                         | 6  | On/Off Switch                 |
| 2  | Overload Indicator             | 7  | Earth Clamp                   |
| 3  | Welding Current Selector       | 8  | Combination Wire Brush/Hammer |
| 4  | Welding Rod (Electrode) Holder | 9  | Welding Mask                  |
| 5  | Welding Current Scale          |    |                               |

## ASSEMBLING THE WELDING SHIELD

1. The welding shield shown on page 12 is supplied flat for shipping. Fold the sides of the shield around and clip to the top panel.

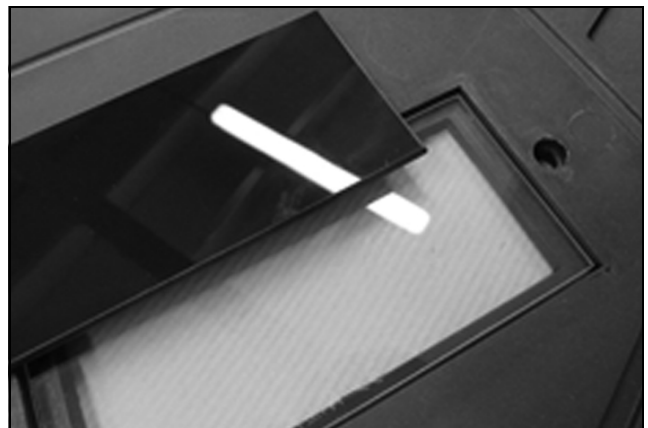


2. Insert both the glass lens panels into the recess inside the shield.

- The clear glass must be fitted first to face the outside.

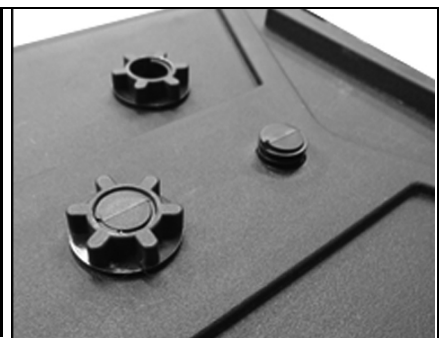
3. Insert the two plastic screws and use the plastic wingnuts to clamp the glass panels to the shield.

- The clear glass panel should be replaced when it becomes badly pitted.



4. When replacing the glass panels, only use parts supplied by Clarke International. The dark panel is a certified, optical glass and should not be exchanged for any other type.

5. Secure the handle in position using the plastic nuts provided.



- The handle will be on the inside of the shield.



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## PREPARATION FOR USE

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### FITTING THE WELDING ROD

6. Select the appropriate welding rod, and insert it into the welding rod holder.
  - It should be approximately the same thickness as the workpieces being welded.

### PREPARING THE WORKPIECE

The area being welded should be perfectly clean. Any coating, plating or corrosion must be removed, otherwise a good weld will be impossible to achieve.

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## OPERATING THE WELDER

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### THERMAL CUTOUT

If the machine stops at any time and the amber light on the front panel illuminates, the thermal cutout has activated.

Wait until the transformer has cooled sufficiently (the amber light goes out) before restarting work.



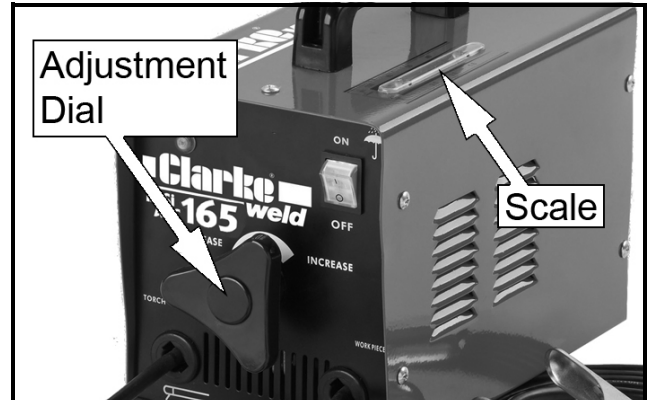
### ATTACHING THE EARTH CLAMP

Attach the earth clamp firmly to the workpiece as close as possible to the point of weld.

**IMPORTANT:** Ensure that the earth clamp is attached to clean, solid metal. If necessary, thoroughly clean with a wire brush or similar to guarantee a good connection.

## SETTING THE WELDING CURRENT

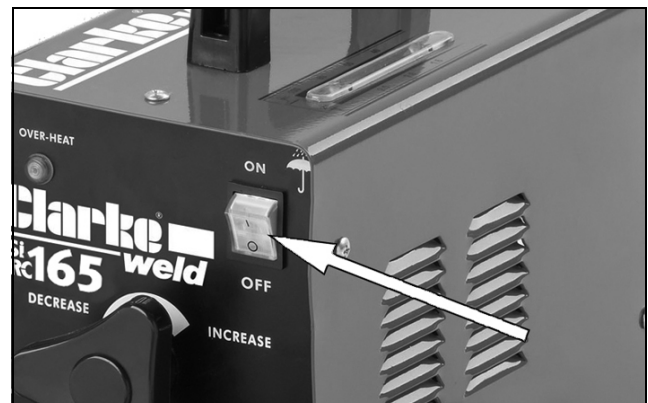
1. Select the welding current by turning the adjustment dial and observing the setting on the scale on top of the machine.
  - The scale also recommends the size of welding rod to be used.
  - With practice you will get a feel for the best current settings for different welding rod thicknesses.



## STRIKING AN ARC

**IMPORTANT:** BEFORE YOU STRIKE AN ARC, ALWAYS BRING THE FACE SHIELD UP TO PROTECT YOUR EYES.

1. Switch ON the machine.
2. Line up the electrode exactly over the spot where you want to strike.
3. Position your shield in front of your face and tap the electrode down firmly. Once you tap down and contact is made, you must instantly raise the electrode to the required arc gap.



- The arc gap should be roughly the same as the diameter of the electrode.
- If you withdraw the electrode too far once the arc is struck, you will lose the arc and have to try again.

**NOTE:** One thing that usually happens when you are striking an arc is that the electrode sticks to the work. It should come unstuck with a sharp tug. If it will not free easily, turn off the welder immediately as it will quickly overheat, then give the join a tap from the chipping hammer. As you get more experienced, this will happen less.

4. Once the arc is struck, move the electrode along its intended path, keeping the tip in the molten pool at all times.
  - You must also get used to feeding down the electrode steadily as it burns away.

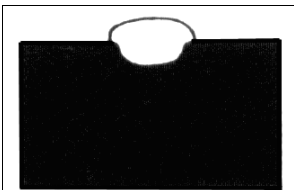
- An even crackling noise should be heard, which is an indication of a good weld.
5. Inspect the job carefully, the area of weld should be a complete fusion of the electrode and parent metal(s).
- Any slag which forms on the surface should be chipped away with the hammer/brush supplied.
  - If the resultant weld looks messy and irregular, this is an indication of porosity or slag contamination, and you have almost certainly failed to achieve the correct combination of speed and current. This is a common problem, so do not worry as practice will quickly cure this.

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## WELDING PITFALLS

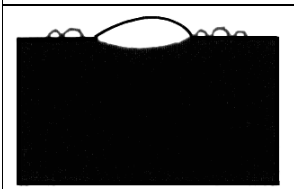
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The arc welding technique is an acquired skill and requires considerable practice before perfect results are obtained. The diagrams below will help to explain the pitfalls in your technique and how to overcome them.



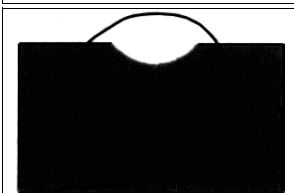
### **ARC TOO SHORT**

This causes irregular masses of weld to be deposited, with slag contamination on an uneven surface.



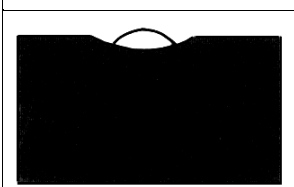
### **ARC TOO LONG**

This causes poor penetration resulting in a weak weld with excessive spatter and porosity. Surface of the weld is rough and the arc makes a hissing sound



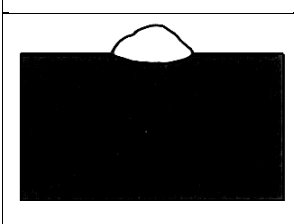
### **ELECTRODE MOVED TOO SLOWLY**

This causes a very wide and heavy deposit which overlaps at the sides. It is wasteful both in terms of time and electrode use.



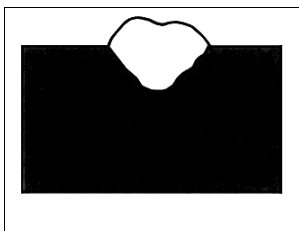
### **ELECTRODE MOVED TOO QUICKLY**

This causes poor penetration with a 'stringy' and incomplete weld deposit. Slag is very hard to remove.



### **CURRENT TOO LOW**

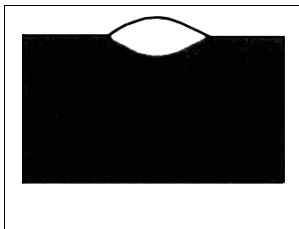
This causes poor penetration and causes the electrode to stick to the workpiece too readily. Also results in a very irregular and high weld deposit. Slag is very hard to remove.



### **CURRENT TOO HIGH**

This causes excessive penetration with spatter and deep pointed crater. It may also cause holes to be burned in the workpiece.

Burns electrodes very quickly.



### **THE PERFECT WELD**

With the correct combination of arc length, current regulation, inclination and speed of the electrode, you will, with practice, produce the perfect weld.

This should be regular with uniform ripples and no slag contamination. The arc will make a steady crackling sound.

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## **MAINTENANCE**

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**WARNING: ELECTRICITY CAN KILL - NEVER TOUCH LIVE ELECTRICAL COMPONENTS.**

**WARNING: DISCONNECT THE POWER SUPPLY BEFORE ALL INSPECTIONS AND MAINTENANCE OPERATIONS**

**WARNING: BEWARE HOT SURFACES.**

Frequency of maintenance operations depends on the operating conditions, how intensively the welder is used and how clean or dirty the welding site is (aggressive atmospheres etc).

Always inspect the earth return and torch hose before use, to ensure they are in perfect condition and that the earth clamp is clean and secured correctly to the cable.

As a general rule, the power supply should be inspected at least annually. Consult your CLARKE dealer for advice if necessary.

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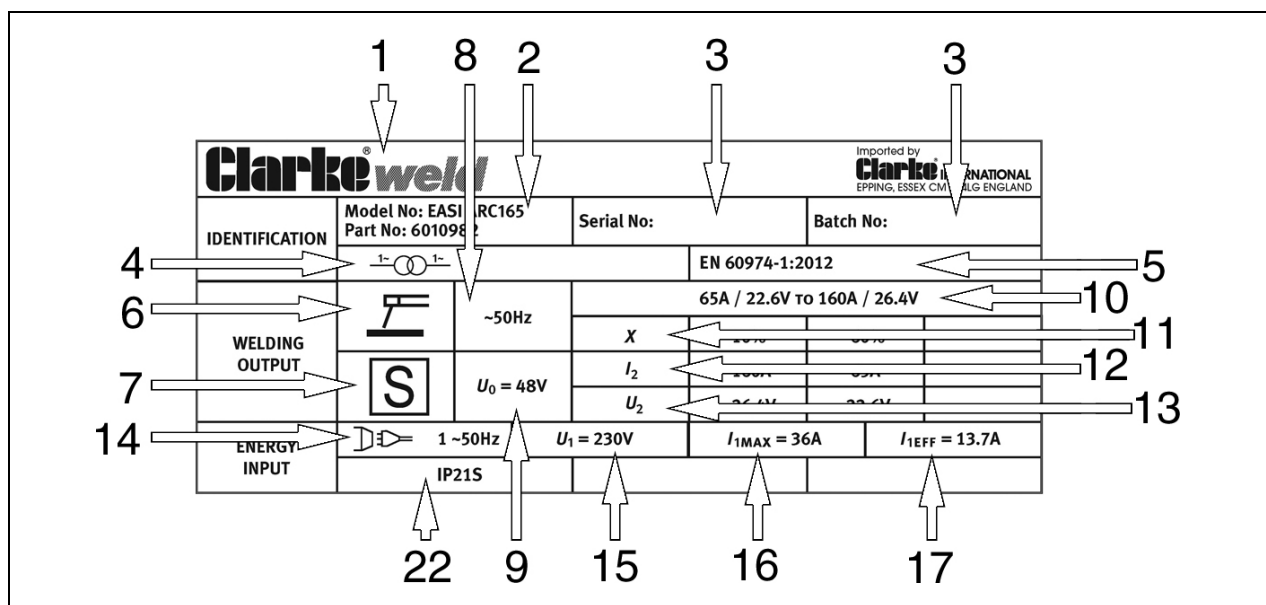
## SPECIFICATIONS

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|                                     |                                |
|-------------------------------------|--------------------------------|
| Model                               | Easiarc165                     |
| Power Supply                        | 230V @ 50Hz                    |
| Rated Max Input Current I1Max/I1eff | 36/13.7 A                      |
| Open Circuit Voltage                | 48V                            |
| IP Rating                           | IP21S                          |
| Output Min./Max Current             | 65 - 160 Amps                  |
| Usable Electrodes                   | 2.0 mm, 2.5 mm, 3.2 mm, 4.0 mm |
| Dimensions (l x w x h)              | 346 x 182 x 270 mm             |
| Weight                              | 16.7 kg                        |
| Part Number                         | 6010982                        |

**NOTE:** The details and specifications contained herein, are correct at the time of going to print. However, CLARKE International reserve the right to change specifications at any time without prior notice.

## RATING PLATE



|    |                                                                                                                                                      |    |                                  |
|----|------------------------------------------------------------------------------------------------------------------------------------------------------|----|----------------------------------|
| 1  | Name And Address Of Manufacturer                                                                                                                     | 12 | Rated Welding Current Symbol     |
| 2  | Model Number, Part Number                                                                                                                            | 13 | Conventional Load Voltage Symbol |
| 3  | Serial / Batch Number                                                                                                                                | 14 | Energy Supply Symbol             |
| 4  | Welding Power Source                                                                                                                                 | 15 | Rated Supply Voltage             |
| 5  | British Standards Applied                                                                                                                            | 16 | Rated Maximum Supply Current     |
| 6  | Welding Process Symbol                                                                                                                               | 17 | Maximum Effective Supply Current |
| 7  | This symbol indicates that the unit is suitable for carrying out welding operations in an environment which has an increased risk of electric shock. | 18 | N/a                              |
| 8  | Welding Current Symbol                                                                                                                               | 19 | N/a                              |
| 9  | Rated No-load Voltage                                                                                                                                | 20 | N/a                              |
| 10 | Range Of Output                                                                                                                                      | 21 | N/a                              |
| 11 | Duty Cycle Symbol                                                                                                                                    | 22 | Degree Of Protection             |

## DUTY CYCLE

This welder is covered by regulations EN60974-1 and EN 50199, where the Duty Cycle (X) is expressed as a percentage of time the machine may be used in a given period for a specified welding current.

i.e. When welding at 65 Amps the machine may be used for 6 minutes (60%) in any 10 minute period,

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