

Champion®

weld



WELDER GENERATOR

MODEL NO: WH215

PART NO: 8130535

OPERATION & MAINTENANCE INSTRUCTIONS



ORIGINAL INSTRUCTIONS

GC0320

INTRODUCTION

Thank you for purchasing this CLARKE Welder Generator designed to provide single phase electrical power for power or arc welding. No other appliance other than those indicated should be used with this machine.

Please read through this document and the instruction manuals for the engine and alternator thoroughly before operating the machine. In doing so you will ensure the safety of yourself and that of others around you. This will also ensure that the welder generator will give you long and satisfactory service.

It is important that all accompanying instructions are observed. Clarke International does not accept responsibility for any injury or damage caused through improper use.

Please keep these instructions in a safe place for future reference.

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



By purchasing this product, the customer is taking on the obligation to deal with its safe disposal in accordance with the Waste Electrical and Electronic Equipment (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 at a recognised disposal facility.

Please note that 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. ALWAYS CONSULT THE MACHINE'S DATA PLATE.

GENERAL SAFETY PRECAUTIONS FOR ALL TYPES OF WELDING



WARNING: AS WITH ALL MACHINERY, THERE ARE CERTAIN HAZARDS INVOLVED WITH THEIR OPERATION AND USE. EXERCISING RESPECT AND CAUTION WILL CONSIDERABLY LESSEN THE RISK OF PERSONAL INJURY. HOWEVER, IF NORMAL SAFETY PRECAUTIONS ARE OVERLOOKED, OR IGNORED, PERSONAL INJURY TO THE OPERATOR MAY RESULT.

FAILURE TO FOLLOW THESE RULES MAY RESULT IN SERIOUS PERSONAL INJURY

GENERAL PRECAUTIONS

A) BURN PREVENTION

Wear protective clothing - gauntlet gloves designed for use in welding, apron, and protective shoes. Button any shirt collar and pocket flaps, and wear cuffless trousers to avoid entry of sparks and slag. 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 (and chipping) to protect the eyes from radiant energy and spatter. Replace cover glass when broken, pitted, or spattered. Avoid oily greasy clothing. A spark may ignite them. Hot metal should never be handled without gloves. 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. Ear plugs should be worn when working overhead or in a confined space. A hard hat should be worn when others are working overhead. Flammable hair preparations should not be used by persons intending to weld or cut.

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

B) TOXIC FUME PREVENTION

Severe discomfort, illness or death can result from fumes, vapours, heat, or oxygen enrichment or depletion that welding (or cutting) may produce. Prevent them with adequate ventilation. NEVER ventilate with oxygen. Lead-, cadmium-, zinc-, mercury- and beryllium-bearing materials, when welded (or cut) may produce harmful concentrations of toxic fumes. Adequate local exhaust ventilation must be used, or each person in the area as well as the operator must wear an air-supplied respirator. For beryllium, both must be used. Metals coated with or containing materials that emit toxic fumes should not be heated unless any coating is removed from the work surface, the area is well ventilated, or the operator wears an air-supplied respirator. Only work in a confined space when it is being force ventilated and, if necessary, while wearing an air-supplied respirator. Vapours from chlorinated solvents can be decomposed by the heat of the arc (or flame) to form PHOSGENE, a highly toxic gas, and other lung and eye irritating products. The ultraviolet (radiant)

energy of the arc can also decompose trichloroethylene and perchloroethylene vapours to form phosgene. DO NOT WELD or cut where solvent vapours can be drawn into the welding or cutting atmosphere or where the radiant energy can penetrate to atmospheres containing even minute amounts of trichloroethylene or perchloroethylene.

C) FIRE AND EXPLOSION PREVENTION

Causes of fire and explosion are:

1. Combustibles reached by the arc, flame, flying sparks, hot slag or heated material;
2. misuse of compressed gases and cylinders
3. short circuits.

BE AWARE that flying sparks or falling slag can pass through cracks, along pipes, through windows or doors, and through wall or floor openings, out of sight of the goggle wearing operator.

To prevent fires and explosion: keep equipment clean and operable, free of oil, grease, and (in electrical parts) of metallic particles that can cause short circuits. If combustibles are in the area, do NOT weld. Move the work if practicable, to an area, free of combustibles.

Avoid working in paint spray rooms, dip tanks, storage areas, ventilators. If the work cannot be moved, move any combustibles away from sparks and heat or protect against ignition with suitable fire- resistant covers or shields.

Walls, ceilings and floors near the work should be protected by heat resistant covers or shields. A 'fire watcher' must be standing by, with suitable fire extinguishing equipment during, and for some time after welding or cutting if:

1. appreciable combustibles are within 10m.
2. appreciable combustibles are further than 10m but can be ignited by sparks.
3. openings (concealed or visible) in floors or walls can expose combustibles to sparks.
4. combustibles adjacent to walls, ceilings, roofs or metal partitions can be ignited by radiant or conducted heat.

After work, check that area is free of sparks, glowing embers and flames. An empty container that held combustibles or that can produce flammable or toxic vapours when heated, must never be welded on or cut, unless the container has first been cleaned. This includes a thorough steam or caustic cleaning (or a solvent or water washing, depending on the combustible's solubility) followed by purging and inerting with nitrogen or carbon dioxide, and using protective equipment.

Water filling just below the working level may substitute for inerting.

A container with unknown contents should be cleaned (see paragraph above). Do NOT depend on sense of smell or sight to determine if it is safe to weld or cut. Hollow castings or containers must be vented before welding or cutting - they can explode.

In explosive atmospheres, never weld or cut where the air may contain flammable dust, gas, or liquid vapours.

ELECTRIC ARC WELDING

Comply with the precautions above and this section. Arc welding, properly done, is a safe process, but a careless operator invites trouble. The equipment carries high currents at significant voltages. The arc is very bright and hot. Sparks fly, fumes rise, ultraviolet and infrared energy radiates and work pieces are hot. The wise operator avoids unnecessary risks and protects himself and others from accidents.

A) BURN PROTECTION

The welding arc is intense and visibly bright. It's radiation can damage eyes, penetrate lightweight clothing, reflect from light coloured surfaces and burn the skin and eyes. Skin burns resemble acute sunburn, those from gas - shielded arcs are more severe and painful.

DON'T GET BURNED! FOLLOW ALL SAFETY PRECAUTIONS!

PROTECTIVE CLOTHING

Wear long sleeved clothing (particularly for gas shielded arc) in addition to gloves, apron and strong shoes. As necessary, use additional protective clothing such as leather jacket or sleeves, flameproof apron and fire-resistant leggings. Avoid outer garments of untreated cotton. For bare skin protection wear dark substantial clothing. Keep collars closed to protect the chest and neck and button any pockets to prevent entry of sparks.

EYE AND HEAD PROTECTION

Protect your eyes from exposure to arc. NEVER look at an electric arc without a welding helmet or shield containing an appropriate filter plate (Please refer to the section 'Welding Shield'). Always place over the face before striking an arc. Protect the filter plate with a clear cover plate. Any cracked or broken helmet or shield should NOT be worn; radiation can pass through to cause burns.

Cracked, broken, or loose filter plates must be replaced IMMEDIATELY. Replace the clear cover plate when broken, pitted, or spattered. WE SUGGEST you wear flash goggles with side shields under the helmet, to give some protection to the eyes should the helmet not be lowered over the face before an arc is struck. Looking at an arc momentarily with unprotected eyes (particularly high intensity gas-shielded arc) can cause a retinal burn that may

leave a permanent dark area in the field of vision. Before welding whilst wearing contact lenses, seek advice from your optician.

PROTECTION OF NEARBY PERSONNEL

For production welding, a separate, well vented room or enclosed bay is best. In open areas, surround the operation with low reflection, non-combustible screens or panels. Allow for free air circulation, particularly at floor level. Provide face shields for all persons who will be looking directly at the weld. Others working in the area should wear flash goggles. Before starting to weld, make sure that screen or bay doors are closed.

B) TOXIC FUME PREVENTION

Comply with all precautions in 1B.

C) FIRE AND EXPLOSION PREVENTION

Do not overload arc welding equipment. It may overheat cables and cause a fire. Loose cable connections may overheat or flash and cause a fire. Never strike an arc on a cylinder or other pressure vessel. It creates a brittle area that can cause a violent rupture or lead to such a rupture later under rough handling.

D) SHOCK PREVENTION

Exposed live conductors or other bare metal in the welding circuit, or in unearthed, electrically-LIVE equipment can fatally shock a person whose body becomes a conductor. DO NOT STAND, SIT, LIE, LEAN ON, OR TOUCH a wet surface when welding, without suitable protection.

E) PROTECTION FOR WEARERS OF ELECTRONIC LIFE SUPPORT DEVICES (PACEMAKERS)

Magnetic fields from high currents can affect pacemaker operation. Persons wearing pacemakers should consult with their doctor before going near arc welding or spot welding operations.

F) PROTECTION AGAINST SHOCK

Keep your body and clothing dry. Never work in a damp area without adequate insulation against electric shock. Stay on a dry duckboard or rubber mat when dampness or sweat can not be avoided. Sweat, sea water, or moisture between your body and an electrically LIVE part - or earthed metal - reduces the body surface electrical resistance, enabling dangerous and possibly lethal currents to flow through the body.

1) EARTHING THE EQUIPMENT

When arc welding equipment is earthed according to the National Electrical Code and the workpiece is earthed, a voltage may exist between the electrode and any conducting object.

Examples of conducting objects include, but are not limited to, buildings, electrical tools, work benches, welding power source cases, workpieces, etc. Never touch the electrode and any metal object unless the welding power source is off. When installing, connect the frames of each unit such as the welding power source, control, work table and water circulator to the building earth. Conductors must be adequate to carry earth currents safely. Equipment made electrically LIVE by stray current may shock, possibly fatally. Do not EARTH to electrical conduit, or to a pipe carrying ANY gas or a flammable liquid such as oil or fuel.

2) TORCH

A fully insulated torch should be used without protruding screws or other damage.

3) CONNECTORS

Fully insulated lock-type connectors should be used to join welding cable.

4) CABLES

Frequently inspect cables for wear, cracks and damage. IMMEDIATELY REPLACE those with excessively worn or damaged insulation to avoid possibly lethal shock from bare cable. Cables with damaged areas may be taped to give resistance equivalent to original cable. Keep the cable dry, free of oil and grease and protected from hot metal and sparks.

5) TERMINALS AND OTHER EXPOSED PARTS

Terminals and other exposed parts of electrical units should have insulating covers secured before operation.

6) ELECTRODE

a) Equipment with output on/off control (contactor)

Welding power sources for use with the gas metal arc welding, gas tungsten arc welding and similar processes normally are equipped with devices that permit on/off control of the welding power output. When so equipped the electrode wire becomes electrically LIVE when the power source switch is ON and welding gun switch is closed. Never touch the electrode wire or any conducting object in contact with the electrode circuit unless the welding power source is off.

b) Equipment without output on/off control (no contactor)

Welding power sources used with shielded metal arc welding and similar processes may not be equipped with welding power output on/off control devices. With such equipment the electrode is electrically LIVE when the power switch is turned ON. Never touch the electrode unless the welding power source is off.

7) SAFETY DEVICES

Safety devices such as interlocks and circuit breakers should not be disconnected or shunted out. Before installation, inspection, or service of equipment, shut OFF all power and remove line fuses (or lock or red-tag switches) to prevent accidental turning ON of power. Do not open power circuit or change polarity while welding. If, in an emergency, it must be disconnected, guard against shock burns or flash from switch arcing. Always shut OFF and disconnect all power to equipment. A power disconnect switch must be available near the welding power source.

ELECTROMAGNETIC INTERFERENCE (EMC)

Whilst this unit complies with EMC regulations, the user is responsible for installing and using the welding equipment according to the manufacturers instructions. If electromagnetic disturbances are detected then it shall be the responsibility of the user of the welding equipment to resolve the situation. In some cases this remedial action may be as simple as earthing the welding circuit, see 'Note'. In other cases it could involve constructing an electromagnetic screen enclosing the power source and the work complete with associated input filters. In all cases electromagnetic disturbances must be reduced to the point where they are no longer troublesome.

NOTE: *The welding circuit may or may not be earthed for safety reasons. Changing the earthing arrangements should only be authorised by a person who is competent to assess whether the changes will increase the risk of injury, e.g. by allowing parallel welding current return paths which may damage the earth circuits of other equipment.*

ASSESSMENT OF THE AREA

Before installing welding equipment the user shall make an assessment of potential electromagnetic problems in the surrounding area. Avoid using your inverter in the vicinity of:

- other supply cables, control cables, signalling and telephone cables; above, below and adjacent to the welding equipment;
- radio and television transmitters and receivers;
- computer and other control equipment;
- safety critical equipment, e.g. guarding of industrial equipment;
- pacemakers and hearing aids etc;
- equipment used for calibration or measurement;

- other equipment in the environment. The user shall ensure that other equipment being used in the environment is compatible. This may require additional protection measures;

It may be possible to avoid the above by changing the time of day that welding or other activities are to be carried out.

The size of the surrounding area to be considered will depend on the structure of the building and other activities that are taking place. The surrounding area may extend beyond the boundaries of the premises.

METHODS OF REDUCING EMISSIONS

MAINS SUPPLY

Welding equipment should be connected to the mains supply according to the manufacturers recommendations. If interference occurs, it may be necessary to take additional precautions such as filtering of the mains supply. Consideration should be given to shielding the supply cable of permanently installed welding equipment, in metallic conduit or equivalent. Shielding should be electrically continuous throughout its length. The shielding should be connected to the welding power source so that good electrical contact is maintained between the conduit and the welding power source enclosure.

MAINTENANCE OF THE WELDING EQUIPMENT

The welding equipment should be routinely maintained according to the manufacturers recommendations. All access and service doors and covers should be closed and properly fastened when the welding equipment is in operation. The welding equipment should not be modified in any way except for those changes and adjustments covered in the manufacturers instructions. In particular, the spark gaps of arc striking and stabilizing devices should be adjusted and maintained according to the manufacturers recommendations.

WELDING CABLES

The welding cables should be kept as short as possible and should be positioned close together, running at or close to the floor level.

EQUIPOTENTIAL BONDING

Bonding of all metallic components in the welding installation and adjacent to it should be considered. However, metallic components bonded to the work piece will increase the risk that the operator could receive a shock by touching these metallic components and the electrodes at the same time. The operator should be insulated from all such bonded metallic components.

EARTHING OF THE WORKPIECE

Where the workpiece is not bonded to earth for electrical safety, nor connected to earth because of its size and position, e.g. a ships hull or building steelwork, a connection bonding the workpiece to earth may reduce emissions in some, but not all instances.

Care should be taken to prevent the earthing of the workpiece increasing the risk of injury to users, or damage to other electrical equipment.

Where necessary, the connection of the workpiece to earth should be made by a direct connection to the workpiece, but in some countries where direct connection is not permitted, the bonding should be achieved by suitable capacitance, selected according to national regulations.

SCREENING AND SHIELDING

Selective screening and shielding of other cables and equipment in the surrounding area may alleviate problems of interference. Screening of the entire welding installation may be considered for special applications.

PREPARATION OF THE WORKING AREA

The working area must be sufficiently spacious, with low humidity and well-ventilated so as to avoid any fumes which develop from the welding process and from incidental material adhering to the pieces to be welded (oils, paints, tars...) which may cause danger to the operator.

Avoid welding by contact with humid parts nearby combustible liquids. Least of all, do not weld upon tanks which may contain inflammable residuals.



WARNING: ELECTRIC SHOCK CAN BE FATAL. A PERSON QUALIFIED IN FIRST AID SHOULD ALWAYS BE PRESENT IN THE WORKING AREA. IF PERSON IS UNCONSCIOUS AND ELECTRIC SHOCK IS SUSPECTED, DO NOT TOUCH THE PERSON IF HE OR SHE IS IN CONTACT WITH THE WELDER OR CABLES. DISCONNECT THE WELDER FROM THE POWER SOURCE AND THEN USE FIRST AID. DRY WOOD, OR OTHER INSULATING MATERIAL CAN BE USED TO MOVE CABLES, IF NECESSARY, AWAY FROM THE PERSON.

FIRE PREVENTION

- **ALWAYS** switch the engine OFF when refuelling.
- **ALWAYS** refuel away from any source of heat.
- **ALWAYS** refuel in a well ventilated area.
- **NEVER** overfill fill the tank, fill to the level specified.
- **NEVER** smoke whilst refuelling and avoid smoking or using a naked flame near the machine.
- **NEVER** start the engine if there is a fuel spill. Any spillage must be wiped clean and the machine allowed to dry before attempting to start the engine.

PREVENTION OF ELECTRIC SHOCK

- **ALWAYS** store the machine undercover when not in use and away from damp or wet conditions.
- **NEVER** use the machine when it is raining or snowing or in wet or damp conditions.
- **NEVER** operate the machine with wet hands.
- **NEVER** use water or any other liquids to clean the unit.

POSITIONING THE MACHINE FOR USE

- **ALWAYS** leave at least a 1 metre gap between the machine and any surrounding building or structure.
- **ALWAYS** ensure the machine is on a solid, flat surface.

- **ALWAYS** ensure the surrounding area is free from any material that could burn or be damaged by heat.
- **NEVER** move or tilt the machine whilst it is switched on.
- **NEVER** cover or enclose the machine whilst it is in use.
- Be aware of the weight of the machine, do not attempt to lift or move the machine without the assistance or suitable lifting equipment.

EXHAUST GAS PRECAUTIONS

WARNING!: EXHAUST FUMES CAN BE FATAL

- **ALWAYS** ensure that there is adequate ventilation when using the machine.
- **ALWAYS** position the machine so that the exhaust is pointing away from people or animals.
- If the machine is to be used indoors the exhaust **MUST** be piped to atmosphere.

ADDITIONAL SAFETY PRECAUTIONS FOR ARC WELDERS

- **NEVER** attempt to remove any of the panels unless the machine is disconnected from the 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 provided.

PREPARATION FOR USE

FUELLING

Fill with fuel, according to the instructions within the engine manual.

NOTE: Always use a fuel funnel to fill the tank so as to avoid accidental spillage of fuel. If fuel is spilled it must be removed from the unit and the surrounding area, BEFORE attempting to start the engine.



WARNING: OBSERVE ALL SAFETY PRECAUTIONS WHEN HANDLING FUEL. ALWAYS REFUEL IN A WELL VENTILATED AREA AWAY FROM ANY HEAT SOURCES.

WARNING: ENSURE THERE IS ADEQUATE FUEL IN THE TANK WHEN USING THE MACHINE. RUNNING OUT OF FUEL OR STOPPING THE ENGINE SUDDENLY WITH A LOAD CONNECTED COULD CAUSE SERIOUS DAMAGE.

WARNING: ALLOW THE UNIT TO COOL DOWN BEFORE REFUELLING.

WARNING: BE AWARE THAT FUEL AND LUBRICANTS ARE POTENTIALLY CARCINOGENIC, DIRECT SKIN CONTACT SHOULD BE AVOIDED, WEAR SUITABLE RUBBER GLOVES.

EXTENSION CABLES

All extension cables, from the generator set to the appliance, must be carefully selected, fitted and maintained. Cables in accordance with IEC 245-4 should be used.

Cables should be inspected regularly, and should be replaced, not repaired in the event of a defect.

The length and cross section of conductors should be selected according to the job to be done. The table below is an indication of the sizes that should be used.

Conductor (mm ²)	Max Length (M)	Current (Amps)	Single Phase (kW)
1.5	25	10	2.3
2.5	40	16	3.7
4.0	60	28	6.5

IMPORTANT! Ensure the cable is fully unwound when in use to avoid overheating, and the placing of extra load on the generator.

OPERATION - GENERATOR

IMPORTANT: Ensure all precautions are taken, referring to this and the engine manual, before proceeding.

1. Start the engine. (refer to engine manual) and allow to run for a few minutes at full speed in order for it to warm up.

IMPORTANT: Ensure no appliances are connected to the generator when starting the engine.

2. Check the condition of the appliance, including the supply cable and the extension cable if used, and ensure it is switched OFF. Ensure also that the operating voltage is the same as the output from the generator.
3. Ensure the voltage selector switch, shown at 'C' Fig.2 is set to the deliver the appropriate output - 115V or 230V.

4. Turn the Gen/Weld knob - 'A' Fig.1, to **GEN**.

5. Turn the Welding Current knob - 'B' Fig.1, to **GEN 230V**.

6. With the engine running smoothly, connect the appliance to the appropriate receptacle:
BLUE - 230V, YELLOW - 115V.

7. Switch ON the appliance.

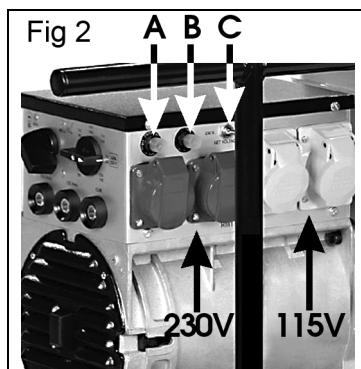


NOTE: If the AC circuit is overloaded the circuit protection switch will trip. To reset the circuit, first disconnect the appliance, and rectify the cause of the overload. Wait a short period and then press the appropriate reset button, shown at 'A' and 'B', Fig.2.

BE AWARE!

Some appliances draw more current on start-up than their normal running current, i.e. electric motors and compressors. If in any doubt as to whether an appliance is compatible or not, please consult your CLARKE dealer.

Additionally, please refer to the specifications to ensure the machine is used under the correct operating conditions.



OPERATION - WELDING

The welding capabilities of your welder are given on the data label printed on the rear panel of the machine, and reproduced on page 16. An explanation of markings and symbols appearing on the data label is shown on page 21.

THERMAL OVERLOAD PROTECTION

If the duty cycle of the welder is exceeded (see Specifications), the Overload Protection Device will automatically cut the power to prevent damage to the machine. Should the cut-out operate, you will have to wait until the transformer cools down (approx. 30 minutes), when the overload device will automatically reset itself.

Although no harm will be done to the machine if/when the overload device is actuated, its frequent use could eventually result in damage.

PREPARATION FOR WELDING

1. Set the GEN/WELD knob - 'A', Fig.1 to WELD.
2. Set the Welding Current knob - 'B', Fig.1, to the appropriate welding current noting that TWO ranges are provided - HIGH and LOW.
 - High range is indicated in RED, Low range in BLACK
3. Connect the welding lead to the appropriate DIN socket:
 - 135 Amp - LOW range
 - 200 Amp - HIGH range.
4. Connect the earth lead to the COM DIN socket.

Ensure the earth lead is connected to the work piece.

IMPORTANT: Ensure also 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.

5. Select the appropriate electrode, which should be approximately the same thickness as the piece to be welded, for single pass welding.

NOTE: With practice you will get a feel for the best current settings for different welding rod thicknesses.

The chart below gives an indication of the thickness of material/welding rod thickness and the corresponding welding current. This is intended as a guide only.

SIZE OF WELDING ROD THICKNESS OF METAL			CURRENT SETTING
1/16"	16 swg	1.5 mm	40-55
	14 swg	2.0 mm	60-75
	12 swg	2.5 mm	75-105
1/8"	10 swg	3.25 mm	105-135
		4.0 mm	135-200

SHUTTING DOWN THE MACHINE

IMPORTANT: Never switch OFF the engine whilst an electrical appliance is connected.

1. Switch OFF the electrical appliance.
2. Unplug the appliance from the generator.
3. Switch the engine OFF (refer to engine manual).
4. Turn the fuel OFF (refer to engine manual).

DUTY CYCLES

This model is covered by regulations EN 60974-1 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.

IDENTIFICATION		Clarkeweld			
Clarke International, Hemnall Street, Epping, Essex CM16 4LG, England					
Model No. WH215		Part No. 8130535		Serial No.	
		EN60974-1:1998			
WELDING OUTPUT					
	\sim	X	35%	60%	100%
s	$U_0 \dots 58V$	I_2	200A	170A	120A
		U_2	30V	26V	22V
ENERGY INPUT					
	3,000rpm	3,060rpm	13Hp		
AUXILIARY POWER OUTPUT					
1AC \sim /50Hz	230V 115V	23A 35A			

i.e. using the example above:

When welding at 170 Amps the machine may be used for 6 minutes (60%) in any 10 minute period, or, the machine may be used continuously, (100%) when welding at 120 Amps.

WELDING TECHNIQUE

1. With the welder correctly connected to the mains supply and the leads attached to the machine, ensure the earth clamp is firmly attached to the workpiece on CLEAN, SOLID metal and as close to the proposed weld as is practical, and the appropriate current setting for the job has been set.
2. Start the engine.

NOTE: *If the machine stops at any time and the amber light on the front panel illuminates, the thermal cutout has intervened. Wait until the transformer has cooled sufficiently for work to recommence. This could take considerable time and is denoted by the amber light going OUT.*

3. Bring the electrode to the work surface at an angle of approx 70° then, **BEFORE** you strike an arc, bring the face shield up to protect your eyes.

Strike an arc by briefly touching the work surface with the tip of the electrode. Once the arc is struck or primed, raise the electrode slightly and maintain it at a distance of approx 1.5mm (1/16") from the work surface, then proceed to move the electrode along its intended path, keeping the tip in the molten pool at all times. An even crackling noise should be heard, which is an indication of a good weld.

NOTE: This is the most difficult aspect for most beginners. It is recommended that you practice on some scrap material in order to get a feel of the operation.

If the electrode is not withdrawn quickly enough once the arc is primed, there is a possibility that the electrode will weld itself to the workpiece. Should this happen, give it a sharp tug to free it and try again. If this fails to free it, turn OFF the machine immediately as it will quickly overheat.

If you withdraw the electrode too far once the arc is primed, you will lose the arc and have to try again.

4. Inspect the job carefully. With a correct combination of electrode size and current setting the area of weld should be complete fusion of the electrode and parent metal/s. Any slag which forms on the surface should be chipped away with a pick/brush.

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. This is a common problem, so do not worry as practice will quickly cure this.

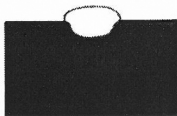
The following tips should help you improve your welding technique fairly quickly.

WELDING MISTAKES

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.

1. Arc too short

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



2. 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



3. 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.



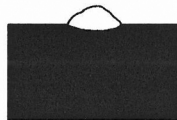
4. Electrode moved too quickly

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



5. 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.



6. 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.

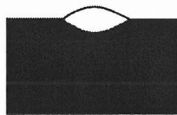


7. The perfect weld

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, even crackling sound.



TYPES OF JOINT



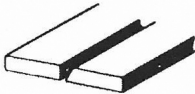
BUTT JOINT



SINGLE V-JOINT



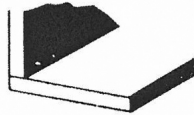
DOUBLE V-JOINT



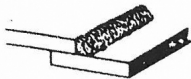
SINGLE BEVEL JOINT



DOUBLE BEVEL JOINT



CORNER JOINT



SINGLE FILLET LAP JOINT



DOUBLE FILLET LAP JOINT



SINGLE STRAP JOINT



DOUBLE STRAP JOINT

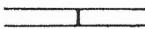


SINGLE FILLET T-JOINT

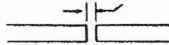


DOUBLE FILLET T-JOINT

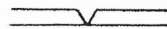
2 to 3 mm.



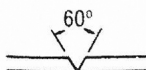
CLOSED JOINT



OPEN JOINT

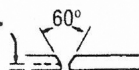


VEE JOINT



FEATHER EDGE
3 mm. OR MORE

2 to 3 mm.



SHOULDER EDGE
6 mm. OR MORE



DOUBLE VEE JOINT

Shoulder

MAINTENANCE

GENERAL CARE

1. Check all cables periodically; they must be in good condition and not cracked.
2. Always ensure the generator's air vents are completely clear. Brush away any dust which may have accumulated.

The engine requires periodic servicing. Please refer to the engine manual for details.

If the machine is not going to be used for some time the engine must be adequately prepared. Please refer to the engine manual for details.

IMPORTANT: ALWAYS switch the engine OFF before servicing or cleaning

ELECTRICAL TROUBLE SHOOTING

Problem: No AC Output	
CAUSE	REMEDY
Selector switch in the wrong position.	Set selector switch
Tripped circuit breaker	Re-set AC safety trip
Poor connection or damaged lead	Check connection and or replace lead
Broken AC connector	Contact CLARke service dept
Faulty circuit breaker	Contact CLARke service dept
Problem: Erratic supply	
CAUSE	REMEDY
Incorrect engine rpm	Set engine rpm. Consult your CLARKE dealer
Alternator defect	Contact CLARke service dept

ENGINE TROUBLESHOOTING

Consult the suppliers engine manual.

ELECTRICAL SYMBOLS EXPLAINED

The full technical specification for your welder is to be found printed in a table on the rear panel of the machine.

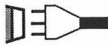
The meaning of the markings and symbols shown in the table are explained as follows.



Symbol for dropping characteristic



Symbol for manual arc welding and covered electrodes



Symbol for the mains supply and No. of phases

X

Duty Cycle, expressed as a % in a 10 min period

1~ 

Single Phase Transformer

$U_{0_} \text{---} 1 \sim V$ Min. and Max. rated no load voltage

50Hz Rated frequency for alternating current

$I_2 \text{---} \text{---} A$ Min. and Max. rated value of the welding current

 mm

Symbol and dimension for the diameter of reference electrodes

$I_2 A$

Symbol and dimension for the welding current

n_c

Symbol for the number of reference electrodes capable of being melted with the welding power source, starting from the **cold state** without operation of the thermal cut-out

n_h


Symbol for the No. reference electrodes being melted with the welding power source at the **hot state**, without operation of the thermal cut-out.

E/h

No. Electrodes that can be burned per hour from the cold state

$U_{1_} \text{---} V$

Rated value of the supply voltage

 A

Size of the necessary main fuse

$I_1 \text{ max_} A$

Symbol, rated value and dimension of the max. supply current

IP__

Degree of protection (e.g. IP21)

H

Code letter for degree of insulation

PRODUCT SPECIFICATIONS

Output (min/max)	60-200 amps
Open circuit voltage	45-48V
IP rating	23
Electrode diameter/material	4mm (max) (ARC)
Output cable length	6m
Plug type	DIN small
Welding gun type	400A (screw type)
Engine specifications	
Make/type	Honda GX390
Capacity	389cc
Oil capacity/ grade	1.1 Litres/ 10W 30
Engine power	13HP
Fuel tank capacity/fuel type	6.5Litres/Unleaded
Spark plug type	BPR 6ES
Fuel consumption	313g/Kwh
Fuel consumption @75% power	2.15Litres/Hour
Cooling system	Air
Choke type	Manual
Auxiliary Generator	
Rated output power	6.5kVA@230V (5.2kW)/ 4kVA@115V (3.2kW)
Rated output	23amps@230V/35amps@115V
Operating voltages	230/115V-1ph
Run time@rated load (max)	2 hours
Earthing type	Floating
Operating temperature	-20 deg C - 40 deg C
Number of sockets	2 x16amps@230V/2 x 16amps@115V
Noise Emissions	
Noise @7m	72dB(A)
Sound power measured	97dBLWA (measured & guaranteed)
Dimension/weights	
Product (LxWxH)	945 x 690 x 685mm
Weight	88kg

DECLARATION OF CONFORMITY



DECLARATION OF CONFORMITY

This is an important document and should be retained.

Directives(s):
2014/30/EU Electromagnetic Compatibility Directive
2006/42/EC Machinery Directive
2014/35/EC Low Voltage Equipment Directive
2011/65/EU Restriction of Hazardous substances
2000/14/EC Noise Emissions Directive, (amended by 2005/88/EC).

Standard (s):
BS EN ISO 12100: 2010, BS EN 12681:2010, BS EN 60204-1:2006 +A1:2008, BS EN 61000-6-1:2007, BS EN 61000-6-3:2007 +A1:2011.

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: 2012

Signed:

J.A. Clarke
Director

Date of issue:

12/12/2019

Place of issue:

Clarke International
Hemmill Street
Epping
Essex, CM16 4LG
England

WEL15 welding generators D.O.C (v2)

Page 3 of 2



DECLARATION OF CONFORMITY

This is an important document and should be retained.

We, Clarke International, as the authorised representative of the manufacturer, declare that the following product(s) comply with the directive(s) and standard(s) listed below.

Product Description: Welding Generator
Model number(s): WHZ15
Serial / batch Number: N/A

Notified Body:
AV Technology Ltd.
AVTECH House
Able Avenue
Stanley Green Trading Estate
Handforth
Cheshire
SK9 3RW

Technical Documentation Holder:
A.R. Pond
Clarke International
2a Shrubland Road
London E10 7RB
UK

Conformity Assessment Procedure: to 2000/14/EC Annex V
Manufacturer: European Supplier
Noise Related Value: 5.2 kW
Measured Sound Power Level: 97 dB
Guaranteed Sound Power Level: 97 dB

WEL15 welding generators D.O.C (v2)

Page 1 of 2

A SELECTION FROM THE VAST RANGE OF

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QUALITY PRODUCTS

AIR COMPRESSORS

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

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

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Saws, sanders, lathes, mortisers and dust extraction.

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

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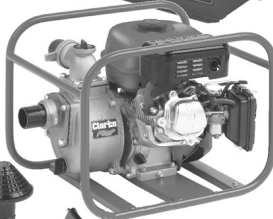
Submersible, electric and engine driven for DIY, agriculture and industry.

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