

Clarke®



SPOT WELDER

MODEL NO: SPOT 4000

PART NO: 6030030

OPERATION & MAINTENANCE INSTRUCTIONS



GC0915

INTRODUCTION

Thank you for purchasing this CLARKE Spot 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 product giving you long and satisfactory service.

GUARANTEE

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.

ENVIRONMENTAL RECYCLING POLICY



Through purchase of this product, the customer is taking on the obligation to deal with the WEEE in accordance with the WEEE regulations in relation to the treatment, recycling & recovery and environmentally sound disposal of the WEEE.

In effect, this means that this product must not be disposed of with general household waste. It must be disposed of according to the laws governing Waste Electrical and Electronic Equipment (WEEE) at a recognised disposal facility.

If disposing of this product or any damaged components, do not dispose of with general waste. This product contains valuable raw materials. Metal products should be taken to your local civic amenity site for recycling of metal products.

SAFETY WARNINGS



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.

ELECTRIC SHOCK

1. Do not touch live electrical parts.
2. Never use electrode holders or cables which are damaged.
3. Keep the working environment, equipment, cables and clothing free from grease, oil, moisture and dirt.
4. Ensure the welding machine has been correctly earthed.
5. The operator must be insulated from the floor using a dry insulation mat.
6. Always ensure a second person is present in case of accident.
7. Keep welding cables away from power cables.
8. Regularly inspect the condition of the cables for signs of damage.
9. Ensure the earth connector is secured to bare metal adjacent to weld, and when not in use insulated for safety. - Keep all equipment well maintained.
10. The operator must not allow any gas cylinders in the vicinity of the work piece from becoming part of the welding circuit.

FUMES & GASES

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

FIRE OR EXPLOSION

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

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

PERSONAL PROTECTION

1. Always protect your body with suitable clothing.
 - The use of neck protection may be necessary against reflected radiation.
 - Arc 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.
2. Always use suitable welding shields equipped with appropriate protection filters.
3. Ensure a protective screen is used to avoid accidental arc glare where there are pedestrians and traffic.
4. Do not weld in the vicinity of children or animals and ensure no one is looking before striking an arc.
5. Wear hearing protection if required.
6. Allow the weld to cool. Hot metal should never be handled without gloves.
7. Take care when adjusting or maintaining the electrode assembly, that 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 skin burns.
 - Flammable hair sprays/gels should not be used by persons intending to weld.

PROTECTIVE CLOTHING

1. Wear gauntlet type gloves designed for use when welding.
2. Wear an apron and protective shoes.
3. Wear cuffless trousers (not turned up) to avoid catching sparks and slag.
4. Avoid oily or greasy clothing.
5. Protective head and shoulder coverings should be worn if welding overhead.
6. Wear a helmet with safety goggles or glasses with side shields underneath, appropriate filter lenses or plates (protected by clear glass). This is a **MUST** for welding to protect the eyes from radiant energy and spatter. Replace the cover glass if broken, pitted, or spattered.

NOTE: All protective wear inc. masks & head shields **MUST** comply with Personal Protective Equipment Directive 89/686/EEC.

ADDITIONAL SAFETY PRECAUTIONS FOR SPOT WELDING

1. Always ensure that there is ample free air circulating around the outer casing of the machine and that the louvres are unobstructed.
2. Always inspect the cable before use to ensure it is in good condition.
3. Always remove all flammable materials from the welding area.
4. Always keep a fire extinguisher handy;-Dry Powder, CO² or BCF, NOT Water.
5. Never remove any of the cover panels unless the machine is disconnected from the power supply, and never use the machine with any panels removed.
6. 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.
7. Never use or store in a wet/damp environment.
8. Never continue to weld, if, at any time, you feel even the smallest electric shock. Stop welding **IMMEDIATELY**, and **DO NOT** attempt to use the machine until the fault is diagnosed and corrected.
9. Never touch the electrode until the welder is switched OFF.
10. Never allow the cables to become wrapped around the operator or any person in the vicinity.
11. Never change electrodes with bare hands or damp glove.
12. Please read these instructions carefully and retain for future reference.

ELECTRICAL CONNECTIONS



WARNING: READ THESE ELECTRICAL SAFETY INSTRUCTIONS THOROUGHLY.

WARNING: A 13 AMP (BS1363) PLUG IS NOT SUITABLE.

Connect the three core mains cable to a suitable industrial supply isolator, or heavy duty plug. This charger must be connected to a supply that has a rated capacity of greater than 13 Amps.

The supply current rating for this unit should be 25 Amps.




WARNING: THIS APPLIANCE MUST BE EARTHED.

IMPORTANT: The wires in the mains lead are coloured in accordance with the following code:

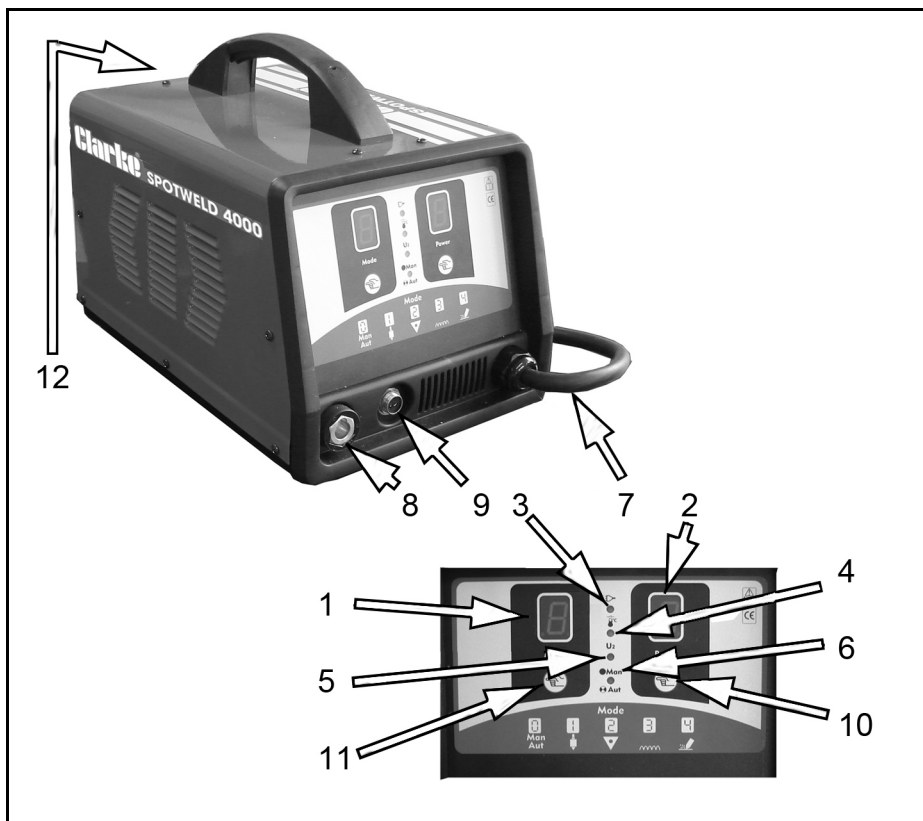
Green & Yellow	Earth
Blue	Neutral
Brown	Live

As the colours of the flexible cable of this appliance may not correspond with the coloured markings identifying terminals in your plug proceed as follows:

- Connect GREEN & YELLOW coloured wire to plug terminal marked with a letter 'E' or  or coloured GREEN or GREEN & YELLOW.
- Connect BROWN wire to terminal marked with a letter L or coloured RED.
- Connect BLUE wire to terminal marked with a letter N or coloured BLACK.

If in doubt, consult a qualified electrician.

OVERVIEW



No	DESCRIPTION	No	DESCRIPTION
1	MODE DISPLAY	7	GROUND CABLE
2	POWER LEVEL DISPLAY	8	GUN CONNECTION SOCKET
3	POWER-ON LED	9	GUN 2-PIN CONNECTION SOCKET
4	THERMAL PROTECTION LED	10	POWER SELECTOR BUTTON
5	OUTPUT VOLTAGE PILOT LED	11	MODE SELECTION BUTTON
6	MANUAL/AUTO MODE LED	12	ON/OFF SWITCH

INTRODUCTION

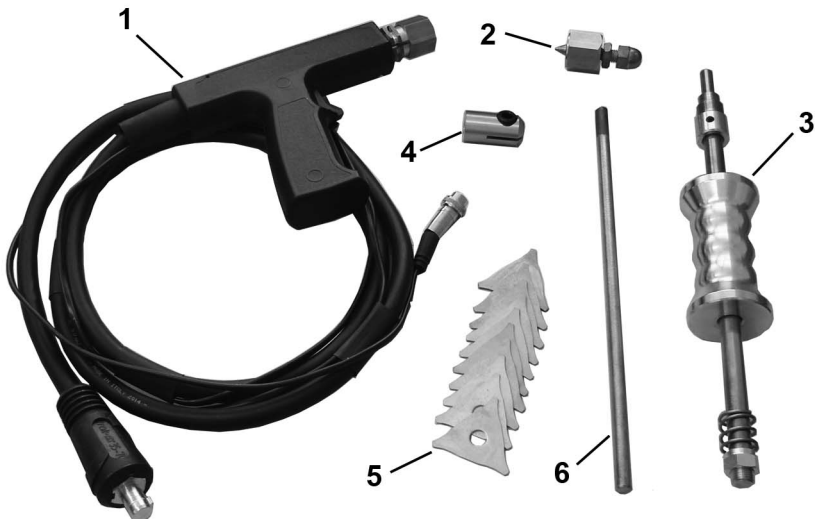
PRODUCT USES

The Spot 4000 has been designed for various steel body repair uses including:

- Heating of pimples in panels, for working back into shape.
- Electronic pulsed weld control for patching of small sheets.
- Spot welding of studs, washers, rivets and moulded panel supports.

INVENTORY

The following components are supplied with the welding unit;



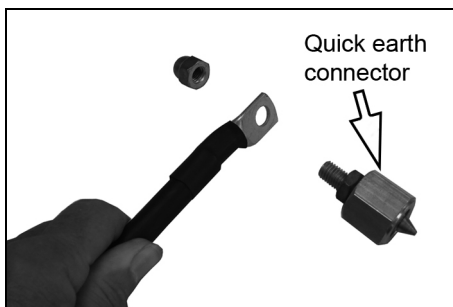
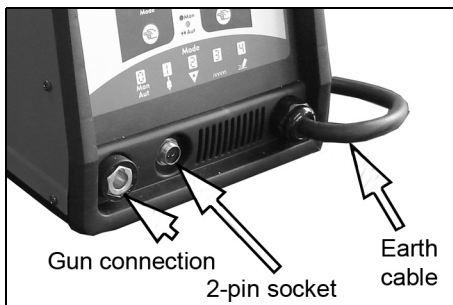
1. Welding Gun with positive cable and control cable
2. Quick-Earth connector
3. Slide Hammer
4. Screw-on mandrel
5. Triangular washers (x 10)
6. Carbon electrode

Ensure the welder and its components suffered no damage during transit and that all components are present. Should any loss or damage be apparent, please contact your CLARKE dealer immediately.

OPERATION OF THE UNIT

GUN CONNECTION

1. Insert the large connector of the welding gun into the gun connection socket (8) and turn clockwise until tight.
2. Connect the small connector on the gun to the 2-pin socket (9).
- The earth cable (7) is already connected to the welder.
3. Connect the quick earth connector to the ground (earth) cable.

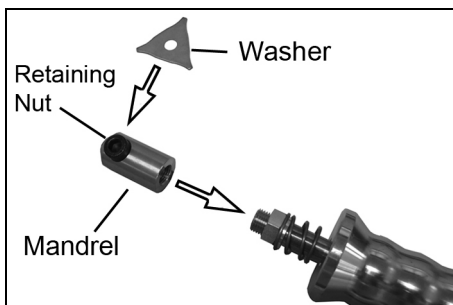


SLIDE HAMMER CONNECTION

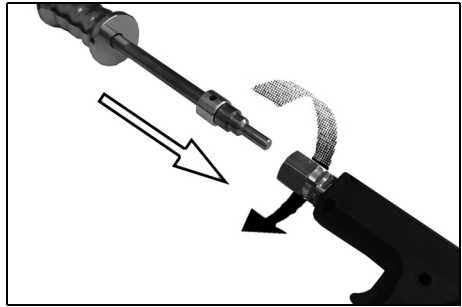


WARNING: ALWAYS SWITCH OFF THE WELDER BEFORE FITTING OR REMOVING ELECTRODES FROM THE GUN.

1. Screw the mandrel onto the shaft of the slide hammer.
2. Remove the retaining nut and fit a triangular washer to the mandrel. Secure with the retaining nut.

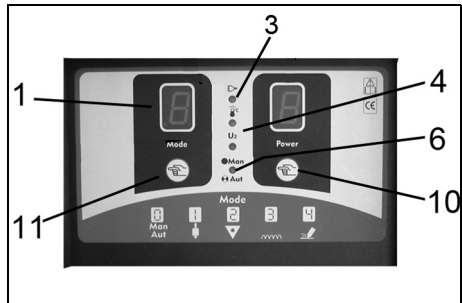


3. Fit the slide hammer to the securing collet of the welding gun.
- The hammer can be replaced by an electrode dependant on the type of work being done.



WELDER SET-UP

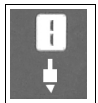
1. Turn the welder on by the power switch at the rear.
- The Power On LED (3) and both the digital displays will light up. The Mode display will read '0'.
2. To switch between AUTOMATIC/MANUAL modes, press and hold the power select button (10).



- In MANUAL mode the MANUAL/AUTO LED (6) will be off and welding will be performed by squeezing the trigger switch.
- In AUTOMATIC mode the MANUAL/AUTO LED (6) will be on and the electrode welds automatically on contact with the workpiece.
- 3. Before starting work, press the Mode selection button (11) to select one of the working modes (1, 2, 3 or 4) as required.

MAKING AN EARTH CONNECTION

1. Remove any paint or grease from the sheet metal where the weld is to be made.
2. Press the Mode Selection button (11) until '1' (Quick Earth Connection) appears on the Mode display.



3. Press and hold the Quick Earth connector onto the workpiece close to the weld, then touch the sheet metal with the electrode. (Press the gun trigger if you are working in manual mode.)

- The welder will activate and the earth connector will attach itself to the metal.

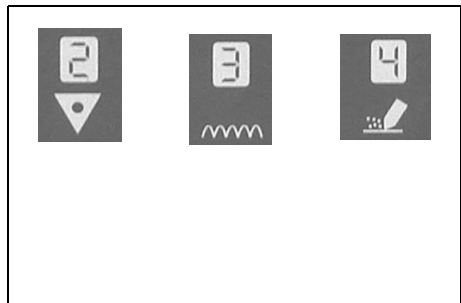
4. Tighten the ring nut onto the sheet metal to hold it firm.

5. To remove the quick earth connector, continue turning the ring nut until the connector breaks away from the sheet metal.

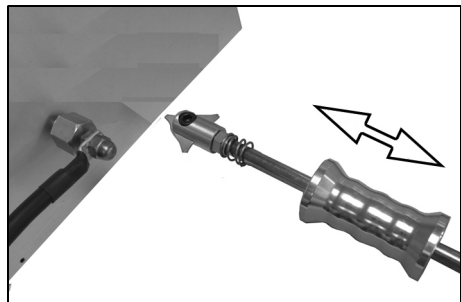
NOTE: It is essential to connect the Quick Earth Connector to any doors when welding them, so that the current will not be passing through the door hinges.

MODE SELECTION

1. Depending upon the type of work, use the Mode Selection button (11) to select the desired tool symbol and the corresponding number will appear on the Mode display (1).



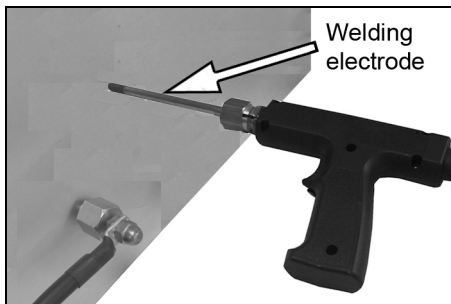
2. Select Mode 2 (the triangular washer symbol). Touch the electrode (the triangular washer) against the sheet metal and perform a weld.
- The slide/extractor hammer can now be used to pull out the sheet metal.





WARNING: ALWAYS SWITCH OFF THE WELDER BEFORE FITTING OR REMOVING ELECTRODES FROM THE GUN.

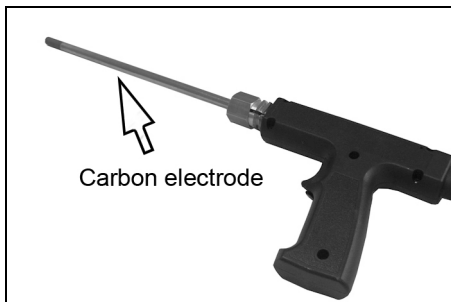
3. Press the mode button again to select Mode 3 (Welding). By fitting a welding electrode (not supplied) to the gun, it can be used to weld additional small steel attachments including nails/pins used for straightening out body panels.



4. Press the Mode button again to select Mode 4. Fit the Carbon Electrode to the gun for locally heating the sheet metal.

SETTING THE WELDING CURRENT

1. The welding current is pre-set but if you wish to change it, press the Power Selector button (10).



SPOT WELDING

MANUAL MODE

- Make contact between the accessory fitted to the gun, and the sheet metal. Press the gun trigger for each weld.

AUTOMATIC MODE

1. Make contact between the electrode and the sheet metal. The welder will automatically detect the contact and welding will occur at that point.
2. To generate a subsequent weld, it is necessary to break the contact for at least half a second before making a new contact.

SETTING THE ACTIVATION TIME

There are two time settings for the activation time (the time from the contact of the electrode with the workpiece to the weld taking place).

The chosen option is shown by a point on the left bottom corner of the Mode Display (1). Settings are:

- ON = Long duration
- OFF = Short duration
- The welder remembers the option last selected.

TO CHANGE THE ACTIVATION TIME

1. Turn the welder OFF.
 2. Hold the Mode Selection key (11) and turn the welder ON.
 3. When the Mode display lights up, release the Mode Selection key.
 4. Repeat the sequence to change the activation time again.
- When the welder is turned off it will remember the last option selected.

TROUBLESHOOTING

PROBLEM	CAUSE	REMEDY
Weld not successful.	Wrong mode selected.	Select the correct mode.
	Dirty contact surface.	Clean the work surface.
	Power too low.	Increase welding power.
Poor quality spot welds.	Damaged electrode.	Replace the electrode.
	Charge voltage too high.	Reduce the power setting.
	Bad earth connection.	Check for proper contact.
	Dirty work surface.	Clean the work surface.
No welding	Cable not properly connected.	Check for correct contact between unit and cables.
	Welder overheating.	Check thermal protection LED and if lit wait for the welder to cool down.
	No current.	Check for sound connections.
	Mechanical failure/problem with the machine control.	Contact your Clarke dealer.

MAINTENANCE

CLEANING

1. Always turn off the welder and disconnect from the power supply before cleaning.
2. Clean the outside surfaces of the welder with a duster or a soft, moist cloth. Do not use solvents which could damage the plastic components.

STORAGE

1. Switch off the unit and disconnect the power cable.
2. Remove and contract the earth cable and gun assembly and store it carefully.
3. Cover the unit and store it in a dry location.

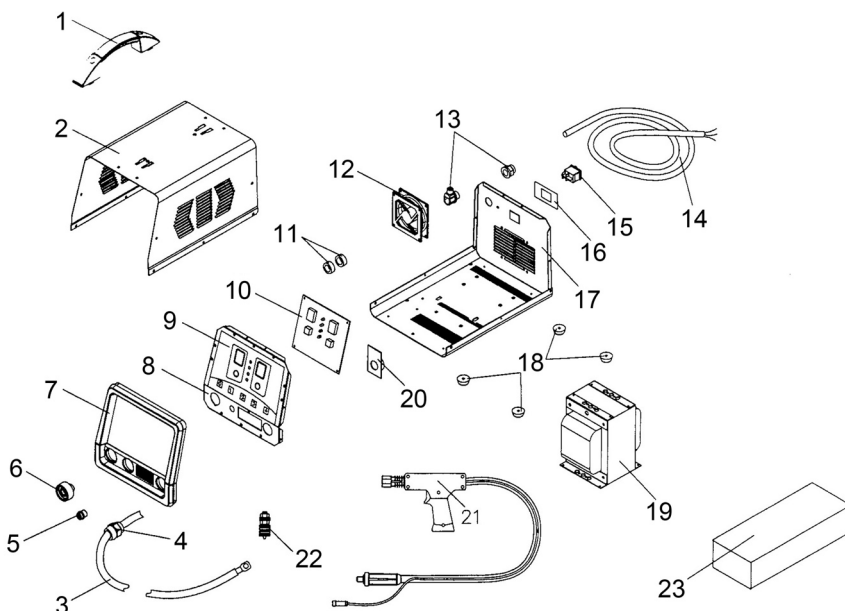
DE-COMMISSIONING THE PRODUCT

Should the product become completely unserviceable and require disposal, it should be taken to a recycling centre for disposal according to the European WEEE Directive or according to local regulations.

TECHNICAL SPECIFICATIONS

Power Supply	220-230V/50Hz (25 A)
Weight	22.3 kg
Dimensions (L x W x H)	180 x 330 x 295 mm
Power @ 50%	2.5 kVA
Max Peak Power	13 kW
Open Circuit Voltage	8 VAC
Output Current	2850 A (2% duty cycle)
Max Output Current	3200 A
Protection Level	IP22

PARTS LIST/DIAGRAM



NO	DESCRIPTION
1	PLASTIC HANDLE
2	COVER PANEL
3	EARTH CABLE
4	CABLE CLAMP
5	2-PIN CONNECTOR SOCKET
6	WELDING GUN SOCKET
7	FRONT FRAME
8	FRONT PANEL
9	FRONT LABEL
10	CONTROL CIRCUIT BOARD
11	FERRITE TEROIDAL
12	COOLING FAN ASSEMBLY

NO	DESCRIPTION
13	CABLE CLAMP
14	POWER SUPPLY CABLE (NO PLUG)
15	FUSED ON/OFF SWITCH
16	I/O LABEL
17	BOTTOM /REAR PANEL
18	RUBBER FOOT
19	TRANSFORMER
20	SHORT CIRCUIT CONTROL
21	GUN WITH CONTROL CABLE
22	QUICK-EARTH CONNECTOR
23	ACCESSORIES KIT

DECLARATION OF CONFORMITY



Clarke[®]
INTERNATIONAL

Hemnall Street, Epping, Essex CM16 4LG

DECLARATION OF CONFORMITY

This is an important document and should be retained.

We hereby declare that this product(s) complies with the following directive(s):

2004/108/EC *Electromagnetic Compatibility Directive.*

2006/95/EC *Low Voltage Equipment Directive.*

2011/65/EU *Restriction of Hazardous substances.*

The following standards have been applied to the product(s):

EN 62135-1, EN 62135-2.

The technical documentation required to demonstrate that the product(s) meet(s) the requirement(s) of the aforementioned directive(s) has been compiled and is available for inspection by the relevant enforcement authorities.

The CE mark was first applied in: 2015

Product Description: Spot Welder

Model number(s): Spot 4000

Serial / batch Number: N/A

Date of Issue: 01/08/2015

Signed:

J.A. Clarke
Director

OTHER PRODUCTS FROM THE CLARKE WELDING RANGE INCLUDE

MIG Welders



Great range from
30 amps to 260 amps

Arc Welders



Great range from
40 amps to 400 amps

Arc/TIG Welders



Ultra-lightweight units
from 80-100 amps

Spot Welders



Professional automotive
spot welders

A SELECTION FROM THE VAST RANGE OF

Clarke®

QUALITY PRODUCTS

AIR COMPRESSORS

From DIY to industrial, Plus air tools, spray guns and accessories.

GENERATORS

Prime duty or emergency standby for business, home and leisure.

POWER WASHERS

Hot and cold, electric and engine driven - we have what you need

WELDERS

Mig, Arc, Tig and Spot. From DIY to auto/industrial.

METALWORKING

Drills, grinders and saws for DIY and professional use.

WOODWORKING

Saws, sanders, lathes, mortisers and dust extraction.

HYDRAULICS

Cranes, body repair kits, transmission jacks for all types of workshop use.

WATER PUMPS

Submersible, electric and engine driven for DIY, agriculture and industry.

POWERTOOLS

Angle grinders, cordless drill sets, saws and sanders.

STARTERS/CHARGERS

All sizes for car and commercial use.



PARTS & SERVICE: 0208 988 7400

E-mail: Parts@clarkeinternational.com or Service@clarkeinternational.com

SALES: UK 01992 565333 or Export 00 44 (0)1992 565335

Clarke® INTERNATIONAL Hemnall Street, Epping, Essex CM16 4LG
www.clarkeinternational.com